

Solid Carbide Drill

Super burnishing drill **MAS** type

(Patent pending)



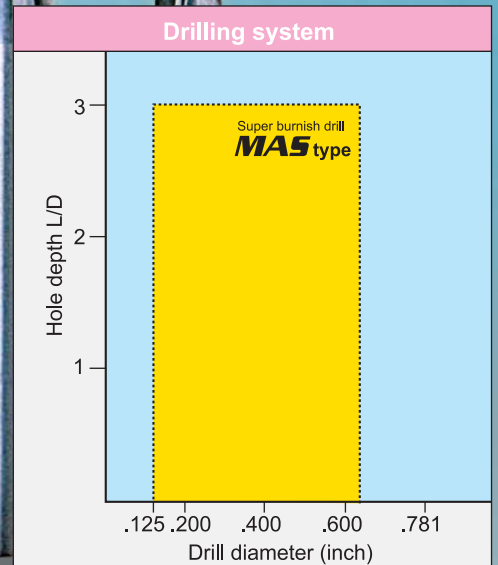
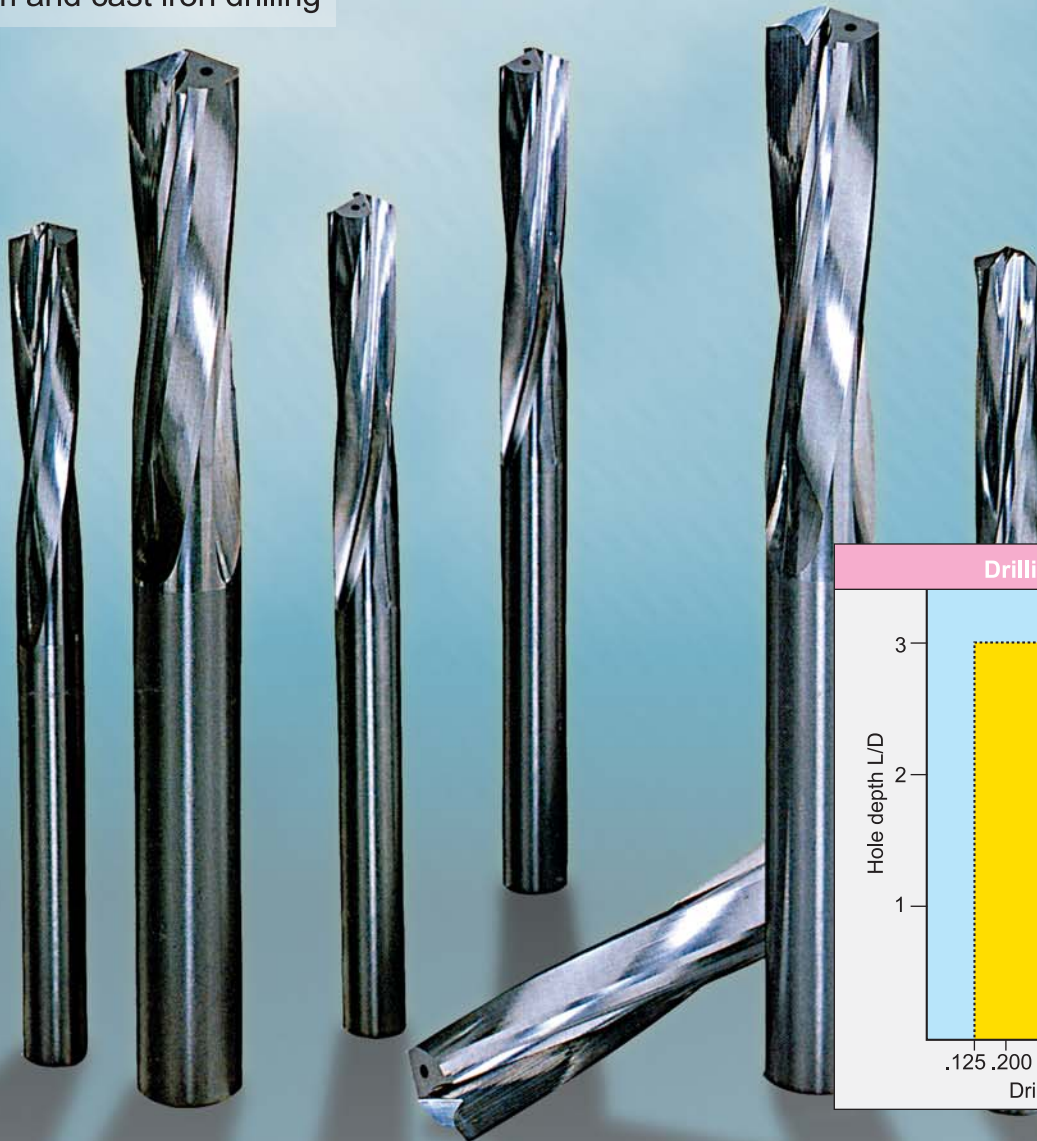
Tsukuba Plant
ISO 9001-1994
Registration No. JSAQ 080
Gifu Plant
ISO 9001-1994
Registration No. JSAQ 094



