OSG PHOENIX®

钻头系列

Drill Series

PHP

NEW NEW NEW
A® P2D/P3D/P4D/P5D

NEW
PXD 3D/5D

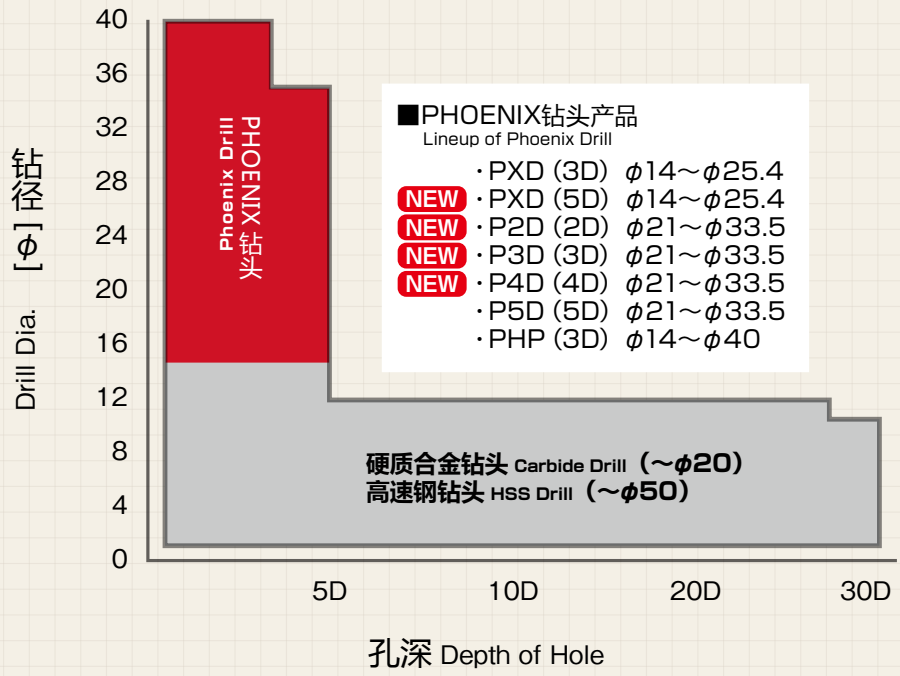
欧士机（上海）精密工具有限公司

Phoenix Drills

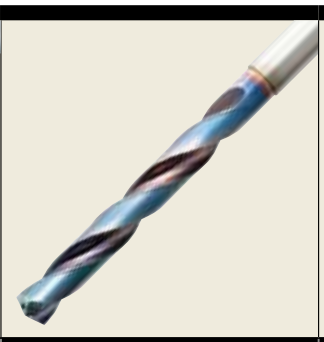
钻头的区分使用 Drill Selection

覆盖大径孔加工
OSG's Comprehensive Product Lineup for Drilling Application

孔加工对应示意图
Product Guideline



■各种钻头的区分使用 Drill Type by Application

			
高速钢钻头 HSS Drill	**硬质合金钻头** Carbide Drill	**可换头式钻头** Exchangeable Head Drill (PXD)	**可转位式钻头** Indexable Drill (P2D/P3D/P4D/P5D/PHP)
●稳定的加工 Stable drilling ●适于低功率的机器 For low horsepower machines	●高速、高效率加工 High speed, high efficiency ●长寿命 Long tool life ●高精度孔 High hole accuracy	●高速、高效率加工 High speed, high efficiency ●长寿命 Long tool life ●与硬质合金钻头相比低成本 Lower cost than carbide drills ●较高的孔精度 Relatively high hole accuracy	●高性价比 High cost performance ●高效率加工 High efficiency operation

Features

PXD

刀头交换式钻头　3D/5D
Exchangeable Head Drill for 3D and 5D

NEW
- ●追加5D型！
- ●与硬质合金钻头同等效率
- ●对应高精度孔加工
  - ・对应挤压丝锥底孔加工（仅3D型）
- ●一把刀体可对应复数的加工尺寸
- ●较硬质合金钻头性价比高
- ●装卸简单
  - ・不使用螺纹，简单牢固的安装

- ● 5D type is now available!
- ● Efficiency : equivalent to carbide drills.
- ● For drilling holes that require accuracy.
  - · Optimal for tap drill holes for forming taps (3D only)
- ● A single cutter body is applicable for multiple drilling diameters.
- ● Cost performance : higher than carbide drills.
- ● Easy attachment and removal.
  - · Screwless, simple but firm fastening.

A®

P2D/P3D/P4D/P5D

可转位式钻头
Indexable Drill

NEW
- ●追加2D、3D、4D用的尺寸！
- ●槽面的精加工处理使其可在高进给条件下加工！
- ●外周刃、中心刃使用同一款刀片，刀具管理方便！

- ● Sizes for 2D, 3D, 4D are now available!
- ● Finishing treatment on flute surface enables high feed machining.
- ● Using same insert to both center and peripheral cutting edges simplify tool management.

PHP

可转位式钻头 3D用
Indexable Drill for 3D

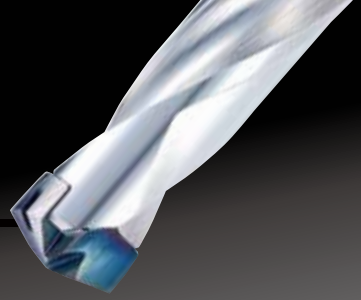
- ●先端角的特殊形状、可对应困难的加工形状
  - ・倾斜面、铸肌面、多层板
- ●高速钢钻头的低速领域也可以加工

- ● Shaped corner tips for difficult drilling shapes.
  - · Inclined surface, cast surface and doubler.
- ● Possible to drill even in low-speed HSS areas.

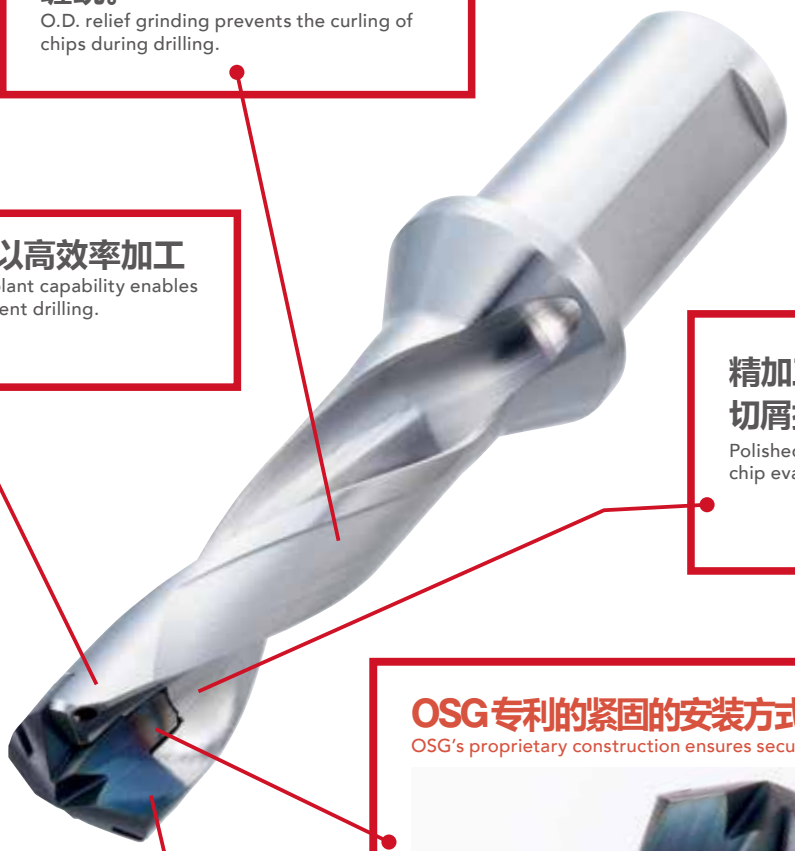
» Phoenix PXD

刀头交换式钻头3D/5D
Exchangeable Head Drill for 3×Dia., 5×Dia.

Phoenix Exchangeable Drill



特长
Features



防止加工过程中切屑的卷曲缠绕。
O.D. relief grinding prevents the curling of chips during drilling.

内冷可以高效率加工
Internal coolant capability enables highly efficient drilling.

精加工槽提供良好的切屑排除性。
Polished flutes enable smooth chip evacuation.

最适合大径加工的刀形
Cutting edges designed optimally for large-diameter drilling.

OSG专利的紧固的安装方式 PAT.P in Japan
OSG's proprietary construction ensures secure mounting.

- OSG专利的安装方式在不使用螺纹的前提下实现紧固安装
- 无螺纹强度等不稳定因素，装卸方便
- With OSG's proprietary mounting system, the exchangeable head can be securely mounted without screws.
- Eliminates loose screw problems. Easy attachment and removal system.

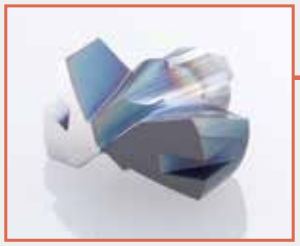
■根据加工材料的不同选择刀头

Exchangeable head selection based on work material

钢用刀头(PC) For steel

○ 钢材加工用刀头
Exchangeable head designed for steel

○ 最适合软钢～低、中碳钢的加工
Suitable for mild steel and low to medium carbon steel



铸铁用刀头(KC) For cast iron

○ 铸铁加工用设计
Exchangeable head designed for cast iron

○ 最适合铸铁、球墨铸铁的加工
Suitable for cast iron and ductile cast iron

非铁金属用刀头(NC) For nonferrous metal

○ 非铁金属加工用刀头
Exchangeable head designed for nonferrous metals

○ 最适合铝合金铸件等的加工
Suitable for aluminum alloy casting

	低碳素钢 Low Carbon Steel	中碳素钢 Medium Carbon Steel	高碳素钢 High Carbon Steel	合金钢 Alloy Steel	调质钢 Hardened Steel		铸铁 Cast Iron	球墨铸铁 Ductile Cast Iron	铜合金 Copper Alloy	铝合金铸件 Aluminum Alloy Casting
	C～0.25%	C0.25～0.45%	C0.45%～	SCM	～35HRC	35～45HRC	FC	FCD	Cu	AC·ADC
PC(钢用) for Steel	◎	◎	◎	○	○		○	○		
KC(铸铁用) for Cast Iron	○	○	○	○	○		◎	◎		
NC(非铁用) for Nonferrous Metal									○	◎

◎第一推荐材质 Best ○第一推荐材质 Good

■PXD专用WDI涂层(PC·KC)

OSG's proprietary WDI® coating engineered exclusively for PXD

○ 采用PXD用WD1涂层，抑制外周刃磨损。再高速领域中实现长寿命。
The WDI coating on the PXD prevents margin wear, thereby enabling high speed drilling and prolonging tool life.

	涂层构造 Coating Structure	厚度 Thickness (μm)	硬度 Surface Hardness (HV)	氧化开始温度 Oxidation Temperature (℃)
PXD专用 WDI®涂层 WD1® coating exclusive for PXD	多层 Multiple Layer	7	3,300	1,100
TiAlN涂层 TiAlN Coating	2层 Dual Layer	4	2,700	800

■通过交换刀头使得一把刀体对应多个加工径

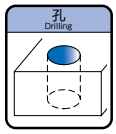
A single cutter body applicable for multiple drilling diameters.

PXD刀体型号 PXD Body Model Number	加工径 (mm) Drilling Diameter	
	最小 Min.	最大 Max.
PXDZ140-···	14	14.49
PXDZ145-···	14.5	14.99
PXDZ150-···	15	15.99
PXDZ160-···	16	16.99
PXDZ170-···	17	17.99
PXDZ180-···	18	18.99
PXDZ190-···	19	19.99
PXDZ200-···	20	20.99
PXDZ210-···	21	21.99
PXDZ220-···	22	22.99
PXDZ230-···	23	23.99
PXDZ240-···	24	24.99
PXDZ250-···	25	25.99

Phoenix

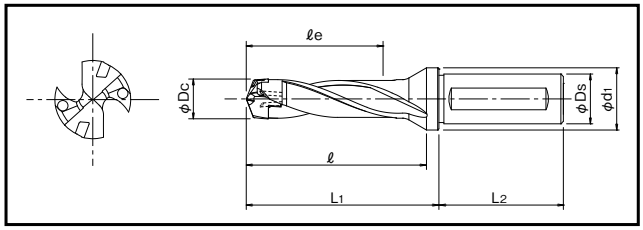
刀头交换式钻头
Exchangeable Head Drill

PXDZ 3D/5D NEW



Specification

■形状尺寸表 Specification



3D类型 3D Type

单位:mm Unit:mm

商品号 EDP No.	名称 Designation	加工径 Drilling Diameter 最小 Min	加工径 Drilling Diameter 最大 Max	有效加工深度 ℓe	槽长 ℓ	L1	L2	柄径 Ds	d1	螺丝刀 Driver	适用刀头 Applicable Head	库存 Stock
7831015	PXDZ140-3D-113.5-16	14	14.49	43	63.4	69.9	48	16	20	❶	①	C
7831016	PXDZ145-3D-115.5-16	14.5	14.99	44.5	65.5	72	48	16	20		②	C
7831017	PXDZ150-3D-119.5-20	15	15.99	46.5	67.1	73.6	50	20	25		③	C
7831018	PXDZ160-3D-123.5-20	16	16.99	49.5	71.7	78.2	50	20	25		④	C
7831019	PXDZ170-3D-128.5-20	17	17.99	52.5	76.8	83.3	50	20	25		⑤	C
7831020	PXDZ180-3D-138.5-25	18	18.99	55.5	81.4	87.9	56	25	32		⑥	C
7831021	PXDZ190-3D-142.5-25	19	19.99	58.5	85.4	91.9	56	25	32	❷	⑦	C
7831022	PXDZ200-3D-146.5-25	20	20.99	61.5	90.1	96.6	56	25	32		⑧	C
7831023	PXDZ210-3D-154.5-32	21	21.99	64.5	94.7	101.2	60	32	42		⑨	C
7831024	PXDZ220-3D-158.5-32	22	22.99	67.5	98.8	105.3	60	32	42		⑩	C
7831025	PXDZ230-3D-162.5-32	23	23.99	70.5	103.4	109.9	60	32	42	❸	⑪	C
7831026	PXDZ240-3D-167.5-32	24	24.99	73.5	108.4	114.9	60	32	42		⑫	C
7831027	PXDZ250-3D-170.5-32	25	25.99	76.5	112	118.5	60	32	42		⑬	C

C=标准库存品 C=Standard stock item

5D类型 5D Type

单位:mm Unit:mm

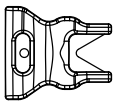
商品号 EDP No.	名称 Designation	加工径 Drilling Diameter 最小 Min	加工径 Drilling Diameter 最大 Max	有效加工深度 ℓe	槽长 ℓ	L1	L2	柄径 Ds	d1	螺丝刀 Driver	适用刀头 Applicable Head	库存 Stock
7831065	PXDZ140-5D-141.5-16	14	14.49	71.2	92.9	97.9	48	16	20	❶	①	C
7831066	PXDZ145-5D-144.5-16	14.5	14.99	73.7	96	101	48	16	20		②	C
7831067	PXDZ150-5D-149.5-20	15	15.99	77.5	97.1	103.6	50	20	25		③	C
7831068	PXDZ160-5D-155.5-20	16	16.99	82.5	103.7	110.2	50	20	25		④	C
7831069	PXDZ170-5D-162.5-20	17	17.99	87.5	110.8	117.3	50	20	25		⑤	C
7831070	PXDZ180-5D-174.5-25	18	18.99	92.5	117.4	123.9	56	25	32		⑥	C
7831071	PXDZ190-5D-180.5-25	19	19.99	97.5	123.4	129.9	56	25	32	❷	⑦	C
7831072	PXDZ200-5D-186.5-25	20	20.99	102.5	130.1	136.6	56	25	32		⑧	C
7831073	PXDZ210-5D-196.5-32	21	21.99	107.5	136.7	143.2	60	32	42		⑨	C
7831074	PXDZ220-5D-202.5-32	22	22.99	112.5	142.8	149.3	60	32	42		⑩	C
7831075	PXDZ230-5D-208.5-32	23	23.99	117.5	149.4	155.9	60	32	42	❸	⑪	C
7831076	PXDZ240-5D-215.5-32	24	24.99	122.5	156.4	162.9	60	32	42		⑫	C
7831077	PXDZ250-5D-220.5-32	25	25.99	127.5	162	168.5	60	32	42		⑬	C

C=标准库存品 C=Standard stock item

Accessories

■零件 Accessories

单位:mm Unit:mm

		商品号 EDP No.	库存 Stock	名称 Designation	板厚 Sheet Thickness	适用刀头 Applicable Head
 扳手 Driver	❶	7808282	C	PXDP1400-1899	1.5	①~⑥
	❷	7808283	C	PXDP1900-2299	1.8	⑦~⑩
	❸	7808284	C	PXDP2300-2699	2	⑪~⑬

C=标准库存品 C=Standard stock item

扳手请另购。 The drivers are sold separately from the cutters.

