

High quality and high feed top solid indexable drill

TPDC Plus

(TPDC-XP, CP, CM, CN / CP-FC)

KORLOY
TECH-NEWS



- The optimal tool shape for drilling realizing high precision and high feed machining as of carbide solid drill performance level.
- Usable for various machining through enlarged line-up by workpieces, depth of cuts and workpiece shapes.

High quality and high feed top solid indexable drill

TPDC Plus

To obtain better work efficiency, excellent machining performance and reduced cutting time are always in need for various industries. Thus, the demands for efficient cutting tools are steadily increasing.

KORLOY newly launched high quality and efficient indexable drill, **TPDC Plus Drill** in accordance with the market's needs.

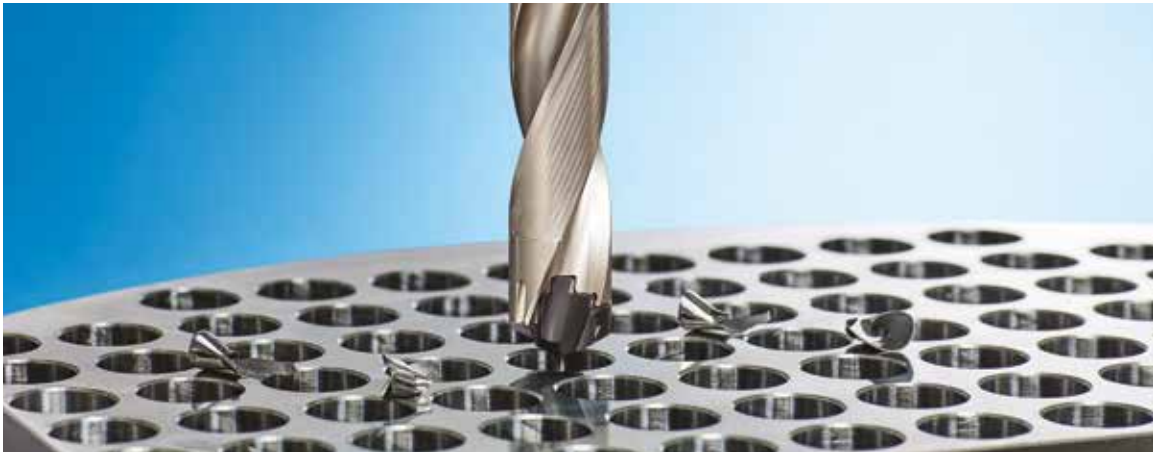
TPDC Plus Drill realizes high speed and high feed machining due to solid and stable clamping with exclusive One step clamp structure. In addition, replacing an insert without taking the holder out of the machine reduces tool setting time and enhances convenience and productivity.

The **TPDC** insert with exclusive grade applying ultra-fine substrate, lubricated coating and different cutting edge

per workpiece material with special after treatment ensure stable machining in various kinds of workpiece.

Besides, newly added **TPDC-FC** (flat type) insert applied 145° point angle and exclusive low cutting resistance cutting edge for stable machining, high precision and good surface finish increases productivity due to low cost and short cycle time.

Various types of insert could be clamped to a **TPDC** holder. Not just for the standard depth of cut such as 3D, 5D, and 8D, the TPDC holders expanded its line-up of 1.5D, 10D, and 12D so it could be applied to various depths of hole-making.



High precision and high convenient clamping

- Applies one step clamp system

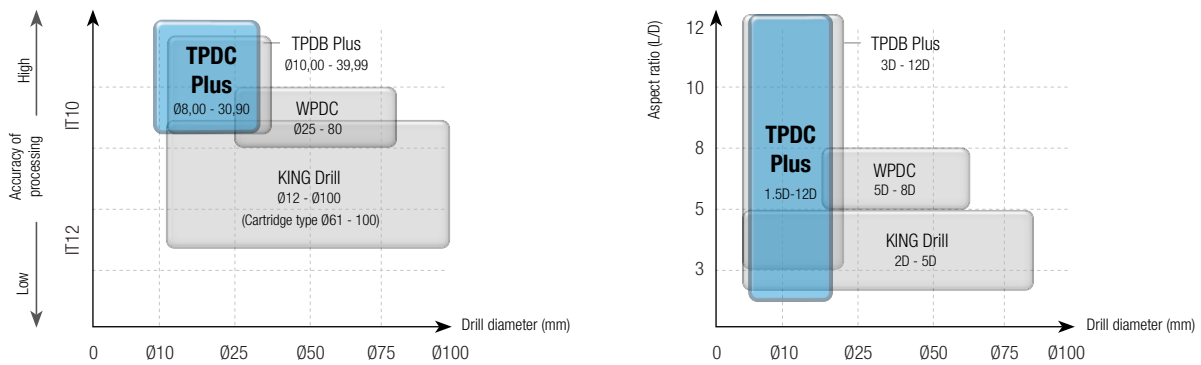
Improved machinability

- Reduced cutting load due to high helix angle

Available in various cutting conditions

- Exclusive edge design per workpieces (P, M, K, N)
- Various aspect ratio (1.5D, 3D, 5D, 8D, 10D, 12D)
- (For TPDC-FC) Simplified machining process combining 2 in 1

Application range



| Tool | Anwendungsbereich | | | | | |
|-----------|--------------------|----------------------|-------------------------|-------------------|---------------------|------------|
| | Drill diameter (Ø) | Aspect ratio (L/D) | Tolerance of drill dia. | Tolerance of hole | Surface finish (Ra) | Workpiece |
| TPDC Plus | 8,00 - 30,90 mm | 1,5, 3, 5, 8, 10, 12 | h7 | IT10 | ≤ 3,0 µm | P, M, K, N |

Applicable industries

| Power generation | Shipbuilding | Railway and construction | Aircraft | Automobile |
|------------------|--------------|--------------------------|----------|------------|
| | | | | |

Code system











Holder

| | | | | | |
|--------------------------|--------------------------------|-----------------------------------------------------|------------------------------------|--------------------------|-------------------|
| TPD | C | 5D | 150 | 20 | 75 |
| Top solid Piercing Drill | Insert type X, C: Cone type | Aspect ratio (L/D) 1,5D, 3D, 5D, 8D, 10D, 12D | Drill dia. 150: Ø15,00 - Ø15,90 | Shank dia. 20: Ø20 mm | Flute length (mm) |

Insert

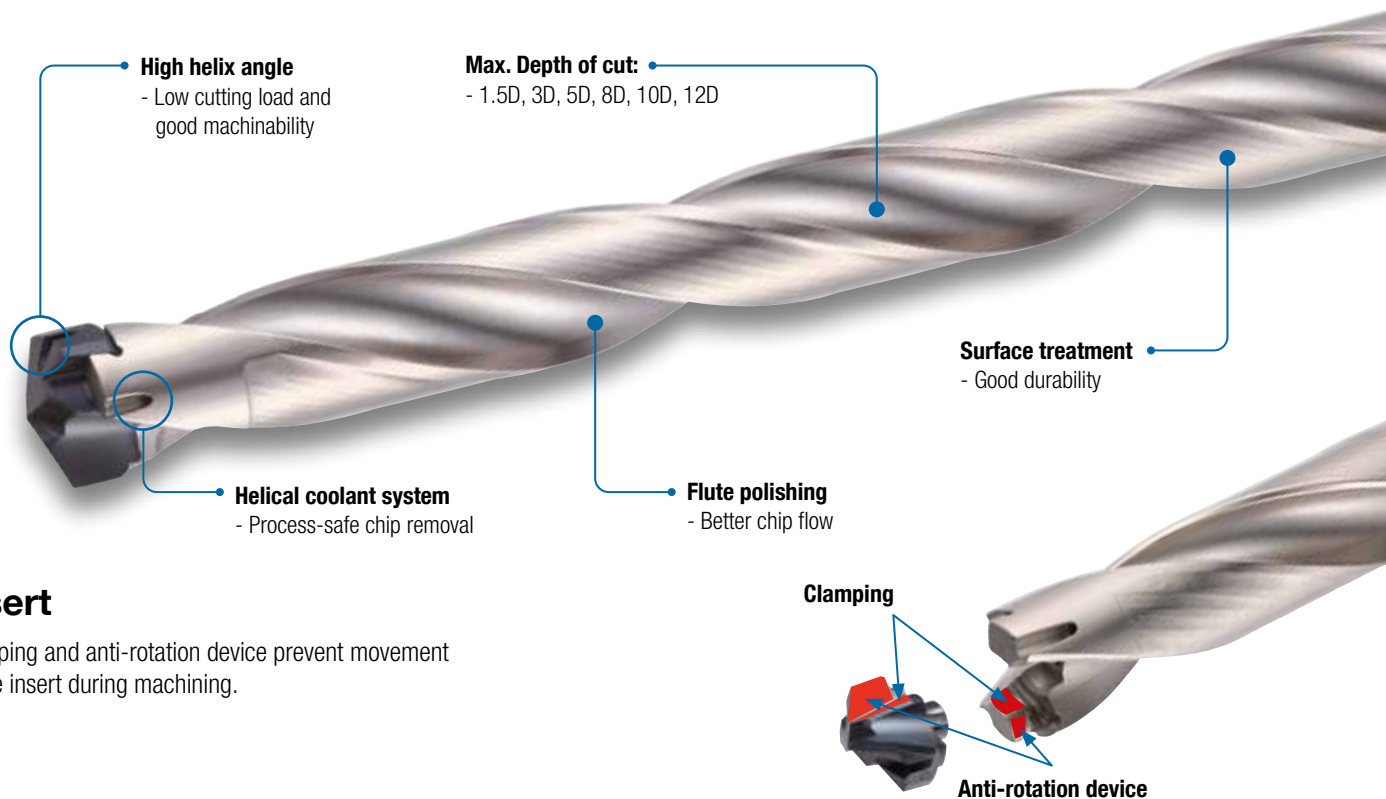
| | | | | |
|--------------------------|-------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|
| TPD | 1500 | C | P | |
| Top solid Piercing Drill | Drill dia. 1500: Ø15,00 mm | Insert type X, C: Cone type | Cutting range P: Steel and general M: Stainless steel K: Cast iron N: Non-ferrous metal | Cutting edge No code: Standard F: Flat FC: Flat Candle |

Insert features

| Form | | Workpiece | Drill Ø (mm) | Features |
|-----------------------------------------------------------------------------------|----------------------|-----------------------------------------------------------------------------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | XP ^{new} |  | Ø8.00 - Ø11.99 | <ul style="list-style-type: none"> • High durability due to the strong clamping system • Excellent quality of machining and stable machining from high clamping force • Enhanced performance by high lubricated grade |
|  | CP |  | Ø12.00 - Ø30.99 | <ul style="list-style-type: none"> • High quality machining due to excellent centering: Good roundness and surface finish • Excellent chip control from exclusive edge design: Stable machining by good chip forming and chip evacuation |
|  | CM ^{new} |  | Ø12.00 - Ø30.99 | <ul style="list-style-type: none"> • Ensuring strength of point and cutting edge: Stable machinability • Increased stability of machining due to low cutting load • Applied grade with high built up edge resistance and chipping resistance |
|  | CN ^{new} |  | Ø12.00 - Ø30.99 | <ul style="list-style-type: none"> • Cutting edge with low cutting load: Excellent chip evacuation from increased surface finish of insert by special after treatment • Long tool life due to ultra-fine substrate application |
|  | CP-FC ^{new} |  | Ø12.00 - Ø30.99 | <ul style="list-style-type: none"> • Cutting edge shape with excellent centering: Stable machinability from low cutting load • Available in various machining applications: Flat surface, angled surface, curved surface drilling, plunging and boring • Reduced cycle time by simplified tools: Endmill+drill machining → TPDC-CP-FC Insert |

Holder features

- **One step clamp system - Increased stability and shortened setting time**
- **High helix angle and flute polishing - Reduced cutting load and enhanced chip evacuation**
- **Various applications from enlarged line-up by depth of cuts and shapes of workpiece**



Insert

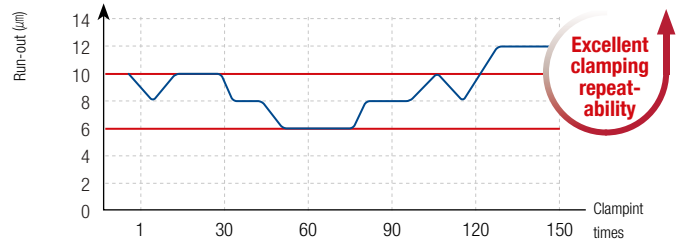
Clamping and anti-rotation device prevent movement of the insert during machining.

