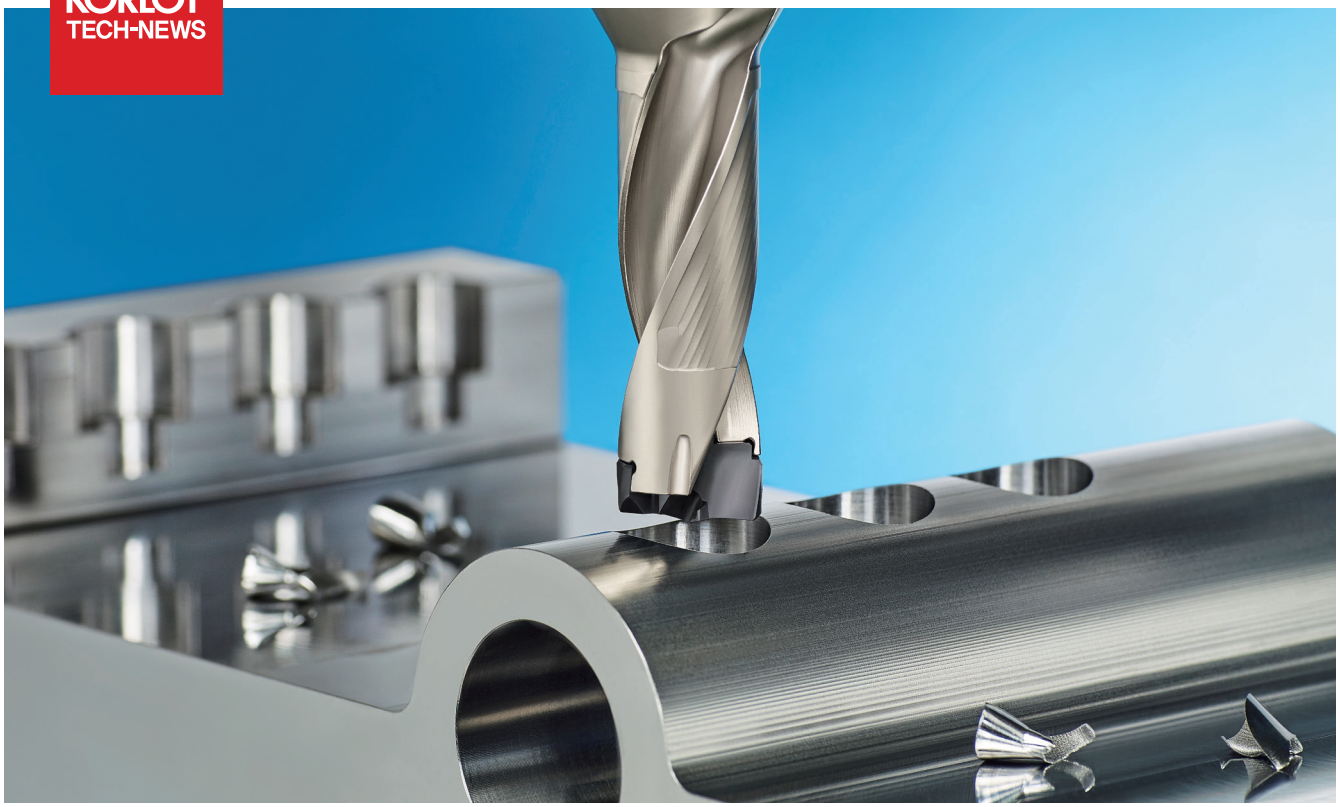
High quality and high feed top solid indexable drill

TPDC Plus Drill

(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.

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TECH-NEWS

High quality and high feed top solid indexable drill

TPDC Plus Drill

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.

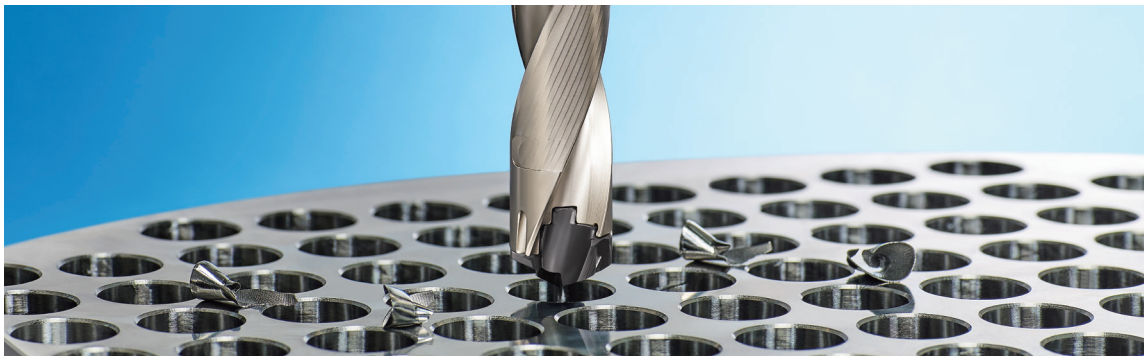
KORLOY newly launched high quality and efficient indexable drill, TPDC Plus Drill in accordance with the market's needs.

