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# Твердосплавные концевые фрезы 2006



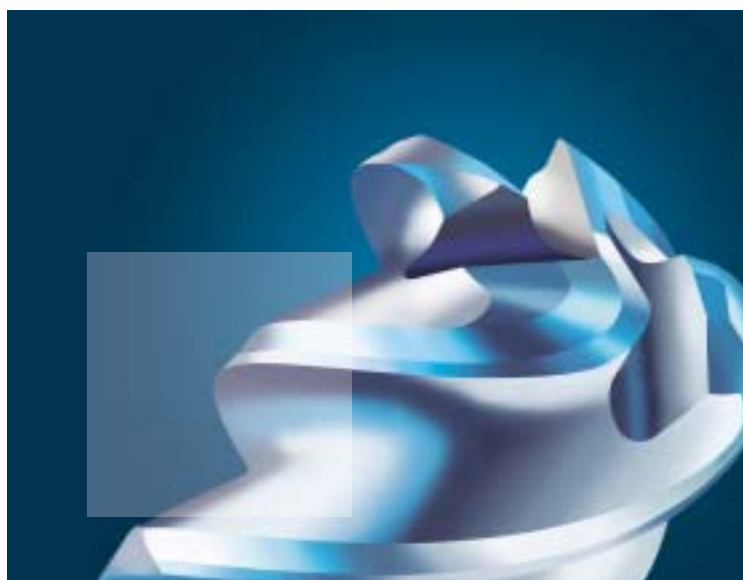
A passion  
for precision

Fraisa SA



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# Твердосплавные концевые фрезы 2006



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**Fraisa SA**

Replaces 2005 edition





X-Generation

Economy

## Сталь

5 - 45

NX

## Закаленная сталь

47 - 89

HX

## Нержавеющая сталь

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SX

## Холодноштамповые стали

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## Алюминий

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## Титан

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Cut-X

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# Сталь

NX

NX

## Высокопроизводительные концевые фрезы с гладкой режущей кромкой, цилиндрические

№ 5225 / 5325



|    |   |  |  |  |   |
|----|---|--|--|--|---|
| NX | $\lambda 38/41^\circ$<br>$\gamma 0^\circ$ |  |  |  | 9 |
|----|---|--|--|--|---|

№ 5227 / 5327



|    |   |  |  |  |    |
|----|---|--|--|--|----|
| NX | $\lambda 38/41^\circ$<br>$\gamma 0^\circ$ |  |  |  | 11 |
|----|---|--|--|--|----|

№ 5228 / 5328



|    |  |  |  |  |    |
|----|--|--|--|--|----|
| NX | $\lambda 40^\circ$<br>$\gamma 5^\circ$ |  |  |  | 13 |
|----|--|--|--|--|----|

№ 5224 / 5324



|    |  |  |  |  |    |
|----|--|--|--|--|----|
| NX | $\lambda 40^\circ$<br>$\gamma 5^\circ$ |  |  |  | 15 |
|----|--|--|--|--|----|

№ 5231 / 5331



|    |  |  |  |  |    |
|----|--|--|--|--|----|
| NX | $\lambda 40^\circ$<br>$\gamma 5^\circ$ |  |  |  | 17 |
|----|--|--|--|--|----|

№ 5155



|    |   |  |  |  |    |
|----|---|--|--|--|----|
| NX | $\lambda 55^\circ$<br>$\gamma 15^\circ$ |  |  |  | 19 |
|----|---|--|--|--|----|

№ 5291 / 5391



|    |  |  |  |  |    |
|----|--|--|--|--|----|
| NX | $\lambda 45^\circ$<br>$\gamma 8^\circ$ |  |  |  | 21 |
|----|--|--|--|--|----|

№ 5296



|    |  |  |  |  |    |
|----|--|--|--|--|----|
| NX | $\lambda 45^\circ$<br>$\gamma 8^\circ$ |  |  |  | 23 |
|----|--|--|--|--|----|

## Высокопроизводительные концевые фрезы с профильной режущей кромкой

№ 5379



|    |  |  |  |  |    |
|----|--|--|--|--|----|
| NX | $\lambda 45^\circ$<br>$\gamma -10^\circ$ |  |  |  | 25 |
|----|--|--|--|--|----|



# Сталь

NX

NX

## Высокопроизводительные концевые фрезы с гладкой режущей кромкой, торические

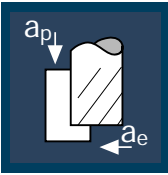
|                            |               |    |   |  |  |  |  |    |
|----------------------------|---------------|----|---|--|--|--|--|----|
| N° 5242 / 5342 <b>NEW!</b> | R 0,5 / R 1,0 | NX | $\lambda 45^\circ$<br>$\gamma 5^\circ$  |  |  |  |  | 27 |
| N° 5243 / 5343 <b>NEW!</b> | R 0,5 / R 1,0 | NX | $\lambda 45^\circ$<br>$\gamma 5^\circ$  |  |  |  |  | 29 |
| N° 5250 / 5350             |               | NX | $\lambda 45^\circ$<br>$\gamma 5^\circ$  |  |  |  |  | 31 |
| N° 5252 / 5352             |               | NX | $\lambda 45^\circ$<br>$\gamma 5^\circ$  |  |  |  |  | 33 |
| N° 5245 / 5345             |               | NX | $\lambda 30^\circ$<br>$\gamma 12^\circ$ |  |  |  |  | 35 |
| N° 5246 / 5346             |               | NX | $\lambda 30^\circ$<br>$\gamma 5^\circ$  |  |  |  |  | 37 |
| N° 5247 / 5347             |               | NX | $\lambda 30^\circ$<br>$\gamma 5^\circ$  |  |  |  |  | 39 |

## Высокопроизводительные концевые фрезы с гладкой режущей кромкой, сферические

|         |  |    |  |  |  |  |  |    |
|---------|--|----|--|--|--|--|--|----|
| N° 5220 |  | NX | $\lambda 30^\circ$<br>$\gamma 5^\circ$ |  |  |  |  | 41 |
| N° 5222 |  | NX | $\lambda 30^\circ$<br>$\gamma 5^\circ$ |  |  |  |  | 43 |
| N° 5223 |  | NX | $\lambda 30^\circ$<br>$\gamma 5^\circ$ |  |  |  |  | 45 |



# 5325



## Применение

Сталь  
up to 24 HRC



Сталь  
24 - 32 HRC



Холодноштамповые  
стали > 12% Cr



Чугун  
(серый /  
высокопрочный)



| d1<br>[mm] | z | V <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 3          | 4 | 200                       | 0.020                  | 3.0                    | 1.5                    | 21220      | 1700                       | 7.5                         |
| 4          | 4 | 200                       | 0.030                  | 4.0                    | 2.0                    | 15915      | 1910                       | 15.5                        |
| 5          | 4 | 200                       | 0.040                  | 5.0                    | 2.5                    | 12735      | 2040                       | 25.5                        |
| 6          | 4 | 200                       | 0.050                  | 6.0                    | 3.0                    | 10610      | 2120                       | 38.0                        |
| 8          | 4 | 200                       | 0.065                  | 8.0                    | 4.0                    | 7960       | 2070                       | 66.0                        |
| 10         | 4 | 200                       | 0.080                  | 10.0                   | 5.0                    | 6365       | 2035                       | 102.0                       |
| 12         | 4 | 200                       | 0.095                  | 12.0                   | 6.0                    | 5305       | 2015                       | 145.0                       |
| 16         | 4 | 200                       | 0.125                  | 16.0                   | 8.0                    | 3980       | 1990                       | 254.5                       |
| 20         | 4 | 200                       | 0.155                  | 20.0                   | 10.0                   | 3185       | 1975                       | 395.0                       |
| 3          | 4 | 150                       | 0.020                  | 3.0                    | 1.5                    | 15915      | 1275                       | 5.5                         |
| 4          | 4 | 150                       | 0.030                  | 4.0                    | 2.0                    | 11935      | 1430                       | 11.5                        |
| 5          | 4 | 150                       | 0.040                  | 5.0                    | 2.5                    | 9550       | 1530                       | 19.0                        |
| 6          | 4 | 150                       | 0.050                  | 6.0                    | 3.0                    | 7960       | 1590                       | 28.5                        |
| 8          | 4 | 150                       | 0.065                  | 8.0                    | 4.0                    | 5970       | 1550                       | 49.5                        |
| 10         | 4 | 150                       | 0.080                  | 10.0                   | 5.0                    | 4775       | 1530                       | 76.5                        |
| 12         | 4 | 150                       | 0.095                  | 12.0                   | 6.0                    | 3980       | 1510                       | 108.5                       |
| 16         | 4 | 150                       | 0.125                  | 16.0                   | 8.0                    | 2985       | 1495                       | 191.5                       |
| 20         | 4 | 150                       | 0.155                  | 20.0                   | 10.0                   | 2385       | 1480                       | 296.0                       |
| 3          | 4 | 100                       | 0.020                  | 3.0                    | 1.5                    | 10610      | 850                        | 4.0                         |
| 4          | 4 | 100                       | 0.030                  | 4.0                    | 2.0                    | 7960       | 955                        | 7.5                         |
| 5          | 4 | 100                       | 0.035                  | 5.0                    | 2.5                    | 6365       | 890                        | 11.0                        |
| 6          | 4 | 100                       | 0.045                  | 6.0                    | 3.0                    | 5305       | 955                        | 17.0                        |
| 8          | 4 | 100                       | 0.060                  | 8.0                    | 4.0                    | 3980       | 955                        | 30.5                        |
| 10         | 4 | 100                       | 0.070                  | 10.0                   | 5.0                    | 3185       | 890                        | 44.5                        |
| 12         | 4 | 100                       | 0.085                  | 12.0                   | 6.0                    | 2655       | 905                        | 65.0                        |
| 16         | 4 | 100                       | 0.110                  | 16.0                   | 8.0                    | 1990       | 875                        | 112.0                       |
| 20         | 4 | 100                       | 0.140                  | 20.0                   | 10.0                   | 1590       | 890                        | 178.0                       |
| 3          | 4 | 180                       | 0.025                  | 3.0                    | 1.5                    | 19100      | 1910                       | 8.5                         |
| 4          | 4 | 180                       | 0.035                  | 4.0                    | 2.0                    | 14325      | 2005                       | 16.0                        |
| 5          | 4 | 180                       | 0.045                  | 5.0                    | 2.5                    | 11460      | 2065                       | 26.0                        |
| 6          | 4 | 180                       | 0.055                  | 6.0                    | 3.0                    | 9550       | 2100                       | 38.0                        |
| 8          | 4 | 180                       | 0.070                  | 8.0                    | 4.0                    | 7160       | 2005                       | 64.0                        |
| 10         | 4 | 180                       | 0.090                  | 10.0                   | 5.0                    | 5730       | 2065                       | 103.5                       |
| 12         | 4 | 180                       | 0.105                  | 12.0                   | 6.0                    | 4775       | 2005                       | 144.5                       |
| 16         | 4 | 180                       | 0.140                  | 16.0                   | 8.0                    | 3580       | 2005                       | 256.5                       |
| 20         | 4 | 180                       | 0.175                  | 20.0                   | 10.0                   | 2865       | 2005                       | 401.0                       |

# 5325

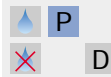


## Применение

Сталь  
up to 24 HRC



Сталь  
24 - 32 HRC



Холодноштамповые  
стали > 12% Cr



Чугун  
(серый /  
высокопрочный)



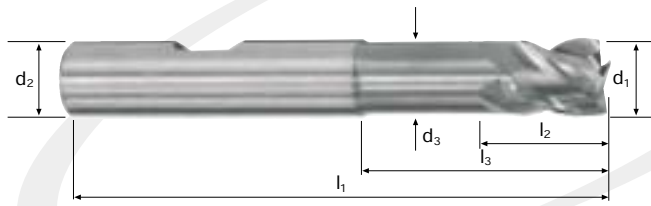
| d1<br>[mm] | z | V <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 3          | 4 | 180                       | 0.015                  | 3.0                    | 3.0                    | 19100      | 1145                       | 10.5                        |
| 4          | 4 | 180                       | 0.020                  | 4.0                    | 4.0                    | 14325      | 1145                       | 18.5                        |
| 5          | 4 | 180                       | 0.030                  | 5.0                    | 5.0                    | 11460      | 1375                       | 34.5                        |
| 6          | 4 | 180                       | 0.040                  | 6.0                    | 6.0                    | 9550       | 1530                       | 55.0                        |
| 8          | 4 | 180                       | 0.050                  | 8.0                    | 8.0                    | 7160       | 1430                       | 91.5                        |
| 10         | 4 | 180                       | 0.065                  | 10.0                   | 10.0                   | 5730       | 1490                       | 149.0                       |
| 12         | 4 | 180                       | 0.075                  | 12.0                   | 12.0                   | 4775       | 1435                       | 206.5                       |
| 16         | 4 | 180                       | 0.075                  | 16.0                   | 4.0                    | 3580       | 1075                       | 69.0                        |
| 20         | 4 | 180                       | 0.095                  | 20.0                   | 5.0                    | 2865       | 1090                       | 109.0                       |
| 3          | 4 | 120                       | 0.015                  | 3.0                    | 3.0                    | 12735      | 765                        | 7.0                         |
| 4          | 4 | 120                       | 0.020                  | 4.0                    | 4.0                    | 9550       | 765                        | 12.0                        |
| 5          | 4 | 120                       | 0.030                  | 5.0                    | 5.0                    | 7640       | 915                        | 23.0                        |
| 6          | 4 | 120                       | 0.040                  | 6.0                    | 6.0                    | 6365       | 1020                       | 36.5                        |
| 8          | 4 | 120                       | 0.050                  | 8.0                    | 8.0                    | 4775       | 955                        | 61.0                        |
| 10         | 4 | 120                       | 0.065                  | 10.0                   | 10.0                   | 3820       | 995                        | 99.5                        |
| 12         | 4 | 120                       | 0.075                  | 12.0                   | 12.0                   | 3185       | 955                        | 137.5                       |
| 16         | 4 | 120                       | 0.075                  | 16.0                   | 4.0                    | 2385       | 715                        | 46.0                        |
| 20         | 4 | 120                       | 0.095                  | 20.0                   | 5.0                    | 1910       | 725                        | 72.5                        |
| 3          | 4 | 80                        | 0.015                  | 3.0                    | 3.0                    | 8490       | 510                        | 4.5                         |
| 4          | 4 | 80                        | 0.020                  | 4.0                    | 4.0                    | 6365       | 510                        | 8.0                         |
| 5          | 4 | 80                        | 0.030                  | 5.0                    | 5.0                    | 5095       | 610                        | 15.5                        |
| 6          | 4 | 80                        | 0.035                  | 6.0                    | 6.0                    | 4245       | 595                        | 21.5                        |
| 8          | 4 | 80                        | 0.045                  | 8.0                    | 8.0                    | 3185       | 575                        | 37.0                        |
| 10         | 4 | 80                        | 0.055                  | 10.0                   | 10.0                   | 2545       | 560                        | 56.0                        |
| 12         | 4 | 80                        | 0.060                  | 12.0                   | 12.0                   | 2120       | 510                        | 73.5                        |
| 16         | 4 | 80                        | 0.075                  | 16.0                   | 4.0                    | 1590       | 475                        | 30.5                        |
| 20         | 4 | 80                        | 0.095                  | 20.0                   | 5.0                    | 1275       | 485                        | 48.5                        |
| 3          | 4 | 160                       | 0.020                  | 3.0                    | 3.0                    | 16975      | 1360                       | 12.0                        |
| 4          | 4 | 160                       | 0.025                  | 4.0                    | 4.0                    | 12735      | 1275                       | 20.5                        |
| 5          | 4 | 160                       | 0.030                  | 5.0                    | 5.0                    | 10185      | 1220                       | 30.5                        |
| 6          | 4 | 160                       | 0.040                  | 6.0                    | 6.0                    | 8490       | 1360                       | 49.0                        |
| 8          | 4 | 160                       | 0.055                  | 8.0                    | 8.0                    | 6365       | 1400                       | 89.5                        |
| 10         | 4 | 160                       | 0.070                  | 10.0                   | 10.0                   | 5095       | 1425                       | 142.5                       |
| 12         | 4 | 160                       | 0.070                  | 12.0                   | 12.0                   | 4245       | 1190                       | 171.5                       |
| 16         | 4 | 160                       | 0.090                  | 16.0                   | 4.0                    | 3185       | 1145                       | 73.5                        |
| 20         | 4 | 160                       | 0.110                  | 20.0                   | 5.0                    | 2545       | 1120                       | 112.0                       |

# Фрезы черновые

NX-V NX

HM  
MG10 NX

$\lambda_{38/41}^\circ$   
 $\gamma 0^\circ$



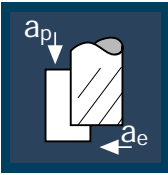
Предназначены для обработки:

0,05-0,15  
4 $^\circ$

- HRC < 40
- HRC < 48
- Нерж. сталь
- GG(G) Чугун
- Титан

|           |       | NEW!    |      |            |    |        |    |   |   | POLYCHROM  |  | DURO-S       |  | SERVICE |  |
|-----------|-------|---------|------|------------|----|--------|----|---|---|------------|--|--------------|--|---------|--|
| Example:  |       | Coating |      | Article-N° |    | ø-Code |    |   |   | P5325D5325 |  | ReTool®      |  |         |  |
| Order-N°: |       | P       |      | 5325       |    | 180    |    |   |   | P5225D5225 |  | with coating |  |         |  |
| ø Code    | d1 e8 | d2 h6   | d3   | l1         | l2 | l3     | α  | z |   |            |  |              |  |         |  |
| NEW! .180 | 3     | 6       | 2,8  | 57         | 4  | 14     | 4° | 4 | • | •          |  |              |  |         |  |
| NEW! .220 | 4     | 6       | 3,7  | 57         | 5  | 16     | 3° | 4 | • | •          |  |              |  |         |  |
| NEW! .260 | 5     | 6       | 4,6  | 57         | 6  | 18     | 2° | 4 | • | •          |  |              |  |         |  |
| .300      | 6     | 6       | 5,5  | 57         | 7  | 20     | 0° | 4 | • | •          |  |              |  |         |  |
| .391      | 8     | 8       | 7,4  | 63         | 9  | 26     | 0° | 4 | • | •          |  |              |  | •       |  |
| .450      | 10    | 10      | 9,2  | 72         | 11 | 31     | 0° | 4 | • | •          |  |              |  | •       |  |
| .501      | 12    | 12      | 11,0 | 83         | 13 | 37     | 0° | 4 | • | •          |  |              |  | •       |  |
| NEW! .610 | 16    | 16      | 15,0 | 92         | 17 | 43     | 0° | 4 | • | •          |  |              |  | •       |  |
| NEW! .682 | 20    | 20      | 19,0 | 104        | 21 | 53     | 0° | 4 | • | •          |  |              |  | •       |  |

5327



Применение

Сталь  
up to 24 HRC



Сталь  
24 - 32 HRC



Холодноштамповые  
стали > 12% Cr



Чугун  
(серый /  
высокопрочный)



| d1<br>[mm] | z | V <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 3          | 4 | 200                       | 0.020                  | 4.5                    | 1.2                    | 21220      | 1700                       | 9.0                         |
| 4          | 4 | 200                       | 0.025                  | 6.0                    | 1.6                    | 15915      | 1590                       | 15.5                        |
| 5          | 4 | 200                       | 0.035                  | 7.5                    | 2.0                    | 12735      | 1785                       | 27.0                        |
| 6          | 4 | 200                       | 0.040                  | 9.0                    | 2.4                    | 10610      | 1700                       | 36.5                        |
| 8          | 4 | 200                       | 0.055                  | 12.0                   | 3.2                    | 7960       | 1750                       | 67.0                        |
| 10         | 4 | 200                       | 0.070                  | 15.0                   | 4.0                    | 6365       | 1780                       | 107.0                       |
| 12         | 4 | 200                       | 0.075                  | 18.0                   | 4.8                    | 5305       | 1590                       | 137.5                       |
| 16         | 4 | 200                       | 0.100                  | 24.0                   | 6.4                    | 3980       | 1590                       | 244.0                       |
| 20         | 4 | 200                       | 0.130                  | 30.0                   | 8.0                    | 3185       | 1655                       | 397.0                       |
| 3          | 4 | 150                       | 0.020                  | 4.5                    | 1.2                    | 15915      | 1275                       | 7.0                         |
| 4          | 4 | 150                       | 0.025                  | 6.0                    | 1.6                    | 11935      | 1195                       | 11.5                        |
| 5          | 4 | 150                       | 0.035                  | 7.5                    | 2.0                    | 9550       | 1335                       | 20.0                        |
| 6          | 4 | 150                       | 0.040                  | 9.0                    | 2.4                    | 7960       | 1275                       | 27.5                        |
| 8          | 4 | 150                       | 0.055                  | 12.0                   | 3.2                    | 5970       | 1315                       | 50.5                        |
| 10         | 4 | 150                       | 0.070                  | 15.0                   | 4.0                    | 4775       | 1335                       | 80.0                        |
| 12         | 4 | 150                       | 0.075                  | 18.0                   | 4.8                    | 3980       | 1195                       | 103.0                       |
| 16         | 4 | 150                       | 0.100                  | 24.0                   | 6.4                    | 2985       | 1195                       | 183.5                       |
| 20         | 4 | 150                       | 0.130                  | 30.0                   | 8.0                    | 2385       | 1240                       | 297.5                       |
| 3          | 4 | 100                       | 0.020                  | 4.5                    | 1.2                    | 10610      | 850                        | 4.5                         |
| 4          | 4 | 100                       | 0.025                  | 6.0                    | 1.6                    | 7960       | 795                        | 7.5                         |
| 5          | 4 | 100                       | 0.030                  | 7.5                    | 2.0                    | 6365       | 765                        | 11.5                        |
| 6          | 4 | 100                       | 0.040                  | 9.0                    | 2.4                    | 5305       | 850                        | 18.5                        |
| 8          | 4 | 100                       | 0.050                  | 12.0                   | 3.2                    | 3980       | 795                        | 30.5                        |
| 10         | 4 | 100                       | 0.065                  | 15.0                   | 4.0                    | 3185       | 830                        | 50.0                        |
| 12         | 4 | 100                       | 0.075                  | 18.0                   | 4.8                    | 2655       | 795                        | 68.5                        |
| 16         | 4 | 100                       | 0.095                  | 24.0                   | 6.4                    | 1990       | 755                        | 116.0                       |
| 20         | 4 | 100                       | 0.120                  | 30.0                   | 8.0                    | 1590       | 765                        | 183.5                       |
| 3          | 4 | 180                       | 0.025                  | 4.5                    | 1.2                    | 19100      | 1910                       | 10.5                        |
| 4          | 4 | 180                       | 0.030                  | 6.0                    | 1.6                    | 14325      | 1720                       | 16.5                        |
| 5          | 4 | 180                       | 0.040                  | 7.5                    | 2.0                    | 11460      | 1835                       | 27.5                        |
| 6          | 4 | 180                       | 0.050                  | 9.0                    | 2.4                    | 9550       | 1910                       | 41.5                        |
| 8          | 4 | 180                       | 0.065                  | 12.0                   | 3.2                    | 7160       | 1860                       | 71.5                        |
| 10         | 4 | 180                       | 0.080                  | 15.0                   | 4.0                    | 5730       | 1835                       | 110.0                       |
| 12         | 4 | 180                       | 0.095                  | 18.0                   | 4.8                    | 4775       | 1815                       | 157.0                       |
| 16         | 4 | 180                       | 0.130                  | 24.0                   | 6.4                    | 3580       | 1860                       | 285.5                       |
| 20         | 4 | 180                       | 0.160                  | 30.0                   | 8.0                    | 2865       | 1835                       | 440.5                       |

5327

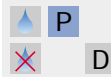


Применение

Сталь  
up to 24 HRC



Сталь  
24 - 32 HRC



Холодноштамповые  
стали > 12% Cr



Чугун  
(серый /  
высокопрочный)



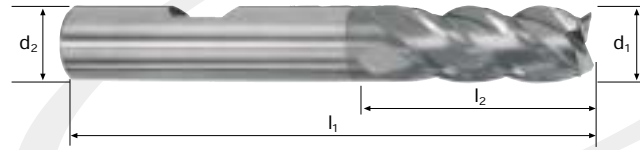
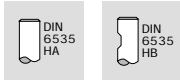
| d1<br>[mm] | z | V <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 3          | 4 | 180                       | 0.015                  | 3.0                    | 3.0                    | 19100      | 1145                       | 10.5                        |
| 4          | 4 | 180                       | 0.020                  | 4.0                    | 4.0                    | 14325      | 1145                       | 18.5                        |
| 5          | 4 | 180                       | 0.030                  | 5.0                    | 5.0                    | 11460      | 1375                       | 34.5                        |
| 6          | 4 | 180                       | 0.035                  | 6.0                    | 6.0                    | 9550       | 1335                       | 48.0                        |
| 8          | 4 | 180                       | 0.045                  | 8.0                    | 8.0                    | 7160       | 1290                       | 82.5                        |
| 10         | 4 | 180                       | 0.055                  | 10.0                   | 10.0                   | 5730       | 1260                       | 126.0                       |
| 12         | 4 | 180                       | 0.060                  | 12.0                   | 12.0                   | 4775       | 1145                       | 165.0                       |
| 16         | 4 | 180                       | 0.075                  | 16.0                   | 8.0                    | 3580       | 1075                       | 137.5                       |
| 20         | 4 | 180                       | 0.095                  | 20.0                   | 10.0                   | 2865       | 1090                       | 218.0                       |
| 3          | 4 | 120                       | 0.015                  | 3.0                    | 3.0                    | 12735      | 765                        | 7.0                         |
| 4          | 4 | 120                       | 0.020                  | 4.0                    | 4.0                    | 9550       | 765                        | 12.0                        |
| 5          | 4 | 120                       | 0.030                  | 5.0                    | 5.0                    | 7640       | 915                        | 23.0                        |
| 6          | 4 | 120                       | 0.035                  | 6.0                    | 6.0                    | 6365       | 890                        | 32.0                        |
| 8          | 4 | 120                       | 0.045                  | 8.0                    | 8.0                    | 4775       | 860                        | 55.0                        |
| 10         | 4 | 120                       | 0.055                  | 10.0                   | 10.0                   | 3820       | 840                        | 84.0                        |
| 12         | 4 | 120                       | 0.060                  | 12.0                   | 12.0                   | 3185       | 765                        | 110.0                       |
| 16         | 4 | 120                       | 0.075                  | 16.0                   | 8.0                    | 2385       | 715                        | 91.5                        |
| 20         | 4 | 120                       | 0.095                  | 20.0                   | 10.0                   | 1910       | 725                        | 145.0                       |
| 3          | 4 | 80                        | 0.015                  | 3.0                    | 3.0                    | 8490       | 510                        | 4.5                         |
| 4          | 4 | 80                        | 0.020                  | 4.0                    | 4.0                    | 6365       | 510                        | 8.0                         |
| 5          | 4 | 80                        | 0.030                  | 5.0                    | 5.0                    | 5095       | 610                        | 15.5                        |
| 6          | 4 | 80                        | 0.035                  | 6.0                    | 6.0                    | 4245       | 595                        | 21.5                        |
| 8          | 4 | 80                        | 0.045                  | 8.0                    | 8.0                    | 3185       | 575                        | 37.0                        |
| 10         | 4 | 80                        | 0.055                  | 10.0                   | 10.0                   | 2545       | 560                        | 56.0                        |
| 12         | 4 | 80                        | 0.060                  | 12.0                   | 12.0                   | 2120       | 510                        | 73.5                        |
| 16         | 4 | 80                        | 0.075                  | 16.0                   | 8.0                    | 1590       | 475                        | 61.0                        |
| 20         | 4 | 80                        | 0.095                  | 20.0                   | 10.0                   | 1275       | 485                        | 97.0                        |
| 3          | 4 | 160                       | 0.020                  | 3.0                    | 3.0                    | 16975      | 1360                       | 12.0                        |
| 4          | 4 | 160                       | 0.025                  | 4.0                    | 4.0                    | 12735      | 1275                       | 20.5                        |
| 5          | 4 | 160                       | 0.030                  | 5.0                    | 5.0                    | 10185      | 1220                       | 30.5                        |
| 6          | 4 | 160                       | 0.040                  | 6.0                    | 6.0                    | 8490       | 1360                       | 49.0                        |
| 8          | 4 | 160                       | 0.050                  | 8.0                    | 8.0                    | 6365       | 1275                       | 81.5                        |
| 10         | 4 | 160                       | 0.065                  | 10.0                   | 10.0                   | 5095       | 1325                       | 132.5                       |
| 12         | 4 | 160                       | 0.065                  | 12.0                   | 12.0                   | 4245       | 1105                       | 159.0                       |
| 16         | 4 | 160                       | 0.090                  | 16.0                   | 8.0                    | 3185       | 1145                       | 146.5                       |
| 20         | 4 | 160                       | 0.110                  | 20.0                   | 10.0                   | 2545       | 1120                       | 224.0                       |

# Фрезы черновые

NX-NV NX

HM  
MG10 NX

$\lambda 38/41^\circ$   
 $\gamma 0^\circ$



Предназначены для обработки:

0,05-0,15  
45°

HRC  
< 40

HRC  
< 48

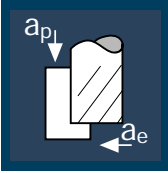
Нерж.  
сталь

GG(G)  
Чугун

Титан

| Example:  |          | Coating  |     | Article-N° |      | α-Code |   | NEW!                     |   |  |
|-----------|----------|----------|-----|------------|------|--------|---|--------------------------|---|--|
| Order-N°. |          | P        |     | 5327       |      | 180    |   | POLYCHROM DURO-S SERVICE |   |  |
|           |          |          |     |            |      |        |   | P5327D5327 ReTool®       |   |  |
|           |          |          |     |            |      |        |   | P5227D5227 with coating  |   |  |
| ∅         | d1<br>e8 | d2<br>h6 | l1  | l2         | α    | Z      |   |                          |   |  |
| NEW! .180 | 3        | 6        | 57  | 8          | 5,5° | 4      | • | •                        |   |  |
| NEW! .220 | 4        | 6        | 57  | 11         | 4,0° | 4      | • | •                        |   |  |
| NEW! .260 | 5        | 6        | 57  | 13         | 2,0° | 4      | • | •                        |   |  |
| .300      | 6        | 6        | 57  | 13         | 0°   | 4      | • | •                        |   |  |
| .391      | 8        | 8        | 63  | 19         | 0°   | 4      | • | •                        | • |  |
| .450      | 10       | 10       | 72  | 22         | 0°   | 4      | • | •                        | • |  |
| .501      | 12       | 12       | 83  | 26         | 0°   | 4      | • | •                        | • |  |
| NEW! .610 | 16       | 16       | 92  | 32         | 0°   | 4      | • | •                        | • |  |
| NEW! .682 | 20       | 20       | 104 | 38         | 0°   | 4      | • | •                        | • |  |
|           |          |          |     |            |      |        |   |                          |   |  |
|           |          |          |     |            |      |        |   |                          |   |  |
|           |          |          |     |            |      |        |   |                          |   |  |
|           |          |          |     |            |      |        |   |                          |   |  |
|           |          |          |     |            |      |        |   |                          |   |  |
|           |          |          |     |            |      |        |   |                          |   |  |
|           |          |          |     |            |      |        |   |                          |   |  |
|           |          |          |     |            |      |        |   |                          |   |  |
|           |          |          |     |            |      |        |   |                          |   |  |
|           |          |          |     |            |      |        |   |                          |   |  |
|           |          |          |     |            |      |        |   |                          |   |  |
|           |          |          |     |            |      |        |   |                          |   |  |
|           |          |          |     |            |      |        |   |                          |   |  |
|           |          |          |     |            |      |        |   |                          |   |  |
|           |          |          |     |            |      |        |   |                          |   |  |
|           |          |          |     |            |      |        |   |                          |   |  |
|           |          |          |     |            |      |        |   |                          |   |  |

5328



Применение

Сталь  
up to 24 HRC



Сталь  
24 - 32 HRC



Холодноштамповые  
стали >12% Cr



Чугун  
(серый /  
высокопрочный)



| d1<br>[mm] | z | V <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 6          | 4 | 200                       | 0.045                  | 6                      | 3                      | 10610      | 1910                       | 34.5                        |
| 8          | 4 | 200                       | 0.060                  | 8                      | 4                      | 7960       | 1910                       | 61.0                        |
| 10         | 4 | 200                       | 0.075                  | 10                     | 5                      | 6365       | 1910                       | 95.5                        |
| 12         | 4 | 200                       | 0.085                  | 12                     | 6                      | 5305       | 1805                       | 130.0                       |
| 16         | 4 | 200                       | 0.115                  | 16                     | 4                      | 3980       | 1830                       | 117.0                       |
| 6          | 4 | 150                       | 0.045                  | 6                      | 3                      | 7960       | 1435                       | 26.0                        |
| 8          | 4 | 150                       | 0.060                  | 8                      | 4                      | 5970       | 1435                       | 46.0                        |
| 10         | 4 | 150                       | 0.075                  | 10                     | 5                      | 4775       | 1435                       | 72.0                        |
| 12         | 4 | 150                       | 0.085                  | 12                     | 6                      | 3980       | 1355                       | 97.5                        |
| 16         | 4 | 150                       | 0.115                  | 16                     | 4                      | 2985       | 1375                       | 88.0                        |
| 6          | 4 | 100                       | 0.040                  | 6                      | 3                      | 5305       | 850                        | 15.5                        |
| 8          | 4 | 100                       | 0.050                  | 8                      | 4                      | 3980       | 795                        | 25.5                        |
| 10         | 4 | 100                       | 0.065                  | 10                     | 5                      | 3185       | 830                        | 41.5                        |
| 12         | 4 | 100                       | 0.080                  | 12                     | 6                      | 2655       | 850                        | 61.0                        |
| 16         | 4 | 100                       | 0.105                  | 16                     | 4                      | 1990       | 835                        | 53.5                        |
| 6          | 4 | 180                       | 0.050                  | 6                      | 3                      | 9550       | 1910                       | 34.5                        |
| 8          | 4 | 180                       | 0.065                  | 8                      | 4                      | 7160       | 1860                       | 59.5                        |
| 10         | 4 | 180                       | 0.080                  | 10                     | 5                      | 5730       | 1835                       | 92.0                        |
| 12         | 4 | 180                       | 0.095                  | 12                     | 6                      | 4775       | 1815                       | 130.5                       |
| 16         | 4 | 180                       | 0.130                  | 16                     | 4                      | 3580       | 1860                       | 119.0                       |

5328



Применение

Сталь  
up to 24 HRC



Сталь  
24 - 32 HRC



Холодноштамповые  
стали >12% Cr



Чугун  
(серый /  
высокопрочный)



| d1<br>[mm] | z | V <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 6          | 4 | 180                       | 0.045                  | 3                      | 6                      | 9550       | 1720                       | 31.0                        |
| 8          | 4 | 180                       | 0.060                  | 4                      | 8                      | 7160       | 1720                       | 55.0                        |
| 10         | 4 | 180                       | 0.075                  | 5                      | 10                     | 5730       | 1720                       | 86.0                        |
| 12         | 4 | 180                       | 0.085                  | 6                      | 12                     | 4775       | 1625                       | 117.0                       |
| 16         | 4 | 180                       | 0.115                  | 4                      | 16                     | 3580       | 1645                       | 105.5                       |
| 6          | 4 | 120                       | 0.045                  | 3                      | 6                      | 6365       | 1145                       | 20.5                        |
| 8          | 4 | 120                       | 0.060                  | 4                      | 8                      | 4775       | 1145                       | 36.5                        |
| 10         | 4 | 120                       | 0.075                  | 5                      | 10                     | 3820       | 1145                       | 57.5                        |
| 12         | 4 | 120                       | 0.085                  | 6                      | 12                     | 3185       | 1085                       | 78.0                        |
| 16         | 4 | 120                       | 0.115                  | 4                      | 16                     | 2385       | 1095                       | 70.0                        |
| 6          | 4 | 80                        | 0.040                  | 3                      | 6                      | 4245       | 680                        | 12.0                        |
| 8          | 4 | 80                        | 0.050                  | 4                      | 8                      | 3185       | 635                        | 20.5                        |
| 10         | 4 | 80                        | 0.065                  | 5                      | 10                     | 2545       | 660                        | 33.0                        |
| 12         | 4 | 80                        | 0.080                  | 6                      | 12                     | 2120       | 680                        | 49.0                        |
| 16         | 4 | 80                        | 0.105                  | 4                      | 16                     | 1590       | 670                        | 43.0                        |
| 6          | 4 | 160                       | 0.050                  | 3                      | 6                      | 8490       | 1700                       | 30.5                        |
| 8          | 4 | 160                       | 0.065                  | 4                      | 8                      | 6365       | 1655                       | 53.0                        |
| 10         | 4 | 160                       | 0.080                  | 5                      | 10                     | 5095       | 1630                       | 81.5                        |
| 12         | 4 | 160                       | 0.095                  | 6                      | 12                     | 4245       | 1615                       | 116.5                       |
| 16         | 4 | 160                       | 0.130                  | 4                      | 16                     | 3185       | 1655                       | 106.0                       |

# Фрезы черновые

NX

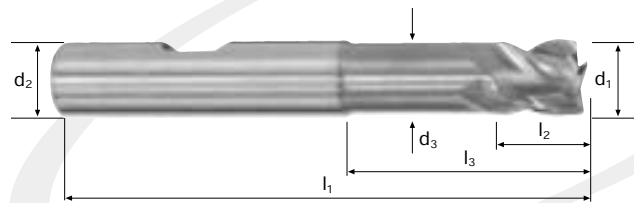
NX

HM  
MG10 NX

$\lambda$  40°  
 $\gamma$  5°



DIN 6535 HA  
DIN 6535 HB



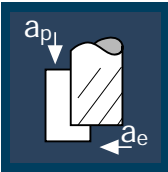
Предназначены для обработки:

0,05-0,15  
45°

- HRC < 40
- HRC < 48
- Нерж. сталь
- GG(G) Чугун
- Титан

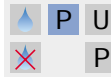
| Example:  |       | Coating | Article-N° | ø-Code |    |    |   | UNICUT-4X  | POLYCHROM    | SERVICE |
|-----------|-------|---------|------------|--------|----|----|---|------------|--------------|---------|
| Order-N°: | U     | 5328    | 300        |        |    |    |   | U5328P5328 | ReTool®      |         |
|           |       |         |            |        |    |    |   | U5228P5228 | with coating |         |
| Ø Code    | d1 e8 | d2 h6   | d3         | l1     | l2 | l3 | Z |            |              |         |
| .300      | 6     | 6       | 5,5        | 57     | 7  | 20 | 4 | •          | •            |         |
| .391      | 8     | 8       | 7,4        | 63     | 9  | 26 | 4 | •          | •            | •       |
| .450      | 10    | 10      | 9,2        | 72     | 11 | 31 | 4 | •          | •            | •       |
| .501      | 12    | 12      | 11,0       | 83     | 13 | 37 | 4 | •          | •            | •       |
| .610      | 16    | 16      | 15,0       | 92     | 17 | 43 | 4 | •          | •            | •       |
|           |       |         |            |        |    |    |   |            |              |         |
|           |       |         |            |        |    |    |   |            |              |         |
|           |       |         |            |        |    |    |   |            |              |         |
|           |       |         |            |        |    |    |   |            |              |         |
|           |       |         |            |        |    |    |   |            |              |         |
|           |       |         |            |        |    |    |   |            |              |         |
|           |       |         |            |        |    |    |   |            |              |         |
|           |       |         |            |        |    |    |   |            |              |         |
|           |       |         |            |        |    |    |   |            |              |         |
|           |       |         |            |        |    |    |   |            |              |         |
|           |       |         |            |        |    |    |   |            |              |         |
|           |       |         |            |        |    |    |   |            |              |         |
|           |       |         |            |        |    |    |   |            |              |         |
|           |       |         |            |        |    |    |   |            |              |         |
|           |       |         |            |        |    |    |   |            |              |         |
|           |       |         |            |        |    |    |   |            |              |         |
|           |       |         |            |        |    |    |   |            |              |         |
|           |       |         |            |        |    |    |   |            |              |         |
|           |       |         |            |        |    |    |   |            |              |         |
|           |       |         |            |        |    |    |   |            |              |         |

5324

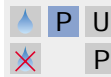


Применение

Сталь  
up to 24 HRC



Сталь  
24 - 32 HRC



Холодноштамповые  
стали >12% Cr



Чугун  
(серый /  
высокопрочный)



| d1<br>[mm] | z | Vc<br>[m/min] | fz<br>[mm] | ap<br>[mm] | ae<br>[mm] | n<br>[min] | Vf<br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------|------------|------------|------------|------------|----------------|-----------------------------|
| 6          | 4 | 200           | 0.040      | 6          | 3          | 10610      | 1700           | 30.5                        |
| 8          | 4 | 200           | 0.055      | 8          | 4          | 7960       | 1750           | 56.0                        |
| 10         | 4 | 200           | 0.070      | 10         | 5          | 6365       | 1780           | 89.0                        |
| 12         | 4 | 200           | 0.085      | 12         | 6          | 5305       | 1805           | 130.0                       |
| 16         | 4 | 200           | 0.110      | 16         | 4          | 3980       | 1750           | 112.0                       |
| 6          | 4 | 150           | 0.040      | 6          | 3          | 7960       | 1275           | 23.0                        |
| 8          | 4 | 150           | 0.055      | 8          | 4          | 5970       | 1315           | 42.0                        |
| 10         | 4 | 150           | 0.070      | 10         | 5          | 4775       | 1335           | 67.0                        |
| 12         | 4 | 150           | 0.085      | 12         | 6          | 3980       | 1355           | 97.5                        |
| 16         | 4 | 150           | 0.110      | 16         | 4          | 2985       | 1315           | 84.0                        |
| 6          | 4 | 100           | 0.040      | 6          | 3          | 5305       | 850            | 15.5                        |
| 8          | 4 | 100           | 0.050      | 8          | 4          | 3980       | 795            | 25.5                        |
| 10         | 4 | 100           | 0.065      | 10         | 5          | 3185       | 830            | 41.5                        |
| 12         | 4 | 100           | 0.080      | 12         | 6          | 2655       | 850            | 61.0                        |
| 16         | 4 | 100           | 0.105      | 16         | 4          | 1990       | 835            | 53.5                        |
| 6          | 4 | 180           | 0.050      | 6          | 3          | 9550       | 1910           | 34.5                        |
| 8          | 4 | 180           | 0.065      | 8          | 4          | 7160       | 1860           | 59.5                        |
| 10         | 4 | 180           | 0.080      | 10         | 5          | 5730       | 1835           | 92.0                        |
| 12         | 4 | 180           | 0.095      | 12         | 6          | 4775       | 1815           | 130.5                       |
| 16         | 4 | 180           | 0.130      | 16         | 4          | 3580       | 1860           | 119.0                       |

5324



Применение

Сталь  
up to 24 HRC



Сталь  
24 - 32 HRC



Холодноштамповые  
стали >12% Cr



Чугун  
(серый /  
высокопрочный)



| d1<br>[mm] | z | Vc<br>[m/min] | fz<br>[mm] | ap<br>[mm] | ae<br>[mm] | n<br>[min] | Vf<br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------|------------|------------|------------|------------|----------------|-----------------------------|
| 6          | 4 | 180           | 0.040      | 3          | 6          | 9550       | 1530           | 27.5                        |
| 8          | 4 | 180           | 0.055      | 4          | 8          | 7160       | 1575           | 50.5                        |
| 10         | 4 | 180           | 0.070      | 5          | 10         | 5730       | 1605           | 80.5                        |
| 12         | 4 | 180           | 0.085      | 6          | 12         | 4775       | 1625           | 117.0                       |
| 16         | 4 | 180           | 0.110      | 4          | 16         | 3580       | 1575           | 101.0                       |
| 6          | 4 | 120           | 0.040      | 3          | 6          | 6365       | 1020           | 18.5                        |
| 8          | 4 | 120           | 0.055      | 4          | 8          | 4775       | 1050           | 33.5                        |
| 10         | 4 | 120           | 0.070      | 5          | 10         | 3820       | 1070           | 53.5                        |
| 12         | 4 | 120           | 0.085      | 6          | 12         | 3185       | 1085           | 78.0                        |
| 16         | 4 | 120           | 0.110      | 4          | 16         | 2385       | 1050           | 67.0                        |
| 6          | 4 | 80            | 0.040      | 3          | 6          | 4245       | 680            | 12.0                        |
| 8          | 4 | 80            | 0.050      | 4          | 8          | 3185       | 635            | 20.5                        |
| 10         | 4 | 80            | 0.065      | 5          | 10         | 2545       | 660            | 33.0                        |
| 12         | 4 | 80            | 0.080      | 6          | 12         | 2120       | 680            | 49.0                        |
| 16         | 4 | 80            | 0.105      | 4          | 16         | 1590       | 670            | 43.0                        |
| 6          | 4 | 160           | 0.050      | 3          | 6          | 8490       | 1700           | 30.5                        |
| 8          | 4 | 160           | 0.065      | 4          | 8          | 6365       | 1655           | 53.0                        |
| 10         | 4 | 160           | 0.080      | 5          | 10         | 5095       | 1630           | 81.5                        |
| 12         | 4 | 160           | 0.095      | 6          | 12         | 4245       | 1615           | 116.5                       |
| 16         | 4 | 160           | 0.130      | 4          | 16         | 3185       | 1655           | 106.0                       |

# Фрезы черновые

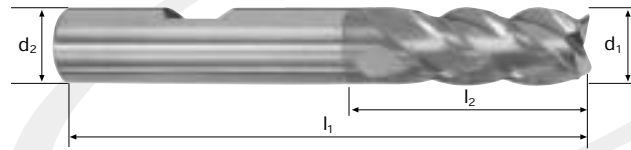
NX-N NX

HM  
MG10 NX

$\lambda$  40°  
 $\gamma$  5°



DIN 6535 HA  
DIN 6535 HB



Предназначены для обработки:

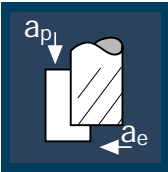
0,05-0,15  
45°

- HRC < 40
- HRC < 48
- Нерж. сталь
- GG(G) Чугун
- Титан

|                                    |       |       |    |    | NEW! |   | UNICUT-4X               | POLYCHROM | SERVICE |
|------------------------------------|-------|-------|----|----|------|---|-------------------------|-----------|---------|
| Example: Coating Article-N° ø-Code |       |       |    |    |      |   | U5324P5324ReTool®       |           |         |
| Order-N°: U 5324300                |       |       |    |    |      |   | U5224P5224 with coating |           |         |
| ø Code                             | d1 e8 | d2 h6 | l1 | l2 | Z    |   |                         |           |         |
| .300                               | 6     | 6     | 57 | 13 | 4    | • | •                       |           |         |
| .391                               | 8     | 8     | 63 | 19 | 4    | • | •                       | •         |         |
| .450                               | 10    | 10    | 72 | 22 | 4    | • | •                       | •         |         |
| .501                               | 12    | 12    | 83 | 26 | 4    | • | •                       | •         |         |
| .610                               | 16    | 16    | 92 | 32 | 4    | • | •                       | •         |         |
|                                    |       |       |    |    |      |   |                         |           |         |
|                                    |       |       |    |    |      |   |                         |           |         |
|                                    |       |       |    |    |      |   |                         |           |         |
|                                    |       |       |    |    |      |   |                         |           |         |
|                                    |       |       |    |    |      |   |                         |           |         |
|                                    |       |       |    |    |      |   |                         |           |         |
|                                    |       |       |    |    |      |   |                         |           |         |
|                                    |       |       |    |    |      |   |                         |           |         |
|                                    |       |       |    |    |      |   |                         |           |         |
|                                    |       |       |    |    |      |   |                         |           |         |
|                                    |       |       |    |    |      |   |                         |           |         |
|                                    |       |       |    |    |      |   |                         |           |         |
|                                    |       |       |    |    |      |   |                         |           |         |
|                                    |       |       |    |    |      |   |                         |           |         |
|                                    |       |       |    |    |      |   |                         |           |         |
|                                    |       |       |    |    |      |   |                         |           |         |
|                                    |       |       |    |    |      |   |                         |           |         |
|                                    |       |       |    |    |      |   |                         |           |         |
|                                    |       |       |    |    |      |   |                         |           |         |
|                                    |       |       |    |    |      |   |                         |           |         |

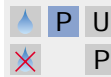


5331



Применение

Сталь  
up to 24 HRC



Сталь  
24 - 32 HRC



Холодноштамповые  
стали >12% Cr



Чугун  
(серый /  
высокопрочный)



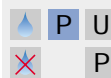
| d1<br>[mm] | z | V <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 3          | 3 | 180                       | 0.010                  | 4.5                    | 1.5                    | 19100      | 575                        | 4.0                         |
| 4          | 3 | 180                       | 0.015                  | 6.0                    | 2.0                    | 14325      | 645                        | 7.5                         |
| 5          | 3 | 180                       | 0.015                  | 7.5                    | 2.5                    | 11460      | 515                        | 9.5                         |
| 6          | 3 | 180                       | 0.035                  | 9.0                    | 3.0                    | 9550       | 1005                       | 27.0                        |
| 8          | 3 | 180                       | 0.045                  | 12.0                   | 4.0                    | 7160       | 965                        | 46.5                        |
| 10         | 3 | 180                       | 0.055                  | 15.0                   | 5.0                    | 5730       | 945                        | 71.0                        |
| 12         | 3 | 180                       | 0.065                  | 18.0                   | 6.0                    | 4775       | 930                        | 100.5                       |
| 16         | 3 | 180                       | 0.085                  | 24.0                   | 4.0                    | 3580       | 915                        | 88.0                        |
| 20         | 3 | 180                       | 0.110                  | 30.0                   | 5.0                    | 2865       | 945                        | 142.0                       |
| 3          | 3 | 120                       | 0.010                  | 4.5                    | 1.5                    | 12735      | 380                        | 2.5                         |
| 4          | 3 | 120                       | 0.015                  | 6.0                    | 2.0                    | 9550       | 430                        | 5.0                         |
| 5          | 3 | 120                       | 0.015                  | 7.5                    | 2.5                    | 7640       | 345                        | 6.5                         |
| 6          | 3 | 120                       | 0.035                  | 9.0                    | 3.0                    | 6365       | 670                        | 18.0                        |
| 8          | 3 | 120                       | 0.045                  | 12.0                   | 4.0                    | 4775       | 645                        | 31.0                        |
| 10         | 3 | 120                       | 0.055                  | 15.0                   | 5.0                    | 3820       | 630                        | 47.5                        |
| 12         | 3 | 120                       | 0.065                  | 18.0                   | 6.0                    | 3185       | 620                        | 67.0                        |
| 16         | 3 | 120                       | 0.085                  | 24.0                   | 4.0                    | 2385       | 610                        | 58.5                        |
| 20         | 3 | 120                       | 0.110                  | 30.0                   | 5.0                    | 1910       | 630                        | 94.5                        |
| 3          | 3 | 80                        | 0.010                  | 4.5                    | 1.5                    | 8490       | 255                        | 1.5                         |
| 4          | 3 | 80                        | 0.010                  | 6.0                    | 2.0                    | 6365       | 190                        | 2.5                         |
| 5          | 3 | 80                        | 0.015                  | 7.5                    | 2.5                    | 5095       | 230                        | 4.5                         |
| 6          | 3 | 80                        | 0.025                  | 9.0                    | 3.0                    | 4245       | 320                        | 8.5                         |
| 8          | 3 | 80                        | 0.035                  | 12.0                   | 4.0                    | 3185       | 335                        | 16.0                        |
| 10         | 3 | 80                        | 0.045                  | 15.0                   | 5.0                    | 2545       | 345                        | 26.0                        |
| 12         | 3 | 80                        | 0.055                  | 18.0                   | 6.0                    | 2120       | 350                        | 38.0                        |
| 16         | 3 | 80                        | 0.075                  | 24.0                   | 4.0                    | 1590       | 360                        | 34.5                        |
| 20         | 3 | 80                        | 0.090                  | 30.0                   | 5.0                    | 1275       | 345                        | 52.0                        |
| 3          | 3 | 160                       | 0.010                  | 4.5                    | 1.5                    | 16975      | 510                        | 3.5                         |
| 4          | 3 | 160                       | 0.015                  | 6.0                    | 2.0                    | 12735      | 575                        | 7.0                         |
| 5          | 3 | 160                       | 0.015                  | 7.5                    | 2.5                    | 10185      | 460                        | 8.5                         |
| 6          | 3 | 160                       | 0.035                  | 9.0                    | 3.0                    | 8490       | 890                        | 24.0                        |
| 8          | 3 | 160                       | 0.045                  | 12.0                   | 4.0                    | 6365       | 860                        | 41.5                        |
| 10         | 3 | 160                       | 0.055                  | 15.0                   | 5.0                    | 5095       | 840                        | 63.0                        |
| 12         | 3 | 160                       | 0.065                  | 18.0                   | 6.0                    | 4245       | 830                        | 89.5                        |
| 16         | 3 | 160                       | 0.085                  | 24.0                   | 4.0                    | 3185       | 810                        | 78.0                        |
| 20         | 3 | 160                       | 0.110                  | 30.0                   | 5.0                    | 2545       | 840                        | 126.0                       |

5331



Применение

Сталь  
up to 24 HRC



Сталь  
24 - 32 HRC



Холодноштамповые  
стали >12% Cr



Чугун  
(серый /  
высокопрочный)



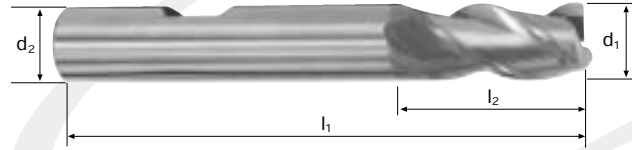
| d1<br>[mm] | z | V <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 3          | 3 | 160                       | 0.010                  | 3.0                    | 3.0                    | 16975      | 510                        | 4.5                         |
| 4          | 3 | 160                       | 0.015                  | 4.0                    | 4.0                    | 12735      | 575                        | 9.0                         |
| 5          | 3 | 160                       | 0.020                  | 5.0                    | 5.0                    | 10185      | 610                        | 15.5                        |
| 6          | 3 | 160                       | 0.025                  | 6.0                    | 6.0                    | 8490       | 635                        | 23.0                        |
| 8          | 3 | 160                       | 0.035                  | 8.0                    | 8.0                    | 6365       | 670                        | 43.0                        |
| 10         | 3 | 160                       | 0.040                  | 10.0                   | 10.0                   | 5095       | 610                        | 61.0                        |
| 12         | 3 | 160                       | 0.050                  | 12.0                   | 12.0                   | 4245       | 635                        | 91.5                        |
| 16         | 3 | 160                       | 0.065                  | 8.0                    | 16.0                   | 3185       | 620                        | 79.5                        |
| 20         | 3 | 160                       | 0.085                  | 10.0                   | 20.0                   | 2545       | 650                        | 130.0                       |
| 3          | 3 | 100                       | 0.010                  | 3.0                    | 3.0                    | 10610      | 320                        | 3.0                         |
| 4          | 3 | 100                       | 0.015                  | 4.0                    | 4.0                    | 7960       | 360                        | 6.0                         |
| 5          | 3 | 100                       | 0.020                  | 5.0                    | 5.0                    | 6365       | 380                        | 9.5                         |
| 6          | 3 | 100                       | 0.025                  | 6.0                    | 6.0                    | 5305       | 400                        | 14.5                        |
| 8          | 3 | 100                       | 0.035                  | 8.0                    | 8.0                    | 3980       | 420                        | 27.0                        |
| 10         | 3 | 100                       | 0.040                  | 10.0                   | 10.0                   | 3185       | 380                        | 38.0                        |
| 12         | 3 | 100                       | 0.050                  | 12.0                   | 12.0                   | 2655       | 400                        | 57.5                        |
| 16         | 3 | 100                       | 0.065                  | 8.0                    | 16.0                   | 1990       | 390                        | 50.0                        |
| 20         | 3 | 100                       | 0.085                  | 10.0                   | 20.0                   | 1590       | 405                        | 81.0                        |
| 3          | 3 | 60                        | 0.010                  | 3.0                    | 3.0                    | 6365       | 190                        | 1.5                         |
| 4          | 3 | 60                        | 0.010                  | 4.0                    | 4.0                    | 4775       | 145                        | 2.5                         |
| 5          | 3 | 60                        | 0.015                  | 5.0                    | 5.0                    | 3820       | 170                        | 4.5                         |
| 6          | 3 | 60                        | 0.025                  | 6.0                    | 6.0                    | 3185       | 240                        | 8.5                         |
| 8          | 3 | 60                        | 0.035                  | 8.0                    | 8.0                    | 2385       | 250                        | 16.0                        |
| 10         | 3 | 60                        | 0.040                  | 10.0                   | 10.0                   | 1910       | 230                        | 23.0                        |
| 12         | 3 | 60                        | 0.050                  | 12.0                   | 12.0                   | 1590       | 240                        | 34.5                        |
| 16         | 3 | 60                        | 0.065                  | 8.0                    | 16.0                   | 1195       | 235                        | 30.0                        |
| 20         | 3 | 60                        | 0.085                  | 10.0                   | 20.0                   | 955        | 245                        | 49.0                        |
| 3          | 3 | 140                       | 0.010                  | 3.0                    | 3.0                    | 14855      | 445                        | 4.0                         |
| 4          | 3 | 140                       | 0.010                  | 4.0                    | 4.0                    | 11140      | 335                        | 5.5                         |
| 5          | 3 | 140                       | 0.015                  | 5.0                    | 5.0                    | 8915       | 400                        | 10.0                        |
| 6          | 3 | 140                       | 0.025                  | 6.0                    | 6.0                    | 7425       | 555                        | 20.0                        |
| 8          | 3 | 140                       | 0.035                  | 8.0                    | 8.0                    | 5570       | 585                        | 37.5                        |
| 10         | 3 | 140                       | 0.045                  | 10.0                   | 10.0                   | 4455       | 600                        | 60.0                        |
| 12         | 3 | 140                       | 0.055                  | 12.0                   | 12.0                   | 3715       | 615                        | 88.5                        |
| 16         | 3 | 140                       | 0.075                  | 8.0                    | 16.0                   | 2785       | 625                        | 80.0                        |
| 20         | 3 | 140                       | 0.090                  | 10.0                   | 20.0                   | 2230       | 600                        | 120.0                       |

# Фрезы черновые

**NX-3M NX**

HM MG10 NX

$\lambda$  40°  
 $\gamma$  5°



DIN 6535 HA    DIN 6535 HB

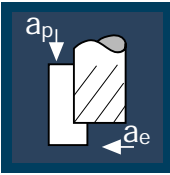
Предназначены для обработки:

0,05-0,15  
45°

- HRC < 40**
- HRC < 48
- Нерж. сталь
- GG(G) Чугун
- Титан

|           |       |       |     |    | UNICUT-4X | POLYCHROM | SERVICE      |
|-----------|-------|-------|-----|----|-----------|-----------|--------------|
| Example:  |       |       |     |    | U5331     | P5331     | ReTool®      |
| Order-N°: |       |       |     |    | U5231     | P5231     | with coating |
| Ø Code    | d1 e8 | d2 h6 | l1  | l2 | Z         |           |              |
| .180      | 3     | 6     | 57  | 7  | 3         | •         | •            |
| .220      | 4     | 6     | 57  | 8  | 3         | •         | •            |
| .260      | 5     | 6     | 57  | 10 | 3         | •         | •            |
| .300      | 6     | 6     | 57  | 10 | 3         | •         | •            |
| .391      | 8     | 8     | 63  | 16 | 3         | •         | •            |
| .450      | 10    | 10    | 72  | 19 | 3         | •         | •            |
| .501      | 12    | 12    | 83  | 22 | 3         | •         | •            |
| .610      | 16    | 16    | 92  | 26 | 3         | •         | •            |
| .682      | 20    | 20    | 104 | 32 | 3         | •         | •            |

5155



Применение

Стали  
20 - 30 HRC



Стали  
30 - 48 HRC



Холодноштамповые  
стали > 12% Cr



Нержавеющие стали  
(аустенитные)



| d1<br>[mm] | z | V <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|
| 6          | 4 | 180                       | 0.020                  | 9.0                    | 1.5                    | 9550       | 765                        |
| 8          | 4 | 180                       | 0.025                  | 12.0                   | 2.0                    | 7160       | 715                        |
| 10         | 4 | 180                       | 0.035                  | 15.0                   | 2.5                    | 5730       | 800                        |
| 12         | 4 | 180                       | 0.040                  | 18.0                   | 3.0                    | 4775       | 765                        |
| 16         | 4 | 180                       | 0.055                  | 24.0                   | 4.0                    | 3580       | 790                        |
| 20         | 4 | 180                       | 0.065                  | 30.0                   | 5.0                    | 2865       | 745                        |
| 6          | 4 | 120                       | 0.020                  | 9.0                    | 1.5                    | 6365       | 510                        |
| 8          | 4 | 120                       | 0.025                  | 12.0                   | 2.0                    | 4775       | 480                        |
| 10         | 4 | 120                       | 0.035                  | 15.0                   | 2.5                    | 3820       | 535                        |
| 12         | 4 | 120                       | 0.040                  | 18.0                   | 3.0                    | 3185       | 510                        |
| 16         | 4 | 120                       | 0.055                  | 24.0                   | 4.0                    | 2385       | 525                        |
| 20         | 4 | 120                       | 0.065                  | 30.0                   | 5.0                    | 1910       | 495                        |
| 6          | 4 | 80                        | 0.020                  | 9.0                    | 0.6                    | 4245       | 340                        |
| 8          | 4 | 80                        | 0.025                  | 12.0                   | 0.8                    | 3185       | 320                        |
| 10         | 4 | 80                        | 0.035                  | 15.0                   | 1.0                    | 2545       | 355                        |
| 12         | 4 | 80                        | 0.040                  | 18.0                   | 1.2                    | 2120       | 340                        |
| 16         | 4 | 80                        | 0.055                  | 24.0                   | 1.6                    | 1590       | 350                        |
| 20         | 4 | 80                        | 0.065                  | 30.0                   | 2.0                    | 1275       | 330                        |
| 6          | 4 | 70                        | 0.020                  | 9.0                    | 1.5                    | 3715       | 295                        |
| 8          | 4 | 70                        | 0.025                  | 12.0                   | 2.0                    | 2785       | 280                        |
| 10         | 4 | 70                        | 0.035                  | 15.0                   | 2.5                    | 2230       | 310                        |
| 12         | 4 | 70                        | 0.040                  | 18.0                   | 3.0                    | 1855       | 295                        |
| 16         | 4 | 70                        | 0.055                  | 24.0                   | 4.0                    | 1395       | 305                        |
| 20         | 4 | 70                        | 0.065                  | 30.0                   | 5.0                    | 1115       | 290                        |

Применение

Чугун  
(серый /  
высокопрочный)



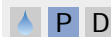
Unalloyed copper



Titanium



Aeronautic materials



| d1<br>[mm] | z | V <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|
| 6          | 4 | 130                       | 0.020                  | 9.0                    | 1.5                    | 6895       | 550                        |
| 8          | 4 | 130                       | 0.025                  | 12.0                   | 2.0                    | 5175       | 520                        |
| 10         | 4 | 130                       | 0.035                  | 15.0                   | 2.5                    | 4140       | 580                        |
| 12         | 4 | 130                       | 0.040                  | 18.0                   | 3.0                    | 3450       | 550                        |
| 16         | 4 | 130                       | 0.055                  | 24.0                   | 4.0                    | 2585       | 570                        |
| 20         | 4 | 130                       | 0.065                  | 30.0                   | 5.0                    | 2070       | 540                        |
| 6          | 4 | 250                       | 0.020                  | 9.0                    | 1.5                    | 13265      | 1060                       |
| 8          | 4 | 250                       | 0.025                  | 12.0                   | 2.0                    | 9945       | 995                        |
| 10         | 4 | 250                       | 0.035                  | 15.0                   | 2.5                    | 7960       | 1115                       |
| 12         | 4 | 250                       | 0.040                  | 18.0                   | 3.0                    | 6630       | 1060                       |
| 16         | 4 | 250                       | 0.055                  | 24.0                   | 4.0                    | 4975       | 1095                       |
| 20         | 4 | 250                       | 0.065                  | 30.0                   | 5.0                    | 3980       | 1035                       |
| 6          | 4 | 80                        | 0.020                  | 9.0                    | 1.5                    | 4245       | 340                        |
| 8          | 4 | 80                        | 0.025                  | 12.0                   | 2.0                    | 3185       | 320                        |
| 10         | 4 | 80                        | 0.035                  | 15.0                   | 2.5                    | 2545       | 355                        |
| 12         | 4 | 80                        | 0.040                  | 18.0                   | 3.0                    | 2120       | 340                        |
| 16         | 4 | 80                        | 0.055                  | 24.0                   | 4.0                    | 1590       | 350                        |
| 20         | 4 | 80                        | 0.065                  | 30.0                   | 5.0                    | 1275       | 330                        |
| 6          | 4 | 40                        | 0.020                  | 9.0                    | 1.5                    | 2120       | 170                        |
| 8          | 4 | 40                        | 0.025                  | 12.0                   | 2.0                    | 1590       | 160                        |
| 10         | 4 | 40                        | 0.035                  | 15.0                   | 2.5                    | 1275       | 180                        |
| 12         | 4 | 40                        | 0.040                  | 18.0                   | 3.0                    | 1060       | 170                        |
| 16         | 4 | 40                        | 0.055                  | 24.0                   | 4.0                    | 795        | 175                        |
| 20         | 4 | 40                        | 0.065                  | 30.0                   | 5.0                    | 635        | 165                        |



NX

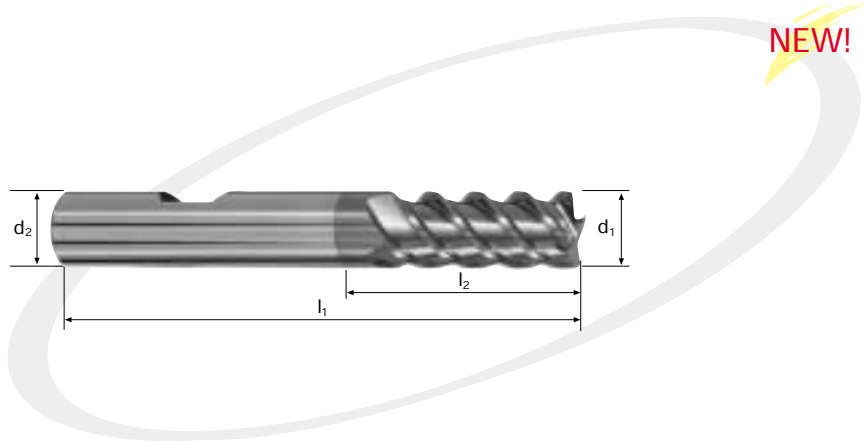
# Фрезы универсальные

HM  
MG10 NX

$\lambda$  55°  
 $\gamma$  15°



0,05-0,15  
45°

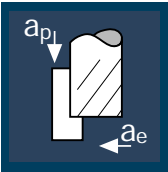


Предназначены для обработки:

- HRC < 48
- Нерж. сталь
- GG(G) Чугун
- Титан

| Example:  |    | Coating | Article-Nº | ø-Code |   | POLYCHROM | DURO-S | SERVICE      |
|-----------|----|---------|------------|--------|---|-----------|--------|--------------|
| Order-Nº: | P  |         | 5155300    |        |   | P5155     | D5155  | ReTool®      |
|           |    |         |            |        |   |           |        | with coating |
| ø         | d1 | d2      | l1         | l2     | Z |           |        |              |
| Code      | e8 | h6      |            |        |   |           |        |              |
| .300      | 6  | 6       | 57         | 13     | 4 | •         | •      | •            |
| .391      | 8  | 8       | 63         | 19     | 4 | •         | •      | •            |
| .450      | 10 | 10      | 72         | 22     | 4 | •         | •      | •            |
| .501      | 12 | 12      | 83         | 26     | 4 | •         | •      | •            |
| .610      | 16 | 16      | 92         | 32     | 4 | •         | •      | •            |
| .682      | 20 | 20      | 104        | 38     | 4 | •         | •      | •            |
|           |    |         |            |        |   |           |        |              |
|           |    |         |            |        |   |           |        |              |
|           |    |         |            |        |   |           |        |              |
|           |    |         |            |        |   |           |        |              |
|           |    |         |            |        |   |           |        |              |
|           |    |         |            |        |   |           |        |              |
|           |    |         |            |        |   |           |        |              |
|           |    |         |            |        |   |           |        |              |
|           |    |         |            |        |   |           |        |              |
|           |    |         |            |        |   |           |        |              |
|           |    |         |            |        |   |           |        |              |
|           |    |         |            |        |   |           |        |              |
|           |    |         |            |        |   |           |        |              |
|           |    |         |            |        |   |           |        |              |
|           |    |         |            |        |   |           |        |              |
|           |    |         |            |        |   |           |        |              |
|           |    |         |            |        |   |           |        |              |
|           |    |         |            |        |   |           |        |              |
|           |    |         |            |        |   |           |        |              |
|           |    |         |            |        |   |           |        |              |
|           |    |         |            |        |   |           |        |              |

5391



Применение

Сталь  
24 - 32 HRC



Сталь  
32 - 42 HRC



Сталь  
42 - 48 HRC

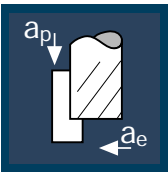


Чугун  
(серый /  
высокопрочный)



| d1<br>[mm] | z  | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] |
|------------|----|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|
| 6          | 6  | 180                       | 0.015                  | 9.0                    | 0.2                    | 9550       | 860                        |
| 8          | 6  | 180                       | 0.025                  | 12.0                   | 0.2                    | 7160       | 1075                       |
| 10         | 6  | 180                       | 0.030                  | 15.0                   | 0.3                    | 5730       | 1030                       |
| 12         | 6  | 180                       | 0.035                  | 18.0                   | 0.3                    | 4775       | 1005                       |
| 16         | 8  | 180                       | 0.045                  | 24.0                   | 0.4                    | 3580       | 1290                       |
| 20         | 10 | 180                       | 0.055                  | 30.0                   | 0.5                    | 2865       | 1575                       |
| 6          | 6  | 150                       | 0.015                  | 9.0                    | 0.2                    | 7960       | 715                        |
| 8          | 6  | 150                       | 0.025                  | 12.0                   | 0.2                    | 5970       | 895                        |
| 10         | 6  | 150                       | 0.030                  | 15.0                   | 0.3                    | 4775       | 860                        |
| 12         | 6  | 150                       | 0.035                  | 18.0                   | 0.3                    | 3980       | 835                        |
| 16         | 8  | 150                       | 0.045                  | 24.0                   | 0.4                    | 2985       | 1075                       |
| 20         | 10 | 150                       | 0.055                  | 30.0                   | 0.5                    | 2385       | 1310                       |
| 6          | 6  | 100                       | 0.015                  | 9.0                    | 0.2                    | 5305       | 475                        |
| 8          | 6  | 100                       | 0.025                  | 12.0                   | 0.2                    | 3980       | 595                        |
| 10         | 6  | 100                       | 0.030                  | 15.0                   | 0.3                    | 3185       | 575                        |
| 12         | 6  | 100                       | 0.035                  | 18.0                   | 0.3                    | 2655       | 560                        |
| 16         | 8  | 100                       | 0.045                  | 24.0                   | 0.4                    | 1990       | 715                        |
| 20         | 10 | 100                       | 0.055                  | 30.0                   | 0.5                    | 1590       | 875                        |
| 6          | 6  | 200                       | 0.015                  | 9.0                    | 0.3                    | 10610      | 955                        |
| 8          | 6  | 200                       | 0.025                  | 12.0                   | 0.4                    | 7960       | 1195                       |
| 10         | 6  | 200                       | 0.030                  | 15.0                   | 0.5                    | 6365       | 1145                       |
| 12         | 6  | 200                       | 0.035                  | 18.0                   | 0.6                    | 5305       | 1115                       |
| 16         | 8  | 200                       | 0.045                  | 24.0                   | 0.8                    | 3980       | 1435                       |
| 20         | 10 | 200                       | 0.055                  | 30.0                   | 1.0                    | 3185       | 1750                       |

5391



Применение

Сталь  
24 - 32 HRC



Сталь  
32 - 42 HRC



Сталь  
42 - 48 HRC



Чугун  
(серый /  
высокопрочный)



| d1<br>[mm] | z  | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] |
|------------|----|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|
| 6          | 6  | 190                       | 0.015                  | 9.0                    | 0.1                    | 10080      | 905                        |
| 8          | 6  | 190                       | 0.025                  | 12.0                   | 0.1                    | 7560       | 1135                       |
| 10         | 6  | 190                       | 0.030                  | 15.0                   | 0.1                    | 6050       | 1090                       |
| 12         | 6  | 190                       | 0.035                  | 18.0                   | 0.1                    | 5040       | 1060                       |
| 16         | 8  | 190                       | 0.045                  | 24.0                   | 0.1                    | 3780       | 1360                       |
| 20         | 10 | 190                       | 0.055                  | 30.0                   | 0.1                    | 3025       | 1665                       |
| 6          | 6  | 160                       | 0.015                  | 9.0                    | 0.1                    | 8490       | 765                        |
| 8          | 6  | 160                       | 0.025                  | 12.0                   | 0.1                    | 6365       | 955                        |
| 10         | 6  | 160                       | 0.030                  | 15.0                   | 0.1                    | 5095       | 915                        |
| 12         | 6  | 160                       | 0.035                  | 18.0                   | 0.1                    | 4245       | 890                        |
| 16         | 8  | 160                       | 0.045                  | 24.0                   | 0.1                    | 3185       | 1145                       |
| 20         | 10 | 160                       | 0.055                  | 30.0                   | 0.1                    | 2545       | 1400                       |
| 6          | 6  | 110                       | 0.015                  | 9.0                    | 0.1                    | 5835       | 525                        |
| 8          | 6  | 110                       | 0.025                  | 12.0                   | 0.1                    | 4375       | 655                        |
| 10         | 6  | 110                       | 0.030                  | 15.0                   | 0.1                    | 3500       | 630                        |
| 12         | 6  | 110                       | 0.035                  | 18.0                   | 0.1                    | 2920       | 615                        |
| 16         | 8  | 110                       | 0.045                  | 24.0                   | 0.1                    | 2190       | 790                        |
| 20         | 10 | 110                       | 0.055                  | 30.0                   | 0.1                    | 1750       | 965                        |
| 6          | 6  | 210                       | 0.015                  | 9.0                    | 0.1                    | 11140      | 1005                       |
| 8          | 6  | 210                       | 0.025                  | 12.0                   | 0.1                    | 8355       | 1255                       |
| 10         | 6  | 210                       | 0.030                  | 15.0                   | 0.1                    | 6685       | 1205                       |
| 12         | 6  | 210                       | 0.035                  | 18.0                   | 0.1                    | 5570       | 1170                       |
| 16         | 8  | 210                       | 0.045                  | 24.0                   | 0.1                    | 4180       | 1505                       |
| 20         | 10 | 210                       | 0.055                  | 30.0                   | 0.1                    | 3340       | 1835                       |

# Фрезы чистовые

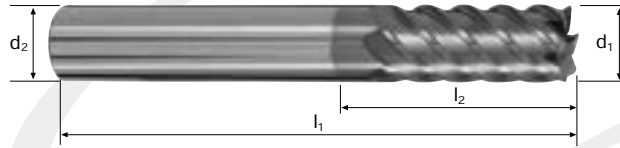
## Multicut NX

MG Plus NX

$\lambda$  45°  
 $\gamma$  8°




DIN 6535 HA  
DIN 6535 HB



**NEW!**

Предназначены для обработки:

0,05-0,15  
45°

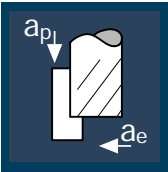
HRC < 48

HRC 48 - 54

GG(G)  
Чугун

| Example:<br>Order-Nº. | Coating | Article-Nº. | ø-Code | z  | POLYCHROM | DURO-S | SERVICE      |
|-----------------------|---------|-------------|--------|----|-----------|--------|--------------|
|                       |         |             |        |    | P5391     | D5391  | ReTool®      |
|                       | P       | 5391        | 1300   |    | P5291     | D5291  | with coating |
| ø Code                | d1 e8   | d2 h6       | l1     | l2 |           |        |              |
| .300                  | 6       | 6           | 57     | 13 | 6         | •      | •            |
| .391                  | 8       | 8           | 63     | 19 | 6         | •      | •            |
| .450                  | 10      | 10          | 72     | 22 | 6         | •      | •            |
| .501                  | 12      | 12          | 83     | 26 | 6         | •      | •            |
| .610                  | 16      | 16          | 92     | 32 | 8         | •      | •            |
| .682                  | 20      | 20          | 104    | 38 | 10        | •      | •            |
|                       |         |             |        |    |           |        |              |
|                       |         |             |        |    |           |        |              |
|                       |         |             |        |    |           |        |              |
|                       |         |             |        |    |           |        |              |
|                       |         |             |        |    |           |        |              |
|                       |         |             |        |    |           |        |              |
|                       |         |             |        |    |           |        |              |
|                       |         |             |        |    |           |        |              |
|                       |         |             |        |    |           |        |              |
|                       |         |             |        |    |           |        |              |
|                       |         |             |        |    |           |        |              |
|                       |         |             |        |    |           |        |              |
|                       |         |             |        |    |           |        |              |
|                       |         |             |        |    |           |        |              |
|                       |         |             |        |    |           |        |              |
|                       |         |             |        |    |           |        |              |
|                       |         |             |        |    |           |        |              |
|                       |         |             |        |    |           |        |              |
|                       |         |             |        |    |           |        |              |
|                       |         |             |        |    |           |        |              |
|                       |         |             |        |    |           |        |              |
|                       |         |             |        |    |           |        |              |

5296



Применение

Сталь  
24 - 32 HRC



Сталь  
32 - 42 HRC



Сталь  
42 - 48 HRC

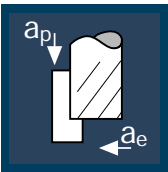


Чугун  
(серый /  
высокопрочный)



| d1<br>[mm] | z  | V <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] |
|------------|----|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|
| 6          | 6  | 140                       | 0.015                  | 15                     | 0.2                    | 7425       | 670                        |
| 8          | 6  | 140                       | 0.025                  | 20                     | 0.2                    | 5570       | 835                        |
| 10         | 6  | 140                       | 0.030                  | 25                     | 0.3                    | 4455       | 800                        |
| 12         | 6  | 140                       | 0.035                  | 30                     | 0.3                    | 3715       | 780                        |
| 16         | 8  | 140                       | 0.045                  | 40                     | 0.4                    | 2785       | 1005                       |
| 20         | 10 | 140                       | 0.055                  | 50                     | 0.5                    | 2230       | 1225                       |
| 6          | 6  | 110                       | 0.015                  | 15                     | 0.2                    | 5835       | 525                        |
| 8          | 6  | 110                       | 0.025                  | 20                     | 0.2                    | 4375       | 655                        |
| 10         | 6  | 110                       | 0.030                  | 25                     | 0.3                    | 3500       | 630                        |
| 12         | 6  | 110                       | 0.035                  | 30                     | 0.3                    | 2920       | 615                        |
| 16         | 8  | 110                       | 0.045                  | 40                     | 0.4                    | 2190       | 790                        |
| 20         | 10 | 110                       | 0.055                  | 50                     | 0.5                    | 1750       | 965                        |
| 6          | 6  | 80                        | 0.015                  | 15                     | 0.2                    | 4245       | 380                        |
| 8          | 6  | 80                        | 0.025                  | 20                     | 0.2                    | 3185       | 480                        |
| 10         | 6  | 80                        | 0.030                  | 25                     | 0.3                    | 2545       | 460                        |
| 12         | 6  | 80                        | 0.035                  | 30                     | 0.3                    | 2120       | 445                        |
| 16         | 8  | 80                        | 0.045                  | 40                     | 0.4                    | 1590       | 570                        |
| 20         | 10 | 80                        | 0.055                  | 50                     | 0.5                    | 1275       | 700                        |
| 6          | 6  | 150                       | 0.015                  | 15                     | 0.3                    | 7960       | 715                        |
| 8          | 6  | 150                       | 0.025                  | 20                     | 0.4                    | 5970       | 895                        |
| 10         | 6  | 150                       | 0.030                  | 25                     | 0.5                    | 4775       | 860                        |
| 12         | 6  | 150                       | 0.035                  | 30                     | 0.6                    | 3980       | 835                        |
| 16         | 8  | 150                       | 0.045                  | 40                     | 0.8                    | 2985       | 1075                       |
| 20         | 10 | 150                       | 0.055                  | 50                     | 1.0                    | 2385       | 1310                       |

5296



Применение

Сталь  
24 - 32 HRC



Сталь  
32 - 42 HRC



Сталь  
42 - 48 HRC



Чугун  
(серый /  
высокопрочный)



| d1<br>[mm] | z  | V <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] |
|------------|----|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|
| 6          | 6  | 170                       | 0.015                  | 15                     | 0.1                    | 9020       | 810                        |
| 8          | 6  | 170                       | 0.025                  | 20                     | 0.1                    | 6765       | 1015                       |
| 10         | 6  | 170                       | 0.030                  | 25                     | 0.1                    | 5410       | 975                        |
| 12         | 6  | 170                       | 0.035                  | 30                     | 0.1                    | 4510       | 945                        |
| 16         | 8  | 170                       | 0.045                  | 40                     | 0.1                    | 3380       | 1215                       |
| 20         | 10 | 170                       | 0.055                  | 50                     | 0.1                    | 2705       | 1490                       |
| 6          | 6  | 140                       | 0.015                  | 15                     | 0.1                    | 7425       | 670                        |
| 8          | 6  | 140                       | 0.025                  | 20                     | 0.1                    | 5570       | 835                        |
| 10         | 6  | 140                       | 0.030                  | 25                     | 0.1                    | 4455       | 800                        |
| 12         | 6  | 140                       | 0.035                  | 30                     | 0.1                    | 3715       | 780                        |
| 16         | 8  | 140                       | 0.045                  | 40                     | 0.1                    | 2785       | 1005                       |
| 20         | 10 | 140                       | 0.055                  | 50                     | 0.1                    | 2230       | 1225                       |
| 6          | 6  | 90                        | 0.015                  | 15                     | 0.1                    | 4775       | 430                        |
| 8          | 6  | 90                        | 0.025                  | 20                     | 0.1                    | 3580       | 535                        |
| 10         | 6  | 90                        | 0.030                  | 25                     | 0.1                    | 2865       | 515                        |
| 12         | 6  | 90                        | 0.035                  | 30                     | 0.1                    | 2385       | 500                        |
| 16         | 8  | 90                        | 0.045                  | 40                     | 0.1                    | 1790       | 645                        |
| 20         | 10 | 90                        | 0.055                  | 50                     | 0.1                    | 1430       | 785                        |
| 6          | 6  | 180                       | 0.015                  | 15                     | 0.1                    | 9550       | 860                        |
| 8          | 6  | 180                       | 0.025                  | 20                     | 0.1                    | 7160       | 1075                       |
| 10         | 6  | 180                       | 0.030                  | 25                     | 0.1                    | 5730       | 1030                       |
| 12         | 6  | 180                       | 0.035                  | 30                     | 0.1                    | 4775       | 1005                       |
| 16         | 8  | 180                       | 0.045                  | 40                     | 0.1                    | 3580       | 1290                       |
| 20         | 10 | 180                       | 0.055                  | 50                     | 0.1                    | 2865       | 1575                       |



# Фрезы чистовые

Multicut N NX

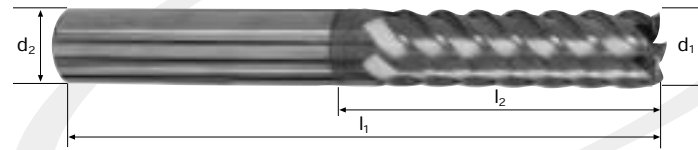
**NEW!**

MG Plus NX

$\lambda$  45°  
 $\gamma$  8°




DIN 6535 HA



Предназначены для обработки:

0,05-0,15  
45°

HRC < 48

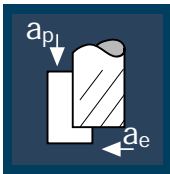
HRC 48 - 54

GG(G)  
Чугун

|   |          |          |     |    |    | POLYCHROM    | DURO-S | SERVICE |
|---|----------|----------|-----|----|----|--------------|--------|---------|
| Example: <span style="color: red; font-weight: bold;">P</span> <span style="color: blue; font-weight: bold;">5296</span> <span style="color: green; font-weight: bold;">300</span>  |          |          |     |    |    | ReTool®      |        |         |
| Order-Nº: <span style="color: red; font-weight: bold;">P</span> <span style="color: blue; font-weight: bold;">5296</span> <span style="color: green; font-weight: bold;">300</span> |          |          |     |    |    | with coating |        |         |
| $\emptyset$<br>Code   | d1<br>e8 | d2<br>h6 | l1  | l2 | z  |              |        |         |
| .300  | 6        | 6        | 63  | 19 | 6  | •            | •      | •       |
| .391  | 8        | 8        | 72  | 28 | 6  | •            | •      | •       |
| .450  | 10       | 10       | 84  | 34 | 6  | •            | •      | •       |
| .501  | 12       | 12       | 97  | 40 | 6  | •            | •      | •       |
| .610  | 16       | 16       | 108 | 48 | 8  | •            | •      | •       |
| .682  | 20       | 20       | 122 | 56 | 10 | •            | •      | •       |
|   |          |          |     |    |    |              |        |         |
|   |          |          |     |    |    |              |        |         |
|   |          |          |     |    |    |              |        |         |
|   |          |          |     |    |    |              |        |         |
|   |          |          |     |    |    |              |        |         |
|   |          |          |     |    |    |              |        |         |
|   |          |          |     |    |    |              |        |         |
|   |          |          |     |    |    |              |        |         |
|   |          |          |     |    |    |              |        |         |
|   |          |          |     |    |    |              |        |         |
|   |          |          |     |    |    |              |        |         |
|   |          |          |     |    |    |              |        |         |
|   |          |          |     |    |    |              |        |         |
|   |          |          |     |    |    |              |        |         |
|   |          |          |     |    |    |              |        |         |



5379



Применение

Сталь  
up to 24 HRC



Сталь  
24 - 32 HRC



Сталь  
32 - 42 HRC



Холодноштамповые  
стали >12% Cr



| d1<br>[mm] | z | V <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 10         | 4 | 180                       | 0.065                  | 15                     | 4.0                    | 5730       | 1490                       | 89.5                        |
| 12         | 4 | 180                       | 0.08C                  | 18                     | 4.8                    | 4775       | 1530                       | 132.0                       |
| 16         | 4 | 180                       | 0.07C                  | 24                     | 6.4                    | 3580       | 1000                       | 153.5                       |
| 16         | 6 | 180                       | 0.06C                  | 24                     | 6.4                    | 3580       | 1290                       | 198.0                       |
| 20         | 4 | 180                       | 0.08C                  | 30                     | 8.0                    | 2865       | 915                        | 219.5                       |
| 20         | 6 | 180                       | 0.07C                  | 30                     | 8.0                    | 2865       | 1205                       | 289.0                       |
| 10         | 4 | 150                       | 0.065                  | 15                     | 4.0                    | 4775       | 1240                       | 74.5                        |
| 12         | 4 | 150                       | 0.08C                  | 18                     | 4.8                    | 3980       | 1275                       | 110.0                       |
| 16         | 4 | 150                       | 0.07C                  | 24                     | 6.4                    | 2985       | 835                        | 128.5                       |
| 16         | 6 | 150                       | 0.06C                  | 24                     | 6.4                    | 2985       | 1075                       | 165.0                       |
| 20         | 4 | 150                       | 0.08C                  | 30                     | 8.0                    | 2385       | 765                        | 183.5                       |
| 20         | 6 | 150                       | 0.07C                  | 30                     | 8.0                    | 2385       | 1000                       | 240.0                       |
| 10         | 4 | 120                       | 0.050                  | 15                     | 4.0                    | 3820       | 765                        | 46.0                        |
| 12         | 4 | 120                       | 0.050                  | 18                     | 4.8                    | 3185       | 635                        | 55.0                        |
| 16         | 4 | 120                       | 0.050                  | 24                     | 6.4                    | 2385       | 475                        | 73.0                        |
| 16         | 6 | 120                       | 0.040                  | 24                     | 6.4                    | 2385       | 570                        | 87.5                        |
| 20         | 4 | 120                       | 0.060                  | 30                     | 8.0                    | 1910       | 460                        | 110.5                       |
| 20         | 6 | 120                       | 0.050                  | 30                     | 8.0                    | 1910       | 575                        | 138.0                       |
| 10         | 4 | 90                        | 0.050                  | 15                     | 4.0                    | 2865       | 575                        | 34.5                        |
| 12         | 4 | 90                        | 0.050                  | 18                     | 4.8                    | 2385       | 475                        | 41.0                        |
| 16         | 4 | 90                        | 0.050                  | 24                     | 6.4                    | 1790       | 360                        | 55.5                        |
| 16         | 6 | 90                        | 0.040                  | 24                     | 6.4                    | 1790       | 430                        | 66.0                        |
| 20         | 4 | 90                        | 0.060                  | 30                     | 8.0                    | 1430       | 345                        | 83.0                        |
| 20         | 6 | 90                        | 0.050                  | 30                     | 8.0                    | 1430       | 430                        | 103.0                       |

5379



Применение

Сталь  
up to 24 HRC



Сталь  
24 - 32 HRC



Сталь  
32 - 42 HRC



Холодноштамповые  
стали >12% Cr



| d1<br>[mm] | z | V <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 10         | 4 | 150                       | 0.05C                  | 10                     | 10                     | 4775       | 955                        | 95.5                        |
| 12         | 4 | 150                       | 0.06C                  | 12                     | 12                     | 3980       | 955                        | 137.5                       |
| 16         | 4 | 150                       | 0.05C                  | 16                     | 16                     | 2985       | 595                        | 152.5                       |
| 20         | 4 | 150                       | 0.06C                  | 20                     | 20                     | 2385       | 570                        | 228.0                       |
| 10         | 4 | 100                       | 0.05C                  | 10                     | 10                     | 3185       | 635                        | 63.5                        |
| 12         | 4 | 100                       | 0.06C                  | 12                     | 12                     | 2655       | 635                        | 91.5                        |
| 16         | 4 | 100                       | 0.05C                  | 16                     | 16                     | 1990       | 400                        | 102.5                       |
| 20         | 4 | 100                       | 0.06C                  | 20                     | 20                     | 1590       | 380                        | 152.0                       |
| 10         | 4 | 80                        | 0.050                  | 10                     | 10                     | 2545       | 510                        | 51.0                        |
| 12         | 4 | 80                        | 0.060                  | 12                     | 12                     | 2120       | 510                        | 73.5                        |
| 16         | 4 | 80                        | 0.050                  | 16                     | 16                     | 1590       | 320                        | 82.0                        |
| 20         | 4 | 80                        | 0.060                  | 20                     | 20                     | 1275       | 305                        | 122.0                       |
| 10         | 4 | 70                        | 0.050                  | 10                     | 10                     | 2230       | 445                        | 44.5                        |
| 12         | 4 | 70                        | 0.060                  | 12                     | 12                     | 1855       | 445                        | 64.0                        |
| 16         | 4 | 70                        | 0.050                  | 16                     | 16                     | 1395       | 280                        | 71.5                        |
| 20         | 4 | 70                        | 0.060                  | 20                     | 20                     | 1115       | 270                        | 108.0                       |

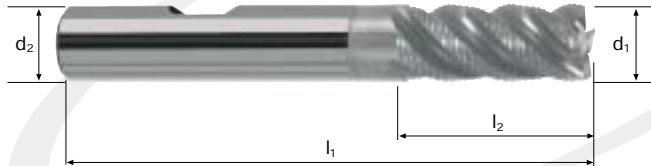
# Фрезы черновые

**NX-FP** NX

HM  
MG10

NX

$\lambda$  45°  
 $\gamma$  -10°



DIN  
6535  
HB

Предназначены для обработки:



**HRC < 40**

HRC < 48

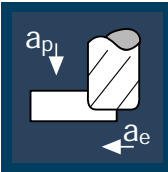
Нерж. сталь

GG(G)  
Чугун

Титан

| Example:         |         |             |        |    |   | POLYCHROM SERVICE |              |
|------------------|---------|-------------|--------|----|---|-------------------|--------------|
| Order-N°.        | Coating | Article-N°. | ø-Code |    |   | P5379ReTool®      |              |
| Ø                | d1      | d2          | l1     | l2 | z |                   | with coating |
| Code             | f10     | h6          |        |    |   |                   |              |
| .450             | 10      | 10          | 72     | 22 | 4 | •                 | •            |
| .501             | 12      | 12          | 83     | 26 | 4 | •                 | •            |
| <b>NEW!</b> .608 | 16      | 16          | 92     | 32 | 4 | •                 | •            |
| .610             | 16      | 16          | 92     | 32 | 6 | •                 | •            |
| <b>NEW!</b> .680 | 20      | 20          | 104    | 38 | 4 | •                 | •            |
| .682             | 20      | 20          | 104    | 38 | 6 | •                 | •            |

5342



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC

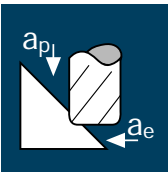


Чугун  
(серый /  
высокопрочный)



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 3          | 4 | 180                       | 0.06C                  | 0.15                   | 0.30                   | 19100      | 4585                       | 207                         |
| 4          | 4 | 180                       | 0.08C                  | 0.20                   | 0.40                   | 14325      | 4585                       | 367                         |
| 5          | 4 | 180                       | 0.085                  | 0.25                   | 0.50                   | 11460      | 3895                       | 487                         |
| 6          | 6 | 180                       | 0.100                  | 0.30                   | 0.60                   | 9550       | 5730                       | 1032                        |
| 8          | 6 | 180                       | 0.115                  | 0.40                   | 0.80                   | 7160       | 4940                       | 1581                        |
| 10         | 6 | 180                       | 0.125                  | 0.50                   | 1.00                   | 5730       | 4300                       | 2150                        |
| 12         | 6 | 180                       | 0.135                  | 0.60                   | 1.20                   | 4775       | 3870                       | 2787                        |
| 3          | 4 | 160                       | 0.06C                  | 0.15                   | 0.30                   | 16975      | 4075                       | 184                         |
| 4          | 4 | 160                       | 0.08C                  | 0.20                   | 0.40                   | 12735      | 4075                       | 326                         |
| 5          | 4 | 160                       | 0.085                  | 0.25                   | 0.50                   | 10185      | 3465                       | 433                         |
| 6          | 6 | 160                       | 0.100                  | 0.30                   | 0.60                   | 8490       | 5095                       | 917                         |
| 8          | 6 | 160                       | 0.115                  | 0.40                   | 0.80                   | 6365       | 439C                       | 1405                        |
| 10         | 6 | 160                       | 0.125                  | 0.50                   | 1.00                   | 5095       | 3820                       | 1910                        |
| 12         | 6 | 160                       | 0.135                  | 0.60                   | 1.20                   | 4245       | 3440                       | 2477                        |
| 3          | 4 | 130                       | 0.050                  | 0.15                   | 0.30                   | 13795      | 2760                       | 124                         |
| 4          | 4 | 130                       | 0.065                  | 0.20                   | 0.40                   | 10345      | 2690                       | 215                         |
| 5          | 4 | 130                       | 0.070                  | 0.25                   | 0.50                   | 8275       | 2315                       | 290                         |
| 6          | 6 | 130                       | 0.085                  | 0.30                   | 0.60                   | 6895       | 3515                       | 633                         |
| 8          | 6 | 130                       | 0.100                  | 0.40                   | 0.80                   | 5175       | 3105                       | 994                         |
| 10         | 6 | 130                       | 0.110                  | 0.50                   | 1.00                   | 4140       | 2730                       | 1365                        |
| 12         | 6 | 130                       | 0.120                  | 0.60                   | 1.20                   | 3450       | 2485                       | 1789                        |
| 3          | 4 | 260                       | 0.060                  | 0.15                   | 0.30                   | 27590      | 6620                       | 298                         |
| 4          | 4 | 260                       | 0.080                  | 0.20                   | 0.40                   | 20690      | 6620                       | 530                         |
| 5          | 4 | 260                       | 0.085                  | 0.25                   | 0.50                   | 16555      | 5630                       | 704                         |
| 6          | 6 | 250                       | 0.100                  | 0.30                   | 0.60                   | 13265      | 7960                       | 1433                        |
| 8          | 6 | 250                       | 0.115                  | 0.40                   | 0.80                   | 9945       | 6860                       | 2195                        |
| 10         | 6 | 250                       | 0.125                  | 0.50                   | 1.00                   | 7960       | 5970                       | 2985                        |
| 12         | 6 | 250                       | 0.135                  | 0.60                   | 1.20                   | 6630       | 5370                       | 3867                        |

5342



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC



Чугун  
(серый /  
высокопрочный)



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|---|
| 3          | 4 | 440                       | 0.080                  | 0.10                   | 0.10                   | 46685      | 14940                      |   |
| 4          | 4 | 440                       | 0.090                  | 0.10                   | 0.10                   | 35015      | 12605                      |   |
| 5          | 4 | 440                       | 0.100                  | 0.15                   | 0.15                   | 28010      | 11205                      |   |
| 6          | 6 | 440                       | 0.110                  | 0.15                   | 0.15                   | 23345      | 15410                      |   |
| 8          | 6 | 440                       | 0.110                  | 0.20                   | 0.20                   | 17510      | 11555                      |   |
| 10         | 6 | 440                       | 0.120                  | 0.20                   | 0.20                   | 14005      | 10085                      |   |
| 12         | 6 | 440                       | 0.130                  | 0.20                   | 0.20                   | 11670      | 9105                       |   |
| 3          | 4 | 390                       | 0.080                  | 0.10                   | 0.10                   | 41380      | 13240                      |   |
| 4          | 4 | 390                       | 0.090                  | 0.10                   | 0.10                   | 31035      | 11175                      |   |
| 5          | 4 | 390                       | 0.100                  | 0.15                   | 0.15                   | 24830      | 9930                       |   |
| 6          | 6 | 380                       | 0.110                  | 0.15                   | 0.15                   | 20160      | 13305                      |   |
| 8          | 6 | 380                       | 0.110                  | 0.20                   | 0.20                   | 15120      | 9980                       |   |
| 10         | 6 | 380                       | 0.120                  | 0.20                   | 0.20                   | 12095      | 8710                       |   |
| 12         | 6 | 380                       | 0.130                  | 0.20                   | 0.20                   | 10080      | 7860                       |   |
| 3          | 4 | 310                       | 0.080                  | 0.10                   | 0.10                   | 32895      | 10525                      |   |
| 4          | 4 | 310                       | 0.090                  | 0.10                   | 0.10                   | 24670      | 8880                       |   |
| 5          | 4 | 310                       | 0.100                  | 0.15                   | 0.15                   | 19735      | 7895                       |   |
| 6          | 6 | 310                       | 0.110                  | 0.15                   | 0.15                   | 16445      | 10855                      |   |
| 8          | 6 | 310                       | 0.110                  | 0.20                   | 0.20                   | 12335      | 8140                       |   |
| 10         | 6 | 310                       | 0.120                  | 0.20                   | 0.20                   | 9870       | 7105                       |   |
| 12         | 6 | 310                       | 0.130                  | 0.20                   | 0.20                   | 8225       | 6415                       |   |
| 3          | 4 | 580                       | 0.080                  | 0.10                   | 0.10                   | 61540      | 19695                      |   |
| 4          | 4 | 580                       | 0.090                  | 0.10                   | 0.10                   | 46155      | 16615                      |   |
| 5          | 4 | 580                       | 0.100                  | 0.15                   | 0.15                   | 36925      | 14770                      |   |
| 6          | 6 | 580                       | 0.110                  | 0.15                   | 0.15                   | 30770      | 20310                      |   |
| 8          | 6 | 580                       | 0.110                  | 0.20                   | 0.20                   | 23080      | 15235                      |   |
| 10         | 6 | 580                       | 0.120                  | 0.20                   | 0.20                   | 18465      | 13295                      |   |
| 12         | 6 | 580                       | 0.130                  | 0.20                   | 0.20                   | 15385      | 12000                      |   |

# Фрезы торические

Multispeed NX

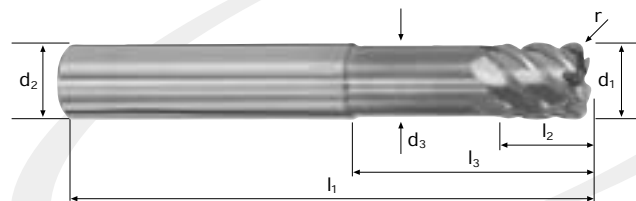
NEW!

HM  
MG/H NX

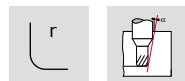
$\lambda$  45°  
 $\gamma$  5°



DIN 6535 HA  
DIN 6535 HB



Предназначены для обработки:



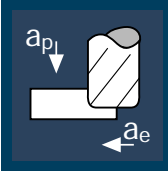
HRC < 48

HRC < 58

GG(G)  
Чугун

|                                    |       |       |      |    |    |    |           |    |   | POLYCHROM  | DURO-S | SERVICE      |
|------------------------------------|-------|-------|------|----|----|----|-----------|----|---|------------|--------|--------------|
| Example: Coating Article-N° α-Code |       |       |      |    |    |    |           |    |   | P5342      |        | ReTool®      |
| Order-N°: P 5342180                |       |       |      |    |    |    |           |    |   | P5242D5242 |        | with coating |
| Ø Code                             | d1 e8 | d2 h6 | d3   | l1 | l2 | l3 | r 0/+0,03 | α  | z |            |        |              |
| .180                               | 3     | 6     | 2,8  | 57 | 4  | 14 | 0,5       | 5° | 4 | •          | •      |              |
| .220                               | 4     | 6     | 3,7  | 57 | 5  | 16 | 0,5       | 3° | 4 | •          | •      |              |
| .260                               | 5     | 6     | 4,6  | 57 | 6  | 18 | 0,5       | 2° | 4 | •          | •      |              |
| .300                               | 6     | 6     | 5,5  | 57 | 7  | 20 | 0,5       | 0° | 6 | •          | •      |              |
| .391                               | 8     | 8     | 7,4  | 63 | 9  | 26 | 0,5       | 0° | 6 | •          | •      | •            |
| .450                               | 10    | 10    | 9,2  | 72 | 11 | 31 | 0,5       | 0° | 6 | •          | •      | •            |
| .501                               | 12    | 12    | 11,0 | 83 | 13 | 37 | 0,5       | 0° | 6 | •          | •      | •            |
| .297                               | 6     | 6     | 5,5  | 57 | 7  | 20 | 1,0       | 0° | 6 | •          | •      |              |
| .388                               | 8     | 8     | 7,4  | 63 | 9  | 26 | 1,0       | 0° | 6 | •          | •      | •            |
| .445                               | 10    | 10    | 9,2  | 72 | 11 | 31 | 1,0       | 0° | 6 | •          | •      | •            |
| .496                               | 12    | 12    | 11,0 | 83 | 13 | 37 | 1,0       | 0° | 6 | •          | •      | •            |

5343



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC



Чугун  
(серый /  
высокопрочный)



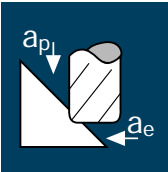
| d1<br>[mm] | z | V <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 3          | 4 | 180                       | 0.06C                  | 0.12                   | 0.30                   | 19100      | 4585                       | 165                         |
| 4          | 4 | 180                       | 0.08C                  | 0.16                   | 0.40                   | 14325      | 4585                       | 294                         |
| 5          | 4 | 180                       | 0.085                  | 0.20                   | 0.50                   | 11460      | 3895                       | 390                         |
| 6          | 6 | 180                       | 0.100                  | 0.24                   | 0.60                   | 9550       | 5730                       | 825                         |
| 8          | 6 | 180                       | 0.115                  | 0.32                   | 0.80                   | 7160       | 4940                       | 1265                        |
| 10         | 6 | 180                       | 0.125                  | 0.40                   | 1.00                   | 5730       | 4300                       | 1720                        |
| 12         | 6 | 180                       | 0.135                  | 0.48                   | 1.20                   | 4775       | 3870                       | 2229                        |

|    |   |     |       |      |      |       |      |      |
|----|---|-----|-------|------|------|-------|------|------|
| 3  | 4 | 160 | 0.06C | 0.12 | 0.30 | 16975 | 4075 | 147  |
| 4  | 4 | 160 | 0.08C | 0.16 | 0.40 | 12735 | 4075 | 261  |
| 5  | 4 | 160 | 0.085 | 0.20 | 0.50 | 10185 | 3465 | 347  |
| 6  | 6 | 160 | 0.100 | 0.24 | 0.60 | 8490  | 5095 | 734  |
| 8  | 6 | 160 | 0.115 | 0.32 | 0.80 | 6365  | 439C | 1124 |
| 10 | 6 | 160 | 0.125 | 0.40 | 1.00 | 5095  | 3820 | 1528 |
| 12 | 6 | 160 | 0.135 | 0.48 | 1.20 | 4245  | 3440 | 1982 |

|    |   |     |       |      |      |       |      |      |
|----|---|-----|-------|------|------|-------|------|------|
| 3  | 4 | 130 | 0.050 | 0.12 | 0.30 | 13795 | 2760 | 100  |
| 4  | 4 | 130 | 0.065 | 0.16 | 0.40 | 10345 | 2690 | 172  |
| 5  | 4 | 130 | 0.070 | 0.20 | 0.50 | 8275  | 2315 | 232  |
| 6  | 6 | 130 | 0.085 | 0.24 | 0.60 | 6895  | 3515 | 506  |
| 8  | 6 | 130 | 0.100 | 0.32 | 0.80 | 5175  | 3105 | 795  |
| 10 | 6 | 130 | 0.110 | 0.40 | 1.00 | 4140  | 2730 | 1092 |
| 12 | 6 | 130 | 0.120 | 0.48 | 1.20 | 3450  | 2485 | 1432 |

|    |   |     |       |      |      |       |      |      |
|----|---|-----|-------|------|------|-------|------|------|
| 3  | 4 | 260 | 0.060 | 0.12 | 0.30 | 27590 | 6620 | 239  |
| 4  | 4 | 260 | 0.080 | 0.16 | 0.40 | 20690 | 6620 | 424  |
| 5  | 4 | 260 | 0.085 | 0.20 | 0.50 | 16555 | 5630 | 563  |
| 6  | 6 | 250 | 0.100 | 0.24 | 0.60 | 13265 | 7960 | 1146 |
| 8  | 6 | 250 | 0.115 | 0.32 | 0.80 | 9945  | 6860 | 1756 |
| 10 | 6 | 250 | 0.125 | 0.40 | 1.00 | 7960  | 5970 | 2388 |
| 12 | 6 | 250 | 0.135 | 0.48 | 1.20 | 6630  | 5370 | 3093 |

5343



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC



Чугун  
(серый /  
высокопрочный)



| d1<br>[mm] | z | V <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|
| 3          | 4 | 440                       | 0.080                  | 0.10                   | 0.10                   | 46685      | 14940                      |
| 4          | 4 | 440                       | 0.090                  | 0.10                   | 0.10                   | 35015      | 12605                      |
| 5          | 4 | 440                       | 0.100                  | 0.15                   | 0.15                   | 28010      | 11205                      |
| 6          | 6 | 440                       | 0.110                  | 0.15                   | 0.15                   | 23345      | 15410                      |
| 8          | 6 | 440                       | 0.110                  | 0.20                   | 0.20                   | 17510      | 11555                      |
| 10         | 6 | 440                       | 0.120                  | 0.20                   | 0.20                   | 14005      | 10085                      |
| 12         | 6 | 440                       | 0.130                  | 0.20                   | 0.20                   | 11670      | 9105                       |

|    |   |     |       |      |      |       |       |
|----|---|-----|-------|------|------|-------|-------|
| 3  | 4 | 390 | 0.080 | 0.10 | 0.10 | 41380 | 13240 |
| 4  | 4 | 390 | 0.090 | 0.10 | 0.10 | 31035 | 11175 |
| 5  | 4 | 390 | 0.100 | 0.15 | 0.15 | 24830 | 9930  |
| 6  | 6 | 380 | 0.110 | 0.15 | 0.15 | 20160 | 13305 |
| 8  | 6 | 380 | 0.110 | 0.20 | 0.20 | 15120 | 9980  |
| 10 | 6 | 380 | 0.120 | 0.20 | 0.20 | 12095 | 8710  |
| 12 | 6 | 380 | 0.130 | 0.20 | 0.20 | 10080 | 7860  |

|    |   |     |       |      |      |       |       |
|----|---|-----|-------|------|------|-------|-------|
| 3  | 4 | 310 | 0.080 | 0.10 | 0.10 | 32895 | 10525 |
| 4  | 4 | 310 | 0.090 | 0.10 | 0.10 | 24670 | 8880  |
| 5  | 4 | 310 | 0.100 | 0.15 | 0.15 | 19735 | 7895  |
| 6  | 6 | 310 | 0.110 | 0.15 | 0.15 | 16445 | 10855 |
| 8  | 6 | 310 | 0.110 | 0.20 | 0.20 | 12335 | 8140  |
| 10 | 6 | 310 | 0.120 | 0.20 | 0.20 | 9870  | 7105  |
| 12 | 6 | 310 | 0.130 | 0.20 | 0.20 | 8225  | 6415  |

|    |   |     |       |      |      |       |       |
|----|---|-----|-------|------|------|-------|-------|
| 3  | 4 | 580 | 0.080 | 0.10 | 0.10 | 61540 | 19695 |
| 4  | 4 | 580 | 0.090 | 0.10 | 0.10 | 46155 | 16615 |
| 5  | 4 | 580 | 0.100 | 0.15 | 0.15 | 36925 | 14770 |
| 6  | 6 | 580 | 0.110 | 0.15 | 0.15 | 30770 | 20310 |
| 8  | 6 | 580 | 0.110 | 0.20 | 0.20 | 23080 | 15235 |
| 10 | 6 | 580 | 0.120 | 0.20 | 0.20 | 18465 | 13295 |
| 12 | 6 | 580 | 0.130 | 0.20 | 0.20 | 15385 | 12000 |

# Фрезы торические

Multispeed NX

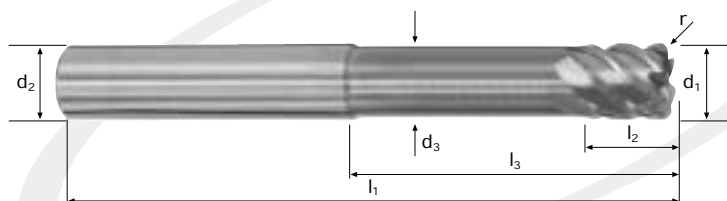
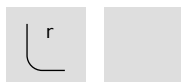
NEW!

HM  
MG/H NX

$\lambda$  45°  
 $\gamma$  5°



DIN 6535 HA  
DIN 6535 HB

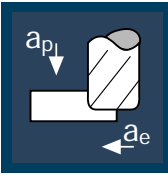


Предназначены для обработки:

HRC < 48    HRC < 58    GG(G) Чугун

|                                    |       |       |      |    |    |    |           |    |   | POLYCHROM  | DURO-S | SERVICE      |
|------------------------------------|-------|-------|------|----|----|----|-----------|----|---|------------|--------|--------------|
| Example: Coating Article-N° ø-Code |       |       |      |    |    |    |           |    |   | P5343      |        | ReTool®      |
| Order-N°:                          |       |       |      |    |    |    |           |    |   | P5243D5243 |        | with coating |
| Ø Code                             | d1 e8 | d2 h6 | d3   | l1 | l2 | l3 | r 0/+0,03 | α  | z |            |        |              |
| .180                               | 3     | 6     | 2,8  | 70 | 4  | 27 | 0,5       | 3° | 4 | •          | •      |              |
| .220                               | 4     | 6     | 3,7  | 70 | 5  | 29 | 0,5       | 2° | 4 | •          | •      |              |
| .260                               | 5     | 6     | 4,6  | 70 | 6  | 31 | 0,5       | 1° | 4 | •          | •      |              |
| .300                               | 6     | 6     | 5,5  | 70 | 7  | 33 | 0,5       | 0° | 6 | •          | •      |              |
| .391                               | 8     | 8     | 7,4  | 80 | 9  | 43 | 0,5       | 0° | 6 | •          | •      | •            |
| .450                               | 10    | 10    | 9,2  | 84 | 11 | 43 | 0,5       | 0° | 6 | •          | •      | •            |
| .501                               | 12    | 12    | 11,0 | 97 | 13 | 51 | 0,5       | 0° | 6 | •          | •      | •            |
| .297                               | 6     | 6     | 5,5  | 70 | 7  | 33 | 1,0       | 0° | 6 | •          | •      |              |
| .388                               | 8     | 8     | 7,4  | 80 | 9  | 43 | 1,0       | 0° | 6 | •          | •      | •            |
| .445                               | 10    | 10    | 9,2  | 84 | 11 | 43 | 1,0       | 0° | 6 | •          | •      | •            |
| .496                               | 12    | 12    | 11,0 | 97 | 13 | 51 | 1,0       | 0° | 6 | •          | •      | •            |

5350



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC

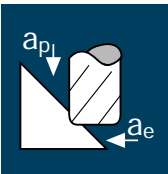


Чугун  
(серый /  
высокопрочный)



| d1<br>[mm] | z | V <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 3          | 4 | 170                       | 0.060                  | 0.15                   | 0.30                   | 18040      | 4330                       | 195                         |
| 4          | 4 | 170                       | 0.080                  | 0.20                   | 0.40                   | 13530      | 4330                       | 347                         |
| 5          | 4 | 170                       | 0.085                  | 0.25                   | 0.50                   | 10825      | 3680                       | 460                         |
| 6          | 6 | 170                       | 0.100                  | 0.30                   | 0.60                   | 9020       | 5410                       | 974                         |
| 8          | 6 | 170                       | 0.115                  | 0.40                   | 0.80                   | 6765       | 4670                       | 1495                        |
| 10         | 6 | 170                       | 0.125                  | 0.50                   | 1.00                   | 5410       | 4060                       | 2030                        |
| 12         | 6 | 170                       | 0.135                  | 0.60                   | 1.20                   | 4510       | 3655                       | 2632                        |
| 16         | 6 | 170                       | 0.180                  | 0.80                   | 1.60                   | 3380       | 3650                       | 4672                        |
| 20         | 8 | 170                       | 0.220                  | 1.00                   | 2.00                   | 2705       | 4760                       | 9520                        |
| 3          | 4 | 150                       | 0.060                  | 0.15                   | 0.30                   | 15915      | 3820                       | 172                         |
| 4          | 4 | 150                       | 0.080                  | 0.20                   | 0.40                   | 11935      | 3820                       | 306                         |
| 5          | 4 | 150                       | 0.085                  | 0.25                   | 0.50                   | 9550       | 3245                       | 406                         |
| 6          | 6 | 150                       | 0.100                  | 0.30                   | 0.60                   | 7960       | 4775                       | 860                         |
| 8          | 6 | 150                       | 0.115                  | 0.40                   | 0.80                   | 5970       | 4120                       | 1319                        |
| 10         | 6 | 150                       | 0.125                  | 0.50                   | 1.00                   | 4775       | 3580                       | 1790                        |
| 12         | 6 | 150                       | 0.135                  | 0.60                   | 1.20                   | 3980       | 3225                       | 2322                        |
| 16         | 6 | 150                       | 0.180                  | 0.80                   | 1.60                   | 2985       | 3225                       | 4128                        |
| 20         | 8 | 150                       | 0.220                  | 1.00                   | 2.00                   | 2385       | 4200                       | 8400                        |
| 3          | 4 | 120                       | 0.050                  | 0.15                   | 0.30                   | 12735      | 2545                       | 115                         |
| 4          | 4 | 120                       | 0.065                  | 0.20                   | 0.40                   | 9550       | 2485                       | 199                         |
| 5          | 4 | 120                       | 0.070                  | 0.25                   | 0.50                   | 7640       | 2140                       | 268                         |
| 6          | 6 | 120                       | 0.085                  | 0.30                   | 0.60                   | 6365       | 3245                       | 584                         |
| 8          | 6 | 120                       | 0.100                  | 0.40                   | 0.80                   | 4775       | 2865                       | 917                         |
| 10         | 6 | 120                       | 0.110                  | 0.50                   | 1.00                   | 3820       | 2520                       | 1260                        |
| 12         | 6 | 120                       | 0.120                  | 0.60                   | 1.20                   | 3185       | 2295                       | 1653                        |
| 16         | 6 | 120                       | 0.160                  | 0.80                   | 1.60                   | 2385       | 2290                       | 2931                        |
| 20         | 8 | 120                       | 0.200                  | 1.00                   | 2.00                   | 1910       | 3055                       | 6110                        |
| 3          | 4 | 250                       | 0.060                  | 0.15                   | 0.30                   | 26525      | 6365                       | 287                         |
| 4          | 4 | 250                       | 0.080                  | 0.20                   | 0.40                   | 19895      | 6365                       | 509                         |
| 5          | 4 | 250                       | 0.085                  | 0.25                   | 0.50                   | 15915      | 5410                       | 677                         |
| 6          | 6 | 250                       | 0.100                  | 0.30                   | 0.60                   | 13265      | 7960                       | 1433                        |
| 8          | 6 | 250                       | 0.115                  | 0.40                   | 0.80                   | 9945       | 6860                       | 2195                        |
| 10         | 6 | 250                       | 0.125                  | 0.50                   | 1.00                   | 7960       | 5970                       | 2985                        |
| 12         | 6 | 250                       | 0.135                  | 0.60                   | 1.20                   | 6630       | 5370                       | 3867                        |
| 16         | 6 | 250                       | 0.180                  | 0.80                   | 1.60                   | 4975       | 5375                       | 6880                        |
| 20         | 8 | 250                       | 0.220                  | 1.00                   | 2.00                   | 3980       | 7005                       | 14010                       |

5350



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC



Чугун  
(серый /  
высокопрочный)



| d1<br>[mm] | z | V <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] | Q |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|---|
| 3          | 4 | 430                       | 0.080                  | 0.10                   | 0.10                   | 45625      | 14600                      |   |
| 4          | 4 | 430                       | 0.090                  | 0.10                   | 0.10                   | 34220      | 12320                      |   |
| 5          | 4 | 430                       | 0.100                  | 0.15                   | 0.15                   | 27375      | 10950                      |   |
| 6          | 6 | 430                       | 0.110                  | 0.15                   | 0.15                   | 22815      | 15060                      |   |
| 8          | 6 | 430                       | 0.110                  | 0.20                   | 0.20                   | 17110      | 11295                      |   |
| 10         | 6 | 430                       | 0.120                  | 0.20                   | 0.20                   | 13690      | 9855                       |   |
| 12         | 6 | 430                       | 0.130                  | 0.20                   | 0.20                   | 11405      | 8895                       |   |
| 16         | 6 | 430                       | 0.140                  | 0.25                   | 0.25                   | 8555       | 7185                       |   |
| 20         | 8 | 430                       | 0.150                  | 0.30                   | 0.30                   | 6845       | 8215                       |   |
| 3          | 4 | 380                       | 0.080                  | 0.10                   | 0.10                   | 40320      | 12900                      |   |
| 4          | 4 | 380                       | 0.090                  | 0.10                   | 0.10                   | 30240      | 10885                      |   |
| 5          | 4 | 380                       | 0.100                  | 0.15                   | 0.15                   | 24190      | 9675                       |   |
| 6          | 6 | 380                       | 0.110                  | 0.15                   | 0.15                   | 20160      | 13305                      |   |
| 8          | 6 | 380                       | 0.110                  | 0.20                   | 0.20                   | 15120      | 9980                       |   |
| 10         | 6 | 380                       | 0.120                  | 0.20                   | 0.20                   | 12095      | 8710                       |   |
| 12         | 6 | 380                       | 0.130                  | 0.20                   | 0.20                   | 10080      | 7860                       |   |
| 16         | 6 | 380                       | 0.140                  | 0.25                   | 0.25                   | 7560       | 6350                       |   |
| 20         | 8 | 380                       | 0.150                  | 0.30                   | 0.30                   | 6050       | 7260                       |   |
| 3          | 4 | 300                       | 0.080                  | 0.10                   | 0.10                   | 31830      | 10185                      |   |
| 4          | 4 | 300                       | 0.090                  | 0.10                   | 0.10                   | 23875      | 8595                       |   |
| 5          | 4 | 300                       | 0.100                  | 0.15                   | 0.15                   | 19100      | 7640                       |   |
| 6          | 6 | 300                       | 0.110                  | 0.15                   | 0.15                   | 15915      | 10505                      |   |
| 8          | 6 | 300                       | 0.110                  | 0.20                   | 0.20                   | 11935      | 7875                       |   |
| 10         | 6 | 300                       | 0.120                  | 0.20                   | 0.20                   | 9550       | 6875                       |   |
| 12         | 6 | 300                       | 0.130                  | 0.20                   | 0.20                   | 7960       | 6210                       |   |
| 16         | 6 | 300                       | 0.140                  | 0.25                   | 0.25                   | 5970       | 5015                       |   |
| 20         | 8 | 300                       | 0.150                  | 0.30                   | 0.30                   | 4775       | 5730                       |   |
| 3          | 4 | 570                       | 0.080                  | 0.10                   | 0.10                   | 60480      | 19355                      |   |
| 4          | 4 | 570                       | 0.090                  | 0.10                   | 0.10                   | 45360      | 16330                      |   |
| 5          | 4 | 570                       | 0.100                  | 0.15                   | 0.15                   | 36290      | 14515                      |   |
| 6          | 6 | 570                       | 0.110                  | 0.15                   | 0.15                   | 30240      | 19960                      |   |
| 8          | 6 | 570                       | 0.110                  | 0.20                   | 0.20                   | 22680      | 14970                      |   |
| 10         | 6 | 570                       | 0.120                  | 0.20                   | 0.20                   | 18145      | 13065                      |   |
| 12         | 6 | 570                       | 0.130                  | 0.20                   | 0.20                   | 15120      | 11795                      |   |
| 16         | 6 | 570                       | 0.140                  | 0.25                   | 0.25                   | 11340      | 9525                       |   |
| 20         | 8 | 570                       | 0.150                  | 0.30                   | 0.30                   | 9070       | 10885                      |   |

# Фрезы торические

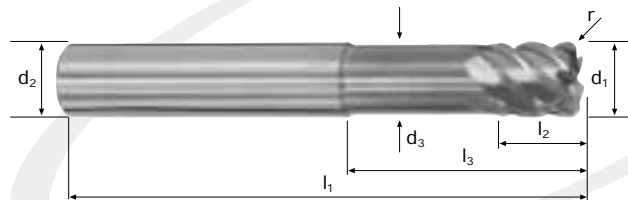
Multispeed NX

HM  
MG10 NX

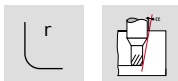
$\lambda$  45°  
 $\gamma$  5°



DIN 6535 HA  
DIN 6535 HB



Предназначены для обработки:



HRC < 48

HRC < 58

Нерж.  
сталь

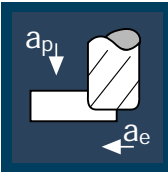
GG(G)  
Чугун

Титан

|                                    |       |       |      |     |    |    |           |    |   | UNICUT-4X | POLYCHROM | DURO-S                   | SERVICE |
|------------------------------------|-------|-------|------|-----|----|----|-----------|----|---|-----------|-----------|--------------------------|---------|
| Example: Coating Article-N° α-Code |       |       |      |     |    |    |           |    |   | U5350     |           | ReTool®                  |         |
| Order-N°: U 5350 180               |       |       |      |     |    |    |           |    |   | U5250     |           | P5250 D5250 with coating |         |
| Ø Code                             | d1 e8 | d2 h6 | d3   | l1  | l2 | l3 | r 0/+0,03 | α  | Z |           |           |                          |         |
| .180                               | 3     | 6     | 2,8  | 57  | 4  | 14 | 0,5       | 5° | 4 | •         | •         | •                        |         |
| .220                               | 4     | 6     | 3,7  | 57  | 5  | 16 | 0,5       | 3° | 4 | •         | •         | •                        |         |
| .260                               | 5     | 6     | 4,6  | 57  | 6  | 18 | 0,5       | 2° | 4 | •         | •         | •                        |         |
| .297                               | 6     | 6     | 5,5  | 57  | 7  | 20 | 0,5       | 0° | 6 | •         | •         | •                        |         |
| .300                               | 6     | 6     | 5,5  | 57  | 7  | 20 | 0,8       | 0° | 6 | •         | •         | •                        |         |
| .388                               | 8     | 8     | 7,4  | 63  | 9  | 26 | 0,5       | 0° | 6 | •         | •         | •                        | •       |
| .391                               | 8     | 8     | 7,4  | 63  | 9  | 26 | 1,0       | 0° | 6 | •         | •         | •                        | •       |
| .445                               | 10    | 10    | 9,2  | 72  | 11 | 31 | 0,5       | 0° | 6 | •         | •         | •                        | •       |
| .450                               | 10    | 10    | 9,2  | 72  | 11 | 31 | 1,0       | 0° | 6 | •         | •         | •                        | •       |
| .496                               | 12    | 12    | 11,0 | 83  | 13 | 37 | 0,5       | 0° | 6 | •         | •         | •                        | •       |
| .501                               | 12    | 12    | 11,0 | 83  | 13 | 37 | 1,5       | 0° | 6 | •         | •         | •                        | •       |
| .610                               | 16    | 16    | 15,0 | 92  | 17 | 43 | 1,5       | 0° | 6 | •         | •         | •                        | •       |
| .682                               | 20    | 20    | 19,0 | 104 | 21 | 53 | 2,0       | 0° | 8 | •         | •         | •                        | •       |



5352



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC

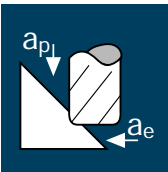


Чугун  
(серый /  
высокопрочный)



| d1<br>[mm] | z | V <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 6          | 6 | 170                       | 0.085                  | 0.24                   | 0.60                   | 9020       | 4600                       | 663                         |
| 8          | 6 | 170                       | 0.100                  | 0.32                   | 0.80                   | 6765       | 4060                       | 1040                        |
| 10         | 6 | 170                       | 0.110                  | 0.40                   | 1.00                   | 5410       | 3570                       | 1428                        |
| 12         | 6 | 170                       | 0.120                  | 0.48                   | 1.20                   | 4510       | 3245                       | 1869                        |
| 16         | 6 | 170                       | 0.160                  | 0.64                   | 1.60                   | 3380       | 3245                       | 3323                        |
| 20         | 8 | 170                       | 0.200                  | 0.80                   | 2.00                   | 2705       | 4330                       | 6928                        |
| 6          | 6 | 150                       | 0.085                  | 0.24                   | 0.60                   | 7960       | 4060                       | 585                         |
| 8          | 6 | 150                       | 0.100                  | 0.32                   | 0.80                   | 5970       | 3580                       | 917                         |
| 10         | 6 | 150                       | 0.110                  | 0.40                   | 1.00                   | 4775       | 3150                       | 1260                        |
| 12         | 6 | 150                       | 0.120                  | 0.48                   | 1.20                   | 3980       | 2865                       | 1650                        |
| 16         | 6 | 150                       | 0.160                  | 0.64                   | 1.60                   | 2985       | 2865                       | 2934                        |
| 20         | 8 | 150                       | 0.200                  | 0.80                   | 2.00                   | 2385       | 3815                       | 6104                        |
| 6          | 6 | 120                       | 0.100                  | 0.24                   | 0.60                   | 6365       | 3820                       | 550                         |
| 8          | 6 | 120                       | 0.115                  | 0.32                   | 0.80                   | 4775       | 3295                       | 844                         |
| 10         | 6 | 120                       | 0.125                  | 0.40                   | 1.00                   | 3820       | 2865                       | 1146                        |
| 12         | 6 | 120                       | 0.110                  | 0.48                   | 1.20                   | 3185       | 2100                       | 1210                        |
| 16         | 6 | 120                       | 0.145                  | 0.64                   | 1.60                   | 2385       | 2075                       | 2125                        |
| 20         | 8 | 120                       | 0.180                  | 0.80                   | 2.00                   | 1910       | 2750                       | 4400                        |
| 6          | 6 | 250                       | 0.100                  | 0.24                   | 0.60                   | 13265      | 7960                       | 1146                        |
| 8          | 6 | 250                       | 0.115                  | 0.32                   | 0.80                   | 9945       | 6860                       | 1756                        |
| 10         | 6 | 250                       | 0.125                  | 0.40                   | 1.00                   | 7960       | 5970                       | 2388                        |
| 12         | 6 | 250                       | 0.135                  | 0.48                   | 1.20                   | 6630       | 5370                       | 3093                        |
| 16         | 6 | 250                       | 0.180                  | 0.64                   | 1.60                   | 4975       | 5375                       | 5504                        |
| 20         | 8 | 250                       | 0.220                  | 0.80                   | 2.00                   | 3980       | 7005                       | 11208                       |

5352



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC



Чугун  
(серый /  
высокопрочный)



| d1<br>[mm] | z | V <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] | Q |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|---|
| 6          | 6 | 430                       | 0.110                  | 0.15                   | 0.15                   | 22815      | 15060                      |   |
| 8          | 6 | 430                       | 0.110                  | 0.20                   | 0.20                   | 17110      | 11295                      |   |
| 10         | 6 | 430                       | 0.120                  | 0.20                   | 0.20                   | 13690      | 9855                       |   |
| 12         | 6 | 430                       | 0.130                  | 0.20                   | 0.20                   | 11405      | 8895                       |   |
| 16         | 6 | 430                       | 0.140                  | 0.25                   | 0.25                   | 8555       | 7185                       |   |
| 20         | 8 | 430                       | 0.150                  | 0.30                   | 0.30                   | 6845       | 8215                       |   |
| 6          | 6 | 380                       | 0.110                  | 0.15                   | 0.15                   | 20160      | 13305                      |   |
| 8          | 6 | 380                       | 0.110                  | 0.20                   | 0.20                   | 15120      | 9980                       |   |
| 10         | 6 | 380                       | 0.120                  | 0.20                   | 0.20                   | 12095      | 8710                       |   |
| 12         | 6 | 380                       | 0.130                  | 0.20                   | 0.20                   | 10080      | 7860                       |   |
| 16         | 6 | 380                       | 0.140                  | 0.25                   | 0.25                   | 7560       | 6350                       |   |
| 20         | 8 | 380                       | 0.150                  | 0.30                   | 0.30                   | 6050       | 7260                       |   |
| 6          | 6 | 300                       | 0.110                  | 0.15                   | 0.15                   | 15915      | 10505                      |   |
| 8          | 6 | 300                       | 0.110                  | 0.20                   | 0.20                   | 11935      | 7875                       |   |
| 10         | 6 | 300                       | 0.120                  | 0.20                   | 0.20                   | 9550       | 6875                       |   |
| 12         | 6 | 300                       | 0.130                  | 0.20                   | 0.20                   | 7960       | 6210                       |   |
| 16         | 6 | 300                       | 0.140                  | 0.25                   | 0.25                   | 5970       | 5015                       |   |
| 20         | 8 | 300                       | 0.150                  | 0.30                   | 0.30                   | 4775       | 5730                       |   |
| 6          | 6 | 570                       | 0.110                  | 0.15                   | 0.15                   | 30240      | 19960                      |   |
| 8          | 6 | 570                       | 0.110                  | 0.20                   | 0.20                   | 22680      | 14970                      |   |
| 10         | 6 | 570                       | 0.120                  | 0.20                   | 0.20                   | 18145      | 13065                      |   |
| 12         | 6 | 570                       | 0.130                  | 0.20                   | 0.20                   | 15120      | 11795                      |   |
| 16         | 6 | 570                       | 0.140                  | 0.25                   | 0.25                   | 11340      | 9525                       |   |
| 20         | 8 | 570                       | 0.150                  | 0.30                   | 0.30                   | 9070       | 10885                      |   |

# Фрезы торические

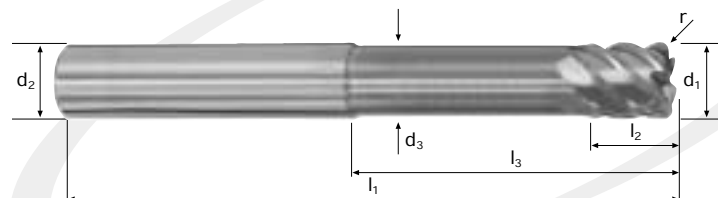
Multispeed **NX**

HM  
MG10 NX

$\lambda$  45°  
 $\gamma$  5°



DIN 6535 HA  
DIN 6535 HB

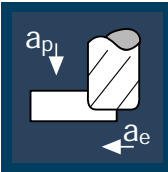


Предназначены для обработки:

HRC < 48 HRC < 58 Нерж. сталь GG(G) Чугун Титан

| Example:  |    |    |      |     |    |    |         |   | UNICUT-4X | POLYCHROM | DURO-S | SERVICE      |
|-----------|----|----|------|-----|----|----|---------|---|-----------|-----------|--------|--------------|
| Order-Nº: |    |    |      |     |    |    |         |   | NEW!      |           |        |              |
|           |    |    |      |     |    |    |         |   | U5352     |           |        | ReTool®      |
|           |    |    |      |     |    |    |         |   | U5252     | P5252     | D5252  | with coating |
| Ø         | d1 | d2 | d3   | l1  | l2 | l3 | r       | z |           |           |        |              |
| Code      | e8 | h6 |      |     |    |    | 0/+0,03 |   |           |           |        |              |
| .300      | 6  | 6  | 5,5  | 70  | 7  | 33 | 0,8     | 6 | •         | •         | •      | •            |
| .391      | 8  | 8  | 7,4  | 80  | 9  | 43 | 1,0     | 6 | •         | •         | •      | •            |
| .450      | 10 | 10 | 9,2  | 84  | 11 | 43 | 1,0     | 6 | •         | •         | •      | •            |
| .501      | 12 | 12 | 11,0 | 97  | 13 | 51 | 1,5     | 6 | •         | •         | •      | •            |
| .610      | 16 | 16 | 15,0 | 115 | 17 | 66 | 1,5     | 6 | •         | •         | •      | •            |
| .682      | 20 | 20 | 19,0 | 130 | 21 | 79 | 2,0     | 8 | •         | •         | •      | •            |
|           |    |    |      |     |    |    |         |   |           |           |        |              |
|           |    |    |      |     |    |    |         |   |           |           |        |              |
|           |    |    |      |     |    |    |         |   |           |           |        |              |
|           |    |    |      |     |    |    |         |   |           |           |        |              |
|           |    |    |      |     |    |    |         |   |           |           |        |              |
|           |    |    |      |     |    |    |         |   |           |           |        |              |
|           |    |    |      |     |    |    |         |   |           |           |        |              |
|           |    |    |      |     |    |    |         |   |           |           |        |              |
|           |    |    |      |     |    |    |         |   |           |           |        |              |
|           |    |    |      |     |    |    |         |   |           |           |        |              |
|           |    |    |      |     |    |    |         |   |           |           |        |              |
|           |    |    |      |     |    |    |         |   |           |           |        |              |
|           |    |    |      |     |    |    |         |   |           |           |        |              |

5345



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC

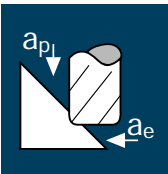


Чугун  
(серый /  
высокопрочный)



| d1<br>[mm] | z | V <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 6          | 4 | 170                       | 0.100                  | 0.60                   | 0.80                   | 9020       | 3610                       | 1733                        |
| 8          | 4 | 170                       | 0.100                  | 0.80                   | 0.90                   | 6765       | 2705                       | 1948                        |
| 10         | 4 | 170                       | 0.100                  | 1.00                   | 1.00                   | 5410       | 2165                       | 2165                        |
| 12         | 4 | 170                       | 0.120                  | 1.20                   | 1.10                   | 4510       | 2165                       | 2858                        |
| 16         | 4 | 170                       | 0.140                  | 1.50                   | 1.20                   | 3380       | 1895                       | 3411                        |
| 6          | 4 | 150                       | 0.100                  | 0.60                   | 0.80                   | 7960       | 3185                       | 1529                        |
| 8          | 4 | 150                       | 0.100                  | 0.80                   | 0.90                   | 5970       | 2390                       | 1721                        |
| 10         | 4 | 150                       | 0.100                  | 1.00                   | 1.00                   | 4775       | 1910                       | 1910                        |
| 12         | 4 | 150                       | 0.120                  | 1.20                   | 1.10                   | 3980       | 1910                       | 2521                        |
| 16         | 4 | 150                       | 0.140                  | 1.50                   | 1.20                   | 2985       | 1670                       | 3006                        |
| 6          | 4 | 120                       | 0.100                  | 0.60                   | 0.80                   | 6365       | 2545                       | 1222                        |
| 8          | 4 | 120                       | 0.100                  | 0.80                   | 0.90                   | 4775       | 1910                       | 1375                        |
| 10         | 4 | 120                       | 0.100                  | 1.00                   | 1.00                   | 3820       | 1530                       | 1530                        |
| 12         | 4 | 120                       | 0.120                  | 1.20                   | 1.10                   | 3185       | 1530                       | 2020                        |
| 16         | 4 | 120                       | 0.140                  | 1.50                   | 1.20                   | 2385       | 1335                       | 2403                        |
| 6          | 4 | 230                       | 0.130                  | 0.25                   | 2.00                   | 12200      | 6345                       | 3173                        |
| 8          | 4 | 230                       | 0.150                  | 0.35                   | 2.65                   | 9150       | 5490                       | 5092                        |
| 10         | 4 | 230                       | 0.170                  | 0.40                   | 3.35                   | 7320       | 4980                       | 6673                        |
| 12         | 4 | 230                       | 0.190                  | 0.50                   | 4.00                   | 6100       | 4635                       | 9270                        |
| 16         | 4 | 230                       | 0.230                  | 0.60                   | 5.35                   | 4575       | 4210                       | 13514                       |

5345



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC



Чугун  
(серый /  
высокопрочный)



| d1<br>[mm] | z | V <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|
| 6          | 4 | 430                       | 0.10C                  | 0.10                   | 0.10                   | 22815      | 9125                       |
| 8          | 4 | 430                       | 0.110                  | 0.10                   | 0.10                   | 17110      | 7530                       |
| 10         | 4 | 430                       | 0.12C                  | 0.15                   | 0.15                   | 13690      | 6570                       |
| 12         | 4 | 430                       | 0.13C                  | 0.20                   | 0.20                   | 11405      | 5930                       |
| 16         | 4 | 430                       | 0.14C                  | 0.30                   | 0.30                   | 8555       | 4790                       |
| 6          | 4 | 380                       | 0.10C                  | 0.10                   | 0.10                   | 20160      | 8065                       |
| 8          | 4 | 380                       | 0.110                  | 0.10                   | 0.10                   | 15120      | 6655                       |
| 10         | 4 | 380                       | 0.12C                  | 0.15                   | 0.15                   | 12095      | 5805                       |
| 12         | 4 | 380                       | 0.13C                  | 0.20                   | 0.20                   | 10080      | 524C                       |
| 16         | 4 | 380                       | 0.14C                  | 0.30                   | 0.30                   | 7560       | 4235                       |
| 6          | 4 | 300                       | 0.100                  | 0.10                   | 0.10                   | 15915      | 6365                       |
| 8          | 4 | 300                       | 0.110                  | 0.10                   | 0.10                   | 11935      | 5250                       |
| 10         | 4 | 300                       | 0.120                  | 0.15                   | 0.15                   | 9550       | 4585                       |
| 12         | 4 | 300                       | 0.130                  | 0.20                   | 0.20                   | 7960       | 4140                       |
| 16         | 4 | 300                       | 0.140                  | 0.30                   | 0.30                   | 5970       | 3345                       |
| 6          | 4 | 570                       | 0.100                  | 0.10                   | 0.10                   | 30240      | 12095                      |
| 8          | 4 | 570                       | 0.110                  | 0.10                   | 0.10                   | 22680      | 9980                       |
| 10         | 4 | 570                       | 0.120                  | 0.15                   | 0.15                   | 18145      | 8710                       |
| 12         | 4 | 570                       | 0.130                  | 0.20                   | 0.20                   | 15120      | 7860                       |
| 16         | 4 | 570                       | 0.140                  | 0.30                   | 0.30                   | 11340      | 6350                       |

Фрезы торические

Steelspe<sup>®</sup> NX

HM  
MG10

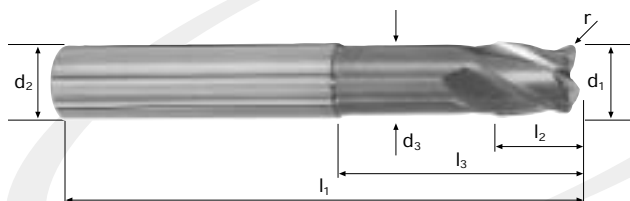
NX

$\lambda$  30°  
 $\gamma$  12°



DIN 6535  
HA

DIN 6535  
HB



Предназначены для обработки:



HRC  
< 48

HRC  
< 58

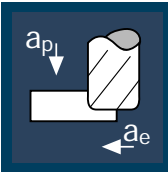
Нерж.  
сталь

GG(G)  
Чугун

Титан

| Example:  |       | Coating | Article-N° | α-Code | NEW! |    | UNICUT-4X | POLYCHROM | DURO-S | SERVICE             |   |
|-----------|-------|---------|------------|--------|------|----|-----------|-----------|--------|---------------------|---|
| Order-N°: | U     | 534     | 5300       |        |      |    | U5345     |           |        | ReTool <sup>®</sup> |   |
|           |       |         |            |        |      |    | U5245     | P5245     | D5245  | with coating        |   |
| Ø Code    | d1 e8 | d2 h6   | d3         | l1     | l2   | l3 | r 0/+0,03 | Z         |        |                     |   |
| .300      | 6     | 6       | 5,5        | 57     | 7    | 20 | 1,0       | 4         | •      | •                   | • |
| .391      | 8     | 8       | 7,4        | 63     | 9    | 26 | 1,0       | 4         | •      | •                   | • |
| .450      | 10    | 10      | 9,2        | 72     | 11   | 31 | 1,5       | 4         | •      | •                   | • |
| .501      | 12    | 12      | 11,0       | 83     | 13   | 37 | 1,5       | 4         | •      | •                   | • |
| .610      | 16    | 16      | 15,0       | 92     | 17   | 43 | 2,0       | 4         | •      | •                   | • |
|           |       |         |            |        |      |    |           |           |        |                     |   |
|           |       |         |            |        |      |    |           |           |        |                     |   |
|           |       |         |            |        |      |    |           |           |        |                     |   |
|           |       |         |            |        |      |    |           |           |        |                     |   |
|           |       |         |            |        |      |    |           |           |        |                     |   |
|           |       |         |            |        |      |    |           |           |        |                     |   |
|           |       |         |            |        |      |    |           |           |        |                     |   |
|           |       |         |            |        |      |    |           |           |        |                     |   |
|           |       |         |            |        |      |    |           |           |        |                     |   |
|           |       |         |            |        |      |    |           |           |        |                     |   |
|           |       |         |            |        |      |    |           |           |        |                     |   |
|           |       |         |            |        |      |    |           |           |        |                     |   |
|           |       |         |            |        |      |    |           |           |        |                     |   |
|           |       |         |            |        |      |    |           |           |        |                     |   |
|           |       |         |            |        |      |    |           |           |        |                     |   |
|           |       |         |            |        |      |    |           |           |        |                     |   |
|           |       |         |            |        |      |    |           |           |        |                     |   |

5346



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC

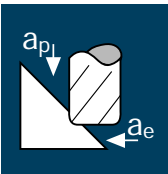


Чугун  
(серый /  
высокопрочный)



| d1<br>[mm] | z | V <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 6          | 4 | 170                       | 0.120                  | 0.30                   | 0.80                   | 9020       | 4330                       | 1039                        |
| 8          | 4 | 170                       | 0.150                  | 0.40                   | 0.90                   | 6765       | 4060                       | 1462                        |
| 10         | 4 | 170                       | 0.140                  | 0.50                   | 1.00                   | 5410       | 3030                       | 1515                        |
| 12         | 4 | 170                       | 0.170                  | 0.60                   | 1.10                   | 4510       | 3065                       | 2023                        |
| 16         | 4 | 170                       | 0.210                  | 0.80                   | 1.20                   | 3380       | 2840                       | 2727                        |
| 6          | 4 | 150                       | 0.120                  | 0.30                   | 0.80                   | 7960       | 3820                       | 917                         |
| 8          | 4 | 150                       | 0.150                  | 0.40                   | 0.90                   | 5970       | 3580                       | 1289                        |
| 10         | 4 | 150                       | 0.140                  | 0.50                   | 1.00                   | 4775       | 2675                       | 1338                        |
| 12         | 4 | 150                       | 0.170                  | 0.60                   | 1.10                   | 3980       | 2705                       | 1786                        |
| 16         | 4 | 150                       | 0.210                  | 0.80                   | 1.20                   | 2985       | 2505                       | 2405                        |
| 6          | 4 | 120                       | 0.120                  | 0.30                   | 0.80                   | 6365       | 3055                       | 733                         |
| 8          | 4 | 120                       | 0.150                  | 0.40                   | 0.90                   | 4775       | 2865                       | 1032                        |
| 10         | 4 | 120                       | 0.140                  | 0.50                   | 1.00                   | 3820       | 2140                       | 1070                        |
| 12         | 4 | 120                       | 0.170                  | 0.60                   | 1.10                   | 3185       | 2165                       | 1429                        |
| 16         | 4 | 120                       | 0.210                  | 0.80                   | 1.20                   | 2385       | 2005                       | 1925                        |
| 6          | 4 | 250                       | 0.130                  | 0.40                   | 2.00                   | 13265      | 6900                       | 5520                        |
| 8          | 4 | 250                       | 0.150                  | 0.55                   | 2.65                   | 9945       | 5965                       | 8694                        |
| 10         | 4 | 250                       | 0.170                  | 0.65                   | 3.35                   | 7960       | 5415                       | 11791                       |
| 12         | 4 | 250                       | 0.190                  | 0.80                   | 4.00                   | 6630       | 5040                       | 16128                       |
| 16         | 4 | 250                       | 0.230                  | 1.00                   | 5.35                   | 4975       | 4575                       | 24477                       |

5346



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC



Чугун  
(серый /  
высокопрочный)



| d1<br>[mm] | z | V <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|
| 6          | 4 | 430                       | 0.10C                  | 0.10                   | 0.10                   | 22815      | 9125                       |
| 8          | 4 | 430                       | 0.110                  | 0.10                   | 0.10                   | 17110      | 7530                       |
| 10         | 4 | 430                       | 0.12C                  | 0.15                   | 0.15                   | 13690      | 6570                       |
| 12         | 4 | 430                       | 0.13C                  | 0.20                   | 0.20                   | 11405      | 5930                       |
| 16         | 4 | 430                       | 0.14C                  | 0.30                   | 0.30                   | 8555       | 4790                       |
| 6          | 4 | 380                       | 0.10C                  | 0.10                   | 0.10                   | 20160      | 8065                       |
| 8          | 4 | 380                       | 0.110                  | 0.10                   | 0.10                   | 15120      | 6655                       |
| 10         | 4 | 380                       | 0.12C                  | 0.15                   | 0.15                   | 12095      | 5805                       |
| 12         | 4 | 380                       | 0.13C                  | 0.20                   | 0.20                   | 10080      | 524C                       |
| 16         | 4 | 380                       | 0.14C                  | 0.30                   | 0.30                   | 7560       | 4235                       |
| 6          | 4 | 300                       | 0.100                  | 0.10                   | 0.10                   | 15915      | 6365                       |
| 8          | 4 | 300                       | 0.110                  | 0.10                   | 0.10                   | 11935      | 5250                       |
| 10         | 4 | 300                       | 0.120                  | 0.15                   | 0.15                   | 9550       | 4585                       |
| 12         | 4 | 300                       | 0.130                  | 0.20                   | 0.20                   | 7960       | 4140                       |
| 16         | 4 | 300                       | 0.140                  | 0.30                   | 0.30                   | 5970       | 3345                       |
| 6          | 4 | 570                       | 0.100                  | 0.10                   | 0.10                   | 30240      | 12095                      |
| 8          | 4 | 570                       | 0.110                  | 0.10                   | 0.10                   | 22680      | 9980                       |
| 10         | 4 | 570                       | 0.120                  | 0.15                   | 0.15                   | 18145      | 8710                       |
| 12         | 4 | 570                       | 0.130                  | 0.20                   | 0.20                   | 15120      | 7860                       |
| 16         | 4 | 570                       | 0.140                  | 0.30                   | 0.30                   | 11340      | 6350                       |

# Фрезы торические

Steelspeed **NX**

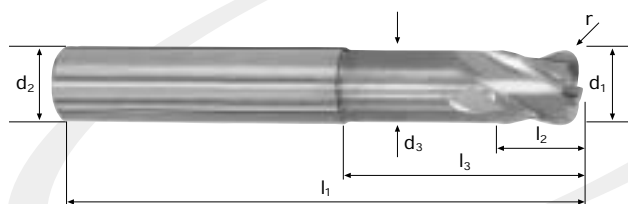
HM  
MG10

NX

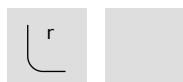
$\lambda$  30°  
 $\gamma$  5°



DIN 6535 HA  
DIN 6535 HB



Предназначены для обработки:



HRC < 48

HRC < 58

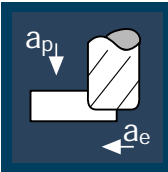
Нерж. сталь

GG(G) Чугун

Титан

|                                    |       |       |      |    |    |    |           |   | UNICUT-4X | POLYCHROM | DURO-S | SERVICE      |
|------------------------------------|-------|-------|------|----|----|----|-----------|---|-----------|-----------|--------|--------------|
| Example: Coating Article-N° ø-Code |       |       |      |    |    |    |           |   | U         | 5346      |        | ReTool®      |
| Order-N°.                          |       |       |      |    |    |    |           |   | U         | 5346      | 300    | with coating |
| ø Code                             | d1 e8 | d2 h6 | d3   | l1 | l2 | l3 | r 0/+0,03 | Z |           |           |        |              |
| .300                               | 6     | 6     | 5,5  | 57 | 7  | 20 | 1,5       | 4 | •         | •         | •      | •            |
| .391                               | 8     | 8     | 7,4  | 63 | 9  | 26 | 2,0       | 4 | •         | •         | •      | •            |
| .450                               | 10    | 10    | 9,2  | 72 | 11 | 31 | 2,5       | 4 | •         | •         | •      | •            |
| .501                               | 12    | 12    | 11,0 | 83 | 13 | 37 | 3,0       | 4 | •         | •         | •      | •            |
| .610                               | 16    | 16    | 15,0 | 92 | 17 | 43 | 4,0       | 4 | •         | •         | •      | •            |

5347



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC

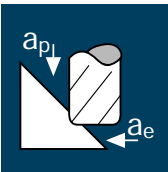


Чугун  
(серый /  
высокопрочный)



| d1<br>[mm] | z | V <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 6          | 4 | 170                       | 0.120                  | 0.15                   | 0.80                   | 9020       | 4330                       | 520                         |
| 8          | 4 | 170                       | 0.150                  | 0.20                   | 0.90                   | 6765       | 4060                       | 731                         |
| 10         | 4 | 170                       | 0.140                  | 0.25                   | 1.00                   | 5410       | 3030                       | 758                         |
| 12         | 4 | 170                       | 0.170                  | 0.30                   | 1.10                   | 4510       | 3065                       | 1012                        |
| 16         | 4 | 170                       | 0.210                  | 0.40                   | 1.20                   | 3380       | 2840                       | 1363                        |
| 6          | 4 | 150                       | 0.120                  | 0.15                   | 0.80                   | 7960       | 3820                       | 459                         |
| 8          | 4 | 150                       | 0.150                  | 0.20                   | 0.90                   | 5970       | 3580                       | 645                         |
| 10         | 4 | 150                       | 0.140                  | 0.25                   | 1.00                   | 4775       | 2675                       | 669                         |
| 12         | 4 | 150                       | 0.170                  | 0.30                   | 1.10                   | 3980       | 2705                       | 893                         |
| 16         | 4 | 150                       | 0.210                  | 0.40                   | 1.20                   | 2985       | 2505                       | 1203                        |
| 6          | 4 | 120                       | 0.120                  | 0.15                   | 0.80                   | 6365       | 3055                       | 367                         |
| 8          | 4 | 120                       | 0.150                  | 0.20                   | 0.90                   | 4775       | 2865                       | 516                         |
| 10         | 4 | 120                       | 0.140                  | 0.25                   | 1.00                   | 3820       | 2140                       | 535                         |
| 12         | 4 | 120                       | 0.170                  | 0.30                   | 1.10                   | 3185       | 2165                       | 715                         |
| 16         | 4 | 120                       | 0.210                  | 0.40                   | 1.20                   | 2385       | 2005                       | 963                         |
| 6          | 4 | 250                       | 0.130                  | 0.20                   | 2.00                   | 13265      | 6900                       | 2760                        |
| 8          | 4 | 250                       | 0.150                  | 0.25                   | 2.65                   | 9945       | 5965                       | 3952                        |
| 10         | 4 | 250                       | 0.170                  | 0.30                   | 3.35                   | 7960       | 5415                       | 5442                        |
| 12         | 4 | 250                       | 0.190                  | 0.40                   | 4.00                   | 6630       | 5040                       | 8064                        |
| 16         | 4 | 250                       | 0.230                  | 0.50                   | 5.35                   | 4975       | 4575                       | 12238                       |

5347



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC



Чугун  
(серый /  
высокопрочный)



| d1<br>[mm] | z | V <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|
| 6          | 4 | 430                       | 0.10C                  | 0.10                   | 0.10                   | 22815      | 9125                       |
| 8          | 4 | 430                       | 0.110                  | 0.10                   | 0.10                   | 17110      | 7530                       |
| 10         | 4 | 430                       | 0.12C                  | 0.15                   | 0.15                   | 13690      | 6570                       |
| 12         | 4 | 430                       | 0.13C                  | 0.20                   | 0.20                   | 11405      | 5930                       |
| 16         | 4 | 430                       | 0.14C                  | 0.30                   | 0.30                   | 8555       | 4790                       |
| 6          | 4 | 380                       | 0.10C                  | 0.10                   | 0.10                   | 20160      | 8065                       |
| 8          | 4 | 380                       | 0.110                  | 0.10                   | 0.10                   | 15120      | 6655                       |
| 10         | 4 | 380                       | 0.12C                  | 0.15                   | 0.15                   | 12095      | 5805                       |
| 12         | 4 | 380                       | 0.13C                  | 0.20                   | 0.20                   | 10080      | 524C                       |
| 16         | 4 | 380                       | 0.14C                  | 0.30                   | 0.30                   | 7560       | 4235                       |
| 6          | 4 | 300                       | 0.100                  | 0.10                   | 0.10                   | 15915      | 6365                       |
| 8          | 4 | 300                       | 0.110                  | 0.10                   | 0.10                   | 11935      | 5250                       |
| 10         | 4 | 300                       | 0.120                  | 0.15                   | 0.15                   | 9550       | 4585                       |
| 12         | 4 | 300                       | 0.130                  | 0.20                   | 0.20                   | 7960       | 4140                       |
| 16         | 4 | 300                       | 0.140                  | 0.30                   | 0.30                   | 5970       | 3345                       |
| 6          | 4 | 560                       | 0.100                  | 0.10                   | 0.10                   | 29710      | 11885                      |
| 8          | 4 | 560                       | 0.110                  | 0.10                   | 0.10                   | 22280      | 9805                       |
| 10         | 4 | 560                       | 0.120                  | 0.15                   | 0.15                   | 17825      | 8555                       |
| 12         | 4 | 560                       | 0.130                  | 0.20                   | 0.20                   | 14855      | 7725                       |
| 16         | 4 | 560                       | 0.140                  | 0.30                   | 0.30                   | 11140      | 6240                       |

# Фрезы торические

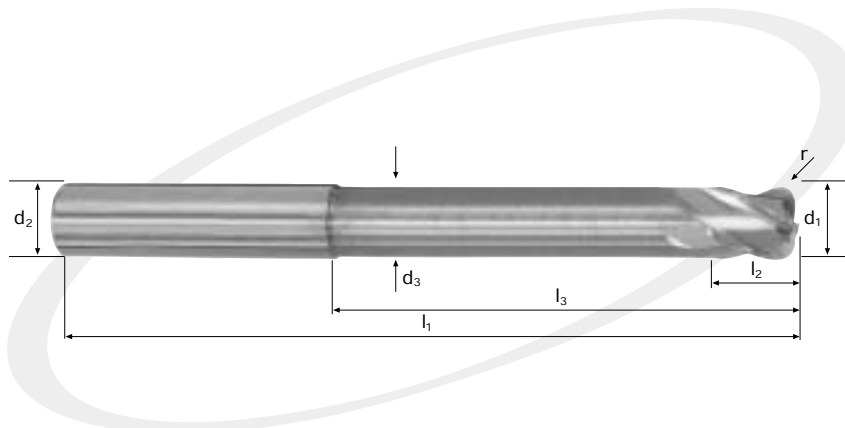
# Steelspeed NX

HM  
MG10 NX

$\lambda$  30°  
 $\gamma$  5°



DIN 6535 HA  
DIN 6535 HB



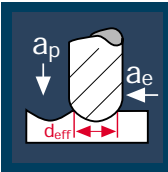
Предназначены для обработки:

- HRC < 48**
- HRC < 58
- Нерж. сталь
- GG(G) Чугун
- Титан

| Example:  |       | Coating | Article-N° | ø-Code |    |    | UNICUT-4X | POLYCHROM | DURO-S | SERVICE             |   |
|-----------|-------|---------|------------|--------|----|----|-----------|-----------|--------|---------------------|---|
| Order-N°: |       | U       | 5347300    |        |    |    | U5347     |           |        | ReTool <sup>®</sup> |   |
|           |       |         |            |        |    |    | U5247     | P5247     | D5247  | with coating        |   |
| ø Code    | d1 e8 | d2 h6   | d3         | l1     | l2 | l3 | r 0/+0,03 | Z         |        |                     |   |
| .300      | 6     | 6       | 5,5        | 80     | 7  | 43 | 1,5       | 4         | •      | •                   | • |
| .391      | 8     | 8       | 7,4        | 90     | 9  | 53 | 2,0       | 4         | •      | •                   | • |
| .450      | 10    | 10      | 9,2        | 100    | 11 | 59 | 2,5       | 4         | •      | •                   | • |
| .501      | 12    | 12      | 11,0       | 120    | 13 | 74 | 3,0       | 4         | •      | •                   | • |
| .610      | 16    | 16      | 15,0       | 140    | 17 | 91 | 4,0       | 4         | •      | •                   | • |
|           |       |         |            |        |    |    |           |           |        |                     |   |
|           |       |         |            |        |    |    |           |           |        |                     |   |
|           |       |         |            |        |    |    |           |           |        |                     |   |
|           |       |         |            |        |    |    |           |           |        |                     |   |
|           |       |         |            |        |    |    |           |           |        |                     |   |
|           |       |         |            |        |    |    |           |           |        |                     |   |
|           |       |         |            |        |    |    |           |           |        |                     |   |
|           |       |         |            |        |    |    |           |           |        |                     |   |
|           |       |         |            |        |    |    |           |           |        |                     |   |
|           |       |         |            |        |    |    |           |           |        |                     |   |
|           |       |         |            |        |    |    |           |           |        |                     |   |
|           |       |         |            |        |    |    |           |           |        |                     |   |
|           |       |         |            |        |    |    |           |           |        |                     |   |
|           |       |         |            |        |    |    |           |           |        |                     |   |
|           |       |         |            |        |    |    |           |           |        |                     |   |
|           |       |         |            |        |    |    |           |           |        |                     |   |



5220



Применение

Сталь  
24 - 32 HRC



Сталь  
32 - 42 HRC



Сталь  
42 - 48 HRC

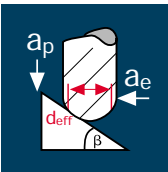


Чугун  
(серый /  
высокопрочный)



| d1<br>[mm] | z | Vc<br>[m/min] | fz<br>[mm] | ap<br>[mm] | ae<br>[mm] | d <sub>eff</sub><br>[mm] | n<br>[min] | Vf<br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------|------------|------------|------------|--------------------------|------------|----------------|-----------------------------|
| 4          | 2 | 250           | 0.080      | 0.12       | 0.24       | 1.36                     | 58315      | 9330           | 269                         |
| 5          | 2 | 250           | 0.100      | 0.15       | 0.30       | 1.71                     | 46650      | 9330           | 420                         |
| 6          | 2 | 250           | 0.120      | 0.18       | 0.36       | 2.05                     | 38875      | 9330           | 605                         |
| 8          | 2 | 250           | 0.120      | 0.24       | 0.48       | 2.73                     | 29155      | 6195           | 806                         |
| 10         | 2 | 250           | 0.150      | 0.30       | 0.60       | 3.41                     | 23325      | 7000           | 1260                        |
| 12         | 2 | 250           | 0.180      | 0.36       | 0.72       | 4.09                     | 19440      | 7000           | 1815                        |
| 16         | 2 | 250           | 0.160      | 0.48       | 0.96       | 5.46                     | 14580      | 4165           | 2150                        |
| 4          | 2 | 220           | 0.080      | 0.12       | 0.24       | 1.36                     | 51315      | 8210           | 237                         |
| 5          | 2 | 220           | 0.100      | 0.15       | 0.30       | 1.71                     | 41050      | 8210           | 370                         |
| 6          | 2 | 220           | 0.120      | 0.18       | 0.36       | 2.05                     | 34210      | 8210           | 532                         |
| 8          | 2 | 220           | 0.120      | 0.24       | 0.48       | 2.73                     | 25660      | 6160           | 710                         |
| 10         | 2 | 220           | 0.150      | 0.30       | 0.60       | 3.41                     | 20525      | 6160           | 1109                        |
| 12         | 2 | 220           | 0.180      | 0.36       | 0.72       | 4.09                     | 17105      | 6160           | 1597                        |
| 16         | 2 | 220           | 0.160      | 0.48       | 0.96       | 5.46                     | 12830      | 4105           | 1892                        |
| 4          | 2 | 200           | 0.080      | 0.12       | 0.24       | 1.36                     | 46650      | 7465           | 215                         |
| 5          | 2 | 200           | 0.100      | 0.15       | 0.30       | 1.71                     | 37320      | 7465           | 336                         |
| 6          | 2 | 200           | 0.120      | 0.18       | 0.36       | 2.05                     | 31100      | 7465           | 484                         |
| 8          | 2 | 200           | 0.120      | 0.24       | 0.48       | 2.73                     | 23325      | 5600           | 645                         |
| 10         | 2 | 200           | 0.150      | 0.30       | 0.60       | 3.41                     | 18660      | 5600           | 1008                        |
| 12         | 2 | 200           | 0.180      | 0.36       | 0.72       | 4.09                     | 15550      | 5600           | 1452                        |
| 16         | 2 | 200           | 0.160      | 0.48       | 0.96       | 5.46                     | 11665      | 3735           | 1721                        |
| 4          | 2 | 280           | 0.080      | 0.12       | 0.24       | 1.36                     | 60000      | 9600           | 277                         |
| 5          | 2 | 280           | 0.100      | 0.15       | 0.30       | 1.71                     | 52250      | 10450          | 471                         |
| 6          | 2 | 280           | 0.120      | 0.18       | 0.36       | 2.05                     | 43540      | 10450          | 677                         |
| 8          | 2 | 280           | 0.120      | 0.24       | 0.48       | 2.73                     | 32655      | 7835           | 903                         |
| 10         | 2 | 280           | 0.150      | 0.30       | 0.60       | 3.41                     | 26125      | 7840           | 1411                        |
| 12         | 2 | 280           | 0.180      | 0.36       | 0.72       | 4.09                     | 21770      | 7835           | 2031                        |
| 16         | 2 | 280           | 0.160      | 0.48       | 0.96       | 5.46                     | 16330      | 5225           | 2408                        |

