



Indexable Drills Series

PHOENIX

P2D P3D P4D P5D



Features : PHOENIX P2D/3D/4D/5D



1 Using same insert to both center and peripheral cutting edges to simplify tool management.

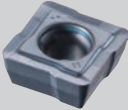
2 Economical 4-corner design

3 The high precision finishing of the flute surface improves chip evacuation.

4 Unique flute design enables stable drilling, even with rigorous 5 × dia deep holes.


PHOENIX P2D/3D/4D/5D

3 Types of breakers are available for variety of work materials




For Steel and Stainless Steel (DM)

- Well balanced insert with sharpness and rigidity



For Cast Iron (DR)

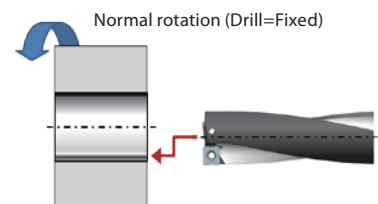
- Strong cutting edge acquired by rake angle and land



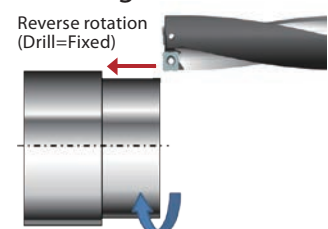
For Aluminum Alloy and Nonferrous Metal (DN)

- Excellent chip evacuation is acquired by sharp cutting edges and polishing treatment

• Turning internal diameter



• Turning outer diameter



Chipbreaker	Classification	Grades	Coating Method	(HRA) Hardness	Surface Treatment	
					Main Component	Coating Thickness
DM for Steel and Stainless Steel	P	XP9020	PVD	91.9	TiAlN	3µm
NEW DR for Cast Iron	K	XP1010	PVD	91.4	TiAlN	6µm
NEW DN for Aluminum Alloy and Nonferrous Metal	N	CK110	—	92.2	—	—

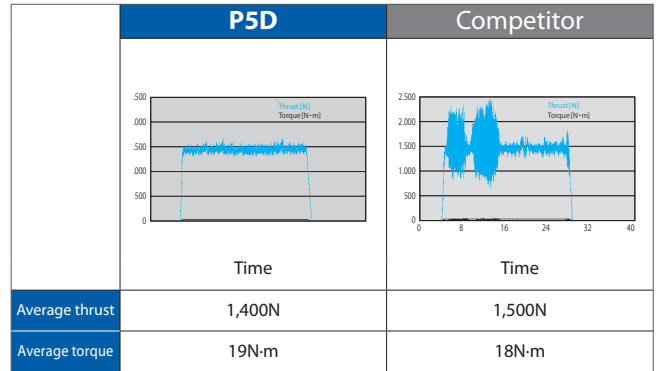
Icons

Icons	EN	DE	IT	FR	DA	SV	ES	RU	TR	PL
Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania										
P	Steel	Stahl	Acciai	Acier	Stål	Stål	Aceros	сталей	çelikler için	Stali
M	Stainless Steel	VA - Stahl	Inox e acciai dolci	Aciers Inox	Rustfrit stål	Rostfritt stål	Aceros inoxidables	нержавеющих сталей	Ayrıca paslanmaz çelik için	Stali nierdzewnych
K	Cast Iron	Grauguss	Ghisa	Fonte	Støbejern	Gjutjärn	fundición de hierro	для чугуна и алюминия	Döküm	żeliw
N	non Ferrous Material	NE-Material	Materiali non ferrosi	Matériel non ferreux	Ikke-jærnholdige materialer	Ikke järnhaltiga material	Materiales no ferrosos	цветных металлов	Demir dışı malzemeler	Material nieżelaznych
S	Super Alloys	Super legierungen	Super leghe	Super Alliage	Super legeringer	Super legeringar	Super aleaciones	жаропрочных сплавов	Süper alaşımlar	Süper alaşımlar
H	Hardened Material	gehärtete Materialien	Acciai temprati fino	Matériaux Supérieur	Hærdede materialer	hårdat stål	Aceros templados	закаленных материалов	Kadar sertleştirilmiş malzemeler için	Super stopy

