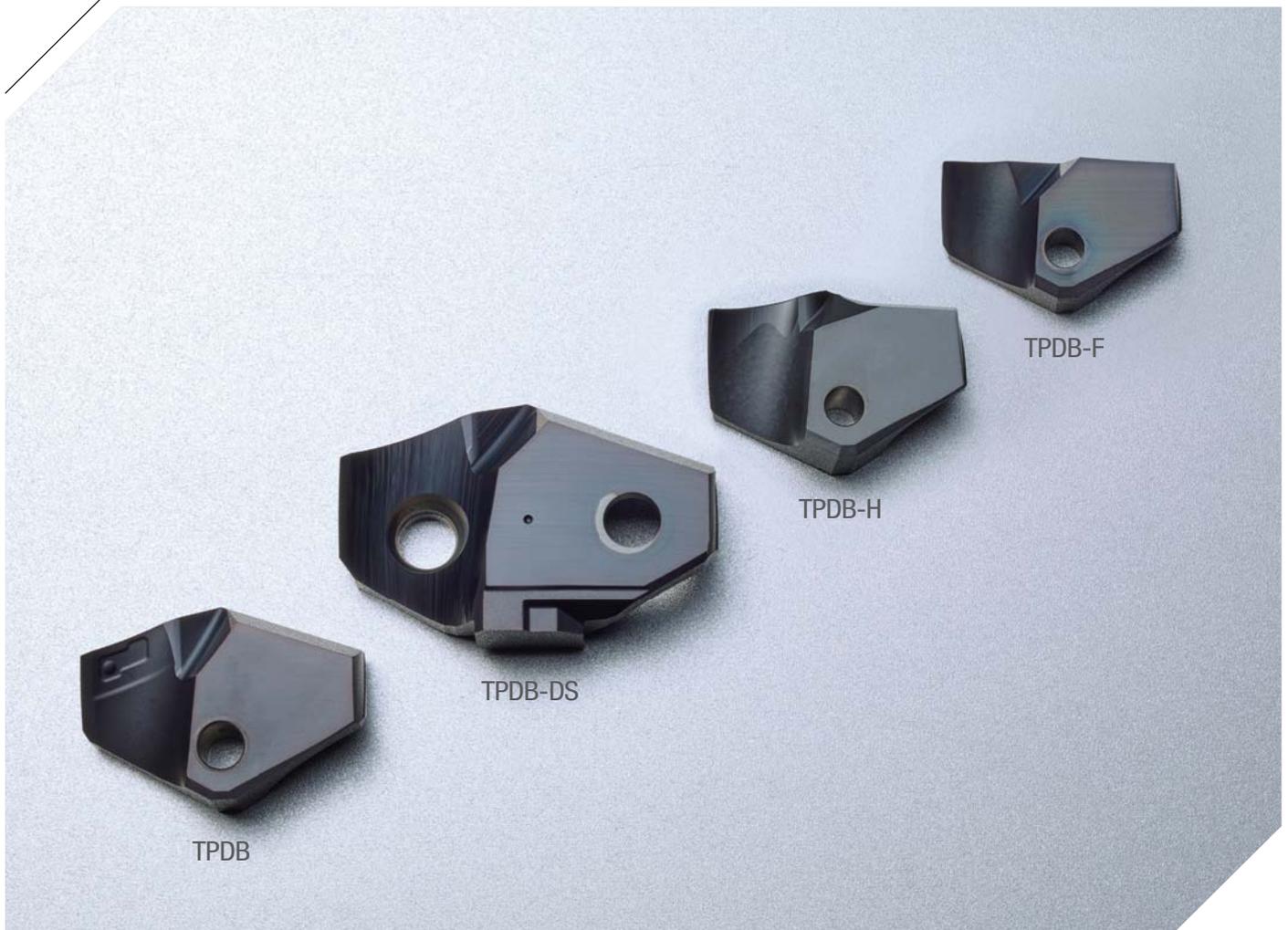


TPDB Plus Drill Series

^{New} TPDB, ^{New} TPDB-DS, TPDB-H, TPDB-F
[Standard] [Medium/large dia.] [H-Beam] [Flat]

High-quality and high efficiency top solid indexable Drill Series

- Improved productivity and excellent machining quality through stable machining
- Versatility in machining various surfaces, structural Steel, and medium/large diameter machining



Highly precise and efficient top solid indexable Drill Series

TPDB Plus Drill Series

In various industries, there are demands of excellent performance and machining time reduction to improve machining efficiency. Thus, the demand for efficient cutting tools leads to a continuous increase. To respond to these market demands, KORLOY launching the TPDB Plus Drill, a high-quality and high-efficiency indexable Drill that enhances machining quality and production efficiency.

The **TPDB Plus Drill** with high helix flutes ensures smooth chip evacuation during machining, greatly enhancing hole surface finish, roundness, and machining quality. Additionally, TPDB-F for machining various surfaces, TPDB-H dedicated hole machining in structural Steel, and TPDB-DS for medium / large diameter Drilling provide multi-faceted usability across different industries.

TPDB-DS is a Drill designed for machining medium/large diameter workpieces, applying a strong clamping structure. The specially designed clamping system and screw clamping method enable stable machining in high cutting load machining environments. Additionally, the double-margin design provides excellent hole surface finish and precision.

The **TPDB-H** insert with unique low-cutting resistance cutting edge improves centering and provides excellent machining quality even in vibration-prone machining environments by reducing machining load. In addition, the high helix angle applied flutes prevents vibration and unexpected tool breakage caused by chip blockage, thereby enhancing machining stability and productivity.

The **TPDB-F** is capable of machining sloping surfaces, curved surfaces, flanges, and boring on various workpiece surfaces, and it is suitable for basic hole machining on flat bottom surfaces. By minimizing the number of tools required and reducing tool change time, it is possible to expect decreasing cycle time.

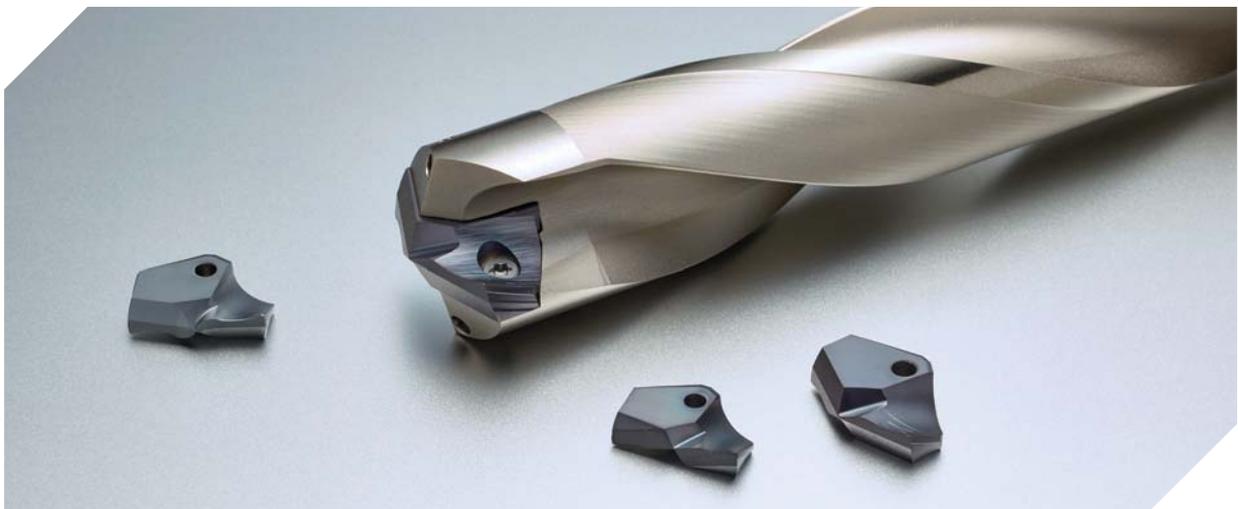
.....

» Excellent machinability

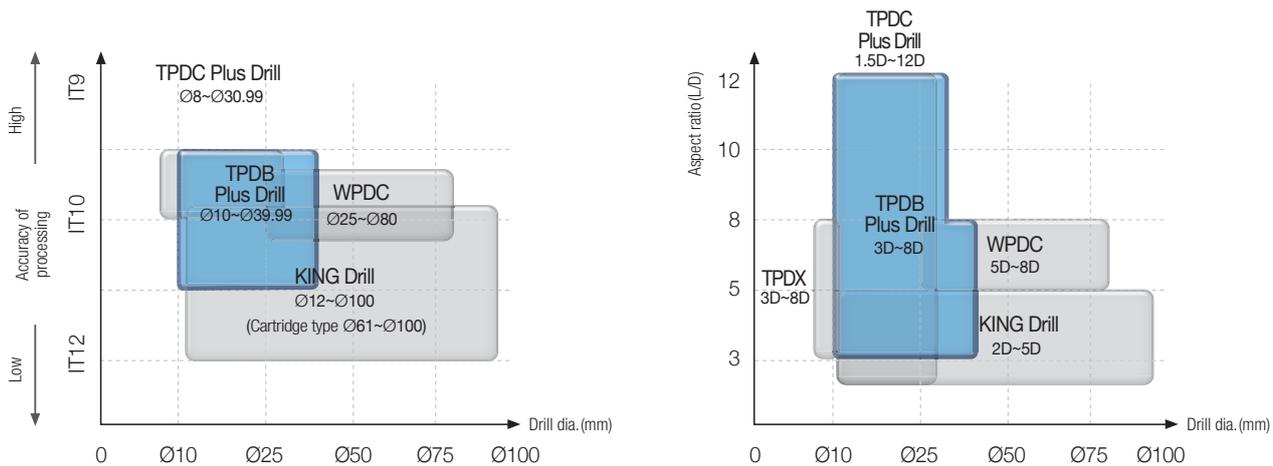
- Excellent hole machining performance with specified cutting edge designs per applications
- Good chip evacuation with high helix angle application

» Improved productivity

- Reduced cycle time through tool simplification
- Durable holder with special surface treatment



Application range

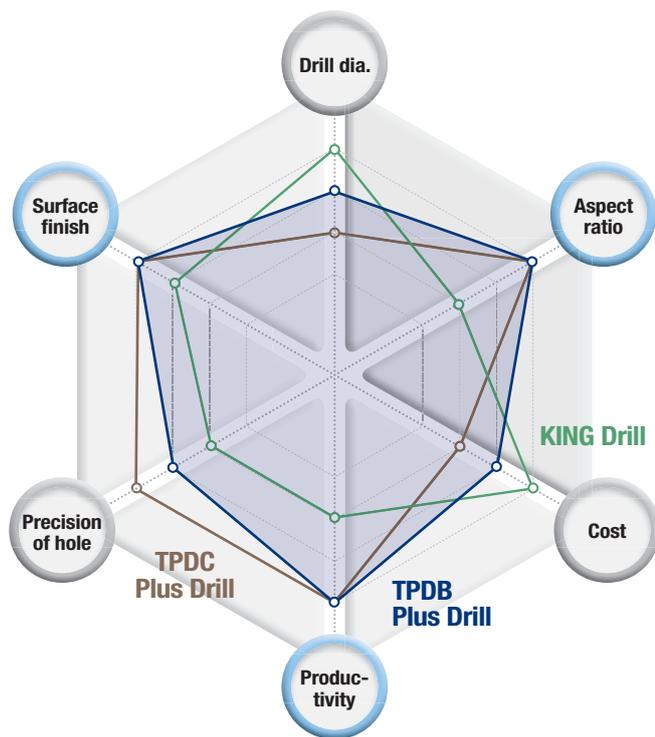


| Tool | | Application range | | | |
|-----------------|---------|-------------------|--------------------|-------------------------|--------------------|
| | | Drill dia. (Ø) | Aspect ratio (L/D) | Tolerance of Drill dia. | Workpiece material |
| TPDB Plus Drill | TPDB | 10.0~32.99mm | 3, 5, 8, 10, 12 | h7 | P, K |
| | TPDB-DS | 33.0~39.99mm | 3, 5, 8 | | P, K |
| | TPDB-H | 14.0~32.99mm | 3, 4, 5, 8 | | P |
| | TPDB-F | 14.0~30.99mm | 1.5 | | P |

Applicable industries

| Generation of wind and nuclear power | Shipbuilding | Railway and construction | Aircraft | Automobile |
|--------------------------------------|--------------|--------------------------|----------|------------|
| | | | | |

Indexable Drill selection guide



TPDB Plus Drill ^{New}

- Good surface finish
- High productivity
- 3D, 5D, 8D, 10D, 12D



TPDC Plus Drill

- One step clamping
- High precision of hole
- 1.5D, 3D, 5D, 8D, 10D, 12D



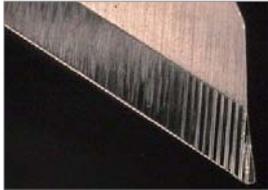
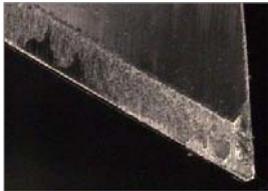
KING Drill

- 4 corners (central and peripheral)
- 2D, 3D, 4D, 5D

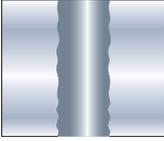
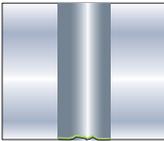
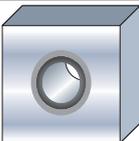


| Tool | Drill dia. | Aspect ratio | Cost | Productivity | Precision of hole | Surface finish |
|--------------------------------|------------|--------------|-------|--------------|-------------------|----------------|
| TPDB Plus Drill ^{New} | ★★★★ | ★★★★★ | ★★★★ | ★★★★★ | ★★★★ | ★★★★★ |
| TPDC Plus Drill | ★★ | ★★★★★ | ★★ | ★★★★★ | ★★★★★ | ★★★★★ |
| KING Drill | ★★★★★ | ★★ | ★★★★★ | ★★ | ★★ | ★★★★ |

Types of damage to Drill and solutions

| Scratches on the margin | | |
|---|-----------------|---|
|  | Factor | <ul style="list-style-type: none"> Lack of coolant lubrication Lack of coolant in deep Drilling due to MQL system Bend of Drill due to improperly placed holder or using a long holder Low rigidity or large concentricity |
| | Solution | <ul style="list-style-type: none"> Use more coolant Place workpiece tightly and check the concentricity Check the precision of installment of Drill (below 0.03 mm) Reduce the cutting speed |
| Wear on the margin | | |
|  | Factor | <ul style="list-style-type: none"> Due to machining pure metal or heat resisting alloy Less back taper due to using a holder for a long time Unstable machining at the end of hole due to interruption Lack of coolant lubrication on the peripheral section of holder contacting workpiece |
| | Solution | <ul style="list-style-type: none"> Set up proper tool life and manage its usage Check the shape of machining part Check the kind and concentration of coolant |
| Chipping on the corner | | |
|  | Factor | <ul style="list-style-type: none"> Interrupted machining (end of hole is inclined or curved shape, junction hole in the middle of hole.) Chattering in Drilling due to unstable clamping, low rigidity of machine or bending of Drill Chattering due to unstable clamping of Drill |
| | Solution | <ul style="list-style-type: none"> Check the part of machining Machine in lower cutting speed Place workpiece tightly Check the performance of the machine Check the precision of installment of Drill (below 0.03 mm) |
| Wear on the rake face | | |
|  | Factor | <ul style="list-style-type: none"> Low cutting speed Machining free-cutting Steel Erosion of chip and flute Lack of coolant lubrication |
| | Solution | <ul style="list-style-type: none"> Increase cutting speed Set a lower thinning angle Reduce the honing Use more coolant |
| Chipping on the rake face | | |
|  | Factor | <ul style="list-style-type: none"> Fracture on the cutting edge partially due to pre-treatment on the center of hole Unstable chip evacuation due to step Drilling and external coolant Chattering in Drilling and low precision of holder installment |
| | Solution | <ul style="list-style-type: none"> Check if there is pre-machining or not It is recommended to use internal coolant in step Drilling Check the state of clamping workpiece and the precision of Drill installment (below 0.03 mm) |

Types of damage to workpiece and check points

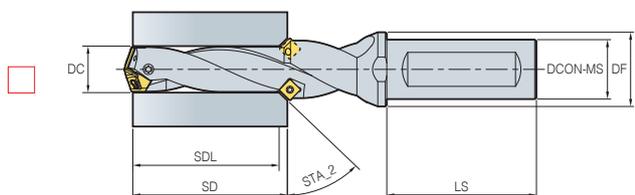
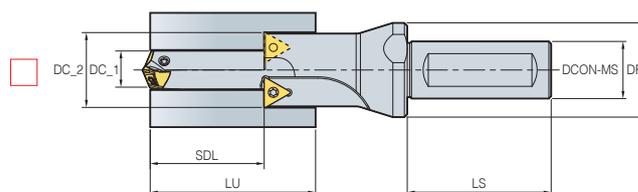
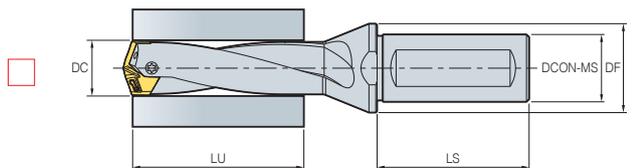
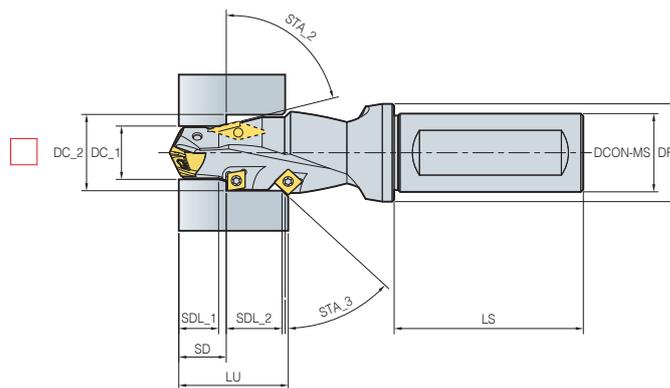
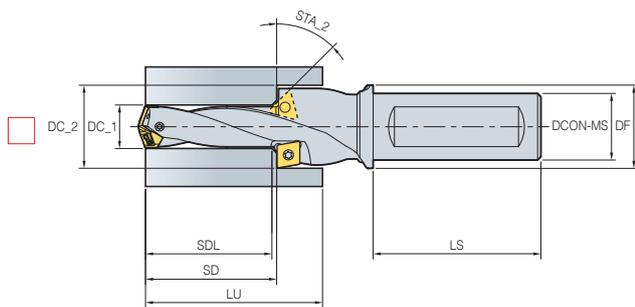
| Poor surface finish (rough, scratch, etc.) | | |
|--|-----------------|--|
|  | Factor | <ul style="list-style-type: none"> • Low rigidity of machine and improperly clamped workpiece • Large concentricity and lack of coolant |
| | Solution | <ul style="list-style-type: none"> • Clamp the workpiece properly and check the concentricity • Increase the amount and pressure of coolant |
| Remained lots of burr at the end of the Drilled hole | | |
|  | Factor | <ul style="list-style-type: none"> • High feed and excessive honing of the cutting edge • Exceeded cutting tool's tool life (too much wear and chipping) |
| | Solution | <ul style="list-style-type: none"> • Reduce feed (especially at the end of hole) and use a new Drill • Increase point angle or reduce honing |
| Flaking the end of the Drilled hole | | |
|  | Factor | <ul style="list-style-type: none"> • Machining of low toughness materials as cast iron • Rapid feed and excessive honing of the cutting edge • Exceeded cutting tool's tool life (too much wear and chipping) |
| | Solution | <ul style="list-style-type: none"> • Reduce the feed. (especially at the end of hole) • Reduce honing on the cutting edge • Use a new Drill |
| Thermal deformation and oxidation of the end of the Drilled hole | | |
|  | Factor | <ul style="list-style-type: none"> • Rapid feed • Excessive cutting load • Lack of coolant • Exceeded cutting tool's tool life (too much wear and chipping) |
| | Solution | <ul style="list-style-type: none"> • Reduce the feed and honing on the cutting edge • Use more coolant and use a new Drill |

Solutions for troubles

↑ Increase ↓ Decrease ○ Use

| Trouble | Designation | Solution | | | | | | | | | | | | | | | |
|------------------------------|--|-------------------|----|---------|-----------------------|--------------|--------------|-------------|----------------|--------|------------------|-----------|----------|---------------------|-----------------------|------------------|----------|
| | | Cutting condition | | | | | Tool shape | | | | | Grade | | The other | | | |
| | | vc | fn | Coolant | fn (in the beginning) | Depth of cut | Relief angle | Point angle | Thinning angle | Honing | Flute width rate | Toughness | Hardness | Rigidity of machine | Chattering of machine | Fixing workpiece | Overhang |
| Chipping | <ul style="list-style-type: none"> • Improper cutting conditions • Low rigidity of tool • Built-up edge • Improper grade • Chattering | ↓ | ↓ | ○ | | | ↓ | ↓ | ↑ | | | ↑ | | ↑ | ↓ | ↑ | ↓ |
| Wear | • Excessive cutting speed (wear on margin) | ↓ | ↓ | ○ | | | | | | | | ↑ | | | | | |
| | • Low cutting speed (wear in the center of Drill) | ↑ | ↓ | ○ | | | | | | | | ↑ | | | | | |
| Fracture | <ul style="list-style-type: none"> • Improper cutting conditions • Too much cutting load • Too long overhang • Less rigidity of machine | ↓ | ↓ | ○ | ↓ | ↓ | | | | | | | | ↑ | | ↑ | ↓ |
| Poor chip evacuation | • Improper cutting conditions | | ↓ | ○ | | ↓ | | | | | ↑ | | | | | | |
| Poor surface finish | <ul style="list-style-type: none"> • Built-up edge • Chattering • Improper cutting conditions | ↑ | ↓ | ○ | ↓ | | | ↓ | | ↓ | | | | ↑ | ↓ | ↑ | ↓ |
| Poor accuracy of hole | • Low cutting speed (wear in the center of Drill) | ↑ | ↓ | | | | | | | | | | | ↑ | ↓ | | ↓ |

