

# TT SERIES

Curved cutting edge design disperse the cutting force, it is not easy to cause chipping and wear due to stress concentration, and facilitate chip removal



**TT SERIES**

**P M K**  
[C1~C44]



- Curved cutting edge design disperse the cutting force, it is not easy to cause chipping and wear due to stress concentration, and facilitate chip removal.
- Nano composite Balzers-PT coating ,superior wear resistance,longer tool life.
- Specially suitable for hole machining of carbon steel, alloy steel,stainless steel and other materials.
- Deep hole drill series L/D=12~30.

**CT SERIES**

**P K**  
[C74~C86]



- Suitable for steel( $\leq$ HRC48),cast iron efficient drilling.
- Unique cutting edge preparation to add strength to the cutting edge and improve the drilling stability.
- Nano composite AlTiN coating ,superior wear resistance,longer tool life.

**TK SERIES**

**K**  
[C45~C73]



- For cast iron processing for automotive engines and other industries .
- Waveform blade, reduce processing torque , improve hole wall quality and hole precision.
- Wide horizontal blade design and improve the intensity of the drill.

**DT SERIES**

**M**  
[C87~C91]



- Suitable for stainless steel,heat-resistant alloy and titanium alloy efficient drilling.
- Unique drill point design,better chip evacuation performance and larger groove profile.
- New substrate material and coating,stronger toughness and wear resistance ability.
- Optimize the groove profile,with excellent chip removal performance.

## TDM Micro-drill SERIES

### TDMC SERIES



[C92~C94]



- Ultra fine particles and super wear resistant cemented carbide are used.
- New composite TiAlN coating is developed to enhance the fatigue resistance and wear resistance of drill.
- Specially suitable for hole machining of carbon steel, alloy steel, stainless steel and other materials.
- Long life, high efficiency.

### TDMAL SERIES



[C95~C98]



- Ultra fine cemented carbide round bar was used.
- Ultra precision tolerance control, excellent cutting force and chip removal.
- Especially suitable for aluminium alloy, Copper alloy and resin precision hole processing.

### FSD SERIES



[C99~C104]



- Point angle 180°
- Better centering ability, chip evacuation smoothly because of point geometry and flute design.
- Suitable for machining inclined hole, drilling on ball surface and thin sheet, restraining the burr also.

### CCD SERIES



[C105]



- Carbide Center Drill with High-performance and Multi-Purpose Series.

### CSD SERIES



[C105]



- Carbide Spotting Drill with High-performance and Multi-Purpose Series.

TTW/TKW/CTW/DTW Drills (mm)

| Flute Dia. | Dia. Tolerance(m7) |
|------------|--------------------|
| =2-3       | +0.002/+0.012      |
| >3-6       | +0.004/+0.016      |
| >6-10      | +0.006/+0.021      |
| >10-18     | +0.007/+0.025      |
| >18-20     | +0.008/+0.029      |

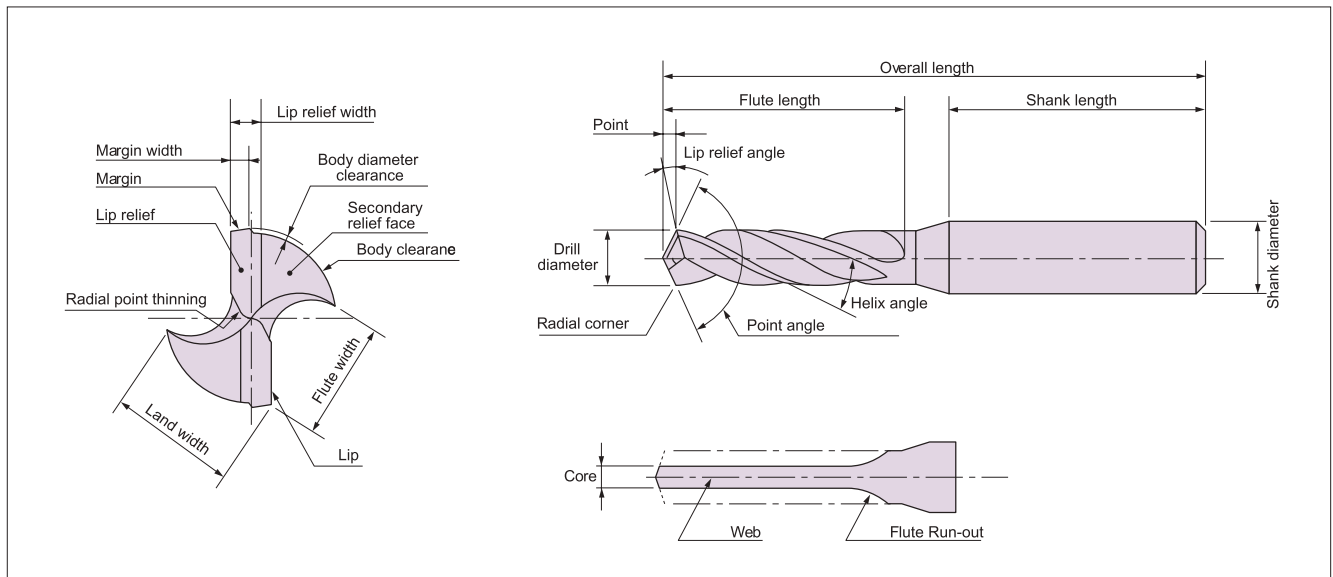
| Shank Dia. | Shank Tolerance(h6) |
|------------|---------------------|
| =2-3       | 0.000/-0.006        |
| >3-6       | 0.000/-0.008        |
| >6-10      | 0.000/-0.009        |
| >10-18     | 0.000/-0.011        |
| >18-20     | 0.000/-0.013        |

TTS/TKS/CTS/DTS Drills (mm)

| Flute Dia. | Dia. Tolerance(m7) |
|------------|--------------------|
| =2-3       | +0.002/+0.012      |
| >3-6       | +0.004/+0.016      |
| >6-10      | +0.006/+0.021      |
| >10-18     | +0.007/+0.025      |
| >18-20     | +0.008/+0.029      |

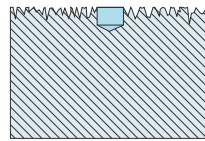
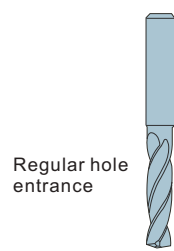
| Shank Dia. | Shank Tolerance(h6) |
|------------|---------------------|
| =2-3       | 0.000/-0.006        |
| >3-6       | 0.000/-0.008        |
| >6-10      | 0.000/-0.009        |
| >10-18     | 0.000/-0.011        |
| >18-20     | 0.000/-0.013        |

Terminology



## Irregular/Angled Hole Entrance

If irregular or angle entrance use pre operations accordingly

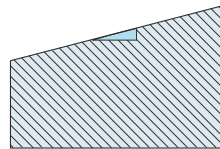


Pre drill with a short standard TT Series



Pre-machining alternatives

Angled hole entrance



Machine a flat using an end mill from the TOTIME range

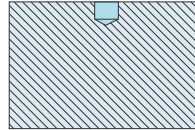
## Recommended Tool Holders

3-12XD



No pre-drilling or entrance feed needed

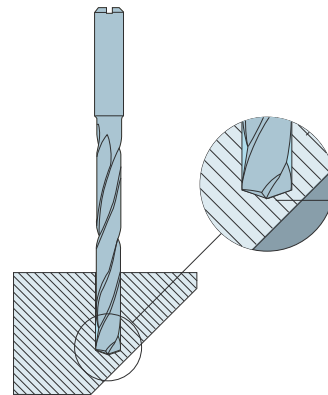
>12XD



When using a longer drill it's recommended to drill a pilot hole

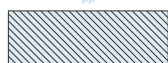
## Angled Hole Exits

Before hole exit reduce the feed/rev by 50%



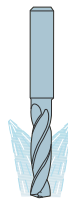
## Coolant Recommendations

1



First choice

2



≤ 5 x D

### 1. Coolant pressure\*

Minimum recommended coolant pressure

10 bar with ≤ 5 x D

Minimum recommended coolant pressure

30 bar with > 5 x D

Minimum recommended coolant pressure

40 bar with > 16 x D

### 2. Coolant mix

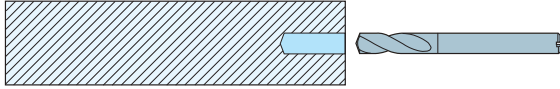
Recommended emulsion mix 6-8%.

When drilling in stainless steels, superalloys and high strength steels a mix of 10% is recommended.

\*If lower coolant pressure is used adjust by reducing cutting data accordingly.

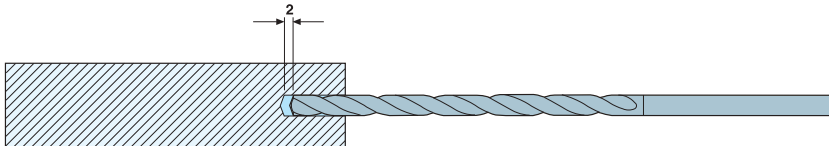
TTS16 (16 x D) up to TTS30 (30 x D) - STEP BY STEP

1.



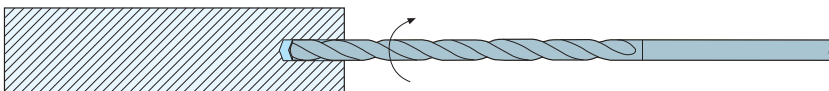
1. Drill a pilot hole 2-3 x D.  
Use a standard drill with the same diameter i.e. TTS 3D. (with 140° point angle)

2.



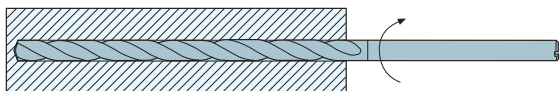
2. Enter the hole with the machine spindle stopped or use a low rpm (500). Stop 2 mm (0.080") above the pilot hole depth.

3.



3. Start the machine spindle and the coolant. drill with the recommended cutting data. (No peck drilling)

4.



4. When reaching full depth, reduce the rpm to 500 and then retract the drill with 4 times the work feed to avoid retraction marks.

|                 |                    |                        |                        |              |              |              |              |              |
|-----------------|--------------------|------------------------|------------------------|--------------|--------------|--------------|--------------|--------------|
| TT Serie        |                    |                        |                        |              |              |              |              |              |
|                 | <b>TTW<br/>TTS</b> | <b>TTW05<br/>TTS05</b> | <b>TTW07<br/>TTS07</b> | <b>TTS12</b> | <b>TTS16</b> | <b>TTS20</b> | <b>TTS25</b> | <b>TTS30</b> |
| Drill Depth     | 3XD                | 5XD                    | 7XD                    | 12XD         | 16XD         | 20XD         | 25XD         | 30XD         |
| Range           | 3-20               | 3-20                   | 4.5-20                 | 3-12         | 3-12         | 3-12         | 3-12         | 3-12         |
| Drill Tolerance | m7                 | m7                     | m7                     | m7           | m7           | m7           | m7           | m7           |
| Shank Tolerance | h6                 | h6                     | h6                     | h6           | h6           | h6           | h6           | h6           |
| Hole Tolerance  | IT8-9              | IT8-9                  | IT8-9                  | IT8-9        | IT8-9        | IT8-9        | IT8-9        | IT8-9        |
| Page            | C3                 | C17                    | C30                    | C38          | C39          | C40          | C41          | C42          |

Technological Innovation

1. Curved Cutting Edge



The edge design has two advantages, one is to disperse the cutting force, it is not easy to cause chipping and wear due to stress concentration, and the second is to facilitate chip removal.

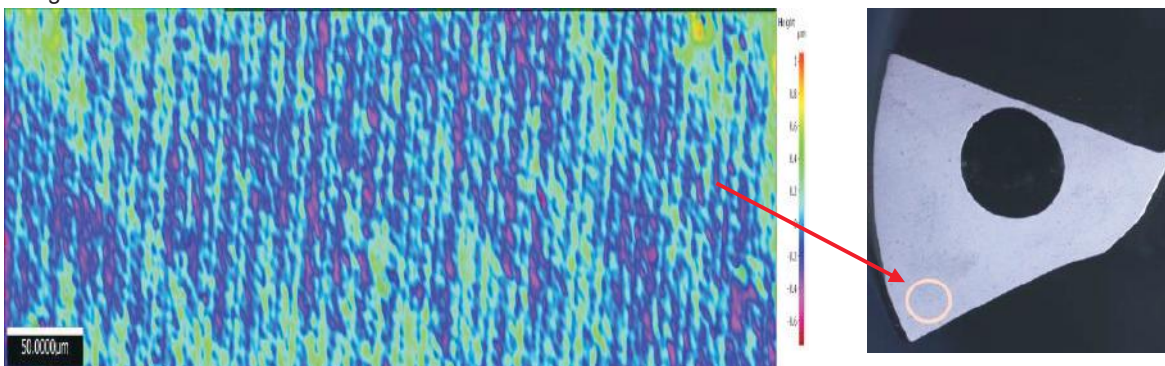
2. Narrow Cutting Edge



Some carbon steels have good ductility and shrinkage holes may occur. The cutting edge is narrow, which reduces friction and helps improve shrinkage holes.

3. Drill Surface Quality

Roughness: 0.14 μm





### Initial check points

- Fixturing stability
- Machine spindle condition
- Tool holder condition
- Clamping of tool:
  - Run-out within 0,04 TIR
  - If using pre drilling within 0,04 TIR
- Chip evacuation:
  - Cutting data
- Coolant:
  - Pressure
  - Flow
  - Concentration

|   |  |   |  |
|---|--|---|--|
| <p><b>Chipping/Center</b></p> <ul style="list-style-type: none"> <li>▪ Reduce feed during entrance</li> <li>▪ Increase coolant pressure and adjust the feed to optimize the chip formation</li> </ul>   |  | <p><b>Unsatisfactory surface finish- Feedmax</b></p> <ul style="list-style-type: none"> <li>▪ Reduce the feed/rev</li> <li>▪ Increase the cutting speed</li> </ul>  |  |
| <p><b>Wear/Periphery land</b></p> <ul style="list-style-type: none"> <li>▪ Reduce the cutting speed</li> <li>▪ Increase coolant concentration</li> </ul>  |  | <p><b>Unsatisfactory positioning of the hole</b></p> <ul style="list-style-type: none"> <li>▪ Reduce feed/rev. on entrance</li> <li>▪ Reduce feed/rev</li> <li>▪ If drilling through rough, hard and angled surfaces - reduce the feed by 30% - 50% during entrance and exit</li> <li>▪ Center drill with a 140° point angle</li> </ul> |  |
| <p><b>Built-up edge</b></p> <ul style="list-style-type: none"> <li>▪ If closer to the periphery increase the cutting speed</li> <li>▪ If closer to center increase feed/rev</li> <li>▪ If the drill is worn, regrind it</li> </ul>                |  | <p><b>Breakage on contact/at hole bottom</b></p> <ul style="list-style-type: none"> <li>▪ Reduce the feed/rev. during entrance/exit</li> <li>▪ Adjust cutting data for improved chip evacuation</li> </ul>  |  |
| <p><b>Chipping/Outer corner, cutting edge</b></p> <ul style="list-style-type: none"> <li>▪ Reduce feed during entrance/exit</li> <li>▪ Reduce the cutting speed</li> <li>▪ Increase coolant concentration</li> <li>▪ Regrind the drill</li> </ul> |  | <p><b>Burrs on exit</b></p> <ul style="list-style-type: none"> <li>▪ Reduce the feed/rev. on exit</li> <li>▪ Reduce the width of edge preparation</li> </ul>  |  |
| <p><b>Rapid flank wear</b></p> <ul style="list-style-type: none"> <li>▪ Reduce the cutting speed</li> <li>▪ Increase coolant concentration</li> </ul>   |  | <p><b>Unsatisfactory diameter tolerance</b></p> <ul style="list-style-type: none"> <li>▪ Increase the feed/rev</li> </ul>   |  |

### Applications

Industry: Automobile Manufacturing Industry  
 Workpiece: Crankshaft  
 Material: 42CrMo  
 Machine: Machining Center  
 Hardness: HRC28 - 32  
 Cooling Method: Internal Cooling  
 Tool: TTS25080D8 (8x25D)  
 Vc (m/min) : 62. 8  
 f (mm/rev) : 0. 2  
 Depth (mm) : 150  
 Tool live (Pieces) : 220

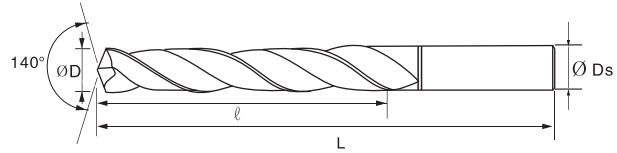
Industry: Automobile Manufacturing Industry  
 Workpiece: Universal Joint  
 Material: S50C  
 Machine: Machining Center  
 Hardness: HRC20  
 Cooling Method: Internal Cooling  
 Tool: TTS05083D10 (8. 3x5D)  
 Vc (m/min) : 62. 5  
 f (mm/rev) : 0. 12  
 Depth (mm) : 38  
 Tool live (Pieces) : 400





## TTW Drill Series 3D External Coolant

|                        |            |                         |                                 |             |       |
|------------------------|------------|-------------------------|---------------------------------|-------------|-------|
| Material               | Carbide    | Helix angle             | 30°                             | Point angle | 140°  |
| Cutting edge tolerance | m7         | Shank tolerance         | h6                              | Standard    | 6537A |
| Coating                | Balzars-PT | Suitable for processing | Steel/Stainless steel/Cast iron |             |       |



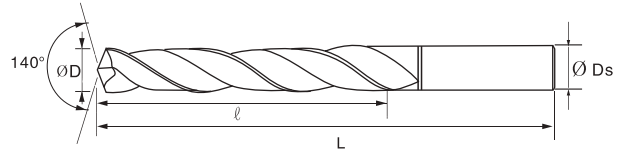
Unit(mm)

| Model No. | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-----------|------------------|----------------|----------------|--------------|-------|
|           | D                | ℓ              | Ds             | L            |       |
| TTW030D6  | 3.0              | 20             | 6              | 62           | ●     |
| TTW031D6  | 3.1              | 20             | 6              | 62           | ●     |
| TTW032D6  | 3.2              | 20             | 6              | 62           | ●     |
| TTW033D6  | 3.3              | 20             | 6              | 62           | ●     |
| TTW034D6  | 3.4              | 20             | 6              | 62           | ●     |
| TTW035D6  | 3.5              | 20             | 6              | 62           | ●     |
| TTW036D6  | 3.6              | 20             | 6              | 62           | ●     |
| TTW037D6  | 3.7              | 20             | 6              | 62           | ●     |
| TTW038D6  | 3.8              | 24             | 6              | 66           | ●     |
| TTW039D6  | 3.9              | 24             | 6              | 66           | ●     |
| TTW040D6  | 4.0              | 24             | 6              | 66           | ●     |
| TTW041D6  | 4.1              | 24             | 6              | 66           | ●     |
| TTW042D6  | 4.2              | 24             | 6              | 66           | ●     |
| TTW043D6  | 4.3              | 24             | 6              | 66           | ●     |
| TTW044D6  | 4.4              | 24             | 6              | 66           | ●     |
| TTW045D6  | 4.5              | 24             | 6              | 66           | ●     |
| TTW046D6  | 4.6              | 26             | 6              | 66           | ●     |
| TTW047D6  | 4.7              | 26             | 6              | 66           | ●     |
| TTW048D6  | 4.8              | 28             | 6              | 66           | ●     |
| TTW049D6  | 4.9              | 28             | 6              | 66           | ●     |
| TTW050D6  | 5.0              | 28             | 6              | 66           | ●     |
| TTW051D6  | 5.1              | 28             | 6              | 66           | ●     |
| TTW052D6  | 5.2              | 28             | 6              | 66           | ●     |
| TTW053D6  | 5.3              | 28             | 6              | 66           | ●     |
| TTW054D6  | 5.4              | 28             | 6              | 66           | ●     |
| TTW055D6  | 5.5              | 28             | 6              | 66           | ●     |
| TTW056D6  | 5.6              | 28             | 6              | 66           | ●     |
| TTW057D6  | 5.7              | 28             | 6              | 66           | ●     |
| TTW058D6  | 5.8              | 28             | 6              | 66           | ●     |
| TTW059D6  | 5.9              | 28             | 6              | 66           | ●     |
| TTW060D6  | 6.0              | 28             | 6              | 66           | ●     |
| TTW061D8  | 6.1              | 34             | 8              | 79           | ●     |
| TTW062D8  | 6.2              | 34             | 8              | 79           | ●     |
| TTW063D8  | 6.3              | 34             | 8              | 79           | ●     |

● Stock ○ Non-stock

## TTW Drill Series 3D External Coolant

|                        |            |                         |                                 |             |       |
|------------------------|------------|-------------------------|---------------------------------|-------------|-------|
| Material               | Carbide    | Helix angle             | 30°                             | Point angle | 140°  |
| Cutting edge tolerance | m7         | Shank tolerance         | h6                              | Standard    | 6537A |
| Coating                | Balzars-PT | Suitable for processing | Steel/Stainless steel/Cast iron |             |       |



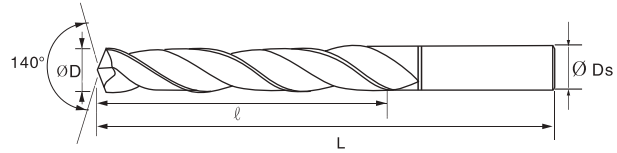
Unit(mm)

| Model No. | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-----------|------------------|----------------|----------------|--------------|-------|
|           | D                | l              | Ds             | L            |       |
| TTW064D8  | 6.4              | 34             | 8              | 79           | ●     |
| TTW065D8  | 6.5              | 34             | 8              | 79           | ●     |
| TTW066D8  | 6.6              | 34             | 8              | 79           | ●     |
| TTW067D8  | 6.7              | 34             | 8              | 79           | ●     |
| TTW068D8  | 6.8              | 34             | 8              | 79           | ●     |
| TTW069D8  | 6.9              | 34             | 8              | 79           | ●     |
| TTW070D8  | 7.0              | 34             | 8              | 79           | ●     |
| TTW071D8  | 7.1              | 41             | 8              | 79           | ●     |
| TTW072D8  | 7.2              | 41             | 8              | 79           | ●     |
| TTW073D8  | 7.3              | 41             | 8              | 79           | ●     |
| TTW074D8  | 7.4              | 41             | 8              | 79           | ●     |
| TTW075D8  | 7.5              | 41             | 8              | 79           | ●     |
| TTW076D8  | 7.6              | 41             | 8              | 79           | ●     |
| TTW077D8  | 7.7              | 41             | 8              | 79           | ●     |
| TTW078D8  | 7.8              | 41             | 8              | 79           | ●     |
| TTW079D8  | 7.9              | 41             | 8              | 79           | ●     |
| TTW080D8  | 8.0              | 41             | 8              | 79           | ●     |
| TTW081D10 | 8.1              | 47             | 10             | 89           | ●     |
| TTW082D10 | 8.2              | 47             | 10             | 89           | ●     |
| TTW083D10 | 8.3              | 47             | 10             | 89           | ●     |
| TTW084D10 | 8.4              | 47             | 10             | 89           | ●     |
| TTW085D10 | 8.5              | 47             | 10             | 89           | ●     |
| TTW086D10 | 8.6              | 47             | 10             | 89           | ●     |
| TTW087D10 | 8.7              | 47             | 10             | 89           | ●     |
| TTW088D10 | 8.8              | 47             | 10             | 89           | ●     |
| TTW089D10 | 8.9              | 47             | 10             | 89           | ●     |
| TTW090D10 | 9.0              | 47             | 10             | 89           | ●     |
| TTW091D10 | 9.1              | 47             | 10             | 89           | ●     |
| TTW092D10 | 9.2              | 47             | 10             | 89           | ●     |
| TTW093D10 | 9.3              | 47             | 10             | 89           | ●     |
| TTW094D10 | 9.4              | 47             | 10             | 89           | ●     |
| TTW095D10 | 9.5              | 47             | 10             | 89           | ●     |
| TTW096D10 | 9.6              | 47             | 10             | 89           | ●     |
| TTW097D10 | 9.7              | 47             | 10             | 89           | ●     |

●Stock ○Non-stock

## TTW Drill Series 3D External Coolant

|                        |            |                         |                                 |             |       |
|------------------------|------------|-------------------------|---------------------------------|-------------|-------|
| Material               | Carbide    | Helix angle             | 30°                             | Point angle | 140°  |
| Cutting edge tolerance | m7         | Shank tolerance         | h6                              | Standard    | 6537A |
| Coating                | Balzars-PT | Suitable for processing | Steel/Stainless steel/Cast iron |             |       |

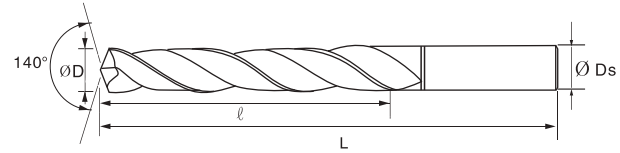


Unit(mm)

| Model No. | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-----------|------------------|----------------|----------------|--------------|-------|
|           | D                | l              | Ds             | L            |       |
| TTW098D10 | 9.8              | 47             | 10             | 89           | ●     |
| TTW099D10 | 9.9              | 47             | 10             | 89           | ●     |
| TTW100D10 | 10.0             | 47             | 10             | 89           | ●     |
| TTW101D12 | 10.1             | 55             | 12             | 102          | ●     |
| TTW102D12 | 10.2             | 55             | 12             | 102          | ●     |
| TTW103D12 | 10.3             | 55             | 12             | 102          | ●     |
| TTW104D12 | 10.4             | 55             | 12             | 102          | ●     |
| TTW105D12 | 10.5             | 55             | 12             | 102          | ●     |
| TTW106D12 | 10.6             | 55             | 12             | 102          | ●     |
| TTW107D12 | 10.7             | 55             | 12             | 102          | ●     |
| TTW108D12 | 10.8             | 55             | 12             | 102          | ●     |
| TTW109D12 | 10.9             | 55             | 12             | 102          | ●     |
| TTW110D12 | 11.0             | 55             | 12             | 102          | ●     |
| TTW111D12 | 11.1             | 55             | 12             | 102          | ●     |
| TTW112D12 | 11.2             | 55             | 12             | 102          | ●     |
| TTW113D12 | 11.3             | 55             | 12             | 102          | ●     |
| TTW114D12 | 11.4             | 55             | 12             | 102          | ●     |
| TTW115D12 | 11.5             | 55             | 12             | 102          | ●     |
| TTW116D12 | 11.6             | 55             | 12             | 102          | ●     |
| TTW117D12 | 11.7             | 55             | 12             | 102          | ●     |
| TTW118D12 | 11.8             | 55             | 12             | 102          | ●     |
| TTW119D12 | 11.9             | 55             | 12             | 102          | ●     |
| TTW120D12 | 12.0             | 55             | 12             | 102          | ●     |
| TTW121D14 | 12.1             | 60             | 14             | 107          | ●     |
| TTW122D14 | 12.2             | 60             | 14             | 107          | ●     |
| TTW123D14 | 12.3             | 60             | 14             | 107          | ●     |
| TTW124D14 | 12.4             | 60             | 14             | 107          | ●     |
| TTW125D14 | 12.5             | 60             | 14             | 107          | ●     |
| TTW126D14 | 12.6             | 60             | 14             | 107          | ●     |
| TTW127D14 | 12.7             | 60             | 14             | 107          | ●     |
| TTW128D14 | 12.8             | 60             | 14             | 107          | ●     |
| TTW129D14 | 12.9             | 60             | 14             | 107          | ●     |
| TTW130D14 | 13.0             | 60             | 14             | 107          | ●     |
| TTW131D14 | 13.1             | 60             | 14             | 107          | ●     |

● Stock ○ Non-stock

| TTW Drill Series 3D External Coolant |            |                         |                                 |             |       |
|--------------------------------------|------------|-------------------------|---------------------------------|-------------|-------|
| Material                             | Carbide    | Helix angle             | 30°                             | Point angle | 140°  |
| Cutting edge tolerance               | m7         | Shank tolerance         | h6                              | Standard    | 6537A |
| Coating                              | Balzars-PT | Suitable for processing | Steel/Stainless steel/Cast iron |             |       |



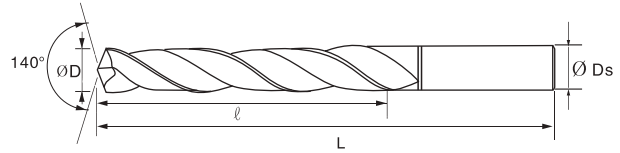
Unit(mm)

| Model No. | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-----------|------------------|----------------|----------------|--------------|-------|
|           | D                | l              | Ds             | L            |       |
| TTW132D14 | 13.2             | 60             | 14             | 107          | ●     |
| TTW133D14 | 13.3             | 60             | 14             | 107          | ●     |
| TTW134D14 | 13.4             | 60             | 14             | 107          | ●     |
| TTW135D14 | 13.5             | 60             | 14             | 107          | ●     |
| TTW136D14 | 13.6             | 60             | 14             | 107          | ●     |
| TTW137D14 | 13.7             | 60             | 14             | 107          | ●     |
| TTW138D14 | 13.8             | 60             | 14             | 107          | ●     |
| TTW139D14 | 13.9             | 60             | 14             | 107          | ●     |
| TTW140D14 | 14.0             | 60             | 14             | 107          | ●     |
| TTW141D16 | 14.1             | 65             | 16             | 115          | ●     |
| TTW142D16 | 14.2             | 65             | 16             | 115          | ●     |
| TTW143D16 | 14.3             | 65             | 16             | 115          | ●     |
| TTW144D16 | 14.4             | 65             | 16             | 115          | ●     |
| TTW145D16 | 14.5             | 65             | 16             | 115          | ●     |
| TTW146D16 | 14.6             | 65             | 16             | 115          | ●     |
| TTW147D16 | 14.7             | 65             | 16             | 115          | ●     |
| TTW148D16 | 14.8             | 65             | 16             | 115          | ●     |
| TTW149D16 | 14.9             | 65             | 16             | 115          | ●     |
| TTW150D16 | 15.0             | 65             | 16             | 115          | ●     |
| TTW151D16 | 15.1             | 65             | 16             | 115          | ●     |
| TTW152D16 | 15.2             | 65             | 16             | 115          | ●     |
| TTW153D16 | 15.3             | 65             | 16             | 115          | ●     |
| TTW154D16 | 15.4             | 65             | 16             | 115          | ●     |
| TTW155D16 | 15.5             | 65             | 16             | 115          | ●     |
| TTW156D16 | 15.6             | 65             | 16             | 115          | ●     |
| TTW157D16 | 15.7             | 65             | 16             | 115          | ●     |
| TTW158D16 | 15.8             | 65             | 16             | 115          | ●     |
| TTW159D16 | 15.9             | 65             | 16             | 115          | ●     |
| TTW160D16 | 16.0             | 65             | 16             | 115          | ●     |
| TTW165D18 | 16.5             | 73             | 18             | 123          | ○     |
| TTW170D18 | 17.0             | 73             | 18             | 123          | ○     |
| TTW175D18 | 17.5             | 73             | 18             | 123          | ○     |
| TTW180D18 | 18.0             | 73             | 18             | 123          | ○     |
| TTW185D20 | 18.5             | 79             | 20             | 131          | ○     |

● Stock ○ Non-stock

## TTW Drill Series 3D External Coolant

|                        |            |                         |                                 |             |       |
|------------------------|------------|-------------------------|---------------------------------|-------------|-------|
| Material               | Carbide    | Helix angle             | 30°                             | Point angle | 140°  |
| Cutting edge tolerance | m7         | Shank tolerance         | h6                              | Standard    | 6537A |
| Coating                | Balzars-PT | Suitable for processing | Steel/Stainless steel/Cast iron |             |       |



Unit(mm)

| Model No. | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-----------|------------------|----------------|----------------|--------------|-------|
|           | D                | ℓ              | Ds             | L            |       |
| TTW190D20 | 19.0             | 79             | 20             | 131          | ○     |
| TTW195D20 | 19.5             | 79             | 20             | 131          | ○     |
| TTW200D20 | 20.0             | 79             | 20             | 131          | ○     |

**Notice: The MOQ for Non-stock item is 5pcs.**

● Stock ○ Non-stock

Carbide Drills

U Drills

Head Exchangable Drills

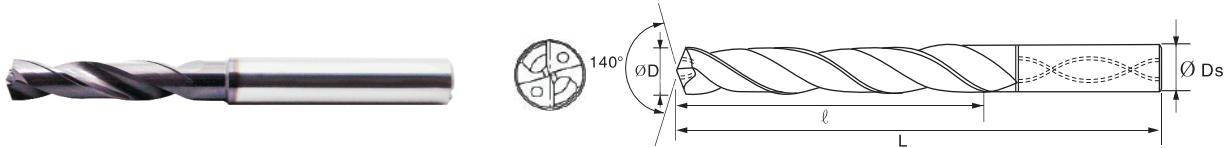
Deep Hole Drills

CDR 45° Chamfer Cutter

Non-standard Tools

## TTS Drill Series 3D with Internal Coolant

|                        |            |                         |                                 |             |       |
|------------------------|------------|-------------------------|---------------------------------|-------------|-------|
| Material               | Carbide    | Helix angle             | 30°                             | Point angle | 140°  |
| Cutting edge tolerance | m7         | Shank tolerance         | h6                              | Standard    | 6537A |
| Coating                | Balzars-PT | Suitable for processing | Steel/Stainless steel/Cast iron |             |       |



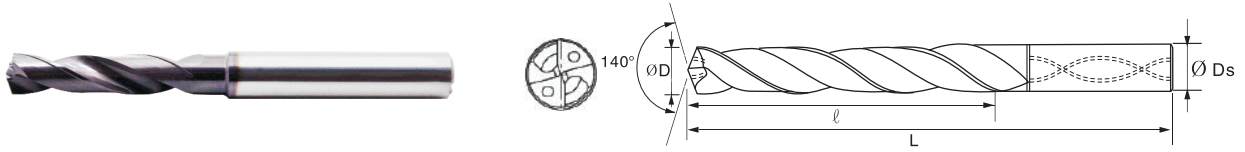
Unit(mm)

| Model No. | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-----------|------------------|----------------|----------------|--------------|-------|
|           | D                | ℓ              | Ds             | L            |       |
| TTS030D6  | 3.0              | 20             | 6              | 62           | ●     |
| TTS031D6  | 3.1              | 20             | 6              | 62           | ●     |
| TTS032D6  | 3.2              | 20             | 6              | 62           | ●     |
| TTS033D6  | 3.3              | 20             | 6              | 62           | ●     |
| TTS034D6  | 3.4              | 20             | 6              | 62           | ●     |
| TTS035D6  | 3.5              | 20             | 6              | 62           | ●     |
| TTS036D6  | 3.6              | 20             | 6              | 62           | ●     |
| TTS037D6  | 3.7              | 20             | 6              | 62           | ●     |
| TTS038D6  | 3.8              | 24             | 6              | 66           | ●     |
| TTS039D6  | 3.9              | 24             | 6              | 66           | ●     |
| TTS040D6  | 4.0              | 24             | 6              | 66           | ●     |
| TTS041D6  | 4.1              | 24             | 6              | 66           | ●     |
| TTS042D6  | 4.2              | 24             | 6              | 66           | ●     |
| TTS043D6  | 4.3              | 24             | 6              | 66           | ●     |
| TTS044D6  | 4.4              | 24             | 6              | 66           | ●     |
| TTS045D6  | 4.5              | 24             | 6              | 66           | ●     |
| TTS046D6  | 4.6              | 24             | 6              | 66           | ●     |
| TTS047D6  | 4.7              | 24             | 6              | 66           | ●     |
| TTS048D6  | 4.8              | 28             | 6              | 66           | ●     |
| TTS049D6  | 4.9              | 28             | 6              | 66           | ●     |
| TTS050D6  | 5.0              | 28             | 6              | 66           | ●     |
| TTS051D6  | 5.1              | 28             | 6              | 66           | ●     |
| TTS052D6  | 5.2              | 28             | 6              | 66           | ●     |
| TTS053D6  | 5.3              | 28             | 6              | 66           | ●     |
| TTS054D6  | 5.4              | 28             | 6              | 66           | ●     |
| TTS055D6  | 5.5              | 28             | 6              | 66           | ●     |
| TTS056D6  | 5.6              | 28             | 6              | 66           | ●     |
| TTS057D6  | 5.7              | 28             | 6              | 66           | ●     |
| TTS058D6  | 5.8              | 28             | 6              | 66           | ●     |
| TTS059D6  | 5.9              | 28             | 6              | 66           | ●     |
| TTS060D6  | 6.0              | 28             | 6              | 66           | ●     |
| TTS061D8  | 6.1              | 34             | 8              | 79           | ●     |
| TTS062D8  | 6.2              | 34             | 8              | 79           | ●     |

● Stock ○ Non-stock

## TTS Drill Series 3D with Internal Coolant

|                        |            |                         |                                 |             |       |
|------------------------|------------|-------------------------|---------------------------------|-------------|-------|
| Material               | Carbide    | Helix angle             | 30°                             | Point angle | 140°  |
| Cutting edge tolerance | m7         | Shank tolerance         | h6                              | Standard    | 6537A |
| Coating                | Balzers-PT | Suitable for processing | Steel/Stainless steel/Cast iron |             |       |



Unit(mm)

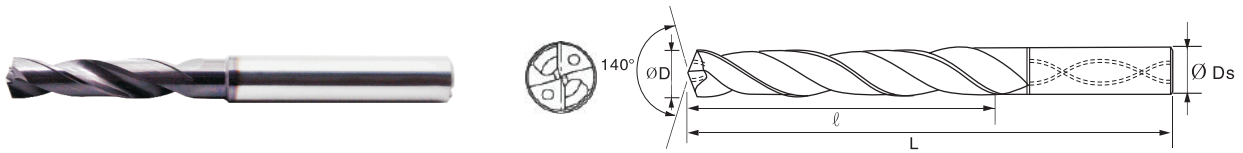
| Model No. | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-----------|------------------|----------------|----------------|--------------|-------|
|           | D                | l              | Ds             | L            |       |
| TTS063D8  | 6.3              | 34             | 8              | 79           | ●     |
| TTS064D8  | 6.4              | 34             | 8              | 79           | ●     |
| TTS065D8  | 6.5              | 34             | 8              | 79           | ●     |
| TTS066D8  | 6.6              | 34             | 8              | 79           | ●     |
| TTS067D8  | 6.7              | 34             | 8              | 79           | ●     |
| TTS068D8  | 6.8              | 34             | 8              | 79           | ●     |
| TTS069D8  | 6.9              | 34             | 8              | 79           | ●     |
| TTS070D8  | 7.0              | 34             | 8              | 79           | ●     |
| TTS071D8  | 7.1              | 41             | 8              | 79           | ●     |
| TTS072D8  | 7.2              | 41             | 8              | 79           | ●     |
| TTS073D8  | 7.3              | 41             | 8              | 79           | ●     |
| TTS074D8  | 7.4              | 41             | 8              | 79           | ●     |
| TTS075D8  | 7.5              | 41             | 8              | 79           | ●     |
| TTS076D8  | 7.6              | 41             | 8              | 79           | ●     |
| TTS077D8  | 7.7              | 41             | 8              | 79           | ●     |
| TTS078D8  | 7.8              | 41             | 8              | 79           | ●     |
| TTS079D8  | 7.9              | 41             | 8              | 79           | ●     |
| TTS080D8  | 8.0              | 41             | 8              | 79           | ●     |
| TTS081D10 | 8.1              | 47             | 10             | 89           | ●     |
| TTS082D10 | 8.2              | 47             | 10             | 89           | ●     |
| TTS083D10 | 8.3              | 47             | 10             | 89           | ●     |
| TTS084D10 | 8.4              | 47             | 10             | 89           | ●     |
| TTS085D10 | 8.5              | 47             | 10             | 89           | ●     |
| TTS086D10 | 8.6              | 47             | 10             | 89           | ●     |
| TTS087D10 | 8.7              | 47             | 10             | 89           | ●     |
| TTS088D10 | 8.8              | 47             | 10             | 89           | ●     |
| TTS089D10 | 8.9              | 47             | 10             | 89           | ●     |
| TTS090D10 | 9.0              | 47             | 10             | 89           | ●     |
| TTS091D10 | 9.1              | 47             | 10             | 89           | ●     |
| TTS092D10 | 9.2              | 47             | 10             | 89           | ●     |
| TTS093D10 | 9.3              | 47             | 10             | 89           | ●     |
| TTS094D10 | 9.4              | 47             | 10             | 89           | ●     |
| TTS095D10 | 9.5              | 47             | 10             | 89           | ●     |

● Stock ○ Non-stock



## TTS Drill Series 3D with Internal Coolant

|                        |            |                         |                                 |             |       |
|------------------------|------------|-------------------------|---------------------------------|-------------|-------|
| Material               | Carbide    | Helix angle             | 30°                             | Point angle | 140°  |
| Cutting edge tolerance | m7         | Shank tolerance         | h6                              | Standard    | 6537A |
| Coating                | Balzers-PT | Suitable for processing | Steel/Stainless steel/Cast iron |             |       |



