

## Fresas em Metal duro

### ( micro grão) revestidas X-COATING

### 2 Navalhas

*NC-Mill*

| Tolleranza diametro<br>fresa (mm) | Tolleranza diametro<br>gambo |
|-----------------------------------|------------------------------|
| 0<br>- 0.030                      | h6                           |



| <i><b>COD</b></i> | <i><b>Diam.</b></i> | <i><b>Cabo</b></i> | <i><b>Corte</b></i> | <i><b>Total</b></i> | <i><b>€</b></i> |
|-------------------|---------------------|--------------------|---------------------|---------------------|-----------------|
| G9F41010N         | 1.0                 | 4                  | 3                   | 50                  | 7.73 €          |
| G9F41020N         | 2.0                 | 4                  | 6                   | 50                  | 6.38 €          |
| G9F41030N         | 3.0                 | 4                  | 8                   | 50                  | 6.38 €          |
| G9F41040N         | 4.0                 | 4                  | 11                  | 50                  | 7.13 €          |
| G9F41050N         | 5.0                 | 6                  | 13                  | 50                  | 7.46 €          |
| G9F41060N         | 6.0                 | 6                  | 16                  | 50                  | 8.26 €          |
| G9F41080N         | 8.0                 | 8                  | 20                  | 60                  | 13.38 €         |
| G9F41100N         | 10.0                | 10                 | 25                  | 75                  | 20.19 €         |
| G9F41120N         | 12.0                | 12                 | 32                  | 75                  | 27.61 €         |
| G9F41140N         | 14.0                | 14                 | 32                  | 75                  | 36.84 €         |
| G9F41160N         | 16.0                | 16                 | 32                  | 75                  | 48.40 €         |
| G9F41200N         | 20.0                | 20                 | 32                  | 100                 | 81.95 €         |

## 4 Navalhas



| Tolleranza diametro<br>fresa (mm) | Tolleranza diametro<br>gambo |
|-----------------------------------|------------------------------|
| 0<br>+ 0.030                      | h6                           |

| <i><b>COD</b></i> | <i><b>Diam.</b></i> | <i><b>Cabo</b></i> | <i><b>Corte</b></i> | <i><b>Total</b></i> | <i><b>€</b></i> |
|-------------------|---------------------|--------------------|---------------------|---------------------|-----------------|
| G9F42010N         | 1.0                 | 4                  | 3                   | 50                  | 7.73 €          |
| G9F42020N         | 2.0                 | 4                  | 6                   | 50                  | 6.38 €          |
| G9F42030N         | 3.0                 | 4                  | 8                   | 50                  | 6.38 €          |
| G9F42040N         | 4.0                 | 4                  | 11                  | 50                  | 7.13 €          |
| G9F42050N         | 5.0                 | 6                  | 13                  | 50                  | 7.46 €          |
| G9F42060N         | 6.0                 | 6                  | 16                  | 50                  | 8.26 €          |
| G9F42080N         | 8.0                 | 8                  | 20                  | 60                  | 13.38 €         |
| G9F42100N         | 10.0                | 10                 | 25                  | 75                  | 20.19 €         |
| G9F42120N         | 12.0                | 12                 | 32                  | 75                  | 27.61 €         |
| G9F42140N         | 14.0                | 14                 | 32                  | 75                  | 36.84 €         |
| G9F42160N         | 16.0                | 16                 | 32                  | 75                  | 48.40 €         |
| G9F42200N         | 20.0                | 20                 | 32                  | 100                 | 81.95 €         |

