

## Mach Solid Drill Plus

# MSD Plus



### **Mach Drill Plus Highly Efficient for Hole Making**

Highly efficient hole making for various workpieces including automobile components

■ **Improved Chip Evacuation**

Excellent chip evacuation thanks to wider chip pockets.

■ **Increased Wear Resistance**

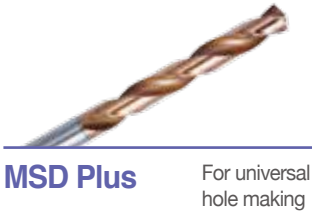
Strong wear resistance thanks to our new PC325U grade



# MSD Plus

## Mach Drill Plus Highly Efficient for Hole Making

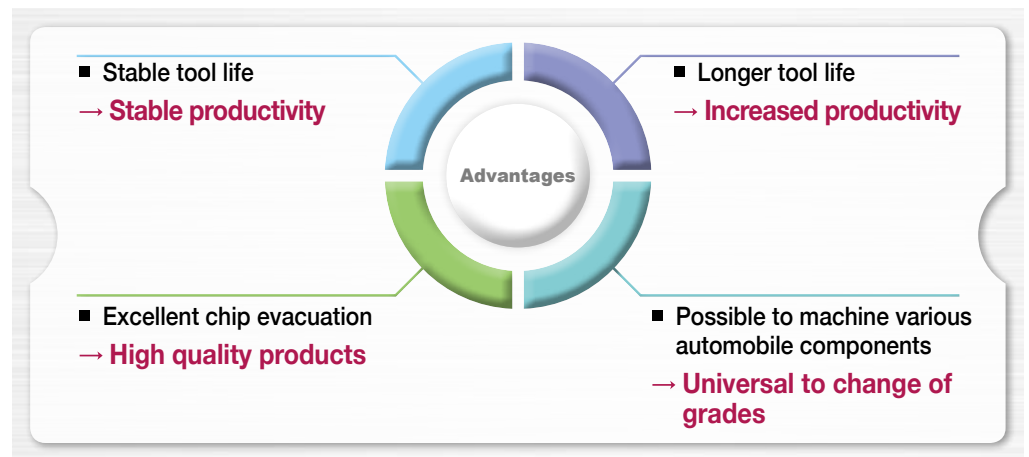
### MSD Plus



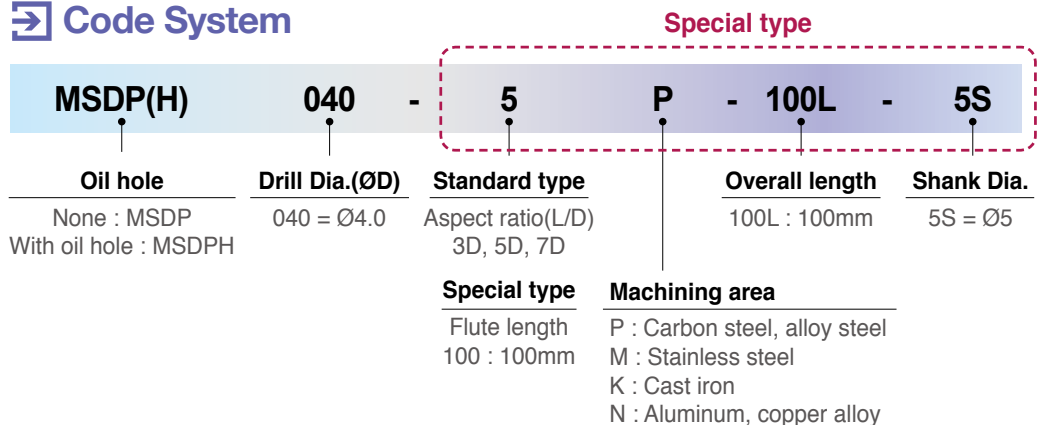
Hole making is a common operation in the cutting tool industry. Those operations are realized under various drilling conditions such as high speed, high feed, dry/wet, etc. At the same time, a wide range of workpieces like carbon steel, cast iron, alloy steel and more are being used. In order to fulfill all the requirements of modern machining, stability and longer tool life are highly valued.

**MSD Plus** is a solid drill designed for high efficiency and high performance with excellent stability. Chip pockets were widened for better chip evacuation, which led to stable machining and extended tool life.

The new grade **PC325U** was also applied for better surface lubrication and lower cutting load, which also improved wear resistance and welding resistance. This is why MSD Plus has longer tool life and stability when machining a comprehensive range of workpieces at low speed to high speed.



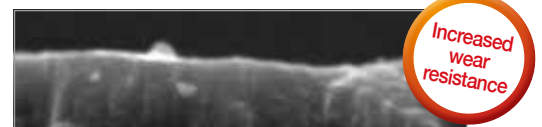
### Code System



### Features

#### New grade(PC325U)

- Lubricative coating layer improves welding resistance at middle to high speed.
- Increase wear resistance in machining carbon steel



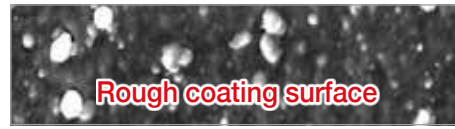
[ PC325U ]

Increased **welding resistance** and **wear resistance** with new PC325U grade applied.

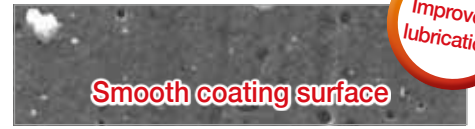
### Surface of coating layer

PC325U has a coating surface more lubricated compared to competitor's rough surface.

- Increased welding resistance and lower cutting load
- Reduced frictional resistance at cutting edges and on the flute



[ Competitor ]



[ PC325U ]



### Chip control

Good chip shape when machining with MSD Plus compared to competitor's.

- Workpiece STS304
- Cutting conditions  $vc(m/min) = 90$ ,  $fn(mm/rev) = 0.2$ ,  $ap(mm) = 30$ , wet
- Tools MSDP(H)060-5M(PC325U)



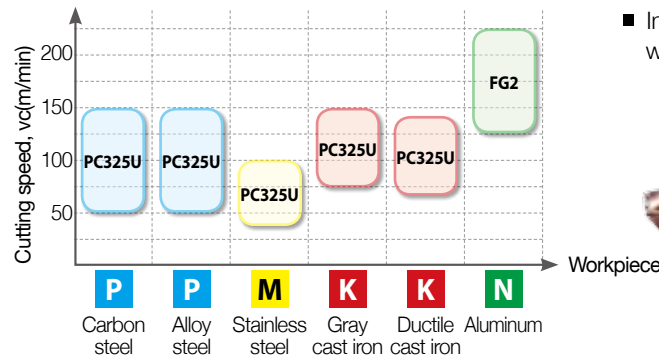
[ Competitor ]



[ MSD Plus ]

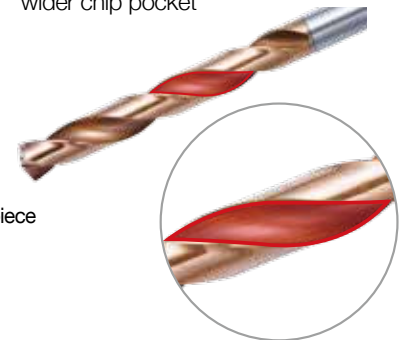


### Application area



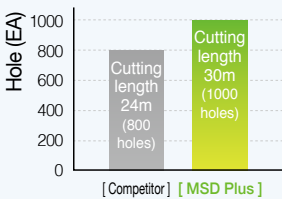
### Flute shape

- Improved chip evacuation thanks to wider chip pocket



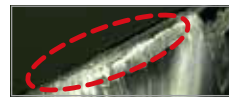
## ⇒ Cutting Performance

### Comparison of wear



Lubricative coating layer of the new grade PC325U maximizes wear resistance.

