



HARTNER

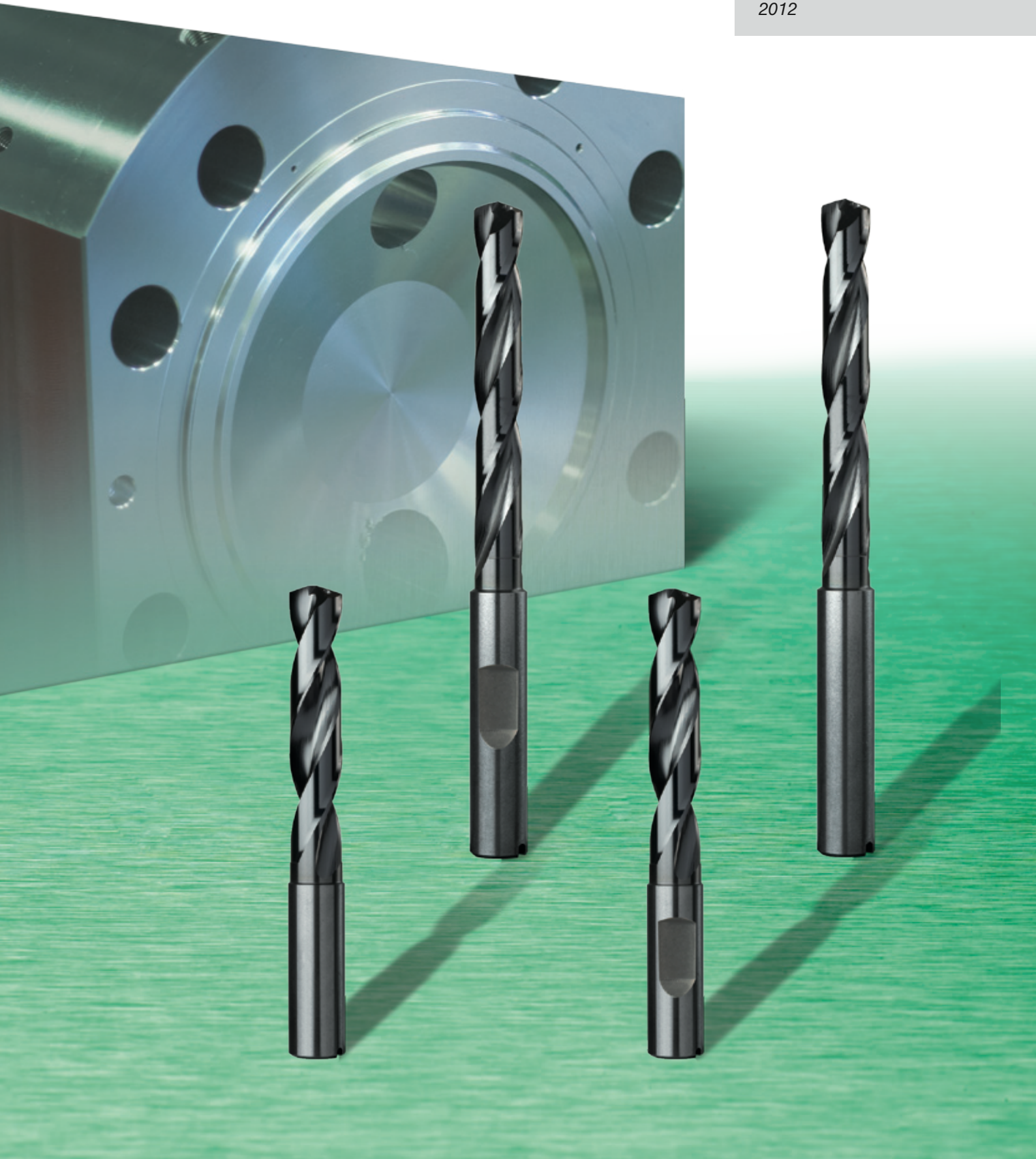
Precision Cutting Tools

INOX Drills

The specialists for the
machining of stainless steels

Pricelist 42

2012





Hartner solutions for the machining of stainless steels

Stainless steels and their attributes

Stainless or acid-resistant steels have a very high chromium content > 12 %, an excellent resistance against chemically aggressive substances and corrosion. The chromium creates a micro oxygen diffusing chromium dioxide coating on the surface, that prevents in-depth corrosion.

Most stainless steels are from the austenitic group of steels. Next to chromium, nickel is the most important constituent of the structure, often molybdenum is also added to optimise the mechanical characteristics. The range of application of austenitic steels is the food industry, power plants and energy supply, ship building and the petrochemical industry, but increasingly also applications in architecture for wall cladding and roofing. Typical materials are 1.4301 (X5CrNi 18 10 / V2A), 1.4541 (X6CrNiTi 18 10), 1.4571 (X6CrNiMoTi 17 12 2 / V4A) or 1.4311 (X2CrNiN 18 10).

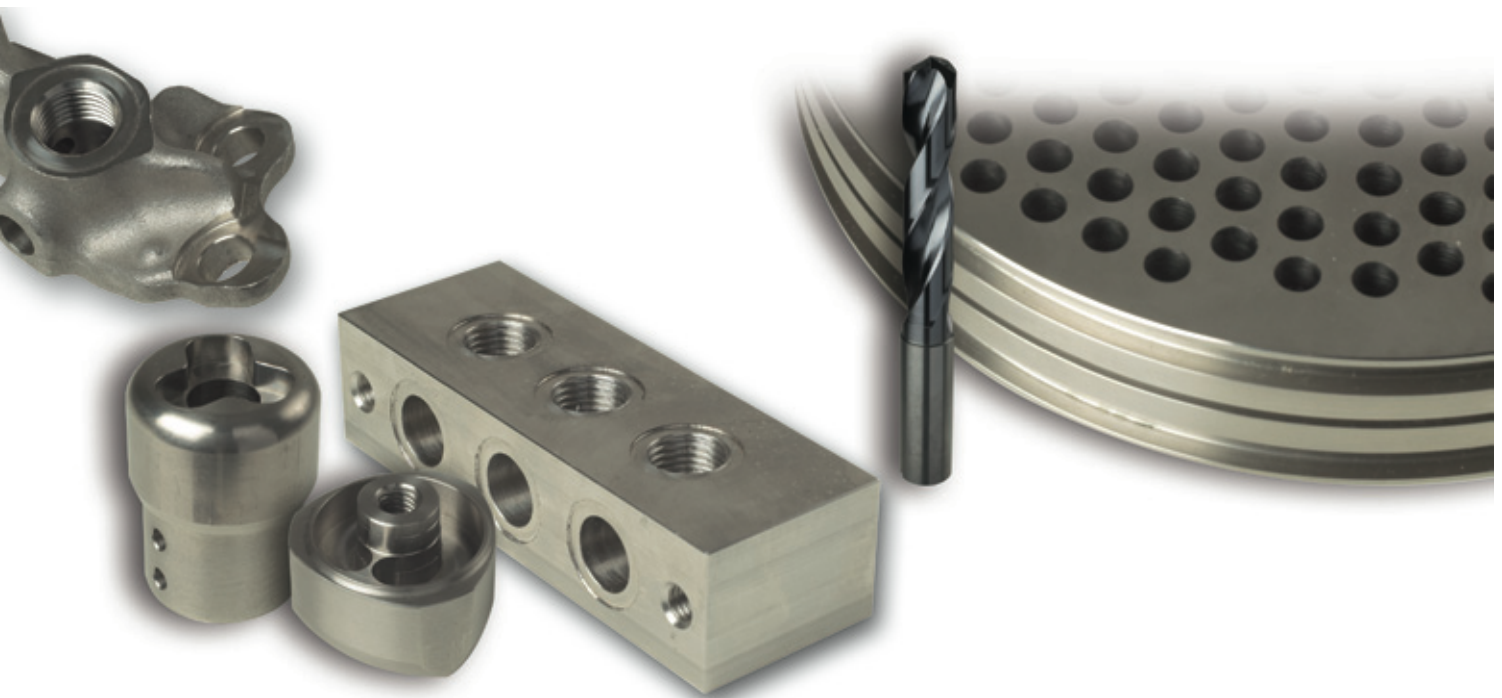
Properties and attributes when machining

When machining stainless or acid-resistant steels, the following properties should be noted: These materials tend to work harden, are very poor conductors of heat and display a high toughness and shear elongation. The high toughness leads to a very heavy cutting load especially when drilling and when producing threads. In addition, the mechanical properties of stainless or acid-resistant steels produce unfavourable chips that tend to stick and jam.

Optimal machining and tool selection

Stainless or acid-resistant steels, due to their properties and attributes, require sharp tools with their back taper and clearance angle configured in such a way that the high elastic deformation does not lead to a jamming of the tool when machining. High feed rates result in an optimal dissipation of heat via the chips, a very good cooling lubrication - ideally via internal cooling - supports the removal of heat as well as chip evacuation and, in addition, counteracts the work hardening. As coolant we recommend high-performance cutting oil, but at least 8 % soluble oil. In addition, pecking may be necessary during machining. A relatively low cutting speed should be chosen and can greatly depend on the material composition. Machining tests are paramount for selecting the optimal cutting speed.

Due to the high work load, particular attention must be paid to maximum rigidity of the machine as well as the workpiece and tool clamping. Always select the shortest possible tool for your machining task.





























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INOX Drills


TS-Drills with internal coolant

| Standard | Type | Tool material | Surface finish | Cutting direction | Coolant | Shank form | Drilling depth | Diameter range | Article no. | Page |
|---|-----------------------|---------------|---|-------------------|---|------------|----------------|----------------|--------------|------|
|  | DIN 6537K TS 100 INOX | Sol. carb. |  | rh |  | HA | 3 x D | 3.00 - 20.00 | 89450 | 5 |
|  | DIN 6537K TS 100 INOX | Sol. carb. |  | rh |  | HE | 3 x D | 3.00 - 20.00 | 89550 | 5 |
|  | DIN 6537L TS 100 INOX | Sol. carb. |  | rh |  | HA | 5 x D | 3.00 - 20.00 | 89451 | 8 |
|  | DIN 6537L TS 100 INOX | Sol. carb. |  | rh |  | HE | 5 x D | 3.00 - 20.00 | 89551 | 8 |

HSS-E Drills

| Standard | Type | Tool material | Surface finish | Cutting direction | Coolant | Shank form | Drilling depth | Diameter range | Article no. | Page |
|---|--------------|---------------|----------------|---|---------|------------|----------------|----------------|--------------|------|
|  | DIN 1897 | IS | HSS-E |  | rh | straight | 3 x D | 1.00 - 12.00 | 81173 | 13 |
|  | DIN 338 | IS | HSS-E |  | rh | straight | 5 x D | 1.00 - 13.00 | 81013 | 15 |
|  | DIN 338 | S | HSS-E |  | rh | straight | 5 x D | 0.20 - 19.50 | 81061 | 15 |
|  | Hartner Std. | IS | HSS-E |  | rh | MT | 3 x D | 10.00 - 31.00 | 82972 | 18 |
|  | DIN 345 | IS | HSS-E |  | rh | MT | 5 x D | 11.50 - 31.50 | 82012 | 19 |
|  | DIN 340 | S | HSS-E |  | rh | straight | 10 x D | 1.50 - 9.50 | 81361 | 20 |

 bright

 TiAlN nanoA

 with internal coolant



TS-Drills with internal coolant

Article no. 89450



For stainless, acid- or heat resistant steels, Inconel, Hastelloy, Nimonic, Titanium and Ti-alloys. Suitable for drilling depths of up to 3 x D.