**Fresas em Metal duro**  
**( micro grão) revestidas X-COATING**

**3 Navalhas**



| <i><b>COD</b></i> | <i><b>Diam.</b></i> | <i><b>Cabo</b></i> | <i><b>Corte</b></i> | <i><b>Total</b></i> | <i><b>€</b></i> |
|-------------------|---------------------|--------------------|---------------------|---------------------|-----------------|
| G9F43010N         | 1.0                 | 4                  | 3                   | 50                  | 7.73 €          |
| G9F43020N         | 2.0                 | 4                  | 6                   | 50                  | 6.38 €          |
| G9F43030N         | 3.0                 | 4                  | 8                   | 50                  | 6.38 €          |
| G9F43040N         | 4.0                 | 4                  | 11                  | 50                  | 7.13 €          |
| G9F43050N         | 5.0                 | 6                  | 13                  | 50                  | 7.46 €          |
| G9F43060N         | 6.0                 | 6                  | 16                  | 50                  | 8.26 €          |
| G9F43080N         | 8.0                 | 8                  | 20                  | 60                  | 13.38 €         |
| G9F43100N         | 10.0                | 10                 | 25                  | 75                  | 20.19 €         |
| G9F43120N         | 12.0                | 12                 | 32                  | 75                  | 27.61 €         |
| G9F43140N         | 14.0                | 14                 | 32                  | 75                  | 36.84 €         |
| G9F43160N         | 16.0                | 16                 | 32                  | 75                  | 48.40 €         |
| G9F43200N         | 20.0                | 20                 | 32                  | 100                 | 81.95 €         |

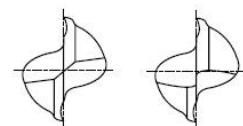
## 2 Navalhas Raio



| COD       | Diam. | Raio  | Cabo | Corte | Total | €       |
|-----------|-------|-------|------|-------|-------|---------|
| G9F44020N | 2.0   | R1.0  | 4    | 5     | 50    | 8.53 €  |
| G9F44030N | 3.0   | R1.5  | 4    | 6     | 50    | 8.53 €  |
| G9F44040N | 4.0   | R2.0  | 6    | 8     | 50    | 8.94 €  |
| G9F44050N | 5.0   | R2.5  | 6    | 10    | 50    | 9.25 €  |
| G9F44060N | 6.0   | R3.0  | 6    | 12    | 50    | 10.06 € |
| G9F44080N | 8.0   | R4.0  | 8    | 14    | 60    | 15.61 € |
| G9F44100N | 10.0  | R5.0  | 10   | 20    | 75    | 24.99 € |
| G9F44120N | 12.0  | R6.0  | 12   | 24    | 75    | 32.06 € |
| G9F44160N | 16.0  | R8.0  | 16   | 32    | 75    | 50.49 € |
| G9F44200N | 20.0  | R10.0 | 20   | 32    | 75    | 77.75 € |

## Fresas de Metalduro K2

### SOLID CARBIDE



under Ø3mm      from Ø3mm

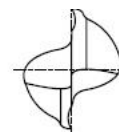
#### G9A68 SERIES



|          |             |         |
|----------|-------------|---------|
| G9A68010 | 1X3X3X39    | 8.09 €  |
| G9A68015 | 1.5X3X5X39  | 8.09 €  |
| G9A68020 | 2X3X7X39    | 8.09 €  |
| G9A68025 | 2.5X3X7X39  | 8.09 €  |
| G9A68030 | 3X3X9X39    | 8.09 €  |
| G9A68040 | 4X4X14X51   | 9.00 €  |
| G9A68050 | 5X5X16X51   | 9.46 €  |
| G9A68060 | 6X6X19X64   | 13.61 € |
| G9A68080 | 8X8X21X64   | 16.94 € |
| G9A68100 | 10X10X22X70 | 25.59 € |
| G9A68120 | 12X12X25X76 | 37.79 € |
| G9A68160 | 16X16X32X89 | 63.61 € |

| ISO                  | P                      |     |                        |     |     |                                           |     |     |     |                        | M                                  |     |                 |     | K              |                 |                   |                |                     |                    |
|----------------------|------------------------|-----|------------------------|-----|-----|-------------------------------------------|-----|-----|-----|------------------------|------------------------------------|-----|-----------------|-----|----------------|-----------------|-------------------|----------------|---------------------|--------------------|
| Material Description | 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                  | N                      |     |                        |     |     |                                           |     |     |     |                        | S                                  |     |                 |     |                |                 |                   | H              |                     |                    |
| Material Description | 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                 |
| HRc                  |                        |     |                        |     |     |                                           |     |     |     |                        | 15                                 | 30  | 25              | 38  | 34             |                 |                   | 55             | 60                  | 42                 |
| HB                   | 60                     | 100 | 75                     | 90  | 130 | 110                                       | 90  | 100 |     |                        | 200                                | 280 | 250             | 350 | 320            | 400 Rm          | 1050 Rm           | 550            | 630                 | 400                |
| Recommend            | ○                      | ○   | ○                      | ○   | ○   | ○                                         | ○   | ○   | ○   | ○                      | ○                                  | ○   | ○               | ○   | ○              | ○               | ○                 |                |                     | ○                  |

