

Series
Expansion

Solid Carbide Drill

WSTAR Drill Series



General Use Solid Carbide Drill

WSTAR DRILL

Innovative "Wave type
cutting edge &
flute geometry"

**Multi-purpose drill for
cutting carbon and
alloy steels, stainless
steels, cast iron and
difficult-to-cut
materials.**

- Drill sizes available in 0.01mm increments from $\varnothing 0.50$ to $\varnothing 0.99$.
- Drill sizes available in 0.1mm increments from $\varnothing 1.0$ to $\varnothing 20.0$.
- Drill sizes available in 0.5mm increments from $\varnothing 20.5$ to $\varnothing 25.0$.



Solid Carbide Drill for Deep Hole Drilling

WSTAR SUPER LONG DRILL

Drilling depth 20-30xD!

**80% cycle time reduction
compared to conventional
deep hole drilling**

- Drill sizes available in 0.1mm increments from $\varnothing 3.0$ to $\varnothing 14.0$.

Solid Carbide Drill

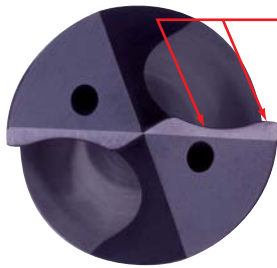
WSTAR DRILL

WSTAR SUPER LONG DRILL

Features

- Wavy cutting edge & special flute geometry to promote smooth chip evacuation

Cutting edge shape



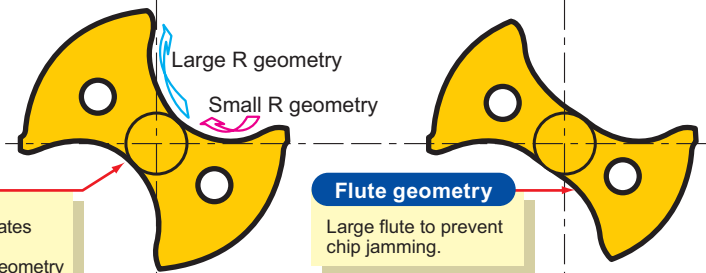
Wavy cutting edge

The wave edge design achieves a sharp peripheral edge cutting performance with a strong initial cutting point near the centre.

Flutes of top edge

The small R geometry generates initial curling of the chips and combines with the larger R geometry to promote smooth chip evacuation.

Cross sectional shape



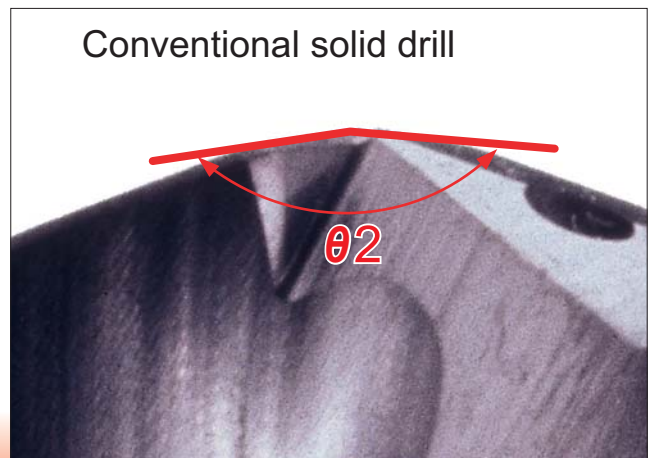
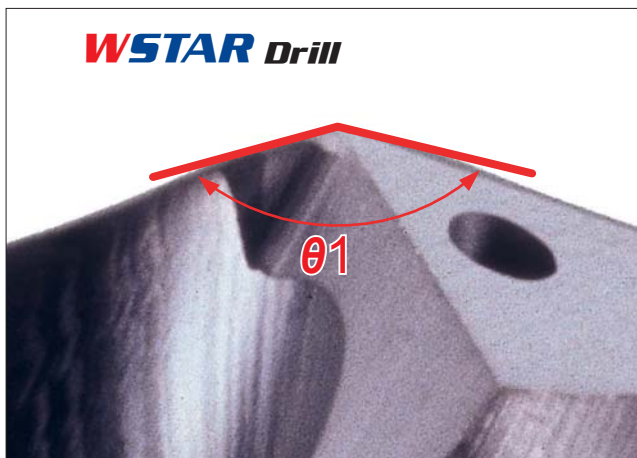
(Cutting edge shoulder cross section)

(Mid flute cross section)

- Centripetal top edge geometry

Top edge geometry

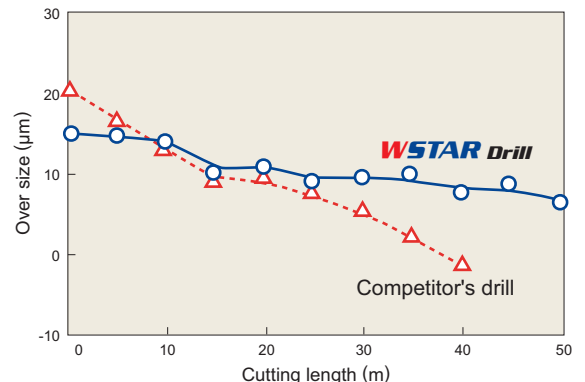
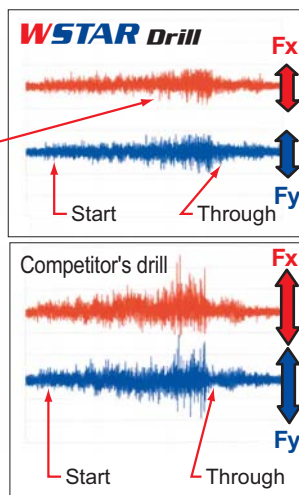
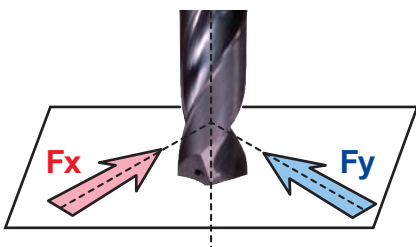
The centripetal top edge geometry with a small point angle and X-thinning promotes a self centering action for accurate hole positions! ($\theta_1 < \theta_2$)



- Machining accuracy (over size)

WSTAR Drill stays on centre and is highly wear resistant, helping to maintain hole size accuracy!

During the complete drilling cycle, components of the horizontal forces, F_x and F_y , remain low and stable.



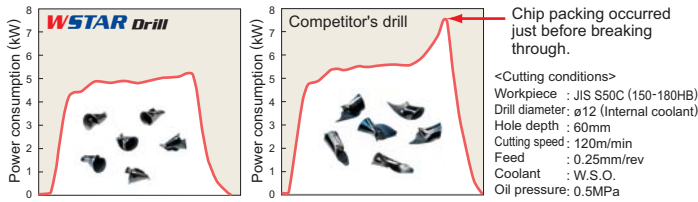
<Cutting conditions>

Workpiece : JIS S50C (150-180HB) Feed : 0.2mm/rev
 Drill diameter : ø8 (External coolant) Coolant : Emulsion 10%
 Cutting speed: 80m/min Oil pressure: 0.5MPa

Cutting Performance of *WSTAR DRILL*

● Excellent Chip Control

WSTAR Drill lowers the cutting resistance and power consumption. Chips are broken into a compact shape for excellent chip disposability to prevent jamming.

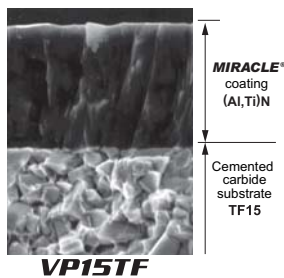


● Small diameter hole drilling

The *WSTAR Drill* gives superior chip control even for drilling of small diameter holes.



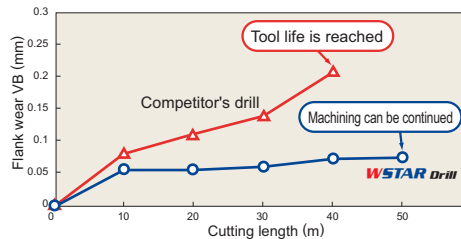
● Long tool life *MIRACLE*® coated *VP15TF*



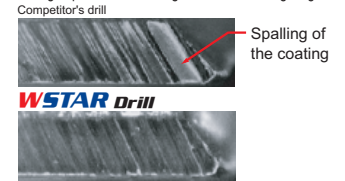
Features of *VP15TF*

MIRACLE® coated *VP15TF* has a high welding resistance, making it suitable for machining a wide range of workpiece materials from mild steels and carbon steels, through to stainless steels and cast iron.

WSTAR Drill has high flank and margin wear resistance !



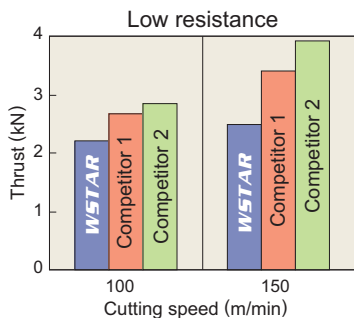
Enlarged picture of the margin after 40m drilling length.



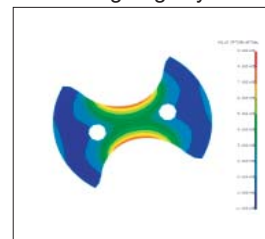
<Cutting conditions>
 Workpiece : JIS S50C (150-180HB) Cutting speed : 80m/min
 Drill diameter : $\phi 8$ (External coolant) Feed : 0.2mm/rev
 Coolant : Emulsion 10% Hole depth : 25mm (Through hole)

● High Efficiency Drilling

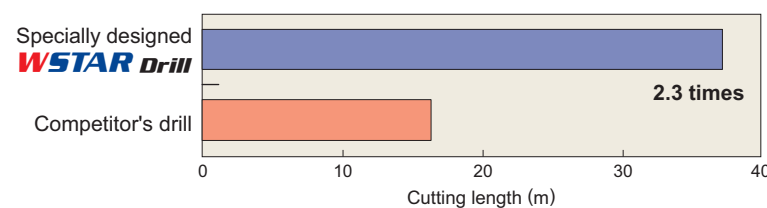
Excellent chip control, low cutting resistance and high rigidity characterise the *Miracle Coated WSTAR Drill*.



High rigidity



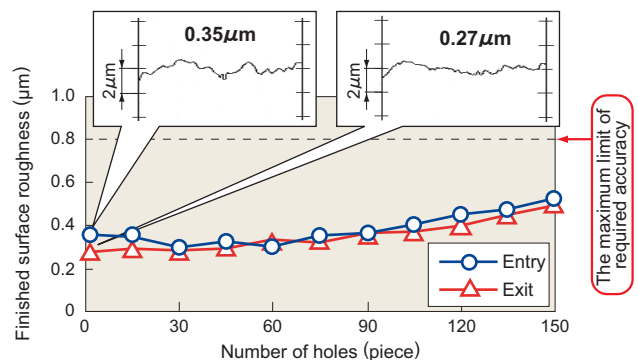
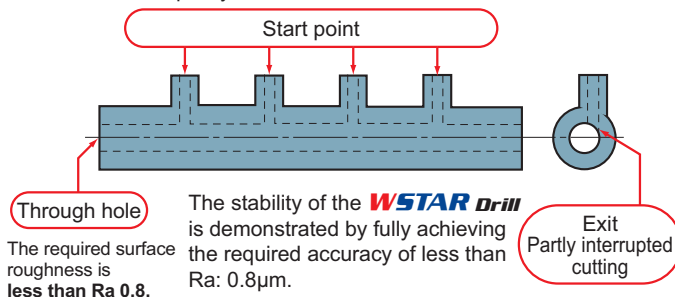
The *WSTAR Drill* more than doubled tool life compared to a competitor's drill at a feed rate of 0.4mm/rev.



● Maintaining drilling accuracy (Surface roughness)

Cutting performance of the specially designed *WSTAR Drill*.

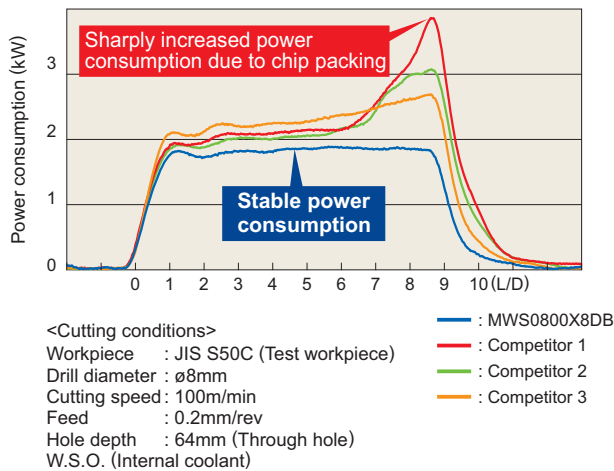
Due largely to the centripetal force exerted by the cutting edge configuration, the *WSTAR Drill* shows its ability to generate an accurate and quality machined finish.



Note) Tool life of the competitor's drill after drilling 80 holes. (Surface roughness)

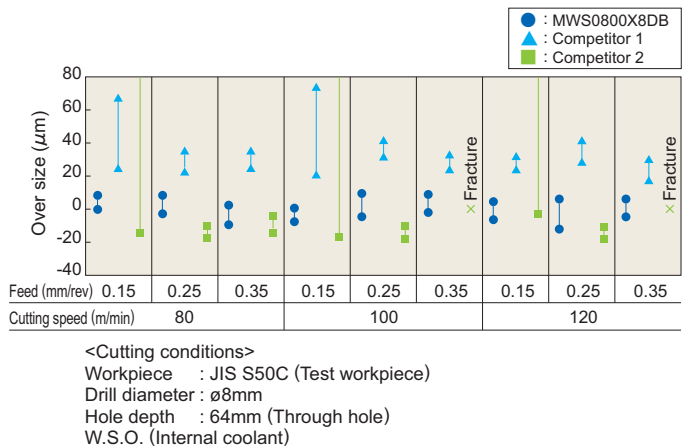
● Stable power consumption (for 8 x D)

The **WSTAR Drill** enables continuous feed drilling of the 8xD deep hole.



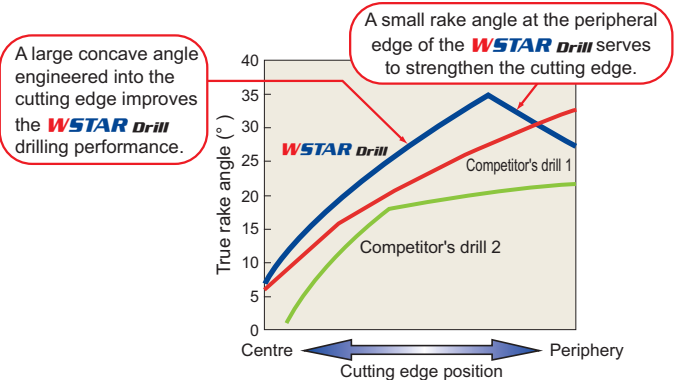
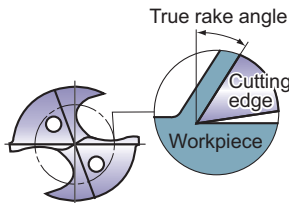
● Stable over size (for 8 x D)

The **WSTAR Drill** delivers stable machining accuracy over a wide range of cutting conditions due to the low resistance cutting edge, high tool rigidity and good chip control.



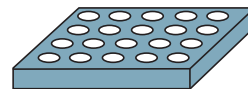
● Reliable drilling performance when machining difficult-to-cut materials

With a unique flute geometry and cutting edge rake angle, the **WSTAR Drill** improves drilling performance of difficult-to-cut materials.



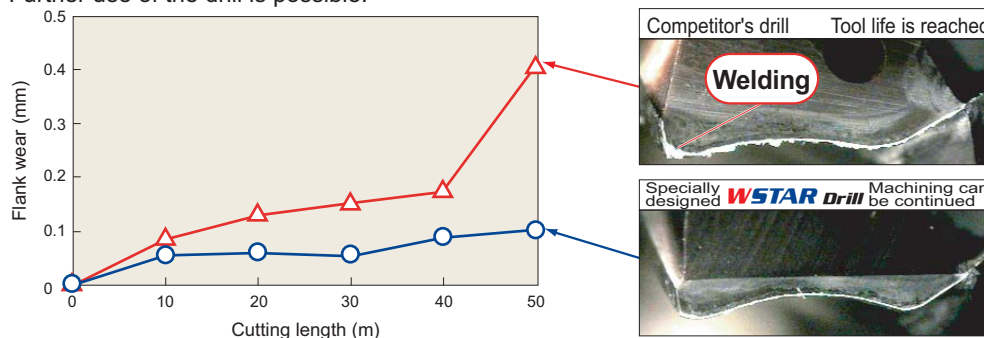
● Drilling performance in Austenitic stainless steel (JIS SUS304)

The **WSTAR Drill** resists built-up edges, a common failure mechanism when machining austenitic stainless steels, thus preventing edge chipping and drill fracture.



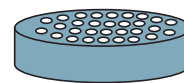
Application example
 workpiece: Plate (JIS SUS 304)
 Tool : MWS0800MB

The **WSTAR Drill** prevents welding on the cutting edge. Further use of the drill is possible.



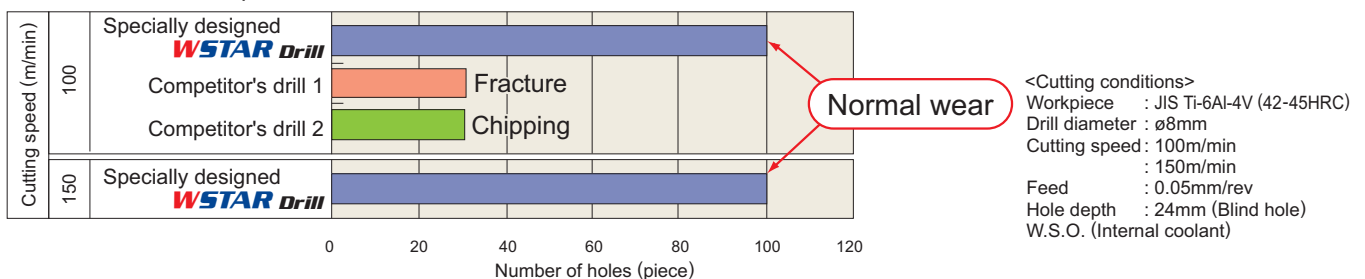
● Drilling performance in Titanium alloy (JIS Ti-6Al-4V)

The **WSTAR Drill** resists deformation of the cutting edge when high cutting temperatures are generated due to the low thermal conductivity of the workpiece.



Application example
 workpiece: Plate (JIS Ti-6Al-4V)
 Tool : Specially designed **WSTAR Drill**

The **WSTAR Drill** prevents fracturing and chipping. Further use of the drill is possible.



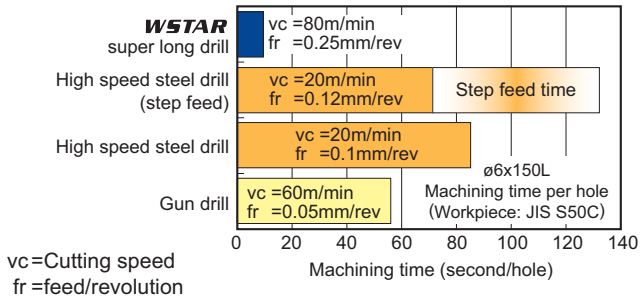
Cutting Performance of *WSTAR SUPER LONG DRILL*

● High Efficiency Machining

Special machine

⇒ High efficiency machining by general M/C

Significantly reduced machining time. Up to 80% reduction.

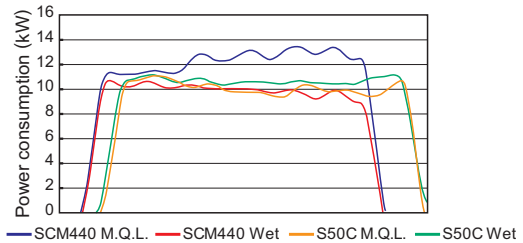


● Excellent Chip Discharge

Excellent cutting performance & chip discharge

⇒ No high pressure coolant required

Emission pressure : Requires only 1-3MPa! Best for semi-dry machining!!



<Cutting conditions>

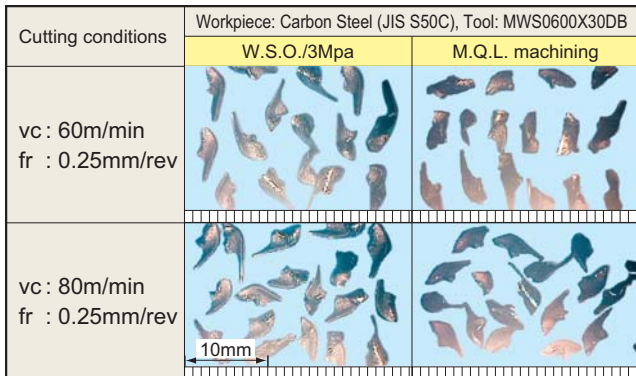
Tool: MWS600X30DB Hole depth: 180mm Pilot hole depth: 18mm

Cutting speed: 80m/min Feed per revolution: 0.15mm/rev

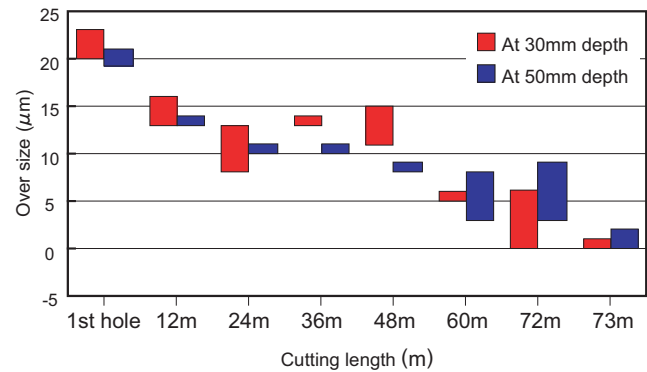
M.Q.L. : 0.8MPa Wet: 3MPa * M.Q.L.: (Minimum quantity lubricant/semi-dry machining)

● Excellent Chip Control

Stable chip formation over a wide application area!



● Precise Cutting Performance



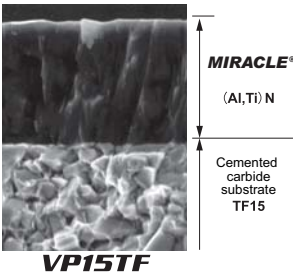
<Cutting conditions> Workpiece: JIS S50C

Tool: MWS0600X30DB Hole depth: 180mm Pilot hole depth: 18mm

Cutting speed: 60m/min Feed per revolution: 0.2mm/rev Coolant: M.Q.L.

● Material technology

● Long tool life *MIRACLE*® coated *VP15TF*



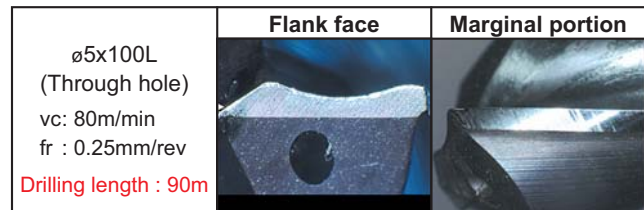
Features of *VP15TF*

MIRACLE® coated *VP15TF* has a high welding resistance, making it suitable for machining a wide range of workpiece materials from mild steels and carbon steels, through to stainless steels and cast iron.

Cutting edge geometry of the *WSTAR* effectively prevents cutting edge wear.