Special Drill order form



Hole type

- Blind hole
- Through hole

Coolant type

- Internal
- External

Special note

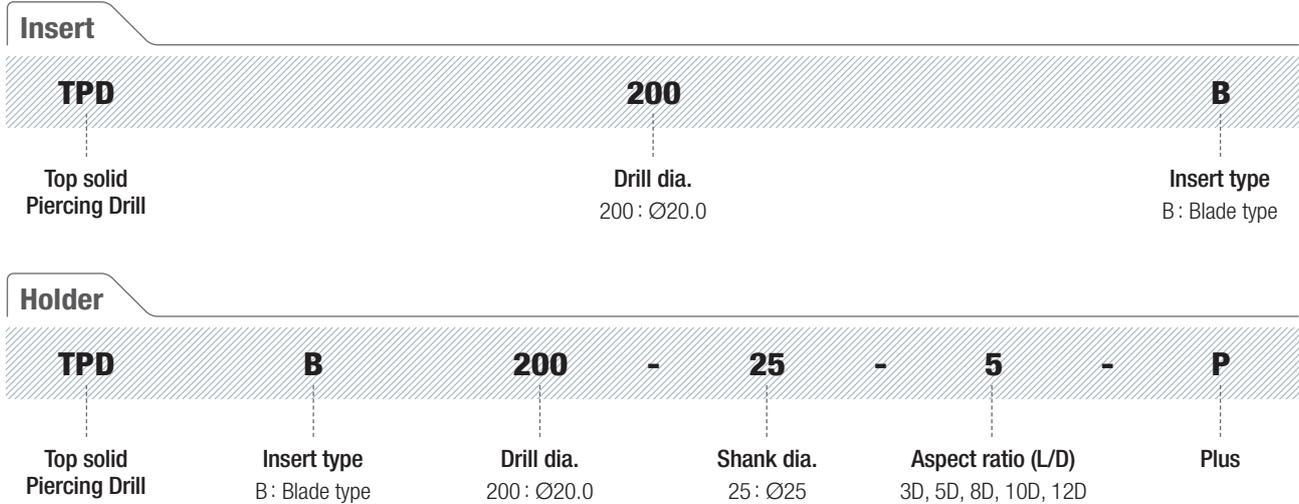
- Currently using tool:
- Current cutting condition
 - n (rpm) or vc (m/min):
 - vf (mm/min) or fn (mm/rev):
 - Depth of cut, ap (mm):
- Standard of measuring tool life:
- Currently using machine
 - Machining center:
 - General lathe:
 - CNC lathe:

Shank type

- Plain type
- Flat type
- Weldon type
- Whistle notch type

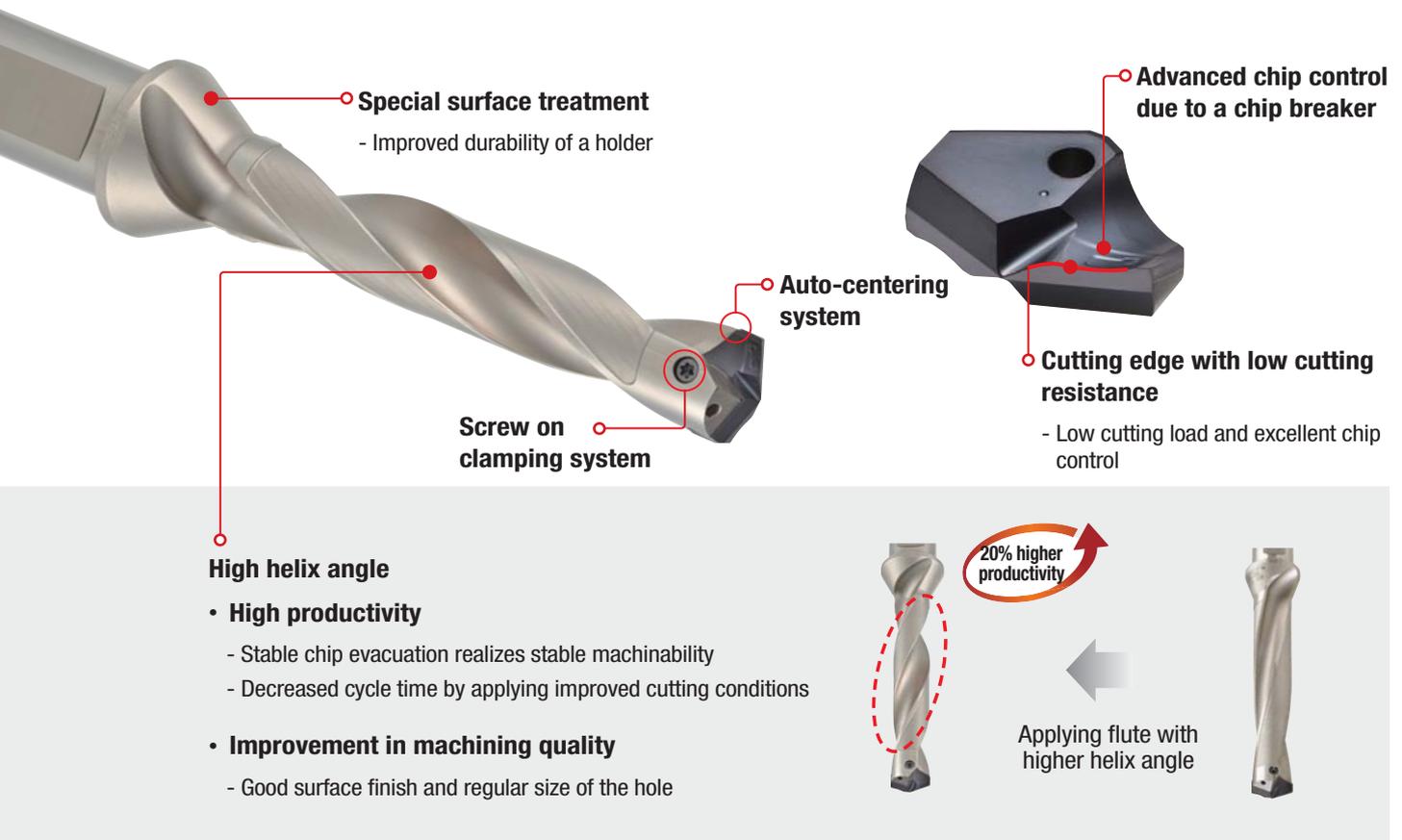
TPDB

Code system



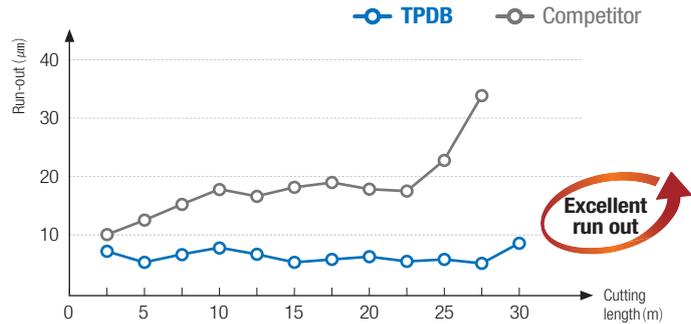
Features

- **Highly precise clamping system** - Superior clamping precision with auto-centering system and highly precise grinding clamping parts
- **Screw on clamping system** - Easy to replace inserts
- **Sharp cutting edge** - Low cutting load and good chip control
- **Holder with excellent durability** - Holder with high rigidity and excellent wear resistance due to special surface treatment
- **Holder with excellent chip control** - Low cutting resistance and outstanding chip evaluation by applying high helix angle



Run-out

| | |
|--------------------------|--|
| Workpiece | Alloy steel (42CrMo4, HRC22) |
| Cutting condition | vc (m/min) = 90, fn (mm/rev) = 0.25, ap (mm) = 120, wet (20 bar) |
| Tool | Insert TPD250B (PC5300) Holder TPDB250-32-5-P (Drill dia. = Ø25mm) |



How to clamp an insert

Clamping an insert to a holder



- Put an insert on the tip seat of the holder.
- As the [Pic. 1], push the insert to the v-shaped groove of the holder.
- Screw and clamp the insert.

Changing the used insert to a new one



- Unscrew and separate the used insert from the holder.
- As the [Pic. 2], clean the insert seat.
- Put a new insert on the tip seat.
- As the [Pic. 3], clamp the insert pushing it with a hand not to separate from the holder.

Recommended cutting conditions

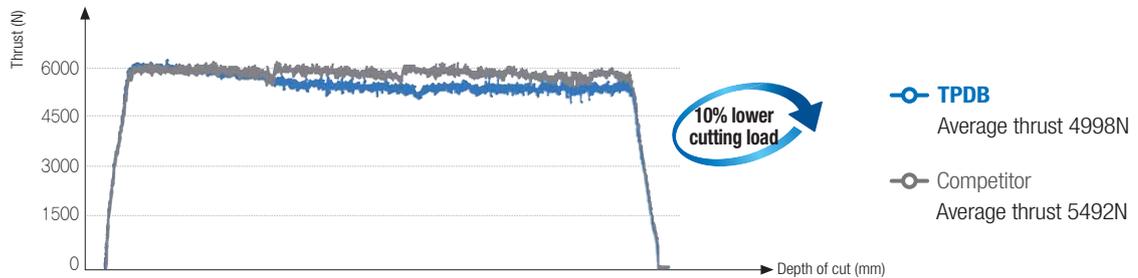
| ISO | Workpiece | | | | Specific cutting force (N/mm ²) | Brinell hardness (HB) | Grade | vc (m/min) | Aspect ratio (L/D) = 3D, 5D | | |
|---------------------|--------------------|-----------------------|----------------------------|---------------------------|---|-----------------------|------------------|-------------|-----------------------------|-------------|-------------|
| | Workpiece material | | KS | ISO | | | | | fn (mm/rev) | | |
| | | | | | | | | | Ø10~Ø16.9 | Ø17~Ø26.9 | Ø27~Ø32.9 |
| P | Carbon steel | C = 0.10 ~ 0.25% | SM15C SM25C | C15 C25 | 1500 | 90 ~ 200 | PC5335 PC330P | 80 ~ 140 | 0.30 ~ 0.15 | 0.35 ~ 0.20 | 0.40 ~ 0.25 |
| | | C = 0.25 ~ 0.55% | SM35C SM45C | C35 C45 | 1600 | 125 ~ 225 | PC5335 PC330P | 80 ~ 140 | 0.30 ~ 0.15 | 0.35 ~ 0.20 | 0.40 ~ 0.25 |
| | | C = 0.55 ~ 0.80% | SM58C | C60 | 1700 | 150 ~ 250 | PC5335 PC330P | 70 ~ 130 | 0.30 ~ 0.15 | 0.35 ~ 0.20 | 0.40 ~ 0.25 |
| | Alloy steel ≤ 5% | Non-hardened | SCM440 | 42CrMo4 | 1700 | 180 | PC5300 | 80 ~ 140 | 0.35 ~ 0.18 | 0.38 ~ 0.23 | 0.43 ~ 0.28 |
| | | Hardened and Tempered | SCM445 | - | 2050 | 350 | PC5300 | 50 ~ 100 | 0.35 ~ 0.18 | 0.38 ~ 0.23 | 0.43 ~ 0.28 |
| | Alloy steel > 5% | Annealed | STD11 | - | 1950 | 200 | PC5300 | 50 ~ 90 | 0.30 ~ 0.18 | 0.35 ~ 0.20 | 0.40 ~ 0.25 |
| Hardened tool steel | | STD61 | X40CrMoV5-1 | 3000 | 352 | PC5300 | 40 ~ 80 | 0.30 ~ 0.18 | 0.35 ~ 0.20 | 0.40 ~ 0.25 | |
| K | Gray cast iron | | GC250 GC350 | 250 350 | 900 | 150 ~ 230 | PC5300 | 80 ~ 140 | 0.35 ~ 0.18 | 0.40 ~ 0.20 | 0.45 ~ 0.25 |
| | Ductile cast iron | | GCD400 GCD500 GCD600 | 400-15 150-10 600-3 | 870 | 160 ~ 260 | PC5300 | 70 ~ 130 | 0.35 ~ 0.18 | 0.40 ~ 0.20 | 0.45 ~ 0.25 |

※ In case of 8D, machine in 20 ~ 30% lower cutting conditions than the mentioned above, or machine the beginning of hole(1.5D) before Drilling.
 ※ In interrupted machining, reduce the feed to 0.1~0.15 machining around the interrupted part.
 ※ Refer to the 'Recommended Drilling method' on the page 12 for Drilling of 10D-12D.

Performance evaluation

Cutting load

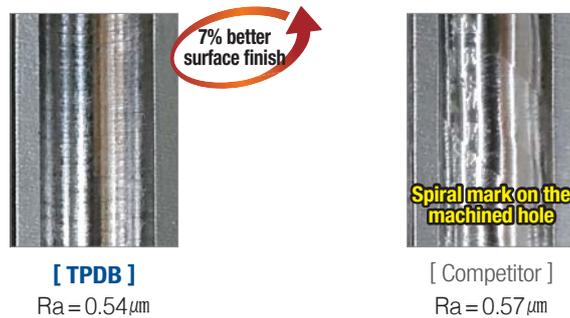
| | | |
|--------------------------|---|--|
| Workpiece | Alloy steel (42CrMo4, HRC22) | |
| Cutting condition | vc (m/min) = 120, fn (mm/rev) = 0.25, ap (mm) = 120, wet (20 bar) | |
| Tool | Insert TPD250B (PC5300) | Holder TPDB250-32-5-P (Drill dia. = Ø25 mm) |



» Secured stable cutting load with excellent chip evacuation through applying low cutting resistance cutting edge and high helix flutes

Surface finish

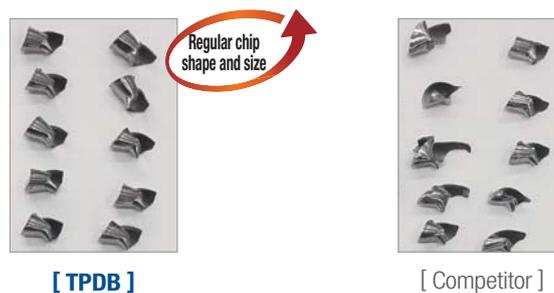
| | | |
|--------------------------|---|--|
| Workpiece | Alloy steel (42CrMo4, HRC22) | |
| Cutting condition | vc (m/min) = 120, fn (mm/rev) = 0.35, ap (mm) = 120, wet (20 bar) | |
| Tool | Insert TPD250B (PC5300) | Holder TPDB250-32-5-P (Drill dia. = Ø25 mm) |



» Good surface finish due to stable chip shape and chip evacuation

Chip control

| | | |
|--------------------------|---|--|
| Workpiece | Alloy steel (42CrMo4, HRC22) | |
| Cutting condition | vc (m/min) = 120, fn (mm/rev) = 0.35, ap (mm) = 120, wet (20 bar) | |
| Tool | Insert TPD250B (PC5300) | Holder TPDB250-32-5-P (Drill dia. = Ø25 mm) |



» Regular chip shape

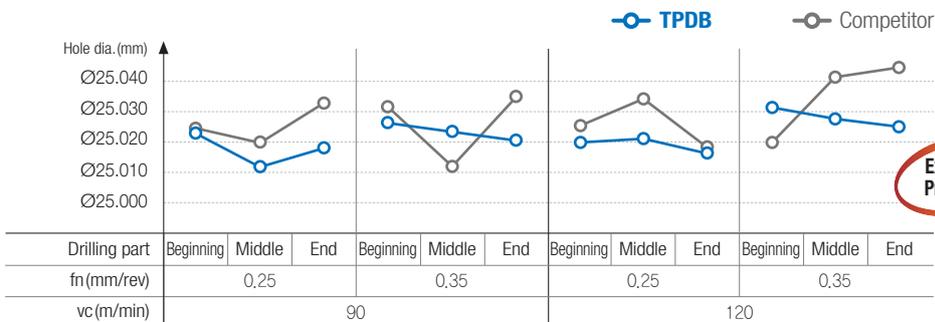
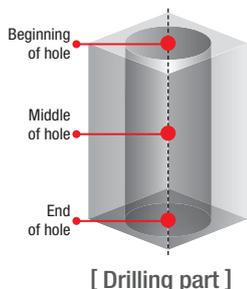
✓ Performance evaluation

Machining precision

Workpiece Alloy steel (42CrMo4, HRC22)

Cutting condition vc (m/min) = 90/120, fn (mm/rev) = 0.25/0.35, ap (mm) = 120, wet (20 bar)

Tool **Insert** TPD250B (PC5300) **Holder** TPDB250-32-5-P (Drill dia. = Ø25 mm)



» High precision cutting due to stable chip evacuation

Wear resistance

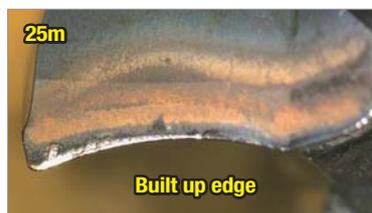
Workpiece Alloy steel (42CrMo4, HRC22)

Cutting condition vc (m/min) = 100, fn (mm/rev) = 0.3, ap (mm) = 100, wet (30 bar)

Tool **Insert** TPD250B (PC5300) **Holder** TPDB250-32-5-P (Drill dia. = Ø25 mm)



[TPDB]



[Competitor]

» Improved built up edge and chipping resistance lead stable wear on TPDB Plus insert's edge and obtain longer Max. tool life.

Workpiece Carbon steel (C45, HRC18)

Cutting condition vc (m/min) = 100, fn (mm/rev) = 0.3, ap (mm) = 100, wet (30 bar)

Tool **Insert** TPD250B (PC5335) **Holder** TPDB250-32-5-P (Drill dia. = Ø25 mm)



[TPDB]



[Competitor]

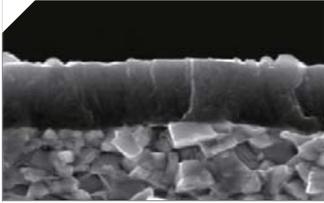
» Sharper cutting edge than competitor's improves built up edge resistance and tool life.

Grade features



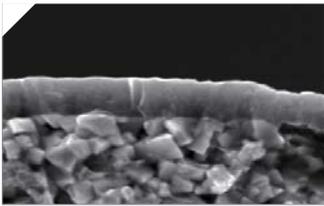
PC5300

- Applying PVD coating with high hardness and stability in machining at high temperature
- Stable Drilling due to high cutting edge strength and excellent chipping resistance
- Optimal grade for Drilling alloy Steel and Cast iron



PC5335

- Applying PVD coating with high toughness and excellent lubrication
- Coating layer highly adhering to substrate
- Optimal grade for general structural Carbon steel (FE360B, etc.) and machine structural Carbon steel (C45, etc.) machining

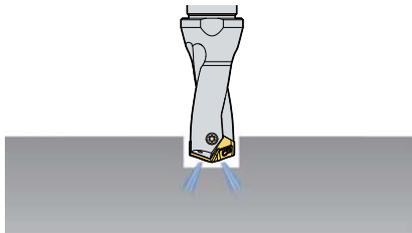


PC330P

- Applying PVD coating with high surface finish and excellent lubrication
- Coating layer with excellent hardness at high temperature and oxidation resistance
- Optimal grade for welding structural Carbon steel (E355DD, etc.)

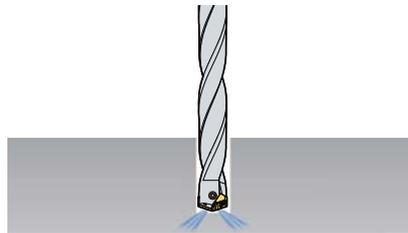
Recommended Drilling method (10D, 12D)

Machine a pilot hole (with a pilot Drill)

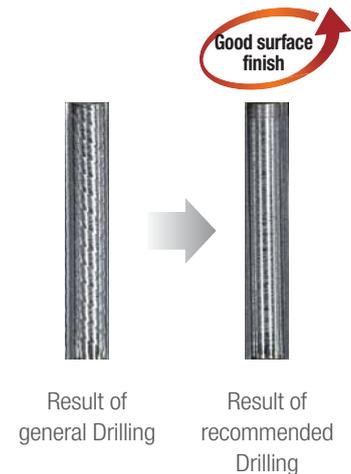


- Machine a pilot hole with the depth of cut as 0.5D and at 30% lower speed using a 1.5D or 3D Drill.

Start Drilling

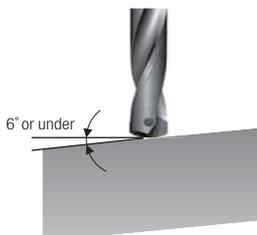


- After machining the pilot hole, replace the pilot Drill to a Drill for further operation and machine in recommended cutting conditions.



Precaution in Drilling

Angled surface Drilling



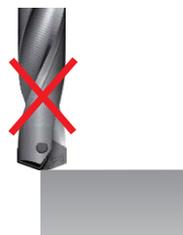
- The approach angle between Drill and the workpiece at the beginning and the end should be less than 6°.
- Reduce the feed (fn) to 30-50% than general cutting conditions at the beginning and the end of angled surface.

Stacked plates Drilling



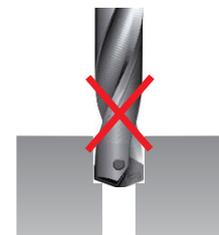
- Gap between the plates could make wrong chip evacuation causing fracture of the Drill.
- Strongly clamp the workpiece together to eliminate any gaps and then proceed with usage.

Plunging



- Irregular cutting resistance in plunging could cause fracture and deformation of the Drill.

