KYOCERA

DRV Magic Drill

High Efficiency Indexable Drill

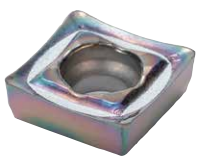
Economical Inserts with 4 Cutting Edges and Excellent Chip Evacuation

2xD to 6xD drilling lineup with 4 chipbreakers for various machining applications

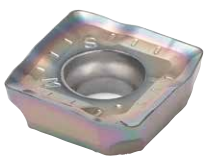
High speed and highly efficient machining with the combination of a CVD outer insert and PVD inner insert

Excellent hole accuracy with a highly rigid design for better chatter resistance

NEW **DLC Coated Inserts for Aluminum**



PDL025
Outer Edge



PDL035
Inner Edge

Expanded Lineup from Ø0.484"~Ø2.000" and Ø12mm~Ø60mm

DRV Magic Drill

High Efficiency Indexable Drill

Product Video

View Online

Economical Inserts with 4 Cutting Edges

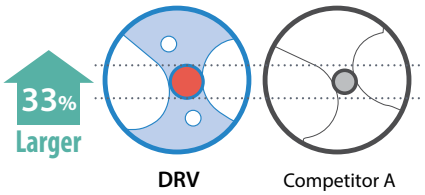
Excellent Chip Evacuation with 6D Maximum Deep-Hole Drilling

High Speed and Highly Efficient Machining with the Combination of CVD (Outer Edge) and PVD (Inner Edge) Inserts

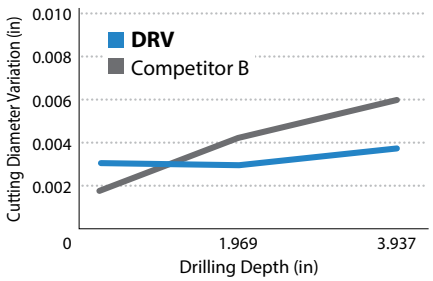
1 Excellent Drilling Precision with Less Variation in Cutting Diameter

Optimal Web Thickness and Low Cutting Force Design Reduces Chattering

Web Thickness Comparison
(Internal Evaluation)

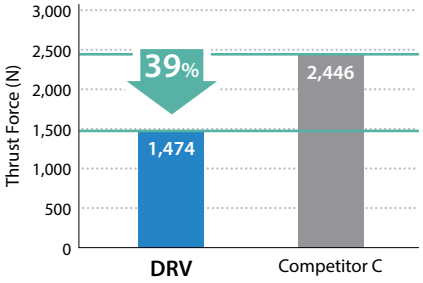


Cutting Diameter Variation Comparison
(Internal Evaluation)



Cutting Conditions : Vc = 490 sfm, f = 0.0024 ipr
Cutting Dia. Ø0.812" (5D), Wet, Workpiece : 1049

Cutting Force Comparison
(Internal Evaluation)

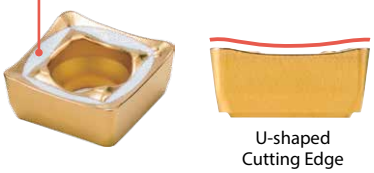


Cutting Conditions : Vc = 660 sfm, f = 0.0047 ipr
Cutting Dia. Ø0.812" (3D), Wet, Workpiece : 1049

2 Unique Insert Design to Control Chip Flow

Outer Edge Insert

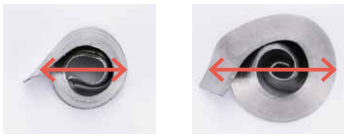
Unique Insert Pattern to Differentiate between Outside and Inside Inserts



U-shaped Cutting Edge

Smooth Chip Evacuation with Compact Chips

Chip Shape Comparison of Outer Insert Cutting Edge
(Internal Evaluation)



DRV : 0.394"

Competitor D : 0.472"

16% Smaller Chips

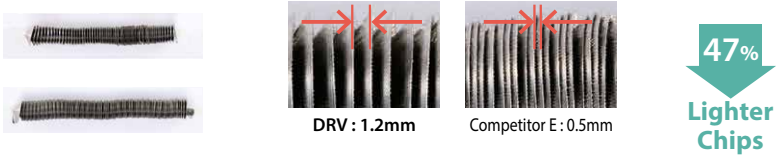
Cutting Conditions : Vc = 490 sfm, f = 0.0024 ipr, Cutting Dia. Ø0.812 (3D), Wet Workpiece : 1049

Inner Edge Insert

Spoon-shaped Cutting Edge

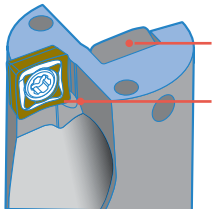
Excellent Chip Evacuation with 6xD Maximum Deep-Hole Drilling

Weight per Unit of Length for Chips Generated by the Inner Insert
(Internal Evaluation)



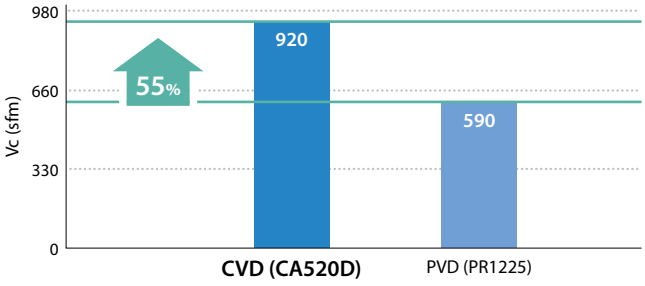
Cutting Conditions : Vc = 820 sfm, f = 0.0031 ipr, Cutting Dia. Ø0.812 (5D), Wet, Workpiece : 304

3 New Insert Grades Developed for Drilling



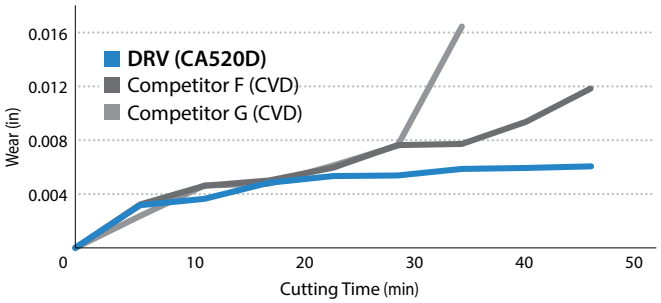
High Speed and Highly Efficient Machining with the Combination of CVD (Outer Edge) and PVD (Inner Edge) Inserts

Recommended Cutting Conditions (Maximum Values)



Cutting Dia. Ø0.812" (3D) Workpiece : 1049

Wear Resistance Comparison (Internal Evaluation)

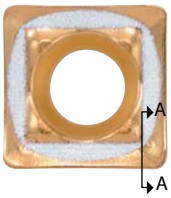


Cutting Conditions : Vc = 660 sfm, f = 0.0047 ipr, Cutting Dia. Ø0.812" (3D) , Wet
Workpiece : 4140H

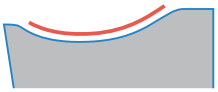
4 Economical 4-Edge Inserts 4 Types of Chipbreakers for Various Machining Applications

Chipbreaker Selection Chart ➡ Page 20

GM Chipbreaker - General Purpose



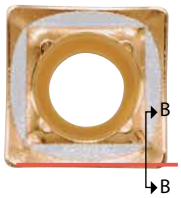
Chipbreaker for Steel Machining
Stable Deep-hole Machining with Low Cutting Force



A-A Section

Edge shape optimized for various machining applications

GH Chipbreaker - Tough Edge

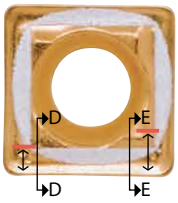


1st Recommendation for Machining Cast Iron
Good for Interrupted Steel Machining
Reduces Insert Chipping Common in Through-hole Machining

B-B Section

Negative land with strong edge

XM Chipbreaker - For Machining Soft Steel and Structural Steel

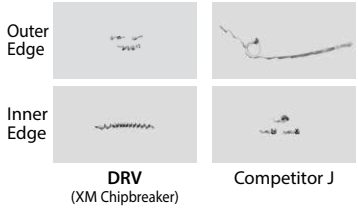


Stable Chip Control of Outer Cutting Edge

D-D Section E-E Section

Excellent chip control with the changing width of the chipbreaker

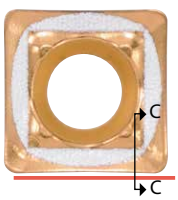
Chip Control Comparison (Internal Evaluation)



Cutting Conditions : Vc = 660 sfm, f = 0.0047 ipr
Cutting Dia. Ø0.625" (3D), Drilling Depth 1.875"
Wet, Workpiece : A36

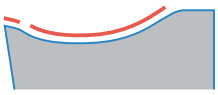
SM Chipbreaker - For Machining Stainless Steel and Aluminum

NEW Expanded lineup with grades **PDL025** and **PDL035** for Aluminum



Stable Chip Control when Machining Gummy Stainless Steel
Reduces Chip Clogging in the Holder Body

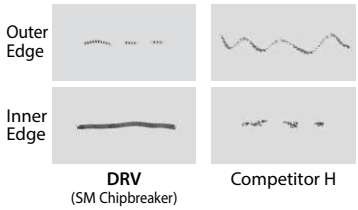
PDL025/PDL035 for aluminum alloy machining feature a mirror surface that suppresses adhesion to the cutting edge



C-C Section

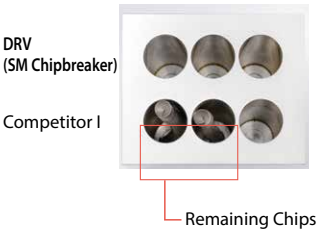
Sharp cutting and large rake angle

Chip Control Comparison (Internal Evaluation)



Cutting Conditions : Vc = 330 sfm, f = 0.0039 ipr
Cutting Dia. Ø0.812" (3D), Drilling Depth 2.436"
Wet, Workpiece : 304

Comparison of Remaining Chips (Internal Evaluation)

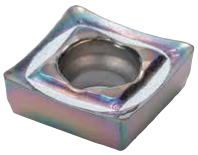


Cutting Conditions : Vc = 490 sfm, f = 0.0031 ipr
Cutting Dia. Ø0.984" (5D), Drilling Depth 3.858"
Wet, Workpiece : 304

5 Introducing New Grades PDL025/PDL035 for Aluminum Alloy Machining

The low-resistance SM chipbreaker features micro-honing and a mirror-finished rake face, reducing material adhesion on the cutting edge and improving chip control.

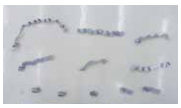
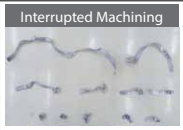
DLC coating improves resistance to material adhesion.



PDL025
Outer Edge

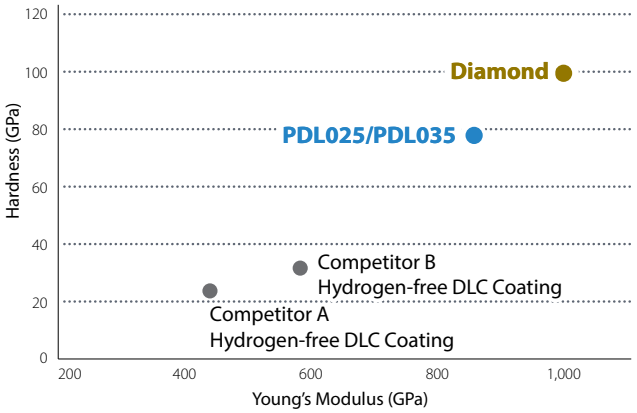
PDL035
Inner Edge

Chip Control Comparison (Internal Evaluation)

f (ipr)	0.003	0.004	0.005	0.006
DRV				
Competitor K			Interrupted Machining  Bottom Chip Build-Up	Interrupted Machining  Outer Edge Chip Build-Up

Cutting Conditions: Vc = 980 sfm, f = 0.003~0.006 ipr, Cutting Dia. Ø20mm (5D), Depth 100mm, Wet, Workpiece 5052

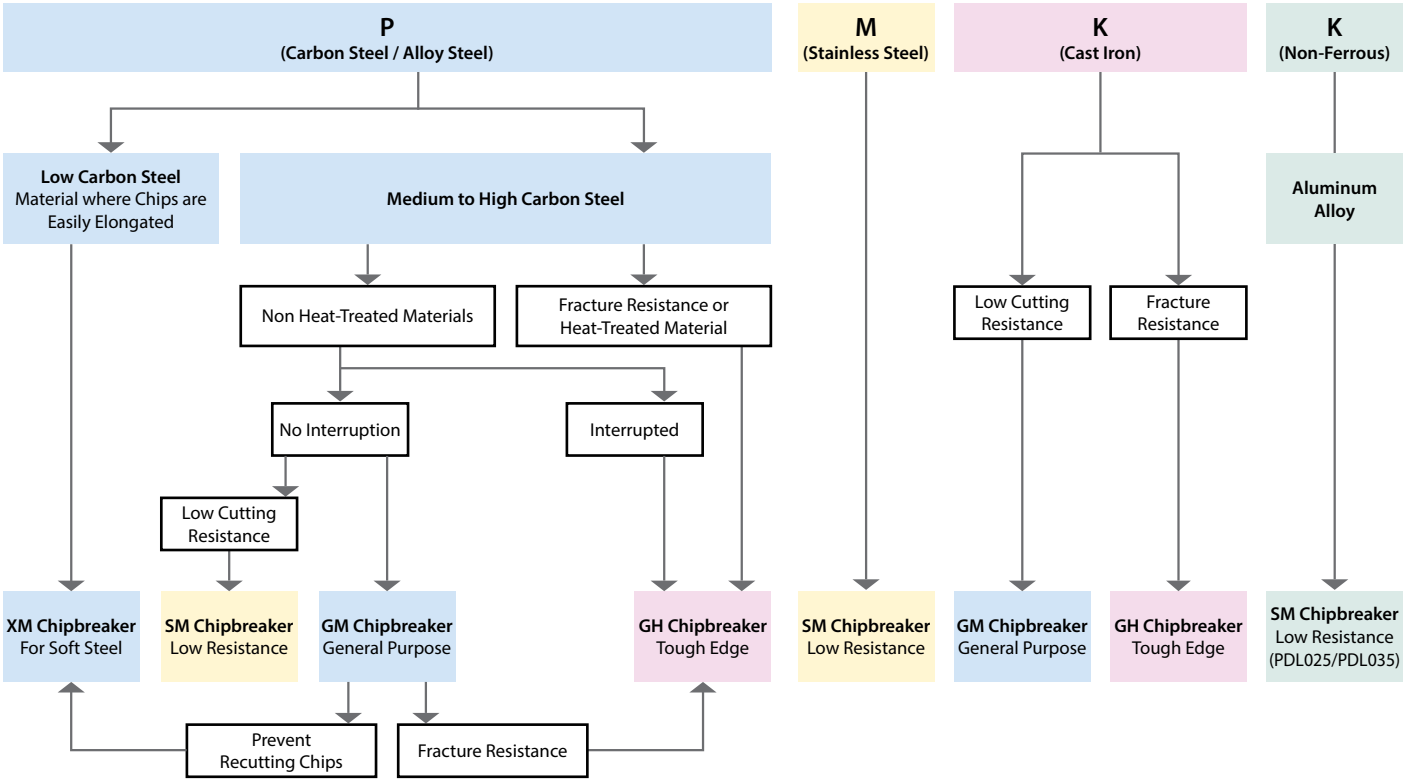
Coating Properties (Internal Evaluation)



Our proprietary hydrogen-free DLC coating achieves hardness approaching diamond, enabling long tool life in aluminum alloy machining

Excellent anti-adhesion performance enables superior surface finish quality

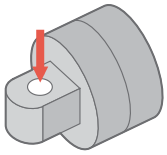
Chipbreaker Selection Chart



Case Studies

Housing - Structural Steel

Vc = 410 sfm (n = 1,660 rpm)
f = 0.003 ipr (Vf = 5.236 ipm)
Drilling Depth 1.772"
Wet (External Coolant)
S100-DRV0938-4-07
SCMT070310GM-I PR1535
SCMT070305GM-E PR1225



Cutting Time

DRV (Ø0.938" 4xD) **16 sec**

Competitor K (Ø0.938" 4xD) **35 sec**

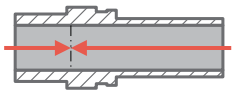
50% or More Cutting Time

Chattering and recutting chips occurred in low rigidity workpiece of Competitor K. Speed was reduced to Vc = 200 sfm. DRV provided good chip control for stable machining at Vc = 410 sfm.

(User Evaluation)

Nipple - Stainless Steel

Vc = 760 sfm (n = 3,330 rpm)
f = 0.005 ipr (Vf = 17.047 ipm)
Drilling Depth 2.362" (4xD)
1.181" (2xD)
Wet (Internal Coolant)
S100-DRV0875-4-06 (4xD)
S100-DRV0875-2-06 (2xD)
SCMT060210-GM-I PR1535
SCMT060205-GM-E PR1225



Process 2 Drilling Depth 1.181" (2xD)

Process 1 Drilling Depth 2.362" (4xD)

Cutting Time

DRV (Ø0.875" 4xD/2xD) **12 sec**

Competitor L (Ø0.875" 4xD/2xD) **20 sec**

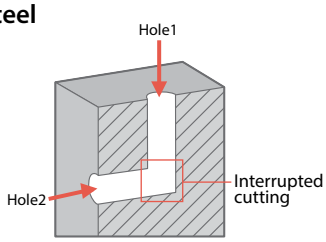
40% Cutting Time

Chattering and deflection occurred with Competitor L. DRV showed stable machining and a shorter cutting time even when the cutting conditions were increased by 1.6 times or more.

(User Evaluation)

Valve Body - Stainless Steel

Vc = 720 sfm (n = 3,200 rpm)
f = 0.002 ipr (Vf = 6.300 ipm)
Drilling Depth 1.969"
(Blind hole / Through hole)
Wet (Internal Coolant)
S100-DRV0875-5-06
SCMT060205-GM-E PR1225
SCMT060210-GM-I PR1535



Cutting Time

DRV (Ø0.875" 5xD) **14 sec**

Competitor M (Ø0.875" 5xD) **22 sec**

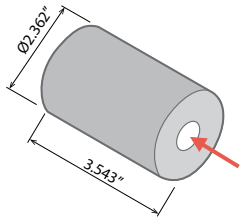
30% or More Cutting Time

Competitor M : Chattering occurred in the continuous part and then vibration was bigger in the crossed-hole.
DRV : There was no chattering even when increasing cutting speed and there was low vibration in the crossed-hole. The DRV achieved 1.5 times machining efficiency.

(User Evaluation)

Piston - 4140

Vc = 820 sfm (n = 3,185 rpm)
f = 0.0035 ipr (Vf = 11.417 ipm)
Drilling Depth 2.756"
(Blind Hole)
Wet (Internal Coolant)
S100-DRV1000-4-07
SCMT070305-GM-E CA520D
SCMT070310-GM-I PR1535



Cutting Time

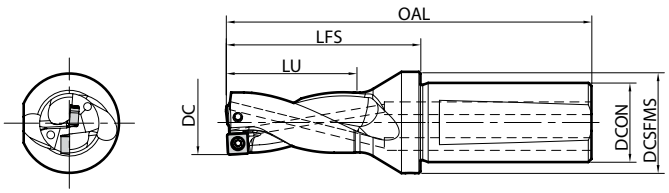
DRV (Ø1.000" 4xD) **14 sec**

Competitor N (Ø1.000" 4xD) **19 sec**

25% Cutting Time

Competitor N : Loud chattering noise occurred.
DRV : Maintained stable machining. No chattering even at 1.5 times faster cutting speed.