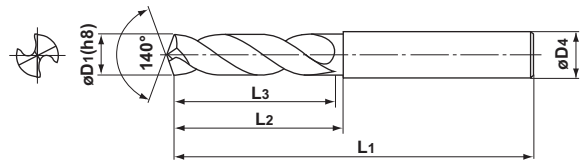
Unsurpassed material technology

⇒ Deep hole drilling with semi-dry machining



MWE (External coolant)

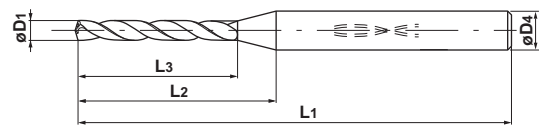
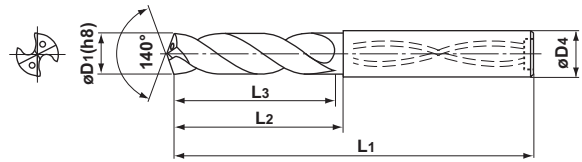
D1	0.5≤D1<1.0	1.0≤D1≤3.0	3.0<D1≤6.0	6.0<D1≤10.0	10.0<D1≤18.0	18.0<D1≤30.0
Tolerance	0 -0.009	0 -0.014	0 -0.018	0 -0.022	0 -0.027	0 -0.033



MWS (Internal coolant)



● MWS-MB/LB/XB/X8DB type can be used for shrink fit holders.



Note) MWS type with ø5.0 or larger diameter has a recess in the end face.

Drill Dia. D1 (mm)	Hole Depth (l/d)	Coolant	Stock VP15TF	Order Number	Dimensions (mm)			
					L3	L2	L1	D4
0.50	5	Int.	●	MWS0050LB	8	13	47	3.0
	12	Int.	●	MWS0050XB	16	21	47	3.0
0.51	5	Int.	●	MWS0051LB	8	13	47	3.0
	12	Int.	●	MWS0051XB	16	21	47	3.0
0.52	5	Int.	●	MWS0052LB	8	13	47	3.0
	12	Int.	●	MWS0052XB	16	21	47	3.0
0.53	5	Int.	●	MWS0053LB	8	13	47	3.0
	12	Int.	●	MWS0053XB	16	21	47	3.0
0.54	5	Int.	●	MWS0054LB	8	13	47	3.0
	12	Int.	●	MWS0054XB	16	21	47	3.0
0.55	5	Int.	●	MWS0055LB	8	13	47	3.0
	12	Int.	●	MWS0055XB	16	21	47	3.0
0.56	5	Int.	●	MWS0056LB	8	13	47	3.0
	12	Int.	●	MWS0056XB	16	21	47	3.0
0.57	5	Int.	●	MWS0057LB	8	13	47	3.0
	12	Int.	●	MWS0057XB	16	21	47	3.0
0.58	5	Int.	●	MWS0058LB	8	13	47	3.0
	12	Int.	●	MWS0058XB	16	21	47	3.0
0.59	5	Int.	●	MWS0059LB	8	12	47	3.0
	12	Int.	●	MWS0059XB	16	20	47	3.0
0.60	5	Int.	●	MWS0060LB	8	12	47	3.0
	12	Int.	●	MWS0060XB	16	20	47	3.0
0.61	5	Int.	●	MWS0061LB	8	12	47	3.0
	12	Int.	●	MWS0061XB	16	20	47	3.0
0.62	5	Int.	●	MWS0062LB	8	12	47	3.0
	12	Int.	●	MWS0062XB	16	20	47	3.0
0.63	5	Int.	●	MWS0063LB	8	12	47	3.0
	12	Int.	●	MWS0063XB	16	20	47	3.0
0.64	5	Int.	●	MWS0064LB	8	12	47	3.0
	12	Int.	●	MWS0064XB	16	20	47	3.0

Drill Dia. D1 (mm)	Hole Depth (l/d)	Coolant	Stock VP15TF	Order Number	Dimensions (mm)			
					L3	L2	L1	D4
0.65	5	Int.	●	MWS0065LB	8	12	47	3.0
	12	Int.	●	MWS0065XB	16	20	47	3.0
0.66	5	Int.	●	MWS0066LB	8	12	47	3.0
	12	Int.	●	MWS0066XB	16	20	47	3.0
0.67	5	Int.	●	MWS0067LB	8	12	47	3.0
	12	Int.	●	MWS0067XB	16	20	47	3.0
0.68	5	Int.	●	MWS0068LB	8	12	47	3.0
	12	Int.	●	MWS0068XB	16	20	47	3.0
0.69	5	Int.	●	MWS0069LB	8	12	47	3.0
	12	Int.	●	MWS0069XB	16	20	47	3.0
0.70	5	Int.	●	MWS0070LB	8	12	47	3.0
	12	Int.	●	MWS0070XB	16	20	47	3.0
0.71	5	Int.	●	MWS0071LB	10	14	50	3.0
	12	Int.	●	MWS0071XB	20	24	50	3.0
0.72	5	Int.	●	MWS0072LB	10	14	50	3.0
	12	Int.	●	MWS0072XB	20	24	50	3.0
0.73	5	Int.	●	MWS0073LB	10	14	50	3.0
	12	Int.	●	MWS0073XB	20	24	50	3.0
0.74	5	Int.	●	MWS0074LB	10	14	50	3.0
	12	Int.	●	MWS0074XB	20	24	50	3.0
0.75	5	Int.	●	MWS0075LB	10	14	50	3.0
	12	Int.	●	MWS0075XB	20	24	50	3.0
0.76	5	Int.	●	MWS0076LB	10	14	50	3.0
	12	Int.	●	MWS0076XB	20	24	50	3.0
0.77	5	Int.	●	MWS0077LB	10	14	50	3.0
	12	Int.	●	MWS0077XB	20	24	50	3.0
0.78	5	Int.	●	MWS0078LB	10	14	50	3.0
	12	Int.	●	MWS0078XB	20	24	50	3.0
0.79	5	Int.	●	MWS0079LB	10	14	50	3.0
	12	Int.	●	MWS0079XB	20	24	50	3.0

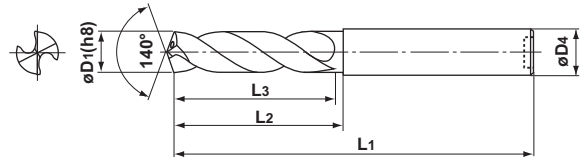
Note) Please contact Mitsubishi Carbide for any geometry that is not in the brochure (e.g. different diameter and length).

Drill Dia. D ₁ (mm)	Hole Depth (l/d)	Coolant	Stock VP15TF	Order Number	Dimensions (mm)			
					L ₃	L ₂	L ₁	D ₄
0.80	5	Int.	●	MWS0080LB	10	14	50	3.0
	12	Int.	●	MWS0080XB	20	24	50	3.0
0.81	5	Int.	●	MWS0081LB	10	14	50	3.0
	12	Int.	●	MWS0081XB	20	24	50	3.0
0.82	5	Int.	●	MWS0082LB	10	14	50	3.0
	12	Int.	●	MWS0082XB	20	24	50	3.0
0.83	5	Int.	●	MWS0083LB	10	14	50	3.0
	12	Int.	●	MWS0083XB	20	24	50	3.0
0.84	5	Int.	●	MWS0084LB	10	14	50	3.0
	12	Int.	●	MWS0084XB	20	24	50	3.0
0.85	5	Int.	●	MWS0085LB	10	14	50	3.0
	12	Int.	●	MWS0085XB	20	24	50	3.0
0.86	5	Int.	●	MWS0086LB	10	14	50	3.0
	12	Int.	●	MWS0086XB	20	24	50	3.0
0.87	5	Int.	●	MWS0087LB	10	14	50	3.0
	12	Int.	●	MWS0087XB	20	24	50	3.0
0.88	5	Int.	●	MWS0088LB	10	14	50	3.0
	12	Int.	●	MWS0088XB	20	24	50	3.0
0.89	5	Int.	●	MWS0089LB	10	14	50	3.0
	12	Int.	●	MWS0089XB	20	24	50	3.0
0.90	5	Int.	●	MWS0090LB	10	14	50	3.0
	12	Int.	●	MWS0090XB	20	24	50	3.0
0.91	5	Int.	●	MWS0091LB	10	14	50	3.0
	12	Int.	●	MWS0091XB	20	24	50	3.0
0.92	5	Int.	●	MWS0092LB	10	14	50	3.0
	12	Int.	●	MWS0092XB	20	24	50	3.0
0.93	5	Int.	●	MWS0093LB	10	14	50	3.0
	12	Int.	●	MWS0093XB	20	24	50	3.0
0.94	5	Int.	●	MWS0094LB	10	14	50	3.0
	12	Int.	●	MWS0094XB	20	24	50	3.0
0.95	5	Int.	●	MWS0095LB	10	14	50	3.0
	12	Int.	●	MWS0095XB	20	24	50	3.0
0.96	5	Int.	●	MWS0096LB	10	14	50	3.0
	12	Int.	●	MWS0096XB	20	24	50	3.0
0.97	5	Int.	●	MWS0097LB	10	14	50	3.0
	12	Int.	●	MWS0097XB	20	24	50	3.0
0.98	5	Int.	●	MWS0098LB	10	14	50	3.0
	12	Int.	●	MWS0098XB	20	24	50	3.0
0.99	5	Int.	●	MWS0099LB	10	14	50	3.0
	12	Int.	●	MWS0099XB	20	24	50	3.0
1.0	5	Int.	●	MWS0100LB	11	15	55	3.0
	12	Int.	●	MWS0100XB	23	27	55	3.0
1.1	5	Int.	●	MWS0110LB	17	21	55	3.0
	12	Int.	●	MWS0110XB	23	27	55	3.0
1.2	5	Int.	●	MWS0120LB	17	20	55	3.0
	12	Int.	●	MWS0120XB	23	26	55	3.0
1.3	5	Int.	●	MWS0130LB	17	20	55	3.0
	12	Int.	●	MWS0130XB	23	26	55	3.0
1.4	5	Int.	●	MWS0140LB	17	20	55	3.0
	12	Int.	●	MWS0140XB	23	26	55	3.0
1.5	5	Int.	●	MWS0150LB	17	20	55	3.0
	12	Int.	●	MWS0150XB	23	26	55	3.0

Drill Dia. D ₁ (mm)	Hole Depth (l/d)	Coolant	Stock VP15TF	Order Number	Dimensions (mm)			
					L ₃	L ₂	L ₁	D ₄
1.6	5	Int.	●	MWS0160LB	22	25	68	3.0
	12	Int.	●	MWS0160XB	30	33	68	3.0
1.7	5	Int.	●	MWS0170LB	22	24	68	3.0
	12	Int.	●	MWS0170XB	30	32	68	3.0
1.8	5	Int.	●	MWS0180LB	22	24	68	3.0
	12	Int.	●	MWS0180XB	30	32	68	3.0
1.9	5	Int.	●	MWS0190LB	22	24	68	3.0
	12	Int.	●	MWS0190XB	30	32	68	3.0
2.0	5	Int.	●	MWS0200LB	22	24	68	3.0
	12	Int.	●	MWS0200XB	30	32	68	3.0
2.1	5	Int.	●	MWS0210LB	28	30	74	3.0
	12	Int.	●	MWS0210XB	38	40	74	3.0
2.2	5	Int.	●	MWS0220LB	28	29	74	3.0
	12	Int.	●	MWS0220XB	38	39	74	3.0
2.3	5	Int.	●	MWS0230LB	28	29	74	3.0
	12	Int.	●	MWS0230XB	38	39	74	3.0
2.4	5	Int.	●	MWS0240LB	28	29	74	3.0
	12	Int.	●	MWS0240XB	38	39	74	3.0
2.5	5	Int.	●	MWS0250LB	28	29	74	3.0
	12	Int.	●	MWS0250XB	38	39	74	3.0
2.6	5	Int.	●	MWS0260LB	33	33	81	3.0
	12	Int.	●	MWS0260XB	45	45	81	3.0
2.7	5	Int.	●	MWS0270LB	33	33	81	3.0
	12	Int.	●	MWS0270XB	45	45	81	3.0
2.8	5	Int.	●	MWS0280LB	33	33	81	3.0
	12	Int.	●	MWS0280XB	45	45	81	3.0
2.9	5	Int.	●	MWS0290LB	33	33	81	3.0
	12	Int.	●	MWS0290XB	45	45	81	3.0
3.0	2	Ext.	●	MWE0300SA	16	16	55	3.0
	3	Ext.	●	MWE0300MA	21	21	60	3.0
	2	Ext.	●	MWE0300SB	16	16	55	3.0
	3	Ext.	●	MWE0300MB	21	21	60	3.0
	3	Int.	●	MWS0300MB	24	24	72	3.0
	5	Int.	●	MWS0300LB	33	33	81	3.0
3.1	8	Int.	●	MWS0300X8DB	35	35	81	3.0
	2	Ext.	●	MWE0310SA	18	18	55	3.1
	3	Ext.	●	MWE0310MA	24	24	60	3.1
	2	Ext.	□	MWE0310SB	18	20	55	4.0
	3	Ext.	□	MWE0310MB	24	26	60	4.0
	3	Int.	●	MWS0310MB	28	28	76	4.0
3.2	5	Int.	●	MWS0310LB	39	39	87	4.0
	8	Int.	●	MWS0310X8DB	41	41	87	4.0
	2	Ext.	●	MWE0320SA	18	18	55	3.2
	3	Ext.	●	MWE0320MA	24	24	60	3.2
	2	Ext.	□	MWE0320SB	18	20	55	4.0
	3	Ext.	□	MWE0320MB	24	26	60	4.0
3.3	3	Int.	●	MWS0320MB	28	28	76	4.0
	5	Int.	●	MWS0320LB	39	39	87	4.0
	8	Int.	●	MWS0320X8DB	41	41	87	4.0

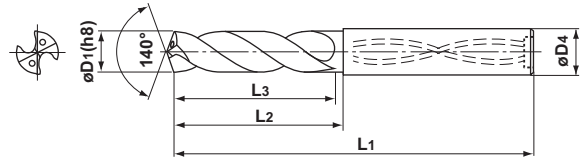
MWE (External coolant)

D1	D1≤3.0	3.0<D1≤6.0	6.0<D1≤10.0	10.0<D1≤18.0	18.0<D1≤30.0
Tolerance	0 -0.014	0 -0.018	0 -0.022	0 -0.027	0 -0.033



MWS (Internal coolant)

● MWS-MB/LB/X8DB type can be used for shrink fit holders.



Note) MWS type with ø5.0 or larger diameter has a recess in the end face.

Drill Dia. D1 (mm)	Hole Depth (l/d)	Coolant	Stock VP15TF	Order Number	Dimensions (mm)			
					L3	L2	L1	D4
3.3	2	Ext.	●	MWE0330SA	18	18	55	3.3
	3	Ext.	●	MWE0330MA	24	24	60	3.3
	2	Ext.	●	MWE0330SB	18	20	55	4.0
	3	Ext.	●	MWE0330MB	24	26	60	4.0
	3	Int.	●	MWS0330MB	28	28	76	4.0
	5	Int.	●	MWS0330LB	39	39	87	4.0
	8	Int.	●	MWS0330X8DB	41	41	87	4.0
3.4	2	Ext.	●	MWE0340SA	20	20	55	3.4
	3	Ext.	●	MWE0340MA	24	24	60	3.4
	2	Ext.	●	MWE0340SB	18	20	55	4.0
	3	Ext.	●	MWE0340MB	24	26	60	4.0
	3	Int.	●	MWS0340MB	28	28	76	4.0
	5	Int.	●	MWS0340LB	39	39	87	4.0
	8	Int.	●	MWS0340X8DB	41	41	87	4.0
3.5	2	Ext.	●	MWE0350SA	20	20	55	3.5
	3	Ext.	●	MWE0350MA	24	24	60	3.5
	2	Ext.	●	MWE0350SB	18	20	55	4.0
	3	Ext.	●	MWE0350MB	24	26	60	4.0
	3	Int.	●	MWS0350MB	28	28	76	4.0
	5	Int.	●	MWS0350LB	39	39	87	4.0
	8	Int.	●	MWS0350X8DB	41	41	87	4.0
3.6	2	Ext.	●	MWE0360SA	20	20	55	3.6
	3	Ext.	●	MWE0360MA	27	27	60	3.6
	2	Ext.	□	MWE0360SB	20	20	55	4.0
	3	Ext.	□	MWE0360MB	27	27	60	4.0
	3	Int.	●	MWS0360MB	32	32	80	4.0
	5	Int.	●	MWS0360LB	44	44	92	4.0
	8	Int.	●	MWS0360X8DB	46	46	92	4.0
3.7	2	Ext.	●	MWE0370SA	20	20	55	3.7
	3	Ext.	●	MWE0370MA	27	27	60	3.7
	2	Ext.	●	MWE0370SB	20	20	55	4.0
	3	Ext.	●	MWE0370MB	27	27	60	4.0
	3	Int.	●	MWS0370MB	32	32	80	4.0
	5	Int.	●	MWS0370LB	44	44	92	4.0
	8	Int.	●	MWS0370X8DB	46	46	92	4.0

Drill Dia. D1 (mm)	Hole Depth (l/d)	Coolant	Stock VP15TF	Order Number	Dimensions (mm)			
					L3	L2	L1	D4
3.8	2	Ext.	●	MWE0380SA	22	22	55	3.8
	3	Ext.	●	MWE0380MA	27	27	60	3.8
	2	Ext.	●	MWE0380SB	20	20	55	4.0
	3	Ext.	●	MWE0380MB	27	27	60	4.0
	3	Int.	●	MWS0380MB	32	32	80	4.0
	5	Int.	●	MWS0380LB	44	44	92	4.0
	8	Int.	●	MWS0380X8DB	46	46	92	4.0
3.9	2	Ext.	●	MWE0390SA	22	22	55	3.9
	3	Ext.	●	MWE0390MA	27	27	60	3.9
	2	Ext.	●	MWE0390SB	20	20	55	4.0
	3	Ext.	●	MWE0390MB	27	27	60	4.0
	3	Int.	●	MWS0390MB	32	32	80	4.0
	5	Int.	●	MWS0390LB	44	44	92	4.0
	8	Int.	●	MWS0390X8DB	46	46	92	4.0
4.0	2	Ext.	●	MWE0400SA	22	22	55	4.0
	3	Ext.	●	MWE0400MA	27	27	60	4.0
	2	Ext.	●	MWE0400SB	20	20	55	4.0
	3	Ext.	●	MWE0400MB	27	27	60	4.0
	3	Int.	●	MWS0400MB	32	32	80	4.0
	5	Int.	●	MWS0400LB	44	44	92	4.0
	8	Int.	●	MWS0400X8DB	46	46	92	4.0
4.1	2	Ext.	●	MWE0410SA	22	22	55	4.1
	3	Ext.	●	MWE0410MA	29	29	63	4.1
	2	Ext.	□	MWE0410SB	22	24	62	5.0
	3	Ext.	□	MWE0410MB	29	31	68	5.0
	3	Int.	●	MWS0410MB	36	36	86	5.0
	5	Int.	●	MWS0410LB	50	50	100	5.0
	8	Int.	●	MWS0410X8DB	52	52	100	5.0
4.2	2	Ext.	●	MWE0420SA	22	22	55	4.2
	3	Ext.	●	MWE0420MA	29	29	63	4.2
	2	Ext.	●	MWE0420SB	22	24	62	5.0
	3	Ext.	●	MWE0420MB	29	31	68	5.0
	3	Int.	●	MWS0420MB	36	36	86	5.0
	5	Int.	●	MWS0420LB	50	50	100	5.0
	8	Int.	●	MWS0420X8DB	52	52	100	5.0

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

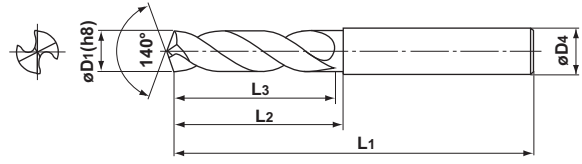
D ₁ Drill Dia. (mm)	Hole Depth (l/d)	Coolant	Stock VP15TF	Order Number	Dimensions (mm)			
					L ₃	L ₂	L ₁	D ₄
4.3	2	Ext.	●	MWE0430SA	24	24	58	4.3
	3	Ext.	●	MWE0430MA	29	29	63	4.3
	2	Ext.	●	MWE0430SB	22	24	62	5.0
	3	Ext.	●	MWE0430MB	29	31	68	5.0
	3	Int.	●	MWS0430MB	36	36	86	5.0
	5	Int.	●	MWS0430LB	50	50	100	5.0
	8	Int.	●	MWS0430X8DB	52	52	100	5.0
4.4	2	Ext.	●	MWE0440SA	24	24	58	4.4
	3	Ext.	●	MWE0440MA	29	29	63	4.4
	2	Ext.	●	MWE0440SB	22	24	62	5.0
	3	Ext.	●	MWE0440MB	29	31	68	5.0
	3	Int.	●	MWS0440MB	36	36	86	5.0
	5	Int.	●	MWS0440LB	50	50	100	5.0
	8	Int.	●	MWS0440X8DB	52	52	100	5.0
4.5	2	Ext.	●	MWE0450SA	24	24	58	4.5
	3	Ext.	●	MWE0450MA	29	29	63	4.5
	2	Ext.	●	MWE0450SB	22	24	62	5.0
	3	Ext.	●	MWE0450MB	29	31	68	5.0
	3	Int.	●	MWS0450MB	36	36	86	5.0
	5	Int.	●	MWS0450LB	50	50	100	5.0
	8	Int.	●	MWS0450X8DB	52	52	100	5.0
4.6	2	Ext.	●	MWE0460SA	24	24	58	4.6
	3	Ext.	●	MWE0460MA	32	32	68	4.6
	2	Ext.	□	MWE0460SB	24	24	62	5.0
	3	Ext.	□	MWE0460MB	32	32	68	5.0
	3	Int.	●	MWS0460MB	40	40	90	5.0
	5	Int.	●	MWS0460LB	55	55	105	5.0
	8	Int.	●	MWS0460X8DB	57	57	105	5.0
4.7	2	Ext.	●	MWE0470SA	24	24	58	4.7
	3	Ext.	●	MWE0470MA	32	32	68	4.7
	2	Ext.	□	MWE0470SB	24	24	62	5.0
	3	Ext.	□	MWE0470MB	32	32	68	5.0
	3	Int.	●	MWS0470MB	40	40	90	5.0
	5	Int.	●	MWS0470LB	55	55	105	5.0
	8	Int.	●	MWS0470X8DB	57	57	105	5.0
4.8	2	Ext.	●	MWE0480SA	26	26	62	4.8
	3	Ext.	●	MWE0480MA	32	32	68	4.8
	2	Ext.	□	MWE0480SB	24	24	62	5.0
	3	Ext.	□	MWE0480MB	32	32	68	5.0
	3	Int.	●	MWS0480MB	40	40	90	5.0
	5	Int.	●	MWS0480LB	55	55	105	5.0
	8	Int.	●	MWS0480X8DB	57	57	105	5.0
4.9	2	Ext.	●	MWE0490SA	26	26	62	4.9
	3	Ext.	●	MWE0490MA	32	32	68	4.9
	2	Ext.	□	MWE0490SB	24	24	62	5.0
	3	Ext.	□	MWE0490MB	32	32	68	5.0
	3	Int.	●	MWS0490MB	40	40	90	5.0
	5	Int.	●	MWS0490LB	55	55	105	5.0
	8	Int.	●	MWS0490X8DB	57	57	105	5.0

