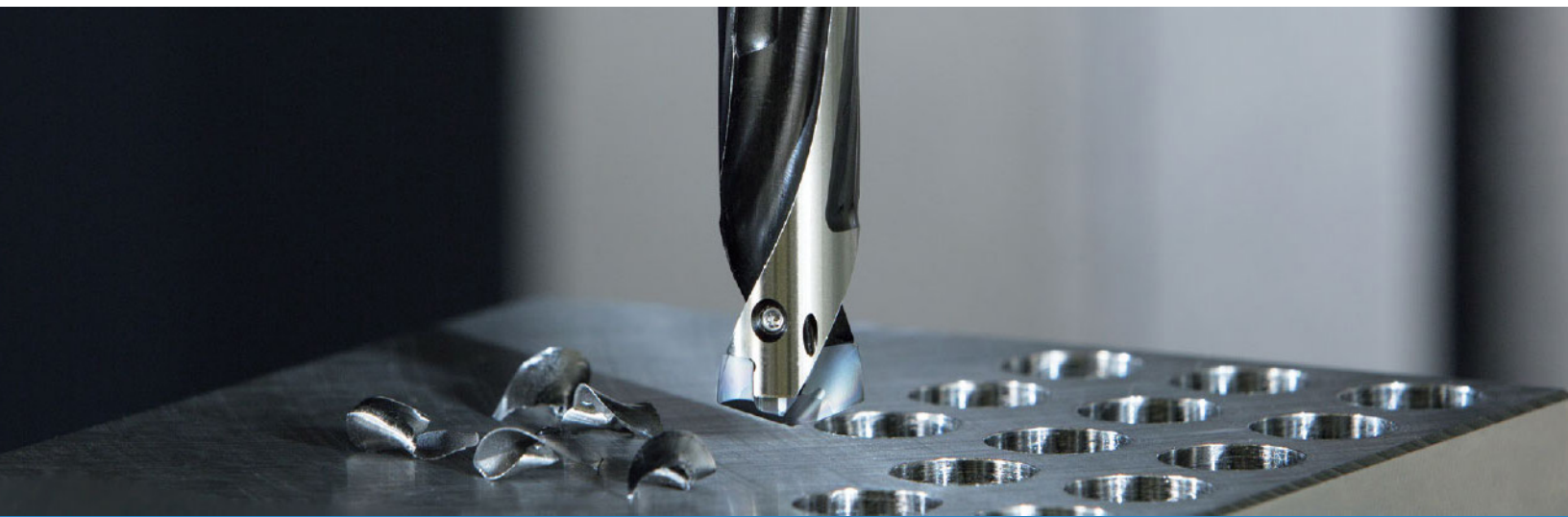




DRA Magic Drill

High Efficiency Modular Drill



Excellent Hole Accuracy with a Low Cutting Force Design

- Optimal Web Thickness Limits Deflection
- Fine Chip Breaking and Smooth Deep Hole Cutting
- Easy Insert Replacement



AHB Tooling & Machinery, Inc.
Complete Metalworking Solutions
Roseville Saginaw & Jackson, MI

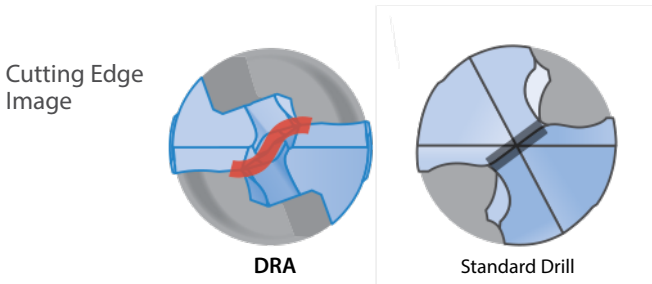
ISO Certified
(800) 991-4225
www.ahbinc.com
customerservice@ahbinc.com

DRA Magic Drill

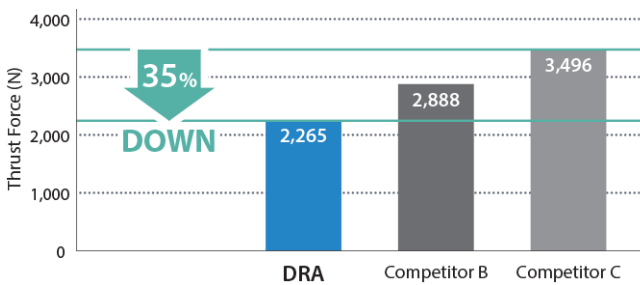
Excellent Hole Accuracy with a Low Cutting Force Design
5 Advantages to Efficiently Solve Common Drilling Difficulties

1 Low Cutting Force Design Improves Hole Accuracy

The special chisel edge with S-curve reduces thrust force and controls vibration.



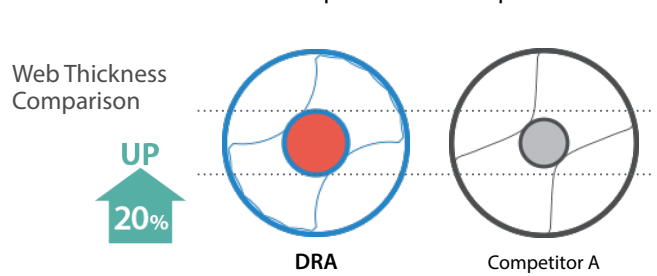
Low Cutting Force Comparison
(In-house Evaluation)



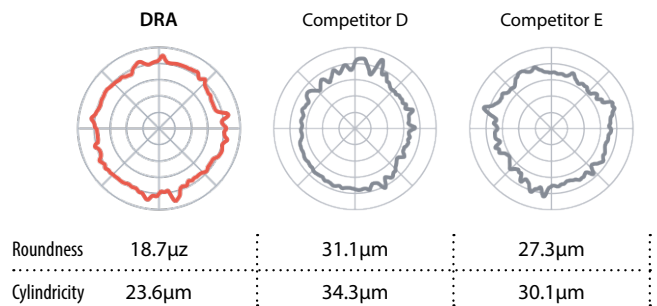
Cutting Conditions : $V_c = 390\text{sfm}$, $f = 0.010\text{ipr}$,
Drilling Diameter $\varnothing 0.551"$, Drilling Depth 1.772", Wet

2 Optimal Web Thickness Limits Deflection

The hole accuracy is improved by controlling drill deflection with a 20% thicker web compared with Competitor A.



Roundness · Cylindricity Comparison
(In-house Evaluation)



Cutting Conditions : $V_c = 390\text{sfm}$, $f = 0.012\text{ipr}$
Drilling Diameter $\varnothing 0.551"$, Measurement Position 2.165", Wet Workpiece : 1049 Steel

3 Fine Chip Breaking Even in Deep Hole Drilling Applications

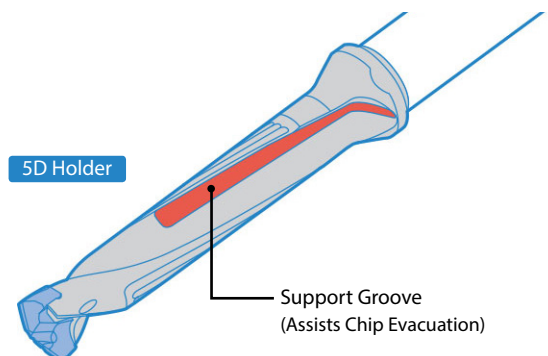
Optimized Chip Thinning for Stable Chip Evacuation

Support Groove with Wider Flute (5D, 8D) Enables Smooth Chip Evacuation

Chip Comparison
(In-house Evaluation)



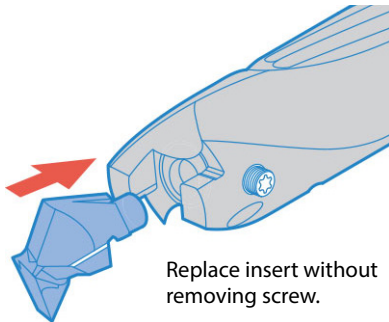
Cutting Conditions : $V_c = 200\text{sfm}$, $f = 0.008\text{ipr}$, Drilling Diameter 0.551"
Drilling Depth 2.756", Wet Workpiece : 304 Stainless Steel



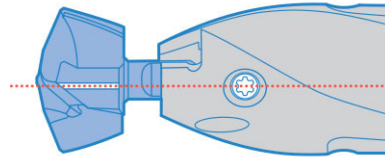
4

Easy Insert Replacement

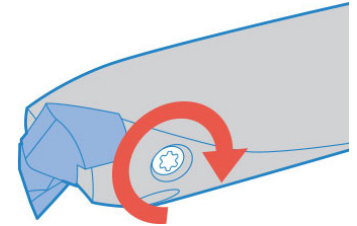
Replace Insert Without Removing Screw



Replace insert without removing screw.



Install the insert onto toolholder. (Align insert guide line with screw position)



Fix the insert by tightening the screw.

5

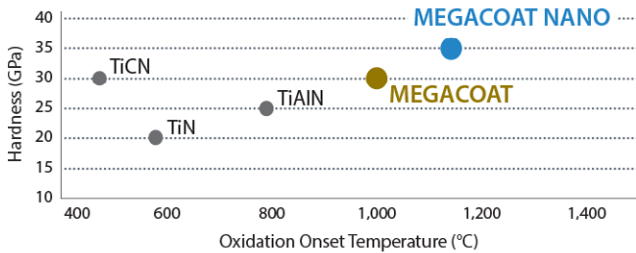
Long Tool Life and Stable Machining of Various Workpieces

MEGACOAT NANO grade PR1535 is used to machine various materials from steel to stainless steel, with the combination of a tough substrate and a special nano layer coating.

1st Recommendation

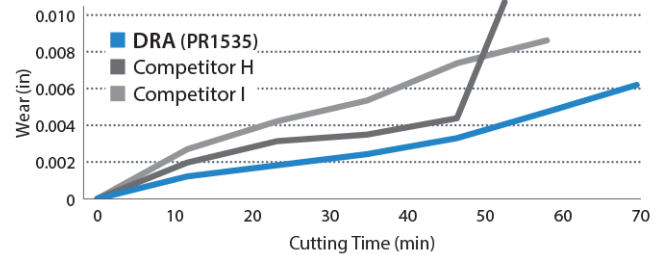
Steel PR1535	Cast Iron PR1525
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Coating Properties



Wear Resistance Comparison

(In-house Evaluation)

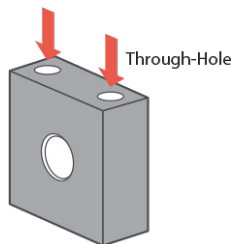


Cutting Conditions : $V_c = 330\text{sfm}$, $f = 0.010\text{ipr}$,
Cutting Diameter $\varnothing 0.551"$, Cutting Depth $1.772"$, Wet

Case Studies

Attachment - Structural Steel

$V_c = 230\text{sfm}$ ($n = 1,240\text{min}^{-1}$)
 $f = 0.009\text{ipr}$ ($V_f = 11.221\text{in/min}$)
Cutting Depth 3.937"
Wet (Internal Coolant)
With Center Hole Drilling
SF0750-DRA180M-8
DA1800M-GM PR1535



Cutting Time

DRA $\varnothing 0.709"-8D$ **45 sec** ↓ 30% Cutting Time

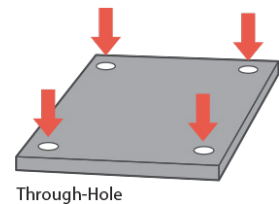
Competitor J $\varnothing 0.709"-7D$ **65 sec**

Competitor J applied a peck cycle to avoid chip clogging.
DRA controlled chip evacuation without pecking.