(User Evaluation)



2D

Toolholder Dimensions

Unit	Part Number	Std. Item	No. of Inserts	Dimensions DC	DCON	OAL	LFS	LU	DCSFMS	Coolant Hole	Radial Offset Max.	Spare Parts: Screw	Wrench	Wrench	Wrench	Applicable Inserts (Page 21-23)
Inch	S075- DRV0484-2-03	●	2	0.484	0.750	3.268	1.575	0.969	1.063	Yes	+0.008	SB-2037TRP	-	FTP-6	-	LCMT030203-□□-E (Outer) LCMT030205-□□-I (Inner)
	DRV0500-2-03	●		0.500		3.299	1.606	1.000			+0.006					
	DRV0516-2-03	●		0.516		3.331	1.638	1.031			+0.006					
	DRV0531-2-03	●		0.531		3.362	1.669	1.063			+0.004					
	S075- DRV0562-2-04	●	2	0.563	0.750	3.661	1.969	1.125	1.063	Yes	+0.014	SB-2037TRP	-	FTP-6	-	SCMT040205-□□-E (Outer) SCMT040209-□□-I (Inner)
	DRV0578-2-04	●		0.578		3.693	2.000	1.156			+0.014					
	S075- DRV0625-2-05	●	2	0.625	0.750	3.866	2.173	1.250	1.063	Yes	+0.016	SB-2041TRP	-	FTP-6	-	SCMT050205-□□-E (Outer) SCMT050210-□□-I (Inner)
	DRV0656-2-05	●		0.656		3.929	2.236	1.313			+0.012					
	S100- DRV0688-2-05	●		0.688	1.000	4.425	2.299	1.375	1.260	Yes	+0.010					
	S100- DRV0750-2-06	●	2	0.750	1.000	4.469	2.343	1.500	1.260	Yes	+0.024	SB-2555TRP	DTPM-8	-	-	SCMT060205-□□-E (Outer) SCMT060210-□□-I (Inner)
	DRV0812-2-06	●		0.813		4.594	2.469	1.625			+0.018					
	DRV0875-2-06	●		0.875		4.720	2.594	1.750			+0.010					
	S100- DRV0938-2-07	●	2	0.938	1.000	4.827	2.701	1.875	1.260	Yes	+0.028	SB-3060TRP	DTPM-10	-	-	SCMT070305-□□-E (Outer) SCMT070310-□□-I (Inner)
	DRV0984-2-07	●		0.984		4.917	2.791	1.969			+0.024					
	DRV1000-2-07	●		1.000		4.949	2.823	2.000			+0.020					
	S125- DRV1062-2-09	●	2	1.063	1.250	5.341	3.018	2.125	1.614	Yes	+0.041	SB-3573TRP	DTPM-10	-	-	SCMT090405-□□-E (Outer) SCMT090410-□□-I (Inner)
	DRV1125-2-09	●		1.125		5.467	3.144	2.250			+0.033					
	DRV1188-2-09	●		1.188		5.593	3.270	2.375			+0.026					
	S150- DRV1250-2-09	●		1.250	1.500	6.256	3.539	2.500	1.929	Yes	+0.020					
	S150- DRV1312-2-11	●	2	1.313	1.500	6.380	3.663	2.625	1.929	Yes	+0.045	SB-4086TRP	DTPM-15	-	-	SCMT110406-□□-E (Outer) SCMT110410-□□-I (Inner)
	DRV1375-2-11	●		1.375		6.506	3.789	2.750			+0.039					
	DRV1438-2-11	●		1.438		6.632	3.915	2.875			+0.031					
	DRV1500-2-11	●		1.500		6.756	4.039	3.000			+0.022					
	S150- DRV1562-2-14	●	2	1.562	1.500	7.116	4.400	3.124	1.929	Yes	+0.070	SB-50120TRPH	-	-	TTP-20	SCMT140508-□□-E (Outer) SCMT140510-□□-I (Inner)
	DRV1625-2-14	●		1.625		7.242	4.526	3.250			+0.063					
	DRV1688-2-14	●		1.688		7.368	4.652	3.376			+0.056					
	DRV1750-2-14	●		1.750		7.492	4.776	3.500			+0.049					
	DRV1812-2-14	●		1.812		7.616	4.900	3.624	2.126		+0.041					
	DRV1875-2-14	●		1.875		7.742	5.026	3.750			+0.034					
	DRV1938-2-14	●		1.938		7.868	5.152	3.876			+0.027					
	S150- DRV2000-2-17	●	2	2.000		7.854	5.138	4.000	2.323	Yes	+0.079	SB-60130TRP	-	-	TTP-20	SCMT170608-□□-E (Outer) SCMT170610-□□-I (Inner)

When offset drilling, reduce feed rate to 0.0031 ipr or less.
See Page 32 for Adjustable Sleeve (ASL / SHE).

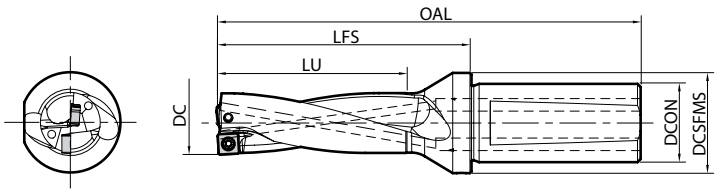
Recommended Cutting Conditions Page 26
Troubleshooting Page 31

● : Standard Item

Hole Dia. Tolerance (2D type)

DC	Hole Dia. Tolerance (in)
ø0.484" - ø2.000"	+0.012 0

* Above is numeric guideline.
It may vary depending on machines / workpieces / clamping status / cutting conditions.



3D

Toolholder Dimensions

Unit	Part Number	Std. Item	No. of Inserts	Dimensions DC	DCON	OAL	LFS	LU	DCSFMS	Coolant Hole	Radial Offset Max.	Spare Parts: Screw	Wrench	Wrench	Wrench	Applicable Inserts (Page 21-23)
Inch	S075- DRV0484-3-03	●	2	0.484	0.750	3.752	2.059	1.453	1.063	Yes	+0.008	SB-2037TRP	-	FTP-6	-	LCMT030203-□□-E (Outer) LCMT030205-□□-I (Inner)
	DRV0500-3-03	●		0.500		3.799	2.106	1.500			+0.006					
	DRV0516-3-03	●		0.516		3.847	2.154	1.547			+0.006					
	DRV0531-3-03	●		0.531		3.894	2.201	1.594			+0.004					
	S075- DRV0562-3-04	●	2	0.563	0.750	4.224	2.531	1.688	1.063	Yes	+0.014	SB-2037TRP	-	FTP-6	-	SCMT040205-□□-E (Outer) SCMT040209-□□-I (Inner)
	DRV0578-3-04	●		0.578		4.268	2.575	1.734			+0.014					
	S075- DRV0625-3-05	●	2	0.625	0.750	4.492	2.799	1.875	1.063	Yes	+0.016	SB-2041TRP	-	FTP-6	-	SCMT050205-□□-E (Outer) SCMT050210-□□-I (Inner)
	DRV0656-3-05	●		0.656		4.587	2.894	1.969			+0.012					
	S100- DRV0688-3-05	●		0.688	1.000	5.114	2.988	2.063	1.260	Yes	+0.010					
	S100- DRV0750-3-06	●	2	0.750	1.000	5.220	3.094	2.250	1.260	Yes	+0.024	SB-2555TRP	DTPM-8	-	-	SCMT060205-□□-E (Outer) SCMT060210-□□-I (Inner)
	DRV0812-3-06	●		0.813		5.406	3.280	2.438			+0.018					
	DRV0875-3-06	●		0.875		5.594	3.469	2.625			+0.010					
	S100- DRV0938-3-07	●	2	0.938	1.000	5.764	3.638	2.813	1.260	Yes	+0.028	SB-3060TRP	DTPM-10	-	-	SCMT070305-□□-E (Outer) SCMT070310-□□-I (Inner)
	DRV0984-3-07	●		0.984		5.902	3.776	2.953			+0.024					
	DRV1000-3-07	●		1.000		5.949	3.823	3.000			+0.020					
	S125- DRV1062-3-09	●	2	1.063	1.250	6.402	4.080	3.188	1.614	Yes	+0.041	SB-3573TRP	DTPM-10	-	-	SCMT090405-□□-E (Outer) SCMT090410-□□-I (Inner)
	DRV1125-3-09	●		1.125		6.592	4.269	3.375			+0.033					
	DRV1188-3-09	●		1.188		6.781	4.458	3.563			+0.026					
	S150- DRV1250-3-09	●		1.250	1.500	7.508	4.791	3.750	1.929	Yes	+0.020					
	S150- DRV1312-3-11	●	2	1.313	1.500	7.692	4.976	3.938	1.929	Yes	+0.045	SB-4086TRP	DTPM-15	-	-	SCMT110406-□□-E (Outer) SCMT110410-□□-I (Inner)
	DRV1375-3-11	●		1.375		7.881	5.165	4.125			+0.039					
	DRV1438-3-11	●		1.438		8.070	5.354	4.313			+0.031					
	DRV1500-3-11	●		1.500		8.256	5.539	4.500			+0.022					
	S150- DRV1562-3-14	●	2	1.562	1.500	8.678	5.962	4.686	1.929	Yes	+0.070	SB-50120TRPH	-	-	TTP-20	SCMT140508-□□-E (Outer) SCMT140510-□□-I (Inner)
	DRV1625-3-14	●		1.625		8.867	6.151	4.875			+0.063					
	DRV1688-3-14	●		1.688		9.056	6.340	5.064			+0.056					
	DRV1750-3-14	●		1.750		9.242	6.526	5.250			+0.049					
	DRV1812-3-14	●		1.812		9.428	6.712	5.436	2.126		+0.041					
	DRV1875-3-14	●		1.875		9.617	6.901	5.625			+0.034					
	DRV1938-3-14	●		1.938		9.806	7.090	5.814			+0.027					
	S150- DRV2000-3-17	●	2	2.000		9.854	7.138	6.000	2.323	Yes	+0.079	SB-60130TRP	-	-	TTP-20	SCMT170608-□□-E (Outer) SCMT170610-□□-I (Inner)

When offset drilling, reduce feed rate to 0.0031 ipr or less.
See Page 32 for Adjustable Sleeve (ASL / SHE).

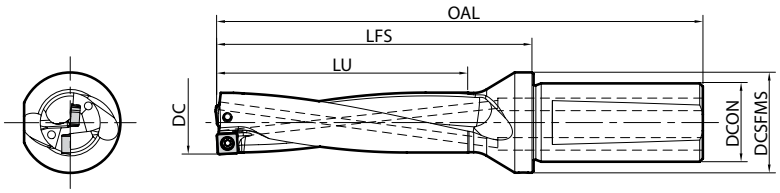
Recommended Cutting Conditions Page 26
Troubleshooting Page 31

● : Standard Item

Hole Dia. Tolerance (3D type)

DC	Hole Dia. Tolerance (in)
ø0.484" - ø2.000"	+0.012 0

* Above is numeric guideline.
It may vary depending on machines / workpieces / clamping status / cutting conditions.



4D

Toolholder Dimensions

Unit	Part Number	Std. Item	No. of Inserts	Dimensions DC	DCON	OAL	LFS	LU	DCSFMS	Coolant Hole	Radial Offset Max.	Spare Parts: Screw	Wrench	Wrench	Wrench	Applicable Inserts (Page 21-23)
Inch	S075- DRV0484-4-03	●	2	0.484	0.750	4.236	2.543	1.938	1.063	Yes	+0.008	SB-2037TRP	-	FTP-6	-	LCMT030203-□□-E (Outer) LCMT030205-□□-I (Inner)
	DRV0500-4-03	●		0.500		4.299	2.606	2.000			+0.006					
	DRV0516-4-03	●		0.516		4.362	2.669	2.062			+0.006					
	DRV0531-4-03	●		0.531		4.425	2.732	2.125			+0.004					
	S075- DRV0562-4-04	●	2	0.563	0.750	4.787	3.094	2.250	1.063	Yes	+0.014	SB-2037TRP	-	FTP-6	-	SCMT040205-□□-E (Outer) SCMT040209-□□-I (Inner)
	DRV0578-4-04	●		0.578		4.847	3.154	2.312			+0.014					
	S075- DRV0625-4-05	●	2	0.625	0.750	5.118	3.425	2.500	1.063	Yes	+0.016	SB-2041TRP	-	FTP-6	-	SCMT050205-□□-E (Outer) SCMT050210-□□-I (Inner)
	DRV0656-4-05	●		0.656		5.240	3.551	2.625			+0.012					
	S100- DRV0688-4-05	●		0.688	1.000	5.803	3.677	2.750	1.260	Yes	+0.010					
	S100- DRV0750-4-06	●	2	0.750	1.000	5.969	3.843	3.000	1.260	Yes	+0.024	SB-2555TRP	DTPM-8	-	-	SCMT060205-□□-E (Outer) SCMT060210-□□-I (Inner)
	DRV0812-4-06	●		0.813		6.217	4.091	3.250			+0.018					
	DRV0875-4-06	●		0.875		6.469	4.343	3.500			+0.010					
	S100- DRV0938-4-07	●	2	0.938	1.000	6.701	4.575	3.750	1.260	Yes	+0.028	SB-3060TRP	DTPM-10	-	-	SCMT070305-□□-E (Outer) SCMT070310-□□-I (Inner)
	DRV0984-4-07	●		0.984		6.886	4.760	3.938			+0.024					
	DRV1000-4-07	●		1.000		6.949	4.823	4.000			+0.020					
	S125- DRV1062-4-09	●	2	1.063	1.250	7.465	5.142	4.250	1.614	Yes	+0.041	SB-3573TRP	DTPM-10	-	-	SCMT090405-□□-E (Outer) SCMT090410-□□-I (Inner)
	DRV1125-4-09	●		1.125		7.717	5.394	4.500			+0.033					
	DRV1188-4-09	●		1.188		7.969	5.646	4.750			+0.026					
	S150- DRV1250-4-09	●		1.250	1.500	8.756	6.039	5.000	1.929	Yes	+0.020					
	S150- DRV1312-4-11	●	2	1.313	1.500	9.004	6.287	5.250	1.929	Yes	+0.045	SB-4086TRP	DTPM-15	-	-	SCMT110406-□□-E (Outer) SCMT110410-□□-I (Inner)
	DRV1375-4-11	●		1.375		9.256	6.539	5.500			+0.039					
	DRV1438-4-11	●		1.438		9.508	6.791	5.750			+0.031					
	DRV1500-4-11	●		1.500		9.756	7.039	6.000			+0.022					
	S150- DRV1562-4-14	●	2	1.562	1.500	10.240	7.524	6.248	1.929	Yes	+0.070	SB-50120TRPH	-	-	TTP-20	SCMT140508-□□-E (Outer) SCMT140510-□□-I (Inner)
	DRV1625-4-14	●		1.625		10.492	7.776	6.500			+0.063					
	DRV1688-4-14	●		1.688		10.744	8.028	6.752			+0.056					
	DRV1750-4-14	●		1.750		10.992	8.276	7.000			+0.049					
	DRV1812-4-14	●		1.812		11.240	8.524	7.248	2.126		+0.041					
	S200- DRV1875-4-14	●	2	1.875	2.000	11.492	8.776	7.500	2.520	Yes	+0.034					
	DRV1938-4-14	●		1.938		11.744	9.028	7.752			+0.027					
	S200- DRV2000-4-17	●	2	2.000	2.000	11.854	9.138	8.000	2.520	Yes	+0.079	SB-60130TRP	-	-	TTP-20	SCMT170608-□□-E (Outer) SCMT170610-□□-I (Inner)

When offset drilling, reduce feed rate to 0.0024 ipr or less.
See Page 32 for Adjustable Sleeve (ASL / SHE).

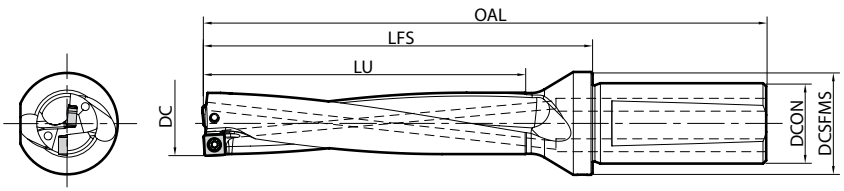
Recommended Cutting Conditions Page 27
Troubleshooting Page 31

● : Standard Item

Hole Dia. Tolerance (4D type)

DC	Hole Dia. Tolerance (in)	DC	Hole Dia. Tolerance (in)
ø0.484" - ø1.500"	+0.014 0	ø1.562" - ø2.000"	+0.016 0

* Above is numeric guideline.
It may vary depending on machines / workpieces / clamping status / cutting conditions.



5D

Toolholder Dimensions

Unit	Part Number	Std. Item	No. of Inserts	Dimensions						Coolant Hole	Radial Offset Max.	Spare Parts				Applicable Inserts Page 21-23
				DC	DCON	OAL	LFS	LU	DCSFMS			Screw	Wrench	Wrench	Wrench	
Inch	S075- DRV0484-5-03	●	2	0.484	0.750	4.721	3.028	2.422	1.063	Yes	+0.008	SB-2037TRP	-	FTP-6	-	LCMT030203-□□-E (Outer) LCMT030205-□□-I (Inner)
	DRV0500-5-03	●		0.500		4.799	3.106	2.500			+0.006					
	DRV0516-5-03	●		0.516		4.878	3.185	2.578			+0.006					
	DRV0531-5-03	●		0.531		4.957	3.264	2.657			+0.004					
	S075- DRV0562-5-04	●	2	0.563	0.750	5.346	3.654	2.813	1.063	Yes	+0.014	SB-2037TRP	-	FTP-6	-	SCMT040205-□□-E (Outer) SCMT040209-□□-I (Inner)
	DRV0578-5-04	●		0.578		5.425	3.732	2.891			+0.014					
	S075- DRV0625-5-05	●	2	0.625	0.750	5.744	4.051	3.125	1.063	Yes	+0.016	SB-2041TRP	-	FTP-6	-	SCMT050205-□□-E (Outer) SCMT050210-□□-I (Inner)
	DRV0656-5-05	●		0.656		5.898	4.205	3.281			+0.012					
	S100- DRV0688-5-05	●		0.688	1.000	6.492	4.366	3.438	1.260	Yes	+0.010					
	S100- DRV0750-5-06	●	2	0.750	1.000	6.720	4.594	3.750	1.260	Yes	+0.024	SB-2555TRP	DTPM-8	-	-	SCMT060205-□□-E (Outer) SCMT060210-□□-I (Inner)
	DRV0812-5-06	●		0.813		7.028	4.902	4.063			+0.018					
	DRV0875-5-06	●		0.875		7.343	5.217	4.375			+0.010					
	S100- DRV0938-5-07	●	2	0.938	1.000	7.638	5.512	4.688	1.260	Yes	+0.028	SB-3060TRP	DTPM-10	-	-	SCMT070305-□□-E (Outer) SCMT070310-□□-I (Inner)
	DRV0984-5-07	●		0.984		7.870	5.744	4.922			+0.024					
	DRV1000-5-07	●		1.000		7.949	5.823	5.000			+0.020					
	S125- DRV1062-5-09	●	2	1.063	1.250	8.526	6.204	5.313	1.614	Yes	+0.041	SB-3573TRP	DTPM-10	-	-	SCMT090405-□□-E (Outer) SCMT090410-□□-I (Inner)
	DRV1125-5-09	●		1.125		8.842	6.519	5.625			+0.033					
	DRV1188-5-09	●		1.188		9.157	6.834	5.938			+0.026					
	S150- DRV1250-5-09	●		1.250	1.500	10.008	7.291	6.250	1.929	Yes	+0.020					
	S150- DRV1312-5-11	●	2	1.313	1.500	10.316	7.600	6.563	1.929	Yes	+0.045	SB-4086TRP	DTPM-15	-	-	SCMT110406-□□-E (Outer) SCMT110410-□□-I (Inner)
	DRV1375-5-11	●		1.375		10.631	7.915	6.875			+0.039					
	DRV1438-5-11	●		1.438		10.946	8.230	7.188			+0.031					
	DRV1500-5-11	●		1.500		11.256	8.539	7.500			+0.022					
	S150- DRV1562-5-14	●	2	1.562	1.500	11.802	9.086	7.810	1.929	Yes	+0.070	SB-50120TRPH	-	-	TTP-20	SCMT140508-□□-E (Outer) SCMT140510-□□-I (Inner)
	DRV1625-5-14	●		1.625		12.117	9.401	8.125			+0.063					
	DRV1688-5-14	●		1.688		12.432	9.716	8.440			+0.056					
	DRV1750-5-14	●		1.750		12.742	10.026	8.750			+0.049					
	DRV1812-5-14	●		1.812		13.052	10.336	9.060	2.126		+0.041					
	S200- DRV1875-5-14	●		1.875	2.000	13.367	10.651	9.375	2.520	Yes	+0.034					
	DRV1938-5-14	●		1.938		13.682	10.966	9.690			+0.027					
	S200- DRV2000-5-17	●	2	2.000	2.000	13.854	11.138	10.000	2.520	Yes	+0.079	SB-60130TRP	-	-	TTP-20	SCMT170608-□□-E (Outer) SCMT170610-□□-I (Inner)

When offset drilling, reduce feed rate to 0.0020 ipr or less.
See Page 32 for Adjustable Sleeve (ASL / SHE).