Processing data

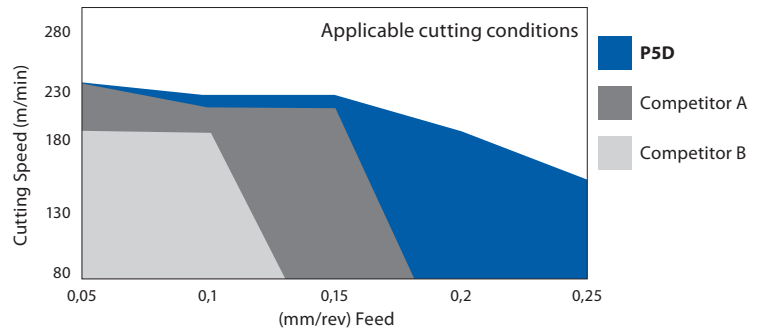
Stable cutting load

Work Material	S50C
Drill Diameter	Ø 21
Depth of hole	50 mm
Cutting Condition	VC=120m/min f=0,12mm/rev
Coolant	Water soluble
Machine	Horizontal Machining Center (BT50)

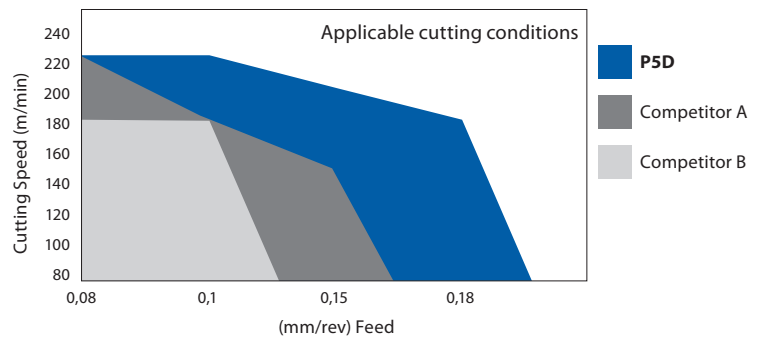


High efficiency even when drilling deep holes

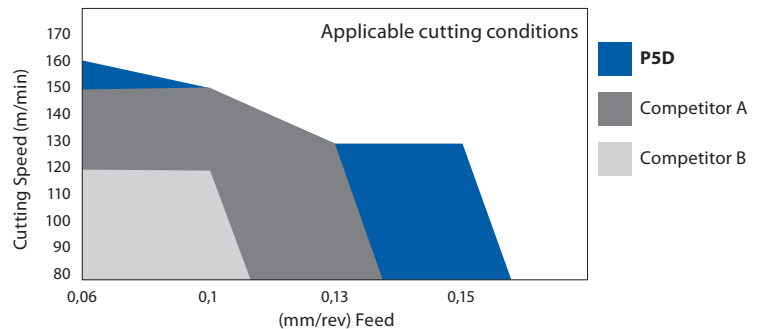
Tool	P5D2500F532M08 (Ø25)
Insert Grade	XCMT083508ER-DM
Work Material	S50C
Depth of Hole	120 mm
Coolant	Water soluble (Internal)
Machine	BT50 Horizontal Machining Center



Tool	P5D2500F532M08 (Ø25)
Insert Grade	XCMT083508ER-DM
Work Material	SCM440 (30HRC)
Depth of Hole	120 mm
Coolant	Water soluble (Internal)
Machine	BT50 Horizontal Machining Center



Tool	P5D2500F532M08 (Ø25)
Insert Grade	XCMT083508ER-DM
Work Material	SUS304
Depth of Hole	120 mm
Coolant	Water soluble (Internal)
Machine	BT50 Horizontal Machining Center

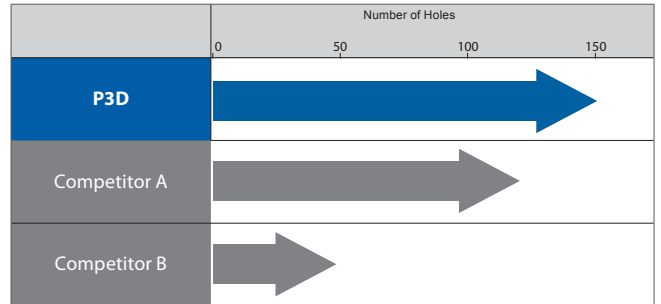


Processing data

High efficiency drilling in SUS304 (P3D)

Tool	P3D2500FS32M08 (Ø25)
Insert Grade	XCMT083508ER-DM (XP9020)
Work Material	SUS304
Cutting Speed	160m/min (2.040min ⁻¹)
Feed	400mm/min (0,2mm/rev)
Depth of Hole	75mm (Blind)
Coolant	Water Soluble
Machine	Horizontal Machining Center

The P3D was able to achieve long tool life by drilling SUS 304.