Advantages:
Highest speed and feed rates possible. Rigid drill with low wear for high productivity and process reliability.

Preconditions for use:
Powerful machines. No play in spindle bearings. Alignment accurate tool holders. Max. concentricity error of clamped tools: 0.02 mm. Chatterfree, mechanical feeds. Tools with cylindrical shank without flat for clamping in shrink fit or hydraulic clamping chucks.

| | |
|-------------------|---------------|
| Standard | DIN 6537 K |
| Tool material | Solid carbide |
| Surface finish | |
| Type | TS 100 INOX |
| Shank | HA |
| Cutting direction | rh |
| Point grinding | 2-facet |
| Point angle ° | 140° |
| Tolerance on Ø | m7 |

Article no. 89550



For stainless, acid- or heat resistant steels, Inconel, Hastelloy, Nimonic, Titanium and Ti-alloys. Suitable for drilling depths of up to 3 x D.

Advantages:
Highest speed and feed rates possible. Rigid drill with low wear for high productivity and process reliability.

Preconditions for use:
Powerful machines. No play in spindle bearings. Alignment accurate tool holders. Max. concentricity error of clamped tools: 0.02 mm. Chatterfree, mechanical feeds.

| | |
|-------------------|---------------|
| Standard | DIN 6537 K |
| Tool material | Solid carbide |
| Surface finish | |
| Type | TS 100 INOX |
| Shank | HE |
| Cutting direction | rh |
| Point grinding | 2-facet |
| Point angle ° | 140° |
| Tolerance on Ø | m7 |

Article no. 89451



For stainless, acid- or heat resistant steels, Inconel, Hastelloy, Nimonic, Titanium and Ti-alloys. Suitable for drilling depths of up to 5 x D.

Advantages:
Highest speed and feed rates possible. Rigid drill with low wear for high productivity and process reliability.

Preconditions for use:
Powerful machines. No play in spindle bearings. Alignment accurate tool holders. Max. concentricity error of clamped tools: 0.02 mm. Chatterfree, mechanical feeds. Tools with cylindrical shank without flat for clamping in shrink fit or hydraulic clamping chucks.

| | |
|-------------------|---------------|
| Standard | DIN 6537 L |
| Tool material | Solid carbide |
| Surface finish | |
| Type | TS 100 INOX |
| Shank | HA |
| Cutting direction | rh |
| Point grinding | 2-facet |
| Point angle ° | 140° |
| Tolerance on Ø | m7 |

Article no. 89551



For stainless, acid- or heat resistant steels, Inconel, Hastelloy, Nimonic, Titanium and Ti-alloys. Suitable for drilling depths of up to 5 x D.

Advantages:
Highest speed and feed rates possible. Rigid drill with low wear for high productivity and process reliability.

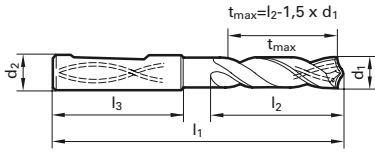
Preconditions for use:
Powerful machines. No play in spindle bearings. Alignment accurate tool holders. Max. concentricity error of clamped tools: 0.02 mm. Chatterfree, mechanical feeds.

| | |
|-------------------|---------------|
| Standard | DIN 6537 L |
| Tool material | Solid carbide |
| Surface finish | |
| Type | TS 100 INOX |
| Shank | HE |
| Cutting direction | rh |
| Point grinding | 2-facet |
| Point angle ° | 140° |
| Tolerance on Ø | m7 |



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TS-Drills with internal coolant 3 x D



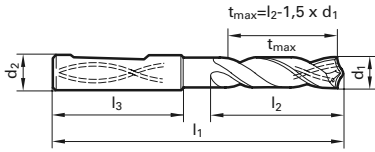
| | | | | | | 89450 | 89550 |
|-------|-------|-------|--------|--------|--------|---------------|---------------|
| | | | | | | Solid carbide | Solid carbide |
| | | | | | | 121 | 121 |
| | | | | | | HA | HE |
| | | | | | | TS 100 INOX | TS 100 INOX |
| | | | | | | a | a |
| | | | | | | Availability | Availability |
| d1 | d1 | d2 | l1 | l2 | l3 | | |
| mm | inch | mm | mm | mm | mm | | |
| 3.000 | | 6.000 | 62.000 | 20.000 | 36.000 | ● | ● |
| 3.100 | | 6.000 | 62.000 | 20.000 | 36.000 | ● | ● |
| 3.170 | 1/8 | 6.000 | 62.000 | 20.000 | 36.000 | ● | ● |
| 3.200 | | 6.000 | 62.000 | 20.000 | 36.000 | ● | ● |
| 3.250 | | 6.000 | 62.000 | 20.000 | 36.000 | ● | ● |
| 3.300 | | 6.000 | 62.000 | 20.000 | 36.000 | ● | ● |
| 3.400 | | 6.000 | 62.000 | 20.000 | 36.000 | ● | ● |
| 3.500 | | 6.000 | 62.000 | 20.000 | 36.000 | ● | ● |
| 3.570 | 9/64 | 6.000 | 62.000 | 20.000 | 36.000 | ● | ● |
| 3.600 | | 6.000 | 62.000 | 20.000 | 36.000 | ● | ● |
| 3.700 | | 6.000 | 62.000 | 20.000 | 36.000 | ● | ● |
| 3.800 | | 6.000 | 66.000 | 24.000 | 36.000 | ● | ● |
| 3.900 | | 6.000 | 66.000 | 24.000 | 36.000 | ● | ● |
| 3.970 | 5/32 | 6.000 | 66.000 | 24.000 | 36.000 | ● | ● |
| 4.000 | | 6.000 | 66.000 | 24.000 | 36.000 | ● | ● |
| 4.100 | | 6.000 | 66.000 | 24.000 | 36.000 | ● | ● |
| 4.200 | | 6.000 | 66.000 | 24.000 | 36.000 | ● | ● |
| 4.300 | | 6.000 | 66.000 | 24.000 | 36.000 | ● | ● |
| 4.370 | 11/64 | 6.000 | 66.000 | 24.000 | 36.000 | ● | ● |
| 4.400 | | 6.000 | 66.000 | 24.000 | 36.000 | ● | ● |
| 4.500 | | 6.000 | 66.000 | 24.000 | 36.000 | ● | ● |
| 4.600 | | 6.000 | 66.000 | 24.000 | 36.000 | ● | ● |
| 4.650 | | 6.000 | 66.000 | 24.000 | 36.000 | ● | ● |
| 4.700 | | 6.000 | 66.000 | 24.000 | 36.000 | ● | ● |
| 4.760 | 3/16 | 6.000 | 66.000 | 28.000 | 36.000 | ● | ● |
| 4.800 | | 6.000 | 66.000 | 28.000 | 36.000 | ● | ● |
| 4.900 | | 6.000 | 66.000 | 28.000 | 36.000 | ● | ● |
| 5.000 | | 6.000 | 66.000 | 28.000 | 36.000 | ● | ● |
| 5.100 | | 6.000 | 66.000 | 28.000 | 36.000 | ● | ● |
| 5.160 | 13/64 | 6.000 | 66.000 | 28.000 | 36.000 | ● | ● |
| 5.200 | | 6.000 | 66.000 | 28.000 | 36.000 | ● | ● |
| 5.300 | | 6.000 | 66.000 | 28.000 | 36.000 | ● | ● |
| 5.400 | | 6.000 | 66.000 | 28.000 | 36.000 | ● | ● |
| 5.500 | | 6.000 | 66.000 | 28.000 | 36.000 | ● | ● |
| 5.550 | | 6.000 | 66.000 | 28.000 | 36.000 | ● | ● |
| 5.560 | 7/32 | 6.000 | 66.000 | 28.000 | 36.000 | ● | ● |
| 5.600 | | 6.000 | 66.000 | 28.000 | 36.000 | ● | ● |
| 5.700 | | 6.000 | 66.000 | 28.000 | 36.000 | ● | ● |
| 5.800 | | 6.000 | 66.000 | 28.000 | 36.000 | ● | ● |
| 5.900 | | 6.000 | 66.000 | 28.000 | 36.000 | ● | ● |
| 5.950 | 15/64 | 6.000 | 66.000 | 28.000 | 36.000 | ● | ● |
| 6.000 | | 6.000 | 66.000 | 28.000 | 36.000 | ● | ● |
| 6.100 | | 8.000 | 79.000 | 34.000 | 36.000 | ● | ● |
| 6.200 | | 8.000 | 79.000 | 34.000 | 36.000 | ● | ● |
| 6.300 | | 8.000 | 79.000 | 34.000 | 36.000 | ● | ● |
| 6.350 | 1/4 | 8.000 | 79.000 | 34.000 | 36.000 | ● | ● |
| 6.400 | | 8.000 | 79.000 | 34.000 | 36.000 | ● | ● |
| 6.500 | | 8.000 | 79.000 | 34.000 | 36.000 | ● | ● |
| 6.600 | | 8.000 | 79.000 | 34.000 | 36.000 | ● | ● |
| 6.700 | | 8.000 | 79.000 | 34.000 | 36.000 | ● | ● |
| 6.750 | 17/64 | 8.000 | 79.000 | 34.000 | 36.000 | ● | ● |
| 6.800 | | 8.000 | 79.000 | 34.000 | 36.000 | ● | ● |
| 6.900 | | 8.000 | 79.000 | 34.000 | 36.000 | ● | ● |
| 7.000 | | 8.000 | 79.000 | 34.000 | 36.000 | ● | ● |

a TiAlN nanoA



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TS-Drills with internal coolant 3 x D