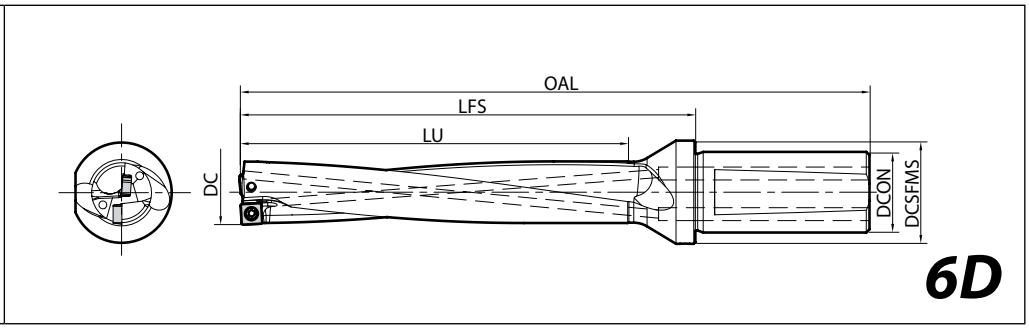
Recommended Cutting Conditions Page 28
Troubleshooting Page 31

● : Standard Item

Hole Dia. Tolerance (5D type)

DC	Hole Dia. Tolerance (in)	DC	Hole Dia. Tolerance (in)
ø0.484" - ø1.500"	+0.014 0	ø1.562" - ø2.000"	+0.016 0

* Above is numeric guideline.
It may vary depending on machines / workpieces / clamping status / cutting conditions.



Toolholder Dimensions

Unit	Part Number	Std. Item	No. of Inserts	Dimensions DC	DCON	OAL	LFS	LU	DCSFMS	Coolant Hole	Radial Offset Max.	Spare Parts: Screw	Wrench	Wrench	Wrench	Applicable Inserts (Page 21-23)
Inch	S075- DRV0484-6-03	●	2	0.484	0.750	5.205	3.512	2.906	1.063	Yes	+0.008	SB-2037TRP	-	FTP-6	-	LCMT030203-□□-E (Outer) LCMT030205-□□-I (Inner)
	DRV0500-6-03	●		0.500		5.299	3.606	3.000			+0.006					
	DRV0516-6-03	●		0.516		5.394	3.701	3.094			+0.006					
	DRV0531-6-03	●		0.531		5.488	3.795	3.188			+0.004					
	S075- DRV0562-6-04	●	2	0.563	0.750	5.909	4.217	3.375	1.063	Yes	+0.014	SB-2037TRP	-	FTP-6	-	SCMT040205-□□-E (Outer) SCMT040209-□□-I (Inner)
	DRV0578-6-04	●		0.578		6.004	4.311	3.469			+0.014					
	S075- DRV0625-6-05	●	2	0.625	0.750	6.370	4.677	3.750	1.063	Yes	+0.016	SB-2041TRP	-	FTP-6	-	SCMT050205-□□-E (Outer) SCMT050210-□□-I (Inner)
	DRV0656-6-05	●		0.656		6.555	4.862	3.938			+0.012					
	S100- DRV0688-6-05	●		0.688	1.000	7.181	5.055	4.125	1.260	Yes	+0.010					
	S100- DRV0750-6-06	●	2	0.750	1.000	7.469	5.343	4.500	1.260	Yes	+0.024	SB-2555TRP	DTPM-8	-	-	SCMT060205-□□-E (Outer) SCMT060210-□□-I (Inner)
	DRV0812-6-06	●		0.813		7.843	5.717	4.875			+0.018					
	DRV0875-6-06	●		0.875		8.220	6.094	5.250			+0.010					
	S100- DRV0938-6-07	●	2	0.938	1.000	8.579	6.453	5.625	1.260	Yes	+0.028	SB-3060TRP	DTPM-10	-	-	SCMT070305-□□-E (Outer) SCMT070310-□□-I (Inner)
	DRV0984-6-07	●		0.984		8.854	6.728	5.906			+0.024					
	DRV1000-6-07	●		1.000		8.949	6.823	6.000			+0.020					
	S125- DRV1062-6-09	●	2	1.063	1.250	9.589	7.266	6.375	1.614	Yes	+0.041	SB-3573TRP	DTPM-10	-	-	SCMT090405-□□-E (Outer) SCMT090410-□□-I (Inner)
	DRV1125-6-09	●		1.125		9.967	7.644	6.750			+0.033					
	DRV1188-6-09	●		1.188		10.344	8.022	7.125			+0.026					
	S150- DRV1250-6-09	●		1.250	1.500	11.256	8.539	7.500	1.929	Yes	+0.020					
	S150- DRV1312-6-11	●	2	1.313	1.500	11.628	8.911	7.875	1.929	Yes	+0.045	SB-4086TRP	DTPM-15	-	-	SCMT110406-□□-E (Outer) SCMT110410-□□-I (Inner)
	DRV1375-6-11	●		1.375		12.006	9.289	8.250			+0.039					
	DRV1438-6-11	●		1.438		12.384	9.667	8.625			+0.031					
	DRV1500-6-11	●		1.500		12.756	10.039	9.000			+0.022					
	S150- DRV1562-6-14	●	2	1.562	1.500	13.364	10.648	9.372	1.929	Yes	+0.070	SB-50120TRPH	-	-	TTP-20	SCMT140508-□□-E (Outer) SCMT140510-□□-I (Inner)
	DRV1625-6-14	●		1.625		13.742	11.026	9.750			+0.063					
	DRV1688-6-14	●		1.688		14.120	11.404	10.128			+0.056					
	DRV1750-6-14	●		1.750		14.492	11.776	10.500			+0.049					
	DRV1812-6-14	●		1.812		14.864	12.148	10.872	2.126		+0.041					
	S200- DRV1875-6-14	●		1.875	2.000	15.242	12.526	11.250	2.520	Yes	+0.034					
	DRV1938-6-14	●		1.938		15.620	12.904	11.628			+0.027					
	S200- DRV2000-6-17	●	2	2.000	2.000	15.854	13.138	12.000	2.520	Yes	+0.079	SB-60130TRP	-	-	TTP-20	SCMT170608-□□-E (Outer) SCMT170610-□□-I (Inner)

When offset drilling, reduce feed rate to 0.0024 ipr or less.
See Page 32 for Adjustable Sleeve (ASL / SHE).

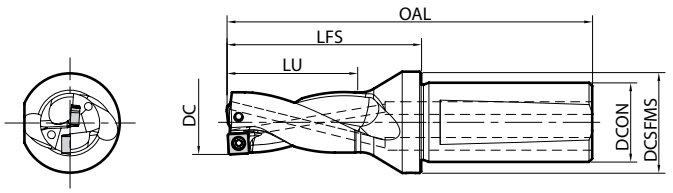
Recommended Cutting Conditions Page 29
Troubleshooting Page 31

● : Standard Item

Hole Dia. Tolerance (6D type)

DC	Hole Dia. Tolerance (in)	DC	Hole Dia. Tolerance (in)
ø0.484" - ø1.500"	+0.018 0	ø1.562" - ø2.000"	+0.020 0

* Above is numeric guideline.
It may vary depending on machines / workpieces / clamping status / cutting conditions.



2D

Toolholder Dimensions

Unit	Part Number	Std. Item	No. of Inserts	Dimensions						Coolant Hole	Radial Offset Max.	Spare Parts				Applicable Inserts Page 21-23
				DC	DCON	OAL	LFS	LU	DCSFMS			Screw	Wrench	Wrench	Wrench	
																
mm	S20- DRV120M-2-03	●	2	12	20	82	39	24	27	Yes	+0.25	SB-2037TRP	-	FTP-6	-	LCMT030203-□□-E (Outer) LCMT030205-□□-I (Inner)
	DRV125M-2-03	●		12.5		83	40	25			+0.20					
	DRV130M-2-03	●		13		84	41	26			+0.15					
	DRV135M-2-03	●		13.5		85	42	27			+0.10					
	S20- DRV140M-2-04	●	2	14	20	92	49	28	27	Yes	+0.40	SB-2037TRP	-	FTP-6	-	SCMT040205-□□-E (Outer) SCMT040209-□□-I (Inner)
	DRV145M-2-04	●		14.5		93	50	29			+0.35					
	DRV150M-2-04	●		15		94	51	30			+0.30					
	DRV155M-2-04	●		15.5		95	52	31			+0.25					
	S25- DRV160M-2-05	●	2	16	25	110	56	32	32	Yes	+0.40	SB-2041TRP	-	FTP-6	-	SCMT050205-□□-E (Outer) SCMT050210-□□-I (Inner)
	DRV165M-2-05	●		16.5		111	57	33			+0.35					
	DRV170M-2-05	●		17		112	58	34			+0.30					
	DRV175M-2-05	●		17.5		113	59	35			+0.25					
	DRV180M-2-05	●		18		114	60	36			+0.20					
	DRV185M-2-05	●		18.5		115	61	37			+0.15					
	S25- DRV190M-2-06	●	2	19	25	113	59	38	32	Yes	+0.65	SB-2555TRP	DTPM-8	-	-	SCMT060205-□□-E (Outer) SCMT060210-□□-I (Inner)
	DRV195M-2-06	●		19.5		114	60	39			+0.60					
	DRV200M-2-06	●		20		115	61	40			+0.55					
	DRV205M-2-06	●		20.5		116	62	41			+0.50					
	DRV210M-2-06	●		21		117	63	42			+0.45					
	DRV215M-2-06	●		21.5		118	64	43			+0.35					
	DRV220M-2-06	●		22		119	65	44			+0.30					
	S25- DRV225M-2-07	●	2	22.5	25	120	66	45	32	Yes	+0.90	SB-3060TRP	DTPM-10	-	-	SCMT070305-□□-E (Outer) SCMT070310-□□-I (Inner)
	DRV230M-2-07	●		23		121	67	46			+0.80					
	DRV235M-2-07	●		23.5		122	68	47			+0.75					
	DRV240M-2-07	●		24		123	69	48			+0.70					
	DRV245M-2-07	●		24.5		124	70	49			+0.65					
	DRV250M-2-07	●		25		125	71	50			+0.60					
	DRV255M-2-07	●		25.5		126	72	51			+0.50					
	DRV260M-2-07	●		26		127	73	52			+0.45					
	S32- DRV270M-2-09	●	2	27	32	136	77	54	41	Yes	+1.05	SB-3573TRP	DTPM-10	-	-	SCMT090405-□□-E (Outer) SCMT090410-□□-I (Inner)
	DRV280M-2-09	●		28		138	79	56			+0.95					
	DRV290M-2-09	●		29		140	81	58			+0.85					
	DRV300M-2-09	●		30		142	83	60			+0.75					
	DRV310M-2-09	●		31		144	85	62			+0.60					
	DRV320M-2-09	●		32		146	87	64			+0.50					

When offset drilling, reduce feed rate to 0.0031 ipr or less.
See Page 32 for Adjustable Sleeve (ASL / SHE).

Recommended Cutting Conditions Page 26
Troubleshooting Page 31

● : Standard Item

Toolholder Dimensions

Unit	Part Number	Std. Item	No. of Inserts	Dimensions						Coolant Hole	Radial Offset Max.	Spare Parts				Applicable Inserts Page 21-23
				DC	DCON	OAL	LFS	LU	DCSFMS			Screw	Wrench	Wrench	Wrench	
																
mm	S40- DRV330M-2-11	●	2	33	40	161	92	66	49	Yes	+1.25	SB-4086TRP	DTPM-15	-	-	SCMT110406-□□-E (Outer) SCMT110410-□□-I (Inner)
	DRV340M-2-11	●		34		163	94	68			+1.15					
	DRV350M-2-11	●		35		165	96	70			+1.00					
	DRV360M-2-11	●		36		167	98	72			+0.90					
	DRV370M-2-11	●		37		169	100	74			+0.80					
	DRV380M-2-11	●		38		171	102	76			+0.65					
	DRV390M-2-11	●		39		173	104	78			+0.55					
	S40- DRV400M-2-14	●	2	40	40	181	112	80	49	Yes	+1.75	SB-50120TRPH	-	-	TTP-20	SCMT140508-□□-E (Outer) SCMT140510-□□-I (Inner)
	DRV410M-2-14	●		41		183	114	82			+1.60					
	DRV420M-2-14	●		42		185	116	84			+1.50					
	DRV430M-2-14	●		43		187	118	86			+1.40					
	DRV440M-2-14	●		44		189	120	88			+1.30					
	DRV450M-2-14	●		45		191	122	90			+1.15					
	DRV460M-2-14	●		46		193	124	92	54		+1.05					
	DRV470M-2-14	●		47		195	126	94			+0.95					
	DRV480M-2-14	●		48		197	128	96			+0.80					
	DRV490M-2-14	●		49		199	130	98			+0.70					
	S40- DRV500M-2-17	●	2	50	40	198	129	100	59	Yes	+2.10	SB-60130TRP	-	-	TTP-20	SCMT170608-□□-E (Outer) SCMT170610-□□-I (Inner)
	DRV510M-2-17	●		51		200	131	102			+1.95					
	DRV520M-2-17	●		52		202	133	104			+1.85					
	DRV530M-2-17	●		53		204	135	106			+1.75					
	DRV540M-2-17	●		54		206	137	108			+1.65					
	DRV550M-2-17	●		55		208	139	110			+1.50					
	DRV560M-2-17	●		56		210	141	112			+1.40					
	DRV570M-2-17	●		57		212	143	114	64		+1.30					
	DRV580M-2-17	●		58		214	145	116			+1.15					
	DRV590M-2-17	●		59		216	147	118			+1.05					
	DRV600M-2-17	●		60		218	149	120			+0.95					

When offset drilling, reduce feed rate to 0.0031 ipr or less.
See **Page 32** for Adjustable Sleeve (ASL / SHE).

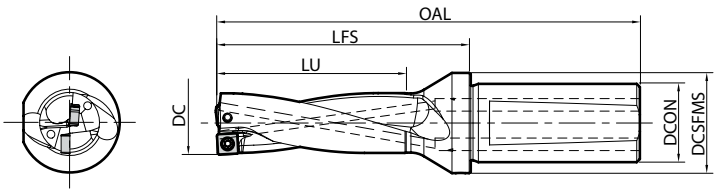
Recommended Cutting Conditions **Page 26**
Troubleshooting **Page 31**

● : Standard Item

Hole Dia. Tolerance (2D type)

DC	Hole Dia. Tolerance (mm)
ø12 - ø60mm	+0.30 0

* Above is numeric guideline.
It may vary depending on machines / workpieces / clamping status / cutting conditions.



3D

Toolholder Dimensions

Unit	Part Number	Std. Item	No. of Inserts	Dimensions						Coolant Hole	Radial Offset Max.	Spare Parts				Applicable Inserts Page 21-23
				DC	DCON	OAL	LFS	LU	DCSFMS			Screw	Wrench	Wrench	Wrench	
mm	S20- DRV120M-3-03	●	2	12	20	94	51	36	27	Yes	+0.25	SB-2037TRP	-	FTP-6	-	LCMT030203-□□-E (Outer) LCMT030205-□□-I (Inner)
	DRV125M-3-03	●		12.5		96	53	37.5			+0.20					
	DRV130M-3-03	●		13		97	54	39			+0.15					
	DRV135M-3-03	●		13.5		99	56	40.5			+0.10					
	S20- DRV140M-3-04	●	2	14	20	106	63	42	27	Yes	+0.40	SB-2037TRP	-	FTP-6	-	SCMT040205-□□-E (Outer) SCMT040209-□□-I (Inner)
	DRV145M-3-04	●		14.5		108	65	43.5			+0.35					
	DRV150M-3-04	●		15		109	66	45			+0.30					
	DRV155M-3-04	●		15.5		111	68	46.5			+0.25					
	S25- DRV160M-3-05	●	2	16	25	126	72	48	32	Yes	+0.40	SB-2041TRP	-	FTP-6	-	SCMT050205-□□-E (Outer) SCMT050210-□□-I (Inner)
	DRV165M-3-05	●		16.5		127	73	49.5			+0.35					
	DRV170M-3-05	●		17		129	75	51			+0.30					
	DRV175M-3-05	●		17.5		130	76	52.5			+0.25					
	DRV180M-3-05	●		18		132	78	54			+0.20					
	DRV185M-3-05	●		18.5		133	79	55.5			+0.15					
	S25- DRV190M-3-06	●	2	19	25	132	78	57	32	Yes	+0.65	SB-2555TRP	DTPM-8	-	-	SCMT060205-□□-E (Outer) SCMT060210-□□-I (Inner)
	DRV195M-3-06	●		19.5		134	80	58.5			+0.60					
	DRV200M-3-06	●		20		135	81	60			+0.55					
	DRV205M-3-06	●		20.5		137	83	61.5			+0.50					
	DRV210M-3-06	●		21		138	84	63			+0.45					
	DRV215M-3-06	●		21.5		140	86	64.5			+0.35					
	DRV220M-3-06	●		22		141	87	66			+0.30					
	S25- DRV225M-3-07	●	2	22.5	25	142	88	67.5	32	Yes	+0.90	SB-3060TRP	DTPM-10	-	-	SCMT070305-□□-E (Outer) SCMT070310-□□-I (Inner)
	DRV230M-3-07	●		23		144	90	69			+0.80					
	DRV235M-3-07	●		23.5		145	91	70.5			+0.75					
	DRV240M-3-07	●		24		147	93	72			+0.70					
	DRV245M-3-07	●		24.5		148	94	73.5			+0.65					
	DRV250M-3-07	●		25		150	96	75			+0.60					
	DRV255M-3-07	●		25.5		151	97	76.5			+0.50					
	DRV260M-3-07	●		26		153	99	78			+0.45					

When offset drilling, reduce feed rate to 0.0031 ipr or less.
See Page 32 for Adjustable Sleeve (ASL / SHE).

Recommended Cutting Conditions Page 26
Troubleshooting Page 31

● : Standard Item

Toolholder Dimensions

Unit	Part Number	Std. Item	No. of Inserts	Dimensions DC	DCON	OAL	LFS	LU	DCSFMS	Coolant Hole	Radial Offset Max.	Spare Parts: Screw	Wrench	Wrench	Wrench	Applicable Inserts (Page 21-23)
mm	S32- DRV265M-3-09	●	2	26.5	32	161	102	79.5	41	Yes	+1.15	SB-3573TRP	DTPM-10	-	-	SCMT090405-□□-E (Outer) SCMT090410-□□-I (Inner)
	DRV270M-3-09	●		27		163	104	81			+1.05					
	DRV275M-3-09	●		27.5		164	105	82.5			+1.00					
	DRV280M-3-09	●		28		166	107	84			+0.95					
	DRV285M-3-09	●		28.5		167	108	85.5			+0.90					
	DRV290M-3-09	●		29		169	110	87			+0.85					
	DRV295M-3-09	●		29.5		170	111	88.5			+0.80					
	DRV300M-3-09	●		30		172	113	90			+0.75					
	DRV305M-3-09	●		30.5		173	114	91.5			+0.65					
	DRV310M-3-09	●		31		175	116	93			+0.60					
	DRV315M-3-09	●		31.5		176	117	94.5			+0.55					
	DRV320M-3-09	●		32		178	119	96			+0.50					
	S40- DRV330M-3-11	●	2	33	40	194	125	99	49	Yes	+1.25	SB-4086TRP	DTPM-15	-	-	SCMT110406-□□-E (Outer) SCMT110410-□□-I (Inner)
	DRV340M-3-11	●		34		197	128	102			+1.15					
	DRV350M-3-11	●		35		200	131	105			+1.00					
	DRV360M-3-11	●		36		203	134	108			+0.90					
	DRV370M-3-11	●		37		206	137	111			+0.80					
	DRV380M-3-11	●		38		209	140	114			+0.65					
	DRV390M-3-11	●		39		212	143	117			+0.55					
	S40- DRV400M-3-14	●	2	40	40	221	152	120	49	Yes	+1.75	SB-50120TRPH	-	-	TTP-20	SCMT140508-□□-E (Outer) SCMT140510-□□-I (Inner)
	DRV410M-3-14	●		41		224	155	123			+1.60					
	DRV420M-3-14	●		42		227	158	126			+1.50					
	DRV430M-3-14	●		43		230	161	129			+1.40					
	DRV440M-3-14	●		44		233	164	132			+1.30					
	DRV450M-3-14	●		45		236	167	135			+1.15					
	DRV460M-3-14	●		46		239	170	138	54		+1.05					
	DRV470M-3-14	●		47		242	173	141			+0.95					
	DRV480M-3-14	●		48		245	176	144			+0.80					
	DRV490M-3-14	●		49		248	179	147			+0.70					
	S40- DRV500M-3-17	●	2	50	40	248	179	150	59	Yes	+2.10	SB-60130TRP	-	-	TTP-20	SCMT170608-□□-E (Outer) SCMT170610-□□-I (Inner)
	DRV510M-3-17	●		51		251	182	153			+1.95					
	DRV520M-3-17	●		52		254	185	156			+1.85					
	DRV530M-3-17	●		53		257	188	159			+1.75					
	DRV540M-3-17	●		54		260	191	162			+1.65					
	DRV550M-3-17	●		55		263	194	165			+1.50					
	DRV560M-3-17	●		56		266	197	168			+1.40					
	DRV570M-3-17	●		57		269	200	171	64		+1.30					
	DRV580M-3-17	●		58		272	203	174			+1.15					
	DRV590M-3-17	●		59		275	206	177			+1.05					
	DRV600M-3-17	●		60		278	209	180			+0.95					

When offset drilling, reduce feed rate to 0.0031 ipr or less.
See **Page 32** for Adjustable Sleeve (ASL / SHE).

