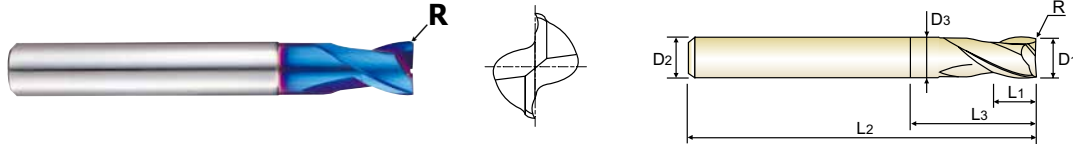


**CARBIDE, 2 FLUTE STUB LENGTH CORNER RADIUS with EXTENDED NECK**

● **VOLLHARTMETALL, 2 SCHNEIDEN EXTRA KURZ ECKENRADIUS mit ABGESETZTEM SCHAFTTEIL**  
 (●) **Fraise carbure, 2 dents, torique, détalonnée, extra-courte**  
 (●) **2 TAGLIANTI, TORICA, TAGLIENTE CORTO CON SARICO ESTESO**

- ▶ Designed to machine high hardened materials.
- ▶ Suitable for dry cutting, high speed cutting thanks to newly developed raw-material and new coating.
- ▶ Excellent workpiece finish.
- ▶ Deep slotting is possible by reduced neck.
- ▶ Corner radius for preventing the chipping in high speed machining.
- ▶ Higher wear-resistance.

- ▶ Geeignet zum Fräsen hochgehärteter Stähle.
- ▶ Geeignet zum Trockenfräsen und HSC-Fräsen dank neuentwickeltem Material und Beschichtung.
- ▶ Excellente Werkstückoberflächen.
- ▶ Abgesetzter Schaft für größere Reichweite.
- ▶ Schneidkantenschutz durch definierten Radius.
- ▶ Höhere Verschleißfestigkeit.



CARBIDE 2 BLUE 30° ±0.010 ±0.015 PLAIN P.153-155

Ø0.3-Ø6 Ø8-Ø20

Unit : mm

| EDP No.  | Corner Radius | Mill Diameter | Shank Diameter | Length of Cut | Length Below Shank | Overall Length | Neck Diameter |
|----------|---------------|---------------|----------------|---------------|--------------------|----------------|---------------|
|          | R             | D1            | D2             | L1            | L3                 | L2             | D3            |
| G8A36003 | -             | 0.3           | 3              | 0.45          | -                  | 40             | -             |
| G8A36004 | -             | 0.4           | 3              | 0.6           | -                  | 40             | -             |
| G8A36005 | R0.05         | 0.5           | 3              | 0.7           | -                  | 40             | -             |
| G8A36907 | R0.05         | 0.5           | 4              | 1             | -                  | 40             | -             |
| G8A36006 | R0.05         | 0.6           | 3              | 0.9           | -                  | 40             | -             |
| G8A36908 | R0.05         | 0.6           | 4              | 1.2           | -                  | 40             | -             |
| G8A36909 | R0.05         | 0.7           | 4              | 1.4           | -                  | 40             | -             |
| G8A36008 | R0.05         | 0.8           | 3              | 1.2           | -                  | 40             | -             |
| G8A36910 | R0.05         | 0.8           | 4              | 1.6           | -                  | 40             | -             |
| G8A36911 | R0.05         | 0.9           | 4              | 2             | -                  | 40             | -             |
| G8A36010 | R0.1          | 1.0           | 3              | 1.5           | -                  | 40             | -             |
| G8A36901 | R0.1          | 1.0           | 4              | 1.5           | -                  | 40             | -             |
| G8A36903 | R0.1          | 1.0           | 6              | 1.5           | -                  | 40             | -             |
| G8A36015 | R0.1          | 1.5           | 3              | 2.2           | -                  | 40             | -             |
| G8A36904 | R0.1          | 1.5           | 6              | 2.2           | -                  | 40             | -             |
| G8A36020 | R0.1          | 2.0           | 3              | 3             | 6                  | 40             | 1.95          |
| G8A36902 | R0.1          | 2.0           | 4              | 3             | 6                  | 40             | 1.95          |
| G8A36905 | R0.1          | 2.0           | 6              | 3             | 6                  | 40             | 1.95          |
| G8A36025 | R0.1          | 2.5           | 3              | 4             | 6                  | 40             | 2.4           |
| G8A36906 | R0.1          | 2.5           | 6              | 4             | 6                  | 40             | 2.4           |
| G8A36030 | R0.1          | 3.0           | 6              | 4             | 7                  | 45             | 2.85          |
| G8A36035 | R0.1          | 3.5           | 6              | 5             | 9                  | 45             | 3.35          |

Due to the characteristics of the blue decoration layer, it might be erased during short term use and the color layer might not be uniformed. However, it doesn't affect the performance of the tool. ▶ NEXT PAGE

| Size     | Corner Radius Tolerance (mm) | Mill Dia. Tolerance (mm) | Shank Dia. Tolerance |
|----------|------------------------------|--------------------------|----------------------|
| up to Ø6 | ± 0.010                      | 0 ~ - 0.012              | h5                   |
| over Ø6  | ± 0.015                      | 0 ~ - 0.015              |                      |