Unit(mm)

| Model No. | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-----------|------------------|----------------|----------------|--------------|-------|
|           | D                | ℓ              | Ds             | L            |       |
| TTS096D10 | 9.6              | 47             | 10             | 89           | ●     |
| TTS097D10 | 9.7              | 47             | 10             | 89           | ●     |
| TTS098D10 | 9.8              | 47             | 10             | 89           | ●     |
| TTS099D10 | 9.9              | 47             | 10             | 89           | ●     |
| TTS100D10 | 10.0             | 47             | 10             | 89           | ●     |
| TTS101D12 | 10.1             | 55             | 12             | 102          | ●     |
| TTS102D12 | 10.2             | 55             | 12             | 102          | ●     |
| TTS103D12 | 10.3             | 55             | 12             | 102          | ●     |
| TTS104D12 | 10.4             | 55             | 12             | 102          | ●     |
| TTS105D12 | 10.5             | 55             | 12             | 102          | ●     |
| TTS106D12 | 10.6             | 55             | 12             | 102          | ●     |
| TTS107D12 | 10.7             | 55             | 12             | 102          | ●     |
| TTS108D12 | 10.8             | 55             | 12             | 102          | ●     |
| TTS109D12 | 10.9             | 55             | 12             | 102          | ●     |
| TTS110D12 | 11.0             | 55             | 12             | 102          | ●     |
| TTS111D12 | 11.1             | 55             | 12             | 102          | ●     |
| TTS112D12 | 11.2             | 55             | 12             | 102          | ●     |
| TTS113D12 | 11.3             | 55             | 12             | 102          | ●     |
| TTS114D12 | 11.4             | 55             | 12             | 102          | ●     |
| TTS115D12 | 11.5             | 55             | 12             | 102          | ●     |
| TTS116D12 | 11.6             | 55             | 12             | 102          | ●     |
| TTS117D12 | 11.7             | 55             | 12             | 102          | ●     |
| TTS118D12 | 11.8             | 55             | 12             | 102          | ●     |
| TTS119D12 | 11.9             | 55             | 12             | 102          | ●     |
| TTS120D12 | 12.0             | 55             | 12             | 102          | ●     |
| TTS121D14 | 12.1             | 60             | 14             | 107          | ●     |
| TTS122D14 | 12.2             | 60             | 14             | 107          | ●     |
| TTS123D14 | 12.3             | 60             | 14             | 107          | ●     |
| TTS124D14 | 12.4             | 60             | 14             | 107          | ●     |
| TTS125D14 | 12.5             | 60             | 14             | 107          | ●     |
| TTS126D14 | 12.6             | 60             | 14             | 107          | ●     |
| TTS127D14 | 12.7             | 60             | 14             | 107          | ●     |
| TTS128D14 | 12.8             | 60             | 14             | 107          | ●     |

● Stock ○ Non-stock

Carbide Drills

U Drills

Head Exchangable Drills

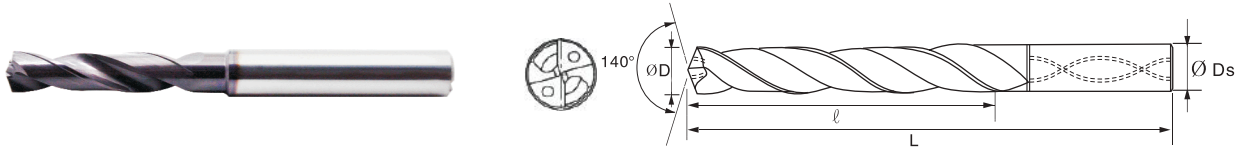
Deep Hole Drills

CDR 45° Chamfer Cutter

Non-standard Tools

## TTS Drill Series 3D with Internal Coolant

|                        |            |                         |                                 |             |       |
|------------------------|------------|-------------------------|---------------------------------|-------------|-------|
| Material               | Carbide    | Helix angle             | 30°                             | Point angle | 140°  |
| Cutting edge tolerance | m7         | Shank tolerance         | h6                              | Standard    | 6537A |
| Coating                | Balzars-PT | Suitable for processing | Steel/Stainless steel/Cast iron |             |       |



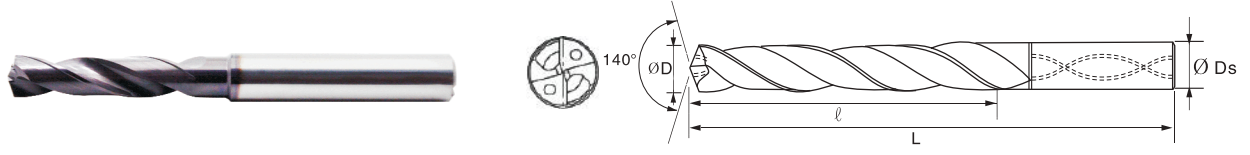
Unit(mm)

| Model No. | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-----------|------------------|----------------|----------------|--------------|-------|
|           | D                | l              | Ds             | L            |       |
| TTS129D14 | 12.9             | 60             | 14             | 107          | ●     |
| TTS130D14 | 13.0             | 60             | 14             | 107          | ●     |
| TTS131D14 | 13.1             | 60             | 14             | 107          | ●     |
| TTS132D14 | 13.2             | 60             | 14             | 107          | ●     |
| TTS133D14 | 13.3             | 60             | 14             | 107          | ●     |
| TTS134D14 | 13.4             | 60             | 14             | 107          | ●     |
| TTS135D14 | 13.5             | 60             | 14             | 107          | ●     |
| TTS136D14 | 13.6             | 60             | 14             | 107          | ●     |
| TTS137D14 | 13.7             | 60             | 14             | 107          | ●     |
| TTS138D14 | 13.8             | 60             | 14             | 107          | ●     |
| TTS139D14 | 13.9             | 60             | 14             | 107          | ●     |
| TTS140D14 | 14.0             | 60             | 14             | 107          | ●     |
| TTS141D16 | 14.1             | 65             | 16             | 115          | ●     |
| TTS142D16 | 14.2             | 65             | 16             | 115          | ●     |
| TTS143D16 | 14.3             | 65             | 16             | 115          | ●     |
| TTS144D16 | 14.4             | 65             | 16             | 115          | ●     |
| TTS145D16 | 14.5             | 65             | 16             | 115          | ●     |
| TTS146D16 | 14.6             | 65             | 16             | 115          | ●     |
| TTS147D16 | 14.7             | 65             | 16             | 115          | ●     |
| TTS148D16 | 14.8             | 65             | 16             | 115          | ●     |
| TTS149D16 | 14.9             | 65             | 16             | 115          | ●     |
| TTS150D16 | 15.0             | 65             | 16             | 115          | ●     |
| TTS151D16 | 15.1             | 65             | 16             | 115          | ●     |
| TTS152D16 | 15.2             | 65             | 16             | 115          | ●     |
| TTS153D16 | 15.3             | 65             | 16             | 115          | ●     |
| TTS154D16 | 15.4             | 65             | 16             | 115          | ●     |
| TTS155D16 | 15.5             | 65             | 16             | 115          | ●     |
| TTS156D16 | 15.6             | 65             | 16             | 115          | ●     |
| TTS157D16 | 15.7             | 65             | 16             | 115          | ●     |
| TTS158D16 | 15.8             | 65             | 16             | 115          | ●     |
| TTS159D16 | 15.9             | 65             | 16             | 115          | ●     |
| TTS160D16 | 16.0             | 65             | 16             | 115          | ●     |
| TTS165D18 | 16.5             | 73             | 18             | 123          | ○     |

● Stock ○ Non-stock

## TTS Drill Series 3D with Internal Coolant

|                        |            |                         |                                 |             |       |
|------------------------|------------|-------------------------|---------------------------------|-------------|-------|
| Material               | Carbide    | Helix angle             | 30°                             | Point angle | 140°  |
| Cutting edge tolerance | m7         | Shank tolerance         | h6                              | Standard    | 6537A |
| Coating                | Balzers-PT | Suitable for processing | Steel/Stainless steel/Cast iron |             |       |



Unit(mm)

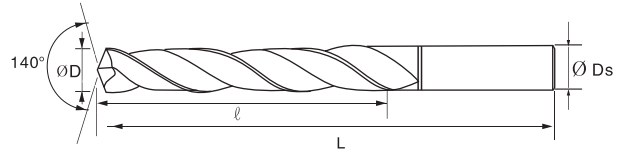
| Model No. | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-----------|------------------|----------------|----------------|--------------|-------|
|           | D                | l              | Ds             | L            |       |
| TTS170D18 | 17.0             | 73             | 18             | 123          | ○     |
| TTS175D18 | 17.5             | 73             | 18             | 123          | ○     |
| TTS180D18 | 18.0             | 73             | 18             | 123          | ○     |
| TTS185D20 | 18.5             | 79             | 20             | 131          | ○     |
| TTS190D20 | 19.0             | 79             | 20             | 131          | ○     |
| TTS195D20 | 19.5             | 79             | 20             | 131          | ○     |
| TTS200D20 | 20.0             | 79             | 20             | 131          | ○     |

● Stock ○ Non-stock

Notice: The MOQ for Non-stock item is 5pcs.

## TTW Drill Series 3D External Coolant(Inch)

|                        |            |                         |                                 |             |       |
|------------------------|------------|-------------------------|---------------------------------|-------------|-------|
| Material               | Carbide    | Helix angle             | 30°                             | Point angle | 140°  |
| Cutting edge tolerance | m7         | Shank tolerance         | h6                              | Standard    | 6537A |
| Coating                | Balzers-PT | Suitable for processing | Steel/Stainless steel/Cast iron |             |       |



Unit(mm)

| Model No.  | Cutting Diameter |       | Cutting Length<br><i>l</i> | Shank Diameter<br><i>Ds</i> | Total Length<br><i>L</i> | Stock |
|------------|------------------|-------|----------------------------|-----------------------------|--------------------------|-------|
|            | D                |       |                            |                             |                          |       |
|            | mm               | inch  |                            |                             |                          |       |
| TTW0318D6  | 3.18             | 1/8   | 20                         | 6                           | 62                       | ○     |
| TTW0357D6  | 3.57             | 9/64  | 20                         | 6                           | 62                       | ○     |
| TTW0397D6  | 3.97             | 5/32  | 24                         | 6                           | 66                       | ○     |
| TTW0437D6  | 4.37             | 11/64 | 24                         | 6                           | 66                       | ○     |
| TTW0476D6  | 4.76             | 3/16  | 26                         | 6                           | 66                       | ○     |
| TTW0516D6  | 5.16             | 13/64 | 28                         | 6                           | 66                       | ○     |
| TTW0556D6  | 5.56             | 7/32  | 28                         | 6                           | 66                       | ○     |
| TTW0595D6  | 5.95             | 15/64 | 28                         | 6                           | 66                       | ○     |
| TTW0635D8  | 6.35             | 1/4   | 34                         | 8                           | 79                       | ○     |
| TTW0675D8  | 6.75             | 17/64 | 34                         | 8                           | 79                       | ○     |
| TTW0714D8  | 7.14             | 9/32  | 41                         | 8                           | 79                       | ○     |
| TTW0754D8  | 7.54             | 19/64 | 41                         | 8                           | 79                       | ○     |
| TTW0794D8  | 7.94             | 5/16  | 41                         | 8                           | 79                       | ○     |
| TTW0833D10 | 8.33             | 21/64 | 47                         | 10                          | 89                       | ○     |
| TTW0873D10 | 8.73             | 11/32 | 47                         | 10                          | 89                       | ○     |
| TTW0913D10 | 9.13             | 23/64 | 47                         | 10                          | 89                       | ○     |
| TTW0952D10 | 9.52             | 3/8   | 47                         | 10                          | 89                       | ○     |
| TTW0992D10 | 9.92             | 25/64 | 47                         | 10                          | 89                       | ○     |
| TTW1032D12 | 10.32            | 13/32 | 55                         | 12                          | 102                      | ○     |
| TTW1072D12 | 10.72            | 27/64 | 55                         | 12                          | 102                      | ○     |
| TTW1111D12 | 11.11            | 7/16  | 55                         | 12                          | 102                      | ○     |
| TTW1151D12 | 11.51            | 29/64 | 55                         | 12                          | 102                      | ○     |
| TTW1191D12 | 11.91            | 15/32 | 55                         | 12                          | 102                      | ○     |
| TTW1349D14 | 13.49            | 17/32 | 60                         | 14                          | 107                      | ○     |
| TTW1389D14 | 13.89            | 35/64 | 60                         | 14                          | 107                      | ○     |
| TTW1429D16 | 14.29            | 9/16  | 65                         | 16                          | 115                      | ○     |
| TTW1468D16 | 14.68            | 37/64 | 65                         | 16                          | 115                      | ○     |
| TTW1508D16 | 15.08            | 19/32 | 65                         | 16                          | 115                      | ○     |
| TTW1548D16 | 15.48            | 39/64 | 65                         | 16                          | 115                      | ○     |
| TTW1588D16 | 15.88            | 5/8   | 65                         | 16                          | 115                      | ○     |
| TTW1627D18 | 16.27            | 41/64 | 73                         | 18                          | 123                      | ○     |
| TTW1667D18 | 16.67            | 21/32 | 73                         | 18                          | 123                      | ○     |
| TTW1707D18 | 17.07            | 43/64 | 73                         | 18                          | 123                      | ○     |
| TTW1746D18 | 17.46            | 11/16 | 73                         | 18                          | 123                      | ○     |

● Stock ○ Non-stock

# High Performance Carbide Drill for General Purpose



Carbide Drills

U Drills

Head Exchangable Drills

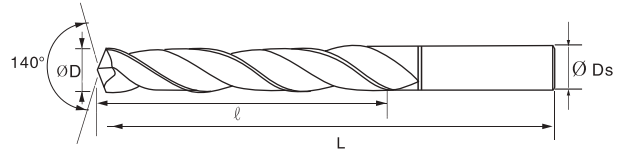
Deep Hole Drills

CDR 45° Chamfer Cutter

Non-standard Tools

## TTW Drill Series 3D External Coolant(Inch)

|                        |            |                         |                                 |             |       |
|------------------------|------------|-------------------------|---------------------------------|-------------|-------|
| Material               | Carbide    | Helix angle             | 30°                             | Point angle | 140°  |
| Cutting edge tolerance | m7         | Shank tolerance         | h6                              | Standard    | 6537A |
| Coating                | Balzars-PT | Suitable for processing | Steel/Stainless steel/Cast iron |             |       |



Unit(mm)

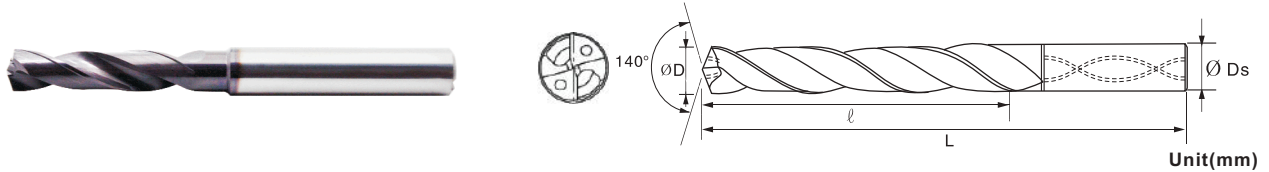
| Model No.  | Cutting Diameter |       | Cutting Length<br><i>l</i> | Shank Diameter<br><i>D<sub>s</sub></i> | Total Length<br><i>L</i> | Stock |
|------------|------------------|-------|----------------------------|--|--------------------------|-------|
|            | D                |       |                            |  |                          |       |
|            | mm               | inch  |                            |  |                          |       |
| TTW1786D18 | 17.86            | 45/64 | 73                         | 18                                     | 123                      | ○     |
| TTW1826D20 | 18.26            | 23/32 | 79                         | 20                                     | 131                      | ○     |
| TTW1865D20 | 18.65            | 47/64 | 79                         | 20                                     | 131                      | ○     |
| TTW1905D20 | 19.05            | 3/4   | 79                         | 20                                     | 131                      | ○     |
| TTW1945D20 | 19.45            | 49/64 | 79                         | 20                                     | 131                      | ○     |
| TTW1984D20 | 19.84            | 25/32 | 79                         | 20                                     | 131                      | ○     |

Notice: The MOQ for Non-stock item is 5pcs.

● Stock ○ Non-stock

## TTS Drill Series 3D with Internal Coolant (Inch)

|                        |            |                         |                                 |             |       |
|------------------------|------------|-------------------------|---------------------------------|-------------|-------|
| Material               | Carbide    | Helix angle             | 30°                             | Point angle | 140°  |
| Cutting edge tolerance | m7         | Shank tolerance         | h6                              | Standard    | 6537A |
| Coating                | Balzers-PT | Suitable for processing | Steel/Stainless steel/Cast iron |             |       |



Unit(mm)

| Model No.  | Cutting Diameter |       | Cutting Length<br><i>l</i> | Shank Diameter<br><i>Ds</i> | Total Length<br><i>L</i> | Stock |
|------------|------------------|-------|----------------------------|-----------------------------|--------------------------|-------|
|            | D                |       |                            |                             |                          |       |
|            | mm               | inch  |                            |                             |                          |       |
| TTS0318D6  | 3.18             | 1/8   | 20                         | 6                           | 62                       | ○     |
| TTS0357D6  | 3.57             | 9/64  | 20                         | 6                           | 62                       | ○     |
| TTS0397D6  | 3.97             | 5/32  | 24                         | 6                           | 66                       | ○     |
| TTS0437D6  | 4.37             | 11/64 | 24                         | 6                           | 66                       | ○     |
| TTS0476D6  | 4.76             | 3/16  | 26                         | 6                           | 66                       | ○     |
| TTS0516D6  | 5.16             | 13/64 | 28                         | 6                           | 66                       | ○     |
| TTS0556D6  | 5.56             | 7/32  | 28                         | 6                           | 66                       | ○     |
| TTS0595D6  | 5.95             | 15/64 | 28                         | 6                           | 66                       | ○     |
| TTS0635D8  | 6.35             | 1/4   | 34                         | 8                           | 79                       | ○     |
| TTS0675D8  | 6.75             | 17/64 | 34                         | 8                           | 79                       | ○     |
| TTS0714D8  | 7.14             | 9/32  | 41                         | 8                           | 79                       | ○     |
| TTS0754D8  | 7.54             | 19/64 | 41                         | 8                           | 79                       | ○     |
| TTS0794D8  | 7.94             | 5/16  | 41                         | 8                           | 79                       | ○     |
| TTS0833D10 | 8.33             | 21/64 | 47                         | 10                          | 89                       | ○     |
| TTS0873D10 | 8.73             | 11/32 | 47                         | 10                          | 89                       | ○     |
| TTS0913D10 | 9.13             | 23/64 | 47                         | 10                          | 89                       | ○     |
| TTS0952D10 | 9.52             | 3/8   | 47                         | 10                          | 89                       | ○     |
| TTS0992D10 | 9.92             | 25/64 | 47                         | 10                          | 89                       | ○     |
| TTS1032D12 | 10.32            | 13/32 | 55                         | 12                          | 102                      | ○     |
| TTS1072D12 | 10.72            | 27/64 | 55                         | 12                          | 102                      | ○     |
| TTS1111D12 | 11.11            | 7/16  | 55                         | 12                          | 102                      | ○     |
| TTS1151D12 | 11.51            | 29/64 | 55                         | 12                          | 102                      | ○     |
| TTS1191D12 | 11.91            | 15/32 | 55                         | 12                          | 102                      | ○     |
| TTS1349D14 | 13.49            | 17/32 | 60                         | 14                          | 107                      | ○     |
| TTS1389D14 | 13.89            | 35/64 | 65                         | 14                          | 115                      | ○     |
| TTS1429D16 | 14.29            | 9/16  | 65                         | 16                          | 115                      | ○     |
| TTS1468D16 | 14.68            | 37/64 | 65                         | 16                          | 115                      | ○     |
| TTS1508D16 | 15.08            | 19/32 | 65                         | 16                          | 115                      | ○     |
| TTS1548D16 | 15.48            | 39/64 | 65                         | 16                          | 115                      | ○     |
| TTS1588D16 | 15.88            | 5/8   | 65                         | 16                          | 115                      | ○     |
| TTS1627D18 | 16.27            | 41/64 | 73                         | 18                          | 123                      | ○     |
| TTS1667D18 | 16.67            | 21/32 | 73                         | 18                          | 123                      | ○     |
| TTS1707D18 | 17.07            | 43/64 | 73                         | 18                          | 123                      | ○     |
| TTS1746D18 | 17.46            | 11/16 | 73                         | 18                          | 123                      | ○     |

● Stock ○ Non-stock

# High Performance Carbide Drill for General Purpose



Carbide Drills

U Drills

Head Exchangable Drills

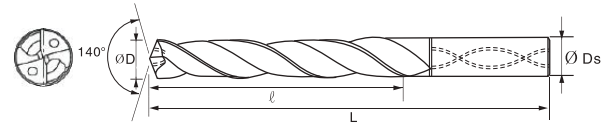
Deep Hole Drills

CDR 45° Chamfer Cutter

Non-standard Tools

## TTS Drill Series 3D with Internal Coolant (Inch)

|                        |            |                         |                                 |             |       |
|------------------------|------------|-------------------------|---------------------------------|-------------|-------|
| Material               | Carbide    | Helix angle             | 30°                             | Point angle | 140°  |
| Cutting edge tolerance | m7         | Shank tolerance         | h6                              | Standard    | 6537A |
| Coating                | Balzars-PT | Suitable for processing | Steel/Stainless steel/Cast iron |             |       |



Unit(mm)

| Model No.  | Cutting Diameter |       | Cutting Length<br><i>l</i> | Shank Diameter<br><i>Ds</i> | Total Length<br><i>L</i> | Stock |
|------------|------------------|-------|----------------------------|-----------------------------|--------------------------|-------|
|            | D                |       |                            |                             |                          |       |
|            | mm               | inch  |                            |                             |                          |       |
| TTS1786D18 | 17.86            | 45/64 | 73                         | 18                          | 123                      | ○     |
| TTS1826D20 | 18.26            | 23/32 | 79                         | 20                          | 131                      | ○     |
| TTS1865D20 | 18.65            | 47/64 | 79                         | 20                          | 131                      | ○     |
| TTS1905D20 | 19.05            | 3/4   | 79                         | 20                          | 131                      | ○     |
| TTS1945D20 | 19.45            | 49/64 | 79                         | 20                          | 131                      | ○     |
| TTS1984D20 | 19.84            | 25/32 | 79                         | 20                          | 131                      | ○     |

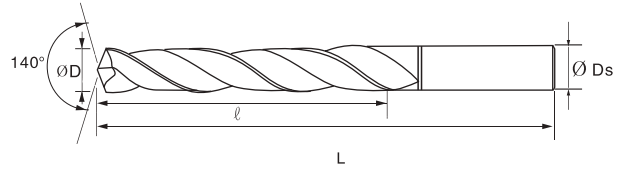
Notice: The MOQ for Non-stock item is 5pcs.

● Stock ○ Non-stock



## TTW Drill Series 5D External Coolant

|                        |            |                         |                                 |             |       |
|------------------------|------------|-------------------------|---------------------------------|-------------|-------|
| Material               | Carbide    | Helix angle             | 30°                             | Point angle | 140°  |
| Cutting edge tolerance | m7         | Shank tolerance         | h6                              | Standard    | 6537A |
| Coating                | Balzers-PT | Suitable for processing | Steel/Stainless steel/Cast iron |             |       |



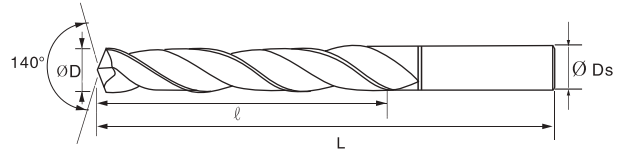
Unit(mm)

| Model No.  | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|------------|------------------|----------------|----------------|--------------|-------|
|            | D                | ℓ              | Ds             | L            |       |
| TTW05030D6 | 3.0              | 26             | 6              | 66           | ●     |
| TTW05031D6 | 3.1              | 26             | 6              | 66           | ●     |
| TTW05032D6 | 3.2              | 26             | 6              | 66           | ●     |
| TTW05033D6 | 3.3              | 26             | 6              | 66           | ●     |
| TTW05034D6 | 3.4              | 26             | 6              | 66           | ●     |
| TTW05035D6 | 3.5              | 26             | 6              | 66           | ●     |
| TTW05036D6 | 3.6              | 26             | 6              | 66           | ●     |
| TTW05037D6 | 3.7              | 26             | 6              | 66           | ●     |
| TTW05038D6 | 3.8              | 34             | 6              | 74           | ●     |
| TTW05039D6 | 3.9              | 34             | 6              | 74           | ●     |
| TTW05040D6 | 4.0              | 34             | 6              | 74           | ●     |
| TTW05041D6 | 4.1              | 34             | 6              | 74           | ●     |
| TTW05042D6 | 4.2              | 34             | 6              | 74           | ●     |
| TTW05043D6 | 4.3              | 34             | 6              | 74           | ●     |
| TTW05044D6 | 4.4              | 34             | 6              | 74           | ●     |
| TTW05045D6 | 4.5              | 34             | 6              | 74           | ●     |
| TTW05046D6 | 4.6              | 34             | 6              | 74           | ●     |
| TTW05047D6 | 4.7              | 34             | 6              | 74           | ●     |
| TTW05048D6 | 4.8              | 44             | 6              | 82           | ●     |
| TTW05049D6 | 4.9              | 44             | 6              | 82           | ●     |
| TTW05050D6 | 5.0              | 44             | 6              | 82           | ●     |
| TTW05051D6 | 5.1              | 44             | 6              | 82           | ●     |
| TTW05052D6 | 5.2              | 44             | 6              | 82           | ●     |
| TTW05053D6 | 5.3              | 44             | 6              | 82           | ●     |
| TTW05054D6 | 5.4              | 44             | 6              | 82           | ●     |
| TTW05055D6 | 5.5              | 44             | 6              | 82           | ●     |
| TTW05056D6 | 5.6              | 44             | 6              | 82           | ●     |
| TTW05057D6 | 5.7              | 44             | 6              | 82           | ●     |
| TTW05058D6 | 5.8              | 44             | 6              | 82           | ●     |
| TTW05059D6 | 5.9              | 44             | 6              | 82           | ●     |
| TTW05060D6 | 6.0              | 44             | 6              | 82           | ●     |
| TTW05061D8 | 6.1              | 44             | 8              | 82           | ●     |

● Stock ○ Non-stock

## TTW Drill Series 5D External Coolant

|                        |            |                         |                                 |             |       |
|------------------------|------------|-------------------------|---------------------------------|-------------|-------|
| Material               | Carbide    | Helix angle             | 30°                             | Point angle | 140°  |
| Cutting edge tolerance | m7         | Shank tolerance         | h6                              | Standard    | 6537A |
| Coating                | Balzers-PT | Suitable for processing | Steel/Stainless steel/Cast iron |             |       |



Unit(mm)

| Model No.   | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-------------|------------------|----------------|----------------|--------------|-------|
|             | D                | ℓ              | Ds             | L            |       |
| TTW05062D8  | 6.2              | 53             | 8              | 91           | ●     |
| TTW05063D8  | 6.3              | 53             | 8              | 91           | ●     |
| TTW05064D8  | 6.4              | 53             | 8              | 91           | ●     |
| TTW05065D8  | 6.5              | 53             | 8              | 91           | ●     |
| TTW05066D8  | 6.6              | 53             | 8              | 91           | ●     |
| TTW05067D8  | 6.7              | 53             | 8              | 91           | ●     |
| TTW05068D8  | 6.8              | 53             | 8              | 91           | ●     |
| TTW05069D8  | 6.9              | 53             | 8              | 91           | ●     |
| TTW05070D8  | 7.0              | 53             | 8              | 91           | ●     |
| TTW05071D8  | 7.1              | 53             | 8              | 91           | ●     |
| TTW05072D8  | 7.2              | 53             | 8              | 91           | ●     |
| TTW05073D8  | 7.3              | 53             | 8              | 91           | ●     |
| TTW05074D8  | 7.4              | 53             | 8              | 91           | ●     |
| TTW05075D8  | 7.5              | 53             | 8              | 91           | ●     |
| TTW05076D8  | 7.6              | 53             | 8              | 91           | ●     |
| TTW05077D8  | 7.7              | 53             | 8              | 91           | ●     |
| TTW05078D8  | 7.8              | 53             | 8              | 91           | ●     |
| TTW05079D8  | 7.9              | 53             | 8              | 91           | ●     |
| TTW05080D8  | 8.0              | 53             | 8              | 91           | ●     |
| TTW05081D10 | 8.1              | 61             | 10             | 103          | ●     |
| TTW05082D10 | 8.2              | 61             | 10             | 103          | ●     |
| TTW05083D10 | 8.3              | 61             | 10             | 103          | ●     |
| TTW05084D10 | 8.4              | 61             | 10             | 103          | ●     |
| TTW05085D10 | 8.5              | 61             | 10             | 103          | ●     |
| TTW05086D10 | 8.6              | 61             | 10             | 103          | ●     |
| TTW05087D10 | 8.7              | 61             | 10             | 103          | ●     |
| TTW05088D10 | 8.8              | 61             | 10             | 103          | ●     |
| TTW05089D10 | 8.9              | 61             | 10             | 103          | ●     |
| TTW05090D10 | 9.0              | 61             | 10             | 103          | ●     |
| TTW05091D10 | 9.1              | 61             | 10             | 103          | ●     |
| TTW05092D10 | 9.2              | 61             | 10             | 103          | ●     |
| TTW05093D10 | 9.3              | 61             | 10             | 103          | ●     |
| TTW05094D10 | 9.4              | 61             | 10             | 103          | ●     |

● Stock ○ Non-stock

Carbide Drills

U Drills

Head Exchangable Drills

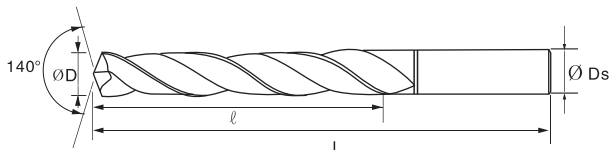
Deep Hole Drills

CDR 45° Chamfer Cutter

Non-standard Tools

## TTW Drill Series 5D External Coolant

|                        |            |                         |                                 |             |       |
|------------------------|------------|-------------------------|---------------------------------|-------------|-------|
| Material               | Carbide    | Helix angle             | 30°                             | Point angle | 140°  |
| Cutting edge tolerance | m7         | Shank tolerance         | h6                              | Standard    | 6537A |
| Coating                | Balzars-PT | Suitable for processing | Steel/Stainless steel/Cast iron |             |       |

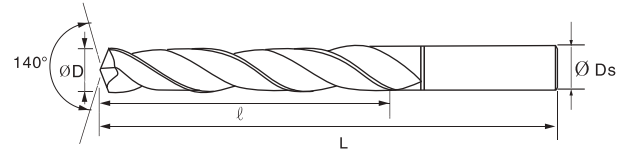


Unit(mm)

| Model No.   | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-------------|------------------|----------------|----------------|--------------|-------|
|             | D                | l              | Ds             | L            |       |
| TTW05095D10 | 9.5              | 61             | 10             | 103          | ●     |
| TTW05096D10 | 9.6              | 61             | 10             | 103          | ●     |
| TTW05097D10 | 9.7              | 61             | 10             | 103          | ●     |
| TTW05098D10 | 9.8              | 61             | 10             | 103          | ●     |
| TTW05099D10 | 9.9              | 61             | 10             | 103          | ●     |
| TTW05100D10 | 10.0             | 61             | 10             | 103          | ●     |
| TTW05101D12 | 10.1             | 71             | 12             | 118          | ●     |
| TTW05102D12 | 10.2             | 71             | 12             | 118          | ●     |
| TTW05103D12 | 10.3             | 71             | 12             | 118          | ●     |
| TTW05104D12 | 10.4             | 71             | 12             | 118          | ●     |
| TTW05105D12 | 10.5             | 71             | 12             | 118          | ●     |
| TTW05106D12 | 10.6             | 71             | 12             | 118          | ●     |
| TTW05107D12 | 10.7             | 71             | 12             | 118          | ●     |
| TTW05108D12 | 10.8             | 71             | 12             | 118          | ●     |
| TTW05109D12 | 10.9             | 71             | 12             | 118          | ●     |
| TTW05110D12 | 11.0             | 71             | 12             | 118          | ●     |
| TTW05111D12 | 11.1             | 71             | 12             | 118          | ●     |
| TTW05112D12 | 11.2             | 71             | 12             | 118          | ●     |
| TTW05113D12 | 11.3             | 71             | 12             | 118          | ●     |
| TTW05114D12 | 11.4             | 71             | 12             | 118          | ●     |
| TTW05115D12 | 11.5             | 71             | 12             | 118          | ●     |
| TTW05116D12 | 11.6             | 71             | 12             | 118          | ●     |
| TTW05117D12 | 11.7             | 71             | 12             | 118          | ●     |
| TTW05118D12 | 11.8             | 71             | 12             | 118          | ●     |
| TTW05119D12 | 11.9             | 71             | 12             | 118          | ●     |
| TTW05120D12 | 12.0             | 71             | 12             | 118          | ●     |
| TTW05121D14 | 12.1             | 77             | 14             | 124          | ●     |
| TTW05122D14 | 12.2             | 77             | 14             | 124          | ●     |
| TTW05123D14 | 12.3             | 77             | 14             | 124          | ●     |
| TTW05124D14 | 12.4             | 77             | 14             | 124          | ●     |
| TTW05125D14 | 12.5             | 77             | 14             | 124          | ●     |
| TTW05126D14 | 12.6             | 77             | 14             | 124          | ●     |
| TTW05127D14 | 12.7             | 77             | 14             | 124          | ●     |

● Stock ○ Non-stock

| TTW Drill Series 5D External Coolant |            |                         |                                 |             |       |
|--------------------------------------|------------|-------------------------|---------------------------------|-------------|-------|
| Material                             | Carbide    | Helix angle             | 30°                             | Point angle | 140°  |
| Cutting edge tolerance               | m7         | Shank tolerance         | h6                              | Standard    | 6537A |
| Coating                              | Balzars-PT | Suitable for processing | Steel/Stainless steel/Cast iron |             |       |



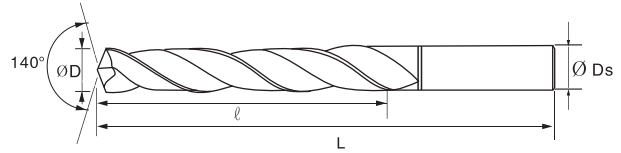
Unit(mm)

| Model No.   | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-------------|------------------|----------------|----------------|--------------|-------|
|             | D                | l              | Ds             | L            |       |
| TTW05128D14 | 12.8             | 77             | 14             | 124          | ●     |
| TTW05129D14 | 12.9             | 77             | 14             | 124          | ●     |
| TTW05130D14 | 13.0             | 77             | 14             | 124          | ●     |
| TTW05131D14 | 13.1             | 77             | 14             | 124          | ●     |
| TTW05132D14 | 13.2             | 77             | 14             | 124          | ●     |
| TTW05133D14 | 13.3             | 77             | 14             | 124          | ●     |
| TTW05134D14 | 13.4             | 77             | 14             | 124          | ●     |
| TTW05135D14 | 13.5             | 77             | 14             | 124          | ●     |
| TTW05136D14 | 13.6             | 77             | 14             | 124          | ●     |
| TTW05137D14 | 13.7             | 77             | 14             | 124          | ●     |
| TTW05138D14 | 13.8             | 77             | 14             | 124          | ●     |
| TTW05139D14 | 13.9             | 77             | 14             | 124          | ●     |
| TTW05140D14 | 14.0             | 77             | 14             | 124          | ●     |
| TTW05141D16 | 14.1             | 83             | 16             | 133          | ●     |
| TTW05142D16 | 14.2             | 83             | 16             | 133          | ●     |
| TTW05143D16 | 14.3             | 83             | 16             | 133          | ●     |
| TTW05144D16 | 14.4             | 83             | 16             | 133          | ●     |
| TTW05145D16 | 14.5             | 83             | 16             | 133          | ●     |
| TTW05146D16 | 14.6             | 83             | 16             | 133          | ●     |
| TTW05147D16 | 14.7             | 83             | 16             | 133          | ●     |
| TTW05148D16 | 14.8             | 83             | 16             | 133          | ●     |
| TTW05149D16 | 14.9             | 83             | 16             | 133          | ●     |
| TTW05150D16 | 15.0             | 83             | 16             | 133          | ●     |
| TTW05151D16 | 15.1             | 83             | 16             | 133          | ●     |
| TTW05152D16 | 15.2             | 83             | 16             | 133          | ●     |
| TTW05153D16 | 15.3             | 83             | 16             | 133          | ●     |
| TTW05154D16 | 15.4             | 83             | 16             | 133          | ●     |
| TTW05155D16 | 15.5             | 83             | 16             | 133          | ●     |
| TTW05156D16 | 15.6             | 83             | 16             | 133          | ●     |
| TTW05157D16 | 15.7             | 83             | 16             | 133          | ●     |
| TTW05158D16 | 15.8             | 83             | 16             | 133          | ●     |
| TTW05159D16 | 15.9             | 83             | 16             | 133          | ●     |
| TTW05160D16 | 16.0             | 83             | 16             | 133          | ●     |

● Stock ○ Non-stock

## TTW Drill Series 5D External Coolant

|                        |            |                         |                                 |             |       |
|------------------------|------------|-------------------------|---------------------------------|-------------|-------|
| Material               | Carbide    | Helix angle             | 30°                             | Point angle | 140°  |
| Cutting edge tolerance | m7         | Shank tolerance         | h6                              | Standard    | 6537A |
| Coating                | Balzars-PT | Suitable for processing | Steel/Stainless steel/Cast iron |             |       |



Unit(mm)

| Model No.   | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-------------|------------------|----------------|----------------|--------------|-------|
|             | D                | l              | Ds             | L            |       |
| TTW05165D18 | 16.5             | 93             | 18             | 143          | ○     |
| TTW05170D18 | 17.0             | 93             | 18             | 143          | ○     |
| TTW05175D18 | 17.5             | 93             | 18             | 143          | ○     |
| TTW05180D18 | 18.0             | 93             | 18             | 143          | ○     |
| TTW05185D20 | 18.5             | 101            | 20             | 153          | ○     |
| TTW05190D20 | 19.0             | 101            | 20             | 153          | ○     |
| TTW05195D20 | 19.5             | 101            | 20             | 153          | ○     |
| TTW05200D20 | 20.0             | 101            | 20             | 153          | ○     |

Notice: The MOQ for Non-stock item is 5pcs.