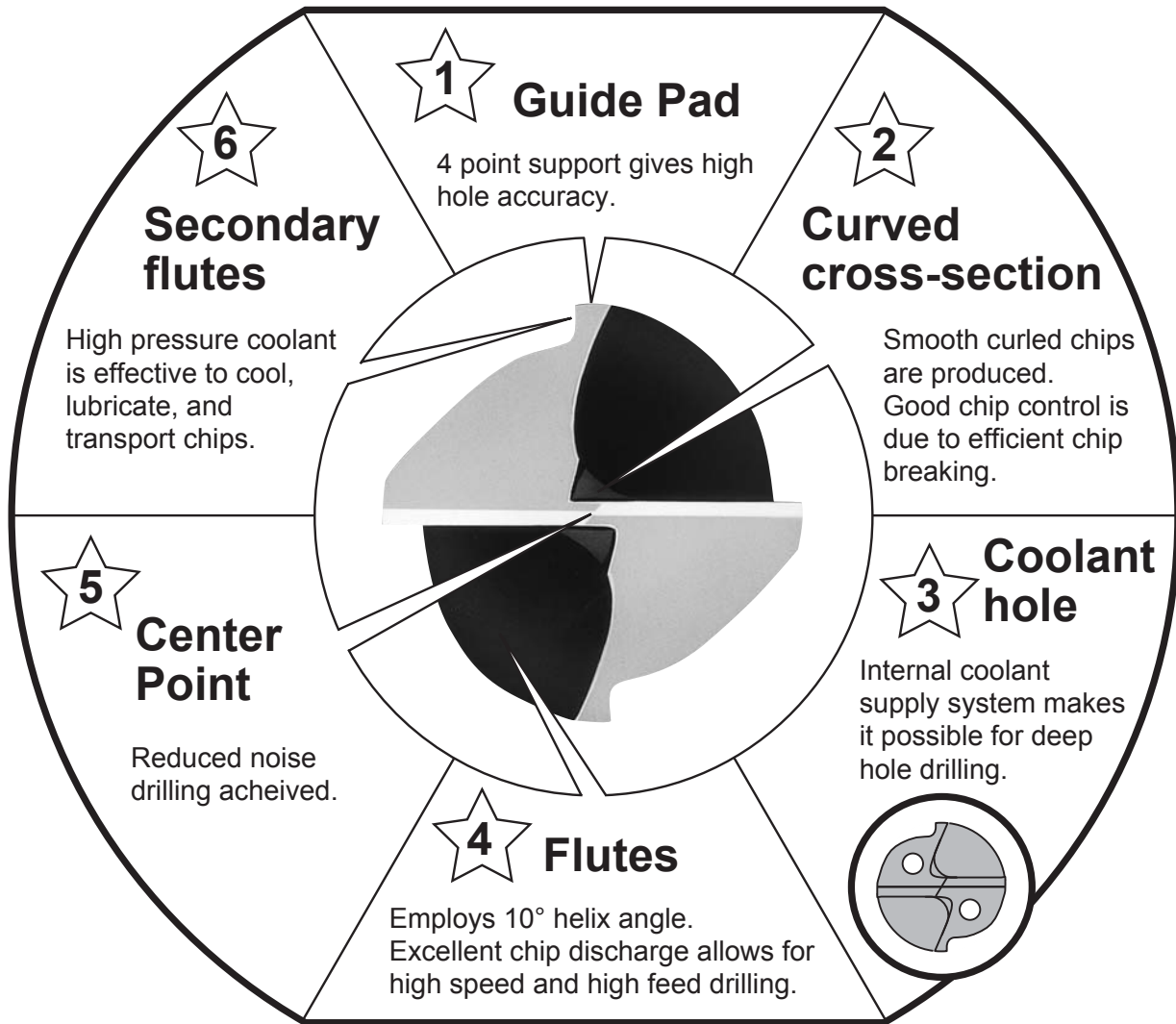
Tsukuba Plant
ISO 14001-1996
Registration No. JSAE 036

Solid carbide, coolant through drill with burnishing effect. High speed drilling with quality surface finish and size. The answer to close hole drilling.

