MITSUBISHI MATERIALS

DSA Series

FOR LONG TOOL LIFE WHEN MACHINING HEAT RESISTANT SUPER ALLOYS





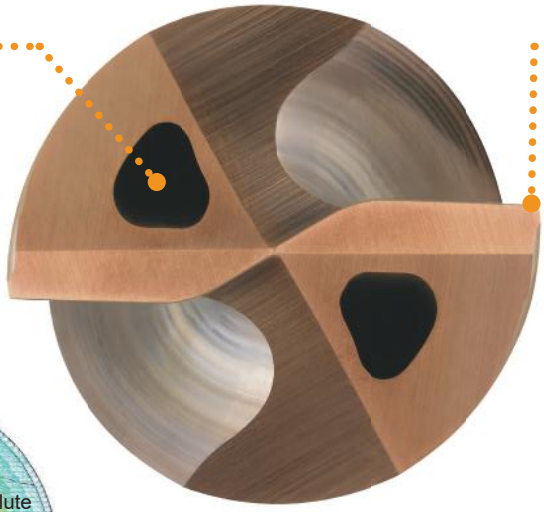
TOOL NEWS **B256A**

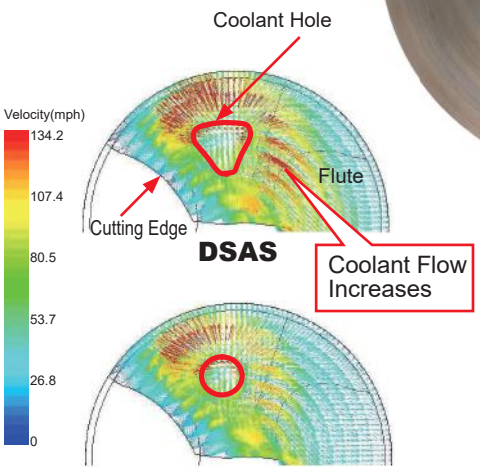
Solid Carbide Drill for Machining Heat Resistant Alloys

DSA Series

TRI-Cooling Technology

The unique hole geometry increases the coolant flow rate, resulting in high lubricity and cooling effect. (available in sizes over : ø.1969 inch or ø 5 mm)

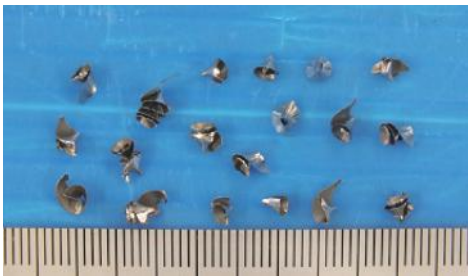




Comparison of Coolant Flow Rate (Spindle Speed 4700 min^{-1})

Straight Cutting Edge with Single-Pass Honing

The tough straight cutting edge with single-pass honing enables stable chip formation as well as preventing the cutting edge from chipping.



DSAS



Conventional

New Grade for Machining of Heat Resistant Alloys DP9020

New hard grade provides both high wear and fracture resistance, leading to longer tool life.

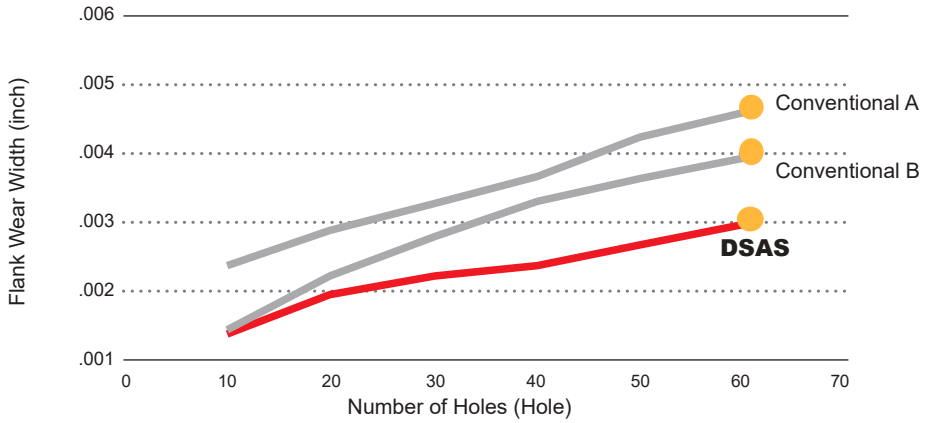


Special Margin

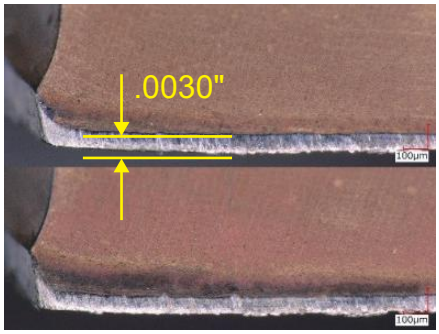
The specially designed thin margin minimizes contact area with hole surface and workpiece materials in combination with tri-cooling technology to reduce cutting heat and prevent the generation of work-hardening making it especially suited for the machining of heat resistant alloys.

Cutting Performance

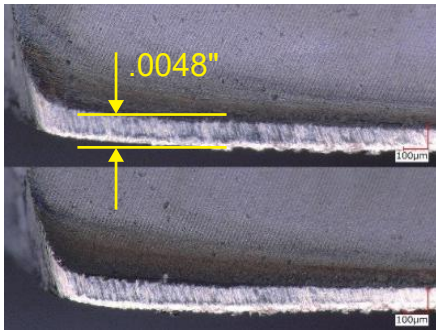
Comparison of Flank Wear Width by Inconel 718



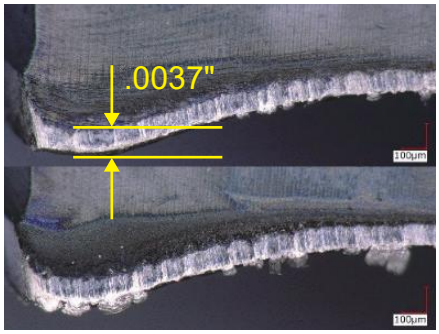
<Cutting Conditions>
Workpiece Material : Inconel 718
Tool : DSAS0700X03S080
Drill Dia. : DC= .2756 inch
Hole Depth : .470 inch (l= DCx 1.7)
Cutting Speed : vc= 50 SFM
Feed per Rev. : fr= .0039 IPR
Cutting Mode : Internal Coolant (Water-soluble Coolants)
Machine : Vertical MC



DSAS

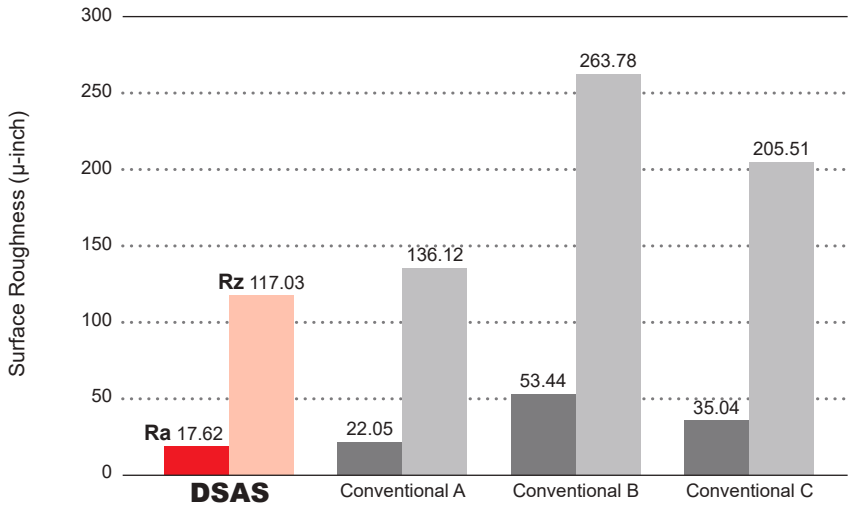


Conventional A



Conventional B

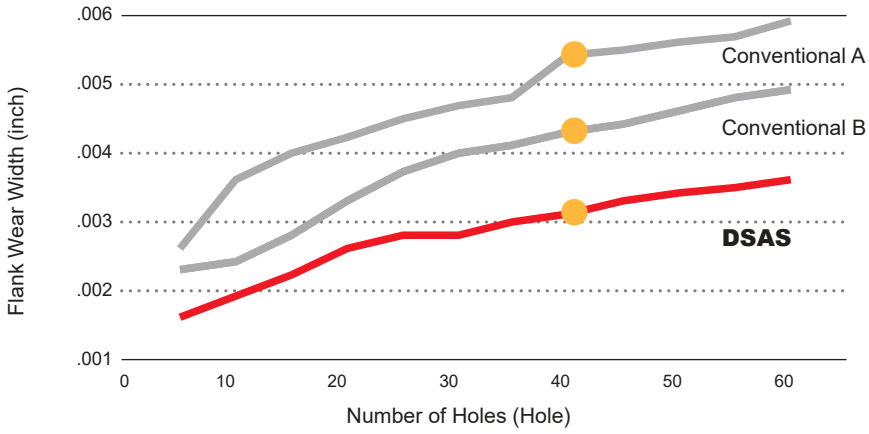
Comparison of Wall Surface Roughness by Inconel 718



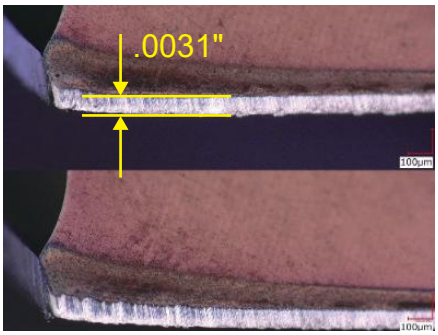
<Cutting Conditions>
Workpiece Material : Inconel 718
Tool : DSAS0700X03S080
Drill Dia. : DC= .2756 inch
Hole Depth : .390 inch (l= DCx 1.4)
Cutting Speed : vc= 50 SFM
Feed per Rev. : fr= .0039 IPR
Cutting Mode : Internal Coolant (Water-soluble Coolants)
Machine : Vertical MC

