

Advanced
Engineering

Hitachi Tool

HITACHI
Inspire the Next

Nano-PVD Coating
TH45+

No. 801

WHNSB Carbide Oil Hole **Non Step Borer**

Solid Carbide Drills for Machining by
Minimum Quantity Lubrication (MQL · MMS)

3xØD ~ 30xØD



**Shank Diameter
for standard collets:
4/6/8/10/12 (13) mm**

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Solid Carbide Drills for Machining by Minimum Quantity Lubrication

WHNSB-TH | Carbide Oil Hole Non-Step Borer (NSB)

 **HIGHLY EFFICIENT AND LONG-LIFE DRILLING OF DEEP HOLES BY USING INTERNAL COOLANT OR MINIMUM QUANTITY LUBRICATION METHOD.**

1. Four times more efficient than a gun drill.
2. The NSB specially designed grooves and coating enable quick chip evacuation.
3. TH coating improves stability during high temperature drilling.
4. Reduction of machining costs.
5. High accuracy shanks capable of shrink fitting.

 **HOCHEFFIZIENTES TIEFLOCHBOHREN MIT LANGER LEBENSDAUER – MIT INTERNER KÜHLUNG ODER MINIMAL-MENGENSCHMIERUNG**

1. Vierfach höhere Leistung gegenüber herkömmlichen Tieflochbohrern.
2. Speziell geformte NSB-Spankammern und die TH-Beschichtung gewährleisten schnelle Spanabfuhr.
3. TH-Beschichtung erhöht die Resistenz gegen Oxidation und Verschleiß.
4. Reduktion der Prozesskosten.
5. Für Schrumpffutter geeignete hochpräzise Schäfte.

 **FORATURE PROFONDE DI LUNGA DURATA ED ALTA EFFICIENZA CON RAFFREDDAMENTO INTERNO O LUBRIFICAZIONE MINIMALE.**

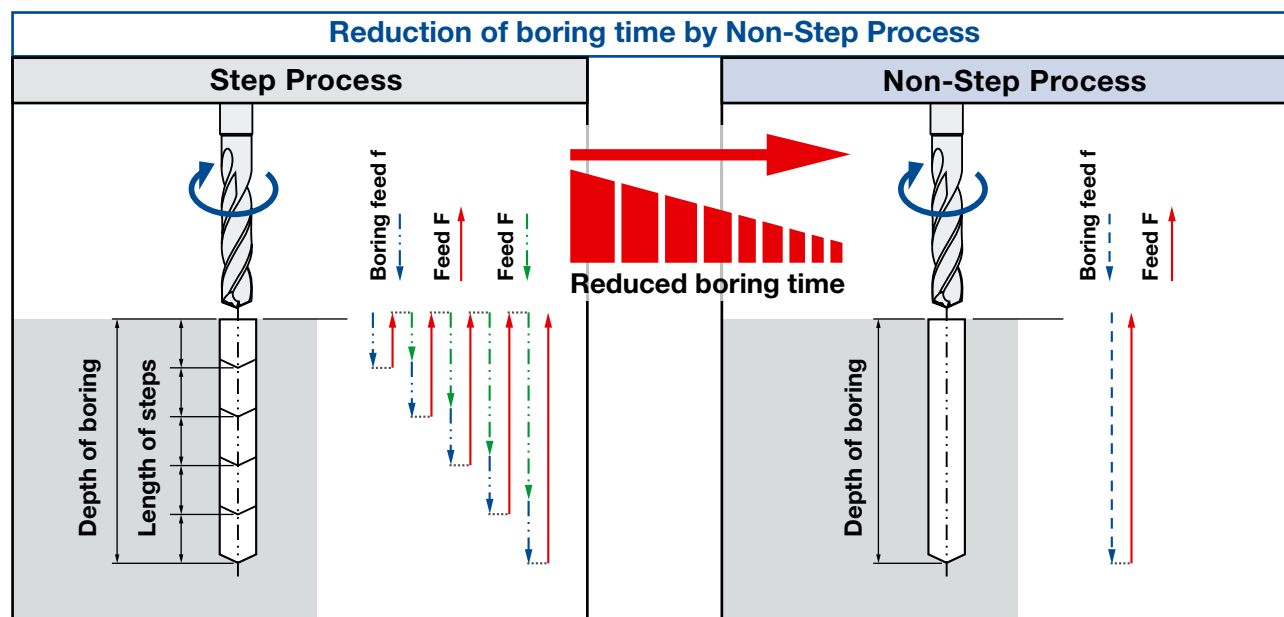
1. Prestazioni 4 volte superiori rispetto alla foratura profonda tradizionale.
2. Le cave di truciatura dal profilo speciale ed il rivestimento TH garantiscono la rapida rimozione del truciolo.
3. Il rivestimento TH aumenta la resistenza all'ossidazione e all'usura.
4. Riduzione dei costi di processo.
5. Codoli di alta precisione adatti per mandrini a calettamento.