5220



Применение

Сталь  
24 - 32 HRC



Сталь  
32 - 42 HRC



Сталь  
42 - 48 HRC



Чугун  
(серый /  
высокопрочный)



| d1<br>[mm] | z | Vc<br>[m/min] | fz<br>[mm] | ap<br>[mm] | ae<br>[mm] | d <sub>eff</sub><br>[mm] | n<br>[min] | Vf<br>[mm/min] | β  |
|------------|---|---------------|------------|------------|------------|--------------------------|------------|----------------|----|
| 4          | 2 | 510           | 0.060      | 0.05       | 0.06       | 3.38                     | 48080      | 5170           | 45 |
| 5          | 2 | 510           | 0.075      | 0.06       | 0.08       | 4.22                     | 38465      | 5170           | 45 |
| 6          | 2 | 510           | 0.090      | 0.07       | 0.09       | 5.06                     | 32055      | 5170           | 45 |
| 8          | 2 | 510           | 0.080      | 0.10       | 0.08       | 6.75                     | 24040      | 3845           | 45 |
| 10         | 2 | 510           | 0.100      | 0.12       | 0.10       | 8.44                     | 19230      | 3845           | 45 |
| 12         | 2 | 510           | 0.120      | 0.14       | 0.12       | 10.13                    | 16025      | 3845           | 45 |
| 16         | 2 | 510           | 0.080      | 0.19       | 0.08       | 13.51                    | 12020      | 1925           | 45 |
| 4          | 2 | 470           | 0.060      | 0.05       | 0.06       | 3.38                     | 44310      | 5115           | 45 |
| 5          | 2 | 470           | 0.075      | 0.06       | 0.08       | 4.22                     | 35450      | 5120           | 45 |
| 6          | 2 | 470           | 0.090      | 0.07       | 0.09       | 5.06                     | 29540      | 5115           | 45 |
| 8          | 2 | 470           | 0.080      | 0.10       | 0.08       | 6.75                     | 22155      | 3845           | 45 |
| 10         | 2 | 470           | 0.100      | 0.12       | 0.10       | 8.44                     | 17725      | 3545           | 45 |
| 12         | 2 | 470           | 0.120      | 0.14       | 0.12       | 10.13                    | 14770      | 3545           | 45 |
| 16         | 2 | 470           | 0.080      | 0.19       | 0.08       | 13.51                    | 11075      | 1770           | 45 |
| 4          | 2 | 430           | 0.060      | 0.05       | 0.06       | 3.38                     | 40540      | 4865           | 45 |
| 5          | 2 | 430           | 0.075      | 0.06       | 0.08       | 4.22                     | 32430      | 4865           | 45 |
| 6          | 2 | 430           | 0.090      | 0.07       | 0.09       | 5.06                     | 27025      | 4865           | 45 |
| 8          | 2 | 430           | 0.080      | 0.10       | 0.08       | 6.75                     | 20270      | 3245           | 45 |
| 10         | 2 | 430           | 0.100      | 0.12       | 0.10       | 8.44                     | 16215      | 3245           | 45 |
| 12         | 2 | 430           | 0.120      | 0.14       | 0.12       | 10.13                    | 13515      | 3245           | 45 |
| 16         | 2 | 430           | 0.080      | 0.19       | 0.08       | 13.51                    | 10135      | 1620           | 45 |
| 4          | 2 | 520           | 0.060      | 0.05       | 0.06       | 3.38                     | 49025      | 5885           | 45 |
| 5          | 2 | 520           | 0.075      | 0.06       | 0.08       | 4.22                     | 39220      | 5885           | 45 |
| 6          | 2 | 520           | 0.090      | 0.07       | 0.09       | 5.06                     | 32685      | 5885           | 45 |
| 8          | 2 | 520           | 0.080      | 0.10       | 0.08       | 6.75                     | 24510      | 3920           | 45 |
| 10         | 2 | 520           | 0.100      | 0.12       | 0.10       | 8.44                     | 19610      | 3920           | 45 |
| 12         | 2 | 520           | 0.120      | 0.14       | 0.12       | 10.13                    | 16340      | 3920           | 45 |
| 16         | 2 | 520           | 0.080      | 0.19       | 0.08       | 13.51                    | 12255      | 1960           | 45 |

# Фрезы сферические

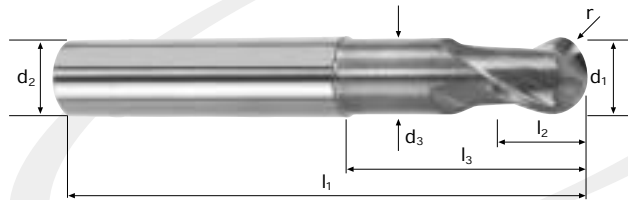
NX-S NX

HM  
MG10 NX

$\lambda$  30°  
 $\gamma$  5°



DIN  
6535  
HA



Предназначены для обработки:



HRC  
< 48

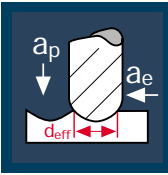
HRC  
< 40

HRC  
< 58

GG(G)  
Чугун

|                                    |     |              |        |        |       |         |     |          |   | UNICUT-4X                    | POLYCHROM | DURO-S | SERVICE |
|------------------------------------|-----|--------------|--------|--------|-------|---------|-----|----------|---|------------------------------|-----------|--------|---------|
| Example: Coating Article-N° ø-Code |     |              |        |        |       |         |     |          |   | ReTool®                      |           |        |         |
| Order-N°: U 5220 220               |     |              |        |        |       |         |     |          |   | U5220P5220D5220 with coating |           |        |         |
| ø                                  | d1  | d2           | d3     | l1     | l2    | l3      | r   | $\alpha$ | z |                              |           |        |         |
| Code                               |     | h6           |        |        |       |         | f8  |          |   |                              |           |        |         |
| .220                               | 4   | 6            | 3,7    | 57     | 5     | 12      | 2,0 | 4°       | 2 | •                            | •         | •      |         |
| .260                               | 5   | 6            | 4,6    | 57     | 6     | 15      | 2,5 | 2°       | 2 | •                            | •         | •      |         |
| .300                               | 6   | 6            | 5,5    | 57     | 7     | 20      | 3,0 | 0°       | 2 | •                            | •         | •      | •       |
| .391                               | 8   | 8            | 7,4    | 63     | 9     | 26      | 4,0 | 0°       | 2 | •                            | •         | •      | •       |
| .450                               | 10  | 10           | 9,2    | 72     | 11    | 31      | 5,0 | 0°       | 2 | •                            | •         | •      | •       |
| .501                               | 12  | 12           | 11,0   | 83     | 12    | 37      | 6,0 | 0°       | 2 | •                            | •         | •      | •       |
| .610                               | 16  | 16           | 15,0   | 92     | 16    | 43      | 8,0 | 0°       | 2 | •                            | •         | •      | •       |
| CNC Radius R                       |     |              |        |        |       |         |     |          |   |                              |           |        |         |
| d1                                 | r   | Tolerance f8 |        | Radius |       | Minimum |     | Maximum  |   |                              |           |        |         |
| 4                                  | 2.0 | -0.006       | -0.020 | 1.980  | 1.994 | 1.987   |     |          |   |                              |           |        |         |
| 5                                  | 2.5 |              |        | 2.480  | 2.494 | 2.487   |     |          |   |                              |           |        |         |
| 6                                  | 3.0 |              |        | 2.980  | 2.994 | 2.987   |     |          |   |                              |           |        |         |
| 8                                  | 4.0 | -0.010       | -0.028 | 3.972  | 3.990 | 3.981   |     |          |   |                              |           |        |         |
| 10                                 | 5.0 |              |        | 4.972  | 4.990 | 4.981   |     |          |   |                              |           |        |         |
| 12                                 | 6.0 |              |        | 5.972  | 5.990 | 5.981   |     |          |   |                              |           |        |         |
| 16                                 | 8.0 | -0.013       | -0.035 | 7.965  | 7.987 | 7.976   |     |          |   |                              |           |        |         |

5222



Применение

Сталь  
24 - 32 HRC



Сталь  
32 - 42 HRC



Сталь  
42 - 48 HRC

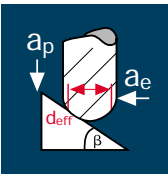


Чугун  
(серый /  
высокопрочный)



| d1<br>[mm] | z | Vc<br>[m/min] | fz<br>[mm] | ap<br>[mm] | ae<br>[mm] | d <sub>eff</sub><br>[mm] | n<br>[min] | Vf<br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------|------------|------------|------------|--------------------------|------------|----------------|-----------------------------|
| 4          | 2 | 240           | 0.080      | 0.08       | 0.24       | 1.12                     | 60000      | 9600           | 185                         |
| 5          | 2 | 240           | 0.100      | 0.10       | 0.30       | 1.40                     | 54570      | 1015           | 328                         |
| 6          | 2 | 240           | 0.120      | 0.12       | 0.36       | 1.68                     | 45475      | 1015           | 472                         |
| 8          | 2 | 240           | 0.120      | 0.16       | 0.48       | 2.24                     | 34105      | 8185           | 629                         |
| 10         | 2 | 240           | 0.150      | 0.20       | 0.60       | 2.80                     | 27285      | 8185           | 982                         |
| 12         | 2 | 240           | 0.180      | 0.24       | 0.72       | 3.36                     | 22735      | 8185           | 1415                        |
| 4          | 2 | 210           | 0.080      | 0.08       | 0.24       | 1.12                     | 59685      | 9550           | 184                         |
| 5          | 2 | 210           | 0.100      | 0.10       | 0.30       | 1.40                     | 47750      | 9550           | 287                         |
| 6          | 2 | 210           | 0.120      | 0.12       | 0.36       | 1.68                     | 39790      | 9550           | 413                         |
| 8          | 2 | 210           | 0.120      | 0.16       | 0.48       | 2.24                     | 29840      | 7160           | 550                         |
| 10         | 2 | 210           | 0.150      | 0.20       | 0.60       | 2.80                     | 23875      | 7160           | 860                         |
| 12         | 2 | 210           | 0.180      | 0.24       | 0.72       | 3.36                     | 19895      | 7160           | 1237                        |
| 4          | 2 | 180           | 0.080      | 0.08       | 0.24       | 1.12                     | 51160      | 8185           | 157                         |
| 5          | 2 | 180           | 0.100      | 0.10       | 0.30       | 1.40                     | 40925      | 8185           | 246                         |
| 6          | 2 | 180           | 0.120      | 0.12       | 0.36       | 1.68                     | 34105      | 8185           | 354                         |
| 8          | 2 | 180           | 0.120      | 0.16       | 0.48       | 2.24                     | 25580      | 6140           | 472                         |
| 10         | 2 | 180           | 0.150      | 0.20       | 0.60       | 2.80                     | 20465      | 6140           | 737                         |
| 12         | 2 | 180           | 0.180      | 0.24       | 0.72       | 3.36                     | 17055      | 6140           | 1061                        |
| 4          | 2 | 260           | 0.080      | 0.08       | 0.24       | 1.12                     | 60000      | 9600           | 185                         |
| 5          | 2 | 260           | 0.100      | 0.10       | 0.30       | 1.40                     | 59115      | 11825          | 355                         |
| 6          | 2 | 260           | 0.120      | 0.12       | 0.36       | 1.68                     | 49265      | 11825          | 511                         |
| 8          | 2 | 260           | 0.120      | 0.16       | 0.48       | 2.24                     | 36950      | 8870           | 681                         |
| 10         | 2 | 260           | 0.150      | 0.20       | 0.60       | 2.80                     | 29560      | 8870           | 1065                        |
| 12         | 2 | 260           | 0.180      | 0.24       | 0.72       | 3.36                     | 24630      | 8865           | 1532                        |

5222



Применение

Сталь  
24 - 32 HRC



Сталь  
32 - 42 HRC



Сталь  
42 - 48 HRC



Чугун  
(серый /  
высокопрочный)



| d1<br>[mm] | z | Vc<br>[m/min] | fz<br>[mm] | ap<br>[mm] | ae<br>[mm] | d <sub>eff</sub><br>[mm] | n<br>[min] | Vf<br>[mm/min] | β  |
|------------|---|---------------|------------|------------|------------|--------------------------|------------|----------------|----|
| 4          | 2 | 460           | 0.060      | 0.05       | 0.06       | 3.38                     | 43365      | 5205           | 45 |
| 5          | 2 | 460           | 0.075      | 0.06       | 0.08       | 4.22                     | 34695      | 5205           | 45 |
| 6          | 2 | 460           | 0.090      | 0.07       | 0.09       | 5.06                     | 28910      | 5205           | 45 |
| 8          | 2 | 460           | 0.080      | 0.10       | 0.08       | 6.75                     | 21685      | 3470           | 45 |
| 10         | 2 | 460           | 0.100      | 0.12       | 0.10       | 8.44                     | 17345      | 3470           | 45 |
| 12         | 2 | 460           | 0.120      | 0.14       | 0.12       | 10.13                    | 14455      | 3470           | 45 |
| 4          | 2 | 420           | 0.060      | 0.05       | 0.06       | 3.38                     | 39595      | 4750           | 45 |
| 5          | 2 | 420           | 0.075      | 0.06       | 0.08       | 4.22                     | 31675      | 4750           | 45 |
| 6          | 2 | 420           | 0.090      | 0.07       | 0.09       | 5.06                     | 26395      | 4750           | 45 |
| 8          | 2 | 420           | 0.080      | 0.10       | 0.08       | 6.75                     | 19800      | 3170           | 45 |
| 10         | 2 | 420           | 0.100      | 0.12       | 0.10       | 8.44                     | 15840      | 3170           | 45 |
| 12         | 2 | 420           | 0.120      | 0.14       | 0.12       | 10.13                    | 13200      | 3170           | 45 |
| 4          | 2 | 390           | 0.060      | 0.05       | 0.06       | 3.38                     | 36770      | 4410           | 45 |
| 5          | 2 | 390           | 0.075      | 0.06       | 0.08       | 4.22                     | 29415      | 4410           | 45 |
| 6          | 2 | 390           | 0.090      | 0.07       | 0.09       | 5.06                     | 24510      | 4410           | 45 |
| 8          | 2 | 390           | 0.080      | 0.10       | 0.08       | 6.75                     | 18385      | 2940           | 45 |
| 10         | 2 | 390           | 0.100      | 0.12       | 0.10       | 8.44                     | 14705      | 2940           | 45 |
| 12         | 2 | 390           | 0.120      | 0.14       | 0.12       | 10.13                    | 12255      | 2940           | 45 |
| 4          | 2 | 470           | 0.060      | 0.05       | 0.06       | 3.38                     | 44310      | 5315           | 45 |
| 5          | 2 | 470           | 0.075      | 0.06       | 0.08       | 4.22                     | 35450      | 5320           | 45 |
| 6          | 2 | 470           | 0.090      | 0.07       | 0.09       | 5.06                     | 29540      | 5315           | 45 |
| 8          | 2 | 470           | 0.080      | 0.10       | 0.08       | 6.75                     | 22155      | 3545           | 45 |
| 10         | 2 | 470           | 0.100      | 0.12       | 0.10       | 8.44                     | 17725      | 3545           | 45 |
| 12         | 2 | 470           | 0.120      | 0.14       | 0.12       | 10.13                    | 14770      | 3545           | 45 |

# Фрезы сферические

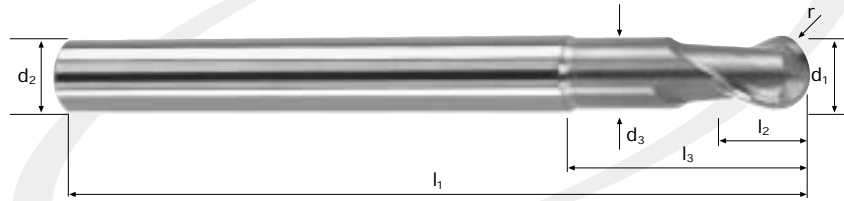
NX-S NX

HM  
MG10 NX

$\lambda$  30°  
 $\gamma$  5°



DIN  
6535  
HA

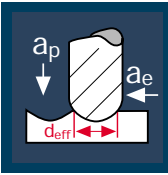


Предназначены для обработки:

- HRC < 48
- HRC < 40
- HRC < 58
- GG(G)  
Чугун

| Example:                  |     |              |        |         |         |       |      |          |   | UNICUT-4X    | POLYCHROM | DURO-S | SERVICE |
|---------------------------|-----|--------------|--------|---------|---------|-------|------|----------|---|--------------|-----------|--------|---------|
| Order-N°:                 |     |              |        |         |         |       |      |          |   | ReTool®      |           |        |         |
| Coating Article-N° ø-Code |     |              |        |         |         |       |      |          |   | with coating |           |        |         |
| ø Code                    | d1  | d2 h6        | d3     | l1      | l2      | l3    | r f8 | $\alpha$ | z |              |           |        |         |
| .220                      | 4   | 6            | 3,7    | 75      | 5       | 12    | 2,0  | 4°       | 2 | •            | •         | •      |         |
| .260                      | 5   | 6            | 4,6    | 80      | 6       | 15    | 2,5  | 2°       | 2 | •            | •         | •      |         |
| .300                      | 6   | 6            | 5,5    | 80      | 7       | 20    | 3,0  | 0°       | 2 | •            | •         | •      | •       |
| .391                      | 8   | 8            | 7,4    | 90      | 9       | 26    | 4,0  | 0°       | 2 | •            | •         | •      | •       |
| .450                      | 10  | 10           | 9,2    | 100     | 11      | 31    | 5,0  | 0°       | 2 | •            | •         | •      | •       |
| .501                      | 12  | 12           | 11,0   | 120     | 12      | 37    | 6,0  | 0°       | 2 | •            | •         | •      | •       |
| CNC Radius R              |     |              |        |         |         |       |      |          |   |              |           |        |         |
| d1                        | r   | Tolerance f8 |        | Radius  |         |       |      |          |   |              |           |        |         |
|                           |     |              |        | Minimum | Maximum |       |      |          |   |              |           |        |         |
| 4                         | 2.0 | -0.006       | -0.020 | 1.980   | 1.994   | 1.987 |      |          |   |              |           |        |         |
| 5                         | 2.5 |              |        | 2.480   | 2.494   | 2.487 |      |          |   |              |           |        |         |
| 6                         | 3.0 |              |        | 2.980   | 2.994   | 2.987 |      |          |   |              |           |        |         |
| 8                         | 4.0 | -0.010       | -0.028 | 3.972   | 3.990   | 3.981 |      |          |   |              |           |        |         |
| 10                        | 5.0 |              |        | 4.972   | 4.990   | 4.981 |      |          |   |              |           |        |         |
| 12                        | 6.0 |              |        | 5.972   | 5.990   | 5.981 |      |          |   |              |           |        |         |

5223



Применение

Сталь  
24 - 32 HRC



Сталь  
32 - 42 HRC



Сталь  
42 - 48 HRC



Чугун  
(серый /  
высокопрочный)



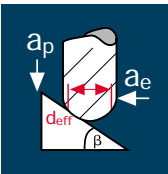
| d1 [mm] | z | Vc [m/min] | fz [mm] | ap [mm] | ae [mm] | d <sub>eff</sub> [mm] | n [min] | Vf [mm/ми] | Q [mm <sup>3</sup> /min] |
|---------|---|------------|---------|---------|---------|-----------------------|---------|------------|--------------------------|
| 3       | 2 | 240        | 0.060   | 0.06    | 0.18    | 0.84                  | 60000   | 7200       | 78                       |
| 4       | 2 | 240        | 0.080   | 0.08    | 0.24    | 1.12                  | 68210   | 10515      | 210                      |
| 5       | 2 | 240        | 0.100   | 0.10    | 0.30    | 1.40                  | 54570   | 10515      | 328                      |
| 6       | 2 | 240        | 0.090   | 0.12    | 0.36    | 1.68                  | 45475   | 8185       | 354                      |
| 8       | 2 | 240        | 0.120   | 0.16    | 0.48    | 2.24                  | 34105   | 8185       | 629                      |
| 10      | 2 | 240        | 0.150   | 0.20    | 0.60    | 2.80                  | 27285   | 8185       | 982                      |
| 12      | 2 | 240        | 0.180   | 0.24    | 0.72    | 3.36                  | 22735   | 8185       | 1415                     |

|    |   |     |       |      |      |      |       |      |      |
|----|---|-----|-------|------|------|------|-------|------|------|
| 3  | 2 | 210 | 0.060 | 0.06 | 0.18 | 0.84 | 60000 | 7200 | 78   |
| 4  | 2 | 210 | 0.080 | 0.08 | 0.24 | 1.12 | 59685 | 9550 | 184  |
| 5  | 2 | 210 | 0.100 | 0.10 | 0.30 | 1.40 | 47750 | 9550 | 287  |
| 6  | 2 | 210 | 0.090 | 0.12 | 0.36 | 1.68 | 39790 | 7160 | 310  |
| 8  | 2 | 210 | 0.120 | 0.16 | 0.48 | 2.24 | 29840 | 7160 | 550  |
| 10 | 2 | 210 | 0.150 | 0.20 | 0.60 | 2.80 | 23875 | 7160 | 860  |
| 12 | 2 | 210 | 0.180 | 0.24 | 0.72 | 3.36 | 19895 | 7160 | 1237 |

|    |   |     |       |      |      |      |       |      |      |
|----|---|-----|-------|------|------|------|-------|------|------|
| 3  | 2 | 180 | 0.060 | 0.06 | 0.18 | 0.84 | 60000 | 7200 | 78   |
| 4  | 2 | 180 | 0.080 | 0.08 | 0.24 | 1.12 | 51160 | 8185 | 157  |
| 5  | 2 | 180 | 0.100 | 0.10 | 0.30 | 1.40 | 40925 | 8185 | 246  |
| 6  | 2 | 180 | 0.090 | 0.12 | 0.36 | 1.68 | 34105 | 6140 | 265  |
| 8  | 2 | 180 | 0.120 | 0.16 | 0.48 | 2.24 | 25580 | 6140 | 472  |
| 10 | 2 | 180 | 0.150 | 0.20 | 0.60 | 2.80 | 20465 | 6140 | 737  |
| 12 | 2 | 180 | 0.180 | 0.24 | 0.72 | 3.36 | 17055 | 6140 | 1061 |

|    |   |     |       |      |      |      |       |       |      |
|----|---|-----|-------|------|------|------|-------|-------|------|
| 3  | 2 | 260 | 0.060 | 0.06 | 0.18 | 0.84 | 60000 | 7200  | 78   |
| 4  | 2 | 260 | 0.080 | 0.08 | 0.24 | 1.12 | 73895 | 11825 | 227  |
| 5  | 2 | 260 | 0.100 | 0.10 | 0.30 | 1.40 | 59115 | 11825 | 355  |
| 6  | 2 | 260 | 0.090 | 0.12 | 0.36 | 1.68 | 49265 | 8870  | 383  |
| 8  | 2 | 260 | 0.120 | 0.16 | 0.48 | 2.24 | 36950 | 8870  | 681  |
| 10 | 2 | 260 | 0.150 | 0.20 | 0.60 | 2.80 | 29560 | 8870  | 1065 |
| 12 | 2 | 260 | 0.180 | 0.24 | 0.72 | 3.36 | 24630 | 8865  | 1532 |

5223



Применение

Сталь  
24 - 32 HRC



Сталь  
32 - 42 HRC



Сталь  
42 - 48 HRC



Чугун  
(серый /  
высокопрочный)



| d1 [mm] | z | Vc [m/min] | fz [mm] | ap [mm] | ae [mm] | d <sub>eff</sub> [mm] | n [min] | Vf [mm/ми] | β  |
|---------|---|------------|---------|---------|---------|-----------------------|---------|------------|----|
| 3       | 2 | 460        | 0.045   | 0.04    | 0.05    | 2.53                  | 57825   | 5205       | 45 |
| 4       | 2 | 460        | 0.060   | 0.05    | 0.06    | 3.38                  | 43365   | 5205       | 45 |
| 5       | 2 | 460        | 0.075   | 0.06    | 0.08    | 4.22                  | 34695   | 5205       | 45 |
| 6       | 2 | 460        | 0.060   | 0.07    | 0.06    | 5.06                  | 28910   | 3270       | 45 |
| 8       | 2 | 460        | 0.080   | 0.10    | 0.08    | 6.75                  | 21685   | 3470       | 45 |
| 10      | 2 | 460        | 0.100   | 0.12    | 0.10    | 8.44                  | 17345   | 3470       | 45 |
| 12      | 2 | 460        | 0.120   | 0.14    | 0.12    | 10.13                 | 14455   | 3470       | 45 |

|    |   |     |       |      |      |       |       |      |    |
|----|---|-----|-------|------|------|-------|-------|------|----|
| 3  | 2 | 420 | 0.045 | 0.04 | 0.05 | 2.53  | 52795 | 4750 | 45 |
| 4  | 2 | 420 | 0.060 | 0.05 | 0.06 | 3.38  | 39595 | 4750 | 45 |
| 5  | 2 | 420 | 0.075 | 0.06 | 0.08 | 4.22  | 31675 | 4750 | 45 |
| 6  | 2 | 420 | 0.060 | 0.07 | 0.06 | 5.06  | 26395 | 3265 | 45 |
| 8  | 2 | 420 | 0.080 | 0.10 | 0.08 | 6.75  | 19800 | 3170 | 45 |
| 10 | 2 | 420 | 0.100 | 0.12 | 0.10 | 8.44  | 15840 | 3170 | 45 |
| 12 | 2 | 420 | 0.120 | 0.14 | 0.12 | 10.13 | 13200 | 3170 | 45 |

|    |   |     |       |      |      |       |       |      |    |
|----|---|-----|-------|------|------|-------|-------|------|----|
| 3  | 2 | 390 | 0.045 | 0.04 | 0.05 | 2.53  | 49025 | 4410 | 45 |
| 4  | 2 | 390 | 0.060 | 0.05 | 0.06 | 3.38  | 36770 | 4410 | 45 |
| 5  | 2 | 390 | 0.075 | 0.06 | 0.08 | 4.22  | 29415 | 4410 | 45 |
| 6  | 2 | 390 | 0.060 | 0.07 | 0.06 | 5.06  | 24510 | 2940 | 45 |
| 8  | 2 | 390 | 0.080 | 0.10 | 0.08 | 6.75  | 18385 | 2940 | 45 |
| 10 | 2 | 390 | 0.100 | 0.12 | 0.10 | 8.44  | 14705 | 2940 | 45 |
| 12 | 2 | 390 | 0.120 | 0.14 | 0.12 | 10.13 | 12255 | 2940 | 45 |

|    |   |     |       |      |      |       |       |      |    |
|----|---|-----|-------|------|------|-------|-------|------|----|
| 3  | 2 | 470 | 0.045 | 0.04 | 0.05 | 2.53  | 59080 | 5315 | 45 |
| 4  | 2 | 470 | 0.060 | 0.05 | 0.06 | 3.38  | 44310 | 5315 | 45 |
| 5  | 2 | 470 | 0.075 | 0.06 | 0.08 | 4.22  | 35450 | 5320 | 45 |
| 6  | 2 | 470 | 0.060 | 0.07 | 0.06 | 5.06  | 29540 | 3545 | 45 |
| 8  | 2 | 470 | 0.080 | 0.10 | 0.08 | 6.75  | 22155 | 3545 | 45 |
| 10 | 2 | 470 | 0.100 | 0.12 | 0.10 | 8.44  | 17725 | 3545 | 45 |
| 12 | 2 | 470 | 0.120 | 0.14 | 0.12 | 10.13 | 14770 | 3545 | 45 |

# Фрезы сферические

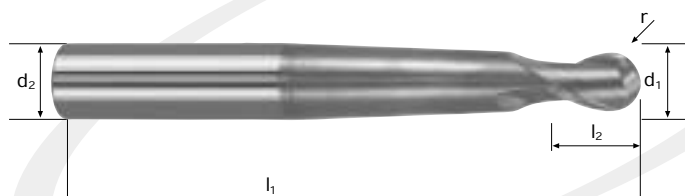
NX-S NX

HM  
MG10 NX

$\lambda$  30°  
 $\gamma$  5°



DIN  
6535  
HA



Предназначены для обработки:

HRC < 40    HRC < 48    HRC < 58    GG(G) Чугун

|              |            |              |        |         |         |         |    | UNICUT-4X    | POLYCHROM | DURO-S | SERVICE |
|--------------|------------|--------------|--------|---------|---------|---------|----|--------------|-----------|--------|---------|
| Example:     |            |              |        |         |         |         |    | ReTool®      |           |        |         |
| Order-N°:    |            |              |        |         |         |         |    | with coating |           |        |         |
| Coating      | Article-N° | ø-Code       |        |         |         |         |    | UNICUT-4X    | POLYCHROM | DURO-S | SERVICE |
| U            | 5223180    | 5            | 8      | 75      | 8       | 2,5     | 2° | 2            |           |        |         |
| ø Code       | d1         | d2 h6        | l1     | l2      | r f8    | α       | Z  |              |           |        |         |
| .180         | 3          | 6            | 65     | 6       | 1,5     | 3°      | 2  | •            | •         | •      |         |
| .220         | 4          | 6            | 70     | 7       | 2,0     | 2°      | 2  | •            | •         | •      |         |
| .260         | 5          | 8            | 75     | 8       | 2,5     | 2°      | 2  | •            | •         | •      |         |
| .300         | 6          | 8            | 80     | 9       | 3,0     | 2°      | 2  | •            | •         | •      | •       |
| .391         | 8          | 10           | 90     | 12      | 4,0     | 2°      | 2  | •            | •         | •      | •       |
| .450         | 10         | 12           | 100    | 14      | 5,0     | 1°      | 2  | •            | •         | •      | •       |
| .501         | 12         | 16           | 120    | 16      | 6,0     | 2°      | 2  | •            | •         | •      | •       |
| CNC Radius R |            |              |        |         |         |         |    |              |           |        |         |
| d1           | r          | Tolerance f8 |        | Radius  |         |         |    |              |           |        |         |
|              |            |              |        | Minimum | Maximum | Maximum |    |              |           |        |         |
| 3            | 1.5        | -0.006       | -0.020 | 1.480   | 1.494   | 1.487   |    |              |           |        |         |
| 4            | 2.0        |              |        | 1.980   | 1.994   | 1.987   |    |              |           |        |         |
| 5            | 2.5        |              |        | 2.480   | 2.494   | 2.487   |    |              |           |        |         |
| 6            | 3.0        |              |        | 2.980   | 2.994   | 2.987   |    |              |           |        |         |
| 8            | 4.0        | -0.010       | -0.028 | 3.972   | 3.990   | 3.981   |    |              |           |        |         |
| 10           | 5.0        |              |        | 4.972   | 4.990   | 4.981   |    |              |           |        |         |
| 12           | 6.0        |              |        | 5.972   | 5.990   | 5.981   |    |              |           |        |         |



# Закаленная сталь 70 HRC

HX

Высокопроизводительные концевые фрезы с гладкой режущей кромкой, цилиндрические

№ 5244 / 5344 **NEW!**



|    |  |  |  |  |    |
|----|--|--|--|--|----|
| HX | $\lambda 55^\circ$<br>$\gamma -10^\circ$ |  |  |  | 51 |
|----|--|--|--|--|----|

№ 5248 / 5348



|    |  |  |  |  |    |
|----|--|--|--|--|----|
| HX | $\lambda 55^\circ$<br>$\gamma -10^\circ$ |  |  |  | 53 |
|----|--|--|--|--|----|

№ 5249 / 5349



|    |  |  |  |  |    |
|----|--|--|--|--|----|
| HX | $\lambda 55^\circ$<br>$\gamma -10^\circ$ |  |  |  | 55 |
|----|--|--|--|--|----|

№ 5251 / 5351



|    |  |  |  |  |    |
|----|--|--|--|--|----|
| HX | $\lambda 55^\circ$<br>$\gamma -10^\circ$ |  |  |  | 57 |
|----|--|--|--|--|----|

№ 5258 / 5358



|    |  |  |  |  |    |
|----|--|--|--|--|----|
| HX | $\lambda 55^\circ$<br>$\gamma -10^\circ$ |  |  |  | 59 |
|----|--|--|--|--|----|

№ 5266 / 5366



|    |  |  |  |  |    |
|----|--|--|--|--|----|
| HX | $\lambda 55^\circ$<br>$\gamma -10^\circ$ |  |  |  | 61 |
|----|--|--|--|--|----|

№ 5263 / 5363



|    |  |  |  |  |    |
|----|--|--|--|--|----|
| HX | $\lambda 55^\circ$<br>$\gamma -10^\circ$ |  |  |  | 63 |
|----|--|--|--|--|----|

HX





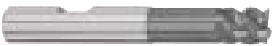



















































# Закаленная сталь 70 HRC

HX

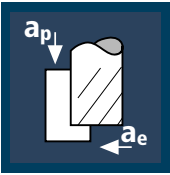
## Высокопроизводительные концевые фрезы с гладкой режущей кромкой, торические

|  |   |    |  |  |   |   |    |
|--|---|----|--|--|---|---|----|
| N° 5269 <span style="color: red;">NEW!</span>        |                  | HX | $\lambda 0^\circ$<br>$\gamma 0^\circ$    |    |    |    | 65 |
| N° 5261 / 5361                                       |                  | HX | $\lambda 55^\circ$<br>$\gamma -10^\circ$ |    |    |    | 67 |
| N° 5253 / 5353                                       |                  | HX | $\lambda 55^\circ$<br>$\gamma -10^\circ$ |    |    |    | 69 |
| N° 5254 / 5354                                       |                  | HX | $\lambda 55^\circ$<br>$\gamma -10^\circ$ |    |    |    | 71 |
| N° 5256 / 5356                                       |                  | HX | $\lambda 55^\circ$<br>$\gamma -10^\circ$ |    |    |    | 73 |
| N° 5267 / 5367 <span style="color: red;">NEW!</span> |                  | HX | $\lambda 55^\circ$<br>$\gamma -10^\circ$ |    |    |    | 75 |
| N° 5257 / 5357                                       |                 | HX | $\lambda 55^\circ$<br>$\gamma -10^\circ$ |   |   |   | 77 |
| N° 5259 / 5359                                       |  R 0,2 / R 0,5 | HX | $\lambda 55^\circ$<br>$\gamma -10^\circ$ |  |  |  | 79 |
| N° 5264 / 5364                                       |  R 0,2 / R 0,5 | HX | $\lambda 55^\circ$<br>$\gamma -10^\circ$ |  |  |  | 81 |

## Высокопроизводительные концевые фрезы с гладкой режущей кромкой, сферические

|         |   |    |  |  |   |   |    |
|---------|---|----|--|--|---|---|----|
| N° 5100 |  | HX | $\lambda 30^\circ$<br>$\gamma -10^\circ$ |  |  |  | 83 |
| N° 5110 |  | HX | $\lambda 30^\circ$<br>$\gamma -10^\circ$ |  |  |  | 85 |
| N° 5120 |  | HX | $\lambda 30^\circ$<br>$\gamma -10^\circ$ |  |  |  | 87 |
| N° 5140 |  | HX | $\lambda 30^\circ$<br>$\gamma -10^\circ$ |  |  |  | 89 |

5344



Применение

Закаленная инструментальная сталь 48 - 52 HRC



Закаленная инструментальная сталь 52 - 56 HRC



Закаленная инструментальная сталь 56 - 60 HRC



Закаленная инструментальная сталь 60 - 70 HRC



| d1 [mm] | z | v <sub>c</sub> [m/min] | f <sub>z</sub> [mm] | a <sub>p</sub> [mm] | a <sub>e</sub> [mm] | n [min] | v <sub>f</sub> [mm/min] | Q [cm <sup>3</sup> /min] |
|---------|---|------------------------|---------------------|---------------------|---------------------|---------|-------------------------|--------------------------|
| 3       | 4 | 80                     | 0.015               | 3.0                 | 1.2                 | 8490    | 510                     | 2.0                      |
| 4       | 4 | 80                     | 0.020               | 4.0                 | 1.6                 | 6365    | 510                     | 3.5                      |
| 5       | 4 | 80                     | 0.030               | 5.0                 | 2.0                 | 5095    | 610                     | 6.0                      |
| 6       | 4 | 80                     | 0.035               | 6.0                 | 2.4                 | 4245    | 595                     | 8.5                      |
| 8       | 4 | 80                     | 0.045               | 8.0                 | 2.0                 | 3185    | 575                     | 9.0                      |
| 10      | 4 | 80                     | 0.055               | 10.0                | 2.5                 | 2545    | 560                     | 14.0                     |
| 12      | 4 | 80                     | 0.065               | 12.0                | 3.0                 | 2120    | 550                     | 20.0                     |
| 16      | 4 | 80                     | 0.090               | 16.0                | 4.0                 | 1590    | 570                     | 36.5                     |
| 20      | 4 | 80                     | 0.110               | 20.0                | 5.0                 | 1275    | 560                     | 56.0                     |
| 3       | 4 | 50                     | 0.015               | 3.0                 | 1.2                 | 5305    | 320                     | 1.0                      |
| 4       | 4 | 50                     | 0.020               | 4.0                 | 1.6                 | 3980    | 320                     | 2.0                      |
| 5       | 4 | 50                     | 0.030               | 5.0                 | 2.0                 | 3185    | 380                     | 4.0                      |
| 6       | 4 | 50                     | 0.035               | 6.0                 | 2.4                 | 2655    | 370                     | 5.5                      |
| 8       | 4 | 50                     | 0.045               | 8.0                 | 2.0                 | 1990    | 360                     | 6.0                      |
| 10      | 4 | 50                     | 0.055               | 10.0                | 2.5                 | 1590    | 350                     | 9.0                      |
| 12      | 4 | 50                     | 0.065               | 12.0                | 3.0                 | 1325    | 345                     | 12.5                     |
| 16      | 4 | 50                     | 0.090               | 16.0                | 4.0                 | 995     | 360                     | 23.0                     |
| 20      | 4 | 50                     | 0.110               | 20.0                | 5.0                 | 795     | 350                     | 35.0                     |
| 3       | 4 | 35                     | 0.010               | 3.0                 | 1.2                 | 3715    | 150                     | 0.5                      |
| 4       | 4 | 35                     | 0.015               | 4.0                 | 1.6                 | 2785    | 165                     | 1.0                      |
| 5       | 4 | 35                     | 0.025               | 5.0                 | 2.0                 | 2230    | 225                     | 2.5                      |
| 6       | 4 | 35                     | 0.030               | 6.0                 | 2.4                 | 1855    | 225                     | 3.0                      |
| 8       | 4 | 35                     | 0.040               | 8.0                 | 2.0                 | 1395    | 225                     | 3.5                      |
| 10      | 4 | 35                     | 0.050               | 10.0                | 2.5                 | 1115    | 225                     | 5.5                      |
| 12      | 4 | 35                     | 0.060               | 12.0                | 3.0                 | 930     | 225                     | 8.0                      |
| 16      | 4 | 35                     | 0.075               | 16.0                | 4.0                 | 695     | 210                     | 13.5                     |
| 20      | 4 | 35                     | 0.090               | 20.0                | 5.0                 | 555     | 200                     | 20.0                     |
| 3       | 4 | 25                     | 0.010               | 3.0                 | 1.2                 | 2655    | 106                     | 0.5                      |
| 4       | 4 | 25                     | 0.010               | 4.0                 | 1.6                 | 1990    | 80                      | 0.5                      |
| 5       | 4 | 25                     | 0.015               | 5.0                 | 2.0                 | 1590    | 95                      | 1.0                      |
| 6       | 4 | 25                     | 0.015               | 6.0                 | 2.4                 | 1325    | 80                      | 1.0                      |
| 8       | 4 | 25                     | 0.025               | 8.0                 | 2.0                 | 995     | 100                     | 1.5                      |
| 10      | 4 | 25                     | 0.030               | 10.0                | 2.5                 | 795     | 95                      | 2.5                      |
| 12      | 4 | 25                     | 0.035               | 12.0                | 3.0                 | 665     | 93                      | 3.5                      |
| 16      | 4 | 25                     | 0.045               | 16.0                | 4.0                 | 495     | 89                      | 5.5                      |
| 20      | 4 | 25                     | 0.055               | 20.0                | 5.0                 | 400     | 88                      | 9.0                      |

5344



Применение

Закаленная инструментальная сталь 48 - 52 HRC



Закаленная инструментальная сталь 52 - 56 HRC



Закаленная инструментальная сталь 56 - 60 HRC



Закаленная инструментальная сталь 60 - 70 HRC



| d1 [mm] | z | v <sub>c</sub> [m/min] | f <sub>z</sub> [mm] | a <sub>p</sub> [mm] | a <sub>e</sub> [mm] | n [min] | v <sub>f</sub> [mm/min] | Q [cm <sup>3</sup> /min] |
|---------|---|------------------------|---------------------|---------------------|---------------------|---------|-------------------------|--------------------------|
| 3       | 4 | 70                     | 0.015               | 1.5                 | 3.0                 | 7425    | 445                     | 2.0                      |
| 4       | 4 | 70                     | 0.020               | 2.0                 | 4.0                 | 5570    | 445                     | 3.5                      |
| 5       | 4 | 70                     | 0.030               | 2.5                 | 5.0                 | 4455    | 535                     | 6.5                      |
| 6       | 4 | 70                     | 0.035               | 3.0                 | 6.0                 | 3715    | 520                     | 9.5                      |
| 8       | 4 | 70                     | 0.045               | 4.0                 | 8.0                 | 2785    | 500                     | 16.0                     |
| 10      | 4 | 70                     | 0.055               | 5.0                 | 10.0                | 2230    | 490                     | 24.5                     |
| 12      | 4 | 70                     | 0.065               | 6.0                 | 12.0                | 1855    | 480                     | 34.5                     |
| 16      | 4 | 70                     | 0.090               | 4.0                 | 16.0                | 1395    | 500                     | 32.0                     |
| 20      | 4 | 70                     | 0.110               | 5.0                 | 20.0                | 1115    | 490                     | 49.0                     |
| 3       | 4 | 50                     | 0.015               | 1.5                 | 3.0                 | 5305    | 320                     | 1.5                      |
| 4       | 4 | 50                     | 0.020               | 2.0                 | 4.0                 | 3980    | 320                     | 2.5                      |
| 5       | 4 | 50                     | 0.030               | 2.5                 | 5.0                 | 3185    | 380                     | 5.0                      |
| 6       | 4 | 50                     | 0.035               | 3.0                 | 6.0                 | 2655    | 370                     | 6.5                      |
| 8       | 4 | 50                     | 0.045               | 4.0                 | 8.0                 | 1990    | 360                     | 11.5                     |
| 10      | 4 | 50                     | 0.055               | 5.0                 | 10.0                | 1590    | 350                     | 17.5                     |
| 12      | 4 | 50                     | 0.065               | 6.0                 | 12.0                | 1325    | 345                     | 25.0                     |
| 16      | 4 | 50                     | 0.090               | 4.0                 | 16.0                | 995     | 360                     | 23.0                     |
| 20      | 4 | 50                     | 0.110               | 5.0                 | 20.0                | 795     | 350                     | 35.0                     |
| 3       | 4 | 30                     | 0.008               | 1.5                 | 3.0                 | 3185    | 100                     | 0.5                      |
| 4       | 4 | 30                     | 0.015               | 2.0                 | 4.0                 | 2385    | 145                     | 1.0                      |
| 5       | 4 | 30                     | 0.025               | 2.5                 | 5.0                 | 1910    | 190                     | 2.5                      |
| 6       | 4 | 30                     | 0.030               | 3.0                 | 6.0                 | 1590    | 190                     | 3.5                      |
| 8       | 4 | 30                     | 0.040               | 4.0                 | 8.0                 | 1195    | 190                     | 6.0                      |
| 10      | 4 | 30                     | 0.050               | 5.0                 | 10.0                | 955     | 190                     | 9.5                      |
| 12      | 4 | 30                     | 0.060               | 6.0                 | 12.0                | 795     | 190                     | 13.5                     |
| 16      | 4 | 30                     | 0.075               | 4.0                 | 16.0                | 595     | 180                     | 11.5                     |
| 20      | 4 | 30                     | 0.090               | 5.0                 | 20.0                | 475     | 170                     | 17.0                     |
| 3       | 4 | 20                     | 0.008               | 1.5                 | 3.0                 | 2120    | 68                      | 0.5                      |
| 4       | 4 | 20                     | 0.010               | 2.0                 | 4.0                 | 1590    | 64                      | 0.5                      |
| 5       | 4 | 20                     | 0.015               | 2.5                 | 5.0                 | 1275    | 77                      | 1.0                      |
| 6       | 4 | 20                     | 0.015               | 3.0                 | 6.0                 | 1060    | 64                      | 1.0                      |
| 8       | 4 | 20                     | 0.020               | 4.0                 | 8.0                 | 795     | 64                      | 2.0                      |
| 10      | 4 | 20                     | 0.025               | 5.0                 | 10.0                | 635     | 64                      | 3.0                      |
| 12      | 4 | 20                     | 0.030               | 6.0                 | 12.0                | 530     | 64                      | 4.5                      |
| 16      | 4 | 20                     | 0.040               | 4.0                 | 16.0                | 400     | 64                      | 4.0                      |
| 20      | 4 | 20                     | 0.055               | 5.0                 | 20.0                | 320     | 70                      | 7.0                      |

# Фрезы черновые

HX-H

NEW!

HX

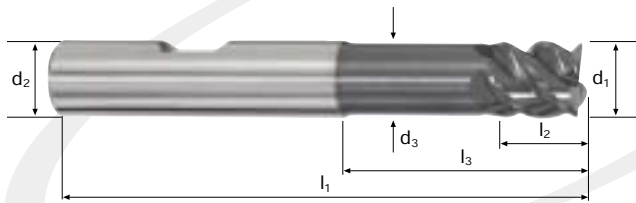
HM  
MG/H HX

$\lambda$  55°  
 $\gamma$  -10°



DIN 6535 HA  
DIN 6535 HB

0,05-0,20  
45°



Предназначены для обработки:

HRC  
< 58

HRC  
< 70

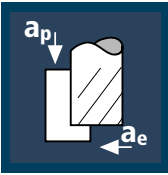
HRC  
25 - 48

GG(G)  
Чугун

Титан

| Example:<br>Order-Nº. | Coating | Article-Nº. | ø-Code | DURO-S |         | SERVICE |              |   |   |   |
|-----------------------|---------|-------------|--------|--------|---------|---------|--------------|---|---|---|
|                       |         |             |        | D5344  | ReTool® | D5244   | with coating |   |   |   |
| ø                     | d1      | d2          | d3     | l1     | l2      | l3      | α            | z |   |   |
| Code                  | e8      | h6          |        |        |         |         |              |   |   |   |
| .180                  | 3       | 6           | 2,8    | 57     | 4       | 14      | 4°           | 4 | • |   |
| .220                  | 4       | 6           | 3,7    | 57     | 5       | 16      | 3°           | 4 | • |   |
| .260                  | 5       | 6           | 4,6    | 57     | 6       | 18      | 2°           | 4 | • |   |
| .300                  | 6       | 6           | 5,5    | 57     | 7       | 20      | 0°           | 4 | • |   |
| .391                  | 8       | 8           | 7,4    | 63     | 9       | 26      | 0°           | 4 | • | • |
| .450                  | 10      | 10          | 9,2    | 72     | 11      | 31      | 0°           | 4 | • | • |
| .501                  | 12      | 12          | 11,0   | 83     | 13      | 37      | 0°           | 4 | • | • |
| .610                  | 16      | 16          | 15,0   | 92     | 17      | 43      | 0°           | 4 | • | • |
| .682                  | 20      | 20          | 19,0   | 104    | 21      | 53      | 0°           | 4 | • | • |
|                       |         |             |        |        |         |         |              |   |   |   |
|                       |         |             |        |        |         |         |              |   |   |   |
|                       |         |             |        |        |         |         |              |   |   |   |
|                       |         |             |        |        |         |         |              |   |   |   |
|                       |         |             |        |        |         |         |              |   |   |   |
|                       |         |             |        |        |         |         |              |   |   |   |
|                       |         |             |        |        |         |         |              |   |   |   |
|                       |         |             |        |        |         |         |              |   |   |   |
|                       |         |             |        |        |         |         |              |   |   |   |
|                       |         |             |        |        |         |         |              |   |   |   |
|                       |         |             |        |        |         |         |              |   |   |   |
|                       |         |             |        |        |         |         |              |   |   |   |
|                       |         |             |        |        |         |         |              |   |   |   |
|                       |         |             |        |        |         |         |              |   |   |   |
|                       |         |             |        |        |         |         |              |   |   |   |
|                       |         |             |        |        |         |         |              |   |   |   |
|                       |         |             |        |        |         |         |              |   |   |   |
|                       |         |             |        |        |         |         |              |   |   |   |
|                       |         |             |        |        |         |         |              |   |   |   |

5348



Применение

Закаленная инструментальная сталь 24 - 32 HRC



Закаленная инструментальная сталь 40 - 48 HRC



Закаленная инструментальная сталь 50 - 54 HRC

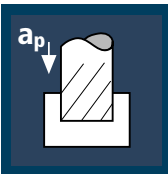


Закаленная инструментальная сталь > 60 HRC



| d1 [mm] | z | v <sub>c</sub> [m/min] | f <sub>z</sub> [mm] | a <sub>p</sub> [mm] | a <sub>e</sub> [mm] | n [min] | v <sub>f</sub> [mm/min] | Q [cm <sup>3</sup> /min] |
|---------|---|------------------------|---------------------|---------------------|---------------------|---------|-------------------------|--------------------------|
| 3       | 4 | 180                    | 0.025               | 3                   | 1.5                 | 19100   | 1910                    | 8.5                      |
| 4       | 4 | 180                    | 0.035               | 4                   | 2                   | 14325   | 2005                    | 16.0                     |
| 5       | 4 | 180                    | 0.045               | 5                   | 2.5                 | 11460   | 2065                    | 26.0                     |
| 6       | 4 | 180                    | 0.055               | 6                   | 3                   | 9550    | 2100                    | 38.0                     |
| 8       | 4 | 180                    | 0.075               | 8                   | 2                   | 7160    | 2150                    | 34.5                     |
| 10      | 4 | 180                    | 0.090               | 10                  | 2.5                 | 5730    | 2065                    | 51.5                     |
| 12      | 4 | 180                    | 0.110               | 12                  | 3                   | 4775    | 2100                    | 75.5                     |
| 16      | 4 | 180                    | 0.145               | 16                  | 4                   | 3580    | 2075                    | 133.0                    |
| 20      | 4 | 180                    | 0.180               | 20                  | 5                   | 2865    | 2065                    | 206.5                    |
| 3       | 4 | 120                    | 0.025               | 3                   | 1.5                 | 12735   | 1275                    | 5.5                      |
| 4       | 4 | 120                    | 0.035               | 4                   | 2                   | 9550    | 1335                    | 10.5                     |
| 5       | 4 | 120                    | 0.045               | 5                   | 2.5                 | 7640    | 1375                    | 17.0                     |
| 6       | 4 | 120                    | 0.055               | 6                   | 3                   | 6365    | 1400                    | 25.0                     |
| 8       | 4 | 120                    | 0.075               | 8                   | 2                   | 4775    | 1435                    | 23.0                     |
| 10      | 4 | 120                    | 0.090               | 10                  | 2.5                 | 3820    | 1375                    | 34.5                     |
| 12      | 4 | 120                    | 0.110               | 12                  | 3                   | 3185    | 1400                    | 50.5                     |
| 16      | 4 | 120                    | 0.145               | 16                  | 4                   | 2385    | 1385                    | 88.5                     |
| 20      | 4 | 120                    | 0.180               | 20                  | 5                   | 1910    | 1375                    | 137.5                    |
| 3       | 4 | 60                     | 0.010               | 3                   | 1.5                 | 6365    | 255                     | 1.0                      |
| 4       | 4 | 60                     | 0.015               | 4                   | 2                   | 4775    | 285                     | 2.5                      |
| 5       | 4 | 60                     | 0.025               | 5                   | 2.5                 | 3820    | 380                     | 5.0                      |
| 6       | 4 | 60                     | 0.030               | 6                   | 3                   | 3185    | 380                     | 7.0                      |
| 8       | 4 | 60                     | 0.040               | 8                   | 2                   | 2385    | 380                     | 6.0                      |
| 10      | 4 | 60                     | 0.050               | 10                  | 2.5                 | 1910    | 380                     | 9.5                      |
| 12      | 4 | 60                     | 0.060               | 12                  | 3                   | 1590    | 380                     | 13.5                     |
| 16      | 4 | 60                     | 0.075               | 16                  | 4                   | 1195    | 360                     | 23.0                     |
| 20      | 4 | 60                     | 0.090               | 20                  | 5                   | 955     | 345                     | 34.5                     |
| 3       | 4 | 20                     | 0.010               | 3                   | 1.5                 | 2120    | 85                      | 0.5                      |
| 4       | 4 | 20                     | 0.010               | 4                   | 2                   | 1590    | 64                      | 0.5                      |
| 5       | 4 | 20                     | 0.015               | 5                   | 2.5                 | 1275    | 77                      | 1.0                      |
| 6       | 4 | 20                     | 0.015               | 6                   | 3                   | 1060    | 64                      | 1.0                      |
| 8       | 4 | 20                     | 0.025               | 8                   | 2                   | 795     | 80                      | 1.5                      |
| 10      | 4 | 20                     | 0.030               | 10                  | 2.5                 | 635     | 76                      | 2.0                      |
| 12      | 4 | 20                     | 0.035               | 12                  | 3                   | 530     | 74                      | 2.5                      |
| 16      | 4 | 20                     | 0.045               | 16                  | 4                   | 400     | 72                      | 4.5                      |
| 20      | 4 | 20                     | 0.055               | 20                  | 5                   | 320     | 70                      | 7.0                      |

5348



Применение

Закаленная инструментальная сталь 24 - 32 HRC



Закаленная инструментальная сталь 40 - 48 HRC



Закаленная инструментальная сталь 50 - 54 HRC



Закаленная инструментальная сталь > 60 HRC



| d1 [mm] | z | v <sub>c</sub> [m/min] | f <sub>z</sub> [mm] | a <sub>p</sub> [mm] | a <sub>e</sub> [mm] | n [min] | v <sub>f</sub> [mm/min] | Q [cm <sup>3</sup> /min] |
|---------|---|------------------------|---------------------|---------------------|---------------------|---------|-------------------------|--------------------------|
| 3       | 4 | 150                    | 0.025               | 1.5                 | 3                   | 15915   | 1590                    | 7.0                      |
| 4       | 4 | 150                    | 0.035               | 2                   | 4                   | 11935   | 1670                    | 13.5                     |
| 5       | 4 | 150                    | 0.045               | 2.5                 | 5                   | 9550    | 1720                    | 21.5                     |
| 6       | 4 | 150                    | 0.055               | 3                   | 6                   | 7960    | 1750                    | 31.5                     |
| 8       | 4 | 150                    | 0.075               | 4                   | 8                   | 5970    | 1790                    | 57.5                     |
| 10      | 4 | 150                    | 0.090               | 5                   | 10                  | 4775    | 1720                    | 86.0                     |
| 12      | 4 | 150                    | 0.110               | 6                   | 12                  | 3980    | 1750                    | 126.0                    |
| 16      | 4 | 150                    | 0.145               | 4                   | 16                  | 2985    | 1730                    | 110.5                    |
| 20      | 4 | 150                    | 0.180               | 5                   | 20                  | 2385    | 1715                    | 171.5                    |
| 3       | 4 | 100                    | 0.025               | 1.5                 | 3                   | 10610   | 1060                    | 5.0                      |
| 4       | 4 | 100                    | 0.035               | 2                   | 4                   | 7960    | 1115                    | 9.0                      |
| 5       | 4 | 100                    | 0.045               | 2.5                 | 5                   | 6365    | 1145                    | 14.5                     |
| 6       | 4 | 100                    | 0.055               | 3                   | 6                   | 5305    | 1165                    | 21.0                     |
| 8       | 4 | 100                    | 0.075               | 4                   | 8                   | 3980    | 1195                    | 38.0                     |
| 10      | 4 | 100                    | 0.090               | 5                   | 10                  | 3185    | 1145                    | 57.5                     |
| 12      | 4 | 100                    | 0.110               | 6                   | 12                  | 2655    | 1170                    | 84.0                     |
| 16      | 4 | 100                    | 0.145               | 4                   | 16                  | 1990    | 1155                    | 74.0                     |
| 20      | 4 | 100                    | 0.180               | 5                   | 20                  | 1590    | 1145                    | 114.5                    |
| 3       | 4 | 50                     | 0.008               | 1.5                 | 3                   | 5305    | 170                     | 1.0                      |
| 4       | 4 | 50                     | 0.015               | 2                   | 4                   | 3980    | 240                     | 2.0                      |
| 5       | 4 | 50                     | 0.025               | 2.5                 | 5                   | 3185    | 320                     | 4.0                      |
| 6       | 4 | 50                     | 0.030               | 3                   | 6                   | 2655    | 320                     | 6.0                      |
| 8       | 4 | 50                     | 0.040               | 4                   | 8                   | 1990    | 320                     | 10.0                     |
| 10      | 4 | 50                     | 0.050               | 5                   | 10                  | 1590    | 320                     | 16.0                     |
| 12      | 4 | 50                     | 0.060               | 6                   | 12                  | 1325    | 320                     | 23.0                     |
| 16      | 4 | 50                     | 0.075               | 4                   | 16                  | 995     | 300                     | 19.0                     |
| 20      | 4 | 50                     | 0.090               | 5                   | 20                  | 795     | 285                     | 28.5                     |
| 3       | 4 | 15                     | 0.008               | 1.5                 | 3                   | 1590    | 51                      | 0.3                      |
| 4       | 4 | 15                     | 0.010               | 2                   | 4                   | 1195    | 48                      | 0.5                      |
| 5       | 4 | 15                     | 0.015               | 2.5                 | 5                   | 955     | 57                      | 0.5                      |
| 6       | 4 | 15                     | 0.015               | 3                   | 6                   | 795     | 48                      | 1.0                      |
| 8       | 4 | 15                     | 0.020               | 4                   | 8                   | 595     | 48                      | 1.5                      |
| 10      | 4 | 15                     | 0.025               | 5                   | 10                  | 475     | 48                      | 2.5                      |
| 12      | 4 | 15                     | 0.030               | 6                   | 12                  | 400     | 48                      | 3.5                      |
| 16      | 4 | 15                     | 0.040               | 4                   | 16                  | 300     | 48                      | 3.0                      |
| 20      | 4 | 15                     | 0.055               | 5                   | 20                  | 240     | 53                      | 5.5                      |

# Фрезы черновые

HX

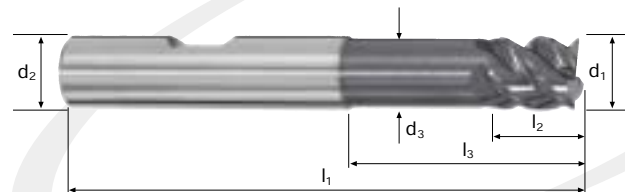
HM  
MG10 HX

$\lambda$  55°  
 $\gamma$  -10°



DIN 6535 HA  
DIN 6535 HB

0,05-0,20  
45°



HX

Предназначены для обработки:

HRC < 58

HRC < 70

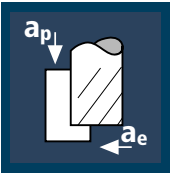
HRC 25 - 48

GG(G)  
Чугун

Титан

| Example:  |    | Coating | Article-N° | ø-Code |    | UNICUT-4X | POLYCHROM | DURO-S | SERVICE      |
|-----------|----|---------|------------|--------|----|-----------|-----------|--------|--------------|
| Order-N°. | U  | 5348    | 180        |        |    | U5348P    | 5348D     | 5348S  | ReTool®      |
|           |    |         |            |        |    | U5248P    | 5248D     | 5248S  | with coating |
| ø         | d1 | d2      | d3         | l1     | l2 | l3        | $\alpha$  | z      |              |
| Code      | e8 | h6      |            |        |    |           |           |        |              |
| .180      | 3  | 6       | 2,8        | 57     | 4  | 14        | 4°        | 4      |              |
| .220      | 4  | 6       | 3,7        | 57     | 5  | 16        | 3°        | 4      |              |
| .260      | 5  | 6       | 4,6        | 57     | 6  | 18        | 2°        | 4      |              |
| .300      | 6  | 6       | 5,5        | 57     | 7  | 20        | 0°        | 4      |              |
| .391      | 8  | 8       | 7,4        | 63     | 9  | 26        | 0°        | 4      |              |
| .450      | 10 | 10      | 9,2        | 72     | 11 | 31        | 0°        | 4      |              |
| .501      | 12 | 12      | 11,0       | 83     | 13 | 37        | 0°        | 4      |              |
| .610      | 16 | 16      | 15,0       | 92     | 17 | 43        | 0°        | 4      |              |
| .682      | 20 | 20      | 19,0       | 104    | 21 | 53        | 0°        | 4      |              |
| .772      | 25 | 25      | 24,0       | 121    | 26 | 64        | 0°        | 4      |              |

5349



Применение

Закаленная инструментальная сталь 24 - 32 HRC



Закаленная инструментальная сталь 40 - 48 HRC



Закаленная инструментальная сталь 50 - 54 HRC

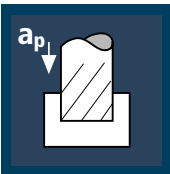


Закаленная инструментальная сталь > 60 HRC



| d1 [mm] | z | v <sub>c</sub> [m/min] | f <sub>z</sub> [mm] | a <sub>p</sub> [mm] | a <sub>e</sub> [mm] | n [min] | v <sub>f</sub> [mm/min] | Q [cm <sup>3</sup> /min] |
|---------|---|------------------------|---------------------|---------------------|---------------------|---------|-------------------------|--------------------------|
| 2       | 4 | 190                    | 0.024               | 2                   | 1.0                 | 30240   | 2905                    | 6.0                      |
| 3       | 4 | 190                    | 0.030               | 3                   | 1.5                 | 20160   | 2420                    | 11.0                     |
| 4       | 4 | 190                    | 0.042               | 4                   | 2                   | 15120   | 2540                    | 20.5                     |
| 5       | 4 | 190                    | 0.054               | 5                   | 2.5                 | 12095   | 2615                    | 32.5                     |
| 6       | 4 | 190                    | 0.066               | 6                   | 3                   | 10080   | 2660                    | 48.0                     |
| 8       | 4 | 190                    | 0.090               | 8                   | 2                   | 7560    | 2720                    | 43.5                     |
| 10      | 4 | 190                    | 0.108               | 10                  | 2.5                 | 6050    | 2615                    | 65.5                     |
| 12      | 4 | 190                    | 0.132               | 12                  | 3                   | 5040    | 2660                    | 96.0                     |
| 16      | 4 | 190                    | 0.174               | 16                  | 4                   | 3780    | 2630                    | 168.5                    |
| 2       | 4 | 130                    | 0.020               | 2                   | 1.0                 | 20690   | 1655                    | 3.5                      |
| 3       | 4 | 130                    | 0.025               | 3                   | 1.5                 | 13795   | 1380                    | 6.0                      |
| 4       | 4 | 130                    | 0.035               | 4                   | 2                   | 10345   | 1450                    | 11.5                     |
| 5       | 4 | 130                    | 0.045               | 5                   | 2.5                 | 8275    | 1490                    | 18.5                     |
| 6       | 4 | 130                    | 0.055               | 6                   | 3                   | 6895    | 1515                    | 27.5                     |
| 8       | 4 | 130                    | 0.075               | 8                   | 2                   | 5175    | 1555                    | 25.0                     |
| 10      | 4 | 130                    | 0.090               | 10                  | 2.5                 | 4140    | 1490                    | 37.5                     |
| 12      | 4 | 130                    | 0.110               | 12                  | 3                   | 3450    | 1520                    | 54.5                     |
| 16      | 4 | 130                    | 0.145               | 16                  | 4                   | 2585    | 1500                    | 96.0                     |
| 2       | 4 | 60                     | 0.010               | 2                   | 1.0                 | 9550    | 380                     | 1.0                      |
| 3       | 4 | 60                     | 0.010               | 3                   | 1.5                 | 6365    | 255                     | 1.0                      |
| 4       | 4 | 60                     | 0.015               | 4                   | 2                   | 4775    | 285                     | 2.5                      |
| 5       | 4 | 60                     | 0.025               | 5                   | 2.5                 | 3820    | 380                     | 5.0                      |
| 6       | 4 | 60                     | 0.030               | 6                   | 3                   | 3185    | 380                     | 7.0                      |
| 8       | 4 | 60                     | 0.040               | 8                   | 2                   | 2385    | 380                     | 6.0                      |
| 10      | 4 | 60                     | 0.050               | 10                  | 2.5                 | 1910    | 380                     | 9.5                      |
| 12      | 4 | 60                     | 0.060               | 12                  | 3                   | 1590    | 380                     | 13.5                     |
| 16      | 4 | 60                     | 0.075               | 16                  | 4                   | 1195    | 360                     | 23.0                     |
| 2       | 4 | 20                     | 0.005               | 2                   | 1.0                 | 3185    | 65                      | 0.1                      |
| 3       | 4 | 20                     | 0.010               | 3                   | 1.5                 | 2120    | 85                      | 0.5                      |
| 4       | 4 | 20                     | 0.010               | 4                   | 2                   | 1590    | 65                      | 0.5                      |
| 5       | 4 | 20                     | 0.015               | 5                   | 2.5                 | 1275    | 75                      | 1.0                      |
| 6       | 4 | 20                     | 0.015               | 6                   | 3                   | 1060    | 65                      | 1.0                      |
| 8       | 4 | 20                     | 0.025               | 8                   | 2                   | 795     | 80                      | 1.5                      |
| 10      | 4 | 20                     | 0.030               | 10                  | 2.5                 | 635     | 75                      | 2.0                      |
| 12      | 4 | 20                     | 0.035               | 12                  | 3                   | 530     | 75                      | 2.5                      |
| 16      | 4 | 20                     | 0.045               | 16                  | 4                   | 400     | 70                      | 4.5                      |

5349



Применение

Закаленная инструментальная сталь 24 - 32 HRC



Закаленная инструментальная сталь 40 - 48 HRC



Закаленная инструментальная сталь 50 - 54 HRC



Закаленная инструментальная сталь > 60 HRC



| d1 [mm] | z | v <sub>c</sub> [m/min] | f <sub>z</sub> [mm] | a <sub>p</sub> [mm] | a <sub>e</sub> [mm] | n [min] | v <sub>f</sub> [mm/min] | Q [cm <sup>3</sup> /min] |
|---------|---|------------------------|---------------------|---------------------|---------------------|---------|-------------------------|--------------------------|
| 2       | 4 | 160                    | 0.020               | 1.0                 | 2                   | 25465   | 2035                    | 4.0                      |
| 3       | 4 | 160                    | 0.025               | 1.5                 | 3                   | 16975   | 1700                    | 7.5                      |
| 4       | 4 | 160                    | 0.035               | 2                   | 4                   | 12735   | 1785                    | 14.5                     |
| 5       | 4 | 160                    | 0.045               | 2.5                 | 5                   | 10185   | 1835                    | 23.0                     |
| 6       | 4 | 160                    | 0.055               | 3                   | 6                   | 8490    | 1870                    | 33.5                     |
| 8       | 4 | 160                    | 0.075               | 4                   | 8                   | 6365    | 1910                    | 61.0                     |
| 10      | 4 | 160                    | 0.090               | 5                   | 10                  | 5095    | 1835                    | 92.0                     |
| 12      | 4 | 160                    | 0.110               | 6                   | 12                  | 4245    | 1870                    | 134.5                    |
| 16      | 4 | 160                    | 0.145               | 4                   | 16                  | 3185    | 1845                    | 118.0                    |
| 2       | 4 | 110                    | 0.020               | 1.0                 | 2                   | 17510   | 1400                    | 3.0                      |
| 3       | 4 | 110                    | 0.025               | 1.5                 | 3                   | 11670   | 1165                    | 5.0                      |
| 4       | 4 | 110                    | 0.035               | 2                   | 4                   | 8755    | 1225                    | 10.0                     |
| 5       | 4 | 110                    | 0.045               | 2.5                 | 5                   | 7005    | 1260                    | 16.0                     |
| 6       | 4 | 110                    | 0.055               | 3                   | 6                   | 5835    | 1285                    | 23.0                     |
| 8       | 4 | 110                    | 0.075               | 4                   | 8                   | 4375    | 1315                    | 42.0                     |
| 10      | 4 | 110                    | 0.090               | 5                   | 10                  | 3500    | 1260                    | 63.0                     |
| 12      | 4 | 110                    | 0.110               | 6                   | 12                  | 2920    | 1285                    | 92.5                     |
| 16      | 4 | 110                    | 0.145               | 4                   | 16                  | 2190    | 1270                    | 81.5                     |
| 2       | 4 | 50                     | 0.010               | 1.0                 | 2                   | 7960    | 320                     | 0.5                      |
| 3       | 4 | 50                     | 0.010               | 1.5                 | 3                   | 5305    | 210                     | 1.0                      |
| 4       | 4 | 50                     | 0.015               | 2                   | 4                   | 3980    | 240                     | 2.0                      |
| 5       | 4 | 50                     | 0.025               | 2.5                 | 5                   | 3185    | 320                     | 4.0                      |
| 6       | 4 | 50                     | 0.030               | 3                   | 6                   | 2655    | 320                     | 6.0                      |
| 8       | 4 | 50                     | 0.040               | 4                   | 8                   | 1990    | 320                     | 10.0                     |
| 10      | 4 | 50                     | 0.050               | 5                   | 10                  | 1590    | 320                     | 16.0                     |
| 12      | 4 | 50                     | 0.060               | 6                   | 12                  | 1325    | 320                     | 23.0                     |
| 16      | 4 | 50                     | 0.075               | 4                   | 16                  | 995     | 300                     | 19.0                     |
| 2       | 4 | 15                     | 0.005               | 1.0                 | 2                   | 2385    | 50                      | 0.1                      |
| 3       | 4 | 15                     | 0.010               | 1.5                 | 3                   | 1590    | 65                      | 0.3                      |
| 4       | 4 | 15                     | 0.010               | 2                   | 4                   | 1195    | 50                      | 0.5                      |
| 5       | 4 | 15                     | 0.015               | 2.5                 | 5                   | 955     | 55                      | 0.5                      |
| 6       | 4 | 15                     | 0.015               | 3                   | 6                   | 795     | 50                      | 1.0                      |
| 8       | 4 | 15                     | 0.020               | 4                   | 8                   | 595     | 50                      | 1.5                      |
| 10      | 4 | 15                     | 0.025               | 5                   | 10                  | 475     | 50                      | 2.5                      |
| 12      | 4 | 15                     | 0.030               | 6                   | 12                  | 400     | 50                      | 3.5                      |
| 16      | 4 | 15                     | 0.040               | 4                   | 16                  | 300     | 50                      | 3.0                      |



# Фрезы черновые

# HX

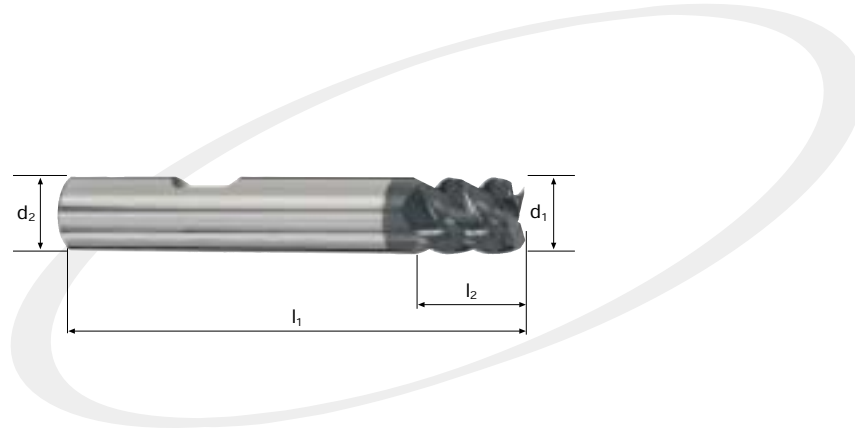
HM  
MG10 HX

$\lambda$  55°  
 $\gamma$  -10°



DIN 6535 HA  
DIN 6535 HB

0,05-0,15  
45°



HX

Предназначены для обработки:

HRC < 58

HRC < 70

HRC 25 - 48

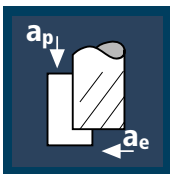
GG(G)  
Чугун

Титан

| Example:  |      | Coating | Article-N°. | ø-Code |     |   | UNICUT-4X       | POLYCHROM    | DURO-S | SERVICE |
|-----------|------|---------|-------------|--------|-----|---|-----------------|--------------|--------|---------|
| Order-N°. |      | U       | 5349        | 100    |     |   | U5349P5349D5349 | ReTool®      |        |         |
|           |      |         |             |        |     |   | U5249P5249D5249 | with coating |        |         |
| ø         | d1   | d2      | l1          | l2     | α   | z |                 |              |        |         |
| Code      | e8   | h6      |             |        |     |   |                 |              |        |         |
| .100      | 1,0  | 6       | 50          | 1,0    | 11° | 3 | •               | •            | •      |         |
| .108      | 1,2  | 6       | 50          | 1,2    | 11° | 3 | •               | •            | •      |         |
| .120      | 1,5  | 6       | 50          | 1,5    | 10° | 3 | •               | •            | •      |         |
| .140      | 2,0  | 6       | 50          | 2,0    | 10° | 3 | •               | •            | •      |         |
| .148      | 2,2  | 6       | 50          | 2,2    | 9°  | 3 | •               | •            | •      |         |
| .160      | 2,5  | 6       | 50          | 2,5    | 9°  | 3 | •               | •            | •      |         |
| .180      | 3,0  | 6       | 50          | 3,0    | 8°  | 4 | •               | •            | •      |         |
| .220      | 4,0  | 6       | 54          | 4,0    | 6°  | 4 | •               | •            | •      |         |
| .260      | 5,0  | 6       | 54          | 5,0    | 4°  | 4 | •               | •            | •      |         |
| .300      | 6,0  | 6       | 54          | 7,0    | 0°  | 4 | •               | •            | •      |         |
| .391      | 8,0  | 8       | 58          | 9,0    | 0°  | 4 | •               | •            | •      | •       |
| .450      | 10,0 | 10      | 66          | 11,0   | 0°  | 4 | •               | •            | •      | •       |
| .501      | 12,0 | 12      | 73          | 13,0   | 0°  | 4 | •               | •            | •      | •       |
| .610      | 16,0 | 16      | 82          | 17,0   | 0°  | 4 | •               | •            | •      | •       |



5351



Применение

Закаленная инструментальная сталь 24 - 32 HRC



Закаленная инструментальная сталь 40 - 48 HRC



Закаленная инструментальная сталь 50 - 54 HRC



Закаленная инструментальная сталь > 60 HRC



| d1 [mm] | z | v <sub>c</sub> [m/min] | f <sub>z</sub> [mm] | a <sub>p</sub> [mm] | a <sub>e</sub> [mm] | n [min] | v <sub>f</sub> [mm/min] | Q [cm <sup>3</sup> /min] |
|---------|---|------------------------|---------------------|---------------------|---------------------|---------|-------------------------|--------------------------|
| 6       | 4 | 150                    | 0.055               | 6                   | 2.4                 | 7960    | 1750                    | 25.0                     |
| 8       | 4 | 150                    | 0.075               | 8                   | 1.6                 | 5970    | 1790                    | 23.0                     |
| 10      | 4 | 150                    | 0.090               | 10                  | 2                   | 4775    | 1720                    | 34.5                     |
| 12      | 4 | 150                    | 0.110               | 12                  | 2.4                 | 3980    | 1750                    | 50.5                     |
| 16      | 4 | 150                    | 0.145               | 16                  | 3.2                 | 2985    | 1730                    | 88.5                     |
| 20      | 4 | 150                    | 0.180               | 20                  | 4                   | 2385    | 1715                    | 137.0                    |
| 6       | 4 | 100                    | 0.055               | 6                   | 2.4                 | 5305    | 1165                    | 17.0                     |
| 8       | 4 | 100                    | 0.075               | 8                   | 1.6                 | 3980    | 1195                    | 15.5                     |
| 10      | 4 | 100                    | 0.090               | 10                  | 2                   | 3185    | 1145                    | 23.0                     |
| 12      | 4 | 100                    | 0.110               | 12                  | 2.4                 | 2655    | 1170                    | 33.5                     |
| 16      | 4 | 100                    | 0.145               | 16                  | 3.2                 | 1990    | 1155                    | 59.0                     |
| 20      | 4 | 100                    | 0.180               | 20                  | 4                   | 1590    | 1145                    | 91.5                     |
| 6       | 4 | 50                     | 0.030               | 6                   | 2.4                 | 2655    | 320                     | 4.5                      |
| 8       | 4 | 50                     | 0.040               | 8                   | 1.6                 | 1990    | 320                     | 4.0                      |
| 10      | 4 | 50                     | 0.050               | 10                  | 2                   | 1590    | 320                     | 6.5                      |
| 12      | 4 | 50                     | 0.060               | 12                  | 2.4                 | 1325    | 320                     | 9.0                      |
| 16      | 4 | 50                     | 0.075               | 16                  | 3.2                 | 995     | 300                     | 15.5                     |
| 20      | 4 | 50                     | 0.090               | 20                  | 4                   | 795     | 285                     | 23.0                     |
| 6       | 4 | 15                     | 0.015               | 6                   | 2.4                 | 795     | 48                      | 0.5                      |
| 8       | 4 | 15                     | 0.025               | 8                   | 1.6                 | 595     | 60                      | 1.0                      |
| 10      | 4 | 15                     | 0.030               | 10                  | 2                   | 475     | 57                      | 1.0                      |
| 12      | 4 | 15                     | 0.035               | 12                  | 2.4                 | 400     | 56                      | 1.5                      |
| 16      | 4 | 15                     | 0.045               | 16                  | 3.2                 | 300     | 54                      | 3.0                      |
| 20      | 4 | 15                     | 0.055               | 20                  | 4                   | 240     | 53                      | 4.0                      |

5351



Применение

Закаленная инструментальная сталь 24 - 32 HRC



Закаленная инструментальная сталь 40 - 48 HRC



Закаленная инструментальная сталь 50 - 54 HRC



Закаленная инструментальная сталь > 60 HRC



| d1 [mm] | z | v <sub>c</sub> [m/min] | f <sub>z</sub> [mm] | a <sub>p</sub> [mm] | a <sub>e</sub> [mm] | n [min] | v <sub>f</sub> [mm/min] | Q [cm <sup>3</sup> /min] |
|---------|---|------------------------|---------------------|---------------------|---------------------|---------|-------------------------|--------------------------|
| 6       | 4 | 120                    | 0.055               | 2.4                 | 6                   | 6365    | 1400                    | 20.0                     |
| 8       | 4 | 120                    | 0.075               | 3.2                 | 8                   | 4775    | 1435                    | 36.5                     |
| 10      | 4 | 120                    | 0.090               | 4                   | 10                  | 3820    | 1375                    | 55.0                     |
| 12      | 4 | 120                    | 0.110               | 4.8                 | 12                  | 3185    | 1400                    | 80.5                     |
| 16      | 4 | 120                    | 0.145               | 3.2                 | 16                  | 2385    | 1385                    | 71.0                     |
| 20      | 4 | 120                    | 0.180               | 4                   | 20                  | 1910    | 1375                    | 110.0                    |
| 6       | 4 | 80                     | 0.055               | 2.4                 | 6                   | 4245    | 935                     | 13.5                     |
| 8       | 4 | 80                     | 0.075               | 3.2                 | 8                   | 3185    | 955                     | 24.5                     |
| 10      | 4 | 80                     | 0.090               | 4                   | 10                  | 2545    | 915                     | 36.5                     |
| 12      | 4 | 80                     | 0.110               | 4.8                 | 12                  | 2120    | 935                     | 54.0                     |
| 16      | 4 | 80                     | 0.145               | 3.2                 | 16                  | 1590    | 920                     | 47.0                     |
| 20      | 4 | 80                     | 0.180               | 4                   | 20                  | 1275    | 920                     | 73.5                     |
| 6       | 4 | 40                     | 0.030               | 2.4                 | 6                   | 2120    | 255                     | 3.5                      |
| 8       | 4 | 40                     | 0.040               | 3.2                 | 8                   | 1590    | 255                     | 6.5                      |
| 10      | 4 | 40                     | 0.050               | 4                   | 10                  | 1275    | 255                     | 10.0                     |
| 12      | 4 | 40                     | 0.060               | 4.8                 | 12                  | 1060    | 255                     | 14.5                     |
| 16      | 4 | 40                     | 0.075               | 3.2                 | 16                  | 795     | 240                     | 12.5                     |
| 20      | 4 | 40                     | 0.090               | 4                   | 20                  | 635     | 230                     | 18.5                     |
| 6       | 4 | 12                     | 0.015               | 2.4                 | 6                   | 635     | 38                      | 0.5                      |
| 8       | 4 | 12                     | 0.020               | 3.2                 | 8                   | 475     | 38                      | 1.0                      |
| 10      | 4 | 12                     | 0.025               | 4                   | 10                  | 380     | 38                      | 1.5                      |
| 12      | 4 | 12                     | 0.030               | 4.8                 | 12                  | 320     | 38                      | 2.0                      |
| 16      | 4 | 12                     | 0.040               | 3.2                 | 16                  | 240     | 38                      | 2.0                      |
| 20      | 4 | 12                     | 0.055               | 4                   | 20                  | 190     | 42                      | 3.5                      |



## Фрезы черновые

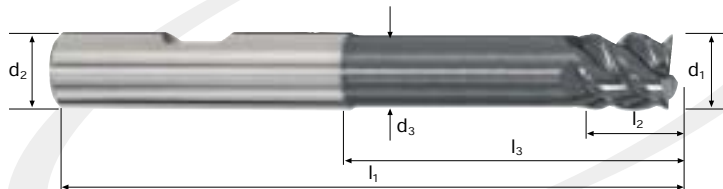
## HX

HM  
MG10 HX

$\lambda$  55°  
 $\gamma$  -10°



0,05-0,15  
45°



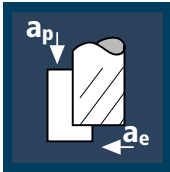
HX

Предназначены для обработки:

HRC < 58
HRC < 70
HRC 25 - 48
GG(G)  
Чугун
Титан

|           |    | Coating |      | Article-N° |    | ø-Code |   |   | UNICUT-4X | POLYCHROM | DURO-S | SERVICE      |
|-----------|----|---------|------|------------|----|--------|---|---|-----------|-----------|--------|--------------|
| Example:  |    | U       | 535  | 1300       |    |        |   |   | U5351     | P5351     | D5351  | ReTool®      |
| Order-N°: |    | U       | 535  | 1300       |    |        |   |   | U5251     | P5251     | D5251  | with coating |
| ø         | d1 | d2      | d3   | l1         | l2 | l3     | z |   |           |           |        |              |
| Code      | e8 | h6      |      |            |    |        |   |   |           |           |        |              |
| .300      | 6  | 6       | 5,5  | 70         | 7  | 33     | 4 | • | •         | •         | •      | •            |
| .391      | 8  | 8       | 7,4  | 80         | 9  | 43     | 4 | • | •         | •         | •      | •            |
| .450      | 10 | 10      | 9,2  | 84         | 11 | 43     | 4 | • | •         | •         | •      | •            |
| .501      | 12 | 12      | 11,0 | 97         | 13 | 51     | 4 | • | •         | •         | •      | •            |
| .610      | 16 | 16      | 15,0 | 115        | 17 | 66     | 4 | • | •         | •         | •      | •            |
| .682      | 20 | 20      | 19,0 | 130        | 21 | 79     | 4 | • | •         | •         | •      | •            |
|           |    |         |      |            |    |        |   |   |           |           |        |              |
|           |    |         |      |            |    |        |   |   |           |           |        |              |
|           |    |         |      |            |    |        |   |   |           |           |        |              |
|           |    |         |      |            |    |        |   |   |           |           |        |              |
|           |    |         |      |            |    |        |   |   |           |           |        |              |
|           |    |         |      |            |    |        |   |   |           |           |        |              |
|           |    |         |      |            |    |        |   |   |           |           |        |              |
|           |    |         |      |            |    |        |   |   |           |           |        |              |
|           |    |         |      |            |    |        |   |   |           |           |        |              |
|           |    |         |      |            |    |        |   |   |           |           |        |              |
|           |    |         |      |            |    |        |   |   |           |           |        |              |
|           |    |         |      |            |    |        |   |   |           |           |        |              |
|           |    |         |      |            |    |        |   |   |           |           |        |              |
|           |    |         |      |            |    |        |   |   |           |           |        |              |
|           |    |         |      |            |    |        |   |   |           |           |        |              |
|           |    |         |      |            |    |        |   |   |           |           |        |              |
|           |    |         |      |            |    |        |   |   |           |           |        |              |
|           |    |         |      |            |    |        |   |   |           |           |        |              |

5358



Применение

Закаленная инструментальная сталь 24 - 32 HRC



Закаленная инструментальная сталь 40 - 48 HRC



Закаленная инструментальная сталь 50 - 54 HRC



Закаленная инструментальная сталь > 60 HRC



| d1 [mm] | z | v <sub>c</sub> [m/min] | f <sub>z</sub> [mm] | a <sub>p</sub> [mm] | a <sub>e</sub> [mm] | n [min] | v <sub>f</sub> [mm/min] | Q [cm <sup>3</sup> /min] |
|---------|---|------------------------|---------------------|---------------------|---------------------|---------|-------------------------|--------------------------|
| 5       | 4 | 180                    | 0.045               | 7.5                 | 0.7                 | 11460   | 2065                    | 11.5                     |
| 6       | 4 | 180                    | 0.055               | 9                   | 0.9                 | 9550    | 2100                    | 17.0                     |
| 8       | 4 | 180                    | 0.075               | 12                  | 1.2                 | 7160    | 2150                    | 31.0                     |
| 10      | 4 | 180                    | 0.090               | 15                  | 1.5                 | 5730    | 2065                    | 46.5                     |
| 12      | 4 | 180                    | 0.110               | 18                  | 1.8                 | 4775    | 2100                    | 68.0                     |
| 16      | 4 | 180                    | 0.145               | 24                  | 2.4                 | 3580    | 2075                    | 119.5                    |
| 5       | 4 | 120                    | 0.045               | 7.5                 | 0.7                 | 7640    | 1375                    | 7.5                      |
| 6       | 4 | 120                    | 0.055               | 9                   | 0.9                 | 6365    | 1400                    | 11.5                     |
| 8       | 4 | 120                    | 0.075               | 12                  | 1.2                 | 4775    | 1435                    | 20.5                     |
| 10      | 4 | 120                    | 0.090               | 15                  | 1.5                 | 3820    | 1375                    | 31.0                     |
| 12      | 4 | 120                    | 0.110               | 18                  | 1.8                 | 3185    | 1400                    | 45.5                     |
| 16      | 4 | 120                    | 0.145               | 24                  | 2.4                 | 2385    | 1385                    | 80.0                     |
| 5       | 4 | 60                     | 0.025               | 7.5                 | 0.7                 | 3820    | 380                     | 2.0                      |
| 6       | 4 | 60                     | 0.030               | 9                   | 0.9                 | 3185    | 380                     | 3.0                      |
| 8       | 4 | 60                     | 0.040               | 12                  | 1.2                 | 2385    | 380                     | 5.5                      |
| 10      | 4 | 60                     | 0.050               | 15                  | 1.5                 | 1910    | 380                     | 8.5                      |
| 12      | 4 | 60                     | 0.060               | 18                  | 1.8                 | 1590    | 380                     | 12.5                     |
| 16      | 4 | 60                     | 0.075               | 24                  | 2.4                 | 1195    | 360                     | 20.5                     |
| 5       | 4 | 20                     | 0.015               | 7.5                 | 0.7                 | 1275    | 77                      | 0.5                      |
| 6       | 4 | 20                     | 0.015               | 9                   | 0.9                 | 1060    | 64                      | 0.5                      |
| 8       | 4 | 20                     | 0.025               | 12                  | 1.2                 | 795     | 80                      | 1.0                      |
| 10      | 4 | 20                     | 0.030               | 15                  | 1.5                 | 635     | 76                      | 1.5                      |
| 12      | 4 | 20                     | 0.035               | 18                  | 1.8                 | 530     | 74                      | 2.5                      |
| 16      | 4 | 20                     | 0.045               | 24                  | 2.4                 | 400     | 72                      | 4.0                      |

5358



Применение

Закаленная инструментальная сталь 24 - 32 HRC



Закаленная инструментальная сталь 40 - 48 HRC



Закаленная инструментальная сталь 50 - 54 HRC



Закаленная инструментальная сталь > 60 HRC



| d1 [mm] | z | v <sub>c</sub> [m/min] | f <sub>z</sub> [mm] | a <sub>p</sub> [mm] | a <sub>e</sub> [mm] | n [min] | v <sub>f</sub> [mm/min] | Q [cm <sup>3</sup> /min] |
|---------|---|------------------------|---------------------|---------------------|---------------------|---------|-------------------------|--------------------------|
| 5       | 4 | 150                    | 0.045               | 2.5                 | 5                   | 9550    | 1720                    | 21.5                     |
| 6       | 4 | 150                    | 0.055               | 3                   | 6                   | 7960    | 1750                    | 31.5                     |
| 8       | 4 | 150                    | 0.075               | 4                   | 8                   | 5970    | 1790                    | 57.5                     |
| 10      | 4 | 150                    | 0.090               | 5                   | 10                  | 4775    | 1720                    | 86.0                     |
| 12      | 4 | 150                    | 0.110               | 6                   | 12                  | 3980    | 1750                    | 126.0                    |
| 16      | 4 | 150                    | 0.145               | 4                   | 16                  | 2985    | 1730                    | 110.5                    |
| 5       | 4 | 100                    | 0.045               | 2.5                 | 5                   | 6365    | 1145                    | 14.5                     |
| 6       | 4 | 100                    | 0.055               | 3                   | 6                   | 5305    | 1165                    | 21.0                     |
| 8       | 4 | 100                    | 0.075               | 4                   | 8                   | 3980    | 1195                    | 38.0                     |
| 10      | 4 | 100                    | 0.090               | 5                   | 10                  | 3185    | 1145                    | 57.5                     |
| 12      | 4 | 100                    | 0.110               | 6                   | 12                  | 2655    | 1170                    | 84.0                     |
| 16      | 4 | 100                    | 0.145               | 4                   | 16                  | 1990    | 1155                    | 74.0                     |
| 5       | 4 | 50                     | 0.025               | 2.5                 | 5                   | 3185    | 320                     | 4.0                      |
| 6       | 4 | 50                     | 0.030               | 3                   | 6                   | 2655    | 320                     | 6.0                      |
| 8       | 4 | 50                     | 0.040               | 4                   | 8                   | 1990    | 320                     | 10.0                     |
| 10      | 4 | 50                     | 0.050               | 5                   | 10                  | 1590    | 320                     | 16.0                     |
| 12      | 4 | 50                     | 0.060               | 6                   | 12                  | 1325    | 320                     | 23.0                     |
| 16      | 4 | 50                     | 0.075               | 4                   | 16                  | 995     | 300                     | 19.0                     |
| 5       | 4 | 15                     | 0.015               | 2.5                 | 5                   | 955     | 57                      | 0.5                      |
| 6       | 4 | 15                     | 0.015               | 3                   | 6                   | 795     | 48                      | 1.0                      |
| 8       | 4 | 15                     | 0.020               | 4                   | 8                   | 595     | 48                      | 1.5                      |
| 10      | 4 | 15                     | 0.025               | 5                   | 10                  | 475     | 48                      | 2.5                      |
| 12      | 4 | 15                     | 0.030               | 6                   | 12                  | 400     | 48                      | 3.5                      |
| 16      | 4 | 15                     | 0.040               | 4                   | 16                  | 300     | 48                      | 3.0                      |



# Фрезы черновые

# HX-N

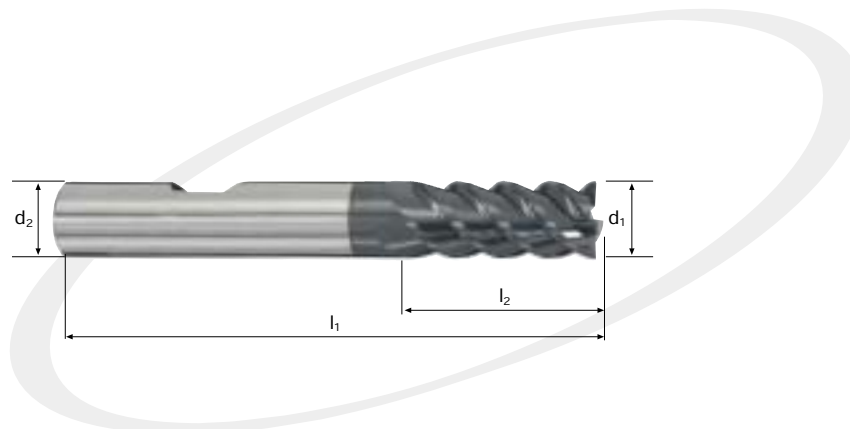
HM  
MG10 HX

$\lambda$  55°  
 $\gamma$  -10°



DIN 6535 HA  
DIN 6535 HB

0,05-0,15  
45°



HX

Предназначены для обработки:

HRC < 58

HRC < 70

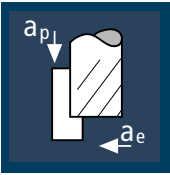
HRC 25 - 48

GG(G)  
Чугун

Титан

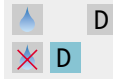
| Example:       |          | Coating  | Article-N° | $\phi$ -Code |          | UNICUT-4X       | POLYCHROM    | DURO-S | SERVICE |
|----------------|----------|----------|------------|--------------|----------|-----------------|--------------|--------|---------|
| Order-N°.      | U        | 5358     | 260        |              |          | U5358P5358D5358 | ReTool®      |        |         |
|                |          |          |            |              |          | U5258P5258D5258 | with coating |        |         |
| $\phi$<br>Code | d1<br>e8 | d2<br>h6 | l1         | l2           | $\alpha$ | Z               |              |        |         |
| .260           | 5        | 6        | 57         | 13           | 2°       | 4               | .            | .      | .       |
| .300           | 6        | 6        | 57         | 13           | 0°       | 4               | .            | .      | .       |
| .391           | 8        | 8        | 63         | 19           | 0°       | 4               | .            | .      | .       |
| .450           | 10       | 10       | 72         | 22           | 0°       | 4               | .            | .      | .       |
| .501           | 12       | 12       | 83         | 26           | 0°       | 4               | .            | .      | .       |
| .610           | 16       | 16       | 92         | 32           | 0°       | 4               | .            | .      | .       |

5366



Применение

Закаленная инструментальная сталь 40 - 48 HRC



Закаленная инструментальная сталь 50 - 54 HRC

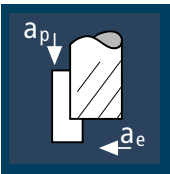


Закаленная инструментальная сталь > 60 HRC



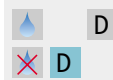
| d1 [mm] | z | v <sub>c</sub> [m/min] | f <sub>z</sub> [mm] | a <sub>p</sub> [mm] | a <sub>e</sub> [mm] | n [min <sup>-1</sup> ] | v <sub>f</sub> [mm/min] |
|---------|---|------------------------|---------------------|---------------------|---------------------|------------------------|-------------------------|
| 3       | 4 | 180                    | 0.010               | 4.5                 | 0.1                 | 19100                  | 765                     |
| 4       | 4 | 180                    | 0.015               | 6.0                 | 0.1                 | 14325                  | 860                     |
| 5       | 5 | 180                    | 0.025               | 7.5                 | 0.1                 | 11460                  | 1435                    |
| 6       | 6 | 180                    | 0.030               | 9.0                 | 0.1                 | 9550                   | 1720                    |
| 8       | 6 | 180                    | 0.040               | 12.0                | 0.1                 | 7160                   | 1720                    |
| 10      | 6 | 180                    | 0.050               | 15.0                | 0.1                 | 5730                   | 1720                    |
| 12      | 6 | 180                    | 0.060               | 18.0                | 0.1                 | 4775                   | 1720                    |
| 16      | 6 | 180                    | 0.080               | 24.0                | 0.1                 | 3580                   | 1720                    |
| 20      | 8 | 180                    | 0.100               | 30.0                | 0.1                 | 2865                   | 2290                    |
| 3       | 4 | 100                    | 0.010               | 4.5                 | 0.1                 | 10610                  | 425                     |
| 4       | 4 | 100                    | 0.015               | 6.0                 | 0.1                 | 7960                   | 480                     |
| 5       | 5 | 100                    | 0.025               | 7.5                 | 0.1                 | 6365                   | 795                     |
| 6       | 6 | 100                    | 0.030               | 9.0                 | 0.1                 | 5305                   | 955                     |
| 8       | 6 | 100                    | 0.040               | 12.0                | 0.1                 | 3980                   | 955                     |
| 10      | 6 | 100                    | 0.050               | 15.0                | 0.1                 | 3185                   | 955                     |
| 12      | 6 | 100                    | 0.060               | 18.0                | 0.1                 | 2655                   | 955                     |
| 16      | 6 | 100                    | 0.080               | 24.0                | 0.1                 | 1990                   | 955                     |
| 20      | 8 | 100                    | 0.100               | 30.0                | 0.1                 | 1590                   | 1270                    |
| 3       | 4 | 45                     | 0.010               | 4.5                 | 0.1                 | 4775                   | 191                     |
| 4       | 4 | 45                     | 0.010               | 6.0                 | 0.1                 | 3580                   | 143                     |
| 5       | 5 | 45                     | 0.015               | 7.5                 | 0.1                 | 2865                   | 215                     |
| 6       | 6 | 45                     | 0.015               | 9.0                 | 0.1                 | 2385                   | 215                     |
| 8       | 6 | 45                     | 0.025               | 12.0                | 0.1                 | 1790                   | 269                     |
| 10      | 6 | 45                     | 0.030               | 15.0                | 0.1                 | 1430                   | 257                     |
| 12      | 6 | 45                     | 0.035               | 18.0                | 0.1                 | 1195                   | 251                     |
| 16      | 6 | 45                     | 0.045               | 24.0                | 0.1                 | 895                    | 242                     |
| 20      | 8 | 45                     | 0.055               | 30.0                | 0.1                 | 715                    | 315                     |

5366



Применение

Закаленная инструментальная сталь 40 - 48 HRC



Закаленная инструментальная сталь 50 - 54 HRC



Закаленная инструментальная сталь > 60 HRC



| d1 [mm] | z | v <sub>c</sub> [m/min] | f <sub>z</sub> [mm] | a <sub>p</sub> [mm] | a <sub>e</sub> [mm] | n [min <sup>-1</sup> ] | v <sub>f</sub> [mm/min] |
|---------|---|------------------------|---------------------|---------------------|---------------------|------------------------|-------------------------|
| 3       | 4 | 120                    | 0.010               | 3.0                 | 0.2                 | 12735                  | 510                     |
| 4       | 4 | 120                    | 0.015               | 4.0                 | 0.2                 | 9550                   | 575                     |
| 5       | 5 | 120                    | 0.025               | 5.0                 | 0.3                 | 7640                   | 955                     |
| 6       | 6 | 120                    | 0.030               | 6.0                 | 0.3                 | 6365                   | 1145                    |
| 8       | 6 | 120                    | 0.040               | 8.0                 | 0.4                 | 4775                   | 1145                    |
| 10      | 6 | 120                    | 0.050               | 10.0                | 0.5                 | 3820                   | 1145                    |
| 12      | 6 | 120                    | 0.060               | 12.0                | 0.6                 | 3185                   | 1145                    |
| 16      | 6 | 120                    | 0.080               | 16.0                | 0.8                 | 2385                   | 1145                    |
| 20      | 8 | 120                    | 0.100               | 20.0                | 1.0                 | 1910                   | 1530                    |
| 3       | 4 | 60                     | 0.008               | 3.0                 | 0.2                 | 6365                   | 205                     |
| 4       | 4 | 60                     | 0.015               | 4.0                 | 0.2                 | 4775                   | 285                     |
| 5       | 5 | 60                     | 0.025               | 5.0                 | 0.3                 | 3820                   | 480                     |
| 6       | 6 | 60                     | 0.030               | 6.0                 | 0.3                 | 3185                   | 575                     |
| 8       | 6 | 60                     | 0.040               | 8.0                 | 0.4                 | 2385                   | 570                     |
| 10      | 6 | 60                     | 0.050               | 10.0                | 0.5                 | 1910                   | 575                     |
| 12      | 6 | 60                     | 0.060               | 12.0                | 0.6                 | 1590                   | 570                     |
| 16      | 6 | 60                     | 0.080               | 16.0                | 0.8                 | 1195                   | 575                     |
| 20      | 8 | 60                     | 0.100               | 20.0                | 1.0                 | 955                    | 765                     |
| 3       | 4 | 20                     | 0.008               | 3.0                 | 0.2                 | 2120                   | 68                      |
| 4       | 4 | 20                     | 0.010               | 4.0                 | 0.2                 | 1590                   | 64                      |
| 5       | 5 | 20                     | 0.015               | 5.0                 | 0.3                 | 1275                   | 96                      |
| 6       | 6 | 20                     | 0.015               | 6.0                 | 0.3                 | 1060                   | 95                      |
| 8       | 6 | 20                     | 0.020               | 8.0                 | 0.4                 | 795                    | 95                      |
| 10      | 6 | 20                     | 0.025               | 10.0                | 0.5                 | 635                    | 95                      |
| 12      | 6 | 20                     | 0.030               | 12.0                | 0.6                 | 530                    | 95                      |
| 16      | 6 | 20                     | 0.040               | 16.0                | 0.8                 | 400                    | 96                      |
| 20      | 8 | 20                     | 0.055               | 20.0                | 1.0                 | 320                    | 141                     |

# Фрезы чистовые

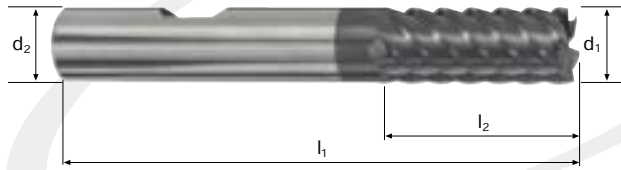
# Multicut HX-H

HM  
MG/H HX

$\lambda$  55°  
 $\gamma$  -10°



DIN 6535 HA  
DIN 6535 HB



HX

Предназначены для обработки:

0,05-0,15  
45°

HRC < 58

HRC < 70

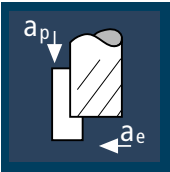
HRC 25 - 48

GG(G)  
Чугун

Титан

| Example:  |       | Coating | Article-Nº. | ø-Code |    |   | DURO-S | SERVICE      |
|-----------|-------|---------|-------------|--------|----|---|--------|--------------|
| Order-Nº. | D     | 5366    | 180         |        |    |   | D5366  | ReTool®      |
|           |       |         |             |        |    |   | D5266  | with coating |
| ø Code    | d1 e8 | d2 h6   | l1          | l2     | α  | Z |        |              |
| NEW!      | .180  | 3 6     | 57          | 8      | 6° | 4 | •      |              |
| NEW!      | .220  | 4 6     | 57          | 11     | 4° | 4 | •      |              |
| NEW!      | .260  | 5 6     | 57          | 13     | 2° | 5 | •      |              |
|           | .300  | 6 6     | 57          | 13     | 0° | 6 | •      |              |
|           | .391  | 8 8     | 63          | 19     | 0° | 6 | •      | •            |
|           | .450  | 10 10   | 72          | 22     | 0° | 6 | •      | •            |
|           | .501  | 12 12   | 83          | 26     | 0° | 6 | •      | •            |
|           | .610  | 16 16   | 92          | 32     | 0° | 6 | •      | •            |
|           | .682  | 20 20   | 104         | 38     | 0° | 8 | •      | •            |

5363



Применение

Закаленная инструментальная сталь 40 - 48 HRC



Закаленная инструментальная сталь 50 - 54 HRC

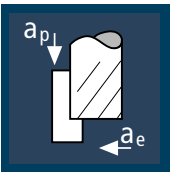


Закаленная инструментальная сталь > 60 HRC



| d1 [mm] | z | v <sub>c</sub> [m/min] | f <sub>z</sub> [mm] | a <sub>p</sub> [mm] | a <sub>e</sub> [mm] | n [min <sup>-1</sup> ] | v <sub>f</sub> [mm/min] |
|---------|---|------------------------|---------------------|---------------------|---------------------|------------------------|-------------------------|
| 3       | 4 | 150                    | 0.010               | 4.5                 | 0.1                 | 15915                  | 635                     |
| 4       | 4 | 150                    | 0.015               | 6                   | 0.1                 | 11935                  | 715                     |
| 5       | 5 | 150                    | 0.025               | 7.5                 | 0.1                 | 9550                   | 1195                    |
| 6       | 6 | 150                    | 0.030               | 9                   | 0.1                 | 7960                   | 1435                    |
| 8       | 6 | 150                    | 0.040               | 12                  | 0.1                 | 5970                   | 1435                    |
| 10      | 6 | 150                    | 0.050               | 15                  | 0.1                 | 4775                   | 1435                    |
| 12      | 6 | 150                    | 0.060               | 18                  | 0.1                 | 3980                   | 1435                    |
| 16      | 6 | 150                    | 0.060               | 24                  | 0.2                 | 2985                   | 1075                    |
| 20      | 8 | 150                    | 0.075               | 30                  | 0.2                 | 2385                   | 1430                    |
| 3       | 4 | 80                     | 0.010               | 4.5                 | 0.1                 | 8490                   | 340                     |
| 4       | 4 | 80                     | 0.015               | 6                   | 0.1                 | 6365                   | 380                     |
| 5       | 5 | 80                     | 0.025               | 7.5                 | 0.1                 | 5095                   | 635                     |
| 6       | 6 | 80                     | 0.030               | 9                   | 0.1                 | 4245                   | 765                     |
| 8       | 6 | 80                     | 0.040               | 12                  | 0.1                 | 3185                   | 765                     |
| 10      | 6 | 80                     | 0.050               | 15                  | 0.1                 | 2545                   | 765                     |
| 12      | 6 | 80                     | 0.060               | 18                  | 0.1                 | 2120                   | 765                     |
| 16      | 6 | 80                     | 0.060               | 24                  | 0.2                 | 1590                   | 570                     |
| 20      | 8 | 80                     | 0.075               | 30                  | 0.2                 | 1275                   | 765                     |
| 3       | 4 | 30                     | 0.010               | 4.5                 | 0.1                 | 3185                   | 127                     |
| 4       | 4 | 30                     | 0.010               | 6                   | 0.1                 | 2385                   | 95                      |
| 5       | 5 | 30                     | 0.015               | 7.5                 | 0.1                 | 1910                   | 143                     |
| 6       | 6 | 30                     | 0.015               | 9                   | 0.1                 | 1590                   | 143                     |
| 8       | 6 | 30                     | 0.025               | 12                  | 0.1                 | 1195                   | 179                     |
| 10      | 6 | 30                     | 0.030               | 15                  | 0.1                 | 955                    | 172                     |
| 12      | 6 | 30                     | 0.035               | 18                  | 0.1                 | 795                    | 167                     |
| 16      | 6 | 30                     | 0.045               | 24                  | 0.2                 | 595                    | 161                     |
| 20      | 8 | 30                     | 0.055               | 30                  | 0.2                 | 475                    | 209                     |

5363



Применение

Закаленная инструментальная сталь 40 - 48 HRC



Закаленная инструментальная сталь 50 - 54 HRC



Закаленная инструментальная сталь > 60 HRC



| d1 [mm] | z | v <sub>c</sub> [m/min] | f <sub>z</sub> [mm] | a <sub>p</sub> [mm] | a <sub>e</sub> [mm] | n [min <sup>-1</sup> ] | v <sub>f</sub> [mm/min] |
|---------|---|------------------------|---------------------|---------------------|---------------------|------------------------|-------------------------|
| 3       | 4 | 120                    | 0.010               | 3                   | 0.2                 | 12735                  | 510                     |
| 4       | 4 | 120                    | 0.015               | 4                   | 0.2                 | 9550                   | 575                     |
| 5       | 5 | 120                    | 0.025               | 5                   | 0.3                 | 7640                   | 955                     |
| 6       | 6 | 120                    | 0.030               | 6                   | 0.3                 | 6365                   | 1145                    |
| 8       | 6 | 120                    | 0.040               | 8                   | 0.4                 | 4775                   | 1145                    |
| 10      | 6 | 120                    | 0.050               | 10                  | 0.5                 | 3820                   | 1145                    |
| 12      | 6 | 120                    | 0.060               | 12                  | 0.6                 | 3185                   | 1145                    |
| 16      | 6 | 120                    | 0.075               | 16                  | 0.6                 | 2385                   | 1075                    |
| 20      | 8 | 120                    | 0.090               | 20                  | 0.6                 | 1910                   | 1375                    |
| 3       | 4 | 60                     | 0.008               | 3                   | 0.2                 | 6365                   | 205                     |
| 4       | 4 | 60                     | 0.015               | 4                   | 0.2                 | 4775                   | 285                     |
| 5       | 5 | 60                     | 0.025               | 5                   | 0.3                 | 3820                   | 480                     |
| 6       | 6 | 60                     | 0.030               | 6                   | 0.3                 | 3185                   | 575                     |
| 8       | 6 | 60                     | 0.040               | 8                   | 0.4                 | 2385                   | 570                     |
| 10      | 6 | 60                     | 0.050               | 10                  | 0.5                 | 1910                   | 575                     |
| 12      | 6 | 60                     | 0.060               | 12                  | 0.6                 | 1590                   | 570                     |
| 16      | 6 | 60                     | 0.075               | 16                  | 0.6                 | 1195                   | 540                     |
| 20      | 8 | 60                     | 0.090               | 20                  | 0.6                 | 955                    | 690                     |
| 3       | 4 | 20                     | 0.008               | 3                   | 0.2                 | 2120                   | 68                      |
| 4       | 4 | 20                     | 0.010               | 4                   | 0.2                 | 1590                   | 64                      |
| 5       | 5 | 20                     | 0.015               | 5                   | 0.3                 | 1275                   | 96                      |
| 6       | 6 | 20                     | 0.015               | 6                   | 0.3                 | 1060                   | 95                      |
| 8       | 6 | 20                     | 0.020               | 8                   | 0.4                 | 795                    | 95                      |
| 10      | 6 | 20                     | 0.025               | 10                  | 0.5                 | 635                    | 95                      |
| 12      | 6 | 20                     | 0.030               | 12                  | 0.6                 | 530                    | 95                      |
| 16      | 6 | 20                     | 0.040               | 16                  | 0.6                 | 400                    | 96                      |
| 20      | 8 | 20                     | 0.055               | 20                  | 0.6                 | 320                    | 141                     |

## Фрезы чистовые

## Multicut HX

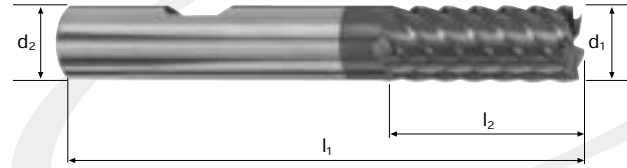
HM  
MG10

HX

$\lambda$  55°  
 $\gamma$  -10°



0,05-0,15  
45°



HX

Предназначены для обработки:

HRC  
< 58

HRC  
< 70

HRC  
25 - 48

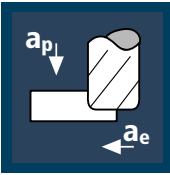
GG(G)  
Чугун

Титан

|           |    | Coating   |           | Article-Nº. |         | ø-Code |   | NEW!         |   |   |   |
|-----------|----|-----------|-----------|-------------|---------|--------|---|--------------|---|---|---|
|           |    | UNICUT-4X | POLYCHROM | DURO-S      | SERVICE |        |   |              |   |   |   |
| Example:  |    | U         |           | 5363        |         | 180    |   | ReTool®      |   |   |   |
| Order-Nº. |    | U         |           | 5363        |         | 180    |   | with coating |   |   |   |
| Ø         | d1 | d2        | l1        |             | l2      | α      | Z |              |   |   |   |
| Code      | e8 | h6        |           |             |         |        |   |              |   |   |   |
| .180      | 3  | 6         | 57        | 8           |         | 6°     | 4 | •            | • | • |   |
| .220      | 4  | 6         | 57        | 11          |         | 4°     | 4 | •            | • | • |   |
| .260      | 5  | 6         | 57        | 13          |         | 2°     | 5 | •            | • | • |   |
| .300      | 6  | 6         | 57        | 13          |         | 0°     | 6 | •            | • | • |   |
| .391      | 8  | 8         | 63        | 19          |         | 0°     | 6 | •            | • | • | • |
| .450      | 10 | 10        | 72        | 22          |         | 0°     | 6 | •            | • | • | • |
| .501      | 12 | 12        | 83        | 26          |         | 0°     | 6 | •            | • | • | • |
| .610      | 16 | 16        | 92        | 32          |         | 0°     | 6 | •            | • | • | • |
| .682      | 20 | 20        | 104       | 38          |         | 0°     | 8 | •            | • | • | • |
|           |    |           |           |             |         |        |   |              |   |   |   |
|           |    |           |           |             |         |        |   |              |   |   |   |
|           |    |           |           |             |         |        |   |              |   |   |   |
|           |    |           |           |             |         |        |   |              |   |   |   |
|           |    |           |           |             |         |        |   |              |   |   |   |
|           |    |           |           |             |         |        |   |              |   |   |   |
|           |    |           |           |             |         |        |   |              |   |   |   |
|           |    |           |           |             |         |        |   |              |   |   |   |
|           |    |           |           |             |         |        |   |              |   |   |   |
|           |    |           |           |             |         |        |   |              |   |   |   |
|           |    |           |           |             |         |        |   |              |   |   |   |
|           |    |           |           |             |         |        |   |              |   |   |   |
|           |    |           |           |             |         |        |   |              |   |   |   |
|           |    |           |           |             |         |        |   |              |   |   |   |
|           |    |           |           |             |         |        |   |              |   |   |   |
|           |    |           |           |             |         |        |   |              |   |   |   |
|           |    |           |           |             |         |        |   |              |   |   |   |



5269



Применение

Закаленная инструментальная сталь 48 - 52 HRC



Закаленная инструментальная сталь 52 - 56 HRC



Закаленная инструментальная сталь 56 - 60 HRC

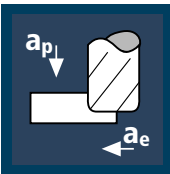


Закаленная инструментальная сталь 60 - 70 HRC



| d1 [mm] | z | v <sub>c</sub> [m/min] | f <sub>z</sub> [mm] | a <sub>p</sub> [mm] | a <sub>e</sub> [mm] | n [min <sup>-1</sup> ] | v <sub>f</sub> [mm/min] | Q [mm <sup>3</sup> /min] |
|---------|---|------------------------|---------------------|---------------------|---------------------|------------------------|-------------------------|--------------------------|
| 6       | 6 | 180                    | 0.055               | 0.15                | 1.2                 | 9550                   | 3150                    | 567                      |
| 8       | 6 | 180                    | 0.075               | 0.20                | 1.6                 | 7160                   | 3220                    | 1031                     |
| 10      | 8 | 180                    | 0.090               | 0.25                | 2.0                 | 5730                   | 4125                    | 2063                     |
| 12      | 8 | 180                    | 0.110               | 0.30                | 2.4                 | 4775                   | 4200                    | 3024                     |
| 6       | 6 | 120                    | 0.055               | 0.15                | 1.2                 | 6365                   | 2100                    | 378                      |
| 8       | 6 | 120                    | 0.075               | 0.20                | 1.6                 | 4775                   | 2150                    | 688                      |
| 10      | 8 | 120                    | 0.090               | 0.25                | 2.0                 | 3820                   | 2750                    | 1375                     |
| 12      | 8 | 120                    | 0.110               | 0.30                | 2.4                 | 3185                   | 2805                    | 2020                     |
| 6       | 6 | 60                     | 0.030               | 0.15                | 1.2                 | 3185                   | 575                     | 104                      |
| 8       | 6 | 60                     | 0.040               | 0.20                | 1.6                 | 2385                   | 570                     | 183                      |
| 10      | 8 | 60                     | 0.050               | 0.25                | 2.0                 | 1910                   | 765                     | 383                      |
| 12      | 8 | 60                     | 0.060               | 0.30                | 2.4                 | 1590                   | 765                     | 551                      |
| 6       | 6 | 20                     | 0.015               | 0.15                | 1.2                 | 1060                   | 95                      | 17                       |
| 8       | 6 | 20                     | 0.025               | 0.20                | 1.6                 | 795                    | 119                     | 38                       |
| 10      | 8 | 20                     | 0.030               | 0.25                | 2.0                 | 635                    | 152                     | 76                       |
| 12      | 8 | 20                     | 0.035               | 0.30                | 2.4                 | 530                    | 148                     | 107                      |

5269



Применение

Закаленная инструментальная сталь 48 - 52 HRC



Закаленная инструментальная сталь 52 - 56 HRC



Закаленная инструментальная сталь 56 - 60 HRC



Закаленная инструментальная сталь 60 - 70 HRC



| d1 [mm] | z | v <sub>c</sub> [m/min] | f <sub>z</sub> [mm] | a <sub>p</sub> [mm] | a <sub>e</sub> [mm] | n [min <sup>-1</sup> ] | v <sub>f</sub> [mm/min] | Q [mm <sup>3</sup> /min] |
|---------|---|------------------------|---------------------|---------------------|---------------------|------------------------|-------------------------|--------------------------|
| 6       | 6 | 150                    | 0.055               | 0.15                | 2.4                 | 7960                   | 2625                    | 945                      |
| 8       | 6 | 150                    | 0.075               | 0.20                | 3.2                 | 5970                   | 2685                    | 1719                     |
| 10      | 8 | 150                    | 0.090               | 0.25                | 4.0                 | 4775                   | 3440                    | 3440                     |
| 12      | 8 | 150                    | 0.110               | 0.30                | 4.8                 | 3980                   | 3500                    | 5040                     |
| 6       | 6 | 100                    | 0.055               | 0.15                | 2.4                 | 5305                   | 1750                    | 630                      |
| 8       | 6 | 100                    | 0.075               | 0.20                | 3.2                 | 3980                   | 1790                    | 1146                     |
| 10      | 8 | 100                    | 0.090               | 0.25                | 4.0                 | 3185                   | 2295                    | 2295                     |
| 12      | 8 | 100                    | 0.110               | 0.30                | 4.8                 | 2655                   | 2335                    | 3363                     |
| 6       | 6 | 50                     | 0.030               | 0.15                | 2.4                 | 2655                   | 480                     | 173                      |
| 8       | 6 | 50                     | 0.040               | 0.20                | 3.2                 | 1990                   | 480                     | 307                      |
| 10      | 8 | 50                     | 0.050               | 0.25                | 4.0                 | 1590                   | 635                     | 635                      |
| 12      | 8 | 50                     | 0.060               | 0.30                | 4.8                 | 1325                   | 635                     | 915                      |
| 6       | 6 | 15                     | 0.015               | 0.15                | 2.4                 | 795                    | 72                      | 26                       |
| 8       | 6 | 15                     | 0.020               | 0.20                | 3.2                 | 595                    | 71                      | 46                       |
| 10      | 8 | 15                     | 0.025               | 0.25                | 4.0                 | 475                    | 95                      | 95                       |
| 12      | 8 | 15                     | 0.030               | 0.30                | 4.8                 | 400                    | 96                      | 138                      |

# Фрезы черновые

HX-R

NEW!

HX

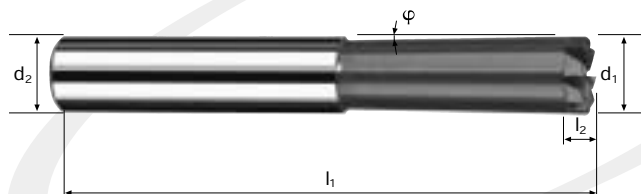
HM  
MG/H HX

$\lambda$  0°  
 $\gamma$  0°



DIN  
6535  
HA

r

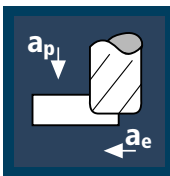


Предназначены для обработки:

- HRC < 58
- HRC < 70
- HRC 25 - 48
- GG(G)  
Чугун
- Титан

|           |    |    |    |     |         |    |   |   | POLYCHROM    | DURO-S | SERVICE |
|-----------|----|----|----|-----|---------|----|---|---|--------------|--------|---------|
| Example:  |    |    |    |     |         |    |   |   | ReTool®      |        |         |
| Order-Nº: |    |    |    |     |         |    |   |   | with coating |        |         |
|           |    |    |    |     |         |    |   |   | P5269        | D5269  |         |
| Ø         | d1 | d2 | l1 | l2  | r       | φ  | Z |   |              |        |         |
| Code      | e8 | h6 |    |     | 0/+0,03 |    |   |   |              |        |         |
| .300      | 6  | 6  | 57 | 2,0 | 1,0     | 1° | 6 | • | •            | •      |         |
| .391      | 8  | 8  | 63 | 2,5 | 1,0     | 1° | 6 | • | •            | •      |         |
| .450      | 10 | 10 | 72 | 3,0 | 1,0     | 1° | 8 | • | •            | •      |         |
| .501      | 12 | 12 | 83 | 3,5 | 1,0     | 1° | 8 | • | •            | •      |         |
| .303      | 6  | 6  | 57 | 2,0 | 1,5     | 1° | 6 | • | •            | •      |         |
| .393      | 8  | 8  | 63 | 2,5 | 1,5     | 1° | 6 | • | •            | •      |         |
| .453      | 10 | 10 | 72 | 3,0 | 1,5     | 1° | 8 | • | •            | •      |         |
| .503      | 12 | 12 | 83 | 3,5 | 1,5     | 1° | 8 | • | •            | •      |         |
| .395      | 8  | 8  | 63 | 2,5 | 2,0     | 1° | 6 | • | •            | •      |         |
| .455      | 10 | 10 | 72 | 3,0 | 2,0     | 1° | 8 | • | •            | •      |         |
| .505      | 12 | 12 | 83 | 3,5 | 2,0     | 1° | 8 | • | •            | •      |         |
|           |    |    |    |     |         |    |   |   |              |        |         |
|           |    |    |    |     |         |    |   |   |              |        |         |
|           |    |    |    |     |         |    |   |   |              |        |         |
|           |    |    |    |     |         |    |   |   |              |        |         |
|           |    |    |    |     |         |    |   |   |              |        |         |
|           |    |    |    |     |         |    |   |   |              |        |         |
|           |    |    |    |     |         |    |   |   |              |        |         |
|           |    |    |    |     |         |    |   |   |              |        |         |
|           |    |    |    |     |         |    |   |   |              |        |         |
|           |    |    |    |     |         |    |   |   |              |        |         |

5361



Применение

Закаленная инструментальная сталь  
48 - 52 HRC



Закаленная инструментальная сталь  
52 - 56 HRC



Закаленная инструментальная сталь  
56 - 60 HRC

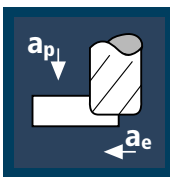


Закаленная инструментальная сталь  
60 - 70 HRC



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 8          | 4 | 150                       | 0.135                  | 0.4                    | 1.2                    | 5970       | 3225                       | 1.5                         |
| 10         | 4 | 150                       | 0.165                  | 0.5                    | 1.5                    | 4775       | 3150                       | 2.5                         |
| 12         | 4 | 150                       | 0.200                  | 0.6                    | 1.8                    | 3980       | 3185                       | 3.5                         |
| 16         | 4 | 150                       | 0.265                  | 0.8                    | 2.4                    | 2985       | 3165                       | 6.0                         |
| 20         | 4 | 150                       | 0.335                  | 1.0                    | 3.0                    | 2385       | 3195                       | 9.5                         |
| 8          | 4 | 120                       | 0.115                  | 0.4                    | 1.2                    | 4775       | 2195                       | 1.0                         |
| 10         | 4 | 120                       | 0.145                  | 0.5                    | 1.5                    | 3820       | 2215                       | 1.5                         |
| 12         | 4 | 120                       | 0.170                  | 0.6                    | 1.8                    | 3185       | 2165                       | 2.5                         |
| 16         | 4 | 120                       | 0.230                  | 0.8                    | 2.4                    | 2385       | 2195                       | 4.0                         |
| 20         | 4 | 120                       | 0.285                  | 1.0                    | 3.0                    | 1910       | 2175                       | 6.5                         |
| 8          | 4 | 80                        | 0.080                  | 0.4                    | 0.8                    | 3185       | 1020                       | 0.5                         |
| 10         | 4 | 80                        | 0.100                  | 0.5                    | 1.0                    | 2545       | 1020                       | 0.5                         |
| 12         | 4 | 80                        | 0.120                  | 0.6                    | 1.2                    | 2120       | 1020                       | 0.5                         |
| 16         | 4 | 80                        | 0.160                  | 0.8                    | 1.6                    | 1590       | 1020                       | 1.5                         |
| 20         | 4 | 80                        | 0.200                  | 1.0                    | 2.0                    | 1275       | 1020                       | 2.0                         |
| 8          | 4 | 60                        | 0.080                  | 0.2                    | 0.8                    | 2385       | 763                        | 0.0                         |
| 10         | 4 | 60                        | 0.100                  | 0.3                    | 1.0                    | 1910       | 764                        | 0.0                         |
| 12         | 4 | 60                        | 0.120                  | 0.3                    | 1.2                    | 1590       | 763                        | 0.5                         |
| 16         | 4 | 60                        | 0.160                  | 0.4                    | 1.6                    | 1195       | 765                        | 0.5                         |
| 20         | 4 | 60                        | 0.200                  | 0.5                    | 2.0                    | 955        | 764                        | 1.0                         |

5361



Применение

Закаленная инструментальная сталь  
48 - 52 HRC



Закаленная инструментальная сталь  
52 - 56 HRC



Закаленная инструментальная сталь  
56 - 60 HRC



Закаленная инструментальная сталь  
60 - 70 HRC



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 8          | 4 | 120                       | 0.190                  | 0.2                    | 2.4                    | 4775       | 3630                       | 1.5                         |
| 10         | 4 | 120                       | 0.240                  | 0.3                    | 3.0                    | 3820       | 3665                       | 2.5                         |
| 12         | 4 | 120                       | 0.285                  | 0.3                    | 3.6                    | 3185       | 3630                       | 4.0                         |
| 16         | 4 | 120                       | 0.380                  | 0.4                    | 4.8                    | 2385       | 3625                       | 7.0                         |
| 20         | 4 | 120                       | 0.475                  | 0.5                    | 6.0                    | 1910       | 3630                       | 11.0                        |
| 8          | 4 | 100                       | 0.180                  | 0.2                    | 2.4                    | 3980       | 2865                       | 1.5                         |
| 10         | 4 | 100                       | 0.220                  | 0.3                    | 3.0                    | 3185       | 2805                       | 2.0                         |
| 12         | 4 | 100                       | 0.265                  | 0.3                    | 3.6                    | 2655       | 2815                       | 3.0                         |
| 16         | 4 | 100                       | 0.355                  | 0.4                    | 4.8                    | 1990       | 2825                       | 5.5                         |
| 20         | 4 | 100                       | 0.445                  | 0.5                    | 6.0                    | 1590       | 2830                       | 8.5                         |
| 8          | 4 | 60                        | 0.075                  | 0.2                    | 1.6                    | 2385       | 715                        | 0.0                         |
| 10         | 4 | 60                        | 0.090                  | 0.3                    | 2.0                    | 1910       | 690                        | 0.5                         |
| 12         | 4 | 60                        | 0.110                  | 0.3                    | 2.4                    | 1590       | 700                        | 0.5                         |
| 16         | 4 | 60                        | 0.145                  | 0.4                    | 3.2                    | 1195       | 695                        | 1.0                         |
| 20         | 4 | 60                        | 0.180                  | 0.5                    | 4.0                    | 955        | 690                        | 1.5                         |
| 8          | 4 | 50                        | 0.075                  | 0.2                    | 1.6                    | 1990       | 597                        | 0.0                         |
| 10         | 4 | 50                        | 0.090                  | 0.3                    | 2.0                    | 1590       | 572                        | 0.5                         |
| 12         | 4 | 50                        | 0.110                  | 0.3                    | 2.4                    | 1325       | 583                        | 0.5                         |
| 16         | 4 | 50                        | 0.145                  | 0.4                    | 3.2                    | 995        | 577                        | 0.5                         |
| 20         | 4 | 50                        | 0.180                  | 0.5                    | 4.0                    | 795        | 572                        | 1.0                         |



# Фрезы черновые

# HX-RS

HM  
MG10

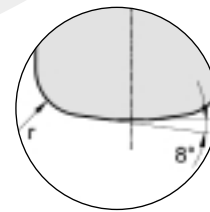
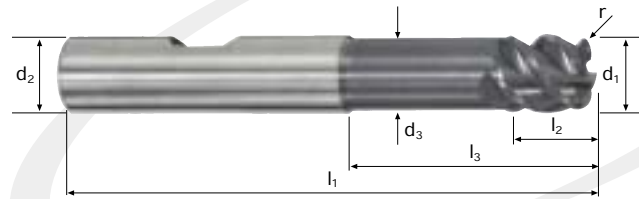
HX

$\lambda$  55°  
 $\gamma$  -10°



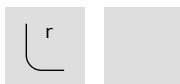

DIN 6535  
HA

DIN 6535  
HB



HX

Предназначены для обработки:



HRC  
< 58

HRC  
< 70

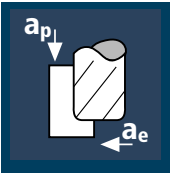
HRC  
25 - 48

GG(G)  
Чугун

Титан

| Ø<br>Code | d1<br>e8  | d2<br>h6 | d3                 | l1  | l2 | l3     | r<br>0/+0,03 | z | NEW!      |        |              |  |
|-----------|-----------|----------|--------------------|-----|----|--------|--------------|---|-----------|--------|--------------|--|
|           |           |          |                    |     |    |        |              |   | POLYCHROM | DURO-S | SERVICE      |  |
|           |           |          |                    |     |    |        |              |   |           |        |              |  |
| Example:  |           |          |                    |     |    |        |              |   |           | DURO-S |              |  |
| Order-Nº  | Coating P |          | Article-Nº 5261391 |     |    | ø-Code |              |   |           |        | D5361ReTool® |  |
|           |           |          |                    |     |    |        |              |   |           |        | with coating |  |
| .391      | 8         | 8        | 7,4                | 63  | 9  | 26     | 2,0          | 4 | •         | •      | •            |  |
| .450      | 10        | 10       | 9,2                | 72  | 11 | 31     | 2,5          | 4 | •         | •      | •            |  |
| .501      | 12        | 12       | 11,0               | 83  | 13 | 37     | 3,0          | 4 | •         | •      | •            |  |
| .610      | 16        | 16       | 15,0               | 92  | 17 | 43     | 3,5          | 4 | •         | •      | •            |  |
| .682      | 20        | 20       | 19,0               | 104 | 21 | 53     | 4,0          | 4 | •         | •      | •            |  |
|           |           |          |                    |     |    |        |              |   |           |        |              |  |
|           |           |          |                    |     |    |        |              |   |           |        |              |  |
|           |           |          |                    |     |    |        |              |   |           |        |              |  |
|           |           |          |                    |     |    |        |              |   |           |        |              |  |
|           |           |          |                    |     |    |        |              |   |           |        |              |  |
|           |           |          |                    |     |    |        |              |   |           |        |              |  |
|           |           |          |                    |     |    |        |              |   |           |        |              |  |
|           |           |          |                    |     |    |        |              |   |           |        |              |  |
|           |           |          |                    |     |    |        |              |   |           |        |              |  |
|           |           |          |                    |     |    |        |              |   |           |        |              |  |
|           |           |          |                    |     |    |        |              |   |           |        |              |  |
|           |           |          |                    |     |    |        |              |   |           |        |              |  |

5353



Применение

Закаленная инструментальная сталь  
24 - 32 HRC



Закаленная инструментальная сталь  
40 - 48 HRC



Закаленная инструментальная сталь  
50 - 54 HRC



Закаленная инструментальная сталь  
> 60 HRC



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 6          | 4 | 180                       | 0.055                  | 6                      | 3                      | 9550       | 2100                       | 38.0                        |
| 8          | 4 | 180                       | 0.075                  | 8                      | 2                      | 7160       | 2150                       | 34.5                        |
| 10         | 4 | 180                       | 0.090                  | 10                     | 2.5                    | 5730       | 2065                       | 51.5                        |
| 12         | 4 | 180                       | 0.110                  | 12                     | 3                      | 4775       | 2100                       | 75.5                        |
| 16         | 4 | 180                       | 0.145                  | 16                     | 4                      | 3580       | 2075                       | 133.0                       |
| 6          | 4 | 120                       | 0.055                  | 6                      | 3                      | 6365       | 1400                       | 25.0                        |
| 8          | 4 | 120                       | 0.075                  | 8                      | 2                      | 4775       | 1435                       | 23.0                        |
| 10         | 4 | 120                       | 0.090                  | 10                     | 2.5                    | 3820       | 1375                       | 34.5                        |
| 12         | 4 | 120                       | 0.110                  | 12                     | 3                      | 3185       | 1400                       | 50.5                        |
| 16         | 4 | 120                       | 0.145                  | 16                     | 4                      | 2385       | 1385                       | 88.5                        |
| 6          | 4 | 60                        | 0.030                  | 6                      | 3                      | 3185       | 380                        | 7.0                         |
| 8          | 4 | 60                        | 0.040                  | 8                      | 2                      | 2385       | 380                        | 6.0                         |
| 10         | 4 | 60                        | 0.050                  | 10                     | 2.5                    | 1910       | 380                        | 9.5                         |
| 12         | 4 | 60                        | 0.060                  | 12                     | 3                      | 1590       | 380                        | 13.5                        |
| 16         | 4 | 60                        | 0.075                  | 16                     | 4                      | 1195       | 360                        | 23.0                        |
| 6          | 4 | 20                        | 0.015                  | 6                      | 3                      | 1060       | 64                         | 1.0                         |
| 8          | 4 | 20                        | 0.025                  | 8                      | 2                      | 795        | 80                         | 1.5                         |
| 10         | 4 | 20                        | 0.030                  | 10                     | 2.5                    | 635        | 76                         | 2.0                         |
| 12         | 4 | 20                        | 0.035                  | 12                     | 3                      | 530        | 74                         | 2.5                         |
| 16         | 4 | 20                        | 0.045                  | 16                     | 4                      | 400        | 72                         | 4.5                         |

5353



Применение

Закаленная инструментальная сталь  
24 - 32 HRC



Закаленная инструментальная сталь  
40 - 48 HRC



Закаленная инструментальная сталь  
50 - 54 HRC



Закаленная инструментальная сталь  
> 60 HRC



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 6          | 4 | 150                       | 0.055                  | 3                      | 6                      | 7960       | 1750                       | 31.5                        |
| 8          | 4 | 150                       | 0.075                  | 4                      | 8                      | 5970       | 1790                       | 57.5                        |
| 10         | 4 | 150                       | 0.090                  | 5                      | 10                     | 4775       | 1720                       | 86.0                        |
| 12         | 4 | 150                       | 0.110                  | 6                      | 12                     | 3980       | 1750                       | 126.0                       |
| 16         | 4 | 150                       | 0.145                  | 4                      | 16                     | 2985       | 1730                       | 110.5                       |
| 6          | 4 | 100                       | 0.055                  | 3                      | 6                      | 5305       | 1165                       | 21.0                        |
| 8          | 4 | 100                       | 0.075                  | 4                      | 8                      | 3980       | 1195                       | 38.0                        |
| 10         | 4 | 100                       | 0.090                  | 5                      | 10                     | 3185       | 1145                       | 57.5                        |
| 12         | 4 | 100                       | 0.110                  | 6                      | 12                     | 2655       | 1170                       | 84.0                        |
| 16         | 4 | 100                       | 0.145                  | 4                      | 16                     | 1990       | 1155                       | 74.0                        |
| 6          | 4 | 50                        | 0.030                  | 3                      | 6                      | 2655       | 320                        | 6.0                         |
| 8          | 4 | 50                        | 0.040                  | 4                      | 8                      | 1990       | 320                        | 10.0                        |
| 10         | 4 | 50                        | 0.050                  | 5                      | 10                     | 1590       | 320                        | 16.0                        |
| 12         | 4 | 50                        | 0.060                  | 6                      | 12                     | 1325       | 320                        | 23.0                        |
| 16         | 4 | 50                        | 0.075                  | 4                      | 16                     | 995        | 300                        | 19.0                        |
| 6          | 4 | 15                        | 0.015                  | 3                      | 6                      | 795        | 48                         | 1.0                         |
| 8          | 4 | 15                        | 0.020                  | 4                      | 8                      | 595        | 48                         | 1.5                         |
| 10         | 4 | 15                        | 0.025                  | 5                      | 10                     | 475        | 48                         | 2.5                         |
| 12         | 4 | 15                        | 0.030                  | 6                      | 12                     | 400        | 48                         | 3.5                         |
| 16         | 4 | 15                        | 0.040                  | 4                      | 16                     | 300        | 48                         | 3.0                         |



## Фрезы черновые

## HX-R

HM  
MG10

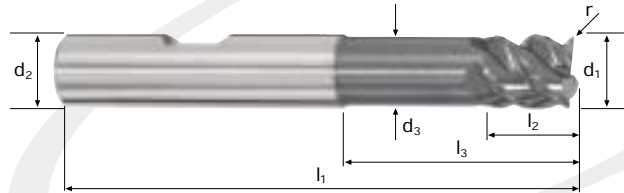
HX

$\lambda$  55°  
 $\gamma$  -10°



DIN  
6535  
HA

DIN  
6535  
HB



HX

Предназначены для обработки:

HRC  
< 58

HRC  
< 70

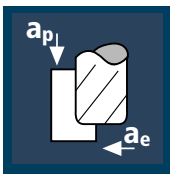
HRC  
25 - 48

GG(G)  
Чугун

Титан

| Пример:<br>заказа-№. | Покрyтие | Артикул-№. | Ø-Код | Ø    | d1 | d2 | d3   | l1 | l2 | l3 | r | Z | UNICUT-4X       | POLYCHROM       | DURO-S     | SERVICE                 |
|----------------------|----------|------------|-------|------|----|----|------|----|----|----|---|---|-----------------|-----------------|------------|-------------------------|
|                      |          |            |       |      |    |    |      |    |    |    |   |   | U5353P5353D5353 | U5253P5253D5253 | U5353D5353 | ReTool®<br>with coating |
|                      |          |            |       | .300 | 6  | 6  | 5,5  | 57 | 7  | 20 | 1 | 4 | •               | •               | •          | •                       |
|                      |          |            |       | .391 | 8  | 8  | 7,4  | 63 | 9  | 26 | 1 | 4 | •               | •               | •          | •                       |
|                      |          |            |       | .450 | 10 | 10 | 9,2  | 72 | 11 | 31 | 1 | 4 | •               | •               | •          | •                       |
|                      |          |            |       | .501 | 12 | 12 | 11,0 | 83 | 13 | 37 | 1 | 4 | •               | •               | •          | •                       |
|                      |          |            |       | .610 | 16 | 16 | 15,0 | 92 | 17 | 43 | 1 | 4 | •               | •               | •          | •                       |

5354



Применение

Закаленная инструментальная сталь 24 - 32 HRC



Закаленная инструментальная сталь 40 - 48 HRC



Закаленная инструментальная сталь 50 - 54 HRC



Закаленная инструментальная сталь > 60 HRC



| d1 [mm] | z | v <sub>c</sub> [m/min] | f <sub>z</sub> [mm] | a <sub>p</sub> [mm] | a <sub>e</sub> [mm] | n [min <sup>-1</sup> ] | v <sub>f</sub> [mm/min] | Q [cm <sup>3</sup> /min] |
|---------|---|------------------------|---------------------|---------------------|---------------------|------------------------|-------------------------|--------------------------|
| 8       | 4 | 180                    | 0.075               | 8                   | 2                   | 7160                   | 2150                    | 34.5                     |
| 10      | 4 | 180                    | 0.090               | 10                  | 2.5                 | 5730                   | 2065                    | 51.5                     |
| 12      | 4 | 180                    | 0.110               | 12                  | 3                   | 4775                   | 2100                    | 75.5                     |
| 16      | 4 | 180                    | 0.145               | 16                  | 4                   | 3580                   | 2075                    | 133.0                    |
| 8       | 4 | 120                    | 0.075               | 8                   | 2                   | 4775                   | 1435                    | 23.0                     |
| 10      | 4 | 120                    | 0.090               | 10                  | 2.5                 | 3820                   | 1375                    | 34.5                     |
| 12      | 4 | 120                    | 0.110               | 12                  | 3                   | 3185                   | 1400                    | 50.5                     |
| 16      | 4 | 120                    | 0.145               | 16                  | 4                   | 2385                   | 1385                    | 88.5                     |
| 8       | 4 | 60                     | 0.040               | 8                   | 2                   | 2385                   | 380                     | 6.0                      |
| 10      | 4 | 60                     | 0.050               | 10                  | 2.5                 | 1910                   | 380                     | 9.5                      |
| 12      | 4 | 60                     | 0.060               | 12                  | 3                   | 1590                   | 380                     | 13.5                     |
| 16      | 4 | 60                     | 0.075               | 16                  | 4                   | 1195                   | 360                     | 23.0                     |
| 8       | 4 | 20                     | 0.025               | 8                   | 2                   | 795                    | 80                      | 1.5                      |
| 10      | 4 | 20                     | 0.030               | 10                  | 2.5                 | 635                    | 76                      | 2.0                      |
| 12      | 4 | 20                     | 0.035               | 12                  | 3                   | 530                    | 74                      | 2.5                      |
| 16      | 4 | 20                     | 0.045               | 16                  | 4                   | 400                    | 72                      | 4.5                      |

5354



Применение

Закаленная инструментальная сталь 24 - 32 HRC



Закаленная инструментальная сталь 40 - 48 HRC



Закаленная инструментальная сталь 50 - 54 HRC



Закаленная инструментальная сталь > 60 HRC



| d1 [mm] | z | v <sub>c</sub> [m/min] | f <sub>z</sub> [mm] | a <sub>p</sub> [mm] | a <sub>e</sub> [mm] | n [min <sup>-1</sup> ] | v <sub>f</sub> [mm/min] | Q [cm <sup>3</sup> /min] |
|---------|---|------------------------|---------------------|---------------------|---------------------|------------------------|-------------------------|--------------------------|
| 8       | 4 | 150                    | 0.075               | 4                   | 8                   | 5970                   | 1790                    | 57.5                     |
| 10      | 4 | 150                    | 0.090               | 5                   | 10                  | 4775                   | 1720                    | 86.0                     |
| 12      | 4 | 150                    | 0.110               | 6                   | 12                  | 3980                   | 1750                    | 126.0                    |
| 16      | 4 | 150                    | 0.145               | 4                   | 16                  | 2985                   | 1730                    | 110.5                    |
| 8       | 4 | 100                    | 0.075               | 4                   | 8                   | 3980                   | 1195                    | 38.0                     |
| 10      | 4 | 100                    | 0.090               | 5                   | 10                  | 3185                   | 1145                    | 57.5                     |
| 12      | 4 | 100                    | 0.110               | 6                   | 12                  | 2655                   | 1170                    | 84.0                     |
| 16      | 4 | 100                    | 0.145               | 4                   | 16                  | 1990                   | 1155                    | 74.0                     |
| 8       | 4 | 50                     | 0.040               | 4                   | 8                   | 1990                   | 320                     | 10.0                     |
| 10      | 4 | 50                     | 0.050               | 5                   | 10                  | 1590                   | 320                     | 16.0                     |
| 12      | 4 | 50                     | 0.060               | 6                   | 12                  | 1325                   | 320                     | 23.0                     |
| 16      | 4 | 50                     | 0.075               | 4                   | 16                  | 995                    | 300                     | 19.0                     |
| 8       | 4 | 15                     | 0.020               | 4                   | 8                   | 595                    | 48                      | 1.5                      |
| 10      | 4 | 15                     | 0.025               | 5                   | 10                  | 475                    | 48                      | 2.5                      |
| 12      | 4 | 15                     | 0.030               | 6                   | 12                  | 400                    | 48                      | 3.5                      |
| 16      | 4 | 15                     | 0.040               | 4                   | 16                  | 300                    | 48                      | 3.0                      |

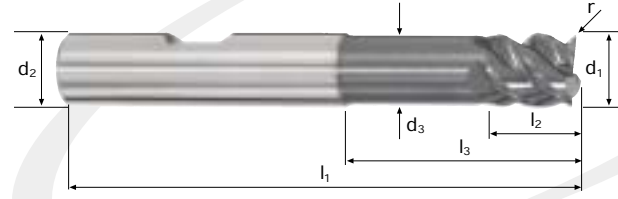
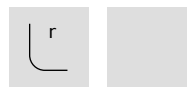


# Фрезы черновые

# HX-R

HM  
MG10 HX

$\lambda$  55°  
 $\gamma$  -10°



HX

Предназначены для обработки:

HRC < 58

HRC < 70

HRC 25 - 48

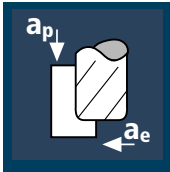
GG(G)  
Чугун

Титан

|           |          |    |           |    |       |    |         |   | UNICUT-4X                    | POLYCHROM | DURO-S | SERVICE |
|-----------|----------|----|-----------|----|-------|----|---------|---|------------------------------|-----------|--------|---------|
| Пример:   | Покрытие |    | Артикул-№ |    | Ø-Код |    |         |   | NEW!                         |           |        |         |
| заказа-№. | U        |    | 5354      |    | .391  |    |         |   | U5354P5354D5354ReTool®       |           |        |         |
|           |          |    |           |    |       |    |         |   | U5254P5254D5254 with coating |           |        |         |
| Ø         | d1       | d2 | d3        | l1 | l2    | l3 | r       | Z |                              |           |        |         |
| Code      | e8       | h6 |           |    |       |    | 0/+0,03 |   |                              |           |        |         |
| .391      | 8        | 8  | 7,4       | 63 | 9     | 26 | 1,5     | 4 | .                            | .         | .      | .       |
| .450      | 10       | 10 | 9,2       | 72 | 11    | 31 | 1,5     | 4 | .                            | .         | .      | .       |
| .501      | 12       | 12 | 11,0      | 83 | 13    | 37 | 1,5     | 4 | .                            | .         | .      | .       |
| .610      | 16       | 16 | 15,0      | 92 | 17    | 43 | 1,5     | 4 | .                            | .         | .      | .       |
|           |          |    |           |    |       |    |         |   |                              |           |        |         |
|           |          |    |           |    |       |    |         |   |                              |           |        |         |
|           |          |    |           |    |       |    |         |   |                              |           |        |         |
|           |          |    |           |    |       |    |         |   |                              |           |        |         |
|           |          |    |           |    |       |    |         |   |                              |           |        |         |
|           |          |    |           |    |       |    |         |   |                              |           |        |         |
|           |          |    |           |    |       |    |         |   |                              |           |        |         |
|           |          |    |           |    |       |    |         |   |                              |           |        |         |
|           |          |    |           |    |       |    |         |   |                              |           |        |         |
|           |          |    |           |    |       |    |         |   |                              |           |        |         |
|           |          |    |           |    |       |    |         |   |                              |           |        |         |
|           |          |    |           |    |       |    |         |   |                              |           |        |         |
|           |          |    |           |    |       |    |         |   |                              |           |        |         |
|           |          |    |           |    |       |    |         |   |                              |           |        |         |
|           |          |    |           |    |       |    |         |   |                              |           |        |         |
|           |          |    |           |    |       |    |         |   |                              |           |        |         |



5356



Применение

Закаленная инструментальная сталь  
24 - 32 HRC



Закаленная инструментальная сталь  
40 - 48 HRC



Закаленная инструментальная сталь  
50 - 54 HRC



Закаленная инструментальная сталь  
> 60 HRC



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 6          | 4 | 180                       | 0.055                  | 6                      | 3                      | 9550       | 2100                       | 38.0                        |
| 8          | 4 | 180                       | 0.075                  | 8                      | 2                      | 7160       | 2150                       | 34.5                        |
| 10         | 4 | 180                       | 0.090                  | 10                     | 2.5                    | 5730       | 2065                       | 51.5                        |
| 12         | 4 | 180                       | 0.110                  | 12                     | 3                      | 4775       | 2100                       | 75.5                        |
| 16         | 4 | 180                       | 0.145                  | 16                     | 4                      | 3580       | 2075                       | 133.0                       |
| 20         | 4 | 180                       | 0.180                  | 20                     | 5                      | 2865       | 2065                       | 206.5                       |
| 6          | 4 | 120                       | 0.055                  | 6                      | 3                      | 6365       | 1400                       | 25.0                        |
| 8          | 4 | 120                       | 0.075                  | 8                      | 2                      | 4775       | 1435                       | 23.0                        |
| 10         | 4 | 120                       | 0.090                  | 10                     | 2.5                    | 3820       | 1375                       | 34.5                        |
| 12         | 4 | 120                       | 0.110                  | 12                     | 3                      | 3185       | 1400                       | 50.5                        |
| 16         | 4 | 120                       | 0.145                  | 16                     | 4                      | 2385       | 1385                       | 88.5                        |
| 20         | 4 | 120                       | 0.180                  | 20                     | 5                      | 1910       | 1375                       | 137.5                       |
| 6          | 4 | 60                        | 0.030                  | 6                      | 3                      | 3185       | 380                        | 7.0                         |
| 8          | 4 | 60                        | 0.040                  | 8                      | 2                      | 2385       | 380                        | 6.0                         |
| 10         | 4 | 60                        | 0.050                  | 10                     | 2.5                    | 1910       | 380                        | 9.5                         |
| 12         | 4 | 60                        | 0.060                  | 12                     | 3                      | 1590       | 380                        | 13.5                        |
| 16         | 4 | 60                        | 0.075                  | 16                     | 4                      | 1195       | 360                        | 23.0                        |
| 20         | 4 | 60                        | 0.090                  | 20                     | 5                      | 955        | 345                        | 34.5                        |
| 6          | 4 | 20                        | 0.015                  | 6                      | 3                      | 1060       | 64                         | 1.0                         |
| 8          | 4 | 20                        | 0.025                  | 8                      | 2                      | 795        | 80                         | 1.5                         |
| 10         | 4 | 20                        | 0.030                  | 10                     | 2.5                    | 635        | 76                         | 2.0                         |
| 12         | 4 | 20                        | 0.035                  | 12                     | 3                      | 530        | 74                         | 2.5                         |
| 16         | 4 | 20                        | 0.045                  | 16                     | 4                      | 400        | 72                         | 4.5                         |
| 20         | 4 | 20                        | 0.055                  | 20                     | 5                      | 320        | 70                         | 7.0                         |

5356



Применение

Закаленная инструментальная сталь  
24 - 32 HRC



Закаленная инструментальная сталь  
40 - 48 HRC



Закаленная инструментальная сталь  
50 - 54 HRC



Закаленная инструментальная сталь  
> 60 HRC



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 6          | 4 | 150                       | 0.055                  | 3                      | 6                      | 7960       | 1750                       | 31.5                        |
| 8          | 4 | 150                       | 0.075                  | 4                      | 8                      | 5970       | 1790                       | 57.5                        |
| 10         | 4 | 150                       | 0.090                  | 5                      | 10                     | 4775       | 1720                       | 86.0                        |
| 12         | 4 | 150                       | 0.110                  | 6                      | 12                     | 3980       | 1750                       | 126.0                       |
| 16         | 4 | 150                       | 0.145                  | 4                      | 16                     | 2985       | 1730                       | 110.5                       |
| 20         | 4 | 150                       | 0.180                  | 5                      | 20                     | 2385       | 1715                       | 171.5                       |
| 6          | 4 | 100                       | 0.055                  | 3                      | 6                      | 5305       | 1165                       | 21.0                        |
| 8          | 4 | 100                       | 0.075                  | 4                      | 8                      | 3980       | 1195                       | 38.0                        |
| 10         | 4 | 100                       | 0.090                  | 5                      | 10                     | 3185       | 1145                       | 57.5                        |
| 12         | 4 | 100                       | 0.110                  | 6                      | 12                     | 2655       | 1170                       | 84.0                        |
| 16         | 4 | 100                       | 0.145                  | 4                      | 16                     | 1990       | 1155                       | 74.0                        |
| 20         | 4 | 100                       | 0.180                  | 5                      | 20                     | 1590       | 1145                       | 114.5                       |
| 6          | 4 | 50                        | 0.030                  | 3                      | 6                      | 2655       | 320                        | 6.0                         |
| 8          | 4 | 50                        | 0.040                  | 4                      | 8                      | 1990       | 320                        | 10.0                        |
| 10         | 4 | 50                        | 0.050                  | 5                      | 10                     | 1590       | 320                        | 16.0                        |
| 12         | 4 | 50                        | 0.060                  | 6                      | 12                     | 1325       | 320                        | 23.0                        |
| 16         | 4 | 50                        | 0.075                  | 4                      | 16                     | 995        | 300                        | 19.0                        |
| 20         | 4 | 50                        | 0.090                  | 5                      | 20                     | 795        | 285                        | 28.5                        |
| 6          | 4 | 15                        | 0.015                  | 3                      | 6                      | 795        | 48                         | 1.0                         |
| 8          | 4 | 15                        | 0.020                  | 4                      | 8                      | 595        | 48                         | 1.5                         |
| 10         | 4 | 15                        | 0.025                  | 5                      | 10                     | 475        | 48                         | 2.5                         |
| 12         | 4 | 15                        | 0.030                  | 6                      | 12                     | 400        | 48                         | 3.5                         |
| 16         | 4 | 15                        | 0.040                  | 4                      | 16                     | 300        | 48                         | 3.0                         |
| 20         | 4 | 15                        | 0.055                  | 5                      | 20                     | 240        | 53                         | 5.5                         |



# Фрезы черновые

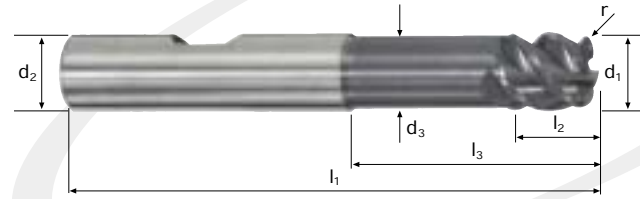
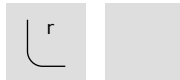
# HX-R

HM MG10 HX

$\lambda$  55°  
 $\gamma$  -10°



DIN 6535 HA    DIN 6535 HB



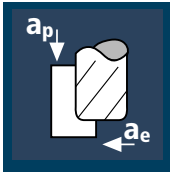
HX

Предназначены для обработки:

- HRC < 58
- HRC < 70
- HRC 25 - 48
- GG(G) Чугун
- Титан

|           |          |    |            |     |       |    |         |   | UNICUT-4X    | POLYCHROM | DURO-S | SERVICE |
|-----------|----------|----|------------|-----|-------|----|---------|---|--------------|-----------|--------|---------|
| Пример:   | Покрытие |    | Артикул-№. |     | Ø-Код |    |         |   | ReTool®      |           |        |         |
| заказа-№. | U        |    | 5356.300   |     | 300   |    |         |   | with coating |           |        |         |
| Ø         | d1       | d2 | d3         | l1  | l2    | l3 | r       | z |              |           |        |         |
| Code      | e8       | h6 |            |     |       |    | 0/+0,03 |   |              |           |        |         |
| .300      | 6        | 6  | 5,5        | 57  | 7     | 20 | 1,5     | 4 | •            | •         | •      |         |
| .391      | 8        | 8  | 7,4        | 63  | 9     | 26 | 2,0     | 4 | •            | •         | •      | •       |
| .450      | 10       | 10 | 9,2        | 72  | 11    | 31 | 2,5     | 4 | •            | •         | •      | •       |
| .501      | 12       | 12 | 11,0       | 83  | 13    | 37 | 3,0     | 4 | •            | •         | •      | •       |
| .610      | 16       | 16 | 15,0       | 92  | 17    | 43 | 3,5     | 4 | •            | •         | •      | •       |
| .682      | 20       | 20 | 19,0       | 104 | 21    | 53 | 4,0     | 4 | •            | •         | •      | •       |
|           |          |    |            |     |       |    |         |   |              |           |        |         |
|           |          |    |            |     |       |    |         |   |              |           |        |         |
|           |          |    |            |     |       |    |         |   |              |           |        |         |
|           |          |    |            |     |       |    |         |   |              |           |        |         |
|           |          |    |            |     |       |    |         |   |              |           |        |         |
|           |          |    |            |     |       |    |         |   |              |           |        |         |
|           |          |    |            |     |       |    |         |   |              |           |        |         |
|           |          |    |            |     |       |    |         |   |              |           |        |         |
|           |          |    |            |     |       |    |         |   |              |           |        |         |
|           |          |    |            |     |       |    |         |   |              |           |        |         |
|           |          |    |            |     |       |    |         |   |              |           |        |         |
|           |          |    |            |     |       |    |         |   |              |           |        |         |
|           |          |    |            |     |       |    |         |   |              |           |        |         |
|           |          |    |            |     |       |    |         |   |              |           |        |         |
|           |          |    |            |     |       |    |         |   |              |           |        |         |
|           |          |    |            |     |       |    |         |   |              |           |        |         |
|           |          |    |            |     |       |    |         |   |              |           |        |         |
|           |          |    |            |     |       |    |         |   |              |           |        |         |

5367



Применение

Закаленная инструментальная сталь 48 - 52 HRC



Закаленная инструментальная сталь 52 - 56 HRC



Закаленная инструментальная сталь 56 - 60 HRC



Закаленная инструментальная сталь 60 - 70 HRC



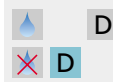
| d1 [mm] | z | v <sub>c</sub> [m/min] | f <sub>z</sub> [mm] | a <sub>p</sub> [mm] | a <sub>e</sub> [mm] | n [min] | v <sub>f</sub> [mm/min] | Q [cm <sup>3</sup> /min] |
|---------|---|------------------------|---------------------|---------------------|---------------------|---------|-------------------------|--------------------------|
| 3       | 2 | 80                     | 0.015               | 3.0                 | 1.5                 | 8490    | 255                     | 1.0                      |
| 4       | 2 | 80                     | 0.020               | 4.0                 | 2.0                 | 6365    | 255                     | 2.0                      |
| 5       | 2 | 80                     | 0.030               | 5.0                 | 2.5                 | 5095    | 305                     | 4.0                      |
| 6       | 4 | 80                     | 0.035               | 6.0                 | 3.0                 | 4245    | 595                     | 10.5                     |
| 8       | 4 | 80                     | 0.045               | 8.0                 | 2.0                 | 3185    | 575                     | 9.0                      |
| 10      | 4 | 80                     | 0.055               | 10.0                | 2.5                 | 2545    | 560                     | 14.0                     |
| 12      | 4 | 80                     | 0.065               | 12.0                | 3.0                 | 2120    | 550                     | 20.0                     |
| 16      | 4 | 80                     | 0.090               | 16.0                | 4.0                 | 1590    | 570                     | 36.5                     |
| 3       | 2 | 50                     | 0.015               | 3.0                 | 1.5                 | 5305    | 160                     | 0.5                      |
| 4       | 2 | 50                     | 0.020               | 4.0                 | 2.0                 | 3980    | 160                     | 1.5                      |
| 5       | 2 | 50                     | 0.030               | 5.0                 | 2.5                 | 3185    | 190                     | 2.5                      |
| 6       | 4 | 50                     | 0.035               | 6.0                 | 3.0                 | 2655    | 370                     | 6.5                      |
| 8       | 4 | 50                     | 0.045               | 8.0                 | 2.0                 | 1990    | 360                     | 6.0                      |
| 10      | 4 | 50                     | 0.055               | 10.0                | 2.5                 | 1590    | 350                     | 9.0                      |
| 12      | 4 | 50                     | 0.065               | 12.0                | 3.0                 | 1325    | 345                     | 12.5                     |
| 16      | 4 | 50                     | 0.090               | 16.0                | 4.0                 | 995     | 360                     | 23.0                     |
| 3       | 2 | 35                     | 0.010               | 3.0                 | 1.5                 | 3715    | 75                      | 0.5                      |
| 4       | 2 | 35                     | 0.015               | 4.0                 | 2.0                 | 2785    | 85                      | 0.5                      |
| 5       | 2 | 35                     | 0.025               | 5.0                 | 2.5                 | 2230    | 110                     | 1.5                      |
| 6       | 4 | 35                     | 0.030               | 6.0                 | 3.0                 | 1855    | 225                     | 4.0                      |
| 8       | 4 | 35                     | 0.040               | 8.0                 | 2.0                 | 1395    | 225                     | 3.5                      |
| 10      | 4 | 35                     | 0.050               | 10.0                | 2.5                 | 1115    | 225                     | 5.5                      |
| 12      | 4 | 35                     | 0.060               | 12.0                | 3.0                 | 930     | 225                     | 8.0                      |
| 16      | 4 | 35                     | 0.075               | 16.0                | 4.0                 | 695     | 210                     | 13.5                     |
| 3       | 2 | 25                     | 0.010               | 3.0                 | 1.5                 | 2655    | 53                      | 0.0                      |
| 4       | 2 | 25                     | 0.010               | 4.0                 | 2.0                 | 1990    | 40                      | 0.5                      |
| 5       | 2 | 25                     | 0.015               | 5.0                 | 2.5                 | 1590    | 48                      | 0.5                      |
| 6       | 4 | 25                     | 0.015               | 6.0                 | 3.0                 | 1325    | 80                      | 1.5                      |
| 8       | 4 | 25                     | 0.025               | 8.0                 | 2.0                 | 995     | 100                     | 1.5                      |
| 10      | 4 | 25                     | 0.030               | 10.0                | 2.5                 | 795     | 95                      | 2.5                      |
| 12      | 4 | 25                     | 0.035               | 12.0                | 3.0                 | 665     | 93                      | 3.5                      |
| 16      | 4 | 25                     | 0.045               | 16.0                | 4.0                 | 495     | 89                      | 5.5                      |

5367



Применение

Закаленная инструментальная сталь 48 - 52 HRC



Закаленная инструментальная сталь 52 - 56 HRC



Закаленная инструментальная сталь 56 - 60 HRC



Закаленная инструментальная сталь 60 - 70 HRC



| d1 [mm] | z | v <sub>c</sub> [m/min] | f <sub>z</sub> [mm] | a <sub>p</sub> [mm] | a <sub>e</sub> [mm] | n [min] | v <sub>f</sub> [mm/min] | Q [cm <sup>3</sup> /min] |
|---------|---|------------------------|---------------------|---------------------|---------------------|---------|-------------------------|--------------------------|
| 3       | 2 | 70                     | 0.015               | 1.5                 | 3.0                 | 7425    | 225                     | 1.0                      |
| 4       | 2 | 70                     | 0.020               | 2.0                 | 4.0                 | 5570    | 225                     | 2.0                      |
| 5       | 2 | 70                     | 0.030               | 2.5                 | 5.0                 | 4455    | 265                     | 3.5                      |
| 6       | 4 | 70                     | 0.035               | 3.0                 | 6.0                 | 3715    | 520                     | 9.5                      |
| 8       | 4 | 70                     | 0.045               | 4.0                 | 8.0                 | 2785    | 500                     | 16.0                     |
| 10      | 4 | 70                     | 0.055               | 5.0                 | 10.0                | 2230    | 490                     | 24.5                     |
| 12      | 4 | 70                     | 0.065               | 6.0                 | 12.0                | 1855    | 480                     | 34.5                     |
| 16      | 4 | 70                     | 0.090               | 4.0                 | 16.0                | 1395    | 500                     | 32.0                     |
| 3       | 2 | 50                     | 0.015               | 1.5                 | 3.0                 | 5305    | 160                     | 0.5                      |
| 4       | 2 | 50                     | 0.020               | 2.0                 | 4.0                 | 3980    | 160                     | 1.5                      |
| 5       | 2 | 50                     | 0.030               | 2.5                 | 5.0                 | 3185    | 190                     | 2.5                      |
| 6       | 4 | 50                     | 0.035               | 3.0                 | 6.0                 | 2655    | 370                     | 6.5                      |
| 8       | 4 | 50                     | 0.045               | 4.0                 | 8.0                 | 1990    | 360                     | 11.5                     |
| 10      | 4 | 50                     | 0.055               | 5.0                 | 10.0                | 1590    | 350                     | 17.5                     |
| 12      | 4 | 50                     | 0.065               | 6.0                 | 12.0                | 1325    | 345                     | 25.0                     |
| 16      | 4 | 50                     | 0.090               | 4.0                 | 16.0                | 995     | 360                     | 23.0                     |
| 3       | 2 | 30                     | 0.008               | 1.5                 | 3.0                 | 3185    | 50                      | 0.0                      |
| 4       | 2 | 30                     | 0.015               | 2.0                 | 4.0                 | 2385    | 70                      | 0.5                      |
| 5       | 2 | 30                     | 0.025               | 2.5                 | 5.0                 | 1910    | 95                      | 1.0                      |
| 6       | 4 | 30                     | 0.030               | 3.0                 | 6.0                 | 1590    | 190                     | 3.5                      |
| 8       | 4 | 30                     | 0.040               | 4.0                 | 8.0                 | 1195    | 190                     | 6.0                      |
| 10      | 4 | 30                     | 0.050               | 5.0                 | 10.0                | 955     | 190                     | 9.5                      |
| 12      | 4 | 30                     | 0.060               | 6.0                 | 12.0                | 795     | 190                     | 13.5                     |
| 16      | 4 | 30                     | 0.075               | 4.0                 | 16.0                | 595     | 180                     | 11.5                     |
| 3       | 2 | 20                     | 0.008               | 1.5                 | 3.0                 | 2120    | 34                      | 0.0                      |
| 4       | 2 | 20                     | 0.010               | 2.0                 | 4.0                 | 1590    | 32                      | 0.5                      |
| 5       | 2 | 20                     | 0.015               | 2.5                 | 5.0                 | 1275    | 38                      | 0.5                      |
| 6       | 4 | 20                     | 0.015               | 3.0                 | 6.0                 | 1060    | 64                      | 1.0                      |
| 8       | 4 | 20                     | 0.020               | 4.0                 | 8.0                 | 795     | 64                      | 2.0                      |
| 10      | 4 | 20                     | 0.025               | 5.0                 | 10.0                | 635     | 64                      | 3.0                      |
| 12      | 4 | 20                     | 0.030               | 6.0                 | 12.0                | 530     | 64                      | 4.5                      |
| 16      | 4 | 20                     | 0.040               | 4.0                 | 16.0                | 400     | 64                      | 4.0                      |

# Фрезы черновые

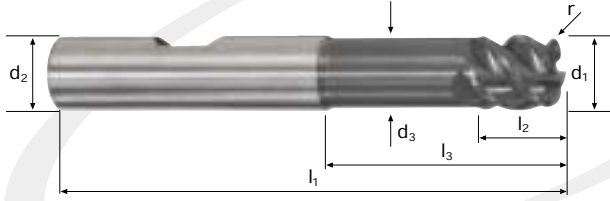
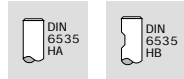
## HX-RH

NEW!

