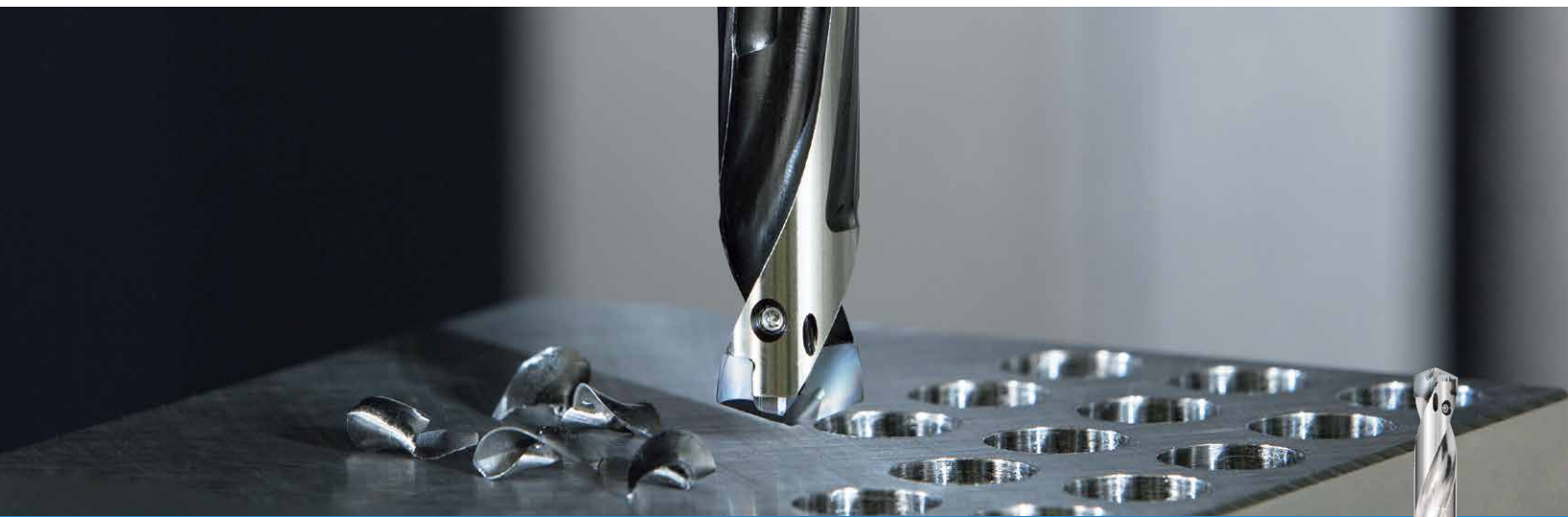




DRA Magic Drill

High Efficiency Replaceable Tip 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

NEW

Lineup Expansion with Chamfering Attachment and 12xD Sizes



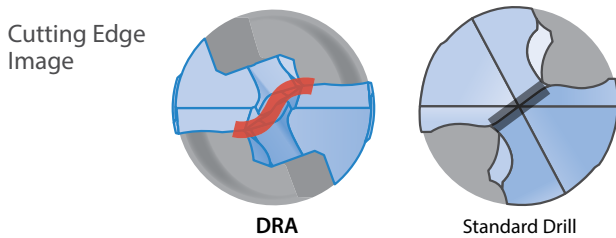
DRA Magic Drill



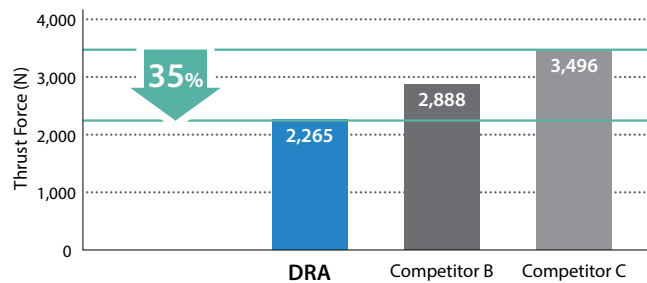
Excellent Hole Accuracy with a Low Cutting Force Design
5 Advantages to Efficiently Solve Common Drilling Difficulties

1 Low Cutting Force Design Improves Hole Accuracy

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



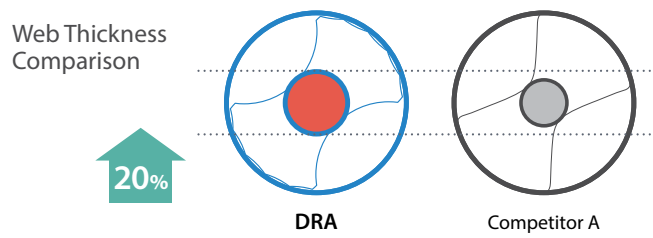
Low Cutting Force Comparison
(Internal Evaluation)



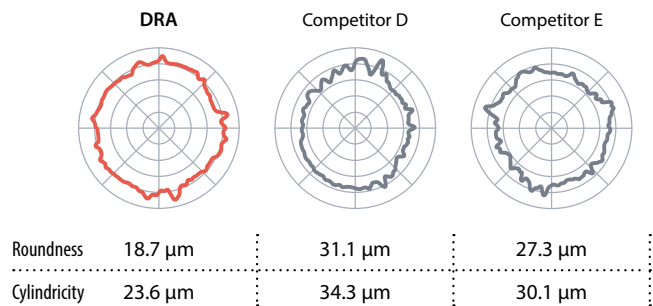
Cutting Conditions: $V_c = 390$ sfm, $f = 0.010$ ipr,
Drilling Diameter 0.551", Drilling Depth 1.772", Wet, Workpiece: 1049 Steel

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
(Internal Evaluation)



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

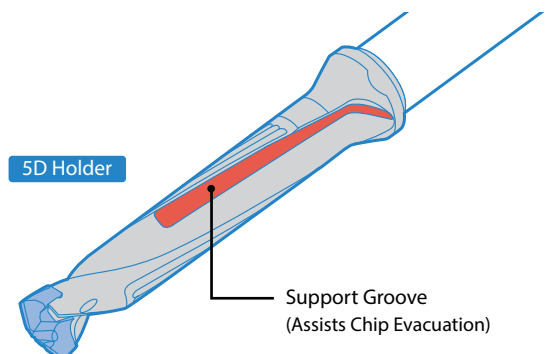
3 Fine Chip Breaking Even in Deep Hole Drilling Applications

Optimized chip thinning for stable chip evacuation
Support groove with wider flute (5D, 8D) enables smooth chip evacuation

Chip Comparison
(Internal Evaluation)

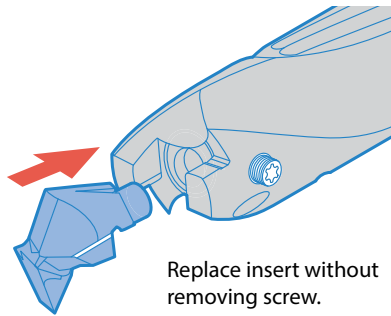


Cutting Conditions: $V_c = 200$ sfm, $f = 0.008$ ipr, Drilling Diameter 0.551"
Drilling Depth 2.756", Wet Workpiece: 304 Stainless Steel

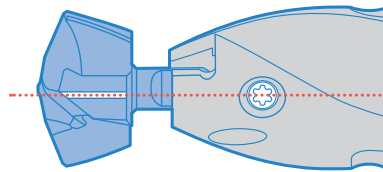


4 Easy Insert Replacement

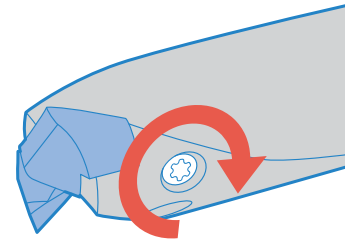
Replace insert without removing screw



Replace insert without removing screw.



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



Fix the insert by tightening the screw.

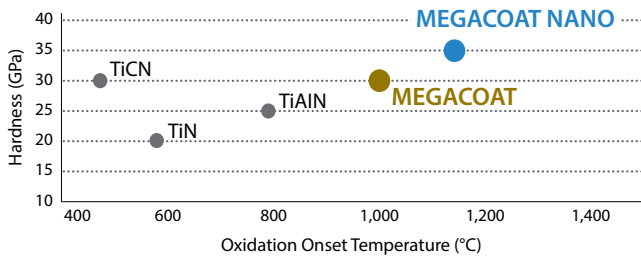
5 Long Tool Life and Stable Machining of Various Workpieces

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

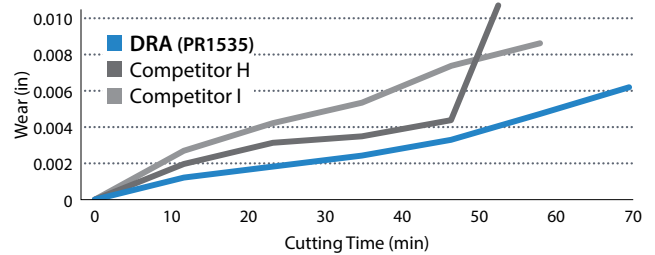
1st Recommendation

Steel PR1535	Cast Iron PR1525
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Coating Properties



Wear Resistance Comparison (Internal Evaluation)

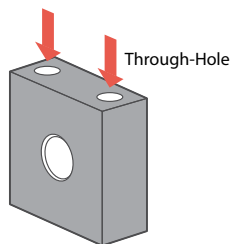


Cutting Conditions: $V_c = 330$ sfm, $f = 0.010$ ipr, Cutting Diameter $\varnothing 0.551$ ", Cutting Depth 1.772", Wet Workpiece: 4140H

Case Studies

Attachment - Structural Steel

$V_c = 230$ sfm ($n = 1,240$ rpm)
 $f = 0.009$ ipr ($V_f = 11.221$ 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

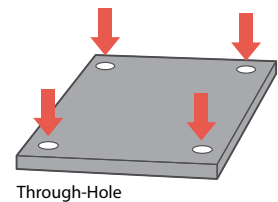
Competitor J $\varnothing 0.709$ "-7D **65 sec**

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

(User Evaluation)

Plate - Stainless Steel

$V_c = 195$ sfm ($n = 2,120$ rpm)
 $f = 0.005$ ipr ($V_f = 10$ 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)

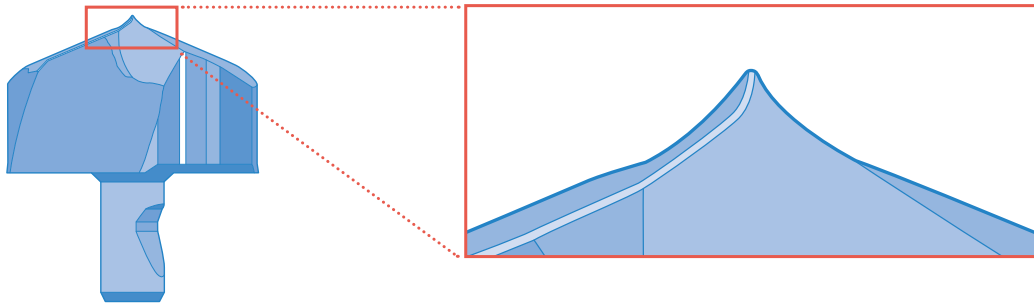
KM Insert

For Cast Iron

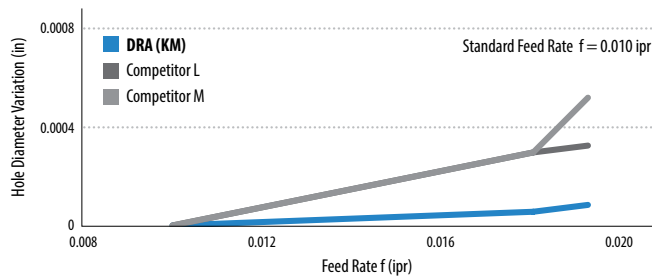
Improved hole accuracy and tool life with a unique chisel shaped cutting edge makes the KM insert tip great for efficient cast iron drilling

1 Improved Hole Accuracy for Cast Iron Drilling

The chisel shaped cutting edge improves centripetal force and suppresses hole diameter fluctuation even at high feed rates

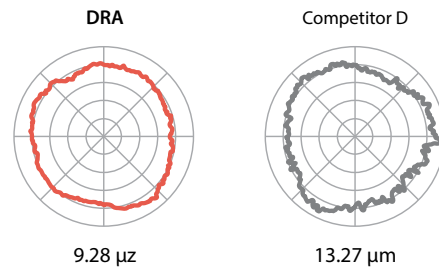


Hole Diameter Fluctuation Comparison
(Internal Evaluation)



Cutting Conditions : $V_c = 330$ sfm, $f = 0.010 \sim 0.019$ ipr
Drilling Diameter $\varnothing 0.551''$ (5xD), Measurement Position 0.197", Wet Workpiece : 80-60-03 Cast Iron

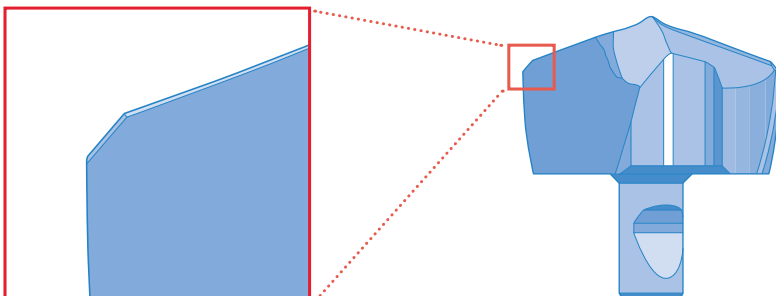
Roundness · Cylindricity Comparison
(Internal Evaluation)



Cutting Conditions : $V_c = 330$ sfm, $f = 0.010$ ipr
Drilling Diameter $\varnothing 0.551''$ (5xD), Measurement Position 0.197", Wet Workpiece : 80-60-03 Cast Iron

2 Superior Fracture Resistance

Stable drilling with reduced defects during high feed rates due to the large corner chamfer



FTP Insert

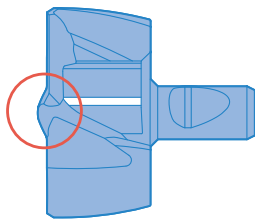
Flat Bottom / Counterboring

Pilot point geometry and double margin design improves hole accuracy for highly efficient drilling of near flat bottom holes

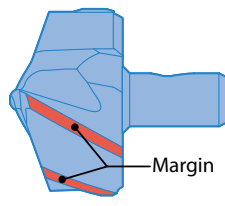
1 Pilot Point Geometry and Double Margin for Improved Hole Accuracy

Improved centripetal force with pilot point geometry and double margin reduces hole bending and waviness

Pilot Point Geometry

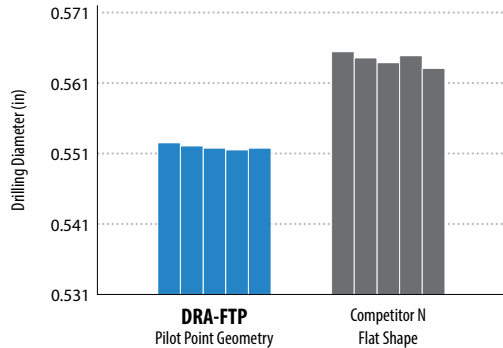


Double Margin



*Insert is rotated 90 degrees in image above

Hole Precision Comparison
(Internal Evaluation)

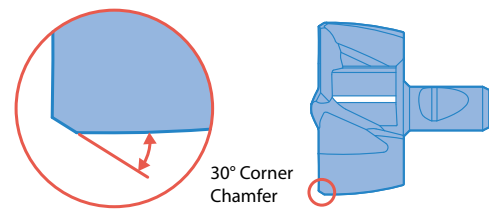


Cutting Conditions: $V_c = 260$ sfm, $f = 0.010$ ipr
Drilling Diameter $\varnothing 0.551$ ", Drilling Depth 0.787", Wet Workpiece: 1045 Steel

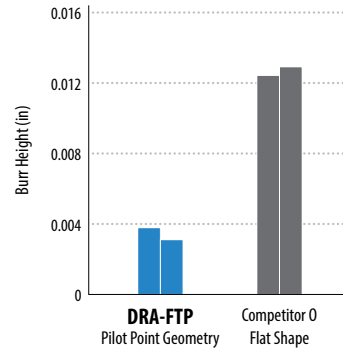
2 Reduced Burr Formation with Large Helix Angle and Corner Chamfer

Corner chamfer offers enhanced chipping and burr resistance

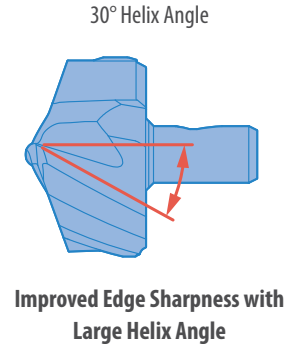
Corner Shape



Burr Height Comparison
(Internal Evaluation)



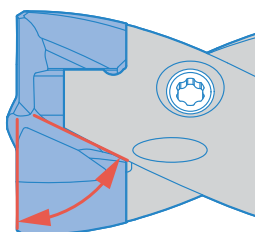
Cutting Conditions: $V_c = 260$ sfm, $f = 0.010$ ipr
Drilling Diameter $\varnothing 0.551$ ", Drilling Depth 0.787", Wet Workpiece: 1045 Steel



3 Excellent Chip Evacuation with Large Groove and Cutting Edge Angle for Chip Thinning

Cleanly evacuates compact chips to prevent chip clogging

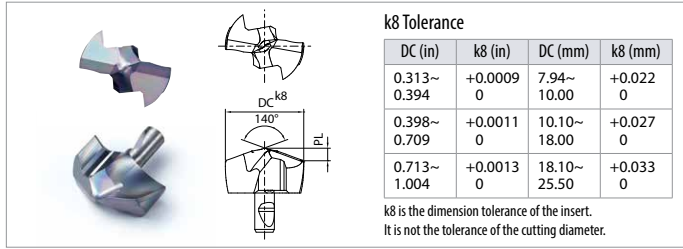
Large Cutting Edge for Chip Thinning



Chip Comparison (Internal Evaluation)



