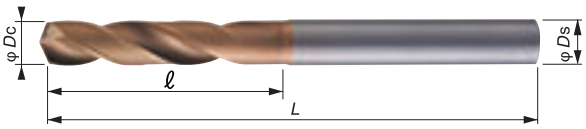
DRILLS
ดอกสว่าน

MOLDINO
The Edge To Innovation

ดอกสว่านคาร์ไบด์ Non Step มีรูน้ำมัน
Carbide Oil Hole Non Step Borer 3D
03WHNSB○○○○-TH

Plane, S-X thinning



Boring | Carbide | TH COATED | 140° | Normal Helix 21°~34° | Integral No. Shank | ~3Dc | P (Steel) | M (Stainless) | S (Titanium alloy) | K (Cast iron)

h8

Ø2 ~ Ø3 : 0 ~-0.014
Ø3.05 ~ Ø6 : 0 ~-0.018
Ø6.05 ~ Ø10 : 0 ~-0.022
Ø10.1 ~ Ø13 : 0 ~-0.027

Shank Diameter Tolerance 0~ -0.01

(mm)

Order Code	Stock	Size (mm) Dc Drill Dia.	ℓ Flute Length	L Overall Length	Ds Shank Dia.
03WHNSB0200-TH	●	2.0	16	69	3.0
03WHNSB0203-TH	●	2.03	16	69	3.0
03WHNSB0210-TH	●	2.10	17	69	3.0
03WHNSB0213-TH	●	2.13	17	69	3.0
03WHNSB0220-TH	●	2.2	17	69	3.0
03WHNSB0223-TH	●	2.23	17	69	3.0
03WHNSB0230-TH	●	2.3	19	69	3.0
03WHNSB0233-TH	●	2.33	19	69	3.0
03WHNSB0240-TH	●	2.4	19	69	3.0
03WHNSB0243-TH	●	2.43	19	69	3.0
03WHNSB0250-TH	●	2.5	19	69	3.0
03WHNSB0253-TH	●	2.53	19	69	3.0
03WHNSB0260-TH	●	2.6	19	69	3.0
03WHNSB0263-TH	●	2.63	19	69	3.0
03WHNSB0270-TH	●	2.7	19	69	3.0
03WHNSB0273-TH	●	2.73	19	69	3.0
03WHNSB0280-TH	●	2.8	19	69	3.0
03WHNSB0283-TH	●	2.83	19	69	3.0
03WHNSB0290-TH	●	2.9	19	69	3.0
03WHNSB0293-TH	●	2.93	19	69	3.0
03WHNSB0300-TH	●	3.0	19	69	3.0
03WHNSB0305-TH	●	3.05	23	73	4.0
03WHNSB0310-TH	●	3.1	23	73	4.0
03WHNSB0320-TH	●	3.2	23	73	4.0
03WHNSB0330-TH	●	3.3	23	73	4.0
03WHNSB0340-TH	●	3.4	23	73	4.0
03WHNSB0350-TH	●	3.5	23	73	4.0
03WHNSB0360-TH	●	3.6	23	73	4.0
03WHNSB0370-TH	●	3.7	23	73	4.0
03WHNSB0380-TH	●	3.8	23	73	4.0
03WHNSB0390-TH	●	3.9	23	73	4.0
03WHNSB0400-TH	●	4.0	23	73	4.0
03WHNSB0405-TH	●	4.05	29	82	5.0
03WHNSB0410-TH	●	4.1	29	82	5.0
03WHNSB0420-TH	●	4.2	29	82	5.0
03WHNSB0430-TH	●	4.3	29	82	5.0
03WHNSB0440-TH	●	4.4	29	82	5.0
03WHNSB0450-TH	●	4.5	29	82	5.0
03WHNSB0460-TH	●	4.6	29	82	5.0
03WHNSB0470-TH	●	4.7	29	82	5.0
03WHNSB0480-TH	●	4.8	29	82	5.0
03WHNSB0490-TH	●	4.9	29	82	5.0
03WHNSB0500-TH	●	5.0	29	82	5.0
03WHNSB0505-TH	●	5.05	29	82	6.0
03WHNSB0510-TH	●	5.1	29	82	6.0
03WHNSB0520-TH	●	5.2	29	82	6.0

