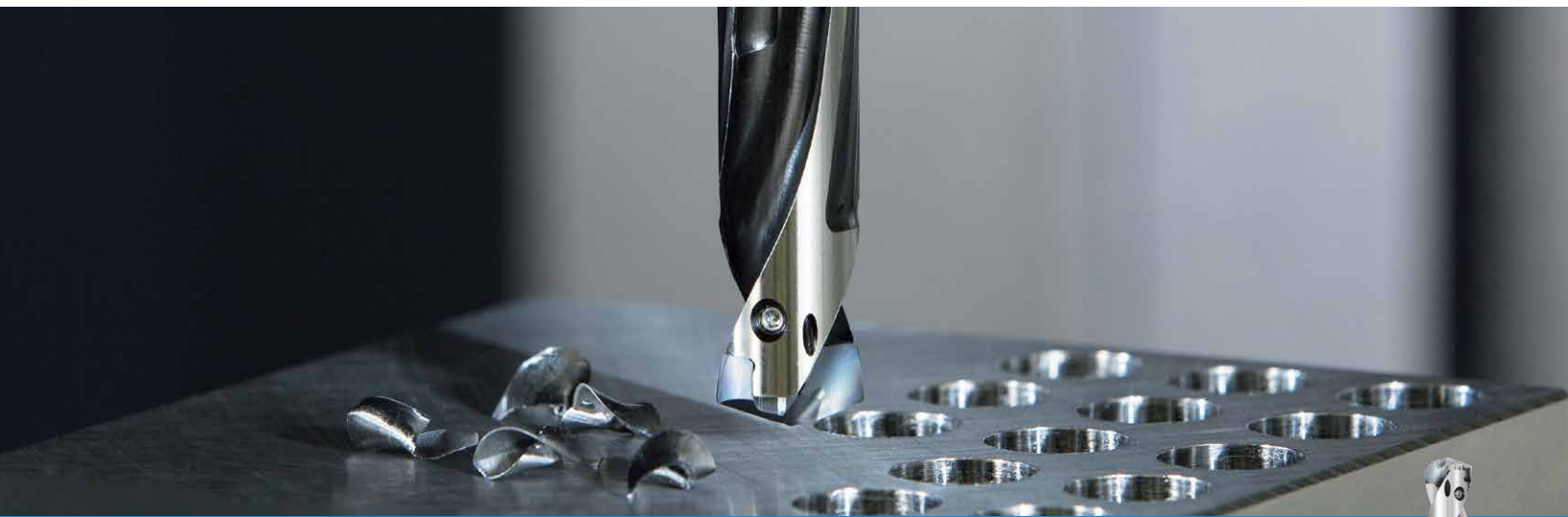




DRA Magic Drill

High Efficiency Replaceable Tip Drill



Excellent Hole Accuracy with a Low Cutting Force Design

Optimal Web Thickness Limits Deflection

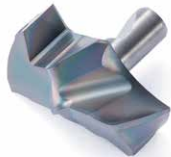
Fine Chip Breaking and Smooth Deep Hole Cutting

Easy Insert Replacement



FTP-H

Specialized inserts for
steel beam drilling



DRA Magic Drill

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



4 different insert designs offer a variety of machining applications

General Purpose

For Steel/Stainless Steel Machining
1st Recommendation

GM

For a wide range of drilling applications
Special chisel edge reduces thrust force and controls vibration
Excellent hole accuracy

Drilling Diameter
Ø0.313" ~ Ø1.299"
Ø7.94mm ~ Ø33mm

PR1535

PR1525



Double Margin Type

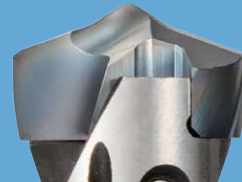
High-Precision Insert for
Steel Machining

HQP

Special two-step bottom and double margin
Reduces shock for higher-precision machining
of steel

Drilling Diameter
Ø0.313" ~ Ø0.783"
Ø7.94mm ~ Ø19.90mm

PR1525



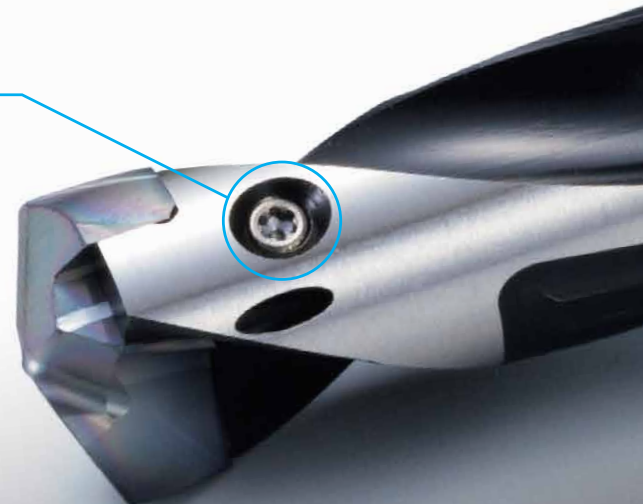
Extensive lineup of toolholders for shallow to deep hole drilling

Drilling Depth	1.5D	3D	5D	8D	12D
SS-DRA Straight shank	Ø0.313" ~ Ø1.004" Ø7.94mm ~ Ø25.5mm				
SF-DRA Flanged shank	Ø0.313" ~ Ø1.004" Ø7.94 ~ Ø25.5mm	Ø0.313" ~ Ø1.299" Ø7.94mm ~ Ø33mm			Ø0.472" ~ Ø1.004" Ø12.0 ~ Ø25.5mm

Easy Insert Replacement

➡ **P4**

Insert can be replaced without removing screw



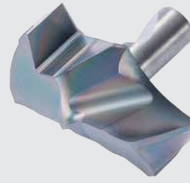
NEW

Steel Beam Drilling

For Steel
Beam Drilling

Reinforced chamfer edge for higher rigidity insert

FTP-H



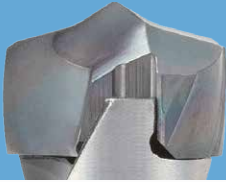
Drilling Diameter
Ø0.551" ~ Ø1.024"
Ø14.00mm ~ Ø26.00mm

PR1535

For Difficult-to-cut Materials /
Stainless Steel Machining

HQS

Special two-step bottom and double margin
Improving stability of difficult-to-cut materials and
stainless steel during machining operations



Drilling Diameter
Ø0.315" ~ Ø0.768"
Ø8.00mm ~ Ø19.50mm

PR1535

For Counterboring

FTP

Improved hole accuracy with pilot point geometry and
double margin specs



Drilling Diameter
Ø0.315" ~ Ø1.000"
Ø8.00mm ~ Ø25.40mm

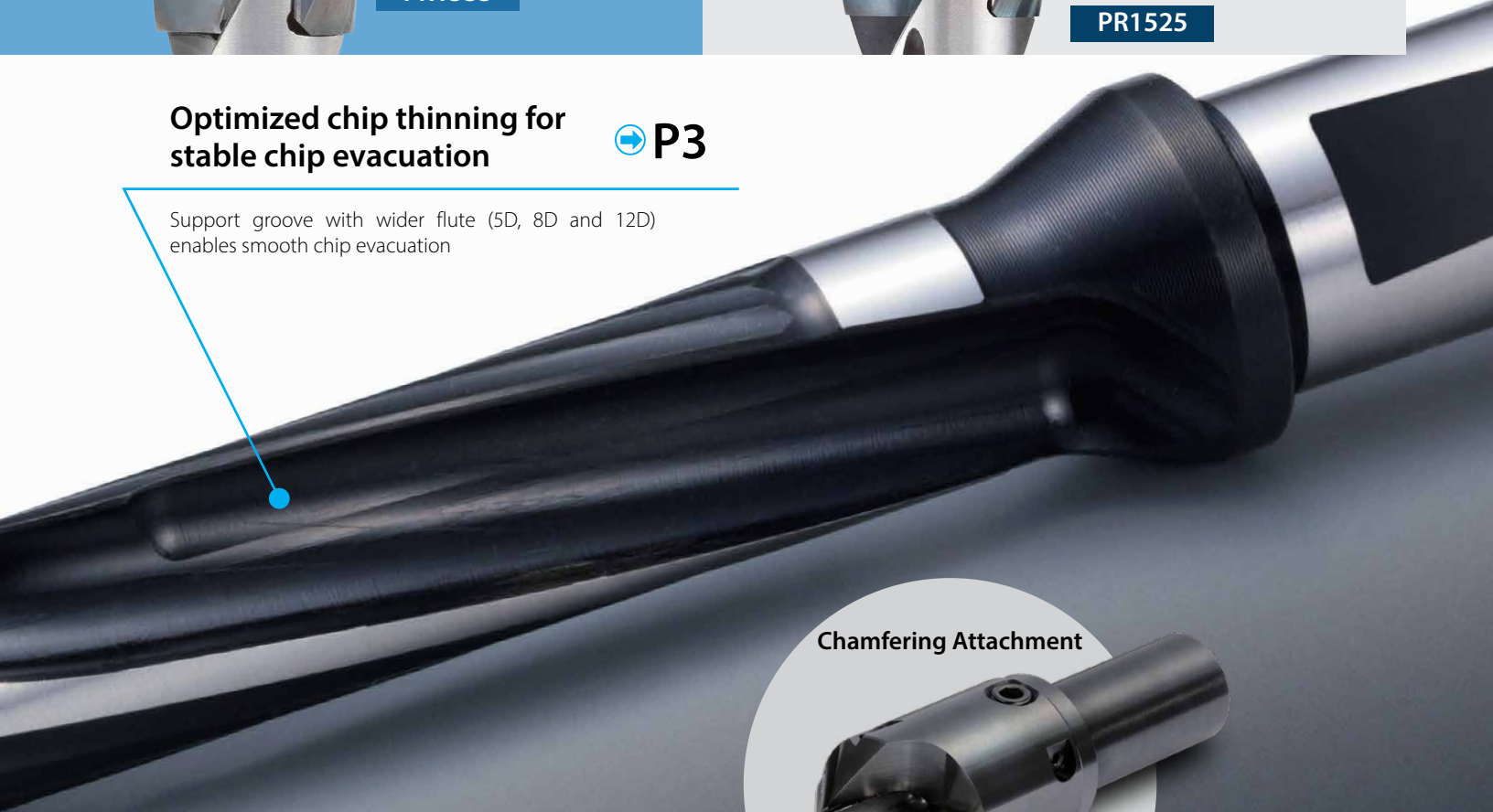
PR1535

PR1525

Optimized chip thinning for
stable chip evacuation

➡ P3

Support groove with wider flute (5D, 8D and 12D)
enables smooth chip evacuation



Chamfering Attachment

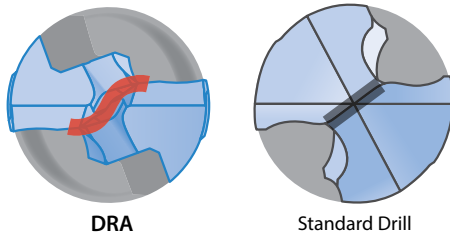


For SS Type

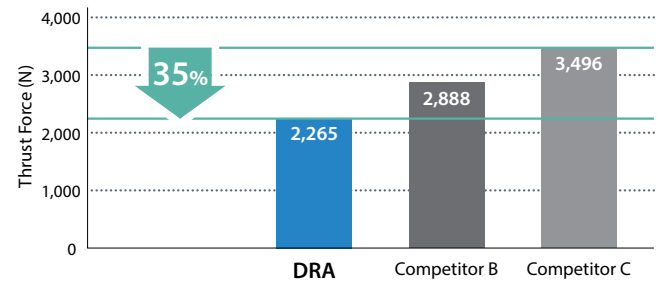
1 Low Cutting Force Design Improves Hole Accuracy

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

Cutting Edge Image



Cutting Force Comparison
(Internal Evaluation)

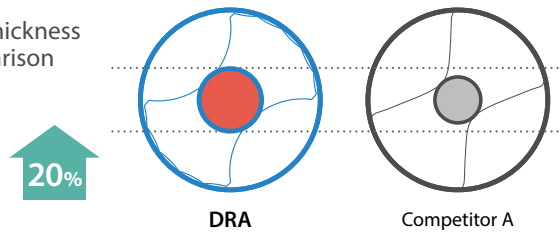


Cutting Conditions : $V_c = 390$ sfm, $f = 0.010$ ipr,
Drilling Diameter $\varnothing 0.551$ ", Drilling Depth 1.772", Wet, Workpiece : 1049 Steel

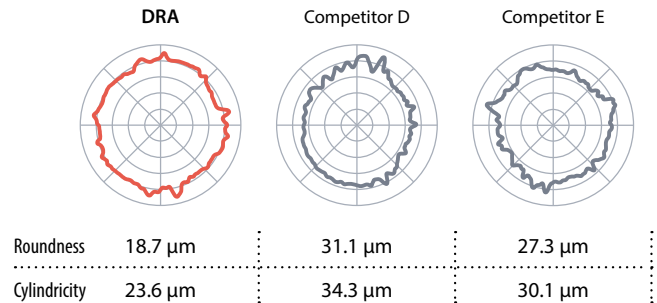
2 Optimal Web Thickness Limits Deflection

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

Web Thickness Comparison



Roundness · Cylindricity Comparison
(Internal Evaluation)



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

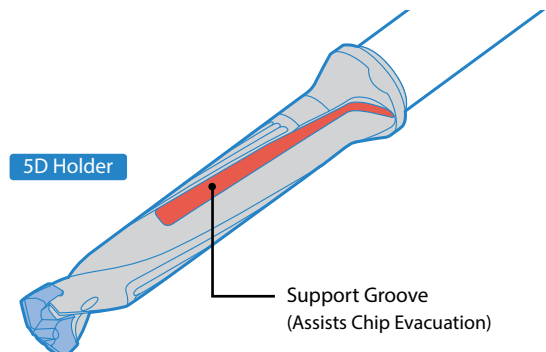
3 Fine Chip Breaking Even in Deep Hole Drilling Applications

Optimized chip thinning for stable chip evacuation
Support groove with wider flute (5D, 8D, and 12D) enables smooth chip evacuation

Chip Comparison
(Internal Evaluation)



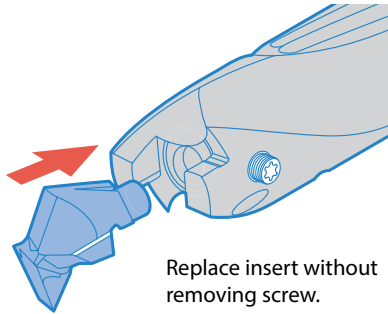
Cutting Conditions : $V_c = 200$ sfm, $f = 0.008$ ipr, Drilling Diameter $\varnothing 0.551$ "
Drilling Depth 2.756", Wet Workpiece : 304 Stainless Steel



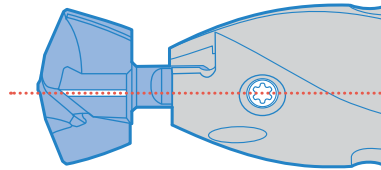
4

Easy Insert Replacement

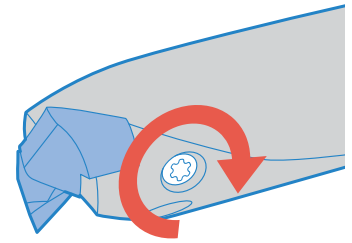
Replace insert without removing screw



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

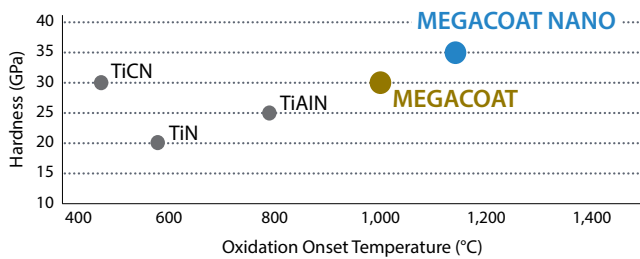
Long Tool Life and Stable Machining of Various Workpieces