Cutting Conditions: $V_c = 180$ sfm, $f = 0.004$ ipr
Drilling Diameter $\varnothing 0.551$ ", Drilling Depth 0.787", Wet Workpiece: 304 Stainless Steel



Inserts

PR1535 (Steel / Stainless Steel) PR1525 (Cast Iron)

Part Number	Dimensions		PL (in)	Grade		Applicable Toolholder
	in	mm		PR1535	PR1525	
DA 0794M-GM	0.313	7.94	0.053	●	●	SS0375-DRA080M-○ SF0500-DRA080M-○ (SS10-DRA080M-○) (SF12-DRA080M-○)
0800M-GM	0.315	8.00	0.053	●	●	
0810M-GM	0.319	8.10	0.054	●	●	
0818M-GM	0.322	8.18	0.054	●	■	
0820M-GM	0.323	8.20	0.055	●	●	
0830M-GM	0.327	8.30	0.055	●	●	
0840M-GM	0.331	8.40	0.056	●	●	
DA 0850M-GM	0.335	8.50	0.057	●	●	
0860M-GM	0.339	8.60	0.057	●	●	
0870M-GM	0.343	8.70	0.058	●	●	
0880M-GM	0.346	8.80	0.059	●	●	
0890M-GM	0.350	8.90	0.060	●	●	
DA 0900M-GM	0.354	9.00	0.060	●	●	SS0375-DRA090M-○ SF0500-DRA090M-○ (SS10-DRA090M-○) (SF12-DRA090M-○)
0910M-GM	0.358	9.10	0.061	●	●	
0920M-GM	0.362	9.20	0.061	●	●	
0930M-GM	0.366	9.30	0.062	●	●	
0940M-GM	0.370	9.40	0.063	●	●	
DA 0950M-GM	0.374	9.50	0.063	●	●	SS0500-DRA095M-○ SF0500-DRA095M-○ (SS10-DRA095M-○) (SF12-DRA095M-○)
0953M-GM	0.375	9.53	0.064	●	■	
0960M-GM	0.378	9.60	0.064	●	●	
0970M-GM	0.382	9.70	0.065	●	●	
0980M-GM	0.386	9.80	0.066	●	●	
0990M-GM	0.390	9.90	0.066	●	●	
DA 1000M-GM	0.394	10.00	0.067	●	●	SS0500-DRA100M-○ SF0625-DRA100M-○ (SS12-DRA100M-○) (SF16-DRA100M-○)
1010M-GM	0.398	10.10	0.068	●	●	
1020M-GM	0.402	10.20	0.068	●	●	
1030M-GM	0.406	10.30	0.069	●	●	
1040M-GM	0.409	10.40	0.070	●	●	
DA 1050M-GM	0.413	10.50	0.071	●	●	SS0500-DRA105M-○ SF0625-DRA105M-○ (SS12-DRA105M-○) (SF16-DRA105M-○)
1060M-GM	0.417	10.60	0.071	●	●	
1070M-GM	0.421	10.70	0.072	●	●	
1072M-GM	0.422	10.72	0.072	●	■	
1080M-GM	0.425	10.80	0.073	●	●	
1090M-GM	0.429	10.90	0.073	●	●	
DA 1100M-GM	0.433	11.00	0.074	●	●	SS0500-DRA110M-○ SF0625-DRA110M-○ (SS12-DRA110M-○) (SF16-DRA110M-○)
1110M-GM	0.437	11.10	0.074	●	●	
1120M-GM	0.441	11.20	0.075	●	●	
1130M-GM	0.445	11.30	0.076	●	●	
1140M-GM	0.449	11.40	0.076	●	●	
DA 1150M-GM	0.453	11.50	0.077	●	●	SS0500-DRA115M-○ SF0625-DRA115M-○ (SS12-DRA115M-○) (SF16-DRA115M-○)
1160M-GM	0.457	11.60	0.078	●	●	
1170M-GM	0.461	11.70	0.079	●	●	
1180M-GM	0.465	11.80	0.079	●	●	
1190M-GM	0.469	11.90	0.080	●	●	
DA 1200M-GM	0.472	12.00	0.080	●	●	SS0625-DRA120M-○ SF0625-DRA120M-○ (SS14-DRA120M-○) (SF16-DRA120M-○)
1210M-GM	0.476	12.10	0.081	●	●	
1220M-GM	0.480	12.20	0.081	●	●	
1230M-GM	0.484	12.30	0.082	●	●	
1240M-GM	0.488	12.40	0.083	●	●	
DA 1250M-GM	0.492	12.50	0.083	●	●	SS0625-DRA125M-○ SF0625-DRA125M-○ (SS14-DRA125M-○) (SF16-DRA125M-○)
1260M-GM	0.496	12.60	0.084	●	●	
1270M-GM	0.500	12.70	0.085	●	●	
1280M-GM	0.504	12.80	0.086	●	●	
1290M-GM	0.508	12.90	0.086	●	●	
DA 1300M-GM	0.512	13.00	0.087	●	●	SS0625-DRA130M-○ SF0625-DRA130M-○ (SS14-DRA130M-○) (SF16-DRA130M-○)
1310M-GM	0.516	13.10	0.087	●	●	
1320M-GM	0.520	13.20	0.088	●	●	
1330M-GM	0.524	13.30	0.089	●	●	
1340M-GM	0.528	13.40	0.089	●	●	
DA 1350M-GM	0.531	13.50	0.090	●	●	SS0625-DRA135M-○ SF0625-DRA135M-○ (SS14-DRA135M-○) (SF16-DRA135M-○)
1360M-GM	0.535	13.60	0.091	●	●	
1370M-GM	0.539	13.70	0.092	●	●	
1380M-GM	0.543	13.80	0.092	●	●	
1390M-GM	0.547	13.90	0.093	●	●	
DA 1400M-GM	0.551	14.00	0.092	●	●	SS0625-DRA140M-○ SF0625-DRA140M-○ (SS16-DRA140M-○) (SF16-DRA140M-○)
1410M-GM	0.555	14.10	0.092	●	●	
1420M-GM	0.559	14.20	0.093	●	●	
1430M-GM	0.563	14.30	0.094	●	●	
1440M-GM	0.567	14.40	0.094	●	●	
DA 1450M-GM	0.571	14.50	0.095	●	●	SS0625-DRA145M-○ SF0625-DRA145M-○ (SS16-DRA145M-○) (SF16-DRA145M-○)
1460M-GM	0.575	14.60	0.096	●	●	
1468M-GM	0.578	14.68	0.096	●	■	

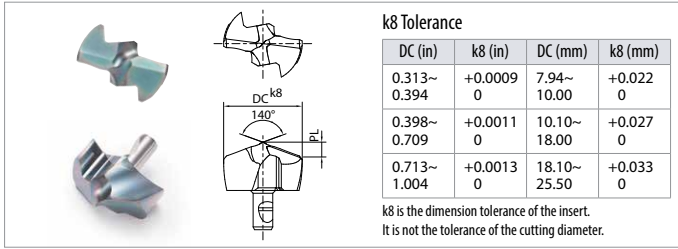
Applicable Toolholders in () are metric

Part Number	Dimensions		PL (in)	Grade		Applicable Toolholder
	in	mm		PR1535	PR1525	
DA 1470M-GM	0.579	14.70	0.097	●	●	SS0625-DRA145M-○ SF0625-DRA145M-○ (SS16-DRA145M-○) (SF16-DRA145M-○)
1480M-GM	0.583	14.80	0.097	●	●	
1490M-GM	0.590	14.90	0.098	●	●	
DA 1500M-GM	0.591	15.00	0.099	●	●	SS0625-DRA150M-○ SF0750-DRA150M-○ (SS16-DRA150M-○) (SF20-DRA150M-○)
1510M-GM	0.594	15.10	0.100	●	●	
1520M-GM	0.598	15.20	0.101	●	●	
1530M-GM	0.602	15.30	0.101	●	●	
1540M-GM	0.606	15.40	0.102	●	●	
1550M-GM	0.610	15.50	0.103	●	●	
1560M-GM	0.614	15.60	0.103	●	●	
1570M-GM	0.618	15.70	0.104	●	●	
1580M-GM	0.622	15.80	0.105	●	●	
1588M-GM	0.625	15.88	0.106	●	■	
1590M-GM	0.626	15.90	0.106	●	●	
DA 1600M-GM	0.630	16.00	0.106	●	●	SS0750-DRA160M-○ SF0750-DRA160M-○ (SS18-DRA160M-○) (SF20-DRA160M-○)
1610M-GM	0.634	16.10	0.107	●	●	
1620M-GM	0.638	16.20	0.107	●	●	
1630M-GM	0.642	16.30	0.108	●	●	
1640M-GM	0.646	16.40	0.109	●	●	
1650M-GM	0.650	16.50	0.110	●	●	
1660M-GM	0.654	16.60	0.110	●	●	
1667M-GM	0.656	16.67	0.111	●	■	
1670M-GM	0.657	16.70	0.111	●	●	
1680M-GM	0.661	16.80	0.112	●	●	
1690M-GM	0.665	16.90	0.112	●	●	
DA 1700M-GM	0.669	17.00	0.113	●	●	SS0750-DRA170M-○ SF0750-DRA170M-○ (SS18-DRA170M-○) (SF20-DRA170M-○)
1710M-GM	0.673	17.10	0.113	●	●	
1720M-GM	0.677	17.20	0.114	●	●	
1730M-GM	0.681	17.30	0.115	●	●	
1740M-GM	0.685	17.40	0.116	●	●	
1746M-GM	0.687	17.46	0.116	●	■	
1750M-GM	0.689	17.50	0.116	●	●	
1760M-GM	0.693	17.60	0.117	●	●	
1770M-GM	0.697	17.70	0.118	●	●	
1780M-GM	0.701	17.80	0.118	●	●	
1790M-GM	0.705	17.90	0.119	●	●	
DA 1800M-GM	0.709	18.00	0.120	●	●	SS0750-DRA180M-○ SF0750-DRA180M-○ (SS20-DRA180M-○) (SF25-DRA180M-○)
1810M-GM	0.713	18.10	0.120	●	●	
1820M-GM	0.717	18.20	0.121	●	●	
1830M-GM	0.720	18.30	0.122	●	●	
1840M-GM	0.724	18.40	0.122	●	●	
1850M-GM	0.728	18.50	0.123	●	●	
1860M-GM	0.732	18.60	0.124	●	●	
1870M-GM	0.736	18.70	0.125	●	●	
1880M-GM	0.740	18.80	0.125	●	●	
1890M-GM	0.744	18.90	0.126	●	●	
DA 1900M-GM	0.748	19.00	0.126	●	●	SS1000-DRA190M-○ SF0750-DRA190M-○ (SS20-DRA190M-○) (SF25-DRA190M-○)
1905M-GM	0.750	19.05	0.127	●	■	
1910M-GM	0.752	19.10	0.127	●	●	
1920M-GM	0.756	19.20	0.128	●	●	
1930M-GM	0.760	19.30	0.129	●	●	
1940M-GM	0.764	19.40	0.129	●	●	
1950M-GM	0.768	19.50	0.130	●	●	
1960M-GM	0.772	19.60	0.131	●	●	
1970M-GM	0.776	19.70	0.132	●	●	
1980M-GM	0.780	19.80	0.132	●	●	
1990M-GM	0.783	19.90	0.133	●	●	
DA 2000M-GM	0.787	20.00	0.133	●	●	SS1000-DRA200M-○ SF1000-DRA200M-○ (SS25-DRA200M-○) (SF25-DRA200M-○)
2010M-GM	0.791	20.10	0.134	●	●	
2020M-GM	0.795	20.20	0.134	●	●	
2030M-GM	0.799	20.30	0.135	●	●	
2040M-GM	0.803	20.40	0.136	●	●	
2050M-GM	0.807	20.50	0.136	●	●	
2060M-GM	0.811	20.60	0.137	●	●	
2064M-GM	0.813	20.64	0.137	●	■	
2070M-GM	0.815	20.70	0.138	●	●	
2080M-GM	0.819	20.80	0.139	●	●	
2090M-GM	0.823	20.90	0.139	●	●	
DA 2100M-GM	0.827	21.00	0.140	●	●	SS1000-DRA210M-○ SF1000-DRA210M-○ (SS25-DRA210M-○) (SF25-DRA210M-○)
2150M-GM	0.846	21.50	0.143	●	●	
DA 2200M-GM	0.866	22.00	0.146	●	●	SS1000-DRA220M-○ SF1000-DRA220M-○ (SS25-DRA220M-○) (SF25-DRA220M-○)
2223M-GM	0.875	22.23	0.148	●	■	
2250M-GM	0.886	22.50	0.150	●	●	
DA 2300M-GM	0.906	23.00	0.153	●	●	SS1000-DRA230M-○ SF1000-DRA230M-○ (SS25-DRA230M-○) (SF25-DRA230M-○)
2350M-GM	0.925	23.50	0.156	●	●	
2381M-GM	0.937	23.81	0.158	●	■	
DA 2400M-GM	0.945	24.00	0.159	●	●	SS1000-DRA240M-○ SF1000-DRA240M-○ (SS25-DRA240M-○) (SF25-DRA240M-○)
2450M-GM	0.965	24.50	0.163	●	●	
DA 2500M-GM	0.984	25.00	0.165	●	●	SS1000-DRA250M-○ SF1000-DRA250M-○ (SS32-DRA250M-○) (SF25-DRA250M-○)
2540M-GM	1.000	25.40	0.168	●	■	
2550M-GM	1.004	25.50	0.169	●	●	

● : Standard Item ■ : Quoted Item (Made to Order)

Inserts Sold in 1 Piece Boxes

DRA Inserts (KM - Cast Iron) Cutting Diameter Ø0.313" ~ Ø1.004" (Ø7.94mm ~ Ø25.50mm)



DC (in)	k8 (in)	DC (mm)	k8 (mm)
0.313~0.394	+0.0009 0	7.94~10.00	+0.022 0
0.398~0.709	+0.0011 0	10.10~18.00	+0.027 0
0.713~1.004	+0.0013 0	18.10~25.50	+0.033 0

k8 is the dimension tolerance of the insert.
It is not the tolerance of the cutting diameter.

Inserts

PR1525 (Cast Iron)

Part Number	Dimensions		PL (in)	Grade PR1525	Applicable Toolholder	
	in	mm				
DA 0794M-KM	0.313	7.94	0.072	●	SS0375-DRA080M-○ SF0500-DRA080M-○ (SS10-DRA080M-○) (SF12-DRA080M-○)	
0800M-KM	0.315	8.00	0.073	●		
0810M-KM	0.319	8.10	0.074	●		
0820M-KM	0.323	8.20	0.076	●		
0830M-KM	0.327	8.30	0.078	●		
0840M-KM	0.331	8.40	0.080	●		
DA 0850M-KM	0.335	8.50	0.081	●	SS0375-DRA085M-○ SF0500-DRA085M-○ (SS10-DRA085M-○) (SF12-DRA085M-○)	
0860M-KM	0.339	8.60	0.083	●		
0870M-KM	0.343	8.70	0.084	●		
0880M-KM	0.346	8.80	0.086	●		
0890M-KM	0.350	8.90	0.088	●		
DA 0900M-KM	0.354	9.00	0.080	●		SS0375-DRA090M-○ SF0500-DRA090M-○ (SS10-DRA090M-○) (SF12-DRA090M-○)
0910M-KM	0.358	9.10	0.081	●		
0920M-KM	0.362	9.20	0.083	●		
0930M-KM	0.366	9.30	0.085	●		
0940M-KM	0.370	9.40	0.086	●		
DA 0950M-KM	0.374	9.50	0.088	●	SS0500-DRA095M-○ SF0500-DRA095M-○ (SS10-DRA095M-○) (SF12-DRA095M-○)	
0960M-KM	0.378	9.60	0.089	●		
0970M-KM	0.382	9.70	0.091	●		
0980M-KM	0.386	9.80	0.093	●		
0990M-KM	0.390	9.90	0.094	●		
DA 1000M-KM	0.394	10.00	0.087	●		SS0500-DRA100M-○ SF0625-DRA100M-○ (SS12-DRA100M-○) (SF16-DRA100M-○)
1010M-KM	0.398	10.10	0.088	●		
1020M-KM	0.402	10.20	0.090	●		
1030M-KM	0.406	10.30	0.091	●		
1040M-KM	0.409	10.40	0.093	●		
DA 1050M-KM	0.413	10.50	0.095	●	SS0500-DRA105M-○ SF0625-DRA105M-○ (SS12-DRA105M-○) (SF16-DRA105M-○)	
1060M-KM	0.417	10.60	0.096	●		
1070M-KM	0.421	10.70	0.098	●		
1080M-KM	0.425	10.80	0.100	●		
1090M-KM	0.429	10.90	0.101	●		
DA 1100M-KM	0.433	11.00	0.098	●		SS0500-DRA110M-○ SF0625-DRA110M-○ (SS12-DRA110M-○) (SF16-DRA110M-○)
1110M-KM	0.437	11.10	0.100	●		
1120M-KM	0.441	11.20	0.102	●		
1130M-KM	0.445	11.30	0.104	●		
1140M-KM	0.449	11.40	0.105	●		
DA 1150M-KM	0.453	11.50	0.107	●	SS0500-DRA115M-○ SF0625-DRA115M-○ (SS12-DRA115M-○) (SF16-DRA115M-○)	
1160M-KM	0.457	11.60	0.108	●		
1170M-KM	0.461	11.70	0.110	●		
1180M-KM	0.465	11.80	0.112	●		
1190M-KM	0.469	11.90	0.113	●		
DA 1200M-KM	0.472	12.00	0.106	●		SS0625-DRA120M-○ SF0625-DRA120M-○ (SS14-DRA120M-○) (SF16-DRA120M-○)
1210M-KM	0.476	12.10	0.107	●		
1220M-KM	0.480	12.20	0.109	●		
1230M-KM	0.484	12.30	0.110	●		
1240M-KM	0.488	12.40	0.112	●		
DA 1250M-KM	0.492	12.50	0.114	●	SS0625-DRA125M-○ SF0625-DRA125M-○ (SS14-DRA125M-○) (SF16-DRA125M-○)	
1260M-KM	0.496	12.60	0.115	●		
1270M-KM	0.500	12.70	0.117	●		
1280M-KM	0.504	12.80	0.119	●		
1290M-KM	0.508	12.90	0.120	●		
DA 1300M-KM	0.512	13.00	0.111	●		SS0625-DRA130M-○ SF0625-DRA130M-○ (SS14-DRA130M-○) (SF16-DRA130M-○)
1310M-KM	0.516	13.10	0.113	●		
1320M-KM	0.520	13.20	0.115	●		
1330M-KM	0.524	13.30	0.117	●		
1340M-KM	0.528	13.40	0.118	●		
DA 1350M-KM	0.531	13.50	0.120	●	SS0625-DRA135M-○ SF0625-DRA135M-○ (SS14-DRA135M-○) (SF16-DRA135M-○)	
1360M-KM	0.535	13.60	0.121	●		
1370M-KM	0.539	13.70	0.123	●		
1380M-KM	0.543	13.80	0.125	●		
1390M-KM	0.547	13.90	0.126	●		
DA 1400M-KM	0.551	14.00	0.120	●		SS0625-DRA140M-○ SF0625-DRA140M-○ (SS16-DRA140M-○) (SF16-DRA140M-○)
1410M-KM	0.555	14.10	0.122	●		
1420M-KM	0.559	14.20	0.123	●		
1430M-KM	0.563	14.30	0.125	●		
1440M-KM	0.567	14.40	0.126	●		
DA 1450M-KM	0.571	14.50	0.128	●	SS0625-DRA145M-○ SF0625-DRA145M-○ (SS16-DRA145M-○) (SF16-DRA145M-○)	
1460M-KM	0.575	14.60	0.130	●		
DA 1470M-KM	0.579	14.70	0.131	●		SS1000-DRA250M-○ SF1000-DRA250M-○ (SS32-DRA250M-○) (SF25-DRA250M-○)
1480M-KM	0.583	14.80	0.133	●		
1490M-KM	0.590	14.90	0.135	●		

