

Solid Carbide Drill for Stainless Steel

# MMS WSTAR Drill Series

Special drill for stainless steels added to the WSTAR series.

## Exceeding the bounds of Stainless Steel drilling

Unique triangular shaped “**TRI-Cooling Technology**” coolant hole increases coolant volume, which increases tool life and chip evacuation.



# AHB

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- Drill sizes available in 0.1mm increments from 3mm to 20mm and 0.1250 inch to 0.7812 inch diameters.
- Shank diameters are all standard metric shanks for both inch and metric sizes which may be used in combination milling, shrink fit holders and drill collets.

# Solid Carbide Drill for Stainless Steel

## **WSTAR** drill series

# **MMS**

### Feature

Unique coolant hole geometry for high productivity & long tool life!

#### 1 Unique coolant hole geometry

Employs new **TRI-cooling** technology. **PAT.P.**  
Coolant volume increased by unique hole shape.  
(Coolant holes on drills larger than  $\varnothing.2362''$ )

#### 3 Special margin to reduce cutting resistance

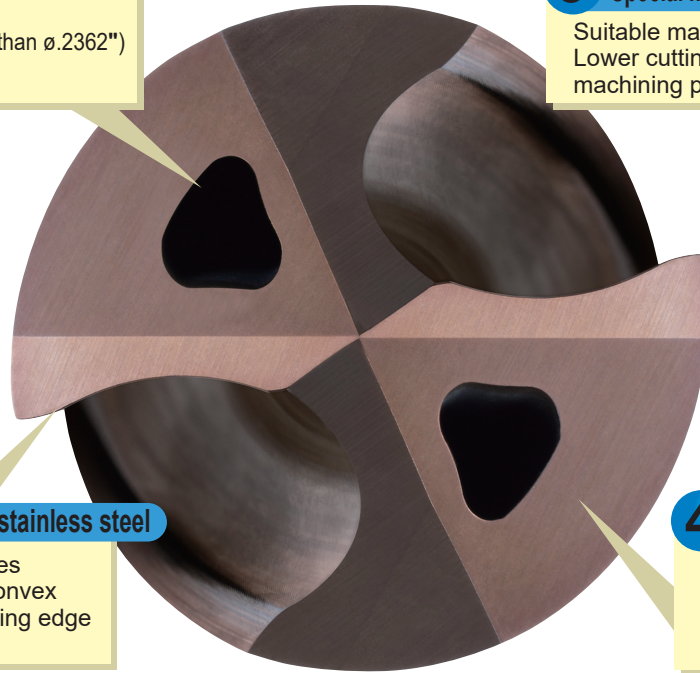
Suitable margin width for stainless steels.  
Lower cutting resistance offering higher machining performance.

#### 2 Wavy cutting edge for stainless steel

The concave edge improves sharpness, whereas the convex edge improves overall cutting edge strength.

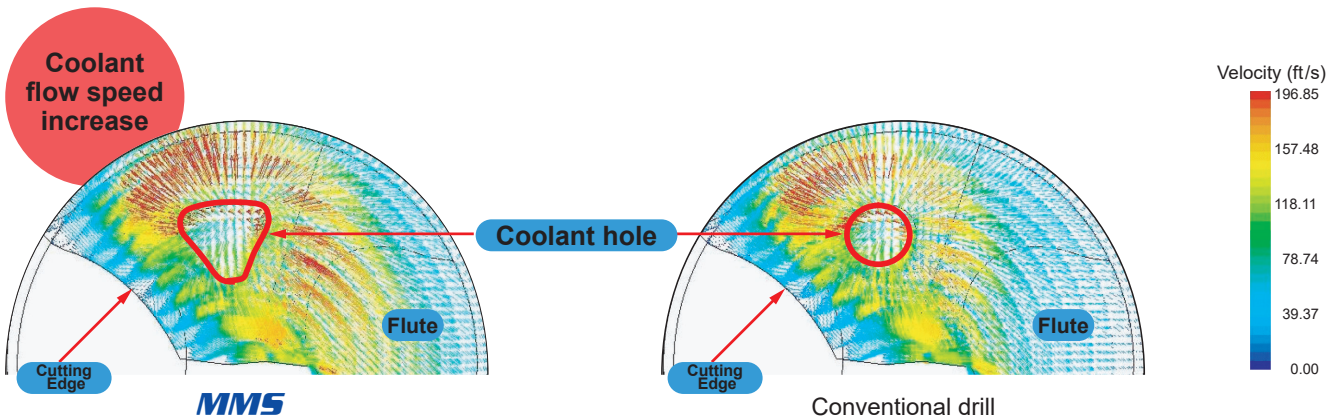
#### 4 New tool grade DP7020

New substrate for stainless steels, with a PVD coating offering improved lubricity.



Compared to conventional drills, coolant volume is doubled.  
Improved cooling and longer tool life.

Coolant flow speed simulation (Rotation 4700 rpm)

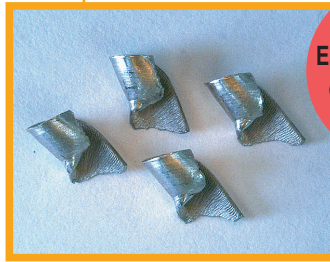


# Cutting Performance

The MMS drill generates chips that are easily evacuated leading to higher performance.

**MMS**

VC(SFM) Feed (inch/rev)	195	260	330
.0079"	○ Workable	○ Workable	○ Workable
.0118"	○ Workable	○ Workable	○ Workable
.0138"	○ Workable	○ Breakage	—



Easy to evacuate  
chip geometry

<Cutting conditions>

Drill :  $\phi$ .2402 inch  
Work piece : 304  
Hole depth : 1.1811 inch (L/D=5)  
Coolant : W.S.O  
Emission pressure : 435 PSI  
Machine : Machining Center

Conventional drill

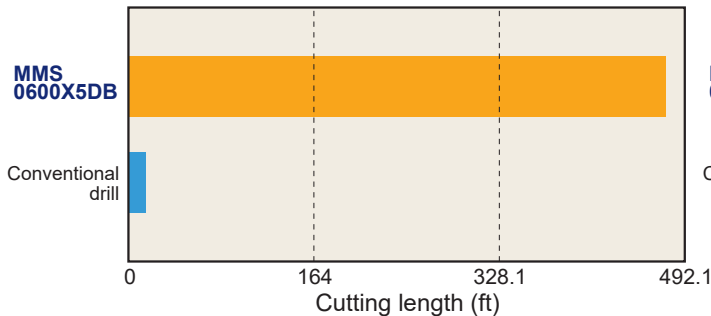
VC(SFM) Feed (inch/rev)	195	260	330
.0079"	○ Workable	○ Workable	○ Workable
.0118"	○ Workable	○ Breakage	—
.0138"	○ Breakage	—	—



\*Above is an example, for recommended cutting conditions please refer to page 7.

The MMS drill offer longer tool life, and can be used for various stainless steels.

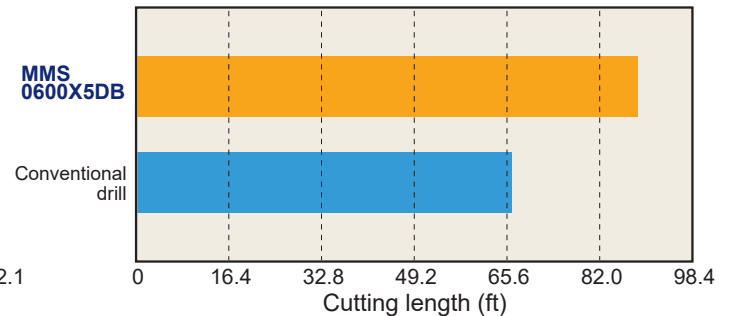
● Austenitic stainless steel



<Cutting conditions>

Drill :  $\phi$ .2362 inch    Feed Rate : 37.2 IPM (Non-step)  
Work piece: AISI 316L    Coolant : W.S.O  
Hole depth : 1.1811 inch (L/D=5)    Emission pressure : 435 PSI  
Cutting speed : 295 SFM    Machine : Machining Center  
Feed : .0078 inch/rev

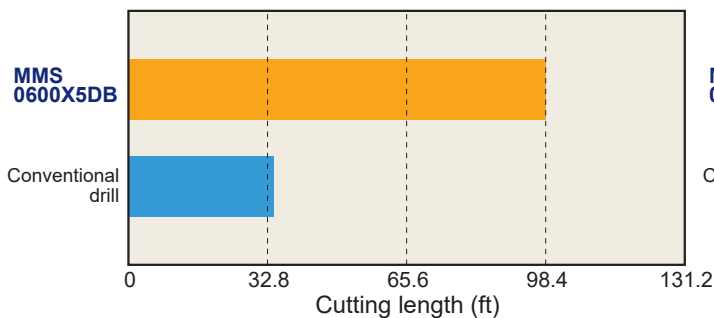
● Martensitic stainless steel



<Cutting conditions>

Drill :  $\phi$ .2362 inch    Feed Rate : 13.6 IPM (Non-step)  
Work piece: AISI 420    Coolant : W.S.O  
Hole depth : 1.1811 inch (L/D=5)    Emission pressure : 435 PSI  
Cutting speed : 165 SFM    Machine : Machining Center  
Feed : .0051 inch/rev

