

AHB

TOOLING & MACHINERY

COMPLETE METALWORKING SOLUTIONS

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www.ahbinc.com

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DIA  EDGE

DSA SERIES

FOR LONG TOOL LIFE
WHEN MACHINING HEAT
RESISTANT SUPER ALLOYS



ABOUT OUR BRAND

Your manufacturing success is our success.

It's simple. We want to provide high-quality cutting tool products that help deliver unparalleled performance and control for you to manufacture precisely perfect products every day.

Our long heritage of building partnerships through cutting tool solutions to metal working manufacturers, like yours, has given Mitsubishi Materials USA a solid reputation as an industry leader. We understand the importance of getting it right the first time by delivering high-quality cutting tool product brands to help overcome machining challenges to improve machining processes.

Your success is our success and is the driving force behind our innovative products. Our product brands, DIAEDGE and MOLDINO, are trusted globally in the metal manufacturing and die & mold industries for delivering expertly-designed manufactured tools of the trade for highly specialized industries like yours.

With the acquisition of Hitachi Tool Engineering, LTD, our traditional Mitsubishi Materials USA cutting tool product line is now sold under the DIAEDGE product brand name.

Brands you can trust:

 **MITSUBISHI MATERIALS U.S.A.**

TRUSTED PRODUCT BRANDS

 **DIAEDGE**

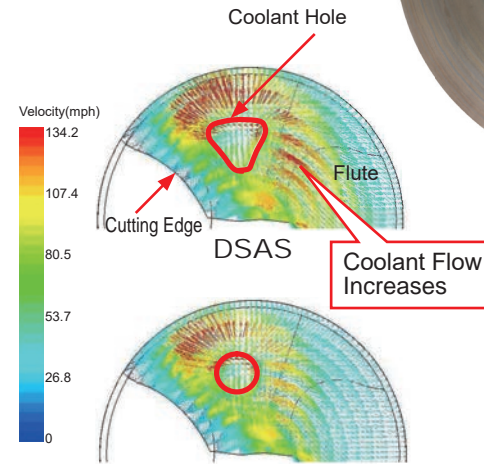
 **MOLDINO**

Solid Carbide Drill for Machining Heat Resistant Alloys

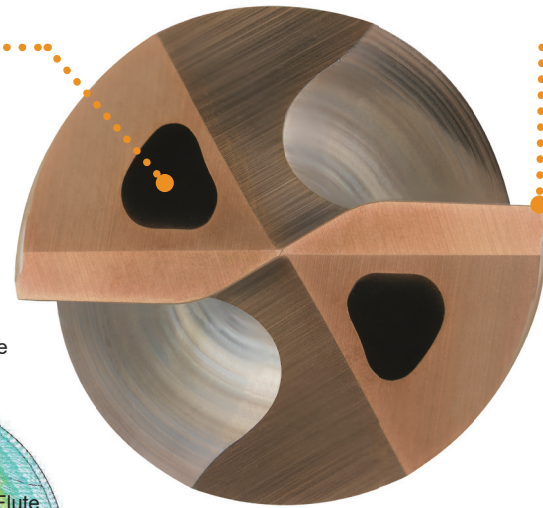
DSA Series

TRI-Cooling Technology

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

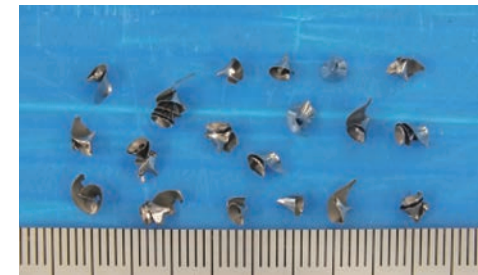


Comparison of Coolant Flow Rate (Spindle Speed 4700 min⁻¹)



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.