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-CP-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

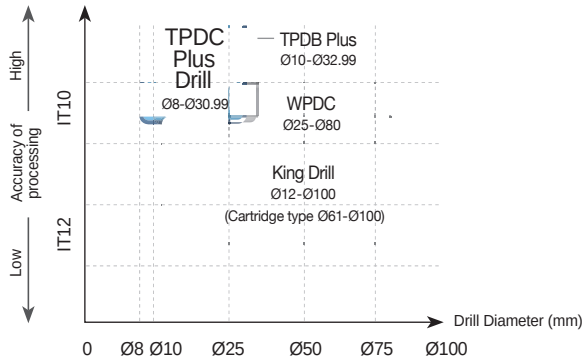
Improved machinability

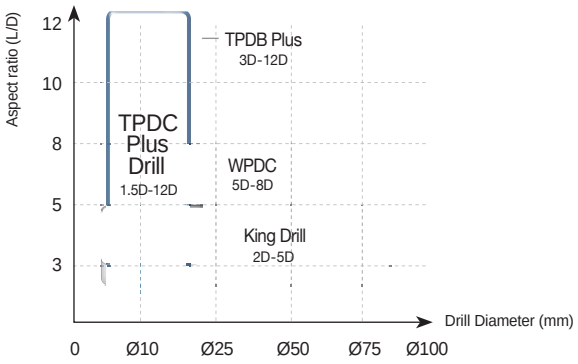
- Reduced cutting load due to high helix angle

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

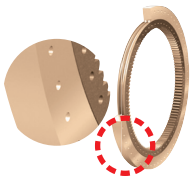
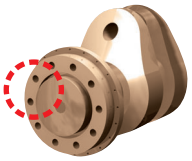
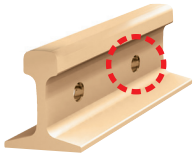
Application range





Tools	Application range					
	Drill Diameter (Ø)	Aspect ratio (L/D)	Tolerance of drill dia.	Tolerance of hole	Surface finish of hole (Ra)	Workpiece material
TPDC Plus Drill	8.00-30.99mm	1.5, 3, 5, 8, 10, 12	h7	IT10	K μm	P, M, K, N

Applicable industries

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

Code system

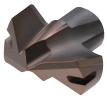
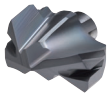
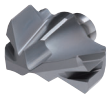
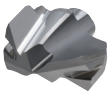
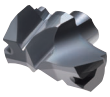
Holder •

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-Ø15.99	**Shank dia.** 20: Ø20		**Flute length** 75: 75 mm

Insert •

TPD	1500	C	P	-	□
Top solid Piercing Drill	**Drill dia.** 1500: Ø15.00	**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