Boring



- Boring is not recommended as it can cause excessive wear and chipping at the insert's corner.
- In case of necessity, process it with a 2mm stepping. (30% reduction in transfer during processing)

Basic checklist for the Drilling operations

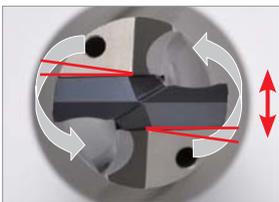
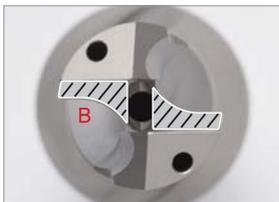
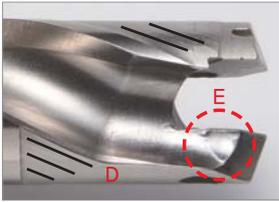
- Workpiece clamping condition
- Rotational state of the main axial in the machining equipment
- Holder condition
- Clamped drill's Run-out: Max. 0.03mm
- Coolant supply condition (pressure, flow rate, concentration)
- Chip evacuation condition

Coolant application system

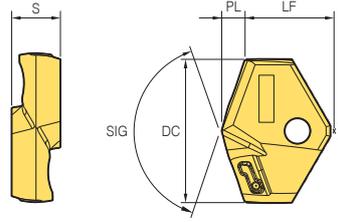
- Adequate supply of cutting fluid at the entrance of the hole
- Minimum cutting fluid pressure: 5 bar or above
- Minimum flow rate: 5ℓ/min or above



Replacement of holders and screws

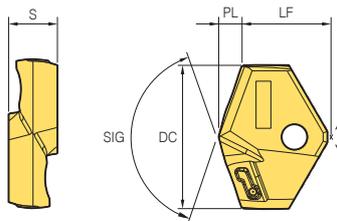
| Worn part | How to check | Description |
|--|--|---|
| <p>[Pic.1]</p>  | <p>[Pic.2]</p> <p>Check the gap</p>  | <ul style="list-style-type: none"> • In case of Drilling for a long time as shown in the [Pic.1] the 'A' part is torn and twisted due to torque. • As shown in the [Pic.2] check the gap between the insert and the tip seat turning the clamped insert from side to side. If there is a gap between them, replace the used holder to a new one. |
| <p>[Pic.3]</p>  | <p>[Pic.4]</p> <p>Check the moving</p>  | <ul style="list-style-type: none"> • The insert could move up or down due to the load on the Z-axis in Drilling over an extended period of time which causes wear on the 'B' part as shown the [Pic.3]. • After clamping an insert, if the insert is moving or there is a gap between the insert and the tip seat as shown in the [Pic.4] replace the used holder to a new one. |
| <p>[Pic.5]</p>  | <p>Check the moving</p>  | <ul style="list-style-type: none"> • After an extended period of use, the screw can be worn as shown in the 'C' part of [Pic.5] which could decrease the clamping force of the insert. When the screw is worn, replace the old screw to a new one among the enclosed extras. • Spreading the grease on the screw makes it last longer. |
| <p>[Pic.6]</p> <ol style="list-style-type: none"> ① Check the 'D' and 'E' parts as shown in the [Pic.6] ② Check whether the chips are getting longer or not. |  | <ul style="list-style-type: none"> • Winding or jamming of long and tiny chips in Drilling causes wear or scratch on the 'D' part as shown in the [Pic.6] due to chattering from machining in improper cutting conditions. In that case, reset the cutting conditions and check the Run-out before machining. • The excessive wear of the part 'E' as shown in the [Pic.6] relating to chip curling might cause long chips. |

Insert



(mm)

| Designation | Coated | | | DC | S | LF | PL | SIG |
|-------------|--------|--------|--------|------|-----|-------|------|------|
| | PC5300 | PC5335 | PC330P | | | | | |
| TPD | | | | | | | | |
| 100B | ● | | | 10.0 | 3.5 | 6.21 | 1.58 | 140° |
| 101B | ● | | | 10.1 | 3.5 | 6.20 | 1.59 | 140° |
| 102B | ● | | | 10.2 | 3.5 | 6.18 | 1.61 | 140° |
| 103B | ● | | | 10.3 | 3.5 | 6.17 | 1.62 | 140° |
| 105B | ● | | | 10.5 | 3.5 | 6.13 | 1.66 | 140° |
| 108B | ● | | | 10.8 | 3.5 | 6.09 | 1.70 | 140° |
| 110B | ● | ● | | 11.0 | 3.5 | 7.06 | 1.73 | 140° |
| 111B | ● | | | 11.1 | 3.5 | 7.04 | 1.75 | 140° |
| 115B | ● | | | 11.5 | 3.5 | 6.98 | 1.81 | 140° |
| 118B | ● | | | 11.8 | 3.5 | 6.93 | 1.86 | 140° |
| 120B | ● | ● | | 12.0 | 3.5 | 7.22 | 2.07 | 140° |
| 121B | ● | | | 12.1 | 3.5 | 7.21 | 2.08 | 140° |
| 122B | ● | | | 12.2 | 3.5 | 7.19 | 2.10 | 140° |
| 123B | ● | | | 12.3 | 3.5 | 7.17 | 2.12 | 140° |
| 124B | ● | | | 12.4 | 3.5 | 7.16 | 2.13 | 140° |
| 125B | ● | ● | | 12.5 | 3.5 | 7.14 | 2.15 | 140° |
| 126B | ● | | | 12.6 | 3.5 | 7.12 | 2.17 | 140° |
| 130B | ● | | | 13.0 | 4.0 | 8.05 | 2.24 | 140° |
| 132B | ● | | | 13.2 | 4.0 | 8.02 | 2.27 | 140° |
| 135B | ● | | | 13.5 | 4.0 | 7.97 | 2.32 | 140° |
| 137B | ● | | | 13.7 | 4.0 | 7.93 | 2.36 | 140° |
| 140B | ● | ● | | 14.0 | 4.0 | 8.38 | 2.41 | 140° |
| 141B | ● | | | 14.1 | 4.0 | 8.36 | 2.43 | 140° |
| 142B | ● | | | 14.2 | 4.0 | 8.35 | 2.44 | 140° |
| 143B | ● | | | 14.3 | 4.0 | 8.33 | 2.46 | 140° |
| 144B | ● | | | 14.4 | 4.0 | 8.31 | 2.48 | 140° |
| 145B | ● | ● | | 14.5 | 4.0 | 8.29 | 2.50 | 140° |
| 146B | ● | | | 14.6 | 4.0 | 8.28 | 2.51 | 140° |
| 147B | ● | | | 14.7 | 4.0 | 8.26 | 2.53 | 140° |
| 150B | ● | ● | | 15.0 | 4.0 | 8.71 | 2.58 | 140° |
| 151B | ● | | | 15.1 | 4.0 | 8.69 | 2.60 | 140° |
| 152B | ● | | | 15.2 | 4.0 | 8.67 | 2.62 | 140° |
| 154B | ● | | | 15.4 | 4.0 | 8.64 | 2.65 | 140° |
| 155B | ● | ● | | 15.5 | 4.0 | 8.62 | 2.67 | 140° |
| 157B | ● | | | 15.7 | 4.0 | 8.59 | 2.70 | 140° |
| 158B | ● | | | 15.8 | 4.0 | 8.57 | 2.72 | 140° |
| 159B | | | ● | 15.9 | 4.0 | 8.55 | 2.74 | 140° |
| 160B | ● | ● | | 16.0 | 5.5 | 9.54 | 2.75 | 140° |
| 161B | ● | | | 16.1 | 5.5 | 9.52 | 2.77 | 140° |
| 162B | ● | | | 16.2 | 5.5 | 9.50 | 2.79 | 140° |
| 163B | ● | | | 16.3 | 5.5 | 9.48 | 2.81 | 140° |
| 164B | ● | | | 16.4 | 5.5 | 9.47 | 2.82 | 140° |
| 165B | ● | | | 16.5 | 5.5 | 9.45 | 2.84 | 140° |
| 166B | ● | | | 16.6 | 5.5 | 9.43 | 2.86 | 140° |
| 167B | ● | | | 16.7 | 5.5 | 9.41 | 2.88 | 140° |
| 170B | ● | ● | ● | 17.0 | 5.5 | 9.86 | 2.93 | 140° |
| 171B | ● | | | 17.1 | 5.5 | 9.85 | 2.94 | 140° |
| 172B | ● | | | 17.2 | 5.5 | 9.83 | 2.96 | 140° |
| 173B | ● | | | 17.3 | 5.5 | 9.81 | 2.98 | 140° |
| 174B | ● | | | 17.4 | 5.5 | 9.79 | 3.00 | 140° |
| 175B | ● | ● | ● | 17.5 | 5.5 | 9.78 | 3.01 | 140° |
| 176B | ● | | | 17.6 | 5.5 | 9.76 | 3.03 | 140° |
| 177B | ● | | | 17.7 | 5.5 | 9.74 | 3.05 | 140° |
| 178B | ● | | | 17.8 | 5.5 | 9.73 | 3.06 | 140° |
| 180B | ● | ● | ● | 18.0 | 6.0 | 10.69 | 3.10 | 140° |
| 181B | ● | | | 18.1 | 6.0 | 10.67 | 3.12 | 140° |
| 182B | ● | | | 18.2 | 6.0 | 10.66 | 3.13 | 140° |
| 185B | ● | ● | ● | 18.5 | 6.0 | 10.60 | 3.19 | 140° |
| 186B | ● | ● | | 18.6 | 6.0 | 10.59 | 3.20 | 140° |
| 187B | ● | | | 18.7 | 6.0 | 10.57 | 3.22 | 140° |
| 190B | ● | ● | | 19.0 | 6.0 | 11.02 | 3.27 | 140° |
| 191B | ● | | | 19.1 | 6.0 | 11.00 | 3.29 | 140° |
| 192B | ● | | | 19.2 | 6.0 | 10.98 | 3.31 | 140° |
| 193B | ● | | | 19.3 | 6.0 | 10.97 | 3.32 | 140° |
| 195B | ● | | | 19.5 | 6.0 | 10.93 | 3.36 | 140° |



(mm)

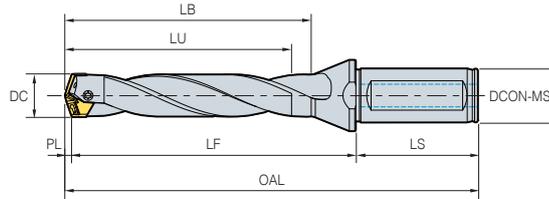
| Designation | Coated | | | DC | S | LF | PL | SIG |
|-----------------|--------|--------|--------|------|------|-------|------|------|
| | PC5300 | PC5335 | PC330P | | | | | |
| TPD 196B | ● | | | 19.6 | 6.0 | 10.92 | 3.37 | 140° |
| 197B | ● | | | 19.7 | 6.0 | 10.90 | 3.39 | 140° |
| 198B | ● | | | 19.8 | 6.0 | 10.88 | 3.41 | 140° |
| 200B | ● | | | 20.0 | 6.5 | 11.99 | 3.44 | 140° |
| 201B | ● | ● | ● | 20.1 | 6.5 | 11.97 | 3.46 | 140° |
| 202B | ● | | | 20.2 | 6.5 | 11.95 | 3.48 | 140° |
| 204B | ● | | | 20.4 | 6.5 | 11.92 | 3.51 | 140° |
| 205B | ● | | | 20.5 | 6.5 | 11.90 | 3.53 | 140° |
| 206B | ● | | | 20.6 | 6.5 | 11.88 | 3.55 | 140° |
| 210B | ● | | | 21.0 | 6.5 | 12.31 | 3.62 | 140° |
| 211B | ● | ● | ● | 21.1 | 6.5 | 12.30 | 3.63 | 140° |
| 212B | ● | | | 21.2 | 6.5 | 12.28 | 3.65 | 140° |
| 213B | ● | | | 21.3 | 6.5 | 12.26 | 3.67 | 140° |
| 215B | ● | | | 21.5 | 6.5 | 12.23 | 3.70 | 140° |
| 217B | ● | | | 21.7 | 6.5 | 12.19 | 3.74 | 140° |
| 219B | ● | | | 21.9 | 6.5 | 12.16 | 3.77 | 140° |
| 220B | ● | | | 22.0 | 7.0 | 12.64 | 3.79 | 140° |
| 222B | ● | ● | | 22.2 | 7.0 | 12.61 | 3.82 | 140° |
| 223B | ● | | | 22.3 | 7.0 | 12.59 | 3.84 | 140° |
| 225B | ● | | | 22.5 | 7.0 | 12.56 | 3.87 | 140° |
| 227B | ● | | | 22.7 | 7.0 | 12.52 | 3.91 | 140° |
| 230B | ● | | | 23.0 | 7.0 | 12.97 | 3.96 | 140° |
| 235B | ● | ● | | 23.5 | 7.0 | 12.88 | 4.05 | 140° |
| 237B | ● | | | 23.7 | 7.0 | 12.85 | 4.08 | 140° |
| 240B | ● | | | 24.0 | 7.5 | 13.45 | 4.13 | 140° |
| 242B | ● | ● | | 24.2 | 7.5 | 13.41 | 4.17 | 140° |
| 244B | ● | | | 24.4 | 7.5 | 13.38 | 4.20 | 140° |
| 245B | ● | | | 24.5 | 7.5 | 13.36 | 4.22 | 140° |
| 247B | ● | | | 24.7 | 7.5 | 13.33 | 4.25 | 140° |
| 250B | ● | | | 25.0 | 7.5 | 13.65 | 4.43 | 140° |
| 251B | ● | ● | | 25.1 | 7.5 | 13.64 | 4.44 | 140° |
| 252B | ● | | | 25.2 | 7.5 | 13.62 | 4.46 | 140° |
| 253B | ● | | | 25.3 | 7.5 | 13.60 | 4.48 | 140° |
| 255B | ● | | | 25.5 | 7.5 | 13.56 | 4.52 | 140° |
| 256B | ● | | | 25.6 | 7.5 | 13.55 | 4.53 | 140° |
| 258B | ● | | | 25.8 | 7.5 | 13.51 | 4.57 | 140° |
| 259B | ● | | | 25.9 | 7.5 | 13.49 | 4.59 | 140° |
| 260B | ● | | | 26.0 | 8.5 | 13.98 | 4.60 | 140° |
| 262B | ● | ● | | 26.2 | 8.5 | 13.94 | 4.64 | 140° |
| 265B | ● | | | 26.5 | 8.5 | 13.89 | 4.69 | 140° |
| 270B | ● | | | 27.0 | 8.5 | 14.80 | 4.78 | 140° |
| 275B | ● | | ● | 27.5 | 8.5 | 14.71 | 4.87 | 140° |
| 280B | ● | | | 28.0 | 9.5 | 15.76 | 4.96 | 140° |
| 285B | ● | | | 28.5 | 9.5 | 15.67 | 5.05 | 140° |
| 290B | ● | | | 29.0 | 9.5 | 16.09 | 5.13 | 140° |
| 295B | ● | | | 29.5 | 9.5 | 16.00 | 5.22 | 140° |
| 300B | ● | | | 30.0 | 10.0 | 16.26 | 5.46 | 140° |
| 310B | ● | | | 31.0 | 10.0 | 16.58 | 5.64 | 140° |
| 320B | ● | | ● | 32.0 | 10.0 | 16.90 | 5.82 | 140° |
| 329B | ● | | | 32.9 | 10.0 | 16.73 | 5.99 | 140° |

※ TPD Inserts not list above within the range of Ø10.00~Ø32.99 can be made to order ● : Stock item

Parts

| Designation | Drill dia. DC (mm) | Screw | Wrench | Torque (N·m) |
|------------------------|--------------------|-------------|----------|--------------|
| TPD 100B ~ 129B | 10.0 ~ 12.9 | FTNB0209-P | TW06P | 0.4 |
| 130B ~ 149B | 13.0 ~ 14.9 | FTNB02512-P | TW07S | 0.8 |
| 150B ~ 179B | 15.0 ~ 17.9 | FTNB02514-P | TW07S | 0.8 |
| 180B ~ 199B | 18.0 ~ 19.9 | FTNB0316-P | TW09S | 1.2 |
| 200B ~ 239B | 20.0 ~ 23.9 | FTNB0319 | TW09S | 1.2 |
| 240B ~ 259B | 24.0 ~ 25.9 | FTNB03522 | TW15S | 3.0 |
| 260B ~ 279B | 26.0 ~ 27.9 | FTNB03524 | TW15S | 3.0 |
| 280B ~ 299B | 28.0 ~ 29.9 | FTNB0426 | TW15S | 3.0 |
| 300B ~ 329B | 30.0 ~ 32.9 | FTNB0528 | TW20-100 | 4.0 |

TPDB (3D)

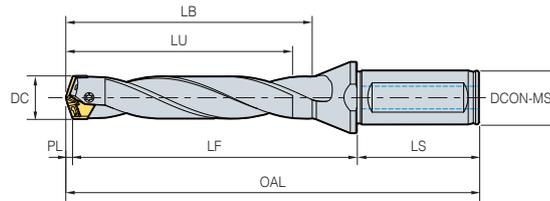


(mm)

| | Designation | Stock | DC | DCON-MS | LU | LF | LB | LS | OAL | PL | Applicable insert |
|------------|-------------|-----------|-----------|---------|--------|--------|-------|-------|-------|----------------|-------------------|
| TPDB | 100-16-3-P | ● | 10.0-10.4 | 16 | 31.58 | 47.02 | 37.08 | 48 | 96.6 | 1.58 | TPD100B ~ 104B |
| | 105-16-3-P | ● | 10.5-10.9 | 16 | 33.16 | 47.94 | 38.91 | 48 | 97.6 | 1.66 | TPD105B ~ 109B |
| | 110-16-3-P | ● | 11.0-11.4 | 16 | 34.73 | 49.97 | 40.73 | 48 | 99.7 | 1.73 | TPD110B ~ 114B |
| | 115-16-3-P | ● | 11.5-11.9 | 16 | 36.31 | 50.89 | 42.56 | 48 | 100.7 | 1.81 | TPD115B ~ 119B |
| | 120-16-3-P | ● | 12.0-12.4 | 16 | 38.07 | 53.83 | 44.57 | 48 | 103.9 | 2.07 | TPD120B ~ 124B |
| | 125-16-3-P | ● | 12.5-12.9 | 16 | 39.65 | 55.75 | 46.40 | 48 | 105.9 | 2.15 | TPD125B ~ 129B |
| | 130-16-3-P | ● | 13.0-13.4 | 16 | 41.24 | 59.06 | 48.24 | 48 | 109.3 | 2.24 | TPD130B ~ 134B |
| | 135-16-3-P | ● | 13.5-13.9 | 16 | 42.82 | 60.98 | 50.07 | 48 | 111.3 | 2.32 | TPD135B ~ 139B |
| | 140-16-3-P | ● | 14.0-14.4 | 16 | 44.41 | 63.09 | 51.91 | 48 | 113.5 | 2.41 | TPD140B ~ 144B |
| | 145-16-3-P | ● | 14.5-14.9 | 16 | 46.00 | 66.00 | 53.75 | 48 | 116.5 | 2.50 | TPD145B ~ 149B |
| | 150-20-3-P | ● | 15.0-15.4 | 20 | 47.58 | 68.12 | 55.58 | 50 | 120.7 | 2.58 | TPD150B ~ 154B |
| | 155-20-3-P | ● | 15.5-15.9 | 20 | 49.17 | 70.03 | 57.42 | 50 | 122.7 | 2.67 | TPD155B ~ 159B |
| | 160-20-3-P | ● | 16.0-16.4 | 20 | 50.75 | 72.15 | 59.25 | 50 | 124.9 | 2.75 | TPD160B ~ 164B |
| | 165-20-3-P | ● | 16.5-16.9 | 20 | 52.34 | 74.06 | 61.09 | 50 | 126.9 | 2.84 | TPD165B ~ 169B |
| | 170-20-3-P | ● | 17.0-17.4 | 20 | 53.93 | 77.17 | 62.93 | 50 | 130.1 | 2.93 | TPD170B ~ 174B |
| | 175-20-3-P | ● | 17.5-17.9 | 20 | 55.51 | 79.09 | 64.76 | 50 | 132.1 | 3.01 | TPD175B ~ 179B |
| | 180-25-3-P | ● | 18.0-18.4 | 25 | 57.10 | 81.10 | 66.60 | 56 | 140.2 | 3.10 | TPD180B ~ 184B |
| | 185-25-3-P | ● | 18.5-18.9 | 25 | 58.69 | 83.01 | 68.44 | 56 | 142.2 | 3.19 | TPD185B ~ 189B |
| | 190-25-3-P | ● | 19.0-19.4 | 25 | 60.27 | 86.03 | 70.27 | 56 | 145.3 | 3.27 | TPD190B ~ 194B |
| | 195-25-3-P | ● | 19.5-19.9 | 25 | 61.86 | 87.94 | 72.11 | 56 | 147.3 | 3.36 | TPD195B ~ 199B |
| | 200-25-3-P | ● | 20.0-20.4 | 25 | 63.44 | 90.06 | 73.94 | 56 | 149.5 | 3.44 | TPD200B ~ 204B |
| | 205-25-3-P | ● | 20.5-20.9 | 25 | 65.03 | 91.97 | 75.78 | 56 | 151.5 | 3.53 | TPD205B ~ 209B |
| | 210-25-3-P | ● | 21.0-21.4 | 25 | 66.62 | 91.08 | 77.62 | 60 | 154.7 | 3.62 | TPD210B ~ 214B |
| | 215-25-3-P | ● | 21.5-21.9 | 25 | 68.20 | 93.00 | 79.45 | 60 | 156.7 | 3.70 | TPD215B ~ 219B |
| | 220-25-3-P | ● | 22.0-22.4 | 25 | 69.79 | 95.11 | 81.29 | 60 | 158.9 | 3.79 | TPD220B ~ 224B |
| | 225-25-3-P | ● | 22.5-22.9 | 25 | 71.37 | 97.03 | 83.12 | 60 | 160.9 | 3.87 | TPD225B ~ 229B |
| | 230-25-3-P | ● | 23.0-23.4 | 25 | 72.96 | 100.14 | 84.96 | 60 | 164.1 | 3.96 | TPD230B ~ 234B |
| | 235-25-3-P | ● | 23.5-23.9 | 25 | 74.55 | 102.05 | 86.80 | 60 | 166.1 | 4.05 | TPD235B ~ 239B |
| | 240-32-3-P | ● | 24.0-24.4 | 32 | 76.13 | 108.17 | 88.63 | 60 | 172.3 | 4.13 | TPD240B ~ 244B |
| | 245-32-3-P | ● | 24.5-24.9 | 32 | 77.72 | 110.08 | 90.47 | 60 | 174.3 | 4.22 | TPD245B ~ 249B |
| | 250-32-3-P | ● | 25.0-25.4 | 32 | 79.43 | 113.07 | 92.43 | 60 | 177.5 | 4.43 | TPD250B ~ 254B |
| | 255-32-3-P | ● | 25.5-25.9 | 32 | 81.02 | 114.98 | 94.27 | 60 | 179.5 | 4.52 | TPD255B ~ 259B |
| 260-32-3-P | ● | 26.0-26.9 | 32 | 82.60 | 117.10 | 96.10 | 60 | 181.7 | 4.60 | TPD260B ~ 269B | |
| 270-32-3-P | ● | 27.0-27.9 | 32 | 85.78 | 122.12 | 99.78 | 60 | 186.9 | 4.78 | TPD270B ~ 279B | |
| 280-32-3-P | ● | 28.0-28.9 | 32 | 88.96 | 126.04 | 103.46 | 60 | 191.0 | 4.96 | TPD280B ~ 289B | |
| 290-32-3-P | ● | 29.0-29.9 | 32 | 92.13 | 131.07 | 107.13 | 60 | 196.2 | 5.13 | TPD290B ~ 299B | |
| 300-32-3-P | ● | 30.0-30.9 | 32 | 95.46 | 133.94 | 110.96 | 60 | 199.4 | 5.46 | TPD300B ~ 309B | |
| 310-32-3-P | ● | 31.0-31.9 | 32 | 98.64 | 138.96 | 114.64 | 60 | 204.6 | 5.64 | TPD310B ~ 319B | |
| 320-32-3-P | ● | 32.0-32.9 | 32 | 101.82 | 140.98 | 118.32 | 60 | 206.8 | 5.82 | TPD320B ~ 329B | |