Applicable Toolholders in () are metric

Part Number	Dimensions			Grade PR1525	Applicable Toolholder
	DC		PL (in)		
	in	mm			
DA 1500M-KM	0.591	15.00	0.128	●	SS0625-DRA150M-○ SF0750-DRA150M-○ (SS16-DRA150M-○) (SF20-DRA150M-○)
1510M-KM	0.594	15.10	0.129	●	
1520M-KM	0.598	15.20	0.131	●	
1530M-KM	0.602	15.30	0.133	●	
1540M-KM	0.606	15.40	0.134	●	
1550M-KM	0.610	15.50	0.136	●	
1560M-KM	0.614	15.60	0.137	●	
1570M-KM	0.618	15.70	0.139	●	
1580M-KM	0.622	15.80	0.141	●	
1590M-KM	0.626	15.90	0.143	●	
DA 1600M-KM	0.630	16.00	0.135	●	SS0750-DRA160M-○ SF0750-DRA160M-○ (SS18-DRA160M-○) (SF20-DRA160M-○)
1610M-KM	0.634	16.10	0.137	●	
1620M-KM	0.638	16.20	0.138	●	
1630M-KM	0.642	16.30	0.140	●	
1640M-KM	0.646	16.40	0.142	●	
1650M-KM	0.650	16.50	0.143	●	
1660M-KM	0.654	16.60	0.145	●	
1670M-KM	0.657	16.70	0.146	●	
1680M-KM	0.661	16.80	0.148	●	
1690M-KM	0.665	16.90	0.150	●	
DA 1700M-KM	0.669	17.00	0.142	●	SS0750-DRA170M-○ SF0750-DRA170M-○ (SS18-DRA170M-○) (SF20-DRA170M-○)
1710M-KM	0.673	17.10	0.144	●	
1720M-KM	0.677	17.20	0.145	●	
1730M-KM	0.681	17.30	0.147	●	
1740M-KM	0.685	17.40	0.149	●	
1750M-KM	0.689	17.50	0.150	●	
1760M-KM	0.693	17.60	0.152	●	
1770M-KM	0.697	17.70	0.154	●	
1780M-KM	0.701	17.80	0.156	●	
1790M-KM	0.705	17.90	0.157	●	
DA 1800M-KM	0.709	18.00	0.149	●	SS0750-DRA180M-○ SF0750-DRA180M-○ (SS20-DRA180M-○) (SF25-DRA180M-○)
1810M-KM	0.713	18.10	0.151	●	
1820M-KM	0.717	18.20	0.153	●	
1830M-KM	0.720	18.30	0.154	●	
1840M-KM	0.724	18.40	0.156	●	
1850M-KM	0.728	18.50	0.157	●	
1860M-KM	0.732	18.60	0.159	●	
1870M-KM	0.736	18.70	0.161	●	
1880M-KM	0.740	18.80	0.163	●	
1890M-KM	0.744	18.90	0.164	●	
DA 1900M-KM	0.748	19.00	0.156	●	SS1000-DRA190M-○ SF0750-DRA190M-○ (SS20-DRA190M-○) (SF25-DRA190M-○)
1910M-KM	0.752	19.10	0.158	●	
1920M-KM	0.756	19.20	0.159	●	
1930M-KM	0.760	19.30	0.161	●	
1940M-KM	0.764	19.40	0.163	●	
1950M-KM	0.768	19.50	0.165	●	
1960M-KM	0.772	19.60	0.166	●	
1970M-KM	0.776	19.70	0.168	●	
1980M-KM	0.780	19.80	0.169	●	
1990M-KM	0.783	19.90	0.171	●	
DA 2000M-KM	0.787	20.00	0.165	●	SS1000-DRA200M-○ SF1000-DRA200M-○ (SS25-DRA200M-○) (SF25-DRA200M-○)
2010M-KM	0.791	20.10	0.167	●	
2020M-KM	0.795	20.20	0.169	●	
2030M-KM	0.799	20.30	0.170	●	
2040M-KM	0.803	20.40	0.172	●	
2050M-KM	0.807	20.50	0.174	●	
2060M-KM	0.811	20.60	0.175	●	
2070M-KM	0.815	20.70	0.177	●	
2080M-KM	0.819	20.80	0.179	●	
2090M-KM	0.823	20.90	0.180	●	
DA 2100M-KM	0.827	21.00	0.172	●	SS1000-DRA210M-○ SF1000-DRA210M-○ (SS25-DRA210M-○) (SF25-DRA210M-○)
2150M-KM	0.846	21.50	0.181	●	
DA 2200M-KM	0.866	22.00	0.179	●	SS1000-DRA220M-○ SF1000-DRA220M-○ (SS25-DRA220M-○) (SF25-DRA220M-○)
2250M-KM	0.886	22.50	0.187	●	
DA 2300M-KM	0.906	23.00	0.187	●	SS1000-DRA230M-○ SF1000-DRA230M-○ (SS25-DRA230M-○) (SF25-DRA230M-○)
2350M-KM	0.925	23.50	0.194	●	
DA 2400M-KM	0.945	24.00	0.193	●	SS1000-DRA240M-○ SF1000-DRA240M-○ (SS25-DRA240M-○) (SF25-DRA240M-○)
2450M-KM	0.965	24.50	0.202	●	
DA 2500M-KM	0.984	25.00	0.200	●	SS1000-DRA250M-○ SF1000-DRA250M-○ (SS32-DRA250M-○) (SF25-DRA250M-○)
2550M-KM	1.004	25.50	0.208	●	

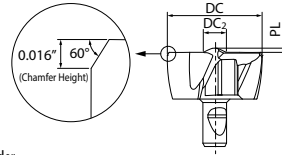
● : Standard Item

Inserts Sold in 1 Piece Boxes

DRA Inserts (FTP - Near Flat Bottom Drilling) Cutting Diameter $\varnothing 0.315" \sim \varnothing 1.000"$ ($\varnothing 8.00\text{mm} \sim \varnothing 25.40\text{mm}$)



* Uncut area remains in hole due to chamfered cutting edge



k8 Tolerance

DC (in)	k8 (in)	DC (mm)	k8 (mm)
0.313~0.394	+0.0009 0	8.00~10.00	+0.022 0
0.398~0.709	+0.0011 0	10.30~18.00	+0.027 0
0.713~1.004	+0.0013 0	18.50~25.40	+0.033 0

k8 is the dimension tolerance of the insert.
It is not the tolerance of the cutting diameter.

Note
Applicable to 1.5D, 3D, 5D and 8D holders. Guide hole (0.5D) is needed when using 8D holder

Inserts

PR1535 (Steel / Stainless Steel) PR1525 (Cast Iron)

Part Number	Dimensions				PL (in)	Grade		Applicable Toolholder
	DC		DC ₂			PR1535	PR1525	
	in	mm	in	mm				
DA 0800M-FTP	0.315	8.00	0.114	2.90	0.016	●	●	SS0375-DRA080M-○ SF0500-DRA080M-○ (SS10-DRA080M-○) (SF12-DRA080M-○)
0830M-FTP	0.327	8.30				●	●	
DA 0850M-FTP	0.335	8.50	0.118	3.00	0.017	●	●	SS0375-DRA085M-○ SF0500-DRA085M-○ (SS10-DRA085M-○) (SF12-DRA085M-○)
0880M-FTP	0.346	8.80				●	●	
DA 0900M-FTP	0.354	9.00	0.118	3.00	0.017	●	●	SS0375-DRA090M-○ SF0500-DRA090M-○ (SS10-DRA090M-○) (SF12-DRA090M-○)
0930M-FTP	0.366	9.30				●	●	
DA 0950M-FTP	0.374	9.50	0.130	3.30	0.018	●	●	SS0500-DRA095M-○ SF0500-DRA095M-○ (SS10-DRA095M-○) (SF12-DRA095M-○)
DA 1000M-FTP	0.394	10.00				●	●	SS0500-DRA100M-○ SF0625-DRA100M-○ (SS12-DRA100M-○) (SF16-DRA100M-○)
1030M-FTP	0.406	10.30	0.130	3.30	0.018	●	●	SS0500-DRA103M-○ SF0625-DRA103M-○ (SS12-DRA103M-○) (SF16-DRA103M-○)
DA 1050M-FTP	0.413	10.50				●	●	SS0500-DRA105M-○ SF0625-DRA105M-○ (SS12-DRA105M-○) (SF16-DRA105M-○)
1080M-FTP	0.425	10.80	0.134	3.40	0.020	●	●	SS0500-DRA108M-○ SF0625-DRA108M-○ (SS12-DRA108M-○) (SF16-DRA108M-○)
DA 1100M-FTP	0.433	11.00				●	●	SS0500-DRA110M-○ SF0625-DRA110M-○ (SS12-DRA110M-○) (SF16-DRA110M-○)
DA 1150M-FTP	0.453	11.50	0.134	3.40	0.020	●	●	SS0500-DRA115M-○ SF0625-DRA115M-○ (SS12-DRA115M-○) (SF16-DRA115M-○)
DA 1200M-FTP	0.472	12.00				●	●	SS0625-DRA120M-○ SF0625-DRA120M-○ (SS14-DRA120M-○) (SF16-DRA120M-○)
DA 1250M-FTP	0.492	12.50	0.146	3.70	0.021	●	●	SS0625-DRA125M-○ SF0625-DRA125M-○ (SS14-DRA125M-○) (SF16-DRA125M-○)
1270M-FTP	0.500	12.70				●	●	SS0625-DRA127M-○ SF0625-DRA127M-○ (SS14-DRA127M-○) (SF16-DRA127M-○)
DA 1300M-FTP	0.512	13.00	0.154	3.90	0.022	●	●	SS0625-DRA130M-○ SF0625-DRA130M-○ (SS14-DRA130M-○) (SF16-DRA130M-○)
1350M-FTP	0.531	13.50				●	●	SS0625-DRA135M-○ SF0625-DRA135M-○ (SS14-DRA135M-○) (SF16-DRA135M-○)

Part Number	Dimensions				PL (in)	Grade		Applicable Toolholder
	DC		DC ₂			PR1535	PR1525	
	in	mm	in	mm				
DA 1400M-FTP	0.551	14.00	0.165	4.20	0.024	●	●	SS0625-DRA140M-○ SF0625-DRA140M-○ (SS16-DRA140M-○) (SF16-DRA140M-○)
DA 1450M-FTP	0.571	14.50				●	●	SS0625-DRA145M-○ SF0625-DRA145M-○ (SS16-DRA145M-○) (SF16-DRA145M-○)
DA 1500M-FTP	0.591	15.00	0.173	4.40	0.026	●	●	SS0625-DRA150M-○ SF0750-DRA150M-○ (SS16-DRA150M-○) (SF20-DRA150M-○)
1550M-FTP	0.610	15.50				●	●	SS0625-DRA155M-○ SF0750-DRA155M-○ (SS16-DRA155M-○) (SF20-DRA155M-○)
DA 1600M-FTP	0.630	16.00	0.181	4.60	0.028	●	●	SS0750-DRA160M-○ SF0750-DRA160M-○ (SS18-DRA160M-○) (SF20-DRA160M-○)
1650M-FTP	0.650	16.50				●	●	SS0750-DRA165M-○ SF0750-DRA165M-○ (SS18-DRA165M-○) (SF20-DRA165M-○)
DA 1700M-FTP	0.669	17.00	0.197	5.00	0.030	●	●	SS0750-DRA170M-○ SF0750-DRA170M-○ (SS18-DRA170M-○) (SF20-DRA170M-○)
1750M-FTP	0.689	17.50				●	●	SS0750-DRA175M-○ SF0750-DRA175M-○ (SS18-DRA175M-○) (SF20-DRA175M-○)
DA 1800M-FTP	0.709	18.00	0.197	5.00	0.031	●	●	SS0750-DRA180M-○ SF0750-DRA180M-○ (SS18-DRA180M-○) (SF20-DRA180M-○)
1850M-FTP	0.728	18.50				●	●	SS0750-DRA185M-○ SF0750-DRA185M-○ (SS18-DRA185M-○) (SF20-DRA185M-○)
DA 1900M-FTP	0.748	19.00	0.209	5.30	0.033	●	●	SS1000-DRA190M-○ SF0750-DRA190M-○ (SS20-DRA190M-○) (SF25-DRA190M-○)
1950M-FTP	0.768	19.50				●	●	SS1000-DRA195M-○ SF0750-DRA195M-○ (SS20-DRA195M-○) (SF25-DRA195M-○)
DA 2000M-FTP	0.787	20.00	0.224	5.70	0.035	●	●	SS1000-DRA200M-○ SF1000-DRA200M-○ (SS25-DRA200M-○) (SF25-DRA200M-○)
2050M-FTP	0.807	20.50				●	●	SS1000-DRA205M-○ SF1000-DRA205M-○ (SS25-DRA205M-○) (SF25-DRA205M-○)
DA 2100M-FTP	0.827	21.00	0.236	6.00	0.037	●	●	SS1000-DRA210M-○ SF1000-DRA210M-○ (SS25-DRA210M-○) (SF25-DRA210M-○)
2150M-FTP	0.846	21.50				●	●	SS1000-DRA215M-○ SF1000-DRA215M-○ (SS25-DRA215M-○) (SF25-DRA215M-○)
DA 2200M-FTP	0.866	22.00	0.252	6.40	0.039	●	●	SS1000-DRA220M-○ SF1000-DRA220M-○ (SS25-DRA220M-○) (SF25-DRA220M-○)
2250M-FTP	0.886	22.50				●	●	SS1000-DRA225M-○ SF1000-DRA225M-○ (SS25-DRA225M-○) (SF25-DRA225M-○)
DA 2300M-FTP	0.906	23.00	0.260	6.60	0.041	●	●	SS1000-DRA230M-○ SF1000-DRA230M-○ (SS25-DRA230M-○) (SF25-DRA230M-○)
2350M-FTP	0.925	23.50				●	●	SS1000-DRA235M-○ SF1000-DRA235M-○ (SS25-DRA235M-○) (SF25-DRA235M-○)
DA 2400M-FTP	0.945	24.00	0.268	6.80	0.043	●	●	SS1000-DRA240M-○ SF1000-DRA240M-○ (SS25-DRA240M-○) (SF25-DRA240M-○)
2450M-FTP	0.965	24.50				●	●	SS1000-DRA245M-○ SF1000-DRA245M-○ (SS25-DRA245M-○) (SF25-DRA245M-○)
DA 2500M-FTP	0.984	25.00	0.276	7.00	0.047	●	●	SS1000-DRA250M-○ SF1000-DRA250M-○ (SS32-DRA250M-○) (SF25-DRA250M-○)
2540M-FTP	1.000	25.40				●	●	SS1000-DRA254M-○ SF1000-DRA254M-○ (SS32-DRA254M-○) (SF25-DRA254M-○)

Applicable Toolholders in () are metric

● : Standard Item
Inserts Sold in 1 Piece Boxes

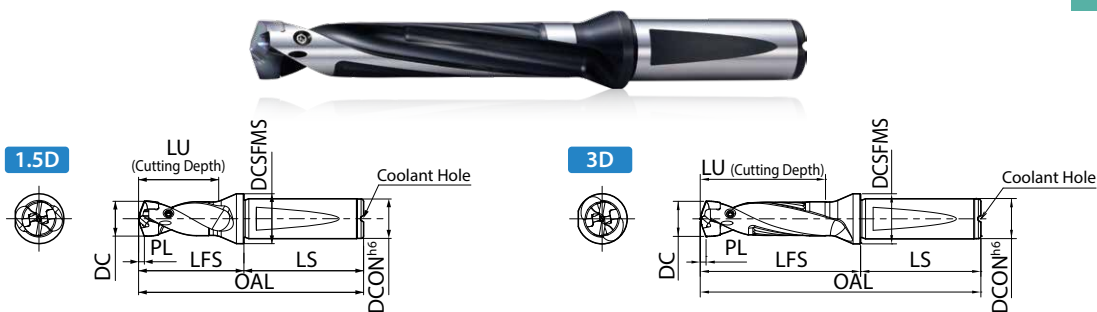
Applicable Workpieces for FTP Inserts

Plain Surface	Stacked Plates	Tubing	*Hole Expansion	Existing Hole	Concave Surface	Slant Surface	Half Cylindrical
← Over 3D Holder Recommended →							NOT Recommended
← 1.5D Holder Recommended →			← Over 3D Holder NOT Recommended →				

*Overlap should be under 1/3xD for hole expansion with 1.5D holder

DRA Toolholders - Inch Sizes (with Flange)

Flange Shank



For PL dimension, reference insert dimension table.