 **BROCA PARA AGUJEROS PROFUNDOS ALTAMENTE EFICIENTE Y DE LARGA DURACIÓN – CON REFRIGERACIÓN INTERNA O SISTEMA DE MÍNIMA LUBRIFICACIÓN.**

1. Cuatro veces más eficiente que una broca cañón.
2. El diseño especial de los canales de las brocas NSB y su recubrimiento TH garantizan una rápida evacuación de la viruta.
3. El recubrimiento TH aumenta la resistencia a la oxidación y al desgaste.
4. Reducción de los costes del proceso.
5. Mangos de alta precisión aptos para uso en portaherramientas térmicos.

 **PERÇAGE PROFOND HAUTE PRODUCTIVITÉ AVEC UNE LONGUE DURÉE DE VIE – AVEC REFFROIDISSEMENT INTERNE OU LUBRIFICATION MINIMALE.**

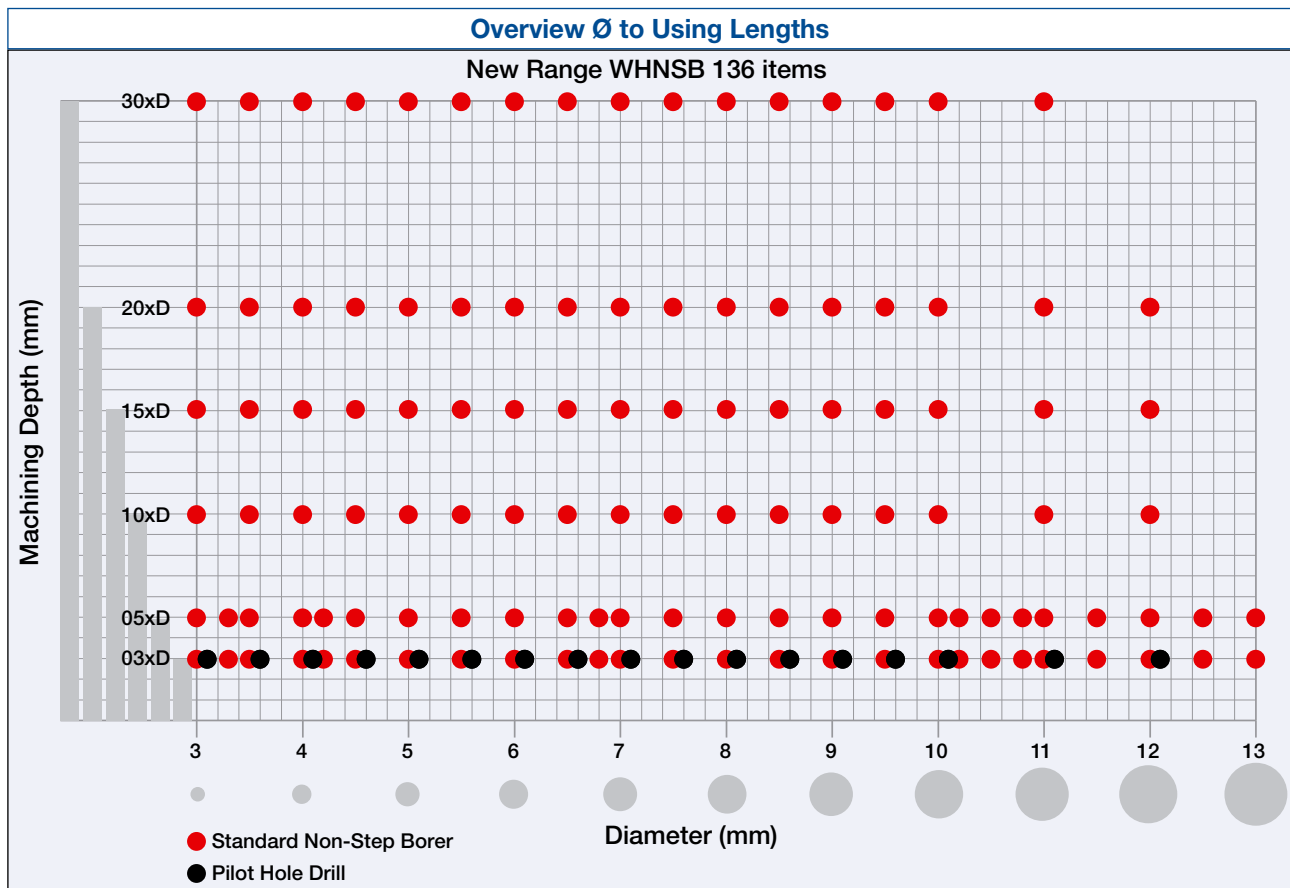
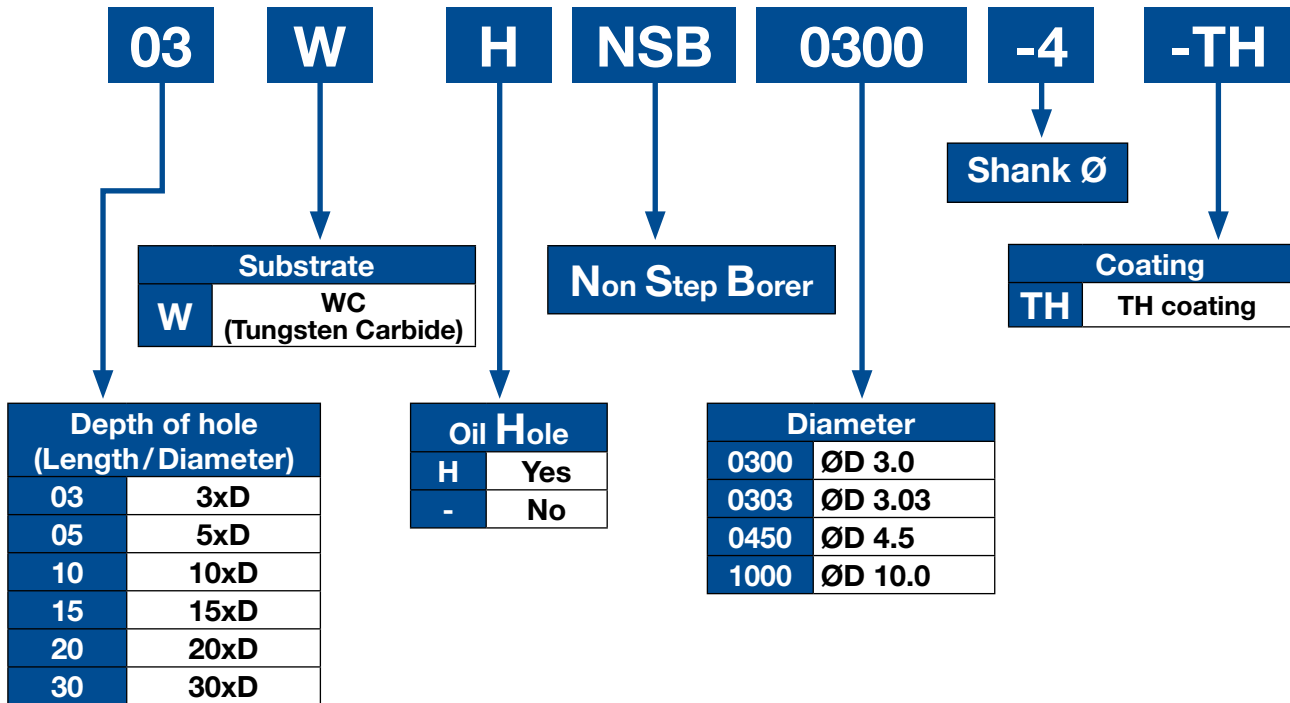
1. Une efficacité quatre fois plus élevée que celle des forets longs traditionnels.
2. Les goujures développées spécialement pour le NSB et le revêtement garantissent une évacuation rapide des copeaux.
3. Le revêtement TH augmente la résistance à l'oxydation et à l'usure.
4. Réduction des coûts d'usinage.
5. Des queues précises et appropriées aux mandrins de frettage.



Solid Carbide Drills for Machining by Minimum Quantity Lubrication

WHNSB-TH | Carbide Oil Hole Non-Step Borer (NSB)

General Information: Item Code of NSB



Solid Carbide Drills for Machining by Minimum Quantity Lubrication

WHNSB-TH | Carbide Oil Hole Non-Step Borer (NSB)

Pilot (Guide) hole

DRILLING METHOD

- 1. Pilot hole drilling with 03WHNSB-TH**
Machining diameter: +0~0.1 mm
Machining depth: 2~4 times drill diameter.
- 2. Insert into pilot hole. (10~30WHNSB-TH)**
(1) Start to supply internal coolant.
(2) Approach and Insert into pilot hole by low revolution (0~200 min⁻¹) till 2.0~5.0 mm before bottom of pilot hole.
- 3. Drilling Operation. (10~30WHNSB-TH)**
Increase to set up cutting conditions and start drilling.
- 4. After drilling operation.**
Pull the NSB out of the material by low revolution (0~200 min⁻¹).

