

DRILLS

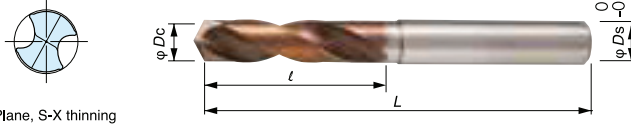
ดอกสว่าน

Straight Shank

ดอกสว่านมาตรฐาน



ดอกสว่านคาร์ไบด์ Non Step Carbide Non Step Borer 2D 02WNSB000-TH



Carbide Drills

ดอกสว่านคาร์ไบด์

HSS Drills

ดอกสว่านไฮสปีด

Stub / Standard

ตัวสั้น / มาตรฐาน

Long

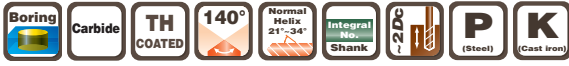
ตัวยาว

Micro Drill

ดอกสว่านไมโคร

Z Plunging

Step Borer



h8	Ø3	: 0 ~ -0.014
	Ø3.1 ~ Ø6	: 0 ~ -0.018
	Ø6.1 ~ Ø10	: 0 ~ -0.022
	Ø10.1 ~ Ø13	: 0 ~ -0.027

Shank Diameter Tolerance	0 ~ -0.01
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(mm)

Order Code	Stock	Size (mm)			
		Dc Drill Dia.	ℓ Flute Length	L Overall Length	Ds Shank Dia.
02WNSB0300-TH	<input type="checkbox"/>	3.0	15	47	3.0
02WNSB0310-TH	<input type="checkbox"/>	3.1	18	52	4.0
02WNSB0320-TH	<input type="checkbox"/>	3.2	18	52	4.0
02WNSB0330-TH	<input type="checkbox"/>	3.3	18	52	4.0
02WNSB0340-TH	<input type="checkbox"/>	3.4	18	52	4.0
02WNSB0350-TH	<input type="checkbox"/>	3.5	18	52	4.0
02WNSB0360-TH	<input type="checkbox"/>	3.6	20	52	4.0
02WNSB0370-TH	<input type="checkbox"/>	3.7	20	52	4.0
02WNSB0380-TH	<input type="checkbox"/>	3.8	20	52	4.0
02WNSB0390-TH	<input type="checkbox"/>	3.9	20	52	4.0
02WNSB0400-TH	<input type="checkbox"/>	4.0	20	52	4.0
02WNSB0410-TH	<input type="checkbox"/>	4.1	23	59	5.0
02WNSB0420-TH	<input type="checkbox"/>	4.2	23	59	5.0
02WNSB0430-TH	<input type="checkbox"/>	4.3	23	59	5.0
02WNSB0440-TH	<input type="checkbox"/>	4.4	23	59	5.0
02WNSB0450-TH	<input type="checkbox"/>	4.5	23	59	5.0
02WNSB0460-TH	<input type="checkbox"/>	4.6	25	59	5.0
02WNSB0470-TH	<input type="checkbox"/>	4.7	25	59	5.0
02WNSB0480-TH	<input type="checkbox"/>	4.8	25	59	5.0
02WNSB0490-TH	<input type="checkbox"/>	4.9	25	59	5.0
02WNSB0500-TH	<input checked="" type="checkbox"/>	5.0	25	59	5.0