HX

HM MG/H HX

$\lambda$  55°  
 $\gamma$  -10°



Предназначены для обработки:



HRC < 58

HRC < 70

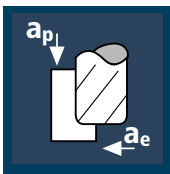
HRC 25 - 48

GG(G)  
Чугун

Титан

|                   |          |       |      |            |    |       |           |    |   | DURO-S | SERVICE      |  |
|-------------------|----------|-------|------|------------|----|-------|-----------|----|---|--------|--------------|--|
|                   |          |       |      |            |    |       |           |    |   | D5367  | ReTool®      |  |
|                   |          |       |      |            |    |       |           |    |   | D5267  | with coating |  |
| Пример: заказа-№. | Покрытие |       |      | Артикул-№. |    | Ø-Код |           | Ø  |   |        |              |  |
|                   | D        | 5367  | .180 |            |    |       |           |    |   |        |              |  |
| Ø Code            | d1 e8    | d2 h6 | d3   | l1         | l2 | l3    | r 0/+0,03 | α  | z |        |              |  |
| .180              | 3        | 6     | 2,8  | 57         | 4  | 14    | 1         | 4° | 2 | •      |              |  |
| .220              | 4        | 6     | 3,7  | 57         | 5  | 16    | 1         | 3° | 2 | •      |              |  |
| .260              | 5        | 6     | 4,6  | 57         | 6  | 18    | 1         | 2° | 2 | •      |              |  |
| .300              | 6        | 6     | 5,5  | 57         | 7  | 20    | 1         | 0° | 4 | •      |              |  |
| .391              | 8        | 8     | 7,4  | 63         | 9  | 26    | 1         | 0° | 4 | •      | •            |  |
| .450              | 10       | 10    | 9,2  | 72         | 11 | 31    | 1         | 0° | 4 | •      | •            |  |
| .501              | 12       | 12    | 11,0 | 83         | 13 | 37    | 1         | 0° | 4 | •      | •            |  |
| .610              | 16       | 16    | 15,0 | 92         | 17 | 43    | 1         | 0° | 4 | •      | •            |  |
|                   |          |       |      |            |    |       |           |    |   |        |              |  |
|                   |          |       |      |            |    |       |           |    |   |        |              |  |
|                   |          |       |      |            |    |       |           |    |   |        |              |  |
|                   |          |       |      |            |    |       |           |    |   |        |              |  |
|                   |          |       |      |            |    |       |           |    |   |        |              |  |
|                   |          |       |      |            |    |       |           |    |   |        |              |  |
|                   |          |       |      |            |    |       |           |    |   |        |              |  |
|                   |          |       |      |            |    |       |           |    |   |        |              |  |
|                   |          |       |      |            |    |       |           |    |   |        |              |  |
|                   |          |       |      |            |    |       |           |    |   |        |              |  |
|                   |          |       |      |            |    |       |           |    |   |        |              |  |
|                   |          |       |      |            |    |       |           |    |   |        |              |  |
|                   |          |       |      |            |    |       |           |    |   |        |              |  |
|                   |          |       |      |            |    |       |           |    |   |        |              |  |
|                   |          |       |      |            |    |       |           |    |   |        |              |  |
|                   |          |       |      |            |    |       |           |    |   |        |              |  |
|                   |          |       |      |            |    |       |           |    |   |        |              |  |

5357



Применение

Закаленная инструментальная сталь 24 - 32 HRC



Закаленная инструментальная сталь 40 - 48 HRC



Закаленная инструментальная сталь 50 - 54 HRC



Закаленная инструментальная сталь > 60 HRC



| d1 [mm] | z | v <sub>c</sub> [m/min] | f <sub>z</sub> [mm] | a <sub>p</sub> [mm] | a <sub>e</sub> [mm] | n [min] | v <sub>f</sub> [mm/min] | Q [cm <sup>3</sup> /min] |
|---------|---|------------------------|---------------------|---------------------|---------------------|---------|-------------------------|--------------------------|
| 6       | 4 | 150                    | 0.055               | 6                   | 2.4                 | 7960    | 1750                    | 25.0                     |
| 8       | 4 | 150                    | 0.075               | 8                   | 1.6                 | 5970    | 1790                    | 23.0                     |
| 10      | 4 | 150                    | 0.090               | 10                  | 2                   | 4775    | 1720                    | 34.5                     |
| 12      | 4 | 150                    | 0.110               | 12                  | 2.4                 | 3980    | 1750                    | 50.5                     |
| 16      | 4 | 150                    | 0.145               | 16                  | 3.2                 | 2985    | 1730                    | 88.5                     |
| 6       | 4 | 100                    | 0.055               | 6                   | 2.4                 | 5305    | 1165                    | 17.0                     |
| 8       | 4 | 100                    | 0.075               | 8                   | 1.6                 | 3980    | 1195                    | 15.5                     |
| 10      | 4 | 100                    | 0.090               | 10                  | 2                   | 3185    | 1145                    | 23.0                     |
| 12      | 4 | 100                    | 0.110               | 12                  | 2.4                 | 2655    | 1170                    | 33.5                     |
| 16      | 4 | 100                    | 0.145               | 16                  | 3.2                 | 1990    | 1155                    | 59.0                     |
| 6       | 4 | 50                     | 0.030               | 6                   | 2.4                 | 2655    | 320                     | 4.5                      |
| 8       | 4 | 50                     | 0.040               | 8                   | 1.6                 | 1990    | 320                     | 4.0                      |
| 10      | 4 | 50                     | 0.050               | 10                  | 2                   | 1590    | 320                     | 6.5                      |
| 12      | 4 | 50                     | 0.060               | 12                  | 2.4                 | 1325    | 320                     | 9.0                      |
| 16      | 4 | 50                     | 0.075               | 16                  | 3.2                 | 995     | 300                     | 15.5                     |
| 6       | 4 | 15                     | 0.015               | 6                   | 2.4                 | 795     | 48                      | 0.5                      |
| 8       | 4 | 15                     | 0.025               | 8                   | 1.6                 | 595     | 60                      | 1.0                      |
| 10      | 4 | 15                     | 0.030               | 10                  | 2                   | 475     | 57                      | 1.0                      |
| 12      | 4 | 15                     | 0.035               | 12                  | 2.4                 | 400     | 56                      | 1.5                      |
| 16      | 4 | 15                     | 0.045               | 16                  | 3.2                 | 300     | 54                      | 3.0                      |

5357



Применение

Закаленная инструментальная сталь 24 - 32 HRC



Закаленная инструментальная сталь 40 - 48 HRC



Закаленная инструментальная сталь 50 - 54 HRC



Закаленная инструментальная сталь > 60 HRC



| d1 [mm] | z | v <sub>c</sub> [m/min] | f <sub>z</sub> [mm] | a <sub>p</sub> [mm] | a <sub>e</sub> [mm] | n [min] | v <sub>f</sub> [mm/min] | Q [cm <sup>3</sup> /min] |
|---------|---|------------------------|---------------------|---------------------|---------------------|---------|-------------------------|--------------------------|
| 6       | 4 | 120                    | 0.055               | 2.4                 | 6                   | 6365    | 1400                    | 20.0                     |
| 8       | 4 | 120                    | 0.075               | 3.2                 | 8                   | 4775    | 1435                    | 36.5                     |
| 10      | 4 | 120                    | 0.090               | 4                   | 10                  | 3820    | 1375                    | 55.0                     |
| 12      | 4 | 120                    | 0.110               | 4.8                 | 12                  | 3185    | 1400                    | 80.5                     |
| 16      | 4 | 120                    | 0.145               | 3.2                 | 16                  | 2385    | 1385                    | 71.0                     |
| 6       | 4 | 80                     | 0.055               | 2.4                 | 6                   | 4245    | 935                     | 13.5                     |
| 8       | 4 | 80                     | 0.075               | 3.2                 | 8                   | 3185    | 955                     | 24.5                     |
| 10      | 4 | 80                     | 0.090               | 4                   | 10                  | 2545    | 915                     | 36.5                     |
| 12      | 4 | 80                     | 0.110               | 4.8                 | 12                  | 2120    | 935                     | 54.0                     |
| 16      | 4 | 80                     | 0.145               | 3.2                 | 16                  | 1590    | 920                     | 47.0                     |
| 6       | 4 | 40                     | 0.030               | 2.4                 | 6                   | 2120    | 255                     | 3.5                      |
| 8       | 4 | 40                     | 0.040               | 3.2                 | 8                   | 1590    | 255                     | 6.5                      |
| 10      | 4 | 40                     | 0.050               | 4                   | 10                  | 1275    | 255                     | 10.0                     |
| 12      | 4 | 40                     | 0.060               | 4.8                 | 12                  | 1060    | 255                     | 14.5                     |
| 16      | 4 | 40                     | 0.075               | 3.2                 | 16                  | 795     | 240                     | 12.5                     |
| 6       | 4 | 12                     | 0.015               | 2.4                 | 6                   | 635     | 38                      | 0.5                      |
| 8       | 4 | 12                     | 0.020               | 3.2                 | 8                   | 475     | 38                      | 1.0                      |
| 10      | 4 | 12                     | 0.025               | 4                   | 10                  | 380     | 38                      | 1.5                      |
| 12      | 4 | 12                     | 0.030               | 4.8                 | 12                  | 320     | 38                      | 2.0                      |
| 16      | 4 | 12                     | 0.040               | 3.2                 | 16                  | 240     | 38                      | 2.0                      |



# Фрезы черновые

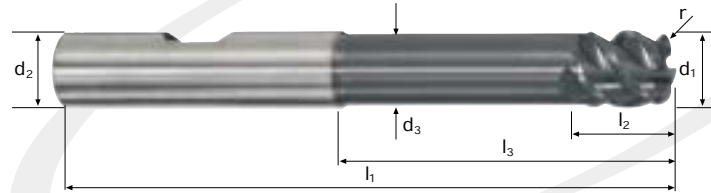
HX-R

HM  
MG10    HX

$\lambda$  55°  
 $\gamma$  -10°

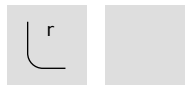


DIN 6535 HA    DIN 6535 HB



HX

Предназначены для обработки:



HRC < 58

HRC < 70

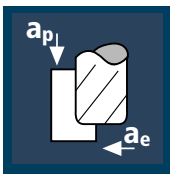
HRC 25 - 48

GG(G)  
Чугун

Титан

| Пример:<br>заказа-№. | Ø | d1 | d2 | d3 | l1 | l2 | l3 | r | Z | UNICUT-4X | POLYCHROM | DURO-S | SERVICE |
|----------------------|---|----|----|----|----|----|----|---|---|-----------|-----------|--------|---------|
|                      |   |    |    |    |    |    |    |   |   | U5357     | P5357     | D5357  | ReTool® |
|                      |   |    |    |    |    |    |    |   |   |           |           |        |         |
|                      |   |    |    |    |    |    |    |   |   |           |           |        |         |
|                      |   |    |    |    |    |    |    |   |   |           |           |        |         |
|                      |   |    |    |    |    |    |    |   |   |           |           |        |         |
|                      |   |    |    |    |    |    |    |   |   |           |           |        |         |
|                      |   |    |    |    |    |    |    |   |   |           |           |        |         |
|                      |   |    |    |    |    |    |    |   |   |           |           |        |         |
|                      |   |    |    |    |    |    |    |   |   |           |           |        |         |
|                      |   |    |    |    |    |    |    |   |   |           |           |        |         |
|                      |   |    |    |    |    |    |    |   |   |           |           |        |         |
|                      |   |    |    |    |    |    |    |   |   |           |           |        |         |
|                      |   |    |    |    |    |    |    |   |   |           |           |        |         |
|                      |   |    |    |    |    |    |    |   |   |           |           |        |         |
|                      |   |    |    |    |    |    |    |   |   |           |           |        |         |
|                      |   |    |    |    |    |    |    |   |   |           |           |        |         |
|                      |   |    |    |    |    |    |    |   |   |           |           |        |         |
|                      |   |    |    |    |    |    |    |   |   |           |           |        |         |
|                      |   |    |    |    |    |    |    |   |   |           |           |        |         |
|                      |   |    |    |    |    |    |    |   |   |           |           |        |         |
|                      |   |    |    |    |    |    |    |   |   |           |           |        |         |
|                      |   |    |    |    |    |    |    |   |   |           |           |        |         |
|                      |   |    |    |    |    |    |    |   |   |           |           |        |         |
|                      |   |    |    |    |    |    |    |   |   |           |           |        |         |
|                      |   |    |    |    |    |    |    |   |   |           |           |        |         |
|                      |   |    |    |    |    |    |    |   |   |           |           |        |         |
|                      |   |    |    |    |    |    |    |   |   |           |           |        |         |
|                      |   |    |    |    |    |    |    |   |   |           |           |        |         |
|                      |   |    |    |    |    |    |    |   |   |           |           |        |         |
|                      |   |    |    |    |    |    |    |   |   |           |           |        |         |
|                      |   |    |    |    |    |    |    |   |   |           |           |        |         |
|                      |   |    |    |    |    |    |    |   |   |           |           |        |         |
|                      |   |    |    |    |    |    |    |   |   |           |           |        |         |
|                      |   |    |    |    |    |    |    |   |   |           |           |        |         |
|                      |   |    |    |    |    |    |    |   |   |           |           |        |         |

5359



Применение

Закаленная инструментальная сталь  
24 - 32 HRC



Закаленная инструментальная сталь  
40 - 48 HRC



Закаленная инструментальная сталь  
50 - 54 HRC



Закаленная инструментальная сталь  
> 60 HRC



| d1 [mm] | z | v <sub>c</sub> [m/min] | f <sub>z</sub> [mm] | a <sub>p</sub> [mm] | a <sub>e</sub> [mm] | n [min] | v <sub>f</sub> [mm/min] | Q [cm <sup>3</sup> /min] |
|---------|---|------------------------|---------------------|---------------------|---------------------|---------|-------------------------|--------------------------|
| 3       | 4 | 180                    | 0.025               | 4.5                 | 0.4                 | 19100   | 1910                    | 4.0                      |
| 4       | 4 | 180                    | 0.035               | 6                   | 0.6                 | 14325   | 2005                    | 7.0                      |
| 5       | 4 | 180                    | 0.045               | 7.5                 | 0.7                 | 11460   | 2065                    | 11.5                     |
| 6       | 4 | 180                    | 0.055               | 9                   | 0.9                 | 9550    | 2100                    | 17.0                     |
| 8       | 4 | 180                    | 0.075               | 12                  | 1.2                 | 7160    | 2150                    | 31.0                     |
| 10      | 4 | 180                    | 0.090               | 15                  | 1.5                 | 5730    | 2065                    | 46.5                     |
| 12      | 4 | 180                    | 0.110               | 18                  | 1.8                 | 4775    | 2100                    | 68.0                     |
| 3       | 4 | 120                    | 0.025               | 4.5                 | 0.4                 | 12735   | 1275                    | 2.5                      |
| 4       | 4 | 120                    | 0.035               | 6                   | 0.6                 | 9550    | 1335                    | 5.0                      |
| 5       | 4 | 120                    | 0.045               | 7.5                 | 0.7                 | 7640    | 1375                    | 7.5                      |
| 6       | 4 | 120                    | 0.055               | 9                   | 0.9                 | 6365    | 1400                    | 11.5                     |
| 8       | 4 | 120                    | 0.075               | 12                  | 1.2                 | 4775    | 1435                    | 20.5                     |
| 10      | 4 | 120                    | 0.090               | 15                  | 1.5                 | 3820    | 1375                    | 31.0                     |
| 12      | 4 | 120                    | 0.110               | 18                  | 1.8                 | 3185    | 1400                    | 45.5                     |
| 3       | 4 | 60                     | 0.010               | 4.5                 | 0.4                 | 6365    | 255                     | 0.5                      |
| 4       | 4 | 60                     | 0.015               | 6                   | 0.6                 | 4775    | 285                     | 1.0                      |
| 5       | 4 | 60                     | 0.025               | 7.5                 | 0.7                 | 3820    | 380                     | 2.0                      |
| 6       | 4 | 60                     | 0.030               | 9                   | 0.9                 | 3185    | 380                     | 3.0                      |
| 8       | 4 | 60                     | 0.040               | 12                  | 1.2                 | 2385    | 380                     | 5.5                      |
| 10      | 4 | 60                     | 0.050               | 15                  | 1.5                 | 1910    | 380                     | 8.5                      |
| 12      | 4 | 60                     | 0.060               | 18                  | 1.8                 | 1590    | 380                     | 12.5                     |
| 3       | 4 | 20                     | 0.010               | 4.5                 | 0.4                 | 2120    | 85                      | 0.2                      |
| 4       | 4 | 20                     | 0.010               | 6                   | 0.6                 | 1590    | 64                      | 0.2                      |
| 5       | 4 | 20                     | 0.015               | 7.5                 | 0.7                 | 1275    | 77                      | 0.5                      |
| 6       | 4 | 20                     | 0.015               | 9                   | 0.9                 | 1060    | 64                      | 0.5                      |
| 8       | 4 | 20                     | 0.025               | 12                  | 1.2                 | 795     | 80                      | 1.0                      |
| 10      | 4 | 20                     | 0.030               | 15                  | 1.5                 | 635     | 76                      | 1.5                      |
| 12      | 4 | 20                     | 0.035               | 18                  | 1.8                 | 530     | 74                      | 2.5                      |

5359



Применение

Закаленная инструментальная сталь  
24 - 32 HRC



Закаленная инструментальная сталь  
40 - 48 HRC



Закаленная инструментальная сталь  
50 - 54 HRC



Закаленная инструментальная сталь  
> 60 HRC



| d1 [mm] | z | v <sub>c</sub> [m/min] | f <sub>z</sub> [mm] | a <sub>p</sub> [mm] | a <sub>e</sub> [mm] | n [min] | v <sub>f</sub> [mm/min] | Q [cm <sup>3</sup> /min] |
|---------|---|------------------------|---------------------|---------------------|---------------------|---------|-------------------------|--------------------------|
| 3       | 4 | 150                    | 0.025               | 1.5                 | 3                   | 15915   | 1590                    | 7.0                      |
| 4       | 4 | 150                    | 0.035               | 2                   | 4                   | 11935   | 1670                    | 13.5                     |
| 5       | 4 | 150                    | 0.045               | 2.5                 | 5                   | 9550    | 1720                    | 21.5                     |
| 6       | 4 | 150                    | 0.055               | 3                   | 6                   | 7960    | 1750                    | 31.5                     |
| 8       | 4 | 150                    | 0.075               | 4                   | 8                   | 5970    | 1790                    | 57.5                     |
| 10      | 4 | 150                    | 0.090               | 5                   | 10                  | 4775    | 1720                    | 86.0                     |
| 12      | 4 | 150                    | 0.110               | 6                   | 12                  | 3980    | 1750                    | 126.0                    |
| 3       | 4 | 100                    | 0.025               | 1.5                 | 3                   | 10610   | 1060                    | 5.0                      |
| 4       | 4 | 100                    | 0.035               | 2                   | 4                   | 7960    | 1115                    | 9.0                      |
| 5       | 4 | 100                    | 0.045               | 2.5                 | 5                   | 6365    | 1145                    | 14.5                     |
| 6       | 4 | 100                    | 0.055               | 3                   | 6                   | 5305    | 1165                    | 21.0                     |
| 8       | 4 | 100                    | 0.075               | 4                   | 8                   | 3980    | 1195                    | 38.0                     |
| 10      | 4 | 100                    | 0.090               | 5                   | 10                  | 3185    | 1145                    | 57.5                     |
| 12      | 4 | 100                    | 0.110               | 6                   | 12                  | 2655    | 1170                    | 84.0                     |
| 3       | 4 | 50                     | 0.008               | 1.5                 | 3                   | 5305    | 170                     | 1.0                      |
| 4       | 4 | 50                     | 0.015               | 2                   | 4                   | 3980    | 240                     | 2.0                      |
| 5       | 4 | 50                     | 0.025               | 2.5                 | 5                   | 3185    | 320                     | 4.0                      |
| 6       | 4 | 50                     | 0.030               | 3                   | 6                   | 2655    | 320                     | 6.0                      |
| 8       | 4 | 50                     | 0.040               | 4                   | 8                   | 1990    | 320                     | 10.0                     |
| 10      | 4 | 50                     | 0.050               | 5                   | 10                  | 1590    | 320                     | 16.0                     |
| 12      | 4 | 50                     | 0.060               | 6                   | 12                  | 1325    | 320                     | 23.0                     |
| 3       | 4 | 15                     | 0.008               | 1.5                 | 3                   | 1590    | 51                      | 0.2                      |
| 4       | 4 | 15                     | 0.010               | 2                   | 4                   | 1195    | 48                      | 0.5                      |
| 5       | 4 | 15                     | 0.015               | 2.5                 | 5                   | 955     | 57                      | 0.5                      |
| 6       | 4 | 15                     | 0.015               | 3                   | 6                   | 795     | 48                      | 1.0                      |
| 8       | 4 | 15                     | 0.020               | 4                   | 8                   | 595     | 48                      | 1.5                      |
| 10      | 4 | 15                     | 0.025               | 5                   | 10                  | 475     | 48                      | 2.5                      |
| 12      | 4 | 15                     | 0.030               | 6                   | 12                  | 400     | 48                      | 3.5                      |

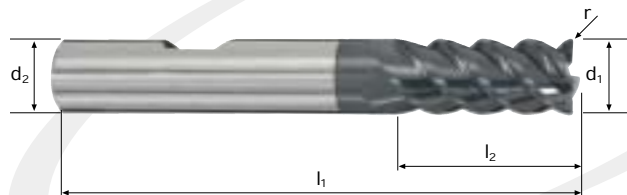
# Фрезы черновые

# HX-RN

HM  
MG10

HX

$\lambda$  55°  
 $\gamma$  -10°



HX

Предназначены для обработки:

HRC  
< 58

HRC  
< 70

HRC  
25 - 48

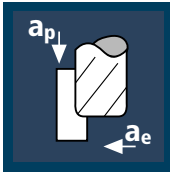
GG(G)  
Чугун

Титан

| Пример:<br>заказа-N°. |          | Покрытие | Артикул-N°. | о-Код |              |    |   | UNICUT-4X       | POLYCHROM | DURO-S | SERVICE      |
|-----------------------|----------|----------|-------------|-------|--------------|----|---|-----------------|-----------|--------|--------------|
|                       |          | U        | 5359.178    |       |              |    |   | U5359P5359D5359 | ReTool®   |        |              |
|                       |          |          |             |       |              |    |   | U5259P5259D5259 |           |        | with coating |
| Ø<br>Code             | d1<br>e8 | d2<br>h6 | l1          | l2    | r<br>0/+0,03 | α  | z |                 |           |        |              |
| .178                  | 3        | 6        | 57          | 8     | 0,2          | 6° | 4 | •               | •         | •      |              |
| .218                  | 4        | 6        | 57          | 11    | 0,2          | 4° | 4 | •               | •         | •      |              |
| .258                  | 5        | 6        | 57          | 13    | 0,2          | 2° | 4 | •               | •         | •      |              |
| .297                  | 6        | 6        | 57          | 13    | 0,2          | 0° | 4 | •               | •         | •      |              |
| .388                  | 8        | 8        | 63          | 19    | 0,2          | 0° | 4 | •               | •         | •      | •            |
| .445                  | 10       | 10       | 72          | 22    | 0,2          | 0° | 4 | •               | •         | •      | •            |
| .496                  | 12       | 12       | 83          | 26    | 0,2          | 0° | 4 | •               | •         | •      | •            |
| .180                  | 3        | 6        | 57          | 8     | 0,5          | 6° | 4 | •               | •         | •      |              |
| .220                  | 4        | 6        | 57          | 11    | 0,5          | 4° | 4 | •               | •         | •      |              |
| .260                  | 5        | 6        | 57          | 13    | 0,5          | 2° | 4 | •               | •         | •      |              |
| .300                  | 6        | 6        | 57          | 13    | 0,5          | 0° | 4 | •               | •         | •      |              |
| .391                  | 8        | 8        | 63          | 19    | 0,5          | 0° | 4 | •               | •         | •      | •            |
| .450                  | 10       | 10       | 72          | 22    | 0,5          | 0° | 4 | •               | •         | •      | •            |
| .501                  | 12       | 12       | 83          | 26    | 0,5          | 0° | 4 | •               | •         | •      | •            |
|                       |          |          |             |       |              |    |   |                 |           |        |              |
|                       |          |          |             |       |              |    |   |                 |           |        |              |
|                       |          |          |             |       |              |    |   |                 |           |        |              |
|                       |          |          |             |       |              |    |   |                 |           |        |              |
|                       |          |          |             |       |              |    |   |                 |           |        |              |
|                       |          |          |             |       |              |    |   |                 |           |        |              |
|                       |          |          |             |       |              |    |   |                 |           |        |              |
|                       |          |          |             |       |              |    |   |                 |           |        |              |
|                       |          |          |             |       |              |    |   |                 |           |        |              |
|                       |          |          |             |       |              |    |   |                 |           |        |              |
|                       |          |          |             |       |              |    |   |                 |           |        |              |
|                       |          |          |             |       |              |    |   |                 |           |        |              |
|                       |          |          |             |       |              |    |   |                 |           |        |              |
|                       |          |          |             |       |              |    |   |                 |           |        |              |
|                       |          |          |             |       |              |    |   |                 |           |        |              |
|                       |          |          |             |       |              |    |   |                 |           |        |              |



5364



Применение

Закаленная инструментальная сталь  
40 - 48 HRC



Закаленная инструментальная сталь  
50 - 54 HRC

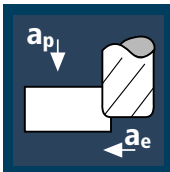


Закаленная инструментальная сталь  
> 60 HRC



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|
| 3          | 4 | 150                       | 0.010                  | 4.5                    | 0.1                    | 15915      | 635                        |
| 4          | 4 | 150                       | 0.015                  | 6                      | 0.1                    | 11935      | 715                        |
| 5          | 5 | 150                       | 0.025                  | 7.5                    | 0.1                    | 9550       | 1195                       |
| 6          | 6 | 150                       | 0.030                  | 9                      | 0.1                    | 7960       | 1435                       |
| 8          | 6 | 150                       | 0.040                  | 12                     | 0.1                    | 5970       | 1435                       |
| 10         | 6 | 150                       | 0.050                  | 15                     | 0.1                    | 4775       | 1435                       |
| 12         | 6 | 150                       | 0.060                  | 18                     | 0.1                    | 3980       | 1435                       |
| 3          | 4 | 80                        | 0.010                  | 4.5                    | 0.1                    | 8490       | 340                        |
| 4          | 4 | 80                        | 0.015                  | 6                      | 0.1                    | 6365       | 380                        |
| 5          | 5 | 80                        | 0.025                  | 7.5                    | 0.1                    | 5095       | 635                        |
| 6          | 6 | 80                        | 0.030                  | 9                      | 0.1                    | 4245       | 765                        |
| 8          | 6 | 80                        | 0.040                  | 12                     | 0.1                    | 3185       | 765                        |
| 10         | 6 | 80                        | 0.050                  | 15                     | 0.1                    | 2545       | 765                        |
| 12         | 6 | 80                        | 0.060                  | 18                     | 0.1                    | 2120       | 765                        |
| 3          | 4 | 30                        | 0.010                  | 4.5                    | 0.1                    | 3185       | 127                        |
| 4          | 4 | 30                        | 0.010                  | 6                      | 0.1                    | 2385       | 95                         |
| 5          | 5 | 30                        | 0.015                  | 7.5                    | 0.1                    | 1910       | 143                        |
| 6          | 6 | 30                        | 0.015                  | 9                      | 0.1                    | 1590       | 143                        |
| 8          | 6 | 30                        | 0.025                  | 12                     | 0.1                    | 1195       | 179                        |
| 10         | 6 | 30                        | 0.030                  | 15                     | 0.1                    | 955        | 172                        |
| 12         | 6 | 30                        | 0.035                  | 18                     | 0.1                    | 795        | 167                        |

5364



Применение

Закаленная инструментальная сталь  
40 - 48 HRC



Закаленная инструментальная сталь  
50 - 54 HRC



Закаленная инструментальная сталь  
> 60 HRC



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|
| 3          | 4 | 120                       | 0.010                  | 3                      | 0.2                    | 12735      | 510                        |
| 4          | 4 | 120                       | 0.015                  | 4                      | 0.2                    | 9550       | 575                        |
| 5          | 5 | 120                       | 0.025                  | 5                      | 0.3                    | 7640       | 955                        |
| 6          | 6 | 120                       | 0.030                  | 6                      | 0.3                    | 6365       | 1145                       |
| 8          | 6 | 120                       | 0.040                  | 8                      | 0.4                    | 4775       | 1145                       |
| 10         | 6 | 120                       | 0.050                  | 10                     | 0.5                    | 3820       | 1145                       |
| 12         | 6 | 120                       | 0.060                  | 12                     | 0.6                    | 3185       | 1145                       |
| 3          | 4 | 60                        | 0.008                  | 3                      | 0.2                    | 6365       | 205                        |
| 4          | 4 | 60                        | 0.015                  | 4                      | 0.2                    | 4775       | 285                        |
| 5          | 5 | 60                        | 0.025                  | 5                      | 0.3                    | 3820       | 480                        |
| 6          | 6 | 60                        | 0.030                  | 6                      | 0.3                    | 3185       | 575                        |
| 8          | 6 | 60                        | 0.040                  | 8                      | 0.4                    | 2385       | 570                        |
| 10         | 6 | 60                        | 0.050                  | 10                     | 0.5                    | 1910       | 575                        |
| 12         | 6 | 60                        | 0.060                  | 12                     | 0.6                    | 1590       | 570                        |
| 3          | 4 | 20                        | 0.008                  | 3                      | 0.2                    | 2120       | 68                         |
| 4          | 4 | 20                        | 0.010                  | 4                      | 0.2                    | 1590       | 64                         |
| 5          | 5 | 20                        | 0.015                  | 5                      | 0.3                    | 1275       | 96                         |
| 6          | 6 | 20                        | 0.015                  | 6                      | 0.3                    | 1060       | 95                         |
| 8          | 6 | 20                        | 0.020                  | 8                      | 0.4                    | 795        | 95                         |
| 10         | 6 | 20                        | 0.025                  | 10                     | 0.5                    | 635        | 95                         |
| 12         | 6 | 20                        | 0.030                  | 12                     | 0.6                    | 530        | 95                         |

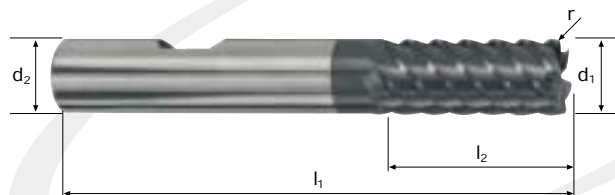
# Фрезы чистовые

# Multicut HX-R

HM  
MG10

HX

$\lambda$  55°  
 $\gamma$  -10°



HX

Предназначены для обработки:



HRC  
< 58

HRC  
< 70

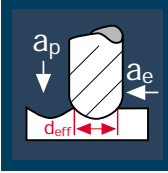
HRC  
25 - 48

GG(G)  
Чугун

Титан

| Пример:<br>заказа-N°. |          | Покрытие | Артикул-N°. | Ø-Код |              |          |   | UNICUT-4X | POLYCHROM | DURO-S | SERVICE      |
|-----------------------|----------|----------|-------------|-------|--------------|----------|---|-----------|-----------|--------|--------------|
|                       |          |          | 5364        | .178  |              |          |   | U5364     |           |        | ReTool®      |
|                       |          |          |             |       |              |          |   | U5264     | P5264     | D5264  | with coating |
| Ø<br>Code             | d1<br>e8 | d2<br>h6 | l1          | l2    | r<br>0/+0,03 | $\alpha$ | z |           |           |        |              |
| .178                  | 3        | 6        | 57          | 8     | 0,2          | 6°       | 4 | •         | •         | •      |              |
| .218                  | 4        | 6        | 57          | 11    | 0,2          | 4°       | 4 | •         | •         | •      |              |
| .258                  | 5        | 6        | 57          | 13    | 0,2          | 2°       | 5 | •         | •         | •      |              |
| .297                  | 6        | 6        | 57          | 13    | 0,2          | 0°       | 6 | •         | •         | •      |              |
| .388                  | 8        | 8        | 63          | 19    | 0,2          | 0°       | 6 | •         | •         | •      | •            |
| .445                  | 10       | 10       | 72          | 22    | 0,2          | 0°       | 6 | •         | •         | •      | •            |
| .496                  | 12       | 12       | 83          | 26    | 0,2          | 0°       | 6 | •         | •         | •      | •            |
| .180                  | 3        | 6        | 57          | 8     | 0,5          | 6°       | 4 | •         | •         | •      |              |
| .220                  | 4        | 6        | 57          | 11    | 0,5          | 4°       | 4 | •         | •         | •      |              |
| .260                  | 5        | 6        | 57          | 13    | 0,5          | 2°       | 5 | •         | •         | •      |              |
| .300                  | 6        | 6        | 57          | 13    | 0,5          | 0°       | 6 | •         | •         | •      |              |
| .391                  | 8        | 8        | 63          | 19    | 0,5          | 0°       | 6 | •         | •         | •      | •            |
| .450                  | 10       | 10       | 72          | 22    | 0,5          | 0°       | 6 | •         | •         | •      | •            |
| .501                  | 12       | 12       | 83          | 26    | 0,5          | 0°       | 6 | •         | •         | •      | •            |

5100



Применение

Сталь  
42 - 48 HRC



Сталь  
50 - 54 HRC



Сталь  
> 60 HRC



Чугун  
(серый /  
высокопрочный)



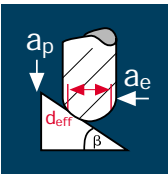
| d1 [mm] | z | Vc [m/min] | fz [mm] | ap [mm] | ae [mm] | d <sub>eff</sub> [mm] | n [min] | Vf [mm/ми] | Q [mm <sup>3</sup> /min] |
|---------|---|------------|---------|---------|---------|-----------------------|---------|------------|--------------------------|
| 3       | 2 | 220        | 0.060   | 0.09    | 0.18    | 1.02                  | 68420   | 8210       | 133                      |
| 4       | 2 | 220        | 0.080   | 0.12    | 0.24    | 1.36                  | 51315   | 8210       | 237                      |
| 5       | 2 | 220        | 0.100   | 0.15    | 0.30    | 1.71                  | 41050   | 8210       | 370                      |
| 6       | 2 | 220        | 0.090   | 0.18    | 0.36    | 2.05                  | 34210   | 6160       | 399                      |
| 8       | 2 | 220        | 0.120   | 0.24    | 0.48    | 2.73                  | 25660   | 6160       | 710                      |
| 10      | 2 | 220        | 0.150   | 0.30    | 0.60    | 3.41                  | 20525   | 6160       | 1109                     |
| 12      | 2 | 220        | 0.120   | 0.36    | 0.72    | 4.09                  | 17105   | 4105       | 1064                     |

|    |   |     |       |      |      |      |       |      |     |
|----|---|-----|-------|------|------|------|-------|------|-----|
| 3  | 2 | 180 | 0.060 | 0.09 | 0.18 | 1.02 | 55980 | 6720 | 109 |
| 4  | 2 | 180 | 0.080 | 0.12 | 0.24 | 1.36 | 41985 | 6720 | 194 |
| 5  | 2 | 180 | 0.100 | 0.15 | 0.30 | 1.71 | 33590 | 6720 | 303 |
| 6  | 2 | 180 | 0.090 | 0.18 | 0.36 | 2.05 | 27990 | 5040 | 327 |
| 8  | 2 | 180 | 0.120 | 0.24 | 0.48 | 2.73 | 20995 | 5040 | 581 |
| 10 | 2 | 180 | 0.150 | 0.30 | 0.60 | 3.41 | 16795 | 5040 | 907 |
| 12 | 2 | 180 | 0.120 | 0.36 | 0.72 | 4.09 | 13995 | 3060 | 871 |

|    |   |    |       |      |      |      |       |      |     |
|----|---|----|-------|------|------|------|-------|------|-----|
| 3  | 2 | 80 | 0.060 | 0.09 | 0.18 | 1.02 | 24880 | 2985 | 49  |
| 4  | 2 | 80 | 0.080 | 0.12 | 0.24 | 1.36 | 18660 | 2985 | 86  |
| 5  | 2 | 80 | 0.100 | 0.15 | 0.30 | 1.71 | 14930 | 2985 | 135 |
| 6  | 2 | 80 | 0.090 | 0.18 | 0.36 | 2.05 | 12440 | 2240 | 145 |
| 8  | 2 | 80 | 0.120 | 0.24 | 0.48 | 2.73 | 9330  | 2240 | 258 |
| 10 | 2 | 80 | 0.150 | 0.30 | 0.60 | 3.41 | 7465  | 2240 | 403 |
| 12 | 2 | 80 | 0.120 | 0.36 | 0.72 | 4.09 | 6220  | 1495 | 388 |

|    |   |     |       |      |      |      |       |       |      |
|----|---|-----|-------|------|------|------|-------|-------|------|
| 3  | 2 | 280 | 0.060 | 0.09 | 0.18 | 1.02 | 87080 | 10450 | 170  |
| 4  | 2 | 280 | 0.080 | 0.12 | 0.24 | 1.36 | 65310 | 10450 | 301  |
| 5  | 2 | 280 | 0.100 | 0.15 | 0.30 | 1.71 | 52250 | 10450 | 471  |
| 6  | 2 | 280 | 0.090 | 0.18 | 0.36 | 2.05 | 43540 | 7835  | 508  |
| 8  | 2 | 280 | 0.120 | 0.24 | 0.48 | 2.73 | 32655 | 7835  | 903  |
| 10 | 2 | 280 | 0.150 | 0.30 | 0.60 | 3.41 | 26125 | 7840  | 1411 |
| 12 | 2 | 280 | 0.120 | 0.36 | 0.72 | 4.09 | 21770 | 5225  | 1355 |

5100



Применение

Сталь  
42 - 48 HRC



Сталь  
50 - 54 HRC



Сталь  
> 60 HRC



Чугун  
(серый /  
высокопрочный)



| d1 [mm] | z | Vc [m/min] | fz [mm] | ap [mm] | ae [mm] | d <sub>eff</sub> [mm] | n [min] | Vf [mm/ми] | β  |
|---------|---|------------|---------|---------|---------|-----------------------|---------|------------|----|
| 3       | 2 | 430        | 0.045   | 0.04    | 0.05    | 2.53                  | 54050   | 4365       | 45 |
| 4       | 2 | 430        | 0.060   | 0.05    | 0.06    | 3.38                  | 40540   | 4365       | 45 |
| 5       | 2 | 430        | 0.075   | 0.06    | 0.08    | 4.22                  | 32430   | 4365       | 45 |
| 6       | 2 | 430        | 0.060   | 0.07    | 0.06    | 5.06                  | 27025   | 3245       | 45 |
| 8       | 2 | 430        | 0.080   | 0.10    | 0.08    | 6.75                  | 20270   | 3245       | 45 |
| 10      | 2 | 430        | 0.100   | 0.12    | 0.10    | 8.44                  | 16215   | 3245       | 45 |
| 12      | 2 | 430        | 0.060   | 0.14    | 0.06    | 10.13                 | 13515   | 1620       | 45 |

|    |   |     |       |      |      |       |       |      |    |
|----|---|-----|-------|------|------|-------|-------|------|----|
| 3  | 2 | 350 | 0.045 | 0.04 | 0.05 | 2.53  | 43995 | 3960 | 45 |
| 4  | 2 | 350 | 0.060 | 0.05 | 0.06 | 3.38  | 32995 | 3960 | 45 |
| 5  | 2 | 350 | 0.075 | 0.06 | 0.08 | 4.22  | 26395 | 3960 | 45 |
| 6  | 2 | 350 | 0.060 | 0.07 | 0.06 | 5.06  | 22000 | 2640 | 45 |
| 8  | 2 | 350 | 0.080 | 0.10 | 0.08 | 6.75  | 16500 | 2640 | 45 |
| 10 | 2 | 350 | 0.100 | 0.12 | 0.10 | 8.44  | 13200 | 2640 | 45 |
| 12 | 2 | 350 | 0.060 | 0.14 | 0.06 | 10.13 | 11000 | 1320 | 45 |

|    |   |     |       |      |      |       |       |      |    |
|----|---|-----|-------|------|------|-------|-------|------|----|
| 3  | 2 | 100 | 0.045 | 0.04 | 0.05 | 2.53  | 12570 | 1130 | 45 |
| 4  | 2 | 100 | 0.060 | 0.05 | 0.06 | 3.38  | 9430  | 1130 | 45 |
| 5  | 2 | 100 | 0.075 | 0.06 | 0.08 | 4.22  | 7540  | 1130 | 45 |
| 6  | 2 | 100 | 0.060 | 0.07 | 0.06 | 5.06  | 6285  | 755  | 45 |
| 8  | 2 | 100 | 0.080 | 0.10 | 0.08 | 6.75  | 4715  | 755  | 45 |
| 10 | 2 | 100 | 0.100 | 0.12 | 0.10 | 8.44  | 3770  | 755  | 45 |
| 12 | 2 | 100 | 0.060 | 0.14 | 0.06 | 10.13 | 3145  | 375  | 45 |

|    |   |     |       |      |      |       |       |      |    |
|----|---|-----|-------|------|------|-------|-------|------|----|
| 3  | 2 | 570 | 0.045 | 0.04 | 0.05 | 2.53  | 71650 | 6450 | 45 |
| 4  | 2 | 570 | 0.060 | 0.05 | 0.06 | 3.38  | 53740 | 6450 | 45 |
| 5  | 2 | 570 | 0.075 | 0.06 | 0.08 | 4.22  | 42990 | 6450 | 45 |
| 6  | 2 | 570 | 0.060 | 0.07 | 0.06 | 5.06  | 35825 | 4300 | 45 |
| 8  | 2 | 570 | 0.080 | 0.10 | 0.08 | 6.75  | 26870 | 4300 | 45 |
| 10 | 2 | 570 | 0.100 | 0.12 | 0.10 | 8.44  | 21495 | 4300 | 45 |
| 12 | 2 | 570 | 0.060 | 0.14 | 0.06 | 10.13 | 17915 | 2150 | 45 |



# Фрезы сферические

# HX-S

HM  
MG/H HX

λ 30°  
γ -10°



DIN  
6535  
HA



HX

Предназначены для обработки:

HRC  
< 58

HRC  
< 70

HRC  
25 - 48

GG(G)  
Чугун

Пример: заказа-N° **U 5100.180**

Покрытие: **U**    Артикул-N°: **5100**    ø-Код: **180**

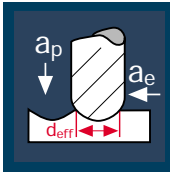
| ø<br>Code | d1 | d2<br>h6 | d3   | l1 | l2 | l3 | r<br>js8 | α  | z | NEW!      |           |        |         |
|-----------|----|----------|------|----|----|----|----------|----|---|-----------|-----------|--------|---------|
|           |    |          |      |    |    |    |          |    |   | UNICUT-4X | POLYCHROM | DURO-S | SERVICE |
| .180      | 3  | 6        | 2,8  | 57 | 4  | 9  | 1,5      | 6° | 2 | •         | •         | •      |         |
| .220      | 4  | 6        | 3,7  | 57 | 5  | 12 | 2,0      | 4° | 2 | •         | •         | •      |         |
| .260      | 5  | 6        | 4,6  | 57 | 6  | 15 | 2,5      | 2° | 2 | •         | •         | •      |         |
| .300      | 6  | 6        | 5,5  | 57 | 7  | 20 | 3,0      | 0° | 2 | •         | •         | •      | •       |
| .391      | 8  | 8        | 7,4  | 63 | 9  | 26 | 4,0      | 0° | 2 | •         | •         | •      | •       |
| .450      | 10 | 10       | 9,2  | 72 | 11 | 31 | 5,0      | 0° | 2 | •         | •         | •      | •       |
| .501      | 12 | 12       | 11,0 | 83 | 12 | 37 | 6,0      | 0° | 2 | •         | •         | •      | •       |

| CNC Radius R |     |               |         |         |         |       |
|--------------|-----|---------------|---------|---------|---------|-------|
| d1           | r   | Tolerance js8 |         | Radius  |         | R     |
|              |     | Minimum       | Maximum | Minimum | Maximum |       |
| 3            | 1.5 | -0.007        | +0.007  | 1.493   | 1.507   | 1.500 |
| 4            | 2.0 |               |         | 1.993   | 2.007   | 2.000 |
| 5            | 2.5 |               |         | 2.493   | 2.507   | 2.500 |
| 6            | 3.0 |               |         | 2.993   | 3.007   | 3.000 |
| 8            | 4.0 | -0.009        | +0.009  | 3.991   | 4.009   | 4.000 |
| 10           | 5.0 |               |         | 4.991   | 5.009   | 5.000 |
| 12           | 6.0 |               |         | 5.991   | 6.009   | 6.000 |

ReTool® with coating

5110



Применение

Сталь  
42 - 48 HRC



Сталь  
50 - 54 HRC



Сталь  
> 60 HRC

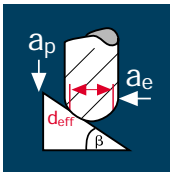


Чугун  
(серый /  
высокопрочный)



| d1<br>[mm] | z | Vc<br>[m/min] | fz<br>[mm] | ap<br>[mm] | ae<br>[mm] | d <sub>eff</sub><br>[mm] | n<br>[min] | Vf<br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------|------------|------------|------------|--------------------------|------------|----------------|-----------------------------|
| 3          | 2 | 220           | 0.060      | 0.06       | 0.18       | 0.84                     | 83370      | 10005          | 108                         |
| 4          | 2 | 220           | 0.080      | 0.08       | 0.24       | 1.12                     | 62525      | 10005          | 192                         |
| 5          | 2 | 220           | 0.100      | 0.10       | 0.30       | 1.40                     | 50020      | 10005          | 300                         |
| 6          | 2 | 220           | 0.090      | 0.12       | 0.36       | 1.68                     | 41685      | 7505           | 324                         |
| 8          | 2 | 220           | 0.120      | 0.16       | 0.48       | 2.24                     | 31265      | 7505           | 577                         |
| 10         | 2 | 220           | 0.150      | 0.20       | 0.60       | 2.80                     | 25010      | 7505           | 901                         |
| 12         | 2 | 220           | 0.120      | 0.24       | 0.72       | 3.36                     | 20840      | 5000           | 864                         |
| 3          | 2 | 180           | 0.060      | 0.06       | 0.18       | 0.84                     | 68210      | 8185           | 89                          |
| 4          | 2 | 180           | 0.080      | 0.08       | 0.24       | 1.12                     | 51160      | 8135           | 157                         |
| 5          | 2 | 180           | 0.100      | 0.10       | 0.30       | 1.40                     | 40925      | 8185           | 246                         |
| 6          | 2 | 180           | 0.090      | 0.12       | 0.36       | 1.68                     | 34105      | 6140           | 265                         |
| 8          | 2 | 180           | 0.120      | 0.16       | 0.48       | 2.24                     | 25580      | 6140           | 472                         |
| 10         | 2 | 180           | 0.150      | 0.20       | 0.60       | 2.80                     | 20465      | 640            | 737                         |
| 12         | 2 | 180           | 0.120      | 0.24       | 0.72       | 3.36                     | 17055      | 4095           | 708                         |
| 3          | 2 | 80            | 0.060      | 0.06       | 0.18       | 0.84                     | 30315      | 3640           | 40                          |
| 4          | 2 | 80            | 0.080      | 0.08       | 0.24       | 1.12                     | 22735      | 3640           | 70                          |
| 5          | 2 | 80            | 0.100      | 0.10       | 0.30       | 1.40                     | 18190      | 3640           | 109                         |
| 6          | 2 | 80            | 0.090      | 0.12       | 0.36       | 1.68                     | 15160      | 2730           | 118                         |
| 8          | 2 | 80            | 0.120      | 0.16       | 0.48       | 2.24                     | 11370      | 2730           | 210                         |
| 10         | 2 | 80            | 0.150      | 0.20       | 0.60       | 2.80                     | 9095       | 2730           | 328                         |
| 12         | 2 | 80            | 0.120      | 0.24       | 0.72       | 3.36                     | 7580       | 1820           | 315                         |
| 3          | 2 | 280           | 0.060      | 0.06       | 0.18       | 0.84                     | 106105     | 12735          | 138                         |
| 4          | 2 | 280           | 0.080      | 0.08       | 0.24       | 1.12                     | 79580      | 12735          | 245                         |
| 5          | 2 | 280           | 0.100      | 0.10       | 0.30       | 1.40                     | 63665      | 12735          | 382                         |
| 6          | 2 | 280           | 0.090      | 0.12       | 0.36       | 1.68                     | 53055      | 9550           | 413                         |
| 8          | 2 | 280           | 0.120      | 0.16       | 0.48       | 2.24                     | 39790      | 9550           | 734                         |
| 10         | 2 | 280           | 0.150      | 0.20       | 0.60       | 2.80                     | 31830      | 9550           | 1146                        |
| 12         | 2 | 280           | 0.120      | 0.24       | 0.72       | 3.36                     | 26525      | 6365           | 1100                        |

5110



Применение

Сталь  
42 - 48 HRC



Сталь  
50 - 54 HRC



Сталь  
> 60 HRC



Чугун  
(серый /  
высокопрочный)



| d1<br>[mm] | z | Vc<br>[m/min] | fz<br>[mm] | ap<br>[mm] | ae<br>[mm] | d <sub>eff</sub><br>[mm] | n<br>[min] | Vf<br>[mm/min] | β  |
|------------|---|---------------|------------|------------|------------|--------------------------|------------|----------------|----|
| 3          | 2 | 430           | 0.045      | 0.04       | 0.05       | 2.53                     | 54050      | 4365           | 45 |
| 4          | 2 | 430           | 0.060      | 0.05       | 0.06       | 3.38                     | 40540      | 4365           | 45 |
| 5          | 2 | 430           | 0.075      | 0.06       | 0.08       | 4.22                     | 32430      | 4365           | 45 |
| 6          | 2 | 430           | 0.060      | 0.07       | 0.06       | 5.06                     | 27025      | 3245           | 45 |
| 8          | 2 | 430           | 0.080      | 0.10       | 0.08       | 6.75                     | 20270      | 3245           | 45 |
| 10         | 2 | 430           | 0.100      | 0.12       | 0.10       | 8.44                     | 16215      | 3245           | 45 |
| 12         | 2 | 430           | 0.060      | 0.14       | 0.06       | 10.13                    | 13515      | 1620           | 45 |
| 3          | 2 | 350           | 0.045      | 0.04       | 0.05       | 2.53                     | 43995      | 3960           | 45 |
| 4          | 2 | 350           | 0.060      | 0.05       | 0.06       | 3.38                     | 32995      | 3960           | 45 |
| 5          | 2 | 350           | 0.075      | 0.06       | 0.08       | 4.22                     | 26395      | 3960           | 45 |
| 6          | 2 | 350           | 0.060      | 0.07       | 0.06       | 5.06                     | 22000      | 2640           | 45 |
| 8          | 2 | 350           | 0.080      | 0.10       | 0.08       | 6.75                     | 16500      | 2640           | 45 |
| 10         | 2 | 350           | 0.100      | 0.12       | 0.10       | 8.44                     | 13200      | 2640           | 45 |
| 12         | 2 | 350           | 0.060      | 0.14       | 0.06       | 10.13                    | 11000      | 1320           | 45 |
| 3          | 2 | 100           | 0.045      | 0.04       | 0.05       | 2.53                     | 12570      | 1130           | 45 |
| 4          | 2 | 100           | 0.060      | 0.05       | 0.06       | 3.38                     | 9430       | 1130           | 45 |
| 5          | 2 | 100           | 0.075      | 0.06       | 0.08       | 4.22                     | 7540       | 1130           | 45 |
| 6          | 2 | 100           | 0.060      | 0.07       | 0.06       | 5.06                     | 6285       | 755            | 45 |
| 8          | 2 | 100           | 0.080      | 0.10       | 0.08       | 6.75                     | 4715       | 755            | 45 |
| 10         | 2 | 100           | 0.100      | 0.12       | 0.10       | 8.44                     | 3770       | 755            | 45 |
| 12         | 2 | 100           | 0.060      | 0.14       | 0.06       | 10.13                    | 3145       | 375            | 45 |
| 3          | 2 | 570           | 0.045      | 0.04       | 0.05       | 2.53                     | 71650      | 6450           | 45 |
| 4          | 2 | 570           | 0.060      | 0.05       | 0.06       | 3.38                     | 53740      | 6450           | 45 |
| 5          | 2 | 570           | 0.075      | 0.06       | 0.08       | 4.22                     | 42990      | 6450           | 45 |
| 6          | 2 | 570           | 0.060      | 0.07       | 0.06       | 5.06                     | 35825      | 4300           | 45 |
| 8          | 2 | 570           | 0.080      | 0.10       | 0.08       | 6.75                     | 26870      | 4300           | 45 |
| 10         | 2 | 570           | 0.100      | 0.12       | 0.10       | 8.44                     | 21495      | 4300           | 45 |
| 12         | 2 | 570           | 0.060      | 0.14       | 0.06       | 10.13                    | 17915      | 2150           | 45 |

# Фрезы сферические

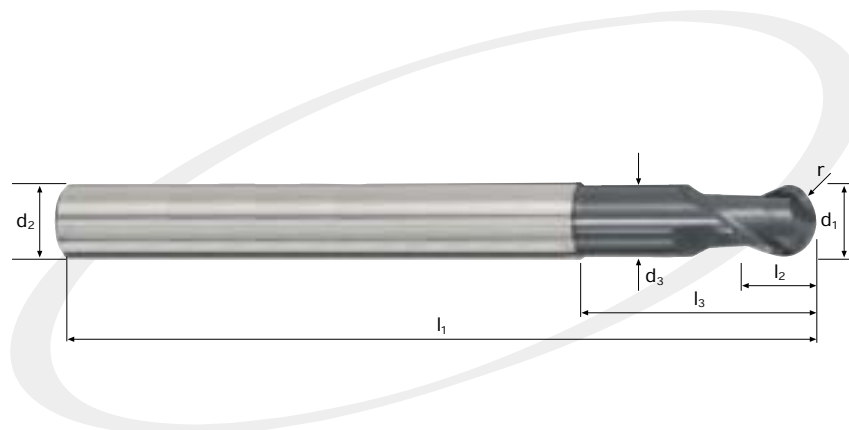
# HX-S

HM  
MG/H HX

$\lambda$  30°  
 $\gamma$  -10°



DIN  
6535  
HA



HX

Предназначены для обработки:

HRC  
< 58

HRC  
< 70

HRC  
25 - 48

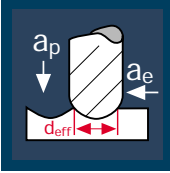
GG(G)  
Чугун

| Пример:<br>заказа-N° | Покрытие<br><b>U</b> | Артикул-N°<br><b>5110</b> | Ø-Код<br><b>.180</b> | Ø  | d1 | d2<br>h6 | d3  | l1 | l2 | l3  | r<br>js8 | $\alpha$ | z | UNICUT-4X    | POLYCHROM    | DURO-S       | SERVICE                 |
|----------------------|----------------------|---------------------------|----------------------|----|----|----------|-----|----|----|-----|----------|----------|---|--------------|--------------|--------------|-------------------------|
|                      |                      |                           |                      |    |    |          |     |    |    |     |          |          |   | <b>U5110</b> | <b>P5110</b> | <b>D5110</b> | ReTool®<br>with coating |
| .180                 |                      |                           |                      | 3  | 6  | 2,8      | 75  | 4  | 9  | 1,5 | 6°       | 2        | • | •            | •            |              |                         |
| .220                 |                      |                           |                      | 4  | 6  | 3,7      | 75  | 5  | 12 | 2,0 | 4°       | 2        | • | •            | •            |              |                         |
| .260                 |                      |                           |                      | 5  | 6  | 4,6      | 80  | 6  | 15 | 2,5 | 2°       | 2        | • | •            | •            |              |                         |
| .300                 |                      |                           |                      | 6  | 6  | 5,5      | 80  | 7  | 25 | 3,0 | 0°       | 2        | • | •            | •            | •            |                         |
| .391                 |                      |                           |                      | 8  | 8  | 7,4      | 90  | 9  | 31 | 4,0 | 0°       | 2        | • | •            | •            | •            |                         |
| .450                 |                      |                           |                      | 10 | 10 | 9,2      | 100 | 11 | 36 | 5,0 | 0°       | 2        | • | •            | •            | •            |                         |
| .501                 |                      |                           |                      | 12 | 12 | 11,0     | 120 | 12 | 42 | 6,0 | 0°       | 2        | • | •            | •            | •            |                         |

| CNC Radius R |     |               |         |         |         |         |
|--------------|-----|---------------|---------|---------|---------|---------|
| d1           | r   | Tolerance js8 | Radius  |         |         |         |
|              |     |               | Minimum | Maximum | Minimum | Maximum |
| 3            | 1.5 | -0.007        | +0.007  | 1.493   | 1.507   | 1.500   |
| 4            | 2.0 |               |         | 1.993   | 2.007   | 2.000   |
| 5            | 2.5 |               |         | 2.493   | 2.507   | 2.500   |
| 6            | 3.0 |               |         | 2.993   | 3.007   | 3.000   |
| 8            | 4.0 | -0.009        | +0.009  | 3.991   | 4.009   | 4.000   |
| 10           | 5.0 |               |         | 4.991   | 5.009   | 5.000   |
| 12           | 6.0 |               |         | 5.991   | 6.009   | 6.000   |

# 5120



## Применение

Сталь  
42 - 48 HRC



Сталь  
50 - 54 HRC



Сталь  
> 60 HRC

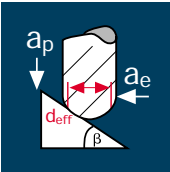


Чугун  
(серый /  
высокопрочный)



| d1<br>[mm] | z | Vc<br>[m/min] | fz<br>[mm] | ap<br>[mm] | ae<br>[mm] | d <sub>eff</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/ми] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------|------------|------------|------------|--------------------------|------------|---------------------------|-----------------------------|
| 4          | 2 | 220           | 0.080      | 0.06       | 0.16       | 0.97                     | 72015      | 11520                     | 111                         |
| 5          | 2 | 220           | 0.100      | 0.08       | 0.20       | 1.22                     | 57615      | 11525                     | 173                         |
| 6          | 2 | 220           | 0.120      | 0.09       | 0.24       | 1.46                     | 48010      | 11520                     | 249                         |
| 8          | 2 | 220           | 0.120      | 0.12       | 0.32       | 1.94                     | 36010      | 8640                      | 332                         |
| 10         | 2 | 220           | 0.150      | 0.15       | 0.40       | 2.43                     | 28805      | 8640                      | 519                         |
| 12         | 2 | 220           | 0.180      | 0.18       | 0.48       | 2.92                     | 24005      | 8640                      | 747                         |
| 4          | 2 | 180           | 0.080      | 0.06       | 0.16       | 0.97                     | 58925      | 9430                      | 91                          |
| 5          | 2 | 180           | 0.100      | 0.08       | 0.20       | 1.22                     | 47140      | 9430                      | 142                         |
| 6          | 2 | 180           | 0.120      | 0.09       | 0.24       | 1.46                     | 39280      | 9425                      | 204                         |
| 8          | 2 | 180           | 0.120      | 0.12       | 0.32       | 1.94                     | 29460      | 7070                      | 272                         |
| 10         | 2 | 180           | 0.150      | 0.15       | 0.40       | 2.43                     | 23570      | 7070                      | 424                         |
| 12         | 2 | 180           | 0.180      | 0.18       | 0.48       | 2.92                     | 19640      | 7070                      | 611                         |
| 4          | 2 | 80            | 0.080      | 0.06       | 0.16       | 0.97                     | 26190      | 4190                      | 40                          |
| 5          | 2 | 80            | 0.100      | 0.08       | 0.20       | 1.22                     | 20950      | 4190                      | 63                          |
| 6          | 2 | 80            | 0.120      | 0.09       | 0.24       | 1.46                     | 17460      | 4190                      | 91                          |
| 8          | 2 | 80            | 0.120      | 0.12       | 0.32       | 1.94                     | 13095      | 3145                      | 121                         |
| 10         | 2 | 80            | 0.150      | 0.15       | 0.40       | 2.43                     | 10475      | 3145                      | 189                         |
| 12         | 2 | 80            | 0.180      | 0.18       | 0.48       | 2.92                     | 8730       | 3145                      | 272                         |
| 4          | 2 | 280           | 0.080      | 0.06       | 0.16       | 0.97                     | 91655      | 14665                     | 141                         |
| 5          | 2 | 280           | 0.100      | 0.08       | 0.20       | 1.22                     | 73325      | 14665                     | 220                         |
| 6          | 2 | 280           | 0.120      | 0.09       | 0.24       | 1.46                     | 61105      | 14665                     | 317                         |
| 8          | 2 | 280           | 0.120      | 0.12       | 0.32       | 1.94                     | 45830      | 11000                     | 423                         |
| 10         | 2 | 280           | 0.150      | 0.15       | 0.40       | 2.43                     | 36665      | 11000                     | 660                         |
| 12         | 2 | 280           | 0.180      | 0.18       | 0.48       | 2.92                     | 30550      | 11000                     | 951                         |

# 5120



## Применение

Сталь  
42 - 48 HRC



Сталь  
50 - 54 HRC



Сталь  
> 60 HRC



Чугун  
(серый /  
высокопрочный)



| d1<br>[mm] | z | Vc<br>[m/min] | fz<br>[mm] | ap<br>[mm] | ae<br>[mm] | d <sub>eff</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/ми] | β  |
|------------|---|---------------|------------|------------|------------|--------------------------|------------|---------------------------|----|
| 4          | 2 | 430           | 0.060      | 0.04       | 0.06       | 3.33                     | 41045      | 4925                      | 45 |
| 5          | 2 | 430           | 0.075      | 0.05       | 0.08       | 4.17                     | 32840      | 4925                      | 45 |
| 6          | 2 | 430           | 0.090      | 0.06       | 0.09       | 5.00                     | 27365      | 4925                      | 45 |
| 8          | 2 | 430           | 0.080      | 0.08       | 0.08       | 6.67                     | 20525      | 3285                      | 45 |
| 10         | 2 | 430           | 0.100      | 0.10       | 0.10       | 8.34                     | 16420      | 3285                      | 45 |
| 12         | 2 | 430           | 0.120      | 0.12       | 0.12       | 10.00                    | 13680      | 3285                      | 45 |
| 4          | 2 | 350           | 0.060      | 0.04       | 0.06       | 3.33                     | 33410      | 4010                      | 45 |
| 5          | 2 | 350           | 0.075      | 0.05       | 0.08       | 4.17                     | 26730      | 4010                      | 45 |
| 6          | 2 | 350           | 0.090      | 0.06       | 0.09       | 5.00                     | 22275      | 4010                      | 45 |
| 8          | 2 | 350           | 0.080      | 0.08       | 0.08       | 6.67                     | 16705      | 2675                      | 45 |
| 10         | 2 | 350           | 0.100      | 0.10       | 0.10       | 8.34                     | 13365      | 2675                      | 45 |
| 12         | 2 | 350           | 0.120      | 0.12       | 0.12       | 10.00                    | 11135      | 2670                      | 45 |
| 4          | 2 | 100           | 0.060      | 0.04       | 0.06       | 3.33                     | 9545       | 1145                      | 45 |
| 5          | 2 | 100           | 0.075      | 0.05       | 0.08       | 4.17                     | 7635       | 1145                      | 45 |
| 6          | 2 | 100           | 0.090      | 0.06       | 0.09       | 5.00                     | 6365       | 1145                      | 45 |
| 8          | 2 | 100           | 0.080      | 0.08       | 0.08       | 6.67                     | 4775       | 765                       | 45 |
| 10         | 2 | 100           | 0.100      | 0.10       | 0.10       | 8.34                     | 3820       | 765                       | 45 |
| 12         | 2 | 100           | 0.120      | 0.12       | 0.12       | 10.00                    | 3180       | 765                       | 45 |
| 4          | 2 | 570           | 0.060      | 0.04       | 0.06       | 3.33                     | 54410      | 6530                      | 45 |
| 5          | 2 | 570           | 0.075      | 0.05       | 0.08       | 4.17                     | 43530      | 6530                      | 45 |
| 6          | 2 | 570           | 0.090      | 0.06       | 0.09       | 5.00                     | 36275      | 6530                      | 45 |
| 8          | 2 | 570           | 0.080      | 0.08       | 0.08       | 6.67                     | 27205      | 4355                      | 45 |
| 10         | 2 | 570           | 0.100      | 0.10       | 0.10       | 8.34                     | 21765      | 4355                      | 45 |
| 12         | 2 | 570           | 0.120      | 0.12       | 0.12       | 10.00                    | 18135      | 4350                      | 45 |

# Фрезы сферические

# HX-S

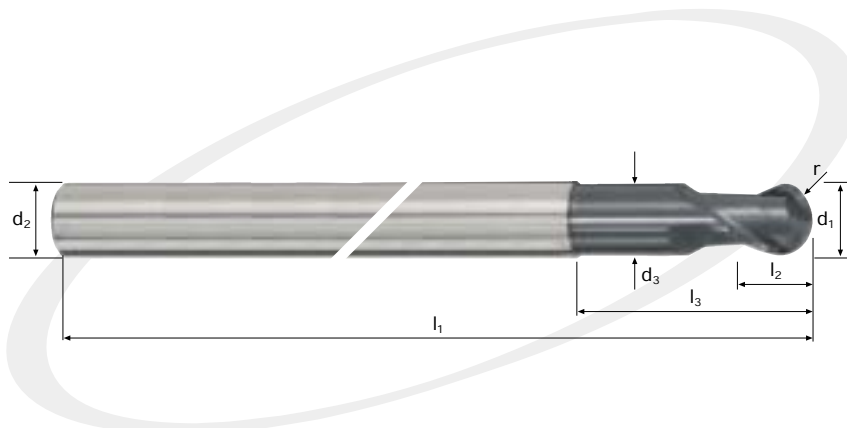
HM  
MG/H

HX

$\lambda$  30°  
 $\gamma$  -10°



DIN  
6535  
HA



HX

Предназначены для обработки:

HRC  
< 58

HRC  
< 70

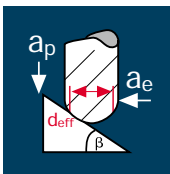
HRC  
25 - 48

GG(G)  
Чугун

|                   |     |               |        |                |       |         |       |    | UNICUT-4X               | POLYCHROM | DURO-S | SERVICE |   |
|-------------------|-----|---------------|--------|----------------|-------|---------|-------|----|-------------------------|-----------|--------|---------|---|
| Пример: заказа-N° |     |               |        |                |       |         |       |    | ReTool®<br>with coating |           |        |         |   |
| Покрытие          |     |               |        |                |       |         |       |    |                         |           |        |         |   |
| Артикул-N°        |     |               |        |                |       |         |       |    |                         |           |        |         |   |
| Ø-Код             |     |               |        |                |       |         |       |    |                         |           |        |         |   |
| U 5120 .220       |     |               |        |                |       |         |       |    | U5120 P5120 D5120       |           |        |         |   |
| Ø Code            | d1  | d2 h6         | d3     | l1             | l2    | l3      | r js8 | α  | z                       |           |        |         |   |
| .220              | 4   | 6             | 3,7    | 90             | 5     | 12      | 2,0   | 4° | 2                       | •         | •      | •       |   |
| .260              | 5   | 6             | 4,6    | 110            | 6     | 15      | 2,5   | 2° | 2                       | •         | •      | •       |   |
| .300              | 6   | 6             | 5,5    | 110            | 7     | 20      | 3,0   | 0° | 2                       | •         | •      | •       | • |
| .391              | 8   | 8             | 7,4    | 110            | 9     | 26      | 4,0   | 0° | 2                       | •         | •      | •       | • |
| .450              | 10  | 10            | 9,2    | 130            | 11    | 31      | 5,0   | 0° | 2                       | •         | •      | •       | • |
| .501              | 12  | 12            | 11,0   | 140            | 12    | 37      | 6,0   | 0° | 2                       | •         | •      | •       | • |
| CNC Radius R      |     |               |        |                |       |         |       |    |                         |           |        |         |   |
| d1                | r   | Tolerance js8 |        | Radius Minimum |       | Maximum |       |    |                         |           |        |         |   |
| 4                 | 2.0 | -0.007        | +0.007 | 1.993          | 2.007 | 2.000   |       |    |                         |           |        |         |   |
| 5                 | 2.5 |               |        | 2.493          | 2.507 | 2.500   |       |    |                         |           |        |         |   |
| 6                 | 3.0 |               |        | 2.993          | 3.007 | 3.000   |       |    |                         |           |        |         |   |
| 8                 | 4.0 | -0.009        | +0.009 | 3.991          | 4.009 | 4.000   |       |    |                         |           |        |         |   |
| 10                | 5.0 |               |        | 4.991          | 5.009 | 5.000   |       |    |                         |           |        |         |   |
| 12                | 6.0 |               |        | 5.991          | 6.009 | 6.000   |       |    |                         |           |        |         |   |



5140



Применение

Сталь  
42 - 48 HRC



Сталь  
50 - 54 HRC



Сталь  
> 60 HRC

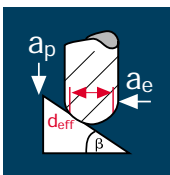


Чугун  
(серый /  
высокопрочный)



| d1<br>[mm] | z | Vc<br>[m/min] | fz<br>[mm] | ap<br>[mm] | ae<br>[mm] | d <sub>eff</sub><br>[mm] | n<br>[min] | Vf<br>[mm/min] | β  |
|------------|---|---------------|------------|------------|------------|--------------------------|------------|----------------|----|
| 6          | 4 | 430           | 0.090      | 0.18       | 0.09       | 4.59                     | 29805      | 10730          | 30 |
| 8          | 4 | 430           | 0.120      | 0.24       | 0.12       | 6.12                     | 22350      | 10730          | 30 |
| 10         | 4 | 430           | 0.150      | 0.30       | 0.15       | 7.65                     | 17880      | 10730          | 30 |
| 12         | 4 | 430           | 0.120      | 0.72       | 0.12       | 10.22                    | 13400      | 6430           | 30 |
| 6          | 4 | 350           | 0.090      | 0.18       | 0.09       | 4.59                     | 24260      | 8735           | 30 |
| 8          | 4 | 350           | 0.120      | 0.24       | 0.12       | 6.12                     | 18195      | 8735           | 30 |
| 10         | 4 | 350           | 0.150      | 0.30       | 0.15       | 7.65                     | 14555      | 8735           | 30 |
| 12         | 4 | 350           | 0.120      | 0.72       | 0.12       | 10.22                    | 10905      | 5235           | 30 |
| 6          | 4 | 100           | 0.090      | 0.18       | 0.09       | 4.59                     | 6930       | 2495           | 30 |
| 8          | 4 | 100           | 0.120      | 0.24       | 0.12       | 6.12                     | 5200       | 2495           | 30 |
| 10         | 4 | 100           | 0.150      | 0.30       | 0.15       | 7.65                     | 4160       | 2495           | 30 |
| 12         | 4 | 100           | 0.120      | 0.72       | 0.12       | 10.22                    | 3115       | 1495           | 30 |
| 6          | 4 | 570           | 0.090      | 0.18       | 0.09       | 4.59                     | 39505      | 14220          | 30 |
| 8          | 4 | 570           | 0.120      | 0.24       | 0.12       | 6.12                     | 29630      | 14220          | 30 |
| 10         | 4 | 570           | 0.150      | 0.30       | 0.15       | 7.65                     | 23705      | 14225          | 30 |
| 12         | 4 | 570           | 0.120      | 0.72       | 0.12       | 10.22                    | 17760      | 8525           | 30 |

5140



Применение

Сталь  
42 - 48 HRC



Сталь  
50 - 54 HRC



Сталь  
> 60 HRC



Чугун  
(серый /  
высокопрочный)



| d1<br>[mm] | z | Vc<br>[m/min] | fz<br>[mm] | ap<br>[mm] | ae<br>[mm] | d <sub>eff</sub><br>[mm] | n<br>[min] | Vf<br>[mm/min] | β  |
|------------|---|---------------|------------|------------|------------|--------------------------|------------|----------------|----|
| 6          | 4 | 430           | 0.090      | 0.18       | 0.09       | 5.91                     | 23170      | 8340           | 60 |
| 8          | 4 | 430           | 0.120      | 0.24       | 0.12       | 7.88                     | 17375      | 8340           | 60 |
| 10         | 4 | 430           | 0.150      | 0.30       | 0.15       | 9.85                     | 13900      | 8340           | 60 |
| 12         | 4 | 430           | 0.120      | 0.72       | 0.12       | 12.00                    | 11410      | 5475           | 60 |
| 6          | 4 | 350           | 0.090      | 0.18       | 0.09       | 5.91                     | 18860      | 6790           | 60 |
| 8          | 4 | 350           | 0.120      | 0.24       | 0.12       | 7.88                     | 14145      | 6790           | 60 |
| 10         | 4 | 350           | 0.150      | 0.30       | 0.15       | 9.85                     | 11315      | 6790           | 60 |
| 12         | 4 | 350           | 0.120      | 0.72       | 0.12       | 12.00                    | 9290       | 4460           | 60 |
| 6          | 4 | 100           | 0.090      | 0.18       | 0.09       | 5.91                     | 5390       | 1940           | 60 |
| 8          | 4 | 100           | 0.120      | 0.24       | 0.12       | 7.88                     | 4040       | 1940           | 60 |
| 10         | 4 | 100           | 0.150      | 0.30       | 0.15       | 9.85                     | 3235       | 1940           | 60 |
| 12         | 4 | 100           | 0.120      | 0.72       | 0.12       | 12.00                    | 2655       | 1275           | 60 |
| 6          | 4 | 570           | 0.090      | 0.18       | 0.09       | 5.91                     | 30710      | 11055          | 60 |
| 8          | 4 | 570           | 0.120      | 0.24       | 0.12       | 7.88                     | 23035      | 11055          | 60 |
| 10         | 4 | 570           | 0.150      | 0.30       | 0.15       | 9.85                     | 18425      | 11055          | 60 |
| 12         | 4 | 570           | 0.120      | 0.72       | 0.12       | 12.00                    | 15125      | 7260           | 60 |

# Фрезы сферические

# HX-S4

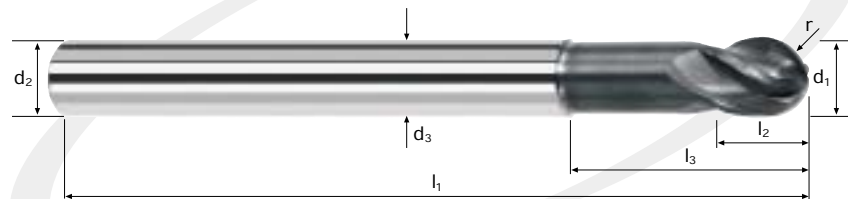
HM  
MG/H

HX

$\lambda$  30°  
 $\gamma$  -10°



DIN  
6535  
HA



HX

Предназначены для обработки:

HRC  
< 58

HRC  
< 70

HRC  
25 - 48

GG(G)  
Чугун

|   |     |               |        |                |       |         |       |   | UNICUT-4X    | POLYCHROM | DURO-S | SERVICE |
|---|-----|---------------|--------|----------------|-------|---------|-------|---|--------------|-----------|--------|---------|
| Пример: <span style="color:red">U</span> <span style="color:blue">5140</span> <span style="color:red">.300</span> |     |               |        |                |       |         |       |   | ReTool®      |           |        |         |
| Артикул-№: <span style="color:blue">5140</span> Ø-Код: <span style="color:red">.300</span>                        |     |               |        |                |       |         |       |   | with coating |           |        |         |
| Ø Code  | d1  | d2 h6         | d3     | l1             | l2    | l3      | r js8 | z |              |           |        |         |
| .300  | 6   | 6             | 5,5    | 80             | 7     | 25      | 3     | 4 | •            | •         | •      | •       |
| .391  | 8   | 8             | 7,4    | 90             | 9     | 31      | 4     | 4 | •            | •         | •      | •       |
| .450  | 10  | 10            | 9,2    | 100            | 11    | 36      | 5     | 4 | •            | •         | •      | •       |
| .501  | 12  | 12            | 11,0   | 120            | 12    | 42      | 6     | 4 | •            | •         | •      | •       |
| CNC Radius R  |     |               |        |                |       |         |       |   |              |           |        |         |
| d1  | r   | Tolerance js8 |        | Radius Minimum |       | Maximum |       |   |              |           |        |         |
| 6   | 3.0 | -0.007        | +0.007 | 2.993          | 3.007 |         |       |   |              |           |        |         |
| 8   | 4.0 | -0.009        | +0.009 | 3.991          | 4.009 |         |       |   |              |           |        |         |
| 10  | 5.0 |               |        | 4.991          | 5.009 |         |       |   |              |           |        |         |
| 12  | 6.0 |               |        | 5.991          | 6.009 |         |       |   |              |           |        |         |



# Нержавеющая сталь

SX

Высокопроизводительные концевые фрезы с гладкой режущей кромкой, цилиндрические

№ 5218 / 5318



|    |   |  |  |  |  |    |
|----|---|--|--|--|--|----|
| SX | $\lambda 55^\circ$<br>$\gamma 15^\circ$ |  |  |  |  | 93 |
|----|---|--|--|--|--|----|

№ 5213 / 5313 **NEW!**



|    |   |  |  |  |  |    |
|----|---|--|--|--|--|----|
| SX | $\lambda 55^\circ$<br>$\gamma 15^\circ$ |  |  |  |  | 95 |
|----|---|--|--|--|--|----|

№ 5219 / 5319 **NEW!**



|    |   |  |  |  |  |    |
|----|---|--|--|--|--|----|
| SX | $\lambda 55^\circ$<br>$\gamma 15^\circ$ |  |  |  |  | 97 |
|----|---|--|--|--|--|----|

№ 5214 / 5314



|    |   |  |  |  |  |    |
|----|---|--|--|--|--|----|
| SX | $\lambda 55^\circ$<br>$\gamma 15^\circ$ |  |  |  |  | 99 |
|----|---|--|--|--|--|----|

№ 5215 / 5315



|    |   |  |  |  |  |     |
|----|---|--|--|--|--|-----|
| SX | $\lambda 55^\circ$<br>$\gamma 15^\circ$ |  |  |  |  | 101 |
|----|---|--|--|--|--|-----|

SX

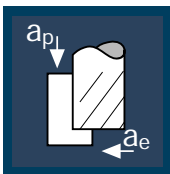
Высокопроизводительные концевые фрезы с гладкой режущей кромкой, торические

№ 5212 / 5312



|    |   |  |  |  |  |     |
|----|---|--|--|--|--|-----|
| SX | $\lambda 55^\circ$<br>$\gamma 15^\circ$ |  |  |  |  | 103 |
|----|---|--|--|--|--|-----|

# 5318



## Применение

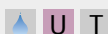
Нержавеющие  
аустенитные стали  
[ 1.4301 ]



Нержавеющие  
аустенитные стали  
[ 1.4571 ]



Жаропрочные стали  
[ 17-4 PH ]



Сплавы на основе  
никеля  
[ Inconel 718 ]



| d1<br>[mm] | z | V <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 6          | 4 | 80                        | 0.030                  | 6                      | 3                      | 4245       | 510                        | 9.0                         |
| 8          | 4 | 80                        | 0.040                  | 8                      | 4                      | 3185       | 510                        | 16.5                        |
| 10         | 4 | 80                        | 0.055                  | 10                     | 5                      | 2545       | 560                        | 28.0                        |
| 12         | 4 | 80                        | 0.065                  | 12                     | 6                      | 2120       | 550                        | 39.5                        |
| 16         | 4 | 80                        | 0.085                  | 16                     | 4                      | 1590       | 540                        | 34.5                        |
| 20         | 4 | 80                        | 0.105                  | 20                     | 5                      | 1275       | 535                        | 53.5                        |
| 6          | 4 | 40                        | 0.030                  | 6                      | 3                      | 2120       | 255                        | 4.5                         |
| 8          | 4 | 40                        | 0.040                  | 8                      | 4                      | 1590       | 255                        | 8.0                         |
| 10         | 4 | 40                        | 0.055                  | 10                     | 5                      | 1275       | 280                        | 14.0                        |
| 12         | 4 | 40                        | 0.065                  | 12                     | 6                      | 1060       | 275                        | 20.0                        |
| 16         | 4 | 40                        | 0.085                  | 16                     | 4                      | 795        | 270                        | 17.5                        |
| 20         | 4 | 40                        | 0.105                  | 20                     | 5                      | 635        | 265                        | 26.5                        |
| 6          | 4 | 25                        | 0.030                  | 6                      | 3                      | 1325       | 160                        | 3.0                         |
| 8          | 4 | 25                        | 0.035                  | 8                      | 4                      | 995        | 140                        | 4.5                         |
| 10         | 4 | 25                        | 0.045                  | 10                     | 5                      | 795        | 145                        | 7.5                         |
| 12         | 4 | 25                        | 0.050                  | 12                     | 6                      | 665        | 135                        | 9.5                         |
| 16         | 4 | 25                        | 0.060                  | 16                     | 4                      | 495        | 120                        | 7.5                         |
| 20         | 4 | 25                        | 0.085                  | 20                     | 5                      | 400        | 135                        | 13.5                        |
| 6          | 4 | 15                        | 0.030                  | 6                      | 3                      | 795        | 95                         | 1.5                         |
| 8          | 4 | 15                        | 0.035                  | 8                      | 4                      | 595        | 85                         | 2.5                         |
| 10         | 4 | 15                        | 0.045                  | 10                     | 5                      | 475        | 85                         | 4.5                         |
| 12         | 4 | 15                        | 0.050                  | 12                     | 6                      | 400        | 80                         | 6.0                         |
| 16         | 4 | 15                        | 0.060                  | 16                     | 4                      | 300        | 70                         | 4.5                         |
| 20         | 4 | 15                        | 0.085                  | 20                     | 5                      | 240        | 80                         | 8.0                         |

# 5318



## Применение

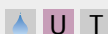
Нержавеющие  
аустенитные стали  
[ 1.4301 ]



Нержавеющие  
аустенитные стали  
[ 1.4571 ]



Жаропрочные стали  
[ 17-4 PH ]



Сплавы на основе  
никеля  
[ Inconel 718 ]



| d1<br>[mm] | z | V <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 6          | 4 | 80                        | 0.030                  | 3                      | 6                      | 4245       | 510                        | 9.0                         |
| 8          | 4 | 80                        | 0.040                  | 4                      | 8                      | 3185       | 510                        | 16.5                        |
| 10         | 4 | 80                        | 0.055                  | 5                      | 10                     | 2545       | 560                        | 28.0                        |
| 12         | 4 | 80                        | 0.065                  | 6                      | 12                     | 2120       | 550                        | 39.5                        |
| 16         | 4 | 80                        | 0.085                  | 4                      | 16                     | 1590       | 540                        | 34.5                        |
| 20         | 4 | 80                        | 0.105                  | 5                      | 20                     | 1275       | 535                        | 53.5                        |
| 6          | 4 | 40                        | 0.030                  | 3                      | 6                      | 2120       | 255                        | 4.5                         |
| 8          | 4 | 40                        | 0.040                  | 4                      | 8                      | 1590       | 255                        | 8.0                         |
| 10         | 4 | 40                        | 0.055                  | 5                      | 10                     | 1275       | 280                        | 14.0                        |
| 12         | 4 | 40                        | 0.065                  | 6                      | 12                     | 1060       | 275                        | 20.0                        |
| 16         | 4 | 40                        | 0.085                  | 4                      | 16                     | 795        | 270                        | 17.5                        |
| 20         | 4 | 40                        | 0.105                  | 5                      | 20                     | 635        | 265                        | 26.5                        |
| 6          | 4 | 25                        | 0.030                  | 3                      | 6                      | 1325       | 160                        | 3.0                         |
| 8          | 4 | 25                        | 0.035                  | 4                      | 8                      | 995        | 140                        | 4.5                         |
| 10         | 4 | 25                        | 0.045                  | 5                      | 10                     | 795        | 145                        | 7.5                         |
| 12         | 4 | 25                        | 0.050                  | 6                      | 12                     | 665        | 135                        | 9.5                         |
| 16         | 4 | 25                        | 0.060                  | 4                      | 16                     | 495        | 120                        | 7.5                         |
| 20         | 4 | 25                        | 0.075                  | 5                      | 20                     | 400        | 120                        | 12.0                        |
| 6          | 4 | 15                        | 0.030                  | 3                      | 6                      | 795        | 95                         | 1.5                         |
| 8          | 4 | 15                        | 0.035                  | 4                      | 8                      | 595        | 85                         | 2.5                         |
| 10         | 4 | 15                        | 0.045                  | 5                      | 10                     | 475        | 85                         | 4.5                         |
| 12         | 4 | 15                        | 0.050                  | 6                      | 12                     | 400        | 80                         | 6.0                         |
| 16         | 4 | 15                        | 0.060                  | 4                      | 16                     | 300        | 70                         | 4.5                         |
| 20         | 4 | 15                        | 0.075                  | 5                      | 20                     | 240        | 70                         | 7.0                         |

# Фрезы черновые

SX

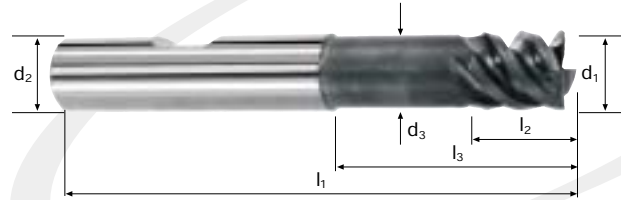
HM  
MG10 SX

$\lambda$  55°  
 $\gamma$  15°



DIN 6535 HA  
DIN 6535 HB

0,05-0,15  
45°



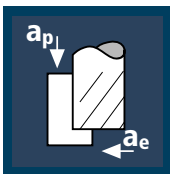
SX

Предназначены для обработки:

- Нерж.  
сталь
- Ni-сплавы
- HRC  
< 32
- Титан

|  |          |          |      |     |    |    |   | UNICUT-4X  | TRIBO | SERVICE |
|--|----------|----------|------|-----|----|----|---|--|-------|---------|
| Пример:<br>заказа-N°. <span style="color: red; font-weight: bold;">U</span> <span style="color: blue; font-weight: bold;">5318</span> <span style="color: black; font-weight: bold;">.300</span> |          |          |      |     |    |    |   | <span style="color: purple; font-weight: bold;">U5318</span> <span style="color: green; font-weight: bold;">T5318</span> <span style="color: black; font-weight: bold;">ReTool®</span> |       |         |
|  |          |          |      |     |    |    |   | <span style="color: purple; font-weight: bold;">U5218</span> <span style="color: black; font-weight: bold;">with coating</span>  |       |         |
| Ø<br>Code  | d1<br>e8 | d2<br>h6 | d3   | l1  | l2 | l3 | z |  |       |         |
| .300   | 6        | 6        | 5,5  | 57  | 7  | 20 | 4 | •  | •     |         |
| .391   | 8        | 8        | 7,4  | 63  | 9  | 26 | 4 | •  | •     | •       |
| .450   | 10       | 10       | 9,2  | 72  | 11 | 31 | 4 | •  | •     | •       |
| .501   | 12       | 12       | 11,0 | 83  | 13 | 37 | 4 | •  | •     | •       |
| .610   | 16       | 16       | 15,0 | 92  | 17 | 43 | 4 | •  | •     | •       |
| .682   | 20       | 20       | 19,0 | 104 | 21 | 53 | 4 | •  | •     | •       |
|  |          |          |      |     |    |    |   |  |       |         |
|  |          |          |      |     |    |    |   |  |       |         |
|  |          |          |      |     |    |    |   |  |       |         |
|  |          |          |      |     |    |    |   |  |       |         |
|  |          |          |      |     |    |    |   |  |       |         |
|  |          |          |      |     |    |    |   |  |       |         |
|  |          |          |      |     |    |    |   |  |       |         |
|  |          |          |      |     |    |    |   |  |       |         |
|  |          |          |      |     |    |    |   |  |       |         |
|  |          |          |      |     |    |    |   |  |       |         |
|  |          |          |      |     |    |    |   |  |       |         |
|  |          |          |      |     |    |    |   |  |       |         |
|  |          |          |      |     |    |    |   |  |       |         |
|  |          |          |      |     |    |    |   |  |       |         |
|  |          |          |      |     |    |    |   |  |       |         |
|  |          |          |      |     |    |    |   |  |       |         |

5313



Применение

Нержавеющие  
аустенитные стали  
[ 1.4301 ]



Нержавеющие  
аустенитные стали  
[ 1.4571 ]



Жаропрочные  
стали  
[ 17-4 PH ]



Сплавы на основе  
никеля  
[ Inconel 718 ]



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 6          | 4 | 80                        | 0.030                  | 6.0                    | 3.6                    | 4245                      | 510                        | 11.0                        |
| 8          | 4 | 80                        | 0.040                  | 8.0                    | 4.8                    | 3185                      | 510                        | 19.5                        |
| 10         | 4 | 80                        | 0.055                  | 10.0                   | 6.0                    | 2545                      | 560                        | 33.5                        |
| 12         | 4 | 80                        | 0.065                  | 12.0                   | 7.2                    | 2120                      | 550                        | 47.5                        |
| 16         | 4 | 80                        | 0.085                  | 16.0                   | 6.4                    | 1590                      | 540                        | 55.5                        |
| 6          | 4 | 40                        | 0.030                  | 6.0                    | 3.6                    | 2120                      | 255                        | 5.5                         |
| 8          | 4 | 40                        | 0.040                  | 8.0                    | 4.8                    | 1590                      | 255                        | 10.0                        |
| 10         | 4 | 40                        | 0.055                  | 10.0                   | 6.0                    | 1275                      | 280                        | 17.0                        |
| 12         | 4 | 40                        | 0.065                  | 12.0                   | 7.2                    | 1060                      | 275                        | 24.0                        |
| 16         | 4 | 40                        | 0.085                  | 16.0                   | 6.4                    | 795                       | 270                        | 27.5                        |
| 6          | 4 | 25                        | 0.030                  | 6.0                    | 3.6                    | 1325                      | 160                        | 3.5                         |
| 8          | 4 | 25                        | 0.035                  | 8.0                    | 4.8                    | 995                       | 140                        | 5.5                         |
| 10         | 4 | 25                        | 0.045                  | 10.0                   | 6.0                    | 795                       | 145                        | 8.5                         |
| 12         | 4 | 25                        | 0.050                  | 12.0                   | 7.2                    | 665                       | 135                        | 11.5                        |
| 16         | 4 | 25                        | 0.060                  | 16.0                   | 6.4                    | 495                       | 120                        | 12.5                        |
| 6          | 4 | 15                        | 0.030                  | 6.0                    | 3.6                    | 795                       | 95                         | 2.0                         |
| 8          | 4 | 15                        | 0.035                  | 8.0                    | 4.8                    | 595                       | 85                         | 3.5                         |
| 10         | 4 | 15                        | 0.045                  | 10.0                   | 6.0                    | 475                       | 85                         | 5.0                         |
| 12         | 4 | 15                        | 0.050                  | 12.0                   | 7.2                    | 400                       | 80                         | 7.0                         |
| 16         | 4 | 15                        | 0.060                  | 16.0                   | 6.4                    | 300                       | 70                         | 7.0                         |

5313



Применение

Нержавеющие  
аустенитные стали  
[ 1.4301 ]



Нержавеющие  
аустенитные стали  
[ 1.4571 ]



Жаропрочные  
стали  
[ 17-4 PH ]



Сплавы на основе  
никеля  
[ Inconel 718 ]



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 6          | 4 | 80                        | 0.030                  | 4.2                    | 6.0                    | 4245                      | 510                        | 13.0                        |
| 8          | 4 | 80                        | 0.040                  | 5.6                    | 8.0                    | 3185                      | 510                        | 23.0                        |
| 10         | 4 | 80                        | 0.055                  | 7.0                    | 10.0                   | 2545                      | 560                        | 39.0                        |
| 12         | 4 | 80                        | 0.065                  | 8.4                    | 12.0                   | 2120                      | 550                        | 55.5                        |
| 16         | 4 | 80                        | 0.085                  | 6.4                    | 16.0                   | 1590                      | 540                        | 55.5                        |
| 6          | 4 | 40                        | 0.030                  | 4.2                    | 6.0                    | 2120                      | 255                        | 6.5                         |
| 8          | 4 | 40                        | 0.040                  | 5.6                    | 8.0                    | 1590                      | 255                        | 11.5                        |
| 10         | 4 | 40                        | 0.055                  | 7.0                    | 10.0                   | 1275                      | 280                        | 19.5                        |
| 12         | 4 | 40                        | 0.065                  | 8.4                    | 12.0                   | 1060                      | 275                        | 27.5                        |
| 16         | 4 | 40                        | 0.085                  | 6.4                    | 16.0                   | 795                       | 270                        | 27.5                        |
| 6          | 4 | 25                        | 0.030                  | 4.2                    | 6.0                    | 1325                      | 160                        | 4.0                         |
| 8          | 4 | 25                        | 0.035                  | 5.6                    | 8.0                    | 995                       | 140                        | 6.5                         |
| 10         | 4 | 25                        | 0.045                  | 7.0                    | 10.0                   | 795                       | 145                        | 10.0                        |
| 12         | 4 | 25                        | 0.050                  | 8.4                    | 12.0                   | 665                       | 135                        | 13.5                        |
| 16         | 4 | 25                        | 0.060                  | 6.4                    | 16.0                   | 495                       | 120                        | 12.5                        |
| 6          | 4 | 15                        | 0.030                  | 4.2                    | 6.0                    | 795                       | 95                         | 2.5                         |
| 8          | 4 | 15                        | 0.035                  | 5.6                    | 8.0                    | 595                       | 85                         | 4.0                         |
| 10         | 4 | 15                        | 0.045                  | 7.0                    | 10.0                   | 475                       | 85                         | 6.0                         |
| 12         | 4 | 15                        | 0.050                  | 8.4                    | 12.0                   | 400                       | 80                         | 8.0                         |
| 16         | 4 | 15                        | 0.060                  | 6.4                    | 16.0                   | 300                       | 70                         | 7.0                         |

# Фрезы черновые

SX

NEW!

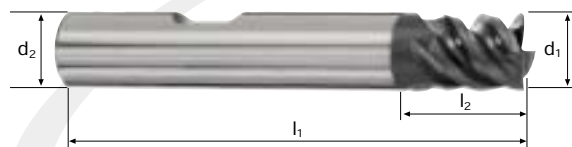
HM  
MG10 SX

$\lambda$  55°  
 $\gamma$  15°



DIN 6535  
HA DIN 6535  
HB

0,05-0,15  
45°



SX

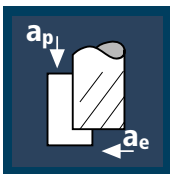
Предназначены для обработки:

- Нерж. сталь
- Ni-сплавы
- HRC < 32
- Титан

| Пример:<br>заказа-N° | Покрытие | Артикул-N° | Ø-Код | UNICUT-4X | TRIBO | SERVICE |
|----------------------|----------|------------|-------|-----------|-------|---------|
|                      |          |            |       |           |       |         |
| Ø                    | d1<br>e8 | d2<br>h6   | l1    | l2        | z     |         |
| .300                 | 6        | 6          | 54    | 7         | 4     | • • •   |
| .391                 | 8        | 8          | 58    | 9         | 4     | • • •   |
| .450                 | 10       | 10         | 66    | 11        | 4     | • • •   |
| .501                 | 12       | 12         | 73    | 13        | 4     | • • •   |
| .610                 | 16       | 16         | 82    | 17        | 4     | • • •   |
|                      |          |            |       |           |       |         |
|                      |          |            |       |           |       |         |
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|                      |          |            |       |           |       |         |
|                      |          |            |       |           |       |         |
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|                      |          |            |       |           |       |         |
|                      |          |            |       |           |       |         |
|                      |          |            |       |           |       |         |



5319



Применение

Нержавеющие  
аустенитные стали  
[ 1.4301 ]



Нержавеющие  
аустенитные стали  
[ 1.4571 ]



Жаропрочные  
стали  
[ 17-4 PH ]



Сплавы на основе  
никеля  
[ Inconel 718 ]



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 6          | 4 | 80                        | 0.030                  | 6.0                    | 2.4                    | 4245                      | 510                        | 7.5                         |
| 8          | 4 | 80                        | 0.040                  | 8.0                    | 3.2                    | 3185                      | 510                        | 13.0                        |
| 10         | 4 | 80                        | 0.055                  | 10.0                   | 4.0                    | 2545                      | 560                        | 22.5                        |
| 12         | 4 | 80                        | 0.065                  | 12.0                   | 4.8                    | 2120                      | 550                        | 31.5                        |
| 16         | 4 | 80                        | 0.085                  | 16.0                   | 2.4                    | 1590                      | 540                        | 20.5                        |
| 6          | 4 | 40                        | 0.030                  | 6.0                    | 2.4                    | 2120                      | 255                        | 3.5                         |
| 8          | 4 | 40                        | 0.040                  | 8.0                    | 3.2                    | 1590                      | 255                        | 6.5                         |
| 10         | 4 | 40                        | 0.055                  | 10.0                   | 4.0                    | 1275                      | 280                        | 11.0                        |
| 12         | 4 | 40                        | 0.065                  | 12.0                   | 4.8                    | 1060                      | 275                        | 16.0                        |
| 16         | 4 | 40                        | 0.085                  | 16.0                   | 2.4                    | 795                       | 270                        | 10.5                        |
| 6          | 4 | 25                        | 0.030                  | 6.0                    | 2.4                    | 1325                      | 160                        | 2.5                         |
| 8          | 4 | 25                        | 0.035                  | 8.0                    | 3.2                    | 995                       | 140                        | 3.5                         |
| 10         | 4 | 25                        | 0.045                  | 10.0                   | 4.0                    | 795                       | 145                        | 6.0                         |
| 12         | 4 | 25                        | 0.050                  | 12.0                   | 4.8                    | 665                       | 135                        | 8.0                         |
| 16         | 4 | 25                        | 0.060                  | 16.0                   | 2.4                    | 495                       | 120                        | 4.5                         |
| 6          | 4 | 15                        | 0.030                  | 6.0                    | 2.4                    | 795                       | 95                         | 1.5                         |
| 8          | 4 | 15                        | 0.035                  | 8.0                    | 3.2                    | 595                       | 85                         | 2.0                         |
| 10         | 4 | 15                        | 0.045                  | 10.0                   | 4.0                    | 475                       | 85                         | 3.5                         |
| 12         | 4 | 15                        | 0.050                  | 12.0                   | 4.8                    | 400                       | 80                         | 4.5                         |
| 16         | 4 | 15                        | 0.060                  | 16.0                   | 2.4                    | 300                       | 70                         | 2.5                         |

5319



Применение

Нержавеющие  
аустенитные стали  
[ 1.4301 ]



Нержавеющие  
аустенитные стали  
[ 1.4571 ]



Жаропрочные  
стали  
[ 17-4 PH ]



Сплавы на основе  
никеля  
[ Inconel 718 ]



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 6          | 4 | 80                        | 0.030                  | 1.5                    | 6.0                    | 4245                      | 510                        | 4.5                         |
| 8          | 4 | 80                        | 0.040                  | 2.0                    | 8.0                    | 3185                      | 510                        | 8.0                         |
| 10         | 4 | 80                        | 0.055                  | 2.5                    | 10.0                   | 2545                      | 560                        | 14.0                        |
| 12         | 4 | 80                        | 0.065                  | 3.0                    | 12.0                   | 2120                      | 550                        | 20.0                        |
| 16         | 4 | 80                        | 0.085                  | 2.4                    | 16.0                   | 1590                      | 540                        | 20.5                        |
| 6          | 4 | 40                        | 0.030                  | 1.5                    | 6.0                    | 2120                      | 255                        | 2.5                         |
| 8          | 4 | 40                        | 0.040                  | 2.0                    | 8.0                    | 1590                      | 255                        | 4.0                         |
| 10         | 4 | 40                        | 0.055                  | 2.5                    | 10.0                   | 1275                      | 280                        | 7.0                         |
| 12         | 4 | 40                        | 0.065                  | 3.0                    | 12.0                   | 1060                      | 275                        | 10.0                        |
| 16         | 4 | 40                        | 0.085                  | 2.4                    | 16.0                   | 795                       | 270                        | 10.5                        |
| 6          | 4 | 25                        | 0.030                  | 1.5                    | 6.0                    | 1325                      | 160                        | 1.5                         |
| 8          | 4 | 25                        | 0.035                  | 2.0                    | 8.0                    | 995                       | 140                        | 2.0                         |
| 10         | 4 | 25                        | 0.045                  | 2.5                    | 10.0                   | 795                       | 145                        | 3.5                         |
| 12         | 4 | 25                        | 0.050                  | 3.0                    | 12.0                   | 665                       | 135                        | 5.0                         |
| 16         | 4 | 25                        | 0.060                  | 2.4                    | 16.0                   | 495                       | 120                        | 4.5                         |
| 6          | 4 | 15                        | 0.030                  | 1.5                    | 6.0                    | 795                       | 95                         | 1.0                         |
| 8          | 4 | 15                        | 0.035                  | 2.0                    | 8.0                    | 595                       | 85                         | 1.5                         |
| 10         | 4 | 15                        | 0.045                  | 2.5                    | 10.0                   | 475                       | 85                         | 2.0                         |
| 12         | 4 | 15                        | 0.050                  | 3.0                    | 12.0                   | 400                       | 80                         | 3.0                         |
| 16         | 4 | 15                        | 0.060                  | 2.4                    | 16.0                   | 300                       | 70                         | 2.5                         |

# Фрезы черновые

SX

NEW!

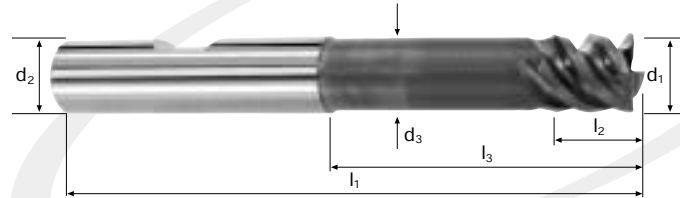
HM  
MG10 SX

$\lambda$  55°  
 $\gamma$  15°



DIN 6535 HA  
DIN 6535 HB

0,05-0,15  
45°



SX

Предназначены для обработки:

Нерж.  
сталь

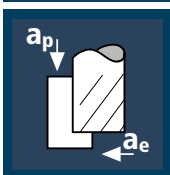
Ni-сплавы

HRC  
< 32

Титан

|                        |          |          |      |           |    |       |   | UNICUT-4X   | TRIBO | SERVICE |
|------------------------|----------|----------|------|-----------|----|-------|---|---|-------|---------|
| Пример:<br>заказа - N° |          | Покрытие |      | Артикул-№ |    | Ø-Код |   | <br><b>U5319T5319ReTool®</b><br><br><b>U5219</b> with coating |       |         |
| $\emptyset$<br>Code    | d1<br>e8 | d2<br>h6 | d3   | l1        | l2 | l3    | z |   |       |         |
| .300                   | 6        | 6        | 5,5  | 70        | 7  | 33    | 4 | •   | •     | •       |
| .391                   | 8        | 8        | 7,4  | 80        | 9  | 43    | 4 | •   | •     | •       |
| .450                   | 10       | 10       | 9,2  | 84        | 11 | 43    | 4 | •   | •     | •       |
| .501                   | 12       | 12       | 11,0 | 97        | 13 | 51    | 4 | •   | •     | •       |
| .610                   | 16       | 16       | 15,0 | 115       | 17 | 66    | 4 | •   | •     | •       |
|                        |          |          |      |           |    |       |   |   |       |         |
|                        |          |          |      |           |    |       |   |   |       |         |
|                        |          |          |      |           |    |       |   |   |       |         |
|                        |          |          |      |           |    |       |   |   |       |         |
|                        |          |          |      |           |    |       |   |   |       |         |
|                        |          |          |      |           |    |       |   |   |       |         |
|                        |          |          |      |           |    |       |   |   |       |         |
|                        |          |          |      |           |    |       |   |   |       |         |
|                        |          |          |      |           |    |       |   |   |       |         |
|                        |          |          |      |           |    |       |   |   |       |         |
|                        |          |          |      |           |    |       |   |   |       |         |
|                        |          |          |      |           |    |       |   |   |       |         |
|                        |          |          |      |           |    |       |   |   |       |         |
|                        |          |          |      |           |    |       |   |   |       |         |
|                        |          |          |      |           |    |       |   |   |       |         |
|                        |          |          |      |           |    |       |   |   |       |         |
|                        |          |          |      |           |    |       |   |   |       |         |
|                        |          |          |      |           |    |       |   |   |       |         |
|                        |          |          |      |           |    |       |   |   |       |         |
|                        |          |          |      |           |    |       |   |   |       |         |
|                        |          |          |      |           |    |       |   |   |       |         |
|                        |          |          |      |           |    |       |   |   |       |         |
|                        |          |          |      |           |    |       |   |   |       |         |

5314



Применение

Нержавеющие  
аустенитные стали  
[ 1.4301 ]



Нержавеющие  
аустенитные стали  
[ 1.4571 ]



Жаропрочные  
стали  
[ 17-4 PH ]



Сплавы на основе  
никеля  
[ Inconel 718 ]



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 6          | 4 | 80                        | 0.025                  | 9                      | 3                      | 4245                      | 425                        | 11.5                        |
| 8          | 4 | 80                        | 0.035                  | 12                     | 4                      | 3185                      | 445                        | 21.5                        |
| 10         | 4 | 80                        | 0.045                  | 15                     | 5                      | 2545                      | 460                        | 34.5                        |
| 12         | 4 | 80                        | 0.055                  | 18                     | 6                      | 2120                      | 465                        | 50.0                        |
| 16         | 4 | 80                        | 0.075                  | 24                     | 4                      | 1590                      | 475                        | 45.5                        |
| 6          | 4 | 40                        | 0.025                  | 9                      | 3                      | 2120                      | 210                        | 5.5                         |
| 8          | 4 | 40                        | 0.035                  | 12                     | 4                      | 1590                      | 225                        | 11.0                        |
| 10         | 4 | 40                        | 0.045                  | 15                     | 5                      | 1275                      | 230                        | 17.5                        |
| 12         | 4 | 40                        | 0.055                  | 18                     | 6                      | 1060                      | 235                        | 25.5                        |
| 16         | 4 | 40                        | 0.075                  | 24                     | 4                      | 795                       | 240                        | 23.0                        |
| 6          | 4 | 25                        | 0.025                  | 9                      | 3                      | 1325                      | 135                        | 3.5                         |
| 8          | 4 | 25                        | 0.035                  | 12                     | 4                      | 995                       | 140                        | 6.5                         |
| 10         | 4 | 25                        | 0.040                  | 15                     | 5                      | 795                       | 125                        | 9.5                         |
| 12         | 4 | 25                        | 0.050                  | 18                     | 6                      | 665                       | 135                        | 14.5                        |
| 16         | 4 | 25                        | 0.065                  | 24                     | 4                      | 495                       | 130                        | 12.5                        |
| 6          | 4 | 15                        | 0.025                  | 9                      | 3                      | 795                       | 80                         | 2.0                         |
| 8          | 4 | 15                        | 0.035                  | 12                     | 4                      | 595                       | 85                         | 4.0                         |
| 10         | 4 | 15                        | 0.040                  | 15                     | 5                      | 475                       | 75                         | 5.5                         |
| 12         | 4 | 15                        | 0.050                  | 18                     | 6                      | 400                       | 80                         | 8.5                         |
| 16         | 4 | 15                        | 0.065                  | 24                     | 4                      | 300                       | 80                         | 7.5                         |

5314



Применение

Нержавеющие  
аустенитные стали  
[ 1.4301 ]



Нержавеющие  
аустенитные стали  
[ 1.4571 ]



Жаропрочные  
стали  
[ 17-4 PH ]



Сплавы на основе  
никеля  
[ Inconel 718 ]



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 6          | 4 | 80                        | 0.030                  | 3                      | 6                      | 4245                      | 510                        | 9.0                         |
| 8          | 4 | 80                        | 0.040                  | 4                      | 8                      | 3185                      | 510                        | 16.5                        |
| 10         | 4 | 80                        | 0.055                  | 5                      | 10                     | 2545                      | 560                        | 28.0                        |
| 12         | 4 | 80                        | 0.065                  | 6                      | 12                     | 2120                      | 550                        | 39.5                        |
| 16         | 4 | 80                        | 0.085                  | 4                      | 16                     | 1590                      | 540                        | 34.5                        |
| 6          | 4 | 40                        | 0.030                  | 3                      | 6                      | 2120                      | 255                        | 4.5                         |
| 8          | 4 | 40                        | 0.040                  | 4                      | 8                      | 1590                      | 255                        | 8.0                         |
| 10         | 4 | 40                        | 0.055                  | 5                      | 10                     | 1275                      | 280                        | 14.0                        |
| 12         | 4 | 40                        | 0.065                  | 6                      | 12                     | 1060                      | 275                        | 20.0                        |
| 16         | 4 | 40                        | 0.085                  | 4                      | 16                     | 795                       | 270                        | 17.5                        |
| 6          | 4 | 25                        | 0.025                  | 3                      | 6                      | 1325                      | 135                        | 2.5                         |
| 8          | 4 | 25                        | 0.035                  | 4                      | 8                      | 995                       | 140                        | 4.5                         |
| 10         | 4 | 25                        | 0.045                  | 5                      | 10                     | 795                       | 145                        | 7.5                         |
| 12         | 4 | 25                        | 0.050                  | 6                      | 12                     | 665                       | 135                        | 9.5                         |
| 16         | 4 | 25                        | 0.060                  | 4                      | 16                     | 495                       | 120                        | 7.5                         |
| 6          | 4 | 15                        | 0.030                  | 3                      | 6                      | 795                       | 95                         | 1.5                         |
| 8          | 4 | 15                        | 0.035                  | 4                      | 8                      | 595                       | 85                         | 2.5                         |
| 10         | 4 | 15                        | 0.045                  | 5                      | 10                     | 475                       | 85                         | 4.5                         |
| 12         | 4 | 15                        | 0.050                  | 6                      | 12                     | 400                       | 80                         | 6.0                         |
| 16         | 4 | 15                        | 0.060                  | 4                      | 16                     | 300                       | 70                         | 4.5                         |

# Фрезы черновые

# SX-N

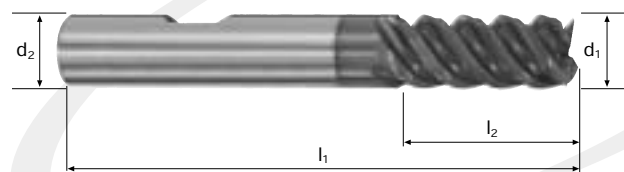
HM  
MG10

SX

$\lambda$  55°  
 $\gamma$  15°



0,05-0,15  
45°



SX

Предназначены для обработки:

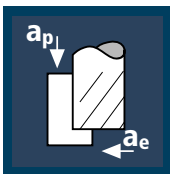
Нерж.  
сталь

Ni-сплавы

HRC  
< 32

Титан

|                      |    | Покрытие |    | Артикул-№. |   | Ø-Код |  | UNICUT-4X | TRIBO | SERVICE      |
|----------------------|----|----------|----|------------|---|-------|--|-----------|-------|--------------|
| Пример:<br>заказа-№. |    | U        |    | 5314.300   |   | 300   |  | U5314     | T5314 | ReTool®      |
|                      |    |          |    |            |   |       |  | U5214     |       | with coating |
| Ø                    | d1 | d2       | l1 | l2         | z |       |  |           |       |              |
| Code                 | e8 | h6       |    |            |   |       |  |           |       |              |
| .300                 | 6  | 6        | 57 | 13         | 4 |       |  |           |       |              |
| .391                 | 8  | 8        | 63 | 19         | 4 |       |  |           |       |              |
| .450                 | 10 | 10       | 72 | 22         | 4 |       |  |           |       |              |
| .501                 | 12 | 12       | 83 | 26         | 4 |       |  |           |       |              |
| .610                 | 16 | 16       | 92 | 32         | 4 |       |  |           |       |              |
|                      |    |          |    |            |   |       |  |           |       |              |
|                      |    |          |    |            |   |       |  |           |       |              |
|                      |    |          |    |            |   |       |  |           |       |              |
|                      |    |          |    |            |   |       |  |           |       |              |
|                      |    |          |    |            |   |       |  |           |       |              |
|                      |    |          |    |            |   |       |  |           |       |              |
|                      |    |          |    |            |   |       |  |           |       |              |
|                      |    |          |    |            |   |       |  |           |       |              |
|                      |    |          |    |            |   |       |  |           |       |              |
|                      |    |          |    |            |   |       |  |           |       |              |
|                      |    |          |    |            |   |       |  |           |       |              |
|                      |    |          |    |            |   |       |  |           |       |              |
|                      |    |          |    |            |   |       |  |           |       |              |
|                      |    |          |    |            |   |       |  |           |       |              |
|                      |    |          |    |            |   |       |  |           |       |              |
|                      |    |          |    |            |   |       |  |           |       |              |
|                      |    |          |    |            |   |       |  |           |       |              |

**5315****Применение**

Нержавеющие  
аустенитные стали  
[ 1.4301 ]



Нержавеющие  
аустенитные стали  
[ 1.4571 ]



Жаропрочные  
стали  
[ 17-4 PH ]



Сплавы на основе  
никеля  
[ Inconel 718 ]



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 6          | 3 | 80                        | 0.030                  | 6                      | 3                      | 4245                      | 380                        | 7.0                         |
| 8          | 3 | 80                        | 0.040                  | 8                      | 4                      | 3185                      | 380                        | 12.0                        |
| 10         | 3 | 80                        | 0.055                  | 10                     | 5                      | 2545                      | 420                        | 21.0                        |
| 12         | 3 | 80                        | 0.065                  | 12                     | 6                      | 2120                      | 415                        | 30.0                        |
| 16         | 3 | 80                        | 0.085                  | 16                     | 4                      | 1590                      | 405                        | 26.0                        |
| 6          | 3 | 40                        | 0.030                  | 6                      | 3                      | 2120                      | 190                        | 3.5                         |
| 8          | 3 | 40                        | 0.040                  | 8                      | 4                      | 1590                      | 190                        | 6.0                         |
| 10         | 3 | 40                        | 0.055                  | 10                     | 5                      | 1275                      | 210                        | 10.5                        |
| 12         | 3 | 40                        | 0.065                  | 12                     | 6                      | 1060                      | 205                        | 15.0                        |
| 16         | 3 | 40                        | 0.085                  | 16                     | 4                      | 795                       | 205                        | 13.0                        |
| 6          | 3 | 25                        | 0.030                  | 6                      | 3                      | 1325                      | 120                        | 2.0                         |
| 8          | 3 | 25                        | 0.035                  | 8                      | 4                      | 995                       | 105                        | 3.5                         |
| 10         | 3 | 25                        | 0.045                  | 10                     | 5                      | 795                       | 105                        | 5.5                         |
| 12         | 3 | 25                        | 0.050                  | 12                     | 6                      | 665                       | 100                        | 7.0                         |
| 16         | 3 | 25                        | 0.060                  | 16                     | 4                      | 495                       | 90                         | 6.0                         |
| 6          | 3 | 15                        | 0.030                  | 6                      | 3                      | 795                       | 70                         | 1.5                         |
| 8          | 3 | 15                        | 0.035                  | 8                      | 4                      | 595                       | 60                         | 2.0                         |
| 10         | 3 | 15                        | 0.045                  | 10                     | 5                      | 475                       | 65                         | 3.5                         |
| 12         | 3 | 15                        | 0.050                  | 12                     | 6                      | 400                       | 60                         | 4.5                         |
| 16         | 3 | 15                        | 0.060                  | 16                     | 4                      | 300                       | 55                         | 3.5                         |

**5315****Применение**

Нержавеющие  
аустенитные стали  
[ 1.4301 ]



Нержавеющие  
аустенитные стали  
[ 1.4571 ]



Жаропрочные  
стали  
[ 17-4 PH ]



Сплавы на основе  
никеля  
[ Inconel 718 ]



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 6          | 3 | 80                        | 0.030                  | 3                      | 6                      | 4245                      | 380                        | 7.0                         |
| 8          | 3 | 80                        | 0.040                  | 4                      | 8                      | 3185                      | 380                        | 12.0                        |
| 10         | 3 | 80                        | 0.055                  | 5                      | 10                     | 2545                      | 420                        | 21.0                        |
| 12         | 3 | 80                        | 0.065                  | 6                      | 12                     | 2120                      | 415                        | 30.0                        |
| 16         | 3 | 80                        | 0.085                  | 4                      | 16                     | 1590                      | 405                        | 26.0                        |
| 6          | 3 | 40                        | 0.030                  | 3                      | 6                      | 2120                      | 190                        | 3.5                         |
| 8          | 3 | 40                        | 0.040                  | 4                      | 8                      | 1590                      | 190                        | 6.0                         |
| 10         | 3 | 40                        | 0.055                  | 5                      | 10                     | 1275                      | 210                        | 10.5                        |
| 12         | 3 | 40                        | 0.065                  | 6                      | 12                     | 1060                      | 205                        | 15.0                        |
| 16         | 3 | 40                        | 0.085                  | 4                      | 16                     | 795                       | 205                        | 13.0                        |
| 6          | 3 | 25                        | 0.030                  | 3                      | 6                      | 1325                      | 120                        | 2.0                         |
| 8          | 3 | 25                        | 0.035                  | 4                      | 8                      | 995                       | 105                        | 3.5                         |
| 10         | 3 | 25                        | 0.045                  | 5                      | 10                     | 795                       | 105                        | 5.5                         |
| 12         | 3 | 25                        | 0.050                  | 6                      | 12                     | 665                       | 100                        | 7.0                         |
| 16         | 3 | 25                        | 0.060                  | 4                      | 16                     | 495                       | 90                         | 6.0                         |
| 6          | 3 | 15                        | 0.030                  | 3                      | 6                      | 795                       | 70                         | 1.5                         |
| 8          | 3 | 15                        | 0.035                  | 4                      | 8                      | 595                       | 60                         | 2.0                         |
| 10         | 3 | 15                        | 0.045                  | 5                      | 10                     | 475                       | 65                         | 3.5                         |
| 12         | 3 | 15                        | 0.050                  | 6                      | 12                     | 400                       | 60                         | 4.5                         |
| 16         | 3 | 15                        | 0.060                  | 4                      | 16                     | 300                       | 55                         | 3.5                         |

# Фрезы черновые

SX-3

HM  
MG10

SX

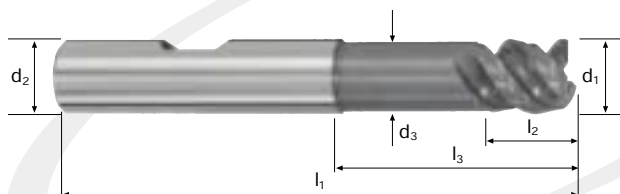
$\lambda$  55°  
 $\gamma$  15°



DIN 6535  
HA

DIN 6535  
HB

0,05-0,15  
45°



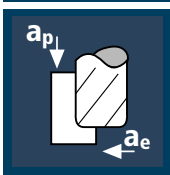
SX

Предназначены для обработки:

- Нерж.  
сталь
- Ni-сплавы
- HRC  
< 32
- Титан

|                      |          | Покрытие |             | Артикул-№. |    |    | Ø-Код |  | UNICUT-4X    | TRIBO        | SERVICE         |
|----------------------|----------|----------|-------------|------------|----|----|-------|--|--------------|--------------|-----------------|
| Пример:<br>заказа-№. |          | <b>U</b> | <b>5315</b> | <b>300</b> |    |    |       |  | <b>U5315</b> | <b>T5315</b> | <b>ReTool®</b>  |
|                      |          | <b>U</b> | <b>5315</b> | <b>300</b> |    |    |       |  | <b>U5215</b> |              | with<br>coating |
| Ø<br>Code            | d1<br>e8 | d2<br>h6 | d3          | l1         | l2 | l3 | z     |  |              |              |                 |
| .300                 | 6        | 6        | 5,5         | 57         | 7  | 20 | 3     |  |              |              |                 |
| .391                 | 8        | 8        | 7,4         | 63         | 9  | 26 | 3     |  |              |              |                 |
| .450                 | 10       | 10       | 9,2         | 72         | 11 | 31 | 3     |  |              |              |                 |
| .501                 | 12       | 12       | 11,0        | 83         | 13 | 37 | 3     |  |              |              |                 |
| .610                 | 16       | 16       | 15,0        | 92         | 17 | 43 | 3     |  |              |              |                 |
|                      |          |          |             |            |    |    |       |  |              |              |                 |
|                      |          |          |             |            |    |    |       |  |              |              |                 |
|                      |          |          |             |            |    |    |       |  |              |              |                 |
|                      |          |          |             |            |    |    |       |  |              |              |                 |
|                      |          |          |             |            |    |    |       |  |              |              |                 |
|                      |          |          |             |            |    |    |       |  |              |              |                 |
|                      |          |          |             |            |    |    |       |  |              |              |                 |
|                      |          |          |             |            |    |    |       |  |              |              |                 |
|                      |          |          |             |            |    |    |       |  |              |              |                 |
|                      |          |          |             |            |    |    |       |  |              |              |                 |
|                      |          |          |             |            |    |    |       |  |              |              |                 |
|                      |          |          |             |            |    |    |       |  |              |              |                 |
|                      |          |          |             |            |    |    |       |  |              |              |                 |
|                      |          |          |             |            |    |    |       |  |              |              |                 |
|                      |          |          |             |            |    |    |       |  |              |              |                 |
|                      |          |          |             |            |    |    |       |  |              |              |                 |
|                      |          |          |             |            |    |    |       |  |              |              |                 |
|                      |          |          |             |            |    |    |       |  |              |              |                 |

5312



Применение

Нержавеющие  
аустенитные стали  
[ 1.4301 ]



Нержавеющие  
аустенитные стали  
[ 1.4571 ]



Жаропрочные  
стали  
[ 17-4 PH ]



Сплавы на основе  
никеля  
[ Inconel 718 ]



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 6          | 4 | 80                        | 0.025                  | 9                      | 3                      | 4245                      | 425                        | 11.5                        |
| 8          | 4 | 80                        | 0.035                  | 12                     | 4                      | 3185                      | 445                        | 21.5                        |
| 10         | 4 | 80                        | 0.045                  | 15                     | 5                      | 2545                      | 460                        | 34.5                        |
| 12         | 4 | 80                        | 0.055                  | 18                     | 6                      | 2120                      | 465                        | 50.0                        |
| 6          | 4 | 40                        | 0.025                  | 9                      | 3                      | 2120                      | 210                        | 5.5                         |
| 8          | 4 | 40                        | 0.035                  | 12                     | 4                      | 1590                      | 225                        | 11.0                        |
| 10         | 4 | 40                        | 0.045                  | 15                     | 5                      | 1275                      | 230                        | 17.5                        |
| 12         | 4 | 40                        | 0.055                  | 18                     | 6                      | 1060                      | 235                        | 25.5                        |
| 6          | 4 | 25                        | 0.025                  | 9                      | 3                      | 1325                      | 135                        | 3.5                         |
| 8          | 4 | 25                        | 0.035                  | 12                     | 4                      | 995                       | 140                        | 6.5                         |
| 10         | 4 | 25                        | 0.040                  | 15                     | 5                      | 795                       | 125                        | 9.5                         |
| 12         | 4 | 25                        | 0.050                  | 18                     | 6                      | 665                       | 135                        | 14.5                        |
| 6          | 4 | 15                        | 0.025                  | 9                      | 3                      | 795                       | 80                         | 2.0                         |
| 8          | 4 | 15                        | 0.035                  | 12                     | 4                      | 595                       | 85                         | 4.0                         |
| 10         | 4 | 15                        | 0.040                  | 15                     | 5                      | 475                       | 75                         | 5.5                         |
| 12         | 4 | 15                        | 0.050                  | 18                     | 6                      | 400                       | 80                         | 8.5                         |

5312



Применение

Нержавеющие  
аустенитные стали  
[ 1.4301 ]



Нержавеющие  
аустенитные стали  
[ 1.4571 ]



Жаропрочные  
стали  
[ 17-4 PH ]



Сплавы на основе  
никеля  
[ Inconel 718 ]



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 6          | 4 | 80                        | 0.030                  | 3                      | 6                      | 4245                      | 510                        | 9.0                         |
| 8          | 4 | 80                        | 0.040                  | 4                      | 8                      | 3185                      | 510                        | 16.5                        |
| 10         | 4 | 80                        | 0.055                  | 5                      | 10                     | 2545                      | 560                        | 28.0                        |
| 12         | 4 | 80                        | 0.065                  | 6                      | 12                     | 2120                      | 550                        | 39.5                        |
| 6          | 4 | 40                        | 0.030                  | 3                      | 6                      | 2120                      | 255                        | 4.5                         |
| 8          | 4 | 40                        | 0.040                  | 4                      | 8                      | 1590                      | 255                        | 8.0                         |
| 10         | 4 | 40                        | 0.055                  | 5                      | 10                     | 1275                      | 280                        | 14.0                        |
| 12         | 4 | 40                        | 0.065                  | 6                      | 12                     | 1060                      | 275                        | 20.0                        |
| 6          | 4 | 25                        | 0.025                  | 3                      | 6                      | 1325                      | 135                        | 2.5                         |
| 8          | 4 | 25                        | 0.035                  | 4                      | 8                      | 995                       | 140                        | 4.5                         |
| 10         | 4 | 25                        | 0.045                  | 5                      | 10                     | 795                       | 145                        | 7.5                         |
| 12         | 4 | 25                        | 0.050                  | 6                      | 12                     | 665                       | 135                        | 9.5                         |
| 6          | 4 | 15                        | 0.030                  | 3                      | 6                      | 795                       | 95                         | 1.5                         |
| 8          | 4 | 15                        | 0.035                  | 4                      | 8                      | 595                       | 85                         | 2.5                         |
| 10         | 4 | 15                        | 0.045                  | 5                      | 10                     | 475                       | 85                         | 4.5                         |
| 12         | 4 | 15                        | 0.050                  | 6                      | 12                     | 400                       | 80                         | 6.0                         |

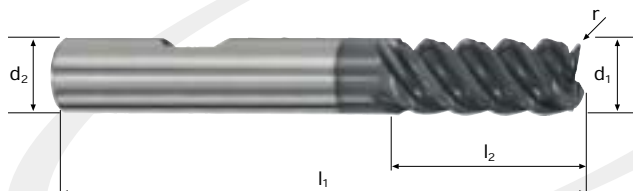
# Фрезы черновые

# SX-RN

HM  
MG10

SX

$\lambda$  55°  
 $\gamma$  15°



SX



DIN  
6535  
HA

DIN  
6535  
HB

Предназначены для обработки:



Нерж.  
сталь

Ni-сплавы

HRC  
< 32

Титан

| Пример:<br>заказа-№. |          | Покрытие | Артикул-№. | Ф-Код |              | UNICUT-4X | TRIBO | SERVICE      |
|----------------------|----------|----------|------------|-------|--------------|-----------|-------|--------------|
|                      |          | U        | 5312.300   |       |              | U5312     | T5312 | ReTool®      |
|                      |          |          |            |       |              | U5212     |       | with coating |
| Ø                    | d1<br>e8 | d2<br>h6 | l1         | l2    | r<br>0/+0,03 | z         |       |              |
| .300                 | 6        | 6        | 57         | 13    | 1,0          | 4         | .     | .            |
| .391                 | 8        | 8        | 63         | 19    | 1,0          | 4         | .     | .            |
| .450                 | 10       | 10       | 72         | 22    | 1,0          | 4         | .     | .            |
| .501                 | 12       | 12       | 83         | 26    | 1,0          | 4         | .     | .            |
|                      |          |          |            |       |              |           |       |              |
|                      |          |          |            |       |              |           |       |              |
|                      |          |          |            |       |              |           |       |              |
|                      |          |          |            |       |              |           |       |              |
|                      |          |          |            |       |              |           |       |              |
|                      |          |          |            |       |              |           |       |              |
|                      |          |          |            |       |              |           |       |              |
|                      |          |          |            |       |              |           |       |              |
|                      |          |          |            |       |              |           |       |              |
|                      |          |          |            |       |              |           |       |              |
|                      |          |          |            |       |              |           |       |              |
|                      |          |          |            |       |              |           |       |              |
|                      |          |          |            |       |              |           |       |              |
|                      |          |          |            |       |              |           |       |              |
|                      |          |          |            |       |              |           |       |              |
|                      |          |          |            |       |              |           |       |              |
|                      |          |          |            |       |              |           |       |              |
|                      |          |          |            |       |              |           |       |              |
|                      |          |          |            |       |              |           |       |              |
|                      |          |          |            |       |              |           |       |              |
|                      |          |          |            |       |              |           |       |              |
|                      |          |          |            |       |              |           |       |              |
|                      |          |          |            |       |              |           |       |              |
|                      |          |          |            |       |              |           |       |              |
|                      |          |          |            |       |              |           |       |              |





## Холодноштамповые стали (12% Cr, ...)

CX

Высокопроизводительные концевые фрезы с гладкой режущей кромкой, цилиндрические

№ 5205 / 5305



CX

$\lambda$  55°  
 $\gamma$  15°



107

№ 5206 / 5306



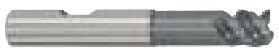
CX

$\lambda$  55°  
 $\gamma$  15°



109

№ 5207 / 5307



CX

$\lambda$  55°  
 $\gamma$  15°



111

CX

Высокопроизводительные концевые фрезы с гладкой режущей кромкой, торические

№ 5202 / 5302



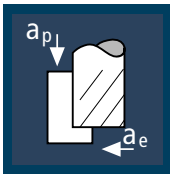
CX

$\lambda$  55°  
 $\gamma$  15°



113

5305



Применение

Холодноштамповые стали (12%Cr), **high alloyed** [ 1.2379 ]



Холодноштамповые стали low alloyed [ 1.2067 ]



| d1 [mm] | z | v <sub>c</sub> [m/min] | f <sub>z</sub> [mm] | a <sub>p</sub> [mm] | a <sub>e</sub> [mm] | n [min <sup>-1</sup> ] | v <sub>f</sub> [mm/min] | Q [cm <sup>3</sup> /min] |
|---------|---|------------------------|---------------------|---------------------|---------------------|------------------------|-------------------------|--------------------------|
| 6       | 4 | 90                     | 0.040               | 6                   | 3                   | 4775                   | 765                     | 14.0                     |
| 8       | 4 | 90                     | 0.050               | 8                   | 4                   | 3580                   | 715                     | 23.0                     |
| 10      | 4 | 90                     | 0.065               | 10                  | 5                   | 2865                   | 745                     | 37.5                     |
| 12      | 4 | 90                     | 0.075               | 12                  | 6                   | 2385                   | 715                     | 51.5                     |
| 16      | 4 | 90                     | 0.100               | 16                  | 4                   | 1790                   | 715                     | 46.0                     |
| 6       | 4 | 120                    | 0.040               | 6                   | 3                   | 6365                   | 1020                    | 18.5                     |
| 8       | 4 | 120                    | 0.050               | 8                   | 4                   | 4775                   | 955                     | 30.5                     |
| 10      | 4 | 120                    | 0.065               | 10                  | 5                   | 3820                   | 995                     | 50.0                     |
| 12      | 4 | 120                    | 0.075               | 12                  | 6                   | 3185                   | 955                     | 69.0                     |
| 16      | 4 | 120                    | 0.100               | 16                  | 4                   | 2385                   | 955                     | 61.0                     |

5305



Применение

Холодноштамповые стали (12%Cr), **high alloyed** [ 1.2379 ]



Холодноштамповые стали low alloyed [ 1.2067 ]



| d1 [mm] | z | v <sub>c</sub> [m/min] | f <sub>z</sub> [mm] | a <sub>p</sub> [mm] | a <sub>e</sub> [mm] | n [min <sup>-1</sup> ] | v <sub>f</sub> [mm/min] | Q [cm <sup>3</sup> /min] |
|---------|---|------------------------|---------------------|---------------------|---------------------|------------------------|-------------------------|--------------------------|
| 6       | 4 | 70                     | 0.040               | 3                   | 6                   | 3715                   | 595                     | 10.5                     |
| 8       | 4 | 70                     | 0.050               | 4                   | 8                   | 2785                   | 555                     | 18.0                     |
| 10      | 4 | 70                     | 0.065               | 5                   | 10                  | 2230                   | 580                     | 29.0                     |
| 12      | 4 | 70                     | 0.075               | 6                   | 12                  | 1855                   | 555                     | 40.0                     |
| 16      | 4 | 70                     | 0.100               | 4                   | 16                  | 1395                   | 560                     | 36.0                     |
| 6       | 4 | 100                    | 0.040               | 3                   | 6                   | 5305                   | 850                     | 15.5                     |
| 8       | 4 | 100                    | 0.050               | 4                   | 8                   | 3980                   | 795                     | 25.5                     |
| 10      | 4 | 100                    | 0.065               | 5                   | 10                  | 3185                   | 830                     | 41.5                     |
| 12      | 4 | 100                    | 0.075               | 6                   | 12                  | 2655                   | 795                     | 57.0                     |
| 16      | 4 | 100                    | 0.100               | 4                   | 16                  | 1990                   | 795                     | 51.0                     |

# Фрезы черновые

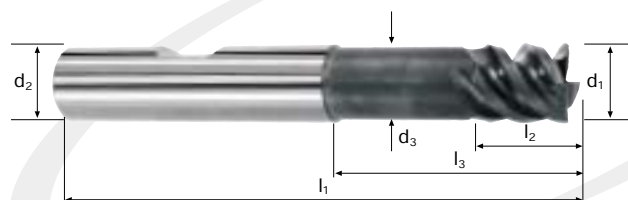
CX

HM  
MG10 CX

$\lambda$  55°  
 $\gamma$  15°



0,05-0,15  
4 $\beta$

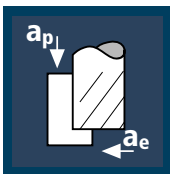


CX

Предназначены для обработки:

Инструм. сталь  
12% Cr

| Пример: заказа-N°. |    | Покрытие | Артикул-N° | Ф-Код |    |    |   | DURO-S | SERVICE     |
|--------------------|----|----------|------------|-------|----|----|---|--------|-------------|
|                    |    | D        | 5305       | .300  |    |    |   | D5305  | ReTool®     |
|                    |    |          |            |       |    |    |   | D5205  | с покрытием |
| Ø                  | d1 | d2       | d3         | l1    | l2 | l3 | z |        |             |
| Code               | e8 | h6       |            |       |    |    |   |        |             |
| .300               | 6  | 6        | 5,5        | 57    | 7  | 20 | 4 | •      |             |
| .391               | 8  | 8        | 7,4        | 63    | 9  | 26 | 4 | •      | •           |
| .450               | 10 | 10       | 9,2        | 72    | 11 | 31 | 4 | •      | •           |
| .501               | 12 | 12       | 11,0       | 83    | 13 | 37 | 4 | •      | •           |
| .610               | 16 | 16       | 15,0       | 92    | 17 | 43 | 4 | •      | •           |
|                    |    |          |            |       |    |    |   |        |             |
|                    |    |          |            |       |    |    |   |        |             |
|                    |    |          |            |       |    |    |   |        |             |
|                    |    |          |            |       |    |    |   |        |             |
|                    |    |          |            |       |    |    |   |        |             |
|                    |    |          |            |       |    |    |   |        |             |
|                    |    |          |            |       |    |    |   |        |             |
|                    |    |          |            |       |    |    |   |        |             |
|                    |    |          |            |       |    |    |   |        |             |
|                    |    |          |            |       |    |    |   |        |             |
|                    |    |          |            |       |    |    |   |        |             |
|                    |    |          |            |       |    |    |   |        |             |

**5306****Применение**

Холодноштамповые  
стали (12%Cr),  
**high alloyed**  
[ 1.2379 ]



Холодноштамповые  
стали  
**low alloyed**  
[ 1.2067 ]



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 6          | 4 | 90                        | 0.025                  | 9                      | 3                      | 4775                      | 480                        | 13.0                        |
| 8          | 4 | 90                        | 0.035                  | 12                     | 4                      | 3580                      | 500                        | 24.0                        |
| 10         | 4 | 90                        | 0.045                  | 15                     | 5                      | 2865                      | 515                        | 38.5                        |
| 12         | 4 | 90                        | 0.055                  | 18                     | 6                      | 2385                      | 525                        | 56.5                        |
| 16         | 4 | 90                        | 0.075                  | 24                     | 4                      | 1790                      | 535                        | 51.5                        |

|    |   |     |       |    |   |      |     |      |
|----|---|-----|-------|----|---|------|-----|------|
| 6  | 4 | 120 | 0.030 | 9  | 3 | 6365 | 765 | 20.5 |
| 8  | 4 | 120 | 0.040 | 12 | 4 | 4775 | 765 | 36.5 |
| 10 | 4 | 120 | 0.050 | 15 | 5 | 3820 | 765 | 57.5 |
| 12 | 4 | 120 | 0.060 | 18 | 6 | 3185 | 765 | 82.5 |
| 16 | 4 | 120 | 0.080 | 24 | 4 | 2385 | 765 | 73.5 |

**5306****Применение**

Холодноштамповые  
стали (12%Cr),  
**high alloyed**  
[ 1.2379 ]



Холодноштамповые  
стали  
**low alloyed**  
[ 1.2067 ]



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 6          | 4 | 70                        | 0.035                  | 3                      | 6                      | 3715                      | 520                        | 9.5                         |
| 8          | 4 | 70                        | 0.045                  | 4                      | 8                      | 2785                      | 500                        | 16.0                        |
| 10         | 4 | 70                        | 0.055                  | 5                      | 10                     | 2230                      | 490                        | 24.5                        |
| 12         | 4 | 70                        | 0.065                  | 6                      | 12                     | 1855                      | 480                        | 34.5                        |
| 16         | 4 | 70                        | 0.090                  | 4                      | 16                     | 1395                      | 500                        | 32.0                        |

|    |   |     |       |   |    |      |     |      |
|----|---|-----|-------|---|----|------|-----|------|
| 6  | 4 | 100 | 0.035 | 3 | 6  | 5305 | 745 | 13.5 |
| 8  | 4 | 100 | 0.045 | 4 | 8  | 3980 | 715 | 23.0 |
| 10 | 4 | 100 | 0.055 | 5 | 10 | 3185 | 700 | 35.0 |
| 12 | 4 | 100 | 0.065 | 6 | 12 | 2655 | 690 | 49.5 |
| 16 | 4 | 100 | 0.090 | 4 | 16 | 1990 | 715 | 46.0 |

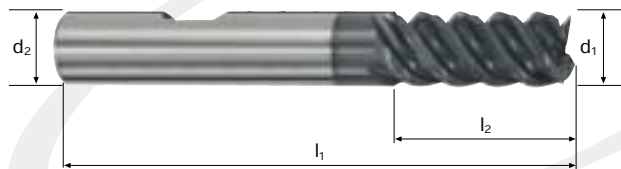


## Фрезы черновые

CX-N

HM  
MG10 CX

$\lambda$  55°  
 $\gamma$  15°



CX

DIN 6535  
HA

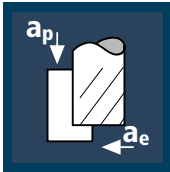
DIN 6535  
HB

0,05-0,15  
4 $\Phi$

Предназначены для обработки:

Инструм. сталь  
12% Cr

| Пример:<br>заказа-N°. | Покрытие | Артикул-N°. | Ф-Код |    |   | DURO-S | SERVICE     |
|-----------------------|----------|-------------|-------|----|---|--------|-------------|
|                       |          |             |       |    |   | D5306  | ReTool®     |
|                       | D        | 5306        | .300  |    |   |        | с покрытием |
| $\emptyset$           | d1       | d2          | l1    | l2 | Z |        |             |
| Code                  | e8       | h6          |       |    |   |        |             |
| .300                  | 6        | 6           | 57    | 13 | 4 | •      |             |
| .391                  | 8        | 8           | 63    | 19 | 4 | •      | •           |
| .450                  | 10       | 10          | 72    | 22 | 4 | •      | •           |
| .501                  | 12       | 12          | 83    | 26 | 4 | •      | •           |
| .610                  | 16       | 16          | 92    | 32 | 4 | •      | •           |

**5307****Применение**

Холодноштамповые  
стали (12%Cr),  
**high alloyed**  
[ 1.2379 ]



Холодноштамповые  
стали  
**low alloyed**  
[ 1.2067 ]



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 6          | 3 | 90                        | 0.040                  | 6                      | 3                      | 4775                      | 575                        | 10.5                        |
| 8          | 3 | 90                        | 0.050                  | 8                      | 4                      | 3580                      | 535                        | 17.0                        |
| 10         | 3 | 90                        | 0.065                  | 10                     | 5                      | 2865                      | 560                        | 28.0                        |
| 12         | 3 | 90                        | 0.075                  | 12                     | 6                      | 2385                      | 535                        | 38.5                        |
| 16         | 3 | 90                        | 0.100                  | 16                     | 4                      | 1790                      | 535                        | 34.0                        |
| 6          | 3 | 120                       | 0.040                  | 6                      | 3                      | 6365                      | 765                        | 14.0                        |
| 8          | 3 | 120                       | 0.050                  | 8                      | 4                      | 4775                      | 715                        | 23.0                        |
| 10         | 3 | 120                       | 0.065                  | 10                     | 5                      | 3820                      | 745                        | 37.5                        |
| 12         | 3 | 120                       | 0.075                  | 12                     | 6                      | 3185                      | 715                        | 51.5                        |
| 16         | 3 | 120                       | 0.100                  | 16                     | 4                      | 2385                      | 715                        | 46.0                        |

**5307****Применение**

Холодноштамповые  
стали (12%Cr),  
**high alloyed**  
[ 1.2379 ]



Холодноштамповые  
стали  
**low alloyed**  
[ 1.2067 ]



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 6          | 3 | 70                        | 0.040                  | 3                      | 6                      | 3715                      | 445                        | 8.0                         |
| 8          | 3 | 70                        | 0.050                  | 4                      | 8                      | 2785                      | 420                        | 13.5                        |
| 10         | 3 | 70                        | 0.065                  | 5                      | 10                     | 2230                      | 435                        | 22.0                        |
| 12         | 3 | 70                        | 0.075                  | 6                      | 12                     | 1855                      | 415                        | 30.0                        |
| 16         | 3 | 70                        | 0.100                  | 4                      | 16                     | 1395                      | 420                        | 27.0                        |
| 6          | 3 | 100                       | 0.040                  | 3                      | 6                      | 5305                      | 635                        | 11.5                        |
| 8          | 3 | 100                       | 0.050                  | 4                      | 8                      | 3980                      | 595                        | 19.0                        |
| 10         | 3 | 100                       | 0.065                  | 5                      | 10                     | 3185                      | 620                        | 31.0                        |
| 12         | 3 | 100                       | 0.075                  | 6                      | 12                     | 2655                      | 595                        | 43.0                        |
| 16         | 3 | 100                       | 0.100                  | 4                      | 16                     | 1990                      | 595                        | 38.0                        |

# Фрезы черновые

CX-3

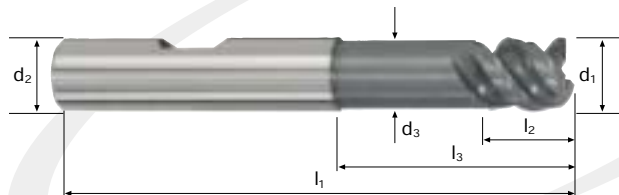
HM  
MG10 CX

$\lambda$  55°  
 $\gamma$  15°




DIN 6535 HA  
DIN 6535 HB

0,05-0,15  
4 $\phi$



CX

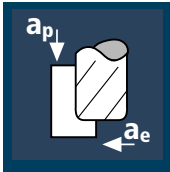
Предназначены для обработки:

Инструм. сталь  
12% Cr

| Пример:<br>заказа-N°. | Покрытие<br>D | Артикул-N°<br>5307 | Ф-Код<br>.300 | Ø    | d1<br>e8 | d2<br>h6 | d3   | l1 | l2 | l3 | z | DURO-S | SERVICE                |
|-----------------------|---------------|--------------------|---------------|------|----------|----------|------|----|----|----|---|--------|------------------------|
|                       |               |                    |               |      |          |          |      |    |    |    |   | D5307  | ReTool®<br>с покрытием |
|                       |               |                    |               | .300 | 6        | 6        | 5,5  | 57 | 7  | 20 | 3 | .      | .                      |
|                       |               |                    |               | .391 | 8        | 8        | 7,4  | 63 | 9  | 26 | 3 | .      | .                      |
|                       |               |                    |               | .450 | 10       | 10       | 9,2  | 72 | 11 | 31 | 3 | .      | .                      |
|                       |               |                    |               | .501 | 12       | 12       | 11,0 | 83 | 13 | 37 | 3 | .      | .                      |
|                       |               |                    |               | .610 | 16       | 16       | 15,0 | 92 | 17 | 43 | 3 | .      | .                      |
|                       |               |                    |               |      |          |          |      |    |    |    |   | .      | .                      |
|                       |               |                    |               |      |          |          |      |    |    |    |   | .      | .                      |
|                       |               |                    |               |      |          |          |      |    |    |    |   | .      | .                      |
|                       |               |                    |               |      |          |          |      |    |    |    |   | .      | .                      |
|                       |               |                    |               |      |          |          |      |    |    |    |   | .      | .                      |
|                       |               |                    |               |      |          |          |      |    |    |    |   | .      | .                      |
|                       |               |                    |               |      |          |          |      |    |    |    |   | .      | .                      |
|                       |               |                    |               |      |          |          |      |    |    |    |   | .      | .                      |
|                       |               |                    |               |      |          |          |      |    |    |    |   | .      | .                      |
|                       |               |                    |               |      |          |          |      |    |    |    |   | .      | .                      |
|                       |               |                    |               |      |          |          |      |    |    |    |   | .      | .                      |
|                       |               |                    |               |      |          |          |      |    |    |    |   | .      | .                      |
|                       |               |                    |               |      |          |          |      |    |    |    |   | .      | .                      |
|                       |               |                    |               |      |          |          |      |    |    |    |   | .      | .                      |
|                       |               |                    |               |      |          |          |      |    |    |    |   | .      | .                      |
|                       |               |                    |               |      |          |          |      |    |    |    |   | .      | .                      |
|                       |               |                    |               |      |          |          |      |    |    |    |   | .      | .                      |



**5302**



**Применение**

Холодноштамповые стали (12%Cr), **high alloyed** [ 1.2379 ]



Холодноштамповые стали **low alloyed** [ 1.2067 ]



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 6          | 4 | 90                        | 0.025                  | 9                      | 3                      | 4775                      | 480                        | 13.0                        |
| 8          | 4 | 90                        | 0.035                  | 12                     | 4                      | 3580                      | 500                        | 24.0                        |
| 10         | 4 | 90                        | 0.045                  | 15                     | 5                      | 2865                      | 515                        | 38.5                        |
| 12         | 4 | 90                        | 0.055                  | 18                     | 6                      | 2385                      | 525                        | 56.5                        |
| 6          | 4 | 120                       | 0.030                  | 9                      | 3                      | 6365                      | 765                        | 20.5                        |
| 8          | 4 | 120                       | 0.040                  | 12                     | 4                      | 4775                      | 765                        | 36.5                        |
| 10         | 4 | 120                       | 0.050                  | 15                     | 5                      | 3820                      | 765                        | 57.5                        |
| 12         | 4 | 120                       | 0.060                  | 18                     | 6                      | 3185                      | 765                        | 82.5                        |

**5302**



**Применение**

Холодноштамповые стали (12%Cr), **high alloyed** [ 1.2379 ]



Холодноштамповые стали **low alloyed** [ 1.2067 ]



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 6          | 4 | 70                        | 0.035                  | 3                      | 6                      | 3715                      | 520                        | 9.5                         |
| 8          | 4 | 70                        | 0.045                  | 4                      | 8                      | 2785                      | 500                        | 16.0                        |
| 10         | 4 | 70                        | 0.055                  | 5                      | 10                     | 2230                      | 490                        | 24.5                        |
| 12         | 4 | 70                        | 0.065                  | 6                      | 12                     | 1855                      | 480                        | 34.5                        |
| 6          | 4 | 100                       | 0.035                  | 3                      | 6                      | 5305                      | 745                        | 13.5                        |
| 8          | 4 | 100                       | 0.045                  | 4                      | 8                      | 3980                      | 715                        | 23.0                        |
| 10         | 4 | 100                       | 0.055                  | 5                      | 10                     | 3185                      | 700                        | 35.0                        |
| 12         | 4 | 100                       | 0.065                  | 6                      | 12                     | 2655                      | 690                        | 49.5                        |

# Фрезы черновые

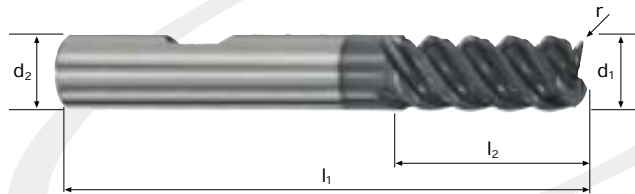
CX-RN

HM  
MG10 CX

$\lambda$  55°  
 $\gamma$  15°



DIN 6535 HA  
DIN 6535 HB



CX

Предназначены для обработки:

Инструм. сталь  
12% Cr

| Пример:<br>заказа-№ | Покрытие |          | Артикул-№ | Ф-Код |              | DURO-S |         | SERVICE        |
|---------------------|----------|----------|-----------|-------|--------------|--------|---------|----------------|
|                     | D        | 5302     | .300      |       |              | D5302  | ReTool® |                |
| Ø<br>Code           | d1<br>e8 | d2<br>h6 | l1        | l2    | r<br>0/+0,03 | Z      |         | с<br>покрытием |
| .300                | 6        | 6        | 57        | 13    | 1,0          | 4      | •       |                |
| .391                | 8        | 8        | 63        | 19    | 1,0          | 4      | •       | •              |
| .450                | 10       | 10       | 72        | 22    | 1,0          | 4      | •       | •              |
| .501                | 12       | 12       | 83        | 26    | 1,0          | 4      | •       | •              |
|                     |          |          |           |       |              |        |         |                |
|                     |          |          |           |       |              |        |         |                |
|                     |          |          |           |       |              |        |         |                |
|                     |          |          |           |       |              |        |         |                |
|                     |          |          |           |       |              |        |         |                |
|                     |          |          |           |       |              |        |         |                |
|                     |          |          |           |       |              |        |         |                |
|                     |          |          |           |       |              |        |         |                |
|                     |          |          |           |       |              |        |         |                |
|                     |          |          |           |       |              |        |         |                |
|                     |          |          |           |       |              |        |         |                |
|                     |          |          |           |       |              |        |         |                |
|                     |          |          |           |       |              |        |         |                |
|                     |          |          |           |       |              |        |         |                |
|                     |          |          |           |       |              |        |         |                |
|                     |          |          |           |       |              |        |         |                |
|                     |          |          |           |       |              |        |         |                |
|                     |          |          |           |       |              |        |         |                |
|                     |          |          |           |       |              |        |         |                |
|                     |          |          |           |       |              |        |         |                |
|                     |          |          |           |       |              |        |         |                |
|                     |          |          |           |       |              |        |         |                |
|                     |          |          |           |       |              |        |         |                |



# Алюминий

AX

Концевые фрезы по алюминию с гладкой режущей кромкой, цилиндрические

№ 5273



AX

$\lambda$  40°  
 $\gamma$  25°



117

№ 5278



AX

$\lambda$  40°  
 $\gamma$  25°



119

Концевые фрезы по алюминию с гладкой режущей кромкой, торические

№ 5271



AX

$\lambda$  30°  
 $\gamma$  15°



121

№ 5275



AX

$\lambda$  30°  
 $\gamma$  15°



123

№ 5276



AX

$\lambda$  30°  
 $\gamma$  15°



125

№ 5277



AX

$\lambda$  30°  
 $\gamma$  15°



127

Концевые фрезы по алюминию с гладкой режущей кромкой, сферические

№ 5290



AX

$\lambda$  40°  
 $\gamma$  20°



129

№ 5292



AX

$\lambda$  40°  
 $\gamma$  20°



131

Концевые фрезы по алюминию с профильной режущей кромкой, цилиндрические

№ 5297 / 5397



AX

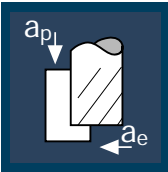
$\lambda$  40°  
 $\gamma$  18°



133

AX

5273



## Применение

Алюминий нелегированный



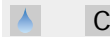
Литейные алюминиевые сплавы



Медь чистая



Термопластики



| d1<br>[mm] | z | V <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 6          | 2 | 350                       | 0.075                  | 9                      | 3                      | 18570      | 2785                       | 75.0                        |
| 8          | 2 | 350                       | 0.100                  | 12                     | 4                      | 13925      | 2785                       | 133.5                       |
| 10         | 2 | 350                       | 0.125                  | 15                     | 5                      | 11140      | 2785                       | 209.0                       |
| 12         | 2 | 350                       | 0.120                  | 18                     | 6                      | 9285       | 2230                       | 241.0                       |
| 16         | 2 | 350                       | 0.185                  | 24                     | 8                      | 6965       | 2575                       | 494.5                       |
| 20         | 2 | 350                       | 0.215                  | 30                     | 10                     | 5570       | 2395                       | 718.5                       |
| 6          | 2 | 900                       | 0.070                  | 9                      | 3                      | 47750      | 6685                       | 180.5                       |
| 8          | 2 | 900                       | 0.090                  | 12                     | 4                      | 35810      | 6445                       | 309.5                       |
| 10         | 2 | 900                       | 0.115                  | 15                     | 5                      | 28650      | 6590                       | 494.5                       |
| 12         | 2 | 900                       | 0.135                  | 18                     | 6                      | 23875      | 6445                       | 696.0                       |
| 16         | 2 | 900                       | 0.180                  | 24                     | 8                      | 17905      | 6445                       | 1237.5                      |
| 20         | 2 | 900                       | 0.225                  | 30                     | 10                     | 14325      | 6445                       | 1933.5                      |
| 6          | 2 | 600                       | 0.060                  | 9                      | 3                      | 31830      | 3820                       | 103.0                       |
| 8          | 2 | 600                       | 0.080                  | 12                     | 4                      | 23875      | 3820                       | 183.5                       |
| 10         | 2 | 600                       | 0.100                  | 15                     | 5                      | 19100      | 3820                       | 286.5                       |
| 12         | 2 | 600                       | 0.120                  | 18                     | 6                      | 15915      | 3820                       | 412.5                       |
| 16         | 2 | 600                       | 0.160                  | 24                     | 8                      | 11935      | 3820                       | 733.5                       |
| 20         | 2 | 600                       | 0.200                  | 30                     | 10                     | 9550       | 3820                       | 1146.0                      |
| 6          | 2 | 1200                      | 0.075                  | 9                      | 3                      | 60000      | 9000                       | 243.0                       |
| 8          | 2 | 1200                      | 0.100                  | 12                     | 4                      | 47750      | 9550                       | 458.5                       |
| 10         | 2 | 1200                      | 0.125                  | 15                     | 5                      | 38200      | 9550                       | 716.5                       |
| 12         | 2 | 1200                      | 0.150                  | 18                     | 6                      | 31830      | 9550                       | 1031.5                      |
| 16         | 2 | 1200                      | 0.200                  | 24                     | 8                      | 23875      | 9550                       | 1833.5                      |
| 20         | 2 | 1200                      | 0.250                  | 30                     | 10                     | 19100      | 9550                       | 2865.0                      |

5273



## Применение

Алюминий нелегированный



Литейные алюминиевые сплавы



Медь чистая



Термопластики



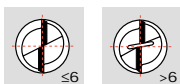
| d1<br>[mm] | z | V <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 6          | 2 | 300                       | 0.050                  | 3                      | 6                      | 15915      | 1590                       | 28.5                        |
| 8          | 2 | 300                       | 0.065                  | 4                      | 8                      | 11935      | 1550                       | 49.5                        |
| 10         | 2 | 300                       | 0.085                  | 5                      | 10                     | 9550       | 1625                       | 81.5                        |
| 12         | 2 | 300                       | 0.100                  | 6                      | 12                     | 7960       | 1590                       | 114.5                       |
| 16         | 2 | 300                       | 0.135                  | 8                      | 16                     | 5970       | 1610                       | 206.0                       |
| 20         | 2 | 300                       | 0.165                  | 10                     | 20                     | 4775       | 1575                       | 315.0                       |
| 6          | 2 | 800                       | 0.045                  | 3                      | 6                      | 42445      | 3820                       | 69.0                        |
| 8          | 2 | 800                       | 0.060                  | 4                      | 8                      | 31830      | 3820                       | 122.0                       |
| 10         | 2 | 800                       | 0.075                  | 5                      | 10                     | 25465      | 3820                       | 191.0                       |
| 12         | 2 | 800                       | 0.090                  | 6                      | 12                     | 21220      | 3820                       | 275.0                       |
| 16         | 2 | 800                       | 0.120                  | 8                      | 16                     | 15915      | 3820                       | 489.0                       |
| 20         | 2 | 800                       | 0.150                  | 10                     | 20                     | 12735      | 3820                       | 764.0                       |
| 6          | 2 | 400                       | 0.040                  | 3                      | 6                      | 21220      | 1700                       | 30.5                        |
| 8          | 2 | 400                       | 0.055                  | 4                      | 8                      | 15915      | 1750                       | 56.0                        |
| 10         | 2 | 400                       | 0.065                  | 5                      | 10                     | 12735      | 1655                       | 83.0                        |
| 12         | 2 | 400                       | 0.080                  | 6                      | 12                     | 10610      | 1700                       | 122.5                       |
| 16         | 2 | 400                       | 0.105                  | 8                      | 16                     | 7960       | 1670                       | 214.0                       |
| 20         | 2 | 400                       | 0.135                  | 10                     | 20                     | 6365       | 1720                       | 344.0                       |
| 6          | 2 | 1200                      | 0.050                  | 3                      | 6                      | 60000      | 6000                       | 108.0                       |
| 8          | 2 | 1200                      | 0.065                  | 4                      | 8                      | 47750      | 6210                       | 198.5                       |
| 10         | 2 | 1200                      | 0.085                  | 5                      | 10                     | 38200      | 6495                       | 325.0                       |
| 12         | 2 | 1200                      | 0.100                  | 6                      | 12                     | 31830      | 6365                       | 458.5                       |
| 16         | 2 | 1200                      | 0.135                  | 8                      | 16                     | 23875      | 6445                       | 825.0                       |
| 20         | 2 | 1200                      | 0.165                  | 10                     | 20                     | 19100      | 6305                       | 1261.0                      |