Cutting Performance

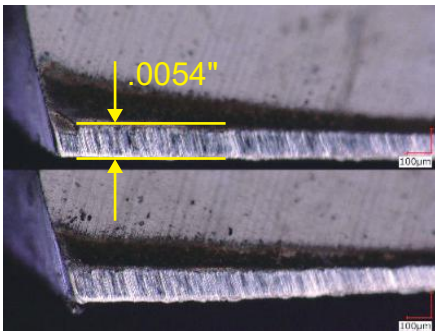
Comparison of Flank Wear Width by RENE 41



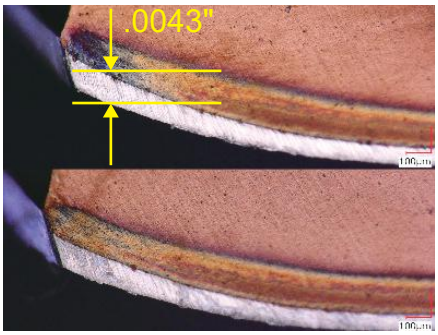
<Cutting Conditions>
Workpiece Material : RENE 41
Tool : DSAS0690X03S080
Drill Dia. : DC= .2717 inch
Hole Depth : .390 inch (l= DCx 1.4)
Cutting Speed : vc= 50 SFM
Feed per Rev. : fr= .0039 IPR
Cutting Mode : Internal Coolant (Water-soluble Coolants)
Machine : Vertical MC



DSAS

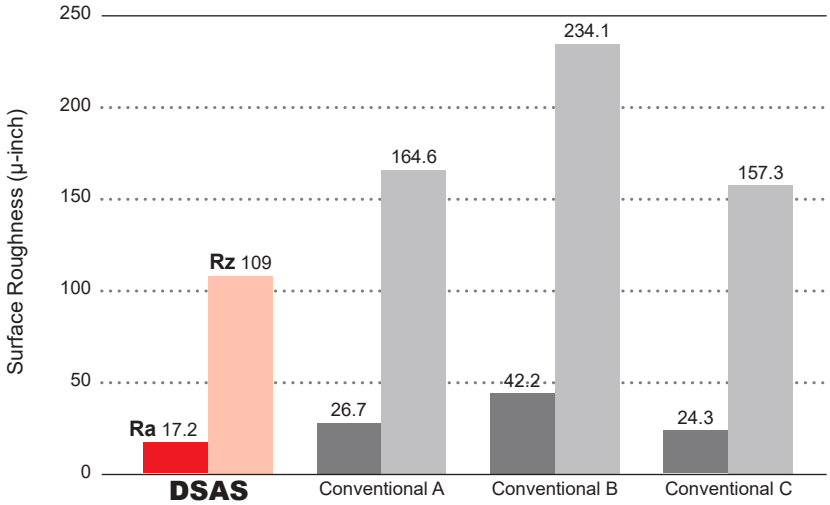


Conventional A



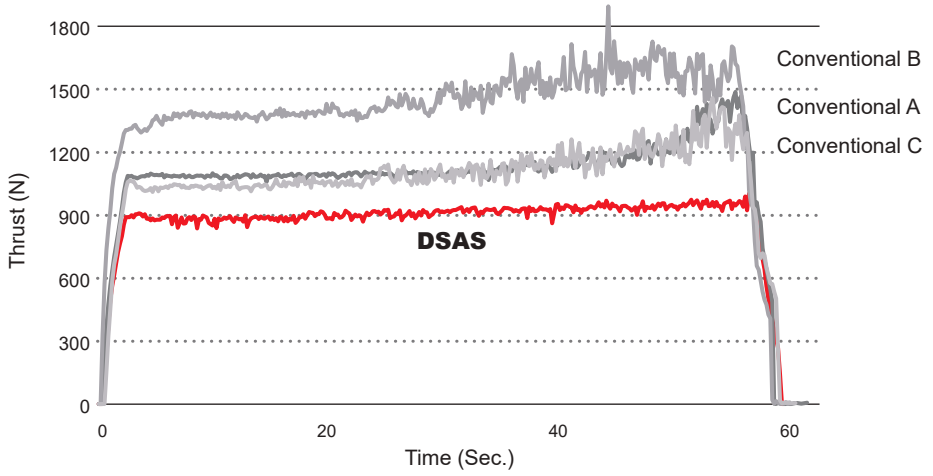
Conventional B

Comparison of Wall Surface Roughness by RENE 41



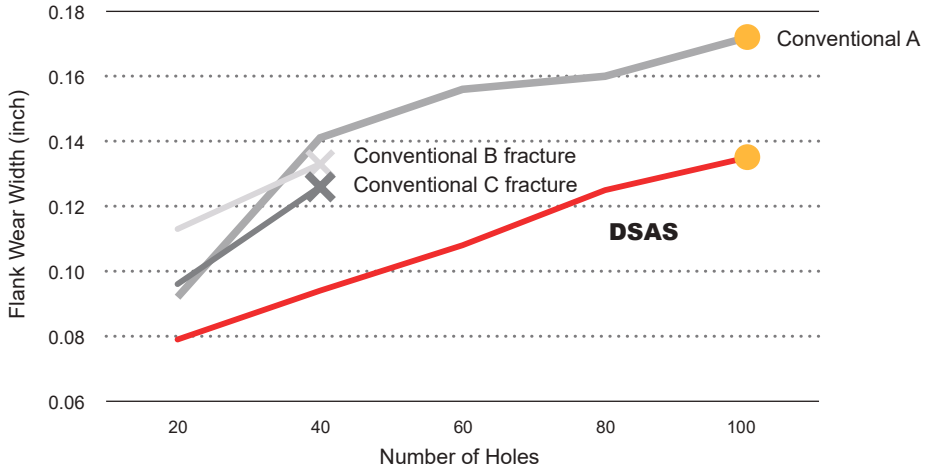
<Cutting Conditions>
Workpiece Material : RENE 41
Tool : DSAS0690X03S080
Drill Dia. : DC= .2717"
Hole Depth : .390 inch (l= DCx 1.4)
Cutting Speed : vc= 50 SFM
Feed per Rev. : fr= .0039 IPR
Cutting Mode : Internal Coolant (Water-soluble Coolants)
Machine : Vertical MC

Comparison of Cutting Resistance by Inconel 718 : L/D = 5



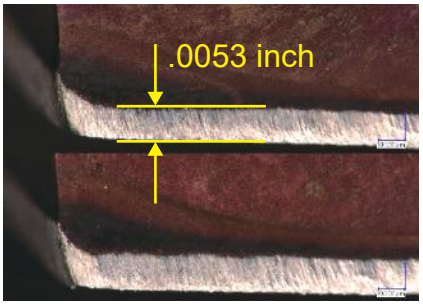
<Cutting Conditions>
Workpiece Material : Inconel 718
Tool : DSAS0600X05S060
Drill Dia. : DC= .2756 inch
Hole Depth : 1.181 inch (l= DCx 5)
Cutting Speed : vc= 30 SFM
Feed per Rev. : fr= .0024 IPR
Cutting Mode : Internal Coolant
(Water-soluble Coolants)
Machine : Vertical MC

Comparison of Flank Wear Width by Inconel 718 : L/D = 5

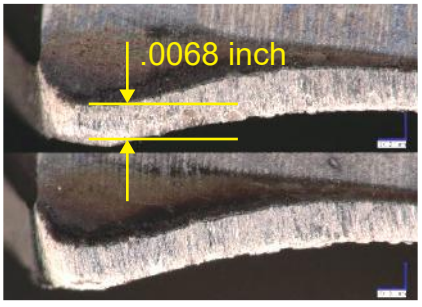


<Cutting Conditions>
Workpiece Material : Inconel 718
Tool : DSAS0600X05S060
Drill Dia. : DC= .2756 inch
Hole Depth : 1.181 inch (l= DCx 5)
Cutting Speed : vc= 65 SFM
Feed per Rev. : fr= .0039 IPR
Cutting Mode : Internal Coolant
(Water-soluble Coolants)
Machine : Vertical MC

After 100 Hole



DSAS



Conventional A

DSA

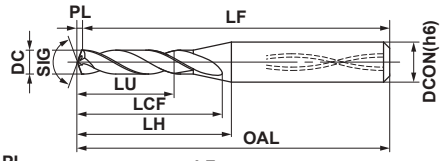
UWC DP9 only DSAS 140° X

P M K N **S** H

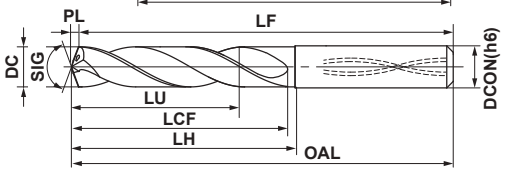
DSAS







Type1

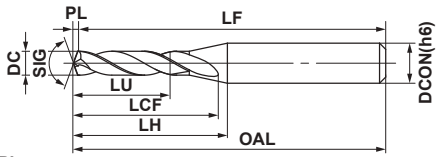


Type2

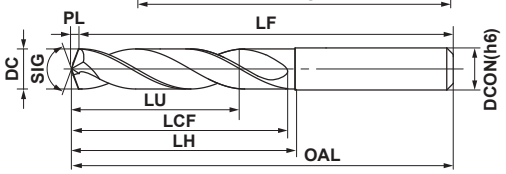
DSAE







Type3



Type4

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

(inch)

Type	Tolerance	DC=.1181	.1181<DC≤.2362	.2362<DC≤.3937	.3937<DC≤.5906
Type1,2,3,4	DC	$^{0}_{-.00071}$	$^{0}_{-.00071}$	$^{0}_{-.00087}$	$^{0}_{-.00106}$
	DCON	$^{0}_{-.00031}$	$^{0}_{-.00031}$	$^{0}_{-.00035}$	$^{0}_{-.00043}$

(mm)

Type	Tolerance	DC=3	3<DC≤6	6<DC≤10	10<DC≤15
Type1,2,3,4	DC	$^{0}_{-0.018}$	$^{0}_{-0.018}$	$^{0}_{-0.022}$	$^{0}_{-0.027}$
	DCON	$^{0}_{-0.008}$	$^{0}_{-0.008}$	$^{0}_{-0.009}$	$^{0}_{-0.011}$