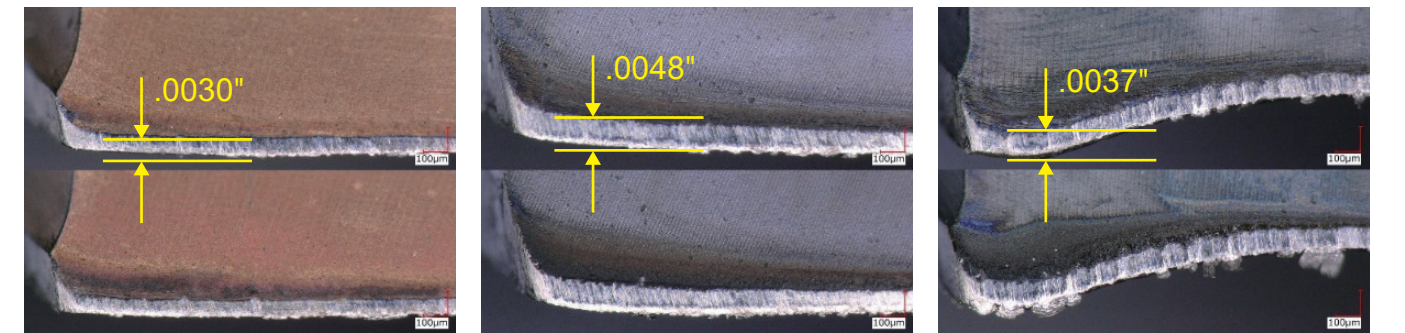
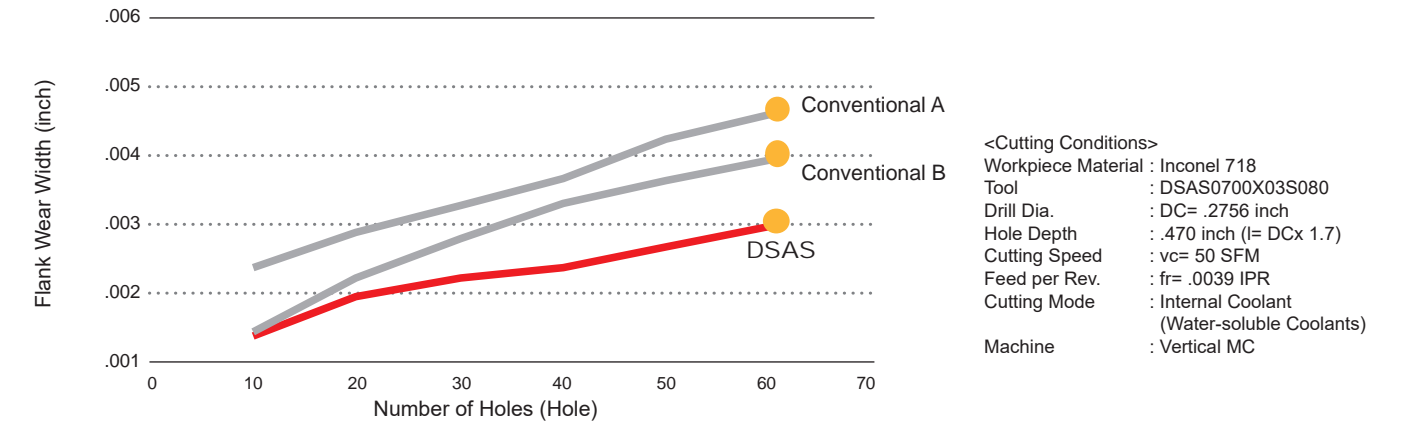