# Фрезы по алюминию

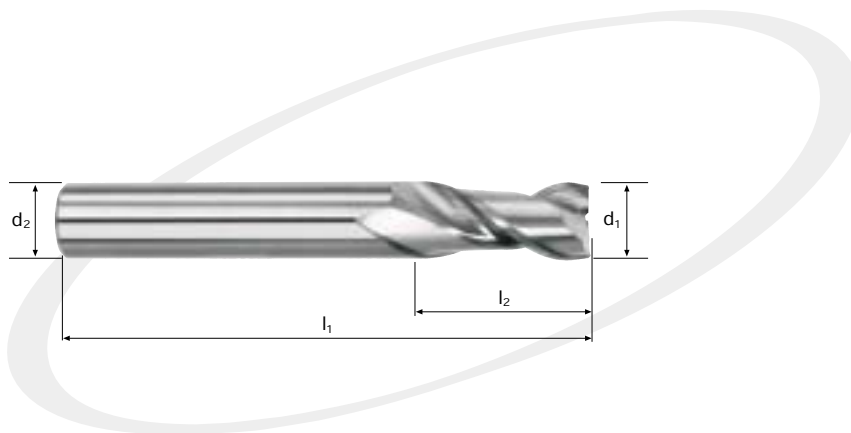
# AX

HM  
MG10 AX

$\lambda$  40°  
 $\gamma$  25°

DIN  
6535  
HA



Предназначены для обработки:

0,05-0,15  
4Ф

Алюминий

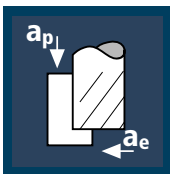
Медь

Пластик

AX

|  |          |          |     |    |   |   | CELERO  | SERVICE |
|--|----------|----------|-----|----|---|---|---------|---------|
|  |          |          |     |    |   |   | ReTool® |         |
| Пример: заказа-№. <span style="color:red">C</span> <span style="color:blue">5273</span> <span style="color:blue">.300</span> |          |          |     |    |   |   | 5273    | C5273   |
| Ø<br>Code  | d1<br>e8 | d2<br>h6 | l1  | l2 | z |   |         |         |
| .300   | 6        | 6        | 57  | 10 | 2 | • | •       | •       |
| .391   | 8        | 8        | 63  | 16 | 2 | • | •       | •       |
| .450   | 10       | 10       | 72  | 19 | 2 | • | •       | •       |
| .501   | 12       | 12       | 83  | 22 | 2 | • | •       | •       |
| .610   | 16       | 16       | 92  | 26 | 2 | • | •       | •       |
| .682   | 20       | 20       | 104 | 32 | 2 | • | •       | •       |
|  |          |          |     |    |   |   |         |         |
|  |          |          |     |    |   |   |         |         |
|  |          |          |     |    |   |   |         |         |
|  |          |          |     |    |   |   |         |         |
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|  |          |          |     |    |   |   |         |         |
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|  |          |          |     |    |   |   |         |         |

5278



## Применение

Алюминий нелегированный



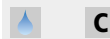
Литейные алюминиевые сплавы



Медь чистая



Термопластики



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 6          | 2 | 350                       | 0.075                  | 6                      | 3                      | 18570                     | 2785                       | 50.0                        |
| 8          | 2 | 350                       | 0.100                  | 8                      | 4                      | 13925                     | 2785                       | 89.0                        |
| 10         | 2 | 350                       | 0.125                  | 10                     | 5                      | 11140                     | 2785                       | 139.5                       |
| 12         | 2 | 350                       | 0.120                  | 12                     | 6                      | 9285                      | 2230                       | 160.5                       |
| 16         | 2 | 350                       | 0.185                  | 16                     | 8                      | 6965                      | 2575                       | 329.5                       |
| 6          | 2 | 900                       | 0.070                  | 6                      | 3                      | 47750                     | 6685                       | 120.5                       |
| 8          | 2 | 900                       | 0.090                  | 8                      | 4                      | 35810                     | 6445                       | 206.0                       |
| 10         | 2 | 900                       | 0.115                  | 10                     | 5                      | 28650                     | 6590                       | 329.5                       |
| 12         | 2 | 900                       | 0.135                  | 12                     | 6                      | 23875                     | 6445                       | 464.0                       |
| 16         | 2 | 900                       | 0.180                  | 16                     | 8                      | 17905                     | 6445                       | 825.0                       |
| 6          | 2 | 600                       | 0.060                  | 6                      | 3                      | 31830                     | 3820                       | 69.0                        |
| 8          | 2 | 600                       | 0.080                  | 8                      | 4                      | 23875                     | 3820                       | 122.0                       |
| 10         | 2 | 600                       | 0.100                  | 10                     | 5                      | 19100                     | 3820                       | 191.0                       |
| 12         | 2 | 600                       | 0.120                  | 12                     | 6                      | 15915                     | 3820                       | 275.0                       |
| 16         | 2 | 600                       | 0.160                  | 16                     | 8                      | 11935                     | 3820                       | 489.0                       |
| 6          | 2 | 1200                      | 0.075                  | 6                      | 3                      | 60000                     | 9000                       | 162.0                       |
| 8          | 2 | 1200                      | 0.100                  | 8                      | 4                      | 47750                     | 9550                       | 305.5                       |
| 10         | 2 | 1200                      | 0.125                  | 10                     | 5                      | 38200                     | 9550                       | 477.5                       |
| 12         | 2 | 1200                      | 0.150                  | 12                     | 6                      | 31830                     | 9550                       | 687.5                       |
| 16         | 2 | 1200                      | 0.200                  | 16                     | 8                      | 23875                     | 9550                       | 1222.5                      |

5278



## Применение

Алюминий нелегированный



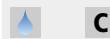
Литейные алюминиевые сплавы



Медь чистая



Термопластики



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 6          | 2 | 300                       | 0.050                  | 2.1                    | 6                      | 15915                     | 1590                       | 20.0                        |
| 8          | 2 | 300                       | 0.065                  | 2.8                    | 8                      | 11935                     | 1550                       | 34.5                        |
| 10         | 2 | 300                       | 0.085                  | 3.5                    | 10                     | 9550                      | 1625                       | 57.0                        |
| 12         | 2 | 300                       | 0.100                  | 4.2                    | 12                     | 7960                      | 1590                       | 80.0                        |
| 16         | 2 | 300                       | 0.135                  | 5.6                    | 16                     | 5970                      | 1610                       | 144.5                       |
| 6          | 2 | 800                       | 0.045                  | 2.1                    | 6                      | 42445                     | 3820                       | 48.0                        |
| 8          | 2 | 800                       | 0.060                  | 2.8                    | 8                      | 31830                     | 3820                       | 85.5                        |
| 10         | 2 | 800                       | 0.075                  | 3.5                    | 10                     | 25465                     | 3820                       | 133.5                       |
| 12         | 2 | 800                       | 0.090                  | 4.2                    | 12                     | 21220                     | 3820                       | 192.5                       |
| 16         | 2 | 800                       | 0.120                  | 5.6                    | 16                     | 15915                     | 3820                       | 342.5                       |
| 6          | 2 | 400                       | 0.040                  | 2.1                    | 6                      | 21220                     | 1700                       | 21.5                        |
| 8          | 2 | 400                       | 0.055                  | 2.8                    | 8                      | 15915                     | 1750                       | 39.0                        |
| 10         | 2 | 400                       | 0.065                  | 3.5                    | 10                     | 12735                     | 1655                       | 58.0                        |
| 12         | 2 | 400                       | 0.080                  | 4.2                    | 12                     | 10610                     | 1700                       | 85.5                        |
| 16         | 2 | 400                       | 0.105                  | 5.6                    | 16                     | 7960                      | 1670                       | 149.5                       |
| 6          | 2 | 1200                      | 0.050                  | 2.1                    | 6                      | 60000                     | 6000                       | 75.5                        |
| 8          | 2 | 1200                      | 0.065                  | 2.8                    | 8                      | 47750                     | 6210                       | 139.0                       |
| 10         | 2 | 1200                      | 0.085                  | 3.5                    | 10                     | 38200                     | 6495                       | 227.5                       |
| 12         | 2 | 1200                      | 0.100                  | 4.2                    | 12                     | 31830                     | 6365                       | 321.0                       |
| 16         | 2 | 1200                      | 0.135                  | 5.6                    | 16                     | 23875                     | 6445                       | 577.5                       |

# Фрезы по алюминию

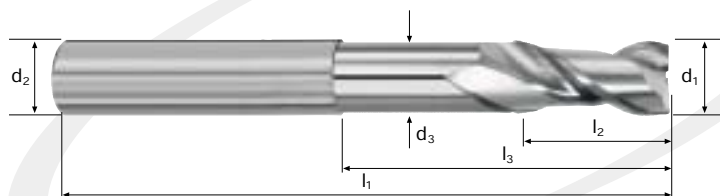
AX

HM  
MG10 AX

$\lambda$  40°  
 $\gamma$  25°



0,05-0,15  
4Ф



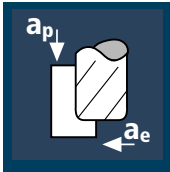
Предназначены для обработки:

- Алюминий
- Медь
- Пластик

AX

|   |          |          |      |     |    |    |   | CELERO  | SERVICE |
|---|----------|----------|------|-----|----|----|---|---------|---------|
|   |          |          |      |     |    |    |   | ReTool® |         |
| Пример: заказа-№. <span style="color: red;">C</span> 5278.300 |          |          |      |     |    |    |   | 5278    | C5278   |
| Ø<br>Code   | d1<br>e8 | d2<br>h6 | d3   | l1  | l2 | l3 | z |         |         |
| .300  | 6        | 6        | 5,5  | 63  | 13 | 26 | 2 | •       | •       |
| .391  | 8        | 8        | 7,4  | 72  | 16 | 35 | 2 | •       | •       |
| .450  | 10       | 10       | 9,2  | 84  | 19 | 43 | 2 | •       | •       |
| .501  | 12       | 12       | 11,0 | 97  | 22 | 51 | 2 | •       | •       |
| .610  | 16       | 16       | 15,0 | 108 | 26 | 59 | 2 | •       | •       |
|   |          |          |      |     |    |    |   |         |         |
|   |          |          |      |     |    |    |   |         |         |
|   |          |          |      |     |    |    |   |         |         |
|   |          |          |      |     |    |    |   |         |         |
|   |          |          |      |     |    |    |   |         |         |
|   |          |          |      |     |    |    |   |         |         |
|   |          |          |      |     |    |    |   |         |         |
|   |          |          |      |     |    |    |   |         |         |
|   |          |          |      |     |    |    |   |         |         |
|   |          |          |      |     |    |    |   |         |         |
|   |          |          |      |     |    |    |   |         |         |
|   |          |          |      |     |    |    |   |         |         |
|   |          |          |      |     |    |    |   |         |         |
|   |          |          |      |     |    |    |   |         |         |
|   |          |          |      |     |    |    |   |         |         |
|   |          |          |      |     |    |    |   |         |         |
|   |          |          |      |     |    |    |   |         |         |
|   |          |          |      |     |    |    |   |         |         |
|   |          |          |      |     |    |    |   |         |         |
|   |          |          |      |     |    |    |   |         |         |
|   |          |          |      |     |    |    |   |         |         |
|   |          |          |      |     |    |    |   |         |         |



**5271****Применение**

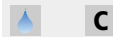
Литейные алюминиевые сплавы



Медь чистая



Термопластики



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 10         | 2 | 900                       | 0.125                  | 15                     | 5                      | 28650                     | 7165                       | 537.5                       |
| 12         | 2 | 900                       | 0.150                  | 18                     | 6                      | 23875                     | 7165                       | 774.0                       |
| 16         | 2 | 900                       | 0.160                  | 24                     | 8                      | 17905                     | 5730                       | 1100.0                      |
| 20         | 2 | 900                       | 0.230                  | 30                     | 10                     | 14325                     | 6590                       | 1977.0                      |
| 10         | 2 | 600                       | 0.150                  | 15                     | 5                      | 19100                     | 5730                       | 430.0                       |
| 12         | 2 | 600                       | 0.180                  | 18                     | 6                      | 15915                     | 5730                       | 619.0                       |
| 16         | 2 | 600                       | 0.205                  | 24                     | 8                      | 11935                     | 4895                       | 940.0                       |
| 20         | 2 | 600                       | 0.225                  | 30                     | 10                     | 9550                      | 4300                       | 1290.0                      |
| 10         | 2 | 1200                      | 0.165                  | 15                     | 5                      | 38200                     | 12605                      | 945.5                       |
| 12         | 2 | 1200                      | 0.200                  | 18                     | 6                      | 31830                     | 12730                      | 1375.0                      |
| 16         | 2 | 1200                      | 0.230                  | 24                     | 8                      | 23875                     | 10985                      | 2109.0                      |
| 20         | 2 | 1200                      | 0.250                  | 30                     | 10                     | 19100                     | 9550                       | 2865.0                      |

**5271****Применение**

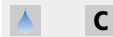
Литейные алюминиевые сплавы



Медь чистая



Термопластики



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 10         | 2 | 800                       | 0.145                  | 5                      | 10                     | 25465                     | 7385                       | 369.5                       |
| 12         | 2 | 800                       | 0.170                  | 6                      | 12                     | 21220                     | 7215                       | 519.5                       |
| 16         | 2 | 800                       | 0.200                  | 8                      | 16                     | 15915                     | 6365                       | 814.5                       |
| 20         | 2 | 800                       | 0.220                  | 10                     | 20                     | 12735                     | 5605                       | 1121.0                      |
| 10         | 2 | 400                       | 0.130                  | 5                      | 10                     | 12735                     | 3310                       | 165.5                       |
| 12         | 2 | 400                       | 0.155                  | 6                      | 12                     | 10610                     | 3290                       | 237.0                       |
| 16         | 2 | 400                       | 0.180                  | 8                      | 16                     | 7960                      | 2865                       | 366.5                       |
| 20         | 2 | 400                       | 0.200                  | 10                     | 20                     | 6365                      | 2545                       | 509.0                       |
| 10         | 2 | 1200                      | 0.165                  | 5                      | 10                     | 38200                     | 12605                      | 630.5                       |
| 12         | 2 | 1200                      | 0.200                  | 6                      | 12                     | 31830                     | 12730                      | 916.5                       |
| 16         | 2 | 1200                      | 0.230                  | 8                      | 16                     | 23875                     | 10985                      | 1406.0                      |
| 20         | 2 | 1200                      | 0.250                  | 10                     | 20                     | 19100                     | 9550                       | 1910.0                      |



# Фрезы по алюминию торические

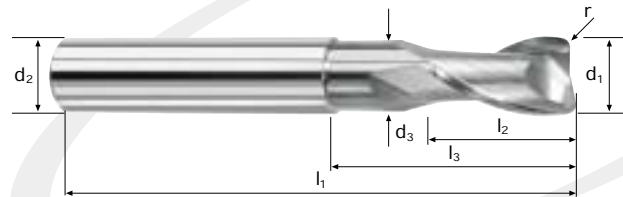
AX-R

HM  
MG10 AX

$\lambda$  30°  
 $\gamma$  15°



DIN  
6535  
HA



Предназначены для обработки:

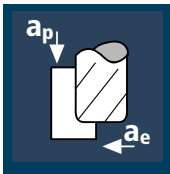
Алюминий Медь Пластик

AX

|   |       |       |      |     |    |    |           |   | CELERO  | SERVICE |   |
|---|-------|-------|------|-----|----|----|-----------|---|---------|---------|---|
|   |       |       |      |     |    |    |           |   | ReTool® |         |   |
| Пример: заказа-N°                               |       |       |      |     |    |    |           |   | 5271    | C5271   |   |
| Покрытие Артикул-N° Ø-Код                       |       |       |      |     |    |    |           |   |         |         |   |
| Ø Code  | d1 e8 | d2 h6 | d3   | l1  | l2 | l3 | r o/+0,03 | z |         |         |   |
| .450  | 10    | 10    | 9,2  | 72  | 16 | 31 | 1,5       | 2 | •       | •       | • |
| .501  | 12    | 12    | 11,0 | 83  | 19 | 37 | 1,5       | 2 | •       | •       | • |
| .610  | 16    | 16    | 15,0 | 92  | 25 | 43 | 2,0       | 2 | •       | •       | • |
| .682  | 20    | 20    | 19,0 | 104 | 31 | 53 | 2,0       | 2 | •       | •       | • |
| NEW! .503                                       | 12    | 12    | 11,0 | 83  | 19 | 37 | 2,5       | 2 | •       | •       | • |
| NEW! .612                                       | 16    | 16    | 15,0 | 92  | 25 | 43 | 2,5       | 2 | •       | •       | • |
| NEW! .684                                       | 20    | 20    | 19,0 | 104 | 31 | 53 | 2,5       | 2 | •       | •       | • |
| NEW! .774                                       | 25    | 25    | 24,0 | 121 | 39 | 64 | 2,5       | 2 | •       | •       | • |
| NEW! .614                                       | 16    | 16    | 15,0 | 92  | 25 | 43 | 4,0       | 2 | •       | •       | • |
| NEW! .686                                       | 20    | 20    | 19,0 | 104 | 31 | 53 | 4,0       | 2 | •       | •       | • |
| NEW! .776                                       | 25    | 25    | 24,0 | 121 | 39 | 64 | 4,0       | 2 | •       | •       | • |
| Additional specifications available on request. |       |       |      |     |    |    |           |   |         |         |   |



5275



Применение

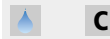
Литейные алюминиевые сплавы



Медь чистая



Термопластики



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 3          | 2 | 900                       | 0.040                  | 3                      | 1.5                    | 60000                     | 4800                       | 21.5                        |
| 4          | 2 | 900                       | 0.050                  | 4                      | 2                      | 60000                     | 6000                       | 48.0                        |
| 6          | 2 | 900                       | 0.075                  | 6                      | 3                      | 47750                     | 7165                       | 129.0                       |
| 8          | 2 | 900                       | 0.100                  | 8                      | 4                      | 35810                     | 7160                       | 229.0                       |
| 10         | 2 | 900                       | 0.125                  | 10                     | 5                      | 28650                     | 7165                       | 358.5                       |
| 12         | 2 | 900                       | 0.150                  | 12                     | 6                      | 23875                     | 7165                       | 516.0                       |
| 16         | 2 | 900                       | 0.160                  | 16                     | 8                      | 17905                     | 5730                       | 733.5                       |
| 20         | 2 | 900                       | 0.230                  | 20                     | 10                     | 14325                     | 6590                       | 1318.0                      |
| 25         | 2 | 900                       | 0.265                  | 25                     | 12.5                   | 11460                     | 6075                       | 1898.5                      |
| 3          | 2 | 600                       | 0.035                  | 3                      | 1.5                    | 60000                     | 4200                       | 19.0                        |
| 4          | 2 | 600                       | 0.045                  | 4                      | 2                      | 47750                     | 4300                       | 34.5                        |
| 6          | 2 | 600                       | 0.070                  | 6                      | 3                      | 31830                     | 4455                       | 80.0                        |
| 8          | 2 | 600                       | 0.090                  | 8                      | 4                      | 23875                     | 4300                       | 137.5                       |
| 10         | 2 | 600                       | 0.115                  | 10                     | 5                      | 19100                     | 4395                       | 220.0                       |
| 12         | 2 | 600                       | 0.135                  | 12                     | 6                      | 15915                     | 4295                       | 309.0                       |
| 16         | 2 | 600                       | 0.180                  | 16                     | 8                      | 11935                     | 4295                       | 550.0                       |
| 20         | 2 | 600                       | 0.225                  | 20                     | 10                     | 9550                      | 4300                       | 860.0                       |
| 25         | 2 | 600                       | 0.280                  | 25                     | 12.5                   | 7640                      | 4280                       | 1337.5                      |
| 3          | 2 | 1200                      | 0.030                  | 3                      | 1.5                    | 60000                     | 3600                       | 16.0                        |
| 4          | 2 | 1200                      | 0.040                  | 4                      | 2                      | 60000                     | 4800                       | 38.5                        |
| 6          | 2 | 1200                      | 0.060                  | 6                      | 3                      | 60000                     | 7200                       | 129.5                       |
| 8          | 2 | 1200                      | 0.080                  | 8                      | 4                      | 47750                     | 7640                       | 244.5                       |
| 10         | 2 | 1200                      | 0.100                  | 10                     | 5                      | 38200                     | 7640                       | 382.0                       |
| 12         | 2 | 1200                      | 0.120                  | 12                     | 6                      | 31830                     | 7640                       | 550.0                       |
| 16         | 2 | 1200                      | 0.160                  | 16                     | 8                      | 23875                     | 7640                       | 978.0                       |
| 20         | 2 | 1200                      | 0.200                  | 20                     | 10                     | 19100                     | 7640                       | 1528.0                      |
| 25         | 2 | 1200                      | 0.250                  | 25                     | 12.5                   | 15280                     | 7640                       | 2387.5                      |

5275



Применение

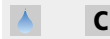
Литейные алюминиевые сплавы



Медь чистая



Термопластики



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 3          | 2 | 800                       | 0.025                  | 1.5                    | 3                      | 60000                     | 3000                       | 13.5                        |
| 4          | 2 | 800                       | 0.035                  | 2                      | 4                      | 60000                     | 4200                       | 33.5                        |
| 6          | 2 | 800                       | 0.050                  | 3                      | 6                      | 42445                     | 4245                       | 76.5                        |
| 8          | 2 | 800                       | 0.065                  | 4                      | 8                      | 31830                     | 4140                       | 132.5                       |
| 10         | 2 | 800                       | 0.085                  | 5                      | 10                     | 25465                     | 4330                       | 216.5                       |
| 12         | 2 | 800                       | 0.100                  | 6                      | 12                     | 21220                     | 4245                       | 305.5                       |
| 16         | 2 | 800                       | 0.135                  | 8                      | 16                     | 15915                     | 4295                       | 550.0                       |
| 20         | 2 | 800                       | 0.165                  | 10                     | 20                     | 12735                     | 4205                       | 841.0                       |
| 25         | 2 | 800                       | 0.210                  | 12.5                   | 25                     | 10185                     | 4280                       | 1337.5                      |
| 3          | 2 | 400                       | 0.025                  | 1.5                    | 3                      | 42445                     | 2120                       | 9.5                         |
| 4          | 2 | 400                       | 0.030                  | 2                      | 4                      | 31830                     | 1910                       | 15.5                        |
| 6          | 2 | 400                       | 0.045                  | 3                      | 6                      | 21220                     | 1910                       | 34.5                        |
| 8          | 2 | 400                       | 0.060                  | 4                      | 8                      | 15915                     | 1910                       | 61.0                        |
| 10         | 2 | 400                       | 0.075                  | 5                      | 10                     | 12735                     | 1910                       | 95.5                        |
| 12         | 2 | 400                       | 0.090                  | 6                      | 12                     | 10610                     | 1910                       | 137.5                       |
| 16         | 2 | 400                       | 0.120                  | 8                      | 16                     | 7960                      | 1910                       | 244.5                       |
| 20         | 2 | 400                       | 0.150                  | 10                     | 20                     | 6365                      | 1910                       | 382.0                       |
| 25         | 2 | 400                       | 0.190                  | 12.5                   | 25                     | 5095                      | 1935                       | 604.5                       |
| 3          | 2 | 1200                      | 0.020                  | 1.5                    | 3                      | 60000                     | 2400                       | 11.0                        |
| 4          | 2 | 1200                      | 0.025                  | 2                      | 4                      | 60000                     | 3000                       | 24.0                        |
| 6          | 2 | 1200                      | 0.040                  | 3                      | 6                      | 60000                     | 4800                       | 86.5                        |
| 8          | 2 | 1200                      | 0.055                  | 4                      | 8                      | 47750                     | 5255                       | 168.0                       |
| 10         | 2 | 1200                      | 0.065                  | 5                      | 10                     | 38200                     | 4965                       | 248.5                       |
| 12         | 2 | 1200                      | 0.080                  | 6                      | 12                     | 31830                     | 5095                       | 367.0                       |
| 16         | 2 | 1200                      | 0.105                  | 8                      | 16                     | 23875                     | 5015                       | 642.0                       |
| 20         | 2 | 1200                      | 0.135                  | 10                     | 20                     | 19100                     | 5155                       | 1031.0                      |
| 25         | 2 | 1200                      | 0.165                  | 12.5                   | 25                     | 15280                     | 5040                       | 1575.0                      |

# Фрезы по алюминию торические

AX-R

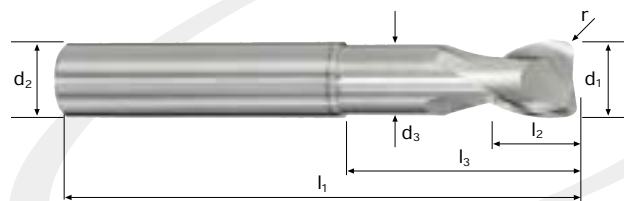
HM  
MG10

AX

$\lambda$  30°  
 $\gamma$  15°



DIN  
6535  
HA



Предназначены для обработки:

Алюминий

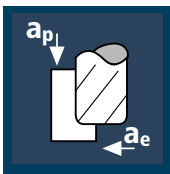
Медь

Пластик

AX

|                      |    |    |      |     |    |    |         |          |   | CELERO | SERVICE |
|----------------------|----|----|------|-----|----|----|---------|----------|---|--------|---------|
| Пример:<br>заказа-N° |    |    |      |     |    |    |         |          |   | 5275   | ReTool® |
| Покрывие Артикул-N°  |    |    |      |     |    |    |         |          |   | C5275  |         |
| Ø-Код                |    |    |      |     |    |    |         |          |   |        |         |
| Ø                    | d1 | d2 | d3   | l1  | l2 | l3 | r       | $\alpha$ | z |        |         |
| Code                 | e8 | h6 |      |     |    |    | 0/+0,03 |          |   |        |         |
| .180                 | 3  | 6  | 2,8  | 57  | 4  | 9  | 0,5     | 6°       | 2 | •      | •       |
| .220                 | 4  | 6  | 3,7  | 57  | 5  | 12 | 0,5     | 4°       | 2 | •      | •       |
| .260                 | 5  | 6  | 4,6  | 57  | 6  | 15 | 0,5     | 2°       | 2 | •      | •       |
| .300                 | 6  | 6  | 5,5  | 57  | 7  | 20 | 1,0     | 0°       | 2 | •      | •       |
| .391                 | 8  | 8  | 7,4  | 63  | 9  | 26 | 1,0     | 0°       | 2 | •      | •       |
| .450                 | 10 | 10 | 9,2  | 72  | 11 | 31 | 1,5     | 0°       | 2 | •      | •       |
| .501                 | 12 | 12 | 11,0 | 83  | 13 | 37 | 1,5     | 0°       | 2 | •      | •       |
| .610                 | 16 | 16 | 15,0 | 92  | 17 | 43 | 2,0     | 0°       | 2 | •      | •       |
| .682                 | 20 | 20 | 19,0 | 104 | 21 | 53 | 2,0     | 0°       | 2 | •      | •       |
| .772                 | 25 | 25 | 24,0 | 121 | 26 | 64 | 2,5     | 0°       | 2 | •      | •       |
|                      |    |    |      |     |    |    |         |          |   |        |         |
|                      |    |    |      |     |    |    |         |          |   |        |         |
|                      |    |    |      |     |    |    |         |          |   |        |         |
|                      |    |    |      |     |    |    |         |          |   |        |         |
|                      |    |    |      |     |    |    |         |          |   |        |         |
|                      |    |    |      |     |    |    |         |          |   |        |         |
|                      |    |    |      |     |    |    |         |          |   |        |         |
|                      |    |    |      |     |    |    |         |          |   |        |         |
|                      |    |    |      |     |    |    |         |          |   |        |         |
|                      |    |    |      |     |    |    |         |          |   |        |         |
|                      |    |    |      |     |    |    |         |          |   |        |         |
|                      |    |    |      |     |    |    |         |          |   |        |         |
|                      |    |    |      |     |    |    |         |          |   |        |         |
|                      |    |    |      |     |    |    |         |          |   |        |         |
|                      |    |    |      |     |    |    |         |          |   |        |         |
|                      |    |    |      |     |    |    |         |          |   |        |         |
|                      |    |    |      |     |    |    |         |          |   |        |         |
|                      |    |    |      |     |    |    |         |          |   |        |         |
|                      |    |    |      |     |    |    |         |          |   |        |         |
|                      |    |    |      |     |    |    |         |          |   |        |         |
|                      |    |    |      |     |    |    |         |          |   |        |         |
|                      |    |    |      |     |    |    |         |          |   |        |         |

5276



Применение

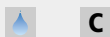
Литейные алюминиевые сплавы



Медь чистая



Термопластики



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 12         | 3 | 900                       | 0.120                  | 12                     | 6                      | 23875                     | 8595                       | 619.0                       |
| 16         | 3 | 900                       | 0.185                  | 16                     | 8                      | 17905                     | 9935                       | 1271.5                      |
| 20         | 3 | 900                       | 0.215                  | 20                     | 10                     | 14325                     | 9240                       | 1848.0                      |
| 25         | 3 | 900                       | 0.265                  | 25                     | 12.5                   | 11460                     | 9110                       | 2847.0                      |
| 12         | 3 | 600                       | 0.135                  | 12                     | 6                      | 15915                     | 6445                       | 464.0                       |
| 16         | 3 | 600                       | 0.180                  | 16                     | 8                      | 11935                     | 6445                       | 825.0                       |
| 20         | 3 | 600                       | 0.225                  | 20                     | 10                     | 9550                      | 6445                       | 1289.0                      |
| 25         | 3 | 600                       | 0.280                  | 25                     | 12.5                   | 7640                      | 6420                       | 2006.5                      |
| 12         | 3 | 1200                      | 0.120                  | 12                     | 6                      | 31830                     | 11460                      | 825.0                       |
| 16         | 3 | 1200                      | 0.160                  | 16                     | 8                      | 23875                     | 11460                      | 1467.0                      |
| 20         | 3 | 1200                      | 0.200                  | 20                     | 10                     | 19100                     | 11460                      | 2292.0                      |
| 25         | 3 | 1200                      | 0.250                  | 25                     | 12.5                   | 15280                     | 11460                      | 3581.5                      |

5276



Применение

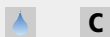
Литейные алюминиевые сплавы



Медь чистая



Термопластики



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 12         | 3 | 800                       | 0.170                  | 3                      | 12                     | 21220                     | 10820                      | 389.5                       |
| 16         | 3 | 800                       | 0.230                  | 4                      | 16                     | 15915                     | 10980                      | 702.5                       |
| 20         | 3 | 800                       | 0.250                  | 5                      | 20                     | 12735                     | 9550                       | 955.0                       |
| 25         | 3 | 800                       | 0.280                  | 6                      | 25                     | 10185                     | 8555                       | 1336.5                      |
| 12         | 3 | 400                       | 0.090                  | 3                      | 12                     | 10610                     | 2865                       | 103.0                       |
| 16         | 3 | 400                       | 0.120                  | 4                      | 16                     | 7960                      | 2865                       | 183.5                       |
| 20         | 3 | 400                       | 0.150                  | 5                      | 20                     | 6365                      | 2865                       | 286.5                       |
| 25         | 3 | 400                       | 0.190                  | 6                      | 25                     | 5095                      | 2905                       | 454.0                       |
| 12         | 3 | 1200                      | 0.170                  | 3                      | 12                     | 31830                     | 16235                      | 584.5                       |
| 16         | 3 | 1200                      | 0.230                  | 4                      | 16                     | 23875                     | 16475                      | 1054.5                      |
| 20         | 3 | 1200                      | 0.250                  | 5                      | 20                     | 19100                     | 14325                      | 1432.5                      |
| 25         | 3 | 1200                      | 0.280                  | 6                      | 25                     | 15280                     | 12835                      | 2005.5                      |



# Фрезы по алюминию торические

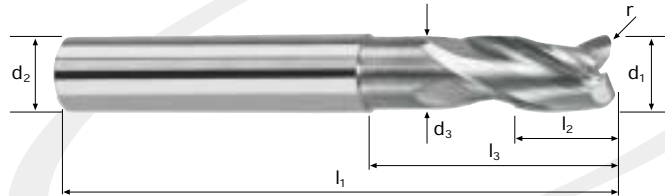
# AX-3R

HM  
MG10 AX

$\lambda$  30°  
 $\gamma$  15°



DIN  
6535  
HA



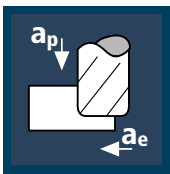
Предназначены для обработки:

- Алюминий
- Медь
- Пластик

AX

|   |          |          |    |     |    |    |              |   | CELERO  | SERVICE |
|---|----------|----------|----|-----|----|----|--------------|---|---------|---------|
|   |          |          |    |     |    |    |              |   | ReTool® |         |
| Пример: заказ-№: <span style="color:red">C</span> 5276501 <span style="border: 1px solid black; padding: 2px 10px;"></span> 5276 <span style="color:red">C5276</span> |          |          |    |     |    |    |              |   |         |         |
| $\varnothing$<br>Code   | d1<br>e8 | d2<br>h6 | d3 | l1  | l2 | l3 | r<br>0/+0,03 | z |         |         |
| .501  | 12       | 12       | 11 | 83  | 13 | 37 | 1,5          | 3 | .       | .       |
| .610  | 16       | 16       | 15 | 92  | 17 | 43 | 2,0          | 3 | .       | .       |
| .682  | 20       | 20       | 19 | 104 | 21 | 53 | 2,0          | 3 | .       | .       |
| .772  | 25       | 25       | 24 | 121 | 26 | 64 | 2,5          | 3 | .       | .       |
|   |          |          |    |     |    |    |              |   | .       | .       |
|   |          |          |    |     |    |    |              |   | .       | .       |
|   |          |          |    |     |    |    |              |   | .       | .       |
|   |          |          |    |     |    |    |              |   | .       | .       |
|   |          |          |    |     |    |    |              |   | .       | .       |
|   |          |          |    |     |    |    |              |   | .       | .       |
|   |          |          |    |     |    |    |              |   | .       | .       |
|   |          |          |    |     |    |    |              |   | .       | .       |
|   |          |          |    |     |    |    |              |   | .       | .       |
|   |          |          |    |     |    |    |              |   | .       | .       |
|   |          |          |    |     |    |    |              |   | .       | .       |
|   |          |          |    |     |    |    |              |   | .       | .       |
|   |          |          |    |     |    |    |              |   | .       | .       |
|   |          |          |    |     |    |    |              |   | .       | .       |
|   |          |          |    |     |    |    |              |   | .       | .       |
|   |          |          |    |     |    |    |              |   | .       | .       |
|   |          |          |    |     |    |    |              |   | .       | .       |
|   |          |          |    |     |    |    |              |   | .       | .       |
|   |          |          |    |     |    |    |              |   | .       | .       |
|   |          |          |    |     |    |    |              |   | .       | .       |
|   |          |          |    |     |    |    |              |   | .       | .       |
|   |          |          |    |     |    |    |              |   | .       | .       |

5277



Применение

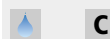
Литейные алюминиевые сплавы



Медь чистая



Термопластики



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 6          | 2 | 650                       | 0.055                  | 1.5                    | 3                      | 34485                     | 3795                       | 17.0                        |
| 8          | 2 | 650                       | 0.070                  | 2                      | 4                      | 25865                     | 3620                       | 29.0                        |
| 10         | 2 | 650                       | 0.090                  | 2.5                    | 5                      | 20690                     | 3725                       | 46.5                        |
| 12         | 2 | 650                       | 0.120                  | 3                      | 6                      | 17240                     | 4140                       | 74.5                        |
| 16         | 2 | 650                       | 0.160                  | 4                      | 8                      | 12930                     | 4140                       | 132.5                       |
| 20         | 2 | 650                       | 0.230                  | 5                      | 10                     | 10345                     | 4760                       | 238.0                       |
| 25         | 2 | 650                       | 0.285                  | 6.2                    | 12.5                   | 8275                      | 4715                       | 368.5                       |
| 6          | 2 | 480                       | 0.055                  | 1.5                    | 3                      | 25465                     | 2800                       | 12.5                        |
| 8          | 2 | 480                       | 0.070                  | 2                      | 4                      | 19100                     | 2675                       | 21.5                        |
| 10         | 2 | 480                       | 0.090                  | 2.5                    | 5                      | 15280                     | 2750                       | 34.5                        |
| 12         | 2 | 480                       | 0.120                  | 3                      | 6                      | 12735                     | 3055                       | 55.0                        |
| 16         | 2 | 480                       | 0.160                  | 4                      | 8                      | 9550                      | 3055                       | 98.0                        |
| 20         | 2 | 480                       | 0.230                  | 5                      | 10                     | 7640                      | 3515                       | 176.0                       |
| 25         | 2 | 480                       | 0.285                  | 6                      | 12.5                   | 6110                      | 3485                       | 272.5                       |
| 6          | 2 | 950                       | 0.060                  | 1.5                    | 3                      | 50400                     | 6050                       | 27.0                        |
| 8          | 2 | 950                       | 0.080                  | 2                      | 4                      | 37800                     | 6050                       | 48.5                        |
| 10         | 2 | 950                       | 0.100                  | 2.5                    | 5                      | 30240                     | 6050                       | 75.5                        |
| 12         | 2 | 950                       | 0.120                  | 3                      | 6                      | 25200                     | 6050                       | 109.0                       |
| 16         | 2 | 950                       | 0.160                  | 4                      | 8                      | 18900                     | 6050                       | 193.5                       |
| 20         | 2 | 950                       | 0.200                  | 5                      | 10                     | 15120                     | 6050                       | 302.5                       |
| 25         | 2 | 950                       | 0.250                  | 6                      | 12.5                   | 12095                     | 6050                       | 472.5                       |

5277



Применение

Литейные алюминиевые сплавы



Медь чистая



Термопластики



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 6          | 2 | 550                       | 0.050                  | 1.5                    | 6                      | 29180                     | 2920                       | 26.5                        |
| 8          | 2 | 550                       | 0.065                  | 2                      | 8                      | 21885                     | 2845                       | 45.5                        |
| 10         | 2 | 550                       | 0.085                  | 2.5                    | 10                     | 17510                     | 2975                       | 74.5                        |
| 12         | 2 | 550                       | 0.100                  | 3                      | 12                     | 14590                     | 2920                       | 105.0                       |
| 16         | 2 | 550                       | 0.135                  | 4                      | 16                     | 10940                     | 2955                       | 189.0                       |
| 20         | 2 | 550                       | 0.165                  | 5                      | 20                     | 8755                      | 2890                       | 289.0                       |
| 25         | 2 | 550                       | 0.210                  | 6                      | 25                     | 7005                      | 2940                       | 459.5                       |
| 6          | 2 | 380                       | 0.045                  | 1.5                    | 6                      | 20160                     | 1815                       | 16.5                        |
| 8          | 2 | 380                       | 0.060                  | 2                      | 8                      | 15120                     | 1815                       | 29.0                        |
| 10         | 2 | 380                       | 0.075                  | 2.5                    | 10                     | 12095                     | 1815                       | 45.5                        |
| 12         | 2 | 380                       | 0.090                  | 3                      | 12                     | 10080                     | 1815                       | 65.5                        |
| 16         | 2 | 380                       | 0.120                  | 4                      | 16                     | 7560                      | 1815                       | 116.0                       |
| 20         | 2 | 380                       | 0.150                  | 5                      | 20                     | 6050                      | 1815                       | 181.5                       |
| 25         | 2 | 380                       | 0.190                  | 6                      | 25                     | 4840                      | 1840                       | 287.5                       |
| 6          | 2 | 850                       | 0.050                  | 1.5                    | 6                      | 45095                     | 4510                       | 40.5                        |
| 8          | 2 | 850                       | 0.065                  | 2                      | 8                      | 33820                     | 4395                       | 70.5                        |
| 10         | 2 | 850                       | 0.085                  | 2.5                    | 10                     | 27055                     | 4600                       | 115.0                       |
| 12         | 2 | 850                       | 0.100                  | 3                      | 12                     | 22550                     | 4510                       | 162.5                       |
| 16         | 2 | 850                       | 0.135                  | 4                      | 16                     | 16910                     | 4565                       | 292.0                       |
| 20         | 2 | 850                       | 0.165                  | 5                      | 20                     | 13530                     | 4465                       | 446.5                       |
| 25         | 2 | 850                       | 0.210                  | 6                      | 25                     | 10825                     | 4545                       | 710.0                       |

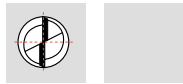


# Фрезы по алюминию торические

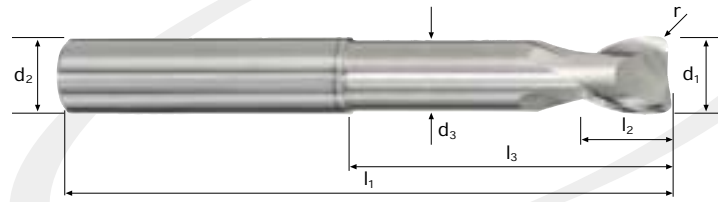
AX-R

HM  
MG10 AX

$\lambda$  30°  
 $\gamma$  15°



DIN  
6535  
HA



Предназначены для обработки:

- Алюминий
- Медь
- Пластик

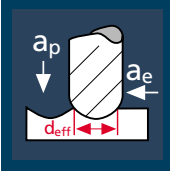
AX

|  |       |       |      |     |    |    |           |   | CELERO  | SERVICE |
|--|-------|-------|------|-----|----|----|-----------|---|---------|---------|
|  |       |       |      |     |    |    |           |   | ReTool® |         |
| Пример: заказа-N°. <span style="color:red">C</span> <span style="color:blue">5277.300</span> <span style="color:blue">ø-Код</span> |       |       |      |     |    |    |           |   | 5277    | C5277   |
| Ø Code   | d1 e8 | d2 h6 | d3   | l1  | l2 | l3 | r 0/+0,03 | z |         |         |
| .300   | 6     | 6     | 5,5  | 70  | 7  | 33 | 1,0       | 2 | •       | •       |
| .391   | 8     | 8     | 7,4  | 80  | 9  | 43 | 1,0       | 2 | •       | •       |
| .450   | 10    | 10    | 9,2  | 84  | 11 | 43 | 1,5       | 2 | •       | •       |
| .501   | 12    | 12    | 11,0 | 97  | 13 | 51 | 1,5       | 2 | •       | •       |
| .610   | 16    | 16    | 15,0 | 115 | 17 | 66 | 2,0       | 2 | •       | •       |
| .682   | 20    | 20    | 19,0 | 130 | 21 | 79 | 2,0       | 2 | •       | •       |
| .772   | 25    | 25    | 24,0 | 151 | 26 | 94 | 2,5       | 2 | •       | •       |
| NEW! .503  | 12    | 12    | 11,0 | 97  | 19 | 51 | 2,5       | 2 | •       | •       |
| NEW! .612  | 16    | 16    | 15,0 | 115 | 25 | 66 | 2,5       | 2 | •       | •       |
| NEW! .684  | 20    | 20    | 19,0 | 130 | 31 | 79 | 2,5       | 2 | •       | •       |
| NEW! .774  | 25    | 25    | 24,0 | 151 | 39 | 94 | 2,5       | 2 | •       | •       |
| NEW! .614  | 16    | 16    | 15,0 | 115 | 25 | 66 | 4,0       | 2 | •       | •       |
| NEW! .686  | 20    | 20    | 19,0 | 130 | 31 | 79 | 4,0       | 2 | •       | •       |
| NEW! .776  | 25    | 25    | 24,0 | 151 | 39 | 94 | 4,0       | 2 | •       | •       |
| Additional specifications available on request.  |       |       |      |     |    |    |           |   |         |         |





5290



Применение

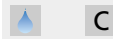
Литейные алюминиевые сплавы



Медь чистая

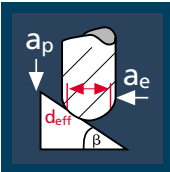


Термопластики



| d1 [mm] | z | v <sub>c</sub> [m/min] | f <sub>z</sub> [mm] | a <sub>p</sub> [mm] | a <sub>e</sub> [mm] | d <sub>eff</sub> [mm] | n [min <sup>-1</sup> ] | v <sub>f</sub> [mm/min] | Q [cm <sup>3</sup> /min] |
|---------|---|------------------------|---------------------|---------------------|---------------------|-----------------------|------------------------|-------------------------|--------------------------|
| 3       | 2 | 900                    | 0.060               | 0.30                | 0.60                | 1.80                  | 60000                  | 7200                    | 2                        |
| 4       | 2 | 900                    | 0.080               | 0.40                | 0.80                | 2.40                  | 60000                  | 9600                    | 3                        |
| 5       | 2 | 900                    | 0.100               | 0.50                | 1.00                | 3.00                  | 60000                  | 12000                   | 6                        |
| 6       | 2 | 900                    | 0.090               | 0.60                | 1.20                | 3.60                  | 60000                  | 10800                   | 8                        |
| 8       | 2 | 900                    | 0.120               | 0.80                | 1.60                | 4.80                  | 59685                  | 14325                   | 19                       |
| 10      | 2 | 900                    | 0.150               | 1.00                | 2.00                | 6.00                  | 47750                  | 14325                   | 29                       |
| 12      | 2 | 900                    | 0.120               | 1.20                | 2.40                | 7.20                  | 39790                  | 9550                    | 28                       |
| 16      | 2 | 900                    | 0.160               | 1.60                | 3.20                | 9.60                  | 29840                  | 9550                    | 49                       |
| 20      | 2 | 900                    | 0.200               | 2.00                | 4.00                | 12.00                 | 23875                  | 9550                    | 77                       |
| 3       | 2 | 600                    | 0.060               | 0.30                | 0.60                | 1.80                  | 60000                  | 7200                    | 2                        |
| 4       | 2 | 600                    | 0.080               | 0.40                | 0.80                | 2.40                  | 60000                  | 9600                    | 3                        |
| 5       | 2 | 600                    | 0.100               | 0.50                | 1.00                | 3.00                  | 60000                  | 12000                   | 6                        |
| 6       | 2 | 600                    | 0.090               | 0.60                | 1.20                | 3.60                  | 53055                  | 9550                    | 7                        |
| 8       | 2 | 600                    | 0.120               | 0.80                | 1.60                | 4.80                  | 39790                  | 9550                    | 12                       |
| 10      | 2 | 600                    | 0.150               | 1.00                | 2.00                | 6.00                  | 31830                  | 9550                    | 19                       |
| 12      | 2 | 600                    | 0.120               | 1.20                | 2.40                | 7.20                  | 26525                  | 6365                    | 19                       |
| 16      | 2 | 600                    | 0.160               | 1.60                | 3.20                | 9.60                  | 19895                  | 6365                    | 33                       |
| 20      | 2 | 600                    | 0.200               | 2.00                | 4.00                | 12.00                 | 15915                  | 6365                    | 51                       |
| 3       | 2 | 1200                   | 0.060               | 0.30                | 0.60                | 1.80                  | 60000                  | 7200                    | 2                        |
| 4       | 2 | 1200                   | 0.080               | 0.40                | 0.80                | 2.40                  | 60000                  | 9600                    | 3                        |
| 5       | 2 | 1200                   | 0.100               | 0.50                | 1.00                | 3.00                  | 60000                  | 12000                   | 6                        |
| 6       | 2 | 1200                   | 0.090               | 0.60                | 1.20                | 3.60                  | 60000                  | 10800                   | 8                        |
| 8       | 2 | 1200                   | 0.120               | 0.80                | 1.60                | 4.80                  | 60000                  | 14400                   | 19                       |
| 10      | 2 | 1200                   | 0.150               | 1.00                | 2.00                | 6.00                  | 60000                  | 18000                   | 36                       |
| 12      | 2 | 1200                   | 0.120               | 1.20                | 2.40                | 7.20                  | 53055                  | 12735                   | 37                       |
| 16      | 2 | 1200                   | 0.160               | 1.60                | 3.20                | 9.60                  | 39790                  | 12735                   | 65                       |
| 20      | 2 | 1200                   | 0.200               | 2.00                | 4.00                | 12.00                 | 31830                  | 12730                   | 102                      |

5290



Применение

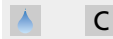
Литейные алюминиевые сплавы



Медь чистая



Термопластики



| d1 [mm] | z | v <sub>c</sub> [m/min] | f <sub>z</sub> [mm] | a <sub>p</sub> [mm] | a <sub>e</sub> [mm] | d <sub>eff</sub> [mm] | n [min <sup>-1</sup> ] | v <sub>f</sub> [mm/min] | β  |
|---------|---|------------------------|---------------------|---------------------|---------------------|-----------------------|------------------------|-------------------------|----|
| 3       | 2 | 900                    | 0.045               | 0.04                | 0.05                | 2.53                  | 60000                  | 5400                    | 45 |
| 4       | 2 | 900                    | 0.060               | 0.05                | 0.06                | 3.38                  | 60000                  | 7200                    | 45 |
| 5       | 2 | 900                    | 0.075               | 0.06                | 0.08                | 4.22                  | 60000                  | 9000                    | 45 |
| 6       | 2 | 900                    | 0.060               | 0.07                | 0.06                | 5.06                  | 56565                  | 6790                    | 45 |
| 8       | 2 | 900                    | 0.080               | 0.10                | 0.08                | 6.75                  | 42425                  | 6790                    | 45 |
| 10      | 2 | 900                    | 0.100               | 0.12                | 0.10                | 8.44                  | 33940                  | 6790                    | 45 |
| 12      | 2 | 900                    | 0.060               | 0.14                | 0.06                | 10.13                 | 28285                  | 3395                    | 45 |
| 16      | 2 | 900                    | 0.080               | 0.19                | 0.08                | 13.51                 | 21210                  | 3395                    | 45 |
| 20      | 2 | 900                    | 0.100               | 0.24                | 0.10                | 16.88                 | 16970                  | 3395                    | 45 |
| 3       | 2 | 600                    | 0.045               | 0.04                | 0.05                | 2.53                  | 60000                  | 5400                    | 45 |
| 4       | 2 | 600                    | 0.060               | 0.05                | 0.06                | 3.38                  | 56565                  | 6790                    | 45 |
| 5       | 2 | 600                    | 0.075               | 0.06                | 0.08                | 4.22                  | 45255                  | 6790                    | 45 |
| 6       | 2 | 600                    | 0.060               | 0.07                | 0.06                | 5.06                  | 37710                  | 4525                    | 45 |
| 8       | 2 | 600                    | 0.080               | 0.10                | 0.08                | 6.75                  | 28285                  | 4525                    | 45 |
| 10      | 2 | 600                    | 0.100               | 0.12                | 0.10                | 8.44                  | 22625                  | 4525                    | 45 |
| 12      | 2 | 600                    | 0.060               | 0.14                | 0.06                | 10.13                 | 18855                  | 2265                    | 45 |
| 16      | 2 | 600                    | 0.080               | 0.19                | 0.08                | 13.51                 | 14140                  | 2260                    | 45 |
| 20      | 2 | 600                    | 0.100               | 0.24                | 0.10                | 16.88                 | 11315                  | 2265                    | 45 |
| 3       | 2 | 1200                   | 0.045               | 0.04                | 0.05                | 2.53                  | 60000                  | 5400                    | 45 |
| 4       | 2 | 1200                   | 0.060               | 0.05                | 0.06                | 3.38                  | 60000                  | 7200                    | 45 |
| 5       | 2 | 1200                   | 0.075               | 0.06                | 0.08                | 4.22                  | 60000                  | 9000                    | 45 |
| 6       | 2 | 1200                   | 0.060               | 0.07                | 0.06                | 5.06                  | 60000                  | 7200                    | 45 |
| 8       | 2 | 1200                   | 0.080               | 0.10                | 0.08                | 6.75                  | 56565                  | 9050                    | 45 |
| 10      | 2 | 1200                   | 0.100               | 0.12                | 0.10                | 8.44                  | 45255                  | 9050                    | 45 |
| 12      | 2 | 1200                   | 0.060               | 0.14                | 0.06                | 10.13                 | 37710                  | 4525                    | 45 |
| 16      | 2 | 1200                   | 0.080               | 0.19                | 0.08                | 13.51                 | 28285                  | 4525                    | 45 |
| 20      | 2 | 1200                   | 0.100               | 0.24                | 0.10                | 16.88                 | 22625                  | 4525                    | 45 |

# Фрезы по алюминию сферические

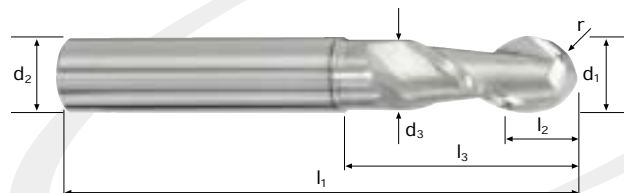
# SphERICUT-ALU

HM  
MG10 AX

$\lambda$  40°  
 $\gamma$  20°



DIN  
6535  
HA



Предназначены для обработки:

- Алюминий
- Медь
- Пластик

AX

Пример: заказа-№. **C** 5290140

Покрывтие Артикул-№. **C** 5290140

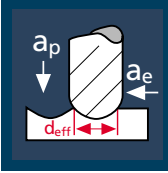
Ø-Код **140**

| Ø Code | d1 | d2 h6 | d3   | l1  | l2 | l3 | r f8 | α  | z | CELERO | SERVICE |
|--------|----|-------|------|-----|----|----|------|----|---|--------|---------|
| .140   | 2  | 6     | 1,8  | 57  | 4  | 6  | 1,0  | 8° | 2 | •      | •       |
| .180   | 3  | 6     | 2,8  | 57  | 6  | 9  | 1,5  | 6° | 2 | •      | •       |
| .220   | 4  | 6     | 3,7  | 57  | 8  | 12 | 2,0  | 4° | 2 | •      | •       |
| .260   | 5  | 6     | 4,6  | 57  | 10 | 15 | 2,5  | 2° | 2 | •      | •       |
| .300   | 6  | 6     | 5,5  | 57  | 12 | 20 | 3,0  | 0° | 2 | •      | •       |
| .391   | 8  | 8     | 7,4  | 63  | 16 | 26 | 4,0  | 0° | 2 | •      | •       |
| .450   | 10 | 10    | 9,2  | 72  | 20 | 31 | 5,0  | 0° | 2 | •      | •       |
| .501   | 12 | 12    | 11,0 | 83  | 24 | 37 | 6,0  | 0° | 2 | •      | •       |
| .610   | 16 | 16    | 15,0 | 92  | 32 | 43 | 8,0  | 0° | 2 | •      | •       |
| .682   | 20 | 20    | 19,0 | 104 | 40 | 53 | 10,0 | 0° | 2 | •      | •       |

| CNC Radius R |      |              |         |         |         |         |
|--------------|------|--------------|---------|---------|---------|---------|
| d1           | r    | Tolerance f8 | Radius  |         |         |         |
|              |      |              | Minimum | Maximum | Minimum | Maximum |
| 2            | 1.0  | -0.006       | -0.020  | 0.980   | 0.994   | 0.987   |
| 3            | 1.5  |              |         | 1.480   | 1.494   | 1.487   |
| 4            | 2.0  |              |         | 1.980   | 1.994   | 1.987   |
| 5            | 2.5  |              |         | 2.480   | 2.494   | 2.487   |
| 6            | 3.0  |              |         | 2.980   | 2.994   | 2.987   |
| 8            | 4.0  | -0.010       | -0.028  | 3.972   | 3.990   | 3.981   |
| 10           | 5.0  |              |         | 4.972   | 4.990   | 4.981   |
| 12           | 6.0  |              |         | 5.972   | 5.990   | 5.981   |
| 16           | 8.0  | -0.013       | -0.035  | 7.965   | 7.987   | 7.976   |
| 20           | 10.0 |              |         | 9.965   | 9.987   | 9.976   |

5292



Применение

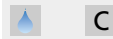
Литейные алюминиевые сплавы



Медь чистая

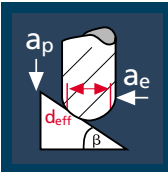


Термопластики



| d1 [mm] | z | Vc [m/min] | fz [mm] | ap [mm] | ae [mm] | d <sub>eff</sub> [mm] | n [min <sup>-1</sup> ] | Vf [mm/min] | Q [mm <sup>3</sup> /min] |
|---------|---|------------|---------|---------|---------|-----------------------|------------------------|-------------|--------------------------|
| 3       | 2 | 650        | 0.060   | 0.15    | 0.30    | 1.31                  | 60000                  | 7200        | 324                      |
| 4       | 2 | 650        | 0.080   | 0.20    | 0.40    | 1.74                  | 60000                  | 9600        | 768                      |
| 5       | 2 | 650        | 0.100   | 0.25    | 0.50    | 2.18                  | 60000                  | 12000       | 1500                     |
| 6       | 2 | 650        | 0.090   | 0.30    | 0.60    | 2.62                  | 60000                  | 10800       | 1944                     |
| 8       | 2 | 650        | 0.120   | 0.40    | 0.80    | 3.49                  | 59335                  | 14240       | 4557                     |
| 10      | 2 | 650        | 0.150   | 0.50    | 1.00    | 4.36                  | 47470                  | 14240       | 7120                     |
| 12      | 2 | 650        | 0.120   | 0.60    | 1.20    | 5.23                  | 39555                  | 9495        | 6837                     |
| 16      | 2 | 650        | 0.160   | 0.80    | 1.60    | 6.97                  | 29665                  | 9495        | 12154                    |
| 3       | 2 | 480        | 0.060   | 0.15    | 0.30    | 1.31                  | 60000                  | 7200        | 324                      |
| 4       | 2 | 480        | 0.080   | 0.20    | 0.40    | 1.74                  | 60000                  | 9600        | 768                      |
| 5       | 2 | 480        | 0.100   | 0.25    | 0.50    | 2.18                  | 60000                  | 12000       | 1500                     |
| 6       | 2 | 480        | 0.090   | 0.30    | 0.60    | 2.62                  | 58420                  | 10515       | 1893                     |
| 8       | 2 | 480        | 0.120   | 0.40    | 0.80    | 3.49                  | 43815                  | 10515       | 3365                     |
| 10      | 2 | 480        | 0.150   | 0.50    | 1.00    | 4.36                  | 35055                  | 10515       | 5258                     |
| 12      | 2 | 480        | 0.120   | 0.60    | 1.20    | 5.23                  | 29210                  | 7010        | 5047                     |
| 16      | 2 | 480        | 0.160   | 0.80    | 1.60    | 6.97                  | 21910                  | 7010        | 8973                     |
| 3       | 2 | 950        | 0.060   | 0.15    | 0.30    | 1.31                  | 60000                  | 7200        | 324                      |
| 4       | 2 | 950        | 0.080   | 0.20    | 0.40    | 1.74                  | 60000                  | 9600        | 768                      |
| 5       | 2 | 950        | 0.100   | 0.25    | 0.50    | 2.18                  | 60000                  | 12000       | 1500                     |
| 6       | 2 | 950        | 0.090   | 0.30    | 0.60    | 2.62                  | 60000                  | 10800       | 1944                     |
| 8       | 2 | 950        | 0.120   | 0.40    | 0.80    | 3.49                  | 60000                  | 14400       | 4608                     |
| 10      | 2 | 950        | 0.150   | 0.50    | 1.00    | 4.36                  | 60000                  | 18000       | 9000                     |
| 12      | 2 | 950        | 0.120   | 0.60    | 1.20    | 5.23                  | 57815                  | 13875       | 9990                     |
| 16      | 2 | 950        | 0.160   | 0.80    | 1.60    | 6.97                  | 43360                  | 13875       | 17760                    |

5292



Применение

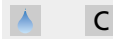
Литейные алюминиевые сплавы



Медь чистая



Термопластики



| d1 [mm] | z | Vc [m/min] | fz [mm] | ap [mm] | ae [mm] | d <sub>eff</sub> [mm] | n [min <sup>-1</sup> ] | Vf [mm/min] | β  |
|---------|---|------------|---------|---------|---------|-----------------------|------------------------|-------------|----|
| 3       | 2 | 550        | 0.045   | 0.04    | 0.05    | 2.53                  | 60000                  | 5400        | 45 |
| 4       | 2 | 550        | 0.060   | 0.05    | 0.06    | 3.38                  | 51850                  | 6220        | 45 |
| 5       | 2 | 550        | 0.075   | 0.06    | 0.08    | 4.22                  | 41480                  | 6220        | 45 |
| 6       | 2 | 550        | 0.060   | 0.07    | 0.06    | 5.06                  | 34570                  | 4150        | 45 |
| 8       | 2 | 550        | 0.080   | 0.10    | 0.08    | 6.75                  | 25925                  | 4150        | 45 |
| 10      | 2 | 550        | 0.100   | 0.12    | 0.10    | 8.44                  | 20740                  | 4150        | 45 |
| 12      | 2 | 550        | 0.060   | 0.14    | 0.06    | 10.13                 | 17285                  | 2075        | 45 |
| 16      | 2 | 550        | 0.080   | 0.19    | 0.08    | 13.51                 | 12965                  | 2075        | 45 |
| 3       | 2 | 380        | 0.045   | 0.04    | 0.05    | 2.53                  | 47765                  | 4300        | 45 |
| 4       | 2 | 380        | 0.060   | 0.05    | 0.06    | 3.38                  | 35825                  | 4300        | 45 |
| 5       | 2 | 380        | 0.075   | 0.06    | 0.08    | 4.22                  | 28660                  | 4300        | 45 |
| 6       | 2 | 380        | 0.060   | 0.07    | 0.06    | 5.06                  | 23885                  | 2865        | 45 |
| 8       | 2 | 380        | 0.080   | 0.10    | 0.08    | 6.75                  | 17915                  | 2865        | 45 |
| 10      | 2 | 380        | 0.100   | 0.12    | 0.10    | 8.44                  | 14330                  | 2865        | 45 |
| 12      | 2 | 380        | 0.060   | 0.14    | 0.06    | 10.13                 | 11940                  | 1435        | 45 |
| 16      | 2 | 380        | 0.080   | 0.19    | 0.08    | 13.51                 | 8955                   | 1435        | 45 |
| 3       | 2 | 850        | 0.045   | 0.04    | 0.05    | 2.53                  | 60000                  | 5400        | 45 |
| 4       | 2 | 850        | 0.060   | 0.05    | 0.06    | 3.38                  | 60000                  | 7200        | 45 |
| 5       | 2 | 850        | 0.075   | 0.06    | 0.08    | 4.22                  | 60000                  | 9000        | 45 |
| 6       | 2 | 850        | 0.060   | 0.07    | 0.06    | 5.06                  | 53425                  | 6410        | 45 |
| 8       | 2 | 850        | 0.080   | 0.10    | 0.08    | 6.75                  | 40070                  | 6410        | 45 |
| 10      | 2 | 850        | 0.100   | 0.12    | 0.10    | 8.44                  | 32055                  | 6410        | 45 |
| 12      | 2 | 850        | 0.060   | 0.14    | 0.06    | 10.13                 | 26710                  | 3205        | 45 |
| 16      | 2 | 850        | 0.080   | 0.19    | 0.08    | 13.51                 | 20035                  | 3205        | 45 |



# Фрезы по алюминию сферические

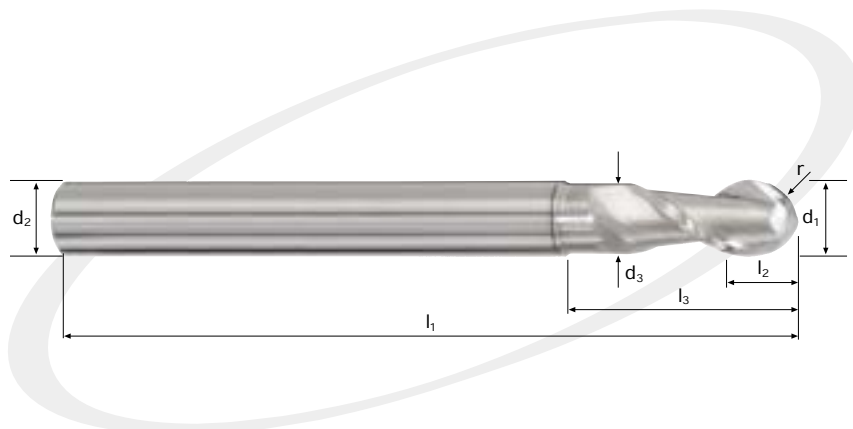
# Sphericut-Alu

HM  
MG10 AX

$\lambda$  40°  
 $\gamma$  20°



DIN  
6535  
HA



Предназначены для обработки:

Алюминий Медь Пластик

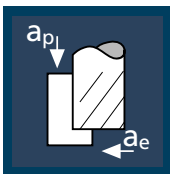
AX

|                   |    |          |      |     |    |    |         |          |   | CELERO  | SERVICE |   |
|-------------------|----|----------|------|-----|----|----|---------|----------|---|---------|---------|---|
|                   |    |          |      |     |    |    |         |          |   | ReTool® |         |   |
| Пример: заказа-N° |    |          |      |     |    |    |         |          |   | 5292    | C5292   |   |
| Ø                 | d1 | d2<br>h6 | d3   | l1  | l2 | l3 | r<br>f8 | $\alpha$ | z |         |         |   |
| .180              | 3  | 6        | 2,8  | 75  | 6  | 9  | 1,5     | 6°       | 2 | •       | •       |   |
| .220              | 4  | 6        | 3,7  | 75  | 8  | 12 | 2,0     | 4°       | 2 | •       | •       |   |
| .260              | 5  | 6        | 4,6  | 80  | 10 | 15 | 2,5     | 2°       | 2 | •       | •       |   |
| .300              | 6  | 6        | 5,5  | 80  | 12 | 20 | 3,0     | 0°       | 2 | •       | •       | • |
| .391              | 8  | 8        | 7,4  | 90  | 16 | 26 | 4,0     | 0°       | 2 | •       | •       | • |
| .450              | 10 | 10       | 9,2  | 100 | 20 | 31 | 5,0     | 0°       | 2 | •       | •       | • |
| .501              | 12 | 12       | 11,0 | 120 | 24 | 37 | 6,0     | 0°       | 2 | •       | •       | • |
| .610              | 16 | 16       | 15,0 | 140 | 32 | 43 | 8,0     | 0°       | 2 | •       | •       | • |

| CNC Radius R |     |              |         |         |       |
|--------------|-----|--------------|---------|---------|-------|
| d1           | r   | Tolerance f8 | Radius  |         |       |
|              |     |              | Minimum | Maximum | R     |
| 3            | 1.5 | -0.006       | -0.020  | 1.480   | 1.487 |
| 4            | 2.0 |              |         | 1.980   | 1.987 |
| 5            | 2.5 |              |         | 2.480   | 2.487 |
| 6            | 3.0 |              |         | 2.980   | 2.987 |
| 8            | 4.0 | -0.010       | -0.028  | 3.972   | 3.981 |
| 10           | 5.0 |              |         | 4.972   | 4.981 |
| 12           | 6.0 |              |         | 5.972   | 5.981 |
| 16           | 8.0 | -0.013       | -0.035  | 7.965   | 7.976 |

**5397**



**Применение**

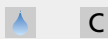
Литейные алюминиевые сплавы



Медь чистая



Термопластики



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 10         | 3 | 600                       | 0.110                  | 15                     | 5                      | 19100                     | 6305                       | 473.0                       |
| 12         | 3 | 600                       | 0.135                  | 18                     | 6                      | 15915                     | 6445                       | 696.0                       |
| 16         | 3 | 600                       | 0.180                  | 24                     | 8                      | 11935                     | 6445                       | 1237.5                      |
| 20         | 3 | 600                       | 0.220                  | 30                     | 10                     | 9550                      | 6305                       | 1891.5                      |
| 25         | 3 | 600                       | 0.280                  | 38                     | 13                     | 7640                      | 6420                       | 3009.5                      |
| 10         | 3 | 400                       | 0.110                  | 15                     | 5                      | 12735                     | 4205                       | 315.5                       |
| 12         | 3 | 400                       | 0.135                  | 18                     | 6                      | 10610                     | 4295                       | 464.0                       |
| 16         | 3 | 400                       | 0.180                  | 24                     | 8                      | 7960                      | 4300                       | 825.5                       |
| 20         | 3 | 400                       | 0.220                  | 30                     | 10                     | 6365                      | 4200                       | 1260.0                      |
| 25         | 3 | 400                       | 0.280                  | 38                     | 13                     | 5095                      | 4280                       | 2006.5                      |
| 10         | 3 | 800                       | 0.110                  | 15                     | 5                      | 25465                     | 8405                       | 630.5                       |
| 12         | 3 | 800                       | 0.135                  | 18                     | 6                      | 21220                     | 8595                       | 928.5                       |
| 16         | 3 | 800                       | 0.180                  | 24                     | 8                      | 15915                     | 8595                       | 1650.0                      |
| 20         | 3 | 800                       | 0.220                  | 30                     | 10                     | 12735                     | 8405                       | 2521.5                      |
| 25         | 3 | 800                       | 0.280                  | 38                     | 13                     | 10185                     | 8555                       | 4010.0                      |

**5397**



**Применение**

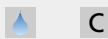
Литейные алюминиевые сплавы



Медь чистая



Термопластики



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 10         | 3 | 500                       | 0.100                  | 10                     | 10                     | 15915                     | 4775                       | 477.5                       |
| 12         | 3 | 500                       | 0.120                  | 12                     | 12                     | 13265                     | 4775                       | 687.5                       |
| 16         | 3 | 500                       | 0.160                  | 16                     | 16                     | 9945                      | 4775                       | 1222.5                      |
| 20         | 3 | 500                       | 0.200                  | 20                     | 20                     | 7960                      | 4775                       | 1910.0                      |
| 25         | 3 | 500                       | 0.250                  | 25                     | 25                     | 6365                      | 4775                       | 2984.5                      |
| 10         | 3 | 270                       | 0.100                  | 10                     | 10                     | 8595                      | 2580                       | 258.0                       |
| 12         | 3 | 270                       | 0.120                  | 12                     | 12                     | 7160                      | 2580                       | 371.5                       |
| 16         | 3 | 270                       | 0.160                  | 16                     | 16                     | 5370                      | 2580                       | 660.5                       |
| 20         | 3 | 270                       | 0.200                  | 20                     | 20                     | 4295                      | 2575                       | 1030.0                      |
| 25         | 3 | 270                       | 0.250                  | 25                     | 25                     | 3440                      | 2580                       | 1612.5                      |
| 10         | 3 | 800                       | 0.100                  | 10                     | 10                     | 25465                     | 7640                       | 764.0                       |
| 12         | 3 | 800                       | 0.120                  | 12                     | 12                     | 21220                     | 7640                       | 1100.0                      |
| 16         | 3 | 800                       | 0.160                  | 16                     | 16                     | 15915                     | 7640                       | 1956.0                      |
| 20         | 3 | 800                       | 0.200                  | 20                     | 20                     | 12735                     | 7640                       | 3056.0                      |
| 25         | 3 | 800                       | 0.250                  | 25                     | 25                     | 10185                     | 7640                       | 4775.0                      |

# Фрезы по алюминию

## AX-FP

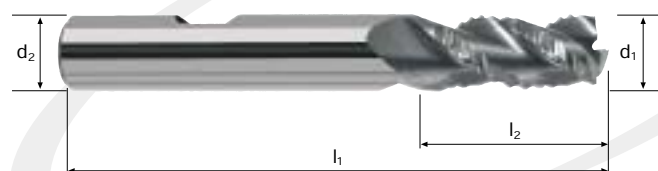
HM  
MG10 AX

$\lambda$  40°  
 $\gamma$  18°



DIN 6535 HA  
DIN 6535 HB

45°



Предназначены для обработки:

Алюминий Медь Пластик

AX

| Пример: заказа-N°. |       | Покрытие | Артикул-N°. | Ø-Код |   | 5397 | CELERO       | SERVICE |
|--------------------|-------|----------|-------------|-------|---|------|--------------|---------|
|                    |       | C        | 5397.450    |       |   |      | C5397ReTool® |         |
|                    |       |          |             |       |   | 5297 | C5297        |         |
| Ø Code             | d1 k8 | d2 h6    | l1          | l2    | z |      |              |         |
| .450               | 10    | 10       | 72          | 22    | 3 | .    | .            | .       |
| .501               | 12    | 12       | 83          | 26    | 3 | .    | .            | .       |
| .610               | 16    | 16       | 92          | 32    | 3 | .    | .            | .       |
| .682               | 20    | 20       | 104         | 38    | 3 | .    | .            | .       |
| .772               | 25    | 25       | 121         | 45    | 3 | .    | .            | .       |
|                    |       |          |             |       |   |      |              |         |
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## Титан

## TX

№ 5450



|    |                              |  |  |  |     |
|----|------------------------------|--|--|--|-----|
| TX | $\lambda$ 30°<br>$\gamma$ 8° |  |  |  | 137 |
|----|------------------------------|--|--|--|-----|

№ 5460



|    |                              |  |  |  |     |
|----|------------------------------|--|--|--|-----|
| TX | $\lambda$ 45°<br>$\gamma$ 8° |  |  |  | 139 |
|----|------------------------------|--|--|--|-----|

№ 5470



|    |                              |  |  |  |     |
|----|------------------------------|--|--|--|-----|
| TX | $\lambda$ 30°<br>$\gamma$ 8° |  |  |  | 141 |
|----|------------------------------|--|--|--|-----|

№ 5480



|    |                              |  |  |  |     |
|----|------------------------------|--|--|--|-----|
| TX | $\lambda$ 45°<br>$\gamma$ 8° |  |  |  | 143 |
|----|------------------------------|--|--|--|-----|

TX





# 5450



## Применение

Титановые сплавы  
**>300 HB**  
[ TiAl6V4 ]



Титановые сплавы  
**up to 300 HB**  
[ TiAl5Sn2 ]



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 10         | 4 | 40                        | 0.030                  | 10                     | 10                     | 1275                      | 155                        | 15.5                        |
| 12         | 4 | 40                        | 0.040                  | 12                     | 12                     | 1060                      | 170                        | 24.5                        |
| 16         | 4 | 40                        | 0.050                  | 16                     | 16                     | 795                       | 160                        | 41.0                        |
| 20         | 4 | 40                        | 0.065                  | 20                     | 20                     | 635                       | 165                        | 66.0                        |

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|----|---|----|-------|----|----|------|-----|-------|
| 10 | 4 | 60 | 0.030 | 10 | 10 | 1910 | 230 | 23.0  |
| 12 | 4 | 60 | 0.040 | 12 | 12 | 1590 | 255 | 36.5  |
| 16 | 4 | 60 | 0.050 | 16 | 16 | 1195 | 240 | 61.5  |
| 20 | 4 | 60 | 0.065 | 20 | 20 | 955  | 250 | 100.0 |

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| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 10         | 4 | 40                        | 0.024                  | 15                     | 10                     | 1275                      | 120                        | 18.0                        |
| 12         | 4 | 40                        | 0.032                  | 18                     | 12                     | 1060                      | 135                        | 29.0                        |
| 16         | 4 | 40                        | 0.040                  | 24                     | 16                     | 795                       | 125                        | 48.0                        |
| 20         | 4 | 40                        | 0.052                  | 30                     | 20                     | 635                       | 130                        | 78.0                        |

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|----|---|----|-------|----|----|------|-----|-------|
| 10 | 4 | 60 | 0.024 | 15 | 10 | 1910 | 185 | 28.0  |
| 12 | 4 | 60 | 0.032 | 18 | 12 | 1590 | 205 | 44.5  |
| 16 | 4 | 60 | 0.040 | 24 | 16 | 1195 | 190 | 73.0  |
| 20 | 4 | 60 | 0.052 | 30 | 20 | 955  | 200 | 120.0 |

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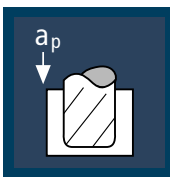
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# 5450



## Применение

Титановые сплавы  
**>300 HB**  
[ TiAl6V4 ]



Титановые сплавы  
**up to 300 HB**  
[ TiAl5Sn2 ]





# Фрезы по титану

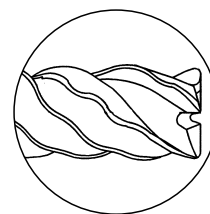
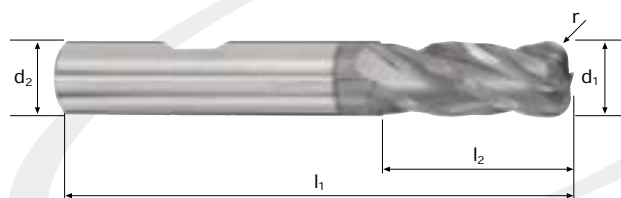
# Splinecut-Ti-R

HM  
MG10 TX

$\lambda$  30°  
 $\gamma$  8°



DIN 6535  
HB



Предназначены для обработки:

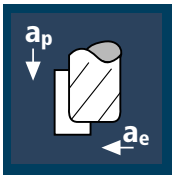
Титан

TX

| Пример: заказа-№.         |       |       |     |    |           |   |   | UNICUT-4X         | TRIBO | SERVICE |
|---------------------------|-------|-------|-----|----|-----------|---|---|-------------------|-------|---------|
| Покрытие Артикул-№. Ø-Код |       |       |     |    |           |   |   | U5450T5450ReTool® |       |         |
|                           |       |       |     |    |           |   |   | с покрытием       |       |         |
| Ø Code                    | d1 e8 | d2 h6 | l1  | l2 | r 0/+0,03 | Z |   |                   |       |         |
| .450                      | 10    | 10    | 72  | 22 | 3         | 4 | • | •                 | •     |         |
| .501                      | 12    | 12    | 83  | 26 | 3         | 4 | • | •                 | •     |         |
| .610                      | 16    | 16    | 92  | 32 | 3         | 4 | • | •                 | •     |         |
| .682                      | 20    | 20    | 104 | 38 | 4         | 4 | • | •                 | •     |         |
|                           |       |       |     |    |           |   |   |                   |       |         |
|                           |       |       |     |    |           |   |   |                   |       |         |
|                           |       |       |     |    |           |   |   |                   |       |         |
|                           |       |       |     |    |           |   |   |                   |       |         |
|                           |       |       |     |    |           |   |   |                   |       |         |
|                           |       |       |     |    |           |   |   |                   |       |         |
|                           |       |       |     |    |           |   |   |                   |       |         |
|                           |       |       |     |    |           |   |   |                   |       |         |
|                           |       |       |     |    |           |   |   |                   |       |         |
|                           |       |       |     |    |           |   |   |                   |       |         |
|                           |       |       |     |    |           |   |   |                   |       |         |
|                           |       |       |     |    |           |   |   |                   |       |         |
|                           |       |       |     |    |           |   |   |                   |       |         |
|                           |       |       |     |    |           |   |   |                   |       |         |
|                           |       |       |     |    |           |   |   |                   |       |         |
|                           |       |       |     |    |           |   |   |                   |       |         |
|                           |       |       |     |    |           |   |   |                   |       |         |
|                           |       |       |     |    |           |   |   |                   |       |         |
|                           |       |       |     |    |           |   |   |                   |       |         |
|                           |       |       |     |    |           |   |   |                   |       |         |
|                           |       |       |     |    |           |   |   |                   |       |         |
|                           |       |       |     |    |           |   |   |                   |       |         |
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|                           |       |       |     |    |           |   |   |                   |       |         |



5460



### Применение

Титановые сплавы  
**>300 HB**  
[ TiAl6V4 ]



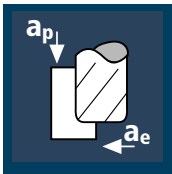
Титановые сплавы  
**up to 300 HB**  
[ TiAl5Sn2 ]



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 12         | 4 | 50                        | 0.045                  | 18                     | 3                      | 1325                      | 240                        | 13.0                        |
| 16         | 4 | 50                        | 0.060                  | 24                     | 4                      | 995                       | 240                        | 23.0                        |
| 20         | 4 | 50                        | 0.075                  | 30                     | 5                      | 795                       | 240                        | 36.0                        |

|    |   |    |       |    |   |      |     |      |
|----|---|----|-------|----|---|------|-----|------|
| 12 | 4 | 70 | 0.045 | 18 | 3 | 1855 | 335 | 18.0 |
| 16 | 4 | 70 | 0.060 | 24 | 4 | 1395 | 335 | 32.0 |
| 20 | 4 | 70 | 0.075 | 30 | 5 | 1115 | 335 | 50.5 |

5460



### Применение

Титановые сплавы  
**>300 HB**  
[ TiAl6V4 ]



Титановые сплавы  
**up to 300 HB**  
[ TiAl5Sn2 ]



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 12         | 4 | 50                        | 0.040                  | 18                     | 1.2                    | 1325                      | 210                        | 4.5                         |
| 16         | 4 | 50                        | 0.050                  | 24                     | 1.6                    | 995                       | 200                        | 7.5                         |
| 20         | 4 | 50                        | 0.065                  | 30                     | 2.0                    | 795                       | 205                        | 12.5                        |

|    |   |    |       |    |     |      |     |      |
|----|---|----|-------|----|-----|------|-----|------|
| 12 | 4 | 70 | 0.040 | 18 | 1.2 | 1855 | 295 | 6.5  |
| 16 | 4 | 70 | 0.050 | 24 | 1.6 | 1395 | 280 | 11.0 |
| 20 | 4 | 70 | 0.065 | 30 | 2.0 | 1115 | 290 | 17.5 |



## Фрезы по титану

## Splinecut-Ti-F

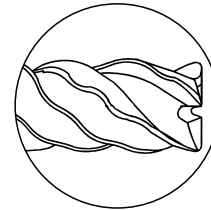
HM  
MG10

TX

$\lambda$  45°  
 $\gamma$  8°



DIN  
6535  
HB



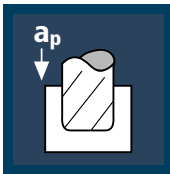
Предназначены для обработки:

Титан

TX

|                       |          |             |       |    |              |   | UNICUT-4X         | TRIBO | SERVICE |
|-----------------------|----------|-------------|-------|----|--------------|---|-------------------|-------|---------|
| Пример:<br>заказа-N°. | Покрyтие | Артикул-N°. | Ф-Код |    |              |   | U5460T5460ReTool® |       |         |
|                       | U        | 5460        | .501  |    |              |   | с покрытием       |       |         |
| Ø<br>Code             | d1<br>e8 | d2<br>h6    | l1    | l2 | r<br>0/+0,03 | Z |                   |       |         |
| .501                  | 12       | 12          | 83    | 26 | 3            | 4 | •                 | •     | •       |
| .610                  | 16       | 16          | 92    | 32 | 3            | 4 | •                 | •     | •       |
| .682                  | 20       | 20          | 104   | 38 | 4            | 4 | •                 | •     | •       |
|                       |          |             |       |    |              |   |                   |       |         |
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5470



Применение

Титановые сплавы  
>300 HB  
[ TiAl6V4 ]

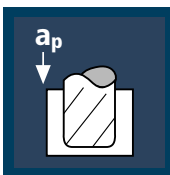


Титановые сплавы  
up to 300 HB  
[ TiAl5Sn2 ]



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 10         | 4 | 40                        | 0.027                  | 10                     | 10                     | 1275                      | 140                        | 14.0                        |
| 12         | 4 | 40                        | 0.036                  | 12                     | 12                     | 1060                      | 155                        | 22.5                        |
| 16         | 4 | 40                        | 0.045                  | 16                     | 16                     | 795                       | 145                        | 37.0                        |
| 20         | 4 | 40                        | 0.059                  | 20                     | 20                     | 635                       | 150                        | 60.0                        |
| 10         | 4 | 60                        | 0.027                  | 10                     | 10                     | 1910                      | 205                        | 20.5                        |
| 12         | 4 | 60                        | 0.036                  | 12                     | 12                     | 1590                      | 230                        | 33.0                        |
| 16         | 4 | 60                        | 0.045                  | 16                     | 16                     | 1195                      | 215                        | 55.0                        |
| 20         | 4 | 60                        | 0.059                  | 20                     | 20                     | 955                       | 225                        | 90.0                        |

5470



Применение

Титановые сплавы  
>300 HB  
[ TiAl6V4 ]



Титановые сплавы  
up to 300 HB  
[ TiAl5Sn2 ]



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 10         | 4 | 40                        | 0.021                  | 15                     | 10                     | 1275                      | 105                        | 16.0                        |
| 12         | 4 | 40                        | 0.028                  | 18                     | 12                     | 1060                      | 120                        | 26.0                        |
| 16         | 4 | 40                        | 0.035                  | 24                     | 16                     | 795                       | 110                        | 42.0                        |
| 20         | 4 | 40                        | 0.046                  | 30                     | 20                     | 635                       | 115                        | 69.0                        |
| 10         | 4 | 60                        | 0.021                  | 15                     | 10                     | 1910                      | 160                        | 24.0                        |
| 12         | 4 | 60                        | 0.028                  | 18                     | 12                     | 1590                      | 180                        | 39.0                        |
| 16         | 4 | 60                        | 0.035                  | 24                     | 16                     | 1195                      | 165                        | 63.5                        |
| 20         | 4 | 60                        | 0.046                  | 30                     | 20                     | 955                       | 175                        | 105.0                       |

# Фрезы по титану

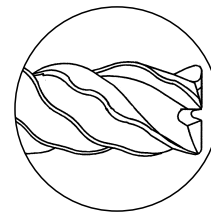
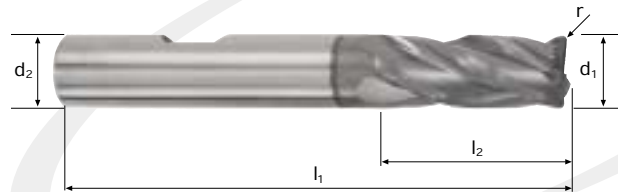
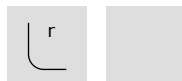
# Splinecut-Ti-R

HM  
MG10 TX

$\lambda$  30°  
 $\gamma$  8°



DIN  
6535  
HB



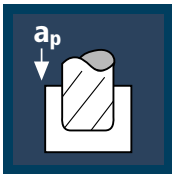
Предназначены для обработки:

Титан

TX

|   |          |          |     |    |              |   | UNICUT-4X         | TRIBO | SERVICE |
|---|----------|----------|-----|----|--------------|---|-------------------|-------|---------|
| Пример: заказа-№. <b>U5470.450</b>              |          |          |     |    |              |   | U5470T5470ReTool® |       |         |
|   |          |          |     |    |              |   | с покрытием       |       |         |
| Ø<br>Code                                       | d1<br>e8 | d2<br>h6 | l1  | l2 | r<br>0/+0,03 | Z |                   |       |         |
| .450  | 10       | 10       | 72  | 22 | 1,0          | 4 | •                 | •     | •       |
| .501  | 12       | 12       | 83  | 26 | 1,0          | 4 | •                 | •     | •       |
| .610  | 16       | 16       | 92  | 32 | 1,0          | 4 | •                 | •     | •       |
| .682  | 20       | 20       | 104 | 38 | 1,0          | 4 | •                 | •     | •       |
| NEW! .503                                       | 12       | 12       | 83  | 26 | 2,5          | 4 | •                 | •     | •       |
| NEW! .612                                       | 16       | 16       | 92  | 32 | 2,5          | 4 | •                 | •     | •       |
| NEW! .684                                       | 20       | 20       | 104 | 38 | 2,5          | 4 | •                 | •     | •       |
| NEW! .614                                       | 16       | 16       | 92  | 32 | 4,0          | 4 | •                 | •     | •       |
| NEW! .686                                       | 20       | 20       | 104 | 38 | 4,0          | 4 | •                 | •     | •       |
| Additional specifications available on request. |          |          |     |    |              |   |                   |       |         |

# 5480



## Применение

Титановые сплавы  
>300 HB  
[ TiAl6V4 ]

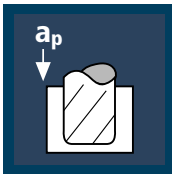


Титановые сплавы  
up to 300 HB  
[ TiAl5Sn2 ]



| d1 [mm] | z | v <sub>c</sub> [m/min] | f <sub>z</sub> [mm] | a <sub>p</sub> [mm] | a <sub>e</sub> [mm] | n [min] | v <sub>f</sub> [mm/min] | Q [cm <sup>3</sup> /min] |
|---------|---|------------------------|---------------------|---------------------|---------------------|---------|-------------------------|--------------------------|
| 12      | 4 | 50                     | 0.045               | 18                  | 3                   | 1325    | 240                     | 13.0                     |
| 16      | 4 | 50                     | 0.060               | 24                  | 4                   | 995     | 240                     | 23.0                     |
| 20      | 4 | 50                     | 0.075               | 30                  | 5                   | 795     | 240                     | 36.0                     |
|         |   |                        |                     |                     |                     |         |                         |                          |
|         |   |                        |                     |                     |                     |         |                         |                          |
|         |   |                        |                     |                     |                     |         |                         |                          |
|         |   |                        |                     |                     |                     |         |                         |                          |
|         |   |                        |                     |                     |                     |         |                         |                          |
|         |   |                        |                     |                     |                     |         |                         |                          |
|         |   |                        |                     |                     |                     |         |                         |                          |
|         |   |                        |                     |                     |                     |         |                         |                          |
|         |   |                        |                     |                     |                     |         |                         |                          |
|         |   |                        |                     |                     |                     |         |                         |                          |
|         |   |                        |                     |                     |                     |         |                         |                          |
|         |   |                        |                     |                     |                     |         |                         |                          |
|         |   |                        |                     |                     |                     |         |                         |                          |
|         |   |                        |                     |                     |                     |         |                         |                          |
|         |   |                        |                     |                     |                     |         |                         |                          |
|         |   |                        |                     |                     |                     |         |                         |                          |
|         |   |                        |                     |                     |                     |         |                         |                          |
|         |   |                        |                     |                     |                     |         |                         |                          |
|         |   |                        |                     |                     |                     |         |                         |                          |
|         |   |                        |                     |                     |                     |         |                         |                          |
|         |   |                        |                     |                     |                     |         |                         |                          |
|         |   |                        |                     |                     |                     |         |                         |                          |

# 5480



## Применение

Титановые сплавы  
>300 HB  
[ TiAl6V4 ]



Титановые сплавы  
up to 300 HB  
[ TiAl5Sn2 ]



| d1 [mm] | z | v <sub>c</sub> [m/min] | f <sub>z</sub> [mm] | a <sub>p</sub> [mm] | a <sub>e</sub> [mm] | n [min] | v <sub>f</sub> [mm/min] | Q [cm <sup>3</sup> /min] |
|---------|---|------------------------|---------------------|---------------------|---------------------|---------|-------------------------|--------------------------|
| 12      | 4 | 50                     | 0.040               | 18                  | 1.2                 | 1325    | 210                     | 4.5                      |
| 16      | 4 | 50                     | 0.050               | 24                  | 1.6                 | 995     | 200                     | 7.5                      |
| 20      | 4 | 50                     | 0.065               | 30                  | 2.0                 | 795     | 205                     | 12.5                     |
|         |   |                        |                     |                     |                     |         |                         |                          |
|         |   |                        |                     |                     |                     |         |                         |                          |
|         |   |                        |                     |                     |                     |         |                         |                          |
|         |   |                        |                     |                     |                     |         |                         |                          |
|         |   |                        |                     |                     |                     |         |                         |                          |
|         |   |                        |                     |                     |                     |         |                         |                          |
|         |   |                        |                     |                     |                     |         |                         |                          |
|         |   |                        |                     |                     |                     |         |                         |                          |
|         |   |                        |                     |                     |                     |         |                         |                          |
|         |   |                        |                     |                     |                     |         |                         |                          |
|         |   |                        |                     |                     |                     |         |                         |                          |
|         |   |                        |                     |                     |                     |         |                         |                          |
|         |   |                        |                     |                     |                     |         |                         |                          |
|         |   |                        |                     |                     |                     |         |                         |                          |
|         |   |                        |                     |                     |                     |         |                         |                          |
|         |   |                        |                     |                     |                     |         |                         |                          |
|         |   |                        |                     |                     |                     |         |                         |                          |
|         |   |                        |                     |                     |                     |         |                         |                          |
|         |   |                        |                     |                     |                     |         |                         |                          |
|         |   |                        |                     |                     |                     |         |                         |                          |
|         |   |                        |                     |                     |                     |         |                         |                          |
|         |   |                        |                     |                     |                     |         |                         |                          |




## Фрезы по титану

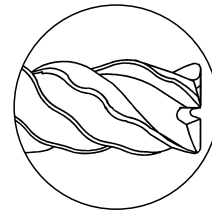
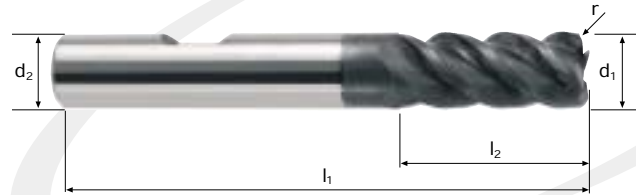
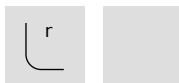
## Splinecut-Ti-F

HM  
MG10 TX

$\lambda$  45°  
 $\gamma$  8°




DIN  
6535  
HB



Предназначены для обработки:

Титан

TX

| Пример:<br>заказа-№ | Покрытие | Артикул-№ | Ø-Код | UNICUT-4X |              |     | TRIBO | SERVICE        |
|---------------------|----------|-----------|-------|-----------|--------------|-----|-------|----------------|
|                     |          |           |       | U         | 5480         | 501 | T5480 | ReTool®        |
|                     |          |           |       |           |              |     |       | с<br>покрытием |
| Ø<br>Code           | d1<br>e8 | d2<br>h6  | l1    | l2        | r<br>0/+0,03 | Z   |       |                |
| .501                | 12       | 12        | 83    | 26        | 1            | 4   | .     | .              |
| .610                | 16       | 16        | 92    | 32        | 1            | 4   | .     | .              |
| .682                | 20       | 20        | 104   | 38        | 1            | 4   | .     | .              |
|                     |          |           |       |           |              |     |       |                |
|                     |          |           |       |           |              |     |       |                |
|                     |          |           |       |           |              |     |       |                |
|                     |          |           |       |           |              |     |       |                |
|                     |          |           |       |           |              |     |       |                |
|                     |          |           |       |           |              |     |       |                |
|                     |          |           |       |           |              |     |       |                |
|                     |          |           |       |           |              |     |       |                |
|                     |          |           |       |           |              |     |       |                |
|                     |          |           |       |           |              |     |       |                |
|                     |          |           |       |           |              |     |       |                |
|                     |          |           |       |           |              |     |       |                |
|                     |          |           |       |           |              |     |       |                |
|                     |          |           |       |           |              |     |       |                |
|                     |          |           |       |           |              |     |       |                |
|                     |          |           |       |           |              |     |       |                |
|                     |          |           |       |           |              |     |       |                |
|                     |          |           |       |           |              |     |       |                |
|                     |          |           |       |           |              |     |       |                |
|                     |          |           |       |           |              |     |       |                |
|                     |          |           |       |           |              |     |       |                |
|                     |          |           |       |           |              |     |       |                |
|                     |          |           |       |           |              |     |       |                |







































# Графит

GX

## Высокопроизводительные концевые фрезы с гладкой режущей кромкой, торические

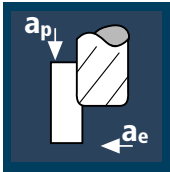
|         |   |    |   |  |   |   |     |
|---------|---|----|---|--|---|---|-----|
| N° 5630 |  | GX | $\lambda 30^\circ$<br>$\gamma 15^\circ$ |  |  |  | 147 |
| N° 5640 |  | GX | $\lambda 40^\circ$<br>$\gamma 15^\circ$ |  |  |  | 149 |
| N° 5645 |  | GX | $\lambda 40^\circ$<br>$\gamma 15^\circ$ |  |  |  | 151 |
| N° 5650 |  | GX | $\lambda 40^\circ$<br>$\gamma 15^\circ$ |  |  |  | 153 |

## Высокопроизводительные концевые фрезы с гладкой режущей кромкой, сферические

|         |   |    |   |  |   |   |     |
|---------|---|----|---|--|---|---|-----|
| N° 5675 |    | GX | $\lambda 40^\circ$<br>$\gamma 20^\circ$ |    |    |    | 155 |
| N° 5680 |   | GX | $\lambda 30^\circ$<br>$\gamma 10^\circ$ |   |   |   | 157 |
| N° 5685 |  | GX | $\lambda 30^\circ$<br>$\gamma 10^\circ$ |  |  |  | 159 |
| N° 5690 |  | GX | $\lambda 30^\circ$<br>$\gamma 10^\circ$ |  |  |  | 161 |
| N° 5695 |  | GX | $\lambda 40^\circ$<br>$\gamma 15^\circ$ |  |  |  | 163 |

GX

5630



Применение

Графит



Графит



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 6          | 2 | 850                       | 0.075                  | 1.5                    | 4.5                    | 45095                     | 6765                       | 45.5                        |
| 8          | 2 | 850                       | 0.100                  | 2                      | 6                      | 33820                     | 6765                       | 81.0                        |
| 10         | 2 | 850                       | 0.125                  | 2.5                    | 7.5                    | 27055                     | 6765                       | 127.0                       |
| 12         | 2 | 850                       | 0.150                  | 3                      | 9                      | 22550                     | 6765                       | 182.5                       |
| 16         | 2 | 850                       | 0.200                  | 4                      | 12                     | 16910                     | 6765                       | 324.5                       |
| 20         | 2 | 850                       | 0.250                  | 5                      | 15                     | 13530                     | 6765                       | 507.5                       |
| 25         | 2 | 850                       | 0.250                  | 6.2                    | 18.7                   | 10825                     | 5415                       | 634.5                       |

|    |   |     |       |      |     |       |      |       |
|----|---|-----|-------|------|-----|-------|------|-------|
| 6  | 2 | 700 | 0.070 | 4.5  | 1.5 | 37135 | 5200 | 35.0  |
| 8  | 2 | 700 | 0.090 | 6    | 2   | 27855 | 5015 | 60.0  |
| 10 | 2 | 700 | 0.115 | 7.5  | 2.5 | 22280 | 5125 | 96.0  |
| 12 | 2 | 700 | 0.135 | 9    | 3   | 18570 | 5015 | 135.5 |
| 16 | 2 | 700 | 0.180 | 12   | 4   | 13925 | 5015 | 240.5 |
| 20 | 2 | 700 | 0.225 | 15   | 5   | 11140 | 5015 | 376.0 |
| 25 | 2 | 700 | 0.280 | 18.7 | 6.2 | 8915  | 4990 | 585.0 |

5630



Применение

Графит



Графит



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 6          | 2 | 650                       | 0.050                  | 1.5                    | 6                      | 34485                     | 3450                       | 31.0                        |
| 8          | 2 | 650                       | 0.065                  | 2                      | 8                      | 25865                     | 3360                       | 54.0                        |
| 10         | 2 | 650                       | 0.085                  | 2.5                    | 10                     | 20690                     | 3515                       | 88.0                        |
| 12         | 2 | 650                       | 0.100                  | 3                      | 12                     | 17240                     | 3450                       | 124.0                       |
| 16         | 2 | 650                       | 0.135                  | 4                      | 16                     | 12930                     | 3490                       | 223.5                       |
| 20         | 2 | 650                       | 0.165                  | 5                      | 20                     | 10345                     | 3415                       | 341.5                       |
| 25         | 2 | 650                       | 0.210                  | 6.2                    | 25                     | 8275                      | 3475                       | 543.0                       |

|    |   |     |       |      |    |       |      |       |
|----|---|-----|-------|------|----|-------|------|-------|
| 6  | 2 | 550 | 0.045 | 3    | 6  | 29180 | 2625 | 47.5  |
| 8  | 2 | 550 | 0.060 | 4    | 8  | 21885 | 2625 | 84.0  |
| 10 | 2 | 550 | 0.075 | 5    | 10 | 17510 | 2625 | 131.5 |
| 12 | 2 | 550 | 0.090 | 6    | 12 | 14590 | 2625 | 189.0 |
| 16 | 2 | 550 | 0.120 | 8    | 16 | 10940 | 2625 | 336.0 |
| 20 | 2 | 550 | 0.150 | 10   | 20 | 8755  | 2625 | 525.0 |
| 25 | 2 | 550 | 0.190 | 12.5 | 25 | 7005  | 2660 | 831.5 |

# Фрезы по графиту торические

GX

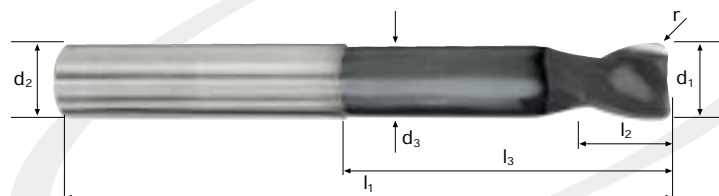
HM  
MG10

GX

$\lambda$  30°  
 $\gamma$  15°



DIN  
6535  
HA



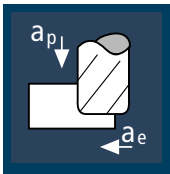
Предназначены для обработки:

Графит

| Пример: заказа-№.         |              |          |         |        |        |    |         |   | BRILLIANT |
|---------------------------|--------------|----------|---------|--------|--------|----|---------|---|-----------|
| Покрытие Артикул-№. Ø-Код |              |          |         |        |        |    |         |   |           |
| B 5630.300                |              |          |         |        |        |    |         |   | B5630     |
| Ø                         | d1           | d2       | d3      | l1     | l2     | l3 | r       | z |           |
| Code                      | e9           | h6       |         |        |        |    | 0/+0.03 |   |           |
| .300                      | 6            | 6        | 5,5     | 70     | 7      | 33 | 1,0     | 2 | •         |
| .391                      | 8            | 8        | 7,4     | 80     | 9      | 43 | 1,0     | 2 | •         |
| .450                      | 10           | 10       | 9,2     | 84     | 11     | 43 | 1,5     | 2 | •         |
| .501                      | 12           | 12       | 11,0    | 97     | 13     | 51 | 1,5     | 2 | •         |
| .610                      | 16           | 16       | 15,0    | 115    | 17     | 66 | 2,0     | 2 | •         |
| .682                      | 20           | 20       | 19,0    | 130    | 21     | 79 | 2,0     | 2 | •         |
| .772                      | 25           | 25       | 24,0    | 151    | 26     | 94 | 2,5     | 2 | •         |
| CNC Diameter D            |              |          |         |        |        |    |         |   |           |
| d1                        | Tolerance e9 | Diameter |         |        |        |    |         |   |           |
|                           |              | Minimum  | Maximum |        |        |    |         |   |           |
| 6                         | -0.050       | -0.020   | 5.950   | 5.980  | 5.965  |    |         |   |           |
| 8                         | -0.061       | -0.025   | 7.939   | 7.975  | 7.957  |    |         |   |           |
| 10                        |              |          | 9.939   | 9.975  | 9.957  |    |         |   |           |
| 12                        | -0.075       | -0.032   | 11.925  | 11.968 | 11.947 |    |         |   |           |
| 16                        |              |          | 15.925  | 15.968 | 15.947 |    |         |   |           |
| 20                        | -0.092       | -0.040   | 19.908  | 19.960 | 19.934 |    |         |   |           |
| 25                        |              |          | 24.908  | 24.960 | 24.934 |    |         |   |           |

GX

5640



Применение

Графит



Графит



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 2          | 3 | 1050                      | 0.025                  | 0.5                    | 1.5                    | 60000                     | 4500                       | 3.5                         |
| 3          | 3 | 1050                      | 0.040                  | 0.7                    | 2.2                    | 60000                     | 7200                       | 12.0                        |
| 4          | 3 | 1050                      | 0.050                  | 1                      | 3                      | 60000                     | 9000                       | 27.0                        |
| 5          | 3 | 1050                      | 0.065                  | 1.2                    | 3.7                    | 60000                     | 11700                      | 55.0                        |
| 6          | 3 | 1050                      | 0.075                  | 1.5                    | 4.5                    | 55705                     | 12535                      | 84.5                        |
| 8          | 3 | 1050                      | 0.100                  | 2                      | 6                      | 41780                     | 12535                      | 150.5                       |
| 10         | 3 | 1050                      | 0.100                  | 2.5                    | 7.5                    | 33425                     | 10030                      | 188.0                       |
| 12         | 3 | 1050                      | 0.135                  | 3                      | 9                      | 27855                     | 11280                      | 304.5                       |
| 2          | 3 | 900                       | 0.025                  | 1.5                    | 0.5                    | 60000                     | 4500                       | 3.5                         |
| 3          | 3 | 900                       | 0.035                  | 2.2                    | 0.7                    | 60000                     | 6300                       | 10.5                        |
| 4          | 3 | 900                       | 0.045                  | 3                      | 1                      | 60000                     | 8100                       | 24.5                        |
| 5          | 3 | 900                       | 0.055                  | 3.7                    | 1.2                    | 57295                     | 9455                       | 44.5                        |
| 6          | 3 | 900                       | 0.070                  | 4.5                    | 1.5                    | 47750                     | 10030                      | 67.5                        |
| 8          | 3 | 900                       | 0.090                  | 6                      | 2                      | 35810                     | 9670                       | 116.0                       |
| 10         | 3 | 900                       | 0.115                  | 7.5                    | 2.5                    | 28650                     | 9885                       | 185.5                       |
| 12         | 3 | 900                       | 0.135                  | 9                      | 3                      | 23875                     | 9670                       | 261.0                       |

5640



Применение

Графит



Графит



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 2          | 3 | 850                       | 0.015                  | 0.5                    | 2                      | 60000                     | 2700                       | 2.5                         |
| 3          | 3 | 850                       | 0.025                  | 0.7                    | 3                      | 60000                     | 4500                       | 10.0                        |
| 4          | 3 | 850                       | 0.035                  | 1                      | 4                      | 60000                     | 6300                       | 25.0                        |
| 5          | 3 | 850                       | 0.040                  | 1.2                    | 5                      | 54115                     | 6495                       | 40.5                        |
| 6          | 3 | 850                       | 0.050                  | 1.5                    | 6                      | 45095                     | 6765                       | 61.0                        |
| 8          | 3 | 850                       | 0.065                  | 2                      | 8                      | 33820                     | 6595                       | 105.5                       |
| 10         | 3 | 850                       | 0.085                  | 2.5                    | 10                     | 27055                     | 6900                       | 172.5                       |
| 12         | 3 | 850                       | 0.100                  | 3                      | 12                     | 22550                     | 6765                       | 243.5                       |
| 2          | 3 | 700                       | 0.015                  | 1                      | 2                      | 60000                     | 2700                       | 5.5                         |
| 3          | 3 | 700                       | 0.025                  | 1.5                    | 3                      | 60000                     | 4500                       | 20.5                        |
| 4          | 3 | 700                       | 0.030                  | 2                      | 4                      | 55705                     | 5015                       | 40.0                        |
| 5          | 3 | 700                       | 0.040                  | 2.5                    | 5                      | 44565                     | 5350                       | 67.0                        |
| 6          | 3 | 700                       | 0.045                  | 3                      | 6                      | 37135                     | 5015                       | 90.5                        |
| 8          | 3 | 700                       | 0.060                  | 4                      | 8                      | 27855                     | 5015                       | 160.5                       |
| 10         | 3 | 700                       | 0.075                  | 5                      | 10                     | 22280                     | 5015                       | 251.0                       |
| 12         | 3 | 700                       | 0.090                  | 6                      | 12                     | 18570                     | 5015                       | 361.0                       |

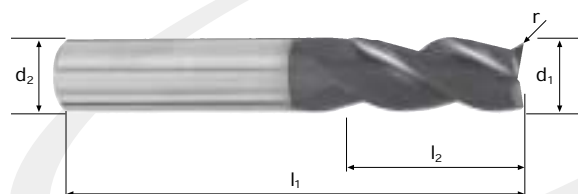
# Фрезы по графиту торические

GX

HM  
MG10

GX

$\lambda$  40°  
 $\gamma$  15°



DIN  
6535  
HA



Предназначены для обработки:

Графит

Пример: Покрытие Артикул-№. Ø-Код  
заказа-№. **B 564Q140**

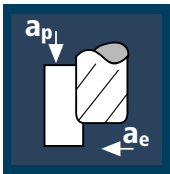
| Ø<br>Code | d1<br>e8 | d2<br>h6 | l1 | l2 | r<br>0/+0.03 | Z | BRILLIANT |
|-----------|----------|----------|----|----|--------------|---|-----------|
|           |          |          |    |    |              |   | B5640     |
| .140      | 2        | 3        | 40 | 6  | 0,15         | 3 | •         |
| .180      | 3        | 3        | 40 | 12 | 0,15         | 3 | •         |
| .220      | 4        | 4        | 50 | 14 | 0,20         | 3 | •         |
| .260      | 5        | 5        | 50 | 16 | 0,30         | 3 | •         |
| .300      | 6        | 6        | 65 | 20 | 0,30         | 3 | •         |
| .391      | 8        | 8        | 65 | 20 | 0,50         | 3 | •         |
| .450      | 10       | 10       | 75 | 25 | 0,50         | 3 | •         |
| .501      | 12       | 12       | 75 | 25 | 0,50         | 3 | •         |

| CNC Diameter D |              |          |        |           |        |
|----------------|--------------|----------|--------|-----------|--------|
| d1             | Tolerance e8 | Diameter |        |           |        |
|                |              | Minimum  |        | Maximum D |        |
| 2              | -0.028       | -0.014   | 1.972  | 1.986     | 1.979  |
| 3              |              |          | 2.972  | 2.986     | 2.979  |
| 4              | -0.038       | -0.020   | 3.962  | 3.980     | 3.971  |
| 5              |              |          | 4.962  | 4.980     | 4.971  |
| 6              |              |          | 5.962  | 5.980     | 5.971  |
| 8              | -0.047       | -0.025   | 7.953  | 7.975     | 7.964  |
| 10             |              |          | 9.953  | 9.975     | 9.964  |
| 12             | -0.059       | -0.032   | 11.941 | 11.968    | 11.955 |

GX

5645



Применение

Графит



Графит



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 2          | 3 | 850                       | 0.025                  | 0.5                    | 1.5                    | 60000                     | 4500                       | 3.5                         |
| 3          | 3 | 850                       | 0.040                  | 0.7                    | 2.2                    | 60000                     | 7200                       | 12.0                        |
| 4          | 3 | 850                       | 0.050                  | 1                      | 3                      | 60000                     | 9000                       | 27.0                        |
| 5          | 3 | 850                       | 0.065                  | 1.2                    | 3.7                    | 54115                     | 10550                      | 49.5                        |
| 6          | 3 | 850                       | 0.075                  | 1.5                    | 4.5                    | 45095                     | 10145                      | 68.5                        |
| 8          | 3 | 850                       | 0.100                  | 2                      | 6                      | 33820                     | 10145                      | 121.5                       |
| 10         | 3 | 850                       | 0.100                  | 2.5                    | 7.5                    | 27055                     | 8115                       | 152.0                       |
| 12         | 3 | 850                       | 0.135                  | 3                      | 9                      | 22550                     | 9135                       | 246.5                       |
| 2          | 3 | 700                       | 0.025                  | 3                      | 0.2                    | 60000                     | 4500                       | 2.5                         |
| 3          | 3 | 700                       | 0.035                  | 4.5                    | 0.3                    | 60000                     | 6300                       | 8.5                         |
| 4          | 3 | 700                       | 0.045                  | 6                      | 0.4                    | 55705                     | 7520                       | 18.0                        |
| 5          | 3 | 700                       | 0.055                  | 7.5                    | 0.5                    | 44565                     | 7355                       | 27.5                        |
| 6          | 3 | 700                       | 0.070                  | 9                      | 0.6                    | 37135                     | 7800                       | 42.0                        |
| 8          | 3 | 700                       | 0.090                  | 12                     | 0.8                    | 27855                     | 7520                       | 72.0                        |
| 10         | 3 | 700                       | 0.115                  | 15                     | 1                      | 22280                     | 7685                       | 115.5                       |
| 12         | 3 | 700                       | 0.135                  | 18                     | 1.2                    | 18570                     | 7520                       | 162.5                       |

5645



Применение

Графит



Графит



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 2          | 3 | 650                       | 0.015                  | 0.5                    | 2                      | 60000                     | 2700                       | 2.5                         |
| 3          | 3 | 650                       | 0.025                  | 0.7                    | 3                      | 60000                     | 4500                       | 10.0                        |
| 4          | 3 | 650                       | 0.035                  | 1                      | 4                      | 51725                     | 5430                       | 21.5                        |
| 5          | 3 | 650                       | 0.040                  | 1.2                    | 5                      | 41380                     | 4965                       | 31.0                        |
| 6          | 3 | 650                       | 0.050                  | 1.5                    | 6                      | 34485                     | 5175                       | 46.5                        |
| 8          | 3 | 650                       | 0.065                  | 2                      | 8                      | 25865                     | 5045                       | 80.5                        |
| 10         | 3 | 650                       | 0.085                  | 2.5                    | 10                     | 20690                     | 5275                       | 132.0                       |
| 12         | 3 | 650                       | 0.100                  | 3                      | 12                     | 17240                     | 5170                       | 186.0                       |
| 2          | 3 | 550                       | 0.015                  | 1                      | 2                      | 60000                     | 2700                       | 5.5                         |
| 3          | 3 | 550                       | 0.025                  | 1.5                    | 3                      | 58360                     | 4375                       | 19.5                        |
| 4          | 3 | 550                       | 0.030                  | 2                      | 4                      | 43770                     | 3940                       | 31.5                        |
| 5          | 3 | 550                       | 0.040                  | 2.5                    | 5                      | 35015                     | 4200                       | 52.5                        |
| 6          | 3 | 550                       | 0.045                  | 3                      | 6                      | 29180                     | 3940                       | 71.0                        |
| 8          | 3 | 550                       | 0.060                  | 4                      | 8                      | 21885                     | 3940                       | 126.0                       |
| 10         | 3 | 550                       | 0.075                  | 5                      | 10                     | 17510                     | 3940                       | 197.0                       |
| 12         | 3 | 550                       | 0.090                  | 6                      | 12                     | 14590                     | 3940                       | 283.5                       |

# Toric end mills for graphite

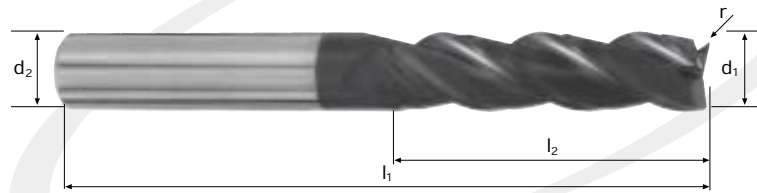
GX

HM  
MG10 GX

$\lambda$  40°  
 $\gamma$  15°



DIN  
6535  
HA



Предназначены для обработки:

Графит

Пример: **BRILLIANT**  
заказа-№: **B 5645140**

| $\varnothing$ | d1 | d2 | l1  | l2 | r       | Z |   |
|---------------|----|----|-----|----|---------|---|---|
| Code          | e8 | h6 |     |    | 0/+0,03 |   |   |
| .140          | 2  | 3  | 60  | 9  | 0,15    | 3 | • |
| .180          | 3  | 3  | 60  | 30 | 0,15    | 3 | • |
| .220          | 4  | 4  | 60  | 30 | 0,20    | 3 | • |
| .260          | 5  | 5  | 70  | 35 | 0,30    | 3 | • |
| .300          | 6  | 6  | 100 | 40 | 0,30    | 3 | • |
| .391          | 8  | 8  | 100 | 40 | 0,50    | 3 | • |
| .450          | 10 | 10 | 100 | 40 | 0,50    | 3 | • |
| .501          | 12 | 12 | 100 | 45 | 0,50    | 3 | • |

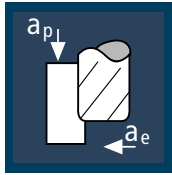
| CNC Diameter D |              |        |          |         |        |
|----------------|--------------|--------|----------|---------|--------|
| d1             | Tolerance e8 |        | Diameter |         |        |
|                |              |        | Minimum  | Maximum | D      |
| 2              | -0.028       | -0.014 | 1.972    | 1.986   | 1.979  |
| 3              |              |        | 2.972    | 2.986   | 2.979  |
| 4              | -0.038       | -0.020 | 3.962    | 3.980   | 3.971  |
| 5              |              |        | 4.962    | 4.980   | 4.971  |
| 6              |              |        | 5.962    | 5.980   | 5.971  |
| 8              | -0.047       | -0.025 | 7.953    | 7.975   | 7.964  |
| 10             |              |        | 9.953    | 9.975   | 9.964  |
| 12             | -0.059       | -0.032 | 11.941   | 11.968  | 11.955 |

GX





**5650**



**Применение**

Графит

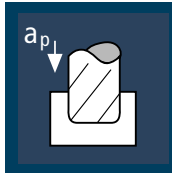


Графит



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 10         | 3 | 650                       | 0.100                  | 1.5                    | 7.5                    | 20690                     | 6205                       | 70.0                        |
| 12         | 3 | 650                       | 0.135                  | 1.8                    | 9.0                    | 17240                     | 6980                       | 113.0                       |
|            |   |                           |                        |                        |                        |                           |                            |                             |
|            |   |                           |                        |                        |                        |                           |                            |                             |
|            |   |                           |                        |                        |                        |                           |                            |                             |
|            |   |                           |                        |                        |                        |                           |                            |                             |
|            |   |                           |                        |                        |                        |                           |                            |                             |
|            |   |                           |                        |                        |                        |                           |                            |                             |
|            |   |                           |                        |                        |                        |                           |                            |                             |
|            |   |                           |                        |                        |                        |                           |                            |                             |
|            |   |                           |                        |                        |                        |                           |                            |                             |
|            |   |                           |                        |                        |                        |                           |                            |                             |
|            |   |                           |                        |                        |                        |                           |                            |                             |
|            |   |                           |                        |                        |                        |                           |                            |                             |
|            |   |                           |                        |                        |                        |                           |                            |                             |
|            |   |                           |                        |                        |                        |                           |                            |                             |
|            |   |                           |                        |                        |                        |                           |                            |                             |
|            |   |                           |                        |                        |                        |                           |                            |                             |
|            |   |                           |                        |                        |                        |                           |                            |                             |
|            |   |                           |                        |                        |                        |                           |                            |                             |
|            |   |                           |                        |                        |                        |                           |                            |                             |
|            |   |                           |                        |                        |                        |                           |                            |                             |
|            |   |                           |                        |                        |                        |                           |                            |                             |

**5650**



**Применение**

Графит



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 10         | 3 | 520                       | 0.085                  | 1.5                    | 10                     | 16510                     | 4210                       | 63.0                        |
| 12         | 3 | 520                       | 0.100                  | 1.8                    | 12                     | 13755                     | 4125                       | 89.0                        |
|            |   |                           |                        |                        |                        |                           |                            |                             |
|            |   |                           |                        |                        |                        |                           |                            |                             |
|            |   |                           |                        |                        |                        |                           |                            |                             |
|            |   |                           |                        |                        |                        |                           |                            |                             |
|            |   |                           |                        |                        |                        |                           |                            |                             |
|            |   |                           |                        |                        |                        |                           |                            |                             |
|            |   |                           |                        |                        |                        |                           |                            |                             |
|            |   |                           |                        |                        |                        |                           |                            |                             |
|            |   |                           |                        |                        |                        |                           |                            |                             |
|            |   |                           |                        |                        |                        |                           |                            |                             |
|            |   |                           |                        |                        |                        |                           |                            |                             |
|            |   |                           |                        |                        |                        |                           |                            |                             |
|            |   |                           |                        |                        |                        |                           |                            |                             |
|            |   |                           |                        |                        |                        |                           |                            |                             |
|            |   |                           |                        |                        |                        |                           |                            |                             |
|            |   |                           |                        |                        |                        |                           |                            |                             |
|            |   |                           |                        |                        |                        |                           |                            |                             |
|            |   |                           |                        |                        |                        |                           |                            |                             |
|            |   |                           |                        |                        |                        |                           |                            |                             |
|            |   |                           |                        |                        |                        |                           |                            |                             |
|            |   |                           |                        |                        |                        |                           |                            |                             |
|            |   |                           |                        |                        |                        |                           |                            |                             |
|            |   |                           |                        |                        |                        |                           |                            |                             |

# Фрезы по графиту торические

GX

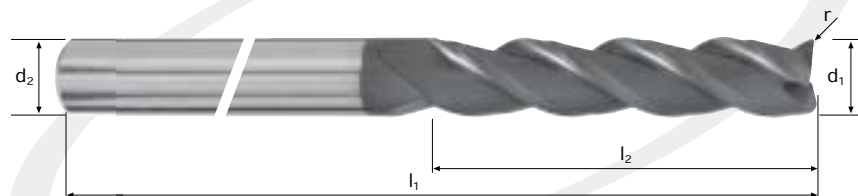
HM  
MG10

GX

$\lambda$  40°  
 $\gamma$  15°



DIN  
6535  
HA



Предназначены для обработки:

Графит

Пример:  
заказа-№:

Покрытие Артикул-№. ø-Код  
**B 5650.450**

BRILLIANT

B5650

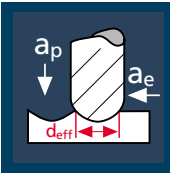
GX

| ø    | d1 | d2 | l1  | l2 | r       | Z |   |
|------|----|----|-----|----|---------|---|---|
| Code | e8 | h6 |     |    | 0/+0,03 |   |   |
| .450 | 10 | 10 | 125 | 55 | 0,5     | 3 | . |
| .501 | 12 | 12 | 125 | 55 | 0,5     | 3 | . |
|      |    |    |     |    |         |   |   |
|      |    |    |     |    |         |   |   |
|      |    |    |     |    |         |   |   |
|      |    |    |     |    |         |   |   |
|      |    |    |     |    |         |   |   |
|      |    |    |     |    |         |   |   |
|      |    |    |     |    |         |   |   |
|      |    |    |     |    |         |   |   |
|      |    |    |     |    |         |   |   |
|      |    |    |     |    |         |   |   |
|      |    |    |     |    |         |   |   |
|      |    |    |     |    |         |   |   |
|      |    |    |     |    |         |   |   |
|      |    |    |     |    |         |   |   |
|      |    |    |     |    |         |   |   |
|      |    |    |     |    |         |   |   |
|      |    |    |     |    |         |   |   |
|      |    |    |     |    |         |   |   |
|      |    |    |     |    |         |   |   |
|      |    |    |     |    |         |   |   |
|      |    |    |     |    |         |   |   |
|      |    |    |     |    |         |   |   |
|      |    |    |     |    |         |   |   |
|      |    |    |     |    |         |   |   |
|      |    |    |     |    |         |   |   |
|      |    |    |     |    |         |   |   |

| d1 | Tolerance e8 | Diameter Minimum | Diameter Maximum (D) |        |
|----|--------------|------------------|----------------------|--------|
|    |              |                  | 9.953                | 9.975  |
| 10 | -0.047       | -0.025           | 9.953                | 9.975  |
| 12 | -0.059       | -0.032           | 11.941               | 11.968 |

5675



Применение

Графит

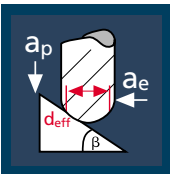


Графит



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | d <sub>eff</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|--------------------------|---------------------------|----------------------------|-----------------------------|
| 3          | 2 | 800                       | 0.060                  | 0.45                   | 0.45                   | 2.14                     | 60000                     | 7200                       | 2                           |
| 4          | 2 | 800                       | 0.080                  | 0.60                   | 0.60                   | 2.86                     | 60000                     | 9600                       | 4                           |
| 5          | 2 | 800                       | 0.100                  | 0.75                   | 0.75                   | 3.57                     | 50930                     | 10185                      | 6                           |
| 6          | 2 | 800                       | 0.090                  | 0.90                   | 0.90                   | 4.28                     | 42445                     | 7640                       | 6                           |
| 8          | 2 | 800                       | 0.120                  | 1.20                   | 1.20                   | 5.71                     | 31830                     | 7640                       | 11                          |
| 10         | 2 | 800                       | 0.150                  | 1.50                   | 1.50                   | 7.14                     | 25465                     | 7640                       | 17                          |
| 12         | 2 | 800                       | 0.180                  | 1.80                   | 1.80                   | 8.57                     | 21220                     | 7640                       | 25                          |
| 16         | 2 | 800                       | 0.240                  | 2.40                   | 2.40                   | 11.43                    | 15915                     | 7640                       | 44                          |
| 3          | 2 | 650                       | 0.060                  | 1.20                   | 1.20                   | 2.94                     | 60000                     | 7200                       | 11                          |
| 4          | 2 | 650                       | 0.060                  | 1.60                   | 1.60                   | 3.92                     | 51725                     | 6205                       | 16                          |
| 5          | 2 | 650                       | 0.075                  | 2.00                   | 2.00                   | 4.90                     | 41380                     | 6205                       | 25                          |
| 6          | 2 | 650                       | 0.090                  | 2.40                   | 2.40                   | 5.88                     | 34485                     | 6205                       | 36                          |
| 8          | 2 | 650                       | 0.120                  | 3.20                   | 3.20                   | 7.84                     | 25865                     | 6210                       | 64                          |
| 10         | 2 | 650                       | 0.150                  | 4.00                   | 4.00                   | 9.80                     | 20690                     | 6205                       | 100                         |
| 12         | 2 | 650                       | 0.180                  | 4.80                   | 4.80                   | 11.76                    | 17240                     | 6205                       | 143                         |
| 16         | 2 | 650                       | 0.240                  | 6.40                   | 6.40                   | 15.68                    | 12930                     | 6205                       | 254                         |

5675



Применение

Графит



Графит



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | d <sub>eff</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | β  |
|------------|---|---------------------------|------------------------|------------------------|------------------------|--------------------------|---------------------------|----------------------------|----|
| 1          | 2 | 800                       | 0.015                  | 0.01                   | 0.02                   | 0.68                     | 60000                     | 1800                       | 30 |
| 2          | 2 | 800                       | 0.030                  | 0.02                   | 0.03                   | 1.35                     | 60000                     | 3600                       | 30 |
| 3          | 2 | 800                       | 0.045                  | 0.04                   | 0.05                   | 2.03                     | 60000                     | 5400                       | 30 |
| 4          | 2 | 800                       | 0.040                  | 0.05                   | 0.04                   | 2.71                     | 60000                     | 4800                       | 30 |
| 5          | 2 | 800                       | 0.050                  | 0.06                   | 0.05                   | 3.38                     | 50930                     | 5095                       | 30 |
| 6          | 2 | 800                       | 0.060                  | 0.07                   | 0.06                   | 4.06                     | 42445                     | 5095                       | 30 |
| 8          | 2 | 800                       | 0.040                  | 0.10                   | 0.04                   | 5.41                     | 31830                     | 2545                       | 30 |
| 10         | 2 | 800                       | 0.050                  | 0.12                   | 0.05                   | 6.77                     | 25465                     | 2545                       | 30 |
| 12         | 2 | 800                       | 0.060                  | 0.14                   | 0.06                   | 8.12                     | 21220                     | 2545                       | 30 |
| 1          | 2 | 650                       | 0.015                  | 0.01                   | 0.02                   | 0.95                     | 60000                     | 1800                       | 60 |
| 2          | 2 | 650                       | 0.030                  | 0.02                   | 0.03                   | 1.91                     | 60000                     | 3600                       | 60 |
| 3          | 2 | 650                       | 0.045                  | 0.04                   | 0.05                   | 2.86                     | 60000                     | 5400                       | 60 |
| 4          | 2 | 650                       | 0.040                  | 0.05                   | 0.04                   | 3.82                     | 51725                     | 4140                       | 60 |
| 5          | 2 | 650                       | 0.050                  | 0.06                   | 0.05                   | 4.77                     | 41380                     | 4140                       | 60 |
| 6          | 2 | 650                       | 0.060                  | 0.07                   | 0.06                   | 5.72                     | 34485                     | 4140                       | 60 |
| 8          | 2 | 650                       | 0.040                  | 0.10                   | 0.04                   | 7.63                     | 25865                     | 2070                       | 60 |
| 10         | 2 | 650                       | 0.050                  | 0.12                   | 0.05                   | 9.54                     | 20690                     | 2070                       | 60 |
| 12         | 2 | 650                       | 0.060                  | 0.14                   | 0.06                   | 11.45                    | 17240                     | 2070                       | 60 |

# Фрезы по графиту сферические

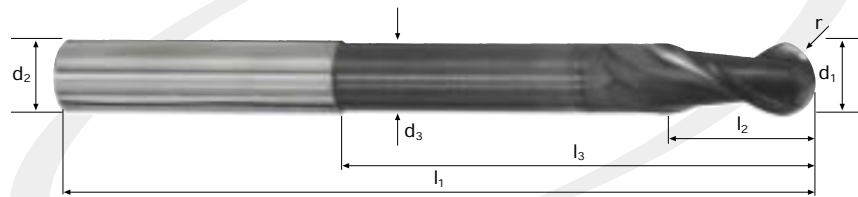
GX

HM  
MG10 GX

$\lambda$  40°  
 $\gamma$  20°



DIN  
6535  
HA



Предназначены для обработки:

Графит

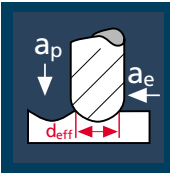
| Пример:<br>заказа-№. | Покрытие | Артикул-№. | Ø-Код |     |    |    |     |    |   | BRILLIANT |
|----------------------|----------|------------|-------|-----|----|----|-----|----|---|-----------|
|                      | B        | 5675       | 180   |     |    |    |     |    |   | B5675     |
| Ø                    | d1       | d2         | d3    | l1  | l2 | l3 | r   | α  | Z |           |
| Code                 |          | h6         |       |     |    |    | e9  |    |   |           |
| .180                 | 3        | 6          | 2,8   | 75  | 6  | 27 | 1,5 | 3° | 2 | •         |
| .220                 | 4        | 6          | 3,7   | 75  | 8  | 30 | 2,0 | 2° | 2 | •         |
| .260                 | 5        | 6          | 4,6   | 80  | 10 | 38 | 2,5 | 1° | 2 | •         |
| .300                 | 6        | 6          | 5,5   | 80  | 12 | 43 | 3,0 | 0° | 2 | •         |
| .391                 | 8        | 8          | 7,4   | 90  | 16 | 53 | 4,0 | 0° | 2 | •         |
| .450                 | 10       | 10         | 9,2   | 100 | 20 | 59 | 5,0 | 0° | 2 | •         |
| .501                 | 12       | 12         | 11,0  | 120 | 24 | 74 | 6,0 | 0° | 2 | •         |
| .610                 | 16       | 16         | 15,0  | 140 | 32 | 84 | 8,0 | 0° | 2 | •         |

| CNC Radius R |     |              |        |         |         |
|--------------|-----|--------------|--------|---------|---------|
| d1           | r   | Tolerance e9 |        | Radius  |         |
|              |     |              |        | Minimum | Maximum |
| 3            | 1.5 | -0.039       | -0.014 | 1.461   | 1.486   |
| 4            | 2.0 |              |        | 1.961   | 1.986   |
| 5            | 2.5 |              |        | 2.461   | 2.486   |
| 6            | 3.0 |              |        | 2.961   | 2.986   |
| 8            | 4.0 | -0.050       | -0.020 | 3.950   | 3.980   |
| 10           | 5.0 |              |        | 4.950   | 4.980   |
| 12           | 6.0 |              |        | 5.950   | 5.980   |
| 16           | 8.0 | -0.061       | -0.025 | 7.939   | 7.975   |

GX

5680



Применение

Графит

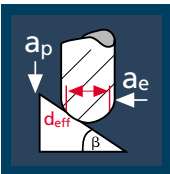


Графит



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | d <sub>eff</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|--------------------------|---------------------------|----------------------------|-----------------------------|
| 1          | 2 | 1250                      | 0.020                  | 0.25                   | 0.25                   | 0.87                     | 60000                     | 2400                       | 1                           |
| 2          | 2 | 1250                      | 0.040                  | 0.50                   | 0.50                   | 1.73                     | 60000                     | 4800                       | 1                           |
| 3          | 2 | 1250                      | 0.060                  | 0.75                   | 0.75                   | 2.60                     | 60000                     | 7200                       | 4                           |
| 4          | 2 | 1250                      | 0.060                  | 1.00                   | 1.00                   | 3.46                     | 60000                     | 7200                       | 7                           |
| 5          | 2 | 1250                      | 0.080                  | 1.25                   | 1.25                   | 4.33                     | 60000                     | 9000                       | 14                          |
| 6          | 2 | 1250                      | 0.090                  | 1.50                   | 1.50                   | 5.20                     | 60000                     | 10800                      | 25                          |
| 8          | 2 | 1250                      | 0.120                  | 2.00                   | 2.00                   | 6.93                     | 49735                     | 11935                      | 48                          |
| 10         | 2 | 1250                      | 0.150                  | 2.50                   | 2.50                   | 8.66                     | 39790                     | 11935                      | 75                          |
| 12         | 2 | 1250                      | 0.180                  | 3.00                   | 3.00                   | 10.39                    | 33160                     | 11940                      | 108                         |
| 1          | 2 | 1050                      | 0.020                  | 0.50                   | 0.50                   | 1.00                     | 60000                     | 2400                       | 1                           |
| 2          | 2 | 1050                      | 0.040                  | 1.00                   | 1.00                   | 2.00                     | 60000                     | 4800                       | 5                           |
| 3          | 2 | 1050                      | 0.060                  | 1.50                   | 1.50                   | 3.00                     | 60000                     | 7200                       | 16                          |
| 4          | 2 | 1050                      | 0.060                  | 2.00                   | 2.00                   | 4.00                     | 60000                     | 7200                       | 29                          |
| 5          | 2 | 1050                      | 0.075                  | 2.50                   | 2.50                   | 5.00                     | 60000                     | 9000                       | 57                          |
| 6          | 2 | 1050                      | 0.090                  | 3.00                   | 3.00                   | 6.00                     | 55705                     | 10025                      | 90                          |
| 8          | 2 | 1050                      | 0.120                  | 4.00                   | 4.00                   | 8.00                     | 41780                     | 10025                      | 161                         |
| 10         | 2 | 1050                      | 0.150                  | 5.00                   | 5.00                   | 10.00                    | 33425                     | 10030                      | 251                         |
| 12         | 2 | 1050                      | 0.180                  | 6.00                   | 6.00                   | 12.00                    | 27855                     | 10030                      | 361                         |

5680



Применение

Графит



Графит



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | d <sub>eff</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | β  |
|------------|---|---------------------------|------------------------|------------------------|------------------------|--------------------------|---------------------------|----------------------------|----|
| 1          | 2 | 1250                      | 0.015                  | 0.01                   | 0.02                   | 0.68                     | 60000                     | 1800                       | 30 |
| 2          | 2 | 1250                      | 0.030                  | 0.02                   | 0.03                   | 1.35                     | 60000                     | 3600                       | 30 |
| 3          | 2 | 1250                      | 0.045                  | 0.04                   | 0.05                   | 2.03                     | 60000                     | 5400                       | 30 |
| 4          | 2 | 1250                      | 0.040                  | 0.05                   | 0.04                   | 2.71                     | 60000                     | 4800                       | 30 |
| 5          | 2 | 1250                      | 0.050                  | 0.06                   | 0.05                   | 3.38                     | 60000                     | 6000                       | 30 |
| 6          | 2 | 1250                      | 0.060                  | 0.07                   | 0.06                   | 4.06                     | 60000                     | 7200                       | 30 |
| 8          | 2 | 1250                      | 0.040                  | 0.10                   | 0.04                   | 5.41                     | 49735                     | 3980                       | 30 |
| 10         | 2 | 1250                      | 0.050                  | 0.12                   | 0.05                   | 6.77                     | 39790                     | 3980                       | 30 |
| 12         | 2 | 1250                      | 0.060                  | 0.14                   | 0.06                   | 8.12                     | 33160                     | 3980                       | 30 |
| 1          | 2 | 1050                      | 0.015                  | 0.01                   | 0.02                   | 0.95                     | 60000                     | 1800                       | 60 |
| 2          | 2 | 1050                      | 0.030                  | 0.02                   | 0.03                   | 1.91                     | 60000                     | 3600                       | 60 |
| 3          | 2 | 1050                      | 0.045                  | 0.04                   | 0.05                   | 2.86                     | 60000                     | 5400                       | 60 |
| 4          | 2 | 1050                      | 0.040                  | 0.05                   | 0.04                   | 3.82                     | 60000                     | 4800                       | 60 |
| 5          | 2 | 1050                      | 0.050                  | 0.06                   | 0.05                   | 4.77                     | 60000                     | 6000                       | 60 |
| 6          | 2 | 1050                      | 0.060                  | 0.07                   | 0.06                   | 5.72                     | 55705                     | 6685                       | 60 |
| 8          | 2 | 1050                      | 0.040                  | 0.10                   | 0.04                   | 7.63                     | 41780                     | 3340                       | 60 |
| 10         | 2 | 1050                      | 0.050                  | 0.12                   | 0.05                   | 9.54                     | 33425                     | 3345                       | 60 |
| 12         | 2 | 1050                      | 0.060                  | 0.14                   | 0.06                   | 11.45                    | 27855                     | 3345                       | 60 |



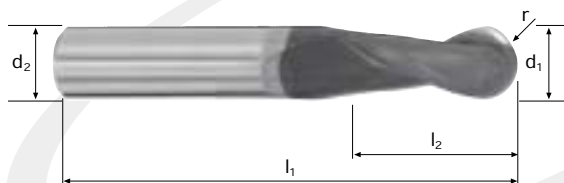
# Фрезы по графиту сферические

GX

HM  
MG10

GX

$\lambda$  30°  
 $\gamma$  10°



Предназначены для обработки:

Графит

Пример: заказа-№. **В** **5680.100**

Покрытие Артикул-№. **В** 5680.100

Ø-Код **100**

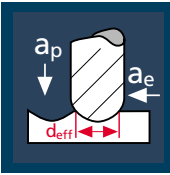
| Ø Code | d1  | d2 h6 | l1 | l2 | r e8 | α  | z | BRILLIANT |
|--------|-----|-------|----|----|------|----|---|-----------|
| .100   | 1   | 3     | 40 | 2  | 0,50 | 9° | 2 | •         |
| .120   | 1,5 | 3     | 40 | 3  | 0,75 | 7° | 2 | •         |
| .140   | 2   | 3     | 40 | 4  | 1,00 | 5° | 2 | •         |
| .160   | 2,5 | 3     | 40 | 5  | 1,25 | 3° | 2 | •         |
| .180   | 3   | 3     | 40 | 8  | 1,50 | 0° | 2 | •         |
| .200   | 3,5 | 4     | 50 | 12 | 1,75 | 2° | 2 | •         |
| .220   | 4   | 4     | 50 | 14 | 2,00 | 0° | 2 | •         |
| .260   | 5   | 5     | 50 | 20 | 2,50 | 0° | 2 | •         |
| .300   | 6   | 6     | 65 | 20 | 3,00 | 0° | 2 | •         |
| .391   | 8   | 8     | 65 | 20 | 4,00 | 0° | 2 | •         |
| .450   | 10  | 10    | 75 | 25 | 5,00 | 0° | 2 | •         |
| .501   | 12  | 12    | 75 | 25 | 6,00 | 0° | 2 | •         |

| CNC Radius R |      |              |         |         |         |         |
|--------------|------|--------------|---------|---------|---------|---------|
| d1           | r    | Tolerance e8 |         | Radius  |         |         |
|              |      | Minimum      | Maximum | Minimum | Maximum | Minimum |
| 1            | 0.50 | -0.025       | -0.010  | 0.472   | 0.486   | 0.479   |
| 1.5          | 0.75 |              |         | 0.722   | 0.736   | 0.729   |
| 2            | 1.00 |              |         | 0.972   | 0.986   | 0.979   |
| 2.5          | 1.25 |              |         | 1.222   | 1.236   | 1.229   |
| 3            | 1.50 |              |         | 1.472   | 1.486   | 1.479   |
| 3.5          | 1.75 |              |         | 1.722   | 1.736   | 1.729   |
| 4            | 2.00 |              |         | 1.972   | 1.986   | 1.979   |
| 5            | 2.50 |              |         | 2.472   | 2.486   | 2.479   |
| 6            | 3.00 |              |         | 2.972   | 2.986   | 2.979   |
| 8            | 4.00 | -0.035       | -0.020  | 3.962   | 3.980   | 3.971   |
| 10           | 5.00 |              |         | 4.962   | 4.980   | 4.971   |
| 12           | 6.00 |              |         | 5.962   | 5.980   | 5.971   |

GX

5685



Применение

Графит

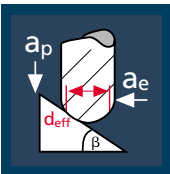


Графит



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | d <sub>eff</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|--------------------------|---------------------------|----------------------------|-----------------------------|
| 1          | 2 | 1000                      | 0.020                  | 0.15                   | 0.15                   | 0.71                     | 60000                     | 2400                       | 1                           |
| 2          | 2 | 1000                      | 0.040                  | 0.30                   | 0.30                   | 1.43                     | 60000                     | 4800                       | 1                           |
| 3          | 2 | 1000                      | 0.060                  | 0.45                   | 0.45                   | 2.14                     | 60000                     | 7200                       | 2                           |
| 4          | 2 | 1000                      | 0.060                  | 0.60                   | 0.60                   | 2.86                     | 60000                     | 7200                       | 3                           |
| 5          | 2 | 1000                      | 0.080                  | 0.75                   | 0.75                   | 3.57                     | 60000                     | 9000                       | 5                           |
| 6          | 2 | 1000                      | 0.090                  | 0.90                   | 0.90                   | 4.28                     | 53055                     | 9550                       | 8                           |
| 8          | 2 | 1000                      | 0.120                  | 1.20                   | 1.20                   | 5.71                     | 39790                     | 9550                       | 14                          |
| 10         | 2 | 1000                      | 0.150                  | 1.50                   | 1.50                   | 7.14                     | 31830                     | 9550                       | 22                          |
| 12         | 2 | 1000                      | 0.180                  | 1.80                   | 1.80                   | 8.57                     | 26525                     | 9550                       | 31                          |
| 1          | 2 | 850                       | 0.020                  | 0.40                   | 0.40                   | 0.98                     | 60000                     | 2400                       | 1                           |
| 2          | 2 | 850                       | 0.040                  | 0.80                   | 0.80                   | 1.96                     | 60000                     | 4800                       | 3                           |
| 3          | 2 | 850                       | 0.060                  | 1.20                   | 1.20                   | 2.94                     | 60000                     | 7200                       | 11                          |
| 4          | 2 | 850                       | 0.060                  | 1.60                   | 1.60                   | 3.92                     | 60000                     | 7200                       | 19                          |
| 5          | 2 | 850                       | 0.075                  | 2.00                   | 2.00                   | 4.90                     | 54115                     | 8115                       | 33                          |
| 6          | 2 | 850                       | 0.090                  | 2.40                   | 2.40                   | 5.88                     | 45095                     | 8115                       | 47                          |
| 8          | 2 | 850                       | 0.120                  | 3.20                   | 3.20                   | 7.84                     | 33820                     | 8115                       | 83                          |
| 10         | 2 | 850                       | 0.150                  | 4.00                   | 4.00                   | 9.80                     | 27055                     | 8115                       | 130                         |
| 12         | 2 | 850                       | 0.180                  | 4.80                   | 4.80                   | 11.76                    | 22550                     | 8120                       | 187                         |

5685



Применение

Графит



Графит



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | d <sub>eff</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | β  |
|------------|---|---------------------------|------------------------|------------------------|------------------------|--------------------------|---------------------------|----------------------------|----|
| 1          | 2 | 1000                      | 0.015                  | 0.01                   | 0.02                   | 0.68                     | 60000                     | 1800                       | 30 |
| 2          | 2 | 1000                      | 0.030                  | 0.02                   | 0.03                   | 1.35                     | 60000                     | 3600                       | 30 |
| 3          | 2 | 1000                      | 0.045                  | 0.04                   | 0.05                   | 2.03                     | 60000                     | 5400                       | 30 |
| 4          | 2 | 1000                      | 0.040                  | 0.05                   | 0.04                   | 2.71                     | 60000                     | 4800                       | 30 |
| 5          | 2 | 1000                      | 0.050                  | 0.06                   | 0.05                   | 3.38                     | 60000                     | 6000                       | 30 |
| 6          | 2 | 1000                      | 0.060                  | 0.07                   | 0.06                   | 4.06                     | 53055                     | 6365                       | 30 |
| 8          | 2 | 1000                      | 0.040                  | 0.10                   | 0.04                   | 5.41                     | 39790                     | 3185                       | 30 |
| 10         | 2 | 1000                      | 0.050                  | 0.12                   | 0.05                   | 6.77                     | 31830                     | 3185                       | 30 |
| 12         | 2 | 1000                      | 0.060                  | 0.14                   | 0.06                   | 8.12                     | 26525                     | 3185                       | 30 |
| 1          | 2 | 850                       | 0.015                  | 0.01                   | 0.02                   | 0.95                     | 60000                     | 1800                       | 60 |
| 2          | 2 | 850                       | 0.030                  | 0.02                   | 0.03                   | 1.91                     | 60000                     | 3600                       | 60 |
| 3          | 2 | 850                       | 0.045                  | 0.04                   | 0.05                   | 2.86                     | 60000                     | 5400                       | 60 |
| 4          | 2 | 850                       | 0.040                  | 0.05                   | 0.04                   | 3.82                     | 60000                     | 4800                       | 60 |
| 5          | 2 | 850                       | 0.050                  | 0.06                   | 0.05                   | 4.77                     | 54115                     | 5410                       | 60 |
| 6          | 2 | 850                       | 0.060                  | 0.07                   | 0.06                   | 5.72                     | 45095                     | 5410                       | 60 |
| 8          | 2 | 850                       | 0.040                  | 0.10                   | 0.04                   | 7.63                     | 33820                     | 2705                       | 60 |
| 10         | 2 | 850                       | 0.050                  | 0.12                   | 0.05                   | 9.54                     | 27055                     | 2705                       | 60 |
| 12         | 2 | 850                       | 0.060                  | 0.14                   | 0.06                   | 11.45                    | 22550                     | 2705                       | 60 |



# Фрезы по графиту сферические

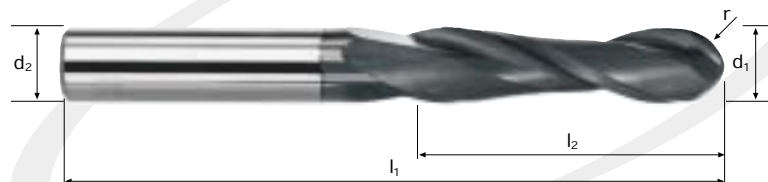
GX

HM  
MG10 GX

$\lambda$  30°  
 $\gamma$  10°



DIN  
6535  
HA



Предназначены для обработки:

**Графит**

| BRILLIANT                                      |     |       |     |    |      |          |   |
|--|-----|-------|-----|----|------|----------|---|
| Пример: <b>В</b> 5685.100 <input type="text"/> |     |       |     |    |      |          |   |
| Покрытие Артикул-№. Ø-Код                      |     |       |     |    |      |          |   |
| Пример: заказа-№.                              |     |       |     |    |      |          |   |
| Ø Code   | d1  | d2 h6 | l1  | l2 | r e8 | $\alpha$ | z |
| .100   | 1   | 3     | 40  | 5  | 0,50 | 7°       | 2 |
| .120   | 1,5 | 3     | 40  | 6  | 0,75 | 5°       | 2 |
| .140   | 2   | 3     | 40  | 9  | 1,00 | 3°       | 2 |
| .180   | 3   | 3     | 60  | 20 | 1,50 | 0°       | 2 |
| .220   | 4   | 4     | 60  | 30 | 2,00 | 0°       | 2 |
| .260   | 5   | 5     | 70  | 35 | 2,50 | 0°       | 2 |
| .300   | 6   | 6     | 100 | 40 | 3,00 | 0°       | 2 |
| .391   | 8   | 8     | 100 | 40 | 4,00 | 0°       | 2 |
| .450   | 10  | 10    | 100 | 40 | 5,00 | 0°       | 2 |
| .501   | 12  | 12    | 100 | 45 | 6,00 | 0°       | 2 |

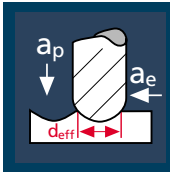
  

| CNC Radius R |      |              |         |         |         |         |
|--------------|------|--------------|---------|---------|---------|---------|
| d1           | r    | Tolerance e8 |         | Radius  |         |         |
|              |      | Minimum      | Maximum | Minimum | Maximum | Minimum |
| 1            | 0.50 | -0.028       | -0.014  | 0.472   | 0.486   | 0.479   |
| 1.5          | 0.75 |              |         | 0.722   | 0.736   | 0.729   |
| 2            | 1.00 |              |         | 0.972   | 0.986   | 0.979   |
| 3            | 1.50 |              |         | 1.472   | 1.486   | 1.479   |
| 4            | 2.00 |              |         | 1.972   | 1.986   | 1.979   |
| 5            | 2.50 |              |         | 2.472   | 2.486   | 2.479   |
| 6            | 3.00 |              |         | 2.972   | 2.986   | 2.979   |
| 8            | 4.00 | -0.038       | -0.020  | 3.962   | 3.980   | 3.971   |
| 10           | 5.00 |              |         | 4.962   | 4.980   | 4.971   |
| 12           | 6.00 |              |         | 5.962   | 5.980   | 5.971   |

GX



5690



Применение

Графит

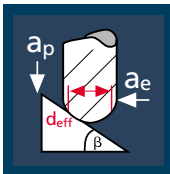


Графит



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | d <sub>eff</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|--------------------------|---------------------------|----------------------------|-----------------------------|
| 6          | 2 | 800                       | 0.090                  | 0.90                   | 0.90                   | 4.28                     | 42445                     | 7640                       | 6                           |
| 8          | 2 | 800                       | 0.120                  | 1.20                   | 1.20                   | 5.71                     | 31830                     | 7640                       | 11                          |
| 10         | 2 | 800                       | 0.150                  | 1.50                   | 1.50                   | 7.14                     | 25465                     | 7640                       | 17                          |
| 12         | 2 | 800                       | 0.180                  | 1.80                   | 1.80                   | 8.57                     | 21220                     | 7640                       | 25                          |
| 6          | 2 | 650                       | 0.090                  | 2.40                   | 2.40                   | 5.88                     | 34485                     | 6205                       | 36                          |
| 8          | 2 | 650                       | 0.120                  | 3.20                   | 3.20                   | 7.84                     | 25865                     | 6210                       | 64                          |
| 10         | 2 | 650                       | 0.150                  | 4.00                   | 4.00                   | 9.80                     | 20690                     | 6205                       | 100                         |
| 12         | 2 | 650                       | 0.180                  | 4.80                   | 4.80                   | 11.76                    | 17240                     | 6205                       | 143                         |

5690



Применение

Графит



Графит



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | d <sub>eff</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | β  |
|------------|---|---------------------------|------------------------|------------------------|------------------------|--------------------------|---------------------------|----------------------------|----|
| 6          | 2 | 800                       | 0.060                  | 0.07                   | 0.06                   | 4.06                     | 42445                     | 5095                       | 30 |
| 8          | 2 | 800                       | 0.040                  | 0.10                   | 0.04                   | 5.41                     | 31830                     | 2545                       | 30 |
| 10         | 2 | 800                       | 0.050                  | 0.12                   | 0.05                   | 6.77                     | 25465                     | 2545                       | 30 |
| 12         | 2 | 800                       | 0.060                  | 0.14                   | 0.06                   | 8.12                     | 21220                     | 2545                       | 30 |
| 6          | 2 | 650                       | 0.060                  | 0.07                   | 0.06                   | 5.72                     | 34485                     | 4140                       | 60 |
| 8          | 2 | 650                       | 0.040                  | 0.10                   | 0.04                   | 7.63                     | 25865                     | 2070                       | 60 |
| 10         | 2 | 650                       | 0.050                  | 0.12                   | 0.05                   | 9.54                     | 20690                     | 2070                       | 60 |
| 12         | 2 | 650                       | 0.060                  | 0.14                   | 0.06                   | 11.45                    | 17240                     | 2070                       | 60 |

Фрезы по графиту сферические

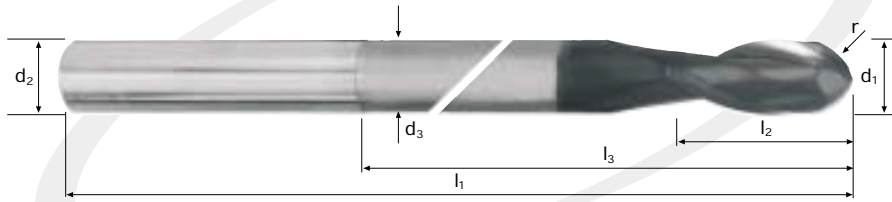
GX

HM  
MG10 GX

λ 30°  
γ 10°



DIN  
6535  
HA



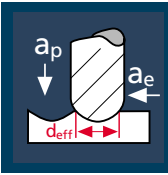
Предназначены для обработки:

Графит

|                      |          |              |                |                           |       |       |         |   | BRILLIANT    |  |  |
|----------------------|----------|--------------|----------------|---------------------------|-------|-------|---------|---|--------------|--|--|
| Пример:<br>заказа-№: | Покрытие |              | Артикул-№.     |                           |       | Ф-Код |         |   |              |  |  |
|                      | <b>B</b> |              | <b>5690300</b> |                           |       |       |         |   | <b>B5690</b> |  |  |
| Ø<br>Code            | d1       | d2<br>h6     | d3             | l1                        | l2    | l3    | r<br>e8 | z |              |  |  |
| .300                 | 6        | 6            | 5,5            | 150                       | 25    | 100   | 3       | 2 | .            |  |  |
| .391                 | 8        | 8            | 7,4            | 150                       | 25    | 100   | 4       | 2 | .            |  |  |
| .450                 | 10       | 10           | 9,2            | 150                       | 25    | 100   | 5       | 2 | .            |  |  |
| .501                 | 12       | 12           | 11,0           | 150                       | 25    | 100   | 6       | 2 | .            |  |  |
| CNC Radius R         |          |              |                |                           |       |       |         |   |              |  |  |
| d1                   | r        | Tolerance e8 |                | Radius<br>Minimum Maximum |       |       |         |   |              |  |  |
| 6                    | 3        | -0.028       | -0.014         | 2.972                     | 2.986 | 2.979 |         |   |              |  |  |
| 8                    | 4        | -0.038       | -0.020         | 3.962                     | 3.980 | 3.971 |         |   |              |  |  |
| 10                   | 5        |              |                | 4.962                     | 4.980 | 4.971 |         |   |              |  |  |
| 12                   | 6        |              |                | 5.962                     | 5.980 | 5.971 |         |   |              |  |  |

GX

5695



Применение

Графит

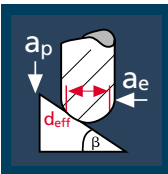


Графит



| d1<br>[mm] | z | Vc<br>[m/min] | fz<br>[mm] | ap<br>[mm] | ae<br>[mm] | d <sub>eff</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | vf<br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------|------------|------------|------------|--------------------------|---------------------------|----------------|-----------------------------|
| 2          | 3 | 800           | 0.040      | 0.30       | 0.30       | 1.43                     | 60000                     | 7200           | 1                           |
| 3          | 3 | 800           | 0.060      | 0.45       | 0.45       | 2.14                     | 60000                     | 10800          | 2                           |
| 4          | 3 | 800           | 0.060      | 0.60       | 0.60       | 2.86                     | 60000                     | 10800          | 4                           |
| 5          | 3 | 800           | 0.080      | 0.75       | 0.75       | 3.57                     | 50930                     | 11460          | 7                           |
| 6          | 3 | 800           | 0.090      | 0.90       | 0.90       | 4.28                     | 42445                     | 11460          | 10                          |
| 8          | 3 | 800           | 0.120      | 1.20       | 1.20       | 5.71                     | 31830                     | 11460          | 17                          |
| 10         | 3 | 800           | 0.150      | 1.50       | 1.50       | 7.14                     | 25465                     | 11460          | 26                          |
| 12         | 3 | 800           | 0.180      | 1.80       | 1.80       | 8.57                     | 21220                     | 11460          | 37                          |
| 2          | 3 | 650           | 0.040      | 0.80       | 0.80       | 1.96                     | 60000                     | 7200           | 5                           |
| 3          | 3 | 650           | 0.060      | 1.20       | 1.20       | 2.94                     | 60000                     | 10800          | 16                          |
| 4          | 3 | 650           | 0.060      | 1.60       | 1.60       | 3.92                     | 51725                     | 9310           | 24                          |
| 5          | 3 | 650           | 0.075      | 2.00       | 2.00       | 4.90                     | 41380                     | 9310           | 37                          |
| 6          | 3 | 650           | 0.090      | 2.40       | 2.40       | 5.88                     | 34485                     | 9310           | 54                          |
| 8          | 3 | 650           | 0.120      | 3.20       | 3.20       | 7.84                     | 25865                     | 9310           | 96                          |
| 10         | 3 | 650           | 0.150      | 4.00       | 4.00       | 9.80                     | 20690                     | 9310           | 149                         |
| 12         | 3 | 650           | 0.180      | 4.80       | 4.80       | 11.76                    | 17240                     | 9310           | 215                         |

5695



Применение

Графит



Графит



| d1<br>[mm] | z | Vc<br>[m/min] | fz<br>[mm] | ap<br>[mm] | ae<br>[mm] | d <sub>eff</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | vf<br>[mm/min] | β  |
|------------|---|---------------|------------|------------|------------|--------------------------|---------------------------|----------------|----|
| 2          | 3 | 800           | 0.030      | 0.02       | 0.03       | 1.35                     | 60000                     | 5400           | 30 |
| 3          | 3 | 800           | 0.045      | 0.04       | 0.05       | 2.03                     | 60000                     | 8100           | 30 |
| 4          | 3 | 800           | 0.040      | 0.05       | 0.04       | 2.71                     | 60000                     | 7200           | 30 |
| 5          | 3 | 800           | 0.050      | 0.06       | 0.05       | 3.38                     | 50930                     | 7640           | 30 |
| 6          | 3 | 800           | 0.060      | 0.07       | 0.06       | 4.06                     | 42445                     | 7640           | 30 |
| 8          | 3 | 800           | 0.040      | 0.10       | 0.04       | 5.41                     | 31830                     | 3820           | 30 |
| 10         | 3 | 800           | 0.050      | 0.12       | 0.05       | 6.77                     | 25465                     | 3820           | 30 |
| 12         | 3 | 800           | 0.060      | 0.14       | 0.06       | 8.12                     | 21220                     | 3820           | 30 |
| 2          | 3 | 650           | 0.030      | 0.02       | 0.03       | 1.91                     | 60000                     | 5400           | 60 |
| 3          | 3 | 650           | 0.045      | 0.04       | 0.05       | 2.86                     | 60000                     | 8100           | 60 |
| 4          | 3 | 650           | 0.040      | 0.05       | 0.04       | 3.82                     | 51725                     | 6205           | 60 |
| 5          | 3 | 650           | 0.050      | 0.06       | 0.05       | 4.77                     | 41380                     | 6205           | 60 |
| 6          | 3 | 650           | 0.060      | 0.07       | 0.06       | 5.72                     | 34485                     | 6205           | 60 |
| 8          | 3 | 650           | 0.040      | 0.10       | 0.04       | 7.63                     | 25865                     | 3105           | 60 |
| 10         | 3 | 650           | 0.050      | 0.12       | 0.05       | 9.54                     | 20690                     | 3105           | 60 |
| 12         | 3 | 650           | 0.060      | 0.14       | 0.06       | 11.45                    | 17240                     | 3105           | 60 |

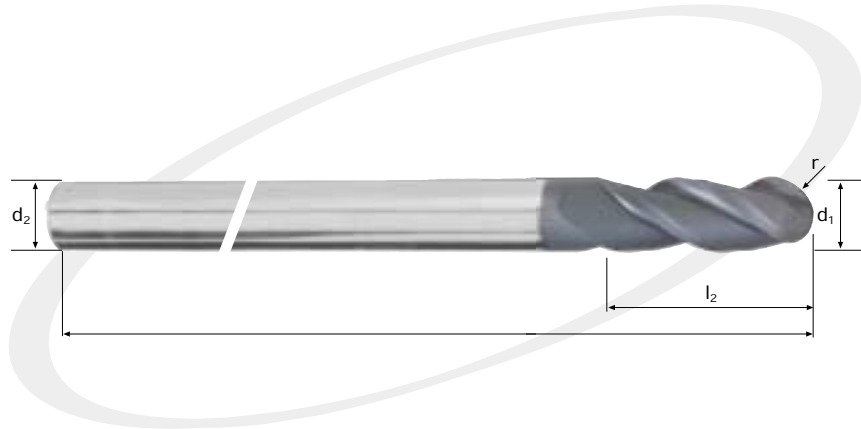


# Фрезы по графиту сферические

GX

HM MG10 GX

$\lambda$  40°  
 $\gamma$  15°

Предназначены для обработки:

**Графит**

Пример: покрытие Артикул-№. ø-Код  
заказа-№. **B 5695.140**

|  |  | BRILLIANT |  |
|--|--|-----------|--|
|  |  | B5695     |  |
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**GX**

| ø<br>Code | d1 | d2<br>h6 | l1  | l2 | r<br>e8 | $\alpha$ | z |
|-----------|----|----------|-----|----|---------|----------|---|
| .140      | 2  | 3        | 100 | 4  | 1,0     | 5°       | 3 |
| .180      | 3  | 3        | 100 | 6  | 1,5     | 0°       | 3 |
| .220      | 4  | 4        | 100 | 9  | 2,0     | 0°       | 3 |
| .260      | 5  | 5        | 100 | 11 | 2,5     | 0°       | 3 |
| .300      | 6  | 6        | 150 | 15 | 3,0     | 0°       | 3 |
| .391      | 8  | 8        | 150 | 20 | 4,0     | 0°       | 3 |
| .450      | 10 | 10       | 175 | 25 | 5,0     | 0°       | 3 |
| .501      | 12 | 12       | 175 | 30 | 6,0     | 0°       | 3 |

| CNC Radius R |     |              |         |         |         |         |
|--------------|-----|--------------|---------|---------|---------|---------|
| d1           | r   | Tolerance e8 |         | Radius  |         |         |
|              |     | Minimum      | Maximum | Minimum | Maximum | Minimum |
| 2            | 1.0 | -0.028       | -0.014  | 0.972   | 0.986   | 0.979   |
| 3            | 1.5 |              |         | 1.472   | 1.486   | 1.479   |
| 4            | 2.0 |              |         | 1.972   | 1.986   | 1.979   |
| 5            | 2.5 |              |         | 2.472   | 2.486   | 2.479   |
| 6            | 3.0 |              |         | 2.972   | 2.986   | 2.979   |
| 8            | 4.0 | -0.038       | -0.020  | 3.962   | 3.980   | 3.971   |
| 10           | 5.0 |              |         | 4.962   | 4.980   | 4.971   |
| 12           | 6.0 |              |         | 5.962   | 5.980   | 5.971   |