Order Code	Stock	Size (mm) Dc Drill Dia.	ℓ Flute Length	L Overall Length	Ds Shank Dia.
03WHNSB0530-TH	●	5.3	29	82	6.0
03WHNSB0540-TH	●	5.4	29	82	6.0
03WHNSB0550-TH	●	5.5	29	82	6.0
03WHNSB0555-TH	●	5.55	29	82	6.0
03WHNSB0560-TH	●	5.6	29	82	6.0
03WHNSB0570-TH	●	5.7	29	82	6.0
03WHNSB0580-TH	●	5.8	29	82	6.0
03WHNSB0590-TH	●	5.9	29	82	6.0
03WHNSB0600-TH	●	6.0	29	82	6.0
03WHNSB0605-TH	●	6.05	34	89	7.0
03WHNSB0610-TH	●	6.1	34	89	7.0
03WHNSB0620-TH	●	6.2	34	89	7.0
03WHNSB0630-TH	●	6.3	34	89	7.0
03WHNSB0640-TH	●	6.4	34	89	7.0
03WHNSB0650-TH	●	6.5	34	89	7.0
03WHNSB0655-TH	●	6.55	34	89	7.0
03WHNSB0660-TH	●	6.6	34	89	7.0
03WHNSB0670-TH	●	6.7	34	89	7.0
03WHNSB0680-TH	●	6.8	34	89	7.0
03WHNSB0690-TH	●	6.9	34	89	7.0
03WHNSB0700-TH	●	7.0	34	89	7.0
03WHNSB0705-TH	●	7.05	39	95	8.0
03WHNSB0710-TH	●	7.1	39	95	8.0
03WHNSB0720-TH	●	7.2	39	95	8.0
03WHNSB0730-TH	●	7.3	39	95	8.0
03WHNSB0740-TH	●	7.4	39	95	8.0
03WHNSB0750-TH	●	7.5	39	95	8.0
03WHNSB0760-TH	●	7.6	39	95	8.0
03WHNSB0770-TH	●	7.7	39	95	8.0
03WHNSB0780-TH	●	7.8	39	95	8.0
03WHNSB0790-TH	●	7.9	39	95	8.0
03WHNSB0800-TH	●	8.0	39	95	8.0
03WHNSB0805-TH	●	8.05	44	101	9.0
03WHNSB0810-TH	●	8.1	44	101	9.0
03WHNSB0820-TH	●	8.2	44	101	9.0
03WHNSB0830-TH	●	8.3	44	101	9.0
03WHNSB0840-TH	●	8.4	44	101	9.0
03WHNSB0850-TH	●	8.5	44	101	9.0
03WHNSB0860-TH	●	8.6	44	101	9.0
03WHNSB0870-TH	●	8.7	44	101	9.0
03WHNSB0880-TH	●	8.8	44	101	9.0
03WHNSB0890-TH	●	8.9	44	101	9.0
03WHNSB0900-TH	●	9.0	44	101	9.0
03WHNSB0910-TH	□	9.1	49	107	10.0
03WHNSB0920-TH	□	9.2	49	107	10.0
03WHNSB0930-TH	□	9.3	49	107	10.0