- High accuracy
- Aluminum and cast iron drilling



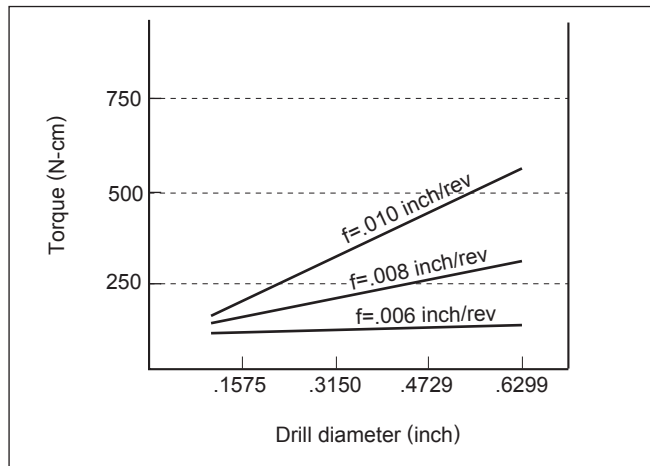
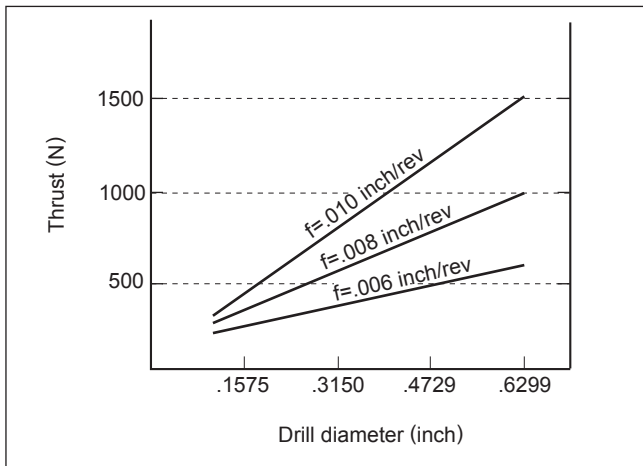
Features of *MAS* type



Cutting performance of *MAS* type

► Cutting resistance

Workpiece : T6 Aluminum Cutting depth : (L/D=3) through hole
 Cutting speed : 328feet/min Cutting fluid : WSO (10%)



Cutting performance of **MAS** type



Drilling Accuracy

Tool : MAS1000MB

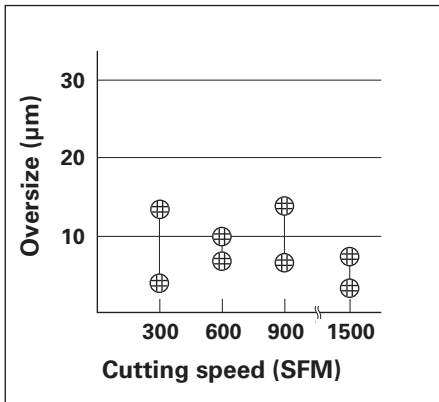
Workpiece : 330 Aluminum

Cutting Fluid : WSO (10%)

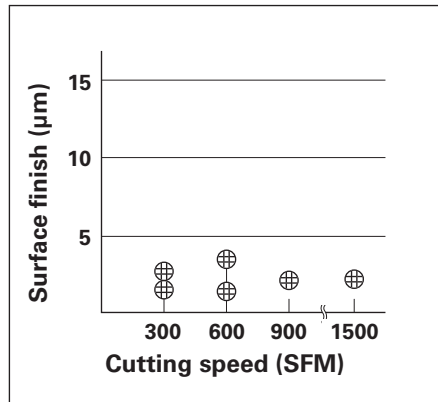
Cutting depth: 11.8 inch (L/D=3) through hole