1 2~4xD

2 ~200 rpm

3 max. rpm

4 ~200 rpm

WHNSB-TH | Carbide Oil Hole Non-Step Borer (NSB)

Q max
High Efficient

HRC
30 (50)

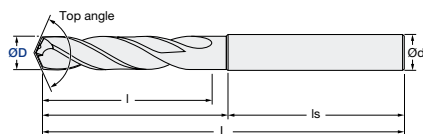
No. of Teeth
2

3D

140°
3D

Carbide
Micro Grain

TH
Nano-PVD Coating



ØD	h8
ød	h6

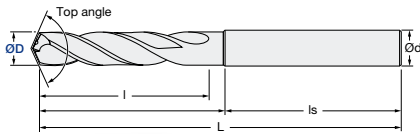
3xØD Pilot Hole Drills

ID Code	Item Code	Diameter	Using length	Flute length	Shank length	Total length	Shank Dia.
		ØD	l	l	ls	L	Ød
CD205	03WHNSB0303-4-TH	3.03	9.09	23	48	73	4
CD208	03WHNSB0353-4-TH	3.53	10.59				
CD210	03WHNSB0403-6-TH	4.03	12.09				
CD213	03WHNSB0453-6-TH	4.53	13.59	29	51	82	6
CD215	03WHNSB0503-6-TH	5.03	15.09				
CD217	03WHNSB0553-6-TH	5.53	16.59				
CD219	03WHNSB0603-8-TH	6.03	18.09	34	53	89	8
CD221	03WHNSB0653-8-TH	6.53	19.59				
CD224	03WHNSB0703-8-TH	7.03	21.09				
CD226	03WHNSB0753-8-TH	7.53	22.59	39	54	95	8
CD228	03WHNSB0803-10-TH	8.03	24.09				
CD230	03WHNSB0853-10-TH	8.53	25.59				
CD232	03WHNSB0903-10-TH	9.03	27.09	49	56	107	10
CD234	03WHNSB0953-10-TH	9.53	28.59				
CD236	03WHNSB1003-12-TH	10.03	30.09				
CD241	03WHNSB1103-12-TH	11.03	33.09	59	62	123	12
CD244	03WHNSB1203-12-TH	12.03	36.09				

Solid Carbide Drills for Machining by Minimum Quantity Lubrication

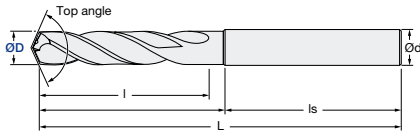
WHNSB-TH | Carbide Oil Hole Non-Step Borer (NSB)

Q max High Efficient	HRC 30 (50)	No. of Teeth 2	3xD-300D	140° 3D-5D	135° 10D-30D	Carbide Micro Grain	TH Nano-PVD Coating
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ØD	h8
ød	h6

ID Code	Item Code	Diameter	Using length	Flute length	Shank length	Total length	Shank Dia.
		ØD		l	ls	L	ød
CD204	03WHNSB0300-4-TH	3.00	9.00	19	48	69	4
CD206	03WHNSB0330-4-TH	3.30	9.90	23			
CD207	03WHNSB0350-4-TH	3.50	10.50	23			
CD209	03WHNSB0400-4-TH	4.00	12.00	23			
CD211	03WHNSB0420-6-TH	4.20	12.60	29	51	82	6
CD212	03WHNSB0450-6-TH	4.50	13.50				
CD214	03WHNSB0500-6-TH	5.00	15.00				
CD216	03WHNSB0550-6-TH	5.50	16.50				
CD218	03WHNSB0600-6-TH	6.00	18.00				
CD220	03WHNSB0650-8-TH	6.50	19.50				
CD222	03WHNSB0680-8-TH	6.80	20.40				
CD223	03WHNSB0700-8-TH	7.00	21.00				
CD225	03WHNSB0750-8-TH	7.50	22.50				
CD227	03WHNSB0800-8-TH	8.00	24.00	39	54	95	10
CD229	03WHNSB0850-10-TH	8.50	25.50				
CD231	03WHNSB0900-10-TH	9.00	27.00	44	55	101	12
CD233	03WHNSB0950-10-TH	9.50	28.50				
CD235	03WHNSB1000-10-TH	10.00	30.00				
CD237	03WHNSB1020-12-TH	10.20	30.60				
CD238	03WHNSB1050-12-TH	10.50	31.50	54	61	117	10
CD239	03WHNSB1080-12-TH	10.80	32.40				
CD240	03WHNSB1100-12-TH	11.00	33.00				
CD242	03WHNSB1150-12-TH	11.50	34.50				
CD243	03WHNSB1200-12-TH	12.00	36.00	59	62	123	13
CD245	03WHNSB1250-13-TH	12.50	37.50				
CD246	03WHNSB1300-13-TH	13.00	39.00	64	63	129	