Toolholder Dimensions 1.5D

Part Number	Stock	DC*		DCON (h6)	Dimensions (in)					Applicable Insert See Page 6-8	Spare Parts	
		min.	max.		OAL	LFS	LU	LS	DCSFMS		Clamp Screw	Wrench
SF0500-DRA080M-1.5	●	0.313	0.334	0.500	2.805	1.033	0.504	1.772	0.630	DA0794M-... ~ DA0840M-...	HS-2524TRP	
SF0500-DRA085M-1.5	●	0.335	0.353		2.854	1.083	0.531			DA0850M-... ~ DA0890M-...		
SF0500-DRA090M-1.5	●	0.354	0.373		2.904	1.132	0.563			DA0900M-... ~ DA0940M-...		
SF0500-DRA095M-1.5	●	0.374	0.393		2.953	1.181	0.591			DA0950M-... ~ DA0990M-...		
SF0625-DRA100M-1.5	●	0.394	0.412		3.120	1.230	0.622			DA1000M-... ~ DA1040M-...		
SF0625-DRA105M-1.5	●	0.413	0.432	0.625	3.169	1.280	0.650	1.890	0.787	DA1050M-... ~ DA1090M-...	HS-2534TRP	FTP-5
SF0625-DRA110M-1.5	●	0.433	0.452		3.258	1.368	0.681			DA1100M-... ~ DA1140M-...		
SF0625-DRA115M-1.5	●	0.453	0.471		3.307	1.417	0.709			DA1150M-... ~ DA1190M-...		
SF0625-DRA120M-1.5	●	0.472	0.491		3.356	1.467	0.740			DA1200M-... ~ DA1240M-...		
SF0625-DRA125M-1.5	●	0.492	0.511		3.406	1.516	0.768			DA1250M-... ~ DA1290M-...		
SF0625-DRA130M-1.5	●	0.512	0.530		3.455	1.565	0.799			DA1300M-... ~ DA1340M-...		
SF0625-DRA135M-1.5	●	0.531	0.550		3.504	1.614	0.827			DA1350M-... ~ DA1390M-...		
SF0625-DRA140M-1.5	●	0.551	0.570		3.553	1.663	0.858			DA1400M-... ~ DA1440M-...		
SF0625-DRA145M-1.5	●	0.571	0.590		3.602	1.713	0.886			DA1450M-... ~ DA1490M-...		
SF0750-DRA150M-1.5	●	0.591	0.629		0.750	3.819	1.850			0.917		
SF0750-DRA160M-1.5	●	0.630	0.668	3.957		1.988	0.976	DA1600M-... ~ DA1690M-...				
SF0750-DRA170M-1.5	●	0.669	0.708	4.055		2.087	1.035	DA1700M-... ~ DA1790M-...				
SF0750-DRA180M-1.5	●	0.709	0.747	4.193		2.224	1.094	DA1800M-... ~ DA1890M-...				
SF0750-DRA190M-1.5	●	0.748	0.786	4.291		2.323	1.154	DA1900M-... ~ DA1990M-...				
SF1000-DRA200M-1.5	●	0.787	0.826	1.000	4.626	2.421	1.213	2.205	1.260	DA2000M-... ~ DA2090M-...	HS-4067TRP	DTP-7
SF1000-DRA210M-1.5	●	0.827	0.865		4.724	2.520	1.272			DA2100M-... ~ DA2150M-...		
SF1000-DRA220M-1.5	●	0.866	0.905		4.862	2.657	1.331			DA2200M-... ~ DA2250M-...		
SF1000-DRA230M-1.5	●	0.906	0.944		4.961	2.756	1.390			DA2300M-... ~ DA2381M-...		
SF1000-DRA240M-1.5	●	0.945	0.983		5.059	2.854	1.449			DA2400M-... ~ DA2450M-...		
SF1000-DRA250M-1.5	●	0.984	1.004		5.157	2.953	1.508			DA2500M-... ~ DA2550M-...		

Toolholder Dimensions 3D

Part Number	Stock	DC*		DCON (h6)	Dimensions (in)					Applicable Insert See Page 6-8	Spare Parts	
		min.	max.		OAL	LFS	LU	LS	DCSFMS		Clamp Screw	Wrench
SF0500-DRA080M-3	●	0.313	0.334	0.500	3.307	1.535	1.004	1.772	0.630	DA0794M-... ~ DA0840M-...	HS-2524TRP	
SF0500-DRA085M-3	●	0.335	0.353		3.386	1.614	1.063			DA0850M-... ~ DA0890M-...		
SF0500-DRA090M-3	●	0.354	0.373		3.465	1.693	1.122			DA0900M-... ~ DA0940M-...		
SF0500-DRA095M-3	●	0.374	0.393		3.543	1.772	1.181			DA0950M-... ~ DA0990M-...		
SF0625-DRA100M-3	●	0.394	0.412		3.740	1.850	1.240			DA1000M-... ~ DA1040M-...		
SF0625-DRA105M-3	●	0.413	0.432	0.625	3.819	1.929	1.299	1.890	0.787	DA1050M-... ~ DA1090M-...	HS-2534TRP	FTP-5
SF0625-DRA110M-3	●	0.433	0.452		3.937	2.047	1.358			DA1100M-... ~ DA1140M-...		
SF0625-DRA115M-3	●	0.453	0.471		4.016	2.126	1.417			DA1150M-... ~ DA1190M-...		
SF0625-DRA120M-3	●	0.472	0.491		4.094	2.205	1.476			DA1200M-... ~ DA1240M-...		
SF0625-DRA125M-3	●	0.492	0.511		4.173	2.283	1.535			DA1250M-... ~ DA1290M-...		
SF0625-DRA130M-3	●	0.512	0.530		4.252	2.362	1.594			DA1300M-... ~ DA1340M-...		
SF0625-DRA135M-3	●	0.531	0.550		4.331	2.441	1.654			DA1350M-... ~ DA1390M-...		
SF0625-DRA140M-3	●	0.551	0.570		4.409	2.520	1.713			DA1400M-... ~ DA1440M-...		
SF0625-DRA145M-3	●	0.571	0.590		4.488	2.598	1.772			DA1450M-... ~ DA1490M-...		
SF0750-DRA150M-3	●	0.591	0.629		0.750	4.764	2.795			1.890		
SF0750-DRA160M-3	●	0.630	0.668	4.961		2.992	2.008	DA1600M-... ~ DA1690M-...				
SF0750-DRA170M-3	●	0.669	0.708	5.118		3.150	2.126	DA1700M-... ~ DA1790M-...				
SF0750-DRA180M-3	●	0.709	0.747	5.315		3.346	2.244	DA1800M-... ~ DA1890M-...				
SF0750-DRA190M-3	●	0.748	0.786	5.472		3.504	2.362	DA1900M-... ~ DA1990M-...				
SF1000-DRA200M-3	●	0.787	0.826	1.000	5.866	3.661	2.480	2.205	1.260	DA2000M-... ~ DA2090M-...	HS-4067TRP	DTP-7
SF1000-DRA210M-3	●	0.827	0.865		6.024	3.819	2.598			DA2100M-... ~ DA2150M-...		
SF1000-DRA220M-3	●	0.866	0.905		6.220	4.016	2.717			DA2200M-... ~ DA2250M-...		
SF1000-DRA230M-3	●	0.906	0.944		6.378	4.173	2.835			DA2300M-... ~ DA2381M-...		
SF1000-DRA240M-3	●	0.945	0.983		6.535	4.331	2.953			DA2400M-... ~ DA2450M-...		
SF1000-DRA250M-3	●	0.984	1.004		6.693	4.488	3.071			DA2500M-... ~ DA2550M-...		

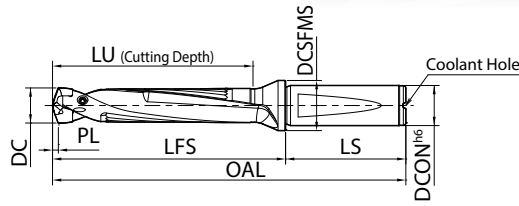
*DC min. & max. show the cutting diameter range of inserts that will fit into the toolholder. See applicable insert tables on page 6-8 for actual cutting diameters (DC).

● : Standard Item

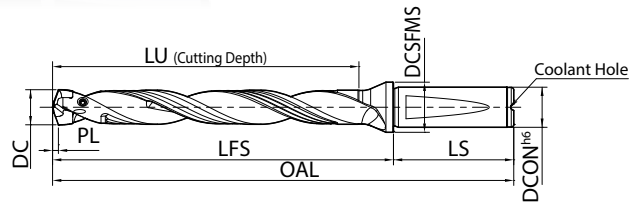
Flange Shank



5D



8D



For PL dimension, reference insert dimension table.

Toolholder Dimensions 5D

Part Number	Stock	Dimensions (in)								Applicable Insert See Page 6-8	Spare Parts						
		DC*		DCON (h6)	OAL	LFS	LU	LS	DCSFMS		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-... ~ DA0840M-...	HS-2524TRP	FTP-5					
SF0500-DRA085M-5	●	0.335	0.353		4.094	2.323	1.772										
SF0500-DRA090M-5	●	0.354	0.373		4.213	2.441	1.870										
SF0500-DRA095M-5	●	0.374	0.393		4.331	2.559	1.969										
SF0625-DRA100M-5	●	0.394	0.412	0.625	4.567	2.677	2.067	1.890	0.787	DA1000M-... ~ DA1040M-...	HS-2534TRP	FTP-5					
SF0625-DRA105M-5	●	0.413	0.432		4.685	2.795	2.165										
SF0625-DRA110M-5	●	0.433	0.452		4.843	2.953	2.264										
SF0625-DRA115M-5	●	0.453	0.471		4.961	3.071	2.362										
SF0625-DRA120M-5	●	0.472	0.491		5.079	3.189	2.461										
SF0625-DRA125M-5	●	0.492	0.511		5.197	3.307	2.559										
SF0625-DRA130M-5	●	0.512	0.530		5.315	3.425	2.657										
SF0625-DRA135M-5	●	0.531	0.550		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	0.629	0.750	6.024	4.055	3.150	1.969	0.984	DA1500M-... ~ DA1590M-...	HS-3048TRP	DTP-6					
SF0750-DRA160M-5	●	0.630	0.668		6.299	4.331	3.346										
SF0750-DRA170M-5	●	0.669	0.708		6.535	4.567	3.543										
SF0750-DRA180M-5	●	0.709	0.747		6.811	4.843	3.740										
SF0750-DRA190M-5	●	0.748	0.786	1.000	7.047	5.079	3.937	2.205	1.260	DA1900M-... ~ DA1990M-...	HS-4067TRP	DTP-7					
SF1000-DRA200M-5	●	0.787	0.826		7.520	5.315	4.134										
SF1000-DRA210M-5	●	0.827	0.865		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	0.983		8.504	6.299	4.921										
SF1000-DRA250M-5	●	0.984	1.004		8.740	6.535	5.116										
															DA2000M-... ~ DA2090M-...		
															DA2100M-... ~ DA2150M-...		
															DA2200M-... ~ DA2250M-...		
										DA2300M-... ~ DA2381M-...							
										DA2400M-... ~ DA2450M-...							
										DA2500M-... ~ DA2550M-...							

Toolholder Dimensions 8D

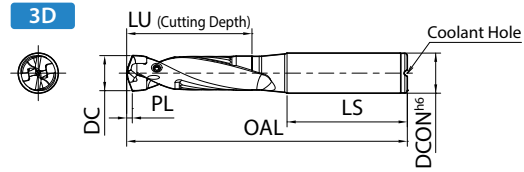
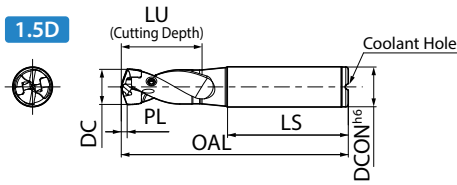
Part Number	Stock	Dimensions (in)								Applicable Insert See Page 6-8	Spare Parts						
		DC*		DCON (h6)	OAL	LFS	LU	LS	DCSFMS		Clamp Screw	Wrench					
		min.	max.														
SF0500-DRA080M-8	●	0.313	0.334	0.500	4.961	3.189	2.677	1.772	0.630	DA0794M-... ~ DA0840M-...	HS-2524TRP	FTP-5					
SF0500-DRA085M-8	●	0.335	0.353		5.157	3.386	2.835										
SF0500-DRA090M-8	●	0.354	0.373		5.315	3.543	2.992										
SF0500-DRA095M-8	●	0.374	0.393		5.512	3.740	3.150										
SF0625-DRA100M-8	●	0.394	0.412	0.625	5.787	3.898	3.307	1.890	0.787	DA1000M-... ~ DA1040M-...	HS-2534TRP	FTP-5					
SF0625-DRA105M-8	●	0.413	0.432		5.984	4.094	3.465										
SF0625-DRA110M-8	●	0.433	0.452		6.181	4.291	3.622										
SF0625-DRA115M-8	●	0.453	0.471		6.378	4.488	3.780										
SF0625-DRA120M-8	●	0.472	0.491		6.535	4.646	3.937										
SF0625-DRA125M-8	●	0.492	0.511		6.732	4.843	4.094										
SF0625-DRA130M-8	●	0.512	0.530		6.890	5.000	4.252										
SF0625-DRA135M-8	●	0.531	0.550		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	0.629	0.750	7.913	5.945	5.039	1.969	0.984	DA1500M-... ~ DA1590M-...	HS-3048TRP	DTP-6					
SF0750-DRA160M-8	●	0.630	0.668		8.307	6.339	5.354										
SF0750-DRA170M-8	●	0.669	0.708		8.661	6.693	5.669										
SF0750-DRA180M-8	●	0.709	0.747		9.055	7.087	5.984										
SF0750-DRA190M-8	●	0.748	0.786	1.000	9.409	7.441	6.299	2.205	1.260	DA1900M-... ~ DA1990M-...	HS-4067TRP	DTP-7					
SF1000-DRA200M-8	●	0.787	0.826		10.000	7.795	6.614										
SF1000-DRA210M-8	●	0.827	0.865		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	8.989	7.559										
SF1000-DRA240M-8	●	0.945	0.983		11.457	9.252	7.874										
SF1000-DRA250M-8	●	0.984	1.004		11.811	9.606	8.189										
															DA2000M-... ~ DA2090M-...		
															DA2100M-... ~ DA2150M-...		
															DA2200M-... ~ DA2250M-...		
										DA2300M-... ~ DA2381M-...							
										DA2400M-... ~ DA2450M-...							
										DA2500M-... ~ DA2550M-...							

*DC min. & max. show the cutting diameter range of inserts that will fit into the toolholder. See applicable insert tables on page 6-8 for actual cutting diameters (DC).

● : Standard Item

DRA Toolholders - Inch Sizes (Straight Shank)

Straight Shank



For PL dimension, reference insert dimension table.