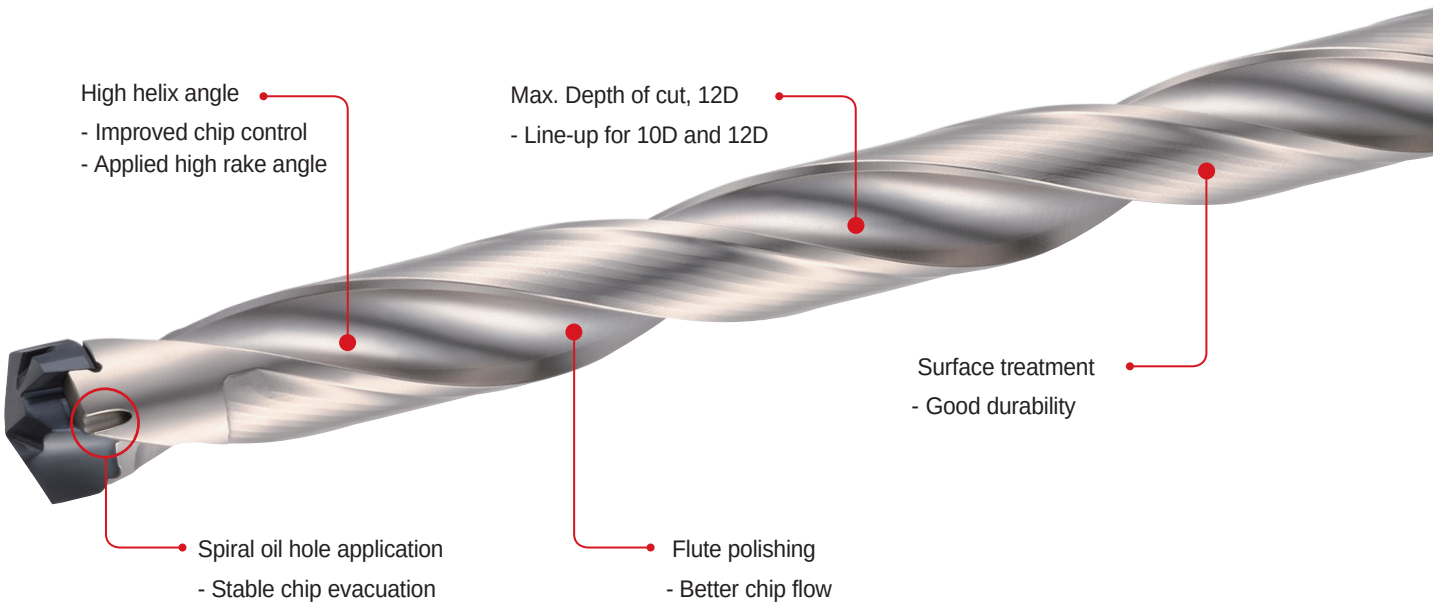
Shape	Application	Drill dia. (mm)	Features
 XP new	P	Ø8.00-Ø11.99	!Ÿ High durability due to the strong clamping system !Ÿ Excellent quality of machining and stable machining from high clamping force !Ÿ Enhanced performance by high lubricated grade
 CP	P K	Ø12.00-Ø30.99	!Ÿ High quality machining due to excellent centering: Good roundness and surface finish !Ÿ Excellent chip control from exclusive edge design: Stable machining by good chip forming and chip evacuation
 CM new	M	Ø12.00-Ø30.99	!Ÿ Ensuring strength of point and cutting edge: Stable machinability !Ÿ Increased stability of machining due to low cutting load !Ÿ Applied grade with high built up edge resistance and chipping resistance
 CN new	N	Ø12.00-Ø30.99	!Ÿ Cutting edge with low cutting load: Excellent chip evacuation from increased surface finish of insert by special after treatment !Ÿ Long tool life due to ultra-fine substrate application
 CP-FC new	P	Ø12.00-Ø30.99	!Ÿ Cutting edge shape with excellent centering: Stable machinability from low cutting load !Ÿ Available in various machining applications: Flat surface, angled surface, curved surface drilling, plunging and boring !Ÿ Reduced cycle time by simplified tools: Endmill+drill machining [a] TPDC-CP-FC insert

Holder features

!Ÿ**One step clamp system** - Increased stability and shortened setting time

!Ÿ**High helix angle and flute polishing** - Reduced cutting load and enhanced chip evacuation

!ŸVarious applications from enlarged line-up by depth of cuts and shapes of workpiece



Run-out

Durability evaluation

!ŸWorkpiece Alloy steel (42CrMo4, HRC22)

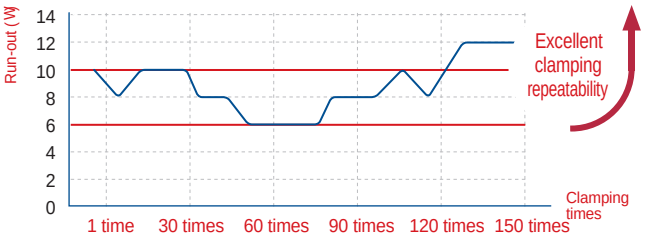
!ŸCutting conditions vc (m/min) = 90, fn (mm/rev) = 0.25, ap (mm) = 60, wet (10bar)

!ŸTools Insert TPD1500CP (PC5335)
Holder TPDC5D-15020-75
(Drill dia. = Ø15 mm)

Ü Long tool life with the setting run-out, lower than 15 Wafter using 40 inserts

œEvaluation standards: Use the machining center under the cutting conditions above.

Clamping repeatability evaluation



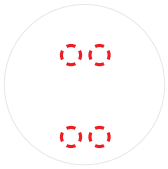
Ü Excellent clamping system keeping the run-out, lower than 6 Wafter clamping 150 times repeatedly

œEvaluation standards: Measure it after manually clamping a holder and an insert.

How to clamp insert

Using the improved wrench

!ŸUsing the insert with slot on the top (Use the improved inserts only.)



Ý Clean the mounting seat with air or cloth.

Þ Put an insert on the holder.

ß Put the wrench in the slot parallel.

à After fixing the wrench firmly, turn it clockwise and clamp the insert to the holder.

Clamped state

Using the existing wrench

!ŸUsing any inserts (Use both existing inserts and improved inserts.)Ü Use only the improved wrench later.

Ý Clean the mounting seat with air or cloth.

Þ Put an insert on the holder.

ß 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