DC Metric (mm)	DC Decimal (inch)	DC Fraction (inch)	DC Wire / Letter	DC Thread Size	L/D	Coolant (Int./Ext.)	Order Number	Stock DP9020	LU mm	LU inch	LCF mm	LCF inch	LH mm	LH inch	OAL mm	OAL inch	LF mm	LF inch	PL mm	PL inch	DCON mm	DCON inch	Type
3.000	**.1181**				3	Ext.	**DSAE0300X03S060**	★	9.5	.374	21.5	.846	23.5	.925	70.5	2.776	70	2.756	0.5	.020	6	.236	3
					3	Int.	**DSAS0300X03S060**	●	9.5	.374	21.5	.846	23.5	.925	70.5	2.776	70	2.756	0.5	.020	6	.236	1
					5	Int.	**DSAS0300X05S060**	●	15.5	.610	28.5	1.122	31.5	1.240	78.5	3.091	78	3.071	0.5	.020	6	.236	1
3.100	**.1220**				3	Int.	**DSAS0310X03S060**	●	9.9	.390	21.6	.850	23.6	.929	70.6	2.780	70	2.756	0.6	.024	6	.236	1
					5	Int.	**DSAS0310X05S060**	●	16.1	.634	28.6	1.126	31.6	1.244	78.6	3.094	78	3.071	0.6	.024	6	.236	1
3.175	**.1250**	**1/8**			3	Int.	**DSAS0318X03S060**	●	10.1	.398	21.6	.850	23.6	.929	70.6	2.780	70	2.756	0.6	.024	6	.236	1
					5	Int.	**DSAS0318X05S060**	●	16.5	.650	28.6	1.126	31.6	1.244	78.6	3.094	78	3.071	0.6	.024	6	.236	1
3.200	**.1260**				3	Int.	**DSAS0320X03S060**	●	10.2	.402	21.6	.850	23.6	.929	70.6	2.780	70	2.756	0.6	.024	6	.236	1
					5	Int.	**DSAS0320X05S060**	●	16.6	.654	28.6	1.126	31.6	1.244	78.6	3.094	78	3.071	0.6	.024	6	.236	1
3.260	**.1283**				3	Int.	**DSAS0326X03S060**	●	10.4	.409	21.6	.850	23.6	.929	70.6	2.780	70	2.756	0.6	.024	6	.236	1
					5	Int.	**DSAS0326X05S060**	★	16.9	.665	28.6	1.126	31.6	1.244	78.6	3.094	78	3.071	0.6	.024	6	.236	1
3.300	**.1299**			**M4x.7**	3	Int.	**DSAS0330X03S060**	●	10.5	.413	21.6	.850	23.6	.929	70.6	2.780	70	2.756	0.6	.024	6	.236	1
					5	Int.	**DSAS0330X05S060**	●	17.1	.673	28.6	1.126	31.6	1.244	78.6	3.094	78	3.071	0.6	.024	6	.236	1
3.400	**.1339**				3	Ext.	**DSAE0340X03S060**	★	10.8	.425	21.6	.850	23.6	.929	70.6	2.780	70	2.756	0.6	.024	6	.236	3
					3	Int.	**DSAS0340X03S060**	●	10.8	.425	21.6	.850	23.6	.929	70.6	2.780	70	2.756	0.6	.024	6	.236	1
					5	Int.	**DSAS0340X05S060**	●	17.6	.693	28.6	1.126	31.6	1.244	78.6	3.094	78	3.071	0.6	.024	6	.236	1
3.500	**.1378**				3	Int.	**DSAS0350X03S060**	●	11.1	.437	21.6	.850	23.6	.929	70.6	2.780	70	2.756	0.6	.024	6	.236	1
					5	Int.	**DSAS0350X05S060**	●	18.1	.713	28.6	1.126	31.6	1.244	78.6	3.094	78	3.071	0.6	.024	6	.236	1

Note 1) The coolant hole of ø.1875" (ø4.763mm) or less will be round shape.

● : USA Stock ★ : Stocked in Japan

DC					L/D	Coolant (Int./Ext.)	Order Number	Stock	LU		LCF		LH		OAL		LF		PL		DCON		Type
Metric (mm)	Decimal (inch)	Fraction (inch)	Wire / Letter	Thread Size				DP9020	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	
3.572	**.1407**	**9/64**			3	Int.	**DSAS0357X03S060**	●	11.4	.449	22.7	.894	23.7	.933	70.7	2.783	70	2.756	0.7	.028	6	.236	1
					5	Int.	**DSAS0357X05S060**	●	18.6	.732	30.7	1.209	31.7	1.248	78.7	3.098	78	3.071	0.7	.028	6	.236	1
3.600	**.1417**				3	Int.	**DSAS0360X03S060**	●	11.5	.453	22.7	.894	23.7	.933	70.7	2.783	70	2.756	0.7	.028	6	.236	1
					5	Int.	**DSAS0360X05S060**	★	18.7	.736	30.7	1.209	31.7	1.248	78.7	3.098	78	3.071	0.7	.028	6	.236	1
3.700	**.1457**			**M4.5x.75**	3	Int.	**DSAS0370X03S060**	●	11.8	.465	22.7	.894	23.7	.933	70.7	2.783	70	2.756	0.7	.028	6	.236	1
					5	Int.	**DSAS0370X05S060**	●	19.2	.756	30.7	1.209	31.7	1.248	78.7	3.098	78	3.071	0.7	.028	6	.236	1
3.800	**.1496**		**25**	**#10-24**	3	Int.	**DSAS0380X03S060**	●	12.1	.476	22.7	.894	23.7	.933	70.7	2.783	70	2.756	0.7	.028	6	.236	1
					5	Int.	**DSAS0380X05S060**	●	19.7	.776	30.7	1.209	31.7	1.248	78.7	3.098	78	3.071	0.7	.028	6	.236	1
3.900	**.1535**				3	Int.	**DSAS0390X03S060**	●	12.4	.488	22.7	.894	23.7	.933	70.7	2.783	70	2.756	0.7	.028	6	.236	1
					5	Int.	**DSAS0390X05S060**	●	20.2	.795	30.7	1.209	31.7	1.248	78.7	3.098	78	3.071	0.7	.028	6	.236	1
3.969	**.1563**	**5/32**			3	Int.	**DSAS0397X03S060**	●	12.6	.496	22.7	.894	23.7	.933	70.7	2.783	70	2.756	0.7	.028	6	.236	1
					5	Int.	**DSAS0397X05S060**	●	20.5	.807	30.7	1.209	31.7	1.248	78.7	3.098	78	3.071	0.7	.028	6	.236	1
4.000	**.1575**				3	Ext.	**DSAE0400X03S060**	★	12.7	.500	22.7	.894	23.7	.933	70.7	2.783	70	2.756	0.7	.028	6	.236	3
					3	Int.	**DSAS0400X03S060**	●	12.7	.500	22.7	.894	23.7	.933	70.7	2.783	70	2.756	0.7	.028	6	.236	1
					5	Int.	**DSAS0400X05S060**	●	20.7	.815	30.7	1.209	31.7	1.248	78.7	3.098	78	3.071	0.7	.028	6	.236	1
4.100	**.1614**				3	Int.	**DSAS0410X03S060**	●	13.0	.512	24.7	.972	26.7	1.051	73.7	2.902	73	2.874	0.7	.028	6	.236	1
					5	Int.	**DSAS0410X05S060**	●	21.2	.835	33.7	1.327	35.7	1.406	82.7	3.256	82	3.228	0.7	.028	6	.236	1
4.200	**.1654**			**M5x.8**	3	Int.	**DSAS0420X03S060**	●	13.4	.528	24.8	.976	26.8	1.055	73.8	2.906	73	2.874	0.8	.031	6	.236	1
					5	Int.	**DSAS0420X05S060**	●	21.8	.858	33.8	1.331	35.8	1.409	82.8	3.260	82	3.228	0.8	.031	6	.236	1
4.300	**.1693**				3	Ext.	**DSAE0430X03S060**	★	13.7	.539	24.8	.976	26.8	1.055	73.8	2.906	73	2.874	0.8	.031	6	.236	3
					3	Int.	**DSAS0430X03S060**	●	13.7	.539	24.8	.976	26.8	1.055	73.8	2.906	73	2.874	0.8	.031	6	.236	1
					5	Int.	**DSAS0430X05S060**	●	22.3	.878	33.8	1.331	35.8	1.409	82.8	3.260	82	3.228	0.8	.031	6	.236	1
4.366	**.1719**	**11/64**			3	Int.	**DSAS0437X03S060**	●	13.9	.547	24.8	.976	26.8	1.055	73.8	2.906	73	2.874	0.8	.031	6	.236	1
					5	Int.	**DSAS0437X05S060**	●	22.6	.890	33.8	1.331	35.8	1.409	82.8	3.260	82	3.228	0.8	.031	6	.236	1
4.400	**.1732**		**17**		3	Int.	**DSAS0440X03S060**	●	14.0	.551	24.8	.976	26.8	1.055	73.8	2.906	73	2.874	0.8	.031	6	.236	1
					5	Int.	**DSAS0440X05S060**	●	22.8	.898	33.8	1.331	35.8	1.409	82.8	3.260	82	3.228	0.8	.031	6	.236	1
4.500	**.1772**		**16**	**#12-24**	3	Ext.	**DSAE0450X03S060**	★	14.3	.563	24.8	.976	26.8	1.055	73.8	2.906	73	2.874	0.8	.031	6	.236	3
					3	Int.	**DSAS0450X03S060**	●	14.3	.563	24.8	.976	26.8	1.055	73.8	2.906	73	2.874	0.8	.031	6	.236	1
					5	Int.	**DSAS0450X05S060**	●	23.3	.917	33.8	1.331	35.8	1.409	82.8	3.260	82	3.228	0.8	.031	6	.236	1
4.600	**.1811**				3	Int.	**DSAS0460X03S060**	●	14.6	.575	25.8	1.016	28.8	1.134	75.8	2.984	75	2.953	0.8	.031	6	.236	1
					5	Int.	**DSAS0460X05S060**	●	23.8	.937	35.8	1.409	38.8	1.528	85.8	3.378	85	3.346	0.8	.031	6	.236	1
4.700	**.1850**		**13**		3	Int.	**DSAS0470X03S060**	●	15.0	.591	25.9	1.020	28.9	1.138	75.9	2.988	75	2.953	0.9	.035	6	.236	1
					5	Int.	**DSAS0470X05S060**	●	24.4	.961	35.9	1.413	38.9	1.531	85.9	3.382	85	3.346	0.9	.035	6	.236	1
4.763	**.1875**	**3/16**			3	Int.	**DSAS0476X03S060**	●	15.2	.598	25.9	1.020	28.9	1.138	75.9	2.988	75	2.953	0.9	.035	6	.236	1
					5	Int.	**DSAS0476X05S060**	●	24.7	.972	35.9	1.413	38.9	1.531	85.9	3.382	85	3.346	0.9	.035	6	.236	1
4.800	**.1890**		**12**		3	Int.	**DSAS0480X03S060**	●	15.3	.602	25.9	1.020	28.9	1.138	75.9	2.988	75	2.953	0.9	.035	6	.236	1
					5	Int.	**DSAS0480X05S060**	●	24.9	.980	35.9	1.413	38.9	1.531	85.9	3.382	85	3.346	0.9	.035	6	.236	1
4.865	**.1915**				3	Int.	**DSAS0486X03S060**	●	15.5	.610	25.9	1.020	28.9	1.138	75.9	2.988	75	2.953	0.9	.035	6	.236	1
					5	Int.	**DSAS0486X05S060**	★	25.2	.992	35.9	1.413	38.9	1.531	85.9	3.382	85	3.346	0.9	.035	6	.236	1
4.900	**.1929**				3	Int.	**DSAS0490X03S060**	●	15.6	.614	25.9	1.020	28.9	1.138	75.9	2.988	75	2.953	0.9	.035	6	.236	1
					5	Int.	**DSAS0490X05S060**	★	25.4	1.000	35.9	1.413	38.9	1.531	85.9	3.382	85	3.346	0.9	.035	6	.236	1
5.000	**.1969**			**M6x1.0**	3	Ext.	**DSAE0500X03S060**	★	15.9	.626	28.9	1.138	29.9	1.177	81.9	3.224	81	3.189	0.9	.035	6	.236	4
					3	Int.	**DSAS0500X03S060**	●	15.9	.626	28.9	1.138	29.9	1.177	81.9	3.224	81	3.189	0.9	.035	6	.236	2
					5	Int.	**DSAS0500X05S060**	●	25.9	1.020	39.9	1.571	42.9	1.689	89.9	3.539	89	3.504	0.9	.035	6	.236	2
5.100	**.2008**		**7**	**1/4-20**	3	Ext.	**DSAE0510X03S060**	★	16.2	.638	28.9	1.138	29.9	1.177	81.9	3.224	81	3.189	0.9	.035	6	.236	4
					3	Int.	**DSAS0510X03S060**	●	16.2	.638	28.9	1.138	29.9	1.177	81.9	3.224	81	3.189	0.9	.035	6	.236	2
					5	Int.	**DSAS0510X05S060**	●	26.4	1.039	39.9	1.571	42.9	1.689	89.9	3.539	89	3.504	0.9	.035	6	.236	2
5.160	**.2032**	**13/64**			3	Int.	**DSAS0516X03S060**	●	16.5	.650	29.0	1.142	30.0	1.181	82.0	3.228	81	3.189	1.0	.039	6	.236	2
					5	Int.	**DSAS0516X05S060**	●	26.8	1.055	40.0	1.575	43.0	1.693	90.0	3.543	89	3.504	1.0	.039	6	.236	2
5.200	**.2047**				3	Int.	**DSAS0520X03S060**	●	16.6	.654	29.0	1.142	30.0	1.181	82.0	3.228	81	3.189	1.0	.039	6	.236	2
					5	Int.	**DSAS0520X05S060**	●	27.0	1.063	40.0	1.575	43.0	1.693	90.0	3.543	89	3.504	1.0	.039	6	.236	2
5.300	**.2087**		**4**		3	Int.	**DSAS0530X03S060**	●	16.9	.665	29.0	1.142	30.0	1.181	82.0	3.228	81	3.189	1.0	.039	6	.236	2
					5	Int.	**DSAS0530X05S060**	●	27.5	1.083	40.0	1.575	43.0	1.693	90.0	3.543	89	3.504	1.0	.039	6	.236	2