Toolholder Dimensions 1.5D

Part Number	Stock	Dimensions (in)					Applicable Insert See Page 6-8	Spare Parts		
		DC*		DCON (h6)	OAL	LU		LS	Clamp Screw	Wrench
		min.	max.							
SS0375-DRA080M-1.5	●	0.313	0.334	0.375	2.608	0.504	1.575	HS-2524TRP	FTP-5	
SS0375-DRA085M-1.5	●	0.335	0.353		2.657	0.531				
SS0375-DRA090M-1.5	●	0.354	0.373		2.707	0.563				
SS0500-DRA095M-1.5	●	0.374	0.393	0.500	2.953	0.591	1.772	HS-2534TRP	FTP-5	
SS0500-DRA100M-1.5	●	0.394	0.412		3.002	0.622				
SS0500-DRA105M-1.5	●	0.413	0.432		3.051	0.650				
SS0500-DRA110M-1.5	●	0.433	0.452	0.625	3.140	0.681	1.890	HS-3048TRP	DTP-6	
SS0500-DRA115M-1.5	●	0.453	0.471		3.189	0.709				
SS0625-DRA120M-1.5	●	0.472	0.491		3.356	0.740				
SS0625-DRA125M-1.5	●	0.492	0.511	0.750	3.406	0.768	1.969	HS-4067TRP	DTP-7	
SS0625-DRA130M-1.5	●	0.512	0.530		3.455	0.799				
SS0625-DRA135M-1.5	●	0.531	0.550		3.504	0.827				
SS0625-DRA140M-1.5	●	0.551	0.570	1.000	3.553	0.858	2.205	HS-4067TRP	DTP-7	
SS0625-DRA145M-1.5	●	0.571	0.590		3.602	0.886				
SS0625-DRA150M-1.5	●	0.591	0.629		3.740	0.917				
SS0750-DRA160M-1.5	●	0.630	0.668	0.750	3.957	0.976	1.969	HS-3048TRP	DTP-6	
SS0750-DRA170M-1.5	●	0.669	0.708		4.055	1.035				
SS0750-DRA180M-1.5	●	0.709	0.747		4.193	1.094				
SS1000-DRA190M-1.5	●	0.748	0.786	1.000	4.528	1.154	2.205	HS-4067TRP	DTP-7	
SS1000-DRA200M-1.5	●	0.787	0.826		4.626	1.213				
SS1000-DRA210M-1.5	●	0.827	0.865		4.724	1.272				
SS1000-DRA220M-1.5	●	0.866	0.905	1.000	4.862	1.331	2.205	HS-4067TRP	DTP-7	
SS1000-DRA230M-1.5	●	0.906	0.944		4.961	1.390				
SS1000-DRA240M-1.5	●	0.945	0.983		5.059	1.449				
SS1000-DRA250M-1.5	●	0.984	1.004	5.157	1.508					

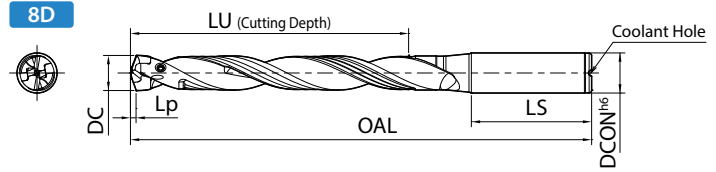
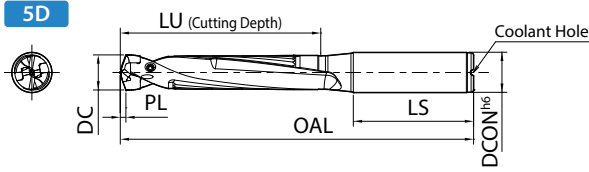
Toolholder Dimensions 3D

Part Number	Stock	Dimensions (in)					Applicable Insert See Page 6-8	Spare Parts		
		DC*		DCON (h6)	OAL	LU		LS	Clamp Screw	Wrench
		min.	max.							
SS0375-DRA080M-3	●	0.313	0.334	0.375	3.110	1.004	1.575	HS-2524TRP	FTP-5	
SS0375-DRA085M-3	●	0.335	0.353		3.189	1.063				
SS0375-DRA090M-3	●	0.354	0.373		3.268	1.122				
SS0500-DRA095M-3	●	0.374	0.393	0.500	3.543	1.181	1.772	HS-2534TRP	FTP-5	
SS0500-DRA100M-3	●	0.394	0.412		3.622	1.240				
SS0500-DRA105M-3	●	0.413	0.432		3.701	1.299				
SS0500-DRA110M-3	●	0.433	0.452	0.625	3.819	1.358	1.890	HS-3048TRP	DTP-6	
SS0500-DRA115M-3	●	0.453	0.471		3.898	1.417				
SS0625-DRA120M-3	●	0.472	0.491		4.094	1.476				
SS0625-DRA125M-3	●	0.492	0.511	0.750	4.173	1.535	1.969	HS-4067TRP	DTP-7	
SS0625-DRA130M-3	●	0.512	0.530		4.252	1.594				
SS0625-DRA135M-3	●	0.531	0.550		4.331	1.654				
SS0625-DRA140M-3	●	0.551	0.570	1.000	4.409	1.713	2.205	HS-4067TRP	DTP-7	
SS0625-DRA145M-3	●	0.571	0.590		4.488	1.772				
SS0625-DRA150M-3	●	0.591	0.629		4.685	1.890				
SS0750-DRA160M-3	●	0.630	0.668	0.750	4.961	2.008	1.969	HS-3048TRP	DTP-6	
SS0750-DRA170M-3	●	0.669	0.708		5.118	2.126				
SS0750-DRA180M-3	●	0.709	0.747		5.315	2.244				
SS1000-DRA190M-3	●	0.748	0.786	1.000	5.472	2.362	2.205	HS-4067TRP	DTP-7	
SS1000-DRA200M-3	●	0.787	0.826		5.866	2.480				
SS1000-DRA210M-3	●	0.827	0.865		6.024	2.598				
SS1000-DRA220M-3	●	0.866	0.905	1.000	6.220	2.717	2.205	HS-4067TRP	DTP-7	
SS1000-DRA230M-3	●	0.906	0.944		6.378	2.835				
SS1000-DRA240M-3	●	0.945	0.983		6.535	2.953				
SS1000-DRA250M-3	●	0.984	1.004	6.693	3.070					

*DC min. & max. show the cutting diameter range of inserts that will fit into the toolholder. See applicable insert tables on page 6-8 for actual cutting diameters (DC).

● : Standard Item

Straight Shank



For PL dimension, reference insert dimension table.

Toolholder Dimensions **5D**

Part Number	Stock	Dimensions (in)					Applicable Insert See Page 6-8	Spare Parts		
		DC*		DCON (h6)	OAL	LU		LS	Clamp Screw	Wrench
		min.	max.							
SS0375-DRA080M-5	●	0.313	0.334	0.375	3.780	1.673	1.575	DA0794M-... ~ DA0840M-... DA0850M-... ~ DA0890M-... DA0900M-... ~ DA0940M-... DA0950M-... ~ DA0990M-...	HS-2524TRP	
SS0375-DRA085M-5	●	0.335	0.353		3.898	1.772				
SS0375-DRA090M-5	●	0.354	0.373		4.016	1.870				
SS0500-DRA095M-5	●	0.374	0.393	0.500	4.331	1.969	1.772	DA1000M-... ~ DA1040M-... DA1050M-... ~ DA1090M-... DA1100M-... ~ DA1140M-... DA1150M-... ~ DA1190M-... DA1200M-... ~ DA1240M-... DA1250M-... ~ DA1290M-...	HS-2534TRP	
SS0500-DRA100M-5	●	0.394	0.412		4.449	2.067				
SS0500-DRA105M-5	●	0.413	0.432		4.567	2.165				
SS0500-DRA110M-5	●	0.433	0.452	0.625	4.724	2.264	1.890	DA1300M-... ~ DA1340M-... DA1350M-... ~ DA1390M-... DA1400M-... ~ DA1440M-... DA1450M-... ~ DA1490M-... DA1500M-... ~ DA1590M-... DA1600M-... ~ DA1690M-...	HS-3048TRP	
SS0500-DRA115M-5	●	0.453	0.471		4.843	2.362				
SS0625-DRA120M-5	●	0.472	0.491		5.079	2.461				
SS0625-DRA125M-5	●	0.492	0.511	0.750	5.197	2.559	1.969	DA1700M-... ~ DA1790M-... DA1800M-... ~ DA1890M-... DA1900M-... ~ DA1990M-... DA2000M-... ~ DA2090M-... DA2100M-... ~ DA2150M-... DA2200M-... ~ DA2250M-... DA2300M-... ~ DA2381M-... DA2400M-... ~ DA2450M-... DA2500M-... ~ DA2550M-...	HS-4067TRP	
SS0625-DRA130M-5	●	0.512	0.530		5.315	2.657				
SS0625-DRA135M-5	●	0.531	0.550		5.433	2.756				
SS0625-DRA140M-5	●	0.551	0.570	1.000	5.551	2.854	2.205	HS-4067TRP		
SS0625-DRA145M-5	●	0.571	0.590		5.669	2.953				
SS0625-DRA150M-5	●	0.591	0.629		5.945	3.150				
SS0750-DRA160M-5	●	0.630	0.668	0.750	6.299	3.346	1.969	HS-3048TRP		
SS0750-DRA170M-5	●	0.669	0.708		6.535	3.543				
SS0750-DRA180M-5	●	0.709	0.747		6.811	3.740				
SS1000-DRA190M-5	●	0.748	0.786	1.000	7.047	3.937	2.205	HS-4067TRP		
SS1000-DRA200M-5	●	0.787	0.826		7.520	4.134				
SS1000-DRA210M-5	●	0.827	0.865		7.756	4.331				
SS1000-DRA220M-5	●	0.866	0.905	1.000	8.031	4.528	2.205	HS-4067TRP		
SS1000-DRA230M-5	●	0.906	0.944		8.268	4.724				
SS1000-DRA240M-5	●	0.945	0.983		8.504	4.921				
SS1000-DRA250M-5	●	0.984	1.004	8.740	5.116					

Toolholder Dimensions **8D**

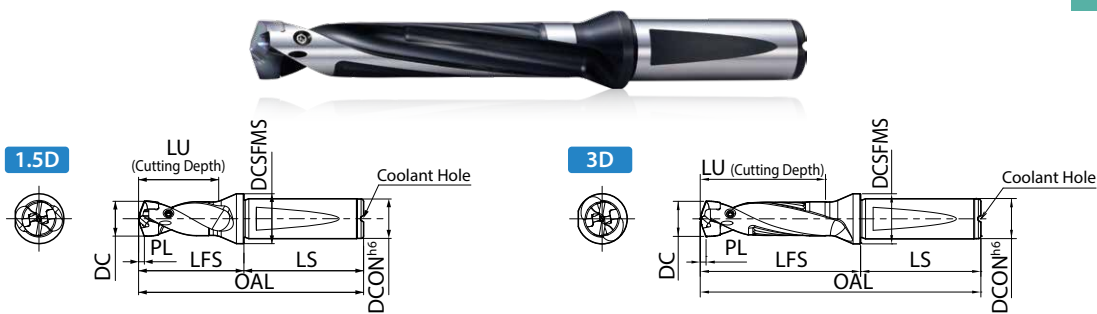
Part Number	Stock	Dimensions (in)					Applicable Insert See Page 6-8	Spare Parts		
		DC*		DCON (h6)	OAL	LU		LS	Clamp Screw	Wrench
		min.	max.							
SS0375-DRA080M-8	●	0.313	0.334	0.375	4.764	2.677	1.575	DA0794M-... ~ DA0840M-... DA0850M-... ~ DA0890M-... DA0900M-... ~ DA0940M-... DA0950M-... ~ DA0990M-...	HS-2524TRP	
SS0375-DRA085M-8	●	0.335	0.353		4.961	2.835				
SS0375-DRA090M-8	●	0.354	0.373		5.118	2.992				
SS0500-DRA095M-8	●	0.374	0.393	0.500	5.512	3.150	1.772	DA1000M-... ~ DA1040M-... DA1050M-... ~ DA1090M-... DA1100M-... ~ DA1140M-... DA1150M-... ~ DA1190M-... DA1200M-... ~ DA1240M-... DA1250M-... ~ DA1290M-...	HS-2534TRP	
SS0500-DRA100M-8	●	0.394	0.412		5.669	3.307				
SS0500-DRA105M-8	●	0.413	0.432		5.866	3.465				
SS0500-DRA110M-8	●	0.433	0.452	0.625	6.063	3.622	1.890	DA1300M-... ~ DA1340M-... DA1350M-... ~ DA1390M-... DA1400M-... ~ DA1440M-... DA1450M-... ~ DA1490M-... DA1500M-... ~ DA1590M-... DA1600M-... ~ DA1690M-...	HS-3048TRP	
SS0500-DRA115M-8	●	0.453	0.471		6.260	3.780				
SS0625-DRA120M-8	●	0.472	0.491		6.535	3.937				
SS0625-DRA125M-8	●	0.492	0.511	0.750	6.732	4.094	1.969	HS-3048TRP		
SS0625-DRA130M-8	●	0.512	0.530		6.890	4.252				
SS0625-DRA135M-8	●	0.531	0.550		7.087	4.409				
SS0625-DRA140M-8	●	0.551	0.570	1.000	7.244	4.567	2.205	HS-4067TRP		
SS0625-DRA145M-8	●	0.571	0.590		7.441	4.724				
SS0625-DRA150M-8	●	0.591	0.629		7.835	5.039				
SS0750-DRA160M-8	●	0.630	0.668	0.750	8.307	5.354	1.969	HS-3048TRP		
SS0750-DRA170M-8	●	0.669	0.708		8.661	5.669				
SS0750-DRA180M-8	●	0.709	0.747		9.055	5.984				
SS1000-DRA190M-8	●	0.748	0.786	1.000	9.409	6.299	2.205	HS-4067TRP		
SS1000-DRA200M-8	●	0.787	0.826		10.000	6.614				
SS1000-DRA210M-8	●	0.827	0.865		10.354	6.929				
SS1000-DRA220M-8	●	0.866	0.905	1.000	10.748	7.244	2.205	HS-4067TRP		
SS1000-DRA230M-8	●	0.906	0.944		11.102	7.559				
SS1000-DRA240M-8	●	0.945	0.983		11.457	7.874				
SS1000-DRA250M-8	●	0.984	1.004	11.969	8.189					

*DC min. & max. show the cutting diameter range of inserts that will fit into the toolholder. See applicable insert tables on page 6-8 for actual cutting diameters (DC).

● : Standard Item

DRA Toolholders - Metric Sizes (with Flange)

Flange Shank



For PL dimension, reference insert dimension table.

Toolholder Dimensions 1.5D

Part Number	Stock	Dimensions (mm)							Applicable Insert See Page 6-8	Spare Parts		
		DC*		DCON (h6)	OAL	LFS	LU	LS		DCSFMS	Clamp Screw	Wrench
		min.	max.									
SF12-DRA080M-1.5	●	7.94	8.49	12	71.2	26.2	12.8	45	16	DA0794M-...~DA0840M-...	HS-2524TRP	
SF12-DRA085M-1.5	●	8.50	8.99		72.5	27.5	13.5					
SF12-DRA090M-1.5	●	9.00	9.49		73.7	28.7	14.3					
SF12-DRA095M-1.5	●	9.50	9.99		75.0	30.0	15.0					
SF16-DRA100M-1.5	●	10.00	10.49	16	79.2	31.2	15.8	48	20	DA1000M-...~DA1040M-...	HS-2534TRP	FTP-5
SF16-DRA105M-1.5	●	10.50	10.99		80.5	32.5	16.5					
SF16-DRA110M-1.5	●	11.00	11.49		82.7	34.7	17.3					
SF16-DRA115M-1.5	●	11.50	11.99		84.0	36.0	18.0					
SF16-DRA120M-1.5	●	12.00	12.49		85.2	37.2	18.8					
SF16-DRA125M-1.5	●	12.50	12.99		86.5	38.5	19.5					
SF16-DRA130M-1.5	●	13.00	13.49		87.7	39.7	20.3					
SF16-DRA135M-1.5	●	13.50	13.99		89.0	41.0	21.0					
SF16-DRA140M-1.5	●	14.00	14.49		90.2	42.2	21.8					
SF16-DRA145M-1.5	●	14.50	14.99		91.5	43.5	22.5					
SF20-DRA150M-1.5	●	15.00	15.99	20	97.0	47.0	24.0	50	25	DA1500M-...~DA1590M-...	HS-3048TRP	DTP-6
SF20-DRA160M-1.5	●	16.00	16.99		100.5	50.5	25.5					
SF20-DRA170M-1.5	●	17.00	17.99		103.0	53.0	27.0					
SF25-DRA180M-1.5	●	18.00	18.99		112.5	56.5	28.5					
SF25-DRA190M-1.5	●	19.00	19.99	25	115.0	59.0	30.0	56	32	DA1900M-...~DA1990M-...	HS-4067TRP	DTP-7
SF25-DRA200M-1.5	●	20.00	20.99		117.5	61.5	31.5					
SF25-DRA210M-1.5	●	21.00	21.99		120.0	64.0	33.0					
SF25-DRA220M-1.5	●	22.00	22.99		123.5	67.5	34.5					
SF25-DRA230M-1.5	●	23.00	23.99		126.0	70.0	36.0					
SF25-DRA240M-1.5	●	24.00	24.99		128.5	72.5	37.5					
SF25-DRA250M-1.5	●	25.00	25.50		131.0	75.0	39.0					

Toolholder Dimensions 3D

Part Number	Stock	Dimensions (mm)							Applicable Insert See Page 6-8	Spare Parts		
		DC*		DCON (h6)	OAL	LFS	LU	LS		DCSFMS	Clamp Screw	Wrench
		min.	max.									
SF12-DRA080M-3	●	7.94	8.49	12	84	39	25.5	45	16	DA0794M-...~DA0840M-...	HS-2524TRP	
SF12-DRA085M-3	●	8.50	8.99		86	41	27.0					
SF12-DRA090M-3	●	9.00	9.49		88	43	28.5					
SF12-DRA095M-3	●	9.50	9.99		90	45	30.0					
SF16-DRA100M-3	●	10.00	10.49	16	95	47	31.5	48	20	DA1000M-...~DA1040M-...	HS-2534TRP	FTP-5
SF16-DRA105M-3	●	10.50	10.99		97	49	33.0					
SF16-DRA110M-3	●	11.00	11.49		100	52	34.5					
SF16-DRA115M-3	●	11.50	11.99		102	54	36.0					
SF16-DRA120M-3	●	12.00	12.49		104	56	37.5					
SF16-DRA125M-3	●	12.50	12.99		106	58	39.0					
SF16-DRA130M-3	●	13.00	13.49		108	60	40.5					
SF16-DRA135M-3	●	13.50	13.99		110	62	42.0					
SF16-DRA140M-3	●	14.00	14.49		112	64	43.5					
SF16-DRA145M-3	●	14.50	14.99		114	66	45.0					
SF20-DRA150M-3	●	15.00	15.99	20	121	71	48.0	50	25	DA1500M-...~DA1590M-...	HS-3048TRP	DTP-6
SF20-DRA160M-3	●	16.00	16.99		126	76	51.0					
SF20-DRA170M-3	●	17.00	17.99		130	80	54.0					
SF25-DRA180M-3	●	18.00	18.99		141	85	57.0					
SF25-DRA190M-3	●	19.00	19.99	25	145	89	60.0	56	32	DA1900M-...~DA1990M-...	HS-4067TRP	DTP-7
SF25-DRA200M-3	●	20.00	20.99		149	93	63.0					
SF25-DRA210M-3	●	21.00	21.99		153	97	66.0					
SF25-DRA220M-3	●	22.00	22.99		158	102	69.0					
SF25-DRA230M-3	●	23.00	23.99		162	106	72.0					
SF25-DRA240M-3	●	24.00	24.99		166	110	75.0					
SF25-DRA250M-3	●	25.00	25.50		170	114	78.0					

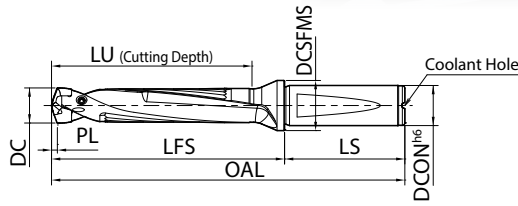
*DC min. & max. show the cutting diameter range of inserts that will fit into the toolholder. See applicable insert tables on page 6-8 for actual cutting diameters (DC).