02WNSB0510-TH	<input checked="" type="checkbox"/>	5.1	25	64	6.0
02WNSB0520-TH	<input checked="" type="checkbox"/>	5.2	25	64	6.0
02WNSB0530-TH	<input type="checkbox"/>	5.3	25	64	6.0
02WNSB0540-TH	<input checked="" type="checkbox"/>	5.4	25	64	6.0
02WNSB0550-TH	<input checked="" type="checkbox"/>	5.5	25	64	6.0
02WNSB0560-TH	<input type="checkbox"/>	5.6	25	64	6.0
02WNSB0570-TH	<input type="checkbox"/>	5.7	25	64	6.0
02WNSB0580-TH	<input checked="" type="checkbox"/>	5.8	25	64	6.0
02WNSB0590-TH	<input type="checkbox"/>	5.9	25	64	6.0
02WNSB0600-TH	<input checked="" type="checkbox"/>	6.0	25	64	6.0
02WNSB0610-TH	<input type="checkbox"/>	6.1	29	71	7.0
02WNSB0620-TH	<input checked="" type="checkbox"/>	6.2	29	71	7.0
02WNSB0630-TH	<input type="checkbox"/>	6.3	29	71	7.0
02WNSB0640-TH	<input type="checkbox"/>	6.4	29	71	7.0
02WNSB0650-TH	<input checked="" type="checkbox"/>	6.5	29	71	7.0
02WNSB0660-TH	<input type="checkbox"/>	6.6	31	71	7.0
02WNSB0670-TH	<input type="checkbox"/>	6.7	31	71	7.0
02WNSB0680-TH	<input checked="" type="checkbox"/>	6.8	31	71	7.0
02WNSB0690-TH	<input checked="" type="checkbox"/>	6.9	31	71	7.0
02WNSB0700-TH	<input checked="" type="checkbox"/>	7.0	31	71	7.0
02WNSB0710-TH	<input type="checkbox"/>	7.1	32	76	8.0
02WNSB0720-TH	<input type="checkbox"/>	7.2	32	76	8.0
02WNSB0730-TH	<input checked="" type="checkbox"/>	7.3	32	76	8.0
02WNSB0740-TH	<input type="checkbox"/>	7.4	32	76	8.0
02WNSB0750-TH	<input checked="" type="checkbox"/>	7.5	32	76	8.0
02WNSB0760-TH	<input type="checkbox"/>	7.6	34	76	8.0
02WNSB0770-TH	<input type="checkbox"/>	7.7	34	76	8.0
02WNSB0780-TH	<input checked="" type="checkbox"/>	7.8	34	76	8.0
02WNSB0790-TH	<input checked="" type="checkbox"/>	7.9	34	76	8.0
02WNSB0800-TH	<input checked="" type="checkbox"/>	8.0	34	76	8.0