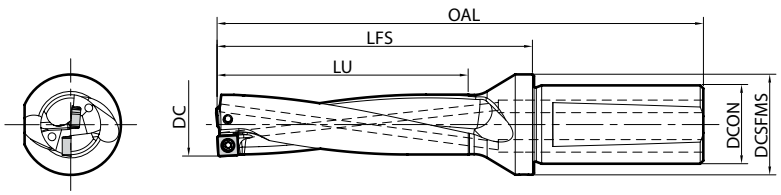
Recommended Cutting Conditions **Page 26**
Troubleshooting **Page 31**

● : Standard Item

Hole Dia. Tolerance (3D type)

DC	Hole Dia. Tolerance (mm)
ø12 - ø60mm	+0.30 0

* Above is numeric guideline.
It may vary depending on machines / workpieces / clamping status / cutting conditions.



4D

Toolholder Dimensions

Unit	Part Number	Std. Item	No. of Inserts	Dimensions						Coolant Hole	Radial Offset Max.	Spare Parts				Applicable Inserts Page 21-23
				DC	DCON	OAL	LFS	LU	DCSFMS			Screw	Wrench	Wrench	Wrench	
mm	S20- DRV120M-4-03	●	2	12	20	106	63	48	27	Yes	+0.25	SB-2037TRP	-	FTP-6	-	LCMT030203-□□-E (Outer) LCMT030205-□□-I (Inner)
	DRV125M-4-03	●		12.5		108	65	50			+0.20					
	DRV130M-4-03	●		13		110	67	52			+0.15					
	DRV135M-4-03	●		13.5		112	69	54			+0.10					
	S20- DRV140M-4-04	●	2	14	20	120	77	56	27	Yes	+0.40	SB-2037TRP	-	FTP-6	-	SCMT040205-□□-E (Outer) SCMT040209-□□-I (Inner)
	DRV145M-4-04	●		14.5		122	79	58			+0.35					
	DRV150M-4-04	●		15		124	81	60			+0.30					
	DRV155M-4-04	●		15.5		126	83	62			+0.25					
	S25- DRV160M-4-05	●	2	16	25	142	88	64	32	Yes	+0.40	SB-2041TRP	-	FTP-6	-	SCMT050205-□□-E (Outer) SCMT050210-□□-I (Inner)
	DRV165M-4-05	●		16.5		144	90	66			+0.35					
	DRV170M-4-05	●		17		146	92	68			+0.30					
	DRV175M-4-05	●		17.5		148	94	70			+0.25					
	DRV180M-4-05	●		18		150	96	72			+0.20					
	DRV185M-4-05	●		18.5		152	98	74			+0.15					
	S25- DRV190M-4-06	●	2	19	25	151	97	76	32	Yes	+0.65	SB-2555TRP	DTPM-8	-	-	SCMT060205-□□-E (Outer) SCMT060210-□□-I (Inner)
	DRV195M-4-06	●		19.5		153	99	78			+0.60					
	DRV200M-4-06	●		20		155	101	80			+0.55					
	DRV205M-4-06	●		20.5		157	103	82			+0.50					
	DRV210M-4-06	●		21		159	105	84			+0.45					
	DRV215M-4-06	●		21.5		161	107	86			+0.35					
	DRV220M-4-06	●		22		163	109	88			+0.30					
	S25- DRV225M-4-07	●	2	22.5	25	165	111	90	32	Yes	+0.90	SB-3060TRP	DTPM-10	-	-	SCMT070305-□□-E (Outer) SCMT070310-□□-I (Inner)
	DRV230M-4-07	●		23		167	113	92			+0.80					
	DRV235M-4-07	●		23.5		169	115	94			+0.75					
	DRV240M-4-07	●		24		171	117	96			+0.70					
	DRV245M-4-07	●		24.5		173	119	98			+0.65					
	DRV250M-4-07	●		25		175	121	100			+0.60					
	DRV255M-4-07	●		25.5		177	123	102			+0.50					
	DRV260M-4-07	●		26		179	125	104			+0.45					
	S32- DRV270M-4-09	●	2	27	32	190	131	108	41	Yes	+1.05	SB-3573TRP	DTPM-10	-	-	SCMT090405-□□-E (Outer) SCMT090410-□□-I (Inner)
	DRV280M-4-09	●		28		194	135	112			+0.95					
	DRV290M-4-09	●		29		198	139	116			+0.85					
	DRV300M-4-09	●		30		202	143	120			+0.75					
	DRV310M-4-09	●		31		206	147	124			+0.60					
	DRV320M-4-09	●		32		210	151	128			+0.50					

When offset drilling, reduce feed rate to 0.0024 ipr or less.
See Page 32 for Adjustable Sleeve (ASL / SHE).

Recommended Cutting Conditions Page 27
Troubleshooting Page 31

● : Standard Item

Toolholder Dimensions

Unit	Part Number	Std. Item	No. of Inserts	Dimensions						Coolant Hole	Radial Offset Max.	Spare Parts				Applicable Inserts Page 21-23
				DC	DCON	OAL	LFS	LU	DCSFMS			Screw	Wrench	Wrench	Wrench	
																
mm	S40- DRV330M-4-11	●	2	33	40	227	158	132	49	Yes	+1.25	SB-4086TRP	DTPM-15	-	-	SCMT110406-□□-E (Outer) SCMT110410-□□-I (Inner)
	DRV340M-4-11	●		34		231	162	136			+1.15					
	DRV350M-4-11	●		35		235	166	140			+1.00					
	DRV360M-4-11	●		36		239	170	144			+0.90					
	DRV370M-4-11	●		37		243	174	148			+0.80					
	DRV380M-4-11	●		38		247	178	152			+0.65					
	DRV390M-4-11	●		39		251	182	156			+0.55					
	S40- DRV400M-4-14	●	2	40	40	261	192	160	49	Yes	+1.75	SB-50120TRPH	-	-	TTP-20	SCMT140508-□□-E (Outer) SCMT140510-□□-I (Inner)
	DRV410M-4-14	●		41		265	196	164			+1.60					
	DRV420M-4-14	●		42		269	200	168			+1.50					
	DRV430M-4-14	●		43		273	204	172			+1.40					
	DRV440M-4-14	●		44		277	208	176			+1.30					
	DRV450M-4-14	●		45		281	212	180			+1.15					
	DRV460M-4-14	●		46		285	216	184	54		+1.05					
	DRV470M-4-14	●		47		289	220	188			+0.95					
	S50- DRV480M-4-14	●		48	50	293	224	192	59		+0.80					
	DRV490M-4-14	●		49		297	228	196			+0.70					
	S50- DRV500M-4-17	●	2	50	50	298	229	200	59	Yes	+2.10	SB-60130TRP	-	-	TTP-20	SCMT170608-□□-E (Outer) SCMT170610-□□-I (Inner)
	DRV510M-4-17	●		51		302	233	204			+1.95					
	DRV520M-4-17	●		52		306	237	208			+1.85					
	DRV530M-4-17	●		53		310	241	212			+1.75					
	DRV540M-4-17	●		54		314	245	216			+1.65					
	DRV550M-4-17	●		55		318	249	220			+1.50					
	DRV560M-4-17	●		56		322	253	224			+1.40					
	DRV570M-4-17	●		57		326	257	228	64		+1.30					
	DRV580M-4-17	●		58		330	261	232			+1.15					
	DRV590M-4-17	●		59		334	265	236			+1.05					
	DRV600M-4-17	●		60		338	269	240			+0.95					

When offset drilling, reduce feed rate to 0.0024 ipr or less.
See **Page 32** for Adjustable Sleeve (ASL / SHE).

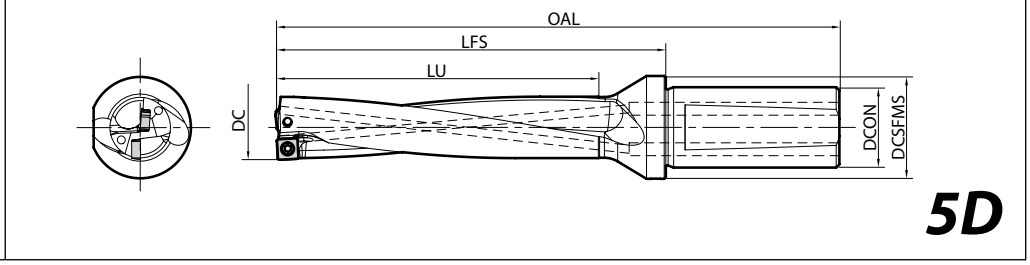
Recommended Cutting Conditions **Page 27**
Troubleshooting **Page 31**

● : Standard Item

Hole Dia. Tolerance (4D type)

DC	Hole Dia. Tolerance (mm)
ø12 - ø39mm	+0.35 0
ø40 - ø60mm	+0.40 0

* Above is numeric guideline.
It may vary depending on machines / workpieces / clamping status / cutting conditions.



Toolholder Dimensions

Unit	Part Number	Std. Item	No. of Inserts	Dimensions DC	DCON	OAL	LFS	LU	DCSFMS	Coolant Hole	Radial Offset Max.	Spare Parts: Screw	Wrench	Wrench	Wrench	Applicable Inserts (Page 21-23)
mm	S20- DRV120M-5-03	●	2	12	20	118	75	60	27	Yes	+0.25	SB-2037TRP	-	FTP-6	-	LCMT030203-□□-E (Outer) LCMT030205-□□-I (Inner)
	DRV130M-5-03	●		13		123	80	65			+0.15					
	S20- DRV140M-5-04	●	2	14	20	134	91	70	27	Yes	+0.40	SB-2037TRP	-	FTP-6	-	SCMT040205-□□-E (Outer) SCMT040209-□□-I (Inner)
	DRV150M-5-04	●		15		139	96	75			+0.30					
	S25- DRV160M-5-05	●		16		158	104	80			+0.40					
	DRV170M-5-05	●	2	17	25	163	109	85	32	Yes	+0.30	SB-2041TRP	-	FTP-6	-	SCMT050205-□□-E (Outer) SCMT050210-□□-I (Inner)
	DRV180M-5-05	●		18		168	114	90			+0.20					
	S25- DRV190M-5-06	●		19		170	116	95			+0.65					
	DRV200M-5-06	●	2	20	25	175	121	100	32	Yes	+0.55	SB-2555TRP	DTPM-8	-	-	SCMT060205-□□-E (Outer) SCMT060210-□□-I (Inner)
	DRV210M-5-06	●		21		180	126	105			+0.45					
	DRV220M-5-06	●		22		185	131	110			+0.30					
	S25- DRV230M-5-07	●		23		190	136	115			+0.80					
	DRV240M-5-07	●	2	24	25	195	141	120	32	Yes	+0.70	SB-3060TRP	DTPM-10	-	-	SCMT070305-□□-E (Outer) SCMT070310-□□-I (Inner)
	DRV250M-5-07	●		25		200	146	125			+0.60					
	DRV260M-5-07	●		26		205	151	130			+0.45					
	S32- DRV270M-5-09	●		27		217	158	135			+1.05					
	DRV280M-5-09	●		28		222	163	140			+0.95					
	DRV290M-5-09	●	2	29	32	227	168	145	41	Yes	+0.85	SB-3573TRP	DTPM-10	-	-	SCMT090405-□□-E (Outer) SCMT090410-□□-I (Inner)
	DRV300M-5-09	●		30		232	173	150			+0.75					
	DRV310M-5-09	●		31		237	178	155			+0.60					
	DRV320M-5-09	●		32		242	183	160			+0.50					
	S40- DRV330M-5-11	●		33		260	191	165			+1.25					
	DRV340M-5-11	●		34		265	196	170			+1.15					
	DRV350M-5-11	●		35		270	201	175			+1.00					
	DRV360M-5-11	●	2	36	40	275	206	180	49	Yes	+0.90	SB-4086TRP	DTPM-15	-	-	SCMT110406-□□-E (Outer) SCMT110410-□□-I (Inner)
	DRV370M-5-11	●		37		280	211	185			+0.80					
	DRV380M-5-11	●		38		285	216	190			+0.65					
	DRV390M-5-11	●		39		290	221	195			+0.55					

When offset drilling, reduce feed rate to 0.0020 ipr or less.
See Page 32 for Adjustable Sleeve (ASL / SHE).

Recommended Cutting Conditions Page 28
Troubleshooting Page 31

● : Standard Item

Toolholder Dimensions

Unit	Part Number	Std. Item	No. of Inserts	Dimensions						Coolant Hole	Radial Offset Max.	Spare Parts				Applicable Inserts ⇒ Page 21-23
				DC	DCON	OAL	LFS	LU	DCSFMS			Screw	Wrench	Wrench	Wrench	
																
mm	S40- DRV400M-5-14	●	2	40	40	301	232	200	49	Yes	+1.75	SB-50120TRPH	-	-	TTP-20	SCMT140508-□□-E (Outer) SCMT140510-□□-I (Inner)
	DRV410M-5-14	●		41		306	237	205			+1.60					
	DRV420M-5-14	●		42		311	242	210			+1.50					
	DRV430M-5-14	●		43		316	247	215			+1.40					
	DRV440M-5-14	●		44		321	252	220			+1.30					
	DRV450M-5-14	●		45		326	257	225			+1.15					
	DRV460M-5-14	●		46		331	262	230	54		+1.05					
	DRV470M-5-14	●		47		336	267	235			+0.95					
	S50- DRV480M-5-14	●		48	50	341	272	240	59		+0.80					
	DRV490M-5-14	●		49		346	277	245			+0.70					
	S50- DRV500M-5-17	●	2	50	50	348	279	250	59	Yes	+2.10	SB-60130TRP	-	-	TTP-20	SCMT170608-□□-E (Outer) SCMT170610-□□-I (Inner)
	DRV510M-5-17	●		51		353	284	255			+1.95					
	DRV520M-5-17	●		52		358	289	260			+1.85					
	DRV530M-5-17	●		53		363	294	265			+1.75					
	DRV540M-5-17	●		54		368	299	270			+1.65					
	DRV550M-5-17	●		55		373	304	275			+1.50					
	DRV560M-5-17	●		56		378	309	280			+1.40					
	DRV570M-5-17	●		57		383	314	285	64		+1.30					
	DRV580M-5-17	●		58		388	319	290			+1.15					
	DRV590M-5-17	●		59		393	324	295			+1.05					
	DRV600M-5-17	●		60		398	329	300			+0.95					

When offset drilling, reduce feed rate to 0.0020 ipr or less.
See ⇒ **Page 32** for Adjustable Sleeve (ASL / SHE).

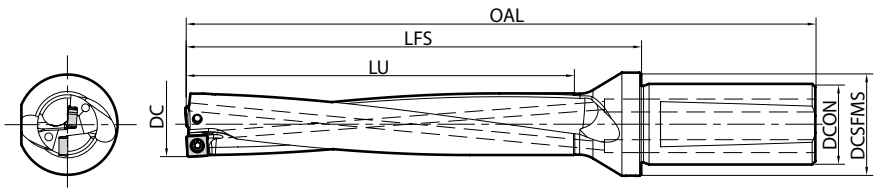
Recommended Cutting Conditions ⇒ **Page 28**
Troubleshooting ⇒ **Page 31**

● : Standard Item

Hole Dia. Tolerance (5D type)

DC	Hole Dia. Tolerance (mm)
ø12 - ø39mm	+0.35 0
ø40 - ø60mm	+0.40 0

* Above is numeric guideline.
It may vary depending on machines / workpieces / clamping status / cutting conditions.



6D

Toolholder Dimensions

Unit	Part Number	Std. Item	No. of Inserts	Dimensions DC	DCON	OAL	LFS	LU	DCSFMS	Coolant Hole	Radial Offset Max.	Spare Parts Screw	Wrench	Wrench	Wrench	Applicable Inserts Page 21-23
mm	S20- DRV120M-6-03	●	2	12	20	130	87	72	27	Yes	+0.25	SB-2037TRP	-	FTP-6	-	LCMT030203-□□-E (Outer)
	DRV130M-6-03	●		13		136	93	78			+0.15					LCMT030205-□□-I (Inner)
	S20- DRV140M-6-04	●	2	14	20	148	105	84	27	Yes	+0.40	SB-2037TRP	-	FTP-6	-	SCMT040205-□□-E (Outer)
	DRV150M-6-04	●		15		154	111	90			+0.30					SCMT040209-□□-I (Inner)
	S25- DRV160M-6-05	●		16		174	120	96			+0.40					
	DRV170M-6-05	●	2	17	25	180	126	102	32	Yes	+0.30	SB-2041TRP	-	FTP-6	-	SCMT050205-□□-E (Outer)
	DRV180M-6-05	●		18		186	132	108			+0.20					SCMT050210-□□-I (Inner)
	S25- DRV190M-6-06	●		19		189	135	114			+0.65					
	DRV200M-6-06	●		20		195	141	120			+0.55					
	DRV210M-6-06	●	2	21	25	201	147	126	32	Yes	+0.45	SB-2555TRP	DTPM-8	-	-	SCMT060205-□□-E (Outer)
	DRV220M-6-06	●		22		207	153	132			+0.30					SCMT060210-□□-I (Inner)
	S25- DRV230M-6-07	●		23		213	159	138			+0.80					
	DRV240M-6-07	●		24		219	165	144			+0.70					
	DRV250M-6-07	●	2	25	25	225	171	150	32	Yes	+0.60	SB-3060TRP	DTPM-10	-	-	SCMT070305-□□-E (Outer)
	DRV260M-6-07	●		26		231	177	156			+0.45					SCMT070310-□□-I (Inner)
	S32- DRV270M-6-09	●		27		244	185	162			+1.05					
	DRV280M-6-09	●		28		250	191	168			+0.95					
	DRV290M-6-09	●		29		256	197	174			+0.85					
	DRV300M-6-09	●	2	30	32	262	203	180	41	Yes	+0.75	SB-3573TRP	DTPM-10	-	-	SCMT090405-□□-E (Outer)
	DRV310M-6-09	●		31		268	209	186			+0.60					SCMT090410-□□-I (Inner)
	DRV320M-6-09	●		32		274	215	192			+0.50					
	S40- DRV330M-6-11	●		33		293	224	198			+1.25					
	DRV340M-6-11	●		34		299	230	204			+1.15					
	DRV350M-6-11	●		35		305	236	210			+1.00					
	DRV360M-6-11	●	2	36	40	311	242	216	49	Yes	+0.90	SB-4086TRP	DTPM-15	-	-	SCMT110406-□□-E (Outer)
	DRV370M-6-11	●		37		317	248	222			+0.80					SCMT110410-□□-I (Inner)
	DRV380M-6-11	●		38		323	254	228			+0.65					
	DRV390M-6-11	●		39		329	260	234			+0.55					
	S40- DRV400M-6-14	●		40		341	272	240			+1.75					
	DRV410M-6-14	●		41		347	278	246			+1.60					
	DRV420M-6-14	●		42		353	284	252			+1.50					
	DRV430M-6-14	●	2	43	40	359	290	258	49	Yes	+1.40	SB-50120TRPH	-	-	TTP-20	SCMT140508-□□-E (Outer)
	DRV440M-6-14	●		44		365	296	264			+1.30					SCMT140510-□□-I (Inner)
	DRV450M-6-14	●		45		371	302	270			+1.15					
	S50- DRV500M-6-17	●		50		398	329	300			+2.10					
	DRV550M-6-17	●	2	55	50	428	359	330	59	Yes	+1.50	SB-60130TRP	-	-	TTP-20	SCMT170608-□□-E (Outer)
	DRV600M-6-17	●		60		458	389	360	64		+0.95					SCMT170610-□□-I (Inner)

When offset drilling, reduce feed rate to 0.0016 ipr or less.
See Page 32 for Adjustable Sleeve (ASL / SHE).