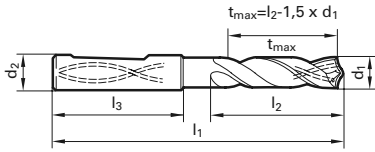
| | | | | | | 89450 | 89550 |
|--------|-------|--------|---------|--------|--------|---------------|---------------|
| | | | | | | Solid carbide | Solid carbide |
| | | | | | | 121 | 121 |
| | | | | | | HA | HE |
| | | | | | | TS 100 INOX | TS 100 INOX |
| | | | | | | a | a |
| | | | | | | Availability | Availability |
| d1 | d1 | d2 | l1 | l2 | l3 | | |
| mm | inch | mm | mm | mm | mm | | |
| 7.100 | | 8.000 | 79.000 | 41.000 | 36.000 | ● | ● |
| 7.140 | 9/32 | 8.000 | 79.000 | 41.000 | 36.000 | ● | ● |
| 7.200 | | 8.000 | 79.000 | 41.000 | 36.000 | ● | ● |
| 7.300 | | 8.000 | 79.000 | 41.000 | 36.000 | ● | ● |
| 7.400 | | 8.000 | 79.000 | 41.000 | 36.000 | ● | ● |
| 7.500 | | 8.000 | 79.000 | 41.000 | 36.000 | ● | ● |
| 7.540 | 19/64 | 8.000 | 79.000 | 41.000 | 36.000 | ● | ● |
| 7.600 | | 8.000 | 79.000 | 41.000 | 36.000 | ● | ● |
| 7.700 | | 8.000 | 79.000 | 41.000 | 36.000 | ● | ● |
| 7.800 | | 8.000 | 79.000 | 41.000 | 36.000 | ● | ● |
| 7.900 | | 8.000 | 79.000 | 41.000 | 36.000 | ● | ● |
| 7.940 | 5/16 | 8.000 | 79.000 | 41.000 | 36.000 | ● | ● |
| 8.000 | | 8.000 | 79.000 | 41.000 | 36.000 | ● | ● |
| 8.100 | | 10.000 | 89.000 | 47.000 | 40.000 | ● | ● |
| 8.200 | | 10.000 | 89.000 | 47.000 | 40.000 | ● | ● |
| 8.300 | | 10.000 | 89.000 | 47.000 | 40.000 | ● | ● |
| 8.330 | 21/64 | 10.000 | 89.000 | 47.000 | 40.000 | ● | ● |
| 8.400 | | 10.000 | 89.000 | 47.000 | 40.000 | ● | ● |
| 8.500 | | 10.000 | 89.000 | 47.000 | 40.000 | ● | ● |
| 8.600 | | 10.000 | 89.000 | 47.000 | 40.000 | ● | ● |
| 8.700 | | 10.000 | 89.000 | 47.000 | 40.000 | ● | ● |
| 8.730 | 11/32 | 10.000 | 89.000 | 47.000 | 40.000 | ● | ● |
| 8.800 | | 10.000 | 89.000 | 47.000 | 40.000 | ● | ● |
| 8.900 | | 10.000 | 89.000 | 47.000 | 40.000 | ● | ● |
| 9.000 | | 10.000 | 89.000 | 47.000 | 40.000 | ● | ● |
| 9.100 | | 10.000 | 89.000 | 47.000 | 40.000 | ● | ● |
| 9.130 | 23/64 | 10.000 | 89.000 | 47.000 | 40.000 | ● | ● |
| 9.200 | | 10.000 | 89.000 | 47.000 | 40.000 | ● | ● |
| 9.250 | | 10.000 | 89.000 | 47.000 | 40.000 | ● | ● |
| 9.300 | | 10.000 | 89.000 | 47.000 | 40.000 | ● | ● |
| 9.400 | | 10.000 | 89.000 | 47.000 | 40.000 | ● | ● |
| 9.500 | | 10.000 | 89.000 | 47.000 | 40.000 | ● | ● |
| 9.520 | 3/8 | 10.000 | 89.000 | 47.000 | 40.000 | ● | ● |
| 9.600 | | 10.000 | 89.000 | 47.000 | 40.000 | ● | ● |
| 9.700 | | 10.000 | 89.000 | 47.000 | 40.000 | ● | ● |
| 9.800 | | 10.000 | 89.000 | 47.000 | 40.000 | ● | ● |
| 9.900 | | 10.000 | 89.000 | 47.000 | 40.000 | ● | ● |
| 9.920 | 25/64 | 10.000 | 89.000 | 47.000 | 40.000 | ● | ● |
| 10.000 | | 10.000 | 89.000 | 47.000 | 40.000 | ● | ● |
| 10.100 | | 12.000 | 102.000 | 55.000 | 45.000 | ● | ● |
| 10.200 | | 12.000 | 102.000 | 55.000 | 45.000 | ● | ● |
| 10.300 | | 12.000 | 102.000 | 55.000 | 45.000 | ● | ● |
| 10.320 | 13/32 | 12.000 | 102.000 | 55.000 | 45.000 | ● | ● |
| 10.400 | | 12.000 | 102.000 | 55.000 | 45.000 | ● | ● |
| 10.500 | | 12.000 | 102.000 | 55.000 | 45.000 | ● | ● |
| 10.600 | | 12.000 | 102.000 | 55.000 | 45.000 | ● | ● |
| 10.700 | | 12.000 | 102.000 | 55.000 | 45.000 | ● | ● |
| 10.800 | | 12.000 | 102.000 | 55.000 | 45.000 | ● | ● |
| 10.900 | | 12.000 | 102.000 | 55.000 | 45.000 | ● | ● |
| 11.000 | | 12.000 | 102.000 | 55.000 | 45.000 | ● | ● |
| 11.100 | | 12.000 | 102.000 | 55.000 | 45.000 | ● | ● |
| 11.110 | 7/16 | 12.000 | 102.000 | 55.000 | 45.000 | ● | ● |
| 11.200 | | 12.000 | 102.000 | 55.000 | 45.000 | ● | ● |
| 11.300 | | 12.000 | 102.000 | 55.000 | 45.000 | ● | ● |

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TS-Drills with internal coolant 3 x D



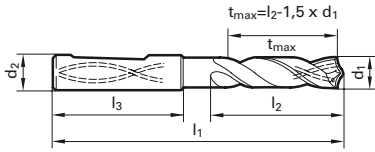
| | | | | | | 89450 | 89550 |
|--------|-------|--------|---------|--------|--------|---------------|---------------|
| | | | | | | Solid carbide | Solid carbide |
| | | | | | | 121 | 121 |
| | | | | | | HA | HE |
| | | | | | | TS 100 INOX | TS 100 INOX |
| | | | | | | a | a |
| | | | | | | Availability | Availability |
| d1 | d1 | d2 | l1 | l2 | l3 | | |
| mm | inch | mm | mm | mm | mm | | |
| 11.400 | | 12.000 | 102.000 | 55.000 | 45.000 | ● | ● |
| 11.500 | | 12.000 | 102.000 | 55.000 | 45.000 | ● | ● |
| 11.600 | | 12.000 | 102.000 | 55.000 | 45.000 | ● | ● |
| 11.700 | | 12.000 | 102.000 | 55.000 | 45.000 | ● | ● |
| 11.800 | | 12.000 | 102.000 | 55.000 | 45.000 | ● | ● |
| 11.900 | | 12.000 | 102.000 | 55.000 | 45.000 | ● | ● |
| 11.910 | 15/32 | 12.000 | 102.000 | 55.000 | 45.000 | ● | ● |
| 12.000 | | 12.000 | 102.000 | 55.000 | 45.000 | ● | ● |
| 12.200 | | 14.000 | 107.000 | 60.000 | 45.000 | ● | ● |
| 12.500 | | 14.000 | 107.000 | 60.000 | 45.000 | ● | ● |
| 12.700 | 1/2 | 14.000 | 107.000 | 60.000 | 45.000 | ● | ● |
| 12.800 | | 14.000 | 107.000 | 60.000 | 45.000 | ● | ● |
| 13.000 | | 14.000 | 107.000 | 60.000 | 45.000 | ● | ● |
| 13.300 | | 14.000 | 107.000 | 60.000 | 45.000 | ● | ● |
| 13.500 | | 14.000 | 107.000 | 60.000 | 45.000 | ● | ● |
| 13.700 | | 14.000 | 107.000 | 60.000 | 45.000 | ● | ● |
| 14.000 | | 14.000 | 107.000 | 60.000 | 45.000 | ● | ● |
| 14.200 | | 16.000 | 115.000 | 65.000 | 48.000 | ● | ● |
| 14.290 | 9/16 | 16.000 | 115.000 | 65.000 | 48.000 | ● | ● |
| 14.300 | | 16.000 | 115.000 | 65.000 | 48.000 | ● | ● |
| 14.500 | | 16.000 | 115.000 | 65.000 | 48.000 | ● | ● |
| 14.700 | | 16.000 | 115.000 | 65.000 | 48.000 | ● | ● |
| 15.000 | | 16.000 | 115.000 | 65.000 | 48.000 | ● | ● |
| 15.200 | | 16.000 | 115.000 | 65.000 | 48.000 | ● | ● |
| 15.300 | | 16.000 | 115.000 | 65.000 | 48.000 | ● | ● |
| 15.500 | | 16.000 | 115.000 | 65.000 | 48.000 | ● | ● |
| 15.700 | | 16.000 | 115.000 | 65.000 | 48.000 | ● | ● |
| 16.000 | | 16.000 | 115.000 | 65.000 | 48.000 | ● | ● |
| 16.300 | | 18.000 | 123.000 | 73.000 | 48.000 | ● | ● |
| 16.500 | | 18.000 | 123.000 | 73.000 | 48.000 | ● | ● |
| 16.900 | | 18.000 | 123.000 | 73.000 | 48.000 | ● | ● |
| 17.000 | | 18.000 | 123.000 | 73.000 | 48.000 | ● | ● |
| 17.300 | | 18.000 | 123.000 | 73.000 | 48.000 | ● | ● |
| 17.500 | | 18.000 | 123.000 | 73.000 | 48.000 | ● | ● |
| 18.000 | | 18.000 | 123.000 | 73.000 | 48.000 | ● | ● |
| 18.500 | | 20.000 | 131.000 | 79.000 | 50.000 | ● | ● |
| 18.900 | | 20.000 | 131.000 | 79.000 | 50.000 | ● | ● |
| 19.000 | | 20.000 | 131.000 | 79.000 | 50.000 | ● | ● |
| 19.300 | | 20.000 | 131.000 | 79.000 | 50.000 | ● | ● |
| 19.500 | | 20.000 | 131.000 | 79.000 | 50.000 | ● | ● |
| 20.000 | | 20.000 | 131.000 | 79.000 | 50.000 | ● | ● |

