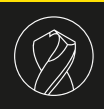


A close-up photograph of a Gühring GMD indexable insert drill bit. The bit is shown in a vertical orientation, with the cutting edge and the indexable insert clearly visible. The background is a blurred industrial setting. The Gühring logo is prominently displayed in a yellow box at the top right.

GÜHRING

GMD
Indexable insert drill

Best machining results for demanding drilling operations



Indexable insert drill

50% longer tool lives thanks to carbide & coating

Best possible machining results for demanding holes

The new indexable insert drill type GMD is characterised by an extensive portfolio of carriers with economical inserts.

Thanks to different carbide grades and coatings for the tougher interior indexable insert and the more wear-resistant exterior indexable insert, you can achieve the best possible surfaces and maximum tool lives.

Furthermore, the unique geometry of the central indexable inserts ensure good self-centring. The perfect combination of indexable inserts and high-quality carrier tools makes the indexable insert drill a reliable solution for the best possible machining results.

X good self-centring thanks to special geometry of the internal cutting insert

X different cutting materials for interior (tough) and exterior (wear-resistant) applications



user-friendly **Torx Plus screw**
powerful **HiPIMS coating**

nickel-plated surface
for optimum protection against wear

high-strength material
for a long tool life

available in the diameter range
2xD | 3xD | 4xD | 5xD, Ø 14.0–60.0 mm

Application example

Component: Injection mould, tool steel (X33CrS16)

Tool: #28502, Ø 28 mm

Customer target: Process reliability, increased tool life

Difficulty: Chip removal at 4xD drilling depth

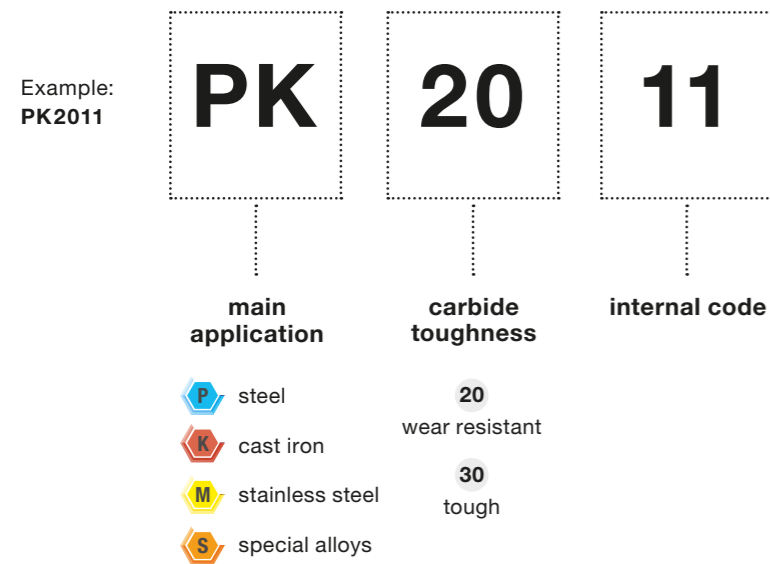
| Cutting data: | Gühring | Competitor |
|---------------|-------------|-------------|
| v_c | 170 m/min | 140 m/min |
| f | 0.18 mm/rev | 0.12 mm/rev |


| | | |
|-------------------|--------|--------|
| Tool life: | 60 min | 40 min |
|-------------------|--------|--------|


x **Tool life** increased by 50 %


Indexable inserts


Precision begins with the carbide grade



 **PK2011**
Wear-resistant carbide grade of the **outer insert** for the machining of steel and cast iron.
#28504

 **PK3021**
Tough carbide grade of the **inner insert** for the machining of steel and cast iron.
#28508

 **MS2011**
Wear-resistant carbide grade of the **outer insert** for the machining of stainless steel and HRSA alloys in the ISO M and ISO S field.
#28505

 **MS3021**
Tough carbide grade of the **inner insert** for the machining of stainless steel and HRSA alloys in the ISO M and ISO S field.
#28509

Indexable insert drills system

Quick overview, reliable selection: our article descriptions will guide you to the right tool in no time at all.

Example: **GMD.140.028.R.20.05.XS.2D**

| Gühring Modular Drill | Ø | drilling depth | round shank | shank Ø | indexable insert size | indexable insert form | l/Ø length ratio |
|-----------------------|------------|----------------|-------------|-----------|-----------------------|-----------------------|------------------|
| GMD | 140 | 028 | R | 20 | 05 | XS | 2D |

Perfectly combined: Matching indexable insert and holder

The correct pairing of insert and holder can be easily determined at Gühring. Both the holder and the insert designation include a size specification that corresponds to the inscribed circle of the insert.

Example holder

| D mm | d h6 mm | l1 mm | l2 mm | L mm | Size | Code no. | Article no. | Description |
|-------|---------|-------|-------|-------|-----------|----------|--------------|---------------------------|
| 14.00 | 20.00 | 28.00 | 31.00 | 51.00 | 05 | 14.000 | 28500 | GMD.140.028.R.20.05.XS.2D |
| 14.50 | 20.00 | 29.00 | 32.00 | 52.00 | 05 | 14.500 | | GMD.145.029.R.20.05.XS.2D |
| 15.00 | 20.00 | 30.00 | 33.00 | 53.00 | 05 | 15.000 | | GMD.150.030.R.20.05.XS.2D |

Example indexable insert

| IC mm | R mm | S mm | Size | Code no. | Article no. | Description |
|-------|------|------|-----------|----------|--------------|---------------------|
| 5.1 | 0.4 | 2.5 | 05 | 5.000 | 28504 | SOLX 05 0204 |

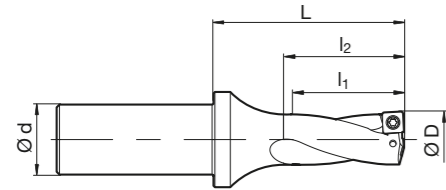


Indexable insert drills with internal cooling

Article no. **28500**



for indexable inserts type SOLX and XOLX • order Torx Plus wrench art. no. 28901 separately



| | | | | | | Article no. | 28500 |
|-------|---------|--------|--------|--------|------|-------------|---------------------------|
| D mm | d h6 mm | l1 mm | l2 mm | L mm | Size | Code no. | Description |
| 14.00 | 20.00 | 28.00 | 31.00 | 51.00 | 05 | 14.000 | GMD.140.028.R.20.05.XS.2D |
| 14.50 | 20.00 | 29.00 | 32.00 | 52.00 | 05 | 14.500 | GMD.145.029.R.20.05.XS.2D |
| 15.00 | 20.00 | 30.00 | 33.00 | 53.00 | 05 | 15.000 | GMD.150.030.R.20.05.XS.2D |
| 15.50 | 20.00 | 31.00 | 34.00 | 54.00 | 05 | 15.500 | GMD.155.031.R.20.05.XS.2D |
| 16.00 | 20.00 | 32.00 | 35.00 | 55.00 | 05 | 16.000 | GMD.160.032.R.20.05.XS.2D |
| 16.50 | 25.00 | 33.00 | 36.00 | 61.00 | 06 | 16.500 | GMD.165.033.R.25.06.XS.2D |
| 17.00 | 25.00 | 34.00 | 37.00 | 62.00 | 06 | 17.000 | GMD.170.034.R.25.06.XS.2D |
| 17.50 | 25.00 | 35.00 | 38.00 | 63.00 | 06 | 17.500 | GMD.175.035.R.25.06.XS.2D |
| 18.00 | 25.00 | 36.00 | 39.00 | 64.00 | 06 | 18.000 | GMD.180.036.R.25.06.XS.2D |
| 18.50 | 25.00 | 37.00 | 40.00 | 65.00 | 06 | 18.500 | GMD.185.037.R.25.06.XS.2D |
| 19.00 | 25.00 | 38.00 | 41.00 | 66.00 | 06 | 19.000 | GMD.190.038.R.25.06.XS.2D |
| 19.50 | 25.00 | 39.00 | 42.00 | 67.00 | 06 | 19.500 | GMD.195.039.R.25.06.XS.2D |
| 20.00 | 25.00 | 40.00 | 43.00 | 68.00 | 07 | 20.000 | GMD.200.040.R.25.07.XS.2D |
| 20.50 | 25.00 | 41.00 | 44.00 | 69.00 | 07 | 20.500 | GMD.205.041.R.25.07.XS.2D |
| 21.00 | 25.00 | 42.00 | 45.00 | 70.00 | 07 | 21.000 | GMD.210.042.R.25.07.XS.2D |
| 21.50 | 25.00 | 43.00 | 46.00 | 71.00 | 07 | 21.500 | GMD.215.043.R.25.07.XS.2D |
| 22.00 | 25.00 | 44.00 | 47.00 | 72.00 | 07 | 22.000 | GMD.220.044.R.25.07.XS.2D |
| 22.50 | 25.00 | 45.00 | 48.00 | 73.00 | 07 | 22.500 | GMD.225.045.R.25.07.XS.2D |
| 23.00 | 25.00 | 46.00 | 49.00 | 74.00 | 07 | 23.000 | GMD.230.046.R.25.07.XS.2D |
| 23.50 | 25.00 | 47.00 | 50.00 | 75.00 | 07 | 23.500 | GMD.235.047.R.25.07.XS.2D |
| 24.00 | 32.00 | 48.00 | 51.00 | 81.00 | 09 | 24.000 | GMD.240.048.R.32.09.XS.2D |
| 24.50 | 32.00 | 49.00 | 52.00 | 82.00 | 09 | 24.500 | GMD.245.049.R.32.09.XS.2D |
| 25.00 | 32.00 | 50.00 | 53.00 | 83.00 | 09 | 25.000 | GMD.250.050.R.32.09.XS.2D |
| 25.50 | 32.00 | 51.00 | 54.00 | 84.00 | 09 | 25.500 | GMD.255.051.R.32.09.XS.2D |
| 26.00 | 32.00 | 52.00 | 55.00 | 85.00 | 09 | 26.000 | GMD.260.052.R.32.09.XS.2D |
| 26.50 | 32.00 | 53.00 | 56.00 | 86.00 | 09 | 26.500 | GMD.265.053.R.32.09.XS.2D |
| 27.00 | 32.00 | 54.00 | 57.00 | 87.00 | 09 | 27.000 | GMD.270.054.R.32.09.XS.2D |
| 27.50 | 32.00 | 55.00 | 58.00 | 88.00 | 09 | 27.500 | GMD.275.055.R.32.09.XS.2D |
| 28.00 | 32.00 | 56.00 | 59.00 | 89.00 | 09 | 28.000 | GMD.280.056.R.32.09.XS.2D |
| 28.50 | 32.00 | 57.00 | 60.00 | 90.00 | 09 | 28.500 | GMD.285.057.R.32.09.XS.2D |
| 29.00 | 32.00 | 58.00 | 61.00 | 91.00 | 09 | 29.000 | GMD.290.058.R.32.09.XS.2D |
| 29.50 | 32.00 | 59.00 | 62.00 | 92.00 | 09 | 29.500 | GMD.295.059.R.32.09.XS.2D |
| 30.00 | 32.00 | 62.00 | 65.00 | 95.00 | 11 | 30.000 | GMD.300.060.R.32.11.XS.2D |
| 31.00 | 32.00 | 64.00 | 67.00 | 97.00 | 11 | 31.000 | GMD.310.062.R.32.11.XS.2D |
| 32.00 | 32.00 | 66.00 | 69.00 | 99.00 | 11 | 32.000 | GMD.320.064.R.32.11.XS.2D |
| 33.00 | 32.00 | 68.00 | 71.00 | 101.00 | 11 | 33.000 | GMD.330.066.R.32.11.XS.2D |
| 34.00 | 32.00 | 70.00 | 73.00 | 103.00 | 11 | 34.000 | GMD.340.068.R.32.11.XS.2D |
| 35.00 | 32.00 | 72.00 | 75.00 | 105.00 | 11 | 35.000 | GMD.350.070.R.32.11.XS.2D |
| 36.00 | 40.00 | 74.00 | 77.00 | 112.00 | 13 | 36.000 | GMD.360.072.R.40.13.XS.2D |
| 37.00 | 40.00 | 76.00 | 79.00 | 114.00 | 13 | 37.000 | GMD.370.074.R.40.13.XS.2D |
| 38.00 | 40.00 | 78.00 | 81.00 | 116.00 | 13 | 38.000 | GMD.380.076.R.40.13.XS.2D |
| 39.00 | 40.00 | 80.00 | 83.00 | 118.00 | 13 | 39.000 | GMD.390.078.R.40.13.XS.2D |
| 40.00 | 40.00 | 82.00 | 85.00 | 120.00 | 13 | 40.000 | GMD.400.080.R.40.13.XS.2D |
| 41.00 | 40.00 | 84.00 | 87.00 | 122.00 | 13 | 41.000 | GMD.410.082.R.40.13.XS.2D |
| 42.00 | 40.00 | 86.00 | 89.00 | 124.00 | 13 | 42.000 | GMD.420.084.R.40.13.XS.2D |
| 43.00 | 40.00 | 88.00 | 91.00 | 126.00 | 15 | 43.000 | GMD.430.086.R.40.15.XS.2D |
| 44.00 | 40.00 | 90.00 | 93.00 | 128.00 | 15 | 44.000 | GMD.440.088.R.40.15.XS.2D |
| 45.00 | 40.00 | 92.00 | 95.00 | 130.00 | 15 | 45.000 | GMD.450.090.R.40.15.XS.2D |
| 46.00 | 40.00 | 94.00 | 97.00 | 132.00 | 15 | 46.000 | GMD.460.092.R.40.15.XS.2D |
| 47.00 | 40.00 | 96.00 | 99.00 | 134.00 | 15 | 47.000 | GMD.470.094.R.40.15.XS.2D |
| 48.00 | 40.00 | 98.00 | 101.00 | 136.00 | 15 | 48.000 | GMD.480.096.R.40.15.XS.2D |
| 49.00 | 40.00 | 100.00 | 103.00 | 138.00 | 15 | 49.000 | GMD.490.098.R.40.15.XS.2D |
| 50.00 | 40.00 | 102.00 | 105.00 | 140.00 | 15 | 50.000 | GMD.500.100.R.40.15.XS.2D |
| 51.00 | 40.00 | 104.00 | 107.00 | 142.00 | 18 | 51.000 | GMD.510.104.R.40.18.XS.2D |
| 52.00 | 40.00 | 106.00 | 109.00 | 144.00 | 18 | 52.000 | GMD.520.106.R.40.18.XS.2D |
| 53.00 | 40.00 | 108.00 | 111.00 | 146.00 | 18 | 53.000 | GMD.530.108.R.40.18.XS.2D |
| 54.00 | 40.00 | 110.00 | 113.00 | 148.00 | 18 | 54.000 | GMD.540.110.R.40.18.XS.2D |
| 55.00 | 40.00 | 112.00 | 115.00 | 150.00 | 18 | 55.000 | GMD.550.112.R.40.18.XS.2D |
| 56.00 | 40.00 | 114.00 | 117.00 | 152.00 | 18 | 56.000 | GMD.560.114.R.40.18.XS.2D |
| 57.00 | 40.00 | 116.00 | 119.00 | 154.00 | 18 | 57.000 | GMD.570.116.R.40.18.XS.2D |