● : Stock item

TPDB (5D)

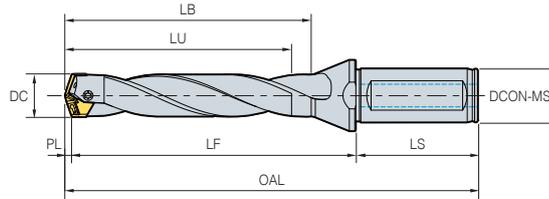


(mm)

| | Designation | Stock | DC | DCON-MS | LU | LF | LB | LS | OAL | PL | Applicable insert |
|-------------|-------------|-----------|-----------|---------|--------|--------|--------|-------|-------|--------------|-------------------|
| TPDB | 100-16-5-P | ● | 10.0-10.4 | 16 | 51.58 | 67.02 | 57.08 | 48 | 116.6 | 1.58 | TPD100B~104B |
| | 105-16-5-P | ● | 10.5-10.9 | 16 | 54.16 | 68.94 | 59.91 | 48 | 118.6 | 1.66 | TPD105B~109B |
| | 110-16-5-P | ● | 11.0-11.4 | 16 | 56.73 | 71.97 | 62.73 | 48 | 121.7 | 1.73 | TPD110B~114B |
| | 115-16-5-P | ● | 11.5-11.9 | 16 | 59.31 | 74.89 | 65.56 | 48 | 124.7 | 1.81 | TPD115B~119B |
| | 120-16-5-P | ● | 12.0-12.4 | 16 | 62.07 | 78.03 | 68.57 | 48 | 128.1 | 2.07 | TPD120B~124B |
| | 125-16-5-P | ● | 12.5-12.9 | 16 | 64.65 | 81.05 | 71.40 | 48 | 131.2 | 2.15 | TPD125B~129B |
| | 130-16-5-P | ● | 13.0-13.4 | 16 | 67.24 | 85.06 | 74.24 | 48 | 135.3 | 2.24 | TPD130B~134B |
| | 135-16-5-P | ● | 13.5-13.9 | 16 | 69.82 | 88.08 | 77.07 | 48 | 138.4 | 2.32 | TPD135B~139B |
| | 140-16-5-P | ● | 14.0-14.4 | 16 | 72.41 | 91.09 | 79.91 | 48 | 141.5 | 2.41 | TPD140B~144B |
| | 145-16-5-P | ● | 14.5-14.9 | 16 | 75.00 | 95.10 | 82.75 | 48 | 145.6 | 2.50 | TPD145B~149B |
| | 150-20-5-P | ● | 15.0-15.4 | 20 | 77.58 | 98.12 | 85.58 | 50 | 150.7 | 2.58 | TPD150B~154B |
| | 155-20-5-P | ● | 15.5-15.9 | 20 | 80.17 | 101.03 | 88.42 | 50 | 153.7 | 2.67 | TPD155B~159B |
| | 160-20-5-P | ● | 16.0-16.4 | 20 | 82.75 | 104.15 | 91.25 | 50 | 156.9 | 2.75 | TPD160B~164B |
| | 165-20-5-P | ● | 16.5-16.9 | 20 | 85.34 | 107.06 | 94.09 | 50 | 159.9 | 2.84 | TPD165B~169B |
| | 170-20-5-P | ● | 17.0-17.4 | 20 | 87.93 | 111.17 | 96.93 | 50 | 164.1 | 2.93 | TPD170B~174B |
| | 175-20-5-P | ● | 17.5-17.9 | 20 | 90.51 | 114.09 | 99.76 | 50 | 167.1 | 3.01 | TPD175B~179B |
| | 180-25-5-P | ● | 18.0-18.4 | 25 | 93.10 | 117.10 | 102.60 | 56 | 176.2 | 3.10 | TPD180B~184B |
| | 185-25-5-P | ● | 18.5-18.9 | 25 | 95.69 | 120.01 | 105.44 | 56 | 179.2 | 3.19 | TPD185B~189B |
| | 190-25-5-P | ● | 19.0-19.4 | 25 | 98.27 | 124.03 | 108.27 | 56 | 183.3 | 3.27 | TPD190B~194B |
| | 195-25-5-P | ● | 19.5-19.9 | 25 | 100.86 | 126.94 | 111.11 | 56 | 186.3 | 3.36 | TPD195B~199B |
| | 200-25-5-P | ● | 20.0-20.4 | 25 | 103.44 | 130.06 | 113.94 | 56 | 189.5 | 3.44 | TPD200B~204B |
| | 205-25-5-P | ● | 20.5-20.9 | 25 | 106.03 | 132.97 | 116.78 | 56 | 192.5 | 3.53 | TPD205B~209B |
| | 210-25-5-P | ● | 21.0-21.4 | 25 | 108.62 | 133.08 | 119.62 | 60 | 196.7 | 3.62 | TPD210B~214B |
| | 215-25-5-P | ● | 21.5-21.9 | 25 | 111.20 | 136.00 | 122.45 | 60 | 199.7 | 3.70 | TPD215B~219B |
| | 220-25-5-P | ● | 22.0-22.4 | 25 | 113.79 | 139.11 | 125.29 | 60 | 202.9 | 3.79 | TPD220B~224B |
| | 225-25-5-P | ● | 22.5-22.9 | 25 | 116.37 | 142.03 | 128.12 | 60 | 205.9 | 3.87 | TPD225B~229B |
| | 230-25-5-P | ● | 23.0-23.4 | 25 | 118.96 | 146.14 | 130.96 | 60 | 210.1 | 3.96 | TPD230B~234B |
| | 235-25-5-P | ● | 23.5-23.9 | 25 | 121.55 | 149.05 | 133.80 | 60 | 213.1 | 4.05 | TPD235B~239B |
| | 240-32-5-P | ● | 24.0-24.4 | 32 | 124.13 | 156.17 | 136.63 | 60 | 220.3 | 4.13 | TPD240B~244B |
| | 245-32-5-P | ● | 24.5-24.9 | 32 | 126.72 | 159.08 | 139.47 | 60 | 223.3 | 4.22 | TPD245B~249B |
| | 250-32-5-P | ● | 25.0-25.4 | 32 | 129.43 | 163.07 | 142.43 | 60 | 227.5 | 4.43 | TPD250B~254B |
| | 255-32-5-P | ● | 25.5-25.9 | 32 | 132.02 | 165.98 | 145.27 | 60 | 230.5 | 4.52 | TPD255B~259B |
| 260-32-5-P | ● | 26.0-26.9 | 32 | 134.60 | 169.10 | 148.10 | 60 | 233.7 | 4.60 | TPD260B~269B | |
| 270-32-5-P | ● | 27.0-27.9 | 32 | 139.78 | 176.12 | 153.78 | 60 | 240.9 | 4.78 | TPD270B~279B | |
| 280-32-5-P | ● | 28.0-28.9 | 32 | 144.96 | 182.04 | 159.46 | 60 | 247.0 | 4.96 | TPD280B~289B | |
| 290-32-5-P | ● | 29.0-29.9 | 32 | 150.13 | 189.07 | 165.13 | 60 | 254.2 | 5.13 | TPD290B~299B | |
| 300-32-5-P | ● | 30.0-30.9 | 32 | 155.46 | 193.94 | 170.96 | 60 | 259.4 | 5.46 | TPD300B~309B | |
| 310-32-5-P | ● | 31.0-31.9 | 32 | 160.64 | 200.96 | 176.64 | 60 | 266.6 | 5.64 | TPD310B~319B | |
| 320-32-5-P | ● | 32.0-32.9 | 32 | 165.82 | 204.98 | 182.32 | 60 | 270.8 | 5.82 | TPD320B~329B | |

● : Stock item

TPDB (8D)

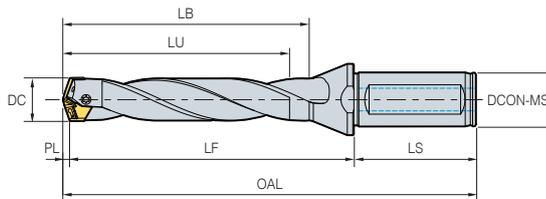


(mm)

| | Designation | Stock | DC | DCON-MS | LU | LF | LB | LS | OAL | PL | Applicable insert |
|-------------|-------------|-----------|-----------|---------|--------|--------|--------|-------|-------|----------------|-------------------|
| TPDB | 100-16-8-P | ● | 10.0-10.4 | 16 | 81.58 | 97.02 | 87.08 | 48 | 146.6 | 1.58 | TPD100B ~ 104B |
| | 105-16-8-P | ● | 10.5-10.9 | 16 | 85.66 | 100.94 | 91.41 | 48 | 150.6 | 1.66 | TPD105B ~ 109B |
| | 110-16-8-P | ● | 11.0-11.4 | 16 | 89.73 | 104.97 | 95.73 | 48 | 154.7 | 1.73 | TPD110B ~ 114B |
| | 115-16-8-P | ● | 11.5-11.9 | 16 | 93.81 | 108.89 | 100.06 | 48 | 158.7 | 1.81 | TPD115B ~ 119B |
| | 120-16-8-P | ● | 12.0-12.4 | 16 | 98.07 | 114.03 | 104.57 | 48 | 164.1 | 2.07 | TPD120B ~ 124B |
| | 125-16-8-P | ● | 12.5-12.9 | 16 | 102.15 | 118.55 | 108.90 | 48 | 168.7 | 2.15 | TPD125B ~ 129B |
| | 130-16-8-P | ● | 13.0-13.4 | 16 | 106.24 | 124.06 | 113.24 | 48 | 174.3 | 2.24 | TPD130B ~ 134B |
| | 135-16-8-P | ● | 13.5-13.9 | 16 | 110.32 | 128.58 | 117.57 | 48 | 178.9 | 2.32 | TPD135B ~ 139B |
| | 140-16-8-P | ● | 14.0-14.4 | 16 | 114.41 | 133.09 | 121.91 | 48 | 183.5 | 2.41 | TPD140B ~ 144B |
| | 145-16-8-P | ● | 14.5-14.9 | 16 | 118.50 | 138.60 | 126.25 | 48 | 189.1 | 2.50 | TPD145B ~ 149B |
| | 150-20-8-P | ● | 15.0-15.4 | 20 | 122.58 | 143.12 | 130.58 | 50 | 195.7 | 2.58 | TPD150B ~ 154B |
| | 155-20-8-P | ● | 15.5-15.9 | 20 | 126.67 | 147.53 | 134.92 | 50 | 200.2 | 2.67 | TPD155B ~ 159B |
| | 160-20-8-P | ● | 16.0-16.4 | 20 | 130.75 | 152.15 | 139.25 | 50 | 204.9 | 2.75 | TPD160B ~ 164B |
| | 165-20-8-P | ● | 16.5-16.9 | 20 | 134.84 | 156.56 | 143.59 | 50 | 209.4 | 2.84 | TPD165B ~ 169B |
| | 170-20-8-P | ● | 17.0-17.4 | 20 | 138.93 | 162.17 | 147.93 | 50 | 215.1 | 2.93 | TPD170B ~ 174B |
| | 175-20-8-P | ● | 17.5-17.9 | 20 | 143.01 | 166.59 | 152.26 | 50 | 219.6 | 3.01 | TPD175B ~ 179B |
| | 180-25-8-P | ● | 18.0-18.4 | 25 | 147.10 | 171.10 | 156.60 | 56 | 230.2 | 3.10 | TPD180B ~ 184B |
| | 185-25-8-P | ● | 18.5-18.9 | 25 | 151.19 | 175.51 | 160.94 | 56 | 234.7 | 3.19 | TPD185B ~ 189B |
| | 190-25-8-P | ● | 19.0-19.4 | 25 | 155.27 | 181.03 | 165.27 | 56 | 240.3 | 3.27 | TPD190B ~ 194B |
| | 195-25-8-P | ● | 19.5-19.9 | 25 | 159.36 | 185.44 | 169.61 | 56 | 244.8 | 3.36 | TPD195B ~ 199B |
| | 200-25-8-P | ● | 20.0-20.4 | 25 | 163.44 | 190.06 | 173.94 | 56 | 249.5 | 3.44 | TPD200B ~ 204B |
| | 205-25-8-P | ● | 20.5-20.9 | 25 | 167.53 | 194.47 | 178.28 | 56 | 254.0 | 3.53 | TPD205B ~ 209B |
| | 210-25-8-P | ● | 21.0-21.4 | 25 | 171.62 | 196.08 | 182.62 | 60 | 259.7 | 3.62 | TPD210B ~ 214B |
| | 215-25-8-P | ● | 21.5-21.9 | 25 | 175.70 | 200.50 | 186.95 | 60 | 264.2 | 3.70 | TPD215B ~ 219B |
| | 220-25-8-P | ● | 22.0-22.4 | 25 | 179.79 | 205.11 | 191.29 | 60 | 268.9 | 3.79 | TPD220B ~ 224B |
| | 225-25-8-P | ● | 22.5-22.9 | 25 | 183.87 | 209.73 | 195.62 | 60 | 273.6 | 3.87 | TPD225B ~ 229B |
| | 230-25-8-P | ● | 23.0-23.4 | 25 | 187.96 | 215.14 | 199.96 | 60 | 279.1 | 3.96 | TPD230B ~ 234B |
| | 235-25-8-P | ● | 23.5-23.9 | 25 | 192.05 | 219.55 | 204.30 | 60 | 283.6 | 4.05 | TPD235B ~ 239B |
| | 240-32-8-P | ● | 24.0-24.4 | 32 | 196.13 | 228.17 | 208.63 | 60 | 292.3 | 4.13 | TPD240B ~ 244B |
| | 245-32-8-P | ● | 24.5-24.9 | 32 | 200.22 | 232.58 | 212.97 | 60 | 296.8 | 4.22 | TPD245B ~ 249B |
| | 250-32-8-P | ● | 25.0-25.4 | 32 | 204.43 | 238.07 | 217.43 | 60 | 302.5 | 4.43 | TPD250B ~ 254B |
| | 255-32-8-P | ● | 25.5-25.9 | 32 | 208.52 | 242.48 | 221.77 | 60 | 307.0 | 4.52 | TPD255B ~ 259B |
| 260-32-8-P | ● | 26.0-26.9 | 32 | 212.60 | 247.10 | 226.10 | 60 | 311.7 | 4.60 | TPD260B ~ 269B | |
| 270-32-8-P | ● | 27.0-27.9 | 32 | 220.78 | 257.12 | 234.78 | 60 | 321.9 | 4.78 | TPD270B ~ 279B | |
| 280-32-8-P | ● | 28.0-28.9 | 32 | 228.96 | 266.04 | 243.46 | 60 | 331.0 | 4.96 | TPD280B ~ 289B | |
| 290-32-8-P | ● | 29.0-29.9 | 32 | 237.13 | 276.07 | 252.13 | 60 | 341.2 | 5.13 | TPD290B ~ 299B | |
| 300-32-8-P | ● | 30.0-30.9 | 32 | 245.46 | 283.94 | 260.96 | 60 | 349.4 | 5.46 | TPD300B ~ 309B | |
| 310-32-8-P | ● | 31.0-31.9 | 32 | 253.64 | 293.96 | 269.64 | 60 | 359.6 | 5.64 | TPD310B ~ 319B | |
| 320-32-8-P | ● | 32.0-32.9 | 32 | 261.82 | 300.98 | 278.32 | 60 | 366.8 | 5.82 | TPD320B ~ 329B | |

● : Stock item

TPDB (10D)

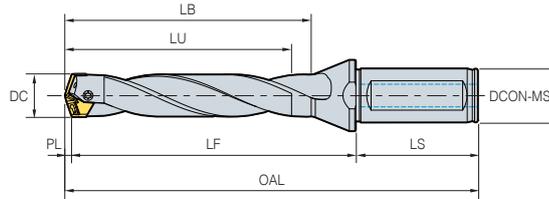


(mm)

| | Designation | Stock | DC | DCON-MS | LU | LF | LB | LS | OAL | PL | Applicable insert |
|-------------|-------------|-----------|-----------|---------|--------|--------|--------|-------|-------|--------------|-------------------|
| TPDB | 100-16-10-P | ● | 10.0-10.4 | 16 | 101.58 | 117.02 | 107.08 | 48 | 166.6 | 1.58 | TPD100B~104B |
| | 105-16-10-P | ● | 10.5-10.9 | 16 | 106.66 | 121.94 | 112.41 | 48 | 171.6 | 1.66 | TPD105B~109B |
| | 110-16-10-P | ● | 11.0-11.4 | 16 | 111.73 | 126.97 | 117.73 | 48 | 176.7 | 1.73 | TPD110B~114B |
| | 115-16-10-P | ● | 11.5-11.9 | 16 | 116.81 | 131.89 | 123.06 | 48 | 181.7 | 1.81 | TPD115B~119B |
| | 120-16-10-P | ● | 12.0-12.4 | 16 | 122.07 | 138.03 | 128.57 | 48 | 188.1 | 2.07 | TPD120B~124B |
| | 125-16-10-P | ● | 12.5-12.9 | 16 | 127.15 | 143.55 | 133.90 | 48 | 193.7 | 2.15 | TPD125B~129B |
| | 130-16-10-P | ● | 13.0-13.4 | 16 | 132.24 | 150.06 | 139.24 | 48 | 200.3 | 2.24 | TPD130B~134B |
| | 135-16-10-P | ● | 13.5-13.9 | 16 | 137.32 | 155.58 | 144.57 | 48 | 205.9 | 2.32 | TPD135B~139B |
| | 140-16-10-P | ● | 14.0-14.4 | 16 | 142.41 | 161.09 | 149.91 | 48 | 211.5 | 2.41 | TPD140B~144B |
| | 145-16-10-P | ● | 14.5-14.9 | 16 | 147.50 | 167.60 | 155.25 | 48 | 218.1 | 2.50 | TPD145B~149B |
| | 150-20-10-P | ● | 15.0-15.4 | 20 | 152.58 | 173.12 | 160.58 | 50 | 225.7 | 2.58 | TPD150B~154B |
| | 155-20-10-P | ● | 15.5-15.9 | 20 | 157.67 | 178.53 | 165.92 | 50 | 231.2 | 2.67 | TPD155B~159B |
| | 160-20-10-P | ● | 16.0-16.4 | 20 | 162.75 | 184.15 | 171.25 | 50 | 236.9 | 2.75 | TPD160B~164B |
| | 165-20-10-P | ● | 16.5-16.9 | 20 | 167.84 | 189.56 | 176.59 | 50 | 242.4 | 2.84 | TPD165B~169B |
| | 170-20-10-P | ● | 17.0-17.4 | 20 | 172.93 | 196.17 | 181.93 | 50 | 249.1 | 2.93 | TPD170B~174B |
| | 175-20-10-P | ● | 17.5-17.9 | 20 | 178.01 | 201.59 | 187.26 | 50 | 254.6 | 3.01 | TPD175B~179B |
| | 180-25-10-P | ● | 18.0-18.4 | 25 | 183.10 | 207.10 | 192.60 | 56 | 266.2 | 3.10 | TPD180B~184B |
| | 185-25-10-P | ● | 18.5-18.9 | 25 | 188.19 | 212.51 | 197.94 | 56 | 271.7 | 3.19 | TPD185B~189B |
| | 190-25-10-P | ● | 19.0-19.4 | 25 | 193.27 | 219.03 | 203.27 | 56 | 278.3 | 3.27 | TPD190B~194B |
| | 195-25-10-P | ● | 19.5-19.9 | 25 | 198.36 | 224.44 | 208.61 | 56 | 283.8 | 3.36 | TPD195B~199B |
| | 200-25-10-P | ● | 20.0-20.4 | 25 | 203.44 | 230.06 | 213.94 | 56 | 289.5 | 3.44 | TPD200B~204B |
| | 205-25-10-P | ● | 20.5-20.9 | 25 | 208.53 | 235.47 | 219.28 | 56 | 295.0 | 3.53 | TPD205B~209B |
| | 210-25-10-P | ● | 21.0-21.4 | 25 | 213.62 | 238.08 | 224.62 | 60 | 301.7 | 3.62 | TPD210B~214B |
| | 215-25-10-P | ● | 21.5-21.9 | 25 | 218.70 | 243.50 | 229.95 | 60 | 307.2 | 3.70 | TPD215B~219B |
| | 220-25-10-P | ● | 22.0-22.4 | 25 | 223.79 | 249.11 | 235.29 | 60 | 312.9 | 3.79 | TPD220B~224B |
| | 225-25-10-P | ● | 22.5-22.9 | 25 | 228.87 | 254.73 | 240.62 | 60 | 318.6 | 3.87 | TPD225B~229B |
| | 230-25-10-P | ● | 23.0-23.4 | 25 | 233.96 | 261.14 | 245.96 | 60 | 325.1 | 3.96 | TPD230B~234B |
| | 235-25-10-P | ● | 23.5-23.9 | 25 | 239.05 | 266.55 | 251.30 | 60 | 330.6 | 4.05 | TPD235B~239B |
| | 240-32-10-P | ● | 24.0-24.4 | 32 | 244.13 | 276.17 | 256.63 | 60 | 340.3 | 4.13 | TPD240B~244B |
| | 245-32-10-P | ● | 24.5-24.9 | 32 | 249.22 | 281.58 | 261.97 | 60 | 345.8 | 4.22 | TPD245B~249B |
| | 250-32-10-P | ● | 25.0-25.4 | 32 | 254.43 | 288.07 | 267.43 | 60 | 352.5 | 4.43 | TPD250B~254B |
| | 255-32-10-P | ● | 25.5-25.9 | 32 | 259.52 | 293.48 | 272.77 | 60 | 358.0 | 4.52 | TPD255B~259B |
| 260-32-10-P | ● | 26.0-26.9 | 32 | 264.60 | 299.10 | 278.10 | 60 | 363.7 | 4.60 | TPD260B~269B | |
| 270-32-10-P | ● | 27.0-27.9 | 32 | 274.78 | 311.12 | 288.78 | 60 | 375.9 | 4.78 | TPD270B~279B | |
| 280-32-10-P | ● | 28.0-28.9 | 32 | 284.96 | 322.04 | 299.46 | 60 | 387.0 | 4.96 | TPD280B~289B | |
| 290-32-10-P | ● | 29.0-29.9 | 32 | 295.13 | 334.07 | 310.13 | 60 | 399.2 | 5.13 | TPD290B~299B | |
| 300-32-10-P | ● | 30.0-30.9 | 32 | 305.46 | 343.94 | 320.96 | 60 | 409.4 | 5.46 | TPD300B~309B | |
| 310-32-10-P | ● | 31.0-31.9 | 32 | 315.64 | 355.96 | 331.64 | 60 | 421.6 | 5.64 | TPD310B~319B | |
| 320-32-10-P | ● | 32.0-32.9 | 32 | 325.82 | 364.98 | 342.32 | 60 | 430.8 | 5.82 | TPD320B~329B | |