(User Evaluation)

Plate - Stainless Steel

$V_c = 195\text{sfm}$ ($n = 2,120\text{min}^{-1}$)
 $f = 0.005\text{ipr}$ ($V_f = 10\text{in/min}$)
Cutting Depth 0.591"
Wet (Internal Coolant)
SS0375-DRA090M-3
DA0900M-GM PR1535



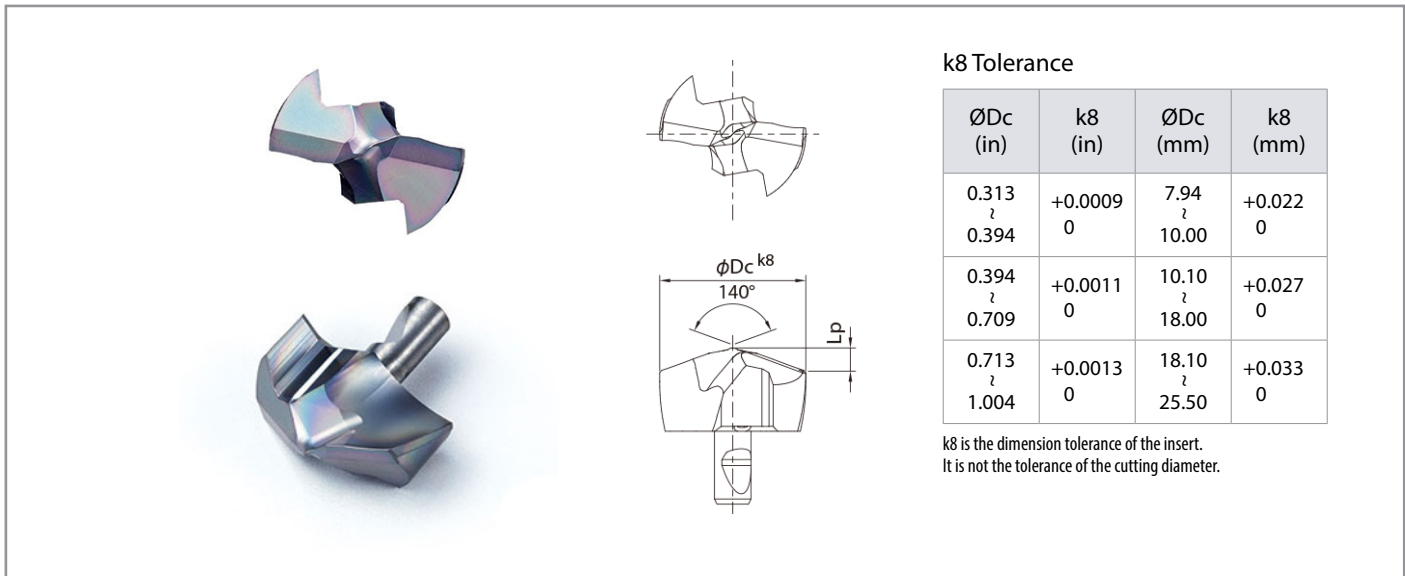
No. of Holes

DRA $\varnothing 0.354"-3D$ **500** ↑ X5 Tool Life

Competitor K $\varnothing 0.354"-3D$ **100**

DRA extended the tool life by 5 times compared to Competitor K.
DRA maintained stable machining and excellent surface finish with less cutting noise.

(User Evaluation)



1st Recommendation

Steel PR1535	Cast Iron PR1525
-----------------	---------------------

Inserts

Description	Dimensions			Grade		Applicable Toolholder
	ØDc		Lp (in)	PR1535	PR1525	
	in	mm				
DA0794M-GM	0.313	7.94	0.053	●	●	SS0375-DRA080M-○ SF0500-DRA080M-○ (SS10-DRA080M-○) (SF12-DRA080M-○)
DA0800M-GM	0.315	8.00	0.053	●	●	
DA0810M-GM	0.319	8.10	0.054	●	●	
DA0818M-GM	0.322	8.18	0.054	●	■	
DA0820M-GM	0.323	8.20	0.055	●	●	
DA0830M-GM	0.327	8.30	0.055	●	●	
DA0840M-GM	0.331	8.40	0.056	●	●	
DA0850M-GM	0.335	8.50	0.057	●	●	SS0375-DRA085M-○ SF0500-DRA085M-○ (SS10-DRA085M-○) (SF12-DRA085M-○)
DA0860M-GM	0.339	8.60	0.057	●	●	
DA0870M-GM	0.343	8.70	0.058	●	●	
DA0880M-GM	0.346	8.80	0.059	●	●	
DA0890M-GM	0.350	8.90	0.060	●	●	
DA0900M-GM	0.354	9.00	0.060	●	●	SS0375-DRA090M-○ SF0500-DRA090M-○ (SS10-DRA090M-○) (SF12-DRA090M-○)
DA0910M-GM	0.358	9.10	0.061	●	●	
DA0920M-GM	0.362	9.20	0.061	●	●	
DA0930M-GM	0.366	9.30	0.062	●	●	
DA0940M-GM	0.370	9.40	0.063	●	●	SS0500-DRA095M-○ SF0500-DRA095M-○ (SS10-DRA095M-○) (SF12-DRA095M-○)
DA0950M-GM	0.374	9.50	0.063	●	●	
DA0953M-GM	0.375	9.53	0.064	●	■	
DA0960M-GM	0.378	9.60	0.064	●	●	
DA0970M-GM	0.382	9.70	0.065	●	●	
DA0980M-GM	0.386	9.80	0.066	●	●	
DA0990M-GM	0.390	9.90	0.066	●	●	
DA1000M-GM	0.394	10.00	0.067	●	●	SS0500-DRA100M-○ SF0625-DRA100M-○ (SS12-DRA100M-○) (SF16-DRA100M-○)
DA1010M-GM	0.398	10.10	0.068	●	●	
DA1020M-GM	0.402	10.20	0.068	●	●	
DA1030M-GM	0.406	10.30	0.069	●	●	
DA1040M-GM	0.409	10.40	0.070	●	●	

Description	Dimensions			Grade		Applicable Toolholder
	ØDc		Lp (in)	PR1535	PR1525	
	in	mm				
DA1050M-GM	0.413	10.50	0.071	●	●	SS0500-DRA105M-○ SF0625-DRA105M-○ (SS12-DRA105M-○) (SF16-DRA105M-○)
DA1060M-GM	0.417	10.60	0.071	●	●	
DA1070M-GM	0.421	10.70	0.072	●	●	
DA1072M-GM	0.422	10.72	0.072	●	■	
DA1080M-GM	0.425	10.80	0.073	●	●	
DA1090M-GM	0.429	10.90	0.073	●	●	
DA1100M-GM	0.433	11.00	0.074	●	●	
DA1110M-GM	0.437	11.10	0.074	●	●	
DA1120M-GM	0.441	11.20	0.075	●	●	
DA1130M-GM	0.445	11.30	0.076	●	●	
DA1140M-GM	0.449	11.40	0.076	●	●	
DA1150M-GM	0.453	11.50	0.077	●	●	SS0500-DRA115M-○ SF0625-DRA115M-○ (SS12-DRA115M-○) (SF16-DRA115M-○)
DA1160M-GM	0.457	11.60	0.078	●	●	
DA1170M-GM	0.461	11.70	0.079	●	●	
DA1180M-GM	0.465	11.80	0.079	●	●	
DA1190M-GM	0.469	11.90	0.080	●	●	SS0625-DRA120M-○ SF0625-DRA120M-○ (SS14-DRA120M-○) (SF16-DRA120M-○)
DA1200M-GM	0.472	12.00	0.080	●	●	
DA1210M-GM	0.476	12.10	0.081	●	●	
DA1220M-GM	0.480	12.20	0.081	●	●	
DA1230M-GM	0.484	12.30	0.082	●	●	
DA1240M-GM	0.488	12.40	0.083	●	●	
DA1250M-GM	0.492	12.50	0.083	●	●	
DA1260M-GM	0.496	12.60	0.084	●	●	
DA1270M-GM	0.500	12.70	0.085	●	●	
DA1280M-GM	0.504	12.80	0.086	●	●	
DA1290M-GM	0.508	12.90	0.086	●	●	

