MOLDINO
The Edge To Innovation

Carbide Miniature Drill with Oil Hole

WHMB-TH

MINIATURE DRILL WHMB

Mitsubishi Hitachi Tool Engineering, Ltd.

New Product News | No.1603E-3 | 2017-9

MINIATURE DRILL WHMB drills small-diameter holes with high efficiency and high accuracy.

Features of WHMB-TH

01 New flute shape form specifically for small-diameter drills

High-accuracy flute shape form enables high-accuracy hole boring.

02 Large oil hole

Achieves high coolant output.

03 Advanced double-margin shape

Improves guide characteristics to improve hole accuracy.

04 Uses New coating technology.

High-hardness coating for small-diameter tools is formed using new technology.

TH Coating

Cast iron | Carbon steel Alloy steep | Stainless steel | Pre-hardened steel

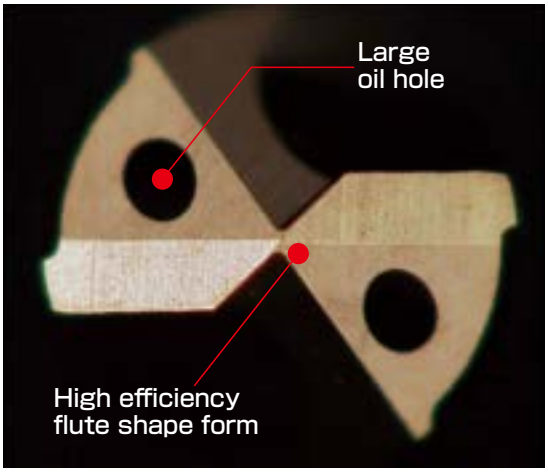
Applications

Mold making | Parts processing

WHMB-TH
ϕ1～ϕ2 L/D=3~30 [312 Items]

Features 01 New flute shape form specifically for small-diameter drills [PAT.P]

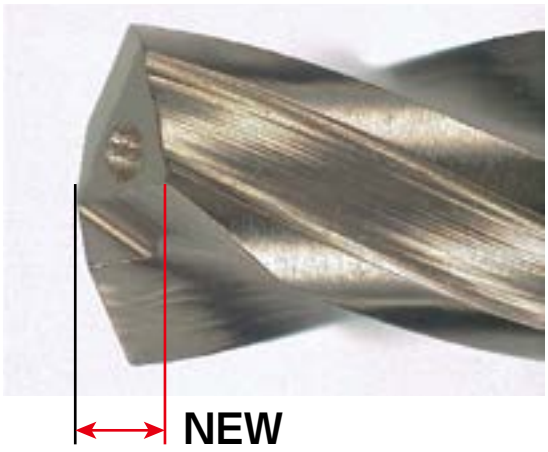
Features 02 Large oil hole



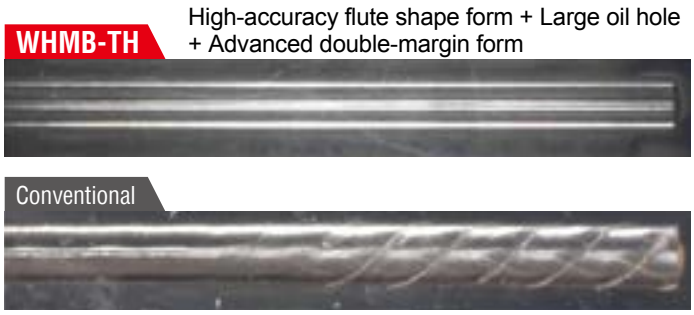
- **New flute shape form** (High-accuracy flute shape form)
  Suppresses tool wandering by improving biting characteristics.

- **Large oil hole**
  Suppresses chip clogging through high-output coolant discharge.

Features 03 Advanced double-margin shape

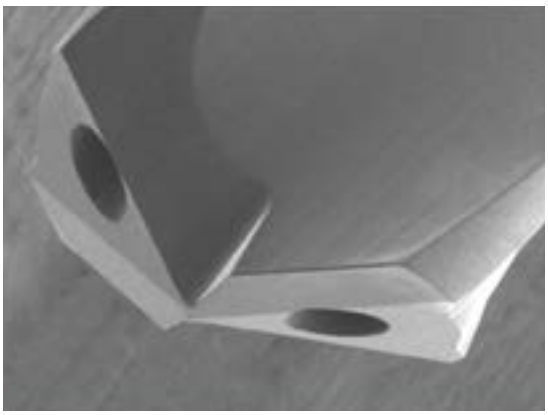


Double margin position is put on flute tip side to improve guide characteristics.

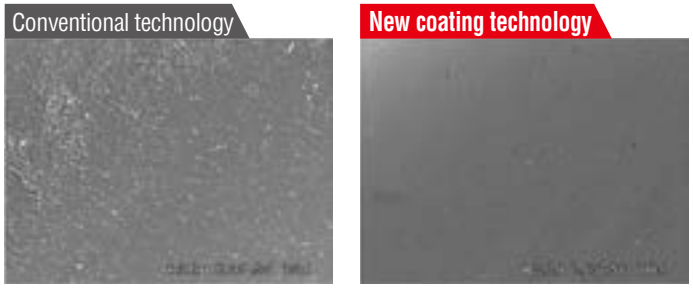


Comparison of hole waviness

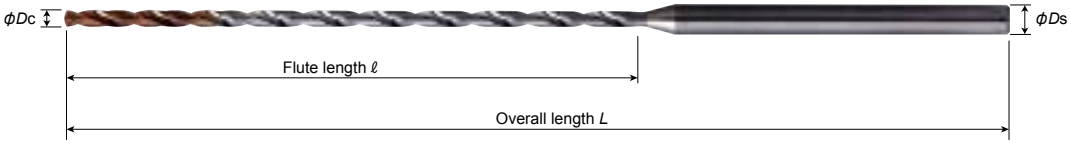
Features 04 New coating technology (TH coating)



TH coating applied using new sputtering coating formation technology achieves a smooth surface condition suitable for small-diameter drills. (Improved chip removal)



Line Up



Sizes are added.