- Workpiece SM45C
- Cutting conditions  $vc(m/min) = 124$ ,  $fn(mm/rev) = 0.15$ ,  $ap(mm) = 30$ , Through coolant



[ Competitor ]



[ MSD Plus ]

- Tools MSDP1205P(PC325U)

### Application example



Special treatment on coating surface minimized frictional resistance.

- Workpiece SM53C
- Cutting conditions  $vc(m/min) = 60$ ,  $fn(mm/rev) = 0.25$ ,  $ap(mm) = 30$ , External coolant

- Tools MSDP120-5P(PC325U)



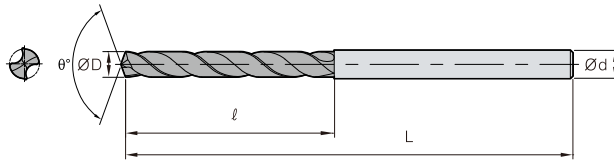
# MSD Plus

## ⇒ Recommended Cutting Conditions

ISO	Workpiece		Grade	Cutting speed vc(m/min)	Feed(Depth of cut = 10D ~ 25D)					
	Workpiece materials	Hardness (HB)			Feed rate(mm/rev) per drill dia.(mm)					
					Ø2.5~Ø4.0	Ø4.1~Ø8.0	Ø8.1~Ø12.0	Ø12.1~Ø16.0	Ø16.1~Ø20.0	
P	Carbon steel	Low carbon steel	80~120	PC325U	90(80~150)	0.10~0.15	0.16~0.24	0.20~0.30	0.25~0.36	0.30~0.40
		High carbon steel	250 over	PC325U	50(40~80)	0.08~0.20	0.08~0.20	0.10~0.25	0.15~0.25	0.15~0.30
	Alloy steel	Low alloy steel	140~260	PC325U	90(80~150)	0.10~0.15	0.16~0.24	0.20~0.30	0.25~0.36	0.30~0.40
		Hardened low alloy steel	200~400	PC325U	60(50~100)	0.10~0.15	0.16~0.24	0.20~0.30	0.25~0.36	0.30~0.40
		High alloy steel	50~260	PC325U	50(40~80)	0.08~0.20	0.08~0.20	0.10~0.25	0.15~0.25	0.15~0.30
		Hardened high alloy steel	250 over	PC325U	50(40~80)	0.08~0.20	0.08~0.20	0.10~0.25	0.15~0.25	0.15~0.30
M	Stainless steel	Austenite series	135~275	PC325U	45(25~80)	0.05~0.20	0.05~0.20	0.10~0.25	0.10~0.25	0.15~0.30
		Ferrite series	135~275	PC325U	50(30~80)	0.05~0.20	0.05~0.20	0.10~0.25	0.10~0.25	0.15~0.30
		Martensite series								
K	Cast iron	Gray cast iron	150~230	PC325U	100(80~150)	0.10~0.15	0.16~0.24	0.20~0.30	0.25~0.36	0.30~0.40
		Ductile cast iron	160~260	PC325U	90(70~140)	0.10~0.15	0.16~0.24	0.20~0.30	0.25~0.36	0.30~0.40
N	Aluminum	Aluminum alloy	30~150	FG2	150(125~220)	0.24~0.38	0.38~0.53	0.53~0.75	0.61~0.85	0.68~0.98
	Copper alloy	Copper alloy	150~160	FG2	150(125~220)	0.10~0.15	0.16~0.24	0.20~0.30	0.25~0.36	0.30~0.40

- Cutting conditions above are for the case of less than 5D depth of cut and through coolant system applied.
- In case of external coolant system, reduce the above feed values by 20%.

## ⇒ MSDP- (P/M/K/N)



Specification	P	M	K	N
Coating	PC325U	FG2		
Tolerance(drill Dia.)	h7			
Tolerance(Shank Dia.)	h6			
Point angle	140°	135°		
Twist angle	30°			
Thinning	X type			
Coolant	External system			
	P Steel	M Stainless steel	K Cast iron	N Non-ferrous metal

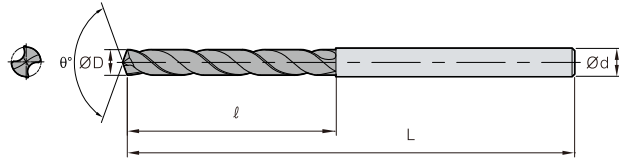
(mm)

Designation	ØD	Ød	3 P,M,K,N			5 P,M,K,N			7 P,M,K,N		
			Stock	ℓ	L	Stock	ℓ	L	Stock	ℓ	L
MSDP 010- _ P,M,K,N	1.0	3.0	○	6	45		12	66	-	-	-
011- _ P,M,K,N	1.1	3.0	○	7	45	○	12	66	-	-	-
012- _ P,M,K,N	1.2	3.0	○	8	45	○	12	66	-	-	-
013- _ P,M,K,N	1.3	3.0	○	8	45	○	12	66	-	-	-
014- _ P,M,K,N	1.4	3.0	○	9	45	○	12	66	-	-	-
015- _ P,M,K,N	1.5	3.0	○	9	45	○	12	66	-	-	-
016- _ P,M,K,N	1.6	3.0	○	10	45	○	15	66	-	-	-
017- _ P,M,K,N	1.7	3.0	○	10	45	○	15	66	-	-	-
018- _ P,M,K,N	1.8	3.0	○	11	45	○	15	66	-	-	-
019- _ P,M,K,N	1.9	3.0	○	11	45	○	15	66	-	-	-
020- _ P,M,K,N	2.0	3.0	○	14	53		20	66	-	-	-
021- _ P,M,K,N	2.1	3.0	○	14	53	○	20	66	-	-	-
022- _ P,M,K,N	2.2	3.0	○	14	53	○	20	66	-	-	-
023- _ P,M,K,N	2.3	3.0	○	14	53	○	20	66	-	-	-
024- _ P,M,K,N	2.4	3.0	○	14	53	○	20	66	-	-	-
025- _ P,M,K,N	2.5	3.0	○	14	53	○	20	66	○	30	70
026- _ P,M,K,N	2.6	3.0	○	17	53	○	20	66	○	30	70
027- _ P,M,K,N	2.7	3.0	○	17	53	○	20	66	○	30	70

※ Pre-orders can be made in advance for non-stock items.

