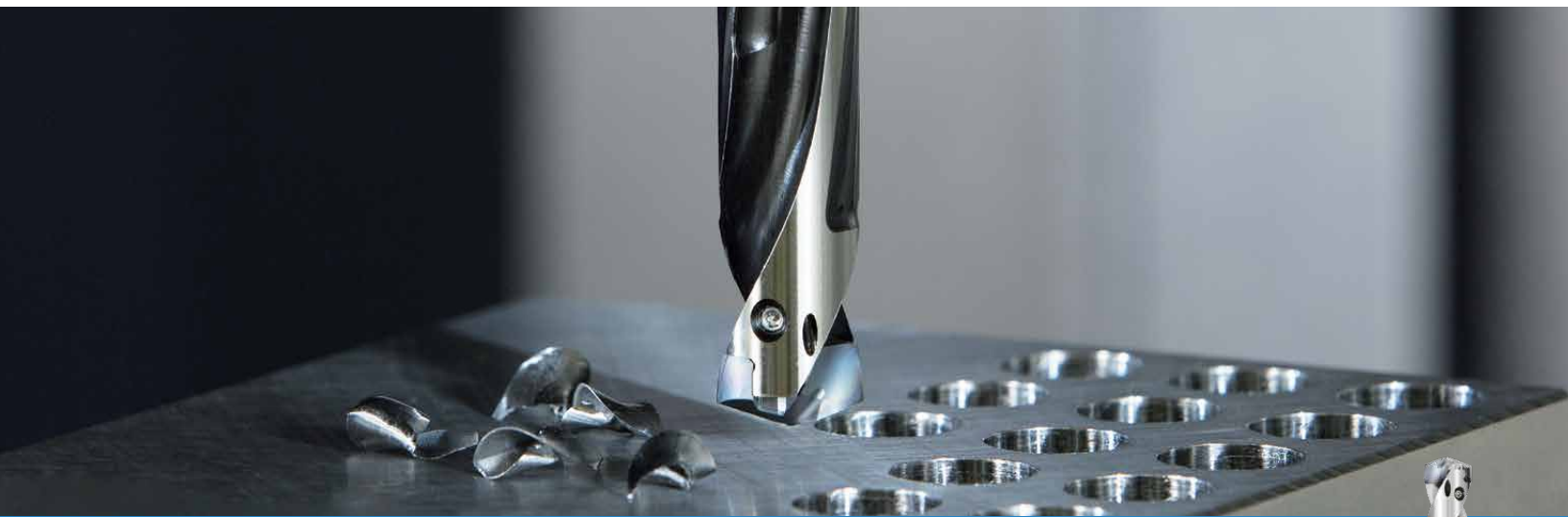




# DRA Magic Drill

High Efficiency Replaceable Tip Drill



Excellent Hole Accuracy with a Low Cutting Force Design

Optimal Web Thickness Limits Deflection

Fine Chip Breaking and Smooth Deep Hole Cutting

Easy Insert Replacement

NEW

**HQP**

High-precision Insert  
for Steel Machining



NEW

**HQS**

High-precision Insert for  
Difficult-to-cut Materials  
and Stainless Steel



# 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**



**NEW**

### 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**



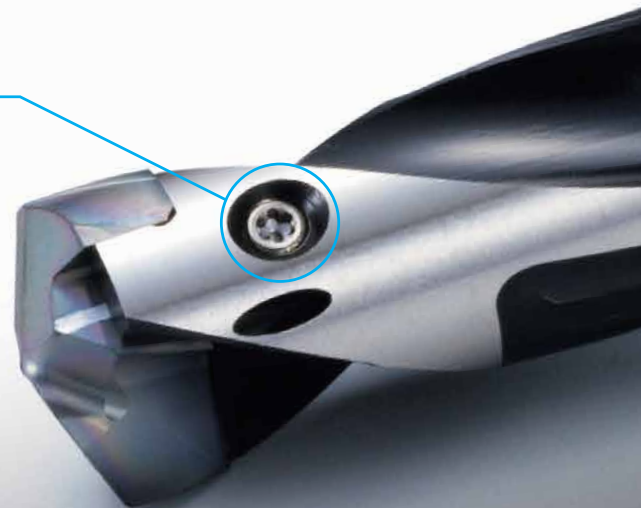
Extensive lineup of toolholders for shallow to deep hole drilling

Drilling Depth	1.5D	3D	5D	8D	12D
<b>SS-DRA</b> Straight shank 	Ø0.313" ~ Ø1.004" Ø7.94mm ~ Ø25.5mm				
<b>SF-DRA</b> 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



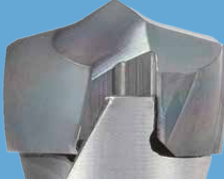
Insert can be replaced without removing screw



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

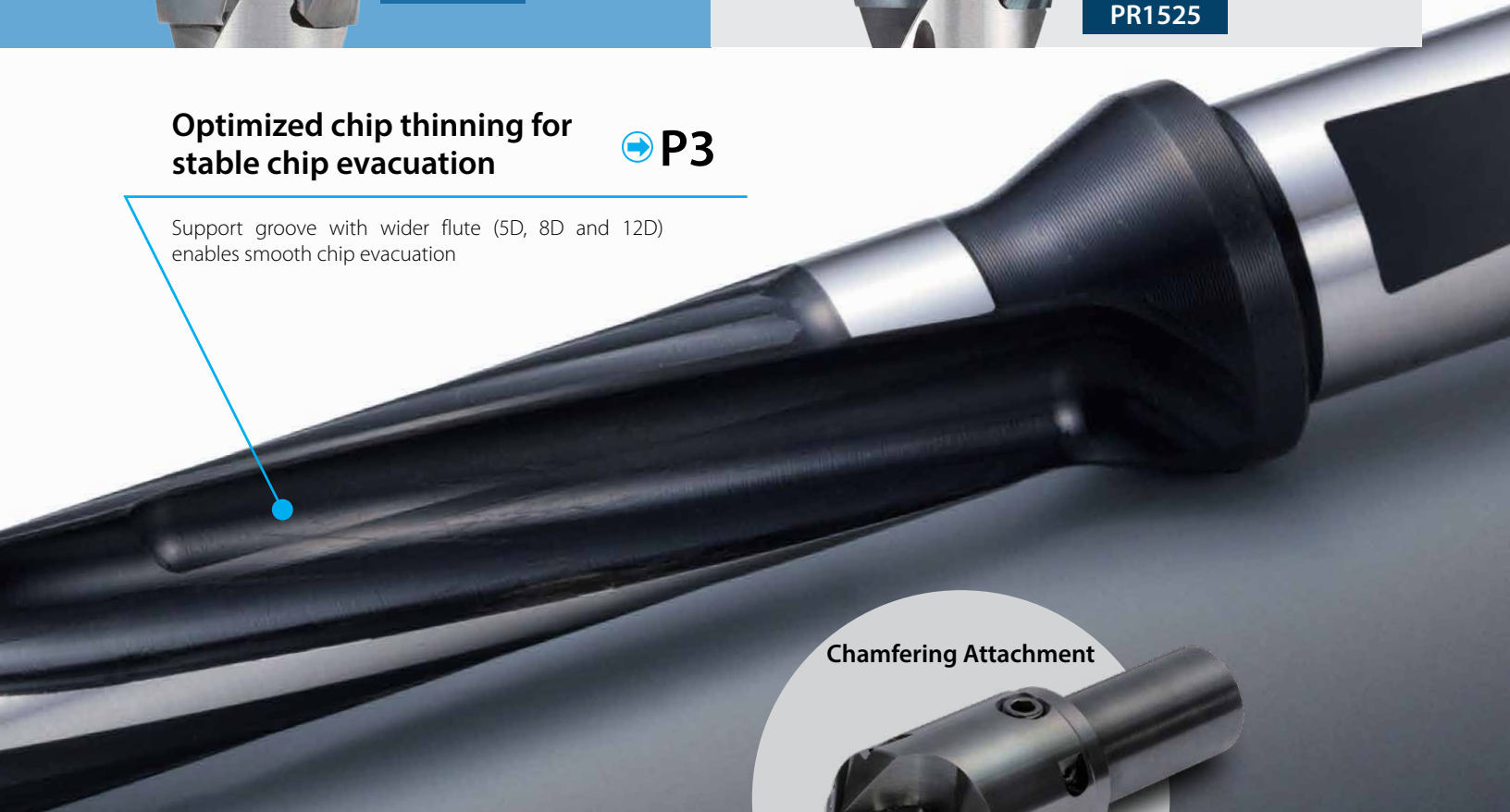
PR1535

PR1525

Optimized chip thinning for  
stable chip evacuation

→ P3

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



Chamfering Attachment

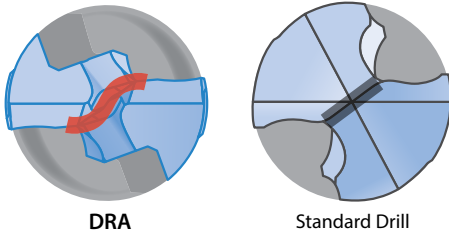


For SS Type

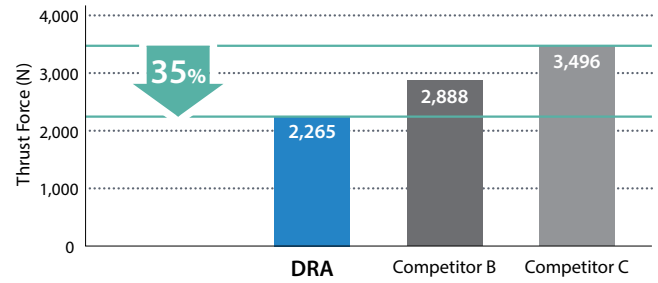
# 1 Low Cutting Force Design Improves Hole Accuracy

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

Cutting Edge Image



Cutting Force Comparison  
(Internal Evaluation)

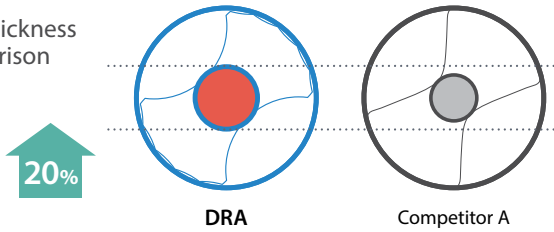


Cutting Conditions :  $V_c = 390$  sfm,  $f = 0.010$  ipr,  
Drilling Diameter  $\varnothing 0.551$ ", Drilling Depth 1.772", Wet, Workpiece : 1049 Steel

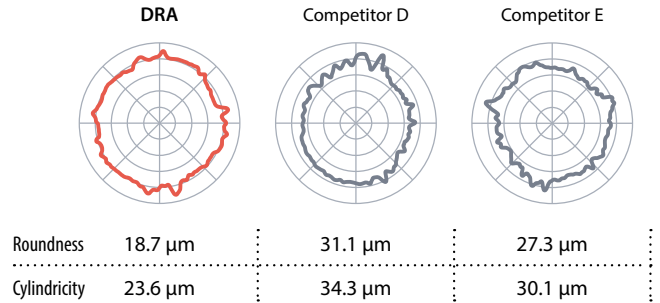
# 2 Optimal Web Thickness Limits Deflection

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

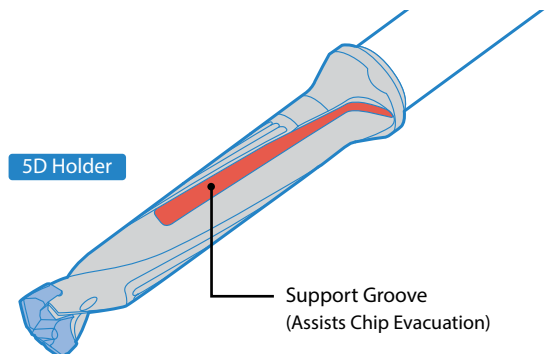
# 3 Fine Chip Breaking Even in Deep Hole Drilling Applications

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

Chip Comparison  
(Internal Evaluation)

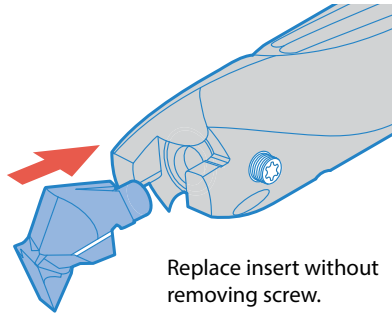


Cutting Conditions :  $V_c = 200$  sfm,  $f = 0.008$  ipr, Drilling Diameter 0.551"  
Drilling Depth 2.756", Wet Workpiece : 304 Stainless Steel

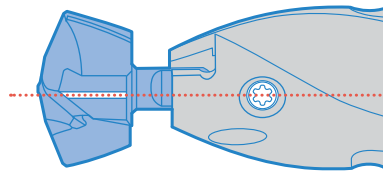


# 4 Easy Insert Replacement

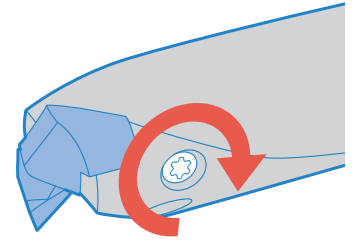
Replace insert without removing screw



Replace insert without removing screw.