Run-out

Durability evaluation

Workpiece Alloy steel (42CrMo4, Hrc22)
Cutting-conditions $V_c = 90 \text{ m/min} \cdot f_n = 0,25 \text{ mm/rev}$,
 $a_p = 60 \text{ mm} \cdot \text{wet (10 bar)}$
Tool Insert TPD1500CP (PC5335)
 Holder TPDC5D-15020-75
 (\varnothing Drill dia. = 15 mm)

Clamping repeatability evaluation

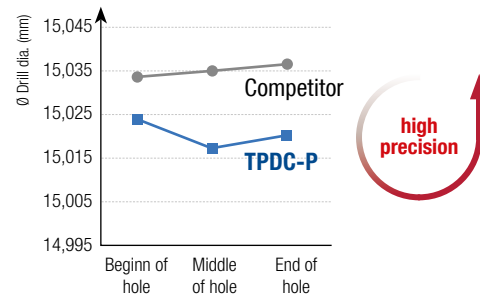
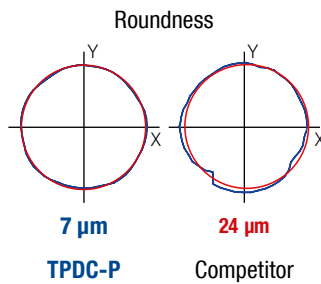


► Long tool life with the setting run-out, lower than 15 µm after using 40 inserts

► Excellent clamping system keeping the run-out, lower than 6 µm after clamping 150 times repeatedly

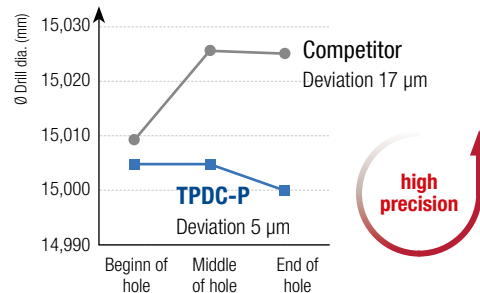
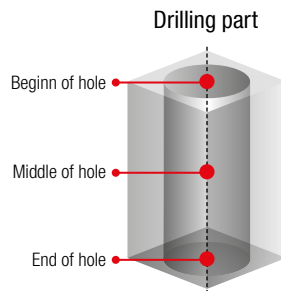
Precision Roundness

Workpiece Alloy steel (42CrMo4, HRC22)
Cutting-conditions $V_c = 100 \text{ m/min}$
 $f_n = 0,20 \text{ mm/rev}$
 $a_p = 60 \text{ mm} \cdot \text{wet (10 bar)}$
Tools Insert TPD1500CP (PC5335)
 Holder TPDC5D-15025-75
 (\varnothing Drill dia. = 15 mm)



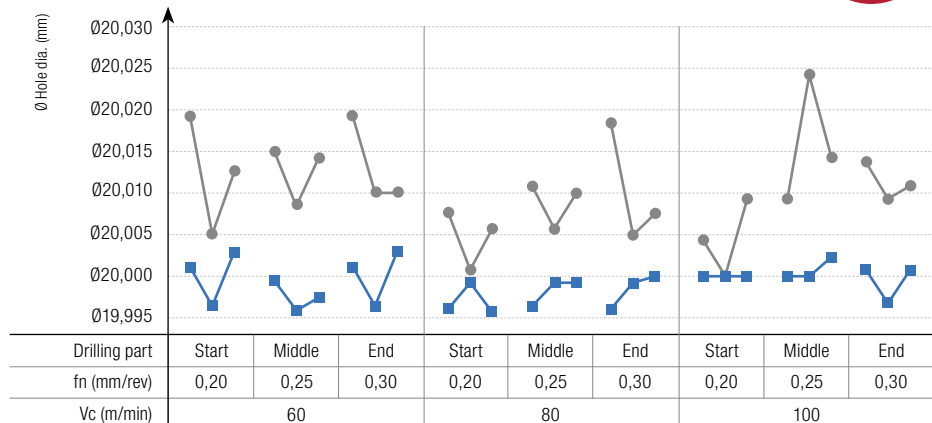
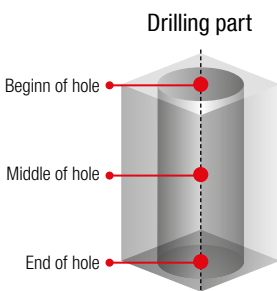
► Stable cutting load due to multi-cutting edge and good chip control

Workpiece Carbon steel (C45, HRC19)
Cutting-conditions $V_c = 60 \text{ m/min}$
 $f_n = 0,20 \text{ mm/rev}$
 $a_p = 150 \text{ mm} \cdot \text{wet (20 bar)}$
Tools Insert TPD1500CP (PC5335)
 Holder TPDC12D-15020-170
 (\varnothing Drill dia. = 15 mm)



► High precision in deep hole-making

Workpiece Carbon steel (C45, HRC19)
Cutting conditions $V_c = 60 - 100 \text{ m/min} \cdot f_n = 0,20 - 0,30 \text{ mm/rev} \cdot a_p = 50 \text{ mm} \cdot \text{wet (20 bar)}$

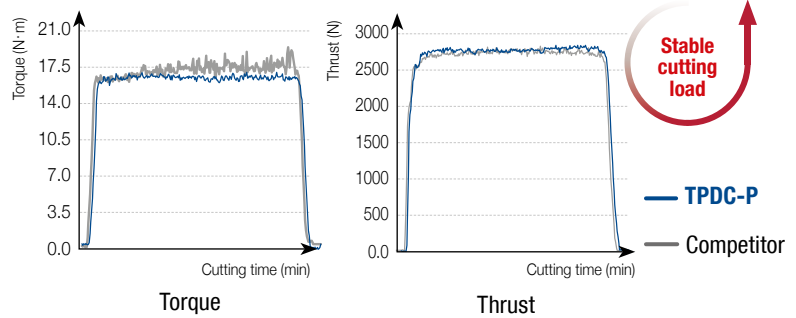


► High precision and excellent centering due to profiled cutting edge

Performance evaluation

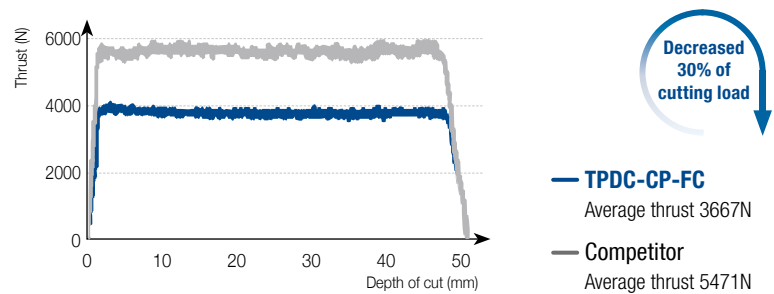
Cutting load

Workpiece Carbon steel (C45, HRC18)
Cutting-conditions $V_c = 90$ m/min
 $f_n = 0,25$ mm/rev
 $a_p = 60$ mm · wet (10 bar)
Tools Insert TPD1500CP (PC5335)
 Holder TPDC5D-15025-75
 (Ø Drill dia. = 15 mm)



► Stable cutting load due to multi-cutting edge and good chip control

Workpiece Carbon steel (C45, HRC18)
Cutting-conditions $V_c = 100$ m/min
 $f_n = 0,25$ mm/rev
 $a_p = 50$ mm · wet (10 bar)
Tools Insert TPD2000CP-FC (PC5335)
 Holder TPDC3D-20025-60
 (Ø Drill dia. = 20 mm)

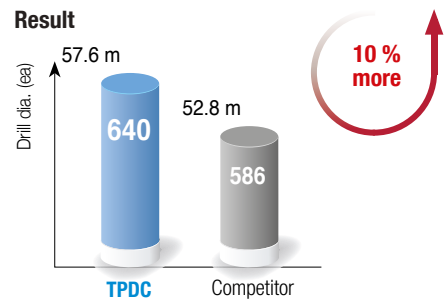
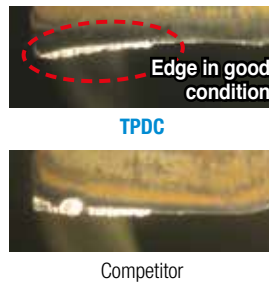


► Low and stable cutting load due to profiled-cutting edge

Cutting performance

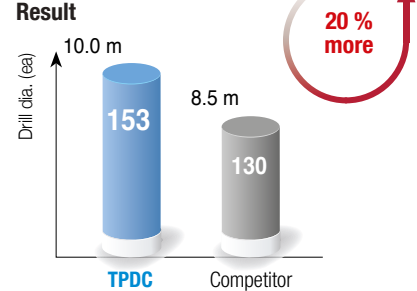
Wear resistance

Part Machine part
Workpiece Alloy steel (42CrMo4, HRC22)
Cutting-conditions Drill dia. = 19,0 mm
 $v_c = 100$ m/min
 $f_n = 0,3$ mm/rev
 $a_p = 90$ mm, wet
Tools Insert = TPD1900CP (PC5335)
 Holder = TPDC5D-19025-95



► Multilayer coating with good anti-friction properties prevents peeling at the cutting edges

Part Machine part
Workpiece Alloy steel (C45, Hrc40)
Cutting-conditions Drill dia. = 17.0 mm
 $v_c = 110$ m/min
 $f_n = 0,25$ mm/rev
 $a_p = 80$ mm, wet
Tools Insert = TPD1700CP (PC5335)
 Holder = TPDC5D-17020-85

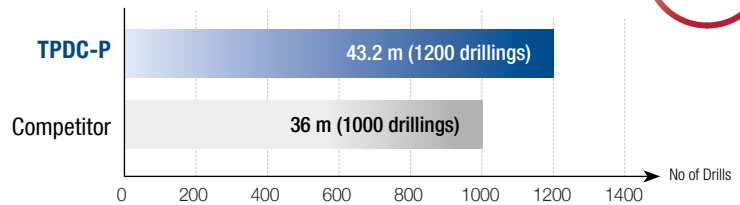


► Multilayer coating with improved wear resistance

Application examples

Carbon steel (20Mn5, HRC18)

Part Plate
Cutting conditions $V_c = 85 \text{ m/min} \cdot n = 1381 \text{ (U/min)} \cdot f_n = 0,27 \text{ mm/rev} \cdot a_p = 12 \text{ mm} \times 3 \text{ passes, wet}$
Tools Insert TPD1960CP (PC330P), Holder TPDC3D-19025-57

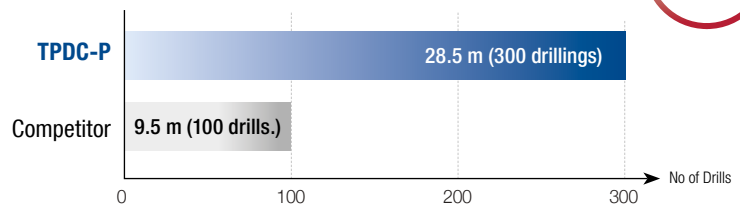


20% more

► The optimised cutting edge geometry increases wear resistance and reduces the cutting load.

Alloy steel (42CrMo4, HRC22)

Part Flange
Cutting conditions $V_c = 82 \text{ m/min} \cdot n = 2000 \text{ (U/min)} \cdot f_n = 0,20 \cdot a_p = 12 \text{ mm} \cdot \text{wet}$
Tools Insert TPD1300CP (PC5335), Holder TPDC8D-13016-104



300% more

► The coating increases the chipping resistance

Chip control

Chip control

Workpiece Welding structural steel (S355, HRC20)
Cutting-conditions $V_c = 90 \text{ m/min}$
 $f_n = 0,25 \text{ mm/rev}$
 $a_p = 90 \text{ mm} \cdot \text{wet (10 bar)}$
Tools Insert TPD1900CP (PC5335)
 Holder TPDC5D-19025-95
 (Ø Drill dia. = 19 mm)



TPDC-P

Welding structural steel



Competitor

► Regular chip shape and stable chip evacuation

Workpiece Carbon steel (C45, HRC18)
Cutting-conditions $V_c = 100 \text{ m/min}$
 $f_n = 0,25 \text{ mm/rev}$
 $a_p = 50 \text{ mm} \cdot \text{wet (20 bar)}$
Tools Insert TPD2000CP-FC (PC5335)
 Holder TPDC3D-20025-60
 (Ø Drill dia. = 20 mm)



TPDC-FC

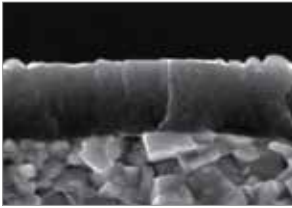
Regular chip shape



Competitor

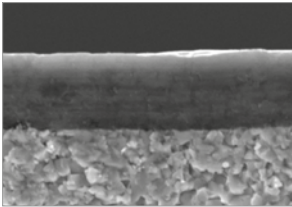
► Regular chip shape and stable chip evacuation

Grade Features



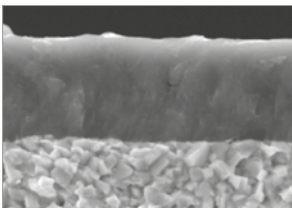
PC5335

- PVD coating technology with high toughness and excellent lubrication
- Coating with high adherence
- General grade for various kinds of workpiece machining



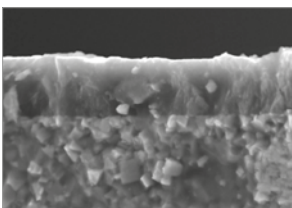
PC330P

- Improved wear resistance, built up edge resistance and heat resistance due to multi-coating layer with high hardness and lubrication
- Improved resistance against chipping and breakage due to alternating laminated structure which minimizes vertical crack
- Grade for carbon steel machining



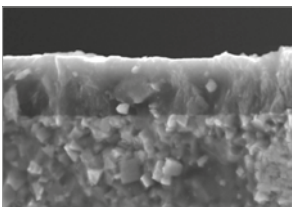
PC5300

- PVD coating layer with high hardness and stability at high temperature
- Stable hole-making from high strength of cutting edge and chipping resistance
- Grade for alloy steel and cast iron machining



PC330N ^{new}

- PVD coating technology with hard and smooth surface
- Coating layer with stability of thermal shock and adherence
- Grade for stainless steel machining



PC325U ^{new}

- Enhanced lubrication of surface and reduced cutting load
- Long tool life from higher welding resistance
- Optimal grade for general workpiece cutting such as carbon steel

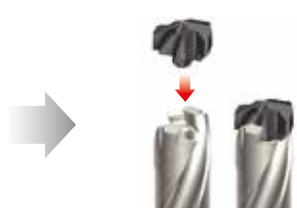
How to clamp insert (existing wrench)

Using the existing wrench

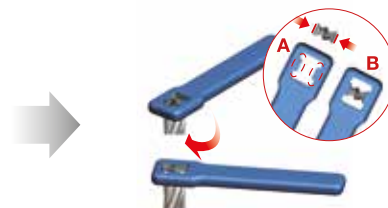
Using any inserts (Use both existing inserts and improved inserts) Use only the improved wrench later.



❶ Clean the mounting seat.



❷ Put an insert on the holder.



❸ A part of wrench and B part of insert must be parallel to each other before clamp the insert. Turn the wrench clockwise to finish clamping.