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

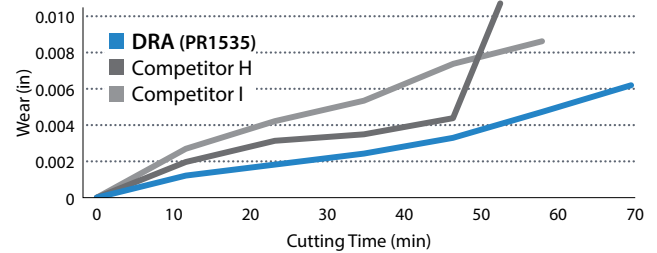
1st Recommendation

Steel	Cast Iron
PR1535	PR1525

Coating Properties



Wear Resistance Comparison
(Internal Evaluation)

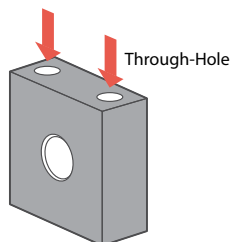


Cutting Conditions : $V_c = 330$ sfm, $f = 0.010$ ipr,
Cutting Diameter $\varnothing 0.551$ ", Cutting Depth 1.772", Wet
Workpiece : 4140H

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

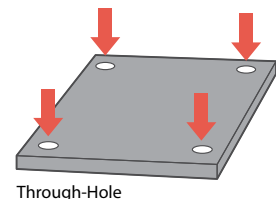
65 sec

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

Tool Life
X5

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)

HQP Insert

Double Margin
for High-Precision
Steel Machining



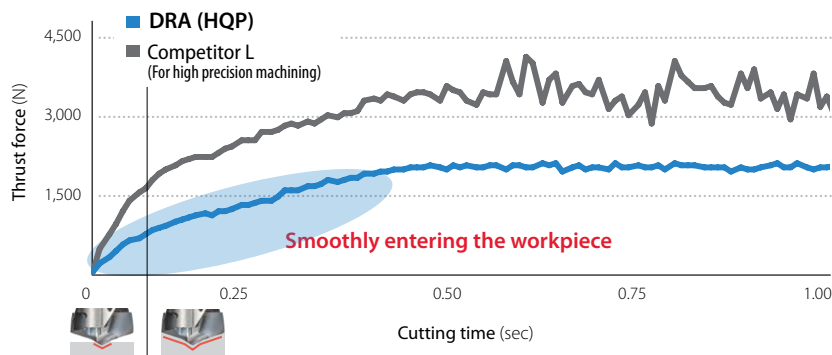
Improved Centripetal Forces with Special Two-step Bottom
Excellent Cylindricity, Roundness and Surface Finish in Steel Machining

1

Improved centripetal forces delivers high-precision machining
Capabilities for both machining centers and lathes

Special two-step bottom, large rake angle and double margin
design reduce initial shock for higher precision machining

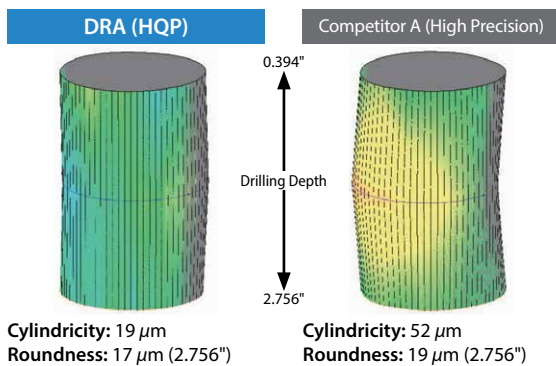
Cutting Force Comparison when Entering Workpiece (Internal Evaluation)



Cutting Conditions: $V_c = 330$ sfm, $f = 0.010$ ipr, $H = 1.181$ ", Wet Workpiece: 1049 Ø0.630" (3D)

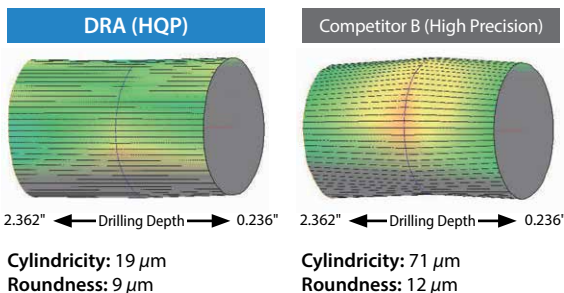
Cylindricity and Roundness Comparison (Internal Evaluation)

Machining Center (BT50)



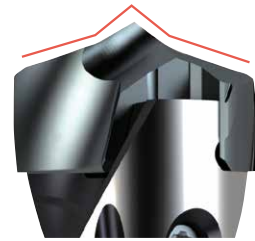
Cutting Conditions: $V_c = 330$ sfm, $f = 0.010$ ipr, $H = 3.150$ ", Wet Workpiece: 1049 Ø0.630" (5D)

Lathes

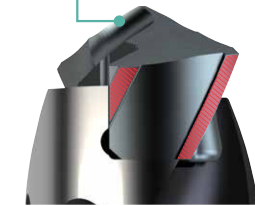


Cutting Conditions: $V_c = 390$ sfm, $f = 0.012$ ipr, $H = 2.559$ ", Wet Workpiece: 4137 Ø0.512" (5D)

Special Two-step Bottom



Large Rake Angle

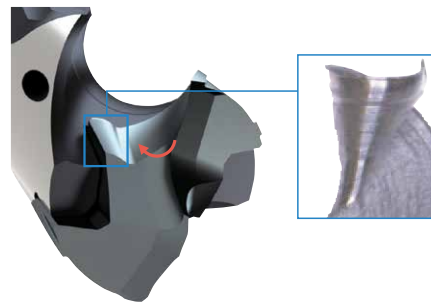


Double Margin

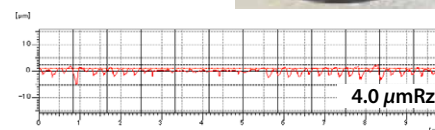
2

Excellent Surface Finish
with Unique Flute Shape

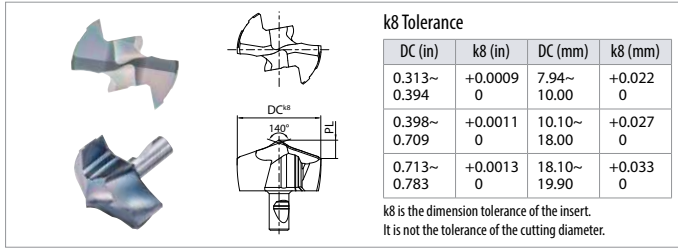
Controlled chips reduce scratches on the hole wall



Hole Wall Surface
Finish Comparison
(Internal Evaluation)



Cutting Conditions: $V_c = 330$ sfm, $f = 0.010$ ipr, $H = 3.150$ ", Wet Workpiece: 1049 Ø0.630" (5D)



Inserts

PR1525 (Steel)

Part Number	Dimensions		PL (in)	Grade PR1525	Applicable Toolholder
	in	mm			
DA 0794M-HQP	0.313	7.94	0.075	●	SS0375-DRA080M-○ SF0500-DRA080M-○ (SS10-DRA080M-○) (SF12-DRA080M-○)
0800M-HQP	0.315	8.00	0.075	●	
0810M-HQP	0.319	8.10	0.076	●	
0820M-HQP	0.323	8.20	0.076	●	
0830M-HQP	0.327	8.30	0.077	●	
0840M-HQP	0.331	8.40	0.078	●	
DA 0850M-HQP	0.335	8.50	0.078	●	SS0375-DRA085M-○ SF0500-DRA085M-○ (SS10-DRA085M-○) (SF12-DRA085M-○)
0860M-HQP	0.339	8.60	0.079	●	
0870M-HQP	0.343	8.70	0.080	●	
0880M-HQP	0.346	8.80	0.081	●	
0890M-HQP	0.350	8.90	0.081	●	
DA 0900M-HQP	0.354	9.00	0.086	●	SS0375-DRA090M-○ SF0500-DRA090M-○ (SS10-DRA090M-○) (SF12-DRA090M-○)
0910M-HQP	0.358	9.10	0.087	●	
0920M-HQP	0.362	9.20	0.087	●	
0930M-HQP	0.366	9.30	0.088	●	
0940M-HQP	0.370	9.40	0.089	●	
DA 0950M-HQP	0.374	9.50	0.089	●	SS0500-DRA095M-○ SF0500-DRA095M-○ (SS10-DRA095M-○) (SF12-DRA095M-○)
0960M-HQP	0.378	9.60	0.090	●	
0970M-HQP	0.382	9.70	0.091	●	
0980M-HQP	0.386	9.80	0.091	●	
0990M-HQP	0.390	9.90	0.092	●	
DA 1000M-HQP	0.394	10.00	0.093	●	SS0500-DRA100M-○ SF0625-DRA100M-○ (SS12-DRA100M-○) (SF16-DRA100M-○)
1010M-HQP	0.398	10.10	0.093	●	
1020M-HQP	0.402	10.20	0.094	●	
1030M-HQP	0.406	10.30	0.094	●	
1040M-HQP	0.409	10.40	0.095	●	
DA 1050M-HQP	0.413	10.50	0.096	●	SS0500-DRA105M-○ SF0625-DRA105M-○ (SS12-DRA105M-○) (SF16-DRA105M-○)
1060M-HQP	0.417	10.60	0.096	●	
1070M-HQP	0.421	10.70	0.097	●	
1080M-HQP	0.425	10.80	0.097	●	
1090M-HQP	0.429	10.90	0.098	●	
DA 1100M-HQP	0.433	11.00	0.104	●	SS0500-DRA110M-○ SF0625-DRA110M-○ (SS12-DRA110M-○) (SF16-DRA110M-○)
1110M-HQP	0.437	11.10	0.105	●	
1120M-HQP	0.441	11.20	0.106	●	
1130M-HQP	0.445	11.30	0.106	●	
1140M-HQP	0.449	11.40	0.107	●	
DA 1150M-HQP	0.453	11.50	0.107	●	SS0500-DRA115M-○ SF0625-DRA115M-○ (SS12-DRA115M-○) (SF16-DRA115M-○)
1160M-HQP	0.457	11.60	0.108	●	
1170M-HQP	0.461	11.70	0.109	●	
1180M-HQP	0.465	11.80	0.109	●	
1190M-HQP	0.469	11.90	0.110	●	
DA 1200M-HQP	0.472	12.00	0.110	●	SS0625-DRA120M-○ SF0625-DRA120M-○ (SS14-DRA120M-○) (SF16-DRA120M-○)
1210M-HQP	0.476	12.10	0.111	●	
1220M-HQP	0.480	12.20	0.111	●	
1230M-HQP	0.484	12.30	0.112	●	
1240M-HQP	0.488	12.40	0.113	●	
DA 1250M-HQP	0.492	12.50	0.113	●	SS0625-DRA125M-○ SF0625-DRA125M-○ (SS14-DRA125M-○) (SF16-DRA125M-○)
1260M-HQP	0.496	12.60	0.114	●	
1270M-HQP	0.500	12.70	0.115	●	
1280M-HQP	0.504	12.80	0.115	●	
1290M-HQP	0.508	12.90	0.116	●	
DA 1300M-HQP	0.512	13.00	0.117	●	SS0625-DRA130M-○ SF0625-DRA130M-○ (SS14-DRA130M-○) (SF16-DRA130M-○)
1310M-HQP	0.516	13.10	0.118	●	
1320M-HQP	0.520	13.20	0.119	●	
1330M-HQP	0.524	13.30	0.119	●	
1340M-HQP	0.528	13.40	0.120	●	

Applicable Toolholders in () are metric

Part Number	Dimensions		PL (in)	Grade PR1525	Applicable Toolholder
	in	mm			
DA 1350M-HQP	0.531	13.50	0.120	●	SS0625-DRA135M-○ SF0625-DRA135M-○ (SS14-DRA135M-○) (SF16-DRA135M-○)
1360M-HQP	0.535	13.60	0.121	●	
1370M-HQP	0.539	13.70	0.122	●	
1380M-HQP	0.543	13.80	0.122	●	
1390M-HQP	0.547	13.90	0.123	●	
DA 1400M-HQP	0.551	14.00	0.122	●	SS0625-DRA140M-○ SF0625-DRA140M-○ (SS16-DRA140M-○) (SF16-DRA140M-○)
1410M-HQP	0.555	14.10	0.123	●	
1420M-HQP	0.559	14.20	0.124	●	
1430M-HQP	0.563	14.30	0.124	●	
1440M-HQP	0.567	14.40	0.125	●	
DA 1450M-HQP	0.571	14.50	0.126	●	SS0625-DRA145M-○ SF0625-DRA145M-○ (SS16-DRA145M-○) (SF16-DRA145M-○)
1460M-HQP	0.575	14.60	0.126	●	
1470M-HQP	0.579	14.70	0.127	●	
1480M-HQP	0.583	14.80	0.128	●	
1490M-HQP	0.587	14.90	0.128	●	
DA 1500M-HQP	0.591	15.00	0.131	●	SS0625-DRA150M-○ SF0750-DRA150M-○ (SS16-DRA150M-○) (SF20-DRA150M-○)
1510M-HQP	0.594	15.10	0.132	●	
1520M-HQP	0.598	15.20	0.132	●	
1530M-HQP	0.602	15.30	0.133	●	
1540M-HQP	0.606	15.40	0.133	●	
1550M-HQP	0.610	15.50	0.134	●	
1560M-HQP	0.614	15.60	0.135	●	SS0750-DRA160M-○ SF0750-DRA160M-○ (SS18-DRA160M-○) (SF20-DRA160M-○)
1570M-HQP	0.618	15.70	0.135	●	
1580M-HQP	0.622	15.80	0.136	●	
1590M-HQP	0.626	15.90	0.137	●	
DA 1600M-HQP	0.630	16.00	0.140	●	
1610M-HQP	0.634	16.10	0.141	●	SS0750-DRA170M-○ SF0750-DRA170M-○ (SS18-DRA170M-○) (SF20-DRA170M-○)
1620M-HQP	0.638	16.20	0.141	●	
1630M-HQP	0.642	16.30	0.142	●	
1640M-HQP	0.646	16.40	0.143	●	
1650M-HQP	0.650	16.50	0.143	●	
1660M-HQP	0.654	16.60	0.144	●	SS0750-DRA180M-○ SF0750-DRA180M-○ (SS20-DRA180M-○) (SF25-DRA180M-○)
1670M-HQP	0.657	16.70	0.144	●	
1680M-HQP	0.661	16.80	0.145	●	
1690M-HQP	0.665	16.90	0.145	●	
DA 1700M-HQP	0.669	17.00	0.147	●	
1710M-HQP	0.673	17.10	0.148	●	SS1000-DRA190M-○ SF0750-DRA190M-○ (SS20-DRA190M-○) (SF25-DRA190M-○)
1720M-HQP	0.677	17.20	0.148	●	
1730M-HQP	0.681	17.30	0.149	●	
1740M-HQP	0.685	17.40	0.150	●	
1750M-HQP	0.689	17.50	0.150	●	
1760M-HQP	0.693	17.60	0.151	●	SS1000-DRA190M-○ SF0750-DRA190M-○ (SS20-DRA190M-○) (SF25-DRA190M-○)
1770M-HQP	0.697	17.70	0.151	●	
1780M-HQP	0.701	17.80	0.152	●	
1790M-HQP	0.705	17.90	0.153	●	
DA 1800M-HQP	0.709	18.00	0.156	●	
1810M-HQP	0.713	18.10	0.157	●	SS1000-DRA190M-○ SF0750-DRA190M-○ (SS20-DRA190M-○) (SF25-DRA190M-○)
1820M-HQP	0.717	18.20	0.157	●	
1830M-HQP	0.720	18.30	0.158	●	
1840M-HQP	0.724	18.40	0.159	●	
1850M-HQP	0.728	18.50	0.159	●	
1860M-HQP	0.732	18.60	0.160	●	SS1000-DRA190M-○ SF0750-DRA190M-○ (SS20-DRA190M-○) (SF25-DRA190M-○)
1870M-HQP	0.736	18.70	0.161	●	
1880M-HQP	0.740	18.80	0.161	●	
1890M-HQP	0.744	18.90	0.162	●	
DA 1900M-HQP	0.748	19.00	0.165	●	
1910M-HQP	0.752	19.10	0.166	●	SS1000-DRA190M-○ SF0750-DRA190M-○ (SS20-DRA190M-○) (SF25-DRA190M-○)
1920M-HQP	0.756	19.20	0.167	●	
1930M-HQP	0.760	19.30	0.167	●	
1940M-HQP	0.764	19.40	0.168	●	
1950M-HQP	0.768	19.50	0.169	●	
1960M-HQP	0.772	19.60	0.169	●	SS1000-DRA190M-○ SF0750-DRA190M-○ (SS20-DRA190M-○) (SF25-DRA190M-○)
1970M-HQP	0.776	19.70	0.170	●	
1980M-HQP	0.780	19.80	0.170	●	
1990M-HQP	0.783	19.90	0.171	●	