## CARBIDE, 2 FLUTE EXTRA LONG LENGTH



| Mill Dia.<br>Tolerance(mm) | Shank Dia.<br>Tolerance |
|----------------------------|-------------------------|
| 0 ~ -0.03                  | h5                      |

### G9452 SERIES

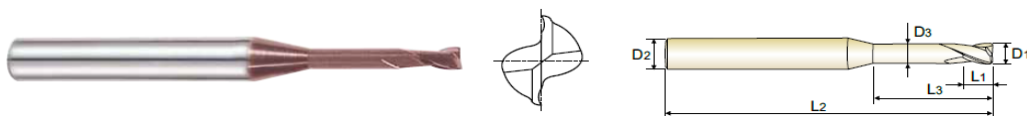


|          |              |          |
|----------|--------------|----------|
| G9452903 | 3X3X20X60    | 12.51 €  |
| G9452904 | 4X4X20X60    | 13.18 €  |
| G9452905 | 5X5X25X75    | 15.28 €  |
| G9452906 | 6X6X30X75    | 16.61 €  |
| G9452908 | 8X8X30X75    | 24.67 €  |
| G9452910 | 10X10X40X100 | 31.73 €  |
| G9452912 | 12X12X45X100 | 47.95 €  |
| G9452914 | 14X14X45X100 | 60.89 €  |
| G9452916 | 16X16X45X100 | 83.29 €  |
| G9452918 | 18X18X45X100 | 92.15 €  |
| G9452920 | 20X20X45X100 | 111.38 € |

◎ : Excellent ○ : Good

| ISO                  | P                      |     |                        |     |     |                                           |     |     |     |                                    | M   |                             |     |     | K              |        |                   |     |                     |     |                   |                    |  |
|----------------------|------------------------|-----|------------------------|-----|-----|-------------------------------------------|-----|-----|-----|------------------------------------|-----|-----------------------------|-----|-----|----------------|--------|-------------------|-----|---------------------|-----|-------------------|--------------------|--|
| Material Description | 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                |     |                     |     |                   |                    |  |
| HB                   | 125                    | 190 | 250                    | 270 | 300 | 180                                       | 275 | 300 | 350 | 200                                | 325 | 200                         | 240 | 180 | 180            | 260    | 160               | 250 | 130                 | 230 |                   |                    |  |
| Recommend            | ◎                      | ◎   | ◎                      | ◎   | ◎   | ◎                                         | ◎   | ◎   | ◎   | ◎                                  | ◎   | ○                           | ○   | ○   | ○              | ○      | ○                 | ○   | ○                   | ○   |                   |                    |  |
| ISO                  | N                      |     |                        |     |     |                                           |     |     |     |                                    | S   |                             |     |     |                |        |                   |     |                     |     | H                 |                    |  |
| Material Description | 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 RIB PROCESSING

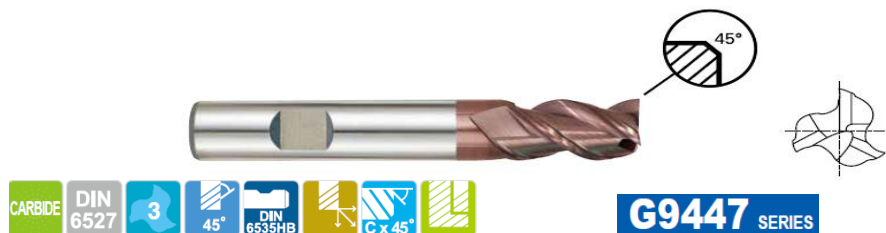


### G9B80 SERIES

| Mill Dia.<br>Tolerance(mm) | Shank Dia.<br>Tolerance |
|----------------------------|-------------------------|
| 0 ~ -0.03                  | h5                      |