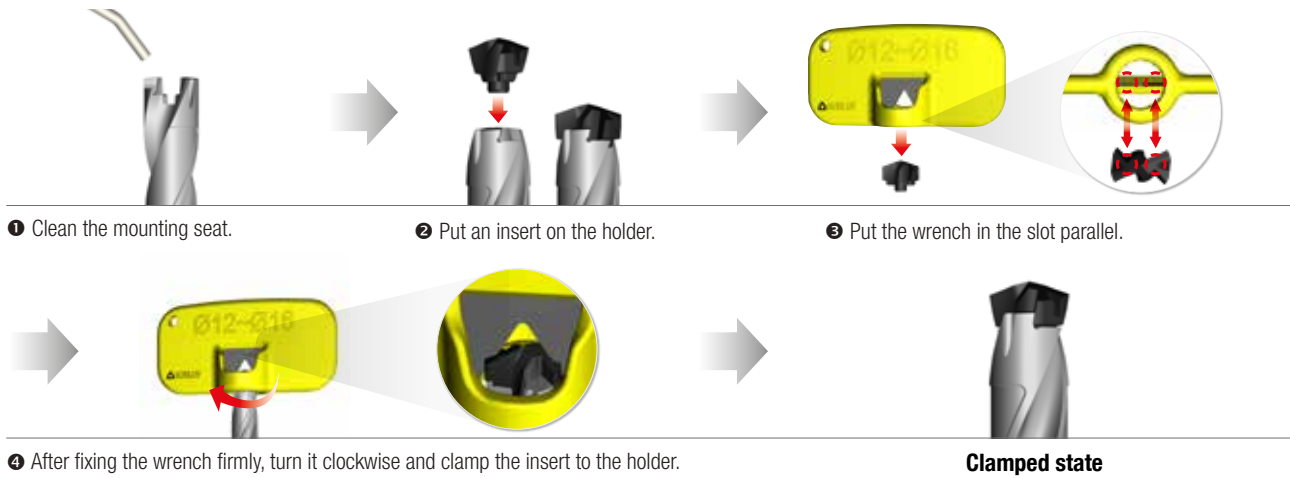


Clamped state

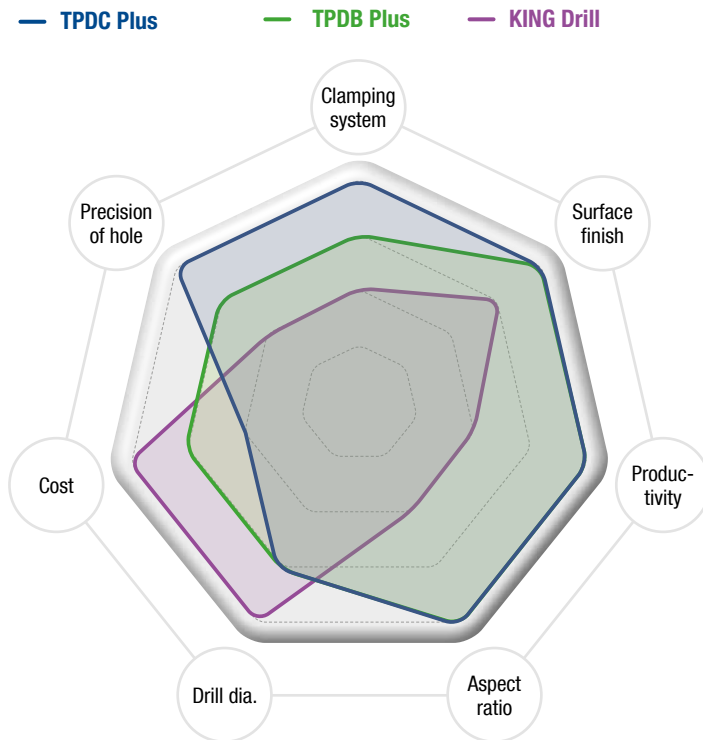
How to clamp insert

Using the improved wrench

Using the insert with slot on the top (Use the improved inserts only)



Indexable drill selection guide



TPDC Plus new

One step clamping
High precision of hole
1,5D, 3D, 5D, 8D, 10D, 12D



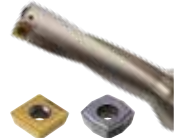
TPDB Plus new

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



KING Drill

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



| Tools | Clamping system | Surface finish | Productivity | Aspect ratio | Drill dia. | Cost | Precision of hole |
|------------------------------------------------|-----------------|----------------|--------------|--------------|------------|-------|-------------------|
| TPDC Plus new | ★★★★★ | ★★★★★ | ★★★★★ | ★★★★★ | ★★★ | ★★ | ★★★★★ |
| TPDB Plus new | ★★★ | ★★★★★ | ★★★★★ | ★★★★★ | ★★★ | ★★★ | ★★★ |
| KING Drill | ★★ | ★★★ | ★★ | ★★ | ★★★★★ | ★★★★★ | ★★ |

Recommended cutting conditions TPDC-XP

Drilling 3D

| Workpiece | | | Grade | Vc (m/min) | Aspect ratio (L/D) = 3D Feed rate (mm/rev) per drill dia. (mm) | |
|--------------------------|------------------------|-----------|--------|----------------|-------------------------------------------------------------------|-----------------|
| ISO | Workpiece | HB | | | Ø8.00 - Ø9.99 | Ø10.00 - Ø11.99 |
| P Carbon steel | low carbon steel | 80 - 120 | PC325U | 110 (80 - 140) | 0.12 - 0.25 | 0.15 - 0.30 |
| | high carbon steel | 180 - 280 | PC325U | 90 (70 - 110) | | |
| P Alloy steel | Low alloy steel | 140 - 260 | PC325U | 90 (70 - 110) | 0.12 - 0.28 | 0.14 - 0.28 |
| | Low alloy heattreated | 200 - 400 | PC325U | 70 (50 - 90) | | |
| | High alloy steel | 260 - 320 | PC325U | 70 (50 - 90) | 0.12 - 0.20 | 0.12 - 0.24 |
| | High alloy heattreated | 300 - 450 | PC325U | 60 (40 - 80) | | |
| K Cast iron | Gray cast iron | 150 - 230 | PC325U | 125 (90 - 160) | 0.15 - 0.30 | 0.20 - 0.35 |
| | Ductile cast iron | 160 - 260 | PC325U | 110 (80 - 140) | | |

- In interrupted machining, reduce the feed to 0.1-0.15 machining around the interrupted part.

Drilling 5D

| Workpiece | | | Grade | Vc (m/min) | Aspect ratio (L/D) = 5D Feed rate (mm/rev) per drill dia. (mm) | |
|--------------------------|------------------------|-----------|--------|----------------|-------------------------------------------------------------------|-----------------|
| ISO | Workpiece | HB | | | Ø8.00 - Ø9.99 | Ø10.00 - Ø11.99 |
| P Carbon steel | low carbon steel | 80 - 120 | PC325U | 110 (80 - 140) | 0.12 - 0.22 | 0.15 - 0.28 |
| | high carbon steel | 180 - 280 | PC325U | 90 (70 - 110) | | |
| P Alloy steel | Low alloy steel | 140 - 260 | PC325U | 90 (70 - 110) | 0.12 - 0.25 | 0.14 - 0.28 |
| | Low alloy heattreated | 200 - 400 | PC325U | 70 (50 - 90) | | |
| | High alloy steel | 260 - 320 | PC325U | 70 (50 - 90) | 0.12 - 0.20 | 0.12 - 0.22 |
| | High alloy heattreated | 300 - 450 | PC325U | 60 (40 - 80) | | |
| K Cast iron | Gray cast iron | 150 - 230 | PC325U | 125 (90 - 160) | 0.15 - 0.30 | 0.20 - 0.35 |
| | Ductile cast iron | 160 - 260 | PC325U | 110 (80 - 140) | | |

- In interrupted machining, reduce the feed to 0.1-0.15 machining around the interrupted part.

Drilling 8D

| Workpiece | | | Grade | Vc (m/min) | Aspect ratio (L/D) = 8D Feed rate (mm/rev) per drill dia. (mm) | |
|--------------------------|------------------------|-----------|--------|----------------|-------------------------------------------------------------------|-----------------|
| ISO | Workpiece | HB | | | Ø8.00 - Ø9.99 | Ø10.00 - Ø11.99 |
| P Carbon steel | low carbon steel | 80 - 120 | PC325U | 100 (70 - 130) | 0.10 - 0.20 | 0.12 - 0.25 |
| | high carbon steel | 180 - 280 | PC325U | 80 (60 - 100) | | |
| P Alloy steel | Low alloy steel | 140 - 260 | PC325U | 80 (60 - 100) | 0.10 - 0.22 | 0.12 - 0.25 |
| | Low alloy heattreated | 200 - 400 | PC325U | 60 (40 - 80) | | |
| | High alloy steel | 260 - 320 | PC325U | 60 (40 - 80) | 0.10 - 0.17 | 0.10 - 0.20 |
| | High alloy heattreated | 300 - 450 | PC325U | 50 (30 - 70) | | |
| K Cast iron | Gray cast iron | 150 - 230 | PC325U | 115 (80 - 150) | 0.12 - 0.27 | 0.17 - 0.32 |
| | Ductile cast iron | 160 - 260 | PC325U | 100 (70 - 130) | | |

- In interrupted machining, reduce the feed to 0.1-0.15 machining around the interrupted part.

- In case of 8D drilling, please use a Pilot Drill.

Recommended cutting conditions TPDC-CP / CM / CN

Drilling 1.5D / 3D

| Workpiece | | | Insert | Grade | Vc (m/min) | Aspect ratio (L/D) = 1.5D. 3D Feed rate (mm/rev) per drill dia. (mm) | | |
|-------------------------------|-------------------------|-----------|--------|------------------|-----------------|-------------------------------------------------------------------------|-----------------|-----------------|
| ISO | Workpiece | HB | | | | Ø12.00 - Ø17.99 | Ø18.00 - Ø25.99 | Ø26.00 - Ø30.99 |
| P Carbon steel | low carbon steel | 80 - 120 | CP | PC5335 PC330P | 120 (90 - 140) | 0.25 - 0.35 | 0.30 - 0.40 | 0.35 - 0.45 |
| | high carbon steel | 180 - 280 | CP | PC5335 PC330P | 110 (80 - 130) | 0.25 - 0.35 | 0.30 - 0.40 | 0.30 - 0.45 |
| P Alloy steel | Low alloy steel | 140 - 260 | CP | PC5335 PC5300 | 120 (90 - 140) | 0.28 - 0.40 | 0.33 - 0.43 | 0.38 - 0.48 |
| | Low alloy heat-treated | 200 - 400 | CP | PC5335 PC5300 | 80 (60 - 100) | 0.28 - 0.40 | 0.33 - 0.43 | 0.30 - 0.48 |
| | High alloy steel | 260 - 320 | CP | PC5335 PC5300 | 75 (60 - 90) | 0.20 - 0.35 | 0.22 - 0.40 | 0.25 - 0.45 |
| | High alloy heat-treated | 300 - 450 | CP | PC5335 PC5300 | 65 (50 - 80) | 0.20 - 0.35 | 0.22 - 0.40 | 0.22 - 0.45 |
| M Stainless steel | Austenitic | 135 - 275 | CM | PC330N | 65 (50 - 80) | 0.05 - 0.15 | 0.10 - 0.20 | 0.15 - 0.25 |
| | Ferritic, martensitic | 135 - 275 | CM | PC330N | 75 (60 - 90) | 0.10 - 0.20 | 0.15 - 0.30 | 0.20 - 0.35 |
| K Cast iron | Gray cast iron | 150 - 230 | CP | PC5335 PC5300 | 130 (90 - 140) | 0.35 - 0.45 | 0.40 - 0.50 | 0.45 - 0.55 |
| | Ductile cast iron | 160 - 260 | CP | PC5335 PC5300 | 120 (80 - 130) | 0.30 - 0.40 | 0.30 - 0.45 | 0.40 - 0.50 |
| N Non-ferrous metal | Aluminum | 30 - 150 | CN | H01 | 200 (120 - 220) | 0.35 - 0.45 | 0.40 - 0.50 | 0.45 - 0.55 |
| | Copper alloy | 150 - 160 | CN | H01 | 200 (120 - 220) | 0.35 - 0.45 | 0.40 - 0.50 | 0.45 - 0.55 |

- In interrupted machining, reduce the feed to 0.1-0.15 machining around the interrupted part.

- In stainless steel machining, start with low feed machining then, gradually get the cutting conditions higher and set the optimal cutting conditions.

Drilling 5D

| Workpiece | | | Insert | Grade | Vc (m/min) | Aspect ratio (L/D) = 5D Feed rate (mm/rev) per drill dia. (mm) | | |
|-------------------------------|-------------------------|-----------|--------|------------------|----------------|-------------------------------------------------------------------|-----------------|-----------------|
| ISO | Workpiece | HB | | | | Ø12.00 - Ø17.99 | Ø18.00 - Ø25.99 | Ø26.00 - Ø30.99 |
| P Carbon steel | low carbon steel | 80 - 120 | CP | PC5335 PC330P | 110 (80 - 140) | 0.15 - 0.30 | 0.20 - 0.35 | 0.25 - 0.40 |
| | high carbon steel | 180 - 280 | CP | PC5335 PC330P | 100 (70 - 130) | 0.15 - 0.30 | 0.20 - 0.35 | 0.25 - 0.40 |
| P Alloy steel | Low alloy steel | 140 - 260 | CP | PC5335 PC5300 | 110 (80 - 140) | 0.18 - 0.35 | 0.23 - 0.38 | 0.28 - 0.43 |
| | Low alloy heat-treated | 200 - 400 | CP | PC5335 PC5300 | 75 (50 - 100) | 0.18 - 0.35 | 0.23 - 0.38 | 0.28 - 0.43 |
| | High alloy steel | 260 - 320 | CP | PC5335 PC5300 | 70 (50 - 90) | 0.18 - 0.30 | 0.20 - 0.35 | 0.25 - 0.40 |
| | High alloy heat-treated | 300 - 450 | CP | PC5335 PC5300 | 60 (40 - 80) | 0.18 - 0.30 | 0.20 - 0.35 | 0.22 - 0.40 |
| M Stainless steel | Austenitic | 135 - 275 | CM | PC330N | 60 (40 - 80) | 0.05 - 0.15 | 0.10 - 0.20 | 0.15 - 0.25 |
| | Ferritic, martensitic | 135 - 275 | CM | PC330N | 70 (50 - 90) | 0.10 - 0.20 | 0.15 - 0.30 | 0.20 - 0.35 |
| K Cast iron | Gray cast iron | 150 - 230 | CP | PC5335 PC5300 | 120 (80 - 140) | 0.25 - 0.40 | 0.30 - 0.45 | 0.35 - 0.50 |
| | Ductile cast iron | 160 - 260 | CP | PC5335 PC5300 | 110 (70 - 130) | 0.20 - 0.35 | 0.25 - 0.40 | 0.30 - 0.45 |
| N Non-ferrous metal | Aluminum | 30 - 150 | CN | H01 | 200 (90 - 220) | 0.35 - 0.45 | 0.40 - 0.50 | 0.45 - 0.55 |
| | Copper alloy | 150 - 160 | CN | H01 | 200 (90 - 220) | 0.35 - 0.45 | 0.40 - 0.50 | 0.45 - 0.55 |

- In interrupted machining, reduce the feed to 0.1-0.15 machining around the interrupted part.

- In stainless steel machining, start with low feed machining then, gradually get the cutting conditions higher and set the optimal cutting conditions.