# Миниатюрная серия

MX

## Высокопроизводительные концевые фрезы миниатюрная серия, цилиндрические

|                     |  |    |  |   |     |  |     |
|---------------------|--|----|--|---|-----|--|-----|
| N° 5712             |   | MX | $\lambda 25^\circ$<br>$\gamma 6^\circ$ |   | 3D  |   | 169 |
| N° 5714             |   | MX | $\lambda 25^\circ$<br>$\gamma 6^\circ$ |   | 5D  |   | 171 |
| N° 5716             |   | MX | $\lambda 25^\circ$<br>$\gamma 6^\circ$ |   | 8D  |   | 173 |
| N° 5717             |   | MX | $\lambda 25^\circ$<br>$\gamma 6^\circ$ |   | 10D |   | 175 |
| N° 5721 <b>NEW!</b> |   | MX | $\lambda 25^\circ$<br>$\gamma 6^\circ$ |   | 12D |   | 177 |
| N° 5723 <b>NEW!</b> |   | MX | $\lambda 25^\circ$<br>$\gamma 6^\circ$ |   | 15D |   | 179 |
| N° 5718             |  | MX | $\lambda 25^\circ$<br>$\gamma 6^\circ$ |  | 2D  |  | 181 |

## Высокопроизводительные концевые фрезы миниатюрная серия, торические

|         |   |    |  |  |    |   |     |
|---------|---|----|--|--|----|---|-----|
| N° 5752 |  | MX | $\lambda 25^\circ$<br>$\gamma 6^\circ$ |  | 3D |  | 183 |
| N° 5754 |  | MX | $\lambda 25^\circ$<br>$\gamma 6^\circ$ |  | 5D |  | 185 |
| N° 5756 |  | MX | $\lambda 25^\circ$<br>$\gamma 6^\circ$ |  | 8D |  | 187 |






















Micro












# Миниатюрная серия

MX

## Высокопроизводительные концевые фрезы миниатюрная серия, сферические

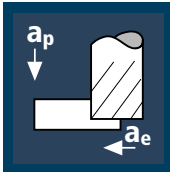
|         |   |    |  |   |     |  |     |
|---------|---|----|--|---|-----|--|-----|
| N° 5782 |  | MX | $\lambda 30^\circ$<br>$\gamma 5^\circ$ |   | 3D  |   | 189 |
| N° 5784 |  | MX | $\lambda 30^\circ$<br>$\gamma 5^\circ$ |   | 5D  |   | 191 |
| N° 5786 |  | MX | $\lambda 30^\circ$<br>$\gamma 5^\circ$ |   | 8D  |   | 193 |
| N° 5787 |  | MX | $\lambda 30^\circ$<br>$\gamma 5^\circ$ |   | 10D |   | 195 |
| N° 5791 |  | MX | $\lambda 30^\circ$<br>$\gamma 5^\circ$ |   | 12D |   | 197 |
| N° 5793 |  | MX | $\lambda 30^\circ$<br>$\gamma 5^\circ$ |   | 15D |   | 199 |
| N° 5788 |  | MX | $\lambda 30^\circ$<br>$\gamma 5^\circ$ |  | 2D  |  | 201 |

## Высокопроизводительные концевые фрезы миниатюрная серия for high strength steels

|         |   |    |  |  |    |   |     |       |
|---------|---|----|--|--|----|---|-----|-------|
| N° 5724 |  | MX | $\lambda 25^\circ$<br>$\gamma -10^\circ$ |  | 5D |  | 203 | Micro |
| N° 5764 |  | MX | $\lambda 25^\circ$<br>$\gamma -10^\circ$ |  | 5D |  | 205 |       |
| N° 5794 |  | MX | $\lambda 30^\circ$<br>$\gamma -10^\circ$ |  | 5D |  | 207 |       |



5712



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC

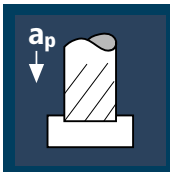


Сталь  
58 - 62 HRC



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 0.3        | 2 | 150                       | 0.005                  | 0.05                   | 0.05                   | 60000      | 600                        | 1.5                         |
| 0.5        | 2 | 150                       | 0.010                  | 0.08                   | 0.08                   | 60000      | 1200                       | 7.5                         |
| 0.8        | 2 | 150                       | 0.015                  | 0.13                   | 0.13                   | 59685      | 1790                       | 29.5                        |
| 1.0        | 2 | 150                       | 0.020                  | 0.16                   | 0.16                   | 47750      | 1910                       | 49.0                        |
| 1.2        | 2 | 150                       | 0.025                  | 0.19                   | 0.19                   | 39790      | 1990                       | 73.5                        |
| 1.5        | 2 | 150                       | 0.030                  | 0.24                   | 0.24                   | 31830      | 1910                       | 110.0                       |
| 2.0        | 2 | 150                       | 0.040                  | 0.32                   | 0.32                   | 23875      | 1910                       | 195.5                       |
| 2.5        | 2 | 150                       | 0.050                  | 0.40                   | 0.40                   | 19100      | 1910                       | 305.5                       |
| 3.0        | 2 | 150                       | 0.060                  | 0.48                   | 0.48                   | 15915      | 1910                       | 440.0                       |
| 0.3        | 2 | 120                       | 0.005                  | 0.05                   | 0.05                   | 60000      | 600                        | 1.5                         |
| 0.5        | 2 | 120                       | 0.010                  | 0.08                   | 0.08                   | 60000      | 1200                       | 7.5                         |
| 0.8        | 2 | 120                       | 0.015                  | 0.13                   | 0.13                   | 47750      | 1435                       | 23.5                        |
| 1.0        | 2 | 120                       | 0.020                  | 0.16                   | 0.16                   | 38200      | 1530                       | 39.0                        |
| 1.2        | 2 | 120                       | 0.025                  | 0.19                   | 0.19                   | 31830      | 1590                       | 58.5                        |
| 1.5        | 2 | 120                       | 0.030                  | 0.24                   | 0.24                   | 25465      | 1530                       | 88.0                        |
| 2.0        | 2 | 120                       | 0.040                  | 0.32                   | 0.32                   | 19100      | 1530                       | 156.5                       |
| 2.5        | 2 | 120                       | 0.050                  | 0.40                   | 0.40                   | 15280      | 1530                       | 245.0                       |
| 3.0        | 2 | 120                       | 0.060                  | 0.48                   | 0.48                   | 12735      | 1530                       | 352.5                       |
| 0.3        | 2 | 100                       | 0.005                  | 0.04                   | 0.04                   | 60000      | 600                        | 1.0                         |
| 0.5        | 2 | 100                       | 0.010                  | 0.07                   | 0.07                   | 60000      | 1200                       | 5.0                         |
| 0.8        | 2 | 100                       | 0.015                  | 0.10                   | 0.10                   | 39790      | 1195                       | 13.0                        |
| 1.0        | 2 | 100                       | 0.020                  | 0.13                   | 0.13                   | 31830      | 1275                       | 21.5                        |
| 1.2        | 2 | 100                       | 0.025                  | 0.16                   | 0.16                   | 26525      | 1325                       | 32.0                        |
| 1.5        | 2 | 100                       | 0.030                  | 0.20                   | 0.20                   | 21220      | 1275                       | 48.5                        |
| 2.0        | 2 | 100                       | 0.040                  | 0.26                   | 0.26                   | 15915      | 1275                       | 86.0                        |
| 2.5        | 2 | 100                       | 0.050                  | 0.33                   | 0.33                   | 12735      | 1275                       | 134.5                       |
| 3.0        | 2 | 100                       | 0.060                  | 0.39                   | 0.39                   | 10610      | 1275                       | 194.0                       |
| 0.3        | 2 | 30                        | 0.005                  | 0.04                   | 0.04                   | 31830      | 320                        | 0.5                         |
| 0.5        | 2 | 30                        | 0.010                  | 0.07                   | 0.07                   | 19100      | 380                        | 1.5                         |
| 0.8        | 2 | 30                        | 0.015                  | 0.10                   | 0.10                   | 11935      | 360                        | 4.0                         |
| 1.0        | 2 | 30                        | 0.020                  | 0.13                   | 0.13                   | 9550       | 380                        | 6.5                         |
| 1.2        | 2 | 30                        | 0.025                  | 0.16                   | 0.16                   | 7960       | 400                        | 9.5                         |
| 1.5        | 2 | 30                        | 0.030                  | 0.20                   | 0.20                   | 6365       | 380                        | 14.5                        |
| 2.0        | 2 | 30                        | 0.040                  | 0.26                   | 0.26                   | 4775       | 380                        | 25.5                        |
| 2.5        | 2 | 30                        | 0.050                  | 0.33                   | 0.33                   | 3820       | 380                        | 40.0                        |
| 3.0        | 2 | 30                        | 0.060                  | 0.39                   | 0.39                   | 3185       | 380                        | 58.0                        |

5712



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC



Сталь  
58 - 62 HRC



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 0.3        | 2 | 120                       | 0.005                  | 0.02                   | 0.30                   | 60000      | 600                        | 3.0                         |
| 0.5        | 2 | 120                       | 0.005                  | 0.03                   | 0.50                   | 60000      | 600                        | 9.0                         |
| 0.8        | 2 | 120                       | 0.010                  | 0.05                   | 0.80                   | 47750      | 955                        | 36.5                        |
| 1.0        | 2 | 120                       | 0.015                  | 0.06                   | 1.00                   | 38200      | 1145                       | 68.5                        |
| 1.2        | 2 | 120                       | 0.015                  | 0.07                   | 1.20                   | 31830      | 955                        | 82.5                        |
| 1.5        | 2 | 120                       | 0.020                  | 0.09                   | 1.50                   | 25465      | 1020                       | 137.5                       |
| 2.0        | 2 | 120                       | 0.025                  | 0.12                   | 2.00                   | 19100      | 955                        | 229.0                       |
| 2.5        | 2 | 120                       | 0.030                  | 0.15                   | 2.50                   | 15280      | 915                        | 343.0                       |
| 3.0        | 2 | 120                       | 0.040                  | 0.18                   | 3.00                   | 12735      | 1020                       | 551.0                       |
| 0.3        | 2 | 100                       | 0.005                  | 0.02                   | 0.30                   | 60000      | 600                        | 3.0                         |
| 0.5        | 2 | 100                       | 0.005                  | 0.03                   | 0.50                   | 60000      | 600                        | 9.0                         |
| 0.8        | 2 | 100                       | 0.010                  | 0.05                   | 0.80                   | 39790      | 795                        | 30.5                        |
| 1.0        | 2 | 100                       | 0.015                  | 0.06                   | 1.00                   | 31830      | 955                        | 57.5                        |
| 1.2        | 2 | 100                       | 0.015                  | 0.07                   | 1.20                   | 26525      | 795                        | 68.5                        |
| 1.5        | 2 | 100                       | 0.020                  | 0.09                   | 1.50                   | 21220      | 850                        | 115.0                       |
| 2.0        | 2 | 100                       | 0.025                  | 0.12                   | 2.00                   | 15915      | 795                        | 191.0                       |
| 2.5        | 2 | 100                       | 0.030                  | 0.15                   | 2.50                   | 12735      | 765                        | 287.0                       |
| 3.0        | 2 | 100                       | 0.040                  | 0.18                   | 3.00                   | 10610      | 850                        | 459.0                       |
| 0.3        | 2 | 80                        | 0.005                  | 0.02                   | 0.30                   | 60000      | 600                        | 3.0                         |
| 0.5        | 2 | 80                        | 0.005                  | 0.03                   | 0.50                   | 50930      | 510                        | 7.5                         |
| 0.8        | 2 | 80                        | 0.010                  | 0.05                   | 0.80                   | 31830      | 635                        | 24.5                        |
| 1.0        | 2 | 80                        | 0.015                  | 0.06                   | 1.00                   | 25465      | 765                        | 46.0                        |
| 1.2        | 2 | 80                        | 0.015                  | 0.07                   | 1.20                   | 21220      | 635                        | 55.0                        |
| 1.5        | 2 | 80                        | 0.020                  | 0.09                   | 1.50                   | 16975      | 680                        | 92.0                        |
| 2.0        | 2 | 80                        | 0.025                  | 0.12                   | 2.00                   | 12735      | 635                        | 152.5                       |
| 2.5        | 2 | 80                        | 0.030                  | 0.15                   | 2.50                   | 10185      | 610                        | 229.0                       |
| 3.0        | 2 | 80                        | 0.040                  | 0.18                   | 3.00                   | 8490       | 680                        | 367.0                       |
| 0.3        | 2 | 20                        | 0.005                  | 0.02                   | 0.30                   | 21220      | 210                        | 1.0                         |
| 0.5        | 2 | 20                        | 0.005                  | 0.03                   | 0.50                   | 12735      | 125                        | 1.5                         |
| 0.8        | 2 | 20                        | 0.010                  | 0.04                   | 0.80                   | 7960       | 160                        | 5.0                         |
| 1.0        | 2 | 20                        | 0.015                  | 0.05                   | 1.00                   | 6365       | 190                        | 9.5                         |
| 1.2        | 2 | 20                        | 0.015                  | 0.06                   | 1.20                   | 5305       | 160                        | 11.5                        |
| 1.5        | 2 | 20                        | 0.020                  | 0.08                   | 1.50                   | 4245       | 170                        | 19.0                        |
| 2.0        | 2 | 20                        | 0.025                  | 0.10                   | 2.00                   | 3185       | 160                        | 32.0                        |
| 2.5        | 2 | 20                        | 0.030                  | 0.13                   | 2.50                   | 2545       | 155                        | 48.5                        |
| 3.0        | 2 | 20                        | 0.040                  | 0.15                   | 3.00                   | 2120       | 170                        | 76.5                        |

# Фрезы цилиндрические, 3 х d

# Microcut-C3

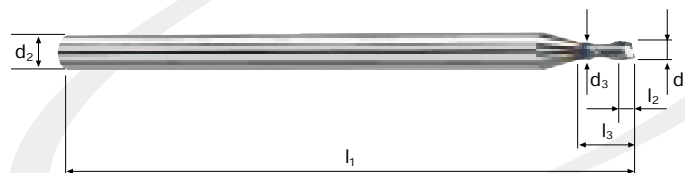
HM  
Micro MX

$\lambda$  25°  
 $\gamma$  6°

3D

DIN  
6535  
HA

45°



Предназначены для обработки:

- HRC 25 - 62
- Графит
- Нерж. сталь
- Медь
- Алюминий

Пример: **М** 5712.020



| MICRO | DIA         |
|-------|-------------|
| 5712  | M5712 I5712 |

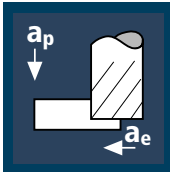
| Ø Code | d1 ±0,01 | d2 h6 | d3   | l1 | l2  | l3  | α   | z |   |   |   |
|--------|----------|-------|------|----|-----|-----|-----|---|---|---|---|
| .020   | 0,2      | 3     | 0,18 | 40 | 0,2 | 0,6 | 10° | 2 | • | • | • |
| .030   | 0,3      | 3     | 0,25 | 40 | 0,3 | 0,9 | 9°  | 2 | • | • | • |
| .040   | 0,4      | 3     | 0,35 | 40 | 0,5 | 1,2 | 9°  | 2 | • | • | • |
| .050   | 0,5      | 3     | 0,45 | 40 | 0,6 | 1,5 | 12° | 2 | • | • | • |
| .060   | 0,6      | 3     | 0,55 | 40 | 0,7 | 1,8 | 11° | 2 | • | • | • |
| .080   | 0,8      | 3     | 0,75 | 40 | 0,9 | 2,4 | 10° | 2 | • | • | • |
| .100   | 1,0      | 3     | 0,95 | 50 | 1,2 | 3,0 | 9°  | 2 | • | • | • |
| .108   | 1,2      | 3     | 1,15 | 50 | 1,4 | 3,6 | 8°  | 2 | • | • | • |
| .120   | 1,5      | 3     | 1,45 | 50 | 1,8 | 4,5 | 6°  | 2 | • | • | • |
| .140   | 2,0      | 3     | 1,95 | 50 | 2,4 | 6,0 | 4°  | 2 | • | • | • |
| .160   | 2,5      | 3     | 2,45 | 50 | 3,0 | 7,5 | 2°  | 2 | • | • | • |
| .180   | 3,0      | 3     | 2,95 | 50 | 3,6 | 9,0 | 0°  | 2 | • | • | • |

Micro

This tool is furnished with a chamfered edge for an improved wear resistance

d1 0,2 - 0,9 mm Chamfered edge 0,00  
 d1 1,0 - 1,5 mm Chamfered edge 0,04 O/+0,03  
 d1 1,8 - 3,0 mm Chamfered edge 0,05 O/+0,05

5714



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC

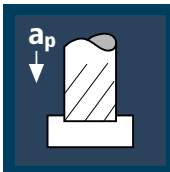


Сталь  
58 - 62 HRC



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 0.5        | 2 | 150                       | 0.010                  | 0.08                   | 0.08                   | 60000      | 1200                       | 7.0                         |
| 0.6        | 2 | 150                       | 0.010                  | 0.09                   | 0.09                   | 60000      | 1200                       | 9.5                         |
| 0.8        | 2 | 150                       | 0.015                  | 0.12                   | 0.12                   | 59685      | 1790                       | 26.0                        |
| 1.0        | 2 | 150                       | 0.020                  | 0.15                   | 0.15                   | 47750      | 1910                       | 43.0                        |
| 1.2        | 2 | 150                       | 0.025                  | 0.18                   | 0.18                   | 39790      | 1990                       | 64.5                        |
| 1.5        | 2 | 150                       | 0.030                  | 0.23                   | 0.23                   | 31830      | 1910                       | 96.5                        |
| 2.0        | 2 | 150                       | 0.040                  | 0.30                   | 0.30                   | 23875      | 1910                       | 172.0                       |
| 2.5        | 2 | 150                       | 0.050                  | 0.38                   | 0.38                   | 19100      | 1910                       | 268.5                       |
| 3.0        | 2 | 150                       | 0.060                  | 0.45                   | 0.45                   | 15915      | 1910                       | 387.0                       |
| 0.5        | 2 | 120                       | 0.010                  | 0.08                   | 0.08                   | 60000      | 1200                       | 7.0                         |
| 0.6        | 2 | 120                       | 0.010                  | 0.09                   | 0.09                   | 60000      | 1200                       | 9.5                         |
| 0.8        | 2 | 120                       | 0.015                  | 0.12                   | 0.12                   | 47750      | 1435                       | 20.5                        |
| 1.0        | 2 | 120                       | 0.020                  | 0.15                   | 0.15                   | 38200      | 1530                       | 34.5                        |
| 1.2        | 2 | 120                       | 0.025                  | 0.18                   | 0.18                   | 31830      | 1590                       | 51.5                        |
| 1.5        | 2 | 120                       | 0.030                  | 0.23                   | 0.23                   | 25465      | 1530                       | 77.5                        |
| 2.0        | 2 | 120                       | 0.040                  | 0.30                   | 0.30                   | 19100      | 1530                       | 137.5                       |
| 2.5        | 2 | 120                       | 0.050                  | 0.38                   | 0.38                   | 15280      | 1530                       | 215.0                       |
| 3.0        | 2 | 120                       | 0.060                  | 0.45                   | 0.45                   | 12735      | 1530                       | 310.0                       |
| 0.5        | 2 | 100                       | 0.010                  | 0.08                   | 0.08                   | 60000      | 1200                       | 7.0                         |
| 0.6        | 2 | 100                       | 0.010                  | 0.09                   | 0.09                   | 53055      | 1060                       | 8.5                         |
| 0.8        | 2 | 100                       | 0.015                  | 0.12                   | 0.12                   | 39790      | 1195                       | 17.0                        |
| 1.0        | 2 | 100                       | 0.020                  | 0.15                   | 0.15                   | 31830      | 1275                       | 28.5                        |
| 1.2        | 2 | 100                       | 0.025                  | 0.18                   | 0.18                   | 26525      | 1325                       | 43.0                        |
| 1.5        | 2 | 100                       | 0.030                  | 0.23                   | 0.23                   | 21220      | 1275                       | 64.5                        |
| 2.0        | 2 | 100                       | 0.040                  | 0.30                   | 0.30                   | 15915      | 1275                       | 115.0                       |
| 2.5        | 2 | 100                       | 0.050                  | 0.38                   | 0.38                   | 12735      | 1275                       | 179.5                       |
| 3.0        | 2 | 100                       | 0.060                  | 0.45                   | 0.45                   | 10610      | 1275                       | 258.0                       |
| 0.5        | 2 | 30                        | 0.010                  | 0.05                   | 0.08                   | 19100      | 380                        | 1.5                         |
| 0.6        | 2 | 30                        | 0.010                  | 0.05                   | 0.09                   | 15915      | 320                        | 1.5                         |
| 0.8        | 2 | 30                        | 0.015                  | 0.07                   | 0.12                   | 11935      | 360                        | 3.0                         |
| 1.0        | 2 | 30                        | 0.020                  | 0.09                   | 0.15                   | 9550       | 380                        | 5.0                         |
| 1.2        | 2 | 30                        | 0.025                  | 0.11                   | 0.18                   | 7960       | 400                        | 8.0                         |
| 1.5        | 2 | 30                        | 0.030                  | 0.14                   | 0.23                   | 6365       | 380                        | 11.5                        |
| 2.0        | 2 | 30                        | 0.040                  | 0.18                   | 0.30                   | 4775       | 380                        | 20.5                        |
| 2.5        | 2 | 30                        | 0.050                  | 0.23                   | 0.38                   | 3820       | 380                        | 32.0                        |
| 3.0        | 2 | 30                        | 0.060                  | 0.27                   | 0.45                   | 3185       | 380                        | 46.0                        |

5714



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC



Сталь  
58 - 62 HRC



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 0.5        | 2 | 120                       | 0.005                  | 0.03                   | 0.50                   | 60000      | 600                        | 7.5                         |
| 0.6        | 2 | 120                       | 0.010                  | 0.03                   | 0.60                   | 60000      | 1200                       | 21.5                        |
| 0.8        | 2 | 120                       | 0.010                  | 0.04                   | 0.80                   | 47750      | 955                        | 30.5                        |
| 1.0        | 2 | 120                       | 0.015                  | 0.05                   | 1.00                   | 38200      | 1145                       | 57.5                        |
| 1.2        | 2 | 120                       | 0.015                  | 0.06                   | 1.20                   | 31830      | 955                        | 69.0                        |
| 1.5        | 2 | 120                       | 0.020                  | 0.08                   | 1.50                   | 25465      | 1020                       | 114.5                       |
| 2.0        | 2 | 120                       | 0.025                  | 0.10                   | 2.00                   | 19100      | 955                        | 191.0                       |
| 2.5        | 2 | 120                       | 0.030                  | 0.13                   | 2.50                   | 15280      | 915                        | 286.0                       |
| 3.0        | 2 | 120                       | 0.040                  | 0.15                   | 3.00                   | 12735      | 1020                       | 459.0                       |
| 0.5        | 2 | 100                       | 0.005                  | 0.03                   | 0.50                   | 60000      | 600                        | 7.5                         |
| 0.6        | 2 | 100                       | 0.010                  | 0.03                   | 0.60                   | 53055      | 1060                       | 19.0                        |
| 0.8        | 2 | 100                       | 0.010                  | 0.04                   | 0.80                   | 39790      | 795                        | 25.5                        |
| 1.0        | 2 | 100                       | 0.015                  | 0.05                   | 1.00                   | 31830      | 955                        | 48.0                        |
| 1.2        | 2 | 100                       | 0.015                  | 0.06                   | 1.20                   | 26525      | 795                        | 57.0                        |
| 1.5        | 2 | 100                       | 0.020                  | 0.08                   | 1.50                   | 21220      | 850                        | 95.5                        |
| 2.0        | 2 | 100                       | 0.025                  | 0.10                   | 2.00                   | 15915      | 795                        | 159.0                       |
| 2.5        | 2 | 100                       | 0.030                  | 0.13                   | 2.50                   | 12735      | 765                        | 239.0                       |
| 3.0        | 2 | 100                       | 0.040                  | 0.15                   | 3.00                   | 10610      | 850                        | 382.5                       |
| 0.5        | 2 | 80                        | 0.005                  | 0.03                   | 0.50                   | 50930      | 510                        | 6.5                         |
| 0.6        | 2 | 80                        | 0.010                  | 0.03                   | 0.60                   | 42445      | 850                        | 15.5                        |
| 0.8        | 2 | 80                        | 0.010                  | 0.04                   | 0.80                   | 31830      | 635                        | 20.5                        |
| 1.0        | 2 | 80                        | 0.015                  | 0.05                   | 1.00                   | 25465      | 765                        | 38.5                        |
| 1.2        | 2 | 80                        | 0.015                  | 0.06                   | 1.20                   | 21220      | 635                        | 45.5                        |
| 1.5        | 2 | 80                        | 0.020                  | 0.08                   | 1.50                   | 16975      | 680                        | 76.5                        |
| 2.0        | 2 | 80                        | 0.025                  | 0.10                   | 2.00                   | 12735      | 635                        | 127.0                       |
| 2.5        | 2 | 80                        | 0.030                  | 0.13                   | 2.50                   | 10185      | 610                        | 190.5                       |
| 3.0        | 2 | 80                        | 0.040                  | 0.15                   | 3.00                   | 8490       | 680                        | 306.0                       |
| 0.5        | 2 | 20                        | 0.005                  | 0.02                   | 0.50                   | 12735      | 125                        | 1.0                         |
| 0.6        | 2 | 20                        | 0.010                  | 0.02                   | 0.60                   | 10610      | 210                        | 2.5                         |
| 0.8        | 2 | 20                        | 0.010                  | 0.02                   | 0.80                   | 7960       | 160                        | 3.0                         |
| 1.0        | 2 | 20                        | 0.015                  | 0.03                   | 1.00                   | 6365       | 190                        | 5.5                         |
| 1.2        | 2 | 20                        | 0.015                  | 0.04                   | 1.20                   | 5305       | 160                        | 7.0                         |
| 1.5        | 2 | 20                        | 0.020                  | 0.05                   | 1.50                   | 4245       | 170                        | 11.5                        |
| 2.0        | 2 | 20                        | 0.025                  | 0.06                   | 2.00                   | 3185       | 160                        | 19.0                        |
| 2.5        | 2 | 20                        | 0.030                  | 0.08                   | 2.50                   | 2545       | 155                        | 29.0                        |
| 3.0        | 2 | 20                        | 0.040                  | 0.09                   | 3.00                   | 2120       | 170                        | 46.0                        |

# Фрезы цилиндрические, 5 x d

# Microcut-C5

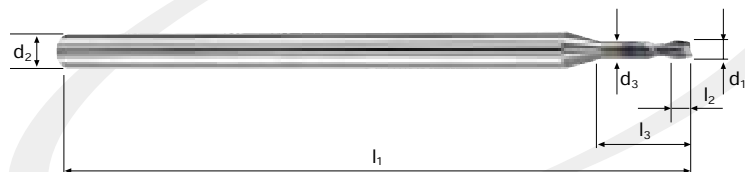
HM  
Micro MX

$\lambda$  25°  
 $\gamma$  6°

5D

DIN  
6535  
HA

45°



Предназначены для обработки:

- HRC  
25 - 62
- Графит
- Нерж.  
сталь
- Медь
- Алюминий

Пример:  
заказа-№: M 5714.050

|  | MICRO | DIA         |
|--|-------|-------------|
|  | 5714  | M5714 I5714 |

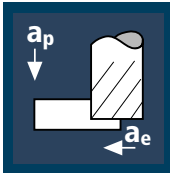
| Ø<br>Code | d1<br>±0,01 | d2<br>h6 | d3   | l1 | l2  | l3   | α     | z |   |   |   |
|-----------|-------------|----------|------|----|-----|------|-------|---|---|---|---|
| .050      | 0,5         | 3        | 0,45 | 40 | 0,6 | 2,5  | 10,0° | 2 | • | • | • |
| .060      | 0,6         | 3        | 0,55 | 40 | 0,7 | 3,0  | 10,0° | 2 | • | • | • |
| NEW! .070 | 0,7         | 3        | 0,65 | 40 | 0,8 | 3,5  | 9,0°  | 2 | • | • | • |
| .080      | 0,8         | 3        | 0,75 | 40 | 1,0 | 4,0  | 8,0°  | 2 | • | • | • |
| NEW! .090 | 0,9         | 3        | 0,85 | 40 | 1,1 | 4,5  | 8,0°  | 2 | • | • | • |
| .100      | 1,0         | 3        | 0,95 | 50 | 1,2 | 5,0  | 7,0°  | 2 | • | • | • |
| .108      | 1,2         | 3        | 1,15 | 50 | 1,4 | 6,0  | 6,0°  | 2 | • | • | • |
| .120      | 1,5         | 3        | 1,45 | 50 | 1,8 | 7,5  | 5,0°  | 2 | • | • | • |
| NEW! .132 | 1,8         | 3        | 1,75 | 50 | 2,2 | 9,0  | 4,0°  | 2 | • | • | • |
| .140      | 2,0         | 3        | 1,95 | 50 | 2,4 | 10,0 | 3,0°  | 2 | • | • | • |
| NEW! .152 | 2,3         | 3        | 2,25 | 50 | 2,8 | 11,5 | 2,0°  | 2 | • | • | • |
| .160      | 2,5         | 3        | 2,45 | 50 | 3,0 | 12,5 | 1,5°  | 2 | • | • | • |
| NEW! .172 | 2,8         | 3        | 2,75 | 50 | 3,4 | 14,0 | 1,0°  | 2 | • | • | • |
| .180      | 3,0         | 3        | 2,95 | 50 | 3,6 | 15,0 | 0°    | 2 | • | • | • |

Micro

This tool is furnished with a chamfered edge for an improved wear resistance

|                 |                     |         |
|-----------------|---------------------|---------|
| d1 0,5 - 0,9 mm | Chamfered edge 0,00 |         |
| d1 1,0 - 1,5 mm | Chamfered edge 0,04 | 0/+0,03 |
| d1 1,8 - 3,0 mm | Chamfered edge 0,05 | 0/+0,05 |

5716



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC

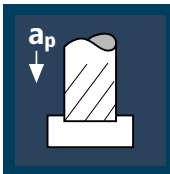


Сталь  
58 - 62 HRC



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 0.5        | 2 | 150                       | 0.010                  | 0.07                   | 0.07                   | 60000      | 1200                       | 5.0                         |
| 0.6        | 2 | 150                       | 0.010                  | 0.08                   | 0.08                   | 60000      | 1200                       | 7.5                         |
| 0.8        | 2 | 150                       | 0.015                  | 0.10                   | 0.10                   | 59685      | 1790                       | 19.5                        |
| 1.0        | 2 | 150                       | 0.020                  | 0.13                   | 0.13                   | 47750      | 1910                       | 32.5                        |
| 1.2        | 2 | 150                       | 0.025                  | 0.16                   | 0.16                   | 39790      | 1990                       | 48.5                        |
| 1.5        | 2 | 150                       | 0.030                  | 0.20                   | 0.20                   | 31830      | 1910                       | 72.5                        |
| 2.0        | 2 | 150                       | 0.040                  | 0.26                   | 0.26                   | 23875      | 1910                       | 129.0                       |
| 2.5        | 2 | 150                       | 0.050                  | 0.33                   | 0.33                   | 19100      | 1910                       | 201.5                       |
| 3.0        | 2 | 150                       | 0.060                  | 0.39                   | 0.39                   | 15915      | 1910                       | 290.5                       |
| 0.5        | 2 | 120                       | 0.010                  | 0.07                   | 0.07                   | 60000      | 1200                       | 5.0                         |
| 0.6        | 2 | 120                       | 0.010                  | 0.08                   | 0.08                   | 60000      | 1200                       | 7.5                         |
| 0.8        | 2 | 120                       | 0.015                  | 0.10                   | 0.10                   | 47750      | 1435                       | 15.5                        |
| 1.0        | 2 | 120                       | 0.020                  | 0.13                   | 0.13                   | 38200      | 1530                       | 26.0                        |
| 1.2        | 2 | 120                       | 0.025                  | 0.16                   | 0.16                   | 31830      | 1590                       | 38.5                        |
| 1.5        | 2 | 120                       | 0.030                  | 0.20                   | 0.20                   | 25465      | 1530                       | 58.0                        |
| 2.0        | 2 | 120                       | 0.040                  | 0.26                   | 0.26                   | 19100      | 1530                       | 103.5                       |
| 2.5        | 2 | 120                       | 0.050                  | 0.33                   | 0.33                   | 15280      | 1530                       | 161.5                       |
| 3.0        | 2 | 120                       | 0.060                  | 0.39                   | 0.39                   | 12735      | 1530                       | 232.5                       |
| 0.5        | 2 | 100                       | 0.010                  | 0.07                   | 0.07                   | 60000      | 1200                       | 5.0                         |
| 0.6        | 2 | 100                       | 0.010                  | 0.08                   | 0.08                   | 53055      | 1060                       | 6.5                         |
| 0.8        | 2 | 100                       | 0.015                  | 0.10                   | 0.10                   | 39790      | 1195                       | 13.0                        |
| 1.0        | 2 | 100                       | 0.020                  | 0.13                   | 0.13                   | 31830      | 1275                       | 21.5                        |
| 1.2        | 2 | 100                       | 0.025                  | 0.16                   | 0.16                   | 26525      | 1325                       | 32.0                        |
| 1.5        | 2 | 100                       | 0.030                  | 0.20                   | 0.20                   | 21220      | 1275                       | 48.5                        |
| 2.0        | 2 | 100                       | 0.040                  | 0.26                   | 0.26                   | 15915      | 1275                       | 86.0                        |
| 2.5        | 2 | 100                       | 0.050                  | 0.33                   | 0.33                   | 12735      | 1275                       | 134.5                       |
| 3.0        | 2 | 100                       | 0.060                  | 0.39                   | 0.39                   | 10610      | 1275                       | 194.0                       |
| 0.5        | 2 | 30                        | 0.010                  | 0.03                   | 0.07                   | 19100      | 380                        | 1.0                         |
| 0.6        | 2 | 30                        | 0.010                  | 0.04                   | 0.08                   | 15915      | 320                        | 1.0                         |
| 0.8        | 2 | 30                        | 0.015                  | 0.05                   | 0.10                   | 11935      | 360                        | 2.0                         |
| 1.0        | 2 | 30                        | 0.020                  | 0.07                   | 0.13                   | 9550       | 380                        | 3.0                         |
| 1.2        | 2 | 30                        | 0.025                  | 0.08                   | 0.16                   | 7960       | 400                        | 5.0                         |
| 1.5        | 2 | 30                        | 0.030                  | 0.10                   | 0.20                   | 6365       | 380                        | 7.0                         |
| 2.0        | 2 | 30                        | 0.040                  | 0.13                   | 0.26                   | 4775       | 380                        | 13.0                        |
| 2.5        | 2 | 30                        | 0.050                  | 0.16                   | 0.33                   | 3820       | 380                        | 20.0                        |
| 3.0        | 2 | 30                        | 0.060                  | 0.20                   | 0.39                   | 3185       | 380                        | 29.0                        |

5716



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC



Сталь  
58 - 62 HRC



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 0.5        | 2 | 120                       | 0.005                  | 0.02                   | 0.50                   | 60000      | 600                        | 5.5                         |
| 0.6        | 2 | 120                       | 0.010                  | 0.02                   | 0.60                   | 60000      | 1200                       | 15.0                        |
| 0.8        | 2 | 120                       | 0.010                  | 0.03                   | 0.80                   | 47750      | 955                        | 21.5                        |
| 1.0        | 2 | 120                       | 0.015                  | 0.04                   | 1.00                   | 38200      | 1145                       | 40.0                        |
| 1.2        | 2 | 120                       | 0.015                  | 0.04                   | 1.20                   | 31830      | 955                        | 48.0                        |
| 1.5        | 2 | 120                       | 0.020                  | 0.05                   | 1.50                   | 25465      | 1020                       | 80.5                        |
| 2.0        | 2 | 120                       | 0.025                  | 0.07                   | 2.00                   | 19100      | 955                        | 133.5                       |
| 2.5        | 2 | 120                       | 0.030                  | 0.09                   | 2.50                   | 15280      | 915                        | 200.0                       |
| 3.0        | 2 | 120                       | 0.040                  | 0.11                   | 3.00                   | 12735      | 1020                       | 321.5                       |
| 0.5        | 2 | 100                       | 0.005                  | 0.02                   | 0.50                   | 60000      | 600                        | 5.5                         |
| 0.6        | 2 | 100                       | 0.010                  | 0.02                   | 0.60                   | 53055      | 1060                       | 13.5                        |
| 0.8        | 2 | 100                       | 0.010                  | 0.03                   | 0.80                   | 39790      | 795                        | 18.0                        |
| 1.0        | 2 | 100                       | 0.015                  | 0.04                   | 1.00                   | 31830      | 955                        | 33.5                        |
| 1.2        | 2 | 100                       | 0.015                  | 0.04                   | 1.20                   | 26525      | 795                        | 40.0                        |
| 1.5        | 2 | 100                       | 0.020                  | 0.05                   | 1.50                   | 21220      | 850                        | 67.0                        |
| 2.0        | 2 | 100                       | 0.025                  | 0.07                   | 2.00                   | 15915      | 795                        | 111.5                       |
| 2.5        | 2 | 100                       | 0.030                  | 0.09                   | 2.50                   | 12735      | 765                        | 167.5                       |
| 3.0        | 2 | 100                       | 0.040                  | 0.11                   | 3.00                   | 10610      | 850                        | 268.0                       |
| 0.5        | 2 | 80                        | 0.005                  | 0.02                   | 0.50                   | 50930      | 510                        | 4.5                         |
| 0.6        | 2 | 80                        | 0.010                  | 0.02                   | 0.60                   | 42445      | 850                        | 10.5                        |
| 0.8        | 2 | 80                        | 0.010                  | 0.03                   | 0.80                   | 31830      | 635                        | 14.0                        |
| 1.0        | 2 | 80                        | 0.015                  | 0.04                   | 1.00                   | 25465      | 765                        | 27.0                        |
| 1.2        | 2 | 80                        | 0.015                  | 0.04                   | 1.20                   | 21220      | 635                        | 32.0                        |
| 1.5        | 2 | 80                        | 0.020                  | 0.05                   | 1.50                   | 16975      | 680                        | 53.5                        |
| 2.0        | 2 | 80                        | 0.025                  | 0.07                   | 2.00                   | 12735      | 635                        | 89.0                        |
| 2.5        | 2 | 80                        | 0.030                  | 0.09                   | 2.50                   | 10185      | 610                        | 133.5                       |
| 3.0        | 2 | 80                        | 0.040                  | 0.11                   | 3.00                   | 8490       | 680                        | 214.0                       |
| 0.5        | 2 | 20                        | 0.005                  | 0.01                   | 0.50                   | 12735      | 125                        | 0.5                         |
| 0.6        | 2 | 20                        | 0.010                  | 0.01                   | 0.60                   | 10610      | 210                        | 1.5                         |
| 0.8        | 2 | 20                        | 0.010                  | 0.02                   | 0.80                   | 7960       | 160                        | 2.0                         |
| 1.0        | 2 | 20                        | 0.015                  | 0.02                   | 1.00                   | 6365       | 190                        | 4.0                         |
| 1.2        | 2 | 20                        | 0.015                  | 0.02                   | 1.20                   | 5305       | 160                        | 4.5                         |
| 1.5        | 2 | 20                        | 0.020                  | 0.03                   | 1.50                   | 4245       | 170                        | 7.5                         |
| 2.0        | 2 | 20                        | 0.025                  | 0.04                   | 2.00                   | 3185       | 160                        | 13.0                        |
| 2.5        | 2 | 20                        | 0.030                  | 0.05                   | 2.50                   | 2545       | 155                        | 19.5                        |
| 3.0        | 2 | 20                        | 0.040                  | 0.06                   | 3.00                   | 2120       | 170                        | 30.5                        |

# Фрезы цилиндрические, 8 x d

# Microcut-C8

HM  
Micro

MX

$\lambda$  25°  
 $\gamma$  6°



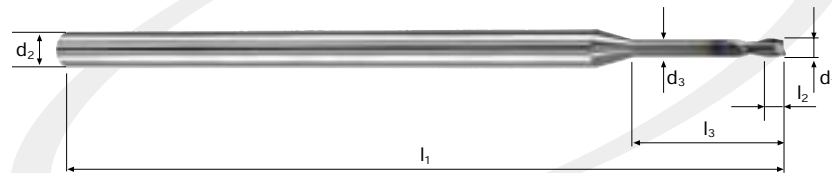
8D



DIN  
6535  
HA



45°



Предназначены для обработки:

HRC  
25 - 62

Графит

Нерж.  
сталь

Медь

Алюминий

Пример: заказа-№. **M 5716.050**

Покрытие: M    Артикул-№: 5716    ø-Код: 050

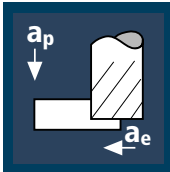
| ø<br>Code | d1<br>±0,01 | d2<br>h6 | d3   | l1 | l2  | l3   | α  | z | MICRO |       | DIA   |   |
|-----------|-------------|----------|------|----|-----|------|----|---|-------|-------|-------|---|
|           |             |          |      |    |     |      |    |   | 5716  | M5716 | I5716 |   |
| .050      | 0,5         | 3        | 0,45 | 40 | 0,6 | 4,0  | 9° | 2 | •     | •     | •     | • |
| .060      | 0,6         | 3        | 0,55 | 40 | 0,7 | 4,8  | 8° | 2 | •     | •     | •     | • |
| .080      | 0,8         | 3        | 0,75 | 40 | 1,0 | 6,4  | 6° | 2 | •     | •     | •     | • |
| .100      | 1,0         | 3        | 0,95 | 50 | 1,2 | 8,0  | 5° | 2 | •     | •     | •     | • |
| .108      | 1,2         | 3        | 1,15 | 50 | 1,4 | 9,6  | 4° | 2 | •     | •     | •     | • |
| .120      | 1,5         | 3        | 1,45 | 60 | 1,8 | 12,0 | 3° | 2 | •     | •     | •     | • |
| .140      | 2,0         | 3        | 1,95 | 60 | 2,4 | 16,0 | 2° | 2 | •     | •     | •     | • |
| .160      | 2,5         | 3        | 2,45 | 60 | 3,0 | 20,0 | 1° | 2 | •     | •     | •     | • |
| .180      | 3,0         | 3        | 2,95 | 60 | 3,6 | 24,0 | 0° | 2 | •     | •     | •     | • |

This tool is furnished with a chamfered edge for an improved wear resistance

|                 |                     |         |
|-----------------|---------------------|---------|
| d1 0,5 - 0,9 mm | Chamfered edge 0,00 |         |
| d1 1,0 - 1,5 mm | Chamfered edge 0,04 | 0/+0,03 |
| d1 1,8 - 3,0 mm | Chamfered edge 0,05 | 0/+0,05 |

Micro

5717



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC

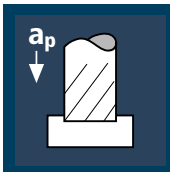


Сталь  
58 - 62 HRC



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 0.5        | 2 | 150                       | 0.010                  | 0.05                   | 0.05                   | 60000      | 1200                       | 3.0                         |
| 0.6        | 2 | 150                       | 0.010                  | 0.06                   | 0.06                   | 60000      | 1200                       | 4.5                         |
| 0.8        | 2 | 150                       | 0.015                  | 0.08                   | 0.08                   | 59685      | 1790                       | 11.5                        |
| 1.0        | 2 | 150                       | 0.020                  | 0.10                   | 0.10                   | 47750      | 1910                       | 19.0                        |
| 1.2        | 2 | 150                       | 0.025                  | 0.12                   | 0.12                   | 39790      | 1990                       | 28.5                        |
| 1.5        | 2 | 150                       | 0.030                  | 0.15                   | 0.15                   | 31830      | 1910                       | 43.0                        |
| 2.0        | 2 | 150                       | 0.040                  | 0.20                   | 0.20                   | 23875      | 1910                       | 76.5                        |
| 2.5        | 2 | 150                       | 0.050                  | 0.25                   | 0.25                   | 19100      | 1910                       | 119.5                       |
| 3.0        | 2 | 150                       | 0.060                  | 0.30                   | 0.30                   | 15915      | 1910                       | 172.0                       |
| 0.5        | 2 | 120                       | 0.010                  | 0.05                   | 0.05                   | 60000      | 1200                       | 3.0                         |
| 0.6        | 2 | 120                       | 0.010                  | 0.06                   | 0.06                   | 60000      | 1200                       | 4.5                         |
| 0.8        | 2 | 120                       | 0.015                  | 0.08                   | 0.08                   | 47750      | 1435                       | 9.0                         |
| 1.0        | 2 | 120                       | 0.020                  | 0.10                   | 0.10                   | 38200      | 1530                       | 15.5                        |
| 1.2        | 2 | 120                       | 0.025                  | 0.12                   | 0.12                   | 31830      | 1590                       | 23.0                        |
| 1.5        | 2 | 120                       | 0.030                  | 0.15                   | 0.15                   | 25465      | 1530                       | 34.5                        |
| 2.0        | 2 | 120                       | 0.040                  | 0.20                   | 0.20                   | 19100      | 1530                       | 61.0                        |
| 2.5        | 2 | 120                       | 0.050                  | 0.25                   | 0.25                   | 15280      | 1530                       | 95.5                        |
| 3.0        | 2 | 120                       | 0.060                  | 0.30                   | 0.30                   | 12735      | 1530                       | 137.5                       |
| 0.5        | 2 | 100                       | 0.010                  | 0.05                   | 0.05                   | 60000      | 1200                       | 3.0                         |
| 0.6        | 2 | 100                       | 0.010                  | 0.06                   | 0.06                   | 53055      | 1060                       | 4.0                         |
| 0.8        | 2 | 100                       | 0.015                  | 0.08                   | 0.08                   | 39790      | 1195                       | 7.5                         |
| 1.0        | 2 | 100                       | 0.020                  | 0.10                   | 0.10                   | 31830      | 1275                       | 13.0                        |
| 1.2        | 2 | 100                       | 0.025                  | 0.12                   | 0.12                   | 26525      | 1325                       | 19.0                        |
| 1.5        | 2 | 100                       | 0.030                  | 0.15                   | 0.15                   | 21220      | 1275                       | 28.5                        |
| 2.0        | 2 | 100                       | 0.040                  | 0.20                   | 0.20                   | 15915      | 1275                       | 51.0                        |
| 2.5        | 2 | 100                       | 0.050                  | 0.25                   | 0.25                   | 12735      | 1275                       | 79.5                        |
| 3.0        | 2 | 100                       | 0.060                  | 0.30                   | 0.30                   | 10610      | 1275                       | 115.0                       |
| 0.5        | 2 | 30                        | 0.010                  | 0.03                   | 0.05                   | 19100      | 380                        | 0.5                         |
| 0.6        | 2 | 30                        | 0.010                  | 0.04                   | 0.06                   | 15915      | 320                        | 0.5                         |
| 0.8        | 2 | 30                        | 0.015                  | 0.05                   | 0.08                   | 11935      | 360                        | 1.5                         |
| 1.0        | 2 | 30                        | 0.020                  | 0.07                   | 0.10                   | 9550       | 380                        | 2.5                         |
| 1.2        | 2 | 30                        | 0.025                  | 0.08                   | 0.12                   | 7960       | 400                        | 3.5                         |
| 1.5        | 2 | 30                        | 0.030                  | 0.10                   | 0.15                   | 6365       | 380                        | 5.5                         |
| 2.0        | 2 | 30                        | 0.040                  | 0.13                   | 0.20                   | 4775       | 380                        | 10.0                        |
| 2.5        | 2 | 30                        | 0.050                  | 0.16                   | 0.25                   | 3820       | 380                        | 15.5                        |
| 3.0        | 2 | 30                        | 0.060                  | 0.20                   | 0.30                   | 3185       | 380                        | 22.0                        |

5717



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC



Сталь  
58 - 62 HRC



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 0.5        | 2 | 120                       | 0.005                  | 0.01                   | 0.50                   | 60000      | 600                        | 3.0                         |
| 0.6        | 2 | 120                       | 0.005                  | 0.01                   | 0.60                   | 60000      | 600                        | 4.5                         |
| 0.8        | 2 | 120                       | 0.010                  | 0.02                   | 0.80                   | 47750      | 955                        | 12.0                        |
| 1.0        | 2 | 120                       | 0.010                  | 0.02                   | 1.00                   | 38200      | 765                        | 15.5                        |
| 1.2        | 2 | 120                       | 0.010                  | 0.02                   | 1.20                   | 31830      | 635                        | 18.5                        |
| 1.5        | 2 | 120                       | 0.015                  | 0.03                   | 1.50                   | 25465      | 765                        | 34.5                        |
| 2.0        | 2 | 120                       | 0.020                  | 0.04                   | 2.00                   | 19100      | 765                        | 61.0                        |
| 2.5        | 2 | 120                       | 0.025                  | 0.05                   | 2.50                   | 15280      | 765                        | 95.5                        |
| 3.0        | 2 | 120                       | 0.030                  | 0.06                   | 3.00                   | 12735      | 765                        | 137.5                       |
| 0.5        | 2 | 100                       | 0.005                  | 0.01                   | 0.50                   | 60000      | 600                        | 3.0                         |
| 0.6        | 2 | 100                       | 0.005                  | 0.01                   | 0.60                   | 53055      | 530                        | 4.0                         |
| 0.8        | 2 | 100                       | 0.010                  | 0.02                   | 0.80                   | 39790      | 795                        | 10.0                        |
| 1.0        | 2 | 100                       | 0.010                  | 0.02                   | 1.00                   | 31830      | 635                        | 12.5                        |
| 1.2        | 2 | 100                       | 0.010                  | 0.02                   | 1.20                   | 26525      | 530                        | 15.5                        |
| 1.5        | 2 | 100                       | 0.015                  | 0.03                   | 1.50                   | 21220      | 635                        | 28.5                        |
| 2.0        | 2 | 100                       | 0.020                  | 0.04                   | 2.00                   | 15915      | 635                        | 51.0                        |
| 2.5        | 2 | 100                       | 0.025                  | 0.05                   | 2.50                   | 12735      | 635                        | 79.5                        |
| 3.0        | 2 | 100                       | 0.030                  | 0.06                   | 3.00                   | 10610      | 635                        | 114.5                       |
| 0.5        | 2 | 80                        | 0.005                  | 0.01                   | 0.50                   | 50930      | 510                        | 2.5                         |
| 0.6        | 2 | 80                        | 0.005                  | 0.01                   | 0.60                   | 42445      | 425                        | 3.0                         |
| 0.8        | 2 | 80                        | 0.010                  | 0.02                   | 0.80                   | 31830      | 635                        | 8.0                         |
| 1.0        | 2 | 80                        | 0.010                  | 0.02                   | 1.00                   | 25465      | 510                        | 10.0                        |
| 1.2        | 2 | 80                        | 0.010                  | 0.02                   | 1.20                   | 21220      | 425                        | 12.0                        |
| 1.5        | 2 | 80                        | 0.015                  | 0.03                   | 1.50                   | 16975      | 510                        | 23.0                        |
| 2.0        | 2 | 80                        | 0.020                  | 0.04                   | 2.00                   | 12735      | 510                        | 41.0                        |
| 2.5        | 2 | 80                        | 0.025                  | 0.05                   | 2.50                   | 10185      | 510                        | 64.0                        |
| 3.0        | 2 | 80                        | 0.030                  | 0.06                   | 3.00                   | 8490       | 510                        | 92.0                        |
| 0.5        | 2 | 20                        | 0.005                  | 0.01                   | 0.50                   | 12735      | 125                        | 0.5                         |
| 0.6        | 2 | 20                        | 0.005                  | 0.01                   | 0.60                   | 10610      | 105                        | 0.5                         |
| 0.8        | 2 | 20                        | 0.010                  | 0.01                   | 0.80                   | 7960       | 160                        | 1.0                         |
| 1.0        | 2 | 20                        | 0.010                  | 0.01                   | 1.00                   | 6365       | 125                        | 1.5                         |
| 1.2        | 2 | 20                        | 0.010                  | 0.01                   | 1.20                   | 5305       | 105                        | 1.5                         |
| 1.5        | 2 | 20                        | 0.015                  | 0.02                   | 1.50                   | 4245       | 125                        | 3.0                         |
| 2.0        | 2 | 20                        | 0.020                  | 0.02                   | 2.00                   | 3185       | 125                        | 5.0                         |
| 2.5        | 2 | 20                        | 0.025                  | 0.03                   | 2.50                   | 2545       | 125                        | 8.0                         |
| 3.0        | 2 | 20                        | 0.030                  | 0.03                   | 3.00                   | 2120       | 125                        | 11.5                        |

# Фрезы цилиндрические, 10 x d

# Microcut-C10

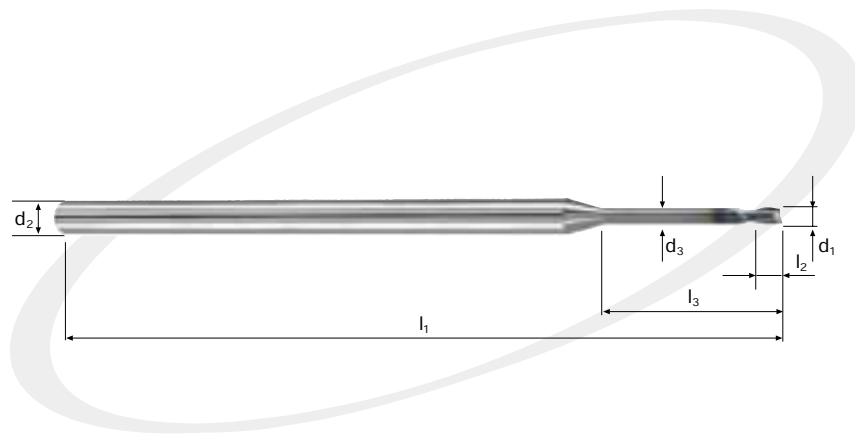
HM  
Micro MX

$\lambda$  25°  
 $\gamma$  6°

10D

DIN  
6535  
HA

45°



Предназначены для обработки:

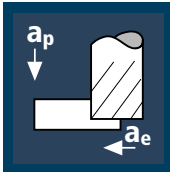
- HRC 25 - 62
- Графит
- Нерж. сталь
- Медь
- Алюминий

|  |             |          |      |    |     |      |    |   | MICRO       | DIA                |
|--|-------------|----------|------|----|-----|------|----|---|-------------|--------------------|
| Пример: заказа-N° <b>M</b> <b>5717.050</b>                                   |             |          |      |    |     |      |    |   | <b>5717</b> | <b>M5717 I5717</b> |
| Ø<br>Code  | d1<br>±0,01 | d2<br>h6 | d3   | l1 | l2  | l3   | α  | z |             |                    |
| .050   | 0,5         | 3        | 0,45 | 40 | 0,6 | 5,0  | 8° | 2 | •           | •                  |
| .060   | 0,6         | 3        | 0,55 | 40 | 0,7 | 6,0  | 7° | 2 | •           | •                  |
| .080   | 0,8         | 3        | 0,75 | 40 | 1,0 | 8,0  | 6° | 2 | •           | •                  |
| .100   | 1,0         | 3        | 0,95 | 50 | 1,2 | 10,0 | 5° | 2 | •           | •                  |
| .108   | 1,2         | 3        | 1,15 | 50 | 1,4 | 12,0 | 4° | 2 | •           | •                  |
| .120   | 1,5         | 3        | 1,45 | 60 | 1,8 | 15,0 | 3° | 2 | •           | •                  |
| .140   | 2,0         | 3        | 1,95 | 60 | 2,4 | 20,0 | 2° | 2 | •           | •                  |
| .160   | 2,5         | 3        | 2,45 | 60 | 3,0 | 25,0 | 1° | 2 | •           | •                  |
| .180   | 3,0         | 3        | 2,95 | 60 | 3,6 | 30,0 | 0° | 2 | •           | •                  |
| This tool is furnished with a chamfered edge for an improved wear resistance |             |          |      |    |     |      |    |   |             |                    |
| d1 0,5 - 0,9 mm Chamfered edge 0,00  |             |          |      |    |     |      |    |   |             |                    |
| d1 1,0 - 1,5 mm Chamfered edge 0,04  |             |          |      |    |     |      |    |   | 0/+0,03     |                    |
| d1 1,8 - 3,0 mm Chamfered edge 0,05  |             |          |      |    |     |      |    |   | 0/+0,05     |                    |

Micro



5721



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC

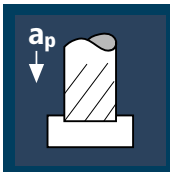


Сталь  
58 - 62 HRC



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 1.0        | 2 | 150                       | 0.020                  | 0.08                   | 0.08                   | 47750      | 1910                       | 12.0                        |
| 1.2        | 2 | 150                       | 0.025                  | 0.10                   | 0.10                   | 39790      | 1990                       | 18.5                        |
| 1.5        | 2 | 150                       | 0.030                  | 0.12                   | 0.12                   | 31830      | 1910                       | 27.5                        |
| 2.0        | 2 | 150                       | 0.040                  | 0.16                   | 0.16                   | 23875      | 1910                       | 49.0                        |
| 2.5        | 2 | 150                       | 0.050                  | 0.20                   | 0.20                   | 19100      | 1910                       | 76.5                        |
| 3.0        | 2 | 150                       | 0.060                  | 0.24                   | 0.24                   | 15915      | 1910                       | 110.0                       |
| 1.0        | 2 | 120                       | 0.020                  | 0.08                   | 0.08                   | 38200      | 1530                       | 10.0                        |
| 1.2        | 2 | 120                       | 0.025                  | 0.10                   | 0.10                   | 31830      | 1590                       | 14.5                        |
| 1.5        | 2 | 120                       | 0.030                  | 0.12                   | 0.12                   | 25465      | 1530                       | 22.0                        |
| 2.0        | 2 | 120                       | 0.040                  | 0.16                   | 0.16                   | 19100      | 1530                       | 39.0                        |
| 2.5        | 2 | 120                       | 0.050                  | 0.20                   | 0.20                   | 15280      | 1530                       | 61.0                        |
| 3.0        | 2 | 120                       | 0.060                  | 0.24                   | 0.24                   | 12735      | 1530                       | 88.0                        |
| 1.0        | 2 | 100                       | 0.020                  | 0.08                   | 0.08                   | 31830      | 1275                       | 8.0                         |
| 1.2        | 2 | 100                       | 0.025                  | 0.10                   | 0.10                   | 26525      | 1325                       | 12.0                        |
| 1.5        | 2 | 100                       | 0.030                  | 0.12                   | 0.12                   | 21220      | 1275                       | 18.5                        |
| 2.0        | 2 | 100                       | 0.040                  | 0.16                   | 0.16                   | 15915      | 1275                       | 32.5                        |
| 2.5        | 2 | 100                       | 0.050                  | 0.20                   | 0.20                   | 12735      | 1275                       | 51.0                        |
| 3.0        | 2 | 100                       | 0.060                  | 0.24                   | 0.24                   | 10610      | 1275                       | 73.5                        |
| 1.0        | 2 | 30                        | 0.020                  | 0.08                   | 0.08                   | 9550       | 380                        | 2.5                         |
| 1.2        | 2 | 30                        | 0.025                  | 0.10                   | 0.10                   | 7960       | 400                        | 3.5                         |
| 1.5        | 2 | 30                        | 0.030                  | 0.12                   | 0.12                   | 6365       | 380                        | 5.5                         |
| 2.0        | 2 | 30                        | 0.040                  | 0.16                   | 0.16                   | 4775       | 380                        | 9.5                         |
| 2.5        | 2 | 30                        | 0.050                  | 0.20                   | 0.20                   | 3820       | 380                        | 15.0                        |
| 3.0        | 2 | 30                        | 0.060                  | 0.24                   | 0.24                   | 3185       | 380                        | 22.0                        |

5721



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC



Сталь  
58 - 62 HRC



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 1.0        | 2 | 120                       | 0.010                  | 0.02                   | 1.00                   | 38200      | 765                        | 15.5                        |
| 1.2        | 2 | 120                       | 0.010                  | 0.02                   | 1.20                   | 31830      | 635                        | 18.5                        |
| 1.5        | 2 | 120                       | 0.015                  | 0.03                   | 1.50                   | 25465      | 765                        | 34.5                        |
| 2.0        | 2 | 120                       | 0.020                  | 0.04                   | 2.00                   | 19100      | 765                        | 61.0                        |
| 2.5        | 2 | 120                       | 0.025                  | 0.05                   | 2.50                   | 15280      | 765                        | 95.5                        |
| 3.0        | 2 | 120                       | 0.030                  | 0.06                   | 3.00                   | 12735      | 765                        | 137.5                       |
| 1.0        | 2 | 100                       | 0.010                  | 0.02                   | 1.00                   | 31830      | 635                        | 12.5                        |
| 1.2        | 2 | 100                       | 0.010                  | 0.02                   | 1.20                   | 26525      | 530                        | 15.5                        |
| 1.5        | 2 | 100                       | 0.015                  | 0.03                   | 1.50                   | 21220      | 635                        | 28.5                        |
| 2.0        | 2 | 100                       | 0.020                  | 0.04                   | 2.00                   | 15915      | 635                        | 51.0                        |
| 2.5        | 2 | 100                       | 0.025                  | 0.05                   | 2.50                   | 12735      | 635                        | 79.5                        |
| 3.0        | 2 | 100                       | 0.030                  | 0.06                   | 3.00                   | 10610      | 635                        | 114.5                       |
| 1.0        | 2 | 80                        | 0.010                  | 0.02                   | 1.00                   | 25465      | 510                        | 10.0                        |
| 1.2        | 2 | 80                        | 0.010                  | 0.02                   | 1.20                   | 21220      | 425                        | 12.0                        |
| 1.5        | 2 | 80                        | 0.015                  | 0.03                   | 1.50                   | 16975      | 510                        | 23.0                        |
| 2.0        | 2 | 80                        | 0.020                  | 0.04                   | 2.00                   | 12735      | 510                        | 41.0                        |
| 2.5        | 2 | 80                        | 0.025                  | 0.05                   | 2.50                   | 10185      | 510                        | 64.0                        |
| 3.0        | 2 | 80                        | 0.030                  | 0.06                   | 3.00                   | 8490       | 510                        | 92.0                        |
| 1.0        | 2 | 20                        | 0.010                  | 0.02                   | 1.00                   | 6365       | 125                        | 2.5                         |
| 1.2        | 2 | 20                        | 0.010                  | 0.02                   | 1.20                   | 5305       | 105                        | 3.0                         |
| 1.5        | 2 | 20                        | 0.015                  | 0.03                   | 1.50                   | 4245       | 125                        | 5.5                         |
| 2.0        | 2 | 20                        | 0.020                  | 0.04                   | 2.00                   | 3185       | 125                        | 10.0                        |
| 2.5        | 2 | 20                        | 0.025                  | 0.05                   | 2.50                   | 2545       | 125                        | 15.5                        |
| 3.0        | 2 | 20                        | 0.030                  | 0.06                   | 3.00                   | 2120       | 125                        | 22.5                        |

# Фрезы цилиндрические, 12 x d

# Microcut-C12

**NEW!**

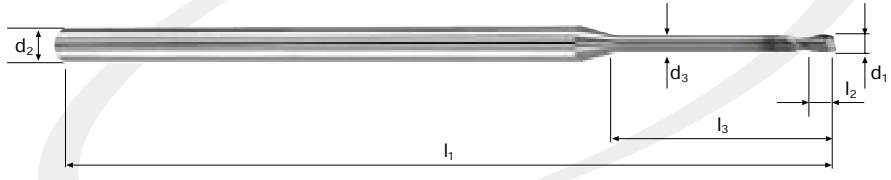
HM  
Micro MX

$\lambda$  25°  
 $\gamma$  6°

12D

DIN  
6535  
HA

45°



Предназначены для обработки:

- HRC 25 - 62
- Графит
- Нерж. сталь
- Медь
- Алюминий

Пример: заказа-№. **M** 5721.100

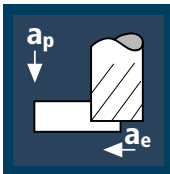
Покрyтие: **M**    Артикул-№: **5721**    ø-Код: **100**

| ø<br>Code | d1<br>±0,01 | d2<br>h6 | d3   | l1 | l2  | l3   | $\alpha$ | z | MICRO |       | DIA   |   |
|-----------|-------------|----------|------|----|-----|------|----------|---|-------|-------|-------|---|
|           |             |          |      |    |     |      |          |   | 5721  | M5721 | I5721 |   |
| .100      | 1,0         | 3        | 0,95 | 50 | 1,2 | 12,0 | 4°       | 2 | •     | •     | •     | • |
| .108      | 1,2         | 3        | 1,15 | 60 | 1,4 | 14,4 | 3°       | 2 | •     | •     | •     | • |
| .120      | 1,5         | 3        | 1,45 | 60 | 1,8 | 18,0 | 3°       | 2 | •     | •     | •     | • |
| .140      | 2,0         | 3        | 1,95 | 60 | 2,4 | 24,0 | 2°       | 2 | •     | •     | •     | • |
| .160      | 2,5         | 3        | 2,45 | 70 | 3,0 | 30,0 | 1°       | 2 | •     | •     | •     | • |
| .180      | 3,0         | 3        | 2,95 | 70 | 3,6 | 36,0 | 0°       | 2 | •     | •     | •     | • |

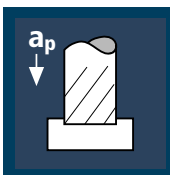
This tool is furnished with a chamfered edge for an improved wear resistance

|                 |                     |         |
|-----------------|---------------------|---------|
| d1 0,5 - 0,9 mm | Chamfered edge 0,00 |         |
| d1 1,0 - 1,5 mm | Chamfered edge 0,04 | 0/+0,03 |
| d1 1,8 - 3,0 mm | Chamfered edge 0,05 | 0/+0,05 |

Micro

**5723****Применение**Сталь  
42 - 48 HRCСталь  
48 - 52 HRCСталь  
52 - 56 HRCСталь  
58 - 62 HRC

| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 1.0        | 2 | 150                       | 0.015                  | 0.06                   | 0.06                   | 47750      | 1435                       | 5.0                         |
| 1.2        | 2 | 150                       | 0.020                  | 0.07                   | 0.07                   | 39790      | 1590                       | 8.0                         |
| 1.5        | 2 | 150                       | 0.025                  | 0.09                   | 0.09                   | 31830      | 1590                       | 13.0                        |
| 2.0        | 2 | 150                       | 0.030                  | 0.12                   | 0.12                   | 23875      | 1435                       | 20.5                        |
| 2.5        | 2 | 150                       | 0.040                  | 0.15                   | 0.15                   | 19100      | 1530                       | 34.5                        |
| 3.0        | 2 | 150                       | 0.045                  | 0.18                   | 0.18                   | 15915      | 1430                       | 46.5                        |
| 1.0        | 2 | 120                       | 0.015                  | 0.06                   | 0.06                   | 38200      | 1145                       | 4.0                         |
| 1.2        | 2 | 120                       | 0.020                  | 0.07                   | 0.07                   | 31830      | 1275                       | 6.5                         |
| 1.5        | 2 | 120                       | 0.025                  | 0.09                   | 0.09                   | 25465      | 1275                       | 10.5                        |
| 2.0        | 2 | 120                       | 0.030                  | 0.12                   | 0.12                   | 19100      | 1145                       | 16.5                        |
| 2.5        | 2 | 120                       | 0.040                  | 0.15                   | 0.15                   | 15280      | 1220                       | 27.5                        |
| 3.0        | 2 | 120                       | 0.045                  | 0.18                   | 0.18                   | 12735      | 1145                       | 37.0                        |
| 1.0        | 2 | 100                       | 0.015                  | 0.06                   | 0.06                   | 31830      | 955                        | 3.5                         |
| 1.2        | 2 | 100                       | 0.020                  | 0.07                   | 0.07                   | 26525      | 1060                       | 5.5                         |
| 1.5        | 2 | 100                       | 0.025                  | 0.09                   | 0.09                   | 21220      | 1060                       | 8.5                         |
| 2.0        | 2 | 100                       | 0.030                  | 0.12                   | 0.12                   | 15915      | 955                        | 14.0                        |
| 2.5        | 2 | 100                       | 0.040                  | 0.15                   | 0.15                   | 12735      | 1020                       | 23.0                        |
| 3.0        | 2 | 100                       | 0.045                  | 0.18                   | 0.18                   | 10610      | 955                        | 31.0                        |
| 1.0        | 2 | 30                        | 0.015                  | 0.06                   | 0.06                   | 9550       | 285                        | 1.0                         |
| 1.2        | 2 | 30                        | 0.020                  | 0.07                   | 0.07                   | 7960       | 320                        | 1.5                         |
| 1.5        | 2 | 30                        | 0.025                  | 0.09                   | 0.09                   | 6365       | 320                        | 2.5                         |
| 2.0        | 2 | 30                        | 0.030                  | 0.12                   | 0.12                   | 4775       | 285                        | 4.0                         |
| 2.5        | 2 | 30                        | 0.040                  | 0.15                   | 0.15                   | 3820       | 305                        | 7.0                         |
| 3.0        | 2 | 30                        | 0.045                  | 0.18                   | 0.18                   | 3185       | 285                        | 9.0                         |

**5723****Применение**Сталь  
42 - 48 HRCСталь  
48 - 52 HRCСталь  
52 - 56 HRCСталь  
58 - 62 HRC

| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 1.0        | 2 | 120                       | 0.010                  | 0.01                   | 1.00                   | 38200      | 765                        | 7.5                         |
| 1.2        | 2 | 120                       | 0.010                  | 0.01                   | 1.20                   | 31830      | 635                        | 9.0                         |
| 1.5        | 2 | 120                       | 0.010                  | 0.02                   | 1.50                   | 25465      | 510                        | 11.5                        |
| 2.0        | 2 | 120                       | 0.015                  | 0.02                   | 2.00                   | 19100      | 575                        | 23.0                        |
| 2.5        | 2 | 120                       | 0.020                  | 0.03                   | 2.50                   | 15280      | 610                        | 38.0                        |
| 3.0        | 2 | 120                       | 0.025                  | 0.03                   | 3.00                   | 12735      | 635                        | 57.0                        |
| 1.0        | 2 | 100                       | 0.010                  | 0.01                   | 1.00                   | 31830      | 635                        | 6.5                         |
| 1.2        | 2 | 100                       | 0.010                  | 0.01                   | 1.20                   | 26525      | 530                        | 7.5                         |
| 1.5        | 2 | 100                       | 0.010                  | 0.02                   | 1.50                   | 21220      | 425                        | 9.5                         |
| 2.0        | 2 | 100                       | 0.015                  | 0.02                   | 2.00                   | 15915      | 475                        | 19.0                        |
| 2.5        | 2 | 100                       | 0.020                  | 0.03                   | 2.50                   | 12735      | 510                        | 32.0                        |
| 3.0        | 2 | 100                       | 0.025                  | 0.03                   | 3.00                   | 10610      | 530                        | 47.5                        |
| 1.0        | 2 | 80                        | 0.010                  | 0.01                   | 1.00                   | 25465      | 510                        | 5.0                         |
| 1.2        | 2 | 80                        | 0.010                  | 0.01                   | 1.20                   | 21220      | 425                        | 6.0                         |
| 1.5        | 2 | 80                        | 0.010                  | 0.02                   | 1.50                   | 16975      | 340                        | 7.5                         |
| 2.0        | 2 | 80                        | 0.015                  | 0.02                   | 2.00                   | 12735      | 380                        | 15.0                        |
| 2.5        | 2 | 80                        | 0.020                  | 0.03                   | 2.50                   | 10185      | 405                        | 25.5                        |
| 3.0        | 2 | 80                        | 0.025                  | 0.03                   | 3.00                   | 8490       | 425                        | 38.5                        |
| 1.0        | 2 | 20                        | 0.010                  | 0.01                   | 1.00                   | 6365       | 125                        | 1.5                         |
| 1.2        | 2 | 20                        | 0.010                  | 0.01                   | 1.20                   | 5305       | 105                        | 1.5                         |
| 1.5        | 2 | 20                        | 0.010                  | 0.02                   | 1.50                   | 4245       | 85                         | 2.0                         |
| 2.0        | 2 | 20                        | 0.015                  | 0.02                   | 2.00                   | 3185       | 95                         | 4.0                         |
| 2.5        | 2 | 20                        | 0.020                  | 0.03                   | 2.50                   | 2545       | 100                        | 6.5                         |
| 3.0        | 2 | 20                        | 0.025                  | 0.03                   | 3.00                   | 2120       | 105                        | 9.5                         |

# Фрезы цилиндрические, 15 x d

# Microcut-C15

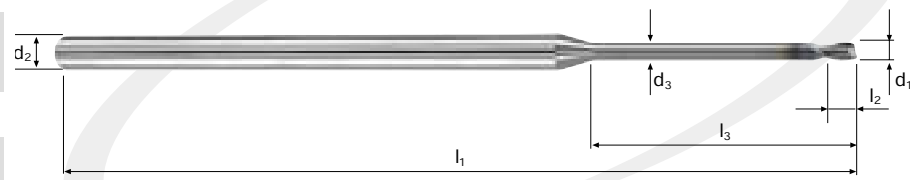
**NEW!**

HM  
Micro MX

$\lambda$  25°  
 $\gamma$  6°

15D

DIN  
6535  
HA



Предназначены для обработки:

45°

HRC  
25 - 62

Графит

Нерж.  
сталь

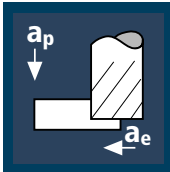
Медь

Алюминий

| Пример:<br>заказа-№  |                     | Покрытие | Артикул-№ | Ф-Код |     |      |    |   |   | MICRO | DIA        |                 |                     |  |                 |                     |         |                 |                     |         |
|--|---------------------|----------|-----------|-------|-----|------|----|---|---|-------|------------|-----------------|---------------------|--|-----------------|---------------------|---------|-----------------|---------------------|---------|
|  |                     | M        | 5723      | 100   |     |      |    |   |   | 5723  | M5723 5723 |                 |                     |  |                 |                     |         |                 |                     |         |
| Ø<br>Code  | d1<br>±0,01         | d2<br>h6 | d3        | l1    | l2  | l3   | α  | z |   |       |            |                 |                     |  |                 |                     |         |                 |                     |         |
| .100   | 1,0                 | 3        | 0,95      | 60    | 1,2 | 15,0 | 4° | 2 | • | •     | •          |                 |                     |  |                 |                     |         |                 |                     |         |
| .108   | 1,2                 | 3        | 1,15      | 60    | 1,4 | 18,0 | 3° | 2 | • | •     | •          |                 |                     |  |                 |                     |         |                 |                     |         |
| .120   | 1,5                 | 3        | 1,45      | 70    | 1,8 | 22,5 | 2° | 2 | • | •     | •          |                 |                     |  |                 |                     |         |                 |                     |         |
| .140   | 2,0                 | 3        | 1,95      | 70    | 2,4 | 30,0 | 1° | 2 | • | •     | •          |                 |                     |  |                 |                     |         |                 |                     |         |
| .160   | 2,5                 | 3        | 2,45      | 70    | 3,0 | 37,5 | 1° | 2 | • | •     | •          |                 |                     |  |                 |                     |         |                 |                     |         |
| .180   | 3,0                 | 3        | 2,95      | 80    | 3,6 | 45,0 | 0° | 2 | • | •     | •          |                 |                     |  |                 |                     |         |                 |                     |         |
| <div style="border: 1px solid black; padding: 5px;"> <p>This tool is furnished with chamfered edge for an improved wear resistance</p> <table border="0"> <tr> <td>d1 0,5 - 0,9 mm</td> <td>Chamfered edge 0,00</td> <td></td> </tr> <tr> <td>d1 1,0 - 1,5 mm</td> <td>Chamfered edge 0,04</td> <td>0/+0,03</td> </tr> <tr> <td>d1 1,8 - 3,0 mm</td> <td>Chamfered edge 0,05</td> <td>0/+0,05</td> </tr> </table> </div> |                     |          |           |       |     |      |    |   |   |       |            | d1 0,5 - 0,9 mm | Chamfered edge 0,00 |  | d1 1,0 - 1,5 mm | Chamfered edge 0,04 | 0/+0,03 | d1 1,8 - 3,0 mm | Chamfered edge 0,05 | 0/+0,05 |
| d1 0,5 - 0,9 mm  | Chamfered edge 0,00 |          |           |       |     |      |    |   |   |       |            |                 |                     |  |                 |                     |         |                 |                     |         |
| d1 1,0 - 1,5 mm  | Chamfered edge 0,04 | 0/+0,03  |           |       |     |      |    |   |   |       |            |                 |                     |  |                 |                     |         |                 |                     |         |
| d1 1,8 - 3,0 mm  | Chamfered edge 0,05 | 0/+0,05  |           |       |     |      |    |   |   |       |            |                 |                     |  |                 |                     |         |                 |                     |         |

Micro

5718



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC

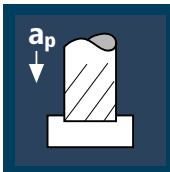


Сталь  
58 - 62 HRC



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 0.8        | 2 | 150                       | 0.015                  | 0.06                   | 0.08                   | 59685      | 1790                       | 9.0                         |
| 1.0        | 2 | 150                       | 0.020                  | 0.08                   | 0.10                   | 47750      | 1910                       | 15.5                        |
| 1.2        | 2 | 150                       | 0.025                  | 0.10                   | 0.12                   | 39790      | 1990                       | 23.0                        |
| 1.5        | 2 | 150                       | 0.030                  | 0.12                   | 0.15                   | 31830      | 1910                       | 34.5                        |
| 2.0        | 2 | 150                       | 0.040                  | 0.16                   | 0.20                   | 23875      | 1910                       | 61.0                        |
| 3.0        | 2 | 150                       | 0.060                  | 0.24                   | 0.30                   | 15915      | 1910                       | 137.5                       |
| 0.8        | 2 | 120                       | 0.015                  | 0.06                   | 0.08                   | 47750      | 1435                       | 7.5                         |
| 1.0        | 2 | 120                       | 0.020                  | 0.08                   | 0.10                   | 38200      | 1530                       | 12.0                        |
| 1.2        | 2 | 120                       | 0.025                  | 0.10                   | 0.12                   | 31830      | 1590                       | 18.5                        |
| 1.5        | 2 | 120                       | 0.030                  | 0.12                   | 0.15                   | 25465      | 1530                       | 27.5                        |
| 2.0        | 2 | 120                       | 0.040                  | 0.16                   | 0.20                   | 19100      | 1530                       | 49.0                        |
| 3.0        | 2 | 120                       | 0.060                  | 0.24                   | 0.30                   | 12735      | 1530                       | 110.0                       |
| 0.8        | 2 | 100                       | 0.015                  | 0.06                   | 0.08                   | 39790      | 1195                       | 6.0                         |
| 1.0        | 2 | 100                       | 0.020                  | 0.08                   | 0.10                   | 31830      | 1275                       | 10.0                        |
| 1.2        | 2 | 100                       | 0.025                  | 0.10                   | 0.12                   | 26525      | 1325                       | 15.5                        |
| 1.5        | 2 | 100                       | 0.030                  | 0.12                   | 0.15                   | 21220      | 1275                       | 23.0                        |
| 2.0        | 2 | 100                       | 0.040                  | 0.16                   | 0.20                   | 15915      | 1275                       | 41.0                        |
| 3.0        | 2 | 100                       | 0.060                  | 0.24                   | 0.30                   | 10610      | 1275                       | 92.0                        |
| 0.8        | 2 | 30                        | 0.015                  | 0.03                   | 0.08                   | 11935      | 360                        | 1.0                         |
| 1.0        | 2 | 30                        | 0.020                  | 0.04                   | 0.10                   | 9550       | 380                        | 1.5                         |
| 1.2        | 2 | 30                        | 0.025                  | 0.05                   | 0.12                   | 7960       | 400                        | 2.5                         |
| 1.5        | 2 | 30                        | 0.030                  | 0.06                   | 0.15                   | 6365       | 380                        | 3.5                         |
| 2.0        | 2 | 30                        | 0.040                  | 0.08                   | 0.20                   | 4775       | 380                        | 6.0                         |
| 3.0        | 2 | 30                        | 0.060                  | 0.12                   | 0.30                   | 3185       | 380                        | 13.5                        |

5718



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC



Сталь  
58 - 62 HRC



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 0.8        | 2 | 120                       | 0.010                  | 0.02                   | 0.80                   | 47750      | 955                        | 12.0                        |
| 1.0        | 2 | 120                       | 0.015                  | 0.02                   | 1.00                   | 38200      | 1145                       | 23.0                        |
| 1.2        | 2 | 120                       | 0.015                  | 0.02                   | 1.20                   | 31830      | 955                        | 27.5                        |
| 1.5        | 2 | 120                       | 0.020                  | 0.03                   | 1.50                   | 25465      | 1020                       | 46.0                        |
| 2.0        | 2 | 120                       | 0.025                  | 0.04                   | 2.00                   | 19100      | 955                        | 76.5                        |
| 3.0        | 2 | 120                       | 0.040                  | 0.06                   | 3.00                   | 12735      | 1020                       | 183.5                       |
| 0.8        | 2 | 100                       | 0.010                  | 0.02                   | 0.80                   | 39790      | 795                        | 10.0                        |
| 1.0        | 2 | 100                       | 0.015                  | 0.02                   | 1.00                   | 31830      | 955                        | 19.0                        |
| 1.2        | 2 | 100                       | 0.015                  | 0.02                   | 1.20                   | 26525      | 795                        | 23.0                        |
| 1.5        | 2 | 100                       | 0.020                  | 0.03                   | 1.50                   | 21220      | 850                        | 38.5                        |
| 2.0        | 2 | 100                       | 0.025                  | 0.04                   | 2.00                   | 15915      | 795                        | 63.5                        |
| 3.0        | 2 | 100                       | 0.040                  | 0.06                   | 3.00                   | 10610      | 850                        | 153.0                       |
| 0.8        | 2 | 80                        | 0.010                  | 0.02                   | 0.80                   | 31830      | 635                        | 8.0                         |
| 1.0        | 2 | 80                        | 0.015                  | 0.02                   | 1.00                   | 25465      | 765                        | 15.5                        |
| 1.2        | 2 | 80                        | 0.015                  | 0.02                   | 1.20                   | 21220      | 635                        | 18.5                        |
| 1.5        | 2 | 80                        | 0.020                  | 0.03                   | 1.50                   | 16975      | 680                        | 30.5                        |
| 2.0        | 2 | 80                        | 0.025                  | 0.04                   | 2.00                   | 12735      | 635                        | 51.0                        |
| 3.0        | 2 | 80                        | 0.040                  | 0.06                   | 3.00                   | 8490       | 680                        | 122.5                       |
| 0.8        | 2 | 20                        | 0.010                  | 0.01                   | 0.80                   | 7960       | 160                        | 1.0                         |
| 1.0        | 2 | 20                        | 0.015                  | 0.01                   | 1.00                   | 6365       | 190                        | 2.0                         |
| 1.2        | 2 | 20                        | 0.015                  | 0.01                   | 1.20                   | 5305       | 160                        | 2.5                         |
| 1.5        | 2 | 20                        | 0.020                  | 0.02                   | 1.50                   | 4245       | 170                        | 4.0                         |
| 2.0        | 2 | 20                        | 0.025                  | 0.02                   | 2.00                   | 3185       | 160                        | 6.5                         |
| 3.0        | 2 | 20                        | 0.040                  | 0.03                   | 3.00                   | 2120       | 170                        | 15.5                        |

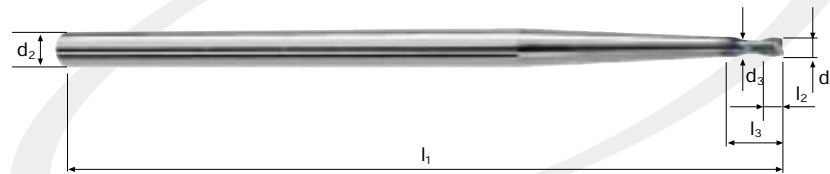
# Фрезы цилиндрические, удлиненные, 2 х d Microcut-LC2

HM  
Micro **MX**

$\lambda$  25°  
 $\gamma$  6°

**2D**

DIN 6535 HA



Предназначены для обработки:

45°

**HRC 25 - 62**

**Графит**

Нерж. сталь

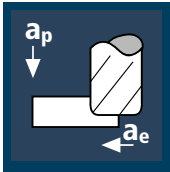
Медь

Алюминий

|   |          |       |      |    |     |     |      |   | MICRO   | DIA          |
|---|----------|-------|------|----|-----|-----|------|---|---------|--------------|
| Пример: <span style="color: red;">M</span> <span style="color: blue;">5718</span> <span style="color: black;">.080</span> |          |       |      |    |     |     |      |   | 5718    | M5718   5718 |
| Ø Code  | d1 ±0,01 | d2 h6 | d3   | l1 | l2  | l3  | α    | z |         |              |
| .080  | 0,8      | 3     | 0,75 | 60 | 1,0 | 1,6 | 2,5° | 2 | •       | •            |
| .100  | 1,0      | 3     | 0,95 | 60 | 1,2 | 2,0 | 2,5° | 2 | •       | •            |
| .108  | 1,2      | 3     | 1,15 | 60 | 1,4 | 2,4 | 2,5° | 2 | •       | •            |
| .120  | 1,5      | 3     | 1,45 | 60 | 1,8 | 3,0 | 2,5° | 2 | •       | •            |
| .140  | 2,0      | 3     | 1,95 | 60 | 2,4 | 4,0 | 1,5° | 2 | •       | •            |
| .180  | 3,0      | 3     | 2,95 | 60 | 3,6 | 6,0 | 0°   | 2 | •       | •            |
| This tool is furnished with a chamfered edge for an improved wear resistance  |          |       |      |    |     |     |      |   |         |              |
| d1 0,5 - 0,9 mm Chamfered edge 0,00<br>d1 1,0 - 1,5 mm Chamfered edge 0,04<br>d1 1,8 - 3,0 mm Chamfered edge 0,05         |          |       |      |    |     |     |      |   | 0/+0,03 |              |
|   |          |       |      |    |     |     |      |   | 0/+0,05 |              |

**Micro**

5752



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC

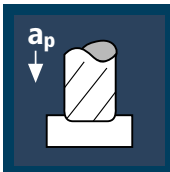


Сталь  
58 - 62 HRC



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 1.0        | 2 | 150                       | 0.020                  | 0.16                   | 0.16                   | 47750      | 1910                       | 49.0                        |
| 1.2        | 2 | 150                       | 0.025                  | 0.19                   | 0.19                   | 39790      | 1990                       | 73.5                        |
| 1.5        | 2 | 150                       | 0.030                  | 0.24                   | 0.24                   | 31830      | 1910                       | 110.0                       |
| 2.0        | 2 | 150                       | 0.040                  | 0.32                   | 0.32                   | 23875      | 1910                       | 195.5                       |
| 2.5        | 2 | 150                       | 0.050                  | 0.40                   | 0.40                   | 19100      | 1910                       | 305.5                       |
| 3.0        | 2 | 150                       | 0.060                  | 0.48                   | 0.48                   | 15915      | 1910                       | 440.0                       |
| 1.0        | 2 | 120                       | 0.020                  | 0.16                   | 0.16                   | 38200      | 1530                       | 39.0                        |
| 1.2        | 2 | 120                       | 0.025                  | 0.19                   | 0.19                   | 31830      | 1590                       | 58.5                        |
| 1.5        | 2 | 120                       | 0.030                  | 0.24                   | 0.24                   | 25465      | 1530                       | 88.0                        |
| 2.0        | 2 | 120                       | 0.040                  | 0.32                   | 0.32                   | 19100      | 1530                       | 156.5                       |
| 2.5        | 2 | 120                       | 0.050                  | 0.40                   | 0.40                   | 15280      | 1530                       | 245.0                       |
| 3.0        | 2 | 120                       | 0.060                  | 0.48                   | 0.48                   | 12735      | 1530                       | 352.5                       |
| 1.0        | 2 | 100                       | 0.020                  | 0.16                   | 0.16                   | 31830      | 1275                       | 32.5                        |
| 1.2        | 2 | 100                       | 0.025                  | 0.19                   | 0.19                   | 26525      | 1325                       | 49.0                        |
| 1.5        | 2 | 100                       | 0.030                  | 0.24                   | 0.24                   | 21220      | 1275                       | 73.5                        |
| 2.0        | 2 | 100                       | 0.040                  | 0.32                   | 0.32                   | 15915      | 1275                       | 130.5                       |
| 2.5        | 2 | 100                       | 0.050                  | 0.40                   | 0.40                   | 12735      | 1275                       | 204.0                       |
| 3.0        | 2 | 100                       | 0.060                  | 0.48                   | 0.48                   | 10610      | 1275                       | 294.0                       |
| 1.0        | 2 | 30                        | 0.020                  | 0.13                   | 0.16                   | 9550       | 380                        | 8.0                         |
| 1.2        | 2 | 30                        | 0.025                  | 0.16                   | 0.19                   | 7960       | 400                        | 12.0                        |
| 1.5        | 2 | 30                        | 0.030                  | 0.20                   | 0.24                   | 6365       | 380                        | 18.0                        |
| 2.0        | 2 | 30                        | 0.040                  | 0.26                   | 0.32                   | 4775       | 380                        | 31.5                        |
| 2.5        | 2 | 30                        | 0.050                  | 0.33                   | 0.40                   | 3820       | 380                        | 49.5                        |
| 3.0        | 2 | 30                        | 0.060                  | 0.39                   | 0.48                   | 3185       | 380                        | 71.0                        |

5752



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC



Сталь  
58 - 62 HRC



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 1.0        | 2 | 120                       | 0.015                  | 0.06                   | 1.00                   | 38200      | 1145                       | 68.5                        |
| 1.2        | 2 | 120                       | 0.015                  | 0.07                   | 1.20                   | 31830      | 955                        | 82.5                        |
| 1.5        | 2 | 120                       | 0.020                  | 0.09                   | 1.50                   | 25465      | 1020                       | 137.5                       |
| 2.0        | 2 | 120                       | 0.025                  | 0.12                   | 2.00                   | 19100      | 955                        | 229.0                       |
| 2.5        | 2 | 120                       | 0.030                  | 0.15                   | 2.50                   | 15280      | 915                        | 343.0                       |
| 3.0        | 2 | 120                       | 0.040                  | 0.18                   | 3.00                   | 12735      | 1020                       | 551.0                       |
| 1.0        | 2 | 100                       | 0.015                  | 0.06                   | 1.00                   | 31830      | 955                        | 57.5                        |
| 1.2        | 2 | 100                       | 0.015                  | 0.07                   | 1.20                   | 26525      | 795                        | 68.5                        |
| 1.5        | 2 | 100                       | 0.020                  | 0.09                   | 1.50                   | 21220      | 850                        | 115.0                       |
| 2.0        | 2 | 100                       | 0.025                  | 0.12                   | 2.00                   | 15915      | 795                        | 191.0                       |
| 2.5        | 2 | 100                       | 0.030                  | 0.15                   | 2.50                   | 12735      | 765                        | 287.0                       |
| 3.0        | 2 | 100                       | 0.040                  | 0.18                   | 3.00                   | 10610      | 850                        | 459.0                       |
| 1.0        | 2 | 80                        | 0.015                  | 0.06                   | 1.00                   | 25465      | 765                        | 46.0                        |
| 1.2        | 2 | 80                        | 0.015                  | 0.07                   | 1.20                   | 21220      | 635                        | 55.0                        |
| 1.5        | 2 | 80                        | 0.020                  | 0.09                   | 1.50                   | 16975      | 680                        | 92.0                        |
| 2.0        | 2 | 80                        | 0.025                  | 0.12                   | 2.00                   | 12735      | 635                        | 152.5                       |
| 2.5        | 2 | 80                        | 0.030                  | 0.15                   | 2.50                   | 10185      | 610                        | 229.0                       |
| 3.0        | 2 | 80                        | 0.040                  | 0.18                   | 3.00                   | 8490       | 680                        | 367.0                       |
| 1.0        | 2 | 20                        | 0.015                  | 0.05                   | 1.00                   | 6365       | 190                        | 9.5                         |
| 1.2        | 2 | 20                        | 0.015                  | 0.06                   | 1.20                   | 5305       | 160                        | 11.5                        |
| 1.5        | 2 | 20                        | 0.020                  | 0.08                   | 1.50                   | 4245       | 170                        | 19.0                        |
| 2.0        | 2 | 20                        | 0.025                  | 0.10                   | 2.00                   | 3185       | 160                        | 32.0                        |
| 2.5        | 2 | 20                        | 0.030                  | 0.13                   | 2.50                   | 2545       | 155                        | 48.5                        |
| 3.0        | 2 | 20                        | 0.040                  | 0.15                   | 3.00                   | 2120       | 170                        | 76.5                        |

# Фрезы торические, 3 x d

# Microcut-T3

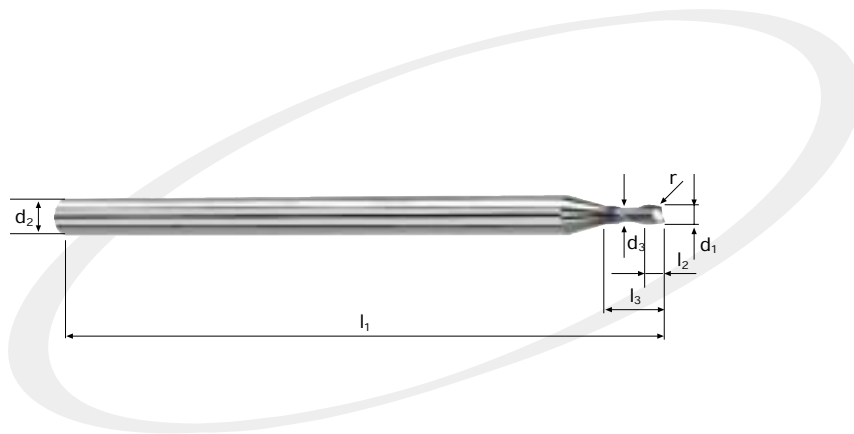
HM  
Micro MX

$\lambda$  25°  
 $\gamma$  6°

3D

DIN  
6535  
HA

$r$



Предназначены для обработки:

- HRC 25 - 62
- Графит
- Нерж. сталь
- Медь
- Алюминий

Пример: заказа-№. **M** 5752.100

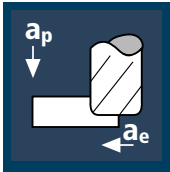
Покрyтие: M    Артикул-№: 5752    ø-Код: 100

| ø<br>Code | d1<br>±0,01 | d2<br>h6 | d3   | l1 | l2  | l3  | r<br>0/+0,03 | α  | z | MICRO |       | DIA   |   |
|-----------|-------------|----------|------|----|-----|-----|--------------|----|---|-------|-------|-------|---|
|           |             |          |      |    |     |     |              |    |   | 5752  | M5752 | I5752 |   |
| .100      | 1,0         | 3        | 0,95 | 50 | 1,2 | 3,0 | 0,20         | 9° | 2 | •     | •     | •     | • |
| .108      | 1,2         | 3        | 1,15 | 50 | 1,4 | 3,6 | 0,20         | 8° | 2 | •     | •     | •     | • |
| .120      | 1,5         | 3        | 1,45 | 50 | 1,8 | 4,5 | 0,20         | 6° | 2 | •     | •     | •     | • |
| .140      | 2,0         | 3        | 1,95 | 50 | 2,4 | 6,0 | 0,20         | 4° | 2 | •     | •     | •     | • |
| .160      | 2,5         | 3        | 2,45 | 50 | 3,0 | 7,5 | 0,20         | 2° | 2 | •     | •     | •     | • |
| .180      | 3,0         | 3        | 2,95 | 50 | 3,6 | 9,0 | 0,20         | 0° | 2 | •     | •     | •     | • |

Micro



5754



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC

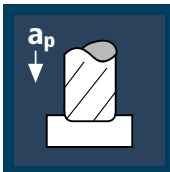


Сталь  
58 - 62 HRC



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 1.0        | 2 | 150                       | 0.020                  | 0.15                   | 0.15                   | 47750      | 1910                       | 43.0                        |
| 1.2        | 2 | 150                       | 0.025                  | 0.18                   | 0.18                   | 39790      | 1990                       | 64.5                        |
| 1.5        | 2 | 150                       | 0.030                  | 0.23                   | 0.23                   | 31830      | 1910                       | 96.5                        |
| 2.0        | 2 | 150                       | 0.040                  | 0.30                   | 0.30                   | 23875      | 1910                       | 172.0                       |
| 2.5        | 2 | 150                       | 0.050                  | 0.38                   | 0.38                   | 19100      | 1910                       | 268.5                       |
| 3.0        | 2 | 150                       | 0.060                  | 0.45                   | 0.45                   | 15915      | 1910                       | 387.0                       |
| 1.0        | 2 | 120                       | 0.020                  | 0.15                   | 0.15                   | 38200      | 1530                       | 34.5                        |
| 1.2        | 2 | 120                       | 0.025                  | 0.18                   | 0.18                   | 31830      | 1590                       | 51.5                        |
| 1.5        | 2 | 120                       | 0.030                  | 0.23                   | 0.23                   | 25465      | 1530                       | 77.5                        |
| 2.0        | 2 | 120                       | 0.040                  | 0.30                   | 0.30                   | 19100      | 1530                       | 137.5                       |
| 2.5        | 2 | 120                       | 0.050                  | 0.38                   | 0.38                   | 15280      | 1530                       | 215.0                       |
| 3.0        | 2 | 120                       | 0.060                  | 0.45                   | 0.45                   | 12735      | 1530                       | 310.0                       |
| 1.0        | 2 | 100                       | 0.020                  | 0.15                   | 0.15                   | 31830      | 1275                       | 28.5                        |
| 1.2        | 2 | 100                       | 0.025                  | 0.18                   | 0.18                   | 26525      | 1325                       | 43.0                        |
| 1.5        | 2 | 100                       | 0.030                  | 0.23                   | 0.23                   | 21220      | 1275                       | 64.5                        |
| 2.0        | 2 | 100                       | 0.040                  | 0.30                   | 0.30                   | 15915      | 1275                       | 115.0                       |
| 2.5        | 2 | 100                       | 0.050                  | 0.38                   | 0.38                   | 12735      | 1275                       | 179.5                       |
| 3.0        | 2 | 100                       | 0.060                  | 0.45                   | 0.45                   | 10610      | 1275                       | 258.0                       |
| 1.0        | 2 | 30                        | 0.020                  | 0.09                   | 0.15                   | 9550       | 380                        | 5.0                         |
| 1.2        | 2 | 30                        | 0.025                  | 0.11                   | 0.18                   | 7960       | 400                        | 8.0                         |
| 1.5        | 2 | 30                        | 0.030                  | 0.14                   | 0.23                   | 6365       | 380                        | 11.5                        |
| 2.0        | 2 | 30                        | 0.040                  | 0.18                   | 0.30                   | 4775       | 380                        | 20.5                        |
| 2.5        | 2 | 30                        | 0.050                  | 0.23                   | 0.38                   | 3820       | 380                        | 32.0                        |
| 3.0        | 2 | 30                        | 0.060                  | 0.27                   | 0.45                   | 3185       | 380                        | 46.0                        |

5754



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC



Сталь  
58 - 62 HRC



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 1.0        | 2 | 120                       | 0.015                  | 0.05                   | 1.00                   | 38200      | 1145                       | 57.5                        |
| 1.2        | 2 | 120                       | 0.015                  | 0.06                   | 1.20                   | 31830      | 955                        | 69.0                        |
| 1.5        | 2 | 120                       | 0.020                  | 0.08                   | 1.50                   | 25465      | 1020                       | 114.5                       |
| 2.0        | 2 | 120                       | 0.025                  | 0.10                   | 2.00                   | 19100      | 955                        | 191.0                       |
| 2.5        | 2 | 120                       | 0.030                  | 0.13                   | 2.50                   | 15280      | 915                        | 286.0                       |
| 3.0        | 2 | 120                       | 0.040                  | 0.15                   | 3.00                   | 12735      | 1020                       | 459.0                       |
| 1.0        | 2 | 100                       | 0.015                  | 0.05                   | 1.00                   | 31830      | 955                        | 48.0                        |
| 1.2        | 2 | 100                       | 0.015                  | 0.06                   | 1.20                   | 26525      | 795                        | 57.0                        |
| 1.5        | 2 | 100                       | 0.020                  | 0.08                   | 1.50                   | 21220      | 850                        | 95.5                        |
| 2.0        | 2 | 100                       | 0.025                  | 0.10                   | 2.00                   | 15915      | 795                        | 159.0                       |
| 2.5        | 2 | 100                       | 0.030                  | 0.13                   | 2.50                   | 12735      | 765                        | 239.0                       |
| 3.0        | 2 | 100                       | 0.040                  | 0.15                   | 3.00                   | 10610      | 850                        | 382.5                       |
| 1.0        | 2 | 80                        | 0.015                  | 0.05                   | 1.00                   | 25465      | 765                        | 38.5                        |
| 1.2        | 2 | 80                        | 0.015                  | 0.06                   | 1.20                   | 21220      | 635                        | 45.5                        |
| 1.5        | 2 | 80                        | 0.020                  | 0.08                   | 1.50                   | 16975      | 680                        | 76.5                        |
| 2.0        | 2 | 80                        | 0.025                  | 0.10                   | 2.00                   | 12735      | 635                        | 127.0                       |
| 2.5        | 2 | 80                        | 0.030                  | 0.13                   | 2.50                   | 10185      | 610                        | 190.5                       |
| 3.0        | 2 | 80                        | 0.040                  | 0.15                   | 3.00                   | 8490       | 680                        | 306.0                       |
| 1.0        | 2 | 20                        | 0.015                  | 0.03                   | 1.00                   | 6365       | 190                        | 5.5                         |
| 1.2        | 2 | 20                        | 0.015                  | 0.04                   | 1.20                   | 5305       | 160                        | 7.0                         |
| 1.5        | 2 | 20                        | 0.020                  | 0.05                   | 1.50                   | 4245       | 170                        | 11.5                        |
| 2.0        | 2 | 20                        | 0.025                  | 0.06                   | 2.00                   | 3185       | 160                        | 19.0                        |
| 2.5        | 2 | 20                        | 0.030                  | 0.08                   | 2.50                   | 2545       | 155                        | 29.0                        |
| 3.0        | 2 | 20                        | 0.040                  | 0.09                   | 3.00                   | 2120       | 170                        | 46.0                        |

# Фрезы торические, 5 x d

# Microcut-T5

HM  
Micro MX

$\lambda$  25°  
 $\gamma$  6°




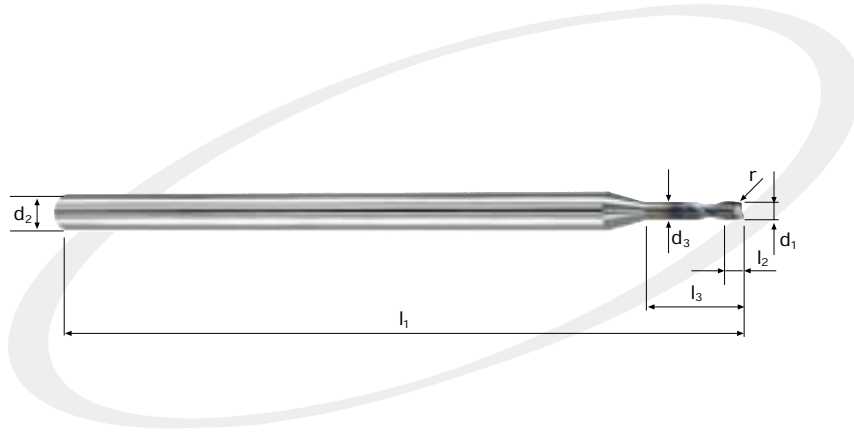
5D



DIN  
6535  
HA



$r$

Предназначены для обработки:

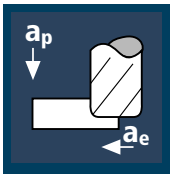
- HRC  
25 - 62
- Графит
- Нерж.  
сталь
- Медь
- Алюминий

| ø<br>Code | d1<br>±0,01 | d2<br>h6 | d3   | l1 | l2  | l3   | r<br>0/+0,03 | $\alpha$ | z | MICRO |       | DIA   |   |
|-----------|-------------|----------|------|----|-----|------|--------------|----------|---|-------|-------|-------|---|
|           |             |          |      |    |     |      |              |          |   | 5754  | M5754 | I5754 |   |
| .100      | 1,0         | 3        | 0,95 | 50 | 1,2 | 5,0  | 0,20         | 7,0°     | 2 | •     | •     | •     | • |
| .108      | 1,2         | 3        | 1,15 | 50 | 1,4 | 6,0  | 0,20         | 6,0°     | 2 | •     | •     | •     | • |
| .120      | 1,5         | 3        | 1,45 | 50 | 1,8 | 7,5  | 0,20         | 5,0°     | 2 | •     | •     | •     | • |
| .140      | 2,0         | 3        | 1,95 | 50 | 2,4 | 10,0 | 0,20         | 3,0°     | 2 | •     | •     | •     | • |
| .160      | 2,5         | 3        | 2,45 | 50 | 3,0 | 12,5 | 0,20         | 1,5°     | 2 | •     | •     | •     | • |
| .180      | 3,0         | 3        | 2,95 | 50 | 3,6 | 15,0 | 0,20         | 0°       | 2 | •     | •     | •     | • |

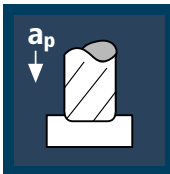
Пример: заказа-№. **M** **5754** **100**

5754 M5754 I5754

Micro

**5756****Применение**Сталь  
42 - 48 HRCСталь  
48 - 52 HRCСталь  
52 - 56 HRCСталь  
58 - 62 HRC

| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 1.0        | 2 | 150                       | 0.020                  | 0.13                   | 0.13                   | 47750      | 1910                       | 32.5                        |
| 1.2        | 2 | 150                       | 0.025                  | 0.16                   | 0.16                   | 39790      | 1990                       | 48.5                        |
| 1.5        | 2 | 150                       | 0.030                  | 0.20                   | 0.20                   | 31830      | 1910                       | 72.5                        |
| 2.0        | 2 | 150                       | 0.040                  | 0.26                   | 0.26                   | 23875      | 1910                       | 129.0                       |
| 2.5        | 2 | 150                       | 0.050                  | 0.33                   | 0.33                   | 19100      | 1910                       | 201.5                       |
| 3.0        | 2 | 150                       | 0.060                  | 0.39                   | 0.39                   | 15915      | 1910                       | 290.5                       |
| 1.0        | 2 | 120                       | 0.020                  | 0.13                   | 0.13                   | 38200      | 1530                       | 26.0                        |
| 1.2        | 2 | 120                       | 0.025                  | 0.16                   | 0.16                   | 31830      | 1590                       | 38.5                        |
| 1.5        | 2 | 120                       | 0.030                  | 0.20                   | 0.20                   | 25465      | 1530                       | 58.0                        |
| 2.0        | 2 | 120                       | 0.040                  | 0.26                   | 0.26                   | 19100      | 1530                       | 103.5                       |
| 2.5        | 2 | 120                       | 0.050                  | 0.33                   | 0.33                   | 15280      | 1530                       | 161.5                       |
| 3.0        | 2 | 120                       | 0.060                  | 0.39                   | 0.39                   | 12735      | 1530                       | 232.5                       |
| 1.0        | 2 | 100                       | 0.020                  | 0.13                   | 0.13                   | 31830      | 1275                       | 21.5                        |
| 1.2        | 2 | 100                       | 0.025                  | 0.16                   | 0.16                   | 26525      | 1325                       | 32.0                        |
| 1.5        | 2 | 100                       | 0.030                  | 0.20                   | 0.20                   | 21220      | 1275                       | 48.5                        |
| 2.0        | 2 | 100                       | 0.040                  | 0.26                   | 0.26                   | 15915      | 1275                       | 86.0                        |
| 2.5        | 2 | 100                       | 0.050                  | 0.33                   | 0.33                   | 12735      | 1275                       | 134.5                       |
| 3.0        | 2 | 100                       | 0.060                  | 0.39                   | 0.39                   | 10610      | 1275                       | 194.0                       |
| 1.0        | 2 | 30                        | 0.020                  | 0.07                   | 0.13                   | 9550       | 380                        | 3.0                         |
| 1.2        | 2 | 30                        | 0.025                  | 0.08                   | 0.16                   | 7960       | 400                        | 5.0                         |
| 1.5        | 2 | 30                        | 0.030                  | 0.10                   | 0.20                   | 6365       | 380                        | 7.0                         |
| 2.0        | 2 | 30                        | 0.040                  | 0.13                   | 0.26                   | 4775       | 380                        | 13.0                        |
| 2.5        | 2 | 30                        | 0.050                  | 0.16                   | 0.33                   | 3820       | 380                        | 20.0                        |
| 3.0        | 2 | 30                        | 0.060                  | 0.20                   | 0.39                   | 3185       | 380                        | 29.0                        |

**5756****Применение**Сталь  
42 - 48 HRCСталь  
48 - 52 HRCСталь  
52 - 56 HRCСталь  
58 - 62 HRC

| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 1.0        | 2 | 120                       | 0.015                  | 0.04                   | 1.00                   | 38200      | 1145                       | 40.0                        |
| 1.2        | 2 | 120                       | 0.015                  | 0.04                   | 1.20                   | 31830      | 955                        | 48.0                        |
| 1.5        | 2 | 120                       | 0.020                  | 0.05                   | 1.50                   | 25465      | 1020                       | 80.5                        |
| 2.0        | 2 | 120                       | 0.025                  | 0.07                   | 2.00                   | 19100      | 955                        | 133.5                       |
| 2.5        | 2 | 120                       | 0.030                  | 0.09                   | 2.50                   | 15280      | 915                        | 200.0                       |
| 3.0        | 2 | 120                       | 0.040                  | 0.11                   | 3.00                   | 12735      | 1020                       | 321.5                       |
| 1.0        | 2 | 100                       | 0.015                  | 0.04                   | 1.00                   | 31830      | 955                        | 33.5                        |
| 1.2        | 2 | 100                       | 0.015                  | 0.04                   | 1.20                   | 26525      | 795                        | 40.0                        |
| 1.5        | 2 | 100                       | 0.020                  | 0.05                   | 1.50                   | 21220      | 850                        | 67.0                        |
| 2.0        | 2 | 100                       | 0.025                  | 0.07                   | 2.00                   | 15915      | 795                        | 111.5                       |
| 2.5        | 2 | 100                       | 0.030                  | 0.09                   | 2.50                   | 12735      | 765                        | 167.5                       |
| 3.0        | 2 | 100                       | 0.040                  | 0.11                   | 3.00                   | 10610      | 850                        | 268.0                       |
| 1.0        | 2 | 80                        | 0.015                  | 0.04                   | 1.00                   | 25465      | 765                        | 27.0                        |
| 1.2        | 2 | 80                        | 0.015                  | 0.04                   | 1.20                   | 21220      | 635                        | 32.0                        |
| 1.5        | 2 | 80                        | 0.020                  | 0.05                   | 1.50                   | 16975      | 680                        | 53.5                        |
| 2.0        | 2 | 80                        | 0.025                  | 0.07                   | 2.00                   | 12735      | 635                        | 89.0                        |
| 2.5        | 2 | 80                        | 0.030                  | 0.09                   | 2.50                   | 10185      | 610                        | 133.5                       |
| 3.0        | 2 | 80                        | 0.040                  | 0.11                   | 3.00                   | 8490       | 680                        | 214.0                       |
| 1.0        | 2 | 20                        | 0.015                  | 0.02                   | 1.00                   | 6365       | 190                        | 4.0                         |
| 1.2        | 2 | 20                        | 0.015                  | 0.02                   | 1.20                   | 5305       | 160                        | 4.5                         |
| 1.5        | 2 | 20                        | 0.020                  | 0.03                   | 1.50                   | 4245       | 170                        | 7.5                         |
| 2.0        | 2 | 20                        | 0.025                  | 0.04                   | 2.00                   | 3185       | 160                        | 13.0                        |
| 2.5        | 2 | 20                        | 0.030                  | 0.05                   | 2.50                   | 2545       | 155                        | 19.5                        |
| 3.0        | 2 | 20                        | 0.040                  | 0.06                   | 3.00                   | 2120       | 170                        | 30.5                        |

# Фрезы торические, 8 x d

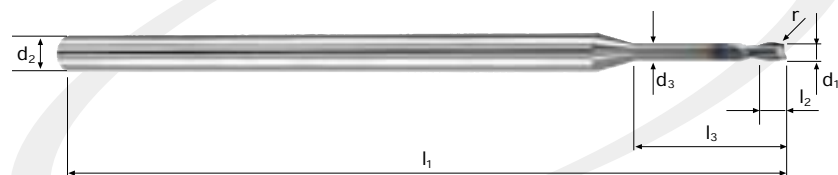
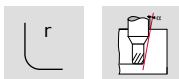
# Microcut-T8

HM  
Micro MX

$\lambda$  25°  
 $\gamma$  6°

8D

DIN  
8535  
HA



Предназначены для обработки:

- HRC  
25 - 62
- Графит
- Нерж.  
сталь
- Медь
- Алюминий

Пример:  
заказа-№.

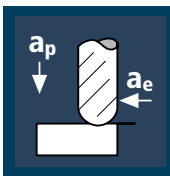
Покрытие: **M**  
Артикул-№: **5756**  
Ø-Код: **100**

| MICRO | DIA        |
|-------|------------|
| 5756  | M5756I5756 |

| Ø<br>Code | d1<br>±0,01 | d2<br>h6 | d3   | l1 | l2  | l3   | r<br>0/+0,03 | $\alpha$ | z | MICRO | DIA |
|-----------|-------------|----------|------|----|-----|------|--------------|----------|---|-------|-----|
| .100      | 1,0         | 3        | 0,95 | 50 | 1,2 | 8,0  | 0,20         | 5°       | 2 | •     | •   |
| .108      | 1,2         | 3        | 1,15 | 50 | 1,4 | 9,6  | 0,20         | 4°       | 2 | •     | •   |
| .120      | 1,5         | 3        | 1,45 | 60 | 1,8 | 12,0 | 0,20         | 3°       | 2 | •     | •   |
| .140      | 2,0         | 3        | 1,95 | 60 | 2,4 | 16,0 | 0,20         | 2°       | 2 | •     | •   |
| .160      | 2,5         | 3        | 2,45 | 60 | 3,0 | 20,0 | 0,20         | 1°       | 2 | •     | •   |
| .180      | 3,0         | 3        | 2,95 | 60 | 3,6 | 24,0 | 0,20         | 0°       | 2 | •     | •   |
|           |             |          |      |    |     |      |              |          |   |       |     |
|           |             |          |      |    |     |      |              |          |   |       |     |
|           |             |          |      |    |     |      |              |          |   |       |     |
|           |             |          |      |    |     |      |              |          |   |       |     |
|           |             |          |      |    |     |      |              |          |   |       |     |
|           |             |          |      |    |     |      |              |          |   |       |     |
|           |             |          |      |    |     |      |              |          |   |       |     |
|           |             |          |      |    |     |      |              |          |   |       |     |
|           |             |          |      |    |     |      |              |          |   |       |     |
|           |             |          |      |    |     |      |              |          |   |       |     |
|           |             |          |      |    |     |      |              |          |   |       |     |
|           |             |          |      |    |     |      |              |          |   |       |     |
|           |             |          |      |    |     |      |              |          |   |       |     |
|           |             |          |      |    |     |      |              |          |   |       |     |
|           |             |          |      |    |     |      |              |          |   |       |     |
|           |             |          |      |    |     |      |              |          |   |       |     |

Micro

5782



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC

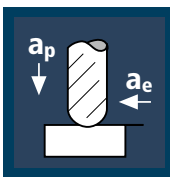


Сталь  
58 - 62 HRC



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 0.3        | 2 | 150                       | 0.005                  | 0.05                   | 0.05                   | 60000      | 600                        | 1.5                         |
| 0.5        | 2 | 150                       | 0.010                  | 0.08                   | 0.08                   | 60000      | 1200                       | 7.5                         |
| 0.8        | 2 | 150                       | 0.015                  | 0.13                   | 0.13                   | 59685      | 1790                       | 29.5                        |
| 1.0        | 2 | 150                       | 0.020                  | 0.16                   | 0.16                   | 47750      | 1910                       | 49.0                        |
| 1.2        | 2 | 150                       | 0.025                  | 0.19                   | 0.19                   | 39790      | 1990                       | 73.5                        |
| 1.5        | 2 | 150                       | 0.030                  | 0.24                   | 0.24                   | 31830      | 1910                       | 110.0                       |
| 2.0        | 2 | 150                       | 0.040                  | 0.32                   | 0.32                   | 23875      | 1910                       | 195.5                       |
| 2.5        | 2 | 150                       | 0.050                  | 0.40                   | 0.40                   | 19100      | 1910                       | 305.5                       |
| 3.0        | 2 | 150                       | 0.060                  | 0.48                   | 0.48                   | 15915      | 1910                       | 440.0                       |
| 0.3        | 2 | 120                       | 0.005                  | 0.05                   | 0.05                   | 60000      | 600                        | 1.5                         |
| 0.5        | 2 | 120                       | 0.010                  | 0.08                   | 0.08                   | 60000      | 1200                       | 7.5                         |
| 0.8        | 2 | 120                       | 0.015                  | 0.13                   | 0.13                   | 47750      | 1435                       | 23.5                        |
| 1.0        | 2 | 120                       | 0.020                  | 0.16                   | 0.16                   | 38200      | 1530                       | 39.0                        |
| 1.2        | 2 | 120                       | 0.025                  | 0.19                   | 0.19                   | 31830      | 1590                       | 58.5                        |
| 1.5        | 2 | 120                       | 0.030                  | 0.24                   | 0.24                   | 25465      | 1530                       | 88.0                        |
| 2.0        | 2 | 120                       | 0.040                  | 0.32                   | 0.32                   | 19100      | 1530                       | 156.5                       |
| 2.5        | 2 | 120                       | 0.050                  | 0.40                   | 0.40                   | 15280      | 1530                       | 245.0                       |
| 3.0        | 2 | 120                       | 0.060                  | 0.48                   | 0.48                   | 12735      | 1530                       | 352.5                       |
| 0.3        | 2 | 100                       | 0.005                  | 0.05                   | 0.05                   | 60000      | 600                        | 1.5                         |
| 0.5        | 2 | 100                       | 0.010                  | 0.08                   | 0.08                   | 60000      | 1200                       | 7.5                         |
| 0.8        | 2 | 100                       | 0.015                  | 0.13                   | 0.13                   | 39790      | 1195                       | 19.5                        |
| 1.0        | 2 | 100                       | 0.020                  | 0.16                   | 0.16                   | 31830      | 1275                       | 32.5                        |
| 1.2        | 2 | 100                       | 0.025                  | 0.19                   | 0.19                   | 26525      | 1325                       | 49.0                        |
| 1.5        | 2 | 100                       | 0.030                  | 0.24                   | 0.24                   | 21220      | 1275                       | 73.5                        |
| 2.0        | 2 | 100                       | 0.040                  | 0.32                   | 0.32                   | 15915      | 1275                       | 130.5                       |
| 2.5        | 2 | 100                       | 0.050                  | 0.40                   | 0.40                   | 12735      | 1275                       | 204.0                       |
| 3.0        | 2 | 100                       | 0.060                  | 0.48                   | 0.48                   | 10610      | 1275                       | 294.0                       |
| 0.3        | 2 | 30                        | 0.005                  | 0.04                   | 0.05                   | 31830      | 320                        | 0.5                         |
| 0.5        | 2 | 30                        | 0.010                  | 0.07                   | 0.08                   | 19100      | 380                        | 2.0                         |
| 0.8        | 2 | 30                        | 0.015                  | 0.10                   | 0.13                   | 11935      | 360                        | 5.0                         |
| 1.0        | 2 | 30                        | 0.020                  | 0.13                   | 0.16                   | 9550       | 380                        | 8.0                         |
| 1.2        | 2 | 30                        | 0.025                  | 0.16                   | 0.19                   | 7960       | 400                        | 12.0                        |
| 1.5        | 2 | 30                        | 0.030                  | 0.20                   | 0.24                   | 6365       | 380                        | 18.0                        |
| 2.0        | 2 | 30                        | 0.040                  | 0.26                   | 0.32                   | 4775       | 380                        | 31.5                        |
| 2.5        | 2 | 30                        | 0.050                  | 0.33                   | 0.40                   | 3820       | 380                        | 49.5                        |
| 3.0        | 2 | 30                        | 0.060                  | 0.39                   | 0.48                   | 3185       | 380                        | 71.0                        |

5782



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC



Сталь  
58 - 62 HRC



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 0.3        | 2 | 120                       | 0.005                  | 0.02                   | 0.30                   | 60000      | 600                        | 3.0                         |
| 0.5        | 2 | 120                       | 0.005                  | 0.03                   | 0.50                   | 60000      | 600                        | 9.0                         |
| 0.8        | 2 | 120                       | 0.010                  | 0.05                   | 0.80                   | 47750      | 955                        | 36.5                        |
| 1.0        | 2 | 120                       | 0.015                  | 0.06                   | 1.00                   | 38200      | 1145                       | 68.5                        |
| 1.2        | 2 | 120                       | 0.015                  | 0.07                   | 1.20                   | 31830      | 955                        | 82.5                        |
| 1.5        | 2 | 120                       | 0.020                  | 0.09                   | 1.50                   | 25465      | 1020                       | 137.5                       |
| 2.0        | 2 | 120                       | 0.025                  | 0.12                   | 2.00                   | 19100      | 955                        | 229.0                       |
| 2.5        | 2 | 120                       | 0.030                  | 0.15                   | 2.50                   | 15280      | 915                        | 343.0                       |
| 3.0        | 2 | 120                       | 0.040                  | 0.18                   | 3.00                   | 12735      | 1020                       | 551.0                       |
| 0.3        | 2 | 100                       | 0.005                  | 0.02                   | 0.30                   | 60000      | 600                        | 3.0                         |
| 0.5        | 2 | 100                       | 0.005                  | 0.03                   | 0.50                   | 60000      | 600                        | 9.0                         |
| 0.8        | 2 | 100                       | 0.010                  | 0.05                   | 0.80                   | 39790      | 795                        | 30.5                        |
| 1.0        | 2 | 100                       | 0.015                  | 0.06                   | 1.00                   | 31830      | 955                        | 57.5                        |
| 1.2        | 2 | 100                       | 0.015                  | 0.07                   | 1.20                   | 26525      | 795                        | 68.5                        |
| 1.5        | 2 | 100                       | 0.020                  | 0.09                   | 1.50                   | 21220      | 850                        | 115.0                       |
| 2.0        | 2 | 100                       | 0.025                  | 0.12                   | 2.00                   | 15915      | 795                        | 191.0                       |
| 2.5        | 2 | 100                       | 0.030                  | 0.15                   | 2.50                   | 12735      | 765                        | 287.0                       |
| 3.0        | 2 | 100                       | 0.040                  | 0.18                   | 3.00                   | 10610      | 850                        | 459.0                       |
| 0.3        | 2 | 80                        | 0.005                  | 0.02                   | 0.30                   | 60000      | 600                        | 3.0                         |
| 0.5        | 2 | 80                        | 0.005                  | 0.03                   | 0.50                   | 50930      | 510                        | 7.5                         |
| 0.8        | 2 | 80                        | 0.010                  | 0.05                   | 0.80                   | 31830      | 635                        | 24.5                        |
| 1.0        | 2 | 80                        | 0.015                  | 0.06                   | 1.00                   | 25465      | 765                        | 46.0                        |
| 1.2        | 2 | 80                        | 0.015                  | 0.07                   | 1.20                   | 21220      | 635                        | 55.0                        |
| 1.5        | 2 | 80                        | 0.020                  | 0.09                   | 1.50                   | 16975      | 680                        | 92.0                        |
| 2.0        | 2 | 80                        | 0.025                  | 0.12                   | 2.00                   | 12735      | 635                        | 152.5                       |
| 2.5        | 2 | 80                        | 0.030                  | 0.15                   | 2.50                   | 10185      | 610                        | 229.0                       |
| 3.0        | 2 | 80                        | 0.040                  | 0.18                   | 3.00                   | 8490       | 680                        | 367.0                       |
| 0.3        | 2 | 20                        | 0.005                  | 0.02                   | 0.30                   | 21220      | 210                        | 1.0                         |
| 0.5        | 2 | 20                        | 0.005                  | 0.03                   | 0.50                   | 12735      | 125                        | 1.5                         |
| 0.8        | 2 | 20                        | 0.010                  | 0.04                   | 0.80                   | 7960       | 160                        | 5.0                         |
| 1.0        | 2 | 20                        | 0.015                  | 0.05                   | 1.00                   | 6365       | 190                        | 9.5                         |
| 1.2        | 2 | 20                        | 0.015                  | 0.06                   | 1.20                   | 5305       | 160                        | 11.5                        |
| 1.5        | 2 | 20                        | 0.020                  | 0.08                   | 1.50                   | 4245       | 170                        | 19.0                        |
| 2.0        | 2 | 20                        | 0.025                  | 0.10                   | 2.00                   | 3185       | 160                        | 32.0                        |
| 2.5        | 2 | 20                        | 0.030                  | 0.13                   | 2.50                   | 2545       | 155                        | 48.5                        |
| 3.0        | 2 | 20                        | 0.040                  | 0.15                   | 3.00                   | 2120       | 170                        | 76.5                        |

# Фрезы сферические, 3 x d

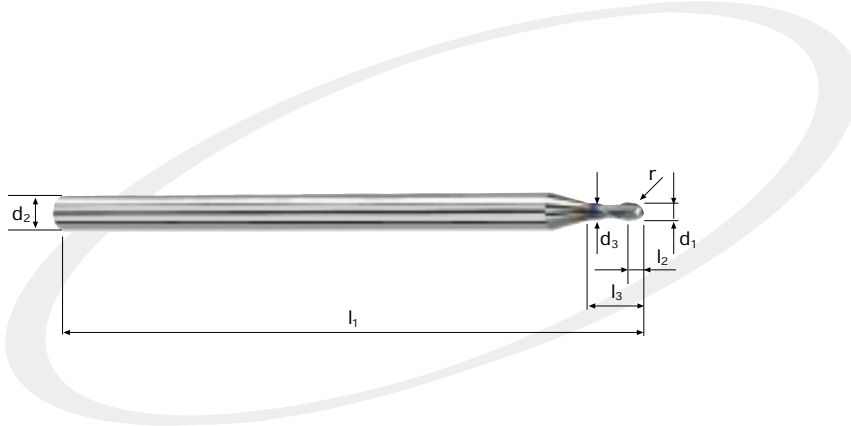
# Microcut-B3

HM  
Micro MX

$\lambda$  30°  
 $\gamma$  5°

3D

DIN 6535 HA



Предназначены для обработки:

- HRC 25 - 62
- Графит
- Нерж. сталь
- Медь
- Алюминий

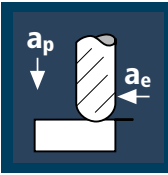
Пример: заказа-№. **M** 5782.020

| MICRO | DIA          |
|-------|--------------|
| 5782  | M5782   5782 |

| Ø Code | d1  | d2 h6 | d3   | l1 | l2  | l3  | r ±0,01 | α   | z | MICRO | DIA |
|--------|-----|-------|------|----|-----|-----|---------|-----|---|-------|-----|
| .020   | 0,2 | 3     | 0,18 | 40 | 0,2 | 0,6 | 0,10    | 10° | 2 | •     | •   |
| .030   | 0,3 | 3     | 0,25 | 40 | 0,3 | 0,9 | 0,15    | 10° | 2 | •     | •   |
| .040   | 0,4 | 3     | 0,35 | 40 | 0,5 | 1,2 | 0,20    | 9°  | 2 | •     | •   |
| .050   | 0,5 | 3     | 0,45 | 40 | 0,6 | 1,5 | 0,25    | 12° | 2 | •     | •   |
| .060   | 0,6 | 3     | 0,55 | 40 | 0,7 | 1,8 | 0,30    | 12° | 2 | •     | •   |
| .080   | 0,8 | 3     | 0,75 | 40 | 0,9 | 2,4 | 0,40    | 11° | 2 | •     | •   |
| .100   | 1,0 | 3     | 0,95 | 50 | 1,2 | 3,0 | 0,50    | 10° | 2 | •     | •   |
| .108   | 1,2 | 3     | 1,15 | 50 | 1,4 | 3,6 | 0,60    | 9°  | 2 | •     | •   |
| .120   | 1,5 | 3     | 1,45 | 50 | 1,8 | 4,5 | 0,75    | 7°  | 2 | •     | •   |
| .140   | 2,0 | 3     | 1,95 | 50 | 2,4 | 6,0 | 1,00    | 5°  | 2 | •     | •   |
| .160   | 2,5 | 3     | 2,45 | 50 | 3,0 | 7,5 | 1,25    | 2°  | 2 | •     | •   |
| .180   | 3,0 | 3     | 2,95 | 50 | 3,6 | 9,0 | 1,50    | 0°  | 2 | •     | •   |

Micro

5784



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC

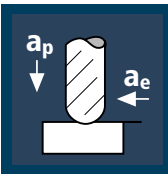


Сталь  
58 - 62 HRC



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 0.5        | 2 | 150                       | 0.010                  | 0.08                   | 0.08                   | 60000      | 1200                       | 7.0                         |
| 0.6        | 2 | 150                       | 0.010                  | 0.09                   | 0.09                   | 60000      | 1200                       | 9.5                         |
| 0.8        | 2 | 150                       | 0.015                  | 0.12                   | 0.12                   | 59685      | 1790                       | 26.0                        |
| 1.0        | 2 | 150                       | 0.020                  | 0.15                   | 0.15                   | 47750      | 1910                       | 43.0                        |
| 1.2        | 2 | 150                       | 0.025                  | 0.18                   | 0.18                   | 39790      | 1990                       | 64.5                        |
| 1.5        | 2 | 150                       | 0.030                  | 0.23                   | 0.23                   | 31830      | 1910                       | 96.5                        |
| 2.0        | 2 | 150                       | 0.040                  | 0.30                   | 0.30                   | 23875      | 1910                       | 172.0                       |
| 2.5        | 2 | 150                       | 0.050                  | 0.38                   | 0.38                   | 19100      | 1910                       | 268.5                       |
| 3.0        | 2 | 150                       | 0.060                  | 0.45                   | 0.45                   | 15915      | 1910                       | 387.0                       |
| 0.5        | 2 | 120                       | 0.010                  | 0.08                   | 0.08                   | 60000      | 1200                       | 7.0                         |
| 0.6        | 2 | 120                       | 0.010                  | 0.09                   | 0.09                   | 60000      | 1200                       | 9.5                         |
| 0.8        | 2 | 120                       | 0.015                  | 0.12                   | 0.12                   | 47750      | 1435                       | 20.5                        |
| 1.0        | 2 | 120                       | 0.020                  | 0.15                   | 0.15                   | 38200      | 1530                       | 34.5                        |
| 1.2        | 2 | 120                       | 0.025                  | 0.18                   | 0.18                   | 31830      | 1590                       | 51.5                        |
| 1.5        | 2 | 120                       | 0.030                  | 0.23                   | 0.23                   | 25465      | 1530                       | 77.5                        |
| 2.0        | 2 | 120                       | 0.040                  | 0.30                   | 0.30                   | 19100      | 1530                       | 137.5                       |
| 2.5        | 2 | 120                       | 0.050                  | 0.38                   | 0.38                   | 15280      | 1530                       | 215.0                       |
| 3.0        | 2 | 120                       | 0.060                  | 0.45                   | 0.45                   | 12735      | 1530                       | 310.0                       |
| 0.5        | 2 | 100                       | 0.010                  | 0.08                   | 0.08                   | 60000      | 1200                       | 7.0                         |
| 0.6        | 2 | 100                       | 0.010                  | 0.09                   | 0.09                   | 53055      | 1060                       | 8.5                         |
| 0.8        | 2 | 100                       | 0.015                  | 0.12                   | 0.12                   | 39790      | 1195                       | 17.0                        |
| 1.0        | 2 | 100                       | 0.020                  | 0.15                   | 0.15                   | 31830      | 1275                       | 28.5                        |
| 1.2        | 2 | 100                       | 0.025                  | 0.18                   | 0.18                   | 26525      | 1325                       | 43.0                        |
| 1.5        | 2 | 100                       | 0.030                  | 0.23                   | 0.23                   | 21220      | 1275                       | 64.5                        |
| 2.0        | 2 | 100                       | 0.040                  | 0.30                   | 0.30                   | 15915      | 1275                       | 115.0                       |
| 2.5        | 2 | 100                       | 0.050                  | 0.38                   | 0.38                   | 12735      | 1275                       | 179.5                       |
| 3.0        | 2 | 100                       | 0.060                  | 0.45                   | 0.45                   | 10610      | 1275                       | 258.0                       |
| 0.5        | 2 | 30                        | 0.010                  | 0.05                   | 0.08                   | 19100      | 380                        | 1.5                         |
| 0.6        | 2 | 30                        | 0.010                  | 0.05                   | 0.09                   | 15915      | 320                        | 1.5                         |
| 0.8        | 2 | 30                        | 0.015                  | 0.07                   | 0.12                   | 11935      | 360                        | 3.0                         |
| 1.0        | 2 | 30                        | 0.020                  | 0.09                   | 0.15                   | 9550       | 380                        | 5.0                         |
| 1.2        | 2 | 30                        | 0.025                  | 0.11                   | 0.18                   | 7960       | 400                        | 8.0                         |
| 1.5        | 2 | 30                        | 0.030                  | 0.14                   | 0.23                   | 6365       | 380                        | 11.5                        |
| 2.0        | 2 | 30                        | 0.040                  | 0.18                   | 0.30                   | 4775       | 380                        | 20.5                        |
| 2.5        | 2 | 30                        | 0.050                  | 0.23                   | 0.38                   | 3820       | 380                        | 32.0                        |
| 3.0        | 2 | 30                        | 0.060                  | 0.27                   | 0.45                   | 3185       | 380                        | 46.0                        |

5784



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC



Сталь  
58 - 62 HRC



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 0.5        | 2 | 120                       | 0.005                  | 0.03                   | 0.50                   | 60000      | 600                        | 7.5                         |
| 0.6        | 2 | 120                       | 0.010                  | 0.03                   | 0.60                   | 60000      | 1200                       | 21.5                        |
| 0.8        | 2 | 120                       | 0.010                  | 0.04                   | 0.80                   | 47750      | 955                        | 30.5                        |
| 1.0        | 2 | 120                       | 0.015                  | 0.05                   | 1.00                   | 38200      | 1145                       | 57.5                        |
| 1.2        | 2 | 120                       | 0.015                  | 0.06                   | 1.20                   | 31830      | 955                        | 69.0                        |
| 1.5        | 2 | 120                       | 0.020                  | 0.08                   | 1.50                   | 25465      | 1020                       | 114.5                       |
| 2.0        | 2 | 120                       | 0.025                  | 0.10                   | 2.00                   | 19100      | 955                        | 191.0                       |
| 2.5        | 2 | 120                       | 0.030                  | 0.13                   | 2.50                   | 15280      | 915                        | 286.0                       |
| 3.0        | 2 | 120                       | 0.040                  | 0.15                   | 3.00                   | 12735      | 1020                       | 459.0                       |
| 0.5        | 2 | 100                       | 0.005                  | 0.03                   | 0.50                   | 60000      | 600                        | 7.5                         |
| 0.6        | 2 | 100                       | 0.010                  | 0.03                   | 0.60                   | 53055      | 1060                       | 19.0                        |
| 0.8        | 2 | 100                       | 0.010                  | 0.04                   | 0.80                   | 39790      | 795                        | 25.5                        |
| 1.0        | 2 | 100                       | 0.015                  | 0.05                   | 1.00                   | 31830      | 955                        | 48.0                        |
| 1.2        | 2 | 100                       | 0.015                  | 0.06                   | 1.20                   | 26525      | 795                        | 57.0                        |
| 1.5        | 2 | 100                       | 0.020                  | 0.08                   | 1.50                   | 21220      | 850                        | 95.5                        |
| 2.0        | 2 | 100                       | 0.025                  | 0.10                   | 2.00                   | 15915      | 795                        | 159.0                       |
| 2.5        | 2 | 100                       | 0.030                  | 0.13                   | 2.50                   | 12735      | 765                        | 239.0                       |
| 3.0        | 2 | 100                       | 0.040                  | 0.15                   | 3.00                   | 10610      | 850                        | 382.5                       |
| 0.5        | 2 | 80                        | 0.005                  | 0.03                   | 0.50                   | 50930      | 510                        | 6.5                         |
| 0.6        | 2 | 80                        | 0.010                  | 0.03                   | 0.60                   | 42445      | 850                        | 15.5                        |
| 0.8        | 2 | 80                        | 0.010                  | 0.04                   | 0.80                   | 31830      | 635                        | 20.5                        |
| 1.0        | 2 | 80                        | 0.015                  | 0.05                   | 1.00                   | 25465      | 765                        | 38.5                        |
| 1.2        | 2 | 80                        | 0.015                  | 0.06                   | 1.20                   | 21220      | 635                        | 45.5                        |
| 1.5        | 2 | 80                        | 0.020                  | 0.08                   | 1.50                   | 16975      | 680                        | 76.5                        |
| 2.0        | 2 | 80                        | 0.025                  | 0.10                   | 2.00                   | 12735      | 635                        | 127.0                       |
| 2.5        | 2 | 80                        | 0.030                  | 0.13                   | 2.50                   | 10185      | 610                        | 190.5                       |
| 3.0        | 2 | 80                        | 0.040                  | 0.15                   | 3.00                   | 8490       | 680                        | 306.0                       |
| 0.5        | 2 | 20                        | 0.005                  | 0.02                   | 0.50                   | 12735      | 125                        | 1.0                         |
| 0.6        | 2 | 20                        | 0.010                  | 0.02                   | 0.60                   | 10610      | 210                        | 2.5                         |
| 0.8        | 2 | 20                        | 0.010                  | 0.02                   | 0.80                   | 7960       | 160                        | 3.0                         |
| 1.0        | 2 | 20                        | 0.015                  | 0.03                   | 1.00                   | 6365       | 190                        | 5.5                         |
| 1.2        | 2 | 20                        | 0.015                  | 0.04                   | 1.20                   | 5305       | 160                        | 7.0                         |
| 1.5        | 2 | 20                        | 0.020                  | 0.05                   | 1.50                   | 4245       | 170                        | 11.5                        |
| 2.0        | 2 | 20                        | 0.025                  | 0.06                   | 2.00                   | 3185       | 160                        | 19.0                        |
| 2.5        | 2 | 20                        | 0.030                  | 0.08                   | 2.50                   | 2545       | 155                        | 29.0                        |
| 3.0        | 2 | 20                        | 0.040                  | 0.09                   | 3.00                   | 2120       | 170                        | 46.0                        |

# Фрезы сферические, 5 x d

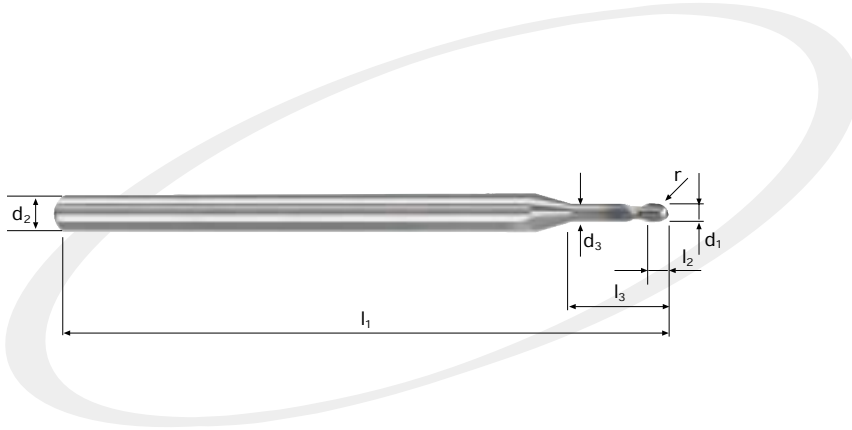
# Microcut-B5

HM  
Micro MX

$\lambda$  30°  
 $\gamma$  5°

5D

DIN  
6535  
HA



Предназначены для обработки:



HRC  
25 - 62

Графит

Нерж.  
сталь

Медь

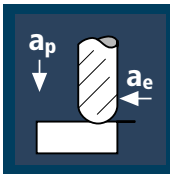
Алюминий

|   |     |          |      |    |     |      |            |       |   | MICRO                   | DIA |
|---|-----|----------|------|----|-----|------|------------|-------|---|-------------------------|-----|
| Пример: Покрытие Артикул-№. Ø-Код<br>заказа-№. <b>M 5784050</b> |     |          |      |    |     |      |            |       |   | <b>5784 M5784 I5784</b> |     |
| Ø<br>Code   | d1  | d2<br>h6 | d3   | l1 | l2  | l3   | r<br>±0.01 | α     | z |                         |     |
| .050  | 0,5 | 3        | 0,45 | 40 | 0,6 | 2,5  | 0,25       | 11,0° | 2 | •                       | •   |
| .060  | 0,6 | 3        | 0,55 | 40 | 0,7 | 3,0  | 0,30       | 10,0° | 2 | •                       | •   |
| NEW! .070   | 0,7 | 3        | 0,65 | 40 | 0,8 | 3,5  | 0,35       | 9,0°  | 2 | •                       | •   |
| .080  | 0,8 | 3        | 0,75 | 40 | 1,0 | 4,0  | 0,40       | 9,0°  | 2 | •                       | •   |
| NEW! .090   | 0,9 | 3        | 0,85 | 40 | 1,1 | 4,5  | 0,45       | 8,0°  | 2 | •                       | •   |
| .100  | 1,0 | 3        | 0,95 | 50 | 1,2 | 5,0  | 0,50       | 7,0°  | 2 | •                       | •   |
| .108  | 1,2 | 3        | 1,15 | 50 | 1,4 | 6,0  | 0,60       | 6,0°  | 2 | •                       | •   |
| .120  | 1,5 | 3        | 1,45 | 50 | 1,8 | 7,5  | 0,75       | 5,0°  | 2 | •                       | •   |
| NEW! .132   | 1,8 | 3        | 1,75 | 50 | 2,2 | 9,0  | 0,90       | 4,0°  | 2 | •                       | •   |
| .140  | 2,0 | 3        | 1,95 | 50 | 2,4 | 10,0 | 1,00       | 3,0°  | 2 | •                       | •   |
| NEW! .152   | 2,3 | 3        | 2,25 | 50 | 2,8 | 11,5 | 1,15       | 2,0°  | 2 | •                       | •   |
| .160  | 2,5 | 3        | 2,45 | 50 | 3,0 | 12,5 | 1,25       | 1,5°  | 2 | •                       | •   |
| NEW! .172   | 2,8 | 3        | 2,75 | 50 | 3,4 | 14,0 | 1,40       | 1,0°  | 2 | •                       | •   |
| .180  | 3,0 | 3        | 2,95 | 50 | 3,6 | 15,0 | 1,50       | 0°    | 2 | •                       | •   |

Micro



5786



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC

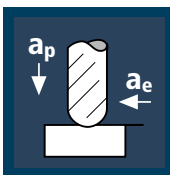


Сталь  
58 - 62 HRC



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 0.5        | 2 | 150                       | 0.010                  | 0.07                   | 0.07                   | 60000      | 1200                       | 5.0                         |
| 0.6        | 2 | 150                       | 0.010                  | 0.08                   | 0.08                   | 60000      | 1200                       | 7.5                         |
| 0.8        | 2 | 150                       | 0.015                  | 0.10                   | 0.10                   | 59685      | 1790                       | 19.5                        |
| 1.0        | 2 | 150                       | 0.020                  | 0.13                   | 0.13                   | 47750      | 1910                       | 32.5                        |
| 1.2        | 2 | 150                       | 0.025                  | 0.16                   | 0.16                   | 39790      | 1990                       | 48.5                        |
| 1.5        | 2 | 150                       | 0.030                  | 0.20                   | 0.20                   | 31830      | 1910                       | 72.5                        |
| 2.0        | 2 | 150                       | 0.040                  | 0.26                   | 0.26                   | 23875      | 1910                       | 129.0                       |
| 2.5        | 2 | 150                       | 0.050                  | 0.33                   | 0.33                   | 19100      | 1910                       | 201.5                       |
| 3.0        | 2 | 150                       | 0.060                  | 0.39                   | 0.39                   | 15915      | 1910                       | 290.5                       |
| 0.5        | 2 | 120                       | 0.010                  | 0.07                   | 0.07                   | 60000      | 1200                       | 5.0                         |
| 0.6        | 2 | 120                       | 0.010                  | 0.08                   | 0.08                   | 60000      | 1200                       | 7.5                         |
| 0.8        | 2 | 120                       | 0.015                  | 0.10                   | 0.10                   | 47750      | 1435                       | 15.5                        |
| 1.0        | 2 | 120                       | 0.020                  | 0.13                   | 0.13                   | 38200      | 1530                       | 26.0                        |
| 1.2        | 2 | 120                       | 0.025                  | 0.16                   | 0.16                   | 31830      | 1590                       | 38.5                        |
| 1.5        | 2 | 120                       | 0.030                  | 0.20                   | 0.20                   | 25465      | 1530                       | 58.0                        |
| 2.0        | 2 | 120                       | 0.040                  | 0.26                   | 0.26                   | 19100      | 1530                       | 103.5                       |
| 2.5        | 2 | 120                       | 0.050                  | 0.33                   | 0.33                   | 15280      | 1530                       | 161.5                       |
| 3.0        | 2 | 120                       | 0.060                  | 0.39                   | 0.39                   | 12735      | 1530                       | 232.5                       |
| 0.5        | 2 | 100                       | 0.010                  | 0.07                   | 0.07                   | 60000      | 1200                       | 5.0                         |
| 0.6        | 2 | 100                       | 0.010                  | 0.08                   | 0.08                   | 53055      | 1060                       | 6.5                         |
| 0.8        | 2 | 100                       | 0.015                  | 0.10                   | 0.10                   | 39790      | 1195                       | 13.0                        |
| 1.0        | 2 | 100                       | 0.020                  | 0.13                   | 0.13                   | 31830      | 1275                       | 21.5                        |
| 1.2        | 2 | 100                       | 0.025                  | 0.16                   | 0.16                   | 26525      | 1325                       | 32.0                        |
| 1.5        | 2 | 100                       | 0.030                  | 0.20                   | 0.20                   | 21220      | 1275                       | 48.5                        |
| 2.0        | 2 | 100                       | 0.040                  | 0.26                   | 0.26                   | 15915      | 1275                       | 86.0                        |
| 2.5        | 2 | 100                       | 0.050                  | 0.33                   | 0.33                   | 12735      | 1275                       | 134.5                       |
| 3.0        | 2 | 100                       | 0.060                  | 0.39                   | 0.39                   | 10610      | 1275                       | 194.0                       |
| 0.5        | 2 | 30                        | 0.010                  | 0.03                   | 0.07                   | 19100      | 380                        | 1.0                         |
| 0.6        | 2 | 30                        | 0.010                  | 0.04                   | 0.08                   | 15915      | 320                        | 1.0                         |
| 0.8        | 2 | 30                        | 0.015                  | 0.05                   | 0.10                   | 11935      | 360                        | 2.0                         |
| 1.0        | 2 | 30                        | 0.020                  | 0.07                   | 0.13                   | 9550       | 380                        | 3.0                         |
| 1.2        | 2 | 30                        | 0.025                  | 0.08                   | 0.16                   | 7960       | 400                        | 5.0                         |
| 1.5        | 2 | 30                        | 0.030                  | 0.10                   | 0.20                   | 6365       | 380                        | 7.0                         |
| 2.0        | 2 | 30                        | 0.040                  | 0.13                   | 0.26                   | 4775       | 380                        | 13.0                        |
| 2.5        | 2 | 30                        | 0.050                  | 0.16                   | 0.33                   | 3820       | 380                        | 20.0                        |
| 3.0        | 2 | 30                        | 0.060                  | 0.20                   | 0.39                   | 3185       | 380                        | 29.0                        |

5786



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC



Сталь  
58 - 62 HRC



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 0.5        | 2 | 120                       | 0.005                  | 0.02                   | 0.50                   | 60000      | 600                        | 5.5                         |
| 0.6        | 2 | 120                       | 0.010                  | 0.02                   | 0.60                   | 60000      | 1200                       | 15.0                        |
| 0.8        | 2 | 120                       | 0.010                  | 0.03                   | 0.80                   | 47750      | 955                        | 21.5                        |
| 1.0        | 2 | 120                       | 0.015                  | 0.04                   | 1.00                   | 38200      | 1145                       | 40.0                        |
| 1.2        | 2 | 120                       | 0.015                  | 0.04                   | 1.20                   | 31830      | 955                        | 48.0                        |
| 1.5        | 2 | 120                       | 0.020                  | 0.05                   | 1.50                   | 25465      | 1020                       | 80.5                        |
| 2.0        | 2 | 120                       | 0.025                  | 0.07                   | 2.00                   | 19100      | 955                        | 133.5                       |
| 2.5        | 2 | 120                       | 0.030                  | 0.09                   | 2.50                   | 15280      | 915                        | 200.0                       |
| 3.0        | 2 | 120                       | 0.040                  | 0.11                   | 3.00                   | 12735      | 1020                       | 321.5                       |
| 0.5        | 2 | 100                       | 0.005                  | 0.02                   | 0.50                   | 60000      | 600                        | 5.5                         |
| 0.6        | 2 | 100                       | 0.010                  | 0.02                   | 0.60                   | 53055      | 1060                       | 13.5                        |
| 0.8        | 2 | 100                       | 0.010                  | 0.03                   | 0.80                   | 39790      | 795                        | 18.0                        |
| 1.0        | 2 | 100                       | 0.015                  | 0.04                   | 1.00                   | 31830      | 955                        | 33.5                        |
| 1.2        | 2 | 100                       | 0.015                  | 0.04                   | 1.20                   | 26525      | 795                        | 40.0                        |
| 1.5        | 2 | 100                       | 0.020                  | 0.05                   | 1.50                   | 21220      | 850                        | 67.0                        |
| 2.0        | 2 | 100                       | 0.025                  | 0.07                   | 2.00                   | 15915      | 795                        | 111.5                       |
| 2.5        | 2 | 100                       | 0.030                  | 0.09                   | 2.50                   | 12735      | 765                        | 167.5                       |
| 3.0        | 2 | 100                       | 0.040                  | 0.11                   | 3.00                   | 10610      | 850                        | 268.0                       |
| 0.5        | 2 | 80                        | 0.005                  | 0.02                   | 0.50                   | 50930      | 510                        | 4.5                         |
| 0.6        | 2 | 80                        | 0.010                  | 0.02                   | 0.60                   | 42445      | 850                        | 10.5                        |
| 0.8        | 2 | 80                        | 0.010                  | 0.03                   | 0.80                   | 31830      | 635                        | 14.0                        |
| 1.0        | 2 | 80                        | 0.015                  | 0.04                   | 1.00                   | 25465      | 765                        | 27.0                        |
| 1.2        | 2 | 80                        | 0.015                  | 0.04                   | 1.20                   | 21220      | 635                        | 32.0                        |
| 1.5        | 2 | 80                        | 0.020                  | 0.05                   | 1.50                   | 16975      | 680                        | 53.5                        |
| 2.0        | 2 | 80                        | 0.025                  | 0.07                   | 2.00                   | 12735      | 635                        | 89.0                        |
| 2.5        | 2 | 80                        | 0.030                  | 0.09                   | 2.50                   | 10185      | 610                        | 133.5                       |
| 3.0        | 2 | 80                        | 0.040                  | 0.11                   | 3.00                   | 8490       | 680                        | 214.0                       |
| 0.5        | 2 | 20                        | 0.005                  | 0.01                   | 0.50                   | 12735      | 125                        | 0.5                         |
| 0.6        | 2 | 20                        | 0.010                  | 0.01                   | 0.60                   | 10610      | 210                        | 1.5                         |
| 0.8        | 2 | 20                        | 0.010                  | 0.02                   | 0.80                   | 7960       | 160                        | 2.0                         |
| 1.0        | 2 | 20                        | 0.015                  | 0.02                   | 1.00                   | 6365       | 190                        | 4.0                         |
| 1.2        | 2 | 20                        | 0.015                  | 0.02                   | 1.20                   | 5305       | 160                        | 4.5                         |
| 1.5        | 2 | 20                        | 0.020                  | 0.03                   | 1.50                   | 4245       | 170                        | 7.5                         |
| 2.0        | 2 | 20                        | 0.025                  | 0.04                   | 2.00                   | 3185       | 160                        | 13.0                        |
| 2.5        | 2 | 20                        | 0.030                  | 0.05                   | 2.50                   | 2545       | 155                        | 19.5                        |
| 3.0        | 2 | 20                        | 0.040                  | 0.06                   | 3.00                   | 2120       | 170                        | 30.5                        |

# Фрезы сферические, 8 x d

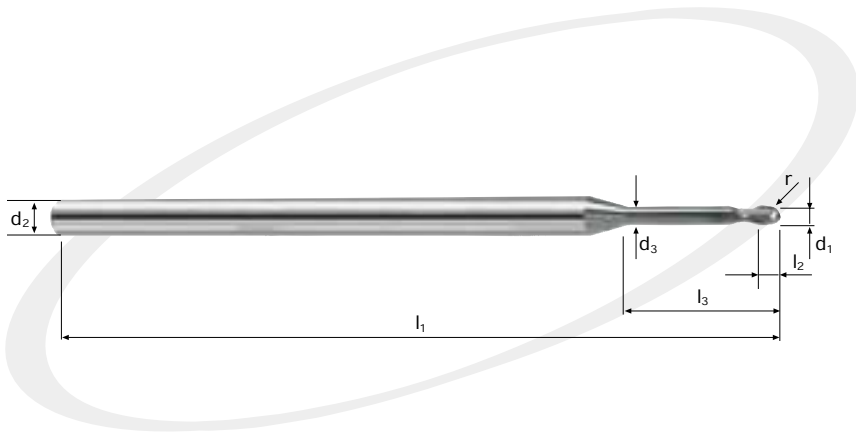
# Microcut-B8

HM  
Micro MX

$\lambda$  30°  
 $\gamma$  5°

8D

DIN 6535 HA



Предназначены для обработки:



HRC 25 - 62

Графит

Нерж. сталь

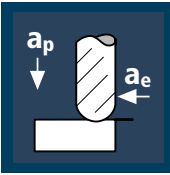
Медь

Алюминий

|                                    |     |          |      |    |     |      |                 |          |   | MICRO            | DIA |
|------------------------------------|-----|----------|------|----|-----|------|-----------------|----------|---|------------------|-----|
| Пример: заказа-№. <b>M5786.050</b> |     |          |      |    |     |      |                 |          |   | 5786 M5786 I5786 |     |
| $\phi$<br>Code                     | d1  | d2<br>h6 | d3   | l1 | l2  | l3   | r<br>$\pm 0,01$ | $\alpha$ | z |                  |     |
| .050                               | 0,5 | 3        | 0,45 | 40 | 0,6 | 4,0  | 0,25            | 9°       | 2 | •                | •   |
| .060                               | 0,6 | 3        | 0,55 | 40 | 0,7 | 4,8  | 0,30            | 8°       | 2 | •                | •   |
| .080                               | 0,8 | 3        | 0,75 | 40 | 1,0 | 6,4  | 0,40            | 7°       | 2 | •                | •   |
| .100                               | 1,0 | 3        | 0,95 | 50 | 1,2 | 8,0  | 0,50            | 6°       | 2 | •                | •   |
| .108                               | 1,2 | 3        | 1,15 | 50 | 1,4 | 9,6  | 0,60            | 5°       | 2 | •                | •   |
| .120                               | 1,5 | 3        | 1,45 | 60 | 1,8 | 12,0 | 0,75            | 4°       | 2 | •                | •   |
| .140                               | 2,0 | 3        | 1,95 | 60 | 2,4 | 16,0 | 1,00            | 2°       | 2 | •                | •   |
| .160                               | 2,5 | 3        | 2,45 | 60 | 3,0 | 20,0 | 1,25            | 1°       | 2 | •                | •   |
| .180                               | 3,0 | 3        | 2,95 | 60 | 3,6 | 24,0 | 1,50            | 0°       | 2 | •                | •   |

Micro

5787



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC

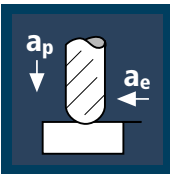


Сталь  
58 - 62 HRC



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 0.5        | 2 | 150                       | 0.005                  | 0.05                   | 0.05                   | 60000      | 600                        | 1.5                         |
| 0.6        | 2 | 150                       | 0.005                  | 0.06                   | 0.06                   | 60000      | 600                        | 2.0                         |
| 0.8        | 2 | 150                       | 0.010                  | 0.08                   | 0.08                   | 59685      | 1195                       | 7.5                         |
| 1.0        | 2 | 150                       | 0.010                  | 0.10                   | 0.10                   | 47750      | 955                        | 9.5                         |
| 1.2        | 2 | 150                       | 0.010                  | 0.12                   | 0.12                   | 39790      | 795                        | 11.5                        |
| 1.5        | 2 | 150                       | 0.015                  | 0.15                   | 0.15                   | 31830      | 955                        | 21.5                        |
| 2.0        | 2 | 150                       | 0.020                  | 0.20                   | 0.20                   | 23875      | 955                        | 38.0                        |
| 2.5        | 2 | 150                       | 0.025                  | 0.25                   | 0.25                   | 19100      | 955                        | 59.5                        |
| 3.0        | 2 | 150                       | 0.030                  | 0.30                   | 0.30                   | 15915      | 955                        | 86.0                        |
| 0.5        | 2 | 120                       | 0.005                  | 0.05                   | 0.05                   | 60000      | 600                        | 1.5                         |
| 0.6        | 2 | 120                       | 0.005                  | 0.06                   | 0.06                   | 60000      | 600                        | 2.0                         |
| 0.8        | 2 | 120                       | 0.010                  | 0.08                   | 0.08                   | 47750      | 955                        | 6.0                         |
| 1.0        | 2 | 120                       | 0.010                  | 0.10                   | 0.10                   | 38200      | 765                        | 7.5                         |
| 1.2        | 2 | 120                       | 0.010                  | 0.12                   | 0.12                   | 31830      | 635                        | 9.0                         |
| 1.5        | 2 | 120                       | 0.015                  | 0.15                   | 0.15                   | 25465      | 765                        | 17.0                        |
| 2.0        | 2 | 120                       | 0.020                  | 0.20                   | 0.20                   | 19100      | 765                        | 30.5                        |
| 2.5        | 2 | 120                       | 0.025                  | 0.25                   | 0.25                   | 15280      | 765                        | 48.0                        |
| 3.0        | 2 | 120                       | 0.030                  | 0.30                   | 0.30                   | 12735      | 765                        | 69.0                        |
| 0.5        | 2 | 100                       | 0.005                  | 0.05                   | 0.05                   | 60000      | 600                        | 1.5                         |
| 0.6        | 2 | 100                       | 0.005                  | 0.06                   | 0.06                   | 53055      | 530                        | 2.0                         |
| 0.8        | 2 | 100                       | 0.010                  | 0.08                   | 0.08                   | 39790      | 795                        | 5.0                         |
| 1.0        | 2 | 100                       | 0.010                  | 0.10                   | 0.10                   | 31830      | 635                        | 6.5                         |
| 1.2        | 2 | 100                       | 0.010                  | 0.12                   | 0.12                   | 26525      | 530                        | 7.5                         |
| 1.5        | 2 | 100                       | 0.015                  | 0.15                   | 0.15                   | 21220      | 635                        | 14.5                        |
| 2.0        | 2 | 100                       | 0.020                  | 0.20                   | 0.20                   | 15915      | 635                        | 25.5                        |
| 2.5        | 2 | 100                       | 0.025                  | 0.25                   | 0.25                   | 12735      | 635                        | 39.5                        |
| 3.0        | 2 | 100                       | 0.030                  | 0.30                   | 0.30                   | 10610      | 635                        | 57.0                        |
| 0.5        | 2 | 30                        | 0.005                  | 0.02                   | 0.05                   | 19100      | 190                        | 0.0                         |
| 0.6        | 2 | 30                        | 0.005                  | 0.02                   | 0.06                   | 15915      | 160                        | 0.0                         |
| 0.8        | 2 | 30                        | 0.010                  | 0.03                   | 0.08                   | 11935      | 240                        | 0.5                         |
| 1.0        | 2 | 30                        | 0.010                  | 0.04                   | 0.10                   | 9550       | 190                        | 1.0                         |
| 1.2        | 2 | 30                        | 0.010                  | 0.05                   | 0.12                   | 7960       | 160                        | 1.0                         |
| 1.5        | 2 | 30                        | 0.015                  | 0.06                   | 0.15                   | 6365       | 190                        | 1.5                         |
| 2.0        | 2 | 30                        | 0.020                  | 0.08                   | 0.20                   | 4775       | 190                        | 3.0                         |
| 2.5        | 2 | 30                        | 0.025                  | 0.10                   | 0.25                   | 3820       | 190                        | 5.0                         |
| 3.0        | 2 | 30                        | 0.030                  | 0.12                   | 0.30                   | 3185       | 190                        | 7.0                         |

5787



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC



Сталь  
58 - 62 HRC



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 0.5        | 2 | 120                       | 0.005                  | 0.01                   | 0.50                   | 60000      | 600                        | 3.0                         |
| 0.6        | 2 | 120                       | 0.005                  | 0.01                   | 0.60                   | 60000      | 600                        | 4.5                         |
| 0.8        | 2 | 120                       | 0.010                  | 0.02                   | 0.80                   | 47750      | 955                        | 12.0                        |
| 1.0        | 2 | 120                       | 0.010                  | 0.02                   | 1.00                   | 38200      | 765                        | 15.5                        |
| 1.2        | 2 | 120                       | 0.010                  | 0.02                   | 1.20                   | 31830      | 635                        | 18.5                        |
| 1.5        | 2 | 120                       | 0.015                  | 0.03                   | 1.50                   | 25465      | 765                        | 34.5                        |
| 2.0        | 2 | 120                       | 0.020                  | 0.04                   | 2.00                   | 19100      | 765                        | 61.0                        |
| 2.5        | 2 | 120                       | 0.025                  | 0.05                   | 2.50                   | 15280      | 765                        | 95.5                        |
| 3.0        | 2 | 120                       | 0.030                  | 0.06                   | 3.00                   | 12735      | 765                        | 137.5                       |
| 0.5        | 2 | 100                       | 0.005                  | 0.01                   | 0.50                   | 60000      | 600                        | 3.0                         |
| 0.6        | 2 | 100                       | 0.005                  | 0.01                   | 0.60                   | 53055      | 530                        | 4.0                         |
| 0.8        | 2 | 100                       | 0.010                  | 0.02                   | 0.80                   | 39790      | 795                        | 10.0                        |
| 1.0        | 2 | 100                       | 0.010                  | 0.02                   | 1.00                   | 31830      | 635                        | 12.5                        |
| 1.2        | 2 | 100                       | 0.010                  | 0.02                   | 1.20                   | 26525      | 530                        | 15.5                        |
| 1.5        | 2 | 100                       | 0.015                  | 0.03                   | 1.50                   | 21220      | 635                        | 28.5                        |
| 2.0        | 2 | 100                       | 0.020                  | 0.04                   | 2.00                   | 15915      | 635                        | 51.0                        |
| 2.5        | 2 | 100                       | 0.025                  | 0.05                   | 2.50                   | 12735      | 635                        | 79.5                        |
| 3.0        | 2 | 100                       | 0.030                  | 0.06                   | 3.00                   | 10610      | 635                        | 114.5                       |
| 0.5        | 2 | 80                        | 0.005                  | 0.01                   | 0.50                   | 50930      | 510                        | 2.5                         |
| 0.6        | 2 | 80                        | 0.005                  | 0.01                   | 0.60                   | 42445      | 425                        | 3.0                         |
| 0.8        | 2 | 80                        | 0.010                  | 0.02                   | 0.80                   | 31830      | 635                        | 8.0                         |
| 1.0        | 2 | 80                        | 0.010                  | 0.02                   | 1.00                   | 25465      | 510                        | 10.0                        |
| 1.2        | 2 | 80                        | 0.010                  | 0.02                   | 1.20                   | 21220      | 425                        | 12.0                        |
| 1.5        | 2 | 80                        | 0.015                  | 0.03                   | 1.50                   | 16975      | 510                        | 23.0                        |
| 2.0        | 2 | 80                        | 0.020                  | 0.04                   | 2.00                   | 12735      | 510                        | 41.0                        |
| 2.5        | 2 | 80                        | 0.025                  | 0.05                   | 2.50                   | 10185      | 510                        | 64.0                        |
| 3.0        | 2 | 80                        | 0.030                  | 0.06                   | 3.00                   | 8490       | 510                        | 92.0                        |
| 0.5        | 2 | 20                        | 0.005                  | 0.01                   | 0.50                   | 12735      | 125                        | 0.5                         |
| 0.6        | 2 | 20                        | 0.005                  | 0.01                   | 0.60                   | 10610      | 105                        | 0.5                         |
| 0.8        | 2 | 20                        | 0.010                  | 0.01                   | 0.80                   | 7960       | 160                        | 1.0                         |
| 1.0        | 2 | 20                        | 0.010                  | 0.01                   | 1.00                   | 6365       | 125                        | 1.5                         |
| 1.2        | 2 | 20                        | 0.010                  | 0.01                   | 1.20                   | 5305       | 105                        | 1.5                         |
| 1.5        | 2 | 20                        | 0.015                  | 0.02                   | 1.50                   | 4245       | 125                        | 3.0                         |
| 2.0        | 2 | 20                        | 0.020                  | 0.02                   | 2.00                   | 3185       | 125                        | 5.0                         |
| 2.5        | 2 | 20                        | 0.025                  | 0.03                   | 2.50                   | 2545       | 125                        | 8.0                         |
| 3.0        | 2 | 20                        | 0.030                  | 0.03                   | 3.00                   | 2120       | 125                        | 11.5                        |

# Фрезы сферические, 10 x d

## Microcut-B10

HM  
Micro

MX

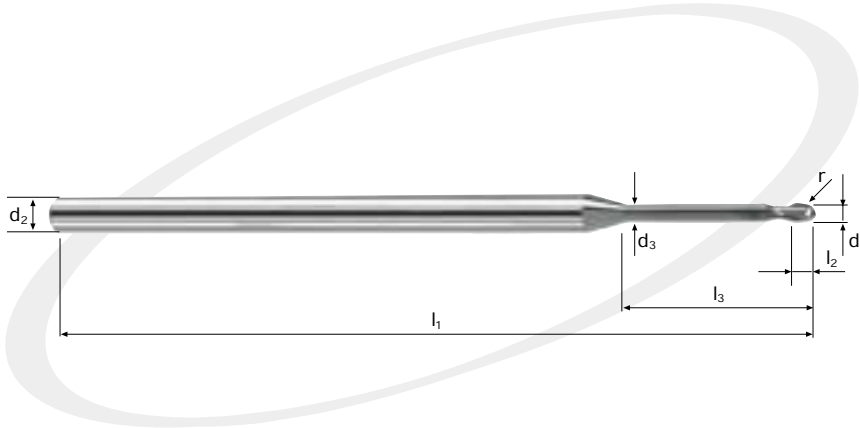
$\lambda$  30°  
 $\gamma$  5°



10D



DIN  
6535  
HA



Предназначены для обработки:

- HRC 25 - 62**
- Графит**
- Нерж. сталь
- Медь
- Алюминий

| ø    | d1  | d2<br>h6 | d3   | l1 | l2  | l3   | r<br>±0,01 | α  | z | MICRO DIA |       |       |
|------|-----|----------|------|----|-----|------|------------|----|---|-----------|-------|-------|
|      |     |          |      |    |     |      |            |    |   | 5787      | M5787 | I5787 |
| .050 | 0,5 | 3        | 0,45 | 40 | 0,6 | 5,0  | 0,25       | 8° | 2 | .         | .     | .     |
| .060 | 0,6 | 3        | 0,55 | 40 | 0,7 | 6,0  | 0,30       | 7° | 2 | .         | .     | .     |
| .080 | 0,8 | 3        | 0,75 | 40 | 1,0 | 8,0  | 0,40       | 6° | 2 | .         | .     | .     |
| .100 | 1,0 | 3        | 0,95 | 50 | 1,2 | 10,0 | 0,50       | 5° | 2 | .         | .     | .     |
| .108 | 1,2 | 3        | 1,15 | 50 | 1,4 | 12,0 | 0,60       | 4° | 2 | .         | .     | .     |
| .120 | 1,5 | 3        | 1,45 | 60 | 1,8 | 15,0 | 0,75       | 3° | 2 | .         | .     | .     |
| .140 | 2,0 | 3        | 1,95 | 60 | 2,4 | 20,0 | 1,00       | 2° | 2 | .         | .     | .     |
| .160 | 2,5 | 3        | 2,45 | 60 | 3,0 | 25,0 | 1,25       | 1° | 2 | .         | .     | .     |
| .180 | 3,0 | 3        | 2,95 | 60 | 3,6 | 30,0 | 1,50       | 0° | 2 | .         | .     | .     |

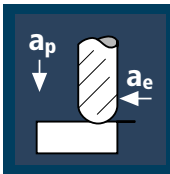
Пример: M 5787.050



5787 M5787 I5787

Micro

5791



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC

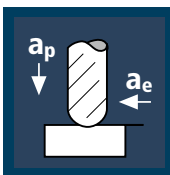


Сталь  
58 - 62 HRC



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 1.0        | 2 | 150                       | 0.020                  | 0.08                   | 0.08                   | 47750      | 1910                       | 12.0                        |
| 1.2        | 2 | 150                       | 0.025                  | 0.10                   | 0.10                   | 39790      | 1990                       | 18.5                        |
| 1.5        | 2 | 150                       | 0.030                  | 0.12                   | 0.12                   | 31830      | 1910                       | 27.5                        |
| 2.0        | 2 | 150                       | 0.040                  | 0.16                   | 0.16                   | 23875      | 1910                       | 49.0                        |
| 2.5        | 2 | 150                       | 0.050                  | 0.20                   | 0.20                   | 19100      | 1910                       | 76.5                        |
| 3.0        | 2 | 150                       | 0.060                  | 0.24                   | 0.24                   | 15915      | 1910                       | 110.0                       |
| 1.0        | 2 | 120                       | 0.020                  | 0.08                   | 0.08                   | 38200      | 1530                       | 10.0                        |
| 1.2        | 2 | 120                       | 0.025                  | 0.10                   | 0.10                   | 31830      | 1590                       | 14.5                        |
| 1.5        | 2 | 120                       | 0.030                  | 0.12                   | 0.12                   | 25465      | 1530                       | 22.0                        |
| 2.0        | 2 | 120                       | 0.040                  | 0.16                   | 0.16                   | 19100      | 1530                       | 39.0                        |
| 2.5        | 2 | 120                       | 0.050                  | 0.20                   | 0.20                   | 15280      | 1530                       | 61.0                        |
| 3.0        | 2 | 120                       | 0.060                  | 0.24                   | 0.24                   | 12735      | 1530                       | 88.0                        |
| 1.0        | 2 | 100                       | 0.020                  | 0.08                   | 0.08                   | 31830      | 1275                       | 8.0                         |
| 1.2        | 2 | 100                       | 0.025                  | 0.10                   | 0.10                   | 26525      | 1325                       | 12.0                        |
| 1.5        | 2 | 100                       | 0.030                  | 0.12                   | 0.12                   | 21220      | 1275                       | 18.5                        |
| 2.0        | 2 | 100                       | 0.040                  | 0.16                   | 0.16                   | 15915      | 1275                       | 32.5                        |
| 2.5        | 2 | 100                       | 0.050                  | 0.20                   | 0.20                   | 12735      | 1275                       | 51.0                        |
| 3.0        | 2 | 100                       | 0.060                  | 0.24                   | 0.24                   | 10610      | 1275                       | 73.5                        |
| 1.0        | 2 | 30                        | 0.020                  | 0.08                   | 0.08                   | 9550       | 380                        | 2.5                         |
| 1.2        | 2 | 30                        | 0.025                  | 0.10                   | 0.10                   | 7960       | 400                        | 3.5                         |
| 1.5        | 2 | 30                        | 0.030                  | 0.12                   | 0.12                   | 6365       | 380                        | 5.5                         |
| 2.0        | 2 | 30                        | 0.040                  | 0.16                   | 0.16                   | 4775       | 380                        | 9.5                         |
| 2.5        | 2 | 30                        | 0.050                  | 0.20                   | 0.20                   | 3820       | 380                        | 15.0                        |
| 3.0        | 2 | 30                        | 0.060                  | 0.24                   | 0.24                   | 3185       | 380                        | 22.0                        |

5791



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC



Сталь  
58 - 62 HRC



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 1.0        | 2 | 120                       | 0.010                  | 0.02                   | 1.00                   | 38200      | 765                        | 15.5                        |
| 1.2        | 2 | 120                       | 0.010                  | 0.02                   | 1.20                   | 31830      | 635                        | 18.5                        |
| 1.5        | 2 | 120                       | 0.015                  | 0.03                   | 1.50                   | 25465      | 765                        | 34.5                        |
| 2.0        | 2 | 120                       | 0.020                  | 0.04                   | 2.00                   | 19100      | 765                        | 61.0                        |
| 2.5        | 2 | 120                       | 0.025                  | 0.05                   | 2.50                   | 15280      | 765                        | 95.5                        |
| 3.0        | 2 | 120                       | 0.030                  | 0.06                   | 3.00                   | 12735      | 765                        | 137.5                       |
| 1.0        | 2 | 100                       | 0.010                  | 0.02                   | 1.00                   | 31830      | 635                        | 12.5                        |
| 1.2        | 2 | 100                       | 0.010                  | 0.02                   | 1.20                   | 26525      | 530                        | 15.5                        |
| 1.5        | 2 | 100                       | 0.015                  | 0.03                   | 1.50                   | 21220      | 635                        | 28.5                        |
| 2.0        | 2 | 100                       | 0.020                  | 0.04                   | 2.00                   | 15915      | 635                        | 51.0                        |
| 2.5        | 2 | 100                       | 0.025                  | 0.05                   | 2.50                   | 12735      | 635                        | 79.5                        |
| 3.0        | 2 | 100                       | 0.030                  | 0.06                   | 3.00                   | 10610      | 635                        | 114.5                       |
| 1.0        | 2 | 80                        | 0.010                  | 0.02                   | 1.00                   | 25465      | 510                        | 10.0                        |
| 1.2        | 2 | 80                        | 0.010                  | 0.02                   | 1.20                   | 21220      | 425                        | 12.0                        |
| 1.5        | 2 | 80                        | 0.015                  | 0.03                   | 1.50                   | 16975      | 510                        | 23.0                        |
| 2.0        | 2 | 80                        | 0.020                  | 0.04                   | 2.00                   | 12735      | 510                        | 41.0                        |
| 2.5        | 2 | 80                        | 0.025                  | 0.05                   | 2.50                   | 10185      | 510                        | 64.0                        |
| 3.0        | 2 | 80                        | 0.030                  | 0.06                   | 3.00                   | 8490       | 510                        | 92.0                        |
| 1.0        | 2 | 20                        | 0.010                  | 0.02                   | 1.00                   | 6365       | 125                        | 2.5                         |
| 1.2        | 2 | 20                        | 0.010                  | 0.02                   | 1.20                   | 5305       | 105                        | 3.0                         |
| 1.5        | 2 | 20                        | 0.015                  | 0.03                   | 1.50                   | 4245       | 125                        | 5.5                         |
| 2.0        | 2 | 20                        | 0.020                  | 0.04                   | 2.00                   | 3185       | 125                        | 10.0                        |
| 2.5        | 2 | 20                        | 0.025                  | 0.05                   | 2.50                   | 2545       | 125                        | 15.5                        |
| 3.0        | 2 | 20                        | 0.030                  | 0.06                   | 3.00                   | 2120       | 125                        | 22.5                        |

# Фрезы сферические, 12 x d

# Microcut-B12

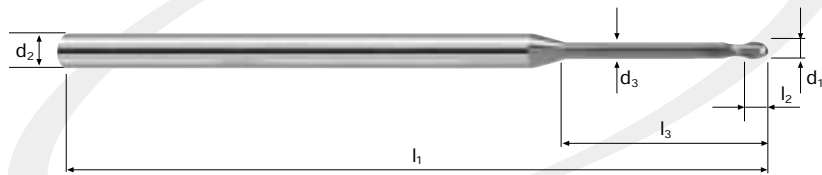
**NEW!**

HM  
Micro MX

$\lambda$  30°  
 $\gamma$  5°

12D

DIN 6535 HA



Предназначены для обработки:



HRC  
25 - 62

Графит

Нерж.  
сталь

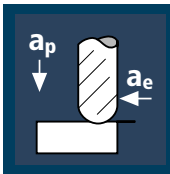
Медь

Алюминий

| Пример:<br>заказа-№. | Покрытие | Артикул-№. | Ф-Код |      |       |       |            |          |   | MICRO | DIA |   |
|----------------------|----------|------------|-------|------|-------|-------|------------|----------|---|-------|-----|---|
|                      |          |            |       | 5791 | M5791 | I5791 |            |          |   |       |     |   |
| $\phi$               | d1       | d2         | d3    | l1   | l2    | l3    | r          | $\alpha$ | z |       |     |   |
| Code                 |          | h6         |       |      |       |       | $\pm 0,01$ |          |   |       |     |   |
| .100                 | 1,0      | 3          | 0,95  | 50   | 1,2   | 12,0  | 0,50       | 4°       | 2 | •     | •   | • |
| .108                 | 1,2      | 3          | 1,15  | 60   | 1,4   | 14,4  | 0,60       | 3°       | 2 | •     | •   | • |
| .120                 | 1,5      | 3          | 1,45  | 60   | 1,8   | 18,0  | 0,75       | 3°       | 2 | •     | •   | • |
| .140                 | 2,0      | 3          | 1,95  | 60   | 2,4   | 24,0  | 1,00       | 2°       | 2 | •     | •   | • |
| .160                 | 2,5      | 3          | 2,45  | 70   | 3,0   | 30,0  | 1,25       | 1°       | 2 | •     | •   | • |
| .180                 | 3,0      | 3          | 2,95  | 70   | 3,6   | 36,0  | 1,50       | 0°       | 2 | •     | •   | • |

Micro

5793



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC

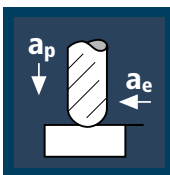


Сталь  
58 - 62 HRC



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 1.0        | 2 | 150                       | 0.015                  | 0.06                   | 0.06                   | 47750                     | 1435                       | 5.0                         |
| 1.2        | 2 | 150                       | 0.020                  | 0.07                   | 0.07                   | 39790                     | 1590                       | 8.0                         |
| 1.5        | 2 | 150                       | 0.025                  | 0.09                   | 0.09                   | 31830                     | 1590                       | 13.0                        |
| 2.0        | 2 | 150                       | 0.030                  | 0.12                   | 0.12                   | 23875                     | 1435                       | 20.5                        |
| 2.5        | 2 | 150                       | 0.040                  | 0.15                   | 0.15                   | 19100                     | 1530                       | 34.5                        |
| 3.0        | 2 | 150                       | 0.045                  | 0.18                   | 0.18                   | 15915                     | 1430                       | 46.5                        |
| 1.0        | 2 | 120                       | 0.015                  | 0.06                   | 0.06                   | 38200                     | 1145                       | 4.0                         |
| 1.2        | 2 | 120                       | 0.020                  | 0.07                   | 0.07                   | 31830                     | 1275                       | 6.5                         |
| 1.5        | 2 | 120                       | 0.025                  | 0.09                   | 0.09                   | 25465                     | 1275                       | 10.5                        |
| 2.0        | 2 | 120                       | 0.030                  | 0.12                   | 0.12                   | 19100                     | 1145                       | 16.5                        |
| 2.5        | 2 | 120                       | 0.040                  | 0.15                   | 0.15                   | 15280                     | 1220                       | 27.5                        |
| 3.0        | 2 | 120                       | 0.045                  | 0.18                   | 0.18                   | 12735                     | 1145                       | 37.0                        |
| 1.0        | 2 | 100                       | 0.015                  | 0.06                   | 0.06                   | 31830                     | 955                        | 3.5                         |
| 1.2        | 2 | 100                       | 0.020                  | 0.07                   | 0.07                   | 26525                     | 1060                       | 5.5                         |
| 1.5        | 2 | 100                       | 0.025                  | 0.09                   | 0.09                   | 21220                     | 1060                       | 8.5                         |
| 2.0        | 2 | 100                       | 0.030                  | 0.12                   | 0.12                   | 15915                     | 955                        | 14.0                        |
| 2.5        | 2 | 100                       | 0.040                  | 0.15                   | 0.15                   | 12735                     | 1020                       | 23.0                        |
| 3.0        | 2 | 100                       | 0.045                  | 0.18                   | 0.18                   | 10610                     | 955                        | 31.0                        |
| 1.0        | 2 | 30                        | 0.015                  | 0.06                   | 0.06                   | 9550                      | 285                        | 1.0                         |
| 1.2        | 2 | 30                        | 0.020                  | 0.07                   | 0.07                   | 7960                      | 320                        | 1.5                         |
| 1.5        | 2 | 30                        | 0.025                  | 0.09                   | 0.09                   | 6365                      | 320                        | 2.5                         |
| 2.0        | 2 | 30                        | 0.030                  | 0.12                   | 0.12                   | 4775                      | 285                        | 4.0                         |
| 2.5        | 2 | 30                        | 0.040                  | 0.15                   | 0.15                   | 3820                      | 305                        | 7.0                         |
| 3.0        | 2 | 30                        | 0.045                  | 0.18                   | 0.18                   | 3185                      | 285                        | 9.0                         |

5793



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC



Сталь  
58 - 62 HRC



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 1.0        | 2 | 120                       | 0.010                  | 0.01                   | 1.00                   | 38200                     | 765                        | 7.5                         |
| 1.2        | 2 | 120                       | 0.010                  | 0.01                   | 1.20                   | 31830                     | 635                        | 9.0                         |
| 1.5        | 2 | 120                       | 0.010                  | 0.02                   | 1.50                   | 25465                     | 510                        | 11.5                        |
| 2.0        | 2 | 120                       | 0.015                  | 0.02                   | 2.00                   | 19100                     | 575                        | 23.0                        |
| 2.5        | 2 | 120                       | 0.020                  | 0.03                   | 2.50                   | 15280                     | 610                        | 38.0                        |
| 3.0        | 2 | 120                       | 0.025                  | 0.03                   | 3.00                   | 12735                     | 635                        | 57.0                        |
| 1.0        | 2 | 100                       | 0.010                  | 0.01                   | 1.00                   | 31830                     | 635                        | 6.5                         |
| 1.2        | 2 | 100                       | 0.010                  | 0.01                   | 1.20                   | 26525                     | 530                        | 7.5                         |
| 1.5        | 2 | 100                       | 0.010                  | 0.02                   | 1.50                   | 21220                     | 425                        | 9.5                         |
| 2.0        | 2 | 100                       | 0.015                  | 0.02                   | 2.00                   | 15915                     | 475                        | 19.0                        |
| 2.5        | 2 | 100                       | 0.020                  | 0.03                   | 2.50                   | 12735                     | 510                        | 32.0                        |
| 3.0        | 2 | 100                       | 0.025                  | 0.03                   | 3.00                   | 10610                     | 530                        | 47.5                        |
| 1.0        | 2 | 80                        | 0.010                  | 0.01                   | 1.00                   | 25465                     | 510                        | 5.0                         |
| 1.2        | 2 | 80                        | 0.010                  | 0.01                   | 1.20                   | 21220                     | 425                        | 6.0                         |
| 1.5        | 2 | 80                        | 0.010                  | 0.02                   | 1.50                   | 16975                     | 340                        | 7.5                         |
| 2.0        | 2 | 80                        | 0.015                  | 0.02                   | 2.00                   | 12735                     | 380                        | 15.0                        |
| 2.5        | 2 | 80                        | 0.020                  | 0.03                   | 2.50                   | 10185                     | 405                        | 25.5                        |
| 3.0        | 2 | 80                        | 0.025                  | 0.03                   | 3.00                   | 8490                      | 425                        | 38.5                        |
| 1.0        | 2 | 20                        | 0.010                  | 0.01                   | 1.00                   | 6365                      | 125                        | 1.5                         |
| 1.2        | 2 | 20                        | 0.010                  | 0.01                   | 1.20                   | 5305                      | 105                        | 1.5                         |
| 1.5        | 2 | 20                        | 0.010                  | 0.02                   | 1.50                   | 4245                      | 85                         | 2.0                         |
| 2.0        | 2 | 20                        | 0.015                  | 0.02                   | 2.00                   | 3185                      | 95                         | 4.0                         |
| 2.5        | 2 | 20                        | 0.020                  | 0.03                   | 2.50                   | 2545                      | 100                        | 6.5                         |
| 3.0        | 2 | 20                        | 0.025                  | 0.03                   | 3.00                   | 2120                      | 105                        | 9.5                         |

# Фрезы сферические, 15 x d

# Microcut-B15

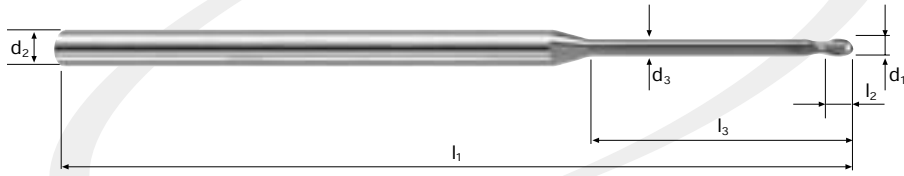
NEW!