Article no.

28500

| D mm | d h6 mm | l1 mm | l2 mm | L mm | Size | Code-Nr. | Description |
|-------|---------|--------|--------|--------|------|----------|---------------------------|
| 58.00 | 40.00 | 118.00 | 121.00 | 156.00 | 18 | 58.000 | GMD.580.118.R.40.18.XS.2D |
| 59.00 | 40.00 | 120.00 | 123.00 | 158.00 | 18 | 59.000 | GMD.590.120.R.40.18.XS.2D |
| 60.00 | 40.00 | 122.00 | 125.00 | 160.00 | 18 | 60.000 | GMD.600.122.R.40.18.XS.2D |

Spare parts

| Article no. | Clamping screw | Torque | Description |
|-------------|----------------|--------|---|
| 28900 | Size | Nm | |
| Code 6.200 | M2.0x4.4 06IP | 0.6 | use for indexable insert size 05, XOLX and SOLX |
| Code 6.220 | M2.2x5.4 06IP | 0.6 | use for indexable insert size 06, XOLX and SOLX |
| Code 8.250 | M2.5x6.5 08IP | 1.2 | use for indexable insert size 07, XOLX and SOLX |
| Code 8.300 | M3.0x7.0 08IP | 1.2 | use for indexable insert size 09, XOLX and SOLX |
| Code 15.350 | M3.5x8.0 15IP | 3.0 | use for indexable insert size 11, XOLX and SOLX |
| Code 15.400 | M4.0x10 15IP | 3.0 | use for indexable insert size 13, XOLX and SOLX |
| Code 20.500 | M5.0x12.5 20IP | 5.0 | use for indexable insert sizes 15 and 18, XOLX and SOLX |

| Article no. | Torx Plus wrench |
|-------------|--------------------------------|
| 28901 | Size |
| Code 6.000 | T-handle Torx Plus wrench 06IP |
| Code 8.000 | T-handle Torx Plus wrench 08IP |
| Code 15.000 | T-handle Torx Plus wrench 15IP |
| Code 20.000 | T-handle Torx Plus wrench 20IP |

| Article no. | Torque wrenches | Torque |
|-------------|-----------------|--------|
| 4915 | Size | Nm |
| Code 2.000 | 1/4" | 0.5-2 |
| Code 8.000 | 1/4" | 2-8 |

| Article no. | Interchangeable blade | Overall length |
|-------------|-----------------------|----------------|
| 4960 | Size | |
| Code 6.000 | 06IP | 175 |
| Code 8.000 | 08IP | 175 |
| Code 15.000 | 15IP | 175 |
| Code 20.000 | 20IP | 175 |

| Shank Ø d | Shank length Ls | IC connection thread |
|-----------|-----------------|----------------------|
| 20 | 50 | BSPT-1/8 |
| 25 | 56 | BSPT-1/8 |
| 32 | 60 | BSPT-1/4 |
| 40 | 70 | BSPT-1/4 |

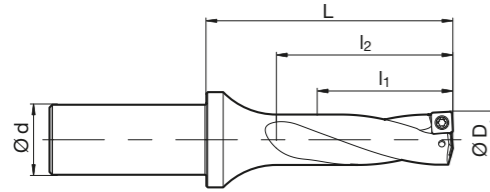


Indexable insert drills with internal cooling

Article no. **28501**



for indexable inserts type SOLX and XOLX • order Torx Plus wrench art. no. 28901 separately