○○WHMB○○○○-TH With Oil Hole

Carbide | TH Coated | 140° | h7 0~−0.01 | h6 0~−0.006 (mm)

Item Code	Stock	Size (mm) Tool dia. Dc	Flute length ℓ	Overall length L	Shank dia. Ds
03WHMB0100-TH	●	1	6	55	3
05WHMB0100-TH	●		10	55	3
10WHMB0100-TH	●		15	55	3
15WHMB0100-TH	●		20	60	3
20WHMB0100-TH	●		24	65	3
25WHMB0100-TH	●		28	65	3
30WHMB0100-TH	●		33	70	3
NEW 03WHMB0101-TH	□	1.01	6	55	3
NEW 05WHMB0101-TH	□		10	55	3
NEW 10WHMB0101-TH	□		16	55	3
NEW 20WHMB0101-TH	□		25	65	3
NEW 30WHMB0101-TH	□		35	75	3
NEW 03WHMB0102-TH	□	1.02	6	55	3
NEW 05WHMB0102-TH	□		10	55	3
NEW 10WHMB0102-TH	□		16	55	3
NEW 20WHMB0102-TH	□		25	65	3
NEW 30WHMB0102-TH	□		35	75	3
NEW 03WHMB0103-TH	□	1.03	6	55	3
NEW 05WHMB0103-TH	□		10	55	3
NEW 10WHMB0103-TH	□		16	55	3
NEW 20WHMB0103-TH	□		25	65	3
NEW 30WHMB0103-TH	□		35	75	3
03WHMB0105-TH	●	1.05	6	55	3
05WHMB0105-TH	●		10	55	3
10WHMB0105-TH	●		16	55	3
15WHMB0105-TH	●		20	60	3
20WHMB0105-TH	●		25	65	3
25WHMB0105-TH	●		30	70	3
30WHMB0105-TH	●		35	75	3
03WHMB0110-TH	●	1.1	6	55	3
05WHMB0110-TH	●		11	55	3
10WHMB0110-TH	●		17	55	3
15WHMB0110-TH	●		22	60	3
20WHMB0110-TH	●		26	65	3
25WHMB0110-TH	●		32	70	3
30WHMB0110-TH	●		37	75	3
NEW 03WHMB0111-TH	□	1.11	6	55	3
NEW 05WHMB0111-TH	□		11	55	3
NEW 10WHMB0111-TH	□		18	60	3
NEW 20WHMB0111-TH	□		28	70	3
NEW 30WHMB0111-TH	□		38	75	3

Item Code	Stock	Size (mm) Tool dia. Dc	Flute length ℓ	Overall length L	Shank dia. Ds
NEW 03WHMB0112-TH	□	1.12	6	55	3
NEW 05WHMB0112-TH	□		11	55	3
NEW 10WHMB0112-TH	□		18	60	3
NEW 20WHMB0112-TH	□		28	70	3
NEW 30WHMB0112-TH	□		38	75	3
NEW 03WHMB0113-TH	□	1.13	6	55	3
NEW 05WHMB0113-TH	□		11	55	3
NEW 10WHMB0113-TH	□		18	60	3
NEW 20WHMB0113-TH	□		28	70	3
NEW 30WHMB0113-TH	□		38	75	3
03WHMB0115-TH	●	1.15	6	55	3
05WHMB0115-TH	●		11	55	3
10WHMB0115-TH	●		18	60	3
15WHMB0115-TH	●		23	60	3
20WHMB0115-TH	●		28	70	3
25WHMB0115-TH	●		33	70	3
30WHMB0115-TH	●		38	75	3
03WHMB0120-TH	●	1.2	6	55	3
05WHMB0120-TH	●		12	55	3
10WHMB0120-TH	●		18	60	3
15WHMB0120-TH	●		23	60	3
20WHMB0120-TH	●		29	70	3
25WHMB0120-TH	●		35	75	3
30WHMB0120-TH	●		40	80	3
NEW 03WHMB0121-TH	□	1.21	7	55	3
NEW 05WHMB0121-TH	□		13	55	3
NEW 10WHMB0121-TH	□		20	60	3
NEW 20WHMB0121-TH	□		31	70	3
NEW 30WHMB0121-TH	□		42	80	3
NEW 03WHMB0122-TH	□	1.22	7	55	3
NEW 05WHMB0122-TH	□		13	55	3
NEW 10WHMB0122-TH	□		20	60	3
NEW 20WHMB0122-TH	□		31	70	3
NEW 30WHMB0122-TH	□		42	80	3
NEW 03WHMB0123-TH	□	1.23	7	55	3
NEW 05WHMB0123-TH	□		13	55	3
NEW 10WHMB0123-TH	□		20	60	3
NEW 20WHMB0123-TH	□		31	70	3
NEW 30WHMB0123-TH	□		42	80	3

Manufacturer regrinding/recoating is not possible. ● : Stocked Items. □ : Stocked by specified distributor. Contact with our sales department.

