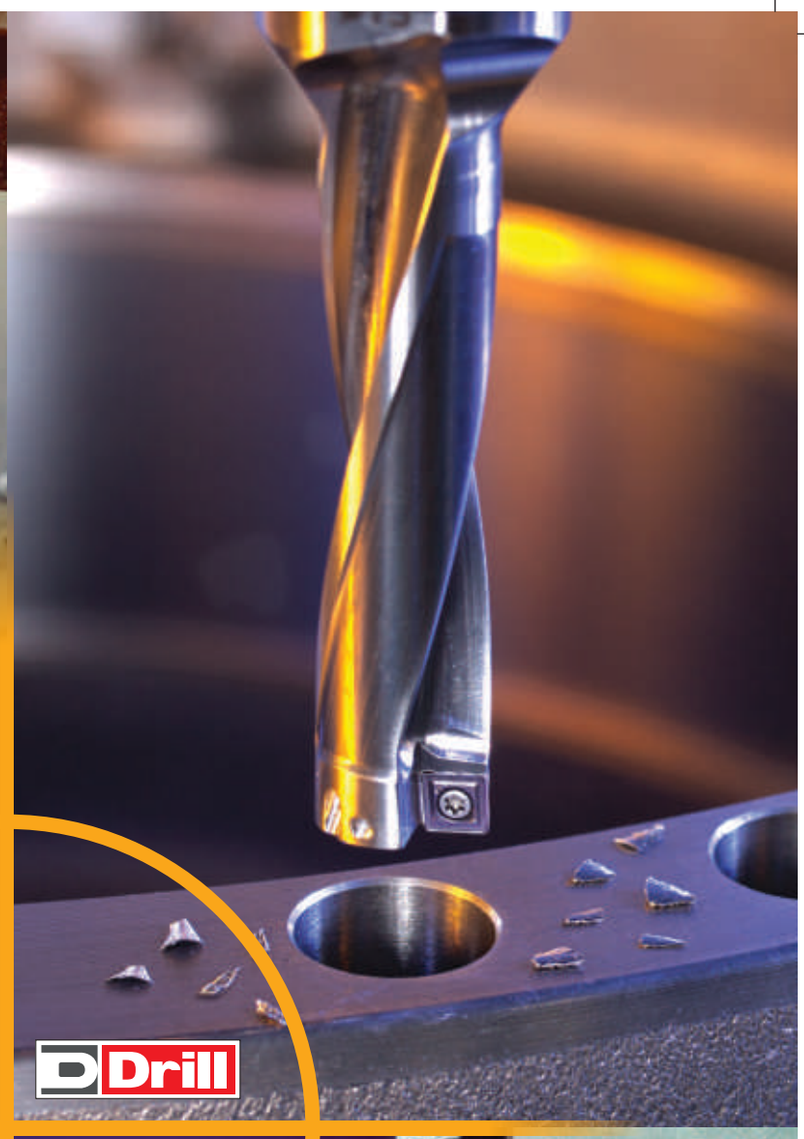
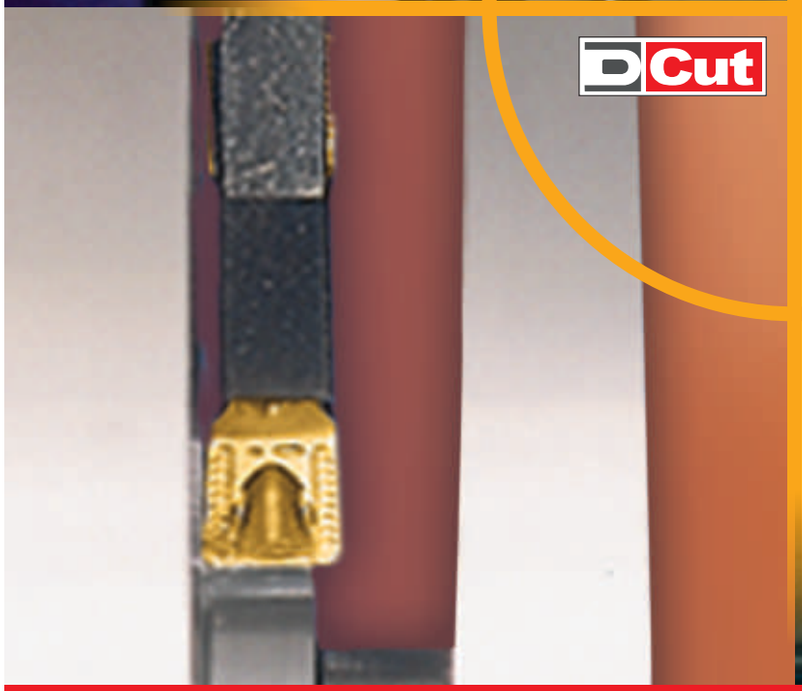


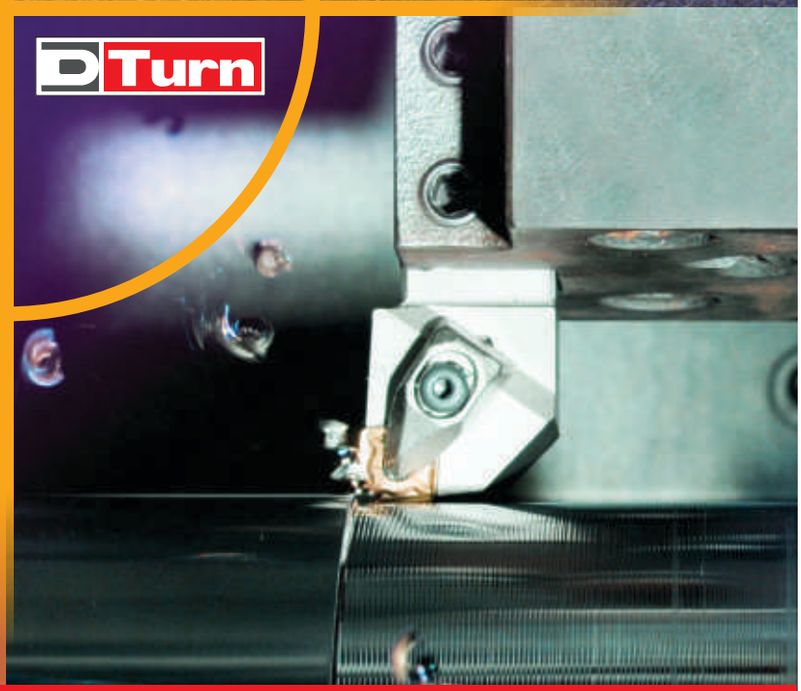
DMill

DDrill



DCut

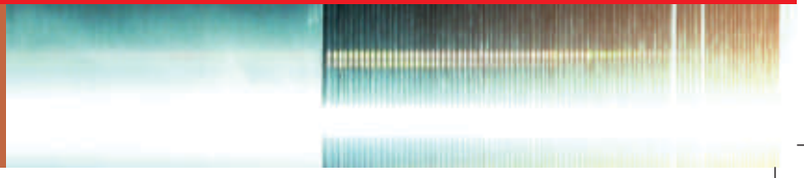
DTurn



Member IMC Group

Duracarb

Smart indian Choice



FROM THE TEAM @ DURACARB...

The Make in India program of Government of India is certain to throw up opportunities as well as challenges across the manufacturing sector in the times ahead. Differing sizes and segments within the industry will give rise to need for differentiated product and service offerings. We at Duracarb have acknowledged this need in putting together a SMART INDIAN CHOICE of the complete range of carbide cutting tools to help our customers realise their objectives of output, quality and productivity at reasonable manufacturing cost.

The youngest member of IMC (International Metalworking Companies), DURACARB will ensure, apart from product and process excellence, one of the best customer friendly experiences in the market. Our team of qualified application engineers are stationed close to your place of work and would respond to your needs at a short notice.

Do write to us at sales@duracarb-india.com...