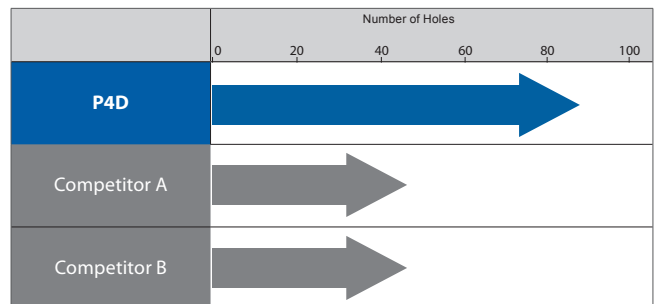
Wear comparison after drilling 48 holes



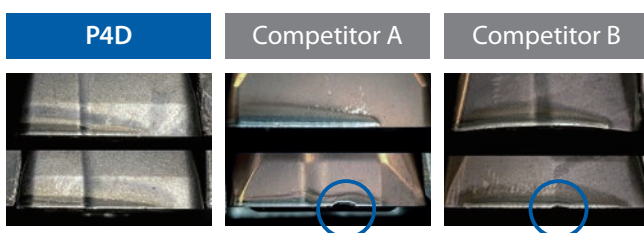
High efficiency drilling in SUS304 (P4D)

Tool	P4D2500FS32M08 (Ø25)
Insert Grade	XCMT083508ER-DM (XP9020)
Work Material	SUS304
Cutting Speed	160m/min (2.040min ⁻¹)
Feed	245mm/min (0,12mm/rev)
Depth of Hole	100mm(Blind)
Coolant	Water Soluble
Machine	Horizontal Machining Center

Long tool life was able to achieve by stable drilling.



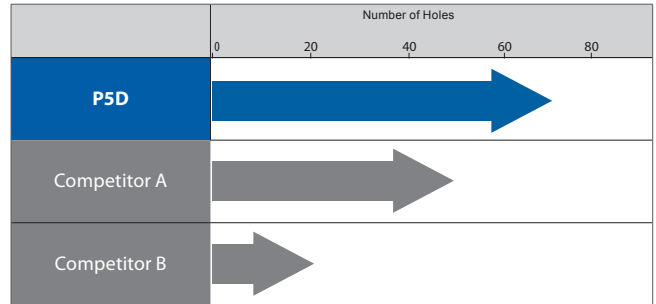
Wear comparison after drilling 45 holes



Processing data

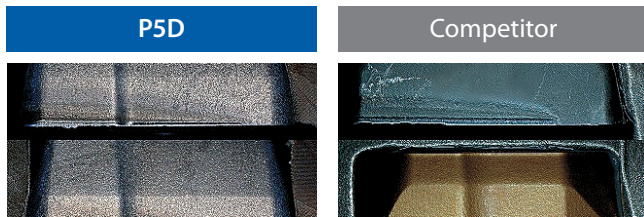
High efficiency drilling in S50C (P5D)

Tool	P5D2700FS32M08 (Ø27)
Insert Grade	XCMT083508ER-DM (XP9020)
Work Material	S50C
Cutting Speed	150m/min (1,800min ⁻¹)
Feed	216mm/min (0.12mm/rev)
Depth of Hole	120mm (Through)
Coolant	Water Soluble
Machine	Horizontal Machining Center



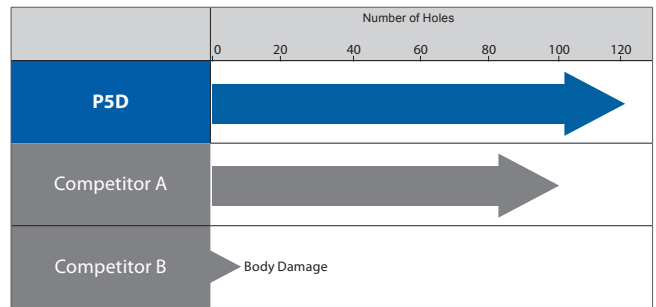
High efficiency can be achieved even when drilling 5xD deep holes. With stable performance, tool life can be prolonged.