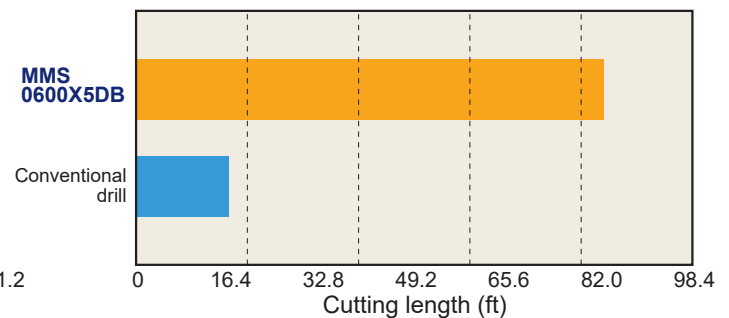
● Duplex steel



<Cutting conditions>

Drill :  $\phi$ .2362 inch    Feed Rate : 13.6 IPM (Non-step)  
Work piece: AISI 329    Coolant : W.S.O  
Hole depth : 1.1811 inch (L/D=5)    Emission pressure : 435 PSI  
Cutting speed : 165 SFM    Machine : Machining Center  
Feed : .0051 inch/rev

● PH stainless steel



<Cutting conditions>

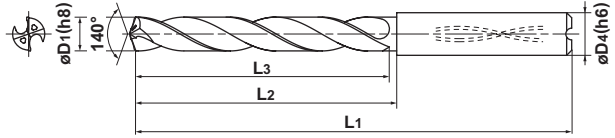
Drill :  $\phi$ .1969 inch    Feed Rate : 10 IPM (Non-step)  
Work piece: AISI 630(17-4PH)    Coolant : W.S.O  
Hole depth : .9843 inch (L/D=5)    Emission pressure : 435 PSI  
Cutting speed : 165 SFM    Machine : Machining Center  
Feed : .0031 inch/rev



# Solid Carbide Drill for Stainless Steel

# MMS NEW

Carbon Steel Alloy Steel	Hardened Steel	Stainless Steel	Cast Iron	Light Alloy	Heat Resistant Alloy	D1=3	3<D1≤6	6<D1≤10	10<D1≤18	18<D1≤20
		◎				D1 Tolerance (mm) 0 -0.014	0 -0.018	0 -0.022	0 -0.027	0 -0.033
						D4 Tolerance (mm) 0 -0.008	0 -0.008	0 -0.009	0 -0.011	0 -0.013



\*When looking at coating the color can vary depending on the direction of viewing. This does not have any effect on the performance of the drill.

Drill Diameter D1					Hole Depth l/d	Coolant (Int./Ext.)	Stock DP7020	Order Number	Dimensions							
Metric (mm)	Decimal	Fraction	Wire / Letter	Tread size					L3		L2		L1		D4	
	(inch)								mm	inch	mm	inch	mm	inch	mm	inch
3.0	.1181				3	Int.	●	MMS0300X3DB	21	.827	23	.906	70	2.756	6	.2362
					5	Int.	●	0300X5DB	28	1.102	31	1.220	78	3.071	6	.2362
3.048	.1200		31		3	Int.	●	0305X3D060	21	.827	23	.906	70	2.756	6	.2362
					5	Int.	●	0305X5D060	28	1.102	31	1.220	78	3.071	6	.2362
3.1	.1220				3	Int.	●	0310X3DB	21	.827	23	.906	70	2.756	6	.2362
					5	Int.	●	0310X5DB	28	1.102	31	1.220	78	3.071	6	.2362
3.175	.1250	1/8			3	Int.	●	0318X3D060	21	.827	23	.906	70	2.756	6	.2362
					5	Int.	●	0318X5D060	28	1.102	31	1.220	78	3.071	6	.2362
3.2	.1260				3	Int.	●	0320X3DB	21	.827	23	.906	70	2.756	6	.2362
					5	Int.	●	0320X5DB	28	1.102	31	1.220	78	3.071	6	.2362
3.3	.1299			M4x0.7	3	Int.	●	0330X3DB	21	.827	23	.906	70	2.756	6	.2362
					5	Int.	●	0330X5DB	28	1.102	31	1.220	78	3.071	6	.2362
3.4	.1339				3	Int.	●	0340X3DB	21	.827	23	.906	70	2.756	6	.2362
					5	Int.	●	0340X5DB	28	1.102	31	1.220	78	3.071	6	.2362
3.5	.1378				3	Int.	●	0350X3DB	21	.827	23	.906	70	2.756	6	.2362
					5	Int.	●	0350X5DB	28	1.102	31	1.220	78	3.071	6	.2362
3.572	.1406	9/64			3	Int.	●	0357X3D060	22	.866	23	.906	70	2.756	6	.2362
					5	Int.	●	0357X5D060	30	1.181	31	1.220	78	3.071	6	.2362
3.6	.1417				3	Int.	●	0360X3DB	22	.866	23	.906	70	2.756	6	.2362
					5	Int.	●	0360X5DB	30	1.181	31	1.220	78	3.071	6	.2362
3.7	.1457			M4.5x0.75	3	Int.	●	0370X3DB	22	.866	23	.906	70	2.756	6	.2362
					5	Int.	●	0370X5DB	30	1.181	31	1.220	78	3.071	6	.2362
3.8	.1496		25	#10-24	3	Int.	●	0380X3DB	22	.866	23	.906	70	2.756	6	.2362
					5	Int.	●	0380X5DB	30	1.181	31	1.220	78	3.071	6	.2362
3.9	.1535				3	Int.	●	0390X3DB	22	.866	23	.906	70	2.756	6	.2362
					5	Int.	●	0390X5DB	30	1.181	31	1.220	78	3.071	6	.2362
3.969	.1562	5/32			3	Int.	●	0397X3D060	22	.866	23	.906	70	2.756	6	.2362
					5	Int.	●	0397X5D060	30	1.181	31	1.220	78	3.071	6	.2362
4.0	.1575				3	Int.	●	0400X3DB	22	.866	23	.906	70	2.756	6	.2362
					5	Int.	●	0400X5DB	30	1.181	31	1.220	78	3.071	6	.2362
4.039	.1590		21	#10-32	3	Int.	●	0404X3D060	24	.945	26	1.024	73	2.874	6	.2362
					5	Int.	●	0404X5D060	33	1.299	35	1.378	82	3.228	6	.2362
4.1	.1614				3	Int.	●	0410X3DB	24	.945	26	1.024	73	2.874	6	.2362
					5	Int.	●	0410X5DB	33	1.299	35	1.378	82	3.228	6	.2362
4.2	.1654			M5x0.8	3	Int.	●	0420X3DB	24	.945	26	1.024	73	2.874	6	.2362
					5	Int.	●	0420X5DB	33	1.299	35	1.378	82	3.228	6	.2362
4.3	.1693				3	Int.	●	0430X3DB	24	.945	26	1.024	73	2.874	6	.2362
					5	Int.	●	0430X5DB	33	1.299	35	1.378	82	3.228	6	.2362

Note) Please contact Mitsubishi Carbide for any geometry that is not in the brochure (e.g. different diameter and length).

● : Inventory maintained.