● : Standard Item

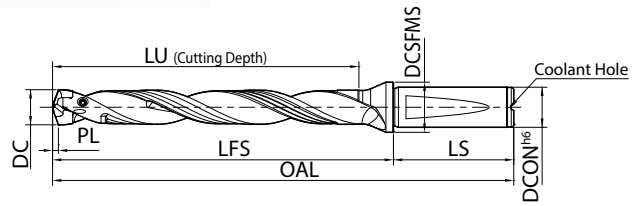
Flange Shank



5D



8D



For PL dimension, reference insert dimension table.

Toolholder Dimensions **5D**

Part Number	Stock	Dimensions (mm)								Applicable Insert See Page 6-8	Spare Parts						
		DC*		DCON (h6)	OAL	LFS	LU	LS	DCSFMS		Clamp Screw	Wrench					
		min.	max.														
SF12-DRA080M-5	●	7.94	8.49	12	101	56	42.5	45	16	DA0794M-... ~ DA0840M-...	HS-2524TRP	FTP-5					
SF12-DRA085M-5	●	8.50	8.99		104	59	45.0			DA0850M-... ~ DA0890M-...							
SF12-DRA090M-5	●	9.00	9.49		107	62	47.5			DA0900M-... ~ DA0940M-...							
SF12-DRA095M-5	●	9.50	9.99		110	65	50.0			DA0950M-... ~ DA0990M-...							
SF16-DRA100M-5	●	10.00	10.49	16	116	68	52.5	48	20	DA1000M-... ~ DA1040M-...	HS-2534TRP	FTP-5					
SF16-DRA105M-5	●	10.50	10.99		119	71	55.0			DA1050M-... ~ DA1090M-...							
SF16-DRA110M-5	●	11.00	11.49		123	75	57.5			DA1100M-... ~ DA1140M-...							
SF16-DRA115M-5	●	11.50	11.99		126	78	60.0			DA1150M-... ~ DA1190M-...							
SF16-DRA120M-5	●	12.00	12.49		129	81	62.5			DA1200M-... ~ DA1240M-...							
SF16-DRA125M-5	●	12.50	12.99		132	84	65.0			DA1250M-... ~ DA1290M-...							
SF16-DRA130M-5	●	13.00	13.49		135	87	67.5			DA1300M-... ~ DA1340M-...							
SF16-DRA135M-5	●	13.50	13.99		138	90	70.0			DA1350M-... ~ DA1390M-...							
SF16-DRA140M-5	●	14.00	14.49		141	93	72.5			DA1400M-... ~ DA1440M-...							
SF16-DRA145M-5	●	14.50	14.99		144	96	75.0			DA1450M-... ~ DA1490M-...							
SF20-DRA150M-5	●	15.00	15.99		20	153	103			80.0			50	25	DA1500M-... ~ DA1590M-...	HS-3048TRP	DTP-6
SF20-DRA160M-5	●	16.00	16.99			160	110			85.0					DA1600M-... ~ DA1690M-...		
SF20-DRA170M-5	●	17.00	17.99	166		116	90.0	DA1700M-... ~ DA1790M-...									
SF25-DRA180M-5	●	18.00	18.99	179		123	95.0	DA1800M-... ~ DA1890M-...									
SF25-DRA190M-5	●	19.00	19.99	25	185	129	100.0	56	32	DA1900M-... ~ DA1990M-...	HS-4067TRP	DTP-7					
SF25-DRA200M-5	●	20.00	20.99		191	135	105.0			DA2000M-... ~ DA2090M-...							
SF25-DRA210M-5	●	21.00	21.99		197	141	110.0			DA2100M-... ~ DA2150M-...							
SF25-DRA220M-5	●	22.00	22.99		204	148	115.0			DA2200M-... ~ DA2250M-...							
SF25-DRA230M-5	●	23.00	23.99		210	154	120.0			DA2300M-... ~ DA2350M-...							
SF25-DRA240M-5	●	24.00	24.99		216	160	125.0			DA2400M-... ~ DA2450M-...							
SF25-DRA250M-5	●	25.00	25.50		222	166	130.0			DA2500M-... ~ DA2550M-...							

Toolholder Dimensions **8D**

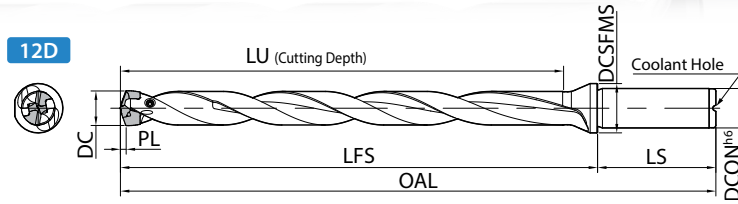
Part Number	Stock	Dimensions (mm)								Applicable Insert See Page 6-8	Spare Parts						
		DC*		DCON (h6)	OAL	LFS	LU	LS	DCSFMS		Clamp Screw	Wrench					
		min.	max.														
SF12-DRA080M-8	●	7.94	8.49	12	126	81	68.0	45	16	DA0794M-... ~ DA0840M-...	HS-2524TRP	FTP-5					
SF12-DRA085M-8	●	8.50	8.99		131	86	72.0			DA0850M-... ~ DA0890M-...							
SF12-DRA090M-8	●	9.00	9.49		135	90	76.0			DA0900M-... ~ DA0940M-...							
SF12-DRA095M-8	●	9.50	9.99		140	95	80.0			DA0950M-... ~ DA0990M-...							
SF16-DRA100M-8	●	10.00	10.49	16	147	99	84.0	48	20	DA1000M-... ~ DA1040M-...	HS-2534TRP	FTP-5					
SF16-DRA105M-8	●	10.50	10.99		152	104	88.0			DA1050M-... ~ DA1090M-...							
SF16-DRA110M-8	●	11.00	11.49		157	109	92.0			DA1100M-... ~ DA1140M-...							
SF16-DRA115M-8	●	11.50	11.99		162	114	96.0			DA1150M-... ~ DA1190M-...							
SF16-DRA120M-8	●	12.00	12.49		166	118	100.0			DA1200M-... ~ DA1240M-...							
SF16-DRA125M-8	●	12.50	12.99		171	123	104.0			DA1250M-... ~ DA1290M-...							
SF16-DRA130M-8	●	13.00	13.49		175	127	108.0			DA1300M-... ~ DA1340M-...							
SF16-DRA135M-8	●	13.50	13.99		180	132	112.0			DA1350M-... ~ DA1390M-...							
SF16-DRA140M-8	●	14.00	14.49		184	136	116.0			DA1400M-... ~ DA1440M-...							
SF16-DRA145M-8	●	14.50	14.99		189	141	120.0			DA1450M-... ~ DA1490M-...							
SF20-DRA150M-8	●	15.00	15.99		20	201	151			128.0			50	25	DA1500M-... ~ DA1590M-...	HS-3048TRP	DTP-6
SF20-DRA160M-8	●	16.00	16.99			211	161			136.0					DA1600M-... ~ DA1690M-...		
SF20-DRA170M-8	●	17.00	17.99	220		170	144.0	DA1700M-... ~ DA1790M-...									
SF25-DRA180M-8	●	18.00	18.99	236		180	152.0	DA1800M-... ~ DA1890M-...									
SF25-DRA190M-8	●	19.00	19.99	25	245	189	160.0	56	32	DA1900M-... ~ DA1990M-...	HS-4067TRP	DTP-7					
SF25-DRA200M-8	●	20.00	20.99		254	198	168.0			DA2000M-... ~ DA2090M-...							
SF25-DRA210M-8	●	21.00	21.99		263	207	176.0			DA2100M-... ~ DA2150M-...							
SF25-DRA220M-8	●	22.00	22.99		273	217	184.0			DA2200M-... ~ DA2250M-...							
SF25-DRA230M-8	●	23.00	23.99		282	226	192.0			DA2300M-... ~ DA2350M-...							
SF25-DRA240M-8	●	24.00	24.99		291	235	200.0			DA2400M-... ~ DA2450M-...							
SF25-DRA250M-8	●	25.00	25.50		300	244	208.0			DA2500M-... ~ DA2550M-...							

*DC min. & max. show the cutting diameter range of inserts that will fit into the toolholder. See applicable insert tables on page 6-8 for actual cutting diameters (DC).

● : Standard Item

Flange Shank

NEW



For PL dimension, reference insert dimension table.

Toolholder Dimensions **12D**

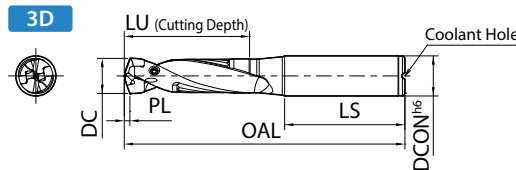
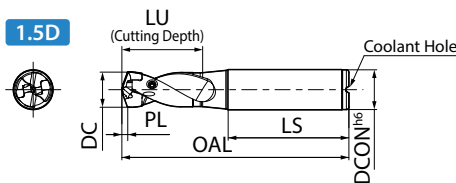
Part Number	Stock	DC*		DCON (h6)	Dimensions (mm)					Applicable Insert See Page 6-8	Spare Parts	
		min.	max.		OAL	LFS	LU	LS	DCSFMS		Clamp Screw	Wrench
SF16-DRA120M-12	●	12	12.49	16	216	168	150	48	20	DA1200M-... ~ DA1240M-...	HS-2534TRP	FTP-5
SF16-DRA125M-12	●	12.5	12.99		223	175	156			DA1250M-... ~ DA1290M-...		
SF16-DRA130M-12	●	13	13.49		229	181	162			DA1300M-... ~ DA1340M-...		
SF16-DRA135M-12	●	13.5	13.99		236	188	168			DA1350M-... ~ DA1390M-...		
SF16-DRA140M-12	●	14	14.49		242	194	174			DA1400M-... ~ DA1440M-...		
SF16-DRA145M-12	●	14.5	14.99		249	201	180			DA1450M-... ~ DA1490M-...		
SF20-DRA150M-12	●	15	15.99	20	265	215	192	50	25	DA1500M-... ~ DA1590M-...	HS-3048TRP	DTP-6
SF20-DRA160M-12	●	16	16.99		279	229	204			DA1600M-... ~ DA1690M-...		
SF20-DRA170M-12	●	17	17.99		292	242	216			DA1700M-... ~ DA1790M-...		
SF25-DRA180M-12	●	18	18.99	25	312	256	228	56	32	DA1800M-... ~ DA1890M-...	HS-4067TRP	DTP-7
SF25-DRA190M-12	●	19	19.99		325	269	240			DA1900M-... ~ DA1990M-...		
SF25-DRA200M-12	●	20	20.99		338	282	252			DA2000M-... ~ DA2090M-...		
SF25-DRA210M-12	●	21	21.99		351	295	264			DA2100M-... ~ DA2150M-...		
SF25-DRA220M-12	●	22	22.99		365	309	276			DA2200M-... ~ DA2250M-...		
SF25-DRA230M-12	●	23	23.99		378	322	288			DA2300M-... ~ DA2350M-...		
SF25-DRA240M-12	●	24	24.99		391	335	300			DA2400M-... ~ DA2450M-...		
SF25-DRA250M-12	●	25	25.5		404	348	312			DA2500M-... ~ DA2550M-...		

*DC min. & max. show the cutting diameter range of inserts that will fit into the toolholder. See applicable insert tables on page 6-8 for actual cutting diameters (DC).

● : Standard Item

DRA Toolholders - Metric Sizes (Straight Shank)

Straight Shank



For PL dimension, reference insert dimension table.

Toolholder Dimensions 1.5D

Part Number	Stock	Dimensions (mm)					Applicable Insert See Page 6-8	Spare Parts		
		DC*		DCON (h6)	OAL	LU		LS	Clamp Screw	Wrench
		min.	max.							
SS10-DRA080M-1.5	●	7.94	8.49	10	66.2	12.8	DA0794M-...~DA0840M-... DA0850M-...~DA0890M-... DA0900M-...~DA0940M-... DA0950M-...~DA0990M-...	HS-2524TRP		
SS10-DRA085M-1.5	●	8.50	8.99		67.5	13.5				
SS10-DRA090M-1.5	●	9.00	9.49		68.7	14.3				
SS10-DRA095M-1.5	●	9.50	9.99		70.0	15.0				
SS12-DRA100M-1.5	●	10.00	10.49	12	76.2	15.8	DA1000M-...~DA1040M-... DA1050M-...~DA1090M-... DA1100M-...~DA1140M-... DA1150M-...~DA1190M-...	HS-2534TRP	FTP-5	
SS12-DRA105M-1.5	●	10.50	10.99		77.5	16.5				
SS12-DRA110M-1.5	●	11.00	11.49		79.7	17.3				
SS12-DRA115M-1.5	●	11.50	11.99		81.0	18.0				
SS14-DRA120M-1.5	●	12.00	12.49	14	82.2	18.8	DA1200M-...~DA1240M-... DA1250M-...~DA1290M-... DA1300M-...~DA1340M-... DA1350M-...~DA1390M-...	HS-2534TRP		
SS14-DRA125M-1.5	●	12.50	12.99		83.5	19.5				
SS14-DRA130M-1.5	●	13.00	13.49		84.7	20.3				
SS14-DRA135M-1.5	●	13.50	13.99		86.0	21.0				
SS16-DRA140M-1.5	●	14.00	14.49	16	90.2	21.8	DA1400M-...~DA1440M-... DA1450M-...~DA1490M-... DA1500M-...~DA1590M-... DA1600M-...~DA1690M-...	HS-3048TRP	DTP-6	
SS16-DRA145M-1.5	●	14.50	14.99		91.5	22.5				
SS16-DRA150M-1.5	●	15.00	15.99		95.0	24.0				
SS18-DRA160M-1.5	●	16.00	16.99		98.5	25.5				
SS18-DRA170M-1.5	●	17.00	17.99	18	101.0	27.0	DA1700M-...~DA1790M-... DA1800M-...~DA1890M-... DA1900M-...~DA1990M-... DA2000M-...~DA2090M-...	HS-3048TRP		
SS20-DRA180M-1.5	●	18.00	18.99		106.5	28.5				
SS20-DRA190M-1.5	●	19.00	19.99		109.0	30.0				
SS25-DRA200M-1.5	●	20.00	20.99		117.5	31.5				
SS25-DRA210M-1.5	●	21.00	21.99	20	120.0	33.0	DA2100M-...~DA2150M-... DA2200M-...~DA2250M-... DA2300M-...~DA2350M-... DA2400M-...~DA2450M-...	HS-4067TRP	DTP-7	
SS25-DRA220M-1.5	●	22.00	22.99		123.5	34.5				
SS25-DRA230M-1.5	●	23.00	23.99		126.0	36.0				
SS25-DRA240M-1.5	●	24.00	24.99		128.5	37.5				
SS32-DRA250M-1.5	●	25.00	25.50	32	135.0	39.0	DA2500M-...~DA2550M-...			