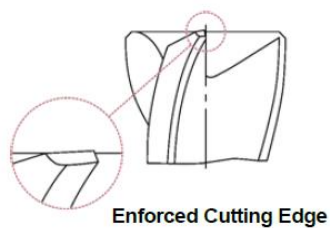
| Mill Diameter<br>D1 | Shank Diameter<br>D2 | Length of Cut<br>L1 | Length Below Shank<br>L3 | Overall Length<br>D3 | Neck Diameter<br>D3 |
|---------------------|----------------------|---------------------|--------------------------|----------------------|---------------------|
| G9B80004            |                      | 0.4X4X0.7(2)X50     |                          | 17.05 €              |                     |
| G9B80005            |                      | 0.5X4X0.75(2)X50    |                          | 15.54 €              |                     |
| G9B80006            |                      | 0.6X4X0.9(2)X50     |                          | 15.54 €              |                     |
| G9B80007            |                      | 0.7X4X1.1(4)X50     |                          | 14.16 €              |                     |
| G9B80008            |                      | 0.8X4X1.2(4)X50     |                          | 14.16 €              |                     |
| G9B80009            |                      | 0.9X4X1.4(6)X50     |                          | 14.16 €              |                     |
| G9B80010            |                      | 1X4X1.5(6)X50       |                          | 12.60 €              |                     |
| G9B80012            |                      | 1.2X4X1.8(6)X50     |                          | 12.60 €              |                     |
| G9B80015            |                      | 1.5X4X2.3(6)X50     |                          | 12.60 €              |                     |
| G9B80020            |                      | 2X4X3(6)X50         |                          | 12.01 €              |                     |
| G9B80025            |                      | 2.5X4X3.7(8)X50     |                          | 12.01 €              |                     |
| G9B80030            |                      | 3X6X4.5(8)X50       |                          | 18.07 €              |                     |
| G9B80040            |                      | 4X6X6(12)X50        |                          | 18.07 €              |                     |
| G9B80901            |                      | 0.4X4X0.7(4)X50     |                          | 17.05 €              |                     |
| G9B80902            |                      | 0.5X4X0.75(4)X50    |                          | 15.54 €              |                     |
| G9B80903            |                      | 0.5X4X0.75(6)X50    |                          | 15.54 €              |                     |
| G9B80904            |                      | 0.6X4X0.9(4)X50     |                          | 15.54 €              |                     |
| G9B80905            |                      | 0.6X4X0.9(6)X50     |                          | 15.54 €              |                     |
| G9B80906            |                      | 0.7X4X1.1(6)X50     |                          | 14.16 €              |                     |
| G9B80907            |                      | 0.8X4X1.2(6)X50     |                          | 14.16 €              |                     |
| G9B80908            |                      | 0.8X4X1.2(8)X50     |                          | 14.16 €              |                     |
| G9B80909            |                      | 0.9X4X1.4(8)X50     |                          | 14.16 €              |                     |
| G9B80910            |                      | 0.9X4X1.4(10)X50    |                          | 14.16 €              |                     |

## CARBIDE, 3 FLUTE 45° HELIX, LONG LENGTH WITH CHAMFER

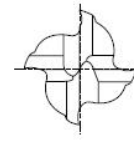


|          |              |          |
|----------|--------------|----------|
| G9447030 | 3X6X7X57     | 13.66 €  |
| G9447035 | 3.5X6X7X57   | 13.66 €  |
| G9447040 | 4X6X8X57     | 13.66 €  |
| G9447045 | 4.5X6X8X57   | 13.66 €  |
| G9447050 | 5X6X10X57    | 13.66 €  |
| G9447060 | 6X6X10X57    | 13.66 €  |
| G9447070 | 7X8X13X63    | 16.75 €  |
| G9447080 | 8X8X16X63    | 16.75 €  |
| G9447090 | 9X10X16X72   | 26.34 €  |
| G9447100 | 10X10X19X72  | 26.34 €  |
| G9447120 | 12X12X22X83  | 37.99 €  |
| G9447140 | 14X14X22X83  | 48.48 €  |
| G9447160 | 16X16X26X92  | 64.27 €  |
| G9447180 | 18X18X26X92  | 84.20 €  |
| G9447200 | 20X20X32X104 | 101.42 € |

| Mill Dia.<br>Tolerance(mm) | Shank Dia.<br>Tolerance |
|----------------------------|-------------------------|
| 0 ~ - 0.03                 | h5                      |