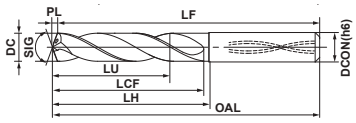
Note 1) The coolant hole of ø.1875" (ø4.763mm) or less will be round shape.

DSA

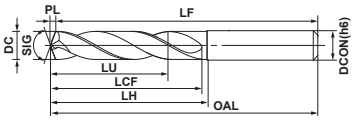
DC					L/D	Coolant (Int./Ext.)	Order Number	Stock	LU		LCF		LH		OAL		LF		PL		DCON		Type
Metric (mm)	Decimal (inch)	Fraction (inch)	Wire / Letter	Thread Size				DP9020	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	
5.400	.2126		3	1/4-28	3	Ext.	DSAE0540X03S060	★	17.2	.677	29.0	1.142	30.0	1.181	82.0	3.228	81	3.189	1.0	.039	6	.236	4
					3	Int.	DSAS0540X03S060	●	17.2	.677	29.0	1.142	30.0	1.181	82.0	3.228	81	3.189	1.0	.039	6	.236	2
					5	Int.	DSAS0540X05S060	●	28.0	1.102	40.0	1.575	43.0	1.693	90.0	3.543	89	3.504	1.0	.039	6	.236	2
5.500	.2165				3	Ext.	DSAE0550X03S060	★	17.5	.689	29.0	1.142	30.0	1.181	82.0	3.228	81	3.189	1.0	.039	6	.236	4
					3	Int.	DSAS0550X03S060	●	17.5	.689	29.0	1.142	30.0	1.181	82.0	3.228	81	3.189	1.0	.039	6	.236	2
					5	Int.	DSAS0550X05S060	●	28.5	1.122	40.0	1.575	43.0	1.693	90.0	3.543	89	3.504	1.0	.039	6	.236	2
5.557	.2188	7/32			3	Int.	DSAS0556X03S060	●	17.8	.701	31.1	1.224	31.1	1.224	82.1	3.232	81	3.189	1.1	.043	6	.236	2
					5	Int.	DSAS0556X05S060	●	28.9	1.138	43.1	1.697	43.1	1.697	90.1	3.547	89	3.504	1.1	.043	6	.236	2
5.600	.2205		2		3	Ext.	DSAE0560X03S060	★	17.9	.705	31.1	1.224	31.1	1.224	82.1	3.232	81	3.189	1.1	.043	6	.236	4
					3	Int.	DSAS0560X03S060	●	17.9	.705	31.1	1.224	31.1	1.224	82.1	3.232	81	3.189	1.1	.043	6	.236	2
					5	Int.	DSAS0560X05S060	●	29.1	1.146	43.1	1.697	43.1	1.697	90.1	3.547	89	3.504	1.1	.043	6	.236	2
5.700	.2244				3	Int.	DSAS0570X03S060	●	18.2	.717	31.1	1.224	31.1	1.224	82.1	3.232	81	3.189	1.1	.043	6	.236	2
					5	Int.	DSAS0570X05S060	●	29.6	1.165	43.1	1.697	43.1	1.697	90.1	3.547	89	3.504	1.1	.043	6	.236	2
5.800	.2283		1		3	Int.	DSAS0580X03S060	●	18.5	.728	31.1	1.224	31.1	1.224	82.1	3.232	81	3.189	1.1	.043	6	.236	2
					5	Int.	DSAS0580X05S060	●	30.1	1.185	43.1	1.697	43.1	1.697	90.1	3.547	89	3.504	1.1	.043	6	.236	2
5.900	.2323				3	Ext.	DSAE0590X03S060	★	18.8	.740	31.1	1.224	31.1	1.224	82.1	3.232	81	3.189	1.1	.043	6	.236	4
					3	Int.	DSAS0590X03S060	●	18.8	.740	31.1	1.224	31.1	1.224	82.1	3.232	81	3.189	1.1	.043	6	.236	2
					5	Int.	DSAS0590X05S060	●	30.6	1.205	43.1	1.697	43.1	1.697	90.1	3.547	89	3.504	1.1	.043	6	.236	2
5.954	.2344	15/64	A		3	Int.	DSAS0595X03S060	●	19.0	.748	31.1	1.224	31.1	1.224	82.1	3.232	81	3.189	1.1	.043	6	.236	2
					5	Int.	DSAS0595X05S060	●	30.9	1.217	43.1	1.697	43.1	1.697	90.1	3.547	89	3.504	1.1	.043	6	.236	2
6.000	.2362			M7x1.0	3	Ext.	DSAE0600X03S060	★	19.1	.752	31.1	1.224	31.1	1.224	82.1	3.232	81	3.189	1.1	.043	6	.236	4
					3	Int.	DSAS0600X03S060	●	19.1	.752	31.1	1.224	31.1	1.224	82.1	3.232	81	3.189	1.1	.043	6	.236	2
					5	Int.	DSAS0600X05S060	●	31.1	1.224	43.1	1.697	43.1	1.697	90.1	3.547	89	3.504	1.1	.043	6	.236	2
6.100	.2402				3	Ext.	DSAE0610X03S080	★	19.5	.768	34.2	1.346	37.2	1.465	87.2	3.433	86	3.386	1.2	.047	8	.315	4
					3	Int.	DSAS0610X03S080	●	19.5	.768	34.2	1.346	37.2	1.465	87.2	3.433	86	3.386	1.2	.047	8	.315	2
					5	Int.	DSAS0610X05S080	●	31.7	1.248	47.2	1.858	49.2	1.937	96.2	3.787	95	3.740	1.2	.047	8	.315	2
6.200	.2441				3	Ext.	DSAE0620X03S080	★	19.8	.780	34.2	1.346	37.2	1.465	87.2	3.433	86	3.386	1.2	.047	8	.315	4
					3	Int.	DSAS0620X03S080	●	19.8	.780	34.2	1.346	37.2	1.465	87.2	3.433	86	3.386	1.2	.047	8	.315	2
					5	Int.	DSAS0620X05S080	●	32.2	1.268	47.2	1.858	49.2	1.937	96.2	3.787	95	3.740	1.2	.047	8	.315	2
6.300	.2480				3	Int.	DSAS0630X03S080	●	20.1	.791	34.2	1.346	37.2	1.465	87.2	3.433	86	3.386	1.2	.047	8	.315	2
					5	Int.	DSAS0630X05S080	★	32.7	1.287	47.2	1.858	49.2	1.937	96.2	3.787	95	3.740	1.2	.047	8	.315	2
6.350	.2500	1/4	E		3	Int.	DSAS0635X03S080	●	20.3	.799	34.2	1.346	37.2	1.465	87.2	3.433	86	3.386	1.2	.047	8	.315	2
					5	Int.	DSAS0635X05S080	●	33.0	1.299	47.2	1.858	49.2	1.937	96.2	3.787	95	3.740	1.2	.047	8	.315	2
6.400	.2520				3	Ext.	DSAE0640X03S080	★	20.4	.803	34.2	1.346	37.2	1.465	87.2	3.433	86	3.386	1.2	.047	8	.315	4
					3	Int.	DSAS0640X03S080	●	20.4	.803	34.2	1.346	37.2	1.465	87.2	3.433	86	3.386	1.2	.047	8	.315	2
					5	Int.	DSAS0640X05S080	●	33.2	1.307	47.2	1.858	49.2	1.937	96.2	3.787	95	3.740	1.2	.047	8	.315	2
6.500	.2559				3	Int.	DSAS0650X03S080	●	20.7	.815	34.2	1.346	37.2	1.465	87.2	3.433	86	3.386	1.2	.047	8	.315	2
					5	Int.	DSAS0650X05S080	●	33.7	1.327	47.2	1.858	49.2	1.937	96.2	3.787	95	3.740	1.2	.047	8	.315	2
6.600	.2598				3	Int.	DSAS0660X03S080	●	21.1	.831	36.3	1.429	38.3	1.508	91.3	3.594	90	3.543	1.3	.051	8	.315	2
					5	Int.	DSAS0660X05S080	●	34.3	1.350	50.3	1.980	52.3	2.059	99.3	3.909	98	3.858	1.3	.051	8	.315	2
6.700	.2638			M8x1.25	3	Int.	DSAS0670X03S080	●	21.4	.843	36.3	1.429	38.3	1.508	91.3	3.594	90	3.543	1.3	.051	8	.315	2
					5	Int.	DSAS0670X05S080	★	34.8	1.370	50.3	1.980	52.3	2.059	99.3	3.909	98	3.858	1.3	.051	8	.315	2
6.747	.2657	17/64			3	Int.	DSAS0675X03S080	●	21.5	.846	36.3	1.429	38.3	1.508	91.3	3.594	90	3.543	1.3	.051	8	.315	2
					5	Int.	DSAS0675X05S080	●	35.0	1.378	50.3	1.980	52.3	2.059	99.3	3.909	98	3.858	1.3	.051	8	.315	2
6.800	.2677				3	Ext.	DSAE0680X03S080	★	21.7	.854	36.3	1.429	38.3	1.508	91.3	3.594	90	3.543	1.3	.051	8	.315	4
					3	Int.	DSAS0680X03S080	●	21.7	.854	36.3	1.429	38.3	1.508	91.3	3.594	90	3.543	1.3	.051	8	.315	2
					5	Int.	DSAS0680X05S080	●	35.3	1.390	50.3	1.980	52.3	2.059	99.3	3.909	98	3.858	1.3	.051	8	.315	2
6.900	.2717		I	5/16-24	3	Ext.	DSAE0690X03S080	★	22.0	.866	36.3	1.429	38.3	1.508	91.3	3.594	90	3.543	1.3	.051	8	.315	4
					3	Int.	DSAS0690X03S080	●	22.0	.866	36.3	1.429	38.3	1.508	91.3	3.594	90	3.543	1.3	.051	8	.315	2
					5	Int.	DSAS0690X05S080	●	35.8	1.409	50.3	1.980	52.3	2.059	99.3	3.909	98	3.858	1.3	.051	8	.315	2
6.950	.2736				3	Int.	DSAS0695X03S080	●	22.2	.874	36.3	1.429	38.3	1.508	91.3	3.594	90	3.543	1.3	.051	8	.315	2
					5	Int.	DSAS0695X05S080	★	36.1	1.421	50.3	1.980	52.3	2.059	99.3	3.909	98	3.858	1.3	.051	8	.315	2