D ₁ Drill Dia. (mm)	Hole Depth (l/d)	Coolant	Stock VP15TF	Order Number	Dimensions (mm)			
					L ₃	L ₂	L ₁	D ₄
5.0	2	Ext.	●	MWE0500SA	26	26	62	5.0
	3	Ext.	●	MWE0500MA	32	32	68	5.0
	2	Ext.	●	MWE0500SB	24	24	62	5.0
	3	Ext.	●	MWE0500MB	32	32	68	5.0
	3	Int.	●	MWS0500MB	27.5	30	82	6.0
	5	Int.	●	MWS0500LB	44	48	100	6.0
	8	Int.	●	MWS0500X8DB	57	57	105	5.0
	5.1	2	Ext.	●	MWE0510SA	26	26	62
3		Ext.	●	MWE0510MA	34	34	72	5.1
2		Ext.	●	MWE0510SB	26	28	66	6.0
3		Ext.	●	MWE0510MB	34	36	74	6.0
3		Int.	●	MWS0510MB	27.5	30	82	6.0
5		Int.	●	MWS0510LB	44	48	100	6.0
8		Int.	●	MWS0510X8DB	61	66	118	6.0
5.2		2	Ext.	●	MWE0520SA	26	26	62
	3	Ext.	●	MWE0520MA	34	34	72	5.2
	2	Ext.	●	MWE0520SB	26	28	66	6.0
	3	Ext.	●	MWE0520MB	34	36	74	6.0
	3	Int.	●	MWS0520MB	27.5	30	82	6.0
	5	Int.	●	MWS0520LB	44	48	100	6.0
	8	Int.	●	MWS0520X8DB	61	66	118	6.0
	5.3	2	Ext.	●	MWE0530SA	26	26	62
3		Ext.	●	MWE0530MA	34	34	72	5.3
2		Ext.	□	MWE0530SB	26	28	66	6.0
3		Ext.	□	MWE0530MB	34	36	74	6.0
3		Int.	●	MWS0530MB	27.5	30	82	6.0
5		Int.	●	MWS0530LB	44	48	100	6.0
8		Int.	●	MWS0530X8DB	61	66	118	6.0
5.4		2	Ext.	●	MWE0540SA	28	28	66
	3	Ext.	●	MWE0540MA	34	34	72	5.4
	2	Ext.	□	MWE0540SB	26	28	66	6.0
	3	Ext.	□	MWE0540MB	34	36	74	6.0
	3	Int.	●	MWS0540MB	27.5	30	82	6.0
	5	Int.	●	MWS0540LB	44	48	100	6.0
	8	Int.	●	MWS0540X8DB	61	66	118	6.0
	5.5	2	Ext.	●	MWE0550SA	28	28	66
3		Ext.	●	MWE0550MA	34	34	72	5.5
2		Ext.	●	MWE0550SB	26	28	66	6.0
3		Ext.	●	MWE0550MB	34	36	74	6.0
3		Int.	●	MWS0550MB	27.5	30	82	6.0
5		Int.	●	MWS0550LB	44	48	100	6.0
8		Int.	●	MWS0550X8DB	61	66	118	6.0
5.6		2	Ext.	●	MWE0560SA	28	28	66
	3	Ext.	●	MWE0560MA	36	36	74	5.6
	2	Ext.	□	MWE0560SB	28	28	66	6.0
	3	Ext.	□	MWE0560MB	36	36	74	6.0
	3	Int.	●	MWS0560MB	30	30	82	6.0
	5	Int.	●	MWS0560LB	48	48	100	6.0
	8	Int.	●	MWS0560X8DB	66	66	118	6.0

MWE (External coolant)



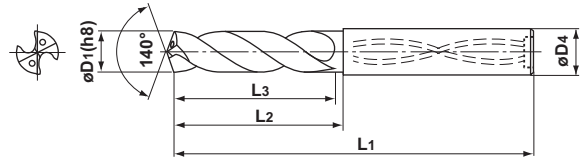
D1	D1≤3.0	3.0<D1≤6.0	6.0<D1≤10.0	10.0<D1≤18.0	18.0<D1≤30.0
Tolerance	0 -0.014	0 -0.018	0 -0.022	0 -0.027	0 -0.033



MWS (Internal coolant)



● MWS-MB/LB/X8DB type can be used for shrink fit holders.



Note) MWS type with ø5.0 or larger diameter has a recess in the end face.

Drill Dia. D1 (mm)	Hole Depth (l/d)	Coolant	Stock VP15TF	Order Number	Dimensions (mm)			
					L3	L2	L1	D4
5.7	2	Ext.	●	MWE0570SA	28	28	66	5.7
	3	Ext.	●	MWE0570MA	36	36	74	5.7
	2	Ext.	□	MWE0570SB	28	28	66	6.0
	3	Ext.	□	MWE0570MB	36	36	74	6.0
	3	Int.	●	MWS0570MB	30	30	82	6.0
	5	Int.	●	MWS0570LB	48	48	100	6.0
	8	Int.	●	MWS0570X8DB	66	66	118	6.0
5.8	2	Ext.	●	MWE0580SA	28	28	66	5.8
	3	Ext.	●	MWE0580MA	36	36	74	5.8
	2	Ext.	□	MWE0580SB	28	28	66	6.0
	3	Ext.	□	MWE0580MB	36	36	74	6.0
	3	Int.	●	MWS0580MB	30	30	82	6.0
	5	Int.	●	MWS0580LB	48	48	100	6.0
	8	Int.	●	MWS0580X8DB	66	66	118	6.0
5.9	2	Ext.	●	MWE0590SA	28	28	66	5.9
	3	Ext.	●	MWE0590MA	36	36	74	5.9
	2	Ext.	□	MWE0590SB	28	28	66	6.0
	3	Ext.	□	MWE0590MB	36	36	74	6.0
	3	Int.	●	MWS0590MB	30	30	82	6.0
	5	Int.	●	MWS0590LB	48	48	100	6.0
	8	Int.	●	MWS0590X8DB	66	66	118	6.0
6.0	2	Ext.	●	MWE0600SA	28	28	66	6.0
	3	Ext.	●	MWE0600MA	41	41	81	6.0
	2	Ext.	●	MWE0600SB	28	28	66	6.0
	3	Ext.	●	MWE0600MB	36	36	74	6.0
	3	Int.	●	MWS0600MB	30	30	82	6.0
	5	Int.	●	MWS0600LB	48	48	100	6.0
	8	Int.	●	MWS0600X8DB	66	66	118	6.0
6.1	2	Ext.	●	MWE0610SA	31	31	70	6.1
	3	Ext.	●	MWE0610MA	41	41	81	6.1
	2	Ext.	●	MWE0610SB	31	34	74	7.0
	3	Ext.	●	MWE0610MB	41	44	83	7.0
	3	Int.	●	MWS0610MB	32.5	35	88	7.0
	5	Int.	●	MWS0610LB	52	56	109	7.0
	8	Int.	●	MWS0610X8DB	72	77	130	7.0

Drill Dia. D1 (mm)	Hole Depth (l/d)	Coolant	Stock VP15TF	Order Number	Dimensions (mm)			
					L3	L2	L1	D4
6.2	2	Ext.	●	MWE0620SA	31	31	70	6.2
	3	Ext.	●	MWE0620MA	41	41	81	6.2
	2	Ext.	●	MWE0620SB	31	34	74	7.0
	3	Ext.	●	MWE0620MB	41	44	83	7.0
	3	Int.	●	MWS0620MB	32.5	35	88	7.0
	5	Int.	●	MWS0620LB	52	56	109	7.0
	8	Int.	●	MWS0620X8DB	72	77	130	7.0
	6.3	2	Ext.	●	MWE0630SA	31	31	70
3		Ext.	●	MWE0630MA	41	41	81	6.3
2		Ext.	□	MWE0630SB	31	34	74	7.0
3		Ext.	□	MWE0630MB	41	44	83	7.0
3		Int.	●	MWS0630MB	32.5	35	88	7.0
5		Int.	●	MWS0630LB	52	56	109	7.0
8		Int.	●	MWS0630X8DB	72	77	130	7.0
6.4		2	Ext.	●	MWE0640SA	31	31	70
	3	Ext.	●	MWE0640MA	41	41	81	6.4
	2	Ext.	□	MWE0640SB	31	34	74	7.0
	3	Ext.	□	MWE0640MB	41	44	83	7.0
	3	Int.	●	MWS0640MB	32.5	35	88	7.0
	5	Int.	●	MWS0640LB	52	56	109	7.0
	8	Int.	●	MWS0640X8DB	72	77	130	7.0
	6.5	2	Ext.	●	MWE0650SA	31	31	70
3		Ext.	●	MWE0650MA	41	41	81	6.5
2		Ext.	●	MWE0650SB	31	34	74	7.0
3		Ext.	●	MWE0650MB	41	44	83	7.0
3		Int.	●	MWS0650MB	32.5	35	88	7.0
5		Int.	●	MWS0650LB	52	56	109	7.0
8		Int.	●	MWS0650X8DB	72	77	130	7.0
6.6		2	Ext.	●	MWE0660SA	31	31	70
	3	Ext.	●	MWE0660MA	43	43	83	6.6
	2	Ext.	□	MWE0660SB	34	34	74	7.0
	3	Ext.	□	MWE0660MB	43	43	83	7.0
	3	Int.	●	MWS0660MB	35	35	88	7.0
	5	Int.	●	MWS0660LB	56	56	109	7.0
	8	Int.	●	MWS0660X8DB	77	77	130	7.0

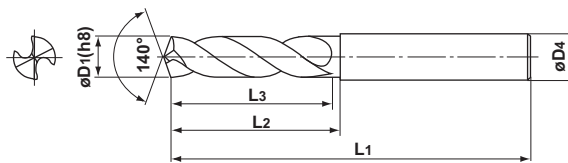
Note) Please contact Mitsubishi Carbide for any geometry that is not in the brochure (e.g. different diameter and length).

D ₁ Drill Dia. (mm)	Hole Depth (l/d)	Coolant	Stock VP15TF	Order Number	Dimensions (mm)			
					L3	L2	L1	D4
6.7	2	Ext.	●	MWE0670SA	31	31	70	6.7
	3	Ext.	●	MWE0670MA	43	43	83	6.7
	2	Ext.	●	MWE0670SB	34	34	74	7.0
	3	Ext.	●	MWE0670MB	43	43	83	7.0
	3	Int.	●	MWS0670MB	35	35	88	7.0
	5	Int.	●	MWS0670LB	56	56	109	7.0
	8	Int.	●	MWS0670X8DB	77	77	130	7.0
6.8	2	Ext.	●	MWE0680SA	34	34	74	6.8
	3	Ext.	●	MWE0680MA	43	43	83	6.8
	2	Ext.	●	MWE0680SB	34	34	74	7.0
	3	Ext.	●	MWE0680MB	43	43	83	7.0
	3	Int.	●	MWS0680MB	35	35	88	7.0
	5	Int.	●	MWS0680LB	56	56	109	7.0
	8	Int.	●	MWS0680X8DB	77	77	130	7.0
6.9	2	Ext.	●	MWE0690SA	34	34	74	6.9
	3	Ext.	●	MWE0690MA	43	43	83	6.9
	2	Ext.	●	MWE0690SB	34	34	74	7.0
	3	Ext.	●	MWE0690MB	43	43	83	7.0
	3	Int.	●	MWS0690MB	35	35	88	7.0
	5	Int.	●	MWS0690LB	56	56	109	7.0
	8	Int.	●	MWS0690X8DB	77	77	130	7.0
7.0	2	Ext.	●	MWE0700SA	34	34	74	7.0
	3	Ext.	●	MWE0700MA	43	43	83	7.0
	2	Ext.	●	MWE0700SB	34	34	74	7.0
	3	Ext.	●	MWE0700MB	43	43	83	7.0
	3	Int.	●	MWS0700MB	35	35	88	7.0
	5	Int.	●	MWS0700LB	56	56	109	7.0
	8	Int.	●	MWS0700X8DB	77	77	130	7.0
7.1	2	Ext.	●	MWE0710SA	34	34	74	7.1
	3	Ext.	●	MWE0710MA	45	45	87	7.1
	2	Ext.	□	MWE0710SB	34	37	79	8.0
	3	Ext.	□	MWE0710MB	45	48	90	8.0
	3	Int.	●	MWS0710MB	37.5	40	94	8.0
	5	Int.	●	MWS0710LB	60	64	118	8.0
	8	Int.	●	MWS0710X8DB	83	88	142	8.0
7.2	2	Ext.	●	MWE0720SA	34	34	74	7.2
	3	Ext.	●	MWE0720MA	45	45	87	7.2
	2	Ext.	□	MWE0720SB	34	37	79	8.0
	3	Ext.	□	MWE0720MB	45	48	90	8.0
	3	Int.	●	MWS0720MB	37.5	40	94	8.0
	5	Int.	●	MWS0720LB	60	64	118	8.0
	8	Int.	●	MWS0720X8DB	83	88	142	8.0
7.3	2	Ext.	●	MWE0730SA	34	34	74	7.3
	3	Ext.	●	MWE0730MA	45	45	87	7.3
	2	Ext.	□	MWE0730SB	34	37	79	8.0
	3	Ext.	□	MWE0730MB	45	48	90	8.0
	3	Int.	●	MWS0730MB	37.5	40	94	8.0
	5	Int.	●	MWS0730LB	60	64	118	8.0
	8	Int.	●	MWS0730X8DB	83	88	142	8.0

D ₁ Drill Dia. (mm)	Hole Depth (l/d)	Coolant	Stock VP15TF	Order Number	Dimensions (mm)			
					L3	L2	L1	D4
7.4	2	Ext.	●	MWE0740SA	34	34	74	7.4
	3	Ext.	●	MWE0740MA	45	45	87	7.4
	2	Ext.	□	MWE0740SB	34	37	79	8.0
	3	Ext.	□	MWE0740MB	45	48	90	8.0
	3	Int.	●	MWS0740MB	37.5	40	94	8.0
	5	Int.	●	MWS0740LB	60	64	118	8.0
	8	Int.	●	MWS0740X8DB	83	88	142	8.0
	7.5	2	Ext.	●	MWE0750SA	34	34	74
3		Ext.	●	MWE0750MA	45	45	87	7.5
2		Ext.	●	MWE0750SB	34	37	79	8.0
3		Ext.	●	MWE0750MB	45	48	90	8.0
3		Int.	●	MWS0750MB	37.5	40	94	8.0
5		Int.	●	MWS0750LB	60	64	118	8.0
8		Int.	●	MWS0750X8DB	83	88	142	8.0
7.6		2	Ext.	●	MWE0760SA	37	37	79
	3	Ext.	●	MWE0760MA	48	48	90	7.6
	2	Ext.	□	MWE0760SB	37	37	79	8.0
	3	Ext.	□	MWE0760MB	48	48	90	8.0
	3	Int.	●	MWS0760MB	40	40	94	8.0
	5	Int.	●	MWS0760LB	64	64	118	8.0
	8	Int.	●	MWS0760X8DB	88	88	142	8.0
	7.7	2	Ext.	●	MWE0770SA	37	37	79
3		Ext.	●	MWE0770MA	48	48	90	7.7
2		Ext.	●	MWE0770SB	37	37	79	8.0
3		Ext.	●	MWE0770MB	48	48	90	8.0
3		Int.	●	MWS0770MB	40	40	94	8.0
5		Int.	●	MWS0770LB	64	64	118	8.0
8		Int.	●	MWS0770X8DB	88	88	142	8.0
7.8		2	Ext.	●	MWE0780SA	37	37	79
	3	Ext.	●	MWE0780MA	48	48	90	7.8
	2	Ext.	●	MWE0780SB	37	37	79	8.0
	3	Ext.	●	MWE0780MB	48	48	90	8.0
	3	Int.	●	MWS0780MB	40	40	94	8.0
	5	Int.	●	MWS0780LB	64	64	118	8.0
	8	Int.	●	MWS0780X8DB	88	88	142	8.0
	7.9	2	Ext.	●	MWE0790SA	37	37	79
3		Ext.	●	MWE0790MA	48	48	90	7.9
2		Ext.	●	MWE0790SB	37	37	79	8.0
3		Ext.	●	MWE0790MB	48	48	90	8.0
3		Int.	●	MWS0790MB	40	40	94	8.0
5		Int.	●	MWS0790LB	64	64	118	8.0
8		Int.	●	MWS0790X8DB	88	88	142	8.0
8.0		2	Ext.	●	MWE0800SA	37	37	79
	3	Ext.	●	MWE0800MA	48	48	90	8.0
	2	Ext.	●	MWE0800SB	37	37	79	8.0
	3	Ext.	●	MWE0800MB	48	48	90	8.0
	3	Int.	●	MWS0800MB	40	40	94	8.0
	5	Int.	●	MWS0800LB	64	64	118	8.0
	8	Int.	●	MWS0800X8DB	88	88	142	8.0

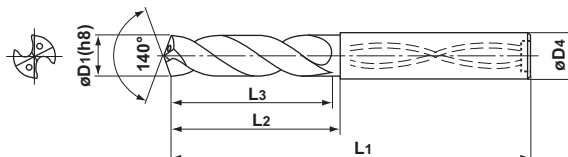
MWE (External coolant)

D1	D1≤3.0	3.0<D1≤6.0	6.0<D1≤10.0	10.0<D1≤18.0	18.0<D1≤30.0
Tolerance	0 -0.014	0 -0.018	0 -0.022	0 -0.027	0 -0.033



MWS (Internal coolant)

● MWS-MB/LB/X8DB type can be used for shrink fit holders.



Note) MWS type with ø5.0 or larger diameter has a recess in the end face.

Drill Dia. D1 (mm)	Hole Depth (l/d)	Coolant	Stock VP15TF	Order Number	Dimensions (mm)			
					L3	L2	L1	D4
8.1	2	Ext.	●	MWE0810SA	37	37	79	8.1
	3	Ext.	●	MWE0810MA	53	53	96	8.1
	2	Ext.	□	MWE0810SB	37	40	84	9.0
	3	Ext.	□	MWE0810MB	53	56	98	9.0
	3	Int.	●	MWS0810MB	42.5	45	100	9.0
	5	Int.	●	MWS0810LB	68	72	127	9.0
	8	Int.	●	MWS0810X8DB	94	99	154	9.0
8.2	2	Ext.	●	MWE0820SA	37	37	79	8.2
	3	Ext.	●	MWE0820MA	53	53	96	8.2
	2	Ext.	□	MWE0820SB	37	40	84	9.0
	3	Ext.	□	MWE0820MB	53	56	98	9.0
	3	Int.	●	MWS0820MB	42.5	45	100	9.0
	5	Int.	●	MWS0820LB	68	72	127	9.0
	8	Int.	●	MWS0820X8DB	94	99	154	9.0
8.3	2	Ext.	●	MWE0830SA	37	37	79	8.3
	3	Ext.	●	MWE0830MA	53	53	96	8.3
	2	Ext.	□	MWE0830SB	37	40	84	9.0
	3	Ext.	□	MWE0830MB	53	56	98	9.0
	3	Int.	●	MWS0830MB	42.5	45	100	9.0
	5	Int.	●	MWS0830LB	68	72	127	9.0
	8	Int.	●	MWS0830X8DB	94	99	154	9.0
8.4	2	Ext.	●	MWE0840SA	37	37	79	8.4
	3	Ext.	●	MWE0840MA	53	53	96	8.4
	2	Ext.	●	MWE0840SB	37	40	84	9.0
	3	Ext.	●	MWE0840MB	53	56	98	9.0
	3	Int.	●	MWS0840MB	42.5	45	100	9.0
	5	Int.	●	MWS0840LB	68	72	127	9.0
	8	Int.	●	MWS0840X8DB	94	99	154	9.0
8.5	2	Ext.	●	MWE0850SA	37	37	79	8.5
	3	Ext.	●	MWE0850MA	53	53	96	8.5
	2	Ext.	●	MWE0850SB	37	40	84	9.0
	3	Ext.	●	MWE0850MB	53	56	98	9.0
	3	Int.	●	MWS0850MB	42.5	45	100	9.0
	5	Int.	●	MWS0850LB	68	72	127	9.0
	8	Int.	●	MWS0850X8DB	94	99	154	9.0

Drill Dia. D1 (mm)	Hole Depth (l/d)	Coolant	Stock VP15TF	Order Number	Dimensions (mm)			
					L3	L2	L1	D4
8.6	2	Ext.	●	MWE0860SA	40	40	84	8.6
	3	Ext.	●	MWE0860MA	55	55	98	8.6
	2	Ext.	●	MWE0860SB	40	40	84	9.0
	3	Ext.	●	MWE0860MB	55	55	98	9.0
	3	Int.	●	MWS0860MB	45	45	100	9.0
	5	Int.	●	MWS0860LB	72	72	127	9.0
	8	Int.	●	MWS0860X8DB	99	99	154	9.0
8.7	2	Ext.	●	MWE0870SA	40	40	84	8.7
	3	Ext.	●	MWE0870MA	55	55	98	8.7
	2	Ext.	□	MWE0870SB	40	40	84	9.0
	3	Ext.	□	MWE0870MB	55	55	98	9.0
	3	Int.	●	MWS0870MB	45	45	100	9.0
	5	Int.	●	MWS0870LB	72	72	127	9.0
	8	Int.	●	MWS0870X8DB	99	99	154	9.0
8.8	2	Ext.	●	MWE0880SA	40	40	84	8.8
	3	Ext.	●	MWE0880MA	55	55	98	8.8
	2	Ext.	□	MWE0880SB	40	40	84	9.0
	3	Ext.	□	MWE0880MB	55	55	98	9.0
	3	Int.	●	MWS0880MB	45	45	100	9.0
	5	Int.	●	MWS0880LB	72	72	127	9.0
	8	Int.	●	MWS0880X8DB	99	99	154	9.0
8.9	2	Ext.	●	MWE0890SA	40	40	84	8.9
	3	Ext.	●	MWE0890MA	55	55	98	8.9
	2	Ext.	□	MWE0890SB	40	40	84	9.0
	3	Ext.	□	MWE0890MB	55	55	98	9.0
	3	Int.	●	MWS0890MB	45	45	100	9.0
	5	Int.	●	MWS0890LB	72	72	127	9.0
	8	Int.	●	MWS0890X8DB	99	99	154	9.0
9.0	2	Ext.	●	MWE0900SA	40	40	84	9.0
	3	Ext.	●	MWE0900MA	55	55	98	9.0
	2	Ext.	●	MWE0900SB	40	40	84	9.0
	3	Ext.	●	MWE0900MB	55	55	98	9.0
	3	Int.	●	MWS0900MB	45	45	100	9.0
	5	Int.	●	MWS0900LB	72	72	127	9.0
	8	Int.	●	MWS0900X8DB	99	99	154	9.0

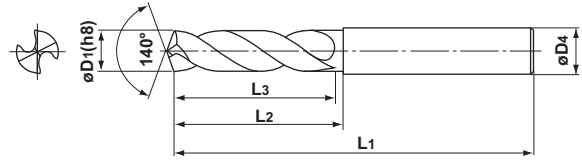
Note) Please contact Mitsubishi Carbide for any geometry that is not in the brochure (e.g. different diameter and length).