## CARBIDE, 4 FLUTE SHORT LENGTH



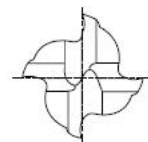
**G9A69** SERIES

|          |              |         |
|----------|--------------|---------|
| G9A69010 | 1X3X3X39     | 6.88 €  |
| G9A69015 | 1.5X3X5X39   | 6.88 €  |
| G9A69020 | 2X3X7X39     | 6.88 €  |
| G9A69025 | 2.5X3X7X39   | 6.88 €  |
| G9A69030 | 3X3X10X39    | 6.88 €  |
| G9A69040 | 4X4X14X51    | 7.66 €  |
| G9A69050 | 5X5X16X51    | 8.05 €  |
| G9A69060 | 6X6X19X64    | 11.58 € |
| G9A69080 | 8X8X21X64    | 14.40 € |
| G9A69100 | 10X10X22X70  | 21.75 € |
| G9A69120 | 12X12X25X76  | 32.13 € |
| G9A69160 | 16X16X32X89  | 54.07 € |
| G9A69200 | 20X20X38X102 | 88.95 € |

◎ : Excellent ○ : Good

| ISO                  | P                      |     |                        |     |     |                                           |     |     |                        |                                   | M                           |     |     |                | K   |                   |         |                     |     |                   |                    |
|----------------------|------------------------|-----|------------------------|-----|-----|-------------------------------------------|-----|-----|------------------------|-----------------------------------|-----------------------------|-----|-----|----------------|-----|-------------------|---------|---------------------|-----|-------------------|--------------------|
| Material Description | 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                  | N                      |     |                        |     |     |                                           |     |     |                        |                                   | S                           |     |     |                |     |                   |         | H                   |     |                   |                    |
| Material Description | 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, 4 FLUTE EXTRA LONG LENGTH

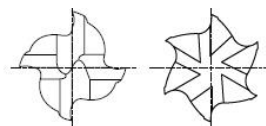


**G9453** SERIES

| Mill Diameter | Shank Diameter | Length of Cut | Overall Length |
|---------------|----------------|---------------|----------------|
| G9453903      | 3X3X20X60      | 12.51 €       |                |
| G9453904      | 4X4X20X60      | 13.18 €       |                |
| G9453905      | 5X5X25X75      | 15.28 €       |                |
| G9453906      | 6X6X30X75      | 16.61 €       |                |
| G9453908      | 8X8X30X75      | 24.67 €       |                |
| G9453910      | 10X10X40X100   | 31.73 €       |                |
| G9453912      | 12X12X45X100   | 47.95 €       |                |
| G9453914      | 14X14X45X100   | 60.89 €       |                |
| G9453916      | 16X16X45X100   | 83.29 €       |                |
| G9453918      | 18X18X45X100   | 92.15 €       |                |
| G9453920      | 20X20X45X100   | 111.38 €      |                |

| Mill Dia.<br>Tolerance(mm) | Shank Dia.<br>Tolerance |
|----------------------------|-------------------------|
| 0 ~ -0.03                  | h5                      |

## CARBIDE, 4&6 FLUTE 45° HELIX SHORT / LONG LENGTH



### G9F45 SERIES

|          |              |         |
|----------|--------------|---------|
| G9F45030 | 3X4X8X50     | 8.04 €  |
| G9F45040 | 4X4X11X50    | 8.04 €  |
| G9F45050 | 5X6X13X50    | 12.51 € |
| G9F45060 | 6X6X16X50    | 12.51 € |
| G9F45080 | 8X8X19X60    | 15.33 € |
| G9F45100 | 10X10X22X75  | 23.34 € |
| G9F45120 | 12X12X26X75  | 30.53 € |
| G9F45140 | 14X14X30X90  | 44.24 € |
| G9F45160 | 16X16X32X100 | 60.22 € |
| G9F45180 | 18X18X38X100 | 77.61 € |
| G9F45200 | 20X20X38X100 | 96.05 € |