Article no. **28501**

| D mm | d h6 mm | l1 mm | l2 mm | L mm | Size | Code no. | Description |
|-------|---------|--------|--------|--------|------|----------|---------------------------|
| 14.00 | 20.00 | 42.00 | 45.00 | 65.00 | 05 | 14.000 | GMD.140.042.R.20.05.XS.3D |
| 14.50 | 20.00 | 44.00 | 47.00 | 67.00 | 05 | 14.500 | GMD.145.043.R.20.05.XS.3D |
| 15.00 | 20.00 | 45.00 | 48.00 | 68.00 | 05 | 15.000 | GMD.150.045.R.20.05.XS.3D |
| 15.50 | 20.00 | 47.00 | 50.00 | 70.00 | 05 | 15.500 | GMD.155.046.R.20.05.XS.3D |
| 16.00 | 20.00 | 48.00 | 51.00 | 71.00 | 05 | 16.000 | GMD.160.048.R.20.05.XS.3D |
| 16.50 | 25.00 | 50.00 | 53.00 | 78.00 | 06 | 16.500 | GMD.165.049.R.25.06.XS.3D |
| 17.00 | 25.00 | 51.00 | 54.00 | 79.00 | 06 | 17.000 | GMD.170.051.R.25.06.XS.3D |
| 17.50 | 25.00 | 53.00 | 56.00 | 81.00 | 06 | 17.500 | GMD.175.052.R.25.06.XS.3D |
| 18.00 | 25.00 | 54.00 | 57.00 | 82.00 | 06 | 18.000 | GMD.180.054.R.25.06.XS.3D |
| 18.50 | 25.00 | 56.00 | 59.00 | 84.00 | 06 | 18.500 | GMD.185.055.R.25.06.XS.3D |
| 19.00 | 25.00 | 57.00 | 60.00 | 85.00 | 06 | 19.000 | GMD.190.057.R.25.06.XS.3D |
| 19.50 | 25.00 | 59.00 | 62.00 | 87.00 | 06 | 19.500 | GMD.195.058.R.25.06.XS.3D |
| 20.00 | 25.00 | 60.00 | 63.00 | 88.00 | 07 | 20.000 | GMD.200.060.R.25.07.XS.3D |
| 20.50 | 25.00 | 62.00 | 65.00 | 90.00 | 07 | 20.500 | GMD.205.061.R.25.07.XS.3D |
| 21.00 | 25.00 | 63.00 | 66.00 | 91.00 | 07 | 21.000 | GMD.210.063.R.25.07.XS.3D |
| 21.50 | 25.00 | 65.00 | 68.00 | 93.00 | 07 | 21.500 | GMD.215.064.R.25.07.XS.3D |
| 22.00 | 25.00 | 66.00 | 69.00 | 94.00 | 07 | 22.000 | GMD.220.066.R.25.07.XS.3D |
| 22.50 | 25.00 | 68.00 | 71.00 | 96.00 | 07 | 22.500 | GMD.225.067.R.25.07.XS.3D |
| 23.00 | 25.00 | 69.00 | 72.00 | 97.00 | 07 | 23.000 | GMD.230.069.R.25.07.XS.3D |
| 23.50 | 25.00 | 71.00 | 74.00 | 99.00 | 07 | 23.500 | GMD.235.070.R.25.07.XS.3D |
| 24.00 | 32.00 | 72.00 | 75.00 | 105.00 | 09 | 24.000 | GMD.240.072.R.32.09.XS.3D |
| 24.50 | 32.00 | 74.00 | 77.00 | 107.00 | 09 | 24.500 | GMD.245.073.R.32.09.XS.3D |
| 25.00 | 32.00 | 75.00 | 78.00 | 108.00 | 09 | 25.000 | GMD.250.075.R.32.09.XS.3D |
| 25.50 | 32.00 | 77.00 | 80.00 | 110.00 | 09 | 25.500 | GMD.255.076.R.32.09.XS.3D |
| 26.00 | 32.00 | 78.00 | 81.00 | 111.00 | 09 | 26.000 | GMD.260.078.R.32.09.XS.3D |
| 26.50 | 32.00 | 80.00 | 83.00 | 113.00 | 09 | 26.500 | GMD.265.079.R.32.09.XS.3D |
| 27.00 | 32.00 | 81.00 | 84.00 | 114.00 | 09 | 27.000 | GMD.270.081.R.32.09.XS.3D |
| 27.50 | 32.00 | 83.00 | 86.00 | 116.00 | 09 | 27.500 | GMD.275.082.R.32.09.XS.3D |
| 28.00 | 32.00 | 84.00 | 87.00 | 117.00 | 09 | 28.000 | GMD.280.084.R.32.09.XS.3D |
| 28.50 | 32.00 | 86.00 | 89.00 | 119.00 | 09 | 28.500 | GMD.285.085.R.32.09.XS.3D |
| 29.00 | 32.00 | 87.00 | 90.00 | 120.00 | 09 | 29.000 | GMD.290.087.R.32.09.XS.3D |
| 29.50 | 32.00 | 89.00 | 92.00 | 122.00 | 09 | 29.500 | GMD.295.088.R.32.09.XS.3D |
| 30.00 | 32.00 | 92.00 | 95.00 | 125.00 | 11 | 30.000 | GMD.300.090.R.32.11.XS.3D |
| 31.00 | 32.00 | 95.00 | 98.00 | 128.00 | 11 | 31.000 | GMD.310.093.R.32.11.XS.3D |
| 32.00 | 32.00 | 98.00 | 101.00 | 131.00 | 11 | 32.000 | GMD.320.096.R.32.11.XS.3D |
| 33.00 | 32.00 | 101.00 | 104.00 | 134.00 | 11 | 33.000 | GMD.330.099.R.32.11.XS.3D |
| 34.00 | 32.00 | 104.00 | 107.00 | 137.00 | 11 | 34.000 | GMD.340.102.R.32.11.XS.3D |
| 35.00 | 32.00 | 107.00 | 110.00 | 140.00 | 11 | 35.000 | GMD.350.105.R.32.11.XS.3D |
| 36.00 | 40.00 | 110.00 | 113.00 | 148.00 | 13 | 36.000 | GMD.360.108.R.40.13.XS.3D |
| 37.00 | 40.00 | 113.00 | 116.00 | 151.00 | 13 | 37.000 | GMD.370.111.R.40.13.XS.3D |
| 38.00 | 40.00 | 116.00 | 119.00 | 154.00 | 13 | 38.000 | GMD.380.114.R.40.13.XS.3D |
| 39.00 | 40.00 | 119.00 | 122.00 | 157.00 | 13 | 39.000 | GMD.390.117.R.40.13.XS.3D |
| 40.00 | 40.00 | 122.00 | 125.00 | 160.00 | 13 | 40.000 | GMD.400.120.R.40.13.XS.3D |
| 41.00 | 40.00 | 125.00 | 128.00 | 163.00 | 13 | 41.000 | GMD.410.123.R.40.13.XS.3D |
| 42.00 | 40.00 | 128.00 | 131.00 | 166.00 | 13 | 42.000 | GMD.420.126.R.40.13.XS.3D |
| 43.00 | 40.00 | 131.00 | 134.00 | 169.00 | 15 | 43.000 | GMD.430.126.R.40.15.XS.3D |
| 44.00 | 40.00 | 134.00 | 137.00 | 172.00 | 15 | 44.000 | GMD.440.132.R.40.15.XS.3D |
| 45.00 | 40.00 | 137.00 | 140.00 | 175.00 | 15 | 45.000 | GMD.450.135.R.40.15.XS.3D |
| 46.00 | 40.00 | 140.00 | 143.00 | 178.00 | 15 | 46.000 | GMD.460.138.R.40.15.XS.3D |
| 47.00 | 40.00 | 143.00 | 146.00 | 181.00 | 15 | 47.000 | GMD.470.141.R.40.15.XS.3D |
| 48.00 | 40.00 | 146.00 | 149.00 | 184.00 | 15 | 48.000 | GMD.480.144.R.40.15.XS.3D |
| 49.00 | 40.00 | 149.00 | 152.00 | 187.00 | 15 | 49.000 | GMD.490.147.R.40.15.XS.3D |
| 50.00 | 40.00 | 150.00 | 155.00 | 190.00 | 15 | 50.000 | GMD.500.150.R.40.15.XS.3D |
| 51.00 | 40.00 | 155.00 | 158.00 | 193.00 | 18 | 51.000 | GMD.510.155.R.40.18.XS.3D |
| 52.00 | 40.00 | 158.00 | 161.00 | 196.00 | 18 | 52.000 | GMD.520.158.R.40.18.XS.3D |
| 53.00 | 40.00 | 161.00 | 164.00 | 199.00 | 18 | 53.000 | GMD.530.161.R.40.18.XS.3D |
| 54.00 | 40.00 | 164.00 | 167.00 | 202.00 | 18 | 54.000 | GMD.540.164.R.40.18.XS.3D |
| 55.00 | 40.00 | 167.00 | 170.00 | 205.00 | 18 | 55.000 | GMD.550.167.R.40.18.XS.3D |
| 56.00 | 40.00 | 170.00 | 173.00 | 208.00 | 18 | 56.000 | GMD.560.170.R.40.18.XS.3D |
| 57.00 | 40.00 | 173.00 | 176.00 | 211.00 | 18 | 57.000 | GMD.570.173.R.40.18.XS.3D |

Article no. **28501**

| D mm | d h6 mm | l1 mm | l2 mm | L mm | Size | Code-Nr. | Description |
|-------|---------|--------|--------|--------|------|----------|---------------------------|
| 58.00 | 40.00 | 176.00 | 179.00 | 214.00 | 18 | 58.000 | GMD.580.176.R.40.18.XS.3D |
| 59.00 | 40.00 | 179.00 | 182.00 | 217.00 | 18 | 59.000 | GMD.590.179.R.40.18.XS.3D |
| 60.00 | 40.00 | 182.00 | 185.00 | 220.00 | 18 | 60.000 | GMD.600.182.R.40.18.XS.3D |

Spare parts

| Article no. | Clamping screw Size | Torque Nm | Description |
|-------------|---------------------|-----------|---|
| 28900 | | | |
| Code 6.200 | M2.0x4.4 06IP | 0.6 | use for indexable insert size 05, XOLX and SOLX |
| Code 6.220 | M2.2x5.4 06IP | 0.6 | use for indexable insert size 06, XOLX and SOLX |
| Code 8.250 | M2.5x6.5 08IP | 1.2 | use for indexable insert size 07, XOLX and SOLX |
| Code 8.300 | M3.0x7.0 08IP | 1.2 | use for indexable insert size 09, XOLX and SOLX |
| Code 15.350 | M3.5x8.0 15IP | 3.0 | use for indexable insert size 11, XOLX and SOLX |
| Code 15.400 | M4.0x10 15IP | 3.0 | use for indexable insert size 13, XOLX and SOLX |
| Code 20.500 | M5.0x12.5 20IP | 5.0 | use for indexable insert sizes 15 and 18, XOLX and SOLX |

| Article no. | Torx Plus wrench Size | Description |
|-------------|--------------------------------|-------------|
| 28901 | | |
| Code 6.000 | T-handle Torx Plus wrench 06IP | |
| Code 8.000 | T-handle Torx Plus wrench 08IP | |
| Code 15.000 | T-handle Torx Plus wrench 15IP | |
| Code 20.000 | T-handle Torx Plus wrench 20IP | |

| Article no. | Torque wrenches Size | Torque Nm |
|-------------|----------------------|-----------|
| 4915 | | |
| Code 2.000 | 1/4" | 0.5-2 |
| Code 8.000 | 1/4" | 2-8 |

| Article no. | Interchangeable blade Size | Overall length |
|-------------|----------------------------|----------------|
| 4960 | | |
| Code 6.000 | 06IP | 175 |
| Code 8.000 | 08IP | 175 |
| Code 15.000 | 15IP | 175 |
| Code 20.000 | 20IP | 175 |

| Shank Ø d | Shank length Ls | IC connection thread |
|-----------|-----------------|----------------------|
| 20 | 50 | BSPT-1/8 |
| 25 | 56 | BSPT-1/8 |
| 32 | 60 | BSPT-1/4 |
| 40 | 70 | BSPT-1/4 |

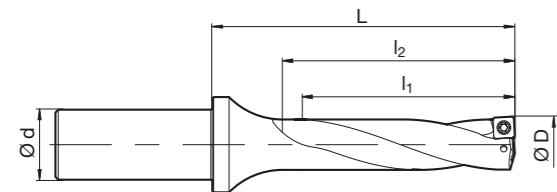


Indexable insert drills with internal cooling

Article no. 28502



for indexable inserts type SOLX and XOLX • order Torx Plus wrench art. no. 28901 separately