Order Code	Stock	Size (mm) Dc Drill Dia.	ℓ Flute Length	L Overall Length	Ds Shank Dia.
03WHNSB0940-TH	□	9.4	49	107	10.0
03WHNSB0950-TH	●	9.5	49	107	10.0
03WHNSB0960-TH	□	9.6	49	107	10.0
03WHNSB0970-TH	□	9.7	49	107	10.0
03WHNSB0980-TH	●	9.8	49	107	10.0
03WHNSB0990-TH	□	9.9	49	107	10.0
03WHNSB1000-TH	●	10.0	49	107	10.0
03WHNSB1010-TH	□	10.1	54	117	11.0
03WHNSB1020-TH	●	10.2	54	117	11.0
03WHNSB1030-TH	●	10.3	54	117	11.0
03WHNSB1040-TH	□	10.4	54	117	11.0
03WHNSB1050-TH	●	10.5	54	117	11.0
03WHNSB1060-TH	□	10.6	54	117	11.0
03WHNSB1070-TH	□	10.7	54	117	11.0
03WHNSB1080-TH	●	10.8	54	117	11.0
03WHNSB1090-TH	□	10.9	54	117	11.0
03WHNSB1100-TH	●	11.0	54	117	11.0
03WHNSB1110-TH	□	11.1	59	123	12.0
03WHNSB1120-TH	□	11.2	59	123	12.0
03WHNSB1130-TH	□	11.3	59	123	12.0
03WHNSB1140-TH	□	11.4	59	123	12.0
03WHNSB1150-TH	●	11.5	59	123	12.0
03WHNSB1160-TH	□	11.6	59	123	12.0
03WHNSB1170-TH	□	11.7	59	123	12.0
03WHNSB1180-TH	●	11.8	59	123	12.0
03WHNSB1190-TH	□	11.9	59	123	12.0
03WHNSB1200-TH	●	12.0	59	123	12.0
03WHNSB1210-TH	□	12.1	64	129	13.0
03WHNSB1220-TH	□	12.2	64	129	13.0
03WHNSB1230-TH	□	12.3	64	129	13.0
03WHNSB1240-TH	□	12.4	64	129	13.0
03WHNSB1250-TH	●	12.5	64	129	13.0
03WHNSB1260-TH	□	12.6	64	129	13.0
03WHNSB1270-TH	□	12.7	64	129	13.0
03WHNSB1280-TH	□	12.8	64	129	13.0
03WHNSB1290-TH	□	12.9	64	129	13.0
03WHNSB1300-TH	●	13.0	64	129	13.0

● : Stocked Items. □ : Stocked by specified distributor. Contact with our sales department.