Drill Diameter D1					Hole Depth l/d	Coolant (Int./Ext.)	Stock DP7020	Order Number	Dimensions							
Metric (mm)	Decimal	Fraction	Wire / Letter	Tread size					L3		L2		L1		D4	
	(inch)								mm	inch	mm	inch	mm	inch	mm	inch
4.366	.1719	11/64			3	Int.	●	MMS0437X3D060	24	.945	26	1.024	73	2.874	6	.2362
					5	Int.	●	0437X5D060	33	1.299	35	1.378	82	3.228	6	.2362
4.4	.1732				3	Int.	●	0440X3DB	24	.945	26	1.024	73	2.874	6	.2362
					5	Int.	●	0440X5DB	33	1.299	35	1.378	82	3.228	6	.2362
4.5	.1772		16	#12-24	3	Int.	●	0450X3DB	24	.945	26	1.024	73	2.874	6	.2362
					5	Int.	●	0450X5DB	33	1.299	35	1.378	82	3.228	6	.2362
4.6	.1811				3	Int.	●	0460X3DB	25	.984	28	1.102	75	2.953	6	.2362
					5	Int.	●	0460X5DB	35	1.378	38	1.496	85	3.346	6	.2362
4.7	.1850		13		3	Int.	●	0470X3DB	25	.984	28	1.102	75	2.953	6	.2362
					5	Int.	●	0470X5DB	35	1.378	38	1.496	85	3.346	6	.2362
4.763	.1875	3/16			3	Int.	●	0476X3D060	25	.984	28	1.102	75	2.953	6	.2362
					5	Int.	●	0476X5D060	35	1.378	38	1.496	85	3.346	6	.2362
4.8	.1890				3	Int.	●	0480X3DB	25	.984	28	1.102	75	2.953	6	.2362
					5	Int.	●	0480X5DB	35	1.378	38	1.496	85	3.346	6	.2362
4.9	.1929				3	Int.	●	0490X3DB	25	.984	28	1.102	75	2.953	6	.2362
					5	Int.	●	0490X5DB	35	1.378	38	1.496	85	3.346	6	.2362
5.0	.1969			M6x1.0	3	Int.	●	0500X3DB	25	.984	28	1.102	75	2.953	6	.2362
					5	Int.	●	0500X5DB	35	1.378	38	1.496	85	3.346	6	.2362
5.1	.2008		7	1/4-20	3	Int.	●	0510X3DB	28	1.102	30	1.181	81	3.189	6	.2362
					5	Int.	●	0510X5DB	39	1.535	42	1.654	89	3.504	6	.2362
5.159	.2031	13/64			3	Int.	●	0516X3D060	28	1.102	30	1.181	81	3.189	6	.2362
					5	Int.	●	0516X5D060	39	1.535	42	1.654	89	3.504	6	.2362
5.2	.2047				3	Int.	●	0520X3DB	28	1.102	30	1.181	81	3.189	6	.2362
					5	Int.	●	0520X5DB	39	1.535	42	1.654	89	3.504	6	.2362
5.3	.2087				3	Int.	●	0530X3DB	28	1.102	30	1.181	81	3.189	6	.2362
					5	Int.	●	0530X5DB	39	1.535	42	1.654	89	3.504	6	.2362
5.4	.2126		3	1/4-28	3	Int.	●	0540X3DB	28	1.102	30	1.181	81	3.189	6	.2362
					5	Int.	●	0540X5DB	39	1.535	42	1.654	89	3.504	6	.2362
5.5	.2165				3	Int.	●	0550X3DB	28	1.102	30	1.181	81	3.189	6	.2362
					5	Int.	●	0550X5DB	39	1.535	42	1.654	89	3.504	6	.2362
5.556	.2188	7/32			3	Int.	●	0556X3D060	30	1.181	30	1.181	81	3.189	6	.2362
					5	Int.	●	0556X5D060	42	1.654	42	1.654	89	3.504	6	.2362
5.6	.2205				3	Int.	●	0560X3DB	30	1.181	30	1.181	81	3.189	6	.2362
					5	Int.	●	0560X5DB	42	1.654	42	1.654	89	3.504	6	.2362
5.7	.2244				3	Int.	●	0570X3DB	30	1.181	30	1.181	81	3.189	6	.2362
					5	Int.	●	0570X5DB	42	1.654	42	1.654	89	3.504	6	.2362
5.8	.2283		1		3	Int.	●	0580X3DB	30	1.181	30	1.181	81	3.189	6	.2362
					5	Int.	●	0580X5DB	42	1.654	42	1.654	89	3.504	6	.2362
5.9	.2323				3	Int.	●	0590X3DB	30	1.181	30	1.181	81	3.189	6	.2362
					5	Int.	●	0590X5DB	42	1.654	42	1.654	89	3.504	6	.2362
5.953	.2344	15/64			3	Int.	●	0595X3D060	30	1.181	30	1.181	81	3.189	6	.2362
					5	Int.	●	0595X5D060	42	1.654	42	1.654	89	3.504	6	.2362
6.0	.2362			M7x1.0	3	Int.	●	0600X3DB	30	1.181	30	1.181	81	3.189	6	.2362
					5	Int.	●	0600X5DB	42	1.654	42	1.654	89	3.504	6	.2362
6.1	.2402				3	Int.	●	0610X3DB	33	1.299	35	1.378	86	3.386	8	.3150
					5	Int.	●	0610X5DB	46	1.811	48	1.890	95	3.740	8	.3150
6.2	.2441				3	Int.	●	0620X3DB	33	1.299	35	1.378	86	3.386	8	.3150
					5	Int.	●	0620X5DB	46	1.811	48	1.890	95	3.740	8	.3150

# Solid Carbide Drill for Stainless Steel

# MMS

Drill Diameter D1					Hole Depth l/d	Coolant (Int./Ext.)	Stock DP7020	Order Number	Dimensions							
Metric (mm)	Decimal	Fraction	Wire / Letter	Tread size					L3		L2		L1		D4	
	(inch)								mm	inch	mm	inch	mm	inch	mm	inch
6.3	.2480				3	Int.	●	MMS0630X3DB	33	1.299	35	1.378	86	3.386	8	.3150
					5	Int.	●	0630X5DB	46	1.811	48	1.890	95	3.740	8	.3150
6.350	.2500	1/4	E		3	Int.	●	0635X3D080	33	1.299	35	1.378	86	3.386	8	.3150
					5	Int.	●	0635X5D080	46	1.811	48	1.890	95	3.740	8	.3150
6.4	.2520				3	Int.	●	0640X3DB	33	1.299	35	1.378	86	3.386	8	.3150
					5	Int.	●	0640X5DB	46	1.811	48	1.890	95	3.740	8	.3150
6.5	.2559				3	Int.	●	0650X3DB	33	1.299	35	1.378	86	3.386	8	.3150
					5	Int.	●	0650X5DB	46	1.811	48	1.890	95	3.740	8	.3150
6.528	.2570		F	5/16-18	3	Int.	●	0653X3D080	35	1.378	37	1.457	90	3.543	8	.3150
					5	Int.	●	0653X5D080	49	1.929	51	2.008	98	3.858	8	.3150
6.6	.2598				3	Int.	●	0660X3DB	35	1.378	37	1.457	90	3.543	8	.3150
					5	Int.	●	0660X5DB	49	1.929	51	2.008	98	3.858	8	.3150
6.7	.2638			M8x1.25	3	Int.	●	0670X3DB	35	1.378	37	1.457	90	3.543	8	.3150
					5	Int.	●	0670X5DB	49	1.929	51	2.008	98	3.858	8	.3150
6.747	.2656	17/64			3	Int.	●	0675X3D080	35	1.378	37	1.457	90	3.543	8	.3150
					5	Int.	●	0675X5D080	49	1.929	51	2.008	98	3.858	8	.3150
6.8	.2677				3	Int.	●	0680X3DB	35	1.378	37	1.457	90	3.543	8	.3150
					5	Int.	●	0680X5DB	49	1.929	51	2.008	98	3.858	8	.3150
6.9	.2717		I	5/16-24	3	Int.	●	0690X3DB	35	1.378	37	1.457	90	3.543	8	.3150
					5	Int.	●	0690X5DB	49	1.929	51	2.008	98	3.858	8	.3150
7.0	.2756			M8x1.0	3	Int.	●	0700X3DB	35	1.378	37	1.457	90	3.543	8	.3150
					5	Int.	●	0700X5DB	49	1.929	51	2.008	98	3.858	8	.3150
7.1	.2795				3	Int.	●	0710X3DB	38	1.496	39	1.535	90	3.543	8	.3150
					5	Int.	●	0710X5DB	53	2.087	56	2.205	103	4.055	8	.3150
7.144	.2812	9/32			3	Int.	●	0714X3D080	38	1.496	39	1.535	90	3.543	8	.3150
					5	Int.	●	0714X5D080	53	2.087	56	2.205	103	4.055	8	.3150
7.2	.2835				3	Int.	●	0720X3DB	38	1.496	39	1.535	90	3.543	8	.3150
					5	Int.	●	0720X5DB	53	2.087	56	2.205	103	4.055	8	.3150
7.3	.2874				3	Int.	●	0730X3DB	38	1.496	39	1.535	90	3.543	8	.3150
					5	Int.	●	0730X5DB	53	2.087	56	2.205	103	4.055	8	.3150
7.4	.2913				3	Int.	●	0740X3DB	38	1.496	39	1.535	90	3.543	8	.3150
					5	Int.	●	0740X5DB	53	2.087	56	2.205	103	4.055	8	.3150
7.5	.2953				3	Int.	●	0750X3DB	38	1.496	39	1.535	90	3.543	8	.3150
					5	Int.	●	0750X5DB	53	2.087	56	2.205	103	4.055	8	.3150
7.541	.2969	19/64			3	Int.	●	0754X3D080	40	1.575	40	1.575	90	3.543	8	.3150
					5	Int.	●	0754X5D080	56	2.205	56	2.205	103	4.055	8	.3150
7.6	.2992				3	Int.	●	0760X3DB	40	1.575	40	1.575	90	3.543	8	.3150
					5	Int.	●	0760X5DB	56	2.205	56	2.205	103	4.055	8	.3150
7.7	.3031				3	Int.	●	0770X3DB	40	1.575	40	1.575	90	3.543	8	.3150
					5	Int.	●	0770X5DB	56	2.205	56	2.205	103	4.055	8	.3150
7.8	.3071				3	Int.	●	0780X3DB	40	1.575	40	1.575	90	3.543	8	.3150
					5	Int.	●	0780X5DB	56	2.205	56	2.205	103	4.055	8	.3150
7.9	.3110				3	Int.	●	0790X3DB	40	1.575	40	1.575	90	3.543	8	.3150
					5	Int.	●	0790X5DB	56	2.205	56	2.205	103	4.055	8	.3150
7.938	.3125	5/16		3/8-16	3	Int.	●	0794X3D080	40	1.575	40	1.575	90	3.543	8	.3150
					5	Int.	●	0794X5D080	56	2.205	56	2.205	103	4.055	8	.3150
8.0	.3150				3	Int.	●	0800X3DB	40	1.575	40	1.575	90	3.543	8	.3150
					5	Int.	●	0800X5DB	56	2.205	56	2.205	103	4.055	8	.3150

Note) Please contact Mitsubishi Carbide for any geometry that is not in the brochure (e.g. different diameter and length).

● : Inventory maintained in Japan.