▲: Available in Europe ●: Available in Korea ○: Order-made item

MSDP- (P/M/K/N)



Specification	P	M	K	N
Coating	PC325U			FG2
Tolerance(drill Dia.)	h7			
Tolerance(shank Dia.)	h6			
Point angle	140°		135°	
Twist angle	30°			
Thinning	X type			
Coolant	External system			
	P Steel	M Stainless steel	K Cast iron	N Non-ferrous metal

(mm)

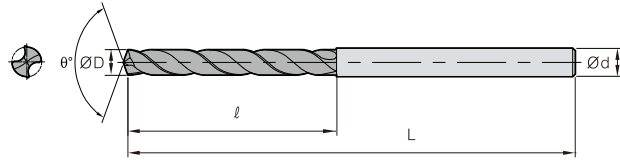
Designation	ØD	Ød	3 P,M,K,N			5 P,M,K,N			7 P,M,K,N		
			Stock	ℓ	L	Stock	ℓ	L	Stock	ℓ	L
MSDP 028- P,M,K,N	2.8	3.0	○	17	53	○	20	66	○	30	70
029- P,M,K,N	2.9	3.0	○	17	53	○	20	66	○	30	70
030- P,M,K,N	3.0	3.0	○	17	53	○	20	66	○	30	70
031- P,M,K,N	3.1	4.0	○	20	58	○	28	74	○	30	70
032- P,M,K,N	3.2	4.0	●	20	58	○	28	74	○	30	70
033- P,M,K,N	3.3	4.0	●	20	58	○	28	74	○	30	70
034- P,M,K,N	3.4	4.0	○	20	58	○	28	74	○	37.5	75
035- P,M,K,N	3.5	4.0	●	20	58	○	28	74	○	37.5	75
036- P,M,K,N	3.6	4.0	○	22	58	○	32	74	○	37.5	75
037- P,M,K,N	3.7	4.0	○	22	58	○	32	74	○	37.5	75
038- P,M,K,N	3.8	4.0	●	22	58	○	32	74	○	37.5	75
039- P,M,K,N	3.9	4.0	○	22	58	○	32	74	○	37.5	75
040- P,M,K,N	4.0	4.0	●	22	58	○	32	74	○	37.5	75
041- P,M,K,N	4.1	4.0	●	24	62	○	36	82	○	37.5	75
042- P,M,K,N	4.2	4.0	●	24	62	○	36	82	○	37.5	75
043- P,M,K,N	4.3	4.0	○	24	62	○	36	82	○	45	85
044- P,M,K,N	4.4	4.0	○	24	62	○	36	82	○	45	85
045- P,M,K,N	4.5	4.0	●	24	62	○	36	82	○	45	85
046- P,M,K,N	4.6	4.0	●	26	62	○	38	82	○	45	85
047- P,M,K,N	4.7	4.0	○	26	62	○	38	82	○	45	85
048- P,M,K,N	4.8	4.0	○	26	62	○	38	82	○	50	90
049- P,M,K,N	4.9	4.0	○	26	62	○	38	82	○	50	90
050- P,M,K,N	5.0	5.0	●	26	62	○	38	82	○	50	90
051- P,M,K,N	5.1	6.0	○	28	66	○	44	82	○	50	90
052- P,M,K,N	5.2	6.0	○	28	66	○	44	82	○	50	90
053- P,M,K,N	5.3	6.0	●	28	66	○	44	82	○	50	90
054- P,M,K,N	5.4	6.0	○	28	66	○	44	82	○	50	90
055- P,M,K,N	5.5	6.0	●	28	66	○	44	82	○	57	97
056- P,M,K,N	5.6	6.0	○	28	66	○	44	82	○	57	97
057- P,M,K,N	5.7	6.0	○	28	66	○	44	82	○	57	97
058- P,M,K,N	5.8	6.0	○	28	66	○	44	82	○	57	97
059- P,M,K,N	5.9	6.0	○	28	66	○	44	82	○	57	97
060- P,M,K,N	6.0	6.0	○	28	66	○	44	82	○	57	97
061- P,M,K,N	6.1	7.0	○	34	74	○	50	91	○	66	106
062- P,M,K,N	6.2	7.0	○	34	74	○	50	91	○	66	106
063- P,M,K,N	6.3	7.0	○	34	74	○	50	91	○	66	106
064- P,M,K,N	6.4	7.0	○	34	74	○	50	91	○	66	106
065- P,M,K,N	6.5	7.0	○	34	74	○	50	91	○	66	106
066- P,M,K,N	6.6	7.0	○	34	74	○	50	91	○	66	106
067- P,M,K,N	6.7	7.0	○	34	74	○	50	91	○	66	106
068- P,M,K,N	6.8	7.0	○	34	74	○	50	91	○	66	106
069- P,M,K,N	6.9	7.0	○	34	74	○	50	91	○	76	116
070- P,M,K,N	7.0	7.0	○	34	74	○	50	91	○	76	116
071- P,M,K,N	7.1	8.0	○	41	79	○	53	91	○	76	116
072- P,M,K,N	7.2	8.0	○	41	79	○	53	91	○	76	116
073- P,M,K,N	7.3	8.0	●	41	79	○	53	91	○	76	116
074- P,M,K,N	7.4	8.0	○	41	79	○	53	91	○	76	116
075- P,M,K,N	7.5	8.0	●	41	79	○	53	91	○	76	116
076- P,M,K,N	7.6	8.0	○	41	79	○	53	91	○	76	116
077- P,M,K,N	7.7	8.0	●	41	79	○	53	91	○	76	116
078- P,M,K,N	7.8	8.0	●	41	79	○	53	91	○	76	116

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▲: Available in Europe ●: Available in Korea ○: Order-made item

# MSD Plus

## MSDP- (P/M/K/N)



Specification	P	M	K	N
Coating	PC325U	FG2		
Tolerance(drill Dia.)	h7			
Tolerance(shank Dia.)	h6			
Point angle	140°	135°		
Twist angle	30°			
Thinning	X type			
Coolant	External system			
	P Steel	M Stainless steel	K Cast iron	N Non-ferrous metal

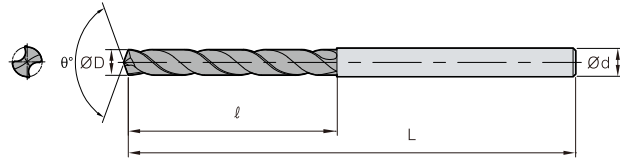
(mm)