◎ : Excellent ○ : Good

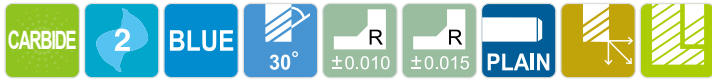
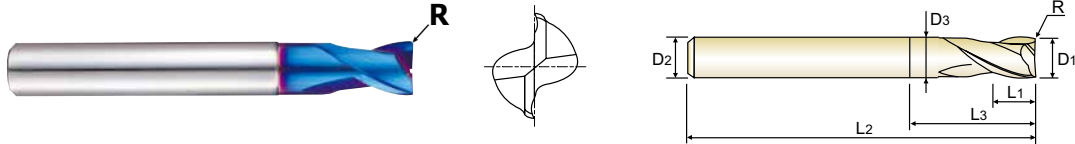
| ISO Material Description | P                      |     |                        |     |     |   |     |     |                        |     | M                                  |     |     | K               |     |                 |                |                |                   |                    |                     |
|--------------------------|------------------------|-----|------------------------|-----|-----|---|-----|-----|------------------------|-----|------------------------------------|-----|-----|-----------------|-----|-----------------|----------------|----------------|-------------------|--------------------|---------------------|
|                          | Non-alloy steel        |     |                        |     |     | Low alloy steel                           |     |     |                        |     | High alloyed steel, and tool steel |     |     | Stainless steel |     |                 | Grey cast iron |                | Nodular cast iron |                    | Malleable cast iron |
| VDI 3323                 | 1                      | 2   | 3                      | 4   | 5   | 6   | 7   | 8   | 9                      | 10  | 11                                 | 12  | 13  | 14              | 15  | 16              | 17             | 18             | 19                | 20                 |                     |
| HRC                      |                        | 13  | 25                     | 28  | 32  | 10  | 29  | 32  | 38                     | 15  | 35                                 | 15  | 23  | 10              | 10  | 26              | 3              | 25             |                   | 21                 |                     |
| HB                       | 125                    | 190 | 250                    | 270 | 300 | 180                                       | 275 | 300 | 350                    | 200 | 325                                | 200 | 240 | 180             | 180 | 260             | 160            | 250            | 130               | 230                |                     |
| Recommend                |                        |     |                        |     | ○   |   |     |     | ○                      | ○   | ○                                  |     |     |                 |     |                 |                |                |                   |                    |                     |
| ISO Material Description | N                      |     |                        |     |     | S   |     |     |                        |     |                                    |     |     |                 |     | H               |                |                |                   |                    |                     |
|                          | Aluminum-wrought alloy |     | Aluminum-cast, alloyed |     |     | Copper and Copper Alloys (Bronze / Brass) |     |     | Non Metallic Materials |     | Heat Resistant Super Alloys        |     |     |                 |     | Titanium Alloys |                | Hardened steel | Chilled Cast Iron | Hardened Cast Iron |                     |
| VDI 3323                 | 21                     | 22  | 23                     | 24  | 25  | 26  | 27  | 28  | 29                     | 30  | 31                                 | 32  | 33  | 34              | 35  | 36              | 37             | 38             | 39                | 40                 | 41                  |
| HRC                      |                        |     |                        |     |     |   |     |     |                        |     | 15                                 | 30  | 25  | 38              | 34  |                 |                | 55             | 60                | 42                 | 55                  |
| HB                       | 60                     | 100 | 75                     | 90  | 130 | 110                                       | 90  | 100 |                        |     | 200                                | 280 | 250 | 350             | 320 | 400 Rm          | 1050 Rm        | 550            | 630               | 400                | 550                 |
| Recommend                |                        |     |                        |     |     |   |     |     |                        |     |                                    |     |     |                 |     |                 |                | ◎              | ◎                 | ○                  | ◎                   |

**CARBIDE, 2 FLUTE STUB LENGTH CORNER RADIUS with EXTENDED NECK**

- **VOLLHARTMETALL, 2 SCHNEIDEN EXTRA KURZ ECKENRADIUS mit ABGESETZTEM SCHAFTTEIL**
- **Fraise carbure, 2 dents, torique, détalonnée, extra-courte**
- **2 TAGLIENTI, TORICA, TAGLIENTE CORTO CON SARICO ESTESO**

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- ▶ Suitable for dry cutting, high speed cutting thanks to newly developed raw-material and new coating.
- ▶ Excellent workpiece finish.
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- ▶ Geeignet zum Fräsen hochgehärteter Stähle.
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- ▶ Excellente Werkstückoberflächen.
- ▶ Abgesetzter Schaft für größere Reichweite.
- ▶ Schneidkantenschutz durch definierten Radius.
- ▶ Höhere Verschleißfestigkeit.



P.153-155

Ø0.3-Ø6 Ø8-Ø20

Unit : mm

| EDP No.         | Corner Radius | Mill Diameter | Shank Diameter | Length of Cut | Length Below Shank | Overall Length | Neck Diameter |
|-----------------|---------------|---------------|----------------|---------------|--------------------|----------------|---------------|
|                 | R             | D1            | D2             | L1            | L3                 | L2             | D3            |
| <b>G8A36040</b> | R0.1          | <b>4.0</b>    | 6              | 5             | 9                  | 45             | 3.85          |
| <b>G8A36045</b> | R0.1          | <b>4.5</b>    | 6              | 6             | 10                 | 45             | 4.35          |
| <b>G8A36050</b> | R0.2          | <b>5.0</b>    | 6              | 6             | 11                 | 50             | 4.85          |
| <b>G8A36060</b> | R0.2          | <b>6.0</b>    | 6              | 7             | 14                 | 50             | 5.85          |
| <b>G8A36080</b> | R0.2          | <b>8.0</b>    | 8              | 9             | 18                 | 60             | 7.7           |
| <b>G8A36100</b> | R0.2          | <b>10.0</b>   | 10             | 12            | 25                 | 75             | 9.7           |
| <b>G8A36120</b> | R0.3          | <b>12.0</b>   | 12             | 15            | 30                 | 75             | 11.7          |
| <b>G8A36160</b> | R0.3          | <b>16.0</b>   | 16             | 18            | 38                 | 90             | 15.7          |
| <b>G8A36200</b> | R0.3          | <b>20.0</b>   | 20             | 24            | 45                 | 100            | 19.7          |

Due to the characteristics of the blue decoration layer, it might be erased during short term use and the color layer might not be uniformed. However, it doesn't affect the performance of the tool.

| Size     | Corner Radius Tolerance (mm) | Mill Dia. Tolerance (mm) | Shank Dia. Tolerance |
|----------|------------------------------|--------------------------|----------------------|
| up to Ø6 | ± 0.010                      | 0 ~ - 0.012              | h5                   |
| over Ø6  | ± 0.015                      | 0 ~ - 0.015              |                      |