D ₁ Drill Dia. (mm)	Hole Depth (l/d)	Coolant	Stock VP15TF	Order Number	Dimensions (mm)			
					L3	L2	L1	D4
9.1	2	Ext.	●	MWE0910SA	40	40	84	9.1
	3	Ext.	●	MWE0910MA	58	58	102	9.1
	2	Ext.	□	MWE0910SB	40	43	89	10.0
	3	Ext.	□	MWE0910MB	58	61	105	10.0
	3	Int.	●	MWS0910MB	47.5	50	106	10.0
	5	Int.	●	MWS0910LB	76	80	136	10.0
	8	Int.	●	MWS0910X8DB	105	110	166	10.0
9.2	2	Ext.	●	MWE0920SA	40	40	84	9.2
	3	Ext.	●	MWE0920MA	58	58	102	9.2
	2	Ext.	□	MWE0920SB	40	43	89	10.0
	3	Ext.	□	MWE0920MB	58	61	105	10.0
	3	Int.	●	MWS0920MB	47.5	50	106	10.0
	5	Int.	●	MWS0920LB	76	80	136	10.0
	8	Int.	●	MWS0920X8DB	105	110	166	10.0
9.3	2	Ext.	●	MWE0930SA	40	40	84	9.3
	3	Ext.	●	MWE0930MA	58	58	102	9.3
	2	Ext.	□	MWE0930SB	40	43	89	10.0
	3	Ext.	□	MWE0930MB	58	61	105	10.0
	3	Int.	●	MWS0930MB	47.5	50	106	10.0
	5	Int.	●	MWS0930LB	76	80	136	10.0
	8	Int.	●	MWS0930X8DB	105	110	166	10.0
9.4	2	Ext.	●	MWE0940SA	40	40	84	9.4
	3	Ext.	●	MWE0940MA	58	58	102	9.4
	2	Ext.	●	MWE0940SB	40	43	89	10.0
	3	Ext.	●	MWE0940MB	58	61	105	10.0
	3	Int.	●	MWS0940MB	47.5	50	106	10.0
	5	Int.	●	MWS0940LB	76	80	136	10.0
	8	Int.	●	MWS0940X8DB	105	110	166	10.0
9.5	2	Ext.	●	MWE0950SA	40	40	84	9.5
	3	Ext.	●	MWE0950MA	58	58	102	9.5
	2	Ext.	●	MWE0950SB	40	43	89	10.0
	3	Ext.	●	MWE0950MB	58	61	105	10.0
	3	Int.	●	MWS0950MB	47.5	50	106	10.0
	5	Int.	●	MWS0950LB	76	80	136	10.0
	8	Int.	●	MWS0950X8DB	105	110	166	10.0
9.6	2	Ext.	●	MWE0960SA	43	43	89	9.6
	3	Ext.	●	MWE0960MA	60	60	105	9.6
	2	Ext.	●	MWE0960SB	43	43	89	10.0
	3	Ext.	●	MWE0960MB	60	60	105	10.0
	3	Int.	●	MWS0960MB	50	50	106	10.0
	5	Int.	●	MWS0960LB	80	80	136	10.0
	8	Int.	●	MWS0960X8DB	110	110	166	10.0
9.7	2	Ext.	●	MWE0970SA	43	43	89	9.7
	3	Ext.	●	MWE0970MA	60	60	105	9.7
	2	Ext.	□	MWE0970SB	43	43	89	10.0
	3	Ext.	□	MWE0970MB	60	60	105	10.0
	3	Int.	●	MWS0970MB	50	50	106	10.0
	5	Int.	●	MWS0970LB	80	80	136	10.0
	8	Int.	●	MWS0970X8DB	110	110	166	10.0

D ₁ Drill Dia. (mm)	Hole Depth (l/d)	Coolant	Stock VP15TF	Order Number	Dimensions (mm)			
					L3	L2	L1	D4
9.8	2	Ext.	●	MWE0980SA	43	43	89	9.8
	3	Ext.	●	MWE0980MA	60	60	105	9.8
	2	Ext.	□	MWE0980SB	43	43	89	10.0
	3	Ext.	□	MWE0980MB	60	60	105	10.0
	3	Int.	●	MWS0980MB	50	50	106	10.0
	5	Int.	●	MWS0980LB	80	80	136	10.0
	8	Int.	●	MWS0980X8DB	110	110	166	10.0
9.9	2	Ext.	●	MWE0990SA	43	43	89	9.9
	3	Ext.	●	MWE0990MA	60	60	105	9.9
	2	Ext.	□	MWE0990SB	43	43	89	10.0
	3	Ext.	□	MWE0990MB	60	60	105	10.0
	3	Int.	●	MWS0990MB	50	50	106	10.0
	5	Int.	●	MWS0990LB	80	80	136	10.0
	8	Int.	●	MWS0990X8DB	110	110	166	10.0
10.0	2	Ext.	●	MWE1000SA	43	43	89	10.0
	3	Ext.	●	MWE1000MA	60	60	105	10.0
	2	Ext.	●	MWE1000SB	43	43	89	10.0
	3	Ext.	●	MWE1000MB	60	60	105	10.0
	3	Int.	●	MWS1000MB	50	50	106	10.0
	5	Int.	●	MWS1000LB	80	80	136	10.0
	8	Int.	●	MWS1000X8DB	110	110	166	10.0
10.1	2	Ext.	●	MWE1010SA	43	43	89	10.1
	3	Ext.	●	MWE1010MA	66	66	112	10.1
	2	Ext.	□	MWE1010SB	43	46	95	11.0
	3	Ext.	□	MWE1010MB	66	69	114	11.0
	3	Int.	●	MWS1010MB	52.5	55	116	11.0
	5	Int.	●	MWS1010LB	84	88	149	11.0
	8	Int.	●	MWS1010X8DB	116	121	182	11.0
10.2	2	Ext.	●	MWE1020SA	43	43	89	10.2
	3	Ext.	●	MWE1020MA	66	66	112	10.2
	2	Ext.	●	MWE1020SB	43	46	95	11.0
	3	Ext.	●	MWE1020MB	66	69	114	11.0
	3	Int.	●	MWS1020MB	52.5	55	116	11.0
	5	Int.	●	MWS1020LB	84	88	149	11.0
	8	Int.	●	MWS1020X8DB	116	121	182	11.0
10.3	2	Ext.	●	MWE1030SA	43	43	89	10.3
	3	Ext.	●	MWE1030MA	66	66	112	10.3
	2	Ext.	●	MWE1030SB	43	46	95	11.0
	3	Ext.	●	MWE1030MB	66	69	114	11.0
	3	Int.	●	MWS1030MB	52.5	55	116	11.0
	5	Int.	●	MWS1030LB	84	88	149	11.0
	8	Int.	●	MWS1030X8DB	116	121	182	11.0
10.4	2	Ext.	●	MWE1040SA	43	43	89	10.4
	3	Ext.	●	MWE1040MA	66	66	112	10.4
	2	Ext.	●	MWE1040SB	43	46	95	11.0
	3	Ext.	●	MWE1040MB	66	69	114	11.0
	3	Int.	●	MWS1040MB	52.5	55	116	11.0
	5	Int.	●	MWS1040LB	84	88	149	11.0
	8	Int.	●	MWS1040X8DB	116	121	182	11.0

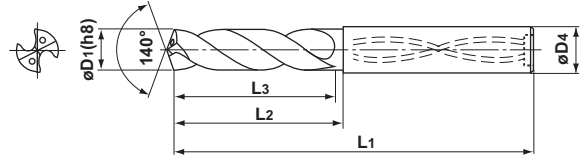
MWE (External coolant)

D1	D1≤3.0	3.0<D1≤6.0	6.0<D1≤10.0	10.0<D1≤18.0	18.0<D1≤30.0
Tolerance	0 -0.014	0 -0.018	0 -0.022	0 -0.027	0 -0.033



MWS (Internal coolant)

● MWS-MB/LB/X8DB type can be used for shrink fit holders.



Note) MWS type with ø5.0 or larger diameter has a recess in the end face.

Drill Dia. D1 (mm)	Hole Depth (l/d)	Coolant	Stock VP15TF	Order Number	Dimensions (mm)			
					L3	L2	L1	D4
10.5	2	Ext.	●	MWE1050SA	43	43	89	10.5
	3	Ext.	●	MWE1050MA	66	66	112	10.5
	2	Ext.	●	MWE1050SB	43	46	95	11.0
	3	Ext.	●	MWE1050MB	66	69	114	11.0
	3	Int.	●	MWS1050MB	52.5	55	116	11.0
	5	Int.	●	MWS1050LB	84	88	149	11.0
	8	Int.	●	MWS1050X8DB	116	121	182	11.0
10.6	2	Ext.	●	MWE1060SA	43	43	89	10.6
	3	Ext.	●	MWE1060MA	68	68	114	10.6
	2	Ext.	□	MWE1060SB	47	47	95	11.0
	3	Ext.	□	MWE1060MB	68	68	114	11.0
	3	Int.	●	MWS1060MB	55	55	116	11.0
	5	Int.	●	MWS1060LB	88	88	149	11.0
	8	Int.	●	MWS1060X8DB	121	121	182	11.0
10.7	2	Ext.	●	MWE1070SA	47	47	95	10.7
	3	Ext.	●	MWE1070MA	68	68	114	10.7
	2	Ext.	□	MWE1070SB	47	47	95	11.0
	3	Ext.	□	MWE1070MB	68	68	114	11.0
	3	Int.	●	MWS1070MB	55	55	116	11.0
	5	Int.	●	MWS1070LB	88	88	149	11.0
	8	Int.	●	MWS1070X8DB	121	121	182	11.0
10.8	2	Ext.	●	MWE1080SA	47	47	95	10.8
	3	Ext.	●	MWE1080MA	68	68	114	10.8
	2	Ext.	□	MWE1080SB	47	47	95	11.0
	3	Ext.	□	MWE1080MB	68	68	114	11.0
	3	Int.	●	MWS1080MB	55	55	116	11.0
	5	Int.	●	MWS1080LB	88	88	149	11.0
	8	Int.	●	MWS1080X8DB	121	121	182	11.0
10.9	2	Ext.	●	MWE1090SA	47	47	95	10.9
	3	Ext.	●	MWE1090MA	68	68	114	10.9
	2	Ext.	□	MWE1090SB	47	47	95	11.0
	3	Ext.	□	MWE1090MB	68	68	114	11.0
	3	Int.	●	MWS1090MB	55	55	116	11.0
	5	Int.	●	MWS1090LB	88	88	149	11.0
	8	Int.	●	MWS1090X8DB	121	121	182	11.0

Drill Dia. D1 (mm)	Hole Depth (l/d)	Coolant	Stock VP15TF	Order Number	Dimensions (mm)			
					L3	L2	L1	D4
11.0	2	Ext.	●	MWE1100SA	47	47	95	11.0
	3	Ext.	●	MWE1100MA	68	68	114	11.0
	2	Ext.	●	MWE1100SB	47	47	95	11.0
	3	Ext.	●	MWE1100MB	68	68	114	11.0
	3	Int.	●	MWS1100MB	55	55	116	11.0
	5	Int.	●	MWS1100LB	88	88	149	11.0
	8	Int.	●	MWS1100X8DB	121	121	182	11.0
11.1	2	Ext.	●	MWE1110SA	47	47	95	11.1
	3	Ext.	●	MWE1110MA	71	71	118	11.1
	2	Ext.	□	MWE1110SB	47	50	95	12.0
	3	Ext.	□	MWE1110MB	71	74	121	12.0
	3	Int.	●	MWS1110MB	57.5	60	122	12.0
	5	Int.	●	MWS1110LB	92	96	158	12.0
	8	Int.	●	MWS1110X8DB	127	132	194	12.0
11.2	2	Ext.	●	MWE1120SA	47	47	95	11.2
	3	Ext.	●	MWE1120MA	71	71	118	11.2
	2	Ext.	□	MWE1120SB	47	50	95	12.0
	3	Ext.	□	MWE1120MB	71	74	121	12.0
	3	Int.	●	MWS1120MB	57.5	60	122	12.0
	5	Int.	●	MWS1120LB	92	96	158	12.0
	8	Int.	●	MWS1120X8DB	127	132	194	12.0
11.3	2	Ext.	●	MWE1130SA	47	47	95	11.3
	3	Ext.	●	MWE1130MA	71	71	118	11.3
	2	Ext.	□	MWE1130SB	47	50	95	12.0
	3	Ext.	□	MWE1130MB	71	74	121	12.0
	3	Int.	●	MWS1130MB	57.5	60	122	12.0
	5	Int.	●	MWS1130LB	92	96	158	12.0
	8	Int.	●	MWS1130X8DB	127	132	194	12.0
11.4	2	Ext.	●	MWE1140SA	47	47	95	11.4
	3	Ext.	●	MWE1140MA	71	71	118	11.4
	2	Ext.	□	MWE1140SB	47	50	95	12.0
	3	Ext.	□	MWE1140MB	71	74	121	12.0
	3	Int.	●	MWS1140MB	57.5	60	122	12.0
	5	Int.	●	MWS1140LB	92	96	158	12.0
	8	Int.	●	MWS1140X8DB	127	132	194	12.0

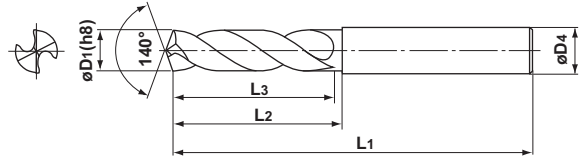
Note) Please contact Mitsubishi Carbide for any geometry that is not in the brochure (e.g. different diameter and length).

D ₁ Drill Dia. (mm)	Hole Depth (l/d)	Coolant	Stock VP15TF	Order Number	Dimensions (mm)			
					L3	L2	L1	D4
11.5	2	Ext.	●	MWE1150SA	47	47	95	11.5
	3	Ext.	●	MWE1150MA	71	71	118	11.5
	2	Ext.	●	MWE1150SB	47	50	95	12.0
	3	Ext.	●	MWE1150MB	71	74	121	12.0
	3	Int.	●	MWS1150MB	57.5	60	122	12.0
	5	Int.	●	MWS1150LB	92	96	158	12.0
	8	Int.	●	MWS1150X8DB	127	132	194	12.0
11.6	2	Ext.	●	MWE1160SA	47	47	95	11.6
	3	Ext.	●	MWE1160MA	73	73	121	11.6
	2	Ext.	□	MWE1160SB	47	47	95	12.0
	3	Ext.	□	MWE1160MB	73	73	121	12.0
	3	Int.	●	MWS1160MB	60	60	122	12.0
	5	Int.	●	MWS1160LB	96	96	158	12.0
8	Int.	●	MWS1160X8DB	132	132	194	12.0	
11.7	2	Ext.	●	MWE1170SA	47	47	95	11.7
	3	Ext.	●	MWE1170MA	73	73	121	11.7
	2	Ext.	□	MWE1170SB	47	47	95	12.0
	3	Ext.	□	MWE1170MB	73	73	121	12.0
	3	Int.	●	MWS1170MB	60	60	122	12.0
	5	Int.	●	MWS1170LB	96	96	158	12.0
8	Int.	●	MWS1170X8DB	132	132	194	12.0	
11.8	2	Ext.	●	MWE1180SA	47	47	95	11.8
	3	Ext.	●	MWE1180MA	73	73	121	11.8
	2	Ext.	□	MWE1180SB	47	47	95	12.0
	3	Ext.	□	MWE1180MB	73	73	121	12.0
	3	Int.	●	MWS1180MB	60	60	122	12.0
	5	Int.	●	MWS1180LB	96	96	158	12.0
8	Int.	●	MWS1180X8DB	132	132	194	12.0	
11.9	2	Ext.	●	MWE1190SA	51	51	102	11.9
	3	Ext.	●	MWE1190MA	73	73	121	11.9
	2	Ext.	●	MWE1190SB	47	47	95	12.0
	3	Ext.	●	MWE1190MB	73	73	121	12.0
	3	Int.	●	MWS1190MB	60	60	122	12.0
	5	Int.	●	MWS1190LB	96	96	158	12.0
	8	Int.	●	MWS1190X8DB	132	132	194	12.0
12.0	2	Ext.	●	MWE1200SA	51	51	102	12.0
	3	Ext.	●	MWE1200MA	73	73	121	12.0
	2	Ext.	●	MWE1200SB	47	47	95	12.0
	3	Ext.	●	MWE1200MB	73	73	121	12.0
	3	Int.	●	MWS1200MB	60	60	122	12.0
	5	Int.	●	MWS1200LB	96	96	158	12.0
8	Int.	●	MWS1200X8DB	132	132	194	12.0	
12.1	2	Ext.	●	MWE1210SA	51	51	102	12.1
	3	Ext.	●	MWE1210MA	76	76	135	12.1
	2	Ext.	●	MWE1210SB	51	54	102	13.0
	3	Ext.	●	MWE1210MB	76	79	137	13.0
	3	Int.	●	MWS1210MB	62.5	65	128	13.0
	5	Int.	●	MWS1210LB	100	104	167	13.0
8	Int.	□	MWS1210X8DB	138	143	206	13.0	

D ₁ Drill Dia. (mm)	Hole Depth (l/d)	Coolant	Stock VP15TF	Order Number	Dimensions (mm)			
					L3	L2	L1	D4
12.2	2	Ext.	●	MWE1220SA	51	51	102	12.2
	3	Ext.	●	MWE1220MA	76	76	135	12.2
	2	Ext.	□	MWE1220SB	51	54	102	13.0
	3	Ext.	□	MWE1220MB	76	79	137	13.0
	3	Int.	●	MWS1220MB	62.5	65	128	13.0
	5	Int.	●	MWS1220LB	100	104	167	13.0
	8	Int.	□	MWS1220X8DB	138	143	206	13.0
12.3	2	Ext.	●	MWE1230SA	51	51	102	12.3
	3	Ext.	●	MWE1230MA	76	76	135	12.3
	2	Ext.	□	MWE1230SB	51	54	102	13.0
	3	Ext.	□	MWE1230MB	76	79	137	13.0
	3	Int.	●	MWS1230MB	62.5	65	128	13.0
	5	Int.	●	MWS1230LB	100	104	167	13.0
8	Int.	□	MWS1230X8DB	138	143	206	13.0	
12.4	2	Ext.	●	MWE1240SA	51	51	102	12.4
	3	Ext.	●	MWE1240MA	76	76	135	12.4
	2	Ext.	□	MWE1240SB	51	54	102	13.0
	3	Ext.	□	MWE1240MB	76	79	137	13.0
	3	Int.	●	MWS1240MB	62.5	65	128	13.0
	5	Int.	●	MWS1240LB	100	104	167	13.0
8	Int.	□	MWS1240X8DB	138	143	206	13.0	
12.5	2	Ext.	●	MWE1250SA	51	51	102	12.5
	3	Ext.	●	MWE1250MA	76	76	135	12.5
	2	Ext.	●	MWE1250SB	51	54	102	13.0
	3	Ext.	●	MWE1250MB	76	79	137	13.0
	3	Int.	●	MWS1250MB	62.5	65	128	13.0
	5	Int.	●	MWS1250LB	100	104	167	13.0
8	Int.	●	MWS1250X8DB	138	143	206	13.0	
12.6	2	Ext.	●	MWE1260SA	51	51	102	12.6
	3	Ext.	●	MWE1260MA	78	78	137	12.6
	2	Ext.	□	MWE1260SB	51	51	102	13.0
	3	Ext.	□	MWE1260MB	78	78	137	13.0
	3	Int.	●	MWS1260MB	65	65	128	13.0
	5	Int.	●	MWS1260LB	104	104	167	13.0
8	Int.	□	MWS1260X8DB	143	143	206	13.0	
12.7	2	Ext.	●	MWE1270SA	51	51	102	12.7
	3	Ext.	●	MWE1270MA	78	78	137	12.7
	2	Ext.	□	MWE1270SB	51	51	102	13.0
	3	Ext.	□	MWE1270MB	78	78	137	13.0
	3	Int.	●	MWS1270MB	65	65	128	13.0
	5	Int.	●	MWS1270LB	104	104	167	13.0
8	Int.	□	MWS1270X8DB	143	143	206	13.0	
12.8	2	Ext.	●	MWE1280SA	51	51	102	12.8
	3	Ext.	●	MWE1280MA	78	78	137	12.8
	2	Ext.	□	MWE1280SB	51	51	102	13.0
	3	Ext.	□	MWE1280MB	78	78	137	13.0
	3	Int.	●	MWS1280MB	65	65	128	13.0
	5	Int.	●	MWS1280LB	104	104	167	13.0
8	Int.	□	MWS1280X8DB	143	143	206	13.0	

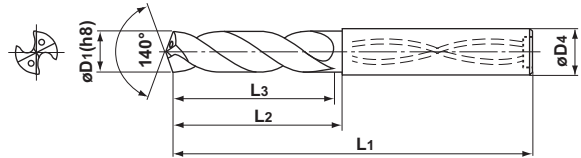
MWE (External coolant)

D1	D1≤3.0	3.0<D1≤6.0	6.0<D1≤10.0	10.0<D1≤18.0	18.0<D1≤30.0
Tolerance	0 -0.014	0 -0.018	0 -0.022	0 -0.027	0 -0.033



MWS (Internal coolant)

● MWS-MB/LB/X8DB type can be used for shrink fit holders.



Note) MWS type with ø5.0 or larger diameter has a recess in the end face.

Drill Dia. D1 (mm)	Hole Depth (l/d)	Coolant	Stock VP15TF	Order Number	Dimensions (mm)			
					L3	L2	L1	D4
12.9	2	Ext.	●	MWE1290SA	51	51	102	12.9
	3	Ext.	●	MWE1290MA	78	78	137	12.9
	2	Ext.	□	MWE1290SB	51	51	102	13.0
	3	Ext.	□	MWE1290MB	78	78	137	13.0
	3	Int.	●	MWS1290MB	65	65	128	13.0
	5	Int.	●	MWS1290LB	104	104	167	13.0
	8	Int.	□	MWS1290X8DB	143	143	206	13.0
13.0	2	Ext.	●	MWE1300SA	51	51	102	13.0
	3	Ext.	●	MWE1300MA	78	78	137	13.0
	2	Ext.	●	MWE1300SB	51	51	102	13.0
	3	Ext.	●	MWE1300MB	78	78	137	13.0
	3	Int.	●	MWS1300MB	65	65	128	13.0
	5	Int.	●	MWS1300LB	104	104	167	13.0
	8	Int.	●	MWS1300X8DB	143	143	206	13.0
13.1	2	Ext.	●	MWE1310SA	51	51	102	13.1
	3	Ext.	●	MWE1310MA	84	84	144	13.1
	2	Ext.	□	MWE1310SB	54	57	107	14.0
	3	Ext.	□	MWE1310MB	84	87	147	14.0
	3	Int.	●	MWS1310MB	67.5	70	134	14.0
	5	Int.	●	MWS1310LB	108	112	176	14.0
	8	Int.	□	MWS1310X8DB	149	154	218	14.0
13.2	2	Ext.	●	MWE1320SA	51	51	102	13.2
	3	Ext.	●	MWE1320MA	84	84	144	13.2
	2	Ext.	□	MWE1320SB	54	57	107	14.0
	3	Ext.	□	MWE1320MB	84	87	147	14.0
	3	Int.	●	MWS1320MB	67.5	70	134	14.0
	5	Int.	●	MWS1320LB	108	112	176	14.0
	8	Int.	□	MWS1320X8DB	149	154	218	14.0
13.3	2	Ext.	●	MWE1330SA	54	54	107	13.3
	3	Ext.	●	MWE1330MA	84	84	144	13.3
	2	Ext.	□	MWE1330SB	54	57	107	14.0
	3	Ext.	□	MWE1330MB	84	87	147	14.0
	3	Int.	●	MWS1330MB	67.5	70	134	14.0
	5	Int.	●	MWS1330LB	108	112	176	14.0
	8	Int.	□	MWS1330X8DB	149	154	218	14.0

Drill Dia. D1 (mm)	Hole Depth (l/d)	Coolant	Stock VP15TF	Order Number	Dimensions (mm)			
					L3	L2	L1	D4
13.4	2	Ext.	●	MWE1340SA	54	54	107	13.4
	3	Ext.	●	MWE1340MA	84	84	144	13.4
	2	Ext.	□	MWE1340SB	54	57	107	14.0
	3	Ext.	□	MWE1340MB	84	87	147	14.0
	3	Int.	●	MWS1340MB	67.5	70	134	14.0
	5	Int.	●	MWS1340LB	108	112	176	14.0
	8	Int.	□	MWS1340X8DB	149	154	218	14.0
13.5	2	Ext.	●	MWE1350SA	54	54	107	13.5
	3	Ext.	●	MWE1350MA	84	84	144	13.5
	2	Ext.	●	MWE1350SB	54	57	107	14.0
	3	Ext.	●	MWE1350MB	84	87	147	14.0
	3	Int.	●	MWS1350MB	67.5	70	134	14.0
	5	Int.	●	MWS1350LB	108	112	176	14.0
	8	Int.	●	MWS1350X8DB	149	154	218	14.0
13.6	2	Ext.	●	MWE1360SA	54	54	107	13.6
	3	Ext.	●	MWE1360MA	86	86	147	13.6
	2	Ext.	□	MWE1360SB	54	54	107	14.0
	3	Ext.	□	MWE1360MB	86	86	147	14.0
	3	Int.	●	MWS1360MB	70	70	134	14.0
	5	Int.	●	MWS1360LB	112	112	176	14.0
	8	Int.	□	MWS1360X8DB	154	154	218	14.0
13.7	2	Ext.	●	MWE1370SA	54	54	107	13.7
	3	Ext.	●	MWE1370MA	86	86	147	13.7
	2	Ext.	□	MWE1370SB	54	54	107	14.0
	3	Ext.	□	MWE1370MB	86	86	147	14.0
	3	Int.	●	MWS1370MB	70	70	134	14.0
	5	Int.	●	MWS1370LB	112	112	176	14.0
	8	Int.	□	MWS1370X8DB	154	154	218	14.0
13.8	2	Ext.	●	MWE1380SA	54	54	107	13.8
	3	Ext.	●	MWE1380MA	86	86	147	13.8
	2	Ext.	□	MWE1380SB	54	54	107	14.0
	3	Ext.	□	MWE1380MB	86	86	147	14.0
	3	Int.	●	MWS1380MB	70	70	134	14.0
	5	Int.	●	MWS1380LB	112	112	176	14.0
	8	Int.	□	MWS1380X8DB	154	154	218	14.0

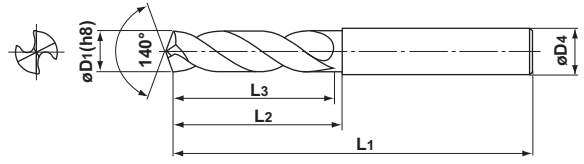
Note) Please contact Mitsubishi Carbide for any geometry that is not in the brochure (e.g. different diameter and length).