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



Fix the insert by tightening the screw.

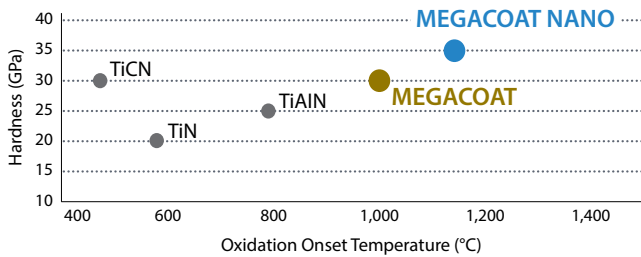
# 5 Long Tool Life and Stable Machining of Various Workpieces

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

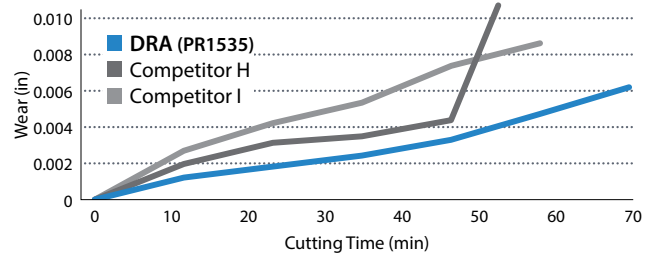
1st Recommendation

Steel PR1535	Cast Iron PR1525
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Coating Properties



Wear Resistance Comparison (Internal Evaluation)

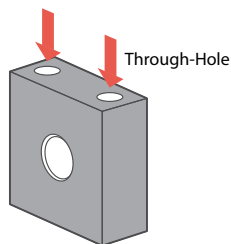


Cutting Conditions:  $V_c = 330$  sfm,  $f = 0.010$  ipr, Cutting Diameter  $\varnothing 0.551$ ", Cutting Depth 1.772", Wet Workpiece: 4140H

## Case Studies

### Attachment - Structural Steel

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



Cutting Time

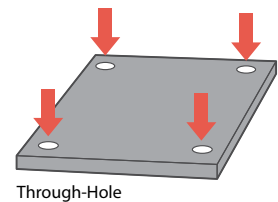


Competitor J applied a peck cycle to avoid chip clogging. DRA controlled chip evacuation without pecking.

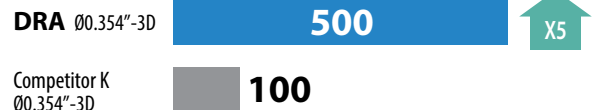
(User Evaluation)

### 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 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 NEW

**Double Margin**  
for High-Precision  
Steel Machining

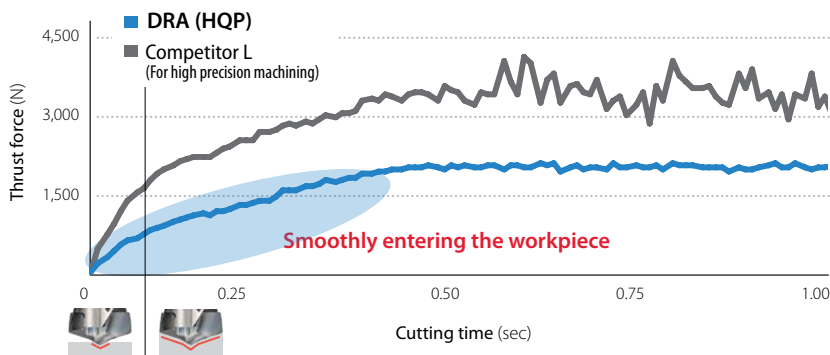


Improved Centripetal Forces with Special Two-step Bottom  
Excellent Cylindricity, Roundness and Surface Finish in Steel Machining

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

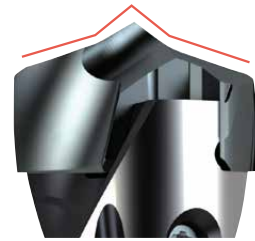
Special two-step bottom, large rake angle and double margin design reduce initial shock for higher precision machining

Cutting Force Comparison when Entering Workpiece (Internal Evaluation)

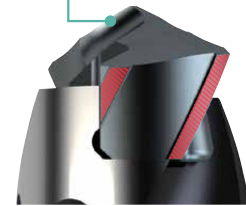


Cutting Conditions:  $V_c = 330$  sfm,  $f = 0.010$  ipr,  $H = 1.181$ ", Wet Workpiece: 1049 00.630" (3D)

### Special Two-step Bottom



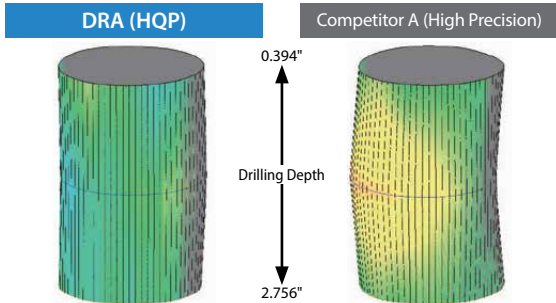
### Large Rake Angle



### Double Margin

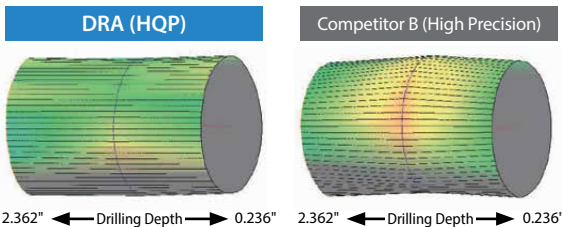
Cylindricity and Roundness Comparison (Internal Evaluation)

#### Machining Center (BT50)



Cutting Conditions:  $V_c = 330$  sfm,  $f = 0.010$  ipr,  $H = 3.150$ ", Wet Workpiece: 1049 00.630" (5D)

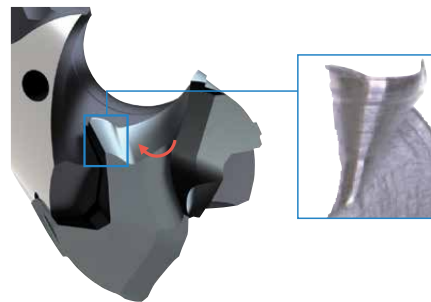
#### Lathes



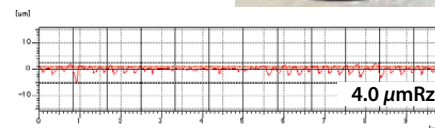
Cutting Conditions:  $V_c = 390$  sfm,  $f = 0.012$  ipr,  $H = 2.559$ ", Wet Workpiece: 4137 00.512" (5D)

## 2 Excellent Surface Finish with Unique Flute Shape

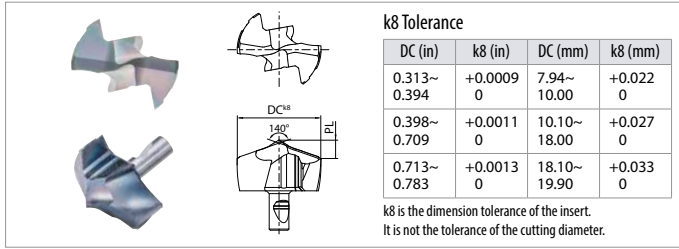
Controlled chips reduce scratches on the hole wall



Hole Wall Surface Finish Comparison (Internal Evaluation)



Cutting Conditions:  $V_c = 330$  sfm,  $f = 0.010$  ipr,  $H = 3.150$ ", Wet Workpiece: 1049 00.630" (5D)



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~ 0.783	+0.0013 0	18.10~ 19.90	+0.033 0

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

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	●	
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	●	
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	●	
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	●	
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	●	
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			Grade PR1525	Applicable Toolholder
	DC		PL (in)		
	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	●	
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	●	
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	●	
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	●	SS0750-DRA160M-○ SF0750-DRA160M-○ (SS18-DRA160M-○) (SF20-DRA160M-○)
1610M-HQP	0.634	16.10	0.141	●	
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	●	
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	●	SS0750-DRA170M-○ SF0750-DRA170M-○ (SS18-DRA170M-○) (SF20-DRA170M-○)
1710M-HQP	0.673	17.10	0.148	●	
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	●	
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	●	SS0750-DRA180M-○ SF0750-DRA180M-○ (SS20-DRA180M-○) (SF25-DRA180M-○)
1810M-HQP	0.713	18.10	0.157	●	
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	●	
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	●	SS1000-DRA190M-○ SF0750-DRA190M-○ (SS20-DRA190M-○) (SF25-DRA190M-○)
1910M-HQP	0.752	19.10	0.166	●	
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	●	
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

NEW

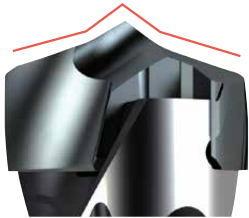
**Double Margin**  
for Difficult-to-Cut Materials  
and Stainless Steel Machining



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

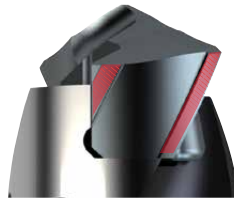
## 1 Three features specializing in machining difficult-to-cut materials

### Special Two-step Tip Edge



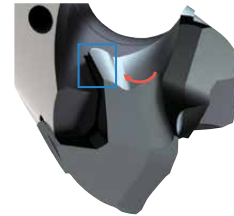
- Suppresses sudden fractures from occurring when entering the workpiece
- Improvement of cutting edge strength

### Double Margin



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

### Unique Flute Shape

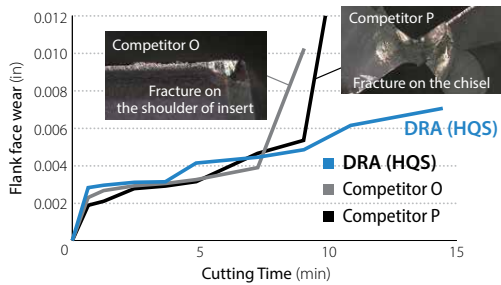


- Superior chip control
- Prevents damage to hole walls
- Excellent finished surface

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

### Inconel

Wear Resistance Comparison (Internal evaluation)



### DRA (HQS)



Normal wear condition



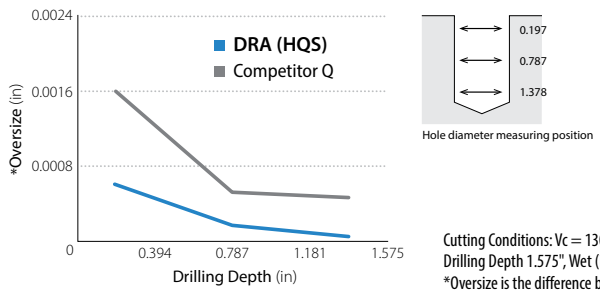
Good without fracture

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

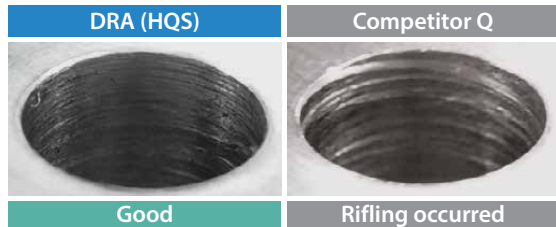
The shoulder part and chisel part of competitor were fractured and the tool life was shortened.  
HQS maintains long tool life.