◎ : Excellent ○ : Good

| ISO Material Description | P                      |     |                        |     |     |   |     |                        |     |                                    |     | M               |     |     | K               |        |                   |                   |                     |     |     |
|--------------------------|------------------------|-----|------------------------|-----|-----|---|-----|------------------------|-----|------------------------------------|-----|-----------------|-----|-----|-----------------|--------|-------------------|-------------------|---------------------|-----|-----|
|                          | Non-alloy steel        |     |                        |     |     | Low alloy steel                           |     |                        |     | High alloyed steel, and tool steel |     | Stainless steel |     |     | Grey cast iron  |        | Nodular cast iron |                   | Malleable cast iron |     |     |
| VDI 3323                 | 1                      | 2   | 3                      | 4   | 5   | 6   | 7   | 8                      | 9   | 10                                 | 11  | 12              | 13  | 14  | 15              | 16     | 17                | 18                | 19                  | 20  |     |
| HRc                      | 13                     | 25  | 28                     | 32  | 10  | 29  | 32  | 38                     | 15  | 35                                 | 15  | 23              | 10  | 10  | 26              | 3      | 25                | 42                | 55                  |     |     |
| HB                       | 125                    | 190 | 250                    | 270 | 300 | 180                                       | 275 | 300                    | 350 | 200                                | 325 | 200             | 240 | 180 | 180             | 260    | 160               | 250               | 130                 | 230 |     |
| Recommend                |                        |     |                        |     | ○   |   |     | ○                      | ○   |                                    | ○   |                 |     |     |                 |        |                   |                   |                     |     |     |
| ISO Material Description | N                      |     |                        |     |     |   |     |                        |     | S                                  |     |                 |     |     |                 |        | H                 |                   |                     |     |     |
|                          | Aluminum-wrought alloy |     | Aluminum-cast, alloyed |     |     | Copper and Copper Alloys (Bronze / Brass) |     | Non Metallic Materials |     | Heat Resistant Super Alloys        |     |                 |     |     | Titanium Alloys |        | Hardened steel    | Chilled Cast Iron | Hardened Cast Iron  |     |     |
| VDI 3323                 | 21                     | 22  | 23                     | 24  | 25  | 26  | 27  | 28                     | 29  | 30                                 | 31  | 32              | 33  | 34  | 35              | 36     | 37                | 38                | 39                  | 40  | 41  |
| HRc                      |                        |     |                        |     |     |   |     |                        |     |                                    | 15  | 30              | 25  | 38  | 34              |        |                   | 55                | 60                  | 42  | 55  |
| HB                       | 60                     | 100 | 75                     | 90  | 130 | 110                                       | 90  | 100                    |     |                                    | 200 | 280             | 250 | 350 | 320             | 400 Rm | 1050 Rm           | 550               | 630                 | 400 | 550 |
| Recommend                |                        |     |                        |     |     |   |     |                        |     |                                    |     |                 |     |     |                 |        |                   | ◎                 | ◎                   | ○   | ◎   |

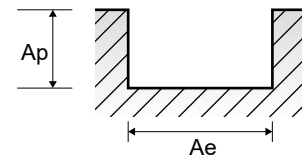
## G8A01, G8A36 SERIES

### 2 FLUTE - **SLOTTING**

Vc = m/min.  
fz = mm/tooth  
RPM = rev./min.  
FEED = mm/min.

| ISO      | VDI 3323                              | Material Description                  | Ae    | Ap    | Parameter | Diameter (Ø) |       |       |       |       |       |       |       |       |  |
|----------|---------------------------------------|---------------------------------------|-------|-------|-----------|--------------|-------|-------|-------|-------|-------|-------|-------|-------|--|
|          |                                       |                                       |       |       |           | 0.2          | 0.3   | 0.4   | 0.5   | 0.6   | 0.8   | 0.9   | 1.0   | 2.0   |  |
| <b>P</b> | 5                                     | Non-alloy steel                       | 1.0D  | 0.05D | Vc        | 30           | 45    | 65    | 80    | 95    | 125   | 140   | 150   | 210   |  |
|          |                                       |                                       |       |       | fz        | 0.001        | 0.002 | 0.002 | 0.004 | 0.005 | 0.006 | 0.007 | 0.01  | 0.013 |  |
|          |                                       |                                       |       |       | RPM       | 47746        | 47746 | 51725 | 50930 | 50399 | 49736 | 49515 | 47746 | 33423 |  |
|          |                                       |                                       |       |       | FEED      | 95           | 191   | 207   | 407   | 504   | 597   | 693   | 955   | 869   |  |
|          | 8-9                                   | Low alloy steel                       | 1.0D  | 0.05D | Vc        | 30           | 45    | 65    | 80    | 95    | 125   | 140   | 150   | 210   |  |
|          |                                       |                                       |       |       | fz        | 0.001        | 0.002 | 0.002 | 0.004 | 0.005 | 0.006 | 0.007 | 0.01  | 0.013 |  |
|          |                                       |                                       |       |       | RPM       | 47746        | 47746 | 51725 | 50930 | 50399 | 49736 | 49515 | 47746 | 33423 |  |
|          |                                       |                                       |       |       | FEED      | 95           | 191   | 207   | 407   | 504   | 597   | 693   | 955   | 869   |  |
|          | 11.1                                  | High alloyed steel,<br>and tool steel | 1.0D  | 0.05D | Vc        | 30           | 45    | 65    | 80    | 95    | 125   | 140   | 150   | 210   |  |
|          |                                       |                                       |       |       | fz        | 0.001        | 0.002 | 0.002 | 0.004 | 0.005 | 0.006 | 0.007 | 0.01  | 0.013 |  |