Designation	ØD	Ød	3 P,M,K,N			5 P,M,K,N			7 P,M,K,N		
			Stock	ℓ	L	Stock	ℓ	L	Stock	ℓ	L
MSDP 079- P,M,K,N	7.9	8.0	○	41	79	○	53	91	○	76	116
080- P,M,K,N	8.0	8.0	○	43	84	●	58	98	○	87	131
081- P,M,K,N	8.1	9.0	○	43	84	○	58	98	○	87	131
082- P,M,K,N	8.2	9.0	○	43	84	○	58	98	○	87	131
083- P,M,K,N	8.3	9.0	○	43	84	○	58	98	○	87	131
084- P,M,K,N	8.4	9.0	○	43	84	○	58	98	○	87	131
085- P,M,K,N	8.5	9.0	○	43	84	○	58	98	○	87	131
086- P,M,K,N	8.6	9.0	○	43	84	○	58	98	○	87	131
087- P,M,K,N	8.7	9.0	○	43	84	○	58	98	○	87	131
088- P,M,K,N	8.8	9.0	○	43	84	○	58	98	○	87	131
089- P,M,K,N	8.9	9.0	○	43	84	○	58	98	○	87	131
090- P,M,K,N	9.0	9.0	○	43	84	○	58	98	○	87	131
091- P,M,K,N	9.1	10.0	○	47	89	○	61	105	○	95	139
092- P,M,K,N	9.2	10.0	○	47	89	○	61	105	○	95	139
093- P,M,K,N	9.3	10.0	○	47	89	●	61	105	○	95	139
094- P,M,K,N	9.4	10.0	○	47	89	●	61	105	○	95	139
095- P,M,K,N	9.5	10.0	○	47	89	●	61	105	○	95	139
096- P,M,K,N	9.6	10.0	○	47	89	○	61	105	○	95	139
097- P,M,K,N	9.7	10.0	○	47	89	○	61	105	○	95	139
098- P,M,K,N	9.8	10.0	○	47	89	○	61	105	○	95	139
099- P,M,K,N	9.9	10.0	○	47	89	○	61	105	○	95	139
100- P,M,K,N	10.0	10.0	○	47	89	●	61	105	○	95	139
101- P,M,K,N	10.1	11.0	○	55	95	○	68	114	○	106	155
102- P,M,K,N	10.2	11.0	○	55	95	○	68	114	○	106	155
103- P,M,K,N	10.3	11.0	○	55	95	●	68	114	○	106	155
104- P,M,K,N	10.4	11.0	○	55	95	●	68	114	○	106	155
105- P,M,K,N	10.5	11.0	○	55	95	●	68	114	○	106	155
106- P,M,K,N	10.6	11.0	○	55	95	○	68	114	○	106	155
107- P,M,K,N	10.7	11.0	○	55	95	○	68	114	○	106	155
108- P,M,K,N	10.8	11.0	○	55	95	●	68	114	○	106	155
109- P,M,K,N	10.9	11.0	○	55	95	●	68	114	○	106	155
110- P,M,K,N	11.0	11.0	○	55	95	●	68	114	○	106	155
111- P,M,K,N	11.1	12.0	○	55	102	○	71	120	○	114	163
112- P,M,K,N	11.2	12.0	○	55	102	○	71	120	○	114	163
113- P,M,K,N	11.3	12.0	○	55	102	○	71	120	○	114	163
114- P,M,K,N	11.4	12.0	○	55	102	○	71	120	○	114	163
115- P,M,K,N	11.5	12.0	○	55	102	○	71	120	○	114	163
116- P,M,K,N	11.6	12.0	○	55	102	○	71	120	○	114	163
117- P,M,K,N	11.7	12.0	○	55	102	○	71	120	○	114	163
118- P,M,K,N	11.8	12.0	○	55	102	○	71	120	○	114	163
119- P,M,K,N	11.9	12.0	○	55	102	○	71	120	○	114	163
120- P,M,K,N	12.0	12.0	○	55	102	●	71	120	○	114	163
121- P,M,K,N	12.1	13.0	○	60	107	○	77	124	○	133	182
122- P,M,K,N	12.2	13.0	○	60	107	○	77	124	○	133	182
123- P,M,K,N	12.3	13.0	○	60	107	○	77	124	○	133	182
124- P,M,K,N	12.4	13.0	○	60	107	○	77	124	○	133	182
125- P,M,K,N	12.5	13.0	○	60	107	●	77	124	○	133	182
126- P,M,K,N	12.6	13.0	○	60	107	○	77	124	○	133	182
127- P,M,K,N	12.7	13.0	○	60	107	○	77	124	○	133	182
128- P,M,K,N	12.8	13.0	○	60	107	○	77	124	○	133	182
129- P,M,K,N	12.9	13.0	○	60	107	○	77	124	○	133	182

※ Pre-orders can be made in advance for non-stock items.

▲: Available in Europe ●: Available in Korea ○: Order-made item

**MSDP-** (P/M/K/N)



Specification	P	M	K	N
Coating	PC325U			FG2
Tolerance(drill Dia.)	h7			
Tolerance(shank Dia.)	h6			
Point angle	140°			135°
Twist angle	30°			
Thinning	X type			
Coolant	External system			
	P Steel	M Stainless steel	K Cast iron	N Non-ferrous metal

(mm)