● Stock ○ Non-stock

Carbide Drills

U Drills

Head Exchangable Drills

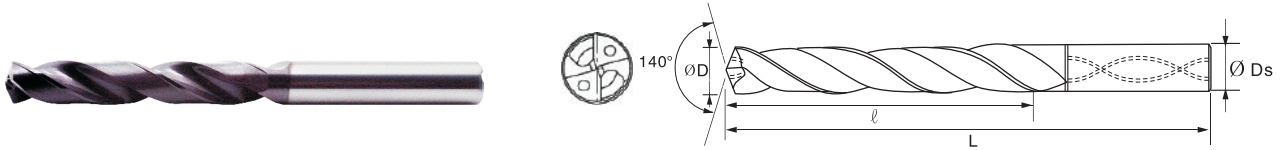
Deep Hole Drills

CDR 45° Chamfer Cutter

Non-standard Tools

## TTS Drill Series 5D with Internal Coolant

|                        |            |                         |                                 |             |       |
|------------------------|------------|-------------------------|---------------------------------|-------------|-------|
| Material               | Carbide    | Helix angle             | 30°                             | Point angle | 140°  |
| Cutting edge tolerance | m7         | Shank tolerance         | h6                              | Standard    | 6537A |
| Coating                | Balzers-PT | Suitable for processing | Steel/Stainless steel/Cast iron |             |       |



Unit(mm)

| Model No.  | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|------------|------------------|----------------|----------------|--------------|-------|
|            | D                | l              | Ds             | L            |       |
| TTS05030D6 | 3.0              | 26             | 6              | 66           | ●     |
| TTS05031D6 | 3.1              | 26             | 6              | 66           | ●     |
| TTS05032D6 | 3.2              | 26             | 6              | 66           | ●     |
| TTS05033D6 | 3.3              | 26             | 6              | 66           | ●     |
| TTS05034D6 | 3.4              | 26             | 6              | 66           | ●     |
| TTS05035D6 | 3.5              | 26             | 6              | 66           | ●     |
| TTS05036D6 | 3.6              | 26             | 6              | 66           | ●     |
| TTS05037D6 | 3.7              | 26             | 6              | 66           | ●     |
| TTS05038D6 | 3.8              | 34             | 6              | 74           | ●     |
| TTS05039D6 | 3.9              | 34             | 6              | 74           | ●     |
| TTS05040D6 | 4.0              | 34             | 6              | 74           | ●     |
| TTS05041D6 | 4.1              | 34             | 6              | 74           | ●     |
| TTS05042D6 | 4.2              | 34             | 6              | 74           | ●     |
| TTS05043D6 | 4.3              | 34             | 6              | 74           | ●     |
| TTS05044D6 | 4.4              | 34             | 6              | 74           | ●     |
| TTS05045D6 | 4.5              | 34             | 6              | 74           | ●     |
| TTS05046D6 | 4.6              | 34             | 6              | 74           | ●     |
| TTS05047D6 | 4.7              | 34             | 6              | 74           | ●     |
| TTS05048D6 | 4.8              | 44             | 6              | 82           | ●     |
| TTS05049D6 | 4.9              | 44             | 6              | 82           | ●     |
| TTS05050D6 | 5.0              | 44             | 6              | 82           | ●     |
| TTS05051D6 | 5.1              | 44             | 6              | 82           | ●     |
| TTS05052D6 | 5.2              | 44             | 6              | 82           | ●     |
| TTS05053D6 | 5.3              | 44             | 6              | 82           | ●     |
| TTS05054D6 | 5.4              | 44             | 6              | 82           | ●     |
| TTS05055D6 | 5.5              | 44             | 6              | 82           | ●     |
| TTS05056D6 | 5.6              | 44             | 6              | 82           | ●     |
| TTS05057D6 | 5.7              | 44             | 6              | 82           | ●     |
| TTS05058D6 | 5.8              | 44             | 6              | 82           | ●     |
| TTS05059D6 | 5.9              | 44             | 6              | 82           | ●     |
| TTS05060D6 | 6.0              | 44             | 6              | 82           | ●     |
| TTS05061D8 | 6.1              | 44             | 8              | 82           | ●     |
| TTS05062D8 | 6.2              | 53             | 8              | 91           | ●     |
| TTS05063D8 | 6.3              | 53             | 8              | 91           | ●     |
| TTS05064D8 | 6.4              | 53             | 8              | 91           | ●     |
| TTS05065D8 | 6.5              | 53             | 8              | 91           | ●     |

● Stock ○ Non-stock

Carbide Drills

U Drills

Head Exchangable Drills

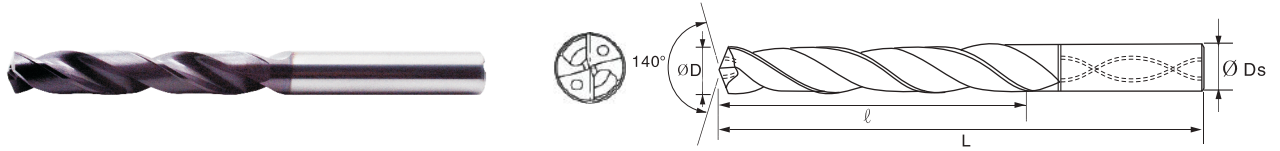
Deep Hole Drills

CDR 45° Chamfer Cutter

Non-standard Tools

## TTS Drill Series 5D with Internal Coolant

|                        |            |                         |                                 |             |       |
|------------------------|------------|-------------------------|---------------------------------|-------------|-------|
| Material               | Carbide    | Helix angle             | 30°                             | Point angle | 140°  |
| Cutting edge tolerance | m7         | Shank tolerance         | h6                              | Standard    | 6537A |
| Coating                | Balzars-PT | Suitable for processing | Steel/Stainless steel/Cast iron |             |       |



Unit(mm)

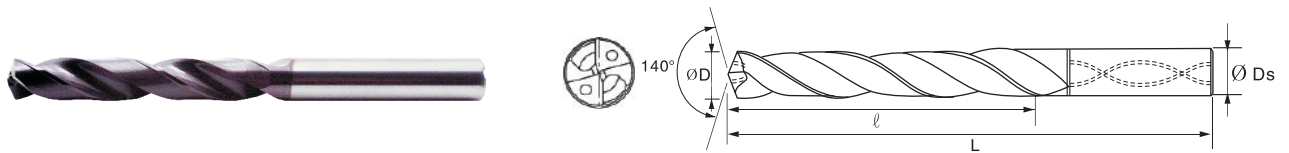
| Model No.   | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-------------|------------------|----------------|----------------|--------------|-------|
|             | D                | $\ell$         | Ds             | L            |       |
| TTS05066D8  | 6.6              | 53             | 8              | 91           | ●     |
| TTS05067D8  | 6.7              | 53             | 8              | 91           | ●     |
| TTS05068D8  | 6.8              | 53             | 8              | 91           | ●     |
| TTS05069D8  | 6.9              | 53             | 8              | 91           | ●     |
| TTS05070D8  | 7.0              | 53             | 8              | 91           | ●     |
| TTS05071D8  | 7.1              | 53             | 8              | 91           | ●     |
| TTS05072D8  | 7.2              | 53             | 8              | 91           | ●     |
| TTS05073D8  | 7.3              | 53             | 8              | 91           | ●     |
| TTS05074D8  | 7.4              | 53             | 8              | 91           | ●     |
| TTS05075D8  | 7.5              | 53             | 8              | 91           | ●     |
| TTS05076D8  | 7.6              | 53             | 8              | 91           | ●     |
| TTS05077D8  | 7.7              | 53             | 8              | 91           | ●     |
| TTS05078D8  | 7.8              | 53             | 8              | 91           | ●     |
| TTS05079D8  | 7.9              | 53             | 8              | 91           | ●     |
| TTS05080D8  | 8.0              | 53             | 8              | 91           | ●     |
| TTS05081D10 | 8.1              | 61             | 10             | 103          | ●     |
| TTS05082D10 | 8.2              | 61             | 10             | 103          | ●     |
| TTS05083D10 | 8.3              | 61             | 10             | 103          | ●     |
| TTS05084D10 | 8.4              | 61             | 10             | 103          | ●     |
| TTS05085D10 | 8.5              | 61             | 10             | 103          | ●     |
| TTS05086D10 | 8.6              | 61             | 10             | 103          | ●     |
| TTS05087D10 | 8.7              | 61             | 10             | 103          | ●     |
| TTS05088D10 | 8.8              | 61             | 10             | 103          | ●     |
| TTS05089D10 | 8.9              | 61             | 10             | 103          | ●     |
| TTS05090D10 | 9.0              | 61             | 10             | 103          | ●     |
| TTS05091D10 | 9.1              | 61             | 10             | 103          | ●     |
| TTS05092D10 | 9.2              | 61             | 10             | 103          | ●     |
| TTS05093D10 | 9.3              | 61             | 10             | 103          | ●     |
| TTS05094D10 | 9.4              | 61             | 10             | 103          | ●     |
| TTS05095D10 | 9.5              | 61             | 10             | 103          | ●     |
| TTS05096D10 | 9.6              | 61             | 10             | 103          | ●     |
| TTS05097D10 | 9.7              | 61             | 10             | 103          | ●     |
| TTS05098D10 | 9.8              | 61             | 10             | 103          | ●     |
| TTS05099D10 | 9.9              | 61             | 10             | 103          | ●     |
| TTS05100D10 | 10.0             | 61             | 10             | 103          | ●     |
| TTS05101D12 | 10.1             | 71             | 12             | 118          | ●     |
| TTS05102D12 | 10.2             | 71             | 12             | 118          | ●     |

● Stock ○ Non-stock



## TTS Drill Series 5D with Internal Coolant

|                        |            |                         |                                 |             |       |
|------------------------|------------|-------------------------|---------------------------------|-------------|-------|
| Material               | Carbide    | Helix angle             | 30°                             | Point angle | 140°  |
| Cutting edge tolerance | m7         | Shank tolerance         | h6                              | Standard    | 6537A |
| Coating                | Balzars-PT | Suitable for processing | Steel/Stainless steel/Cast iron |             |       |



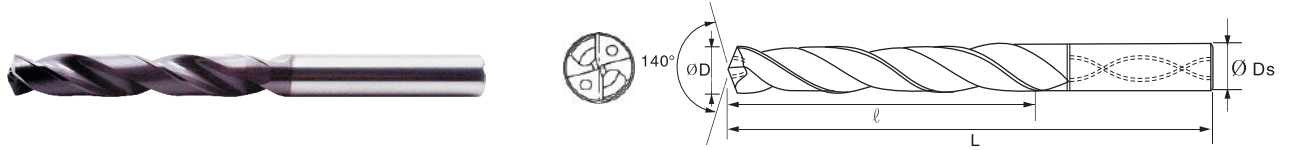
Unit(mm)

| Model No.   | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-------------|------------------|----------------|----------------|--------------|-------|
|             | D                | l              | Ds             | L            |       |
| TTS05103D12 | 10.3             | 71             | 12             | 118          | ●     |
| TTS05104D12 | 10.4             | 71             | 12             | 118          | ●     |
| TTS05105D12 | 10.5             | 71             | 12             | 118          | ●     |
| TTS05106D12 | 10.6             | 71             | 12             | 118          | ●     |
| TTS05107D12 | 10.7             | 71             | 12             | 118          | ●     |
| TTS05108D12 | 10.8             | 71             | 12             | 118          | ●     |
| TTS05109D12 | 10.9             | 71             | 12             | 118          | ●     |
| TTS05110D12 | 11.0             | 71             | 12             | 118          | ●     |
| TTS05111D12 | 11.1             | 71             | 12             | 118          | ●     |
| TTS05112D12 | 11.2             | 71             | 12             | 118          | ●     |
| TTS05113D12 | 11.3             | 71             | 12             | 118          | ●     |
| TTS05114D12 | 11.4             | 71             | 12             | 118          | ●     |
| TTS05115D12 | 11.5             | 71             | 12             | 118          | ●     |
| TTS05116D12 | 11.6             | 71             | 12             | 118          | ●     |
| TTS05117D12 | 11.7             | 71             | 12             | 118          | ●     |
| TTS05118D12 | 11.8             | 71             | 12             | 118          | ●     |
| TTS05119D12 | 11.9             | 71             | 12             | 118          | ●     |
| TTS05120D12 | 12.0             | 71             | 12             | 118          | ●     |
| TTS05121D14 | 12.1             | 77             | 14             | 124          | ●     |
| TTS05122D14 | 12.2             | 77             | 14             | 124          | ●     |
| TTS05123D14 | 12.3             | 77             | 14             | 124          | ●     |
| TTS05124D14 | 12.4             | 77             | 14             | 124          | ●     |
| TTS05125D14 | 12.5             | 77             | 14             | 124          | ●     |
| TTS05126D14 | 12.6             | 77             | 14             | 124          | ●     |
| TTS05127D14 | 12.7             | 77             | 14             | 124          | ●     |
| TTS05128D14 | 12.8             | 77             | 14             | 124          | ●     |
| TTS05129D14 | 12.9             | 77             | 14             | 124          | ●     |
| TTS05130D14 | 13.0             | 77             | 14             | 124          | ●     |
| TTS05131D14 | 13.1             | 77             | 14             | 124          | ●     |
| TTS05132D14 | 13.2             | 77             | 14             | 124          | ●     |
| TTS05133D14 | 13.3             | 77             | 14             | 124          | ●     |
| TTS05134D14 | 13.4             | 77             | 14             | 124          | ●     |
| TTS05135D14 | 13.5             | 77             | 14             | 124          | ●     |
| TTS05136D14 | 13.6             | 77             | 14             | 124          | ●     |
| TTS05137D14 | 13.7             | 77             | 14             | 124          | ●     |
| TTS05138D14 | 13.8             | 77             | 14             | 124          | ●     |
| TTS05139D14 | 13.9             | 77             | 14             | 124          | ●     |

● Stock ○ Non-stock

## TTS Drill Series 5D with Internal Coolant

|                        |            |                         |                                 |             |       |
|------------------------|------------|-------------------------|---------------------------------|-------------|-------|
| Material               | Carbide    | Helix angle             | 30°                             | Point angle | 140°  |
| Cutting edge tolerance | m7         | Shank tolerance         | h6                              | Standard    | 6537A |
| Coating                | Balzars-PT | Suitable for processing | Steel/Stainless steel/Cast iron |             |       |



Unit(mm)

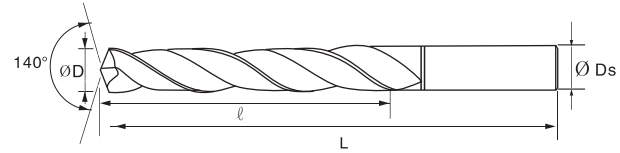
| Model No.   | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-------------|------------------|----------------|----------------|--------------|-------|
|             | D                | l              | Ds             | L            |       |
| TTS05140D14 | 14.0             | 77             | 14             | 124          | ●     |
| TTS05141D16 | 14.1             | 83             | 16             | 133          | ●     |
| TTS05142D16 | 14.2             | 83             | 16             | 133          | ●     |
| TTS05143D16 | 14.3             | 83             | 16             | 133          | ●     |
| TTS05144D16 | 14.4             | 83             | 16             | 133          | ●     |
| TTS05145D16 | 14.5             | 83             | 16             | 133          | ●     |
| TTS05146D16 | 14.6             | 83             | 16             | 133          | ●     |
| TTS05147D16 | 14.7             | 83             | 16             | 133          | ●     |
| TTS05148D16 | 14.8             | 83             | 16             | 133          | ●     |
| TTS05149D16 | 14.9             | 83             | 16             | 133          | ●     |
| TTS05150D16 | 15.0             | 83             | 16             | 133          | ●     |
| TTS05151D16 | 15.1             | 83             | 16             | 133          | ●     |
| TTS05152D16 | 15.2             | 83             | 16             | 133          | ●     |
| TTS05153D16 | 15.3             | 83             | 16             | 133          | ●     |
| TTS05154D16 | 15.4             | 83             | 16             | 133          | ●     |
| TTS05155D16 | 15.5             | 83             | 16             | 133          | ●     |
| TTS05156D16 | 15.6             | 83             | 16             | 133          | ●     |
| TTS05157D16 | 15.7             | 83             | 16             | 133          | ●     |
| TTS05158D16 | 15.8             | 83             | 16             | 133          | ●     |
| TTS05159D16 | 15.9             | 83             | 16             | 133          | ●     |
| TTS05160D16 | 16.0             | 83             | 16             | 133          | ●     |
| TTS05165D18 | 16.5             | 93             | 18             | 143          | ○     |
| TTS05170D18 | 17.0             | 93             | 18             | 143          | ○     |
| TTS05175D18 | 17.5             | 93             | 18             | 143          | ○     |
| TTS05180D18 | 18.0             | 93             | 18             | 143          | ○     |
| TTS05185D20 | 18.5             | 101            | 20             | 153          | ○     |
| TTS05190D20 | 19.0             | 101            | 20             | 153          | ○     |
| TTS05195D20 | 19.5             | 101            | 20             | 153          | ○     |
| TTS05200D20 | 20.0             | 101            | 20             | 153          | ○     |

Notice: The MOQ for Non-stock item is 5pcs.

● Stock ○ Non-stock

## TTW Drill Series 5D External Coolant (Inch)

|                        |            |                         |                                 |             |       |
|------------------------|------------|-------------------------|---------------------------------|-------------|-------|
| Material               | Carbide    | Helix angle             | 30°                             | Point angle | 140°  |
| Cutting edge tolerance | m7         | Shank tolerance         | h6                              | Standard    | 6537A |
| Coating                | Balzars-PT | Suitable for processing | Steel/Stainless steel/Cast iron |             |       |



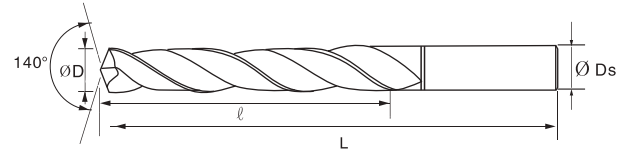
Unit(mm)

| Model No.    | Cutting Diameter |       | Cutting Length<br><i>l</i> | Shank Diameter<br><i>D<sub>s</sub></i> | Total Length<br><i>L</i> | Stock |
|--------------|------------------|-------|----------------------------|--|--------------------------|-------|
|              | D                |       |                            |  |                          |       |
|              | mm               | inch  |                            |  |                          |       |
| TTW050318D6  | 3.18             | 1/8   | 26                         | 6                                      | 66                       | ○     |
| TTW050357D6  | 3.57             | 9/64  | 26                         | 6                                      | 66                       | ○     |
| TTW050397D6  | 3.97             | 5/32  | 34                         | 6                                      | 74                       | ○     |
| TTW050437D6  | 4.37             | 11/64 | 34                         | 6                                      | 74                       | ○     |
| TTW050476D6  | 4.76             | 3/16  | 44                         | 6                                      | 82                       | ○     |
| TTW050516D6  | 5.16             | 13/64 | 44                         | 6                                      | 82                       | ○     |
| TTW050556D6  | 5.56             | 7/32  | 44                         | 6                                      | 82                       | ○     |
| TTW050595D6  | 5.95             | 15/64 | 44                         | 6                                      | 82                       | ○     |
| TTW050635D8  | 6.35             | 1/4   | 53                         | 8                                      | 91                       | ○     |
| TTW050675D8  | 6.75             | 17/64 | 53                         | 8                                      | 91                       | ○     |
| TTW050714D8  | 7.14             | 9/32  | 53                         | 8                                      | 91                       | ○     |
| TTW050754D8  | 7.54             | 19/64 | 53                         | 8                                      | 91                       | ○     |
| TTW050794D8  | 7.94             | 5/16  | 53                         | 8                                      | 91                       | ○     |
| TTW050833D10 | 8.33             | 21/64 | 61                         | 10                                     | 103                      | ○     |
| TTW050873D10 | 8.73             | 11/32 | 61                         | 10                                     | 103                      | ○     |
| TTW050913D10 | 9.13             | 23/64 | 61                         | 10                                     | 103                      | ○     |
| TTW050952D10 | 9.52             | 3/8   | 61                         | 10                                     | 103                      | ○     |
| TTW050992D10 | 9.92             | 25/64 | 61                         | 10                                     | 103                      | ○     |
| TTW051032D12 | 10.32            | 13/32 | 71                         | 12                                     | 118                      | ○     |
| TTW051072D12 | 10.72            | 27/64 | 71                         | 12                                     | 118                      | ○     |
| TTW051111D12 | 11.11            | 7/16  | 71                         | 12                                     | 118                      | ○     |
| TTW051151D12 | 11.51            | 29/64 | 71                         | 12                                     | 118                      | ○     |
| TTW051191D12 | 11.91            | 15/32 | 71                         | 12                                     | 118                      | ○     |
| TTW051349D14 | 13.49            | 17/32 | 77                         | 14                                     | 124                      | ○     |
| TTW051389D14 | 13.89            | 35/64 | 77                         | 14                                     | 124                      | ○     |
| TTW051429D16 | 14.29            | 9/16  | 83                         | 16                                     | 133                      | ○     |
| TTW051468D16 | 14.68            | 37/64 | 83                         | 16                                     | 133                      | ○     |
| TTW051508D16 | 15.08            | 19/32 | 83                         | 16                                     | 133                      | ○     |
| TTW051548D16 | 15.48            | 39/64 | 83                         | 16                                     | 133                      | ○     |
| TTW051588D16 | 15.88            | 5/8   | 83                         | 16                                     | 133                      | ○     |
| TTW051627D18 | 16.27            | 41/64 | 93                         | 18                                     | 143                      | ○     |
| TTW051667D18 | 16.67            | 21/32 | 93                         | 18                                     | 143                      | ○     |
| TTW051707D18 | 17.07            | 43/64 | 93                         | 18                                     | 143                      | ○     |
| TTW051746D18 | 17.46            | 11/16 | 93                         | 18                                     | 143                      | ○     |

● Stock ○ Non-stock

## TTW Drill Series 5D External Coolant (Inch)

|                        |            |                         |                                 |             |       |
|------------------------|------------|-------------------------|---------------------------------|-------------|-------|
| Material               | Carbide    | Helix angle             | 30°                             | Point angle | 140°  |
| Cutting edge tolerance | m7         | Shank tolerance         | h6                              | Standard    | 6537A |
| Coating                | Balzars-PT | Suitable for processing | Steel/Stainless steel/Cast iron |             |       |



Unit(mm)

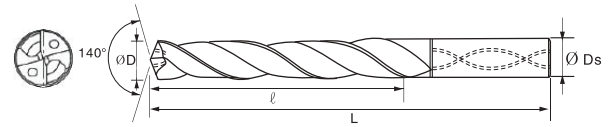
| Model No.    | Cutting Diameter |       | Cutting Length<br><i>l</i> | Shank Diameter<br><i>D<sub>s</sub></i> | Total Length<br><i>L</i> | Stock |
|--------------|------------------|-------|----------------------------|--|--------------------------|-------|
|              | D                |       |                            |  |                          |       |
|              | mm               | inch  |                            |  |                          |       |
| TTW051786D18 | 17.86            | 45/64 | 93                         | 18                                     | 143                      | ○     |
| TTW051826D20 | 18.26            | 23/32 | 101                        | 20                                     | 153                      | ○     |
| TTW051865D20 | 18.65            | 47/64 | 101                        | 20                                     | 153                      | ○     |
| TTW051905D20 | 19.05            | 3/4   | 101                        | 20                                     | 153                      | ○     |
| TTW051945D20 | 19.45            | 49/64 | 101                        | 20                                     | 153                      | ○     |
| TTW051984D20 | 19.84            | 25/32 | 101                        | 20                                     | 153                      | ○     |

Notice: The MOQ for Non-stock item is 5pcs.

● Stock ○ Non-stock

## TTS Drill Series 5D with Internal Coolant (Inch)

|                        |            |                         |                                 |             |       |
|------------------------|------------|-------------------------|---------------------------------|-------------|-------|
| Material               | Carbide    | Helix angle             | 30°                             | Point angle | 140°  |
| Cutting edge tolerance | m7         | Shank tolerance         | h6                              | Standard    | 6537A |
| Coating                | Balzars-PT | Suitable for processing | Steel/Stainless steel/Cast iron |             |       |



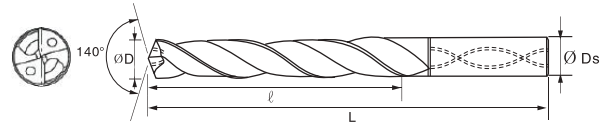
Unit(mm)

| Model No.    | Cutting Diameter |       | Cutting Length<br><i>l</i> | Shank Diameter<br><i>Ds</i> | Total Length<br><i>L</i> | Stock |
|--------------|------------------|-------|----------------------------|-----------------------------|--------------------------|-------|
|              | D                |       |                            |                             |                          |       |
|              | mm               | inch  |                            |                             |                          |       |
| TTS050318D6  | 3.18             | 1/8   | 26                         | 6                           | 66                       | ○     |
| TTS050357D6  | 3.57             | 9/64  | 26                         | 6                           | 66                       | ○     |
| TTS050397D6  | 3.97             | 5/32  | 34                         | 6                           | 74                       | ○     |
| TTS050437D6  | 4.37             | 11/64 | 34                         | 6                           | 74                       | ○     |
| TTS050476D6  | 4.76             | 3/16  | 44                         | 6                           | 82                       | ○     |
| TTS050516D6  | 5.16             | 13/64 | 44                         | 6                           | 82                       | ○     |
| TTS050556D6  | 5.56             | 7/32  | 44                         | 6                           | 82                       | ○     |
| TTS050595D6  | 5.95             | 15/64 | 44                         | 6                           | 82                       | ○     |
| TTS050635D8  | 6.35             | 1/4   | 53                         | 8                           | 91                       | ○     |
| TTS050675D8  | 6.75             | 17/64 | 53                         | 8                           | 91                       | ○     |
| TTS050714D8  | 7.14             | 9/32  | 53                         | 8                           | 91                       | ○     |
| TTS050754D8  | 7.54             | 19/64 | 53                         | 8                           | 91                       | ○     |
| TTS050794D8  | 7.94             | 5/16  | 53                         | 8                           | 91                       | ○     |
| TTS050833D10 | 8.33             | 21/64 | 61                         | 10                          | 103                      | ○     |
| TTS050873D10 | 8.73             | 11/32 | 61                         | 10                          | 103                      | ○     |
| TTS050913D10 | 9.13             | 23/64 | 61                         | 10                          | 103                      | ○     |
| TTS050952D10 | 9.52             | 3/8   | 61                         | 10                          | 103                      | ○     |
| TTS050992D10 | 9.92             | 25/64 | 61                         | 10                          | 103                      | ○     |
| TTS051032D12 | 10.32            | 13/32 | 71                         | 12                          | 118                      | ○     |
| TTS051072D12 | 10.72            | 27/64 | 71                         | 12                          | 118                      | ○     |
| TTS051111D12 | 11.11            | 7/16  | 71                         | 12                          | 118                      | ○     |
| TTS051151D12 | 11.51            | 29/64 | 71                         | 12                          | 118                      | ○     |
| TTS051191D12 | 11.91            | 15/32 | 71                         | 12                          | 118                      | ○     |
| TTS051349D14 | 13.49            | 17/32 | 77                         | 14                          | 124                      | ○     |
| TTS051389D14 | 13.89            | 35/64 | 77                         | 14                          | 124                      | ○     |
| TTS051429D16 | 14.29            | 9/16  | 83                         | 16                          | 133                      | ○     |
| TTS051468D16 | 14.68            | 37/64 | 83                         | 16                          | 133                      | ○     |
| TTS051508D16 | 15.08            | 19/32 | 83                         | 16                          | 133                      | ○     |
| TTS051548D16 | 15.48            | 39/64 | 83                         | 16                          | 133                      | ○     |
| TTS051588D16 | 15.88            | 5/8   | 83                         | 16                          | 133                      | ○     |
| TTS051627D18 | 16.27            | 41/64 | 93                         | 18                          | 143                      | ○     |
| TTS051667D18 | 16.67            | 21/32 | 93                         | 18                          | 143                      | ○     |
| TTS051707D18 | 17.07            | 43/64 | 93                         | 18                          | 143                      | ○     |
| TTS051746D18 | 17.46            | 11/16 | 93                         | 18                          | 143                      | ○     |

● Stock ○ Non-stock

## TTS Drill Series 5D with Internal Coolant (Inch)

|                        |            |                         |                                 |             |       |
|------------------------|------------|-------------------------|---------------------------------|-------------|-------|
| Material               | Carbide    | Helix angle             | 30°                             | Point angle | 140°  |
| Cutting edge tolerance | m7         | Shank tolerance         | h6                              | Standard    | 6537A |
| Coating                | Balzars-PT | Suitable for processing | Steel/Stainless steel/Cast iron |             |       |



Unit(mm)

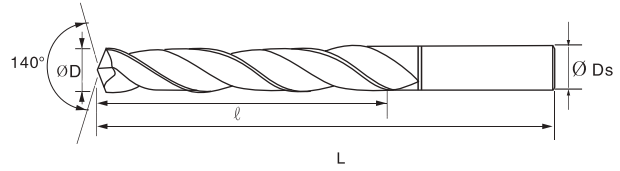
| Model No.    | Cutting Diameter |       | Cutting Length<br><i>l</i> | Shank Diameter<br><i>D<sub>s</sub></i> | Total Length<br><i>L</i> | Stock |
|--------------|------------------|-------|----------------------------|--|--------------------------|-------|
|              | D                |       |                            |  |                          |       |
|              | mm               | inch  |                            |  |                          |       |
| TTS051786D18 | 17.86            | 45/64 | 93                         | 18                                     | 143                      | ○     |
| TTS051826D20 | 18.26            | 23/32 | 101                        | 20                                     | 153                      | ○     |
| TTS051865D20 | 18.65            | 47/64 | 101                        | 20                                     | 153                      | ○     |
| TTS051905D20 | 19.05            | 3/4   | 101                        | 20                                     | 153                      | ○     |
| TTS051945D20 | 19.45            | 49/64 | 101                        | 20                                     | 153                      | ○     |
| TTS051984D20 | 19.84            | 25/32 | 101                        | 20                                     | 153                      | ○     |

Notice: The MOQ for Non-stock item is 5pcs.

● Stock ○ Non-stock

TTW Drill Series 7D External Coolant

|                        |            |                         |                                 |             |       |
|------------------------|------------|-------------------------|---------------------------------|-------------|-------|
| Material               | Carbide    | Helix angle             | 30°                             | Point angle | 140°  |
| Cutting edge tolerance | m7         | Shank tolerance         | h6                              | Standard    | 6537A |
| Coating                | Balzars-PT | Suitable for processing | Steel/Stainless steel/Cast iron |             |       |



Unit(mm)

| Model No.  | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|------------|------------------|----------------|----------------|--------------|-------|
|            | D                | ℓ              | Ds             | L            |       |
| TTW07045D6 | 4.5              | 45             | 6              | 94           | ○     |
| TTW07046D6 | 4.6              | 45             | 6              | 94           | ○     |
| TTW07047D6 | 4.7              | 45             | 6              | 94           | ○     |
| TTW07048D6 | 4.8              | 45             | 6              | 94           | ○     |
| TTW07049D6 | 4.9              | 45             | 6              | 94           | ○     |
| TTW07050D6 | 5.0              | 45             | 6              | 94           | ○     |
| TTW07051D6 | 5.1              | 45             | 6              | 94           | ○     |
| TTW07052D6 | 5.2              | 45             | 6              | 94           | ○     |
| TTW07053D6 | 5.3              | 45             | 6              | 94           | ○     |
| TTW07054D6 | 5.4              | 45             | 6              | 94           | ○     |
| TTW07055D6 | 5.5              | 45             | 6              | 94           | ○     |
| TTW07056D6 | 5.6              | 45             | 6              | 94           | ○     |
| TTW07057D6 | 5.7              | 45             | 6              | 94           | ○     |
| TTW07058D6 | 5.8              | 45             | 6              | 94           | ○     |
| TTW07059D6 | 5.9              | 45             | 6              | 94           | ○     |
| TTW07060D6 | 6.0              | 45             | 6              | 94           | ○     |
| TTW07061D8 | 6.1              | 57             | 8              | 110          | ○     |
| TTW07062D8 | 6.2              | 57             | 8              | 110          | ○     |
| TTW07063D8 | 6.3              | 57             | 8              | 110          | ○     |
| TTW07064D8 | 6.4              | 57             | 8              | 110          | ○     |
| TTW07065D8 | 6.5              | 57             | 8              | 110          | ○     |
| TTW07066D8 | 6.6              | 57             | 8              | 110          | ○     |
| TTW07067D8 | 6.7              | 57             | 8              | 110          | ○     |
| TTW07068D8 | 6.8              | 57             | 8              | 110          | ○     |
| TTW07069D8 | 6.9              | 57             | 8              | 110          | ○     |
| TTW07070D8 | 7.0              | 57             | 8              | 110          | ○     |
| TTW07071D8 | 7.1              | 57             | 8              | 110          | ○     |
| TTW07072D8 | 7.2              | 57             | 8              | 110          | ○     |
| TTW07073D8 | 7.3              | 57             | 8              | 110          | ○     |
| TTW07074D8 | 7.4              | 57             | 8              | 110          | ○     |
| TTW07075D8 | 7.5              | 57             | 8              | 110          | ○     |
| TTW07076D8 | 7.6              | 57             | 8              | 110          | ○     |

● Stock ○ Non-stock

Carbide Drills

U Drills

Head Exchangable Drills

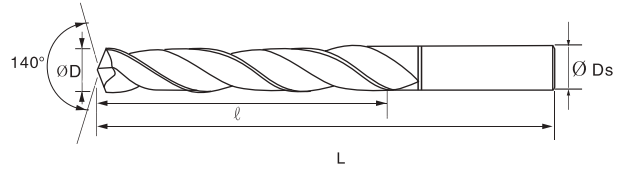
Deep Hole Drills

CDR 45° Chamfer Cutter

Non-standard Tools

## TTW Drill Series 7D External Coolant

|                        |            |                         |                                 |             |       |
|------------------------|------------|-------------------------|---------------------------------|-------------|-------|
| Material               | Carbide    | Helix angle             | 30°                             | Point angle | 140°  |
| Cutting edge tolerance | m7         | Shank tolerance         | h6                              | Standard    | 6537A |
| Coating                | Balzars-PT | Suitable for processing | Steel/Stainless steel/Cast iron |             |       |



Unit(mm)

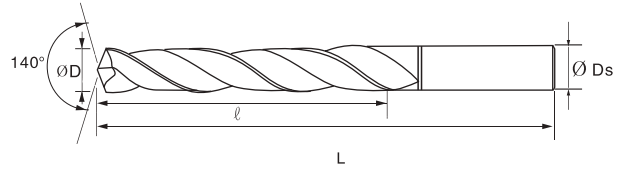
| Model No.   | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-------------|------------------|----------------|----------------|--------------|-------|
|             | D                | ℓ              | Ds             | L            |       |
| TTW07077D8  | 7.7              | 57             | 8              | 110          | ○     |
| TTW07078D8  | 7.8              | 57             | 8              | 110          | ○     |
| TTW07079D8  | 7.9              | 57             | 8              | 110          | ○     |
| TTW07080D8  | 8.0              | 57             | 8              | 110          | ○     |
| TTW07081D10 | 8.1              | 62             | 10             | 122          | ○     |
| TTW07082D10 | 8.2              | 62             | 10             | 122          | ○     |
| TTW07083D10 | 8.3              | 62             | 10             | 122          | ○     |
| TTW07084D10 | 8.4              | 62             | 10             | 122          | ○     |
| TTW07085D10 | 8.5              | 62             | 10             | 122          | ○     |
| TTW07086D10 | 8.6              | 62             | 10             | 122          | ○     |
| TTW07087D10 | 8.7              | 62             | 10             | 122          | ○     |
| TTW07088D10 | 8.8              | 62             | 10             | 122          | ○     |
| TTW07089D10 | 8.9              | 62             | 10             | 122          | ○     |
| TTW07090D10 | 9.0              | 62             | 10             | 122          | ○     |
| TTW07091D10 | 9.1              | 62             | 10             | 122          | ○     |
| TTW07092D10 | 9.2              | 62             | 10             | 122          | ○     |
| TTW07093D10 | 9.3              | 62             | 10             | 122          | ○     |
| TTW07094D10 | 9.4              | 62             | 10             | 122          | ○     |
| TTW07095D10 | 9.5              | 62             | 10             | 122          | ○     |
| TTW07096D10 | 9.6              | 62             | 10             | 122          | ○     |
| TTW07097D10 | 9.7              | 62             | 10             | 122          | ○     |
| TTW07098D10 | 9.8              | 62             | 10             | 122          | ○     |
| TTW07099D10 | 9.9              | 62             | 10             | 122          | ○     |
| TTW07100D10 | 10.0             | 62             | 10             | 122          | ○     |
| TTW07101D12 | 10.1             | 72             | 12             | 141          | ○     |
| TTW07102D12 | 10.2             | 72             | 12             | 141          | ○     |
| TTW07103D12 | 10.3             | 72             | 12             | 141          | ○     |
| TTW07104D12 | 10.4             | 72             | 12             | 141          | ○     |
| TTW07105D12 | 10.5             | 72             | 12             | 141          | ○     |
| TTW07106D12 | 10.6             | 72             | 12             | 141          | ○     |
| TTW07107D12 | 10.7             | 72             | 12             | 141          | ○     |
| TTW07108D12 | 10.8             | 72             | 12             | 141          | ○     |

● Stock ○ Non-stock



TTW Drill Series 7D External Coolant

|                        |            |                         |                                 |             |       |
|------------------------|------------|-------------------------|---------------------------------|-------------|-------|
| Material               | Carbide    | Helix angle             | 30°                             | Point angle | 140°  |
| Cutting edge tolerance | m7         | Shank tolerance         | h6                              | Standard    | 6537A |
| Coating                | Balzars-PT | Suitable for processing | Steel/Stainless steel/Cast iron |             |       |



Unit(mm)

| Model No.   | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-------------|------------------|----------------|----------------|--------------|-------|
|             | D                | ℓ              | Ds             | L            |       |
| TTW07109D12 | 10.9             | 72             | 12             | 141          | ○     |
| TTW07110D12 | 11.0             | 72             | 12             | 141          | ○     |
| TTW07111D12 | 11.1             | 72             | 12             | 141          | ○     |
| TTW07112D12 | 11.2             | 72             | 12             | 141          | ○     |
| TTW07113D12 | 11.3             | 72             | 12             | 141          | ○     |
| TTW07114D12 | 11.4             | 72             | 12             | 141          | ○     |
| TTW07115D12 | 11.5             | 72             | 12             | 141          | ○     |
| TTW07116D12 | 11.6             | 72             | 12             | 141          | ○     |
| TTW07117D12 | 11.7             | 72             | 12             | 141          | ○     |
| TTW07118D12 | 11.8             | 72             | 12             | 141          | ○     |
| TTW07119D12 | 11.9             | 72             | 12             | 141          | ○     |
| TTW07120D12 | 12.0             | 72             | 12             | 141          | ○     |
| TTW07121D14 | 12.1             | 83             | 14             | 155          | ○     |
| TTW07122D14 | 12.2             | 83             | 14             | 155          | ○     |
| TTW07123D14 | 12.3             | 83             | 14             | 155          | ○     |
| TTW07124D14 | 12.4             | 83             | 14             | 155          | ○     |
| TTW07125D14 | 12.5             | 83             | 14             | 155          | ○     |
| TTW07126D14 | 12.6             | 83             | 14             | 155          | ○     |
| TTW07127D14 | 12.7             | 83             | 14             | 155          | ○     |
| TTW07128D14 | 12.8             | 83             | 14             | 155          | ○     |
| TTW07129D14 | 12.9             | 83             | 14             | 155          | ○     |
| TTW07130D14 | 13.0             | 83             | 14             | 155          | ○     |
| TTW07131D14 | 13.1             | 83             | 14             | 155          | ○     |
| TTW07132D14 | 13.2             | 83             | 14             | 155          | ○     |
| TTW07133D14 | 13.3             | 83             | 14             | 155          | ○     |
| TTW07134D14 | 13.4             | 83             | 14             | 155          | ○     |
| TTW07135D14 | 13.5             | 83             | 14             | 155          | ○     |
| TTW07136D14 | 13.6             | 83             | 14             | 155          | ○     |
| TTW07137D14 | 13.7             | 83             | 14             | 155          | ○     |
| TTW07138D14 | 13.8             | 83             | 14             | 155          | ○     |
| TTW07139D14 | 13.9             | 83             | 14             | 155          | ○     |
| TTW07140D14 | 14.0             | 83             | 14             | 155          | ○     |

● Stock ○ Non-stock

Carbide Drills

U Drills

Head Exchangable Drills

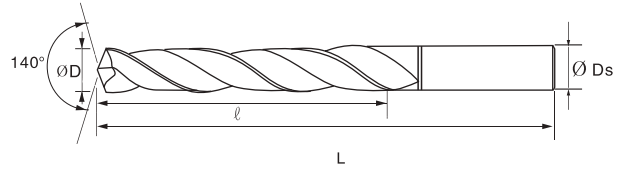
Deep Hole Drills

CDR 45° Chamfer Cutter

Non-standard Tools

## TTW Drill Series 7D External Coolant

|                        |            |                         |                                 |             |       |
|------------------------|------------|-------------------------|---------------------------------|-------------|-------|
| Material               | Carbide    | Helix angle             | 30°                             | Point angle | 140°  |
| Cutting edge tolerance | m7         | Shank tolerance         | h6                              | Standard    | 6537A |
| Coating                | Balzers-PT | Suitable for processing | Steel/Stainless steel/Cast iron |             |       |



Unit(mm)

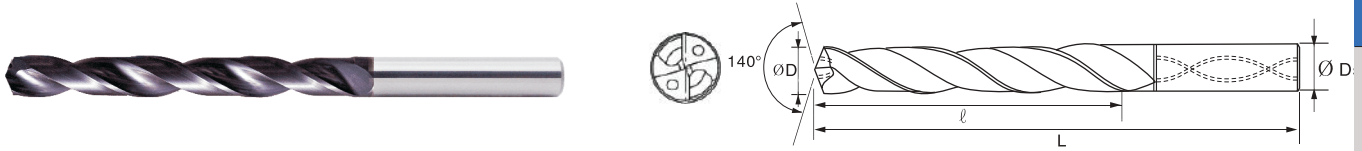
| Model No.   | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-------------|------------------|----------------|----------------|--------------|-------|
|             | D                | ℓ              | Ds             | L            |       |
| TTW07141D16 | 14.1             | 92             | 16             | 171          | ○     |
| TTW07142D16 | 14.2             | 92             | 16             | 171          | ○     |
| TTW07143D16 | 14.3             | 92             | 16             | 171          | ○     |
| TTW07144D16 | 14.4             | 92             | 16             | 171          | ○     |
| TTW07145D16 | 14.5             | 92             | 16             | 171          | ○     |
| TTW07146D16 | 14.6             | 92             | 16             | 171          | ○     |
| TTW07147D16 | 14.7             | 92             | 16             | 171          | ○     |
| TTW07148D16 | 14.8             | 92             | 16             | 171          | ○     |
| TTW07149D16 | 14.9             | 92             | 16             | 171          | ○     |
| TTW07150D16 | 15.0             | 92             | 16             | 171          | ○     |
| TTW07151D16 | 15.1             | 92             | 16             | 171          | ○     |
| TTW07152D16 | 15.2             | 92             | 16             | 171          | ○     |
| TTW07153D16 | 15.3             | 92             | 16             | 171          | ○     |
| TTW07154D16 | 15.4             | 92             | 16             | 171          | ○     |
| TTW07155D16 | 15.5             | 92             | 16             | 171          | ○     |
| TTW07156D16 | 15.6             | 92             | 16             | 171          | ○     |
| TTW07157D16 | 15.7             | 92             | 16             | 171          | ○     |
| TTW07158D16 | 15.8             | 92             | 16             | 171          | ○     |
| TTW07159D16 | 15.9             | 92             | 16             | 171          | ○     |
| TTW07160D16 | 16.0             | 92             | 16             | 171          | ○     |
| TTW07165D18 | 16.5             | 103            | 18             | 185          | ○     |
| TTW07170D18 | 17.0             | 103            | 18             | 185          | ○     |
| TTW07175D18 | 17.5             | 103            | 18             | 185          | ○     |
| TTW07180D18 | 18.0             | 103            | 18             | 185          | ○     |
| TTW07185D20 | 18.5             | 112            | 20             | 200          | ○     |
| TTW07190D20 | 19.0             | 112            | 20             | 200          | ○     |
| TTW07195D20 | 19.5             | 112            | 20             | 200          | ○     |
| TTW07200D20 | 20.0             | 112            | 20             | 200          | ○     |

Notice: The MOQ for Non-stock item is 5pcs.