Recommended cutting conditions TPDC-CP / CM / CN

Drilling 8D

| Workpiece | | | Insert | Grade | Vc (m/min) | Aspect ratio (L/D) = 8D Feed rate (mm/rev) per drill dia. (mm) | | |
|-------------------------------|-------------------------|-----------|--------|------------------|----------------|-------------------------------------------------------------------|-----------------|-----------------|
| ISO | Workpiece | HB | | | | Ø12.00 - Ø17.99 | Ø18.00 - Ø25.99 | Ø26.00 - Ø30.99 |
| P Carbon steel | low carbon steel | 80 - 120 | CP | PC5335 PC330P | 100 (70 - 130) | 0.12 - 0.25 | 0.17 - 0.30 | 0.22 - 0.35 |
| | high carbon steel | 180 - 280 | CP | PC5335 PC330P | 90 (60 - 120) | 0.12 - 0.25 | 0.17 - 0.30 | 0.22 - 0.35 |
| P Alloy steel | Low alloy steel | 140 - 260 | CP | PC5335 PC5300 | 100 (70 - 130) | 0.15 - 0.30 | 0.20 - 0.33 | 0.25 - 0.38 |
| | Low alloy heat-treated | 200 - 400 | CP | PC5335 PC5300 | 65 (40 - 90) | 0.15 - 0.30 | 0.20 - 0.33 | 0.25 - 0.38 |
| | High alloy steel | 260 - 320 | CP | PC5335 PC5300 | 60 (40 - 80) | 0.15 - 0.25 | 0.17 - 0.30 | 0.22 - 0.35 |
| | High alloy heat-treated | 300 - 450 | CP | PC5335 PC5300 | 50 (30 - 70) | 0.15 - 0.25 | 0.17 - 0.30 | 0.22 - 0.35 |
| M Stainless steel | Austenitic | 135 - 275 | CM | PC330N | 50 (30 - 70) | 0.05 - 0.10 | 0.05 - 0.15 | 0.10 - 0.20 |
| | Ferritic, martensitic | 135 - 275 | CM | PC330N | 60 (40 - 80) | 0.05 - 0.15 | 0.10 - 0.25 | 0.15 - 0.30 |
| K Cast iron | Gray cast iron | 150 - 230 | CP | PC5335 PC5300 | 110 (70 - 130) | 0.22 - 0.35 | 0.27 - 0.40 | 0.32 - 0.45 |
| | Ductile cast iron | 160 - 260 | CP | PC5335 PC5300 | 100 (60 - 120) | 0.17 - 0.30 | 0.22 - 0.35 | 0.27 - 0.40 |
| N Non-ferrous metal | Aluminum | 30 - 150 | CN | H01 | 190 (80 - 200) | 0.30 - 0.40 | 0.35 - 0.45 | 0.40 - 0.50 |
| | Copper alloy | 150 - 160 | CN | H01 | 190 (80 - 200) | 0.30 - 0.40 | 0.35 - 0.45 | 0.40 - 0.50 |

- In interrupted machining, reduce the feed to 0.1-0.15 machining around the interrupted part.
- In stainless steel machining, start with low feed machining then, gradually get the cutting conditions higher and set the optimal cutting conditions.






Drilling 10D / 12D

| Workpiece | | | Insert | Grade | Vc (m/min) | Aspect ratio (L/D) = 10D, 12D Feed rate (mm/rev) per drill dia. (mm) | | |
|-------------------------------|-------------------------|-----------|--------|------------------|----------------|-------------------------------------------------------------------------|-----------------|-----------------|
| ISO | Workpiece | HB | | | | Ø12.00 - Ø17.99 | Ø18.00 - Ø25.99 | Ø26.00 - Ø30.99 |
| P Carbon steel | low carbon steel | 80 - 120 | CP | PC5335 PC330P | 90 (60 - 120) | 0.10 - 0.20 | 0.15 - 0.25 | 0.20 - 0.30 |
| | high carbon steel | 180 - 280 | CP | PC5335 PC330P | 80 (50 - 110) | 0.10 - 0.20 | 0.15 - 0.25 | 0.20 - 0.30 |
| P Alloy steel | Low alloy steel | 140 - 260 | CP | PC5335 PC5300 | 90 (60 - 120) | 0.13 - 0.25 | 0.18 - 0.28 | 0.23 - 0.33 |
| | Low alloy heat-treated | 200 - 400 | CP | PC5335 PC5300 | 55 (40 - 80) | 0.13 - 0.30 | 0.18 - 0.28 | 0.23 - 0.33 |
| | High alloy steel | 260 - 320 | CP | PC5335 PC5300 | 50 (40 - 70) | 0.13 - 0.25 | 0.15 - 0.25 | 0.20 - 0.30 |
| | High alloy heat-treated | 300 - 450 | CP | PC5335 PC5300 | 40 (30 - 60) | 0.13 - 0.25 | 0.15 - 0.25 | 0.20 - 0.30 |
| M Stainless steel | Austenitic | 135 - 275 | CM | PC330N | 50 (30 - 60) | 0.05 - 0.10 | 0.05 - 0.15 | 0.10 - 0.20 |
| | Ferritic, martensitic | 135 - 275 | CM | PC330N | 60 (40 - 70) | 0.05 - 0.15 | 0.10 - 0.25 | 0.15 - 0.30 |
| K Cast iron | Gray cast iron | 150 - 230 | CP | PC5335 PC5300 | 100 (60 - 120) | 0.20 - 0.30 | 0.25 - 0.35 | 0.30 - 0.40 |
| | Ductile cast iron | 160 - 260 | CP | PC5335 PC5300 | 90 (50 - 110) | 0.15 - 0.25 | 0.20 - 0.30 | 0.25 - 0.35 |
| N Non-ferrous metal | Aluminum | 30 - 150 | CN | H01 | 180 (70 - 190) | 0.28 - 0.35 | 0.33 - 0.40 | 0.38 - 0.45 |
| | Copper alloy | 150 - 160 | CN | H01 | 180 (70 - 190) | 0.28 - 0.35 | 0.33 - 0.40 | 0.38 - 0.45 |

- In interrupted machining, reduce the feed to 0.1-0.15 machining around the interrupted part.
- In stainless steel machining, start with low feed machining then, gradually get the cutting conditions higher and set the optimal cutting conditions.

Recommended cutting conditions TPDC-CP-FC (flat candle)

| Workpiece | | | Grade | Vc (m/min) | Aspect ratio (L/D) = 1.5D. 3D. 5D Feed rate (mm/rev) per drill dia. (mm) | | |
|--------------------------|-------------------|-----------|--------|---------------|-----------------------------------------------------------------------------|-----------------|-----------------|
| ISO | Workpiece | HB | | | Ø12.00 - Ø17.99 | Ø18.00 - Ø25.99 | Ø26.00 - Ø30.99 |
| P Carbon steel | low carbon steel | 80 - 120 | PC5335 | 90 (70 - 110) | 0.18 - 0.28 | 0.2 - 0.3 | 0.23 - 0.33 |
| | high carbon steel | 180 - 280 | | 80 (60 - 100) | 0.18 - 0.28 | 0.2 - 0.3 | 0.23 - 0.33 |
| P Alloy steel | Low alloy steel | 140 - 260 | | 90 (70 - 110) | 0.18 - 0.28 | 0.2 - 0.3 | 0.23 - 0.33 |
| | High alloy steel | 260 - 320 | | 70 (50 - 90) | 0.18 - 0.28 | 0.2 - 0.3 | 0.23 - 0.33 |

| Machining | Flat surface drilling | Angled surface drilling | Curved surface drilling | Plunging | Boring |
|-----------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Pic. |  |  |  |  |  |
| 1.5D / 3D | ○ | ○ | ○ | ○ | ○ |
| 5D | ○ | × | × | × | × |

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

How to drill a deep hole 10D / 12D

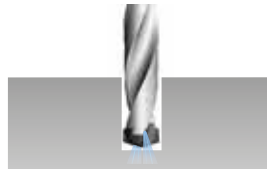
Using a pilot drill (recommended)

1. Drilling a pilot hole (with a pilot drill)



Drill a 0.5D pilot hole in 70% lower cutting speed with 1.5D drill or 3D drill.

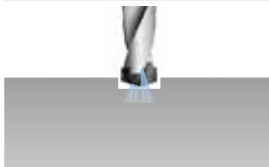
2. Start drilling 10D / 12D



Start drilling in recommended cutting conditions after replacing the drill.

Without Pilot Drill

1. Drilling a pilot hole (without a pilot drill)



After drill 0.5D with 70% lower cutting speed, stop drilling for 2-3 seconds putting the drill in the hole.

2. Stop drilling



Stop supplying the coolant and take out the drill from the hole. Then, stop drilling for 2-3 seconds.

3. Ready to drill



After putting the drill in the hole to 2-3 mm upper than the bottom of the pilot hole, start supplying the coolant. Then, be ready to start drilling.



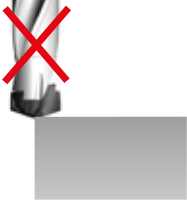
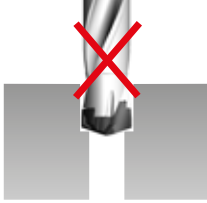
4. Start drilling



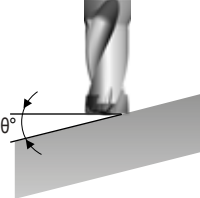
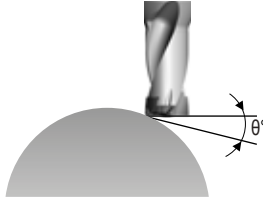
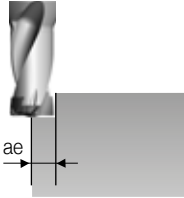
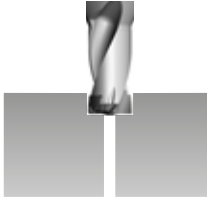
Start drilling in recommended cutting conditions.

Precaution in drilling

TPDC - CP / CM / CN

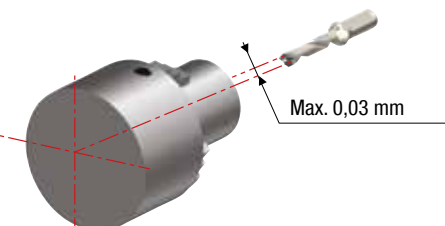
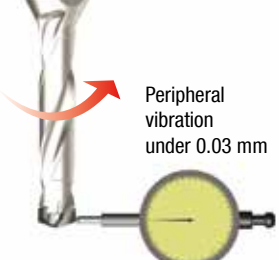
| Angled surface drilling | Stacked plates drilling | Plunging | Boring |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
|  |  |  |  |
| <p>The approach angle between drill and the workpiece at the beginning and the end should be less than 6°.</p> <p>Reduce the feed (fn) to 30-50% than general cutting conditions at the beginning and the end of angled surface.</p> | <p>Gap between the plates could make wrong chip evacuation causing fracture of the drill.</p> <p>Place stacked plates without any gap between each.</p> | <p>Irregular cutting resistance in plunging could cause fracture and deformation of the drill.</p> | <p>Boring is not recommended due to wear and chipping in the corner of the insert.</p> |

TPDC - CP-FC

| Angled surface drilling | Curved surface drilling | Plunging | Boring |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |  |  |  |
| <p>Reduce the feed (fn) to 30% than general cutting conditions at the beginning and the end of angled surface (Recommended only in case of θ is less than 10°).</p> | <p>Reduce the feed (fn) to 30% than general cutting conditions at the beginning of curved surface (In case, θ is over 3°, reduce it to 50%)</p> | <p>Reduce the depth of cut (ae) to shorter than 1/2 of drill diameter</p> <p>In case, the depth of cut is longer than drill diameter, plunge with divided depth of cut</p> | <p>Reduce the feed (fn) to 30% than general cutting conditions at the beginning of boring.</p> <p>Start with 2 mm stepping before boring to prevent long chip.</p> |

Check point in drilling

- Condition of the clamped workpiece
- Revolution of the main axis of the machine
- Condition of the holder
- Run-out of the clamped drill (Max. 0.03 mm)
- Condition of supplying coolant (pressure, flow, concentration)
- Chip evacuation





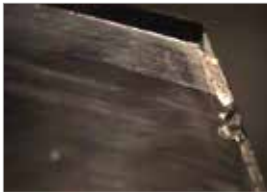
| Setting of the horizontal equipment | Setting of the vertical equipment |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |

Supply of coolant

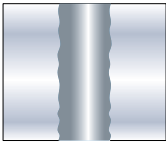
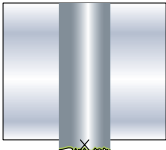
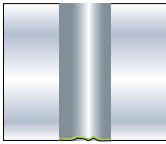
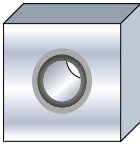
- Supply enough coolant to the beginning of the hole
- Minimum pressure of oil coolant: 5 bar
- Minimum flow of coolant: 5l/min



Types of damage to drill and solutions

| Scratches on the margin | | |
|-------------------------------------------------------------------------------------|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | Factors | <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 |
| | Solutions | <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 | | |
|  | Factors | <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 |
| | Solutions | <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 | | |
|  | Factors | <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 |
| | Solutions | <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 | | |
|  | Factors | <ul style="list-style-type: none"> • Low cutting speed • Machining free-cutting steel • Erosion of chip and flute • Lack of coolant lubrication |
| | Solutions | <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 | | |
|  | Factors | <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 |
| | Solutions | <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.) | |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | Factors <ul style="list-style-type: none"> • Low rigidity of machine and improperly clamped workpiece. • Large concentricity and lack of coolant. |
| | Solutions <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 | |
|  | Factors <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) |
| | Solutions <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 | |
|  | Factors <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). |
| | Solutions <ul style="list-style-type: none"> • Reduce the feed. (Especially at the end of hole). • Use a new drill. • Reduce honing on the cutting edge. |
| Thermal deformation and oxidation of the end of the drilled hole | |
|  | Factors <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) |
| | Solutions <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