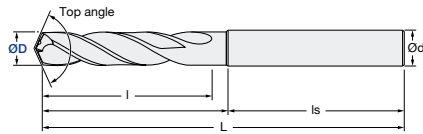
ØD	h8
ød	h6

ID Code	Item Code	Diameter	Using length	Flute length	Shank length	Total length	Shank Dia.
		ØD		l	ls	L	ød
CD247	05WHNSB0300-4-TH	3.00	15.00	29	47	79	4
CD248	05WHNSB0330-4-TH	3.30	16.50	37			
CD249	05WHNSB0350-4-TH	3.50	17.50	37			
CD250	05WHNSB0400-4-TH	4.00	20.00	47	50	100	6
CD251	05WHNSB0420-6-TH	4.20	21.00				
CD252	05WHNSB0450-6-TH	4.50	22.50				
CD253	05WHNSB0500-6-TH	5.00	25.00				
CD254	05WHNSB0550-6-TH	5.50	27.50				
CD255	05WHNSB0600-6-TH	6.00	30.00				
CD256	05WHNSB0650-8-TH	6.50	32.50				
CD257	05WHNSB0680-8-TH	6.80	34.00				
CD258	05WHNSB0700-8-TH	7.00	35.00				
CD259	05WHNSB0750-8-TH	7.50	37.50	63	54	119	10
CD260	05WHNSB0800-8-TH	8.00	40.00				
CD261	05WHNSB0850-10-TH	8.50	42.50	71	55	128	12
CD262	05WHNSB0900-10-TH	9.00	45.00				
CD263	05WHNSB0950-10-TH	9.50	47.50	79	56	137	10
CD264	05WHNSB1000-10-TH	10.00	50.00				
CD265	05WHNSB1020-12-TH	10.20	51.00				
CD266	05WHNSB1050-12-TH	10.50	52.50				
CD267	05WHNSB1080-12-TH	10.80	54.00	87	61	150	13
CD268	05WHNSB1100-12-TH	11.00	55.00				
CD269	05WHNSB1150-12-TH	11.50	57.50	93	63	156	13
CD270	05WHNSB1200-12-TH	12.00	60.00				
CD271	05WHNSB1250-13-TH	12.50	62.50	104	63	169	13
CD272	05WHNSB1300-13-TH	13.00	65.00				

Solid Carbide Drills for Machining by Minimum Quantity Lubrication

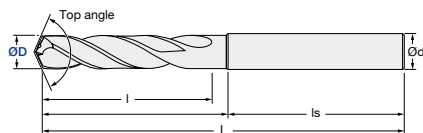
WHNSB-TH | Carbide Oil Hole Non-Step Borer (NSB)

Q max High Efficient	HRC 30 (50)	No. of Teeth 2					
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ØD	h8
ød	h6

10xØD		Diameter	Using length	Flute length	Shank length	Total length	Shank Dia.
ID Code	Item Code	ØD		l	ls	L	Ød
CD273	10WHNSB0300-4-TH	3.00	30.00	39	47	87	4
CD274	10WHNSB0350-4-TH	3.50	35.00	46		94	
CD275	10WHNSB0400-4-TH	4.00	40.00	52		101	
CD276	10WHNSB0450-6-TH	4.50	45.00	59	50	110	6
CD277	10WHNSB0500-6-TH	5.00	50.00	66		117	
CD278	10WHNSB0550-6-TH	5.50	55.00	72		123	
CD279	10WHNSB0600-6-TH	6.00	60.00	79	52	130	8
CD280	10WHNSB0650-8-TH	6.50	65.00	85		138	
CD281	10WHNSB0700-8-TH	7.00	70.00	92		145	
CD282	10WHNSB0750-8-TH	7.50	75.00	98	54	153	10
CD283	10WHNSB0800-8-TH	8.00	80.00	105		160	
CD284	10WHNSB0850-10-TH	8.50	85.00	111		166	
CD285	10WHNSB0900-10-TH	9.00	90.00	118	60	173	12
CD286	10WHNSB0950-10-TH	9.50	95.00	124		179	
CD287	10WHNSB1000-10-TH	10.00	100.00	131		186	
CD288	10WHNSB1100-12-TH	11.00	110.00	144	60	205	12
CD289	10WHNSB1200-12-TH	12.00	120.00	157		218	