### Stainless Steel

Hole Diameter Accuracy Comparison (Internal evaluation)



After machining

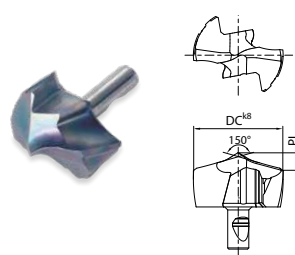


Cutting Conditions:  $V_c = 130 \text{ sfm}$ ,  $f = 0.004 \text{ ipr}$ , Drilling Diameter  $\varnothing 10.8 \text{ mm}$  (0.425") (5xD)  
Drilling Depth 1.575", Wet (internal/external), Workpiece: 304, BT50 M/C  
\*Oversize is the difference between the actual hole diameter and the drill diameter

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



# DRA Inserts (HQS - Difficult-to-cut Material and Stainless Steel) Cutting Diameter Ø0.313" ~ Ø0.768" (Ø8.00mm ~ Ø19.50mm)



**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~ 0.783	+0.0013 0	18.10~ 19.90	+0.033 0

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

## Inserts

### PR1525 (Steel)

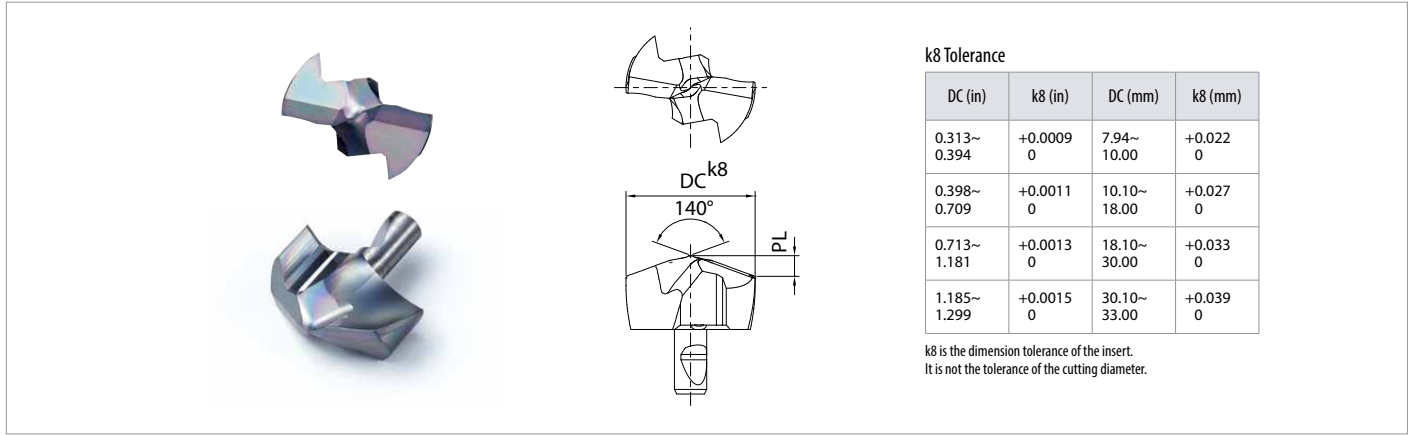
Part Number	Dimensions			Grade	Applicable Toolholder
	DC		PL (in)		
	in	mm		PR1535	
DA 0800M-HQS	0.315	8.00	0.069	●	SS0375-DRA080M-○ SF0500-DRA080M-○ (SS10-DRA080M-○) (SF12-DRA080M-○)
0820M-HQS	0.323	8.20	0.070	●	
DA 0850M-HQS	0.335	8.50	0.072	●	SS0375-DRA085M-○ SF0500-DRA085M-○ (SS10-DRA085M-○) (SF12-DRA085M-○)
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-○ (SS12-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)		
	in	mm		PR1535	
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	●	
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)

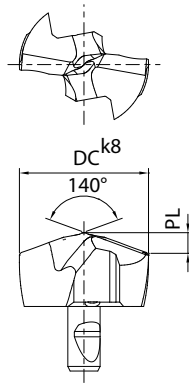
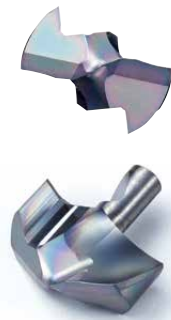
Part Number	Dimensions		PL (in)	Grade		Applicable Toolholder
	in	mm		PR1535	PR1525	
DA 0794M-GM	0.313	7.94	0.053	●	●	SS0375-DRA080M-○ SF0500-DRA080M-○ (SS10-DRA080M-○) (SF12-DRA080M-○)
0800M-GM	0.315	8.00	0.053	●	●	
0810M-GM	0.319	8.10	0.054	●	■	
0818M-GM	0.322	8.18	0.054	●	■	
0820M-GM	0.323	8.20	0.055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

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	●	●	
DA 1340M-GM	0.528	13.40	0.089	●	●	SS0625-DRA135M-○ SF0625-DRA135M-○ (SS14-DRA135M-○) (SF16-DRA135M-○)
DA 1350M-GM	0.531	13.50	0.090	●	●	
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	●	●	
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	●	●	
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	●	●	

Applicable Toolholders in ( ) are metric

● : 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

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

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	●	●	

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	●	●	

Applicable Toolholders in ( ) are metric

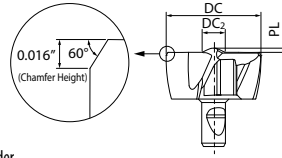
● : Standard Item ■ : Quoted Item (Made to Order)

Inserts Sold in 1 Piece Boxes

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



\* Uncut area remains in hole due to chamfered cutting edge



k8 Tolerance

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

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

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

## Inserts

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

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

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

Applicable Toolholders in ( ) are metric

● : Standard Item

Inserts Sold in 1 Piece Boxes

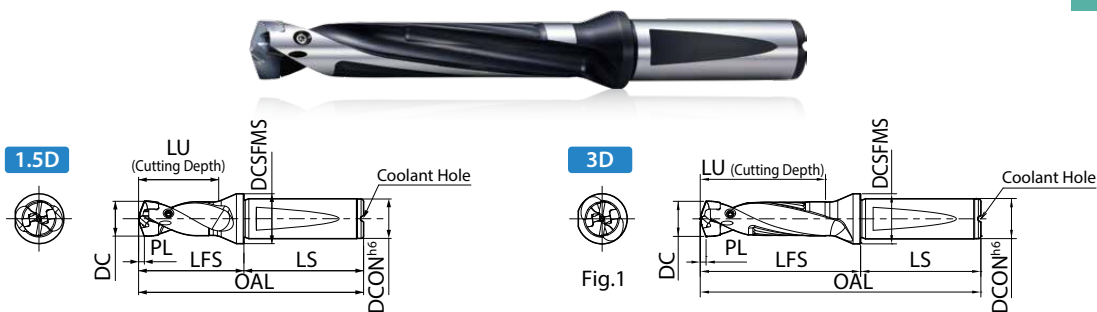
## Applicable Workpieces for FTP Inserts

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

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

# DRA Toolholders - Inch Sizes (with Flange)

Flange Shank



For PL dimension, reference insert dimension table.

## Toolholder Dimensions 1.5D

Part Number	Stock	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-1.5	●	0.313	0.334	0.500	2.805	1.033	0.504	1.772	0.630	DA0794M-... ~ DA0840M-...	HS-2524TRP	
SF0500-DRA085M-1.5	●	0.335	0.353		2.854	1.083	0.531					
SF0500-DRA090M-1.5	●	0.354	0.373		2.904	1.132	0.563					
SF0500-DRA095M-1.5	●	0.374	0.393		2.953	1.181	0.591					
SF0625-DRA100M-1.5	●	0.394	0.412	0.625	3.120	1.230	0.622	1.890	0.787	DA1000M-... ~ DA1040M-...	HS-2534TRP	FTP-5
SF0625-DRA105M-1.5	●	0.413	0.432		3.169	1.280	0.650					
SF0625-DRA110M-1.5	●	0.433	0.452		3.258	1.368	0.681					
SF0625-DRA115M-1.5	●	0.453	0.471		3.307	1.417	0.709					
SF0625-DRA120M-1.5	●	0.472	0.491		3.356	1.467	0.740					
SF0625-DRA125M-1.5	●	0.492	0.511		3.406	1.516	0.768					
SF0625-DRA130M-1.5	●	0.512	0.530		3.455	1.565	0.799					
SF0625-DRA135M-1.5	●	0.531	0.550		3.504	1.614	0.827					
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					
SF0750-DRA150M-1.5	●	0.591	0.629		3.819	1.850	0.917					
SF0750-DRA160M-1.5	●	0.630	0.668		3.957	1.988	0.976					
SF0750-DRA170M-1.5	●	0.669	0.708	1.000	4.055	2.087	1.035	2.205	1.260	DA1700M-... ~ DA1790M-...	HS-4067TRP	DTP-7
SF0750-DRA180M-1.5	●	0.709	0.747		4.193	2.224	1.094					
SF0750-DRA190M-1.5	●	0.748	0.786		4.291	2.323	1.154					
SF1000-DRA200M-1.5	●	0.787	0.826		4.626	2.421	1.213					
SF1000-DRA210M-1.5	●	0.827	0.865	1.000	4.724	2.520	1.272	2.205	1.260	DA2000M-... ~ DA2090M-...	HS-4067TRP	DTP-7
SF1000-DRA220M-1.5	●	0.866	0.905		4.862	2.657	1.331					
SF1000-DRA230M-1.5	●	0.906	0.944		4.961	2.756	1.390					
SF1000-DRA240M-1.5	●	0.945	0.983		5.059	2.854	1.449					
SF1000-DRA250M-1.5	●	0.984	1.004		5.157	2.953	1.508					

## Toolholder Dimensions 3D

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-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					
SF0500-DRA090M-3	●	0.354	0.373		3.465	1.693	1.122					
SF0500-DRA095M-3	●	0.374	0.393		3.543	1.772	1.181					
SF0625-DRA100M-3	●	0.394	0.412	0.625	3.740	1.850	1.240	1.890	0.787	DA1000M-... ~ DA1040M-...	HS-2534TRP	FTP-5
SF0625-DRA105M-3	●	0.413	0.432		3.819	1.929	1.299					
SF0625-DRA110M-3	●	0.433	0.452		3.937	2.047	1.358					
SF0625-DRA115M-3	●	0.453	0.471		4.016	2.126	1.417					
SF0625-DRA120M-3	●	0.472	0.491		4.094	2.205	1.476					
SF0625-DRA125M-3	●	0.492	0.511		4.173	2.283	1.535					
SF0625-DRA130M-3	●	0.512	0.530		4.252	2.362	1.594					
SF0625-DRA135M-3	●	0.531	0.550		4.331	2.441	1.654					
SF0625-DRA140M-3	●	0.551	0.570	0.750	4.409	2.520	1.713	1.969	0.984	DA1400M-... ~ DA1440M-...	HS-3048TRP	DTP-6
SF0625-DRA145M-3	●	0.571	0.590		4.488	2.598	1.772					
SF0750-DRA150M-3	●	0.591	0.629		4.764	2.795	1.890					
SF0750-DRA160M-3	●	0.630	0.668		4.961	2.992	2.008					
SF0750-DRA170M-3	●	0.669	0.708	1.000	5.118	3.150	2.126	2.205	1.260	DA1700M-... ~ DA1790M-...	HS-4067TRP	DTP-7
SF0750-DRA180M-3	●	0.709	0.747		5.315	3.346	2.244					
SF0750-DRA190M-3	●	0.748	0.786		5.472	3.504	2.362					
SF1000-DRA200M-3	●	0.787	0.826		5.866	3.661	2.480					
SF1000-DRA210M-3	●	0.827	0.865	1.000	6.024	3.819	2.598	2.205	1.260	DA2000M-... ~ DA2090M-...	HS-4067TRP	DTP-7
SF1000-DRA220M-3	●	0.866	0.905		6.220	4.016	2.717					
SF1000-DRA230M-3	●	0.906	0.944		6.378	4.173	2.835					
SF1000-DRA240M-3	●	0.945	0.983		6.535	4.331	2.953					
SF1000-DRA250M-3	●	0.984	1.004		6.693	4.488	3.071					

\*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



5D

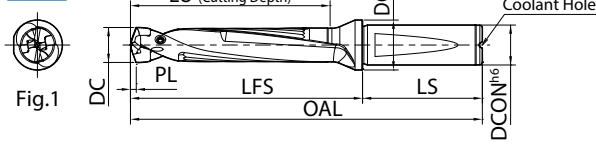


Fig.1

8D

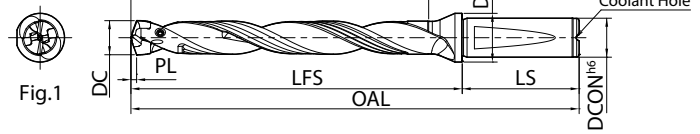


Fig.1

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	DA0794M-... ~ DA0840M-...	HS-2524TRP	
SF0500-DRA085M-5	●	0.335	0.353		4.094	2.323	1.772					
SF0500-DRA090M-5	●	0.354	0.373		4.213	2.441	1.870					
SF0500-DRA095M-5	●	0.374	0.393		4.331	2.559	1.969					
SF0625-DRA100M-5	●	0.394	0.412	0.625	4.567	2.677	2.067	1.890	0.787	DA1000M-... ~ DA1040M-...	HS-2534TRP	FTP-5
SF0625-DRA105M-5	●	0.413	0.432		4.685	2.795	2.165					
SF0625-DRA110M-5	●	0.433	0.452		4.843	2.953	2.264					
SF0625-DRA115M-5	●	0.453	0.471		4.961	3.071	2.362					
SF0625-DRA120M-5	●	0.472	0.491		5.079	3.189	2.461					
SF0625-DRA125M-5	●	0.492	0.511		5.197	3.307	2.559					
SF0625-DRA130M-5	●	0.512	0.530		5.315	3.425	2.657					
SF0625-DRA135M-5	●	0.531	0.550		5.433	3.543	2.756					
SF0625-DRA140M-5	●	0.551	0.570		5.551	3.661	2.854					
SF0625-DRA145M-5	●	0.571	0.590		5.669	3.780	2.953					
SF0750-DRA150M-5	●	0.591	0.629	0.750	6.024	4.055	3.150	1.969	0.984	DA1500M-... ~ DA1590M-...	HS-3048TRP	DTP-6
SF0750-DRA160M-5	●	0.630	0.668		6.299	4.331	3.346					
SF0750-DRA170M-5	●	0.669	0.708		6.535	4.567	3.543					
SF0750-DRA180M-5	●	0.709	0.747		6.811	4.843	3.740					
SF0750-DRA190M-5	●	0.748	0.786	1.000	7.047	5.079	3.937	2.205	1.260	DA1900M-... ~ DA1990M-...	HS-4067TRP	DTP-7
SF1000-DRA200M-5	●	0.787	0.826		7.520	5.315	4.134					
SF1000-DRA210M-5	●	0.827	0.865		7.756	5.551	4.331					
SF1000-DRA220M-5	●	0.866	0.905		8.031	5.827	4.528					
SF1000-DRA230M-5	●	0.906	0.944		8.268	6.063	4.724					
SF1000-DRA240M-5	●	0.945	0.983		8.504	6.299	4.921					
SF1000-DRA250M-5	●	0.984	1.004		8.740	6.535	5.116					