|          |                                       |                                       |       |       | RPM       | 47746        | 47746 | 51725 | 50930 | 50399 | 49736 | 49515 | 47746 | 33423 |  |
|          |                                       |                                       |       |       | FEED      | 95           | 191   | 207   | 407   | 504   | 597   | 693   | 955   | 869   |  |
| 11.2     | High alloyed steel,<br>and tool steel | 1.0D                                  | 0.05D | Vc    | 30        | 40           | 55    | 70    | 85    | 100   | 110   | 120   | 165   |       |  |
|          |                                       |                                       |       | fz    | 0.001     | 0.002        | 0.002 | 0.003 | 0.004 | 0.006 | 0.007 | 0.008 | 0.013 |       |  |
|          |                                       |                                       |       | RPM   | 47746     | 42441        | 43768 | 44563 | 45094 | 39789 | 38905 | 38197 | 26261 |       |  |
|          |                                       |                                       |       | FEED  | 95        | 170          | 175   | 267   | 361   | 477   | 545   | 611   | 683   |       |  |
| <b>H</b> | 38.1                                  | Hardened steel                        | 1.0D  | 0.05D | Vc        | 30           | 40    | 55    | 70    | 85    | 100   | 110   | 120   | 165   |  |
|          |                                       |                                       |       |       | fz        | 0.001        | 0.002 | 0.002 | 0.003 | 0.004 | 0.006 | 0.007 | 0.008 | 0.013 |  |
|          |                                       |                                       |       |       | RPM       | 47746        | 42441 | 43768 | 44563 | 45094 | 39789 | 38905 | 38197 | 26261 |  |
|          |                                       |                                       |       |       | FEED      | 95           | 170   | 175   | 267   | 361   | 477   | 545   | 611   | 683   |  |
|          | 38.2                                  | Hardened steel                        | 1.0D  | 0.05D | Vc        | 25           | 40    | 50    | 65    | 75    | 75    | 80    | 80    | 110   |  |
|          |                                       |                                       |       |       | fz        | 0.001        | 0.001 | 0.002 | 0.003 | 0.004 | 0.005 | 0.006 | 0.007 | 0.012 |  |
|          |                                       |                                       |       |       | RPM       | 39789        | 42441 | 39789 | 41380 | 39789 | 29842 | 28294 | 25465 | 17507 |  |
|          |                                       |                                       |       |       | FEED      | 80           | 85    | 159   | 248   | 318   | 298   | 340   | 357   | 420   |  |
|          | 39.1                                  | Hardened steel                        | 1.0D  | 0.05D | Vc        | 20           | 30    | 40    | 50    | 55    | 65    | 65    | 65    | 90    |  |
|          |                                       |                                       |       |       | fz        | 0.001        | 0.001 | 0.001 | 0.002 | 0.003 | 0.004 | 0.005 | 0.005 | 0.009 |  |
|          |                                       |                                       |       |       | RPM       | 31831        | 31831 | 31831 | 31831 | 29178 | 25863 | 22989 | 20690 | 14324 |  |
|          |                                       |                                       |       |       | FEED      | 64           | 64    | 64    | 127   | 175   | 207   | 230   | 207   | 258   |  |
|          | 39.2                                  | Hardened steel                        | 1.0D  | 0.05D | Vc        | 20           | 25    | 30    | 40    | 45    | 50    | 50    | 50    | 70    |  |
|          |                                       |                                       |       |       | fz        | 0.001        | 0.001 | 0.001 | 0.002 | 0.002 | 0.003 | 0.004 | 0.004 | 0.007 |  |
|          |                                       |                                       |       |       | RPM       | 31831        | 26526 | 23873 | 25465 | 23873 | 19894 | 17684 | 15915 | 11141 |  |
|          |                                       |                                       |       |       | FEED      | 64           | 53    | 48    | 102   | 95    | 119   | 141   | 127   | 156   |  |
|          | 39.3                                  | Hardened steel                        | 1.0D  | 0.02D | Vc        | 15           | 20    | 25    | 30    | 40    | 40    | 40    | 40    | 60    |  |
|          |                                       |                                       |       |       | fz        | 0.001        | 0.001 | 0.001 | 0.002 | 0.002 | 0.003 | 0.003 | 0.003 | 0.006 |  |
|          |                                       |                                       |       |       | RPM       | 23873        | 21221 | 19894 | 19099 | 21221 | 15915 | 14147 | 12732 | 9549  |  |
|          |                                       |                                       |       |       | FEED      | 29           | 38    | 40    | 57    | 81    | 83    | 91    | 87    | 116   |  |
|          | 40                                    | Chilled<br>Cast Iron                  | 1.0D  | 0.05D | Vc        | 30           | 40    | 55    | 70    | 85    | 100   | 110   | 120   | 165   |  |
|          |                                       |                                       |       |       | fz        | 0.001        | 0.002 | 0.002 | 0.003 | 0.004 | 0.006 | 0.007 | 0.008 | 0.013 |  |
|          |                                       |                                       |       |       | RPM       | 47746        | 42441 | 43768 | 44563 | 45094 | 39789 | 38905 | 38197 | 26261 |  |
|          |                                       |                                       |       |       | FEED      | 95           | 170   | 175   | 267   | 361   | 477   | 545   | 611   | 683   |  |
| 41       | Hardened<br>Cast Iron                 | 1.0D                                  | 0.05D | Vc    | 25        | 40           | 50    | 65    | 75    | 75    | 80    | 80    | 110   |       |  |
|          |                                       |                                       |       | fz    | 0.001     | 0.001        | 0.002 | 0.003 | 0.004 | 0.005 | 0.006 | 0.007 | 0.012 |       |  |
|          |                                       |                                       |       | RPM   | 39789     | 42441        | 39789 | 41380 | 39789 | 29842 | 28294 | 25465 | 17507 |       |  |
|          |                                       |                                       |       | FEED  | 80        | 85           | 159   | 248   | 318   | 298   | 340   | 357   | 420   |       |  |