D ₁ Drill Dia. (mm)	Hole Depth (l/d)	Coolant	Stock VP15TF	Order Number	Dimensions (mm)			
					L ₃	L ₂	L ₁	D ₄
13.9	2	Ext.	●	MWE1390SA	54	54	107	13.9
	3	Ext.	●	MWE1390MA	86	86	147	13.9
	2	Ext.	●	MWE1390SB	54	54	107	14.0
	3	Ext.	●	MWE1390MB	86	86	147	14.0
	3	Int.	●	MWS1390MB	70	70	134	14.0
	5	Int.	●	MWS1390LB	112	112	176	14.0
	8	Int.	□	MWS1390X8DB	154	154	218	14.0
14.0	2	Ext.	●	MWE1400SA	54	54	107	14.0
	3	Ext.	●	MWE1400MA	86	86	147	14.0
	2	Ext.	●	MWE1400SB	54	54	107	14.0
	3	Ext.	●	MWE1400MB	86	86	147	14.0
	3	Int.	●	MWS1400MB	70	70	134	14.0
	5	Int.	●	MWS1400LB	112	112	176	14.0
8	Int.	●	MWS1400X8DB	154	154	218	14.0	
14.1	2	Ext.	●	MWE1410SA	56	56	111	14.1
	3	Ext.	●	MWE1410MA	89	89	151	14.1
	2	Ext.	●	MWE1410SB	56	59	111	15.0
	3	Ext.	●	MWE1410MB	89	92	153	15.0
	3	Int.	●	MWS1410MB	72.5	75	140	15.0
	5	Int.	●	MWS1410LB	116	120	185	15.0
8	Int.	□	MWS1410X8DB	160	165	225	15.0	
14.2	2	Ext.	●	MWE1420SA	56	56	111	14.2
	3	Ext.	●	MWE1420MA	89	89	151	14.2
	2	Ext.	□	MWE1420SB	56	59	111	15.0
	3	Ext.	□	MWE1420MB	89	92	153	15.0
	3	Int.	●	MWS1420MB	72.5	75	140	15.0
	5	Int.	●	MWS1420LB	116	120	185	15.0
8	Int.	●	MWS1420X8DB	160	165	225	15.0	
14.3	2	Ext.	□	MWE1430SA	56	56	111	14.3
	3	Ext.	●	MWE1430MA	89	89	151	14.3
	2	Ext.	□	MWE1430SB	56	59	111	15.0
	3	Ext.	□	MWE1430MB	89	92	153	15.0
	3	Int.	●	MWS1430MB	72.5	75	140	15.0
	5	Int.	●	MWS1430LB	116	120	185	15.0
8	Int.	□	MWS1430X8DB	160	165	225	15.0	
14.4	2	Ext.	□	MWE1440SA	56	56	111	14.4
	3	Ext.	●	MWE1440MA	89	89	151	14.4
	2	Ext.	□	MWE1440SB	56	59	111	15.0
	3	Ext.	□	MWE1440MB	89	92	153	15.0
	3	Int.	●	MWS1440MB	72.5	75	140	15.0
	5	Int.	●	MWS1440LB	116	120	185	15.0
8	Int.	□	MWS1440X8DB	160	165	225	15.0	
14.5	2	Ext.	●	MWE1450SA	56	56	111	14.5
	3	Ext.	●	MWE1450MA	89	89	151	14.5
	2	Ext.	●	MWE1450SB	56	59	111	15.0
	3	Ext.	●	MWE1450MB	89	92	153	15.0
	3	Int.	●	MWS1450MB	72.5	75	140	15.0
	5	Int.	●	MWS1450LB	116	120	185	15.0
8	Int.	●	MWS1450X8DB	160	165	225	15.0	

D ₁ Drill Dia. (mm)	Hole Depth (l/d)	Coolant	Stock VP15TF	Order Number	Dimensions (mm)			
					L ₃	L ₂	L ₁	D ₄
14.6	2	Ext.	□	MWE1460SA	56	56	111	14.6
	3	Ext.	●	MWE1460MA	91	91	153	14.6
	2	Ext.	□	MWE1460SB	56	56	111	15.0
	3	Ext.	□	MWE1460MB	91	91	153	15.0
	3	Int.	●	MWS1460MB	75	75	140	15.0
	5	Int.	●	MWS1460LB	120	120	185	15.0
	8	Int.	●	MWS1460X8DB	165	165	225	15.0
	14.7	2	Ext.	□	MWE1470SA	56	56	111
3		Ext.	●	MWE1470MA	91	91	153	14.7
2		Ext.	□	MWE1470SB	56	56	111	15.0
3		Ext.	□	MWE1470MB	91	91	153	15.0
3		Int.	●	MWS1470MB	75	75	140	15.0
5		Int.	●	MWS1470LB	120	120	185	15.0
8		Int.	□	MWS1470X8DB	165	165	225	15.0
14.8		2	Ext.	□	MWE1480SA	56	56	111
	3	Ext.	●	MWE1480MA	91	91	153	14.8
	2	Ext.	□	MWE1480SB	56	56	111	15.0
	3	Ext.	□	MWE1480MB	91	91	153	15.0
	3	Int.	●	MWS1480MB	75	75	140	15.0
	5	Int.	●	MWS1480LB	120	120	185	15.0
	8	Int.	□	MWS1480X8DB	165	165	225	15.0
	14.9	2	Ext.	□	MWE1490SA	56	56	111
3		Ext.	●	MWE1490MA	91	91	153	14.9
2		Ext.	□	MWE1490SB	56	56	111	15.0
3		Ext.	□	MWE1490MB	91	91	153	15.0
3		Int.	●	MWS1490MB	75	75	140	15.0
5		Int.	●	MWS1490LB	120	120	185	15.0
8		Int.	□	MWS1490X8DB	165	165	225	15.0
15.0		2	Ext.	●	MWE1500SA	56	56	111
	3	Ext.	●	MWE1500MA	91	91	153	15.0
	2	Ext.	●	MWE1500SB	56	56	111	15.0
	3	Ext.	●	MWE1500MB	91	91	153	15.0
	3	Int.	●	MWS1500MB	75	75	140	15.0
	5	Int.	●	MWS1500LB	120	120	185	15.0
	8	Int.	●	MWS1500X8DB	165	165	225	15.0
	15.1	2	Ext.	□	MWE1510SA	58	58	115
3		Ext.	●	MWE1510MA	94	94	157	15.1
2		Ext.	□	MWE1510SB	58	61	115	16.0
3		Ext.	□	MWE1510MB	94	97	160	16.0
3		Int.	●	MWS1510MB	77.5	80	145	16.0
5		Int.	●	MWS1510LB	124	128	193	16.0
8		Int.	□	MWS1510X8DB	171	181	241	16.0
15.2		2	Ext.	●	MWE1520SA	58	58	115
	3	Ext.	●	MWE1520MA	94	94	157	15.2
	2	Ext.	□	MWE1520SB	58	61	115	16.0
	3	Ext.	□	MWE1520MB	94	97	160	16.0
	3	Int.	●	MWS1520MB	77.5	80	145	16.0
	5	Int.	●	MWS1520LB	124	128	193	16.0
	8	Int.	□	MWS1520X8DB	171	181	241	16.0

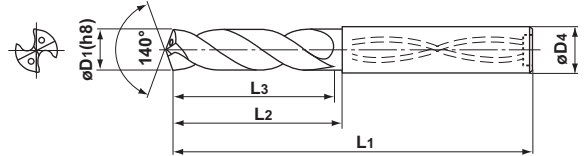
MWE (External coolant)

D1	D1≤3.0	3.0<D1≤6.0	6.0<D1≤10.0	10.0<D1≤18.0	18.0<D1≤30.0
Tolerance	0 -0.014	0 -0.018	0 -0.022	0 -0.027	0 -0.033



MWS (Internal coolant)

● MWS-MB/LB/X8DB type can be used for shrink fit holders.



Note) MWS type with ø5.0 or larger diameter has a recess in the end face.

Drill Dia. D1 (mm)	Hole Depth (l/d)	Coolant	Stock VP15TF	Order Number	Dimensions (mm)			
					L3	L2	L1	D4
15.3	2	Ext.	□	MWE1530SA	58	58	115	15.3
	3	Ext.	●	MWE1530MA	94	94	157	15.3
	2	Ext.	□	MWE1530SB	58	61	115	16.0
	3	Ext.	□	MWE1530MB	94	97	160	16.0
	3	Int.	●	MWS1530MB	77.5	80	145	16.0
	5	Int.	●	MWS1530LB	124	128	193	16.0
	8	Int.	□	MWS1530X8DB	171	181	241	16.0
15.4	2	Ext.	□	MWE1540SA	58	58	115	15.4
	3	Ext.	●	MWE1540MA	94	94	157	15.4
	2	Ext.	●	MWE1540SB	58	61	115	16.0
	3	Ext.	●	MWE1540MB	94	97	160	16.0
	3	Int.	●	MWS1540MB	77.5	80	145	16.0
	5	Int.	●	MWS1540LB	124	128	193	16.0
	8	Int.	□	MWS1540X8DB	171	181	241	16.0
15.5	2	Ext.	●	MWE1550SA	58	58	115	15.5
	3	Ext.	●	MWE1550MA	94	94	157	15.5
	2	Ext.	●	MWE1550SB	58	61	115	16.0
	3	Ext.	●	MWE1550MB	94	97	160	16.0
	3	Int.	●	MWS1550MB	77.5	80	145	16.0
	5	Int.	●	MWS1550LB	124	128	193	16.0
	8	Int.	●	MWS1550X8DB	171	181	241	16.0
15.6	2	Ext.	□	MWE1560SA	58	58	115	5.6
	3	Ext.	●	MWE1560MA	96	96	160	15.6
	2	Ext.	●	MWE1560SB	58	58	115	16.0
	3	Ext.	●	MWE1560MB	96	96	160	16.0
	3	Int.	●	MWS1560MB	80	80	145	16.0
	5	Int.	●	MWS1560LB	128	128	193	16.0
	8	Int.	□	MWS1560X8DB	176	181	241	16.0
15.7	2	Ext.	□	MWE1570SA	58	58	115	15.7
	3	Ext.	●	MWE1570MA	96	96	160	15.7
	2	Ext.	□	MWE1570SB	58	58	115	16.0
	3	Ext.	□	MWE1570MB	96	96	160	16.0
	3	Int.	●	MWS1570MB	80	80	145	16.0
	5	Int.	●	MWS1570LB	128	128	193	16.0
	8	Int.	□	MWS1570X8DB	176	181	241	16.0

Drill Dia. D1 (mm)	Hole Depth (l/d)	Coolant	Stock VP15TF	Order Number	Dimensions (mm)			
					L3	L2	L1	D4
15.8	2	Ext.	□	MWE1580SA	58	58	115	15.8
	3	Ext.	●	MWE1580MA	96	96	160	15.8
	2	Ext.	□	MWE1580SB	58	58	115	16.0
	3	Ext.	□	MWE1580MB	96	96	160	16.0
	3	Int.	●	MWS1580MB	80	80	145	16.0
	5	Int.	●	MWS1580LB	128	128	193	16.0
	8	Int.	□	MWS1580X8DB	176	181	241	16.0
	15.9	2	Ext.	□	MWE1590SA	58	58	115
3		Ext.	●	MWE1590MA	96	96	160	15.9
2		Ext.	□	MWE1590SB	58	58	115	16.0
3		Ext.	□	MWE1590MB	96	96	160	16.0
3		Int.	●	MWS1590MB	80	80	145	16.0
5		Int.	●	MWS1590LB	128	128	193	16.0
8		Int.	□	MWS1590X8DB	176	181	241	16.0
16.0		2	Ext.	●	MWE1600SA	58	58	115
	3	Ext.	●	MWE1600MA	96	96	160	16.0
	2	Ext.	●	MWE1600SB	58	58	115	16.0
	3	Ext.	●	MWE1600MB	96	96	160	16.0
	3	Int.	●	MWS1600MB	80	80	145	16.0
	5	Int.	●	MWS1600LB	128	128	193	16.0
	8	Int.	●	MWS1600X8DB	176	181	241	16.0
	16.1	2	Ext.	●	MWE1610SA	60	60	119
3		Ext.	□	MWE1610MA	102	102	167	16.1
3		Int.	□	MWS1610MB	82.5	85	150	17.0
5		Int.	□	MWS1610LB	132	136	201	17.0
16.2		2	Ext.	●	MWE1620SA	60	60	119
	3	Ext.	□	MWE1620MA	102	102	167	16.2
	3	Int.	□	MWS1620MB	82.5	85	150	17.0
	5	Int.	□	MWS1620LB	132	136	201	17.0
	16.3	2	Ext.	●	MWE1630SA	60	60	119
3		Ext.	□	MWE1630MA	102	102	167	16.3
3		Int.	□	MWS1630MB	82.5	85	150	17.0
5		Int.	□	MWS1630LB	132	136	201	17.0

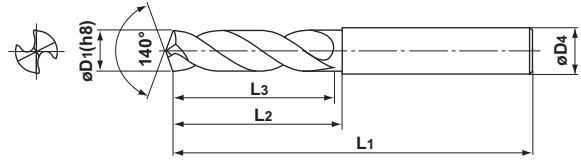
Note) Please contact Mitsubishi Carbide for any geometry that is not in the brochure (e.g. different diameter and length).

Drill Dia. D1 (mm)	Hole Depth (l/d)	Coolant	Stock VP15TF	Order Number	Dimensions (mm)			
					L3	L2	L1	D4
16.4	2	Ext.	□	MWE1640SA	60	60	119	16.4
	3	Ext.	□	MWE1640MA	102	102	167	16.4
	3	Int.	□	MWS1640MB	82.5	85	150	17.0
	5	Int.	□	MWS1640LB	132	136	201	17.0
16.5	2	Ext.	●	MWE1650SA	60	60	119	16.5
	3	Ext.	●	MWE1650MA	102	102	167	16.5
	3	Int.	●	MWS1650MB	82.5	85	150	17.0
	5	Int.	●	MWS1650LB	132	136	201	17.0
16.6	2	Ext.	□	MWE1660SA	60	60	119	16.6
	3	Ext.	□	MWE1660MA	102	102	167	16.6
	3	Int.	□	MWS1660MB	85	85	150	17.0
	5	Int.	□	MWS1660LB	136	136	201	17.0
16.7	2	Ext.	□	MWE1670SA	60	60	119	16.7
	3	Ext.	□	MWE1670MA	102	102	167	16.7
	3	Int.	□	MWS1670MB	85	85	150	17.0
	5	Int.	□	MWS1670LB	136	136	201	17.0
16.8	2	Ext.	□	MWE1680SA	60	60	119	16.8
	3	Ext.	□	MWE1680MA	102	102	167	16.8
	3	Int.	□	MWS1680MB	85	85	150	17.0
	5	Int.	□	MWS1680LB	136	136	201	17.0
16.9	2	Ext.	□	MWE1690SA	60	60	119	16.9
	3	Ext.	□	MWE1690MA	102	102	167	16.9
	3	Int.	□	MWS1690MB	85	85	150	17.0
	5	Int.	□	MWS1690LB	136	136	201	17.0
17.0	2	Ext.	●	MWE1700SA	60	60	119	17.0
	3	Ext.	●	MWE1700MA	102	102	167	17.0
	3	Int.	●	MWS1700MB	85	85	150	17.0
	5	Int.	●	MWS1700LB	136	136	201	17.0
17.1	2	Ext.	□	MWE1710SA	62	62	123	17.1
	3	Ext.	□	MWE1710MA	102	102	167	17.1
	3	Int.	□	MWS1710MB	87.5	90	155	18.0
	5	Int.	□	MWS1710LB	140	144	209	18.0
17.2	2	Ext.	□	MWE1720SA	62	62	123	17.2
	3	Ext.	□	MWE1720MA	102	102	167	17.2
	3	Int.	□	MWS1720MB	87.5	90	155	18.0
	5	Int.	□	MWS1720LB	140	144	209	18.0
17.3	2	Ext.	□	MWE1730SA	62	62	123	17.3
	3	Ext.	□	MWE1730MA	102	102	167	17.3
	3	Int.	□	MWS1730MB	87.5	90	155	18.0
	5	Int.	□	MWS1730LB	140	144	209	18.0
17.4	2	Ext.	□	MWE1740SA	62	62	123	17.4
	3	Ext.	□	MWE1740MA	102	102	167	17.4
	3	Int.	□	MWS1740MB	87.5	90	155	18.0
	5	Int.	□	MWS1740LB	140	144	209	18.0
17.5	2	Ext.	●	MWE1750SA	62	62	123	17.5
	3	Ext.	●	MWE1750MA	102	102	167	17.5
	3	Int.	●	MWS1750MB	87.5	90	155	18.0
	5	Int.	●	MWS1750LB	140	144	209	18.0

Drill Dia. D1 (mm)	Hole Depth (l/d)	Coolant	Stock VP15TF	Order Number	Dimensions (mm)			
					L3	L2	L1	D4
17.6	2	Ext.	□	MWE1760SA	62	62	123	17.6
	3	Ext.	□	MWE1760MA	102	102	167	17.6
	3	Int.	□	MWS1760MB	90	90	155	18.0
	5	Int.	□	MWS1760LB	144	144	209	18.0
17.7	2	Ext.	□	MWE1770SA	62	62	123	17.7
	3	Ext.	□	MWE1770MA	102	102	167	17.7
	3	Int.	□	MWS1770MB	90	90	155	18.0
	5	Int.	□	MWS1770LB	144	144	209	18.0
17.8	2	Ext.	●	MWE1780SA	62	62	123	17.8
	3	Ext.	□	MWE1780MA	102	102	167	17.8
	3	Int.	□	MWS1780MB	90	90	155	18.0
	5	Int.	□	MWS1780LB	144	144	209	18.0
17.9	2	Ext.	□	MWE1790SA	62	62	123	17.9
	3	Ext.	□	MWE1790MA	102	102	167	17.9
	3	Int.	□	MWS1790MB	90	90	155	18.0
	5	Int.	□	MWS1790LB	144	144	209	18.0
18.0	2	Ext.	●	MWE1800SA	62	62	123	18.0
	3	Ext.	●	MWE1800MA	102	102	167	18.0
	3	Int.	●	MWS1800MB	90	90	155	18.0
	5	Int.	●	MWS1800LB	144	144	209	18.0
18.1	2	Ext.	□	MWE1810SA	64	64	127	18.1
	3	Ext.	□	MWE1810MA	114	114	179	18.1
	3	Int.	□	MWS1810MB	92.5	95	160	19.0
	5	Int.	□	MWS1810LB	148	152	217	19.0
18.2	2	Ext.	□	MWE1820SA	64	64	127	18.2
	3	Ext.	□	MWE1820MA	114	114	179	18.2
	3	Int.	□	MWS1820MB	92.5	95	160	19.0
	5	Int.	□	MWS1820LB	148	152	217	19.0
18.3	2	Ext.	□	MWE1830SA	64	64	127	18.3
	3	Ext.	□	MWE1830MA	114	114	179	18.3
	3	Int.	□	MWS1830MB	92.5	95	160	19.0
	5	Int.	□	MWS1830LB	148	152	217	19.0
18.4	2	Ext.	□	MWE1840SA	64	64	127	18.4
	3	Ext.	□	MWE1840MA	114	114	179	18.4
	3	Int.	□	MWS1840MB	92.5	95	160	19.0
	5	Int.	□	MWS1840LB	148	152	217	19.0
18.5	2	Ext.	●	MWE1850SA	64	64	127	18.5
	3	Ext.	●	MWE1850MA	114	114	179	18.5
	3	Int.	●	MWS1850MB	92.5	95	160	19.0
	5	Int.	●	MWS1850LB	148	152	217	19.0
18.6	2	Ext.	□	MWE1860SA	64	64	127	18.6
	3	Ext.	□	MWE1860MA	114	114	179	18.6
	3	Int.	□	MWS1860MB	95	95	160	19.0
	5	Int.	□	MWS1860LB	152	152	217	19.0
18.7	2	Ext.	□	MWE1870SA	64	64	127	18.7
	3	Ext.	□	MWE1870MA	114	114	179	18.7
	3	Int.	□	MWS1870MB	95	95	160	19.0
	5	Int.	□	MWS1870LB	152	152	217	19.0

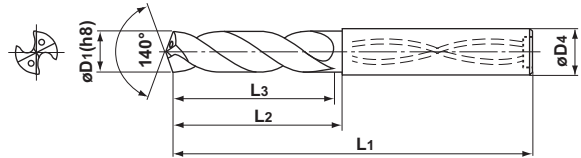
MWE (External coolant)

D1	D1≤3.0	3.0<D1≤6.0	6.0<D1≤10.0	10.0<D1≤18.0	18.0<D1≤30.0
Tolerance	0 -0.014	0 -0.018	0 -0.022	0 -0.027	0 -0.033



MWS (Internal coolant)

● MWS-MB/LB/X8DB type can be used for shrink fit holders.