● : Standard Item

Inserts Sold in 1 Piece Boxes

HQS Insert

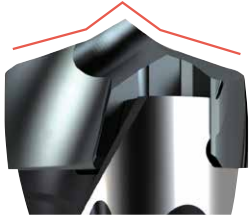
Double Margin
for Difficult-to-Cut Materials
and Stainless Steel Machining



Unique design for machining difficult-to-cut materials such as Inconel
High quality and stable machining provide long tool life

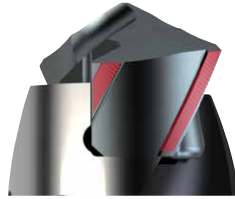
1 Three features specializing in machining difficult-to-cut materials

Special Two-step Tip Edge



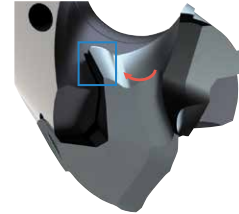
- Suppresses sudden fractures from occurring when entering the workpiece
- Improvement of cutting edge strength

Double Margin



- Optimized for difficult-to-cut materials
- Improvement of heat resistance

Unique Flute Shape

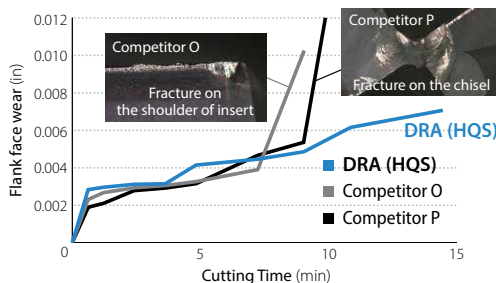


- Superior chip control
- Prevents damage to hole walls
- Excellent finished surface

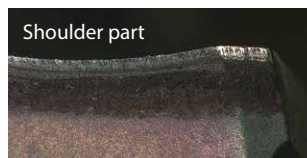
2 Long tool life and high-quality machining of Inconel and stainless steel

Inconel

Wear Resistance Comparison (Internal evaluation)



DRA (HQS)



Normal wear condition



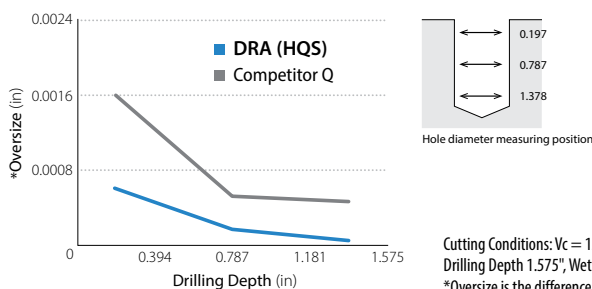
Good without fracture

Cutting Conditions: $V_c = 70$ sfm, $f = 0.006$ ipr, Drilling Diameter $\varnothing 14.5$ mm (0.571") (3xD)
Drilling Depth 1.575", Wet (internal/external), Workpiece: Inconel 718, BT50 M/C

The shoulder part and chisel part of competitor were fractured and the tool life was shortened.
HQS maintains long tool life.

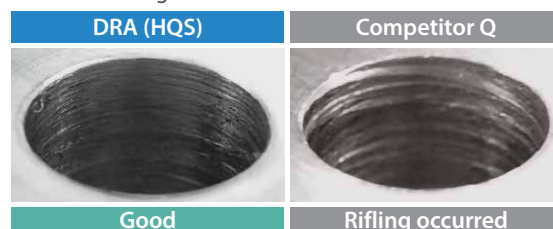
Stainless Steel

Hole Diameter Accuracy Comparison (Internal evaluation)



Cutting Conditions: $V_c = 130$ sfm, $f = 0.004$ ipr, Drilling Diameter $\varnothing 10.8$ mm (0.425") (5xD)
Drilling Depth 1.575", Wet (internal/external), Workpiece: 304, BT50 M/C
*Oversize is the difference between the actual hole diameter and the drill diameter

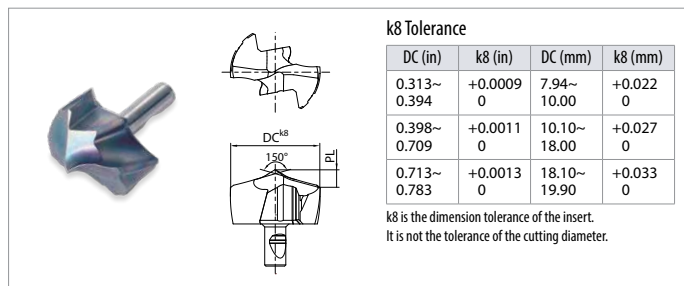
After machining



Good

Rifling occurred

HQS has excellent centripetal properties with special two-step bottom and double margin and provides superior hole diameter accuracy



Inserts

PR1525 (Steel)

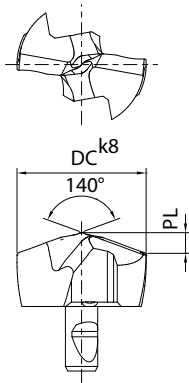
Part Number	Dimensions			Grade	Applicable Toolholder
	DC		PL (in)	PR1535	
	in	mm			
DA 0800M-HQS	0.315	8.00	0.069	●	SS0375-DRA080M-○ SF0500-DRA080M-○ (SS10-DRA080M-○) (SF12-DRA080M-○)
0820M-HQS	0.323	8.20	0.070	●	
DA 0850M-HQS	0.335	8.50	0.072	●	SS0375-DRA085M-○ SF0500-DRA085M-○ (SS10-DRA085M-○) (SF12-DRA085M-○)
0870M-HQS	0.343	8.70	0.073	●	
0880M-HQS	0.346	8.80	0.073	●	
DA 0900M-HQS	0.354	9.00	0.078	●	SS0375-DRA090M-○ SF0500-DRA090M-○ (SS10-DRA090M-○) (SF12-DRA090M-○)
0930M-HQS	0.366	9.30	0.079	●	
0940M-HQS	0.370	9.40	0.080	●	
DA 0950M-HQS	0.374	9.50	0.080	●	SS0500-DRA095M-○ SF0500-DRA095M-○ (SS10-DRA095M-○) (SF12-DRA095M-○)
0970M-HQS	0.382	9.70	0.081	●	
0980M-HQS	0.386	9.80	0.081	●	
DA 1000M-HQS	0.394	10.00	0.085	●	SS0500-DRA100M-○ SF0625-DRA100M-○ (SS12-DRA100M-○) (SF16-DRA100M-○)
1030M-HQS	0.406	10.30	0.087	●	
1040M-HQS	0.409	10.40	0.087	●	
DA 1050M-HQS	0.413	10.50	0.088	●	SS0500-DRA105M-○ SF0625-DRA105M-○ (SS12-DRA105M-○) (SF16-DRA105M-○)
1080M-HQS	0.425	10.80	0.089	●	
DA 1100M-HQS	0.433	11.00	0.094	●	SS0500-DRA110M-○ SF0625-DRA110M-○ (SS12-DRA110M-○) (SF16-DRA110M-○)
DA 1150M-HQS	0.453	11.50	0.096	●	SS0500-DRA115M-○ SF0625-DRA115M-○ (SS12-DRA115M-○) (SF16-DRA115M-○)
DA 1200M-HQS	0.472	12.00	0.098	●	SS0625-DRA120M-○ SF0625-DRA120M-○ (SS14-DRA120M-○) (SF16-DRA120M-○)
DA 1250M-HQS	0.492	12.50	0.101	●	SS0625-DRA125M-○ SF0625-DRA125M-○ (SS14-DRA125M-○) (SF16-DRA125M-○)
1260M-HQS	0.496	12.60	0.102	●	
DA 1300M-HQS	0.512	13.00	0.106	●	SS0625-DRA130M-○ SF0625-DRA130M-○ (SS14-DRA130M-○) (SF16-DRA130M-○)
DA 1350M-HQS	0.531	13.50	0.108	●	SS0625-DRA135M-○ SF0625-DRA135M-○ (SS14-DRA135M-○) (SF16-DRA135M-○)
1390M-HQS	0.547	13.90	0.109	●	

Applicable Toolholders in () are metric

Part Number	Dimensions			Grade	Applicable Toolholder
	DC		PL (in)	PR1535	
	in	mm			
DA 1400M-HQS	0.551	14.00	0.110	●	SS0625-DRA140M-○ SF0625-DRA140M-○ (SS16-DRA140M-○) (SF16-DRA140M-○)
1420M-HQS	0.559	14.20	0.111	●	
DA 1450M-HQS	0.571	14.50	0.112	●	SS0625-DRA145M-○ SF0625-DRA145M-○ (SS16-DRA145M-○) (SF16-DRA145M-○)
DA 1500M-HQS	0.591	15.00	0.117	●	SS0625-DRA150M-○ SF0750-DRA150M-○ (SS16-DRA150M-○) (SF20-DRA150M-○)
1520M-HQS	0.598	15.20	0.118	●	
1530M-HQS	0.602	15.30	0.118	●	
1550M-HQS	0.610	15.50	0.119	●	
1570M-HQS	0.618	15.70	0.120	●	
DA 1600M-HQS	0.630	16.00	0.125	●	SS0750-DRA160M-○ SF0750-DRA160M-○ (SS18-DRA160M-○) (SF20-DRA160M-○)
1610M-HQS	0.634	16.10	0.126	●	
1620M-HQS	0.638	16.20	0.126	●	
1630M-HQS	0.642	16.30	0.127	●	
1650M-HQS	0.650	16.50	0.128	●	
DA 1700M-HQS	0.669	17.00	0.133	●	SS0750-DRA170M-○ SF0750-DRA170M-○ (SS18-DRA170M-○) (SF20-DRA170M-○)
1750M-HQS	0.689	17.50	0.135	●	
1770M-HQS	0.697	17.70	0.136	●	
DA 1800M-HQS	0.709	18.00	0.141	●	SS0750-DRA180M-○ SF0750-DRA180M-○ (SS20-DRA180M-○) (SF25-DRA180M-○)
1810M-HQS	0.713	18.10	0.142	●	
1850M-HQS	0.728	18.50	0.144	●	
DA 1900M-HQS	0.748	19.00	0.149	●	SS1000-DRA190M-○ SF0750-DRA190M-○ (SS20-DRA190M-○) (SF25-DRA190M-○)
1930M-HQS	0.760	19.30	0.150	●	
1950M-HQS	0.768	19.50	0.151	●	

● : Standard Item
Inserts Sold in 1 Piece Boxes

HQS can be customized within the range of
Ø0.313" - 0.783" (Ø7.94mm ~ Ø19.90mm)
For more information, please contact a Kyocera sales representative.



k8 Tolerance

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~ 1.181	+0.0013 0	18.10~ 30.00	+0.033 0
1.185~ 1.299	+0.0015 0	30.10~ 33.00	+0.039 0

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

Inserts

PR1535 (Steel / Stainless Steel)

PR1525 (Cast Iron)

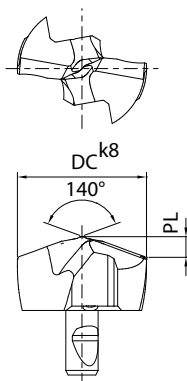
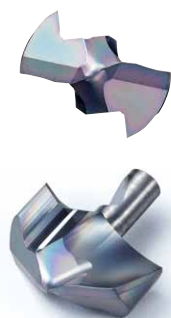
Part Number	Dimensions		PL (in)	Grade		Applicable Toolholder
	in	mm		PR1535	PR1525	
DA 0794M-GM	0.313	7.94	0.053	●	●	SS0375-DRA080M-○ SF0500-DRA080M-○ (SS10-DRA080M-○) (SF12-DRA080M-○)
0800M-GM	0.315	8.00	0.053	●	●	
0810M-GM	0.319	8.10	0.054	●	●	
0818M-GM	0.322	8.18	0.054	●	■	
0820M-GM	0.323	8.20	0.055	●	●	
0830M-GM	0.327	8.30	0.055	●	●	
0840M-GM	0.331	8.40	0.056	●	●	SS0375-DRA085M-○ SF0500-DRA085M-○ (SS10-DRA085M-○) (SF12-DRA085M-○)
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	●	●	

Applicable Toolholders in () are metric

Part Number	Dimensions		PL (in)	Grade		Applicable Toolholder
	in	mm		PR1535	PR1525	
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	●	■	
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	●	●	

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

Inserts Sold in 1 Piece Boxes



k8 Tolerance

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
0.713~1.181	+0.0013 0	18.10~30.00	+0.033 0
1.185~1.299	+0.0015 0	30.10~33.00	+0.039 0

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

Inserts

Part Number	Dimensions			Grade		Applicable Toolholder
	DC		PL (in)	PR1535	PR1525	
	in	mm				
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	●	●	

Applicable Toolholders in () are metric

PR1535 (Steel / Stainless Steel)

PR1525 (Cast Iron)

Part Number	Dimensions			Grade		Applicable Toolholder
	DC		PL (in)	PR1535	PR1525	
	in	mm				
DA 2600M-GM	1.024	26.00	0.189	●	●	(SF32-DRA260M-○)
2650M-GM	1.043	26.50	0.193	●	●	
DA 2700M-GM	1.063	27.00	0.196	●	●	(SF32-DRA270M-○)
2750M-GM	1.083	27.50	0.200	●	●	
DA 2800M-GM	1.102	28.00	0.186	●	●	(SF32-DRA280M-○)
2850M-GM	1.122	28.50	0.190	●	●	
DA 2900M-GM	1.142	29.00	0.193	●	●	(SF32-DRA290M-○)
2950M-GM	1.161	29.50	0.197	●	●	
DA 3000M-GM	1.181	30.00	0.200	●	●	(SF32-DRA300M-○)
3050M-GM	1.201	30.50	0.204	●	●	
DA 3100M-GM	1.220	31.00	0.207	●	●	(SF32-DRA310M-○)
3150M-GM	1.240	31.50	0.211	●	●	
DA 3200M-GM	1.260	32.00	0.213	●	●	(SF32-DRA320M-○)
3250M-GM	1.280	32.50	0.217	●	●	
3300M-GM	1.299	33.00	0.221	●	●	