● : USA Stock ★ : Stocked in Japan

Type2



Type4



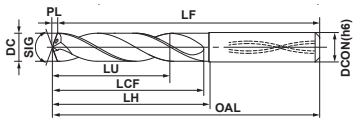
DC					L/D	Coolant (Int./Ext.)	Order Number	Stock	LU		LCF		LH		OAL		LF		PL		DCON		Type
Metric (mm)	Decimal (inch)	Fraction (inch)	Wire / Letter	Thread Size				DP9020	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	
7.000	.2756			M8x1.0	3	Ext.	DSAE0700X03S080	★	22.3	.878	36.3	1.429	38.3	1.508	91.3	3.594	90	3.543	1.3	.051	8	.315	4
					3	Int.	DSAS0700X03S080	●	22.3	.878	36.3	1.429	38.3	1.508	91.3	3.594	90	3.543	1.3	.051	8	.315	2
					5	Int.	DSAS0700X05S080	●	36.3	1.429	50.3	1.980	52.3	2.059	99.3	3.909	98	3.858	1.3	.051	8	.315	2
7.100	.2795				3	Ext.	DSAE0710X03S080	★	22.7	.894	39.4	1.551	40.4	1.591	91.4	3.598	90	3.543	1.4	.055	8	.315	4
					3	Int.	DSAS0710X03S080	●	22.7	.894	39.4	1.551	40.4	1.591	91.4	3.598	90	3.543	1.4	.055	8	.315	2
					5	Int.	DSAS0710X05S080	●	36.9	1.453	54.4	2.142	57.4	2.260	104.4	4.110	103	4.055	1.4	.055	8	.315	2
7.144	.2813	9/32	K		3	Int.	DSAS0714X03S080	●	22.8	.898	39.4	1.551	40.4	1.591	91.4	3.598	90	3.543	1.4	.055	8	.315	2
					5	Int.	DSAS0714X05S080	●	37.1	1.461	54.4	2.142	57.4	2.260	104.4	4.110	103	4.055	1.4	.055	8	.315	2
7.200	.2835				3	Int.	DSAS0720X03S080	●	23.0	.906	39.4	1.551	40.4	1.591	91.4	3.598	90	3.543	1.4	.055	8	.315	2
					5	Int.	DSAS0720X05S080	●	37.4	1.472	54.4	2.142	57.4	2.260	104.4	4.110	103	4.055	1.4	.055	8	.315	2
7.300	.2874				3	Int.	DSAS0730X03S080	●	23.3	.917	39.4	1.551	40.4	1.591	91.4	3.598	90	3.543	1.4	.055	8	.315	2
					5	Int.	DSAS0730X05S080	★	37.9	1.492	54.4	2.142	57.4	2.260	104.4	4.110	103	4.055	1.4	.055	8	.315	2
7.400	.2913				3	Int.	DSAS0740X03S080	●	23.6	.929	39.4	1.551	40.4	1.591	91.4	3.598	90	3.543	1.4	.055	8	.315	2
					5	Int.	DSAS0740X05S080	●	38.4	1.512	54.4	2.142	57.4	2.260	104.4	4.110	103	4.055	1.4	.055	8	.315	2
7.500	.2953		M		3	Int.	DSAS0750X03S080	●	23.9	.941	39.4	1.551	40.4	1.591	91.4	3.598	90	3.543	1.4	.055	8	.315	2
					5	Int.	DSAS0750X05S080	●	38.9	1.531	54.4	2.142	57.4	2.260	104.4	4.110	103	4.055	1.4	.055	8	.315	2
7.541	.2969	19/64			3	Int.	DSAS0754X03S080	●	24.1	.949	41.5	1.634	41.5	1.634	91.5	3.602	90	3.543	1.5	.059	8	.315	2
					5	Int.	DSAS0754X05S080	●	39.2	1.543	57.5	2.264	57.5	2.264	104.5	4.114	103	4.055	1.5	.059	8	.315	2
7.600	.2992				3	Int.	DSAS0760X03S080	●	24.3	.957	41.5	1.634	41.5	1.634	91.5	3.602	90	3.543	1.5	.059	8	.315	2
					5	Int.	DSAS0760X05S080	★	39.5	1.555	57.5	2.264	57.5	2.264	104.5	4.114	103	4.055	1.5	.059	8	.315	2
7.700	.3031				3	Int.	DSAS0770X03S080	●	24.6	.969	41.5	1.634	41.5	1.634	91.5	3.602	90	3.543	1.5	.059	8	.315	2
					5	Int.	DSAS0770X05S080	●	40.0	1.575	57.5	2.264	57.5	2.264	104.5	4.114	103	4.055	1.5	.059	8	.315	2
7.800	.3071				3	Ext.	DSAE0780X03S080	★	24.9	.980	41.5	1.634	41.5	1.634	91.5	3.602	90	3.543	1.5	.059	8	.315	4
					3	Int.	DSAS0780X03S080	●	24.9	.980	41.5	1.634	41.5	1.634	91.5	3.602	90	3.543	1.5	.059	8	.315	2
					5	Int.	DSAS0780X05S080	●	40.5	1.594	57.5	2.264	57.5	2.264	104.5	4.114	103	4.055	1.5	.059	8	.315	2
7.900	.3110				3	Int.	DSAS0790X03S080	●	25.2	.992	41.5	1.634	41.5	1.634	91.5	3.602	90	3.543	1.5	.059	8	.315	2
					5	Int.	DSAS0790X05S080	●	41.0	1.614	57.5	2.264	57.5	2.264	104.5	4.114	103	4.055	1.5	.059	8	.315	2
7.938	.3125	5/16		3/8-16	3	Int.	DSAS0794X03S080	●	25.3	.996	41.5	1.634	41.5	1.634	91.5	3.602	90	3.543	1.5	.059	8	.315	2
					5	Int.	DSAS0794X05S080	●	41.2	1.622	57.5	2.264	57.5	2.264	104.5	4.114	103	4.055	1.5	.059	8	.315	2
8.000	.3150				3	Ext.	DSAE0800X03S080	★	25.5	1.004	41.5	1.634	41.5	1.634	91.5	3.602	90	3.543	1.5	.059	8	.315	4
					3	Int.	DSAS0800X03S080	●	25.5	1.004	41.5	1.634	41.5	1.634	91.5	3.602	90	3.543	1.5	.059	8	.315	2
					5	Int.	DSAS0800X05S080	●	41.5	1.634	57.5	2.264	57.5	2.264	104.5	4.114	103	4.055	1.5	.059	8	.315	2
8.100	.3189				3	Ext.	DSAE0810X03S100	★	25.8	1.016	44.5	1.752	47.5	1.870	97.5	3.839	96	3.780	1.5	.059	10	.394	4
					3	Int.	DSAS0810X03S100	●	25.8	1.016	44.5	1.752	47.5	1.870	97.5	3.839	96	3.780	1.5	.059	10	.394	2
					5	Int.	DSAS0810X05S100	★	42.0	1.654	61.5	2.421	63.5	2.500	114.5	4.508	113	4.449	1.5	.059	10	.394	2
8.200	.3228		P		3	Ext.	DSAE0820X03S100	★	26.1	1.028	44.5	1.752	47.5	1.870	97.5	3.839	96	3.780	1.5	.059	10	.394	4
					3	Int.	DSAS0820X03S100	●	26.1	1.028	44.5	1.752	47.5	1.870	97.5	3.839	96	3.780	1.5	.059	10	.394	2
					5	Int.	DSAS0820X05S100	★	42.5	1.673	61.5	2.421	63.5	2.500	114.5	4.508	113	4.449	1.5	.059	10	.394	2
8.300	.3268				3	Int.	DSAS0830X03S100	●	26.4	1.039	44.5	1.752	47.5	1.870	97.5	3.839	96	3.780	1.5	.059	10	.394	2
					5	Int.	DSAS0830X05S100	●	43.0	1.693	61.5	2.421	63.5	2.500	114.5	4.508	113	4.449	1.5	.059	10	.394	2
8.335	.3282	21/64			3	Int.	DSAS0833X03S100	●	26.5	1.043	44.5	1.752	47.5	1.870	97.5	3.839	96	3.780	1.5	.059	10	.394	2
					5	Int.	DSAS0833X05S100	●	43.2	1.701	61.5	2.421	63.5	2.500	114.5	4.508	113	4.449	1.5	.059	10	.394	2
8.400	.3307				3	Ext.	DSAE0840X03S100	★	26.7	1.051	44.5	1.752	47.5	1.870	97.5	3.839	96	3.780	1.5	.059	10	.394	4
					3	Int.	DSAS0840X03S100	●	26.7	1.051	44.5	1.752	47.5	1.870	97.5	3.839	96	3.780	1.5	.059	10	.394	2
					5	Int.	DSAS0840X05S100	★	43.5	1.713	61.5	2.421	63.5	2.500	114.5	4.508	113	4.449	1.5	.059	10	.394	2
8.500	.3346			M10x1.5	3	Ext.	DSAE0850X03S100	★	27.0	1.063	44.5	1.752	47.5	1.870	97.5	3.839	96	3.780	1.5	.059	10	.394	4
					3	Int.	DSAS0850X03S100	●	27.0	1.063	44.5	1.752	47.5	1.870	97.5	3.839	96	3.780	1.5	.059	10	.394	2
					5	Int.	DSAS0850X05S100	●	44.0	1.732	61.5	2.421	63.5	2.500	114.5	4.508	113	4.449	1.5	.059	10	.394	2
8.600	.3386		R		3	Int.	DSAS0860X03S100	●	27.4	1.079	46.6	1.835	48.6	1.913	102.6	4.039	101	3.976	1.6	.063	10	.394	2
					5	Int.	DSAS0860X05S100	●	44.6	1.756	64.6	2.543	66.6	2.622	117.6	4.630	116	4.567	1.6	.063	10	.394	2
8.700	.3425			M10x1.25	3	Int.	DSAS0870X03S100	●	27.7	1.091	46.6	1.835	48.6	1.913	102.6	4.039	101	3.976	1.6	.063	10	.394	2
					5	Int.	DSAS0870X05S100	●	45.1	1.776	64.6	2.543	66.6	2.622	117.6	4.630	116	4.567	1.6	.063	10	.394	2