  ; f=.008 in/rev

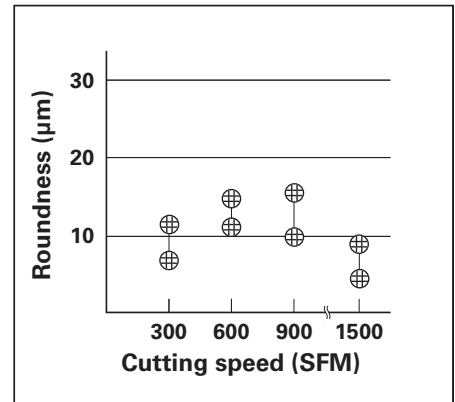
Enlarge



Surface finish

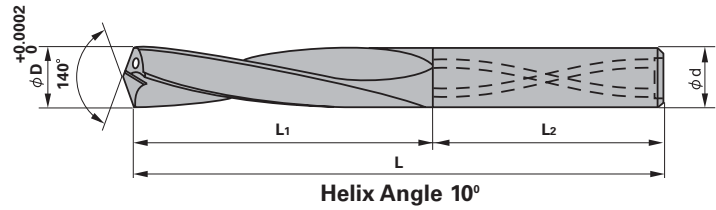


Roundness



Tool	Workpiece	Drill diameter		Cutting conditions		Drill diameter	
		.125-.250		.251-.400		.401-.781	
		Cutting speed (SFM)	Feed (IPR)	Cutting speed (SFM)	Feed (IPR)	Cutting speed (SFM)	Feed (IPR)
MAS	Cast aluminum alloy	160-600	.004-.009	300-600	.008-.012	450-600	.006-.012
	Die cast aluminum alloy	300-600	.004-.009	330-500	.004-.009	450-600	.006-.009
	Cast Iron	120-200	.004-.008	120-200	.006-.009	200-400	.008-.012
	Ductile cast iron	100-120	.003-.006	120-200	.004-.008	180-300	.006-.009