## Toolholder Dimensions 8D

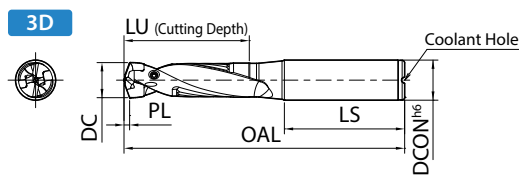
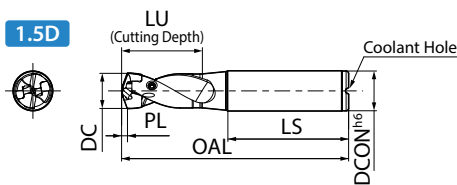
Part Number	Stock	Dimensions (in)							Applicable Insert See Page 7-12	Spare Parts		
		DC*		DCON (h6)	OAL	LFS	LU	LS		DCSFMS	Clamp Screw	Wrench
		min.	max.									
SF0500-DRA080M-8	●	0.313	0.334	0.500	4.961	3.189	2.677	1.772	0.630	DA0794M-... ~ DA0840M-...	HS-2524TRP	
SF0500-DRA085M-8	●	0.335	0.353		5.157	3.386	2.835					
SF0500-DRA090M-8	●	0.354	0.373		5.315	3.543	2.992					
SF0500-DRA095M-8	●	0.374	0.393		5.512	3.740	3.150					
SF0625-DRA100M-8	●	0.394	0.412	0.625	5.787	3.898	3.307	1.890	0.787	DA1000M-... ~ DA1040M-...	HS-2534TRP	FTP-5
SF0625-DRA105M-8	●	0.413	0.432		5.984	4.094	3.465					
SF0625-DRA110M-8	●	0.433	0.452		6.181	4.291	3.622					
SF0625-DRA115M-8	●	0.453	0.471		6.378	4.488	3.780					
SF0625-DRA120M-8	●	0.472	0.491		6.535	4.646	3.937					
SF0625-DRA125M-8	●	0.492	0.511		6.732	4.843	4.094					
SF0625-DRA130M-8	●	0.512	0.530		6.890	5.000	4.252					
SF0625-DRA135M-8	●	0.531	0.550		7.087	5.197	4.409					
SF0625-DRA140M-8	●	0.551	0.570		7.244	5.354	4.567					
SF0625-DRA145M-8	●	0.571	0.590		7.441	5.551	4.724					
SF0750-DRA150M-8	●	0.591	0.629	0.750	7.913	5.945	5.039	1.969	0.984	DA1500M-... ~ DA1590M-...	HS-3048TRP	DTP-6
SF0750-DRA160M-8	●	0.630	0.668		8.307	6.339	5.354					
SF0750-DRA170M-8	●	0.669	0.708		8.661	6.693	5.669					
SF0750-DRA180M-8	●	0.709	0.747		9.055	7.087	5.984					
SF0750-DRA190M-8	●	0.748	0.786	1.000	9.409	7.441	6.299	2.205	1.260	DA1900M-... ~ DA1990M-...	HS-4067TRP	DTP-7
SF1000-DRA200M-8	●	0.787	0.826		10.000	7.795	6.614					
SF1000-DRA210M-8	●	0.827	0.865		10.354	8.150	6.929					
SF1000-DRA220M-8	●	0.866	0.905		10.748	8.543	7.244					
SF1000-DRA230M-8	●	0.906	0.944		11.102	8.989	7.559					
SF1000-DRA240M-8	●	0.945	0.983		11.457	9.252	7.874					
SF1000-DRA250M-8	●	0.984	1.004		11.811	9.606	8.189					

\*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 <a href="#">Page 7-12</a>	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	DA0794M-... ~ DA0840M-...	HS-2524TRP	
SS0375-DRA085M-1.5	●	0.335	0.353		2.657	0.531				DA0850M-... ~ DA0890M-...
SS0375-DRA090M-1.5	●	0.354	0.373		2.707	0.563				DA0900M-... ~ DA0940M-...
SS0500-DRA095M-1.5	●	0.374	0.393	0.500	2.953	0.591	1.772	DA0950M-... ~ DA0990M-...	FTP-5	
SS0500-DRA100M-1.5	●	0.394	0.412		3.002	0.622				DA1000M-... ~ DA1040M-...
SS0500-DRA105M-1.5	●	0.413	0.432		3.051	0.650				DA1050M-... ~ DA1090M-...
SS0500-DRA110M-1.5	●	0.433	0.452	0.625	3.140	0.681	1.890	DA1100M-... ~ DA1140M-...	HS-2534TRP	
SS0500-DRA115M-1.5	●	0.453	0.471		3.189	0.709				DA1150M-... ~ DA1190M-...
SS0625-DRA120M-1.5	●	0.472	0.491		3.356	0.740				DA1200M-... ~ DA1240M-...
SS0625-DRA125M-1.5	●	0.492	0.511	0.750	3.406	0.768	1.969	DA1250M-... ~ DA1290M-...	HS-3048TRP	
SS0625-DRA130M-1.5	●	0.512	0.530		3.455	0.799				DA1300M-... ~ DA1340M-...
SS0625-DRA135M-1.5	●	0.531	0.550		3.504	0.827				DA1350M-... ~ DA1390M-...
SS0625-DRA140M-1.5	●	0.551	0.570	1.000	3.553	0.858	2.205	DA1400M-... ~ DA1440M-...	HS-4067TRP	
SS0625-DRA145M-1.5	●	0.571	0.590		3.602	0.886				DA1450M-... ~ DA1490M-...
SS0625-DRA150M-1.5	●	0.591	0.629		3.740	0.917				DA1500M-... ~ DA1590M-...
SS0750-DRA160M-1.5	●	0.630	0.668	0.750	3.957	0.976	1.969	DA1600M-... ~ DA1690M-...	DTP-6	
SS0750-DRA170M-1.5	●	0.669	0.708		4.055	1.035				DA1700M-... ~ DA1790M-...
SS0750-DRA180M-1.5	●	0.709	0.747		4.193	1.094				DA1800M-... ~ DA1890M-...
SS1000-DRA190M-1.5	●	0.748	0.786	1.000	4.528	1.154	2.205	DA1900M-... ~ DA1990M-...	DTP-7	
SS1000-DRA200M-1.5	●	0.787	0.826		4.626	1.213				DA2000M-... ~ DA2090M-...
SS1000-DRA210M-1.5	●	0.827	0.865		4.724	1.272				DA2100M-... ~ DA2150M-...
SS1000-DRA220M-1.5	●	0.866	0.905	1.000	4.862	1.331	2.205	DA2200M-... ~ DA2250M-...	HS-4067TRP	
SS1000-DRA230M-1.5	●	0.906	0.944		4.961	1.390				DA2300M-... ~ DA2381M-...
SS1000-DRA240M-1.5	●	0.945	0.983		5.059	1.449				DA2400M-... ~ DA2450M-...
SS1000-DRA250M-1.5	●	0.984	1.004	5.157	1.508	DA2500M-... ~ DA2550M-...				

## Toolholder Dimensions 3D

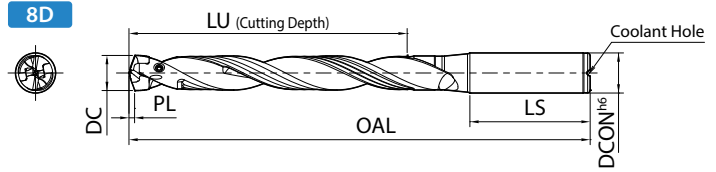
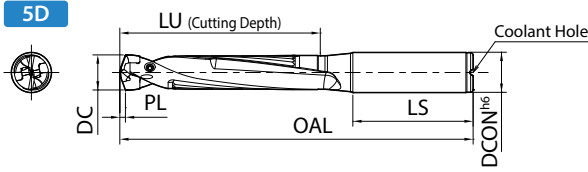
Part Number	Stock	Dimensions (in)					Applicable Insert See <a href="#">Page 7-12</a>	Spare Parts		
		DC*		DCON (h6)	OAL	LU		LS	Clamp Screw	Wrench
		min.	max.							
SS0375-DRA080M-3	●	0.313	0.334	0.375	3.110	1.004	1.575	DA0794M-... ~ DA0840M-...	HS-2524TRP	
SS0375-DRA085M-3	●	0.335	0.353		3.189	1.063				DA0850M-... ~ DA0890M-...
SS0375-DRA090M-3	●	0.354	0.373		3.268	1.122				DA0900M-... ~ DA0940M-...
SS0500-DRA095M-3	●	0.374	0.393	0.500	3.543	1.181	1.772	DA0950M-... ~ DA0990M-...	FTP-5	
SS0500-DRA100M-3	●	0.394	0.412		3.622	1.240				DA1000M-... ~ DA1040M-...
SS0500-DRA105M-3	●	0.413	0.432		3.701	1.299				DA1050M-... ~ DA1090M-...
SS0500-DRA110M-3	●	0.433	0.452	0.625	3.819	1.358	1.890	DA1100M-... ~ DA1140M-...	HS-2534TRP	
SS0500-DRA115M-3	●	0.453	0.471		3.898	1.417				DA1150M-... ~ DA1190M-...
SS0625-DRA120M-3	●	0.472	0.491		4.094	1.476				DA1200M-... ~ DA1240M-...
SS0625-DRA125M-3	●	0.492	0.511	0.750	4.173	1.535	1.969	DA1250M-... ~ DA1290M-...	HS-3048TRP	
SS0625-DRA130M-3	●	0.512	0.530		4.252	1.594				DA1300M-... ~ DA1340M-...
SS0625-DRA135M-3	●	0.531	0.550		4.331	1.654				DA1350M-... ~ DA1390M-...
SS0625-DRA140M-3	●	0.551	0.570	1.000	4.409	1.713	2.205	DA1400M-... ~ DA1440M-...	DTP-6	
SS0625-DRA145M-3	●	0.571	0.590		4.488	1.772				DA1450M-... ~ DA1490M-...
SS0625-DRA150M-3	●	0.591	0.629		4.685	1.890				DA1500M-... ~ DA1590M-...
SS0750-DRA160M-3	●	0.630	0.668	0.750	4.961	2.008	1.969	DA1600M-... ~ DA1690M-...	HS-4067TRP	
SS0750-DRA170M-3	●	0.669	0.708		5.118	2.126				DA1700M-... ~ DA1790M-...
SS0750-DRA180M-3	●	0.709	0.747		5.315	2.244				DA1800M-... ~ DA1890M-...
SS1000-DRA190M-3	●	0.748	0.786	1.000	5.472	2.362	2.205	DA1900M-... ~ DA1990M-...	DTP-7	
SS1000-DRA200M-3	●	0.787	0.826		5.866	2.480				DA2000M-... ~ DA2090M-...
SS1000-DRA210M-3	●	0.827	0.865		6.024	2.598				DA2100M-... ~ DA2150M-...
SS1000-DRA220M-3	●	0.866	0.905	1.000	6.220	2.717	2.205	DA2200M-... ~ DA2250M-...	HS-4067TRP	
SS1000-DRA230M-3	●	0.906	0.944		6.378	2.835				DA2300M-... ~ DA2381M-...
SS1000-DRA240M-3	●	0.945	0.983		6.535	2.953				DA2400M-... ~ DA2450M-...
SS1000-DRA250M-3	●	0.984	1.004	6.693	3.070	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 (Straight Shank)

Straight Shank



For PL dimension, reference insert dimension table.