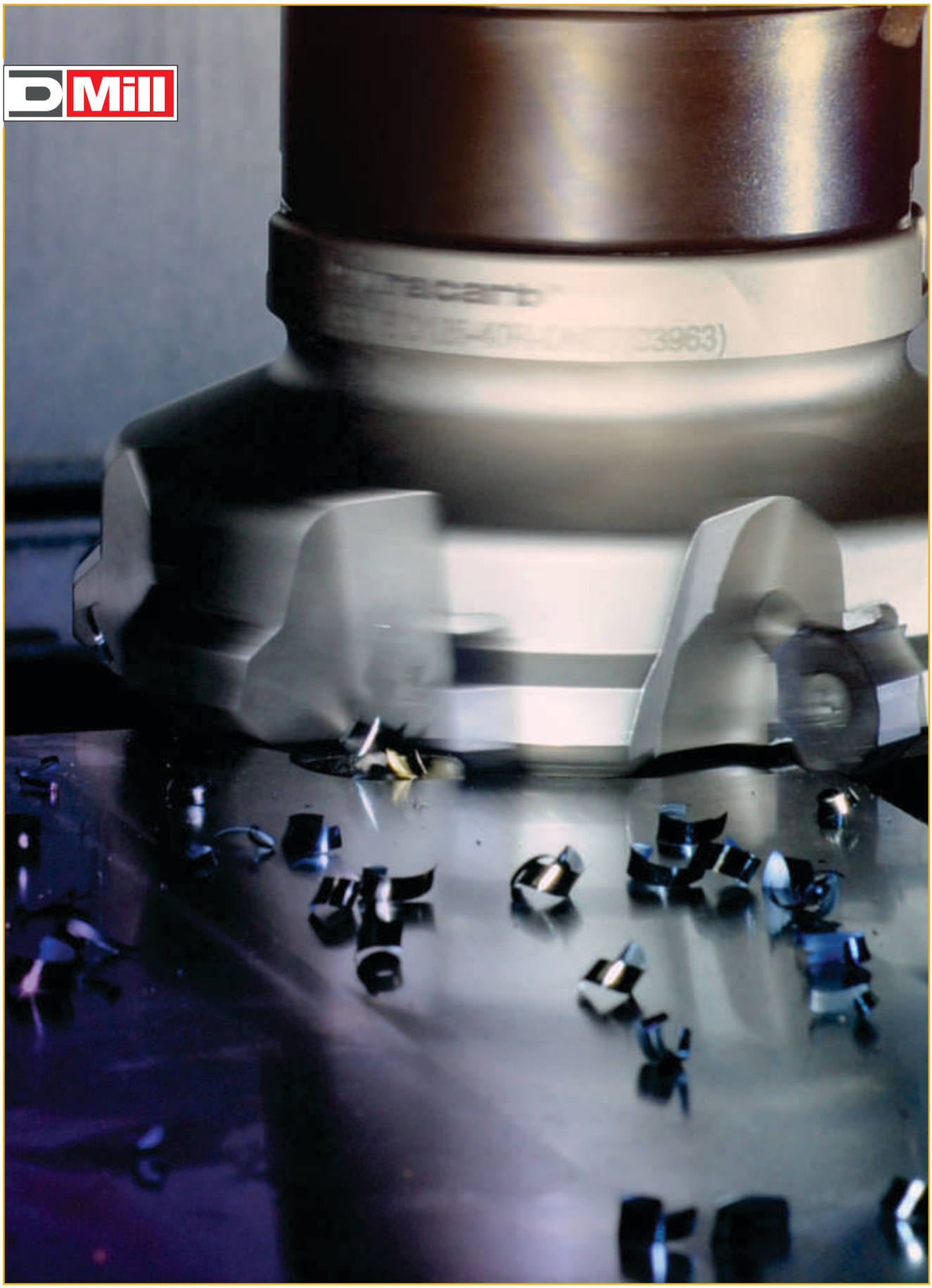
QUALITY @ DURACARB

DURACARB products are manufactured in IMC facilities around the world in compliance with the highest quality, environmental, occupational health & safety management standards.

Our production systems incorporate automatic quality control procedures and is certified by internationally recognized standards like AS 9100 / ISO 9001, ISO 14001 and OHSAS 18001 to name a few.

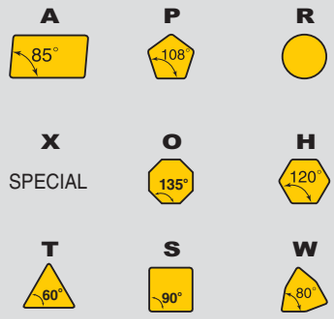
Quality control facilities include the metallurgical laboratory, raw metal testing and a machining center for tool performance testing and final product inspection.

Only the finest products are packaged for entry into Duracarb's inventory.

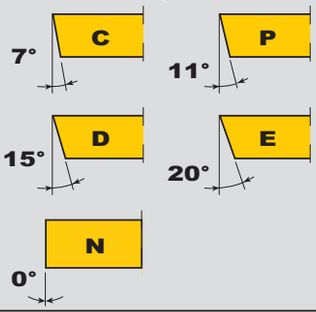

DMill

Insert Designation System

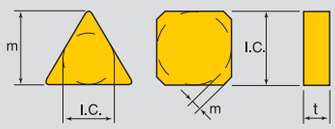
1. Shape



2. Clearance Angle

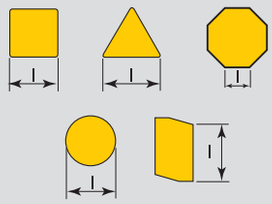


3. Tolerance

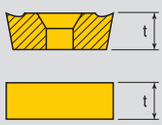


Class	Tolerance (mm)		
	m	t	I.C.
A	±0.005	±0.025	±0.025
E	±0.025	±0.025	±0.025
F	±0.005	±0.025	±0.013
G	±0.025	±0.130	±0.025
H	±0.013	±0.025	±0.013
K	±0.013	±0.025	±0.05
			±0.08
			±0.10
			±0.13
M	±0.08	±0.130	±0.05
	±0.13		±0.08
	±0.15		±0.10
	±0.18		±0.13

5. Cuttng Edge Length



6. Thickness



01t=1.59 05t=5.56
02t=2.38 06t=6.35
03t=3.18 07t=7.94
T3t=3.97 09t=9.52
04t=4.76

A P K T 1 6 0 4 □□ P D □ R

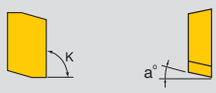
1 2 3 4 5 6 7 8 9 10

4. Type

7. Corner Radius

Symbol	Radius(mm)
04	0.4
05	0.5
08	0.8
16	1.6
24	2.4
32	3.2
48	4.8
64	6.35

8. Parallel Land



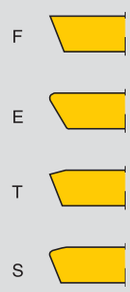
Entry Angle (K)

A=45°
D=60°
E=75°
P=90°
X= Special

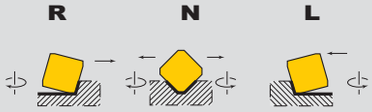
Clearance Angle(a°)

C=7°
P=11°
D=15°
E=20°
F=25°
N=0°

9. Edge Condition



10. Hand of Insert

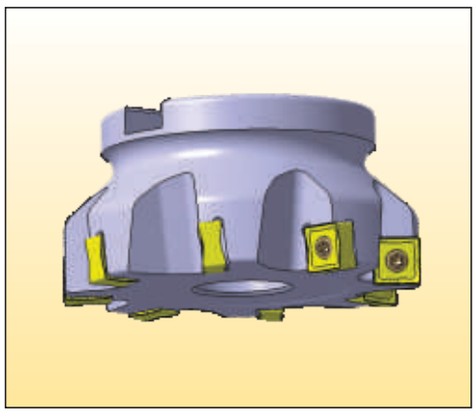


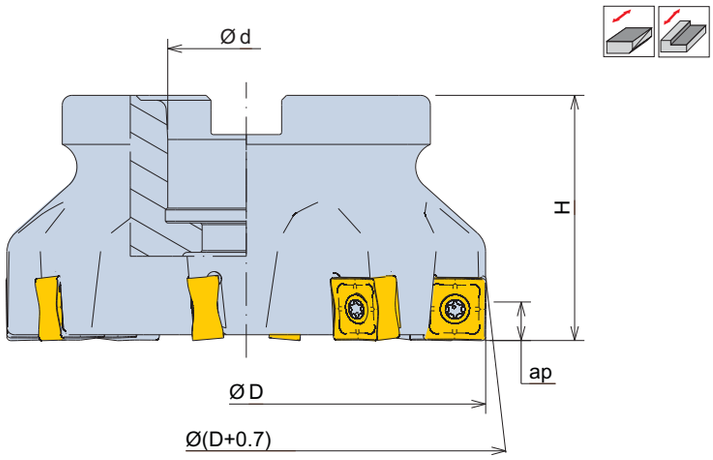
GRADE	ISO RANGE	FEATURES & APPLICATION
DC210 UNCOATED	K05 – K20	• For cast iron milling • Uncoated grade
DC325M UNCOATED	P25 – P35	• For steel milling • Uncoated grade
DC208 UNCOATED	P25 – P35 M25 – M35 N25 – N35	• General machining of steel • General machining of stainless steel • General machining of aluminum alloys and non ferrous materials
DP5015 PVD COATED	P10 – P30 M10 – M30 K10 – K30 S10 – S30 H10 – H30	• High Speed milling of steel. Excellent wear and heat resistance • General milling of stainless steel • General milling of cast iron • General milling of heat-resistant alloy • High speed milling of hardened steel. Excellent wear resistance
DP5025 PVD COATED	P20 – P40 M20 – M40 S20 – S40	• High Speed milling of steel • High Speed milling of stainless steel • High Speed milling of heat-resistant alloy
DC9200 PVD COATED	K05 – K20 N05 – N20 H05 – H20	• Prolonged tool life in milling of cast iron • Wear resistance and enhanced substrate • AlTiAlN
DP7320 PVD COATED	K05 – K20 N05 – N20 H05 – H20	• Prolonged tool life in milling of cast iron • Wear resistance and enhanced substrate • TiAlN + TiN
DC9235 PVD COATED	P30 – P45 M30 – M45 K20 – K40 N15 – N30 S20 – S30	• For roughing and low speed applications, high feed machining of steel, stainless steel and cast iron • Coated grade with improved edge strength • TiCN
DP8330 PVD COATED	P30 – P45 M25 – M40 S15 – S30	• High mechanical shock resistance • PVD TiAlN coating • For semi-roughing and medium machining applications • TiAlN + TiN
DC9300 PVD COATED	P15 – P40	• Prolonged tool life in milling of steel • Tough enhanced substrate • TiAlN
DP9320 PVD COATED	P10 – P40	• Prolonged tool life in mold & die steel • Wear resistance and toughness enhanced grade • TiAlN + TiN
DC9800 PVD COATED	P15 – P35 M10 – M30 K10 – K30 S10 – S25 H15 – H30	• For semi-roughing and medium machining applications • Optimum mechanical shock resistance • TiAlN
DP5320 PVD COATED	P15 – P35 M10 – M30 K10 – K30 S10 – S25 H15 – H30	• Prolonged tool life in mold & die steel • Wear resistance and toughness enhanced grade • For semi -roughing and medium machining applications • TiAlN + TiN
DC7800 CVD COATED	P20 – P45 M30 – M45	• For heavy duty applications in milling of steel • Improved edge strength and better toughness
DP5035 PVD COATED	M20 – M40 P25 – P40 K15 – K40 S15 – S30	• High mechanical shock resistance. • PVD TiAlN Coating. • For Semi-roughing and medium Machining applications.