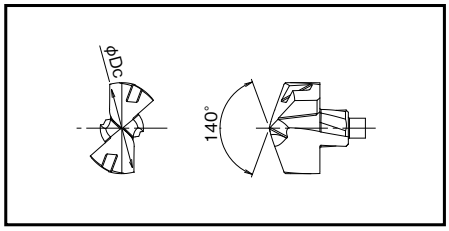
Phoenix

刀头交换式钻头
Exchangeable Head Drill

PXD 刀头
Head

Heads

■适用刀头 Heads



钢用(PC) For steel (PC)

单位:mm Unit:mm

商品号 EDP No.		名称 Designation	外径 Dc	材质 Grades	库存 Stock
7831140	①	PXDH1400-PC	14	XP3425	C
		PXDH1410-PC	14.1	XP3425	※
		PXDH1420-PC	14.2	XP3425	※
		PXDH1430-PC	14.3	XP3425	※
		PXDH1440-PC	14.4	XP3425	※
7831145	②	PXDH1450-PC	14.5	XP3425	C
		PXDH1460-PC	14.6	XP3425	※
		PXDH1470-PC	14.7	XP3425	※
		PXDH1480-PC	14.8	XP3425	※
		PXDH1490-PC	14.9	XP3425	※
7831351		PXDH1495-PC	14.95	XP3425	C
7831150	③	PXDH1500-PC	15	XP3425	C
		PXDH1510-PC	15.1	XP3425	※
		PXDH1520-PC	15.2	XP3425	※
7831352		PXDH1525-PC	15.25	XP3425	C
		PXDH1530-PC	15.3	XP3425	※
		PXDH1540-PC	15.4	XP3425	※
7831155		PXDH1550-PC	15.5	XP3425	C
		PXDH1560-PC	15.6	XP3425	※
		PXDH1570-PC	15.7	XP3425	※
		PXDH1580-PC	15.8	XP3425	※
		PXDH1590-PC	15.9	XP3425	※
7831160	④	PXDH1600-PC	16	XP3425	C
		PXDH1610-PC	16.1	XP3425	※
		PXDH1620-PC	16.2	XP3425	※
		PXDH1630-PC	16.3	XP3425	※
		PXDH1640-PC	16.4	XP3425	※
7831165		PXDH1650-PC	16.5	XP3425	C
		PXDH1660-PC	16.6	XP3425	※
7831167		PXDH1670-PC	16.7	XP3425	C

商品号 EDP No.		名称 Designation	外径 Dc	材质 Grades	库存 Stock
	④	PXDH1680-PC	16.8	XP3425	※
		PXDH1690-PC	16.9	XP3425	※
7831170	⑤	PXDH1700-PC	17	XP3425	C
		PXDH1710-PC	17.1	XP3425	※
		PXDH1720-PC	17.2	XP3425	※
7831353		PXDH1725-PC	17.25	XP3425	C
		PXDH1730-PC	17.3	XP3425	※
		PXDH1740-PC	17.4	XP3425	※
7831175		PXDH1750-PC	17.5	XP3425	C
		PXDH1760-PC	17.6	XP3425	※
		PXDH1770-PC	17.7	XP3425	※
		PXDH1780-PC	17.8	XP3425	※
		PXDH1790-PC	17.9	XP3425	※
7831180	⑥	PXDH1800-PC	18	XP3425	C
		PXDH1810-PC	18.1	XP3425	※
		PXDH1820-PC	18.2	XP3425	※
		PXDH1830-PC	18.3	XP3425	※
		PXDH1840-PC	18.4	XP3425	※
7831185		PXDH1850-PC	18.5	XP3425	C
		PXDH1860-PC	18.6	XP3425	※
7831187		PXDH1870-PC	18.7	XP3425	C
		PXDH1880-PC	18.8	XP3425	※
		PXDH1890-PC	18.9	XP3425	※
7831190	⑦	PXDH1900-PC	19	XP3425	C
		PXDH1910-PC	19.1	XP3425	※
		PXDH1920-PC	19.2	XP3425	※
7831354		PXDH1925-PC	19.25	XP3425	C
		PXDH1930-PC	19.3	XP3425	※
		PXDH1940-PC	19.4	XP3425	※
7831195		PXDH1950-PC	19.5	XP3425	C

C=标准库存品 C=Standard stock item
※=标准化预订 ※=Coming Soon

NEXT 下一页

FROM 上一页

单位:mm Unit:mm

商品号 EDP No.		名称 Designation	外径 Dc	材质 Grades	库存 Stock
	⑦	PXDH1960-PC	19.6	XP3425	※
		PXDH1970-PC	19.7	XP3425	※
		PXDH1980-PC	19.8	XP3425	※
		PXDH1990-PC	19.9	XP3425	※
7831200	⑧	PXDH2000-PC	20	XP3425	C
		PXDH2010-PC	20.1	XP3425	※
		PXDH2020-PC	20.2	XP3425	※
		PXDH2030-PC	20.3	XP3425	※
		PXDH2040-PC	20.4	XP3425	※
7831205		PXDH2050-PC	20.5	XP3425	C
		PXDH2060-PC	20.6	XP3425	※
7831207		PXDH2070-PC	20.7	XP3425	C
		PXDH2080-PC	20.8	XP3425	※
		PXDH2090-PC	20.9	XP3425	※
7831210	⑨	PXDH2100-PC	21	XP3425	C
		PXDH2110-PC	21.1	XP3425	※
		PXDH2120-PC	21.2	XP3425	※
7831355		PXDH2125-PC	21.25	XP3425	C
		PXDH2130-PC	21.3	XP3425	※
		PXDH2140-PC	21.4	XP3425	※
7831215		PXDH2150-PC	21.5	XP3425	C
		PXDH2160-PC	21.6	XP3425	※
		PXDH2170-PC	21.7	XP3425	※
		PXDH2180-PC	21.8	XP3425	※
		PXDH2190-PC	21.9	XP3425	※
7831220	⑩	PXDH2200-PC	22	XP3425	C
		PXDH2210-PC	22.1	XP3425	※
		PXDH2220-PC	22.2	XP3425	※
		PXDH2230-PC	22.3	XP3425	※
7831224		PXDH2240-PC	22.4	XP3425	C
7831225		PXDH2250-PC	22.5	XP3425	C

商品号 EDP No.		名称 Designation	外径 Dc	材质 Grades	库存 Stock
	⑩	PXDH2260-PC	22.6	XP3425	※
		PXDH2270-PC	22.7	XP3425	※
		PXDH2280-PC	22.8	XP3425	※
		PXDH2290-PC	22.9	XP3425	※
7831230	⑪	PXDH2300-PC	23	XP3425	C
		PXDH2310-PC	23.1	XP3425	※
		PXDH2320-PC	23.2	XP3425	※
7831356		PXDH2325-PC	23.25	XP3425	C
		PXDH2330-PC	23.3	XP3425	※
		PXDH2340-PC	23.4	XP3425	※
7831235		PXDH2350-PC	23.5	XP3425	C
		PXDH2360-PC	23.6	XP3425	※
		PXDH2370-PC	23.7	XP3425	※
		PXDH2380-PC	23.8	XP3425	※
		PXDH2390-PC	23.9	XP3425	※
7831240	⑫	PXDH2400-PC	24	XP3425	C
		PXDH2410-PC	24.1	XP3425	※
		PXDH2420-PC	24.2	XP3425	※
		PXDH2430-PC	24.3	XP3425	※
		PXDH2440-PC	24.4	XP3425	※
7831245		PXDH2450-PC	24.5	XP3425	C
		PXDH2460-PC	24.6	XP3425	※
		PXDH2470-PC	24.7	XP3425	※
		PXDH2480-PC	24.8	XP3425	※
		PXDH2490-PC	24.9	XP3425	※
7831250	⑬	PXDH2500-PC	25	XP3425	C
		PXDH2510-PC	25.1	XP3425	※
		PXDH2520-PC	25.2	XP3425	※
		PXDH2530-PC	25.3	XP3425	※
7831254		PXDH2540-PC	25.4	XP3425	C

C=标准库存品 C=Standard stock item
※=标准化预订 ※=Coming Soon

蓝字=切削底孔 Blue = tap drill hole for cutting taps
红字=挤压底孔 Red = tap drill hole for forming taps
用来加工挤压丝锥底孔时，请使用3D型。
For tap drill hole of forming tap, 3D type should be used. (5D is not recommended)

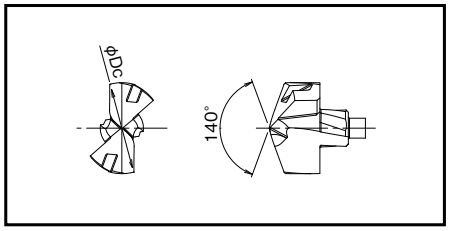
Phoenix

刀头加换式钻头
Exchangeable Head Drill

PXD 刀头
Head

Heads

■适用刀头 Heads



铸件用(KC) For cast iron (KC)

单位:mm Unit:mm

商品号 EDP No.		名称 Designation	外径 Dc	材质 Grades	库存 Stock
7831440	①	PXDH1400-KC	14	XP1425	C
		PXDH1410-KC	14.1	XP1425	※
		PXDH1420-KC	14.2	XP1425	※
		PXDH1430-KC	14.3	XP1425	※
		PXDH1440-KC	14.4	XP1425	※
7831445	②	PXDH1450-KC	14.5	XP1425	C
		PXDH1460-KC	14.6	XP1425	※
		PXDH1470-KC	14.7	XP1425	※
		PXDH1480-KC	14.8	XP1425	※
		PXDH1490-KC	14.9	XP1425	※
7831450	③	PXDH1500-KC	15	XP1425	C
		PXDH1510-KC	15.1	XP1425	※
		PXDH1520-KC	15.2	XP1425	※
		PXDH1530-KC	15.3	XP1425	※
		PXDH1540-KC	15.4	XP1425	※
7831455		PXDH1550-KC	15.5	XP1425	C
		PXDH1560-KC	15.6	XP1425	※
		PXDH1570-KC	15.7	XP1425	※
		PXDH1580-KC	15.8	XP1425	※
		PXDH1590-KC	15.9	XP1425	※
7831460	④	PXDH1600-KC	16	XP1425	C
		PXDH1610-KC	16.1	XP1425	※
		PXDH1620-KC	16.2	XP1425	※
		PXDH1630-KC	16.3	XP1425	※
		PXDH1640-KC	16.4	XP1425	※
7831465		PXDH1650-KC	16.5	XP1425	C
		PXDH1660-KC	16.6	XP1425	※
7831467		PXDH1670-KC	16.7	XP1425	C
		PXDH1680-KC	16.8	XP1425	※
		PXDH1690-KC	16.9	XP1425	※

商品号 EDP No.		名称 Designation	外径 Dc	材质 Grades	库存 Stock
7831470	⑤	PXDH1700-KC	17	XP1425	C
		PXDH1710-KC	17.1	XP1425	※
		PXDH1720-KC	17.2	XP1425	※
		PXDH1730-KC	17.3	XP1425	※
		PXDH1740-KC	17.4	XP1425	※
7831475		PXDH1750-KC	17.5	XP1425	C
		PXDH1760-KC	17.6	XP1425	※
		PXDH1770-KC	17.7	XP1425	※
		PXDH1780-KC	17.8	XP1425	※
		PXDH1790-KC	17.9	XP1425	※
7831480	⑥	PXDH1800-KC	18	XP1425	C
		PXDH1810-KC	18.1	XP1425	※
		PXDH1820-KC	18.2	XP1425	※
		PXDH1830-KC	18.3	XP1425	※
		PXDH1840-KC	18.4	XP1425	※
7831485		PXDH1850-KC	18.5	XP1425	C
		PXDH1860-KC	18.6	XP1425	※
7831487		PXDH1870-KC	18.7	XP1425	C
		PXDH1880-KC	18.8	XP1425	※
		PXDH1890-KC	18.9	XP1425	※
7831490	⑦	PXDH1900-KC	19	XP1425	C
		PXDH1910-KC	19.1	XP1425	※
		PXDH1920-KC	19.2	XP1425	※
		PXDH1930-KC	19.3	XP1425	※
		PXDH1940-KC	19.4	XP1425	※
7831495		PXDH1950-KC	19.5	XP1425	C
		PXDH1960-KC	19.6	XP1425	※
		PXDH1970-KC	19.7	XP1425	※
		PXDH1980-KC	19.8	XP1425	※
		PXDH1990-KC	19.9	XP1425	※

C=标准库存品 C=Standard stock item
※=标准化预订 ※=Coming Soon

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FROM 上一页

单位:mm Unit:mm

商品号 EDP No.		名称 Designation	外径 Dc	材质 Grades	库存 Stock
7831500	⑧	PXDH2000-KC	20	XP1425	C
		PXDH2010-KC	20.1	XP1425	※
		PXDH2020-KC	20.2	XP1425	※
		PXDH2030-KC	20.3	XP1425	※
		PXDH2040-KC	20.4	XP1425	※
7831505		PXDH2050-KC	20.5	XP1425	C
		PXDH2060-KC	20.6	XP1425	※
7831507		PXDH2070-KC	20.7	XP1425	C
		PXDH2080-KC	20.8	XP1425	※
		PXDH2090-KC	20.9	XP1425	※
7831510	⑨	PXDH2100-KC	21	XP1425	C
		PXDH2110-KC	21.1	XP1425	※
		PXDH2120-KC	21.2	XP1425	※
		PXDH2130-KC	21.3	XP1425	※
		PXDH2140-KC	21.4	XP1425	※
7831515		PXDH2150-KC	21.5	XP1425	C
		PXDH2160-KC	21.6	XP1425	※
		PXDH2170-KC	21.7	XP1425	※
		PXDH2180-KC	21.8	XP1425	※
		PXDH2190-KC	21.9	XP1425	※
7831520	⑩	PXDH2200-KC	22	XP1425	C
		PXDH2210-KC	22.1	XP1425	※
		PXDH2220-KC	22.2	XP1425	※
		PXDH2230-KC	22.3	XP1425	※
7831524		PXDH2240-KC	22.4	XP1425	C
7831525		PXDH2250-KC	22.5	XP1425	C
		PXDH2260-KC	22.6	XP1425	※
		PXDH2270-KC	22.7	XP1425	※

蓝字 = 切削底孔 Blue = tap drill hole for cutting taps

商品号 EDP No.		名称 Designation	外径 Dc	材质 Grades	库存 Stock
	⑩	PXDH2280-KC	22.8	XP1425	※
		PXDH2290-KC	22.9	XP1425	※
7831530	⑪	PXDH2300-KC	23	XP1425	C
		PXDH2310-KC	23.1	XP1425	※
		PXDH2320-KC	23.2	XP1425	※
		PXDH2330-KC	23.3	XP1425	※
		PXDH2340-KC	23.4	XP1425	※
7831535		PXDH2350-KC	23.5	XP1425	C
		PXDH2360-KC	23.6	XP1425	※
		PXDH2370-KC	23.7	XP1425	※
		PXDH2380-KC	23.8	XP1425	※
		PXDH2390-KC	23.9	XP1425	※
7831540	⑫	PXDH2400-KC	24	XP1425	C
		PXDH2410-KC	24.1	XP1425	※
		PXDH2420-KC	24.2	XP1425	※
		PXDH2430-KC	24.3	XP1425	※
		PXDH2440-KC	24.4	XP1425	※
7831545		PXDH2450-KC	24.5	XP1425	C
		PXDH2460-KC	24.6	XP1425	※
		PXDH2470-KC	24.7	XP1425	※
		PXDH2480-KC	24.8	XP1425	※
		PXDH2490-KC	24.9	XP1425	※
7831550	⑬	PXDH2500-KC	25	XP1425	C
		PXDH2510-KC	25.1	XP1425	※
		PXDH2520-KC	25.2	XP1425	※
		PXDH2530-KC	25.3	XP1425	※
7831554		PXDH2540-KC	25.4	XP1425	C

C=标准库存品 C=Standard stock item
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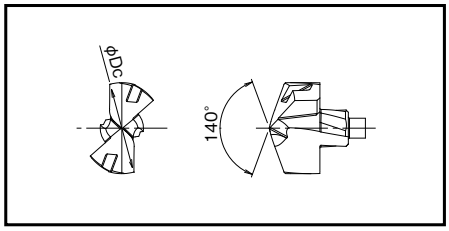
Phoenix