Recommended Cutting Conditions Page 29
Troubleshooting Page 31

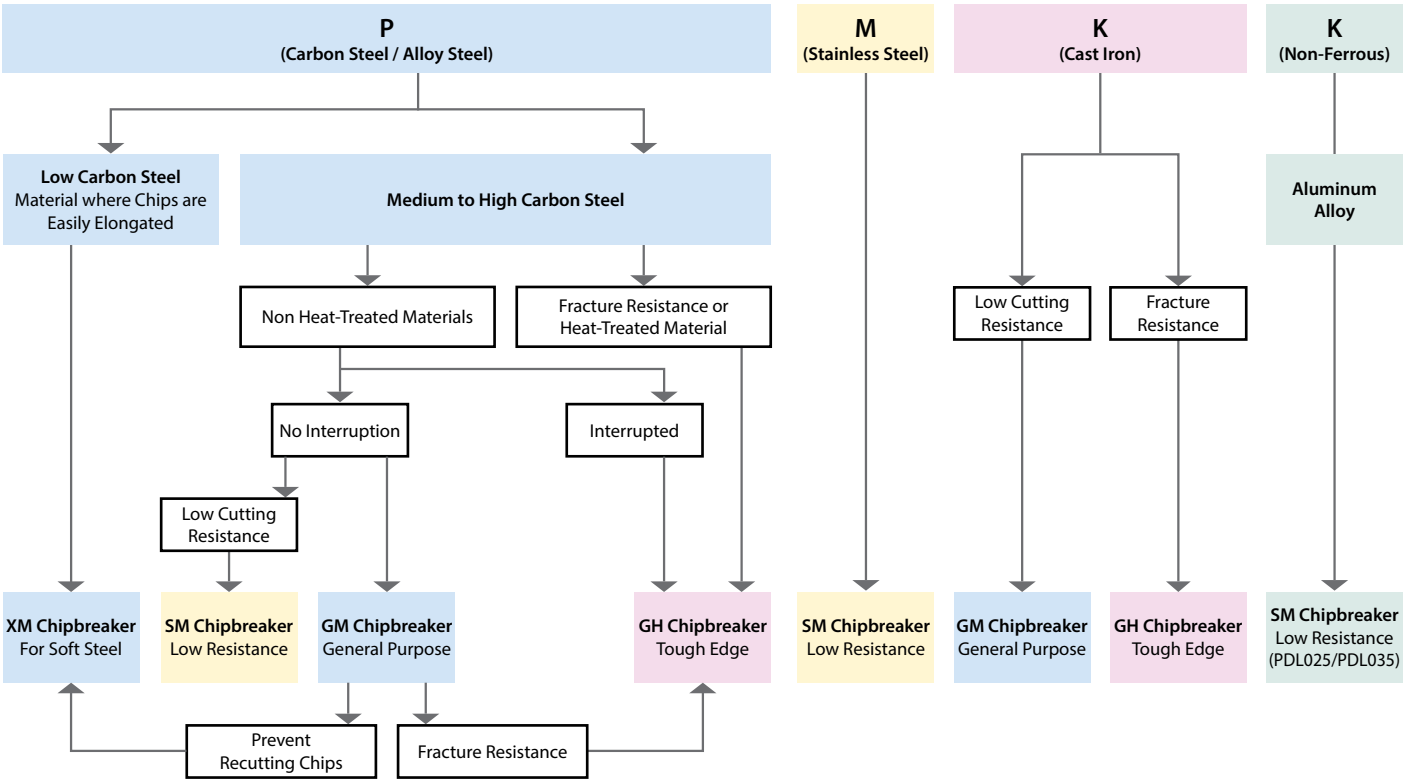
● : Standard Item

Hole Dia. Tolerance (6D type)

DC	Hole Dia. Tolerance (mm)	DC	Hole Dia. Tolerance (mm)
ø12 - ø39mm	+0.45 0	ø40 - ø60mm	+0.50 0

* Above is numeric guideline.
It may vary depending on machines / workpieces / clamping status / cutting conditions.

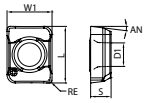
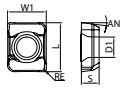
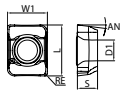
Chipbreaker Selection Chart



LCMT (Outer Edge)

Usage Classification
★ : High speed and highly efficient drilling
☆ : Stable machining oriented

Carbon Steel / Alloy Steel	★ ☆	P
Mold and Die Steel	★ ☆	P
Stainless Steel	★ ☆	M
Cast Iron	★ ☆	K
Non-Ferrous Metals	★	N

Insert		Part Number	No. of Edges	Dimensions (mm) S	D1	RE	L	W1	Angle (°) AN	Carbide CVD CA415D	CVD CA520D	PVD PR1225	DLC PDL025	Applicable Toolholder
	 Tough Edge	LCMT 030203-GH-E	2	2	2.3	0.3	5.54	4.4	7	●	●	●		S075-DRV...-□-03 S20-DRV...-□-03
	 General Purpose	LCMT 030203-GM-E	2	2	2.3	0.3	5.54	4.4	7	●	●	●		
	 Stainless Steel	LCMT 030203-SM-E	2	2	2.3	0.3	5.54	4.4	7		●	●	●	

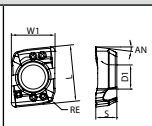
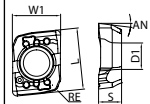
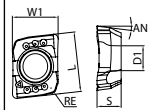
Recommended Cutting Conditions Page 26-29

● : Standard Item

LCMT (Inner Edge)

Usage Classification
★ : High speed and highly efficient drilling

Carbon Steel / Alloy Steel	★	P
Mold and Die Steel	★	P
Stainless Steel	★	M
Cast Iron	★	K
Non-Ferrous Metals	★	N

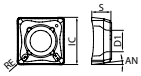
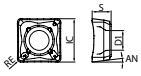
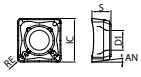
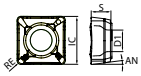
Insert		Part Number	No. of Edges	Dimensions (mm) S	D1	RE	L	W1	Angle (°) AN	Carbide PVD PR1535	DLC PDL035	Applicable Toolholder
	 Tough Edge	LCMT 030205-GH-I	2	2	2.3	0.5	5.37	4.16	7	●		S075-DRV...-□-03 S20-DRV...-□-03
	 General Purpose	LCMT 030205-GM-I	2	2	2.3	0.5	5.37	4.16	7	●		
	 Stainless Steel	LCMT 030205-SM-I	2	2	2.3	0.5	5.37	4.16	7	●	●	

Recommended Cutting Conditions Page 26-29

● : Standard Item

Inserts are sold in 10 piece boxes

SCMT (Outer Edge)

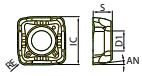
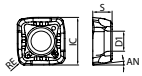
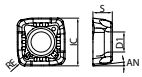
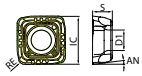
Usage Classification ★ : High speed and highly efficient drilling ☆ : Stable machining oriented														
			Carbon Steel / Alloy Steel			★	☆		P
			Mold and Die Steel			★	☆		P
			Stainless Steel			★	☆		M
			Cast Iron	★			☆		K
			Non-Ferrous Metals					★	N
Insert		Part Number	No. of Edges	Dimensions (mm)				Angle (°)	Carbide				Applicable Toolholder Page 6-19
				IC	S	D1	RE	AN	CVD		PVD	DLC	
									CA415D	CA520D	PR1225	PDL025	
	 Tough Edge	SCMT 040205-GH-E	4	4.8	2.2	2.4	0.5	7	●	●	●		S..-DRV...-□-04
		SCMT 050205-GH-E	4	5.25	2.6	2.4	0.5	7	●	●	●		S..-DRV...-□-05
		SCMT 060205-GH-E	4	6.4	2.8	2.9	0.5	7	●	●	●		S..-DRV...-□-06
		SCMT 070305-GH-E	4	7.65	3.2	3.5	0.5	7	●	●	●		S..-DRV...-□-07
		SCMT 090405-GH-E	4	9.1	4.1	4	0.5	7	●	●	●		S..-DRV...-□-09
		SCMT 110406-GH-E	4	11	4.5	4.6	0.6	7	●	●	●		S..-DRV...-□-11
		SCMT 140508-GH-E	4	13.8	5	5.7	0.8	7	●	●	●		S..-DRV...-□-14
		SCMT 170608-GH-E	4	16.8	6.58	6.9	0.8	7	●	●	●		S..-DRV...-□-17
	 General Purpose	SCMT 040205-GM-E	4	4.8	2.2	2.4	0.5	7	●	●	●		S..-DRV...-□-04
		SCMT 050205-GM-E	4	5.25	2.6	2.4	0.5	7	●	●	●		S..-DRV...-□-05
		SCMT 060205-GM-E	4	6.4	2.8	2.9	0.5	7	●	●	●		S..-DRV...-□-06
		SCMT 070305-GM-E	4	7.65	3.2	3.5	0.5	7	●	●	●		S..-DRV...-□-07
		SCMT 090405-GM-E	4	9.1	4.1	4	0.5	7	●	●	●		S..-DRV...-□-09
		SCMT 110406-GM-E	4	11	4.5	4.6	0.6	7	●	●	●		S..-DRV...-□-11
		SCMT 140508-GM-E	4	13.8	5	5.7	0.8	7	●	●	●		S..-DRV...-□-14
		SCMT 170608-GM-E	4	16.8	6.58	6.9	0.8	7	●	●	●		S..-DRV...-□-17
	 Stainless Steel	SCMT 040205-SM-E	4	4.8	2.2	2.4	0.5	7		●	●	●	S..-DRV...-□-04
		SCMT 050205-SM-E	4	5.25	2.6	2.4	0.5	7		●	●	●	S..-DRV...-□-05
		SCMT 060205-SM-E	4	6.4	2.8	2.9	0.5	7		●	●	●	S..-DRV...-□-06
		SCMT 070305-SM-E	4	7.65	3.2	3.5	0.5	7		●	●	●	S..-DRV...-□-07
		SCMT 090405-SM-E	4	9.1	4.1	4	0.5	7		●	●	●	S..-DRV...-□-09
		SCMT 110406-SM-E	4	11	4.5	4.6	0.6	7		●	●	●	S..-DRV...-□-11
		SCMT 140508-SM-E	4	13.8	5	5.7	0.8	7		●	●	●	S..-DRV...-□-14
		SCMT 170608-SM-E	4	16.8	6.58	6.9	0.8	7		●	●	●	S..-DRV...-□-17
	 Low Carbon Steel	SCMT 040205-XM-E	4	4.8	2.2	2.4	0.5	7		●	●		S..-DRV...-□-04
		SCMT 050205-XM-E	4	5.25	2.6	2.4	0.5	7		●	●		S..-DRV...-□-05
		SCMT 060205-XM-E	4	6.4	2.8	2.9	0.5	7		●	●		S..-DRV...-□-06
		SCMT 070305-XM-E	4	7.65	3.2	3.5	0.5	7		●	●		S..-DRV...-□-07
		SCMT 090405-XM-E	4	9.1	4.1	4	0.5	7		●	●		S..-DRV...-□-09
		SCMT 110406-XM-E	4	11	4.5	4.6	0.6	7		●	●		S..-DRV...-□-11
		SCMT 140508-XM-E	4	13.8	5	5.7	0.8	7		●	●		S..-DRV...-□-14
		SCMT 170608-XM-E	4	16.8	6.58	6.9	0.8	7		●	●		S..-DRV...-□-17

Recommended Cutting Conditions Page 26-29

● : Standard Item

Inserts are sold in 10 piece boxes

SCMT (Inner Edge)

Usage Classification ★ : High speed and highly efficient drilling													
			Carbon Steel / Alloy Steel					★		P
			Mold and Die Steel					★		P
			Stainless Steel					★		M
			Cast Iron					★		K
			Non-Ferrous Metals						★	N
Insert		Part Number	No. of Edges	Dimensions (mm) IC	S	D1	RE	Angle (°) AN	Carbide PVD PR1535	Carbide DLC PDL035	Applicable Toolholder Page 6-19
	 Tough Edge	SCMT 040209-GH-I	4	5	2.2	2.4	0.9	7	●		S..-DRV...-□-04
		SCMT 050210-GH-I	4	5.7	2.6	2.4	1	7	●		S..-DRV...-□-05
		SCMT 060210-GH-I	4	6.9	2.8	2.9	1	7	●		S..-DRV...-□-06
		SCMT 070310-GH-I	4	8.2	3.2	3.5	1	7	●		S..-DRV...-□-07
		SCMT 090410-GH-I	4	9.8	4.1	4	1	7	●		S..-DRV...-□-09
		SCMT 110410-GH-I	4	11.9	4.5	4.6	1	7	●		S..-DRV...-□-11
		SCMT 140510-GH-I	4	14.9	5	5.7	1	7	●		S..-DRV...-□-14
		SCMT 170610-GH-I	4	17.9	6.58	6.9	1	7	●		S..-DRV...-□-17
	 General Purpose	SCMT 040209-GM-I	4	5	2.2	2.4	0.9	7	●		S..-DRV...-□-04
		SCMT 050210-GM-I	4	5.7	2.6	2.4	1	7	●		S..-DRV...-□-05
		SCMT 060210-GM-I	4	6.9	2.8	2.9	1	7	●		S..-DRV...-□-06
		SCMT 070310-GM-I	4	8.2	3.2	3.5	1	7	●		S..-DRV...-□-07
		SCMT 090410-GM-I	4	9.8	4.1	4	1	7	●		S..-DRV...-□-09
		SCMT 110410-GM-I	4	11.9	4.5	4.6	1	7	●		S..-DRV...-□-11
		SCMT 140510-GM-I	4	14.9	5	5.7	1	7	●		S..-DRV...-□-14
		SCMT 170610-GM-I	4	17.9	6.58	6.9	1	7	●		S..-DRV...-□-17
	 Stainless Steel	SCMT 040209-SM-I	4	5	2.2	2.4	0.9	7	●	●	S..-DRV...-□-04
		SCMT 050210-SM-I	4	5.7	2.6	2.4	1	7	●	●	S..-DRV...-□-05
		SCMT 060210-SM-I	4	6.9	2.8	2.9	1	7	●	●	S..-DRV...-□-06
		SCMT 070310-SM-I	4	8.2	3.2	3.5	1	7	●	●	S..-DRV...-□-07
		SCMT 090410-SM-I	4	9.8	4.1	4	1	7	●	●	S..-DRV...-□-09
		SCMT 110410-SM-I	4	11.9	4.5	4.6	1	7	●	●	S..-DRV...-□-11
		SCMT 140510-SM-I	4	14.9	5	5.7	1	7	●	●	S..-DRV...-□-14
		SCMT 170610-SM-I	4	17.9	6.58	6.9	1	7	●	●	S..-DRV...-□-17
	 Low Carbon Steel	SCMT 040209-XM-I	4	5	2.2	2.4	0.9	7	●		S..-DRV...-□-04
		SCMT 050210-XM-I	4	5.7	2.6	2.4	1	7	●		S..-DRV...-□-05
		SCMT 060210-XM-I	4	6.9	2.8	2.9	1	7	●		S..-DRV...-□-06
		SCMT 070310-XM-I	4	8.2	3.2	3.5	1	7	●		S..-DRV...-□-07
		SCMT 090410-XM-I	4	9.8	4.1	4	1	7	●		S..-DRV...-□-09
		SCMT 110410-XM-I	4	11.9	4.5	4.6	1	7	●		S..-DRV...-□-11
		SCMT 140510-XM-I	4	14.9	5	5.7	1	7	●		S..-DRV...-□-14
		SCMT 170610-XM-I	4	17.9	6.58	6.9	1	7	●		S..-DRV...-□-17

Recommended Cutting Conditions Page 26-29

● : Standard Item

Inserts are sold in 10 piece boxes

DRV Chamfering Attachment

Free-positioning according to the drilling depth
Versatile chamfering with reduced chattering

1 Double Inserts Provide Highly Efficient Machining

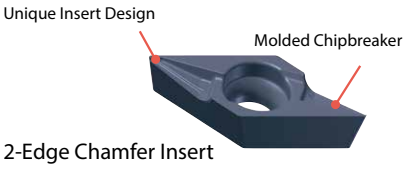
2 inserts allow for increased feed rates and a low cutting force design reduces chattering

2 Excellent Chip Evacuation

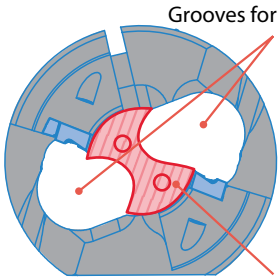
Chip flow grooves are designed to follow the flutes of the drill body delivering excellent chip evacuation

3 High Chattering Resistance

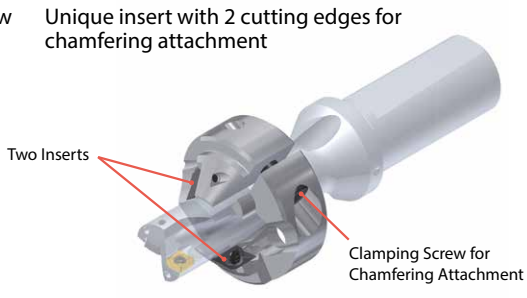
Molded chipbreaker on 2-edge chamfering insert reduces cutting force while the special insert design prevents fracturing on the edge



2-Edge Chamfer Insert

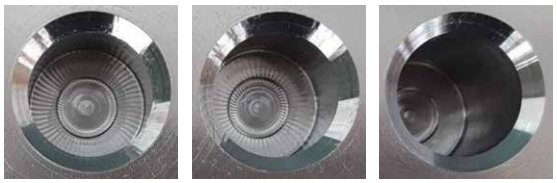


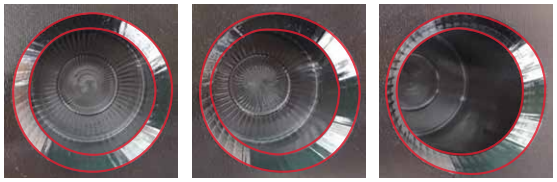
Drill Cross-section



Chattering Resistance Comparison (Internal Evaluation)

Provided good surface finish on the chamfer without chattering

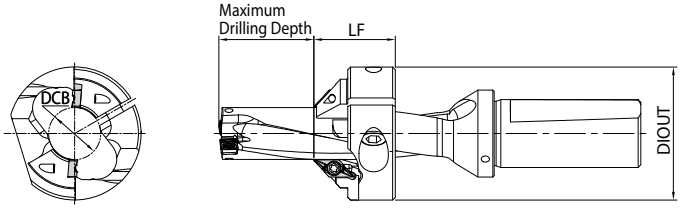




Cutting Conditions	Vc = 330 sfm f = 0.006 ipr	Vc = 390 sfm f = 0.004 ipr	Vc = 390 sfm f = 0.005 ipr