● : Stock item

TPDB (12D)



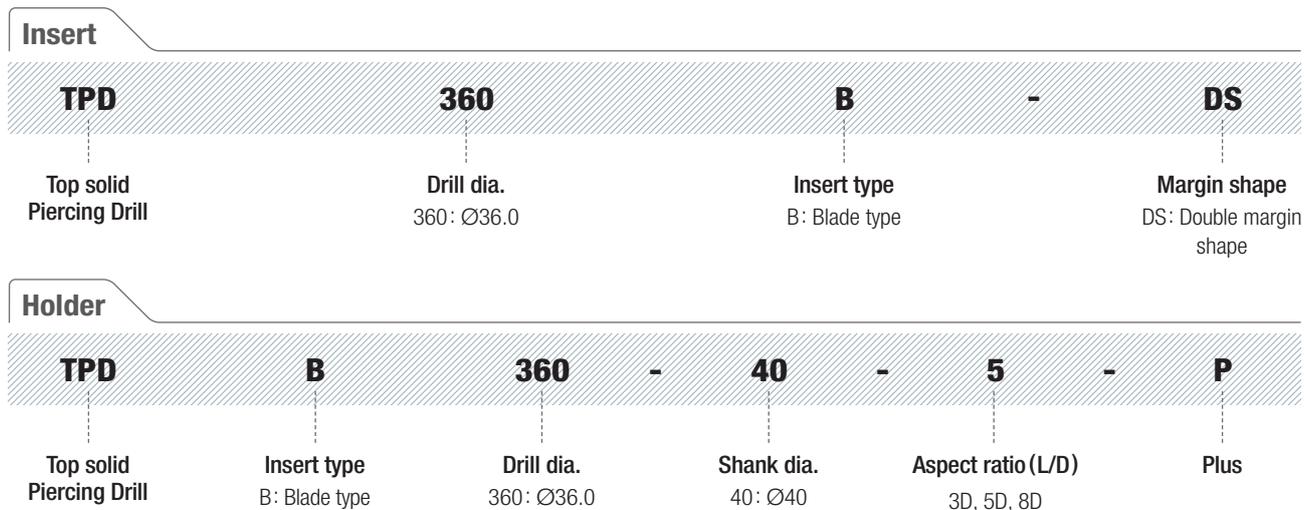
(mm)

| | Designation | Stock | DC | DCON-MS | LU | LF | LB | LS | OAL | PL | Applicable insert |
|-------------|-------------|-----------|-----------|---------|--------|--------|--------|-------|-------|----------------|-------------------|
| TPDB | 100-16-12-P | ● | 10.0-10.4 | 16 | 121.58 | 137.02 | 127.08 | 48 | 186.6 | 1.58 | TPD100B ~ 104B |
| | 105-16-12-P | ● | 10.5-10.9 | 16 | 127.66 | 142.94 | 133.41 | 48 | 192.6 | 1.66 | TPD105B ~ 109B |
| | 110-16-12-P | ● | 11.0-11.4 | 16 | 133.73 | 148.97 | 139.73 | 48 | 198.7 | 1.73 | TPD110B ~ 114B |
| | 115-16-12-P | ● | 11.5-11.9 | 16 | 139.81 | 154.89 | 146.06 | 48 | 204.7 | 1.81 | TPD115B ~ 119B |
| | 120-16-12-P | ● | 12.0-12.4 | 16 | 146.07 | 162.03 | 152.57 | 48 | 212.1 | 2.07 | TPD120B ~ 124B |
| | 125-16-12-P | ● | 12.5-12.9 | 16 | 152.15 | 168.55 | 158.90 | 48 | 218.7 | 2.15 | TPD125B ~ 129B |
| | 130-16-12-P | ● | 13.0-13.4 | 16 | 158.24 | 176.06 | 165.24 | 48 | 226.3 | 2.24 | TPD130B ~ 134B |
| | 135-16-12-P | ● | 13.5-13.9 | 16 | 164.32 | 182.58 | 171.57 | 48 | 232.9 | 2.32 | TPD135B ~ 139B |
| | 140-16-12-P | ● | 14.0-14.4 | 16 | 170.41 | 189.09 | 177.91 | 48 | 239.5 | 2.41 | TPD140B ~ 144B |
| | 145-16-12-P | ● | 14.5-14.9 | 16 | 176.50 | 196.60 | 184.25 | 48 | 247.1 | 2.50 | TPD145B ~ 149B |
| | 150-20-12-P | ● | 15.0-15.4 | 20 | 182.58 | 203.12 | 190.58 | 50 | 255.7 | 2.58 | TPD150B ~ 154B |
| | 155-20-12-P | ● | 15.5-15.9 | 20 | 188.67 | 209.53 | 196.92 | 50 | 262.2 | 2.67 | TPD155B ~ 159B |
| | 160-20-12-P | ● | 16.0-16.4 | 20 | 194.75 | 216.15 | 203.25 | 50 | 268.9 | 2.75 | TPD160B ~ 164B |
| | 165-20-12-P | ● | 16.5-16.9 | 20 | 200.84 | 222.56 | 209.59 | 50 | 275.4 | 2.84 | TPD165B ~ 169B |
| | 170-20-12-P | ● | 17.0-17.4 | 20 | 206.93 | 230.17 | 215.93 | 50 | 283.1 | 2.93 | TPD170B ~ 174B |
| | 175-20-12-P | ● | 17.5-17.9 | 20 | 213.01 | 236.59 | 222.26 | 50 | 289.6 | 3.01 | TPD175B ~ 179B |
| | 180-25-12-P | ● | 18.0-18.4 | 25 | 219.10 | 243.10 | 228.60 | 56 | 302.2 | 3.10 | TPD180B ~ 184B |
| | 185-25-12-P | ● | 18.5-18.9 | 25 | 225.19 | 249.51 | 234.94 | 56 | 308.7 | 3.19 | TPD185B ~ 189B |
| | 190-25-12-P | ● | 19.0-19.4 | 25 | 231.27 | 257.03 | 241.27 | 56 | 316.3 | 3.27 | TPD190B ~ 194B |
| | 195-25-12-P | ● | 19.5-19.9 | 25 | 237.36 | 263.44 | 247.61 | 56 | 322.8 | 3.36 | TPD195B ~ 199B |
| | 200-25-12-P | ● | 20.0-20.4 | 25 | 243.44 | 270.06 | 253.94 | 56 | 329.5 | 3.44 | TPD200B ~ 204B |
| | 205-25-12-P | ● | 20.5-20.9 | 25 | 249.53 | 276.47 | 260.28 | 56 | 336.0 | 3.53 | TPD205B ~ 209B |
| | 210-25-12-P | ● | 21.0-21.4 | 25 | 255.62 | 280.08 | 266.62 | 60 | 343.7 | 3.62 | TPD210B ~ 214B |
| | 215-25-12-P | ● | 21.5-21.9 | 25 | 261.70 | 286.50 | 272.95 | 60 | 350.2 | 3.70 | TPD215B ~ 219B |
| | 220-25-12-P | ● | 22.0-22.4 | 25 | 267.79 | 293.11 | 279.29 | 60 | 356.9 | 3.79 | TPD220B ~ 224B |
| | 225-25-12-P | ● | 22.5-22.9 | 25 | 273.87 | 299.73 | 285.62 | 60 | 363.6 | 3.87 | TPD225B ~ 229B |
| | 230-25-12-P | ● | 23.0-23.4 | 25 | 279.96 | 307.14 | 291.96 | 60 | 371.1 | 3.96 | TPD230B ~ 234B |
| | 235-25-12-P | ● | 23.5-23.9 | 25 | 286.05 | 313.55 | 298.30 | 60 | 377.6 | 4.05 | TPD235B ~ 239B |
| | 240-32-12-P | ● | 24.0-24.4 | 32 | 292.13 | 324.17 | 304.63 | 60 | 388.3 | 4.13 | TPD240B ~ 244B |
| | 245-32-12-P | ● | 24.5-24.9 | 32 | 298.22 | 330.58 | 310.97 | 60 | 394.8 | 4.22 | TPD245B ~ 249B |
| | 250-32-12-P | ● | 25.0-25.4 | 32 | 304.43 | 338.07 | 317.43 | 60 | 402.5 | 4.43 | TPD250B ~ 254B |
| | 255-32-12-P | ● | 25.5-25.9 | 32 | 310.52 | 344.48 | 323.77 | 60 | 409.0 | 4.52 | TPD255B ~ 259B |
| 260-32-12-P | ● | 26.0-26.9 | 32 | 316.60 | 351.10 | 330.10 | 60 | 415.7 | 4.60 | TPD260B ~ 269B | |
| 270-32-12-P | ● | 27.0-27.9 | 32 | 328.78 | 365.12 | 342.78 | 60 | 429.9 | 4.78 | TPD270B ~ 279B | |
| 280-32-12-P | ● | 28.0-28.9 | 32 | 340.96 | 378.04 | 355.46 | 60 | 443.0 | 4.96 | TPD280B ~ 289B | |
| 290-32-12-P | ● | 29.0-29.9 | 32 | 353.13 | 392.07 | 368.13 | 60 | 457.2 | 5.13 | TPD290B ~ 299B | |
| 300-32-12-P | ● | 30.0-30.9 | 32 | 365.46 | 403.94 | 380.96 | 60 | 469.4 | 5.46 | TPD300B ~ 309B | |
| 310-32-12-P | ● | 31.0-31.9 | 32 | 377.64 | 417.96 | 393.64 | 60 | 483.6 | 5.64 | TPD310B ~ 319B | |
| 320-32-12-P | ● | 32.0-32.9 | 32 | 389.82 | 428.98 | 406.32 | 60 | 494.8 | 5.82 | TPD320B ~ 329B | |

● : Stock item

TPDB-DS ^{New}

Code system



Features

- A curved linear insert with high helix angle applied holder, which has low cutting load and excellent chip handling performance.
- Excellent clamping stability with a specially designed clamping section and 2 screws-on clamping methods.
- Improved wear resistance and durability through special surface treatment.

Screw-on clamping

- Good clamping stability due to 2 screws-on clamping method

Cutting edge shape for low cutting resistance

- Less cutting load and better chip control

Applied double margin

- Increased cutting stability
- Better surface finish on inner wall of the hole
- Higher precision of hole size

Applied key preventing insert misalignment

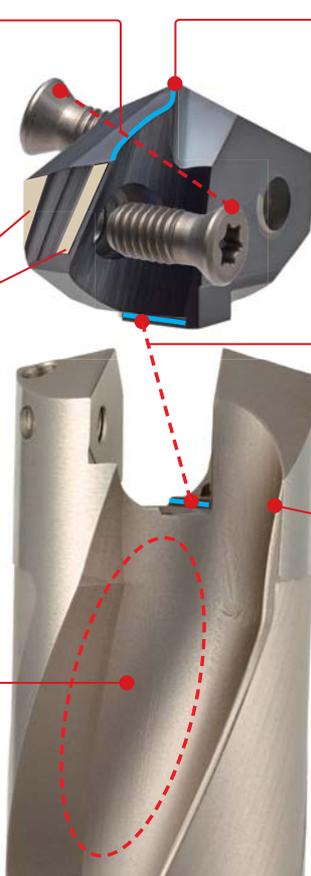
- High precision of clamping

Special surface treatment

- High durability of the holder

2-stepped flute shape

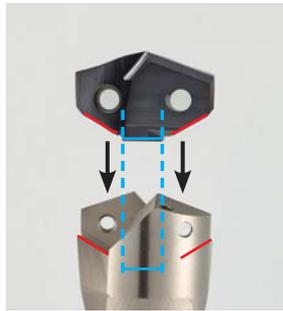
- Good chip evacuation



How to clamp an insert



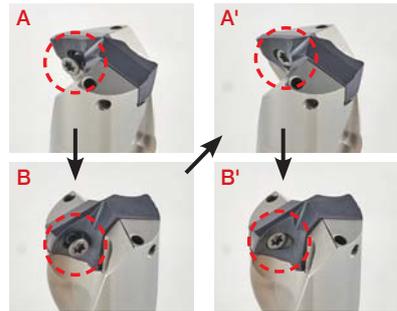
① Clean the tip seat.



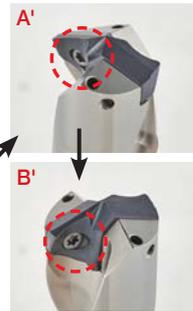
② Put an insert in.



③ Lightly press the insert while screwing to prevent it from rotating.



④ Clamp a screw partially just like in the case of A and B to prevent laterality.



⑤ Clamp the screws completely in the order of A', B'.

Recommended cutting conditions

| ISO | Workpiece | | | Specific cutting force (N/mm ²) | Brinell hardness (HB) | Grade | vc (m/min) | Aspect ratio (L/D) = 3D, 5D | |
|-----|---------------------|----------------------------|---------------------------|---|-----------------------|-----------|------------|-----------------------------|-------------|
| | Workpiece material | KS | ISO | | | | | fn (mm/rev) | |
| P | Carbon steel | C = 0.10 ~ 0.25% | SM15C SM25C | C15 C25 | 1500 | 90 ~ 200 | PC5300 | 80 ~ 140 | 0.4 ~ 0.25 |
| | | C = 0.25 ~ 0.55% | SM35C SM45C | C35 C45 | 1600 | 125 ~ 225 | PC5300 | 80 ~ 140 | 0.4 ~ 0.25 |
| | | C = 0.55 ~ 0.80% | SM58C | C60 | 1700 | 150 ~ 250 | PC5300 | 70 ~ 130 | 0.4 ~ 0.25 |
| | Alloy steel ≤ 5% | Non-hardened | SCM440 | 42CrMo4 | 1700 | 180 | PC5300 | 80 ~ 130 | 0.45 ~ 0.25 |
| | | Hardened and Tempered | SCM445 | - | 2050 | 350 | PC5300 | 60 ~ 110 | 0.45 ~ 0.25 |
| | Alloy steel > 5% | Annealed | STD11 | - | 1950 | 200 | PC5300 | 60 ~ 100 | 0.4 ~ 0.25 |
| | Hardened tool steel | STD61 | X40CrMoV5-1 | 3000 | 352 | PC5300 | 50 ~ 90 | 0.35 ~ 0.2 | |
| K | Gray cast iron | GC250 GC350 | 250 350 | 900 | 150 ~ 230 | PC5300 | 80 ~ 140 | 0.45 ~ 0.25 | |
| | Ductile cast iron | GCD400 GCD500 GCD600 | 400-15 150-10 600-3 | 870 | 160 ~ 260 | PC5300 | 70 ~ 130 | 0.45 ~ 0.25 | |

※ For 8D, reduce the recommended cutting conditions by 20% to 30% at the machining depth from its entry to 0.5D depth then proceed with the above-mentioned cutting conditions.

※ For interrupted machining, reduce the feed to 0.1 to 0.15 in the vicinity of the interrupted cutting area.

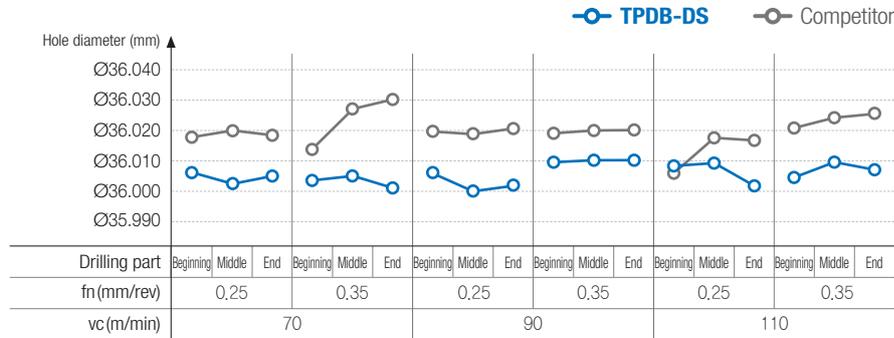
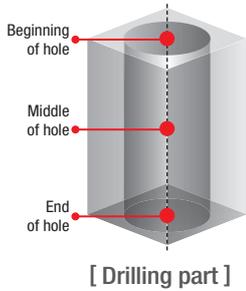
Performance evaluation

Machining precision

Workpiece Alloy steel (42CrMo4, HRC22)

Cutting condition vc (m/min) = 70/90/110, fn (mm/rev) = 0.25/0.35, ap (mm) = 150, wet (20 bar)

Tool **Insert** TPD360B-DS (PC5300) **Holder** TPDB360-40-5-P (Drill dia. = \varnothing 36 mm)



Good machining precision

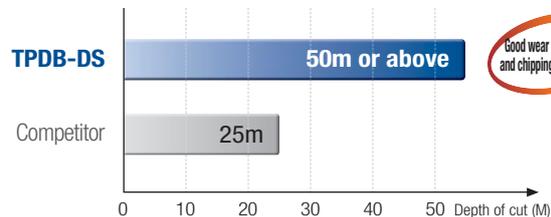
» Improved machining precision through double margin and stable chip evacuation

Wear resistance

Workpiece Alloy steel (42CrMo4, HRC22)

Cutting condition vc (m/min) = 90, fn (mm/rev) = 0.3, ap (mm) = 150, wet (20 bar)

Tool **Insert** TPD360B-DS (PC5300) **Holder** TPDB360-40-5-P (Drill dia. = \varnothing 36 mm)



Good wear resistance and chipping resistance

» Increased maximum tool life with more stable chipping resistance compared to the competitor's

Cutting surface finish / chip surface finish

Workpiece Alloy steel (42CrMo4, HRC22)

Cutting condition vc (m/min) = 90, fn (mm/rev) = 0.35, ap (mm) = 150, wet (20 bar)

Tool **Insert** TPD360B-DS (PC5300) **Holder** TPDB360-40-5-P (Drill dia. = \varnothing 36 mm)



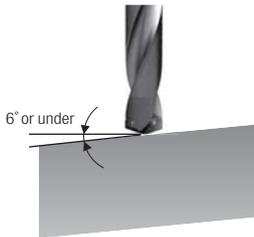
Good surface finish and chip control



» Good surface finish due to stable chip formation and effective chip evacuation

☑ Precaution in Drilling

Angled surface Drilling



- The approach angle between Drill and the workpiece at the beginning and the end should be less than 6°.
- Reduce the feed (fn) to 30-50% than general cutting conditions at the beginning and the end of angled surface.

Stacked plates Drilling



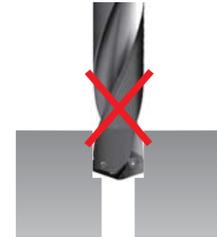
- Gap between the plates could make wrong chip evacuation causing fracture of the Drill.
- Strongly clamp the workpiece together to eliminate any gaps and then proceed with usage.

Plunging



- Irregular cutting resistance in plunging could cause fracture and deformation of the Drill.