HM  
Micro MX

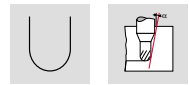
$\lambda$  30°  
 $\gamma$  5°

15D

DIN 6535 HA



Предназначены для обработки:

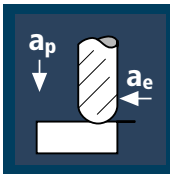


- HRC 25 - 62
- Графит
- Нерж. сталь
- Медь
- Алюминий

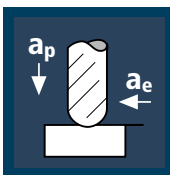
| Пример: заказа-№. | Покр. М | Артикул-№. 5793 | Ø-Код .100 |    |     |      |         |    |   | MICRO |   | DIA        |   |
|-------------------|---------|-----------------|------------|----|-----|------|---------|----|---|-------|---|------------|---|
|                   |         |                 |            |    |     |      |         |    |   | 5793  |   | M5793 5793 |   |
| Ø Code            | d1      | d2 h6           | d3         | l1 | l2  | l3   | r ±0,01 | α  | z |       |   |            |   |
| .100              | 1,0     | 3               | 0,95       | 60 | 1,2 | 15,0 | 0,50    | 4° | 2 | •     | • | •          | • |
| .108              | 1,2     | 3               | 1,15       | 60 | 1,4 | 18,0 | 0,60    | 3° | 2 | •     | • | •          | • |
| .120              | 1,5     | 3               | 1,45       | 70 | 1,8 | 22,5 | 0,75    | 2° | 2 | •     | • | •          | • |
| .140              | 2,0     | 3               | 1,95       | 70 | 2,4 | 30,0 | 1,00    | 1° | 2 | •     | • | •          | • |
| .160              | 2,5     | 3               | 2,45       | 70 | 3,0 | 37,5 | 1,25    | 1° | 2 | •     | • | •          | • |
| .180              | 3,0     | 3               | 2,95       | 80 | 3,6 | 45,0 | 1,50    | 0° | 2 | •     | • | •          | • |

Micro



**5788****Применение**Сталь  
42 - 48 HRCСталь  
48 - 52 HRCСталь  
52 - 56 HRCСталь  
58 - 62 HRC

| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 0.8        | 2 | 150                       | 0.015                  | 0.06                   | 0.08                   | 59685                     | 1790                       | 9.0                         |
| 1.0        | 2 | 150                       | 0.020                  | 0.08                   | 0.10                   | 47750                     | 1910                       | 15.5                        |
| 1.2        | 2 | 150                       | 0.025                  | 0.10                   | 0.12                   | 39790                     | 1990                       | 23.0                        |
| 1.5        | 2 | 150                       | 0.030                  | 0.12                   | 0.15                   | 31830                     | 1910                       | 34.5                        |
| 2.0        | 2 | 150                       | 0.040                  | 0.16                   | 0.20                   | 23875                     | 1910                       | 61.0                        |
| 3.0        | 2 | 150                       | 0.060                  | 0.24                   | 0.30                   | 15915                     | 1910                       | 137.5                       |
| 0.8        | 2 | 120                       | 0.015                  | 0.06                   | 0.08                   | 47750                     | 1435                       | 7.5                         |
| 1.0        | 2 | 120                       | 0.020                  | 0.08                   | 0.10                   | 38200                     | 1530                       | 12.0                        |
| 1.2        | 2 | 120                       | 0.025                  | 0.10                   | 0.12                   | 31830                     | 1590                       | 18.5                        |
| 1.5        | 2 | 120                       | 0.030                  | 0.12                   | 0.15                   | 25465                     | 1530                       | 27.5                        |
| 2.0        | 2 | 120                       | 0.040                  | 0.16                   | 0.20                   | 19100                     | 1530                       | 49.0                        |
| 3.0        | 2 | 120                       | 0.060                  | 0.24                   | 0.30                   | 12735                     | 1530                       | 110.0                       |
| 0.8        | 2 | 100                       | 0.015                  | 0.06                   | 0.08                   | 39790                     | 1195                       | 6.0                         |
| 1.0        | 2 | 100                       | 0.020                  | 0.08                   | 0.10                   | 31830                     | 1275                       | 10.0                        |
| 1.2        | 2 | 100                       | 0.025                  | 0.10                   | 0.12                   | 26525                     | 1325                       | 15.5                        |
| 1.5        | 2 | 100                       | 0.030                  | 0.12                   | 0.15                   | 21220                     | 1275                       | 23.0                        |
| 2.0        | 2 | 100                       | 0.040                  | 0.16                   | 0.20                   | 15915                     | 1275                       | 41.0                        |
| 3.0        | 2 | 100                       | 0.060                  | 0.24                   | 0.30                   | 10610                     | 1275                       | 92.0                        |
| 0.8        | 2 | 30                        | 0.015                  | 0.03                   | 0.08                   | 11935                     | 360                        | 1.0                         |
| 1.0        | 2 | 30                        | 0.020                  | 0.04                   | 0.10                   | 9550                      | 380                        | 1.5                         |
| 1.2        | 2 | 30                        | 0.025                  | 0.05                   | 0.12                   | 7960                      | 400                        | 2.5                         |
| 1.5        | 2 | 30                        | 0.030                  | 0.06                   | 0.15                   | 6365                      | 380                        | 3.5                         |
| 2.0        | 2 | 30                        | 0.040                  | 0.08                   | 0.20                   | 4775                      | 380                        | 6.0                         |
| 3.0        | 2 | 30                        | 0.060                  | 0.12                   | 0.30                   | 3185                      | 380                        | 13.5                        |

**5788****Применение**Сталь  
42 - 48 HRCСталь  
48 - 52 HRCСталь  
52 - 56 HRCСталь  
58 - 62 HRC

| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 0.8        | 2 | 120                       | 0.010                  | 0.02                   | 0.80                   | 47750                     | 955                        | 12.0                        |
| 1.0        | 2 | 120                       | 0.015                  | 0.02                   | 1.00                   | 38200                     | 1145                       | 23.0                        |
| 1.2        | 2 | 120                       | 0.015                  | 0.02                   | 1.20                   | 31830                     | 955                        | 27.5                        |
| 1.5        | 2 | 120                       | 0.020                  | 0.03                   | 1.50                   | 25465                     | 1020                       | 46.0                        |
| 2.0        | 2 | 120                       | 0.025                  | 0.04                   | 2.00                   | 19100                     | 955                        | 76.5                        |
| 3.0        | 2 | 120                       | 0.040                  | 0.06                   | 3.00                   | 12735                     | 1020                       | 183.5                       |
| 0.8        | 2 | 100                       | 0.010                  | 0.02                   | 0.80                   | 39790                     | 795                        | 10.0                        |
| 1.0        | 2 | 100                       | 0.015                  | 0.02                   | 1.00                   | 31830                     | 955                        | 19.0                        |
| 1.2        | 2 | 100                       | 0.015                  | 0.02                   | 1.20                   | 26525                     | 795                        | 23.0                        |
| 1.5        | 2 | 100                       | 0.020                  | 0.03                   | 1.50                   | 21220                     | 850                        | 38.5                        |
| 2.0        | 2 | 100                       | 0.025                  | 0.04                   | 2.00                   | 15915                     | 795                        | 63.5                        |
| 3.0        | 2 | 100                       | 0.040                  | 0.06                   | 3.00                   | 10610                     | 850                        | 153.0                       |
| 0.8        | 2 | 80                        | 0.010                  | 0.02                   | 0.80                   | 31830                     | 635                        | 8.0                         |
| 1.0        | 2 | 80                        | 0.015                  | 0.02                   | 1.00                   | 25465                     | 765                        | 15.5                        |
| 1.2        | 2 | 80                        | 0.015                  | 0.02                   | 1.20                   | 21220                     | 635                        | 18.5                        |
| 1.5        | 2 | 80                        | 0.020                  | 0.03                   | 1.50                   | 16975                     | 680                        | 30.5                        |
| 2.0        | 2 | 80                        | 0.025                  | 0.04                   | 2.00                   | 12735                     | 635                        | 51.0                        |
| 3.0        | 2 | 80                        | 0.040                  | 0.06                   | 3.00                   | 8490                      | 680                        | 122.5                       |
| 0.8        | 2 | 20                        | 0.010                  | 0.01                   | 0.80                   | 7960                      | 160                        | 1.0                         |
| 1.0        | 2 | 20                        | 0.015                  | 0.01                   | 1.00                   | 6365                      | 190                        | 2.0                         |
| 1.2        | 2 | 20                        | 0.015                  | 0.01                   | 1.20                   | 5305                      | 160                        | 2.5                         |
| 1.5        | 2 | 20                        | 0.020                  | 0.02                   | 1.50                   | 4245                      | 170                        | 4.0                         |
| 2.0        | 2 | 20                        | 0.025                  | 0.02                   | 2.00                   | 3185                      | 160                        | 6.5                         |
| 3.0        | 2 | 20                        | 0.040                  | 0.03                   | 3.00                   | 2120                      | 170                        | 15.5                        |

# Фрезы сферические, удлиненные, 2 x d

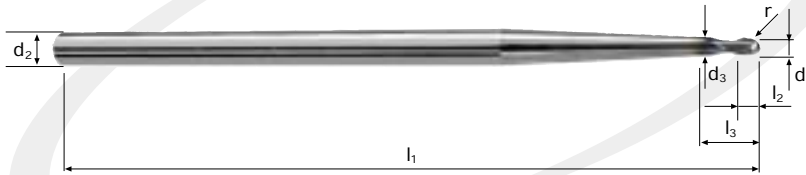
# Microcut-LB2

HM  
Micro MX

$\lambda$  30°  
 $\gamma$  5°

2D

DIN  
6535  
HA



Предназначены для обработки:



HRC  
25 - 62

Графит

Нерж.  
сталь

Медь

Алюминий

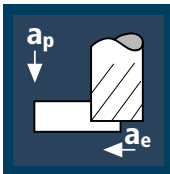
| ø<br>Code | d1  | d2<br>h6 | d3   | l1 | l2  | l3  | r<br>±0,01 | α    | z | MICRO |   | DIA |
|-----------|-----|----------|------|----|-----|-----|------------|------|---|-------|---|-----|
|           |     |          |      |    |     |     |            |      |   |       |   |     |
| .080      | 0,8 | 3        | 0,75 | 60 | 1,0 | 1,6 | 0,40       | 2,5° | 2 | •     | • | •   |
| .100      | 1,0 | 3        | 0,95 | 60 | 1,2 | 2,0 | 0,50       | 2,5° | 2 | •     | • | •   |
| .108      | 1,2 | 3        | 1,15 | 60 | 1,4 | 2,4 | 0,60       | 2,5° | 2 | •     | • | •   |
| .120      | 1,5 | 3        | 1,45 | 60 | 1,8 | 3,0 | 0,75       | 2,5° | 2 | •     | • | •   |
| .140      | 2,0 | 3        | 1,95 | 60 | 2,4 | 4,0 | 1,00       | 1,5° | 2 | •     | • | •   |
| .180      | 3,0 | 3        | 2,95 | 60 | 3,6 | 6,0 | 1,50       | 0°   | 2 | •     | • | •   |
|           |     |          |      |    |     |     |            |      |   |       |   |     |
|           |     |          |      |    |     |     |            |      |   |       |   |     |
|           |     |          |      |    |     |     |            |      |   |       |   |     |
|           |     |          |      |    |     |     |            |      |   |       |   |     |
|           |     |          |      |    |     |     |            |      |   |       |   |     |
|           |     |          |      |    |     |     |            |      |   |       |   |     |
|           |     |          |      |    |     |     |            |      |   |       |   |     |
|           |     |          |      |    |     |     |            |      |   |       |   |     |
|           |     |          |      |    |     |     |            |      |   |       |   |     |
|           |     |          |      |    |     |     |            |      |   |       |   |     |
|           |     |          |      |    |     |     |            |      |   |       |   |     |
|           |     |          |      |    |     |     |            |      |   |       |   |     |
|           |     |          |      |    |     |     |            |      |   |       |   |     |

Пример: M 5788.080

5788 M5788 I5788

Micro

5724



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC

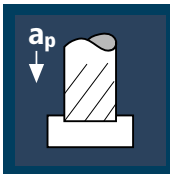


Сталь  
58 - 62 HRC



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 0.8        | 2 | 150                       | 0.015                  | 0.12                   | 0.12                   | 59685      | 1790                       | 26.0                        |
| 1.0        | 2 | 150                       | 0.020                  | 0.15                   | 0.15                   | 47750      | 1910                       | 43.0                        |
| 1.2        | 2 | 150                       | 0.025                  | 0.18                   | 0.18                   | 39790      | 1990                       | 64.5                        |
| 1.5        | 2 | 150                       | 0.030                  | 0.23                   | 0.23                   | 31830      | 1910                       | 96.5                        |
| 1.8        | 2 | 150                       | 0.035                  | 0.27                   | 0.27                   | 26525      | 1855                       | 135.0                       |
| 2.0        | 2 | 150                       | 0.040                  | 0.30                   | 0.30                   | 23875      | 1910                       | 172.0                       |
| 2.5        | 2 | 150                       | 0.050                  | 0.38                   | 0.38                   | 19100      | 1910                       | 268.5                       |
| 2.8        | 2 | 150                       | 0.055                  | 0.42                   | 0.42                   | 17055      | 1875                       | 330.5                       |
| 3.0        | 2 | 150                       | 0.060                  | 0.45                   | 0.45                   | 15915      | 1910                       | 387.0                       |
| 0.8        | 2 | 120                       | 0.015                  | 0.12                   | 0.12                   | 47750      | 1435                       | 20.5                        |
| 1.0        | 2 | 120                       | 0.020                  | 0.15                   | 0.15                   | 38200      | 1530                       | 34.5                        |
| 1.2        | 2 | 120                       | 0.025                  | 0.18                   | 0.18                   | 31830      | 1590                       | 51.5                        |
| 1.5        | 2 | 120                       | 0.030                  | 0.23                   | 0.23                   | 25465      | 1530                       | 77.5                        |
| 1.8        | 2 | 120                       | 0.035                  | 0.27                   | 0.27                   | 21220      | 1485                       | 108.5                       |
| 2.0        | 2 | 120                       | 0.040                  | 0.30                   | 0.30                   | 19100      | 1530                       | 137.5                       |
| 2.5        | 2 | 120                       | 0.050                  | 0.38                   | 0.38                   | 15280      | 1530                       | 215.0                       |
| 2.8        | 2 | 120                       | 0.055                  | 0.42                   | 0.42                   | 13640      | 1500                       | 264.5                       |
| 3.0        | 2 | 120                       | 0.060                  | 0.45                   | 0.45                   | 12735      | 1530                       | 310.0                       |
| 0.8        | 2 | 100                       | 0.015                  | 0.12                   | 0.12                   | 39790      | 1195                       | 17.0                        |
| 1.0        | 2 | 100                       | 0.020                  | 0.15                   | 0.15                   | 31830      | 1275                       | 28.5                        |
| 1.2        | 2 | 100                       | 0.025                  | 0.18                   | 0.18                   | 26525      | 1325                       | 43.0                        |
| 1.5        | 2 | 100                       | 0.030                  | 0.23                   | 0.23                   | 21220      | 1275                       | 64.5                        |
| 1.8        | 2 | 100                       | 0.035                  | 0.27                   | 0.27                   | 17685      | 1240                       | 90.5                        |
| 2.0        | 2 | 100                       | 0.040                  | 0.30                   | 0.30                   | 15915      | 1275                       | 115.0                       |
| 2.5        | 2 | 100                       | 0.050                  | 0.38                   | 0.38                   | 12735      | 1275                       | 179.5                       |
| 2.8        | 2 | 100                       | 0.055                  | 0.42                   | 0.42                   | 11370      | 1250                       | 220.5                       |
| 3.0        | 2 | 100                       | 0.060                  | 0.45                   | 0.45                   | 10610      | 1275                       | 258.0                       |
| 0.8        | 2 | 30                        | 0.015                  | 0.07                   | 0.12                   | 11935      | 360                        | 3.0                         |
| 1.0        | 2 | 30                        | 0.020                  | 0.09                   | 0.15                   | 9550       | 380                        | 5.0                         |
| 1.2        | 2 | 30                        | 0.025                  | 0.11                   | 0.18                   | 7960       | 400                        | 8.0                         |
| 1.5        | 2 | 30                        | 0.030                  | 0.14                   | 0.23                   | 6365       | 380                        | 11.5                        |
| 1.8        | 2 | 30                        | 0.035                  | 0.16                   | 0.27                   | 5305       | 370                        | 16.0                        |
| 2.0        | 2 | 30                        | 0.040                  | 0.18                   | 0.30                   | 4775       | 380                        | 20.5                        |
| 2.5        | 2 | 30                        | 0.050                  | 0.23                   | 0.38                   | 3820       | 380                        | 32.0                        |
| 2.8        | 2 | 30                        | 0.055                  | 0.25                   | 0.42                   | 3410       | 375                        | 39.5                        |
| 3.0        | 2 | 30                        | 0.060                  | 0.27                   | 0.45                   | 3185       | 380                        | 46.0                        |

5724



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC



Сталь  
58 - 62 HRC



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 0.8        | 2 | 120                       | 0.010                  | 0.04                   | 0.80                   | 47750      | 955                        | 30.5                        |
| 1.0        | 2 | 120                       | 0.015                  | 0.05                   | 1.00                   | 38200      | 1145                       | 57.5                        |
| 1.2        | 2 | 120                       | 0.015                  | 0.06                   | 1.20                   | 31830      | 955                        | 69.0                        |
| 1.5        | 2 | 120                       | 0.020                  | 0.08                   | 1.50                   | 25465      | 1020                       | 114.5                       |
| 1.8        | 2 | 120                       | 0.025                  | 0.09                   | 1.80                   | 21220      | 1060                       | 171.5                       |
| 2.0        | 2 | 120                       | 0.025                  | 0.10                   | 2.00                   | 19100      | 955                        | 191.0                       |
| 2.5        | 2 | 120                       | 0.030                  | 0.13                   | 2.50                   | 15280      | 915                        | 286.0                       |
| 2.8        | 2 | 120                       | 0.035                  | 0.14                   | 2.80                   | 13640      | 955                        | 374.5                       |
| 3.0        | 2 | 120                       | 0.040                  | 0.15                   | 3.00                   | 12735      | 1020                       | 459.0                       |
| 0.8        | 2 | 100                       | 0.010                  | 0.04                   | 0.80                   | 39790      | 795                        | 25.5                        |
| 1.0        | 2 | 100                       | 0.015                  | 0.05                   | 1.00                   | 31830      | 955                        | 48.0                        |
| 1.2        | 2 | 100                       | 0.015                  | 0.06                   | 1.20                   | 26525      | 795                        | 57.0                        |
| 1.5        | 2 | 100                       | 0.020                  | 0.08                   | 1.50                   | 21220      | 850                        | 95.5                        |
| 1.8        | 2 | 100                       | 0.025                  | 0.09                   | 1.80                   | 17685      | 885                        | 143.5                       |
| 2.0        | 2 | 100                       | 0.025                  | 0.10                   | 2.00                   | 15915      | 795                        | 159.0                       |
| 2.5        | 2 | 100                       | 0.030                  | 0.13                   | 2.50                   | 12735      | 765                        | 239.0                       |
| 2.8        | 2 | 100                       | 0.035                  | 0.14                   | 2.80                   | 11370      | 795                        | 311.5                       |
| 3.0        | 2 | 100                       | 0.040                  | 0.15                   | 3.00                   | 10610      | 850                        | 382.5                       |
| 0.8        | 2 | 80                        | 0.010                  | 0.04                   | 0.80                   | 31830      | 635                        | 20.5                        |
| 1.0        | 2 | 80                        | 0.015                  | 0.05                   | 1.00                   | 25465      | 765                        | 38.5                        |
| 1.2        | 2 | 80                        | 0.015                  | 0.06                   | 1.20                   | 21220      | 635                        | 45.5                        |
| 1.5        | 2 | 80                        | 0.020                  | 0.08                   | 1.50                   | 16975      | 680                        | 76.5                        |
| 1.8        | 2 | 80                        | 0.025                  | 0.09                   | 1.80                   | 14150      | 710                        | 115.0                       |
| 2.0        | 2 | 80                        | 0.025                  | 0.10                   | 2.00                   | 12735      | 635                        | 127.0                       |
| 2.5        | 2 | 80                        | 0.030                  | 0.13                   | 2.50                   | 10185      | 610                        | 190.5                       |
| 2.8        | 2 | 80                        | 0.035                  | 0.14                   | 2.80                   | 9095       | 635                        | 249.0                       |
| 3.0        | 2 | 80                        | 0.040                  | 0.15                   | 3.00                   | 8490       | 680                        | 306.0                       |
| 0.8        | 2 | 20                        | 0.010                  | 0.02                   | 0.80                   | 7960       | 160                        | 3.0                         |
| 1.0        | 2 | 20                        | 0.015                  | 0.03                   | 1.00                   | 6365       | 190                        | 5.5                         |
| 1.2        | 2 | 20                        | 0.015                  | 0.04                   | 1.20                   | 5305       | 160                        | 7.0                         |
| 1.5        | 2 | 20                        | 0.020                  | 0.05                   | 1.50                   | 4245       | 170                        | 11.5                        |
| 1.8        | 2 | 20                        | 0.025                  | 0.05                   | 1.80                   | 3535       | 175                        | 17.0                        |
| 2.0        | 2 | 20                        | 0.025                  | 0.06                   | 2.00                   | 3185       | 160                        | 19.0                        |
| 2.5        | 2 | 20                        | 0.030                  | 0.08                   | 2.50                   | 2545       | 155                        | 29.0                        |
| 2.8        | 2 | 20                        | 0.035                  | 0.08                   | 2.80                   | 2275       | 160                        | 37.5                        |
| 3.0        | 2 | 20                        | 0.040                  | 0.09                   | 3.00                   | 2120       | 170                        | 46.0                        |



# Фрезы цилиндрические, 5 x d

# Microcut-C5H

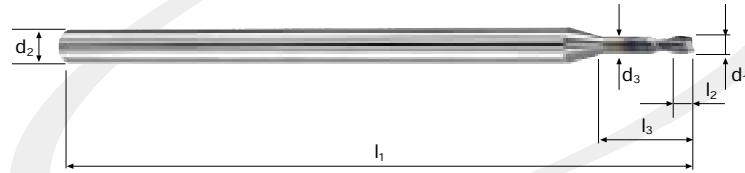
HM  
MG/H MX

$\lambda$  25°  
 $\gamma$ -10°

5D

DIN  
6535  
HA

45°



Предназначены для обработки:

HRC  
> 60

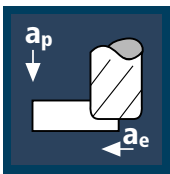
HRC  
< 58

HRC  
< 48

|   |                  |          |      |    |     |      |          | DURO-S |         |
|---|------------------|----------|------|----|-----|------|----------|--------|---------|
| Пример: заказа-N°   |                  |          |      |    |     |      |          | D5724  |         |
|   |                  |          |      |    |     |      |          | D5724  |         |
| $\varnothing$<br>Code   | d1<br>$\pm 0,01$ | d2<br>h6 | d3   | l1 | l2  | l3   | $\alpha$ | z      |         |
| NEW! .080   | 0,8              | 3        | 0,75 | 40 | 1,0 | 4,0  | 8,0°     | 2      | •       |
| NEW! .090   | 0,9              | 3        | 0,85 | 40 | 1,1 | 4,5  | 8,0°     | 2      | •       |
| .100  | 1,0              | 3        | 0,95 | 50 | 1,2 | 5,0  | 7,0°     | 2      | •       |
| .108  | 1,2              | 3        | 1,15 | 50 | 1,4 | 6,0  | 6,0°     | 2      | •       |
| .120  | 1,5              | 3        | 1,45 | 50 | 1,8 | 7,5  | 5,0°     | 2      | •       |
| NEW! .132   | 1,8              | 3        | 1,75 | 50 | 2,2 | 9,0  | 4,0°     | 2      | •       |
| .140  | 2,0              | 3        | 1,95 | 50 | 2,4 | 10,0 | 3,0°     | 2      | •       |
| NEW! .152   | 2,3              | 3        | 2,25 | 50 | 2,8 | 11,5 | 2,0°     | 2      | •       |
| .160  | 2,5              | 3        | 2,45 | 50 | 3,0 | 12,5 | 1,5°     | 2      | •       |
| NEW! .172   | 2,8              | 3        | 2,75 | 50 | 3,4 | 14,0 | 1,0°     | 2      | •       |
| .180  | 3,0              | 3        | 2,95 | 50 | 3,6 | 15,0 | 0°       | 2      | •       |
| This tool is furnished with chamfered edge<br>for an improved wear resistance                                     |                  |          |      |    |     |      |          |        |         |
| d1 0,5 - 0,9 mm Chamfered edge 0,00<br>d1 1,0 - 1,5 mm Chamfered edge 0,04<br>d1 1,8 - 3,0 mm Chamfered edge 0,05 |                  |          |      |    |     |      |          |        |         |
|   |                  |          |      |    |     |      |          |        | 0/+0,03 |
|   |                  |          |      |    |     |      |          |        | 0/+0,05 |

Micro

5764



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC

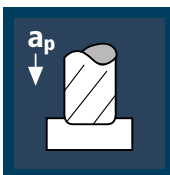


Сталь  
58 - 62 HRC



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 1.0        | 2 | 150                       | 0.020                  | 0.15                   | 0.15                   | 47750      | 1910                       | 43.0                        |
| 1.2        | 2 | 150                       | 0.025                  | 0.18                   | 0.18                   | 39790      | 1990                       | 64.5                        |
| 1.5        | 2 | 150                       | 0.030                  | 0.23                   | 0.23                   | 31830      | 1910                       | 96.5                        |
| 2.0        | 2 | 150                       | 0.040                  | 0.30                   | 0.30                   | 23875      | 1910                       | 172.0                       |
| 2.5        | 2 | 150                       | 0.050                  | 0.38                   | 0.38                   | 19100      | 1910                       | 268.5                       |
| 3.0        | 2 | 150                       | 0.060                  | 0.45                   | 0.45                   | 15915      | 1910                       | 387.0                       |
| 1.0        | 2 | 120                       | 0.020                  | 0.15                   | 0.15                   | 38200      | 1530                       | 34.5                        |
| 1.2        | 2 | 120                       | 0.025                  | 0.18                   | 0.18                   | 31830      | 1590                       | 51.5                        |
| 1.5        | 2 | 120                       | 0.030                  | 0.23                   | 0.23                   | 25465      | 1530                       | 77.5                        |
| 2.0        | 2 | 120                       | 0.040                  | 0.30                   | 0.30                   | 19100      | 1530                       | 137.5                       |
| 2.5        | 2 | 120                       | 0.050                  | 0.38                   | 0.38                   | 15280      | 1530                       | 215.0                       |
| 3.0        | 2 | 120                       | 0.060                  | 0.45                   | 0.45                   | 12735      | 1530                       | 310.0                       |
| 1.0        | 2 | 100                       | 0.020                  | 0.15                   | 0.15                   | 31830      | 1275                       | 28.5                        |
| 1.2        | 2 | 100                       | 0.025                  | 0.18                   | 0.18                   | 26525      | 1325                       | 43.0                        |
| 1.5        | 2 | 100                       | 0.030                  | 0.23                   | 0.23                   | 21220      | 1275                       | 64.5                        |
| 2.0        | 2 | 100                       | 0.040                  | 0.30                   | 0.30                   | 15915      | 1275                       | 115.0                       |
| 2.5        | 2 | 100                       | 0.050                  | 0.38                   | 0.38                   | 12735      | 1275                       | 179.5                       |
| 3.0        | 2 | 100                       | 0.060                  | 0.45                   | 0.45                   | 10610      | 1275                       | 258.0                       |
| 1.0        | 2 | 30                        | 0.020                  | 0.09                   | 0.15                   | 9550       | 380                        | 5.0                         |
| 1.2        | 2 | 30                        | 0.025                  | 0.11                   | 0.18                   | 7960       | 400                        | 8.0                         |
| 1.5        | 2 | 30                        | 0.030                  | 0.14                   | 0.23                   | 6365       | 380                        | 11.5                        |
| 2.0        | 2 | 30                        | 0.040                  | 0.18                   | 0.30                   | 4775       | 380                        | 20.5                        |
| 2.5        | 2 | 30                        | 0.050                  | 0.23                   | 0.38                   | 3820       | 380                        | 32.0                        |
| 3.0        | 2 | 30                        | 0.060                  | 0.27                   | 0.45                   | 3185       | 380                        | 46.0                        |

5764



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC



Сталь  
58 - 62 HRC



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 1.0        | 2 | 120                       | 0.015                  | 0.05                   | 1.00                   | 38200      | 1145                       | 57.5                        |
| 1.2        | 2 | 120                       | 0.015                  | 0.06                   | 1.20                   | 31830      | 955                        | 69.0                        |
| 1.5        | 2 | 120                       | 0.020                  | 0.08                   | 1.50                   | 25465      | 1020                       | 114.5                       |
| 2.0        | 2 | 120                       | 0.025                  | 0.10                   | 2.00                   | 19100      | 955                        | 191.0                       |
| 2.5        | 2 | 120                       | 0.030                  | 0.13                   | 2.50                   | 15280      | 915                        | 286.0                       |
| 3.0        | 2 | 120                       | 0.040                  | 0.15                   | 3.00                   | 12735      | 1020                       | 459.0                       |
| 1.0        | 2 | 100                       | 0.015                  | 0.05                   | 1.00                   | 31830      | 955                        | 48.0                        |
| 1.2        | 2 | 100                       | 0.015                  | 0.06                   | 1.20                   | 26525      | 795                        | 57.0                        |
| 1.5        | 2 | 100                       | 0.020                  | 0.08                   | 1.50                   | 21220      | 850                        | 95.5                        |
| 2.0        | 2 | 100                       | 0.025                  | 0.10                   | 2.00                   | 15915      | 795                        | 159.0                       |
| 2.5        | 2 | 100                       | 0.030                  | 0.13                   | 2.50                   | 12735      | 765                        | 239.0                       |
| 3.0        | 2 | 100                       | 0.040                  | 0.15                   | 3.00                   | 10610      | 850                        | 382.5                       |
| 1.0        | 2 | 80                        | 0.015                  | 0.05                   | 1.00                   | 25465      | 765                        | 38.5                        |
| 1.2        | 2 | 80                        | 0.015                  | 0.06                   | 1.20                   | 21220      | 635                        | 45.5                        |
| 1.5        | 2 | 80                        | 0.020                  | 0.08                   | 1.50                   | 16975      | 680                        | 76.5                        |
| 2.0        | 2 | 80                        | 0.025                  | 0.10                   | 2.00                   | 12735      | 635                        | 127.0                       |
| 2.5        | 2 | 80                        | 0.030                  | 0.13                   | 2.50                   | 10185      | 610                        | 190.5                       |
| 3.0        | 2 | 80                        | 0.040                  | 0.15                   | 3.00                   | 8490       | 680                        | 306.0                       |
| 1.0        | 2 | 20                        | 0.015                  | 0.03                   | 1.00                   | 6365       | 190                        | 5.5                         |
| 1.2        | 2 | 20                        | 0.015                  | 0.04                   | 1.20                   | 5305       | 160                        | 7.0                         |
| 1.5        | 2 | 20                        | 0.020                  | 0.05                   | 1.50                   | 4245       | 170                        | 11.5                        |
| 2.0        | 2 | 20                        | 0.025                  | 0.06                   | 2.00                   | 3185       | 160                        | 19.0                        |
| 2.5        | 2 | 20                        | 0.030                  | 0.08                   | 2.50                   | 2545       | 155                        | 29.0                        |
| 3.0        | 2 | 20                        | 0.040                  | 0.09                   | 3.00                   | 2120       | 170                        | 46.0                        |

Фрезы торические, 5 x d

Microcut-T5H

**NEW!**

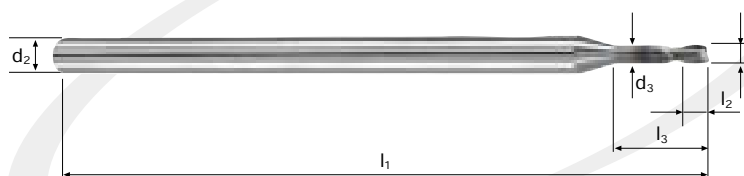
HM MG/H MX

$\lambda$  25°  
 $\gamma$ -10°

5D

DIN 6535 HA

r



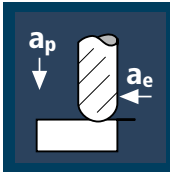
Предназначены для обработки:

- HRC > 60
- HRC < 58
- HRC < 48

|                   |          |       |      |    |     |      |           |          |   | DURO-S |  |
|-------------------|----------|-------|------|----|-----|------|-----------|----------|---|--------|--|
| Пример: заказа-N° |          |       |      |    |     |      |           |          |   | D5764  |  |
|                   |          |       |      |    |     |      |           |          |   | D5764  |  |
| Ø Code            | d1 ±0,01 | d2 h6 | d3   | l1 | l2  | l3   | r 0/+0,03 | $\alpha$ | z |        |  |
| .100              | 1,0      | 3     | 0,95 | 50 | 1,2 | 5,0  | 0,20      | 7,0°     | 2 | •      |  |
| .108              | 1,2      | 3     | 1,15 | 50 | 1,4 | 6,0  | 0,20      | 6,0°     | 2 | •      |  |
| .120              | 1,5      | 3     | 1,45 | 50 | 1,8 | 7,5  | 0,20      | 5,0°     | 2 | •      |  |
| .140              | 2,0      | 3     | 1,95 | 50 | 2,4 | 10,0 | 0,20      | 3,0°     | 2 | •      |  |
| .160              | 2,5      | 3     | 2,45 | 50 | 3,0 | 12,5 | 0,20      | 1,5°     | 2 | •      |  |
| .180              | 3,0      | 3     | 2,95 | 50 | 3,6 | 15,0 | 0,20      | 0°       | 2 | •      |  |
|                   |          |       |      |    |     |      |           |          |   |        |  |
|                   |          |       |      |    |     |      |           |          |   |        |  |
|                   |          |       |      |    |     |      |           |          |   |        |  |
|                   |          |       |      |    |     |      |           |          |   |        |  |
|                   |          |       |      |    |     |      |           |          |   |        |  |
|                   |          |       |      |    |     |      |           |          |   |        |  |
|                   |          |       |      |    |     |      |           |          |   |        |  |
|                   |          |       |      |    |     |      |           |          |   |        |  |
|                   |          |       |      |    |     |      |           |          |   |        |  |
|                   |          |       |      |    |     |      |           |          |   |        |  |
|                   |          |       |      |    |     |      |           |          |   |        |  |
|                   |          |       |      |    |     |      |           |          |   |        |  |
|                   |          |       |      |    |     |      |           |          |   |        |  |
|                   |          |       |      |    |     |      |           |          |   |        |  |
|                   |          |       |      |    |     |      |           |          |   |        |  |
|                   |          |       |      |    |     |      |           |          |   |        |  |
|                   |          |       |      |    |     |      |           |          |   |        |  |
|                   |          |       |      |    |     |      |           |          |   |        |  |
|                   |          |       |      |    |     |      |           |          |   |        |  |
|                   |          |       |      |    |     |      |           |          |   |        |  |
|                   |          |       |      |    |     |      |           |          |   |        |  |
|                   |          |       |      |    |     |      |           |          |   |        |  |
|                   |          |       |      |    |     |      |           |          |   |        |  |
|                   |          |       |      |    |     |      |           |          |   |        |  |
|                   |          |       |      |    |     |      |           |          |   |        |  |
|                   |          |       |      |    |     |      |           |          |   |        |  |
|                   |          |       |      |    |     |      |           |          |   |        |  |
|                   |          |       |      |    |     |      |           |          |   |        |  |
|                   |          |       |      |    |     |      |           |          |   |        |  |

Micro

5794



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC

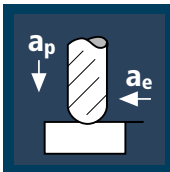


Сталь  
58 - 62 HRC



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 0.8        | 2 | 150                       | 0.015                  | 0.12                   | 0.12                   | 59685      | 1790                       | 26.0                        |
| 1.0        | 2 | 150                       | 0.020                  | 0.15                   | 0.15                   | 47750      | 1910                       | 43.0                        |
| 1.2        | 2 | 150                       | 0.025                  | 0.18                   | 0.18                   | 39790      | 1990                       | 64.5                        |
| 1.5        | 2 | 150                       | 0.030                  | 0.23                   | 0.23                   | 31830      | 1910                       | 96.5                        |
| 1.8        | 2 | 150                       | 0.035                  | 0.27                   | 0.27                   | 26525      | 1855                       | 135.0                       |
| 2.0        | 2 | 150                       | 0.040                  | 0.30                   | 0.30                   | 23875      | 1910                       | 172.0                       |
| 2.5        | 2 | 150                       | 0.050                  | 0.38                   | 0.38                   | 19100      | 1910                       | 268.5                       |
| 2.8        | 2 | 150                       | 0.055                  | 0.42                   | 0.42                   | 17055      | 1875                       | 330.5                       |
| 3.0        | 2 | 150                       | 0.060                  | 0.45                   | 0.45                   | 15915      | 1910                       | 387.0                       |
| 0.8        | 2 | 120                       | 0.015                  | 0.12                   | 0.12                   | 47750      | 1435                       | 20.5                        |
| 1.0        | 2 | 120                       | 0.020                  | 0.15                   | 0.15                   | 38200      | 1530                       | 34.5                        |
| 1.2        | 2 | 120                       | 0.025                  | 0.18                   | 0.18                   | 31830      | 1590                       | 51.5                        |
| 1.5        | 2 | 120                       | 0.030                  | 0.23                   | 0.23                   | 25465      | 1530                       | 77.5                        |
| 1.8        | 2 | 120                       | 0.035                  | 0.27                   | 0.27                   | 21220      | 1485                       | 108.5                       |
| 2.0        | 2 | 120                       | 0.040                  | 0.30                   | 0.30                   | 19100      | 1530                       | 137.5                       |
| 2.5        | 2 | 120                       | 0.050                  | 0.38                   | 0.38                   | 15280      | 1530                       | 215.0                       |
| 2.8        | 2 | 120                       | 0.055                  | 0.42                   | 0.42                   | 13640      | 1500                       | 264.5                       |
| 3.0        | 2 | 120                       | 0.060                  | 0.45                   | 0.45                   | 12735      | 1530                       | 310.0                       |
| 0.8        | 2 | 100                       | 0.015                  | 0.12                   | 0.12                   | 39790      | 1195                       | 17.0                        |
| 1.0        | 2 | 100                       | 0.020                  | 0.15                   | 0.15                   | 31830      | 1275                       | 28.5                        |
| 1.2        | 2 | 100                       | 0.025                  | 0.18                   | 0.18                   | 26525      | 1325                       | 43.0                        |
| 1.5        | 2 | 100                       | 0.030                  | 0.23                   | 0.23                   | 21220      | 1275                       | 64.5                        |
| 1.8        | 2 | 100                       | 0.035                  | 0.27                   | 0.27                   | 17685      | 1240                       | 90.5                        |
| 2.0        | 2 | 100                       | 0.040                  | 0.30                   | 0.30                   | 15915      | 1275                       | 115.0                       |
| 2.5        | 2 | 100                       | 0.050                  | 0.38                   | 0.38                   | 12735      | 1275                       | 179.5                       |
| 2.8        | 2 | 100                       | 0.055                  | 0.42                   | 0.42                   | 11370      | 1250                       | 220.5                       |
| 3.0        | 2 | 100                       | 0.060                  | 0.45                   | 0.45                   | 10610      | 1275                       | 258.0                       |
| 0.8        | 2 | 30                        | 0.015                  | 0.07                   | 0.12                   | 11935      | 360                        | 3.0                         |
| 1.0        | 2 | 30                        | 0.020                  | 0.09                   | 0.15                   | 9550       | 380                        | 5.0                         |
| 1.2        | 2 | 30                        | 0.025                  | 0.11                   | 0.18                   | 7960       | 400                        | 8.0                         |
| 1.5        | 2 | 30                        | 0.030                  | 0.14                   | 0.23                   | 6365       | 380                        | 11.5                        |
| 1.8        | 2 | 30                        | 0.035                  | 0.16                   | 0.27                   | 5305       | 370                        | 16.0                        |
| 2.0        | 2 | 30                        | 0.040                  | 0.18                   | 0.30                   | 4775       | 380                        | 20.5                        |
| 2.5        | 2 | 30                        | 0.050                  | 0.23                   | 0.38                   | 3820       | 380                        | 32.0                        |
| 2.8        | 2 | 30                        | 0.055                  | 0.25                   | 0.42                   | 3410       | 375                        | 39.5                        |
| 3.0        | 2 | 30                        | 0.060                  | 0.27                   | 0.45                   | 3185       | 380                        | 46.0                        |

5794



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC



Сталь  
58 - 62 HRC



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 0.8        | 2 | 120                       | 0.010                  | 0.04                   | 0.80                   | 47750      | 955                        | 30.5                        |
| 1.0        | 2 | 120                       | 0.015                  | 0.05                   | 1.00                   | 38200      | 1145                       | 57.5                        |
| 1.2        | 2 | 120                       | 0.015                  | 0.06                   | 1.20                   | 31830      | 955                        | 69.0                        |
| 1.5        | 2 | 120                       | 0.020                  | 0.08                   | 1.50                   | 25465      | 1020                       | 114.5                       |
| 1.8        | 2 | 120                       | 0.025                  | 0.09                   | 1.80                   | 21220      | 1060                       | 171.5                       |
| 2.0        | 2 | 120                       | 0.025                  | 0.10                   | 2.00                   | 19100      | 955                        | 191.0                       |
| 2.5        | 2 | 120                       | 0.030                  | 0.13                   | 2.50                   | 15280      | 915                        | 286.0                       |
| 2.8        | 2 | 120                       | 0.035                  | 0.14                   | 2.80                   | 13640      | 955                        | 374.5                       |
| 3.0        | 2 | 120                       | 0.040                  | 0.15                   | 3.00                   | 12735      | 1020                       | 459.0                       |
| 0.8        | 2 | 100                       | 0.010                  | 0.04                   | 0.80                   | 39790      | 795                        | 25.5                        |
| 1.0        | 2 | 100                       | 0.015                  | 0.05                   | 1.00                   | 31830      | 955                        | 48.0                        |
| 1.2        | 2 | 100                       | 0.015                  | 0.06                   | 1.20                   | 26525      | 795                        | 57.0                        |
| 1.5        | 2 | 100                       | 0.020                  | 0.08                   | 1.50                   | 21220      | 850                        | 95.5                        |
| 1.8        | 2 | 100                       | 0.025                  | 0.09                   | 1.80                   | 17685      | 885                        | 143.5                       |
| 2.0        | 2 | 100                       | 0.025                  | 0.10                   | 2.00                   | 15915      | 795                        | 159.0                       |
| 2.5        | 2 | 100                       | 0.030                  | 0.13                   | 2.50                   | 12735      | 765                        | 239.0                       |
| 2.8        | 2 | 100                       | 0.035                  | 0.14                   | 2.80                   | 11370      | 795                        | 311.5                       |
| 3.0        | 2 | 100                       | 0.040                  | 0.15                   | 3.00                   | 10610      | 850                        | 382.5                       |
| 0.8        | 2 | 80                        | 0.010                  | 0.04                   | 0.80                   | 31830      | 635                        | 20.5                        |
| 1.0        | 2 | 80                        | 0.015                  | 0.05                   | 1.00                   | 25465      | 765                        | 38.5                        |
| 1.2        | 2 | 80                        | 0.015                  | 0.06                   | 1.20                   | 21220      | 635                        | 45.5                        |
| 1.5        | 2 | 80                        | 0.020                  | 0.08                   | 1.50                   | 16975      | 680                        | 76.5                        |
| 1.8        | 2 | 80                        | 0.025                  | 0.09                   | 1.80                   | 14150      | 710                        | 115.0                       |
| 2.0        | 2 | 80                        | 0.025                  | 0.10                   | 2.00                   | 12735      | 635                        | 127.0                       |
| 2.5        | 2 | 80                        | 0.030                  | 0.13                   | 2.50                   | 10185      | 610                        | 190.5                       |
| 2.8        | 2 | 80                        | 0.035                  | 0.14                   | 2.80                   | 9095       | 635                        | 249.0                       |
| 3.0        | 2 | 80                        | 0.040                  | 0.15                   | 3.00                   | 8490       | 680                        | 306.0                       |
| 0.8        | 2 | 20                        | 0.010                  | 0.02                   | 0.80                   | 7960       | 160                        | 3.0                         |
| 1.0        | 2 | 20                        | 0.015                  | 0.03                   | 1.00                   | 6365       | 190                        | 5.5                         |
| 1.2        | 2 | 20                        | 0.015                  | 0.04                   | 1.20                   | 5305       | 160                        | 7.0                         |
| 1.5        | 2 | 20                        | 0.020                  | 0.05                   | 1.50                   | 4245       | 170                        | 11.5                        |
| 1.8        | 2 | 20                        | 0.025                  | 0.05                   | 1.80                   | 3535       | 175                        | 17.0                        |
| 2.0        | 2 | 20                        | 0.025                  | 0.06                   | 2.00                   | 3185       | 160                        | 19.0                        |
| 2.5        | 2 | 20                        | 0.030                  | 0.08                   | 2.50                   | 2545       | 155                        | 29.0                        |
| 2.8        | 2 | 20                        | 0.035                  | 0.08                   | 2.80                   | 2275       | 160                        | 37.5                        |
| 3.0        | 2 | 20                        | 0.040                  | 0.09                   | 3.00                   | 2120       | 170                        | 46.0                        |



## Фрезы сферические, 5 x d

## Microcut-B5H

HM  
MG/H

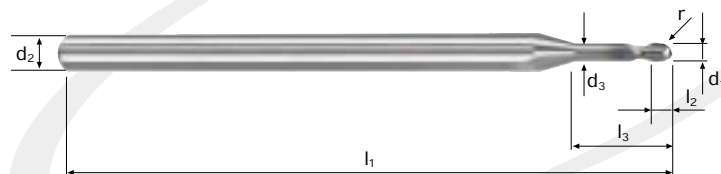
MX

$\lambda$  30°  
 $\gamma$ -10°



5D

DIN  
6535  
HA



Предназначены для обработки:

HRC  
> 60

HRC  
< 58

HRC  
< 48



|                       |     |          |                |       |     |      |            |      |   | DURO-S |  |  |
|-----------------------|-----|----------|----------------|-------|-----|------|------------|------|---|--------|--|--|
| Пример:<br>заказа-N°. |     |          |                |       |     |      |            |      |   | D5794  |  |  |
|                       |     | Покрытие | Артикул-N°.    | φ-Код |     |      |            |      |   |        |  |  |
|                       |     | <b>D</b> | <b>5794080</b> |       |     |      |            |      |   |        |  |  |
| Ø<br>Code             | d1  | d2<br>h6 | d3             | l1    | l2  | l3   | r<br>±0,01 | α    | z |        |  |  |
| NEW! .080             | 0,8 | 3        | 0,75           | 40    | 1,0 | 4,0  | 0,40       | 8,0° | 2 | •      |  |  |
| NEW! .090             | 0,9 | 3        | 0,85           | 40    | 1,1 | 4,5  | 0,45       | 8,0° | 2 | •      |  |  |
| .100                  | 1,0 | 3        | 0,95           | 50    | 1,2 | 5,0  | 0,50       | 7,0° | 2 | •      |  |  |
| .108                  | 1,2 | 3        | 1,15           | 50    | 1,4 | 6,0  | 0,60       | 6,0° | 2 | •      |  |  |
| .120                  | 1,5 | 3        | 1,45           | 50    | 1,8 | 7,5  | 0,75       | 5,0° | 2 | •      |  |  |
| NEW! .132             | 1,8 | 3        | 1,75           | 50    | 2,2 | 9,0  | 0,90       | 4,0° | 2 | •      |  |  |
| .140                  | 2,0 | 3        | 1,95           | 50    | 2,4 | 10,0 | 1,00       | 3,0° | 2 | •      |  |  |
| NEW! .152             | 2,3 | 3        | 2,25           | 50    | 2,8 | 11,5 | 1,15       | 2,0° | 2 | •      |  |  |
| .160                  | 2,5 | 3        | 2,45           | 50    | 3,0 | 12,5 | 1,25       | 1,5° | 2 | •      |  |  |
| NEW! .172             | 2,8 | 3        | 2,75           | 50    | 3,4 | 14,0 | 1,40       | 1,0° | 2 | •      |  |  |
| .180                  | 3,0 | 3        | 2,95           | 50    | 3,6 | 15,0 | 1,50       | 0°   | 2 | •      |  |  |
|                       |     |          |                |       |     |      |            |      |   |        |  |  |
|                       |     |          |                |       |     |      |            |      |   |        |  |  |
|                       |     |          |                |       |     |      |            |      |   |        |  |  |
|                       |     |          |                |       |     |      |            |      |   |        |  |  |
|                       |     |          |                |       |     |      |            |      |   |        |  |  |
|                       |     |          |                |       |     |      |            |      |   |        |  |  |
|                       |     |          |                |       |     |      |            |      |   |        |  |  |
|                       |     |          |                |       |     |      |            |      |   |        |  |  |
|                       |     |          |                |       |     |      |            |      |   |        |  |  |
|                       |     |          |                |       |     |      |            |      |   |        |  |  |
|                       |     |          |                |       |     |      |            |      |   |        |  |  |
|                       |     |          |                |       |     |      |            |      |   |        |  |  |
|                       |     |          |                |       |     |      |            |      |   |        |  |  |
|                       |     |          |                |       |     |      |            |      |   |        |  |  |
|                       |     |          |                |       |     |      |            |      |   |        |  |  |
|                       |     |          |                |       |     |      |            |      |   |        |  |  |

Micro





































## Экономичная серия

Cut-X

Экономичные концевые фрезы с гладкой режущей кромкой, цилиндрические

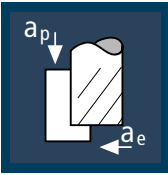
|         |  |   |   |  |   |   |     |
|---------|--|---|---|--|---|---|-----|
| N° 5329 |               | N | $\lambda 38/41^\circ$<br>$\gamma 0^\circ$ |    |    |    | 211 |
| N° 5335 |               | N | $\lambda 30^\circ$<br>$\gamma 12^\circ$   |    |    |    | 213 |
| N° 5336 |               | N | $\lambda 30^\circ$<br>$\gamma 12^\circ$   |    |    |    | 215 |
| N° 5036 |  <b>NEW!</b>  | N | $\lambda 30^\circ$<br>$\gamma 12^\circ$   |    |    |    | 217 |
| N° 5337 |               | N | $\lambda 45^\circ$<br>$\gamma 10^\circ$   |    |    |    | 219 |
| N° 5338 |               | N | $\lambda 45^\circ$<br>$\gamma 10^\circ$   |    |    |    | 221 |
| N° 5037 |  <b>NEW!</b> | N | $\lambda 45^\circ$<br>$\gamma 10^\circ$   |   |   |   | 223 |
| N° 5339 |             | N | $\lambda 45^\circ$<br>$\gamma 12^\circ$   |  |  |  | 225 |

Экономичные концевые фрезы с гладкой режущей кромкой, сферические

|         |   |   |  |  |   |   |     |
|---------|---|---|--|--|---|---|-----|
| N° 5298 |  <b>NEW!</b> | N | $\lambda 30^\circ$<br>$\gamma -10^\circ$ |  |  |  | 227 |
|---------|---|---|--|--|---|---|-----|

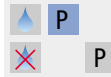
Cut-X

5329



Применение

Сталь  
up to 24 HRC



Сталь  
24 - 32 HRC



Холодноштамповые  
стали > 12% Cr



Чугун  
(серый /  
высокопрочный)



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 6          | 4 | 200                       | 0.050                  | 6                      | 3                      | 10610                     | 2120                       | 38.0                        |
| 8          | 4 | 200                       | 0.070                  | 8                      | 4                      | 7960                      | 2230                       | 71.5                        |
| 10         | 4 | 200                       | 0.085                  | 10                     | 5                      | 6365                      | 2165                       | 108.5                       |
| 12         | 4 | 200                       | 0.105                  | 12                     | 6                      | 5305                      | 2230                       | 160.5                       |
| 16         | 4 | 200                       | 0.140                  | 16                     | 4                      | 3980                      | 2230                       | 142.5                       |
| 6          | 4 | 150                       | 0.050                  | 6                      | 3                      | 7960                      | 1590                       | 28.5                        |
| 8          | 4 | 150                       | 0.070                  | 8                      | 4                      | 5970                      | 1670                       | 53.5                        |
| 10         | 4 | 150                       | 0.085                  | 10                     | 5                      | 4775                      | 1625                       | 81.5                        |
| 12         | 4 | 150                       | 0.105                  | 12                     | 6                      | 3980                      | 1670                       | 120.0                       |
| 16         | 4 | 150                       | 0.140                  | 16                     | 4                      | 2985                      | 1670                       | 107.0                       |
| 6          | 4 | 100                       | 0.050                  | 6                      | 3                      | 5305                      | 1060                       | 19.0                        |
| 8          | 4 | 100                       | 0.065                  | 8                      | 4                      | 3980                      | 1035                       | 33.0                        |
| 10         | 4 | 100                       | 0.080                  | 10                     | 5                      | 3185                      | 1020                       | 51.0                        |
| 12         | 4 | 100                       | 0.100                  | 12                     | 6                      | 2655                      | 1060                       | 76.5                        |
| 16         | 4 | 100                       | 0.130                  | 16                     | 4                      | 1990                      | 1035                       | 66.0                        |
| 6          | 4 | 180                       | 0.060                  | 6                      | 3                      | 9550                      | 2290                       | 41.0                        |
| 8          | 4 | 180                       | 0.085                  | 8                      | 4                      | 7160                      | 2435                       | 78.0                        |
| 10         | 4 | 180                       | 0.105                  | 10                     | 5                      | 5730                      | 2405                       | 120.5                       |
| 12         | 4 | 180                       | 0.125                  | 12                     | 6                      | 4775                      | 2390                       | 172.0                       |
| 16         | 4 | 180                       | 0.160                  | 16                     | 4                      | 3580                      | 2290                       | 146.5                       |

5329

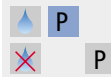


Применение

Сталь  
up to 24 HRC



Сталь  
24 - 32 HRC



Холодноштамповые  
стали > 12% Cr



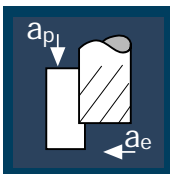
Чугун  
(серый /  
высокопрочный)



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 6          | 4 | 180                       | 0.050                  | 3                      | 6                      | 9550                      | 1910                       | 34.5                        |
| 8          | 4 | 180                       | 0.070                  | 4                      | 8                      | 7160                      | 2005                       | 64.0                        |
| 10         | 4 | 180                       | 0.085                  | 5                      | 10                     | 5730                      | 1950                       | 97.5                        |
| 12         | 4 | 180                       | 0.105                  | 6                      | 12                     | 4775                      | 2005                       | 144.5                       |
| 16         | 4 | 180                       | 0.140                  | 4                      | 16                     | 3580                      | 2005                       | 128.5                       |
| 6          | 4 | 120                       | 0.050                  | 3                      | 6                      | 6365                      | 1275                       | 23.0                        |
| 8          | 4 | 120                       | 0.070                  | 4                      | 8                      | 4775                      | 1335                       | 42.5                        |
| 10         | 4 | 120                       | 0.085                  | 5                      | 10                     | 3820                      | 1300                       | 65.0                        |
| 12         | 4 | 120                       | 0.105                  | 6                      | 12                     | 3185                      | 1340                       | 96.5                        |
| 16         | 4 | 120                       | 0.140                  | 4                      | 16                     | 2385                      | 1335                       | 85.5                        |
| 6          | 4 | 80                        | 0.050                  | 3                      | 6                      | 4245                      | 850                        | 15.5                        |
| 8          | 4 | 80                        | 0.065                  | 4                      | 8                      | 3185                      | 830                        | 26.5                        |
| 10         | 4 | 80                        | 0.080                  | 5                      | 10                     | 2545                      | 815                        | 41.0                        |
| 12         | 4 | 80                        | 0.100                  | 6                      | 12                     | 2120                      | 850                        | 61.0                        |
| 16         | 4 | 80                        | 0.130                  | 4                      | 16                     | 1590                      | 825                        | 53.0                        |
| 6          | 4 | 160                       | 0.060                  | 3                      | 6                      | 8490                      | 2040                       | 36.5                        |
| 8          | 4 | 160                       | 0.085                  | 4                      | 8                      | 6365                      | 2165                       | 69.5                        |
| 10         | 4 | 160                       | 0.105                  | 5                      | 10                     | 5095                      | 2140                       | 107.0                       |
| 12         | 4 | 160                       | 0.125                  | 6                      | 12                     | 4245                      | 2125                       | 153.0                       |
| 16         | 4 | 160                       | 0.160                  | 4                      | 16                     | 3185                      | 2040                       | 130.5                       |



# 5335



## Применение

Сталь  
20 - 30 HRC



Сталь  
30 - 48 HRC



Чугун  
(серый /  
высокопрочный)



Холодноштамповые  
стали >12% Сг  
жаростойкие стали  
нержавеющие  
аустенитные стали



| d1<br>[mm] | z | V <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|
| 2          | 3 | 120                       | 0.005                  | 2                      | 0.2                    | 19100      | 285                        |
| 3          | 3 | 120                       | 0.010                  | 3                      | 0.3                    | 12735      | 380                        |
| 4          | 3 | 120                       | 0.015                  | 4                      | 0.4                    | 9550       | 430                        |
| 5          | 3 | 120                       | 0.015                  | 5                      | 0.5                    | 7640       | 345                        |
| 6          | 3 | 120                       | 0.020                  | 6                      | 0.6                    | 6365       | 380                        |
| 8          | 3 | 120                       | 0.025                  | 8                      | 0.8                    | 4775       | 360                        |
| 10         | 3 | 120                       | 0.035                  | 10                     | 1.0                    | 3820       | 400                        |
| 2          | 3 | 80                        | 0.005                  | 2                      | 0.2                    | 12735      | 190                        |
| 3          | 3 | 80                        | 0.010                  | 3                      | 0.3                    | 8490       | 255                        |
| 4          | 3 | 80                        | 0.015                  | 4                      | 0.4                    | 6365       | 285                        |
| 5          | 3 | 80                        | 0.015                  | 5                      | 0.5                    | 5095       | 230                        |
| 6          | 3 | 80                        | 0.020                  | 6                      | 0.6                    | 4245       | 255                        |
| 8          | 3 | 80                        | 0.025                  | 8                      | 0.8                    | 3185       | 240                        |
| 10         | 3 | 80                        | 0.035                  | 10                     | 1.0                    | 2545       | 265                        |
| 2          | 3 | 160                       | 0.005                  | 2                      | 0.2                    | 25465      | 380                        |
| 3          | 3 | 160                       | 0.010                  | 3                      | 0.3                    | 16975      | 510                        |
| 4          | 3 | 160                       | 0.015                  | 4                      | 0.4                    | 12735      | 575                        |
| 5          | 3 | 160                       | 0.015                  | 5                      | 0.5                    | 10185      | 460                        |
| 6          | 3 | 160                       | 0.020                  | 6                      | 0.6                    | 8490       | 510                        |
| 8          | 3 | 160                       | 0.025                  | 8                      | 0.8                    | 6365       | 475                        |
| 10         | 3 | 160                       | 0.035                  | 10                     | 1.0                    | 5095       | 535                        |
| 2          | 3 | 60                        | 0.005                  | 2                      | 0.2                    | 9550       | 145                        |
| 3          | 3 | 60                        | 0.010                  | 3                      | 0.3                    | 6365       | 190                        |
| 4          | 3 | 60                        | 0.015                  | 4                      | 0.4                    | 4775       | 215                        |
| 5          | 3 | 60                        | 0.015                  | 5                      | 0.5                    | 3820       | 170                        |
| 6          | 3 | 60                        | 0.020                  | 6                      | 0.6                    | 3185       | 190                        |
| 8          | 3 | 60                        | 0.025                  | 8                      | 0.8                    | 2385       | 180                        |
| 10         | 3 | 60                        | 0.035                  | 10                     | 1.0                    | 1910       | 200                        |

# 5335



## Применение

Сталь  
20 - 30 HRC



Сталь  
30 - 48 HRC



Чугун  
(серый /  
высокопрочный)



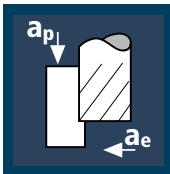
Холодноштамповые  
стали >12% Сг  
жаростойкие стали  
нержавеющие  
аустенитные стали



| d1<br>[mm] | z | V <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 2          | 3 | 100                       | 0.005                  | 1                      | 2                      | 15915      | 240                        | 0.5                         |
| 3          | 3 | 100                       | 0.010                  | 1.5                    | 3                      | 10610      | 320                        | 1.5                         |
| 4          | 3 | 100                       | 0.010                  | 2                      | 4                      | 7960       | 240                        | 2.0                         |
| 5          | 3 | 100                       | 0.015                  | 2.5                    | 5                      | 6365       | 285                        | 3.5                         |
| 6          | 3 | 100                       | 0.015                  | 3                      | 6                      | 5305       | 240                        | 4.5                         |
| 8          | 3 | 100                       | 0.020                  | 4                      | 8                      | 3980       | 240                        | 7.5                         |
| 10         | 3 | 100                       | 0.030                  | 5                      | 10                     | 3185       | 285                        | 14.5                        |
| 2          | 3 | 70                        | 0.005                  | 1                      | 2                      | 11140      | 165                        | 0.5                         |
| 3          | 3 | 70                        | 0.010                  | 1.5                    | 3                      | 7425       | 225                        | 1.0                         |
| 4          | 3 | 70                        | 0.010                  | 2                      | 4                      | 5570       | 165                        | 1.5                         |
| 5          | 3 | 70                        | 0.015                  | 2.5                    | 5                      | 4455       | 200                        | 2.5                         |
| 6          | 3 | 70                        | 0.015                  | 3                      | 6                      | 3715       | 165                        | 3.0                         |
| 8          | 3 | 70                        | 0.020                  | 4                      | 8                      | 2785       | 165                        | 5.5                         |
| 10         | 3 | 70                        | 0.025                  | 5                      | 10                     | 2230       | 165                        | 8.5                         |
| 2          | 3 | 120                       | 0.005                  | 1                      | 2                      | 19100      | 285                        | 0.5                         |
| 3          | 3 | 120                       | 0.010                  | 1.5                    | 3                      | 12735      | 380                        | 1.5                         |
| 4          | 3 | 120                       | 0.010                  | 2                      | 4                      | 9550       | 285                        | 2.5                         |
| 5          | 3 | 120                       | 0.015                  | 2.5                    | 5                      | 7640       | 345                        | 4.5                         |
| 6          | 3 | 120                       | 0.020                  | 3                      | 6                      | 6365       | 380                        | 7.0                         |
| 8          | 3 | 120                       | 0.025                  | 4                      | 8                      | 4775       | 360                        | 11.5                        |
| 10         | 3 | 120                       | 0.030                  | 5                      | 10                     | 3820       | 345                        | 17.5                        |
| 2          | 3 | 40                        | 0.005                  | 1                      | 2                      | 6365       | 95                         | 0.2                         |
| 3          | 3 | 40                        | 0.010                  | 1.5                    | 3                      | 4245       | 125                        | 0.5                         |
| 4          | 3 | 40                        | 0.010                  | 2                      | 4                      | 3185       | 95                         | 1.0                         |
| 5          | 3 | 40                        | 0.015                  | 2.5                    | 5                      | 2545       | 115                        | 1.5                         |
| 6          | 3 | 40                        | 0.015                  | 3                      | 6                      | 2120       | 95                         | 1.5                         |
| 8          | 3 | 40                        | 0.020                  | 4                      | 8                      | 1590       | 95                         | 3.0                         |
| 10         | 3 | 40                        | 0.025                  | 5                      | 10                     | 1275       | 95                         | 5.0                         |



5336



Применение

Сталь  
20 - 30 HRC



Сталь  
30 - 48 HRC



Чугун  
(серый /  
высокопрочный)



Холодноштамповые  
стали >12% Cr  
жаростойкие стали  
нержавеющие  
аустенитные стали



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|
| 2          | 3 | 120                       | 0.005                  | 2                      | 0.2                    | 19100      | 285                        |
| 3          | 3 | 120                       | 0.010                  | 3                      | 0.3                    | 12735      | 380                        |
| 4          | 3 | 120                       | 0.015                  | 4                      | 0.4                    | 9550       | 430                        |
| 5          | 3 | 120                       | 0.015                  | 5                      | 0.5                    | 7640       | 345                        |
| 6          | 3 | 120                       | 0.020                  | 6                      | 0.6                    | 6365       | 380                        |
| 8          | 3 | 120                       | 0.025                  | 8                      | 0.8                    | 4775       | 360                        |
| 10         | 3 | 120                       | 0.035                  | 10                     | 1.0                    | 3820       | 400                        |
| 2          | 3 | 80                        | 0.005                  | 2                      | 0.2                    | 12735      | 190                        |
| 3          | 3 | 80                        | 0.010                  | 3                      | 0.3                    | 8490       | 255                        |
| 4          | 3 | 80                        | 0.015                  | 4                      | 0.4                    | 6365       | 285                        |
| 5          | 3 | 80                        | 0.015                  | 5                      | 0.5                    | 5095       | 230                        |
| 6          | 3 | 80                        | 0.020                  | 6                      | 0.6                    | 4245       | 255                        |
| 8          | 3 | 80                        | 0.025                  | 8                      | 0.8                    | 3185       | 240                        |
| 10         | 3 | 80                        | 0.035                  | 10                     | 1.0                    | 2545       | 265                        |
| 2          | 3 | 160                       | 0.005                  | 2                      | 0.2                    | 25465      | 380                        |
| 3          | 3 | 160                       | 0.010                  | 3                      | 0.3                    | 16975      | 510                        |
| 4          | 3 | 160                       | 0.015                  | 4                      | 0.4                    | 12735      | 575                        |
| 5          | 3 | 160                       | 0.015                  | 5                      | 0.5                    | 10185      | 460                        |
| 6          | 3 | 160                       | 0.020                  | 6                      | 0.6                    | 8490       | 510                        |
| 8          | 3 | 160                       | 0.025                  | 8                      | 0.8                    | 6365       | 475                        |
| 10         | 3 | 160                       | 0.035                  | 10                     | 1.0                    | 5095       | 535                        |
| 2          | 3 | 60                        | 0.005                  | 2                      | 0.2                    | 9550       | 145                        |
| 3          | 3 | 60                        | 0.010                  | 3                      | 0.3                    | 6365       | 190                        |
| 4          | 3 | 60                        | 0.015                  | 4                      | 0.4                    | 4775       | 215                        |
| 5          | 3 | 60                        | 0.015                  | 5                      | 0.5                    | 3820       | 170                        |
| 6          | 3 | 60                        | 0.020                  | 6                      | 0.6                    | 3185       | 190                        |
| 8          | 3 | 60                        | 0.025                  | 8                      | 0.8                    | 2385       | 180                        |
| 10         | 3 | 60                        | 0.035                  | 10                     | 1.0                    | 1910       | 200                        |

5336



Применение

Сталь  
20 - 30 HRC



Сталь  
30 - 48 HRC



Чугун  
(серый /  
высокопрочный)



Холодноштамповые  
стали >12% Cr  
жаростойкие стали  
нержавеющие  
аустенитные стали



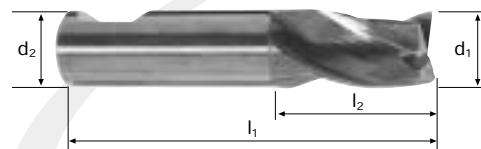
| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 2          | 3 | 100                       | 0.005                  | 1                      | 2                      | 15915      | 240                        | 0.5                         |
| 3          | 3 | 100                       | 0.010                  | 1.5                    | 3                      | 10610      | 320                        | 1.5                         |
| 4          | 3 | 100                       | 0.010                  | 2                      | 4                      | 7960       | 240                        | 2.0                         |
| 5          | 3 | 100                       | 0.015                  | 2.5                    | 5                      | 6365       | 285                        | 3.5                         |
| 6          | 3 | 100                       | 0.015                  | 3                      | 6                      | 5305       | 240                        | 4.5                         |
| 8          | 3 | 100                       | 0.020                  | 4                      | 8                      | 3980       | 240                        | 7.5                         |
| 10         | 3 | 100                       | 0.030                  | 5                      | 10                     | 3185       | 285                        | 14.5                        |
| 2          | 3 | 70                        | 0.005                  | 1                      | 2                      | 11140      | 165                        | 0.5                         |
| 3          | 3 | 70                        | 0.010                  | 1.5                    | 3                      | 7425       | 225                        | 1.0                         |
| 4          | 3 | 70                        | 0.010                  | 2                      | 4                      | 5570       | 165                        | 1.5                         |
| 5          | 3 | 70                        | 0.015                  | 2.5                    | 5                      | 4455       | 200                        | 2.5                         |
| 6          | 3 | 70                        | 0.015                  | 3                      | 6                      | 3715       | 165                        | 3.0                         |
| 8          | 3 | 70                        | 0.020                  | 4                      | 8                      | 2785       | 165                        | 5.5                         |
| 10         | 3 | 70                        | 0.025                  | 5                      | 10                     | 2230       | 165                        | 8.5                         |
| 2          | 3 | 120                       | 0.005                  | 1                      | 2                      | 19100      | 285                        | 0.5                         |
| 3          | 3 | 120                       | 0.010                  | 1.5                    | 3                      | 12735      | 380                        | 1.5                         |
| 4          | 3 | 120                       | 0.010                  | 2                      | 4                      | 9550       | 285                        | 2.5                         |
| 5          | 3 | 120                       | 0.015                  | 2.5                    | 5                      | 7640       | 345                        | 4.5                         |
| 6          | 3 | 120                       | 0.020                  | 3                      | 6                      | 6365       | 380                        | 7.0                         |
| 8          | 3 | 120                       | 0.025                  | 4                      | 8                      | 4775       | 360                        | 11.5                        |
| 10         | 3 | 120                       | 0.030                  | 5                      | 10                     | 3820       | 345                        | 17.5                        |
| 2          | 3 | 40                        | 0.005                  | 1                      | 2                      | 6365       | 95                         | 0.2                         |
| 3          | 3 | 40                        | 0.010                  | 1.5                    | 3                      | 4245       | 125                        | 0.5                         |
| 4          | 3 | 40                        | 0.010                  | 2                      | 4                      | 3185       | 95                         | 1.0                         |
| 5          | 3 | 40                        | 0.015                  | 2.5                    | 5                      | 2545       | 115                        | 1.5                         |
| 6          | 3 | 40                        | 0.015                  | 3                      | 6                      | 2120       | 95                         | 1.5                         |
| 8          | 3 | 40                        | 0.020                  | 4                      | 8                      | 1590       | 95                         | 3.0                         |
| 10         | 3 | 40                        | 0.025                  | 5                      | 10                     | 1275       | 95                         | 5.0                         |

# Серия Cut-X

# Cut-X

HM  
MG10 N

$\lambda$  30°  
 $\gamma$  12°

Предназначены для обработки:

90°

HRC  
< 48

Нерж.  
сталь

GG(G)  
Чугун

Титан

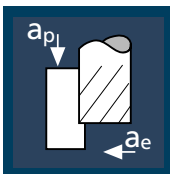
Алюминий

| Пример: заказа-№: U 5336.120 |          |          |    |    |   |  | NEW!<br>UNICUT-4X POLYCHROM<br>U5336P5336 |   |
|------------------------------|----------|----------|----|----|---|--|---|---|
| $\varnothing$<br>Code        | d1<br>e8 | d2<br>h6 | l1 | l2 | z |  |   |   |
| .120                         | 1,5      | 6        | 34 | 3  | 3 |  | .   | . |
| .140                         | 2        | 6        | 34 | 3  | 3 |  | .   | . |
| .160                         | 2,5      | 6        | 34 | 3  | 3 |  | .   | . |
| .180                         | 3        | 6        | 35 | 4  | 3 |  | .   | . |
| .200                         | 3,5      | 6        | 35 | 4  | 3 |  | .   | . |
| .220                         | 4        | 6        | 36 | 5  | 3 |  | .   | . |
| .240                         | 4,5      | 6        | 36 | 5  | 3 |  | .   | . |
| .260                         | 5        | 6        | 37 | 6  | 3 |  | .   | . |
| .300                         | 6        | 6        | 38 | 7  | 3 |  | .   | . |
| .331                         | 7        | 8        | 41 | 8  | 3 |  | .   | . |
| .391                         | 8        | 8        | 41 | 9  | 3 |  | .   | . |
| .420                         | 9        | 10       | 48 | 10 | 3 |  | .   | . |
| .450                         | 10       | 10       | 48 | 11 | 3 |  | .   | . |
|                              |          |          |    |    |   |  |   |   |
|                              |          |          |    |    |   |  |   |   |
|                              |          |          |    |    |   |  |   |   |
|                              |          |          |    |    |   |  |   |   |
|                              |          |          |    |    |   |  |   |   |
|                              |          |          |    |    |   |  |   |   |
|                              |          |          |    |    |   |  |   |   |
|                              |          |          |    |    |   |  |   |   |
|                              |          |          |    |    |   |  |   |   |
|                              |          |          |    |    |   |  |   |   |
|                              |          |          |    |    |   |  |   |   |
|                              |          |          |    |    |   |  |   |   |
|                              |          |          |    |    |   |  |   |   |

Cut-X



# 5036



## Применение

Сталь  
20 - 30 HRC



Сталь  
30 - 48 HRC



Чугун  
(серый /  
высокопрочный)



Холодноштамповые  
стали >12% Cr  
жаростойкие стали  
нержавеющие  
аустенитные стали



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|
| 2          | 3 | 120                       | 0.005                  | 3.0                    | 0.2                    | 19100      | 285                        |
| 3          | 3 | 120                       | 0.010                  | 4.5                    | 0.3                    | 12735      | 380                        |
| 4          | 3 | 120                       | 0.015                  | 6.0                    | 0.4                    | 9550       | 430                        |
| 5          | 3 | 120                       | 0.015                  | 7.5                    | 0.5                    | 7640       | 345                        |
| 6          | 3 | 120                       | 0.020                  | 9.0                    | 0.6                    | 6365       | 380                        |
| 8          | 3 | 120                       | 0.025                  | 12.0                   | 0.8                    | 4775       | 360                        |
| 10         | 3 | 120                       | 0.035                  | 15.0                   | 1.0                    | 3820       | 400                        |
| 2          | 3 | 80                        | 0.005                  | 3.0                    | 0.2                    | 12735      | 190                        |
| 3          | 3 | 80                        | 0.010                  | 4.5                    | 0.3                    | 8490       | 255                        |
| 4          | 3 | 80                        | 0.015                  | 6.0                    | 0.4                    | 6365       | 285                        |
| 5          | 3 | 80                        | 0.015                  | 7.5                    | 0.5                    | 5095       | 230                        |
| 6          | 3 | 80                        | 0.020                  | 9.0                    | 0.6                    | 4245       | 255                        |
| 8          | 3 | 80                        | 0.025                  | 12.0                   | 0.8                    | 3185       | 240                        |
| 10         | 3 | 80                        | 0.035                  | 15.0                   | 1.0                    | 2545       | 265                        |
| 2          | 3 | 160                       | 0.005                  | 3.0                    | 0.2                    | 25465      | 380                        |
| 3          | 3 | 160                       | 0.010                  | 4.5                    | 0.3                    | 16975      | 510                        |
| 4          | 3 | 160                       | 0.015                  | 6.0                    | 0.4                    | 12735      | 575                        |
| 5          | 3 | 160                       | 0.015                  | 7.5                    | 0.5                    | 10185      | 460                        |
| 6          | 3 | 160                       | 0.020                  | 9.0                    | 0.6                    | 8490       | 510                        |
| 8          | 3 | 160                       | 0.025                  | 12.0                   | 0.8                    | 6365       | 475                        |
| 10         | 3 | 160                       | 0.035                  | 15.0                   | 1.0                    | 5095       | 535                        |
| 2          | 3 | 60                        | 0.005                  | 3.0                    | 0.2                    | 9550       | 145                        |
| 3          | 3 | 60                        | 0.010                  | 4.5                    | 0.3                    | 6365       | 190                        |
| 4          | 3 | 60                        | 0.015                  | 6.0                    | 0.4                    | 4775       | 215                        |
| 5          | 3 | 60                        | 0.015                  | 7.5                    | 0.5                    | 3820       | 170                        |
| 6          | 3 | 60                        | 0.020                  | 9.0                    | 0.6                    | 3185       | 190                        |
| 8          | 3 | 60                        | 0.025                  | 12.0                   | 0.8                    | 2385       | 180                        |
| 10         | 3 | 60                        | 0.035                  | 15.0                   | 1.0                    | 1910       | 200                        |

# 5036



## Применение

Сталь  
20 - 30 HRC



Сталь  
30 - 48 HRC



Чугун  
(серый /  
высокопрочный)



Холодноштамповые  
стали >12% Cr  
жаростойкие стали  
нержавеющие  
аустенитные стали



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 2          | 3 | 100                       | 0.005                  | 0.8                    | 2                      | 15915      | 240                        | 0.5                         |
| 3          | 3 | 100                       | 0.010                  | 1.2                    | 3                      | 10610      | 320                        | 1.0                         |
| 4          | 3 | 100                       | 0.010                  | 1.6                    | 4                      | 7960       | 240                        | 1.5                         |
| 5          | 3 | 100                       | 0.015                  | 2.0                    | 5                      | 6365       | 285                        | 3.0                         |
| 6          | 3 | 100                       | 0.015                  | 2.4                    | 6                      | 5305       | 240                        | 3.5                         |
| 8          | 3 | 100                       | 0.020                  | 3.2                    | 8                      | 3980       | 240                        | 6.0                         |
| 10         | 3 | 100                       | 0.030                  | 4.0                    | 10                     | 3185       | 285                        | 11.5                        |
| 2          | 3 | 70                        | 0.005                  | 0.8                    | 2                      | 11140      | 165                        | 0.5                         |
| 3          | 3 | 70                        | 0.010                  | 1.2                    | 3                      | 7425       | 225                        | 1.0                         |
| 4          | 3 | 70                        | 0.010                  | 1.6                    | 4                      | 5570       | 165                        | 1.0                         |
| 5          | 3 | 70                        | 0.015                  | 2.0                    | 5                      | 4455       | 200                        | 2.0                         |
| 6          | 3 | 70                        | 0.015                  | 2.4                    | 6                      | 3715       | 165                        | 2.5                         |
| 8          | 3 | 70                        | 0.020                  | 3.2                    | 8                      | 2785       | 165                        | 4.0                         |
| 10         | 3 | 70                        | 0.025                  | 4.0                    | 10                     | 2230       | 165                        | 6.5                         |
| 2          | 3 | 120                       | 0.005                  | 0.8                    | 2                      | 19100      | 285                        | 0.5                         |
| 3          | 3 | 120                       | 0.010                  | 1.2                    | 3                      | 12735      | 380                        | 1.5                         |
| 4          | 3 | 120                       | 0.010                  | 1.6                    | 4                      | 9550       | 285                        | 2.0                         |
| 5          | 3 | 120                       | 0.015                  | 2.0                    | 5                      | 7640       | 345                        | 3.5                         |
| 6          | 3 | 120                       | 0.020                  | 2.4                    | 6                      | 6365       | 380                        | 5.5                         |
| 8          | 3 | 120                       | 0.025                  | 3.2                    | 8                      | 4775       | 360                        | 9.0                         |
| 10         | 3 | 120                       | 0.030                  | 4.0                    | 10                     | 3820       | 345                        | 14.0                        |
| 2          | 3 | 40                        | 0.005                  | 0.8                    | 2                      | 6365       | 95                         | 0.2                         |
| 3          | 3 | 40                        | 0.010                  | 1.2                    | 3                      | 4245       | 125                        | 0.5                         |
| 4          | 3 | 40                        | 0.010                  | 1.6                    | 4                      | 3185       | 95                         | 0.5                         |
| 5          | 3 | 40                        | 0.015                  | 2.0                    | 5                      | 2545       | 115                        | 1.0                         |
| 6          | 3 | 40                        | 0.015                  | 2.4                    | 6                      | 2120       | 95                         | 1.5                         |
| 8          | 3 | 40                        | 0.020                  | 3.2                    | 8                      | 1590       | 95                         | 2.5                         |
| 10         | 3 | 40                        | 0.025                  | 4.0                    | 10                     | 1275       | 95                         | 4.0                         |

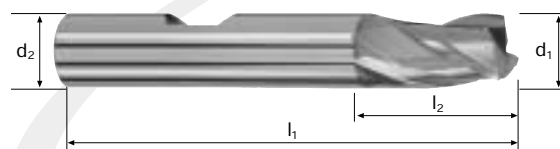
# Серия Cut-X

## Cut-X

NEW!

HM  
MG10 N

$\lambda$  30°  
 $\gamma$  12°



Предназначены для обработки:

90°

HRC  
< 48

Нерж.  
сталь

GG(G)  
Чугун

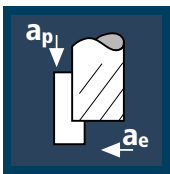
Титан

Алюминий

| Пример: заказа-N° |      |            |    |       |    |       | POLYCHROM |  |
|-------------------|------|------------|----|-------|----|-------|-----------|--|
| Покрyтие          |      | Артикул-N° |    | Ф-Код |    | P5036 |           |  |
| P                 |      | 5036.120   |    |       |    |       |           |  |
| Ø                 | d1   | d2         | l1 | l2    | α  | Z     |           |  |
| Code              | e8   | h6         |    |       |    |       |           |  |
| .120              | 1,5  | 6          | 50 | 5     | 9° | 3     | ?         |  |
| .140              | 2,0  | 6          | 50 | 5     | 9° | 3     | ?         |  |
| .160              | 2,5  | 6          | 50 | 5     | 8° | 3     | ?         |  |
| .180              | 3,0  | 6          | 50 | 6     | 7° | 3     | ?         |  |
| .200              | 3,5  | 6          | 50 | 8     | 5° | 3     | ?         |  |
| .220              | 4,0  | 6          | 50 | 8     | 5° | 3     | ?         |  |
| .240              | 4,5  | 6          | 50 | 8     | 4° | 3     | ?         |  |
| .260              | 5,0  | 6          | 50 | 9     | 3° | 3     | ?         |  |
| .300              | 6,0  | 6          | 50 | 10    | 0° | 3     | ?         |  |
| .331              | 7,0  | 8          | 54 | 10    | 2° | 3     | ?         |  |
| .391              | 8,0  | 8          | 54 | 12    | 0° | 3     | ?         |  |
| .420              | 9,0  | 10         | 63 | 12    | 2° | 3     | ?         |  |
| .450              | 10,0 | 10         | 63 | 13    | 0° | 3     | ?         |  |

Cut-X

5337



Применение

Сталь  
20 - 30 HRC



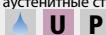
Сталь  
30 - 48 HRC



Сталь  
48 - 58 HRC



Холодноштамповые  
стали >12% Cr  
жаростойкие стали  
нержавеющие  
аустенитные стали



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|
| 3          | 4 | 170                       | 0.010                  | 3                      | 0.1                    | 18040      | 720                        |
| 4          | 4 | 170                       | 0.010                  | 4                      | 0.2                    | 13530      | 540                        |
| 5          | 4 | 170                       | 0.015                  | 5                      | 0.2                    | 10825      | 650                        |
| 6          | 6 | 170                       | 0.015                  | 6                      | 0.3                    | 9020       | 810                        |
| 8          | 6 | 170                       | 0.025                  | 8                      | 0.4                    | 6765       | 1015                       |
| 10         | 6 | 170                       | 0.030                  | 10                     | 0.5                    | 5410       | 975                        |
| 3          | 4 | 110                       | 0.010                  | 3                      | 0.1                    | 11670      | 465                        |
| 4          | 4 | 110                       | 0.010                  | 4                      | 0.2                    | 8755       | 350                        |
| 5          | 4 | 110                       | 0.015                  | 5                      | 0.2                    | 7005       | 420                        |
| 6          | 6 | 110                       | 0.015                  | 6                      | 0.3                    | 5835       | 525                        |
| 8          | 6 | 110                       | 0.025                  | 8                      | 0.4                    | 4375       | 655                        |
| 10         | 6 | 110                       | 0.030                  | 10                     | 0.5                    | 3500       | 630                        |
| 3          | 4 | 80                        | 0.010                  | 3                      | 0.1                    | 8490       | 340                        |
| 4          | 4 | 80                        | 0.010                  | 4                      | 0.2                    | 6365       | 255                        |
| 5          | 4 | 80                        | 0.015                  | 5                      | 0.2                    | 5095       | 305                        |
| 6          | 6 | 80                        | 0.015                  | 6                      | 0.3                    | 4245       | 380                        |
| 8          | 6 | 80                        | 0.025                  | 8                      | 0.4                    | 3185       | 480                        |
| 10         | 6 | 80                        | 0.030                  | 10                     | 0.5                    | 2545       | 460                        |
| 3          | 4 | 70                        | 0.010                  | 3                      | 0.1                    | 7425       | 295                        |
| 4          | 4 | 70                        | 0.010                  | 4                      | 0.2                    | 5570       | 225                        |
| 5          | 4 | 70                        | 0.015                  | 5                      | 0.2                    | 4455       | 265                        |
| 6          | 6 | 70                        | 0.015                  | 6                      | 0.3                    | 3715       | 335                        |
| 8          | 6 | 70                        | 0.025                  | 8                      | 0.4                    | 2785       | 420                        |
| 10         | 6 | 70                        | 0.030                  | 10                     | 0.5                    | 2230       | 400                        |

Применение

Чугун  
(серый /  
высокопрочный)



Медь чистая



Титан



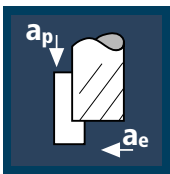
Сплавы на основе никеля  
Aeronautic materials



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|
| 3          | 4 | 130                       | 0.010                  | 3                      | 0.1                    | 13795      | 550                        |
| 4          | 4 | 130                       | 0.010                  | 4                      | 0.2                    | 10345      | 415                        |
| 5          | 4 | 130                       | 0.015                  | 5                      | 0.2                    | 8275       | 495                        |
| 6          | 6 | 130                       | 0.015                  | 6                      | 0.3                    | 6895       | 620                        |
| 8          | 6 | 130                       | 0.025                  | 8                      | 0.4                    | 5175       | 775                        |
| 10         | 6 | 130                       | 0.030                  | 10                     | 0.5                    | 4140       | 745                        |
| 3          | 4 | 230                       | 0.010                  | 3                      | 0.1                    | 24405      | 975                        |
| 4          | 4 | 230                       | 0.010                  | 4                      | 0.2                    | 18305      | 730                        |
| 5          | 4 | 230                       | 0.015                  | 5                      | 0.2                    | 14645      | 880                        |
| 6          | 6 | 230                       | 0.015                  | 6                      | 0.3                    | 12200      | 1100                       |
| 8          | 6 | 230                       | 0.025                  | 8                      | 0.4                    | 9150       | 1375                       |
| 10         | 6 | 230                       | 0.030                  | 10                     | 0.5                    | 7320       | 1320                       |
| 3          | 4 | 80                        | 0.010                  | 3                      | 0.1                    | 8490       | 340                        |
| 4          | 4 | 80                        | 0.010                  | 4                      | 0.2                    | 6365       | 255                        |
| 5          | 4 | 80                        | 0.015                  | 5                      | 0.2                    | 5095       | 305                        |
| 6          | 6 | 80                        | 0.015                  | 6                      | 0.3                    | 4245       | 380                        |
| 8          | 6 | 80                        | 0.025                  | 8                      | 0.4                    | 3185       | 480                        |
| 10         | 6 | 80                        | 0.030                  | 10                     | 0.5                    | 2545       | 460                        |
| 3          | 4 | 40                        | 0.010                  | 3                      | 0.1                    | 4245       | 170                        |
| 4          | 4 | 40                        | 0.010                  | 4                      | 0.2                    | 3185       | 125                        |
| 5          | 4 | 40                        | 0.015                  | 5                      | 0.2                    | 2545       | 155                        |
| 6          | 6 | 40                        | 0.015                  | 6                      | 0.3                    | 2120       | 190                        |
| 8          | 6 | 40                        | 0.025                  | 8                      | 0.4                    | 1590       | 240                        |
| 10         | 6 | 40                        | 0.030                  | 10                     | 0.5                    | 1275       | 230                        |

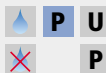


5338



Применение

Сталь  
20 - 30 HRC



Сталь  
30 - 48 HRC



Сталь  
48 - 58 HRC



Холодноштамповые  
стали >12% Cr  
жаростойкие стали  
нержавеющие  
аустенитные стали



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|
| 3          | 4 | 170                       | 0.010                  | 3                      | 0.1                    | 18040      | 720                        |
| 4          | 4 | 170                       | 0.010                  | 4                      | 0.2                    | 13530      | 540                        |
| 5          | 4 | 170                       | 0.015                  | 5                      | 0.2                    | 10825      | 650                        |
| 6          | 6 | 170                       | 0.015                  | 6                      | 0.3                    | 9020       | 810                        |
| 8          | 6 | 170                       | 0.025                  | 8                      | 0.4                    | 6765       | 1015                       |
| 10         | 6 | 170                       | 0.030                  | 10                     | 0.5                    | 5410       | 975                        |
| 3          | 4 | 110                       | 0.010                  | 3                      | 0.1                    | 11670      | 465                        |
| 4          | 4 | 110                       | 0.010                  | 4                      | 0.2                    | 8755       | 350                        |
| 5          | 4 | 110                       | 0.015                  | 5                      | 0.2                    | 7005       | 420                        |
| 6          | 6 | 110                       | 0.015                  | 6                      | 0.3                    | 5835       | 525                        |
| 8          | 6 | 110                       | 0.025                  | 8                      | 0.4                    | 4375       | 655                        |
| 10         | 6 | 110                       | 0.030                  | 10                     | 0.5                    | 3500       | 630                        |
| 3          | 4 | 80                        | 0.010                  | 3                      | 0.1                    | 8490       | 340                        |
| 4          | 4 | 80                        | 0.010                  | 4                      | 0.2                    | 6365       | 255                        |
| 5          | 4 | 80                        | 0.015                  | 5                      | 0.2                    | 5095       | 305                        |
| 6          | 6 | 80                        | 0.015                  | 6                      | 0.3                    | 4245       | 380                        |
| 8          | 6 | 80                        | 0.025                  | 8                      | 0.4                    | 3185       | 480                        |
| 10         | 6 | 80                        | 0.030                  | 10                     | 0.5                    | 2545       | 460                        |
| 3          | 4 | 70                        | 0.010                  | 3                      | 0.1                    | 7425       | 295                        |
| 4          | 4 | 70                        | 0.010                  | 4                      | 0.2                    | 5570       | 225                        |
| 5          | 4 | 70                        | 0.015                  | 5                      | 0.2                    | 4455       | 265                        |
| 6          | 6 | 70                        | 0.015                  | 6                      | 0.3                    | 3715       | 335                        |
| 8          | 6 | 70                        | 0.025                  | 8                      | 0.4                    | 2785       | 420                        |
| 10         | 6 | 70                        | 0.030                  | 10                     | 0.5                    | 2230       | 400                        |

Применение

Чугун  
(серый /  
высокопрочный)



Медь чистая



Титан



Сплавы на основе никеля  
Aeronautic materials



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|
| 3          | 4 | 130                       | 0.010                  | 3                      | 0.1                    | 13795      | 550                        |
| 4          | 4 | 130                       | 0.010                  | 4                      | 0.2                    | 10345      | 415                        |
| 5          | 4 | 130                       | 0.015                  | 5                      | 0.2                    | 8275       | 495                        |
| 6          | 6 | 130                       | 0.015                  | 6                      | 0.3                    | 6895       | 620                        |
| 8          | 6 | 130                       | 0.025                  | 8                      | 0.4                    | 5175       | 775                        |
| 10         | 6 | 130                       | 0.030                  | 10                     | 0.5                    | 4140       | 745                        |
| 3          | 4 | 230                       | 0.010                  | 3                      | 0.1                    | 24405      | 975                        |
| 4          | 4 | 230                       | 0.010                  | 4                      | 0.2                    | 18305      | 730                        |
| 5          | 4 | 230                       | 0.015                  | 5                      | 0.2                    | 14645      | 880                        |
| 6          | 6 | 230                       | 0.015                  | 6                      | 0.3                    | 12200      | 1100                       |
| 8          | 6 | 230                       | 0.025                  | 8                      | 0.4                    | 9150       | 1375                       |
| 10         | 6 | 230                       | 0.030                  | 10                     | 0.5                    | 7320       | 1320                       |
| 3          | 4 | 80                        | 0.010                  | 3                      | 0.1                    | 8490       | 340                        |
| 4          | 4 | 80                        | 0.010                  | 4                      | 0.2                    | 6365       | 255                        |
| 5          | 4 | 80                        | 0.015                  | 5                      | 0.2                    | 5095       | 305                        |
| 6          | 6 | 80                        | 0.015                  | 6                      | 0.3                    | 4245       | 380                        |
| 8          | 6 | 80                        | 0.025                  | 8                      | 0.4                    | 3185       | 480                        |
| 10         | 6 | 80                        | 0.030                  | 10                     | 0.5                    | 2545       | 460                        |
| 3          | 4 | 40                        | 0.010                  | 3                      | 0.1                    | 4245       | 170                        |
| 4          | 4 | 40                        | 0.010                  | 4                      | 0.2                    | 3185       | 125                        |
| 5          | 4 | 40                        | 0.015                  | 5                      | 0.2                    | 2545       | 155                        |
| 6          | 6 | 40                        | 0.015                  | 6                      | 0.3                    | 2120       | 190                        |
| 8          | 6 | 40                        | 0.025                  | 8                      | 0.4                    | 1590       | 240                        |
| 10         | 6 | 40                        | 0.030                  | 10                     | 0.5                    | 1275       | 230                        |

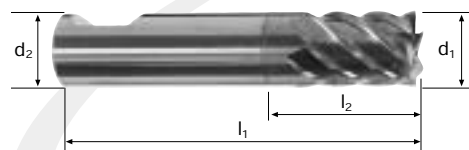


## Серия Cut-X

## Cut-X multi

HM  
MG10 N

$\lambda$  45°  
 $\gamma$  10°



Предназначены для обработки:

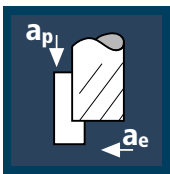
0,05-0,15  
4°

HRC < 48    Нерж. сталь    GG(G) Чугун    Титан

|   |          |          |    |    |   |   | NEW!       |           |
|---|----------|----------|----|----|---|---|------------|-----------|
|   |          |          |    |    |   |   | UNICUT-4X  | POLYCHROM |
| Пример: заказа-№. <span style="color:red">U</span> <span style="color:blue">5338</span> . <span style="color:blue">180</span> |          |          |    |    |   |   | U5338P5338 |           |
| Ø<br>Code   | d1<br>e8 | d2<br>h6 | l1 | l2 | z |   |            |           |
| .180  | 3        | 6        | 35 | 4  | 4 | • | •          |           |
| .220  | 4        | 6        | 36 | 5  | 4 | • | •          |           |
| .260  | 5        | 6        | 37 | 6  | 4 | • | •          |           |
| .300  | 6        | 6        | 38 | 7  | 6 | • | •          |           |
| .391  | 8        | 8        | 41 | 9  | 6 | • | •          |           |
| .450  | 10       | 10       | 48 | 11 | 6 | • | •          |           |
|   |          |          |    |    |   |   |            |           |
|   |          |          |    |    |   |   |            |           |
|   |          |          |    |    |   |   |            |           |
|   |          |          |    |    |   |   |            |           |
|   |          |          |    |    |   |   |            |           |
|   |          |          |    |    |   |   |            |           |
|   |          |          |    |    |   |   |            |           |
|   |          |          |    |    |   |   |            |           |
|   |          |          |    |    |   |   |            |           |
|   |          |          |    |    |   |   |            |           |
|   |          |          |    |    |   |   |            |           |
|   |          |          |    |    |   |   |            |           |
|   |          |          |    |    |   |   |            |           |
|   |          |          |    |    |   |   |            |           |
|   |          |          |    |    |   |   |            |           |
|   |          |          |    |    |   |   |            |           |
|   |          |          |    |    |   |   |            |           |

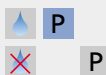
Cut-X

5037



Применение

Сталь  
20 - 30 HRC



Сталь  
30 - 48 HRC



Сталь  
48 - 58 HRC



Холодноштамповые  
стали >12% Cr  
жаростойкие стали  
нержавеющие стали  
аустенитные стали



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|
| 3          | 4 | 170                       | 0.010                  | 4.5                    | 0.08                   | 18040      | 720                        |
| 4          | 4 | 170                       | 0.010                  | 6.0                    | 0.10                   | 13530      | 540                        |
| 5          | 4 | 170                       | 0.015                  | 7.5                    | 0.13                   | 10825      | 650                        |
| 6          | 6 | 170                       | 0.015                  | 9.0                    | 0.15                   | 9020       | 810                        |
| 8          | 6 | 170                       | 0.025                  | 12.0                   | 0.20                   | 6765       | 1015                       |
| 10         | 6 | 170                       | 0.030                  | 15.0                   | 0.25                   | 5410       | 975                        |
| 3          | 4 | 110                       | 0.010                  | 4.5                    | 0.08                   | 11670      | 465                        |
| 4          | 4 | 110                       | 0.010                  | 6.0                    | 0.10                   | 8755       | 350                        |
| 5          | 4 | 110                       | 0.015                  | 7.5                    | 0.13                   | 7005       | 420                        |
| 6          | 6 | 110                       | 0.015                  | 9.0                    | 0.15                   | 5835       | 525                        |
| 8          | 6 | 110                       | 0.025                  | 12.0                   | 0.20                   | 4375       | 655                        |
| 10         | 6 | 110                       | 0.030                  | 15.0                   | 0.25                   | 3500       | 630                        |
| 3          | 4 | 80                        | 0.010                  | 4.5                    | 0.08                   | 8490       | 340                        |
| 4          | 4 | 80                        | 0.010                  | 6.0                    | 0.10                   | 6365       | 255                        |
| 5          | 4 | 80                        | 0.015                  | 7.5                    | 0.13                   | 5095       | 305                        |
| 6          | 6 | 80                        | 0.015                  | 9.0                    | 0.15                   | 4245       | 380                        |
| 8          | 6 | 80                        | 0.025                  | 12.0                   | 0.20                   | 3185       | 480                        |
| 10         | 6 | 80                        | 0.030                  | 15.0                   | 0.25                   | 2545       | 460                        |
| 3          | 4 | 70                        | 0.010                  | 4.5                    | 0.08                   | 7425       | 295                        |
| 4          | 4 | 70                        | 0.010                  | 6.0                    | 0.10                   | 5570       | 225                        |
| 5          | 4 | 70                        | 0.015                  | 7.5                    | 0.13                   | 4455       | 265                        |
| 6          | 6 | 70                        | 0.015                  | 9.0                    | 0.15                   | 3715       | 335                        |
| 8          | 6 | 70                        | 0.025                  | 12.0                   | 0.20                   | 2785       | 420                        |
| 10         | 6 | 70                        | 0.030                  | 15.0                   | 0.25                   | 2230       | 400                        |

Применение

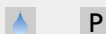
Чугун  
(серый /  
высокопрочный)



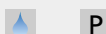
Медь чистая



Титан



Сплавы на основе никеля  
Aeronautic materials



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|
| 3          | 4 | 130                       | 0.010                  | 4.5                    | 0.08                   | 13795      | 550                        |
| 4          | 4 | 130                       | 0.010                  | 6.0                    | 0.10                   | 10345      | 415                        |
| 5          | 4 | 130                       | 0.015                  | 7.5                    | 0.13                   | 8275       | 495                        |
| 6          | 6 | 130                       | 0.015                  | 9.0                    | 0.15                   | 6895       | 620                        |
| 8          | 6 | 130                       | 0.025                  | 12.0                   | 0.20                   | 5175       | 775                        |
| 10         | 6 | 130                       | 0.030                  | 15.0                   | 0.25                   | 4140       | 745                        |
| 3          | 4 | 230                       | 0.010                  | 4.5                    | 0.08                   | 24405      | 975                        |
| 4          | 4 | 230                       | 0.010                  | 6.0                    | 0.10                   | 18305      | 730                        |
| 5          | 4 | 230                       | 0.015                  | 7.5                    | 0.13                   | 14645      | 880                        |
| 6          | 6 | 230                       | 0.015                  | 9.0                    | 0.15                   | 12200      | 1100                       |
| 8          | 6 | 230                       | 0.025                  | 12.0                   | 0.20                   | 9150       | 1375                       |
| 10         | 6 | 230                       | 0.030                  | 15.0                   | 0.25                   | 7320       | 1320                       |
| 3          | 4 | 80                        | 0.010                  | 4.5                    | 0.08                   | 8490       | 340                        |
| 4          | 4 | 80                        | 0.010                  | 6.0                    | 0.10                   | 6365       | 255                        |
| 5          | 4 | 80                        | 0.015                  | 7.5                    | 0.13                   | 5095       | 305                        |
| 6          | 6 | 80                        | 0.015                  | 9.0                    | 0.15                   | 4245       | 380                        |
| 8          | 6 | 80                        | 0.025                  | 12.0                   | 0.20                   | 3185       | 480                        |
| 10         | 6 | 80                        | 0.030                  | 15.0                   | 0.25                   | 2545       | 460                        |
| 3          | 4 | 40                        | 0.010                  | 4.5                    | 0.08                   | 4245       | 170                        |
| 4          | 4 | 40                        | 0.010                  | 6.0                    | 0.10                   | 3185       | 125                        |
| 5          | 4 | 40                        | 0.015                  | 7.5                    | 0.13                   | 2545       | 155                        |
| 6          | 6 | 40                        | 0.015                  | 9.0                    | 0.15                   | 2120       | 190                        |
| 8          | 6 | 40                        | 0.025                  | 12.0                   | 0.20                   | 1590       | 240                        |
| 10         | 6 | 40                        | 0.030                  | 15.0                   | 0.25                   | 1275       | 230                        |

# Серия Cut-X

# Cut-X multi

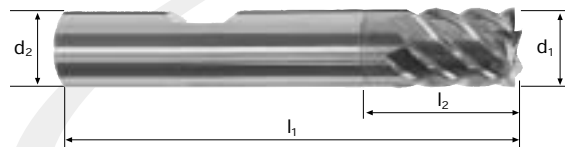
NEW!

HM  
MG10 N

$\lambda$  45°  
 $\gamma$  10°



90°



Предназначены для обработки:

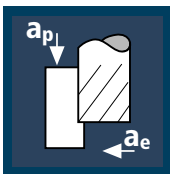
- HRC < 48
- Нерж. сталь
- GG(G) Чугун
- Титан

| Ø    | d1 | d2 | l1 | l2 | $\alpha$ | Z | ПОЛХРОМ |
|------|----|----|----|----|----------|---|---------|
| Code | e8 | h6 |    |    |          |   | P5037   |
| .180 | 3  | 6  | 50 | 6  | 7°       | 4 | •       |
| .220 | 4  | 6  | 50 | 8  | 5°       | 4 | •       |
| .260 | 5  | 6  | 50 | 9  | 3°       | 4 | •       |
| .300 | 6  | 6  | 50 | 10 | 0°       | 6 | •       |
| .391 | 8  | 8  | 54 | 12 | 0°       | 6 | •       |
| .450 | 10 | 10 | 63 | 13 | 0°       | 6 | •       |
|      |    |    |    |    |          |   |         |
|      |    |    |    |    |          |   |         |
|      |    |    |    |    |          |   |         |
|      |    |    |    |    |          |   |         |
|      |    |    |    |    |          |   |         |
|      |    |    |    |    |          |   |         |
|      |    |    |    |    |          |   |         |
|      |    |    |    |    |          |   |         |
|      |    |    |    |    |          |   |         |
|      |    |    |    |    |          |   |         |
|      |    |    |    |    |          |   |         |
|      |    |    |    |    |          |   |         |
|      |    |    |    |    |          |   |         |
|      |    |    |    |    |          |   |         |
|      |    |    |    |    |          |   |         |
|      |    |    |    |    |          |   |         |
|      |    |    |    |    |          |   |         |
|      |    |    |    |    |          |   |         |
|      |    |    |    |    |          |   |         |

Cut-X



5339



Применение

Сталь  
20 - 30 HRC



Сталь  
30 - 48 HRC



Чугун  
(серый /  
высокопрочный)



Холодноштамповые  
стали >12% Cr  
жаростойкие стали  
нержавеющие  
аустенитные стали



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|
| 3          | 3 | 120                       | 0.010                  | 3                      | 0.3                    | 12735      | 380                        |
| 4          | 3 | 120                       | 0.015                  | 4                      | 0.4                    | 9550       | 430                        |
| 5          | 3 | 120                       | 0.015                  | 5                      | 0.5                    | 7640       | 345                        |
| 6          | 3 | 120                       | 0.020                  | 6                      | 0.6                    | 6365       | 380                        |
| 8          | 3 | 120                       | 0.025                  | 8                      | 0.8                    | 4775       | 360                        |
| 10         | 3 | 120                       | 0.035                  | 10                     | 1.0                    | 3820       | 400                        |
| 3          | 3 | 80                        | 0.010                  | 3                      | 0.3                    | 8490       | 255                        |
| 4          | 3 | 80                        | 0.015                  | 4                      | 0.4                    | 6365       | 285                        |
| 5          | 3 | 80                        | 0.015                  | 5                      | 0.5                    | 5095       | 230                        |
| 6          | 3 | 80                        | 0.020                  | 6                      | 0.6                    | 4245       | 255                        |
| 8          | 3 | 80                        | 0.025                  | 8                      | 0.8                    | 3185       | 240                        |
| 10         | 3 | 80                        | 0.035                  | 10                     | 1.0                    | 2545       | 265                        |
| 3          | 3 | 160                       | 0.010                  | 3                      | 0.3                    | 16975      | 510                        |
| 4          | 3 | 160                       | 0.015                  | 4                      | 0.4                    | 12735      | 575                        |
| 5          | 3 | 160                       | 0.015                  | 5                      | 0.5                    | 10185      | 460                        |
| 6          | 3 | 160                       | 0.020                  | 6                      | 0.6                    | 8490       | 510                        |
| 8          | 3 | 160                       | 0.025                  | 8                      | 0.8                    | 6365       | 475                        |
| 10         | 3 | 160                       | 0.035                  | 10                     | 1.0                    | 5095       | 535                        |
| 3          | 3 | 60                        | 0.010                  | 3                      | 0.3                    | 6365       | 190                        |
| 4          | 3 | 60                        | 0.015                  | 4                      | 0.4                    | 4775       | 215                        |
| 5          | 3 | 60                        | 0.015                  | 5                      | 0.5                    | 3820       | 170                        |
| 6          | 3 | 60                        | 0.020                  | 6                      | 0.6                    | 3185       | 190                        |
| 8          | 3 | 60                        | 0.025                  | 8                      | 0.8                    | 2385       | 180                        |
| 10         | 3 | 60                        | 0.035                  | 10                     | 1.0                    | 1910       | 200                        |

5339



Применение

Сталь  
20 - 30 HRC



Сталь  
30 - 48 HRC



Чугун  
(серый /  
высокопрочный)



Холодноштамповые  
стали >12% Cr  
жаростойкие стали  
нержавеющие  
аустенитные стали



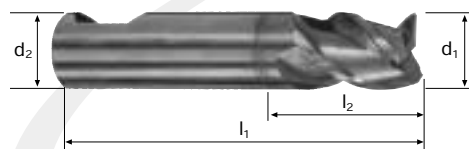
| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 3          | 3 | 100                       | 0.010                  | 1.5                    | 3                      | 10610      | 320                        | 1.5                         |
| 4          | 3 | 100                       | 0.010                  | 2                      | 4                      | 7960       | 240                        | 2.0                         |
| 5          | 3 | 100                       | 0.015                  | 2.5                    | 5                      | 6365       | 285                        | 3.5                         |
| 6          | 3 | 100                       | 0.015                  | 3                      | 6                      | 5305       | 240                        | 4.5                         |
| 8          | 3 | 100                       | 0.020                  | 4                      | 8                      | 3980       | 240                        | 7.5                         |
| 10         | 3 | 100                       | 0.030                  | 5                      | 10                     | 3185       | 285                        | 14.5                        |
| 3          | 3 | 70                        | 0.010                  | 1.5                    | 3                      | 7425       | 225                        | 1.0                         |
| 4          | 3 | 70                        | 0.010                  | 2                      | 4                      | 5570       | 165                        | 1.5                         |
| 5          | 3 | 70                        | 0.015                  | 2.5                    | 5                      | 4455       | 200                        | 2.5                         |
| 6          | 3 | 70                        | 0.015                  | 3                      | 6                      | 3715       | 165                        | 3.0                         |
| 8          | 3 | 70                        | 0.020                  | 4                      | 8                      | 2785       | 165                        | 5.5                         |
| 10         | 3 | 70                        | 0.025                  | 5                      | 10                     | 2230       | 165                        | 8.5                         |
| 3          | 3 | 120                       | 0.010                  | 1.5                    | 3                      | 12735      | 380                        | 1.5                         |
| 4          | 3 | 120                       | 0.010                  | 2                      | 4                      | 9550       | 285                        | 2.5                         |
| 5          | 3 | 120                       | 0.015                  | 2.5                    | 5                      | 7640       | 345                        | 4.5                         |
| 6          | 3 | 120                       | 0.020                  | 3                      | 6                      | 6365       | 380                        | 7.0                         |
| 8          | 3 | 120                       | 0.025                  | 4                      | 8                      | 4775       | 360                        | 11.5                        |
| 10         | 3 | 120                       | 0.030                  | 5                      | 10                     | 3820       | 345                        | 17.5                        |
| 3          | 3 | 40                        | 0.010                  | 1.5                    | 3                      | 4245       | 125                        | 0.5                         |
| 4          | 3 | 40                        | 0.010                  | 2                      | 4                      | 3185       | 95                         | 1.0                         |
| 5          | 3 | 40                        | 0.015                  | 2.5                    | 5                      | 2545       | 115                        | 1.5                         |
| 6          | 3 | 40                        | 0.015                  | 3                      | 6                      | 2120       | 95                         | 1.5                         |
| 8          | 3 | 40                        | 0.020                  | 4                      | 8                      | 1590       | 95                         | 3.0                         |
| 10         | 3 | 40                        | 0.025                  | 5                      | 10                     | 1275       | 95                         | 5.0                         |

# Серия Cut-X

# Cut-X 45

HM  
MG10 N

$\lambda$  45°  
 $\gamma$  12°



Предназначены для обработки:

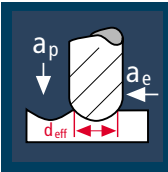
0,05-0,15  
45°

- HRC < 48
- Нерж. сталь
- GG(G) Чугун
- Титан

| Пример: заказа-№: | Покрытие | Артикул-№: | Ø-Код |    | UNICUT-4X | POLYCHROM |
|-------------------|----------|------------|-------|----|-----------|-----------|
|                   | U        | 5339.180   |       |    | U5339     | P5339     |
| Ø Code            | d1 e8    | d2 h6      | l1    | l2 | Z         |           |
| .180              | 3        | 6          | 35    | 4  | 3         | •         |
| .220              | 4        | 6          | 36    | 5  | 3         | •         |
| .260              | 5        | 6          | 37    | 6  | 3         | •         |
| .300              | 6        | 6          | 38    | 7  | 3         | •         |
| .391              | 8        | 8          | 41    | 9  | 3         | •         |
| .450              | 10       | 10         | 48    | 11 | 3         | •         |
|                   |          |            |       |    |           | •         |
|                   |          |            |       |    |           | •         |
|                   |          |            |       |    |           | •         |
|                   |          |            |       |    |           | •         |
|                   |          |            |       |    |           | •         |
|                   |          |            |       |    |           | •         |
|                   |          |            |       |    |           | •         |
|                   |          |            |       |    |           | •         |
|                   |          |            |       |    |           | •         |
|                   |          |            |       |    |           | •         |
|                   |          |            |       |    |           | •         |
|                   |          |            |       |    |           | •         |

Cut-X

5298



Применение

Сталь  
42 - 48 HRC

✗ P U

Сталь  
48 - 52 HRC

✗ P U

Сталь  
52 - 56 HRC

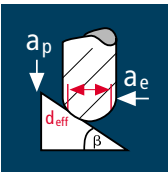
✗ P U

Чугун  
(серый /  
высокопрочный)

✗ P U

| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | d <sub>eff</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|--------------------------|---------------------------|----------------------------|-----------------------------|
| 3          | 2 | 180                       | 0.060                  | 0.05                   | 0.12                   | 0.73                     | 60000                     | 7200                       | 39                          |
| 4          | 2 | 180                       | 0.080                  | 0.06                   | 0.16                   | 0.97                     | 58925                     | 9430                       | 91                          |
| 5          | 2 | 180                       | 0.100                  | 0.08                   | 0.20                   | 1.22                     | 47140                     | 9430                       | 142                         |
| 6          | 2 | 180                       | 0.090                  | 0.09                   | 0.24                   | 1.46                     | 39280                     | 7070                       | 153                         |
| 8          | 2 | 180                       | 0.120                  | 0.12                   | 0.32                   | 1.94                     | 29460                     | 7070                       | 272                         |
| 10         | 2 | 180                       | 0.150                  | 0.15                   | 0.40                   | 2.43                     | 23570                     | 7070                       | 424                         |
| 12         | 2 | 180                       | 0.120                  | 0.18                   | 0.48                   | 2.92                     | 19640                     | 4715                       | 408                         |
| 3          | 2 | 140                       | 0.060                  | 0.05                   | 0.12                   | 0.73                     | 60000                     | 7200                       | 39                          |
| 4          | 2 | 140                       | 0.080                  | 0.06                   | 0.16                   | 0.97                     | 45830                     | 7335                       | 71                          |
| 5          | 2 | 140                       | 0.100                  | 0.08                   | 0.20                   | 1.22                     | 36665                     | 7335                       | 110                         |
| 6          | 2 | 140                       | 0.090                  | 0.09                   | 0.24                   | 1.46                     | 30550                     | 5500                       | 119                         |
| 8          | 2 | 140                       | 0.120                  | 0.12                   | 0.32                   | 1.94                     | 22915                     | 5500                       | 211                         |
| 10         | 2 | 140                       | 0.150                  | 0.15                   | 0.40                   | 2.43                     | 18330                     | 5500                       | 330                         |
| 12         | 2 | 140                       | 0.120                  | 0.18                   | 0.48                   | 2.92                     | 15275                     | 3665                       | 317                         |
| 3          | 2 | 110                       | 0.060                  | 0.05                   | 0.12                   | 0.73                     | 48010                     | 5760                       | 31                          |
| 4          | 2 | 110                       | 0.080                  | 0.06                   | 0.16                   | 0.97                     | 36010                     | 5760                       | 56                          |
| 5          | 2 | 110                       | 0.100                  | 0.08                   | 0.20                   | 1.22                     | 28805                     | 5760                       | 87                          |
| 6          | 2 | 110                       | 0.090                  | 0.09                   | 0.24                   | 1.46                     | 24005                     | 4320                       | 94                          |
| 8          | 2 | 110                       | 0.120                  | 0.12                   | 0.32                   | 1.94                     | 18005                     | 4320                       | 166                         |
| 10         | 2 | 110                       | 0.150                  | 0.15                   | 0.40                   | 2.43                     | 14405                     | 4320                       | 259                         |
| 12         | 2 | 110                       | 0.120                  | 0.18                   | 0.48                   | 2.92                     | 12005                     | 2880                       | 249                         |
| 3          | 2 | 220                       | 0.060                  | 0.05                   | 0.12                   | 0.73                     | 60000                     | 7200                       | 39                          |
| 4          | 2 | 220                       | 0.080                  | 0.06                   | 0.16                   | 0.97                     | 60000                     | 9600                       | 92                          |
| 5          | 2 | 220                       | 0.100                  | 0.08                   | 0.20                   | 1.22                     | 57615                     | 11525                      | 173                         |
| 6          | 2 | 220                       | 0.090                  | 0.09                   | 0.24                   | 1.46                     | 48010                     | 8640                       | 187                         |
| 8          | 2 | 220                       | 0.120                  | 0.12                   | 0.32                   | 1.94                     | 36010                     | 8640                       | 332                         |
| 10         | 2 | 220                       | 0.150                  | 0.15                   | 0.40                   | 2.43                     | 28805                     | 8640                       | 519                         |
| 12         | 2 | 220                       | 0.120                  | 0.18                   | 0.48                   | 2.92                     | 24005                     | 5760                       | 498                         |

5298



Применение

Сталь  
42 - 48 HRC

✗ P U

Сталь  
48 - 52 HRC

✗ P U

Сталь  
52 - 56 HRC

✗ P U

Чугун  
(серый /  
высокопрочный)

✗ P U

| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | d <sub>eff</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | β  |
|------------|---|---------------------------|------------------------|------------------------|------------------------|--------------------------|---------------------------|----------------------------|----|
| 3          | 2 | 200                       | 0.045                  | 0.03                   | 0.05                   | 2.50                     | 25455                     | 2290                       | 45 |
| 4          | 2 | 200                       | 0.060                  | 0.04                   | 0.06                   | 3.33                     | 19090                     | 2290                       | 45 |
| 5          | 2 | 200                       | 0.075                  | 0.05                   | 0.08                   | 4.17                     | 15275                     | 2290                       | 45 |
| 6          | 2 | 200                       | 0.060                  | 0.06                   | 0.06                   | 5.00                     | 12730                     | 1530                       | 45 |
| 8          | 2 | 200                       | 0.080                  | 0.08                   | 0.08                   | 6.67                     | 9545                      | 1525                       | 45 |
| 10         | 2 | 200                       | 0.100                  | 0.10                   | 0.10                   | 8.34                     | 7635                      | 1525                       | 45 |
| 12         | 2 | 200                       | 0.060                  | 0.12                   | 0.06                   | 10.00                    | 6365                      | 765                        | 45 |
| 3          | 2 | 180                       | 0.045                  | 0.03                   | 0.05                   | 2.50                     | 22910                     | 2060                       | 45 |
| 4          | 2 | 180                       | 0.060                  | 0.04                   | 0.06                   | 3.33                     | 17180                     | 2060                       | 45 |
| 5          | 2 | 180                       | 0.075                  | 0.05                   | 0.08                   | 4.17                     | 13745                     | 2060                       | 45 |
| 6          | 2 | 180                       | 0.060                  | 0.06                   | 0.06                   | 5.00                     | 11455                     | 1375                       | 45 |
| 8          | 2 | 180                       | 0.080                  | 0.08                   | 0.08                   | 6.67                     | 8590                      | 1375                       | 45 |
| 10         | 2 | 180                       | 0.100                  | 0.10                   | 0.10                   | 8.34                     | 6875                      | 1375                       | 45 |
| 12         | 2 | 180                       | 0.060                  | 0.12                   | 0.06                   | 10.00                    | 5725                      | 685                        | 45 |
| 3          | 2 | 150                       | 0.045                  | 0.03                   | 0.05                   | 2.50                     | 19090                     | 1720                       | 45 |
| 4          | 2 | 150                       | 0.060                  | 0.04                   | 0.06                   | 3.33                     | 14320                     | 1720                       | 45 |
| 5          | 2 | 150                       | 0.075                  | 0.05                   | 0.08                   | 4.17                     | 11455                     | 1720                       | 45 |
| 6          | 2 | 150                       | 0.060                  | 0.06                   | 0.06                   | 5.00                     | 9545                      | 1145                       | 45 |
| 8          | 2 | 150                       | 0.080                  | 0.08                   | 0.08                   | 6.67                     | 7160                      | 1145                       | 45 |
| 10         | 2 | 150                       | 0.100                  | 0.10                   | 0.10                   | 8.34                     | 5725                      | 1145                       | 45 |
| 12         | 2 | 150                       | 0.060                  | 0.12                   | 0.06                   | 10.00                    | 4775                      | 575                        | 45 |
| 3          | 2 | 250                       | 0.045                  | 0.03                   | 0.05                   | 2.50                     | 31820                     | 2865                       | 45 |
| 4          | 2 | 250                       | 0.060                  | 0.04                   | 0.06                   | 3.33                     | 23865                     | 2865                       | 45 |
| 5          | 2 | 250                       | 0.075                  | 0.05                   | 0.08                   | 4.17                     | 19090                     | 2865                       | 45 |
| 6          | 2 | 250                       | 0.060                  | 0.06                   | 0.06                   | 5.00                     | 15910                     | 1910                       | 45 |
| 8          | 2 | 250                       | 0.080                  | 0.08                   | 0.08                   | 6.67                     | 11930                     | 1910                       | 45 |
| 10         | 2 | 250                       | 0.100                  | 0.10                   | 0.10                   | 8.34                     | 9545                      | 1910                       | 45 |
| 12         | 2 | 250                       | 0.060                  | 0.12                   | 0.06                   | 10.00                    | 7955                      | 955                        | 45 |

# Фрезы сферические

## Cut-S

**NEW!**

HM  
MG10 N

$\lambda$  30°  
 $\gamma$  -10°



DIN  
6535  
HA



Предназначены для обработки:



HRC  
< 48

HRC  
< 58

HRC  
< 40

GG(G)  
Чугун

|                      |                      |                           |                     |                           |         |          |   | UNICUT-4X         | POLYCHROM |
|----------------------|----------------------|---------------------------|---------------------|---------------------------|---------|----------|---|-------------------|-----------|
| Пример:<br>заказа-N° | Покрытие<br><b>U</b> | Артикул-N°<br><b>5298</b> | Ø-Код<br><b>180</b> |                           |         |          |   | <b>U5298P5298</b> |           |
| Ø<br>Code            | d1                   | d2<br>h6                  | l1                  | l2                        | r<br>f8 | $\alpha$ | Z |                   |           |
| .180                 | 3                    | 6                         | 57                  | 4                         | 1,5     | 8°       | 2 | •                 | •         |
| .220                 | 4                    | 6                         | 57                  | 5                         | 2,0     | 6°       | 2 | •                 | •         |
| .260                 | 5                    | 6                         | 57                  | 6                         | 2,5     | 4°       | 2 | •                 | •         |
| .300                 | 6                    | 6                         | 57                  | 7                         | 3,0     | 0°       | 2 | •                 | •         |
| .391                 | 8                    | 8                         | 63                  | 9                         | 4,0     | 0°       | 2 | •                 | •         |
| .450                 | 10                   | 10                        | 72                  | 11                        | 5,0     | 0°       | 2 | •                 | •         |
| .501                 | 12                   | 12                        | 83                  | 12                        | 6,0     | 0°       | 2 | •                 | •         |
| CNC Radius R         |                      |                           |                     |                           |         |          |   |                   |           |
| d1                   | r                    | Tolerance f8              |                     | Radius<br>Minimum Maximum |         |          |   |                   |           |
| 3                    | 1.5                  | -0.006                    | -0.020              | 1.480                     | 1.494   | 1.487    |   |                   |           |
| 4                    | 2.0                  |                           |                     | 1.980                     | 1.994   | 1.987    |   |                   |           |
| 5                    | 2.5                  |                           |                     | 2.480                     | 2.494   | 2.487    |   |                   |           |
| 6                    | 3.0                  |                           |                     | 2.980                     | 2.994   | 2.987    |   |                   |           |
| 8                    | 4.0                  | -0.010                    | -0.028              | 3.972                     | 3.990   | 3.981    |   |                   |           |
| 10                   | 5.0                  |                           |                     | 4.972                     | 4.990   | 4.981    |   |                   |           |
| 12                   | 6.0                  |                           |                     | 5.972                     | 5.990   | 5.981    |   |                   |           |

Cut-X

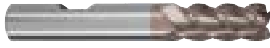


# Базовый ассортимент

# Base-X

## Фрезы чистовые

№ 5240 / 5340



|   |   |  |  |  |     |
|---|---|--|--|--|-----|
| N | $\lambda 45^\circ$<br>$\gamma 15^\circ$ |  |  |  | 233 |
|---|---|--|--|--|-----|

№ 5241 / 5341



|   |   |  |  |  |     |
|---|---|--|--|--|-----|
| N | $\lambda 35^\circ$<br>$\gamma 15^\circ$ |  |  |  | 235 |
|---|---|--|--|--|-----|

№ 5255 / 5355



|   |   |  |  |  |     |
|---|---|--|--|--|-----|
| N | $\lambda 55^\circ$<br>$\gamma 15^\circ$ |  |  |  | 237 |
|---|---|--|--|--|-----|

№ 5260 / 5360



|   |  |  |  |  |     |
|---|--|--|--|--|-----|
| N | $\lambda 45^\circ$<br>$\gamma 8^\circ$ |  |  |  | 239 |
|---|--|--|--|--|-----|

№ 5265



|   |  |  |  |  |     |
|---|--|--|--|--|-----|
| N | $\lambda 45^\circ$<br>$\gamma 8^\circ$ |  |  |  | 241 |
|---|--|--|--|--|-----|

№ 5268



|   |  |  |  |  |     |
|---|--|--|--|--|-----|
| N | $\lambda 45^\circ$<br>$\gamma 8^\circ$ |  |  |  | 243 |
|---|--|--|--|--|-----|

## Фрезы универсальные

№ 5200 / 5300



|   |   |  |  |  |     |
|---|---|--|--|--|-----|
| N | $\lambda 30^\circ$<br>$\gamma 12^\circ$ |  |  |  | 245 |
|---|---|--|--|--|-----|

№ 5230 / 5330



|   |   |  |  |  |     |
|---|---|--|--|--|-----|
| N | $\lambda 45^\circ$<br>$\gamma 15^\circ$ |  |  |  | 247 |
|---|---|--|--|--|-----|

№ 5332



|   |   |  |  |  |     |
|---|---|--|--|--|-----|
| N | $\lambda 45^\circ$<br>$\gamma 15^\circ$ |  |  |  | 251 |
|---|---|--|--|--|-----|

№ 5333



|   |   |  |  |  |     |
|---|---|--|--|--|-----|
| N | $\lambda 45^\circ$<br>$\gamma 15^\circ$ |  |  |  | 253 |
|---|---|--|--|--|-----|

№ 5393 NEW!



|   |   |  |  |  |     |
|---|---|--|--|--|-----|
| N | $\lambda 45^\circ$<br>$\gamma 15^\circ$ |  |  |  | 255 |
|---|---|--|--|--|-----|

Base-X

№ 5400



|   |   |  |  |  |     |
|---|---|--|--|--|-----|
| N | $\lambda 30^\circ$<br>$\gamma 12^\circ$ |  |  |  | 257 |
|---|---|--|--|--|-----|

№ 5272 / 5500























|   |   |  |  |  |     |
|---|---|--|--|--|-----|
| W | $\lambda 40^\circ$<br>$\gamma 18^\circ$ |  |  |  | 259 |
|---|---|--|--|--|-----|



## Базовый ассортимент

Base-X

### Фрезы черновые

|   |     |                               |  |   |   |            |
|---|-----|-------------------------------|--|---|---|------------|
| <b>N° 5370</b><br> | NRC | $\lambda$ 30°<br>$\gamma$ 8°  |  |  |  | <b>261</b> |
| <b>N° 5373</b><br> | NRF | $\lambda$ 25°<br>$\gamma$ 10° |  |  |  | <b>263</b> |
| <b>N° 5374</b><br> | NRF | $\lambda$ 25°<br>$\gamma$ 10° |  |  |  | <b>265</b> |
| <b>N° 5376</b><br> | NRF | $\lambda$ 25°<br>$\gamma$ 10° |  |  |  | <b>267</b> |
| <b>N° 5378</b><br> | NRF | $\lambda$ 30°<br>$\gamma$ 12° |  |  |  | <b>269</b> |

### Фрезы торические

|   |   |                               |   |  |  |            |
|---|---|-------------------------------|---|--|--|------------|
| <b>N° 5234 / 5334</b><br> R 0,2 / R 0,5 | N | $\lambda$ 45°<br>$\gamma$ 15° |  |  |  | <b>271</b> |
|---|---|-------------------------------|---|--|--|------------|

## Базовый ассортимент

Base-X

### Фрезы сферические

N° 5286



|   |                                |  |  |  |     |
|---|--------------------------------|--|--|--|-----|
| H | $\lambda$ 30°<br>$\gamma$ -10° |  |  |  | 273 |
|---|--------------------------------|--|--|--|-----|

N° 5288



|   |                                |  |  |  |     |
|---|--------------------------------|--|--|--|-----|
| H | $\lambda$ 30°<br>$\gamma$ -10° |  |  |  | 275 |
|---|--------------------------------|--|--|--|-----|

N° 5289



|   |                                |  |  |  |     |
|---|--------------------------------|--|--|--|-----|
| H | $\lambda$ 30°<br>$\gamma$ -10° |  |  |  | 277 |
|---|--------------------------------|--|--|--|-----|

N° 5295



|   |                               |  |  |  |     |
|---|-------------------------------|--|--|--|-----|
| H | $\lambda$ 30°<br>$\gamma$ -5° |  |  |  | 279 |
|---|-------------------------------|--|--|--|-----|

### Миниатюрная серия

N° 5710



|   |                               |  |  |  |     |
|---|-------------------------------|--|--|--|-----|
| N | $\lambda$ 30°<br>$\gamma$ 10° |  |  |  | 281 |
|---|-------------------------------|--|--|--|-----|

N° 5785



|   |                               |  |  |  |     |
|---|-------------------------------|--|--|--|-----|
| N | $\lambda$ 30°<br>$\gamma$ 10° |  |  |  | 283 |
|---|-------------------------------|--|--|--|-----|

### Slitting saws

N° 5900



|  |                             |  |  |          |     |
|--|-----------------------------|--|--|----------|-----|
|  | $\lambda$ 0°<br>$\gamma$ 8° |  |  | DIN 1837 | 284 |
|--|-----------------------------|--|--|----------|-----|

N° 5920

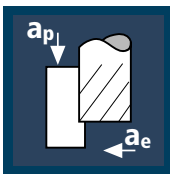


|  |                             |  |  |          |     |
|--|-----------------------------|--|--|----------|-----|
|  | $\lambda$ 0°<br>$\gamma$ 8° |  |  | DIN 1838 | 288 |
|--|-----------------------------|--|--|----------|-----|

Base-X



5340



Применение

Сталь  
20 - 30 HRC



Сталь  
30 - 48 HRC



Сталь  
48 - 58 HRC



Холодноштамповые  
стали >12% Cr  
жаростойкие стали  
нержавеющие  
аустенитные стали



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|
| 3          | 4 | 170                       | 0.010                  | 4.5                    | 0.3                    | 18040      | 720                        |
| 4          | 4 | 170                       | 0.015                  | 6                      | 0.4                    | 13530      | 810                        |
| 5          | 4 | 170                       | 0.015                  | 7.5                    | 0.5                    | 10825      | 650                        |
| 6          | 4 | 170                       | 0.020                  | 9                      | 0.6                    | 9020       | 720                        |
| 8          | 4 | 170                       | 0.025                  | 12                     | 0.8                    | 6765       | 675                        |
| 10         | 4 | 170                       | 0.035                  | 15                     | 1                      | 5410       | 755                        |
| 12         | 4 | 170                       | 0.040                  | 18                     | 1.2                    | 4510       | 720                        |
| 16         | 4 | 170                       | 0.055                  | 24                     | 1.6                    | 3380       | 745                        |
| 20         | 4 | 170                       | 0.065                  | 30                     | 2                      | 2705       | 705                        |
| 3          | 4 | 110                       | 0.010                  | 4.5                    | 0.3                    | 11670      | 465                        |
| 4          | 4 | 110                       | 0.015                  | 6                      | 0.4                    | 8755       | 525                        |
| 5          | 4 | 110                       | 0.015                  | 7.5                    | 0.5                    | 7005       | 420                        |
| 6          | 4 | 110                       | 0.020                  | 9                      | 0.6                    | 5835       | 465                        |
| 8          | 4 | 110                       | 0.025                  | 12                     | 0.8                    | 4375       | 440                        |
| 10         | 4 | 110                       | 0.035                  | 15                     | 1                      | 3500       | 490                        |
| 12         | 4 | 110                       | 0.040                  | 18                     | 1.2                    | 2920       | 465                        |
| 16         | 4 | 110                       | 0.055                  | 24                     | 1.6                    | 2190       | 480                        |
| 20         | 4 | 110                       | 0.065                  | 30                     | 2                      | 1750       | 455                        |
| 3          | 4 | 80                        | 0.010                  | 4.5                    | 0.3                    | 8490       | 340                        |
| 4          | 4 | 80                        | 0.015                  | 6                      | 0.4                    | 6365       | 380                        |
| 5          | 4 | 80                        | 0.015                  | 7.5                    | 0.5                    | 5095       | 305                        |
| 6          | 4 | 80                        | 0.020                  | 9                      | 0.6                    | 4245       | 340                        |
| 8          | 4 | 80                        | 0.025                  | 12                     | 0.8                    | 3185       | 320                        |
| 10         | 4 | 80                        | 0.035                  | 15                     | 1                      | 2545       | 355                        |
| 12         | 4 | 80                        | 0.040                  | 18                     | 1.2                    | 2120       | 340                        |
| 16         | 4 | 80                        | 0.055                  | 24                     | 1.6                    | 1590       | 350                        |
| 20         | 4 | 80                        | 0.065                  | 30                     | 2                      | 1275       | 330                        |
| 3          | 4 | 70                        | 0.010                  | 4.5                    | 0.3                    | 7425       | 295                        |
| 4          | 4 | 70                        | 0.015                  | 6                      | 0.4                    | 5570       | 335                        |
| 5          | 4 | 70                        | 0.015                  | 7.5                    | 0.5                    | 4455       | 265                        |
| 6          | 4 | 70                        | 0.020                  | 9                      | 0.6                    | 3715       | 295                        |
| 8          | 4 | 70                        | 0.025                  | 12                     | 0.8                    | 2785       | 280                        |
| 10         | 4 | 70                        | 0.035                  | 15                     | 1                      | 2230       | 310                        |
| 12         | 4 | 70                        | 0.040                  | 18                     | 1.2                    | 1855       | 295                        |
| 16         | 4 | 70                        | 0.055                  | 24                     | 1.6                    | 1395       | 305                        |
| 20         | 4 | 70                        | 0.065                  | 30                     | 2                      | 1115       | 290                        |

Применение

Чугун  
(серый /  
высокопрочный)



Медь чистая



Титан



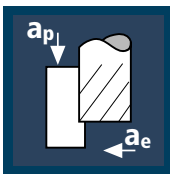
Сплавы на основе никеля  
Aeronautic materials



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|
| 3          | 4 | 130                       | 0.010                  | 4.5                    | 0.3                    | 13795      | 550                        |
| 4          | 4 | 130                       | 0.015                  | 6                      | 0.4                    | 10345      | 620                        |
| 5          | 4 | 130                       | 0.015                  | 7.5                    | 0.5                    | 8275       | 495                        |
| 6          | 4 | 130                       | 0.020                  | 9                      | 0.6                    | 6895       | 550                        |
| 8          | 4 | 130                       | 0.025                  | 12                     | 0.8                    | 5175       | 520                        |
| 10         | 4 | 130                       | 0.035                  | 15                     | 1                      | 4140       | 580                        |
| 12         | 4 | 130                       | 0.040                  | 18                     | 1.2                    | 3450       | 550                        |
| 16         | 4 | 130                       | 0.055                  | 24                     | 1.6                    | 2585       | 570                        |
| 20         | 4 | 130                       | 0.065                  | 30                     | 2                      | 2070       | 540                        |
| 3          | 4 | 230                       | 0.010                  | 4.5                    | 0.3                    | 24405      | 975                        |
| 4          | 4 | 230                       | 0.015                  | 6                      | 0.4                    | 18305      | 1100                       |
| 5          | 4 | 230                       | 0.015                  | 7.5                    | 0.5                    | 14645      | 880                        |
| 6          | 4 | 230                       | 0.020                  | 9                      | 0.6                    | 12200      | 975                        |
| 8          | 4 | 230                       | 0.025                  | 12                     | 0.8                    | 9150       | 915                        |
| 10         | 4 | 230                       | 0.035                  | 15                     | 1                      | 7320       | 1025                       |
| 12         | 4 | 230                       | 0.040                  | 18                     | 1.2                    | 6100       | 975                        |
| 16         | 4 | 230                       | 0.055                  | 24                     | 1.6                    | 4575       | 1005                       |
| 20         | 4 | 230                       | 0.065                  | 30                     | 2                      | 3660       | 950                        |
| 3          | 4 | 80                        | 0.010                  | 4.5                    | 0.3                    | 8490       | 340                        |
| 4          | 4 | 80                        | 0.015                  | 6                      | 0.4                    | 6365       | 380                        |
| 5          | 4 | 80                        | 0.015                  | 7.5                    | 0.5                    | 5095       | 305                        |
| 6          | 4 | 80                        | 0.020                  | 9                      | 0.6                    | 4245       | 340                        |
| 8          | 4 | 80                        | 0.025                  | 12                     | 0.8                    | 3185       | 320                        |
| 10         | 4 | 80                        | 0.035                  | 15                     | 1                      | 2545       | 355                        |
| 12         | 4 | 80                        | 0.040                  | 18                     | 1.2                    | 2120       | 340                        |
| 16         | 4 | 80                        | 0.055                  | 24                     | 1.6                    | 1590       | 350                        |
| 20         | 4 | 80                        | 0.065                  | 30                     | 2                      | 1275       | 330                        |
| 3          | 4 | 40                        | 0.010                  | 4.5                    | 0.3                    | 4245       | 170                        |
| 4          | 4 | 40                        | 0.015                  | 6                      | 0.4                    | 3185       | 190                        |
| 5          | 4 | 40                        | 0.015                  | 7.5                    | 0.5                    | 2545       | 155                        |
| 6          | 4 | 40                        | 0.020                  | 9                      | 0.6                    | 2120       | 170                        |
| 8          | 4 | 40                        | 0.025                  | 12                     | 0.8                    | 1590       | 160                        |
| 10         | 4 | 40                        | 0.035                  | 15                     | 1                      | 1275       | 180                        |
| 12         | 4 | 40                        | 0.040                  | 18                     | 1.2                    | 1060       | 170                        |
| 16         | 4 | 40                        | 0.055                  | 24                     | 1.6                    | 795        | 175                        |
| 20         | 4 | 40                        | 0.065                  | 30                     | 2                      | 635        | 165                        |



5341



Применение

Сталь  
20 - 30 HRC



Сталь  
30 - 48 HRC



Сталь  
48 - 58 HRC



Холодноштамповые  
стали >12% Cr  
жаростойкие стали  
нержавеющие  
аустенитные стали