● Stock ○ Non-stock

## TTS Drill Series 7D with Internal Coolant

|                        |            |                         |                                 |             |       |
|------------------------|------------|-------------------------|---------------------------------|-------------|-------|
| Material               | Carbide    | Helix angle             | 30°                             | Point angle | 140°  |
| Cutting edge tolerance | m7         | Shank tolerance         | h6                              | Standard    | 6537A |
| Coating                | Balzars-PT | Suitable for processing | Steel/Stainless steel/Cast iron |             |       |



Unit(mm)

| Model No.  | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|------------|------------------|----------------|----------------|--------------|-------|
|            | D                | l              | Ds             | L            |       |
| TTS07045D6 | 4.5              | 45             | 6              | 94           | ○     |
| TTS07046D6 | 4.6              | 45             | 6              | 94           | ○     |
| TTS07047D6 | 4.7              | 45             | 6              | 94           | ○     |
| TTS07048D6 | 4.8              | 45             | 6              | 94           | ○     |
| TTS07049D6 | 4.9              | 45             | 6              | 94           | ○     |
| TTS07050D6 | 5.0              | 45             | 6              | 94           | ○     |
| TTS07051D6 | 5.1              | 45             | 6              | 94           | ○     |
| TTS07052D6 | 5.2              | 45             | 6              | 94           | ○     |
| TTS07053D6 | 5.3              | 45             | 6              | 94           | ○     |
| TTS07054D6 | 5.4              | 45             | 6              | 94           | ○     |
| TTS07055D6 | 5.5              | 45             | 6              | 94           | ○     |
| TTS07056D6 | 5.6              | 45             | 6              | 94           | ○     |
| TTS07057D6 | 5.7              | 45             | 6              | 94           | ○     |
| TTS07058D6 | 5.8              | 45             | 6              | 94           | ○     |
| TTS07059D6 | 5.9              | 45             | 6              | 94           | ○     |
| TTS07060D6 | 6.0              | 45             | 6              | 94           | ○     |
| TTS07061D8 | 6.1              | 57             | 8              | 110          | ○     |
| TTS07062D8 | 6.2              | 57             | 8              | 110          | ○     |
| TTS07063D8 | 6.3              | 57             | 8              | 110          | ○     |
| TTS07064D8 | 6.4              | 57             | 8              | 110          | ○     |
| TTS07065D8 | 6.5              | 57             | 8              | 110          | ○     |
| TTS07066D8 | 6.6              | 57             | 8              | 110          | ○     |
| TTS07067D8 | 6.7              | 57             | 8              | 110          | ○     |
| TTS07068D8 | 6.8              | 57             | 8              | 110          | ○     |
| TTS07069D8 | 6.9              | 57             | 8              | 110          | ○     |
| TTS07070D8 | 7.0              | 57             | 8              | 110          | ○     |
| TTS07071D8 | 7.1              | 57             | 8              | 110          | ○     |
| TTS07072D8 | 7.2              | 57             | 8              | 110          | ○     |
| TTS07073D8 | 7.3              | 57             | 8              | 110          | ○     |
| TTS07074D8 | 7.4              | 57             | 8              | 110          | ○     |
| TTS07075D8 | 7.5              | 57             | 8              | 110          | ○     |
| TTS07076D8 | 7.6              | 57             | 8              | 110          | ○     |

● Stock ○ Non-stock

Carbide Drills

U Drills

Head Exchangable Drills

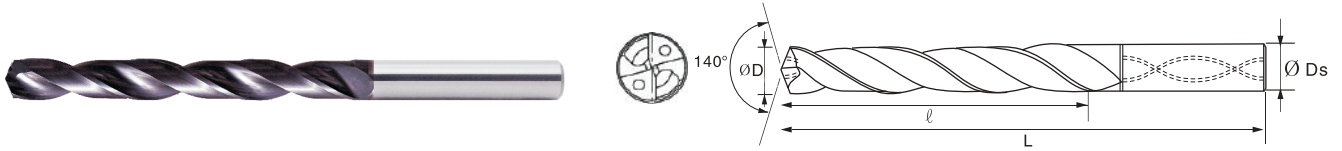
Deep Hole Drills

CDR 45° Chamfer Cutter

Non-standard Tools

TTS Drill Series 7D with Internal Coolant

|                        |            |                         |                                 |             |       |
|------------------------|------------|-------------------------|---------------------------------|-------------|-------|
| Material               | Carbide    | Helix angle             | 30°                             | Point angle | 140°  |
| Cutting edge tolerance | m7         | Shank tolerance         | h6                              | Standard    | 6537A |
| Coating                | Balzars-PT | Suitable for processing | Steel/Stainless steel/Cast iron |             |       |



Unit(mm)

| Model No.   | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-------------|------------------|----------------|----------------|--------------|-------|
|             | D                | l              | Ds             | L            |       |
| TTS07077D8  | 7.7              | 57             | 8              | 110          | ○     |
| TTS07078D8  | 7.8              | 57             | 8              | 110          | ○     |
| TTS07079D8  | 7.9              | 57             | 8              | 110          | ○     |
| TTS07080D8  | 8.0              | 57             | 8              | 110          | ○     |
| TTS07081D10 | 8.1              | 62             | 10             | 122          | ○     |
| TTS07082D10 | 8.2              | 62             | 10             | 122          | ○     |
| TTS07083D10 | 8.3              | 62             | 10             | 122          | ○     |
| TTS07084D10 | 8.4              | 62             | 10             | 122          | ○     |
| TTS07085D10 | 8.5              | 62             | 10             | 122          | ○     |
| TTS07086D10 | 8.6              | 62             | 10             | 122          | ○     |
| TTS07087D10 | 8.7              | 62             | 10             | 122          | ○     |
| TTS07088D10 | 8.8              | 62             | 10             | 122          | ○     |
| TTS07089D10 | 8.9              | 62             | 10             | 122          | ○     |
| TTS07090D10 | 9.0              | 62             | 10             | 122          | ○     |
| TTS07091D10 | 9.1              | 62             | 10             | 122          | ○     |
| TTS07092D10 | 9.2              | 62             | 10             | 122          | ○     |
| TTS07093D10 | 9.3              | 62             | 10             | 122          | ○     |
| TTS07094D10 | 9.4              | 62             | 10             | 122          | ○     |
| TTS07095D10 | 9.5              | 62             | 10             | 122          | ○     |
| TTS07096D10 | 9.6              | 62             | 10             | 122          | ○     |
| TTS07097D10 | 9.7              | 62             | 10             | 122          | ○     |
| TTS07098D10 | 9.8              | 62             | 10             | 122          | ○     |
| TTS07099D10 | 9.9              | 62             | 10             | 122          | ○     |
| TTS07100D10 | 10.0             | 62             | 10             | 122          | ○     |
| TTS07101D12 | 10.1             | 72             | 12             | 141          | ○     |
| TTS07102D12 | 10.2             | 72             | 12             | 141          | ○     |
| TTS07103D12 | 10.3             | 72             | 12             | 141          | ○     |
| TTS07104D12 | 10.4             | 72             | 12             | 141          | ○     |
| TTS07105D12 | 10.5             | 72             | 12             | 141          | ○     |
| TTS07106D12 | 10.6             | 72             | 12             | 141          | ○     |
| TTS07107D12 | 10.7             | 72             | 12             | 141          | ○     |
| TTS07108D12 | 10.8             | 72             | 12             | 141          | ○     |

● Stock ○ Non-stock

Carbide Drills

U Drills

Head Exchangable Drills

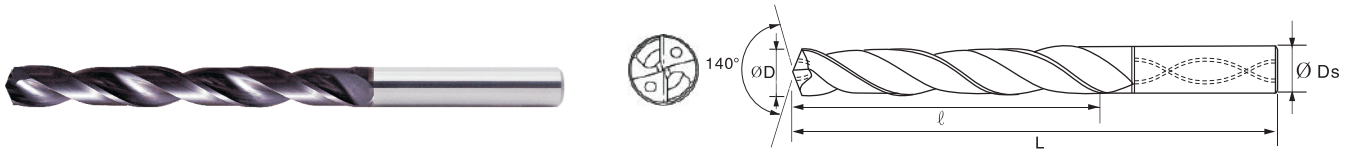
Deep Hole Drills

CDR 45° Chamfer Cutter

Non-standard Tools

## TTS Drill Series 7D with Internal Coolant

|                        |            |                         |                                 |             |       |
|------------------------|------------|-------------------------|---------------------------------|-------------|-------|
| Material               | Carbide    | Helix angle             | 30°                             | Point angle | 140°  |
| Cutting edge tolerance | m7         | Shank tolerance         | h6                              | Standard    | 6537A |
| Coating                | Balzars-PT | Suitable for processing | Steel/Stainless steel/Cast iron |             |       |



Unit(mm)

| Model No.   | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-------------|------------------|----------------|----------------|--------------|-------|
|             | D                | l              | Ds             | L            |       |
| TTS07109D12 | 10.9             | 72             | 12             | 141          | ○     |
| TTS07110D12 | 11.0             | 72             | 12             | 141          | ○     |
| TTS07111D12 | 11.1             | 72             | 12             | 141          | ○     |
| TTS07112D12 | 11.2             | 72             | 12             | 141          | ○     |
| TTS07113D12 | 11.3             | 72             | 12             | 141          | ○     |
| TTS07114D12 | 11.4             | 72             | 12             | 141          | ○     |
| TTS07115D12 | 11.5             | 72             | 12             | 141          | ○     |
| TTS07116D12 | 11.6             | 72             | 12             | 141          | ○     |
| TTS07117D12 | 11.7             | 72             | 12             | 141          | ○     |
| TTS07118D12 | 11.8             | 72             | 12             | 141          | ○     |
| TTS07119D12 | 11.9             | 72             | 12             | 141          | ○     |
| TTS07120D12 | 12.0             | 72             | 12             | 141          | ○     |
| TTS07121D14 | 12.1             | 83             | 14             | 155          | ○     |
| TTS07122D14 | 12.2             | 83             | 14             | 155          | ○     |
| TTS07123D14 | 12.3             | 83             | 14             | 155          | ○     |
| TTS07124D14 | 12.4             | 83             | 14             | 155          | ○     |
| TTS07125D14 | 12.5             | 83             | 14             | 155          | ○     |
| TTS07126D14 | 12.6             | 83             | 14             | 155          | ○     |
| TTS07127D14 | 12.7             | 83             | 14             | 155          | ○     |
| TTS07128D14 | 12.8             | 83             | 14             | 155          | ○     |
| TTS07129D14 | 12.9             | 83             | 14             | 155          | ○     |
| TTS07130D14 | 13.0             | 83             | 14             | 155          | ○     |
| TTS07131D14 | 13.1             | 83             | 14             | 155          | ○     |
| TTS07132D14 | 13.2             | 83             | 14             | 155          | ○     |
| TTS07133D14 | 13.3             | 83             | 14             | 155          | ○     |
| TTS07134D14 | 13.4             | 83             | 14             | 155          | ○     |
| TTS07135D14 | 13.5             | 83             | 14             | 155          | ○     |
| TTS07136D14 | 13.6             | 83             | 14             | 155          | ○     |
| TTS07137D14 | 13.7             | 83             | 14             | 155          | ○     |
| TTS07138D14 | 13.8             | 83             | 14             | 155          | ○     |
| TTS07139D14 | 13.9             | 83             | 14             | 155          | ○     |
| TTS07140D14 | 14.0             | 83             | 14             | 155          | ○     |

● Stock ○ Non-stock

Carbide Drills

U Drills

Head Exchangable Drills

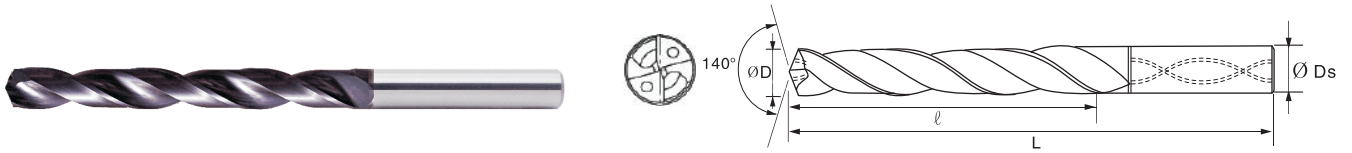
Deep Hole Drills

CDR 45° Chamfer Cutter

Non-standard Tools

## TTS Drill Series 7D with Internal Coolant

|                        |            |                         |                                 |             |       |
|------------------------|------------|-------------------------|---------------------------------|-------------|-------|
| Material               | Carbide    | Helix angle             | 30°                             | Point angle | 140°  |
| Cutting edge tolerance | m7         | Shank tolerance         | h6                              | Standard    | 6537A |
| Coating                | Balzars-PT | Suitable for processing | Steel/Stainless steel/Cast iron |             |       |



Unit(mm)

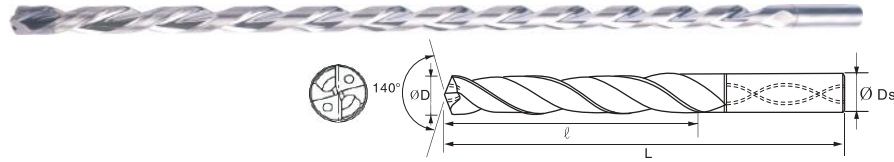
| Model No.   | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-------------|------------------|----------------|----------------|--------------|-------|
|             | D                | l              | Ds             | L            |       |
| TTS07141D16 | 14.1             | 92             | 16             | 171          | ○     |
| TTS07142D16 | 14.2             | 92             | 16             | 171          | ○     |
| TTS07143D16 | 14.3             | 92             | 16             | 171          | ○     |
| TTS07144D16 | 14.4             | 92             | 16             | 171          | ○     |
| TTS07145D16 | 14.5             | 92             | 16             | 171          | ○     |
| TTS07146D16 | 14.6             | 92             | 16             | 171          | ○     |
| TTS07147D16 | 14.7             | 92             | 16             | 171          | ○     |
| TTS07148D16 | 14.8             | 92             | 16             | 171          | ○     |
| TTS07149D16 | 14.9             | 92             | 16             | 171          | ○     |
| TTS07150D16 | 15.0             | 92             | 16             | 171          | ○     |
| TTS07151D16 | 15.1             | 92             | 16             | 171          | ○     |
| TTS07152D16 | 15.2             | 92             | 16             | 171          | ○     |
| TTS07153D16 | 15.3             | 92             | 16             | 171          | ○     |
| TTS07154D16 | 15.4             | 92             | 16             | 171          | ○     |
| TTS07155D16 | 15.5             | 92             | 16             | 171          | ○     |
| TTS07156D16 | 15.6             | 92             | 16             | 171          | ○     |
| TTS07157D16 | 15.7             | 92             | 16             | 171          | ○     |
| TTS07158D16 | 15.8             | 92             | 16             | 171          | ○     |
| TTS07159D16 | 15.9             | 92             | 16             | 171          | ○     |
| TTS07160D16 | 16.0             | 92             | 16             | 171          | ○     |
| TTS07165D18 | 16.5             | 103            | 18             | 185          | ○     |
| TTS07170D18 | 17.0             | 103            | 18             | 185          | ○     |
| TTS07175D18 | 17.5             | 103            | 18             | 185          | ○     |
| TTS07180D18 | 18.0             | 103            | 18             | 185          | ○     |
| TTS07185D20 | 18.5             | 112            | 20             | 200          | ○     |
| TTS07190D20 | 19.0             | 112            | 20             | 200          | ○     |
| TTS07195D20 | 19.5             | 112            | 20             | 200          | ○     |
| TTS07200D20 | 20.0             | 112            | 20             | 200          | ○     |

Notice: The MOQ for Non-stock item is 5pcs.

● Stock ○ Non-stock

TTS Drill Series 12D with Internal Coolant

|                        |            |                         |                                 |             |       |
|------------------------|------------|-------------------------|---------------------------------|-------------|-------|
| Material               | Carbide    | Helix angle             | 30°                             | Point angle | 140°  |
| Cutting edge tolerance | m7         | Shank tolerance         | h6                              | Standard    | 6537A |
| Coating                | Balzers-PT | Suitable for processing | Steel/Stainless steel/Cast iron |             |       |



Unit(mm)

| Model No.   | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-------------|------------------|----------------|----------------|--------------|-------|
|             | D                | l              | Ds             | L            |       |
| TTS12030D4  | 3.0              | 45             | 4              | 80           | ○     |
| TTS12035D4  | 3.5              | 45             | 4              | 80           | ○     |
| TTS12040D4  | 4.0              | 50             | 4              | 88           | ○     |
| TTS12045D6  | 4.5              | 55             | 6              | 106          | ○     |
| TTS12050D6  | 5.0              | 66             | 6              | 116          | ○     |
| TTS12055D6  | 5.5              | 66             | 6              | 116          | ○     |
| TTS12060D6  | 6.0              | 66             | 6              | 116          | ○     |
| TTS12065D8  | 6.5              | 84             | 8              | 138          | ○     |
| TTS12070D8  | 7.0              | 84             | 8              | 138          | ○     |
| TTS12075D8  | 7.5              | 84             | 8              | 138          | ○     |
| TTS12080D8  | 8.0              | 84             | 8              | 138          | ○     |
| TTS12085D10 | 8.5              | 108            | 10             | 169          | ○     |
| TTS12090D10 | 9.0              | 108            | 10             | 169          | ○     |
| TTS12095D10 | 9.5              | 108            | 10             | 169          | ○     |
| TTS12100D10 | 10.0             | 108            | 10             | 169          | ○     |
| TTS12105D12 | 10.5             | 132            | 12             | 201          | ○     |
| TTS12110D12 | 11.0             | 132            | 12             | 201          | ○     |
| TTS12115D12 | 11.5             | 132            | 12             | 201          | ○     |
| TTS12120D12 | 12.0             | 132            | 12             | 201          | ○     |

Notice: The MOQ for Non-stock item is 5pcs.

● Stock ○ Non-stock

Carbide Drills

U Drills

Head Exchangable Drills

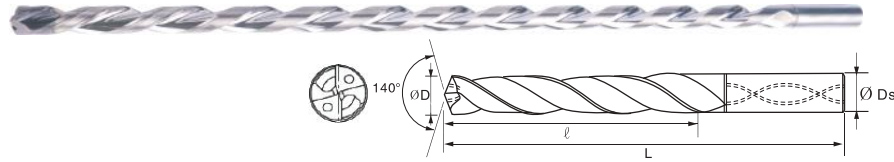
Deep Hole Drills

CDR 45° Chamfer Cutter

Non-standard Tools

TTS Drill Series 16D with Internal Coolant

|                        |            |                         |                                 |             |       |
|------------------------|------------|-------------------------|---------------------------------|-------------|-------|
| Material               | Carbide    | Helix angle             | 30°                             | Point angle | 140°  |
| Cutting edge tolerance | m7         | Shank tolerance         | h6                              | Standard    | 6537A |
| Coating                | Balzars-PT | Suitable for processing | Steel/Stainless steel/Cast iron |             |       |



Unit(mm)

| Model No.   | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-------------|------------------|----------------|----------------|--------------|-------|
|             | D                | l              | Ds             | L            |       |
| TTS16030D4  | 3.0              | 50             | 4              | 88           | ○     |
| TTS16035D4  | 3.5              | 60             | 4              | 99           | ○     |
| TTS16040D4  | 4.0              | 60             | 4              | 99           | ○     |
| TTS16045D6  | 4.5              | 70             | 6              | 117          | ○     |
| TTS16050D6  | 5.0              | 90             | 6              | 142          | ○     |
| TTS16055D6  | 5.5              | 90             | 6              | 142          | ○     |
| TTS16060D6  | 6.0              | 90             | 6              | 142          | ○     |
| TTS16065D8  | 6.5              | 120            | 8              | 177          | ○     |
| TTS16070D8  | 7.0              | 120            | 8              | 177          | ○     |
| TTS16075D8  | 7.5              | 120            | 8              | 177          | ○     |
| TTS16080D8  | 8.0              | 120            | 8              | 177          | ○     |
| TTS16085D10 | 8.5              | 150            | 10             | 216          | ○     |
| TTS16090D10 | 9.0              | 150            | 10             | 216          | ○     |
| TTS16095D10 | 9.5              | 150            | 10             | 216          | ○     |
| TTS16100D10 | 10.0             | 150            | 10             | 216          | ○     |
| TTS16105D12 | 10.5             | 180            | 12             | 256          | ○     |
| TTS16110D12 | 11.0             | 180            | 12             | 256          | ○     |
| TTS16115D12 | 11.5             | 180            | 12             | 256          | ○     |
| TTS16120D12 | 12.0             | 180            | 12             | 256          | ○     |

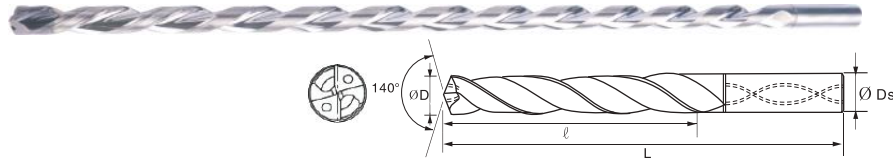
Notice: The MOQ for Non-stock item is 5pcs.

● Stock ○ Non-stock



TTS Drill Series 20D with Internal Coolant

|                        |            |                         |                                 |             |       |
|------------------------|------------|-------------------------|---------------------------------|-------------|-------|
| Material               | Carbide    | Helix angle             | 30°                             | Point angle | 140°  |
| Cutting edge tolerance | m7         | Shank tolerance         | h6                              | Standard    | 6537A |
| Coating                | Balzers-PT | Suitable for processing | Steel/Stainless steel/Cast iron |             |       |



Unit(mm)

| Model No.   | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-------------|------------------|----------------|----------------|--------------|-------|
|             | D                | l              | Ds             | L            |       |
| TTS20030D4  | 3.0              | 63             | 4              | 101          | ○     |
| TTS20035D4  | 3.5              | 70             | 4              | 114          | ○     |
| TTS20040D4  | 4.0              | 70             | 4              | 114          | ○     |
| TTS20045D6  | 4.5              | 90             | 6              | 138          | ○     |
| TTS20050D6  | 5.0              | 110            | 6              | 160          | ○     |
| TTS20055D6  | 5.5              | 110            | 6              | 160          | ○     |
| TTS20060D6  | 6.0              | 110            | 6              | 160          | ○     |
| TTS20065D8  | 6.5              | 145            | 8              | 199          | ○     |
| TTS20070D8  | 7.0              | 145            | 8              | 199          | ○     |
| TTS20075D8  | 7.5              | 145            | 8              | 199          | ○     |
| TTS20080D8  | 8.0              | 145            | 8              | 199          | ○     |
| TTS20085D10 | 8.5              | 185            | 10             | 246          | ○     |
| TTS20090D10 | 9.0              | 185            | 10             | 246          | ○     |
| TTS20095D10 | 9.5              | 185            | 10             | 246          | ○     |
| TTS20100D10 | 10.0             | 185            | 10             | 246          | ○     |
| TTS20105D12 | 10.5             | 225            | 12             | 294          | ○     |
| TTS20110D12 | 11.0             | 225            | 12             | 294          | ○     |
| TTS20115D12 | 11.5             | 225            | 12             | 294          | ○     |
| TTS20120D12 | 12.0             | 225            | 12             | 294          | ○     |

Notice: The MOQ for Non-stock item is 5pcs.

● Stock ○ Non-stock

Carbide Drills

U Drills

Head Exchangable Drills

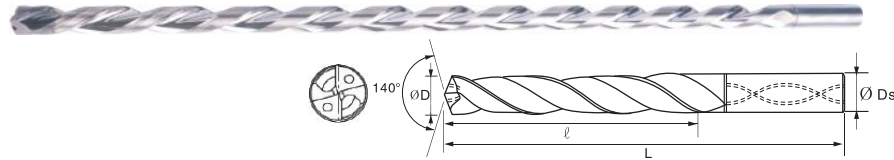
Deep Hole Drills

CDR 45° Chamfer Cutter

Non-standard Tools

TTS Drill Series 25D with Internal Coolant

|                        |            |                         |                                 |             |       |
|------------------------|------------|-------------------------|---------------------------------|-------------|-------|
| Material               | Carbide    | Helix angle             | 30°                             | Point angle | 140°  |
| Cutting edge tolerance | m7         | Shank tolerance         | h6                              | Standard    | 6537A |
| Coating                | Balzars-PT | Suitable for processing | Steel/Stainless steel/Cast iron |             |       |



Unit(mm)

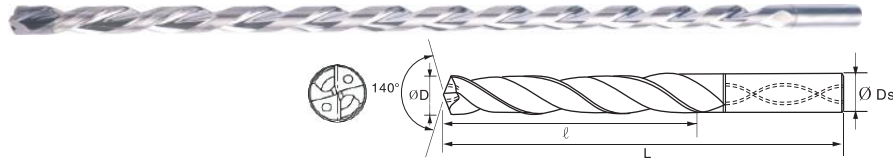
| Model No.   | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-------------|------------------|----------------|----------------|--------------|-------|
|             | D                | l              | Ds             | L            |       |
| TTS25030D4  | 3.0              | 79             | 4              | 117          | ○     |
| TTS25035D4  | 3.5              | 94             | 4              | 133          | ○     |
| TTS25040D4  | 4.0              | 94             | 4              | 133          | ○     |
| TTS25045D6  | 4.5              | 112            | 6              | 160          | ○     |
| TTS25050D6  | 5.0              | 140            | 6              | 190          | ○     |
| TTS25055D6  | 5.5              | 140            | 6              | 190          | ○     |
| TTS25060D6  | 6.0              | 140            | 6              | 190          | ○     |
| TTS25065D8  | 6.5              | 188            | 8              | 241          | ○     |
| TTS25070D8  | 7.0              | 188            | 8              | 241          | ○     |
| TTS25075D8  | 7.5              | 188            | 8              | 241          | ○     |
| TTS25080D8  | 8.0              | 188            | 8              | 241          | ○     |
| TTS25085D10 | 8.5              | 234            | 10             | 295          | ○     |
| TTS25090D10 | 9.0              | 234            | 10             | 295          | ○     |
| TTS25095D10 | 9.5              | 234            | 10             | 295          | ○     |
| TTS25100D10 | 10.0             | 234            | 10             | 295          | ○     |
| TTS25105D12 | 10.5             | 281            | 12             | 350          | ○     |
| TTS25110D12 | 11.0             | 281            | 12             | 350          | ○     |
| TTS25115D12 | 11.5             | 281            | 12             | 350          | ○     |
| TTS25120D12 | 12.0             | 281            | 12             | 350          | ○     |

Notice: The MOQ for Non-stock item is 5pcs.

● Stock ○ Non-stock

TTS Drill Series 30D with Internal Coolant

|                        |            |                         |                                 |             |       |
|------------------------|------------|-------------------------|---------------------------------|-------------|-------|
| Material               | Carbide    | Helix angle             | 30°                             | Point angle | 140°  |
| Cutting edge tolerance | m7         | Shank tolerance         | h6                              | Standard    | 6537A |
| Coating                | Balzars-PT | Suitable for processing | Steel/Stainless steel/Cast iron |             |       |



Unit(mm)

| Model No.   | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-------------|------------------|----------------|----------------|--------------|-------|
|             | D                | l              | Ds             | L            |       |
| TTS30030D4  | 3.0              | 105            | 4              | 133          | ○     |
| TTS30035D4  | 3.5              | 112            | 4              | 151          | ○     |
| TTS30040D4  | 4.0              | 112            | 4              | 151          | ○     |
| TTS30045D6  | 4.5              | 135            | 6              | 185          | ○     |
| TTS30050D6  | 5.0              | 170            | 6              | 220          | ○     |
| TTS30055D6  | 5.5              | 170            | 6              | 220          | ○     |
| TTS30060D6  | 6.0              | 170            | 6              | 220          | ○     |
| TTS30065D8  | 6.5              | 225            | 8              | 279          | ○     |
| TTS30070D8  | 7.0              | 225            | 8              | 279          | ○     |
| TTS30075D8  | 7.5              | 225            | 8              | 279          | ○     |
| TTS30080D8  | 8.0              | 225            | 8              | 279          | ○     |
| TTS30085D10 | 8.5              | 285            | 10             | 346          | ○     |
| TTS30090D10 | 9.0              | 285            | 10             | 346          | ○     |
| TTS30095D10 | 9.5              | 285            | 10             | 346          | ○     |
| TTS30100D10 | 10.0             | 285            | 10             | 346          | ○     |
| TTS30105D12 | 10.5             | 300            | 12             | 369          | ○     |
| TTS30110D12 | 11.0             | 300            | 12             | 369          | ○     |
| TTS30115D12 | 11.5             | 300            | 12             | 369          | ○     |
| TTS30120D12 | 12.0             | 300            | 12             | 369          | ○     |

Notice: The MOQ for Non-stock item is 5pcs.

● Stock ○ Non-stock

Carbide Drills

U Drills

Head Exchangable Drills

Deep Hole Drills

CDR 45° Chamfer Cutter

Non-standard Tools

**TTW Series 3D/5D (External Coolant)**

Unit (mm)

| ISO | Workpiece Material                                       | Brinell hardness (HB) | Feed: f (mm/rev) |      |      |      |      |      |      |      |      |      | Vc (m/min) |
|-----|--|-----------------------|------------------|------|------|------|------|------|------|------|------|------|------------|
|     |  |                       | ø3               | ø4   | ø6   | ø8   | ø10  | ø12  | ø14  | ø16  | ø18  | ø20  |            |
| P   | Low carbon steels (C < 0.3)<br>C15E4, E275A, E355D, etc. | ~ 180                 | 0.12             | 0.14 | 0.14 | 0.22 | 0.26 | 0.28 | 0.30 | 0.32 | 0.34 | 0.36 | 70.00      |
|     | Carbon steels (C > 0.3)<br>C45, C55, etc.                | 180 ~ 300             | 0.12             | 0.14 | 0.14 | 0.22 | 0.26 | 0.28 | 0.30 | 0.32 | 0.34 | 0.36 | 60.00      |
|     | High alloy steels<br>42CrMo4, etc.                       | 250 ~ 350             | 0.11             | 0.13 | 0.13 | 0.20 | 0.24 | 0.26 | 0.28 | 0.30 | 0.32 | 0.34 | 50.00      |
| M   | Stainless steels<br>X5CrNi18-9, etc.                     | ~ 200                 | 0.11             | 0.13 | 0.13 | 0.20 | 0.24 | 0.26 | 0.28 | 0.30 | 0.32 | 0.34 | 30.00      |
| K   | Grey cast irons<br>250, etc.                             | ~ 200                 | 0.12             | 0.13 | 0.13 | 0.22 | 0.26 | 0.28 | 0.30 | 0.32 | 0.34 | 0.36 | 40.00      |
|     | Ductile cast irons<br>450-10S, etc.                      | ~ 300                 | 0.11             | 0.12 | 0.12 | 0.20 | 0.24 | 0.26 | 0.28 | 0.30 | 0.32 | 0.34 | 35.00      |
| N   | Aluminium alloys<br>AlSi11Cu3, etc.                      | -                     | -                | -    | -    | -    | -    | -    | -    | -    | -    | -    | -          |

**TTS Series 3D/5D (Internal Coolant)**

Unit (mm)

| ISO | Workpiece Material                                       | Brinell hardness (HB) | Feed: f (mm/rev) |      |      |      |      |      |      |      |      |      | Vc (m/min) |
|-----|--|-----------------------|------------------|------|------|------|------|------|------|------|------|------|------------|
|     |  |                       | ø3               | ø4   | ø6   | ø8   | ø10  | ø12  | ø14  | ø16  | ø18  | ø20  |            |
| P   | Low carbon steels (C < 0.3)<br>C15E4, E275A, E355D, etc. | ~ 180                 | 0.12             | 0.14 | 0.18 | 0.22 | 0.26 | 0.28 | 0.30 | 0.32 | 0.34 | 0.36 | 90.00      |
|     | Carbon steels (C > 0.3)<br>C45, C55, etc.                | 180 ~ 300             | 0.12             | 0.14 | 0.18 | 0.22 | 0.26 | 0.28 | 0.30 | 0.32 | 0.34 | 0.36 | 80.00      |
|     | High alloy steels<br>42CrMo4, etc.                       | 250 ~ 350             | 0.11             | 0.13 | 0.16 | 0.20 | 0.24 | 0.26 | 0.28 | 0.30 | 0.32 | 0.34 | 75.00      |
| M   | Stainless steels<br>X5CrNi18-9, etc.                     | ~ 200                 | 0.11             | 0.13 | 0.16 | 0.20 | 0.24 | 0.26 | 0.28 | 0.30 | 0.32 | 0.34 | 50.00      |
| K   | Grey cast irons<br>250, etc.                             | ~ 200                 | 0.12             | 0.13 | 0.18 | 0.22 | 0.26 | 0.28 | 0.30 | 0.32 | 0.34 | 0.36 | 50.00      |
|     | Ductile cast irons<br>450-10S, etc.                      | ~ 300                 | 0.11             | 0.12 | 0.16 | 0.20 | 0.24 | 0.26 | 0.28 | 0.30 | 0.32 | 0.34 | 45.00      |
| N   | Aluminium alloys<br>AlSi11Cu3, etc.                      | -                     | 0.10             | 0.20 | 0.22 | 0.26 | 0.30 | 0.34 | 0.36 | 0.38 | 0.40 | 0.42 | 180.00     |

**TTW Series 7D (External Coolant)**

Unit (mm)

| ISO | Workpiece Material                                       | Brinell hardness (HB) | Feed: f (mm/rev) |      |      |      |      |      |      |      |      |          | Vc (m/min) |
|-----|--|-----------------------|------------------|------|------|------|------|------|------|------|------|----------|------------|
|     |  |                       | ø4.5             | ø6   | ø8   | ø10  | ø12  | ø14  | ø16  | ø18  | ø20  | ø3 ~ ø20 |            |
| P   | Low carbon steels (C < 0.3)<br>C15E4, E275A, E355D, etc. | ~ 180                 | 0.14             | 0.14 | 0.22 | 0.26 | 0.28 | 0.30 | 0.32 | 0.34 | 0.36 | 63.00    |            |
|     | Carbon steels (C > 0.3)<br>C45, C55, etc.                | 180 ~ 300             | 0.14             | 0.14 | 0.22 | 0.26 | 0.28 | 0.30 | 0.32 | 0.34 | 0.36 | 54.00    |            |
|     | High alloy steels<br>42CrMo4, etc.                       | 250 ~ 350             | 0.13             | 0.13 | 0.20 | 0.24 | 0.26 | 0.28 | 0.30 | 0.32 | 0.34 | 45.00    |            |
| M   | Stainless steels<br>X5CrNi18-9, etc.                     | ~ 200                 | 0.13             | 0.13 | 0.20 | 0.24 | 0.26 | 0.28 | 0.30 | 0.32 | 0.34 | 27.00    |            |
| K   | Grey cast irons<br>250, etc.                             | ~ 200                 | 0.13             | 0.13 | 0.22 | 0.26 | 0.28 | 0.30 | 0.32 | 0.34 | 0.36 | 36.00    |            |
|     | Ductile cast irons<br>450-10S, etc.                      | ~ 300                 | 0.12             | 0.12 | 0.20 | 0.24 | 0.26 | 0.28 | 0.30 | 0.32 | 0.34 | 30.00    |            |
| N   | Aluminium alloys<br>AlSi11Cu3, etc.                      | -                     | -                | -    | -    | -    | -    | -    | -    | -    | -    | -        |            |

TTS Series 7D (Internal Coolant)

Unit (mm)

| ISO | Workpiece Material                                       | Brinell hardness (HB) | Feed: f (mm/rev) |      |      |      |      |      |      |      |      | Vc (m/min) |
|-----|--|-----------------------|------------------|------|------|------|------|------|------|------|------|------------|
|     |  |                       | ø4.5             | ø6   | ø8   | ø10  | ø12  | ø14  | ø16  | ø18  | ø20  |            |
| P   | Low carbon steels (C < 0.3)<br>C15E4, E275A, E355D, etc. | ~ 180                 | 0.14             | 0.18 | 0.22 | 0.26 | 0.28 | 0.30 | 0.32 | 0.34 | 0.36 | 75.00      |
|     | Carbon steels (C > 0.3)<br>C45, C55, etc.                | 180 ~ 300             | 0.14             | 0.18 | 0.22 | 0.26 | 0.28 | 0.30 | 0.32 | 0.34 | 0.36 | 66.00      |
|     | High alloy steels<br>42CrMo4, etc.                       | 250 ~ 350             | 0.13             | 0.16 | 0.20 | 0.24 | 0.26 | 0.28 | 0.30 | 0.32 | 0.34 | 60.00      |
| M   | Stainless steels<br>X5CrNi18-9, etc.                     | ~ 200                 | 0.13             | 0.16 | 0.20 | 0.24 | 0.26 | 0.28 | 0.30 | 0.32 | 0.34 | 40.00      |
| K   | Grey cast irons<br>250, etc.                             | ~ 200                 | 0.13             | 0.18 | 0.22 | 0.26 | 0.28 | 0.30 | 0.32 | 0.34 | 0.36 | 40.00      |
|     | Ductile cast irons<br>450-10S, etc.                      | ~ 300                 | 0.12             | 0.16 | 0.20 | 0.24 | 0.26 | 0.28 | 0.30 | 0.32 | 0.34 | 38.00      |
| N   | Aluminium alloys<br>AlSi11Cu3, etc.                      | -                     | 0.20             | 0.22 | 0.26 | 0.30 | 0.34 | 0.36 | 0.38 | 0.40 | 0.42 | 150.00     |

TTS Series 12D/16D/20D/25D/30D (Internal Coolant)

Unit (mm)

| ISO | Workpiece Material                                       | Brinell hardness (HB) | Feed: f (mm/rev) |      |      |      |      |      | Vc (m/min) |
|-----|--|-----------------------|------------------|------|------|------|------|------|------------|
|     |  |                       | ø3               | ø4   | ø6   | ø8   | ø10  | ø12  |            |
| P   | Low carbon steels (C < 0.3)<br>C15E4, E275A, E355D, etc. | ~ 180                 | 0.12             | 0.14 | 0.18 | 0.22 | 0.26 | 0.28 | 81.00      |
|     | Carbon steels (C > 0.3)<br>C45, C55, etc.                | 180 ~ 300             | 0.12             | 0.14 | 0.18 | 0.22 | 0.26 | 0.28 | 68.00      |
|     | High alloy steels<br>42CrMo4, etc.                       | 250 ~ 350             | 0.11             | 0.13 | 0.16 | 0.20 | 0.24 | 0.26 | 58.00      |
| M   | Stainless steels<br>X5CrNi18-9, etc.                     | ~ 200                 | 0.11             | 0.13 | 0.16 | 0.20 | 0.24 | 0.26 | 36.00      |
| K   | Grey cast irons<br>250, etc.                             | ~ 200                 | 0.12             | 0.13 | 0.18 | 0.22 | 0.26 | 0.28 | 45.00      |
|     | Ductile cast irons<br>450-10S, etc.                      | ~ 300                 | 0.11             | 0.12 | 0.16 | 0.20 | 0.24 | 0.26 | 40.00      |
| N   | Aluminium alloys<br>AlSi11Cu3, etc.                      | -                     | 0.12             | 0.14 | 0.20 | 0.24 | 0.28 | 0.32 | 135.00     |

Carbide Drills

U Drills

Head Exchangable Drills

Head Exchangable

Deep Hole Drills

CDR 45° Chamfer Cutter

Non-standard Tools

### TK Series



#### General Features

TK Series is a special drill for cast iron that combines reduced cutting resistance and improved drill strength.

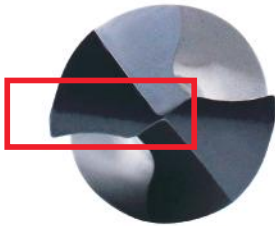
#### Product Range

| Model No. | Diameter Range (mm) | Hole Depth (L/D) | Coolant Supply |
|-----------|---------------------|------------------|----------------|
| TKW Type  | D3.0-D20.0          | up to 3          | External       |
|           |                     | up to 5          |                |
| TKS Type  | D3.0-D20.0          | up to 3          | Internal       |
|           |                     | up to 5          |                |

※When the tensile strength is greater than 500, can be made on request.

## Technological Innovation

### 1. Cutting Edge Design



Special cutting edge is designed for processing cast iron to enhance the cutting strength of drill and is conducive to chip removal.

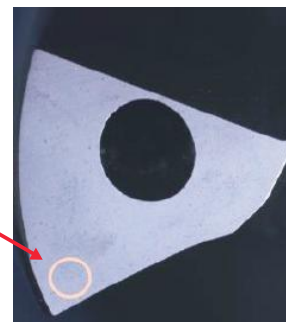
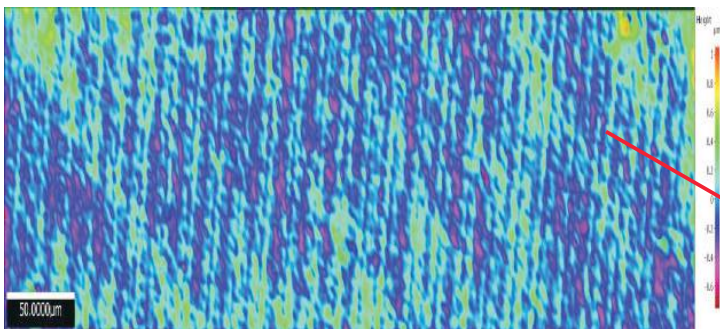
### 2. Point Angle Design and Coated



135° point angle design and wide transverse edge is designed to realize high-efficiency cutting of cast iron. The new TiAlN coating realizes the high wear resistance of the drill.