DSA

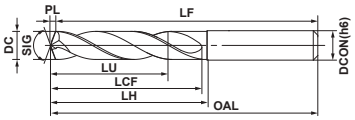
DC					L/D	Coolant (Int./Ext.)	Order Number	Stock	LU		LCF		LH		OAL		LF		PL		DCON		Type
Metric (mm)	Decimal (inch)	Fraction (inch)	Wire / Letter	Thread Size				DP9020	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	
8.732	.3438	11/32			3	Int.	DSAS0873X03S100	●	27.8	1.094	46.6	1.835	48.6	1.913	102.6	4.039	101	3.976	1.6	.063	10	.394	2
					5	Int.	DSAS0873X05S100	●	45.3	1.783	64.6	2.543	66.6	2.622	117.6	4.630	116	4.567	1.6	.063	10	.394	2
8.800	.3465				3	Int.	DSAS0880X03S100	●	28.0	1.102	46.6	1.835	48.6	1.913	102.6	4.039	101	3.976	1.6	.063	10	.394	2
					5	Int.	DSAS0880X05S100	●	45.6	1.795	64.6	2.543	66.6	2.622	117.6	4.630	116	4.567	1.6	.063	10	.394	2
8.900	.3504				3	Int.	DSAS0890X03S100	●	28.3	1.114	46.6	1.835	48.6	1.913	102.6	4.039	101	3.976	1.6	.063	10	.394	2
					5	Int.	DSAS0890X05S100	●	46.1	1.815	64.6	2.543	66.6	2.622	117.6	4.630	116	4.567	1.6	.063	10	.394	2
9.000	.3543				3	Ext.	DSAE0900X03S100	★	28.6	1.126	46.6	1.835	48.6	1.913	102.6	4.039	101	3.976	1.6	.063	10	.394	4
					3	Int.	DSAS0900X03S100	●	28.6	1.126	46.6	1.835	48.6	1.913	102.6	4.039	101	3.976	1.6	.063	10	.394	2
					5	Int.	DSAS0900X05S100	●	46.6	1.835	64.6	2.543	66.6	2.622	117.6	4.630	116	4.567	1.6	.063	10	.394	2
9.100	.3583		T		3	Int.	DSAS0910X03S100	●	29.1	1.146	49.8	1.961	50.8	2.000	102.8	4.047	101	3.976	1.8	.071	10	.394	2
					5	Int.	DSAS0910X05S100	★	47.3	1.862	68.8	2.709	71.8	2.827	122.8	4.835	121	4.764	1.8	.071	10	.394	2
9.200	.3622				3	Int.	DSAS0920X03S100	●	29.4	1.157	49.8	1.961	50.8	2.000	102.8	4.047	101	3.976	1.8	.071	10	.394	2
					5	Int.	DSAS0920X05S100	★	47.8	1.882	68.8	2.709	71.8	2.827	122.8	4.835	121	4.764	1.8	.071	10	.394	2
9.300	.3661				3	Int.	DSAS0930X03S100	●	29.7	1.169	49.8	1.961	50.8	2.000	102.8	4.047	101	3.976	1.8	.071	10	.394	2
					5	Int.	DSAS0930X05S100	★	48.3	1.902	68.8	2.709	71.8	2.827	122.8	4.835	121	4.764	1.8	.071	10	.394	2
9.400	.3701				3	Int.	DSAS0940X03S100	●	30.0	1.181	49.8	1.961	50.8	2.000	102.8	4.047	101	3.976	1.8	.071	10	.394	2
					5	Int.	DSAS0940X05S100	★	48.8	1.921	68.8	2.709	71.8	2.827	122.8	4.835	121	4.764	1.8	.071	10	.394	2
9.500	.3740				3	Int.	DSAS0950X03S100	●	30.3	1.193	49.8	1.961	50.8	2.000	102.8	4.047	101	3.976	1.8	.071	10	.394	2
					5	Int.	DSAS0950X05S100	●	49.3	1.941	68.8	2.709	71.8	2.827	122.8	4.835	121	4.764	1.8	.071	10	.394	2
9.525	.3750	3/8			3	Int.	DSAS0953X03S100	●	30.4	1.197	49.8	1.961	50.8	2.000	102.8	4.047	101	3.976	1.8	.071	10	.394	2
					5	Int.	DSAS0953X05S100	●	49.4	1.945	68.8	2.709	71.8	2.827	122.8	4.835	121	4.764	1.8	.071	10	.394	2
9.600	.3780				3	Int.	DSAS0960X03S100	●	30.6	1.205	49.8	1.961	50.8	2.000	102.8	4.047	101	3.976	1.8	.071	10	.394	2
					5	Int.	DSAS0960X05S100	★	49.8	1.961	68.8	2.709	71.8	2.827	122.8	4.835	121	4.764	1.8	.071	10	.394	2
9.700	.3819		Tube Sheet		3	Int.	DSAS0970X03S100	●	30.9	1.217	49.8	1.961	50.8	2.000	102.8	4.047	101	3.976	1.8	.071	10	.394	2
					5	Int.	DSAS0970X05S100	★	50.3	1.980	68.8	2.709	71.8	2.827	122.8	4.835	121	4.764	1.8	.071	10	.394	2
9.800	.3858		W		3	Int.	DSAS0980X03S100	●	31.2	1.228	51.8	2.039	51.8	2.039	102.8	4.047	101	3.976	1.8	.071	10	.394	2
					5	Int.	DSAS0980X05S100	●	50.8	2.000	71.8	2.827	71.8	2.827	122.8	4.835	121	4.764	1.8	.071	10	.394	2
9.900	.3898				3	Int.	DSAS0990X03S100	●	31.5	1.240	51.8	2.039	51.8	2.039	102.8	4.047	101	3.976	1.8	.071	10	.394	2
					5	Int.	DSAS0990X05S100	★	51.3	2.020	71.8	2.827	71.8	2.827	122.8	4.835	121	4.764	1.8	.071	10	.394	2
9.922	.3907	25/64		7/16-20	3	Int.	DSAS0992X03S100	●	31.6	1.244	51.8	2.039	51.8	2.039	102.8	4.047	101	3.976	1.8	.071	10	.394	2
					5	Int.	DSAS0992X05S100	●	51.4	2.024	71.8	2.827	71.8	2.827	122.8	4.835	121	4.764	1.8	.071	10	.394	2
10.000	.3937				3	Ext.	DSAE1000X03S100	★	31.8	1.252	51.8	2.039	51.8	2.039	102.8	4.047	101	3.976	1.8	.071	10	.394	4
					3	Int.	DSAS1000X03S100	●	31.8	1.252	51.8	2.039	51.8	2.039	102.8	4.047	101	3.976	1.8	.071	10	.394	2
					5	Int.	DSAS1000X05S100	●	51.8	2.039	71.8	2.827	71.8	2.827	122.8	4.835	121	4.764	1.8	.071	10	.394	2
10.100	.3976				3	Int.	DSAS1010X03S120	●	32.2	1.268	54.9	2.161	57.9	2.280	112.9	4.445	111	4.370	1.9	.075	12	.472	2
					5	Int.	DSAS1010X05S120	★	52.4	2.063	75.9	2.988	79.9	3.146	135.9	5.350	134	5.276	1.9	.075	12	.472	2
10.200	.4016			M12x1.75	3	Int.	DSAS1020X03S120	●	32.5	1.280	54.9	2.161	57.9	2.280	112.9	4.445	111	4.370	1.9	.075	12	.472	2
					5	Int.	DSAS1020X05S120	●	52.9	2.083	75.9	2.988	79.9	3.146	135.9	5.350	134	5.276	1.9	.075	12	.472	2
10.300	.4055				3	Int.	DSAS1030X03S120	●	32.8	1.291	54.9	2.161	57.9	2.280	112.9	4.445	111	4.370	1.9	.075	12	.472	2
					5	Int.	DSAS1030X05S120	★	53.4	2.102	75.9	2.988	79.9	3.146	135.9	5.350	134	5.276	1.9	.075	12	.472	2
10.319	.4063	13/32			3	Int.	DSAS1032X03S120	●	32.9	1.295	54.9	2.161	57.9	2.280	112.9	4.445	111	4.370	1.9	.075	12	.472	2
					5	Int.	DSAS1032X05S120	●	53.5	2.106	75.9	2.988	79.9	3.146	135.9	5.350	134	5.276	1.9	.075	12	.472	2
10.400	.4094				3	Int.	DSAS1040X03S120	●	33.1	1.303	54.9	2.161	57.9	2.280	112.9	4.445	111	4.370	1.9	.075	12	.472	2
					5	Int.	DSAS1040X05S120	★	53.9	2.122	75.9	2.988	79.9	3.146	135.9	5.350	134	5.276	1.9	.075	12	.472	2
10.500	.4134		Z		3	Ext.	DSAE1050X03S120	★	33.4	1.315	54.9	2.161	57.9	2.280	112.9	4.445	111	4.370	1.9	.075	12	.472	4
					3	Int.	DSAS1050X03S120	●	33.4	1.315	54.9	2.161	57.9	2.280	112.9	4.445	111	4.370	1.9	.075	12	.472	2
					5	Int.	DSAS1050X05S120	●	54.4	2.142	75.9	2.988	79.9	3.146	135.9	5.350	134	5.276	1.9	.075	12	.472	2
10.600	.4173				3	Int.	DSAS1060X03S120	●	33.7	1.327	54.9	2.161	57.9	2.280	112.9	4.445	111	4.370	1.9	.075	12	.472	2
					5	Int.	DSAS1060X05S120	★	54.9	2.161	75.9	2.988	79.9	3.146	135.9	5.350	134	5.276	1.9	.075	12	.472	2
10.700	.4213				3	Ext.	DSAE1070X03S120	★	34.0	1.339	54.9	2.161	57.9	2.280	112.9	4.445	111	4.370	1.9	.075	12	.472	4
					3	Int.	DSAS1070X03S120	●	34.0	1.339	54.9	2.161	57.9	2.280	112.9	4.445	111	4.370	1.9	.075	12	.472	2
					5	Int.	DSAS1070X05S120	★	55.4	2.181	75.9	2.988	79.9	3.146	135.9	5.350	134	5.276	1.9	.075	12	.472	2