Ø20mm / 3D, H = 30 mm, C2.0
Workpiece : 1045 Machine : Machining Center BT-50

Chamfering Attachment

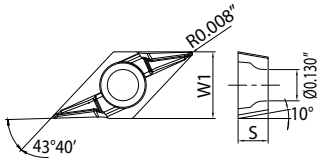


Chamfer Attachment Dimensions

Part Number	Std. Item	Applicable Drill Bodies		Dimensions (mm)			Applicable Inserts	Spare Parts			
		Inch Size Bodies	Metric Size Bodies	DIOUT	DCB	LF		Insert Screw	Wrench	Clamp Screw	Wrench
DRV-CH17	●	S075-DRV0656-...-05	S25-DRV165M-...-05 S25-DRV170M-...-05	47	16.2	30	CH0503-45	SB-3080TR	FT-10	HH6X18	LW-5
DRV-CH18	●	S100-DRV0688-...-05	S25-DRV175M-...-05 S25-DRV180M-...-05	47	17.2	30					
DRV-CH19	●	-	S25-DRV185M-...-05 S25-DRV190M-...-06	49	18.2	30					
DRV-CH20	●	S100-DRV0766-...-06	S25-DRV195M-...-06 S25-DRV200M-...-06	49	19.2	30					
DRV-CH21	●	S100-DRV0812-...-06	S25-DRV205M-...-06 S25-DRV210M-...-06	49	20.2	30					
DRV-CH22	●	-	S25-DRV215M-...-06 S25-DRV220M-...-06	49	21.2	30					
DRV-CH23	●	-	S25-DRV225M-...-07 S25-DRV230M-...-07	51	22.2	30					
DRV-CH24	●	S100-DRV0938-...-07	S25-DRV235M-...-07 S25-DRV240M-...-07	51	23.2	30					
DRV-CH25	●	S100-DRV0984-...-07	S25-DRV245M-...-07 S25-DRV250M-...-07	53	24.2	30					
DRV-CH26	●	-	S25-DRV255M-...-07 S25-DRV260M-...-07	53	25.2	30					
DRV-CH27	●	S125-DRV1062-...-09	S25-DRV265M-...-09 S32-DRV270M-...-09	64	26	35				HH8X20	LW-6

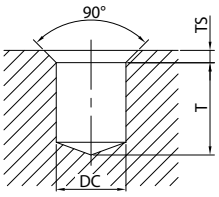
● : Standard Item

Applicable Chamfer Attachment Insert

Insert		Part Number	Dimensions (mm)		MEGACOAT NANO	Applicable Chamfering Attachment
			W1	S	PR1535	
		CH0503-45	7.05	3.18	●	DRV-CH○○

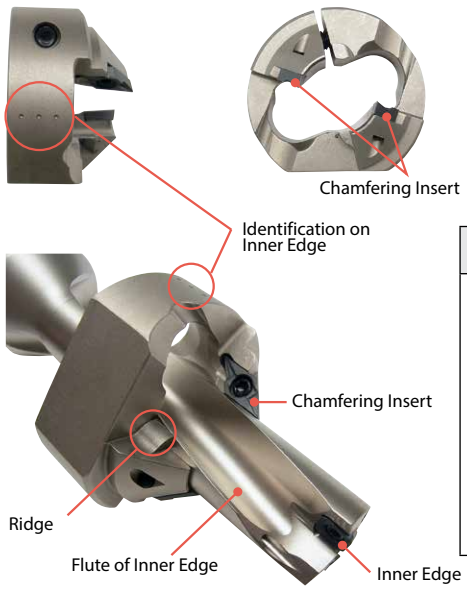
● : Standard Item

Maximum Drilling Depth / Chamfering Depths



Drilling Diameter (mm)	Maximum Drilling Depth T (mm)					Max Chamfering Depth	Applicable Chamfering Attachment
DC	2D Drill	3D Drill	4D Drill	5D Drill	6D Drill	Ts (mm)	
Ø16.5	0.5	17	33.5	–	–	2.5	DRV-CH17
Ø17.0	1.5	18.5	35.5	52.5	69.5		
Ø17.5	2.5	20	37.5	–	–		DRV-CH18
Ø18.0	3.5	21.5	39.5	57.5	75.5		
Ø18.5	4.5	23	41.5	–	–		DRV-CH19
Ø19.0	5.5	24.5	43.5	62.5	81.5		
Ø19.5	6.5	26	45.5	–	–		DRV-CH20
Ø20.0	7.5	27.5	47.5	67.5	87.5		
Ø20.5	8.5	29	49.5	–	–		DRV-CH21
Ø21.0	9.5	30.5	51.5	72.5	93.5		
Ø21.5	10.5	32	53.5	–	–		DRV-CH22
Ø22.0	11.5	33.5	55.5	77.5	99.5		
Ø22.5	12.5	35	57.5	–	–		DRV-CH23
Ø23.0	13.5	36.5	59.5	82.5	105.5		
Ø23.5	14.5	38	61.5	–	–		DRV-CH24
Ø24.0	15.5	39.5	63.5	87.5	111.5		
Ø24.5	16.5	41	65.5	–	–		DRV-CH25
Ø25.0	17.5	42.5	67.5	92.5	117.5		
Ø25.5	18.5	44	69.5	–	–		DRV-CH26
Ø26.0	19.5	45.5	71.5	97.5	123.5		
Ø26.5	–	47	–	–	–		DRV-CH27
Ø27.0	16.5	43.5	75.5	97.5	124.5		

Maximum Drilling Depth / Chamfering Depths



Instructions

1) Install the attachment over the DRV body so that "• • •" mark on the side of the attachment aligns with the inside flute edge (see image).

2) Adjust the position to avoid interference between the chamfering inserts, chamfering attachment ridges, and drill body flutes. Then fasten the clamp screw with the recommended torque below.

Recommended Torque

Chamfering Attachment Part Number	DRV-CH17 ~ DRV-CH26	DRV-CH27
Torque (Nm)	10	14
Clamping Screw	HH6X18	HH8X20
Wrench	LW-5	LW-6

DRV 2D/3D - Recommended Cutting Conditions (with Coolant)

Drilling Depth: 2D & 3D

Workpiece Material	Recommended Insert Grade / Cutting Speed (sfm)											Inch Drill Dia. DC (in)	Metric Drill Dia. DC (mm)	Drill Depth / Feed Rate (ipr)			
	PVD Coated Carbide				CVD Coated Carbide						DLC			2D~3D			
	PR1225				CA520D				CA415D		PDL025						
	GM	GH	XM	SM	GM	GH	XM	SM	GM	GH	SM			GM	GH	XM	SM
Low Carbon Steel	–	–	★ 390-660	☆ 390-660	–	–	★ 490-920	☆ 490-920	–	–	–	0.500	12.0 - 13.5	–	–	–	0.0016 - 0.0024
												0.562 - 0.578	14.0 - 15.5	–	–	0.0016 - 0.0035	0.0016 - 0.0028
												0.625 - 0.688	16.0 - 18.5	–	–	0.0016 - 0.0039	0.0016 - 0.0031
												0.750 - 0.875	19.0 - 22.0	–	–	0.0016 - 0.0047	0.0016 - 0.0031
												0.922 - 1.000	22.5 - 26.0	–	–	0.0016 - 0.0055	0.0024 - 0.0039
												1.062 - 1.250	26.5 - 32.0	–	–	0.0024 - 0.0055	0.0024 - 0.0039
												1.312 - 1.500	33.0 - 39.0	–	–	0.0024 - 0.0055	0.0024 - 0.0039
												1.562 - 2.000	40.0 - 60.0	–	–	0.0024 - 0.0063	0.0031 - 0.0047
Carbon Steel	★ 330-590	☆ 330-590	☆ 330-590	☆ 330-590	★ 490-920	☆ 490-920	☆ 490-920	☆ 490-920	–	–	–	0.500	12.0 - 13.5	0.0016 - 0.0055	0.0016 - 0.0055	–	0.0016 - 0.0039
												0.562 - 0.578	14.0 - 15.5	0.0016 - 0.0055	0.0016 - 0.0055	0.0016 - 0.0039	0.0016 - 0.0039
												0.625 - 0.688	16.0 - 18.5	0.0024 - 0.0063	0.0024 - 0.0063	0.0024 - 0.0047	0.0024 - 0.0047
												0.750 - 1.000	19.0 - 26.0	0.0031 - 0.0079	0.0031 - 0.0079	0.0024 - 0.0055	0.0024 - 0.0055
												1.062 - 1.250	26.5 - 32.0	0.0031 - 0.0079	0.0031 - 0.0079	0.0024 - 0.0055	0.0024 - 0.0055
												1.312 - 1.500	33.0 - 39.0	0.0031 - 0.0079	0.0031 - 0.0079	0.0024 - 0.0063	0.0024 - 0.0055
												1.562 - 2.000	40.0 - 60.0	0.0031 - 0.0079	0.0031 - 0.0079	0.0024 - 0.0071	0.0024 - 0.0055
Alloy Steel	★ 330-525	☆ 330-525	☆ 330-525	–	★ 460-720	☆ 460-720	☆ 460-720	–	–	–	–	0.500	12.0 - 13.5	0.0016 - 0.0047	0.0016 - 0.0047	–	–
												0.562 - 0.578	14.0 - 15.5	0.0016 - 0.0055	0.0016 - 0.0055	–	–
												0.625 - 0.688	16.0 - 18.5	0.0024 - 0.0063	0.0024 - 0.0063	–	–
												0.750 - 1.000	19.0 - 26.0	0.0031 - 0.0079	0.0031 - 0.0079	–	–
												1.062 - 1.250	26.5 - 32.0	0.0031 - 0.0079	0.0031 - 0.0079	–	–
												1.312 - 1.500	33.0 - 39.0	0.0031 - 0.0079	0.0031 - 0.0079	–	–
												1.562 - 2.000	40.0 - 60.0	0.0031 - 0.0079	0.0031 - 0.0079	–	–
Tool Steel	☆ 260-490	★ 260-490	–	–	☆ 425-690	★ 425-690	–	–	–	–	–	0.500	12.0 - 13.5	0.0016 - 0.0031	0.0016 - 0.0031	–	–
												0.562 - 0.578	14.0 - 15.5	0.0016 - 0.0031	0.0016 - 0.0031	–	–
												0.625 - 0.688	16.0 - 18.5	0.0024 - 0.0047	0.0024 - 0.0047	–	–
												0.750 - 1.000	19.0 - 26.0	0.0031 - 0.0059	0.0031 - 0.0059	–	–
												1.062 - 1.250	26.5 - 32.0	0.0031 - 0.0059	0.0031 - 0.0059	–	–
												1.312 - 1.500	33.0 - 39.0	0.0031 - 0.0059	0.0031 - 0.0059	–	–
												1.562 - 2.000	40.0 - 60.0	0.0031 - 0.0059	0.0031 - 0.0059	–	–
Stainless Steel (Austenitic)	–	–	–	★ 230-460	–	–	–	★ 460-660	–	–	–	0.500	12.0 - 13.5	–	–	–	0.0016 - 0.0039
												0.562 - 0.578	14.0 - 15.5	–	–	–	0.0016 - 0.0039
												0.625 - 0.688	16.0 - 18.5	–	–	–	0.0024 - 0.0047
												0.750 - 1.000	19.0 - 26.0	–	–	–	0.0024 - 0.0055
												1.062 - 1.250	26.5 - 32.0	–	–	–	0.0024 - 0.0055
												1.312 - 1.500	33.0 - 39.0	–	–	–	0.0024 - 0.0055
												1.562 - 2.000	40.0 - 60.0	–	–	–	0.0024 - 0.0055
Gray Cast Iron	☆ 330-490	★ 330-490	–	–	–	–	–	–	☆ 490-720	★ 490-720	–	0.500	12.0 - 13.5	0.0031 - 0.0055	0.0031 - 0.0055	–	–
												0.562 - 0.578	14.0 - 15.5	0.0031 - 0.0055	0.0031 - 0.0055	–	–
												0.625 - 0.688	16.0 - 18.5	0.0031 - 0.0071	0.0031 - 0.0071	–	–
												0.750 - 1.000	19.0 - 26.0	0.0031 - 0.0079	0.0031 - 0.0079	–	–
												1.062 - 1.250	26.5 - 32.0	0.0031 - 0.0079	0.0031 - 0.0079	–	–
												1.312 - 1.500	33.0 - 39.0	0.0031 - 0.0079	0.0031 - 0.0079	–	–
												1.562 - 2.000	40.0 - 60.0	0.0031 - 0.0079	0.0031 - 0.0079	–	–
Nodular Cast Iron	☆ 260-390	★ 260-390	–	–	–	–	–	–	☆ 390-590	★ 390-590	–	0.500	12.0 - 13.5	0.0031 - 0.0047	0.0031 - 0.0047	–	–
												0.562 - 0.578	14.0 - 15.5	0.0031 - 0.0047	0.0031 - 0.0047	–	–
												0.625 - 0.688	16.0 - 18.5	0.0031 - 0.0063	0.0031 - 0.0063	–	–
												0.750 - 1.000	19.0 - 26.0	0.0031 - 0.0071	0.0031 - 0.0071	–	–
												1.062 - 1.250	26.5 - 32.0	0.0031 - 0.0071	0.0031 - 0.0071	–	–
												1.312 - 1.500	33.0 - 39.0	0.0031 - 0.0071	0.0031 - 0.0071	–	–
												1.562 - 2.000	40.0 - 60.0	0.0031 - 0.0071	0.0031 - 0.0071	–	–
Aluminum Alloy	–	–	–	–	–	–	–	–	–	–	★ 660-1,970	0.500	12.0 - 13.5	–	–	–	0.0016 - 0.0047
												0.562 - 0.578	14.0 - 15.5	–	–	–	0.0016 - 0.0047
												0.625 - 0.688	16.0 - 18.5	–	–	–	0.0024 - 0.0055
												0.750 - 0.875	19.0 - 22.0	–	–	–	0.0031 - 0.0063
												0.938 - 1.000	22.5 - 26.0	–	–	–	0.0031 - 0.0071
												1.062 - 1.250	26.5 - 32.0	–	–	–	0.0031 - 0.0079
												1.312 - 1.500	33.0 - 39.0	–	–	–	0.0031 - 0.0079
												1.562 - 2.000	40.0 - 60.0	–	–	–	0.0031 - 0.0079

Internal Coolant is Recommended

★ : 1st Recommendation ☆ : 2nd Recommendation

DRV 4D - Recommended Cutting Conditions (with Coolant)

Drilling Depth: 4D

Workpiece Material	Recommended Insert Grade / Cutting Speed (sfm)											Inch Drill Dia. DC (in)	Metric Drill Dia. DC (mm)	Drill Depth / Feed Rate (ipr)			
	PVD Coated Carbide				CVD Coated Carbide						DLC			4D			
	PR1225				CA520D				CA415D		PDL025						
	GM	GH	XM	SM	GM	GH	XM	SM	GM	GH	SM			GM	GH	XM	SM
Low Carbon Steel	–	–	★ 390-660	☆ 390-660	–	–	★ 490-920	☆ 490-920	–	–	–	0.500	12.0 - 13.5	–	–	–	0.0016 - 0.0024
												0.562 - 0.578	14.0 - 15.5	–	–	0.0016 - 0.0031	0.0016 - 0.0028
												0.625 - 0.688	16.0 - 18.5	–	–	0.0016 - 0.0031	0.0016 - 0.0031
												0.750 - 0.875	19.0 - 22.0	–	–	0.0016 - 0.0039	0.0016 - 0.0031
												0.922 - 1.000	22.5 - 26.0	–	–	0.0016 - 0.0047	0.0020 - 0.0039
												1.062 - 1.250	26.5 - 32.0	–	–	0.0016 - 0.0047	0.0020 - 0.0039
												1.312 - 1.500	33.0 - 39.0	–	–	0.0024 - 0.0047	0.0020 - 0.0039
												1.562 - 2.000	40.0 - 60.0	–	–	0.0024 - 0.0063	0.0020 - 0.0039
Carbon Steel	★ 330-590	☆ 330-590	☆ 330-590	☆ 330-590	★ 490-920	☆ 490-920	☆ 490-920	☆ 490-920	–	–	–	0.500	12.0 - 13.5	0.0016 - 0.0039	0.0016 - 0.0039	–	0.0016 - 0.0031
												0.562 - 0.578	14.0 - 15.5	0.0016 - 0.0039	0.0016 - 0.0039	0.0016 - 0.0031	0.0016 - 0.0031
												0.625 - 0.688	16.0 - 18.5	0.0020 - 0.0047	0.0020 - 0.0047	0.0016 - 0.0039	0.0020 - 0.0039
												0.750 - 1.000	19.0 - 26.0	0.0028 - 0.0063	0.0028 - 0.0063	0.0016 - 0.0047	0.0020 - 0.0047
												1.062 - 1.250	26.5 - 32.0	0.0028 - 0.0063	0.0028 - 0.0063	0.0016 - 0.0047	0.0020 - 0.0047
												1.312 - 1.500	33.0 - 39.0	0.0028 - 0.0063	0.0028 - 0.0063	0.0024 - 0.0055	0.0020 - 0.0047
												1.562 - 2.000	40.0 - 60.0	0.0028 - 0.0063	0.0028 - 0.0063	0.0024 - 0.0063	0.0020 - 0.0047
Alloy Steel	★ 330-525	☆ 330-525	☆ 330-525	–	★ 460-720	☆ 460-720	☆ 460-720	–	–	–	–	0.500	12.0 - 13.5	0.0016 - 0.0039	0.0016 - 0.0039	–	–
												0.562 - 0.578	14.0 - 15.5	0.0016 - 0.0039	0.0016 - 0.0039	–	–
												0.625 - 0.688	16.0 - 18.5	0.0020 - 0.0047	0.0020 - 0.0047	–	–
												0.750 - 1.000	19.0 - 26.0	0.0028 - 0.0063	0.0028 - 0.0063	–	–
												1.062 - 1.250	26.5 - 32.0	0.0028 - 0.0063	0.0028 - 0.0063	–	–
												1.312 - 1.500	33.0 - 39.0	0.0028 - 0.0063	0.0028 - 0.0063	–	–
												1.562 - 2.000	40.0 - 60.0	0.0028 - 0.0063	0.0028 - 0.0063	–	–
Tool Steel	☆ 260-490	★ 260-490	–	–	☆ 425-690	★ 425-690	–	–	–	–	–	0.500	12.0 - 13.5	0.0016 - 0.0028	0.0016 - 0.0028	–	–
												0.562 - 0.578	14.0 - 15.5	0.0016 - 0.0028	0.0016 - 0.0028	–	–
												0.625 - 0.688	16.0 - 18.5	0.0020 - 0.0039	0.0020 - 0.0039	–	–
												0.750 - 1.000	19.0 - 26.0	0.0024 - 0.0047	0.0024 - 0.0047	–	–
												1.062 - 1.250	26.5 - 32.0	0.0024 - 0.0047	0.0024 - 0.0047	–	–
												1.312 - 1.500	33.0 - 39.0	0.0024 - 0.0047	0.0024 - 0.0047	–	–
												1.562 - 2.000	40.0 - 60.0	0.0024 - 0.0047	0.0024 - 0.0047	–	–
Stainless Steel (Austenitic)	–	–	–	★ 230-460	–	–	–	★ 460-660	–	–	–	0.500	12.0 - 13.5	–	–	–	0.0016 - 0.0031
												0.562 - 0.578	14.0 - 15.5	–	–	–	0.0016 - 0.0031
												0.625 - 0.688	16.0 - 18.5	–	–	–	0.0020 - 0.0043
												0.750 - 1.000	19.0 - 26.0	–	–	–	0.0024 - 0.0047
												1.062 - 1.250	26.5 - 32.0	–	–	–	0.0024 - 0.0047
												1.312 - 1.500	33.0 - 39.0	–	–	–	0.0024 - 0.0047
												1.562 - 2.000	40.0 - 60.0	–	–	–	0.0024 - 0.0047
Gray Cast Iron	☆ 330-490	★ 330-490	–	–	–	–	–	–	☆ 490-720	★ 490-720	–	0.500	12.0 - 13.5	0.0024 - 0.0039	0.0024 - 0.0039	–	–
												0.562 - 0.578	14.0 - 15.5	0.0024 - 0.0047	0.0024 - 0.0047	–	–
												0.625 - 0.688	16.0 - 18.5	0.0031 - 0.0063	0.0031 - 0.0063	–	–
												0.750 - 1.000	19.0 - 26.0	0.0031 - 0.0071	0.0031 - 0.0071	–	–
												1.062 - 1.250	26.5 - 32.0	0.0031 - 0.0071	0.0031 - 0.0071	–	–
												1.312 - 1.500	33.0 - 39.0	0.0031 - 0.0071	0.0031 - 0.0071	–	–
												1.562 - 2.000	40.0 - 60.0	0.0031 - 0.0071	0.0031 - 0.0071	–	–
Nodular Cast Iron	☆ 260-390	★ 260-390	–	–	–	–	–	–	☆ 390-590	★ 390-590	–	0.500	12.0 - 13.5	0.0024 - 0.0039	0.0024 - 0.0039	–	–
												0.562 - 0.578	14.0 - 15.5	0.0024 - 0.0039	0.0024 - 0.0039	–	–
												0.625 - 0.688	16.0 - 18.5	0.0031 - 0.0055	0.0031 - 0.0055	–	–
												0.750 - 1.000	19.0 - 26.0	0.0031 - 0.0063	0.0031 - 0.0063	–	–
												1.062 - 1.250	26.5 - 32.0	0.0031 - 0.0063	0.0031 - 0.0063	–	–
												1.312 - 1.500	33.0 - 39.0	0.0031 - 0.0063	0.0031 - 0.0063	–	–
												1.562 - 2.000	40.0 - 60.0	0.0031 - 0.0063	0.0031 - 0.0063	–	–
Aluminum Alloy	–	–	–	–	–	–	–	–	–	–	★ 660-1,970	0.500	12.0 - 13.5	–	–	–	0.0016 - 0.0039
												0.562 - 0.578	14.0 - 15.5	–	–	–	0.0016 - 0.0039
												0.625 - 0.688	16.0 - 18.5	–	–	–	0.0024 - 0.0047
												0.750 - 0.875	19.0 - 22.0	–	–	–	0.0031 - 0.0059
												0.938 - 1.000	22.5 - 26.0	–	–	–	0.0031 - 0.0071
												1.062 - 1.250	26.5 - 32.0	–	–	–	0.0031 - 0.0071
												1.312 - 1.500	33.0 - 39.0	–	–	–	0.0031 - 0.0071
												1.562 - 2.000	40.0 - 60.0	–	–	–	0.0031 - 0.0071