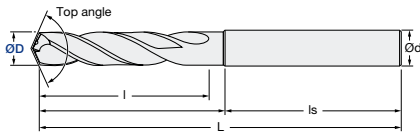
ØD	h8
ød	h6

15xØD		Diameter	Using length	Flute length	Shank length	Total length	Shank Dia.
ID Code	Item Code	ØD		l	ls	L	Ød
CD290	15WHNSB0300-4-TH	3.00	45.00	54	47	102	4
CD291	15WHNSB0350-4-TH	3.50	52.50	63		111	
CD292	15WHNSB0400-4-TH	4.00	60.00	72		121	
CD293	15WHNSB0450-6-TH	4.50	67.50	81	50	132	6
CD294	15WHNSB0500-6-TH	5.00	75.00	91		142	
CD295	15WHNSB0550-6-TH	5.50	82.50	100		151	
CD296	15WHNSB0600-6-TH	6.00	90.00	109	52	160	8
CD297	15WHNSB0650-8-TH	6.50	97.50	118		171	
CD298	15WHNSB0700-8-TH	7.00	105.00	127		180	
CD299	15WHNSB0750-8-TH	7.50	112.50	136	54	191	10
CD300	15WHNSB0800-8-TH	8.00	120.00	145		200	
CD301	15WHNSB0850-10-TH	8.50	127.50	154		209	
CD302	15WHNSB0900-10-TH	9.00	135.00	163	60	218	12
CD303	15WHNSB0950-10-TH	9.50	142.50	172		227	
CD304	15WHNSB1000-10-TH	10.00	150.00	181		236	
CD305	15WHNSB1100-12-TH	11.00	165.00	199	60	260	12
CD306	15WHNSB1200-12-TH	12.00	180.00	217		278	

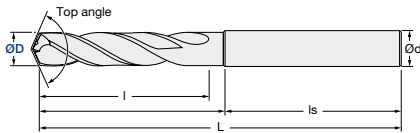
Solid Carbide Drills for Machining by Minimum Quantity Lubrication

WHNSB-TH | Carbide Oil Hole Non-Step Borer (NSB)

Q max High Efficient	HRC 30 (50)	No. of Teeth 2					
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20xØD		ØD	h8				
		ød	h6				
ID Code	Item Code	Diameter	Using length	Flute length	Shank length	Total length	Shank Dia.
		ØD		l	ls	L	Ød
CD307	20WHNSB0300-4-TH	3.00	60.00	69	47	117	4
CD308	20WHNSB0350-4-TH	3.50	70.00	81		129	
CD309	20WHNSB0400-4-TH	4.00	80.00	92		141	
CD310	20WHNSB0450-6-TH	4.50	90.00	104	50	155	6
CD311	20WHNSB0500-6-TH	5.00	100.00	116		167	
CD312	20WHNSB0550-6-TH	5.50	110.00	127		178	
CD313	20WHNSB0600-6-TH	6.00	120.00	139	52	190	8
CD314	20WHNSB0650-8-TH	6.50	130.00	150		203	
CD315	20WHNSB0700-8-TH	7.00	140.00	162		215	
CD316	20WHNSB0750-8-TH	7.50	150.00	173	54	228	10
CD317	20WHNSB0800-8-TH	8.00	160.00	185		240	
CD318	20WHNSB0850-10-TH	8.50	170.00	196		251	
CD319	20WHNSB0900-10-TH	9.00	180.00	208	60	263	12
CD320	20WHNSB0950-10-TH	9.50	190.00	219		274	
CD321	20WHNSB1000-10-TH	10.00	200.00	231		286	
CD322	20WHNSB1100-12-TH	11.00	220.00	254		315	
CD323	20WHNSB1200-12-TH	12.00	240.00	277		338	



30xØD		ØD	h8				
		ød	h6				
ID Code	Item Code	Diameter	Using length	Flute length	Shank length	Total length	Shank Dia.
		ØD		l	ls	L	Ød
CD324	30WHNSB0300-4-TH	3.00	90.00	99	47	147	4
CD325	30WHNSB0350-4-TH	3.50	105.00	116		164	
CD326	30WHNSB0400-4-TH	4.00	120.00	132		181	
CD327	30WHNSB0450-6-TH	4.50	135.00	149	50	200	6
CD328	30WHNSB0500-6-TH	5.00	150.00	166		217	
CD329	30WHNSB0550-6-TH	5.50	165.00	182		233	
CD330	30WHNSB0600-6-TH	6.00	180.00	199	52	250	8
CD331	30WHNSB0650-8-TH	6.50	195.00	215		268	
CD332	30WHNSB0700-8-TH	7.00	210.00	232		285	
CD333	30WHNSB0750-8-TH	7.50	225.00	248	54	303	10
CD334	30WHNSB0800-8-TH	8.00	240.00	265		320	
CD335	30WHNSB0850-10-TH	8.50	255.00	281		336	
CD336	30WHNSB0900-10-TH	9.00	270.00	298	60	353	12
CD337	30WHNSB0950-10-TH	9.50	285.00	314		369	
CD338	30WHNSB1000-10-TH	10.00	300.00	331		386	
CD339	30WHNSB1100-12-TH	11.00	330.00	364		425	