○○WHMB○○○○-TH With Oil Hole

Item Code	Stock	Size (mm)			
		Tool dia. *Dc*	Flute length *ℓ*	Overall length *L*	Shank dia. *Ds*
03WHMB0125-TH	●	1.25	7	55	3
05WHMB0125-TH	●		13	55	3
10WHMB0125-TH	●		20	60	3
15WHMB0125-TH	●		24	60	3
20WHMB0125-TH	●		31	70	3
25WHMB0125-TH	●		36	75	3
30WHMB0125-TH	●		42	80	3
03WHMB0130-TH	●	1.3	7	55	3
05WHMB0130-TH	●		14	55	3
10WHMB0130-TH	●		21	60	3
15WHMB0130-TH	●		25	70	3
20WHMB0130-TH	●		32	70	3
25WHMB0130-TH	●		37	75	3
30WHMB0130-TH	●		43	80	3
NEW 03WHMB0131-TH	□	1.31	7	55	3
NEW 05WHMB0131-TH	□		14	55	3
NEW 10WHMB0131-TH	□		21	60	3
NEW 20WHMB0131-TH	□		33	70	3
NEW 30WHMB0131-TH	□		45	85	3
NEW 03WHMB0132-TH	□	1.32	7	55	3
NEW 05WHMB0132-TH	□		14	55	3
NEW 10WHMB0132-TH	□		21	60	3
NEW 20WHMB0132-TH	□		33	70	3
NEW 30WHMB0132-TH	□		45	85	3
NEW 03WHMB0133-TH	□	1.33	7	55	3
NEW 05WHMB0133-TH	□		14	55	3
NEW 10WHMB0133-TH	□		21	60	3
NEW 20WHMB0133-TH	□		33	70	3
NEW 30WHMB0133-TH	□		45	85	3
03WHMB0135-TH	●	1.35	7	55	3
05WHMB0135-TH	●		14	55	3
10WHMB0135-TH	●		21	60	3
15WHMB0135-TH	●		26	70	3
20WHMB0135-TH	●		33	70	3
25WHMB0135-TH	●		37	75	3
30WHMB0135-TH	●		45	85	3

Item Code	Stock	Size (mm)			
		Tool dia. *Dc*	Flute length *ℓ*	Overall length *L*	Shank dia. *Ds*
03WHMB0140-TH	●	1.4	7	55	3
05WHMB0140-TH	●		15	55	3
10WHMB0140-TH	●		22	60	3
15WHMB0140-TH	●		27	70	3
20WHMB0140-TH	●		33	70	3
25WHMB0140-TH	●		38	75	3
30WHMB0140-TH	●		47	85	3
NEW 03WHMB0141-TH	□	1.41	7	55	3
NEW 05WHMB0141-TH	□		15	55	3
NEW 10WHMB0141-TH	□		23	60	3
NEW 20WHMB0141-TH	□		35	75	3
NEW 30WHMB0141-TH	□		49	85	3
NEW 03WHMB0142-TH	□	1.42	7	55	3
NEW 05WHMB0142-TH	□		15	55	3
NEW 10WHMB0142-TH	□		23	60	3
NEW 20WHMB0142-TH	□		35	75	3
NEW 30WHMB0142-TH	□		49	85	3
NEW 03WHMB0143-TH	□	1.43	7	55	3
NEW 05WHMB0143-TH	□		15	55	3
NEW 10WHMB0143-TH	□		23	60	3
NEW 20WHMB0143-TH	□		35	75	3
NEW 30WHMB0143-TH	□		49	85	3
03WHMB0145-TH	●	1.45	7	55	3
05WHMB0145-TH	●		15	55	3
10WHMB0145-TH	●		23	60	3
15WHMB0145-TH	●		30	70	3
20WHMB0145-TH	●		35	75	3
25WHMB0145-TH	●		42	80	3
30WHMB0145-TH	●		49	85	3
03WHMB0150-TH	●	1.5	8	55	3
05WHMB0150-TH	●		16	55	3
10WHMB0150-TH	●		24	60	3
15WHMB0150-TH	●		30	70	3
20WHMB0150-TH	●		37	75	3
25WHMB0150-TH	●		42	80	3
30WHMB0150-TH	●		50	90	3
NEW 03WHMB0151-TH	□	1.51	8	55	3
NEW 05WHMB0151-TH	□		16	55	3
NEW 10WHMB0151-TH	□		22	60	3
NEW 20WHMB0151-TH	□		37	75	3
NEW 30WHMB0151-TH	□		52	90	3

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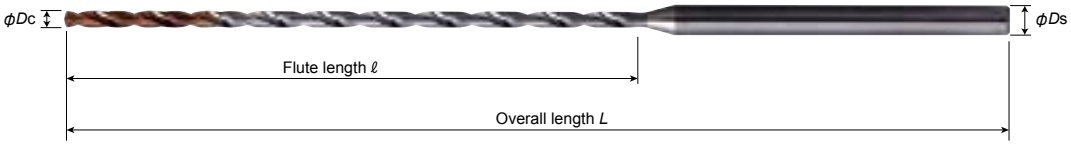
Line Up



Sizes are added.