Applicable Toolholders in () are metric

● : U.S. Stock ■ : Made to Order
Inserts Sold in 1 Piece Boxes

Inserts

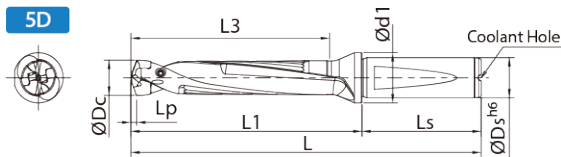
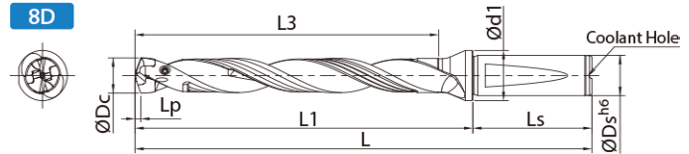
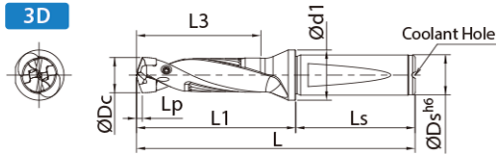
Description	Dimensions			Grade		Applicable Toolholder
	ØDc		Lp (in)	PR1535	PR1525	
	in	mm				
DA1300M-GM	0.512	13.00	0.087	●	●	SS0625-DRA130M-○ SF0625-DRA130M-○ (SS14-DRA130M-○) (SF16-DRA130M-○)
DA1310M-GM	0.516	13.10	0.087	●	●	
DA1320M-GM	0.520	13.20	0.088	●	●	
DA1330M-GM	0.524	13.30	0.089	●	●	
DA1340M-GM	0.528	13.40	0.089	●	●	
DA1350M-GM	0.531	13.50	0.090	●	●	SS0625-DRA135M-○ SF0625-DRA135M-○ (SS14-DRA135M-○) (SF16-DRA135M-○)
DA1360M-GM	0.535	13.60	0.091	●	●	
DA1370M-GM	0.539	13.70	0.092	●	●	
DA1380M-GM	0.543	13.80	0.092	●	●	
DA1390M-GM	0.547	13.90	0.093	●	●	
DA1400M-GM	0.551	14.00	0.092	●	●	SS0625-DRA140M-○ SF0625-DRA140M-○ (SS16-DRA140M-○) (SF16-DRA140M-○)
DA1410M-GM	0.555	14.10	0.092	●	●	
DA1420M-GM	0.559	14.20	0.093	●	●	
DA1430M-GM	0.563	14.30	0.094	●	●	
DA1440M-GM	0.567	14.40	0.094	●	●	
DA1450M-GM	0.571	14.50	0.095	●	●	SS0625-DRA145M-○ SF0625-DRA145M-○ (SS16-DRA145M-○) (SF16-DRA145M-○)
DA1460M-GM	0.575	14.60	0.096	●	●	
DA1468M-GM	0.578	14.68	0.096	●	■	
DA1470M-GM	0.579	14.70	0.097	●	●	
DA1480M-GM	0.583	14.80	0.097	●	●	
DA1490M-GM	0.587	14.90	0.098	●	●	SS0625-DRA150M-○ SF0750-DRA150M-○ (SS16-DRA150M-○) (SF20-DRA150M-○)
DA1500M-GM	0.591	15.00	0.099	●	●	
DA1510M-GM	0.594	15.10	0.100	●	●	
DA1520M-GM	0.598	15.20	0.101	●	●	
DA1530M-GM	0.602	15.30	0.101	●	●	
DA1540M-GM	0.606	15.40	0.102	●	●	SS0625-DRA150M-○ SF0750-DRA150M-○ (SS16-DRA150M-○) (SF20-DRA150M-○)
DA1550M-GM	0.610	15.50	0.103	●	●	
DA1560M-GM	0.614	15.60	0.103	●	●	
DA1570M-GM	0.618	15.70	0.104	●	●	
DA1580M-GM	0.622	15.80	0.105	●	●	
DA1590M-GM	0.626	15.90	0.106	●	●	SS0750-DRA160M-○ SF0750-DRA160M-○ (SS18-DRA160M-○) (SF20-DRA160M-○)
DA1600M-GM	0.630	16.00	0.106	●	●	
DA1610M-GM	0.634	16.10	0.107	●	●	
DA1620M-GM	0.638	16.20	0.107	●	●	
DA1630M-GM	0.642	16.30	0.108	●	●	
DA1640M-GM	0.646	16.40	0.109	●	●	SS0750-DRA170M-○ SF0750-DRA170M-○ (SS18-DRA170M-○) (SF20-DRA170M-○)
DA1650M-GM	0.650	16.50	0.110	●	●	
DA1660M-GM	0.654	16.60	0.110	●	●	
DA1667M-GM	0.656	16.67	0.111	●	■	
DA1670M-GM	0.657	16.70	0.111	●	●	
DA1680M-GM	0.661	16.80	0.112	●	●	SS0750-DRA170M-○ SF0750-DRA170M-○ (SS18-DRA170M-○) (SF20-DRA170M-○)
DA1690M-GM	0.665	16.90	0.112	●	●	
DA1700M-GM	0.669	17.00	0.113	●	●	
DA1710M-GM	0.673	17.10	0.113	●	●	
DA1720M-GM	0.677	17.20	0.114	●	●	
DA1730M-GM	0.681	17.30	0.115	●	●	SS0750-DRA170M-○ SF0750-DRA170M-○ (SS18-DRA170M-○) (SF20-DRA170M-○)
DA1740M-GM	0.685	17.40	0.116	●	●	

Applicable Toolholders in () are metric

Description	Dimensions			Grade		Applicable Toolholder
	ØDc		Lp (in)	PR1535	PR1525	
	in	mm				
DA1746M-GM	0.687	17.46	0.116	●	■	SS0750-DRA170M-○ SF0750-DRA170M-○ (SS18-DRA170M-○) (SF20-DRA170M-○)
DA1750M-GM	0.689	17.50	0.116	●	●	
DA1760M-GM	0.693	17.60	0.117	●	●	
DA1770M-GM	0.697	17.70	0.118	●	●	
DA1780M-GM	0.701	17.80	0.118	●	●	
DA1790M-GM	0.705	17.90	0.119	●	●	SS0750-DRA180M-○ SF0750-DRA180M-○ (SS20-DRA180M-○) (SF25-DRA180M-○)
DA1800M-GM	0.709	18.00	0.120	●	●	
DA1810M-GM	0.713	18.10	0.120	●	●	
DA1820M-GM	0.717	18.20	0.121	●	●	
DA1830M-GM	0.720	18.30	0.122	●	●	
DA1840M-GM	0.724	18.40	0.122	●	●	SS1000-DRA190M-○ SF0750-DRA190M-○ (SS20-DRA190M-○) (SF25-DRA190M-○)
DA1850M-GM	0.728	18.50	0.123	●	●	
DA1860M-GM	0.732	18.60	0.124	●	●	
DA1870M-GM	0.736	18.70	0.125	●	●	
DA1880M-GM	0.740	18.80	0.125	●	●	
DA1890M-GM	0.744	18.90	0.126	●	●	SS1000-DRA200M-○ SF1000-DRA200M-○ (SS20-DRA200M-○) (SF25-DRA200M-○)
DA1900M-GM	0.748	19.00	0.126	●	●	
DA1905M-GM	0.750	19.05	0.127	●	■	
DA1910M-GM	0.752	19.10	0.127	●	●	
DA1920M-GM	0.756	19.20	0.128	●	●	
DA1930M-GM	0.760	19.30	0.129	●	●	SS1000-DRA210M-○ SF1000-DRA210M-○ (SS25-DRA210M-○) (SF25-DRA210M-○)
DA1940M-GM	0.764	19.40	0.129	●	●	
DA1950M-GM	0.768	19.50	0.130	●	●	
DA1960M-GM	0.772	19.60	0.131	●	●	
DA1970M-GM	0.776	19.70	0.132	●	●	
DA1980M-GM	0.780	19.80	0.132	●	●	SS1000-DRA220M-○ SF1000-DRA220M-○ (SS25-DRA220M-○) (SF25-DRA220M-○)
DA1990M-GM	0.783	19.90	0.133	●	●	
DA2000M-GM	0.787	20.00	0.133	●	●	
DA2010M-GM	0.791	20.10	0.134	●	●	
DA2020M-GM	0.795	20.20	0.134	●	●	
DA2030M-GM	0.799	20.30	0.135	●	●	SS1000-DRA230M-○ SF1000-DRA230M-○ (SS25-DRA230M-○) (SF25-DRA230M-○)
DA2040M-GM	0.803	20.40	0.136	●	●	
DA2050M-GM	0.807	20.50	0.136	●	●	
DA2060M-GM	0.811	20.60	0.137	●	●	
DA2064M-GM	0.813	20.64	0.137	●	■	
DA2070M-GM	0.815	20.70	0.138	●	●	SS1000-DRA240M-○ SF1000-DRA240M-○ (SS25-DRA240M-○) (SF25-DRA240M-○)
DA2080M-GM	0.819	20.80	0.139	●	●	
DA2090M-GM	0.823	20.90	0.139	●	●	
DA2100M-GM	0.827	21.00	0.140	●	●	
DA2150M-GM	0.846	21.50	0.143	●	●	
DA2200M-GM	0.866	22.00	0.146	●	●	
DA2223M-GM	0.875	22.23	0.148	●	■	
DA2250M-GM	0.886	22.50	0.150	●	●	
DA2300M-GM	0.906	23.00	0.153	●	●	
DA2350M-GM	0.925	23.50	0.156	●	●	SS1000-DRA250M-○ SF1000-DRA250M-○ (SS32-DRA250M-○) (SF25-DRA250M-○)
DA2381M-GM	0.937	23.81	0.158	●	■	
DA2400M-GM	0.945	24.00	0.159	●	●	
DA2450M-GM	0.965	24.50	0.163	●	●	
DA2500M-GM	0.984	25.00	0.165	●	●	
DA2540M-GM	1.000	25.40	0.168	●	■	SS1000-DRA250M-○ SF1000-DRA250M-○ (SS32-DRA250M-○) (SF25-DRA250M-○)
DA2550M-GM	1.004	25.50	0.169	●	●	

● : U.S. Stock ■ : Made to Order
Inserts Sold in 1 Piece Boxes

DRA Toolholders - Inch Sizes (with Flange)



For Lp dimension, reference insert dimension table.

Toolholder Dimension **3D**

Description	Stock	Dimension (in)							Applicable Insert	Spare Parts		
		ØDc		ØDs	L	L1	L3	Ls		Ød1	Clamp Screw	Wrench
		min.	max.									
SF0500-DRA080M-3	●	0.313	0.334	0.500	3.307	1.535	1.004	1.772	0.630	DA0794M-GM ~ DA0840M-GM	HS-2524TRP	
SF0500-DRA085M-3	▲	0.335	0.354		3.386	1.614	1.063					
SF0500-DRA090M-3	▲	0.354	0.374		3.465	1.693	1.122					
SF0500-DRA095M-3	●	0.374	0.393		3.543	1.772	1.181					
SF0625-DRA100M-3	▲	0.394	0.413	0.625	3.740	1.850	1.240	1.890	0.787	DA1000M-GM ~ DA1040M-GM	HS-2534TRP	FTP-5
SF0625-DRA105M-3	●	0.413	0.433		3.819	1.929	1.299			DA1050M-GM ~ DA1090M-GM		
SF0625-DRA110M-3	●	0.433	0.452		3.937	2.047	1.358			DA1100M-GM ~ DA1140M-GM		
SF0625-DRA115M-3	▲	0.453	0.472		4.016	2.126	1.417			DA1150M-GM ~ DA1190M-GM		
SF0625-DRA120M-3	▲	0.472	0.492		4.094	2.205	1.476			DA1200M-GM ~ DA1240M-GM		
SF0625-DRA125M-3	●	0.492	0.511		4.173	2.283	1.535			DA1250M-GM ~ DA1290M-GM		
SF0625-DRA130M-3	▲	0.512	0.531		4.252	2.362	1.594			DA1300M-GM ~ DA1340M-GM		
SF0625-DRA135M-3	●	0.531	0.551		4.331	2.441	1.654			DA1350M-GM ~ DA1390M-GM		
SF0625-DRA140M-3	●	0.551	0.570		4.409	2.520	1.713			DA1400M-GM ~ DA1440M-GM		
SF0625-DRA145M-3	●	0.571	0.590		4.488	2.598	1.772			DA1450M-GM ~ DA1490M-GM		
SF0750-DRA150M-3	●	0.591	0.630	0.750	4.764	2.795	1.890	1.969	0.984	DA1500M-GM ~ DA1590M-GM	HS-3048TRP	FTP-6
SF0750-DRA160M-3	●	0.630	0.669		4.961	2.992	2.008			DA1600M-GM ~ DA1690M-GM		
SF0750-DRA170M-3	●	0.669	0.708		5.118	3.150	2.126			DA1700M-GM ~ DA1790M-GM		
SF0750-DRA180M-3	▲	0.709	0.748		5.315	3.346	2.244			DA1800M-GM ~ DA1890M-GM		
SF0750-DRA190M-3	●	0.748	0.787		5.472	3.504	2.362			DA1900M-GM ~ DA1990M-GM		
SF1000-DRA200M-3	●	0.787	0.826		1.000	5.866	3.661			2.480		
SF1000-DRA210M-3	▲	0.827	0.866	6.024		3.819	2.598	DA2100M-GM ~ DA2150M-GM				
SF1000-DRA220M-3	●	0.866	0.905	6.220		4.016	2.717	DA2200M-GM ~ DA2250M-GM				
SF1000-DRA230M-3	●	0.906	0.944	6.378		4.173	2.835	DA2300M-GM ~ DA2381M-GM				
SF1000-DRA240M-3	▲	0.945	0.984	6.535		4.331	2.953	DA2400M-GM ~ DA2450M-GM				
SF1000-DRA250M-3	●	0.984	1.023	6.693		4.488	3.071	DA2500M-GM ~ DA2550M-GM				