Note) MWS type with ø5.0 or larger diameter has a recess in the end face.

Drill Dia. D1 (mm)	Hole Depth (l/d)	Coolant	Stock VP15TF	Order Number	Dimensions (mm)			
					L3	L2	L1	D4
18.8	2	Ext.	□	MWE1880SA	64	64	127	18.8
	3	Ext.	□	MWE1880MA	114	114	179	18.8
	3	Int.	□	MWS1880MB	95	95	160	19.0
	5	Int.	□	MWS1880LB	152	152	217	19.0
18.9	2	Ext.	□	MWE1890SA	64	64	127	18.9
	3	Ext.	□	MWE1890MA	114	114	179	18.9
	3	Int.	□	MWS1890MB	95	95	160	19.0
	5	Int.	□	MWS1890LB	152	152	217	19.0
19.0	2	Ext.	●	MWE1900SA	64	64	127	19.0
	3	Ext.	●	MWE1900MA	114	114	179	19.0
	3	Int.	●	MWS1900MB	95	95	160	19.0
	5	Int.	●	MWS1900LB	152	152	217	19.0
19.1	2	Ext.	□	MWE1910SA	66	66	131	19.1
	3	Ext.	□	MWE1910MA	114	114	179	19.1
	3	Int.	□	MWS1910MB	97.5	100	165	20.0
	5	Int.	□	MWS1910LB	156	160	225	20.0
19.2	2	Ext.	□	MWE1920SA	66	66	131	19.2
	3	Ext.	□	MWE1920MA	114	114	179	19.2
	3	Int.	□	MWS1920MB	97.5	100	165	20.0
	5	Int.	□	MWS1920LB	156	160	225	20.0
19.3	2	Ext.	□	MWE1930SA	66	66	131	19.3
	3	Ext.	□	MWE1930MA	114	114	179	19.3
	3	Int.	□	MWS1930MB	97.5	100	165	20.0
	5	Int.	□	MWS1930LB	156	160	225	20.0
19.4	2	Ext.	□	MWE1940SA	66	66	131	19.4
	3	Ext.	□	MWE1940MA	114	114	179	19.4
	3	Int.	□	MWS1940MB	97.5	100	165	20.0
	5	Int.	□	MWS1940LB	156	160	225	20.0
19.5	2	Ext.	●	MWE1950SA	66	66	131	19.5
	3	Ext.	●	MWE1950MA	114	114	179	19.5
	3	Int.	●	MWS1950MB	97.5	100	165	20.0
	5	Int.	●	MWS1950LB	156	160	225	20.0
19.6	2	Ext.	□	MWE1960SA	66	66	131	19.6
	3	Ext.	□	MWE1960MA	114	114	179	19.6
	3	Int.	□	MWS1960MB	100	100	165	20.0
	5	Int.	□	MWS1960LB	160	160	225	20.0

Drill Dia. D1 (mm)	Hole Depth (l/d)	Coolant	Stock VP15TF	Order Number	Dimensions (mm)			
					L3	L2	L1	D4
19.7	2	Ext.	□	MWE1970SA	66	66	131	19.7
	3	Ext.	□	MWE1970MA	114	114	179	19.7
	3	Int.	□	MWS1970MB	100	100	165	20.0
	5	Int.	□	MWS1970LB	160	160	225	20.0
19.8	2	Ext.	□	MWE1980SA	66	66	131	19.8
	3	Ext.	□	MWE1980MA	114	114	179	19.8
	3	Int.	□	MWS1980MB	100	100	165	20.0
	5	Int.	□	MWS1980LB	160	160	225	20.0
19.9	2	Ext.	□	MWE1990SA	66	66	131	19.9
	3	Ext.	□	MWE1990MA	114	114	179	19.9
	3	Int.	□	MWS1990MB	100	100	165	20.0
	5	Int.	□	MWS1990LB	160	160	225	20.0
20.0	2	Ext.	●	MWE2000SA	66	66	131	20.0
	3	Ext.	●	MWE2000MA	114	114	179	20.0
	3	Int.	●	MWS2000MB	100	100	165	20.0
	5	Int.	●	MWS2000LB	160	160	225	20.0
20.5	3	Int.	●	MWS2050MB	103	105	176	21.0
	5	Int.	●	MWS2050LB	166	168	239	21.0
21.0	3	Int.	●	MWS2100MB	105	105	176	21.0
	5	Int.	●	MWS2100LB	168	168	239	21.0
21.5	3	Int.	●	MWS2150MB	108	110	182	22.0
	5	Int.	●	MWS2150LB	174	176	248	22.0
22.0	3	Int.	●	MWS2200MB	110	110	182	22.0
	5	Int.	●	MWS2200LB	176	176	248	22.0
22.5	3	Int.	●	MWS2250MB	113	115	188	23.0
	5	Int.	●	MWS2250LB	182	184	257	23.0
23.0	3	Int.	●	MWS2300MB	115	115	188	23.0
	5	Int.	●	MWS2300LB	184	184	257	23.0
23.5	3	Int.	●	MWS2350MB	118	120	194	24.0
	5	Int.	●	MWS2350LB	190	192	266	24.0
24.0	3	Int.	●	MWS2400MB	120	120	194	24.0
	5	Int.	●	MWS2400LB	192	192	266	24.0
24.5	3	Int.	●	MWS2450MB	123	125	200	25.0
	5	Int.	●	MWS2450LB	198	200	270	25.0
25.0	3	Int.	●	MWS2500MB	125	125	200	25.0
	5	Int.	●	MWS2500LB	200	200	270	25.0

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.

Recommended Cutting Conditions

MWE (External coolant)

Work Material	Drill Diameter	φ3.0—φ6.0		φ6.0—φ10.0		φ10.0—φ14.0		φ14.0—φ20.0	
	Conditions Hardness	Cutting Speed (m/min)	Feed (mm/rev)	Cutting Speed (m/min)	Feed (mm/rev)	Cutting Speed (m/min)	Feed (mm/rev)	Cutting Speed (m/min)	Feed (mm/rev)
P Mild Steel	≤180HB	85 (35—100)	0.20 (0.15—0.30)	85 (45—120)	0.25 (0.15—0.35)	90 (55—120)	0.30 (0.20—0.35)	100 (60—130)	0.35 (0.20—0.40)
	Carbon Steel Alloy Steel	180—280HB	80 (40—95)	0.20 (0.15—0.30)	90 (50—120)	0.25 (0.15—0.35)	90 (60—130)	0.30 (0.15—0.35)	90 (60—130)
		280—350HB	75 (35—80)	0.15 (0.15—0.20)	80 (45—115)	0.20 (0.15—0.25)	85 (55—115)	0.25 (0.15—0.30)	85 (55—115)
M Stainless Steel	≤200HB	20 (15—30)	0.10 (0.05—0.15)	25 (15—30)	0.12 (0.05—0.15)	25 (15—30)	0.15 (0.10—0.20)	25 (15—30)	0.20 (0.10—0.25)
K Cast Iron	Tensile Strength ≤350MPa	70 (40—85)	0.25 (0.15—0.30)	75 (50—90)	0.30 (0.20—0.35)	80 (50—95)	0.35 (0.20—0.40)	85 (55—95)	0.40 (0.30—0.45)
	Ductile Cast Iron Tensile Strength ≤450MPa	65 (35—80)	0.20 (0.15—0.25)	70 (45—85)	0.25 (0.15—0.30)	75 (45—90)	0.30 (0.20—0.35)	80 (50—90)	0.35 (0.20—0.40)
N Aluminum Alloy	—	80 (70—90)	0.20 (0.10—0.25)	90 (80—100)	0.25 (0.15—0.30)	100 (90—110)	0.30 (0.20—0.35)	110 (100—120)	0.35 (0.20—0.40)
S Heat Resistant Alloy	—	20 (10—25)	0.10 (0.05—0.15)	25 (15—30)	0.12 (0.05—0.15)	25 (15—30)	0.15 (0.10—0.20)	30 (25—35)	0.20 (0.10—0.25)
H Hardened Material	40—60HRC	20 (15—25)	0.10 (0.05—0.15)	25 (15—30)	0.12 (0.05—0.15)	25 (15—30)	0.15 (0.10—0.20)	30 (15—35)	0.20 (0.10—0.25)

MWS (Internal coolant)

Work Material	Drill Diameter	φ0.50—φ0.70		φ0.70—φ0.85		φ0.86—φ0.99		φ1.0—φ3.0	
	Conditions Hardness	Cutting Speed (m/min)	Feed (mm/rev)	Cutting Speed (m/min)	Feed (mm/rev)	Cutting Speed (m/min)	Feed (mm/rev)	Cutting Speed (m/min)	Feed (mm/rev)
P Mild Steel	≤180HB	50 (40—60)	0.010 (0.005—0.015)	50 (40—60)	0.02 (0.01—0.03)	50 (40—60)	0.03 (0.02—0.05)	50 (40—60)	0.08 (0.04—0.12)
	Carbon Steel Alloy Steel	180—280HB	50 (40—60)	0.010 (0.005—0.015)	50 (40—60)	0.02 (0.01—0.03)	50 (40—60)	0.03 (0.02—0.05)	50 (40—60)
		280—350HB	50 (40—60)	0.010 (0.005—0.015)	50 (40—60)	0.02 (0.01—0.03)	50 (40—60)	0.03 (0.02—0.05)	50 (40—60)
M Stainless Steel	≤200HB	30 (20—40)	0.008 (0.005—0.01)	30 (20—40)	0.015 (0.008—0.02)	30 (20—40)	0.02 (0.01—0.03)	30 (20—40)	0.05 (0.02—0.10)
K Cast Iron	Tensile Strength ≤350MPa	50 (40—60)	0.015 (0.008—0.02)	50 (40—60)	0.02 (0.01—0.03)	50 (40—60)	0.04 (0.02—0.06)	50 (40—60)	0.08 (0.04—0.12)
	Ductile Cast Iron Tensile Strength ≤450MPa	30 (20—40)	0.010 (0.005—0.015)	30 (20—40)	0.02 (0.01—0.03)	30 (20—40)	0.03 (0.02—0.05)	30 (20—40)	0.06 (0.02—0.10)
N Aluminum Alloy	—	60 (50—80)	0.03 (0.02—0.05)	60 (50—80)	0.04 (0.03—0.06)	60 (50—80)	0.06 (0.04—0.08)	60 (50—80)	0.10 (0.05—0.15)
S Heat Resistant Alloy	—	10 (5—15)	0.006 (0.004—0.008)	10 (5—15)	0.01 (0.005—0.02)	10 (5—15)	0.01 (0.005—0.02)	10 (5—15)	0.03 (0.01—0.05)

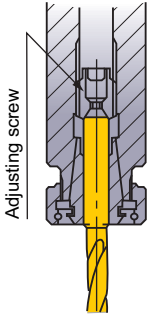
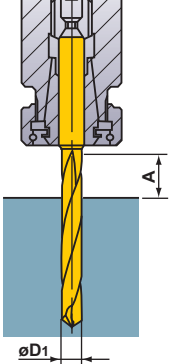
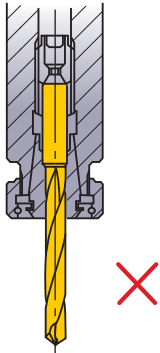
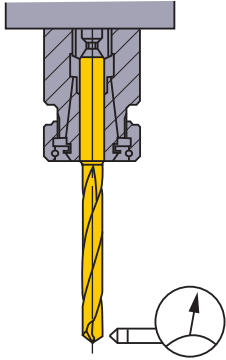
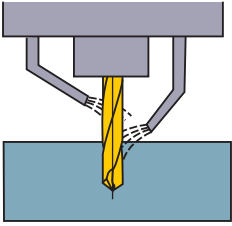
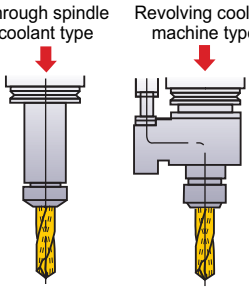
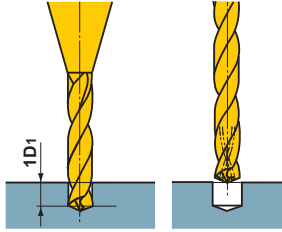
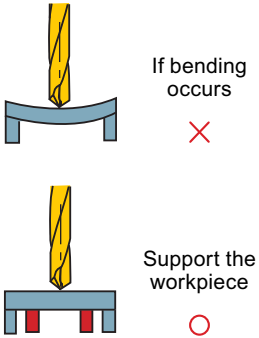
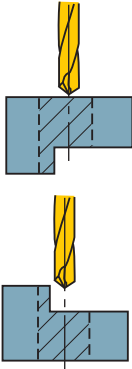
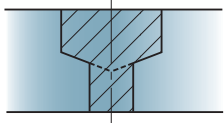
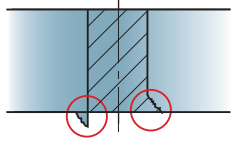
Work Material	Drill Diameter	φ3.0—φ6.0		φ6.0—φ10.0		φ10.0—φ14.0		φ14.0—φ25.0	
	Conditions Hardness	Cutting Speed (m/min)	Feed (mm/rev)	Cutting Speed (m/min)	Feed (mm/rev)	Cutting Speed (m/min)	Feed (mm/rev)	Cutting Speed (m/min)	Feed (mm/rev)
P Mild Steel	≤180HB	110 (50—120)	0.20 (0.15—0.25)	130 (80—140)	0.25 (0.20—0.35)	150 (90—170)	0.30 (0.20—0.40)	160 (100—180)	0.35 (0.20—0.40)
	Carbon Steel Alloy Steel	180—280HB	90 (50—100)	0.20 (0.15—0.25)	110 (70—120)	0.25 (0.20—0.35)	130 (80—140)	0.25 (0.20—0.40)	140 (100—150)
		280—350HB	80 (40—90)	0.20 (0.15—0.30)	90 (60—110)	0.25 (0.15—0.30)	110 (70—130)	0.25 (0.15—0.40)	120 (90—140)
M Stainless Steel	≤200HB	60 (20—100)	0.10 (0.05—0.15)	80 (40—120)	0.20 (0.10—0.25)	90 (50—120)	0.25 (0.15—0.30)	100 (60—120)	0.25 (0.15—0.30)
K Cast Iron	Tensile Strength ≤350MPa	100 (70—120)	0.25 (0.15—0.30)	130 (100—140)	0.30 (0.20—0.35)	150 (110—160)	0.35 (0.25—0.40)	160 (120—170)	0.35 (0.25—0.40)
	Ductile Cast Iron Tensile Strength ≤450MPa	60 (30—80)	0.20 (0.15—0.25)	70 (40—90)	0.20 (0.15—0.30)	90 (50—110)	0.25 (0.20—0.40)	100 (60—110)	0.30 (0.20—0.40)
N Aluminum Alloy	—	120 (80—150)	0.25 (0.20—0.35)	150 (100—170)	0.30 (0.20—0.50)	160 (100—170)	0.40 (0.20—0.80)	170 (100—180)	0.50 (0.20—1.00)
S Heat Resistant Alloy	—	20 (10—25)	0.10 (0.05—0.15)	25 (15—30)	0.12 (0.05—0.15)	25 (15—30)	0.15 (0.10—0.20)	30 (25—35)	0.20 (0.10—0.25)

(Note 1) For drill diameter up to φ2, peck feed drilling is recommended according to cutting modes and conditions.


(Note 2) Peck guide: 1 x D₁ (drill diameter)

(Note 3) Please refer to the next page for further information about the effective use of WSTAR drills.

Operational Guidance

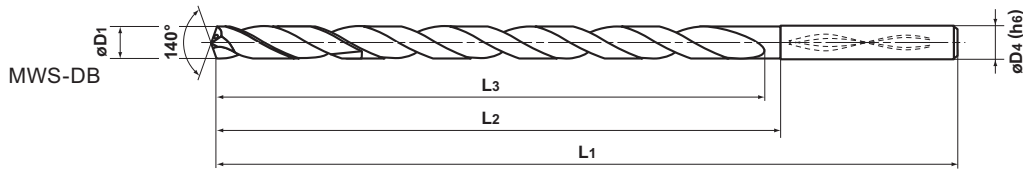
<p>Drill holding</p>  <p>Adjusting screw</p> <p>Thrust bearing type collet chuck holds the drill securely.</p>	<p>Drill length</p>  <p>ϕD_1</p> <p>$A : \geq D \times 1.5$</p>	<p>Drill installation</p>  <p>Do not clamp on the flutes.</p>	<p>Installation tolerance</p>  <p>Runout $\leq 0.03\text{mm}$</p>
<p>Coolant method (MWE)</p>  <p>Two coolant positions, at the end and at the centre are ideal.</p>	<p>Coolant method (MWS)</p>  <p>Through spindle coolant type Revolving coolant machine type</p> <p>Coolant pressure is approx. 0.5-1MPa ($\leq \phi 5 : 2-3\text{MPa}$). Coolant volume is 1.5-4.0 l/min.</p>	<p>Small diameter drill application</p>  <p>D_1</p> <p>①When machining a prepared hole with the MZB-SB or other centre drills, set the depth to $1D_1$ ($D_1 = \text{drill Diameter}$).</p> <p>②Use the prepared hole as a guide. Depending on the cutting conditions, peck feed drilling is recommended.</p>	<p>Coolant handling</p> <p>< MWS type ></p> <ol style="list-style-type: none"> 1) Dirt and dust particles in old coolant can clog the oil hole and prevent effective flow. Regular coolant exchange is recommended. 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.
<p>Thin workpieces</p>  <p>If bending occurs</p> <p>Support the workpiece</p>	<p>Interrupted cutting</p>  <p>One process</p> <p>①Lower the feed when drilling the interrupted part.</p> <p>Requires prior machining</p> <p>①Spot face with an end mill prior to drilling.</p>	<p>Stepped holes</p>  <p>①Divide the machining into two processes. ②Drill the larger hole first. *Tools for chamfering and spot facing can be produced to order.</p>	<p>Burring and workpiece chipping</p>  <p>①Lower the feed rate when breaking through. ②Add a chamfer. ③Change the point angle.</p>

Caution in using the MWS (Drill diameter $\leq \phi 3$)

- Please use a fine mesh filter (mesh $\leq 3\mu\text{m}$) for coolant to prevent jamming in the oil hole.
- For deep drilling ($l/d > 3$), machining guiding hole is recommended. (Use **MZE**  SB type for guiding hole.)



D1	D1≤3.0	3.0<D1≤6.0	6.0<D1≤10.0	10.0<D1≤14.0
Tolerance	-0.017 -0.031	-0.025 -0.043	-0.033 -0.055	-0.041 -0.068



(Note 1) MWS-DB type can be used for shrink fit holder.

(Note 2) MWS-DB type with ø5.0 or larger diameter has a recess in the end face.

Drill Dia. D1 (mm)	Hole Depth (l/d)	Coolant	Stock VP15TF	Order Number	Dimensions (mm)			
					L3	L2	L1	D4
3.0	10	Int.	●	MWS0300X10DB	39	42	90	3
	15	Int.	●	0300X15DB	54	57	105	3
	20	Int.	●	0300X20DB	69	72	120	3
	25	Int.	●	0300X25DB	84	87	135	3
	30	Int.	●	0300X30DB	99	102	150	3
3.1	10	Int.	●	0310X10DB	46	49	97	4
	15	Int.	●	0310X15DB	63	66	114	4
	20	Int.	●	0310X20DB	81	84	132	4
	25	Int.	●	0310X25DB	98	101	149	4
	30	Int.	●	0310X30DB	116	119	167	4
3.2	10	Int.	●	0320X10DB	46	49	97	4
	15	Int.	●	0320X15DB	63	66	114	4
	20	Int.	●	0320X20DB	81	84	132	4
	25	Int.	●	0320X25DB	98	101	149	4
	30	Int.	●	0320X30DB	116	119	167	4
3.3	10	Int.	●	0330X10DB	46	49	97	4
	15	Int.	●	0330X15DB	63	66	114	4
	20	Int.	●	0330X20DB	81	84	132	4
	25	Int.	●	0330X25DB	98	101	149	4
	30	Int.	●	0330X30DB	116	119	167	4
3.4	10	Int.	●	0340X10DB	46	49	97	4
	15	Int.	●	0340X15DB	63	66	114	4
	20	Int.	●	0340X20DB	81	84	132	4
	25	Int.	●	0340X25DB	98	101	149	4
	30	Int.	●	0340X30DB	116	119	167	4
3.5	10	Int.	●	0350X10DB	46	49	97	4
	15	Int.	●	0350X15DB	63	66	114	4
	20	Int.	●	0350X20DB	81	84	132	4
	25	Int.	●	0350X25DB	98	101	149	4
	30	Int.	●	0350X30DB	116	119	167	4
3.6	10	Int.	●	0360X10DB	52	55	103	4
	15	Int.	●	0360X15DB	72	75	123	4
	20	Int.	●	0360X20DB	92	95	143	4
	25	Int.	●	0360X25DB	112	115	163	4
	30	Int.	●	0360X30DB	132	135	183	4

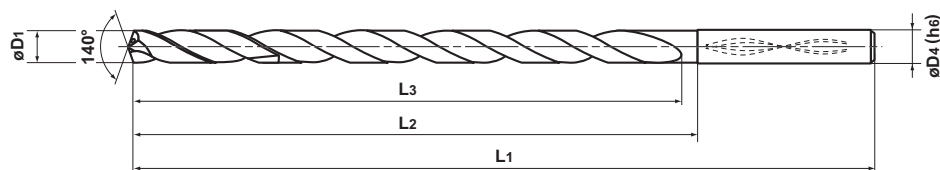
Drill Dia. D1 (mm)	Hole Depth (l/d)	Coolant	Stock VP15TF	Order Number	Dimensions (mm)			
					L3	L2	L1	D4
3.7	10	Int.	●	MWS0370X10DB	52	55	103	4
	15	Int.	●	0370X15DB	72	75	123	4
	20	Int.	●	0370X20DB	92	95	143	4
	25	Int.	●	0370X25DB	112	115	163	4
	30	Int.	●	0370X30DB	132	135	183	4
3.8	10	Int.	●	0380X10DB	52	55	103	4
	15	Int.	●	0380X15DB	72	75	123	4
	20	Int.	●	0380X20DB	92	95	143	4
	25	Int.	●	0380X25DB	112	115	163	4
	30	Int.	●	0380X30DB	132	135	183	4
3.9	10	Int.	●	0390X10DB	52	55	103	4
	15	Int.	●	0390X15DB	72	75	123	4
	20	Int.	●	0390X20DB	92	95	143	4
	25	Int.	●	0390X25DB	112	115	163	4
	30	Int.	●	0390X30DB	132	135	183	4
4.0	10	Int.	●	0400X10DB	52	55	103	4
	15	Int.	●	0400X15DB	72	75	123	4
	20	Int.	●	0400X20DB	92	95	143	4
	25	Int.	●	0400X25DB	112	115	163	4
	30	Int.	●	0400X30DB	132	135	183	4
4.1	10	Int.	●	0410X10DB	59	62	112	5
	15	Int.	●	0410X15DB	81	84	134	5
	20	Int.	●	0410X20DB	104	107	157	5
	25	Int.	●	0410X25DB	126	129	179	5
	30	Int.	●	0410X30DB	149	152	202	5
4.2	10	Int.	●	0420X10DB	59	62	112	5
	15	Int.	●	0420X15DB	81	84	134	5
	20	Int.	●	0420X20DB	104	107	157	5
	25	Int.	●	0420X25DB	126	129	179	5
	30	Int.	●	0420X30DB	149	152	202	5
4.3	10	Int.	●	0430X10DB	59	62	112	5
	15	Int.	●	0430X15DB	81	84	134	5
	20	Int.	●	0430X20DB	104	107	157	5
	25	Int.	●	0430X25DB	126	129	179	5
	30	Int.	●	0430X30DB	149	152	202	5

Note) Please specify the following when ordering.