○○WHMB○○○○-TH With Oil Hole

Carbide | TH Coated | 140° | h7 0~−0.01 | h6 0~−0.006 (mm)

Item Code	Stock	Size (mm) Tool dia. Dc	Flute length ℓ	Overall length L	Shank dia. Ds
NEW 03WHMB0152-TH	□	1.52	8	55	3
NEW 05WHMB0152-TH	□		16	55	3
NEW 10WHMB0152-TH	□		22	60	3
NEW 20WHMB0152-TH	□		37	75	3
NEW 30WHMB0152-TH	□		52	90	3
NEW 03WHMB0153-TH	□	1.53	8	55	3
NEW 05WHMB0153-TH	□		16	55	3
NEW 10WHMB0153-TH	□		22	60	3
NEW 20WHMB0153-TH	□		37	75	3
NEW 30WHMB0153-TH	□		52	90	3
03WHMB0155-TH	●	1.55	8	55	3
05WHMB0155-TH	●		16	55	3
10WHMB0155-TH	●		22	60	3
15WHMB0155-TH	●		32	70	3
20WHMB0155-TH	●		37	75	3
25WHMB0155-TH	●		44	85	3
30WHMB0155-TH	●		52	90	3
03WHMB0160-TH	●	1.6	8	55	3
05WHMB0160-TH	●		17	55	3
10WHMB0160-TH	●		26	65	3
15WHMB0160-TH	●		33	70	3
20WHMB0160-TH	●		37	75	3
25WHMB0160-TH	●		45	85	3
30WHMB0160-TH	●		53	90	3
NEW 03WHMB0161-TH	□	1.61	8	55	3
NEW 05WHMB0161-TH	□		17	55	3
NEW 10WHMB0161-TH	□		26	65	3
NEW 20WHMB0161-TH	□		38	75	3
NEW 30WHMB0161-TH	□		55	95	3
NEW 03WHMB0162-TH	□	1.62	8	55	3
NEW 05WHMB0162-TH	□		17	55	3
NEW 10WHMB0162-TH	□		26	65	3
NEW 20WHMB0162-TH	□		38	75	3
NEW 30WHMB0162-TH	□		55	95	3
NEW 03WHMB0163-TH	□	1.63	8	55	3
NEW 05WHMB0163-TH	□		17	55	3
NEW 10WHMB0163-TH	□		26	65	3
NEW 20WHMB0163-TH	□		38	75	3
NEW 30WHMB0163-TH	□		55	95	3

Item Code	Stock	Size (mm) Tool dia. Dc	Flute length ℓ	Overall length L	Shank dia. Ds
03WHMB0165-TH	●	1.65	8	55	3
05WHMB0165-TH	●		17	55	3
10WHMB0165-TH	●		26	65	3
15WHMB0165-TH	●		33	70	3
20WHMB0165-TH	●		38	75	3
25WHMB0165-TH	●		46	90	3
30WHMB0165-TH	●		55	95	3
03WHMB0170-TH	●	1.7	8	55	3
05WHMB0170-TH	●		18	55	3
10WHMB0170-TH	●		27	65	3
15WHMB0170-TH	●		34	70	3
20WHMB0170-TH	●		40	80	3
25WHMB0170-TH	●		48	85	3
30WHMB0170-TH	●		57	95	3
NEW 03WHMB0171-TH	□	1.71	8	55	3
NEW 05WHMB0171-TH	□		19	60	3
NEW 10WHMB0171-TH	□		27	65	3
NEW 20WHMB0171-TH	□		41	80	3
NEW 30WHMB0171-TH	□		58	95	3
NEW 03WHMB0172-TH	□	1.72	8	55	3
NEW 05WHMB0172-TH	□		19	60	3
NEW 10WHMB0172-TH	□		27	65	3
NEW 20WHMB0172-TH	□		41	80	3
NEW 30WHMB0172-TH	□		58	95	3
NEW 03WHMB0173-TH	□	1.73	8	55	3
NEW 05WHMB0173-TH	□		19	60	3
NEW 10WHMB0173-TH	□		27	65	3
NEW 20WHMB0173-TH	□		41	80	3
NEW 30WHMB0173-TH	□		58	95	3
03WHMB0175-TH	●	1.75	8	55	3
05WHMB0175-TH	●		19	60	3
10WHMB0175-TH	●		27	65	3
15WHMB0175-TH	●		34	75	3
20WHMB0175-TH	●		41	80	3
25WHMB0175-TH	●		50	90	3
30WHMB0175-TH	●		58	95	3

Manufacturer regrinding/recoating is not possible. ● : Stocked Items. □ : Stocked by specified distributor. Contact with our sales department.