● : U.S. Stock ▲ : Available July, 2016

Toolholder Dimension

5D

Description	Stock	Dimension (in)							Applicable Insert	Spare Parts		
		ØDc		ØDs	L	L1	L3	Ls		Ød1	Clamp Screw	Wrench
		min.	max.									
SF0500-DRA080M-5	●	0.313	0.334	0.500	3.976	2.205	1.673	1.772	0.630	DA0794M-GM ~ DA0840M-GM	HS-2524TRP	
SF0500-DRA085M-5	▲	0.335	0.354		4.094	2.323	1.772					
SF0500-DRA090M-5	▲	0.354	0.374		4.213	2.441	1.870					
SF0500-DRA095M-5	●	0.374	0.393		4.331	2.559	1.969					
SF0625-DRA100M-5	▲	0.394	0.413	0.625	4.567	2.677	2.067	1.890	0.787	DA1000M-GM ~ DA1040M-GM	HS-2534TRP	FTP-5
SF0625-DRA105M-5	●	0.413	0.433		4.685	2.795	2.165					
SF0625-DRA110M-5	●	0.433	0.452		4.843	2.953	2.264					
SF0625-DRA115M-5	▲	0.453	0.472		4.961	3.071	2.362					
SF0625-DRA120M-5	▲	0.472	0.492		5.079	3.189	2.461					
SF0625-DRA125M-5	●	0.492	0.511		5.197	3.307	2.559					
SF0625-DRA130M-5	▲	0.512	0.531		5.315	3.425	2.657					
SF0625-DRA135M-5	●	0.531	0.551		5.433	3.543	2.756					
SF0625-DRA140M-5	●	0.551	0.570		5.551	3.661	2.854					
SF0625-DRA145M-5	●	0.571	0.590		5.669	3.780	2.953					
SF0750-DRA150M-5	●	0.591	0.630	0.750	6.024	4.055	3.150	1.969	0.984	DA1500M-GM ~ DA1590M-GM	HS-3048TRP	FTP-6
SF0750-DRA160M-5	●	0.630	0.669		6.299	4.331	3.346					
SF0750-DRA170M-5	●	0.669	0.708		6.535	4.567	3.543					
SF0750-DRA180M-5	▲	0.709	0.748		6.811	4.843	3.740					
SF0750-DRA190M-5	●	0.748	0.787	1.000	7.047	5.079	3.937	2.205	1.260	DA1900M-GM ~ DA1990M-GM	HS-4067TRP	FTP-7
SF1000-DRA200M-5	●	0.787	0.826		7.520	5.315	4.134					
SF1000-DRA210M-5	▲	0.827	0.866		7.756	5.551	4.331					
SF1000-DRA220M-5	●	0.866	0.905		8.031	5.827	4.528					
SF1000-DRA230M-5	●	0.906	0.944		8.268	6.063	4.724					
SF1000-DRA240M-5	▲	0.945	0.984		8.504	6.299	4.921					
SF1000-DRA250M-5	●	0.984	1.023	8.740	6.535	5.116						

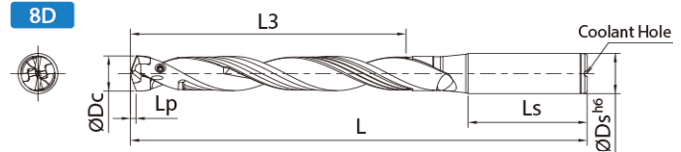
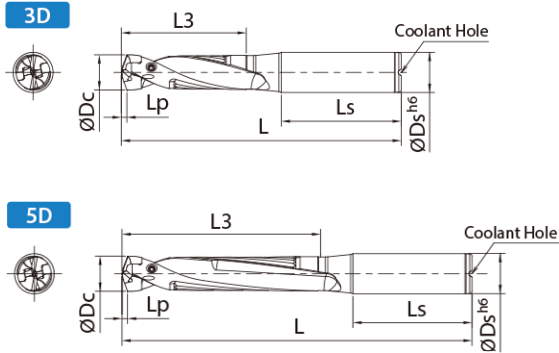
Toolholder Dimension

8D

Description	Stock	Dimension (in)							Applicable Insert	Spare Parts		
		ØDc		ØDs	L	L1	L3	Ls		Ød1	Clamp Screw	Wrench
		min.	max.									
SF0500-DRA080M-8	●	0.313	0.334	0.500	4.961	3.189	2.677	1.772	0.630	DA0794M-GM ~ DA0840M-GM	HS-2524TRP	
SF0500-DRA085M-8	▲	0.335	0.354		5.157	3.386	2.835					
SF0500-DRA090M-8	▲	0.354	0.374		5.315	3.543	2.992					
SF0500-DRA095M-8	●	0.374	0.393		5.512	3.740	3.150					
SF0625-DRA100M-8	▲	0.394	0.413	0.625	5.787	3.898	3.307	1.890	0.787	DA1000M-GM ~ DA1040M-GM	HS-2534TRP	FTP-5
SF0625-DRA105M-8	●	0.413	0.433		5.984	4.094	3.465					
SF0625-DRA110M-8	●	0.433	0.452		6.181	4.291	3.622					
SF0625-DRA115M-8	▲	0.453	0.472		6.378	4.488	3.780					
SF0625-DRA120M-8	▲	0.472	0.492		6.535	4.646	3.937					
SF0625-DRA125M-8	●	0.492	0.511		6.732	4.843	4.094					
SF0625-DRA130M-8	▲	0.512	0.531		6.890	5.000	4.252					
SF0625-DRA135M-8	●	0.531	0.551		7.087	5.197	4.409					
SF0625-DRA140M-8	●	0.551	0.570		7.244	5.354	4.567					
SF0625-DRA145M-8	●	0.571	0.590		7.441	5.551	4.724					
SF0750-DRA150M-8	●	0.591	0.630	0.750	7.913	5.945	5.039	1.969	0.984	DA1500M-GM ~ DA1590M-GM	HS-3048TRP	FTP-6
SF0750-DRA160M-8	●	0.630	0.669		8.307	6.339	5.354					
SF0750-DRA170M-8	●	0.669	0.708		8.661	6.693	5.669					
SF0750-DRA180M-8	▲	0.709	0.748		9.055	7.087	5.984					
SF0750-DRA190M-8	●	0.748	0.787	1.000	9.409	7.441	6.299	2.205	1.260	DA1900M-GM ~ DA1990M-GM	HS-4067TRP	FTP-7
SF1000-DRA200M-8	●	0.787	0.826		10.000	7.795	6.614					
SF1000-DRA210M-8	▲	0.827	0.866		10.354	8.150	6.929					
SF1000-DRA220M-8	●	0.866	0.905		10.748	8.543	7.244					
SF1000-DRA230M-8	●	0.906	0.944		11.102	8.898	7.559					
SF1000-DRA240M-8	▲	0.945	0.984		11.457	9.252	7.874					
SF1000-DRA250M-8	●	0.984	1.023	11.811	9.606	8.189						

● : U.S. Stock ▲ : Available July, 2016

DRA Toolholders - Inch Sizes (Straight Shank)



For Lp dimension, reference insert dimension table.

Toolholder Dimension **3D**

Description	Stock	Dimension (in)					Applicable Insert	Spare Parts			
		ØDc		ØDs	L	L3		Ls	Clamp Screw	Wrench	
		min.	max.								
SS0375-DRA080M-3	■	0.313	0.334	0.375	3.110	1.004	1.575	DA0794M-GM ~ DA0840M-GM	HS-2524TRP	FTP-5	
SS0375-DRA085M-3	■	0.335	0.354		3.189	1.063					DA0850M-GM ~ DA0890M-GM
SS0375-DRA090M-3	■	0.354	0.374		3.268	1.122					DA0900M-GM ~ DA0940M-GM
SS0500-DRA095M-3	■	0.374	0.393	0.500	3.543	1.181	1.772	DA0950M-GM ~ DA0990M-GM	HS-2534TRP		
SS0500-DRA100M-3	■	0.394	0.413		3.622	1.240					DA1000M-GM ~ DA1040M-GM
SS0500-DRA105M-3	■	0.413	0.433		3.701	1.299					DA1050M-GM ~ DA1090M-GM
SS0500-DRA110M-3	■	0.433	0.452	0.625	3.819	1.358	1.890	DA1100M-GM ~ DA1140M-GM	HS-3048TRP		
SS0500-DRA115M-3	■	0.453	0.472		3.898	1.417					DA1150M-GM ~ DA1190M-GM
SS0625-DRA120M-3	■	0.472	0.492		4.094	1.476					DA1200M-GM ~ DA1240M-GM
SS0625-DRA125M-3	■	0.492	0.511	0.750	4.173	1.535	1.969	DA1250M-GM ~ DA1290M-GM	HS-4067TRP		
SS0625-DRA130M-3	■	0.512	0.531		4.252	1.594					DA1300M-GM ~ DA1340M-GM
SS0625-DRA135M-3	■	0.531	0.551		4.331	1.654					DA1350M-GM ~ DA1390M-GM
SS0625-DRA140M-3	■	0.551	0.570	1.000	4.409	1.713	2.205	DA1400M-GM ~ DA1440M-GM	HS-4067TRP		
SS0625-DRA145M-3	■	0.571	0.590		4.488	1.772				DA1450M-GM ~ DA1490M-GM	
SS0625-DRA150M-3	■	0.591	0.630		4.685	1.890				DA1500M-GM ~ DA1590M-GM	
SS0750-DRA160M-3	■	0.630	0.669	0.750	4.961	2.008	1.969	DA1600M-GM ~ DA1690M-GM	HS-3048TRP		
SS0750-DRA170M-3	■	0.669	0.708		5.118	2.126				DA1700M-GM ~ DA1790M-GM	
SS0750-DRA180M-3	■	0.709	0.748		5.315	2.244				DA1800M-GM ~ DA1890M-GM	
SS1000-DRA190M-3	■	0.748	0.787	1.000	5.472	2.362	2.205	DA1900M-GM ~ DA1990M-GM	HS-4067TRP		
SS1000-DRA200M-3	■	0.787	0.826		5.866	2.480				DA2000M-GM ~ DA2090M-GM	
SS1000-DRA210M-3	■	0.827	0.866		6.024	2.598				DA2100M-GM ~ DA2150M-GM	
SS1000-DRA220M-3	■	0.866	0.905	1.000	6.220	2.717	2.205	DA2200M-GM ~ DA2250M-GM	HS-4067TRP		
SS1000-DRA230M-3	■	0.906	0.944		6.378	2.835				DA2300M-GM ~ DA2381M-GM	
SS1000-DRA240M-3	■	0.945	0.984		6.535	2.953				DA2400M-GM ~ DA2450M-GM	
SS1000-DRA250M-3	■	0.984	1.023	6.693	3.070	DA2500M-GM ~ DA2550M-GM					