Special Margin

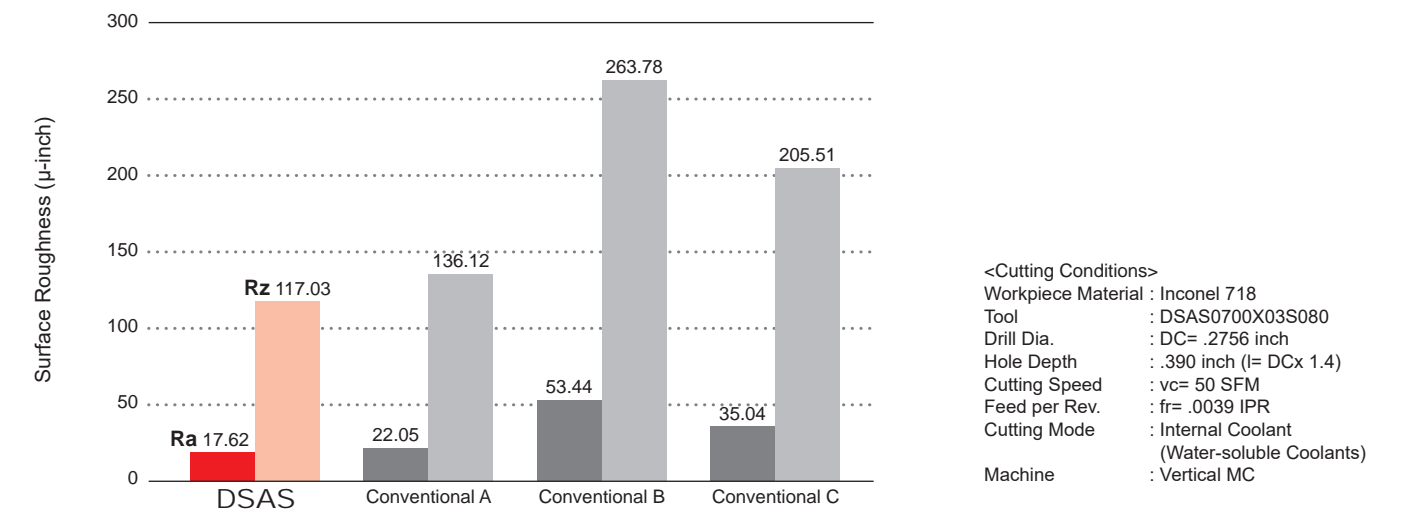
The specially designed thin margin minimizes contact area with hole surface and workpiece materials in combination with tri-cooling technology to reduce cutting heat and prevent the generation of work-hardening making it especially suited for the machining of heat resistant alloys.