Milling Program

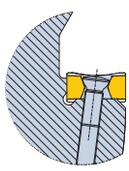
Designation	Features•Application	Edge Geometry & Picture	Cutter Designation
SNGU 12	• For general purpose machining of steel, cast iron		• 90° Facemill 90F…SN12
SOMX 12	• Helical cutting edge for low cutting forces • For general purpose machining of steel, cast iron		• 90° Face mill 90F…SO12
GNMU 11,16	• Helical positive cutting geometry • For steel, Cast iron		• 90° Endmill 90E…GN11/16 • 90° Facemill 90F…GN11/16
TOMX 10	• High Rake face with Helical cutting edge for Lower cutting forces and smoother operation • For general purpose shoulder machining of alloy steel, cast iron & SS		• 90° Endmill 90E…TO10
APKT 16	• High positive geometry for lower cutting force with helical cutting edge		• 90° Endmill 90E…AP16 • 90° Facemill 90F…AP16
APKT 08	• High positive geometry for lower cutting force with helical cutting edge		• 90° Endmill 90E…AP08
SNGU 12-XTN	• Helical cutting edge for low cutting forces • Steel, cast iron semi finishing & general purpose machining		• 45° Facemill 45F…SN12
SNKU 12-XTN	• Helical cutting edge for low cutting forces • For steel, cast iron general purpose machining		• 45° Facemill 45F…SN12
SDKT 13	• Helical cutting edge for low cutting forces • For general purpose machining of steel, cast iron		• 45° Face Mill 45F…SD13
ONMU07-M	• For cast iron & steel, medium roughing		• 43° Facemill 43FW…ON7
ONHU07-ML	• For cast iron & steel medium to light machining		
ONMU 05	• For general purpose machining of steel, cast iron at depths up to 2.5mm		• 43° Facemill 43FW…ON05 • 43° Endmill 43EW…ON05
RDMT 10,12	• For general purpose face milling & profiling • For steel, cast iron		• Endmill ER…L160 • Facemill FR…12
	• For general purpose rough face milling & profiling • For steel, cast iron		• Endmill ER…L160 • Facemill FR…12
SDMT 1004-DM	• High feed face milling. • Straight and Helical ramping capabilities		• End mill 10E…SD10 • Face mill 10F…SD10
SPKN 12 SPKR 12	• For steel & Cast Iron		• 75° Facemill
	• Lower cutting force for low carbon steel and stainless steel		• 75° Facemill
TPKN 22 TPKR 22	• For Cast Iron		• 90° Facemill
	• For Steel		• 90° Facemill
	• Lower cutting force for low carbon steel and stainless steel		• 90° Facemill

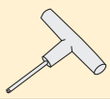
D2-Mill (90° Facemill)





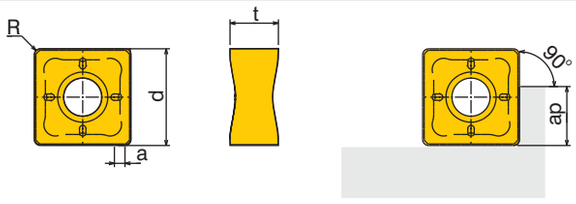
Designation	Insert		Dimension(mm)				Weight (Kg)	Mounting Bolt
			D	d	H	Arbour Style		
90F4 D50-22R-SN12	SNGU 120508-M	4	50	22	40	A	0.3	SH M10 X 1.5 X 30
90F5 D63-22R-SN12		5	63	22	40	A	0.5	SH M10 X 1.5 X 30
90F6 D80-27R-SN12		6	80	27	50	A	1.2	SH M12 X 1.75 X 35
90F9 D80-27R-SN12		9	80	27	50	A	1	SH M12 X 1.75 X 35
90F8 D100-32R-SN12		8	100	32	50	A	1.6	SH M16X2X30
90F11 D100-32R-SN12		11	100	32	50	A	1.4	SH M16X2X30
90F9 D125-40R-SN12		9	125	40	63	B	3.1	-
90F14 D125-40R-SN12		14	125	40	63	B	3	-



Component	
Screw	Wrench
	
DS 40B100I-TS	DTTW-15

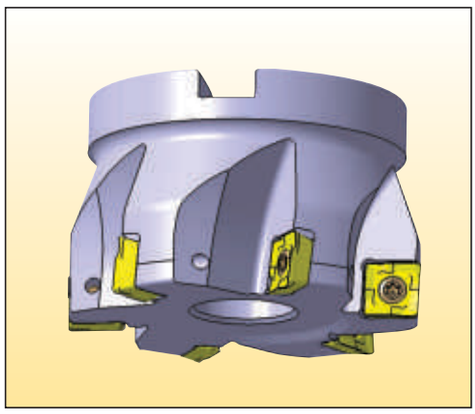
Cutting Condition Pg - 27
Arbor Style Pg - 35

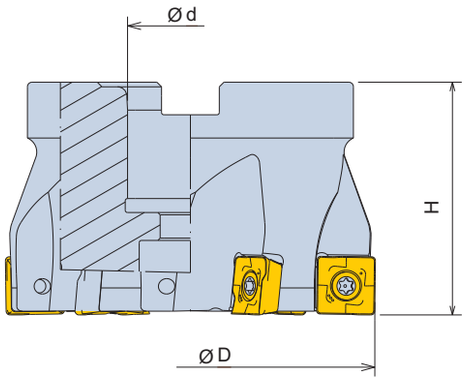
SNGU 12...M



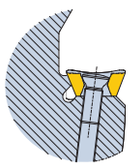
Insert	Designation	Dimension(mm)					Coated						Uncoated	
		d	t	R	ap	a	DP5320	DC9200	DP7320	DC9300	DC9800	DP5035	DC210	DC325M
	SNGU 120508-M	12.7	0.5	0.8	6.0	1.6	●	●			●	●		

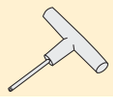
D-Mill (90° Facemill)





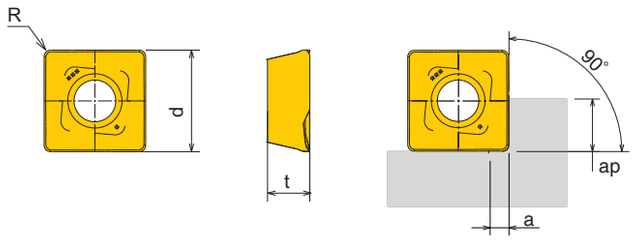
Designation	Insert		Dimension (mm)				Weight (kg)	Mounting Bolt
			D	d	H	Arbor style		
90F4-D50-22R-SO12	SOMX 120508PEER-DM	4	50	22	40	A	0.31	SH M10 X 1.5 X 30
90F5-D63-22R-SO12		5	63	22	40	A	0.43	SH M10 X 1.5 X 30
90F6-D80-27R-SO12		6	80	27	50	A	1.13	SH M12 X 1.75 X 35
90F8-D100-32R-SO12		8	100	32	50	A	1.81	SH M16 X 2 X 35
90F10-D125-40R-SO12		10	125	40	63	B	3.23	-



Component	
Screw	Wrench
	
DS40B100I - TS	DTTW-15

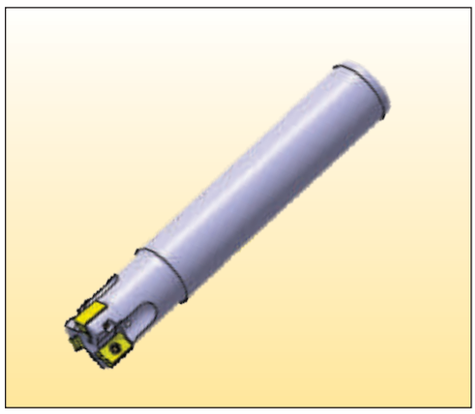
Cutting Condition Pg - 30
Arbor Style Pg - 35

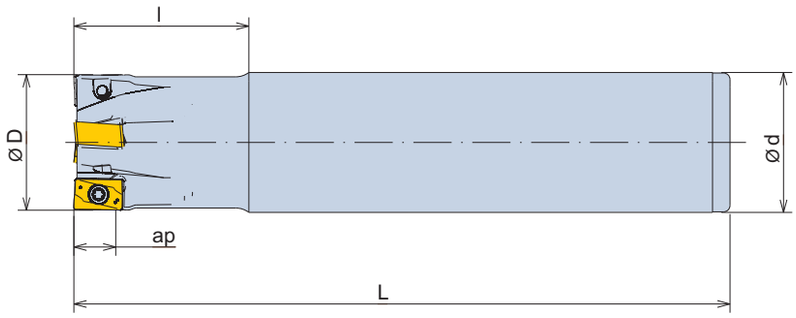
SOMX 12



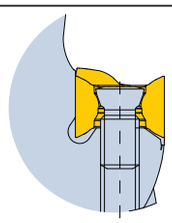
Insert	Designation	Dimension (mm)					Coated						Uncoated	
		d	t	R	ap	a	DC9200	DC9300	DC7800	DP5035	DP7320	DP5320	DC210	
	SOMX 120508PEER-DM	12.5	5.2	0.8	7.0	2.5	•	•	•	•		•		

D2-Mill (90° Endmill)





Designation	Insert		Dimension (mm)					Weight (kg)	
			D	d	L	l	ap		
90E2-02020-GN11-L150	GNMU 110605R-M GNHU 110608R-M	2	20	20	150	40	10	0.32	○
90E3-02525-GN11-L150		3	25	25	150	40	10	0.5	○
90E4-03232-GN11-L150		4	32	32	150	40	10	0.8	○
90E2-03232-GN16-L150	GNMU 161008R-M	2	32	32	150	45	14.5	0.8	○
90E3-04032-GN16-L150		3	40	32	150	45	14.5	0.9	○