Wear comparison after drilling 40 holes



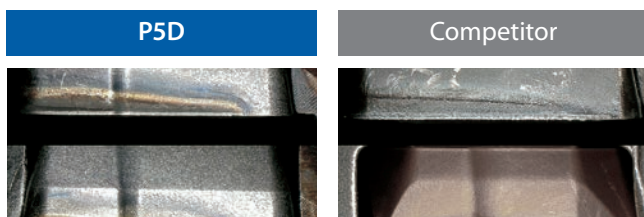
Stable performance even in stainless steel (P5D)

Tool	P5D2700FS32M08 (Ø27)
Insert Grade	XCMT083508ER-DM (XP9020)
Work Material	SUS304
Cutting Speed	120m/min (1,400min ⁻¹)
Feed	140mm/min (0,1mm/rev)
Depth of Hole	120mm (Through)
Coolant	Water Soluble
Machine	Horizontal Machining Center



The P5D is able to achieve great chip evacuation and stable performance even in SUS304, where chip packing is a common problem.

Wear comparison after drilling 100 holes



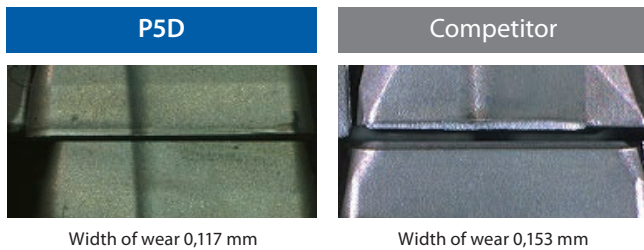
Processing data

Drilling with long tool life in ADC12 (P5D)

Tool	P5D2500FS32M8 (Ø25)
Insert Grade	XCMT083508ER-DN (CK110)
Work Material	ADC12
Cutting Speed	250m/min (3.185min ⁻¹)
Feed	320mm/min (0,1mm/rev)
Depth of Hole	100mm (Blind)
Coolant	Water Soluble
Machine	Horizontal Machining Center

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

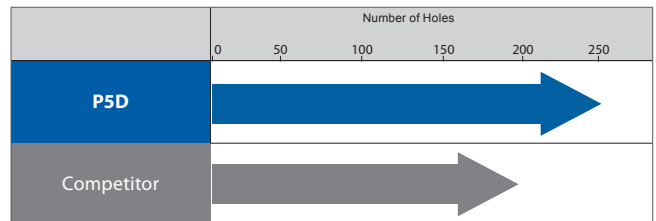
Wear comparison after drilling 200 holes



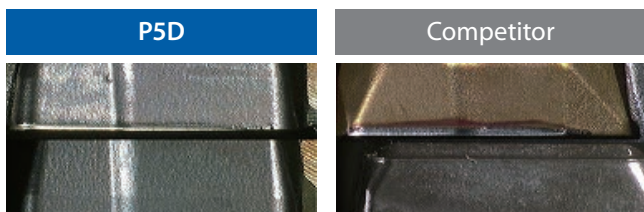
Drilling with long tool life in FC250 (P5D)

Tool	P5D2500FS32M08 (Ø25)
Insert Grade	XCMT083508ER-DR (XP1010)
Work Material	FC250
Cutting Speed	150m/min (1,910min ⁻¹)
Feed	200mm/min (0.1mm/rev)
Depth of Hole	100mm (Blind)
Coolant	Water Soluble
Machine	Horizontal Machining Center

P5D achieved stable drilling of 250holes, which was over 1,3 times, versus the competition.