● : USA Stock ★ : Stocked in Japan □ : Made to Order

Type2



Type4



DC					L/D	Coolant (Int./Ext.)	Order Number	Stock	LU		LCF		LH		OAL		LF		PL		DCON		Type
Metric (mm)	Decimal (inch)	Fraction	Wire / Letter	Thread Size				DP9020	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	
10.716	.4219	27/64		1/2-13	3	Int.	DSAS1072X03S120	●	34.1	1.343	57.0	2.244	59.0	2.323	118.0	4.646	116	4.567	2.0	.079	12	.472	2
					5	Int.	DSAS1072X05S120	●	55.6	2.189	79.0	3.110	80.0	3.150	142.0	5.591	140	5.512	2.0	.079	12	.472	2
10.800	.4252			M12x1.25	3	Int.	DSAS1080X03S120	●	34.4	1.354	57.0	2.244	59.0	2.323	118.0	4.646	116	4.567	2.0	.079	12	.472	2
					5	Int.	DSAS1080X05S120	★	56.0	2.205	79.0	3.110	80.0	3.150	142.0	5.591	140	5.512	2.0	.079	12	.472	2
10.900	.4291				3	Int.	DSAS1090X03S120	●	34.7	1.366	57.0	2.244	59.0	2.323	118.0	4.646	116	4.567	2.0	.079	12	.472	2
					5	Int.	DSAS1090X05S120	★	56.5	2.224	79.0	3.110	80.0	3.150	142.0	5.591	140	5.512	2.0	.079	12	.472	2
11.000	.4331				3	Ext.	DSAE1100X03S120	★	35.0	1.378	57.0	2.244	59.0	2.323	118.0	4.646	116	4.567	2.0	.079	12	.472	4
					3	Int.	DSAS1100X03S120	●	35.0	1.378	57.0	2.244	59.0	2.323	118.0	4.646	116	4.567	2.0	.079	12	.472	2
					5	Int.	DSAS1100X05S120	●	57.0	2.244	79.0	3.110	80.0	3.150	142.0	5.591	140	5.512	2.0	.079	12	.472	2
11.100	.4370				3	Int.	DSAS1110X03S120	●	35.4	1.394	60.1	2.366	61.1	2.406	118.1	4.650	116	4.567	2.1	.083	12	.472	2
					5	Int.	DSAS1110X05S120	★	57.6	2.268	83.1	3.272	86.1	3.390	142.1	5.594	140	5.512	2.1	.083	12	.472	2
11.113	.4375	7/16			3	Int.	DSAS1111X03S120	●	35.4	1.394	60.1	2.366	61.1	2.406	118.1	4.650	116	4.567	2.1	.083	12	.472	2
					5	Int.	DSAS1111X05S120	●	57.7	2.272	83.1	3.272	86.1	3.390	142.1	5.594	140	5.512	2.1	.083	12	.472	2
11.200	.4409				3	Int.	DSAS1120X03S120	●	35.7	1.406	60.1	2.366	61.1	2.406	118.1	4.650	116	4.567	2.1	.083	12	.472	2
					5	Int.	DSAS1120X05S120	★	58.1	2.287	83.1	3.272	86.1	3.390	142.1	5.594	140	5.512	2.1	.083	12	.472	2
11.300	.4449				3	Int.	DSAS1130X03S120	●	36.0	1.417	60.1	2.366	61.1	2.406	118.1	4.650	116	4.567	2.1	.083	12	.472	2
					5	Int.	DSAS1130X05S120	★	58.6	2.307	83.1	3.272	86.1	3.390	142.1	5.594	140	5.512	2.1	.083	12	.472	2
11.400	.4488				3	Int.	DSAS1140X03S120	●	36.3	1.429	60.1	2.366	61.1	2.406	118.1	4.650	116	4.567	2.1	.083	12	.472	2
					5	Int.	DSAS1140X05S120	★	59.1	2.327	83.1	3.272	86.1	3.390	142.1	5.594	140	5.512	2.1	.083	12	.472	2
11.500	.4528				3	Ext.	DSAE1150X03S120	★	36.6	1.441	60.1	2.366	61.1	2.406	118.1	4.650	116	4.567	2.1	.083	12	.472	4
					3	Int.	DSAS1150X03S120	●	36.6	1.441	60.1	2.366	61.1	2.406	118.1	4.650	116	4.567	2.1	.083	12	.472	2
					5	Int.	DSAS1150X05S120	●	59.6	2.346	83.1	3.272	86.1	3.390	142.1	5.594	140	5.512	2.1	.083	12	.472	2
11.510	.4532	29/64		1/2-20	3	Int.	DSAS1151X03S120	●	36.7	1.445	62.2	2.449	62.2	2.449	118.2	4.654	116	4.567	2.2	.087	12	.472	2
					5	Int.	DSAS1151X05S120	★	59.7	2.350	86.2	3.394	86.2	3.394	142.2	5.598	140	5.512	2.2	.087	12	.472	2
11.600	.4567				3	Int.	DSAS1160X03S120	●	37.0	1.457	62.2	2.449	62.2	2.449	118.2	4.654	116	4.567	2.2	.087	12	.472	2
					5	Int.	DSAS1160X05S120	★	60.2	2.370	86.2	3.394	86.2	3.394	142.2	5.598	140	5.512	2.2	.087	12	.472	2
11.700	.4606				3	Int.	DSAS1170X03S120	●	37.3	1.469	62.2	2.449	62.2	2.449	118.2	4.654	116	4.567	2.2	.087	12	.472	2
					5	Int.	DSAS1170X05S120	★	60.7	2.390	86.2	3.394	86.2	3.394	142.2	5.598	140	5.512	2.2	.087	12	.472	2
11.800	.4646				3	Int.	DSAS1180X03S120	●	37.6	1.480	62.2	2.449	62.2	2.449	118.2	4.654	116	4.567	2.2	.087	12	.472	2
					5	Int.	DSAS1180X05S120	★	61.2	2.409	86.2	3.394	86.2	3.394	142.2	5.598	140	5.512	2.2	.087	12	.472	2
11.900	.4685				3	Int.	DSAS1190X03S120	●	37.9	1.492	62.2	2.449	62.2	2.449	118.2	4.654	116	4.567	2.2	.087	12	.472	2
					5	Int.	DSAS1190X05S120	★	61.7	2.429	86.2	3.394	86.2	3.394	142.2	5.598	140	5.512	2.2	.087	12	.472	2
12.000	.4724			M14x2.0	3	Ext.	DSAE1200X03S120	★	38.2	1.504	62.2	2.449	62.2	2.449	118.2	4.654	116	4.567	2.2	.087	12	.472	4
					3	Int.	DSAS1200X03S120	●	38.2	1.504	62.2	2.449	62.2	2.449	118.2	4.654	116	4.567	2.2	.087	12	.472	2
					5	Int.	DSAS1200X05S120	●	62.2	2.449	86.2	3.394	86.2	3.394	142.2	5.598	140	5.512	2.2	.087	12	.472	2
12.300	.4843				3	Int.	DSAS1230X03S140	●	39.1	1.539	65.2	2.567	68.2	2.685	124.2	4.890	122	4.803	2.2	.087	14	.551	2
					5	Int.	DSAS1230X05S140	●	63.7	2.508	90.2	3.551	94.2	3.709	150.2	5.913	148	5.827	2.2	.087	14	.551	2
12.400	.4882				3	Int.	DSAS1240X03S140	●	39.5	1.555	65.3	2.571	68.3	2.689	124.3	4.894	122	4.803	2.3	.091	14	.551	2
					5	Int.	DSAS1240X05S140	●	64.3	2.531	90.3	3.555	94.3	3.713	150.3	5.917	148	5.827	2.3	.091	14	.551	2
12.500	.4921			M14x1.5	3	Int.	DSAS1250X03S140	●	39.8	1.567	65.3	2.571	68.3	2.689	124.3	4.894	122	4.803	2.3	.091	14	.551	2
					5	Int.	DSAS1250X05S140	●	64.8	2.551	90.3	3.555	94.3	3.713	150.3	5.917	148	5.827	2.3	.091	14	.551	2
12.700	.5000	1/2			3	Int.	DSAS1270X03S140	●	40.4	1.591	67.3	2.650	68.3	2.689	128.3	5.051	126	4.961	2.3	.091	14	.551	2
					5	Int.	DSAS1270X05S140	●	65.8	2.591	93.3	3.673	94.3	3.713	156.3	6.154	154	6.063	2.3	.091	14	.551	2
13.000	.5118				3	Int.	DSAS1300X03S140	●	41.4	1.630	67.4	2.654	68.4	2.693	128.4	5.055	126	4.961	2.4	.094	14	.551	2
					5	Int.	DSAS1300X05S140	●	67.4	2.654	93.4	3.677	94.4	3.717	156.4	6.157	154	6.063	2.4	.094	14	.551	2
13.100	.5157			9/16-18	3	Int.	DSAS1310X03S140	●	41.7	1.642	70.4	2.772	72.4	2.850	128.4	5.055	126	4.961	2.4	.094	14	.551	2
					5	Int.	DSAS1310X05S140	●	67.9	2.673	97.4	3.835	100.4	3.953	156.4	6.157	154	6.063	2.4	.094	14	.551	2
13.500	.5315			5/8-11	3	Int.	DSAS1350X03S140	●	43.0	1.693	70.5	2.776	72.5	2.854	128.5	5.059	126	4.961	2.5	.098	14	.551	2
					5	Int.	DSAS1350X05S140	●	70.0	2.756	97.5	3.839	100.5	3.957	156.5	6.161	154	6.063	2.5	.098	14	.551	2
14.000	.5512			M16x2.0	3	Int.	DSAS1400X03S140	●	44.5	1.752	72.5	2.854	72.5	2.854	128.5	5.059	126	4.961	2.5	.098	14	.551	2
					5	Int.	DSAS1400X05S140	●	72.5	2.854	100.5	3.957	100.5	3.957	156.5	6.161	154	6.063	2.5	.098	14	.551	2