○○WHMB○○○○-TH With Oil Hole

Item Code	Stock	Size (mm) Tool dia. Dc	Flute length ℓ	Overall length L	Shank dia. Ds
03WHMB0180-TH	●	1.8	10	55	3
05WHMB0180-TH	●		19	60	3
10WHMB0180-TH	●		28	65	3
15WHMB0180-TH	●		36	75	3
20WHMB0180-TH	●		43	80	3
25WHMB0180-TH	●		51	90	3
30WHMB0180-TH	●		60	100	3
NEW 03WHMB0181-TH	□	1.81	10	55	3
NEW 05WHMB0181-TH	□		20	60	3
NEW 10WHMB0181-TH	□		29	70	3
NEW 20WHMB0181-TH	□		45	85	3
NEW 30WHMB0181-TH	□		61	100	3
NEW 03WHMB0182-TH	□	1.82	10	55	3
NEW 05WHMB0182-TH	□		20	60	3
NEW 10WHMB0182-TH	□		29	70	3
NEW 20WHMB0182-TH	□		45	85	3
NEW 30WHMB0182-TH	□		61	100	3
NEW 03WHMB0183-TH	□	1.83	10	55	3
NEW 05WHMB0183-TH	□		20	60	3
NEW 10WHMB0183-TH	□		29	70	3
NEW 20WHMB0183-TH	□		45	85	3
NEW 30WHMB0183-TH	□		61	100	3
03WHMB0185-TH	●	1.85	10	55	3
05WHMB0185-TH	●		20	60	3
10WHMB0185-TH	●		29	70	3
15WHMB0185-TH	●		38	75	3
20WHMB0185-TH	●		45	85	3
25WHMB0185-TH	●		53	90	3
30WHMB0185-TH	●		61	100	3
03WHMB0190-TH	●	1.9	10	55	3
05WHMB0190-TH	●		20	60	3
10WHMB0190-TH	●		29	70	3
15WHMB0190-TH	●		39	75	3
20WHMB0190-TH	●		45	85	3
25WHMB0190-TH	●		55	95	3
30WHMB0190-TH	●		63	100	3
NEW 03WHMB0191-TH	□	1.91	10	55	3
NEW 05WHMB0191-TH	□		20	60	3
NEW 10WHMB0191-TH	□		30	70	3
NEW 20WHMB0191-TH	□		47	85	3
NEW 30WHMB0191-TH	□		65	105	3

Item Code	Stock	Size (mm) Tool dia. Dc	Flute length ℓ	Overall length L	Shank dia. Ds
NEW 03WHMB0192-TH	□	1.92	10	55	3
NEW 05WHMB0192-TH	□		20	60	3
NEW 10WHMB0192-TH	□		30	70	3
NEW 20WHMB0192-TH	□		47	85	3
NEW 30WHMB0192-TH	□		65	105	3
NEW 03WHMB0193-TH	□	1.93	10	55	3
NEW 05WHMB0193-TH	□		20	60	3
NEW 10WHMB0193-TH	□		30	70	3
NEW 20WHMB0193-TH	□		47	85	3
NEW 30WHMB0193-TH	□		65	105	3
03WHMB0195-TH	●	1.95	10	55	3
05WHMB0195-TH	●		20	60	3
10WHMB0195-TH	●		30	70	3
15WHMB0195-TH	●		41	80	3
20WHMB0195-TH	●		47	85	3
25WHMB0195-TH	●		56	95	3
30WHMB0195-TH	●		65	105	3
03WHMB0200-TH	●	2	10	55	3
05WHMB0200-TH	●		20	60	3
10WHMB0200-TH	●		30	70	3
15WHMB0200-TH	●		41	80	3
20WHMB0200-TH	●		47	85	3
25WHMB0200-TH	●		57	95	3
30WHMB0200-TH	●		67	105	3
NEW 03WHMB0201-TH	□	2.01	10	55	3
NEW 05WHMB0201-TH	□		21	60	3
NEW 10WHMB0201-TH	□		31	70	3
NEW 20WHMB0201-TH	□		49	90	3
NEW 30WHMB0201-TH	□		69	110	3
NEW 03WHMB0202-TH	□	2.02	10	55	3
NEW 05WHMB0202-TH	□		21	60	3
NEW 10WHMB0202-TH	□		31	70	3
NEW 20WHMB0202-TH	□		49	90	3
NEW 30WHMB0202-TH	□		69	110	3
NEW 03WHMB0203-TH	□	2.03	10	55	3
NEW 05WHMB0203-TH	□		21	60	3
NEW 10WHMB0203-TH	□		31	70	3
NEW 20WHMB0203-TH	□		49	90	3
NEW 30WHMB0203-TH	□		69	110	3

Manufacturer regrinding/recoating is not possible. ● : Stocked Items. □ : Stocked by specified distributor. Contact with our sales department.

Recommended Cutting Conditions

Up to 5D 03WHMB-TH 05WHMB-TH

Tool dia. (mm)	Cutting conditions	Carbon steel SC	Alloy steel SCM	Stainless steel SUS304	Stainless steel SUS630	Aluminiun alloy
1	Cutting speed (v_c) m/min	30~**40**~50	30~**40**~50	20~**30**~40	20~**30**~40	40~**60**~80
	Revolution (n) min^{-1}	12,732	12,732	9,549	9,549	19,099
	Feed per rev (f) mm/rev	0.01~0.04	0.01~0.04	0.01~0.04	0.01~0.03	0.01~0.05
1.5	Cutting speed (v_c) m/min	30~**40**~50	30~**40**~50	20~**30**~40	20~**30**~40	40~**60**~80
	Revolution (n) min^{-1}	8,488	8,488	6,366	6,366	12,732
	Feed per rev (f) mm/rev	0.015~0.06	0.015~0.06	0.015~0.06	0.015~0.045	0.015~0.075
2	Cutting speed (v_c) m/min	30~**40**~50	30~**40**~50	20~**30**~40	20~**30**~40	40~**60**~80
	Revolution (n) min^{-1}	6,366	6,366	4,775	4,775	9,549
	Feed per rev (f) mm/rev	0.02~0.08	0.02~0.08	0.02~0.08	0.02~0.06	0.02~0.1