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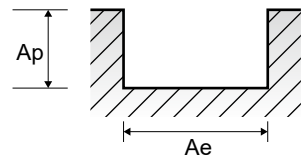


**RECOMMENDED CUTTING CONDITIONS**  
**EMPFOHLENE SCHNEIDPARAMETER**

**G8A01, G8A36 SERIES 2 FLUTE - SLOTTING**

Vc = m/min.  
fz = mm/tooth  
RPM = rev./min.  
FEED = mm/min.

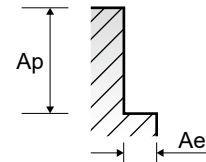
| ISO  | VDI 3323           | Material Description               | Ae    | Ap    | Parameter | Diameter (Ø) |       |       |       |       |       |       |       |       |  |
|------|--------------------|------------------------------------|-------|-------|-----------|--------------|-------|-------|-------|-------|-------|-------|-------|-------|--|
|      |                    |                                    |       |       |           | 3.0          | 4.0   | 5.0   | 6.0   | 8.0   | 10.0  | 12.0  | 16.0  | 20.0  |  |
| P    | 5                  | Non-alloy steel                    | 1.0D  | 0.05D | Vc        | 205          | 210   | 245   | 245   | 250   | 245   | 250   | 245   | 245   |  |
|      |                    |                                    |       |       | fz        | 0.019        | 0.026 | 0.032 | 0.036 | 0.047 | 0.054 | 0.064 | 0.074 | 0.085 |  |
|      |                    |                                    |       |       | RPM       | 21751        | 16711 | 15597 | 12998 | 9947  | 7799  | 6631  | 4874  | 3899  |  |
|      | 8-9                | Low alloy steel                    | 1.0D  | 0.05D | Vc        | 205          | 210   | 245   | 245   | 250   | 245   | 250   | 245   | 245   |  |
|      |                    |                                    |       |       | fz        | 0.019        | 0.026 | 0.032 | 0.036 | 0.047 | 0.054 | 0.064 | 0.074 | 0.085 |  |
|      |                    |                                    |       |       | RPM       | 21751        | 16711 | 15597 | 12998 | 9947  | 7799  | 6631  | 4874  | 3899  |  |
|      | 11.1               | High alloyed steel, and tool steel | 1.0D  | 0.05D | Vc        | 205          | 210   | 245   | 245   | 250   | 245   | 250   | 245   | 245   |  |
|      |                    |                                    |       |       | fz        | 0.019        | 0.026 | 0.032 | 0.036 | 0.047 | 0.054 | 0.064 | 0.074 | 0.085 |  |
|      |                    |                                    |       |       | RPM       | 21751        | 16711 | 15597 | 12998 | 9947  | 7799  | 6631  | 4874  | 3899  |  |
|      | 11.2               | High alloyed steel, and tool steel | 1.0D  | 0.05D | Vc        | 165          | 165   | 195   | 195   | 195   | 195   | 200   | 195   | 195   |  |
|      |                    |                                    |       |       | fz        | 0.02         | 0.027 | 0.032 | 0.037 | 0.046 | 0.055 | 0.065 | 0.074 | 0.085 |  |
|      |                    |                                    |       |       | RPM       | 17507        | 13130 | 12414 | 10345 | 7759  | 6207  | 5305  | 3879  | 3104  |  |
| H    | 38.1               | Hardened steel                     | 1.0D  | 0.05D | Vc        | 165          | 165   | 195   | 195   | 195   | 195   | 200   | 195   | 195   |  |
|      |                    |                                    |       |       | fz        | 0.02         | 0.027 | 0.032 | 0.037 | 0.046 | 0.055 | 0.065 | 0.074 | 0.085 |  |
|      |                    |                                    |       |       | RPM       | 17507        | 13130 | 12414 | 10345 | 7759  | 6207  | 5305  | 3879  | 3104  |  |
|      | 38.2               | Hardened steel                     | 1.0D  | 0.05D | Vc        | 110          | 110   | 130   | 130   | 130   | 130   | 130   | 130   | 130   |  |
|      |                    |                                    |       |       | fz        | 0.018        | 0.025 | 0.03  | 0.035 | 0.043 | 0.051 | 0.059 | 0.07  | 0.082 |  |
|      |                    |                                    |       |       | RPM       | 11671        | 8754  | 8276  | 6897  | 5173  | 4138  | 3448  | 2586  | 2069  |  |
|      | 39.1               | Hardened steel                     | 1.0D  | 0.05D | Vc        | 90           | 90    | 100   | 100   | 100   | 100   | 100   | 100   | 100   |  |
|      |                    |                                    |       |       | fz        | 0.014        | 0.019 | 0.022 | 0.026 | 0.032 | 0.038 | 0.045 | 0.053 | 0.061 |  |
|      |                    |                                    |       |       | RPM       | 9549         | 7162  | 6366  | 5305  | 3979  | 3183  | 2653  | 1989  | 1592  |  |
|      | 39.2               | Hardened steel                     | 1.0D  | 0.05D | Vc        | 70           | 70    | 80    | 80    | 80    | 80    | 80    | 80    | 80    |  |
|      |                    |                                    |       |       | fz        | 0.011        | 0.015 | 0.018 | 0.021 | 0.026 | 0.03  | 0.037 | 0.042 | 0.048 |  |
|      |                    |                                    |       |       | RPM       | 7427         | 5570  | 5093  | 4244  | 3183  | 2546  | 2122  | 1592  | 1273  |  |
| 39.3 | Hardened steel     | 1.0D                               | 0.02D | Vc    | 60        | 60           | 70    | 70    | 70    | 70    | 70    | 70    | 70    |       |  |
|      |                    |                                    |       | fz    | 0.009     | 0.012        | 0.015 | 0.018 | 0.021 | 0.026 | 0.03  | 0.034 | 0.039 |       |  |
|      |                    |                                    |       | RPM   | 6366      | 4775         | 4456  | 3714  | 2785  | 2228  | 1857  | 1393  | 1114  |       |  |
| 40   | Chilled Cast Iron  | 1.0D                               | 0.05D | Vc    | 165       | 165          | 195   | 195   | 195   | 195   | 200   | 195   | 195   |       |  |
|      |                    |                                    |       | fz    | 0.02      | 0.027        | 0.032 | 0.037 | 0.046 | 0.055 | 0.065 | 0.074 | 0.085 |       |  |
|      |                    |                                    |       | RPM   | 17507     | 13130        | 12414 | 10345 | 7759  | 6207  | 5305  | 3879  | 3104  |       |  |
| 41   | Hardened Cast Iron | 1.0D                               | 0.05D | Vc    | 110       | 110          | 130   | 130   | 130   | 130   | 130   | 130   | 130   |       |  |
|      |                    |                                    |       | fz    | 0.018     | 0.025        | 0.03  | 0.035 | 0.043 | 0.051 | 0.059 | 0.07  | 0.082 |       |  |
|      |                    |                                    |       | RPM   | 11671     | 8754         | 8276  | 6897  | 5173  | 4138  | 3448  | 2586  | 2069  |       |  |



**G8A01, G8A36** SERIES **2 FLUTE - SIDE CUTTING**

Vc = m/min.  
fz = mm/tooth  
RPM = rev./min.  
FEED = mm/min.