Wear comparison after drilling 150 holes



P2D



- High performance
- 2 flutes

- High performance
- 2 Schneiden

- Alta prestazione
- 2 denti

- Haute performance
- 2 lèvres

- Yüksek performans
- 2 Kanal

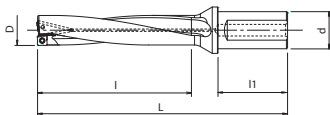
- High performance
- 2 skær

- High performance
- 2 skär

- Altas prestaciones
- 2 labios

- Высокая производительность
- 2-зуба

- Wysoka wydajność
- 2 ostrowe



EDP	Designation	D	Applicable Inserts	L	l	l1	d	Price
7803129	P2D2100FS25M07	21		121	42	56	25	
7803130	P2D2150FS25M07	21,5		122	43	56	25	
7803131	P2D2200FS25M07	22		123	44	56	25	
7803132	P2D2250FS25M07	22,5	XCMT073106ER- ①	124	45	56	25	
7803133	P2D2300FS25M07	23		125	46	56	25	
7803134	P2D2350FS32M07	23,5		130	47	60	32	
7803135	P2D2400FS32M07	24		131	48	60	32	
7803136	P2D2450FS32M07	24,5		132	49	60	32	
7803137	P2D2500FS32M08	25		133	50	60	32	
7803138	P2D2550FS32M08	25,5	XCMT083508ER- ②	134	51	60	32	
7803139	P2D2600FS32M08	26		135	52	60	32	
7803140	P2D2650FS32M08	26,5		136	53	60	32	
7803141	P2D2700FS32M08	27		137	54	60	32	
7803142	P2D2800FS32M08	28		139	56	60	32	
7803143	P2D2850FS32M08	28,5		140	57	60	32	
7803144	P2D2900FS32M09	29		141	58	60	32	
7803145	P2D3000FS32M09	30		143	60	60	32	
7803146	P2D3100FS32M09	31	XCMT094008ER- ③	145	62	60	32	
7803147	P2D3200FS32M09	32		147	64	60	32	
7803148	P2D3300FS40M09	33		159	66	70	40	
7803149	P2D3350FS40M09	33,5		160	67	70	40	

P3D



- High performance
- 2 flutes

- High performance
- 2 Schneiden

- Alta prestazione
- 2 denti

- Haute performance
- 2 lèvres

- Yüksek performans
- 2 Kanal

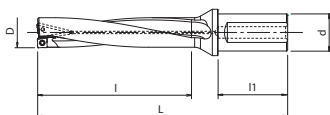
- High performance
- 2 skær

- High performance
- 2 skär

- Altas prestaciones
- 2 labios

- Высокая производительность
- 2-зуба

- Wysoka wydajność
- 2 ostrowe



EDP	Designation	D	Applicable Inserts	L	l	l1	d	Price
7803229	P3D2100FS25M07	21		142	63	56	25	
7803230	P3D2150FS25M07	21,5		144	65	56	25	
7803231	P3D2200FS25M07	22		145	66	56	25	
7803232	P3D2250FS25M07	22,5	XCMT073106ER- ①	147	68	56	25	
7803233	P3D2300FS25M07	23		148	69	56	25	
7803234	P3D2350FS32M07	23,5		154	71	60	32	
7803235	P3D2400FS32M07	24		155	72	60	32	
7803236	P3D2450FS32M07	24,5		157	74	60	32	
7803237	P3D2500FS32M08	25		158	75	60	32	
7803238	P3D2550FS32M08	25,5		160	77	60	32	
7803239	P3D2600FS32M08	26	XCMT083508ER- ②	161	78	60	32	
7803240	P3D2650FS32M08	26,5		163	80	60	32	
7803241	P3D2700FS32M08	27		164	81	60	32	
7803242	P3D2800FS32M08	28		167	84	60	32	
7803243	P3D2850FS32M08	28,5		169	86	60	32	
7803244	P3D2900FS32M09	29		170	87	60	32	
7803245	P3D3000FS32M09	30		173	90	60	32	
7803246	P3D3100FS32M09	31	XCMT094008ER- ③	176	93	60	32	
7803247	P3D3200FS32M09	32		179	96	60	32	
7803248	P3D3300FS40M09	33		192	99	70	40	
7803249	P3D3350FS40M09	33,5		194	101	70	40	