WHNSB-TH | Cutting Conditions for NSB 3D ~ 30D

ØD 3 - 13

Cutting Conditions for NSB 3D & 5D				Tool Diameter				
Work material	Cutting Speed V _c (m/min)			~ØD 4.0	~ØD 6.0	~ØD 8.0	~ØD 10.0	~ØD 12.0(13.0)
				rpm	(min)			
Structural steel ~180HB	Internal coolant	rpm	(min)	9,500	6,300	4,800	3,800	3,200
		f	(mm/rpm)	0.1~0.16	0.15~0.24	0.18~0.3	0.2~0.35	0.22~0.4
	Mist coolant	rpm	(min)	9,500	6,300	4,800	3,800	3,200
		f	(mm/rpm)	0.1~0.16	0.15~0.24	0.18~0.3	0.2~0.35	0.22~0.4
Carbon steel ~200HB	Internal coolant	rpm	(min)	9,500	6,300	4,800	3,800	3,200
		f	(mm/rpm)	0.1~0.16	0.15~0.24	0.18~0.3	0.2~0.35	0.22~0.4
	Mist coolant	rpm	(min)	9,500	6,300	4,800	3,800	3,200
		f	(mm/rpm)	0.1~0.16	0.15~0.24	0.18~0.3	0.2~0.35	0.22~0.4
Alloy steel ~30HRC	Internal coolant	rpm	(min)	9,500	6,300	4,800	3,800	3,200
		f	(mm/rpm)	0.1~0.16	0.15~0.24	0.18~0.3	0.2~0.35	0.22~0.4
	Mist coolant	rpm	(min)	9,500	6,300	4,800	3,800	3,200
		f	(mm/rpm)	0.1~0.16	0.15~0.24	0.18~0.3	0.2~0.35	0.22~0.4
Stainless steel	Internal coolant	rpm	(min)	8,000	5,300	4,000	3,200	2,650
		f	(mm/rpm)	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	rpm	(min)	6,400	4,200	3,200	2,550	2,100
		f	(mm/rpm)	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	rpm	(min)	4,800	3,200	2,400	1,900	1,600
		f	(mm/rpm)	0.08~0.13	0.12~0.19	0.14~0.24	0.16~0.28	0.18~0.32
	Mist coolant	rpm	(min)	4,800	3,200	2,400	1,900	1,600
		f	(mm/rpm)	0.08~0.13	0.12~0.19	0.14~0.24	0.16~0.28	0.18~0.32
Prehardened steel ~50HRC	Internal coolant	rpm	(min)	3,200	2,100	1,600	1,300	1,050
		f	(mm/rpm)	0.05~0.1	0.08~0.14	0.12~0.18	0.15~0.2	0.17~0.24
	Mist coolant	rpm	(min)	2,400	1,600	1,200	1,000	800
		f	(mm/rpm)	0.05~0.1	0.08~0.14	0.12~0.18	0.05~0.2	0.17~0.24
Ductile iron	Internal coolant	rpm	(min)	8,000	5,300	4,000	3,200	2,650
		f	(mm/rpm)	0.1~0.16	0.15~0.24	0.18~0.3	0.2~0.35	0.22~0.4
	Mist coolant	rpm	(min)	8,000	5,300	4,000	3,200	2,650
		f	(mm/rpm)	0.1~0.16	0.15~0.24	0.18~0.3	0.2~0.35	0.22~0.4
Cast iron	Internal coolant	rpm	(min)	9,500	6,300	4,800	3,800	3,200
		f	(mm/rpm)	0.1~0.16	0.15~0.24	0.18~0.3	0.2~0.35	0.22~0.4
	Mist coolant	rpm	(min)	9,500	6,300	4,800	3,800	3,200
		f	(mm/rpm)	0.1~0.16	0.15~0.24	0.18~0.3	0.2~0.35	0.22~0.4
Inconel718	Internal coolant	rpm	(min)	2,400	1,600	1,200	950	800
Heatproof steel		f	(mm/rpm)	0.06~0.08	0.09~0.12	0.12~0.16	0.13~0.2	0.14~0.24