Article no. 28502

| D mm | d h6 mm | l1 mm | l2 mm | L mm | Size | Code no. | Description |
|-------|---------|--------|--------|--------|------|----------|---------------------------|
| 14.00 | 20.00 | 56.00 | 59.00 | 79.00 | 05 | 14.000 | GMD.140.056.R.20.05.XS.4D |
| 14.50 | 20.00 | 58.00 | 61.00 | 81.00 | 05 | 14.500 | GMD.145.058.R.20.05.XS.4D |
| 15.00 | 20.00 | 60.00 | 63.00 | 83.00 | 05 | 15.000 | GMD.150.060.R.20.05.XS.4D |
| 15.50 | 20.00 | 62.00 | 65.00 | 85.00 | 05 | 15.500 | GMD.155.062.R.20.05.XS.4D |
| 16.00 | 20.00 | 64.00 | 67.00 | 87.00 | 05 | 16.000 | GMD.160.064.R.20.05.XS.4D |
| 16.50 | 25.00 | 66.00 | 69.00 | 94.00 | 06 | 16.500 | GMD.165.066.R.25.06.XS.4D |
| 17.00 | 25.00 | 68.00 | 71.00 | 96.00 | 06 | 17.000 | GMD.170.068.R.25.06.XS.4D |
| 17.50 | 25.00 | 70.00 | 73.00 | 98.00 | 06 | 17.500 | GMD.175.070.R.25.06.XS.4D |
| 18.00 | 25.00 | 72.00 | 75.00 | 100.00 | 06 | 18.000 | GMD.180.072.R.25.06.XS.4D |
| 18.50 | 25.00 | 74.00 | 77.00 | 103.00 | 06 | 18.500 | GMD.185.074.R.25.06.XS.4D |
| 19.00 | 25.00 | 76.00 | 79.00 | 104.00 | 06 | 19.000 | GMD.190.076.R.25.06.XS.4D |
| 19.50 | 25.00 | 78.00 | 81.00 | 106.00 | 06 | 19.500 | GMD.195.078.R.25.06.XS.4D |
| 20.00 | 25.00 | 80.00 | 83.00 | 108.00 | 07 | 20.000 | GMD.200.080.R.25.07.XS.4D |
| 20.50 | 25.00 | 82.00 | 85.00 | 110.00 | 07 | 20.500 | GMD.205.082.R.25.07.XS.4D |
| 21.00 | 25.00 | 84.00 | 87.00 | 113.00 | 07 | 21.000 | GMD.210.084.R.25.07.XS.4D |
| 21.50 | 25.00 | 86.00 | 89.00 | 114.00 | 07 | 21.500 | GMD.215.086.R.25.07.XS.4D |
| 22.00 | 25.00 | 88.00 | 91.00 | 116.00 | 07 | 22.000 | GMD.220.088.R.25.07.XS.4D |
| 22.50 | 25.00 | 90.00 | 93.00 | 118.00 | 07 | 22.500 | GMD.225.090.R.25.07.XS.4D |
| 23.00 | 25.00 | 92.00 | 95.00 | 120.00 | 07 | 23.000 | GMD.230.092.R.25.07.XS.4D |
| 23.50 | 25.00 | 94.00 | 97.00 | 122.00 | 07 | 23.500 | GMD.235.094.R.25.07.XS.4D |
| 24.00 | 32.00 | 96.00 | 99.00 | 129.00 | 09 | 24.000 | GMD.240.096.R.32.09.XS.4D |
| 24.50 | 32.00 | 98.00 | 101.00 | 131.00 | 09 | 24.500 | GMD.245.098.R.32.09.XS.4D |
| 25.00 | 32.00 | 100.00 | 103.00 | 133.00 | 09 | 25.000 | GMD.250.100.R.32.09.XS.4D |
| 25.50 | 32.00 | 102.00 | 105.00 | 135.00 | 09 | 25.500 | GMD.255.102.R.32.09.XS.4D |
| 26.00 | 32.00 | 104.00 | 107.00 | 137.00 | 09 | 26.000 | GMD.260.104.R.32.09.XS.4D |
| 26.50 | 32.00 | 106.00 | 109.00 | 139.00 | 09 | 26.500 | GMD.265.106.R.32.09.XS.4D |
| 27.00 | 32.00 | 108.00 | 111.00 | 141.00 | 09 | 27.000 | GMD.270.108.R.32.09.XS.4D |
| 27.50 | 32.00 | 110.00 | 113.00 | 143.00 | 09 | 27.500 | GMD.275.110.R.32.09.XS.4D |
| 28.00 | 32.00 | 112.00 | 115.00 | 145.00 | 09 | 28.000 | GMD.280.112.R.32.09.XS.4D |
| 28.50 | 32.00 | 114.00 | 117.00 | 147.00 | 09 | 28.500 | GMD.285.114.R.32.09.XS.4D |
| 29.00 | 32.00 | 116.00 | 119.00 | 149.00 | 09 | 29.000 | GMD.290.116.R.32.09.XS.4D |
| 29.50 | 32.00 | 118.00 | 121.00 | 151.00 | 09 | 29.500 | GMD.295.118.R.32.09.XS.4D |
| 30.00 | 32.00 | 122.00 | 125.00 | 155.00 | 11 | 30.000 | GMD.300.120.R.32.11.XS.4D |
| 31.00 | 32.00 | 126.00 | 129.00 | 159.00 | 11 | 31.000 | GMD.310.124.R.32.11.XS.4D |
| 32.00 | 32.00 | 130.00 | 133.00 | 163.00 | 11 | 32.000 | GMD.320.128.R.32.11.XS.4D |
| 33.00 | 32.00 | 134.00 | 137.00 | 167.00 | 11 | 33.000 | GMD.330.132.R.32.11.XS.4D |
| 34.00 | 32.00 | 138.00 | 141.00 | 171.00 | 11 | 34.000 | GMD.340.136.R.32.11.XS.4D |
| 35.00 | 32.00 | 142.00 | 145.00 | 175.00 | 11 | 35.000 | GMD.350.140.R.32.11.XS.4D |
| 36.00 | 40.00 | 146.00 | 149.00 | 184.00 | 13 | 36.000 | GMD.360.144.R.40.13.XS.4D |
| 37.00 | 40.00 | 150.00 | 153.00 | 188.00 | 13 | 37.000 | GMD.370.148.R.40.13.XS.4D |
| 38.00 | 40.00 | 152.00 | 157.00 | 192.00 | 13 | 38.000 | GMD.380.152.R.40.13.XS.4D |
| 39.00 | 40.00 | 156.00 | 161.00 | 196.00 | 13 | 39.000 | GMD.390.156.R.40.13.XS.4D |
| 40.00 | 40.00 | 160.00 | 165.00 | 200.00 | 13 | 40.000 | GMD.400.160.R.40.13.XS.4D |
| 41.00 | 40.00 | 164.00 | 169.00 | 204.00 | 13 | 41.000 | GMD.410.164.R.40.13.XS.4D |
| 42.00 | 40.00 | 168.00 | 173.00 | 208.00 | 13 | 42.000 | GMD.420.168.R.40.13.XS.4D |
| 43.00 | 40.00 | 172.00 | 177.00 | 212.00 | 15 | 43.000 | GMD.430.172.R.40.15.XS.4D |
| 44.00 | 40.00 | 176.00 | 181.00 | 216.00 | 15 | 44.000 | GMD.440.176.R.40.15.XS.4D |
| 45.00 | 40.00 | 180.00 | 185.00 | 220.00 | 15 | 45.000 | GMD.450.180.R.40.15.XS.4D |
| 46.00 | 40.00 | 184.00 | 189.00 | 224.00 | 15 | 46.000 | GMD.460.184.R.40.15.XS.4D |
| 47.00 | 40.00 | 188.00 | 193.00 | 228.00 | 15 | 47.000 | GMD.470.188.R.40.15.XS.4D |
| 48.00 | 40.00 | 192.00 | 197.00 | 232.00 | 15 | 48.000 | GMD.480.192.R.40.15.XS.4D |
| 49.00 | 40.00 | 196.00 | 201.00 | 236.00 | 15 | 49.000 | GMD.490.196.R.40.15.XS.4D |
| 50.00 | 40.00 | 200.00 | 205.00 | 240.00 | 15 | 50.000 | GMD.500.200.R.40.15.XS.4D |
| 51.00 | 40.00 | 204.00 | 209.00 | 244.00 | 18 | 51.000 | GMD.510.204.R.40.18.XS.4D |
| 52.00 | 40.00 | 208.00 | 213.00 | 248.00 | 18 | 52.000 | GMD.520.208.R.40.18.XS.4D |
| 53.00 | 40.00 | 212.00 | 217.00 | 252.00 | 18 | 53.000 | GMD.530.212.R.40.18.XS.4D |
| 54.00 | 40.00 | 216.00 | 221.00 | 256.00 | 18 | 54.000 | GMD.540.216.R.40.18.XS.4D |
| 55.00 | 40.00 | 220.00 | 225.00 | 260.00 | 18 | 55.000 | GMD.550.220.R.40.18.XS.4D |
| 56.00 | 40.00 | 224.00 | 229.00 | 264.00 | 18 | 56.000 | GMD.560.224.R.40.18.XS.4D |
| 57.00 | 40.00 | 228.00 | 233.00 | 268.00 | 18 | 57.000 | GMD.570.228.R.40.18.XS.4D |

Article no.

28502

| D mm | d h6 mm | l1 mm | l2 mm | L mm | Size | Code-Nr. | Description |
|-------|---------|--------|--------|--------|------|----------|---------------------------|
| 58.00 | 40.00 | 232.00 | 237.00 | 272.00 | 18 | 58.000 | GMD.580.232.R.40.18.XS.4D |
| 59.00 | 40.00 | 236.00 | 241.00 | 276.00 | 18 | 59.000 | GMD.590.236.R.40.18.XS.4D |
| 60.00 | 40.00 | 240.00 | 245.00 | 280.00 | 18 | 60.000 | GMD.600.240.R.40.18.XS.4D |

Spare parts

| Article no. | Clamping screw Size | Torque Nm | Description |
|-------------|---------------------|-----------|---|
| 28900 | | | |
| Code 6.200 | M2.0x4.4 06IP | 0.6 | use for indexable insert size 05, XOLX and SOLX |
| Code 6.220 | M2.2x5.4 06IP | 0.6 | use for indexable insert size 06, XOLX and SOLX |
| Code 8.250 | M2.5x6.5 08IP | 1.2 | use for indexable insert size 07, XOLX and SOLX |
| Code 8.300 | M3.0x7.0 08IP | 1.2 | use for indexable insert size 09, XOLX and SOLX |
| Code 15.350 | M3.5x8.0 15IP | 3.0 | use for indexable insert size 11, XOLX and SOLX |
| Code 15.400 | M4.0x10 15IP | 3.0 | use for indexable insert size 13, XOLX and SOLX |
| Code 20.500 | M5.0x12.5 20IP | 5.0 | use for indexable insert sizes 15 and 18, XOLX and SOLX |

| Article no. | Torx Plus wrench Size | Description |
|-------------|--------------------------------|-------------|
| 28901 | | |
| Code 6.000 | T-handle Torx Plus wrench 06IP | |
| Code 8.000 | T-handle Torx Plus wrench 08IP | |
| Code 15.000 | T-handle Torx Plus wrench 15IP | |
| Code 20.000 | T-handle Torx Plus wrench 20IP | |

| Article no. | Torque wrenches Size | Torque Nm |
|-------------|----------------------|-----------|
| 4915 | | |
| Code 2.000 | 1/4" | 0.5-2 |
| Code 8.000 | 1/4" | 2-8 |

| Article no. | Interchangeable blade Size | Overall length |
|-------------|----------------------------|----------------|
| 4960 | | |
| Code 6.000 | 06IP | 175 |
| Code 8.000 | 08IP | 175 |
| Code 15.000 | 15IP | 175 |
| Code 20.000 | 20IP | 175 |

| Shank Ø d | Shank length Ls | IC connection thread |
|-----------|-----------------|----------------------|
| 20 | 50 | BSPT-1/8 |
| 25 | 56 | BSPT-1/8 |
| 32 | 60 | BSPT-1/4 |
| 40 | 70 | BSPT-1/4 |

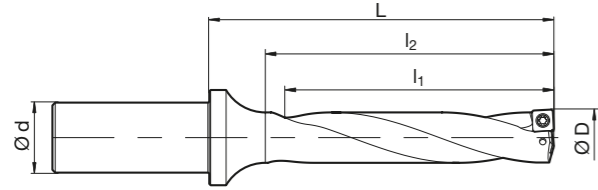


Indexable insert drills with internal cooling

Article no. 28503



for indexable inserts type SOLX and XOLX • order Torx Plus wrench art. no. 28901 separately