Drill Diameter D1					Hole Depth l/d	Coolant (Int./Ext.)	Stock DP7020	Order Number	Dimensions							
Metric (mm)	Decimal	Fraction	Wire / Letter	Tread size					L3		L2		L1		D4	
	(inch)								mm	inch	mm	inch	mm	inch	mm	inch
8.1	.3189				3	Int.	●	MMS0810X3DB	43	1.693	45	1.772	96	3.780	10	.3937
					5	Int.	●	0810X5DB	60	2.362	62	2.441	113	4.449	10	.3937
8.2	.3228				3	Int.	●	0820X3DB	43	1.693	45	1.772	96	3.780	10	.3937
					5	Int.	●	0820X5DB	60	2.362	62	2.441	113	4.449	10	.3937
8.3	.3268				3	Int.	●	0830X3DB	43	1.693	45	1.772	96	3.780	10	.3937
					5	Int.	●	0830X5DB	60	2.362	62	2.441	113	4.449	10	.3937
8.334	.3281	21/64			3	Int.	●	0833X3D100	43	1.693	45	1.772	96	3.780	10	.3937
					5	Int.	●	0833X5D100	60	2.362	62	2.441	113	4.449	10	.3937
8.4	.3307				3	Int.	●	0840X3DB	43	1.693	45	1.772	96	3.780	10	.3937
					5	Int.	●	0840X5DB	60	2.362	62	2.441	113	4.449	10	.3937
8.433	.3320		Q	3/8-24	3	Int.	●	0843X3D100	43	1.693	45	1.772	96	3.780	10	.3937
					5	Int.	●	0843X5D100	60	2.362	62	2.441	113	4.449	10	.3937
8.5	.3346			M10x1.5	3	Int.	●	0850X3DB	43	1.693	45	1.772	96	3.780	10	.3937
					5	Int.	●	0850X5DB	60	2.362	62	2.441	113	4.449	10	.3937
8.6	.3386				3	Int.	●	0860X3DB	45	1.772	47	1.850	101	3.976	10	.3937
					5	Int.	●	0860X5DB	63	2.480	65	2.559	116	4.567	10	.3937
8.7	.3425			M10x1.25	3	Int.	●	0870X3DB	45	1.772	47	1.850	101	3.976	10	.3937
					5	Int.	●	0870X5DB	63	2.480	65	2.559	116	4.567	10	.3937
8.731	.3438	11/32			3	Int.	●	0873X3D100	45	1.772	47	1.850	101	3.976	10	.3937
					5	Int.	●	0873X5D100	63	2.480	65	2.559	116	4.567	10	.3937
8.8	.3465				3	Int.	●	0880X3DB	45	1.772	47	1.850	101	3.976	10	.3937
					5	Int.	●	0880X5DB	63	2.480	65	2.559	116	4.567	10	.3937
8.9	.3504				3	Int.	●	0890X3DB	45	1.772	47	1.850	101	3.976	10	.3937
					5	Int.	●	0890X5DB	63	2.480	65	2.559	116	4.567	10	.3937
9.0	.3543				3	Int.	●	0900X3DB	45	1.772	47	1.850	101	3.976	10	.3937
					5	Int.	●	0900X5DB	63	2.480	65	2.559	116	4.567	10	.3937
9.1	.3583				3	Int.	●	0910X3DB	48	1.890	50	1.969	101	3.976	10	.3937
					5	Int.	●	0910X5DB	67	2.638	70	2.756	121	4.764	10	.3937
9.128	.3594	23/64			3	Int.	●	0913X3D100	48	1.890	50	1.969	101	3.976	10	.3937
					5	Int.	●	0913X5D100	67	2.638	70	2.756	121	4.764	10	.3937
9.2	.3622				3	Int.	●	0920X3DB	48	1.890	50	1.969	101	3.976	10	.3937
					5	Int.	●	0920X5DB	67	2.638	70	2.756	121	4.764	10	.3937
9.3	.3661				3	Int.	●	0930X3DB	48	1.890	50	1.969	101	3.976	10	.3937
					5	Int.	●	0930X5DB	67	2.638	70	2.756	121	4.764	10	.3937
9.347	.3680		U	7/16-14	3	Int.	●	0935X3D100	48	1.890	50	1.969	101	3.976	10	.3937
					5	Int.	●	0935X5D100	67	2.638	70	2.756	121	4.764	10	.3937
9.4	.3701				3	Int.	●	0940X3DB	48	1.890	50	1.969	101	3.976	10	.3937
					5	Int.	●	0940X5DB	67	2.638	70	2.756	121	4.764	10	.3937
9.5	.3740				3	Int.	●	0950X3DB	48	1.890	50	1.969	101	3.976	10	.3937
					5	Int.	●	0950X5DB	67	2.638	70	2.756	121	4.764	10	.3937
9.525	.3750	3/8			3	Int.	●	0953X3D100	50	1.969	50	1.969	101	3.976	10	.3937
					5	Int.	●	0953X5D100	70	2.756	70	2.756	121	4.764	10	.3937
9.6	.3780				3	Int.	●	0960X3DB	50	1.969	50	1.969	101	3.976	10	.3937
					5	Int.	●	0960X5DB	70	2.756	70	2.756	121	4.764	10	.3937
9.7	.3819		Tube sheet		3	Int.	●	0970X3DB	50	1.969	50	1.969	101	3.976	10	.3937
					5	Int.	●	0970X5DB	70	2.756	70	2.756	121	4.764	10	.3937
9.8	.3858				3	Int.	●	0980X3DB	50	1.969	50	1.969	101	3.976	10	.3937
					5	Int.	●	0980X5DB	70	2.756	70	2.756	121	4.764	10	.3937

# Solid Carbide Drill for Stainless Steel

# MMS

Drill Diameter D1					Hole Depth I/d	Coolant (Int./Ext.)	Stock DP7020	Order Number	Dimensions							
Metric (mm)	Decimal	Fraction	Wire / Letter	Tread size					L3		L2		L1		D4	
	(inch)								mm	inch	mm	inch	mm	inch	mm	inch
9.9	.3898				3	Int.	●	MMS0990X3DB	50	1.969	50	1.969	101	3.976	10	.3937
					5	Int.	●	0990X5DB	70	2.756	70	2.756	121	4.764	10	.3937
9.922	.3906	25/64		7/16-20	3	Int.	●	0992X3D100	50	1.969	50	1.969	101	3.976	10	.3937
					5	Int.	●	0992X5D100	70	2.756	70	2.756	121	4.764	10	.3937
10.0	.3937				3	Int.	●	1000X3DB	50	1.969	50	1.969	101	3.976	10	.3937
					5	Int.	●	1000X5DB	70	2.756	70	2.756	121	4.764	10	.3937
10.1	.3976				3	Int.	●	1010X3DB	53	2.087	55	2.165	111	4.370	12	.4724
					5	Int.	●	1010X5DB	74	2.913	78	3.071	134	5.276	12	.4724
10.2	.4016			M12x1.75	3	Int.	●	1020X3DB	53	2.087	55	2.165	111	4.370	12	.4724
					5	Int.	●	1020X5DB	74	2.913	78	3.071	134	5.276	12	.4724
10.3	.4055				3	Int.	●	1030X3DB	53	2.087	55	2.165	111	4.370	12	.4724
					5	Int.	●	1030X5DB	74	2.913	78	3.071	134	5.276	12	.4724
10.319	.4062	13/32			3	Int.	●	1032X3D120	53	2.087	55	2.165	111	4.370	12	.4724
					5	Int.	●	1032X5D120	74	2.913	78	3.071	134	5.276	12	.4724
10.4	.4094				3	Int.	●	1040X3DB	53	2.087	55	2.165	111	4.370	12	.4724
					5	Int.	●	1040X5DB	74	2.913	78	3.071	134	5.276	12	.4724
10.5	.4134				3	Int.	●	1050X3DB	53	2.087	55	2.165	111	4.370	12	.4724
					5	Int.	●	1050X5DB	74	2.913	78	3.071	134	5.276	12	.4724
10.6	.4173				3	Int.	●	1060X3DB	55	2.165	56	2.205	116	4.567	12	.4724
					5	Int.	●	1060X5DB	77	3.031	78	3.071	134	5.276	12	.4724
10.7	.4213				3	Int.	●	1070X3DB	55	2.165	56	2.205	116	4.567	12	.4724
					5	Int.	●	1070X5DB	77	3.031	78	3.071	134	5.276	12	.4724
10.716	.4219	27/64		1/2-13	3	Int.	●	1072X3D120	55	2.165	56	2.205	116	4.567	12	.4724
					5	Int.	●	1072X5D120	77	3.031	78	3.071	134	5.276	12	.4724
10.8	.4252			M12X1.25	3	Int.	●	1080X3DB	55	2.165	56	2.205	116	4.567	12	.4724
					5	Int.	●	1080X5DB	77	3.031	78	3.071	134	5.276	12	.4724
10.9	.4291				3	Int.	●	1090X3DB	55	2.165	56	2.205	116	4.567	12	.4724
					5	Int.	●	1090X5DB	77	3.031	78	3.071	134	5.276	12	.4724
11.0	.4331				3	Int.	●	1100X3DB	55	2.165	56	2.205	116	4.567	12	.4724
					5	Int.	●	1100X5DB	77	3.031	78	3.071	134	5.276	12	.4724
11.1	.4370				3	Int.	●	1110X3DB	58	2.283	60	2.362	116	4.567	12	.4724
					5	Int.	●	1110X5DB	81	3.189	84	3.307	140	5.512	12	.4724
11.113	.4375	7/16			3	Int.	●	1111X3D120	58	2.283	60	2.362	116	4.567	12	.4724
					5	Int.	●	1111X5D120	81	3.189	84	3.307	140	5.512	12	.4724
11.2	.4409				3	Int.	●	1120X3DB	58	2.283	60	2.362	116	4.567	12	.4724
					5	Int.	●	1120X5DB	81	3.189	84	3.307	140	5.512	12	.4724
11.3	.4449				3	Int.	●	1130X3DB	58	2.283	60	2.362	116	4.567	12	.4724
					5	Int.	●	1130X5DB	81	3.189	84	3.307	140	5.512	12	.4724
11.4	.4488				3	Int.	●	1140X3DB	58	2.283	60	2.362	116	4.567	12	.4724
					5	Int.	●	1140X5DB	81	3.189	84	3.307	140	5.512	12	.4724
11.5	.4528				3	Int.	●	1150X3DB	58	2.283	60	2.362	116	4.567	12	.4724
					5	Int.	●	1150X5DB	81	3.189	84	3.307	140	5.512	12	.4724
11.509	.4531	29/64		1/2-20	3	Int.	●	1151X3D120	60	2.362	60	2.362	116	4.567	12	.4724
					5	Int.	●	1151X5D120	84	3.307	84	3.307	140	5.512	12	.4724
11.6	.4567				3	Int.	●	1160X3DB	60	2.362	60	2.362	116	4.567	12	.4724
					5	Int.	●	1160X5DB	84	3.307	84	3.307	140	5.512	12	.4724
11.7	.4606				3	Int.	●	1170X3DB	60	2.362	60	2.362	116	4.567	12	.4724
					5	Int.	●	1170X5DB	84	3.307	84	3.307	140	5.512	12	.4724

Note) Please contact Mitsubishi Carbide for any geometry that is not in the brochure (e.g. different diameter and length).