ØD 3 - 10

Cutting Conditions for NSB 10D ~ 30D				Tool Diameter			
Work material	Cutting Speed V _c (m/min)			~ØD 4.0	~ØD 6.0	~ØD 8.0	~ØD 10.0
				rpm	(min)		
Structural steel ~180HB	Internal coolant	rpm	(min)	7,000	4,800	3,600	2,900
		f	(mm/rpm)	0.1~0.16	0.15~0.24	0.18~0.3	0.2~0.3
	Mist coolant	rpm	(min)	5,500	4,300	3,200	2,600
		f	(mm/rpm)	0.1~0.16	0.15~0.24	0.18~0.3	0.2~0.3
Carbon steel ~200HB	Internal coolant	rpm	(min)	7,000	4,800	3,600	2,900
		f	(mm/rpm)	0.1~0.16	0.15~0.24	0.18~0.3	0.2~0.3
	Mist coolant	rpm	(min)	5,500	4,700	3,600	2,900
		f	(mm/rpm)	0.1~0.16	0.15~0.24	0.18~0.3	0.2~0.3
Alloy steel ~30HRC	Internal coolant	rpm	(min)	6,300	4,500	3,400	2,700
		f	(mm/rpm)	0.08~0.12	0.12~0.2	0.16~0.24	0.2~0.3
	Mist coolant	rpm	(min)	5,000	3,700	2,900	2,400
		f	(mm/rpm)	0.08~0.12	0.12~0.2	0.16~0.24	0.2~0.3
Stainless steel	Internal coolant	rpm	(min)	4,800	3,700	2,700	2,200
		f	(mm/rpm)	0.08~0.12	0.12~0.2	0.16~0.24	0.2~0.3
Ductile iron	Internal coolant	rpm	(min)	7,000	4,800	3,600	2,900
		f	(mm/rpm)	0.1~0.16	0.15~0.24	0.18~0.3	0.2~0.35
	Mist coolant	rpm	(min)	6,300	4,500	3,400	2,700
		f	(mm/rpm)	0.1~0.16	0.15~0.24	0.18~0.3	0.2~0.35
Cast iron	Internal coolant	rpm	(min)	8,000	5,300	4,000	3,200
		f	(mm/rpm)	0.1~0.16	0.15~0.24	0.18~0.3	0.2~0.35
	Mist coolant	rpm	(min)	7,000	4,800	3,600	2,900
		f	(mm/rpm)	0.1~0.16	0.15~0.24	0.18~0.3	0.2~0.35

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 or less, the coolant pressure should be 2.0MPa or higher, and when the diameter is over Ø5, the pressure should be 1.5MPa or higher.

In the case of MQL (mist cooling) machining, the cutting speed may be reduced depending on the mist blower and chip evacuation of the tool.

When changing the tool, use a collet free from damage and oil or grease, grip the tool firmly and ensure the runout is 0.02 mm or less.

When using cutting oil, reduce the cutting speed to lower than the lowest speed in the specified range.

Take the greatest care to avoid smoke or ignition due to the heat of the chips, and the tool.

Components should be held firmly to prevent deformation, deflection and vibration.

Die oben genannten Schnittwerte basieren auf der Verwendung von wasserlöslichem Kühlschmiermittel mit maximal 20facher Verdünnung. Bei Verwendung von Kühlschmiermittel mit mehr als 20facher Verdünnung ist die Schnittgeschwindigkeit auf den jeweils niedrigsten in der Tabelle genannten Wert zu verringern.

Der Kühlschmiermitteldruck bei Werkzeugdurchmessern von weniger als Ø5 mm muss mindestens 2,0 MPa betragen, bei Durchmessern über Ø5 mm mindestens 1,5 MPa.

Bei Bearbeitungen mit Minimalmengenschmierung MQL (Kühlnebel) sollte die Schnittgeschwindigkeit abhängig von der Kühlnebelmenge und der Späneabfuhr des Werkzeugs reduziert werden.

Beim Werkzeugwechsel ist zu beachten, dass die Spannzange frei von Beschädigungen und Överschmutzungen ist, das Werkzeug sicher eingespannt und die Rundlaufabweichung geringer als 0,02 mm ist.

Bei Verwendung von Schneidöl ist die Schnittgeschwindigkeit noch unter den in der Tabelle genannten niedrigsten Wert zu verringern.

Die Vermeidung von Rauchentwicklung oder Feuergefahr, bedingt durch die Hitzeentwicklung des Werkzeugs und der Späne, ist mit größter Sorgfalt einzuhalten.

Die Komponenten sollten sorgfältig eingespannt werden um Deformation, Verbiegen und Vibrationen zu vermeiden.