Internal Coolant is Recommended

★ : 1st Recommendation ☆ : 2nd Recommendation

DRV 5D - Recommended Cutting Conditions (with Coolant)

Drilling Depth: 5D

Workpiece Material	Recommended Insert Grade / Cutting Speed (sfm)											Inch Drill Dia. DC (in)	Metric Drill Dia. DC (mm)	Drill Depth / Feed Rate (ipr)			
	PVD Coated Carbide				CVD Coated Carbide						DLC						
	PR1225				CA520D				CA415D		PDL025			5D			
	GM	GH	XM	SM	GM	GH	XM	SM	GM	GH	SM			GM	GH	XM	SM
Low Carbon Steel	–	–	★ 390-660	☆ 390-660	–	–	★ 490-920	☆ 490-920	–	–	–	0.500	12.0 - 13.5	–	–	–	0.0012 - 0.0020
												0.562 - 0.578	14.0 - 15.5	–	–	0.0016 - 0.0028	0.0016 - 0.0024
												0.625 - 0.688	16.0 - 18.5	–	–	0.0016 - 0.0031	0.0016 - 0.0024
												0.750 - 0.875	19.0 - 22.0	–	–	0.0016 - 0.0039	0.0016 - 0.0028
												0.922 - 1.000	22.5 - 26.0	–	–	0.0016 - 0.0047	0.0016 - 0.0031
												1.062 - 1.250	26.5 - 32.0	–	–	0.0016 - 0.0047	0.0016 - 0.0031
												1.312 - 1.500	33.0 - 39.0	–	–	0.0020 - 0.0047	0.0016 - 0.0039
												1.562 - 2.000	40.0 - 60.0	–	–	0.0024 - 0.0055	0.0016 - 0.0039
Carbon Steel	★ 330-590	☆ 330-590	☆ 330-590	☆ 330-590	★ 490-920	☆ 490-920	☆ 490-920	☆ 490-920	–	–	–	0.500	12.0 - 13.5	0.0016 - 0.0031	0.0016 - 0.0031	–	0.0016 - 0.0028
												0.562 - 0.578	14.0 - 15.5	0.0016 - 0.0031	0.0016 - 0.0031	0.0016 - 0.0028	0.0016 - 0.0028
												0.625 - 0.688	16.0 - 18.5	0.0020 - 0.0039	0.0020 - 0.0039	0.0020 - 0.0031	0.0020 - 0.0031
												0.750 - 1.000	19.0 - 26.0	0.0024 - 0.0047	0.0024 - 0.0047	0.0020 - 0.0039	0.0020 - 0.0039
												1.062 - 1.250	26.5 - 32.0	0.0024 - 0.0047	0.0024 - 0.0047	0.0020 - 0.0047	0.0020 - 0.0039
												1.312 - 1.500	33.0 - 39.0	0.0024 - 0.0047	0.0024 - 0.0047	0.0020 - 0.0047	0.0020 - 0.0039
												1.562 - 2.000	40.0 - 60.0	0.0024 - 0.0047	0.0024 - 0.0047	0.0024 - 0.0047	0.0020 - 0.0039
Alloy Steel	★ 330-525	☆ 330-525	☆ 330-525	–	★ 460-720	☆ 460-720	☆ 460-720	–	–	–	–	0.500	12.0 - 13.5	0.0016 - 0.0031	0.0016 - 0.0031	–	–
												0.562 - 0.578	14.0 - 15.5	0.0016 - 0.0031	0.0016 - 0.0031	–	–
												0.625 - 0.688	16.0 - 18.5	0.0020 - 0.0039	0.0020 - 0.0039	–	–
												0.750 - 1.000	19.0 - 26.0	0.0024 - 0.0047	0.0024 - 0.0047	–	–
												1.062 - 1.250	26.5 - 32.0	0.0024 - 0.0047	0.0024 - 0.0047	–	–
												1.312 - 1.500	33.0 - 39.0	0.0024 - 0.0047	0.0024 - 0.0047	–	–
												1.562 - 2.000	40.0 - 60.0	0.0024 - 0.0047	0.0024 - 0.0047	–	–
Tool Steel	☆ 260-490	★ 260-490	–	–	☆ 425-690	★ 425-690	–	–	–	–	–	0.500	12.0 - 13.5	0.0016 - 0.0024	0.0016 - 0.0024	–	–
												0.562 - 0.578	14.0 - 15.5	0.0016 - 0.0024	0.0016 - 0.0024	–	–
												0.625 - 0.688	16.0 - 18.5	0.0016 - 0.0031	0.0016 - 0.0031	–	–
												0.750 - 1.000	19.0 - 26.0	0.0020 - 0.0039	0.0020 - 0.0039	–	–
												1.062 - 1.250	26.5 - 32.0	0.0020 - 0.0039	0.0020 - 0.0039	–	–
												1.312 - 1.500	33.0 - 39.0	0.0020 - 0.0039	0.0020 - 0.0039	–	–
												1.562 - 2.000	40.0 - 60.0	0.0020 - 0.0039	0.0020 - 0.0039	–	–
Stainless Steel (Austenitic)	–	–	–	★ 230-460	–	–	–	★ 460-660	–	–	–	0.500	12.0 - 13.5	–	–	–	0.0016 - 0.0031
												0.562 - 0.578	14.0 - 15.5	–	–	–	0.0016 - 0.0031
												0.625 - 0.688	16.0 - 18.5	–	–	–	0.0016 - 0.0039
												0.750 - 1.000	19.0 - 26.0	–	–	–	0.0024 - 0.0047
												1.062 - 1.250	26.5 - 32.0	–	–	–	0.0024 - 0.0047
												1.312 - 1.500	33.0 - 39.0	–	–	–	0.0024 - 0.0047
												1.562 - 2.000	40.0 - 60.0	–	–	–	0.0024 - 0.0047
Gray Cast Iron	☆ 330-490	★ 330-490	–	–	–	–	–	–	☆ 490-720	★ 490-720	–	0.500	12.0 - 13.5	0.0016 - 0.0039	0.0016 - 0.0039	–	–
												0.562 - 0.578	14.0 - 15.5	0.0016 - 0.0039	0.0016 - 0.0039	–	–
												0.625 - 0.688	16.0 - 18.5	0.0024 - 0.0047	0.0024 - 0.0047	–	–
												0.750 - 1.000	19.0 - 26.0	0.0024 - 0.0055	0.0024 - 0.0055	–	–
												1.062 - 1.250	26.5 - 32.0	0.0024 - 0.0055	0.0024 - 0.0055	–	–
												1.312 - 1.500	33.0 - 39.0	0.0024 - 0.0055	0.0024 - 0.0055	–	–
												1.562 - 2.000	40.0 - 60.0	0.0024 - 0.0055	0.0024 - 0.0055	–	–
Nodular Cast Iron	☆ 260-390	★ 260-390	–	–	–	–	–	–	☆ 390-590	★ 390-590	–	0.500	12.0 - 13.5	0.0016 - 0.0031	0.0016 - 0.0031	–	–
												0.562 - 0.578	14.0 - 15.5	0.0016 - 0.0031	0.0016 - 0.0031	–	–
												0.625 - 0.688	16.0 - 18.5	0.0024 - 0.0039	0.0024 - 0.0039	–	–
												0.750 - 1.000	19.0 - 26.0	0.0024 - 0.0047	0.0024 - 0.0047	–	–
												1.062 - 1.250	26.5 - 32.0	0.0024 - 0.0047	0.0024 - 0.0047	–	–
												1.312 - 1.500	33.0 - 39.0	0.0024 - 0.0047	0.0024 - 0.0047	–	–
												1.562 - 2.000	40.0 - 60.0	0.0024 - 0.0047	0.0024 - 0.0047	–	–
Aluminum Alloy	–	–	–	–	–	–	–	–	–	–	★ 660-1,970	0.500	12.0 - 13.5	–	–	–	0.0016 - 0.0031
												0.562 - 0.578	14.0 - 15.5	–	–	–	0.0016 - 0.0039
												0.625 - 0.688	16.0 - 18.5	–	–	–	0.0024 - 0.0047
												0.750 - 0.875	19.0 - 22.0	–	–	–	0.0024 - 0.0055
												0.938 - 1.000	22.5 - 26.0	–	–	–	0.0024 - 0.0063
												1.062 - 1.250	26.5 - 32.0	–	–	–	0.0024 - 0.0063
												1.312 - 1.500	33.0 - 39.0	–	–	–	0.0031 - 0.0063
												1.562 - 2.000	40.0 - 60.0	–	–	–	0.0031 - 0.0071

Internal Coolant is Recommended

★ : 1st Recommendation ☆ : 2nd Recommendation

DRV 6D - Recommended Cutting Conditions (with Coolant)

Drilling Depth: 6D

Workpiece Material	Recommended Insert Grade / Cutting Speed (sfm)											Inch Drill Dia. DC (in)	Metric Drill Dia. DC (mm)	Drill Depth / Feed Rate (ipr)			
	PVD Coated Carbide				CVD Coated Carbide						DLC						
	PR1225				CA520D				CA415D		PDL025			6D			
	GM	GH	XM	SM	GM	GH	XM	SM	GM	GH	SM			GM	GH	XM	SM
Low Carbon Steel	–	–	★ 390-660	☆ 390-660	–	–	★ 490-920	☆ 490-920	–	–	–	0.500	12.0 - 13.5	–	–	–	0.0012 - 0.0020
												0.562 - 0.578	14.0 - 15.5	–	–	0.0016 - 0.0024	0.0016 - 0.0024
												0.625 - 0.688	16.0 - 18.5	–	–	0.0016 - 0.0024	0.0016 - 0.0024
												0.750 - 0.875	19.0 - 22.0	–	–	0.0016 - 0.0028	0.0016 - 0.0028
												0.922 - 1.000	22.5 - 26.0	–	–	0.0016 - 0.0031	0.0016 - 0.0028
												1.062 - 1.250	26.5 - 32.0	–	–	0.0016 - 0.0031	0.0016 - 0.0028
												1.312 - 1.500	33.0 - 39.0	–	–	0.0016 - 0.0035	0.0016 - 0.0031
												1.562 - 2.000	40.0 - 60.0	–	–	0.0024 - 0.0047	0.0016 - 0.0031
Carbon Steel	★ 330-590	☆ 330-590	☆ 330-590	☆ 330-590	★ 490-920	☆ 490-920	☆ 490-920	☆ 490-920	–	–	–	0.500	12.0 - 13.5	0.0012 - 0.0020	0.0012 - 0.0020	–	0.0012 - 0.0020
												0.562 - 0.578	14.0 - 15.5	0.0016 - 0.0024	0.0016 - 0.0024	0.0016 - 0.0024	0.0016 - 0.0024
												0.625 - 0.688	16.0 - 18.5	0.0020 - 0.0031	0.0020 - 0.0031	0.0020 - 0.0028	0.0020 - 0.0028
												0.750 - 1.000	19.0 - 26.0	0.0024 - 0.0039	0.0024 - 0.0039	0.0020 - 0.0031	0.0020 - 0.0031
												1.062 - 1.250	26.5 - 32.0	0.0024 - 0.0039	0.0024 - 0.0039	0.0020 - 0.0031	0.0020 - 0.0031
												1.312 - 1.500	33.0 - 39.0	0.0024 - 0.0039	0.0024 - 0.0039	0.0020 - 0.0031	0.0020 - 0.0031
												1.562 - 2.000	40.0 - 60.0	0.0024 - 0.0039	0.0024 - 0.0039	0.0024 - 0.0039	0.0020 - 0.0031
Alloy Steel	★ 330-525	☆ 330-525	☆ 330-525	–	★ 460-720	☆ 460-720	☆ 460-720	–	–	–	–	0.500	12.0 - 13.5	0.0012 - 0.0020	0.0012 - 0.0020	–	–
												0.562 - 0.578	14.0 - 15.5	0.0016 - 0.0024	0.0016 - 0.0024	–	–
												0.625 - 0.688	16.0 - 18.5	0.0020 - 0.0031	0.0020 - 0.0031	–	–
												0.750 - 1.000	19.0 - 26.0	0.0024 - 0.0039	0.0024 - 0.0039	–	–
												1.062 - 1.250	26.5 - 32.0	0.0024 - 0.0039	0.0024 - 0.0039	–	–
												1.312 - 1.500	33.0 - 39.0	0.0024 - 0.0039	0.0024 - 0.0039	–	–
												1.562 - 2.000	40.0 - 60.0	0.0024 - 0.0039	0.0024 - 0.0039	–	–
Tool Steel	☆ 260-490	★ 260-490	–	–	☆ 425-690	★ 425-690	–	–	–	–	–	0.500	12.0 - 13.5	0.0012 - 0.0020	0.0012 - 0.0020	–	–
												0.562 - 0.578	14.0 - 15.5	0.0016 - 0.0020	0.0016 - 0.0020	–	–
												0.625 - 0.688	16.0 - 18.5	0.0016 - 0.0024	0.0016 - 0.0024	–	–
												0.750 - 1.000	19.0 - 26.0	0.0020 - 0.0031	0.0020 - 0.0031	–	–
												1.062 - 1.250	26.5 - 32.0	0.0020 - 0.0031	0.0020 - 0.0031	–	–
												1.312 - 1.500	33.0 - 39.0	0.0020 - 0.0031	0.0020 - 0.0031	–	–
												1.562 - 2.000	40.0 - 60.0	0.0020 - 0.0031	0.0020 - 0.0031	–	–
Stainless Steel (Austenitic)	–	–	–	★ 230-460	–	–	–	★ 460-660	–	–	–	0.500	12.0 - 13.5	–	–	–	0.0012 - 0.0020
												0.562 - 0.578	14.0 - 15.5	–	–	–	0.0016 - 0.0024
												0.625 - 0.688	16.0 - 18.5	–	–	–	0.0016 - 0.0035
												0.750 - 1.000	19.0 - 26.0	–	–	–	0.0024 - 0.0039
												1.062 - 1.250	26.5 - 32.0	–	–	–	0.0024 - 0.0039
												1.312 - 1.500	33.0 - 39.0	–	–	–	0.0024 - 0.0039
												1.562 - 2.000	40.0 - 60.0	–	–	–	0.0024 - 0.0039
Gray Cast Iron	☆ 330-490	★ 330-490	–	–	–	–	–	–	☆ 490-720	★ 490-720	–	0.500	12.0 - 13.5	0.0016 - 0.0031	0.0016 - 0.0031	–	–
												0.562 - 0.578	14.0 - 15.5	0.0016 - 0.0031	0.0016 - 0.0031	–	–
												0.625 - 0.688	16.0 - 18.5	0.0024 - 0.0039	0.0024 - 0.0039	–	–
												0.750 - 1.000	19.0 - 26.0	0.0024 - 0.0047	0.0024 - 0.0047	–	–
												1.062 - 1.250	26.5 - 32.0	0.0024 - 0.0047	0.0024 - 0.0047	–	–
												1.312 - 1.500	33.0 - 39.0	0.0024 - 0.0047	0.0024 - 0.0047	–	–
												1.562 - 2.000	40.0 - 60.0	0.0024 - 0.0047	0.0024 - 0.0047	–	–
Nodular Cast Iron	☆ 260-390	★ 260-390	–	–	–	–	–	–	☆ 390-590	★ 390-590	–	0.500	12.0 - 13.5	0.0012 - 0.0020	0.0012 - 0.0020	–	–
												0.562 - 0.578	14.0 - 15.5	0.0016 - 0.0024	0.0016 - 0.0024	–	–
												0.625 - 0.688	16.0 - 18.5	0.0024 - 0.0031	0.0024 - 0.0031	–	–
												0.750 - 1.000	19.0 - 26.0	0.0024 - 0.0039	0.0024 - 0.0039	–	–
												1.062 - 1.250	26.5 - 32.0	0.0024 - 0.0039	0.0024 - 0.0039	–	–
												1.312 - 1.500	33.0 - 39.0	0.0024 - 0.0039	0.0024 - 0.0039	–	–
												1.562 - 2.000	40.0 - 60.0	0.0024 - 0.0039	0.0024 - 0.0039	–	–
Aluminum Alloy	–	–	–	–	–	–	–	–	–	–	★ 660-1,970	0.500	12.0 - 13.5	–	–	–	0.0016 - 0.0031
												0.562 - 0.578	14.0 - 15.5	–	–	–	0.0016 - 0.0031
												0.625 - 0.688	16.0 - 18.5	–	–	–	0.0024 - 0.0039
												0.750 - 0.875	19.0 - 22.0	–	–	–	0.0024 - 0.0047
												0.938 - 1.000	22.5 - 26.0	–	–	–	0.0024 - 0.0055
												1.062 - 1.250	26.5 - 32.0	–	–	–	0.0024 - 0.0055
												1.312 - 1.500	33.0 - 39.0	–	–	–	0.0031 - 0.0055
												1.562 - 2.000	40.0 - 60.0	–	–	–	0.0031 - 0.0063

Internal Coolant is Recommended

★ : 1st Recommendation ☆ : 2nd Recommendation

Insert Grade Selection Guide

Select CVD for the outer edge when performing high speed and high efficiency drilling and for abrasion resistance and long tool life.

Select PVD MEGACOAT for the outer edge for stable machining and a better surface finish.

PVD MEGACOAT is recommended for the outer edge if chattering occurs, machining with lathe, or if cutting conditions cannot be increased to the recommended speed for CVD.