● : Inventory maintained.



Drill Diameter D1					Hole Depth l/d	Coolant (Int./Ext.)	Stock DP7020	Order Number	Dimensions							
Metric (mm)	Decimal	Fraction	Wire / Letter	Tread size					L3		L2		L1		D4	
	(inch)								mm	inch	mm	inch	mm	inch	mm	inch
11.8	.4646				3	Int.	●	MMS1180X3DB	60	2.362	60	2.362	116	4.567	12	.4724
					5	Int.	●	1180X5DB	84	3.307	84	3.307	140	5.512	12	.4724
11.9	.4685	15/32			3	Int.	●	1190X3DB	60	2.362	60	2.362	116	4.567	12	.4724
					5	Int.	●	1190X5DB	84	3.307	84	3.307	140	5.512	12	.4724
12.0	.4724			M14x2.0	3	Int.	●	1200X3DB	60	2.362	60	2.362	116	4.567	12	.4724
					5	Int.	●	1200X5DB	84	3.307	84	3.307	140	5.512	12	.4724
12.1	.4764				3	Int.	●	1210X3DB	63	2.480	66	2.598	122	4.803	14	.5512
					5	Int.	●	1210X5DB	88	3.465	92	3.622	148	5.827	14	.5512
12.2	.4803				3	Int.	●	1220X3DB	63	2.480	66	2.598	122	4.803	14	.5512
					5	Int.	●	1220X5DB	88	3.465	92	3.622	148	5.827	14	.5512
12.3	.4843	31/64		9/16-12	3	Int.	●	1230X3DB	63	2.480	66	2.598	122	4.803	14	.5512
					5	Int.	●	1230X5DB	88	3.465	92	3.622	148	5.827	14	.5512
12.4	.4882				3	Int.	●	1240X3DB	63	2.480	66	2.598	122	4.803	14	.5512
					5	Int.	●	1240X5DB	88	3.465	92	3.622	148	5.827	14	.5512
12.5	.4921			M14x1.5	3	Int.	●	1250X3DB	63	2.480	66	2.598	122	4.803	14	.5512
					5	Int.	●	1250X5DB	88	3.465	92	3.622	148	5.827	14	.5512
12.6	.4961				3	Int.	●	1260X3DB	65	2.559	66	2.598	122	4.803	14	.5512
					5	Int.	●	1260X5DB	91	3.583	92	3.622	148	5.827	14	.5512
12.7	.5000	1/2			3	Int.	●	1270X3DB	65	2.559	66	2.598	122	4.803	14	.5512
					5	Int.	●	1270X5DB	91	3.583	92	3.622	148	5.827	14	.5512
12.8	.5039				3	Int.	●	1280X3DB	65	2.559	66	2.598	122	4.803	14	.5512
					5	Int.	●	1280X5DB	91	3.583	92	3.622	148	5.827	14	.5512
12.9	.5079				3	Int.	●	1290X3DB	65	2.559	66	2.598	122	4.803	14	.5512
					5	Int.	●	1290X5DB	91	3.583	92	3.622	148	5.827	14	.5512
13.0	.5118				3	Int.	●	1300X3DB	65	2.559	66	2.598	122	4.803	14	.5512
					5	Int.	●	1300X5DB	91	3.583	92	3.622	148	5.827	14	.5512
13.1	.5157	33/64		9/16-18	3	Int.	●	1310X3DB	68	2.677	70	2.756	126	4.961	14	.5512
					5	Int.	●	1310X5DB	95	3.740	98	3.858	154	6.063	14	.5512
13.2	.5197				3	Int.	●	1320X3DB	68	2.677	70	2.756	126	4.961	14	.5512
					5	Int.	●	1320X5DB	95	3.740	98	3.858	154	6.063	14	.5512
13.3	.5236				3	Int.	●	1330X3DB	68	2.677	70	2.756	126	4.961	14	.5512
					5	Int.	●	1330X5DB	95	3.740	98	3.858	154	6.063	14	.5512
13.4	.5276				3	Int.	●	1340X3DB	68	2.677	70	2.756	126	4.961	14	.5512
					5	Int.	●	1340X5DB	95	3.740	98	3.858	154	6.063	14	.5512
13.5	.5315	17/32		5/8-11	3	Int.	●	1350X3DB	68	2.677	70	2.756	126	4.961	14	.5512
					5	Int.	●	1350X5DB	95	3.740	98	3.858	154	6.063	14	.5512
13.6	.5354				3	Int.	●	1360X3DB	70	2.756	70	2.756	126	4.961	14	.5512
					5	Int.	●	1360X5DB	98	3.858	98	3.858	154	6.063	14	.5512
13.7	.5394				3	Int.	●	1370X3DB	70	2.756	70	2.756	126	4.961	14	.5512
					5	Int.	●	1370X5DB	98	3.858	98	3.858	154	6.063	14	.5512
13.8	.5433				3	Int.	●	1380X3DB	70	2.756	70	2.756	126	4.961	14	.5512
					5	Int.	●	1380X5DB	98	3.858	98	3.858	154	6.063	14	.5512
13.891	.5469	35/64			3	Int.	●	1389X3D140	70	2.756	70	2.756	126	4.961	14	.5512
					5	Int.	●	1389X5D140	98	3.858	98	3.858	154	6.063	14	.5512
13.9	.5472				3	Int.	●	1390X3DB	70	2.756	70	2.756	126	4.961	14	.5512
					5	Int.	●	1390X5DB	98	3.858	98	3.858	154	6.063	14	.5512
14.0	.5512			M16x2.0	3	Int.	●	1400X3DB	70	2.756	70	2.756	126	4.961	14	.5512
					5	Int.	●	1400X5DB	98	3.858	98	3.858	154	6.063	14	.5512



# Solid Carbide Drill for Stainless Steel

# MMS

Drill Diameter D1					Hole Depth l/d	Coolant (Int./Ext.)	Stock DP7020	Order Number	Dimensions							
Metric (mm)	Decimal	Fraction	Wire / Letter	Tread size					L3		L2		L1		D4	
	(inch)								mm	inch	mm	inch	mm	inch	mm	inch
14.1	.5551				3	Int.	●	MMS1410X3DB	73	2.874	76	2.992	135	5.315	16	.6299
					5	Int.	●	1410X5DB	102	4.016	106	4.173	165	6.496	16	.6299
14.2	.5591				3	Int.	●	1420X3DB	73	2.874	76	2.992	135	5.315	16	.6299
					5	Int.	●	1420X5DB	102	4.016	106	4.173	165	6.496	16	.6299
14.288	.5625	9/16			3	Int.	●	1429X3D160	73	2.874	76	2.992	135	5.315	16	.6299
					5	Int.	●	1429X5D160	102	4.016	106	4.173	165	6.496	16	.6299
14.3	.5630				3	Int.	●	1430X3DB	73	2.874	76	2.992	135	5.315	16	.6299
					5	Int.	●	1430X5DB	102	4.016	106	4.173	165	6.496	16	.6299
14.4	.5670				3	Int.	●	1440X3DB	73	2.874	76	2.992	135	5.315	16	.6299
					5	Int.	●	1440X5DB	102	4.016	106	4.173	165	6.496	16	.6299
14.5	.5709			M16x1.5	3	Int.	●	1450X3DB	73	2.874	76	2.992	135	5.315	16	.6299
					5	Int.	●	1450X5DB	102	4.016	106	4.173	165	6.496	16	.6299
14.6	.5748				3	Int.	●	1460X3DB	75	2.953	76	2.992	135	5.315	16	.6299
					5	Int.	●	1460X5DB	105	4.134	106	4.173	165	6.496	16	.6299
14.684	.5781	37/64		5/8-18	3	Int.	●	1468X3D160	75	2.953	76	2.992	135	5.315	16	.6299
					5	Int.	●	1468X5D160	105	4.134	106	4.173	165	6.496	16	.6299
14.7	.5787				3	Int.	●	1470X3DB	75	2.953	76	2.992	135	5.315	16	.6299
					5	Int.	●	1470X5DB	105	4.134	106	4.173	165	6.496	16	.6299
14.8	.5827				3	Int.	●	1480X3DB	75	2.953	76	2.992	135	5.315	16	.6299
					5	Int.	●	1480X5DB	105	4.134	106	4.173	165	6.496	16	.6299
14.9	.5866				3	Int.	●	1490X3DB	75	2.953	76	2.992	135	5.315	16	.6299
					5	Int.	●	1490X5DB	105	4.134	106	4.173	165	6.496	16	.6299
15.0	.5906				3	Int.	●	1500X3DB	75	2.953	76	2.992	135	5.315	16	.6299
					5	Int.	●	1500X5DB	105	4.134	106	4.173	165	6.496	16	.6299
15.081	.5938	19/32			3	Int.	●	1508X3D160	78	3.071	80	3.150	139	5.472	16	.6299
					5	Int.	●	1508X5D160	109	4.291	112	4.409	171	6.732	16	.6299
15.1	.5945				3	Int.	●	1510X3DB	78	3.071	80	3.150	139	5.472	16	.6299
					5	Int.	●	1510X5DB	109	4.291	112	4.409	171	6.732	16	.6299
15.2	.5984				3	Int.	●	1520X3DB	78	3.071	80	3.150	139	5.472	16	.6299
					5	Int.	●	1520X5DB	109	4.291	112	4.409	171	6.732	16	.6299
15.3	.6024				3	Int.	●	1530X3DB	78	3.071	80	3.150	139	5.472	16	.6299
					5	Int.	●	1530X5DB	109	4.291	112	4.409	171	6.732	16	.6299
15.4	.6063				3	Int.	●	1540X3DB	78	3.071	80	3.150	139	5.472	16	.6299
					5	Int.	●	1540X5DB	109	4.291	112	4.409	171	6.732	16	.6299
15.478	.6094	39/64			3	Int.	●	1548X3D160	78	3.071	80	3.150	139	5.472	16	.6299
					5	Int.	●	1548X5D160	109	4.291	112	4.409	171	6.732	16	.6299
15.5	.6102			M18x2.5	3	Int.	●	1550X3DB	78	3.071	80	3.150	139	5.472	16	.6299
					5	Int.	●	1550X5DB	109	4.291	112	4.409	171	6.732	16	.6299
15.6	.6142				3	Int.	●	1560X3DB	80	3.150	80	3.150	139	5.472	16	.6299
					5	Int.	●	1560X5DB	112	4.409	112	4.409	171	6.732	16	.6299
15.7	.6181				3	Int.	●	1570X3DB	80	3.150	80	3.150	139	5.472	16	.6299
					5	Int.	●	1570X5DB	112	4.409	112	4.409	171	6.732	16	.6299
15.8	.6220				3	Int.	●	1580X3DB	80	3.150	80	3.150	139	5.472	16	.6299
					5	Int.	●	1580X5DB	112	4.409	112	4.409	171	6.732	16	.6299
15.875	.6250	5/8			3	Int.	●	1588X3D160	80	3.150	80	3.150	139	5.472	16	.6299
					5	Int.	●	1588X5D160	112	4.409	112	4.409	171	6.732	16	.6299
15.9	.6260				3	Int.	●	1590X3DB	80	3.150	80	3.150	139	5.472	16	.6299
					5	Int.	●	1590X5DB	112	4.409	112	4.409	171	6.732	16	.6299