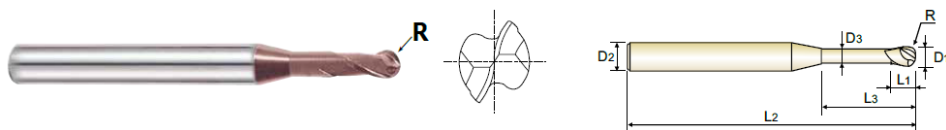
### G9F46 SERIES

#### LONG

Unit : mm

| EDP No.  | Mill Diameter | Shank Diameter | Length of Cut | Overall Length | No. of Flute |
|----------|---------------|----------------|---------------|----------------|--------------|
| G9F46120 |               | 12X12X50X100   |               | 47.67 €        |              |
| G9F46160 |               | 16X16X65X150   |               | 99.42 €        |              |
| G9F46200 |               | 20X20X70X150   |               | 145.73 €       |              |

## CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING



### G9B81 SERIES

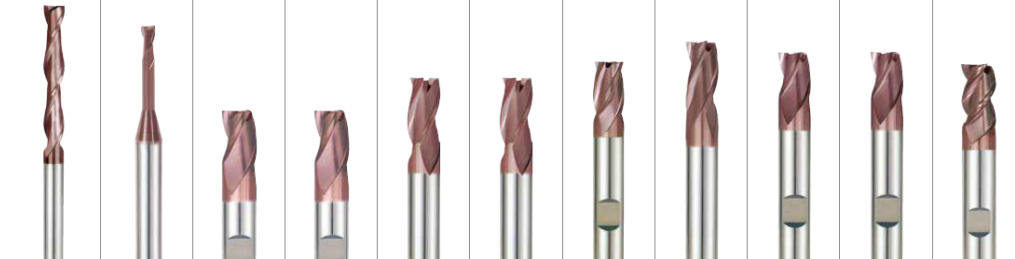
| Radius of Ball Nose | Mill Diameter | Shank Diameter | Length of Cut | Length Below Shank | Overall Length | Neck Diameter |
|---------------------|---------------|----------------|---------------|--------------------|----------------|---------------|
| R (± 0.02)          | D1            | D2             | L1            | L3                 | D3             | D3            |
|                     |               |                |               |                    |                |               |
|                     |               |                | G9B81004      | 0.4X4X0.7(2)X50    | 27.19 €        |               |
|                     |               |                | G9B81005      | 0.5X4X0.75(2)X50   | 23.54 €        |               |
|                     |               |                | G9B81006      | 0.6X4X0.9(2)X50    | 23.54 €        |               |
|                     |               |                | G9B81008      | 0.8X4X1.2(4)X50    | 18.22 €        |               |
|                     |               |                | G9B81010      | 1X4X1.5(6)X50      | 16.79 €        |               |
|                     |               |                | G9B81012      | 1.2X4X1.8(8)X50    | 16.79 €        |               |
|                     |               |                | G9B81014      | 1.4X4X2.1(16)X50   | 18.93 €        |               |
|                     |               |                | G9B81015      | 1.5X4X2.3(6)X50    | 16.79 €        |               |
|                     |               |                | G9B81016      | 1.6X4X2.4(8)X50    | 16.79 €        |               |
|                     |               |                | G9B81020      | 2X4X3(8)X50        | 15.68 €        |               |
|                     |               |                | G9B81030      | 3X6X4.5(10)X50     | 18.88 €        |               |
|                     |               |                | G9B81040      | 4X6X6(12)X50       | 18.27 €        |               |
|                     |               |                | G9B81901      | 0.5X4X0.75(4)X50   | 23.54 €        |               |
|                     |               |                | G9B81902      | 0.5X4X0.75(6)X50   | 27.19 €        |               |
|                     |               |                | G9B81903      | 0.6X4X0.9(4)X50    | 23.54 €        |               |
|                     |               |                | G9B81904      | 0.6X4X0.9(6)X50    | 23.54 €        |               |
|                     |               |                | G9B81905      | 0.8X4X1.2(6)X50    | 18.22 €        |               |
|                     |               |                | G9B81906      | 0.8X4X1.2(8)X50    | 18.22 €        |               |
|                     |               |                | G9B81907      | 1X4X1.5(8)X50      | 16.79 €        |               |
|                     |               |                | G9B81908      | 1X4X1.5(10)X50     | 16.79 €        |               |
|                     |               |                | G9B81909      | 1X4X1.5(12)X50     | 17.92 €        |               |
|                     |               |                | G9B81910      | 1.2X4X1.8(12)X50   | 17.92 €        |               |
|                     |               |                | G9B81911      | 1.5X4X2.3(8)X50    | 16.79 €        |               |
|                     |               |                | G9B81912      | 1.5X4X2.3(10)X50   | 16.79 €        |               |
|                     |               |                | G9B81913      | 1.5X4X2.3(12)X50   | 17.92 €        |               |