## Toolholder Dimensions **5D**

Part Number	Stock	Dimensions (in)					Applicable Insert See <a href="#">Page 7-12</a>	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-...	HS-2524TRP	FTP-5	
SS0375-DRA085M-5	●	0.335	0.353		3.898	1.772					DA0850M-... ~ DA0890M-...
SS0375-DRA090M-5	●	0.354	0.373		4.016	1.870					DA0900M-... ~ DA0940M-...
SS0500-DRA095M-5	●	0.374	0.393	0.500	4.331	1.969	1.772	DA0950M-... ~ DA0990M-...	HS-2534TRP	FTP-5	
SS0500-DRA100M-5	●	0.394	0.412		4.449	2.067		DA1000M-... ~ DA1040M-...			
SS0500-DRA105M-5	●	0.413	0.432		4.567	2.165		DA1050M-... ~ DA1090M-...			
SS0500-DRA110M-5	●	0.433	0.452	0.625	4.724	2.264	1.890	DA1100M-... ~ DA1140M-...	HS-3048TRP	DTP-6	
SS0500-DRA115M-5	●	0.453	0.471		4.843	2.362		DA1150M-... ~ DA1190M-...			
SS0625-DRA120M-5	●	0.472	0.491		5.079	2.461		DA1200M-... ~ DA1240M-...			
SS0625-DRA125M-5	●	0.492	0.511	0.750	5.197	2.559	1.969	DA1250M-... ~ DA1290M-...	HS-4067TRP	DTP-7	
SS0625-DRA130M-5	●	0.512	0.530		5.315	2.657		DA1300M-... ~ DA1340M-...			
SS0625-DRA135M-5	●	0.531	0.550		5.433	2.756		DA1350M-... ~ DA1390M-...			
SS0625-DRA140M-5	●	0.551	0.570	1.000	5.551	2.854	2.205	DA1400M-... ~ DA1440M-...	HS-3048TRP	DTP-6	
SS0625-DRA145M-5	●	0.571	0.590		5.669	2.953		DA1450M-... ~ DA1490M-...			
SS0625-DRA150M-5	●	0.591	0.629		5.945	3.150		DA1500M-... ~ DA1590M-...			
SS0750-DRA160M-5	●	0.630	0.668	0.750	6.299	3.346	1.969	DA1600M-... ~ DA1690M-...	HS-3048TRP	DTP-6	
SS0750-DRA170M-5	●	0.669	0.708		6.535	3.543		DA1700M-... ~ DA1790M-...			
SS0750-DRA180M-5	●	0.709	0.747		6.811	3.740		DA1800M-... ~ DA1890M-...			
SS1000-DRA190M-5	●	0.748	0.786	1.000	7.047	3.937	2.205	DA1900M-... ~ DA1990M-...	HS-4067TRP	DTP-7	
SS1000-DRA200M-5	●	0.787	0.826		7.520	4.134		DA2000M-... ~ DA2090M-...			
SS1000-DRA210M-5	●	0.827	0.865		7.756	4.331		DA2100M-... ~ DA2150M-...			
SS1000-DRA220M-5	●	0.866	0.905	1.000	8.031	4.528	2.205	DA2200M-... ~ DA2250M-...	HS-4067TRP	DTP-7	
SS1000-DRA230M-5	●	0.906	0.944		8.268	4.724		DA2300M-... ~ DA2381M-...			
SS1000-DRA240M-5	●	0.945	0.983		8.504	4.921		DA2400M-... ~ DA2450M-...			
SS1000-DRA250M-5	●	0.984	1.004	8.740	5.116	DA2500M-... ~ DA2550M-...					

## Toolholder Dimensions **8D**

Part Number	Stock	Dimensions (in)					Applicable Insert See <a href="#">Page 7-12</a>	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-...	HS-2524TRP	FTP-5	
SS0375-DRA085M-8	●	0.335	0.353		4.961	2.835					DA0850M-... ~ DA0890M-...
SS0375-DRA090M-8	●	0.354	0.373		5.118	2.992					DA0900M-... ~ DA0940M-...
SS0500-DRA095M-8	●	0.374	0.393	0.500	5.512	3.150	1.772	DA0950M-... ~ DA0990M-...	HS-2534TRP	FTP-5	
SS0500-DRA100M-8	●	0.394	0.412		5.669	3.307		DA1000M-... ~ DA1040M-...			
SS0500-DRA105M-8	●	0.413	0.432		5.866	3.465		DA1050M-... ~ DA1090M-...			
SS0500-DRA110M-8	●	0.433	0.452	0.625	6.063	3.622	1.890	DA1100M-... ~ DA1140M-...	HS-3048TRP	DTP-6	
SS0500-DRA115M-8	●	0.453	0.471		6.260	3.780		DA1150M-... ~ DA1190M-...			
SS0625-DRA120M-8	●	0.472	0.491		6.535	3.937		DA1200M-... ~ DA1240M-...			
SS0625-DRA125M-8	●	0.492	0.511	0.750	6.732	4.094	1.969	DA1250M-... ~ DA1290M-...	HS-3048TRP	DTP-6	
SS0625-DRA130M-8	●	0.512	0.530		6.890	4.252		DA1300M-... ~ DA1340M-...			
SS0625-DRA135M-8	●	0.531	0.550		7.087	4.409		DA1350M-... ~ DA1390M-...			
SS0625-DRA140M-8	●	0.551	0.570	1.000	7.244	4.567	2.205	DA1400M-... ~ DA1440M-...	HS-4067TRP	DTP-7	
SS0625-DRA145M-8	●	0.571	0.590		7.441	4.724		DA1450M-... ~ DA1490M-...			
SS0625-DRA150M-8	●	0.591	0.629		7.835	5.039		DA1500M-... ~ DA1590M-...			
SS0750-DRA160M-8	●	0.630	0.668	0.750	8.307	5.354	1.969	DA1600M-... ~ DA1690M-...	HS-3048TRP	DTP-6	
SS0750-DRA170M-8	●	0.669	0.708		8.661	5.669		DA1700M-... ~ DA1790M-...			
SS0750-DRA180M-8	●	0.709	0.747		9.055	5.984		DA1800M-... ~ DA1890M-...			
SS1000-DRA190M-8	●	0.748	0.786	1.000	9.409	6.299	2.205	DA1900M-... ~ DA1990M-...	HS-4067TRP	DTP-7	
SS1000-DRA200M-8	●	0.787	0.826		10.000	6.614		DA2000M-... ~ DA2090M-...			
SS1000-DRA210M-8	●	0.827	0.865		10.354	6.929		DA2100M-... ~ DA2150M-...			
SS1000-DRA220M-8	●	0.866	0.905	1.000	10.748	7.244	2.205	DA2200M-... ~ DA2250M-...	HS-4067TRP	DTP-7	
SS1000-DRA230M-8	●	0.906	0.944		11.102	7.559		DA2300M-... ~ DA2381M-...			
SS1000-DRA240M-8	●	0.945	0.983		11.457	7.874		DA2400M-... ~ DA2450M-...			
SS1000-DRA250M-8	●	0.984	1.004	11.969	8.189	DA2500M-... ~ DA2550M-...					

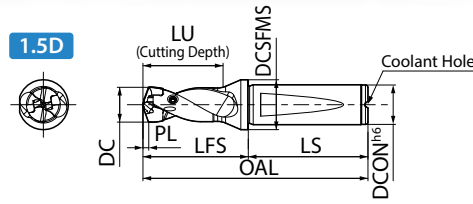
\*DC min. & max. show the cutting diameter range of inserts that will fit into the toolholder. See applicable insert tables on page [7-12](#) for actual cutting diameters (DC).

● : Standard Item



# DRA Toolholders - Metric Sizes (with Flange)

Flange Shank



For PL dimension, reference insert dimension table.

## Toolholder Dimensions 1.5D

Part Number	Stock	Dimensions (mm)								Applicable Insert See Page 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	
SF12-DRA085M-1.5	●	8.50	8.99		72.5	27.5	13.5					
SF12-DRA090M-1.5	●	9.00	9.49		73.7	28.7	14.3					
SF12-DRA095M-1.5	●	9.50	9.99		75.0	30.0	15.0					
SF16-DRA100M-1.5	●	10.00	10.49	16	79.2	31.2	15.8	48	20	DA1000M-...~DA1040M-...	HS-2534TRP	FTP-5
SF16-DRA105M-1.5	●	10.50	10.99		80.5	32.5	16.5					
SF16-DRA110M-1.5	●	11.00	11.49		82.7	34.7	17.3					
SF16-DRA115M-1.5	●	11.50	11.99		84.0	36.0	18.0					
SF16-DRA120M-1.5	●	12.00	12.49		85.2	37.2	18.8					
SF16-DRA125M-1.5	●	12.50	12.99		86.5	38.5	19.5					
SF16-DRA130M-1.5	●	13.00	13.49		87.7	39.7	20.3					
SF16-DRA135M-1.5	●	13.50	13.99		89.0	41.0	21.0					
SF16-DRA140M-1.5	●	14.00	14.49		90.2	42.2	21.8					
SF16-DRA145M-1.5	●	14.50	14.99		91.5	43.5	22.5					
SF20-DRA150M-1.5	●	15.00	15.99	20	97.0	47.0	24.0	50	25	DA1500M-...~DA1590M-...	HS-3048TRP	DTP-6
SF20-DRA160M-1.5	●	16.00	16.99		100.5	50.5	25.5					
SF20-DRA170M-1.5	●	17.00	17.99		103.0	53.0	27.0					
SF25-DRA180M-1.5	●	18.00	18.99	25	112.5	56.5	28.5	56	32	DA1800M-...~DA1890M-...	HS-4067TRP	DTP-7
SF25-DRA190M-1.5	●	19.00	19.99		115.0	59.0	30.0					
SF25-DRA200M-1.5	●	20.00	20.99		117.5	61.5	31.5					
SF25-DRA210M-1.5	●	21.00	21.99		120.0	64.0	33.0					
SF25-DRA220M-1.5	●	22.00	22.99		123.5	67.5	34.5					
SF25-DRA230M-1.5	●	23.00	23.99		126.0	70.0	36.0					
SF25-DRA240M-1.5	●	24.00	24.99		128.5	72.5	37.5					
SF25-DRA250M-1.5	●	25.00	25.50		131.0	75.0	39.0					

\*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



3D

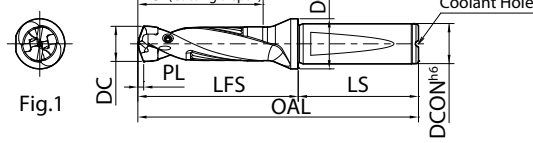


Fig.1

3D

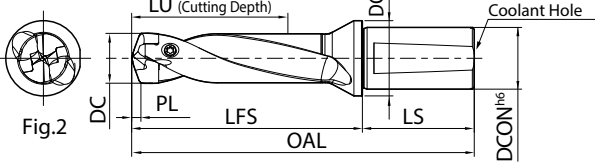


Fig.2

For PL dimension, reference insert dimension table.

## Toolholder Dimensions 3D

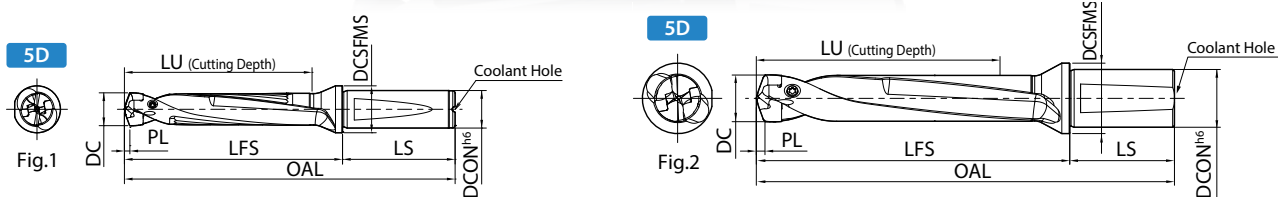
Part Number	Stock	DC*		Dimensions (mm)						Drawing	Applicable Insert See Page 7-12	Spare Parts	
		min.	max.	DCON (h6)	OAL	LFS	LU	LS	DCSFMS			Clamp Screw	Wrench
SF12-DRA080M-3	●	7.94	8.49	12	84	39	25.5	45	16	Fig.1	DA0794M-... ~ DA0840M-...	HS-2524TRP	
SF12-DRA085M-3	●	8.50	8.99		86	41	27.0				DA0850M-... ~ 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	FTP-5
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	16	112	64	43.5	48	20	Fig.1	DA1400M-... ~ DA1440M-...	HS-3048TRP	DTP-6
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

# DRA Toolholders - Metric Sizes (with Flange)

Flange Shank



For PL dimension, reference insert dimension table.