- ① Drill name.
 - ② Workpiece material, drilling depth and required accuracy.
 - ③ Drilling mode (through hole, blind hole, cross hole...).
 - ④ Drill dimensions (dimensions specified in the drawing above).
- Please contact us for inquiries.



D1	D1≤3.0	3.0<D1≤6.0	6.0<D1≤10.0	10.0<D1≤14.0
Tolerance	-0.017 -0.031	-0.025 -0.043	-0.033 -0.055	-0.041 -0.068



(Note 1) MWS-DB type can be used for shrink fit holder.

(Note 2) MWS-DB type with ø5.0 or larger diameter has a recess in the end face.

Drill Dia. D1 (mm)	Hole Depth (l/d)	Coolant	Stock VP15TF	Order Number	Dimensions (mm)			
					L3	L2	L1	D4
4.4	10	Int.	●	MWS0440X10DB	59	62	112	5
	15	Int.	●	0440X15DB	81	84	134	5
	20	Int.	●	0440X20DB	104	107	157	5
	25	Int.	●	0440X25DB	126	129	179	5
	30	Int.	●	0440X30DB	149	152	202	5
4.5	10	Int.	●	0450X10DB	59	62	112	5
	15	Int.	●	0450X15DB	81	84	134	5
	20	Int.	●	0450X20DB	104	107	157	5
	25	Int.	●	0450X25DB	126	129	179	5
	30	Int.	●	0450X30DB	149	152	202	5
4.6	10	Int.	●	0460X10DB	65	68	118	5
	15	Int.	●	0460X15DB	90	93	143	5
	20	Int.	●	0460X20DB	115	118	168	5
	25	Int.	●	0460X25DB	140	143	193	5
	30	Int.	●	0460X30DB	165	168	218	5
4.7	10	Int.	●	0470X10DB	65	68	118	5
	15	Int.	●	0470X15DB	90	93	143	5
	20	Int.	●	0470X20DB	115	118	168	5
	25	Int.	●	0470X25DB	140	143	193	5
	30	Int.	●	0470X30DB	165	168	218	5
4.8	10	Int.	●	0480X10DB	65	68	118	5
	15	Int.	●	0480X15DB	90	93	143	5
	20	Int.	●	0480X20DB	115	118	168	5
	25	Int.	●	0480X25DB	140	143	193	5
	30	Int.	●	0480X30DB	165	168	218	5
4.9	10	Int.	●	0490X10DB	65	68	118	5
	15	Int.	●	0490X15DB	90	93	143	5
	20	Int.	●	0490X20DB	115	118	168	5
	25	Int.	●	0490X25DB	140	143	193	5
	30	Int.	●	0490X30DB	165	168	218	5
5.0	10	Int.	●	0500X10DB	65	68	118	5
	15	Int.	●	0500X15DB	90	93	143	5
	20	Int.	●	0500X20DB	115	118	168	5
	25	Int.	●	0500X25DB	140	143	193	5
	30	Int.	●	0500X30DB	165	168	218	5

Drill Dia. D1 (mm)	Hole Depth (l/d)	Coolant	Stock VP15TF	Order Number	Dimensions (mm)			
					L3	L2	L1	D4
5.1	10	Int.	●	MWS0510X10DB	72	75	127	6
	15	Int.	●	0510X15DB	99	102	154	6
	20	Int.	●	0510X20DB	127	130	182	6
	25	Int.	●	0510X25DB	154	157	209	6
	30	Int.	●	0510X30DB	182	185	237	6
5.2	10	Int.	●	0520X10DB	72	75	127	6
	15	Int.	●	0520X15DB	99	102	154	6
	20	Int.	●	0520X20DB	127	130	182	6
	25	Int.	●	0520X25DB	154	157	209	6
	30	Int.	●	0520X30DB	182	185	237	6
5.3	10	Int.	●	0530X10DB	72	75	127	6
	15	Int.	●	0530X15DB	99	102	154	6
	20	Int.	●	0530X20DB	127	130	182	6
	25	Int.	●	0530X25DB	154	157	209	6
	30	Int.	●	0530X30DB	182	185	237	6
5.4	10	Int.	●	0540X10DB	72	75	127	6
	15	Int.	●	0540X15DB	99	102	154	6
	20	Int.	●	0540X20DB	127	130	182	6
	25	Int.	●	0540X25DB	154	157	209	6
	30	Int.	●	0540X30DB	182	185	237	6
5.5	10	Int.	●	0550X10DB	72	75	127	6
	15	Int.	●	0550X15DB	99	102	154	6
	20	Int.	●	0550X20DB	127	130	182	6
	25	Int.	●	0550X25DB	154	157	209	6
	30	Int.	●	0550X30DB	182	185	237	6
5.6	10	Int.	●	0560X10DB	78	81	133	6
	15	Int.	●	0560X15DB	108	111	163	6
	20	Int.	●	0560X20DB	138	141	193	6
	25	Int.	●	0560X25DB	168	171	223	6
	30	Int.	●	0560X30DB	198	201	253	6
5.7	10	Int.	●	0570X10DB	78	81	133	6
	15	Int.	●	0570X15DB	108	111	163	6
	20	Int.	●	0570X20DB	138	141	193	6
	25	Int.	●	0570X25DB	168	171	223	6
	30	Int.	●	0570X30DB	198	201	253	6

Note) Please specify the following when ordering.

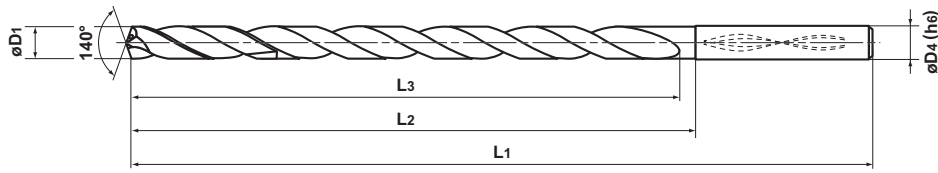
- ① Drill name.
 - ② Workpiece material, drilling depth and required accuracy.
 - ③ Drilling mode (through hole, blind hole, cross hole...).
 - ④ Drill dimensions (dimensions specified in the drawing above).
- Please contact us for inquiries.

Drill Dia. D1 (mm)	Hole Depth (l/d)	Coolant	Stock VP15TF	Order Number	Dimensions (mm)			
					L3	L2	L1	D4
5.8	10	Int.	●	MWS0580X10DB	78	81	133	6
	15	Int.	●	0580X15DB	108	111	163	6
	20	Int.	●	0580X20DB	138	141	193	6
	25	Int.	●	0580X25DB	168	171	223	6
	30	Int.	●	0580X30DB	198	201	253	6
5.9	10	Int.	●	0590X10DB	78	81	133	6
	15	Int.	●	0590X15DB	108	111	163	6
	20	Int.	●	0590X20DB	138	141	193	6
	25	Int.	●	0590X25DB	168	171	223	6
	30	Int.	●	0590X30DB	198	201	253	6
6.0	10	Int.	●	0600X10DB	78	81	133	6
	15	Int.	●	0600X15DB	108	111	163	6
	20	Int.	●	0600X20DB	138	141	193	6
	25	Int.	●	0600X25DB	168	171	223	6
	30	Int.	●	0600X30DB	198	201	253	6
6.1	10	Int.	●	0610X10DB	85	88	141	7
	15	Int.	●	0610X15DB	117	120	173	7
	20	Int.	●	0610X20DB	150	153	206	7
	25	Int.	●	0610X25DB	182	185	238	7
	30	Int.	●	0610X30DB	215	218	271	7
6.2	10	Int.	●	0620X10DB	85	88	141	7
	15	Int.	●	0620X15DB	117	120	173	7
	20	Int.	●	0620X20DB	150	153	206	7
	25	Int.	●	0620X25DB	182	185	238	7
	30	Int.	●	0620X30DB	215	218	271	7
6.3	10	Int.	●	0630X10DB	85	88	141	7
	15	Int.	●	0630X15DB	117	120	173	7
	20	Int.	●	0630X20DB	150	153	206	7
	25	Int.	●	0630X25DB	182	185	238	7
	30	Int.	●	0630X30DB	215	218	271	7
6.4	10	Int.	●	0640X10DB	85	88	141	7
	15	Int.	●	0640X15DB	117	120	173	7
	20	Int.	●	0640X20DB	150	153	206	7
	25	Int.	●	0640X25DB	182	185	238	7
	30	Int.	●	0640X30DB	215	218	271	7
6.5	10	Int.	●	0650X10DB	85	88	141	7
	15	Int.	●	0650X15DB	117	120	173	7
	20	Int.	●	0650X20DB	150	153	206	7
	25	Int.	●	0650X25DB	182	185	238	7
	30	Int.	●	0650X30DB	215	218	271	7
6.6	10	Int.	●	0660X10DB	91	94	147	7
	15	Int.	●	0660X15DB	126	129	182	7
	20	Int.	●	0660X20DB	161	164	217	7
	25	Int.	●	0660X25DB	196	199	252	7
	30	Int.	●	0660X30DB	231	234	287	7
6.7	10	Int.	●	0670X10DB	91	94	147	7
	15	Int.	●	0670X15DB	126	129	182	7
	20	Int.	●	0670X20DB	161	164	217	7
	25	Int.	●	0670X25DB	196	199	252	7
	30	Int.	●	0670X30DB	231	234	287	7

Drill Dia. D1 (mm)	Hole Depth (l/d)	Coolant	Stock VP15TF	Order Number	Dimensions (mm)			
					L3	L2	L1	D4
6.8	10	Int.	●	MWS0680X10DB	91	94	147	7
	15	Int.	●	0680X15DB	126	129	182	7
	20	Int.	●	0680X20DB	161	164	217	7
	25	Int.	●	0680X25DB	196	199	252	7
	30	Int.	●	0680X30DB	231	234	287	7
6.9	10	Int.	●	0690X10DB	91	94	147	7
	15	Int.	●	0690X15DB	126	129	182	7
	20	Int.	●	0690X20DB	161	164	217	7
	25	Int.	●	0690X25DB	196	199	252	7
	30	Int.	●	0690X30DB	231	234	287	7
7.0	10	Int.	●	0700X10DB	91	94	147	7
	15	Int.	●	0700X15DB	126	129	182	7
	20	Int.	●	0700X20DB	161	164	217	7
	25	Int.	●	0700X25DB	196	199	252	7
	30	Int.	●	0700X30DB	231	234	287	7
7.1	10	Int.	●	0710X10DB	98	101	155	8
	15	Int.	●	0710X15DB	135	138	192	8
	20	Int.	●	0710X20DB	173	176	230	8
	25	Int.	●	0710X25DB	210	213	267	8
	30	Int.	●	0710X30DB	248	251	305	8
7.2	10	Int.	●	0720X10DB	98	101	155	8
	15	Int.	●	0720X15DB	135	138	192	8
	20	Int.	●	0720X20DB	173	176	230	8
	25	Int.	●	0720X25DB	210	213	267	8
	30	Int.	●	0720X30DB	248	251	305	8
7.3	10	Int.	●	0730X10DB	98	101	155	8
	15	Int.	●	0730X15DB	135	138	192	8
	20	Int.	●	0730X20DB	173	176	230	8
	25	Int.	●	0730X25DB	210	213	267	8
	30	Int.	●	0730X30DB	248	251	305	8
7.4	10	Int.	●	0740X10DB	98	101	155	8
	15	Int.	●	0740X15DB	135	138	192	8
	20	Int.	●	0740X20DB	173	176	230	8
	25	Int.	●	0740X25DB	210	213	267	8
	30	Int.	●	0740X30DB	248	251	305	8
7.5	10	Int.	●	0750X10DB	98	101	155	8
	15	Int.	●	0750X15DB	135	138	192	8
	20	Int.	●	0750X20DB	173	176	230	8
	25	Int.	●	0750X25DB	210	213	267	8
	30	Int.	●	0750X30DB	248	251	305	8
7.6	10	Int.	●	0760X10DB	104	107	161	8
	15	Int.	●	0760X15DB	144	147	201	8
	20	Int.	●	0760X20DB	184	187	241	8
	25	Int.	●	0760X25DB	224	227	281	8
	30	Int.	●	0760X30DB	264	267	321	8
7.7	10	Int.	●	0770X10DB	104	107	161	8
	15	Int.	●	0770X15DB	144	147	201	8
	20	Int.	●	0770X20DB	184	187	241	8
	25	Int.	●	0770X25DB	224	227	281	8
	30	Int.	●	0770X30DB	264	267	321	8



D1	D1≤3.0	3.0<D1≤6.0	6.0<D1≤10.0	10.0<D1≤14.0
Tolerance	-0.017 -0.031	-0.025 -0.043	-0.033 -0.055	-0.041 -0.068



(Note 1) MWS-DB type can be used for shrink fit holder.

(Note 2) MWS-DB type with ø5.0 or larger diameter has a recess in the end face.

Drill Dia. D1 (mm)	Hole Depth (l/d)	Coolant	Stock VP15TF	Order Number	Dimensions (mm)			
					L3	L2	L1	D4
7.8	10	Int.	●	MWS0780X10DB	104	107	161	8
	15	Int.	●	0780X15DB	144	147	201	8
	20	Int.	●	0780X20DB	184	187	241	8
	25	Int.	●	0780X25DB	224	227	281	8
	30	Int.	●	0780X30DB	264	267	321	8
7.9	10	Int.	●	0790X10DB	104	107	161	8
	15	Int.	●	0790X15DB	144	147	201	8
	20	Int.	●	0790X20DB	184	187	241	8
	25	Int.	●	0790X25DB	224	227	281	8
	30	Int.	●	0790X30DB	264	267	321	8
8.0	10	Int.	●	0800X10DB	104	107	161	8
	15	Int.	●	0800X15DB	144	147	201	8
	20	Int.	●	0800X20DB	184	187	241	8
	25	Int.	●	0800X25DB	224	227	281	8
	30	Int.	●	0800X30DB	264	267	321	8
8.1	10	Int.	●	0810X10DB	111	114	169	9
	15	Int.	●	0810X15DB	153	156	211	9
	20	Int.	●	0810X20DB	196	199	254	9
	25	Int.	●	0810X25DB	238	241	296	9
	NEW 30	Int.	●	0810X30DB	281	284	339	9
8.2	10	Int.	●	0820X10DB	111	114	169	9
	15	Int.	●	0820X15DB	153	156	211	9
	20	Int.	●	0820X20DB	196	199	254	9
	25	Int.	●	0820X25DB	238	241	296	9
	NEW 30	Int.	●	0820X30DB	281	284	339	9
8.3	10	Int.	●	0830X10DB	111	114	169	9
	15	Int.	●	0830X15DB	153	156	211	9
	20	Int.	●	0830X20DB	196	199	254	9
	25	Int.	●	0830X25DB	238	241	296	9
	NEW 30	Int.	●	0830X30DB	281	284	339	9
8.4	10	Int.	●	0840X10DB	111	114	169	9
	15	Int.	●	0840X15DB	153	156	211	9
	20	Int.	●	0840X20DB	196	199	254	9
	25	Int.	●	0840X25DB	238	241	296	9
	NEW 30	Int.	●	0840X30DB	281	284	339	9

Drill Dia. D1 (mm)	Hole Depth (l/d)	Coolant	Stock VP15TF	Order Number	Dimensions (mm)			
					L3	L2	L1	D4
8.5	10	Int.	●	MWS0850X10DB	111	114	169	9
	15	Int.	●	0850X15DB	153	156	211	9
	20	Int.	●	0850X20DB	196	199	254	9
	25	Int.	●	0850X25DB	238	241	296	9
	NEW 30	Int.	●	0850X30DB	281	284	339	9
8.6	10	Int.	●	0860X10DB	117	120	175	9
	15	Int.	●	0860X15DB	162	165	220	9
	20	Int.	●	0860X20DB	207	210	265	9
	25	Int.	●	0860X25DB	252	255	310	9
	NEW 30	Int.	●	0860X30DB	297	300	355	9
8.7	10	Int.	●	0870X10DB	117	120	175	9
	15	Int.	●	0870X15DB	162	165	220	9
	20	Int.	●	0870X20DB	207	210	265	9
	25	Int.	●	0870X25DB	252	255	310	9
	NEW 30	Int.	●	0870X30DB	297	300	355	9
8.8	10	Int.	●	0880X10DB	117	120	175	9
	15	Int.	●	0880X15DB	162	165	220	9
	20	Int.	●	0880X20DB	207	210	265	9
	25	Int.	●	0880X25DB	252	255	310	9
	NEW 30	Int.	●	0880X30DB	297	300	355	9
8.9	10	Int.	●	0890X10DB	117	120	175	9
	15	Int.	●	0890X15DB	162	165	220	9
	20	Int.	●	0890X20DB	207	210	265	9
	25	Int.	●	0890X25DB	252	255	310	9
	NEW 30	Int.	●	0890X30DB	297	300	355	9
9.0	10	Int.	●	0900X10DB	117	120	175	9
	15	Int.	●	0900X15DB	162	165	220	9
	20	Int.	●	0900X20DB	207	210	265	9
	25	Int.	●	0900X25DB	252	255	310	9
	NEW 30	Int.	●	0900X30DB	297	300	355	9
9.1	10	Int.	●	0910X10DB	124	127	182	10
	15	Int.	●	0910X15DB	171	174	229	10
	20	Int.	●	0910X20DB	219	222	277	10
	25	Int.	●	0910X25DB	266	269	324	10
	NEW 30	Int.	●	0910X30DB	314	317	372	10

Note) Please specify the following when ordering.

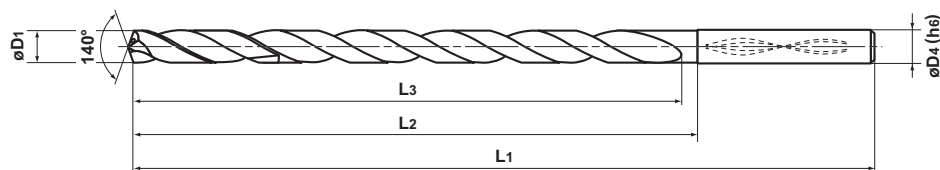
- ① Drill name.
 - ② Workpiece material, drilling depth and required accuracy.
 - ③ Drilling mode (through hole, blind hole, cross hole...).
 - ④ Drill dimensions (dimensions specified in the drawing above).
- Please contact us for inquiries.

Drill Dia. D1 (mm)	Hole Depth (l/d)	Coolant	Stock VP15TF	Order Number	Dimensions (mm)			
					L3	L2	L1	D4
9.2	10	Int.	●	MWS0920X10DB	124	127	182	10
	15	Int.	●	0920X15DB	171	174	229	10
	20	Int.	●	0920X20DB	219	222	277	10
	25	Int.	●	0920X25DB	266	269	324	10
	NEW	30	Int.	●	0920X30DB	314	317	372
9.3	10	Int.	●	0930X10DB	124	127	182	10
	15	Int.	●	0930X15DB	171	174	229	10
	20	Int.	●	0930X20DB	219	222	277	10
	25	Int.	●	0930X25DB	266	269	324	10
	NEW	30	Int.	●	0930X30DB	314	317	372
9.4	10	Int.	●	0940X10DB	124	127	182	10
	15	Int.	●	0940X15DB	171	174	229	10
	20	Int.	●	0940X20DB	219	222	277	10
	25	Int.	●	0940X25DB	266	269	324	10
	NEW	30	Int.	●	0940X30DB	314	317	372
9.5	10	Int.	●	0950X10DB	124	127	182	10
	15	Int.	●	0950X15DB	171	174	229	10
	20	Int.	●	0950X20DB	219	222	277	10
	25	Int.	●	0950X25DB	266	269	324	10
	NEW	30	Int.	●	0950X30DB	314	317	372
9.6	10	Int.	●	0960X10DB	130	133	188	10
	15	Int.	●	0960X15DB	180	183	238	10
	20	Int.	●	0960X20DB	230	233	288	10
	25	Int.	●	0960X25DB	280	283	338	10
	NEW	30	Int.	●	0960X30DB	330	333	388
9.7	10	Int.	●	0970X10DB	130	133	188	10
	15	Int.	●	0970X15DB	180	183	238	10
	20	Int.	●	0970X20DB	230	233	288	10
	25	Int.	●	0970X25DB	280	283	338	10
	NEW	30	Int.	●	0970X30DB	330	333	388
9.8	10	Int.	●	0980X10DB	130	133	188	10
	15	Int.	●	0980X15DB	180	183	238	10
	20	Int.	●	0980X20DB	230	233	288	10
	25	Int.	●	0980X25DB	280	283	338	10
	NEW	30	Int.	●	0980X30DB	330	333	388
9.9	10	Int.	●	0990X10DB	130	133	188	10
	15	Int.	●	0990X15DB	180	183	238	10
	20	Int.	●	0990X20DB	230	233	288	10
	25	Int.	●	0990X25DB	280	283	338	10
	NEW	30	Int.	●	0990X30DB	330	333	388
10.0	10	Int.	●	1000X10DB	130	133	188	10
	15	Int.	●	1000X15DB	180	183	238	10
	20	Int.	●	1000X20DB	230	233	288	10
	25	Int.	●	1000X25DB	280	283	338	10
	NEW	30	Int.	●	1000X30DB	330	333	388
10.1	10	Int.	●	1010X10DB	137	140	201	11
	15	Int.	●	1010X15DB	189	192	253	11
	20	Int.	●	1010X20DB	242	245	306	11
	25	Int.	●	1010X25DB	294	297	358	11
	NEW	30	Int.	●	1010X30DB	346	349	408

Drill Dia. D1 (mm)	Hole Depth (l/d)	Coolant	Stock VP15TF	Order Number	Dimensions (mm)				
					L3	L2	L1	D4	
10.2	10	Int.	●	MWS1020X10DB	137	140	201	11	
	15	Int.	●	1020X15DB	189	192	253	11	
	20	Int.	●	1020X20DB	242	245	306	11	
	NEW	25	Int.	●	1020X25DB	294	297	358	11
	10.3	10	Int.	●	1030X10DB	137	140	201	11
15		Int.	●	1030X15DB	189	192	253	11	
20		Int.	●	1030X20DB	242	245	306	11	
NEW		25	Int.	●	1030X25DB	294	297	358	11
10.4		10	Int.	●	1040X10DB	137	140	201	11
	15	Int.	●	1040X15DB	189	192	253	11	
	20	Int.	●	1040X20DB	242	245	306	11	
	NEW	25	Int.	●	1040X25DB	294	297	358	11
	10.5	10	Int.	●	1050X10DB	137	140	201	11
15		Int.	●	1050X15DB	189	192	253	11	
20		Int.	●	1050X20DB	242	245	306	11	
NEW		25	Int.	●	1050X25DB	294	297	358	11
10.6		10	Int.	●	1060X10DB	143	146	207	11
	15	Int.	●	1060X15DB	198	201	262	11	
	20	Int.	●	1060X20DB	253	256	317	11	
	NEW	25	Int.	●	1060X25DB	308	311	372	11
	10.7	10	Int.	●	1070X10DB	143	146	207	11
15		Int.	●	1070X15DB	198	201	262	11	
20		Int.	●	1070X20DB	253	256	317	11	
NEW		25	Int.	●	1070X25DB	308	311	372	11
10.8		10	Int.	●	1080X10DB	143	146	207	11
	15	Int.	●	1080X15DB	198	201	262	11	
	20	Int.	●	1080X20DB	253	256	317	11	
	NEW	25	Int.	●	1080X25DB	308	311	372	11
	10.9	10	Int.	●	1090X10DB	143	146	207	11
15		Int.	●	1090X15DB	198	201	262	11	
20		Int.	●	1090X20DB	253	256	317	11	
NEW		25	Int.	●	1090X25DB	308	311	372	11
11.0		10	Int.	●	1100X10DB	143	146	207	11
	15	Int.	●	1100X15DB	198	201	262	11	
	20	Int.	●	1100X20DB	253	256	317	11	
	NEW	25	Int.	●	1100X25DB	308	311	372	11
	11.1	10	Int.	●	1110X10DB	150	153	215	12
15		Int.	●	1110X15DB	207	210	272	12	
20		Int.	●	1110X20DB	265	268	330	12	
NEW		25	Int.	●	1110X25DB	322	325	387	12
11.2		10	Int.	●	1120X10DB	150	153	215	12
	15	Int.	●	1120X15DB	207	210	272	12	
	20	Int.	●	1120X20DB	265	268	330	12	
	NEW	25	Int.	●	1120X25DB	322	325	387	12
	11.3	10	Int.	●	1130X10DB	150	153	215	12
15		Int.	●	1130X15DB	207	210	272	12	
20		Int.	●	1130X20DB	265	268	330	12	
NEW		25	Int.	●	1130X25DB	322	325	387	12



D1	D1≤3.0	3.0<D1≤6.0	6.0<D1≤10.0	10.0<D1≤14.0
Tolerance	-0.017 -0.031	-0.025 -0.043	-0.033 -0.055	-0.041 -0.068



(Note 1) MWS-DB type can be used for shrink fit holder.