● = NEW

DC					L/D	Coolant (Int./Ext.)	Order Number	Stock	LU		LCF		LH		OAL		LF		PL		DCON		Type
Metric (mm)	Decimal (inch)	Fraction (inch)	Wire / Letter	Thread Size				DP9020	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	
14.500	**.5709**			**M16x1.5**	3	Int.	**DSAS1450X03S160**	●	46.1	1.815	75.6	2.976	78.6	3.094	137.6	5.417	135	5.315	2.6	.102	16	.630	2
					5	Int.	**DSAS1450X05S160**	●	75.1	2.957	104.6	4.118	108.6	4.276	167.6	6.598	165	6.496	2.6	.102	16	.630	2
14.600	**.5748**				3	Int.	**DSAS1460X03S160**	●	46.5	1.831	77.7	3.059	78.7	3.098	137.7	5.421	135	5.315	2.7	.106	16	.630	2
					5	Int.	**DSAS1460X05S160**	●	75.7	2.980	107.7	4.240	108.7	4.280	167.7	6.602	165	6.496	2.7	.106	16	.630	2
14.700	**.5787**				3	Int.	**DSAS1470X03S160**	●	46.8	1.843	77.7	3.059	78.7	3.098	137.7	5.421	135	5.315	2.7	.106	16	.630	2
					5	Int.	**DSAS1470X05S160**	●	76.2	3.000	107.7	4.240	108.7	4.280	167.7	6.602	165	6.496	2.7	.106	16	.630	2
15.000	**.5906**				3	Int.	**DSAS1500X03S160**	●	47.7	1.878	77.7	3.059	78.7	3.098	137.7	5.421	135	5.315	2.7	.106	16	.630	2
					5	Int.	**DSAS1500X05S160**	●	77.7	3.059	107.7	4.240	108.7	4.280	167.7	6.602	165	6.496	2.7	.106	16	.630	2

● = NEW

● : USA Stock

Recommended Cutting Conditions

(inch)

Workpiece Material			Heat Resistant Alloys Inconel718 etc.		Titanium Alloys Ti-6Al-4V etc.	
DC		L/D	Cutting Speed **vc** (SFM)	Feed **fr** (Min.—Max.) (IPR)	Cutting Speed **vc** (SFM)	Feed **fr** (Min.—Max.) (IPR)
inch	mm					
.1181	**3.000**	**≦ 5**	30	.002 (.002—.004)	130	.003 (.002—.005)
.1575	**4.000**	**≦ 5**	30	.002 (.002—.004)	130	.004 (.003—.006)
.1969	**5.000**	**≦ 5**	40	.003 (.002—.005)	130	.005 (.003—.008)
.2362	**6.000**	**≦ 5**	50	.004 (.003—.006)	130	.006 (.004—.008)
.3150	**8.000**	**≦ 5**	50	.004 (.003—.006)	130	.007 (.006—.010)
.3937	**10.000**	**≦ 5**	60	.004 (.003—.006)	130	.009 (.007—.011)
.4724	**12.000**	**≦ 5**	65	.005 (.003—.006)	130	.009 (.008—.012)
.5512	**14.000**	**≦ 5**	65	.005 (.003—.006)	130	.009 (.008—.012)

Note 1) Spindle through & high pressure coolant system is recommended to make stable holes.
Note 2) Emulsion type of water-soluble coolant is recommended.
Note 3) In non water-insoluble coolant, reduce the cutting speed by 10%-20%.
Note 4) When drilling length of DCx1 or more with the use of external coolant system, step drilling is recommended in every DCx0.5 to encourage chips to break.

Memo

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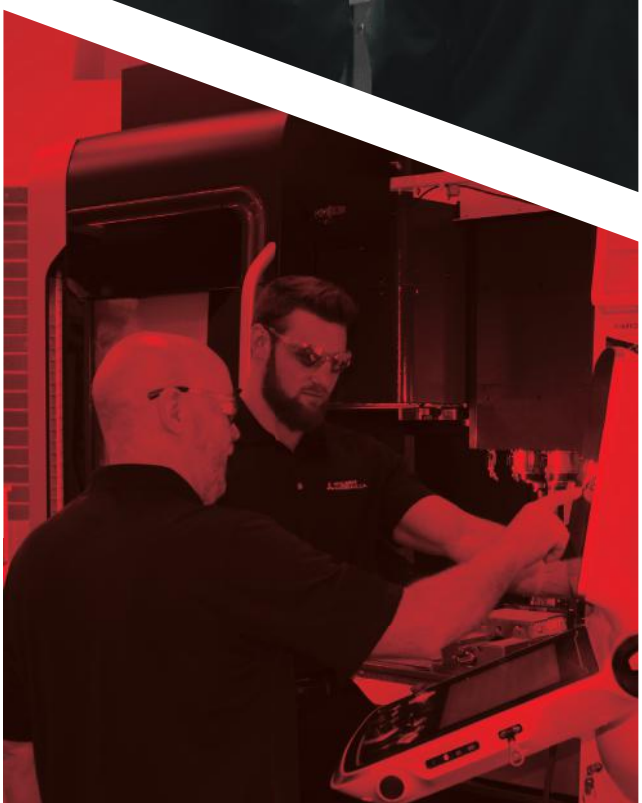
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FOR YOUR SAFETY

- 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 attaching inserts or spare parts, please use only the correct wrench or driver.
- When using rotating tools, please make a trial run to check run-out, vibration and abnormal sounds etc.

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Tools specifications subject to change without notice.

B256A-US-2023.10