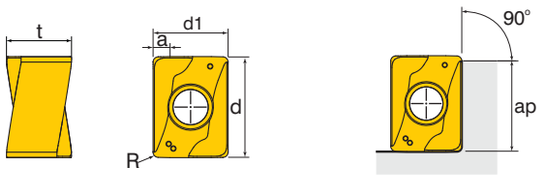


Designation	Component	
	Screw	Wrench
		
90E.....GN11	DS 30085I/HG-TS	DTDW-9
90E.....GN16	DS 50B106I/HG-TS	DTDW-20

Cutting Condition Pg - 29

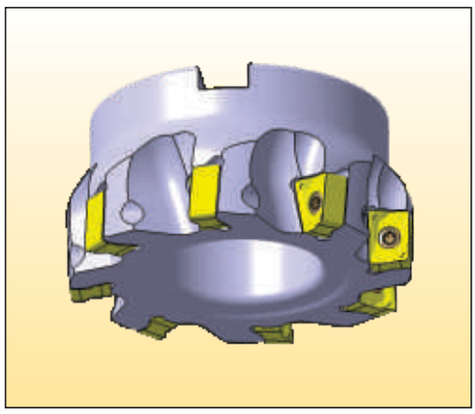
○ Through coolant
X Non-Through coolant

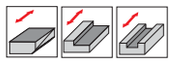
GNMU 11, 16 / GNHU 11



Insert	Designation	Dimension (mm)						Coated						Uncoated	
		d	d_1	t	R	a	ap	DP5320	DC9200	DP7320	DC9300	DC9800	DP5035	DC210	DC325M
	GNMU 110605R-M	11.00	7.10	6.6	0.50	1.20	10.0	●	●			●	●		
	GNHU 110608R-M	11.00	7.10	6.6	0.80	1.20	10.0	●	●	●		●	●		
	GNMU 161008R-M	15.60	11.50	9.9	0.80	1.80	14.5	●	●	●		●	●		

D2-Mill (90° Facemill)





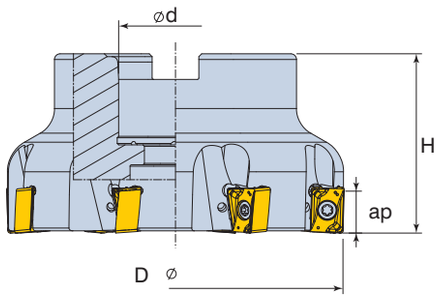


Fig.1

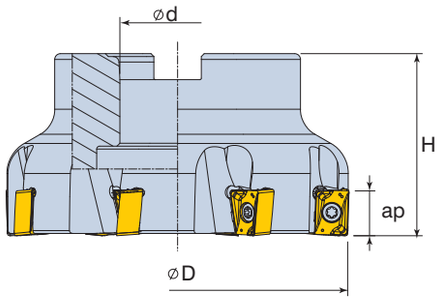
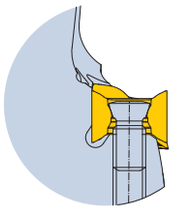
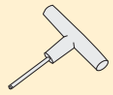


Fig.2

Designation	Insert		Dimension (mm)				Weight (Kg)		Fig.	Mounting Bolt
			D	d	H	ap				
90F4-D40-16R-GN11	GNMU 110605R-M GNHU 110608R-M	4	40	16	40	10	0.3	○	1	SH M8X1.25X25
90F5-D50-22R-GN11		5	50	22	40	10	0.4	○	1	SH M10X1.5X30
90F6-D63-22R-GN11		6	63	22	40	10	0.6	○	1	SH M10X1.5X30
90F8-D80-27R-GN11		8	80	27	50	10	1.1	○	1	SH M12X1.75X35
90F9-D100-32R-GN11		9	100	32	50	10	2.0	X	2	-
90F4-D50-22R-GN16	GNMU 161008R-M	4	50	22	40	14.5	0.4	○	1	SH M10X1.5X30
90F4-D63-22R-GN16		4	63	22	40	14.5	0.6	○	1	SH M10X1.5X30
90F7-D80-27R-GN16		7	80	27	50	14.5	1.2	○	1	SH M12X1.75X35
90F8-D100-32R-GN16		8	100	32	50	14.5	2.1	X	2	-

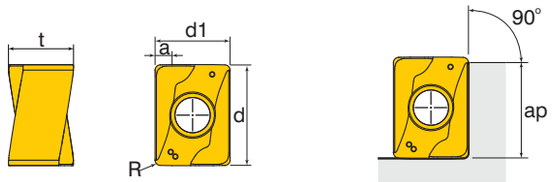


Designation	Component		
	Screw	Wrench	
			
90F.....GN11	DS 30085I/HG-TS	DTDW-9	-
90F.....GN16	DS 50B106I/HG-TS	-	DTTW-20

Cutting Condition Pg - 29
Arbor Style Pg - 35

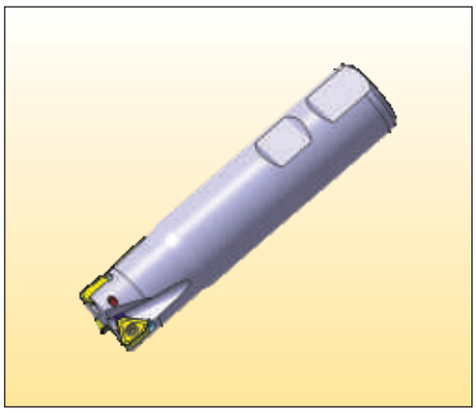
○ Through coolant
X Non-Through coolant

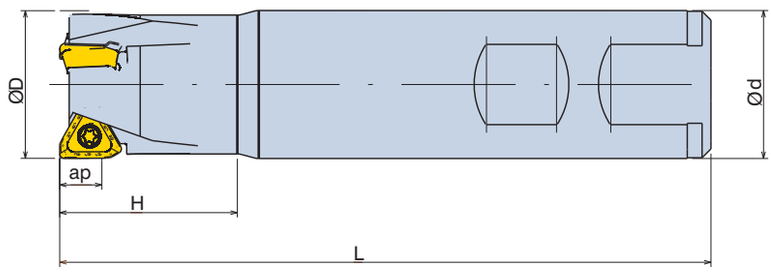
GNMU 11, 16 / GNHU 11



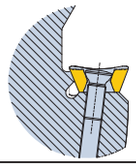
Insert	Designation	Dimension (mm)						Coated						Uncoated	
		d	d_1	t	R	a	ap	DP5320	DC9200	DP7320	DC9300	DC9800	DP5035	DC210	DC325M
	GNMU 110605R-M	11.00	7.10	6.6	0.50	1.20	10.0	●	●			●	●		
	GNHU 110608R-M	11.00	7.10	6.6	0.80	1.20	10.0	●	●	●		●	●		
	GNMU 161008R-M	15.60	11.50	9.9	0.80	1.80	14.5	●	●	●		●	●		

D-Mill (90° Endmill)





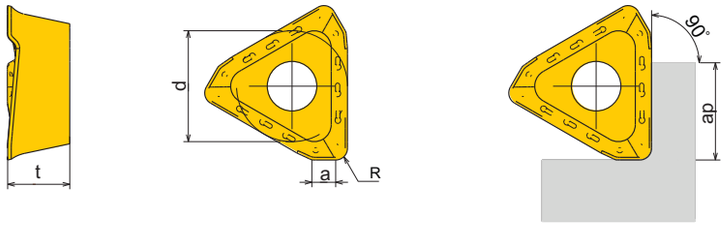
Designation	Insert		Dimension (mm)					Weight (Kg)
			D	d	H	L	ap	
90E2-02020W-TO10-L110	TOMX 100408 PDTR-DM	2	20	20	30	110	6	0.6
90E3-02525W-TO10-L110		3	25	25	30	110	6	0.8
90E4-03232W-TO10-L130		4	32	32	40	130	6	0.9



Designation	Component	
	Screw	Wrench
		
90E.....TO10	DS 25C065I/HG	DTDW-8

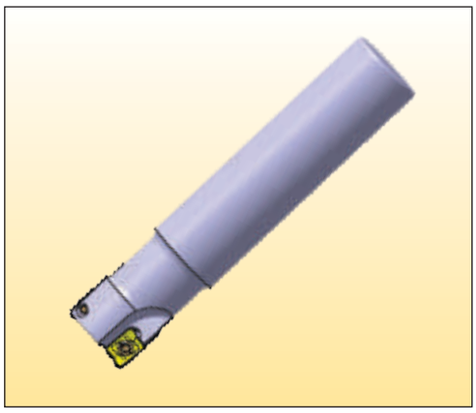
Cutting Condition Pg - 29

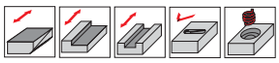
TOMX 1004

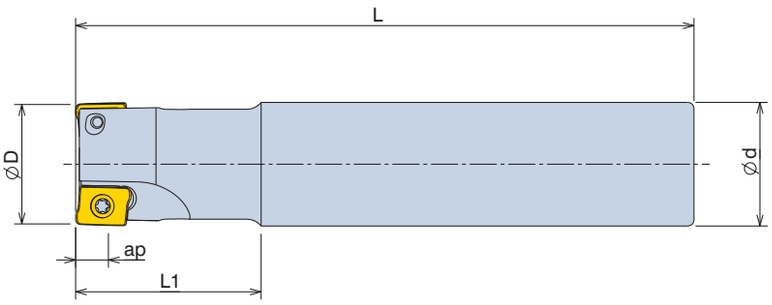


Insert	Designation	Dimension (mm)					Coated						Uncoated	
		d	t	R	a	ap	DC9235	DC9200	DP7320	DC9300	DC9800	DP5035	DC210	DC350M
	TOMX 100408 PDTR-DM	7.5	4.2	0.8	1.5	6	•	•			•			

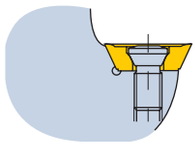
D-Mill (90° Endmill)