| | | | | | | Article no. | 28503 |
|-------|---------|--------|--------|--------|------|-------------|---------------------------|
| D mm | d h6 mm | l1 mm | l2 mm | L mm | Size | Code no. | Description |
| 14.00 | 20.00 | 70.00 | 73.00 | 88.00 | 05 | 14.000 | GMD.140.070.R.20.05.XS.5D |
| 14.50 | 20.00 | 73.00 | 76.00 | 91.00 | 05 | 14.500 | GMD.145.072.R.20.05.XS.5D |
| 15.00 | 20.00 | 75.00 | 78.00 | 93.00 | 05 | 15.000 | GMD.150.075.R.20.05.XS.5D |
| 15.50 | 20.00 | 78.00 | 81.00 | 96.00 | 05 | 15.500 | GMD.155.077.R.20.05.XS.5D |
| 16.00 | 20.00 | 80.00 | 83.00 | 98.00 | 05 | 16.000 | GMD.160.080.R.20.05.XS.5D |
| 16.50 | 25.00 | 83.00 | 86.00 | 100.00 | 06 | 16.500 | GMD.165.082.R.25.06.XS.5D |
| 17.00 | 25.00 | 85.00 | 88.00 | 108.00 | 06 | 17.000 | GMD.170.085.R.25.06.XS.5D |
| 17.50 | 25.00 | 88.00 | 91.00 | 111.00 | 06 | 17.500 | GMD.175.087.R.25.06.XS.5D |
| 18.00 | 25.00 | 90.00 | 93.00 | 113.00 | 06 | 18.000 | GMD.180.090.R.25.06.XS.5D |
| 18.50 | 25.00 | 93.00 | 96.00 | 116.00 | 06 | 18.500 | GMD.185.092.R.25.06.XS.5D |
| 19.00 | 25.00 | 95.00 | 98.00 | 118.00 | 06 | 19.000 | GMD.190.095.R.25.06.XS.5D |
| 19.50 | 25.00 | 98.00 | 101.00 | 121.00 | 06 | 19.500 | GMD.195.097.R.25.06.XS.5D |
| 20.00 | 25.00 | 100.00 | 103.00 | 123.00 | 07 | 20.000 | GMD.200.100.R.25.07.XS.5D |
| 20.50 | 25.00 | 103.00 | 106.00 | 126.00 | 07 | 20.500 | GMD.205.102.R.25.07.XS.5D |
| 21.00 | 25.00 | 105.00 | 108.00 | 128.00 | 07 | 21.000 | GMD.210.105.R.25.07.XS.5D |
| 21.50 | 25.00 | 108.00 | 111.00 | 131.00 | 07 | 21.500 | GMD.215.107.R.25.07.XS.5D |
| 22.00 | 25.00 | 110.00 | 113.00 | 133.00 | 07 | 22.000 | GMD.220.110.R.25.07.XS.5D |
| 22.50 | 25.00 | 113.00 | 116.00 | 136.00 | 07 | 22.500 | GMD.225.112.R.25.07.XS.5D |
| 23.00 | 25.00 | 115.00 | 118.00 | 138.00 | 07 | 23.000 | GMD.230.115.R.25.07.XS.5D |
| 23.50 | 25.00 | 118.00 | 121.00 | 141.00 | 07 | 23.500 | GMD.235.117.R.25.07.XS.5D |
| 24.00 | 32.00 | 120.00 | 123.00 | 148.00 | 09 | 24.000 | GMD.240.120.R.32.09.XS.5D |
| 24.50 | 32.00 | 123.00 | 126.00 | 151.00 | 09 | 24.500 | GMD.245.122.R.32.09.XS.5D |
| 25.00 | 32.00 | 125.00 | 128.00 | 153.00 | 09 | 25.000 | GMD.250.125.R.32.09.XS.5D |
| 25.50 | 32.00 | 128.00 | 131.00 | 156.00 | 09 | 25.500 | GMD.255.127.R.32.09.XS.5D |
| 26.00 | 32.00 | 130.00 | 133.00 | 158.00 | 09 | 26.000 | GMD.260.130.R.32.09.XS.5D |
| 26.50 | 32.00 | 133.00 | 136.00 | 161.00 | 09 | 26.500 | GMD.265.132.R.32.09.XS.5D |
| 27.00 | 32.00 | 135.00 | 138.00 | 163.00 | 09 | 27.000 | GMD.270.135.R.32.09.XS.5D |
| 27.50 | 32.00 | 138.00 | 141.00 | 166.00 | 09 | 27.500 | GMD.275.137.R.32.09.XS.5D |
| 28.00 | 32.00 | 140.00 | 143.00 | 168.00 | 09 | 28.000 | GMD.280.140.R.32.09.XS.5D |
| 28.50 | 32.00 | 143.00 | 146.00 | 171.00 | 09 | 28.500 | GMD.285.142.R.32.09.XS.5D |
| 29.00 | 32.00 | 145.00 | 148.00 | 173.00 | 09 | 29.000 | GMD.290.145.R.32.09.XS.5D |
| 29.50 | 32.00 | 148.00 | 151.00 | 176.00 | 09 | 29.500 | GMD.295.147.R.32.09.XS.5D |
| 30.00 | 32.00 | 150.00 | 155.00 | 180.00 | 11 | 30.000 | GMD.300.150.R.32.11.XS.5D |
| 31.00 | 32.00 | 155.00 | 160.00 | 185.00 | 11 | 31.000 | GMD.310.155.R.32.11.XS.5D |
| 32.00 | 32.00 | 160.00 | 165.00 | 190.00 | 11 | 32.000 | GMD.320.160.R.32.11.XS.5D |
| 33.00 | 32.00 | 165.00 | 170.00 | 195.00 | 11 | 33.000 | GMD.330.165.R.32.11.XS.5D |
| 34.00 | 32.00 | 170.00 | 175.00 | 200.00 | 11 | 34.000 | GMD.340.170.R.32.11.XS.5D |
| 35.00 | 32.00 | 175.00 | 180.00 | 205.00 | 11 | 35.000 | GMD.350.175.R.32.11.XS.5D |
| 36.00 | 40.00 | 180.00 | 185.00 | 215.00 | 13 | 36.000 | GMD.360.180.R.40.13.XS.5D |
| 37.00 | 40.00 | 185.00 | 190.00 | 220.00 | 13 | 37.000 | GMD.370.185.R.40.13.XS.5D |
| 38.00 | 40.00 | 190.00 | 195.00 | 225.00 | 13 | 38.000 | GMD.380.190.R.40.13.XS.5D |
| 39.00 | 40.00 | 195.00 | 200.00 | 230.00 | 13 | 39.000 | GMD.390.195.R.40.13.XS.5D |
| 40.00 | 40.00 | 200.00 | 205.00 | 235.00 | 13 | 40.000 | GMD.400.200.R.40.13.XS.5D |
| 41.00 | 40.00 | 205.00 | 210.00 | 240.00 | 13 | 41.000 | GMD.410.205.R.40.13.XS.5D |
| 42.00 | 40.00 | 210.00 | 215.00 | 245.00 | 13 | 42.000 | GMD.420.210.R.40.13.XS.5D |
| 43.00 | 40.00 | 215.00 | 220.00 | 250.00 | 15 | 43.000 | GMD.430.215.R.40.15.XS.5D |
| 44.00 | 40.00 | 220.00 | 225.00 | 255.00 | 15 | 44.000 | GMD.440.220.R.40.15.XS.5D |
| 45.00 | 40.00 | 225.00 | 230.00 | 260.00 | 15 | 45.000 | GMD.450.225.R.40.15.XS.5D |
| 46.00 | 40.00 | 230.00 | 235.00 | 265.00 | 15 | 46.000 | GMD.460.230.R.40.15.XS.5D |
| 47.00 | 40.00 | 235.00 | 240.00 | 270.00 | 15 | 47.000 | GMD.470.235.R.40.15.XS.5D |
| 48.00 | 40.00 | 240.00 | 245.00 | 275.00 | 15 | 48.000 | GMD.480.240.R.40.15.XS.5D |
| 49.00 | 40.00 | 245.00 | 250.00 | 280.00 | 15 | 49.000 | GMD.490.245.R.40.15.XS.5D |
| 50.00 | 40.00 | 250.00 | 255.00 | 285.00 | 15 | 50.000 | GMD.500.250.R.40.15.XS.5D |
| 51.00 | 40.00 | 257.00 | 260.00 | 290.00 | 18 | 51.000 | GMD.510.257.R.40.18.XS.5D |
| 52.00 | 40.00 | 262.00 | 265.00 | 295.00 | 18 | 52.000 | GMD.520.262.R.40.18.XS.5D |
| 53.00 | 40.00 | 267.00 | 270.00 | 300.00 | 18 | 53.000 | GMD.530.267.R.40.18.XS.5D |
| 54.00 | 40.00 | 272.00 | 275.00 | 305.00 | 18 | 54.000 | GMD.540.272.R.40.18.XS.5D |
| 55.00 | 40.00 | 277.00 | 280.00 | 310.00 | 18 | 55.000 | GMD.550.277.R.40.18.XS.5D |
| 56.00 | 40.00 | 282.00 | 285.00 | 315.00 | 18 | 56.000 | GMD.560.282.R.40.18.XS.5D |
| 57.00 | 40.00 | 287.00 | 290.00 | 320.00 | 18 | 57.000 | GMD.570.287.R.40.18.XS.5D |

Article no.

28503

| D mm | d h6 mm | l1 mm | l2 mm | L mm | Size | Code-Nr. | Description |
|-------|---------|--------|--------|--------|------|----------|---------------------------|
| 58.00 | 40.00 | 292.00 | 295.00 | 325.00 | 18 | 58.000 | GMD.580.292.R.40.18.XS.5D |
| 59.00 | 40.00 | 297.00 | 300.00 | 330.00 | 18 | 59.000 | GMD.590.297.R.40.18.XS.5D |
| 60.00 | 40.00 | 302.00 | 305.00 | 335.00 | 18 | 60.000 | GMD.600.302.R.40.18.XS.5D |

Spare parts

| Article no. | Clamping screw Size | Torque Nm | Description |
|-------------|---------------------|-----------|---|
| 28900 | | | |
| Code 6.200 | M2.0x4.4 06IP | 0.6 | use for indexable insert size 05, XOLX and SOLX |
| Code 6.220 | M2.2x5.4 06IP | 0.6 | use for indexable insert size 06, XOLX and SOLX |
| Code 8.250 | M2.5x6.5 08IP | 1.2 | use for indexable insert size 07, XOLX and SOLX |
| Code 8.300 | M3.0x7.0 08IP | 1.2 | use for indexable insert size 09, XOLX and SOLX |
| Code 15.350 | M3.5x8.0 15IP | 3.0 | use for indexable insert size 11, XOLX and SOLX |
| Code 15.400 | M4.0x10 15IP | 3.0 | use for indexable insert size 13, XOLX and SOLX |
| Code 20.500 | M5.0x12.5 20IP | 5.0 | use for indexable insert sizes 15 and 18, XOLX and SOLX |

| Article no. | Torx Plus wrench Size | Description |
|-------------|--------------------------------|-------------|
| 28901 | | |
| Code 6.000 | T-handle Torx Plus wrench 06IP | |
| Code 8.000 | T-handle Torx Plus wrench 08IP | |
| Code 15.000 | T-handle Torx Plus wrench 15IP | |
| Code 20.000 | T-handle Torx Plus wrench 20IP | |

| Article no. | Torque wrenches Size | Torque Nm |
|-------------|----------------------|-----------|
| 4915 | | |
| Code 2.000 | 1/4" | 0.5-2 |
| Code 8.000 | 1/4" | 2-8 |

| Article no. | Interchangeable blade Size | Overall length |
|-------------|----------------------------|----------------|
| 4960 | | |
| Code 6.000 | 06IP | 175 |
| Code 8.000 | 08IP | 175 |
| Code 15.000 | 15IP | 175 |
| Code 20.000 | 20IP | 175 |

| Shank Ø d | Shank length Ls | IC connection thread |
|-----------|-----------------|----------------------|
| 20 | 50 | BSPT-1/8 |
| 25 | 56 | BSPT-1/8 |
| 32 | 60 | BSPT-1/4 |
| 40 | 70 | BSPT-1/4 |



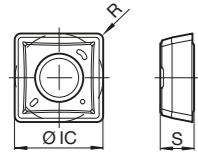
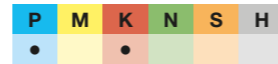
Indexable inserts SOLX, single-sided, peripheral