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

Inserts Sold in 1 Piece Boxes

FTP-H Insert

NEW

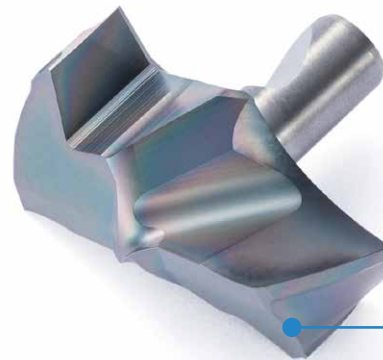
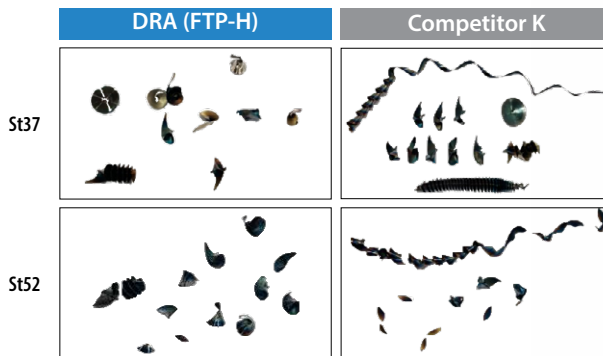
Specialized high-performance in steel beam drilling



1 Optimized chip control

Optimized chip thinning for stable chip evacuation

Chip comparison (Internal evaluation)

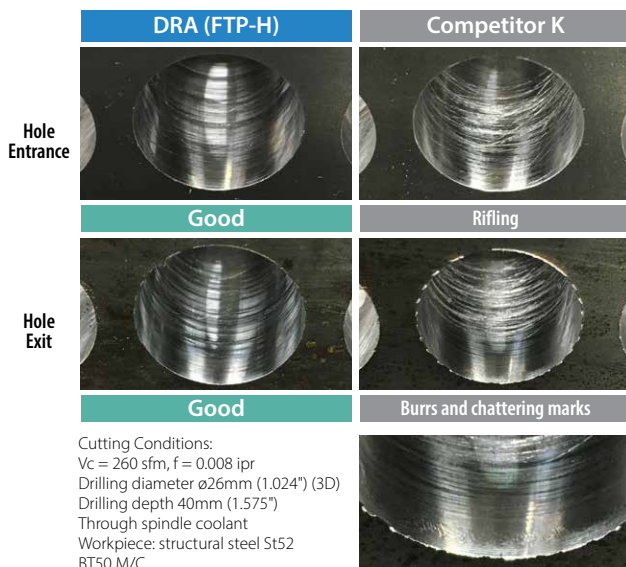


Reinforced chamfer
Higher rigidity of insert

2 Excellent surface finish

Controlled chips reduce scratches on the hole wall

Hole quality comparison (Internal evaluation)



Case Study

Structure Part S355

$V_c = 260 \text{ sfm}$ ($n = 979 \text{ rpm}$),
 $f = 0.008 \text{ ipr}$ ($V_f = 7.717 \text{ ipm}$),

Drilling depth 0.591" through-hole
 Coolant = Oil mist lubrication

SF25-DRA250M-3
 DA2600M-XFTP PR1535

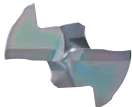
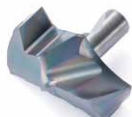
Competitor K: $\varnothing 26\text{mm}-3\text{D}$

FTP-H achieved tool life of 45 m with no issues.

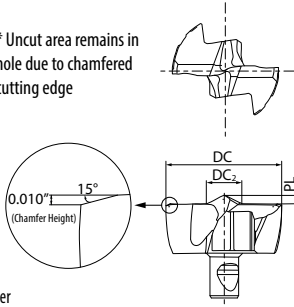
Shortened process time.
Good chip control.



FTP-H has excellent properties providing superior hole accuracy.

* Uncut area remains in hole due to chamfered cutting edge



k8 Tolerance

DC (in)	k8 (in)	DC (mm)	k8 (mm)
0.551~0.709	+0.0011 0	14.00~18.00	+0.027 0
0.787~1.024	+0.0013 0	20.00~26.00	+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)

Description	Dimensions					Grade	Applicable toolholder
	DC		DC ₂		PL	PR1535	
	in	mm	in	mm	in		
DA1400M-FTP-H	0.551	14	0.165	4.20	0.024	●	SS0625-DRA140M-○ SF0625-DRA140M-○ (SS16-DRA140M-○) (SF16-DRA140M-○)
DA1600M-FTP-H	0.630	16	0.181	4.60	0.028	●	SS0750-DRA160M-○ SF0750-DRA160M-○ (SS18-DRA160M-○) (SF20-DRA160M-○)
DA1800M-FTP-H	0.709	18	0.197	5.00	0.031	●	SS0750-DRA180M-○ SF0750-DRA180M-○ (SS20-DRA180M-○) (SF25-DRA180M-○)
DA2000M-FTP-H	0.787	20	0.224	5.70	0.035	●	SS1000-DRA200M-○ SF1000-DRA200M-○ (SS25-DRA200M-○) (SF25-DRA200M-○)
DA2100M-FTP-H	0.827	21	0.236	6.00	0.037	●	SS1000-DRA210M-○ SF1000-DRA210M-○ (SS25-DRA210M-○) (SF25-DRA210M-○)
DA2200M-FTP-H	0.866	22	0.252	6.40	0.039	●	SS1000-DRA220M-○ SF1000-DRA220M-○ (SS25-DRA220M-○) (SF25-DRA220M-○)
DA2400M-FTP-H	0.945	24	0.268	6.80	0.043	●	SS1000-DRA240M-○ SF1000-DRA240M-○ (SS25-DRA240M-○) (SF25-DRA240M-○)
DA2600M-FTP-H	1.024	26	0.276	7.00	0.047	●	SS1000-DRA250M-○ SF1000-DRA250M-○ (SS32-DRA250M-○) (SF25-DRA250M-○)

Applicable Toolholders in () are metric

● : Standard Item

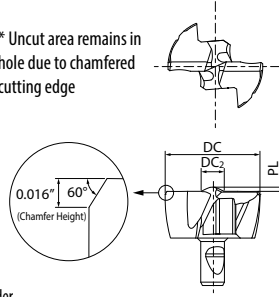
Inserts Sold in 1 Piece Boxes

DRA Inserts (FTP - Near Flat Bottom Drilling) Cutting Diameter Ø0.315" ~ Ø1.000" (Ø8.00mm ~ Ø25.40mm)



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

* 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.

Inserts

Part Number	Dimensions				PL (in)	Grade		Applicable Toolholder
	DC in	DC mm	DC2 in	DC2 mm		PR1535	PR1525	
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				●	●	SS0375-DRA085M-○ SF0500-DRA085M-○ (SS10-DRA085M-○) (SF12-DRA085M-○)
0880M-FTP	0.346	8.80	0.118	3.00	0.017	●	●	
DA 0900M-FTP	0.354	9.00				●	●	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				●	●	
DA 1050M-FTP	0.413	10.50	0.134	3.40	0.020	●	●	SS0500-DRA105M-○ SF0625-DRA105M-○ (SS12-DRA105M-○) (SF16-DRA105M-○)
1080M-FTP	0.425	10.80				●	●	
DA 1100M-FTP	0.433	11.00				●	●	SS0500-DRA110M-○ SF0625-DRA110M-○ (SS12-DRA110M-○) (SF16-DRA110M-○)
DA 1150M-FTP	0.453	11.50	0.146	3.70	0.021	●	●	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				●	●	SS0625-DRA125M-○ SF0625-DRA125M-○ (SS14-DRA125M-○) (SF16-DRA125M-○)
1270M-FTP	0.500	12.70	0.154	3.90	0.022	●	●	SS0625-DRA130M-○ SF0625-DRA130M-○ (SS14-DRA130M-○) (SF16-DRA130M-○)
DA 1300M-FTP	0.512	13.00				●	●	SS0625-DRA135M-○ SF0625-DRA135M-○ (SS14-DRA135M-○) (SF16-DRA135M-○)
1350M-FTP	0.531	13.50				●	●	

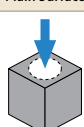
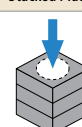
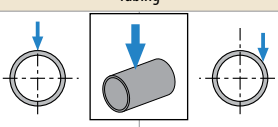
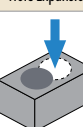
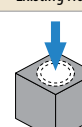
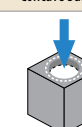
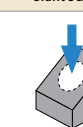
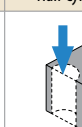
Applicable Toolholders in () are metric

Part Number	Dimensions				PL (in)	Grade		Applicable Toolholder
	DC in	DC mm	DC2 in	DC2 mm		PR1535	PR1525	
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				●	●	SS0625-DRA150M-○ SF0750-DRA150M-○ (SS16-DRA150M-○) (SF20-DRA150M-○)
1550M-FTP	0.610	15.50	0.173	4.40	0.026	●	●	
DA 1600M-FTP	0.630	16.00				●	●	SS0750-DRA160M-○ SF0750-DRA160M-○ (SS18-DRA160M-○) (SF20-DRA160M-○)
1650M-FTP	0.650	16.50				●	●	
DA 1700M-FTP	0.669	17.00	0.181	4.60	0.028	●	●	SS0750-DRA170M-○ SF0750-DRA170M-○ (SS18-DRA170M-○) (SF20-DRA170M-○)
1750M-FTP	0.689	17.50				●	●	
DA 1800M-FTP	0.709	18.00				●	●	SS0750-DRA180M-○ SF0750-DRA180M-○ (SS20-DRA180M-○) (SF25-DRA180M-○)
1850M-FTP	0.728	18.50	0.197	5.00	0.031	●	●	
DA 1900M-FTP	0.748	19.00				●	●	SS1000-DRA190M-○ SF0750-DRA190M-○ (SS20-DRA190M-○) (SF25-DRA190M-○)
1950M-FTP	0.768	19.50				●	●	
DA 2000M-FTP	0.787	20.00	0.209	5.30	0.033	●	●	SS1000-DRA200M-○ SF1000-DRA200M-○ (SS25-DRA200M-○) (SF25-DRA200M-○)
2050M-FTP	0.807	20.50				●	●	
DA 2100M-FTP	0.827	21.00				●	●	SS1000-DRA210M-○ SF1000-DRA210M-○ (SS25-DRA210M-○) (SF25-DRA210M-○)
2150M-FTP	0.846	21.50	0.224	5.70	0.035	●	●	
DA 2200M-FTP	0.866	22.00				●	●	SS1000-DRA220M-○ SF1000-DRA220M-○ (SS25-DRA220M-○) (SF25-DRA220M-○)
2250M-FTP	0.886	22.50				●	●	
DA 2300M-FTP	0.906	23.00	0.236	6.00	0.037	●	●	SS1000-DRA230M-○ SF1000-DRA230M-○ (SS25-DRA230M-○) (SF25-DRA230M-○)
2350M-FTP	0.925	23.50				●	●	
DA 2400M-FTP	0.945	24.00				●	●	SS1000-DRA240M-○ SF1000-DRA240M-○ (SS25-DRA240M-○) (SF25-DRA240M-○)
2450M-FTP	0.965	24.50	0.252	6.40	0.039	●	●	
DA 2500M-FTP	0.984	25.00				●	●	SS1000-DRA250M-○ SF1000-DRA250M-○ (SS32-DRA250M-○) (SF25-DRA250M-○)
2540M-FTP	1.000	25.40				●	●	

● : Standard Item

Inserts Sold in 1 Piece Boxes

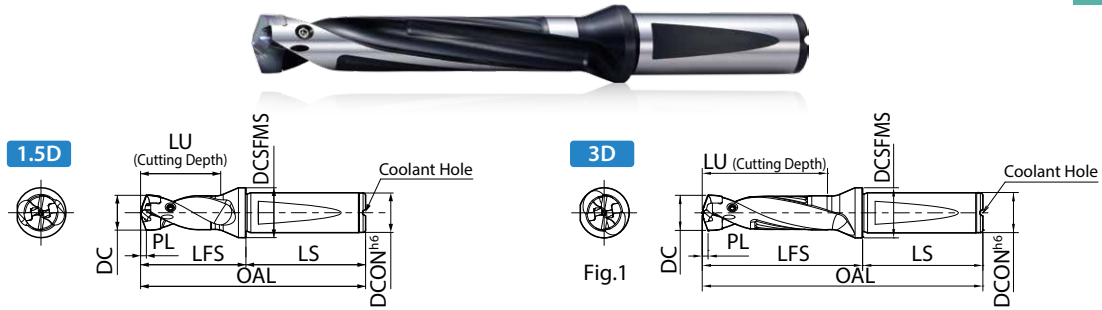
Applicable Workpieces for FTP Inserts

Plain Surface	Stacked Plates	Tubing	*Hole Expansion	Existing Hole	Concave Surface	Slant Surface	Half Cylindrical
							
1.5D Holder Recommended				Over 3D Holder NOT Recommended			
Over 3D Holder Recommended				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	Dimensions (in)							Applicable Insert See Page 7-12	Spare Parts			
		DC*		DCON (h6)	OAL	LFS	LU	LS		DCSFS	Clamp Screw	Wrench	
		min.	max.										
SF0500-DRA080M-1.5	●	0.313	0.334	0.500	2.805	1.033	0.504	1.772	0.630	DA0794M-... ~ DA0840M-...	HS-2524TRP	FTP-5	
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	0.625	3.120	1.230	0.622	1.890	0.787	DA1000M-... ~ DA1040M-...	HS-2534TRP		
SF0625-DRA105M-1.5	●	0.413	0.432		3.169	1.280	0.650			DA1050M-... ~ DA1090M-...			
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	0.750	3.553	1.663	0.858	1.969	0.984	DA1400M-... ~ DA1440M-...	HS-3048TRP		DTP-6
SF0625-DRA145M-1.5	●	0.571	0.590		3.602	1.713	0.886			DA1450M-... ~ DA1490M-...			
SF0750-DRA150M-1.5	●	0.591	0.629		3.819	1.850	0.917			DA1500M-... ~ DA1590M-...			
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	
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

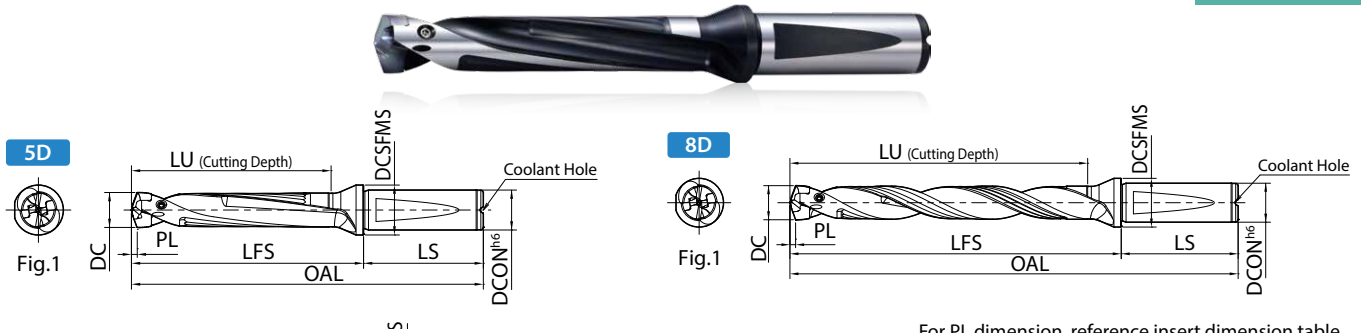
Part Number	Stock	Dimensions (in)								Applicable Insert See Page 7-12	Spare Parts	
		DC*		DCON (h6)	OAL	LFS	LU	LS	DCSFS		Clamp Screw	Wrench
		min.	max.									
SF0500-DRA080M-3	●	0.313	0.334	0.500	3.307	1.535	1.004	1.772	0.630	DA0794M-... ~ DA0840M-...	HS-2524TRP	
SF0500-DRA085M-3	●	0.335	0.353		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	0.625	3.740	1.850	1.240	1.890	0.787	DA1000M-... ~ DA1040M-...	FTP-5 HS-2534TRP	
SF0625-DRA105M-3	●	0.413	0.432		3.819	1.929	1.299			DA1050M-... ~ DA1090M-...		
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	0.750	4.409	2.520	1.713	1.969	0.984	DA1400M-... ~ DA1440M-...	HS-3048TRP	
SF0625-DRA145M-3	●	0.571	0.590		4.488	2.598	1.772			DA1450M-... ~ DA1490M-...		
SF0750-DRA150M-3	●	0.591	0.629		4.764	2.795	1.890			DA1500M-... ~ DA1590M-...		
SF0750-DRA160M-3	●	0.630	0.668		4.961	2.992	2.008			DA1600M-... ~ DA1690M-...		
SF0750-DRA170M-3	●	0.669	0.708	1.000	5.118	3.150	2.126	2.205	1.260	DA1700M-... ~ DA1790M-...	HS-4067TRP	
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		5.866	3.661	2.480			DA2000M-... ~ DA2090M-...		
SF1000-DRA210M-3	●	0.827	0.865	1.000	6.024	3.819	2.598	2.205	1.260	DA2100M-... ~ DA2150M-...	DTP-7	
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 7-12 for actual cutting diameters (DC).