P4D



- High performance
- 2 flutes

- High performance
- 2 Schneiden

- Alta prestazione
- 2 denti

- Haute performance
- 2 lèvres

- Yüksek performans
- 2 Kanal

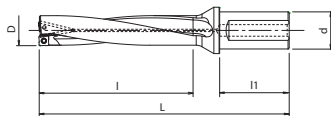
- High performance
- 2 skær

- High performance
- 2 skär

- Altas prestaciones
- 2 labios

- Высокая производительность
- 2-зуба

- Wysoka wydajność
- 2 ostrowe



EDP	Designation	D	Applicable Inserts	L	l	l1	d	Price
7803329	P4D2100FS25M07	21		163	84	56	25	
7803330	P4D2150FS25M07	21,5		165	86	56	25	
7803331	P4D2200FS25M07	22		167	88	56	25	
7803332	P4D2250FS25M07	22,5	XCMT073106ER-	169	90	56	25	
7803333	P4D2300FS25M07	23	①	171	92	56	25	
7803334	P4D2350FS32M07	23,5		177	94	60	32	
7803335	P4D2400FS32M07	24		179	96	60	32	
7803336	P4D2450FS32M07	24,5		181	98	60	32	
7803337	P4D2500FS32M08	25		183	100	60	32	
7803338	P4D2550FS32M08	25,5		185	102	60	32	
7803339	P4D2600FS32M08	26	XCMT083508ER-	187	104	60	32	
7803340	P4D2650FS32M08	26,5	②	189	106	60	32	
7803341	P4D2700FS32M08	27		191	108	60	32	
7803342	P4D2800FS32M08	28		195	112	60	32	
7803343	P4D2850FS32M08	28,5		197	114	60	32	
7803344	P4D2900FS32M09	29		199	116	60	32	
7803345	P4D3000FS32M09	30		203	120	60	32	
7803346	P4D3100FS32M09	31	XCMT094008ER-	207	124	60	32	
7803347	P4D3200FS32M09	32	③	211	128	60	32	
7803348	P4D3300FS40M09	33		225	132	70	40	
7803349	P4D3350FS40M09	33,5		227	134	70	40	

P5D



- High performance
- 2 flutes

- High performance
- 2 Schneiden

- Alta prestazione
- 2 denti

- Haute performance
- 2 lèvres

- Yüksek performans
- 2 Kanal

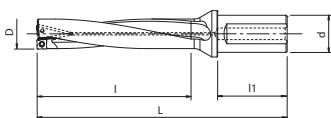
- High performance
- 2 skær

- High performance
- 2 skär

- Altas prestaciones
- 2 labios

- Высокая производительность
- 2-зуба

- Wysoka wydajność
- 2 ostrowe



EDP	Designation	D	Applicable Inserts	L	l	l1	d	Price
7802729	P5D2100FS25M07	21		184	105	56	25	
7802730	P5D2150FS25M07	21,5		187	108	56	25	
7802731	P5D2200FS25M07	22		189	110	56	25	
7802732	P5D2250FS25M07	22,5	XCMT073106ER-	192	113	56	25	
7802733	P5D2300FS25M07	23	①	194	115	56	25	
7802734	P5D2350FS32M07	23,5		201	118	60	32	
7802735	P5D2400FS32M07	24		203	120	60	32	
7802736	P5D2450FS32M07	24,5		206	123	60	32	
7802737	P5D2500FS32M08	25		208	125	60	32	
7802738	P5D2550FS32M08	25,5		211	128	60	32	
7802739	P5D2600FS32M08	26	XCMT083508ER-	213	130	60	32	
7802740	P5D2650FS32M08	26,5	②	216	133	60	32	
7802741	P5D2700FS32M08	27		218	135	60	32	
7802742	P5D2800FS32M08	28		223	140	60	32	
7802743	P5D2850FS32M08	28,5		226	143	60	32	
7802744	P5D2900FS32M09	29		228	145	60	32	
7802745	P5D3000FS32M09	30		233	150	60	32	
7802746	P5D3100FS32M09	31	XCMT094008ER-	238	155	60	32	
7802747	P5D3200FS32M09	32	③	243	160	60	32	
7802748	P5D3300FS40M09	33		258	165	70	40	
7802749	P5D3350FS40M09	33,5		261	168	70	40	