Order Code	Stock	Size (mm)			
		Dc Drill Dia.	ℓ Flute Length	L Overall Length	Ds Shank Dia.
02WNSB0810-TH	<input type="checkbox"/>	8.1	36	80	9.0
02WNSB0820-TH	<input type="checkbox"/>	8.2	36	80	9.0
02WNSB0830-TH	<input type="checkbox"/>	8.3	36	80	9.0
02WNSB0840-TH	<input checked="" type="checkbox"/>	8.4	36	80	9.0
02WNSB0850-TH	<input checked="" type="checkbox"/>	8.5	36	80	9.0
02WNSB0860-TH	<input checked="" type="checkbox"/>	8.6	38	80	9.0
02WNSB0870-TH	<input type="checkbox"/>	8.7	38	80	9.0
02WNSB0880-TH	<input checked="" type="checkbox"/>	8.8	38	80	9.0
02WNSB0890-TH	<input type="checkbox"/>	8.9	38	80	9.0
02WNSB0900-TH	<input checked="" type="checkbox"/>	9.0	38	80	9.0
02WNSB0910-TH	<input type="checkbox"/>	9.1	40	85	10.0
02WNSB0920-TH	<input type="checkbox"/>	9.2	40	85	10.0
02WNSB0930-TH	<input type="checkbox"/>	9.3	40	85	10.0
02WNSB0940-TH	<input checked="" type="checkbox"/>	9.4	40	85	10.0
02WNSB0950-TH	<input checked="" type="checkbox"/>	9.5	40	85	10.0
02WNSB0960-TH	<input type="checkbox"/>	9.6	41	85	10.0
02WNSB0970-TH	<input type="checkbox"/>	9.7	41	85	10.0
02WNSB0980-TH	<input checked="" type="checkbox"/>	9.8	41	85	10.0
02WNSB0990-TH	<input type="checkbox"/>	9.9	41	85	10.0
02WNSB1000-TH	<input checked="" type="checkbox"/>	10.0	41	85	10.0
02WNSB1010-TH	<input type="checkbox"/>	10.1	42	90	11.0
02WNSB1020-TH	<input checked="" type="checkbox"/>	10.2	42	90	11.0
02WNSB1030-TH	<input checked="" type="checkbox"/>	10.3	42	90	11.0
02WNSB1040-TH	<input type="checkbox"/>	10.4	42	90	11.0
02WNSB1050-TH	<input checked="" type="checkbox"/>	10.5	42	90	11.0
02WNSB1060-TH	<input checked="" type="checkbox"/>	10.6	44	90	11.0
02WNSB1070-TH	<input type="checkbox"/>	10.7	44	90	11.0
02WNSB1080-TH	<input checked="" type="checkbox"/>	10.8	44	90	11.0
02WNSB1090-TH	<input type="checkbox"/>	10.9	44	90	11.0
02WNSB1100-TH	<input checked="" type="checkbox"/>	11.0	44	90	11.0
02WNSB1110-TH	<input type="checkbox"/>	11.1	46	94	12.0
02WNSB1120-TH	<input type="checkbox"/>	11.2	46	94	12.0
02WNSB1130-TH	<input type="checkbox"/>	11.3	46	94	12.0
02WNSB1140-TH	<input checked="" type="checkbox"/>	11.4	46	94	12.0
02WNSB1150-TH	<input checked="" type="checkbox"/>	11.5	46	94	12.0
02WNSB1160-TH	<input checked="" type="checkbox"/>	11.6	46	94	12.0
02WNSB1170-TH	<input type="checkbox"/>	11.7	46	94	12.0
02WNSB1180-TH	<input checked="" type="checkbox"/>	11.8	46	94	12.0
02WNSB1190-TH	<input type="checkbox"/>	11.9	46	94	12.0
02WNSB1200-TH	<input checked="" type="checkbox"/>	12.0	46	94	12.0
02WNSB1210-TH	<input type="checkbox"/>	12.1	49	100	13.0
02WNSB1220-TH	<input checked="" type="checkbox"/>	12.2	49	100	13.0
02WNSB1230-TH	<input type="checkbox"/>	12.3	49	100	13.0
02WNSB1240-TH	<input type="checkbox"/>	12.4	49	100	13.0
02WNSB1250-TH	<input checked="" type="checkbox"/>	12.5	49	100	13.0
02WNSB1260-TH	<input checked="" type="checkbox"/>	12.6	49	100	13.0
02WNSB1270-TH	<input type="checkbox"/>	12.7	49	100	13.0
02WNSB1280-TH	<input type="checkbox"/>	12.8	49	100	13.0
02WNSB1290-TH	<input type="checkbox"/>	12.9	49	100	13.0
02WNSB1300-TH	<input checked="" type="checkbox"/>	13.0	49	100	13.0