刀头交换式钻头
Exchangeable Head Drill

PXD 刀头
Head

Heads

■适用刀头 Heads



非铁用(NC) For nonferrous metal (NC)

单位:mm Unit:mm

商品号 EDP No.		名称 Designation	外径 Dc	材质 Grades	库存 Stock
7831740	①	PXDH1400-NC	14	CF225	C
		PXDH1410-NC	14.1	CF225	※
		PXDH1420-NC	14.2	CF225	※
		PXDH1430-NC	14.3	CF225	※
		PXDH1440-NC	14.4	CF225	※
7831745	②	PXDH1450-NC	14.5	CF225	C
		PXDH1460-NC	14.6	CF225	※
		PXDH1470-NC	14.7	CF225	※
		PXDH1480-NC	14.8	CF225	※
		PXDH1490-NC	14.9	CF225	※
7831750	③	PXDH1500-NC	15	CF225	C
		PXDH1510-NC	15.1	CF225	※
		PXDH1520-NC	15.2	CF225	※
		PXDH1530-NC	15.3	CF225	※
		PXDH1540-NC	15.4	CF225	※
7831755		PXDH1550-NC	15.5	CF225	C
		PXDH1560-NC	15.6	CF225	※
		PXDH1570-NC	15.7	CF225	※
		PXDH1580-NC	15.8	CF225	※
		PXDH1590-NC	15.9	CF225	※
7831760	④	PXDH1600-NC	16	CF225	C
		PXDH1610-NC	16.1	CF225	※
		PXDH1620-NC	16.2	CF225	※
		PXDH1630-NC	16.3	CF225	※
		PXDH1640-NC	16.4	CF225	※
7831765		PXDH1650-NC	16.5	CF225	C
		PXDH1660-NC	16.6	CF225	※
7831767		PXDH1670-NC	16.7	CF225	C
		PXDH1680-NC	16.8	CF225	※
		PXDH1690-NC	16.9	CF225	※

商品号 EDP No.		名称 Designation	外径 Dc	材质 Grades	库存 Stock
7831770	⑤	PXDH1700-NC	17	CF225	C
		PXDH1710-NC	17.1	CF225	※
		PXDH1720-NC	17.2	CF225	※
		PXDH1730-NC	17.3	CF225	※
		PXDH1740-NC	17.4	CF225	※
7831775		PXDH1750-NC	17.5	CF225	C
		PXDH1760-NC	17.6	CF225	※
		PXDH1770-NC	17.7	CF225	※
		PXDH1780-NC	17.8	CF225	※
		PXDH1790-NC	17.9	CF225	※
7831780	⑥	PXDH1800-NC	18	CF225	C
		PXDH1810-NC	18.1	CF225	※
		PXDH1820-NC	18.2	CF225	※
		PXDH1830-NC	18.3	CF225	※
		PXDH1840-NC	18.4	CF225	※
7831785		PXDH1850-NC	18.5	CF225	C
		PXDH1860-NC	18.6	CF225	※
7831787		PXDH1870-NC	18.7	CF225	C
		PXDH1880-NC	18.8	CF225	※
		PXDH1890-NC	18.9	CF225	※
7831790	⑦	PXDH1900-NC	19	CF225	C
		PXDH1910-NC	19.1	CF225	※
		PXDH1920-NC	19.2	CF225	※
		PXDH1930-NC	19.3	CF225	※
		PXDH1940-NC	19.4	CF225	※
7831795		PXDH1950-NC	19.5	CF225	C
		PXDH1960-NC	19.6	CF225	※
		PXDH1970-NC	19.7	CF225	※
		PXDH1980-NC	19.8	CF225	※
		PXDH1990-NC	19.9	CF225	※

C=标准库存品 C=Standard stock item
※=标准化预订 ※=Coming Soon

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单位:mm Unit:mm

商品号 EDP No.		名称 Designation	外径 Dc	材质 Grades	库存 Stock
7831800	⑧	PXDH2000-NC	20	CF225	C
		PXDH2010-NC	20.1	CF225	※
		PXDH2020-NC	20.2	CF225	※
		PXDH2030-NC	20.3	CF225	※
		PXDH2040-NC	20.4	CF225	※
7831805		PXDH2050-NC	20.5	CF225	C
		PXDH2060-NC	20.6	CF225	※
7831807		PXDH2070-NC	20.7	CF225	C
		PXDH2080-NC	20.8	CF225	※
		PXDH2090-NC	20.9	CF225	※
7831810	⑨	PXDH2100-NC	21	CF225	C
		PXDH2110-NC	21.1	CF225	※
		PXDH2120-NC	21.2	CF225	※
		PXDH2130-NC	21.3	CF225	※
		PXDH2140-NC	21.4	CF225	※
7831815		PXDH2150-NC	21.5	CF225	C
		PXDH2160-NC	21.6	CF225	※
		PXDH2170-NC	21.7	CF225	※
		PXDH2180-NC	21.8	CF225	※
		PXDH2190-NC	21.9	CF225	※
7831820	⑩	PXDH2200-NC	22	CF225	C
		PXDH2210-NC	22.1	CF225	※
		PXDH2220-NC	22.2	CF225	※
		PXDH2230-NC	22.3	CF225	※
7831824		PXDH2240-NC	22.4	CF225	C
7831825		PXDH2250-NC	22.5	CF225	C
		PXDH2260-NC	22.6	CF225	※
		PXDH2270-NC	22.7	CF225	※

蓝字 = 切削底孔　Blue = tap drill hole for cutting taps

商品号 EDP No.		名称 Designation	外径 Dc	材质 Grades	库存 Stock
	⑩	PXDH2280-NC	22.8	CF225	※
		PXDH2290-NC	22.9	CF225	※
7831830	⑪	PXDH2300-NC	23	CF225	C
		PXDH2310-NC	23.1	CF225	※
		PXDH2320-NC	23.2	CF225	※
		PXDH2330-NC	23.3	CF225	※
		PXDH2340-NC	23.4	CF225	※
7831835		PXDH2350-NC	23.5	CF225	C
		PXDH2360-NC	23.6	CF225	※
		PXDH2370-NC	23.7	CF225	※
		PXDH2380-NC	23.8	CF225	※
		PXDH2390-NC	23.9	CF225	※
7831840	⑫	PXDH2400-NC	24	CF225	C
		PXDH2410-NC	24.1	CF225	※
		PXDH2420-NC	24.2	CF225	※
		PXDH2430-NC	24.3	CF225	※
		PXDH2440-NC	24.4	CF225	※
7831845		PXDH2450-NC	24.5	CF225	C
		PXDH2460-NC	24.6	CF225	※
		PXDH2470-NC	24.7	CF225	※
		PXDH2480-NC	24.8	CF225	※
		PXDH2490-NC	24.9	CF225	※
7831850	⑬	PXDH2500-NC	25	CF225	C
		PXDH2510-NC	25.1	CF225	※
		PXDH2520-NC	25.2	CF225	※
		PXDH2530-NC	25.3	CF225	※
7831854		PXDH2540-NC	25.4	CF225	C

C=标准库存品　C=Standard stock item
※=标准化预订　※=Coming Soon

Phoenix

刀头交换式钻头
Exchangeable Head Drill

PXD

Cutting Conditions

■切削条件基准表 Cutting Conditions

加工材料 Work Material	PC(钢用) For Steels									KC(铸铁用) For Cast Iron						NC(非铁用) For Nonferrous Metals		
	软钢·低碳素钢 Mild Steels· Low Carbon Steels SS400、S10C ～150HB (～500N/mm²)			碳素钢 Carbon Steels S35C、S50C ～210HB (～710N/mm²)			合金钢 Alloy Steels SCM、SCr、SNCM 16～30HRC (710～950N/mm²)			铸铁 Cast Iron FC250 (～350N/mm²)			球墨铸铁 Ductile Cast Iron FCD450、FCD600 (400～600N/mm²)			铸造铝合金 Aluminum Alloy Casting AC4A、ADC		
切削速度 Cutting Speed	80~120m/min			80~120m/min			60~120m/min			80~120m/min			60~100m/min			80~180m/min		
直径 Drill Dia. (mm)	回转速度 Speed (min⁻¹)	进给量 Feed (mm/rev)		回转速度 Speed (min⁻¹)	进给量 Feed (mm/rev)		回转速度 Speed (min⁻¹)	进给量 Feed (mm/rev)		回转速度 Speed (min⁻¹)	进给量 Feed (mm/rev)		回转速度 Speed (min⁻¹)	进给量 Feed (mm/rev)		回转速度 Speed (min⁻¹)	进给量 Feed (mm/rev)	
14	2,300	0.21	0.35	2,300	0.21	0.35	2,000	0.21	0.35	2,300	0.21	0.35	1,800	0.21	0.35	3,000	0.28	0.42
15	2,100	0.23	0.38	2,100	0.23	0.38	1,900	0.23	0.38	2,100	0.23	0.38	1,700	0.23	0.38	2,800	0.3	0.45
16	2,000	0.24	0.4	2,000	0.24	0.4	1,800	0.24	0.4	2,000	0.24	0.4	1,600	0.24	0.4	2,600	0.32	0.48
17	1,900	0.26	0.43	1,900	0.26	0.43	1,700	0.26	0.43	1,900	0.26	0.43	1,500	0.26	0.43	2,400	0.34	0.51
18	1,800	0.27	0.45	1,800	0.27	0.45	1,600	0.27	0.45	1,800	0.27	0.45	1,400	0.27	0.45	2,300	0.36	0.54
19	1,700	0.29	0.48	1,700	0.29	0.48	1,500	0.29	0.48	1,700	0.29	0.48	1,300	0.29	0.48	2,200	0.38	0.57
20	1,600	0.3	0.5	1,600	0.3	0.5	1,400	0.3	0.5	1,600	0.3	0.5	1,300	0.3	0.5	2,100	0.4	0.6
21	1,500	0.32	0.53	1,500	0.32	0.53	1,400	0.32	0.53	1,500	0.32	0.53	1,200	0.32	0.53	2,000	0.42	0.63
22	1,400	0.33	0.55	1,400	0.33	0.55	1,300	0.33	0.55	1,400	0.33	0.55	1,200	0.33	0.55	1,900	0.44	0.66
23	1,400	0.35	0.58	1,400	0.35	0.58	1,200	0.35	0.58	1,400	0.35	0.58	1,100	0.35	0.58	1,800	0.46	0.69
24	1,300	0.36	0.6	1,300	0.36	0.6	1,200	0.36	0.6	1,300	0.36	0.6	1,100	0.36	0.6	1,700	0.48	0.72
25	1,300	0.38	0.63	1,300	0.38	0.63	1,100	0.38	0.63	1,300	0.38	0.63	1,000	0.38	0.63	1,700	0.5	0.75

1. 这张切削条件基准表是以水溶性切屑油剂作为内部供油。
2. 请使用稀释倍率20倍以下的优质水溶性切屑油剂。
3. 请牢牢固定加工材料，确保在没有变形，倾斜，震动的情况下加工。
4. 油孔堵塞是造成折损问题的原因，请务必安装供油装置的过滤器。
5. 刀头的安装方式及使用注意事项请参照 P.20

1. The indicated speeds and feeds are for using water soluble oil with inner supply.
2. Suitable cutting fluid is water soluble high density oil (less than 20 times dilution)
3. Fasten the work material to reduce the possibility of work deformation, deflection of machined surface, or vibration.
4. A clogged oil hole can lead to a breakage. Make sure that a filter is attached to the oil feeder.
5. Please see p.20 for mounting procedure and precaution for machining.

Tap Pilot Hole Size Chart

■切削丝锥用底孔径.PXD刀头一览表 Tap drill hole sizes for cutting tap and PXD head

螺纹名称 Thread Size	推荐底孔径 Recommended tap drill hole diameter	最小底孔径 Min. drill hole dia.	最大底孔径(6H用) Max. drill hole dia.	适用PXD刀头 Applicable PXD head
		各精度共通	前JIS2級用	
M 16 × 2	14	13.84	14.2	PXDH1400···
M 16 × 1.5	14.5	14.38	14.67	PXDH1450···
M 18 × 2.5	15.5	15.3	15.74	PXDH1550···
M 18 × 1.5	16.5	16.38	16.67	PXDH1650···
M 20 × 2.5	17.5	17.3	17.74	PXDH1750···
M 20 × 1.5	18.5	18.38	18.67	PXDH1850···
M 22 × 2.5	19.5	19.3	19.74	PXDH1950···
M 22 × 1.5	20.5	20.38	20.67	PXDH2050···
M 24 × 3	21	20.76	21.25	PXDH2100···
M 24 × 1.5	22.5	22.38	22.67	PXDH2250···
M 27 × 3	24	23.76	24.25	PXDH2400···

■挤压丝锥底孔径.PXD刀头一览表(3D类型) Tap drill hole sizes for forming tap and PXD head (PXD-3D Type)

螺纹名称 Thread Size	推荐底孔径 Recommended tap drill hole diameter	最大底孔径(6H用)				适用PXD刀头 Applicable PXD head
		材质 Grade	丝锥精度 RH Limit	最小底孔径 Min. drill hole dia.	最大底孔径 Max. drill hole dia.	
M 16 × 2	14.95	STD	10	14.92	15.04	PXDH1495···
M 16 × 1.5	15.25	STD	9	15.21	15.3	PXDH1525···
M 18 × 2.5	16.7	STD	11	16.63	16.78	PXDH1670···
M 18 × 1.5	17.25	STD	10	17.22	17.31	PXDH1725···
M 20 × 2.5	18.7	STD	11	18.63	18.78	PXDH1870···
M 20 × 1.5	19.25	STD	10	19.22	19.31	PXDH1925···
M 22 × 2.5	20.7	STD	11	20.63	20.78	PXDH2070···
M 22 × 1.5	21.25	STD	10	21.22	21.31	PXDH2125···
M 24 × 3	22.4	STD	13	22.36	22.53	PXDH2240···
M 24 × 1.5	23.25	STD	10	23.22	23.31	PXDH2325···
M 27 × 3	25.4	STD	13	25.36	25.53	PXDH2540···

※PXD 5D型不推荐挤压丝锥底孔径加工。请使用PXD 3D。
For tap drill hole of forming tap, 3D type should be used. (5D is not recommended)

Phoenix

刀头交换式钻头
Exchangeable Head Drill

PXD

■比以往的加工速度更快！
Achieves faster feeds than ever before!

加工效率2倍以上！ Double the efficiency!

	工具径 Drill Dia.	加工材料 Work Material	孔深度 Depth of Hole	切削速度 Cutting Speed (m/min)	回转数 Speed (min-1)	进给量 Feed Rate (mm/rev)	回转速度 Feed (mm/min)	切削油剂 Coolant	使用机械 Machine
内冷油孔高速钢钻头 HSS Drill with Oil Hole	ø16	S50C	50mm	30	600	0.4	240	水溶性切削油剂 Water Soluble	卧式加工中心 Horizontal Machining Center
可转位式钻头 Indexable Drill				160	3,200	0.09	288		
PXD				100	1,990	0.3	**597**		

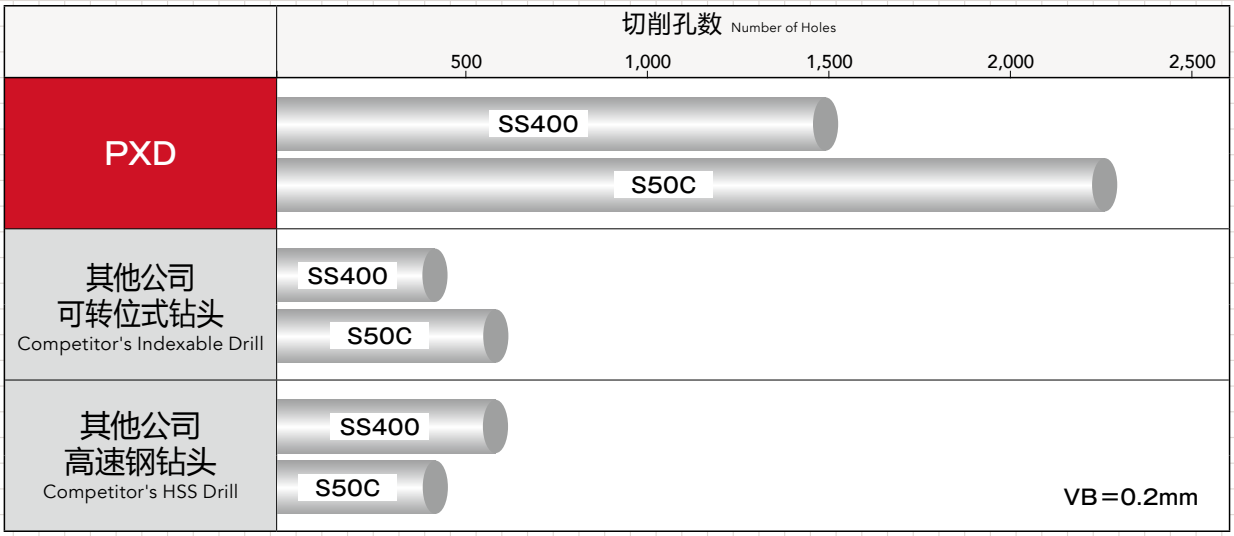
加工效率3倍以上！ Triple the efficiency!