Boring



- Boring is not recommended as it can cause excessive wear and chipping at the insert's corner.
- In case of necessity, process it with a 2mm stepping. (30% reduction in transfer during processing)

☑ Basic checklist for the Drilling operations

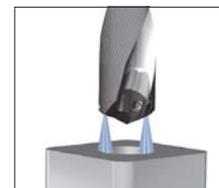
- Workpiece clamping condition
- Rotational state of the main axial in the machining equipment
- Holder condition
- Clamped drill's Run-out: Max. 0.03mm
- Coolant supply condition (pressure, flow rate, concentration)
- Chip evacuation condition

☑ Coolant application system

- Adequate supply of cutting fluid at the entrance of the hole
- Minimum cutting fluid pressure: 5 bar or above
- Minimum flow rate: 5ℓ/min or above



[Dry]

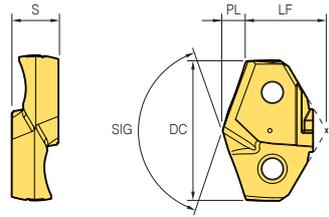


[Internal coolant]



[External coolant]

Insert



(mm)

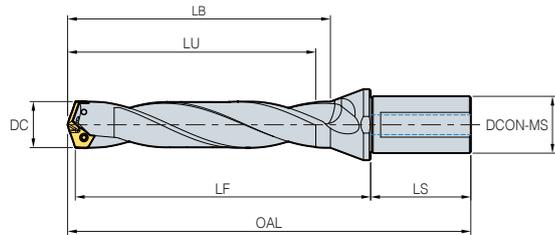
| Designation | Coated | DC | S | LF | PL | SIG | |
|-------------|---------|----|------|------|-------|------|------|
| | PC5300 | | | | | | |
| TPD | 330B-DS | ● | 33.0 | 10.5 | 18.16 | 5.38 | 140° |
| | 335B-DS | | 33.5 | 10.5 | 18.08 | 5.46 | 140° |
| | 340B-DS | ● | 34.0 | 11.0 | 18.55 | 5.54 | 140° |
| | 345B-DS | | 34.5 | 11.0 | 18.47 | 5.62 | 140° |
| | 350B-DS | ● | 35.0 | 11.5 | 19.48 | 5.70 | 140° |
| | 355B-DS | ● | 35.5 | 11.5 | 19.40 | 5.78 | 140° |
| | 360B-DS | ● | 36.0 | 11.5 | 20.41 | 5.87 | 140° |
| | 365B-DS | | 36.5 | 11.5 | 20.33 | 5.95 | 140° |
| | 370B-DS | ● | 37.0 | 12.0 | 20.80 | 6.03 | 140° |
| | 375B-DS | | 37.5 | 12.0 | 20.72 | 6.11 | 140° |
| | 380B-DS | ● | 38.0 | 12.0 | 21.63 | 6.19 | 140° |
| | 385B-DS | ● | 38.5 | 12.0 | 21.55 | 6.27 | 140° |
| | 390B-DS | ● | 39.0 | 12.5 | 22.02 | 6.35 | 140° |
| | 395B-DS | | 39.5 | 12.5 | 21.93 | 6.44 | 140° |

※ TPD Inserts not list above within the range of $\varnothing 33.00 \sim \varnothing 39.99$ can be made to order ● : Stock item

Parts

| Designation | Drill dia. DC (mm) | Screw  | Wrench  | |
|-------------|-----------------------|---|---|-------|
| TPD | 330B-DS ~ 339B-DS | 33.0 ~ 33.9 | FTKA0410 | TW15S |
| | 340B-DS ~ 349B-DS | 34.0 ~ 34.9 | FTKA0410 | TW15S |
| | 350B-DS ~ 359B-DS | 35.0 ~ 35.9 | FTKA0410 | TW15S |
| | 360B-DS ~ 369B-DS | 36.0 ~ 36.9 | FTNC04511 | TW20S |
| | 370B-DS ~ 379B-DS | 37.0 ~ 37.9 | FTNC04511 | TW20S |
| | 380B-DS ~ 389B-DS | 38.0 ~ 38.9 | FTNA0511 | TW20S |
| | 390B-DS ~ 399B-DS | 39.0 ~ 39.9 | FTNA0511 | TW20S |

TPDB-DS (3D, 5D, 8D)



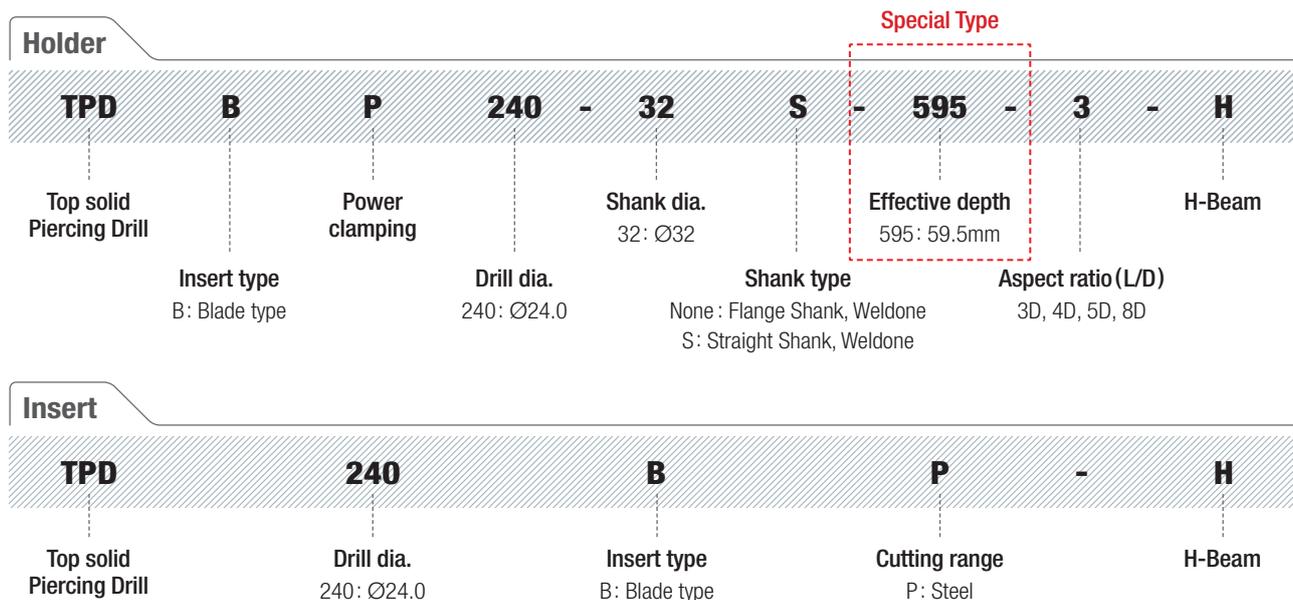
(mm)

| Designation | Stock | DC | DCON-MS | LU | LF | LB | LS | OAL | PL | Applicable insert |
|------------------------|-------|-----------|---------|--------|--------|--------|----|-------|------|-------------------|
| TPDB 330-40-3-P | ● | 33.0-33.9 | 40 | 104.38 | 140.30 | 117.58 | 70 | 215.7 | 5.38 | TPD330B ~ 339B-DS |
| 340-40-3-P | ● | 34.0-34.9 | 40 | 107.54 | 144.41 | 121.15 | 70 | 219.9 | 5.54 | TPD340B ~ 349B-DS |
| 350-40-3-P | ● | 35.0-35.9 | 40 | 110.70 | 148.51 | 124.71 | 70 | 224.2 | 5.70 | TPD350B ~ 359B-DS |
| 360-40-3-P | ● | 36.0-36.9 | 40 | 113.87 | 152.60 | 128.27 | 70 | 228.5 | 5.87 | TPD360B ~ 369B-DS |
| 370-40-3-P | ● | 37.0-37.9 | 40 | 117.03 | 156.70 | 131.83 | 70 | 232.7 | 6.03 | TPD370B ~ 379B-DS |
| 380-40-3-P | ● | 38.0-38.9 | 40 | 120.19 | 160.81 | 135.40 | 70 | 237.0 | 6.19 | TPD380B ~ 389B-DS |
| 390-40-3-P | ● | 39.0-39.9 | 40 | 123.35 | 164.91 | 138.96 | 70 | 241.3 | 6.35 | TPD390B ~ 399B-DS |
| 330-40-5-P | | 33.0-33.9 | 40 | 170.38 | 206.30 | 183.58 | 70 | 281.7 | 5.38 | TPD330B ~ 339B-DS |
| 340-40-5-P | | 34.0-34.9 | 40 | 175.54 | 212.41 | 189.15 | 70 | 287.9 | 5.54 | TPD340B ~ 349B-DS |
| 350-40-5-P | | 35.0-35.9 | 40 | 180.70 | 218.51 | 194.71 | 70 | 294.2 | 5.70 | TPD350B ~ 359B-DS |
| 360-40-5-P | | 36.0-36.9 | 40 | 185.87 | 224.60 | 200.27 | 70 | 300.5 | 5.87 | TPD360B ~ 369B-DS |
| 370-40-5-P | | 37.0-37.9 | 40 | 191.03 | 230.70 | 205.83 | 70 | 306.7 | 6.03 | TPD370B ~ 379B-DS |
| 380-40-5-P | | 38.0-38.9 | 40 | 196.19 | 236.81 | 211.40 | 70 | 313.0 | 6.19 | TPD380B ~ 389B-DS |
| 390-40-5-P | | 39.0-39.9 | 40 | 201.35 | 242.91 | 216.96 | 70 | 319.3 | 6.35 | TPD390B ~ 399B-DS |
| 330-40-8-P | | 33.0-33.9 | 40 | 269.38 | 305.30 | 282.58 | 70 | 380.7 | 5.38 | TPD330B ~ 339B-DS |
| 340-40-8-P | | 34.0-34.9 | 40 | 277.54 | 314.41 | 291.15 | 70 | 389.9 | 5.54 | TPD340B ~ 349B-DS |
| 350-40-8-P | | 35.0-35.9 | 40 | 285.70 | 323.51 | 299.71 | 70 | 399.2 | 5.70 | TPD350B ~ 359B-DS |
| 360-40-8-P | | 36.0-36.9 | 40 | 293.87 | 332.60 | 308.27 | 70 | 408.5 | 5.87 | TPD360B ~ 369B-DS |
| 370-40-8-P | | 37.0-37.9 | 40 | 302.03 | 341.70 | 316.83 | 70 | 417.7 | 6.03 | TPD370B ~ 379B-DS |
| 380-40-8-P | | 38.0-38.9 | 40 | 310.19 | 350.81 | 325.40 | 70 | 427.0 | 6.19 | TPD380B ~ 389B-DS |
| 390-40-8-P | | 39.0-39.9 | 40 | 318.35 | 359.91 | 333.96 | 70 | 436.3 | 6.35 | TPD390B ~ 399B-DS |

※ We can provide if you order exact machining specification. ● : Stock item

TPDB-H ^{New}

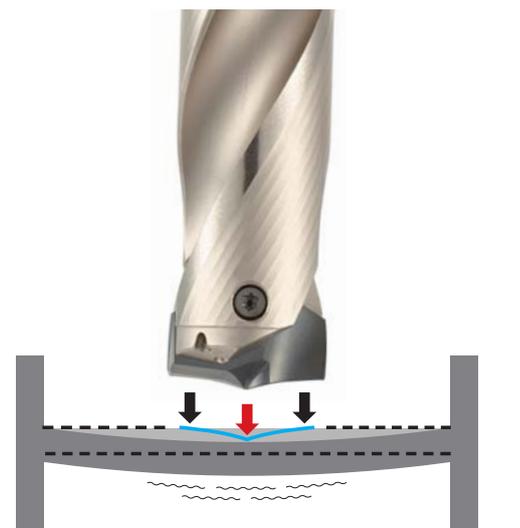
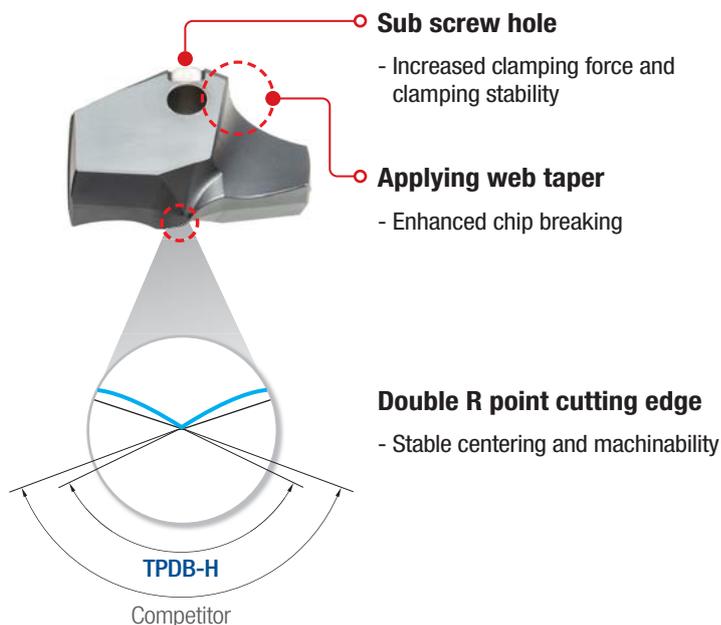
Code system



Features

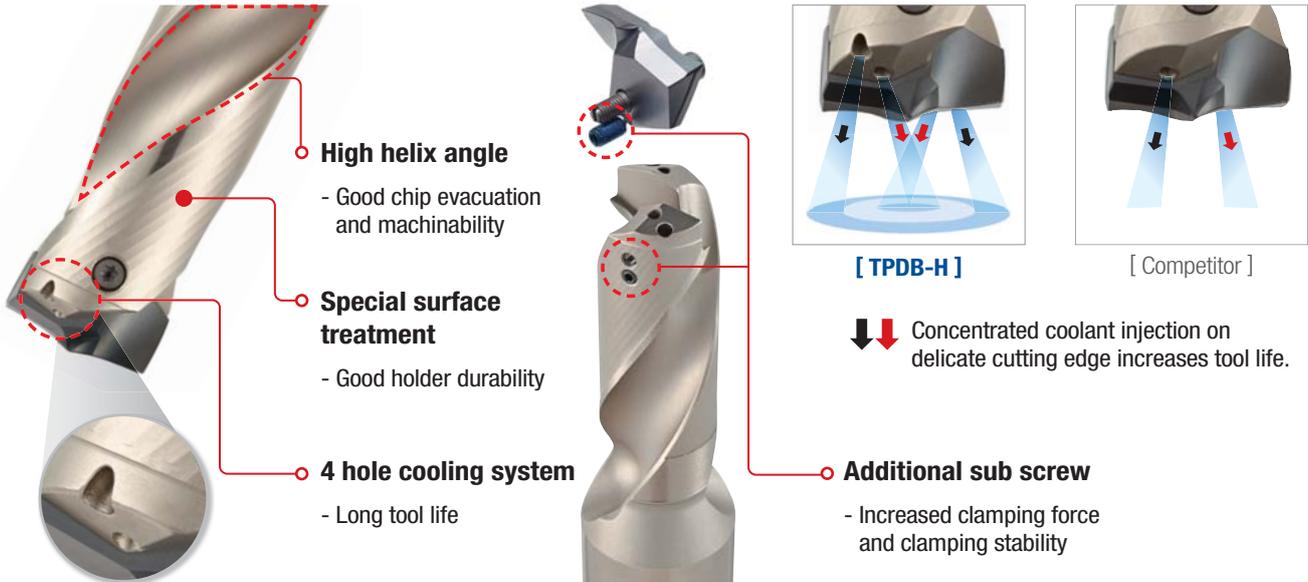
- **High precision clamping system** - High precision clamping due highly precise grinding and auto-centering
- **Screw on clamping system** - Enhanced clamping force and clamping stability from applying a main screw and a sub screw
- **Edge design with excellent centering** - Low cutting load and good chip control
- **Applying shape for better chip breaking** - Increasing chip breaking due to applying web taper
- **High durability holder** - Improved wear resistance and durability with special surface treatment implementation
- **Optimally designed oil hole** - Long tool life

Insert features

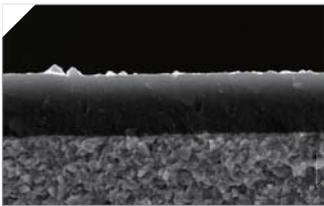


- ↓ Applied Double R point edge design optimized for excellent centering and stable machinability.
- ↓ Machinability and productivity are improved by minimizing both workpiece's bending and chipping at edge corner section.

✓ Holder features



✓ Grade features



PC340UL

- Applying high toughness substrate with good fracture resistance
- Applying PVD coating technology enhancing lubrication and welding resistance
- Increasing chipping resistance and cutting stability due to good surface finish

✓ Performance evaluation

Chip control

| | |
|--------------------------|---|
| Workpiece | Carbon steel (SM355A, HRC20) |
| Cutting condition | vc (m/min) = 80, fn (mm/rev) = 0.2, ap (mm) = 30, Mist |
| Tool | Insert TPD240BP-H (PC340UL) Holder TPDBP240-32S-4-H (Drill dia. = Ø24mm) |



[TPDB-H]

Good chip control



[Competitor]

Wear resistance

| | |
|--------------------------|---|
| Workpiece | Carbon steel (SM355A, HRC20) |
| Cutting condition | vc (m/min) = 80, fn (mm/rev) = 0.23, ap (mm) = 50, Mist |
| Tool | Insert TPD240BP-H (PC340UL) Holder TPDBP240-32S-4-H (Drill dia. = Ø24mm) |



[TPDB-H]

Built up edge resistance



[Competitor]

Workpiece and recommended cutting conditions

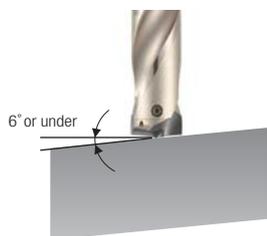
| ISO | Workpiece | | | | Yield Strength (Mpa, min) | Brinell hardness (HB) | Grade | vc (m/min) | Aspect ratio (L/D) = 3D, 4D, 5D, 8D | |
|-----|--------------------|---|----------------------------------|-------------|-----------------------------|-----------------------|-------|------------|-------------------------------------|--|
| | Workpiece material | KS | AISI | fn (mm/rev) | | | | | | |
| | | | | Ø14~Ø21.9 | | | | | Ø22~Ø32.9 | |
| P | H-Beam |  | | | | PC340Q | 60~75 | 0.25~0.2 | 0.3~0.2 | |
| | Angle |  | SS275 (SS400*) SM355 (SM490*) | A36 A572 | 275 355 355 (t≤16) | PC340Q | 60~75 | 0.25~0.2 | 0.3~0.2 | |
| | Plate |  | SHN355 (SHN490*) | | | PC340Q | 60~75 | 0.25~0.2 | 0.3~0.2 | |
| | Plate (Stacked) |  | | | | PC340Q | 55~65 | 0.25~0.15 | 0.25~0.15 | |

※ In case of 5D over, machine in 30% lower cutting conditions or use under the above conditions

* : Old symbol

Precaution in Drilling

Angled surface Drilling



- The approach angle between Drill and the workpiece at the beginning and the end should be less than 6°.
- Reduce the feed (fn) to 30-50% than general cutting conditions at the beginning and the end of angled surface.

Stacked plates Drilling



- Gap between the plates could make wrong chip evacuation causing fracture of the Drill.
- Strongly clamp the workpiece together to eliminate any gaps and then proceed with usage.

Plunging



- Irregular cutting resistance in plunging could cause fracture and deformation of the Drill.

Boring



- Boring is not recommended as it can cause excessive wear and chipping at the insert's corner.
- In case of necessity, process it with a 2mm stepping. (30% reduction in transfer during processing)

Carbon steel (SM355)



Cutting condition vc (m/min) = 47, fn (mm/rev) = 0.24, ap (mm) = 50, MQL (Mist)

Tool **Insert** TPD240BP-H (PC340UL)

Holder TPDBP240-32S-4-H (Drill dia. = \varnothing 24 mm)

Tool life 64m (Corner chipping)

» Stable chip evacuation ensures tool life as 60 m in even machining with over 40 mm thickness.

Carbon steel (SM355)



Cutting condition vc (m/min) = 80, fn (mm/rev) = 0.27, ap (mm) = 25, Wet

Tool **Insert** TPD220BP-H (PC340UL)

Holder TPDBP220-25S-4-H (Drill dia. = \varnothing 22 mm)

Tool life 41m (Corner chipping)

» High speed and high feed machining saves machining hours.

Carbon steel (SS275)



Cutting condition vc (m/min) = 70, fn (mm/rev) = 0.23, ap (mm) = 30, Wet

Tool **Insert** TPD260BP-H (PC340UL)

Holder TPDBP260-32S-4-H (Drill dia. = \varnothing 26 mm)

Tool life 35m (Corner chipping)

» Stable machinability and long tool life are realized in machining various workpieces such as SM355, SS275, SHN355 etc.

Carbon steel (SM355)



Cutting condition vc (m/min) = 56, fn (mm/rev) = 0.31, ap (mm) = 40, Wet

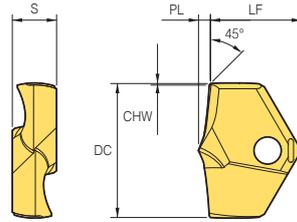
Tool **Insert** TPD270BP-H (PC340UL)

Holder TPDBP270-32S-4-H (Drill dia. = \varnothing 26 mm)

Tool life 47m (Corner chipping)

» Minimized cutting load in horizontal machining ensures high quality machining.