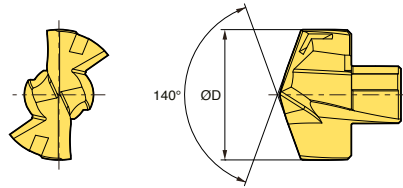
↑ Increase ↓ Decrease ○ Use

| Trouble | Designation | Solutions | | | | | | | | | | | | | | | |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----|---------|--------------|--------------|--------------|-------------|----------------|--------|------------------|------------|----------|---------------------|-----------------------|-------------------|----------|
| | | Cutting conditions | | | | Tool shape | | | | Grade | | The others | | | | | |
| | | vc | fn | Coolant | fn beginning | Depth of cut | Relief angle | Point angle | Thinning angle | Honing | Flute width rate | Toughness | Hardness | Rigidity of machine | Chattering of machine | Fixing work-piece | Overhang |
| Chipping | <ul style="list-style-type: none"> • Improper cutting conditions • Low rigidity of tool • Built-up edge • Improper grade • Chattering | ↓ | ↓ | ○ | | | ↓ | | ↓ | ↑ | | ↑ | | ↑ | ↓ | ↑ | ↓ |
| Wear | <ul style="list-style-type: none"> • Excessive cutting speed (wear on margin) | ↓ | ↓ | ○ | | | | | | | | ↑ | | | | | |
| | <ul style="list-style-type: none"> • 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 | <ul style="list-style-type: none"> • Improper cutting conditions | | ↓ | ○ | | ↓ | | | | | ↑ | | | | | | |
| Poor surface finish | <ul style="list-style-type: none"> • Built-up edge • Chattering • Improper cutting conditions | ↑ | ↓ | ○ | ↓ | | ↓ | | ↓ | | | | ↑ | ↓ | ↑ | ↓ | |
| Poor accuracy of hole | <ul style="list-style-type: none"> • Low cutting speed (wear in the center of drill) | ↑ | ↓ | | | | | | | | | | ↑ | ↓ | | | ↓ |

Insert XP




XP



| Drill dia. ØD (mm) | P Typ (XP) | Coated | Holder | Wrench |
|-----------------------|------------|--------|--------------------|------------|
| | TPDC-XP | PC325U | | |
| 8,0 | TPD0800XP | ● | TPDX_D-08012- _ | TPDC-W0811 |
| 8,1 | TPD0810XP | ● | | |
| 8,2 | TPD0820XP | ● | | |
| 8,3 | TPD0830XP | ● | | |
| 8,4 | TPD0840XP | ● | TPDX_D-08512- _ | |
| 8,5 | TPD0850XP | ● | | |
| 8,6 | TPD0860XP | ● | | |
| 8,7 | TPD0870XP | ● | | |
| 8,8 | TPD0880XP | ● | TPDX_D-09012- _ | |
| 8,9 | TPD0890XP | ● | | |
| 9,0 | TPD0900XP | ● | | |
| 9,1 | TPD0910XP | ● | | |
| 9,2 | TPD0920XP | ● | TPDX_D-09512- _ | |
| 9,3 | TPD0930XP | ● | | |
| 9,4 | TPD0940XP | ● | | |
| 9,5 | TPD0950XP | ● | | |
| 9,6 | TPD0960XP | ● | TPDX_D-10016- _ | |
| 9,7 | TPD0970XP | ● | | |
| 9,8 | TPD0980XP | ● | | |
| 9,9 | TPD0990XP | ● | | |
| 10,0 | TPD1000XP | ● | TPDX_D-10516- _ | |
| 10,1 | TPD1010XP | ● | | |
| 10,2 | TPD1020XP | ● | | |
| 10,3 | TPD1030XP | ● | | |
| 10,4 | TPD1040XP | ● | TPDX_D-11016- _ | |
| 10,5 | TPD1050XP | ● | | |
| 10,6 | TPD1060XP | ● | | |
| 10,7 | TPD1070XP | ● | | |
| 10,8 | TPD1080XP | ● | TPDX_D-11516- _ | |
| 10,9 | TPD1090XP | ● | | |
| 11,0 | TPD1100XP | ● | | |
| 11,1 | TPD1110XP | ● | | |
| 11,2 | TPD1120XP | ● | TPDX_D-11516- _ | |
| 11,3 | TPD1130XP | ● | | |
| 11,4 | TPD1140XP | ● | | |
| 11,5 | TPD1150XP | ● | | |
| 11,6 | TPD1160XP | ● | TPDX_D-11516- _ | |
| 11,7 | TPD1170XP | ● | | |
| 11,8 | TPD1180XP | ● | | |
| 11,9 | TPD1190XP | ● | | |

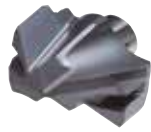
Parts (applicable wrench)

| Pic. | Designation | Drill diameter ØD (mm) | Torque (Nm) |
|-------------------------------------------------------------------------------------|-------------|------------------------|-------------|
|  | TPDC-W0811 | 8,00 - 11,99 | 0,7 - 1,5 |

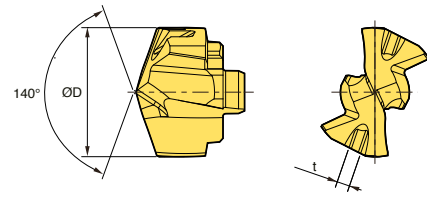
Other diameters available on request.

▲ : Stock item Europe ● : Stock item Korea ○ : Production on demand

Insert CP



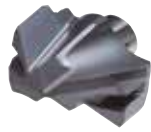
CP



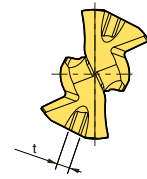
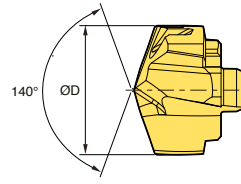
| Designation | Drill dia. (ØD) | Coated | Holder | Wrench |
|-------------|-----------------|--------|-----------------|------------|
| | | PC5335 | | |
| TPD1200CP | 12,0 | ▲ | TPDC_D-12016-__ | TPDC-W1216 |
| TPD1220CP | 12,2 | | | |
| TPD1250CP | 12,5 | | | |
| TPD1260CP | 12,6 | | | |
| TPD1300CP | 13,0 | ▲ | TPDC_D-13016-__ | |
| TPD1310CP | 13,1 | | | |
| TPD1340CP | 13,4 | | | |
| TPD1350CP | 13,5 | | | |
| TPD1360CP | 13,6 | | | |
| TPD1370CP | 13,7 | | | |
| TPD1380CP | 13,8 | ▲ | TPDC_D-13516-__ | |
| TPD1400CP | 14,0 | | | |
| TPD1410CP | 14,1 | | | |
| TPD1420CP | 14,2 | | | |
| TPD1430CP | 14,3 | | | |
| TPD1440CP | 14,4 | | | |
| TPD1450CP | 14,5 | | | |
| TPD1460CP | 14,6 | | | |
| TPD1480CP | 14,8 | ▲ | TPDC_D-14016-__ | |
| TPD1490CP | 14,9 | | | |
| TPD1500CP | 15,0 | | | |
| TPD1510CP | 15,1 | | | |
| TPD1520CP | 15,2 | | | |
| TPD1530CP | 15,3 | | | |
| TPD1540CP | 15,4 | | | |
| TPD1550CP | 15,5 | | | |
| TPD1560CP | 15,6 | | | |
| TPD1580CP | 15,8 | | | |
| TPD1600CP | 16,0 | ▲ | TPDC_D-14516-__ | |
| TPD1630CP | 16,3 | | | |
| TPD1650CP | 16,5 | | | |
| TPD1660CP | 16,6 | | | |
| TPD1670CP | 16,7 | | | |
| TPD1680CP | 16,8 | | | |
| | | | TPDC_D-15020-__ | |
| | | | TPDC_D-16020-__ | |

▲ : Stock item Europe ● : Stock item Korea ○ : Production on demand

Insert CP



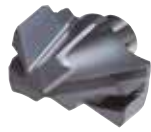
CP



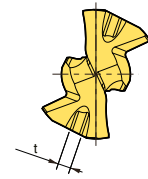
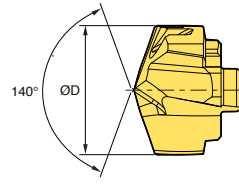
| Designation | Drill dia. (ØD) | Coated | Holder | Wrench |
|-------------|-----------------|--------|-------------------------|------------|
| | | PC5335 | | |
| TPD1700CP | 17,0 | ▲ | TPDC_D-17020- <u> </u> | TPDC-W1721 |
| TPD1710CP | 17,1 | | | |
| TPD1720CP | 17,2 | | | |
| TPD1740CP | 17,4 | | | |
| TPD1750CP | 17,5 | | | |
| TPD1760CP | 17,6 | | | |
| TPD1770CP | 17,7 | | | |
| TPD1780CP | 17,8 | | | |
| TPD1790CP | 17,9 | | | |
| TPD1800CP | 18,0 | ▲ | TPDC_D-18025- <u> </u> | |
| TPD1810CP | 18,1 | | | |
| TPD1820CP | 18,2 | | | |
| TPD1830CP | 18,3 | | | |
| TPD1850CP | 18,5 | | | |
| TPD1860CP | 18,6 | | | |
| TPD1870CP | 18,7 | | | |
| TPD1880CP | 18,8 | | | |
| TPD1900CP | 19,0 | ▲ | TPDC_D-19025- <u> </u> | |
| TPD1920CP | 19,2 | | | |
| TPD1930CP | 19,3 | | | |
| TPD1940CP | 19,4 | | | |
| TPD1950CP | 19,5 | | | |
| TPD1970CP | 19,7 | | | |
| TPD1980CP | 19,8 | | | |
| TPD1990CP | 19,9 | | | |
| TPD2000CP | 20,0 | ▲ | TPDC_D-20025- <u> </u> | |
| TPD2010CP | 20,1 | | | |
| TPD2020CP | 20,2 | | | |
| TPD2030CP | 20,3 | | | |
| TPD2040CP | 20,4 | | | |
| TPD2050CP | 20,5 | | | |
| TPD2060CP | 20,6 | | | |
| TPD2100CP | 21,0 | ▲ | TPDC_D-21025- <u> </u> | |
| TPD2110CP | 21,1 | | | |
| TPD2120CP | 21,2 | | | |
| TPD2130CP | 21,3 | | | |
| TPD2150CP | 21,5 | | | |
| TPD2190CP | 21,9 | | | |

▲: Stock item Europe ●: Stock item Korea ○: Production on demand

Insert CP



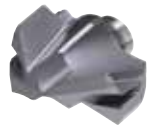
CP



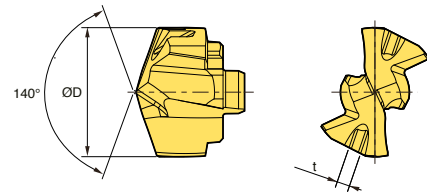
| Designation | Drill dia. (ØD) | Coated | Holder | Wrench |
|-------------|-----------------|--------|--------------------|------------|
| | | PC5335 | | |
| TPD2200CP | 22,0 | ▲ | TPDC_D-22025- _ | TPDC-W2225 |
| TPD2220CP | 22,2 | | | |
| TPD2230CP | 22,3 | | | |
| TPD2240CP | 22,4 | | | |
| TPD2250CP | 22,5 | | | |
| TPD2260CP | 22,6 | | | |
| TPD2270CP | 22,7 | | | |
| TPD2300CP | 23,0 | ▲ | TPDC_D-23025- _ | |
| TPD2330CP | 23,3 | | | |
| TPD2340CP | 23,4 | | | |
| TPD2350CP | 23,5 | | | |
| TPD2400CP | 24,0 | ▲ | TPDC_D-24032- _ | |
| TPD2440CP | 24,4 | | | |
| TPD2450CP | 24,5 | | | |
| TPD2480CP | 24,8 | | | |
| TPD2490CP | 24,9 | | | |
| TPD2500CP | 25,0 | ▲ | TPDC_D-25032- _ | |
| TPD2510CP | 25,1 | | | |
| TPD2530CP | 25,3 | | | |
| TPD2540CP | 25,4 | | | |
| TPD2550CP | 25,5 | | | |
| TPD2580CP | 25,8 | | | |
| TPD2590CP | 25,9 | | | |
| TPD2600CP | 26,0 | ▲ | TPDC_D-26032- _ | |
| TPD2610CP | 26,1 | | | |
| TPD2650CP | 26,5 | | | |
| TPD2700CP | 27,0 | ● | TPDC_D-27032- _ | |
| TPD2750CP | 27,5 | ○ | | |
| TPD2800CP | 28,0 | ● | TPDC_D-28032- _ | |
| TPD2820CP | 28,2 | ▲ | | |
| TPD2850CP | 28,5 | ● | | |
| TPD2900CP | 29,0 | ● | TPDC_D-29032- _ | |
| TPD2950CP | 29,5 | ● | | |
| TPD2990CP | 29,9 | ▲ | | |
| TPD3000CP | 30,0 | ● | TPDC_D-30032- _ | |
| TPD3010CP | 30,1 | ▲ | | |
| TPD3030CP | 30,3 | ▲ | | |
| TPD3050CP | 30,5 | ● | | |

▲: Stock item Europe ●: Stock item Korea ○: Production on demand

Insert CM



CM



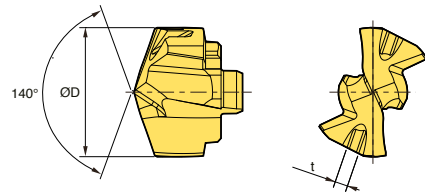
| Designation | Drill dia. (ØD) | Coated | Holder | Wrench | |
|-------------|-----------------|--------|-----------------|-----------------|------------|
| | | PC330N | | | |
| TPDC-CM | TPD1200CM | 12,0 | ▲ | TPDC_D-12016-__ | TPDC-W1216 |
| | TPD1220CM | 12,2 | ● | | |
| | TPD1250CM | 12,5 | ▲ | TPDC_D-12516-__ | |
| | TPD1260CM | 12,6 | ● | | |
| | TPD1300CM | 13,0 | ▲ | TPDC_D-13016-__ | |
| | TPD1350CM | 13,5 | ▲ | | |
| | TPD1400CM | 14,0 | ▲ | TPDC_D-14016-__ | |
| | TPD1420CM | 14,2 | ● | | |
| | TPD1430CM | 14,3 | ● | | |
| | TPD1450CM | 14,5 | ▲ | TPDC_D-14516-__ | |
| | TPD1500CM | 15,0 | ▲ | | |
| | TPD1520CM | 15,2 | ● | TPDC_D-15020-__ | |
| | TPD1550CM | 15,5 | ▲ | | |
| | TPD1600CM | 16,0 | ▲ | TPDC_D-16020-__ | |
| | TPD1630CM | 16,3 | ● | | |
| | TPD1650CM | 16,5 | ▲ | | |
| | TPD1670CM | 16,7 | ● | | |
| | TPD1690CM | 16,9 | ● | | |
| | TPD1700CM | 17,0 | ▲ | TPDC_D-17020-__ | TPDC-W1721 |
| | TPD1750CM | 17,5 | ▲ | | |
| | TPD1770CM | 17,7 | ● | | |
| | TPD1800CM | 18,0 | ▲ | TPDC_D-18025-__ | |
| | TPD1810CM | 18,1 | ● | | |
| | TPD1850CM | 18,5 | ▲ | | |
| | TPD1860CM | 18,6 | ● | | |
| | TPD1870CM | 18,7 | ▲ | TPDC_D-19025-__ | |
| | TPD1900CM | 19,0 | ▲ | | |
| | TPD1920CM | 19,2 | ● | | |
| TPD1930CM | 19,3 | ● | | | |
| TPD1950CM | 19,5 | ▲ | | | |
| TPD1970CM | 19,7 | ● | TPDC_D-20025-__ | | |
| TPD2000CM | 20,0 | ▲ | | | |
| TPD2050CM | 20,5 | ▲ | | | |
| TPD2100CM | 21,0 | ▲ | TPDC_D-21025-__ | | |
| TPD2150CM | 21,5 | ▲ | | | |