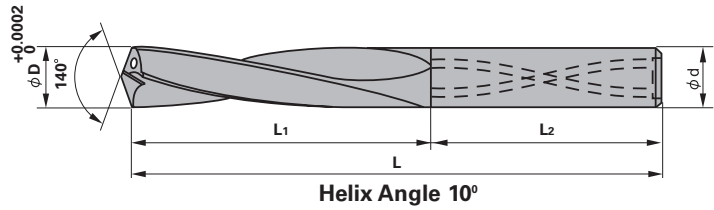
Standards of *MAS* type



Order Number	Uncoated		Drill Diameter (ØD)				Dimensions (inch or mm)				Drill Depth
	HTT10		Fractional (inch)	Metric (mm)	Decimal	Tap Drill Sizes	L	L1	L2	d	
MAS01250MB	+		1/8		0.1250		2.520	0.945	1.575	0.157	3XD
MAS01406MB	+		9/64		0.1406		2.677	1.102	1.575	0.157	
MAS01495MB	+		#25		0.1495	10-24NC	2.677	1.102	1.575	0.157	
MAS01563MB	+		5/32		0.1563		2.677	1.102	1.575	0.157	
MAS01590MB	+		#21		0.1590	10-32NF	2.795	1.220	1.575	0.197	
MAS01719MB	+		11/64		0.1719		2.795	1.220	1.575	0.197	
MAS01875MB	+		3/16		0.1875		2.874	1.299	1.575	0.197	
MAS0500MB	◇			5.0mm	0.1969		73mm	33mm	40mm	5mm	
MAS02031MB	+		13/64		0.2031		2.992	1.417	1.575	0.236	
MAS02165MB	+				0.2165		2.992	1.417	1.575	0.236	
MAS02188MB	+		7/32		0.2188		3.110	1.535	1.575	0.236	
MAS02344MB	+		15/64		0.2344		3.110	1.535	1.575	0.236	
MAS0600MB	◇			6.0mm	0.2362		79mm	39mm	40mm	6mm	
MAS02500MB	+		1/4		0.2500	1/16-27NS	3.307	1.654	1.653	0.276	
MAS0650MB	◇			6.5mm	0.2559		84mm	42mm	42mm	7mm	
MAS02570MB	+		F		0.2570	5/16-18NC	3.307	1.654	1.653	0.276	
MAS02656MB	+		17/64		0.2656		3.307	1.654	1.653	0.276	
MAS0680MB	◇			6.8mm	0.2677		84mm	42mm	42mm	7mm	
MAS02720MB	+		I		0.2720	5/16-24NF	3.307	1.654	1.653	0.276	
MAS0700MB	◇			7.0mm	0.2756		84mm	42mm	42mm	7mm	
MAS02812MB	+		9/32		0.2812		3.543	1.890	1.653	0.315	
MAS0735MB	◇			7.35mm	0.2894		90mm	48mm	42mm	8mm	
MAS02969MB	+		19/64		0.2969		3.543	1.890	1.653	0.315	
MAS03125MB	+		5/16		0.3125	3/8-16NC	3.543	1.890	1.653	0.315	
MAS0800MB	◇			8.0mm	0.3150		90mm	48mm	42mm	8mm	
MAS03281MB	+		21/64		0.3281	1/8-27NPT	3.701	1.969	1.732	0.354	
MAS03320MB	+		Q		0.3320	3/8-24NF	3.701	1.969	1.732	0.354	
MAS0850MB	◇			8.5mm	0.3346		94mm	50mm	44mm	9mm	
MAS03438MB	+		11/32		0.3438		3.701	1.969	1.732	0.354	
MAS0900MB	◇			9.0mm	0.3543		94mm	50mm	44mm	9mm	
MAS03594MB	+		23/64		0.3594		3.819	2.087	1.732	0.394	
MAS0921MB	◇			9.21mm	0.3626		97mm	53mm	44mm	10mm	
MAS03680MB	+		U		0.3680	7/16-14NC	3.819	2.087	1.732	0.394	
MAS0950MB	◇			9.5mm	0.3740		97mm	53mm	44mm	10mm	
MAS03750MB	+		3/8		0.3750		3.819	2.087	1.732	0.394	
MAS03906MB	+		25/64		0.3906	7/16-20NF	3.819	2.087	1.732	0.394	
MAS1000MB	◇			10.0mm	0.3937		97mm	53mm	44mm	10mm	

⊕ : Stock ◇ : Non stock. Allow 2 weeks for delivery

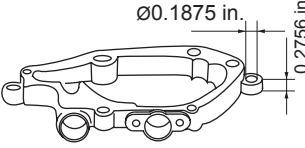
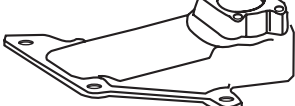
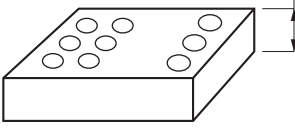
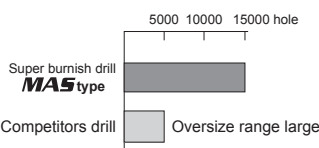
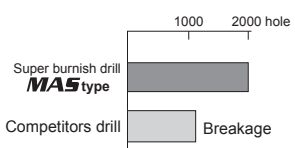
Standards of *MAS* type