Article no. 28504



4 usable cutting edges • stable cutting edge • type PK2011

cutting data see page 18



Article no. **28504**

| IC mm | R mm | S mm | Size | Code no. | Description |
|-------|------|------|------|----------|-------------|
| 5.1 | 0.4 | 2.5 | 05 | 5.000 | SOLX 050204 |
| 6.2 | 0.5 | 2.6 | 06 | 6.000 | SOLX 060205 |
| 7.5 | 0.8 | 2.9 | 07 | 7.000 | SOLX 07T208 |
| 9.2 | 0.8 | 3.5 | 09 | 9.000 | SOLX 090308 |
| 11.0 | 0.8 | 4.2 | 11 | 11.000 | SOLX 11T308 |
| 13.0 | 1.0 | 4.7 | 13 | 13.000 | SOLX 130410 |
| 15.2 | 1.0 | 5.3 | 15 | 15.000 | SOLX 150510 |
| 18.2 | 1.0 | 5.5 | 18 | 18.000 | SOLX 180510 |

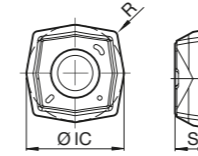
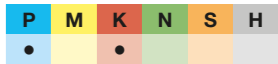
Indexable inserts XOLX, single-sided, central

Article no. 28508



4 usable cutting edges • stable cutting edge • type PK3021

cutting data see page 18



Article no. **28508**

| IC mm | R mm | S mm | Size | Code no. | Description |
|-------|------|------|------|----------|-------------|
| 5.4 | 0.4 | 2.5 | 05 | 5.000 | XOLX 050204 |
| 6.6 | 0.4 | 2.5 | 06 | 6.000 | XOLX 060204 |
| 7.8 | 0.5 | 2.9 | 07 | 7.000 | XOLX 07T205 |
| 9.6 | 0.5 | 3.5 | 09 | 9.000 | XOLX 090305 |
| 11.4 | 0.6 | 4.2 | 11 | 11.000 | XOLX 11T306 |
| 13.6 | 0.6 | 4.7 | 13 | 13.000 | XOLX 130406 |
| 15.9 | 0.8 | 5.3 | 15 | 15.000 | XOLX 150508 |
| 18.9 | 0.8 | 5.5 | 18 | 18.000 | XOLX 180508 |

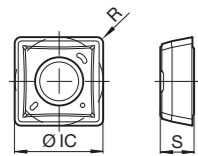
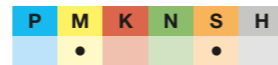
Indexable inserts SOLX, single-sided, peripheral

Article no. 28505



4 usable cutting edges • soft cut • type MS2011

cutting data see page 19



Article no. **28505**

| IC mm | R mm | S mm | Size | Code no. | Description |
|-------|------|------|------|----------|-------------|
| 5.1 | 0.4 | 2.5 | 05 | 5.000 | SOLX 050204 |
| 6.2 | 0.5 | 2.6 | 06 | 6.000 | SOLX 060205 |
| 7.5 | 0.8 | 2.9 | 07 | 7.000 | SOLX 07T208 |
| 9.2 | 0.8 | 3.5 | 09 | 9.000 | SOLX 090308 |
| 11.0 | 0.8 | 4.2 | 11 | 11.000 | SOLX 11T308 |
| 13.0 | 1.0 | 4.7 | 13 | 13.000 | SOLX 130410 |
| 15.2 | 1.0 | 5.3 | 15 | 15.000 | SOLX 150510 |
| 18.2 | 1.0 | 5.5 | 18 | 18.000 | SOLX 180510 |

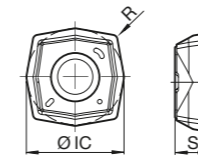
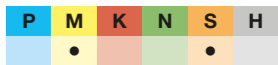
Indexable inserts XOLX, single-sided, central

Article no. 28509



4 usable cutting edges • soft cut • type MS3021

cutting data see page 19



Article no. **28509**

| IC mm | R mm | S mm | Size | Code no. | Description |
|-------|------|------|------|----------|-------------|
| 5.4 | 0.4 | 2.5 | 05 | 5.000 | XOLX 050204 |
| 6.6 | 0.4 | 2.5 | 06 | 6.000 | XOLX 060204 |
| 7.8 | 0.5 | 2.9 | 07 | 7.000 | XOLX 07T205 |
| 9.6 | 0.5 | 3.5 | 09 | 9.000 | XOLX 090305 |
| 11.4 | 0.6 | 4.2 | 11 | 11.000 | XOLX 11T306 |
| 13.6 | 0.6 | 4.7 | 13 | 13.000 | XOLX 130406 |
| 15.9 | 0.8 | 5.3 | 15 | 15.000 | XOLX 150508 |
| 18.9 | 0.8 | 5.5 | 18 | 18.000 | XOLX 180508 |

Clamping screws Article no. 28900



| | | | Article no. | 28900 |
|-------|-------|------|--------------|-------|
| d1 | l1 | Size | Order no. | |
| | mm | | | |
| M 2 | 4.30 | 06IP | 28900 6.200 | |
| M 2.2 | 5.40 | 06IP | 28900 6.220 | |
| M 2.5 | 6.50 | 08IP | 28900 8.250 | |
| M 3 | 7.00 | 08IP | 28900 8.300 | |
| M 3.5 | 8.00 | 15IP | 28900 15.350 | |
| M 4 | 10.00 | 15IP | 28900 15.400 | |
| M 5 | 12.50 | 20IP | 28900 20.500 | |

Torx Plus wrench



T-handle Torx Plus wrench

| | | Article no. | 28901 |
|------|--|--------------|-------|
| Size | | Order no. | |
| 06IP | | 28901 6.000 | |
| 08IP | | 28901 8.000 | |
| 15IP | | 28901 15.000 | |
| 20IP | | 28901 20.000 | |

Torque wrenches



| | | Article no. | 4915 |
|------|-----------|-------------|------|
| Size | Torque Nm | Order no. | |
| 1/4" | 0.5-2 | 4915 2.000 | |
| 1/4" | 2-8 | 4915 8.000 | |

Interchangeable blade



| | | Article no. | 4960 |
|------|-------------------|-------------|------|
| Size | Overall length mm | Order no. | |
| 06IP | 175 | 4960 6.000 | |
| 08IP | 175 | 4960 8.000 | |
| 15IP | 175 | 4960 15.000 | |
| 20IP | 175 | 4960 20.000 | |

Precision begins with the tool selection



Your digital guide

The navigator for your application

The Gühring Navigator guides you to the optimum solution in four steps:

1. select product group & application
2. enter dimensions
3. determine material & strength
4. find the best tool

webnavigator.guehring.de/en



Indexable insert drills ISO P & K



| Article no. | Factor V_c | Factor f_z |
|--------------------------|--------------|--------------|
| 28500 (2xD), 28501 (3xD) | ± 0 % | ± 0 % |
| 28502 (4xD) | -10 % | -15 % |
| 28503 (5xD) | -15 % | -20 % |

| Machining group | v_c (m/min) | f (mm/rev) with nom. Ø | | | | |
|---|------------------|------------------------|-----------|---------|---------|---------|
| | | 14 – 23.5 | 24 – 29.5 | 30 – 42 | 43 – 50 | 51 – 60 |
| P1.1.1 Unalloyed steel, annealed, 0.15 % C, Rm 420 N/mm ² , 125 HB | 250 | 0.10 | 0.12 | 0.14 | 0.18 | 0.21 |
| P1.1.2 Unalloyed steel, heat-treated, 0.15 % C, Rm 420 N/mm ² , 125 HB | 250 | 0.10 | 0.12 | 0.14 | 0.18 | 0.21 |
| P1.1.3 Unalloyed steel, annealed, 0.45 % C, Rm 640 N/mm ² , 190 HB | 250 | 0.10 | 0.12 | 0.14 | 0.18 | 0.21 |
| P1.1.4 Unalloyed steel, heat-treated, 0.45 % C, Rm 640 N/mm ² , 190 HB | 250 | 0.10 | 0.12 | 0.14 | 0.18 | 0.21 |
| P1.1.5 Unalloyed steel, heat-treated, 0.45 % C, Rm 850 N/mm ² , 250 HB | 225 | 0.10 | 0.12 | 0.14 | 0.18 | 0.21 |
| P1.1.6 Unalloyed steel, annealed, 0.75 % C, Rm 915 N/mm ² , 270 HB | 225 | 0.10 | 0.12 | 0.14 | 0.18 | 0.21 |
| P1.1.7 Unalloyed steel, heat-treated, 0.75 % C, Rm 1020 N/mm ² , 300 HB | 200 | 0.10 | 0.12 | 0.14 | 0.18 | 0.21 |
| P2.1.1 Low-alloy steel, annealed, Rm 610 N/mm ² , 180 HB | 220 | 0.08 | 0.10 | 0.11 | 0.14 | 0.17 |
| P2.1.2 Low-alloy steel, heat-treated, Rm 930 N/mm ² , 275 HB | 220 | 0.08 | 0.10 | 0.11 | 0.14 | 0.17 |
| P2.1.3 Low-alloy steel, heat-treated, Rm 1020 N/mm ² , 300 HB | 200 | 0.08 | 0.10 | 0.11 | 0.14 | 0.17 |
| P2.1.4 Low-alloy steel, heat-treated, Rm 1190 N/mm ² , 350 HB | 200 | 0.08 | 0.10 | 0.11 | 0.14 | 0.17 |
| P3.1.1 High-alloy steel and tool steel, annealed, Rm 680 N/mm ² , 200 HB | 180 | 0.08 | 0.10 | 0.11 | 0.14 | 0.17 |
| P3.1.2 High-alloy steel and tool steel, hardened and tempered, Rm 1100 N/mm ² , 325 HB | 160 | 0.08 | 0.10 | 0.11 | 0.14 | 0.17 |
| M1.1.1 Stainless steel, ferritic/martensitic, with machining additives | | | | | | |
| M1.1.2 Stainless steel, ferritic/martensitic, annealed, Rm 680 N/mm ² , 200 HB | | | | | | |
| M1.1.3 Stainless steel, ferritic/martensitic, heat-treated, Rm 810 N/mm ² , 240 HB | | | | | | |
| M2.1.1 Stainless steel, austenitic, quenched, 180 HB | | | | | | |
| M2.2.1 Duplex steel, high-strength stainless steels | | | | | | |
| K1.1.1 Grey cast iron, pearlitic/ferritic, 180 HB | 250 | 0.13 | 0.17 | 0.20 | 0.25 | 0.29 |
| K1.1.2 Grey cast iron, pearlitic/martensitic, 260 HB | 225 | 0.13 | 0.17 | 0.20 | 0.25 | 0.29 |
| K1.2.1 Cast iron with spheroidal graphite, ferritic, 160 HB | 250 | 0.13 | 0.17 | 0.20 | 0.25 | 0.29 |
| K1.2.2 Cast iron with spheroidal graphite, pearlitic, 250 HB | 225 | 0.13 | 0.17 | 0.20 | 0.25 | 0.29 |
| K1.3.1 Malleable cast iron, ferritic, 130 HB | 250 | 0.13 | 0.17 | 0.20 | 0.25 | 0.29 |
| K1.3.2 Malleable cast iron, pearlitic, 230 HB | 225 | 0.13 | 0.17 | 0.20 | 0.25 | 0.29 |
| K2.1.1 Vermicular graphite cast iron (GJV) | 200 | 0.11 | 0.14 | 0.17 | 0.21 | 0.24 |
| K2.2.1 Austenitic-ferritic spheroidal graphite cast iron (ADI) | 180 | 0.11 | 0.14 | 0.17 | 0.21 | 0.24 |
| N1.1.1 Wrought aluminium alloys, non-hardened, 60 HB | | | | | | |
| N1.1.2 Wrought aluminium alloys, hardened, 100 HB | | | | | | |
| N2.1.1 Aluminium casting alloys, non-hardened, ≤ 12 % Si, 75 HB | | | | | | |
| N2.1.2 Aluminium casting alloys, hardened, ≤ 12 % Si, 90 HB | | | | | | |
| N2.1.3 Aluminium casting alloys, non-hardened, > 12 % Si, 130 HB | | | | | | |
| N3.1.1 Copper and copper alloys: Free-machining alloy, Pb > 1 % | | | | | | |
| N3.1.2 Copper and copper alloys: CuZn, CuSnZn | | | | | | |
| N3.1.3 Copper and copper alloys: CuSn, lead-free copper and copper electrolyte | | | | | | |
| N4.1.1 Non-metallic materials: Duroplastics, fibre-reinforced plastics | | | | | | |
| N4.1.2 Non-metallic materials: Hard rubber, wood, etc. | | | | | | |
| N4.1.3 Non-metallic materials: Graphite | | | | | | |
| S1.1.1 Heat-resistant alloys, Fe-based, annealed, 200 HB | | | | | | |
| S1.1.2 Heat-resistant alloys, Fe-based, hardened, 280 HB | | | | | | |
| S1.1.3 Heat-resistant alloys, Ni- or Co-based, annealed, 250 HB | | | | | | |
| S1.1.4 Heat-resistant alloys, Ni- or Co-based, hardened, 350 HB | | | | | | |
| S1.1.5 Heat-resistant alloys, Ni- or Co-based, cast, 320 HB | | | | | | |
| S2.1.1 Titanium alloys, pure titanium, Rm 400 N/mm ² | | | | | | |
| S2.1.2 Titanium alloys, Alpha and Beta alloys, hardened, Rm 1050 N/mm ² | | | | | | |
| H1.1.1 Hardened steel, hardened and tempered, < 55 HRC | | | | | | |
| H1.1.2 Hardened steel, hardened and tempered, < 60 HRC | | | | | | |
| H1.1.3 Hardened steel, hardened and tempered, > 60 HRC | | | | | | |
| H2.1.1 Chilled cast iron, 400 HB | | | | | | |
| H2.1.2 Chilled cast iron, hardened and tempered, < 55 HRC | | | | | | |