	工具径 Drill Dia.	加工材料 Work Material	切深量 Depth of Hole	切削速度 Cutting Speed (m/min)	回转数 Speed (min-1)	进给量 Feed Rate (mm/rev)	回转速度 Feed (mm/min)	切削油剂 Coolant	使用机械 Machine
内冷油孔高速钢钻头 HSS Drill with Oil Hole	ø25	S50C	75mm	25	320	0.5	160	水溶性切削油剂 Water Soluble	卧式加工中心 Horizontal Machining Center
可转位式钻头 Indexable Drill				160	2,000	0.13	260		
PXD				100	1,270	0.5	**635**		

■加工效率・寿命提高！加工成本大幅下降！
Greater tool life and efficiency while significantly lowering cost!

工具径：ϕ16 Drill Diameter
使用机械：卧式加工中心 Machine Horizontal Machining Center
切深量：50mm Depth of Hole
切削油剂：水溶性切削油剂 Coolant Water Soluble

加工材料 Work Material	SS400 切削速度 Cutting Speed (m/min)	SS400 进给量 Feed Rate (mm/rev)	S50C 切削速度 Cutting Speed (m/min)	S50C 进给量 Feed Rate (mm/rev)
PXD	100	0.3	100	0.3
其他公司可转位式钻头 Competitor's Indexable Drill	200	0.1	160	0.1
其他公司高速钢钻头 Competitor's HSS Drill	30	0.3	30	0.3



Processing Data

■加工数据 Processing Data

PXD加工挤压丝锥底孔！ PXD-3D drill adequate pilot holes for forming taps

■钻孔 Drilling

使用工具 Tool	PXDZ220-3D-158.5-32
使用刀片(材质) Head (grade)	PXDH2240-PC
加工材料 Work Material	S50C
切削速度 Cutting Speed	70m/min(995min^{-1})
进给量 Feed	597mm/min (0.6mm/rev)
切削量 Depth of Hole	112mm（盲孔） (Blind)
切削油剂 Coolant	水溶性切削油剂 Water Soluble
使用机械 Machine	卧式加工中心 Horizontal Machining Center

加工孔径 ϕ22.43
Hole Size

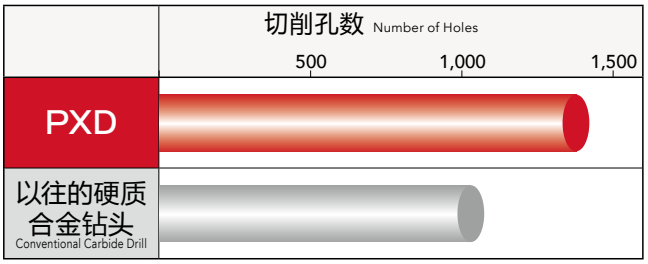
■攻丝 Tapping

使用工具 Tool	挤压丝锥 S-XPF M24×3 Forming Tap
加工材料 Work Material	S50C
攻丝深度 Tapping Length	48mm（2D）（盲孔） (Blind)
切削速度 Cutting Speed	15m/min(199min^{-1})
切削油剂 Coolant	水溶性切削油剂 Water Soluble
使用机械 Machine	卧式加工中心 Horizontal Machining Center

※挤压丝锥底孔加工请使用PXD 3D
For tap drill hole of forming tap, 3D type should be used. (5D is not recommended)

SS400的长寿命加工 Long tool life in SS400

使用工具 Tool	PXDZ160-3D-123.5-20
使用刀片(材质) Head (grade)	PXDH1600-PC
加工材料 Work Material	SS400
切削速度 Cutting Speed	100m/min (1,990min^{-1})
进给量 Feed	597mm/min (0.3mm/rev)
切削量 Depth of Hole	45mm（通孔） (Through)
切削油剂 Coolant	水溶性切削油剂 Water Soluble
使用机械 Machine	卧式加工中心 Horizontal Machining Center



大径加工时，根据加工环境，可以获得整硬钻头以上的寿命。合理区分使用整硬钻头与可换头式钻头可降低加工成本。
Higher durability may be achieved than conventional carbide drills depending on the working environment. Optimal, low-cost drilling is possible by properly selected carbide solid drills and exchangeable head drills.

Processing Data

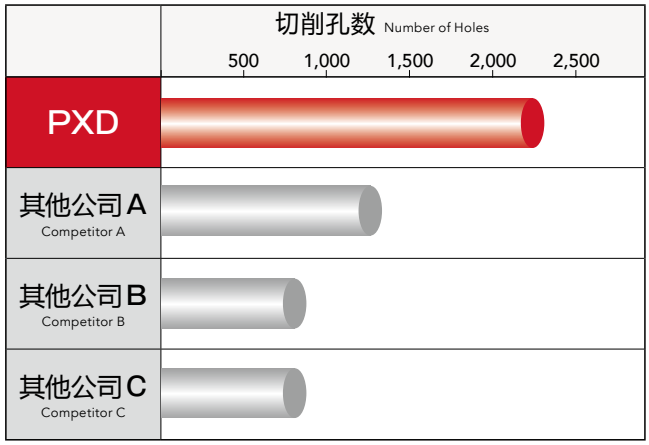
■加工数据 Processing Data

S50C的高效率加工(孔深3D) Highly efficient drilling in S50C (drilling depth 3xD)

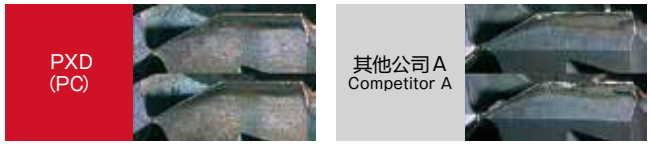
使用工具 Tool	PXDZ160-3D-123.5-20
使用刀片(材质) Head (grade)	PXDH1600-PC
加工材料 Work Material	S50C
切削速度 Cutting Speed	100m/min (1,990min^{-1})
进给量 Feed	597mm/min (0.3mm/rev)
切削量 Depth of Hole	45mm（通孔） (Through)
切削油剂 Coolant	水溶性切削油剂 Water Soluble
使用机械 Machine	卧式加工中心 Horizontal Machining Center

φ16，和硬质合金钻头同等的加工效率。使用寿命约为其他公司产品的1.7倍。

At ø16, the PXD was able to perform at the same level of efficiency as a carbide drill. Moreover, it was approximately 1.7 times the durability versus the competitor.



加工1,300孔时的磨损比较 Wear comparison after 1,300 holes of drilling

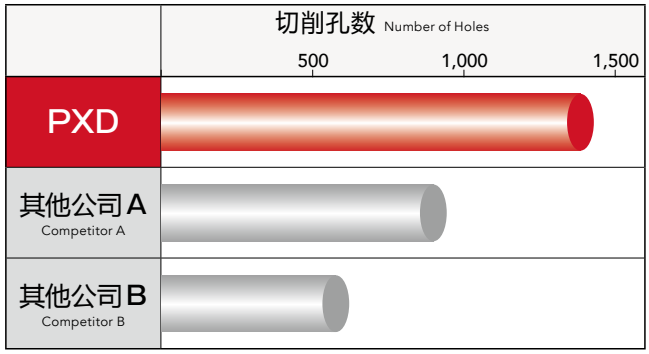


SS400的长寿命加工 Long tool life in SS400

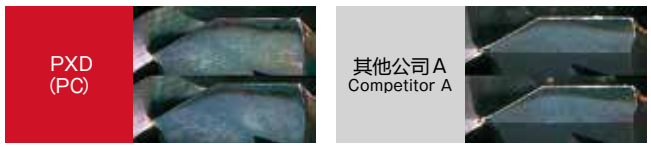
使用工具 Tool	PXDZ160-3D-123.5-20
使用刀片(材质) Head (grade)	PXDH1600-PC
加工材料 Work Material	SS400
切削速度 Cutting Speed	100m/min (1,990min^{-1})
进给量 Feed	597mm/min (0.3mm/rev)
切削量 Depth of Hole	45mm（通孔） (Through)
切削油剂 Coolant	水溶性切削油剂 Water Soluble
使用机械 Machine	卧式加工中心 Horizontal Machining Center

对SS400 加工，因有专用WDI® 涂层，抑制其磨损，使用寿命是其他公司的1.8倍。

When drilling in SS400, OSG's proprietary WDI® coating minimized tool wear, permitting 1.8 times the tool life versus the competition.



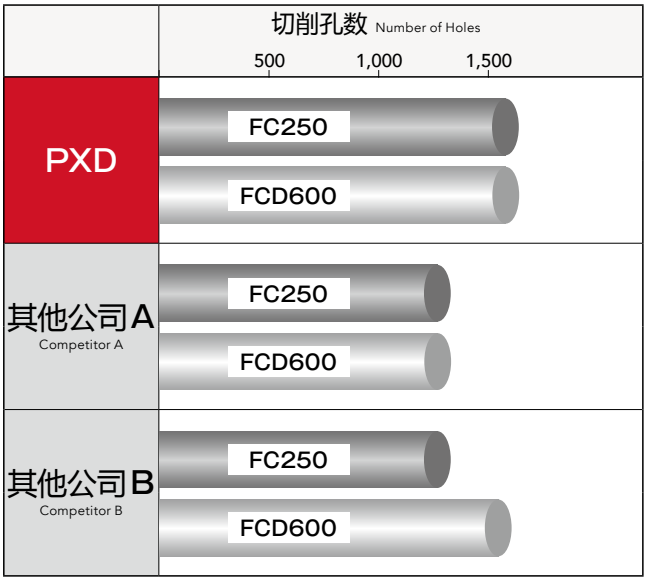
加工900孔时的磨损比较 Wear comparison after 900 holes of drilling



专用刀头的铸件加工 Exchangeable head for cast iron

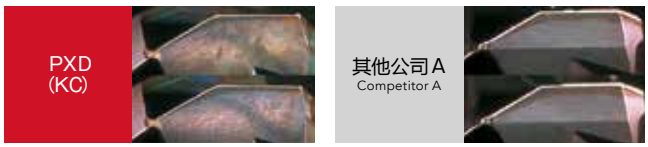
使用工具 Tool	PXDZ160-3D-123.5-20	
使用刀头(材质) Head (grade)	PXDH1600-KC	
加工材料 Work Material	FC250	FCD600
切削速度 Cutting Speed	100m/min(1,990min^{-1})	80m/min(1,600min^{-1})
进给速度 Feed	796mm/min (0.4mm/rev)	480mm/min (0.3mm/rev)
切削量 Depth of Hole	45mm（通孔） (Through)	
切削油剂 Coolant	水溶性切削油剂 Water Soluble	
使用机械 Machine	卧式加工中心 Horizontal Machining Center	

使用铸铁专用刀头可实现长寿命。
This exchangeable head is designated for cast iron and can maintain long tool life.



FC250

加工1280孔时的磨损比较 Wear comparison after 1,280 holes of drilling



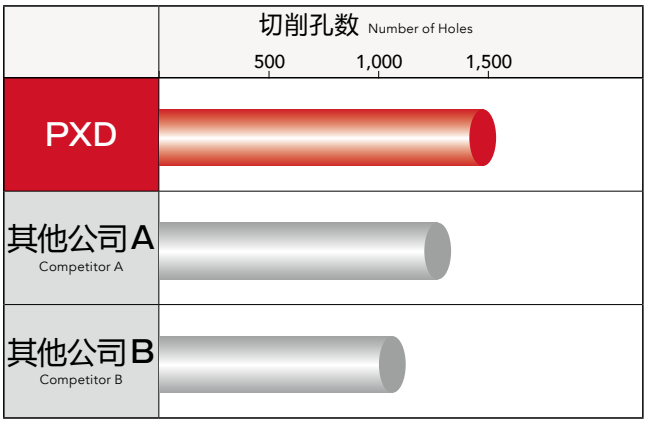
FCD600

加工1600孔时的磨损比较 Wear comparison after 1,600 holes of drilling

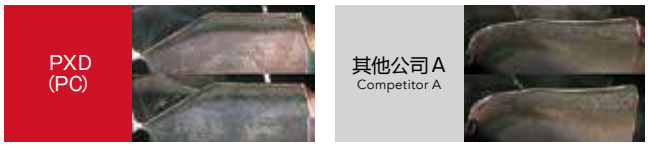
φ20的高效率加工 Highly efficient drilling at ø20

使用工具 Tool	PXDZ200-3D-146.5-25
使用刀头(材质) Head (grade)	PXDH2000-PC
加工材料 Work Material	S50C
切削速度 Cutting Speed	100m/min (1,590min^{-1})
进给速度 Feed	637mm/min (0.4mm/rev)
切削量 Depth of Hole	50mm（通孔） (Through)
切削油剂 Coolant	水溶性切削油剂 Water Soluble
使用机械 Machine	卧式加工中心 Horizontal Machining Center

即使是φ20，也能高效率加工，因专用WDI涂层的效果得以实现较长的使用寿命。
OSG's WDI® proprietary coating has enabled the PXD to achieve long tool life and high efficiency when drilling holes of ø20.



1,000穴加工時の摩耗比較 Wear comparison after 1,000 holes of drilling

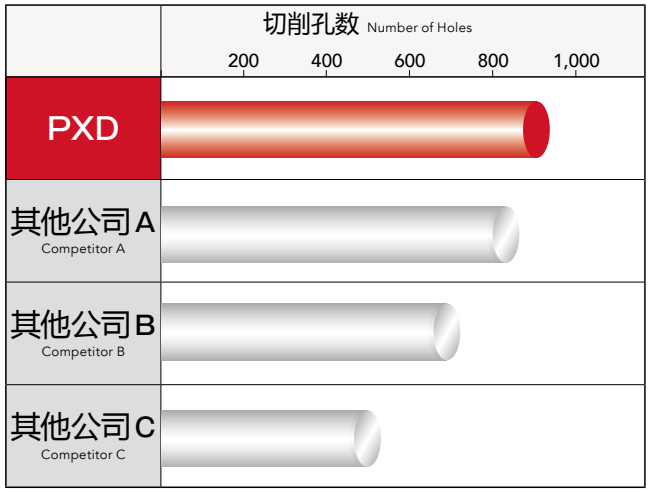


Processing Data

■加工数据 Processing Data

S50C的高效率加工(孔深5D) Highly efficient drilling in S50C (drilling depth 5xD)

使用工具 Tool	PXDZ160-5D-155.5-20
使用刀头(材质) Head (grade)	PXDH1600-PC
加工材料 Work Material	S50C
切削速度 Cutting Speed	100m/min (1,990min^{-1})
进给速度 Feed	597mm/min (0.3mm/rev)
切削量 Depth of Hole	80mm（盲孔） (Blind)
切削油剂 Coolant	水溶性切削油剂 Water Soluble
使用机械 Machine	卧式加工中心 Horizontal Machining Center



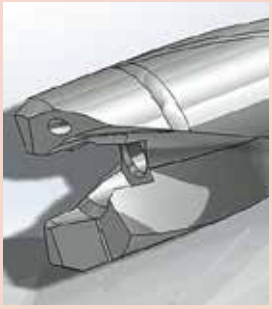
5D深孔加工也能实现与硬质合金钻头同能的加工效率。另外与其他公司产品相比也能达到长寿命。

Even when drilling hole depth of 5xD, the PXD achieved at the same level of efficiency as a carbide drill. Moreover, it had the best tool life versus the competitions.

加工750孔时的磨损比较 Wear comparison after 750 holes of drilling

■ 关于可换头式钻头的安装 Mounting Procedure

■ 安装顺序 Procedure



步骤1 Step 1

用气枪清洁安装部。

Clean attachment area with an air blower.

※如有切屑残留，会导致无法正确安装致使刀头破损。

Any leftover cutting chips may prevent the head from being mounted properly and may cause damages to the tool.

步骤2 Step 2

将刀头嵌在安装部处。

Manually attach the head.

步骤3 Step 3

在刀头两侧有两处直槽，使用专用扳手嵌入该直槽中。

Insert the flat metal portion of the designated driver into the groove of the head.

※请将扳手完全嵌入两槽中,如果嵌入太浅，则可能会导致槽部破损。

Insert the designated driver firmly into the groove. If the insertion of the designated driver is too shallow, it could damage the flutes.