P2D/3D/4D/5D INSERTS

■ Applicable insert for P2D,3D,4D,5D drill

■ Wendeplatten, Bohrer P2D,3D,4D,5D

■ Inerti applicabili per punta P2D,3D,4D,5D

■ Choix de plaquettes pour le perçage P2D,3D,4D,5D

■ P2D,3D,4D,5D matkap için uygun uç

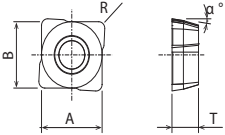
■ Anvendelige skær til P2D,3D,4D,5D bor

■ Utbytbara vändskär för korthålsborr P2D,3D,4D,5D

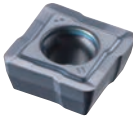


■ Plaquitas para broca P2D,3D,4D,5D

■ Сменные пластинки для P2D,3D,4D,5D сверла

■ Płytki, do wiertel P2D,3D,4D,5D



Inserts

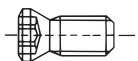
	Specification	Designation	Number of Cutting Edges	Applicable Body	Insert Size				Uncoated	Grade of Coated Materials		Price
					AxB	T	α°	R		CK110	XP9020	
	for Steel & Stainless Steel	① XCMT073106ER-DM	4	Ø21~24,5	7,42	3,1	8	0,6		7823067		
		② XCMT083508ER-DM	4	Ø25~28,5	8,71	3,5	8	0,8		7823068		
		③ XCMT094008ER-DM	4	Ø29~33,5	10,04	4	8	0,8		7823069		
	for Cast Iron	① XCMT073106ER-DR	4	Ø21~24,5	7,42	3,1	8	0,6			7823167	
		② XCMT083508ER-DR	4	Ø25~28,5	8,71	3,5	8	0,8			7823168	
		③ XCMT094008ER-DR	4	Ø29~33,5	10,04	4	8	0,8			7823169	
	for Aluminium & non-ferrous Metal	① XCMT073106ER-DN	4	Ø21~24,5	7,42	3,1	8	0,6	7823267			
		② XCMT083508ER-DN	4	Ø25~28,5	8,71	3,5	8	0,8	7823268			
		③ XCMT094008ER-DN	4	Ø29~33,5	10,04	4	8	0,8	7823269			

Recommended Grade / Material

Grade	Chipbreaker	Coolant / Dry	P	M	K	N	S
XP9020	DM	Coolant	⊙	⊙	○	○	○
XP1010	DR	Coolant	○		⊙		
CK110	DN	Coolant				⊙	

DM For steel and stainless steel
DR For cast iron
NM For aluminium alloy
⊙ First choice
○ Second choice

Accessories



Clamping Screw

EDP	Designation	Applicable Inserts	Price
7808136	FS25560P	① XCMT0731...	-
7808135	FS30570P	② XCMT0835... ③ XCMT0940...	



Wrench

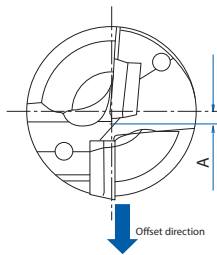
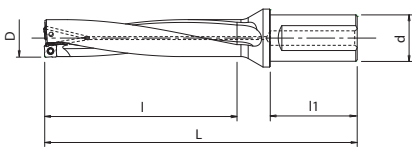
EDP	Designation	Applicable Inserts	Price
7808225	8P-D (Torx 8IP)	① XCMT0731...	-
7808226	9P-D (Torx 91P)	② XCMT0835... ③ XCMT0940...	

Conditions

P2D/P3D/P4D/P5D

	Work Material	Tensile strength/ Hardness	Vc (m/min) Milling Speed	Feed Rate f (mm/rev)								
				2D 3D			4D			5D		
				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	Mild Steel-Low Carbon Steel (S5400-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)
	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)
	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	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	Cast Iron (FC250)	~350N/mm ²	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)
	Ductile Cast Iron (FCD400)	~800N/mm ²	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	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	Superalloy (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)
	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)

Maximum offset amount for drilling with rotation of work materials



D	D + A offset Amount	D Max.
21	1	23
21,5	0,9	23,3
22	0,8	23,6
22,5	0,7	23,9
23	0,5	24
23,5	0,4	24,3
24	0,3	24,6
24,5	0,2	24,9
25	1,1	27,2
25,5	0,9	27,3
26	0,8	27,6
26,5	0,7	27,9
27	0,6	28,2
28	0,3	28,6
28,5	0,2	28,9
29	1,3	31,6
30	1,1	32,2
31	0,8	32,6
32	0,6	33,2
33	0,3	33,6
33,5	0,2	33,9





shaping your dreams

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