▲ : Stock item Europe ● : Stock item Korea ○ : Production on demand

Insert CM



CM

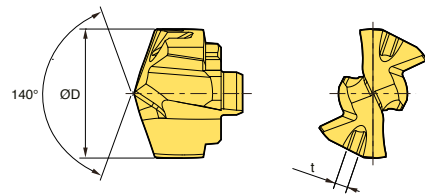


| Designation | Drill dia. (ØD) | Coated | Holder | Wrench | |
|-------------|-----------------|--------|-----------------|-----------------|------------|
| | | PC330N | | | |
| TPDC-CM | TPD2200CM | 22,0 | ▲ | TPDC_D-22025-__ | TPDC-W2225 |
| | TPD2250CM | 22,5 | ▲ | | |
| | TPD2260CM | 22,6 | ● | | |
| | TPD2270CM | 22,7 | ● | | |
| | TPD2300CM | 23,0 | ▲ | TPDC_D-23025-__ | |
| | TPD2350CM | 23,5 | ▲ | TPDC_D-24032-__ | |
| | TPD2400CM | 24,0 | ▲ | | |
| | TPD2450CM | 24,5 | ▲ | TPDC_D-25032-__ | |
| | TPD2500CM | 25,0 | ▲ | | |
| | TPD2530CM | 25,3 | ● | | |
| | TPD2550CM | 25,5 | ▲ | | |
| | TPD2580CM | 25,8 | ● | TPDC_D-26032-__ | TPDC-W2630 |
| | TPD2590CM | 25,9 | ● | | |
| | TPD2600CM | 26,0 | ▲ | | |
| | TPD2650CM | 26,5 | ▲ | | |
| | TPD2700CM | 27,0 | ▲ | TPDC_D-27032-__ | |
| | TPD2750CM | 27,5 | ▲ | TPDC_D-28032-__ | |
| | TPD2800CM | 28,0 | ▲ | | |
| | TPD2850CM | 28,5 | ▲ | TPDC_D-29032-__ | |
| | TPD2900CM | 29,0 | ▲ | | |
| TPD2950CM | 29,5 | ▲ | TPDC_D-30032-__ | | |
| TPD3000CM | 30,0 | ▲ | | | |
| TPD3050CM | 30,5 | ▲ | | | |

Insert CN



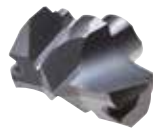
CN



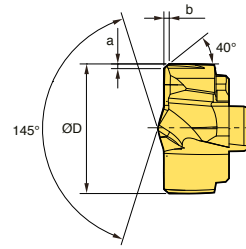
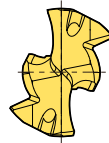
| Designation | Drill dia. (ØD) | Uncoated | Holder | Wrench | |
|-------------|-----------------|----------|--------|-----------------|------------|
| | | H01 | | | |
| TPDC-CN | TPD1500CN | 15,0 | ○ | TPDC_D-15020-__ | TPDC-W1216 |
| | TPD1650CN | 16,5 | ○ | TPDC_D-16020-__ | |
| | TPD1750CN | 17,5 | ○ | TPDC_D-17020-__ | TPDC-W1721 |
| | TPD1970CN | 19,7 | ○ | TPDC_D-19025-__ | |
| | TPD2500CN | 25,0 | ○ | TPDC_D-25032-__ | TPDC-W2225 |
| | TPD2800CN | 28,0 | ○ | TPDC_D-28032-__ | TPDC-W2630 |
| | TPD2900CN | 29,0 | ○ | TPDC_D-29032-__ | |

▲ : Stock item Europe ● : Stock item Korea ○ : Production on demand

Insert CP-FC



CP-FC



| Designation | Drill dia. (ØD) | Coated | Holder | Chamfer (mm) | | Wrench | | |
|--------------|-----------------|--------|----------------------------|--------------|------|------------|------|------|
| | | PC5335 | | a | b | | | |
| TPD1200CP-FC | 12,0 | ▲ | TPDC_D-12016- __ | 0,38 | 0,45 | TPDC-W1216 | | |
| TPD1300CP-FC | 13,0 | ● | TPDC_D-13016- __ | | | | | |
| TPD1400CP-FC | 14,0 | ● | TPDC_D-14016- __ | | | | | |
| TPD1410CP-FC | 14,1 | ○ | | | | | | |
| TPD1500CP-FC | 15,0 | ▲ | TPDC_D-15020- __ | | | | | |
| TPD1600CP-FC | 16,0 | ▲ | TPDC_D-16020- __ | | | | | |
| TPD1650CP-FC | 16,5 | ○ | | | | | | |
| TPD1700CP-FC | 17,0 | ● | TPDC_D-17020- __ | | | | 0,46 | 0,55 |
| TPD1750CP-FC | 17,5 | ▲ | TPDC_D-18025- __ | | | | | |
| TPD1800CP-FC | 18,0 | ▲ | | | | | | |
| TPD1900CP-FC | 19,0 | ▲ | TPDC_D-19025- __ | | | | | |
| TPD2000CP-FC | 20,0 | ▲ | TPDC_D-20025- __ | | | | | |
| TPD2010CP-FC | 20,1 | ○ | | | | | | |
| TPD2100CP-FC | 21,0 | ● | TPDC_D-21025- __ | | | | | |
| TPD2200CP-FC | 22,0 | ▲ | TPDC_D-22025- __ | | | | | |
| TPD2300CP-FC | 23,0 | ● | TPDC_D-23025- __ | | | | | |
| TPD2360CP-FC | 23,6 | ○ | | | | | | |
| TPD2400CP-FC | 24,0 | ▲ | TPDC_D-24032- __ | | | | | |
| TPD2500CP-FC | 25,0 | ▲ | TPDC_D-25032- __ | | | | | |
| TPD2550CP-FC | 25,5 | ○ | | | | | | |
| TPD2560CP-FC | 25,6 | ○ | | | | | | |
| TPD2600CP-FC | 26,0 | ▲ | TPDC_D-26032- __ | 0,54 | 0,65 | TPDC-W2630 | | |
| TPD2700CP-FC | 27,0 | ● | TPDC_D-27032- __ | | | | | |
| TPD2800CP-FC | 28,0 | ● | TPDC_D-28032- __ | | | | | |
| TPD2900CP-FC | 29,0 | ● | TPDC_D-29032- __ | | | | | |
| TPD3000CP-FC | 30,0 | ▲ | TPDC_D-30032- __ | | | | | |
| TPD3050CP-FC | 30,5 | ○ | | | | | | |

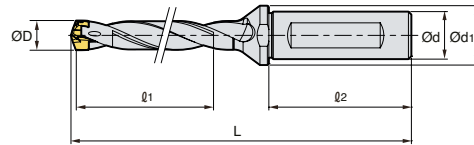
Other diameters available on request.
TPDC-FC insert: impossible to be reground.

Wrench

| Pic. | Designation | | Drill diameter ØD (mm) | Torque (Nm) |
|------|-------------|-------|------------------------|-------------|
| | TPDC- | W1216 | 12,00 - 16,99 | 2,0 - 3,0 |
| | | W1721 | 17,00 - 21,99 | 2,0 - 4,0 |
| | | W2225 | 22,00 - 25,99 | 3,0 - 4,0 |
| | | W2630 | 26,00 - 30,99 | 4,0 - 5,0 |

▲ : Stock item Europe ● : Stock item Korea ○ : Production on demand

TPDC Plus - TPDX - 3D / 5D / 8D



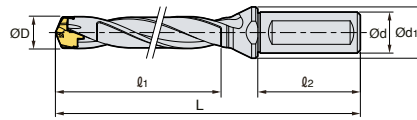
(mm)

| Designation | Stock | ØD | Ød | Ød1 | ℓ1 | ℓ2 | L | Insert | |
|-------------|-------------|----|-----------|-----|----|----|----|--------|--------------------|
| TPDX | 3D-08012-24 | ● | 8,0-8,4 | 12 | 16 | 24 | 45 | 82,2 | TPD0800XP - 0849XP |
| | 3D-08512-26 | ● | 8,5-8,9 | 12 | 16 | 26 | 45 | 84,1 | TPD0850XP - 0899XP |
| | 3D-09012-27 | ● | 9,0-9,4 | 12 | 16 | 27 | 45 | 85,9 | TPD0900XP - 0949XP |
| | 3D-09512-29 | ● | 9,5-9,9 | 12 | 16 | 29 | 45 | 87,7 | TPD0950XP - 0999XP |
| | 3D-10016-30 | ● | 10,0-10,4 | 16 | 20 | 30 | 48 | 94,6 | TPD1000XP - 1049XP |
| | 3D-10516-32 | ● | 10,5-10,9 | 16 | 20 | 32 | 48 | 96,5 | TPD1050XP - 1099XP |
| | 3D-11016-33 | ● | 11,0-11,4 | 16 | 20 | 33 | 48 | 98,2 | TPD1100XP - 1149XP |
| | 3D-11516-35 | ● | 11,5-11,9 | 16 | 20 | 35 | 48 | 100,1 | TPD1150XP - 1199XP |
| | 5D-08012-40 | ● | 8,0-8,4 | 12 | 16 | 40 | 45 | 98,2 | TPD0800XP - 0849XP |
| | 5D-08512-43 | ● | 8,5-8,9 | 12 | 16 | 43 | 45 | 101,1 | TPD0850XP - 0899XP |
| | 5D-09012-45 | ● | 9,0-9,4 | 12 | 16 | 45 | 45 | 103,9 | TPD0900XP - 0949XP |
| | 5D-09512-48 | ● | 9,5-9,9 | 12 | 16 | 48 | 45 | 106,7 | TPD0950XP - 0999XP |
| | 5D-10016-50 | ● | 10,0-10,4 | 16 | 20 | 50 | 48 | 114,6 | TPD1000XP - 1049XP |
| | 5D-10516-53 | ● | 10,5-10,9 | 16 | 20 | 53 | 48 | 117,5 | TPD1050XP - 1099XP |
| | 5D-11016-55 | ● | 11,0-11,4 | 16 | 20 | 55 | 48 | 120,2 | TPD1100XP - 1149XP |
| | 5D-11516-58 | ● | 11,5-11,9 | 16 | 20 | 58 | 48 | 123,1 | TPD1150XP - 1199XP |
| | 8D-08012-64 | ● | 8,0-8,4 | 12 | 16 | 64 | 45 | 122,2 | TPD0800XP - 0849XP |
| | 8D-08512-68 | ● | 8,5-8,9 | 12 | 16 | 68 | 45 | 126,6 | TPD0850XP - 0899XP |
| | 8D-09012-72 | ● | 9,0-9,4 | 12 | 16 | 72 | 45 | 130,9 | TPD0900XP - 0949XP |
| | 8D-09512-76 | ● | 9,5-9,9 | 12 | 16 | 76 | 45 | 135,2 | TPD0950XP - 0999XP |
| | 8D-10016-80 | ● | 10,0-10,4 | 16 | 20 | 80 | 48 | 144,6 | TPD1000XP - 1049XP |
| | 8D-10516-84 | ● | 10,5-10,9 | 16 | 20 | 84 | 48 | 149,0 | TPD1050XP - 1099XP |
| | 8D-11016-88 | ● | 11,0-11,4 | 16 | 20 | 88 | 48 | 153,2 | TPD1100XP - 1149XP |
| | 8D-11516-92 | ● | 11,5-11,9 | 16 | 20 | 92 | 48 | 157,6 | TPD1150XP - 1199XP |

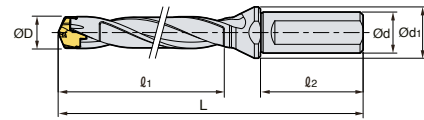
Other diameters available on request.

▲ : Stock item Europe ● : Stock item Korea ○ : Production on demand

TPDC Plus - 1.5D



Pic. 1



Pic. 2

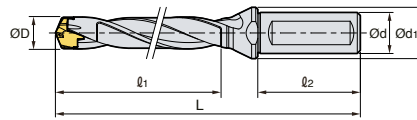
(mm)

| Designation | Stock | ØD | Ød | Ød1 | ℓ1 | ℓ2 | L | Insert | Pic. | |
|---------------|---------------|-------------|-------------|-----|----|----|-----|------------------|------------------|---|
| TPDC | 1.5D-12016-18 | ● | 12,0 - 12,4 | 16 | 20 | 18 | 48 | 85 | TPD1200C_-1249C_ | 1 |
| | 1.5D-12516-19 | ● | 12,5 - 12,9 | 16 | 20 | 19 | 48 | 86 | TPD1250C_-1299C_ | 1 |
| | 1.5D-13016-20 | ● | 13,0 - 13,4 | 16 | 20 | 20 | 48 | 87 | TPD1300C_-1349C_ | 1 |
| | 1.5D-13516-20 | ● | 13,5 - 13,9 | 16 | 20 | 20 | 48 | 88 | TPD1350C_-1399C_ | 1 |
| | 1.5D-14016-21 | ● | 14,0 - 14,4 | 16 | 20 | 21 | 48 | 93 | TPD1400C_-1449C_ | 1 |
| | 1.5D-14516-22 | ● | 14,5 - 14,9 | 16 | 20 | 22 | 48 | 94 | TPD1450C_-1499C_ | 1 |
| | 1.5D-15020-23 | ● | 15,0 - 15,9 | 20 | 25 | 23 | 50 | 95 | TPD1500C_-1599C_ | 2 |
| | 1.5D-16020-24 | ● | 16,0 - 16,9 | 20 | 25 | 24 | 50 | 98 | TPD1600C_-1699C_ | 2 |
| | 1.5D-17020-26 | ● | 17,0 - 17,9 | 20 | 25 | 26 | 50 | 100 | TPD1700C_-1799C_ | 2 |
| | 1.5D-18025-27 | ● | 18,0 - 18,9 | 25 | 33 | 27 | 56 | 110 | TPD1800C_-1899C_ | 2 |
| | 1.5D-19025-28 | ● | 19,0 - 19,9 | 25 | 33 | 28 | 56 | 112 | TPD1900C_-1999C_ | 2 |
| | 1.5D-20025-30 | ● | 20,0 - 20,9 | 25 | 33 | 30 | 56 | 114 | TPD2000C_-2099C_ | 2 |
| | 1.5D-21025-31 | ● | 21,0 - 21,9 | 25 | 33 | 31 | 56 | 116 | TPD2100C_-2199C_ | 2 |
| | 1.5D-22025-33 | ● | 22,0 - 22,9 | 25 | 33 | 33 | 56 | 119 | TPD2200C_-2299C_ | 2 |
| | 1.5D-23025-34 | ● | 23,0 - 23,9 | 25 | 33 | 34 | 56 | 121 | TPD2300C_-2399C_ | 2 |
| | 1.5D-24032-36 | ● | 24,0 - 24,9 | 32 | 43 | 36 | 60 | 130 | TPD2400C_-2499C_ | 2 |
| | 1.5D-25032-37 | ● | 25,0 - 25,9 | 32 | 43 | 37 | 60 | 132 | TPD2500C_-2599C_ | 2 |
| | 1.5D-26032-39 | ● | 26,0 - 26,9 | 32 | 43 | 39 | 60 | 134 | TPD2600C_-2699C_ | 2 |
| | 1.5D-27032-40 | ● | 27,0 - 27,9 | 32 | 43 | 40 | 60 | 136 | TPD2700C_-2799C_ | 2 |
| | 1.5D-28032-42 | ● | 28,0 - 28,9 | 32 | 43 | 42 | 60 | 138 | TPD2800C_-2899C_ | 2 |
| 1.5D-29032-43 | ● | 29,0 - 29,9 | 32 | 43 | 43 | 60 | 141 | TPD2900C_-2999C_ | 2 | |
| 1.5D-30032-45 | ● | 30,0 - 30,9 | 32 | 43 | 45 | 60 | 143 | TPD3000C_-3099C_ | 2 | |