步骤4 Step 4

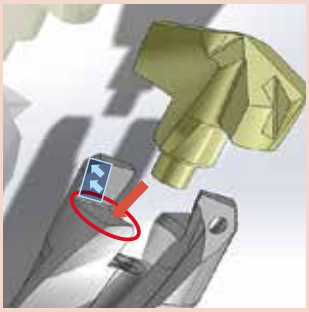
将扳手顺时针回转，将刀头和刀体拧紧。

Turn the designated driver clockwise and mount the head onto the body.

※请确保刀头和刀体的连接部没有间隙

.Mount it firmly and make sure that there is no gap in the area between the head and the body.

■ 安装后的确认 After mounting



安装完了之后，请用厚度计（20μm）确认标记部位（蓝、红）的间隙。

Make sure no clearance gaps is found places marked blue and red by using thickness gauges of 20μm.

像这样在安装后发生间隙的情况，请用气枪清洁，再安装，再确认。

If clearance gap is found, please mount and check again after cleaning the mounting area by air blow.

※刀体的嵌合力在一定以下就到寿命了。当间隙发生，用手都可以将刀头取下的情况下，刀体也将无法使用了。

If the clearance gap remains or head can be took off without driver, body is overused and must be changed.

■ 使用注意 Precaution

■ PXD 因为未使用紧固螺纹，设定安装部不易松动的加工环境是必要的。

The machining environment that won't loosen the mounting area is essential for PXD because no clamping screws are used.

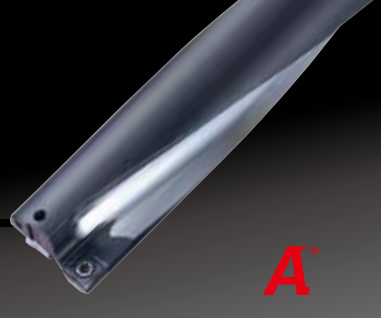
孔加工贯穿时特别注意。

Extra caution is necessary for through holes.

- 在加工固定困难的薄板材料，以及一些容易发生回弹的材料时，退刀时回转进给请下调30%左右。
- 贯穿时深度设定请参考右图。
- When pulling the drill out from the hole of thin plate without enough holding or material tend to spring back easily, reduce feed rate by 30%.
- Please refer photos on right for setting of through holes.

贯穿时深度位置请设定在钻肩部2mm以下。

Head should be penetrated no more than 2mm from the shoulder of PXD.



特长
Features

槽面高精度精加工提高了切屑的排出性
The high precision finishing of the flute surface improves chip evacuation.

即使是苛刻的5D深孔也能进行稳定加工的槽设计
Unique flute design enables stable drilling, even with rigorous 5 × dia deep holes.

因为内冷可以进行高效率加工
The internal coolant system enables highly efficient drilling.

经济性的四角式样
Economical 4-corner design

中心和外周刃使用同一种刀片，管理方便
Using same insert to both center and peripheral cutting edges simplify tool management.

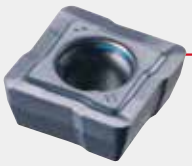
■优异的排屑性在高进给条件下也能实现稳定加工
Stable machining with high feed rate is optimized by excellent chip evacuation.

PAT.P in Japan

○兼备高刚性及排屑性的沟槽设计
○自带段屑槽可将切削细小分段
○车削也能稳定加工
○从2D至苛刻的5D加工一应俱全
○最平衡的刀片安装方式，实现高进给条件

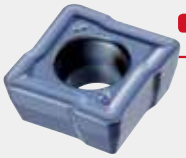
○The flute design features both high rigidity and superb chip evacuation performance.
○With an attached breaker to the cutter body, cutting chips can be broken into small pieces.
○Excellent stability for turning
○Capable for stable drilling with rigorous 5 × dia. deep holes
○High feed cutting is available by sequential balance of inserts

■3种刀片可对应广泛的加工材料。
3 types of breakers are available for variety of work materials



钢・不锈钢用(DM)for Steel and Stainless Steel

○锋利性及强度兼备的形状
○钢材、不锈钢加工发挥优异性能
○Well balanced insert with sharpness and rigidity
○Optimal for steel and stainless steels



NEW 铸铁用(DR)for Cast Iron

○刃尖强度优良的形状
○铸铁加工发挥优异性能
○Strong cutting edge acquired by rake angle and land
○Optimal for cast iron

NEW 铝合金・非铁合金用(DN)for Aluminum Alloy and Nonferrous Metal

○锋利的切削刃及抛光处理，排屑性优良的形状
○铝合金、非铁合金加工发挥优异性能
○Excellent chip evacuation is acquired by sharp cutting edges and polishing treatment
○Optimal for aluminum alloy and nonferrous metal

刀片段屑槽 Insert Breaker	分类 Classification	材质 Grades	涂层方法 Coating Method	母材硬度 (HRA) Hardness	表面处理 Surface Treatment	
					主成分 Main Component	厚度 Coating Thickness
DM (钢・不锈钢用) for Steel and Stainless Steel	P	XP9020	PVD	91.9	TiAlN系	3μm
NEW DR (铸铁用) for Cast Iron	K	XP1010	PVD	91.4	TiAlN系	6μm
NEW DN (铝合金・非铁用) for Aluminum Alloy and Nonferrous Metal	N	CK110	—	92.2	—	—

Phoenix

可转位式钻头
Indexable Drill

P2D/P3D/P4D/P5D

■即使是苛刻的5D深孔也能稳定加工

Achieves stable drilling, even when making rigorous, 5xD deep holes.

加工材料：S50C
Work Material

刀具径：ϕ25
Drill Diameter

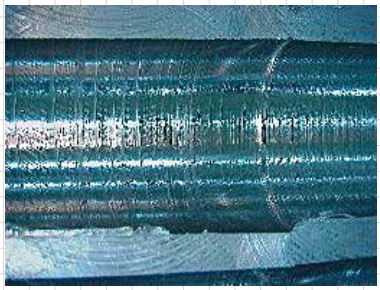
孔深：125mm
Depth of Hole

使用机械：卧式加工中心
Machine　Horizontal Machining Center

切削油剂：水溶性切削油剂
Coolant　Water Soluble

切削条件：Vc=150m/min、f=0.12mm/rev
Cutting Conditions

■以前产品 Conventional Indexable Drill



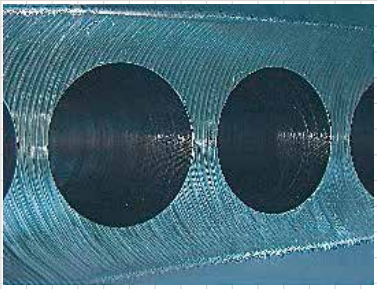
横截面照片 Cross-sectional

〇以往可转位式钻头加工5D深孔加工非常困难。

〇可转位式钻头是双槽单刃，径向负荷平衡较差，容易导致横向负荷过大。对于深孔加工影响更大。

〇5xD deep hole drilling was an extremely difficult process for conventional indexable drills.
〇Since conventional indexable drills are constructed of two flutes and a cutting edge, its load balance is relatively poor especially when drilling deep holes.

■P5D Indexable Drill for 5D



〇 **可实现面精度优良的稳定加工！**

〇以5D深孔加工为基准的专用设计可稳定加工5D深孔！

〇Achieves stable drilling with minimal irregularity!
〇The P5D is designed specifically for stable drilling of 5xD deep holes.

■稳定的切削负荷 Stable cutting load

加工材料：S50C
Work Material

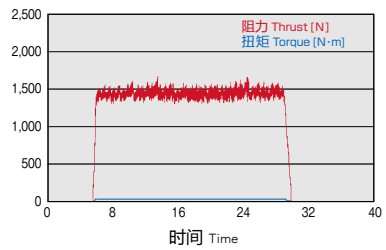
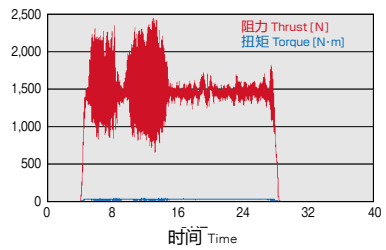
刀具径：ϕ21
Drill Diameter

孔深：50mm
Depth of Hole

使用机械：卧式加工中心
Machine　Horizontal Machining Center

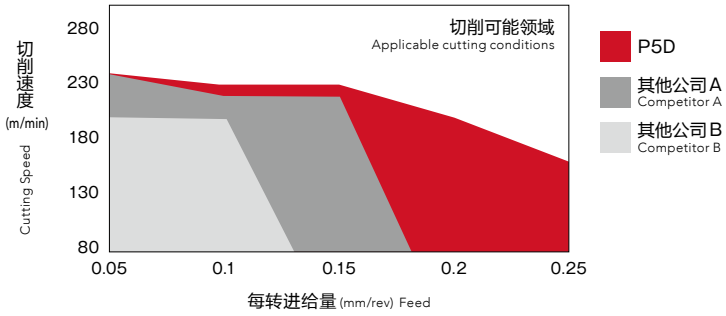
切削油剂：水溶性切削油剂
Coolant　Water Soluble

切削条件：Vc=120m/min、f=0.12mm/rev
Cutting Conditions

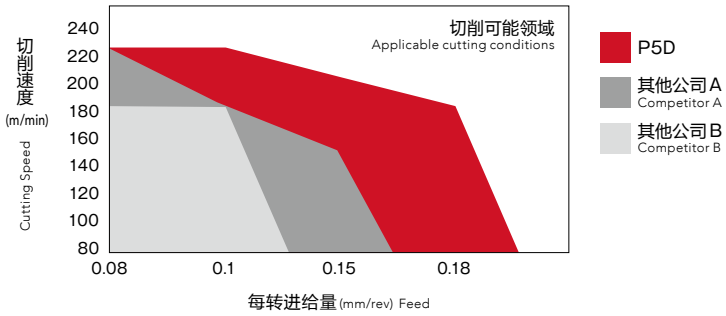
	P5D	其他公司 Competitor
		
阻力平均值 Average thrust	1,400N	1,500N
扭矩平均值 Average torque	19N·m	18N·m

■即使是深孔加工也能高效率 High efficiency even when drilling deep holes

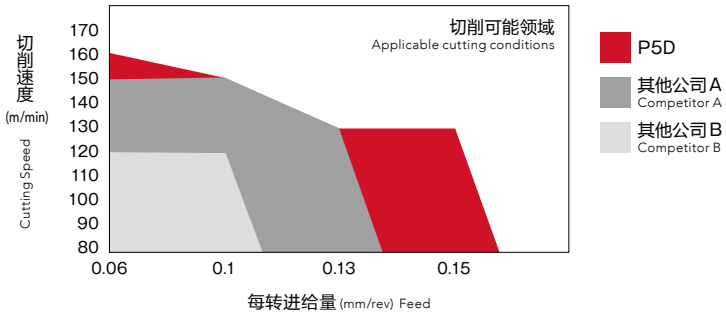
使用工具 Tool	P5D2500FS32M08 (ϕ25)
使用刀片(材质) Insert (grade)	XCMT083508ER-DM
加工材料 Work Material	S50C
切血量 Depth of Hole	120mm
切削油剂 Coolant	水溶性切削油剂(内部供油) Water Soluble (Internal)
使用机械 Machine	卧式加工中心(BT50) Horizontal Machining Center



使用工具 Tool	P5D2500FS32M08 (ϕ25)
使用刀片(材质) Insert (grade)	XCMT083508ER-DM
加工材料 Work Material	SCM440 (30HRC)
切血量 Depth of Hole	120mm
切削油剂 Coolant	水溶性切削油剂(内部供油) Water Soluble (Internal)
使用机械 Machine	卧式加工中心(BT50) Horizontal Machining Center



使用工具 Tool	P5D2500FS32M08 (ϕ25)
使用刀片(材质) Insert (grade)	XCMT083508ER-DM
加工材料 Work Material	SUS304
切血量 Depth of Hole	120mm
切削油剂 Coolant	水溶性切削油剂(内部供油) Water Soluble (Internal)
使用机械 Machine	卧式加工中心(BT50) Horizontal Machining Center



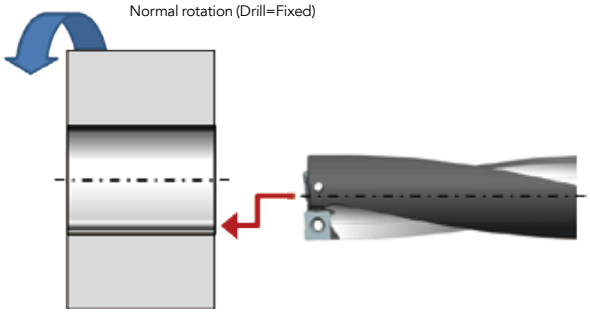
※根据切削环境的变化会导致切削可能领域的变化。这些图片不能保证切削可能领域。

※ Applicable cutting conditions may vary based on actual machining conditions. These graphs are not to guarantee the applicable cutting conditions.

■也可进行车削粗加工 Rough process of turning is also possible

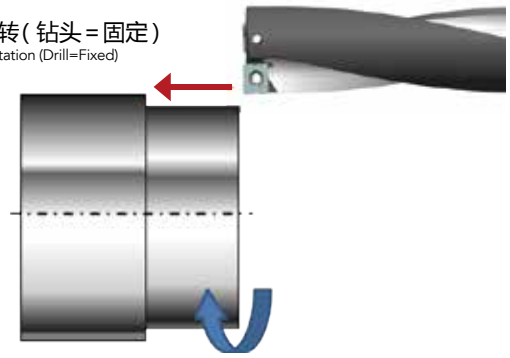
■车内圆加工
Turning internal diameter

工件正转(钻头 = 固定)
Normal rotation (Drill=Fixed)



■车外圆加工
Turning outer diameter

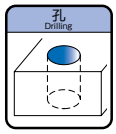
工件逆转(钻头 = 固定)
Reverse rotation (Drill=Fixed)



Phoenix

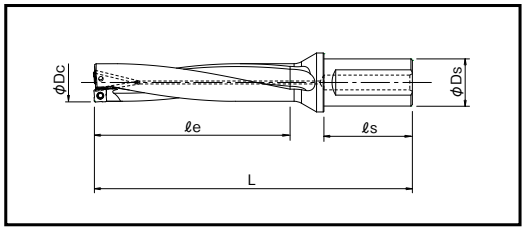
可转位式钻头
Indexable Drill

P2D NEW

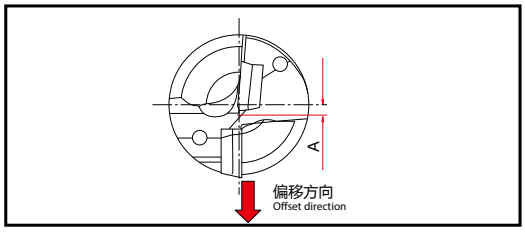


Specification

■形状尺寸表 Specification



■工件回转钻孔时偏移最大调整量
Maximum offset amount for drilling with rotation of work materials



P2D

单位:mm Unit:mm

商品号 EDP No.	名称 Designation	外径 Dc	全长 L	有效加工深度 ℓe	柄径 Ds	柄长 ℓs	外径＋侧偏移量 Dc+A Offset Amount	最大加工径 Dc Max	适用刀片 Applicable Inserts	库存 Stock
7803129	P2D2100FS25M07	21	121	42	25	56	1	23	①	C
7803130	P2D2150FS25M07	21.5	122	43	25	56	0.9	23.3		C
7803131	P2D2200FS25M07	22	123	44	25	56	0.8	23.6		C
7803132	P2D2250FS25M07	22.5	124	45	25	56	0.7	23.9		C
7803133	P2D2300FS25M07	23	125	46	25	56	0.5	24		C
7803134	P2D2350FS32M07	23.5	130	47	32	60	0.4	24.3		C
7803135	P2D2400FS32M07	24	131	48	32	60	0.3	24.6		C
7803136	P2D2450FS32M07	24.5	132	49	32	60	0.2	24.9		C
7803137	P2D2500FS32M08	25	133	50	32	60	1.1	27.2	②	C
7803138	P2D2550FS32M08	25.5	134	51	32	60	0.9	27.3		C
7803139	P2D2600FS32M08	26	135	52	32	60	0.8	27.6		C
7803140	P2D2650FS32M08	26.5	136	53	32	60	0.7	27.9		C
7803141	P2D2700FS32M08	27	137	54	32	60	0.6	28.2		C
7803142	P2D2800FS32M08	28	139	56	32	60	0.3	28.6		C
7803143	P2D2850FS32M08	28.5	140	57	32	60	0.2	28.9		C
7803144	P2D2900FS32M09	29	141	58	32	60	1.3	31.6	③	C
7803145	P2D3000FS32M09	30	143	60	32	60	1.1	32.2		C
7803146	P2D3100FS32M09	31	145	62	32	60	0.8	32.6		C
7803147	P2D3200FS32M09	32	147	64	32	60	0.6	33.2		C
7803148	P2D3300FS40M09	33	159	66	40	70	0.3	33.6		C
7803149	P2D3350FS40M09	33.5	160	67	40	70	0.2	33.9		C