● : Standard Item

DRA Toolholders - Inch Sizes (with Flange)

Flange Shank



For PL dimension, reference insert dimension table.

Toolholder Dimensions 5D

Part Number	Stock	Dimensions (in)							Applicable Insert See Page 7-12	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	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	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	0.750	5.551	3.661	2.854	1.969	0.984	HS-3048TRP	DTP-6
SF0625-DRA145M-5	●	0.571	0.590		5.669	3.780	2.953				
SF0750-DRA150M-5	●	0.591	0.629		6.024	4.055	3.150				
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		7.047	5.079	3.937				
SF1000-DRA200M-5	●	0.787	0.826		7.520	5.315	4.134				
SF1000-DRA210M-5	●	0.827	0.865	1.000	7.756	5.551	4.331	2.205	1.260	HS-4067TRP	DTP-7
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				

Toolholder Dimensions 8D

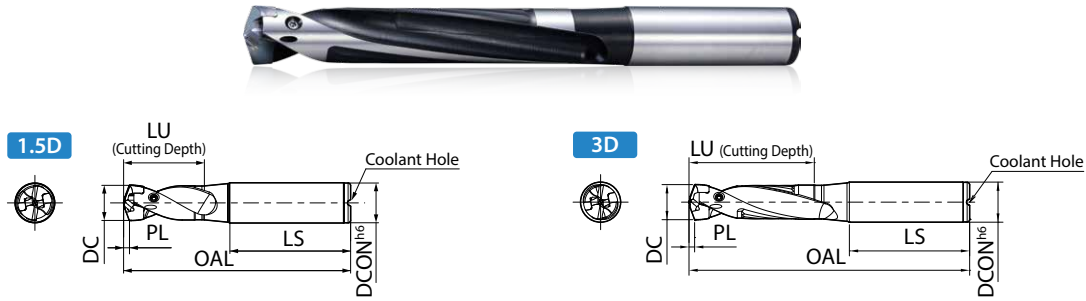
Part Number	Stock	Dimensions (in)							Applicable Insert See Page 7-12	Spare Parts	
		DC*		DCON (h6)	OAL	LFS	LU	LS	DCSFMS	Clamp Screw	Wrench
		min.	max.								
SF0500-DRA080M-8	●	0.313	0.334	0.500	4.961	3.189	2.677	1.772	0.630	HS-2524TRP	FTP-5
SF0500-DRA085M-8	●	0.335	0.353		5.157	3.386	2.835				
SF0500-DRA090M-8	●	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	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	0.750	7.244	5.354	4.567	1.969	0.984	HS-3048TRP	DTP-6
SF0625-DRA145M-8	●	0.571	0.590		7.441	5.551	4.724				
SF0750-DRA150M-8	●	0.591	0.629		7.913	5.945	5.039				
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		9.409	7.441	6.299				
SF1000-DRA200M-8	●	0.787	0.826		10.000	7.795	6.614				
SF1000-DRA210M-8	●	0.827	0.865	1.000	10.354	8.150	6.929	2.205	1.260	HS-4067TRP	DTP-7
SF1000-DRA220M-8	●	0.866	0.905		10.748	8.543	7.244				
SF1000-DRA230M-8	●	0.906	0.944		11.102	8.898	7.559				
SF1000-DRA240M-8	●	0.945	0.983		11.457	9.252	7.874				
SF1000-DRA250M-8	●	0.984	1.004		11.811	9.606	8.189				

*DC min. & max. show the cutting diameter range of inserts that will fit into the toolholder. See applicable insert tables on page 7-12 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 7-12	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-4067TRP	DTP-7
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

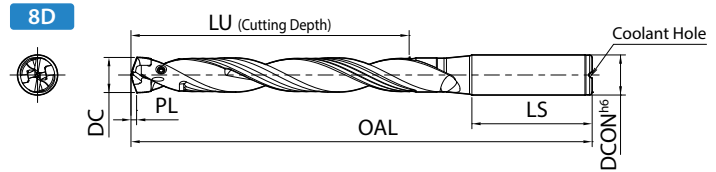
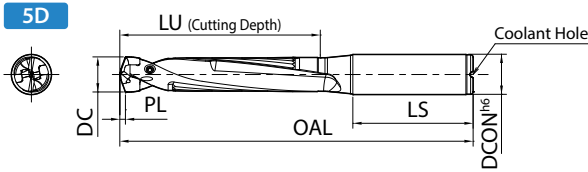
Part Number	Stock	Dimensions (in)					Applicable Insert See Page 7-12	Spare Parts	
		DC*		DCON (h6)	OAL	LU	LS	Clamp Screw	Wrench
		min.	max.						
SS0375-DRA080M-3	●	0.313	0.334	0.375	3.110	1.004	1.575	HS-2524TRP	FTP-5
SS0375-DRA085M-3	●	0.335	0.353		3.189	1.063			
SS0375-DRA090M-3	●	0.354	0.373		3.268	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-4067TRP	DTP-7
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 7-12](#) for actual cutting diameters (DC).

● : Standard Item

DRA Toolholders - Inch Sizes (Straight Shank)

Straight Shank



For PL dimension, reference insert dimension table.

Toolholder Dimensions 5D

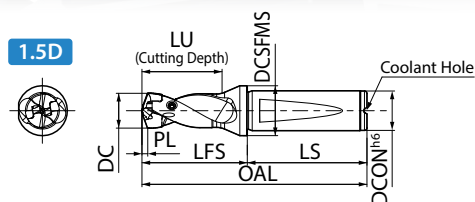
Part Number	Stock	Dimensions (in)					Applicable Insert See Page 7-12	Spare Parts	
		DC*		DCON (h6)	OAL	LU	LS	Clamp Screw	Wrench
		min.	max.						
SS0375-DRA080M-5	●	0.313	0.334	0.375	3.780	1.673	1.575	DA0794M-... ~ DA0840M-... DA0850M-... ~ DA0890M-... DA0900M-... ~ DA0940M-...	HS-2524TRP
SS0375-DRA085M-5	●	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	DA0950M-... ~ DA0990M-... DA1000M-... ~ DA1040M-... DA1050M-... ~ DA1090M-...	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	DA1100M-... ~ DA1140M-... DA1150M-... ~ DA1190M-... DA1200M-... ~ DA1240M-...	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	DA1250M-... ~ DA1290M-... DA1300M-... ~ DA1340M-... DA1350M-... ~ DA1390M-...	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	DA1400M-... ~ DA1440M-... DA1450M-... ~ DA1490M-... DA1500M-... ~ DA1590M-...	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	DA1600M-... ~ DA1690M-... DA1700M-... ~ DA1790M-... DA1800M-... ~ DA1890M-...	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	DA1900M-... ~ DA1990M-... DA2000M-... ~ DA2090M-... DA2100M-... ~ DA2150M-...	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	DA2200M-... ~ DA2250M-... DA2300M-... ~ DA2381M-... DA2400M-... ~ DA2450M-...	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		DA2500M-... ~ DA2550M-...	

Toolholder Dimensions 8D

Part Number	Stock	Dimensions (in)					Applicable Insert See Page 7-12	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-...	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	DA0950M-... ~ DA0990M-... DA1000M-... ~ DA1040M-... DA1050M-... ~ DA1090M-...	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	DA1100M-... ~ DA1140M-... DA1150M-... ~ DA1190M-... DA1200M-... ~ DA1240M-...	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	DA1250M-... ~ DA1290M-... DA1300M-... ~ DA1340M-... DA1350M-... ~ DA1390M-...	HS-4067TRP
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	DA1400M-... ~ DA1440M-... DA1450M-... ~ DA1490M-... DA1500M-... ~ DA1590M-...	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	DA1600M-... ~ DA1690M-... DA1700M-... ~ DA1790M-... DA1800M-... ~ DA1890M-...	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	DA1900M-... ~ DA1990M-... DA2000M-... ~ DA2090M-... DA2100M-... ~ DA2150M-...	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	DA2200M-... ~ DA2250M-... DA2300M-... ~ DA2381M-... DA2400M-... ~ DA2450M-...	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		DA2500M-... ~ DA2550M-...	

*DC min. & max. show the cutting diameter range of inserts that will fit into the toolholder. See applicable insert tables on page [7-12](#) for actual cutting diameters (DC).

● : Standard Item



For PL dimension, reference insert dimension table.

Toolholder Dimensions 1.5D

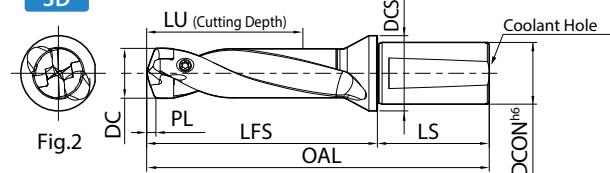
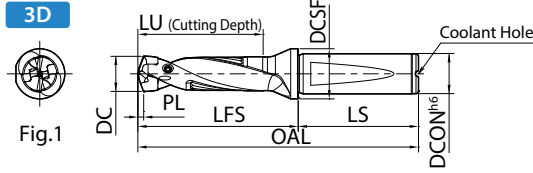
Part Number	Stock	Dimensions (mm)								Applicable Insert See Page 7-12	Spare Parts	
		DC*		DCON (h6)	OAL	LFS	LU	LS	DCSFMS		Clamp Screw	Wrench
		min.	max.									
SF12-DRA080M-1.5	●	7.94	8.49	12	71.2	26.2	12.8	45	16	DA0794M-...~DA0840M-...	HS-2524TRP	FTP-5
SF12-DRA085M-1.5	●	8.50	8.99		72.5	27.5	13.5			DA0850M-...~DA0890M-...		
SF12-DRA090M-1.5	●	9.00	9.49		73.7	28.7	14.3			DA0900M-...~DA0940M-...		
SF12-DRA095M-1.5	●	9.50	9.99		75.0	30.0	15.0			DA0950M-...~DA0990M-...		
SF16-DRA100M-1.5	●	10.00	10.49	16	79.2	31.2	15.8	48	20	DA1000M-...~DA1040M-...	HS-2534TRP	
SF16-DRA105M-1.5	●	10.50	10.99		80.5	32.5	16.5			DA1050M-...~DA1090M-...		
SF16-DRA110M-1.5	●	11.00	11.49		82.7	34.7	17.3			DA1100M-...~DA1140M-...		
SF16-DRA115M-1.5	●	11.50	11.99		84.0	36.0	18.0			DA1150M-...~DA1190M-...		
SF16-DRA120M-1.5	●	12.00	12.49		85.2	37.2	18.8			DA1200M-...~DA1240M-...		
SF16-DRA125M-1.5	●	12.50	12.99		86.5	38.5	19.5			DA1250M-...~DA1290M-...		
SF16-DRA130M-1.5	●	13.00	13.49		87.7	39.7	20.3			DA1300M-...~DA1340M-...		
SF16-DRA135M-1.5	●	13.50	13.99		89.0	41.0	21.0			DA1350M-...~DA1390M-...		
SF16-DRA140M-1.5	●	14.00	14.49	20	90.2	42.2	21.8	50	25	DA1400M-...~DA1440M-...	HS-3048TRP	
SF16-DRA145M-1.5	●	14.50	14.99		91.5	43.5	22.5			DA1450M-...~DA1490M-...		
SF20-DRA150M-1.5	●	15.00	15.99		97.0	47.0	24.0			DA1500M-...~DA1590M-...		
SF20-DRA160M-1.5	●	16.00	16.99		100.5	50.5	25.5			DA1600M-...~DA1690M-...		
SF20-DRA170M-1.5	●	17.00	17.99	25	103.0	53.0	27.0	56	32	DA1700M-...~DA1790M-...	HS-4067TRP	
SF25-DRA180M-1.5	●	18.00	18.99		112.5	56.5	28.5			DA1800M-...~DA1890M-...		
SF25-DRA190M-1.5	●	19.00	19.99		115.0	59.0	30.0			DA1900M-...~DA1990M-...		
SF25-DRA200M-1.5	●	20.00	20.99		117.5	61.5	31.5			DA2000M-...~DA2090M-...		
SF25-DRA210M-1.5	●	21.00	21.99		120.0	64.0	33.0			DA2100M-...~DA2150M-...		
SF25-DRA220M-1.5	●	22.00	22.99		123.5	67.5	34.5			DA2200M-...~DA2250M-...		
SF25-DRA230M-1.5	●	23.00	23.99		126.0	70.0	36.0			DA2300M-...~DA2350M-...		
SF25-DRA240M-1.5	●	24.00	24.99		128.5	72.5	37.5			DA2400M-...~DA2450M-...		
SF25-DRA250M-1.5	●	25.00	25.50		131.0	75.0	39.0			DA2500M-...~DA2550M-...		

*DC min. & max. show the cutting diameter range of inserts that will fit into the toolholder. See applicable insert tables on [page 7-12](#) for actual cutting diameters (DC).

● : Standard Item

DRA Toolholders - Metric Sizes (with Flange)

Flange Shank



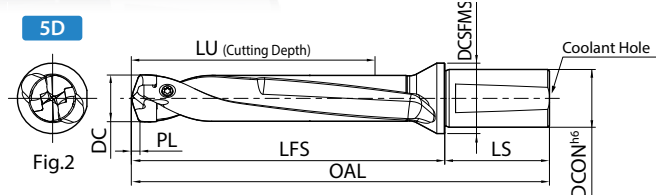
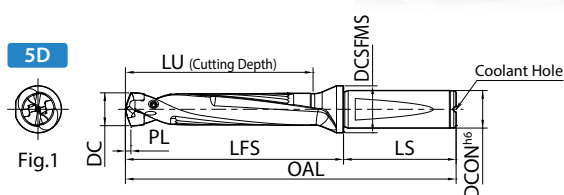
For PL dimension, reference insert dimension table.