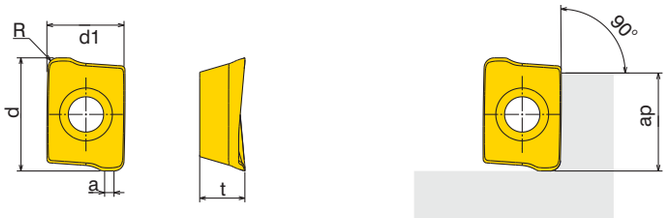
Designation	Insert		Dimension (mm)					Weight (Kg)
			D	d	L	L1	ap	
90E2-01616-AP08-L90	APKT 080308R APKT 080316R	2	16	16	90	25	6.5	0.12
90E2-01616-AP08-L145		2	16	16	145	30	6.5	0.21
90E2-02020-AP08-L170		2	20	20	170	40	6.5	0.39
90E3-02020-AP08-L110		3	20	20	110	30	6.5	0.24
90E3-02525-AP08-L110		3	25	25	110	30	6.5	0.38
90E2-03232-AP08-L250		2	32	32	250	65	6.5	1.49
90E4-03225-AP08-L130		4	32	25	130	60	6.5	0.57

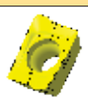


Component	
Screw	Wrench
	
DS25055I/HG-TS, *DS25075I/HG-TS	DTDW-9
	DTDW-20

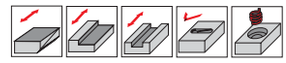
Cutting Condition Pg - 27,33

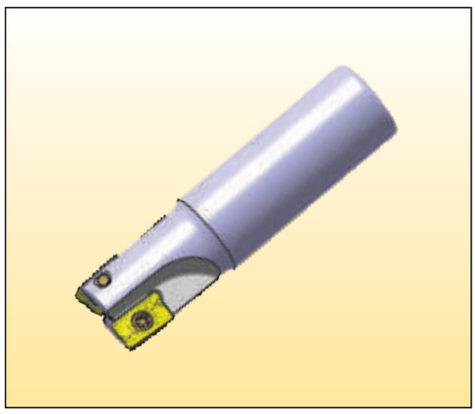
APKT...0803

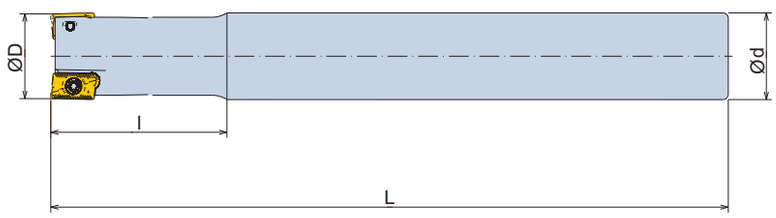


Insert	Designation	Dimension (mm)						Coated					
		d	d_1	t	R	a	ap	DP5320	DC9200	DP7320	DC9300	DC9800	DP5035
	APKT 080308R	9	6.21	3.6	0.8	1.0	6.5	●		●	●	●	●
	APKT 080316R	9	6.21	3.6	1.6	0.8	6.5	●		●	●	●	

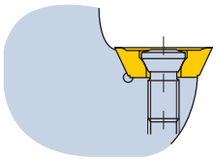
D-Mill (90° Endmill)







Designation	Insert		Dimension (mm)				Weight (kg)
			D	d	L	l	
90E2-02525-AP16-L100	APKT 160408 PDSR	2	25	25	100	39	0.3
90E2-02525-AP16-L210		2	25	25	210	40	0.7
90E3-03232-AP16-L110		3	32	32	110	33	0.6
90E2-03232-AP16-L250		2	32	32	250	65	1.4
90E3-03232-AP16-L200		3	32	32	200	65	65

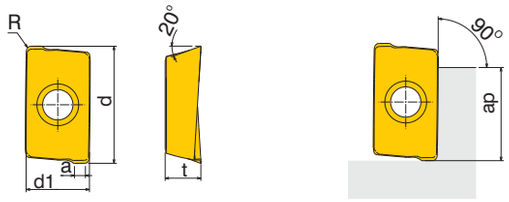


Component	
Screw	Wrench
	
*DS40080I-TS, Ds40093I-TS	DTDW-9
	DTDW-20

* For Ø25 cutter

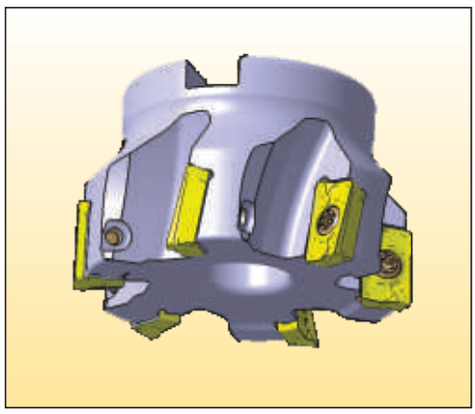
Cutting Condition Pg - 26,33

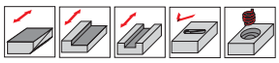
APKT 160408 PDSR



Insert	Designation	Dimension (mm)						Coated									Uncoated	
		d	d1	a	t	R	ap	DC9200	DP7320	DP5320	DP8330	DC9300	DP9320	DC9800	DP5320	DP5035	DC210	DC325M
	APKT 160408 PDSR	16.4	9.45	1.7	5.25	0.8	13	•	•	•		•		•		•		

D-Mill (90° Facemill)





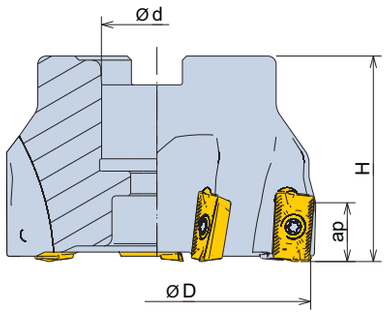


Fig.1

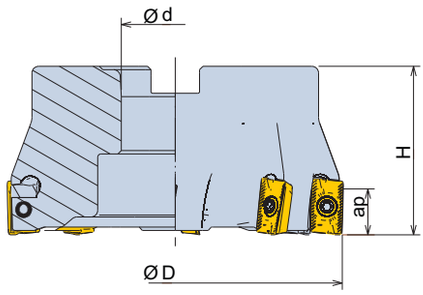
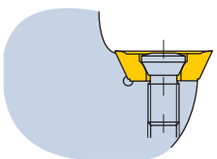
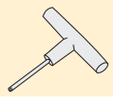


Fig.2

Designation	Insert		Dimension (mm)			Fig.	Mounting Bolt
			D	d	H		
90F4-D40-16-AP16	APKT 160408 PDSR	4	40	16	40	1	-
90F5-D50-22-AP16		5	50	22	40	1	SH M10 X 1.5 X 30
90F6-D63-22-AP16		6	63	22	40	1	SH M10 X 1.5 X 30
90F7-D80-27-AP16		7	80	27	50	1	SH M12 X 1.75 X 35
90F8-D100-32-AP16		8	100	32	50	2	-

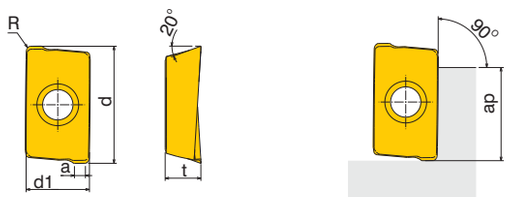


Component	
Screw	Wrench
	
*DS40093I-TS, DS40120I-TS	DTTW-15

* For Ø40-Ø63 cutter

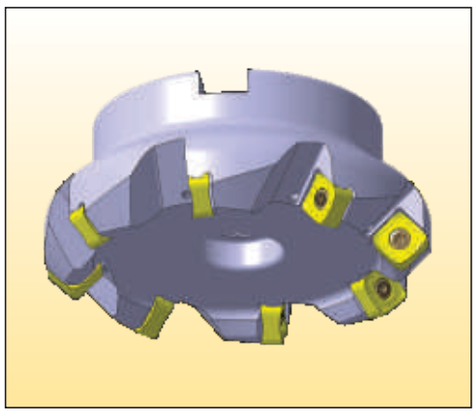
Cutting Condition Pg - 26,33
Arbor Style Pg - 35

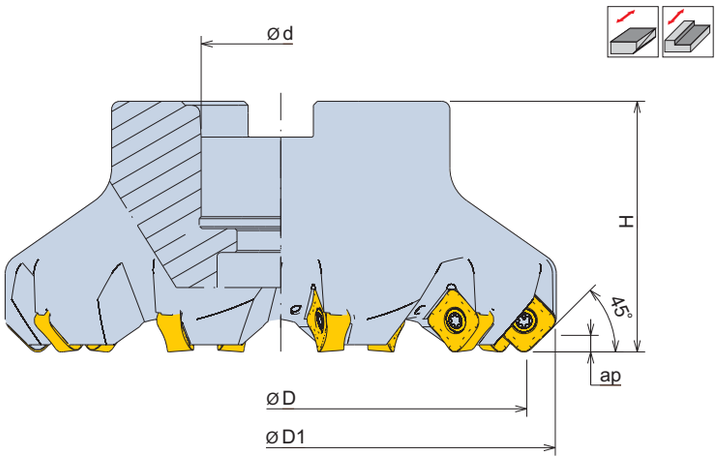
APKT 160408 PDSR



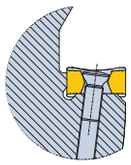
Insert	Designation	Dimension (mm)						Coated								Uncoated	
		d	d1	a	t	R	ap	DC9200	DP7320	DP5320	DP8330	DC9300	DP9320	DC9800	DP5320	DP5035	DC210	DC325M
	APKT 160408 PDSR	16.4	9.45	1.7	5.25	0.8	13	•	•	•		•		•		•		