Note) Please contact Mitsubishi Carbide for any geometry that is not in the brochure (e.g. different diameter and length).

● : Inventory maintained. □ : Non stock, produced to order only.

Drill Diameter D1					Hole Depth l/d	Coolant (Int./Ext.)	Stock DP7020	Order Number	Dimensions							
Metric (mm)	Decimal	Fraction	Wire / Letter	Tread size					L3		L2		L1		D4	
	(inch)								mm	inch	mm	inch	mm	inch	mm	inch
16.0	.6299				3	Int.	●	MMS1600X3DB	80	3.150	80	3.150	139	5.472	16	.6299
					5	Int.	●	1600X5DB	112	4.409	112	4.409	171	6.732	16	.6299
16.1	.6339				3	Int.	□	1610X3DB	83	3.268	86	3.386	145	5.709	18	.7087
					5	Int.	□	1610X5DB	116	4.567	120	4.724	179	7.047	18	.7087
16.2	.6378				3	Int.	□	1620X3DB	83	3.268	86	3.386	145	5.709	18	.7087
					5	Int.	□	1620X5DB	116	4.567	120	4.724	179	7.047	18	.7087
16.272	.6406	41/64			3	Int.	●	1627X3D180	83	3.268	86	3.386	145	5.709	18	.7087
					5	Int.	●	1627X5D180	116	4.567	120	4.724	179	7.047	18	.7087
16.3	.6417				3	Int.	□	1630X3DB	83	3.268	86	3.386	145	5.709	18	.7087
					5	Int.	□	1630X5DB	116	4.567	120	4.724	179	7.047	18	.7087
16.4	.6457				3	Int.	□	1640X3DB	83	3.268	86	3.386	145	5.709	18	.7087
					5	Int.	□	1640X5DB	116	4.567	120	4.724	179	7.047	18	.7087
16.5	.6496			M18x1.5	3	Int.	●	1650X3DB	83	3.268	86	3.386	145	5.709	18	.7087
					5	Int.	●	1650X5DB	116	4.567	120	4.724	179	7.047	18	.7087
16.6	.6535				3	Int.	□	1660X3DB	85	3.346	86	3.386	145	5.709	18	.7087
					5	Int.	□	1660X5DB	119	4.685	120	4.724	179	7.047	18	.7087
16.669	.6562	21/32		3/4-10	3	Int.	●	1667X3D180	85	3.346	86	3.386	145	5.709	18	.7087
					5	Int.	●	1667X5D180	119	4.685	120	4.724	179	7.047	18	.7087
16.7	.6575				3	Int.	□	1670X3DB	85	3.346	86	3.386	145	5.709	18	.7087
					5	Int.	□	1670X5DB	119	4.685	120	4.724	179	7.047	18	.7087
16.8	.6614				3	Int.	□	1680X3DB	85	3.346	86	3.386	145	5.709	18	.7087
					5	Int.	□	1680X5DB	119	4.685	120	4.724	179	7.047	18	.7087
16.9	.6654				3	Int.	□	1690X3DB	85	3.346	86	3.386	145	5.709	18	.7087
					5	Int.	□	1690X5DB	119	4.685	120	4.724	179	7.047	18	.7087
17.0	.6693		Tube sheet		3	Int.	●	1700X3DB	85	3.346	86	3.386	145	5.709	18	.7087
					5	Int.	●	1700X5DB	119	4.685	120	4.724	179	7.047	18	.7087
17.066	.6719	43/64			3	Int.	●	1707X3D180	88	3.465	90	3.543	149	5.866	18	.7087
					5	Int.	●	1707X5D180	123	4.843	126	4.961	185	7.283	18	.7087
17.1	.6732				3	Int.	□	1710X3DB	88	3.465	90	3.543	149	5.866	18	.7087
					5	Int.	□	1710X5DB	123	4.843	126	4.961	185	7.283	18	.7087
17.2	.6772				3	Int.	□	1720X3DB	88	3.465	90	3.543	149	5.866	18	.7087
					5	Int.	□	1720X5DB	123	4.843	126	4.961	185	7.283	18	.7087
17.3	.6811				3	Int.	□	1730X3DB	88	3.465	90	3.543	149	5.866	18	.7087
					5	Int.	□	1730X5DB	123	4.843	126	4.961	185	7.283	18	.7087
17.4	.6850				3	Int.	□	1740X3DB	88	3.465	90	3.543	149	5.866	18	.7087
					5	Int.	□	1740X5DB	123	4.843	126	4.961	185	7.283	18	.7087
17.463	.6875	11/16		3/4-16	3	Int.	●	1746X3D180	88	3.465	90	3.543	149	5.866	18	.7087
					5	Int.	●	1746X5D180	123	4.843	126	4.961	185	7.283	18	.7087
17.5	.6890			M20x2.5	3	Int.	●	1750X3DB	88	3.465	90	3.543	149	5.866	18	.7087
					5	Int.	●	1750X5DB	123	4.843	126	4.961	185	7.283	18	.7087
17.6	.6929				3	Int.	□	1760X3DB	90	3.543	90	3.543	149	5.866	18	.7087
					5	Int.	□	1760X5DB	126	4.961	126	4.961	185	7.283	18	.7087
17.7	.6969				3	Int.	□	1770X3DB	90	3.543	90	3.543	149	5.866	18	.7087
					5	Int.	□	1770X5DB	126	4.961	126	4.961	185	7.283	18	.7087
17.8	.7008				3	Int.	□	1780X3DB	90	3.543	90	3.543	149	5.866	18	.7087
					5	Int.	□	1780X5DB	126	4.961	126	4.961	185	7.283	18	.7087
17.859	.7031	45/64			3	Int.	●	1786X3D180	90	3.543	90	3.543	149	5.866	18	.7087
					5	Int.	●	1786X5D180	126	4.961	126	4.961	185	7.283	18	.7087