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HARTNER

TS-Drills with internal coolant 5 x D



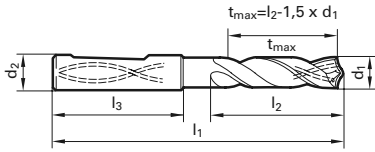
| | | | | | | 89451 | 89551 |
|-------|-------|-------|--------|--------|--------|---------------|---------------|
| | | | | | | Solid carbide | Solid carbide |
| | | | | | | 121 | 121 |
| | | | | | | HA | HE |
| | | | | | | TS 100 INOX | TS 100 INOX |
| | | | | | | a | a |
| | | | | | | Availability | Availability |
| d1 | d1 | d2 | l1 | l2 | l3 | | |
| mm | inch | mm | mm | mm | mm | | |
| 3.000 | | 6.000 | 66.000 | 28.000 | 36.000 | ● | ● |
| 3.100 | | 6.000 | 66.000 | 28.000 | 36.000 | ● | ● |
| 3.170 | 1/8 | 6.000 | 66.000 | 28.000 | 36.000 | ● | ● |
| 3.200 | | 6.000 | 66.000 | 28.000 | 36.000 | ● | ● |
| 3.250 | | 6.000 | 66.000 | 28.000 | 36.000 | ● | ● |
| 3.300 | | 6.000 | 66.000 | 28.000 | 36.000 | ● | ● |
| 3.400 | | 6.000 | 66.000 | 28.000 | 36.000 | ● | ● |
| 3.500 | | 6.000 | 66.000 | 28.000 | 36.000 | ● | ● |
| 3.570 | 9/64 | 6.000 | 66.000 | 28.000 | 36.000 | ● | ● |
| 3.600 | | 6.000 | 66.000 | 28.000 | 36.000 | ● | ● |
| 3.700 | | 6.000 | 66.000 | 28.000 | 36.000 | ● | ● |
| 3.800 | | 6.000 | 74.000 | 36.000 | 36.000 | ● | ● |
| 3.900 | | 6.000 | 74.000 | 36.000 | 36.000 | ● | ● |
| 3.970 | 5/32 | 6.000 | 74.000 | 36.000 | 36.000 | ● | ● |
| 4.000 | | 6.000 | 74.000 | 36.000 | 36.000 | ● | ● |
| 4.100 | | 6.000 | 74.000 | 36.000 | 36.000 | ● | ● |
| 4.200 | | 6.000 | 74.000 | 36.000 | 36.000 | ● | ● |
| 4.300 | | 6.000 | 74.000 | 36.000 | 36.000 | ● | ● |
| 4.370 | 11/64 | 6.000 | 74.000 | 36.000 | 36.000 | ● | ● |
| 4.400 | | 6.000 | 74.000 | 36.000 | 36.000 | ● | ● |
| 4.500 | | 6.000 | 74.000 | 36.000 | 36.000 | ● | ● |
| 4.600 | | 6.000 | 74.000 | 36.000 | 36.000 | ● | ● |
| 4.650 | | 6.000 | 74.000 | 36.000 | 36.000 | ● | ● |
| 4.700 | | 6.000 | 74.000 | 36.000 | 36.000 | ● | ● |
| 4.760 | 3/16 | 6.000 | 82.000 | 44.000 | 36.000 | ● | ● |
| 4.800 | | 6.000 | 82.000 | 44.000 | 36.000 | ● | ● |
| 4.900 | | 6.000 | 82.000 | 44.000 | 36.000 | ● | ● |
| 5.000 | | 6.000 | 82.000 | 44.000 | 36.000 | ● | ● |
| 5.100 | | 6.000 | 82.000 | 44.000 | 36.000 | ● | ● |
| 5.160 | 13/64 | 6.000 | 82.000 | 44.000 | 36.000 | ● | ● |
| 5.200 | | 6.000 | 82.000 | 44.000 | 36.000 | ● | ● |
| 5.300 | | 6.000 | 82.000 | 44.000 | 36.000 | ● | ● |
| 5.400 | | 6.000 | 82.000 | 44.000 | 36.000 | ● | ● |
| 5.500 | | 6.000 | 82.000 | 44.000 | 36.000 | ● | ● |
| 5.550 | | 6.000 | 82.000 | 44.000 | 36.000 | ● | ● |
| 5.560 | 7/32 | 6.000 | 82.000 | 44.000 | 36.000 | ● | ● |
| 5.600 | | 6.000 | 82.000 | 44.000 | 36.000 | ● | ● |
| 5.700 | | 6.000 | 82.000 | 44.000 | 36.000 | ● | ● |
| 5.800 | | 6.000 | 82.000 | 44.000 | 36.000 | ● | ● |
| 5.900 | | 6.000 | 82.000 | 44.000 | 36.000 | ● | ● |
| 5.950 | 15/64 | 6.000 | 82.000 | 44.000 | 36.000 | ● | ● |
| 6.000 | | 6.000 | 82.000 | 44.000 | 36.000 | ● | ● |
| 6.100 | | 8.000 | 91.000 | 53.000 | 36.000 | ● | ● |
| 6.200 | | 8.000 | 91.000 | 53.000 | 36.000 | ● | ● |
| 6.300 | | 8.000 | 91.000 | 53.000 | 36.000 | ● | ● |
| 6.350 | 1/4 | 8.000 | 91.000 | 53.000 | 36.000 | ● | ● |
| 6.400 | | 8.000 | 91.000 | 53.000 | 36.000 | ● | ● |
| 6.500 | | 8.000 | 91.000 | 53.000 | 36.000 | ● | ● |
| 6.600 | | 8.000 | 91.000 | 53.000 | 36.000 | ● | ● |
| 6.700 | | 8.000 | 91.000 | 53.000 | 36.000 | ● | ● |
| 6.750 | 17/64 | 8.000 | 91.000 | 53.000 | 36.000 | ● | ● |
| 6.800 | | 8.000 | 91.000 | 53.000 | 36.000 | ● | ● |
| 6.900 | | 8.000 | 91.000 | 53.000 | 36.000 | ● | ● |
| 7.000 | | 8.000 | 91.000 | 53.000 | 36.000 | ● | ● |

a TiAlN nanoA



HARTNER

TS-Drills with internal coolant 5 x D



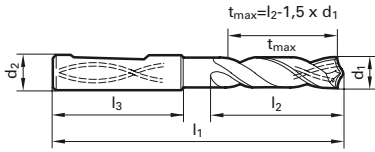
| | | | | | | 89451 | 89551 |
|--------|-------|--------|---------|--------|--------|---------------|---------------|
| | | | | | | Solid carbide | Solid carbide |
| | | | | | | 121 | 121 |
| | | | | | | HA | HE |
| | | | | | | TS 100 INOX | TS 100 INOX |
| | | | | | | a | a |
| | | | | | | Availability | Availability |
| d1 | d1 | d2 | l1 | l2 | l3 | | |
| mm | inch | mm | mm | mm | mm | | |
| 7.100 | | 8.000 | 91.000 | 53.000 | 36.000 | ● | ● |
| 7.140 | 9/32 | 8.000 | 91.000 | 53.000 | 36.000 | ● | ● |
| 7.200 | | 8.000 | 91.000 | 53.000 | 36.000 | ● | ● |
| 7.300 | | 8.000 | 91.000 | 53.000 | 36.000 | ● | ● |
| 7.400 | | 8.000 | 91.000 | 53.000 | 36.000 | ● | ● |
| 7.500 | | 8.000 | 91.000 | 53.000 | 36.000 | ● | ● |
| 7.540 | 19/64 | 8.000 | 91.000 | 53.000 | 36.000 | ● | ● |
| 7.600 | | 8.000 | 91.000 | 53.000 | 36.000 | ● | ● |
| 7.700 | | 8.000 | 91.000 | 53.000 | 36.000 | ● | ● |
| 7.800 | | 8.000 | 91.000 | 53.000 | 36.000 | ● | ● |
| 7.900 | | 8.000 | 91.000 | 53.000 | 36.000 | ● | ● |
| 7.940 | 5/16 | 8.000 | 91.000 | 53.000 | 36.000 | ● | ● |
| 8.000 | | 8.000 | 91.000 | 53.000 | 36.000 | ● | ● |
| 8.100 | | 10.000 | 103.000 | 61.000 | 40.000 | ● | ● |
| 8.200 | | 10.000 | 103.000 | 61.000 | 40.000 | ● | ● |
| 8.300 | | 10.000 | 103.000 | 61.000 | 40.000 | ● | ● |
| 8.330 | 21/64 | 10.000 | 103.000 | 61.000 | 40.000 | ● | ● |
| 8.400 | | 10.000 | 103.000 | 61.000 | 40.000 | ● | ● |
| 8.500 | | 10.000 | 103.000 | 61.000 | 40.000 | ● | ● |
| 8.600 | | 10.000 | 103.000 | 61.000 | 40.000 | ● | ● |
| 8.700 | | 10.000 | 103.000 | 61.000 | 40.000 | ● | ● |
| 8.730 | 11/32 | 10.000 | 103.000 | 61.000 | 40.000 | ● | ● |
| 8.800 | | 10.000 | 103.000 | 61.000 | 40.000 | ● | ● |
| 8.900 | | 10.000 | 103.000 | 61.000 | 40.000 | ● | ● |
| 9.000 | | 10.000 | 103.000 | 61.000 | 40.000 | ● | ● |
| 9.100 | | 10.000 | 103.000 | 61.000 | 40.000 | ● | ● |
| 9.130 | 23/64 | 10.000 | 103.000 | 61.000 | 40.000 | ● | ● |
| 9.200 | | 10.000 | 103.000 | 61.000 | 40.000 | ● | ● |
| 9.250 | | 10.000 | 103.000 | 61.000 | 40.000 | ● | ● |
| 9.300 | | 10.000 | 103.000 | 61.000 | 40.000 | ● | ● |
| 9.400 | | 10.000 | 103.000 | 61.000 | 40.000 | ● | ● |
| 9.500 | | 10.000 | 103.000 | 61.000 | 40.000 | ● | ● |
| 9.520 | 3/8 | 10.000 | 103.000 | 61.000 | 40.000 | ● | ● |
| 9.600 | | 10.000 | 103.000 | 61.000 | 40.000 | ● | ● |
| 9.700 | | 10.000 | 103.000 | 61.000 | 40.000 | ● | ● |
| 9.800 | | 10.000 | 103.000 | 61.000 | 40.000 | ● | ● |
| 9.900 | | 10.000 | 103.000 | 61.000 | 40.000 | ● | ● |
| 9.920 | 25/64 | 10.000 | 103.000 | 61.000 | 40.000 | ● | ● |
| 10.000 | | 10.000 | 103.000 | 61.000 | 40.000 | ● | ● |
| 10.100 | | 12.000 | 118.000 | 71.000 | 45.000 | ● | ● |
| 10.200 | | 12.000 | 118.000 | 71.000 | 45.000 | ● | ● |
| 10.300 | | 12.000 | 118.000 | 71.000 | 45.000 | ● | ● |
| 10.320 | 13/32 | 12.000 | 118.000 | 71.000 | 45.000 | ● | ● |
| 10.400 | | 12.000 | 118.000 | 71.000 | 45.000 | ● | ● |
| 10.500 | | 12.000 | 118.000 | 71.000 | 45.000 | ● | ● |
| 10.600 | | 12.000 | 118.000 | 71.000 | 45.000 | ● | ● |
| 10.700 | | 12.000 | 118.000 | 71.000 | 45.000 | ● | ● |
| 10.800 | | 12.000 | 118.000 | 71.000 | 45.000 | ● | ● |
| 10.900 | | 12.000 | 118.000 | 71.000 | 45.000 | ● | ● |
| 11.000 | | 12.000 | 118.000 | 71.000 | 45.000 | ● | ● |
| 11.100 | | 12.000 | 118.000 | 71.000 | 45.000 | ● | ● |
| 11.110 | 7/16 | 12.000 | 118.000 | 71.000 | 45.000 | ● | ● |
| 11.200 | | 12.000 | 118.000 | 71.000 | 45.000 | ● | ● |
| 11.300 | | 12.000 | 118.000 | 71.000 | 45.000 | ● | ● |