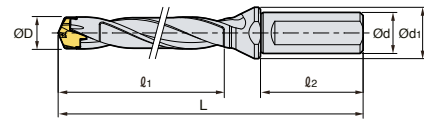
Other diameters available on request.

▲ : Stock item Europe ● : Stock item Korea ○ : Production on demand

TPDC Plus - 3D



Pic. 1



Pic. 2

(mm)

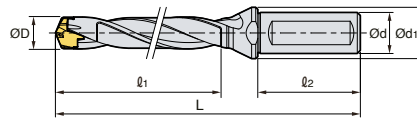
| Designation | Stock | ØD | Ød | Ød1 | ℓ1 | ℓ2 | L | Insert | Pic. |
|--------------------|-------|-------------|----|-----|----|----|-----|------------------|------|
| 3D-12016-36 | ▲ | 12,0 - 12,4 | 16 | 20 | 36 | 48 | 99 | TPD1200C_-1249C_ | 1 |
| 3D-12516-38 | ▲ | 12,5 - 12,9 | 16 | 20 | 38 | 48 | 101 | TPD1250C_-1299C_ | 1 |
| 3D-13016-39 | ▲ | 13,0 - 13,4 | 16 | 20 | 39 | 48 | 103 | TPD1300C_-1349C_ | 1 |
| 3D-13516-41 | ▲ | 13,5 - 13,9 | 16 | 20 | 41 | 48 | 105 | TPD1350C_-1399C_ | 1 |
| 3D-14016-42 | ▲ | 14,0 - 14,4 | 16 | 20 | 42 | 48 | 106 | TPD1400C_-1449C_ | 1 |
| 3D-14516-44 | ▲ | 14,5 - 14,9 | 16 | 20 | 44 | 48 | 107 | TPD1450C_-1499C_ | 1 |
| 3D-15020-45 | ▲ | 15,0 - 15,9 | 20 | 25 | 45 | 50 | 113 | TPD1500C_-1599C_ | 2 |
| 3D-16020-48 | ▲ | 16,0 - 16,9 | 20 | 25 | 48 | 50 | 117 | TPD1600C_-1699C_ | 2 |
| 3D-17020-51 | ▲ | 17,0 - 17,9 | 20 | 25 | 51 | 50 | 120 | TPD1700C_-1799C_ | 2 |
| 3D-18025-54 | ▲ | 18,0 - 18,9 | 25 | 33 | 54 | 56 | 132 | TPD1800C_-1899C_ | 2 |
| 3D-19025-57 | ▲ | 19,0 - 19,9 | 25 | 33 | 57 | 56 | 135 | TPD1900C_-1999C_ | 2 |
| 3D-20025-60 | ▲ | 20,0 - 20,9 | 25 | 33 | 60 | 56 | 138 | TPD2000C_-2099C_ | 2 |
| 3D-21025-63 | ▲ | 21,0 - 21,9 | 25 | 33 | 63 | 56 | 141 | TPD2100C_-2199C_ | 2 |
| 3D-22025-66 | ▲ | 22,0 - 22,9 | 25 | 33 | 66 | 56 | 145 | TPD2200C_-2299C_ | 2 |
| 3D-23025-69 | ▲ | 23,0 - 23,9 | 25 | 33 | 69 | 56 | 149 | TPD2300C_-2399C_ | 2 |
| 3D-24032-72 | ▲ | 24,0 - 24,9 | 32 | 43 | 72 | 60 | 159 | TPD2400C_-2499C_ | 2 |
| 3D-25032-75 | ▲ | 25,0 - 25,9 | 32 | 43 | 75 | 60 | 162 | TPD2500C_-2599C_ | 2 |
| 3D-26032-78 | ▲ | 26,0 - 26,9 | 32 | 43 | 78 | 60 | 173 | TPD2600C_-2699C_ | 2 |
| 3D-27032-81 | ▲ | 27,0 - 27,9 | 32 | 43 | 81 | 60 | 176 | TPD2700C_-2799C_ | 2 |
| 3D-28032-84 | ▲ | 28,0 - 28,9 | 32 | 43 | 84 | 60 | 180 | TPD2800C_-2899C_ | 2 |
| 3D-29032-87 | ▲ | 29,0 - 29,9 | 32 | 43 | 87 | 60 | 185 | TPD2900C_-2999C_ | 2 |
| 3D-30032-90 | ▲ | 30,0 - 30,9 | 32 | 43 | 90 | 60 | 188 | TPD3000C_-3099C_ | 2 |

TPDC

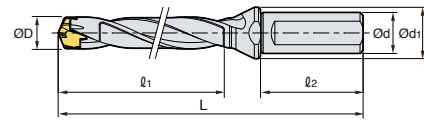
Other diameters available on request.

▲ : Stock item Europe ● : Stock item Korea ○ : Production on demand

TPDC Plus - 5D



Pic. 1



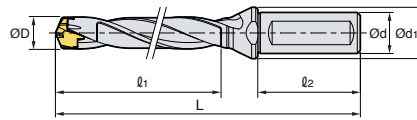
Pic. 2

(mm)

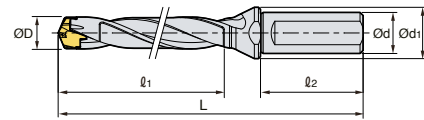
| Designation | Stock | ØD | Ød | Ød1 | ℓ1 | ℓ2 | L | Insert | Pic. |
|--------------|-------|-------------|----|-----|-----|----|-----|------------------|------|
| 5D-12016-60 | ▲ | 12,0-12,4 | 16 | 20 | 60 | 48 | 123 | TPD1200C_-1249C_ | 1 |
| 5D-12516-63 | ▲ | 12,5-12,9 | 16 | 20 | 63 | 48 | 126 | TPD1250C_-1299C_ | 1 |
| 5D-13016-65 | ▲ | 13,0 - 13,4 | 16 | 20 | 65 | 48 | 129 | TPD1300C_-1349C_ | 1 |
| 5D-13516-68 | ▲ | 13,5 - 13,9 | 16 | 20 | 68 | 48 | 132 | TPD1350C_-1399C_ | 1 |
| 5D-14016-70 | ▲ | 14,0 - 14,4 | 16 | 20 | 70 | 48 | 134 | TPD1400C_-1449C_ | 1 |
| 5D-14516-73 | ▲ | 14,5 - 14,9 | 16 | 20 | 73 | 48 | 136 | TPD1450C_-1499C_ | 1 |
| 5D-15020-75 | ▲ | 15,0 - 15,9 | 20 | 25 | 75 | 50 | 143 | TPD1500C_-1599C_ | 2 |
| 5D-16020-80 | ▲ | 16,0 - 16,9 | 20 | 25 | 80 | 50 | 149 | TPD1600C_-1699C_ | 2 |
| 5D-17020-85 | ▲ | 17,0 - 17,9 | 20 | 25 | 85 | 50 | 154 | TPD1700C_-1799C_ | 2 |
| 5D-18025-90 | ▲ | 18,0 - 18,9 | 25 | 33 | 90 | 56 | 168 | TPD1800C_-1899C_ | 2 |
| 5D-19025-95 | ▲ | 19,0 - 19,9 | 25 | 33 | 95 | 56 | 173 | TPD1900C_-1999C_ | 2 |
| 5D-20025-100 | ▲ | 20,0 - 20,9 | 25 | 33 | 100 | 56 | 178 | TPD2000C_-2099C_ | 2 |
| 5D-21025-105 | ▲ | 21,0 - 21,9 | 25 | 33 | 105 | 56 | 183 | TPD2100C_-2199C_ | 2 |
| 5D-22025-110 | ▲ | 22,0 - 22,9 | 25 | 33 | 110 | 56 | 189 | TPD2200C_-2299C_ | 2 |
| 5D-23025-115 | ▲ | 23,0 - 23,9 | 25 | 33 | 115 | 56 | 195 | TPD2300C_-2399C_ | 2 |
| 5D-24032-120 | ▲ | 24,0 - 24,9 | 32 | 43 | 120 | 60 | 207 | TPD2400C_-2499C_ | 2 |
| 5D-25032-125 | ▲ | 25,0 - 25,9 | 32 | 43 | 125 | 60 | 212 | TPD2500C_-2599C_ | 2 |
| 5D-26032-130 | ▲ | 26,0 - 26,9 | 32 | 43 | 130 | 60 | 225 | TPD2600C_-2699C_ | 2 |
| 5D-27032-135 | ▲ | 27,0 - 27,9 | 32 | 43 | 135 | 60 | 230 | TPD2700C_-2799C_ | 2 |
| 5D-28032-140 | ▲ | 28,0 - 28,9 | 32 | 43 | 140 | 60 | 236 | TPD2800C_-2899C_ | 2 |
| 5D-29032-145 | ▲ | 29,0 - 29,9 | 32 | 43 | 145 | 60 | 243 | TPD2900C_-2999C_ | 2 |
| 5D-30032-150 | ▲ | 30,0 - 30,9 | 32 | 43 | 150 | 60 | 248 | TPD3000C_-3099C_ | 2 |

TPDC

TPDC Plus - 8D



Pic. 1



Pic. 2

(mm)

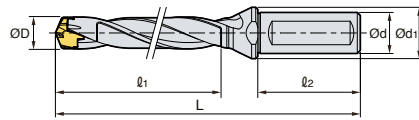
| Designation | Stock | ØD | Ød | Ød1 | ℓ1 | ℓ2 | L | Insert | Pic. |
|--------------|-------|-------------|----|-----|-----|----|-----|------------------|------|
| 8D-12016-96 | ▲ | 12,0 - 12,4 | 16 | 20 | 96 | 48 | 159 | TPD1200C_-1249C_ | 1 |
| 8D-12516-100 | ▲ | 12,5 - 12,9 | 16 | 20 | 100 | 48 | 163 | TPD1250C_-1299C_ | 1 |
| 8D-13016-104 | ▲ | 13,0 - 13,4 | 16 | 20 | 104 | 48 | 168 | TPD1300C_-1349C_ | 1 |
| 8D-13516-108 | ▲ | 13,5 - 13,9 | 16 | 20 | 108 | 48 | 173 | TPD1350C_-1399C_ | 1 |
| 8D-14016-112 | ▲ | 14,0 - 14,4 | 16 | 20 | 112 | 48 | 176 | TPD1400C_-1449C_ | 1 |
| 8D-14516-116 | ▲ | 14,5 - 14,9 | 16 | 20 | 116 | 48 | 180 | TPD1450C_-1499C_ | 1 |
| 8D-15020-120 | ▲ | 15,0 - 15,9 | 20 | 25 | 120 | 50 | 188 | TPD1500C_-1599C_ | 2 |
| 8D-16020-128 | ▲ | 16,0 - 16,9 | 20 | 25 | 128 | 50 | 197 | TPD1600C_-1699C_ | 2 |
| 8D-17020-136 | ▲ | 17,0 - 17,9 | 20 | 25 | 136 | 50 | 205 | TPD1700C_-1799C_ | 2 |
| 8D-18025-144 | ▲ | 18,0 - 18,9 | 25 | 33 | 144 | 56 | 222 | TPD1800C_-1899C_ | 2 |
| 8D-19025-152 | ▲ | 19,0 - 19,9 | 25 | 33 | 152 | 56 | 230 | TPD1900C_-1999C_ | 2 |
| 8D-20025-160 | ▲ | 20,0 - 20,9 | 25 | 33 | 160 | 56 | 238 | TPD2000C_-2099C_ | 2 |
| 8D-21025-168 | ▲ | 21,0 - 21,9 | 25 | 33 | 168 | 56 | 246 | TPD2100C_-2199C_ | 2 |
| 8D-22025-176 | ▲ | 22,0 - 22,9 | 25 | 33 | 176 | 56 | 255 | TPD2200C_-2299C_ | 2 |
| 8D-23025-184 | ▲ | 23,0 - 23,9 | 25 | 33 | 184 | 56 | 264 | TPD2300C_-2399C_ | 2 |
| 8D-24032-192 | ▲ | 24,0 - 24,9 | 32 | 43 | 192 | 60 | 279 | TPD2400C_-2499C_ | 2 |
| 8D-25032-200 | ▲ | 25,0 - 25,9 | 32 | 43 | 200 | 60 | 287 | TPD2500C_-2599C_ | 2 |
| 8D-26032-208 | ▲ | 26,0 - 26,9 | 32 | 43 | 208 | 60 | 303 | TPD2600C_-2699C_ | 2 |
| 8D-27032-216 | ▲ | 27,0 - 27,9 | 32 | 43 | 216 | 60 | 311 | TPD2700C_-2799C_ | 2 |
| 8D-28032-224 | ▲ | 28,0 - 28,9 | 32 | 43 | 224 | 60 | 320 | TPD2800C_-2899C_ | 2 |
| 8D-29032-232 | ▲ | 29,0 - 29,9 | 32 | 43 | 232 | 60 | 330 | TPD2900C_-2999C_ | 2 |
| 8D-30032-240 | ▲ | 30,0 - 30,9 | 32 | 43 | 240 | 60 | 338 | TPD3000C_-3099C_ | 2 |

TPDC

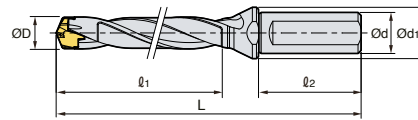
Other diameters available on request.