C＝标准库存品 C=Standard stock item

Phoenix

可转位式钻头
Indexable DrillIndexable Drill

P3D NEW /P4D NEW

P3D

单位:mm Unit:mm

商品号 EDP No.	名称 Designation	外径 Dc	全长 L	有效加工深度 ℓe	柄径 Ds	柄长 ℓs	外径+侧偏移量 Dc+A Offset Amount	最大加工径 Dc Max	适用刀片 Applicable Inserts	库存 Stock
7803229	P3D2100FS25M07	21	142	63	25	56	1	23	①	C
7803230	P3D2150FS25M07	21.5	144	65	25	56	0.9	23.3		C
7803231	P3D2200FS25M07	22	145	66	25	56	0.8	23.6		C
7803232	P3D2250FS25M07	22.5	147	68	25	56	0.7	23.9		C
7803233	P3D2300FS25M07	23	148	69	25	56	0.5	24		C
7803234	P3D2350FS32M07	23.5	154	71	32	60	0.4	24.3		C
7803235	P3D2400FS32M07	24	155	72	32	60	0.3	24.6		C
7803236	P3D2450FS32M07	24.5	157	74	32	60	0.2	24.9		C
7803237	P3D2500FS32M08	25	158	75	32	60	1.1	27.2	②	C
7803238	P3D2550FS32M08	25.5	160	77	32	60	0.9	27.3		C
7803239	P3D2600FS32M08	26	161	78	32	60	0.8	27.6		C
7803240	P3D2650FS32M08	26.5	163	80	32	60	0.7	27.9		C
7803241	P3D2700FS32M08	27	164	81	32	60	0.6	28.2		C
7803242	P3D2800FS32M08	28	167	84	32	60	0.3	28.6		C
7803243	P3D2850FS32M08	28.5	169	86	32	60	0.2	28.9		C
7803244	P3D2900FS32M09	29	170	87	32	60	1.3	31.6	③	C
7803245	P3D3000FS32M09	30	173	90	32	60	1.1	32.2		C
7803246	P3D3100FS32M09	31	176	93	32	60	0.8	32.6		C
7803247	P3D3200FS32M09	32	179	96	32	60	0.6	33.2		C
7803248	P3D3300FS40M09	33	192	99	40	70	0.3	33.6		C
7803249	P3D3350FS40M09	33.5	194	101	40	70	0.2	33.9		C

C=标准库存品 C=Standard stock item

P4D

单位:mm Unit:mm

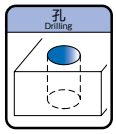
商品号 EDP No.	名称 Designation	外径 Dc	全长 L	有效加工深度 ℓe	柄径 Ds	柄长 ℓs	外径+侧偏移量 Dc+A Offset Amount	最大加工径 Dc Max	适用刀片 Applicable Inserts	库存 Stock
7803329	P4D2100FS25M07	21	163	84	25	56	1	23	①	C
7803330	P4D2150FS25M07	21.5	165	86	25	56	0.9	23.3		C
7803331	P4D2200FS25M07	22	167	88	25	56	0.8	23.6		C
7803332	P4D2250FS25M07	22.5	169	90	25	56	0.7	23.9		C
7803333	P4D2300FS25M07	23	171	92	25	56	0.5	24		C
7803334	P4D2350FS32M07	23.5	177	94	32	60	0.4	24.3		C
7803335	P4D2400FS32M07	24	179	96	32	60	0.3	24.6		C
7803336	P4D2450FS32M07	24.5	181	98	32	60	0.2	24.9		C
7803337	P4D2500FS32M08	25	183	100	32	60	1.1	27.2	②	C
7803338	P4D2550FS32M08	25.5	185	102	32	60	0.9	27.3		C
7803339	P4D2600FS32M08	26	187	104	32	60	0.8	27.6		C
7803340	P4D2650FS32M08	26.5	189	106	32	60	0.7	27.9		C
7803341	P4D2700FS32M08	27	191	108	32	60	0.6	28.2		C
7803342	P4D2800FS32M08	28	195	112	32	60	0.3	28.6		C
7803343	P4D2850FS32M08	28.5	197	114	32	60	0.2	28.9		C
7803344	P4D2900FS32M09	29	199	116	32	60	1.3	31.6	③	C
7803345	P4D3000FS32M09	30	203	120	32	60	1.1	32.2		C
7803346	P4D3100FS32M09	31	207	124	32	60	0.8	32.6		C
7803347	P4D3200FS32M09	32	211	128	32	60	0.6	33.2		C
7803348	P4D3300FS40M09	33	225	132	40	70	0.3	33.6		C
7803349	P4D3350FS40M09	33.5	227	134	40	70	0.2	33.9		C

C=标准库存品 C=Standard stock item

Phoenix

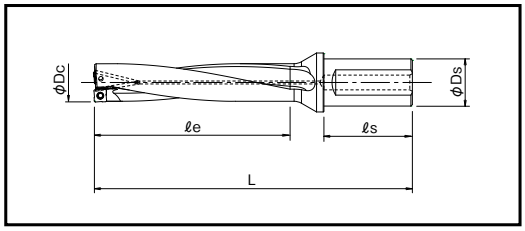
可转位式钻头
Indexable Drill

P5D

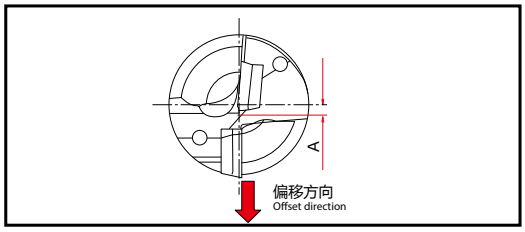


Specification

■形状尺寸表 Specification



■工件回转钻孔时偏移最大调整量
Maximum offset amount for drilling with rotation of work materials



P5D

单位:mm Unit:mm

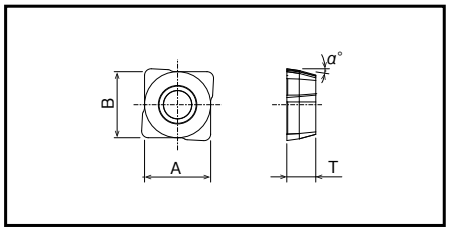
商品号 EDP No.	名称 Designation	外径 Dc	全长 L	有效加工深度 ℓe	柄径 Ds	柄长 ℓs	外径＋侧偏移量 Dc+A Offset Amount	最大加工径 Dc Max	适用刀片 Applicable Inserts	库存 Stock
7802729	P5D2100FS25M07	21	184	105	25	56	1	23	①	C
7802730	P5D2150FS25M07	21.5	187	108	25	56	0.9	23.3		C
7802731	P5D2200FS25M07	22	189	110	25	56	0.8	23.6		C
7802732	P5D2250FS25M07	22.5	192	113	25	56	0.7	23.9		C
7802733	P5D2300FS25M07	23	194	115	25	56	0.5	24		C
7802734	P5D2350FS32M07	23.5	201	118	32	60	0.4	24.3		C
7802735	P5D2400FS32M07	24	203	120	32	60	0.3	24.6		C
7802736	P5D2450FS32M07	24.5	206	123	32	60	0.2	24.9		C
7802737	P5D2500FS32M08	25	208	125	32	60	1.1	27.2	②	C
7802738	P5D2550FS32M08	25.5	211	128	32	60	0.9	27.3		C
7802739	P5D2600FS32M08	26	213	130	32	60	0.8	27.6		C
7802740	P5D2650FS32M08	26.5	216	133	32	60	0.7	27.9		C
7802741	P5D2700FS32M08	27	218	135	32	60	0.6	28.2		C
7802742	P5D2800FS32M08	28	223	140	32	60	0.3	28.6		C
7802743	P5D2850FS32M08	28.5	226	143	32	60	0.2	28.9		C
7802744	P5D2900FS32M09	29	228	145	32	60	1.3	31.6	③	C
7802745	P5D3000FS32M09	30	233	150	32	60	1.1	32.2		C
7802746	P5D3100FS32M09	31	238	155	32	60	0.8	32.6		C
7802747	P5D3200FS32M09	32	243	160	32	60	0.6	33.2		C
7802748	P5D3300FS40M09	33	258	165	40	70	0.3	33.6		C
7802749	P5D3350FS40M09	33.5	261	168	40	70	0.2	33.9		C

C＝标准库存品 C=Standard stock item

Phoenix

可转位式钻头
Indexable Drill

刀片



Inserts

■适用刀片 Inserts

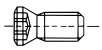
单位:mm Unit:mm

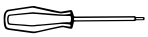
	式样 Specification		名称 Designation	切削刃数 Number of Cutting Edges	适用刀身 Applicable Body	刀片尺寸 Insert Size A×B	高度 T	前角 α°	R	超硬 Uncoated CK110	涂层种类 Grade of Coated Materials XP9020	XP1010
	钢 不锈钢 for Steel & Stainless Steel	①	XCMT073106ER-DM	4	φ21~24.5	7.42	3.1	8	0.6		7823067	
		②	XCMT083508ER-DM	4	φ25~28.5	8.71	3.5	8	0.8		7823068	
		③	XCMT094008ER-DM	4	φ29~33.5	10.04	4	8	0.8		7823069	
NEW	铸铁 for Cast Iron	①	XCMT073106ER-DR	4	φ21~24.5	7.42	3.1	8	0.6			7823167
		②	XCMT083508ER-DR	4	φ25~28.5	8.71	3.5	8	0.8			7823168
		③	XCMT094008ER-DR	4	φ29~33.5	10.04	4	8	0.8			7823169
NEW	铝合金 非铁 for Alluminum(alloy) and Nonferrous Metal	①	XCMT073106ER-DN	4	φ21~24.5	7.42	3.1	8	0.6	7823267		
		②	XCMT083508ER-DN	4	φ25~28.5	8.71	3.5	8	0.8	7823268		
		③	XCMT094008ER-DN	4	φ29~33.5	10.04	4	8	0.8	7823269		

库存种类为C(标准库存品)。
Stock are categorized as C (Standard stock item).

Accessories

■零件 Accessories

	商品号 EDP No.	库存 Stock	名称 Designation	适用刀片 Applicable Inserts			
 固定螺丝 Clamping Screw	7808136	C	FS25560P	①	XCMT0731···		—
	7808135	C	FS30570P	②	XCMT0835···	③	XCMT0940···

	商品号 EDP No.	库存 Stock	名称 Designation	适用刀片 Applicable Inserts			
 螺丝刀 Wrench	7808225	C	8IP-D (Torx 8IP)	①	XCMT0731···		—
	7808226	C	9IP-D (Torx 9IP)	②	XCMT0835···	③	XCMT0940···

C=标准库存品 C=Standard stock item
螺丝刀请另购。 The wrenches are sold separately from the cutters.

Phoenix

可转位式钻头
Indexable Drill

P2D/P3D/P4D/P5D

■加工材料推荐
Recommended Materials by Insert Type

◎第一推荐材料 Best
○第二推荐材料 Good

刀片材质 Insert Grades	断屑槽 Insert Breaker	切削油剂 Coolant	P	M	K	N	S
XP9020	DM	有	◎	◎	○	○	○
NEW XP1010	DR	有	○		◎		
NEW CK110	DN	有				◎	

DM:钢·不锈钢用 DR:铸铁用 DN:铝合金用
DM:for Steel & Stainless Steel Drill DR:for Cast Iron NM:for Aluminum Alloy

Cutting Conditions

■切削条件基准表 Cutting Conditions

	加工材料 Work Material	抗损强度·硬度 Tensil Strength·Hardness	切削速度 Vc (m/min) Cutting Speed	进给量 f (mm/rev) Feed Rate								
				加工深度 2D 3D Depth of Cut 2×Dia, 3×Dia.			加工深度 4D Depth of Cut 4×Dia.			加工深度 5D Depth of Cut 5×Dia.		
				ø21~ø24.5	ø25~ø28.5	ø29~ø33.5	ø21~ø24.5	ø25~ø28.5	ø29~ø33.5	ø21~ø24.5	ø25~ø28.5	ø29~ø33.5
P	软钢、低炭素钢 Mild Steel,Carbon Steel (SS400、S10C)	~180HB	200 (150 ~ 250)	0.14 (0.04~0.2)	0.18 (0.06~0.25)	0.2 (0.08~0.3)	0.12 (0.04~0.15)	0.18 (0.06~0.25)	0.2 (0.08~0.25)	0.12 (0.04~0.15)	0.15 (0.06~0.2)	0.18 (0.08~0.2)
P	炭素钢、合金钢 Carbon Steel, Alloy Steel (S50C、SCM440)	~280HB	150 (100 ~ 220)	0.14 (0.04~0.2)	0.18 (0.06~0.25)	0.2 (0.08~0.3)	0.12 (0.04~0.15)	0.18 (0.06~0.25)	0.2 (0.08~0.25)	0.12 (0.04~0.15)	0.15 (0.06~0.2)	0.18 (0.08~0.2)
P	模具钢 Die Steel (SKD11、SKD61)	~280HB	120 (80 ~ 180)	0.12 (0.04~0.15)	0.14 (0.06~0.2)	0.18 (0.08~0.25)	0.1 (0.04~0.13)	0.14 (0.06~0.2)	0.18 (0.08~0.25)	0.1 (0.04~0.13)	0.12 (0.06~0.15)	0.15 (0.08~0.18)
M	不锈钢 Stainless Steel (SUS304、SUS420)	~250HB	130 (80 ~ 180)	0.1 (0.04~0.15)	0.13 (0.06~0.2)	0.16 (0.08~0.25)	0.08 (0.04~0.1)	0.13 (0.06~0.2)	0.16 (0.08~0.2)	0.08 (0.04~0.1)	0.1 (0.06~0.15)	0.12 (0.08~0.18)
K	铸铁 Cast Iron (FC250)	~350N/mm²	200 (150 ~ 280)	0.16 (0.08~0.25)	0.2 (0.06~0.3)	0.2 (0.08~0.3)	0.12 (0.04~0.15)	0.2 (0.06~0.3)	0.2 (0.08~0.3)	0.12 (0.04~0.15)	0.15 (0.06~0.2)	0.18 (0.08~0.2)
K	球墨铸铁 Ductile Cast Iron (FCD400)	~800N/mm²	160 (100 ~ 220)	0.14 (0.04~0.2)	0.18 (0.06~0.25)	0.18 (0.08~0.25)	0.12 (0.04~0.15)	0.15 (0.06~0.25)	0.18 (0.08~0.25)	0.1 (0.04~0.13)	0.12 (0.06~0.15)	0.15 (0.08~0.18)
N	铝合金 Aluminum Alloy	~13%Si	200 (100 ~ 800)	0.16 (0.04~0.25)	0.2 (0.06~0.3)	0.2 (0.08~0.3)	0.14 (0.04~0.2)	0.2 (0.06~0.3)	0.2 (0.08~0.3)	0.12 (0.04~0.15)	0.15 (0.06~0.25)	0.2 (0.08~0.3)
S	超耐热合金 Supperalloy (Inconel® 718)	—	30 (15 ~ 50)	0.06 (0.04~0.08)	0.08 (0.06~0.1)	0.1 (0.06~0.12)	0.05 (0.04~0.08)	0.07 (0.06~0.1)	0.08 (0.06~0.12)	0.04 (0.02~0.06)	0.07 (0.06~0.08)	0.07 (0.06~0.08)
S	钛合金 Titanium Alloy (Ti-6AL-4V)	—	60 (30 ~ 100)	0.08 (0.04~0.15)	0.1 (0.06~0.2)	0.14 (0.08~0.2)	0.08 (0.04~0.1)	0.1 (0.06~0.2)	0.14 (0.08~0.2)	0.06 (0.04~0.1)	0.08 (0.06~0.15)	0.1 (0.08~0.15)

1. 这张切削条件基准表是以水溶性切屑油剂作为内部供油。
2. 请使用稀释倍率20倍以下的优质水溶性切屑油剂。
3. 不推荐使用油性切屑油剂。
4. 这张切削条件基准表适用于孔深5D以下。
5. 请确保整洁干净后紧紧地安装刀片。
6. 请在没有变形，弯曲，震动的情况下对加工材料进行加工。
7. 堵塞的油孔是导致折损的诱因，请务必安装供油装置的过滤设备。
8. 根据要求的孔精度，调整加工条件。
   ·重视孔径误差的情况：扩大孔径0 ~ +0.2mm，推荐条件f=0.07mm/rev以下
   ·重视效率的情况：扩大孔径0 ~ +0.5mm，推荐条件f=0.1mm/rev以上

1. The indicated speeds and feeds are for using water soluble oil with inner supply.
2. Suitable cutting fluid is water soluble high density oil (less than 20 times dilution)
3. Using non-water soluble oil is not recommended.
4. These conditions are for drilling depth less than 5 times the drill diameter.
5. Inserts should be attached to the holder tightly in a very neat condition.
6. Fasten the work material to reduce the possibility of work deformation, deflection of machined surface, or vibration.
7. A clogged oil hole can lead to a breakage. Make sure that a filter is attached to the oil feeder.
8. Cutting condition may need adjustment depending on the required hole accuracy.
   ·Prioritize tolerance of hole dia.: oversized hole dia. 0~+0.02mm f=0.07mm/rev or less
   ·Prioritize efficiency.: oversized hole dia. 0~+0.05mm f=0.1mm/rev or more

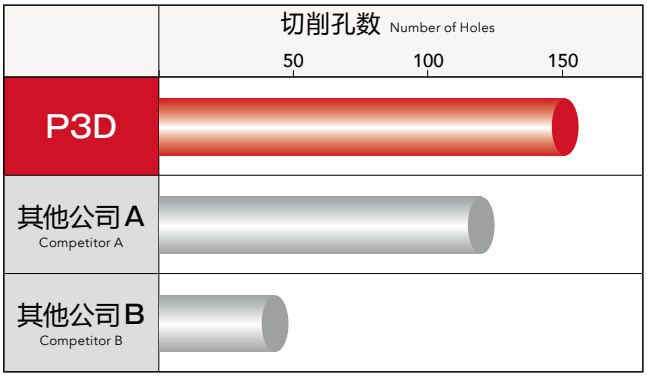
Processing Data

■加工数据 Processing Data

SUS304的高效率加工(P3D) High efficiency drilling in SUS304 (P3D)

使用工具 Tool	P3D2500FS32M08 (ϕ25)
使用刀片(材质) Insert (grade)	XCMT083508ER-DM (XP9020)
加工材料 Work Material	SUS304
切削速度 Cutting Speed	160m/min (2,040min^{-1})
进给速度 Feed	400mm/min (0.2mm/rev)
切削量 Depth of Hole	75mm（盲孔） (Blind)
切削油剂 Coolant	水溶性切削油剂 Water Soluble
使用机械 Machine	卧式加工中心 Horizontal Machining Center

SUS304加工实现长寿命。
The P3D was able to achieve long tool life by drilling SUS 304.