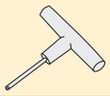
D2-Mill (45° Facemill)





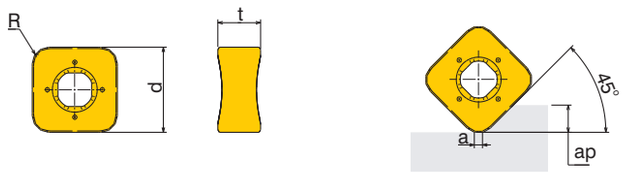
Designation	Insert		Dimension (mm)				Weight (Kg)	Arbour style	Mounting Bolt
			D	D1	d	H			
45F5-D50-22R-SN12	SNKU 1205 XTN SNGU 1205 XTN	5	50	64.5	22	40	0.42	A	SH M10 X 1.5 X 30
45F6-D63-22R-SN12		6	63	77.5	22	40	0.61	A	SH M10 X 1.5 X 30
45F7-D80-27R-SN12		7	80	94.5	27	50	1.37	A	SH M12 X 1.75 X 30
45F10-D80-27R-SN12		10	80	94.5	27	50	1.3	A	SH M12 X 1.75 X 30
45F8-D100-32R-SN12		8	100	114.5	32	50	2.11	B	—
45F12-D100-32R-SN12		12	100	114.5	32	50	2.1	B	—
45F10-D125-40R-SN12		10	125	139.5	40	63	3.45	B	—
45F15-D125-40R-SN12		15	125	139.5	40	63	3.4	B	—



Component	
Screw	Wrench
	
DS40B100I-TS,	DTTW-15

Cutting Condition Pg - 28
Arbor Style Pg - 35

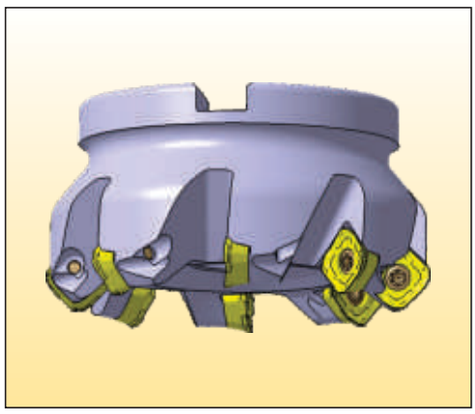
SNKU / SNGU 12

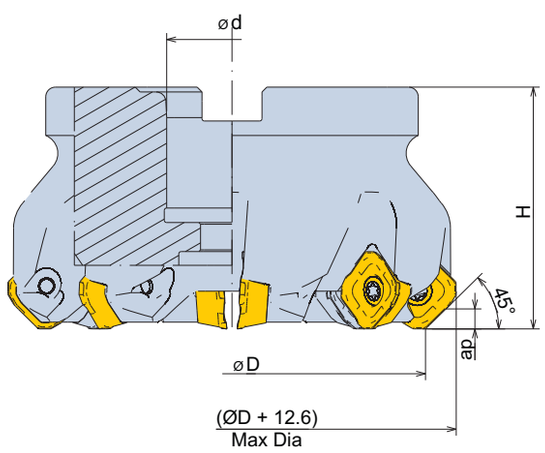


Insert	Designation	Dimension (mm)					Coated						Uncoated	
		d	t	R	ap	a	DP5320	DC9200	DP7320	DC9300	DC9800	DP5035	DC210	DC325M
	SNKU 1205 XTN	12.7	6.3	0.8	6	1.0	•	•	•	•	•	•		

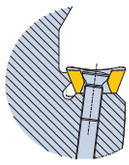
Insert	Designation	Dimension (mm)					Coated						Uncoated	
		d	t	R	ap	a	DP5320	DC9200	DP7320	DC9300	DC9800	DP5035	DC210	DC325M
	SNGU 1205 XTN	12.7	6.3	0.8	6	1.0	•	•	•	•	•			

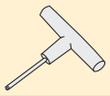
D-Mill (45° Facemill)





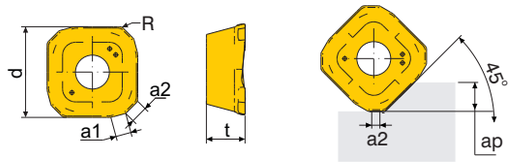
Designation	Insert		Dimension (mm)				Weight (Kg)	Mounting Bolt
			D	d	H	Arbour style		
45F4-D50-22R-SD13	SDKT 1305 XTR-M	4	50	22	40	A	0.46	SH M10 X 1.5 X 30
45F5-D63-22R-SD13		5	63	22	40	A	0.74	SH M10 X 1.5 X 30
45F6-D80-27R-SD13		6	80	27	50	A	1.42	SH M12 X 1.75 X 35
45F8-D80-27R-SD13		8	80	27	50	A	1.81	SH M12 X 1.75 X 35
45F8-D100-32R-SD13		8	100	32	50	B	2.4	—
45F10-D100-32R-SD13		10	100	32	50	B	2.1	—
45F10-D125-40R-SD13		10	125	40	63	B	3.7	—
45F12-D125-40R-SD13		12	125	40	63	B	3.8	



Component	
Screw	Wrench
	
DS40B100I-TS,	DTTW-15

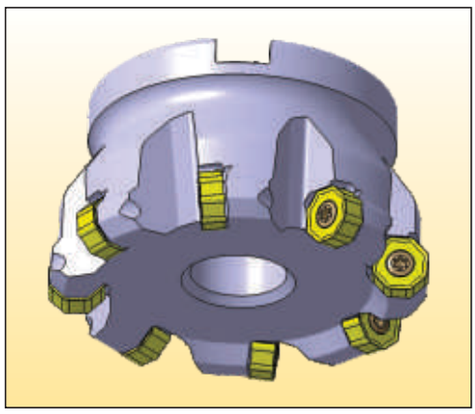
Cutting Condition Pg - 30
Arbor Style Pg - 35

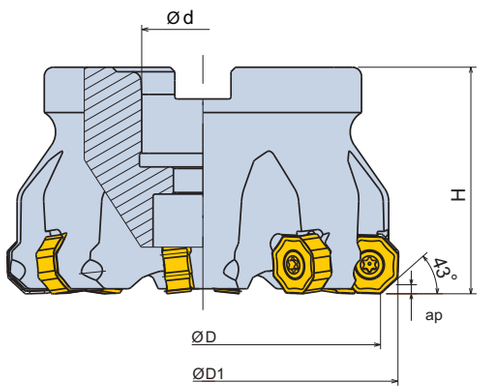
SDKT 13



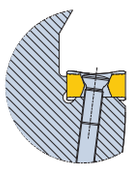
Insert	Designation	Dimension (mm)						Coated						Uncoated
		d	t	R	ap	a1	a2	DC9200	DC9300	DC9800	DP5035	DP7320	DP5320	DC210
	SDKT 1305 XTR-M	13.76	5.9	0.5	4.0	2.0	2.5	•	•	•	•	•	•	

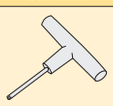
D2-Mill (43° Facemill)





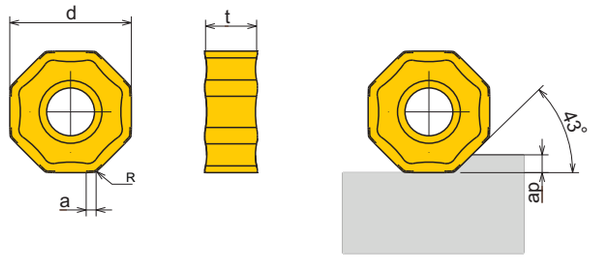
Designation	Insert		Dimension (mm)				Weight (Kg)	Arbour style	Mounting Bolt
			D	D1	d	H			
43FW3 D40-16R-ON05	ONMU 050505-M ONMU 050508-M	3	40	48.2	16	40	0.26	A	SH M8X1.25X30
43FW4 D40-16R-ON05		4	40	48.2	16	40	0.24	A	SH M8X1.25X30
43FW5 D50-22R-ON05		5	50	58.2	22	40	0.36	A	SH M10X1.5X30
43FW7 D63-22R-ON05		7	63	71.2	22	50	0.8	A	SH M10X1.5X30
43FW8 D80-27R-ON05		8	80	88.2	27	50	1.3	A	SH M12X1.75X30
43FW10 D80-27R-ON05		10	80	88.2	27	50	1.24	A	SH M12X1.75X30
43FW10 D100-32R-ON05		10	100	108.2	32	50	2.2	A	SH M16X2X30
43FW12 D100-32R-ON05		12	100	108.2	32	50	2	A	SH M16X2X30
43FW12 D125-40R-ON05		12	125	133.2	40	63	3.6	B	
43FW15 D125-40R-ON05		15	125	133.2	40	63	3.5	B	



Designation	Component	
	Screw	Wrench
		
43EW.....ON05	DS 40B100I	DTTW-15

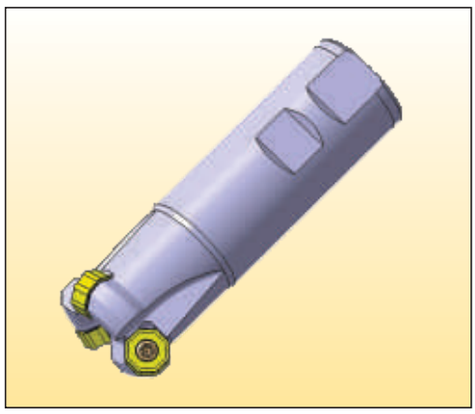
Cutting Condition Pg - 28
Arbor Style Pg - 35