10D or more 10WHMB-TH 15WHMB-TH 20WHMB-TH 25WHMB-TH 30WHMB-TH

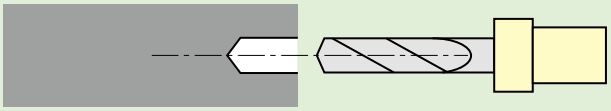
Tool dia. (mm)	Cutting conditions	Carbon steel SC	Alloy steel SCM	Stainless steel SUS304	Stainless steel SUS630	Aluminiun alloy
1	Cutting speed (v_c) m/min	30~**40**~50	30~**40**~50	20~**30**~40	20~**30**~40	30~**40**~60
	Revolution (n) min^{-1}	12,732	12,732	9,549	9,549	12,732
	Feed per rev (f) mm/rev	0.01~0.03	0.01~0.03	0.01~0.03	0.01~0.015	0.01~0.04
1.5	Cutting speed (v_c) m/min	30~**40**~50	30~**40**~50	20~**30**~40	20~**30**~40	30~**40**~60
	Revolution (n) min^{-1}	8,488	8,488	6,366	6,366	8,488
	Feed per rev (f) mm/rev	0.015~0.045	0.015~0.045	0.015~0.045	0.015~0.023	0.015~0.06
2	Cutting speed (v_c) m/min	30~**40**~50	30~**40**~50	20~**30**~40	20~**30**~40	30~**40**~60
	Revolution (n) min^{-1}	6,366	6,366	4,775	4,775	6,366
	Feed per rev (f) mm/rev	0.02~0.06	0.02~0.06	0.02~0.06	0.02~0.03	0.02~0.08

Setting of Cutting conditions

- This standard cutting condition table is for general guidance regarding cutting conditions. The conditions should be adjusted according to the machining shape, application, machine used, etc. for the actual machining.
- For the cutting fluid, water-based cutting fluids are recommended.
- Internal coolant pressure of 1.5MPa or higher is recommended. (When pressure is less than 1.5MPa, performing step machining is recommended.)
- Use a mesh filter (3 μm to 5 μm) to prevent clogging of coolant hole.
- G81 is recommended as the machining cycle.
- When removal of chips is difficult, perform step machining of about the tool diameter. (G73, G83 cycle)
- When mounting the tool, use of a collet without scratches or dirt and tool deflection of 0.02 mm or less is recommended.
- When using 10D type or larger tools, it is recommended that a 3D type tool is used to create a pilot hole.
- When performing machining using a long drill (10D or more), perform machining at v_c=80 m/min. or less. If the tool is rotated at high speed, it may be broken by centrifugal force.
- Please consult us regarding machining of materials other than those listed above.

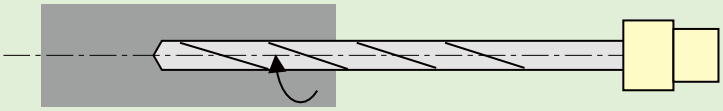
Machining method when using a long drill (10D type or longer)

1 Use 03WHMB-TH to machine a hole with a depth of 3 times the tool diameter.

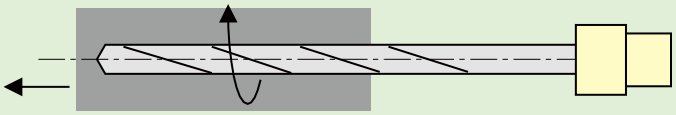


2 Machine using a long drill.

※When using a horizontal machine, low-speed rotation (n = 0 to 500 min^{-1}) while advancing is recommended



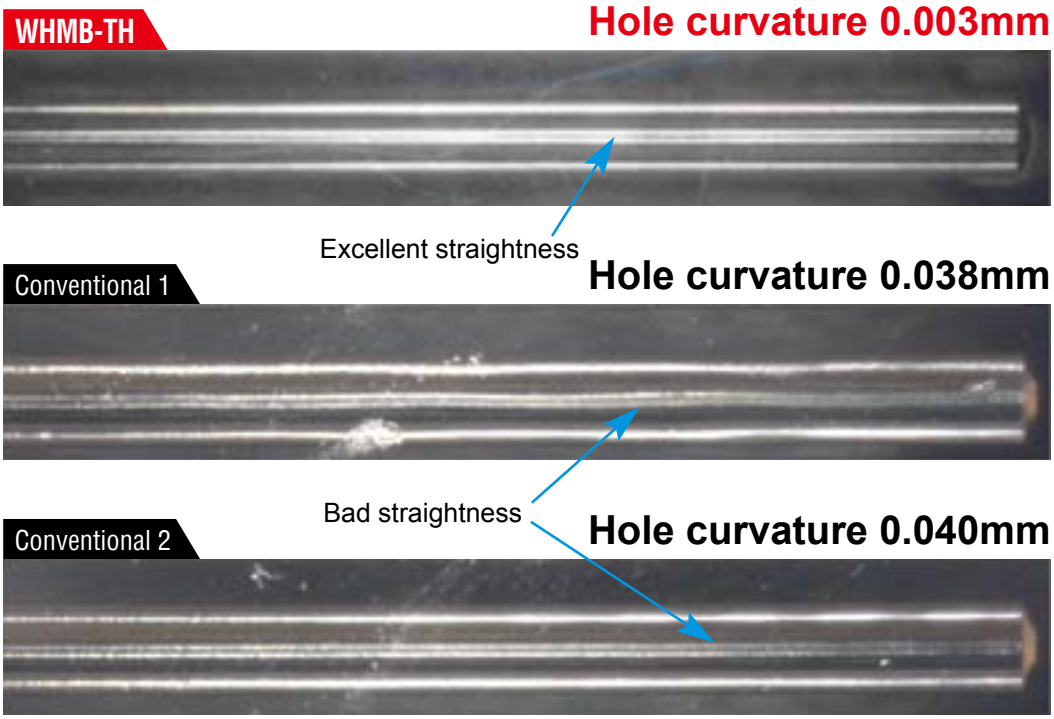
3 Dwelling at the bottom of the hole for 0.3 s is recommended.