# Solid Carbide Drill for Stainless Steel

# MMS

Drill Diameter D1					Hole Depth l/d	Coolant (Int./Ext.)	Stock DP7020	Order Number	Dimensions							
Metric (mm)	Decimal	Fraction	Wire / Letter	Tread size					L3		L2		L1		D4	
	(inch)								mm	inch	mm	inch	mm	inch	mm	inch
17.9	.7047				3	Int.	□	<b>MMS1790X3DB</b>	90	3.543	90	3.543	149	5.866	18	.7087
					5	Int.	□	<b>1790X5DB</b>	126	4.961	126	4.961	185	7.283	18	.7087
18.0	.7087				3	Int.	●	<b>1800X3DB</b>	90	3.543	90	3.543	149	5.866	18	.7087
					5	Int.	●	<b>1800X5DB</b>	126	4.961	126	4.961	185	7.283	18	.7087
18.1	.7126				3	Int.	□	<b>1810X3DB</b>	93	3.661	96	3.780	157	6.181	20	.7874
					5	Int.	□	<b>1810X5DB</b>	130	5.118	134	5.276	195	7.677	20	.7874
18.2	.7165				3	Int.	□	<b>1820X3DB</b>	93	3.661	96	3.780	157	6.181	20	.7874
					5	Int.	□	<b>1820X5DB</b>	130	5.118	134	5.276	195	7.677	20	.7874
18.256	.7188	23/32			3	Int.	●	<b>1826X3D200</b>	93	3.661	96	3.780	157	6.181	20	.7874
					5	Int.	●	<b>1826X5D200</b>	130	5.118	134	5.276	195	7.677	20	.7874
18.3	.7205				3	Int.	□	<b>1830X3DB</b>	93	3.661	96	3.780	157	6.181	20	.7874
					5	Int.	□	<b>1830X5DB</b>	130	5.118	134	5.276	195	7.677	20	.7874
18.4	.7244				3	Int.	□	<b>1840X3DB</b>	93	3.661	96	3.780	157	6.181	20	.7874
					5	Int.	□	<b>1840X5DB</b>	130	5.118	134	5.276	195	7.677	20	.7874
18.5	.7283			M20x1.5	3	Int.	●	<b>1850X3DB</b>	93	3.661	96	3.780	157	6.181	20	.7874
					5	Int.	●	<b>1850X5DB</b>	130	5.118	134	5.276	195	7.677	20	.7874
18.6	.7323				3	Int.	□	<b>1860X3DB</b>	95	3.740	96	3.780	157	6.181	20	.7874
					5	Int.	□	<b>1860X5DB</b>	133	5.236	134	5.276	195	7.677	20	.7874
18.654	.7344	47/64			3	Int.	●	<b>1865X3D200</b>	95	3.740	96	3.780	157	6.181	20	.7874
					5	Int.	●	<b>1865X5D200</b>	133	5.236	134	5.276	195	7.677	20	.7874
18.7	.7362				3	Int.	□	<b>1870X3DB</b>	95	3.740	96	3.780	157	6.181	20	.7874
					5	Int.	□	<b>1870X5DB</b>	133	5.236	134	5.276	195	7.677	20	.7874
18.8	.7402				3	Int.	□	<b>1880X3DB</b>	95	3.740	96	3.780	157	6.181	20	.7874
					5	Int.	□	<b>1880X5DB</b>	133	5.236	134	5.276	195	7.677	20	.7874
18.9	.7441				3	Int.	□	<b>1890X3DB</b>	95	3.740	96	3.780	157	6.181	20	.7874
					5	Int.	□	<b>1890X5DB</b>	133	5.236	134	5.276	195	7.677	20	.7874
19.0	.7480				3	Int.	●	<b>1900X3DB</b>	95	3.740	96	3.780	157	6.181	20	.7874
					5	Int.	●	<b>1900X5DB</b>	133	5.236	134	5.276	195	7.677	20	.7874
19.050	.7500	3/4			3	Int.	●	<b>1905X3D200</b>	98	3.858	100	3.937	161	6.339	20	.7874
					5	Int.	●	<b>1905X5D200</b>	137	5.394	140	5.512	201	7.913	20	.7874
19.1	.7520				3	Int.	□	<b>1910X3DB</b>	98	3.858	100	3.937	161	6.339	20	.7874
					5	Int.	□	<b>1910X5DB</b>	137	5.394	140	5.512	201	7.913	20	.7874
19.2	.7559				3	Int.	□	<b>1920X3DB</b>	98	3.858	100	3.937	161	6.339	20	.7874
					5	Int.	□	<b>1920X5DB</b>	137	5.394	140	5.512	201	7.913	20	.7874
19.250	.7579		Tube sheet		3	Int.	●	<b>1925X3D200</b>	98	3.858	100	3.937	161	6.339	20	.7874
					5	Int.	●	<b>1925X5D200</b>	137	5.394	140	5.512	201	7.913	20	.7874
19.3	.7598				3	Int.	□	<b>1930X3DB</b>	98	3.858	100	3.937	161	6.339	20	.7874
					5	Int.	□	<b>1930X5DB</b>	137	5.394	140	5.512	201	7.913	20	.7874
19.4	.7638				3	Int.	□	<b>1940X3DB</b>	98	3.858	100	3.937	161	6.339	20	.7874
					5	Int.	□	<b>1940X5DB</b>	137	5.394	140	5.512	201	7.913	20	.7874
19.447	.7656	49/64		7/8-9	3	Int.	●	<b>1945X3D200</b>	98	3.858	100	3.937	161	6.339	20	.7874
					5	Int.	●	<b>1945X5D200</b>	137	5.394	140	5.512	201	7.913	20	.7874
19.5	.7677			M22x2.5	3	Int.	●	<b>1950X3DB</b>	98	3.858	100	3.937	161	6.339	20	.7874
					5	Int.	●	<b>1950X5DB</b>	137	5.394	140	5.512	201	7.913	20	.7874
19.6	.7717				3	Int.	□	<b>1960X3DB</b>	100	3.937	100	3.937	161	6.339	20	.7874
					5	Int.	□	<b>1960X5DB</b>	140	5.512	140	5.512	201	7.913	20	.7874
19.7	.7756				3	Int.	□	<b>1970X3DB</b>	100	3.937	100	3.937	161	6.339	20	.7874
					5	Int.	□	<b>1970X5DB</b>	140	5.512	140	5.512	201	7.913	20	.7874

Note) Please contact Mitsubishi Carbide for any geometry that is not in the brochure (e.g. different diameter and length).

● : Inventory maintained. □ : Non stock, produced to order only.



Drill Diameter D1					Hole Depth l/d	Coolant (Int./Ext.)	Stock DP7020	Order Number	Dimensions							
Metric (mm)	Decimal	Fraction	Wire / Letter	Tread size					L3		L2		L1		D4	
	(inch)								mm	inch	mm	inch	mm	inch	mm	inch
19.8	.7795				3	Int.	<input type="checkbox"/>	<b>MMS1980X3DB</b>	100	3.937	100	3.937	161	6.339	20	.7874
					5	Int.	<input type="checkbox"/>	<b>1980X5DB</b>	140	5.512	140	5.512	201	7.913	20	.7874
19.844	.7812	25/32			3	Int.	<input checked="" type="checkbox"/>	<b>1984X3D200</b>	100	3.937	100	3.937	161	6.339	20	.7874
					5	Int.	<input checked="" type="checkbox"/>	<b>1984X5D200</b>	140	5.512	140	5.512	201	7.913	20	.7874
19.9	.7835				3	Int.	<input type="checkbox"/>	<b>1990X3DB</b>	100	3.937	100	3.937	161	6.339	20	.7874
					5	Int.	<input type="checkbox"/>	<b>1990X5DB</b>	140	5.512	140	5.512	201	7.913	20	.7874
20.0	.7874				3	Int.	<input checked="" type="checkbox"/>	<b>2000X3DB</b>	100	3.937	100	3.937	161	6.339	20	.7874
					5	Int.	<input checked="" type="checkbox"/>	<b>2000X5DB</b>	140	5.512	140	5.512	201	7.913	20	.7874

## RECOMMENDED CUTTING CONDITIONS

Work Material	No	Hardness	Cutting speed (SFM)	Feed (IPR)			
				Drill Diameter D1			
				φ.1181"-φ.1535" (φ3.0-φ3.9mm)	φ.1575"-φ.2323" (φ4.0-φ5.9mm)	φ.2362"-φ.3110" (φ6.0-φ7.9mm)	φ.3150"-φ.3898" (φ8.0-φ9.9mm)
Ferritic, Martensitic Stainless Steel	1	≤200HB	197-262-328	.003-.005-.007	.004-.006-.008	.005-.007-.009	.006-.007-.009
	2	>200HB	131-197-262	.003-.004-.007	.004-.005-.008	.005-.006-.009	.006-.007-.009
PH Stainless Steel	3	<450HB	131-164-262	.003-.004-.007	.004-.005-.008	.005-.006-.009	.006-.007-.009
Austenitic Stainless Steel	4	≤200HB	197-262-328	.003-.005-.007	.004-.006-.008	.005-.007-.009	.006-.007-.009
	5	>200HB	131-197-262	.003-.004-.007	.004-.005-.008	.005-.006-.009	.006-.007-.009
Duplex Steel	6	≤280HB	131-164-262	.003-.004-.007	.004-.005-.008	.005-.006-.009	.006-.007-.009

Work Material	No	Hardness	Cutting speed (SFM)	Feed (IPR)			
				Drill Diameter D1			
				φ.3937"-φ.4685" (φ10.0-φ11.9mm)	φ.4724"-φ.6260" (φ12.0-φ15.9mm)	φ.6299"-φ.7835" (φ16.0-φ19.9mm)	φ.7874" (φ20.0mm)
Ferritic, Martensitic Stainless Steel	1	≤200HB	164-197-230	.006-.008-.009	.006-.008-.010	.007-.009-.010	.007-.009-.011
	2	>200HB	131-164-197	.006-.007-.009	.006-.007-.010	.007-.008-.010	.007-.008-.011
PH Stainless Steel	3	<450HB	98-131-164	.006-.007-.009	.006-.007-.010	.007-.008-.010	.007-.008-.011
Austenitic Stainless Steel	4	≤200HB	164-197-230	.006-.008-.009	.006-.008-.010	.007-.009-.010	.007-.009-.011
	5	>200HB	131-164-197	.006-.007-.009	.006-.007-.010	.007-.008-.010	.007-.008-.011
Duplex Steel	6	≤280HB	98-131-164	.006-.007-.009	.006-.007-.010	.007-.008-.010	.007-.008-.011

(Note 1) Spindle through & high pressure coolant system is recommended to make stable holes.