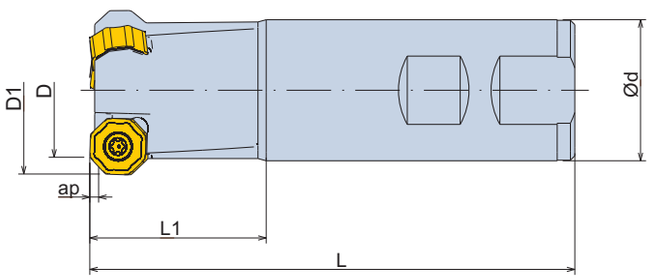
ONMU 05



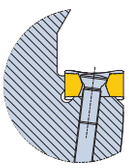
Insert	Designation	Dimension (mm)					Coated						Uncoated	
		d	t	R	ap	a	DP5320	DC9200	DP7320	DC9300	DC9800	DP5035	DC210	DC325M
	ONMU 050505-M	12.7	5	0.5	2.5	0.8	•	•	•		•	•		
	ONMU 050508-M	12.7	5	0.8	2.5	0.5		•			•	•		

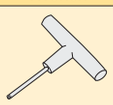
D2-Mill (43° Endmill)





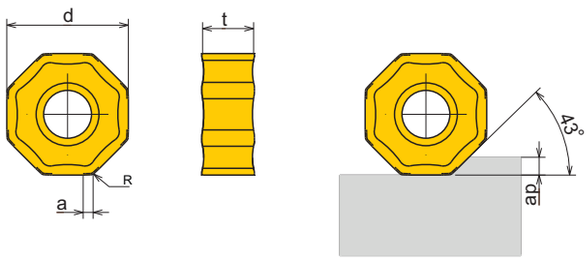
Designation	Insert		Dimension (mm)						Weight (Kg)
			D	D1	d	L1	L	ap	
43EW3-02525W-ON05-L110	ONMU 050505-M ONMU 050508-M	3	25	33.2	25	40	110	2.5	0.6
43EW3-03232W-ON05-L110		3	32	40.2	32	40	110	2.5	0.8
43EW4-04032W-ON05-L110		4	40	48.2	32	40	110	2.5	0.9



Designation	Component	
	Screw	Wrench
		
43EW.....ON05	DS 40B100I	DTTW-15

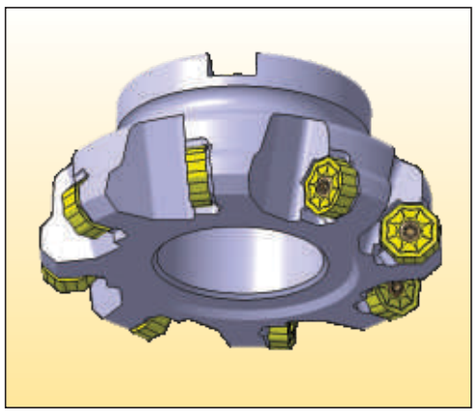
ONMU 05

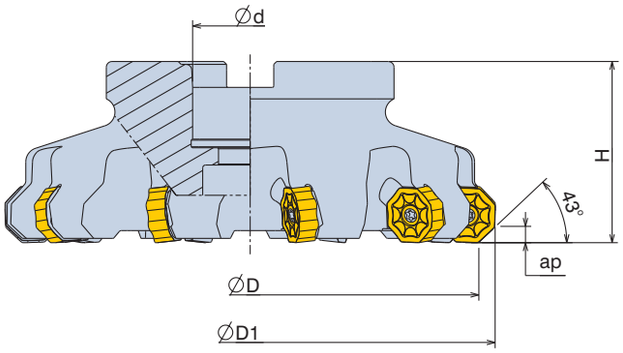
Cutting Condition Pg - 28



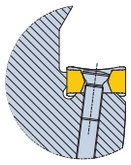
Insert	Designation	Dimension (mm)					Coated						Uncoated	
		d	t	R	ap	a	DP5320	DC9200	DP7320	DC9300	DC9800	DP5035	DC210	DC325M
	ONMU 050505-M	12.7	5	0.5	2.5	0.8	•	•	•		•	•		
	ONMU 050508-M	12.7	5	0.8	2.5	0.5		•			•	•		

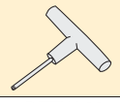
D2-Mill (43° Facemill)





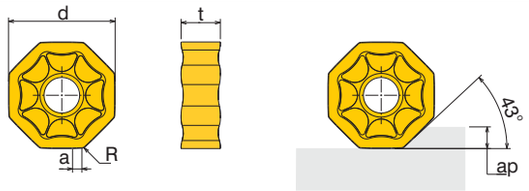
Designation	Insert		Dimension (mm)				Weight (Kg)	Arbour style	Mounting Bolt
			D	D1	d	H			
43FW5-D63-22R-ON07	ONMU 070608-M ONHU 070608-ML	5	63	75.2	22	50	0.72	A	SH M10 X 1.5 X 30
43FW6-D80-27R-ON07		6	80	92.2	27	50	1.15	A	SH M12 X 1.75 X 30
43FW8-D80-27R-ON07		8	80	92.2	27	50	1.2	A	SH M12 X 1.75 X 30
43FW7-D100-32R-ON07		7	100	112.2	32	60	2.46	A	SH M16 X 2 X 30
43FW10-D100-32R-ON07		10	100	112.2	32	60	2.5	A	SH M16 X 2 X 30
43FW8-D125-40 R-ON07		8	125	137.2	40	63	3.0	B	-
43FW13-D125-40 R-ON07		13	125	137.2	40	63	3.1	B	-
43FW10-D160-40 R-ON07		10	160	172.2	40	63	5.2	C	SH M20 X 2.5 X 40
43FW15-D160-40 R-ON07		15	160	172.2	40	63	5.4	C	SH M20 X 2.5 X 40



Component	
Screw	Wrench
	
DS50C130I/HG-TS	DTTW-20

ONMU / ONHU

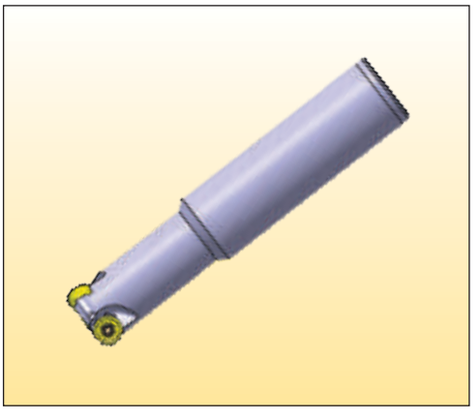
Cutting Condition Pg - 28
Arbor Style Pg - 35

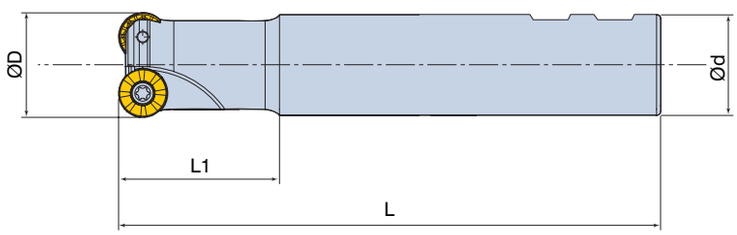


Insert	Designation	Dimension (mm)					Coated						Uncoated	
		d	t	R	ap	a	DP5320	DC9200	DP7320	DC9300	DC9800	DP5035	DC210	DC325M
	ONMU 070608-M	19	06	0.8	4	1.0	•	•	•		•	•		

Insert	Designation	Dimension (mm)					Coated						Uncoated	
		d	t	R	ap	a	DP5320	DC9200	DP7320	DC9300	DC9800	DP5035	DC210	DC325M
	ONHU 070608-ML	19	06	0.8	4	1.7	•	•	•		•	•		

D-Mold (Button Endmill)

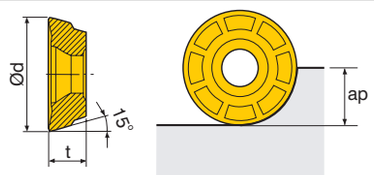




Designation	Insert		Dimension(mm)				Weight (kg)	Component	
			D	L	d	L_1		Screw	Wrench
ER2-02020W-10-L160	RDMT 1003-DM RDMT 1003-DR	2	20	160	20	60	0.3	DS 35070I/HG-TS	DTDW-15
ER2-02525W-10-L160		2	25	160	25	60	0.5		
ER3-03232W-12-L160	RDMT 12T3-DM RDMT 12T3-DR	3	32	160	32	64	0.7	DS 35085I/HG-TS	

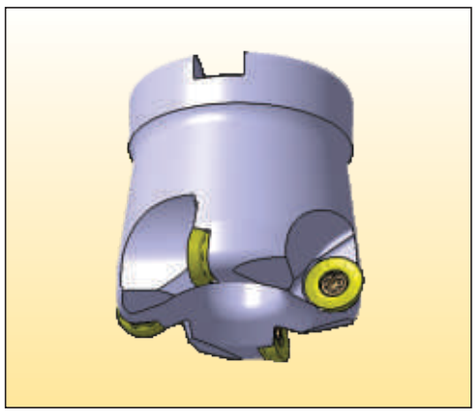
Cutting Condition Pg -29

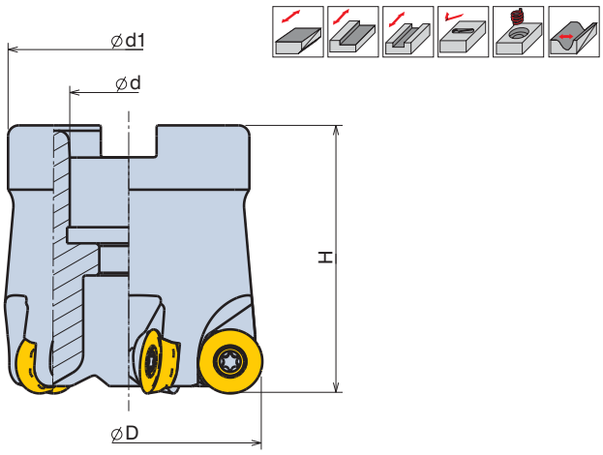
RDMT10, RDMT12



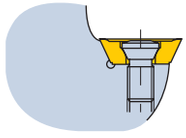
Insert	Designation	Dimension(mm)				Coated					
		d	t	ap	R	DP5320	DC9200	DP7320	DC9300	DC9800	DP5035
	RDMT 1003-DM	10	3.18	5	5	●		●	●	●	●
	RDMT 12T3-DM	12	3.97	6	6	●		●	●	●	●
	RDMT 1003-DR	10	3.18	5	5	●		●		●	
	RDMT 12T3-DR	12	3.97	6	6	●		●		●	