■ : Made to Order

Toolholder Dimension **5D**

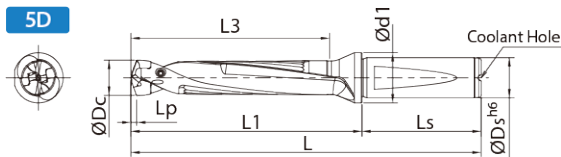
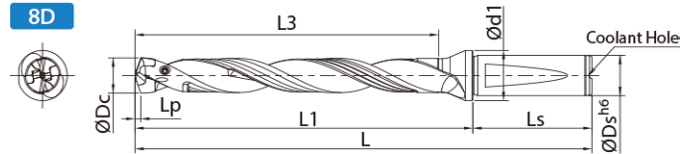
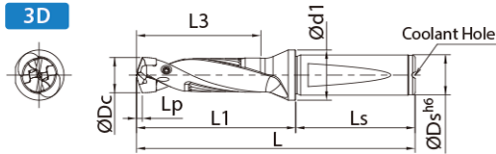
Description	Stock	Dimension (in)					Applicable Insert	Spare Parts			
		ØDc		ØDs	L	L3		Ls	Clamp Screw	Wrench	
		min.	max.								
SS0375-DRA080M-5	■	0.313	0.334	0.375	3.780	1.673	1.575	DA0794M-GM ~ DA0840M-GM	HS-2524TRP		
SS0375-DRA085M-5	■	0.335	0.354		3.898	1.772					DA0850M-GM ~ DA0890M-GM
SS0375-DRA090M-5	■	0.354	0.374		4.016	1.870					
SS0500-DRA095M-5	■	0.374	0.393	0.500	4.331	1.969	1.772	DA0950M-GM ~ DA0990M-GM		FTP-5	
SS0500-DRA100M-5	■	0.394	0.413		4.449	2.067					DA1000M-GM ~ DA1040M-GM
SS0500-DRA105M-5	■	0.413	0.433		4.567	2.165					DA1050M-GM ~ DA1090M-GM
SS0500-DRA110M-5	■	0.433	0.452	0.625	4.724	2.264	1.890	DA1100M-GM ~ DA1140M-GM	HS-2534TRP		
SS0500-DRA115M-5	■	0.453	0.472		4.843	2.362					DA1150M-GM ~ DA1190M-GM
SS0625-DRA120M-5	■	0.472	0.492		5.079	2.461					DA1200M-GM ~ DA1240M-GM
SS0625-DRA125M-5	■	0.492	0.511	0.750	5.197	2.559	1.969	DA1250M-GM ~ DA1290M-GM		FTP-6	
SS0625-DRA130M-5	■	0.512	0.531		5.315	2.657					DA1300M-GM ~ DA1340M-GM
SS0625-DRA135M-5	■	0.531	0.551		5.433	2.756					DA1350M-GM ~ DA1390M-GM
SS0625-DRA140M-5	■	0.551	0.570	1.000	5.551	2.854	2.205	DA1400M-GM ~ DA1440M-GM	HS-3048TRP		
SS0625-DRA145M-5	■	0.571	0.590		5.669	2.953					DA1450M-GM ~ DA1490M-GM
SS0625-DRA150M-5	■	0.591	0.630		5.945	3.150					DA1500M-GM ~ DA1590M-GM
SS0750-DRA160M-5	■	0.630	0.669	0.750	6.299	3.346	1.969	DA1600M-GM ~ DA1690M-GM		FTP-7	
SS0750-DRA170M-5	■	0.669	0.708		6.535	3.543					DA1700M-GM ~ DA1790M-GM
SS0750-DRA180M-5	■	0.709	0.748		6.811	3.740					DA1800M-GM ~ DA1890M-GM
SS1000-DRA190M-5	■	0.748	0.787	1.000	7.047	3.937	2.205	DA1900M-GM ~ DA1990M-GM	HS-4067TRP		
SS1000-DRA200M-5	■	0.787	0.826		7.520	4.134					DA2000M-GM ~ DA2090M-GM
SS1000-DRA210M-5	■	0.827	0.866		7.756	4.331					DA2100M-GM ~ DA2150M-GM
SS1000-DRA220M-5	■	0.866	0.905	1.000	8.031	4.528	2.205	DA2200M-GM ~ DA2250M-GM		FTP-7	
SS1000-DRA230M-5	■	0.906	0.944		8.268	4.724					DA2300M-GM ~ DA2381M-GM
SS1000-DRA240M-5	■	0.945	0.984		8.504	4.921					DA2400M-GM ~ DA2450M-GM
SS1000-DRA250M-5	■	0.984	1.023		8.740	5.116		DA2500M-GM ~ DA2550M-GM			

Toolholder Dimension **8D**

Description	Stock	Dimension (in)					Applicable Insert	Spare Parts			
		ØDc		ØDs	L	L3		Ls	Clamp Screw	Wrench	
		min.	max.								
SS0375-DRA080M-8	■	0.313	0.334	0.375	4.764	2.677	1.575	DA0794M-GM ~ DA0840M-GM	HS-2524TRP		
SS0375-DRA085M-8	■	0.335	0.354		4.961	2.835					DA0850M-GM ~ DA0890M-GM
SS0375-DRA090M-8	■	0.354	0.374		5.118	2.992					
SS0500-DRA095M-8	■	0.374	0.393	0.500	5.512	3.150	1.772	DA0950M-GM ~ DA0990M-GM		FTP-5	
SS0500-DRA100M-8	■	0.394	0.413		5.669	3.307					DA1000M-GM ~ DA1040M-GM
SS0500-DRA105M-8	■	0.413	0.433		5.866	3.465					DA1050M-GM ~ DA1090M-GM
SS0500-DRA110M-8	■	0.433	0.452	0.625	6.063	3.622	1.890	DA1100M-GM ~ DA1140M-GM	HS-2534TRP		
SS0500-DRA115M-8	■	0.453	0.472		6.260	3.780					DA1150M-GM ~ DA1190M-GM
SS0625-DRA120M-8	■	0.472	0.492		6.535	3.937					DA1200M-GM ~ DA1240M-GM
SS0625-DRA125M-8	■	0.492	0.511	0.750	6.732	4.094	1.969	DA1250M-GM ~ DA1290M-GM		FTP-6	
SS0625-DRA130M-8	■	0.512	0.531		6.890	4.252					DA1300M-GM ~ DA1340M-GM
SS0625-DRA135M-8	■	0.531	0.551		7.087	4.409					DA1350M-GM ~ DA1390M-GM
SS0625-DRA140M-8	■	0.551	0.570	1.000	7.244	4.567	2.205	DA1400M-GM ~ DA1440M-GM	HS-3048TRP		
SS0625-DRA145M-8	■	0.571	0.590		7.441	4.724					DA1450M-GM ~ DA1490M-GM
SS0625-DRA150M-8	■	0.591	0.630		7.835	5.039					DA1500M-GM ~ DA1590M-GM
SS0750-DRA160M-8	■	0.630	0.669	0.750	8.307	5.354	1.969	DA1600M-GM ~ DA1690M-GM		FTP-7	
SS0750-DRA170M-8	■	0.669	0.708		8.661	5.669					DA1700M-GM ~ DA1790M-GM
SS0750-DRA180M-8	■	0.709	0.748		9.055	5.984					DA1800M-GM ~ DA1890M-GM
SS1000-DRA190M-8	■	0.748	0.787	1.000	9.409	6.299	2.205	DA1900M-GM ~ DA1990M-GM	HS-4067TRP		
SS1000-DRA200M-8	■	0.787	0.826		10.000	6.614					DA2000M-GM ~ DA2090M-GM
SS1000-DRA210M-8	■	0.827	0.866		10.354	6.929					DA2100M-GM ~ DA2150M-GM
SS1000-DRA220M-8	■	0.866	0.905	1.000	10.748	7.244	2.205	DA2200M-GM ~ DA2250M-GM		FTP-7	
SS1000-DRA230M-8	■	0.906	0.944		11.102	7.559					DA2300M-GM ~ DA2381M-GM
SS1000-DRA240M-8	■	0.945	0.984		11.457	7.874					DA2400M-GM ~ DA2450M-GM
SS1000-DRA250M-8	■	0.984	1.023		11.969	8.189		DA2500M-GM ~ DA2550M-GM			

■ : Made to Order

DRA Toolholders - Metric Sizes (with Flange)



For Lp dimension, reference insert dimension table.

Toolholder Dimension **3D**

Description	Stock	Dimension (mm)								Applicable Insert	Spare Parts	
		ØDc		ØDs	L	L1	L3	Ls	Ød1		Clamp Screw	Wrench
		min.	max.									
SF12-DRA080M-3	○	7.94	8.49	12	84	39	25.5	45	16	DA0794M-GM ~ DA0840M-GM	HS-2524TRP	FTP-5
SF12-DRA085M-3	○	8.50	8.99		86	41	27.0			DA0850M-GM ~ DA0890M-GM		
SF12-DRA090M-3	○	9.00	9.49		88	43	28.5			DA0900M-GM ~ DA0940M-GM		
SF12-DRA095M-3	○	9.50	9.99		90	45	30.0			DA0950M-GM ~ DA0990M-GM		
SF16-DRA100M-3	○	10.00	10.49	16	95	47	31.5	48	20	DA1000M-GM ~ DA1040M-GM	HS-2534TRP	
SF16-DRA105M-3	○	10.50	10.99		97	49	33.0			DA1050M-GM ~ DA1090M-GM		
SF16-DRA110M-3	○	11.00	11.49		100	52	34.5			DA1100M-GM ~ DA1140M-GM		
SF16-DRA115M-3	○	11.50	11.99		102	54	36.0			DA1150M-GM ~ DA1190M-GM		
SF16-DRA120M-3	○	12.00	12.49		104	56	37.5			DA1200M-GM ~ DA1240M-GM		
SF16-DRA125M-3	○	12.50	12.99		106	58	39.0			DA1250M-GM ~ DA1290M-GM		
SF16-DRA130M-3	○	13.00	13.49		108	60	40.5			DA1300M-GM ~ DA1340M-GM		
SF16-DRA135M-3	○	13.50	13.99		110	62	42.0			DA1350M-GM ~ DA1390M-GM		
SF16-DRA140M-3	○	14.00	14.49	112	64	43.5	45	25	DA1400M-GM ~ DA1440M-GM	HS-3048TRP	FTP-6	
SF16-DRA145M-3	○	14.50	14.99		114	66			45.0			DA1450M-GM ~ DA1490M-GM
SF20-DRA150M-3	○	15.00	15.99	20	121	71	48.0	50	25	DA1500M-GM ~ DA1590M-GM		HS-3048TRP
SF20-DRA160M-3	○	16.00	16.99		126	76	51.0			DA1600M-GM ~ DA1690M-GM		
SF20-DRA170M-3	○	17.00	17.99		130	80	54.0			DA1700M-GM ~ DA1790M-GM		
SF25-DRA180M-3	○	18.00	18.99	25	141	85	57.0	56	32	DA1800M-GM ~ DA1890M-GM		HS-4067TRP
SF25-DRA190M-3	○	19.00	19.99		145	89	60.0			DA1900M-GM ~ DA1990M-GM		
SF25-DRA200M-3	○	20.00	20.99		149	93	63.0			DA2000M-GM ~ DA2090M-GM		
SF25-DRA210M-3	○	21.00	21.99		153	97	66.0			DA2100M-GM ~ DA2150M-GM		
SF25-DRA220M-3	○	22.00	22.99		158	102	69.0			DA2200M-GM ~ DA2250M-GM		
SF25-DRA230M-3	○	23.00	23.99		162	106	72.0			DA2300M-GM ~ DA2350M-GM		
SF25-DRA240M-3	○	24.00	24.99		166	110	75.0			DA2400M-GM ~ DA2450M-GM		
SF25-DRA250M-3	○	25.00	25.50		170	114	78.0			DA2500M-GM ~ DA2550M-GM		