Cutting Performance

Comparison of Flank Wear Width by Inconel 718

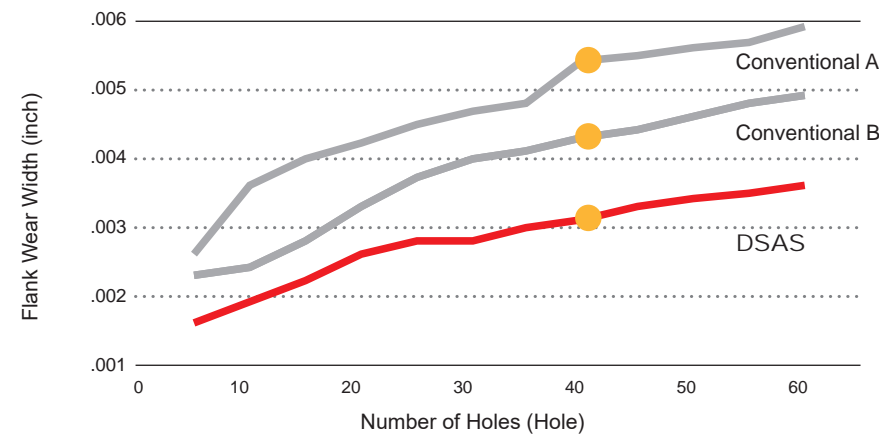


Comparison of Wall Surface Roughness by Inconel 718

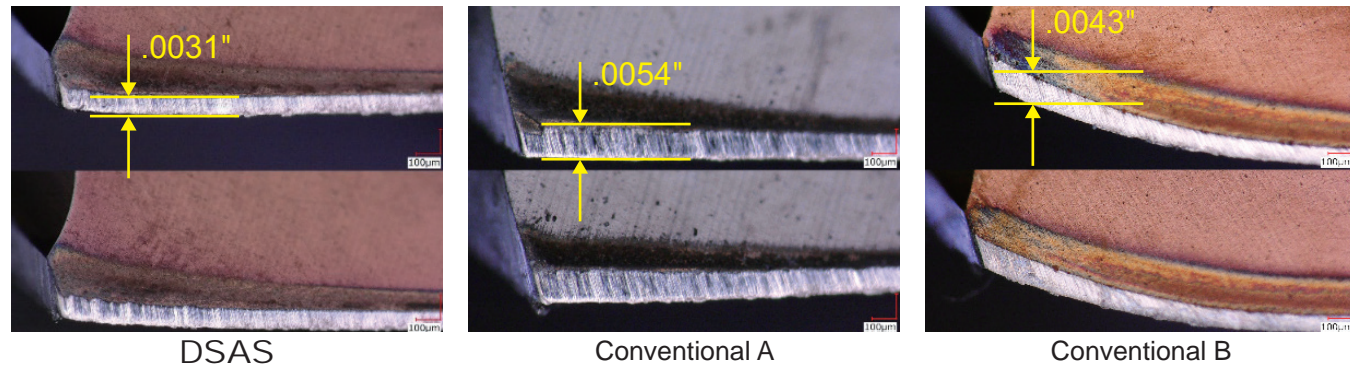


Cutting Performance

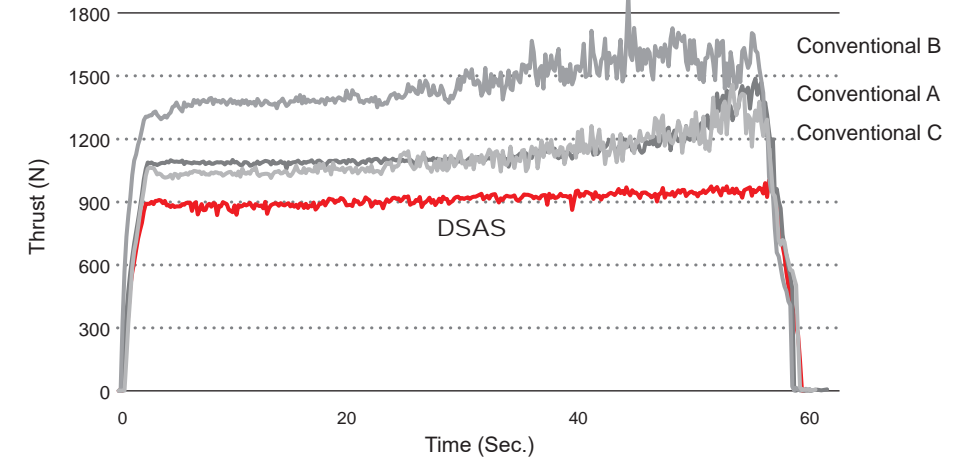
Comparison of Flank Wear Width by RENE 41