Indexable insert drills ISO M & S



| Article no. | Factor V_c | Factor f_z |
|--------------------------|--------------|--------------|
| 28500 (2xD), 28501 (3xD) | ± 0 % | ± 0 % |
| 28502 (4xD) | -10 % | -15 % |
| 28503 (5xD) | -15 % | -20 % |

| Machining group | v_c (m/min) | f (mm/rev) with nom. Ø | | | | |
|---|------------------|------------------------|-----------|---------|---------|---------|
| | | 14 – 23.5 | 24 – 29.5 | 30 – 42 | 43 – 50 | 51 – 60 |
| P1.1.1 Unalloyed steel, annealed, 0.15 % C, Rm 420 N/mm ² , 125 HB | | | | | | |
| P1.1.2 Unalloyed steel, heat-treated, 0.15 % C, Rm 420 N/mm ² , 125 HB | | | | | | |
| P1.1.3 Unalloyed steel, annealed, 0.45 % C, Rm 640 N/mm ² , 190 HB | | | | | | |
| P1.1.4 Unalloyed steel, heat-treated, 0.45 % C, Rm 640 N/mm ² , 190 HB | | | | | | |
| P1.1.5 Unalloyed steel, heat-treated, 0.45 % C, Rm 850 N/mm ² , 250 HB | | | | | | |
| P1.1.6 Unalloyed steel, annealed, 0.75 % C, Rm 915 N/mm ² , 270 HB | | | | | | |
| P1.1.7 Unalloyed steel, heat-treated, 0.75 % C, Rm 1020 N/mm ² , 300 HB | | | | | | |
| P2.1.1 Low-alloy steel, annealed, Rm 610 N/mm ² , 180 HB | | | | | | |
| P2.1.2 Low-alloy steel, heat-treated, Rm 930 N/mm ² , 275 HB | | | | | | |
| P2.1.3 Low-alloy steel, heat-treated, Rm 1020 N/mm ² , 300 HB | | | | | | |
| P2.1.4 Low-alloy steel, heat-treated, Rm 1190 N/mm ² , 350 HB | | | | | | |
| P3.1.1 High-alloy steel and tool steel, annealed, Rm 680 N/mm ² , 200 HB | | | | | | |
| P3.1.2 High-alloy steel and tool steel, hardened and tempered, Rm 1100 N/mm ² , 325 HB | | | | | | |
| M1.1.1 Stainless steel, ferritic/martensitic, with machining additives | 220 | 0.10 | 0.13 | 0.15 | 0.19 | 0.22 |
| M1.1.2 Stainless steel, ferritic/martensitic, annealed, Rm 680 N/mm ² , 200 HB | 200 | 0.09 | 0.12 | 0.14 | 0.17 | 0.20 |
| M1.1.3 Stainless steel, ferritic/martensitic, heat-treated, Rm 810 N/mm ² , 240 HB | 200 | 0.09 | 0.12 | 0.14 | 0.17 | 0.20 |
| M2.1.1 Stainless steel, austenitic, quenched, 180 HB | 180 | 0.08 | 0.10 | 0.12 | 0.15 | 0.18 |
| M2.2.1 Duplex steel, high-strength stainless steels | 145 | 0.06 | 0.08 | 0.10 | 0.12 | 0.14 |
| K1.1.1 Grey cast iron, pearlitic/ferritic, 180 HB | | | | | | |
| K1.1.2 Grey cast iron, pearlitic/martensitic, 260 HB | | | | | | |
| K1.2.1 Cast iron with spheroidal graphite, ferritic, 160 HB | | | | | | |
| K1.2.2 Cast iron with spheroidal graphite, pearlitic, 250 HB | | | | | | |
| K1.3.1 Malleable cast iron, ferritic, 130 HB | | | | | | |
| K1.3.2 Malleable cast iron, pearlitic, 230 HB | | | | | | |
| K2.1.1 Vermicular graphite cast iron (GJV) | | | | | | |
| K2.2.1 Austenitic-ferritic spheroidal graphite cast iron (ADI) | | | | | | |
| N1.1.1 Wrought aluminium alloys, non-hardened, 60 HB | | | | | | |
| N1.1.2 Wrought aluminium alloys, hardened, 100 HB | | | | | | |
| N2.1.1 Aluminium casting alloys, non-hardened, ≤ 12 % Si, 75 HB | | | | | | |
| N2.1.2 Aluminium casting alloys, hardened, ≤ 12 % Si, 90 HB | | | | | | |
| N2.1.3 Aluminium casting alloys, non-hardened, > 12 % Si, 130 HB | | | | | | |
| N3.1.1 Copper and copper alloys: Free-machining alloy, Pb > 1 % | | | | | | |
| N3.1.2 Copper and copper alloys: CuZn, CuSnZn | | | | | | |
| N3.1.3 Copper and copper alloys: CuSn, lead-free copper and copper electrolyte | | | | | | |
| N4.1.1 Non-metallic materials: Duroplastics, fibre-reinforced plastics | | | | | | |
| N4.1.2 Non-metallic materials: Hard rubber, wood, etc. | | | | | | |
| N4.1.3 Non-metallic materials: Graphite | | | | | | |
| S1.1.1 Heat-resistant alloys, Fe-based, annealed, 200 HB | 90 | 0.07 | 0.09 | 0.11 | 0.13 | 0.15 |
| S1.1.2 Heat-resistant alloys, Fe-based, hardened, 280 HB | 90 | 0.07 | 0.09 | 0.11 | 0.13 | 0.15 |
| S1.1.3 Heat-resistant alloys, Ni- or Co-based, annealed, 250 HB | 90 | 0.07 | 0.09 | 0.11 | 0.13 | 0.15 |
| S1.1.4 Heat-resistant alloys, Ni- or Co-based, hardened, 350 HB | 80 | 0.06 | 0.08 | 0.09 | 0.12 | 0.14 |
| S1.1.5 Heat-resistant alloys, Ni- or Co-based, cast, 320 HB | 80 | 0.06 | 0.08 | 0.09 | 0.12 | 0.14 |
| S2.1.1 Titanium alloys, pure titanium, Rm 400 N/mm ² | 60 | 0.06 | 0.08 | 0.09 | 0.11 | 0.13 |
| S2.1.2 Titanium alloys, Alpha and Beta alloys, hardened, Rm 1050 N/mm ² | 50 | 0.05 | 0.06 | 0.07 | 0.09 | 0.11 |
| H1.1.1 Hardened steel, hardened and tempered, < 55 HRC | | | | | | |
| H1.1.2 Hardened steel, hardened and tempered, < 60 HRC | | | | | | |
| H1.1.3 Hardened steel, hardened and tempered, > 60 HRC | | | | | | |
| H2.1.1 Chilled cast iron, 400 HB | | | | | | |
| H2.1.2 Chilled cast iron, hardened and tempered, < 55 HRC | | | | | | |



Technical information on indexable insert drills



Application & setting range on lathes
P.22/23

Insert geometries
P.25

Blind hole
P.24

Manufacturing know-how for practical use:
Our tips and advice show you how to achieve the best machining results with our indexable insert drills.

Perfect dimensional accuracy in every hole

Whether drilling to finished dimensions or pre-drilling for subsequent machining, consistent dimensional accuracy is important in every drilling process. With the GMD, you can achieve hole tolerances in line with today's requirements for indexable insert drills.

Tolerances on the drill & in the hole

With the help of these tolerance tables, you can achieve perfect machining results with the indexable insert drills.

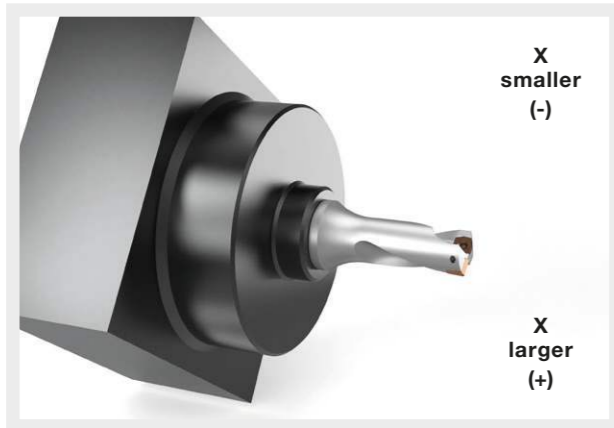
| 2xD | | |
|---------|-----------------|----------------|
| drill Ø | drill tolerance | hole tolerance |
| mm | mm | mm |
| 14-29.5 | 0 / -0.15 | -0.1 / +0.2 |
| 30-42 | 0 / -0.15 | -0.1 / +0.25 |
| 43-60 | 0 / -0.15 | -0.1 / +0.28 |

| 3xD | | |
|---------|-----------------|----------------|
| drill Ø | drill tolerance | hole tolerance |
| mm | mm | mm |
| 14-29.5 | 0 / -0.15 | -0.1 / +0.2 |
| 30-42 | 0 / -0.15 | -0.1 / +0.25 |
| 43-60 | 0 / -0.15 | -0.1 / +0.28 |

| 4xD | | |
|---------|-----------------|----------------|
| drill Ø | drill tolerance | hole tolerance |
| mm | mm | mm |
| 14-29.5 | 0 / -0.15 | -0.1 / +0.25 |
| 30-42 | 0 / -0.15 | -0.1 / +0.30 |
| 43-60 | 0 / -0.15 | -0.1 / +0.33 |


| 5xD | | |
|---------|-----------------|----------------|
| drill Ø | drill tolerance | hole tolerance |
| mm | mm | mm |
| 14-29.5 | 0 / -0.15 | -0.1 / +0.25 |
| 30-42 | 0 / -0.15 | -0.1 / +0.30 |
| 43-60 | 0 / -0.15 | -0.1 / +0.33 |

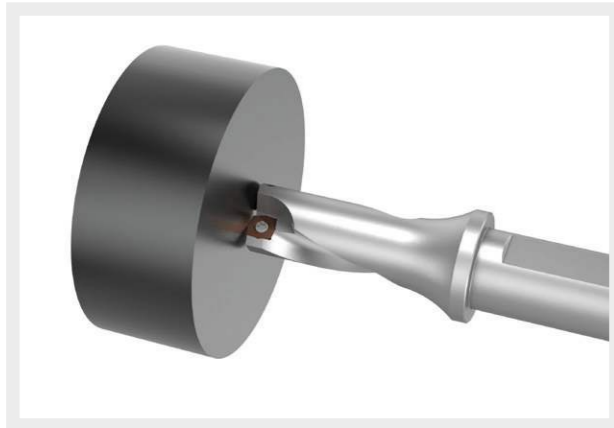
Applications on lathes



Positioning

The indexable inserts should be positioned along the X-axis. Since the clamping flat is parallel to the insert position, the correct position of the indexable inserts is generally ensured.