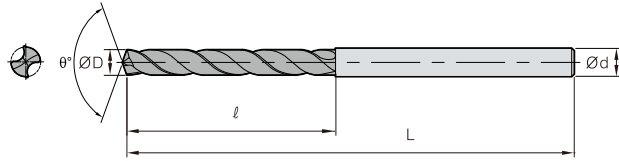
Designation	ØD	Ød	3 P,M,K,N			5 P,M,K,N			7 P,M,K,N		
			Stock	ℓ	L	Stock	ℓ	L	Stock	ℓ	L
MSDP 130- P,M,K,N	13.0	13.0	○	60	107	●	77	124	○	133	182
131- P,M,K,N	13.1	14.0	○	62	107	○	80	133	○	133	182
132- P,M,K,N	13.2	14.0	○	62	107	○	80	133	○	133	182
133- P,M,K,N	13.3	14.0	○	62	107	○	80	133	○	133	182
134- P,M,K,N	13.4	14.0	○	62	107	○	80	133	○	133	182
135- P,M,K,N	13.5	14.0	○	62	107	●	80	133	○	133	182
136- P,M,K,N	13.6	14.0	○	62	107	○	80	133	○	133	182
137- P,M,K,N	13.7	14.0	○	62	107	○	80	133	○	133	182
138- P,M,K,N	13.8	14.0	○	62	107	○	80	133	○	133	182
139- P,M,K,N	13.9	14.0	○	62	107	○	80	133	○	133	182
140- P,M,K,N	14.0	14.0	○	62	107	●	80	133	○	133	182
141- P,M,K,N	14.1	15.0	○	65	115	○	85	143	○	152	204
142- P,M,K,N	14.2	15.0	○	65	115	○	85	143	○	152	204
143- P,M,K,N	14.3	15.0	○	65	115	○	85	143	○	152	204
144- P,M,K,N	14.4	15.0	○	65	115	○	85	143	○	152	204
145- P,M,K,N	14.5	15.0	○	65	115	●	85	143	○	152	204
146- P,M,K,N	14.6	15.0	○	65	115	○	85	143	○	152	204
147- P,M,K,N	14.7	15.0	○	65	115	○	85	143	○	152	204
148- P,M,K,N	14.8	15.0	○	65	115	○	85	143	○	152	204
149- P,M,K,N	14.9	15.0	○	65	115	○	85	143	○	152	204
150- P,M,K,N	15.0	15.0	○	65	115	●	85	143	○	152	204
151- P,M,K,N	15.1	16.0	○	68	115	○	88	143	○	152	204
152- P,M,K,N	15.2	16.0	○	68	115	○	88	143	○	152	204
153- P,M,K,N	15.3	16.0	○	68	115	○	88	143	○	152	204
154- P,M,K,N	15.4	16.0	○	68	115	○	88	143	○	152	204
155- P,M,K,N	15.5	16.0	○	68	115	○	88	143	○	152	204
156- P,M,K,N	15.6	16.0	○	68	115	○	88	143	○	152	204
157- P,M,K,N	15.7	16.0	○	68	115	○	88	143	○	152	204
158- P,M,K,N	15.8	16.0	○	68	115	○	88	143	○	152	204
159- P,M,K,N	15.9	16.0	○	68	115	○	88	143	○	152	204
160- P,M,K,N	16.0	16.0	○	68	115	○	88	143	○	152	204
161- P,M,K,N	16.1	17.0	○	73	123	○	93	153	○	171	223
162- P,M,K,N	16.2	17.0	○	73	123	○	93	153	○	171	223
163- P,M,K,N	16.3	17.0	○	73	123	○	93	153	○	171	223
164- P,M,K,N	16.4	17.0	○	73	123	○	93	153	○	171	223
165- P,M,K,N	16.5	17.0	○	73	123	○	93	153	○	171	223
166- P,M,K,N	16.6	17.0	○	73	123	○	93	153	○	171	223
167- P,M,K,N	16.7	17.0	○	73	123	○	93	153	○	171	223
168- P,M,K,N	16.8	17.0	○	73	123	○	93	153	○	171	223
169- P,M,K,N	16.9	17.0	○	73	123	○	93	153	○	171	223
170- P,M,K,N	17.0	17.0	○	73	123	○	93	153	○	171	223
171- P,M,K,N	17.1	18.0	○	73	123	○	98	153	○	171	223
172- P,M,K,N	17.2	18.0	○	73	123	○	98	153	○	171	223
173- P,M,K,N	17.3	18.0	○	73	123	○	98	153	○	171	223
174- P,M,K,N	17.4	18.0	○	73	123	○	98	153	○	171	223
175- P,M,K,N	17.5	18.0	○	73	123	○	98	153	○	171	223
176- P,M,K,N	17.6	18.0	○	73	123	○	98	153	○	171	223
177- P,M,K,N	17.7	18.0	○	73	123	○	98	153	○	171	223
178- P,M,K,N	17.8	18.0	○	73	123	○	98	153	○	171	223
179- P,M,K,N	17.9	18.0	○	73	123	○	98	153	○	171	223
180- P,M,K,N	18.0	18.0	○	73	123	○	98	153	○	171	223

※ Pre-orders can be made in advance for non-stock items.

▲: Available in Europe ●: Available in Korea ○: Order-made item

# MSD Plus

## MSDP- (P/M/K/N)



Specification	P	M	K	N
Coating	PC325U	FG2		
Tolerance(drill Dia.)	h7			
Tolerance(shank Dia.)	h6			
Point angle	140°	135°		
Twist angle	30°			
Thinning	X type			
Coolant	External system			
	P Steel	M Stainless steel	K Cast iron	N Non-ferrous metal

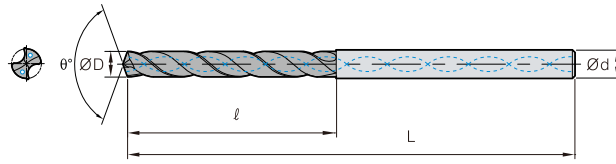
(mm)

Designation	ØD	Ød	3 P,M,K,N			5 P,M,K,N			7 P,M,K,N		
			Stock	ℓ	L	Stock	ℓ	L	Stock	ℓ	L
MSDP 181- P,M,K,N	18.1	19.0	○	79	131	○	103	153	○	190	244
182- P,M,K,N	18.2	19.0	○	79	131	○	103	153	○	190	244
183- P,M,K,N	18.3	19.0	○	79	131	○	103	153	○	190	244
184- P,M,K,N	18.4	19.0	○	79	131	○	103	153	○	190	244
185- P,M,K,N	18.5	19.0	○	79	131	○	103	153	○	190	244
186- P,M,K,N	18.6	19.0	○	79	131	○	103	153	○	190	244
187- P,M,K,N	18.7	19.0	○	79	131	○	103	153	○	190	244
188- P,M,K,N	18.8	19.0	○	79	131	○	103	153	○	190	244
189- P,M,K,N	18.9	19.0	○	79	131	○	103	153	○	190	244
190- P,M,K,N	19.0	19.0	○	79	131	○	103	153	○	190	244
191- P,M,K,N	19.1	20.0	○	79	131	○	107	153	○	190	244
192- P,M,K,N	19.2	20.0	○	79	131	○	107	153	○	190	244
193- P,M,K,N	19.3	20.0	○	79	131	○	107	153	○	190	244
194- P,M,K,N	19.4	20.0	○	79	131	○	107	153	○	190	244
195- P,M,K,N	19.5	20.0	○	79	131	○	107	153	○	190	244
196- P,M,K,N	19.6	20.0	○	79	131	○	107	153	○	190	244
197- P,M,K,N	19.7	20.0	○	79	131	○	107	153	○	190	244
198- P,M,K,N	19.8	20.0	○	79	131	○	107	153	○	190	244
199- P,M,K,N	19.9	20.0	○	79	131	○	107	153	○	190	244
200- P,M,K,N	20.0	20.0	○	79	131	○	107	153	○	190	244

※ Pre-orders can be made in advance for non-stock items.