Insert



(mm)

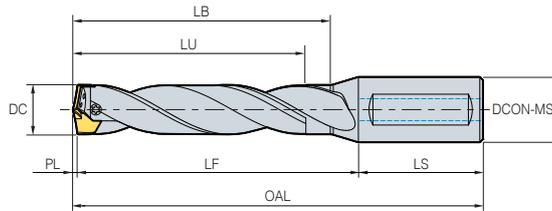
| Designation | Coated | DC | S | LF | PL | CHW | |
|-------------|---------|------|------|-------|-------|------|------|
| | PC340UL | | | | | | |
| TPD | 140BP-H | ● | 14.0 | 4.0 | 9.45 | 1.17 | 0.05 |
| | 150BP-H | | 15.0 | 4.0 | 9.83 | 1.29 | 0.05 |
| | 160BP-H | ● | 16.0 | 5.5 | 10.73 | 1.39 | 0.07 |
| | 170BP-H | | 17.0 | 5.5 | 11.14 | 1.48 | 0.07 |
| | 180BP-H | ● | 18.0 | 6.0 | 12.15 | 1.51 | 0.07 |
| | 190BP-H | | 19.0 | 6.0 | 12.54 | 1.60 | 0.07 |
| | 200BP-H | ● | 20.0 | 6.5 | 13.45 | 1.67 | 0.07 |
| | 210BP-H | | 21.0 | 6.5 | 13.86 | 1.76 | 0.07 |
| | 220BP-H | ● | 22.0 | 7.0 | 14.54 | 1.89 | 0.09 |
| | 230BP-H | | 23.0 | 7.0 | 14.70 | 1.94 | 0.09 |
| | 240BP-H | ● | 24.0 | 7.5 | 15.56 | 2.02 | 0.09 |
| | 250BP-H | | 25.0 | 7.5 | 15.98 | 2.10 | 0.09 |
| | 260BP-H | ● | 26.0 | 8.5 | 16.35 | 2.23 | 0.09 |
| | 270BP-H | ● | 27.0 | 8.5 | 17.43 | 2.28 | 0.13 |
| | 280BP-H | | 28.0 | 9.5 | 18.26 | 2.32 | 0.13 |
| | 290BP-H | | 29.0 | 9.5 | 18.64 | 2.55 | 0.13 |
| 300BP-H | ● | 30.0 | 10.0 | 19.03 | 2.61 | 0.13 | |
| 310BP-H | | 31.0 | 10.0 | 19.44 | 2.70 | 0.13 | |
| 320BP-H | | 32.0 | 10.0 | 19.85 | 2.79 | 0.13 | |

● : Stock item

Parts

| Designation | Drill dia. DC (mm) | Screw  | Wrench  | Sub screw  | Wrench for sub screw  |
|---------------------|-----------------------|--|---|--|---|
| TPD 140BP-H~159BP-H | Ø14.0 ~ Ø15.9 | FTNB02512-P | TW07S | - | - |
| 160BP-H~179BP-H | Ø16.0 ~ Ø17.9 | FTNB02514-P | TW07S | KHMA02505 | HW13LB |
| 180BP-H~199BP-H | Ø18.0 ~ Ø19.9 | FTNB0316-P | TW09S | KHMA02505 | HW13LB |
| 200BP-H~239BP-H | Ø20.0 ~ Ø23.9 | FTNB0319 | TW09S | KHMA0306 | HW15L |
| 240BP-H~259BP-H | Ø24.0 ~ Ø25.9 | FTNB03522 | TW15S | KHMA0308 | HW15L |
| 260BP-H~279BP-H | Ø26.0 ~ Ø27.9 | FTNB03524 | TW15S | KHMA0308 | HW15L |
| 280BP-H~299BP-H | Ø28.0 ~ Ø29.9 | FTNB0426 | TW15S | KHMA0410 | HW20L |
| 300BP-H~329BP-H | Ø30.0 ~ Ø32.9 | FTNB0528 | TW20-100 | KHMA0410 | HW20L |

TPDB-H (3D, 4D)

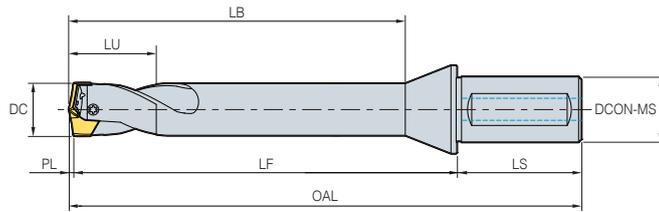


(mm)

| Designation | Stock | DC | DCON-MS | LU | LF | LB | LS | OAL | PL | Applicable insert |
|--------------------------|-------|-----------|---------|--------|--------|--------|----|-------|------|--------------------|
| TPDBP 140-16S-3-H | ● | 14.0-14.9 | 16 | 35.67 | 48.83 | 43.17 | 48 | 98.0 | 1.17 | TPD140BP-H-149BP-H |
| 150-20S-3-H | | 15.0-15.9 | 20 | 38.29 | 52.21 | 46.29 | 50 | 103.5 | 1.29 | TPD150BP-H-159BP-H |
| 160-20S-3-H | ● | 16.0-16.9 | 20 | 40.89 | 55.11 | 49.39 | 50 | 106.5 | 1.39 | TPD160BP-H-169BP-H |
| 170-20S-3-H | | 17.0-17.9 | 20 | 43.48 | 58.02 | 52.48 | 50 | 109.5 | 1.48 | TPD170BP-H-179BP-H |
| 180-20S-3-H | ● | 18.0-18.9 | 20 | 46.01 | 62.49 | 55.51 | 50 | 114.0 | 1.51 | TPD180BP-H-189BP-H |
| 190-20S-3-H | | 19.0-19.9 | 20 | 48.60 | 67.40 | 58.60 | 50 | 119.0 | 1.60 | TPD190BP-H-199BP-H |
| 200-25S-3-H | ● | 20.0-20.9 | 25 | 51.17 | 76.33 | 61.67 | 56 | 128.0 | 1.67 | TPD200BP-H-209BP-H |
| 210-25S-3-H | | 21.0-21.9 | 25 | 53.76 | 73.24 | 64.76 | 56 | 131.0 | 1.76 | TPD210BP-H-219BP-H |
| 220-25S-3-H | ● | 22.0-22.9 | 25 | 56.39 | 76.11 | 67.89 | 56 | 134.0 | 1.89 | TPD220BP-H-229BP-H |
| 230-25S-3-H | | 23.0-23.9 | 25 | 58.94 | 79.06 | 70.94 | 56 | 137.0 | 1.94 | TPD230BP-H-239BP-H |
| 240-32S-3-H | ● | 24.0-24.9 | 32 | 61.52 | 84.78 | 74.02 | 60 | 146.8 | 2.02 | TPD240BP-H-249BP-H |
| 250-32S-3-H | | 25.0-25.9 | 32 | 64.10 | 84.90 | 77.10 | 60 | 147.0 | 2.10 | TPD250BP-H-259BP-H |
| 260-32S-3-H | ● | 26.0-26.9 | 32 | 66.73 | 87.77 | 80.23 | 60 | 150.0 | 2.23 | TPD260BP-H-269BP-H |
| 270-32S-3-H | ● | 27.0-27.9 | 32 | 69.28 | 90.72 | 83.28 | 60 | 153.0 | 2.28 | TPD270BP-H-279BP-H |
| 280-32S-3-H | | 28.0-28.9 | 32 | 71.82 | 93.68 | 86.32 | 60 | 156.0 | 2.32 | TPD280BP-H-289BP-H |
| 290-32S-3-H | | 29.0-29.9 | 32 | 74.55 | 96.45 | 89.55 | 60 | 159.0 | 2.55 | TPD290BP-H-299BP-H |
| 300-32S-3-H | ● | 30.0-30.9 | 32 | 77.11 | 99.39 | 92.61 | 60 | 162.0 | 2.61 | TPD300BP-H-309BP-H |
| 310-32S-3-H | | 31.0-31.9 | 32 | 79.70 | 102.30 | 95.70 | 60 | 165.0 | 2.70 | TPD310BP-H-319BP-H |
| 320-32S-3-H | | 32.0-32.9 | 32 | 82.29 | 105.21 | 98.79 | 60 | 168.0 | 2.79 | TPD320BP-H-329BP-H |
| 140-16S-4-H | | 14.0-14.9 | 16 | 49.67 | 62.83 | 57.17 | 48 | 112.0 | 1.17 | TPD140BP-H-149BP-H |
| 150-20S-4-H | | 15.0-15.9 | 20 | 53.29 | 67.21 | 61.29 | 50 | 118.5 | 1.29 | TPD150BP-H-159BP-H |
| 160-20S-4-H | | 16.0-16.9 | 20 | 56.89 | 71.11 | 65.39 | 50 | 122.5 | 1.39 | TPD160BP-H-169BP-H |
| 170-20S-4-H | | 17.0-17.9 | 20 | 60.48 | 75.02 | 69.48 | 50 | 126.5 | 1.48 | TPD170BP-H-179BP-H |
| 180-20S-4-H | | 18.0-18.9 | 20 | 64.01 | 80.49 | 73.51 | 50 | 132.0 | 1.51 | TPD180BP-H-189BP-H |
| 190-20S-4-H | | 19.0-19.9 | 20 | 67.60 | 86.40 | 77.60 | 50 | 138.0 | 1.60 | TPD190BP-H-199BP-H |
| 200-25S-4-H | | 20.0-20.9 | 25 | 71.17 | 96.33 | 81.67 | 56 | 148.0 | 1.67 | TPD200BP-H-209BP-H |
| 210-25S-4-H | | 21.0-21.9 | 25 | 74.76 | 94.24 | 85.76 | 56 | 152.0 | 1.76 | TPD210BP-H-219BP-H |
| 220-25S-4-H | ● | 22.0-22.9 | 25 | 78.39 | 98.11 | 89.89 | 56 | 156.0 | 1.89 | TPD220BP-H-229BP-H |
| 230-25S-4-H | | 23.0-23.9 | 25 | 81.94 | 102.06 | 93.94 | 56 | 160.0 | 1.94 | TPD230BP-H-239BP-H |
| 240-32S-4-H | ● | 24.0-24.9 | 32 | 85.52 | 108.78 | 98.02 | 60 | 170.8 | 2.02 | TPD240BP-H-249BP-H |
| 250-32S-4-H | | 25.0-25.9 | 32 | 89.10 | 109.90 | 102.10 | 60 | 172.0 | 2.10 | TPD250BP-H-259BP-H |
| 260-32S-4-H | ● | 26.0-26.9 | 32 | 92.73 | 113.77 | 106.23 | 60 | 176.0 | 2.23 | TPD260BP-H-269BP-H |
| 270-32S-4-H | ● | 27.0-27.9 | 32 | 96.28 | 117.72 | 110.28 | 60 | 180.0 | 2.28 | TPD270BP-H-279BP-H |
| 280-32S-4-H | | 28.0-28.9 | 32 | 99.82 | 121.68 | 114.32 | 60 | 184.0 | 2.32 | TPD280BP-H-289BP-H |
| 290-32S-4-H | | 29.0-29.9 | 32 | 103.55 | 125.45 | 118.55 | 60 | 188.0 | 2.55 | TPD290BP-H-299BP-H |
| 300-32S-4-H | | 30.0-30.9 | 32 | 107.11 | 129.39 | 122.61 | 60 | 192.0 | 2.61 | TPD300BP-H-309BP-H |
| 310-32S-4-H | | 31.0-31.9 | 32 | 110.70 | 133.30 | 126.70 | 60 | 196.0 | 2.70 | TPD310BP-H-319BP-H |
| 320-32S-4-H | | 32.0-32.9 | 32 | 114.29 | 137.21 | 130.79 | 60 | 200.0 | 2.79 | TPD320BP-H-329BP-H |

● : Stock item

TPDB-H (5D, 8D)



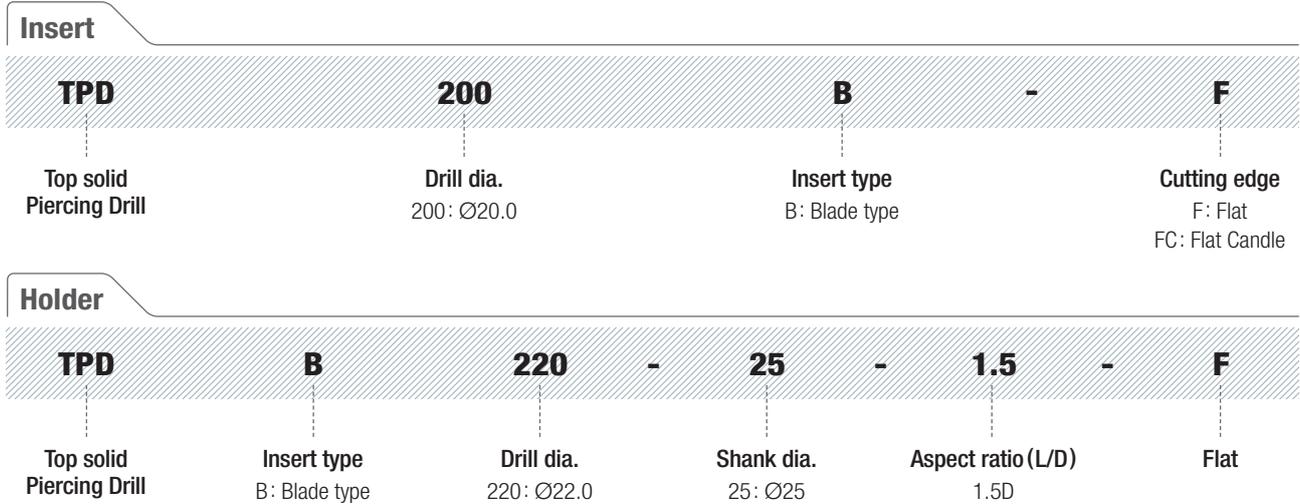
(mm)

| | Designation | Stock | DC | DCON-MS | LU | LF | LB | LS | OAL | PL | Applicable insert |
|----------------|----------------|-----------|-----------|---------|--------|--------|--------|-------|-------|--------------------|--------------------|
| TPDBP | 140-16-345-5-H | ● | 14.0-14.9 | 16 | 35.67 | 83.83 | 71.17 | 48 | 133.0 | 1.17 | TPD140BP-H-149BP-H |
| | 150-20-370-5-H | | 15.0-15.9 | 20 | 38.29 | 90.21 | 76.29 | 50 | 141.5 | 1.29 | TPD150BP-H-159BP-H |
| | 160-20-395-5-H | ● | 16.0-16.9 | 20 | 40.89 | 95.11 | 81.39 | 50 | 146.5 | 1.39 | TPD160BP-H-169BP-H |
| | 170-20-420-5-H | | 17.0-17.9 | 20 | 43.48 | 100.02 | 86.48 | 50 | 151.5 | 1.48 | TPD170BP-H-179BP-H |
| | 180-20-445-5-H | ● | 18.0-18.9 | 20 | 46.01 | 106.49 | 91.51 | 50 | 158.0 | 1.51 | TPD180BP-H-189BP-H |
| | 190-20-470-5-H | | 19.0-19.9 | 20 | 48.60 | 113.40 | 96.60 | 50 | 165.0 | 1.60 | TPD190BP-H-199BP-H |
| | 200-25-495-5-H | ● | 20.0-20.9 | 25 | 51.17 | 123.33 | 101.67 | 56 | 175.0 | 1.67 | TPD200BP-H-209BP-H |
| | 210-25-520-5-H | | 21.0-21.9 | 25 | 53.76 | 122.24 | 106.76 | 56 | 180.0 | 1.76 | TPD210BP-H-219BP-H |
| | 220-25-545-5-H | ● | 22.0-22.9 | 25 | 56.39 | 127.11 | 111.89 | 56 | 185.0 | 1.89 | TPD220BP-H-229BP-H |
| | 230-25-570-5-H | | 23.0-23.9 | 25 | 58.94 | 132.06 | 116.94 | 56 | 190.0 | 1.94 | TPD230BP-H-239BP-H |
| | 240-32-595-5-H | ● | 24.0-24.9 | 32 | 61.52 | 144.78 | 122.02 | 60 | 206.8 | 2.02 | TPD240BP-H-249BP-H |
| | 250-32-620-5-H | | 25.0-25.9 | 32 | 64.10 | 146.90 | 127.10 | 60 | 209.0 | 2.10 | TPD250BP-H-259BP-H |
| | 260-32-645-5-H | ● | 26.0-26.9 | 32 | 66.73 | 151.77 | 132.23 | 60 | 214.0 | 2.23 | TPD260BP-H-269BP-H |
| | 270-32-670-5-H | | 27.0-27.9 | 32 | 69.28 | 156.72 | 137.28 | 60 | 219.0 | 2.28 | TPD270BP-H-279BP-H |
| | 280-32-695-5-H | | 28.0-28.9 | 32 | 71.82 | 161.68 | 142.32 | 60 | 224.0 | 2.32 | TPD280BP-H-289BP-H |
| | 290-32-720-5-H | | 29.0-29.9 | 32 | 74.55 | 166.45 | 147.55 | 60 | 229.0 | 2.55 | TPD290BP-H-299BP-H |
| | 300-32-745-5-H | ● | 30.0-30.9 | 32 | 77.11 | 171.39 | 152.61 | 60 | 234.0 | 2.61 | TPD300BP-H-309BP-H |
| | 310-32-770-5-H | | 31.0-31.9 | 32 | 79.70 | 176.30 | 157.70 | 60 | 239.0 | 2.70 | TPD310BP-H-319BP-H |
| | 320-32-795-5-H | | 32.0-32.9 | 32 | 82.29 | 181.21 | 162.79 | 60 | 244.0 | 2.79 | TPD320BP-H-329BP-H |
| | 140-16-345-8-H | ● | 14.0-14.9 | 16 | 35.67 | 125.83 | 113.17 | 48 | 175.0 | 1.17 | TPD140BP-H-149BP-H |
| | 150-20-370-8-H | | 15.0-15.9 | 20 | 38.29 | 135.21 | 121.29 | 50 | 186.5 | 1.29 | TPD150BP-H-159BP-H |
| | 160-20-395-8-H | ● | 16.0-16.9 | 20 | 40.89 | 143.11 | 129.39 | 50 | 194.5 | 1.39 | TPD160BP-H-169BP-H |
| | 170-20-420-8-H | | 17.0-17.9 | 20 | 43.48 | 151.02 | 137.48 | 50 | 202.5 | 1.48 | TPD170BP-H-179BP-H |
| | 180-20-445-8-H | ● | 18.0-18.9 | 20 | 46.01 | 160.49 | 145.51 | 50 | 212.0 | 1.51 | TPD180BP-H-189BP-H |
| | 190-20-470-8-H | | 19.0-19.9 | 20 | 48.60 | 170.40 | 153.60 | 50 | 222.0 | 1.60 | TPD190BP-H-199BP-H |
| | 200-25-495-8-H | ● | 20.0-20.9 | 25 | 51.17 | 183.33 | 161.67 | 56 | 235.0 | 1.67 | TPD200BP-H-209BP-H |
| | 210-25-520-8-H | | 21.0-21.9 | 25 | 53.76 | 185.24 | 169.76 | 56 | 243.0 | 1.76 | TPD210BP-H-219BP-H |
| | 220-25-545-8-H | ● | 22.0-22.9 | 25 | 56.39 | 193.11 | 177.89 | 56 | 251.0 | 1.89 | TPD220BP-H-229BP-H |
| | 230-25-570-8-H | | 23.0-23.9 | 25 | 58.94 | 201.06 | 185.94 | 56 | 259.0 | 1.94 | TPD230BP-H-239BP-H |
| | 240-32-595-8-H | | 24.0-24.9 | 32 | 61.52 | 216.78 | 194.02 | 60 | 278.8 | 2.02 | TPD240BP-H-249BP-H |
| | 250-32-620-8-H | | 25.0-25.9 | 32 | 64.10 | 221.90 | 202.10 | 60 | 284.0 | 2.10 | TPD250BP-H-259BP-H |
| | 260-32-645-8-H | | 26.0-26.9 | 32 | 66.73 | 229.77 | 210.23 | 60 | 292.0 | 2.23 | TPD260BP-H-269BP-H |
| 270-32-670-8-H | | 27.0-27.9 | 32 | 69.28 | 237.72 | 218.28 | 60 | 300.0 | 2.28 | TPD270BP-H-279BP-H | |
| 280-32-695-8-H | | 28.0-28.9 | 32 | 71.82 | 245.68 | 226.32 | 60 | 308.0 | 2.32 | TPD280BP-H-289BP-H | |
| 290-32-720-8-H | | 29.0-29.9 | 32 | 74.55 | 253.45 | 234.55 | 60 | 316.0 | 2.55 | TPD290BP-H-299BP-H | |
| 300-32-745-8-H | | 30.0-30.9 | 32 | 77.11 | 261.39 | 242.61 | 60 | 324.0 | 2.61 | TPD300BP-H-309BP-H | |
| 310-32-770-8-H | | 31.0-31.9 | 32 | 79.70 | 269.30 | 250.70 | 60 | 332.0 | 2.70 | TPD310BP-H-319BP-H | |
| 320-32-795-8-H | | 32.0-32.9 | 32 | 82.29 | 277.21 | 258.79 | 60 | 340.0 | 2.79 | TPD320BP-H-329BP-H | |

● : Stock item

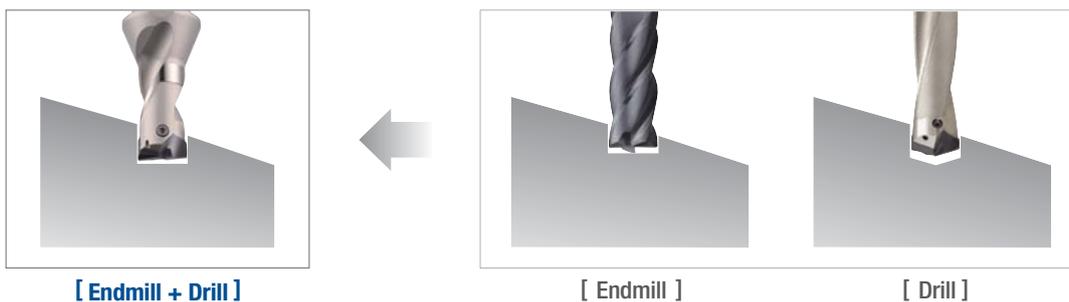
TPDB-F

Code system

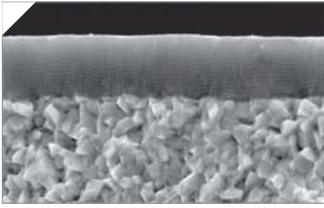


Features

- **High precision clamping system** - High precision clamping due to high precise grinding and auto-centering
- **Screw on clamping system** - Easy to replace insert
- **Cutting edge with 180° point angle** - Flat bottom machining
- **Low cutting load cutting edge** - Low cutting load and excellent chip control
- **High durability holder** - Improved wear resistance and durability with special surface treatment implementation
- **Holder with good chip evacuation** - Good chip evacuation and reduced cutting load with high helix angle



Grade features



PC5400

- PVD coating technology with high lubrication, built up edge resistance and chipping resistance
- Excellent chipping resistance due to high toughness coating with high adhesive strength
- Enhanced fracture resistance and stable machinability due to ultra-fine substrate with high toughness substrate

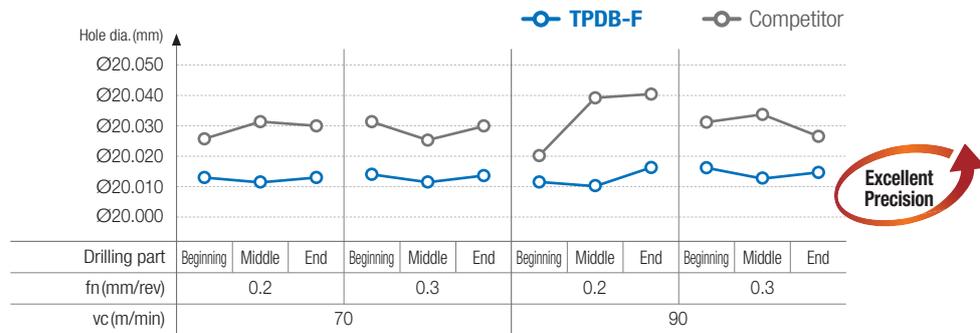
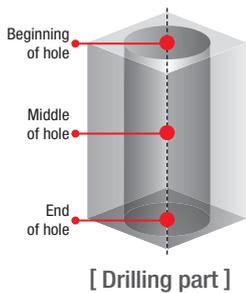
Performance evaluation

Machining precision

Workpiece Alloy steel (42CrMo4, HRC22)

Cutting condition vc (m/min) = 70/90, fn (mm/rev) = 0.2/0.3, ap (mm) = 30, wet (20 bar)

Tool **Insert** TPD200B-F (PC5400) **Holder** TPDB200-25-1.5-F (Drill dia. = \varnothing 20 mm)

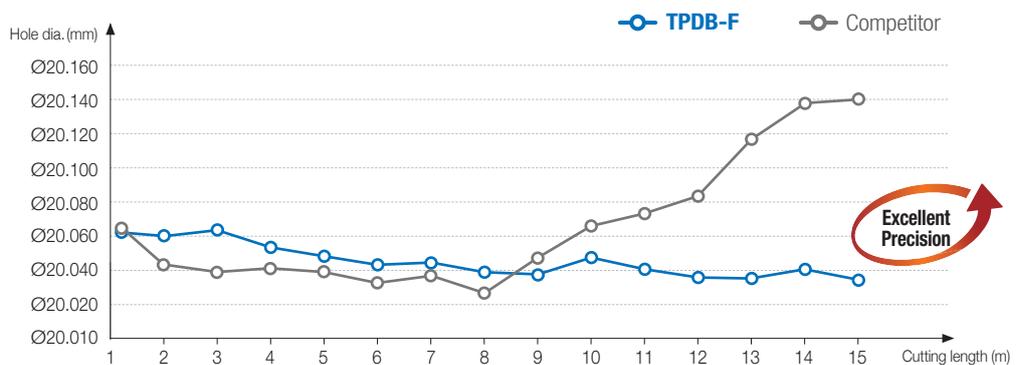


» Cutting edge with low cutting load enhances high precision.