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|
| 3          | 4 | 170                       | 0.010                  | 4.5                    | 0.3                    | 18040      | 720                        |
| 4          | 4 | 170                       | 0.015                  | 6                      | 0.4                    | 13530      | 810                        |
| 5          | 4 | 170                       | 0.015                  | 7.5                    | 0.5                    | 10825      | 650                        |
| 6          | 4 | 170                       | 0.020                  | 9                      | 0.6                    | 9020       | 720                        |
| 8          | 4 | 170                       | 0.025                  | 12                     | 0.8                    | 6765       | 675                        |
| 10         | 4 | 170                       | 0.035                  | 15                     | 1                      | 5410       | 755                        |
| 12         | 4 | 170                       | 0.040                  | 18                     | 1.2                    | 4510       | 720                        |
| 16         | 4 | 170                       | 0.055                  | 24                     | 1.6                    | 3380       | 745                        |
| 3          | 4 | 110                       | 0.010                  | 4.5                    | 0.3                    | 11670      | 465                        |
| 4          | 4 | 110                       | 0.015                  | 6                      | 0.4                    | 8755       | 525                        |
| 5          | 4 | 110                       | 0.015                  | 7.5                    | 0.5                    | 7005       | 420                        |
| 6          | 4 | 110                       | 0.020                  | 9                      | 0.6                    | 5835       | 465                        |
| 8          | 4 | 110                       | 0.025                  | 12                     | 0.8                    | 4375       | 440                        |
| 10         | 4 | 110                       | 0.035                  | 15                     | 1                      | 3500       | 490                        |
| 12         | 4 | 110                       | 0.040                  | 18                     | 1.2                    | 2920       | 465                        |
| 16         | 4 | 110                       | 0.055                  | 24                     | 1.6                    | 2190       | 480                        |
| 3          | 4 | 80                        | 0.010                  | 4.5                    | 0.3                    | 8490       | 340                        |
| 4          | 4 | 80                        | 0.015                  | 6                      | 0.4                    | 6365       | 380                        |
| 5          | 4 | 80                        | 0.015                  | 7.5                    | 0.5                    | 5095       | 305                        |
| 6          | 4 | 80                        | 0.020                  | 9                      | 0.6                    | 4245       | 340                        |
| 8          | 4 | 80                        | 0.025                  | 12                     | 0.8                    | 3185       | 320                        |
| 10         | 4 | 80                        | 0.035                  | 15                     | 1                      | 2545       | 355                        |
| 12         | 4 | 80                        | 0.040                  | 18                     | 1.2                    | 2120       | 340                        |
| 16         | 4 | 80                        | 0.055                  | 24                     | 1.6                    | 1590       | 350                        |
| 3          | 4 | 70                        | 0.010                  | 4.5                    | 0.3                    | 7425       | 295                        |
| 4          | 4 | 70                        | 0.015                  | 6                      | 0.4                    | 5570       | 335                        |
| 5          | 4 | 70                        | 0.015                  | 7.5                    | 0.5                    | 4455       | 265                        |
| 6          | 4 | 70                        | 0.020                  | 9                      | 0.6                    | 3715       | 295                        |
| 8          | 4 | 70                        | 0.025                  | 12                     | 0.8                    | 2785       | 280                        |
| 10         | 4 | 70                        | 0.035                  | 15                     | 1                      | 2230       | 310                        |
| 12         | 4 | 70                        | 0.040                  | 18                     | 1.2                    | 1855       | 295                        |
| 16         | 4 | 70                        | 0.055                  | 24                     | 1.6                    | 1395       | 305                        |

Применение

Чугун  
(серый /  
высокопрочный)



Медь чистая



Титан



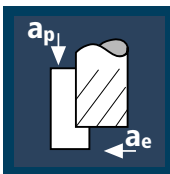
Сплавы на основе никеля  
Aeronautic materials



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|
| 3          | 4 | 130                       | 0.010                  | 4.5                    | 0.3                    | 13795      | 550                        |
| 4          | 4 | 130                       | 0.015                  | 6                      | 0.4                    | 10345      | 620                        |
| 5          | 4 | 130                       | 0.015                  | 7.5                    | 0.5                    | 8275       | 495                        |
| 6          | 4 | 130                       | 0.020                  | 9                      | 0.6                    | 6895       | 550                        |
| 8          | 4 | 130                       | 0.025                  | 12                     | 0.8                    | 5175       | 520                        |
| 10         | 4 | 130                       | 0.035                  | 15                     | 1                      | 4140       | 580                        |
| 12         | 4 | 130                       | 0.040                  | 18                     | 1.2                    | 3450       | 550                        |
| 16         | 4 | 130                       | 0.055                  | 24                     | 1.6                    | 2585       | 570                        |
| 3          | 4 | 230                       | 0.010                  | 4.5                    | 0.3                    | 24405      | 975                        |
| 4          | 4 | 230                       | 0.015                  | 6                      | 0.4                    | 18305      | 1100                       |
| 5          | 4 | 230                       | 0.015                  | 7.5                    | 0.5                    | 14645      | 880                        |
| 6          | 4 | 230                       | 0.020                  | 9                      | 0.6                    | 12200      | 975                        |
| 8          | 4 | 230                       | 0.025                  | 12                     | 0.8                    | 9150       | 915                        |
| 10         | 4 | 230                       | 0.035                  | 15                     | 1                      | 7320       | 1025                       |
| 12         | 4 | 230                       | 0.040                  | 18                     | 1.2                    | 6100       | 975                        |
| 16         | 4 | 230                       | 0.055                  | 24                     | 1.6                    | 4575       | 1005                       |
| 3          | 4 | 80                        | 0.010                  | 4.5                    | 0.3                    | 8490       | 340                        |
| 4          | 4 | 80                        | 0.015                  | 6                      | 0.4                    | 6365       | 380                        |
| 5          | 4 | 80                        | 0.015                  | 7.5                    | 0.5                    | 5095       | 305                        |
| 6          | 4 | 80                        | 0.020                  | 9                      | 0.6                    | 4245       | 340                        |
| 8          | 4 | 80                        | 0.025                  | 12                     | 0.8                    | 3185       | 320                        |
| 10         | 4 | 80                        | 0.035                  | 15                     | 1                      | 2545       | 355                        |
| 12         | 4 | 80                        | 0.040                  | 18                     | 1.2                    | 2120       | 340                        |
| 16         | 4 | 80                        | 0.055                  | 24                     | 1.6                    | 1590       | 350                        |
| 3          | 4 | 40                        | 0.010                  | 4.5                    | 0.3                    | 4245       | 170                        |
| 4          | 4 | 40                        | 0.015                  | 6                      | 0.4                    | 3185       | 190                        |
| 5          | 4 | 40                        | 0.015                  | 7.5                    | 0.5                    | 2545       | 155                        |
| 6          | 4 | 40                        | 0.020                  | 9                      | 0.6                    | 2120       | 170                        |
| 8          | 4 | 40                        | 0.025                  | 12                     | 0.8                    | 1590       | 160                        |
| 10         | 4 | 40                        | 0.035                  | 15                     | 1                      | 1275       | 180                        |
| 12         | 4 | 40                        | 0.040                  | 18                     | 1.2                    | 1060       | 170                        |
| 16         | 4 | 40                        | 0.055                  | 24                     | 1.6                    | 795        | 175                        |



5355



Применение

Сталь  
20 - 30 HRC



Сталь  
30 - 48 HRC



Сталь  
48 - 58 HRC



Холодноштамповые  
стали >12% Cr  
жаростойкие стали  
нержавеющие  
аустенитные стали



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|
| 6          | 4 | 170                       | 0.020                  | 9                      | 1.5                    | 9020       | 720                        |
| 7          | 4 | 170                       | 0.025                  | 10.5                   | 1.7                    | 7730       | 775                        |
| 8          | 4 | 170                       | 0.025                  | 12                     | 2                      | 6765       | 675                        |
| 10         | 4 | 170                       | 0.035                  | 15                     | 2.5                    | 5410       | 755                        |
| 12         | 4 | 170                       | 0.040                  | 18                     | 3                      | 4510       | 720                        |
| 14         | 4 | 170                       | 0.045                  | 21                     | 3.5                    | 3865       | 695                        |
| 16         | 4 | 170                       | 0.055                  | 24                     | 4                      | 3380       | 745                        |
| 18         | 4 | 170                       | 0.060                  | 27                     | 4.5                    | 3005       | 720                        |
| 20         | 4 | 170                       | 0.065                  | 30                     | 5                      | 2705       | 705                        |
| 6          | 4 | 110                       | 0.020                  | 9                      | 1.5                    | 5835       | 465                        |
| 7          | 4 | 110                       | 0.025                  | 10.5                   | 1.7                    | 5000       | 500                        |
| 8          | 4 | 110                       | 0.025                  | 12                     | 2                      | 4375       | 440                        |
| 10         | 4 | 110                       | 0.035                  | 15                     | 2.5                    | 3500       | 490                        |
| 12         | 4 | 110                       | 0.040                  | 18                     | 3                      | 2920       | 465                        |
| 14         | 4 | 110                       | 0.045                  | 21                     | 3.5                    | 2500       | 450                        |
| 16         | 4 | 110                       | 0.055                  | 24                     | 4                      | 2190       | 480                        |
| 18         | 4 | 110                       | 0.060                  | 27                     | 4.5                    | 1945       | 465                        |
| 20         | 4 | 110                       | 0.065                  | 30                     | 5                      | 1750       | 455                        |
| 6          | 4 | 80                        | 0.020                  | 9                      | 0.6                    | 4245       | 340                        |
| 7          | 4 | 80                        | 0.025                  | 10.5                   | 0.7                    | 3640       | 365                        |
| 8          | 4 | 80                        | 0.025                  | 12                     | 0.8                    | 3185       | 320                        |
| 10         | 4 | 80                        | 0.035                  | 15                     | 1                      | 2545       | 355                        |
| 12         | 4 | 80                        | 0.040                  | 18                     | 1.2                    | 2120       | 340                        |
| 14         | 4 | 80                        | 0.045                  | 21                     | 1.4                    | 1820       | 330                        |
| 16         | 4 | 80                        | 0.055                  | 24                     | 1.6                    | 1590       | 350                        |
| 18         | 4 | 80                        | 0.060                  | 27                     | 1.8                    | 1415       | 340                        |
| 20         | 4 | 80                        | 0.065                  | 30                     | 2                      | 1275       | 330                        |
| 6          | 4 | 70                        | 0.020                  | 9                      | 1.5                    | 3715       | 295                        |
| 7          | 4 | 70                        | 0.025                  | 10.5                   | 1.7                    | 3185       | 320                        |
| 8          | 4 | 70                        | 0.025                  | 12                     | 2                      | 2785       | 280                        |
| 10         | 4 | 70                        | 0.035                  | 15                     | 2.5                    | 2230       | 310                        |
| 12         | 4 | 70                        | 0.040                  | 18                     | 3                      | 1855       | 295                        |
| 14         | 4 | 70                        | 0.045                  | 21                     | 3.5                    | 1590       | 285                        |
| 16         | 4 | 70                        | 0.055                  | 24                     | 4                      | 1395       | 305                        |
| 18         | 4 | 70                        | 0.060                  | 27                     | 4.5                    | 1240       | 300                        |
| 20         | 4 | 70                        | 0.065                  | 30                     | 5                      | 1115       | 290                        |

Применение

Чугун  
(серый /  
высокопрочный)



Медь чистая



Титан



Сплавы на основе никеля  
Aeronautic materials



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|
| 6          | 4 | 130                       | 0.020                  | 9                      | 1.5                    | 6895       | 550                        |
| 7          | 4 | 130                       | 0.025                  | 10.5                   | 1.7                    | 5910       | 590                        |
| 8          | 4 | 130                       | 0.025                  | 12                     | 2                      | 5175       | 520                        |
| 10         | 4 | 130                       | 0.035                  | 15                     | 2.5                    | 4140       | 580                        |
| 12         | 4 | 130                       | 0.040                  | 18                     | 3                      | 3450       | 550                        |
| 14         | 4 | 130                       | 0.045                  | 21                     | 3.5                    | 2955       | 530                        |
| 16         | 4 | 130                       | 0.055                  | 24                     | 4                      | 2585       | 570                        |
| 18         | 4 | 130                       | 0.060                  | 27                     | 4.5                    | 2300       | 550                        |
| 20         | 4 | 130                       | 0.065                  | 30                     | 5                      | 2070       | 540                        |
| 6          | 4 | 230                       | 0.020                  | 9                      | 1.5                    | 12200      | 975                        |
| 7          | 4 | 230                       | 0.025                  | 10.5                   | 1.7                    | 10460      | 1045                       |
| 8          | 4 | 230                       | 0.025                  | 12                     | 2                      | 9150       | 915                        |
| 10         | 4 | 230                       | 0.035                  | 15                     | 2.5                    | 7320       | 1025                       |
| 12         | 4 | 230                       | 0.040                  | 18                     | 3                      | 6100       | 975                        |
| 14         | 4 | 230                       | 0.045                  | 21                     | 3.5                    | 5230       | 940                        |
| 16         | 4 | 230                       | 0.055                  | 24                     | 4                      | 4575       | 1005                       |
| 18         | 4 | 230                       | 0.060                  | 27                     | 4.5                    | 4065       | 975                        |
| 20         | 4 | 230                       | 0.065                  | 30                     | 5                      | 3660       | 950                        |
| 6          | 4 | 80                        | 0.020                  | 9                      | 1.5                    | 4245       | 340                        |
| 7          | 4 | 80                        | 0.025                  | 10.5                   | 1.7                    | 3640       | 365                        |
| 8          | 4 | 80                        | 0.025                  | 12                     | 2                      | 3185       | 320                        |
| 10         | 4 | 80                        | 0.035                  | 15                     | 2.5                    | 2545       | 355                        |
| 12         | 4 | 80                        | 0.040                  | 18                     | 3                      | 2120       | 340                        |
| 14         | 4 | 80                        | 0.045                  | 21                     | 3.5                    | 1820       | 330                        |
| 16         | 4 | 80                        | 0.055                  | 24                     | 4                      | 1590       | 350                        |
| 18         | 4 | 80                        | 0.060                  | 27                     | 4.5                    | 1415       | 340                        |
| 20         | 4 | 80                        | 0.065                  | 30                     | 5                      | 1275       | 330                        |
| 6          | 4 | 40                        | 0.020                  | 9                      | 1.5                    | 2120       | 170                        |
| 7          | 4 | 40                        | 0.025                  | 10.5                   | 1.7                    | 1820       | 180                        |
| 8          | 4 | 40                        | 0.025                  | 12                     | 2                      | 1590       | 160                        |
| 10         | 4 | 40                        | 0.035                  | 15                     | 2.5                    | 1275       | 180                        |
| 12         | 4 | 40                        | 0.040                  | 18                     | 3                      | 1060       | 170                        |
| 14         | 4 | 40                        | 0.045                  | 21                     | 3.5                    | 910        | 165                        |
| 16         | 4 | 40                        | 0.055                  | 24                     | 4                      | 795        | 175                        |
| 18         | 4 | 40                        | 0.060                  | 27                     | 4.5                    | 705        | 170                        |
| 20         | 4 | 40                        | 0.065                  | 30                     | 5                      | 635        | 165                        |

## Фрезы чистовые

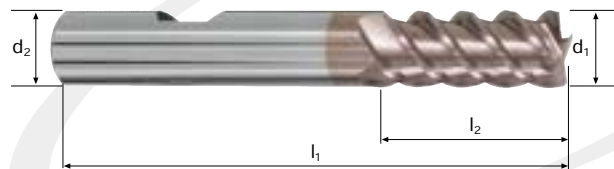
HM  
MG10

N

$\lambda$  55°  
 $\gamma$  15°



0,05-0,15  
45°



Предназначены для обработки:

HRC  
< 48

Нерж.  
сталь

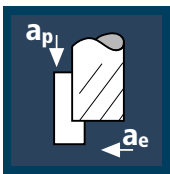
GG(G)  
Чугун

Титан

| Пример:<br>заказа-N° | Покр <sup>т</sup><br>U | Артикул-N°<br>5355 | Ø-Код<br>.300 | NEW!  |          | UNICUT-4X | TRIBO          | SERVICE |
|----------------------|------------------------|--------------------|---------------|-------|----------|-----------|----------------|---------|
|                      |                        |                    |               | U5355 | T5355    | ReTool®   | с<br>покрытием |         |
| Ø<br>Code            | d1<br>e8               | d2<br>h6           | l1            | l2    | $\alpha$ | Z         |                |         |
| .300                 | 6                      | 6                  | 57            | 13    | 0°       | 4         | •              | •       |
| .331                 | 7                      | 8                  | 63            | 16    | 1,5°     | 4         | •              | •       |
| .391                 | 8                      | 8                  | 63            | 19    | 0°       | 4         | •              | •       |
| .420                 | 9                      | 10                 | 72            | 19    | 1,5°     | 4         | •              | •       |
| .450                 | 10                     | 10                 | 72            | 22    | 0°       | 4         | •              | •       |
| .470                 | 11                     | 12                 | 83            | 26    | 1,0°     | 4         | •              | •       |
| .501                 | 12                     | 12                 | 83            | 26    | 0°       | 4         | •              | •       |
| .570                 | 14                     | 14                 | 83            | 26    | 0°       | 4         | •              | •       |
| .610                 | 16                     | 16                 | 92            | 32    | 0°       | 4         | •              | •       |
| .640                 | 18                     | 18                 | 92            | 32    | 0°       | 4         | •              | •       |
| .682                 | 20                     | 20                 | 104           | 38    | 0°       | 4         | •              | •       |
|                      |                        |                    |               |       |          |           | •              | •       |
|                      |                        |                    |               |       |          |           | •              | •       |
|                      |                        |                    |               |       |          |           | •              | •       |
|                      |                        |                    |               |       |          |           | •              | •       |
|                      |                        |                    |               |       |          |           | •              | •       |
|                      |                        |                    |               |       |          |           | •              | •       |
|                      |                        |                    |               |       |          |           | •              | •       |
|                      |                        |                    |               |       |          |           | •              | •       |
|                      |                        |                    |               |       |          |           | •              | •       |
|                      |                        |                    |               |       |          |           | •              | •       |
|                      |                        |                    |               |       |          |           | •              | •       |
|                      |                        |                    |               |       |          |           | •              | •       |
|                      |                        |                    |               |       |          |           | •              | •       |
|                      |                        |                    |               |       |          |           | •              | •       |
|                      |                        |                    |               |       |          |           | •              | •       |

Base-X

5360



Применение

Сталь  
20 - 30 HRC



Сталь  
30 - 48 HRC



Сталь  
48 - 54 HRC



High alloyed steel  
Холодноштамповые  
стали >12% Cr



| d1<br>[mm] | z  | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] |
|------------|----|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|
| 6          | 6  | 170                       | 0.015                  | 9                      | 0.3                    | 9020       | 810                        |
| 8          | 6  | 170                       | 0.025                  | 12                     | 0.4                    | 6765       | 1015                       |
| 10         | 6  | 170                       | 0.030                  | 15                     | 0.5                    | 5410       | 975                        |
| 12         | 6  | 170                       | 0.035                  | 18                     | 0.6                    | 4510       | 945                        |
| 14         | 8  | 170                       | 0.040                  | 21                     | 0.7                    | 3865       | 1235                       |
| 16         | 8  | 170                       | 0.045                  | 24                     | 0.8                    | 3380       | 1215                       |
| 18         | 8  | 170                       | 0.050                  | 27                     | 0.9                    | 3005       | 1200                       |
| 20         | 10 | 170                       | 0.055                  | 30                     | 1.0                    | 2705       | 1490                       |
| 6          | 6  | 110                       | 0.015                  | 9                      | 0.3                    | 5835       | 525                        |
| 8          | 6  | 110                       | 0.025                  | 12                     | 0.4                    | 4375       | 655                        |
| 10         | 6  | 110                       | 0.030                  | 15                     | 0.5                    | 3500       | 630                        |
| 12         | 6  | 110                       | 0.035                  | 18                     | 0.6                    | 2920       | 615                        |
| 14         | 8  | 110                       | 0.040                  | 21                     | 0.7                    | 2500       | 800                        |
| 16         | 8  | 110                       | 0.045                  | 24                     | 0.8                    | 2190       | 790                        |
| 18         | 8  | 110                       | 0.050                  | 27                     | 0.9                    | 1945       | 780                        |
| 20         | 10 | 110                       | 0.055                  | 30                     | 1.0                    | 1750       | 965                        |
| 6          | 6  | 80                        | 0.015                  | 9                      | 0.3                    | 4245       | 380                        |
| 8          | 6  | 80                        | 0.025                  | 12                     | 0.4                    | 3185       | 480                        |
| 10         | 6  | 80                        | 0.030                  | 15                     | 0.5                    | 2545       | 460                        |
| 12         | 6  | 80                        | 0.035                  | 18                     | 0.6                    | 2120       | 445                        |
| 14         | 8  | 80                        | 0.040                  | 21                     | 0.7                    | 1820       | 580                        |
| 16         | 8  | 80                        | 0.045                  | 24                     | 0.8                    | 1590       | 570                        |
| 18         | 8  | 80                        | 0.050                  | 27                     | 0.9                    | 1415       | 565                        |
| 20         | 10 | 80                        | 0.055                  | 30                     | 1.0                    | 1275       | 700                        |
| 6          | 6  | 70                        | 0.015                  | 9                      | 0.3                    | 3715       | 335                        |
| 8          | 6  | 70                        | 0.025                  | 12                     | 0.4                    | 2785       | 420                        |
| 10         | 6  | 70                        | 0.030                  | 15                     | 0.5                    | 2230       | 400                        |
| 12         | 6  | 70                        | 0.035                  | 18                     | 0.6                    | 1855       | 390                        |
| 14         | 8  | 70                        | 0.040                  | 21                     | 0.7                    | 1590       | 510                        |
| 16         | 8  | 70                        | 0.045                  | 24                     | 0.8                    | 1395       | 500                        |
| 18         | 8  | 70                        | 0.050                  | 27                     | 0.9                    | 1240       | 495                        |
| 20         | 10 | 70                        | 0.055                  | 30                     | 1.0                    | 1115       | 615                        |

Применение

Чугун  
(серый /  
высокопрочный)



Медь чистая



Титан



Сплавы на основе никеля  
Aeronautic materials

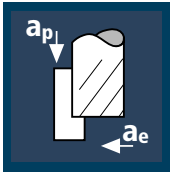


| d1<br>[mm] | z  | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] |
|------------|----|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|
| 6          | 6  | 130                       | 0.015                  | 9                      | 0.3                    | 6895       | 620                        |
| 8          | 6  | 130                       | 0.025                  | 12                     | 0.4                    | 5175       | 775                        |
| 10         | 6  | 130                       | 0.030                  | 15                     | 0.5                    | 4140       | 745                        |
| 12         | 6  | 130                       | 0.035                  | 18                     | 0.6                    | 3450       | 725                        |
| 14         | 8  | 130                       | 0.040                  | 21                     | 0.7                    | 2955       | 945                        |
| 16         | 8  | 130                       | 0.045                  | 24                     | 0.8                    | 2585       | 930                        |
| 18         | 8  | 130                       | 0.050                  | 27                     | 0.9                    | 2300       | 920                        |
| 20         | 10 | 130                       | 0.055                  | 30                     | 1.0                    | 2070       | 1140                       |
| 6          | 6  | 230                       | 0.015                  | 9                      | 0.1                    | 12200      | 1100                       |
| 8          | 6  | 230                       | 0.025                  | 12                     | 0.2                    | 9150       | 1375                       |
| 10         | 6  | 230                       | 0.030                  | 15                     | 0.2                    | 7320       | 1320                       |
| 12         | 6  | 230                       | 0.035                  | 18                     | 0.3                    | 6100       | 1280                       |
| 14         | 8  | 230                       | 0.040                  | 21                     | 0.3                    | 5230       | 1675                       |
| 16         | 8  | 230                       | 0.045                  | 24                     | 0.4                    | 4575       | 1645                       |
| 18         | 8  | 230                       | 0.050                  | 27                     | 0.4                    | 4065       | 1625                       |
| 20         | 10 | 230                       | 0.055                  | 30                     | 0.5                    | 3660       | 2015                       |
| 6          | 6  | 80                        | 0.015                  | 9                      | 0.1                    | 4245       | 380                        |
| 8          | 6  | 80                        | 0.025                  | 12                     | 0.1                    | 3185       | 480                        |
| 10         | 6  | 80                        | 0.030                  | 15                     | 0.1                    | 2545       | 460                        |
| 12         | 6  | 80                        | 0.035                  | 18                     | 0.1                    | 2120       | 445                        |
| 14         | 8  | 80                        | 0.040                  | 21                     | 0.1                    | 1820       | 580                        |
| 16         | 8  | 80                        | 0.045                  | 24                     | 0.1                    | 1590       | 570                        |
| 18         | 8  | 80                        | 0.050                  | 27                     | 0.1                    | 1415       | 565                        |
| 20         | 10 | 80                        | 0.055                  | 30                     | 0.1                    | 1275       | 700                        |
| 6          | 6  | 40                        | 0.015                  | 9                      | 0.1                    | 2120       | 190                        |
| 8          | 6  | 40                        | 0.025                  | 12                     | 0.1                    | 1590       | 240                        |
| 10         | 6  | 40                        | 0.030                  | 15                     | 0.1                    | 1275       | 230                        |
| 12         | 6  | 40                        | 0.035                  | 18                     | 0.1                    | 1060       | 225                        |
| 14         | 8  | 40                        | 0.040                  | 21                     | 0.1                    | 910        | 290                        |
| 16         | 8  | 40                        | 0.045                  | 24                     | 0.1                    | 795        | 285                        |
| 18         | 8  | 40                        | 0.050                  | 27                     | 0.1                    | 705        | 280                        |
| 20         | 10 | 40                        | 0.055                  | 30                     | 0.1                    | 635        | 350                        |





5265

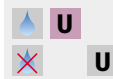


Применение

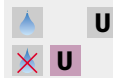
Сталь  
20 - 30 HRC



Сталь  
30 - 48 HRC



Сталь  
48 - 54 HRC



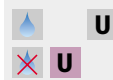
High alloyed steel  
Холодноштамповые  
стали >12% Cr



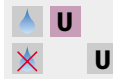
| d1<br>[mm] | z  | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] |
|------------|----|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|
| 6          | 6  | 130                       | 0.010                  | 15                     | 0.3                    | 6895       | 415                        |
| 8          | 6  | 130                       | 0.015                  | 20                     | 0.4                    | 5175       | 465                        |
| 10         | 6  | 130                       | 0.020                  | 25                     | 0.5                    | 4140       | 495                        |
| 12         | 6  | 130                       | 0.025                  | 30                     | 0.6                    | 3450       | 520                        |
| 16         | 8  | 130                       | 0.030                  | 40                     | 0.8                    | 2585       | 620                        |
| 20         | 10 | 130                       | 0.040                  | 50                     | 1.0                    | 2070       | 830                        |
| 6          | 6  | 90                        | 0.010                  | 15                     | 0.3                    | 4775       | 285                        |
| 8          | 6  | 90                        | 0.015                  | 20                     | 0.4                    | 3580       | 320                        |
| 10         | 6  | 90                        | 0.020                  | 25                     | 0.5                    | 2865       | 345                        |
| 12         | 6  | 90                        | 0.025                  | 30                     | 0.6                    | 2385       | 360                        |
| 16         | 8  | 90                        | 0.030                  | 40                     | 0.8                    | 1790       | 430                        |
| 20         | 10 | 90                        | 0.040                  | 50                     | 1.0                    | 1430       | 570                        |
| 6          | 6  | 60                        | 0.010                  | 15                     | 0.3                    | 3185       | 190                        |
| 8          | 6  | 60                        | 0.015                  | 20                     | 0.4                    | 2385       | 215                        |
| 10         | 6  | 60                        | 0.020                  | 25                     | 0.5                    | 1910       | 230                        |
| 12         | 6  | 60                        | 0.025                  | 30                     | 0.6                    | 1590       | 240                        |
| 16         | 8  | 60                        | 0.030                  | 40                     | 0.8                    | 1195       | 285                        |
| 20         | 10 | 60                        | 0.040                  | 50                     | 1.0                    | 955        | 380                        |
| 6          | 6  | 50                        | 0.010                  | 15                     | 0.3                    | 2655       | 160                        |
| 8          | 6  | 50                        | 0.015                  | 20                     | 0.4                    | 1990       | 180                        |
| 10         | 6  | 50                        | 0.020                  | 25                     | 0.5                    | 1590       | 190                        |
| 12         | 6  | 50                        | 0.025                  | 30                     | 0.6                    | 1325       | 200                        |
| 16         | 8  | 50                        | 0.030                  | 40                     | 0.8                    | 995        | 240                        |
| 20         | 10 | 50                        | 0.040                  | 50                     | 1.0                    | 795        | 320                        |

Применение

Чугун  
(серый /  
высокопрочный)



Медь чистая



| d1<br>[mm] | z  | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] |
|------------|----|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|
| 6          | 6  | 100                       | 0.010                  | 15                     | 0.3                    | 5305       | 320                        |
| 8          | 6  | 100                       | 0.015                  | 20                     | 0.4                    | 3980       | 360                        |
| 10         | 6  | 100                       | 0.020                  | 25                     | 0.5                    | 3185       | 380                        |
| 12         | 6  | 100                       | 0.025                  | 30                     | 0.6                    | 2655       | 400                        |
| 16         | 8  | 100                       | 0.030                  | 40                     | 0.8                    | 1990       | 480                        |
| 20         | 10 | 100                       | 0.040                  | 50                     | 1.0                    | 1590       | 635                        |
| 6          | 6  | 180                       | 0.010                  | 15                     | 0.1                    | 9550       | 575                        |
| 8          | 6  | 180                       | 0.015                  | 20                     | 0.1                    | 7160       | 645                        |
| 10         | 6  | 180                       | 0.020                  | 25                     | 0.1                    | 5730       | 690                        |
| 12         | 6  | 180                       | 0.025                  | 30                     | 0.1                    | 4775       | 715                        |
| 16         | 8  | 180                       | 0.030                  | 40                     | 0.1                    | 3580       | 860                        |
| 20         | 10 | 180                       | 0.040                  | 50                     | 0.1                    | 2865       | 1145                       |

# Фрезы чистовые

# Multicut N

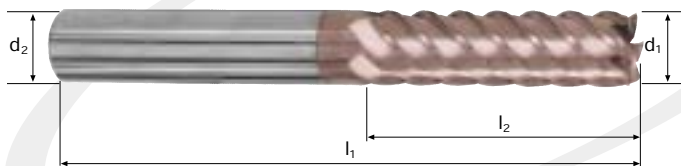
HM  
MG10

N

$\lambda$  45°  
 $\gamma$  8°




DIN  
6535  
HA



Предназначены для обработки:

0,05-0,15  
45°

HRC  
< 48

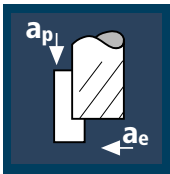
Нерж.  
сталь  
48 - 54

GG(G)  
Чугун

|   |          |          |     |    |    | UNICUT-4X | SERVICE        |
|---|----------|----------|-----|----|----|-----------|----------------|
| Пример:<br>заказа-N°. <b>U</b> 5265.300 |          |          |     |    |    | ReTool®   |                |
|   |          |          |     |    |    | U5265     | с<br>покрытием |
| Ø<br>Code                               | d1<br>e8 | d2<br>h6 | l1  | l2 | Z  |           |                |
| .300                                    | 6        | 6        | 63  | 19 | 6  | •         |                |
| .391                                    | 8        | 8        | 72  | 28 | 6  | •         | •              |
| .450                                    | 10       | 10       | 84  | 34 | 6  | •         | •              |
| .501                                    | 12       | 12       | 97  | 40 | 6  | •         | •              |
| .610                                    | 16       | 16       | 108 | 48 | 8  | •         | •              |
| .682                                    | 20       | 20       | 122 | 56 | 10 | •         | •              |
|   |          |          |     |    |    |           |                |
|   |          |          |     |    |    |           |                |
|   |          |          |     |    |    |           |                |
|   |          |          |     |    |    |           |                |
|   |          |          |     |    |    |           |                |
|   |          |          |     |    |    |           |                |
|   |          |          |     |    |    |           |                |
|   |          |          |     |    |    |           |                |
|   |          |          |     |    |    |           |                |
|   |          |          |     |    |    |           |                |
|   |          |          |     |    |    |           |                |
|   |          |          |     |    |    |           |                |
|   |          |          |     |    |    |           |                |
|   |          |          |     |    |    |           |                |
|   |          |          |     |    |    |           |                |
|   |          |          |     |    |    |           |                |
|   |          |          |     |    |    |           |                |
|   |          |          |     |    |    |           |                |

Base-X

5268



Применение

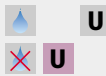
Сталь  
20 - 30 HRC



Сталь  
30 - 48 HRC



Сталь  
48 - 54 HRC



High alloyed steel  
Холодноштамповые  
стали >12% Cr



| d1<br>[mm] | z  | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | V <sub>f</sub><br>[mm/min] |
|------------|----|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|
| 10         | 6  | 30                        | 0.015                  | 40                     | 0.1                    | 955                       | 85                         |
| 12         | 6  | 30                        | 0.020                  | 48                     | 0.1                    | 795                       | 95                         |
| 16         | 8  | 30                        | 0.025                  | 64                     | 0.1                    | 595                       | 120                        |
| 20         | 10 | 30                        | 0.035                  | 80                     | 0.1                    | 475                       | 165                        |
| 25         | 12 | 30                        | 0.040                  | 100                    | 0.1                    | 380                       | 180                        |
| 10         | 6  | 20                        | 0.015                  | 40                     | 0.1                    | 635                       | 55                         |
| 12         | 6  | 20                        | 0.020                  | 48                     | 0.1                    | 530                       | 65                         |
| 16         | 8  | 20                        | 0.025                  | 64                     | 0.1                    | 400                       | 60                         |
| 20         | 10 | 20                        | 0.035                  | 80                     | 0.1                    | 320                       | 65                         |
| 25         | 12 | 20                        | 0.040                  | 100                    | 0.1                    | 255                       | 80                         |
| 10         | 6  | 20                        | 0.015                  | 40                     | 0.1                    | 635                       | 55                         |
| 12         | 6  | 20                        | 0.020                  | 48                     | 0.1                    | 530                       | 65                         |
| 16         | 8  | 20                        | 0.025                  | 64                     | 0.1                    | 400                       | 60                         |
| 20         | 10 | 20                        | 0.035                  | 80                     | 0.1                    | 320                       | 65                         |
| 25         | 12 | 20                        | 0.040                  | 100                    | 0.1                    | 255                       | 80                         |

Применение

Чугун  
(серый /  
высокопрочный)



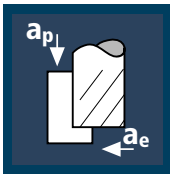
Медь чистая



| d1<br>[mm] | z  | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | V <sub>f</sub><br>[mm/min] |
|------------|----|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|
| 10         | 6  | 30                        | 0.015                  | 40                     | 0.1                    | 955                       | 85                         |
| 12         | 6  | 30                        | 0.020                  | 48                     | 0.1                    | 795                       | 95                         |
| 16         | 8  | 30                        | 0.025                  | 64                     | 0.1                    | 595                       | 90                         |
| 20         | 10 | 30                        | 0.035                  | 80                     | 0.2                    | 475                       | 100                        |
| 25         | 12 | 30                        | 0.040                  | 100                    | 0.2                    | 380                       | 120                        |
| 10         | 6  | 30                        | 0.015                  | 40                     | 0.1                    | 955                       | 85                         |
| 12         | 6  | 30                        | 0.020                  | 48                     | 0.1                    | 795                       | 95                         |
| 16         | 8  | 30                        | 0.025                  | 64                     | 0.1                    | 595                       | 90                         |
| 20         | 10 | 30                        | 0.035                  | 80                     | 0.1                    | 475                       | 100                        |
| 25         | 12 | 30                        | 0.040                  | 100                    | 0.1                    | 380                       | 120                        |

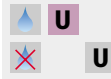


5300

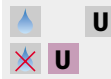


Применение

Сталь  
20 - 30 HRC



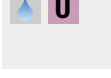
Сталь  
30 - 48 HRC



Чугун  
(серый /  
высокопрочный)

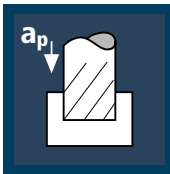


Холодноштамповые  
стали >12% Cr  
жаростойкие стали  
нержавеющие  
аустенитные стали



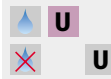
| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 3          | 2 | 120                       | 0.010                  | 3                      | 1.5                    | 12735                     | 255                        | 1.0                         |
| 4          | 2 | 120                       | 0.015                  | 4                      | 2                      | 9550                      | 285                        | 2.5                         |
| 5          | 2 | 120                       | 0.020                  | 5                      | 2.5                    | 7640                      | 305                        | 4.0                         |
| 6          | 2 | 120                       | 0.025                  | 6                      | 3                      | 6365                      | 320                        | 6.0                         |
| 8          | 2 | 120                       | 0.030                  | 8                      | 4                      | 4775                      | 285                        | 9.0                         |
| 10         | 2 | 120                       | 0.040                  | 10                     | 5                      | 3820                      | 305                        | 15.5                        |
| 12         | 2 | 120                       | 0.050                  | 12                     | 6                      | 3185                      | 320                        | 23.0                        |
| 16         | 2 | 120                       | 0.065                  | 16                     | 8                      | 2385                      | 310                        | 39.5                        |
| 20         | 2 | 120                       | 0.080                  | 20                     | 10                     | 1910                      | 305                        | 61.0                        |
| 3          | 2 | 80                        | 0.010                  | 3                      | 1.5                    | 8490                      | 170                        | 1.0                         |
| 4          | 2 | 80                        | 0.015                  | 4                      | 2                      | 6365                      | 190                        | 1.5                         |
| 5          | 2 | 80                        | 0.020                  | 5                      | 2.5                    | 5095                      | 205                        | 2.5                         |
| 6          | 2 | 80                        | 0.020                  | 6                      | 3                      | 4245                      | 170                        | 3.0                         |
| 8          | 2 | 80                        | 0.030                  | 8                      | 4                      | 3185                      | 190                        | 6.0                         |
| 10         | 2 | 80                        | 0.035                  | 10                     | 5                      | 2545                      | 180                        | 9.0                         |
| 12         | 2 | 80                        | 0.045                  | 12                     | 6                      | 2120                      | 190                        | 13.5                        |
| 16         | 2 | 80                        | 0.060                  | 16                     | 8                      | 1590                      | 190                        | 24.5                        |
| 20         | 2 | 80                        | 0.070                  | 20                     | 10                     | 1275                      | 180                        | 36.0                        |
| 3          | 2 | 160                       | 0.015                  | 3                      | 1.5                    | 16975                     | 510                        | 2.5                         |
| 4          | 2 | 160                       | 0.020                  | 4                      | 2                      | 12735                     | 510                        | 4.0                         |
| 5          | 2 | 160                       | 0.020                  | 5                      | 2.5                    | 10185                     | 405                        | 5.0                         |
| 6          | 2 | 160                       | 0.025                  | 6                      | 3                      | 8490                      | 425                        | 7.5                         |
| 8          | 2 | 160                       | 0.035                  | 8                      | 4                      | 6365                      | 445                        | 14.0                        |
| 10         | 2 | 160                       | 0.045                  | 10                     | 5                      | 5095                      | 460                        | 23.0                        |
| 12         | 2 | 160                       | 0.055                  | 12                     | 6                      | 4245                      | 465                        | 33.5                        |
| 16         | 2 | 160                       | 0.070                  | 16                     | 8                      | 3185                      | 445                        | 57.0                        |
| 20         | 2 | 160                       | 0.090                  | 20                     | 10                     | 2545                      | 460                        | 92.0                        |
| 3          | 2 | 60                        | 0.010                  | 3                      | 1.5                    | 6365                      | 125                        | 0.5                         |
| 4          | 2 | 60                        | 0.015                  | 4                      | 2                      | 4775                      | 145                        | 1.0                         |
| 5          | 2 | 60                        | 0.020                  | 5                      | 2.5                    | 3820                      | 155                        | 2.0                         |
| 6          | 2 | 60                        | 0.020                  | 6                      | 3                      | 3185                      | 125                        | 2.5                         |
| 8          | 2 | 60                        | 0.030                  | 8                      | 4                      | 2385                      | 145                        | 4.5                         |
| 10         | 2 | 60                        | 0.035                  | 10                     | 5                      | 1910                      | 135                        | 7.0                         |
| 12         | 2 | 60                        | 0.045                  | 12                     | 6                      | 1590                      | 145                        | 10.5                        |
| 16         | 2 | 60                        | 0.060                  | 16                     | 8                      | 1195                      | 145                        | 18.5                        |
| 20         | 2 | 60                        | 0.070                  | 20                     | 10                     | 955                       | 135                        | 27.0                        |

5300

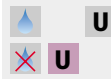


Применение

Сталь  
20 - 30 HRC



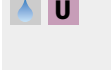
Сталь  
30 - 48 HRC



Чугун  
(серый /  
высокопрочный)



Холодноштамповые  
стали >12% Cr  
жаростойкие стали  
нержавеющие  
аустенитные стали

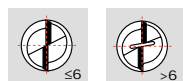


| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 3          | 2 | 100                       | 0.010                  | 1.5                    | 3                      | 10610                     | 210                        | 1.0                         |
| 4          | 2 | 100                       | 0.010                  | 2                      | 4                      | 7960                      | 160                        | 1.5                         |
| 5          | 2 | 100                       | 0.015                  | 2.5                    | 5                      | 6365                      | 190                        | 2.5                         |
| 6          | 2 | 100                       | 0.015                  | 3                      | 6                      | 5305                      | 160                        | 3.0                         |
| 8          | 2 | 100                       | 0.020                  | 4                      | 8                      | 3980                      | 160                        | 5.0                         |
| 10         | 2 | 100                       | 0.030                  | 5                      | 10                     | 3185                      | 190                        | 9.5                         |
| 12         | 2 | 100                       | 0.035                  | 6                      | 12                     | 2655                      | 185                        | 13.5                        |
| 16         | 2 | 100                       | 0.045                  | 8                      | 16                     | 1990                      | 180                        | 23.0                        |
| 20         | 2 | 100                       | 0.055                  | 10                     | 20                     | 1590                      | 175                        | 35.0                        |
| 3          | 2 | 70                        | 0.010                  | 1.5                    | 3                      | 7425                      | 150                        | 0.5                         |
| 4          | 2 | 70                        | 0.010                  | 2                      | 4                      | 5570                      | 110                        | 1.0                         |
| 5          | 2 | 70                        | 0.015                  | 2.5                    | 5                      | 4455                      | 135                        | 1.5                         |
| 6          | 2 | 70                        | 0.015                  | 3                      | 6                      | 3715                      | 110                        | 2.0                         |
| 8          | 2 | 70                        | 0.020                  | 4                      | 8                      | 2785                      | 110                        | 3.5                         |
| 10         | 2 | 70                        | 0.025                  | 5                      | 10                     | 2230                      | 110                        | 5.5                         |
| 12         | 2 | 70                        | 0.030                  | 6                      | 12                     | 1855                      | 110                        | 8.0                         |
| 16         | 2 | 70                        | 0.040                  | 8                      | 16                     | 1395                      | 110                        | 14.0                        |
| 20         | 2 | 70                        | 0.050                  | 10                     | 20                     | 1115                      | 110                        | 22.0                        |
| 3          | 2 | 120                       | 0.010                  | 1.5                    | 3                      | 12735                     | 255                        | 1.0                         |
| 4          | 2 | 120                       | 0.010                  | 2                      | 4                      | 9550                      | 190                        | 1.5                         |
| 5          | 2 | 120                       | 0.015                  | 2.5                    | 5                      | 7640                      | 230                        | 3.0                         |
| 6          | 2 | 120                       | 0.020                  | 3                      | 6                      | 6365                      | 255                        | 4.5                         |
| 8          | 2 | 120                       | 0.025                  | 4                      | 8                      | 4775                      | 240                        | 7.5                         |
| 10         | 2 | 120                       | 0.030                  | 5                      | 10                     | 3820                      | 230                        | 11.5                        |
| 12         | 2 | 120                       | 0.035                  | 6                      | 12                     | 3185                      | 225                        | 16.0                        |
| 16         | 2 | 120                       | 0.050                  | 8                      | 16                     | 2385                      | 240                        | 30.5                        |
| 20         | 2 | 120                       | 0.060                  | 10                     | 20                     | 1910                      | 230                        | 46.0                        |
| 3          | 2 | 40                        | 0.010                  | 1.5                    | 3                      | 4245                      | 85                         | 0.5                         |
| 4          | 2 | 40                        | 0.010                  | 2                      | 4                      | 3185                      | 65                         | 0.5                         |
| 5          | 2 | 40                        | 0.015                  | 2.5                    | 5                      | 2545                      | 75                         | 1.0                         |
| 6          | 2 | 40                        | 0.015                  | 3                      | 6                      | 2120                      | 65                         | 1.0                         |
| 8          | 2 | 40                        | 0.020                  | 4                      | 8                      | 1590                      | 65                         | 2.0                         |
| 10         | 2 | 40                        | 0.025                  | 5                      | 10                     | 1275                      | 65                         | 3.5                         |
| 12         | 2 | 40                        | 0.030                  | 6                      | 12                     | 1060                      | 65                         | 4.5                         |
| 16         | 2 | 40                        | 0.040                  | 8                      | 16                     | 795                       | 65                         | 8.5                         |
| 20         | 2 | 40                        | 0.050                  | 10                     | 20                     | 635                       | 65                         | 13.0                        |

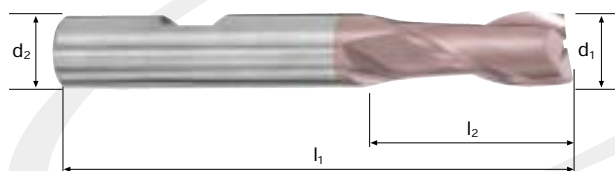
# Фрезы универсальные

HM  
MG10 N

$\lambda$  30°  
 $\gamma$  12°



0,05-0,15  
45°

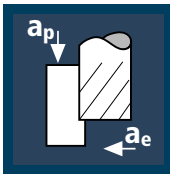


Предназначены для обработки:

- HRC < 48
- Нерж. сталь
- GG(G) Чугун
- Медь

|                              |      | Покрyтие |     | Артикул-№ |    | Ø-Код |  |  |   | UNICUT-4X    | SERVICE     |
|------------------------------|------|----------|-----|-----------|----|-------|--|--|---|--------------|-------------|
| Пример: заказа-№.            |      | U        |     | 5300.138  |    |       |  |  |   | U5300ReTool® |             |
|                              |      |          |     |           |    |       |  |  |   | U5200        | с покрытием |
| Ø                            | d1   | d2       | l1  | l2        | α  | Z     |  |  |   |              |             |
| Code                         | e8   | h6       |     |           |    |       |  |  |   |              |             |
| NEW! .138*                   | 2,0  | 2,0      | 42  | 6         | 0° | 2     |  |  | ? |              |             |
| .140                         | 2,0  | 6,0      | 54  | 6         | 7° | 2     |  |  | ? |              |             |
| NEW! .158*                   | 2,5  | 2,5      | 42  | 7         | 0° | 2     |  |  | ? |              |             |
| .160                         | 2,5  | 6,0      | 54  | 6         | 7° | 2     |  |  | ? |              |             |
| NEW! .178*                   | 3,0  | 3,0      | 45  | 7         | 0° | 2     |  |  | ? |              |             |
| .180                         | 3,0  | 6,0      | 57  | 7         | 6° | 2     |  |  | ? |              |             |
| NEW! .200                    | 3,5  | 6,0      | 57  | 7         | 5° | 2     |  |  | ? |              |             |
| NEW! .218*                   | 4,0  | 4,0      | 50  | 8         | 0° | 2     |  |  | ? |              |             |
| .220                         | 4,0  | 6,0      | 57  | 8         | 4° | 2     |  |  | ? |              |             |
| NEW! .240                    | 4,5  | 6,0      | 57  | 8         | 4° | 2     |  |  | ? |              |             |
| NEW! .258*                   | 5,0  | 5,0      | 50  | 10        | 0° | 2     |  |  | ? |              |             |
| .260                         | 5,0  | 6,0      | 57  | 10        | 2° | 2     |  |  | ? |              |             |
| NEW! .280                    | 5,5  | 6,0      | 57  | 10        | 2° | 2     |  |  | ? |              |             |
| .300                         | 6,0  | 6,0      | 57  | 10        | 0° | 2     |  |  | ? |              |             |
| .331                         | 7,0  | 8,0      | 63  | 13        | 2° | 2     |  |  | ? |              |             |
| .391                         | 8,0  | 8,0      | 63  | 16        | 0° | 2     |  |  | ? | ?            |             |
| .420                         | 9,0  | 10,0     | 72  | 16        | 2° | 2     |  |  | ? | ?            |             |
| .450                         | 10,0 | 10,0     | 72  | 19        | 0° | 2     |  |  | ? | ?            |             |
| .501                         | 12,0 | 12,0     | 83  | 22        | 0° | 2     |  |  | ? | ?            |             |
| .570                         | 14,0 | 14,0     | 83  | 22        | 0° | 2     |  |  | ? | ?            |             |
| .610                         | 16,0 | 16,0     | 92  | 26        | 0° | 2     |  |  | ? | ?            |             |
| .640                         | 18,0 | 18,0     | 92  | 26        | 0° | 2     |  |  | ? | ?            |             |
| .682                         | 20,0 | 20,0     | 104 | 32        | 0° | 2     |  |  | ? | ?            |             |
| * without clamping flat only |      |          |     |           |    |       |  |  |   |              |             |

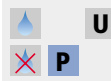
Base-X

**5330****Применение**

Сталь  
20 - 30 HRC



Сталь  
30 - 48 HRC



Чугун  
(серый /  
высокопрочный)



Холодноштамповые  
стали >12% Cr  
жаростойкие стали  
нержавеющие  
аустенитные стали



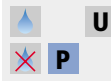
| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|
| 2          | 3 | 120                       | 0.005                  | 3.0                    | 0.2                    | 19100      | 285                        |
| 3          | 3 | 120                       | 0.010                  | 4.5                    | 0.3                    | 12735      | 380                        |
| 4          | 3 | 120                       | 0.015                  | 6.0                    | 0.4                    | 9550       | 430                        |
| 5          | 3 | 120                       | 0.015                  | 7.5                    | 0.5                    | 7640       | 345                        |
| 6          | 3 | 120                       | 0.020                  | 9.0                    | 0.6                    | 6365       | 380                        |
| 8          | 3 | 120                       | 0.025                  | 12.0                   | 0.8                    | 4775       | 360                        |
| 9          | 3 | 120                       | 0.030                  | 13.5                   | 0.9                    | 4245       | 380                        |
| 10         | 3 | 120                       | 0.035                  | 15.0                   | 1.0                    | 3820       | 400                        |
| 12         | 3 | 120                       | 0.040                  | 18.0                   | 1.2                    | 3185       | 380                        |
| 2          | 3 | 80                        | 0.005                  | 3.0                    | 0.2                    | 12735      | 190                        |
| 3          | 3 | 80                        | 0.010                  | 4.5                    | 0.3                    | 8490       | 255                        |
| 4          | 3 | 80                        | 0.015                  | 6.0                    | 0.4                    | 6365       | 285                        |
| 5          | 3 | 80                        | 0.015                  | 7.5                    | 0.5                    | 5095       | 230                        |
| 6          | 3 | 80                        | 0.020                  | 9.0                    | 0.6                    | 4245       | 255                        |
| 8          | 3 | 80                        | 0.025                  | 12.0                   | 0.8                    | 3185       | 240                        |
| 9          | 3 | 80                        | 0.030                  | 13.5                   | 0.9                    | 2830       | 255                        |
| 10         | 3 | 80                        | 0.035                  | 15.0                   | 1.0                    | 2545       | 265                        |
| 12         | 3 | 80                        | 0.040                  | 18.0                   | 1.2                    | 2120       | 255                        |
| 2          | 3 | 160                       | 0.005                  | 3.0                    | 0.2                    | 25465      | 380                        |
| 3          | 3 | 160                       | 0.010                  | 4.5                    | 0.3                    | 16975      | 510                        |
| 4          | 3 | 160                       | 0.015                  | 6.0                    | 0.4                    | 12735      | 575                        |
| 5          | 3 | 160                       | 0.015                  | 7.5                    | 0.5                    | 10185      | 460                        |
| 6          | 3 | 160                       | 0.020                  | 9.0                    | 0.6                    | 8490       | 510                        |
| 8          | 3 | 160                       | 0.025                  | 12.0                   | 0.8                    | 6365       | 475                        |
| 9          | 3 | 160                       | 0.030                  | 13.5                   | 0.9                    | 5660       | 510                        |
| 10         | 3 | 160                       | 0.035                  | 15.0                   | 1.0                    | 5095       | 535                        |
| 12         | 3 | 160                       | 0.040                  | 18.0                   | 1.2                    | 4245       | 510                        |
| 2          | 3 | 60                        | 0.005                  | 3.0                    | 0.2                    | 9550       | 145                        |
| 3          | 3 | 60                        | 0.010                  | 4.5                    | 0.3                    | 6365       | 190                        |
| 4          | 3 | 60                        | 0.015                  | 6.0                    | 0.4                    | 4775       | 215                        |
| 5          | 3 | 60                        | 0.015                  | 7.5                    | 0.5                    | 3820       | 170                        |
| 6          | 3 | 60                        | 0.020                  | 9.0                    | 0.6                    | 3185       | 190                        |
| 8          | 3 | 60                        | 0.025                  | 12.0                   | 0.8                    | 2385       | 180                        |
| 9          | 3 | 60                        | 0.030                  | 13.5                   | 0.9                    | 2120       | 190                        |
| 10         | 3 | 60                        | 0.035                  | 15.0                   | 1.0                    | 1910       | 200                        |
| 12         | 3 | 60                        | 0.040                  | 18.0                   | 1.2                    | 1590       | 190                        |

**5330****Применение**

Сталь  
20 - 30 HRC



Сталь  
30 - 48 HRC



Чугун  
(серый /  
высокопрочный)



Холодноштамповые  
стали >12% Cr  
жаростойкие стали  
нержавеющие  
аустенитные стали



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | V <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 2          | 3 | 100                       | 0.005                  | 1.0                    | 2.0                    | 15915      | 240                        | 0.5                         |
| 3          | 3 | 100                       | 0.010                  | 1.5                    | 3.0                    | 10610      | 320                        | 1.5                         |
| 4          | 3 | 100                       | 0.010                  | 2.0                    | 4.0                    | 7960       | 240                        | 2.0                         |
| 5          | 3 | 100                       | 0.015                  | 2.5                    | 5.0                    | 6365       | 285                        | 3.5                         |
| 6          | 3 | 100                       | 0.015                  | 3.0                    | 6.0                    | 5305       | 240                        | 4.5                         |
| 8          | 3 | 100                       | 0.020                  | 4.0                    | 8.0                    | 3980       | 240                        | 7.5                         |
| 9          | 3 | 100                       | 0.025                  | 4.5                    | 9.0                    | 3535       | 265                        | 10.5                        |
| 10         | 3 | 100                       | 0.030                  | 5.0                    | 10.0                   | 3185       | 285                        | 14.5                        |
| 12         | 3 | 100                       | 0.035                  | 6.0                    | 12.0                   | 2655       | 280                        | 20.0                        |
| 2          | 3 | 70                        | 0.005                  | 1.0                    | 2.0                    | 11140      | 165                        | 0.5                         |
| 3          | 3 | 70                        | 0.010                  | 1.5                    | 3.0                    | 7425       | 225                        | 1.0                         |
| 4          | 3 | 70                        | 0.010                  | 2.0                    | 4.0                    | 5570       | 165                        | 1.5                         |
| 5          | 3 | 70                        | 0.015                  | 2.5                    | 5.0                    | 4455       | 200                        | 2.5                         |
| 6          | 3 | 70                        | 0.015                  | 3.0                    | 6.0                    | 3715       | 165                        | 3.0                         |
| 8          | 3 | 70                        | 0.020                  | 4.0                    | 8.0                    | 2785       | 165                        | 5.5                         |
| 9          | 3 | 70                        | 0.025                  | 4.5                    | 9.0                    | 2475       | 185                        | 7.5                         |
| 10         | 3 | 70                        | 0.025                  | 5.0                    | 10.0                   | 2230       | 165                        | 8.5                         |
| 12         | 3 | 70                        | 0.030                  | 6.0                    | 12.0                   | 1855       | 165                        | 12.0                        |
| 2          | 3 | 120                       | 0.005                  | 1.0                    | 2.0                    | 19100      | 285                        | 0.5                         |
| 3          | 3 | 120                       | 0.010                  | 1.5                    | 3.0                    | 12735      | 380                        | 1.5                         |
| 4          | 3 | 120                       | 0.010                  | 2.0                    | 4.0                    | 9550       | 285                        | 2.5                         |
| 5          | 3 | 120                       | 0.015                  | 2.5                    | 5.0                    | 7640       | 345                        | 4.5                         |
| 6          | 3 | 120                       | 0.020                  | 3.0                    | 6.0                    | 6365       | 380                        | 7.0                         |
| 8          | 3 | 120                       | 0.025                  | 4.0                    | 8.0                    | 4775       | 360                        | 11.5                        |
| 9          | 3 | 120                       | 0.030                  | 4.5                    | 9.0                    | 4245       | 380                        | 15.5                        |
| 10         | 3 | 120                       | 0.030                  | 5.0                    | 10.0                   | 3820       | 345                        | 17.5                        |
| 12         | 3 | 120                       | 0.035                  | 6.0                    | 12.0                   | 3185       | 335                        | 24.0                        |
| 2          | 3 | 40                        | 0.005                  | 1.0                    | 2.0                    | 6365       | 95                         | 0.0                         |
| 3          | 3 | 40                        | 0.010                  | 1.5                    | 3.0                    | 4245       | 125                        | 0.5                         |
| 4          | 3 | 40                        | 0.010                  | 2.0                    | 4.0                    | 3185       | 95                         | 1.0                         |
| 5          | 3 | 40                        | 0.015                  | 2.5                    | 5.0                    | 2545       | 115                        | 1.5                         |
| 6          | 3 | 40                        | 0.015                  | 3.0                    | 6.0                    | 2120       | 95                         | 1.5                         |
| 8          | 3 | 40                        | 0.020                  | 4.0                    | 8.0                    | 1590       | 95                         | 3.0                         |
| 9          | 3 | 40                        | 0.025                  | 4.5                    | 9.0                    | 1415       | 105                        | 4.5                         |
| 10         | 3 | 40                        | 0.025                  | 5.0                    | 10.0                   | 1275       | 95                         | 5.0                         |
| 12         | 3 | 40                        | 0.030                  | 6.0                    | 12.0                   | 1060       | 95                         | 7.0                         |

# Фрезы универсальные

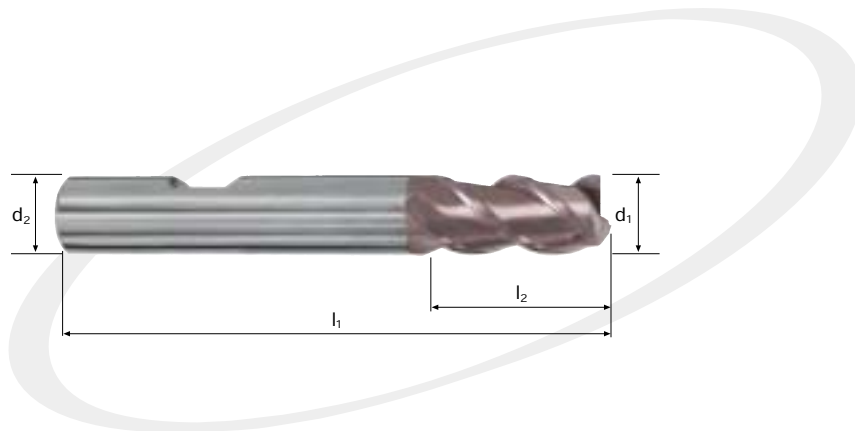
HM  
MG10 N

$\lambda$  45°  
 $\gamma$  15°



DIN 6535 HA  
DIN 6535 HB

0,05-0,20  
45°



Предназначены для обработки:

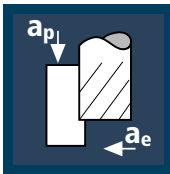
HRC < 48  
Нерж. сталь  
GG(G) Чугун  
Медь

| Пример:<br>заказа-N°. | Покрытие<br>U | Артикул-N°.<br>5330.138 | Ø-Код | Ø  | d1<br>e8 | d2<br>h6 | l1 | l2 | α  | z | UNICUT-4X POLYCHROM SERVICE |        |              |   |  |
|-----------------------|---------------|-------------------------|-------|--|----------|----------|----|----|----|---|-----------------------------|--------|--------------|---|--|
|                       |               |                         |       |  |          |          |    |    |    |   | 5330                        | U5330P | 5330 ReTool® |   |  |
|                       |               |                         |       |  |          |          |    |    |    |   |                             | 5230   | U5230        |   |  |
| NEW!                  |               |                         |       | .138*  | 2,0      | 2,0      | 42 | 6  | 0° | 3 | ?                           | ?      |              |   |  |
|                       |               |                         |       | .140   | 2,0      | 6,0      | 54 | 6  | 7° | 3 | ?                           | ?      | ?            |   |  |
| NEW!                  |               |                         |       | .158*  | 2,5      | 2,5      | 42 | 7  | 0° | 3 | ?                           | ?      |              |   |  |
|                       |               |                         |       | .160   | 2,5      | 6,0      | 54 | 6  | 7° | 3 | ?                           | ?      |              |   |  |
| NEW!                  |               |                         |       | .178*  | 3,0      | 3,0      | 45 | 7  | 0° | 3 | ?                           | ?      |              |   |  |
|                       |               |                         |       | .180   | 3,0      | 6,0      | 57 | 7  | 6° | 3 | ?                           | ?      | ?            |   |  |
| NEW!                  |               |                         |       | .198*  | 3,5      | 3,5      | 50 | 7  | 0° | 3 | ?                           | ?      |              |   |  |
|                       |               |                         |       | .200   | 3,5      | 6,0      | 57 | 7  | 5° | 3 | ?                           | ?      |              |   |  |
| NEW!                  |               |                         |       | .218*  | 4,0      | 4,0      | 50 | 8  | 0° | 3 | ?                           | ?      |              |   |  |
|                       |               |                         |       | .220   | 4,0      | 6,0      | 57 | 8  | 4° | 3 | ?                           | ?      | ?            |   |  |
| NEW!                  |               |                         |       | .238*  | 4,5      | 4,5      | 50 | 8  | 0° | 3 | ?                           | ?      |              |   |  |
|                       |               |                         |       | .240   | 4,5      | 6,0      | 57 | 8  | 4° | 3 | ?                           | ?      |              |   |  |
| NEW!                  |               |                         |       | .258*  | 5,0      | 5,0      | 50 | 10 | 0° | 3 | ?                           | ?      |              |   |  |
|                       |               |                         |       | .260   | 5,0      | 6,0      | 57 | 10 | 2° | 3 | ?                           | ?      | ?            |   |  |
| NEW!                  |               |                         |       | .278*  | 5,5      | 5,5      | 57 | 10 | 0° | 3 | ?                           | ?      |              |   |  |
|                       |               |                         |       | .280   | 5,5      | 6,0      | 57 | 10 | 2° | 3 | ?                           | ?      |              |   |  |
|                       |               |                         |       | .300   | 6,0      | 6,0      | 57 | 10 | 0° | 3 | ?                           | ?      | ?            |   |  |
|                       |               |                         |       | .322   | 6,5      | 8,0      | 63 | 13 | 3° | 3 | ?                           | ?      |              |   |  |
|                       |               |                         |       | .331   | 7,0      | 8,0      | 63 | 13 | 2° | 3 | ?                           | ?      | ?            |   |  |
|                       |               |                         |       | .362   | 7,5      | 8,0      | 63 | 16 | 1° | 3 | ?                           | ?      |              |   |  |
|                       |               |                         |       | .391   | 8,0      | 8,0      | 63 | 16 | 0° | 3 | ?                           | ?      | ?            | ? |  |
|                       |               |                         |       | .410   | 8,5      | 10,0     | 72 | 16 | 2° | 3 | ?                           | ?      |              | ? |  |
|                       |               |                         |       | .420   | 9,0      | 10,0     | 72 | 16 | 2° | 3 | ?                           | ?      | ?            | ? |  |
|                       |               |                         |       | .430   | 9,5      | 10,0     | 72 | 19 | 1° | 3 | ?                           | ?      |              | ? |  |
|                       |               |                         |       | .450   | 10,0     | 10,0     | 72 | 19 | 0° | 3 | ?                           | ?      | ?            | ? |  |
|                       |               |                         |       | .470   | 11,0     | 12,0     | 83 | 22 | 2° | 3 | ?                           | ?      |              | ? |  |
|                       |               |                         |       | .501   | 12,0     | 12,0     | 83 | 22 | 0° | 3 | ?                           | ?      | ?            | ? |  |
|                       |               |                         |       | * without clamping flat only<br>TRIBO coating on request |          |          |    |    |    |   |                             |        |              |   |  |

Base-X



5330



Применение

Сталь  
20 - 30 HRC



Сталь  
30 - 48 HRC



Чугун  
(серый /  
высокопрочный)



Холодноштамповые  
стали >12% Cr  
жаростойкие стали  
нержавеющие  
аустенитные стали



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|
| 13         | 3 | 120                       | 0.045                  | 19.5                   | 1.3                    | 2940       | 395                        |
| 14         | 3 | 120                       | 0.045                  | 21.0                   | 1.4                    | 2730       | 370                        |
| 15         | 3 | 120                       | 0.050                  | 22.5                   | 1.5                    | 2545       | 380                        |
| 16         | 3 | 120                       | 0.055                  | 24.0                   | 1.6                    | 2385       | 395                        |
| 18         | 3 | 120                       | 0.060                  | 27.0                   | 1.8                    | 2120       | 380                        |
| 20         | 3 | 120                       | 0.065                  | 30.0                   | 2.0                    | 1910       | 370                        |
| 22         | 3 | 120                       | 0.075                  | 33.0                   | 2.2                    | 1735       | 390                        |
| 25         | 3 | 120                       | 0.085                  | 37.5                   | 2.5                    | 1530       | 390                        |
| 13         | 3 | 80                        | 0.045                  | 19.5                   | 1.3                    | 1960       | 265                        |
| 14         | 3 | 80                        | 0.045                  | 21.0                   | 1.4                    | 1820       | 245                        |
| 15         | 3 | 80                        | 0.050                  | 22.5                   | 1.5                    | 1700       | 255                        |
| 16         | 3 | 80                        | 0.055                  | 24.0                   | 1.6                    | 1590       | 260                        |
| 18         | 3 | 80                        | 0.060                  | 27.0                   | 1.8                    | 1415       | 255                        |
| 20         | 3 | 80                        | 0.065                  | 30.0                   | 2.0                    | 1275       | 250                        |
| 22         | 3 | 80                        | 0.075                  | 33.0                   | 2.2                    | 1160       | 260                        |
| 25         | 3 | 80                        | 0.085                  | 37.5                   | 2.5                    | 1020       | 260                        |
| 13         | 3 | 160                       | 0.045                  | 19.5                   | 1.3                    | 3920       | 530                        |
| 14         | 3 | 160                       | 0.045                  | 21.0                   | 1.4                    | 3640       | 490                        |
| 15         | 3 | 160                       | 0.050                  | 22.5                   | 1.5                    | 3395       | 510                        |
| 16         | 3 | 160                       | 0.055                  | 24.0                   | 1.6                    | 3185       | 525                        |
| 18         | 3 | 160                       | 0.060                  | 27.0                   | 1.8                    | 2830       | 510                        |
| 20         | 3 | 160                       | 0.065                  | 30.0                   | 2.0                    | 2545       | 495                        |
| 22         | 3 | 160                       | 0.075                  | 33.0                   | 2.2                    | 2315       | 520                        |
| 25         | 3 | 160                       | 0.085                  | 37.5                   | 2.5                    | 2035       | 520                        |
| 13         | 3 | 60                        | 0.045                  | 19.5                   | 1.3                    | 1470       | 200                        |
| 14         | 3 | 60                        | 0.045                  | 21.0                   | 1.4                    | 1365       | 185                        |
| 15         | 3 | 60                        | 0.050                  | 22.5                   | 1.5                    | 1275       | 190                        |
| 16         | 3 | 60                        | 0.055                  | 24.0                   | 1.6                    | 1195       | 195                        |
| 18         | 3 | 60                        | 0.060                  | 27.0                   | 1.8                    | 1060       | 190                        |
| 20         | 3 | 60                        | 0.065                  | 30.0                   | 2.0                    | 955        | 185                        |
| 22         | 3 | 60                        | 0.075                  | 33.0                   | 2.2                    | 870        | 195                        |
| 25         | 3 | 60                        | 0.085                  | 37.5                   | 2.5                    | 765        | 195                        |

5330



Применение

Сталь  
20 - 30 HRC



Сталь  
30 - 48 HRC



Чугун  
(серый /  
высокопрочный)



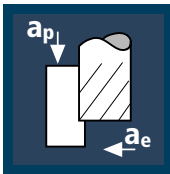
Холодноштамповые  
стали >12% Cr  
жаростойкие стали  
нержавеющие  
аустенитные стали



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 13         | 3 | 100                       | 0.035                  | 6.5                    | 13.0                   | 2450       | 255                        | 21.5                        |
| 14         | 3 | 100                       | 0.040                  | 7.0                    | 14.0                   | 2275       | 275                        | 27.0                        |
| 15         | 3 | 100                       | 0.040                  | 7.5                    | 15.0                   | 2120       | 255                        | 28.5                        |
| 16         | 3 | 100                       | 0.045                  | 8.0                    | 16.0                   | 1990       | 270                        | 34.5                        |
| 18         | 3 | 100                       | 0.050                  | 9.0                    | 18.0                   | 1770       | 265                        | 43.0                        |
| 20         | 3 | 100                       | 0.055                  | 10.0                   | 20.0                   | 1590       | 260                        | 52.0                        |
| 22         | 3 | 100                       | 0.060                  | 11.0                   | 22.0                   | 1445       | 260                        | 63.0                        |
| 25         | 3 | 100                       | 0.070                  | 12.5                   | 25.0                   | 1275       | 270                        | 84.5                        |
| 13         | 3 | 70                        | 0.035                  | 6.5                    | 13.0                   | 1715       | 180                        | 15.0                        |
| 14         | 3 | 70                        | 0.035                  | 7.0                    | 14.0                   | 1590       | 165                        | 16.0                        |
| 15         | 3 | 70                        | 0.040                  | 7.5                    | 15.0                   | 1485       | 180                        | 20.5                        |
| 16         | 3 | 70                        | 0.040                  | 8.0                    | 16.0                   | 1395       | 165                        | 21.0                        |
| 18         | 3 | 70                        | 0.045                  | 9.0                    | 18.0                   | 1240       | 165                        | 26.5                        |
| 20         | 3 | 70                        | 0.050                  | 10.0                   | 20.0                   | 1115       | 165                        | 33.0                        |
| 22         | 3 | 70                        | 0.055                  | 11.0                   | 22.0                   | 1015       | 165                        | 40.0                        |
| 25         | 3 | 70                        | 0.065                  | 12.5                   | 25.0                   | 890        | 175                        | 54.5                        |
| 13         | 3 | 120                       | 0.040                  | 6.5                    | 13.0                   | 2940       | 355                        | 30.0                        |
| 14         | 3 | 120                       | 0.045                  | 7.0                    | 14.0                   | 2730       | 370                        | 36.5                        |
| 15         | 3 | 120                       | 0.045                  | 7.5                    | 15.0                   | 2545       | 345                        | 39.0                        |
| 16         | 3 | 120                       | 0.050                  | 8.0                    | 16.0                   | 2385       | 360                        | 46.0                        |
| 18         | 3 | 120                       | 0.055                  | 9.0                    | 18.0                   | 2120       | 350                        | 56.5                        |
| 20         | 3 | 120                       | 0.060                  | 10.0                   | 20.0                   | 1910       | 345                        | 69.0                        |
| 22         | 3 | 120                       | 0.065                  | 11.0                   | 22.0                   | 1735       | 340                        | 82.5                        |
| 25         | 3 | 120                       | 0.075                  | 12.5                   | 25.0                   | 1530       | 345                        | 108.0                       |
| 13         | 3 | 40                        | 0.035                  | 6.5                    | 13.0                   | 980        | 105                        | 9.0                         |
| 14         | 3 | 40                        | 0.035                  | 7.0                    | 14.0                   | 910        | 95                         | 9.5                         |
| 15         | 3 | 40                        | 0.040                  | 7.5                    | 15.0                   | 850        | 100                        | 11.5                        |
| 16         | 3 | 40                        | 0.040                  | 8.0                    | 16.0                   | 795        | 95                         | 12.0                        |
| 18         | 3 | 40                        | 0.045                  | 9.0                    | 18.0                   | 705        | 95                         | 15.5                        |
| 20         | 3 | 40                        | 0.050                  | 10.0                   | 20.0                   | 635        | 95                         | 19.0                        |
| 22         | 3 | 40                        | 0.055                  | 11.0                   | 22.0                   | 580        | 95                         | 23.0                        |
| 25         | 3 | 40                        | 0.065                  | 12.5                   | 25.0                   | 510        | 100                        | 31.5                        |

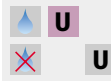


5332

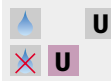


Применение

Сталь  
20 - 30 HRC



Сталь  
30 - 48 HRC



Чугун  
(серый /  
высокопрочный)



Холодноштамповые  
стали >12% Cr  
жаростойкие стали  
нержавеющие  
аустенитные стали



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|
| 6          | 3 | 120                       | 0.015                  | 15                     | 0.3                    | 6365       | 285                        |
| 7          | 3 | 120                       | 0.020                  | 17.5                   | 0.3                    | 5455       | 325                        |
| 8          | 3 | 120                       | 0.020                  | 20                     | 0.4                    | 4775       | 285                        |
| 9          | 3 | 120                       | 0.025                  | 22.5                   | 0.4                    | 4245       | 320                        |
| 10         | 3 | 120                       | 0.025                  | 25                     | 0.5                    | 3820       | 285                        |
| 12         | 3 | 120                       | 0.030                  | 30                     | 0.6                    | 3185       | 285                        |
| 16         | 3 | 120                       | 0.040                  | 40                     | 0.8                    | 2385       | 285                        |
| 20         | 3 | 120                       | 0.050                  | 50                     | 1                      | 1910       | 285                        |
| 6          | 3 | 80                        | 0.015                  | 15                     | 0.3                    | 4245       | 190                        |
| 7          | 3 | 80                        | 0.020                  | 17.5                   | 0.3                    | 3640       | 220                        |
| 8          | 3 | 80                        | 0.020                  | 20                     | 0.4                    | 3185       | 190                        |
| 9          | 3 | 80                        | 0.025                  | 22.5                   | 0.4                    | 2830       | 210                        |
| 10         | 3 | 80                        | 0.025                  | 25                     | 0.5                    | 2545       | 190                        |
| 12         | 3 | 80                        | 0.030                  | 30                     | 0.6                    | 2120       | 190                        |
| 16         | 3 | 80                        | 0.040                  | 40                     | 0.8                    | 1590       | 190                        |
| 20         | 3 | 80                        | 0.050                  | 50                     | 1                      | 1275       | 190                        |
| 6          | 3 | 160                       | 0.015                  | 15                     | 0.3                    | 8490       | 380                        |
| 7          | 3 | 160                       | 0.020                  | 17.5                   | 0.3                    | 7275       | 435                        |
| 8          | 3 | 160                       | 0.020                  | 20                     | 0.4                    | 6365       | 380                        |
| 9          | 3 | 160                       | 0.025                  | 22.5                   | 0.4                    | 5660       | 425                        |
| 10         | 3 | 160                       | 0.025                  | 25                     | 0.5                    | 5095       | 380                        |
| 12         | 3 | 160                       | 0.030                  | 30                     | 0.6                    | 4245       | 380                        |
| 16         | 3 | 160                       | 0.040                  | 40                     | 0.8                    | 3185       | 380                        |
| 20         | 3 | 160                       | 0.050                  | 50                     | 1                      | 2545       | 380                        |
| 6          | 3 | 60                        | 0.015                  | 15                     | 0.3                    | 3185       | 145                        |
| 7          | 3 | 60                        | 0.020                  | 17.5                   | 0.3                    | 2730       | 165                        |
| 8          | 3 | 60                        | 0.020                  | 20                     | 0.4                    | 2385       | 145                        |
| 9          | 3 | 60                        | 0.025                  | 22.5                   | 0.4                    | 2120       | 160                        |
| 10         | 3 | 60                        | 0.025                  | 25                     | 0.5                    | 1910       | 145                        |
| 12         | 3 | 60                        | 0.030                  | 30                     | 0.6                    | 1590       | 145                        |
| 16         | 3 | 60                        | 0.040                  | 40                     | 0.8                    | 1195       | 145                        |
| 20         | 3 | 60                        | 0.050                  | 50                     | 1                      | 955        | 145                        |

5332

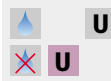


Применение

Сталь  
20 - 30 HRC



Сталь  
30 - 48 HRC



Чугун  
(серый /  
высокопрочный)



Холодноштамповые  
стали >12% Cr  
жаростойкие стали  
нержавеющие  
аустенитные стали



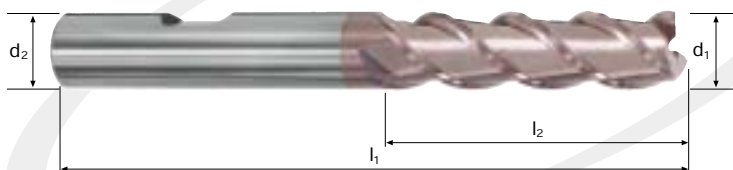
| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 6          | 3 | 100                       | 0.010                  | 1.2                    | 6                      | 5305       | 160                        | 1.0                         |
| 7          | 3 | 100                       | 0.015                  | 1.4                    | 7                      | 4545       | 205                        | 2.0                         |
| 8          | 3 | 100                       | 0.015                  | 1.6                    | 8                      | 3980       | 180                        | 2.5                         |
| 9          | 3 | 100                       | 0.020                  | 1.8                    | 9                      | 3535       | 210                        | 3.5                         |
| 10         | 3 | 100                       | 0.020                  | 2                      | 10                     | 3185       | 190                        | 4.0                         |
| 12         | 3 | 100                       | 0.025                  | 2.4                    | 12                     | 2655       | 200                        | 6.0                         |
| 16         | 3 | 100                       | 0.030                  | 3.2                    | 16                     | 1990       | 180                        | 9.0                         |
| 20         | 3 | 100                       | 0.040                  | 4                      | 20                     | 1590       | 190                        | 15.0                        |
| 6          | 3 | 70                        | 0.010                  | 1.2                    | 6                      | 3715       | 110                        | 1.0                         |
| 7          | 3 | 70                        | 0.015                  | 1.4                    | 7                      | 3185       | 145                        | 1.5                         |
| 8          | 3 | 70                        | 0.015                  | 1.6                    | 8                      | 2785       | 125                        | 1.5                         |
| 9          | 3 | 70                        | 0.015                  | 1.8                    | 9                      | 2475       | 110                        | 2.0                         |
| 10         | 3 | 70                        | 0.020                  | 2                      | 10                     | 2230       | 135                        | 2.5                         |
| 12         | 3 | 70                        | 0.020                  | 2.4                    | 12                     | 1855       | 110                        | 3.0                         |
| 16         | 3 | 70                        | 0.030                  | 3.2                    | 16                     | 1395       | 125                        | 6.5                         |
| 20         | 3 | 70                        | 0.035                  | 4                      | 20                     | 1115       | 115                        | 9.0                         |
| 6          | 3 | 120                       | 0.015                  | 1.2                    | 6                      | 6365       | 285                        | 2.0                         |
| 7          | 3 | 120                       | 0.015                  | 1.4                    | 7                      | 5455       | 245                        | 2.5                         |
| 8          | 3 | 120                       | 0.020                  | 1.6                    | 8                      | 4775       | 285                        | 3.5                         |
| 9          | 3 | 120                       | 0.020                  | 1.8                    | 9                      | 4245       | 255                        | 4.0                         |
| 10         | 3 | 120                       | 0.020                  | 2                      | 10                     | 3820       | 230                        | 4.5                         |
| 12         | 3 | 120                       | 0.025                  | 2.4                    | 12                     | 3185       | 240                        | 7.0                         |
| 16         | 3 | 120                       | 0.035                  | 3.2                    | 16                     | 2385       | 250                        | 13.0                        |
| 20         | 3 | 120                       | 0.045                  | 4                      | 20                     | 1910       | 260                        | 21.0                        |
| 6          | 3 | 40                        | 0.010                  | 1.2                    | 6                      | 2120       | 65                         | 0.5                         |
| 7          | 3 | 40                        | 0.015                  | 1.4                    | 7                      | 1820       | 80                         | 1.0                         |
| 8          | 3 | 40                        | 0.015                  | 1.6                    | 8                      | 1590       | 70                         | 1.0                         |
| 9          | 3 | 40                        | 0.015                  | 1.8                    | 9                      | 1415       | 65                         | 1.0                         |
| 10         | 3 | 40                        | 0.020                  | 2                      | 10                     | 1275       | 75                         | 1.5                         |
| 12         | 3 | 40                        | 0.020                  | 2.4                    | 12                     | 1060       | 65                         | 2.0                         |
| 16         | 3 | 40                        | 0.030                  | 3.2                    | 16                     | 795        | 70                         | 3.5                         |
| 20         | 3 | 40                        | 0.035                  | 4                      | 20                     | 635        | 65                         | 5.0                         |

# Фрезы универсальные

HM  
MG10

N

$\lambda$  45°  
 $\gamma$  15°



0,05-0,15  
45°

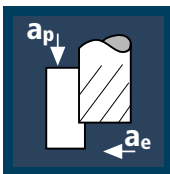
Предназначены для обработки:

- HRC < 48
- Нерж. сталь
- GG(G) Чугун
- Медь

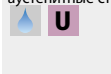
| Пример: заказа-№. |    |            |     |       |   |                   | UNICUT-4X | SERVICE |
|-------------------|----|------------|-----|-------|---|-------------------|-----------|---------|
| Покрытие          |    | Артикул-№. |     | Ø-Код |   | 5332 U5332 ReTool |           |         |
| Ø                 | d1 | d2         | l1  | l2    | Z |                   |           |         |
| Code              | e8 | h6         |     |       |   |                   |           |         |
| .300              | 6  | 6          | 63  | 19    | 3 | ?                 | ?         |         |
| .331              | 7  | 8          | 72  | 24    | 3 | ?                 | ?         |         |
| .391              | 8  | 8          | 72  | 28    | 3 | ?                 | ?         |         |
| .420              | 9  | 10         | 84  | 28    | 3 | ?                 | ?         |         |
| .450              | 10 | 10         | 84  | 34    | 3 | ?                 | ?         |         |
| .501              | 12 | 12         | 97  | 40    | 3 | ?                 | ?         |         |
| .610              | 16 | 16         | 108 | 48    | 3 | ?                 | ?         |         |
| .682              | 20 | 20         | 122 | 56    | 3 | ?                 | ?         |         |
|                   |    |            |     |       |   |                   |           |         |
|                   |    |            |     |       |   |                   |           |         |
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|                   |    |            |     |       |   |                   |           |         |
|                   |    |            |     |       |   |                   |           |         |
|                   |    |            |     |       |   |                   |           |         |
|                   |    |            |     |       |   |                   |           |         |

Base-X

5333



## Применение

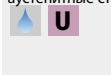
Сталь  
20 - 30 HRCСталь  
30 - 48 HRCЧугун  
(серый /  
высокопрочный)Холодноштамповые  
стали >12% Cr  
жаростойкие стали  
нержавеющие  
аустенитные стали

| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|
| 3          | 3 | 120                       | 0.010                  | 4.5                    | 0.2                    | 12735      | 380                        |
| 4          | 3 | 120                       | 0.010                  | 6.0                    | 0.2                    | 9550       | 285                        |
| 5          | 3 | 120                       | 0.015                  | 7.5                    | 0.3                    | 7640       | 345                        |
| 6          | 3 | 120                       | 0.015                  | 9.0                    | 0.3                    | 6365       | 285                        |
| 8          | 3 | 120                       | 0.020                  | 12.0                   | 0.4                    | 4775       | 285                        |
| 10         | 3 | 120                       | 0.025                  | 15.0                   | 0.5                    | 3820       | 285                        |
| 12         | 3 | 120                       | 0.030                  | 18.0                   | 0.6                    | 3185       | 285                        |
| 16         | 3 | 120                       | 0.040                  | 24.0                   | 0.8                    | 2385       | 285                        |
| 3          | 3 | 80                        | 0.010                  | 4.5                    | 0.2                    | 8490       | 255                        |
| 4          | 3 | 80                        | 0.010                  | 6.0                    | 0.2                    | 6365       | 190                        |
| 5          | 3 | 80                        | 0.015                  | 7.5                    | 0.3                    | 5095       | 230                        |
| 6          | 3 | 80                        | 0.015                  | 9.0                    | 0.3                    | 4245       | 190                        |
| 8          | 3 | 80                        | 0.020                  | 12.0                   | 0.4                    | 3185       | 190                        |
| 10         | 3 | 80                        | 0.025                  | 15.0                   | 0.5                    | 2545       | 190                        |
| 12         | 3 | 80                        | 0.030                  | 18.0                   | 0.6                    | 2120       | 190                        |
| 16         | 3 | 80                        | 0.040                  | 24.0                   | 0.8                    | 1590       | 190                        |
| 3          | 3 | 160                       | 0.010                  | 4.5                    | 0.2                    | 16975      | 510                        |
| 4          | 3 | 160                       | 0.010                  | 6.0                    | 0.2                    | 12735      | 380                        |
| 5          | 3 | 160                       | 0.015                  | 7.5                    | 0.3                    | 10185      | 460                        |
| 6          | 3 | 160                       | 0.015                  | 9.0                    | 0.3                    | 8490       | 380                        |
| 8          | 3 | 160                       | 0.020                  | 12.0                   | 0.4                    | 6365       | 380                        |
| 10         | 3 | 160                       | 0.025                  | 15.0                   | 0.5                    | 5095       | 380                        |
| 12         | 3 | 160                       | 0.030                  | 18.0                   | 0.6                    | 4245       | 380                        |
| 16         | 3 | 160                       | 0.040                  | 24.0                   | 0.8                    | 3185       | 380                        |
| 3          | 3 | 60                        | 0.010                  | 4.5                    | 0.2                    | 6365       | 190                        |
| 4          | 3 | 60                        | 0.010                  | 6.0                    | 0.2                    | 4775       | 145                        |
| 5          | 3 | 60                        | 0.015                  | 7.5                    | 0.3                    | 3820       | 170                        |
| 6          | 3 | 60                        | 0.015                  | 9.0                    | 0.3                    | 3185       | 145                        |
| 8          | 3 | 60                        | 0.020                  | 12.0                   | 0.4                    | 2385       | 145                        |
| 10         | 3 | 60                        | 0.025                  | 15.0                   | 0.5                    | 1910       | 145                        |
| 12         | 3 | 60                        | 0.030                  | 18.0                   | 0.6                    | 1590       | 145                        |
| 16         | 3 | 60                        | 0.040                  | 24.0                   | 0.8                    | 1195       | 145                        |

5333

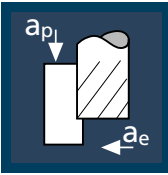
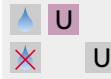
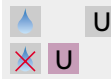


## Применение

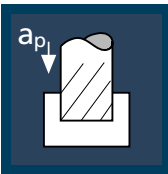
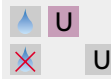
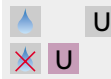
Сталь  
20 - 30 HRCСталь  
30 - 48 HRCЧугун  
(серый /  
высокопрочный)Холодноштамповые  
стали >12% Cr  
жаростойкие стали  
нержавеющие  
аустенитные стали

| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 3          | 3 | 100                       | 0.005                  | 0.6                    | 3                      | 10610      | 160                        | 0.3                         |
| 4          | 3 | 100                       | 0.010                  | 0.8                    | 4                      | 7960       | 240                        | 0.8                         |
| 5          | 3 | 100                       | 0.010                  | 1.0                    | 5                      | 6365       | 190                        | 1.0                         |
| 6          | 3 | 100                       | 0.010                  | 1.2                    | 6                      | 5305       | 160                        | 1.2                         |
| 8          | 3 | 100                       | 0.015                  | 1.6                    | 8                      | 3980       | 180                        | 2.3                         |
| 10         | 3 | 100                       | 0.020                  | 2.0                    | 10                     | 3185       | 190                        | 3.8                         |
| 12         | 3 | 100                       | 0.025                  | 2.4                    | 12                     | 2655       | 200                        | 5.8                         |
| 16         | 3 | 100                       | 0.030                  | 3.2                    | 16                     | 1990       | 180                        | 9.2                         |
| 3          | 3 | 70                        | 0.005                  | 0.6                    | 3                      | 7425       | 110                        | 0.2                         |
| 4          | 3 | 70                        | 0.005                  | 0.8                    | 4                      | 5570       | 85                         | 0.3                         |
| 5          | 3 | 70                        | 0.010                  | 1.0                    | 5                      | 4455       | 135                        | 0.7                         |
| 6          | 3 | 70                        | 0.010                  | 1.2                    | 6                      | 3715       | 110                        | 0.8                         |
| 8          | 3 | 70                        | 0.015                  | 1.6                    | 8                      | 2785       | 125                        | 1.6                         |
| 10         | 3 | 70                        | 0.020                  | 2.0                    | 10                     | 2230       | 135                        | 2.7                         |
| 12         | 3 | 70                        | 0.020                  | 2.4                    | 12                     | 1855       | 110                        | 3.2                         |
| 16         | 3 | 70                        | 0.030                  | 3.2                    | 16                     | 1395       | 125                        | 6.4                         |
| 3          | 3 | 120                       | 0.005                  | 0.6                    | 3                      | 12735      | 190                        | 0.3                         |
| 4          | 3 | 120                       | 0.010                  | 0.8                    | 4                      | 9550       | 285                        | 0.9                         |
| 5          | 3 | 120                       | 0.010                  | 1.0                    | 5                      | 7640       | 230                        | 1.2                         |
| 6          | 3 | 120                       | 0.015                  | 1.2                    | 6                      | 6365       | 285                        | 2.1                         |
| 8          | 3 | 120                       | 0.020                  | 1.6                    | 8                      | 4775       | 285                        | 3.6                         |
| 10         | 3 | 120                       | 0.020                  | 2.0                    | 10                     | 3820       | 230                        | 4.6                         |
| 12         | 3 | 120                       | 0.025                  | 2.4                    | 12                     | 3185       | 240                        | 6.9                         |
| 16         | 3 | 120                       | 0.035                  | 3.2                    | 16                     | 2385       | 250                        | 12.8                        |
| 3          | 3 | 40                        | 0.005                  | 0.6                    | 3                      | 4245       | 65                         | 0.1                         |
| 4          | 3 | 40                        | 0.005                  | 0.8                    | 4                      | 3185       | 50                         | 0.2                         |
| 5          | 3 | 40                        | 0.010                  | 1.0                    | 5                      | 2545       | 75                         | 0.4                         |
| 6          | 3 | 40                        | 0.010                  | 1.2                    | 6                      | 2120       | 65                         | 0.5                         |
| 8          | 3 | 40                        | 0.015                  | 1.6                    | 8                      | 1590       | 70                         | 0.9                         |
| 10         | 3 | 40                        | 0.020                  | 2.0                    | 10                     | 1275       | 75                         | 1.5                         |
| 12         | 3 | 40                        | 0.020                  | 2.4                    | 12                     | 1060       | 65                         | 1.9                         |
| 16         | 3 | 40                        | 0.030                  | 3.2                    | 16                     | 795        | 70                         | 3.6                         |



**5393****Применение**Сталь  
20 - 30 HRCСталь  
30 - 48 HRCЧугун  
(серый /  
высокопрочный)Холодноштамповые  
стали >12% Cr  
жаростойкие стали  
нержавеющие  
аустенитные стали

| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 3          | 3 | 120                       | 0.010                  | 4.5                    | 0.1                    | 12735      | 380                        | 0.1                         |
| 4          | 3 | 120                       | 0.010                  | 6.0                    | 0.1                    | 9550       | 285                        | 0.2                         |
| 5          | 3 | 120                       | 0.015                  | 7.5                    | 0.1                    | 7640       | 345                        | 0.3                         |
| 6          | 3 | 120                       | 0.015                  | 9.0                    | 0.2                    | 6365       | 285                        | 0.4                         |
| 8          | 3 | 120                       | 0.020                  | 12.0                   | 0.2                    | 4775       | 285                        | 0.7                         |
| 10         | 3 | 120                       | 0.025                  | 15.0                   | 0.3                    | 3820       | 285                        | 1.1                         |
| 12         | 3 | 120                       | 0.030                  | 18.0                   | 0.3                    | 3185       | 285                        | 1.5                         |
| 16         | 3 | 120                       | 0.040                  | 24.0                   | 0.4                    | 2385       | 285                        | 2.7                         |
| 3          | 3 | 80                        | 0.010                  | 4.5                    | 0.1                    | 8490       | 255                        | 0.1                         |
| 4          | 3 | 80                        | 0.010                  | 6.0                    | 0.1                    | 6365       | 190                        | 0.1                         |
| 5          | 3 | 80                        | 0.015                  | 7.5                    | 0.1                    | 5095       | 230                        | 0.0                         |
| 6          | 3 | 80                        | 0.015                  | 9.0                    | 0.2                    | 4245       | 190                        | 0.5                         |
| 8          | 3 | 80                        | 0.020                  | 12.0                   | 0.2                    | 3185       | 190                        | 0.5                         |
| 10         | 3 | 80                        | 0.025                  | 15.0                   | 0.3                    | 2545       | 190                        | 0.5                         |
| 12         | 3 | 80                        | 0.030                  | 18.0                   | 0.3                    | 2120       | 190                        | 1.0                         |
| 16         | 3 | 80                        | 0.040                  | 24.0                   | 0.4                    | 1590       | 190                        | 2.0                         |
| 3          | 3 | 160                       | 0.010                  | 4.5                    | 0.1                    | 16975      | 510                        | 0.2                         |
| 4          | 3 | 160                       | 0.010                  | 6.0                    | 0.1                    | 12735      | 380                        | 0.2                         |
| 5          | 3 | 160                       | 0.015                  | 7.5                    | 0.1                    | 10185      | 460                        | 0.4                         |
| 6          | 3 | 160                       | 0.015                  | 9.0                    | 0.2                    | 8490       | 380                        | 0.5                         |
| 8          | 3 | 160                       | 0.020                  | 12.0                   | 0.2                    | 6365       | 380                        | 0.9                         |
| 10         | 3 | 160                       | 0.025                  | 15.0                   | 0.3                    | 5095       | 380                        | 1.4                         |
| 12         | 3 | 160                       | 0.030                  | 18.0                   | 0.3                    | 4245       | 380                        | 2.1                         |
| 16         | 3 | 160                       | 0.040                  | 24.0                   | 0.4                    | 3185       | 380                        | 3.6                         |
| 3          | 3 | 60                        | 0.010                  | 4.5                    | 0.1                    | 6365       | 190                        | 0.1                         |
| 4          | 3 | 60                        | 0.010                  | 6.0                    | 0.1                    | 4775       | 145                        | 0.1                         |
| 5          | 3 | 60                        | 0.015                  | 7.5                    | 0.1                    | 3820       | 170                        | 0.2                         |
| 6          | 3 | 60                        | 0.015                  | 9.0                    | 0.2                    | 3185       | 145                        | 0.2                         |
| 8          | 3 | 60                        | 0.020                  | 12.0                   | 0.2                    | 2385       | 145                        | 0.3                         |
| 10         | 3 | 60                        | 0.025                  | 15.0                   | 0.3                    | 1910       | 145                        | 0.5                         |
| 12         | 3 | 60                        | 0.030                  | 18.0                   | 0.3                    | 1590       | 145                        | 0.8                         |
| 16         | 3 | 60                        | 0.040                  | 24.0                   | 0.4                    | 1195       | 145                        | 1.4                         |

**5393****Применение**Сталь  
20 - 30 HRCСталь  
30 - 48 HRCЧугун  
(серый /  
высокопрочный)Холодноштамповые  
стали >12% Cr  
жаростойкие стали  
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аустенитные стали

| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 3          | 3 | 100                       | 0.005                  | 0.3                    | 3                      | 10610      | 160                        | 0.1                         |
| 4          | 3 | 100                       | 0.010                  | 0.4                    | 4                      | 7960       | 240                        | 0.4                         |
| 5          | 3 | 100                       | 0.010                  | 0.5                    | 5                      | 6365       | 190                        | 0.5                         |
| 6          | 3 | 100                       | 0.010                  | 0.6                    | 6                      | 5305       | 160                        | 0.6                         |
| 8          | 3 | 100                       | 0.015                  | 0.8                    | 8                      | 3980       | 180                        | 1.2                         |
| 10         | 3 | 100                       | 0.020                  | 1.0                    | 10                     | 3185       | 190                        | 1.9                         |
| 12         | 3 | 100                       | 0.025                  | 1.2                    | 12                     | 2655       | 200                        | 2.9                         |
| 16         | 3 | 100                       | 0.030                  | 1.6                    | 16                     | 1990       | 180                        | 4.6                         |
| 3          | 3 | 70                        | 0.005                  | 0.3                    | 3                      | 7425       | 110                        | 0.1                         |
| 4          | 3 | 70                        | 0.005                  | 0.4                    | 4                      | 5570       | 85                         | 0.1                         |
| 5          | 3 | 70                        | 0.010                  | 0.5                    | 5                      | 4455       | 135                        | 0.3                         |
| 6          | 3 | 70                        | 0.010                  | 0.6                    | 6                      | 3715       | 110                        | 0.4                         |
| 8          | 3 | 70                        | 0.015                  | 0.8                    | 8                      | 2785       | 125                        | 0.8                         |
| 10         | 3 | 70                        | 0.020                  | 1.0                    | 10                     | 2230       | 135                        | 1.4                         |
| 12         | 3 | 70                        | 0.020                  | 1.2                    | 12                     | 1855       | 110                        | 1.6                         |
| 16         | 3 | 70                        | 0.030                  | 1.6                    | 16                     | 1395       | 125                        | 3.2                         |
| 3          | 3 | 120                       | 0.005                  | 0.3                    | 3                      | 12735      | 190                        | 0.2                         |
| 4          | 3 | 120                       | 0.010                  | 0.4                    | 4                      | 9550       | 285                        | 0.5                         |
| 5          | 3 | 120                       | 0.010                  | 0.5                    | 5                      | 7640       | 230                        | 0.6                         |
| 6          | 3 | 120                       | 0.015                  | 0.6                    | 6                      | 6365       | 285                        | 1.0                         |
| 8          | 3 | 120                       | 0.020                  | 0.8                    | 8                      | 4775       | 285                        | 1.8                         |
| 10         | 3 | 120                       | 0.020                  | 1.0                    | 10                     | 3820       | 230                        | 2.3                         |
| 12         | 3 | 120                       | 0.025                  | 1.2                    | 12                     | 3185       | 240                        | 3.5                         |
| 16         | 3 | 120                       | 0.035                  | 1.6                    | 16                     | 2385       | 250                        | 6.4                         |
| 3          | 3 | 40                        | 0.005                  | 0.3                    | 3                      | 4245       | 65                         | 0.1                         |
| 4          | 3 | 40                        | 0.005                  | 0.4                    | 4                      | 3185       | 50                         | 0.1                         |
| 5          | 3 | 40                        | 0.010                  | 0.5                    | 5                      | 2545       | 75                         | 0.2                         |
| 6          | 3 | 40                        | 0.010                  | 0.6                    | 6                      | 2120       | 65                         | 0.2                         |
| 8          | 3 | 40                        | 0.015                  | 0.8                    | 8                      | 1590       | 70                         | 0.4                         |
| 10         | 3 | 40                        | 0.020                  | 1.0                    | 10                     | 1275       | 75                         | 0.8                         |
| 12         | 3 | 40                        | 0.020                  | 1.2                    | 12                     | 1060       | 65                         | 0.9                         |
| 16         | 3 | 40                        | 0.030                  | 1.6                    | 16                     | 795        | 70                         | 1.8                         |

# Фрезы универсальные

**NEW!**

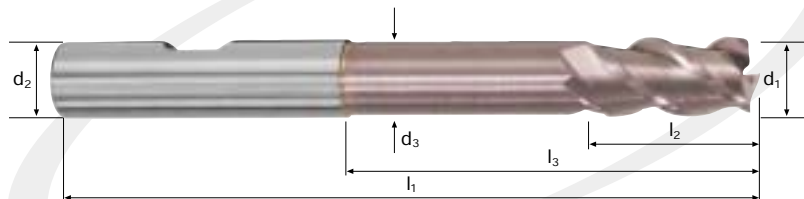
HM  
MG10 N

$\lambda$  45°  
 $\gamma$  15°



DIN  
6535  
HB

0,05-0,15  
45°



Предназначены для обработки:

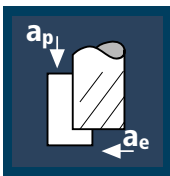
- HRC < 48**
- Нерж. сталь
- GG(G) Чугун
- Медь

| Пример: заказа-№. |    | Покр. U | Артикул-№. 5393 | Ф-Код .180 |    |    |          |   | UNICUT-4X                | SERVICE |
|-------------------|----|---------|-----------------|------------|----|----|----------|---|--------------------------|---------|
| $\varnothing$     | d1 | d2      | d3              | l1         | l2 | l3 | $\alpha$ | z | U5393 ReTool с покрытием |         |
| Code              | e8 | h6      |                 |            |    |    |          |   |                          |         |
| .180              | 3  | 6       | 2,8             | 68         | 7  | 16 | 4°       | 3 | ?                        |         |
| .220              | 4  | 6       | 3,7             | 68         | 8  | 18 | 3°       | 3 | ?                        |         |
| .260              | 5  | 6       | 4,6             | 68         | 10 | 21 | 2°       | 3 | ?                        |         |
| .300              | 6  | 6       | 5,5             | 68         | 13 | 31 | 0°       | 3 | ?                        |         |
| .391              | 8  | 8       | 7,4             | 88         | 16 | 51 | 0°       | 3 | ?                        | ?       |
| .450              | 10 | 10      | 9,2             | 95         | 19 | 54 | 0°       | 3 | ?                        | ?       |
| .501              | 12 | 12      | 11,0            | 110        | 22 | 64 | 0°       | 3 | ?                        | ?       |
| .610              | 16 | 16      | 15,0            | 123        | 26 | 74 | 0°       | 3 | ?                        | ?       |
|                   |    |         |                 |            |    |    |          |   |                          |         |
|                   |    |         |                 |            |    |    |          |   |                          |         |
|                   |    |         |                 |            |    |    |          |   |                          |         |
|                   |    |         |                 |            |    |    |          |   |                          |         |
|                   |    |         |                 |            |    |    |          |   |                          |         |
|                   |    |         |                 |            |    |    |          |   |                          |         |
|                   |    |         |                 |            |    |    |          |   |                          |         |
|                   |    |         |                 |            |    |    |          |   |                          |         |
|                   |    |         |                 |            |    |    |          |   |                          |         |
|                   |    |         |                 |            |    |    |          |   |                          |         |
|                   |    |         |                 |            |    |    |          |   |                          |         |
|                   |    |         |                 |            |    |    |          |   |                          |         |
|                   |    |         |                 |            |    |    |          |   |                          |         |
|                   |    |         |                 |            |    |    |          |   |                          |         |
|                   |    |         |                 |            |    |    |          |   |                          |         |
|                   |    |         |                 |            |    |    |          |   |                          |         |

Base-X

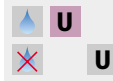


5400

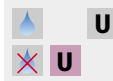


Применение

Сталь  
20 - 30 HRC



Сталь  
30 - 48 HRC



Чугун  
(серый /  
высокопрочный)



Холодноштамповые  
стали >12% Cr  
жаростойкие стали  
нержавеющие  
аустенитные стали



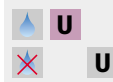
| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 3          | 2 | 120                       | 0.010                  | 3                      | 1.5                    | 12735      | 255                        | 1.0                         |
| 4          | 2 | 120                       | 0.015                  | 4                      | 2                      | 9550       | 285                        | 2.5                         |
| 5          | 2 | 120                       | 0.020                  | 5                      | 2.5                    | 7640       | 305                        | 4.0                         |
| 6          | 2 | 120                       | 0.025                  | 6                      | 3                      | 6365       | 320                        | 6.0                         |
| 8          | 2 | 120                       | 0.030                  | 8                      | 4                      | 4775       | 285                        | 9.0                         |
| 10         | 2 | 120                       | 0.040                  | 10                     | 5                      | 3820       | 305                        | 15.5                        |
| 12         | 2 | 120                       | 0.050                  | 12                     | 6                      | 3185       | 320                        | 23.0                        |
| 16         | 2 | 120                       | 0.065                  | 16                     | 8                      | 2385       | 310                        | 39.5                        |
| 20         | 2 | 120                       | 0.080                  | 20                     | 10                     | 1910       | 305                        | 61.0                        |
| 3          | 2 | 80                        | 0.010                  | 3                      | 1.5                    | 8490       | 170                        | 1.0                         |
| 4          | 2 | 80                        | 0.015                  | 4                      | 2                      | 6365       | 190                        | 1.5                         |
| 5          | 2 | 80                        | 0.020                  | 5                      | 2.5                    | 5095       | 205                        | 2.5                         |
| 6          | 2 | 80                        | 0.020                  | 6                      | 3                      | 4245       | 170                        | 3.0                         |
| 8          | 2 | 80                        | 0.030                  | 8                      | 4                      | 3185       | 190                        | 6.0                         |
| 10         | 2 | 80                        | 0.035                  | 10                     | 5                      | 2545       | 180                        | 9.0                         |
| 12         | 2 | 80                        | 0.045                  | 12                     | 6                      | 2120       | 190                        | 13.5                        |
| 16         | 2 | 80                        | 0.060                  | 16                     | 8                      | 1590       | 190                        | 24.5                        |
| 20         | 2 | 80                        | 0.070                  | 20                     | 10                     | 1275       | 180                        | 36.0                        |
| 3          | 2 | 160                       | 0.015                  | 3                      | 1.5                    | 16975      | 510                        | 2.5                         |
| 4          | 2 | 160                       | 0.020                  | 4                      | 2                      | 12735      | 510                        | 4.0                         |
| 5          | 2 | 160                       | 0.020                  | 5                      | 2.5                    | 10185      | 405                        | 5.0                         |
| 6          | 2 | 160                       | 0.025                  | 6                      | 3                      | 8490       | 425                        | 7.5                         |
| 8          | 2 | 160                       | 0.035                  | 8                      | 4                      | 6365       | 445                        | 14.0                        |
| 10         | 2 | 160                       | 0.045                  | 10                     | 5                      | 5095       | 460                        | 23.0                        |
| 12         | 2 | 160                       | 0.055                  | 12                     | 6                      | 4245       | 465                        | 33.5                        |
| 16         | 2 | 160                       | 0.070                  | 16                     | 8                      | 3185       | 445                        | 57.0                        |
| 20         | 2 | 160                       | 0.090                  | 20                     | 10                     | 2545       | 460                        | 92.0                        |
| 3          | 2 | 60                        | 0.010                  | 3                      | 1.5                    | 6365       | 125                        | 0.5                         |
| 4          | 2 | 60                        | 0.015                  | 4                      | 2                      | 4775       | 145                        | 1.0                         |
| 5          | 2 | 60                        | 0.020                  | 5                      | 2.5                    | 3820       | 155                        | 2.0                         |
| 6          | 2 | 60                        | 0.020                  | 6                      | 3                      | 3185       | 125                        | 2.5                         |
| 8          | 2 | 60                        | 0.030                  | 8                      | 4                      | 2385       | 145                        | 4.5                         |
| 10         | 2 | 60                        | 0.035                  | 10                     | 5                      | 1910       | 135                        | 7.0                         |
| 12         | 2 | 60                        | 0.045                  | 12                     | 6                      | 1590       | 145                        | 10.5                        |
| 16         | 2 | 60                        | 0.060                  | 16                     | 8                      | 1195       | 145                        | 18.5                        |
| 20         | 2 | 60                        | 0.070                  | 20                     | 10                     | 955        | 135                        | 27.0                        |

5400

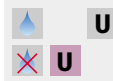


Применение

Сталь  
20 - 30 HRC



Сталь  
30 - 48 HRC



Чугун  
(серый /  
высокопрочный)



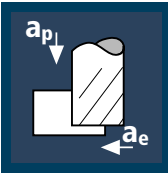
Холодноштамповые  
стали >12% Cr  
жаростойкие стали  
нержавеющие  
аустенитные стали



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 3          | 2 | 100                       | 0.010                  | 1.5                    | 3                      | 10610      | 210                        | 1.0                         |
| 4          | 2 | 100                       | 0.010                  | 2                      | 4                      | 7960       | 160                        | 1.5                         |
| 5          | 2 | 100                       | 0.015                  | 2.5                    | 5                      | 6365       | 190                        | 2.5                         |
| 6          | 2 | 100                       | 0.015                  | 3                      | 6                      | 5305       | 160                        | 3.0                         |
| 8          | 2 | 100                       | 0.020                  | 4                      | 8                      | 3980       | 160                        | 5.0                         |
| 10         | 2 | 100                       | 0.030                  | 5                      | 10                     | 3185       | 190                        | 9.5                         |
| 12         | 2 | 100                       | 0.035                  | 6                      | 12                     | 2655       | 185                        | 13.5                        |
| 16         | 2 | 100                       | 0.045                  | 8                      | 16                     | 1990       | 180                        | 23.0                        |
| 20         | 2 | 100                       | 0.055                  | 10                     | 20                     | 1590       | 175                        | 35.0                        |
| 3          | 2 | 70                        | 0.010                  | 1.5                    | 3                      | 7425       | 150                        | 0.5                         |
| 4          | 2 | 70                        | 0.010                  | 2                      | 4                      | 5570       | 110                        | 1.0                         |
| 5          | 2 | 70                        | 0.015                  | 2.5                    | 5                      | 4455       | 135                        | 1.5                         |
| 6          | 2 | 70                        | 0.015                  | 3                      | 6                      | 3715       | 110                        | 2.0                         |
| 8          | 2 | 70                        | 0.020                  | 4                      | 8                      | 2785       | 110                        | 3.5                         |
| 10         | 2 | 70                        | 0.025                  | 5                      | 10                     | 2230       | 110                        | 5.5                         |
| 12         | 2 | 70                        | 0.030                  | 6                      | 12                     | 1855       | 110                        | 8.0                         |
| 16         | 2 | 70                        | 0.040                  | 8                      | 16                     | 1395       | 110                        | 14.0                        |
| 20         | 2 | 70                        | 0.050                  | 10                     | 20                     | 1115       | 110                        | 22.0                        |
| 3          | 2 | 120                       | 0.010                  | 1.5                    | 3                      | 12735      | 255                        | 1.0                         |
| 4          | 2 | 120                       | 0.010                  | 2                      | 4                      | 9550       | 190                        | 1.5                         |
| 5          | 2 | 120                       | 0.015                  | 2.5                    | 5                      | 7640       | 230                        | 3.0                         |
| 6          | 2 | 120                       | 0.020                  | 3                      | 6                      | 6365       | 255                        | 4.5                         |
| 8          | 2 | 120                       | 0.025                  | 4                      | 8                      | 4775       | 240                        | 7.5                         |
| 10         | 2 | 120                       | 0.030                  | 5                      | 10                     | 3820       | 230                        | 11.5                        |
| 12         | 2 | 120                       | 0.035                  | 6                      | 12                     | 3185       | 225                        | 16.0                        |
| 16         | 2 | 120                       | 0.050                  | 8                      | 16                     | 2385       | 240                        | 30.5                        |
| 20         | 2 | 120                       | 0.060                  | 10                     | 20                     | 1910       | 230                        | 46.0                        |
| 3          | 2 | 40                        | 0.010                  | 1.5                    | 3                      | 4245       | 85                         | 0.5                         |
| 4          | 2 | 40                        | 0.010                  | 2                      | 4                      | 3185       | 65                         | 0.5                         |
| 5          | 2 | 40                        | 0.015                  | 2.5                    | 5                      | 2545       | 75                         | 1.0                         |
| 6          | 2 | 40                        | 0.015                  | 3                      | 6                      | 2120       | 65                         | 1.0                         |
| 8          | 2 | 40                        | 0.020                  | 4                      | 8                      | 1590       | 65                         | 2.0                         |
| 10         | 2 | 40                        | 0.025                  | 5                      | 10                     | 1275       | 65                         | 3.5                         |
| 12         | 2 | 40                        | 0.030                  | 6                      | 12                     | 1060       | 65                         | 4.5                         |
| 16         | 2 | 40                        | 0.040                  | 8                      | 16                     | 795        | 65                         | 8.5                         |
| 20         | 2 | 40                        | 0.050                  | 10                     | 20                     | 635        | 65                         | 13.0                        |



5500



Применение

Литейные сплавы алюминия



Медь чистая



Литейные сплавы меди и бронзы



| d1 [mm] | z | v <sub>c</sub> [m/min] | f <sub>z</sub> [mm] | a <sub>p</sub> [mm] | a <sub>e</sub> [mm] | n [min <sup>-1</sup> ] | v <sub>f</sub> [mm/min] | Q [cm <sup>3</sup> /min] |
|---------|---|------------------------|---------------------|---------------------|---------------------|------------------------|-------------------------|--------------------------|
| 3       | 2 | 480                    | 0.040               | 1.5                 | 1.5                 | 50930                  | 4075                    | 9.0                      |
| 4       | 2 | 480                    | 0.050               | 2                   | 2                   | 38200                  | 3820                    | 15.5                     |
| 5       | 2 | 480                    | 0.065               | 2.5                 | 2.5                 | 30560                  | 3975                    | 25.0                     |
| 6       | 2 | 480                    | 0.075               | 3                   | 3                   | 25465                  | 3820                    | 34.5                     |
| 8       | 2 | 480                    | 0.100               | 4                   | 4                   | 19100                  | 3820                    | 61.0                     |
| 10      | 2 | 480                    | 0.125               | 5                   | 5                   | 15280                  | 3820                    | 95.5                     |
| 12      | 2 | 480                    | 0.150               | 6                   | 6                   | 12735                  | 3820                    | 137.5                    |
| 16      | 2 | 480                    | 0.200               | 8                   | 8                   | 9550                   | 3820                    | 244.5                    |
| 20      | 2 | 480                    | 0.250               | 10                  | 10                  | 7640                   | 3820                    | 382.0                    |
| 3       | 2 | 210                    | 0.035               | 1.5                 | 1.5                 | 22280                  | 1560                    | 3.5                      |
| 4       | 2 | 210                    | 0.045               | 2                   | 2                   | 16710                  | 1505                    | 6.0                      |
| 5       | 2 | 210                    | 0.055               | 2.5                 | 2.5                 | 13370                  | 1470                    | 9.0                      |
| 6       | 2 | 210                    | 0.070               | 3                   | 3                   | 11140                  | 1560                    | 14.0                     |
| 8       | 2 | 210                    | 0.090               | 4                   | 4                   | 8355                   | 1505                    | 24.0                     |
| 10      | 2 | 210                    | 0.115               | 5                   | 5                   | 6685                   | 1540                    | 38.5                     |
| 12      | 2 | 210                    | 0.135               | 6                   | 6                   | 5570                   | 1505                    | 54.0                     |
| 16      | 2 | 210                    | 0.180               | 8                   | 8                   | 4180                   | 1505                    | 96.5                     |
| 20      | 2 | 210                    | 0.225               | 10                  | 10                  | 3340                   | 1505                    | 150.5                    |
| 3       | 2 | 180                    | 0.030               | 1.5                 | 1.5                 | 19100                  | 1145                    | 2.5                      |
| 4       | 2 | 180                    | 0.040               | 2                   | 2                   | 14325                  | 1145                    | 4.5                      |
| 5       | 2 | 180                    | 0.050               | 2.5                 | 2.5                 | 11460                  | 1145                    | 7.0                      |
| 6       | 2 | 180                    | 0.060               | 3                   | 3                   | 9550                   | 1145                    | 10.5                     |
| 8       | 2 | 180                    | 0.080               | 4                   | 4                   | 7160                   | 1145                    | 18.5                     |
| 10      | 2 | 180                    | 0.100               | 5                   | 5                   | 5730                   | 1145                    | 28.5                     |
| 12      | 2 | 180                    | 0.120               | 6                   | 6                   | 4775                   | 1145                    | 41.0                     |
| 16      | 2 | 180                    | 0.160               | 8                   | 8                   | 3580                   | 1145                    | 73.5                     |
| 20      | 2 | 180                    | 0.200               | 10                  | 10                  | 2865                   | 1145                    | 114.5                    |

5500



Применение

Литейные сплавы алюминия



Медь чистая



Литейные сплавы меди и бронзы



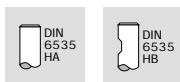
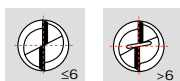
| d1 [mm] | z | v <sub>c</sub> [m/min] | f <sub>z</sub> [mm] | a <sub>p</sub> [mm] | a <sub>e</sub> [mm] | n [min <sup>-1</sup> ] | v <sub>f</sub> [mm/min] | Q [cm <sup>3</sup> /min] |
|---------|---|------------------------|---------------------|---------------------|---------------------|------------------------|-------------------------|--------------------------|
| 3       | 2 | 480                    | 0.025               | 1.5                 | 3                   | 50930                  | 2545                    | 11.5                     |
| 4       | 2 | 480                    | 0.035               | 2                   | 4                   | 38200                  | 2675                    | 21.5                     |
| 5       | 2 | 480                    | 0.040               | 2.5                 | 5                   | 30560                  | 2445                    | 30.5                     |
| 6       | 2 | 480                    | 0.050               | 3                   | 6                   | 25465                  | 2545                    | 46.0                     |
| 8       | 2 | 480                    | 0.065               | 4                   | 8                   | 19100                  | 2485                    | 79.5                     |
| 10      | 2 | 480                    | 0.085               | 5                   | 10                  | 15280                  | 2600                    | 130.0                    |
| 12      | 2 | 480                    | 0.100               | 6                   | 12                  | 12735                  | 2545                    | 183.0                    |
| 16      | 2 | 480                    | 0.135               | 8                   | 16                  | 9550                   | 2580                    | 330.0                    |
| 20      | 2 | 480                    | 0.165               | 10                  | 20                  | 7640                   | 2520                    | 504.0                    |
| 3       | 2 | 210                    | 0.025               | 1.5                 | 3                   | 22280                  | 1115                    | 5.0                      |
| 4       | 2 | 210                    | 0.030               | 2                   | 4                   | 16710                  | 1005                    | 8.0                      |
| 5       | 2 | 210                    | 0.040               | 2.5                 | 5                   | 13370                  | 1070                    | 13.5                     |
| 6       | 2 | 210                    | 0.045               | 3                   | 6                   | 11140                  | 1005                    | 18.0                     |
| 8       | 2 | 210                    | 0.060               | 4                   | 8                   | 8355                   | 1005                    | 32.0                     |
| 10      | 2 | 210                    | 0.075               | 5                   | 10                  | 6685                   | 1005                    | 50.5                     |
| 12      | 2 | 210                    | 0.090               | 6                   | 12                  | 5570                   | 1005                    | 72.5                     |
| 16      | 2 | 210                    | 0.120               | 8                   | 16                  | 4180                   | 1005                    | 128.5                    |
| 20      | 2 | 210                    | 0.150               | 10                  | 20                  | 3340                   | 1000                    | 200.0                    |
| 3       | 2 | 180                    | 0.020               | 1.5                 | 3                   | 19100                  | 765                     | 3.5                      |
| 4       | 2 | 180                    | 0.025               | 2                   | 4                   | 14325                  | 715                     | 5.5                      |
| 5       | 2 | 180                    | 0.035               | 2.5                 | 5                   | 11460                  | 800                     | 10.0                     |
| 6       | 2 | 180                    | 0.040               | 3                   | 6                   | 9550                   | 765                     | 14.0                     |
| 8       | 2 | 180                    | 0.055               | 4                   | 8                   | 7160                   | 790                     | 25.5                     |
| 10      | 2 | 180                    | 0.065               | 5                   | 10                  | 5730                   | 745                     | 37.5                     |
| 12      | 2 | 180                    | 0.080               | 6                   | 12                  | 4775                   | 765                     | 55.0                     |
| 16      | 2 | 180                    | 0.105               | 8                   | 16                  | 3580                   | 750                     | 96.0                     |
| 20      | 2 | 180                    | 0.135               | 10                  | 20                  | 2865                   | 775                     | 155.0                    |

# Фрезы по алюминию

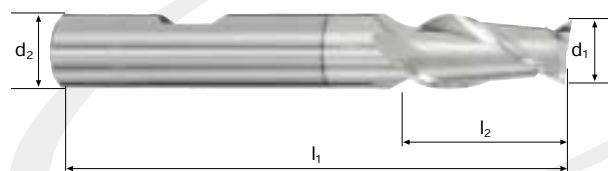
Alucut

HM  
MG10 W

$\lambda$  40°  
 $\gamma$  18°



0,05-0,15  
45°

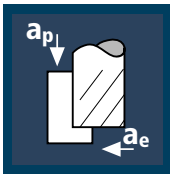


Предназначены для обработки:

- Алюминий
- Медь
- Пластик

| Пример:<br>заказа-N° | Покрyтие<br>C | Артикул-N°<br>5500.140 | Ø-Код<br>140 | Ø   | d1<br>e8 | d2<br>h6 | l1  | l2 | $\alpha$ | z | CELERO |              | SERVICE |
|----------------------|---------------|------------------------|--------------|-----|----------|----------|-----|----|----------|---|--------|--------------|---------|
|                      |               |                        |              |     |          |          |     |    |          |   | 5500   | C5500ReTool® |         |
|                      |               |                        |              |     |          |          |     |    |          |   | 5272   | C5272        |         |
| .140                 |               |                        |              | 140 | 2        | 6        | 54  | 6  | 7°       | 2 | ?      | ?            |         |
| .180                 |               |                        |              | 180 | 3        | 6        | 57  | 7  | 6°       | 2 | ?      | ?            |         |
| .220                 |               |                        |              | 220 | 4        | 6        | 57  | 8  | 4°       | 2 | ?      | ?            |         |
| .260                 |               |                        |              | 260 | 5        | 6        | 57  | 10 | 2°       | 2 | ?      | ?            |         |
| .300                 |               |                        |              | 300 | 6        | 6        | 57  | 10 | 0°       | 2 | ?      | ?            |         |
| .391                 |               |                        |              | 391 | 8        | 8        | 63  | 16 | 0°       | 2 | ?      | ?            | ?       |
| .450                 |               |                        |              | 450 | 10       | 10       | 72  | 19 | 0°       | 2 | ?      | ?            | ?       |
| .501                 |               |                        |              | 501 | 12       | 12       | 83  | 22 | 0°       | 2 | ?      | ?            | ?       |
| .570                 |               |                        |              | 570 | 14       | 14       | 83  | 22 | 0°       | 2 | ?      | ?            | ?       |
| .610                 |               |                        |              | 610 | 16       | 16       | 92  | 26 | 0°       | 2 | ?      | ?            | ?       |
| .640                 |               |                        |              | 640 | 18       | 18       | 92  | 26 | 0°       | 2 | ?      | ?            | ?       |
| .682                 |               |                        |              | 682 | 20       | 20       | 104 | 32 | 0°       | 2 | ?      | ?            | ?       |
|                      |               |                        |              |     |          |          |     |    |          |   |        |              |         |
|                      |               |                        |              |     |          |          |     |    |          |   |        |              |         |
|                      |               |                        |              |     |          |          |     |    |          |   |        |              |         |
|                      |               |                        |              |     |          |          |     |    |          |   |        |              |         |
|                      |               |                        |              |     |          |          |     |    |          |   |        |              |         |
|                      |               |                        |              |     |          |          |     |    |          |   |        |              |         |
|                      |               |                        |              |     |          |          |     |    |          |   |        |              |         |
|                      |               |                        |              |     |          |          |     |    |          |   |        |              |         |
|                      |               |                        |              |     |          |          |     |    |          |   |        |              |         |
|                      |               |                        |              |     |          |          |     |    |          |   |        |              |         |
|                      |               |                        |              |     |          |          |     |    |          |   |        |              |         |

Base-X

**5370****Применение**Сталь  
20 - 30 HRCСталь  
30 - 54 HRCЧугун  
(серый /  
высокопрочный)

Титан



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 6          | 4 | 120                       | 0.025                  | 6                      | 3                      | 6365       | 635                        | 11.5                        |
| 8          | 4 | 120                       | 0.030                  | 8                      | 4                      | 4775       | 575                        | 18.5                        |
| 10         | 4 | 120                       | 0.040                  | 10                     | 5                      | 3820       | 610                        | 30.5                        |
| 12         | 4 | 120                       | 0.050                  | 12                     | 6                      | 3185       | 635                        | 45.5                        |
| 16         | 4 | 120                       | 0.065                  | 16                     | 8                      | 2385       | 620                        | 79.5                        |
| 20         | 4 | 120                       | 0.080                  | 20                     | 10                     | 1910       | 610                        | 122.0                       |
| 6          | 4 | 80                        | 0.020                  | 6                      | 3                      | 4245       | 340                        | 6.0                         |
| 8          | 4 | 80                        | 0.030                  | 8                      | 4                      | 3185       | 380                        | 12.0                        |
| 10         | 4 | 80                        | 0.035                  | 10                     | 5                      | 2545       | 355                        | 18.0                        |
| 12         | 4 | 80                        | 0.045                  | 12                     | 6                      | 2120       | 380                        | 27.5                        |
| 16         | 4 | 80                        | 0.060                  | 16                     | 8                      | 1590       | 380                        | 48.5                        |
| 20         | 4 | 80                        | 0.070                  | 20                     | 10                     | 1275       | 355                        | 71.0                        |
| 6          | 4 | 160                       | 0.025                  | 6                      | 3                      | 8490       | 850                        | 15.5                        |
| 8          | 4 | 160                       | 0.035                  | 8                      | 4                      | 6365       | 890                        | 28.5                        |
| 10         | 4 | 160                       | 0.045                  | 10                     | 5                      | 5095       | 915                        | 46.0                        |
| 12         | 4 | 160                       | 0.055                  | 12                     | 6                      | 4245       | 935                        | 67.5                        |
| 16         | 4 | 160                       | 0.070                  | 16                     | 8                      | 3185       | 890                        | 114.0                       |
| 20         | 4 | 160                       | 0.090                  | 20                     | 10                     | 2545       | 915                        | 183.0                       |
| 6          | 4 | 40                        | 0.020                  | 6                      | 3                      | 2120       | 170                        | 3.0                         |
| 8          | 4 | 40                        | 0.030                  | 8                      | 4                      | 1590       | 190                        | 6.0                         |
| 10         | 4 | 40                        | 0.035                  | 10                     | 5                      | 1275       | 180                        | 9.0                         |
| 12         | 4 | 40                        | 0.045                  | 12                     | 6                      | 1060       | 190                        | 13.5                        |
| 16         | 4 | 40                        | 0.060                  | 16                     | 8                      | 795        | 190                        | 24.5                        |
| 20         | 4 | 40                        | 0.070                  | 20                     | 10                     | 635        | 180                        | 36.0                        |

**5370****Применение**Сталь  
20 - 30 HRCСталь  
30 - 54 HRCЧугун  
(серый /  
высокопрочный)

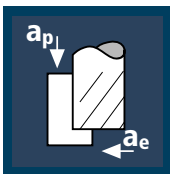
Титан



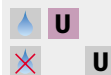
| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 6          | 4 | 100                       | 0.020                  | 6                      | 6                      | 5305       | 425                        | 15.5                        |
| 8          | 4 | 100                       | 0.025                  | 8                      | 8                      | 3980       | 400                        | 25.5                        |
| 10         | 4 | 100                       | 0.035                  | 10                     | 10                     | 3185       | 445                        | 44.5                        |
| 12         | 4 | 100                       | 0.040                  | 12                     | 12                     | 2655       | 425                        | 61.0                        |
| 16         | 4 | 100                       | 0.055                  | 16                     | 16                     | 1990       | 440                        | 112.5                       |
| 20         | 4 | 100                       | 0.065                  | 20                     | 20                     | 1590       | 415                        | 166.0                       |
| 6          | 4 | 70                        | 0.020                  | 6                      | 6                      | 3715       | 295                        | 10.5                        |
| 8          | 4 | 70                        | 0.025                  | 8                      | 8                      | 2785       | 280                        | 18.0                        |
| 10         | 4 | 70                        | 0.030                  | 10                     | 10                     | 2230       | 270                        | 27.0                        |
| 12         | 4 | 70                        | 0.035                  | 12                     | 12                     | 1855       | 260                        | 37.5                        |
| 16         | 4 | 70                        | 0.050                  | 16                     | 16                     | 1395       | 280                        | 71.5                        |
| 20         | 4 | 70                        | 0.060                  | 20                     | 20                     | 1115       | 270                        | 108.0                       |
| 6          | 4 | 120                       | 0.020                  | 6                      | 6                      | 6365       | 510                        | 18.5                        |
| 8          | 4 | 120                       | 0.030                  | 8                      | 8                      | 4775       | 575                        | 37.0                        |
| 10         | 4 | 120                       | 0.035                  | 10                     | 10                     | 3820       | 535                        | 53.5                        |
| 12         | 4 | 120                       | 0.045                  | 12                     | 12                     | 3185       | 575                        | 83.0                        |
| 16         | 4 | 120                       | 0.060                  | 16                     | 16                     | 2385       | 570                        | 146.0                       |
| 20         | 4 | 120                       | 0.075                  | 20                     | 20                     | 1910       | 575                        | 230.0                       |
| 6          | 4 | 30                        | 0.020                  | 6                      | 6                      | 1590       | 125                        | 4.5                         |
| 8          | 4 | 30                        | 0.025                  | 8                      | 8                      | 1195       | 120                        | 7.5                         |
| 10         | 4 | 30                        | 0.030                  | 10                     | 10                     | 955        | 115                        | 11.5                        |
| 12         | 4 | 30                        | 0.035                  | 12                     | 12                     | 795        | 110                        | 16.0                        |
| 16         | 4 | 30                        | 0.050                  | 16                     | 16                     | 595        | 120                        | 30.5                        |
| 20         | 4 | 30                        | 0.060                  | 20                     | 20                     | 475        | 115                        | 46.0                        |



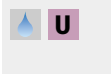
5373



## Применение

Сталь  
20 - 30 HRCСталь  
30 - 48 HRCЧугун  
(серый /  
высокопрочный)

Титан



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 6          | 4 | 120                       | 0.025                  | 6                      | 3                      | 6365       | 635                        | 11.5                        |
| 8          | 4 | 120                       | 0.030                  | 8                      | 4                      | 4775       | 575                        | 18.5                        |
| 10         | 4 | 120                       | 0.040                  | 10                     | 5                      | 3820       | 610                        | 30.5                        |
| 12         | 4 | 120                       | 0.050                  | 12                     | 6                      | 3185       | 635                        | 45.5                        |
| 14         | 4 | 120                       | 0.055                  | 14                     | 7                      | 2730       | 600                        | 59.0                        |
| 16         | 4 | 120                       | 0.065                  | 16                     | 8                      | 2385       | 620                        | 79.5                        |
| 18         | 4 | 120                       | 0.070                  | 18                     | 9                      | 2120       | 595                        | 96.5                        |
| 20         | 4 | 120                       | 0.080                  | 20                     | 10                     | 1910       | 610                        | 122.0                       |
| 6          | 4 | 80                        | 0.020                  | 6                      | 3                      | 4245       | 340                        | 6.0                         |
| 8          | 4 | 80                        | 0.030                  | 8                      | 4                      | 3185       | 380                        | 12.0                        |
| 10         | 4 | 80                        | 0.035                  | 10                     | 5                      | 2545       | 355                        | 18.0                        |
| 12         | 4 | 80                        | 0.045                  | 12                     | 6                      | 2120       | 380                        | 27.5                        |
| 14         | 4 | 80                        | 0.050                  | 14                     | 7                      | 1820       | 365                        | 36.0                        |
| 16         | 4 | 80                        | 0.060                  | 16                     | 8                      | 1590       | 380                        | 48.5                        |
| 18         | 4 | 80                        | 0.065                  | 18                     | 9                      | 1415       | 370                        | 60.0                        |
| 20         | 4 | 80                        | 0.070                  | 20                     | 10                     | 1275       | 355                        | 71.0                        |
| 6          | 4 | 160                       | 0.025                  | 6                      | 3                      | 8490       | 850                        | 15.5                        |
| 8          | 4 | 160                       | 0.035                  | 8                      | 4                      | 6365       | 890                        | 28.5                        |
| 10         | 4 | 160                       | 0.045                  | 10                     | 5                      | 5095       | 915                        | 46.0                        |
| 12         | 4 | 160                       | 0.055                  | 12                     | 6                      | 4245       | 935                        | 67.5                        |
| 14         | 4 | 160                       | 0.060                  | 14                     | 7                      | 3640       | 875                        | 86.0                        |
| 16         | 4 | 160                       | 0.070                  | 16                     | 8                      | 3185       | 890                        | 114.0                       |
| 18         | 4 | 160                       | 0.080                  | 18                     | 9                      | 2830       | 905                        | 146.5                       |
| 20         | 4 | 160                       | 0.090                  | 20                     | 10                     | 2545       | 915                        | 183.0                       |
| 6          | 4 | 40                        | 0.020                  | 6                      | 3                      | 2120       | 170                        | 3.0                         |
| 8          | 4 | 40                        | 0.030                  | 8                      | 4                      | 1590       | 190                        | 6.0                         |
| 10         | 4 | 40                        | 0.035                  | 10                     | 5                      | 1275       | 180                        | 9.0                         |
| 12         | 4 | 40                        | 0.045                  | 12                     | 6                      | 1060       | 190                        | 13.5                        |
| 14         | 4 | 40                        | 0.050                  | 14                     | 7                      | 910        | 180                        | 17.5                        |
| 16         | 4 | 40                        | 0.060                  | 16                     | 8                      | 795        | 190                        | 24.5                        |
| 18         | 4 | 40                        | 0.065                  | 18                     | 9                      | 705        | 185                        | 30.0                        |
| 20         | 4 | 40                        | 0.070                  | 20                     | 10                     | 635        | 180                        | 36.0                        |

5373



## Применение

Сталь  
20 - 30 HRCСталь  
30 - 48 HRCЧугун  
(серый /  
высокопрочный)

Титан

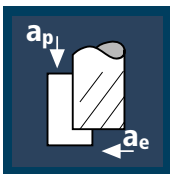


| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 6          | 4 | 100                       | 0.020                  | 6                      | 6                      | 5305       | 425                        | 15.5                        |
| 8          | 4 | 100                       | 0.025                  | 8                      | 8                      | 3980       | 400                        | 25.5                        |
| 10         | 4 | 100                       | 0.035                  | 10                     | 10                     | 3185       | 445                        | 44.5                        |
| 12         | 4 | 100                       | 0.040                  | 12                     | 12                     | 2655       | 425                        | 61.0                        |
| 14         | 4 | 100                       | 0.045                  | 14                     | 14                     | 2275       | 410                        | 80.5                        |
| 16         | 4 | 100                       | 0.055                  | 16                     | 16                     | 1990       | 440                        | 112.5                       |
| 18         | 4 | 100                       | 0.060                  | 18                     | 18                     | 1770       | 425                        | 137.5                       |
| 20         | 4 | 100                       | 0.065                  | 20                     | 20                     | 1590       | 415                        | 166.0                       |
| 6          | 4 | 70                        | 0.020                  | 6                      | 6                      | 3715       | 295                        | 10.5                        |
| 8          | 4 | 70                        | 0.025                  | 8                      | 8                      | 2785       | 280                        | 18.0                        |
| 10         | 4 | 70                        | 0.030                  | 10                     | 10                     | 2230       | 270                        | 27.0                        |
| 12         | 4 | 70                        | 0.035                  | 12                     | 12                     | 1855       | 260                        | 37.5                        |
| 14         | 4 | 70                        | 0.040                  | 14                     | 14                     | 1590       | 255                        | 50.0                        |
| 16         | 4 | 70                        | 0.050                  | 16                     | 16                     | 1395       | 280                        | 71.5                        |
| 18         | 4 | 70                        | 0.055                  | 18                     | 18                     | 1240       | 275                        | 89.0                        |
| 20         | 4 | 70                        | 0.060                  | 20                     | 20                     | 1115       | 270                        | 108.0                       |
| 6          | 4 | 120                       | 0.020                  | 6                      | 6                      | 6365       | 510                        | 18.5                        |
| 8          | 4 | 120                       | 0.030                  | 8                      | 8                      | 4775       | 575                        | 37.0                        |
| 10         | 4 | 120                       | 0.035                  | 10                     | 10                     | 3820       | 535                        | 53.5                        |
| 12         | 4 | 120                       | 0.045                  | 12                     | 12                     | 3185       | 575                        | 83.0                        |
| 14         | 4 | 120                       | 0.050                  | 14                     | 14                     | 2730       | 545                        | 107.0                       |
| 16         | 4 | 120                       | 0.060                  | 16                     | 16                     | 2385       | 570                        | 146.0                       |
| 18         | 4 | 120                       | 0.065                  | 18                     | 18                     | 2120       | 550                        | 178.0                       |
| 20         | 4 | 120                       | 0.075                  | 20                     | 20                     | 1910       | 575                        | 230.0                       |
| 6          | 4 | 30                        | 0.020                  | 6                      | 6                      | 1590       | 125                        | 4.5                         |
| 8          | 4 | 30                        | 0.025                  | 8                      | 8                      | 1195       | 120                        | 7.5                         |
| 10         | 4 | 30                        | 0.030                  | 10                     | 10                     | 955        | 115                        | 11.5                        |
| 12         | 4 | 30                        | 0.035                  | 12                     | 12                     | 795        | 110                        | 16.0                        |
| 14         | 4 | 30                        | 0.040                  | 14                     | 14                     | 680        | 110                        | 21.5                        |
| 16         | 4 | 30                        | 0.050                  | 16                     | 16                     | 595        | 120                        | 30.5                        |
| 18         | 4 | 30                        | 0.055                  | 18                     | 18                     | 530        | 115                        | 37.5                        |
| 20         | 4 | 30                        | 0.060                  | 20                     | 20                     | 475        | 115                        | 46.0                        |





5374



## Применение

Сталь  
20 - 30 HRCСталь  
30 - 48 HRCЧугун  
(серый /  
высокопрочный)

Титан



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 6          | 4 | 120                       | 0.025                  | 6                      | 3                      | 6365                      | 635                        | 11.5                        |
| 8          | 4 | 120                       | 0.030                  | 8                      | 4                      | 4775                      | 575                        | 18.5                        |
| 10         | 4 | 120                       | 0.040                  | 10                     | 5                      | 3820                      | 610                        | 30.5                        |
| 12         | 4 | 120                       | 0.050                  | 12                     | 6                      | 3185                      | 635                        | 45.5                        |
| 16         | 4 | 120                       | 0.065                  | 16                     | 8                      | 2385                      | 620                        | 79.5                        |
| 20         | 4 | 120                       | 0.080                  | 20                     | 10                     | 1910                      | 610                        | 122.0                       |
| 6          | 4 | 80                        | 0.020                  | 6                      | 3                      | 4245                      | 340                        | 6.0                         |
| 8          | 4 | 80                        | 0.030                  | 8                      | 4                      | 3185                      | 380                        | 12.0                        |
| 10         | 4 | 80                        | 0.035                  | 10                     | 5                      | 2545                      | 355                        | 18.0                        |
| 12         | 4 | 80                        | 0.045                  | 12                     | 6                      | 2120                      | 380                        | 27.5                        |
| 16         | 4 | 80                        | 0.060                  | 16                     | 8                      | 1590                      | 380                        | 48.5                        |
| 20         | 4 | 80                        | 0.070                  | 20                     | 10                     | 1275                      | 355                        | 71.0                        |
| 6          | 4 | 160                       | 0.025                  | 6                      | 3                      | 8490                      | 850                        | 15.5                        |
| 8          | 4 | 160                       | 0.035                  | 8                      | 4                      | 6365                      | 890                        | 28.5                        |
| 10         | 4 | 160                       | 0.045                  | 10                     | 5                      | 5095                      | 915                        | 46.0                        |
| 12         | 4 | 160                       | 0.055                  | 12                     | 6                      | 4245                      | 935                        | 67.5                        |
| 16         | 4 | 160                       | 0.070                  | 16                     | 8                      | 3185                      | 890                        | 114.0                       |
| 20         | 4 | 160                       | 0.090                  | 20                     | 10                     | 2545                      | 915                        | 183.0                       |
| 6          | 4 | 40                        | 0.020                  | 6                      | 3                      | 2120                      | 170                        | 3.0                         |
| 8          | 4 | 40                        | 0.030                  | 8                      | 4                      | 1590                      | 190                        | 6.0                         |
| 10         | 4 | 40                        | 0.035                  | 10                     | 5                      | 1275                      | 180                        | 9.0                         |
| 12         | 4 | 40                        | 0.045                  | 12                     | 6                      | 1060                      | 190                        | 13.5                        |
| 16         | 4 | 40                        | 0.060                  | 16                     | 8                      | 795                       | 190                        | 24.5                        |
| 20         | 4 | 40                        | 0.070                  | 20                     | 10                     | 635                       | 180                        | 36.0                        |

5374



## Применение

Сталь  
20 - 30 HRCСталь  
30 - 48 HRCЧугун  
(серый /  
высокопрочный)

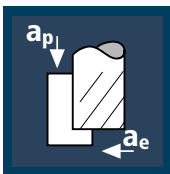
Титан



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 6          | 4 | 100                       | 0.020                  | 6                      | 6                      | 5305                      | 425                        | 15.5                        |
| 8          | 4 | 100                       | 0.025                  | 8                      | 8                      | 3980                      | 400                        | 25.5                        |
| 10         | 4 | 100                       | 0.035                  | 10                     | 10                     | 3185                      | 445                        | 44.5                        |
| 12         | 4 | 100                       | 0.040                  | 12                     | 12                     | 2655                      | 425                        | 61.0                        |
| 16         | 4 | 100                       | 0.055                  | 16                     | 16                     | 1990                      | 440                        | 112.5                       |
| 20         | 4 | 100                       | 0.065                  | 20                     | 20                     | 1590                      | 415                        | 166.0                       |
| 6          | 4 | 70                        | 0.020                  | 6                      | 6                      | 3715                      | 295                        | 10.5                        |
| 8          | 4 | 70                        | 0.025                  | 8                      | 8                      | 2785                      | 280                        | 18.0                        |
| 10         | 4 | 70                        | 0.030                  | 10                     | 10                     | 2230                      | 270                        | 27.0                        |
| 12         | 4 | 70                        | 0.035                  | 12                     | 12                     | 1855                      | 260                        | 37.5                        |
| 16         | 4 | 70                        | 0.050                  | 16                     | 16                     | 1395                      | 280                        | 71.5                        |
| 20         | 4 | 70                        | 0.060                  | 20                     | 20                     | 1115                      | 270                        | 108.0                       |
| 6          | 4 | 120                       | 0.020                  | 6                      | 6                      | 6365                      | 510                        | 18.5                        |
| 8          | 4 | 120                       | 0.030                  | 8                      | 8                      | 4775                      | 575                        | 37.0                        |
| 10         | 4 | 120                       | 0.035                  | 10                     | 10                     | 3820                      | 535                        | 53.5                        |
| 12         | 4 | 120                       | 0.045                  | 12                     | 12                     | 3185                      | 575                        | 83.0                        |
| 16         | 4 | 120                       | 0.060                  | 16                     | 16                     | 2385                      | 570                        | 146.0                       |
| 20         | 4 | 120                       | 0.075                  | 20                     | 20                     | 1910                      | 575                        | 230.0                       |
| 6          | 4 | 30                        | 0.020                  | 6                      | 6                      | 1590                      | 125                        | 4.5                         |
| 8          | 4 | 30                        | 0.025                  | 8                      | 8                      | 1195                      | 120                        | 7.5                         |
| 10         | 4 | 30                        | 0.030                  | 10                     | 10                     | 955                       | 115                        | 11.5                        |
| 12         | 4 | 30                        | 0.035                  | 12                     | 12                     | 795                       | 110                        | 16.0                        |
| 16         | 4 | 30                        | 0.050                  | 16                     | 16                     | 595                       | 120                        | 30.5                        |
| 20         | 4 | 30                        | 0.060                  | 20                     | 20                     | 475                       | 115                        | 46.0                        |



5376



Применение

Сталь  
20 - 30 HRC



Сталь  
30 - 48 HRC



Чугун  
(серый /  
высокопрочный)



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 6          | 4 | 120                       | 0.020                  | 6                      | 3                      | 6365       | 510                        | 9.0                         |
| 8          | 4 | 120                       | 0.025                  | 8                      | 4                      | 4775       | 480                        | 15.5                        |
| 10         | 4 | 120                       | 0.035                  | 10                     | 5                      | 3820       | 535                        | 27.0                        |
| 12         | 4 | 120                       | 0.040                  | 12                     | 6                      | 3185       | 510                        | 36.5                        |
| 16         | 4 | 120                       | 0.055                  | 16                     | 8                      | 2385       | 525                        | 67.0                        |
| 20         | 4 | 120                       | 0.065                  | 20                     | 10                     | 1910       | 495                        | 99.0                        |
| 6          | 4 | 80                        | 0.020                  | 6                      | 3                      | 4245       | 340                        | 6.0                         |
| 8          | 4 | 80                        | 0.025                  | 8                      | 4                      | 3185       | 320                        | 10.0                        |
| 10         | 4 | 80                        | 0.030                  | 10                     | 5                      | 2545       | 305                        | 15.5                        |
| 12         | 4 | 80                        | 0.035                  | 12                     | 6                      | 2120       | 295                        | 21.0                        |
| 16         | 4 | 80                        | 0.050                  | 16                     | 8                      | 1590       | 320                        | 41.0                        |
| 20         | 4 | 80                        | 0.060                  | 20                     | 10                     | 1275       | 305                        | 61.0                        |
| 6          | 4 | 160                       | 0.020                  | 6                      | 3                      | 8490       | 680                        | 12.0                        |
| 8          | 4 | 160                       | 0.030                  | 8                      | 4                      | 6365       | 765                        | 24.5                        |
| 10         | 4 | 160                       | 0.035                  | 10                     | 5                      | 5095       | 715                        | 36.0                        |
| 12         | 4 | 160                       | 0.045                  | 12                     | 6                      | 4245       | 765                        | 55.0                        |
| 16         | 4 | 160                       | 0.060                  | 16                     | 8                      | 3185       | 765                        | 98.0                        |
| 20         | 4 | 160                       | 0.075                  | 20                     | 10                     | 2545       | 765                        | 153.0                       |

5376



Применение

Сталь  
20 - 30 HRC



Сталь  
30 - 48 HRC



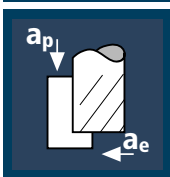
Чугун  
(серый /  
высокопрочный)



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 6          | 4 | 100                       | 0.015                  | 3                      | 6                      | 5305       | 320                        | 6.0                         |
| 8          | 4 | 100                       | 0.020                  | 4                      | 8                      | 3980       | 320                        | 10.0                        |
| 10         | 4 | 100                       | 0.030                  | 5                      | 10                     | 3185       | 380                        | 19.0                        |
| 12         | 4 | 100                       | 0.035                  | 6                      | 12                     | 2655       | 370                        | 26.5                        |
| 16         | 4 | 100                       | 0.045                  | 8                      | 16                     | 1990       | 360                        | 46.0                        |
| 20         | 4 | 100                       | 0.055                  | 10                     | 20                     | 1590       | 350                        | 70.0                        |
| 6          | 4 | 70                        | 0.015                  | 3                      | 6                      | 3715       | 225                        | 4.0                         |
| 8          | 4 | 70                        | 0.020                  | 4                      | 8                      | 2785       | 225                        | 7.0                         |
| 10         | 4 | 70                        | 0.025                  | 5                      | 10                     | 2230       | 225                        | 11.5                        |
| 12         | 4 | 70                        | 0.030                  | 6                      | 12                     | 1855       | 225                        | 16.0                        |
| 16         | 4 | 70                        | 0.040                  | 8                      | 16                     | 1395       | 225                        | 29.0                        |
| 20         | 4 | 70                        | 0.050                  | 10                     | 20                     | 1115       | 225                        | 45.0                        |
| 6          | 4 | 120                       | 0.020                  | 3                      | 6                      | 6365       | 510                        | 9.0                         |
| 8          | 4 | 120                       | 0.025                  | 4                      | 8                      | 4775       | 480                        | 15.5                        |
| 10         | 4 | 120                       | 0.030                  | 5                      | 10                     | 3820       | 460                        | 23.0                        |
| 12         | 4 | 120                       | 0.035                  | 6                      | 12                     | 3185       | 445                        | 32.0                        |
| 16         | 4 | 120                       | 0.050                  | 8                      | 16                     | 2385       | 475                        | 61.0                        |
| 20         | 4 | 120                       | 0.060                  | 10                     | 20                     | 1910       | 460                        | 92.0                        |



5378



## Применение

Холодноштамповые стали >12% Cr  
жаропрочные стали  
нержавеющие  
аустенитные стали



Сталь  
20 - 30 HRC



Чугун  
(серый /  
высокопрочный)



Титан



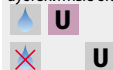
| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 6          | 3 | 60                        | 0.020                  | 6                      | 3                      | 3185       | 190                        | 3.5                         |
| 7          | 3 | 60                        | 0.025                  | 7                      | 3.5                    | 2730       | 205                        | 5.0                         |
| 8          | 3 | 60                        | 0.030                  | 8                      | 4                      | 2385       | 215                        | 7.0                         |
| 9          | 3 | 60                        | 0.030                  | 9                      | 4.5                    | 2120       | 190                        | 7.5                         |
| 10         | 3 | 60                        | 0.035                  | 10                     | 5                      | 1910       | 200                        | 10.0                        |
| 12         | 3 | 60                        | 0.045                  | 12                     | 6                      | 1590       | 215                        | 15.5                        |
| 6          | 3 | 120                       | 0.025                  | 6                      | 3                      | 6365       | 475                        | 8.5                         |
| 7          | 3 | 120                       | 0.030                  | 7                      | 3.5                    | 5455       | 490                        | 12.0                        |
| 8          | 3 | 120                       | 0.030                  | 8                      | 4                      | 4775       | 430                        | 14.0                        |
| 9          | 3 | 120                       | 0.035                  | 9                      | 4.5                    | 4245       | 445                        | 18.0                        |
| 10         | 3 | 120                       | 0.040                  | 10                     | 5                      | 3820       | 460                        | 23.0                        |
| 12         | 3 | 120                       | 0.050                  | 12                     | 6                      | 3185       | 480                        | 34.5                        |
| 6          | 3 | 160                       | 0.025                  | 6                      | 3                      | 8490       | 635                        | 11.5                        |
| 7          | 3 | 160                       | 0.030                  | 7                      | 3.5                    | 7275       | 655                        | 16.0                        |
| 8          | 3 | 160                       | 0.035                  | 8                      | 4                      | 6365       | 670                        | 21.5                        |
| 9          | 3 | 160                       | 0.040                  | 9                      | 4.5                    | 5660       | 680                        | 27.5                        |
| 10         | 3 | 160                       | 0.045                  | 10                     | 5                      | 5095       | 690                        | 34.5                        |
| 12         | 3 | 160                       | 0.055                  | 12                     | 6                      | 4245       | 700                        | 50.5                        |
| 6          | 3 | 40                        | 0.020                  | 6                      | 3                      | 2120       | 125                        | 2.5                         |
| 7          | 3 | 40                        | 0.025                  | 7                      | 3.5                    | 1820       | 135                        | 3.5                         |
| 8          | 3 | 40                        | 0.030                  | 8                      | 4                      | 1590       | 145                        | 4.5                         |
| 9          | 3 | 40                        | 0.030                  | 9                      | 4.5                    | 1415       | 125                        | 5.0                         |
| 10         | 3 | 40                        | 0.035                  | 10                     | 5                      | 1275       | 135                        | 7.0                         |
| 12         | 3 | 40                        | 0.045                  | 12                     | 6                      | 1060       | 145                        | 10.5                        |

5378



## Применение

Холодноштамповые стали >12% Cr  
жаропрочные стали  
нержавеющие  
аустенитные стали



Сталь  
20 - 30 HRC



Чугун  
(серый /  
высокопрочный)

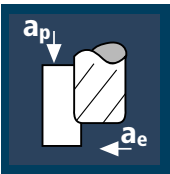


Титан

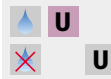


| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 6          | 3 | 40                        | 0.020                  | 6                      | 6                      | 2120       | 125                        | 4.5                         |
| 7          | 3 | 40                        | 0.020                  | 7                      | 7                      | 1820       | 110                        | 5.5                         |
| 8          | 3 | 40                        | 0.025                  | 8                      | 8                      | 1590       | 120                        | 7.5                         |
| 9          | 3 | 40                        | 0.025                  | 9                      | 9                      | 1415       | 105                        | 8.5                         |
| 10         | 3 | 40                        | 0.030                  | 10                     | 10                     | 1275       | 115                        | 11.5                        |
| 12         | 3 | 40                        | 0.035                  | 12                     | 12                     | 1060       | 110                        | 16.0                        |
| 6          | 3 | 70                        | 0.020                  | 6                      | 6                      | 3715       | 225                        | 8.0                         |
| 7          | 3 | 70                        | 0.025                  | 7                      | 7                      | 3185       | 240                        | 12.0                        |
| 8          | 3 | 70                        | 0.025                  | 8                      | 8                      | 2785       | 210                        | 13.5                        |
| 9          | 3 | 70                        | 0.030                  | 9                      | 9                      | 2475       | 225                        | 18.0                        |
| 10         | 3 | 70                        | 0.035                  | 10                     | 10                     | 2230       | 235                        | 23.5                        |
| 12         | 3 | 70                        | 0.040                  | 12                     | 12                     | 1855       | 225                        | 32.5                        |
| 6          | 3 | 120                       | 0.020                  | 6                      | 6                      | 6365       | 380                        | 13.5                        |
| 7          | 3 | 120                       | 0.025                  | 7                      | 7                      | 5455       | 410                        | 20.0                        |
| 8          | 3 | 120                       | 0.030                  | 8                      | 8                      | 4775       | 430                        | 27.5                        |
| 9          | 3 | 120                       | 0.035                  | 9                      | 9                      | 4245       | 445                        | 36.0                        |
| 10         | 3 | 120                       | 0.035                  | 10                     | 10                     | 3820       | 400                        | 40.0                        |
| 12         | 3 | 120                       | 0.045                  | 12                     | 12                     | 3185       | 430                        | 62.0                        |
| 6          | 3 | 30                        | 0.020                  | 6                      | 6                      | 1590       | 95                         | 3.5                         |
| 7          | 3 | 30                        | 0.020                  | 7                      | 7                      | 1365       | 80                         | 4.0                         |
| 8          | 3 | 30                        | 0.025                  | 8                      | 8                      | 1195       | 90                         | 6.0                         |
| 9          | 3 | 30                        | 0.025                  | 9                      | 9                      | 1060       | 80                         | 6.5                         |
| 10         | 3 | 30                        | 0.030                  | 10                     | 10                     | 955        | 85                         | 8.5                         |
| 12         | 3 | 30                        | 0.035                  | 12                     | 12                     | 795        | 85                         | 12.0                        |



**5334****Применение**

Сталь  
20 - 30 HRC



Сталь  
30 - 48 HRC



Чугун  
(серый /  
высокопрочный)



Холодноштамповые  
стали >12% Cr  
жаропрочные стали  
нержавеющие  
аустенитные стали



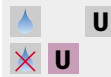
| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|
| 3          | 3 | 120                       | 0.010                  | 4.5                    | 0.3                    | 12735                     | 380                        |
| 4          | 3 | 120                       | 0.015                  | 6                      | 0.4                    | 9550                      | 430                        |
| 5          | 3 | 120                       | 0.015                  | 7.5                    | 0.5                    | 7640                      | 345                        |
| 6          | 3 | 120                       | 0.020                  | 9                      | 0.6                    | 6365                      | 380                        |
| 8          | 3 | 120                       | 0.025                  | 12                     | 0.8                    | 4775                      | 360                        |
| 10         | 3 | 120                       | 0.035                  | 15                     | 1                      | 3820                      | 400                        |
| 12         | 3 | 120                       | 0.040                  | 18                     | 1.2                    | 3185                      | 380                        |
| 3          | 3 | 80                        | 0.010                  | 4.5                    | 0.3                    | 8490                      | 255                        |
| 4          | 3 | 80                        | 0.015                  | 6                      | 0.4                    | 6365                      | 285                        |
| 5          | 3 | 80                        | 0.015                  | 7.5                    | 0.5                    | 5095                      | 230                        |
| 6          | 3 | 80                        | 0.020                  | 9                      | 0.6                    | 4245                      | 255                        |
| 8          | 3 | 80                        | 0.025                  | 12                     | 0.8                    | 3185                      | 240                        |
| 10         | 3 | 80                        | 0.035                  | 15                     | 1                      | 2545                      | 265                        |
| 12         | 3 | 80                        | 0.040                  | 18                     | 1.2                    | 2120                      | 255                        |
| 3          | 3 | 160                       | 0.010                  | 4.5                    | 0.3                    | 16975                     | 510                        |
| 4          | 3 | 160                       | 0.015                  | 6                      | 0.4                    | 12735                     | 575                        |
| 5          | 3 | 160                       | 0.015                  | 7.5                    | 0.5                    | 10185                     | 460                        |
| 6          | 3 | 160                       | 0.020                  | 9                      | 0.6                    | 8490                      | 510                        |
| 8          | 3 | 160                       | 0.025                  | 12                     | 0.8                    | 6365                      | 475                        |
| 10         | 3 | 160                       | 0.035                  | 15                     | 1                      | 5095                      | 535                        |
| 12         | 3 | 160                       | 0.040                  | 18                     | 1.2                    | 4245                      | 510                        |
| 3          | 3 | 60                        | 0.010                  | 4.5                    | 0.3                    | 6365                      | 190                        |
| 4          | 3 | 60                        | 0.015                  | 6                      | 0.4                    | 4775                      | 215                        |
| 5          | 3 | 60                        | 0.015                  | 7.5                    | 0.5                    | 3820                      | 170                        |
| 6          | 3 | 60                        | 0.020                  | 9                      | 0.6                    | 3185                      | 190                        |
| 8          | 3 | 60                        | 0.025                  | 12                     | 0.8                    | 2385                      | 180                        |
| 10         | 3 | 60                        | 0.035                  | 15                     | 1                      | 1910                      | 200                        |
| 12         | 3 | 60                        | 0.040                  | 18                     | 1.2                    | 1590                      | 190                        |

**5334****Применение**

Сталь  
20 - 30 HRC



Сталь  
30 - 48 HRC



Чугун  
(серый /  
высокопрочный)



Холодноштамповые  
стали >12% Cr  
жаропрочные стали  
нержавеющие  
аустенитные стали



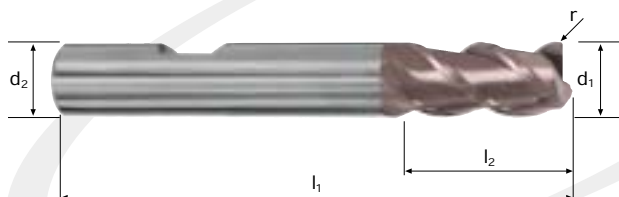
| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[cm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|---------------------------|----------------------------|-----------------------------|
| 3          | 3 | 100                       | 0.010                  | 1.5                    | 3                      | 10610                     | 320                        | 1.5                         |
| 4          | 3 | 100                       | 0.010                  | 2                      | 4                      | 7960                      | 240                        | 2.0                         |
| 5          | 3 | 100                       | 0.015                  | 2.5                    | 5                      | 6365                      | 285                        | 3.5                         |
| 6          | 3 | 100                       | 0.015                  | 3                      | 6                      | 5305                      | 240                        | 4.5                         |
| 8          | 3 | 100                       | 0.020                  | 4                      | 8                      | 3980                      | 240                        | 7.5                         |
| 10         | 3 | 100                       | 0.030                  | 5                      | 10                     | 3185                      | 285                        | 14.5                        |
| 12         | 3 | 100                       | 0.035                  | 6                      | 12                     | 2655                      | 280                        | 20.0                        |
| 3          | 3 | 70                        | 0.010                  | 1.5                    | 3                      | 7425                      | 225                        | 1.0                         |
| 4          | 3 | 70                        | 0.010                  | 2                      | 4                      | 5570                      | 165                        | 1.5                         |
| 5          | 3 | 70                        | 0.015                  | 2.5                    | 5                      | 4455                      | 200                        | 2.5                         |
| 6          | 3 | 70                        | 0.015                  | 3                      | 6                      | 3715                      | 165                        | 3.0                         |
| 8          | 3 | 70                        | 0.020                  | 4                      | 8                      | 2785                      | 165                        | 5.5                         |
| 10         | 3 | 70                        | 0.025                  | 5                      | 10                     | 2230                      | 165                        | 8.5                         |
| 12         | 3 | 70                        | 0.030                  | 6                      | 12                     | 1855                      | 165                        | 12.0                        |
| 3          | 3 | 120                       | 0.010                  | 1.5                    | 3                      | 12735                     | 380                        | 1.5                         |
| 4          | 3 | 120                       | 0.010                  | 2                      | 4                      | 9550                      | 285                        | 2.5                         |
| 5          | 3 | 120                       | 0.015                  | 2.5                    | 5                      | 7640                      | 345                        | 4.5                         |
| 6          | 3 | 120                       | 0.020                  | 3                      | 6                      | 6365                      | 380                        | 7.0                         |
| 8          | 3 | 120                       | 0.025                  | 4                      | 8                      | 4775                      | 360                        | 11.5                        |
| 10         | 3 | 120                       | 0.030                  | 5                      | 10                     | 3820                      | 345                        | 17.5                        |
| 12         | 3 | 120                       | 0.035                  | 6                      | 12                     | 3185                      | 335                        | 24.0                        |
| 3          | 3 | 40                        | 0.010                  | 1.5                    | 3                      | 4245                      | 125                        | 0.5                         |
| 4          | 3 | 40                        | 0.010                  | 2                      | 4                      | 3185                      | 95                         | 1.0                         |
| 5          | 3 | 40                        | 0.015                  | 2.5                    | 5                      | 2545                      | 115                        | 1.5                         |
| 6          | 3 | 40                        | 0.015                  | 3                      | 6                      | 2120                      | 95                         | 1.5                         |
| 8          | 3 | 40                        | 0.020                  | 4                      | 8                      | 1590                      | 95                         | 3.0                         |
| 10         | 3 | 40                        | 0.025                  | 5                      | 10                     | 1275                      | 95                         | 5.0                         |
| 12         | 3 | 40                        | 0.030                  | 6                      | 12                     | 1060                      | 95                         | 7.0                         |

## Фрезы универсальные

HM  
MG10

N

$\lambda$  45°  
 $\gamma$  15°



Предназначены для обработки:



HRC  
< 48

Нерж.  
сталь

GG(G)  
Чугун

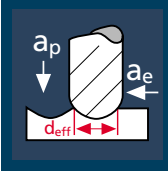
Медь

|                       |          |               |                     |               |              |    |   | UNICUT-4X | SERVICE      |
|-----------------------|----------|---------------|---------------------|---------------|--------------|----|---|-----------|--------------|
| Пример:<br>заказа-N°. |          | Покрытие<br>U | Артикул-N°.<br>5334 | Ø-Код<br>.178 |              |    |   |           | U5334ReTool® |
|                       |          |               |                     |               |              |    |   | U5234     | с покрытием  |
| Ø<br>Code             | d1<br>e8 | d2<br>h6      | l1                  | l2            | r<br>0/+0,03 | α  | Z |           |              |
| .178                  | 3        | 6             | 57                  | 7             | 0,2          | 6° | 3 | •         |              |
| .218                  | 4        | 6             | 57                  | 8             | 0,2          | 4° | 3 | •         |              |
| .258                  | 5        | 6             | 57                  | 10            | 0,2          | 2° | 3 | •         |              |
| .297                  | 6        | 6             | 57                  | 10            | 0,2          | 0° | 3 | •         |              |
| .388                  | 8        | 8             | 63                  | 16            | 0,2          | 0° | 3 | •         | •            |
| .445                  | 10       | 10            | 72                  | 19            | 0,2          | 0° | 3 | •         | •            |
| .496                  | 12       | 12            | 83                  | 22            | 0,2          | 0° | 3 | •         | •            |
| .180                  | 3        | 6             | 57                  | 7             | 0,5          | 6° | 3 | •         |              |
| .220                  | 4        | 6             | 57                  | 8             | 0,5          | 4° | 3 | •         |              |
| .260                  | 5        | 6             | 57                  | 10            | 0,5          | 2° | 3 | •         |              |
| .300                  | 6        | 6             | 57                  | 10            | 0,5          | 0° | 3 | •         |              |
| .391                  | 8        | 8             | 63                  | 16            | 0,5          | 0° | 3 | •         | •            |
| .450                  | 10       | 10            | 72                  | 19            | 0,5          | 0° | 3 | •         | •            |
| .501                  | 12       | 12            | 83                  | 22            | 0,5          | 0° | 3 | •         | •            |
|                       |          |               |                     |               |              |    |   |           |              |
|                       |          |               |                     |               |              |    |   |           |              |
|                       |          |               |                     |               |              |    |   |           |              |
|                       |          |               |                     |               |              |    |   |           |              |
|                       |          |               |                     |               |              |    |   |           |              |
|                       |          |               |                     |               |              |    |   |           |              |
|                       |          |               |                     |               |              |    |   |           |              |
|                       |          |               |                     |               |              |    |   |           |              |
|                       |          |               |                     |               |              |    |   |           |              |
|                       |          |               |                     |               |              |    |   |           |              |
|                       |          |               |                     |               |              |    |   |           |              |
|                       |          |               |                     |               |              |    |   |           |              |
|                       |          |               |                     |               |              |    |   |           |              |
|                       |          |               |                     |               |              |    |   |           |              |

Base-X



5286



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC

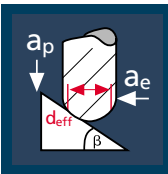


Чугун  
(серый /  
высокопрочный)



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | d <sub>eff</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|--------------------------|---------------------------|----------------------------|-----------------------------|
| 3          | 2 | 200                       | 0.060                  | 0.09                   | 0.18                   | 1.02                     | 60000                     | 7200                       | 117                         |
| 4          | 2 | 200                       | 0.080                  | 0.12                   | 0.24                   | 1.36                     | 46650                     | 7465                       | 215                         |
| 5          | 2 | 200                       | 0.100                  | 0.15                   | 0.30                   | 1.71                     | 37320                     | 7465                       | 336                         |
| 6          | 2 | 200                       | 0.090                  | 0.18                   | 0.36                   | 2.05                     | 31100                     | 5600                       | 363                         |
| 8          | 2 | 200                       | 0.120                  | 0.24                   | 0.48                   | 2.73                     | 23325                     | 5600                       | 645                         |
| 10         | 2 | 200                       | 0.150                  | 0.30                   | 0.60                   | 3.41                     | 18660                     | 5600                       | 1008                        |
| 12         | 2 | 200                       | 0.120                  | 0.36                   | 0.72                   | 4.09                     | 15550                     | 3730                       | 967                         |
| 16         | 2 | 200                       | 0.160                  | 0.48                   | 0.96                   | 5.46                     | 11665                     | 3735                       | 1721                        |
| 20         | 2 | 200                       | 0.200                  | 0.60                   | 1.20                   | 6.82                     | 9330                      | 3730                       | 2686                        |
| 3          | 2 | 160                       | 0.060                  | 0.09                   | 0.18                   | 1.02                     | 49760                     | 5970                       | 97                          |
| 4          | 2 | 160                       | 0.080                  | 0.12                   | 0.24                   | 1.36                     | 37320                     | 5970                       | 172                         |
| 5          | 2 | 160                       | 0.100                  | 0.15                   | 0.30                   | 1.71                     | 29855                     | 5970                       | 269                         |
| 6          | 2 | 160                       | 0.090                  | 0.18                   | 0.36                   | 2.05                     | 24880                     | 4480                       | 291                         |
| 8          | 2 | 160                       | 0.120                  | 0.24                   | 0.48                   | 2.73                     | 18660                     | 4480                       | 516                         |
| 10         | 2 | 160                       | 0.150                  | 0.30                   | 0.60                   | 3.41                     | 14930                     | 4480                       | 807                         |
| 12         | 2 | 160                       | 0.120                  | 0.36                   | 0.72                   | 4.09                     | 12440                     | 2985                       | 774                         |
| 16         | 2 | 160                       | 0.160                  | 0.48                   | 0.96                   | 5.46                     | 9330                      | 2985                       | 1376                        |
| 20         | 2 | 160                       | 0.200                  | 0.60                   | 1.20                   | 6.82                     | 7465                      | 2985                       | 2149                        |
| 3          | 2 | 130                       | 0.060                  | 0.09                   | 0.18                   | 1.02                     | 40430                     | 4850                       | 79                          |
| 4          | 2 | 130                       | 0.080                  | 0.12                   | 0.24                   | 1.36                     | 30325                     | 4850                       | 140                         |
| 5          | 2 | 130                       | 0.100                  | 0.15                   | 0.30                   | 1.71                     | 24260                     | 4850                       | 219                         |
| 6          | 2 | 130                       | 0.090                  | 0.18                   | 0.36                   | 2.05                     | 20215                     | 3640                       | 236                         |
| 8          | 2 | 130                       | 0.120                  | 0.24                   | 0.48                   | 2.73                     | 15160                     | 3640                       | 420                         |
| 10         | 2 | 130                       | 0.150                  | 0.30                   | 0.60                   | 3.41                     | 12130                     | 3640                       | 655                         |
| 12         | 2 | 130                       | 0.120                  | 0.36                   | 0.72                   | 4.09                     | 10110                     | 2425                       | 629                         |
| 16         | 2 | 130                       | 0.160                  | 0.48                   | 0.96                   | 5.46                     | 7580                      | 2425                       | 1118                        |
| 20         | 2 | 130                       | 0.200                  | 0.60                   | 1.20                   | 6.82                     | 6065                      | 2425                       | 1746                        |
| 3          | 2 | 250                       | 0.060                  | 0.09                   | 0.18                   | 1.02                     | 60000                     | 7200                       | 117                         |
| 4          | 2 | 250                       | 0.080                  | 0.12                   | 0.24                   | 1.36                     | 58315                     | 9330                       | 269                         |
| 5          | 2 | 250                       | 0.100                  | 0.15                   | 0.30                   | 1.71                     | 46650                     | 9330                       | 420                         |
| 6          | 2 | 250                       | 0.090                  | 0.18                   | 0.36                   | 2.05                     | 38875                     | 7000                       | 454                         |
| 8          | 2 | 250                       | 0.120                  | 0.24                   | 0.48                   | 2.73                     | 29155                     | 6995                       | 806                         |
| 10         | 2 | 250                       | 0.150                  | 0.30                   | 0.60                   | 3.41                     | 23325                     | 7000                       | 1260                        |
| 12         | 2 | 250                       | 0.120                  | 0.36                   | 0.72                   | 4.09                     | 19440                     | 4665                       | 1209                        |
| 16         | 2 | 250                       | 0.160                  | 0.48                   | 0.96                   | 5.46                     | 14580                     | 4665                       | 2150                        |
| 20         | 2 | 250                       | 0.200                  | 0.60                   | 1.20                   | 6.82                     | 11665                     | 4665                       | 3359                        |

5286



Применение

Сталь  
42 - 48 HRC



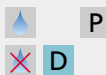
Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC



Чугун  
(серый /  
высокопрочный)



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | d <sub>eff</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | β  |
|------------|---|---------------------------|------------------------|------------------------|------------------------|--------------------------|---------------------------|----------------------------|----|
| 3          | 2 | 430                       | 0.045                  | 0.04                   | 0.05                   | 2.53                     | 54050                     | 4865                       | 45 |
| 4          | 2 | 430                       | 0.060                  | 0.05                   | 0.06                   | 3.38                     | 40540                     | 4865                       | 45 |
| 5          | 2 | 430                       | 0.075                  | 0.06                   | 0.08                   | 4.22                     | 32430                     | 4865                       | 45 |
| 6          | 2 | 430                       | 0.060                  | 0.07                   | 0.06                   | 5.06                     | 27025                     | 3245                       | 45 |
| 8          | 2 | 430                       | 0.080                  | 0.10                   | 0.08                   | 6.75                     | 20270                     | 3245                       | 45 |
| 10         | 2 | 430                       | 0.100                  | 0.12                   | 0.10                   | 8.44                     | 16215                     | 3245                       | 45 |
| 12         | 2 | 430                       | 0.060                  | 0.14                   | 0.06                   | 10.13                    | 13515                     | 1620                       | 45 |
| 16         | 2 | 430                       | 0.080                  | 0.19                   | 0.08                   | 13.51                    | 10135                     | 1620                       | 45 |
| 20         | 2 | 430                       | 0.100                  | 0.24                   | 0.10                   | 16.88                    | 8110                      | 1620                       | 45 |
| 3          | 2 | 380                       | 0.045                  | 0.04                   | 0.05                   | 2.53                     | 47765                     | 4300                       | 45 |
| 4          | 2 | 380                       | 0.060                  | 0.05                   | 0.06                   | 3.38                     | 35825                     | 4300                       | 45 |
| 5          | 2 | 380                       | 0.075                  | 0.06                   | 0.08                   | 4.22                     | 28660                     | 4300                       | 45 |
| 6          | 2 | 380                       | 0.060                  | 0.07                   | 0.06                   | 5.06                     | 23885                     | 2865                       | 45 |
| 8          | 2 | 380                       | 0.080                  | 0.10                   | 0.08                   | 6.75                     | 17915                     | 2865                       | 45 |
| 10         | 2 | 380                       | 0.100                  | 0.12                   | 0.10                   | 8.44                     | 14330                     | 2865                       | 45 |
| 12         | 2 | 380                       | 0.060                  | 0.14                   | 0.06                   | 10.13                    | 11940                     | 1435                       | 45 |
| 16         | 2 | 380                       | 0.080                  | 0.19                   | 0.08                   | 13.51                    | 8955                      | 1435                       | 45 |
| 20         | 2 | 380                       | 0.100                  | 0.24                   | 0.10                   | 16.88                    | 7165                      | 1435                       | 45 |
| 3          | 2 | 300                       | 0.045                  | 0.04                   | 0.05                   | 2.53                     | 37710                     | 3395                       | 45 |
| 4          | 2 | 300                       | 0.060                  | 0.05                   | 0.06                   | 3.38                     | 28285                     | 3395                       | 45 |
| 5          | 2 | 300                       | 0.075                  | 0.06                   | 0.08                   | 4.22                     | 22625                     | 3395                       | 45 |
| 6          | 2 | 300                       | 0.060                  | 0.07                   | 0.06                   | 5.06                     | 18855                     | 2265                       | 45 |
| 8          | 2 | 300                       | 0.080                  | 0.10                   | 0.08                   | 6.75                     | 14140                     | 2260                       | 45 |
| 10         | 2 | 300                       | 0.100                  | 0.12                   | 0.10                   | 8.44                     | 11315                     | 2265                       | 45 |
| 12         | 2 | 300                       | 0.060                  | 0.14                   | 0.06                   | 10.13                    | 9430                      | 1130                       | 45 |
| 16         | 2 | 300                       | 0.080                  | 0.19                   | 0.08                   | 13.51                    | 7070                      | 1130                       | 45 |
| 20         | 2 | 300                       | 0.100                  | 0.24                   | 0.10                   | 16.88                    | 5655                      | 1130                       | 45 |
| 3          | 2 | 570                       | 0.045                  | 0.04                   | 0.05                   | 2.53                     | 60000                     | 5400                       | 45 |
| 4          | 2 | 570                       | 0.060                  | 0.05                   | 0.06                   | 3.38                     | 53740                     | 6450                       | 45 |
| 5          | 2 | 570                       | 0.075                  | 0.06                   | 0.08                   | 4.22                     | 42990                     | 6450                       | 45 |
| 6          | 2 | 570                       | 0.060                  | 0.07                   | 0.06                   | 5.06                     | 35825                     | 4300                       | 45 |
| 8          | 2 | 570                       | 0.080                  | 0.10                   | 0.08                   | 6.75                     | 26870                     | 4300                       | 45 |
| 10         | 2 | 570                       | 0.100                  | 0.12                   | 0.10                   | 8.44                     | 21495                     | 4300                       | 45 |
| 12         | 2 | 570                       | 0.060                  | 0.14                   | 0.06                   | 10.13                    | 17915                     | 2150                       | 45 |
| 16         | 2 | 570                       | 0.080                  | 0.19                   | 0.08                   | 13.51                    | 13435                     | 2150                       | 45 |
| 20         | 2 | 570                       | 0.100                  | 0.24                   | 0.10                   | 16.88                    | 10750                     | 2150                       | 45 |

# Фрезы сферические

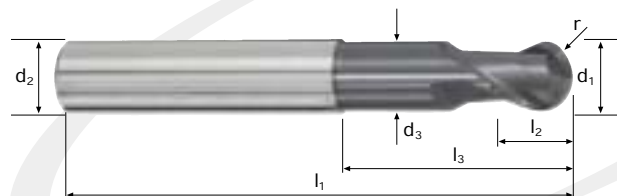
# Sphericut

MG Plus H

$\lambda$  30°  
 $\gamma$  -10°



DIN 6535 HA



Предназначены для обработки:



HRC < 48

HRC < 58

HRC < 40

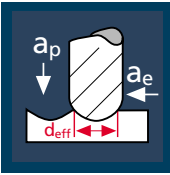
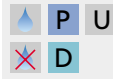
GG(G)  
Чугун

|  |      |       |      |     |      |    |       |          |   | UNICUT-4X  | POLYCHROM | DURO-S | SERVICE |
|--|------|-------|------|-----|------|----|-------|----------|---|--|-----------|--------|---------|
| Пример: <span style="color:red">U</span> <span style="color:blue">5286</span> <span style="color:red">100</span>                     |      |       |      |     |      |    |       |          |   | ReTool®  |           |        |         |
| Покрyтие: <span style="color:red">U</span> Артикул-№: <span style="color:blue">5286</span> ø-Код: <span style="color:red">100</span> |      |       |      |     |      |    |       |          |   | U5286P5286D5286 <span style="font-size:small">с покрытием</span> |           |        |         |
| ø Code   | d1   | d2 h6 | d3   | l1  | l2   | l3 | r f8  | $\alpha$ | z |  |           |        |         |
| .100   | 1,0  | 3     | -    | 40  | 1,0  | -  | 0,50  | 10°      | 2 | •  | •         | •      |         |
| .120   | 1,5  | 3     | -    | 40  | 2,0  | -  | 0,75  | 8°       | 2 | •  | •         | •      |         |
| .138   | 2,0  | 3     | -    | 40  | 2,5  | -  | 1,00  | 6°       | 2 | •  | •         | •      |         |
| .140   | 2,0  | 6     | 1,8  | 57  | 3,0  | 6  | 1,00  | 8°       | 2 | •  | •         | •      |         |
| .178   | 3,0  | 3     | -    | 40  | 4,0  | -  | 1,50  | 0°       | 2 | •  | •         | •      |         |
| .180   | 3,0  | 6     | 2,8  | 57  | 4,0  | 9  | 1,50  | 6°       | 2 | •  | •         | •      |         |
| .220   | 4,0  | 6     | 3,7  | 57  | 5,0  | 12 | 2,00  | 4°       | 2 | •  | •         | •      |         |
| .260   | 5,0  | 6     | 4,6  | 57  | 6,0  | 15 | 2,50  | 2°       | 2 | •  | •         | •      |         |
| .300   | 6,0  | 6     | 5,5  | 57  | 7,0  | 20 | 3,00  | 0°       | 2 | •  | •         | •      |         |
| .391   | 8,0  | 8     | 7,4  | 63  | 9,0  | 26 | 4,00  | 0°       | 2 | •  | •         | •      | •       |
| .450   | 10,0 | 10    | 9,2  | 72  | 11,0 | 31 | 5,00  | 0°       | 2 | •  | •         | •      | •       |
| .501   | 12,0 | 12    | 11,0 | 83  | 12,0 | 37 | 6,00  | 0°       | 2 | •  | •         | •      | •       |
| .610   | 16,0 | 16    | 15,0 | 92  | 16,0 | 43 | 8,00  | 0°       | 2 | •  | •         | •      | •       |
| .682   | 20,0 | 20    | 19,0 | 104 | 20,0 | 53 | 10,00 | 0°       | 2 | •  | •         | •      | •       |

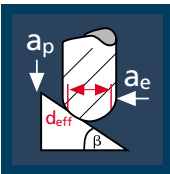
  

| CNC Radius R |      |              |         |         |         |         |
|--------------|------|--------------|---------|---------|---------|---------|
| d1           | r    | Tolerance f8 |         | Radius  |         |         |
|              |      | Minimum      | Maximum | Minimum | Maximum | Minimum |
| 1            | 0.5  | -0.006       | -0.020  | 0.480   | 0.494   | 0.487   |
| 1,5          | 0.75 |              |         | 0.730   | 0.744   | 0.737   |
| 2            | 1.0  |              |         | 0.980   | 0.994   | 0.987   |
| 3            | 1.5  |              |         | 1.480   | 1.494   | 1.487   |
| 4            | 2.0  |              |         | 1.980   | 1.994   | 1.987   |
| 5            | 2.5  |              |         | 2.480   | 2.494   | 2.487   |
| 6            | 3.0  |              |         | 2.980   | 2.994   | 2.987   |
| 8            | 4.0  | -0.010       | -0.028  | 3.972   | 3.990   | 3.981   |
| 10           | 5.0  |              |         | 4.972   | 4.990   | 4.981   |
| 12           | 6.0  |              |         | 5.972   | 5.990   | 5.981   |
| 16           | 8.0  | -0.013       | -0.035  | 7.965   | 7.987   | 7.976   |
| 20           | 10.0 |              |         | 9.965   | 9.987   | 9.976   |

Base-X

**5288****Применение**Сталь  
42 - 48 HRCСталь  
48 - 52 HRCСталь  
52 - 56 HRCЧугун  
(серый /  
высокопрочный)

| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | d <sub>eff</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|--------------------------|---------------------------|----------------------------|-----------------------------|
| 3          | 2 | 200                       | 0.060                  | 0.06                   | 0.18                   | 0.84                     | 60000                     | 7200                       | 78                          |
| 4          | 2 | 200                       | 0.080                  | 0.08                   | 0.24                   | 1.12                     | 56845                     | 9095                       | 175                         |
| 5          | 2 | 200                       | 0.100                  | 0.10                   | 0.30                   | 1.40                     | 45475                     | 9095                       | 273                         |
| 6          | 2 | 200                       | 0.090                  | 0.12                   | 0.36                   | 1.68                     | 37895                     | 6820                       | 295                         |
| 8          | 2 | 200                       | 0.120                  | 0.16                   | 0.48                   | 2.24                     | 28420                     | 6820                       | 524                         |
| 10         | 2 | 200                       | 0.150                  | 0.20                   | 0.60                   | 2.80                     | 22735                     | 6820                       | 819                         |
| 12         | 2 | 200                       | 0.120                  | 0.24                   | 0.72                   | 3.36                     | 18950                     | 4550                       | 786                         |
| 16         | 2 | 200                       | 0.160                  | 0.32                   | 0.96                   | 4.48                     | 14210                     | 4545                       | 1396                        |
| 20         | 2 | 200                       | 0.200                  | 0.40                   | 1.20                   | 5.60                     | 11370                     | 4550                       | 2184                        |
| 3          | 2 | 160                       | 0.060                  | 0.06                   | 0.18                   | 0.84                     | 60000                     | 7200                       | 78                          |
| 4          | 2 | 160                       | 0.080                  | 0.08                   | 0.24                   | 1.12                     | 45475                     | 7275                       | 140                         |
| 5          | 2 | 160                       | 0.100                  | 0.10                   | 0.30                   | 1.40                     | 36380                     | 7275                       | 219                         |
| 6          | 2 | 160                       | 0.090                  | 0.12                   | 0.36                   | 1.68                     | 30315                     | 5455                       | 236                         |
| 8          | 2 | 160                       | 0.120                  | 0.16                   | 0.48                   | 2.24                     | 22735                     | 5455                       | 419                         |
| 10         | 2 | 160                       | 0.150                  | 0.20                   | 0.60                   | 2.80                     | 18190                     | 5455                       | 655                         |
| 12         | 2 | 160                       | 0.120                  | 0.24                   | 0.72                   | 3.36                     | 15160                     | 3640                       | 629                         |
| 16         | 2 | 160                       | 0.160                  | 0.32                   | 0.96                   | 4.48                     | 11370                     | 3640                       | 1118                        |
| 20         | 2 | 160                       | 0.200                  | 0.40                   | 1.20                   | 5.60                     | 9095                      | 3640                       | 1747                        |
| 3          | 2 | 130                       | 0.060                  | 0.06                   | 0.18                   | 0.84                     | 49265                     | 5910                       | 64                          |
| 4          | 2 | 130                       | 0.080                  | 0.08                   | 0.24                   | 1.12                     | 36950                     | 5910                       | 114                         |
| 5          | 2 | 130                       | 0.100                  | 0.10                   | 0.30                   | 1.40                     | 29560                     | 5910                       | 178                         |
| 6          | 2 | 130                       | 0.090                  | 0.12                   | 0.36                   | 1.68                     | 24630                     | 4435                       | 192                         |
| 8          | 2 | 130                       | 0.120                  | 0.16                   | 0.48                   | 2.24                     | 18475                     | 4435                       | 341                         |
| 10         | 2 | 130                       | 0.150                  | 0.20                   | 0.60                   | 2.80                     | 14780                     | 4435                       | 532                         |
| 12         | 2 | 130                       | 0.120                  | 0.24                   | 0.72                   | 3.36                     | 12315                     | 2955                       | 511                         |
| 16         | 2 | 130                       | 0.160                  | 0.32                   | 0.96                   | 4.48                     | 9235                      | 2955                       | 908                         |
| 20         | 2 | 130                       | 0.200                  | 0.40                   | 1.20                   | 5.60                     | 7390                      | 2955                       | 1419                        |
| 3          | 2 | 250                       | 0.060                  | 0.06                   | 0.18                   | 0.84                     | 60000                     | 7200                       | 78                          |
| 4          | 2 | 250                       | 0.080                  | 0.08                   | 0.24                   | 1.12                     | 60000                     | 9600                       | 185                         |
| 5          | 2 | 250                       | 0.100                  | 0.10                   | 0.30                   | 1.40                     | 56845                     | 11370                      | 341                         |
| 6          | 2 | 250                       | 0.090                  | 0.12                   | 0.36                   | 1.68                     | 47370                     | 8525                       | 369                         |
| 8          | 2 | 250                       | 0.120                  | 0.16                   | 0.48                   | 2.24                     | 35525                     | 8525                       | 655                         |
| 10         | 2 | 250                       | 0.150                  | 0.20                   | 0.60                   | 2.80                     | 28420                     | 8525                       | 1023                        |
| 12         | 2 | 250                       | 0.120                  | 0.24                   | 0.72                   | 3.36                     | 23685                     | 5685                       | 983                         |
| 16         | 2 | 250                       | 0.160                  | 0.32                   | 0.96                   | 4.48                     | 17765                     | 5685                       | 1747                        |
| 20         | 2 | 250                       | 0.200                  | 0.40                   | 1.20                   | 5.60                     | 14210                     | 5685                       | 2729                        |

**5288****Применение**Сталь  
42 - 48 HRCСталь  
48 - 52 HRCСталь  
52 - 56 HRCЧугун  
(серый /  
высокопрочный)

| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | d <sub>eff</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | β  |
|------------|---|---------------------------|------------------------|------------------------|------------------------|--------------------------|---------------------------|----------------------------|----|
| 3          | 2 | 430                       | 0.045                  | 0.04                   | 0.05                   | 2.53                     | 54050                     | 4865                       | 45 |
| 4          | 2 | 430                       | 0.060                  | 0.05                   | 0.06                   | 3.38                     | 40540                     | 4865                       | 45 |
| 5          | 2 | 430                       | 0.075                  | 0.06                   | 0.08                   | 4.22                     | 32430                     | 4865                       | 45 |
| 6          | 2 | 430                       | 0.060                  | 0.07                   | 0.06                   | 5.06                     | 27025                     | 3245                       | 45 |
| 8          | 2 | 430                       | 0.080                  | 0.10                   | 0.08                   | 6.75                     | 20270                     | 3245                       | 45 |
| 10         | 2 | 430                       | 0.100                  | 0.12                   | 0.10                   | 8.44                     | 16215                     | 3245                       | 45 |
| 12         | 2 | 430                       | 0.060                  | 0.14                   | 0.06                   | 10.13                    | 13515                     | 1620                       | 45 |
| 16         | 2 | 430                       | 0.080                  | 0.19                   | 0.08                   | 13.51                    | 10135                     | 1620                       | 45 |
| 20         | 2 | 430                       | 0.100                  | 0.24                   | 0.10                   | 16.88                    | 8110                      | 1620                       | 45 |
| 3          | 2 | 380                       | 0.045                  | 0.04                   | 0.05                   | 2.53                     | 47765                     | 4300                       | 45 |
| 4          | 2 | 380                       | 0.060                  | 0.05                   | 0.06                   | 3.38                     | 35825                     | 4300                       | 45 |
| 5          | 2 | 380                       | 0.075                  | 0.06                   | 0.08                   | 4.22                     | 28660                     | 4300                       | 45 |
| 6          | 2 | 380                       | 0.060                  | 0.07                   | 0.06                   | 5.06                     | 23885                     | 2865                       | 45 |
| 8          | 2 | 380                       | 0.080                  | 0.10                   | 0.08                   | 6.75                     | 17915                     | 2865                       | 45 |
| 10         | 2 | 380                       | 0.100                  | 0.12                   | 0.10                   | 8.44                     | 14330                     | 2865                       | 45 |
| 12         | 2 | 380                       | 0.060                  | 0.14                   | 0.06                   | 10.13                    | 11940                     | 1435                       | 45 |
| 16         | 2 | 380                       | 0.080                  | 0.19                   | 0.08                   | 13.51                    | 8955                      | 1435                       | 45 |
| 20         | 2 | 380                       | 0.100                  | 0.24                   | 0.10                   | 16.88                    | 7165                      | 1435                       | 45 |
| 3          | 2 | 300                       | 0.045                  | 0.04                   | 0.05                   | 2.53                     | 37710                     | 3395                       | 45 |
| 4          | 2 | 300                       | 0.060                  | 0.05                   | 0.06                   | 3.38                     | 28285                     | 3395                       | 45 |
| 5          | 2 | 300                       | 0.075                  | 0.06                   | 0.08                   | 4.22                     | 22625                     | 3395                       | 45 |
| 6          | 2 | 300                       | 0.060                  | 0.07                   | 0.06                   | 5.06                     | 18855                     | 2265                       | 45 |
| 8          | 2 | 300                       | 0.080                  | 0.10                   | 0.08                   | 6.75                     | 14140                     | 2260                       | 45 |
| 10         | 2 | 300                       | 0.100                  | 0.12                   | 0.10                   | 8.44                     | 11315                     | 2265                       | 45 |
| 12         | 2 | 300                       | 0.060                  | 0.14                   | 0.06                   | 10.13                    | 9430                      | 1130                       | 45 |
| 16         | 2 | 300                       | 0.080                  | 0.19                   | 0.08                   | 13.51                    | 7070                      | 1130                       | 45 |
| 20         | 2 | 300                       | 0.100                  | 0.24                   | 0.10                   | 16.88                    | 5655                      | 1130                       | 45 |
| 3          | 2 | 570                       | 0.045                  | 0.04                   | 0.05                   | 2.53                     | 60000                     | 5400                       | 45 |
| 4          | 2 | 570                       | 0.060                  | 0.05                   | 0.06                   | 3.38                     | 53740                     | 6450                       | 45 |
| 5          | 2 | 570                       | 0.075                  | 0.06                   | 0.08                   | 4.22                     | 42990                     | 6450                       | 45 |
| 6          | 2 | 570                       | 0.060                  | 0.07                   | 0.06                   | 5.06                     | 35825                     | 4300                       | 45 |
| 8          | 2 | 570                       | 0.080                  | 0.10                   | 0.08                   | 6.75                     | 26870                     | 4300                       | 45 |
| 10         | 2 | 570                       | 0.100                  | 0.12                   | 0.10                   | 8.44                     | 21495                     | 4300                       | 45 |
| 12         | 2 | 570                       | 0.060                  | 0.14                   | 0.06                   | 10.13                    | 17915                     | 2150                       | 45 |
| 16         | 2 | 570                       | 0.080                  | 0.19                   | 0.08                   | 13.51                    | 13435                     | 2150                       | 45 |
| 20         | 2 | 570                       | 0.100                  | 0.24                   | 0.10                   | 16.88                    | 10750                     | 2150                       | 45 |

# Фрезы сферические

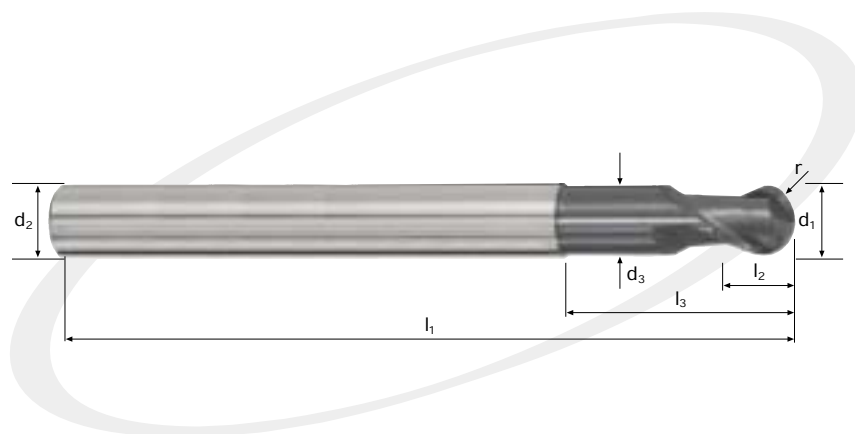
# Sphericut

MG Plus H

$\lambda$  30°  
 $\gamma$  -10°



DIN 6535 HA



Предназначены для обработки:

HRC < 48    HRC < 58    HRC < 40    GG(G) Чугун

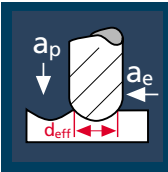
|                    |    |       |      |     |      |    |      |          |   | UNICUT-4X       | POLYCHROM | DURO-S | SERVICE |
|--------------------|----|-------|------|-----|------|----|------|----------|---|-----------------|-----------|--------|---------|
|                    |    |       |      |     |      |    |      |          |   | ReTool®         |           |        |         |
| Пример: заказа-N°. |    |       |      |     |      |    |      |          |   | U5288P5288D5288 |           |        |         |
|                    |    |       |      |     |      |    |      |          |   | с покрытием     |           |        |         |
| Ø Code             | d1 | d2 h6 | d3   | l1  | l2   | l3 | r f8 | $\alpha$ | z |                 |           |        |         |
| .100               | 1  | 3     | -    | 60  | 1,0  | -  | 0,5  | 10°      | 2 | •               | •         | •      |         |
| .138               | 2  | 3     | -    | 60  | 2,5  | -  | 1,0  | 6°       | 2 | •               | •         | •      |         |
| .140               | 2  | 6     | 1,8  | 75  | 3,0  | 6  | 1,0  | 8°       | 2 | •               | •         | •      |         |
| .178               | 3  | 3     | -    | 60  | 4,0  | -  | 1,5  | 0°       | 2 | •               | •         | •      |         |
| .180               | 3  | 6     | 2,8  | 75  | 4,0  | 9  | 1,5  | 6°       | 2 | •               | •         | •      |         |
| .220               | 4  | 6     | 3,7  | 75  | 5,0  | 12 | 2,0  | 4°       | 2 | •               | •         | •      |         |
| .260               | 5  | 6     | 4,6  | 80  | 6,0  | 15 | 2,5  | 2°       | 2 | •               | •         | •      |         |
| .300               | 6  | 6     | 5,5  | 80  | 7,0  | 20 | 3,0  | 0°       | 2 | •               | •         | •      | •       |
| .391               | 8  | 8     | 7,4  | 90  | 9,0  | 26 | 4,0  | 0°       | 2 | •               | •         | •      | •       |
| .450               | 10 | 10    | 9,2  | 100 | 11,0 | 31 | 5,0  | 0°       | 2 | •               | •         | •      | •       |
| .501               | 12 | 12    | 11,0 | 120 | 12,0 | 37 | 6,0  | 0°       | 2 | •               | •         | •      | •       |
| .610               | 16 | 16    | 15,0 | 140 | 16,0 | 43 | 8,0  | 0°       | 2 | •               | •         | •      | •       |
| .682               | 20 | 20    | 19,0 | 140 | 20,0 | 53 | 10,0 | 0°       | 2 | •               | •         | •      | •       |

| CNC Radius R |      |              |         |         |         |         |
|--------------|------|--------------|---------|---------|---------|---------|
| d1           | r    | Tolerance f8 | Radius  |         |         |         |
|              |      |              | Minimum | Maximum | Minimum | Maximum |
| 1            | 0.5  | -0.006       | -0.020  | 0.480   | 0.494   | 0.487   |
| 2            | 1.0  |              |         | 0.980   | 0.994   | 0.987   |
| 3            | 1.5  |              |         | 1.480   | 1.494   | 1.487   |
| 4            | 2.0  |              |         | 1.980   | 1.994   | 1.987   |
| 5            | 2.5  |              |         | 2.480   | 2.494   | 2.487   |
| 6            | 3.0  |              |         | 2.980   | 2.994   | 2.987   |
| 8            | 4.0  | -0.010       | -0.028  | 3.972   | 3.990   | 3.981   |
| 10           | 5.0  |              |         | 4.972   | 4.990   | 4.981   |
| 12           | 6.0  |              |         | 5.972   | 5.990   | 5.981   |
| 16           | 8.0  | -0.013       | -0.035  | 7.965   | 7.987   | 7.976   |
| 20           | 10.0 |              |         | 9.965   | 9.987   | 9.976   |

Base-X

5289



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC

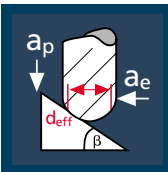


Чугун  
(серый /  
высокопрочный)



| d1<br>[mm] | z | $v_c$<br>[m/min] | $f_z$<br>[mm] | $a_p$<br>[mm] | $a_e$<br>[mm] | $d_{eff}$<br>[mm] | n<br>[min <sup>-1</sup> ] | $v_f$<br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|------------------|---------------|---------------|---------------|-------------------|---------------------------|-------------------|-----------------------------|
| 3          | 2 | 200              | 0.060         | 0.05          | 0.12          | 0.73              | 60000                     | 7200              | 39                          |
| 4          | 2 | 200              | 0.080         | 0.06          | 0.16          | 0.97              | 60000                     | 9600              | 92                          |
| 5          | 2 | 200              | 0.100         | 0.08          | 0.20          | 1.22              | 52375                     | 10475             | 157                         |
| 6          | 2 | 200              | 0.090         | 0.09          | 0.24          | 1.46              | 43645                     | 7855              | 170                         |
| 8          | 2 | 200              | 0.120         | 0.12          | 0.32          | 1.94              | 32735                     | 7855              | 302                         |
| 10         | 2 | 200              | 0.150         | 0.15          | 0.40          | 2.43              | 26190                     | 7855              | 472                         |
| 12         | 2 | 200              | 0.120         | 0.18          | 0.48          | 2.92              | 21825                     | 5240              | 453                         |
| 3          | 2 | 160              | 0.060         | 0.05          | 0.12          | 0.73              | 60000                     | 7200              | 39                          |
| 4          | 2 | 160              | 0.080         | 0.06          | 0.16          | 0.97              | 52375                     | 8380              | 81                          |
| 5          | 2 | 160              | 0.100         | 0.08          | 0.20          | 1.22              | 41900                     | 8380              | 126                         |
| 6          | 2 | 160              | 0.090         | 0.09          | 0.24          | 1.46              | 34915                     | 6285              | 136                         |
| 8          | 2 | 160              | 0.120         | 0.12          | 0.32          | 1.94              | 26190                     | 6285              | 242                         |
| 10         | 2 | 160              | 0.150         | 0.15          | 0.40          | 2.43              | 20950                     | 6285              | 377                         |
| 12         | 2 | 160              | 0.120         | 0.18          | 0.48          | 2.92              | 17460                     | 4190              | 362                         |
| 3          | 2 | 130              | 0.060         | 0.05          | 0.12          | 0.73              | 56740                     | 6810              | 37                          |
| 4          | 2 | 130              | 0.080         | 0.06          | 0.16          | 0.97              | 42555                     | 6810              | 66                          |
| 5          | 2 | 130              | 0.100         | 0.08          | 0.20          | 1.22              | 34045                     | 6810              | 102                         |
| 6          | 2 | 130              | 0.090         | 0.09          | 0.24          | 1.46              | 28370                     | 5105              | 111                         |
| 8          | 2 | 130              | 0.120         | 0.12          | 0.32          | 1.94              | 21280                     | 5105              | 196                         |
| 10         | 2 | 130              | 0.150         | 0.15          | 0.40          | 2.43              | 17020                     | 5105              | 307                         |
| 12         | 2 | 130              | 0.120         | 0.18          | 0.48          | 2.92              | 14185                     | 3405              | 294                         |
| 3          | 2 | 250              | 0.060         | 0.05          | 0.12          | 0.73              | 60000                     | 7200              | 39                          |
| 4          | 2 | 250              | 0.080         | 0.06          | 0.16          | 0.97              | 60000                     | 9600              | 92                          |
| 5          | 2 | 250              | 0.100         | 0.08          | 0.20          | 1.22              | 60000                     | 12000             | 180                         |
| 6          | 2 | 250              | 0.090         | 0.09          | 0.24          | 1.46              | 54560                     | 9820              | 212                         |
| 8          | 2 | 250              | 0.120         | 0.12          | 0.32          | 1.94              | 40920                     | 9820              | 377                         |
| 10         | 2 | 250              | 0.150         | 0.15          | 0.40          | 2.43              | 32735                     | 9820              | 589                         |
| 12         | 2 | 250              | 0.120         | 0.18          | 0.48          | 2.92              | 27280                     | 6545              | 566                         |

5289



Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC



Чугун  
(серый /  
высокопрочный)



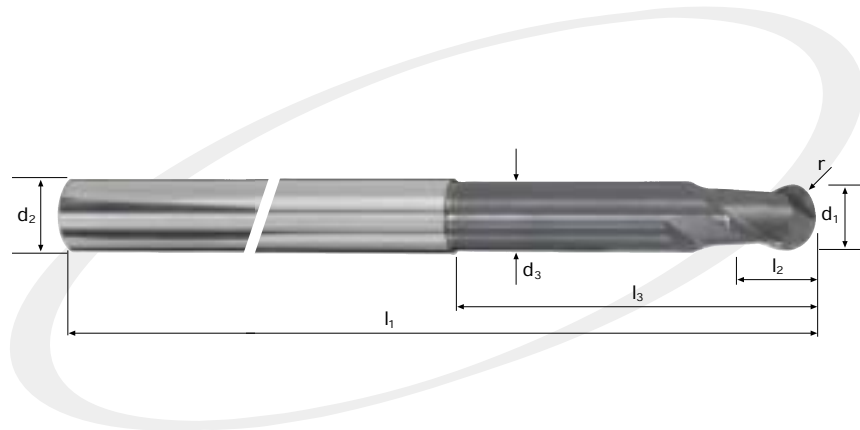
| d1<br>[mm] | z | $v_c$<br>[m/min] | $f_z$<br>[mm] | $a_p$<br>[mm] | $a_e$<br>[mm] | $d_{eff}$<br>[mm] | n<br>[min <sup>-1</sup> ] | $v_f$<br>[mm/min] | $\beta$ |
|------------|---|------------------|---------------|---------------|---------------|-------------------|---------------------------|-------------------|---------|
| 3          | 2 | 430              | 0.045         | 0.03          | 0.05          | 2.50              | 54730                     | 4925              | 45      |
| 4          | 2 | 430              | 0.060         | 0.04          | 0.06          | 3.33              | 41045                     | 4925              | 45      |
| 5          | 2 | 430              | 0.075         | 0.05          | 0.08          | 4.17              | 32840                     | 4925              | 45      |
| 6          | 2 | 430              | 0.060         | 0.06          | 0.06          | 5.00              | 27365                     | 3285              | 45      |
| 8          | 2 | 430              | 0.080         | 0.08          | 0.08          | 6.67              | 20525                     | 3285              | 45      |
| 10         | 2 | 430              | 0.100         | 0.10          | 0.10          | 8.34              | 16420                     | 3285              | 45      |
| 12         | 2 | 430              | 0.060         | 0.12          | 0.06          | 10.00             | 13680                     | 1640              | 45      |
| 3          | 2 | 380              | 0.045         | 0.03          | 0.05          | 2.50              | 48365                     | 4355              | 45      |
| 4          | 2 | 380              | 0.060         | 0.04          | 0.06          | 3.33              | 36275                     | 4355              | 45      |
| 5          | 2 | 380              | 0.075         | 0.05          | 0.08          | 4.17              | 29020                     | 4355              | 45      |
| 6          | 2 | 380              | 0.060         | 0.06          | 0.06          | 5.00              | 24185                     | 2900              | 45      |
| 8          | 2 | 380              | 0.080         | 0.08          | 0.08          | 6.67              | 18135                     | 2900              | 45      |
| 10         | 2 | 380              | 0.100         | 0.10          | 0.10          | 8.34              | 14510                     | 2900              | 45      |
| 12         | 2 | 380              | 0.060         | 0.12          | 0.06          | 10.00             | 12090                     | 1450              | 45      |
| 3          | 2 | 300              | 0.045         | 0.03          | 0.05          | 2.50              | 38185                     | 3435              | 45      |
| 4          | 2 | 300              | 0.060         | 0.04          | 0.06          | 3.33              | 28635                     | 3435              | 45      |
| 5          | 2 | 300              | 0.075         | 0.05          | 0.08          | 4.17              | 22910                     | 3435              | 45      |
| 6          | 2 | 300              | 0.060         | 0.06          | 0.06          | 5.00              | 19090                     | 2290              | 45      |
| 8          | 2 | 300              | 0.080         | 0.08          | 0.08          | 6.67              | 14320                     | 2290              | 45      |
| 10         | 2 | 300              | 0.100         | 0.10          | 0.10          | 8.34              | 11455                     | 2290              | 45      |
| 12         | 2 | 300              | 0.060         | 0.12          | 0.06          | 10.00             | 9545                      | 1145              | 45      |
| 3          | 2 | 570              | 0.045         | 0.03          | 0.05          | 2.50              | 60000                     | 5400              | 45      |
| 4          | 2 | 570              | 0.060         | 0.04          | 0.06          | 3.33              | 54410                     | 6530              | 45      |
| 5          | 2 | 570              | 0.075         | 0.05          | 0.08          | 4.17              | 43530                     | 6530              | 45      |
| 6          | 2 | 570              | 0.060         | 0.06          | 0.06          | 5.00              | 36275                     | 4355              | 45      |
| 8          | 2 | 570              | 0.080         | 0.08          | 0.08          | 6.67              | 27205                     | 4355              | 45      |
| 10         | 2 | 570              | 0.100         | 0.10          | 0.10          | 8.34              | 21765                     | 4355              | 45      |
| 12         | 2 | 570              | 0.060         | 0.12          | 0.06          | 10.00             | 18135                     | 2175              | 45      |

# Фрезы сферические

# Sphericut

MG Plus H

$\lambda$  30°  
 $\gamma$  -10°



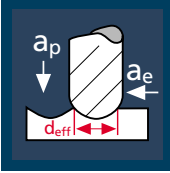
Предназначены для обработки:

HRC < 48    HRC < 58    HRC < 40    GG(G) Чугун

|   |     |              |        |         |         |       |      |          |   | UNICUT-4X                              | POLYCHROM | DURO-S | SERVICE |
|---|-----|--------------|--------|---------|---------|-------|------|----------|---|--|-----------|--------|---------|
|   |     |              |        |         |         |       |      |          |   | ReTool <sup>®</sup>                    |           |        |         |
| Пример: заказ-№. <span style="color:red">U</span> <span style="color:blue">5289</span> . <span style="color:red">180</span> |     |              |        |         |         |       |      |          |   | U5289P5289D5289 <sup>c</sup> покрытием |           |        |         |
| Ø Code  | d1  | d2 h6        | d3     | l1      | l2      | l3    | r f8 | $\alpha$ | z |  |           |        |         |
| .180  | 3   | 6            | 2,8    | 90      | 4       | 24    | 1,5  | 3°       | 2 | •                                      | •         | •      |         |
| .220  | 4   | 6            | 3,7    | 90      | 5       | 27    | 2,0  | 2°       | 2 | •                                      | •         | •      |         |
| .260  | 5   | 6            | 4,6    | 110     | 6       | 45    | 2,5  | 1°       | 2 | •                                      | •         | •      |         |
| .300  | 6   | 6            | 5,5    | 110     | 7       | 50    | 3,0  | 0°       | 2 | •                                      | •         | •      | •       |
| .391  | 8   | 8            | 7,4    | 110     | 9       | 46    | 4,0  | 0°       | 2 | •                                      | •         | •      | •       |
| .450  | 10  | 10           | 9,2    | 130     | 11      | 61    | 5,0  | 0°       | 2 | •                                      | •         | •      | •       |
| .501  | 12  | 12           | 11,0   | 140     | 12      | 57    | 6,0  | 0°       | 2 | •                                      | •         | •      | •       |
| CNC Radius R  |     |              |        |         |         |       |      |          |   |  |           |        |         |
| d1  | r   | Tolerance f8 |        | Radius  |         |       |      |          |   |  |           |        |         |
|   |     |              |        | Minimum | Maximum | Rn    |      |          |   |  |           |        |         |
| 3   | 1.5 | -0.006       | -0.020 | 1.480   | 1.494   | 1.487 |      |          |   |  |           |        |         |
| 4   | 2.0 |              |        | 1.980   | 1.994   | 1.987 |      |          |   |  |           |        |         |
| 5   | 2.5 |              |        | 2.480   | 2.494   | 2.487 |      |          |   |  |           |        |         |
| 6   | 3.0 |              |        | 2.980   | 2.994   | 2.987 |      |          |   |  |           |        |         |
| 8   | 4.0 | -0.010       | -0.028 | 3.972   | 3.990   | 3.981 |      |          |   |  |           |        |         |
| 10  | 5.0 |              |        | 4.972   | 4.990   | 4.981 |      |          |   |  |           |        |         |
| 12  | 6.0 |              |        | 5.972   | 5.990   | 5.981 |      |          |   |  |           |        |         |

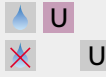
Base-X

# 5295



## Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC

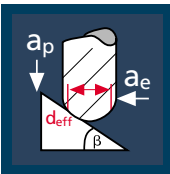


Чугун  
(серый /  
высокопрочный)



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | d <sub>eff</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] |  |
|------------|---|---------------------------|------------------------|------------------------|------------------------|--------------------------|---------------------------|----------------------------|--|
| 6          | 2 | 250                       | 0.090                  | 0.07                   | 0.09                   | 1.31                     | 60000                     | 10800                      |  |
| 8          | 2 | 250                       | 0.120                  | 0.10                   | 0.12                   | 1.74                     | 45680                     | 10965                      |  |
| 10         | 2 | 250                       | 0.150                  | 0.12                   | 0.15                   | 2.18                     | 36545                     | 10965                      |  |
| 12         | 2 | 250                       | 0.060                  | 0.14                   | 0.06                   | 2.61                     | 30450                     | 3655                       |  |
| 6          | 2 | 200                       | 0.090                  | 0.07                   | 0.09                   | 1.31                     | 48725                     | 8770                       |  |
| 8          | 2 | 200                       | 0.120                  | 0.10                   | 0.12                   | 1.74                     | 36545                     | 8770                       |  |
| 10         | 2 | 200                       | 0.150                  | 0.12                   | 0.15                   | 2.18                     | 29235                     | 8770                       |  |
| 12         | 2 | 200                       | 0.060                  | 0.14                   | 0.06                   | 2.61                     | 24360                     | 2925                       |  |
| 6          | 2 | 180                       | 0.090                  | 0.07                   | 0.09                   | 1.31                     | 43850                     | 7895                       |  |
| 8          | 2 | 180                       | 0.120                  | 0.10                   | 0.12                   | 1.74                     | 32890                     | 7895                       |  |
| 10         | 2 | 180                       | 0.150                  | 0.12                   | 0.15                   | 2.18                     | 26310                     | 7895                       |  |
| 12         | 2 | 180                       | 0.060                  | 0.14                   | 0.06                   | 2.61                     | 21925                     | 2630                       |  |
| 6          | 2 | 270                       | 0.090                  | 0.07                   | 0.09                   | 1.31                     | 60000                     | 10800                      |  |
| 8          | 2 | 270                       | 0.120                  | 0.10                   | 0.12                   | 1.74                     | 49335                     | 11840                      |  |
| 10         | 2 | 270                       | 0.150                  | 0.12                   | 0.15                   | 2.18                     | 39465                     | 11840                      |  |
| 12         | 2 | 270                       | 0.060                  | 0.14                   | 0.06                   | 2.61                     | 32890                     | 3945                       |  |

# 5295



## Применение

Сталь  
42 - 48 HRC



Сталь  
48 - 52 HRC



Сталь  
52 - 56 HRC



Чугун  
(серый /  
высокопрочный)



| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | d <sub>eff</sub><br>[mm] | n<br>[min <sup>-1</sup> ] | v <sub>f</sub><br>[mm/min] | β  |
|------------|---|---------------------------|------------------------|------------------------|------------------------|--------------------------|---------------------------|----------------------------|----|
| 6          | 2 | 250                       | 0.060                  | 0.07                   | 0.06                   | 5.06                     | 15715                     | 1885                       | 45 |
| 8          | 2 | 250                       | 0.080                  | 0.10                   | 0.08                   | 6.75                     | 11785                     | 1885                       | 45 |
| 10         | 2 | 250                       | 0.100                  | 0.12                   | 0.10                   | 8.44                     | 9430                      | 1885                       | 45 |
| 12         | 2 | 250                       | 0.060                  | 0.14                   | 0.06                   | 10.13                    | 7855                      | 945                        | 45 |
| 6          | 2 | 200                       | 0.060                  | 0.07                   | 0.06                   | 5.06                     | 12570                     | 1510                       | 45 |
| 8          | 2 | 200                       | 0.080                  | 0.10                   | 0.08                   | 6.75                     | 9430                      | 1510                       | 45 |
| 10         | 2 | 200                       | 0.100                  | 0.12                   | 0.10                   | 8.44                     | 7540                      | 1510                       | 45 |
| 12         | 2 | 200                       | 0.060                  | 0.14                   | 0.06                   | 10.13                    | 6285                      | 755                        | 45 |
| 6          | 2 | 180                       | 0.060                  | 0.07                   | 0.06                   | 5.06                     | 11315                     | 1360                       | 45 |
| 8          | 2 | 180                       | 0.080                  | 0.10                   | 0.08                   | 6.75                     | 8485                      | 1360                       | 45 |
| 10         | 2 | 180                       | 0.100                  | 0.12                   | 0.10                   | 8.44                     | 6790                      | 1360                       | 45 |
| 12         | 2 | 180                       | 0.060                  | 0.14                   | 0.06                   | 10.13                    | 5655                      | 680                        | 45 |
| 6          | 2 | 270                       | 0.060                  | 0.07                   | 0.06                   | 5.06                     | 16970                     | 2035                       | 45 |
| 8          | 2 | 270                       | 0.080                  | 0.10                   | 0.08                   | 6.75                     | 12725                     | 2035                       | 45 |
| 10         | 2 | 270                       | 0.100                  | 0.12                   | 0.10                   | 8.44                     | 10180                     | 2035                       | 45 |
| 12         | 2 | 270                       | 0.060                  | 0.14                   | 0.06                   | 10.13                    | 8485                      | 1020                       | 45 |

# Фрезы сферические

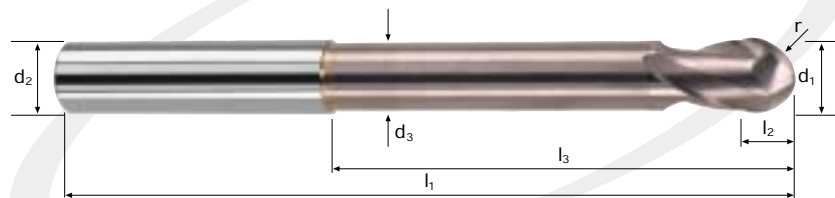
# Sphericut 220°

MG Plus H

$\lambda$  30°  
 $\gamma$  -5°



DIN 6535 HA



Предназначены для обработки:

HRC < 48    HRC < 58    HRC < 40    GG(G) Чугун

|                  |    | UNICUT-4X |      | SERVICE   |     |    |      |   |
|------------------|----|-----------|------|-----------|-----|----|------|---|
|                  |    | U5295     |      | ReTool®   |     |    |      |   |
| Пример: заказа-№ |    | Покрyтие  |      | Артикул-№ |     |    |      |   |
|                  |    | U         |      | 5295.300  |     |    |      |   |
|                  |    | Ø-Код     |      |           |     |    |      |   |
|                  |    | Ø         |      |           |     |    |      |   |
| Code             | d1 | d2 h6     | d3   | l1        | l2  | l3 | r f8 | z |
| .300             | 6  | 6         | 5,5  | 80        | 4,2 | 43 | 3    | 2 |
| .391             | 8  | 8         | 7,4  | 90        | 5,5 | 53 | 4    | 2 |
| .450             | 10 | 10        | 9,2  | 100       | 7,0 | 59 | 5    | 2 |
| .501             | 12 | 12        | 11,0 | 120       | 8,4 | 74 | 6    | 2 |

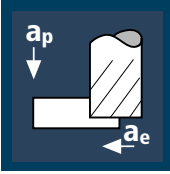
  

| CNC Radius R |     |              |         |         |         |         |
|--------------|-----|--------------|---------|---------|---------|---------|
| d1           | r   | Tolerance f8 |         | Radius  |         |         |
|              |     | Minimum      | Maximum | Minimum | Maximum | Minimum |
| 6            | 3.0 | -0.006       | -0.02   | 2.980   | 2.994   | 2.987   |
| 8            | 4.0 | -0.010       | -0.028  | 3.972   | 3.990   | 3.981   |
| 10           | 5.0 |              |         | 4.972   | 4.990   | 4.981   |
| 12           | 6.0 |              |         | 5.972   | 5.990   | 5.981   |

Base-X



**5710**



**Применение**

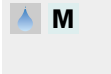
Сталь  
20 - 30 HRC



Сталь  
30 - 48 HRC



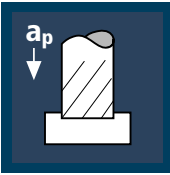
Медь чистая  
Медные сплавы



Алюминий

| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 0.3        | 2 | 120                       | 0.005                  | 0.08                   | 0.08                   | 60000      | 600                        | 3.5                         |
| 0.5        | 2 | 120                       | 0.010                  | 0.13                   | 0.13                   | 60000      | 1200                       | 19.0                        |
| 0.7        | 2 | 120                       | 0.015                  | 0.18                   | 0.18                   | 54570      | 1635                       | 50.0                        |
| 1.0        | 2 | 120                       | 0.020                  | 0.25                   | 0.25                   | 38200      | 1530                       | 95.5                        |
| 1.2        | 2 | 120                       | 0.025                  | 0.30                   | 0.30                   | 31830      | 1590                       | 143.0                       |
| 1.5        | 2 | 120                       | 0.030                  | 0.38                   | 0.38                   | 25465      | 1530                       | 215.0                       |
| 2.0        | 2 | 120                       | 0.040                  | 0.50                   | 0.50                   | 19100      | 1530                       | 382.5                       |
| 2.5        | 2 | 120                       | 0.050                  | 0.63                   | 0.63                   | 15280      | 1530                       | 597.5                       |
| 3.0        | 2 | 120                       | 0.060                  | 0.75                   | 0.75                   | 12735      | 1530                       | 860.5                       |
| 0.3        | 2 | 80                        | 0.005                  | 0.08                   | 0.08                   | 60000      | 600                        | 3.5                         |
| 0.5        | 2 | 80                        | 0.010                  | 0.13                   | 0.13                   | 50930      | 1020                       | 16.0                        |
| 0.7        | 2 | 80                        | 0.015                  | 0.18                   | 0.18                   | 36380      | 1090                       | 33.5                        |
| 1.0        | 2 | 80                        | 0.020                  | 0.25                   | 0.25                   | 25465      | 1020                       | 64.0                        |
| 1.2        | 2 | 80                        | 0.025                  | 0.30                   | 0.30                   | 21220      | 1060                       | 95.5                        |
| 1.5        | 2 | 80                        | 0.030                  | 0.38                   | 0.38                   | 16975      | 1020                       | 143.5                       |
| 2.0        | 2 | 80                        | 0.040                  | 0.50                   | 0.50                   | 12735      | 1020                       | 255.0                       |
| 2.5        | 2 | 80                        | 0.050                  | 0.63                   | 0.63                   | 10185      | 1020                       | 398.5                       |
| 3.0        | 2 | 80                        | 0.060                  | 0.75                   | 0.75                   | 8490       | 1020                       | 574.0                       |
| 0.3        | 2 | 230                       | 0.005                  | 0.08                   | 0.08                   | 60000      | 600                        | 3.5                         |
| 0.5        | 2 | 230                       | 0.010                  | 0.13                   | 0.13                   | 60000      | 1200                       | 19.0                        |
| 0.7        | 2 | 230                       | 0.015                  | 0.18                   | 0.18                   | 60000      | 1800                       | 55.0                        |
| 1.0        | 2 | 230                       | 0.020                  | 0.25                   | 0.25                   | 60000      | 2400                       | 150.0                       |
| 1.2        | 2 | 230                       | 0.025                  | 0.30                   | 0.30                   | 60000      | 3000                       | 270.0                       |
| 1.5        | 2 | 230                       | 0.030                  | 0.38                   | 0.38                   | 48810      | 2930                       | 412.0                       |
| 2.0        | 2 | 230                       | 0.040                  | 0.50                   | 0.50                   | 36605      | 2930                       | 732.5                       |
| 2.5        | 2 | 230                       | 0.050                  | 0.63                   | 0.63                   | 29285      | 2930                       | 1144.5                      |
| 3.0        | 2 | 230                       | 0.060                  | 0.75                   | 0.75                   | 24405      | 2930                       | 1648.0                      |
| 0.3        | 2 | 480                       | 0.005                  | 0.08                   | 0.08                   | 60000      | 600                        | 3.5                         |
| 0.5        | 2 | 480                       | 0.010                  | 0.13                   | 0.13                   | 60000      | 1200                       | 19.0                        |
| 0.7        | 2 | 480                       | 0.015                  | 0.18                   | 0.18                   | 60000      | 1800                       | 55.0                        |
| 1.0        | 2 | 480                       | 0.020                  | 0.25                   | 0.25                   | 60000      | 2400                       | 150.0                       |
| 1.2        | 2 | 480                       | 0.025                  | 0.30                   | 0.30                   | 60000      | 3000                       | 270.0                       |
| 1.5        | 2 | 480                       | 0.030                  | 0.38                   | 0.38                   | 60000      | 3600                       | 506.5                       |
| 2.0        | 2 | 480                       | 0.040                  | 0.50                   | 0.50                   | 60000      | 4800                       | 1200.0                      |
| 2.5        | 2 | 480                       | 0.050                  | 0.63                   | 0.63                   | 60000      | 6000                       | 2344.0                      |
| 3.0        | 2 | 480                       | 0.060                  | 0.75                   | 0.75                   | 50930      | 6110                       | 3437.0                      |

**5710**



**Применение**

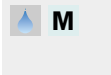
Сталь  
20 - 30 HRC



Сталь  
30 - 48 HRC



Медь чистая  
Медные сплавы



Алюминий

| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 0.3        | 2 | 100                       | 0.005                  | 0.03                   | 0.30                   | 60000      | 600                        | 5.5                         |
| 0.5        | 2 | 100                       | 0.005                  | 0.05                   | 0.50                   | 60000      | 600                        | 15.0                        |
| 0.7        | 2 | 100                       | 0.010                  | 0.07                   | 0.70                   | 45475      | 910                        | 44.5                        |
| 1.0        | 2 | 100                       | 0.015                  | 0.10                   | 1.00                   | 31830      | 955                        | 95.5                        |
| 1.2        | 2 | 100                       | 0.015                  | 0.12                   | 1.20                   | 26525      | 795                        | 114.5                       |
| 1.5        | 2 | 100                       | 0.020                  | 0.15                   | 1.50                   | 21220      | 850                        | 191.0                       |
| 2.0        | 2 | 100                       | 0.025                  | 0.20                   | 2.00                   | 15915      | 795                        | 318.0                       |
| 2.5        | 2 | 100                       | 0.030                  | 0.25                   | 2.50                   | 12735      | 765                        | 478.0                       |
| 3.0        | 2 | 100                       | 0.040                  | 0.30                   | 3.00                   | 10610      | 850                        | 765.0                       |
| 0.3        | 2 | 70                        | 0.005                  | 0.03                   | 0.30                   | 60000      | 600                        | 5.5                         |
| 0.5        | 2 | 70                        | 0.005                  | 0.05                   | 0.50                   | 44565      | 445                        | 11.0                        |
| 0.7        | 2 | 70                        | 0.010                  | 0.07                   | 0.70                   | 31830      | 635                        | 31.0                        |
| 1.0        | 2 | 70                        | 0.015                  | 0.10                   | 1.00                   | 22280      | 670                        | 67.0                        |
| 1.2        | 2 | 70                        | 0.015                  | 0.12                   | 1.20                   | 18570      | 555                        | 80.0                        |
| 1.5        | 2 | 70                        | 0.020                  | 0.15                   | 1.50                   | 14855      | 595                        | 134.0                       |
| 2.0        | 2 | 70                        | 0.025                  | 0.20                   | 2.00                   | 11140      | 555                        | 222.0                       |
| 2.5        | 2 | 70                        | 0.030                  | 0.25                   | 2.50                   | 8915       | 535                        | 334.5                       |
| 3.0        | 2 | 70                        | 0.040                  | 0.30                   | 3.00                   | 7425       | 595                        | 535.5                       |
| 0.3        | 2 | 230                       | 0.005                  | 0.03                   | 0.30                   | 60000      | 600                        | 5.5                         |
| 0.5        | 2 | 230                       | 0.005                  | 0.05                   | 0.50                   | 60000      | 600                        | 15.0                        |
| 0.7        | 2 | 230                       | 0.010                  | 0.07                   | 0.70                   | 60000      | 1200                       | 59.0                        |
| 1.0        | 2 | 230                       | 0.015                  | 0.10                   | 1.00                   | 60000      | 1800                       | 180.0                       |
| 1.2        | 2 | 230                       | 0.015                  | 0.12                   | 1.20                   | 60000      | 1800                       | 259.0                       |
| 1.5        | 2 | 230                       | 0.020                  | 0.15                   | 1.50                   | 48810      | 1950                       | 438.5                       |
| 2.0        | 2 | 230                       | 0.025                  | 0.20                   | 2.00                   | 36605      | 1830                       | 732.0                       |
| 2.5        | 2 | 230                       | 0.030                  | 0.25                   | 2.50                   | 29285      | 1755                       | 1097.0                      |
| 3.0        | 2 | 230                       | 0.040                  | 0.30                   | 3.00                   | 24405      | 1950                       | 1755.0                      |
| 0.3        | 2 | 480                       | 0.005                  | 0.03                   | 0.30                   | 60000      | 600                        | 5.5                         |
| 0.5        | 2 | 480                       | 0.005                  | 0.05                   | 0.50                   | 60000      | 600                        | 15.0                        |
| 0.7        | 2 | 480                       | 0.010                  | 0.07                   | 0.70                   | 60000      | 1200                       | 59.0                        |
| 1.0        | 2 | 480                       | 0.015                  | 0.10                   | 1.00                   | 60000      | 1800                       | 180.0                       |
| 1.2        | 2 | 480                       | 0.015                  | 0.12                   | 1.20                   | 60000      | 1800                       | 259.0                       |
| 1.5        | 2 | 480                       | 0.020                  | 0.15                   | 1.50                   | 60000      | 2400                       | 540.0                       |
| 2.0        | 2 | 480                       | 0.025                  | 0.20                   | 2.00                   | 60000      | 3000                       | 1200.0                      |
| 2.5        | 2 | 480                       | 0.030                  | 0.25                   | 2.50                   | 60000      | 3600                       | 2250.0                      |
| 3.0        | 2 | 480                       | 0.040                  | 0.30                   | 3.00                   | 50930      | 4075                       | 3667.5                      |

## Фрезы цилиндрические миниатюрная серия

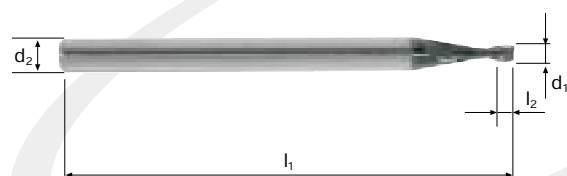
HM  
MG10

N

$\lambda$  30°  
 $\gamma$  10°



DIN  
6535  
HA



Предназначены для обработки:

90°



HRC  
< 48

Нерж.  
сталь

GG(G)  
Чугун

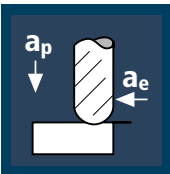
Титан

Медь

|  |       |    |    |     |    |   | MICRO                                     |   |
|--|-------|----|----|-----|----|---|---|---|
| Пример: <span style="color:red">M</span> <span style="color:blue">5710</span> <span style="color:blue">.030</span> |       |    |    |     |    |   | 5710 <span style="color:red">M5710</span> |   |
| Ø  | d1    | d2 | l1 | l2  | α  | z |   |   |
| Code   | ±0,01 | h6 |    |     |    |   |   |   |
| .030   | 0,3   | 3  | 39 | 1   | 9° | 2 | ●   | ● |
| .040   | 0,4   | 3  | 39 | 1   | 9° | 2 | ●   | ● |
| .050   | 0,5   | 3  | 39 | 1,5 | 9° | 2 | ●   | ● |
| .060   | 0,6   | 3  | 39 | 1,5 | 9° | 2 | ●   | ● |
| .070   | 0,7   | 3  | 39 | 2   | 8° | 2 | ●   | ● |
| .080   | 0,8   | 3  | 39 | 2   | 8° | 2 | ●   | ● |
| .090   | 0,9   | 3  | 39 | 2,5 | 8° | 2 | ●   | ● |
| .100   | 1,0   | 3  | 39 | 3   | 7° | 2 | ●   | ● |
| .104   | 1,1   | 3  | 39 | 3   | 7° | 2 | ●   | ● |
| .108   | 1,2   | 3  | 39 | 4   | 6° | 2 | ●   | ● |
| .112   | 1,3   | 3  | 39 | 4   | 6° | 2 | ●   | ● |
| .116   | 1,4   | 3  | 39 | 4   | 6° | 2 | ●   | ● |
| .120   | 1,5   | 3  | 39 | 4   | 6° | 2 | ●   | ● |
| .123   | 1,6   | 3  | 39 | 5   | 5° | 2 | ●   | ● |
| .126   | 1,7   | 3  | 39 | 5   | 6° | 2 | ●   | ● |
| .130   | 1,8   | 3  | 39 | 5   | 6° | 2 | ●   | ● |
| .135   | 1,9   | 3  | 39 | 5   | 5° | 2 | ●   | ● |
| .140   | 2,0   | 3  | 39 | 5   | 5° | 2 | ●   | ● |
| .143   | 2,1   | 3  | 39 | 6   | 4° | 2 | ●   | ● |
| .146   | 2,2   | 3  | 39 | 6   | 4° | 2 | ●   | ● |
| .150   | 2,3   | 3  | 39 | 6   | 3° | 2 | ●   | ● |
| .155   | 2,4   | 3  | 39 | 6   | 3° | 2 | ●   | ● |
| .160   | 2,5   | 3  | 39 | 7   | 2° | 2 | ●   | ● |
| .180   | 3,0   | 4  | 44 | 10  | 3° | 2 | ●   | ● |
|  |       |    |    |     |    |   |   |   |
|  |       |    |    |     |    |   |   |   |
|  |       |    |    |     |    |   |   |   |
|  |       |    |    |     |    |   |   |   |

Base-X

# 5785



## Применение

Сталь  
20 - 30 HRC



Сталь  
30 - 48 HRC



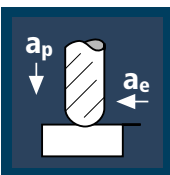
Медь чистая  
Медные сплавы



Алюминий

| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 0.3        | 2 | 120                       | 0.005                  | 0.08                   | 0.08                   | 60000      | 600                        | 3.5                         |
| 0.5        | 2 | 120                       | 0.010                  | 0.13                   | 0.13                   | 60000      | 1200                       | 19.0                        |
| 0.7        | 2 | 120                       | 0.015                  | 0.18                   | 0.18                   | 54570      | 1635                       | 50.0                        |
| 1.0        | 2 | 120                       | 0.020                  | 0.25                   | 0.25                   | 38200      | 1530                       | 95.5                        |
| 1.2        | 2 | 120                       | 0.025                  | 0.30                   | 0.30                   | 31830      | 1590                       | 143.0                       |
| 1.5        | 2 | 120                       | 0.030                  | 0.38                   | 0.38                   | 25465      | 1530                       | 215.0                       |
| 2.0        | 2 | 120                       | 0.040                  | 0.50                   | 0.50                   | 19100      | 1530                       | 382.5                       |
| 2.5        | 2 | 120                       | 0.050                  | 0.63                   | 0.63                   | 15280      | 1530                       | 597.5                       |
| 3.0        | 2 | 120                       | 0.060                  | 0.75                   | 0.75                   | 12735      | 1530                       | 860.5                       |
| 0.3        | 2 | 80                        | 0.005                  | 0.08                   | 0.08                   | 60000      | 600                        | 3.5                         |
| 0.5        | 2 | 80                        | 0.010                  | 0.13                   | 0.13                   | 50930      | 1020                       | 16.0                        |
| 0.7        | 2 | 80                        | 0.015                  | 0.18                   | 0.18                   | 36380      | 1090                       | 33.5                        |
| 1.0        | 2 | 80                        | 0.020                  | 0.25                   | 0.25                   | 25465      | 1020                       | 64.0                        |
| 1.2        | 2 | 80                        | 0.025                  | 0.30                   | 0.30                   | 21220      | 1060                       | 95.5                        |
| 1.5        | 2 | 80                        | 0.030                  | 0.38                   | 0.38                   | 16975      | 1020                       | 143.5                       |
| 2.0        | 2 | 80                        | 0.040                  | 0.50                   | 0.50                   | 12735      | 1020                       | 255.0                       |
| 2.5        | 2 | 80                        | 0.050                  | 0.63                   | 0.63                   | 10185      | 1020                       | 398.5                       |
| 3.0        | 2 | 80                        | 0.060                  | 0.75                   | 0.75                   | 8490       | 1020                       | 574.0                       |
| 0.3        | 2 | 230                       | 0.005                  | 0.08                   | 0.08                   | 60000      | 600                        | 3.5                         |
| 0.5        | 2 | 230                       | 0.010                  | 0.13                   | 0.13                   | 60000      | 1200                       | 19.0                        |
| 0.7        | 2 | 230                       | 0.015                  | 0.18                   | 0.18                   | 60000      | 1800                       | 55.0                        |
| 1.0        | 2 | 230                       | 0.020                  | 0.25                   | 0.25                   | 60000      | 2400                       | 150.0                       |
| 1.2        | 2 | 230                       | 0.025                  | 0.30                   | 0.30                   | 60000      | 3000                       | 270.0                       |
| 1.5        | 2 | 230                       | 0.030                  | 0.38                   | 0.38                   | 48810      | 2930                       | 412.0                       |
| 2.0        | 2 | 230                       | 0.040                  | 0.50                   | 0.50                   | 36605      | 2930                       | 732.5                       |
| 2.5        | 2 | 230                       | 0.050                  | 0.63                   | 0.63                   | 29285      | 2930                       | 1144.5                      |
| 3.0        | 2 | 230                       | 0.060                  | 0.75                   | 0.75                   | 24405      | 2930                       | 1648.0                      |
| 0.3        | 2 | 480                       | 0.005                  | 0.08                   | 0.08                   | 60000      | 600                        | 3.5                         |
| 0.5        | 2 | 480                       | 0.010                  | 0.13                   | 0.13                   | 60000      | 1200                       | 19.0                        |
| 0.7        | 2 | 480                       | 0.015                  | 0.18                   | 0.18                   | 60000      | 1800                       | 55.0                        |
| 1.0        | 2 | 480                       | 0.020                  | 0.25                   | 0.25                   | 60000      | 2400                       | 150.0                       |
| 1.2        | 2 | 480                       | 0.025                  | 0.30                   | 0.30                   | 60000      | 3000                       | 270.0                       |
| 1.5        | 2 | 480                       | 0.030                  | 0.38                   | 0.38                   | 60000      | 3600                       | 506.5                       |
| 2.0        | 2 | 480                       | 0.040                  | 0.50                   | 0.50                   | 60000      | 4800                       | 1200.0                      |
| 2.5        | 2 | 480                       | 0.050                  | 0.63                   | 0.63                   | 60000      | 6000                       | 2344.0                      |
| 3.0        | 2 | 480                       | 0.060                  | 0.75                   | 0.75                   | 50930      | 6110                       | 3437.0                      |

# 5785



## Применение

Сталь  
20 - 30 HRC



Сталь  
30 - 48 HRC



Медь чистая  
Медные сплавы



Алюминий

| d1<br>[mm] | z | v <sub>c</sub><br>[m/min] | f <sub>z</sub><br>[mm] | a <sub>p</sub><br>[mm] | a <sub>e</sub><br>[mm] | n<br>[min] | v <sub>f</sub><br>[mm/min] | Q<br>[mm <sup>3</sup> /min] |
|------------|---|---------------------------|------------------------|------------------------|------------------------|------------|----------------------------|-----------------------------|
| 0.3        | 2 | 100                       | 0.005                  | 0.03                   | 0.30                   | 60000      | 600                        | 5.5                         |
| 0.5        | 2 | 100                       | 0.005                  | 0.05                   | 0.50                   | 60000      | 600                        | 15.0                        |
| 0.7        | 2 | 100                       | 0.010                  | 0.07                   | 0.70                   | 45475      | 910                        | 44.5                        |
| 1.0        | 2 | 100                       | 0.015                  | 0.10                   | 1.00                   | 31830      | 955                        | 95.5                        |
| 1.2        | 2 | 100                       | 0.015                  | 0.12                   | 1.20                   | 26525      | 795                        | 114.5                       |
| 1.5        | 2 | 100                       | 0.020                  | 0.15                   | 1.50                   | 21220      | 850                        | 191.0                       |
| 2.0        | 2 | 100                       | 0.025                  | 0.20                   | 2.00                   | 15915      | 795                        | 318.0                       |
| 2.5        | 2 | 100                       | 0.030                  | 0.25                   | 2.50                   | 12735      | 765                        | 478.0                       |
| 3.0        | 2 | 100                       | 0.040                  | 0.30                   | 3.00                   | 10610      | 850                        | 765.0                       |
| 0.3        | 2 | 70                        | 0.005                  | 0.03                   | 0.30                   | 60000      | 600                        | 5.5                         |
| 0.5        | 2 | 70                        | 0.005                  | 0.05                   | 0.50                   | 44565      | 445                        | 11.0                        |
| 0.7        | 2 | 70                        | 0.010                  | 0.07                   | 0.70                   | 31830      | 635                        | 31.0                        |
| 1.0        | 2 | 70                        | 0.015                  | 0.10                   | 1.00                   | 22280      | 670                        | 67.0                        |
| 1.2        | 2 | 70                        | 0.015                  | 0.12                   | 1.20                   | 18570      | 555                        | 80.0                        |
| 1.5        | 2 | 70                        | 0.020                  | 0.15                   | 1.50                   | 14855      | 595                        | 134.0                       |
| 2.0        | 2 | 70                        | 0.025                  | 0.20                   | 2.00                   | 11140      | 555                        | 222.0                       |
| 2.5        | 2 | 70                        | 0.030                  | 0.25                   | 2.50                   | 8915       | 535                        | 334.5                       |
| 3.0        | 2 | 70                        | 0.040                  | 0.30                   | 3.00                   | 7425       | 595                        | 535.5                       |
| 0.3        | 2 | 230                       | 0.005                  | 0.03                   | 0.30                   | 60000      | 600                        | 5.5                         |
| 0.5        | 2 | 230                       | 0.005                  | 0.05                   | 0.50                   | 60000      | 600                        | 15.0                        |
| 0.7        | 2 | 230                       | 0.010                  | 0.07                   | 0.70                   | 60000      | 1200                       | 59.0                        |
| 1.0        | 2 | 230                       | 0.015                  | 0.10                   | 1.00                   | 60000      | 1800                       | 180.0                       |
| 1.2        | 2 | 230                       | 0.015                  | 0.12                   | 1.20                   | 60000      | 1800                       | 259.0                       |
| 1.5        | 2 | 230                       | 0.020                  | 0.15                   | 1.50                   | 48810      | 1950                       | 438.5                       |
| 2.0        | 2 | 230                       | 0.025                  | 0.20                   | 2.00                   | 36605      | 1830                       | 732.0                       |
| 2.5        | 2 | 230                       | 0.030                  | 0.25                   | 2.50                   | 29285      | 1755                       | 1097.0                      |
| 3.0        | 2 | 230                       | 0.040                  | 0.30                   | 3.00                   | 24405      | 1950                       | 1755.0                      |
| 0.3        | 2 | 480                       | 0.005                  | 0.03                   | 0.30                   | 60000      | 600                        | 5.5                         |
| 0.5        | 2 | 480                       | 0.005                  | 0.05                   | 0.50                   | 60000      | 600                        | 15.0                        |
| 0.7        | 2 | 480                       | 0.010                  | 0.07                   | 0.70                   | 60000      | 1200                       | 59.0                        |
| 1.0        | 2 | 480                       | 0.015                  | 0.10                   | 1.00                   | 60000      | 1800                       | 180.0                       |
| 1.2        | 2 | 480                       | 0.015                  | 0.12                   | 1.20                   | 60000      | 1800                       | 259.0                       |
| 1.5        | 2 | 480                       | 0.020                  | 0.15                   | 1.50                   | 60000      | 2400                       | 540.0                       |
| 2.0        | 2 | 480                       | 0.025                  | 0.20                   | 2.00                   | 60000      | 3000                       | 1200.0                      |
| 2.5        | 2 | 480                       | 0.030                  | 0.25                   | 2.50                   | 60000      | 3600                       | 2250.0                      |
| 3.0        | 2 | 480                       | 0.040                  | 0.30                   | 3.00                   | 50930      | 4075                       | 3667.5                      |

# Фрезы сферические миниатюрная серия

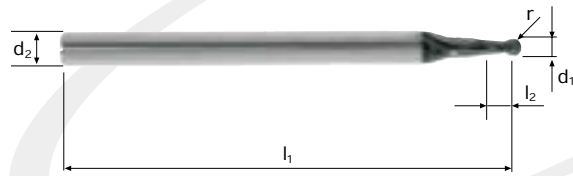
HM  
MG10

N

$\lambda$  30°  
 $\gamma$  10°



DIN  
6535  
HA



Предназначены для обработки:



HRC  
< 48

Нерж.  
сталь

GG(G)  
Чугун

Титан

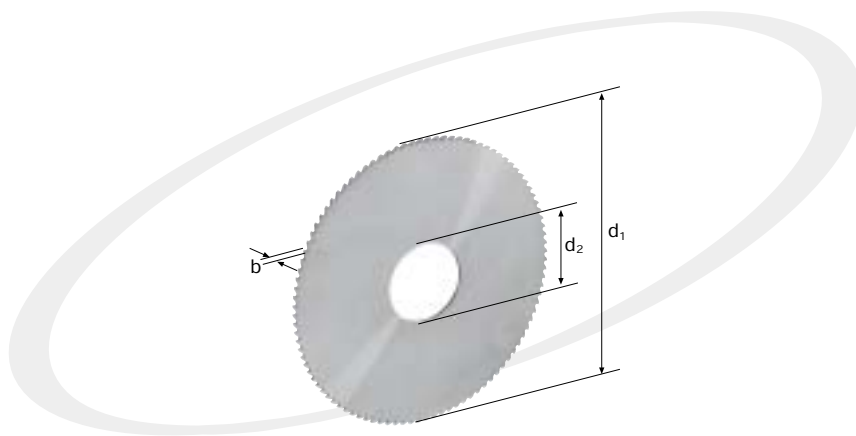
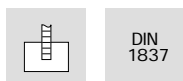
Медь

|                   |     |            |    |       |       |    |   | MICRO |       |
|-------------------|-----|------------|----|-------|-------|----|---|-------|-------|
| Пример: заказа-N° |     |            |    |       |       |    |   | 5785  | M5785 |
| Покрытие          |     | Артикул-N° |    | Ф-Код |       |    |   |       |       |
| M                 |     | 5785       |    | 030   |       |    |   |       |       |
| Ø                 | d1  | d2         | l1 | l2    | r     | α  | z |       |       |
| Code              |     | h6         |    |       | ±0,01 |    |   |       |       |
| .030              | 0,3 | 3          | 39 | 1     | 0,15  | 9° | 2 | ●     | ●     |
| .040              | 0,4 | 3          | 39 | 1     | 0,20  | 9° | 2 | ●     | ●     |
| .050              | 0,5 | 3          | 39 | 1,5   | 0,25  | 9° | 2 | ●     | ●     |
| .060              | 0,6 | 3          | 39 | 1,5   | 0,30  | 9° | 2 | ●     | ●     |
| .070              | 0,7 | 3          | 39 | 2     | 0,35  | 8° | 2 | ●     | ●     |
| .080              | 0,8 | 3          | 39 | 2     | 0,40  | 8° | 2 | ●     | ●     |
| .090              | 0,9 | 3          | 39 | 2,5   | 0,45  | 8° | 2 | ●     | ●     |
| .100              | 1,0 | 3          | 39 | 3     | 0,50  | 7° | 2 | ●     | ●     |
| .108              | 1,2 | 3          | 39 | 4     | 0,60  | 6° | 2 | ●     | ●     |
| .120              | 1,5 | 3          | 39 | 4     | 0,75  | 6° | 2 | ●     | ●     |
| .130              | 1,8 | 3          | 39 | 5     | 0,90  | 6° | 2 | ●     | ●     |
| .140              | 2,0 | 3          | 39 | 5     | 1,00  | 6° | 2 | ●     | ●     |
| .160              | 2,5 | 3          | 39 | 7     | 1,25  | 3° | 2 | ●     | ●     |
| .180              | 3,0 | 4          | 44 | 10    | 1,50  | 3° | 2 | ●     | ●     |

Base-X



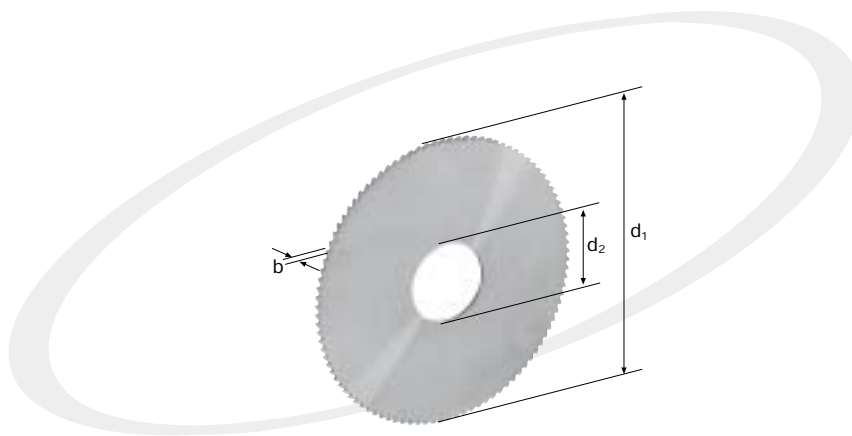
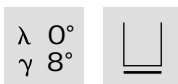
## Фрезы отрезные



| Пример: заказа-N°. |      |       |    |    | 5900       |  |  |
|--------------------|------|-------|----|----|------------|--|--|
| Покрытие           |      |       |    |    | Артикул-N° |  |  |
| 5900.102           |      |       |    |    | φ-Код      |  |  |
| ∅                  | d1   | b     | d2 | z  |            |  |  |
| Code               | js15 | ±0,01 | H7 |    |            |  |  |
| .102               | 15   | 0,2   | 5  | 64 | ●          |  |  |
| .103               |      | 0,3   |    | 64 | ●          |  |  |
| .104               |      | 0,4   |    | 64 | ●          |  |  |
| .105               |      | 0,5   |    | 48 | ●          |  |  |
| .106               |      | 0,6   |    | 48 | ●          |  |  |
| .108               |      | 0,8   |    | 40 | ●          |  |  |
| .110               |      | 1,0   |    | 40 | ●          |  |  |
| .112               |      | 1,2   |    | 40 | ●          |  |  |
| .132               | 20   | 0,2   | 5  | 80 | ●          |  |  |
| .133               |      | 0,3   |    | 64 | ●          |  |  |
| .134               |      | 0,4   |    | 64 | ●          |  |  |
| .135               |      | 0,5   |    | 48 | ●          |  |  |
| .136               |      | 0,6   |    | 48 | ●          |  |  |
| .138               |      | 0,8   |    | 48 | ●          |  |  |
| .140               |      | 1,0   |    | 40 | ●          |  |  |
| .142               |      | 1,2   |    | 40 | ●          |  |  |
| .145               |      | 1,5   |    | 40 | ●          |  |  |
| .150               |      | 2,0   |    | 32 | ●          |  |  |
| .155               |      | 2,5   |    | 32 | ●          |  |  |
| .160               |      | 3,0   |    | 32 | ●          |  |  |
| .292               | 25   | 0,2   | 8  | 80 | ●          |  |  |
| .293               |      | 0,3   |    | 80 | ●          |  |  |
| .294               |      | 0,4   |    | 64 | ●          |  |  |
| .295               |      | 0,5   |    | 64 | ●          |  |  |
| .296               |      | 0,6   |    | 64 | ●          |  |  |
| .297               |      | 0,7   |    | 48 | ●          |  |  |
| .298               |      | 0,8   |    | 48 | ●          |  |  |
| .299               |      | 0,9   |    | 48 | ●          |  |  |
| .300               |      | 1,0   |    | 48 | ●          |  |  |
| .301               |      | 1,1   |    | 48 | ●          |  |  |



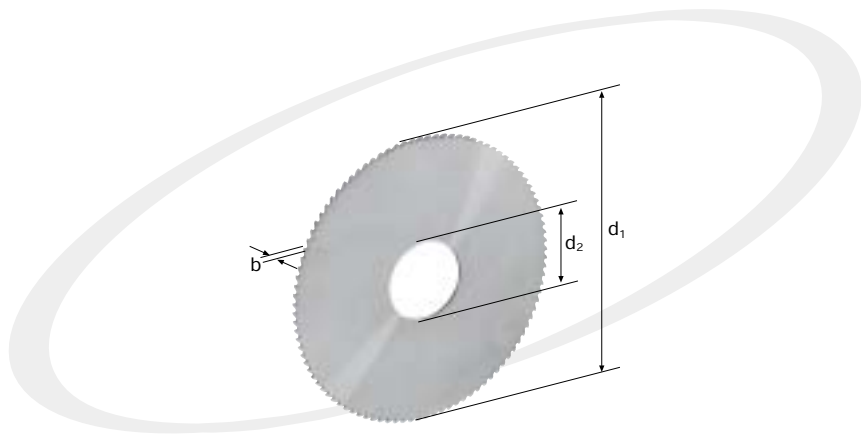
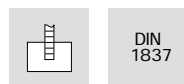
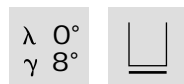
# Фрезы отрезные



| Пример: заказа-N°. |      |       |    |     | 5900 | SERVICE |
|--------------------|------|-------|----|-----|------|---------|
| Покрытие           |      |       |    |     |      | ReTool® |
| Артикул-N°.        |      |       |    |     |      |         |
| φ-Код              |      |       |    |     |      |         |
| φ                  | d1   | b     | d2 | z   |      |         |
| Code               | js15 | ±0,01 | H7 |     |      |         |
| .302               | 25   | 1,2   | 8  | 48  | ●    |         |
| .305               |      | 1,5   |    | 40  | ●    |         |
| .310               |      | 2,0   |    | 40  | ●    |         |
| .315               |      | 2,5   |    | 40  | ●    |         |
| .320               |      | 3,0   |    | 32  | ●    |         |
| .332               | 30   | 0,2   | 8  | 100 | ●    | ●       |
| .333               |      | 0,3   |    | 80  | ●    | ●       |
| .334               |      | 0,4   |    | 80  | ●    | ●       |
| .335               |      | 0,5   |    | 80  | ●    | ●       |
| .336               |      | 0,6   |    | 64  | ●    | ●       |
| .337               |      | 0,7   |    | 64  | ●    | ●       |
| .338               |      | 0,8   |    | 64  | ●    | ●       |
| .339               |      | 0,9   |    | 64  | ●    | ●       |
| .340               |      | 1,0   |    | 64  | ●    | ●       |
| .341               |      | 1,1   |    | 64  | ●    | ●       |
| .342               |      | 1,2   |    | 48  | ●    | ●       |
| .345               |      | 1,5   |    | 48  | ●    | ●       |
| .346               |      | 1,6   |    | 48  | ●    | ●       |
| .350               |      | 2,0   |    | 48  | ●    | ●       |
| .355               |      | 2,5   |    | 40  | ●    | ●       |
| .360               |      | 3,0   |    | 40  | ●    | ●       |
| .452               | 40   | 0,2   | 10 | 128 | ●    | ●       |
| .453               |      | 0,3   |    | 100 | ●    | ●       |
| .454               |      | 0,4   |    | 100 | ●    | ●       |
| .455               |      | 0,5   |    | 80  | ●    | ●       |
| .456               |      | 0,6   |    | 80  | ●    | ●       |
| .458               |      | 0,8   |    | 80  | ●    | ●       |
| .460               |      | 1,0   |    | 64  | ●    | ●       |
| .462               |      | 1,2   |    | 64  | ●    | ●       |
| .465               |      | 1,5   |    | 64  | ●    | ●       |

Base-X

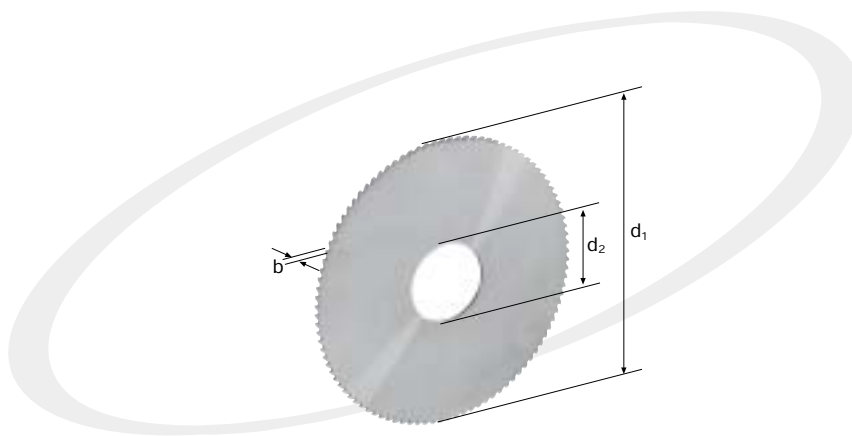
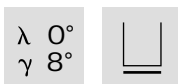
# Фрезы отрезные



| Пример: заказа-N°. |      |       |    |     | 5900 | SERVICE |
|--------------------|------|-------|----|-----|------|---------|
| Покрытие           |      |       |    |     |      | ReTool® |
| Артикул-N°.        |      |       |    |     |      |         |
| φ-Код              |      |       |    |     |      |         |
| φ                  | d1   | b     | d2 | z   |      |         |
| Code               | js15 | ±0,01 | H7 |     |      |         |
| .466               | 40   | 1,6   | 10 | 64  | ●    | ●       |
| .470               |      | 2,0   |    | 48  | ●    | ●       |
| .475               |      | 2,5   |    | 48  | ●    | ●       |
| .480               |      | 3,0   |    | 48  | ●    | ●       |
| .573               | 50   | 0,3   | 13 | 128 | ●    | ●       |
| .574               |      | 0,4   |    | 100 | ●    | ●       |
| .575               |      | 0,5   |    | 100 | ●    | ●       |
| .576               |      | 0,6   |    | 100 | ●    | ●       |
| .577               |      | 0,7   |    | 80  | ●    | ●       |
| .578               |      | 0,8   |    | 80  | ●    | ●       |
| .579               |      | 0,9   |    | 80  | ●    | ●       |
| .580               |      | 1,0   |    | 80  | ●    | ●       |
| .581               |      | 1,1   |    | 80  | ●    | ●       |
| .582               |      | 1,2   |    | 80  | ●    | ●       |
| .585               |      | 1,5   |    | 64  | ●    | ●       |
| .590               |      | 2,0   |    | 64  | ●    | ●       |
| .595               |      | 2,5   |    | 64  | ●    | ●       |
| .600               |      | 3,0   |    | 48  | ●    | ●       |
| .615               | 63   | 0,5   | 16 | 128 | ●    | ●       |
| .616               |      | 0,6   |    | 100 | ●    | ●       |
| .618               |      | 0,8   |    | 100 | ●    | ●       |
| .619               |      | 0,9   |    | 100 | ●    | ●       |
| .620               |      | 1,0   |    | 100 | ●    | ●       |
| .622               |      | 1,2   |    | 80  | ●    | ●       |
| .625               |      | 1,5   |    | 80  | ●    | ●       |
| .626               |      | 1,6   |    | 80  | ●    | ●       |
| .630               |      | 2,0   |    | 80  | ●    | ●       |
| .635               |      | 2,5   |    | 64  | ●    | ●       |
| .640               |      | 3,0   |    | 64  | ●    | ●       |



# Фрезы отрезные



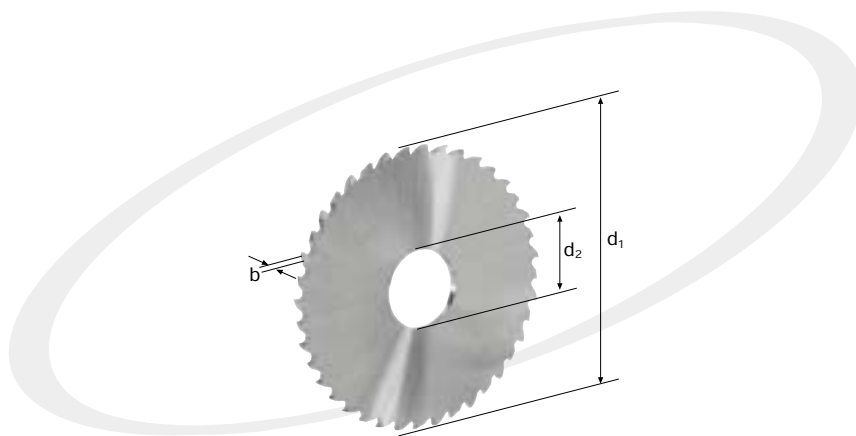
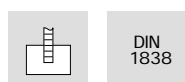
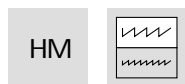
| Пример: заказа-N°                  |      |       |    |     | 5900 | SERVICE |
|------------------------------------|------|-------|----|-----|------|---------|
| Покрытие:<br>Артикул-N°:<br>φ-Код: |      |       |    |     |      | ReTool® |
| ∅                                  | d1   | b     | d2 | z   |      |         |
| Code                               | js15 | ±0,01 | H7 |     |      |         |
| .698                               | 80   | 0,8   | 22 | 128 | ●    | ●       |
| .700                               |      | 1,0   |    | 100 | ●    | ●       |
| .702                               |      | 1,2   |    | 100 | ●    | ●       |
| .705                               |      | 1,5   |    | 100 | ●    | ●       |
| .710                               |      | 2,0   |    | 80  | ●    | ●       |
| .715                               |      | 2,5   |    | 80  | ●    | ●       |
| .720                               |      | 3,0   |    | 80  | ●    | ●       |
| .778                               | 100  | 0,8   | 22 | 128 | ●    | ●       |
| .780                               |      | 1,0   |    | 128 | ●    | ●       |
| .782                               |      | 1,2   |    | 128 | ●    | ●       |
| .785                               |      | 1,5   |    | 100 | ●    | ●       |
| .790                               |      | 2,0   |    | 100 | ●    | ●       |
| .800                               |      | 3,0   |    | 80  | ●    | ●       |
| .858                               | 125  | 0,8   | 22 | 160 | ●    | ●       |
| .860                               |      | 1,0   |    | 160 | ●    | ●       |
| .862                               |      | 1,2   |    | 128 | ●    | ●       |
| .865                               |      | 1,5   |    | 128 | ●    | ●       |
| .870                               |      | 2,0   |    | 128 | ●    | ●       |
| .880                               |      | 3,0   |    | 100 | ●    | ●       |

Base-X





## Фрезы отрезные



| Пример: заказа-N°. |      |       |    |    | 5920 |  |
|--------------------|------|-------|----|----|------|--|
| Покрытие           |      |       |    |    | 5920 |  |
| Артикул-N°.        |      |       |    |    | 5920 |  |
| φ-Код              |      |       |    |    | 102  |  |
| φ                  | d1   | b     | d2 | z  |      |  |
| Code               | js15 | ±0,01 | H7 |    |      |  |
| .102               | 15   | 0,2   | 5  | 20 | ●    |  |
| .103               |      | 0,3   |    | 20 | ●    |  |
| .104               |      | 0,4   |    | 20 | ●    |  |
| .105               |      | 0,5   |    | 20 | ●    |  |
| .106               |      | 0,6   |    | 20 | ●    |  |
| .108               |      | 0,8   |    | 20 | ●    |  |
| .110               |      | 1,0   |    | 20 | ●    |  |
| .112               |      | 1,2   |    | 20 | ●    |  |
| .132               | 20   | 0,2   | 5  | 20 | ●    |  |
| .133               |      | 0,3   |    | 20 | ●    |  |
| .134               |      | 0,4   |    | 20 | ●    |  |
| .135               |      | 0,5   |    | 20 | ●    |  |
| .136               |      | 0,6   |    | 20 | ●    |  |
| .138               |      | 0,8   |    | 20 | ●    |  |
| .140               |      | 1,0   |    | 20 | ●    |  |
| .142               |      | 1,2   |    | 20 | ●    |  |
| .145               |      | 1,5   |    | 20 | ●    |  |
| .150               |      | 2,0   |    | 20 | ●    |  |
| .155               |      | 2,5   |    | 20 | ●    |  |
| .160               |      | 3,0   |    | 20 | ●    |  |
| .292               | 25   | 0,2   | 8  | 20 | ●    |  |
| .293               |      | 0,3   |    | 20 | ●    |  |
| .294               |      | 0,4   |    | 20 | ●    |  |
| .295               |      | 0,5   |    | 20 | ●    |  |
| .296               |      | 0,6   |    | 20 | ●    |  |
| .297               |      | 0,7   |    | 20 | ●    |  |
| .298               |      | 0,8   |    | 20 | ●    |  |
| .299               |      | 0,9   |    | 20 | ●    |  |
| .300               |      | 1,0   |    | 20 | ●    |  |
| .301               |      | 1,1   |    | 20 | ●    |  |



## Фрезы отрезные

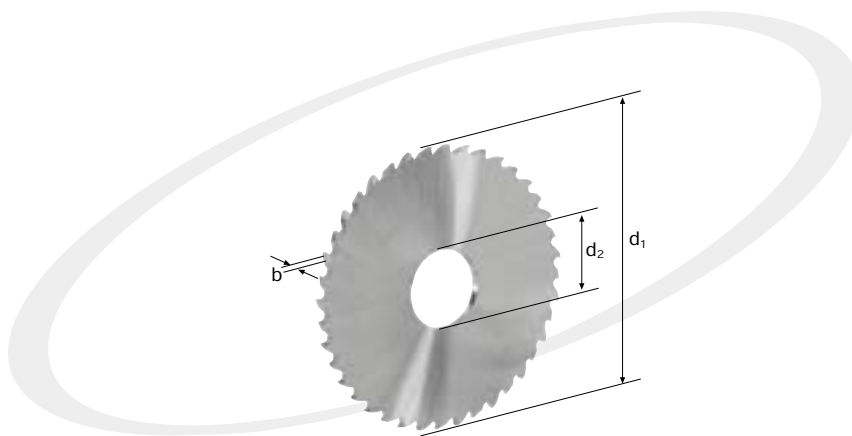
HM



$\lambda$  0°  
 $\gamma$  8°



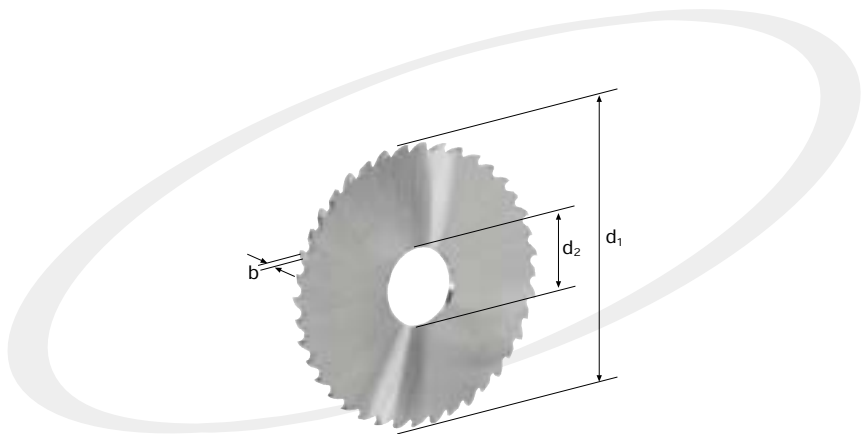
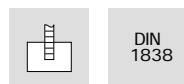
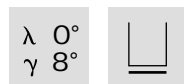
DIN  
1838



| Пример: заказа-N°. |      |       |    |    | 5920 | SERVICE |
|--------------------|------|-------|----|----|------|---------|
| Покрытие           |      |       |    |    |      | ReTool® |
| Артикул-N°.        |      |       |    |    |      |         |
| ø-Код              |      |       |    |    |      |         |
| ø                  | d1   | b     | d2 | z  |      |         |
| Code               | js15 | ±0,01 | H7 |    |      |         |
| .302               | 25   | 1,2   | 8  | 20 | •    |         |
| .305               |      | 1,5   |    | 20 | •    |         |
| .310               |      | 2,0   |    | 20 | •    |         |
| .315               |      | 2,5   |    | 20 | •    |         |
| .320               |      | 3,0   |    | 20 | •    |         |
| .332               | 30   | 0,2   | 8  | 30 | •    | •       |
| .333               |      | 0,3   |    | 30 | •    | •       |
| .334               |      | 0,4   |    | 30 | •    | •       |
| .335               |      | 0,5   |    | 30 | •    | •       |
| .336               |      | 0,6   |    | 30 | •    | •       |
| .337               |      | 0,7   |    | 30 | •    | •       |
| .338               |      | 0,8   |    | 24 | •    | •       |
| .339               |      | 0,9   |    | 24 | •    | •       |
| .340               |      | 1,0   |    | 24 | •    | •       |
| .341               |      | 1,1   |    | 24 | •    | •       |
| .342               |      | 1,2   |    | 24 | •    | •       |
| .345               |      | 1,5   |    | 24 | •    | •       |
| .346               |      | 1,6   |    | 24 | •    | •       |
| .350               |      | 2,0   |    | 24 | •    | •       |
| .355               |      | 2,5   |    | 24 | •    | •       |
| .360               |      | 3,0   |    | 24 | •    | •       |
| .452               | 40   | 0,2   | 10 | 40 | •    | •       |
| .453               |      | 0,3   |    | 40 | •    | •       |
| .454               |      | 0,4   |    | 40 | •    | •       |
| .455               |      | 0,5   |    | 40 | •    | •       |
| .456               |      | 0,6   |    | 40 | •    | •       |
| .458               |      | 0,8   |    | 32 | •    | •       |
| .460               |      | 1,0   |    | 32 | •    | •       |
| .462               |      | 1,2   |    | 32 | •    | •       |
| .465               |      | 1,5   |    | 32 | •    | •       |

Base-X

# Фрезы отрезные



| Пример: заказа-N°. |      |       |    |    | 5920 | SERVICE |
|--------------------|------|-------|----|----|------|---------|
| Покрyтие           |      |       |    |    |      | ReTool® |
| Артикул-N°.        |      |       |    |    |      |         |
| ø-Код              |      |       |    |    |      |         |
| ø                  | d1   | b     | d2 | z  |      |         |
| Code               | js15 | ±0,01 | H7 |    |      |         |
| .466               | 40   | 1,6   | 10 | 32 | ●    | ●       |
| .470               |      | 2,0   |    | 32 | ●    | ●       |
| .475               |      | 2,5   |    | 32 | ●    | ●       |
| .480               |      | 3,0   |    | 32 | ●    | ●       |
| .573               | 50   | 0,3   | 13 | 48 | ●    | ●       |
| .574               |      | 0,4   |    | 48 | ●    | ●       |
| .575               |      | 0,5   |    | 48 | ●    | ●       |
| .576               |      | 0,6   |    | 48 | ●    | ●       |
| .577               |      | 0,7   |    | 40 | ●    | ●       |
| .578               |      | 0,8   |    | 40 | ●    | ●       |
| .579               |      | 0,9   |    | 40 | ●    | ●       |
| .580               |      | 1,0   |    | 40 | ●    | ●       |
| .581               |      | 1,1   |    | 40 | ●    | ●       |
| .582               |      | 1,2   |    | 40 | ●    | ●       |
| .585               |      | 1,5   |    | 32 | ●    | ●       |
| .590               |      | 2,0   |    | 32 | ●    | ●       |
| .595               |      | 2,5   |    | 32 | ●    | ●       |
| .600               |      | 3,0   |    | 24 | ●    | ●       |
| .615               | 63   | 0,5   | 16 | 64 | ●    | ●       |
| .616               |      | 0,6   |    | 48 | ●    | ●       |
| .618               |      | 0,8   |    | 48 | ●    | ●       |
| .619               |      | 0,9   |    | 48 | ●    | ●       |
| .620               |      | 1,0   |    | 48 | ●    | ●       |
| .622               |      | 1,2   |    | 40 | ●    | ●       |
| .625               |      | 1,5   |    | 40 | ●    | ●       |
| .626               |      | 1,6   |    | 40 | ●    | ●       |
| .630               |      | 2,0   |    | 40 | ●    | ●       |
| .635               |      | 2,5   |    | 32 | ●    | ●       |
| .640               |      | 3,0   |    | 32 | ●    | ●       |



# Фрезы отрезные

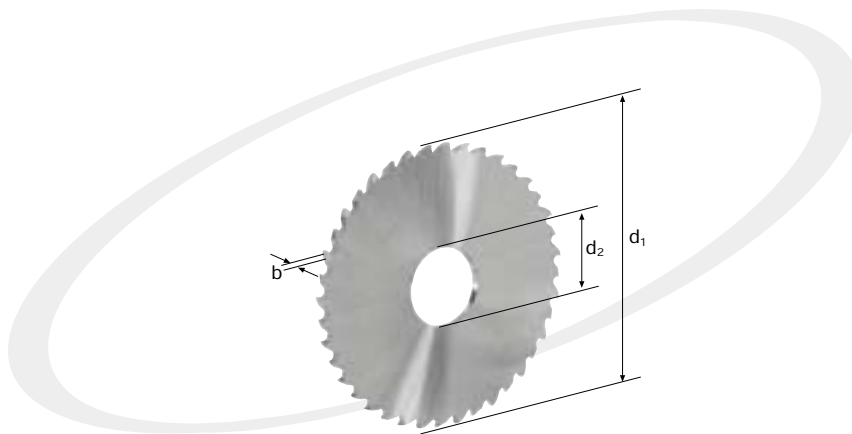
HM



$\lambda$  0°  
 $\gamma$  8°



DIN  
1838



| Пример: заказа-N°. |      |       |    |    | 5920 | SERVICE |
|--------------------|------|-------|----|----|------|---------|
| Покрытие           |      |       |    |    |      | ReTool® |
| Артикул-N°.        |      |       |    |    |      |         |
| Ø-Код              |      |       |    |    |      |         |
| Ø                  | d1   | b     | d2 | z  |      |         |
| Code               | js15 | ±0,01 | H7 |    |      |         |
| .698               | 80   | 0,8   | 22 | 64 | •    | •       |
| .700               |      | 1,0   |    | 48 | •    | •       |
| .702               |      | 1,2   |    | 48 | •    | •       |
| .705               |      | 1,5   |    | 48 | •    | •       |
| .710               |      | 2,0   |    | 40 | •    | •       |
| .715               |      | 2,5   |    | 40 | •    | •       |
| .720               |      | 3,0   |    | 40 | •    | •       |
| .778               | 100  | 0,8   | 22 | 64 | •    | •       |
| .780               |      | 1,0   |    | 64 | •    | •       |
| .782               |      | 1,2   |    | 64 | •    | •       |
| .785               |      | 1,5   |    | 48 | •    | •       |
| .790               |      | 2,0   |    | 48 | •    | •       |
| .800               |      | 3,0   |    | 40 | •    | •       |
| .858               | 125  | 0,8   | 22 | 80 | •    | •       |
| .860               |      | 1,0   |    | 80 | •    | •       |
| .862               |      | 1,2   |    | 64 | •    | •       |
| .865               |      | 1,5   |    | 64 | •    | •       |
| .870               |      | 2,0   |    | 64 | •    | •       |
| .880               |      | 3,0   |    | 48 | •    | •       |

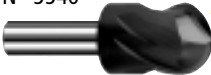







Base-X





















## Специальные исполнения

S

Фрезы концевые с уменьшенным хвостовиком, suitable for thermal shrink systems

|         |   |      |   |                                |  |   |     |
|---------|---|------|---|--------------------------------|--|---|-----|
| N° 5540 |  | NEW! | H | $\lambda$ 30°<br>$\gamma$ -10° |  |  | 294 |
| N° 5550 |  | NEW! | H | $\lambda$ 0°<br>$\gamma$ 0°    |  |  | 295 |
| N°5560  |  | NEW! | H | $\lambda$ 0°<br>$\gamma$ 0°    |  |  | 296 |

Edge milling tool for deburring

|        |   |      |   |            |  |  |     |
|--------|---|------|---|------------|--|--|-----|
| N°7945 |    | NEW! | N | $90^\circ$ |    |  | 297 |
| N°7950 |    | NEW! | N | $90^\circ$ |    |  | 297 |
| N°7955 |   | NEW! | N |            |   |  | 298 |
| N°7956 |  | NEW! | N |            |  |  | 298 |
| N°7980 |  | NEW! | N |            |  |  | 299 |
| N°7985 |  | NEW! | N |            |  |  | 299 |
| N°7970 |  | NEW! | N | $90^\circ$ |  |  | 300 |
| N°7975 |  | NEW! | N | $90^\circ$ |  |  | 300 |
| N°7990 |  | NEW! |   |            |  |  | 301 |
| N°7995 |  | NEW! |   |            |  |  | 301 |

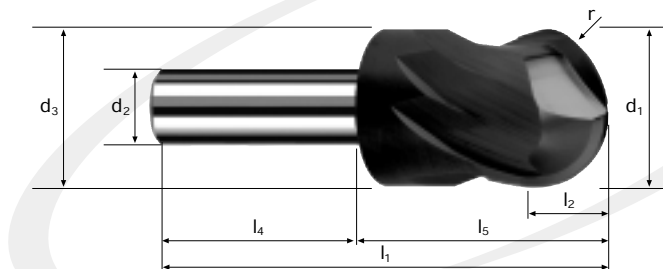
S

Фрезы концевые с уменьшенным хвостовиком

NEW!

HM  
MG/H H

$\lambda$  30°  
 $\gamma$ -10°



Предназначены для обработки:

HRC < 58

HRC < 70

HRC 25 - 48

GG(G)  
Чугун

|                                     |    |    |    |    |    |    |    |    |   | DURO-S            | SERVICE |
|-------------------------------------|----|----|----|----|----|----|----|----|---|-------------------|---------|
|                                     |    |    |    |    |    |    |    |    |   | ReTool®           |         |
| Пример: заказа-№. <b>D</b> 5540.300 |    |    |    |    |    |    |    |    |   | D5540 с покрытием |         |
| Ø                                   | d1 | d2 | d3 | l1 | l2 | l4 | l5 | r  | z |                   |         |
| Code                                |    | h6 |    |    |    |    |    | f8 |   |                   |         |
| .300                                | 6  | 4  | 8  | 22 | 5  | 10 | 12 | 3  | 2 |                   |         |
| .391                                | 8  | 4  | 8  | 24 | 7  | 10 | 14 | 4  | 2 |                   |         |
| .450                                | 10 | 6  | 10 | 31 | 9  | 15 | 16 | 5  | 2 |                   |         |
| .501                                | 12 | 8  | 14 | 38 | 11 | 20 | 18 | 6  | 2 |                   |         |
|                                     |    |    |    |    |    |    |    |    |   |                   |         |
|                                     |    |    |    |    |    |    |    |    |   |                   |         |
|                                     |    |    |    |    |    |    |    |    |   |                   |         |
|                                     |    |    |    |    |    |    |    |    |   |                   |         |
|                                     |    |    |    |    |    |    |    |    |   |                   |         |
|                                     |    |    |    |    |    |    |    |    |   |                   |         |
|                                     |    |    |    |    |    |    |    |    |   |                   |         |
|                                     |    |    |    |    |    |    |    |    |   |                   |         |
|                                     |    |    |    |    |    |    |    |    |   |                   |         |
|                                     |    |    |    |    |    |    |    |    |   |                   |         |
|                                     |    |    |    |    |    |    |    |    |   |                   |         |
|                                     |    |    |    |    |    |    |    |    |   |                   |         |



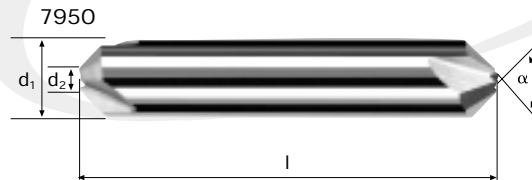
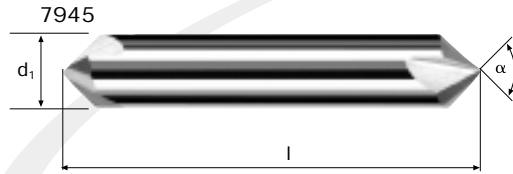
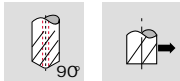
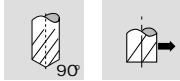




# Edge milling tool

**NEW!**

HM  
MG/H N



Предназначены для обработки:

HRC  
< 40

HRC  
< 48

Нерж.  
сталь

GG(G)  
Чугун

| Пример: заказа-N°.   |    |    |  |     |   | SERVICE |  |
|--|----|----|--|-----|---|---------|--|
| Покрытие: <span style="color: red;">7945</span> Артикул-N°: <span style="color: blue;">900</span> ø-Код: <span style="color: blue;">900</span> |    |    |  |     |   | ReTool® |  |
| ø  | d1 | l  |  | α   | Z | 7945    |  |
| Code   |    |    |  |     |   |         |  |
| .900   | 6  | 32 |  | 90° | 3 |         |  |
|  |    |    |  |     |   |         |  |
|  |    |    |  |     |   |         |  |
|  |    |    |  |     |   |         |  |
|  |    |    |  |     |   |         |  |
|  |    |    |  |     |   |         |  |
|  |    |    |  |     |   |         |  |
|  |    |    |  |     |   |         |  |
|  |    |    |  |     |   |         |  |

| Пример: заказа-N°.   |    |     |    |  |     | SERVICE |      |  |
|--|----|-----|----|--|-----|---------|------|--|
| Покрытие: <span style="color: red;">7950</span> Артикул-N°: <span style="color: blue;">900</span> ø-Код: <span style="color: blue;">900</span> |    |     |    |  |     | ReTool® |      |  |
| ø  | d1 | d2  | l  |  | α   | Z       | 7950 |  |
| Code   |    |     |    |  |     |         |      |  |
| .900   | 6  | 2,5 | 25 |  | 90° | 3       |      |  |
| .901   | 6  | 2,5 | 32 |  | 90° | 3       |      |  |
| .905   | 6  | 2,5 | 25 |  | 90° | 5       |      |  |
|  |    |     |    |  |     |         |      |  |
|  |    |     |    |  |     |         |      |  |
|  |    |     |    |  |     |         |      |  |
|  |    |     |    |  |     |         |      |  |
|  |    |     |    |  |     |         |      |  |
|  |    |     |    |  |     |         |      |  |
|  |    |     |    |  |     |         |      |  |
|  |    |     |    |  |     |         |      |  |

| Suitable pilot pins and ball bearing guides (p. 301) |           |           |           |
|--|-----------|-----------|-----------|
| Code   | Order-N°. | Order-N°. | Order-N°. |
| .900   | 7990.100  | 7995.100  |           |
| .901   | 7990.200  | 7995.200  | 7995.300  |
| .905   | 7990.100  | 7995.100  |           |

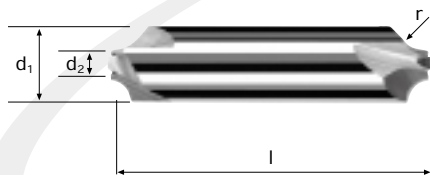
S

# Edge milling tool

**NEW!**

HM  
MG10

N



Предназначены для обработки:

HRC  
< 40

HRC  
< 48

Нерж.  
сталь

GG(G)  
Чугун

| Пример: заказа-N°.                            |    |     |    |     |   | SERVICE |  |
|---|----|-----|----|-----|---|---------|--|
| Покрытие    Артикул-N°..    ø-Код<br>7955.955 |    |     |    |     |   | ReTool® |  |
| ø   | d1 | d2  | l  | r   | z | 7955    |  |
| Code  |    |     |    |     |   |         |  |
| .955  | 6  | 2,5 | 25 | 0,5 | 3 |         |  |
| .960  | 6  | 2,5 | 25 | 1,0 | 3 |         |  |
| .965  | 6  | 2,5 | 25 | 1,5 | 3 |         |  |

| Suitable pilot pins (p. 301) |           |           |           |
|------------------------------|-----------|-----------|-----------|
| Code                         | Order-N°. | Order-N°. | Order-N°. |
| .955                         | 7990.100  |           |           |
| .960                         | 7990.100  |           |           |
| .965                         | 7990.100  |           |           |

| Пример: заказа-N°.                            |    |     |    |     |   | SERVICE |  |
|---|----|-----|----|-----|---|---------|--|
| Покрытие    Артикул-N°..    ø-Код<br>7956.955 |    |     |    |     |   | ReTool® |  |
| ø   | d1 | d2  | l  | r   | z | 7956    |  |
| Code  |    |     |    |     |   |         |  |
| .955  | 6  | 2,9 | 25 | 0,5 | 3 |         |  |
| .960  | 6  | 2,9 | 25 | 1,0 | 3 |         |  |
| .965  | 6  | 2,9 | 25 | 1,5 | 3 |         |  |

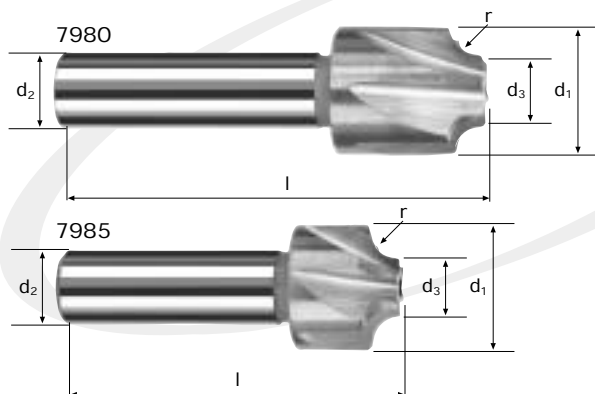
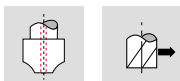
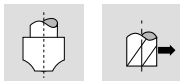
  

| Suitable ball bearing guides (p. 301) |           |           |           |
|---------------------------------------|-----------|-----------|-----------|
| Code                                  | Order-N°. | Order-N°. | Order-N°. |
| .955                                  | 7995.100  |           |           |
| .960                                  | 7995.100  |           |           |
| .965                                  | 7995.100  |           |           |

# Edge milling tool

NEW!

HM  
MG10 N



Предназначены для обработки:

HRC  
< 40

HRC  
< 48

Нерж.  
сталь

GG(G)  
Чугун

|                       |          |    |            |    |       |   | SERVICE |
|-----------------------|----------|----|------------|----|-------|---|---------|
| Пример:<br>заказа-N°. | Покрытие |    | Артикул-N° |    | Ф-Код |   | ReTool® |
|                       | 7980     |    | .980       |    |       |   | 7980    |
| Ø                     | d1       | d2 | d3         | l  | r     | z |         |
| Code                  |          |    |            |    |       |   |         |
| .980                  | 10       | 6  | 5          | 33 | 1,0   | 6 |         |
| .985                  | 10       | 6  | 5          | 33 | 1,5   | 6 |         |
| .990                  | 10       | 6  | 5          | 33 | 2,0   | 6 |         |

|                       |          |    |            |    |       |   | SERVICE |
|-----------------------|----------|----|------------|----|-------|---|---------|
| Пример:<br>заказа-N°. | Покрытие |    | Артикул-N° |    | Ф-Код |   | ReTool® |
|                       | 7985     |    | .980       |    |       |   | 7985    |
| Ø                     | d1       | d2 | d3         | l  | r     | z |         |
| Code                  |          |    |            |    |       |   |         |
| .980                  | 10       | 6  | 4,8        | 27 | 1,0   | 6 |         |
| .985                  | 10       | 6  | 4,8        | 27 | 1,5   | 6 |         |
| .990                  | 10       | 6  | 4,8        | 27 | 2,0   | 6 |         |

| Suitable ball bearing guides (p. 301) |           |           |           |
|---------------------------------------|-----------|-----------|-----------|
| Code                                  | Order-N°. | Order-N°. | Order-N°. |
| .980                                  | 7995.400  |           |           |
| .985                                  | 7995.400  |           |           |
| .990                                  | 7995.400  |           |           |

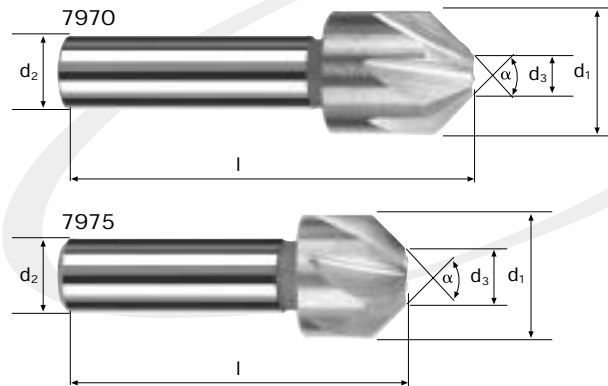
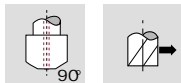
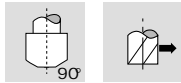


# Edge milling tool

**NEW!**

HM  
MG10

N



Предназначены для обработки:

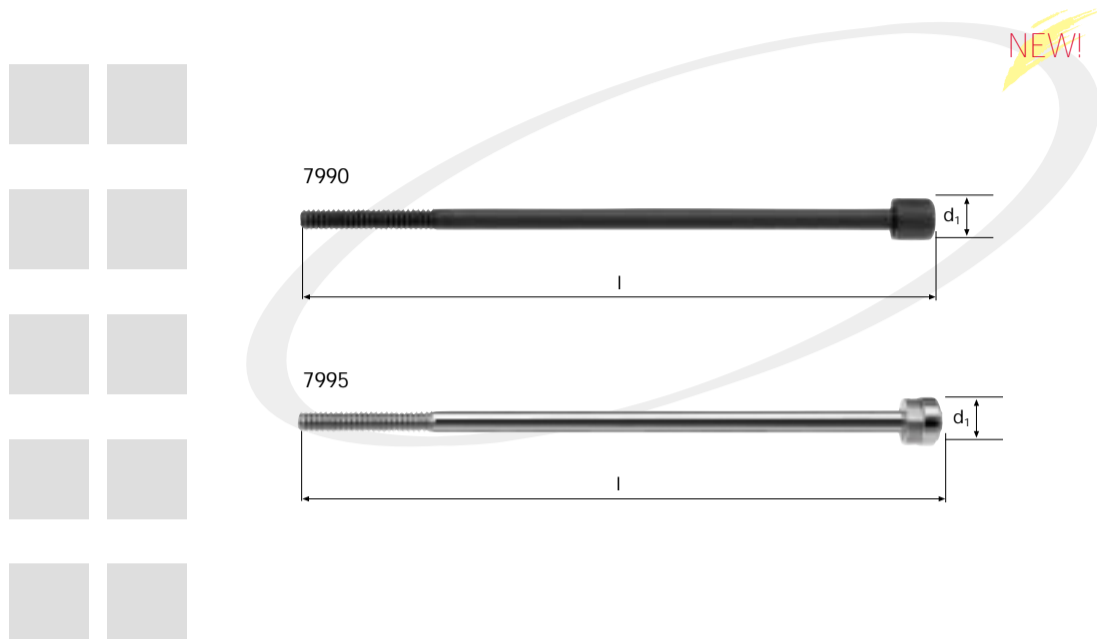
- HRC  
< 40
- HRC  
< 48
- Нерж.  
сталь
- GG(G)  
Чугун

|                       |          |    |            |    |       |   | SERVICE |  |
|-----------------------|----------|----|------------|----|-------|---|---------|--|
|                       |          |    |            |    |       |   | ReTool® |  |
| Пример:<br>заказа-N°. | Покрытие |    | Артикул-N° |    | Ø-Код |   |         |  |
|                       | 7970     |    | .940       |    |       |   | 7970    |  |
| Ø<br>Code             | d1       | d2 | d3         | l  | α     | z |         |  |
| .940                  | 10       | 6  | 4          | 33 | 90°   | 6 |         |  |
|                       |          |    |            |    |       |   |         |  |
|                       |          |    |            |    |       |   |         |  |
|                       |          |    |            |    |       |   |         |  |
|                       |          |    |            |    |       |   |         |  |
|                       |          |    |            |    |       |   |         |  |
|                       |          |    |            |    |       |   |         |  |
|                       |          |    |            |    |       |   |         |  |
|                       |          |    |            |    |       |   |         |  |

|                       |          |    |            |    |       |   | SERVICE |  |
|-----------------------|----------|----|------------|----|-------|---|---------|--|
|                       |          |    |            |    |       |   | ReTool® |  |
| Пример:<br>заказа-N°. | Покрытие |    | Артикул-N° |    | Ø-Код |   |         |  |
|                       | 7975     |    | .940       |    |       |   | 7975    |  |
| Ø<br>Code             | d1       | d2 | d3         | l  | α     | z |         |  |
| .940                  | 10       | 6  | 4,8        | 27 | 90°   | 6 |         |  |
|                       |          |    |            |    |       |   |         |  |
|                       |          |    |            |    |       |   |         |  |
|                       |          |    |            |    |       |   |         |  |
|                       |          |    |            |    |       |   |         |  |
|                       |          |    |            |    |       |   |         |  |
|                       |          |    |            |    |       |   |         |  |
|                       |          |    |            |    |       |   |         |  |
|                       |          |    |            |    |       |   |         |  |
|                       |          |    |            |    |       |   |         |  |
|                       |          |    |            |    |       |   |         |  |
|                       |          |    |            |    |       |   |         |  |
|                       |          |    |            |    |       |   |         |  |

| Suitable ball bearing guides (p. 301) |           |           |           |
|---------------------------------------|-----------|-----------|-----------|
| Code                                  | Order-N°. | Order-N°. | Order-N°. |
| .940                                  | 7995.400  |           |           |
|                                       |           |           |           |
|                                       |           |           |           |

## Accessory for edge milling tool



| Пример: заказа-№: |     |    | 7990 |  |  |
|-------------------|-----|----|------|--|--|
| Ø                 | d1  | l  |      |  |  |
| Code              |     |    |      |  |  |
| .100              | 2,6 | 25 | •    |  |  |
| .200              | 2,6 | 32 | •    |  |  |
|                   |     |    |      |  |  |
|                   |     |    |      |  |  |
|                   |     |    |      |  |  |
|                   |     |    |      |  |  |
|                   |     |    |      |  |  |

| Пример: заказа-№: |     |    | 7995 |  |  |
|-------------------|-----|----|------|--|--|
| Ø                 | d1  | l  |      |  |  |
| Code              |     |    |      |  |  |
| .100              | 3,0 | 25 | •    |  |  |
| .200              | 3,0 | 32 | •    |  |  |
| .300              | 4,0 | 32 | •    |  |  |
| .400              | 5,0 | 27 | •    |  |  |
|                   |     |    |      |  |  |
|                   |     |    |      |  |  |
|                   |     |    |      |  |  |
|                   |     |    |      |  |  |

S





## СИМВОЛЫ

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|            | Описание/ Геометрия  |
|------------|--|
| <b>NX</b>  | High-performance tool for the machining of low to medium strength steels.                                |
| <b>HX</b>  | High-performance tool for the machining of tempered and hardened steels.                                 |
| <b>SX</b>  | Высокопроизводительный инструмент для обработки нержавеющей стали  |
| <b>CX</b>  | Высокопроизводительный инструмент для обработки 12% Cr холодноштамповой стали.                           |
| <b>AX</b>  | Высокопроизводительный инструмент для обработки литейных алюминиевых сплавов и нелегированного алюминия. |
| <b>TX</b>  | Высокопроизводительный инструмент для обработки титановых сплавов.                                       |
| <b>GX</b>  | Высокопроизводительный инструмент для обработки графита.   |
| <b>MX</b>  | Высокопроизводительный инструмент для обработки, миниатюрная серия.                                      |
| <b>N</b>   | Precision tool for the machining of low to medium strength steels.                                       |
| <b>H</b>   | Precision tool for the machining of high strength steels .   |
| <b>W</b>   | Precision tool for the machining of soft materials such as aluminium wrought alloys and copper.          |
| <b>NRC</b> | Precision tool for the roughing respectively roughing/finishing of steels.                               |
| <b>NRF</b> | Precision tool for the roughing of steels.   |



# Symbols

## Machining directions



The tool is suitable for radial machining. Plunging and/or helix interpolation is possible up to a plunging angle of 2°.



The tool is suitable for radial and diagonal machining. Unrestricted diagonal plunging and helix interpolations are possible (feed rate 50%). Axial machining (drilling) is possible up to a depth of maximum 10% of the tool's diameter (feed rate 25%).



The tool is suitable for radial, diagonal and axial machining. Unrestricted diagonal plunging and helix interpolations are possible (feed rate 50%). Axial machining is possible up to a depth of maximum 50% of the tool's diameter (feed rate 25%).

## Helix angle and rake angle



Helix and rake angles are particularly important characteristics of milling tools. Due to this fact, helix angle  $\lambda$  and rake angle  $\gamma$  are specified for each tool. The exact values can vary with the tool diameter.

## Form of the shank



Shank execution according to DIN 6535 HA (cylindrical shank for solid carbide tools).



Shank execution according to DIN 6535 HB (cylindrical shank with clamping flat for solid carbide tools).



Short shank tools. The shank corresponds to the diameter grading and the diameter tolerance of the norm DIN 6535 HB. The shaft section behind the clamping flat is shortened. From a technical point of view this generates for very short projection tools (Cut-X!) no disadvantages for the machining operation. Short shank tools can be produced at lower costs and offered at lower prices. Further to that, short shank tools make a valuable ecological contribution.

## Cutting tool substrate material



Universal fine-grain carbide. Hardness 1600 HV. Co-content 10%.



Ultra fine-grain carbide. Hardness 1800 HV. Co-content 12%. Especially suitable for tools with ball nose for the application in steels of medium to high hardness.



Ultra fine-grain carbide. Hardness 2000 HV. Co-content 8%. Especially suitable for tools with ball nose for the application in hardened steels.



Ultra fine-grain carbide. Hardness 1680 HV. Co-content 10%. Especially suitable for micro tools.

# Symbols

## Crash angle



Tools with a smaller cutting diameter than the shank diameter need specific attention during machining. A crash can surely be avoided when the limiting side surfaces are sloped with at least a minimum angle, the crash angle  $\alpha$ , against the vertical.

## Form of the front cutting edges



Milling tool with 2 cutting edges which touch each other in the centre of the tool (center cutting).



Milling tool with 3 cutting edges. One cutting edge reaches to the center (center cutting).



Milling tool with 4 cutting edges. Two cutting edges touch each other in the center of the tool (center cutting).



Milling tool with 4 cutting edges. None of the cutting edges reaches to the center (no center cutting).



Milling tool with 5, 6 or more cutting edges. At least one cutting edge reaches to the center (center cutting).



Milling tool with 5, 6 or more cutting edges. None of the cutting edges reaches to the center (no center cutting).

## Form of the cutting edges



Cylindrical tool



Toric tool (tool with corner radius)



Tool with ball nose

## Form of the corner of the cutting edges



The corner between front cutting edge and circumferential cutting edge is executed sharp-edged.



The corner between front cutting edge and circumferential cutting edge is provided with a protecting phase of 45°. The size of the protecting phase is adjusted to the diameter of the tool and is within the mentioned range (in this case 0,05 to 0,15 mm).



The tool is furnished with a corner radius. For every diameter the size of the radius is listed in the corresponding data table of the catalogue.




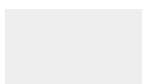
# Symbols

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## Materials

|                                   |   |
|-----------------------------------|---|
| <b>HRC</b><br><b>&lt; 48</b>      | Steels up to a hardness of 48 HRC (Hardness Rockwell C)                 |
| <b>Inox</b><br>stainless          | Stainless steels (austenitic)   |
| <b>ToolSteel</b><br><b>12% Cr</b> | Tool steels for cold working (often with 12% Cr)                        |
| <b>GG(G)</b><br>Ft/cast iron      | Cast iron, lamellar or globular   |
| <b>CU</b><br>Rame/Copper          | Copper (i.e. for electrode fabrication)                                 |
| <b>ALU</b>                        | Aluminium (here: unalloyed aluminium and low alloyed wrought aluminium) |
| <b>Titan</b>                      | Titanium alloys   |
| <b>Plastic</b>                    | Plastics  |

 A blue background means an excellent suitability of the tool for this material.

 A grey background means a good until sufficient suitability of the tool for this material.

# Symbols

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## Cutting data



Wet machining



Dry machining



Excellent suitability of the coating POLYCHROM



The suitability of the coating POLYCHROM is sufficient to good

## Reading examples:



Excellent suitability of the coating POLYCHROM during wet machining.



Excellent suitability of the coating DURO-S during dry machining. POLYCHROM shows a suitability that is sufficient to good.



Excellent suitability of the coating POLYCHROM during wet machining.



The suitability of the coating DURO-S during dry machining is sufficient to good.

## Wet machining should be favoured.



The suitability of the coating POLYCHROM during wet machining is sufficient to good.



Excellent suitability of the coating DURO-S during dry machining.

## Dry machining should be favoured.



# Formulas and abbreviations

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|                        |  |
|------------------------|--|
| <b>d<sub>1</sub></b>   | Diameter of the cutting edge   |
| <b>d<sub>2</sub></b>   | Diameter of the shank  |
| <b>d<sub>3</sub></b>   | Diameter of the neck   |
| <b>l<sub>1</sub></b>   | Total length of the tool   |
| <b>l<sub>2</sub></b>   | Length of the cutting edge   |
| <b>l<sub>3</sub></b>   | Distance from the front of the tool to the end of the neck                             |
| <b>z</b>               | Number of cutting edges  |
| <b>r</b>               | Corner radius  |
| <b>α</b>               | Crash angle  |
| <b>f<sub>z</sub></b>   | Feed per tooth   |
| <b>v<sub>c</sub></b>   | Cutting speed  |
| <b>n</b>               | Spindle speed  |
| <b>v<sub>f</sub></b>   | Feed rate  |
| <b>a<sub>p</sub></b>   | Axial depth of cut   |
| <b>a<sub>e</sub></b>   | Radial depth of cut  |
| <b>d<sub>eff</sub></b> | Effective diameter (when milling with corner radius or ball nose = effective diameter) |
| <b>Q</b>               | Material removal rate (removal of a certain material volume in a given time)           |
| <b>R<sub>m</sub></b>   | Mechanical tensile strength  |
| <b>HRC</b>             | Hardness according to Rockwell C   |
| <b>HV</b>              | Hardness according to Vickers  |
| <b>HB</b>              | Hardness according to Brinell  |

# Formulas

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Spindle speed  $n$  [ $\text{min}^{-1}$ ]

$$n = v_c \cdot 1000 / d / \pi$$

Cutting speed  $v_c$  [ $\text{m}/\text{min}$ ]

$$v_c = d \cdot \pi \cdot n / 1000$$

Feed per tooth  $f_z$  [ $\text{mm}$ ]

$$f_z = v_f / z / n$$

Feed per rotation  $f$  [ $\text{mm}$ ]

$$f = f_z \cdot z$$

Feed speed  $v_f$  [ $\text{mm}/\text{min}$ ]

$$v_f = f_z \cdot z \cdot n$$

Feed speed  $v_{fH}$  by a helix interpolation  
[ $\text{mm}/\text{min}$ ]

$$v_{fH} = v_f \cdot \frac{D_z}{D_a}$$

$$v_{fH} = v_f \cdot \frac{D_a - d}{D_a}$$

$D_a$  [ $\text{mm}$ ] = Outside diameter of the mentioned helix

$D_z$  [ $\text{mm}$ ] = Diameter that the center of the tool describes for the helix interpolation

Material removal rate  $Q$  [ $\text{mm}^3/\text{min}$ ]

$$Q = a_e \cdot a_p \cdot v_f$$

Effective tool diameter

$$d_{\text{eff}} = 2 \cdot \sqrt{(d \cdot a_p - a_p \cdot a_p)}$$

i



ReTool®

ReTool® renews tools



**ReTool®**: The tool reconditioning by the tool manufacturer itself saves you money.

We recondition your used tools with the competence of a tool manufacturer and thereby guarantee maximum economy of our products also beyond the first time use.

**ReTool®**                      Regrinding of Fraisa-tools according to original Fraisa-geometry specifications

**ReTool®**  
with coating                      Regrinding of Fraisa-tools according to original Fraisa-geometry specifications and subsequent recoating

**Reference to the prizing for ReTool®**

The price list in the catalogue refers to reconditioning of tools with normal wear. For tools with high wear an additional surplus charge applies. If on the other hand only partial reconditioning is necessary, like regrinding of the face only, than a reduced price may apply. For any further questions on regrinding please do not hesitate to contact our consulting team.





# Material data list

| Material type                      | Material designation number | Designation according to BS | X-Generation           |                 | Base-X<br>Tools of the base assortment |
|------------------------------------|-----------------------------|-----------------------------|------------------------|-----------------|--|
|                                    |                             |                             | High-performance tools | Hardened steels |  |
| <b>Free-cutting steel</b>          |                             |                             | NX                     |                 | Base-X                                 |
|                                    | 1.0715                      | 230 M 07                    | 5                      |                 | 229                                    |
|                                    | 1.0718                      | 230 M 07Pb                  |                        |                 |  |
|                                    | 1.0737                      |                             |                        |                 |  |
|                                    | 1.0727                      | 212 M 44                    |                        |                 |  |
|                                    | 1.0728                      |                             |                        |                 |  |
| <b>Structural steel</b>            |                             |                             | NX                     |                 | Base-X                                 |
|                                    | 1.0570                      | 4360-50 D                   | 5                      |                 | 229                                    |
|                                    | 1.0060                      | 4360-SSE; SSC               |                        |                 |  |
|                                    | 1.7337                      | 1501-620 Gr. 27             |                        |                 |  |
|                                    | 1.7715                      | 1503-660-440                |                        |                 |  |
|                                    | 1.7735                      |                             |                        |                 |  |
| <b>Case hardening steel</b>        |                             |                             | NX                     | HX              | Base-X                                 |
|                                    | 1.0401                      | 080 A 15                    | 5                      | 47              | 229                                    |
|                                    | 1.5752                      | 655 M 13                    |                        |                 |  |
|                                    | 1.7131                      | 590 M 17                    |                        |                 |  |
|                                    | 1.7147                      |                             |                        |                 |  |
|                                    | 1.7326                      |                             |                        |                 |  |
| <b>Nitriding steel</b>             |                             |                             | NX                     | HX              | Base-X                                 |
|                                    | 1.8504                      |                             | 5                      | 47              | 229                                    |
|                                    | 1.8506                      |                             |                        |                 |  |
|                                    | 1.8509                      | 905 M 39                    |                        |                 |  |
|                                    | 1.8521                      |                             |                        |                 |  |
|                                    | 1.8550                      |                             |                        |                 |  |
| <b>Heat-treatable steel</b>        |                             |                             | NX                     | HX              | Base-X                                 |
| unalloyed                          | 1.0503                      | 080 M 46                    | NX                     | HX              | Base-X                                 |
|                                    | 1.1191                      | 080 M 46                    | 5                      | 47              | 229                                    |
|                                    | 1.1221                      | 080 A 62                    |                        |                 |  |
|                                    |                             |                             |                        |                 |  |
| alloyed                            | 1.7225                      | 709 M 40                    | NX                     | HX              | Base-X                                 |
|                                    | 1.7228                      | 708 A 47                    | 5                      | 47              | 229                                    |
|                                    | 1.5755                      | 653 M 31                    |                        |                 |  |
|                                    | 1.7735                      |                             |                        |                 |  |
|                                    | 1.6746                      | 830 M 31                    |                        |                 |  |
|                                    |                             |                             |                        |                 |  |
| <b>Unalloyed tool steel</b>        |                             |                             | NX                     | HX              | Base-X                                 |
|                                    | 1.1730                      |                             | 5                      | 47              | 229                                    |
|                                    | 1.1645                      |                             |                        |                 |  |
|                                    | 1.1820                      |                             |                        |                 |  |
| <b>Tool steel for cold working</b> |                             |                             | CX                     | HX              | Base-X                                 |
| low alloyed                        | 1.2067                      | BL 3                        | CX                     | HX              | Base-X                                 |
|                                    | 1.2162                      |                             | 105                    | 47              | 229                                    |
|                                    | 1.2510                      | BO 1                        |                        |                 |  |
|                                    | 1.2542                      | BS 1                        |                        |                 |  |
|                                    | 1.2721                      |                             |                        |                 |  |
| high alloyed (12% Cr)              | 1.2080                      | BD 3                        | CX                     | HX              | Base-X                                 |
|                                    | 1.2083                      |                             | 105                    | 47              | 229                                    |
|                                    | 1.2379                      | BD 2                        |                        |                 |  |
|                                    | 1.2436                      |                             |                        |                 |  |
|                                    | 1.2601                      |                             |                        |                 |  |
| <b>Tool steel for warm working</b> |                             |                             | HX                     | HX              | Base-X                                 |
| low alloyed                        | 1.2311                      | BP 20                       | HX                     | HX              | Base-X                                 |
|                                    | 1.2312                      |                             | 105                    | 47              | 229                                    |
|                                    | 1.2713                      |                             |                        |                 |  |
|                                    | 1.2738                      |                             |                        |                 |  |
|                                    | 1.2744                      |                             |                        |                 |  |
|                                    |                             |                             |                        |                 |  |

| Material type                                   | Material designation number | Designation according to BS | X-Generation           |                 | Base-X<br>Tools of the base assortment |
|---|-----------------------------|-----------------------------|------------------------|-----------------|--|
|   |                             |                             | High-performance tools | Hardened steels |  |
| <b>Tool steel for warm working</b>              |                             |                             | HX                     | HX              | Base-X                                 |
| high alloyed                                    | 1.2083                      |                             | HX                     | HX              | Base-X                                 |
|   | 1.2767                      | BP 30                       | 47                     | 47              | 229                                    |
|   | 1.2343                      | BH 11                       |                        |                 |  |
|   | 1.2344                      | BH 13                       |                        |                 |  |
|   | 1.2316                      |                             |                        |                 |  |
|   | 1.2581                      | BH 21                       |                        |                 |  |
| 1.2885  |                             |                             |                        |                 |  |
| <b>Stainless steel</b>                          |                             |                             | SX                     | HX              | Base-X                                 |
| ferritic/martensitic                            | 1.4006                      | 410 S 21                    | SX                     | HX              | Base-X                                 |
|   | 1.4024                      | 420 S 29                    | 91                     | 47              | 229                                    |
|   | 1.4031                      |                             |                        |                 |  |
|   | 1.4104                      |                             |                        |                 |  |
|   | 1.4112                      |                             |                        |                 |  |
| 1.4404  | 316 S 11                    |                             |                        |                 |  |
| austenitic                                      | 1.4571                      | 320 S 31                    | SX                     |                 | Base-X                                 |
|   | 1.4580                      | 318 S 17                    | 91                     |                 | 229                                    |
|   | 1.4301                      | 304 S 31                    |                        |                 |  |
|   | 1.4573                      | 320 S 33                    |                        |                 |  |
|   |                             |                             |                        |                 |  |
| <b>High temperature resistant steels</b>        |                             |                             | SX                     |                 | Base-X                                 |
|   | 1.4742                      | 430 S 15                    | 91                     |                 | 229                                    |
|   | 1.4828                      | 309 S 24                    |                        |                 |  |
|   | 1.4871                      | 349 S 54                    |                        |                 |  |
|   | 1.4923                      | 762                         |                        |                 |  |
|   | 1.4945                      |                             |                        |                 |  |
| <b>High temperature resistant nickel alloys</b> |                             |                             | SX                     |                 | Base-X                                 |
|   | 2.4360                      |                             | 91                     |                 | 229                                    |
|   | 2.4640                      |                             |                        |                 |  |
|   | 2.4668                      |                             |                        |                 |  |
|   | 2.4952                      |                             |                        |                 |  |
|   | 2.4632                      |                             |                        |                 |  |
| <b>Cast steel</b>                               |                             |                             | NX / HX / SX           |                 | Base-X                                 |
| low alloyed                                     | 1.0446                      |                             | NX                     |                 | Base-X                                 |
|   | 1.1168                      |                             | 5                      |                 | 229                                    |
|   | 1.6552                      |                             |                        |                 |  |
|   | 1.6783                      |                             |                        |                 |  |
|   | 1.7147                      |                             |                        |                 |  |
| 1.2201  |                             |                             |                        |                 |  |
| high alloyed                                    | 1.2363                      | BA 2                        | HX                     |                 | Base-X                                 |
|   | 1.2367                      |                             | 47                     |                 | 229                                    |
|   | 1.2880                      |                             |                        |                 |  |
|   |                             |                             |                        |                 |  |
| Stainless ferritic/martensitic                  | 1.4006                      | 410 S 21                    | NX                     |                 | Base-X                                 |
|   | 1.4027                      | 420 C 29                    | 5                      |                 | 229                                    |
|   | 1.4826                      |                             |                        |                 |  |
|   |                             |                             |                        |                 |  |
| Stainless austenitic                            | 1.4312                      | 305 S 19                    | SX                     |                 | Base-X                                 |
|   | 1.4465                      |                             | 91                     |                 | 229                                    |
|   | 1.4585                      |                             |                        |                 |  |
|   |                             |                             |                        |                 |  |
| <b>Cast iron GG</b>                             |                             |                             | HX                     |                 | Base-X                                 |
|   | 0.6025                      | Grade 260                   | 47                     |                 | 229                                    |
|   | 0.6040                      | Grade 400                   |                        |                 |  |
|   | 0.6661                      | L-NiCr 20 3                 |                        |                 |  |
|   | 0.9625                      | Grade 2 B                   |                        |                 |  |
|   | 0.9645                      | Grade 3 C                   |                        |                 |  |
| <b>Cast iron GGG</b>                            |                             |                             | HX                     |                 | Base-X                                 |
|   | 0.7040                      | SNG 420/12                  | 47                     |                 | 229                                    |
|   | 0.7070                      | SNG 700/2                   |                        |                 |  |
|   | 0.7660                      | S-NiCr 20 2                 |                        |                 |  |
|   | 0.7676                      | S-NiCr 30 3                 |                        |                 |  |
|   | 0.7680                      | S-NiSiCr 30 5 5             |                        |                 |  |

M

| Material type                    | Material designation number | Designation according to B5 | X-Generation           |                 | Base-X        |
|----------------------------------|-----------------------------|-----------------------------|------------------------|-----------------|---------------|
|                                  |                             |                             | High-performance tools | Hardened steels |               |
| <b>Titanium</b>                  |                             |                             | <b>SX / TX</b>         |                 | <b>Base-X</b> |
| unalloyed                        | 3.7124                      |                             | <b>SX</b>              |                 | <b>Base-X</b> |
|                                  |                             |                             | <b>91</b>              |                 | <b>229</b>    |
| alloyed                          | 3.7154                      |                             | <b>TX</b>              |                 | <b>Base-X</b> |
|                                  | 3.7165                      | TA 10,11,12,28,56           | <b>135</b>             |                 | <b>229</b>    |
|                                  | 3.7174                      |                             |                        |                 |               |
|                                  | 3.7184                      |                             |                        |                 |               |
| <b>Aluminium</b>                 |                             |                             | <b>AX</b>              |                 | <b>Base-X</b> |
| unalloyed                        | 3.0205                      | 1C                          | <b>AX</b>              |                 | <b>Base-X</b> |
|                                  |                             |                             | <b>115</b>             |                 | <b>229</b>    |
| Wrought alloys                   | 3.0515                      | N3                          | <b>AX</b>              |                 | <b>Base-X</b> |
|                                  | 3.3315                      | N41                         | <b>115</b>             |                 | <b>229</b>    |
|                                  | 3.3345                      |                             |                        |                 |               |
|                                  | 3.1325                      | H14                         |                        |                 |               |
|                                  | 3.1645                      |                             |                        |                 |               |
| Cast alloys                      | 3.2315                      | H30                         | <b>AX</b>              |                 | <b>Base-X</b> |
|                                  | 3.3561                      |                             | <b>115</b>             |                 | <b>229</b>    |
|                                  | 3.3591                      |                             |                        |                 |               |
|                                  | 3.2371                      |                             |                        |                 |               |
|                                  | 3.2381                      |                             |                        |                 |               |
|                                  | 3.2581                      |                             |                        |                 |               |
| Aluminium / Magnesium            | 3.5312                      |                             | <b>AX</b>              |                 | <b>Base-X</b> |
|                                  | 3.5812                      |                             | <b>115</b>             |                 | <b>229</b>    |
|                                  | 3.5102                      |                             |                        |                 |               |
| <b>Magnesium</b>                 |                             |                             | <b>AX</b>              |                 | <b>Base-X</b> |
|                                  | 3.5105                      |                             | <b>115</b>             |                 | <b>229</b>    |
|                                  | 3.5612                      |                             |                        |                 |               |
|                                  | 3.5912                      |                             |                        |                 |               |
| <b>Copper</b>                    |                             |                             | <b>AX</b>              |                 | <b>Base-X</b> |
|                                  | 2.0060                      |                             | <b>115</b>             |                 | <b>229</b>    |
|                                  | 2.0205                      |                             |                        |                 |               |
|                                  | 2.0857                      |                             |                        |                 |               |
|                                  | 2.0842                      |                             |                        |                 |               |
|                                  | 2.0780                      |                             |                        |                 |               |
| <b>Brass</b>                     |                             |                             | <b>NX</b>              |                 | <b>Base-X</b> |
|                                  | 2.0331                      |                             | <b>5</b>               |                 | <b>229</b>    |
|                                  | 2.0375                      |                             |                        |                 |               |
|                                  | 2.0530                      |                             |                        |                 |               |
|                                  | 2.0561                      |                             |                        |                 |               |
| <b>Bronze</b>                    |                             |                             | <b>NX</b>              |                 | <b>Base-X</b> |
|                                  | 2.1016                      |                             | <b>5</b>               |                 | <b>229</b>    |
|                                  | 2.1030                      |                             |                        |                 |               |
|                                  | 2.0971                      |                             |                        |                 |               |
|                                  | 2.0978                      |                             |                        |                 |               |
| <b>Graphite</b>                  |                             |                             | <b>GX</b>              |                 | <b>Base-X</b> |
|                                  |                             |                             | <b>145</b>             |                 | <b>229</b>    |
|                                  |                             |                             |                        |                 |               |
|                                  |                             |                             |                        |                 |               |
| <b>Plastics</b>                  |                             |                             | <b>AX</b>              |                 | <b>Base-X</b> |
|                                  |                             |                             | <b>115</b>             |                 | <b>229</b>    |
|                                  |                             |                             |                        |                 |               |
|                                  |                             |                             |                        |                 |               |
| <b>Fibre reinforced plastics</b> |                             |                             |                        |                 | <b>Base-X</b> |
|                                  |                             |                             |                        |                 | <b>229</b>    |
|                                  |                             |                             |                        |                 |               |
|                                  |                             |                             |                        |                 |               |

## Hardness conversion table

| R <sub>m</sub> [N/mm <sup>2</sup> ] | HV 10 | HB  | HRC | R <sub>m</sub> [N/mm <sup>2</sup> ] | HV 10 | HB  | HRC |
|-------------------------------------|-------|-----|-----|-------------------------------------|-------|-----|-----|
| 240                                 | 75    | 71  |     | 920                                 | 287   | 273 | 28  |
| 255                                 | 80    | 76  |     | 940                                 | 293   | 278 | 29  |
| 270                                 | 85    | 81  |     | 970                                 | 302   | 287 | 30  |
| 285                                 | 90    | 86  |     | 995                                 | 310   | 295 | 31  |
| 305                                 | 95    | 90  |     | 1020                                | 317   | 301 | 32  |
| 320                                 | 100   | 95  |     | 1050                                | 327   | 311 | 33  |
| 335                                 | 105   | 100 |     | 1080                                | 336   | 319 | 34  |
| 350                                 | 110   | 105 |     | 1110                                | 345   | 328 | 35  |
| 370                                 | 115   | 109 |     | 1140                                | 355   | 337 | 36  |
| 385                                 | 120   | 114 |     | 1170                                | 364   | 346 | 37  |
| 400                                 | 125   | 119 |     | 1200                                | 373   | 354 | 38  |
| 415                                 | 130   | 124 |     | 1230                                | 382   | 363 | 39  |
| 430                                 | 135   | 128 |     | 1260                                | 392   | 372 | 40  |
| 450                                 | 140   | 133 |     | 1300                                | 403   | 383 | 41  |
| 465                                 | 145   | 138 |     | 1330                                | 413   | 393 | 42  |
| 480                                 | 150   | 143 |     | 1360                                | 423   | 402 | 43  |
| 495                                 | 155   | 147 |     | 1400                                | 434   | 413 | 44  |
| 510                                 | 160   | 152 |     | 1440                                | 446   | 424 | 45  |
| 530                                 | 165   | 157 |     | 1480                                | 458   | 435 | 46  |
| 545                                 | 170   | 162 |     | 1530                                | 473   | 449 | 47  |
| 560                                 | 175   | 166 |     | 1570                                | 484   | 460 | 48  |
| 575                                 | 180   | 171 |     | 1620                                | 497   | 472 | 49  |
| 595                                 | 185   | 176 |     | 1680                                | 514   | 488 | 50  |
| 610                                 | 190   | 181 |     | 1730                                | 527   | 501 | 51  |
| 625                                 | 195   | 185 |     | 1790                                | 544   | 517 | 52  |
| 640                                 | 200   | 190 |     | 1845                                | 560   | 532 | 53  |
| 660                                 | 205   | 195 |     | 1910                                | 578   | 549 | 54  |
| 675                                 | 210   | 199 |     | 1980                                | 596   | 567 | 55  |
| 690                                 | 215   | 204 |     | 2050                                | 615   | 584 | 56  |
| 705                                 | 220   | 209 |     | 2140                                | 639   | 607 | 57  |
| 720                                 | 225   | 214 |     |                                     | 655   | 622 | 58  |
| 740                                 | 230   | 219 |     |                                     | 675   |     | 59  |
| 755                                 | 235   | 223 |     |                                     | 698   |     | 60  |
| 770                                 | 240   | 228 |     |                                     | 720   |     | 61  |
| 785                                 | 245   | 233 |     |                                     | 745   |     | 62  |
| 800                                 | 250   | 238 | 22  |                                     | 773   |     | 63  |
| 820                                 | 255   | 242 | 23  |                                     | 800   |     | 64  |
| 835                                 | 260   | 247 | 24  |                                     | 829   |     | 65  |
| 860                                 | 268   | 255 | 25  |                                     | 864   |     | 66  |
| 870                                 | 272   | 258 | 26  |                                     | 900   |     | 67  |
| 900                                 | 280   | 266 | 27  |                                     | 940   |     | 68  |

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| - 5036      | 217 |         |           |          |          |          |           |          |          | ●         |
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| - 5100      | 83  |         | ●         | ●        |          |          |           |          |          | ●         |
| - 5110      | 85  |         | ●         | ●        |          |          |           |          |          | ●         |
| - 5120      | 87  |         | ●         | ●        |          |          |           |          |          | ●         |
| - 5140      | 89  |         | ●         | ●        |          |          |           |          |          | ●         |
| - 5155      | 19  |         |           | ●        |          |          |           |          |          | ●         |
| - 5200      | 245 |         | ●         |          |          |          |           |          |          |           |
| - 5202      | 113 |         |           | ●        |          |          |           |          |          |           |
| - 5205      | 107 |         |           | ●        |          |          |           |          |          |           |
| - 5206      | 109 |         |           | ●        |          |          |           |          |          |           |
| - 5207      | 111 |         |           | ●        |          |          |           |          |          |           |
| - 5212      | 103 |         | ●         |          |          |          |           |          |          |           |
| - 5213      | 95  |         | ●         |          |          |          |           |          |          |           |
| - 5214      | 99  |         | ●         |          |          |          |           |          |          |           |
| - 5215      | 101 |         | ●         |          |          |          |           |          |          |           |
| - 5218      | 93  |         | ●         |          |          |          |           |          |          |           |
| - 5219      | 97  |         | ●         |          |          |          |           |          |          |           |
| - 5220      | 41  |         |           | ●        |          |          |           |          |          | ●         |
| - 5222      | 43  |         | ●         | ●        |          |          |           |          |          | ●         |
| - 5223      | 45  |         | ●         | ●        |          |          |           |          |          | ●         |
| - 5224      | 15  |         | ●         |          |          |          |           |          |          | ●         |
| - 5225      | 9   |         |           | ●        |          |          |           |          |          | ●         |
| - 5227      | 11  |         |           | ●        |          |          |           |          |          | ●         |
| - 5228      | 13  |         | ●         |          |          |          |           |          |          | ●         |
| - 5230      | 247 | ●       | ●         |          |          |          |           |          |          | ●         |
| - 5231      | 17  |         | ●         |          |          |          |           |          |          | ●         |
| - 5234      | 271 |         | ●         |          |          |          |           |          |          |           |
| - 5240      | 233 |         | ●         |          |          |          |           |          |          |           |
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| - 5255      | 237 |         | ●         |          |          |          |           |          |          |           |
| - 5256      | 73  |         | ●         | ●        |          |          |           |          |          | ●         |
| - 5257      | 77  |         | ●         | ●        |          |          |           |          |          | ●         |
| - 5258      | 59  |         | ●         | ●        |          |          |           |          |          | ●         |
| - 5259      | 79  |         | ●         | ●        |          |          |           |          |          | ●         |
| - 5260      | 239 |         | ●         |          |          |          |           |          |          |           |
| - 5261      | 67  |         |           | ●        |          |          |           |          |          | ●         |
| - 5263      | 63  |         | ●         | ●        |          |          |           |          |          | ●         |
| - 5264      | 81  |         | ●         | ●        |          |          |           |          |          | ●         |
| - 5265      | 241 |         | ●         |          |          |          |           |          |          |           |
| - 5266      | 61  |         |           | ●        |          |          |           |          |          |           |
| - 5267      | 75  |         |           | ●        |          |          |           |          |          |           |
| - 5268      | 243 |         | ●         |          |          |          |           |          |          |           |
| - 5269      | 65  |         |           | ●        |          |          |           |          |          | ●         |
| - 5271      | 121 | ●       |           |          |          | ●        |           |          |          |           |
| - 5272      | 259 | ●       |           |          |          | ●        |           |          |          |           |

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| - 5306      | 109 |         |           | •      |       |        |           |     |       |           |
| - 5307      | 111 |         |           | •      |       |        |           |     |       |           |
| - 5312      | 103 |         | •         |        | •     |        |           |     |       |           |
| - 5313      | 95  |         | •         |        | •     |        |           |     |       |           |
| - 5314      | 99  |         | •         |        | •     |        |           |     |       |           |
| - 5315      | 101 |         | •         |        | •     |        |           |     |       |           |
| - 5318      | 93  |         | •         |        | •     |        |           |     |       |           |
| - 5319      | 97  |         | •         |        | •     |        |           |     |       |           |
| - 5324      | 15  |         | •         |        |       |        |           |     |       | •         |
| - 5325      | 9   |         |           | •      |       |        |           |     |       | •         |
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| - 5329      | 211 |         |           |        |       |        |           |     |       | •         |
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| - 5356      | 73  |         | •         | •      |       |        |           |     |       | •         |
| - 5357      | 77  |         | •         | •      |       |        |           |     |       | •         |
| - 5358      | 59  |         | •         | •      |       |        |           |     |       | •         |
| - 5359      | 79  |         | •         | •      |       |        |           |     |       | •         |
| - 5360      | 239 |         | •         |        |       |        |           |     |       |           |
| - 5361      | 67  |         |           | •      |       |        |           |     |       |           |
| - 5363      | 63  |         | •         | •      |       |        |           |     |       | •         |
| - 5364      | 81  |         | •         |        |       |        |           |     |       |           |
| - 5366      | 61  |         |           | •      |       |        |           |     |       |           |
| - 5367      | 75  |         |           | •      |       |        |           |     |       |           |
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