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HARTNER

TS-Drills with internal coolant 5 x D



| | | | | | | 89451 | 89551 |
|--------|-------|--------|---------|---------|--------|---------------|---------------|
| | | | | | | Solid carbide | Solid carbide |
| | | | | | | 121 | 121 |
| | | | | | | HA | HE |
| | | | | | | TS 100 INOX | TS 100 INOX |
| | | | | | | a | a |
| d1 | d1 | d2 | l1 | l2 | l3 | Availability | |
| mm | inch | mm | mm | mm | mm | Availability | |
| 11.400 | | 12.000 | 118.000 | 71.000 | 45.000 | ● | ● |
| 11.500 | | 12.000 | 118.000 | 71.000 | 45.000 | ● | ● |
| 11.600 | | 12.000 | 118.000 | 71.000 | 45.000 | ● | ● |
| 11.700 | | 12.000 | 118.000 | 71.000 | 45.000 | ● | ● |
| 11.800 | | 12.000 | 118.000 | 71.000 | 45.000 | ● | ● |
| 11.900 | | 12.000 | 118.000 | 71.000 | 45.000 | ● | ● |
| 11.910 | 15/32 | 12.000 | 118.000 | 71.000 | 45.000 | ● | ● |
| 12.000 | | 12.000 | 118.000 | 71.000 | 45.000 | ● | ● |
| 12.200 | | 14.000 | 124.000 | 77.000 | 45.000 | ● | ● |
| 12.500 | | 14.000 | 124.000 | 77.000 | 45.000 | ● | ● |
| 12.700 | 1/2 | 14.000 | 124.000 | 77.000 | 45.000 | ● | ● |
| 12.800 | | 14.000 | 124.000 | 77.000 | 45.000 | ● | ● |
| 13.000 | | 14.000 | 124.000 | 77.000 | 45.000 | ● | ● |
| 13.300 | | 14.000 | 124.000 | 77.000 | 45.000 | ● | ● |
| 13.500 | | 14.000 | 124.000 | 77.000 | 45.000 | ● | ● |
| 13.700 | | 14.000 | 124.000 | 77.000 | 45.000 | ● | ● |
| 14.000 | | 14.000 | 124.000 | 77.000 | 45.000 | ● | ● |
| 14.200 | | 16.000 | 133.000 | 83.000 | 48.000 | ● | ● |
| 14.290 | 9/16 | 16.000 | 133.000 | 83.000 | 48.000 | ● | ● |
| 14.300 | | 16.000 | 133.000 | 83.000 | 48.000 | ● | ● |
| 14.500 | | 16.000 | 133.000 | 83.000 | 48.000 | ● | ● |
| 14.700 | | 16.000 | 133.000 | 83.000 | 48.000 | ● | ● |
| 15.000 | | 16.000 | 133.000 | 83.000 | 48.000 | ● | ● |
| 15.200 | | 16.000 | 133.000 | 83.000 | 48.000 | ● | ● |
| 15.300 | | 16.000 | 133.000 | 83.000 | 48.000 | ● | ● |
| 15.500 | | 16.000 | 133.000 | 83.000 | 48.000 | ● | ● |
| 15.700 | | 16.000 | 133.000 | 83.000 | 48.000 | ● | ● |
| 16.000 | | 16.000 | 133.000 | 83.000 | 48.000 | ● | ● |
| 16.300 | | 18.000 | 143.000 | 93.000 | 48.000 | ● | ● |
| 16.500 | | 18.000 | 143.000 | 93.000 | 48.000 | ● | ● |
| 16.900 | | 18.000 | 143.000 | 93.000 | 48.000 | ● | ● |
| 17.000 | | 18.000 | 143.000 | 93.000 | 48.000 | ● | ● |
| 17.300 | | 18.000 | 143.000 | 93.000 | 48.000 | ● | ● |
| 17.500 | | 18.000 | 143.000 | 93.000 | 48.000 | ● | ● |
| 18.000 | | 18.000 | 143.000 | 93.000 | 48.000 | ● | ● |
| 18.500 | | 20.000 | 153.000 | 101.000 | 50.000 | ● | ● |
| 18.900 | | 20.000 | 153.000 | 101.000 | 50.000 | ● | ● |
| 19.000 | | 20.000 | 153.000 | 101.000 | 50.000 | ● | ● |
| 19.050 | 3/4 | 20.000 | 153.000 | 101.000 | 50.000 | ● | ● |
| 19.300 | | 20.000 | 153.000 | 101.000 | 50.000 | ● | ● |
| 19.500 | | 20.000 | 153.000 | 101.000 | 50.000 | ● | ● |
| 20.000 | | 20.000 | 153.000 | 101.000 | 50.000 | ● | ● |

a TiAIN nanoA



HARTNER

HSS-E Drills, INOX

Article no. 81173



Extra rigid, high heat resistant drill with large helix angle. Preferential application in stainless steels, acid and heat resistant austenitic steels (V2A and V4A).

| | |
|-------------------|-----------------------|
| Standard | DIN 1897 |
| Tool material | HSS-E |
| Surface finish | <input type="radio"/> |
| Type | IS |
| Cutting direction | rh |
| Point grinding | Relieved cone |
| Point angle ° | 130 |
| Web thinned ≥ Ø | |
| Tolerance on Ø | h8 |

Article no. 81013



Extra rigid, high heat resistant drill with large helix angle. Preferential application in stainless steels, acid and heat resisting austenitic steels (V2A), nickel-forgeable alloy, titan, electrolytic copper as well as aluminium alloys up to a tensile strength of approx. 850 N/mm².

| | |
|-------------------|-----------------------|
| Standard | DIN 338 |
| Tool material | HSS-E |
| Surface | <input type="radio"/> |
| Type | IS |
| Cutting direction | rh |
| Point grinding | Relieved cone |
| Point angle ° | 130 |
| Web thinned ≥ Ø | |
| Tolerance on Ø | h8 |

Article no. 81061



Extra rigid, high heat resistant drill with large helix angle (35°). Preferential application in titanium and titanium alloys, stainless steels, acid and heat resisting austenitic steels. Also suitable for high tensile strength steels from approx. 900N/mm² and above, forming short chips (anti-friction bearing steel) with shallow drilling depth above.
3 x D. Limited suitability for special alloys such as Hastelloy, Inconel, Nimonic etc.

| | |
|-------------------|-----------------------|
| Standard | DIN 338 |
| Tool material | HSS-E |
| Surface | <input type="radio"/> |
| Type | S |
| Cutting direction | rh |
| Point grinding | Relieved cone |
| Point angle ° | 130 |
| Web thinned ≥ Ø | 0.96 |
| Tolerance on Ø | h8 |

Article no. 82972



A particularly robust, high heat resistant drill. Preferential application in stainless steel, acid and heat resistant austenitic steels (V2A and V4A).

| | |
|-------------------|-----------------------|
| Standard | Hartner std. |
| Tool material | HSS-E |
| Surface | <input type="radio"/> |
| Type | IS |
| Cutting direction | rh |
| Point grinding | Relieved cone |
| Point angle ° | 130 |
| Web thinned ≥ Ø | |
| Tolerance on Ø | h8 |

bright



HARTNER

HSS-E Drills, INOX

Article no. 82012



A robust, high heat resistant drill with a large helix angle. Preferential application in stainless steel, acid and heat resistant austenitic steels (V2A und V4A).

| | |
|-------------------|-----------------------|
| Standard | DIN 345 |
| Tool material | HSS-E |
| Surface | <input type="radio"/> |
| Type | IS |
| Cutting direction | rh |
| Point grinding | Relieved cone |
| Point angle ° | 130 |
| Web thinned ≥ Ø | |
| Tolerance on Ø | h8 |

Article no. 81361



Extra rigid high heat resistant drill for use with drill bushings. Preferential application in titanium and titanium alloys, stainless steels, acid and heat resistant austenitic steels. Also suitable for high tensile strength steels for approx. 900 N/mm² forming short chips (antifriction bearing steel). Limited suitability for special alloys such as Hastelloy, Inconel, Nimonic etc.