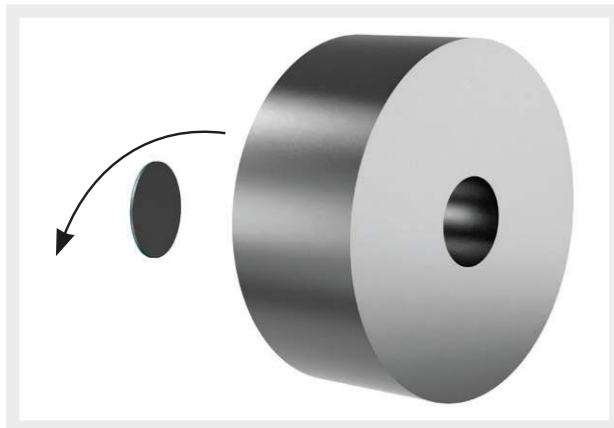
 The outer insert should be in the „+“ direction.



Verification

To check, drill a manufacturing test hole approx. 5 mm deep. If necessary, correct the drill position in the X direction to achieve the desired dimension.

D_{max} and D_{min} according to the table on page 23.



Safety

When drilling through-holes, a disc is cut off at the drill exit, which can fly off uncontrollably and pose a safety risk. Ensure appropriate safety measures, such as performing operations only with the door closed or using sufficiently large protective screens.

We've got the hang of it:

Refer to the following table for the adjustment ranges for applications on the lathe.

| drill Ø | smallest possible hole | largest possible hole | drill Ø | smallest possible hole | largest possible hole | drill Ø | smallest possible hole | largest possible hole |
|---------|------------------------|-----------------------|---------|------------------------|-----------------------|---------|------------------------|-----------------------|
| mm | mm | mm | mm | mm | mm | mm | mm | mm |
| 14 | 13.6 | 14.5 | 25 | 24.4 | 25.6 | 42 | 41.3 | 42.7 |
| 14.5 | 14.1 | 15 | 25.5 | 24.9 | 26.1 | 43 | 42.2 | 43.7 |
| 15 | 14.6 | 15.5 | 26 | 25.4 | 26.6 | 44 | 43.2 | 44.7 |
| 15.5 | 15.1 | 16 | 26.5 | 25.9 | 27.1 | 45 | 44.2 | 45.7 |
| 16 | 15.6 | 16.5 | 27 | 26.4 | 27.6 | 46 | 45.7 | 46.7 |
| 16.5 | 16 | 17 | 27.5 | 26.9 | 28.1 | 47 | 46.2 | 47.7 |
| 17 | 16.5 | 17.5 | 28 | 27.4 | 28.6 | 48 | 47.2 | 48.7 |
| 17.5 | 17 | 18 | 28.5 | 27.9 | 29.1 | 49 | 48.2 | 49.7 |
| 18 | 17.5 | 18.5 | 29 | 28.4 | 29.6 | 50 | 49.2 | 50.7 |
| 18.5 | 18 | 19 | 29.5 | 28.9 | 30.1 | 51 | 50.2 | 51.7 |
| 19 | 18.5 | 19.5 | 30 | 29.3 | 30.7 | 52 | 51.2 | 52.7 |
| 19.5 | 19 | 20 | 31 | 30.3 | 31.7 | 53 | 52.2 | 53.7 |
| 20 | 19.4 | 20.6 | 32 | 31.3 | 32.7 | 54 | 53.2 | 54.7 |
| 20.5 | 19.9 | 21.1 | 33 | 32.3 | 33.7 | 55 | 54.2 | 55.7 |
| 21 | 20.4 | 21.6 | 34 | 33.3 | 34.7 | 56 | 55.2 | 56.7 |
| 21.5 | 20.9 | 22.1 | 35 | 34.3 | 35.7 | 57 | 56.2 | 56.7 |
| 22 | 21.4 | 22.6 | 36 | 35.3 | 36.7 | 58 | 57.2 | 58.7 |
| 22.5 | 21.9 | 23.1 | 37 | 36.3 | 37.7 | 59 | 58.2 | 59.7 |
| 23 | 22.4 | 23.6 | 38 | 37.3 | 38.7 | 60 | 59.2 | 60.7 |
| 23.5 | 22.9 | 24.1 | 39 | 38.3 | 39.7 | | | |
| 24 | 23.4 | 24.6 | 40 | 39.3 | 40.7 | | | |
| 24.5 | 23.9 | 25.1 | 41 | 40.3 | 41.7 | | | |

Greater precision in blind holes

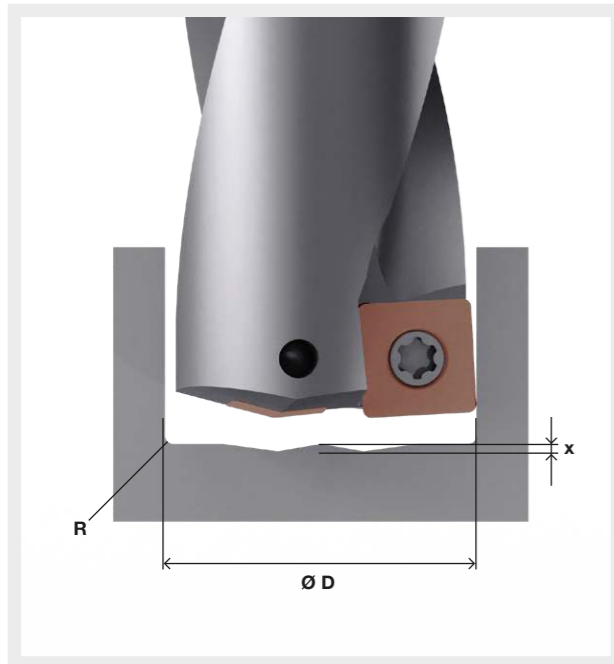


Assistance for subsequent operations

The shape and position of the cutting inserts is reflected at the bottom of a blind hole.

Refer to the table for the corner radius R and the dimension X for the distance between the highest and lowest points.

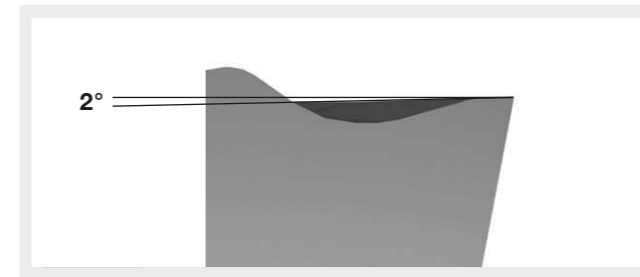
| drill Ø | indexable inserts size | X | R |
|-------------|---------------------------|-----|-----|
| mm | inscribed circle | mm | mm |
| 14.0 - 16.0 | 05 | 0.4 | 0.4 |
| 16.5 - 19.5 | 06 | 0.5 | 0.5 |
| 20.5 - 24.0 | 07 | 0.5 | 0.8 |
| 24.5 - 30.0 | 09 | 0.7 | 0.8 |
| 31.0 - 35.0 | 11 | 0.8 | 0.8 |
| 36.0 - 42.0 | 13 | 1.0 | 1.0 |
| 43.0 - 50.0 | 15 | 1.1 | 1.0 |
| 52.5 - 60.0 | 18 | 1.2 | 1.0 |



Indexable insert geometry

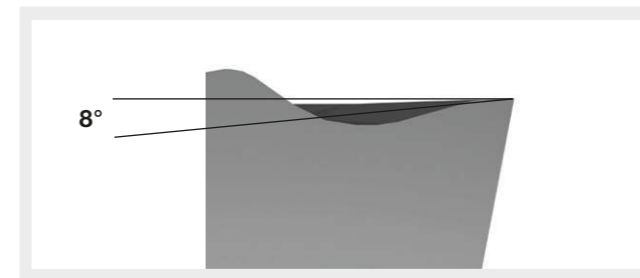
The right cutting edge geometry for every material. Stable cutting edges for machining steel and cast materials. Soft-cutting geometry for machining stainless steels and difficult-to-machine alloys.

Indexable inserts for machining steels and cast materials



For #28504/ 28508

Indexable inserts for machining stainless steels and difficult-to-machine alloys



For #28505/ 28509

Successful in practice: user tips



Drilling into solid material on a flat surface

- **2xD/3xD:** drilling without reduced feed
- **4xD/5xD:** When drilling, reduce feed by 30 % to approx. 3 mm depth



Drilling on an inclined surface

- **2xD/3xD:** Reduce feed by 50 % until the drill is completely immersed in the material
- **4xD/5xD:** Reduce feed rate by 70 % until the drill is completely immersed in the material



Drilling on concave/convex surfaces

- **2xD/3xD:** Reduce feed rate by 50 % until the drill is completely immersed in the material
- **4xD/5xD:** Reduce feed rate by 70 % until the drill is completely immersed in the material



Cross holes

- When drilling through the cross hole, reduce feed rate by 30-50 %



Pocket drilling / countersinking

- Start drilling into solid material
- Offset at least 70 % of the drill diameter, reduce feed rate by 50 %



Drilling plate packages

- Plates must be flat, no gaps between the plates

The quick solution: Troubleshooting



Problem: **Vibrations**

- Reduce cutting speed and/or feed rate
- Check the clamping setup of the component and improve if necessary
- Check the projection of the drill; use a shorter drill if necessary
- Check the drive power and torque



Problem: **Poor chip removal**

- **In case of long chips:** increase feed and/or cutting speed to improve chip breaking
- **In case of short chips:** reduce feed rate and/or cutting speed to relieve the cutting edges



Problem: **Roughness/poor surface finish**

- Check for vibrations or poor chip removal and eliminate if necessary
- Check coolant supply and increase coolant pressure if necessary



Problem: **Chipping of the indexable inserts**

- Check for the above problems and eliminate them
- Check the indexable insert grade
- Check cutting data and machining as described under „Vibrations“



GMD indexable insert drill

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GÜHRING

Gühring KG | Herderstraße 50–54 | 72458 Albstadt | Germany
Phone: +49 74 31 17-0 | info@guehring.de | www.guehring.com

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