▲: Available in Europe ●: Available in Korea ○: Order-made item

# MSDPH- (P/M/K/N)



Specification	<b>P</b>	<b>M</b>	<b>K</b>	<b>N</b>
Coating	PC325U			FG2
Tolerance(drill Dia.)	h7			
Tolerance(shank Dia.)	h6			
Point angle	140°	135°		
Twist angle	30°			
Thinning	X type			
Coolant	Through / External system			
	<b>P</b> Steel	<b>M</b> Stainless steel	<b>K</b> Cast iron	<b>N</b> Non-ferrous metal

(mm)

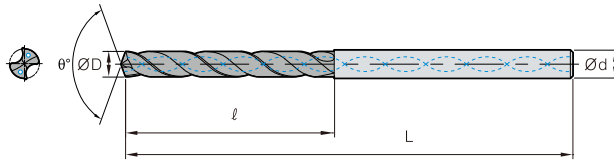
Designation	ØD	Ød	3 P,M,K,N			5 P,M,K,N			7 P,M,K,N		
			Stock	ℓ	L	Stock	ℓ	L	Stock	ℓ	L
MSDPH 025 - P,M,K,N	2.5	3.0	○	14	53	○	20	66	○	30	70
026 - P,M,K,N	2.6	3.0	○	17	53	○	20	66	○	30	70
027 - P,M,K,N	2.7	3.0	○	17	53	○	20	66	○	30	70
028 - P,M,K,N	2.8	3.0	○	17	53	○	20	66	○	30	70
029 - P,M,K,N	2.9	3.0	○	17	53	○	20	66	○	30	70
030 - P,M,K,N	3.0	3.0	○	17	53	○	20	66	○	30	70
031 - P,M,K,N	3.1	4.0	○	20	58	○	28	74	○	30	70
032 - P,M,K,N	3.2	4.0	○	20	58	●	28	74	○	30	70
033 - P,M,K,N	3.3	4.0	○	20	58	●	28	74	○	30	70
034 - P,M,K,N	3.4	4.0	○	20	58	○	28	74	○	37.5	75
035 - P,M,K,N	3.5	4.0	○	20	58	○	28	74	○	37.5	75
036 - P,M,K,N	3.6	4.0	○	22	58	○	32	74	○	37.5	75
037 - P,M,K,N	3.7	4.0	○	22	58	○	32	74	○	37.5	75
038 - P,M,K,N	3.8	4.0	○	22	58	●	32	74	○	37.5	75
039 - P,M,K,N	3.9	4.0	○	22	58	○	32	74	○	37.5	75
040 - P,M,K,N	4.0	4.0	○	22	58	●	32	74	○	37.5	75
041 - P,M,K,N	4.1	4.0	○	24	62	●	36	82	○	37.5	75
042 - P,M,K,N	4.2	4.0	○	24	62	●	36	82	○	37.5	75
043 - P,M,K,N	4.3	4.0	○	24	62	○	36	82	○	45	85
044 - P,M,K,N	4.4	4.0	○	24	62	○	36	82	○	45	85
045 - P,M,K,N	4.5	4.0	○	24	62	●	36	82	○	45	85
046 - P,M,K,N	4.6	4.0	○	26	62	●	38	82	○	45	85
047 - P,M,K,N	4.7	4.0	○	26	62	○	38	82	○	45	85
048 - P,M,K,N	4.8	4.0	○	26	62	●	38	82	○	50	90
049 - P,M,K,N	4.9	4.0	○	26	62	○	38	82	○	50	90
050 - P,M,K,N	5.0	5.0	○	26	62	●	38	82	○	50	90
051 - P,M,K,N	5.1	6.0	○	28	66	○	44	82	○	50	90
052 - P,M,K,N	5.2	6.0	○	28	66	●	44	82	○	50	90
053 - P,M,K,N	5.3	6.0	○	28	66	●	44	82	○	50	90
054 - P,M,K,N	5.4	6.0	○	28	66	○	44	82	○	50	90
055 - P,M,K,N	5.5	6.0	○	28	66	○	44	82	○	57	97
056 - P,M,K,N	5.6	6.0	○	28	66	○	44	82	○	57	97
057 - P,M,K,N	5.7	6.0	○	28	66	○	44	82	○	57	97
058 - P,M,K,N	5.8	6.0	○	28	66	○	44	82	○	57	97
059 - P,M,K,N	5.9	6.0	○	28	66	○	44	82	○	57	97
060 - P,M,K,N	6.0	6.0	○	28	66	●	44	82	○	57	97
061 - P,M,K,N	6.1	7.0	○	34	74	○	50	91	○	66	106
062 - P,M,K,N	6.2	7.0	○	34	74	○	50	91	○	66	106
063 - P,M,K,N	6.3	7.0	○	34	74	●	50	91	○	66	106
064 - P,M,K,N	6.4	7.0	○	34	74	○	50	91	○	66	106
065 - P,M,K,N	6.5	7.0	○	34	74	○	50	91	○	66	106
066 - P,M,K,N	6.6	7.0	○	34	74	○	50	91	○	66	106
067 - P,M,K,N	6.7	7.0	○	34	74	○	50	91	○	66	106
068 - P,M,K,N	6.8	7.0	○	34	74	●	50	91	○	66	106
069 - P,M,K,N	6.9	7.0	○	34	74	○	50	91	○	76	116
070 - P,M,K,N	7.0	7.0	○	34	74	●	50	91	○	76	116
071 - P,M,K,N	7.1	8.0	○	41	79	○	53	91	○	76	116
072 - P,M,K,N	7.2	8.0	○	41	79	○	53	91	○	76	116
073 - P,M,K,N	7.3	8.0	○	41	79	●	53	91	○	76	116
074 - P,M,K,N	7.4	8.0	○	41	79	○	53	91	○	76	116
075 - P,M,K,N	7.5	8.0	○	41	79	○	53	91	○	76	116

※ Pre-orders can be made in advance for non-stock items.

▲: Available in Europe ●: Available in Korea ○: Order-made item

# MSD Plus

## MSDPH- (P/M/K/N)



Specification	P	M	K	N
Coating	PC325U			FG2
Tolerance(drill Dia.)	h7			
Tolerance(shank Dia.)	h6			
Point angle	140°			135°
Twist angle	30°			
Thinning	X type			
Coolant	Through / External system			
	P Steel	M Stainless steel	K Cast iron	N Non-ferrous metal

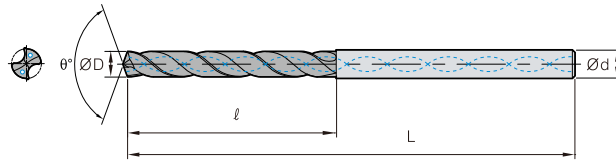
(mm)