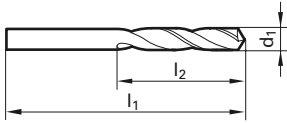
| | |
|-------------------|-----------------------|
| Standard | DIN 340 |
| Tool material | HSS-E |
| Surface | <input type="radio"/> |
| Type | S |
| Cutting direction | rh |
| Point grinding | Relieved cone |
| Point angle ° | 130 |
| Web thinned ≥ Ø | 0.96 |
| Tolerance on Ø | h8 |

bright



HARTNER

INOX Stub drills



81173

HSS-E

138

rh

IS



Availability

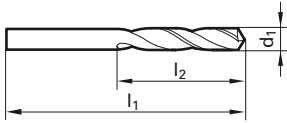
| d1 | l1 | l2 | Availability |
|-------|-------|-------|--------------|
| mm | mm | mm | |
| 1.000 | 26.00 | 6.00 | ● |
| 1.100 | 28.00 | 7.00 | ● |
| 1.200 | 30.00 | 8.00 | ● |
| 1.300 | 30.00 | 8.00 | ● |
| 1.400 | 32.00 | 9.00 | ● |
| 1.500 | 32.00 | 9.00 | ● |
| 1.600 | 34.00 | 10.00 | ● |
| 1.800 | 36.00 | 11.00 | ● |
| 2.000 | 38.00 | 12.00 | ● |
| 2.100 | 38.00 | 12.00 | ● |
| 2.200 | 40.00 | 13.00 | ● |
| 2.300 | 40.00 | 13.00 | ● |
| 2.400 | 43.00 | 14.00 | ● |
| 2.500 | 43.00 | 14.00 | ● |
| 2.600 | 43.00 | 14.00 | ● |
| 2.700 | 46.00 | 16.00 | ● |
| 2.800 | 46.00 | 16.00 | ● |
| 3.000 | 46.00 | 16.00 | ● |
| 3.200 | 49.00 | 18.00 | ● |
| 3.300 | 49.00 | 18.00 | ● |
| 3.400 | 52.00 | 20.00 | ● |
| 3.500 | 52.00 | 20.00 | ● |
| 3.600 | 52.00 | 20.00 | ● |
| 3.800 | 55.00 | 22.00 | ● |
| 4.000 | 55.00 | 22.00 | ● |
| 4.100 | 55.00 | 22.00 | ● |
| 4.200 | 55.00 | 22.00 | ● |
| 4.300 | 58.00 | 24.00 | ● |
| 4.500 | 58.00 | 24.00 | ● |
| 4.800 | 62.00 | 26.00 | ● |
| 4.900 | 62.00 | 26.00 | ● |
| 5.000 | 62.00 | 26.00 | ● |
| 5.100 | 62.00 | 26.00 | ● |
| 5.200 | 62.00 | 26.00 | ● |
| 5.300 | 62.00 | 26.00 | ● |
| 5.500 | 66.00 | 28.00 | ● |
| 5.700 | 66.00 | 28.00 | ● |
| 5.800 | 66.00 | 28.00 | ● |
| 5.900 | 66.00 | 28.00 | ● |
| 6.000 | 66.00 | 28.00 | ● |
| 6.100 | 70.00 | 31.00 | ● |
| 6.300 | 70.00 | 31.00 | ● |
| 6.500 | 70.00 | 31.00 | ● |
| 6.600 | 70.00 | 31.00 | ● |
| 6.700 | 70.00 | 31.00 | ● |
| 6.800 | 74.00 | 34.00 | ● |
| 6.900 | 74.00 | 34.00 | ● |
| 7.000 | 74.00 | 34.00 | ● |
| 7.100 | 74.00 | 34.00 | ● |
| 7.400 | 74.00 | 34.00 | ● |
| 7.500 | 74.00 | 34.00 | ● |
| 7.600 | 79.00 | 37.00 | ● |
| 7.800 | 79.00 | 37.00 | ● |
| 7.900 | 79.00 | 37.00 | ● |

○ bright



HARTNER

INOX Stub drills



81173

HSS-E

138

rh

IS



Availability

| d1 | d2 | l1 | Availability |
|--------|--------|-------|--------------|
| mm | mm | mm | |
| 8.000 | 79.00 | 37.00 | ● |
| 8.100 | 79.00 | 37.00 | ● |
| 8.500 | 79.00 | 37.00 | ● |
| 8.700 | 84.00 | 40.00 | ● |
| 9.000 | 84.00 | 40.00 | ● |
| 9.200 | 84.00 | 40.00 | ● |
| 9.400 | 84.00 | 40.00 | ● |
| 9.500 | 84.00 | 40.00 | ● |
| 10.000 | 89.00 | 43.00 | ● |
| 10.200 | 89.00 | 43.00 | ● |
| 10.500 | 89.00 | 43.00 | ● |
| 11.500 | 95.00 | 47.00 | ● |
| 12.000 | 102.00 | 51.00 | ● |

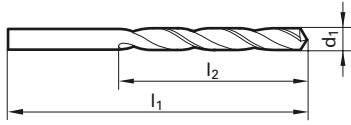


○ bright



HARTNER

INOX Jobber drills



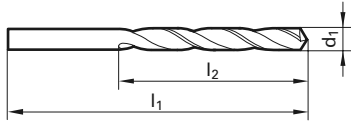
| | | | 81013 | 81061 |
|-------|-------|-------|--------------|-------|
| | | | HSS-E | HSS-E |
| | | | 134 | 134 |
| | | | rh | rh |
| | | | IS | S |
| | | | ○ | ○ |
| | | | Availability | |
| d1 | l1 | l2 | | |
| mm | mm | mm | | |
| 0.200 | 19.00 | 2.50 | | ● |
| 0.300 | 19.00 | 3.00 | | ● |
| 0.400 | 20.00 | 5.00 | | ● |
| 0.500 | 22.00 | 6.00 | | ● |
| 0.550 | 24.00 | 7.00 | | ● |
| 0.600 | 24.00 | 7.00 | | ● |
| 0.650 | 26.00 | 8.00 | | ● |
| 0.700 | 28.00 | 9.00 | | ● |
| 0.750 | 28.00 | 9.00 | | ● |
| 0.800 | 30.00 | 10.00 | | ● |
| 0.820 | 30.00 | 10.00 | | ● |
| 0.850 | 30.00 | 10.00 | | ● |
| 0.900 | 32.00 | 11.00 | | ● |
| 0.950 | 32.00 | 11.00 | | ● |
| 1.000 | 34.00 | 12.00 | ● | ● |
| 1.050 | 34.00 | 12.00 | | ● |
| 1.100 | 36.00 | 14.00 | ● | ● |
| 1.150 | 36.00 | 14.00 | | ● |
| 1.180 | 36.00 | 14.00 | | ● |
| 1.200 | 38.00 | 16.00 | ● | ● |
| 1.250 | 38.00 | 16.00 | | ● |
| 1.300 | 38.00 | 16.00 | ● | ● |
| 1.350 | 40.00 | 18.00 | | ● |
| 1.400 | 40.00 | 18.00 | ● | ● |
| 1.450 | 40.00 | 18.00 | | ● |
| 1.500 | 40.00 | 18.00 | ● | ● |
| 1.520 | 43.00 | 20.00 | | ● |
| 1.550 | 43.00 | 20.00 | | ● |
| 1.600 | 43.00 | 20.00 | ● | ● |
| 1.650 | 43.00 | 20.00 | | ● |
| 1.700 | 43.00 | 20.00 | ● | ● |
| 1.730 | 46.00 | 22.00 | | ● |
| 1.750 | 46.00 | 22.00 | | ● |
| 1.800 | 46.00 | 22.00 | ● | ● |
| 1.820 | 46.00 | 22.00 | | ● |
| 1.850 | 46.00 | 22.00 | | ● |
| 1.900 | 46.00 | 22.00 | ● | ● |
| 1.950 | 49.00 | 24.00 | | ● |
| 2.000 | 49.00 | 24.00 | ● | ● |
| 2.030 | 49.00 | 24.00 | | ● |
| 2.050 | 49.00 | 24.00 | | ● |
| 2.100 | 49.00 | 24.00 | ● | ● |
| 2.200 | 53.00 | 27.00 | ● | ● |
| 2.250 | 53.00 | 27.00 | | ● |
| 2.300 | 53.00 | 27.00 | ● | ● |
| 2.350 | 53.00 | 27.00 | | ● |
| 2.400 | 57.00 | 30.00 | ● | ● |
| 2.450 | 57.00 | 30.00 | | ● |
| 2.500 | 57.00 | 30.00 | ● | ● |
| 2.550 | 57.00 | 30.00 | | ● |
| 2.600 | 57.00 | 30.00 | ● | ● |
| 2.700 | 61.00 | 33.00 | ● | ● |
| 2.750 | 61.00 | 33.00 | | ● |
| 2.800 | 61.00 | 33.00 | ● | ● |





HARTNER

INOX Jobber drills



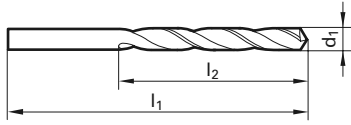
| | | | 81013 | 81061 |
|-------|--------|-------|--------------|-------|
| | | | HSS-E | HSS-E |
| | | | 134 | 134 |
| | | | rh | rh |
| | | | IS | S |
| | | | ○ | ○ |
| | | | Availability | |
| d1 | l1 | l2 | | |
| mm | mm | mm | | |
| 2.850 | 61.00 | 33.00 | | ● |
| 2.900 | 61.00 | 33.00 | ● | ● |
| 2.950 | 61.00 | 33.00 | | ● |
| 3.000 | 61.00 | 33.00 | ● | ● |
| 3.050 | 65.00 | 36.00 | | ● |
| 3.100 | 65.00 | 36.00 | ● | ● |
| 3.200 | 65.00 | 36.00 | ● | ● |
| 3.250 | 65.00 | 36.00 | | ● |
| 3.300 | 65.00 | 36.00 | ● | ● |
| 3.400 | 70.00 | 39.00 | ● | |
| 3.450 | 70.00 | 39.00 | | ● |
| 3.500 | 70.00 | 39.00 | ● | ● |
| 3.600 | 70.00 | 39.00 | ● | ● |
| 3.700 | 70.00 | 39.00 | ● | ● |
| 3.800 | 75.00 | 43.00 | ● | ● |
| 3.900 | 75.00 | 43.00 | ● | ● |
| 4.000 | 75.00 | 43.00 | ● | ● |
| 4.050 | 75.00 | 43.00 | | ● |
| 4.100 | 75.00 | 43.00 | ● | ● |
| 4.200 | 75.00 | 43.00 | ● | ● |
| 4.300 | 80.00 | 47.00 | ● | ● |
| 4.400 | 80.00 | 47.00 | ● | ● |
| 4.500 | 80.00 | 47.00 | ● | ● |
| 4.600 | 80.00 | 47.00 | ● | ● |
| 4.700 | 80.00 | 47.00 | ● | ● |
| 4.750 | 80.00 | 47.00 | | ● |
| 4.800 | 86.00 | 52.00 | ● | ● |
| 4.850 | 86.00 | 52.00 | | ● |
| 4.900 | 86.00 | 52.00 | ● | ● |
| 5.000 | 86.00 | 52.00 | ● | ● |
| 5.100 | 86.00 | 52.00 | ● | ● |
| 5.200 | 86.00 | 52.00 | ● | ● |
| 5.300 | 86.00 | 52.00 | ● | ● |
| 5.400 | 93.00 | 57.00 | ● | ● |
| 5.500 | 93.00 | 57.00 | ● | ● |
| 5.600 | 93.00 | 57.00 | ● | ● |
| 5.700 | 93.00 | 57.00 | ● | ● |
| 5.800 | 93.00 | 57.00 | ● | ● |
| 5.900 | 93.00 | 57.00 | ● | ● |
| 6.000 | 93.00 | 57.00 | ● | ● |
| 6.100 | 101.00 | 63.00 | ● | ● |
| 6.200 | 101.00 | 63.00 | ● | ● |
| 6.300 | 101.00 | 63.00 | ● | ● |
| 6.400 | 101.00 | 63.00 | ● | ● |
| 6.500 | 101.00 | 63.00 | ● | ● |
| 6.600 | 101.00 | 63.00 | ● | ● |
| 6.700 | 101.00 | 63.00 | ● | ● |
| 6.800 | 109.00 | 69.00 | ● | ● |
| 6.900 | 109.00 | 69.00 | ● | ● |
| 7.000 | 109.00 | 69.00 | ● | ● |
| 7.100 | 109.00 | 69.00 | ● | ● |
| 7.200 | 109.00 | 69.00 | ● | ● |
| 7.300 | 109.00 | 69.00 | ● | ● |
| 7.400 | 109.00 | 69.00 | ● | ● |