| ISO  | VDI 3323                           | Material Description               | Ae    | Ap   | Parameter | Diameter (Ø) |       |       |       |       |       |       |       |       |       |       |
|------|------------------------------------|------------------------------------|-------|------|-----------|--------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|      |                                    |                                    |       |      |           | 1.0          | 2.0   | 3.0   | 4.0   | 5.0   | 6.0   | 8.0   | 10.0  | 12.0  | 16.0  | 20.0  |
| P    | 5                                  | Non-alloy steel                    | 0.03D | 1.0D | Vc        | 150          | 210   | 205   | 210   | 245   | 245   | 250   | 245   | 250   | 245   | 245   |
|      |                                    |                                    |       |      | fz        | 0.011        | 0.018 | 0.028 | 0.037 | 0.046 | 0.052 | 0.067 | 0.077 | 0.09  | 0.107 | 0.122 |
|      |                                    |                                    |       |      | RPM       | 47746        | 33423 | 21751 | 16711 | 15597 | 12998 | 9947  | 7799  | 6631  | 4874  | 3899  |
|      |                                    |                                    |       |      | FEED      | 1050         | 1203  | 1218  | 1237  | 1435  | 1352  | 1333  | 1201  | 1194  | 1043  | 951   |
|      | 8-9                                | Low alloy steel                    | 0.03D | 1.0D | Vc        | 150          | 210   | 205   | 210   | 245   | 245   | 250   | 245   | 250   | 245   | 245   |
|      |                                    |                                    |       |      | fz        | 0.011        | 0.018 | 0.028 | 0.037 | 0.046 | 0.052 | 0.067 | 0.077 | 0.09  | 0.107 | 0.122 |
|      |                                    |                                    |       |      | RPM       | 47746        | 33423 | 21751 | 16711 | 15597 | 12998 | 9947  | 7799  | 6631  | 4874  | 3899  |
|      |                                    |                                    |       |      | FEED      | 1050         | 1203  | 1218  | 1237  | 1435  | 1352  | 1333  | 1201  | 1194  | 1043  | 951   |
|      | 11.1                               | High alloyed steel, and tool steel | 0.03D | 1.0D | Vc        | 150          | 210   | 205   | 210   | 245   | 245   | 250   | 245   | 250   | 245   | 245   |
|      |                                    |                                    |       |      | fz        | 0.011        | 0.018 | 0.028 | 0.037 | 0.046 | 0.052 | 0.067 | 0.08  | 0.09  | 0.107 | 0.122 |
|      |                                    |                                    |       |      | RPM       | 47746        | 33423 | 21751 | 16711 | 15597 | 12998 | 9947  | 7799  | 6631  | 4874  | 3899  |
|      |                                    |                                    |       |      | FEED      | 1050         | 1203  | 1218  | 1237  | 1435  | 1352  | 1333  | 1201  | 1194  | 1043  | 951   |
| 11.2 | High alloyed steel, and tool steel | 0.03D                              | 1.0D  | Vc   | 120       | 165          | 165   | 165   | 195   | 195   | 195   | 195   | 200   | 195   | 195   |       |
|      |                                    |                                    |       | fz   | 0.011     | 0.019        | 0.028 | 0.038 | 0.046 | 0.053 | 0.066 | 0.079 | 0.092 | 0.108 | 0.121 |       |
|      |                                    |                                    |       | RPM  | 38197     | 26261        | 17507 | 13130 | 12414 | 10345 | 7759  | 6207  | 5305  | 3879  | 3104  |       |
|      |                                    |                                    |       | FEED | 840       | 998          | 980   | 998   | 1142  | 1097  | 1024  | 981   | 976   | 838   | 751   |       |
| H    | 38.1                               | Hardened steel                     | 0.03D | 1.0D | Vc        | 120          | 165   | 165   | 165   | 195   | 195   | 195   | 195   | 200   | 195   | 195   |
|      |                                    |                                    |       |      | fz        | 0.011        | 0.019 | 0.028 | 0.038 | 0.046 | 0.053 | 0.066 | 0.079 | 0.092 | 0.108 | 0.121 |
|      |                                    |                                    |       |      | RPM       | 38197        | 26261 | 17507 | 13130 | 12414 | 10345 | 7759  | 6207  | 5305  | 3879  | 3104  |
|      |                                    |                                    |       |      | FEED      | 840          | 998   | 980   | 998   | 1142  | 1097  | 1024  | 981   | 976   | 838   | 751   |
|      | 38.2                               | Hardened steel                     | 0.03D | 1.0D | Vc        | 80           | 110   | 110   | 110   | 130   | 130   | 130   | 130   | 130   | 130   | 130   |
|      |                                    |                                    |       |      | fz        | 0.01         | 0.017 | 0.026 | 0.036 | 0.043 | 0.05  | 0.061 | 0.072 | 0.084 | 0.1   | 0.116 |
|      |                                    |                                    |       |      | RPM       | 25465        | 17507 | 11671 | 8754  | 8276  | 6897  | 5173  | 4138  | 3448  | 2586  | 2069  |
|      |                                    |                                    |       |      | FEED      | 509          | 595   | 607   | 630   | 712   | 690   | 631   | 596   | 579   | 517   | 480   |
|      | 39.1                               | Hardened steel                     | 0.03D | 1.0D | Vc        | 65           | 90    | 90    | 90    | 100   | 100   | 100   | 100   | 100   | 100   | 100   |
|      |                                    |                                    |       |      | fz        | 0.008        | 0.013 | 0.019 | 0.027 | 0.032 | 0.038 | 0.046 | 0.053 | 0.064 | 0.075 | 0.086 |
|      |                                    |                                    |       |      | RPM       | 20690        | 14324 | 9549  | 7162  | 6366  | 5305  | 3979  | 3183  | 2653  | 1989  | 1592  |
|      |                                    |                                    |       |      | FEED      | 331          | 372   | 363   | 387   | 407   | 403   | 366   | 337   | 340   | 298   | 274   |
|      | 39.2                               | Hardened steel                     | 0.03D | 1.0D | Vc        | 50           | 70    | 70    | 70    | 80    | 80    | 80    | 80    | 80    | 80    | 80    |
|      |                                    |                                    |       |      | fz        | 0.006        | 0.01  | 0.015 | 0.021 | 0.025 | 0.03  | 0.037 | 0.043 | 0.052 | 0.059 | 0.067 |
|      |                                    |                                    |       |      | RPM       | 15915        | 11141 | 7427  | 5570  | 5093  | 4244  | 3183  | 2546  | 2122  | 1592  | 1273  |
|      |                                    |                                    |       |      | FEED      | 191          | 223   | 223   | 234   | 255   | 255   | 236   | 219   | 221   | 188   | 171   |
|      | 39.3                               | Hardened steel                     | 0.03D | 1.0D | Vc        | 40           | 60    | 60    | 60    | 70    | 70    | 70    | 70    | 70    | 70    | 70    |
|      |                                    |                                    |       |      | fz        | 0.005        | 0.009 | 0.013 | 0.018 | 0.021 | 0.025 | 0.03  | 0.036 | 0.043 | 0.05  | 0.057 |
|      |                                    |                                    |       |      | RPM       | 12732        | 9549  | 6366  | 4775  | 4456  | 3714  | 2785  | 2228  | 1857  | 1393  | 1114  |
|      |                                    |                                    |       |      | FEED      | 127          | 172   | 166   | 172   | 187   | 186   | 167   | 160   | 160   | 139   | 127   |
|      | 40                                 | Chilled Cast Iron                  | 0.03D | 1.0D | Vc        | 120          | 165   | 165   | 165   | 195   | 195   | 195   | 195   | 200   | 195   | 195   |
|      |                                    |                                    |       |      | fz        | 0.011        | 0.019 | 0.028 | 0.038 | 0.046 | 0.053 | 0.066 | 0.079 | 0.092 | 0.108 | 0.121 |
|      |                                    |                                    |       |      | RPM       | 38197        | 26261 | 17507 | 13130 | 12414 | 10345 | 7759  | 6207  | 5305  | 3879  | 3104  |
|      |                                    |                                    |       |      | FEED      | 840          | 998   | 980   | 998   | 1142  | 1097  | 1024  | 981   | 976   | 838   | 751   |
| 41   | Hardened Cast Iron                 | 0.03D                              | 1.0D  | Vc   | 80        | 110          | 110   | 110   | 130   | 130   | 130   | 130   | 130   | 130   | 130   |       |
|      |                                    |                                    |       | fz   | 0.01      | 0.017        | 0.026 | 0.036 | 0.043 | 0.05  | 0.061 | 0.072 | 0.084 | 0.1   | 0.116 |       |
|      |                                    |                                    |       | RPM  | 25465     | 17507        | 11671 | 8754  | 8276  | 6897  | 5173  | 4138  | 3448  | 2586  | 2069  |       |
|      |                                    |                                    |       | FEED | 509       | 595          | 607   | 630   | 712   | 690   | 631   | 596   | 579   | 517   | 480   |       |