○ : World Express (Shipping: 7-10 Business Days)

Toolholder Dimension **5D**

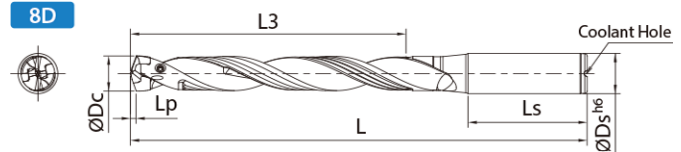
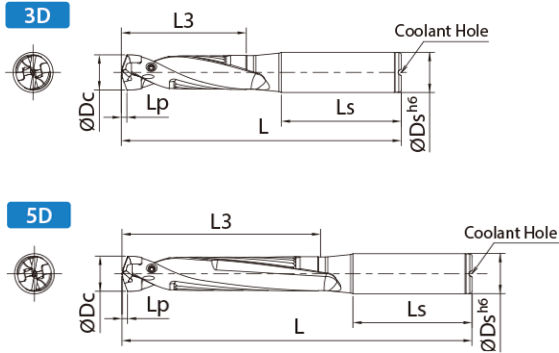
Description	Stock	Dimension (mm)							Applicable Insert	Spare Parts							
		ØDc		ØDs	L	L1	L3	Ls		Ød1	Clamp Screw	Wrench					
		min.	max.														
SF12-DRA080M-5	○	7.94	8.49	12	101	56	42.5	45	16	DA0794M-GM ~ DA0840M-GM	HS-2524TRP	FTP-5					
SF12-DRA085M-5	○	8.50	8.99		104	59	45.0			DA0850M-GM ~ DA0890M-GM							
SF12-DRA090M-5	○	9.00	9.49		107	62	47.5			DA0900M-GM ~ DA0940M-GM							
SF12-DRA095M-5	○	9.50	9.99		110	65	50.0			DA0950M-GM ~ DA0990M-GM							
SF16-DRA100M-5	○	10.00	10.49	16	116	68	52.5	48	20	DA1000M-GM ~ DA1040M-GM	HS-2534TRP						
SF16-DRA105M-5	○	10.50	10.99		119	71	55.0			DA1050M-GM ~ DA1090M-GM							
SF16-DRA110M-5	○	11.00	11.49		123	75	57.5			DA1100M-GM ~ DA1140M-GM							
SF16-DRA115M-5	○	11.50	11.99		126	78	60.0			DA1150M-GM ~ DA1190M-GM							
SF16-DRA120M-5	○	12.00	12.49		129	81	62.5			DA1200M-GM ~ DA1240M-GM							
SF16-DRA125M-5	○	12.50	12.99		132	84	65.0			DA1250M-GM ~ DA1290M-GM							
SF16-DRA130M-5	○	13.00	13.49		135	87	67.5			DA1300M-GM ~ DA1340M-GM							
SF16-DRA135M-5	○	13.50	13.99		138	90	70.0			DA1350M-GM ~ DA1390M-GM							
SF16-DRA140M-5	○	14.00	14.49		141	93	72.5			DA1400M-GM ~ DA1440M-GM							
SF16-DRA145M-5	○	14.50	14.99		144	96	75.0			DA1450M-GM ~ DA1490M-GM							
SF20-DRA150M-5	○	15.00	15.99		20	153	103			80.0			50	25	DA1500M-GM ~ DA1590M-GM	HS-3048TRP	FTP-6
SF20-DRA160M-5	○	16.00	16.99			160	110			85.0					DA1600M-GM ~ DA1690M-GM		
SF20-DRA170M-5	○	17.00	17.99	166		116	90.0	DA1700M-GM ~ DA1790M-GM									
SF25-DRA180M-5	○	18.00	18.99	25	179	123	95.0	56	32	DA1800M-GM ~ DA1890M-GM	HS-4067TRP	FTP-7					
SF25-DRA190M-5	○	19.00	19.99		185	129	100.0			DA1900M-GM ~ DA1990M-GM							
SF25-DRA200M-5	○	20.00	20.99		191	135	105.0			DA2000M-GM ~ DA2090M-GM							
SF25-DRA210M-5	○	21.00	21.99		197	141	110.0			DA2100M-GM ~ DA2150M-GM							
SF25-DRA220M-5	○	22.00	22.99		204	148	115.0			DA2200M-GM ~ DA2250M-GM							
SF25-DRA230M-5	○	23.00	23.99		210	154	120.0			DA2300M-GM ~ DA2350M-GM							
SF25-DRA240M-5	○	24.00	24.99		216	160	125.0			DA2400M-GM ~ DA2450M-GM							
SF25-DRA250M-5	○	25.00	25.50		222	166	130.0			DA2500M-GM ~ DA2550M-GM							

Toolholder Dimension **8D**

Description	Stock	Dimension (mm)							Applicable Insert	Spare Parts							
		ØDc		ØDs	L	L1	L3	Ls		Ød1	Clamp Screw	Wrench					
		min.	max.														
SF12-DRA080M-8	○	7.94	8.49	12	126	81	68.0	45	16	DA0794M-GM ~ DA0840M-GM	HS-2524TRP	FTP-5					
SF12-DRA085M-8	○	8.50	8.99		131	86	72.0			DA0850M-GM ~ DA0890M-GM							
SF12-DRA090M-8	○	9.00	9.49		135	90	76.0			DA0900M-GM ~ DA0940M-GM							
SF12-DRA095M-8	○	9.50	9.99		140	95	80.0			DA0950M-GM ~ DA0990M-GM							
SF16-DRA100M-8	○	10.00	10.49	16	147	99	84.0	48	20	DA1000M-GM ~ DA1040M-GM	HS-2534TRP						
SF16-DRA105M-8	○	10.50	10.99		152	104	88.0			DA1050M-GM ~ DA1090M-GM							
SF16-DRA110M-8	○	11.00	11.49		157	109	92.0			DA1100M-GM ~ DA1140M-GM							
SF16-DRA115M-8	○	11.50	11.99		162	114	96.0			DA1150M-GM ~ DA1190M-GM							
SF16-DRA120M-8	○	12.00	12.49		166	118	100.0			DA1200M-GM ~ DA1240M-GM							
SF16-DRA125M-8	○	12.50	12.99		171	123	104.0			DA1250M-GM ~ DA1290M-GM							
SF16-DRA130M-8	○	13.00	13.49		175	127	108.0			DA1300M-GM ~ DA1340M-GM							
SF16-DRA135M-8	○	13.50	13.99		180	132	112.0			DA1350M-GM ~ DA1390M-GM							
SF16-DRA140M-8	○	14.00	14.49		184	136	116.0			DA1400M-GM ~ DA1440M-GM							
SF16-DRA145M-8	○	14.50	14.99		189	141	120.0			DA1450M-GM ~ DA1490M-GM							
SF20-DRA150M-8	○	15.00	15.99		20	201	151			128.0			50	25	DA1500M-GM ~ DA1590M-GM	HS-3048TRP	FTP-6
SF20-DRA160M-8	○	16.00	16.99			211	161			136.0					DA1600M-GM ~ DA1690M-GM		
SF20-DRA170M-8	○	17.00	17.99	220		170	144.0	DA1700M-GM ~ DA1790M-GM									
SF25-DRA180M-8	○	18.00	18.99	25	236	180	152.0	56	32	DA1800M-GM ~ DA1890M-GM	HS-4067TRP	FTP-7					
SF25-DRA190M-8	○	19.00	19.99		245	189	160.0			DA1900M-GM ~ DA1990M-GM							
SF25-DRA200M-8	○	20.00	20.99		254	198	168.0			DA2000M-GM ~ DA2090M-GM							
SF25-DRA210M-8	○	21.00	21.99		263	207	176.0			DA2100M-GM ~ DA2150M-GM							
SF25-DRA220M-8	○	22.00	22.99		273	217	184.0			DA2200M-GM ~ DA2250M-GM							
SF25-DRA230M-8	○	23.00	23.99		282	226	192.0			DA2300M-GM ~ DA2350M-GM							
SF25-DRA240M-8	○	24.00	24.99		291	235	200.0			DA2400M-GM ~ DA2450M-GM							
SF25-DRA250M-8	○	25.00	25.50		300	244	208.0			DA2500M-GM ~ DA2550M-GM							

○ : World Express (Shipping: 7-10 Business Days)

DRA Toolholders - Metric Sizes (Straight Shank)



For Lp dimension, reference insert dimension table.

Toolholder Dimension **3D**

Description	Stock	Dimension (mm)					Applicable Insert	Spare Parts			
		ØDc		ØDs	L	L3		Ls	Clamp Screw	Wrench	
		min.	max.								
SS10-DRA080M-3	○	7.94	8.49	10	79	25.5	40	DA0794M-GM ~ DA0840M-GM	HS-2524TRP	FTP-5	
SS10-DRA085M-3	○	8.50	8.99		81	27.0					DA0850M-GM ~ DA0890M-GM
SS10-DRA090M-3	○	9.00	9.49		83	28.5					DA0900M-GM ~ DA0940M-GM
SS10-DRA095M-3	○	9.50	9.99	85	30.0	DA0950M-GM ~ DA0990M-GM					
SS12-DRA100M-3	○	10.00	10.49	12	92	31.5	45	DA1000M-GM ~ DA1040M-GM	HS-2534TRP		
SS12-DRA105M-3	○	10.50	10.99		94	33.0					DA1050M-GM ~ DA1090M-GM
SS12-DRA110M-3	○	11.00	11.49		97	34.5					DA1100M-GM ~ DA1140M-GM
SS12-DRA115M-3	○	11.50	11.99	99	36.0	DA1150M-GM ~ DA1190M-GM					
SS14-DRA120M-3	○	12.00	12.49	14	101	37.5	48	DA1200M-GM ~ DA1240M-GM	HS-3048TRP		
SS14-DRA125M-3	○	12.50	12.99		103	39.0					DA1250M-GM ~ DA1290M-GM
SS14-DRA130M-3	○	13.00	13.49		105	40.5				DA1300M-GM ~ DA1340M-GM	
SS14-DRA135M-3	○	13.50	13.99	107	42.0	DA1350M-GM ~ DA1390M-GM					
SS16-DRA140M-3	○	14.00	14.49	16	112	43.5	50	DA1400M-GM ~ DA1440M-GM	HS-4067TRP		
SS16-DRA145M-3	○	14.50	14.99		114	45.0				DA1450M-GM ~ DA1490M-GM	
SS16-DRA150M-3	○	15.00	15.99		119	48.0				DA1500M-GM ~ DA1590M-GM	
SS18-DRA160M-3	○	16.00	16.99	18	124	51.0	56	DA1600M-GM ~ DA1690M-GM	HS-3048TRP		
SS18-DRA170M-3	○	17.00	17.99		128	54.0				DA1700M-GM ~ DA1790M-GM	
SS20-DRA180M-3	○	18.00	18.99	20	135	57.0	60	DA1800M-GM ~ DA1890M-GM	HS-3048TRP		
SS20-DRA190M-3	○	19.00	19.99		139	60.0				DA1900M-GM ~ DA1990M-GM	
SS25-DRA200M-3	○	20.00	20.99	25	149	63.0	60	DA2000M-GM ~ DA2090M-GM	HS-4067TRP		
SS25-DRA210M-3	○	21.00	21.99		153	66.0				DA2100M-GM ~ DA2150M-GM	
SS25-DRA220M-3	○	22.00	22.99		158	69.0				DA2200M-GM ~ DA2250M-GM	
SS25-DRA230M-3	○	23.00	23.99		162	72.0				DA2300M-GM ~ DA2350M-GM	
SS25-DRA240M-3	○	24.00	24.99		166	75.0				DA2400M-GM ~ DA2450M-GM	
SS32-DRA250M-3	○	25.00	25.50		32	174				78.0	DA2500M-GM ~ DA2550M-GM