| G9454       | G9455             | G9B81          | G9634        | G9B82         | G9B83         | G9B84         | G9B85         | G9424        | G9G44                     | G9A68        |
|-------------|-------------------|----------------|--------------|---------------|---------------|---------------|---------------|--------------|---------------------------|--------------|
| 2           | 2                 | 2              | 4            | 2             | 2             | 4             | 4             | 2            | 2                         | 2            |
| 30°         | 30°               | 30°            | 30°          | 30°           | 30°           | 30°           | 30°           | 30°          | 30°                       | 30°          |
| BALL NOSE   | BALL NOSE         | BALL NOSE      | BALL NOSE    | CORNER RADIUS | CORNER RADIUS | CORNER RADIUS | CORNER RADIUS | SQUARE       | SQUARE                    | SQUARE       |
| R1.5        | R1.5              | R0.2           | R1.0         | D2.0          | D3.0          | D2.0          | D3.0          | D1.0         | D3.0                      | D1.0         |
| R10.0       | R10.0             | R2.0           | R10.0        | D12.0         | D12.0         | D12.0         | D12.0         | D20.0        | D20.0                     | D20.0        |
| 552         | 553               | 554            | 556          | 557           | 559           | 560           | 562           | 563          | 564                       | 565          |
| LONG REACH  | EXTRA LONG LENGTH | RIB PROCESSING | SHORT LENGTH | SHORT LENGTH  | LONG REACH    | SHORT LENGTH  | LONG REACH    | SHORT LENGTH | SHORT LENGTH WITH CHAMFER | SHORT LENGTH |
| TiAlN based | TiAlN based       | TiAlN based    | TiAlN based  | TiAlN based   | TiAlN based   | TiAlN based   | TiAlN based   | TiAlN based  | TiAlN based               | TiAlN based  |

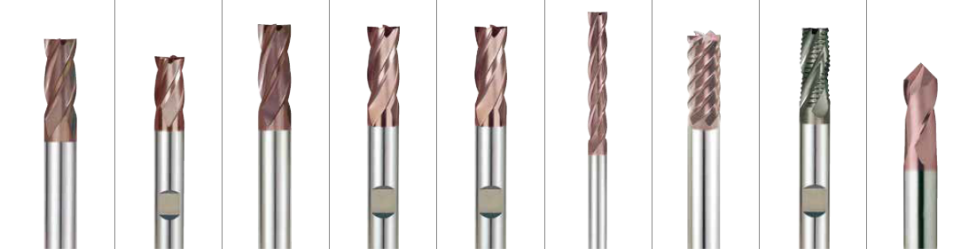


## SELECTION GUIDE

| G9452             | G9B80          | G9410<br>G9553 | G9G46                   | G9425        | G9G47                     | G9439        | G9528       | G9433       | G9G48                    | G9447       |
|-------------------|----------------|----------------|-------------------------|--------------|---------------------------|--------------|-------------|-------------|--------------------------|-------------|
| 2                 | 2              | 3              | 3                       | 3            | 3                         | 3            | 3           | 3           | 3                        | 3           |
| 30°               | 30°            | 30°            | 30°                     | 30°          | 30°                       | ≈ 30°        | ≈ 30°       | ≈ 30°       | ≈ 30°                    | 45°         |
| SQUARE            | SQUARE         | SQUARE         | SQUARE                  | SQUARE       | SQUARE                    | SQUARE       | SQUARE      | SQUARE      | SQUARE                   | SQUARE      |
| D3.0              | D0.4           | D0.5           | D3.0                    | D1.0         | D3.0                      | D2.0         | D3.5        | D3.0        | D3.0                     | D3.0        |
| D20.0             | D4.0           | D20.0          | D20.0                   | D20.0        | D20.0                     | D20.0        | D20.0       | D20.0       | D20.0                    | D20.0       |
| 571               | 572            | 575            | 577                     | 578          | 579                       | 580          | 581         | 582         | 583                      | 584         |
| EXTRA LONG LENGTH | RIB PROCESSING | THROW AWAY     | THROW AWAY with CHAMFER | SHORT LENGTH | SHORT LENGTH with CHAMFER | SHORT LENGTH | LONG LENGTH | LONG LENGTH | LONG LENGTH with CHAMFER | LONG LENGTH |
| TiAlN based       | TiAlN based    | TiAlN based    | TiAlN based             | TiAlN based  | TiAlN based               | TiAlN based  | TiAlN based | TiAlN based | TiAlN based              | TiAlN based |