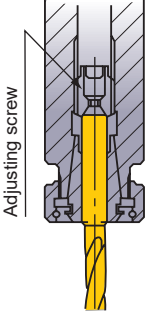
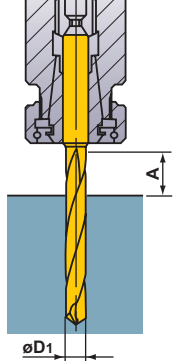
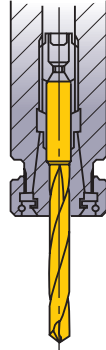
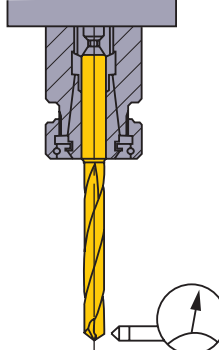
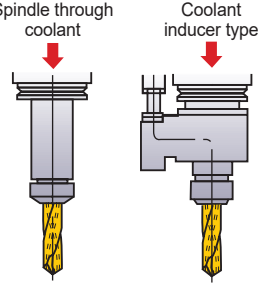
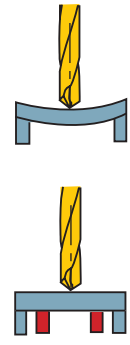
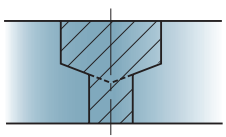
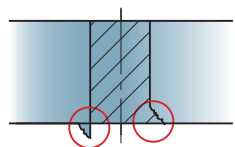
(Note 2) Emulsion type of water coolant is recommended.

(Note 3) In non water cutting fluid, reduce the cutting speed by 10%-20%.

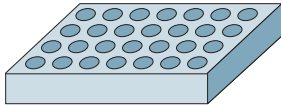
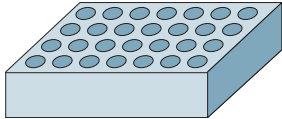
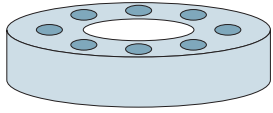
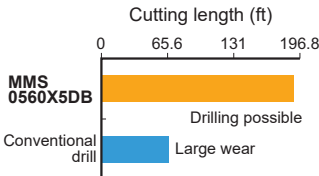
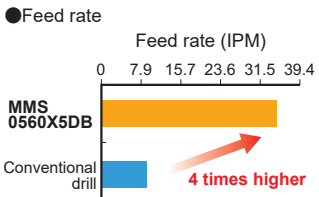
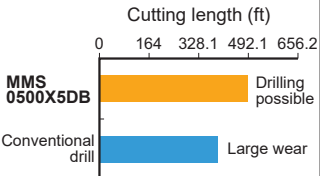
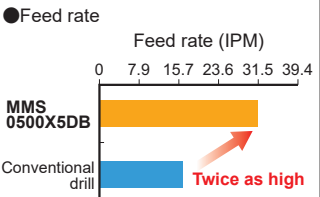
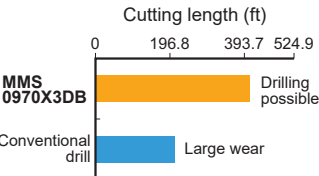
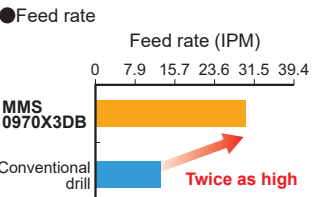
## Stainless Steel Cross Reference List

Work Material	No	USA	Japan	Germany	
		AISI/SAE	JIS	W-no.	DIN
Ferritic, Martensitic Stainless Steel	1	416	SUS416	1.4005	X12CrS3
		410	SUS410	1.4006	X10Cr13
		430	SUS430	1.4016	X6Cr17
		434	SUS434	1.4113	X6CrMo17
		430Ti	SUS430LX	1.4510	X6CrTi17
	2	409	—	1.4512	X6CrTi12
		420	SUS420J1	1.4021	X20Cr13
		431	SUS431	1.4057	X20CrNi17-2
		420	SUS420J2	1.4028	X30Cr13
		440C	SUS440C	1.4125	X10CrMo17
PH Stainless Steel	3	630 (17-4PH)	SUS630	1.4542	X5CrNiCuNb16 4
		S15500 (15-5PH)	—	1.4545	—
		631 (17-7PH)	SUS631	1.4568	X7CrNiAl17 7
Austenitic Stainless Steel	4	304	SUS304	1.4301	X5CrNi18 10
		305	SUS305	1.4303	X5CrNi8-12
		303	SUS303	1.4305	X12CrNiS18-9
		304L	SUS304L	1.4307	X2CrNi19-11
		316	SUS316	1.4401	X5CrNiMo17 12 2
	5	304LN	SUS304LN	1.4311	X2CrNiN18 10
		316L	SUS316L	1.4404	X2CrNiMo17 12 2
		316LN	SUS316LN	1.4406	X2CrNiMoN17 12 2
		—	SUS316L	1.4435	X2CrNiMo18 14 3
		317L	SUS317L	1.4438	X2CrNiMo18 15 4
		N08926	—	1.4529	X1NiCrMoCuN25 20 7
		321	SUS321	1.4541	X6CrNiTi18-10
		347	SUS347	1.4550	X6CrNiNb18-10
		316Ti	SUS316Ti	1.4571	X6CrNiMoTi17 12 2
Duplex Steel	6	—	—	1.4362	X2CrNiN23 4
		S32750	SCS14A	1.4410	X2CrNiMoN25 7 4
		329	SUS329J1	1.4460	X3CrNiMoN27 5 2
		S31803	SUS329J3L	1.4462	X2CrNiMoN22 5 3

## Operational Guidance for the MMS Drill

<p><b>Drill holding</b></p>  <p>Adjusting screw</p> <p>Thrust bearing type collet chuck holds the drill securely.</p>	<p><b>Drill holding</b></p>  <p><math>A : \geq D1 \times 1.5</math></p>	<p><b>Drill Installation</b></p>  <p>Do not clamp on the flutes.</p>	<p><b>Installation tolerance</b></p>  <p>Runout <math>\leq .001''</math></p>
<p><b>Through Coolant Type</b></p>  <p>Spindle through coolant</p> <p>Coolant inducer type</p> <p>Coolant pressure is approx. 70 - 1015 PSI (0.5 - 7MPa).</p>	<p><b>Coolant handling</b></p> <p>&lt; MMS type &gt;</p> <ol style="list-style-type: none"> <li>1) Dirt and dust particles in old coolant can clog the oil hole and prevent effective flow. Regular coolant exchange is recommended.</li> <li>2) Small particles of swarf will jam in the oil hole. Use a filter as a preventative measure. When using small diameter drills, use a fine mesh filter.</li> </ol>	<p><b>Thin workpieces</b></p>  <p>If bending occurs</p> <p>Support the workpiece</p>	<p><b>Interrupted cutting</b></p> <p><b>One process</b></p> <p>○</p> <p>① Lower the feed when drilling the interrupted part.</p> <p><b>Requires prior machining</b></p> <p>△</p> <p>① Spot face with an end mill prior to drilling.</p>
<p><b>Stepped holes</b></p>  <ol style="list-style-type: none"> <li>① Divide the machining into two processes.</li> <li>② Drill the larger hole first.</li> </ol> <p>*Tools for chamfering and spot facing can be produced to order.</p>	<p><b>Burring and workpiece chipping</b></p>  <ol style="list-style-type: none"> <li>① Lower the feed rate when breaking through.</li> <li>② Add a chamfer.</li> <li>③ Change the point angle.</li> </ol>		

## APPLICATION EXAMPLE

Drill		MMS0560X5DB		MMS0500X5DB		MMS0970X3DB	
Work piece		Austenitic stainless steel AISI 304 Hole depth : .7874 inch 		PH stainless steel AISI 630 (17-4PH) Hole depth : 1.1811 inch 		Austenitic stainless steel AISI 304L Hole depth : 1 inch 	
Component		Medical parts		Spinneret		Heat exchanger parts	
Cutting Conditions	Drill	MMS0560X5DB	Conventional drill	MMS0500X5DB	Conventional drill	MMS0970X3DB	Conventional drill
	Cutting Speed (SFM)	230	128	210	215	325	230
	Feed (IPR)	0.0087	0.0039	0.0079	0.0039	0.009	0.0055
	Revolution (min <sup>-1</sup> )	3979	2217	4074	4210	3249	2297
	Feed Rate (IPM)	34.5	8.7	32	16.5	29.4	12.7
Coolant		Emulsion		Emulsion		Emulsion	
Machine		Machining Center		Machining Center		Machining Center	
Result		<p>● Tool life</p>  <p>● Feed rate</p> 		<p>● Tool life</p>  <p>● Feed rate</p> 		<p>● Tool life</p>  <p>● Feed rate</p> 	



# Memo

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A series of horizontal dotted lines for writing, spanning the width of the page.



Solid Carbide Drill for Stainless steel  
**WSTAR** Drill Series  
**MIMS**

**For your safety**

●Don't handle inserts and chips without gloves. ●Please machine within the recommended application range and exchange expired tools with new ones in advance of breakage. ●Please use safety covers and wear safety glasses. ●When using compounded cutting oils, please take fire precautions. ●When using rotating tools, please make a trial run to check run-out, vibration and abnormal sounds etc. ●Grinding or heating of cutting tools produces dust and mist. Inhaling large amount of dust or contacting with eyes and skins may harm your body.

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