▲ : Stock item Europe ● : Stock item Korea ○ : Production on demand

TPDC Plus - 10D



Pic. 1



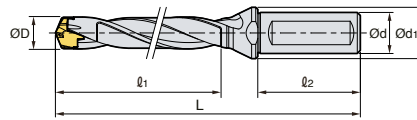
Pic. 2

(mm)

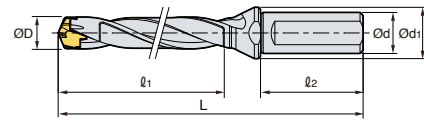
| Designation | Stock | ØD | Ød | Ød1 | ℓ1 | ℓ2 | L | Insert | Pic. |
|----------------------|-------|-------------|----|-----|-----|----|-----|------------------|------|
| 10D-12016-120 | ▲ | 12,0-12,4 | 16 | 20 | 120 | 48 | 183 | TPD1200C_-1249C_ | 1 |
| 10D-12516-125 | ▲ | 12,5-12,9 | 16 | 20 | 125 | 48 | 188 | TPD1250C_-1299C_ | 1 |
| 10D-13016-130 | ▲ | 13,0 - 13,4 | 16 | 20 | 130 | 48 | 194 | TPD1300C_-1349C_ | 1 |
| 10D-13516-135 | ○ | 13,5 - 13,9 | 16 | 20 | 135 | 48 | 199 | TPD1350C_-1399C_ | 1 |
| 10D-14016-140 | ▲ | 14,0 - 14,4 | 16 | 20 | 140 | 48 | 204 | TPD1400C_-1449C_ | 1 |
| 10D-14516-145 | ○ | 14,5 - 14,9 | 16 | 20 | 145 | 48 | 208 | TPD1450C_-1499C_ | 1 |
| 10D-15020-150 | ○ | 15,0 - 15,9 | 20 | 25 | 150 | 50 | 218 | TPD1500C_-1599C_ | 1 |
| 10D-16020-160 | ▲ | 16,0 - 16,9 | 20 | 25 | 160 | 50 | 229 | TPD1600C_-1699C_ | 1 |
| 10D-17020-170 | ▲ | 17,0 - 17,9 | 20 | 25 | 170 | 50 | 239 | TPD1700C_-1799C_ | 1 |
| 10D-18025-180 | ▲ | 18,0 - 18,9 | 25 | 33 | 180 | 56 | 258 | TPD1800C_-1899C_ | 1 |
| 10D-19025-190 | ○ | 19,0 - 19,9 | 25 | 33 | 190 | 56 | 268 | TPD1900C_-1999C_ | 1 |
| 10D-20025-200 | ▲ | 20,0 - 20,9 | 25 | 33 | 200 | 56 | 278 | TPD2000C_-2099C_ | 1 |
| 10D-21025-210 | ▲ | 21,0 - 21,9 | 25 | 33 | 210 | 56 | 288 | TPD2100C_-2199C_ | 1 |
| 10D-22025-220 | ▲ | 22,0 - 22,9 | 25 | 33 | 220 | 56 | 299 | TPD2200C_-2299C_ | 1 |
| 10D-23025-230 | ○ | 23,0 - 23,9 | 25 | 33 | 230 | 56 | 310 | TPD2300C_-2399C_ | 1 |
| 10D-24032-240 | ○ | 24,0 - 24,9 | 32 | 43 | 240 | 60 | 327 | TPD2400C_-2499C_ | 2 |
| 10D-25032-250 | ○ | 25,0 - 25,9 | 32 | 43 | 250 | 60 | 337 | TPD2500C_-2599C_ | 2 |
| 10D-26032-260 | ▲ | 26,0 - 26,9 | 32 | 43 | 260 | 60 | 355 | TPD2600C_-2699C_ | 2 |
| 10D-27032-270 | ○ | 27,0 - 27,9 | 32 | 43 | 270 | 60 | 365 | TPD2700C_-2799C_ | 2 |
| 10D-28032-280 | ○ | 28,0 - 28,9 | 32 | 43 | 280 | 60 | 376 | TPD2800C_-2899C_ | 2 |
| 10D-29032-290 | ○ | 29,0 - 29,9 | 32 | 43 | 290 | 60 | 388 | TPD2900C_-2999C_ | 2 |
| 10D-30032-300 | ○ | 30,0 - 30,9 | 32 | 43 | 300 | 60 | 398 | TPD3000C_-3099C_ | 2 |

TPDC

TPDC Plus - 12D



Pic. 1



Pic. 2

(mm)

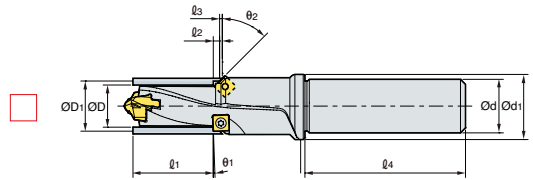
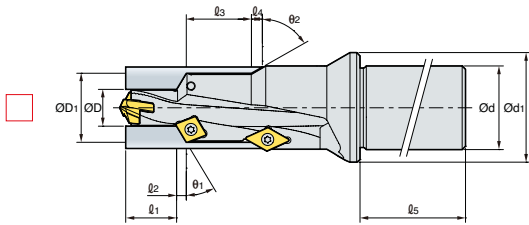
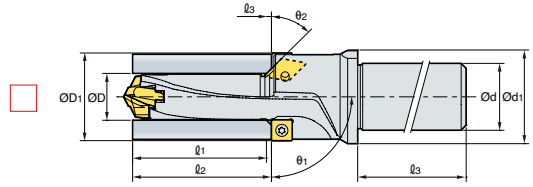
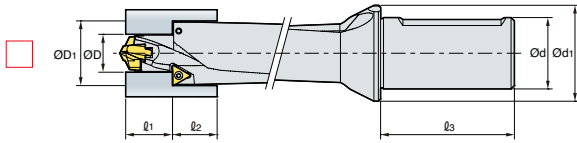
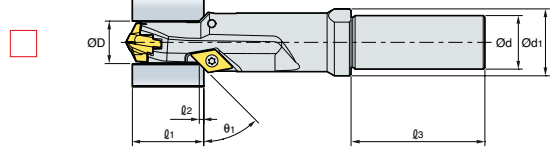
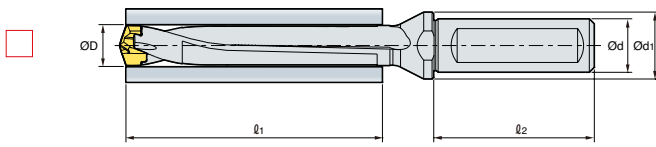
| Designation | Stock | ØD | Ød | Ød1 | ℓ1 | ℓ2 | L | Insert | Pic. |
|----------------------|-------|-------------|----|-----|-----|----|-----|------------------|------|
| 12D-12016-144 | ▲ | 12,0 - 12,4 | 16 | 20 | 144 | 48 | 207 | TPD1200C_-1249C_ | 1 |
| 12D-12516-150 | ▲ | 12,5 - 12,9 | 16 | 20 | 150 | 48 | 213 | TPD1250C_-1299C_ | 1 |
| 12D-13016-156 | ▲ | 13,0 - 13,4 | 16 | 20 | 156 | 48 | 220 | TPD1300C_-1349C_ | 1 |
| 12D-13516-162 | ○ | 13,5 - 13,9 | 16 | 20 | 162 | 48 | 226 | TPD1350C_-1399C_ | 1 |
| 12D-14016-168 | ▲ | 14,0 - 14,4 | 16 | 20 | 168 | 48 | 232 | TPD1400C_-1449C_ | 1 |
| 12D-14516-174 | ○ | 14,5 - 14,9 | 16 | 20 | 174 | 48 | 237 | TPD1450C_-1499C_ | 1 |
| 12D-15020-180 | ○ | 15,0 - 15,9 | 20 | 25 | 180 | 50 | 248 | TPD1500C_-1599C_ | 1 |
| 12D-16020-192 | ▲ | 16,0 - 16,9 | 20 | 25 | 192 | 50 | 261 | TPD1600C_-1699C_ | 1 |
| 12D-17020-204 | ▲ | 17,0 - 17,9 | 20 | 25 | 204 | 50 | 273 | TPD1700C_-1799C_ | 1 |
| 12D-18025-216 | ▲ | 18,0 - 18,9 | 25 | 33 | 216 | 56 | 294 | TPD1800C_-1899C_ | 1 |
| 12D-19025-228 | ○ | 19,0 - 19,9 | 25 | 33 | 228 | 56 | 306 | TPD1900C_-1999C_ | 1 |
| 12D-20025-240 | ▲ | 20,0 - 20,9 | 25 | 33 | 240 | 56 | 318 | TPD2000C_-2099C_ | 1 |
| 12D-21025-252 | ▲ | 21,0 - 21,9 | 25 | 33 | 252 | 56 | 330 | TPD2100C_-2199C_ | 1 |
| 12D-22025-264 | ▲ | 22,0 - 22,9 | 25 | 33 | 264 | 56 | 343 | TPD2200C_-2299C_ | 1 |
| 12D-23025-276 | ○ | 23,0 - 23,9 | 25 | 33 | 276 | 56 | 356 | TPD2300C_-2399C_ | 1 |
| 12D-24032-288 | ○ | 24,0 - 24,9 | 32 | 43 | 288 | 60 | 375 | TPD2400C_-2499C_ | 2 |
| 12D-25032-300 | ○ | 25,0 - 25,9 | 32 | 43 | 300 | 60 | 387 | TPD2500C_-2599C_ | 2 |
| 12D-26032-312 | ▲ | 26,0 - 26,9 | 32 | 43 | 312 | 60 | 407 | TPD2600C_-2699C_ | 2 |
| 12D-27032-324 | ○ | 27,0 - 27,9 | 32 | 43 | 324 | 60 | 419 | TPD2700C_-2799C_ | 2 |
| 12D-28032-336 | ○ | 28,0 - 28,9 | 32 | 43 | 336 | 60 | 432 | TPD2800C_-2899C_ | 2 |
| 12D-29032-348 | ○ | 29,0 - 29,9 | 32 | 43 | 348 | 60 | 446 | TPD2900C_-2999C_ | 2 |
| 12D-30032-360 | ○ | 30,0 - 30,9 | 32 | 43 | 360 | 60 | 458 | TPD3000C_-3099C_ | 2 |

TPDC

Other diameters available on request.

▲ : Stock item Europe ● : Stock item Korea ○ : Production on demand

Special drill order form



Hole type

- Blind hole
- Through hole

Coolant type

- Internal
- External

Special note

•Current tool and cutting condition

n (U/min) or Vc (m/min) _____

vf (mm/min) or fn (mm/rev) _____

ap Depth of cut (mm): _____

Standard of measuring tool life _____

Currently using machine

Machining center _____

CNC lathe _____

General lathe _____

Shank type



- Plain type



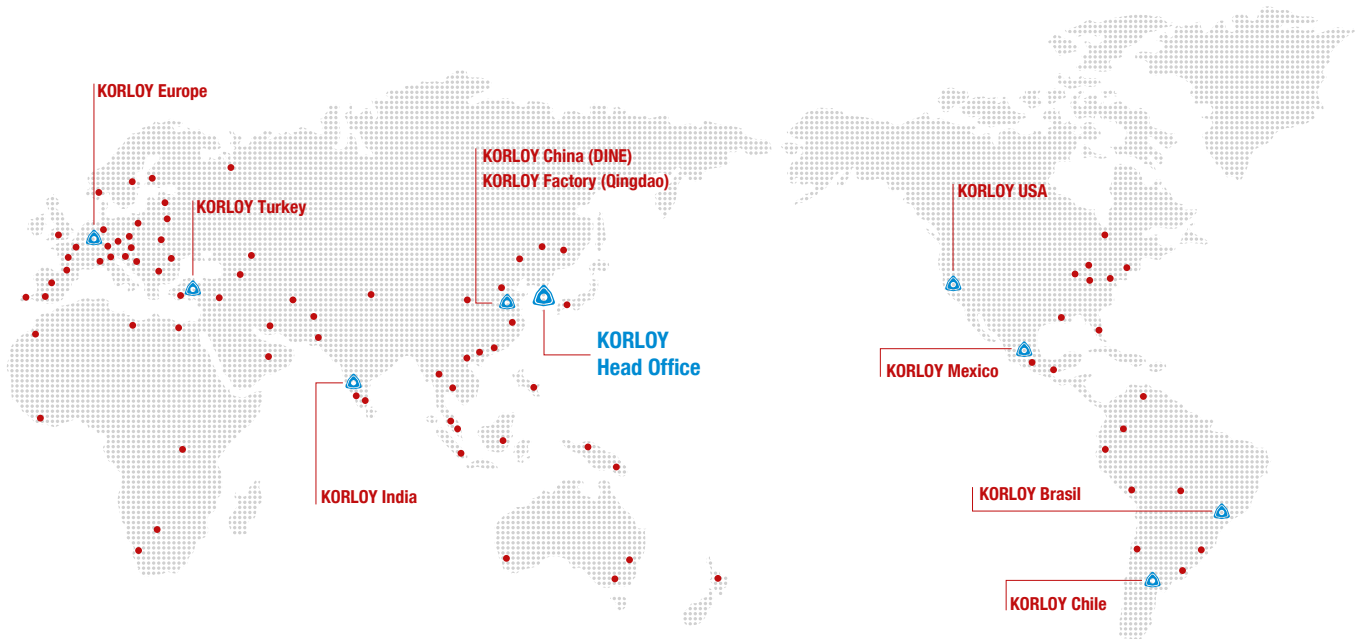
- Flat type



- Weldon



- Whistle notch type



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Cheongju-si, Chungcheongbuk-do,
28589, Korea

Jincheon Factory

54, Gwanghyewonsandan 2-gil,
Gwanghyewon-myeon, Jincheon-gun,
Chungcheongbuk-do, 27807, Korea

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