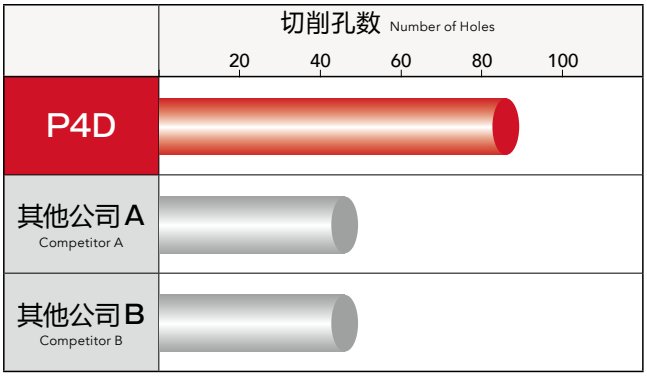
48孔加工时的磨耗比较 Wear comparison after drilling 48 holes

P3D | 其他公司A Competitor A | 其他公司B Competitor B

SUS304的高效率加工(P4D) High efficiency drilling in SUS304 (P4D)

使用工具 Tool	P4D2500FS32M08 (ϕ25)
使用刀片(材质) Insert (grade)	XCMT083508ER-DM (XP9020)
加工材料 Work Material	SUS304
切削速度 Cutting Speed	160m/min (2,040min^{-1})
进给速度 Feed	245mm/min (0.12mm/rev)
切削量 Depth of Hole	100mm（盲孔） (Blind)
切削油剂 Coolant	水溶性切削油剂 Water Soluble
使用机械 Machine	卧式加工中心 Horizontal Machining Center

稳定加工实现长寿命。
Long tool life was able to achieve by stable drilling.



45孔加工时的磨耗比较 Wear comparison after drilling 45 holes

P4D | 其他公司A Competitor A | 其他公司B Competitor B

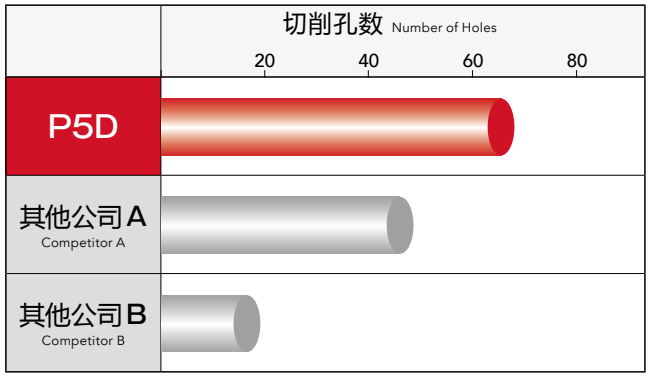
Processing Data

■加工数据 Processing Data

S50C的高效率加工(P5D) High efficiency drilling in S50C

使用工具 Tool	P5D2700FS32M08 (ϕ27)
使用刀片(材质) Insert (grade)	XCMT083508ER-DM (XP9020)
加工材料 Work Material	S50C
切削速度 Cutting Speed	150m/min (1,800min^{-1})
进给速度 Feed	216mm/min (0.12mm/rev)
切削量 Depth of Hole	120mm（通孔） (Through)
切削油剂 Coolant	水溶性切削油剂 Water Soluble
使用机械 Machine	卧式加工中心 Horizontal Machining Center

高效率条件下也能进行稳定的5D深孔加工。稳定加工实现长寿命。
High efficiency can be achieved even when drilling 5xD deep holes.
With stable performance, tool life can be prolonged.

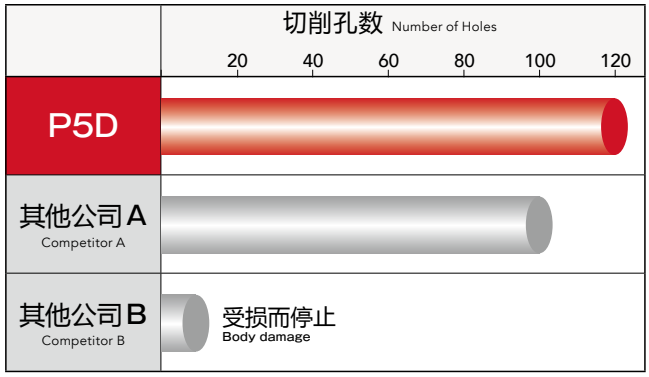


40孔加工时的磨耗比较 Wear comparison after 40 holes of drilling

即使是不锈钢也能稳定加工(P5D) Stable performance even in stainless steel

使用工具 Tool	P5D2700FS32M08 (ϕ27)
使用刀片(材质) Insert (grade)	XCMT083508ER-DM (XP9020)
加工材料 Work Material	SUS304
切削速度 Cutting Speed	120m/min (1,400min^{-1})
进给速度 Feed	140mm/min (0.1mm/rev)
切削量 Depth of Hole	120mm（通孔） (Through)
切削油剂 Coolant	水溶性切削油剂 Water Soluble
使用机械 Machine	卧式加工中心 Horizontal Machining Center

即使面对经常发生切屑堵塞问题的SUS304，由于其高排屑性和最适合5D的槽形，使其能够稳定加工。
The P5D is able to achieve great chip evacuation and stable performance even in SUS304, where chip packing is a common problem.



加工100孔时的磨耗比较 Wear comparison after 100 holes of drilling

ADC12的长寿命加工(P5D) Drilling with long tool life in ADC12(P5D)

使用工具 Tool	P5D2500FS32M08 (ϕ25)
使用刀片(材质) Insert (grade)	XCMT083508ER-DN (CK110)
加工材料 Work Material	ADC12
切削速度 Cutting Speed	250m/min (3,185min^{-1})
进给速度 Feed	320mm/min (0.1mm/rev)
切削量 Depth of Hole	100mm（盲孔） (Blind)
切削油剂 Coolant	水溶性切削油剂 Water Soluble
使用机械 Machine	卧式加工中心 Horizontal Machining Center

使用铝合金·非铁金属用刀片加工 ADC12也能实现长寿命。

Long tool life was achieved in machining ADC12 by using inserts for aluminum alloy and non-ferrous materials.

200孔加工时的磨耗比较 Wear comparison after 200 holes of drilling

磨损量：0.117mm
Width of Wear

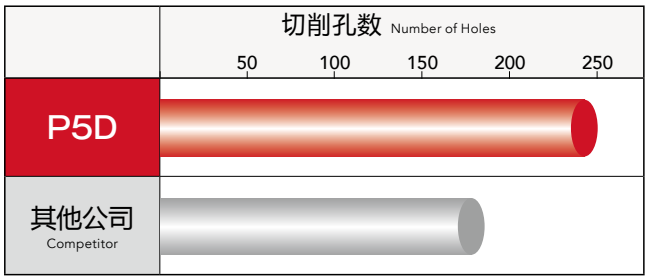
磨损量：0.153mm
Width of Wear

FC250的长寿命加工(P5D) Drilling with long tool life in FC250(P5D)

使用工具 Tool	P5D2500FS32M08 (ϕ25)
使用刀片(材质) Insert (grade)	XCMT083508ER-DR (XP1010)
加工材料 Work Material	FC250
切削速度 Cutting Speed	150m/min (1,910min^{-1})
进给速度 Feed	200mm/min (0.1mm/rev)
切削量 Depth of Hole	100mm（盲孔） (Blind)
切削油剂 Coolant	水溶性切削油剂 Water Soluble
使用机械 Machine	卧式加工中心 Horizontal Machining Center

寿命达到其他公司的1.3倍，250个孔加工后仍能稳定加工。

P5D achieved stable drilling of 250holes, which was over 1.3 times, versus the competition.



150孔加工时的磨耗比较 Wear comparison after 150 holes of drilling

» Phoenix PHP

可转位式钻头　3D用
Indexable Drill for 3D

Phoenix High Performance drill

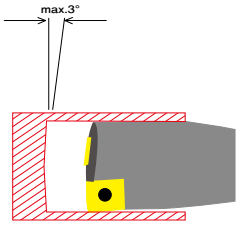
■OSG专利的形状可对应各式加工形态
Unique design supports many types of machining

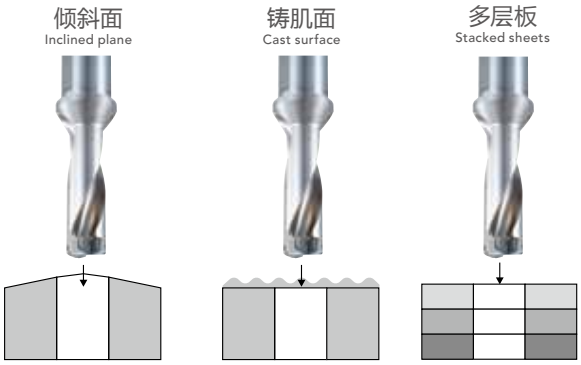
■刀片的排列 Insert arrangement

- ·可减少吃入阻力的先端角形状
  Point angle shape reduces bite resistance
- ·可实现高效率加工的平衡排列
  Balanced arrangement to achieve high efficiency machining
- ·中心刃、外周刃使用同款刀片，便于管理
  The center and the peripheral edge of the same insert can be used, simplifying insert management.

■最适合的槽型 Ideal flute form
控制切屑的排出方向 Controls the flow of chips

■先端角形状，可扩大加工范围
Shaped corner tips for difficult drilling shapes

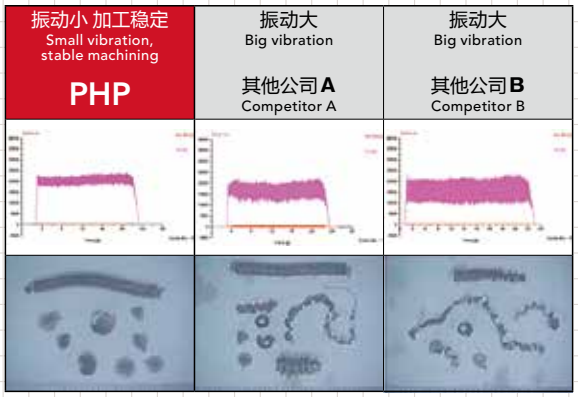




■高刚性的刀体 High rigidity of body
提高刀具寿命 High rigidity improves tool durability

■稳定的扭矩
The stable torque

使用工具 Tool	PHP210FS25M07-3D (ø21)
使用刀片(材质) Insert(grade)	SCMT073206-DM(XP9040)
加工材料 Work Material	S50C
切削速度 Cutting Speed	150m/min (2,275min^{-1})
进给速度 Feed	341mm/min (0.15mm/rev)
切削量 Depth of Hole	50mm
切削油剂 Coolant	水溶性切削油剂（内部给油） Water Soluble(Internal)
使用机械 Machine	卧式加工中心(BT50) (26kW/30kW) Horizontal Machining Center



稳定的扭矩，减少对机械的负荷
The stable torque minimizes the load imparted on the machine.

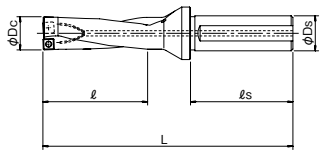
Phoenix

可转位式钻头　3D用
Indexable Drill for 3D

PHP

Specification

■形状尺寸表 Specification



带内冷
With coolant hole

单位:mm　Unit:mm

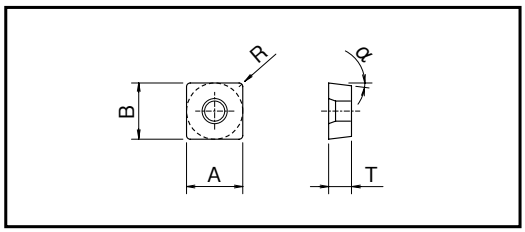
商品号 EDP No.	名称 Designation	外径 Dc	全长 L	槽长 ℓ	柄径 Ds	柄长 ℓs	适用刀片 Applicable Inserts	库存 Stock
7800100	PHP140FS20M04-3D	14	116	42	20	50	①	C
7800101	PHP145FS20M04-3D	14.5	119	45	20	50		C
7800102	PHP150FS20M04-3D	15	119	45	20	50		C
7800103	PHP155FS20M04-3D	15.5	122	48	20	50		C
7800104	PHP160FS20M04-3D	16	122	48	20	50		C
7800105	PHP165FS20M05-3D	16.5	125	51	20	50	②	C
7800106	PHP170FS20M05-3D	17	125	51	20	50		C
7800107	PHP175FS25M05-3D	17.5	134	54	25	56		C
7800108	PHP180FS25M05-3D	18	134	54	25	56		C
7800109	PHP185FS25M06-3D	18.5	137	57	25	56	③	C
7800110	PHP190FS25M06-3D	19	137	57	25	56		C
7800111	PHP195FS25M06-3D	19.5	140	60	25	56		C
7800112	PHP200FS25M06-3D	20	140	60	25	56		C
7800113	PHP205FS25M06-3D	20.5	143	63	25	56		C
7800114	PHP210FS25M07-3D	21	143	63	25	56	④	C
7800115	PHP215FS25M07-3D	21.5	146	66	25	56		C
7800116	PHP220FS25M07-3D	22	146	66	25	56		C
7800117	PHP225FS25M07-3D	22.5	149	69	25	56		C
7800118	PHP230FS25M07-3D	23	149	69	25	56		C
7800119	PHP235FS32M07-3D	23.5	156	72	32	60		C
7800120	PHP240FS32M07-3D	24	156	72	32	60		C
7800121	PHP245FS32M08-3D	24.5	159	75	32	60	⑤	C
7800122	PHP250FS32M08-3D	25	159	75	32	60		C
7800123	PHP255FS32M08-3D	25.5	162	78	32	60		C
7800124	PHP260FS32M08-3D	26	162	78	32	60		C
7800125	PHP265FS32M08-3D	26.5	165	81	32	60		C
7800126	PHP270FS32M08-3D	27	165	81	32	60		C
7800127	PHP280FS32M08-3D	28	168	84	32	60		C
7800128	PHP290FS32M10-3D	29	171	87	32	60	⑥	C
7800130	PHP300FS32M10-3D	30	179	90	32	60		C
7800131	PHP310FS32M10-3D	31	182	93	32	60		C
7800132	PHP320FS32M10-3D	32	185	96	32	60		C
7800133	PHP330FS40M10-3D	33	196	99	40	68		C
7800134	PHP340FS40M10-3D	34	199	102	40	68		C
7800135	PHP350FS40M12-3D	35	202	105	40	68	⑦	C
7800136	PHP360FS40M12-3D	36	205	108	40	68		C
7800137	PHP370FS40M12-3D	37	218	111	40	68		C
7800138	PHP380FS40M12-3D	38	221	114	40	68		C
7800139	PHP390FS40M12-3D	39	224	117	40	68		C
7800140	PHP400FS40M12-3D	40	227	120	40	68		C

C=标准库存品　C=Standard stock item

Phoenix

可转位式钻头 3D用
Indexable Drill for 3D

PHP 刀片



Inserts

■适用刀片 Inserts

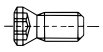
单位:mm Unit:mm

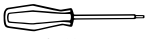
	名称 Designation	切削刃数 Number of Cutting Edges	适用刀身 Applicable Body	刀片尺寸 Insert Size				涂层种类 Grade of Coated Materials	
				A×B	厚度 T	前角 α°	R	XP9040	XC9025
①	SCMT042204-DM	4	ϕ14~16	4.8×4.8	2.2	7	0.4	7818001	7817001
②	SCMT052404-DM	4	ϕ16.5~18	5.4×5.4	2.4	7	0.4	7818002	7817002
③	SCMT062806-DM	4	ϕ18.5~20.5	6.2×6.2	2.8	7	0.6	7818003	7817003
④	SCMT073206-DM	4	ϕ21~24	7.2×7.2	3.2	7	0.6	7818004	7817004
⑤	SCMT083608-DM	4	ϕ24.5~28	8.6×8.6	3.6	7	0.8	7818005	7817005
⑥	SCMT104208-DM	4	ϕ29~34	10×10	4.2	7	0.8	7818006	7817006
⑦	SCMT125008-DM	4	ϕ35~40	12.3×12.3	5	7	0.8	7818007	7817007

库存种类为C(标准库存品)。
Stock are categorized as C (standard stock item).