Designation	ØD	Ød	3 P,M,K,N			5 P,M,K,N			7 P,M,K,N		
			Stock	ℓ	L	Stock	ℓ	L	Stock	ℓ	L
MSDPH 076 - _P,M,K,N	7.6	8.0	○	41	79	○	53	91	○	76	116
077 - _P,M,K,N	7.7	8.0	○	41	79	○	53	91	○	76	116
078 - _P,M,K,N	7.8	8.0	○	41	79	○	53	91	○	76	116
079 - _P,M,K,N	7.9	8.0	○	41	79	○	53	91	○	76	116
080 - _P,M,K,N	8.0	8.0	○	43	84	○	58	98	○	87	131
081 - _P,M,K,N	8.1	9.0	○	43	84	○	58	98	○	87	131
082 - _P,M,K,N	8.2	9.0	○	43	84	○	58	98	○	87	131
083 - _P,M,K,N	8.3	9.0	○	43	84	●	58	98	○	87	131
084 - _P,M,K,N	8.4	9.0	○	43	84	●	58	98	○	87	131
085 - _P,M,K,N	8.5	9.0	○	43	84	○	58	98	○	87	131
086 - _P,M,K,N	8.6	9.0	○	43	84	○	58	98	○	87	131
087 - _P,M,K,N	8.7	9.0	○	43	84	○	58	98	○	87	131
088 - _P,M,K,N	8.8	9.0	○	43	84	○	58	98	○	87	131
089 - _P,M,K,N	8.9	9.0	○	43	84	●	58	98	○	87	131
090 - _P,M,K,N	9.0	9.0	○	43	84	○	58	98	○	87	131
091 - _P,M,K,N	9.1	10.0	○	47	89	●	61	105	○	95	139
092 - _P,M,K,N	9.2	10.0	○	47	89	●	61	105	○	95	139
093 - _P,M,K,N	9.3	10.0	○	47	89	●	61	105	○	95	139
094 - _P,M,K,N	9.4	10.0	○	47	89	○	61	105	○	95	139
095 - _P,M,K,N	9.5	10.0	○	47	89	○	61	105	○	95	139
096 - _P,M,K,N	9.6	10.0	○	47	89	●	61	105	○	95	139
097 - _P,M,K,N	9.7	10.0	○	47	89	●	61	105	○	95	139
098 - _P,M,K,N	9.8	10.0	○	47	89	○	61	105	○	95	139
099 - _P,M,K,N	9.9	10.0	○	47	89	●	61	105	○	95	139
100 - _P,M,K,N	10.0	10.0	○	47	89	○	61	105	○	95	139
101 - _P,M,K,N	10.1	11.0	○	55	95	●	68	114	○	106	155
102 - _P,M,K,N	10.2	11.0	○	55	95	○	68	114	○	106	155
103 - _P,M,K,N	10.3	11.0	○	55	95	●	68	114	○	106	155
104 - _P,M,K,N	10.4	11.0	○	55	95	●	68	114	○	106	155
105 - _P,M,K,N	10.5	11.0	○	55	95	○	68	114	○	106	155
106 - _P,M,K,N	10.6	11.0	○	55	95	○	68	114	○	106	155
107 - _P,M,K,N	10.7	11.0	○	55	95	○	68	114	○	106	155
108 - _P,M,K,N	10.8	11.0	○	55	95	○	68	114	○	106	155
109 - _P,M,K,N	10.9	11.0	○	55	95	○	68	114	○	106	155
110 - _P,M,K,N	11.0	11.0	○	55	95	○	68	114	○	106	155
111 - _P,M,K,N	11.1	12.0	○	55	102	●	71	120	○	114	163
112 - _P,M,K,N	11.2	12.0	○	55	102	○	71	120	○	114	163
113 - _P,M,K,N	11.3	12.0	○	55	102	○	71	120	○	114	163
114 - _P,M,K,N	11.4	12.0	○	55	102	●	71	120	○	114	163
115 - _P,M,K,N	11.5	12.0	○	55	102	○	71	120	○	114	163
116 - _P,M,K,N	11.6	12.0	○	55	102	○	71	120	○	114	163
117 - _P,M,K,N	11.7	12.0	○	55	102	○	71	120	○	114	163
118 - _P,M,K,N	11.8	12.0	○	55	102	○	71	120	○	114	163
119 - _P,M,K,N	11.9	12.0	○	55	102	●	71	120	○	114	163
120 - _P,M,K,N	12.0	12.0	○	55	102	○	71	120	○	114	163
121 - _P,M,K,N	12.1	13.0	○	60	107	○	77	124	○	133	182
122 - _P,M,K,N	12.2	13.0	○	60	107	○	77	124	○	133	182

※ Pre-orders can be made in advance for non-stock items.

▲: Available in Europe ●: Available in Korea ○: Order-made item

MSDPH- (P/M/K/N)



Specification	P	M	K	N
Coating	PC325U			FG2
Tolerance(drill Dia.)	h7			
Tolerance(shank Dia.)	h6			
Point angle	140°		135°	
Twist angle	30°			
Thinning	X type			
Coolant	Through / External system			
	P Steel	M Stainless steel	K Cast iron	N Non-ferrous metal

(mm)