1st Recommendation
(High Speed and High Efficiency Machining)

Outer Edge : CVD (CA520D / CA415D)

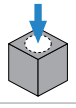
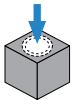
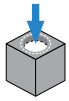
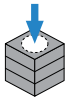
Inner Edge : PVD (PR1535)

Stable Machining Oriented
(1st Recommendation for Lathe Machining)

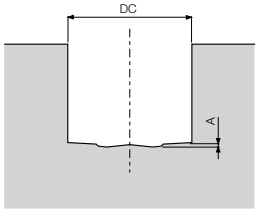
Outer Edge : PVD (PR1225)

Inner Edge : PVD (PR1535)

Cutting Conditions by Application

Applications	Plain Surface	Angled Surface	Half Cylindrical	Hole Expansion	Existing Hole	Concave Surface	Stacked Plates
Workpiece Shape							
Cutting Speed Vc (sfm)	See recommended cutting conditions above	390 (PVD insert is recommended for outer edge)					Not Recommended
f (ipr)	See recommended cutting conditions above	50% of above recommendation				50% of above recommendation initially. See recommendations above once drill is fully engaged.	Not Available
Internal Coolant	Yes						Not Recommended

Shape of the Hole Bottom

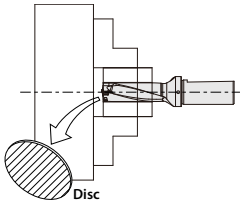


DRV Inch Diameters (in)						DRV Metric Diameters (mm)											
Insert Size	DC	A	Insert Size	DC	A	Insert Size	DC	A	Insert Size	DC	A	Insert Size	DC	A	Insert Size	DC	A
03	0.500	0.028	09	1.062	0.047	03	12.0	0.7	06	19.0	1.2	09	26.5	1.2	14	40.0	1.9
04	0.562	0.039		1.125	0.051		12.5			19.5			27.0			41.0	
05	0.625	0.043		1.188	0.055		13.0			20.0			27.5	1.3		42.0	2.0
	0.656			1.250	0.059		13.5			20.5	1.3		28.0			43.0	
	0.688		11	1.312	0.059	04	14.0	1.0		21.0			28.5			44.0	
06	0.750	0.047		1.375			14.5			21.5			29.0			45.0	2.1
	0.812	0.051		1.438	0.063		15.0			22.0			29.5	1.4		46.0	
	0.875			1.500			15.5		07	22.5	1.2		30.0			47.0	
07	0.938	0.047	14	1.562	0.075	05	16.0	1.1		23.0			30.5			48.0	2.2
	0.984	0.051		1.625			16.5			23.5			31.0			49.0	
	1.000			1.688	0.079		17.0			24.0			31.5	1.5	17	50.0	2.0
09	1.062	0.047		1.750			17.5			24.5	1.3		32.0			51.0	
	1.125	0.051		1.812	0.083		18.0	1.2		25.0		11	33.0	1.5		52.0	2.1
	1.188	0.055		1.875	0.087		18.5			25.5			34.0			53.0	
	1.250	0.059		1.938						26.0			35.0			54.0	
			17	2.000	0.083								36.0	1.6		55.0	2.2
													37.0			56.0	
													38.0			57.0	2.3
													39.0	1.7		58.0	
																59.0	2.4
																60.0	

Common for 2D, 3D, 4D, 5D, 6D Drills

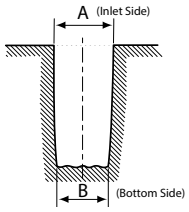
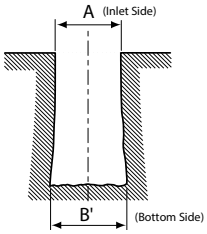
*Above is estimated values. (varies within ±0.004" (±0.1mm) depending on workpiece material and cutting conditions)

Machining Caution



In case of through-hole machining, a disc may be generated and ejected outward when exiting the hole.
Be sure to install guards to protect against dangers if using a machine without the covers (including general-purpose lathes, etc.).

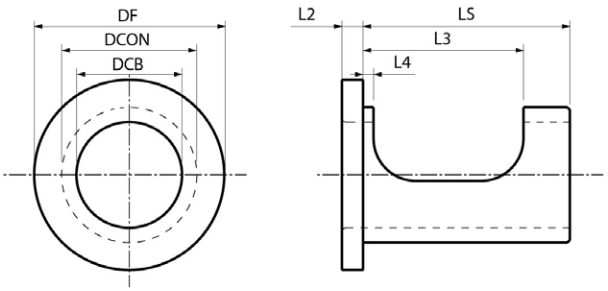
Troubleshooting

Problems	Conditions		Cause	Countermeasures
Hole Diameter is Smaller at the Bottom of the Hole		There is no problem for inlet, however gradually hole diameter is getting smaller at the bottom. A>B	Chip jam (External or Internal edge chip stuck)	Change the cutting conditions · Increase the cutting speed · Lower the feed rate See ➡ **Page 26-29** for "Recommended Cutting Conditions".
Hole Diameter is Larger at the Bottom of the Hole		There is no problem for inlet, however gradually hole diameter is getting larger at the bottom. A<B	Internal edge chip jam.	Change the cutting conditions · Increase the cutting speed · Lower the feed rate See ➡ **Page 26-29** for "Recommended Cutting Conditions". · Check the core height ➡ **Page 34-35**
Hole Diameter is Small at the Hole Inlet			Incorrect adjustment of hole diameter.	In case of using lathe machine, use X-axis and adjustment hole diameter. ➡ **Page 34**
			No core at internal edge. (No core remains)	Adjust the center height. ➡ **Page 34-35**

Identifying DRV Tool Life

How to Judge Tool Life	Tool Life Indications
Tool Condition and Insert Wear	· When an insert is new, the holder is slightly bent to the side during cutting. (Therefore, the cutting diameter is slightly bigger during cutting). Once cutting is finished, the holder will return back to normal size. No tool marks will appear on the finished surface. (his depends on workpiece and cutting condition: during external machining slight tool mark might appear.) · When an insert is at the end of its tool life, Gradually the external corner part gets worn out, the holder does not bend slightly outwards - it starts to bend inwards. After the cutting is finished, the holder returns to the normal position. When taking off a holder under this condition the cutting edge of the insert creates external tool marks on the finished surface of the workpiece.
Checking Hole Diameter	When cutting diameter is measured, suddenly it shows small diameter. In this case, a worn out insert can be the cause.
Checking the Surface on the Exit Side	If insert wear progresses, the burrs of penetrated hole entrance become bigger. This is a clear indication that the tool must be exchanged.
Variation of Cutting Noise	Light drilling noise at the beginning turns to dull noise with vibration
Variation of Vibration	As the end of tool life is getting closer, there is more vibration and the cutting noise changes. However, when machining smaller diameters these factors are difficult to detect.

ASL / SHE



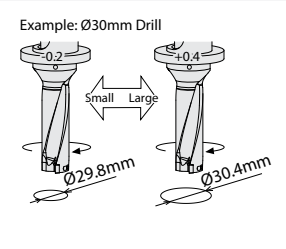
Toolholder Dimensions

Unit	Part Number	Std. Item	Dimensions							* Drill Dia. Adjustable Range	Center Height Adjustable Range
			DCB	DCON	DF	L2	L3	L4	LS		
Inch	ASL 75100-175	●	0.750	1.000	1.614	0.157	1.417	0.118	1.750	+0.016 ~ -0.008	+0.008 ~ -0.006
	100125-212	●	1.000	1.250	1.929	0.236	1.496	0.098	2.125	+0.016 ~ -0.008	+0.008 ~ -0.006
	125150-238	●	1.250	1.500	2.283	0.236	1.693	0.098	2.375	+0.016 ~ -0.008	+0.008 ~ -0.006
mm	SHE 2025-43	●	20	25	41	4	36	3	43	+0.4 ~ -0.2	+0.2 ~ -0.15
	2532-48	●	25	32	49	6	38	2.5	48	+0.4 ~ -0.2	+0.2 ~ -0.15
	3240-53	●	32	40	58		43		53	+0.4 ~ -0.2	+0.2 ~ -0.15
	4050-63	●	40	50	74		49	3	63	+0.6 ~ -0.2	+0.3 ~ -0.2

Diameter Adjustment Range adjusts the drill diameter.
ASL and SHE sleeves can also be used with the DRX and DRZ Magic Drills

How to Use the Adjustable Sleeve

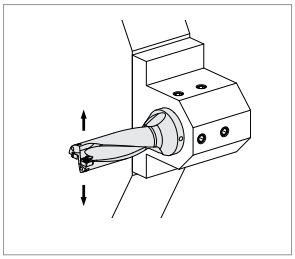
1 Diameter Adjustment ～For Machining Center～



• Diameter Adjustment

ASL (in)		SHE (mm)	
Shank Dia.	Adjustment Range	Shank Dia.	Adjustment Range
Ø0.750"	+0.016 ~ -0.008	Ø20	+0.4 ~ -0.2
Ø1.000"		Ø25	
Ø1.250"		Ø32	
-		Ø40	+0.6 ~ -0.2

2 Center Height Adjustment ～For Lathe Operations～



• Center Height Adjustment

ASL (in)		SHE (mm)	
Shank Dia.	Adjustment Range	Shank Dia.	Adjustment Range
Ø0.750"	+0.008 ~ -0.006	Ø20	+0.2 ~ -0.15
Ø1.000"		Ø25	
Ø1.250"		Ø32	
-		Ø40	+0.3 ~ -0.2

1 Hole Diameter Adjustment when Drilling

1. Align the scale at the flange periphery of the sleeve to the center of the coolant plug of the drill. (Fig.1)
2. When making the hole diameter bigger, rotate the sleeve in the (+) direction and to make it smaller, rotate the sleeve in the (-) direction.
3. When rotating the sleeve, insert the wrench supplied with the drill into the hole on the flange periphery to rotate the sleeve.
4. Using the bottom screw of the side-lock arbor, firmly tighten the drill directly through the sleeve's window.
   The upper screw should be tightened slightly so that the sleeve will not be damaged.

(Caution)
- Not for use with collet chuck type arbor.
- Check the actual cutting diameter after adjusting.

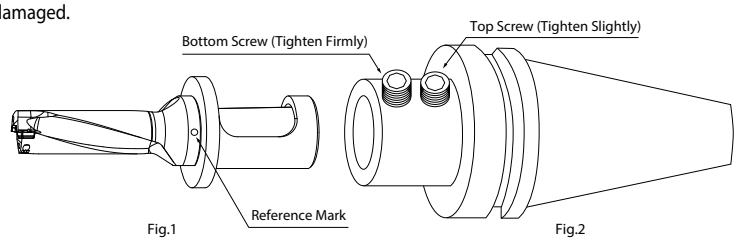


Fig.1 Fig.2

2 Center-Height Adjustment for Lathes

Most of the problems encountered with a turning lathe are center-height deviations.
The center height is appropriate if a core of about 0.5mm (0.020") diameter remains at the center of the hole.
Center-height adjustment is necessary when no core remains or if the core diameter is more than 1mm (0.039").

1. Align the drill with the outer insert face parallel to the X-axis of the tool turret. (Fig.4)
2. Align the scale (for the lathe) on the flange face of the sleeve to the center of the reference mark.
3. When no core remains, rotate the sleeve in the (+) direction to make the core larger, and when the core diameter is more than 1mm, rotate the sleeve in the (-) direction to make the core smaller.
4. When rotating the sleeve, insert the wrench supplied with the drill into the hole of the flange and then rotate the sleeve.
5. After Completing the adjustment, tighten the drill directly through the window on the sleeve.

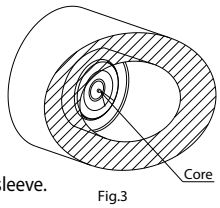


Fig.3

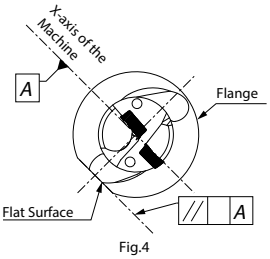


Fig.4

(Caution)
Depending on amount of the center height adjustment, the hole diameter may change. It is recommended that the hole diameter is checked after the center height adjustment.

Lathe Installation

1. The top face of the outer insert should be parallel to the X-axis to allow for offset cutting.
   (Cutting diameter can be changed by moving in the X-axis.)
2. It is recommended to set the outer insert as shown in Fig.1 with the outer insert facing the operator. (Fig.1)
   (It is also possible to use it by setting it in 180° reverse position)
   If the lathe has two turrets, when installing the drill into the lower turret, the outer insert should be set to face the operator.
   (It is also possible to use it by setting at 180° reverse position)

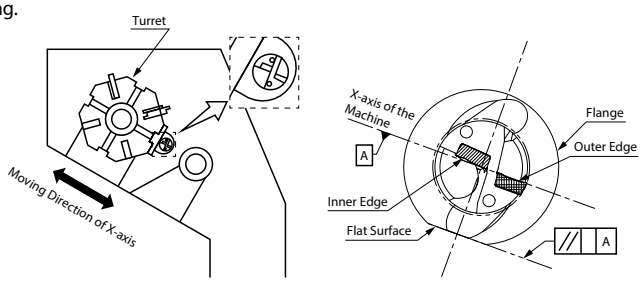


Fig.1 Installed into the Lathe

Cutting Diameter Adjustment

1 Cutting Diameter Adjustment

1. Cutting diameter is adjusted by moving X-axis.
   The moving direction of the X-axis depends on the position of the toolholder.
2. For making the hole diameter larger, slide the tool along the X-axis toward the outer insert side. (Fig.2, Fig.3)
   For making the hole diameter smaller, slide the tool along the X-axis in the opposite direction.
   (This movement of the axis is called an "Offset")
   Be sure not to make the hole diameter smaller than the drill diameter by more than 0.2mm (0.008"). Otherwise, the toolholder will interfere with the drilled hole. (Fig.4)

Ex.) When using Ø20mm drill, the hole diameter must not be smaller than 19.8m (0.780")

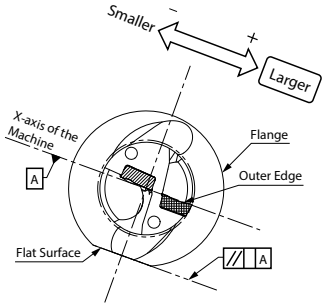


Fig.2 Outer Insert Facing Up

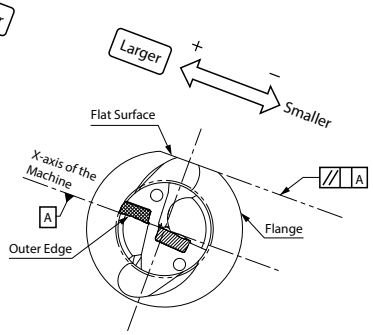


Fig.3 Outer Insert Facing Down

2 Offset Limit of the Cutting Diameter

For the maximum limit of the cutting diameter, refer to "Max. Offset (Radial)" in the Toolholder Dimensions table.
(The figure in the Toolholder Dimensions table shows how much it is possible to offset the drill in the radial direction.)

Ex.) When using Ø20mm (Ø0.787") drill, for example, it is possible to make a hole up to Ø21.1mm (0.831") since "Max. Offset (Radial)" is +0.55mm (+0.022").

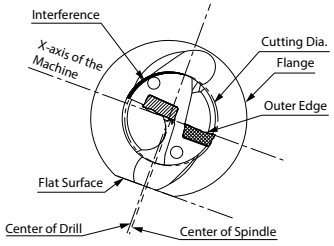


Fig.4 Excessive Offset (For Smaller Hole Diameter)

Center Height Adjustment

1 Center Height of the Inner Insert

When installing inner insert as shown in Fig.1, it will be set around 0.05mm (0.002") below the Center of Spindle. (Fig.5)
This is the normal position of the center height.
However, in case that the turret of the lathe is out of alignment with the Center of Spindle, sometimes the inner insert may be above or below center.
For stable machining, it is essential to check the Center Height of the inner insert carefully

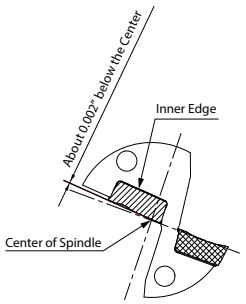


Fig.5 Front View of the Drill

2 How to Check the Center Height

For checking the center height of the inner insert, see the core which remains at the center of the bottom of the drilled hole.
If the center height is in the normal position, a core of about 0.5mm (0.020") in diameter, will remain after machining. (Fig.6)
Adjustment of center height is required if no core is present or a large core diameter of 1mm (0.039") or more remains.

* The drilled hole for verification purposes needs to be machined at approximately 10mm (0.375") in depth and at a feed rate of 0.004 ipr or lower.

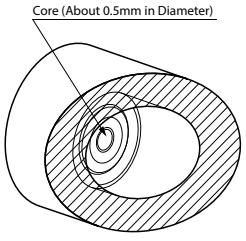


Fig.6 Center Core

3 Center Height Adjustment

1. When there is no remaining core and the inner insert is chipping

This occurs when the inner insert is set above center. (Fig.7)

How to Adjust
A.Install the drill rotated by 180˚ Most problems will be solved by this method (Fig.8) B.If the core diameter becomes too large after the above adjustment, install the drill by rotating 90° counter-clockwise as shown in Fig.9 (outer edge is positioned lower) and adjust the center height by moving the tool in the X-axis direction. (However, this will make it impossible to adjust the cutting diameter) Caution: When installing the drill in the opposite direction (outer insert is positioned above), the cutting diameter will become smaller, which may cause the drill body to interfere with the drilled hole. The best solution is to readjust the center position of the turret itself.

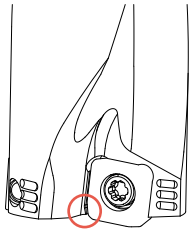


Fig.7 Insert breakage near the center of the drill

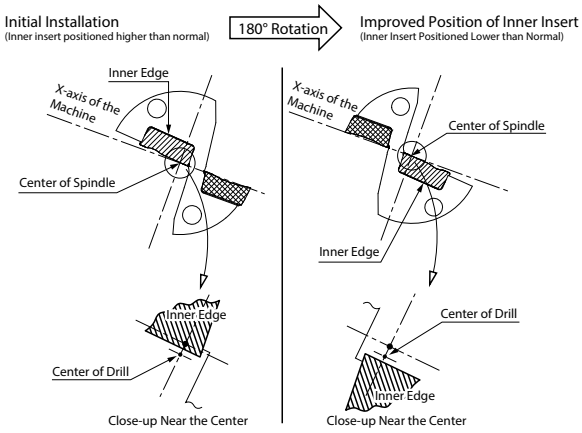


Fig.8

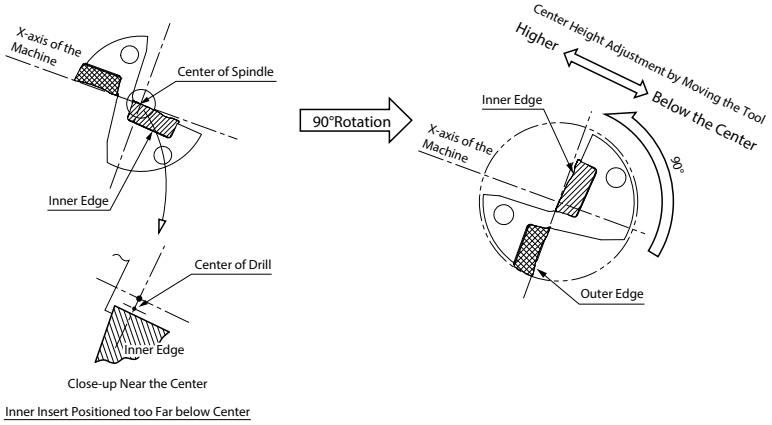


Fig.9

2. Core with Excessively Large Diameter More than 1mm (0.039")

This occurs when the inner insert is below center
This condition causes poor chip evacuation and an adjustment is required.

How to Adjust
Install the drill rotated 90˚ as shown in Fig.10. (outer insert is positioned on the upper side) and adjust the center height by moving tool in the X-axis direction. (However, this will make it impossible to adjust the cutting diameter) Caution: When installing the drill in the opposite direction (outer insert is positioned lower), the cutting diameter will become smaller, which may cause the drill body to interfere with the drilled hole. The best solution is to readjust the center position of the turret itself.

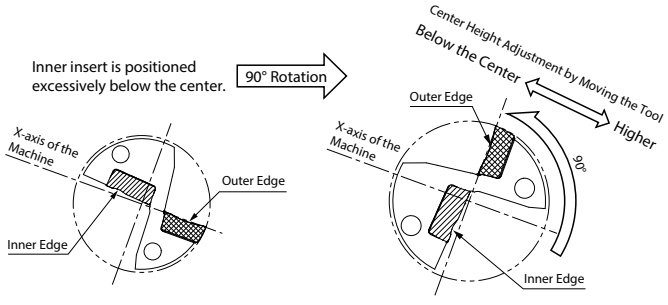


Fig.10

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