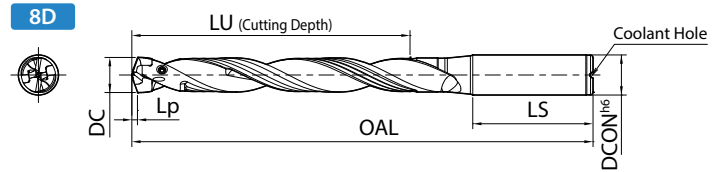
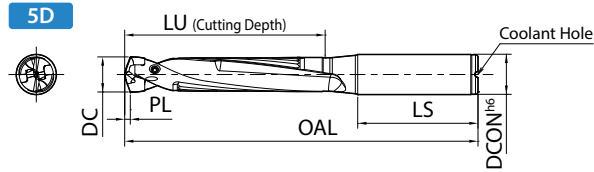
Toolholder Dimensions 3D

Part Number	Stock	Dimensions (mm)					Applicable Insert See Page 6-8	Spare Parts		
		DC*		DCON (h6)	OAL	LU		LS	Clamp Screw	Wrench
		min.	max.							
SS10-DRA080M-3	●	7.94	8.49	10	79	25.5	DA0794M-... ~ DA0840M-... DA0850M-... ~ DA0890M-... DA0900M-... ~ DA0940M-... DA0950M-... ~ DA0990M-...	HS-2524TRP		
SS10-DRA085M-3	●	8.50	8.99		81	27.0				
SS10-DRA090M-3	●	9.00	9.49		83	28.5				
SS10-DRA095M-3	●	9.50	9.99		85	30.0				
SS12-DRA100M-3	●	10.00	10.49	12	92	31.5	DA1000M-... ~ DA1040M-... DA1050M-... ~ DA1090M-... DA1100M-... ~ DA1140M-... DA1150M-... ~ DA1190M-...	HS-2534TRP	FTP-5	
SS12-DRA105M-3	●	10.50	10.99		94	33.0				
SS12-DRA110M-3	●	11.00	11.49		97	34.5				
SS12-DRA115M-3	●	11.50	11.99		99	36.0				
SS14-DRA120M-3	●	12.00	12.49	14	101	37.5	DA1200M-... ~ DA1240M-... DA1250M-... ~ DA1290M-... DA1300M-... ~ DA1340M-... DA1350M-... ~ DA1390M-...	HS-2534TRP		
SS14-DRA125M-3	●	12.50	12.99		103	39.0				
SS14-DRA130M-3	●	13.00	13.49		105	40.5				
SS14-DRA135M-3	●	13.50	13.99		107	42.0				
SS16-DRA140M-3	●	14.00	14.49	16	112	43.5	DA1400M-... ~ DA1440M-... DA1450M-... ~ DA1490M-... DA1500M-... ~ DA1590M-... DA1600M-... ~ DA1690M-...	HS-3048TRP	DTP-6	
SS16-DRA145M-3	●	14.50	14.99		114	45.0				
SS16-DRA150M-3	●	15.00	15.99		119	48.0				
SS18-DRA160M-3	●	16.00	16.99		124	51.0				
SS18-DRA170M-3	●	17.00	17.99	18	128	54.0	DA1700M-... ~ DA1790M-... DA1800M-... ~ DA1890M-... DA1900M-... ~ DA1990M-... DA2000M-... ~ DA2090M-...	HS-3048TRP		
SS20-DRA180M-3	●	18.00	18.99		135	57.0				
SS20-DRA190M-3	●	19.00	19.99		139	60.0				
SS25-DRA200M-3	●	20.00	20.99		149	63.0				
SS25-DRA210M-3	●	21.00	21.99	20	153	66.0	DA2100M-... ~ DA2150M-... DA2200M-... ~ DA2250M-... DA2300M-... ~ DA2350M-... DA2400M-... ~ DA2450M-...	HS-4067TRP	DTP-7	
SS25-DRA220M-3	●	22.00	22.99		158	69.0				
SS25-DRA230M-3	●	23.00	23.99		162	72.0				
SS25-DRA240M-3	●	24.00	24.99		166	75.0				
SS32-DRA250M-3	●	25.00	25.50	32	174	78.0	DA2500M-... ~ DA2550M-...			

*DC min. & max. show the cutting diameter range of inserts that will fit into the toolholder. See applicable insert tables on page 6-8 for actual cutting diameters (DC).

● : Standard Item

Straight Shank



For PL dimension, reference insert dimension table.

Toolholder Dimensions 5D

Part Number	Stock	Dimensions (mm)					Applicable Insert See Page 6-8	Spare Parts		
		DC*		DCON (h6)	OAL	LU		LS	Clamp Screw	Wrench
		min.	max.							
SS10-DRA080M-5	●	7.94	8.49	10	96	42.5	40	DA0794M-... ~ DA0840M-... DA0850M-... ~ DA0890M-... DA0900M-... ~ DA0940M-... DA0950M-... ~ DA0990M-...	HS-2524TRP	
SS10-DRA085M-5	●	8.50	8.99		99	45.0				
SS10-DRA090M-5	●	9.00	9.49		102	47.5				
SS10-DRA095M-5	●	9.50	9.99		105	50.0				
SS12-DRA100M-5	●	10.00	10.49	12	113	52.5	45	DA1000M-... ~ DA1040M-... DA1050M-... ~ DA1090M-... DA1100M-... ~ DA1140M-... DA1150M-... ~ DA1190M-...	HS-2534TRP	FTP-5
SS12-DRA105M-5	●	10.50	10.99		116	55.0				
SS12-DRA110M-5	●	11.00	11.49		120	57.5				
SS12-DRA115M-5	●	11.50	11.99		123	60.0				
SS14-DRA120M-5	●	12.00	12.49	14	126	62.5	50	DA1200M-... ~ DA1240M-... DA1250M-... ~ DA1290M-... DA1300M-... ~ DA1340M-... DA1350M-... ~ DA1390M-...	HS-3048TRP	DTP-6
SS14-DRA125M-5	●	12.50	12.99		129	65.0				
SS14-DRA130M-5	●	13.00	13.49		132	67.5				
SS14-DRA135M-5	●	13.50	13.99		135	70.0				
SS16-DRA140M-5	●	14.00	14.49	16	141	72.5	56	DA1400M-... ~ DA1440M-... DA1450M-... ~ DA1490M-... DA1500M-... ~ DA1590M-... DA1600M-... ~ DA1690M-...	HS-4067TRP	DTP-7
SS16-DRA145M-5	●	14.50	14.99		144	75.0				
SS16-DRA150M-5	●	15.00	15.99		151	80.0				
SS18-DRA160M-5	●	16.00	16.99		158	85.0				
SS18-DRA170M-5	●	17.00	17.99	18	164	90.0	60	DA1700M-... ~ DA1790M-... DA1800M-... ~ DA1890M-... DA1900M-... ~ DA1990M-... DA2000M-... ~ DA2090M-...	HS-3048TRP	DTP-6
SS20-DRA180M-5	●	18.00	18.99		173	95.0				
SS20-DRA190M-5	●	19.00	19.99		179	100.0				
SS25-DRA200M-5	●	20.00	20.99		191	105.0				
SS25-DRA210M-5	●	21.00	21.99	25	197	110.0	56	DA2100M-... ~ DA2150M-... DA2200M-... ~ DA2250M-... DA2300M-... ~ DA2350M-... DA2400M-... ~ DA2450M-...	HS-4067TRP	DTP-7
SS25-DRA220M-5	●	22.00	22.99		204	115.0				
SS25-DRA230M-5	●	23.00	23.99		210	120.0				
SS25-DRA240M-5	●	24.00	24.99		216	125.0				
SS32-DRA250M-5	●	25.00	25.50	32	226	130.0	60	DA2500M-... ~ DA2550M-...		

Toolholder Dimensions 8D

Part Number	Stock	Dimensions (mm)					Applicable Insert See Page 6-8	Spare Parts		
		DC*		DCON (h6)	OAL	LU		LS	Clamp Screw	Wrench
		min.	max.							
SS10-DRA080M-8	●	7.94	8.49	10	121	68.0	40	DA0794M-... ~ DA0840M-... DA0850M-... ~ DA0890M-... DA0900M-... ~ DA0940M-... DA0950M-... ~ DA0990M-...	HS-2524TRP	
SS10-DRA085M-8	●	8.50	8.99		126	72.0				
SS10-DRA090M-8	●	9.00	9.49		130	76.0				
SS10-DRA095M-8	●	9.50	9.99		135	80.0				
SS12-DRA100M-8	●	10.00	10.49	12	144	84.0	45	DA1000M-... ~ DA1040M-... DA1050M-... ~ DA1090M-... DA1100M-... ~ DA1140M-... DA1150M-... ~ DA1190M-...	HS-2534TRP	FTP-5
SS12-DRA105M-8	●	10.50	10.99		149	88.0				
SS12-DRA110M-8	●	11.00	11.49		154	92.0				
SS12-DRA115M-8	●	11.50	11.99		159	96.0				
SS14-DRA120M-8	●	12.00	12.49	14	163	100.0	50	DA1200M-... ~ DA1240M-... DA1250M-... ~ DA1290M-... DA1300M-... ~ DA1340M-... DA1350M-... ~ DA1390M-...	HS-3048TRP	DTP-6
SS14-DRA125M-8	●	12.50	12.99		168	104.0				
SS14-DRA130M-8	●	13.00	13.49		172	108.0				
SS14-DRA135M-8	●	13.50	13.99		177	112.0				
SS16-DRA140M-8	●	14.00	14.49	16	184	116.0	56	DA1400M-... ~ DA1440M-... DA1450M-... ~ DA1490M-... DA1500M-... ~ DA1590M-... DA1600M-... ~ DA1690M-...	HS-3048TRP	DTP-6
SS16-DRA145M-8	●	14.50	14.99		189	120.0				
SS16-DRA150M-8	●	15.00	15.99		199	128.0				
SS18-DRA160M-8	●	16.00	16.99		209	136.0				
SS18-DRA170M-8	●	17.00	17.99	18	218	144.0	60	DA1700M-... ~ DA1790M-... DA1800M-... ~ DA1890M-... DA1900M-... ~ DA1990M-... DA2000M-... ~ DA2090M-...	HS-4067TRP	DTP-7
SS20-DRA180M-8	●	18.00	18.99		230	152.0				
SS20-DRA190M-8	●	19.00	19.99		239	160.0				
SS25-DRA200M-8	●	20.00	20.99		254	168.0				
SS25-DRA210M-8	●	21.00	21.99	25	263	176.0	56	DA2100M-... ~ DA2150M-... DA2200M-... ~ DA2250M-... DA2300M-... ~ DA2350M-... DA2400M-... ~ DA2450M-...	HS-4067TRP	DTP-7
SS25-DRA220M-8	●	22.00	22.99		273	184.0				
SS25-DRA230M-8	●	23.00	23.99		282	192.0				
SS25-DRA240M-8	●	24.00	24.99		291	200.0				
SS32-DRA250M-8	●	25.00	25.50	32	304	208.0	60	DA2500M-... ~ DA2550M-...		

*DC min. & max. show the cutting diameter range of inserts that will fit into the toolholder. See applicable insert tables on page 6-8 for actual cutting diameters (DC).

● : Standard Item

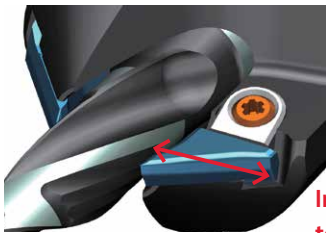


DRA Chamfering Attachment

New straight shank DRA chamfering attachment
Excellent chip control in a wide range of drilling depths

1 Excellent Stability and Chip Evacuation

Easy-to-adjust chamfering insert slides in radial direction with a clamp structure that provides good chip evacuation



Inserts slide in the radial direction to adjust with drilling diameter

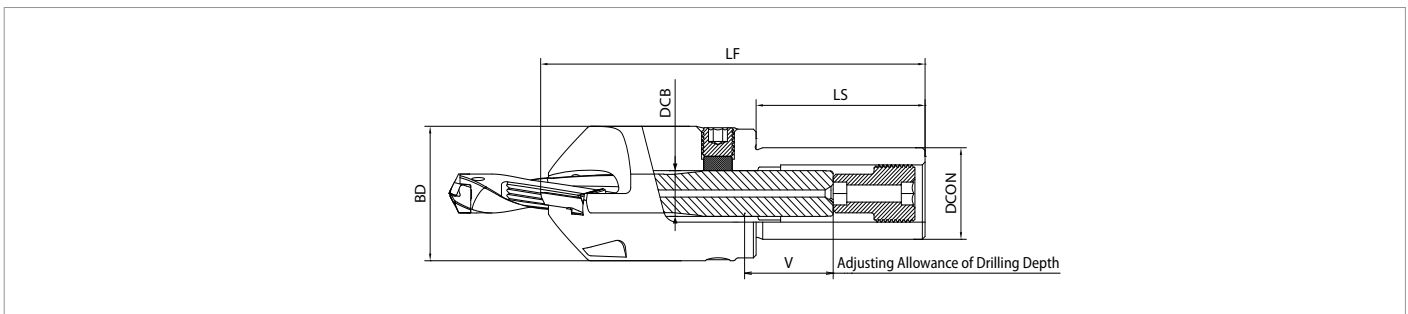
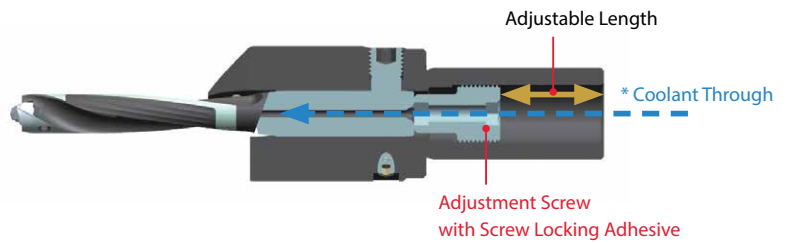
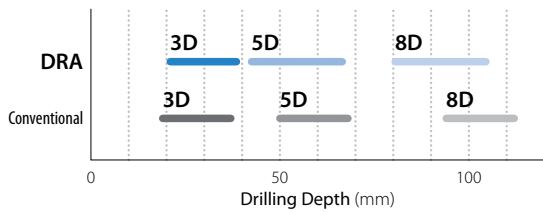
Large chip pockets along drill flutes



Smooth chip evacuation with large pocket design

2 Fully Adjustable for a Wide Range of Drilling Depths

Range of adjustable depths for a $\phi 14$ mm drilling diameter



Chamfer Attachment






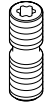
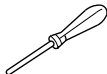
Part Number	Stock	Applicable Drill Shank Dia. DCB	Dimensions (mm)					Applicable Insert
			DCON	BD	LF	LS	V (Max)	
S20-CH10-DRA	●	10	20	39	110	52	18	CT12T3-45DA
S32-CH12-DRA	●	12	32	43	130	62	24	
S32-CH14-DRA	●	14	32	45	130	62	24	
S32-CH16-DRA	●	16	32	47	141	62	24	
S32-CH18-DRA	●	18	32	49	145	62	24	
S32-CH20-DRA	●	20	32	53	150	62	24.5	

Applicable Insert

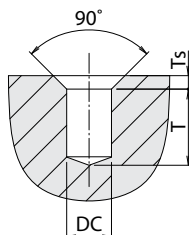
Shape	Description	MEGACOAT NANO		Dimensions (mm)	
		PR1535		W1	S
	CT12T3-45DA	●		13.54	3.97

● : Standard Item

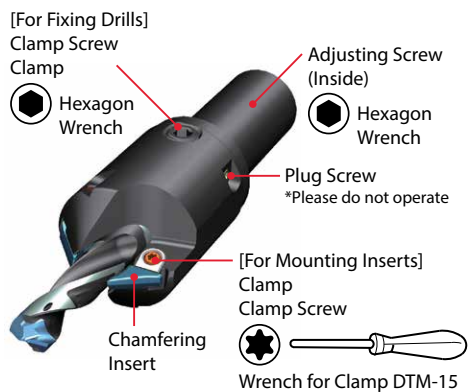
Chamfering Attachment Parts

Chamfering Attachment	Adjusting Screw		For Fixing Drills				For Mounting Inserts			
			Clamp	Clamp Screw		Plug Screw	Clamp	Clamp Screw	Wrench	
Part Number		Width Across Flat (mm)			Width Across Flat (mm)	Torque [N·m]				
S20-CH10-DRA	AJ-12X22	6	CP-CH10	HS8X8	4	12	BNP6	C09N	W6X18N	DTM-15
S32-CH12-DRA	AJ-16X30		CP-CH12			15				
S32-CH14-DRA	AJ-20X30	8	CP-CH14	HS10X10	5	20				
S32-CH16-DRA		CP-CH16	HS12X10	6	30					
S32-CH18-DRA	AJ-22x35	10	CP-CH18	HS16X10	8	30				
S32-CH20-DRA			CP-CH20			45				

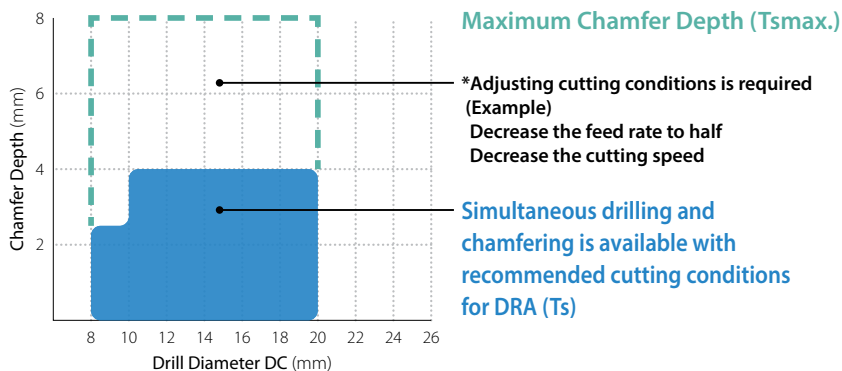
Drilling & Chamfer Depths



Cutting Dia. (mm) DC		Drilling Depth (mm)						Chamfering Dimension (mm)		Applicable Toolholder
		T (3XD)		T (5XD)		T (8XD)		Ts	Tsmax.	
min.	max.	min.	max.	min.	max.	min.	max.			
7.94	8.49	12.5	20	18	36	43	60	2.5	8	S20-CH10-DRA
8.50	8.99	12.5	21.5	21.5	38.5	48	64			
9.00	9.49	12.5	23	24	41	52	68			
9.50	9.99	12.5	24.5	27.5	43.5	57.5	72.5	4	8	S32-CH12-DRA
10.00	10.49	15.5	26	22	46	52	76			
10.50	10.99	16	27.5	24.5	48.5	56	80			
11.00	11.49	16.5	29	27	51	60	84	4	8	S32-CH14-DRA
11.50	11.99	17.5	30.5	29.5	53.5	64	88			
12.00	12.49	18	32	32	56	68	92			
12.50	12.99	19	34	35	59	72.5	96.5	4	8	S32-CH16-DRA
13.00	13.49	19.5	35.5	37.5	61.5	76	100			
13.50	13.99	20	36.5	39.5	63.5	80	104			
14.00	14.49	21	38.5	42.5	66.5	84.5	108.5	4	8	S32-CH18-DRA
14.50	14.99	21.5	40	45	69	88.5	112.5			
15.00	15.99	22.5	41.5	47.5	71.5	92.5	116.5			
16.00	16.99	24	44.5	52.5	76.5	100.5	124.5	4	8	S32-CH20-DRA
17.00	17.99	25.5	47.5	57.5	81.5	108.5	132.5			
18.00	18.99	27.5	51	64	87	121	141			
19.00	19.99	29.5	54	69	92	129	149	4	8	