Workpiece Alloy steel (42CrMo4, HRC22), Angled surface 15°

Cutting condition vc (m/min) = 70, fn (mm/rev) = 0.21, ap (mm) = 20, wet (20 bar)

Tool **Insert** TPD200B-F (PC5400) **Holder** TPDB200-25-1.5-F (Drill dia. = \varnothing 20 mm)



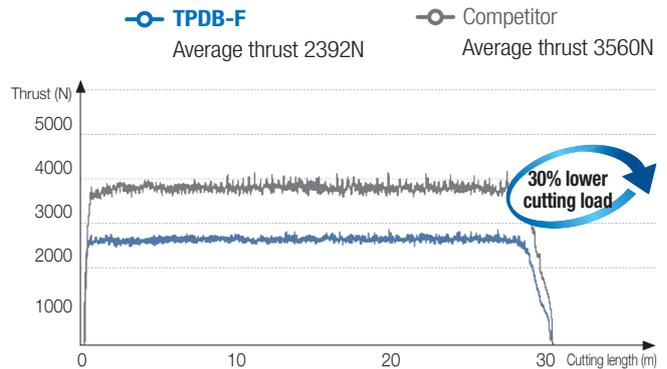
» Cutting edge with low cutting load enhances high precision.

Performance evaluation

Cutting load

| | |
|--------------------------|--|
| Workpiece | Alloy steel (42CrMo4, HRC22) |
| Cutting condition | vc (m/min) = 70, fn (mm/rev) = 0.25, ap (mm) = 30, wet (20 bar) |
| Tool | Insert TPD200B-F (PC5400) Holder TPDB200-25-1.5-F (Drill dia. = Ø20 mm) |

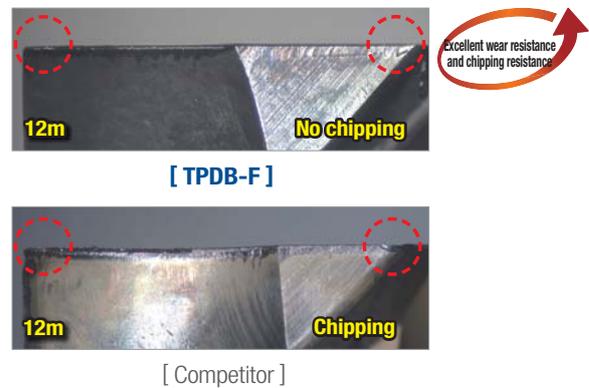
» The sharp point shape reduces cutting load.



Wear resistance

| | |
|--------------------------|--|
| Workpiece | Alloy steel (42CrMo4, HRC22), Angled surface 15° |
| Cutting condition | vc (m/min) = 70, fn (mm/rev) = 0.21, ap (mm) = 20, wet (20 bar) |
| Tool | Insert TPD200B-F (PC5400) Holder TPDB200-25-1.5-F (Drill dia. = Ø20 mm) |

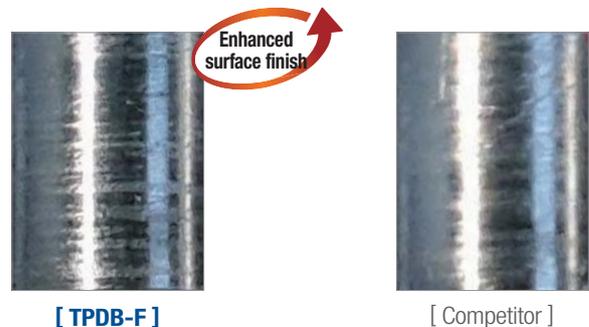
» Enhanced chipping resistance increases tool life due to stable wear on the cutting edge.



Surface finish

| | |
|--------------------------|--|
| Workpiece | Alloy steel (42CrMo4, HRC22), Angled surface 15° |
| Cutting condition | vc (m/min) = 90, fn (mm/rev) = 0.18, ap (mm) = 20, wet (20 bar) |
| Tool | Insert TPD150B-F (PC5400) Holder TPDB150-16-1.5-F (Drill dia. = Ø15 mm) |

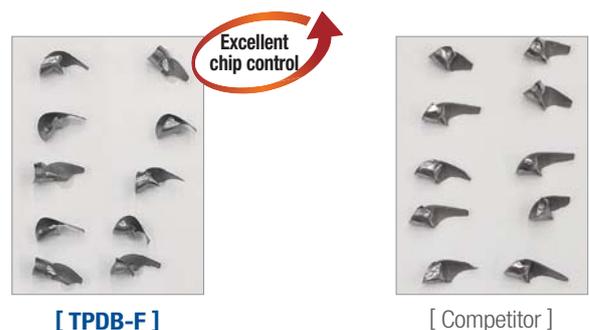
» Low cutting load cutting edge ensures good surface finish.



Chip control

| | |
|--------------------------|--|
| Workpiece | Carbon steel (C45, HRC18) |
| Cutting condition | vc (m/min) = 90, fn (mm/rev) = 0.25, ap (mm) = 30, wet (20 bar) |
| Tool | Insert TPD200B-F (PC5400) Holder TPDB200-25-1.5-F (Drill dia. = Ø20 mm) |

» Stable chip curling controls chip shape.



Recommended cutting conditions

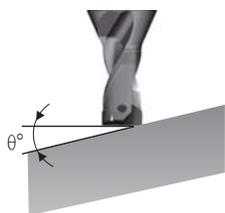
| ISO | Workpiece | | | | Specific cutting force (N/mm ²) | Brinell hardness (HB) | Grade | vc (m/min) | Aspect ratio (L/D) = 1.5D | |
|-----|--------------------|-----------------------|----------------|-------------|---|-----------------------|--------|------------|---------------------------|-------------|
| | Workpiece material | KS | ISO | fn (mm/rev) | | | | | | |
| | | | | Ø14 ~ Ø21.9 | | | | | Ø22 ~ Ø30.9 | |
| P | Carbon steel | C = 0.10 ~ 0.25% | SM15C SM25C | C15 C25 | 1500 | 90 ~ 200 | PC5400 | 60 ~ 100 | 0.3 ~ 0.2 | 0.32 ~ 0.22 |
| | | C = 0.25 ~ 0.55% | SM35C SM45C | C35 C45 | 1600 | 125 ~ 225 | PC5400 | 60 ~ 100 | 0.3 ~ 0.2 | 0.32 ~ 0.22 |
| | | C = 0.55 ~ 0.80% | SM58C | C60 | 1700 | 150 ~ 250 | PC5400 | 50 ~ 90 | 0.3 ~ 0.2 | 0.32 ~ 0.22 |
| | Alloy steel ≤ 5% | Non-hardened | SCM440 | 42CrMo4 | 1700 | 180 | PC5400 | 50 ~ 90 | 0.3 ~ 0.2 | 0.32 ~ 0.22 |
| | | Hardened and Tempered | SCM445 | - | 2050 | 350 | PC5400 | 40 ~ 80 | 0.2 ~ 0.2 | 0.32 ~ 0.22 |
| | Alloy steel > 5% | Annealed | STD11 | - | 1950 | 200 | PC5400 | 40 ~ 80 | 0.28 ~ 0.18 | 0.3 ~ 0.2 |
| | | Hardened tool steel | STD61 | X40CrMoV5-1 | 3000 | 352 | PC5400 | 30 ~ 70 | 0.28 ~ 0.18 | 0.3 ~ 0.2 |

| Type | Flat surface Drilling | Angled surface Drilling | Curved surface Drilling | Plunging | Boring |
|------|-----------------------|-------------------------|-------------------------|----------|--------|
| Pic. | | | | | |
| 1.5D | ○ | ○ | ○ | ○ | ○ |

※ Please refer to the precaution in Drilling in case of angled surface, curved surface Drilling, plunging and boring.

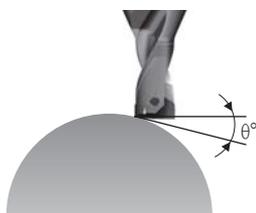
Precaution in Drilling

Angled surface Drilling



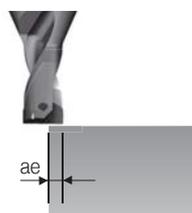
- Reduce the feed (fn) to 30% than general cutting conditions at the beginning and the end of angled surface. (In case, θ is over 30°, reduce it to 50%.)

Curved surface Drilling



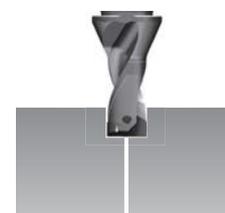
- Reduce the feed (fn) to 30% than general cutting conditions at the beginning of curved surface. (In case, θ is over 30°, reduce it to 50%.)

Plunging



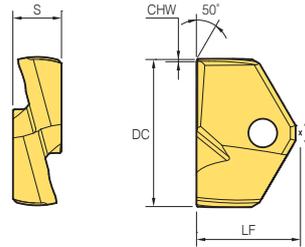
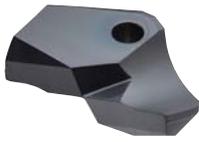
- Reduce the depth of cut (ae) to shorter than 1/2 of Drill diameter.
- In case, the depth of cut is longer than Drill diameter, plunge with divided depth of cut.

Boring



- Reduce the feed (fn) to 30% than general cutting conditions at the beginning of boring.
- Start with 2 mm stepping before boring to prevent long chip.

Insert



(mm)

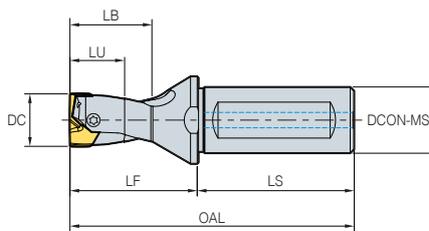
| Designation | Coated | DC | S | LF | CHW | |
|-------------|--------|------|------|-------|-------|------|
| | PC5400 | | | | | |
| TPD | 140B-F | | 14.0 | 4.0 | 9.04 | 0.06 |
| | 145B-F | | 14.5 | 4.0 | 9.04 | 0.06 |
| | 150B-F | | 15.0 | 4.0 | 9.54 | 0.06 |
| | 155B-F | | 15.5 | 4.0 | 9.54 | 0.06 |
| | 160B-F | | 16.0 | 5.5 | 10.54 | 0.06 |
| | 165B-F | | 16.5 | 5.5 | 10.54 | 0.06 |
| | 170B-F | | 17.0 | 5.5 | 11.04 | 0.06 |
| | 175B-F | | 17.5 | 5.5 | 11.04 | 0.06 |
| | 180B-F | | 18.0 | 6.0 | 12.18 | 0.06 |
| | 185B-F | | 18.5 | 6.0 | 12.18 | 0.06 |
| | 190B-F | | 19.0 | 6.0 | 12.77 | 0.06 |
| | 195B-F | | 19.5 | 6.0 | 12.77 | 0.06 |
| | 200B-F | | 20.0 | 6.5 | 13.18 | 0.08 |
| | 205B-F | | 20.5 | 6.5 | 13.18 | 0.08 |
| | 210B-F | | 21.0 | 6.5 | 13.68 | 0.08 |
| | 215B-F | | 21.5 | 6.5 | 13.68 | 0.08 |
| | 220B-F | ● | 22.0 | 7.0 | 14.18 | 0.08 |
| | 225B-F | | 22.5 | 7.0 | 14.18 | 0.08 |
| | 230B-F | | 23.0 | 7.0 | 14.68 | 0.08 |
| | 235B-F | | 23.5 | 7.0 | 14.68 | 0.08 |
| | 240B-F | | 24.0 | 7.5 | 15.33 | 0.08 |
| | 245B-F | | 24.5 | 7.5 | 15.33 | 0.08 |
| | 250B-F | | 25.0 | 7.5 | 15.83 | 0.08 |
| | 255B-F | | 25.5 | 7.5 | 15.83 | 0.08 |
| | 260B-F | | 26.0 | 8.5 | 16.33 | 0.08 |
| | 265B-F | ● | 26.5 | 8.5 | 16.33 | 0.08 |
| | 270B-F | | 27.0 | 8.5 | 17.33 | 0.08 |
| | 275B-F | | 27.5 | 8.5 | 17.33 | 0.08 |
| | 280B-F | | 28.0 | 9.5 | 18.33 | 0.08 |
| | 285B-F | | 28.5 | 9.5 | 18.33 | 0.08 |
| 290B-F | | 29.0 | 9.5 | 18.97 | 0.08 | |
| 295B-F | | 29.5 | 9.5 | 18.97 | 0.08 | |
| 300B-F | | 30.0 | 10.0 | 19.47 | 0.08 | |
| 305B-F | | 30.5 | 10.0 | 19.47 | 0.08 | |

※ TPD Inserts not list above within the range of Ø14.00 ~ Ø30.99 can be made to order ● : Stock item

Parts

| Designation | Drill dia. DC (mm) | Screw | Wrench | Torque (N·m) | |
|-------------|-----------------------|-------------|-------------|-----------------|-----|
| TPD | 140B-F ~ 149B-F | 14.0 ~ 14.9 | FTNB02512-P | TW07S | 0.8 |
| | 150B-F ~ 179B-F | 15.0 ~ 17.9 | FTNB02514-P | TW07S | 0.8 |
| | 180B-F ~ 199B-F | 18.0 ~ 19.9 | FTNB0316-P | TW09S | 1.2 |
| | 200B-F ~ 239B-F | 20.0 ~ 23.9 | FTNB0319 | TW09S | 1.2 |
| | 240B-F ~ 259B-F | 24.0 ~ 25.9 | FTNB03522 | TW15S | 3.0 |
| | 260B-F ~ 279B-F | 26.0 ~ 27.9 | FTNB03524 | TW15S | 3.0 |
| | 280B-F ~ 299B-F | 28.0 ~ 29.9 | FTNB0426 | TW15S | 3.0 |
| | 300B-F ~ 309B-F | 30.0 ~ 30.9 | FTNB0528 | TW20-100 | 4.0 |

TPDB-F (1.5D)



(mm)

| | Designation | Stock | DC | DCON-MS | LU | LF | LB | LS | OAL | Applicable insert |
|--------------|--------------|-----------|-----------|---------|-------|------|------|-------|--------------------|--------------------|
| TPDB | 140-16-1.5-F | | 14.0-14.4 | 16 | 21.00 | 38.0 | 28.0 | 48 | 86.0 | TPD140B-F ~ 144B-F |
| | 145-16-1.5-F | | 14.5-14.9 | 16 | 21.75 | 39.0 | 29.0 | 48 | 87.0 | TPD145B-F ~ 149B-F |
| | 150-20-1.5-F | | 15.0-15.4 | 20 | 22.50 | 43.0 | 30.0 | 50 | 93.0 | TPD150B-F ~ 154B-F |
| | 155-20-1.5-F | | 15.5-15.9 | 20 | 23.25 | 44.0 | 31.0 | 50 | 94.0 | TPD155B-F ~ 159B-F |
| | 160-20-1.5-F | | 16.0-16.4 | 20 | 24.00 | 45.0 | 32.0 | 50 | 95.0 | TPD160B-F ~ 164B-F |
| | 165-20-1.5-F | | 16.5-16.9 | 20 | 24.75 | 46.0 | 33.0 | 50 | 96.0 | TPD165B-F ~ 169B-F |
| | 170-20-1.5-F | | 17.0-17.4 | 20 | 25.50 | 47.0 | 34.0 | 50 | 97.0 | TPD170B-F ~ 174B-F |
| | 175-20-1.5-F | | 17.5-17.9 | 20 | 26.25 | 48.0 | 35.0 | 50 | 98.0 | TPD175B-F ~ 179B-F |
| | 180-20-1.5-F | | 18.0-18.4 | 20 | 27.00 | 49.0 | 36.0 | 50 | 99.0 | TPD180B-F ~ 184B-F |
| | 185-20-1.5-F | | 18.5-18.9 | 20 | 27.75 | 50.0 | 37.0 | 50 | 100.0 | TPD185B-F ~ 189B-F |
| | 190-25-1.5-F | | 19.0-19.4 | 25 | 28.50 | 45.0 | 38.0 | 56 | 101.0 | TPD190B-F ~ 194B-F |
| | 195-25-1.5-F | | 19.5-19.9 | 25 | 29.25 | 46.0 | 39.0 | 56 | 102.0 | TPD195B-F ~ 199B-F |
| | 200-25-1.5-F | | 20.0-20.4 | 25 | 30.00 | 60.0 | 40.0 | 56 | 116.0 | TPD200B-F ~ 204B-F |
| | 205-25-1.5-F | | 20.5-20.9 | 25 | 30.75 | 61.0 | 41.0 | 56 | 117.0 | TPD205B-F ~ 209B-F |
| | 210-25-1.5-F | | 21.0-21.4 | 25 | 31.50 | 62.0 | 42.0 | 56 | 118.0 | TPD210B-F ~ 214B-F |
| | 215-25-1.5-F | | 21.5-21.9 | 25 | 32.25 | 63.0 | 43.0 | 56 | 119.0 | TPD215B-F ~ 219B-F |
| | 220-25-1.5-F | | 22.0-22.4 | 25 | 33.00 | 64.0 | 44.0 | 56 | 120.0 | TPD220B-F ~ 224B-F |
| | 225-25-1.5-F | | 22.5-22.9 | 25 | 33.75 | 65.0 | 45.0 | 56 | 121.0 | TPD225B-F ~ 229B-F |
| | 230-25-1.5-F | | 23.0-23.4 | 25 | 34.50 | 66.0 | 46.0 | 56 | 122.0 | TPD230B-F ~ 234B-F |
| | 235-25-1.5-F | | 23.5-23.9 | 25 | 35.25 | 67.0 | 47.0 | 56 | 123.0 | TPD235B-F ~ 239B-F |
| | 240-32-1.5-F | | 24.0-24.4 | 32 | 36.00 | 68.5 | 48.0 | 60 | 128.5 | TPD240B-F ~ 244B-F |
| | 245-32-1.5-F | | 24.5-24.9 | 32 | 36.75 | 69.5 | 49.0 | 60 | 129.5 | TPD245B-F ~ 249B-F |
| | 250-32-1.5-F | | 25.0-25.4 | 32 | 37.50 | 70.5 | 50.0 | 60 | 130.5 | TPD250B-F ~ 254B-F |
| | 255-32-1.5-F | | 25.5-25.9 | 32 | 38.25 | 71.5 | 51.0 | 60 | 131.5 | TPD255B-F ~ 259B-F |
| | 260-32-1.5-F | | 26.0-26.4 | 32 | 39.00 | 72.5 | 52.0 | 60 | 132.5 | TPD260B-F ~ 264B-F |
| | 265-32-1.5-F | | 26.5-26.9 | 32 | 39.75 | 73.5 | 53.0 | 60 | 133.5 | TPD265B-F ~ 269B-F |
| | 270-32-1.5-F | | 27.0-27.4 | 32 | 40.50 | 74.5 | 54.0 | 60 | 134.5 | TPD270B-F ~ 274B-F |
| | 275-32-1.5-F | | 27.5-27.9 | 32 | 41.25 | 75.5 | 55.0 | 60 | 135.5 | TPD275B-F ~ 279B-F |
| | 280-32-1.5-F | | 28.0-28.4 | 32 | 42.00 | 76.5 | 56.0 | 60 | 136.5 | TPD280B-F ~ 284B-F |
| | 285-32-1.5-F | | 28.5-28.9 | 32 | 42.75 | 77.5 | 57.0 | 60 | 137.5 | TPD285B-F ~ 289B-F |
| | 290-32-1.5-F | | 29.0-29.4 | 32 | 43.50 | 78.5 | 58.0 | 60 | 138.5 | TPD290B-F ~ 294B-F |
| | 295-32-1.5-F | | 29.5-29.9 | 32 | 44.25 | 79.5 | 59.0 | 60 | 139.5 | TPD295B-F ~ 299B-F |
| 300-32-1.5-F | | 30.0-30.4 | 32 | 45.00 | 80.5 | 60.0 | 60 | 140.5 | TPD300B-F ~ 304B-F | |
| 305-32-1.5-F | | 30.5-30.9 | 32 | 45.75 | 81.5 | 61.0 | 60 | 141.5 | TPD305B-F ~ 309B-F | |

● : Stock item

⚠ For the safe metalcutting

- Use safety supplies such as protective gloves to prevent possible injury while touching the edge of tools.
- Use safety glasses or safety cover to hedge possible dangers. Inappropriate usage or excessive cutting condition may lead tool's breakage or even the fragment's scattering.
- Clamp the workpiece tightly enough to prevent its movement while its machining.
- Properly manage the tool change phase because the inordinately used tool can be easily broken under the excessive cutting load or severe wear, and it may threat the operator's safety.
- Use safety cover because chips evacuated during cutting are hot and sharp and may cause burns and cuts. To remove chips safely, stop machining, put on protective gloves, and use a hook or other tools.
- Prepare for fire prevention measures as the use of the non-water soluble cutting oil may cause fire.
- Use safety cover and other safety supplies because the spare parts or the inserts can be pulled out due to centrifugal force while high speed machining.



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