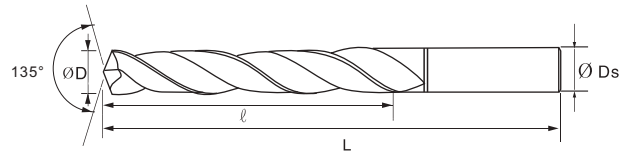
### 3. Drill Surface Quality

Roughness: 0.14 μm



## TKW Drill Series 3D External Coolant

|                        |         |                         |  |             |       |
|------------------------|---------|-------------------------|--|-------------|-------|
| Material               | Carbide | Helix angle             | 30°  | Point angle | 135°  |
| Cutting edge tolerance | m7      | Shank tolerance         | h6   | Standard    | 6537A |
| Coating                | TiAlN   | Suitable for processing | Gray cast iron/Ductile cast iron(Tensile Strength≤500) |             |       |



Unit(mm)

| Model No. | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-----------|------------------|----------------|----------------|--------------|-------|
|           | D                | ℓ              | Ds             | L            |       |
| TKW030D6  | 3.0              | 20             | 6              | 62           | ●     |
| TKW031D6  | 3.1              | 20             | 6              | 62           | ●     |
| TKW032D6  | 3.2              | 20             | 6              | 62           | ●     |
| TKW033D6  | 3.3              | 20             | 6              | 62           | ●     |
| TKW034D6  | 3.4              | 20             | 6              | 62           | ●     |
| TKW035D6  | 3.5              | 20             | 6              | 62           | ●     |
| TKW036D6  | 3.6              | 20             | 6              | 62           | ●     |
| TKW037D6  | 3.7              | 20             | 6              | 62           | ●     |
| TKW038D6  | 3.8              | 24             | 6              | 66           | ●     |
| TKW039D6  | 3.9              | 24             | 6              | 66           | ●     |
| TKW040D6  | 4.0              | 24             | 6              | 66           | ●     |
| TKW041D6  | 4.1              | 24             | 6              | 66           | ●     |
| TKW042D6  | 4.2              | 24             | 6              | 66           | ●     |
| TKW043D6  | 4.3              | 24             | 6              | 66           | ●     |
| TKW044D6  | 4.4              | 24             | 6              | 66           | ●     |
| TKW045D6  | 4.5              | 24             | 6              | 66           | ●     |
| TKW046D6  | 4.6              | 26             | 6              | 66           | ●     |
| TKW047D6  | 4.7              | 26             | 6              | 66           | ●     |
| TKW048D6  | 4.8              | 28             | 6              | 66           | ●     |
| TKW049D6  | 4.9              | 28             | 6              | 66           | ●     |
| TKW050D6  | 5.0              | 28             | 6              | 66           | ●     |
| TKW051D6  | 5.1              | 28             | 6              | 66           | ●     |
| TKW052D6  | 5.2              | 28             | 6              | 66           | ●     |
| TKW053D6  | 5.3              | 28             | 6              | 66           | ●     |
| TKW054D6  | 5.4              | 28             | 6              | 66           | ●     |
| TKW055D6  | 5.5              | 28             | 6              | 66           | ●     |
| TKW056D6  | 5.6              | 28             | 6              | 66           | ●     |
| TKW057D6  | 5.7              | 28             | 6              | 66           | ●     |
| TKW058D6  | 5.8              | 28             | 6              | 66           | ●     |
| TKW059D6  | 5.9              | 28             | 6              | 66           | ●     |
| TKW060D6  | 6.0              | 28             | 6              | 66           | ●     |
| TKW061D8  | 6.1              | 34             | 8              | 79           | ●     |
| TKW062D8  | 6.2              | 34             | 8              | 79           | ●     |
| TKW063D8  | 6.3              | 34             | 8              | 79           | ●     |

● Stock ○ Non-stock

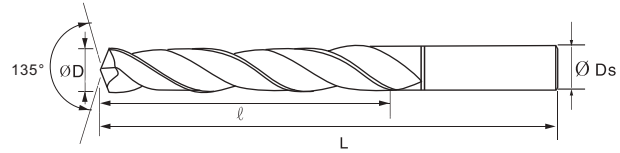
# High Performance Carbide Drill for Cast Iron



Carbide Drills

## TKW Drill Series 3D External Coolant

|                        |         |                         |   |             |       |
|------------------------|---------|-------------------------|---|-------------|-------|
| Material               | Carbide | Helix angle             | 30°   | Point angle | 135°  |
| Cutting edge tolerance | m7      | Shank tolerance         | h6  | Standard    | 6537A |
| Coating                | TiAlN   | Suitable for processing | Gray cast iron/Ductile cast iron (Tensile Strength ≤ 500) |             |       |



Unit(mm)

| Model No. | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-----------|------------------|----------------|----------------|--------------|-------|
|           | D                | l              | Ds             | L            |       |
| TKW064D8  | 6.4              | 34             | 8              | 79           | ●     |
| TKW065D8  | 6.5              | 34             | 8              | 79           | ●     |
| TKW066D8  | 6.6              | 34             | 8              | 79           | ●     |
| TKW067D8  | 6.7              | 34             | 8              | 79           | ●     |
| TKW068D8  | 6.8              | 34             | 8              | 79           | ●     |
| TKW069D8  | 6.9              | 34             | 8              | 79           | ●     |
| TKW070D8  | 7.0              | 34             | 8              | 79           | ●     |
| TKW071D8  | 7.1              | 41             | 8              | 79           | ●     |
| TKW072D8  | 7.2              | 41             | 8              | 79           | ●     |
| TKW073D8  | 7.3              | 41             | 8              | 79           | ●     |
| TKW074D8  | 7.4              | 41             | 8              | 79           | ●     |
| TKW075D8  | 7.5              | 41             | 8              | 79           | ●     |
| TKW076D8  | 7.6              | 41             | 8              | 79           | ●     |
| TKW077D8  | 7.7              | 41             | 8              | 79           | ●     |
| TKW078D8  | 7.8              | 41             | 8              | 79           | ●     |
| TKW079D8  | 7.9              | 41             | 8              | 79           | ●     |
| TKW080D8  | 8.0              | 41             | 8              | 79           | ●     |
| TKW081D10 | 8.1              | 47             | 10             | 89           | ●     |
| TKW082D10 | 8.2              | 47             | 10             | 89           | ●     |
| TKW083D10 | 8.3              | 47             | 10             | 89           | ●     |
| TKW084D10 | 8.4              | 47             | 10             | 89           | ●     |
| TKW085D10 | 8.5              | 47             | 10             | 89           | ●     |
| TKW086D10 | 8.6              | 47             | 10             | 89           | ●     |
| TKW087D10 | 8.7              | 47             | 10             | 89           | ●     |
| TKW088D10 | 8.8              | 47             | 10             | 89           | ●     |
| TKW089D10 | 8.9              | 47             | 10             | 89           | ●     |
| TKW090D10 | 9.0              | 47             | 10             | 89           | ●     |
| TKW091D10 | 9.1              | 47             | 10             | 89           | ●     |
| TKW092D10 | 9.2              | 47             | 10             | 89           | ●     |
| TKW093D10 | 9.3              | 47             | 10             | 89           | ●     |
| TKW094D10 | 9.4              | 47             | 10             | 89           | ●     |
| TKW095D10 | 9.5              | 47             | 10             | 89           | ●     |
| TKW096D10 | 9.6              | 47             | 10             | 89           | ●     |
| TKW097D10 | 9.7              | 47             | 10             | 89           | ●     |

●Stock ○Non-stock

U Drills

Head Exchangable Drills

Deep Hole Drills

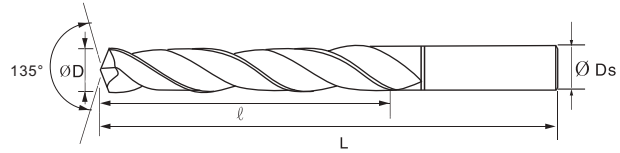
CDR 45° Chamfer Cutter

Non-standard Tools



## TKW Drill Series 3D External Coolant

|                        |         |                         |  |             |       |
|------------------------|---------|-------------------------|--|-------------|-------|
| Material               | Carbide | Helix angle             | 30°  | Point angle | 135°  |
| Cutting edge tolerance | m7      | Shank tolerance         | h6   | Standard    | 6537A |
| Coating                | TiAlN   | Suitable for processing | Gray cast iron/Ductile cast iron(Tensile Strength≤500) |             |       |



Unit(mm)

| Model No. | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-----------|------------------|----------------|----------------|--------------|-------|
|           | D                | l              | Ds             | L            |       |
| TKW098D10 | 9.8              | 47             | 10             | 89           | ●     |
| TKW099D10 | 9.9              | 47             | 10             | 89           | ●     |
| TKW100D10 | 10.0             | 47             | 10             | 89           | ●     |
| TKW101D12 | 10.1             | 55             | 12             | 102          | ●     |
| TKW102D12 | 10.2             | 55             | 12             | 102          | ●     |
| TKW103D12 | 10.3             | 55             | 12             | 102          | ●     |
| TKW104D12 | 10.4             | 55             | 12             | 102          | ●     |
| TKW105D12 | 10.5             | 55             | 12             | 102          | ●     |
| TKW106D12 | 10.6             | 55             | 12             | 102          | ●     |
| TKW107D12 | 10.7             | 55             | 12             | 102          | ●     |
| TKW108D12 | 10.8             | 55             | 12             | 102          | ●     |
| TKW109D12 | 10.9             | 55             | 12             | 102          | ●     |
| TKW110D12 | 11.0             | 55             | 12             | 102          | ●     |
| TKW111D12 | 11.1             | 55             | 12             | 102          | ●     |
| TKW112D12 | 11.2             | 55             | 12             | 102          | ●     |
| TKW113D12 | 11.3             | 55             | 12             | 102          | ●     |
| TKW114D12 | 11.4             | 55             | 12             | 102          | ●     |
| TKW115D12 | 11.5             | 55             | 12             | 102          | ●     |
| TKW116D12 | 11.6             | 55             | 12             | 102          | ●     |
| TKW117D12 | 11.7             | 55             | 12             | 102          | ●     |
| TKW118D12 | 11.8             | 55             | 12             | 102          | ●     |
| TKW119D12 | 11.9             | 55             | 12             | 102          | ●     |
| TKW120D12 | 12.0             | 55             | 12             | 102          | ●     |
| TKW121D14 | 12.1             | 60             | 14             | 107          | ●     |
| TKW122D14 | 12.2             | 60             | 14             | 107          | ●     |
| TKW123D14 | 12.3             | 60             | 14             | 107          | ●     |
| TKW124D14 | 12.4             | 60             | 14             | 107          | ●     |
| TKW125D14 | 12.5             | 60             | 14             | 107          | ●     |
| TKW126D14 | 12.6             | 60             | 14             | 107          | ●     |
| TKW127D14 | 12.7             | 60             | 14             | 107          | ●     |
| TKW128D14 | 12.8             | 60             | 14             | 107          | ●     |
| TKW129D14 | 12.9             | 60             | 14             | 107          | ●     |
| TKW130D14 | 13.0             | 60             | 14             | 107          | ●     |
| TKW131D14 | 13.1             | 60             | 14             | 107          | ●     |

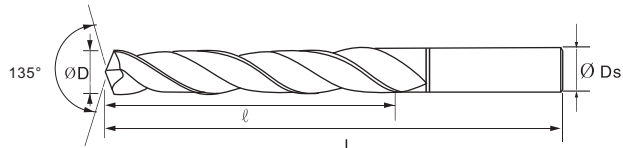
● Stock ○ Non-stock

# High Performance Carbide Drill for Cast Iron



## TKW Drill Series 3D External Coolant

|                        |         |                         |  |             |       |
|------------------------|---------|-------------------------|--|-------------|-------|
| Material               | Carbide | Helix angle             | 30°  | Point angle | 135°  |
| Cutting edge tolerance | m7      | Shank tolerance         | h6   | Standard    | 6537A |
| Coating                | TiAlN   | Suitable for processing | Gray cast iron/Ductile cast iron(Tensile Strength≤500) |             |       |



Unit(mm)

| Model No. | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-----------|------------------|----------------|----------------|--------------|-------|
|           | D                | ℓ              | Ds             | L            |       |
| TKW132D14 | 13.2             | 60             | 14             | 107          | ●     |
| TKW133D14 | 13.3             | 60             | 14             | 107          | ●     |
| TKW134D14 | 13.4             | 60             | 14             | 107          | ●     |
| TKW135D14 | 13.5             | 60             | 14             | 107          | ●     |
| TKW136D14 | 13.6             | 60             | 14             | 107          | ●     |
| TKW137D14 | 13.7             | 60             | 14             | 107          | ●     |
| TKW138D14 | 13.8             | 60             | 14             | 107          | ●     |
| TKW139D14 | 13.9             | 60             | 14             | 107          | ●     |
| TKW140D14 | 14.0             | 60             | 14             | 107          | ●     |
| TKW141D16 | 14.1             | 65             | 16             | 115          | ●     |
| TKW142D16 | 14.2             | 65             | 16             | 115          | ●     |
| TKW143D16 | 14.3             | 65             | 16             | 115          | ●     |
| TKW144D16 | 14.4             | 65             | 16             | 115          | ●     |
| TKW145D16 | 14.5             | 65             | 16             | 115          | ●     |
| TKW146D16 | 14.6             | 65             | 16             | 115          | ●     |
| TKW147D16 | 14.7             | 65             | 16             | 115          | ●     |
| TKW148D16 | 14.8             | 65             | 16             | 115          | ●     |
| TKW149D16 | 14.9             | 65             | 16             | 115          | ●     |
| TKW150D16 | 15.0             | 65             | 16             | 115          | ●     |
| TKW151D16 | 15.1             | 65             | 16             | 115          | ●     |
| TKW152D16 | 15.2             | 65             | 16             | 115          | ●     |
| TKW153D16 | 15.3             | 65             | 16             | 115          | ●     |
| TKW154D16 | 15.4             | 65             | 16             | 115          | ●     |
| TKW155D16 | 15.5             | 65             | 16             | 115          | ●     |
| TKW156D16 | 15.6             | 65             | 16             | 115          | ●     |
| TKW157D16 | 15.7             | 65             | 16             | 115          | ●     |
| TKW158D16 | 15.8             | 65             | 16             | 115          | ●     |
| TKW159D16 | 15.9             | 65             | 16             | 115          | ●     |
| TKW160D16 | 16.0             | 65             | 16             | 115          | ●     |
| TKW165D18 | 16.5             | 73             | 18             | 123          | ○     |
| TKW170D18 | 17.0             | 73             | 18             | 123          | ○     |
| TKW175D18 | 17.5             | 73             | 18             | 123          | ○     |
| TKW180D18 | 18.0             | 73             | 18             | 123          | ○     |
| TKW185D20 | 18.5             | 79             | 20             | 131          | ○     |

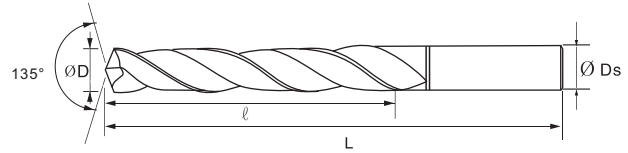
● Stock ○ Non-stock

# High Performance Carbide Drill for Cast Iron



## TKW Drill Series 3D External Coolant

|                        |         |                         |  |             |       |
|------------------------|---------|-------------------------|--|-------------|-------|
| Material               | Carbide | Helix angle             | 30°  | Point angle | 135°  |
| Cutting edge tolerance | m7      | Shank tolerance         | h6   | Standard    | 6537A |
| Coating                | TiAlN   | Suitable for processing | Gray cast iron/Ductile cast iron(Tensile Strength≤500) |             |       |



Unit(mm)

| Model No. | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-----------|------------------|----------------|----------------|--------------|-------|
|           | D                | l              | Ds             | L            |       |
| TKW190D20 | 19.0             | 79             | 20             | 131          | ○     |
| TKW195D20 | 19.5             | 79             | 20             | 131          | ○     |
| TKW200D20 | 20.0             | 79             | 20             | 131          | ○     |

Notice: The MOQ for Non-stock item is 5pcs.

● Stock ○ Non-stock

Carbide Drills

U Drills

Head Exchangable Drills

Deep Hole Drills

CDR 45° Chamfer Cutter

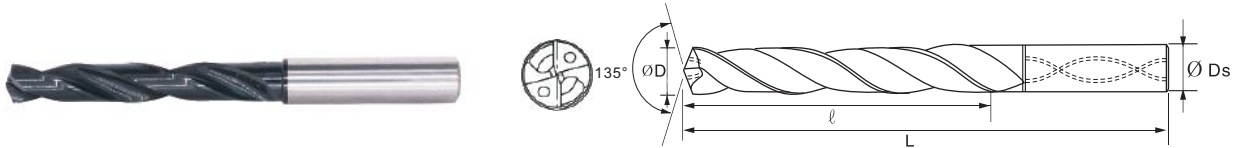
Non-standard Tools

# High Performance Carbide Drill for Cast Iron



## TKS Drill Series 3D with Internal Coolant

|                        |         |                         |  |             |       |
|------------------------|---------|-------------------------|--|-------------|-------|
| Material               | Carbide | Helix angle             | 30°  | Point angle | 135°  |
| Cutting edge tolerance | m7      | Shank tolerance         | h6   | Standard    | 6537A |
| Coating                | TiAlN   | Suitable for processing | Gray cast iron/Ductile cast iron(Tensile Strength≤500) |             |       |



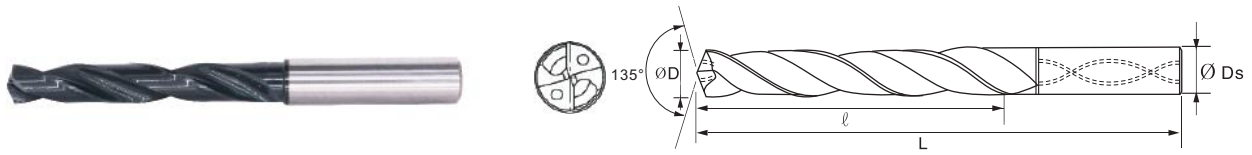
Unit(mm)

| Model No. | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-----------|------------------|----------------|----------------|--------------|-------|
|           | D                | ℓ              | Ds             | L            |       |
| TKS030D6  | 3.0              | 20             | 6              | 62           | ●     |
| TKS031D6  | 3.1              | 20             | 6              | 62           | ●     |
| TKS032D6  | 3.2              | 20             | 6              | 62           | ●     |
| TKS033D6  | 3.3              | 20             | 6              | 62           | ●     |
| TKS034D6  | 3.4              | 20             | 6              | 62           | ●     |
| TKS035D6  | 3.5              | 20             | 6              | 62           | ●     |
| TKS036D6  | 3.6              | 20             | 6              | 62           | ●     |
| TKS037D6  | 3.7              | 20             | 6              | 62           | ●     |
| TKS038D6  | 3.8              | 24             | 6              | 66           | ●     |
| TKS039D6  | 3.9              | 24             | 6              | 66           | ●     |
| TKS040D6  | 4.0              | 24             | 6              | 66           | ●     |
| TKS041D6  | 4.1              | 24             | 6              | 66           | ●     |
| TKS042D6  | 4.2              | 24             | 6              | 66           | ●     |
| TKS043D6  | 4.3              | 24             | 6              | 66           | ●     |
| TKS044D6  | 4.4              | 24             | 6              | 66           | ●     |
| TKS045D6  | 4.5              | 24             | 6              | 66           | ●     |
| TKS046D6  | 4.6              | 24             | 6              | 66           | ●     |
| TKS047D6  | 4.7              | 24             | 6              | 66           | ●     |
| TKS048D6  | 4.8              | 28             | 6              | 66           | ●     |
| TKS049D6  | 4.9              | 28             | 6              | 66           | ●     |
| TKS050D6  | 5.0              | 28             | 6              | 66           | ●     |
| TKS051D6  | 5.1              | 28             | 6              | 66           | ●     |
| TKS052D6  | 5.2              | 28             | 6              | 66           | ●     |
| TKS053D6  | 5.3              | 28             | 6              | 66           | ●     |
| TKS054D6  | 5.4              | 28             | 6              | 66           | ●     |
| TKS055D6  | 5.5              | 28             | 6              | 66           | ●     |
| TKS056D6  | 5.6              | 28             | 6              | 66           | ●     |
| TKS057D6  | 5.7              | 28             | 6              | 66           | ●     |
| TKS058D6  | 5.8              | 28             | 6              | 66           | ●     |
| TKS059D6  | 5.9              | 28             | 6              | 66           | ●     |
| TKS060D6  | 6.0              | 28             | 6              | 66           | ●     |
| TKS061D8  | 6.1              | 34             | 8              | 79           | ●     |
| TKS062D8  | 6.2              | 34             | 8              | 79           | ●     |

● Stock ○ Non-stock

## TKS Drill Series 3D with Internal Coolant

|                        |         |                         |  |             |       |
|------------------------|---------|-------------------------|--|-------------|-------|
| Material               | Carbide | Helix angle             | 30°  | Point angle | 135°  |
| Cutting edge tolerance | m7      | Shank tolerance         | h6   | Standard    | 6537A |
| Coating                | TiAlN   | Suitable for processing | Gray cast iron/Ductile cast iron(Tensile Strength≤500) |             |       |



Unit(mm)

| Model No. | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-----------|------------------|----------------|----------------|--------------|-------|
|           | D                | ℓ              | Ds             | L            |       |
| TKS063D8  | 6.3              | 34             | 8              | 79           | ●     |
| TKS064D8  | 6.4              | 34             | 8              | 79           | ●     |
| TKS065D8  | 6.5              | 34             | 8              | 79           | ●     |
| TKS066D8  | 6.6              | 34             | 8              | 79           | ●     |
| TKS067D8  | 6.7              | 34             | 8              | 79           | ●     |
| TKS068D8  | 6.8              | 34             | 8              | 79           | ●     |
| TKS069D8  | 6.9              | 34             | 8              | 79           | ●     |
| TKS070D8  | 7.0              | 34             | 8              | 79           | ●     |
| TKS071D8  | 7.1              | 41             | 8              | 79           | ●     |
| TKS072D8  | 7.2              | 41             | 8              | 79           | ●     |
| TKS073D8  | 7.3              | 41             | 8              | 79           | ●     |
| TKS074D8  | 7.4              | 41             | 8              | 79           | ●     |
| TKS075D8  | 7.5              | 41             | 8              | 79           | ●     |
| TKS076D8  | 7.6              | 41             | 8              | 79           | ●     |
| TKS077D8  | 7.7              | 41             | 8              | 79           | ●     |
| TKS078D8  | 7.8              | 41             | 8              | 79           | ●     |
| TKS079D8  | 7.9              | 41             | 8              | 79           | ●     |
| TKS080D8  | 8.0              | 41             | 8              | 79           | ●     |
| TKS081D10 | 8.1              | 47             | 10             | 89           | ●     |
| TKS082D10 | 8.2              | 47             | 10             | 89           | ●     |
| TKS083D10 | 8.3              | 47             | 10             | 89           | ●     |
| TKS084D10 | 8.4              | 47             | 10             | 89           | ●     |
| TKS085D10 | 8.5              | 47             | 10             | 89           | ●     |
| TKS086D10 | 8.6              | 47             | 10             | 89           | ●     |
| TKS087D10 | 8.7              | 47             | 10             | 89           | ●     |
| TKS088D10 | 8.8              | 47             | 10             | 89           | ●     |
| TKS089D10 | 8.9              | 47             | 10             | 89           | ●     |
| TKS090D10 | 9.0              | 47             | 10             | 89           | ●     |
| TKS091D10 | 9.1              | 47             | 10             | 89           | ●     |
| TKS092D10 | 9.2              | 47             | 10             | 89           | ●     |
| TKS093D10 | 9.3              | 47             | 10             | 89           | ●     |
| TKS094D10 | 9.4              | 47             | 10             | 89           | ●     |
| TKS095D10 | 9.5              | 47             | 10             | 89           | ●     |

● Stock ○ Non-stock

Carbide Drills

U Drills

Head Exchangable Drills

Deep Hole Drills

CDR 45° Chamfer Cutter

Non-standard Tools

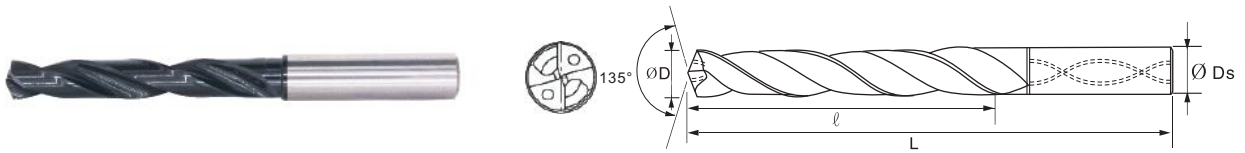
# High Performance Carbide Drill for Cast Iron



Carbide Drills

## TKS Drill Series 3D with Internal Coolant

|                        |         |                         |  |             |       |
|------------------------|---------|-------------------------|--|-------------|-------|
| Material               | Carbide | Helix angle             | 30°  | Point angle | 135°  |
| Cutting edge tolerance | m7      | Shank tolerance         | h6   | Standard    | 6537A |
| Coating                | TiAlN   | Suitable for processing | Gray cast iron/Ductile cast iron(Tensile Strength ≤ 500) |             |       |



Unit(mm)

| Model No. | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-----------|------------------|----------------|----------------|--------------|-------|
|           | D                | l              | Ds             | L            |       |
| TKS096D10 | 9.6              | 47             | 10             | 89           | ●     |
| TKS097D10 | 9.7              | 47             | 10             | 89           | ●     |
| TKS098D10 | 9.8              | 47             | 10             | 89           | ●     |
| TKS099D10 | 9.9              | 47             | 10             | 89           | ●     |
| TKS100D10 | 10.0             | 47             | 10             | 89           | ●     |
| TKS101D12 | 10.1             | 55             | 12             | 102          | ●     |
| TKS102D12 | 10.2             | 55             | 12             | 102          | ●     |
| TKS103D12 | 10.3             | 55             | 12             | 102          | ●     |
| TKS104D12 | 10.4             | 55             | 12             | 102          | ●     |
| TKS105D12 | 10.5             | 55             | 12             | 102          | ●     |
| TKS106D12 | 10.6             | 55             | 12             | 102          | ●     |
| TKS107D12 | 10.7             | 55             | 12             | 102          | ●     |
| TKS108D12 | 10.8             | 55             | 12             | 102          | ●     |
| TKS109D12 | 10.9             | 55             | 12             | 102          | ●     |
| TKS110D12 | 11.0             | 55             | 12             | 102          | ●     |
| TKS111D12 | 11.1             | 55             | 12             | 102          | ●     |
| TKS112D12 | 11.2             | 55             | 12             | 102          | ●     |
| TKS113D12 | 11.3             | 55             | 12             | 102          | ●     |
| TKS114D12 | 11.4             | 55             | 12             | 102          | ●     |
| TKS115D12 | 11.5             | 55             | 12             | 102          | ●     |
| TKS116D12 | 11.6             | 55             | 12             | 102          | ●     |
| TKS117D12 | 11.7             | 55             | 12             | 102          | ●     |
| TKS118D12 | 11.8             | 55             | 12             | 102          | ●     |
| TKS119D12 | 11.9             | 55             | 12             | 102          | ●     |
| TKS120D12 | 12.0             | 55             | 12             | 102          | ●     |
| TKS121D14 | 12.1             | 60             | 14             | 107          | ●     |
| TKS122D14 | 12.2             | 60             | 14             | 107          | ●     |
| TKS123D14 | 12.3             | 60             | 14             | 107          | ●     |
| TKS124D14 | 12.4             | 60             | 14             | 107          | ●     |
| TKS125D14 | 12.5             | 60             | 14             | 107          | ●     |
| TKS126D14 | 12.6             | 60             | 14             | 107          | ●     |
| TKS127D14 | 12.7             | 60             | 14             | 107          | ●     |
| TKS128D14 | 12.8             | 60             | 14             | 107          | ●     |

● Stock ○ Non-stock

U Drills

Head Exchangable Drills

Deep Hole Drills

CDR 45° Chamfer Cutter

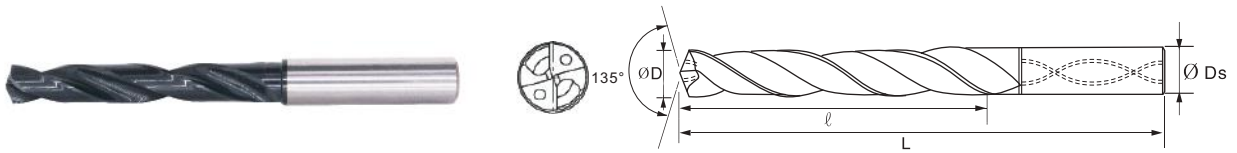
Non-standard Tools

# High Performance Carbide Drill for Cast Iron



## TKS Drill Series 3D with Internal Coolant

|                        |         |                         |  |             |       |
|------------------------|---------|-------------------------|--|-------------|-------|
| Material               | Carbide | Helix angle             | 30°  | Point angle | 135°  |
| Cutting edge tolerance | m7      | Shank tolerance         | h6   | Standard    | 6537A |
| Coating                | TiAlN   | Suitable for processing | Gray cast iron/Ductile cast iron(Tensile Strength≤500) |             |       |



Unit(mm)

| Model No. | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-----------|------------------|----------------|----------------|--------------|-------|
|           | D                | l              | Ds             | L            |       |
| TKS129D14 | 12.9             | 60             | 14             | 107          | ●     |
| TKS130D14 | 13.0             | 60             | 14             | 107          | ●     |
| TKS131D14 | 13.1             | 60             | 14             | 107          | ●     |
| TKS132D14 | 13.2             | 60             | 14             | 107          | ●     |
| TKS133D14 | 13.3             | 60             | 14             | 107          | ●     |
| TKS134D14 | 13.4             | 60             | 14             | 107          | ●     |
| TKS135D14 | 13.5             | 60             | 14             | 107          | ●     |
| TKS136D14 | 13.6             | 60             | 14             | 107          | ●     |
| TKS137D14 | 13.7             | 60             | 14             | 107          | ●     |
| TKS138D14 | 13.8             | 60             | 14             | 107          | ●     |
| TKS139D14 | 13.9             | 60             | 14             | 107          | ●     |
| TKS140D14 | 14.0             | 60             | 14             | 107          | ●     |
| TKS141D16 | 14.1             | 65             | 16             | 115          | ●     |
| TKS142D16 | 14.2             | 65             | 16             | 115          | ●     |
| TKS143D16 | 14.3             | 65             | 16             | 115          | ●     |
| TKS144D16 | 14.4             | 65             | 16             | 115          | ●     |
| TKS145D16 | 14.5             | 65             | 16             | 115          | ●     |
| TKS146D16 | 14.6             | 65             | 16             | 115          | ●     |
| TKS147D16 | 14.7             | 65             | 16             | 115          | ●     |
| TKS148D16 | 14.8             | 65             | 16             | 115          | ●     |
| TKS149D16 | 14.9             | 65             | 16             | 115          | ●     |
| TKS150D16 | 15.0             | 65             | 16             | 115          | ●     |
| TKS151D16 | 15.1             | 65             | 16             | 115          | ●     |
| TKS152D16 | 15.2             | 65             | 16             | 115          | ●     |
| TKS153D16 | 15.3             | 65             | 16             | 115          | ●     |
| TKS154D16 | 15.4             | 65             | 16             | 115          | ●     |
| TKS155D16 | 15.5             | 65             | 16             | 115          | ●     |
| TKS156D16 | 15.6             | 65             | 16             | 115          | ●     |
| TKS157D16 | 15.7             | 65             | 16             | 115          | ●     |
| TKS158D16 | 15.8             | 65             | 16             | 115          | ●     |
| TKS159D16 | 15.9             | 65             | 16             | 115          | ●     |
| TKS160D16 | 16.0             | 65             | 16             | 115          | ●     |
| TKS165D18 | 16.5             | 73             | 18             | 123          | ○     |

● Stock ○ Non-stock

Carbide Drills

U Drills

Head Exchangable Drills

Deep Hole Drills

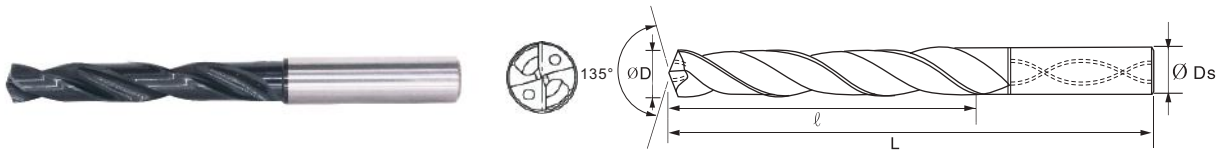
CDR 45° Chamfer Cutter

Non-standard Tools

Carbide Drills

## TKS Drill Series 3D with Internal Coolant

|                        |         |                         |  |             |       |
|------------------------|---------|-------------------------|--|-------------|-------|
| Material               | Carbide | Helix angle             | 30°  | Point angle | 135°  |
| Cutting edge tolerance | m7      | Shank tolerance         | h6   | Standard    | 6537A |
| Coating                | TiAlN   | Suitable for processing | Gray cast iron/Ductile cast iron(Tensile Strength≤500) |             |       |



Unit(mm)

| Model No. | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-----------|------------------|----------------|----------------|--------------|-------|
|           | D                | l              | Ds             | L            |       |
| TKS170D18 | 17.0             | 73             | 18             | 123          | ○     |
| TKS175D18 | 17.5             | 73             | 18             | 123          | ○     |
| TKS180D18 | 18.0             | 73             | 18             | 123          | ○     |
| TKS185D20 | 18.5             | 79             | 20             | 131          | ○     |
| TKS190D20 | 19.0             | 79             | 20             | 131          | ○     |
| TKS195D20 | 19.5             | 79             | 20             | 131          | ○     |
| TKS200D20 | 20.0             | 79             | 20             | 131          | ○     |

Notice: The MOQ for Non-stock item is 5pcs.

● Stock ○ Non-stock

U Drills

Head Exchangable Drills

Deep Hole Drills

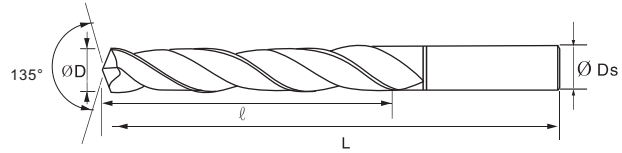
CDR 45° Chamfer Cutter

Non-standard Tools



## TKW Drill Series 3D External Coolant(Inch)

|                        |         |                         |  |             |       |
|------------------------|---------|-------------------------|--|-------------|-------|
| Material               | Carbide | Helix angle             | 30°  | Point angle | 135°  |
| Cutting edge tolerance | m7      | Shank tolerance         | h6   | Standard    | 6537A |
| Coating                | TiAlN   | Suitable for processing | Gray cast iron/Ductile cast iron(Tensile Strength≤500) |             |       |



Unit(mm)

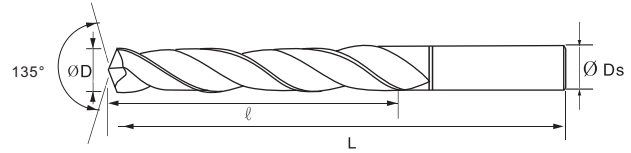
| Model No.  | Cutting Diameter |       | Cutting Length<br><i>l</i> | Shank Diameter<br><i>D<sub>s</sub></i> | Total Length<br><i>L</i> | Stock |
|------------|------------------|-------|----------------------------|--|--------------------------|-------|
|            | D                |       |                            |  |                          |       |
|            | mm               | inch  |                            |  |                          |       |
| TKW0318D6  | 3.18             | 1/8   | 20                         | 6                                      | 62                       | ○     |
| TKW0357D6  | 3.57             | 9/64  | 20                         | 6                                      | 62                       | ○     |
| TKW0397D6  | 3.97             | 5/32  | 24                         | 6                                      | 66                       | ○     |
| TKW0437D6  | 4.37             | 11/64 | 24                         | 6                                      | 66                       | ○     |
| TKW0476D6  | 4.76             | 3/16  | 26                         | 6                                      | 66                       | ○     |
| TKW0516D6  | 5.16             | 13/64 | 28                         | 6                                      | 66                       | ○     |
| TKW0556D6  | 5.56             | 7/32  | 28                         | 6                                      | 66                       | ○     |
| TKW0595D6  | 5.95             | 15/64 | 28                         | 6                                      | 66                       | ○     |
| TKW0635D8  | 6.35             | 1/4   | 34                         | 8                                      | 79                       | ○     |
| TKW0675D8  | 6.75             | 17/64 | 34                         | 8                                      | 79                       | ○     |
| TKW0714D8  | 7.14             | 9/32  | 41                         | 8                                      | 79                       | ○     |
| TKW0754D8  | 7.54             | 19/64 | 41                         | 8                                      | 79                       | ○     |
| TKW0794D8  | 7.94             | 5/16  | 41                         | 8                                      | 79                       | ○     |
| TKW0833D10 | 8.33             | 21/64 | 47                         | 10                                     | 89                       | ○     |
| TKW0873D10 | 8.73             | 11/32 | 47                         | 10                                     | 89                       | ○     |
| TKW0913D10 | 9.13             | 23/64 | 47                         | 10                                     | 89                       | ○     |
| TKW0952D10 | 9.52             | 3/8   | 47                         | 10                                     | 89                       | ○     |
| TKW0992D10 | 9.92             | 25/64 | 47                         | 10                                     | 89                       | ○     |
| TKW1032D12 | 10.32            | 13/32 | 55                         | 12                                     | 102                      | ○     |
| TKW1072D12 | 10.72            | 27/64 | 55                         | 12                                     | 102                      | ○     |
| TKW1111D12 | 11.11            | 7/16  | 55                         | 12                                     | 102                      | ○     |
| TKW1151D12 | 11.51            | 29/64 | 55                         | 12                                     | 102                      | ○     |
| TKW1191D12 | 11.91            | 15/32 | 55                         | 12                                     | 102                      | ○     |
| TKW1349D14 | 13.49            | 17/32 | 60                         | 14                                     | 107                      | ○     |
| TKW1389D14 | 13.89            | 35/64 | 60                         | 14                                     | 107                      | ○     |
| TKW1429D16 | 14.29            | 9/16  | 65                         | 16                                     | 115                      | ○     |
| TKW1468D16 | 14.68            | 37/64 | 65                         | 16                                     | 115                      | ○     |
| TKW1508D16 | 15.08            | 19/32 | 65                         | 16                                     | 115                      | ○     |
| TKW1548D16 | 15.48            | 39/64 | 65                         | 16                                     | 115                      | ○     |
| TKW1588D16 | 15.88            | 5/8   | 65                         | 16                                     | 115                      | ○     |
| TKW1627D18 | 16.27            | 41/64 | 73                         | 18                                     | 123                      | ○     |
| TKW1667D18 | 16.67            | 21/32 | 73                         | 18                                     | 123                      | ○     |
| TKW1707D18 | 17.07            | 43/64 | 73                         | 18                                     | 123                      | ○     |
| TKW1746D18 | 17.46            | 11/16 | 73                         | 18                                     | 123                      | ○     |

● Stock ○ Non-stock

Carbide Drills

## TKW Drill Series 3D External Coolant(Inch)

|                        |         |                         |  |             |       |
|------------------------|---------|-------------------------|--|-------------|-------|
| Material               | Carbide | Helix angle             | 30°  | Point angle | 135°  |
| Cutting edge tolerance | m7      | Shank tolerance         | h6   | Standard    | 6537A |
| Coating                | TiAlN   | Suitable for processing | Gray cast iron/Ductile cast iron(Tensile Strength≤500) |             |       |



Unit(mm)

U Drills

| Model No.  | Cutting Diameter |       | Cutting Length<br><i>ℓ</i> | Shank Diameter<br><i>Ds</i> | Total Length<br><i>L</i> | Stock |
|------------|------------------|-------|----------------------------|-----------------------------|--------------------------|-------|
|            | D                |       |                            |                             |                          |       |
|            | mm               | inch  |                            |                             |                          |       |
| TKW1786D18 | 17.86            | 45/64 | 73                         | 18                          | 123                      | ○     |
| TKW1826D20 | 18.26            | 23/32 | 79                         | 20                          | 131                      | ○     |
| TKW1865D20 | 18.65            | 47/64 | 79                         | 20                          | 131                      | ○     |
| TKW1905D20 | 19.05            | 3/4   | 79                         | 20                          | 131                      | ○     |
| TKW1945D20 | 19.45            | 49/64 | 79                         | 20                          | 131                      | ○     |
| TKW1984D20 | 19.84            | 25/32 | 79                         | 20                          | 131                      | ○     |

Notice: The MOQ for Non-stock item is 5pcs.