## Toolholder Dimensions 5D

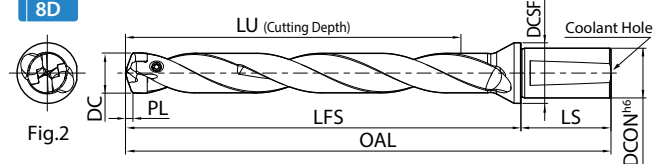
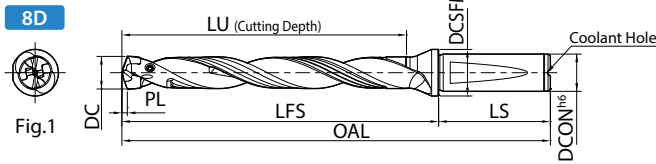
Part Number	Stock	Dimensions (mm)								Drawing	Applicable Insert See <a href="#">Page 7-12</a>	Spare Parts							
		DC*		DCON (h6)	OAL	LFS	LU	LS	DCSFMS			Clamp Screw	Wrench						
		min.	max.																
SF12-DRA080M-5	●	7.94	8.49	12	101	56	42.5	45	16	Fig.1	DA0794M-... ~ DA0840M-...	HS-2524TRP							
SF12-DRA085M-5	●	8.50	8.99		104	59	45.0												
SF12-DRA090M-5	●	9.00	9.49		107	62	47.5												
SF12-DRA095M-5	●	9.50	9.99		110	65	50.0												
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												
SF16-DRA110M-5	●	11.00	11.49		123	75	57.5												
SF16-DRA115M-5	●	11.50	11.99		126	78	60.0												
SF16-DRA120M-5	●	12.00	12.49		129	81	62.5												
SF16-DRA125M-5	●	12.50	12.99		132	84	65.0												
SF16-DRA130M-5	●	13.00	13.49		135	87	67.5												
SF16-DRA135M-5	●	13.50	13.99		138	90	70.0												
SF16-DRA140M-5	●	14.00	14.49		141	93	72.5												
SF16-DRA145M-5	●	14.50	14.99		144	96	75.0												
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												
SF20-DRA170M-5	●	17.00	17.99		166	116	90.0												
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												
SF25-DRA200M-5	●	20.00	20.99		191	135	105.0												
SF25-DRA210M-5	●	21.00	21.99		197	141	110.0												
SF25-DRA220M-5	●	22.00	22.99		204	148	115.0												
SF25-DRA230M-5	●	23.00	23.99		210	154	120.0												
SF25-DRA240M-5	●	24.00	24.99		216	160	125.0												
SF25-DRA250M-5	●	25.00	25.50		222	166	130.0												
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								
SF32-DRA280M-5	●	28.00	28.99	243		185	145.0												
SF32-DRA290M-5	●	29.00	29.99	249		191	150.0												
SF32-DRA300M-5	●	30.00	30.99	255		197	155.0												
SF32-DRA310M-5	●	31.00	31.99	260		202	160.0												
SF32-DRA320M-5	●	32.00	33.00	266		208	165.0												

\*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

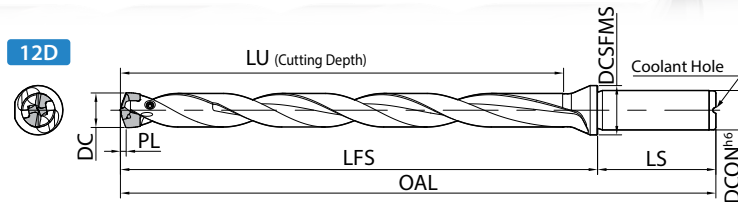
Part Number	Stock	DC*		DCON (h6)	Dimensions (mm)					Drawing	Applicable Insert See Page 7-12	Spare Parts							
		min.	max.		OAL	LFS	LU	LS	DCSFMS			Clamp Screw	Wrench						
SF12-DRA080M-8	●	7.94	8.49	12	126	81	68.0	45	16	Fig.1	DA0794M-... ~ DA0840M-...	HS-2524TRP							
SF12-DRA085M-8	●	8.50	8.99		131	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		184	136	116.0				DA1400M-... ~ DA1440M-...								
SF16-DRA145M-8	●	14.50	14.99		189	141	120.0				DA1450M-... ~ DA1490M-...								
SF20-DRA150M-8	●	15.00	15.99		20	201	151				128.0			50	25	Fig.1	DA1500M-... ~ DA1590M-...	HS-3048TRP	DTP-6
SF20-DRA160M-8	●	16.00	16.99			211	161				136.0						DA1600M-... ~ DA1690M-...		
SF20-DRA170M-8	●	17.00	17.99	220		170	144.0	DA1700M-... ~ DA1790M-...											
SF25-DRA180M-8	●	18.00	18.99	25	236	180	152.0	56	32	Fig.1	DA1800M-... ~ DA1890M-...	HS-4067TRP	DTP-7						
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		300	244	208.0				DA2500M-... ~ DA2550M-...								
SF32-DRA260M-8	●	26.00	26.99		32	313	255				216.0			58	39	Fig.2	DA2600M-... ~ DA2650M-...	HS-50100TRP	DTPM-15
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

# DRA Toolholders - Metric Sizes (with Flange)

Flange Shank



For PL dimension, reference insert dimension table.

## Toolholder Dimensions 12D

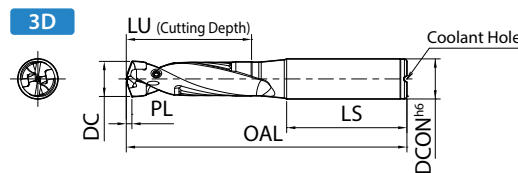
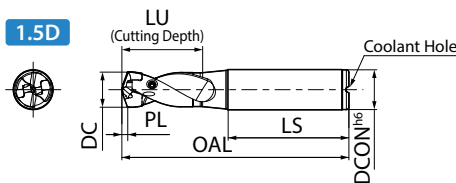
Part Number	Stock	DC*		DCON (h6)	Dimensions (mm)					Applicable Insert See <a href="#">Page 7-12</a>	Spare Parts	
		min.	max.		OAL	LFS	LU	LS	DCSFMS		Clamp Screw	Wrench
SF16-DRA120M-12	●	12	12.49	16	216	168	150	48	20	DA1200M-... ~ DA1240M-...	HS-2534TRP	FTP-5
SF16-DRA125M-12	●	12.5	12.99		223	175	156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

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

● : Standard Item

# DRA Toolholders - Metric Sizes (Straight Shank)

**Straight Shank**



For PL dimension, reference insert dimension table.

## Toolholder Dimensions **1.5D**

Part Number	Stock	Dimensions (mm)					Applicable Insert See <a href="#">Page 7-12</a>	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-... DA0850M-...~DA0890M-... DA0900M-...~DA0940M-... DA0950M-...~DA0990M-...	HS-2524TRP	
SS10-DRA085M-1.5	●	8.50	8.99		67.5	13.5				
SS10-DRA090M-1.5	●	9.00	9.49		68.7	14.3				
SS10-DRA095M-1.5	●	9.50	9.99		70.0	15.0				
SS12-DRA100M-1.5	●	10.00	10.49	12	76.2	15.8	45	DA1000M-...~DA1040M-... DA1050M-...~DA1090M-... DA1100M-...~DA1140M-... DA1150M-...~DA1190M-...	HS-2534TRP	FTP-5
SS12-DRA105M-1.5	●	10.50	10.99		77.5	16.5				
SS12-DRA110M-1.5	●	11.00	11.49		79.7	17.3				
SS12-DRA115M-1.5	●	11.50	11.99		81.0	18.0				
SS14-DRA120M-1.5	●	12.00	12.49	14	82.2	18.8	50	DA1200M-...~DA1240M-... DA1250M-...~DA1290M-... DA1300M-...~DA1340M-... DA1350M-...~DA1390M-...	HS-3048TRP	DTP-6
SS14-DRA125M-1.5	●	12.50	12.99		83.5	19.5				
SS14-DRA130M-1.5	●	13.00	13.49		84.7	20.3				
SS14-DRA135M-1.5	●	13.50	13.99		86.0	21.0				
SS16-DRA140M-1.5	●	14.00	14.49	16	90.2	21.8	56	DA1400M-...~DA1440M-... DA1450M-...~DA1490M-... DA1500M-...~DA1590M-... DA1600M-...~DA1690M-...	HS-4067TRP	DTP-7
SS16-DRA145M-1.5	●	14.50	14.99		91.5	22.5				
SS16-DRA150M-1.5	●	15.00	15.99		95.0	24.0				
SS18-DRA160M-1.5	●	16.00	16.99		98.5	25.5				
SS18-DRA170M-1.5	●	17.00	17.99	18	101.0	27.0	60	DA1700M-...~DA1790M-... DA1800M-...~DA1890M-... DA1900M-...~DA1990M-... DA2000M-...~DA2090M-...	HS-4067TRP	DTP-7
SS20-DRA180M-1.5	●	18.00	18.99		106.5	28.5				
SS20-DRA190M-1.5	●	19.00	19.99		109.0	30.0				
SS25-DRA200M-1.5	●	20.00	20.99		117.5	31.5				
SS25-DRA210M-1.5	●	21.00	21.99	20	120.0	33.0	56	DA2100M-...~DA2150M-... DA2200M-...~DA2250M-... DA2300M-...~DA2350M-... DA2400M-...~DA2450M-...	HS-4067TRP	DTP-7
SS25-DRA220M-1.5	●	22.00	22.99		123.5	34.5				
SS25-DRA230M-1.5	●	23.00	23.99		126.0	36.0				
SS25-DRA240M-1.5	●	24.00	24.99		128.5	37.5				
SS32-DRA250M-1.5	●	25.00	25.50	32	135.0	39.0	60	DA2500M-...~DA2550M-...		

## Toolholder Dimensions **3D**

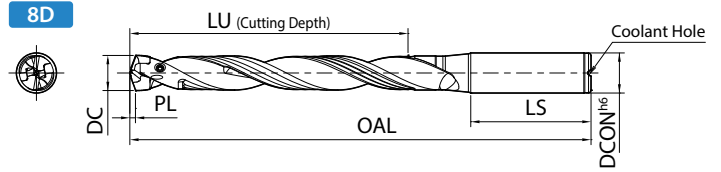
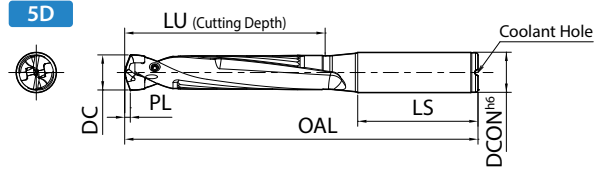
Part Number	Stock	Dimensions (mm)					Applicable Insert See <a href="#">Page 7-12</a>	Spare Parts		
		DC*		DCON (h6)	OAL	LU		LS	Clamp Screw	Wrench
		min.	max.							
SS10-DRA080M-3	●	7.94	8.49	10	79	25.5	40	DA0794M-... ~ DA0840M-... DA0850M-... ~ DA0890M-... DA0900M-... ~ DA0940M-... DA0950M-... ~ DA0990M-...	HS-2524TRP	
SS10-DRA085M-3	●	8.50	8.99		81	27.0				
SS10-DRA090M-3	●	9.00	9.49		83	28.5				
SS10-DRA095M-3	●	9.50	9.99		85	30.0				
SS12-DRA100M-3	●	10.00	10.49	12	92	31.5	45	DA1000M-... ~ DA1040M-... DA1050M-... ~ DA1090M-... DA1100M-... ~ DA1140M-... DA1150M-... ~ DA1190M-...	HS-2534TRP	FTP-5
SS12-DRA105M-3	●	10.50	10.99		94	33.0				
SS12-DRA110M-3	●	11.00	11.49		97	34.5				
SS12-DRA115M-3	●	11.50	11.99		99	36.0				
SS14-DRA120M-3	●	12.00	12.49	14	101	37.5	50	DA1200M-... ~ DA1240M-... DA1250M-... ~ DA1290M-... DA1300M-... ~ DA1340M-... DA1350M-... ~ DA1390M-...	HS-3048TRP	DTP-6
SS14-DRA125M-3	●	12.50	12.99		103	39.0				
SS14-DRA130M-3	●	13.00	13.49		105	40.5				
SS14-DRA135M-3	●	13.50	13.99		107	42.0				
SS16-DRA140M-3	●	14.00	14.49	16	112	43.5	56	DA1400M-... ~ DA1440M-... DA1450M-... ~ DA1490M-... DA1500M-... ~ DA1590M-... DA1600M-... ~ DA1690M-...	HS-4067TRP	DTP-7
SS16-DRA145M-3	●	14.50	14.99		114	45.0				
SS16-DRA150M-3	●	15.00	15.99		119	48.0				
SS18-DRA160M-3	●	16.00	16.99		124	51.0				
SS18-DRA170M-3	●	17.00	17.99	18	128	54.0	60	DA1700M-... ~ DA1790M-... DA1800M-... ~ DA1890M-... DA1900M-... ~ DA1990M-... DA2000M-... ~ DA2090M-...	HS-4067TRP	DTP-7
SS20-DRA180M-3	●	18.00	18.99		135	57.0				
SS20-DRA190M-3	●	19.00	19.99		139	60.0				
SS25-DRA200M-3	●	20.00	20.99		149	63.0				
SS25-DRA210M-3	●	21.00	21.99	20	153	66.0	56	DA2100M-... ~ DA2150M-... DA2200M-... ~ DA2250M-... DA2300M-... ~ DA2350M-... DA2400M-... ~ DA2450M-...	HS-4067TRP	DTP-7
SS25-DRA220M-3	●	22.00	22.99		158	69.0				
SS25-DRA230M-3	●	23.00	23.99		162	72.0				
SS25-DRA240M-3	●	24.00	24.99		166	75.0				
SS32-DRA250M-3	●	25.00	25.50	32	174	78.0	60	DA2500M-... ~ DA2550M-...		