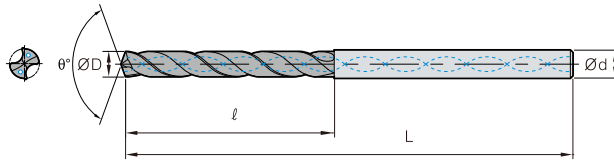
Designation	ØD	Ød	3 P,M,K,N			5 P,M,K,N			7 P,M,K,N		
			Stock	ℓ	L	Stock	ℓ	L	Stock	ℓ	L
MSDPH 123 - _P,M,K,N	12.3	13.0	○	60	107	○	77	124	○	133	182
124 - _P,M,K,N	12.4	13.0	○	60	107	○	77	124	○	133	182
125 - _P,M,K,N	12.5	13.0	○	60	107	●	77	124	○	133	182
126 - _P,M,K,N	12.6	13.0	○	60	107	○	77	124	○	133	182
127 - _P,M,K,N	12.7	13.0	○	60	107	○	77	124	○	133	182
128 - _P,M,K,N	12.8	13.0	○	60	107	○	77	124	○	133	182
129 - _P,M,K,N	12.9	13.0	○	60	107	○	77	124	○	133	182
130 - _P,M,K,N	13.0	13.0	○	60	107	●	77	124	○	133	182
131 - _P,M,K,N	13.1	14.0	○	62	107	○	80	133	○	133	182
132 - _P,M,K,N	13.2	14.0	○	62	107	○	80	133	○	133	182
133 - _P,M,K,N	13.3	14.0	○	62	107	○	80	133	○	133	182
134 - _P,M,K,N	13.4	14.0	○	62	107	○	80	133	○	133	182
135 - _P,M,K,N	13.5	14.0	○	62	107	●	80	133	○	133	182
136 - _P,M,K,N	13.6	14.0	○	62	107	○	80	133	○	133	182
137 - _P,M,K,N	13.7	14.0	○	62	107	○	80	133	○	133	182
138 - _P,M,K,N	13.8	14.0	○	62	107	○	80	133	○	133	182
139 - _P,M,K,N	13.9	14.0	○	62	107	○	80	133	○	133	182
140 - _P,M,K,N	14.0	14.0	○	62	107	●	80	133	○	133	182
141 - _P,M,K,N	14.1	15.0	○	65	115	○	85	143	○	152	204
142 - _P,M,K,N	14.2	15.0	○	65	115	○	85	143	○	152	204
143 - _P,M,K,N	14.3	15.0	○	65	115	○	85	143	○	152	204
144 - _P,M,K,N	14.4	15.0	○	65	115	○	85	143	○	152	204
145 - _P,M,K,N	14.5	15.0	○	65	115	●	85	143	○	152	204
146 - _P,M,K,N	14.6	15.0	○	65	115	○	85	143	○	152	204
147 - _P,M,K,N	14.7	15.0	○	65	115	○	85	143	○	152	204
148 - _P,M,K,N	14.8	15.0	○	65	115	○	85	143	○	152	204
149 - _P,M,K,N	14.9	15.0	○	65	115	○	85	143	○	152	204
150 - _P,M,K,N	15.0	15.0	○	65	115	●	85	143	○	152	204
151 - _P,M,K,N	15.1	16.0	○	68	115	○	88	143	○	152	204
152 - _P,M,K,N	15.2	16.0	○	68	115	○	88	143	○	152	204
153 - _P,M,K,N	15.3	16.0	○	68	115	○	88	143	○	152	204
154 - _P,M,K,N	15.4	16.0	○	68	115	○	88	143	○	152	204
155 - _P,M,K,N	15.5	16.0	○	68	115	○	88	143	○	152	204
156 - _P,M,K,N	15.6	16.0	○	68	115	○	88	143	○	152	204
157 - _P,M,K,N	15.7	16.0	○	68	115	○	88	143	○	152	204
158 - _P,M,K,N	15.8	16.0	○	68	115	○	88	143	○	152	204
159 - _P,M,K,N	15.9	16.0	○	68	115	○	88	143	○	152	204
160 - _P,M,K,N	16.0	16.0	○	68	115	○	88	143	○	152	204
161 - _P,M,K,N	16.1	17.0	○	73	123	○	93	153	○	171	223
162 - _P,M,K,N	16.2	17.0	○	73	123	○	93	153	○	171	223
163 - _P,M,K,N	16.3	17.0	○	73	123	○	93	153	○	171	223
164 - _P,M,K,N	16.4	17.0	○	73	123	○	93	153	○	171	223
165 - _P,M,K,N	16.5	17.0	○	73	123	○	93	153	○	171	223
166 - _P,M,K,N	16.6	17.0	○	73	123	○	93	153	○	171	223
167 - _P,M,K,N	16.7	17.0	○	73	123	○	93	153	○	171	223
168 - _P,M,K,N	16.8	17.0	○	73	123	○	93	153	○	171	223
169 - _P,M,K,N	16.9	17.0	○	73	123	○	93	153	○	171	223

※ Pre-orders can be made in advance for non-stock items.

▲: Available in Europe ●: Available in Korea ○: Order-made item

# MSD Plus

## MSDPH- (P/M/K/N)



Specification	P	M	K	N
Coating	PC325U			FG2
Tolerance(drill Dia.)	h7			
Tolerance(shank Dia.)	h6			
Point angle	140°	135°		
Twist angle	30°			
Thinning	X type			
Coolant	Through / External system			
	P Steel	M Stainless steel	K Cast iron	N Non-ferrous metal

(mm)

Designation	ØD	Ød	3 P,M,K,N			5 P,M,K,N			7 P,M,K,N		
			Stock	ℓ	L	Stock	ℓ	L	Stock	ℓ	L
MSDPH 170 - _P,M,K,N	17.0	17.0	○	73	123	○	93	153	○	171	223
MSDPH 171 - _P,M,K,N	17.1	18.0	○	73	123	○	98	153	○	171	223
MSDPH 172 - _P,M,K,N	17.2	18.0	○	73	123	○	98	153	○	171	223
MSDPH 173 - _P,M,K,N	17.3	18.0	○	73	123	○	98	153	○	171	223
MSDPH 174 - _P,M,K,N	17.4	18.0	○	73	123	○	98	153	○	171	223
MSDPH 175 - _P,M,K,N	17.5	18.0	○	73	123	○	98	153	○	171	223
MSDPH 176 - _P,M,K,N	17.6	18.0	○	73	123	○	98	153	○	171	223
MSDPH 177 - _P,M,K,N	17.7	18.0	○	73	123	○	98	153	○	171	223
MSDPH 178 - _P,M,K,N	17.8	18.0	○	73	123	○	98	153	○	171	223
MSDPH 179 - _P,M,K,N	17.9	18.0	○	73	123	○	98	153	○	171	223
MSDPH 180 - _P,M,K,N	18.0	18.0	○	73	123	○	98	153	○	171	223
MSDPH 181 - _P,M,K,N	18.1	19.0	○	79	131	○	103	153	○	190	244
MSDPH 182 - _P,M,K,N	18.2	19.0	○	79	131	○	103	153	○	190	244
MSDPH 183 - _P,M,K,N	18.3	19.0	○	79	131	○	103	153	○	190	244
MSDPH 184 - _P,M,K,N	18.4	19.0	○	79	131	○	103	153	○	190	244
MSDPH 185 - _P,M,K,N	18.5	19.0	○	79	131	○	103	153	○	190	244
MSDPH 186 - _P,M,K,N	18.6	19.0	○	79	131	○	103	153	○	190	244
MSDPH 187 - _P,M,K,N	18.7	19.0	○	79	131	○	103	153	○	190	244
MSDPH 188 - _P,M,K,N	18.8	19.0	○	79	131	○	103	153	○	190	244
MSDPH 189 - _P,M,K,N	18.9	19.0	○	79	131	○	103	153	○	190	244
MSDPH 190 - _P,M,K,N	19.0	19.0	○	79	131	○	103	153	○	190	244
MSDPH 191 - _P,M,K,N	19.1	20.0	○	79	131	○	107	153	○	190	244
MSDPH 192 - _P,M,K,N	19.2	20.0	○	79	131	○	107	153	○	190	244
MSDPH 193 - _P,M,K,N	19.3	20.0	○	79	131	○	107	153	○	190	244
MSDPH 194 - _P,M,K,N	19.4	20.0	○	79	131	○	107	153	○	190	244
MSDPH 195 - _P,M,K,N	19.5	20.0	○	79	131	○	107	153	○	190	244
MSDPH 196 - _P,M,K,N	19.6	20.0	○	79	131	○	107	153	○	190	244
MSDPH 197 - _P,M,K,N	19.7	20.0	○	79	131	○	107	153	○	190	244
MSDPH 198 - _P,M,K,N	19.8	20.0	○	79	131	○	107	153	○	190	244
MSDPH 199 - _P,M,K,N	19.9	20.0	○	79	131	○	107	153	○	190	244
MSDPH 200 - _P,M,K,N	20.0	20.0	○	79	131	○	107	153	○	190	244

※ Pre-orders can be made in advance for non-stock items.

▲ : Available in Europe ● : Available in Korea ○ : Order-made item



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