Field data

Example of hole curvature in acrylic【ϕ1.0mm, 20D type】

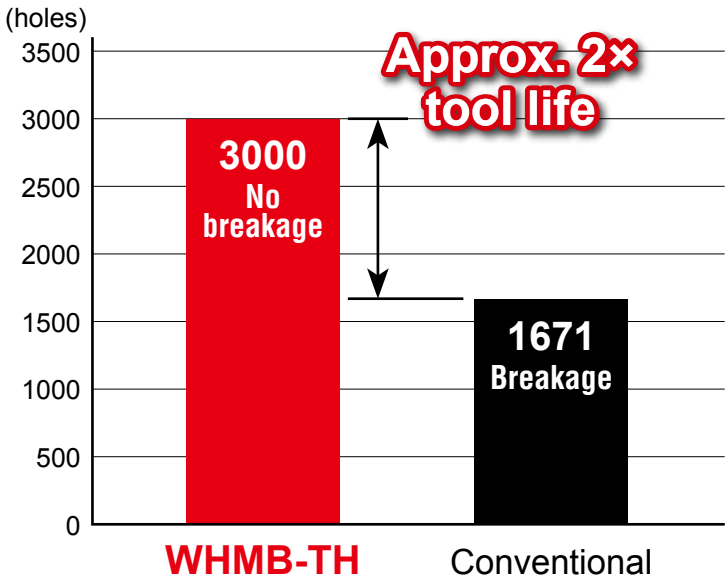
Cutting condition v_c=30m/min、n=9,549min^{-1}, f=0.02mm/rev, v_f=190mm/min, Machining depth=18mm, Pilot hole depth=1mm、Non step machining, Water base coolant, Internal coolant pressure 3MPa

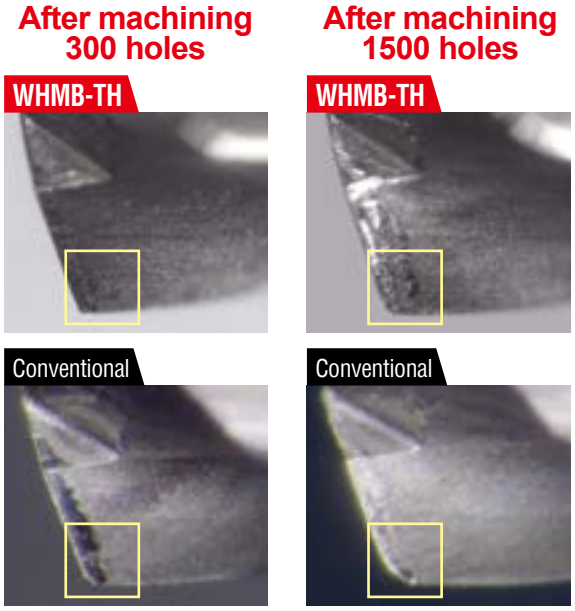


High-accuracy flute shape form achieves higher hole accuracy than conventional products.

Stainless steel (SUS304) machining example【ϕ1.0mm, 20D type】

Cutting condition
v_c=30m/min, n=9,549min^{-1}, f=0.02mm/rev、v_f=190mm/min, Machining depth=18mm, Pilot hole depth=1mm, Non step machining, Water base coolant, Internal coolant pressure 3MPa





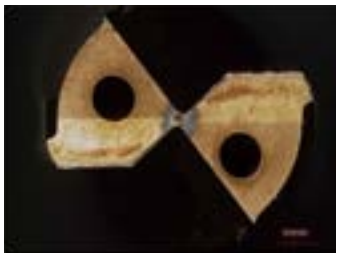
WHMB maintains the flute edge condition even after machining 1,500 holes.

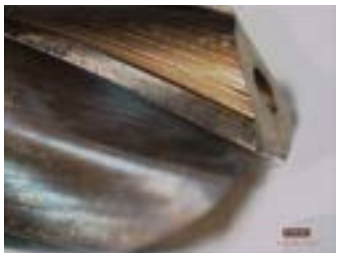
Stainless steel (SUS630) machining example

03WHMB0170-TH　ϕ1.7mm 3D type

Cutting condition
v_c=30m/min, n=5,617min^{-1}, f=0.0425mm/rev、
v_f=239mm/min, Machining depth=5mm,
Non step machining, Water base coolant,
Internal coolant pressure 3MPa