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

● : Standard Item

# DRA Toolholders - Metric Sizes (Straight Shank)

Straight Shank



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-... DA0850M-... ~ DA0890M-... DA0900M-... ~ DA0940M-... DA0950M-... ~ DA0990M-...	HS-2524TRP			
SS10-DRA085M-5	●	8.50	8.99		99	45.0					DA1000M-... ~ DA1040M-... DA1050M-... ~ DA1090M-... DA1100M-... ~ DA1140M-... DA1150M-... ~ DA1190M-...	
SS10-DRA090M-5	●	9.00	9.49		102	47.5						DA1200M-... ~ DA1240M-... DA1250M-... ~ DA1290M-... DA1300M-... ~ DA1340M-... DA1350M-... ~ DA1390M-...
SS10-DRA095M-5	●	9.50	9.99		105	50.0						
SS12-DRA100M-5	●	10.00	10.49	12	113	52.5	45	HS-2534TRP	FTP-5			
SS12-DRA105M-5	●	10.50	10.99		116	55.0				DA1700M-... ~ DA1790M-... DA1800M-... ~ DA1890M-... DA1900M-... ~ DA1990M-... DA2000M-... ~ DA2090M-...		
SS12-DRA110M-5	●	11.00	11.49		120	57.5					DA2100M-... ~ DA2150M-... DA2200M-... ~ DA2250M-... DA2300M-... ~ DA2350M-... DA2400M-... ~ DA2450M-...	
SS12-DRA115M-5	●	11.50	11.99		123	60.0						DA2500M-... ~ DA2550M-...
SS14-DRA120M-5	●	12.00	12.49	14	126	62.5	50	HS-3048TRP	DTP-6			
SS14-DRA125M-5	●	12.50	12.99		129	65.0				DA1800M-... ~ DA1890M-... DA1900M-... ~ DA1990M-... DA2000M-... ~ DA2090M-... DA2100M-... ~ DA2150M-...		
SS14-DRA130M-5	●	13.00	13.49		132	67.5					DA2200M-... ~ DA2250M-... DA2300M-... ~ DA2350M-... DA2400M-... ~ DA2450M-...	
SS14-DRA135M-5	●	13.50	13.99		135	70.0						DA2500M-... ~ DA2550M-...
SS16-DRA140M-5	●	14.00	14.49	16	141	72.5	56	HS-4067TRP	DTP-7			
SS16-DRA145M-5	●	14.50	14.99		144	75.0				DA1800M-... ~ DA1890M-... DA1900M-... ~ DA1990M-... DA2000M-... ~ DA2090M-... DA2100M-... ~ DA2150M-...		
SS16-DRA150M-5	●	15.00	15.99		151	80.0					DA2200M-... ~ DA2250M-... DA2300M-... ~ DA2350M-... DA2400M-... ~ DA2450M-...	
SS18-DRA160M-5	●	16.00	16.99		18	158						85.0
SS18-DRA170M-5	●	17.00	17.99	164		90.0	DA1800M-... ~ DA1890M-... DA1900M-... ~ DA1990M-... DA2000M-... ~ DA2090M-... DA2100M-... ~ DA2150M-...					
SS20-DRA180M-5	●	18.00	18.99	173		95.0		DA2200M-... ~ DA2250M-... DA2300M-... ~ DA2350M-... DA2400M-... ~ DA2450M-...				
SS20-DRA190M-5	●	19.00	19.99	179		100.0			DA2500M-... ~ DA2550M-...			
SS25-DRA200M-5	●	20.00	20.99	20	191	105.0				56	HS-4067TRP	DTP-7
SS25-DRA210M-5	●	21.00	21.99		197	110.0	DA1800M-... ~ DA1890M-... DA1900M-... ~ DA1990M-... DA2000M-... ~ DA2090M-... DA2100M-... ~ DA2150M-...					
SS25-DRA220M-5	●	22.00	22.99		204	115.0		DA2200M-... ~ DA2250M-... DA2300M-... ~ DA2350M-... DA2400M-... ~ DA2450M-...				
SS25-DRA230M-5	●	23.00	23.99		210	120.0			DA2500M-... ~ DA2550M-...			
SS25-DRA240M-5	●	24.00	24.99	216	125.0	DA1800M-... ~ DA1890M-... DA1900M-... ~ DA1990M-... DA2000M-... ~ DA2090M-... DA2100M-... ~ DA2150M-...						
SS32-DRA250M-5	●	25.00	25.50	32	226		130.0			60	HS-4067TRP	DTP-7

## 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-... DA0850M-... ~ DA0890M-... DA0900M-... ~ DA0940M-... DA0950M-... ~ DA0990M-...	HS-2524TRP			
SS10-DRA085M-8	●	8.50	8.99		126	72.0					DA1000M-... ~ DA1040M-... DA1050M-... ~ DA1090M-... DA1100M-... ~ DA1140M-... DA1150M-... ~ DA1190M-...	
SS10-DRA090M-8	●	9.00	9.49		130	76.0						DA1200M-... ~ DA1240M-... DA1250M-... ~ DA1290M-... DA1300M-... ~ DA1340M-... DA1350M-... ~ DA1390M-...
SS10-DRA095M-8	●	9.50	9.99		135	80.0						
SS12-DRA100M-8	●	10.00	10.49	12	144	84.0	45	HS-2534TRP	FTP-5			
SS12-DRA105M-8	●	10.50	10.99		149	88.0				DA1700M-... ~ DA1790M-... DA1800M-... ~ DA1890M-... DA1900M-... ~ DA1990M-... DA2000M-... ~ DA2090M-...		
SS12-DRA110M-8	●	11.00	11.49		154	92.0					DA2100M-... ~ DA2150M-... DA2200M-... ~ DA2250M-... DA2300M-... ~ DA2350M-... DA2400M-... ~ DA2450M-...	
SS12-DRA115M-8	●	11.50	11.99		159	96.0						DA2500M-... ~ DA2550M-...
SS14-DRA120M-8	●	12.00	12.49	14	163	100.0	50	HS-3048TRP	DTP-6			
SS14-DRA125M-8	●	12.50	12.99		168	104.0				DA1800M-... ~ DA1890M-... DA1900M-... ~ DA1990M-... DA2000M-... ~ DA2090M-... DA2100M-... ~ DA2150M-...		
SS14-DRA130M-8	●	13.00	13.49		172	108.0					DA2200M-... ~ DA2250M-... DA2300M-... ~ DA2350M-... DA2400M-... ~ DA2450M-...	
SS14-DRA135M-8	●	13.50	13.99		177	112.0						DA2500M-... ~ DA2550M-...
SS16-DRA140M-8	●	14.00	14.49	16	184	116.0	56	HS-4067TRP	DTP-7			
SS16-DRA145M-8	●	14.50	14.99		189	120.0				DA1800M-... ~ DA1890M-... DA1900M-... ~ DA1990M-... DA2000M-... ~ DA2090M-... DA2100M-... ~ DA2150M-...		
SS16-DRA150M-8	●	15.00	15.99		199	128.0					DA2200M-... ~ DA2250M-... DA2300M-... ~ DA2350M-... DA2400M-... ~ DA2450M-...	
SS18-DRA160M-8	●	16.00	16.99		18	209						136.0
SS18-DRA170M-8	●	17.00	17.99	218		144.0	DA1800M-... ~ DA1890M-... DA1900M-... ~ DA1990M-... DA2000M-... ~ DA2090M-... DA2100M-... ~ DA2150M-...					
SS20-DRA180M-8	●	18.00	18.99	230		152.0		DA2200M-... ~ DA2250M-... DA2300M-... ~ DA2350M-... DA2400M-... ~ DA2450M-...				
SS20-DRA190M-8	●	19.00	19.99	239		160.0			DA2500M-... ~ DA2550M-...			
SS25-DRA200M-8	●	20.00	20.99	20	254	168.0				56	HS-4067TRP	DTP-7
SS25-DRA210M-8	●	21.00	21.99		263	176.0	DA1800M-... ~ DA1890M-... DA1900M-... ~ DA1990M-... DA2000M-... ~ DA2090M-... DA2100M-... ~ DA2150M-...					
SS25-DRA220M-8	●	22.00	22.99		273	184.0		DA2200M-... ~ DA2250M-... DA2300M-... ~ DA2350M-... DA2400M-... ~ DA2450M-...				
SS25-DRA230M-8	●	23.00	23.99		282	192.0			DA2500M-... ~ DA2550M-...			
SS25-DRA240M-8	●	24.00	24.99	291	200.0	DA1800M-... ~ DA1890M-... DA1900M-... ~ DA1990M-... DA2000M-... ~ DA2090M-... DA2100M-... ~ DA2150M-...						
SS32-DRA250M-8	●	25.00	25.50	32	304		208.0			60	HS-4067TRP	DTP-7

\*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).

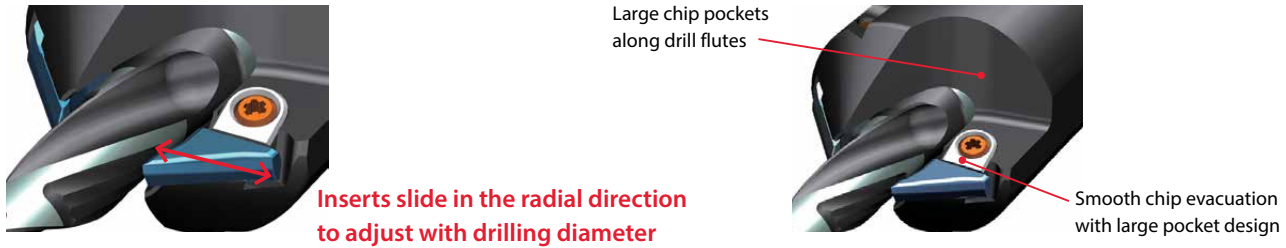
● : Standard Item

# DRA Chamfering Attachment

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

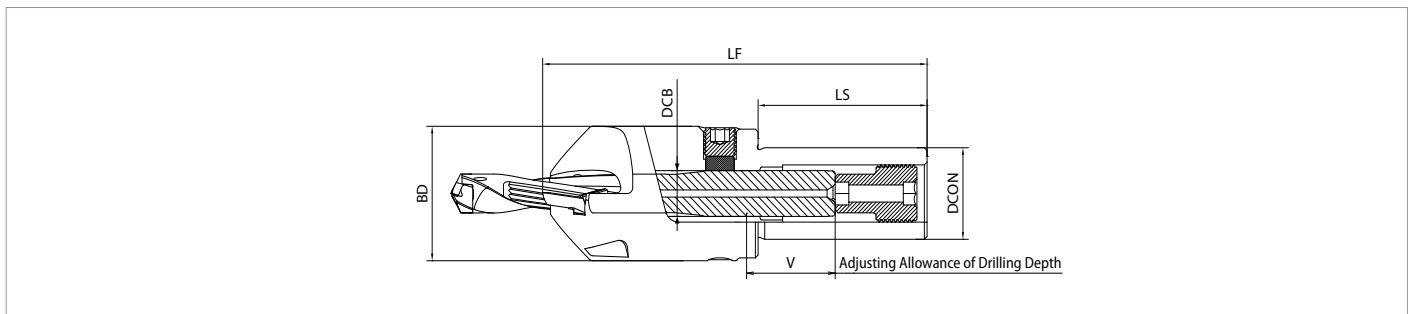
## 1 Excellent Stability and Chip Evacuation

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



## 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	






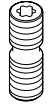
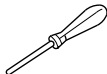
### Applicable Insert