Accessories

■零件 Accessories

	商品号 EDP No.	库存 Stock	名称 Designation	适用刀片 Applicable Inserts	
 固定螺丝 Clamping Screw	7808100	C	FS18538 (Torx 6)	①	SCMT042204-DM
	7808102	C	FS20540 (Torx 6)	②	SCMT052404-DM
	7808104	C	FS22550 (Torx 7)	③	SCMT062806-DM
	7808108	C	FS25560 (Torx 8)	④	SCMT073206-DM
	7808110	C	FS30573 (Torx 8)	⑤	SCMT083608-DM
	7808111	C	FS35572 (Torx 15)	⑥	SCMT104208-DM
	7808113	C	FS45510 (Torx 20)	⑦	SCMT125008-DM

	商品号 EDP No.	库存 Stock	名称 Designation	适用刀片 Applicable Inserts			
 螺丝刀 Wrench	7808203	C	T6-D (Torx 6)	①	SCMT042204-DM	②	SCMT052404-DM
	7808204	C	T7-D (Torx 7)	③	SCMT062806-DM		–
	7808205	C	T8-D (Torx 8)	④	SCMT073206-DM	⑤	SCMT083608-DM
	7808208	C	T15-D (Torx 15)	⑥	SCMT104208-DM		–
	7808209	C	T20-D (Torx 20)	⑦	SCMT125008-DM		–

C=标准库存品 C=Standard stock item
螺丝刀请另购。 The wrenches are sold separately from the cutters.

Phoenix

可转位式钻头　3D用
Indexable Drill for 3D

PHP

■加工材料推荐
Recommended Materials by Insert Type

◎第一推荐材料 Best
○第二推荐材料 Good

刀片型号 Inserts Grades	断屑槽 Chip Breaker	切削油剂 Coolant	P	M	K	N	S
XP9040	DM	有	◎	◎		◎	○
XC9025	DM	有	○	○	◎	○	

Cutting Conditions

■切削条件基准表 Cutting Conditions

	加工材料 Work Material	抗损强度·硬度 Tensil Strength·Hardness	切削速度 Vc (m/min) Drilling Speed	进给量 f (mm/rev) Feed Rate ø14~ø20.5	ø21~ø28	ø29~ø34	ø35~ø40
P	软钢、低炭素钢 Mild Steel、Carbon Steel (SS400、S10C)	~180HB	200 (60 ~ 250)	0.09 (0.06 ~ 0.13)	0.13 (0.1 ~ 0.18)	0.18 (0.13 ~ 0.21)	0.25 (0.2 ~ 0.27)
	炭素钢、合金钢 Carbon Steel、Alloy Steel (S50C、SCM440)	~280HB	160 (40 ~ 220)	0.09 (0.06 ~ 0.13)	0.13 (0.1 ~ 0.18)	0.18 (0.13 ~ 0.21)	0.25 (0.2 ~ 0.27)
	模具钢 Die Steel (SKD11、SKD61)	~280HB	140 (40 ~ 180)	0.08 (0.05 ~ 0.12)	0.12 (0.06 ~ 0.15)	0.14 (0.09 ~ 0.18)	0.15 (0.1 ~ 0.2)
M	不锈钢 Stainless Steel (SUS304、SUS420)	~250HB	150 (60 ~ 180)	0.08 (0.05 ~ 0.12)	0.1 (0.06 ~ 0.12)	0.15 (0.1 ~ 0.17)	0.18 (0.15 ~ 0.2)
K	铸铁 Cast Iron (FC250)	~350N/mm²	150 (60 ~ 180)	0.09 (0.06 ~ 0.13)	0.13 (0.1 ~ 0.18)	0.18 (0.13 ~ 0.21)	0.25 (0.2 ~ 0.27)
	球墨铸铁 Ductile Cast Iron (FCD400)	~800N/mm²	130 (40 ~ 150)	0.09 (0.06 ~ 0.13)	0.12 (0.08 ~ 0.16)	0.16 (0.1 ~ 0.2)	0.2 (0.15 ~ 0.25)
N	铝合金 Aluminum Alloy	~13%Si	220 (100 ~ 800)	0.09 (0.06 ~ 0.2)	0.13 (0.1 ~ 0.25)	0.18 (0.13 ~ 0.3)	0.25 (0.2 ~ 0.35)
S	超耐热合金(湿式) Superalloy (Wet) (Inconel® 718)	–	30 (15 ~ 50)	0.04 (0.02 ~ 0.06)	0.06 (0.03 ~ 0.1)	0.08 (0.04 ~ 0.12)	0.1 (0.06 ~ 0.14)
	钛合金(湿式) Titanium Alloy (Wet) (Ti-6Al-4V)	–	60 (30 ~ 100)	0.06 (0.04 ~ 0.08)	0.08 (0.06 ~ 0.12)	0.1 (0.08 ~ 0.15)	0.12 (0.1 ~ 0.15)

1. 这张切削条件基准表是以水溶性切屑油剂作为内部供油。
2. 请使用稀释倍率20倍以下的优质水溶性切屑油剂。
3. 不推荐使用油性切屑油剂。
4. 这张切削条件基准表适用于孔深5D以下。
5. 请确保整洁干净后紧紧地安装刀片。
6. 请在没有变形，弯曲，震动的情况下对加工材料进行加工。
7. 堵塞的油孔是导致折损的诱因，请务必安装供油装置的过滤设备。

1. The indicated speeds and feeds are for using water soluble oil.
2. Suitable cutting fluid is water soluble high density oil (less than 20 times dilution).
3. Using non-water soluble oil is not recommended.
4. These conditions are for drilling depth less than 3 times the drill diameter.
5. Inserts should be attached to the holder tightly in a very neat condition.
6. Fasten the work material to reduce the possibility of work deformation, deflection of machined surface, or vibration.
7. A clogged oil hole can lead to a breakage. Make sure that a filter is attached to the oil feeder.

Processing Data

■加工数据 Processing Data

Inconel® 718 (28HRC)的高效率加工 High efficiency machining of Inconel 718 (28HRC)

使用工具 Tool	PHP200FS25M06-3D (ϕ20)
使用刀片(材质) Insert (grade)	SCMT062806-DM(XP9040)
加工材料 Work Material	Inconel®718(28HRC)
切削速度 Cutting Speed	60m/min(955min^{-1})
进给速度 Feed	57mm/min(0.06mm/rev)
切深量 Depth of Hole	50mm (2.5D通孔) (Through)
切削油剂 Coolant	水溶性切削油剂(内部给油) Water Soluble(Internal)
使用机械 Machine	多用途加工机(工件旋转) Multifunction milling machine (rotating workpiece)

使用车床Inconel718(28HRC)孔加工案例。加工10孔后,PHP可将切屑细小的分断,实现稳定的加工。

While drilling holes in Inconel 718 (28HRC) on a lathe, 10 holes were completed, breaking up chips into small pieces and resulting in stable milling.

刀片磨损情况的照片(加工5个孔时) Photo of insert wear width (after 5 holes)

0.147mm

0.113mm

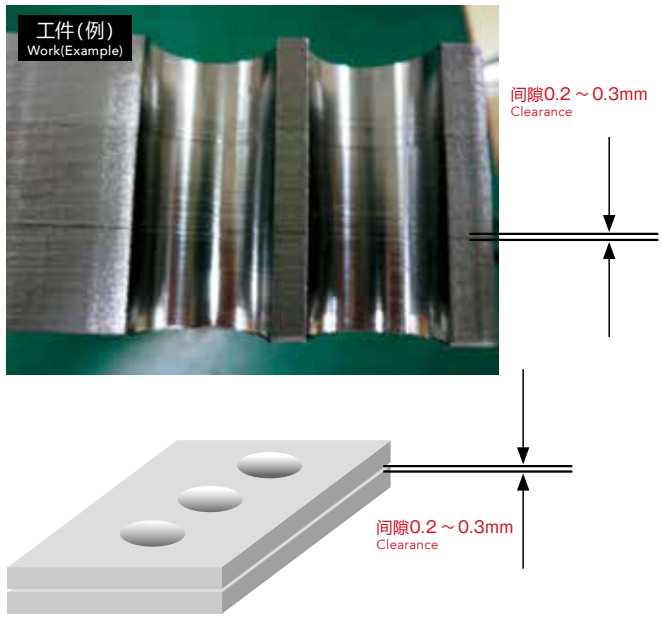
切屑 Chips

SS400的多层板加工 Stacked milling of SS400

使用工具 Tool	PHP260FS32M08-3D (ϕ26)	其他公司(高速钢) Competitor (HSS Drill)
使用刀片(材质) Insert (grade)	SCMT083608-DM(XP9040)	—
加工材料 Work Material	SS400	
切削速度 Cutting Speed	80m/min(980min^{-1})	20m/min(245min^{-1})
进给速度 Feed	118mm/min(0.12mm/rev)	25mm/min(0.1mm/rev)
切深量 Depth of Hole	30mm (厚度20mm×10mm 通孔) (Thickness Through)	
切削油剂 Coolant	水溶性切削油剂(外部给油) Water Soluble (External)	
使用机械 Machine	立式加工中心(BT50) Vertical Machining Center	

厚度为20mm×10mm的多层板加工案例。过去,其他公司可转位式钻头在加工多层板时经常发生刀片刀体崩刃折损。因此放弃使用可转位式钻头,而使用高速钢钻头以低速加工替代。然而PHP采用不易在过孔时发生盘状切屑的前角形状,无论有无外部供油均可稳定加工。

Stacked milling consisted of 20mm × 10mm sheets. In the past, tests using a competitor's indexable drills resulted in the frequent breakage of inserts and bodies, so we abandoned the use of indexable drills, using high-speed drills at low speeds instead. Because the chip of the PHP is shaped with an angle, it suppresses the creation of discs, allowing it to mill in a stable manner even when coolant was fed externally.



Processing Data

■加工数据 Processing Data

15°倾斜面的加工 Milling of a 15° inclined plane

使用工具 Tool	PHP210FS25M07-3D (ϕ21)	其他公司A、B Competitor A and B
使用刀片(材质) Insert (grade)	SCMT073206-DM(XP9040)	硬质合金涂层刀片 Coated Carbide Insert
加工材料 Work Material	S50C	
切削速度 Cutting Speed	200m/min(3,033min^{-1})	
进给速度 Feed	364mm/min(0.12mm/rev) [入口：152mm/min(0.05mm/rev)]	
切深量 Depth of Hole	45mm	
切削油剂 Coolant	水溶性切削油剂 Water Soluble	
使用设备 Machine	卧式加工中心(BT50) Horizontal Machining Center	

15度斜面加工案例，其他公司产品在入口处会晃动造成扩孔(红圈部分)。PHP 可以承受断续加工的高刚性，可以抑制入口处的扩孔(蓝圈部分)

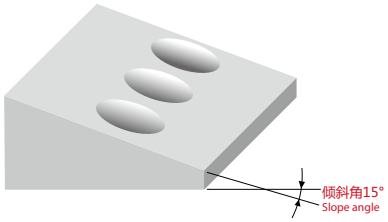
When milling a 15° inclined plane, a competitor's product wobbled at entry and enlarged the entry point (as indicated by the blue circle). Because the PHP has the rigidity to withstand intermittent milling, it inhibits the enlargement of the entry point (as indicated by the red circle).

PHP

其他公司A Competitor A

稳定的入口形状
Accurate hole size and position

其他公司B Competitor B



风力发电(回转支承)的孔加工 Drilling holes in a wind power generator (rotating wheel)

使用工具 Tool	PHP210FS25M07-3D (ϕ21)	其他公司 Competitor
使用刀片(材质) Insert (grade)	SCMT073206-DM(XP9040)	硬质合金涂层刀片 Coated Carbide Insert
加工材料 Work Material	S45C相当品 Equivalent	
切削速度 Cutting Speed	165m/min(2,502min^{-1})	
进给量 Feed	300mm/min(0.12mm/rev)	
切深量 Depth of Hole	57mm	
切削油剂 Coolant	水溶性切削油剂 Water Soluble	
使用机械 Machine	卧式专机 Horizontal Dedicated Machine	

外刃 Outer blade

内刃 Inner blade

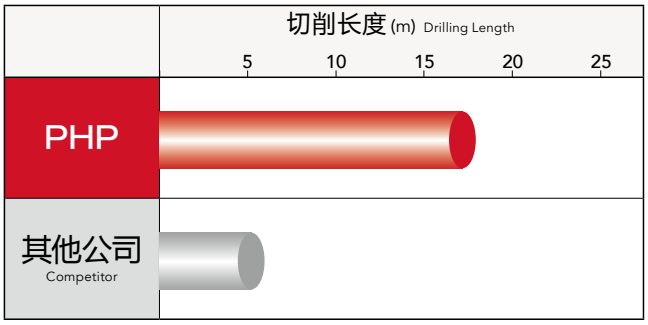
切屑 Chips

是其他公司产品寿命的1.3倍，PHP 在加工128孔后仍可以稳定的加工。

The PHP drilled 128 holes and exhibited stable milling performance. Its durability was 1.3 times that of a competitor's product.

零部件的孔加工 Drilling holes in parts

使用工具 Tool	PHP210FS25M07-3D (ϕ21)	其他公司 Competitor
使用刀片(材质) Insert (grade)	SCMT073206-DM(XP9040)	硬质合金涂层刀片 Coated Carbide Insert
加工材料 Work Material	SUS304	
切削速度 Cutting Speed	150m/min(2,275min^{-1})	
进给量 Feed	272mm/min(0.12mm/rev)	
切深量 Depth of Hole	50mm	
切削油剂 Coolant	水溶性切削油剂 Water Soluble	
使用机械 Machine	卧式加工中心(BT50) Horizontal Machining Center	



其他公司的产品由于切屑问题而致使不能稳定耐久的加工。PHP 在加工时排屑性好，并能将切屑细小的分断，可以达到其他公司产品2倍的寿命。

A competitor's product could not provide stable durability due to chipping. Our product, however, breaks up chips into small pieces and evacuates them properly, which inhibits durability variances and provides double the durability.

请问您有螺纹加工工序吗？

Do you have tapping operations?

自 OSG 创业以来，OSG 的丝锥一直在全世界范围内享誉盛名，
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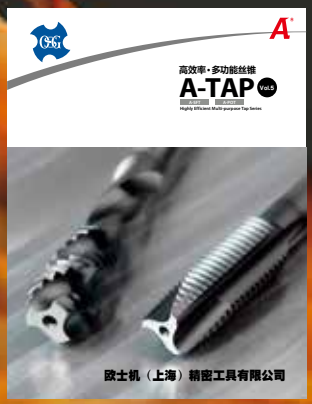
Since its foundation in 1938, OSG taps have received a high reputation from customers all over the world. Please try our latest products and experience the exceptional performance.



依靠出众的排屑性进行
稳定加工的切削丝锥

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The BEST chip evacuation ability and stable machining. A-TAP Series

无排屑挤压加工
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