Order Number	Uncoated		Drill Diameter (ØD)				Dimensions (inch or mm)				Drill Depth
	HT110		Fractional (inch)	Metric (mm)	Decimal	Tap Drill Sizes	L	L1	L2	d	
MAS1030MB	◇			10.3mm	0.4055		101mm	55mm	46mm	11mm	3XD
MAS04062MB	+		13/32		0.4062		3.976	2.165	1.811	0.433	
MAS1050MB	◇			10.5mm	0.4134		101mm	55mm	46mm	11mm	
MAS04219MB	+		27/64		0.4219	1/2-13 & 1/2-12	3.976	2.165	1.811	0.433	
MAS1100MB	◇			11.0mm	0.4331		101mm	55mm	46mm	11mm	
MAS1108MB	◇			11.08mm	0.4362		106mm	60mm	46mm	12mm	
MAS04375MB	+		7/16		0.4375	1/4-18NPT	4.173	2.362	1.811	0.472	
MAS04531MB	+		29/64		0.4531	1/2-20 & 1/4-18NS	4.173	2.362	1.811	0.472	
MAS04688MB	+		15/32		0.4688		4.173	2.362	1.811	0.472	
MAS1200MB	◇			12.0mm	0.4724		105mm	60mm	46mm	12mm	
MAS04844MB	+		31/64		0.4844	9/16-12NC	4.528	2.559	1.969	0.512	
MAS1250MB	◇			12.5mm	0.4921		115mm	65mm	50mm	13mm	
MAS05000MB	+		1/2		0.5000		4.528	2.559	1.969	0.512	
MAS1296MB	◇			12.96mm	0.5102		115mm	65mm	50mm	13mm	
MAS1300MB	◇			13.0mm	0.5118		115mm	65mm	50mm	13mm	
MAS05156MB	+		33/64		0.5156	9/16-18NF	4.724	2.756	1.968	0.551	
MAS05312MB	+		17/32		0.5312	5/8-11NC	4.724	2.756	1.968	0.551	
MAS1350MB	◇			13.5mm	0.5315		120mm	70mm	50mm	14mm	
MAS05469MB	+		35/64		0.5469		4.724	2.756	1.968	0.551	
MAS1400MB	◇			14.0mm	0.5512		120mm	70mm	50mm	14mm	
MAS05625MB	+		9/16		0.5625	3/8-18NPT	5.118	2.835	2.283	0.591	
MAS05781MB	+		37/64		0.5781	5/8-18NF	5.118	2.835	2.283	0.591	
MAS1496MB	◇			14.96mm	0.5890		130mm	72mm	58mm	15mm	
MAS1500MB	◇			15.0mm	0.5906		130mm	72mm	58mm	15mm	
MAS05937MB	+		19/32		0.5937	3/8-18NS	5.276	2.992	2.284	0.63	
MAS06094MB	+		39/64		0.6094		5.276	2.992	2.284	0.63	
MAS06250MB	+		5/8		0.6250		5.276	2.992	2.284	0.63	
MAS1600MB	◇			16.0mm	0.6299		134mm	76mm	58mm	16mm	
MAS06406MB	+		41/64		0.6406		5.433	3.150	2.283	0.669	
MAS06563MB	+		21/32		0.6563	3/4-10NC	5.433	3.150	2.283	0.669	
MAS06718MB	+		43/64		0.6718		5.630	3.346	2.284	0.709	
MAS06875MB	+		11/16		0.6875	3/4-16NF	5.630	3.346	2.284	0.709	
MAS07031MB	+		45/64		0.7031	1/2-14NPT	5.630	3.346	2.284	0.709	
MAS07188MB	+		23/32		0.7188		5.827	3.543	2.284	0.748	
MAS07344MB	+		47/64		0.7344	7/8-9 & 1/2-14NS	5.827	3.543	2.284	0.748	
MAS07500MB	+		3/4		0.7500		6.024	3.740	2.284	0.787	
MAS07656MB	+		49/64		0.7656		6.024	3.740	2.284	0.787	
MAS07812MB	+		25/32		0.7812		6.024	3.740	2.284	0.787	

⊕ : Stock ◇ : Non stock. Allow 2 weeks for delivery

Application examples for **MAS** type

Tool	MAS01875MB	MAS0735MB	MAS04219MB						
Workpiece	ASTM319.0 Cast Aluminum Alloy 	Die Cast Aluminum Alloy Ø0.29893 in. x 0.8268 in. deep (Blind hole)  (Rolled thread tap hole)	Ductile Iron 						
Component	Pump case	Housing	Plate						
Cutting speed (feet/min)	257	229.6	196.8						
Feed (inch/rev)	0.0020	0.0059	0.0098						
Revolutions (rpm)	5000	3000	1740						
Feed (inch/min)	9.8	17.7	17.1						
Coolant	Water soluble oil	Water soluble oil	Water soluble oil						
Results	Hole accuracy <table border="1"> <thead> <tr> <th>Tool</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>Super burnish drill MAS type</td> <td>Oversize (<20µm) Surface finish (Rmax ≈6.38µm)</td> </tr> <tr> <td>Competitors drill</td> <td>Oversize initial hole</td> </tr> </tbody> </table>	Tool	Result	Super burnish drill MAS type	Oversize (<20µm) Surface finish (Rmax ≈6.38µm)	Competitors drill	Oversize initial hole	Tool life (No. of holes) 	Tool life (No. of holes) 
Tool	Result								
Super burnish drill MAS type	Oversize (<20µm) Surface finish (Rmax ≈6.38µm)								
Competitors drill	Oversize initial hole								

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