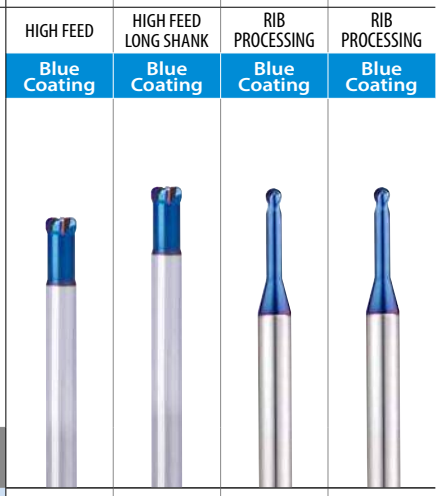
SELECTION GUIDE



| SERIES             | G8B59         | G8B54         | G8A46     | G8A54     |
|--------------------|---------------|---------------|-----------|-----------|
| FLUTE              | 4             | 4             | 2         | 2         |
| HELIX ANGLE        | 0°            | 0°            | 30°       | 30°       |
| CUTTING EDGE SHAPE | CORNER RADIUS | CORNER RADIUS | BALL NOSE | BALL NOSE |
| SIZE MIN           | D2.0          | D2.0          | R0.05     | R0.25     |
| SIZE MAX           | D12.0         | D16.0         | R2.0      | R1.0      |
| PAGE               | 105           | 106           | 107       | 111       |

SOLID CARBIDE  
**X5070**  
END MILLS

High Hardened Steels HRc45 to HRc70,  
High Speed Machining, Dry Cutting



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for material search

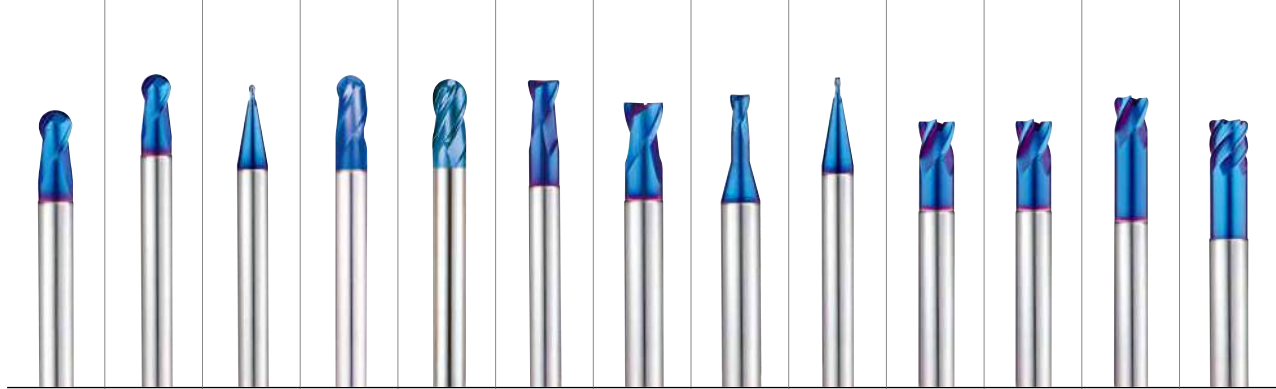
◎ : Excellent ○ : Good

Recommended cutting conditions : P 139

| ISO | VDI 3323                     | Material Description                      | Composition / Structure / Heat Treatment       | HB       | HRc |    |   |   |   |
|-----|------------------------------|---|--|----------|-----|----|---|---|---|
| P   | 1                            | Non-alloy steel                           | About 0.15% C Annealed                         | 125      |     |    |   |   |   |
|     | 2                            |   | About 0.45% C Annealed                         | 190      | 13  |    |   |   |   |
|     | 3                            |   | About 0.45% C Quenched & Tempered              | 250      | 25  |    |   |   |   |
|     | 4                            |   | About 0.75% C Annealed                         | 270      | 28  |    |   |   |   |
|     | 5                            |   | About 0.75% C Quenched & Tempered              | 300      | 32  | ○  | ○ | ○ | ○ |
|     | 6                            | Low alloy steel                           | Annealed                                       | 180      | 10  |    |   |   |   |
|     | 7                            |   | Quenched & Tempered                            | 275      | 29  |    |   |   |   |
|     | 8                            |   | Quenched & Tempered                            | 300      | 32  | ○  | ○ | ○ | ○ |
|     | 9                            |   | Quenched & Tempered                            | 350      | 38  | ○  | ○ | ○ | ○ |
|     | 10                           |   | High alloyed steel, and tool steel             | Annealed | 200 | 15 |   |   |   |
|     | 11                           | Quenched & Tempered                       |  | 325      | 35  | ○  | ○ | ○ | ○ |
| M   | 12                           | Stainless steel                           | Ferritic / Martensitic Annealed                | 200      | 15  |    |   |   |   |
|     | 13                           |   | Martensitic Quenched & Tempered                | 240      | 23  |    |   |   |   |
|     | 14                           |   | Austenitic                                     | 180      | 10  |    |   |   |   |
| K   | 15                           | Grey cast iron                            | Pearlitic / ferritic                           | 180      | 10  |    |   |   |   |
|     | 16                           |   | Pearlitic (Martensitic)                        | 260      | 26  |    |   |   |   |
|     | 17                           | Nodular cast iron                         | Ferritic                                       | 160      | 3   |    |   |   |   |
|     | 18                           |   | Pearlitic                                      | 250      | 25  |    |   |   |   |
|     | 19                           | Malleable cast iron                       | Ferritic                                       | 130      |     |    |   |   |   |
| 20  | Pearlitic                    |   | 230  | 21       |     |    |   |   |   |
| N   | 21                           | Aluminum-wrought alloy                    | Not Curable                                    | 60       |     |    |   |   |   |
|     | 22                           |   | Curable Hardened                               | 100      |     |    |   |   |   |
|     | 23                           | Aluminum-cast, alloyed                    | ≤ 12% Si, Not Curable                          | 75       |     |    |   |   |   |
|     | 24                           |   | ≤ 12% Si, Curable Hardened                     | 90       |     |    |   |   |   |
|     | 25                           |   | > 12% Si, Not Curable                          | 130      |     |    |   |   |   |
|     | 26                           | Copper and Copper Alloys (Bronze / Brass) | Cutting Alloys, PB>1%                          | 110      |     |    |   |   |   |
|     | 27                           |   | CuZn, CuSnZn (Brass)                           | 90       |     |    |   |   |   |
|     | 28                           |   | CuSn, lead-free copper and electrolytic copper | 100      |     |    |   |   |   |
|     | 29                           | Non Metallic Materials                    | Duroplastic, Fiber Reinforced Plastic          |          |     |    |   |   |   |
|     | 30                           |   | Rubber, Wood, etc.                             |          |     |    |   |   |   |
| S   | 31                           | Heat Resistant Super Alloys               | Fe Based                                       | Annealed | 200 | 15 |   |   |   |
|     | 32                           |   |  | Cured    | 280 | 30 |   |   |   |
|     | 33                           |   | Ni or Co Based                                 | Annealed | 250 | 25 |   |   |   |
|     | 34                           |   |  | Cured    | 350 | 38 |   |   |   |
|     | 35                           |   |  | Cast     | 320 | 34 |   |   |   |
|     | 36                           | Titanium Alloys                           | Pure Titanium                                  | 400 Rm   |     |    |   |   |   |
| 37  | Alpha + Beta Alloys Hardened |   | 1050 Rm  |          |     |    |   |   |   |
| H   | 38                           | Hardened steel                            | Hardened                                       | 550      | 55  | ◎  | ◎ | ◎ | ◎ |
|     | 39                           |   | Hardened                                       | 630      | 60  | ◎  | ◎ | ◎ | ◎ |
|     | 40                           | Chilled Cast Iron                         | Cast   | 400      | 42  | ○  | ○ | ○ | ○ |
|     | 41                           | Hardened Cast Iron                        | Hardened                                       | 550      | 55  | ◎  | ◎ | ◎ | ◎ |