Toolholder Dimensions 3D

Part Number	Stock	Dimensions (mm)								Drawing	Applicable Insert See Page 7-12	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	Fig.1	DA0794M-... ~ DA0840M-...	HS-2524TRP	FTP-5
SF12-DRA085M-3	●	8.50	8.99		86	41	27.0				DA0850M-... ~ DA0890M-...		
SF12-DRA090M-3	●	9.00	9.49		88	43	28.5				DA0900M-... ~ DA0940M-...		
SF12-DRA095M-3	●	9.50	9.99		90	45	30.0				DA0950M-... ~ DA0990M-...		
SF16-DRA100M-3	●	10.00	10.49	16	95	47	31.5	48	20	Fig.1	DA1000M-... ~ DA1040M-...	HS-2534TRP	
SF16-DRA105M-3	●	10.50	10.99		97	49	33.0				DA1050M-... ~ DA1090M-...		
SF16-DRA110M-3	●	11.00	11.49		100	52	34.5				DA1100M-... ~ DA1140M-...		
SF16-DRA115M-3	●	11.50	11.99		102	54	36.0				DA1150M-... ~ DA1190M-...		
SF16-DRA120M-3	●	12.00	12.49		104	56	37.5				DA1200M-... ~ DA1240M-...		
SF16-DRA125M-3	●	12.50	12.99		106	58	39.0				DA1250M-... ~ DA1290M-...		
SF16-DRA130M-3	●	13.00	13.49		108	60	40.5				DA1300M-... ~ DA1340M-...		
SF16-DRA135M-3	●	13.50	13.99		110	62	42.0				DA1350M-... ~ DA1390M-...		
SF16-DRA140M-3	●	14.00	14.49		112	64	43.5				DA1400M-... ~ DA1440M-...		
SF16-DRA145M-3	●	14.50	14.99		114	66	45.0				DA1450M-... ~ DA1490M-...		
SF20-DRA150M-3	●	15.00	15.99	20	121	71	48.0	50	25	Fig.1	DA1500M-... ~ DA1590M-...	HS-3048TRP	DTP-6
SF20-DRA160M-3	●	16.00	16.99		126	76	51.0				DA1600M-... ~ DA1690M-...		
SF20-DRA170M-3	●	17.00	17.99		130	80	54.0				DA1700M-... ~ DA1790M-...		
SF25-DRA180M-3	●	18.00	18.99	25	141	85	57.0	56	32	Fig.1	DA1800M-... ~ DA1890M-...	HS-4067TRP	DTP-7
SF25-DRA190M-3	●	19.00	19.99		145	89	60.0				DA1900M-... ~ DA1990M-...		
SF25-DRA200M-3	●	20.00	20.99		149	93	63.0				DA2000M-... ~ DA2090M-...		
SF25-DRA210M-3	●	21.00	21.99		153	97	66.0				DA2100M-... ~ DA2150M-...		
SF25-DRA220M-3	●	22.00	22.99		158	102	69.0				DA2200M-... ~ DA2250M-...		
SF25-DRA230M-3	●	23.00	23.99		162	106	72.0				DA2300M-... ~ DA2350M-...		
SF25-DRA240M-3	●	24.00	24.99		166	110	75.0				DA2400M-... ~ DA2450M-...		
SF25-DRA250M-3	●	25.00	25.50		170	114	78.0				DA2500M-... ~ DA2550M-...		
SF32-DRA260M-3	●	26.00	26.99	32	178	120	81.0	58	39	Fig.2	DA2600M-...~DA2650M-...	HS-50100TRP	DTPM-15
SF32-DRA270M-3	●	27.00	27.99		181	123	84.0				DA2700M-...~DA2750M-...		
SF32-DRA280M-3	●	28.00	28.99		185	127	87.0				DA2800M-...~DA2850M-...		
SF32-DRA290M-3	●	29.00	29.99		189	131	90.0				DA2900M-...~DA2950M-...		
SF32-DRA300M-3	●	30.00	30.99		193	135	93.0				DA3000M-...~DA3050M-...		
SF32-DRA310M-3	●	31.00	31.99		196	138	96.0				DA3100M-...~DA3150M-...		
SF32-DRA320M-3	●	32.00	33.00		200	142	99.0				DA3200M-...~DA3300M-...		

*DC min. & max. show the cutting diameter range of inserts that will fit into the toolholder.
See applicable insert tables on page [7-12](#) for actual cutting diameters (DC).

● : Standard Item



For PL dimension, reference insert dimension table.

Toolholder Dimensions 5D

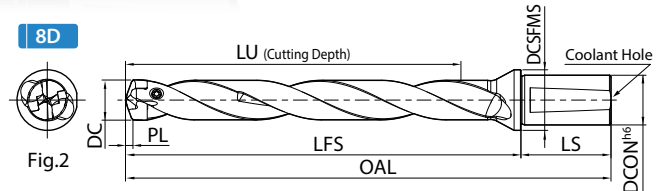
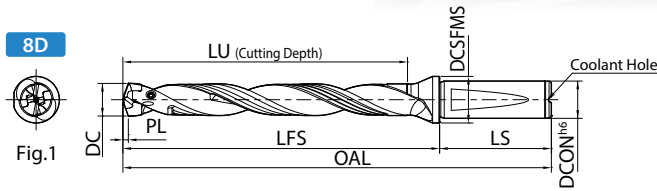
Part Number	Stock	Dimensions (mm)								Drawing	Applicable Insert See Page 7-12	Spare Parts					
		DC*		DCON (h6)	OAL	LFS	LU	LS	DCSFMS			Clamp Screw	Wrench				
		min.	max.														
SF12-DRA080M-5	●	7.94	8.49	12	101	56	42.5	45	16	Fig.1	DA0794M-... ~ DA0840M-...	HS-2524TRP					
SF12-DRA085M-5	●	8.50	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	Fig.1	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	Fig.1	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	25	179	123	95.0	56	32	Fig.1	DA1800M-... ~ DA1890M-...	HS-4067TRP	DTP-7				
SF25-DRA190M-5	●	19.00	19.99		185	129	100.0				DA1900M-... ~ DA1990M-...						
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-...						
SF32-DRA260M-5	●	26.00	26.99	32	232	174	135.0	58	39	Fig.2	DA2600M-...~DA2650M-...	HS-50100TRP	DTPM-15				
SF32-DRA270M-5	●	27.00	27.99		237	179	140.0				DA2700M-...~DA2750M-...						
SF32-DRA280M-5	●	28.00	28.99		243	185	145.0				DA2800M-...~DA2850M-...						
SF32-DRA290M-5	●	29.00	29.99		249	191	150.0				DA2900M-...~DA2950M-...						
SF32-DRA300M-5	●	30.00	30.99		255	197	155.0				DA3000M-...~DA3050M-...						
SF32-DRA310M-5	●	31.00	31.99		260	202	160.0				DA3100M-...~DA3150M-...						
SF32-DRA320M-5	●	32.00	33.00		266	208	165.0				DA3200M-...~DA3300M-...						

*DC min. & max. show the cutting diameter range of inserts that will fit into the toolholder.
See applicable insert tables on page 7-12 for actual cutting diameters (DC).

● : Standard Item

DRA Toolholders - Metric Sizes (with Flange)

Flange Shank



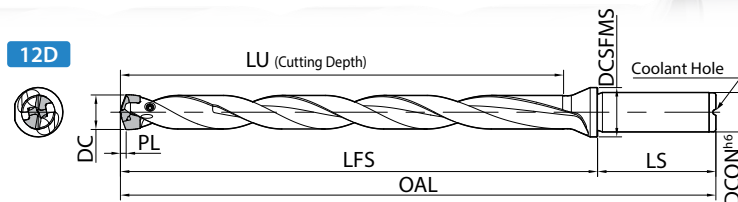
For PL dimension, reference insert dimension table.

Toolholder Dimensions 8D

Part Number	Stock	DC*		DCON (h6)	Dimensions (mm)					Drawing	Applicable Insert See Page 7-12	Spare Parts	
		min.	max.		OAL	LFS	LU	LS	DCSFMS			Clamp Screw	Wrench
SF12-DRA080M-8	●	7.94	8.49	12	126	81	68.0	45	16	Fig.1	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	Fig.1	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	20	184	136	116.0	50	25	Fig.1	DA1400M-... ~ DA1440M-...	HS-3048TRP	DTP-6
SF16-DRA145M-8	●	14.50	14.99		189	141	120.0				DA1450M-... ~ DA1490M-...		
SF20-DRA150M-8	●	15.00	15.99		201	151	128.0				DA1500M-... ~ DA1590M-...		
SF20-DRA160M-8	●	16.00	16.99		211	161	136.0				DA1600M-... ~ DA1690M-...		
SF20-DRA170M-8	●	17.00	17.99	25	220	170	144.0	56	32	Fig.1	DA1700M-... ~ DA1790M-...	HS-4067TRP	DTP-7
SF25-DRA180M-8	●	18.00	18.99		236	180	152.0				DA1800M-... ~ DA1890M-...		
SF25-DRA190M-8	●	19.00	19.99		245	189	160.0				DA1900M-... ~ DA1990M-...		
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	32	300	244	208.0	58	39	Fig.2	DA2500M-... ~ DA2550M-...	HS-50100TRP	DTPM-15
SF32-DRA260M-8	●	26.00	26.99		313	255	216.0				DA2600M-... ~ DA2650M-...		
SF32-DRA270M-8	●	27.00	27.99		321	263	224.0				DA2700M-... ~ DA2750M-...		
SF32-DRA280M-8	●	28.00	28.99		330	272	232.0				DA2800M-... ~ DA2850M-...		
SF32-DRA290M-8	●	29.00	29.99		339	281	240.0				DA2900M-... ~ DA2950M-...		
SF32-DRA300M-8	●	30.00	30.99		348	290	248.0				DA3000M-... ~ DA3050M-...		
SF32-DRA310M-8	●	31.00	31.99		356	298	256.0				DA3100M-... ~ DA3150M-...		
SF32-DRA320M-8	●	32.00	33.00		365	307	264.0				DA3200M-... ~ DA3300M-...		

*DC min. & max. show the cutting diameter range of inserts that will fit into the toolholder.
See applicable insert tables on page [7-12](#) for actual cutting diameters (DC).

● : Standard Item



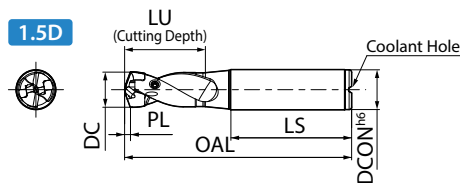
For PL dimension, reference insert dimension table.

Toolholder Dimensions 12D

Part Number	Stock	DC*		Dimensions (mm)						Applicable Insert See Page 7-12	Spare Parts	
		min.	max.	DCON (h6)	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 7-12](#) for actual cutting diameters (DC).

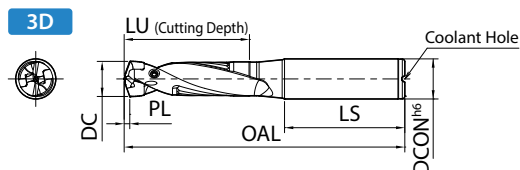
● : Standard Item



For PL dimension, reference insert dimension table.

Toolholder Dimensions 1.5D

Part Number	Stock	Dimensions (mm)						Applicable Insert See Page 7-12	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	40	DA0794M-...~DA0840M-...	HS-2524TRP	FTP-5
SS10-DRA085M-1.5	●	8.50	8.99		67.5	13.5		DA0850M-...~DA0890M-...		
SS10-DRA090M-1.5	●	9.00	9.49		68.7	14.3		DA0900M-...~DA0940M-...		
SS10-DRA095M-1.5	●	9.50	9.99		70.0	15.0		DA0950M-...~DA0990M-...		
SS12-DRA100M-1.5	●	10.00	10.49	12	76.2	15.8	45	DA1000M-...~DA1040M-...	HS-2534TRP	
SS12-DRA105M-1.5	●	10.50	10.99		77.5	16.5		DA1050M-...~DA1090M-...		
SS12-DRA110M-1.5	●	11.00	11.49		79.7	17.3		DA1100M-...~DA1140M-...		
SS12-DRA115M-1.5	●	11.50	11.99		81.0	18.0		DA1150M-...~DA1190M-...		
SS14-DRA120M-1.5	●	12.00	12.49	14	82.2	18.8		DA1200M-...~DA1240M-...		
SS14-DRA125M-1.5	●	12.50	12.99		83.5	19.5		DA1250M-...~DA1290M-...		
SS14-DRA130M-1.5	●	13.00	13.49		84.7	20.3		DA1300M-...~DA1340M-...		
SS14-DRA135M-1.5	●	13.50	13.99		86.0	21.0		DA1350M-...~DA1390M-...		
SS16-DRA140M-1.5	●	14.00	14.49	16	90.2	21.8	48	DA1400M-...~DA1440M-...	HS-3048TRP	
SS16-DRA145M-1.5	●	14.50	14.99		91.5	22.5		DA1450M-...~DA1490M-...		
SS16-DRA150M-1.5	●	15.00	15.99		95.0	24.0		DA1500M-...~DA1590M-...		
SS18-DRA160M-1.5	●	16.00	16.99		98.5	25.5		DA1600M-...~DA1690M-...		
SS18-DRA170M-1.5	●	17.00	17.99	18	101.0	27.0	50	DA1700M-...~DA1790M-...		
SS20-DRA180M-1.5	●	18.00	18.99		106.5	28.5		DA1800M-...~DA1890M-...		
SS20-DRA190M-1.5	●	19.00	19.99		109.0	30.0		DA1900M-...~DA1990M-...		
SS25-DRA200M-1.5	●	20.00	20.99		117.5	31.5		DA2000M-...~DA2090M-...		
SS25-DRA210M-1.5	●	21.00	21.99	25	120.0	33.0	56	DA2100M-...~DA2150M-...	HS-4067TRP	
SS25-DRA220M-1.5	●	22.00	22.99		123.5	34.5		DA2200M-...~DA2250M-...		
SS25-DRA230M-1.5	●	23.00	23.99		126.0	36.0		DA2300M-...~DA2350M-...		
SS25-DRA240M-1.5	●	24.00	24.99		128.5	37.5		DA2400M-...~DA2450M-...		
SS32-DRA250M-1.5	●	25.00	25.50	32	135.0	39.0	60	DA2500M-...~DA2550M-...		



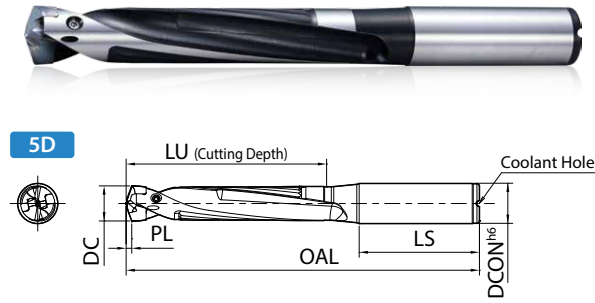
For PL dimension, reference insert dimension table.

Toolholder Dimensions 3D

Part Number	Stock	Dimensions (mm)						Applicable Insert See Page 7-12	Spare Parts	
		DC*		DCON (h6)	OAL	LU	LS		Clamp Screw	Wrench
		min.	max.							
SS10-DRA080M-3	●	7.94	8.49	10	79	25.5	40	DA0794M-... ~ DA0840M-...	HS-2524TRP	
SS10-DRA085M-3	●	8.50	8.99		81	27.0		DA0850M-... ~ DA0890M-...		
SS10-DRA090M-3	●	9.00	9.49		83	28.5		DA0900M-... ~ DA0940M-...		
SS10-DRA095M-3	●	9.50	9.99		85	30.0		DA0950M-... ~ DA0990M-...		
SS12-DRA100M-3	●	10.00	10.49	12	92	31.5	45	DA1000M-... ~ DA1040M-...	HS-2534TRP	FTP-5
SS12-DRA105M-3	●	10.50	10.99		94	33.0		DA1050M-... ~ DA1090M-...		
SS12-DRA110M-3	●	11.00	11.49		97	34.5		DA1100M-... ~ DA1140M-...		
SS12-DRA115M-3	●	11.50	11.99		99	36.0		DA1150M-... ~ DA1190M-...		
SS14-DRA120M-3	●	12.00	12.49	14	101	37.5	45	DA1200M-... ~ DA1240M-...		
SS14-DRA125M-3	●	12.50	12.99		103	39.0		DA1250M-... ~ DA1290M-...		
SS14-DRA130M-3	●	13.00	13.49		105	40.5		DA1300M-... ~ DA1340M-...		
SS14-DRA135M-3	●	13.50	13.99		107	42.0		DA1350M-... ~ DA1390M-...		
SS16-DRA140M-3	●	14.00	14.49	16	112	43.5	48	DA1400M-... ~ DA1440M-...	HS-3048TRP	DTP-6
SS16-DRA145M-3	●	14.50	14.99		114	45.0		DA1450M-... ~ DA1490M-...		
SS16-DRA150M-3	●	15.00	15.99		119	48.0		DA1500M-... ~ DA1590M-...		
SS18-DRA160M-3	●	16.00	16.99		124	51.0		DA1600M-... ~ DA1690M-...		
SS18-DRA170M-3	●	17.00	17.99	18	128	54.0	50	DA1700M-... ~ DA1790M-...		
SS20-DRA180M-3	●	18.00	18.99		135	57.0		DA1800M-... ~ DA1890M-...		
SS20-DRA190M-3	●	19.00	19.99	20	139	60.0	56	DA1900M-... ~ DA1990M-...	HS-4067TRP	DTP-7
SS25-DRA200M-3	●	20.00	20.99		149	63.0		DA2000M-... ~ DA2090M-...		
SS25-DRA210M-3	●	21.00	21.99	25	153	66.0	60	DA2100M-... ~ DA2150M-...		
SS25-DRA220M-3	●	22.00	22.99		158	69.0		DA2200M-... ~ DA2250M-...		
SS25-DRA230M-3	●	23.00	23.99		162	72.0		DA2300M-... ~ DA2350M-...		
SS25-DRA240M-3	●	24.00	24.99		166	75.0		DA2400M-... ~ DA2450M-...		
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 7-12](#) for actual cutting diameters (DC).