○ bright



HARTNER

INOX Jobber drills



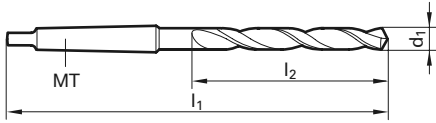
| | | | 81013 | 81061 |
|--------|--------|--------|--------------|-------|
| | | | HSS-E | HSS-E |
| | | | 134 | 134 |
| | | | rh | rh |
| | | | IS | S |
| | | | ○ | ○ |
| | | | Availability | |
| d1 | l1 | l2 | | |
| mm | mm | mm | | |
| 7.500 | 109.00 | 69.00 | ● | ● |
| 7.600 | 117.00 | 75.00 | | ● |
| 7.700 | 117.00 | 75.00 | ● | |
| 7.800 | 117.00 | 75.00 | ● | ● |
| 7.900 | 117.00 | 75.00 | ● | ● |
| 8.000 | 117.00 | 75.00 | ● | ● |
| 8.100 | 117.00 | 75.00 | ● | ● |
| 8.200 | 117.00 | 75.00 | ● | ● |
| 8.300 | 117.00 | 75.00 | ● | ● |
| 8.400 | 117.00 | 75.00 | ● | ● |
| 8.500 | 117.00 | 75.00 | ● | ● |
| 8.600 | 125.00 | 81.00 | ● | ● |
| 8.700 | 125.00 | 81.00 | ● | ● |
| 8.800 | 125.00 | 81.00 | ● | ● |
| 8.900 | 125.00 | 81.00 | ● | ● |
| 9.000 | 125.00 | 81.00 | ● | ● |
| 9.300 | 125.00 | 81.00 | | ● |
| 9.400 | 125.00 | 81.00 | ● | ● |
| 9.500 | 125.00 | 81.00 | ● | ● |
| 9.600 | 133.00 | 87.00 | | ● |
| 9.700 | 133.00 | 87.00 | ● | ● |
| 9.800 | 133.00 | 87.00 | ● | ● |
| 9.900 | 133.00 | 87.00 | ● | ● |
| 10.000 | 133.00 | 87.00 | ● | ● |
| 10.100 | 133.00 | 87.00 | ● | ● |
| 10.200 | 133.00 | 87.00 | ● | ● |
| 10.300 | 133.00 | 87.00 | ● | ● |
| 10.400 | 133.00 | 87.00 | ● | ● |
| 10.500 | 133.00 | 87.00 | ● | ● |
| 10.600 | 133.00 | 87.00 | | ● |
| 10.800 | 142.00 | 94.00 | | ● |
| 11.000 | 142.00 | 94.00 | ● | ● |
| 11.100 | 142.00 | 94.00 | | ● |
| 11.200 | 142.00 | 94.00 | ● | ● |
| 11.300 | 142.00 | 94.00 | | ● |
| 11.500 | 142.00 | 94.00 | ● | ● |
| 11.700 | 142.00 | 94.00 | | ● |
| 11.800 | 142.00 | 94.00 | | ● |
| 12.000 | 151.00 | 101.00 | ● | ● |
| 12.100 | 151.00 | 101.00 | | ● |
| 12.200 | 151.00 | 101.00 | | ● |
| 12.300 | 151.00 | 101.00 | | ● |
| 12.500 | 151.00 | 101.00 | ● | ● |
| 12.700 | 151.00 | 101.00 | | ● |
| 13.000 | 151.00 | 101.00 | ● | ● |
| 13.500 | 160.00 | 108.00 | | ● |
| 14.000 | 160.00 | 108.00 | | ● |
| 14.500 | 169.00 | 114.00 | | ● |
| 15.000 | 169.00 | 114.00 | | ● |
| 15.500 | 178.00 | 120.00 | | ● |
| 16.000 | 178.00 | 120.00 | | ● |
| 16.500 | 184.00 | 125.00 | | ● |
| 19.000 | 198.00 | 135.00 | | ● |
| 19.500 | 205.00 | 140.00 | | ● |

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HARTNER

INOX Jobber drills



82972

HSS-E

138

rh

IS



Availability

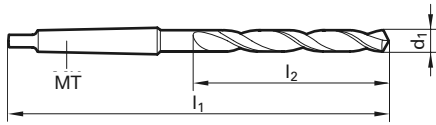
| d1 mm | MT | l1 mm | l2 mm | Availability |
|----------|----|----------|----------|--------------|
| 10.000 | 1 | 138.00 | 57.00 | ● |
| 10.500 | 1 | 138.00 | 57.00 | ● |
| 10.800 | 1 | 142.00 | 61.00 | ● |
| 11.500 | 1 | 142.00 | 61.00 | ● |
| 11.800 | 1 | 142.00 | 61.00 | ● |
| 12.000 | 1 | 147.00 | 66.00 | ● |
| 12.200 | 1 | 147.00 | 66.00 | ● |
| 13.890 | 2 | 168.00 | 70.00 | ● |
| 14.750 | 2 | 172.00 | 74.00 | ● |
| 15.000 | 2 | 172.00 | 74.00 | ● |
| 19.500 | 3 | 212.00 | 91.00 | ● |
| 19.750 | 3 | 212.00 | 91.00 | ● |
| 20.750 | 3 | 216.00 | 95.00 | ● |
| 21.250 | 3 | 219.00 | 98.00 | ● |
| 21.500 | 3 | 219.00 | 98.00 | ● |
| 21.750 | 3 | 219.00 | 98.00 | ● |
| 22.220 | 3 | 219.00 | 98.00 | ● |
| 22.250 | 3 | 219.00 | 98.00 | ● |
| 22.750 | 3 | 222.00 | 101.00 | ● |
| 23.000 | 3 | 222.00 | 101.00 | ● |
| 26.000 | 4 | 256.00 | 107.00 | ● |
| 27.000 | 4 | 259.00 | 110.00 | ● |
| 27.500 | 4 | 259.00 | 110.00 | ● |
| 28.500 | 4 | 263.00 | 114.00 | ● |
| 29.000 | 4 | 263.00 | 114.00 | ● |
| 29.500 | 4 | 263.00 | 114.00 | ● |
| 30.500 | 4 | 266.00 | 117.00 | ● |
| 31.000 | 4 | 266.00 | 117.00 | ● |

○ bright



HARTNER

INOX Twist drills



| d1 | MT | l1 | l2 |
|--------|----|--------|--------|
| mm | | mm | mm |
| 11.500 | 1 | 175.00 | 94.00 |
| 13.500 | 1 | 189.00 | 108.00 |
| 14.000 | 1 | 189.00 | 108.00 |
| 15.000 | 2 | 212.00 | 114.00 |
| 15.750 | 2 | 218.00 | 120.00 |
| 16.500 | 2 | 223.00 | 125.00 |
| 17.000 | 2 | 223.00 | 125.00 |
| 17.250 | 2 | 228.00 | 130.00 |
| 17.500 | 2 | 228.00 | 130.00 |
| 18.000 | 2 | 228.00 | 130.00 |
| 19.500 | 2 | 238.00 | 140.00 |
| 20.000 | 2 | 238.00 | 140.00 |
| 20.500 | 2 | 243.00 | 145.00 |
| 21.000 | 2 | 243.00 | 145.00 |
| 26.000 | 3 | 286.00 | 165.00 |
| 27.500 | 3 | 291.00 | 170.00 |
| 28.000 | 3 | 291.00 | 170.00 |
| 29.500 | 3 | 296.00 | 175.00 |
| 31.000 | 3 | 301.00 | 180.00 |
| 31.500 | 3 | 301.00 | 180.00 |

82012

HSS-E

134

rh

IS



Availability

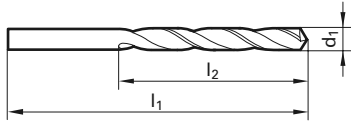


○ bright



HARTNER

INOX Long series twist drills



81361

HSS-E

134

rh

IS



Availability

| d1 | l1 | l2 | Availability |
|-------|--------|--------|--------------|
| mm | mm | mm | |
| 1.500 | 70.00 | 45.00 | ● |
| 2.000 | 85.00 | 56.00 | ● |
| 2.500 | 95.00 | 62.00 | ● |
| 3.000 | 100.00 | 66.00 | ● |
| 3.100 | 106.00 | 69.00 | ● |
| 3.300 | 106.00 | 69.00 | ● |
| 3.500 | 112.00 | 73.00 | ● |
| 3.600 | 112.00 | 73.00 | ● |
| 4.000 | 119.00 | 78.00 | ● |
| 4.200 | 119.00 | 78.00 | ● |
| 4.300 | 126.00 | 82.00 | ● |
| 4.400 | 126.00 | 82.00 | ● |
| 4.500 | 126.00 | 82.00 | ● |
| 4.800 | 132.00 | 87.00 | ● |
| 5.000 | 132.00 | 87.00 | ● |
| 5.300 | 132.00 | 87.00 | ● |
| 5.400 | 139.00 | 91.00 | ● |
| 5.500 | 139.00 | 91.00 | ● |
| 5.700 | 139.00 | 91.00 | ● |
| 5.800 | 139.00 | 91.00 | ● |
| 5.900 | 139.00 | 91.00 | ● |
| 6.400 | 148.00 | 97.00 | ● |
| 6.600 | 148.00 | 97.00 | ● |
| 6.700 | 148.00 | 97.00 | ● |
| 6.900 | 156.00 | 102.00 | ● |
| 7.000 | 156.00 | 102.00 | ● |
| 7.300 | 156.00 | 102.00 | ● |
| 7.400 | 156.00 | 102.00 | ● |
| 7.600 | 165.00 | 109.00 | ● |
| 8.000 | 165.00 | 109.00 | ● |
| 8.300 | 165.00 | 109.00 | ● |
| 8.400 | 165.00 | 109.00 | ● |
| 8.500 | 165.00 | 109.00 | ● |
| 9.500 | 175.00 | 115.00 | ● |

○ bright

15/20/25/30/40xD



HARTNER

Precision Cutting Tools

TS 100 T SPIRAL-FLUTE DEEP HOLE DRILLS FOR DRILLING DEPTHS 15/20/25/30/40XD

- Optimised flute geometry
- Problem-free swarf
- Maximised coolant duct profile





Application recommendations for INOX Drills

Drills with **bold** feed column no. are preferred choice.