○ : World Express (Shipping: 7-10 Business Days)

Toolholder Dimension 5D


Description	Stock	Dimension (mm)						Applicable Insert	Spare Parts	
		ØDc		ØDs	L	L3	Ls		Clamp Screw	Wrench
		min.	max.							
SS10-DRA080M-5	○	7.94	8.49	10	96	42.5	40	DA0794M-GM ~ DA0840M-GM	HS-2524TRP	FTP-5
SS10-DRA085M-5	○	8.50	8.99		99	45.0		DA0850M-GM ~ DA0890M-GM		
SS10-DRA090M-5	○	9.00	9.49		102	47.5		DA0900M-GM ~ DA0940M-GM		
SS10-DRA095M-5	○	9.50	9.99		105	50.0		DA0950M-GM ~ DA0990M-GM		
SS12-DRA100M-5	○	10.00	10.49	12	113	52.5	45	DA1000M-GM ~ DA1040M-GM	HS-2534TRP	
SS12-DRA105M-5	○	10.50	10.99		116	55.0		DA1050M-GM ~ DA1090M-GM		
SS12-DRA110M-5	○	11.00	11.49		120	57.5		DA1100M-GM ~ DA1140M-GM		
SS12-DRA115M-5	○	11.50	11.99		123	60.0		DA1150M-GM ~ DA1190M-GM		
SS14-DRA120M-5	○	12.00	12.49	14	126	62.5	48	DA1200M-GM ~ DA1240M-GM	HS-3048TRP	
SS14-DRA125M-5	○	12.50	12.99		129	65.0		DA1250M-GM ~ DA1290M-GM		
SS14-DRA130M-5	○	13.00	13.49		132	67.5		DA1300M-GM ~ DA1340M-GM		
SS14-DRA135M-5	○	13.50	13.99		135	70.0		DA1350M-GM ~ DA1390M-GM		
SS16-DRA140M-5	○	14.00	14.49	16	141	72.5	50	DA1400M-GM ~ DA1440M-GM	HS-4067TRP	
SS16-DRA145M-5	○	14.50	14.99		144	75.0		DA1450M-GM ~ DA1490M-GM		
SS16-DRA150M-5	○	15.00	15.99		151	80.0		DA1500M-GM ~ DA1590M-GM		
SS18-DRA160M-5	○	16.00	16.99		18	158		85.0		
SS18-DRA170M-5	○	17.00	17.99	164		90.0	DA1700M-GM ~ DA1790M-GM			
SS20-DRA180M-5	○	18.00	18.99	20	173	95.0	56	DA1800M-GM ~ DA1890M-GM	HS-4067TRP	
SS20-DRA190M-5	○	19.00	19.99		179	100.0		DA1900M-GM ~ DA1990M-GM		
SS25-DRA200M-5	○	20.00	20.99	25	191	105.0	60	DA2000M-GM ~ DA2090M-GM	HS-4067TRP	
SS25-DRA210M-5	○	21.00	21.99		197	110.0		DA2100M-GM ~ DA2150M-GM		
SS25-DRA220M-5	○	22.00	22.99		204	115.0		DA2200M-GM ~ DA2250M-GM		
SS25-DRA230M-5	○	23.00	23.99		210	120.0		DA2300M-GM ~ DA2350M-GM		
SS25-DRA240M-5	○	24.00	24.99		216	125.0		DA2400M-GM ~ DA2450M-GM		
SS32-DRA250M-5	○	25.00	25.50		32	226		130.0		DA2500M-GM ~ DA2550M-GM

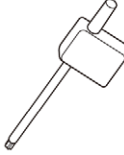
Toolholder Dimension 8D

Description	Stock	Dimension (mm)						Applicable Insert	Spare Parts	
		ØDc		ØDs	L	L3	Ls		Clamp Screw	Wrench
		min.	max.							
SS10-DRA080M-8	○	7.94	8.49	10	121	68.0	40	DA0794M-GM ~ DA0840M-GM	HS-2524TRP	FTP-5
SS10-DRA085M-8	○	8.50	8.99		126	72.0		DA0850M-GM ~ DA0890M-GM		
SS10-DRA090M-8	○	9.00	9.49		130	76.0		DA0900M-GM ~ DA0940M-GM		
SS10-DRA095M-8	○	9.50	9.99		135	80.0		DA0950M-GM ~ DA0990M-GM		
SS12-DRA100M-8	○	10.00	10.49	12	144	84.0	45	DA1000M-GM ~ DA1040M-GM	HS-2534TRP	
SS12-DRA105M-8	○	10.50	10.99		149	88.0		DA1050M-GM ~ DA1090M-GM		
SS12-DRA110M-8	○	11.00	11.49		154	92.0		DA1100M-GM ~ DA1140M-GM		
SS12-DRA115M-8	○	11.50	11.99		159	96.0		DA1150M-GM ~ DA1190M-GM		
SS14-DRA120M-8	○	12.00	12.49	14	163	100.0	48	DA1200M-GM ~ DA1240M-GM	HS-3048TRP	
SS14-DRA125M-8	○	12.50	12.99		168	104.0		DA1250M-GM ~ DA1290M-GM		
SS14-DRA130M-8	○	13.00	13.49		172	108.0		DA1300M-GM ~ DA1340M-GM		
SS14-DRA135M-8	○	13.50	13.99		177	112.0		DA1350M-GM ~ DA1390M-GM		
SS16-DRA140M-8	○	14.00	14.49	16	184	116.0	50	DA1400M-GM ~ DA1440M-GM	HS-4067TRP	
SS16-DRA145M-8	○	14.50	14.99		189	120.0		DA1450M-GM ~ DA1490M-GM		
SS16-DRA150M-8	○	15.00	15.99		199	128.0		DA1500M-GM ~ DA1590M-GM		
SS18-DRA160M-8	○	16.00	16.99		18	209		136.0		
SS18-DRA170M-8	○	17.00	17.99	218		144.0	DA1700M-GM ~ DA1790M-GM			
SS20-DRA180M-8	○	18.00	18.99	20	230	152.0	56	DA1800M-GM ~ DA1890M-GM	HS-4067TRP	
SS20-DRA190M-8	○	19.00	19.99		239	160.0		DA1900M-GM ~ DA1990M-GM		
SS25-DRA200M-8	○	20.00	20.99	25	254	168.0	60	DA2000M-GM ~ DA2090M-GM	HS-4067TRP	
SS25-DRA210M-8	○	21.00	21.99		263	176.0		DA2100M-GM ~ DA2150M-GM		
SS25-DRA220M-8	○	22.00	22.99		273	184.0		DA2200M-GM ~ DA2250M-GM		
SS25-DRA230M-8	○	23.00	23.99		282	192.0		DA2300M-GM ~ DA2350M-GM		
SS25-DRA240M-8	○	24.00	24.99		291	200.0		DA2400M-GM ~ DA2450M-GM		
SS32-DRA250M-8	○	25.00	25.50		32	304		208.0		DA2500M-GM ~ DA2550M-GM

○ : World Express (Shipping: 7-10 Business Days)