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

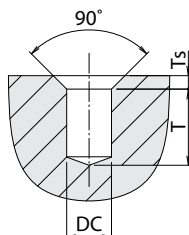
● : Standard Item



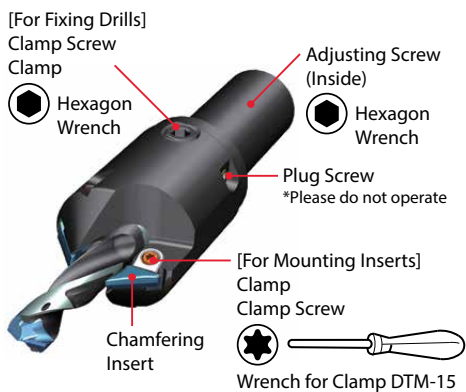
# Chamfering Attachment Parts

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		6	30				
S32-CH18-DRA	AJ-22x35	10	CP-CH18	HS12X10	6	30				
S32-CH20-DRA			CP-CH20		8	45				

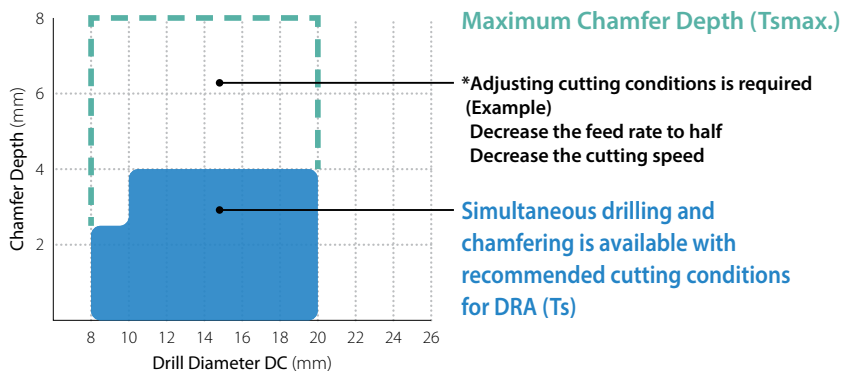
## Drilling & Chamfer Depths



Cutting Dia. (mm) DC		Drilling Depth (mm)						Chamfering Dimension (mm)		Applicable Toolholder
		T (3XD)		T (5XD)		T (8XD)		Ts	Tsmax.	
min.	max.	min.	max.	min.	max.	min.	max.			
7.94	8.49	12.5	20	18	36	43	60	2.5	8	S20-CH10-DRA
8.50	8.99	12.5	21.5	21.5	38.5	48	64			
9.00	9.49	12.5	23	24	41	52	68			
9.50	9.99	12.5	24.5	27.5	43.5	57.5	72.5			
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			
17.00	17.99	25.5	47.5	57.5	81.5	108.5	132.5	4	8	S32-CH18-DRA
18.00	18.99	27.5	51	64	87	121	141			
19.00	19.99	29.5	54	69	92	129	149	4	8	S32-CH20-DRA



## Recommended Cutting Conditions (1049)



# Installing Chamfer Attachment

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



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

Fig.1 Install the DRA

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

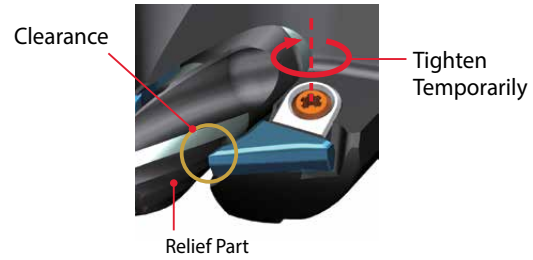


Fig.2 Install Inserts

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

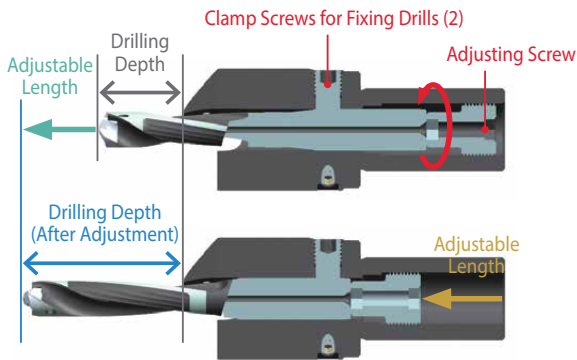


Fig.3 Adjustment of Drilling Depth

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

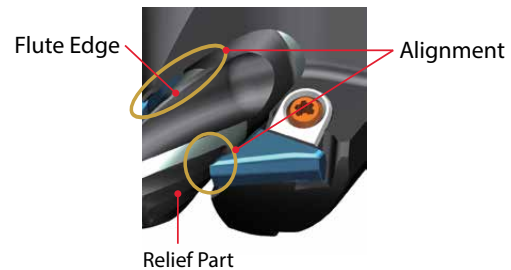


Fig.4 DRA Alignment

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

Table1. Recommended Torque

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

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

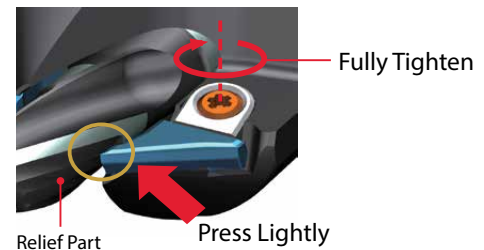


Fig.5 Fully Tighten

## Cautions

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

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

# 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				

Coolant  
See P30

※ Feed Rate 0.006 ipr or less is recommended for stainless steel until drilling depth reaches 0.5D. As drilling depth increases (1.5D → 3D → 5D → 8D → 12D), feed rates should be reduced.  
 Internal and External coolant recommended for Stainless, Heat-resistant Alloys, and Titanium 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 <b>P30</b>
		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/2D ≤ 70%

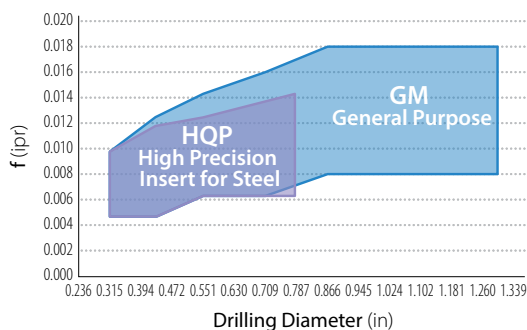
# HQS Insert - Recommended Cutting Conditions ★1st Recommendation ☆2nd Recommendation

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 <b>P30</b>
		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			

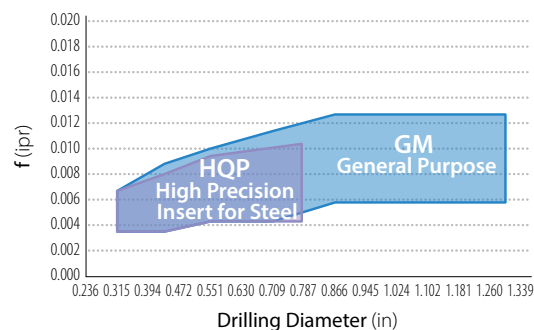
\*\* Feed Rate 0.006 ipr or less is recommended for stainless steel until drilling depth reaches 0.5D.  
Internal and External coolant recommended for Stainless, Heat-resistant Alloys, and Titanium

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/2D ≤ 70%

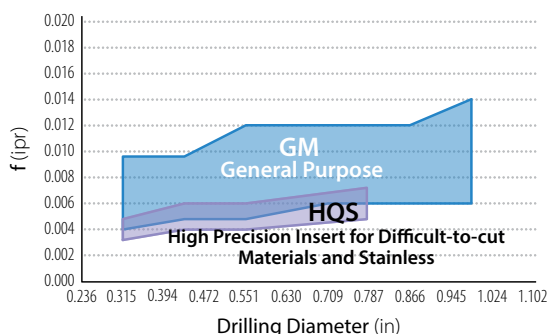
Low Carbon Steel/Carbon Steel/Alloy Steel



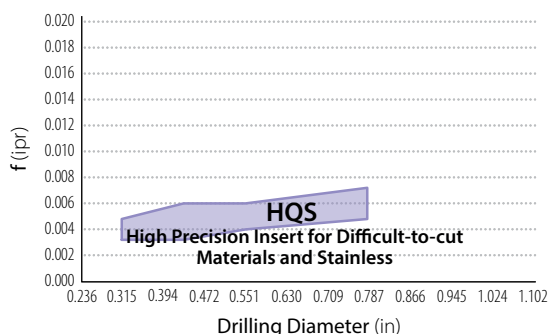
Mold Steel



Stainless Steel



Heat-resistant Alloy / Titanium Alloy



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

Workpiece Material	Recommended Grade / Cutting Speed (sfm)		Cutting Dia. DC (in)	Cutting Dia. DC (mm)	Holder Type (Cutting Depth) Feed Rate (ipr)					Notes
	PR1535	PR1525			1.5D	3D	5D	8D	12D	
Low Carbon Steel	★ 330-590	☆ 330-590	0.313 - 0.429	7.94 - 10.90	0.0047 - 0.0094	0.0038 - 0.0076	0.0033 - 0.0066			
			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			

Coolant  
See P30

※ 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 xDC) is needed when using 8D/12D holder.

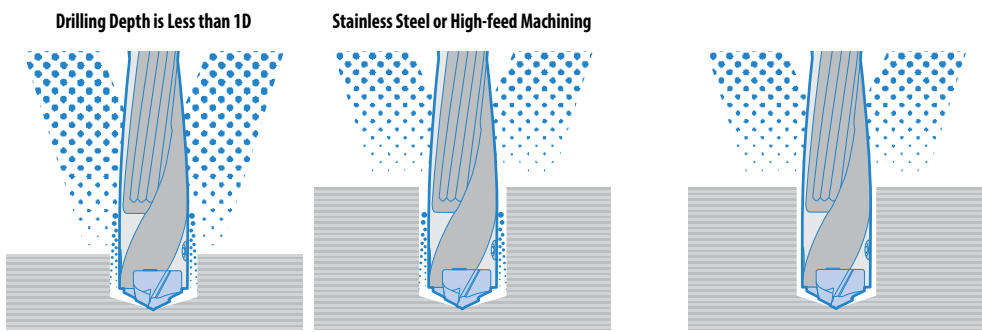
**Coolant** \*Dry cutting is not recommended

**1st Recommendation**

**Internal coolant**

**Internal + External Coolant**

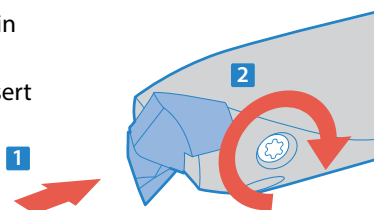
**External Coolant**



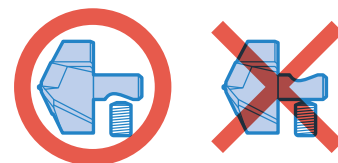
Lathe: Max. Drill Depth 3D  
Vertical M/C: Max. Drill Depth 1.5D

**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)



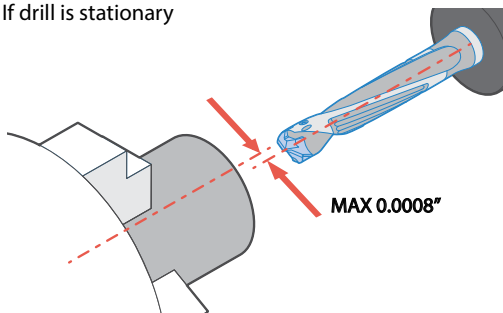
Be careful of the insert direction



\*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.

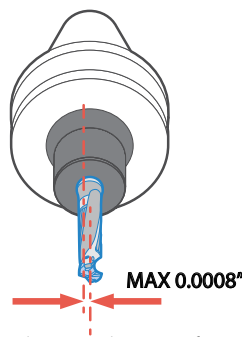
**Core Deviation / Alignment Cautions**

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**

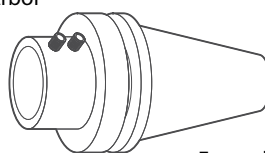
Hydro-chuck, Power-chuck, Collet-chuck

- Hydro-chuck
- Power-chuck
- Collet-chuck

Install DRA into these chucks

**2nd Recommendation**

Side lock Arbor



Example of side lock arbor

## Other Cautions

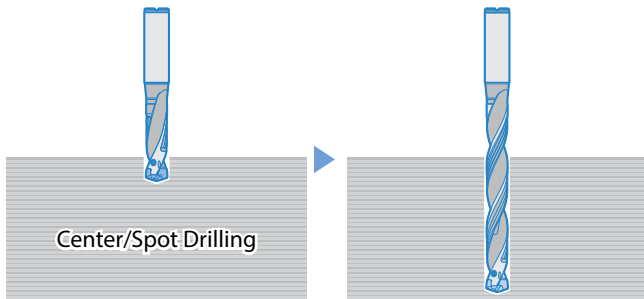
### Cautions for Machining with 8D and 12D Holder

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

### 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)



**KYOCERA Precision Tools**

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Hendersonville, NC 28792  
Customer Service | 800.823.7284 - Option 1  
Technical Support | 800.823.7284 - Option 2



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