(Note 2) MWS-DB type with ø5.0 or larger diameter has a recess in the end face.

Drill Dia. D1 (mm)	Hole Depth (l/d)	Coolant	Stock VP15TF	Order Number	Dimensions (mm)			
					L3	L2	L1	D4
11.4 NEW	10	Int.	●	MWS1140X10DB	150	153	215	12
	15	Int.	●	1140X15DB	207	210	272	12
	20	Int.	●	1140X20DB	265	268	330	12
	25	Int.	●	1140X25DB	322	325	387	12
11.5 NEW	10	Int.	●	1150X10DB	150	153	215	12
	15	Int.	●	1150X15DB	207	210	272	12
	20	Int.	●	1150X20DB	265	268	330	12
	25	Int.	●	1150X25DB	322	325	387	12
11.6 NEW	10	Int.	●	1160X10DB	156	159	221	12
	15	Int.	●	1160X15DB	216	219	281	12
	20	Int.	●	1160X20DB	276	279	341	12
	25	Int.	●	1160X25DB	336	339	401	12
11.7 NEW	10	Int.	●	1170X10DB	156	159	221	12
	15	Int.	●	1170X15DB	216	219	281	12
	20	Int.	●	1170X20DB	276	279	341	12
	25	Int.	●	1170X25DB	336	339	401	12
11.8 NEW	10	Int.	●	1180X10DB	156	159	221	12
	15	Int.	●	1180X15DB	216	219	281	12
	20	Int.	●	1180X20DB	276	279	341	12
	25	Int.	●	1180X25DB	336	339	401	12
11.9 NEW	10	Int.	●	1190X10DB	156	159	221	12
	15	Int.	●	1190X15DB	216	219	281	12
	20	Int.	●	1190X20DB	276	279	341	12
	25	Int.	●	1190X25DB	336	339	401	12
12.0 NEW	10	Int.	●	1200X10DB	156	159	221	12
	15	Int.	●	1200X15DB	216	219	281	12
	20	Int.	●	1200X20DB	276	279	341	12
	25	Int.	●	1200X25DB	336	339	401	12
12.1 NEW	10	Int.	□	1210X10DB	163	166	229	13
	15	Int.	□	1210X15DB	225	228	291	13
	20	Int.	□	1210X20DB	288	291	354	13
12.2 NEW	10	Int.	□	1220X10DB	163	166	229	13
	15	Int.	□	1220X15DB	225	228	291	13
	20	Int.	□	1220X20DB	288	291	354	13

Drill Dia. D1 (mm)	Hole Depth (l/d)	Coolant	Stock VP15TF	Order Number	Dimensions (mm)			
					L3	L2	L1	D4
12.3 NEW	10	Int.	□	MWS1230X10DB	163	166	229	13
	15	Int.	□	1230X15DB	225	228	291	13
	20	Int.	□	1230X20DB	288	291	354	13
12.4 NEW	10	Int.	□	1240X10DB	163	166	229	13
	15	Int.	□	1240X15DB	225	228	291	13
	20	Int.	□	1240X20DB	288	291	354	13
12.5 NEW	10	Int.	●	1250X10DB	163	166	229	13
	15	Int.	●	1250X15DB	225	228	291	13
	20	Int.	●	1250X20DB	288	291	354	13
12.6 NEW	10	Int.	□	1260X10DB	169	172	235	13
	15	Int.	□	1260X15DB	234	237	300	13
	20	Int.	□	1260X20DB	299	302	365	13
12.7 NEW	10	Int.	□	1270X10DB	169	172	235	13
	15	Int.	□	1270X15DB	234	237	300	13
	20	Int.	□	1270X20DB	299	302	365	13
12.8 NEW	10	Int.	□	1280X10DB	169	172	235	13
	15	Int.	□	1280X15DB	234	237	300	13
	20	Int.	□	1280X20DB	299	302	365	13
12.9 NEW	10	Int.	□	1290X10DB	169	172	235	13
	15	Int.	□	1290X15DB	234	237	300	13
	20	Int.	□	1290X20DB	299	302	365	13
13.0 NEW	10	Int.	●	1300X10DB	169	172	235	13
	15	Int.	●	1300X15DB	234	237	300	13
	20	Int.	●	1300X20DB	299	302	365	13
13.1 NEW	10	Int.	□	1310X10DB	176	179	243	14
	15	Int.	□	1310X15DB	243	246	310	14
	20	Int.	□	1310X20DB	311	314	378	14
13.2 NEW	10	Int.	□	1320X10DB	176	179	243	14
	15	Int.	□	1320X15DB	243	246	310	14
	20	Int.	□	1320X20DB	311	314	378	14
13.3 NEW	10	Int.	□	1330X10DB	176	179	243	14
	15	Int.	□	1330X15DB	243	246	310	14
	20	Int.	□	1330X20DB	311	314	378	14

Note) Please specify the following when ordering.

①Drill name.

③Drilling mode (through hole, blind hole, cross hole...).

Please contact us for inquiries.

②Workpiece material, drilling depth and required accuracy.

④Drill dimensions (dimensions specified in the drawing above).

Drill Dia. D1 (mm)	Hole Depth (l/d)	Coolant	Stock VP15TF	Order Number	Dimensions (mm)			
					L3	L2	L1	D4
13.4 <small>NEW</small>	10	Int.	<input type="checkbox"/>	MWS1340X10DB	176	179	243	14
	15	Int.	<input type="checkbox"/>	1340X15DB	243	246	310	14
	20	Int.	<input type="checkbox"/>	1340X20DB	311	314	378	14
13.5 <small>NEW</small>	10	Int.	<input checked="" type="checkbox"/>	1350X10DB	176	179	243	14
	15	Int.	<input checked="" type="checkbox"/>	1350X15DB	243	246	310	14
	20	Int.	<input checked="" type="checkbox"/>	1350X20DB	311	314	378	14
13.6 <small>NEW</small>	10	Int.	<input type="checkbox"/>	1360X10DB	182	185	249	14
	15	Int.	<input type="checkbox"/>	1360X15DB	252	255	319	14
	20	Int.	<input type="checkbox"/>	1360X20DB	322	325	389	14
13.7 <small>NEW</small>	10	Int.	<input type="checkbox"/>	1370X10DB	182	185	249	14
	15	Int.	<input type="checkbox"/>	1370X15DB	252	255	319	14
	20	Int.	<input type="checkbox"/>	1370X20DB	322	325	389	14

Drill Dia. D1 (mm)	Hole Depth (l/d)	Coolant	Stock VP15TF	Order Number	Dimensions (mm)			
					L3	L2	L1	D4
13.8 <small>NEW</small>	10	Int.	<input type="checkbox"/>	MWS1380X10DB	182	185	249	14
	15	Int.	<input type="checkbox"/>	1380X15DB	252	255	319	14
	20	Int.	<input type="checkbox"/>	1380X20DB	322	325	389	14
13.9 <small>NEW</small>	10	Int.	<input type="checkbox"/>	1390X10DB	182	185	249	14
	15	Int.	<input type="checkbox"/>	1390X15DB	252	255	319	14
	20	Int.	<input type="checkbox"/>	1390X20DB	322	325	389	14
14.0 <small>NEW</small>	10	Int.	<input checked="" type="checkbox"/>	1400X10DB	182	185	249	14
	15	Int.	<input checked="" type="checkbox"/>	1400X15DB	252	255	319	14
	20	Int.	<input checked="" type="checkbox"/>	1400X20DB	322	325	389	14

Recommended Cutting Conditions

Work Material	Drill Diameter	φ3.0—φ6.0		φ6.0—φ10.0		φ10.0—φ14.0	
		Conditions Hardness	Cutting Speed (m/min)	Feed (mm/rev)	Cutting Speed (m/min)	Feed (mm/rev)	Cutting Speed (m/min)
P Mild Steel	≤180HB	90 (50—120)	0.20 (0.15—0.30)	110 (80—140)	0.25 (0.20—0.35)	130 (90—170)	0.30 (0.20—0.40)
	180—280HB	80 (50—100)	0.20 (0.15—0.30)	90 (70—120)	0.25 (0.20—0.35)	110 (80—140)	0.25 (0.20—0.40)
	280—350HB	70 (40—90)	0.20 (0.15—0.25)	80 (60—110)	0.25 (0.15—0.30)	90 (70—130)	0.25 (0.15—0.35)
M Stainless Steel	≤200HB	50 (20—100)	0.10 (0.05—0.15)	70 (40—120)	0.20 (0.10—0.25)	80 (50—120)	0.25 (0.15—0.30)
K Cast Iron	Tensile Strength ≤350MPa	90 (70—120)	0.25 (0.15—0.30)	110 (100—140)	0.30 (0.15—0.35)	130 (110—160)	0.35 (0.25—0.40)
	Ductile Cast Iron Tensile Strength ≤450MPa	50 (30—80)	0.20 (0.15—0.25)	60 (40—90)	0.20 (0.15—0.30)	80 (50—110)	0.25 (0.20—0.40)
N Aluminum Alloy	—	100 (80—150)	0.25 (0.20—0.35)	130 (100—170)	0.30 (0.20—0.50)	140 (100—170)	0.40 (0.20—0.80)
S Heat Resistant Alloy	—	20 (10—25)	0.10 (0.05—0.15)	20 (15—30)	0.12 (0.05—0.15)	20 (15—30)	0.15 (0.10—0.20)

(Note 1) Depending on the neck length, lower the cutting speed shown in the table above.

(Note 2) Be sure to drill a guide hole.

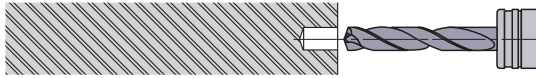
(Note 3) Raise to the above regular cutting revolution after putting a long drill into a guide hole.

(Note 4) For pilot hole drilling, Mitsubishi's WSTAR / ZET1 drill is recommended.

Use

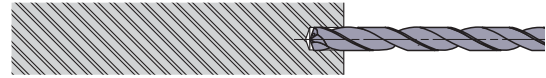
● Drilling a blind hole

1. Drilling a pilot hole



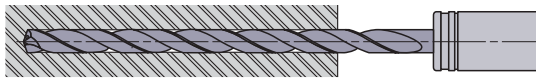
- ① Use a drill with a larger (flatter) point angle than the super long type. Mitsubishi type MZE, MZS, MWE or MWS is recommended.
- ② Use a drill with the same diameter as the deep hole drill.
- ③ Drill depth : Approx 2-3D or deeper.
- ④ Ensure a high precision hole is drilled for the guide.

2. Initial cutting with the long type drill.



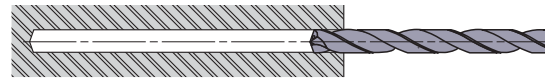
- ① Penetrate the guide hole at low revolution. (Cutting speed 20m-30m/min, feed rate 0.2mm-0.3mm/rev)
- ② Stop the long type drill 1mm-3mm short of the guide hole bottom.

3. Drill the deep hole



- ① Start cutting at the recommended speed and feed with a non-peck (continuous feed) cycle.

4. Drill retraction

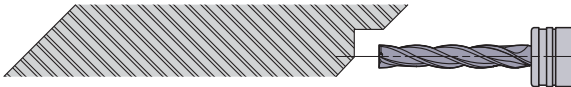


- ① After drilling, lower the cutting revolution about 1mm-2mm short of the hole end. (Cutting speed of around 20m-30m/min)
- ② Retract the drill to the pilot hole depth starting point at a feed rate of 3000mm/min.
- ③ Finally, clear the hole at a cutting speed of 20m-30m/min and feed rate of 0.2mm-0.3mm/rev.

Use

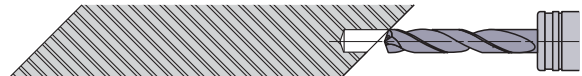
● Drilling and breaking through on irregular faces or angles

1. Spot facing



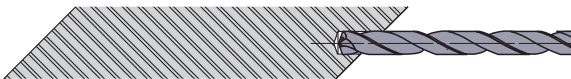
- ① Machine a flat or the irregular face by using an end mill or slot drill capable of spot facing. Make the spot face diameter the same size as the required deep hole diameter.

2. Drilling a pilot hole



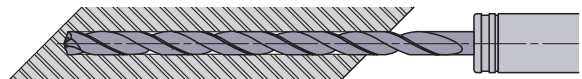
- ① Use a drill with a larger (flatter) point angle than the super long type. Mitsubishi type MZE, MZS, MWE or MWS is recommended.
- ② Use a drill with the same diameter as the deep hole drill.
- ③ Drill depth : Approx 2-3D or deeper.
- ④ Ensure a high precision hole is drilled for the guide.

3. Initial cutting with the long type drill



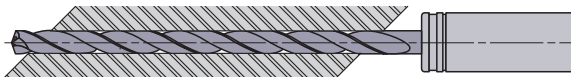
- ① Penetrate the guide hole at a low revolution. (Cutting speed 20m-30m/min, feed rate 0.2mm-0.3mm/rev)
- ② Stop the long type drill 1mm-3mm short of the guide hole bottom.

4. Drill the deep hole



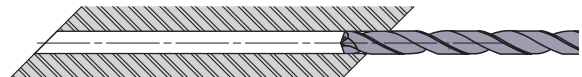
- ① Start cutting at the recommended speed and feed with a non-peck (continuous feed) cycle.

5. Breaking through



- ① When breaking through, the cutting edge can be damaged.
- ② A feed rate of 0.05mm-0.1mm/rev is recommended.

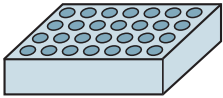
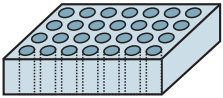
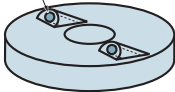
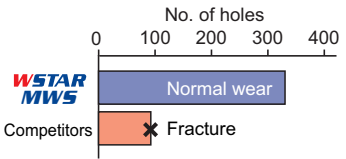
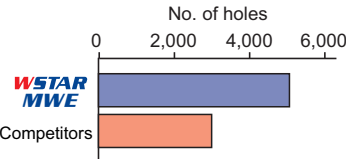
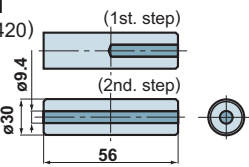
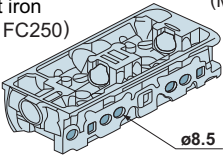
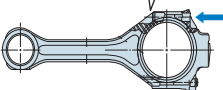
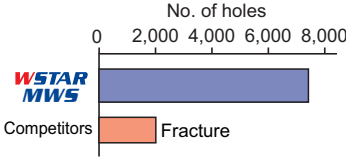
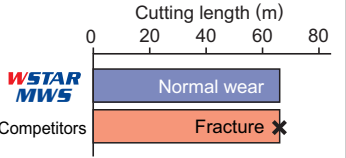
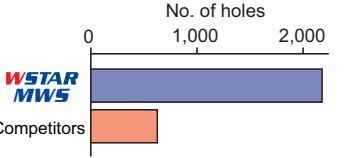

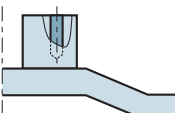
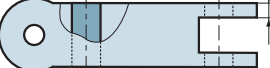
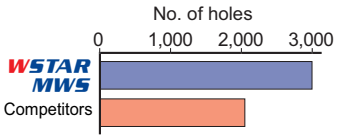
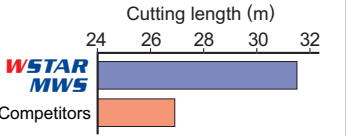
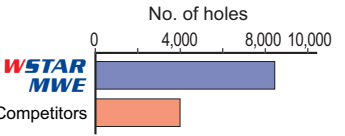
6. Drill retraction



- ① Retract the drill to the pilot hole depth starting point at a feed rate of 3000mm/min.
- ② Finally clear the hole at a cutting speed of 20m-30m/min and feed rate of 0.2mm-0.3mm/rev.

MWE/MWS WSTAR Drill

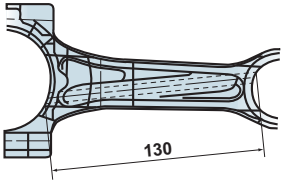
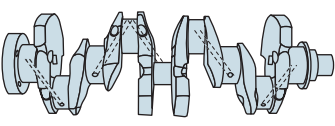
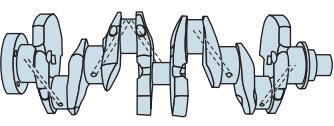
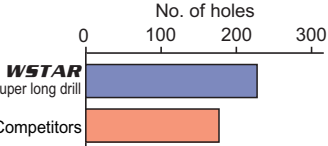

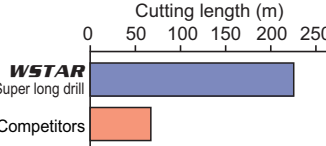
Application Examples



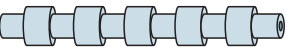

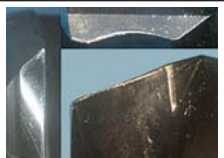

Drill		MWS0150LB	MWS0250XB	MWE0780MA
Workpiece		Stainless steel (JIS SUS304) Cutting depth: 7.5mm (Blind hole) 	Stainless steel (JIS SUS630) Cutting depth: 30mm (Through hole) 	Ductile cast iron (JIS FCD700) 200HB $\phi 7.8$ 
Component		Test workpiece	Mould parts	Compressor parts
Cutting Conditions	Cutting Speed (m/min)	40	40	48
	Feed (mm/rev)	0.05	0.06	0.15
	Revolution (mm/rev)	8493	5096	1,958
	Table Feed (mm/min)	425	306	294
Coolant		W.S.O. : 3MPa	W.S.O. : 3MPa	W.S.O.
Machine		Machining centre	Machining centre	Machining centre
Result			Excellent machining with no wandering even after drilling 50 holes.	
Drill		MWS0940MB	MWS0850MB	MWS1590LB
Workpiece		Alloy steel (JIS SCM420) 180HB 	Cast iron (JIS FC250) (M10 bolt) 	Carbon steel (JIS S40C) 280HB Tool life is assessed by the burr made after drilling. 
Component		Crank pin	Auto parts	Con rod
Cutting Conditions	Cutting Speed (m/min)	54	150	115
	Feed (mm/rev)	0.2	0.3	0.25
	Revolution (mm/rev)	1,829	5,617	2,302
	Table Feed (mm/min)	366	1,685	576
Coolant		W.S.O.	W.S.O.	Mist
Machine		NC lathe	Machining centre	Machining centre
Result				
Drill		MWS0400LB	MWS1040LB	MWE1120SA
Workpiece		Carbon steel (JIS S48C) 	Mild steel (JIS SS400) 	Alloy steel (JIS SCM415H) 
Component		Cam shaft	Machine parts	Automobile parts
Cutting Conditions	Cutting Speed (m/min)	80	62	88
	Feed (mm/rev)	0.18	0.3	0.12
	Revolution (mm/rev)	6,366	1,898	2,500
	Table Feed (mm/min)	1,145	569.4	300
Coolant		W.S.O.	Mist	W.S.O.
Machine		Machining centre	Machining centre	Machining centre
Result				

Solid Carbide Drill

● MWS WSTAR SUPER LONG DRILL

Application Examples

Drill	φ6 x 225 x φ6	φ6.5 x 230 x φ7	φ6 x 225 x φ6
Machine	Vertical type M/C	Horizontal type M/C	Horizontal type M/C
Workpiece	Carbon steel (JIS S55C) Hardness: 280HB Drilled depth: 130mm 	Carbon steel (JIS S48C) Drilled depth: 100mm 	Carbon steel (JIS S40C-Lead free) Drilled depth: Max132mm 
Component	Connecting rod	Crankshaft	Crankshaft
Cutting Conditions	Cutting Speed (m/min)	80	100
	Feed (mm/rev)	0.2	0.15
	Revolution (mm/rev)	4250	5300
	Table Feed (mm/min)	850	795
Coolant	Water soluble : 2MPa	M.Q.L.	M.Q.L.
Result			

Drill	MWS0700X20DB	φ8 x 265 x φ8	φ8.5 x 325 x φ9
Machine	Horizontal type M/C	Horizontal type M/C	Horizontal type M/C
Workpiece	Alloy steel (JIS SCr440-H) Drilled depth: 125mm (Blind hole) 	Alloy steel (JIS SCM440-H) Drilled depth: Max. 215mm (Drilled from both sides) 	Cast iron (JIS FCA) Drilled depth: 240mm (Blind hole) 
Component	Clutch shaft	Plant components	Cam shaft
Cutting Conditions	Cutting Speed (m/min)	50	60
	Feed (mm/rev)	0.3	0.3
	Revolution (mm/rev)	2200	2250
	Table Feed (mm/min)	660	675
Coolant	M.Q.L.	M.Q.L.	Mist coolant
Cutting length (m)	125	156	150
Result			

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.

MITSUBISHI MATERIALS CORPORATION



The Scope of the Registration:
Design, Development and
Production of Compound
Carbide Tools and Carbide
Blanks



The Scope of the Registration:
Design, Development and
Production of Cutting Tools,
Wear-resister Tools, Rock
Drilling Tools, Cemented
Carbide Blanks and Coated
Products



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MITSUBISHI MATERIALS CORPORATION Area Marketing & Operations Dept.

KFC bldg., 8F, 1-6-1, Yokoami, Sumida-ku, Tokyo 130-0015, Japan
TEL +81-3-5819-8772 FAX +81-3-5819-8774

MMC HARTMETALL GmbH

Comeniusstr.2, 40670, Meerbusch GERMANY
TEL +49-2159-9189-0 FAX +49-2159-918966

MITSUBISHI MATERIALS U.S.A. CORPORATION Headquarters

17401, Eastman Street, Irvine, California, 92614, USA
TEL +1-949-862-5100 FAX +1-949-862-5180

MMC METAL SINGAPORE PTE LTD.

10, Arumugam Road, #04-00 Lion Industrial Bldg., 409957, SINGAPORE
TEL +65-6743-9370 FAX +65-6749-1469

Mitsubishi Carbide Home page : <http://www.mitsubishicarbide.com>
(Tools specifications subject to change without notice.)