After machining 800 holes, continued machining is possible

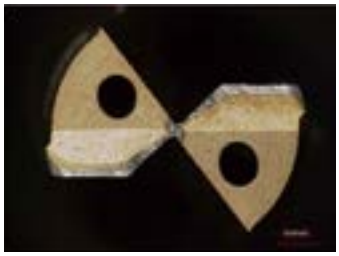


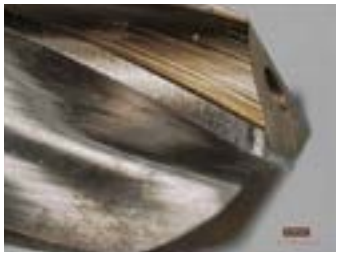


30WHMB0170-TH　ϕ1.7mm 30D type

Cutting condition
v_c=30m/min, n=5,617min^{-1}, f=0.025mm/rev、
v_f=143mm/min, Machining depth=48mm,
Non step machining, Water base coolant,
Internal coolant pressure 3MPa

After machining 200 holes, continued machining is possible





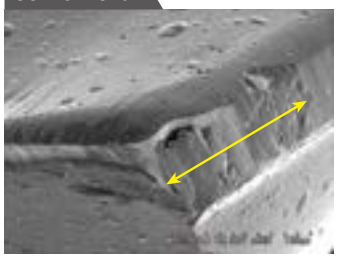
Chrome molybdenum steel (SCM420) machining example【ϕ1.0mm 30D type】

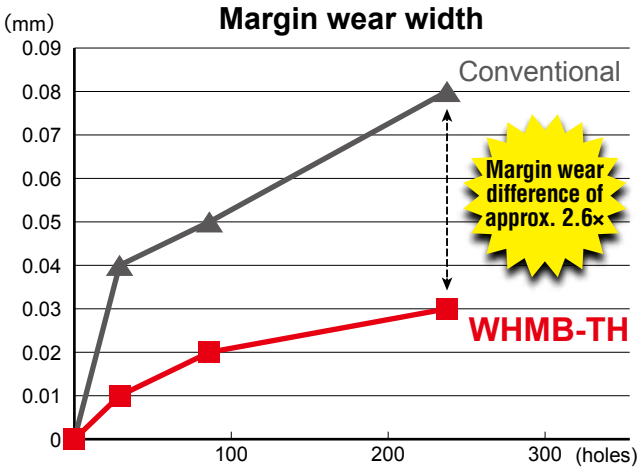
Cutting condition (G73 cycle)
v_c=30m/min, n=9,549min^{-1}, f=0.03mm/rev、v_f=286mm/min、
Step=1mm、Machining depth=28mm、Pilot hole depth=1mm、
Water base coolant, Internal coolant pressure 3MPa

After machining 240 holes

WHMB-TH

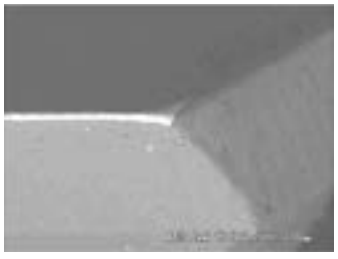
Conventional





Chrome steel machining example【ϕ1.0mm 30D type】

Cutting condition (G73 cycle)　v_c=50.2m/min, n=16,000min^{-1}, f=0.03mm/rev, v_f=480mm/min, Machining depth=25mm,
Step=1mm, Water base coolant, Internal coolant pressure 3MPa



Tool wear after machining 1000 holes (25m)

Machined workpiece

Achieves deep hole machining of L/D=25　**Machining time is 6sec/hole!**

MOLDINO

The Edge To Innovation

The diagrams and table data are examples of test results, and are not guaranteed values.

Attentions on Safety

1. Cautions regarding handling

(1) When removing the tool from its case (packaging), be careful that the tool does not pop out or is dropped. Be particularly careful regarding contact with the tool flutes.
(2) When handling tools with sharp cutting flutes, be careful not to touch the cutting flutes directly with your bare hands.

2. Cautions regarding mounting

(1) Before use, check the outside appearance of the tool for scratches, cracks, etc. and that it is firmly mounted in the collet chuck, etc.
(2) If abnormal chattering, etc. occurs during use, stop the machine immediately and remove the cause of the chattering.

3. Cautions during use

(1) Before use, confirm the dimensions and direction of rotation of the tool and milling work material.
(2) The numerical values in the standard cutting conditions table should be used as criteria when starting new work. The cutting conditions should be adjusted as appropriate when the cutting depth is large, the rigidity of the machine being used is low, or according to the conditions of the work material.
(3) Cutting tools are made of a hard material. During use, they may break and fly off. In addition, cutting chips may also fly off. Since there is a danger of injury to workers, fire, or eye damage from such flying pieces, a safety cover should be attached when work is performed and safety equipment such as safety goggles should be worn to create a safe environment for work.
(4) There is a risk of fire or inflammation due to sparks, heat due to breakage, and cutting chips. Do not use where there is a risk of fire or explosion. **Please caution of fire while using oil base coolant, fire prevention is necessary.**
(5) Do not use the tool for any purpose other than that for which it is intended.

4. Cautions regarding regrinding

(1) If regrinding is not performed at the proper time, there is a risk of the tool breaking. Replace the tool with one in good condition, or perform regrinding.
(2) Grinding dust will be created when regrinding a tool. When regrinding, be sure to attach a safety cover over the work area and wear safety clothes such as safety goggles, etc.
(3) This product contains the specified chemical substance cobalt and its inorganic compounds. When performing regrinding or similar processing, be sure to handle the processing in accordance with thelocal laws and regulations regarding prevention of hazards due to specified chemical substances.

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