Recommended cutting conditions

03WHNSB-TH **05WHNSB-TH**

Work material (hardness)	Cutting speed (Vc) m/min	Cutting conditions	Tool Dia. (mm)					
			Ø2.0	Ø4.0	Ø6.0	Ø8.0	Ø10.0	Ø12.0
Structural steel (~180HB) SS	Internal Coolant 50~120~180	(n)min^{-1} Revolution speed (n)	16000	9500	6300	4800	3800	3200
		(f)mm/rev Feed per Rev	0.05~0.1	0.1~0.16	0.15~0.24	0.18~0.3	0.2~0.35	0.22~0.4
	MQL (mist) 50~120~180	(n)min^{-1} Revolution speed (n)	13000	9500	6300	4800	3800	3200
		(f)mm/rev Feed per Rev	0.05~0.1	0.1~0.16	0.15~0.24	0.18~0.3	0.2~0.35	0.22~0.4
Carbon steel (~200HB) S○○C	Internal Coolant 50~120~180	(n)min^{-1} Revolution speed (n)	16000	9500	6300	4800	3800	3200
		(f)mm/rev Feed per Rev	0.05~0.1	0.1~0.16	0.15~0.24	0.18~0.3	0.2~0.35	0.22~0.4
	MQL (mist) 50~120~180	(n)min^{-1} Revolution speed (n)	13000	9500	6300	4800	3800	3200
		(f)mm/rev Feed per Rev	0.05~0.1	0.1~0.16	0.15~0.24	0.18~0.3	0.2~0.35	0.22~0.4
Alloy steel (~30HRC) SCM	Internal Coolant 50~120~180	(n)min^{-1} Revolution speed (n)	16000	9500	6300	4800	3800	3200
		(f)mm/rev Feed per Rev	0.05~0.1	0.1~0.16	0.15~0.24	0.18~0.3	0.2~0.35	0.22~0.4
	MQL (mist) 50~120~180	(n)min^{-1} Revolution speed (n)	13000	9500	6300	4800	3800	3200
		(f)mm/rev Feed per Rev	0.05~0.1	0.1~0.16	0.15~.24	0.18~0.3	0.2~0.35	0.22~0.4
Stainless steel SUS300, SUS400	Internal Coolant 50~100~150	(n)min^{-1} Revolution speed (n)	11000	8000	5300	4000	3200	2650
		(f)mm/rev Feed per Rev	0.03~0.06	0.06~0.1	0.12~0.19	0.14~.0.24	0.16~0.28	0.17~0.31
Titanium alloy Ti-6AL-4V	Internal Coolant 50~80~100	(n)min^{-1} Revolution speed (n)	9500	6400	4200	3200	2550	2100
		(f)mm/rev Feed per Rev	0.02~0.04	0.06~0.08	0.09~0.12	0.12~0.16	0.13~0.2	0.14~0.24
Prehardened steel (~40HRC)	Internal Coolant 40~60~100	(n)min^{-1} Revolution speed (n)	9500	4800	3200	2400	1900	1600
		(f)mm/rev Feed per Rev	0.04~0.06	0.08~0.13	0.12~0.19	0.14~0.24	0.16~0.28	0.18~0.32
	MQL (mist) 40~60~100	(n)min^{-1} Revolution speed (n)	8000	4800	3200	2400	1900	1600
		(f)mm/rev Feed per Rev	0.04~0.06	0.08~0.13	0.12~0.19	0.14~0.24	0.16~0.28	0.18~0.32
Prehardened steel (~50HRC) SKD	Internal Coolant 30~40~50	(n)min^{-1} Revolution speed (n)	6500	3200	2100	1600	1300	1050
		(f)mm/rev Feed per Rev	0.03~0.05	0.05~0.1	0.08~0.14	0.12~0.18	0.15~0.2	0.17~0.24
	MQL (mist) 20~30~40	(n)min^{-1} Revolution speed (n)	4500	2400	1600	1200	1000	800
		(f)mm/rev Feed per Rev	0.03~0.05	0.05~0.1	0.08~0.14	0.12~0.18	0.05~0.2	0.17~0.24
Ductile iron FCD500	Internal Coolant 50~120~150	(n)min^{-1} Revolution speed (n)	16000	8000	5300	4000	3200	2650
		(f)mm/rev Feed per Rev	0.05~0.1	0.1~0.16	0.15~0.24	0.18~0.3	0.2~0.35	0.22~0.4
	MQL (mist) 50~120~150	(n)min^{-1} Revolution speed (n)	13000	8000	5300	4000	3200	2650
		(f)mm/rev Feed per Rev	0.05~0.1	0.1~0.16	0.15~0.24	0.18~0.3	0.2~0.35	0.22~0.4
Casting FC250	Internal Coolant 50~120~180	(n)min^{-1} Revolution speed (n)	16000	9500	6300	4800	3800	3200
		(f)mm/rev Feed per Rev	0.05~0.1	0.1~0.16	0.15~0.24	0.18~0.3	0.2~0.35	0.22~0.4
	MQL (mist) 50~120~180	(n)min^{-1} Revolution speed (n)	13000	9500	6300	4800	3800	3200
		(f)mm/rev Feed per Rev	0.05~0.1	0.1~0.16	0.15~0.24	0.18~0.3	0.2~0.35	0.22~0.4
INCINEL718 Heatproof steel	Internal Coolant 20~30~40	(n)min^{-1} Revolution speed (n)	4000	2400	1600	1200	950	800
		(f)mm/rev Feed per Rev	0.02~0.03	0.06~0.08	0.09~0.12	0.12~0.16	0.13~0.2	0.14~0.24

[Setting of Cutting Conditions]
※ Use the appropriate coolant for the work material and machining shape.
※ These Recommended Cutting Conditions indicate only the rule of a thumb for the cutting conditions. In actual machining, the condition should be adjusted according to the machining shape, purpose and the machine type.
※ The above cutting conditions are based on the use of a water-soluble coolant diluted to a maximum of 20 times. When coolant dilution exceeds 20 times, decrease the cutting speed to the lowest in the specified range. When the tool diameter is Ø5.0 or less, the coolant pressure should be 2.0 MPa or higher, and when the diameter is over Ø5.0, the pressure should be 1.5 MPa or higher.
※ When performing MQL (mist) machining, depending on the amount or status of spray from the tool, it may be necessary to reduce the cutting speed in order to perform machining.
※ When changing the tool, use collet free from flaws and stains and attach the tool firmly so that its runout is 0.02mm or less.
※ The above conditions apply to a hole-depth of 5 times the diameter or less.
※ When cutting fluid is used, reduce the cutting speed to a speed lower than the lowest speed in the specified range. Take the greatest care to avoid heating of chips and the tool. smoke or ignition due to
※ Works should be gripped firmly to prevent deformation, deflection and vibration.
※ You can use borers at a revolution speed lower than the above values.