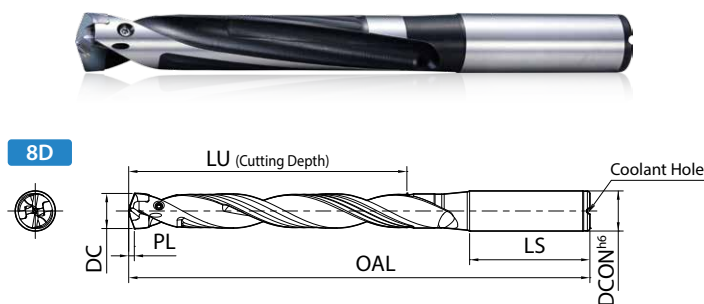
● : Standard Item



For PL dimension, reference insert dimension table.

Toolholder Dimensions 5D

Part Number	Stock	Dimensions (mm)					Applicable Insert See Page 7-12	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-...	HS-2524TRP	FTP-5
SS10-DRA085M-5	●	8.50	8.99		99	45.0		DA0850M-... ~ DA0890M-...		
SS10-DRA090M-5	●	9.00	9.49		102	47.5		DA0900M-... ~ DA0940M-...		
SS10-DRA095M-5	●	9.50	9.99		105	50.0		DA0950M-... ~ DA0990M-...		
SS12-DRA100M-5	●	10.00	10.49	12	113	52.5	45	DA1000M-... ~ DA1040M-...	HS-2534TRP	
SS12-DRA105M-5	●	10.50	10.99		116	55.0		DA1050M-... ~ DA1090M-...		
SS12-DRA110M-5	●	11.00	11.49		120	57.5		DA1100M-... ~ DA1140M-...		
SS12-DRA115M-5	●	11.50	11.99		123	60.0		DA1150M-... ~ DA1190M-...		
SS14-DRA120M-5	●	12.00	12.49	14	126	62.5		DA1200M-... ~ DA1240M-...		
SS14-DRA125M-5	●	12.50	12.99		129	65.0		DA1250M-... ~ DA1290M-...		
SS14-DRA130M-5	●	13.00	13.49		132	67.5		DA1300M-... ~ DA1340M-...		
SS14-DRA135M-5	●	13.50	13.99		135	70.0		DA1350M-... ~ DA1390M-...		
SS16-DRA140M-5	●	14.00	14.49	16	141	72.5	48	DA1400M-... ~ DA1440M-...	HS-3048TRP	
SS16-DRA145M-5	●	14.50	14.99		144	75.0		DA1450M-... ~ DA1490M-...		
SS16-DRA150M-5	●	15.00	15.99		151	80.0		DA1500M-... ~ DA1590M-...		
SS18-DRA160M-5	●	16.00	16.99		18	158		85.0		DA1600M-... ~ DA1690M-...
SS18-DRA170M-5	●	17.00	17.99	164		90.0	DA1700M-... ~ DA1790M-...			
SS20-DRA180M-5	●	18.00	18.99	20	173	95.0	50	DA1800M-... ~ DA1890M-...		
SS20-DRA190M-5	●	19.00	19.99		179	100.0		DA1900M-... ~ DA1990M-...		
SS25-DRA200M-5	●	20.00	20.99	25	191	105.0	56	DA2000M-... ~ DA2090M-...	HS-4067TRP	
SS25-DRA210M-5	●	21.00	21.99		197	110.0		DA2100M-... ~ DA2150M-...		
SS25-DRA220M-5	●	22.00	22.99		204	115.0		DA2200M-... ~ DA2250M-...		
SS25-DRA230M-5	●	23.00	23.99		210	120.0		DA2300M-... ~ DA2350M-...		
SS25-DRA240M-5	●	24.00	24.99		216	125.0		DA2400M-... ~ DA2450M-...		
SS32-DRA250M-5	●	25.00	25.50		32	226		130.0		60



For PL dimension, reference insert dimension table.

Toolholder Dimensions 8D

Part Number	Stock	Dimensions (mm)						Applicable Insert See Page 7-12	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-...	HS-2524TRP	FTP-5
SS10-DRA085M-8	●	8.50	8.99		126	72.0		DA0850M-... ~ DA0890M-...		
SS10-DRA090M-8	●	9.00	9.49		130	76.0		DA0900M-... ~ DA0940M-...		
SS10-DRA095M-8	●	9.50	9.99		135	80.0		DA0950M-... ~ DA0990M-...		
SS12-DRA100M-8	●	10.00	10.49	12	144	84.0	45	DA1000M-... ~ DA1040M-...	HS-2534TRP	
SS12-DRA105M-8	●	10.50	10.99		149	88.0		DA1050M-... ~ DA1090M-...		
SS12-DRA110M-8	●	11.00	11.49		154	92.0		DA1100M-... ~ DA1140M-...		
SS12-DRA115M-8	●	11.50	11.99		159	96.0		DA1150M-... ~ DA1190M-...		
SS14-DRA120M-8	●	12.00	12.49	14	163	100.0	45	DA1200M-... ~ DA1240M-...		
SS14-DRA125M-8	●	12.50	12.99		168	104.0		DA1250M-... ~ DA1290M-...		
SS14-DRA130M-8	●	13.00	13.49		172	108.0		DA1300M-... ~ DA1340M-...		
SS14-DRA135M-8	●	13.50	13.99		177	112.0		DA1350M-... ~ DA1390M-...		
SS16-DRA140M-8	●	14.00	14.49	16	184	116.0	48	DA1400M-... ~ DA1440M-...	HS-3048TRP	DTP-6
SS16-DRA145M-8	●	14.50	14.99		189	120.0		DA1450M-... ~ DA1490M-...		
SS16-DRA150M-8	●	15.00	15.99		199	128.0		DA1500M-... ~ DA1590M-...		
SS18-DRA160M-8	●	16.00	16.99		209	136.0		DA1600M-... ~ DA1690M-...		
SS18-DRA170M-8	●	17.00	17.99	18	218	144.0	50	DA1700M-... ~ DA1790M-...		
SS20-DRA180M-8	●	18.00	18.99		230	152.0		DA1800M-... ~ DA1890M-...		
SS20-DRA190M-8	●	19.00	19.99	20	239	160.0	56	DA1900M-... ~ DA1990M-...		
SS25-DRA200M-8	●	20.00	20.99		254	168.0		DA2000M-... ~ DA2090M-...		
SS25-DRA210M-8	●	21.00	21.99	25	263	176.0	60	DA2100M-... ~ DA2150M-...	HS-4067TRP	DTP-7
SS25-DRA220M-8	●	22.00	22.99		273	184.0		DA2200M-... ~ DA2250M-...		
SS25-DRA230M-8	●	23.00	23.99		282	192.0		DA2300M-... ~ DA2350M-...		
SS25-DRA240M-8	●	24.00	24.99		291	200.0		DA2400M-... ~ DA2450M-...		
SS32-DRA250M-8	●	25.00	25.50	32	304	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 7-12](#) for actual cutting diameters (DC).

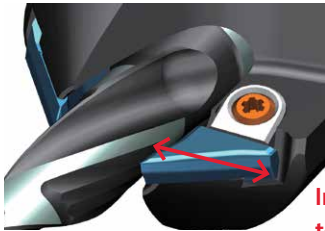
● : Standard Item

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

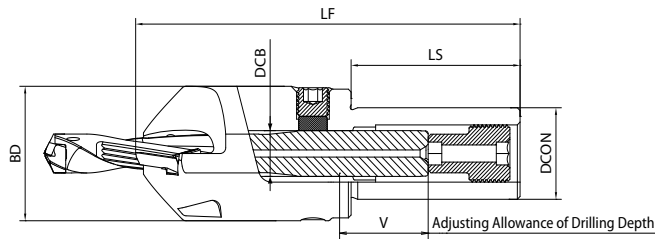
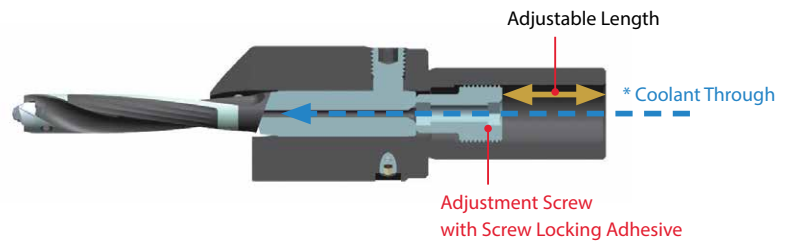
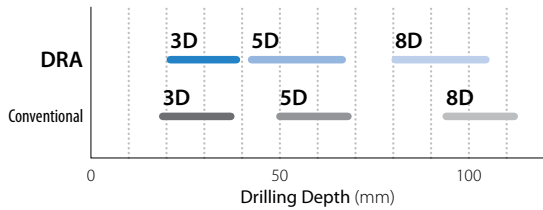
Large chip pockets along drill flutes



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

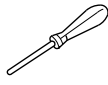
Part Number	Stock	Applicable Drill Shank Dia. DCB	Dimensions (mm)					Applicable Insert
			DCON	BD	LF	LS	V (Max)	
S20-CH10-DRA	●	10	20	39	110	52	18	CT12T3-45DA
S32-CH12-DRA	●	12	32	43	130	62	24	
S32-CH14-DRA	●	14	32	45	130	62	24	
S32-CH16-DRA	●	16	32	47	141	62	24	
S32-CH18-DRA	●	18	32	49	145	62	24	
S32-CH20-DRA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

Applicable Insert

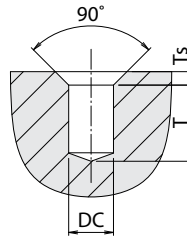
Shape	Description	MEGACOAT NANO	Dimensions (mm)	
		PR1535	W1	S
	CT12T3-45DA	●	13.54	3.97

● : Standard Item

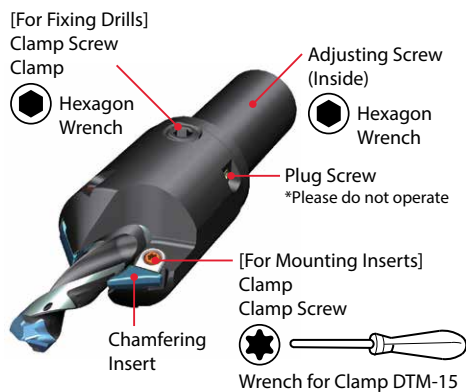
Chamfering Attachment Parts

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			30				
S32-CH18-DRA	AJ-22x35	10	CP-CH18	HS12X10	6	30				
S32-CH20-DRA			CP-CH20			45				

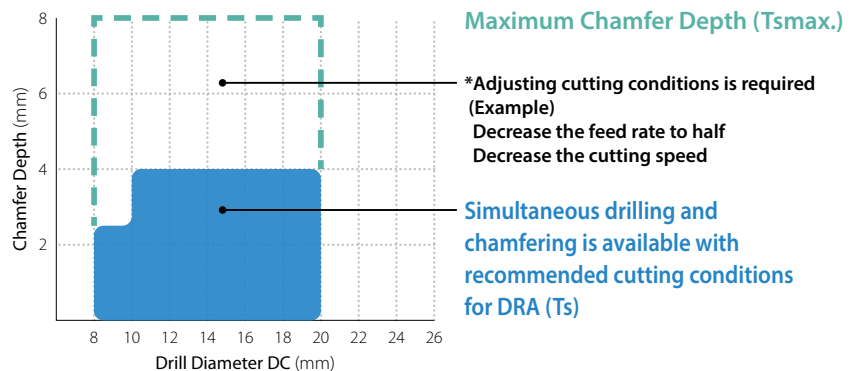
Drilling & Chamfer Depths



Cutting Dia. (mm) DC		Drilling Depth (mm)						Chamfering Dimension (mm)		Applicable Toolholder
		T (3XD)		T (5XD)		T (8XD)				
min.	max.	min.	max.	min.	max.	min.	max.	Ts	Tsmax.	
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			
10.00	10.49	15.5	26	22	46	52	76	4	8	S32-CH12-DRA
10.50	10.99	16	27.5	24.5	48.5	56	80			
11.00	11.49	16.5	29	27	51	60	84			
11.50	11.99	17.5	30.5	29.5	53.5	64	88			
12.00	12.49	18	32	32	56	68	92	4	8	S32-CH14-DRA
12.50	12.99	19	34	35	59	72.5	96.5			
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-CH16-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-CH18-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	4	8	S32-CH20-DRA
19.00	19.99	29.5	54	69	92	129	149			



Recommended Cutting Conditions (1049)



Installing Chamfer Attachment

- 1 Mount DRA drill into the chamfering 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)

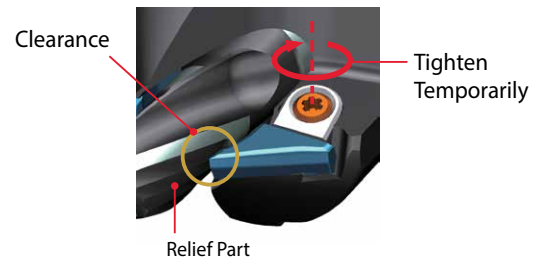


Fig.2 Install Inserts

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

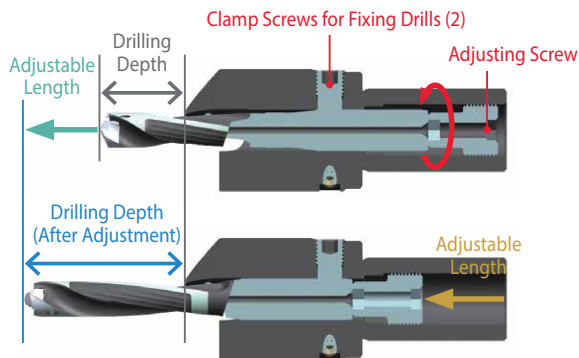


Fig.3 Adjustment of Drilling Depth

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

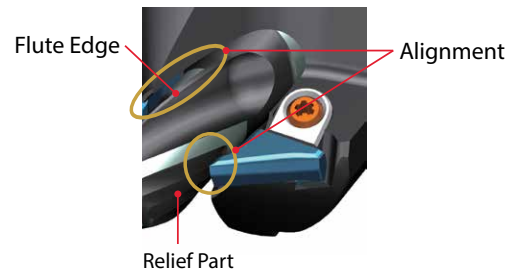


Fig.4 DRA Alignment

**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	
S32-CH14-DRA	20	5
S32-CH16-DRA	30	6
S32-CH18-DRA	30	
S32-CH20-DRA	45	8

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.

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

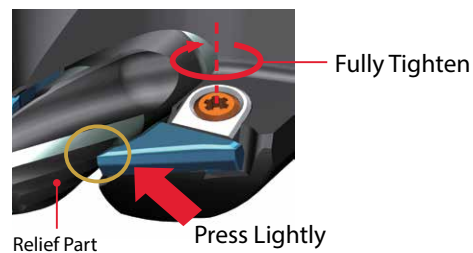


Fig.5 Fully Tighten

- 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.