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



Recommended cutting conditions

02WNSB-TH

04WNSB-TH

Work material (hardness)	Cutting speed (Vc) m/min	Cutting conditions	Tool Dia. (mm)						
			Ø1.0	Ø2.0	Ø4.0	Ø6.0	Ø8.0	Ø10.0	Ø12.0
Structural steel (~180HB) SS	Coolant 70~100~150	(n)min ⁻¹ Revolution speed (n)	22000	16000	8000	5300	4000	3200	2650
		(f)mm/rev Feed per Rev	0.03~0.06	0.05~0.1	0.1~0.16	0.15~0.24	0.18~0.3	0.2~0.35	0.22~0.4
		(n)min ⁻¹ Revolution speed (n)	22000	16000	8000	5300	4000	3200	2650
	MQL (mist) 700~100~150	(f)mm/rev Feed per Rev	0.03~0.06	0.05~0.1	0.1~0.16	0.15~0.24	0.18~0.3	0.2~0.35	0.22~0.4
		(n)min ⁻¹ Revolution speed (n)	22000	16000	8000	5300	4000	3200	2650
		(f)mm/rev Feed per Rev	0.03~0.06	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〇〇C	Coolant 70~100~150	(n)min ⁻¹ Revolution speed (n)	22000	16000	8000	5300	4000	3200	2650
		(f)mm/rev Feed per Rev	0.03~0.06	0.05~0.1	0.1~0.16	0.15~0.24	0.18~0.3	0.2~0.35	0.22~0.4
		(n)min ⁻¹ Revolution speed (n)	22000	16000	8000	5300	4000	3200	2650
	MQL (mist) 70~100~150	(f)mm/rev Feed per Rev	0.03~0.06	0.05~0.1	0.1~0.16	0.15~0.24	0.18~0.3	0.2~0.35	0.22~0.4
		(n)min ⁻¹ Revolution speed (n)	22000	16000	8000	5300	4000	3200	2650
		(f)mm/rev Feed per Rev	0.03~0.06	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	Coolant 70~100~150	(n)min ⁻¹ Revolution speed (n)	22000	16000	8000	5300	4000	3200	2650
		(f)mm/rev Feed per Rev	0.03~0.05	0.05~0.08	0.1~0.16	0.15~0.24	0.18~0.3	0.2~0.35	0.22~0.4
		(n)min ⁻¹ Revolution speed (n)	16000	12800	6400	4300	3200	2550	2100
	MQL (mist) 50~80~130	(f)mm/rev Feed per Rev	0.03~0.05	0.05~0.08	0.1~0.16	0.15~0.24	0.18~0.3	0.2~0.35	0.22~0.4
		(n)min ⁻¹ Revolution speed (n)	16000	12800	6400	4300	3200	2550	2100
		(f)mm/rev Feed per Rev	0.03~0.05	0.05~0.08	0.1~0.16	0.15~0.24	0.18~0.3	0.2~0.35	0.22~0.4
SKD61 Alloy Steel (~30HRC) Prehardened steel (~40HRC)	Coolant 30~50~80	(n)min ⁻¹ Revolution speed (n)	9500	8000	4000	2650	2000	1600	1300
		(f)mm/rev Feed per Rev	0.02~0.04	0.04~0.07	0.08~0.13	0.12~0.19	0.14~0.24	0.16~0.28	0.18~0.32
		(n)min ⁻¹ Revolution speed (n)	6300	6400	3200	2100	1600	1250	1050
	MQL (mist) 20~40~60	(f)mm/rev Feed per Rev	0.02~0.04	0.04~0.07	0.08~0.13	0.12~0.19	0.14~0.24	0.16~0.28	0.18~0.32
		(n)min ⁻¹ Revolution speed (n)	6300	4800	2400	1600	1200	1000	800
		(f)mm/rev Feed per Rev	0.01~0.03	0.03~0.05	0.05~0.1	0.08~0.14	0.12~0.18	0.15~0.2	0.17~0.24
Ductile iron FCD500	Coolant 50~80~130	(n)min ⁻¹ Revolution speed (n)	16000	12800	6400	4300	3200	2550	2100
		(f)mm/rev Feed per Rev	0.03~0.06	0.05~0.1	0.1~0.16	0.15~0.24	0.18~0.3	0.2~0.35	0.22~0.4
		(n)min ⁻¹ Revolution speed (n)	16000	12000	6400	4300	3200	2550	2100
	MQL (mist) 50~80~130	(f)mm/rev Feed per Rev	0.03~0.06	0.05~0.1	0.1~0.16	0.15~0.24	0.18~0.3	0.2~0.35	0.22~0.4
		(n)min ⁻¹ Revolution speed (n)	22000	16000	8000	5300	4000	3200	2650
		(f)mm/rev Feed per Rev	0.03~0.06	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	Coolant 70~100~150	(n)min ⁻¹ Revolution speed (n)	22000	16000	8000	5300	4000	3200	2650
		(f)mm/rev Feed per Rev	0.03~0.06	0.05~0.1	0.1~0.16	0.15~0.24	0.18~0.3	0.2~0.35	0.22~0.4
		(n)min ⁻¹ Revolution speed (n)	22000	16000	8000	5300	4000	3200	2650
	MQL (mist) 70~100~150	(f)mm/rev Feed per Rev	0.03~0.06	0.05~0.1	0.1~0.16	0.15~0.24	0.18~0.3	0.2~0.35	0.22~0.4
		(n)min ⁻¹ Revolution speed (n)	22000	16000	8000	5300	4000	3200	2650
		(f)mm/rev Feed per Rev	0.03~0.06	0.05~0.1	0.1~0.16	0.15~0.24	0.18~0.3	0.2~0.35	0.22~0.4

[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 70% of the lower speed.
- ※ You can use borers at a revolution speed lower than the above values.