<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

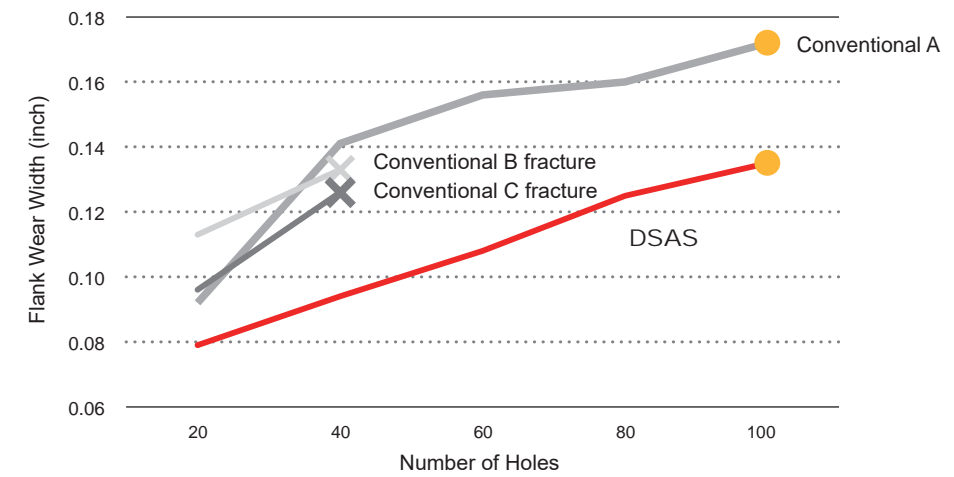


Comparison of Cutting Resistance by Inconel 718 : L/D = 5



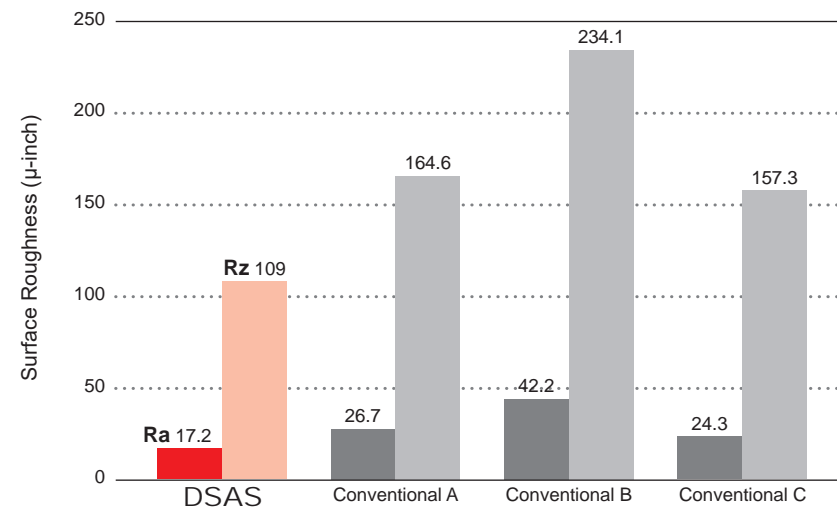
<Cutting Conditions>
 Workpiece Material : Inconel 718
 Tool : DSAS0600X05S060
 Drill Dia. : DC= .2756 inch
 Hole Depth : 1.181 inch (l= DCx 5)
 Cutting Speed : vc= 30 SFM
 Feed per Rev. : fr= .0024 IPR
 Cutting Mode : Internal Coolant
 (Water-soluble Coolants)
 Machine : Vertical MC

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



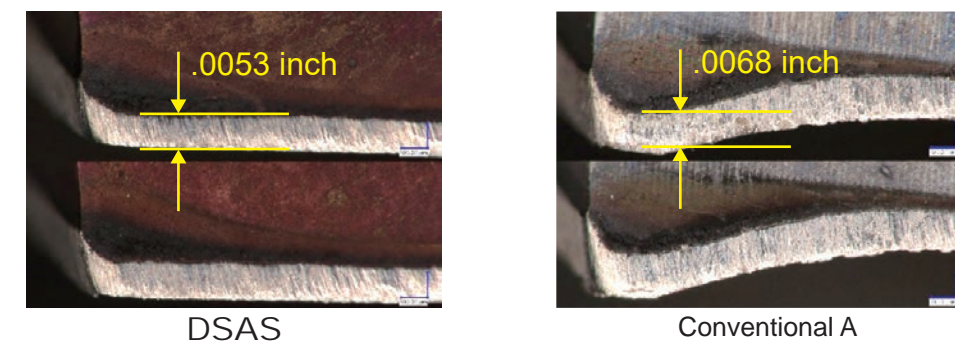
<Cutting Conditions>
 Workpiece Material : Inconel 718
 Tool : DSAS0600X05S060
 Drill Dia. : DC= .2756 inch
 Hole Depth : 1.181 inch (l= DCx 5)
 Cutting Speed : vc= 65 SFM
 Feed per Rev. : fr= .0039 IPR
 Cutting Mode : Internal Coolant
 (Water-soluble Coolants)
 Machine : Vertical MC

Comparison of Wall Surface Roughness 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