● Stock ○ Non-stock

Head Exchangable Drills

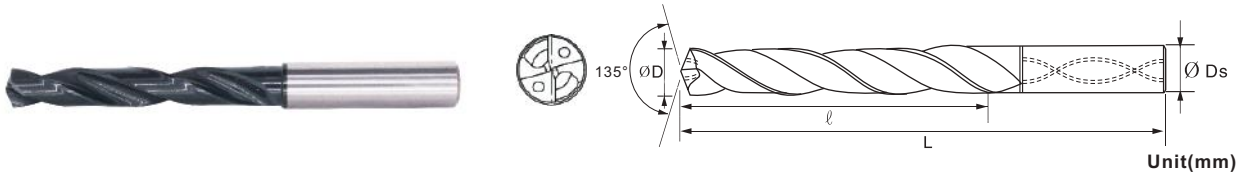
Deep Hole Drills

CDR 45° Chamfer Cutter

Non-standard Tools

## TKS Drill Series 3D with Internal Coolant (Inch)

|                        |         |                         |  |             |       |
|------------------------|---------|-------------------------|--|-------------|-------|
| Material               | Carbide | Helix angle             | 30°  | Point angle | 135°  |
| Cutting edge tolerance | m7      | Shank tolerance         | h6   | Standard    | 6537A |
| Coating                | TiAlN   | Suitable for processing | Gray cast iron/Ductile cast iron(Tensile Strength≤500) |             |       |



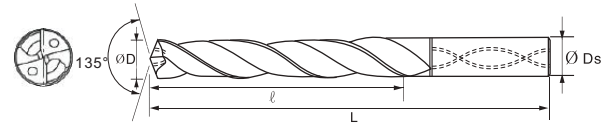
Unit(mm)

| Model No.  | Cutting Diameter |       | Cutting Length<br><i>l</i> | Shank Diameter<br><i>Ds</i> | Total Length<br><i>L</i> | Stock |
|------------|------------------|-------|----------------------------|-----------------------------|--------------------------|-------|
|            | D                |       |                            |                             |                          |       |
|            | mm               | inch  |                            |                             |                          |       |
| TKS0318D6  | 3.18             | 1/8   | 20                         | 6                           | 62                       | ○     |
| TKS0357D6  | 3.57             | 9/64  | 20                         | 6                           | 62                       | ○     |
| TKS0397D6  | 3.97             | 5/32  | 24                         | 6                           | 66                       | ○     |
| TKS0437D6  | 4.37             | 11/64 | 24                         | 6                           | 66                       | ○     |
| TKS0476D6  | 4.76             | 3/16  | 26                         | 6                           | 66                       | ○     |
| TKS0516D6  | 5.16             | 13/64 | 28                         | 6                           | 66                       | ○     |
| TKS0556D6  | 5.56             | 7/32  | 28                         | 6                           | 66                       | ○     |
| TKS0595D6  | 5.95             | 15/64 | 28                         | 6                           | 66                       | ○     |
| TKS0635D8  | 6.35             | 1/4   | 34                         | 8                           | 79                       | ○     |
| TKS0675D8  | 6.75             | 17/64 | 34                         | 8                           | 79                       | ○     |
| TKS0714D8  | 7.14             | 9/32  | 41                         | 8                           | 79                       | ○     |
| TKS0754D8  | 7.54             | 19/64 | 41                         | 8                           | 79                       | ○     |
| TKS0794D8  | 7.94             | 5/16  | 41                         | 8                           | 79                       | ○     |
| TKS0833D10 | 8.33             | 21/64 | 47                         | 10                          | 89                       | ○     |
| TKS0873D10 | 8.73             | 11/32 | 47                         | 10                          | 89                       | ○     |
| TKS0913D10 | 9.13             | 23/64 | 47                         | 10                          | 89                       | ○     |
| TKS0952D10 | 9.52             | 3/8   | 47                         | 10                          | 89                       | ○     |
| TKS0992D10 | 9.92             | 25/64 | 47                         | 10                          | 89                       | ○     |
| TKS1032D12 | 10.32            | 13/32 | 55                         | 12                          | 102                      | ○     |
| TKS1072D12 | 10.72            | 27/64 | 55                         | 12                          | 102                      | ○     |
| TKS1111D12 | 11.11            | 7/16  | 55                         | 12                          | 102                      | ○     |
| TKS1151D12 | 11.51            | 29/64 | 55                         | 12                          | 102                      | ○     |
| TKS1191D12 | 11.91            | 15/32 | 55                         | 12                          | 102                      | ○     |
| TKS1349D14 | 13.49            | 17/32 | 60                         | 14                          | 107                      | ○     |
| TKS1389D14 | 13.89            | 35/64 | 60                         | 14                          | 107                      | ○     |
| TKS1429D16 | 14.29            | 9/16  | 65                         | 16                          | 115                      | ○     |
| TKS1468D16 | 14.68            | 37/64 | 65                         | 16                          | 115                      | ○     |
| TKS1508D16 | 15.08            | 19/32 | 65                         | 16                          | 115                      | ○     |
| TKS1548D16 | 15.48            | 39/64 | 65                         | 16                          | 115                      | ○     |
| TKS1588D16 | 15.88            | 5/8   | 65                         | 16                          | 115                      | ○     |
| TKS1627D18 | 16.27            | 41/64 | 73                         | 18                          | 123                      | ○     |
| TKS1667D18 | 16.67            | 21/32 | 73                         | 18                          | 123                      | ○     |
| TKS1707D18 | 17.07            | 43/64 | 73                         | 18                          | 123                      | ○     |
| TKS1746D18 | 17.46            | 11/16 | 73                         | 18                          | 123                      | ○     |

● Stock ○ Non-stock

## TKS Drill Series 3D with Internal Coolant (Inch)

|                        |         |                         |  |             |       |
|------------------------|---------|-------------------------|--|-------------|-------|
| Material               | Carbide | Helix angle             | 30°  | Point angle | 135°  |
| Cutting edge tolerance | m7      | Shank tolerance         | h6   | Standard    | 6537A |
| Coating                | TiAlN   | Suitable for processing | Gray cast iron/Ductile cast iron(Tensile Strength≤500) |             |       |



Unit(mm)

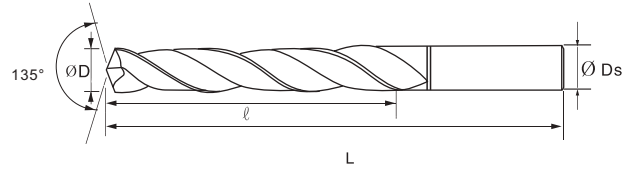
| Model No.  | Cutting Diameter |       | Cutting Length<br><i>l</i> | Shank Diameter<br><i>D<sub>s</sub></i> | Total Length<br><i>L</i> | Stock |
|------------|------------------|-------|----------------------------|--|--------------------------|-------|
|            | D                |       |                            |  |                          |       |
|            | mm               | inch  |                            |  |                          |       |
| TKS1786D18 | 17.86            | 45/64 | 73                         | 18                                     | 123                      | ○     |
| TKS1826D20 | 18.26            | 23/32 | 79                         | 20                                     | 131                      | ○     |
| TKS1865D20 | 18.65            | 47/64 | 79                         | 20                                     | 131                      | ○     |
| TKS1905D20 | 19.05            | 3/4   | 79                         | 20                                     | 131                      | ○     |
| TKS1945D20 | 19.45            | 49/64 | 79                         | 20                                     | 131                      | ○     |
| TKS1984D20 | 19.84            | 25/32 | 79                         | 20                                     | 131                      | ○     |

Notice: The MOQ for Non-stock item is 5pcs.

● Stock ○ Non-stock

## TKW Drill Series 5D External Coolant

|                        |         |                         |  |             |       |
|------------------------|---------|-------------------------|--|-------------|-------|
| Material               | Carbide | Helix angle             | 30°  | Point angle | 135°  |
| Cutting edge tolerance | m7      | Shank tolerance         | h6   | Standard    | 6537A |
| Coating                | TiAlN   | Suitable for processing | Gray cast iron/Ductile cast iron(Tensile Strength≤500) |             |       |



Unit(mm)

| Model No.  | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|------------|------------------|----------------|----------------|--------------|-------|
|            | D                | ℓ              | Ds             | L            |       |
| TKW05030D6 | 3.0              | 26             | 6              | 66           | ●     |
| TKW05031D6 | 3.1              | 26             | 6              | 66           | ●     |
| TKW05032D6 | 3.2              | 26             | 6              | 66           | ●     |
| TKW05033D6 | 3.3              | 26             | 6              | 66           | ●     |
| TKW05034D6 | 3.4              | 26             | 6              | 66           | ●     |
| TKW05035D6 | 3.5              | 26             | 6              | 66           | ●     |
| TKW05036D6 | 3.6              | 26             | 6              | 66           | ●     |
| TKW05037D6 | 3.7              | 26             | 6              | 66           | ●     |
| TKW05038D6 | 3.8              | 34             | 6              | 74           | ●     |
| TKW05039D6 | 3.9              | 34             | 6              | 74           | ●     |
| TKW05040D6 | 4.0              | 34             | 6              | 74           | ●     |
| TKW05041D6 | 4.1              | 34             | 6              | 74           | ●     |
| TKW05042D6 | 4.2              | 34             | 6              | 74           | ●     |
| TKW05043D6 | 4.3              | 34             | 6              | 74           | ●     |
| TKW05044D6 | 4.4              | 34             | 6              | 74           | ●     |
| TKW05045D6 | 4.5              | 34             | 6              | 74           | ●     |
| TKW05046D6 | 4.6              | 34             | 6              | 74           | ●     |
| TKW05047D6 | 4.7              | 34             | 6              | 74           | ●     |
| TKW05048D6 | 4.8              | 44             | 6              | 82           | ●     |
| TKW05049D6 | 4.9              | 44             | 6              | 82           | ●     |
| TKW05050D6 | 5.0              | 44             | 6              | 82           | ●     |
| TKW05051D6 | 5.1              | 44             | 6              | 82           | ●     |
| TKW05052D6 | 5.2              | 44             | 6              | 82           | ●     |
| TKW05053D6 | 5.3              | 44             | 6              | 82           | ●     |
| TKW05054D6 | 5.4              | 44             | 6              | 82           | ●     |
| TKW05055D6 | 5.5              | 44             | 6              | 82           | ●     |
| TKW05056D6 | 5.6              | 44             | 6              | 82           | ●     |
| TKW05057D6 | 5.7              | 44             | 6              | 82           | ●     |
| TKW05058D6 | 5.8              | 44             | 6              | 82           | ●     |
| TKW05059D6 | 5.9              | 44             | 6              | 82           | ●     |
| TKW05060D6 | 6.0              | 44             | 6              | 82           | ●     |
| TKW05061D8 | 6.1              | 44             | 8              | 82           | ●     |

● Stock ○ Non-stock

Carbide Drills

U Drills

Head Exchangable Drills

Deep Hole Drills

CDR 45° Chamfer Cutter

Non-standard Tools

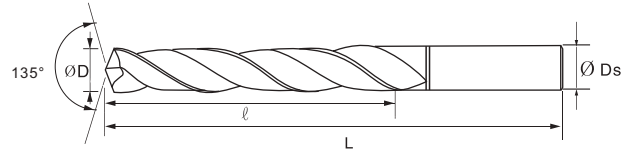
# High Performance Carbide Drill for Cast Iron



Carbide Drills

## TKW Drill Series 5D External Coolant

|                        |         |                         |  |             |       |
|------------------------|---------|-------------------------|--|-------------|-------|
| Material               | Carbide | Helix angle             | 30°  | Point angle | 135°  |
| Cutting edge tolerance | m7      | Shank tolerance         | h6   | Standard    | 6537A |
| Coating                | TiAlN   | Suitable for processing | Gray cast iron/Ductile cast iron(Tensile Strength≤500) |             |       |



U Drills

Unit(mm)

| Model No.   | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-------------|------------------|----------------|----------------|--------------|-------|
|             | D                | ℓ              | Ds             | L            |       |
| TKW05062D8  | 6.2              | 53             | 8              | 91           | ●     |
| TKW05063D8  | 6.3              | 53             | 8              | 91           | ●     |
| TKW05064D8  | 6.4              | 53             | 8              | 91           | ●     |
| TKW05065D8  | 6.5              | 53             | 8              | 91           | ●     |
| TKW05066D8  | 6.6              | 53             | 8              | 91           | ●     |
| TKW05067D8  | 6.7              | 53             | 8              | 91           | ●     |
| TKW05068D8  | 6.8              | 53             | 8              | 91           | ●     |
| TKW05069D8  | 6.9              | 53             | 8              | 91           | ●     |
| TKW05070D8  | 7.0              | 53             | 8              | 91           | ●     |
| TKW05071D8  | 7.1              | 53             | 8              | 91           | ●     |
| TKW05072D8  | 7.2              | 53             | 8              | 91           | ●     |
| TKW05073D8  | 7.3              | 53             | 8              | 91           | ●     |
| TKW05074D8  | 7.4              | 53             | 8              | 91           | ●     |
| TKW05075D8  | 7.5              | 53             | 8              | 91           | ●     |
| TKW05076D8  | 7.6              | 53             | 8              | 91           | ●     |
| TKW05077D8  | 7.7              | 53             | 8              | 91           | ●     |
| TKW05078D8  | 7.8              | 53             | 8              | 91           | ●     |
| TKW05079D8  | 7.9              | 53             | 8              | 91           | ●     |
| TKW05080D8  | 8.0              | 53             | 8              | 91           | ●     |
| TKW05081D10 | 8.1              | 61             | 10             | 103          | ●     |
| TKW05082D10 | 8.2              | 61             | 10             | 103          | ●     |
| TKW05083D10 | 8.3              | 61             | 10             | 103          | ●     |
| TKW05084D10 | 8.4              | 61             | 10             | 103          | ●     |
| TKW05085D10 | 8.5              | 61             | 10             | 103          | ●     |
| TKW05086D10 | 8.6              | 61             | 10             | 103          | ●     |
| TKW05087D10 | 8.7              | 61             | 10             | 103          | ●     |
| TKW05088D10 | 8.8              | 61             | 10             | 103          | ●     |
| TKW05089D10 | 8.9              | 61             | 10             | 103          | ●     |
| TKW05090D10 | 9.0              | 61             | 10             | 103          | ●     |
| TKW05091D10 | 9.1              | 61             | 10             | 103          | ●     |
| TKW05092D10 | 9.2              | 61             | 10             | 103          | ●     |
| TKW05093D10 | 9.3              | 61             | 10             | 103          | ●     |
| TKW05094D10 | 9.4              | 61             | 10             | 103          | ●     |

● Stock ○ Non-stock

Head Exchangable Drills

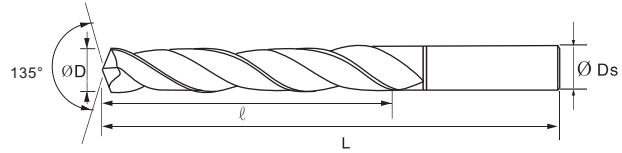
Deep Hole Drills

CDR 45° Chamfer Cutter

Non-standard Tools

## TKW Drill Series 5D External Coolant

|                        |         |                         |  |             |       |
|------------------------|---------|-------------------------|--|-------------|-------|
| Material               | Carbide | Helix angle             | 30°  | Point angle | 135°  |
| Cutting edge tolerance | m7      | Shank tolerance         | h6   | Standard    | 6537A |
| Coating                | TiAlN   | Suitable for processing | Gray cast iron/Ductile cast iron(Tensile Strength≤500) |             |       |



Unit(mm)

| Model No.   | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-------------|------------------|----------------|----------------|--------------|-------|
|             | D                | ℓ              | Ds             | L            |       |
| TKW05095D10 | 9.5              | 61             | 10             | 103          | ●     |
| TKW05096D10 | 9.6              | 61             | 10             | 103          | ●     |
| TKW05097D10 | 9.7              | 61             | 10             | 103          | ●     |
| TKW05098D10 | 9.8              | 61             | 10             | 103          | ●     |
| TKW05099D10 | 9.9              | 61             | 10             | 103          | ●     |
| TKW05100D10 | 10.0             | 61             | 10             | 103          | ●     |
| TKW05101D12 | 10.1             | 71             | 12             | 118          | ●     |
| TKW05102D12 | 10.2             | 71             | 12             | 118          | ●     |
| TKW05103D12 | 10.3             | 71             | 12             | 118          | ●     |
| TKW05104D12 | 10.4             | 71             | 12             | 118          | ●     |
| TKW05105D12 | 10.5             | 71             | 12             | 118          | ●     |
| TKW05106D12 | 10.6             | 71             | 12             | 118          | ●     |
| TKW05107D12 | 10.7             | 71             | 12             | 118          | ●     |
| TKW05108D12 | 10.8             | 71             | 12             | 118          | ●     |
| TKW05109D12 | 10.9             | 71             | 12             | 118          | ●     |
| TKW05110D12 | 11.0             | 71             | 12             | 118          | ●     |
| TKW05111D12 | 11.1             | 71             | 12             | 118          | ●     |
| TKW05112D12 | 11.2             | 71             | 12             | 118          | ●     |
| TKW05113D12 | 11.3             | 71             | 12             | 118          | ●     |
| TKW05114D12 | 11.4             | 71             | 12             | 118          | ●     |
| TKW05115D12 | 11.5             | 71             | 12             | 118          | ●     |
| TKW05116D12 | 11.6             | 71             | 12             | 118          | ●     |
| TKW05117D12 | 11.7             | 71             | 12             | 118          | ●     |
| TKW05118D12 | 11.8             | 71             | 12             | 118          | ●     |
| TKW05119D12 | 11.9             | 71             | 12             | 118          | ●     |
| TKW05120D12 | 12.0             | 71             | 12             | 118          | ●     |
| TKW05121D14 | 12.1             | 77             | 14             | 124          | ●     |
| TKW05122D14 | 12.2             | 77             | 14             | 124          | ●     |
| TKW05123D14 | 12.3             | 77             | 14             | 124          | ●     |
| TKW05124D14 | 12.4             | 77             | 14             | 124          | ●     |
| TKW05125D14 | 12.5             | 77             | 14             | 124          | ●     |
| TKW05126D14 | 12.6             | 77             | 14             | 124          | ●     |
| TKW05127D14 | 12.7             | 77             | 14             | 124          | ●     |

● Stock ○ Non-stock

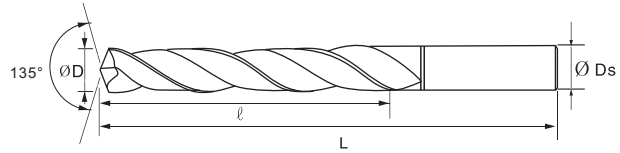
# High Performance Carbide Drill for Cast Iron



Carbide Drills

## TKW Drill Series 5D External Coolant

|                        |         |                         |  |             |       |
|------------------------|---------|-------------------------|--|-------------|-------|
| Material               | Carbide | Helix angle             | 30°  | Point angle | 135°  |
| Cutting edge tolerance | m7      | Shank tolerance         | h6   | Standard    | 6537A |
| Coating                | TiAlN   | Suitable for processing | Gray cast iron/Ductile cast iron(Tensile Strength≤500) |             |       |



U Drills

Unit(mm)

| Model No.   | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-------------|------------------|----------------|----------------|--------------|-------|
|             | D                | ℓ              | Ds             | L            |       |
| TKW05128D14 | 12.8             | 77             | 14             | 124          | ●     |
| TKW05129D14 | 12.9             | 77             | 14             | 124          | ●     |
| TKW05130D14 | 13.0             | 77             | 14             | 124          | ●     |
| TKW05131D14 | 13.1             | 77             | 14             | 124          | ●     |
| TKW05132D14 | 13.2             | 77             | 14             | 124          | ●     |
| TKW05133D14 | 13.3             | 77             | 14             | 124          | ●     |
| TKW05134D14 | 13.4             | 77             | 14             | 124          | ●     |
| TKW05135D14 | 13.5             | 77             | 14             | 124          | ●     |
| TKW05136D14 | 13.6             | 77             | 14             | 124          | ●     |
| TKW05137D14 | 13.7             | 77             | 14             | 124          | ●     |
| TKW05138D14 | 13.8             | 77             | 14             | 124          | ●     |
| TKW05139D14 | 13.9             | 77             | 14             | 124          | ●     |
| TKW05140D14 | 14.0             | 77             | 14             | 124          | ●     |
| TKW05141D16 | 14.1             | 83             | 16             | 133          | ●     |
| TKW05142D16 | 14.2             | 83             | 16             | 133          | ●     |
| TKW05143D16 | 14.3             | 83             | 16             | 133          | ●     |
| TKW05144D16 | 14.4             | 83             | 16             | 133          | ●     |
| TKW05145D16 | 14.5             | 83             | 16             | 133          | ●     |
| TKW05146D16 | 14.6             | 83             | 16             | 133          | ●     |
| TKW05147D16 | 14.7             | 83             | 16             | 133          | ●     |
| TKW05148D16 | 14.8             | 83             | 16             | 133          | ●     |
| TKW05149D16 | 14.9             | 83             | 16             | 133          | ●     |
| TKW05150D16 | 15.0             | 83             | 16             | 133          | ●     |
| TKW05151D16 | 15.1             | 83             | 16             | 133          | ●     |
| TKW05152D16 | 15.2             | 83             | 16             | 133          | ●     |
| TKW05153D16 | 15.3             | 83             | 16             | 133          | ●     |
| TKW05154D16 | 15.4             | 83             | 16             | 133          | ●     |
| TKW05155D16 | 15.5             | 83             | 16             | 133          | ●     |
| TKW05156D16 | 15.6             | 83             | 16             | 133          | ●     |
| TKW05157D16 | 15.7             | 83             | 16             | 133          | ●     |
| TKW05158D16 | 15.8             | 83             | 16             | 133          | ●     |
| TKW05159D16 | 15.9             | 83             | 16             | 133          | ●     |
| TKW05160D16 | 16.0             | 83             | 16             | 133          | ●     |

● Stock ○ Non-stock

Head Exchangable Drills

Deep Hole Drills

CDR 45° Chamfer Cutter

Non-standard Tools

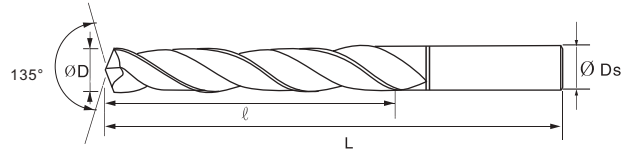


# High Performance Carbide Drill for Cast Iron



## TKW Drill Series 5D External Coolant

|                        |         |                         |  |             |       |
|------------------------|---------|-------------------------|--|-------------|-------|
| Material               | Carbide | Helix angle             | 30°  | Point angle | 135°  |
| Cutting edge tolerance | m7      | Shank tolerance         | h6   | Standard    | 6537A |
| Coating                | TiAlN   | Suitable for processing | Gray cast iron/Ductile cast iron(Tensile Strength≤500) |             |       |



Unit(mm)

| Model No.   | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-------------|------------------|----------------|----------------|--------------|-------|
|             | D                | ℓ              | Ds             | L            |       |
| TKW05165D18 | 16.5             | 93             | 18             | 143          | ○     |
| TKW05170D18 | 17.0             | 93             | 18             | 143          | ○     |
| TKW05175D18 | 17.5             | 93             | 18             | 143          | ○     |
| TKW05180D18 | 18.0             | 93             | 18             | 143          | ○     |
| TKW05185D20 | 18.5             | 101            | 20             | 153          | ○     |
| TKW05190D20 | 19.0             | 101            | 20             | 153          | ○     |
| TKW05195D20 | 19.5             | 101            | 20             | 153          | ○     |
| TKW05200D20 | 20.0             | 101            | 20             | 153          | ○     |

Notice: The MOQ for Non-stock item is 5pcs.

● Stock ○ Non-stock

Carbide Drills

U Drills

Head Exchangable Drills

Deep Hole Drills

CDR 45° Chamfer Cutter

Non-standard Tools

# High Performance Carbide Drill for Cast Iron



Carbide Drills

U Drills

Head Exchangable Drills

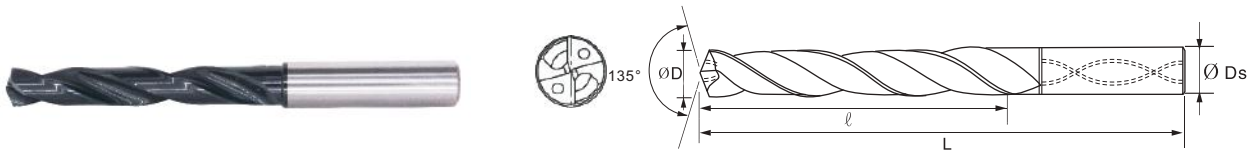
Deep Hole Drills

CDR 45° Chamfer Cutter

Non-standard Tools

## TKS Drill Series 5D with Internal Coolant

|                        |         |                         |  |             |       |
|------------------------|---------|-------------------------|--|-------------|-------|
| Material               | Carbide | Helix angle             | 30°  | Point angle | 135°  |
| Cutting edge tolerance | m7      | Shank tolerance         | h6   | Standard    | 6537A |
| Coating                | TiAlN   | Suitable for processing | Gray cast iron/Ductile cast iron(Tensile Strength≤500) |             |       |



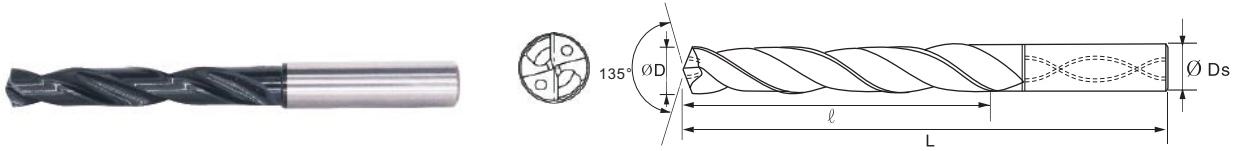
Unit(mm)

| Model No.  | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|------------|------------------|----------------|----------------|--------------|-------|
|            | D                | l              | Ds             | L            |       |
| TKS05030D6 | 3.0              | 26             | 6              | 66           | ●     |
| TKS05031D6 | 3.1              | 26             | 6              | 66           | ●     |
| TKS05032D6 | 3.2              | 26             | 6              | 66           | ●     |
| TKS05033D6 | 3.3              | 26             | 6              | 66           | ●     |
| TKS05034D6 | 3.4              | 26             | 6              | 66           | ●     |
| TKS05035D6 | 3.5              | 26             | 6              | 66           | ●     |
| TKS05036D6 | 3.6              | 26             | 6              | 66           | ●     |
| TKS05037D6 | 3.7              | 26             | 6              | 66           | ●     |
| TKS05038D6 | 3.8              | 34             | 6              | 74           | ●     |
| TKS05039D6 | 3.9              | 34             | 6              | 74           | ●     |
| TKS05040D6 | 4.0              | 34             | 6              | 74           | ●     |
| TKS05041D6 | 4.1              | 34             | 6              | 74           | ●     |
| TKS05042D6 | 4.2              | 34             | 6              | 74           | ●     |
| TKS05043D6 | 4.3              | 34             | 6              | 74           | ●     |
| TKS05044D6 | 4.4              | 34             | 6              | 74           | ●     |
| TKS05045D6 | 4.5              | 34             | 6              | 74           | ●     |
| TKS05046D6 | 4.6              | 34             | 6              | 74           | ●     |
| TKS05047D6 | 4.7              | 34             | 6              | 74           | ●     |
| TKS05048D6 | 4.8              | 44             | 6              | 82           | ●     |
| TKS05049D6 | 4.9              | 44             | 6              | 82           | ●     |
| TKS05050D6 | 5.0              | 44             | 6              | 82           | ●     |
| TKS05051D6 | 5.1              | 44             | 6              | 82           | ●     |
| TKS05052D6 | 5.2              | 44             | 6              | 82           | ●     |
| TKS05053D6 | 5.3              | 44             | 6              | 82           | ●     |
| TKS05054D6 | 5.4              | 44             | 6              | 82           | ●     |
| TKS05055D6 | 5.5              | 44             | 6              | 82           | ●     |
| TKS05056D6 | 5.6              | 44             | 6              | 82           | ●     |
| TKS05057D6 | 5.7              | 44             | 6              | 82           | ●     |
| TKS05058D6 | 5.8              | 44             | 6              | 82           | ●     |
| TKS05059D6 | 5.9              | 44             | 6              | 82           | ●     |
| TKS05060D6 | 6.0              | 44             | 6              | 82           | ●     |
| TKS05061D8 | 6.1              | 44             | 8              | 82           | ●     |
| TKS05062D8 | 6.2              | 53             | 8              | 91           | ●     |
| TKS05063D8 | 6.3              | 53             | 8              | 91           | ●     |
| TKS05064D8 | 6.4              | 53             | 8              | 91           | ●     |
| TKS05065D8 | 6.5              | 53             | 8              | 91           | ●     |

● Stock ○ Non-stock

## TKS Drill Series 5D with Internal Coolant

|                        |         |                         |  |             |       |
|------------------------|---------|-------------------------|--|-------------|-------|
| Material               | Carbide | Helix angle             | 30°  | Point angle | 135°  |
| Cutting edge tolerance | m7      | Shank tolerance         | h6   | Standard    | 6537A |
| Coating                | TiAlN   | Suitable for processing | Gray cast iron/Ductile cast iron(Tensile Strength≤500) |             |       |



Unit(mm)

| Model No.   | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-------------|------------------|----------------|----------------|--------------|-------|
|             | D                | l              | Ds             | L            |       |
| TKS05066D8  | 6.6              | 53             | 8              | 91           | ●     |
| TKS05067D8  | 6.7              | 53             | 8              | 91           | ●     |
| TKS05068D8  | 6.8              | 53             | 8              | 91           | ●     |
| TKS05069D8  | 6.9              | 53             | 8              | 91           | ●     |
| TKS05070D8  | 7.0              | 53             | 8              | 91           | ●     |
| TKS05071D8  | 7.1              | 53             | 8              | 91           | ●     |
| TKS05072D8  | 7.2              | 53             | 8              | 91           | ●     |
| TKS05073D8  | 7.3              | 53             | 8              | 91           | ●     |
| TKS05074D8  | 7.4              | 53             | 8              | 91           | ●     |
| TKS05075D8  | 7.5              | 53             | 8              | 91           | ●     |
| TKS05076D8  | 7.6              | 53             | 8              | 91           | ●     |
| TKS05077D8  | 7.7              | 53             | 8              | 91           | ●     |
| TKS05078D8  | 7.8              | 53             | 8              | 91           | ●     |
| TKS05079D8  | 7.9              | 53             | 8              | 91           | ●     |
| TKS05080D8  | 8.0              | 53             | 8              | 91           | ●     |
| TKS05081D10 | 8.1              | 61             | 10             | 103          | ●     |
| TKS05082D10 | 8.2              | 61             | 10             | 103          | ●     |
| TKS05083D10 | 8.3              | 61             | 10             | 103          | ●     |
| TKS05084D10 | 8.4              | 61             | 10             | 103          | ●     |
| TKS05085D10 | 8.5              | 61             | 10             | 103          | ●     |
| TKS05086D10 | 8.6              | 61             | 10             | 103          | ●     |
| TKS05087D10 | 8.7              | 61             | 10             | 103          | ●     |
| TKS05088D10 | 8.8              | 61             | 10             | 103          | ●     |
| TKS05089D10 | 8.9              | 61             | 10             | 103          | ●     |
| TKS05090D10 | 9.0              | 61             | 10             | 103          | ●     |
| TKS05091D10 | 9.1              | 61             | 10             | 103          | ●     |
| TKS05092D10 | 9.2              | 61             | 10             | 103          | ●     |
| TKS05093D10 | 9.3              | 61             | 10             | 103          | ●     |
| TKS05094D10 | 9.4              | 61             | 10             | 103          | ●     |
| TKS05095D10 | 9.5              | 61             | 10             | 103          | ●     |
| TKS05096D10 | 9.6              | 61             | 10             | 103          | ●     |
| TKS05097D10 | 9.7              | 61             | 10             | 103          | ●     |
| TKS05098D10 | 9.8              | 61             | 10             | 103          | ●     |
| TKS05099D10 | 9.9              | 61             | 10             | 103          | ●     |
| TKS05100D10 | 10.0             | 61             | 10             | 103          | ●     |
| TKS05101D12 | 10.1             | 71             | 12             | 118          | ●     |
| TKS05102D12 | 10.2             | 71             | 12             | 118          | ●     |

● Stock ○ Non-stock

Carbide Drills

U Drills

Head Exchangable Drills

Deep Hole Drills

CDR 45° Chamfer Cutter

Non-standard Tools

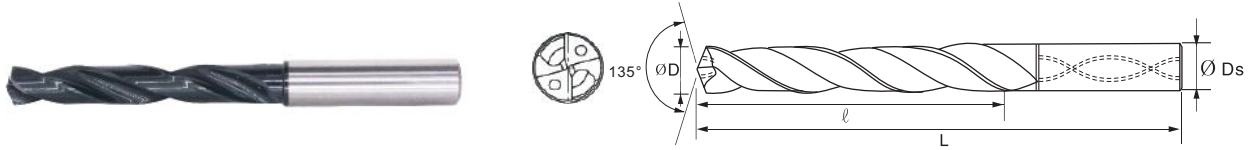
# High Performance Carbide Drill for Cast Iron



Carbide Drills

## TKS Drill Series 5D with Internal Coolant

|                        |         |                         |  |             |       |
|------------------------|---------|-------------------------|--|-------------|-------|
| Material               | Carbide | Helix angle             | 30°  | Point angle | 135°  |
| Cutting edge tolerance | m7      | Shank tolerance         | h6   | Standard    | 6537A |
| Coating                | TiAlN   | Suitable for processing | Gray cast iron/Ductile cast iron(Tensile Strength≤500) |             |       |



Unit(mm)

| Model No.   | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-------------|------------------|----------------|----------------|--------------|-------|
|             | D                | l              | Ds             | L            |       |
| TKS05103D12 | 10.3             | 71             | 12             | 118          | ●     |
| TKS05104D12 | 10.4             | 71             | 12             | 118          | ●     |
| TKS05105D12 | 10.5             | 71             | 12             | 118          | ●     |
| TKS05106D12 | 10.6             | 71             | 12             | 118          | ●     |
| TKS05107D12 | 10.7             | 71             | 12             | 118          | ●     |
| TKS05108D12 | 10.8             | 71             | 12             | 118          | ●     |
| TKS05109D12 | 10.9             | 71             | 12             | 118          | ●     |
| TKS05110D12 | 11.0             | 71             | 12             | 118          | ●     |
| TKS05111D12 | 11.1             | 71             | 12             | 118          | ●     |
| TKS05112D12 | 11.2             | 71             | 12             | 118          | ●     |
| TKS05113D12 | 11.3             | 71             | 12             | 118          | ●     |
| TKS05114D12 | 11.4             | 71             | 12             | 118          | ●     |
| TKS05115D12 | 11.5             | 71             | 12             | 118          | ●     |
| TKS05116D12 | 11.6             | 71             | 12             | 118          | ●     |
| TKS05117D12 | 11.7             | 71             | 12             | 118          | ●     |
| TKS05118D12 | 11.8             | 71             | 12             | 118          | ●     |
| TKS05119D12 | 11.9             | 71             | 12             | 118          | ●     |
| TKS05120D12 | 12.0             | 71             | 12             | 118          | ●     |
| TKS05121D14 | 12.1             | 77             | 14             | 124          | ●     |
| TKS05122D14 | 12.2             | 77             | 14             | 124          | ●     |
| TKS05123D14 | 12.3             | 77             | 14             | 124          | ●     |
| TKS05124D14 | 12.4             | 77             | 14             | 124          | ●     |
| TKS05125D14 | 12.5             | 77             | 14             | 124          | ●     |
| TKS05126D14 | 12.6             | 77             | 14             | 124          | ●     |
| TKS05127D14 | 12.7             | 77             | 14             | 124          | ●     |
| TKS05128D14 | 12.8             | 77             | 14             | 124          | ●     |
| TKS05129D14 | 12.9             | 77             | 14             | 124          | ●     |
| TKS05130D14 | 13.0             | 77             | 14             | 124          | ●     |
| TKS05131D14 | 13.1             | 77             | 14             | 124          | ●     |
| TKS05132D14 | 13.2             | 77             | 14             | 124          | ●     |
| TKS05133D14 | 13.3             | 77             | 14             | 124          | ●     |
| TKS05134D14 | 13.4             | 77             | 14             | 124          | ●     |
| TKS05135D14 | 13.5             | 77             | 14             | 124          | ●     |
| TKS05136D14 | 13.6             | 77             | 14             | 124          | ●     |
| TKS05137D14 | 13.7             | 77             | 14             | 124          | ●     |
| TKS05138D14 | 13.8             | 77             | 14             | 124          | ●     |
| TKS05139D14 | 13.9             | 77             | 14             | 124          | ●     |

● Stock ○ Non-stock

U Drills

Head Exchangable Drills

Deep Hole Drills

CDR 45° Chamfer Cutter

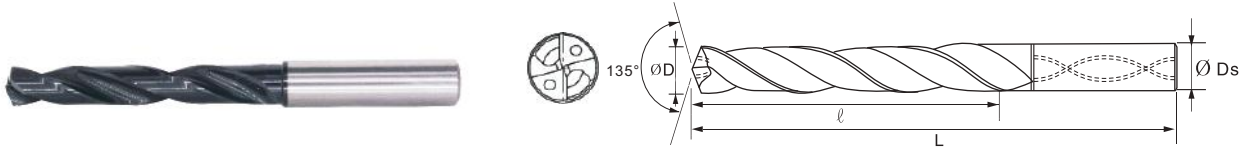
Non-standard Tools

# High Performance Carbide Drill for Cast Iron



## TKS Drill Series 5D with Internal Coolant

|                        |         |                         |  |             |       |
|------------------------|---------|-------------------------|--|-------------|-------|
| Material               | Carbide | Helix angle             | 30°  | Point angle | 135°  |
| Cutting edge tolerance | m7      | Shank tolerance         | h6   | Standard    | 6537A |
| Coating                | TiAlN   | Suitable for processing | Gray cast iron/Ductile cast iron(Tensile Strength ≤ 500) |             |       |



Unit(mm)

| Model No.   | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-------------|------------------|----------------|----------------|--------------|-------|
|             | D                | ℓ              | Ds             | L            |       |
| TKS05140D14 | 14.0             | 77             | 14             | 124          | ●     |
| TKS05141D16 | 14.1             | 83             | 16             | 133          | ●     |
| TKS05142D16 | 14.2             | 83             | 16             | 133          | ●     |
| TKS05143D16 | 14.3             | 83             | 16             | 133          | ●     |
| TKS05144D16 | 14.4             | 83             | 16             | 133          | ●     |
| TKS05145D16 | 14.5             | 83             | 16             | 133          | ●     |
| TKS05146D16 | 14.6             | 83             | 16             | 133          | ●     |
| TKS05147D16 | 14.7             | 83             | 16             | 133          | ●     |
| TKS05148D16 | 14.8             | 83             | 16             | 133          | ●     |
| TKS05149D16 | 14.9             | 83             | 16             | 133          | ●     |
| TKS05150D16 | 15.0             | 83             | 16             | 133          | ●     |
| TKS05151D16 | 15.1             | 83             | 16             | 133          | ●     |
| TKS05152D16 | 15.2             | 83             | 16             | 133          | ●     |
| TKS05153D16 | 15.3             | 83             | 16             | 133          | ●     |
| TKS05154D16 | 15.4             | 83             | 16             | 133          | ●     |
| TKS05155D16 | 15.5             | 83             | 16             | 133          | ●     |
| TKS05156D16 | 15.6             | 83             | 16             | 133          | ●     |
| TKS05157D16 | 15.7             | 83             | 16             | 133          | ●     |
| TKS05158D16 | 15.8             | 83             | 16             | 133          | ●     |
| TKS05159D16 | 15.9             | 83             | 16             | 133          | ●     |
| TKS05160D16 | 16.0             | 83             | 16             | 133          | ●     |
| TKS05165D18 | 16.5             | 93             | 18             | 143          | ○     |
| TKS05170D18 | 17.0             | 93             | 18             | 143          | ○     |
| TKS05175D18 | 17.5             | 93             | 18             | 143          | ○     |
| TKS05180D18 | 18.0             | 93             | 18             | 143          | ○     |
| TKS05185D20 | 18.5             | 101            | 20             | 153          | ○     |
| TKS05190D20 | 19.0             | 101            | 20             | 153          | ○     |
| TKS05195D20 | 19.5             | 101            | 20             | 153          | ○     |
| TKS05200D20 | 20.0             | 101            | 20             | 153          | ○     |

Notice: The MOQ for Non-stock item is 5pcs.

● Stock ○ Non-stock

Carbide Drills

U Drills

Head Exchangable Drills

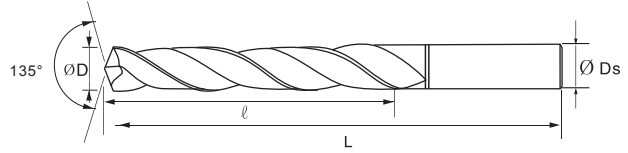
Deep Hole Drills

CDR 45° Chamfer Cutter

Non-standard Tools

## TKW Drill Series 5D External Coolant (Inch)

|                        |         |                         |  |             |       |
|------------------------|---------|-------------------------|--|-------------|-------|
| Material               | Carbide | Helix angle             | 30°  | Point angle | 135°  |
| Cutting edge tolerance | m7      | Shank tolerance         | h6   | Standard    | 6537A |
| Coating                | TiAlN   | Suitable for processing | Gray cast iron/Ductile cast iron(Tensile Strength ≤ 500) |             |       |



Unit(mm)

| Model No.    | Cutting Diameter |       | Cutting Length<br>$\ell$ | Shank Diameter<br>Ds | Total Length<br>L | Stock |
|--------------|------------------|-------|--------------------------|----------------------|-------------------|-------|
|              | D                |       |                          |                      |                   |       |
|              | mm               | inch  |                          |                      |                   |       |
| TKW050318D6  | 3.18             | 1/8   | 26                       | 6                    | 66                | ○     |
| TKW050357D6  | 3.57             | 9/64  | 26                       | 6                    | 66                | ○     |
| TKW050397D6  | 3.97             | 5/32  | 34                       | 6                    | 74                | ○     |
| TKW050437D6  | 4.37             | 11/64 | 34                       | 6                    | 74                | ○     |
| TKW050476D6  | 4.76             | 3/16  | 44                       | 6                    | 82                | ○     |
| TKW050516D6  | 5.16             | 13/64 | 44                       | 6                    | 82                | ○     |
| TKW050556D6  | 5.56             | 7/32  | 44                       | 6                    | 82                | ○     |
| TKW050595D6  | 5.95             | 15/64 | 44                       | 6                    | 82                | ○     |
| TKW050635D8  | 6.35             | 1/4   | 53                       | 8                    | 91                | ○     |
| TKW050675D8  | 6.75             | 17/64 | 53                       | 8                    | 91                | ○     |
| TKW050714D8  | 7.14             | 9/32  | 53                       | 8                    | 91                | ○     |
| TKW050754D8  | 7.54             | 19/64 | 53                       | 8                    | 91                | ○     |
| TKW050794D8  | 7.94             | 5/16  | 53                       | 8                    | 91                | ○     |
| TKW050833D10 | 8.33             | 21/64 | 61                       | 10                   | 103               | ○     |
| TKW050873D10 | 8.73             | 11/32 | 61                       | 10                   | 103               | ○     |
| TKW050913D10 | 9.13             | 23/64 | 61                       | 10                   | 103               | ○     |
| TKW050952D10 | 9.52             | 3/8   | 61                       | 10                   | 103               | ○     |
| TKW050992D10 | 9.92             | 25/64 | 61                       | 10                   | 103               | ○     |
| TKW051032D12 | 10.32            | 13/32 | 71                       | 12                   | 118               | ○     |
| TKW051072D12 | 10.72            | 27/64 | 71                       | 12                   | 118               | ○     |
| TKW051111D12 | 11.11            | 7/16  | 71                       | 12                   | 118               | ○     |
| TKW051151D12 | 11.51            | 29/64 | 71                       | 12                   | 118               | ○     |
| TKW051191D12 | 11.91            | 15/32 | 71                       | 12                   | 118               | ○     |
| TKW051349D14 | 13.49            | 17/32 | 77                       | 14                   | 124               | ○     |
| TKW051389D14 | 13.89            | 35/64 | 77                       | 14                   | 124               | ○     |
| TKW051429D16 | 14.29            | 9/16  | 83                       | 16                   | 133               | ○     |
| TKW051468D16 | 14.68            | 37/64 | 83                       | 16                   | 133               | ○     |
| TKW051508D16 | 15.08            | 19/32 | 83                       | 16                   | 133               | ○     |
| TKW051548D16 | 15.48            | 39/64 | 83                       | 16                   | 133               | ○     |
| TKW051588D16 | 15.88            | 5/8   | 83                       | 16                   | 133               | ○     |
| TKW051627D18 | 16.27            | 41/64 | 93                       | 18                   | 143               | ○     |
| TKW051667D18 | 16.67            | 21/32 | 93                       | 18                   | 143               | ○     |
| TKW051707D18 | 17.07            | 43/64 | 93                       | 18                   | 143               | ○     |
| TKW051746D18 | 17.46            | 11/16 | 93                       | 18                   | 143               | ○     |

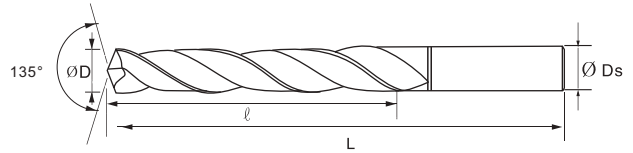
● Stock ○ Non-stock

# High Performance Carbide Drill for Cast Iron



## TKW Drill Series 5D External Coolant (Inch)

|                        |         |                         |  |             |       |
|------------------------|---------|-------------------------|--|-------------|-------|
| Material               | Carbide | Helix angle             | 30°  | Point angle | 135°  |
| Cutting edge tolerance | m7      | Shank tolerance         | h6   | Standard    | 6537A |
| Coating                | TiAlN   | Suitable for processing | Gray cast iron/Ductile cast iron(Tensile Strength≤500) |             |       |



Unit(mm)

| Model No.    | Cutting Diameter |       | Cutting Length | Shank Diameter | Total Length | Stock |
|--------------|------------------|-------|----------------|----------------|--------------|-------|
|              | D                |       |                |                |              |       |
|              | mm               | inch  | ℓ              | Ds             | L            |       |
| TKW051786D18 | 17.86            | 45/64 | 93             | 18             | 143          | ○     |
| TKW051826D20 | 18.26            | 23/32 | 101            | 20             | 153          | ○     |
| TKW051865D20 | 18.65            | 47/64 | 101            | 20             | 153          | ○     |
| TKW051905D20 | 19.05            | 3/4   | 101            | 20             | 153          | ○     |
| TKW051945D20 | 19.45            | 49/64 | 101            | 20             | 153          | ○     |
| TKW051984D20 | 19.84            | 25/32 | 101            | 20             | 153          | ○     |

Notice: The MOQ for Non-stock item is 5pcs.