Recommended Cutting Conditions (1049)



Installing Chamfer Attachment

1 Mount DRA drill into the chamfering attachment (Fig.1)



DRA (SS Type) + Install the DRA body into the attachment (Fig.1)

Fig.1 Install the DRA

2 Install an insert and tighten temporarily with clearance between the cutting edge and DRA body (Fig.2)

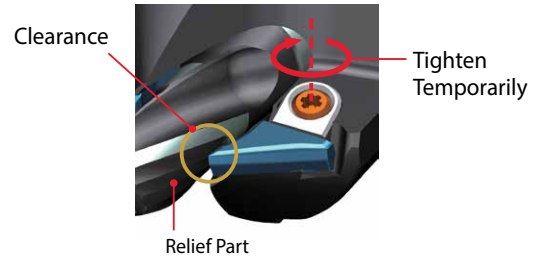


Fig.2 Install Inserts

3 Adjust drilling depth by turning adjustment screw with hexagon wrench (Fig.3)

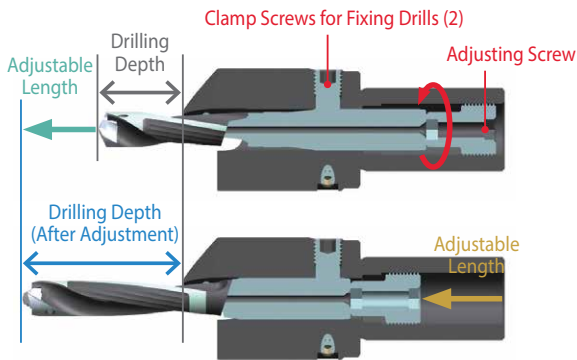


Fig.3 Adjustment of Drilling Depth

4 Align the flute edge and black relief part of the drill to the position shown by rotating the DRA drill (Fig.4)

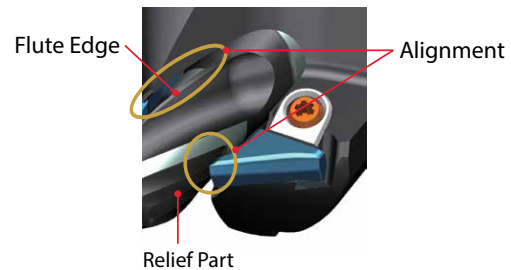


Fig.4 DRA Alignment

5 Fasten the two clamp screws for DRA (See table 1. for recommended torque)

Table1. Recommended Torque

Chamfering Attachment Part Number	Clamp Screw	
	Recommended Torque (N·m)	Width Across Flat (mm)
S20-CH10-DRA	12	4
S32-CH12-DRA	15	4
S32-CH14-DRA	20	5
S32-CH16-DRA	30	6
S32-CH18-DRA	30	6
S32-CH20-DRA	45	8

6 Tighten the inserts while lightly pressing the edge of insert against the relief part (Fig.5) (Recommended torque is 3.5Nm)

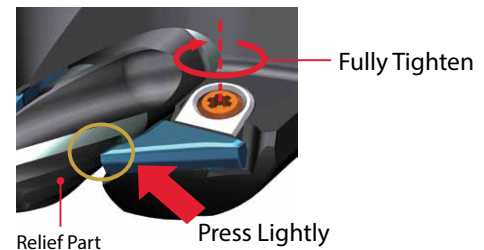


Fig.5 Fully Tighten

Cautions

- Chamfering attachment is compatible with straight shank SS-DRA. It cannot be used for flanged shank SF-DRA.
- Chamfering requires two chamfering inserts. Using one insert is not recommended.
- Only fully remove clamp screws when replacing them.

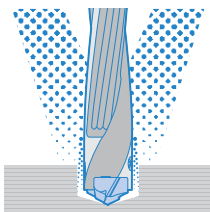
- Clamps and clamp screws for mounting inserts need to be replaced regularly.
- Screw locking adhesive is applied to adjustment screw. The effect will eventually wear off if the screws are used for a long time. Regular replacement is recommended.
- Please do not operate the plug screws.

Coolant

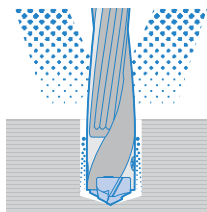
1st Recommendation

Internal + External Coolant

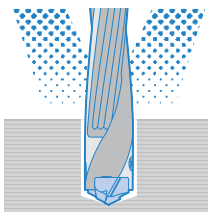
Drilling Depth is Less than 1D



Stainless Steel or High-feed Machining



External Coolant

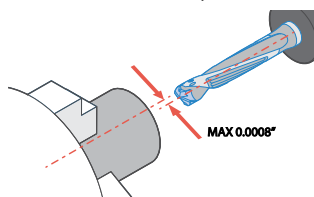


※ Dry cutting is not recommended.

Lathe Application:
Max. Drill Depth 3D
Vertical M/C Application:
Max. Drill Depth 1.5D

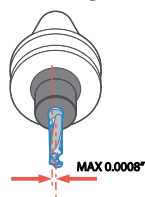
Core Deviation / Alignment Cautions

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

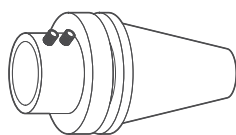
Power-chuck

Collet-chuck

Install DRA Into These Chucks

2nd Recommendation

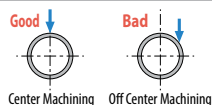
Side-lock Arbor



Example of Side Lock Arbor

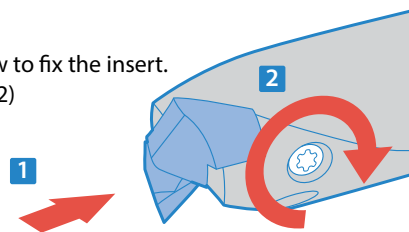
Applicable Workpieces for GM and KM Inserts

Application	Workpiece Shape	Machining Caution
Plain Surface		<ol style="list-style-type: none"> When machining stainless steel, for hole depths of up to 0.5D, keep feed rate at less than 0.006 ipr. 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"> Fix stacked plates securely to ensure they do not slip while machining.
Concave Surface		<ol style="list-style-type: none"> When machining concave holes, set the feed rate at less than half of recommended feed for continuous hole machining. Utilize a pecking cycle if chips are not broken short at the inlet.
Tubing		<ol style="list-style-type: none"> Hole machining on the centerline of the tubing is possible. Do not machine on curved surface areas.



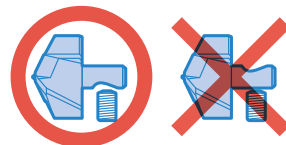
How to Attach Inserts

- 1 Install insert onto the toolholder in the right direction.
- 2 Tighten clamp screw to fix the insert. (Torque: see page 22)



- ※ 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



Other Cautions

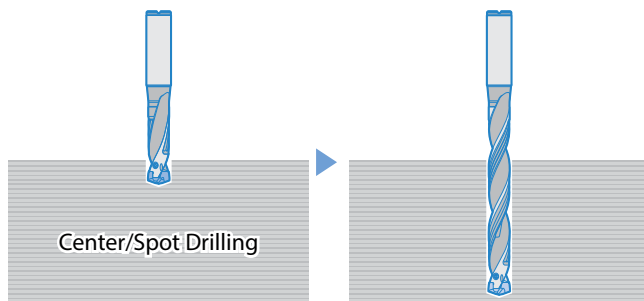
Cautions for Machining with 8D and 12D Holder

Recommended Machining

- 1 Make a center spot using DRA 1.5D/3D/5D (Center spot should be at least half of cutting diameter)
- 2 Then drill the hole using DRA (8D/12D type).

1 DRA1.5D/3D/5D

2 DRA 8D/12D



Not Recommended Workpieces for GM and KM Inserts

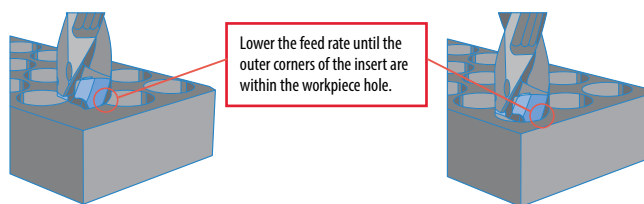
Application	Hole Expansion	Angled Surface	Half Cylindrical	Existing Hole
Workpiece Shape				

For FTP Insert Applicable Workpieces see **P8**

Using KM Inserts


When Drilling Cast Iron with KM Inserts

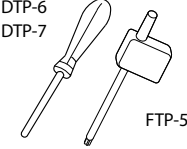
Reduce the feed to 0.006 ipr until the outer corners of the insert are within the workpiece hole



Recommended Cutting Conditions (1049)

Spare Parts

Clamp Screw	Part Number
	HS-2524TRP
	HS-2534TRP
	HS-3048TRP
	HS-4067TRP

Wrench	Part Number	Torque
	FTP-5	0.5 Nm (4.4 in/lb)
	DTP-6	0.8 Nm (7.1 in/lb)
	DTP-7	1.2 Nm (10.6 in/lb)

GM Insert - Recommended Cutting Conditions ★1st Recommendation ☆2nd Recommendation

Workpiece Material	Recommended Grade / Cutting Speed (sfm)		Cutting Dia. DC (in)	Cutting Dia. DC (mm)	Holder Type (Cutting Depth) Feed Rate (ipr)					Notes
	PR1535	PR1525			1.5D	3D	5D	8D	12D	
Low Carbon Steel	★ 330-590	☆ 330-590	0.313 - 0.429	7.94 - 10.90	0.0047 - 0.0094	0.0038 - 0.0076	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 - 0.0113	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 - 0.0076	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 - 0.0113	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 - 0.0076	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 - 0.0113	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 - 0.0069	0.0022 - 0.0061			
			0.551 - 0.705	14.00 - 17.90	0.0043 - 0.0098	0.0035 - 0.0079	0.0030 - 0.0069			
			0.709 - 0.846	18.00 - 21.50	0.0043 - 0.0110	0.0035 - 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 - 0.0076	0.0028 - 0.0066			
			0.433 - 0.547	11.00 - 13.90	0.0039 - 0.0094	0.0031 - 0.0076	0.0028 - 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 - 0.0096			
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	0.0052 - 0.0119			
			0.709 - 0.846	18.00 - 21.50	0.0075 - 0.0177	0.0060 - 0.0142	0.0052 - 0.0124			
			0.866 - 0.965	22.00 - 24.50	0.0094 - 0.0177	0.0076 - 0.0142	0.0066 - 0.0124			
			0.984 - 1.004	25.00 - 25.50	0.0094 - 0.0177	0.0076 - 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 - 0.0076	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 - 0.0113	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			

Coolant
See
P21

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

As drilling depth increases (1.5D → 3D → 5D → 8D), feed rates should be reduced.
Recommended Feed Rate: 1.5D/3D = 100%, 5D/8D ≤ 80%, 12D ≤ 70%
Recommended Cutting Speed: 8D ≤ 80%, 12D ≤ 70%

KM Insert - Recommended Cutting Conditions ★1st Recommendation

Workpiece Material	Cutting Speed (sfm) PR1525	Cutting Dia. DC (in)	Cutting Dia. DC (mm)	Holder Type (Cutting Depth) Feed Rate (ipr)					Notes
				1.5D	3D	5D	8D	12D	
Gray Cast Iron	★ 300-560	0.313 - 0.429	7.94 - 10.90	0.0067 - 0.0138	0.0054 - 0.0110	0.0047 - 0.0096			Coolant See P21
		0.433 - 0.547	11.00 - 13.90	0.0075 - 0.0165	0.0060 - 0.0132	0.0052 - 0.0116			
		0.551 - 0.705	14.00 - 17.90	0.0091 - 0.0209	0.0072 - 0.0167	0.0063 - 0.0146			
		0.709 - 0.846	18.00 - 21.50	0.0098 - 0.0236	0.0079 - 0.0189	0.0069 - 0.0165			
		0.866 - 0.965	22.00 - 24.50	0.0126 - 0.0236	0.0101 - 0.0189	0.0088 - 0.0165			
Nodular Cast Iron	★ 130-390	0.313 - 0.429	7.94 - 10.90	0.0047 - 0.0094	0.0038 - 0.0076	0.0033 - 0.0066			
		0.433 - 0.547	11.00 - 13.90	0.0067 - 0.0142	0.0054 - 0.0113	0.0047 - 0.0099			
		0.551 - 0.705	14.00 - 17.90	0.0083 - 0.0189	0.0066 - 0.0151	0.0058 - 0.0132			
		0.709 - 0.846	18.00 - 21.50	0.0094 - 0.0236	0.0076 - 0.0189	0.0066 - 0.0165			
		0.866 - 0.965	22.00 - 24.50	0.0106 - 0.0236	0.0085 - 0.0189	0.0074 - 0.0165			

As drilling depth increases (1.5D → 3D → 5D → 8D), feed rates should be reduced.
Recommended Feed Rate: 1.5D/3D = 100%, 5D/8D ≤ 80%, 12D ≤ 70%
Recommended Cutting Speed: 8D ≤ 80%, 12D ≤ 70%

FTP Insert - Recommended Cutting Conditions ★1st Recommendation ☆2nd Recommendation

Workpiece Material	Recommended Grade / Cutting Speed (sfm)		Cutting Dia. DC (in)	Cutting Dia. DC (mm)	Holder Type (Cutting Depth) Feed Rate (ipr)					Notes
	PR1535	PR1525			1.5D	3D	5D	8D	12D	
Low Carbon Steel	★ 330-590	☆ 330-590	0.313 - 0.429	7.94 - 10.90	0.0047 - 0.0094	0.0038 - 0.0076	0.0033 - 0.0066			Coolant See P21
			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 - 0.0113	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			
Carbon Steel	★ 330-490	☆ 330-490	0.313 - 0.429	7.94 - 10.90	0.0047 - 0.0094	0.0038 - 0.0076	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 - 0.0113	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			
Alloy Steel	★ 230-390	☆ 230-390	0.313 - 0.429	7.94 - 10.90	0.0047 - 0.0094	0.0038 - 0.0076	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 - 0.0113	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			
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 - 0.0069	0.0022 - 0.0061			
			0.551 - 0.705	14.00 - 17.90	0.0043 - 0.0098	0.0035 - 0.0079	0.0030 - 0.0069			
			0.709 - 0.846	18.00 - 21.50	0.0043 - 0.0110	0.0035 - 0.0088	0.0030 - 0.0077			
			0.866 - 0.965	22.00 - 24.50	0.0055 - 0.0118	0.0044 - 0.0094	0.0039 - 0.0083			
Stainless Steel ※	★ 130-230	☆ 130-230	0.313 - 0.429	7.94 - 10.90	0.0039 - 0.0079	0.0031 - 0.0063	0.0028 - 0.0055			
			0.433 - 0.547	11.00 - 13.90	0.0039 - 0.0079	0.0031 - 0.0063	0.0028 - 0.0055			
			0.551 - 0.705	14.00 - 17.90	0.0039 - 0.0094	0.0031 - 0.0076	0.0028 - 0.0066			
			0.709 - 0.846	18.00 - 21.50	0.0059 - 0.0094	0.0047 - 0.0076	0.0041 - 0.0066			
			0.866 - 0.965	22.00 - 24.50	0.0059 - 0.0094	0.0047 - 0.0076	0.0041 - 0.0066			
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	0.0052 - 0.0119			
			0.709 - 0.846	18.00 - 21.50	0.0075 - 0.0177	0.0060 - 0.0142	0.0052 - 0.0124			
			0.866 - 0.965	22.00 - 24.50	0.0094 - 0.0177	0.0076 - 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 - 0.0076	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 - 0.0113	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			

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

As drilling depth increases (1.5D → 3D → 5D → 8D), feed rates should be reduced.
Recommended Feed Rate: 1.5D/3D = 100%, 5D/8D ≤ 80%, 12D ≤ 70%
Recommended Cutting Speed: 8D ≤ 80%, 12D ≤ 70%

Notes: The recommended cutting conditions are for drilling on plain surfaces.

The conditions for drilling on slant hole shows the depth from the top of workpiece.

Set the feed rate under 50% when inclination angle is under 30°.

Set the feed rate under 30% when inclination angle is over 30°.

Traversing is not recommended.

Applicable to 1.5D, 3D, 5D, 8D, and 12D holders. Prepared hole (0.5 xDC) is needed when using 8D/12D holder.

Explore Kyocera's Broad Range of Drilling Solutions



Drill Diameter Range		Drill Diameter Range												
		Legend: ■ Solid Drills ■ Indexable Drills												
		1.5D	2D	3D	4D	5D	6D	7D	8D	10D	12D	15D		
ORION (Inch)	0.047"~0.500"													
ORION (Metric)	1.00mm~12.00mm			●		●								
HYDROS (Inch)	0.125"~0.500"													
HYDROS (Metric)	1.00mm~12.00mm													
2ZDK (Metric)	1.00mm~20.00mm													
DRA (Inch)	0.313"~1.004"													
DRA (Metric)	7.94mm~25.50mm			●		●		●		●		●		●
DRV (Inch)	0.500"~1.500"													
DRV (Metric)	12.00mm~39.00mm			●		●		●		●		●		●
		FUTURE EXPANSION												
HOLESHOT (Inch)	0.515"~4.000"													
HOLESHOT (Metric)	14.00mm~63.00mm													



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