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 - 1.122	25.00 - 28.50	0.0079 - 0.0177		0.0063 - 0.0142		0.0055 - 0.0124	
			1.142 - 1.280	29.00 - 32.50	0.0079 - 0.0177		0.0063 - 0.0142		-	
			1.299	33.00	0.0079 - 0.0177		0.0063 - 0.0142			
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 - 1.122	25.00 - 28.50	0.0079 - 0.0177		0.0063 - 0.0142		0.0055 - 0.0124	
			1.142 - 1.280	29.00 - 32.50	0.0079 - 0.0177		0.0063 - 0.0142		-	
			1.299	33.00	0.0079 - 0.0177		0.0063 - 0.0142			
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 - 1.122	25.00 - 28.50	0.0079 - 0.0177		0.0063 - 0.0142		0.0055 - 0.0124	
			1.142 - 1.280	29.00 - 32.50	0.0079 - 0.0177		0.0063 - 0.0142		-	
			1.299	33.00	0.0079 - 0.0177		0.0063 - 0.0142			
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 - 1.122	25.00 - 28.50	0.0055 - 0.0126		0.0044 - 0.0101		0.0039 - 0.0088	
			1.142 - 1.280	29.00 - 32.50	0.0055 - 0.0126		0.0044 - 0.0101		-	
			1.299	33.00	0.0055 - 0.0126		0.0044 - 0.0101			
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 - 1.122	25.00 - 28.50	0.0059 - 0.0138		0.0047 - 0.0110		0.0041 - 0.0096	
			1.142 - 1.280	29.00 - 32.50	0.0059 - 0.0138		0.0047 - 0.0110		-	
			1.299	33.00	0.0059 - 0.0138		0.0047 - 0.0110			
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 - 1.122	25.00 - 28.50	0.0094 - 0.0177		0.0076 - 0.0142		0.0066 - 0.0124	
			1.142 - 1.280	29.00 - 32.50	0.0094 - 0.0177		0.0076 - 0.0142		-	
			1.299	33.00	0.0094 - 0.0177		0.0076 - 0.0142			
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 - 1.122	25.00 - 28.50	0.0079 - 0.0177		0.0063 - 0.0142		0.0055 - 0.0124	
			1.142 - 1.280	29.00 - 32.50	0.0079 - 0.0177		0.0063 - 0.0142		-	
			1.299	33.00	0.0079 - 0.0177		0.0063 - 0.0142			

※ Feed Rate 0.006 ipr or less is recommended for stainless steel until drilling depth reaches 0.5D.
Internal and External coolant recommended for Stainless, Heat-resistant Alloys, and Titanium

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

HQP 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
				1.5D	3D	5D	8D	12D	
Low Carbon Steel	★ 260-590	0.313 - 0.429	7.94 - 10.90	0.0047 - 0.0094	0.0038 - 0.0076	0.0033 - 0.0066			Coolant See P30
		0.433 - 0.547	11.00 - 13.90	0.0047 - 0.0110	0.0038 - 0.0088	0.0033 - 0.0077			
		0.551 - 0.705	14.00 - 17.90	0.0063 - 0.0126	0.0050 - 0.0101	0.0044 - 0.0088			
		0.709 - 0.784	18.00 - 19.90	0.0063 - 0.0142	0.0050 - 0.0113	0.0044 - 0.0099			
Carbon Steel	★ 260-490	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 - 0.0110	0.0038 - 0.0088	0.0033 - 0.0077			
		0.551 - 0.705	14.00 - 17.90	0.0063 - 0.0126	0.0050 - 0.0101	0.0044 - 0.0088			
		0.709 - 0.784	18.00 - 19.90	0.0063 - 0.0142	0.0050 - 0.0113	0.0044 - 0.0099			
Alloy Steel	★ 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 - 0.0110	0.0038 - 0.0088	0.0033 - 0.0077			
		0.551 - 0.705	14.00 - 17.90	0.0063 - 0.0126	0.0050 - 0.0101	0.0044 - 0.0088			
		0.709 - 0.784	18.00 - 19.90	0.0063 - 0.0142	0.0050 - 0.0113	0.0044 - 0.0099			
Tool Steel	★ 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 - 0.0079	0.0025 - 0.0063	0.0022 - 0.0055			
		0.551 - 0.705	14.00 - 17.90	0.0043 - 0.0091	0.0035 - 0.0072	0.0030 - 0.0063			
		0.709 - 0.784	18.00 - 19.90	0.0043 - 0.0102	0.0035 - 0.0082	0.0030 - 0.0072			

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

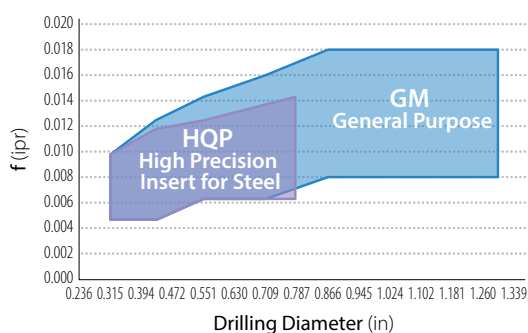
HQS Insert - Recommended Cutting Conditions ★1st Recommendation ☆2nd Recommendation

Workpiece Material	Recommended Grade / Cutting Speed (sfm)	Cutting Dia. DC (in)	Cutting Dia. DC (mm)	Holder Type (Cutting Depth) Feed Rate (ipr)					Notes
				1.5D	3D	5D	8D	12D	
Stainless Steel ※	★ 130-160	0.313 - 0.429	7.94 - 10.90	0.0031 - 0.0047	0.0025 - 0.0038	0.0022 - 0.0033			Coolant See P30
		0.433 - 0.547	11.00 - 13.90	0.0039 - 0.0059	0.0031 - 0.0047	0.0028 - 0.0041			
		0.551 - 0.705	14.00 - 17.90	0.0039 - 0.0059	0.0031 - 0.0047	0.0028 - 0.0041			
		0.709 - 0.784	18.00 - 19.90	0.0047 - 0.0071	0.0038 - 0.0057	0.0033 - 0.0050			
Heat-Resistant Alloy	★ 50-70	0.313 - 0.429	7.94 - 10.90	0.0031 - 0.0047	0.0025 - 0.0038	0.0022 - 0.0033			
		0.433 - 0.547	11.00 - 13.90	0.0031 - 0.0059	0.0025 - 0.0047	0.0022 - 0.0041			
		0.551 - 0.705	14.00 - 17.90	0.0039 - 0.0059	0.0031 - 0.0047	0.0028 - 0.0041			
		0.709 - 0.784	18.00 - 19.90	0.0047 - 0.0071	0.0038 - 0.0057	0.0033 - 0.0050			
Titanium Alloy	★ 100-130	0.313 - 0.429	7.94 - 10.90	0.0031 - 0.0047	0.0025 - 0.0038	0.0022 - 0.0033			
		0.433 - 0.547	11.00 - 13.90	0.0031 - 0.0059	0.0025 - 0.0047	0.0022 - 0.0041			
		0.551 - 0.705	14.00 - 17.90	0.0039 - 0.0059	0.0031 - 0.0047	0.0028 - 0.0041			
		0.709 - 0.784	18.00 - 19.90	0.0047 - 0.0071	0.0038 - 0.0057	0.0033 - 0.0050			

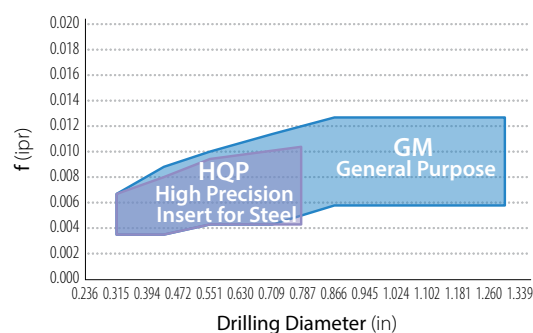
※ Feed Rate 0.006 ipr or less is recommended for stainless steel until drilling depth reaches 0.5D.
Internal and External coolant recommended for Stainless, Heat-resistant Alloys, and Titanium

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

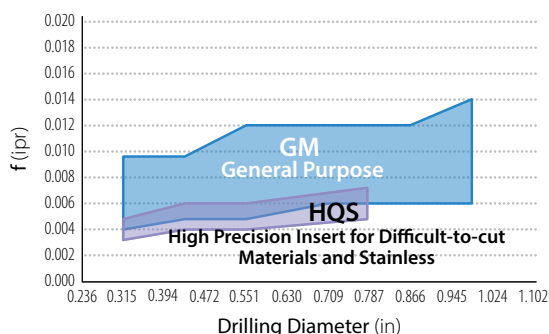
Low Carbon Steel/Carbon Steel/Alloy Steel



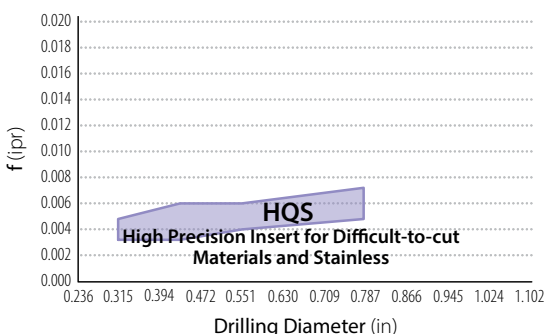
Mold Steel



Stainless Steel



Heat-resistant Alloy / Titanium Alloy



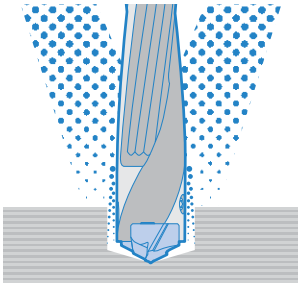
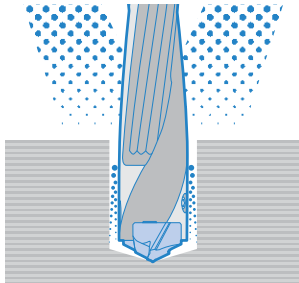
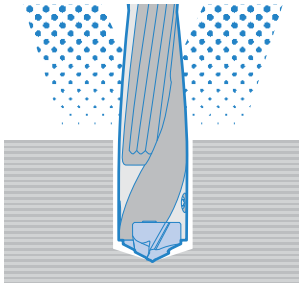
FTP / FTP-H Insert - Recommended Cutting Conditions ★1st Recommendation ☆2nd Recommendation

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 P30
			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 - 0.0157		0.0063 - 0.0126		0.0055 - 0.0110	
			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 - 0.0118		0.0044 - 0.0094		0.0039 - 0.0083	
			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 - 0.0079		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	
			0.984 - 1.004	25.00 - 25.50	0.0059 - 0.0110		0.0047 - 0.0088		0.0041 - 0.0077	
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	

※ Feed Rate 0.006 ipr or less is recommended for stainless steel until drilling depth reaches 0.5D.
Internal and External coolant recommended for Stainless, Heat-resistant Alloys, and Titanium

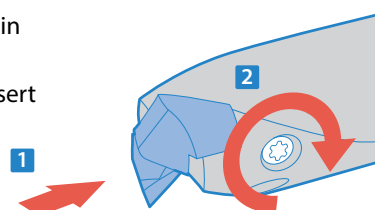
As drilling depth increases (1.5D → 3D → 5D → 8D), feed rates should be reduced.
Recommended Feed Rate Shows: 1.5D/3D = 100%, 5D/8D ≤ 80%, 12D ≤ 70%
Recommended Cutting Speed: 8D ≤ 80%, 12D ≤ 70%

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 x DC) is needed when using 8D/12D holder.

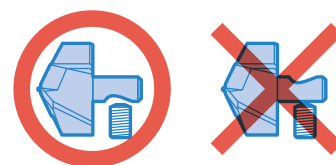
1st Recommendation	Internal + External Coolant		External Coolant
Internal coolant	Drilling Depth is Less than 1D	Stainless Steel or High-feed Machining	
			
			Lathe: Max. Drill Depth 3D Vertical M/C: Max. Drill Depth 1.5D

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 31)



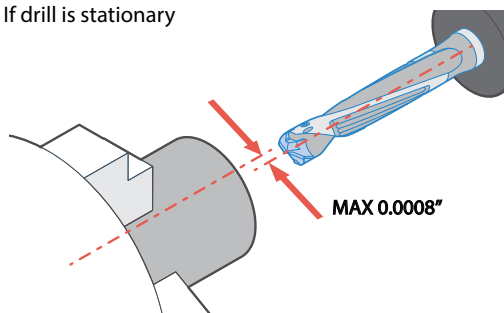
Be careful of the insert direction



- *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.

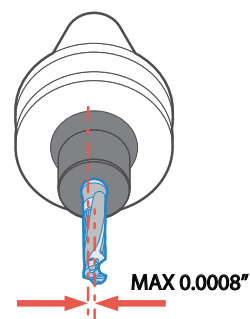
Core Deviation / Alignment Cautions

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



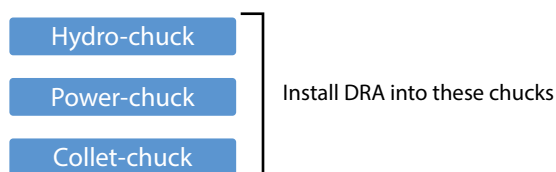
Do not use any arbor whose attachment surface is deformed. Center deviation must be less than 0.0008".

Machining Center Installation Cautions

How to install DRA

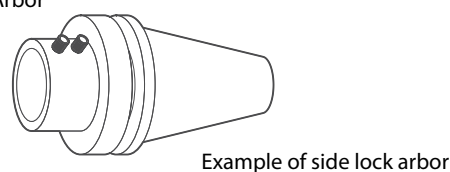
1st Recommendation

Hydro-chuck, Power-chuck, Collet-chuck



2nd Recommendation

Side lock Arbor



Example of side lock arbor

Other Cautions

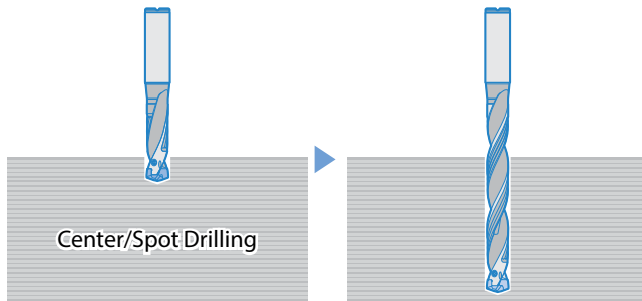
Cautions for Machining with 8D and 12D Holder

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



Applicable Workpieces for GM, HQP, and HQS Inserts

Application	Workpiece Shape	Machining Caution
Plain Surface		1. When machining stainless steel, for hole depths of up to 0.5D, keep feed rate at less than 0.006 ipr. 2. Thru coolant is recommended for smooth chip removal. For stainless steel, the combination of thru and external coolant is recommended.
Stacked Plates		1. Fix stacked plates securely to ensure they do not slip while machining.
Concave Surface		1. When machining concave holes, set the feed rate at less than half of recommended feed for continuous hole machining. 2. Utilize a pecking cycle if chips are not broken short at the inlet.
Tubing		1. Hole machining on the centerline of the tubing is possible. 2. Do not machine on curved surface areas. Good Center Machining Bad Off Center Machining

Not Recommended Workpieces for GM, HQP, and HQS Inserts

Application	Hole Expansion	Angled Surface	Half Cylindrical	Existing Hole
Workpiece Shape				

For FTP Insert Applicable Workpieces see **P11**

Spare Parts

Clamp Screw	Part Number
HS-2524TRP	HS-2524TRP
HS-2534TRP	HS-2534TRP
HS-3048TRP	HS-3048TRP
HS-4067TRP	HS-4067TRP
HS-50100TRP	HS-50100TRP

Wrench	Part Number	Torque
DTP-6	FTP-5	0.5 Nm (4.4 in/lb)
DTP-7	DTP-6	0.8 Nm (7.1 in/lb)
DTPM-15	DTP-7	1.2 Nm (10.6 in/lb)
FTP-5	DTPM-15	3.5 Nm (31.0 in/lb)



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