● Stock ○ Non-stock

Carbide Drills

U Drills

Head Exchangable Drills

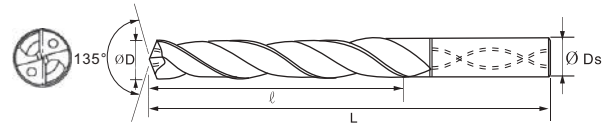
Deep Hole Drills

CDR 45° Chamfer Cutter

Non-standard Tools

## TKS Drill Series 5D with Internal Coolant (Inch)

|                        |         |                         |  |             |       |
|------------------------|---------|-------------------------|--|-------------|-------|
| Material               | Carbide | Helix angle             | 30°  | Point angle | 135°  |
| Cutting edge tolerance | m7      | Shank tolerance         | h6   | Standard    | 6537A |
| Coating                | TiAlN   | Suitable for processing | Gray cast iron/Ductile cast iron(Tensile Strength ≤ 500) |             |       |



Unit(mm)

| Model No.    | Cutting Diameter |       | Cutting Length<br><i>l</i> | Shank Diameter<br><i>D<sub>s</sub></i> | Total Length<br><i>L</i> | Stock |
|--------------|------------------|-------|----------------------------|--|--------------------------|-------|
|              | D                |       |                            |  |                          |       |
|              | mm               | inch  |                            |  |                          |       |
| TKS050318D6  | 3.18             | 1/8   | 26                         | 6                                      | 66                       | ○     |
| TKS050357D6  | 3.57             | 9/64  | 26                         | 6                                      | 66                       | ○     |
| TKS050397D6  | 3.97             | 5/32  | 34                         | 6                                      | 74                       | ○     |
| TKS050437D6  | 4.37             | 11/64 | 34                         | 6                                      | 74                       | ○     |
| TKS050476D6  | 4.76             | 3/16  | 44                         | 6                                      | 82                       | ○     |
| TKS050516D6  | 5.16             | 13/64 | 44                         | 6                                      | 82                       | ○     |
| TKS050556D6  | 5.56             | 7/32  | 44                         | 6                                      | 82                       | ○     |
| TKS050595D6  | 5.95             | 15/64 | 44                         | 6                                      | 82                       | ○     |
| TKS050635D8  | 6.35             | 1/4   | 53                         | 8                                      | 91                       | ○     |
| TKS050675D8  | 6.75             | 17/64 | 53                         | 8                                      | 91                       | ○     |
| TKS050714D8  | 7.14             | 9/32  | 53                         | 8                                      | 91                       | ○     |
| TKS050754D8  | 7.54             | 19/64 | 53                         | 8                                      | 91                       | ○     |
| TKS050794D8  | 7.94             | 5/16  | 53                         | 8                                      | 91                       | ○     |
| TKS050833D10 | 8.33             | 21/64 | 61                         | 10                                     | 103                      | ○     |
| TKS050873D10 | 8.73             | 11/32 | 61                         | 10                                     | 103                      | ○     |
| TKS050913D10 | 9.13             | 23/64 | 61                         | 10                                     | 103                      | ○     |
| TKS050952D10 | 9.52             | 3/8   | 61                         | 10                                     | 103                      | ○     |
| TKS050992D10 | 9.92             | 25/64 | 61                         | 10                                     | 103                      | ○     |
| TKS051032D12 | 10.32            | 13/32 | 71                         | 12                                     | 118                      | ○     |
| TKS051072D12 | 10.72            | 27/64 | 71                         | 12                                     | 118                      | ○     |
| TKS051111D12 | 11.11            | 7/16  | 71                         | 12                                     | 118                      | ○     |
| TKS051151D12 | 11.51            | 29/64 | 71                         | 12                                     | 118                      | ○     |
| TKS051191D12 | 11.91            | 15/32 | 71                         | 12                                     | 118                      | ○     |
| TKS051349D14 | 13.49            | 17/32 | 77                         | 14                                     | 124                      | ○     |
| TKS051389D14 | 13.89            | 35/64 | 77                         | 14                                     | 124                      | ○     |
| TKS051429D16 | 14.29            | 9/16  | 83                         | 16                                     | 133                      | ○     |
| TKS051468D16 | 14.68            | 37/64 | 83                         | 16                                     | 133                      | ○     |
| TKS051508D16 | 15.08            | 19/32 | 83                         | 16                                     | 133                      | ○     |
| TKS051548D16 | 15.48            | 39/64 | 83                         | 16                                     | 133                      | ○     |
| TKS051588D16 | 15.88            | 5/8   | 83                         | 16                                     | 133                      | ○     |
| TKS051627D18 | 16.27            | 41/64 | 93                         | 18                                     | 143                      | ○     |
| TKS051667D18 | 16.67            | 21/32 | 93                         | 18                                     | 143                      | ○     |
| TKS051707D18 | 17.07            | 43/64 | 93                         | 18                                     | 143                      | ○     |
| TKS051746D18 | 17.46            | 11/16 | 93                         | 18                                     | 143                      | ○     |

● Stock ○ Non-stock

Carbide Drills

U Drills

Head Exchangable Drills

Deep Hole Drills

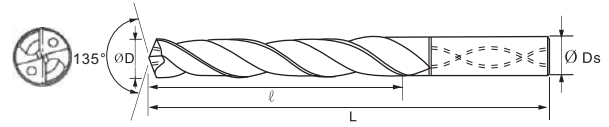
CDR 45° Chamfer Cutter

Non-standard Tools



## TKS Drill Series 5D with Internal Coolant (Inch)

|                        |         |                         |  |             |       |
|------------------------|---------|-------------------------|--|-------------|-------|
| Material               | Carbide | Helix angle             | 30°  | Point angle | 135°  |
| Cutting edge tolerance | m7      | Shank tolerance         | h6   | Standard    | 6537A |
| Coating                | TiAIN   | Suitable for processing | Gray cast iron/Ductile cast iron(Tensile Strength ≤ 500) |             |       |



Unit(mm)

| Model No.    | Cutting Diameter |       | Cutting Length | Shank Diameter | Total Length | Stock |
|--------------|------------------|-------|----------------|----------------|--------------|-------|
|              | D                |       |                |                |              |       |
|              | mm               | inch  | l              | Ds             | L            |       |
| TKS051786D18 | 17.86            | 45/64 | 93             | 18             | 143          | ○     |
| TKS051826D20 | 18.26            | 23/32 | 101            | 20             | 153          | ○     |
| TKS051865D20 | 18.65            | 47/64 | 101            | 20             | 153          | ○     |
| TKS051905D20 | 19.05            | 3/4   | 101            | 20             | 153          | ○     |
| TKS051945D20 | 19.45            | 49/64 | 101            | 20             | 153          | ○     |
| TKS051984D20 | 19.84            | 25/32 | 101            | 20             | 153          | ○     |

Notice: The MOQ for Non-stock item is 5pcs.

● Stock ○ Non-stock

Carbide Drills

U Drills

Head Exchangable Drills

Deep Hole Drills

CDR 45° Chamfer Cutter

Non-standard Tools

Carbide Drills

**TKW Series 3D/5D (External Coolant)**

Unit (mm)

| ISO | Workpiece Material   | Brinell hardness (HB) | Feed: f (mm/rev) |      |      |      |      |      |      |      |      |      | Vc (m/min) |
|-----|--|-----------------------|------------------|------|------|------|------|------|------|------|------|------|------------|
|     |  |                       | ø3               | ø4   | ø6   | ø8   | ø10  | ø12  | ø14  | ø16  | ø18  | ø20  | ø3 ~ ø20   |
| K   | Grey cast irons<br>FC250,etc.                              | ~ 200                 | 0.17             | 0.20 | 0.25 | 0.27 | 0.30 | 0.28 | 0.33 | 0.40 | 0.42 | 0.45 | 60~140     |
|     | Ductile cast irons<br>FCD500,etc.(Tensile Strength≤500Mpa) | ~ 300                 | 0.09             | 0.10 | 0.13 | 0.16 | 0.20 | 0.26 | 0.22 | 0.26 | 0.28 | 0.28 | 50~100     |

U Drills

Head Exchangable Drills

**TKS Series 3D/5D (Internal Coolant)**

Unit (mm)

| ISO | Workpiece Material   | Brinell hardness (HB) | Feed: f (mm/rev) |      |      |      |      |      |      |      |      |      | Vc (m/min) |
|-----|--|-----------------------|------------------|------|------|------|------|------|------|------|------|------|------------|
|     |  |                       | ø3               | ø4   | ø6   | ø8   | ø10  | ø12  | ø14  | ø16  | ø18  | ø20  | ø3 ~ ø20   |
| K   | Grey cast irons<br>FC250,etc.                              | ~ 200                 | 0.17             | 0.20 | 0.25 | 0.27 | 0.30 | 0.28 | 0.33 | 0.40 | 0.42 | 0.45 | 60~160     |
|     | Ductile cast irons<br>FCD500,etc.(Tensile Strength≤500Mpa) | ~ 300                 | 0.09             | 0.10 | 0.13 | 0.16 | 0.20 | 0.26 | 0.22 | 0.26 | 0.28 | 0.28 | 50~100     |

Deep Hole Drills

CDR 45° Chamfer Cutter

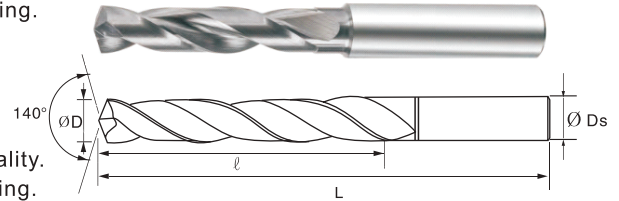
Non-standard Tools

## 1. CTW 3D/5D series (External coolant)

- ① Carbide Material.
- ② Original corner-radius design, achieve the excellent chip removal and work precision.
- ③ Nanocomposite AlTiN coating makes the high speed and high efficiency drill machining.
- ④ Diameter from 3 mm to 20 mm, suitable for different type of machining.

## 2. CTS 3D/5D series (Internal coolant)

- ① Carbide Material.
- ② New groove design achieve the excellent chip removal.
- ③ Nanocomposite AlTiN coating coating makes the hard-wearing quality.
- ④ Diameter from 3 mm to 20 mm, suitable for different type of machining.



### CTW Drill Series 3D External Coolant

|                        |         |                         |                 |                       |           |
|------------------------|---------|-------------------------|-----------------|-----------------------|-----------|
| Material               | Carbide | Helix angle             | 30°             | Point angle           | 140°      |
| Cutting edge tolerance | m7      | Shank tolerance         | h6              | Standard              | DIN6535HA |
| Coating                | AlTiN   | Suitable for processing | Steel/Cast iron | Work hardness ≤ HRC48 |           |

Unit (mm)  
 ● Stock ○ Non-stock

| Model No. | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-----------|------------------|----------------|----------------|--------------|-------|
|           | D                | l              | Ds             | L            |       |
| CTW030D6  | 3.0              | 20             | 6              | 62           | ●     |
| CTW031D6  | 3.1              | 20             | 6              | 62           | ●     |
| CTW032D6  | 3.2              | 20             | 6              | 62           | ●     |
| CTW033D6  | 3.3              | 20             | 6              | 62           | ●     |
| CTW034D6  | 3.4              | 20             | 6              | 62           | ●     |
| CTW035D6  | 3.5              | 20             | 6              | 62           | ●     |
| CTW036D6  | 3.6              | 20             | 6              | 62           | ●     |
| CTW037D6  | 3.7              | 20             | 6              | 62           | ●     |
| CTW038D6  | 3.8              | 24             | 6              | 66           | ●     |
| CTW039D6  | 3.9              | 24             | 6              | 66           | ●     |
| CTW040D6  | 4.0              | 24             | 6              | 66           | ●     |
| CTW041D6  | 4.1              | 24             | 6              | 66           | ●     |
| CTW042D6  | 4.2              | 24             | 6              | 66           | ●     |
| CTW043D6  | 4.3              | 24             | 6              | 66           | ●     |
| CTW044D6  | 4.4              | 24             | 6              | 66           | ●     |
| CTW045D6  | 4.5              | 24             | 6              | 66           | ●     |
| CTW046D6  | 4.6              | 24             | 6              | 66           | ●     |
| CTW047D6  | 4.7              | 24             | 6              | 66           | ●     |
| CTW048D6  | 4.8              | 28             | 6              | 66           | ●     |
| CTW049D6  | 4.9              | 28             | 6              | 66           | ●     |
| CTW050D6  | 5.0              | 28             | 6              | 66           | ●     |
| CTW051D6  | 5.1              | 28             | 6              | 66           | ●     |
| CTW052D6  | 5.2              | 28             | 6              | 66           | ●     |
| CTW053D6  | 5.3              | 28             | 6              | 66           | ●     |
| CTW054D6  | 5.4              | 28             | 6              | 66           | ●     |
| CTW055D6  | 5.5              | 28             | 6              | 66           | ●     |
| CTW056D6  | 5.6              | 28             | 6              | 66           | ●     |
| CTW057D6  | 5.7              | 28             | 6              | 66           | ●     |
| CTW058D6  | 5.8              | 28             | 6              | 66           | ●     |
| CTW059D6  | 5.9              | 28             | 6              | 66           | ●     |
| CTW060D6  | 6.0              | 28             | 6              | 66           | ●     |
| CTW061D8  | 6.1              | 34             | 8              | 79           | ●     |
| CTW062D8  | 6.2              | 34             | 8              | 79           | ●     |
| CTW063D8  | 6.3              | 34             | 8              | 79           | ●     |
| CTW064D8  | 6.4              | 34             | 8              | 79           | ●     |
| CTW065D8  | 6.5              | 34             | 8              | 79           | ●     |

Carbide Drills

U Drills

Head Drills

Head Exchangable

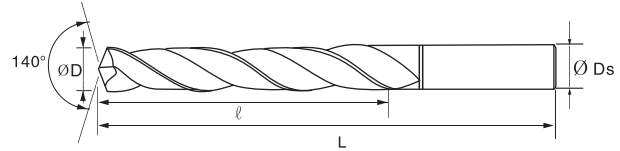
Deep Hole Drills

CDR 45°  
Chamfer Cutter

Non-standard Tools

## CTW Drill Series 3D External Coolant

|                        |         |                         |                 |                       |           |
|------------------------|---------|-------------------------|-----------------|-----------------------|-----------|
| Material               | Carbide | Helix angle             | 30°             | Point angle           | 140°      |
| Cutting edge tolerance | m7      | Shank tolerance         | h6              | Standard              | DIN6535HA |
| Coating                | AlTiN   | Suitable for processing | Steel/Cast iron | Work hardness ≤ HRC48 |           |

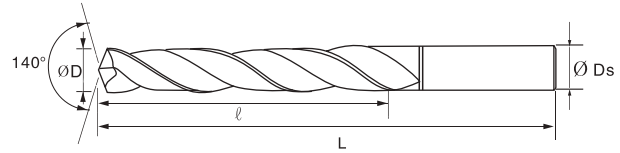


Unit (mm)  
 ● Stock ○ Non-stock

| Model No. | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-----------|------------------|----------------|----------------|--------------|-------|
|           | D                | ℓ              | Ds             | L            |       |
| CTW066D8  | 6.6              | 34             | 8              | 79           | ●     |
| CTW067D8  | 6.7              | 34             | 8              | 79           | ●     |
| CTW068D8  | 6.8              | 34             | 8              | 79           | ●     |
| CTW069D8  | 6.9              | 34             | 8              | 79           | ●     |
| CTW070D8  | 7.0              | 34             | 8              | 79           | ●     |
| CTW071D8  | 7.1              | 41             | 8              | 79           | ●     |
| CTW072D8  | 7.2              | 41             | 8              | 79           | ●     |
| CTW073D8  | 7.3              | 41             | 8              | 79           | ●     |
| CTW074D8  | 7.4              | 41             | 8              | 79           | ●     |
| CTW075D8  | 7.5              | 41             | 8              | 79           | ●     |
| CTW076D8  | 7.6              | 41             | 8              | 79           | ●     |
| CTW077D8  | 7.7              | 41             | 8              | 79           | ●     |
| CTW078D8  | 7.8              | 41             | 8              | 79           | ●     |
| CTW079D8  | 7.9              | 41             | 8              | 79           | ●     |
| CTW080D8  | 8.0              | 41             | 8              | 79           | ●     |
| CTW081D10 | 8.1              | 47             | 10             | 89           | ●     |
| CTW082D10 | 8.2              | 47             | 10             | 89           | ●     |
| CTW083D10 | 8.3              | 47             | 10             | 89           | ●     |
| CTW084D10 | 8.4              | 47             | 10             | 89           | ●     |
| CTW085D10 | 8.5              | 47             | 10             | 89           | ●     |
| CTW086D10 | 8.6              | 47             | 10             | 89           | ●     |
| CTW087D10 | 8.7              | 47             | 10             | 89           | ●     |
| CTW088D10 | 8.8              | 47             | 10             | 89           | ●     |
| CTW089D10 | 8.9              | 47             | 10             | 89           | ●     |
| CTW090D10 | 9.0              | 47             | 10             | 89           | ●     |
| CTW091D10 | 9.1              | 47             | 10             | 89           | ●     |
| CTW092D10 | 9.2              | 47             | 10             | 89           | ●     |
| CTW093D10 | 9.3              | 47             | 10             | 89           | ●     |
| CTW094D10 | 9.4              | 47             | 10             | 89           | ●     |
| CTW095D10 | 9.5              | 47             | 10             | 89           | ●     |
| CTW096D10 | 9.6              | 47             | 10             | 89           | ●     |
| CTW097D10 | 9.7              | 47             | 10             | 89           | ●     |
| CTW098D10 | 9.8              | 47             | 10             | 89           | ●     |
| CTW099D10 | 9.9              | 47             | 10             | 89           | ●     |
| CTW100D10 | 10.0             | 47             | 10             | 89           | ●     |
| CTW101D12 | 10.1             | 55             | 12             | 102          | ●     |
| CTW102D12 | 10.2             | 55             | 12             | 102          | ●     |
| CTW103D12 | 10.3             | 55             | 12             | 102          | ●     |
| CTW104D12 | 10.4             | 55             | 12             | 102          | ●     |
| CTW105D12 | 10.5             | 55             | 12             | 102          | ●     |
| CTW106D12 | 10.6             | 55             | 12             | 102          | ●     |

## CTW Drill Series 3D External Coolant

|                        |         |                         |                 |               |           |
|------------------------|---------|-------------------------|-----------------|---------------|-----------|
| Material               | Carbide | Helix angle             | 30°             | Point angle   | 140°      |
| Cutting edge tolerance | m7      | Shank tolerance         | h6              | Standard      | DIN6535HA |
| Coating                | AlTiN   | Suitable for processing | Steel/Cast iron | Work hardness | ≤HRC48    |



Notice: The MOQ for Non-stock item is 5pcs.

Unit (mm)  
 ● Stock ○ Non-stock

| Model No. | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-----------|------------------|----------------|----------------|--------------|-------|
|           | D                | l              | Ds             | L            |       |
| CTW107D12 | 10.7             | 55             | 12             | 102          | ●     |
| CTW108D12 | 10.8             | 55             | 12             | 102          | ●     |
| CTW109D12 | 10.9             | 55             | 12             | 102          | ●     |
| CTW110D12 | 11.0             | 55             | 12             | 102          | ●     |
| CTW111D12 | 11.1             | 55             | 12             | 102          | ●     |
| CTW112D12 | 11.2             | 55             | 12             | 102          | ●     |
| CTW113D12 | 11.3             | 55             | 12             | 102          | ●     |
| CTW114D12 | 11.4             | 55             | 12             | 102          | ●     |
| CTW115D12 | 11.5             | 55             | 12             | 102          | ●     |
| CTW116D12 | 11.6             | 55             | 12             | 102          | ●     |
| CTW117D12 | 11.7             | 55             | 12             | 102          | ●     |
| CTW118D12 | 11.8             | 55             | 12             | 102          | ●     |
| CTW119D12 | 11.9             | 55             | 12             | 102          | ●     |
| CTW120D12 | 12.0             | 55             | 12             | 102          | ●     |
| CTW125D14 | 12.5             | 60             | 14             | 107          | ○     |
| CTW128D14 | 12.8             | 60             | 14             | 107          | ○     |
| CTW130D14 | 13.0             | 60             | 14             | 107          | ○     |
| CTW135D14 | 13.5             | 60             | 14             | 107          | ○     |
| CTW138D14 | 13.8             | 60             | 14             | 107          | ○     |
| CTW140D14 | 14.0             | 60             | 14             | 107          | ○     |
| CTW145D16 | 14.5             | 65             | 16             | 115          | ○     |
| CTW148D16 | 14.8             | 65             | 16             | 115          | ○     |
| CTW150D16 | 15.0             | 65             | 16             | 115          | ○     |
| CTW155D16 | 15.5             | 65             | 16             | 115          | ○     |
| CTW158D16 | 15.8             | 65             | 16             | 115          | ○     |
| CTW160D16 | 16.0             | 65             | 16             | 115          | ○     |
| CTW165D18 | 16.5             | 73             | 18             | 123          | ○     |
| CTW168D18 | 16.8             | 73             | 18             | 123          | ○     |
| CTW170D18 | 17.0             | 73             | 18             | 123          | ○     |
| CTW175D18 | 17.5             | 73             | 18             | 123          | ○     |
| CTW178D18 | 17.8             | 73             | 18             | 123          | ○     |
| CTW180D18 | 18.0             | 73             | 18             | 123          | ○     |
| CTW185D20 | 18.5             | 79             | 20             | 131          | ○     |
| CTW188D20 | 18.8             | 79             | 20             | 131          | ○     |
| CTW190D20 | 19.0             | 79             | 20             | 131          | ○     |
| CTW195D20 | 19.5             | 79             | 20             | 131          | ○     |
| CTW198D20 | 19.8             | 79             | 20             | 131          | ○     |
| CTW200D20 | 20.0             | 79             | 20             | 131          | ○     |

Carbide Drills

U Drills

Head Exchangable Drills

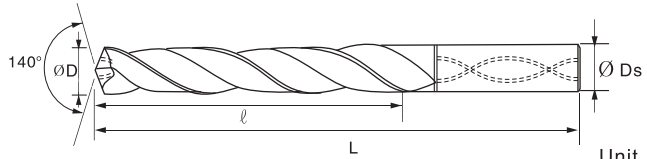
Deep Hole Drills

CDR 45° Chamfer Cutter

Non-standard Tools

## CTS Drill Series 3D with Internal Coolant

|                        |         |                         |                 |                       |          |
|------------------------|---------|-------------------------|-----------------|-----------------------|----------|
| Material               | Carbide | Helix angle             | 30°             | Point angle           | 140°     |
| Cutting edge tolerance | m7      | Shank tolerance         | h6              | Standard              | DIN6537K |
| Coating                | AlTiN   | Suitable for processing | Steel/Cast iron | Work hardness ≤ HRC48 |          |



Unit (mm)  
● Stock ○ Non-stock

| Model No. | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-----------|------------------|----------------|----------------|--------------|-------|
|           | D                | l              | Ds             | L            |       |
| CTS030D6  | 3.0              | 20             | 6              | 62           | ●     |
| CTS031D6  | 3.1              | 20             | 6              | 62           | ●     |
| CTS032D6  | 3.2              | 20             | 6              | 62           | ●     |
| CTS033D6  | 3.3              | 20             | 6              | 62           | ●     |
| CTS034D6  | 3.4              | 20             | 6              | 62           | ●     |
| CTS035D6  | 3.5              | 20             | 6              | 62           | ●     |
| CTS036D6  | 3.6              | 20             | 6              | 62           | ●     |
| CTS037D6  | 3.7              | 20             | 6              | 62           | ●     |
| CTS038D6  | 3.8              | 24             | 6              | 66           | ●     |
| CTS039D6  | 3.9              | 24             | 6              | 66           | ●     |
| CTS040D6  | 4.0              | 24             | 6              | 66           | ●     |
| CTS041D6  | 4.1              | 24             | 6              | 66           | ●     |
| CTS042D6  | 4.2              | 24             | 6              | 66           | ●     |
| CTS043D6  | 4.3              | 24             | 6              | 66           | ●     |
| CTS044D6  | 4.4              | 24             | 6              | 66           | ●     |
| CTS045D6  | 4.5              | 24             | 6              | 66           | ●     |
| CTS046D6  | 4.6              | 24             | 6              | 66           | ●     |
| CTS047D6  | 4.7              | 24             | 6              | 66           | ●     |
| CTS048D6  | 4.8              | 28             | 6              | 66           | ●     |
| CTS049D6  | 4.9              | 28             | 6              | 66           | ●     |
| CTS050D6  | 5.0              | 28             | 6              | 66           | ●     |
| CTS051D6  | 5.1              | 28             | 6              | 66           | ●     |
| CTS052D6  | 5.2              | 28             | 6              | 66           | ●     |
| CTS053D6  | 5.3              | 28             | 6              | 66           | ●     |
| CTS054D6  | 5.4              | 28             | 6              | 66           | ●     |
| CTS055D6  | 5.5              | 28             | 6              | 66           | ●     |
| CTS056D6  | 5.6              | 28             | 6              | 66           | ●     |
| CTS057D6  | 5.7              | 28             | 6              | 66           | ●     |
| CTS058D6  | 5.8              | 28             | 6              | 66           | ●     |
| CTS059D6  | 5.9              | 28             | 6              | 66           | ●     |
| CTS060D6  | 6.0              | 28             | 6              | 66           | ●     |
| CTS061D8  | 6.1              | 34             | 8              | 79           | ●     |
| CTS062D8  | 6.2              | 34             | 8              | 79           | ●     |
| CTS063D8  | 6.3              | 34             | 8              | 79           | ●     |
| CTS064D8  | 6.4              | 34             | 8              | 79           | ●     |
| CTS065D8  | 6.5              | 34             | 8              | 79           | ●     |
| CTS066D8  | 6.6              | 34             | 8              | 79           | ●     |
| CTS067D8  | 6.7              | 34             | 8              | 79           | ●     |

Carbide Drills

U Drills

Head Exchangable Drills

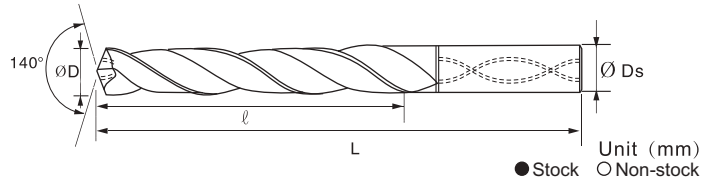
Deep Hole Drills

CDR 45° Chamfer Cutter

Non-standard Tools

## CTS Drill Series 3D with Internal Coolant

|                        |         |                         |                 |               |          |
|------------------------|---------|-------------------------|-----------------|---------------|----------|
| Material               | Carbide | Helix angle             | 30°             | Point angle   | 140°     |
| Cutting edge tolerance | m7      | Shank tolerance         | h6              | Standard      | DIN6537K |
| Coating                | AlTiN   | Suitable for processing | Steel/Cast iron | Work hardness | ≤HRC48   |



| Model No. | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-----------|------------------|----------------|----------------|--------------|-------|
|           | D                | l              | Ds             | L            |       |
| CTS068D8  | 6.8              | 34             | 8              | 79           | ●     |
| CTS069D8  | 6.9              | 34             | 8              | 79           | ●     |
| CTS070D8  | 7.0              | 34             | 8              | 79           | ●     |
| CTS071D8  | 7.1              | 41             | 8              | 79           | ●     |
| CTS072D8  | 7.2              | 41             | 8              | 79           | ●     |
| CTS073D8  | 7.3              | 41             | 8              | 79           | ●     |
| CTS074D8  | 7.4              | 41             | 8              | 79           | ●     |
| CTS075D8  | 7.5              | 41             | 8              | 79           | ●     |
| CTS076D8  | 7.6              | 41             | 8              | 79           | ●     |
| CTS077D8  | 7.7              | 41             | 8              | 79           | ●     |
| CTS078D8  | 7.8              | 41             | 8              | 79           | ●     |
| CTS079D8  | 7.9              | 41             | 8              | 79           | ●     |
| CTS080D8  | 8.0              | 41             | 8              | 79           | ●     |
| CTS081D10 | 8.1              | 47             | 10             | 89           | ●     |
| CTS082D10 | 8.2              | 47             | 10             | 89           | ●     |
| CTS083D10 | 8.3              | 47             | 10             | 89           | ●     |
| CTS084D10 | 8.4              | 47             | 10             | 89           | ●     |
| CTS085D10 | 8.5              | 47             | 10             | 89           | ●     |
| CTS086D10 | 8.6              | 47             | 10             | 89           | ●     |
| CTS087D10 | 8.7              | 47             | 10             | 89           | ●     |
| CTS088D10 | 8.8              | 47             | 10             | 89           | ●     |
| CTS089D10 | 8.9              | 47             | 10             | 89           | ●     |
| CTS090D10 | 9.0              | 47             | 10             | 89           | ●     |
| CTS091D10 | 9.1              | 47             | 10             | 89           | ●     |
| CTS092D10 | 9.2              | 47             | 10             | 89           | ●     |
| CTS093D10 | 9.3              | 47             | 10             | 89           | ●     |
| CTS094D10 | 9.4              | 47             | 10             | 89           | ●     |
| CTS095D10 | 9.5              | 47             | 10             | 89           | ●     |
| CTS096D10 | 9.6              | 47             | 10             | 89           | ●     |
| CTS097D10 | 9.7              | 47             | 10             | 89           | ●     |
| CTS098D10 | 9.8              | 47             | 10             | 89           | ●     |
| CTS099D10 | 9.9              | 47             | 10             | 89           | ●     |
| CTS100D10 | 10.0             | 47             | 10             | 89           | ●     |
| CTS101D12 | 10.1             | 55             | 12             | 102          | ●     |
| CTS102D12 | 10.2             | 55             | 12             | 102          | ●     |
| CTS103D12 | 10.3             | 55             | 12             | 102          | ●     |
| CTS104D12 | 10.4             | 55             | 12             | 102          | ●     |
| CTS105D12 | 10.5             | 55             | 12             | 102          | ●     |

Carbide Drills

U Drills

Head Exchangable Drills

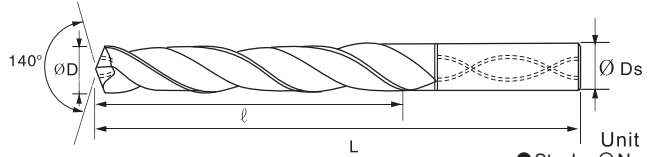
Deep Hole Drills

CDR 45° Chamfer Cutter

Non-standard Tools

## CTS Drill Series 3D with Internal Coolant

|                        |         |                         |                 |                       |          |
|------------------------|---------|-------------------------|-----------------|-----------------------|----------|
| Material               | Carbide | Helix angle             | 30°             | Point angle           | 140°     |
| Cutting edge tolerance | m7      | Shank tolerance         | h6              | Standard              | DIN6537K |
| Coating                | AlTiN   | Suitable for processing | Steel/Cast iron | Work hardness ≤ HRC48 |          |



Notice: The MOQ for Non-stock item is 5pcs.

● Stock  
○ Non-stock

| Model No. | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-----------|------------------|----------------|----------------|--------------|-------|
|           | D                | l              | Ds             | L            |       |
| CTS106D12 | 10.6             | 55             | 12             | 102          | ●     |
| CTS107D12 | 10.7             | 55             | 12             | 102          | ●     |
| CTS108D12 | 10.8             | 55             | 12             | 102          | ●     |
| CTS109D12 | 10.9             | 55             | 12             | 102          | ●     |
| CTS110D12 | 11.0             | 55             | 12             | 102          | ●     |
| CTS111D12 | 11.1             | 55             | 12             | 102          | ●     |
| CTS112D12 | 11.2             | 55             | 12             | 102          | ●     |
| CTS113D12 | 11.3             | 55             | 12             | 102          | ●     |
| CTS114D12 | 11.4             | 55             | 12             | 102          | ●     |
| CTS115D12 | 11.5             | 55             | 12             | 102          | ●     |
| CTS116D12 | 11.6             | 55             | 12             | 102          | ●     |
| CTS117D12 | 11.7             | 55             | 12             | 102          | ●     |
| CTS118D12 | 11.8             | 55             | 12             | 102          | ●     |
| CTS119D12 | 11.9             | 55             | 12             | 102          | ●     |
| CTS120D12 | 12.0             | 55             | 12             | 102          | ●     |
| CTS125D14 | 12.5             | 60             | 14             | 107          | ○     |
| CTS128D14 | 12.8             | 60             | 14             | 107          | ○     |
| CTS130D14 | 13.0             | 60             | 14             | 107          | ○     |
| CTS135D14 | 13.5             | 60             | 14             | 107          | ○     |
| CTS138D14 | 13.8             | 60             | 14             | 107          | ○     |
| CTS140D14 | 14.0             | 60             | 14             | 107          | ○     |
| CTS145D16 | 14.5             | 65             | 16             | 115          | ○     |
| CTS148D16 | 14.8             | 65             | 16             | 115          | ○     |
| CTS150D16 | 15.0             | 65             | 16             | 115          | ○     |
| CTS155D16 | 15.5             | 65             | 16             | 115          | ○     |
| CTS158D16 | 15.8             | 65             | 16             | 115          | ○     |
| CTS160D16 | 16.0             | 65             | 16             | 115          | ○     |
| CTS165D18 | 16.5             | 73             | 18             | 123          | ○     |
| CTS168D18 | 16.8             | 73             | 18             | 123          | ○     |
| CTS170D18 | 17.0             | 73             | 18             | 123          | ○     |
| CTS175D18 | 17.5             | 73             | 18             | 123          | ○     |
| CTS178D18 | 17.8             | 73             | 18             | 123          | ○     |
| CTS180D18 | 18.0             | 73             | 18             | 123          | ○     |
| CTS185D20 | 18.5             | 79             | 20             | 131          | ○     |
| CTS188D20 | 18.8             | 79             | 20             | 131          | ○     |
| CTS190D20 | 19.0             | 79             | 20             | 131          | ○     |
| CTS195D20 | 19.5             | 79             | 20             | 131          | ○     |
| CTS198D20 | 19.8             | 79             | 20             | 131          | ○     |
| CTS200D20 | 20.0             | 79             | 20             | 131          | ○     |

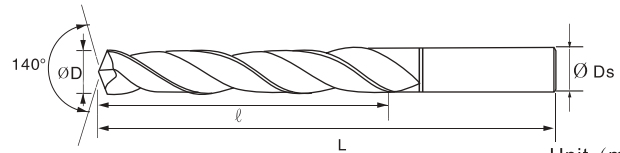


# High Performance Carbide Drill for Steel Purpose (CTW CTS 3D&5D)



## CTW Drill Series 5D External Coolant

|                        |         |                         |                 |                       |           |
|------------------------|---------|-------------------------|-----------------|-----------------------|-----------|
| Material               | Carbide | Helix angle             | 30°             | Point angle           | 140°      |
| Cutting edge tolerance | m7      | Shank tolerance         | h6              | Standard              | DIN6535HA |
| Coating                | AlTiN   | Suitable for processing | Steel/Cast iron | Work hardness ≤ HRC48 |           |



Unit (mm)  
● Stock  
○ Non-stock

| Model No.   | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-------------|------------------|----------------|----------------|--------------|-------|
|             | D                | l              | Ds             | L            |       |
| CTW05030D6  | 3.0              | 28             | 6              | 66           | ●     |
| CTW05031D6  | 3.1              | 28             | 6              | 66           | ●     |
| CTW05032D6  | 3.2              | 28             | 6              | 66           | ●     |
| CTW05033D6  | 3.3              | 28             | 6              | 66           | ●     |
| CTW05034D6  | 3.4              | 28             | 6              | 66           | ●     |
| CTW05035D6  | 3.5              | 28             | 6              | 66           | ●     |
| CTW05036D6  | 3.6              | 28             | 6              | 66           | ●     |
| CTW05037D6  | 3.7              | 28             | 6              | 66           | ●     |
| CTW05038D6  | 3.8              | 36             | 6              | 74           | ●     |
| CTW05039D6  | 3.9              | 36             | 6              | 74           | ●     |
| CTW05040D6  | 4.0              | 36             | 6              | 74           | ●     |
| CTW05041D6  | 4.1              | 36             | 6              | 74           | ●     |
| CTW05042D6  | 4.2              | 36             | 6              | 74           | ●     |
| CTW05043D6  | 4.3              | 36             | 6              | 74           | ●     |
| CTW05044D6  | 4.4              | 36             | 6              | 74           | ●     |
| CTW05045D6  | 4.5              | 36             | 6              | 74           | ●     |
| CTW05046D6  | 4.6              | 36             | 6              | 74           | ●     |
| CTW050465D6 | 4.65             | 36             | 6              | 74           | ●     |
| CTW05047D6  | 4.7              | 36             | 6              | 74           | ●     |
| CTW05048D6  | 4.8              | 44             | 6              | 82           | ●     |
| CTW05049D6  | 4.9              | 44             | 6              | 82           | ●     |
| CTW05050D6  | 5.0              | 44             | 6              | 82           | ●     |
| CTW05051D6  | 5.1              | 44             | 6              | 82           | ●     |
| CTW05052D6  | 5.2              | 44             | 6              | 82           | ●     |
| CTW05053D6  | 5.3              | 44             | 6              | 82           | ●     |
| CTW05054D6  | 5.4              | 44             | 6              | 82           | ●     |
| CTW05055D6  | 5.5              | 44             | 6              | 82           | ●     |
| CTW05056D6  | 5.6              | 44             | 6              | 82           | ●     |
| CTW05057D6  | 5.7              | 44             | 6              | 82           | ●     |
| CTW05058D6  | 5.8              | 44             | 6              | 82           | ●     |
| CTW05059D6  | 5.9              | 44             | 6              | 82           | ●     |
| CTW05060D6  | 6.0              | 44             | 6              | 82           | ●     |
| CTW05061D8  | 6.1              | 53             | 8              | 91           | ●     |
| CTW05062D8  | 6.2              | 53             | 8              | 91           | ●     |
| CTW05063D8  | 6.3              | 53             | 8              | 91           | ●     |
| CTW05064D8  | 6.4              | 53             | 8              | 91           | ●     |
| CTW05065D8  | 6.5              | 53             | 8              | 91           | ●     |
| CTW05066D8  | 6.6              | 53             | 8              | 91           | ●     |
| CTW05067D8  | 6.7              | 53             | 8              | 91           | ●     |
| CTW05068D8  | 6.8              | 53             | 8              | 91           | ●     |

Carbide Drills

U Drills

Head Exchangable Drills

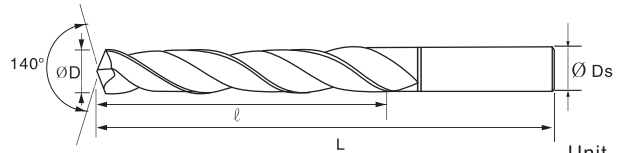
Deep Hole Drills

CDR 45° Chamfer Cutter

Non-standard Tools

## CTW Drill Series 5D External Coolant

|                        |         |                         |                 |               |           |
|------------------------|---------|-------------------------|-----------------|---------------|-----------|
| Material               | Carbide | Helix angle             | 30°             | Point angle   | 140°      |
| Cutting edge tolerance | m7      | Shank tolerance         | h6              | Standard      | DIN6535HA |
| Coating                | AlTiN   | Suitable for processing | Steel/Cast iron | Work hardness | ≤HRC48    |

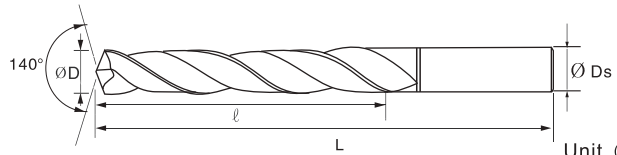


Unit (mm)  
 ● Stock  
 ○ Non-stock

| Model No.   | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-------------|------------------|----------------|----------------|--------------|-------|
|             | D                | l              | Ds             | L            |       |
| CTW05069D8  | 6.9              | 53             | 8              | 91           | ●     |
| CTW05070D8  | 7.0              | 53             | 8              | 91           | ●     |
| CTW05071D8  | 7.1              | 53             | 8              | 91           | ●     |
| CTW05072D8  | 7.2              | 53             | 8              | 91           | ●     |
| CTW05073D8  | 7.3              | 53             | 8              | 91           | ●     |
| CTW05074D8  | 7.4              | 53             | 8              | 91           | ●     |
| CTW05075D8  | 7.5              | 53             | 8              | 91           | ●     |
| CTW05076D8  | 7.6              | 53             | 8              | 91           | ●     |
| CTW05077D8  | 7.7              | 53             | 8              | 91           | ●     |
| CTW05078D8  | 7.8              | 53             | 8              | 91           | ●     |
| CTW05079D8  | 7.9              | 53             | 8              | 91           | ●     |
| CTW05080D8  | 8.0              | 53             | 8              | 91           | ●     |
| CTW05081D10 | 8.1              | 61             | 10             | 103          | ●     |
| CTW05082D10 | 8.2              | 61             | 10             | 103          | ●     |
| CTW05083D10 | 8.3              | 61             | 10             | 103          | ●     |
| CTW05084D10 | 8.4              | 61             | 10             | 103          | ●     |
| CTW05085D10 | 8.5              | 61             | 10             | 103          | ●     |
| CTW05086D10 | 8.6              | 61             | 10             | 103          | ●     |
| CTW05087D10 | 8.7              | 61             | 10             | 103          | ●     |
| CTW05088D10 | 8.8              | 61             | 10             | 103          | ●     |
| CTW05089D10 | 8.9              | 61             | 10             | 103          | ●     |
| CTW05090D10 | 9.0              | 61             | 10             | 103          | ●     |
| CTW05091D10 | 9.1              | 61             | 10             | 103          | ●     |
| CTW05092D10 | 9.2              | 61             | 10             | 103          | ●     |
| CTW05093D10 | 9.3              | 61             | 10             | 103          | ●     |
| CTW05094D10 | 9.4              | 61             | 10             | 103          | ●     |
| CTW05095D10 | 9.5              | 61             | 10             | 103          | ●     |
| CTW05096D10 | 9.6              | 61             | 10             | 103          | ●     |
| CTW05097D10 | 9.7              | 61             | 10             | 103          | ●     |
| CTW05098D10 | 9.8              | 61             | 10             | 103          | ●     |
| CTW05099D10 | 9.9              | 61             | 10             | 103          | ●     |
| CTW05100D10 | 10.0             | 61             | 10             | 103          | ●     |
| CTW05101D12 | 10.1             | 71             | 12             | 118          | ●     |
| CTW05102D12 | 10.2             | 71             | 12             | 118          | ●     |
| CTW05103D12 | 10.3             | 71             | 12             | 118          | ●     |
| CTW05104D12 | 10.4             | 71             | 12             | 118          | ●     |
| CTW05105D12 | 10.5             | 71             | 12             | 118          | ●     |
| CTW05106D12 | 10.6             | 71             | 12             | 118          | ●     |
| CTW05107D12 | 10.7             | 71             | 12             | 118          | ●     |
| CTW05108D12 | 10.8             | 71             | 12             | 118          | ●     |

CTW Drill Series 5D External Coolant

|                        |         |                         |                 |               |           |
|------------------------|---------|-------------------------|-----------------|---------------|-----------|
| Material               | Carbide | Helix angle             | 30°             | Point angle   | 140°      |
| Cutting edge tolerance | m7      | Shank tolerance         | h6              | Standard      | DIN6535HA |
| Coating                | AlTiN   | Suitable for processing | Steel/Cast iron | Work hardness | ≤HRC48    |



Notice: The MOQ for Non-stock item is 5pcs.