After 100 Hole

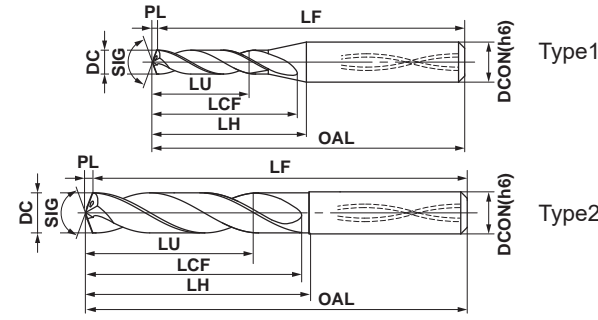


DSA

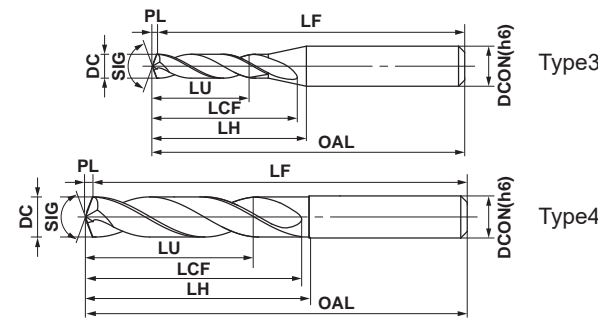


P M K N **S** H

DSAS



DSAE



* 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 ≤ .4724
Type 1,2,3,4	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 ≤ 12
Type 1,2,3,4	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

Metric (mm)	DC		Wire / Letter	Thread Size	L/D	Coolant (Int./Ext.)	Order Number	Stock DP9020	LU		LCF		LH		OAL		LF		PL		DCON		Type		
	Decimal	Fraction							mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch		mm	inch
	(inch)																								
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		
							DSAS0300X03S060	●	9.5	.374	21.5	.846	23.5	.925	70.5	2.776	70	2.756	0.5	.020	6	.236	1		
							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		
							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		
							DSAS0318X03S060	●	10.1	.398	21.6	.850	23.6	.929	70.6	2.780	70	2.756	0.6	.024	6	.236	1		
3.175	.1250	1/8			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		
							DSAS0320X03S060	●	10.2	.402	21.6	.850	23.6	.929	70.6	2.780	70	2.756	0.6	.024	6	.236	1		
							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		
3.200	.1260				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		
							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		
							DSAS0330X03S060	●	10.5	.413	21.6	.850	23.6	.929	70.6	2.780	70	2.756	0.6	.024	6	.236	1		
3.260	.1283				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		
							DSAE0340X03S060	★	10.8	.425	21.6	.850	23.6	.929	70.6	2.780	70	2.756	0.6	.024	6	.236	3		
							DSAS0340X03S060	●	10.8	.425	21.6	.850	23.6	.929	70.6	2.780	70	2.756	0.6	.024	6	.236	1		
3.300	.1299				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		
							DSAE0340X03S060	★	10.8	.425	21.6	.850	23.6	.929	70.6	2.780	70	2.756	0.6	.024	6	.236	3		
							DSAS0340X03S060	●	10.8	.425	21.6	.850	23.6	.929	70.6	2.780	70	2.756	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		
							DSAS0340X03S060	●	10.8	.425	21.6	.850	23.6	.929	70.6	2.780	70	2.756	0.6	.024	6	.236	1		
							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		
							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 ϕ .1875" (ϕ 4.763mm) or less will be round shape.

● = NEW

● : USA Stock ★ : Stocked in Japan

Metric (mm)	DC		Wire / Letter	Thread Size	L/D	Coolant (Int./Ext.)	Order Number	Stock DP9020	LU		LCF		LH		OAL		LF		PL		DCON		Type
	Decimal	Fraction							mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	
	(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
							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
							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				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
							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
							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
							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
							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
							DSAS0400X03S060	●	12.7	.500	22.7	.894	23.7	.933	70.7	2.783	70	2.756	0.7	.028	6	.236	1
							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
							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				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
							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
							DSAS0430X03S060	●	13.7	.539	24.8	.976	26.8	1.055	73.8	2.906	73	2.874	0.8	.031	6	.236	1
							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
							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				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
							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				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



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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.



Product Brands Crafted by Mitsubishi Materials U.S.A.



www.diaedgetools.com
www.mmus-carbide.com

Tools specifications subject to change without notice.

B256A-US-2022.11



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