General hints for solid carbide drills:

Powerful machines, no play in spindle bearings, alignment accurate tool holders. Max. concentricity error of clamped tools 0.02 mm, high coolant pressures. We recommend the application of hydraulic chucks or shrink fit chucks.

Coolant hints for solid carbide drills:

We recommend lubrication by soluble oil or neat oil. Under special conditions cooling just by air is possible. But instead of air cooling we would always prefer minimal quantity lubrication, that the tools are especially suited for. With MQL we recommend the conical Shank end and the Hartner MQL components. Please contact our technical service department for further information.

Order no. **R**

Standard/DIN

Tool material

Carbide grade

Surface finish

Type

Internal cooling

for Ø-range

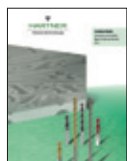
| Drill Ø mm | Feed column no. | | | | | | | | |
|---------------|-----------------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| | f (mm/rev) | | | | | | | | |
| 2.50 | 0.025 | 0.032 | 0.040 | 0.050 | 0.063 | 0.080 | 0.100 | 0.125 | 0.160 |
| 3.15 | 0.032 | 0.040 | 0.050 | 0.063 | 0.080 | 0.100 | 0.125 | 0.160 | 0.160 |
| 4.00 | 0.040 | 0.050 | 0.063 | 0.080 | 0.100 | 0.125 | 0.160 | 0.200 | 0.200 |
| 5.00 | 0.040 | 0.050 | 0.063 | 0.080 | 0.100 | 0.125 | 0.160 | 0.200 | 0.250 |
| 6.30 | 0.050 | 0.063 | 0.080 | 0.100 | 0.125 | 0.160 | 0.200 | 0.250 | 0.315 |
| 8.00 | 0.063 | 0.080 | 0.100 | 0.125 | 0.160 | 0.200 | 0.250 | 0.315 | 0.315 |
| 10.00 | 0.080 | 0.100 | 0.125 | 0.160 | 0.200 | 0.250 | 0.315 | 0.400 | 0.400 |
| 12.50 | 0.080 | 0.100 | 0.125 | 0.160 | 0.200 | 0.250 | 0.315 | 0.400 | 0.500 |
| 16.00 | 0.100 | 0.125 | 0.160 | 0.200 | 0.250 | 0.315 | 0.400 | 0.500 | 0.630 |
| 20.00 | 0.125 | 0.160 | 0.200 | 0.250 | 0.315 | 0.400 | 0.500 | 0.630 | 0.630 |
| 25.00 | 0.160 | 0.200 | 0.250 | 0.315 | 0.400 | 0.500 | 0.630 | 0.800 | 0.800 |

Coolant

- soluble oil
- oil
- air

| Material group | Material examples, new description (old description in brackets) Figures in bold = material no. to DIN EN | Tensile strength MPa (N/mm ²) | Hardness | Coolant |
|--|---|--|--------------------|---------|
| Common structural steels | 1.0035 S185(St33), 1.0486 P275N(StE285), 1.0345 P235GH(H1), 1.0425 P265GH(H2) 1.0050 E295 (St50-2), 1.0070 E360 (St70-2), 1.8937 P500NH (WStE500) | ≤500 ≤1000 | | ○ |
| Free-cutting steels | 1.0718 11SMnPb30 (9SMnPb28), 1.0736 11SMn37 (9SMn36) 1.0727 46S20 (45S20), 1.0728 (60S20), 1.0757 46SPb20 (45SPb20) | ≤850 ≤1000 | | ○ |
| Unalloyed heat-treatable steels | 1.0402 C22, 1.1178 C30E (Ck30) 1.0503 C45, 1.1191 C45E (Ck45) 1.0601 C60, 1.1221 C60E (Ck60) | ≤700 ≤850 ≤1000 | | ○ |
| Alloyed heat-treatable steels | 1.5131 50MnSi4, 1.7003 38Cr2, 1.7030 28Cr4 1.5710 36NiCr6, 1.7035 41Cr4, 1.7225 42CrMo4 | ≤1000 ≤1400 | | ○ |
| Unalloyed case hardened steels | 1.0301 (C10), 1.1121 C10E (Ck10) | ≤850 | | ○ |
| Alloyed case hardened steels | 1.7043 38Cr4 1.5752 15NiCr13 (15NiCr13), 1.7131 16MnCr5, 1.7264 20CrMo5 | ≤1000 ≤1400 | | ● |
| Nitriding steels | 1.8504 34CrAl6 1.8519 31CrMoV9, 1.8550 34CrAlNi7 | ≤1000 ≤1400 | | ○ |
| Tool steels | 1.1750 C75W, 1.2067 102Cr6, 1.2307 29CrMoV9 1.2080 X210Cr12, 1.2083 X42Cr13, 1.2419 105WCr6, 1.2767 X45NiCrMo4 | ≤850 ≤1400 | | ○ |
| High speed steels | 1.3243 S 6-5-2-5, 1.3343 S 6-5-2, 1.3344 S 6-5-3 | ≤1400 | | ● |
| Spring steels | 1.5026 55Si7, 1.7176 55Cr3, 1.8159 51CrV4 (51CrV4) | | ≤350 HB | ● |
| Stainless steels, sulphured | 1.4005 X12CrS13, 1.4104 X14CrMoS17, 1.4105 X6CrMoS17, 1.4305 X8CrNiS18-9 | ≤900 | | ● |
| Stainless steels, austenitic | 1.4301 X5CrNi18-10 (V2A), 1.4541 X6CrNiTi18-10, 1.4571 X6CrNiMoTi 17-12-2 (V4A) | ≤1100 | | ● |
| Stainless steels, martensitic | 1.4057 X20CrNi 17 2 (X17CrNi16-2), 1.4122 X39CrMo17-1, 1.4521 X2CrMoTi18-2 | ≤1500 | | ● |
| Hardened steels | - | | ≤48 HRC ≤66 HRC | ● |
| Special alloys | Nimonic, Inconel, Monel, Hastelloy | ≤2000 | | ○ |
| Cast iron | 0.6010 EN-GJL-100(GG10), 0.6020 EN-GJL-200(GG20) 0.6025 EN-GJL-250(GG25), 0.6035 EN-GJL-350(GG35) | | ≤240 HB ≤350 HB | ○ |
| Spheroidal graphite iron and malleable cast iron | 0.7050 EN-GJS-500-7(GG50), 0.8035 EN-GJMW-350-4(GTW35) 0.7070 EN-GJS-700-2(GGG70), 0.8170 EN-GJMB-700-2(GTS70) | | ≤240 HB ≤350 HB | ○ |
| Chilled cast iron | - | | ≤350 HB | ○ |
| Ti and Ti-alloys | 3.7024 Ti99,5, 3.7114 TiAl5Sn2,5, 3.7124 TiCu2 3.7154 TiAl6Zr5, 3.7165 TiAl6V4, 3.7184 TiAl4Mo4Sn2,5, - TiAl8Mo1V1 | ≤850 ≤1400 | | ● |
| Aluminium and Al-alloys | 3.0255 Al99,5, 3.2315 AlMgSi1, 3.3515 AlMg1 | ≤400 | | ○ |
| Al wrought alloys | 3.0615 AlMgSiPb, 3.1325 AlCuMg1, 3.3245 AlMg3Si, 3.4365 AlZnMgCu1,5 | ≤650 | | ○ |
| Al cast alloys ≤ 10 % Si | 3.2131 G-AlSi5Cu1, 3.2153 G-AlSi7Cu3, 3.2573 G-AlSi9 | ≤600 | | ○ |
| Al cast alloys > 10 % Si | 3.2581 G-AlSi12, 3.2583 G-AlSi12Cu, - G-AlSi12CuNiMg | ≤600 | | ○ |
| Magnesium alloys | 3.5200 MgMn2, 3.5812.05 G-MgAl8Zn1, 3.5612.05 G-MgAl6Zn1 | ≤400 | | ○ |
| Copper, low-alloyed | 2.0070 SE-Cu, 2.1020 CuSn6, 2.1096 G-CuSn5ZnPb | ≤500 | | ○ |
| Brass, short-chipping | 2.0380 CuZn39Pb2, 2.0401 CuZn39Pb3, 2.0410 CuZn43Pb2 | ≤600 | | ○ |
| Brass, long-chipping | 2.0250 CuZn20, 2.0280 CuZn33, 2.0332 CuZn37Pb0,5 | ≤600 | | ○ |
| Bronze, short-chipping | 2.1090 CuSn7ZnPb, 2.1170 CuPb5Sn5, 2.1176 CuPb10Sn 2.0790 CuNi18Zn19Pb | ≤600 ≤850 | | ○ |
| Bronze, long-chipping | 2.0916 CuAl5, 2.0960 CuAl9Mn, 2.1050 CuSn10 2.0980 CuAl11Ni, 2.1247 CuBe2 | ≤850 ≤1000 | | ○ |
| Duroplastics | Bakelite, Resopal, Pertinax, Moltopren | ≤150 | | ○ |
| Thermoplastics | Plexiglass, Hostalen, Novodur, Makralon | ≤100 | | ○ |
| Kevlar | Kevlar | ≤1000 | | ○ |
| Glass, carbon concentrated plastics | GFK/CFK | ≤1000 | | ○ |

Our programme:



FU 500/FN500



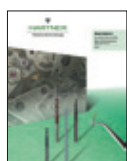
Gun Drills



INOX Drills



Multiplex



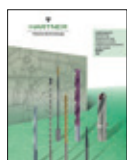
Micro Precision Drills



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TS-Drills



Standard Range



Highlights



TM Vending Machines



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