Unit (mm)  
● Stock ○ Non-stock

| Model No.   | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-------------|------------------|----------------|----------------|--------------|-------|
|             | D                | l              | Ds             | L            |       |
| CTW05109D12 | 10.9             | 71             | 12             | 118          | ●     |
| CTW05110D12 | 11.0             | 71             | 12             | 118          | ●     |
| CTW05111D12 | 11.1             | 71             | 12             | 118          | ●     |
| CTW05112D12 | 11.2             | 71             | 12             | 118          | ●     |
| CTW05113D12 | 11.3             | 71             | 12             | 118          | ●     |
| CTW05114D12 | 11.4             | 71             | 12             | 118          | ●     |
| CTW05115D12 | 11.5             | 71             | 12             | 118          | ●     |
| CTW05116D12 | 11.6             | 71             | 12             | 118          | ●     |
| CTW05117D12 | 11.7             | 71             | 12             | 118          | ●     |
| CTW05118D12 | 11.8             | 71             | 12             | 118          | ●     |
| CTW05119D12 | 11.9             | 71             | 12             | 118          | ●     |
| CTW05120D12 | 12.0             | 71             | 12             | 118          | ●     |
| CTW05122D14 | 12.2             | 77             | 14             | 124          | ○     |
| CTW05123D14 | 12.3             | 77             | 14             | 124          | ○     |
| CTW05124D14 | 12.4             | 77             | 14             | 124          | ○     |
| CTW05125D14 | 12.5             | 77             | 14             | 124          | ○     |
| CTW05128D14 | 12.8             | 77             | 14             | 124          | ○     |
| CTW05130D14 | 13.0             | 77             | 14             | 124          | ○     |
| CTW05135D14 | 13.5             | 77             | 14             | 124          | ○     |
| CTW05138D14 | 13.8             | 77             | 14             | 124          | ○     |
| CTW05140D14 | 14.0             | 77             | 14             | 124          | ○     |
| CTW05143D16 | 14.3             | 83             | 16             | 133          | ○     |
| CTW05145D16 | 14.5             | 83             | 16             | 133          | ○     |
| CTW05146D16 | 14.6             | 83             | 16             | 133          | ○     |
| CTW05148D16 | 14.8             | 83             | 16             | 133          | ○     |
| CTW05150D16 | 15.0             | 83             | 16             | 133          | ○     |
| CTW05155D16 | 15.5             | 83             | 16             | 133          | ○     |
| CTW05158D16 | 15.8             | 83             | 16             | 133          | ○     |
| CTW05160D16 | 16.0             | 83             | 16             | 133          | ○     |
| CTW05165D18 | 16.5             | 93             | 18             | 143          | ○     |
| CTW05166D18 | 16.6             | 93             | 18             | 143          | ○     |
| CTW05168D18 | 16.8             | 93             | 18             | 143          | ○     |
| CTW05170D18 | 17.0             | 93             | 18             | 143          | ○     |
| CTW05175D18 | 17.5             | 93             | 18             | 143          | ○     |
| CTW05178D18 | 17.8             | 93             | 18             | 143          | ○     |
| CTW05180D18 | 18.0             | 93             | 18             | 143          | ○     |
| CTW05185D20 | 18.5             | 101            | 20             | 153          | ○     |
| CTW05190D20 | 19.0             | 101            | 20             | 153          | ○     |
| CTW05195D20 | 19.5             | 101            | 20             | 153          | ○     |
| CTW05200D20 | 20.0             | 101            | 20             | 153          | ○     |

Carbide Drills

U Drills

Head Exchangable Drills

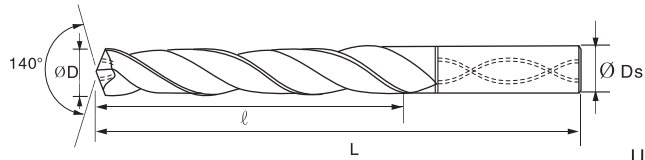
Deep Hole Drills

CDR 45° Chamfer Cutter

Non-standard Tools

## CTS Drill Series 5D with Internal Coolant

|                        |         |                         |                 |               |          |
|------------------------|---------|-------------------------|-----------------|---------------|----------|
| Material               | Carbide | Helix angle             | 30°             | Point angle   | 140°     |
| Cutting edge tolerance | m7      | Shank tolerance         | h6              | Standard      | DIN6537K |
| Coating                | AlTiN   | Suitable for processing | Steel/Cast iron | Work hardness | ≤HRC48   |

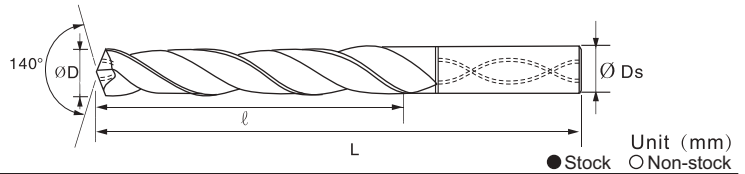


Unit (mm)  
 ● Stock  
 ○ Non-stock

| Model No.  | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|------------|------------------|----------------|----------------|--------------|-------|
|            | D                | l              | Ds             | L            |       |
| CTS05030D6 | 3.0              | 28             | 6              | 66           | ●     |
| CTS05031D6 | 3.1              | 28             | 6              | 66           | ●     |
| CTS05032D6 | 3.2              | 28             | 6              | 66           | ●     |
| CTS05033D6 | 3.3              | 28             | 6              | 66           | ●     |
| CTS05034D6 | 3.4              | 28             | 6              | 66           | ●     |
| CTS05035D6 | 3.5              | 28             | 6              | 66           | ●     |
| CTS05036D6 | 3.6              | 28             | 6              | 66           | ●     |
| CTS05037D6 | 3.7              | 28             | 6              | 66           | ●     |
| CTS05038D6 | 3.8              | 36             | 6              | 74           | ●     |
| CTS05039D6 | 3.9              | 36             | 6              | 74           | ●     |
| CTS05040D6 | 4.0              | 36             | 6              | 74           | ●     |
| CTS05041D6 | 4.1              | 36             | 6              | 74           | ●     |
| CTS05042D6 | 4.2              | 36             | 6              | 74           | ●     |
| CTS05043D6 | 4.3              | 36             | 6              | 74           | ●     |
| CTS05044D6 | 4.4              | 36             | 6              | 74           | ●     |
| CTS05045D6 | 4.5              | 36             | 6              | 74           | ●     |
| CTS05046D6 | 4.6              | 36             | 6              | 74           | ●     |
| CTS05047D6 | 4.7              | 36             | 6              | 74           | ●     |
| CTS05048D6 | 4.8              | 44             | 6              | 82           | ●     |
| CTS05049D6 | 4.9              | 44             | 6              | 82           | ●     |
| CTS05050D6 | 5.0              | 44             | 6              | 82           | ●     |
| CTS05051D6 | 5.1              | 44             | 6              | 82           | ●     |
| CTS05052D6 | 5.2              | 44             | 6              | 82           | ●     |
| CTS05053D6 | 5.3              | 44             | 6              | 82           | ●     |
| CTS05054D6 | 5.4              | 44             | 6              | 82           | ●     |
| CTS05055D6 | 5.5              | 44             | 6              | 82           | ●     |
| CTS05056D6 | 5.6              | 44             | 6              | 82           | ●     |
| CTS05057D6 | 5.7              | 44             | 6              | 82           | ●     |
| CTS05058D6 | 5.8              | 44             | 6              | 82           | ●     |
| CTS05059D6 | 5.9              | 44             | 6              | 82           | ●     |
| CTS05060D6 | 6.0              | 44             | 6              | 82           | ●     |
| CTS05061D8 | 6.1              | 53             | 8              | 91           | ●     |
| CTS05062D8 | 6.2              | 53             | 8              | 91           | ●     |
| CTS05063D8 | 6.3              | 53             | 8              | 91           | ●     |
| CTS05064D8 | 6.4              | 53             | 8              | 91           | ●     |
| CTS05065D8 | 6.5              | 53             | 8              | 91           | ●     |
| CTS05066D8 | 6.6              | 53             | 8              | 91           | ●     |
| CTS05067D8 | 6.7              | 53             | 8              | 91           | ●     |
| CTS05068D8 | 6.8              | 53             | 8              | 91           | ●     |
| CTS05069D8 | 6.9              | 53             | 8              | 91           | ●     |

## CTS Drill Series 5D with Internal Coolant

|                        |         |                         |                 |                       |          |
|------------------------|---------|-------------------------|-----------------|-----------------------|----------|
| Material               | Carbide | Helix angle             | 30°             | Point angle           | 140°     |
| Cutting edge tolerance | m7      | Shank tolerance         | h6              | Standard              | DIN6537K |
| Coating                | AlTiN   | Suitable for processing | Steel/Cast iron | Work hardness ≤ HRC48 |          |



| Model No.   | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-------------|------------------|----------------|----------------|--------------|-------|
|             | D                | l              | Ds             | L            |       |
| CTS05070D8  | 7.0              | 53             | 8              | 91           | ●     |
| CTS05071D8  | 7.1              | 53             | 8              | 91           | ●     |
| CTS05072D8  | 7.2              | 53             | 8              | 91           | ●     |
| CTS05073D8  | 7.3              | 53             | 8              | 91           | ●     |
| CTS05074D8  | 7.4              | 53             | 8              | 91           | ●     |
| CTS05075D8  | 7.5              | 53             | 8              | 91           | ●     |
| CTS05076D8  | 7.6              | 53             | 8              | 91           | ●     |
| CTS05077D8  | 7.7              | 53             | 8              | 91           | ●     |
| CTS05078D8  | 7.8              | 53             | 8              | 91           | ●     |
| CTS05079D8  | 7.9              | 53             | 8              | 91           | ●     |
| CTS05080D8  | 8.0              | 53             | 8              | 91           | ●     |
| CTS05081D10 | 8.1              | 61             | 10             | 103          | ●     |
| CTS05082D10 | 8.2              | 61             | 10             | 103          | ●     |
| CTS05083D10 | 8.3              | 61             | 10             | 103          | ●     |
| CTS05084D10 | 8.4              | 61             | 10             | 103          | ●     |
| CTS05085D10 | 8.5              | 61             | 10             | 103          | ●     |
| CTS05086D10 | 8.6              | 61             | 10             | 103          | ●     |
| CTS05087D10 | 8.7              | 61             | 10             | 103          | ●     |
| CTS05088D10 | 8.8              | 61             | 10             | 103          | ●     |
| CTS05089D10 | 8.9              | 61             | 10             | 103          | ●     |
| CTS05090D10 | 9.0              | 61             | 10             | 103          | ●     |
| CTS05091D10 | 9.1              | 61             | 10             | 103          | ●     |
| CTS05092D10 | 9.2              | 61             | 10             | 103          | ●     |
| CTS05093D10 | 9.3              | 61             | 10             | 103          | ●     |
| CTS05094D10 | 9.4              | 61             | 10             | 103          | ●     |
| CTS05095D10 | 9.5              | 61             | 10             | 103          | ●     |
| CTS05096D10 | 9.6              | 61             | 10             | 103          | ●     |
| CTS05097D10 | 9.7              | 61             | 10             | 103          | ●     |
| CTS05098D10 | 9.8              | 61             | 10             | 103          | ●     |
| CTS05099D10 | 9.9              | 61             | 10             | 103          | ●     |
| CTS05100D10 | 10.0             | 61             | 10             | 103          | ●     |
| CTS05101D12 | 10.1             | 71             | 12             | 118          | ●     |
| CTS05102D12 | 10.2             | 71             | 12             | 118          | ●     |
| CTS05103D12 | 10.3             | 71             | 12             | 118          | ●     |
| CTS05104D12 | 10.4             | 71             | 12             | 118          | ●     |
| CTS05105D12 | 10.5             | 71             | 12             | 118          | ●     |
| CTS05106D12 | 10.6             | 71             | 12             | 118          | ●     |
| CTS05107D12 | 10.7             | 71             | 12             | 118          | ●     |
| CTS05108D12 | 10.8             | 71             | 12             | 118          | ●     |
| CTS05109D12 | 10.9             | 71             | 12             | 118          | ●     |

Carbide Drills

U Drills

Head Exchangable Drills

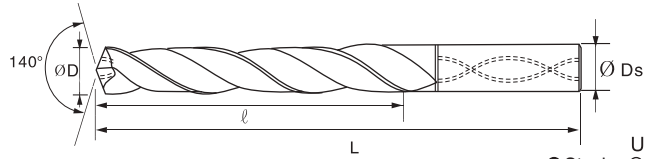
Deep Hole Drills

CDR 45° Chamfer Cutter

Non-standard Tools

## CTS Drill Series 5D with Internal Coolant

|                        |         |                         |                 |                       |          |
|------------------------|---------|-------------------------|-----------------|-----------------------|----------|
| Material               | Carbide | Helix angle             | 30°             | Point angle           | 140°     |
| Cutting edge tolerance | m7      | Shank tolerance         | h6              | Standard              | DIN6537K |
| Coating                | AlTiN   | Suitable for processing | Steel/Cast iron | Work hardness ≤ HRC48 |          |



**Notice: The MOQ for Non-stock item is 5pcs.**

Unit (mm)  
● Stock  
○ Non-stock

| Model No.   | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-------------|------------------|----------------|----------------|--------------|-------|
|             | D                | l              | Ds             | L            |       |
| CTS05110D12 | 11.0             | 71             | 12             | 118          | ●     |
| CTS05111D12 | 11.1             | 71             | 12             | 118          | ●     |
| CTS05112D12 | 11.2             | 71             | 12             | 118          | ●     |
| CTS05113D12 | 11.3             | 71             | 12             | 118          | ●     |
| CTS05114D12 | 11.4             | 71             | 12             | 118          | ●     |
| CTS05115D12 | 11.5             | 71             | 12             | 118          | ●     |
| CTS05116D12 | 11.6             | 71             | 12             | 118          | ●     |
| CTS05117D12 | 11.7             | 71             | 12             | 118          | ●     |
| CTS05118D12 | 11.8             | 71             | 12             | 118          | ●     |
| CTS05119D12 | 11.9             | 71             | 12             | 118          | ●     |
| CTS05120D12 | 12.0             | 71             | 12             | 118          | ●     |
| CTS05122D14 | 12.2             | 77             | 14             | 124          | ○     |
| CTS05123D14 | 12.3             | 77             | 14             | 124          | ○     |
| CTS05124D14 | 12.4             | 77             | 14             | 124          | ○     |
| CTS05125D14 | 12.5             | 77             | 14             | 124          | ○     |
| CTS05128D14 | 12.8             | 77             | 14             | 124          | ○     |
| CTS05130D14 | 13.0             | 77             | 14             | 124          | ○     |
| CTS05135D14 | 13.5             | 77             | 14             | 124          | ○     |
| CTS05138D14 | 13.8             | 77             | 14             | 124          | ○     |
| CTS05140D14 | 14.0             | 77             | 14             | 124          | ○     |
| CTS05143D16 | 14.3             | 83             | 16             | 133          | ○     |
| CTS05145D16 | 14.5             | 83             | 16             | 133          | ○     |
| CTS05146D16 | 14.6             | 83             | 16             | 133          | ○     |
| CTS05148D16 | 14.8             | 83             | 16             | 133          | ○     |
| CTS05150D16 | 15.0             | 83             | 16             | 133          | ○     |
| CTS05155D16 | 15.5             | 83             | 16             | 133          | ○     |
| CTS05158D16 | 15.8             | 83             | 16             | 133          | ○     |
| CTS05160D16 | 16.0             | 83             | 16             | 133          | ○     |
| CTS05165D18 | 16.5             | 93             | 18             | 143          | ○     |
| CTS05166D18 | 16.6             | 93             | 18             | 143          | ○     |
| CTS05168D18 | 16.8             | 93             | 18             | 143          | ○     |
| CTS05170D18 | 17.0             | 93             | 18             | 143          | ○     |
| CTS05175D18 | 17.5             | 93             | 18             | 143          | ○     |
| CTS05178D18 | 17.8             | 93             | 18             | 143          | ○     |
| CTS05180D18 | 18.0             | 93             | 18             | 143          | ○     |
| CTS05185D20 | 18.5             | 101            | 20             | 153          | ○     |
| CTS05190D20 | 19.0             | 101            | 20             | 153          | ○     |
| CTS05195D20 | 19.5             | 101            | 20             | 153          | ○     |
| CTS05200D20 | 20.0             | 101            | 20             | 153          | ○     |

Carbide Drills

U Drills

Head Exchangable Drills

Deep Hole Drills

CDR 45° Chamfer Cutter

Non-standard Tools

## STANDARD CUTTING CONDITIONS

### CTW Series 3D/5D (External Coolant)

Unit (mm)

| ISO | Work Material   | Brinell hardness (HB) | Cutting speed: Vc (m/min) | Feed: f (mm/rev) |           |           |           |           |           |           |
|-----|---|-----------------------|---------------------------|------------------|-----------|-----------|-----------|-----------|-----------|-----------|
|     |   |                       |                           | ø3 ~ ø4          | ø4 ~ ø6   | ø6 ~ ø8   | ø8 ~ ø10  | ø10 ~ ø12 | ø12 ~ ø16 | ø16 ~ ø20 |
| P   | Low carbon steel (C < 0.3)<br>C15E4, E275A, E355D, etc. | ~125                  | 120~80~50                 | 0.10~0.20        | 0.14~0.25 | 0.16~0.32 | 0.16~0.35 | 0.18~0.40 | 0.22~0.45 | 0.25~0.50 |
|     | Carbon steel (C > 0.3)<br>C45, C55, etc.                | 125 ~ 300             | 120~70~45                 | 0.10~0.20        | 0.14~0.25 | 0.16~0.32 | 0.16~0.35 | 0.18~0.40 | 0.22~0.45 | 0.25~0.50 |
|     | High alloy steel<br>42CrMo4, etc.                       | 250 ~ 350             | 100~60~35                 | 0.09~0.16        | 0.12~0.23 | 0.14~0.28 | 0.14~0.30 | 0.18~0.38 | 0.22~0.45 | 0.25~0.50 |
| K   | Grey cast iron<br>250, etc.                             | ~ 200                 | 140~100~60                | 0.13~0.20        | 0.17~0.30 | 0.20~0.35 | 0.23~0.40 | 0.25~0.45 | 0.28~0.48 | 0.32~0.52 |
|     | Ductile cast iron<br>450-10S, etc                       | ~ 300                 | 120~80~60                 | 0.11~0.18        | 0.13~0.20 | 0.15~0.25 | 0.17~0.32 | 0.20~0.36 | 0.24~0.45 | 0.28~0.48 |

### CTS Series 3D/5D (Internal Coolant)

Unit (mm)

| ISO | Work Material   | Brinell hardness (HB) | Cutting speed: Vc (m/min) | Feed: f (mm/rev) |           |           |           |           |           |           |
|-----|---|-----------------------|---------------------------|------------------|-----------|-----------|-----------|-----------|-----------|-----------|
|     |   |                       |                           | ø3 ~ ø4          | ø4 ~ ø6   | ø6 ~ ø8   | ø8 ~ ø10  | ø10 ~ ø12 | ø12 ~ ø16 | ø16 ~ ø20 |
| P   | Low carbon steel (C < 0.3)<br>C15E4, E275A, E355D, etc. | ~125                  | 140~100~60                | 0.10~0.20        | 0.14~0.25 | 0.16~0.32 | 0.16~0.35 | 0.18~0.40 | 0.22~0.45 | 0.25~0.50 |
|     | Carbon steel (C > 0.3)<br>C45, C55, etc.                | 125 ~ 300             | 120~80~60                 | 0.10~0.20        | 0.14~0.25 | 0.16~0.32 | 0.16~0.35 | 0.18~0.40 | 0.22~0.45 | 0.25~0.50 |
|     | High alloy steel<br>42CrMo4, etc.                       | 250 ~ 350             | 110~80~60                 | 0.09~0.16        | 0.12~0.23 | 0.14~0.28 | 0.14~0.30 | 0.18~0.38 | 0.22~0.45 | 0.25~0.50 |
| K   | Grey cast iron<br>250, etc.                             | ~ 200                 | 160~120~60                | 0.13~0.20        | 0.17~0.30 | 0.20~0.35 | 0.23~0.40 | 0.25~0.45 | 0.28~0.48 | 0.32~0.52 |
|     | Ductile cast iron<br>450-10S, etc                       | ~ 300                 | 140~100~60                | 0.11~0.18        | 0.13~0.20 | 0.15~0.25 | 0.17~0.32 | 0.20~0.36 | 0.24~0.45 | 0.28~0.48 |

Carbide Drills

U Drills

Head Exchangable Drills

Head Exchangable

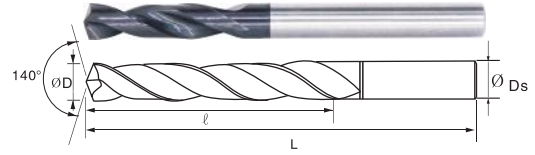
Deep Hole Drills

CDR 45° Chamfer Cutter

Non-standard Tools

## 1.DTW 3D/5D series (External coolant)

- ① Carbide Material.
- ② Unique bottom cutting edge design, with stronger chip breaking ability and greater chip capacity space.
- ③ Nanocomposite AlTiN coating makes the high speed and high efficiency drill machining.
- ④ Diameter from 1mm to 20mm, suitable for stainless steel processing.



## 2.DTS 3D/5D series (Internal coolant)

- ① Carbide Material.
- ② Unique bottom cutting edge design, with stronger chip breaking ability and greater chip capacity space.
- ③ New substrate coating with super toughness and wear resistance.
- ④ Diameter from 3mm to 20mm, suitable for stainless steel processing.

### DTW Drill Series 3D External Coolant

|                        |         |                         |                 |             |           |
|------------------------|---------|-------------------------|-----------------|-------------|-----------|
| Material               | Carbide | Helix angle             | 30°             | Point angle | 140°      |
| Cutting edge tolerance | m7      | Shank tolerance         | h6              | Standard    | DIN6535HA |
| Coating                | AlTiN   | Suitable for processing | Stainless steel |             |           |

Unit (mm)

| Model No. | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-----------|------------------|----------------|----------------|--------------|-------|
|           | D                | ℓ              | Ds             | L            |       |
| DTW010D4  | 1.0              | 7              | 4              | 45           | ●     |
| DTW020D4  | 2.0              | 13             | 4              | 55           | ●     |
| DTW030D6  | 3.0              | 20             | 6              | 62           | ●     |
| DTW033D6  | 3.3              | 20             | 6              | 62           | ●     |
| DTW040D6  | 4.0              | 24             | 6              | 66           | ●     |
| DTW042D6  | 4.2              | 24             | 6              | 66           | ●     |
| DTW050D6  | 5.0              | 28             | 6              | 66           | ●     |
| DTW060D6  | 6.0              | 28             | 6              | 66           | ●     |
| DTW068D8  | 6.8              | 34             | 8              | 79           | ●     |
| DTW070D8  | 7.0              | 34             | 8              | 79           | ●     |
| DTW080D8  | 8.0              | 41             | 8              | 79           | ●     |
| DTW085D10 | 8.5              | 47             | 10             | 89           | ●     |
| DTW090D10 | 9.0              | 47             | 10             | 89           | ●     |
| DTW100D10 | 10.0             | 47             | 10             | 89           | ●     |
| DTW103D12 | 10.3             | 55             | 12             | 102          | ●     |
| DTW105D12 | 10.5             | 55             | 12             | 102          | ●     |
| DTW110D12 | 11.0             | 55             | 12             | 102          | ●     |
| DTW120D12 | 12.0             | 55             | 12             | 102          | ●     |
| DTW125D14 | 12.5             | 60             | 14             | 107          | ●     |
| DTW130D14 | 13.0             | 60             | 14             | 107          | ●     |
| DTW140D14 | 14.0             | 60             | 14             | 107          | ●     |
| DTW145D16 | 14.5             | 65             | 16             | 115          | ●     |
| DTW150D16 | 15.0             | 65             | 16             | 115          | ●     |
| DTW160D16 | 16.0             | 65             | 16             | 115          | ●     |
| DTW170D18 | 17.0             | 73             | 18             | 123          | ●     |
| DTW180D18 | 18.0             | 73             | 18             | 123          | ●     |
| DTW190D20 | 19.0             | 79             | 20             | 131          | ●     |
| DTW200D20 | 20.0             | 79             | 20             | 131          | ●     |

● Stock ○ Non-stock

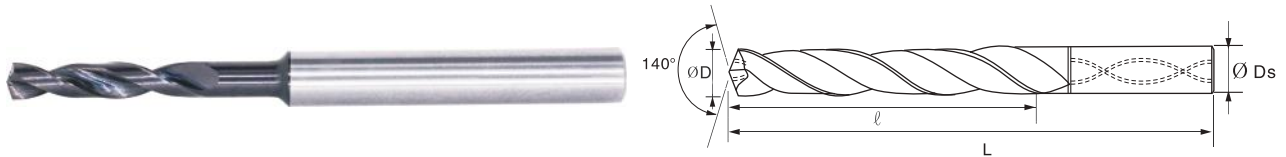


# High Performance Carbide Drill for Stainless Steel Purpose(DTW DTS 3D&5D)



## DTS Drill Series 3D with Internal Coolant

|                        |         |                         |                 |             |          |
|------------------------|---------|-------------------------|-----------------|-------------|----------|
| Material               | Carbide | Helix angle             | 30°             | Point angle | 140°     |
| Cutting edge tolerance | m7      | Shank tolerance         | h6              | Standard    | DIN6537K |
| Coating                | AlTiN   | Suitable for processing | Stainless steel |             |          |



Unit (mm)

| Model No. | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-----------|------------------|----------------|----------------|--------------|-------|
|           | D                | ℓ              | Ds             | L            |       |
| DTS030D6  | 3.0              | 20             | 6              | 62           | ○     |
| DTS033D6  | 3.3              | 20             | 6              | 62           | ○     |
| DTS040D6  | 4.0              | 24             | 6              | 66           | ○     |
| DTS042D6  | 4.2              | 24             | 6              | 66           | ○     |
| DTS050D6  | 5.0              | 28             | 6              | 66           | ○     |
| DTS060D6  | 6.0              | 28             | 6              | 66           | ○     |
| DTS068D8  | 6.8              | 34             | 8              | 79           | ○     |
| DTS070D8  | 7.0              | 34             | 8              | 79           | ○     |
| DTS080D8  | 8.0              | 41             | 8              | 79           | ○     |
| DTS085D10 | 8.5              | 47             | 10             | 89           | ○     |
| DTS090D10 | 9.0              | 47             | 10             | 89           | ○     |
| DTS100D10 | 10.0             | 47             | 10             | 89           | ○     |
| DTS103D12 | 10.3             | 55             | 12             | 102          | ○     |
| DTS105D12 | 10.5             | 55             | 12             | 102          | ○     |
| DTS110D12 | 11.0             | 55             | 12             | 102          | ○     |
| DTS120D12 | 12.0             | 55             | 12             | 102          | ○     |
| DTS125D14 | 12.5             | 60             | 14             | 107          | ○     |
| DTS130D14 | 13.0             | 60             | 14             | 107          | ○     |
| DTS140D14 | 14.0             | 60             | 14             | 107          | ○     |
| DTS145D16 | 14.5             | 65             | 16             | 115          | ○     |
| DTS150D16 | 15.0             | 65             | 16             | 115          | ○     |
| DTS160D16 | 16.0             | 65             | 16             | 115          | ○     |
| DTS170D18 | 17.0             | 73             | 18             | 123          | ○     |
| DTS180D18 | 18.0             | 73             | 18             | 123          | ○     |
| DTS190D20 | 19.0             | 79             | 20             | 131          | ○     |
| DTS200D20 | 20.0             | 79             | 20             | 131          | ○     |

Notice: The MOQ for Non-stock item is 5pcs.

● Stock ○ Non-stock

Carbide Drills

U Drills

Head Exchangable Drills

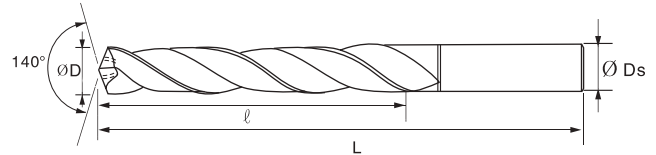
Deep Hole Drills

CDR 45° Chamfer Cutter

Non-standard Tools

DTW Drill Series 5D with External Coolant

|                        |         |                         |                 |             |           |
|------------------------|---------|-------------------------|-----------------|-------------|-----------|
| Material               | Carbide | Helix angle             | 30°             | Point angle | 140°      |
| Cutting edge tolerance | m7      | Shank tolerance         | h6              | Standard    | DIN6535HA |
| Coating                | AlTiN   | Suitable for processing | Stainless steel |             |           |



Unit (mm)

| Model No.   | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-------------|------------------|----------------|----------------|--------------|-------|
|             | D                | l              | Ds             | L            |       |
| DTW05030D6  | 3.0              | 28             | 6              | 66           | ●     |
| DTW05033D6  | 3.3              | 28             | 6              | 66           | ●     |
| DTW05040D6  | 4.0              | 36             | 6              | 74           | ●     |
| DTW05042D6  | 4.2              | 36             | 6              | 74           | ●     |
| DTW05050D6  | 5.0              | 44             | 6              | 82           | ●     |
| DTW05060D6  | 6.0              | 44             | 6              | 82           | ●     |
| DTW05068D8  | 6.8              | 53             | 8              | 91           | ●     |
| DTW05070D8  | 7.0              | 53             | 8              | 91           | ●     |
| DTW05080D8  | 8.0              | 53             | 8              | 91           | ●     |
| DTW05085D10 | 8.5              | 61             | 10             | 103          | ●     |
| DTW05090D10 | 9.0              | 61             | 10             | 103          | ●     |
| DTW05100D10 | 10.0             | 61             | 10             | 103          | ●     |
| DTW05103D12 | 10.3             | 71             | 12             | 118          | ●     |
| DTW05105D12 | 10.5             | 71             | 12             | 118          | ●     |
| DTW05110D12 | 11.0             | 71             | 12             | 118          | ●     |
| DTW05120D12 | 12.0             | 71             | 12             | 118          | ●     |
| DTW05125D14 | 12.5             | 77             | 14             | 124          | ●     |
| DTW05130D14 | 13.0             | 77             | 14             | 124          | ●     |
| DTW05140D14 | 14.0             | 77             | 14             | 124          | ●     |
| DTW05145D16 | 14.5             | 83             | 16             | 133          | ●     |
| DTW05150D16 | 15.0             | 83             | 16             | 133          | ●     |
| DTW05160D16 | 16.0             | 83             | 16             | 133          | ●     |
| DTW05170D18 | 17.0             | 93             | 18             | 143          | ●     |
| DTW05180D18 | 18.0             | 93             | 18             | 143          | ●     |
| DTW05190D20 | 19.0             | 101            | 20             | 153          | ●     |
| DTW05200D20 | 20.0             | 101            | 20             | 153          | ●     |

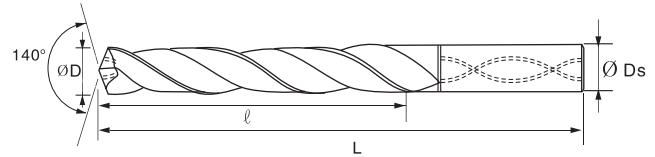
● Stock ○ Non-stock

# High Performance Carbide Drill for Stainless Steel Purpose(DTW DTS 3D&5D)



## DTS Drill Series 5D with Internal Coolant

|                        |         |                         |                 |             |          |
|------------------------|---------|-------------------------|-----------------|-------------|----------|
| Material               | Carbide | Helix angle             | 30°             | Point angle | 140°     |
| Cutting edge tolerance | m7      | Shank tolerance         | h6              | Standard    | DIN6537K |
| Coating                | AlTiN   | Suitable for processing | Stainless steel |             |          |



Unit (mm)

| Model No.   | Cutting Diameter | Cutting Length | Shank Diameter | Total Length | Stock |
|-------------|------------------|----------------|----------------|--------------|-------|
|             | D                | ℓ              | Ds             | L            |       |
| DTS05030D6  | 3.0              | 28             | 6              | 66           | ○     |
| DTS05033D6  | 3.3              | 28             | 6              | 66           | ○     |
| DTS05040D6  | 4.0              | 36             | 6              | 74           | ○     |
| DTS05042D6  | 4.2              | 36             | 6              | 74           | ○     |
| DTS05050D6  | 5.0              | 44             | 6              | 82           | ○     |
| DTS05060D6  | 6.0              | 44             | 6              | 82           | ○     |
| DTS05068D8  | 6.8              | 53             | 8              | 91           | ○     |
| DTS05070D8  | 7.0              | 53             | 8              | 91           | ○     |
| DTS05080D8  | 8.0              | 53             | 8              | 91           | ○     |
| DTS05085D10 | 8.5              | 61             | 10             | 103          | ○     |
| DTS05090D10 | 9.0              | 61             | 10             | 103          | ○     |
| DTS05100D10 | 10.0             | 61             | 10             | 103          | ○     |
| DTS05103D12 | 10.3             | 71             | 12             | 118          | ○     |
| DTS05105D12 | 10.5             | 71             | 12             | 118          | ○     |
| DTS05110D12 | 11.0             | 71             | 12             | 118          | ○     |
| DTS05120D12 | 12.0             | 71             | 12             | 118          | ○     |
| DTS05125D14 | 12.5             | 77             | 14             | 124          | ○     |
| DTS05130D14 | 13.0             | 77             | 14             | 124          | ○     |
| DTS05140D14 | 14.0             | 77             | 14             | 124          | ○     |
| DTS05145D16 | 14.5             | 83             | 16             | 133          | ○     |
| DTS05150D16 | 15.0             | 83             | 16             | 133          | ○     |
| DTS05160D16 | 16.0             | 83             | 16             | 133          | ○     |
| DTS05170D18 | 17.0             | 93             | 18             | 143          | ○     |
| DTS05180D18 | 18.0             | 93             | 18             | 143          | ○     |
| DTS05190D20 | 19.0             | 101            | 20             | 153          | ○     |
| DTS05200D20 | 20.0             | 101            | 20             | 153          | ○     |

Notice: The MOQ for Non-stock item is 5pcs.

● Stock ○ Non-stock

Carbide Drills

U Drills

Head Exchangable Drills

Deep Hole Drills

CDR 45° Chamfer Cutter

Non-standard Tools

## STANDARD CUTTING CONDITIONS

### DTW Series 3D/5D (External Coolant)

Unit (mm)

| ISO | Work Material                                    | Brinell hardness (HB) | Cutting speed: Vc (m/min) | Feed: f (mm/rev) |           |           |           |           |
|-----|--|-----------------------|---------------------------|------------------|-----------|-----------|-----------|-----------|
|     |  |                       |                           | ø3               | ø4        | ø6        | ø8        | ø10       |
| M   | Austenitic stainless steel                       | 130-200HB             | 40-30-20                  | 0.05-0.10        | 0.06-0.12 | 0.07-0.14 | 0.08-0.18 | 0.09-0.20 |
|     | High strength austenite and cast stainless steel | <25HRC                | 40-30-20                  | 0.03-0.08        | 0.04-0.10 | 0.05-0.10 | 0.06-0.12 | 0.07-0.14 |
|     | Duplex stainless steel                           | <30HRC                | 35-25-20                  | 0.03-0.08        | 0.04-0.10 | 0.05-0.10 | 0.06-0.12 | 0.07-0.14 |

### DTS Series 3D/5D (Internal Coolant)

Unit (mm)

| ISO | Work Material                                    | Brinell hardness (HB) | Cutting speed: Vc (m/min) | Feed: f (mm/rev) |           |           |           |           |
|-----|--|-----------------------|---------------------------|------------------|-----------|-----------|-----------|-----------|
|     |  |                       |                           | ø3               | ø4        | ø6        | ø8        | ø10       |
| M   | Austenitic stainless steel                       | 130-200HB             | 80-60-40                  | 0.05-0.10        | 0.06-0.12 | 0.07-0.14 | 0.08-0.18 | 0.09-0.20 |
|     | High strength austenite and cast stainless steel | <25HRC                | 80-60-40                  | 0.03-0.08        | 0.04-0.10 | 0.05-0.10 | 0.06-0.12 | 0.07-0.14 |
|     | Duplex stainless steel                           | <30HRC                | 60-45-30                  | 0.03-0.08        | 0.04-0.10 | 0.05-0.10 | 0.06-0.12 | 0.07-0.14 |

# TOTIME

*Make it Simple*



[www.totimetools.com](http://www.totimetools.com)  
[www.totimetools.net](http://www.totimetools.net)

---

**Dalian Totime Tools Co.,Ltd**  
Email: [info@totimetools.com](mailto:info@totimetools.com)  
Mobile: 13840810606

**Chongqing Branch Office**  
Email: [2355431069@qq.com](mailto:2355431069@qq.com)  
Mobile: 15162402492

**Wuxi Branch Office**  
Email: [18605102687@163.com](mailto:18605102687@163.com)  
Mobile: 18651588111

**Shenyang Branch Office**  
Email: [3247756004@qq.com](mailto:3247756004@qq.com)  
Mobile: 13898300401



**Totime Tools Co.,Ltd**  
Email: [info@totimetools.co.jp](mailto:info@totimetools.co.jp)  
Web: [www.totimetools.co.jp](http://www.totimetools.co.jp)



**Totime Polska SP .ZO.O.**  
Email: [biuro@totimetools.pl](mailto:biuro@totimetools.pl)  
Web: [www.totimetools.eu](http://www.totimetools.eu)



**Totime Tools De Mexico**  
Email: [info@totimetools.mx](mailto:info@totimetools.mx)  
Web: [www.totimetools.mx](http://www.totimetools.mx)