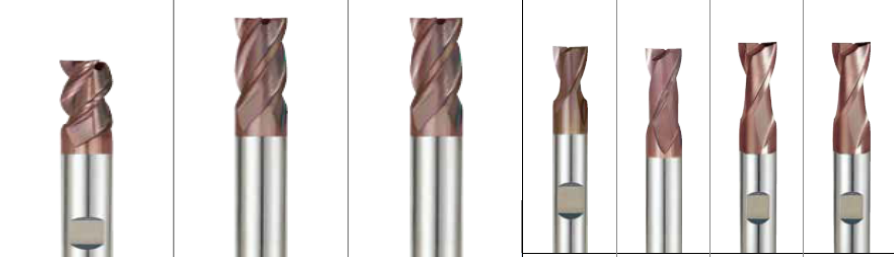


| G9A69        | G9448        | G9540       | G9449       | G9G51                       | G9453             | G9F45<br>G9F46              | G9A42       | G9400       |
|--------------|--------------|-------------|-------------|-----------------------------|-------------------|-----------------------------|-------------|-------------|
| 4            | 4            | 4           | 4           | 4                           | 4                 | 4&6                         | Multi Flute | 2           |
| 30°          | ≈ 30°        | ≈ 30°       | ≈ 30°       | ≈ 30°                       | 30°               | 45°                         | 30°         | 30°         |
| SQUARE       | SQUARE       | SQUARE      | SQUARE      | SQUARE                      | SQUARE            | SQUARE                      | ROUGHING    | DRILL MILL  |
| D1.0         | D2.0         | D3.5        | D2.0        | D3.0                        | D3.0              | D3.0                        | D6.0        | D3.0        |
| D20.0        | D20.0        | D20.0       | D20.0       | D20.0                       | D20.0             | D20.0                       | D25.0       | D20.0       |
| 588          | 589          | 590         | 591         | 592                         | 593               | 594                         | 595         | 596         |
| SHORT LENGTH | SHORT LENGTH | LONG LENGTH | LONG LENGTH | LONG LENGTH<br>with CHAMFER | EXTRA LONG LENGTH | SHORT LENGTH<br>LONG LENGTH | LONG LENGTH | -           |
| TiAlN based  | TiAlN based  | TiAlN based | TiAlN based | TiAlN based                 | TiAlN based       | TiAlN based                 | X-Coating   | TiAlN based |



## SELECTION GUIDE

| G9G49                       | G9432        | G9G50                        | G9444        | G9527       | G9445       | G9G45                       |
|-----------------------------|--------------|------------------------------|--------------|-------------|-------------|-----------------------------|
| 3                           | 4            | 4                            | 2            | 2           | 2           | 2                           |
| 45°                         | 30°          | 30°                          | ≈ 30°        | ≈ 30°       | ≈ 30°       | ≈ 30°                       |
| SQUARE                      | SQUARE       | SQUARE                       | SQUARE       | SQUARE      | SQUARE      | SQUARE                      |
| D3.0                        | D1.0         | D3.0                         | D2.0         | D3.5        | D2.0        | D3.0                        |
| D20.0                       | D20.0        | D20.0                        | D20.0        | D20.0       | D20.0       | D20.0                       |
| 585                         | 586          | 587                          | 566          | 567         | 568         | 570                         |
| LONG LENGTH<br>with CHAMFER | SHORT LENGTH | SHORT LENGTH<br>with CHAMFER | SHORT LENGTH | LONG LENGTH | LONG LENGTH | LONG LENGTH<br>with CHAMFER |
| TiAlN based                 | TiAlN based  | TiAlN based                  | TiAlN based  | TiAlN based | TiAlN based | TiAlN based                 |




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