| G8A28        | G8A38         | G8A53        | G8A59        | G8D62        | G8A60          | G8A36         | G8A52          | G8A50         | G8A47         | G8A37         | G8B08         | G8A39         |
|--------------|---------------|--------------|--------------|--------------|----------------|---------------|----------------|---------------|---------------|---------------|---------------|---------------|
| 2            | 2             | 2            | 3            | 4            | 2              | 2             | 2              | 2             | 4             | 4             | 4             | 6             |
| 30°          | 30°           | 30°          | 30°          | 30°          | 30°            | 30°           | 30°            | 30°           | 30°           | 30°           | 30°           | 45°           |
| BALL NOSE    | BALL NOSE     | BALL NOSE    | BALL NOSE    | BALL NOSE    | CORNER RADIUS  | CORNER RADIUS | CORNER RADIUS  | CORNER RADIUS | CORNER RADIUS | CORNER RADIUS | CORNER RADIUS | CORNER RADIUS |
| R0.05        | R0.5          | R0.2         | R1.5         | R1.5         | D0.5           | D0.3          | D0.5           | D0.3          | D3.0          | D1.0          | D6.0          | D6.0          |
| R6.0         | R12.5         | R1.0         | R10.0        | R10.0        | D12.0          | D20.0         | D2.0           | D2.0          | D12.0         | D20.0         | D12.0         | D20.0         |
| 112          | 114           | 115          | 116          | 117          | 118            | 123           | 125            | 126           | 127           | 128           | 129           | 130           |
| -            | EXTENDED NECK | MINIATURE    | Center Match | Center Match | RIB PROCESSING | EXTENDED NECK | RIB PROCESSING | MINIATURE     | EXTENDED NECK | EXTENDED NECK | EXTENDED NECK | EXTENDED NECK |
| Blue Coating | Blue Coating  | Blue Coating | Blue Coating | Blue Coating | Blue Coating   | Blue Coating  | Blue Coating   | Blue Coating  | Blue Coating  | Blue Coating  | Blue Coating  | Blue Coating  |



|   |   |   |   |   |   |   |   |   |   |   |   |   |      |
|---|---|---|---|---|---|---|---|---|---|---|---|---|------|
|   |   |   |   |   |   |   |   |   |   |   |   |   | 1    |
|   |   |   |   |   |   |   |   |   |   |   |   |   | 2    |
|   |   |   |   |   |   |   |   |   |   |   |   |   | 3    |
|   |   |   |   |   |   |   |   |   |   |   |   |   | 4    |
| ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | 5    |
|   |   |   |   |   |   |   |   |   |   |   |   |   | 6 P  |
| ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | 7    |
| ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | 8    |
| ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | 9    |
|   |   |   |   |   |   |   |   |   |   |   |   |   | 10   |
|   |   |   |   |   |   |   |   |   |   |   |   |   | 11   |
|   |   |   |   |   |   |   |   |   |   |   |   |   | 12   |
|   |   |   |   |   |   |   |   |   |   |   |   |   | 13 M |
|   |   |   |   |   |   |   |   |   |   |   |   |   | 14   |
|   |   |   |   |   |   |   |   |   |   |   |   |   | 15   |
|   |   |   |   |   |   |   |   |   |   |   |   |   | 16   |
|   |   |   |   |   |   |   |   |   |   |   |   |   | 17 K |
|   |   |   |   |   |   |   |   |   |   |   |   |   | 18   |
|   |   |   |   |   |   |   |   |   |   |   |   |   | 19   |
|   |   |   |   |   |   |   |   |   |   |   |   |   | 20   |
|   |   |   |   |   |   |   |   |   |   |   |   |   | 21   |
|   |   |   |   |   |   |   |   |   |   |   |   |   | 22   |
|   |   |   |   |   |   |   |   |   |   |   |   |   | 23   |
|   |   |   |   |   |   |   |   |   |   |   |   |   | 24   |
|   |   |   |   |   |   |   |   |   |   |   |   |   | 25 N |
|   |   |   |   |   |   |   |   |   |   |   |   |   | 26   |
|   |   |   |   |   |   |   |   |   |   |   |   |   | 27   |
|   |   |   |   |   |   |   |   |   |   |   |   |   | 28   |
|   |   |   |   |   |   |   |   |   |   |   |   |   | 29   |
|   |   |   |   |   |   |   |   |   |   |   |   |   | 30   |
|   |   |   |   |   |   |   |   |   |   |   |   |   | 31   |
|   |   |   |   |   |   |   |   |   |   |   |   |   | 32   |
|   |   |   |   |   |   |   |   |   |   |   |   |   | 33   |
|   |   |   |   |   |   |   |   |   |   |   |   |   | 34 S |
|   |   |   |   |   |   |   |   |   |   |   |   |   | 35   |
|   |   |   |   |   |   |   |   |   |   |   |   |   | 36   |
|   |   |   |   |   |   |   |   |   |   |   |   |   | 37   |
| ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | 38   |
| ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | 39   |
| ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | 40   |
| ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | ◎ | 41   |

HSS

CBN END MILLS

i-Xmill END MILLS

i-SMART MODULAR END MILLS

X5070 END MILLS

4G MILL END MILLS

X-POWER PRO END MILLS

TitaNox-POWER END MILLS

JET-POWER END MILLS

V7 PLUS END MILLS

ALU-POWER HPC END MILLS

ALU-POWER END MILLS

D-POWER GRAPHITE END MILLS

D-POWER CFRP END MILLS

ROUTERS

CRX S END MILLS

K-2 END MILLS

ONLY ONE COATED PM60 END MILLS

TANK-POWER END MILLS

GENERAL HSS END MILLS

MILLING CUTTERS

TECHNICAL DATA