Spare Parts

Clamp Screw	Description
	HS-2524TRP
	HS-2534TRP
	HS-3048TRP
	HS-4067TRP

Wrench	Description	Torque (N · m)
	FTP-5	0.4
	FTP-6	0.5
	FTP-7	0.8

Recommended Cutting Conditions ★ 1st Recommendation ☆ 2nd Recommendation

Workpiece Material	Recommended Grade / Cutting Speed (sfm)		Cutting Dia. ØDc (in)	Cutting Dia. ØDc (mm)	Holder Type (Cutting Depth) Feed Rate (ipr)			Notes
	PR1535	PR1525			3D	5D	8D	
Low Carbon Steel	★ 330-590	☆ 330-590	0.313 - 0.429	7.94 - 10.90	0.0047 - 0.0094	0.0038 - 0.0075	0.0033 - 0.0066	Coolant See P15
			0.433 - 0.547	11.00 - 13.90	0.0047 - 0.0122	0.0038 - 0.0098	0.0033 - 0.0085	
			0.551 - 0.705	14.00 - 17.90	0.0063 - 0.0142	0.0050 - 0.0114	0.0044 - 0.0099	
			0.709 - 0.846	18.00 - 21.50	0.0063 - 0.0157	0.0050 - 0.0126	0.0044 - 0.0110	
			0.866 - 0.965	22.00 - 24.50	0.0079 - 0.0177	0.0063 - 0.0142	0.0055 - 0.0124	
			0.984 - 1.004	25.00 - 25.50	0.0079 - 0.0177	0.0063 - 0.0142	0.0055 - 0.0124	
Carbon Steel	★ 330-490	☆ 330-490	0.313 - 0.429	7.94 - 10.90	0.0047 - 0.0094	0.0038 - 0.0075	0.0033 - 0.0066	
			0.433 - 0.547	11.00 - 13.90	0.0047 - 0.0122	0.0038 - 0.0098	0.0033 - 0.0085	
			0.551 - 0.705	14.00 - 17.90	0.0063 - 0.0142	0.0050 - 0.0114	0.0044 - 0.0099	
			0.709 - 0.846	18.00 - 21.50	0.0063 - 0.0157	0.0050 - 0.0126	0.0044 - 0.0110	
			0.866 - 0.965	22.00 - 24.50	0.0079 - 0.0177	0.0063 - 0.0142	0.0055 - 0.0124	
			0.984 - 1.004	25.00 - 25.50	0.0079 - 0.0177	0.0063 - 0.0142	0.0055 - 0.0124	
Alloy Steel	★ 230-390	☆ 230-390	0.313 - 0.429	7.94 - 10.90	0.0047 - 0.0094	0.0038 - 0.0075	0.0033 - 0.0066	
			0.433 - 0.547	11.00 - 13.90	0.0047 - 0.0122	0.0038 - 0.0098	0.0033 - 0.0085	
			0.551 - 0.705	14.00 - 17.90	0.0063 - 0.0142	0.0050 - 0.0114	0.0044 - 0.0099	
			0.709 - 0.846	18.00 - 21.50	0.0063 - 0.0157	0.0050 - 0.0126	0.0044 - 0.0110	
			0.866 - 0.965	22.00 - 24.50	0.0079 - 0.0177	0.0063 - 0.0142	0.0055 - 0.0124	
			0.984 - 1.004	25.00 - 25.50	0.0079 - 0.0177	0.0063 - 0.0142	0.0055 - 0.0124	
Tool Steel	★ 160-300	☆ 160-300	0.313 - 0.429	7.94 - 10.90	0.0031 - 0.0067	0.0025 - 0.0054	0.0022 - 0.0047	
			0.433 - 0.547	11.00 - 13.90	0.0031 - 0.0087	0.0025 - 0.0070	0.0022 - 0.0061	
			0.551 - 0.705	14.00 - 17.90	0.0043 - 0.0098	0.0034 - 0.0078	0.0030 - 0.0069	
			0.709 - 0.846	18.00 - 21.50	0.0043 - 0.0110	0.0034 - 0.0088	0.0030 - 0.0077	
			0.866 - 0.965	22.00 - 24.50	0.0055 - 0.0126	0.0044 - 0.0101	0.0039 - 0.0088	
			0.984 - 1.004	25.00 - 25.50	0.0055 - 0.0126	0.0044 - 0.0101	0.0039 - 0.0088	
Stainless Steel ※	★ 130-230	☆ 130-230	0.313 - 0.429	7.94 - 10.90	0.0039 - 0.0094	0.0031 - 0.0075	0.0027 - 0.0066	
			0.433 - 0.547	11.00 - 13.90	0.0039 - 0.0094	0.0031 - 0.0075	0.0027 - 0.0066	
			0.551 - 0.705	14.00 - 17.90	0.0047 - 0.0118	0.0038 - 0.0094	0.0033 - 0.0083	
			0.709 - 0.846	18.00 - 21.50	0.0059 - 0.0118	0.0047 - 0.0094	0.0041 - 0.0083	
			0.866 - 0.965	22.00 - 24.50	0.0059 - 0.0118	0.0047 - 0.0094	0.0041 - 0.0083	
			0.984 - 1.004	25.00 - 25.50	0.0059 - 0.0138	0.0047 - 0.0110	0.0041 - 0.0097	
Gray Cast Iron	☆ 300-560	★ 300-560	0.313 - 0.429	7.94 - 10.90	0.0055 - 0.0114	0.0044 - 0.0091	0.0039 - 0.0080	
			0.433 - 0.547	11.00 - 13.90	0.0055 - 0.0146	0.0044 - 0.0117	0.0039 - 0.0102	
			0.551 - 0.705	14.00 - 17.90	0.0075 - 0.0169	0.0060 - 0.0135	0.0053 - 0.0118	
			0.709 - 0.846	18.00 - 21.50	0.0075 - 0.0177	0.0060 - 0.0142	0.0053 - 0.0124	
			0.866 - 0.965	22.00 - 24.50	0.0094 - 0.0177	0.0075 - 0.0142	0.0066 - 0.0124	
			0.984 - 1.004	25.00 - 25.50	0.0094 - 0.0177	0.0075 - 0.0142	0.0066 - 0.0124	
Nodular Cast Iron	☆ 130-390	★ 130-390	0.313 - 0.429	7.94 - 10.90	0.0047 - 0.0094	0.0038 - 0.0075	0.0033 - 0.0066	
			0.433 - 0.547	11.00 - 13.90	0.0047 - 0.0122	0.0038 - 0.0098	0.0033 - 0.0085	
			0.551 - 0.705	14.00 - 17.90	0.0063 - 0.0142	0.0050 - 0.0114	0.0044 - 0.0099	
			0.709 - 0.846	18.00 - 21.50	0.0063 - 0.0157	0.0050 - 0.0126	0.0044 - 0.0110	
			0.866 - 0.965	22.00 - 24.50	0.0079 - 0.0177	0.0063 - 0.0142	0.0055 - 0.0124	
			0.984 - 1.004	25.00 - 25.50	0.0079 - 0.0177	0.0063 - 0.0142	0.0055 - 0.0124	

※ Feed Rate 0.006 ipr or less is recommended for stainless steel until drilling depth reaches 0.5D.

Coolant

1st Recommendation

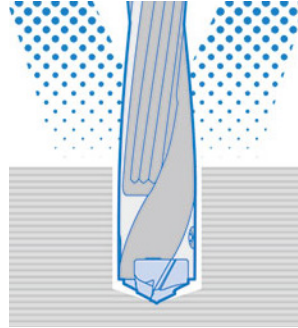
Internal Coolant

The combination of internal and external coolant is recommended for stainless steel or high-feed machining.

In Case of External Coolant

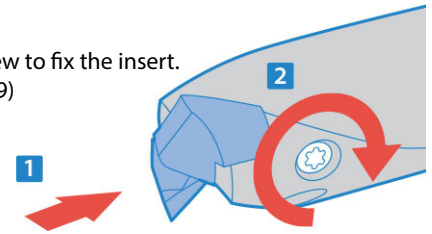
Lathe: Within 3D
Vertical M/C: Within 1.5D

※ Dry cutting is not recommended.



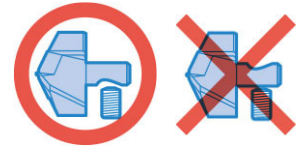
How to Attach Inserts

- 1 Install insert onto the toolholder in the right direction.
- 2 Tighten clamp screw to fix the insert. (Torque: see page 9)



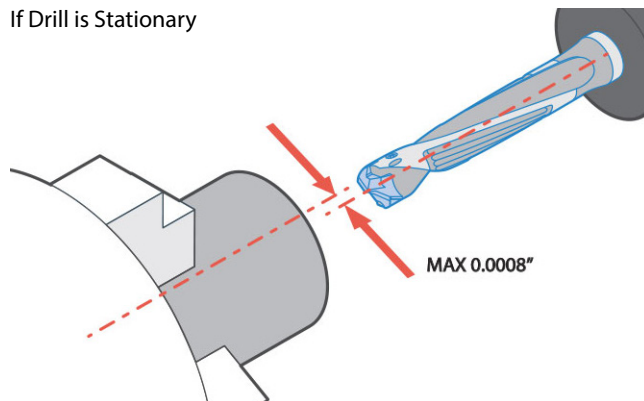
- ※ 1 Remove dust on insert pocket using air blow for every replacement.
- ※ 2 Make sure that the locating surfaces of the insert closely contacts the toolholder.

Be Careful of the Insert Direction



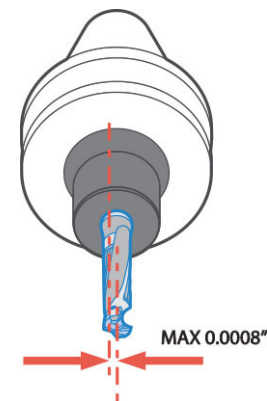
Core Deviation / Alignment Cautions

If Drill is Stationary



DRA works with both boring sleeve and collet-chuck. Center line deviation should be less than 0.0008" between workpiece and drill.

If Drill is Rotating



Do not use any arbor whose attachment surface is deformed. Center deviation must be less than 0.0008".

Machining Center Installation Cautions

How to Install DRA

1st Recommendation

Hydro-chuck, Power-chuck, Collet-chuck

Hydro-chuck

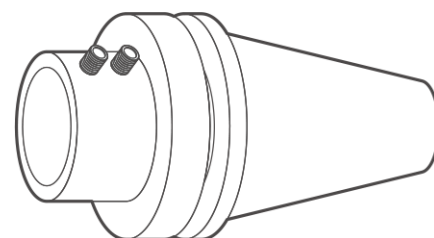
Power-chuck

Collet-chuck

Install DRA Into These Chucks

2nd Recommendation

Side-lock Arbor



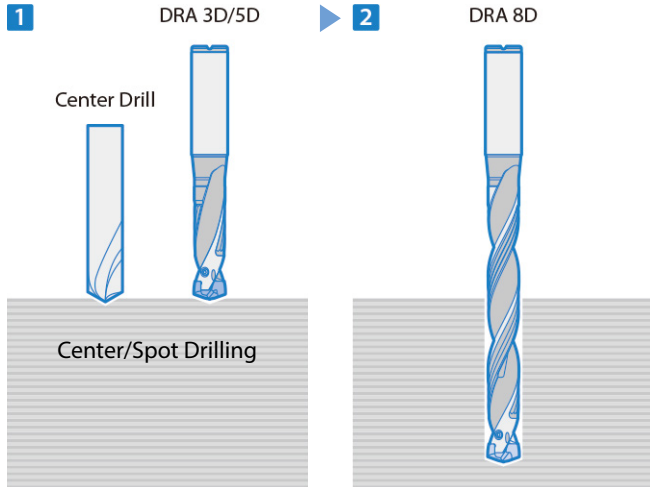
Example of Side Lock Arbor

Other Cautions

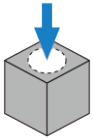
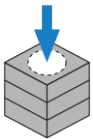
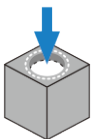
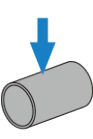


Cautions for Machining with 8D Holder

Recommended Machining

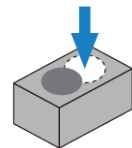
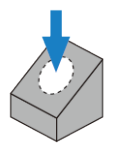
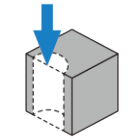
- 1 Make a center spot using DRA 3D/5D type or a commercially available center drill which has a vertex angle of about 140°. (Center spot should be at least half of cutting diameter)
- 2 Then drill the hole using DRA (8D type).



Applicable Workpiece

Application	Workpiece Shape	Machining Caution
Plain Surface		<ol style="list-style-type: none"> 1. When machining stainless steel, for hole depths of up to 0.5D, keep feed rate at less than 0.006ipr. 2. Thru coolant is recommended for smooth chip removal. For stainless steel, the combination of thru and external coolant is recommended.
Stacked Plates		<ol style="list-style-type: none"> 1. Fix stacked plates securely to ensure they do not slip while machining.
Concave Surface		<ol style="list-style-type: none"> 1. When machining concave holes, set the feed rate at less than half of recommended feed for continuous hole machining. 2. Utilize a pecking cycle if chips are not broken short at the inlet.
Tubing		<ol style="list-style-type: none"> 1. Hole machining on the centerline of the tubing is possible. 2. Do not machine on curved surface areas. <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>Good</p>  <p>Center Machining</p> </div> <div style="text-align: center;"> <p>Bad</p>  <p>Off Center Machining</p> </div> </div>

Non-recommended Workpieces

Application	Workpiece Shape	Application	Workpiece Shape
Hole Expansion		Angled Surface	
Half Cylindrical		Existing Hole	