D-Mold (Button Facemill)





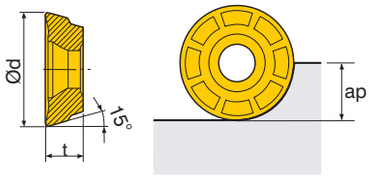
Designation	Insert		Dimension(mm)				Weight (kg)	Arbour style	Mounting Bolt
			D	H	d1	d			
FR4-D50-22-12	RDMT 12T3-DM RDMT 12T3-DR	4	50	40	48	22	0.2	A	SH M10 X 1.5 X 30
FR4-D52-22-12		4	52	40	48	22	0.2	A	SH M10 X 1.5 X 30



Component	
Screw	Wrench
	
DS 35085I/HG-TS	DTDW-15

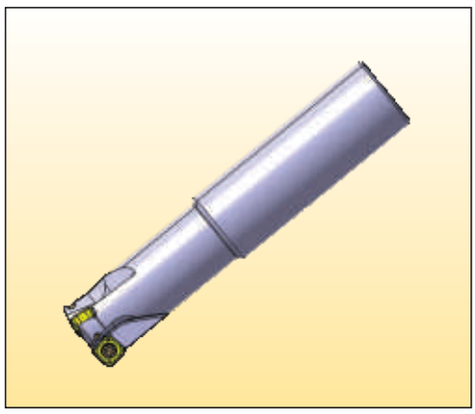
Cutting Condition Pg - 29
Arbor Style Pg - 35

RDMT12



Insert	Designation	Dimension(mm)				Coated					
		d	t	ap	R	DP5320	DC9200	DC9235	DC9300	DC9800	DP5035
	RDMT 12T3-DM	12	3.97	6	6				•	•	•
	RDMT 12T3-DR	12	3.97	6	6					•	

D-Feed (High Feed End Mill)



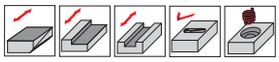
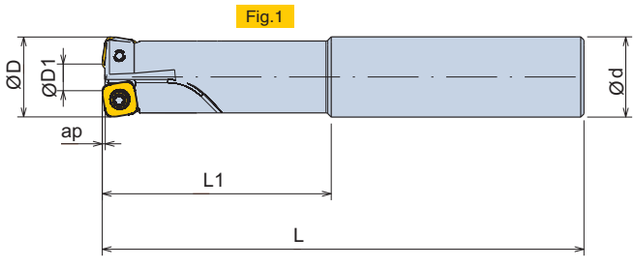


Fig.1



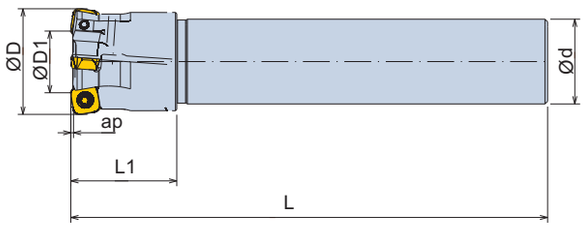
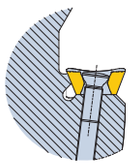


Fig.2

Designation	Insert		Dimension(mm)					Ap	Weight (kg)		Fig
			D	D1	d	L1	L				
10E2-D25-25-SD10-L150	SDMT 1004-DM	2	25	11.5	25	70	150	1.2	0.5	○	1
10E3-D32-32-SD10-L160		3	32	18.5	32	70	160		0.8	○	1
10E3-D32-32-SD10-L220		3	32	18.5	32	120	220		1	○	1
10E4-D40-32-SD10-L180		4	40	26.5	32	40	180		1	○	2
10E4-D40-32-SD10-L250		4	40	26.5	32	40	250		1.4	○	2

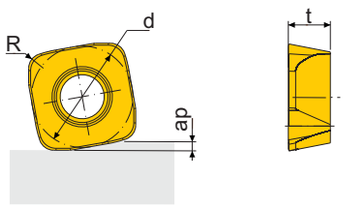
Cutting Condition Pg - 31, 32

○ Through coolant
X Non-Through coolant



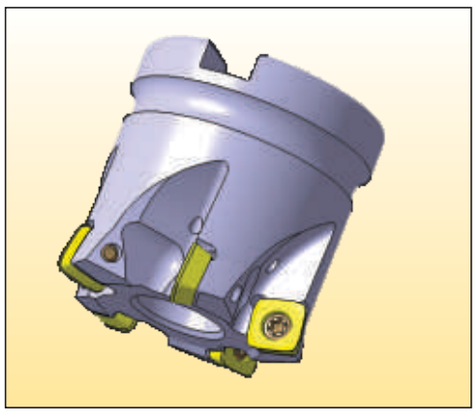
Component	
Screw	Wrench
	
DS 35D100I/HG	DTDW-15

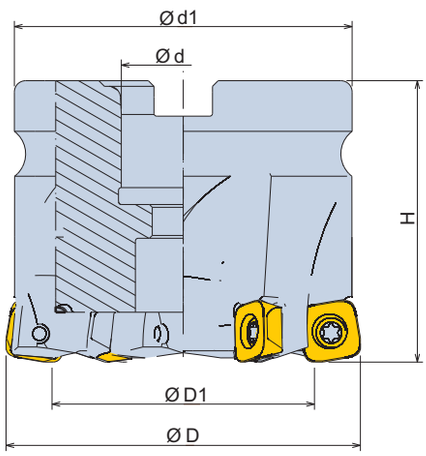
SDMT 1004



Insert	Designation	Dimension(mm)				Coated					
		d	t	R	ap	DP8330	DP7320	DP5320	DC9200	DP8330	DC9800
	SDMT 1004- DM	10.3	4.3	1.5	1.2	●	●	●			

D-Feed (High Feed Face Mill)

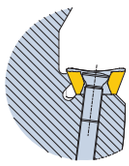




Designation	Insert		Dimension(mm)					Ap	Weight (kg)		Mouting Bolt
			D	D1	d	d1	H				
10F4-D40-16R-SD10	SDMT 1004-DM	4	40	26.5	16	38	40	1.2	0.19	○	SH M8X1.25X25
10F5-D50-22R-SD10		5	50	36.5	22	48	50		0.43	○	SH M10X1.5X30
10F5-D52-22R-SD10		5	52	38.5	22	50	50		0.49	○	SH M10X1.5X30
10F6-D63-22R-SD10		6	63	49.5	22	60	50		0.72	○	SH M10X1.5X30

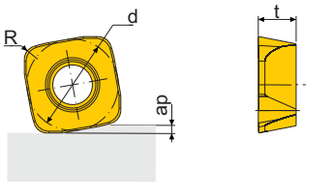
Cutting Condition Pg - 31, 32
Arbor Style Pg - 35

○ Through coolant
X Non-Through coolant



Component	
Screw	Wrench
	
DS 35D100I/HG	DTDW-15

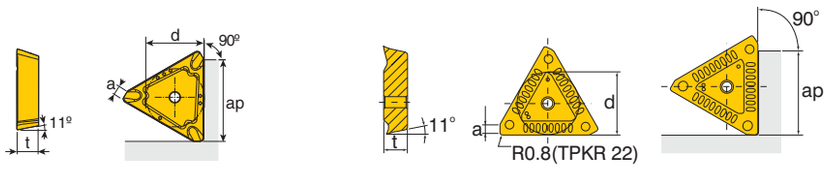
SDMT 1004



Insert	Designation	Dimension(mm)				Coated					
		d	t	R	ap	DP8330	DP7320	DP5320	DC9200	DP8330	DC9800
	SDMT 1004- DM	10.3	4.3	1.5	1.2	●	●	●			

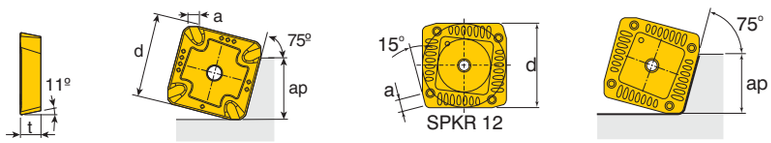
D-Mill (ISO Inserts)

TPKN 22 & TPKR 22



Insert	Designation	Dimension (mm)					Coated									Uncoated	
		d	t	a	b	ap	DC9200	DP7320	DC9235	DP8330	DC9300	DP9320	DC9800	DP5320	DC7800	DP5035	DC210	DC325M
	TPKN 2204 PDR-HPN	12.7	4.76	1.7	1.1	16		●										
	TPKN 2204 PDSR-HPN	12.7	4.76	1.8	0.9	16			●			●		●				
	TPKR 2204 PDR - DM	12.7	4.76	1.72	-	18					●					●		

SPKN 12 & SPKR 12



Insert	Designation	Dimension (mm)						Coated										Uncoated	
		d	t	a	b	R	ap	DC9200	DP7320	DC9235	DP8330	DC9300	DP9320	DC9800	DP5320	DC7800	DP5035	DC210	DC325M
	SPKN 1203 EDR - HPN	12.7	3.18	1.4	1.0	-	9.5	●											
	SPKN 1203 EDSR - HPN	12.7	3.18	1.33	1.0	-	9.5			●					●		●		
	SPKR 1203 EDR - DM	12.7	3.18	1.70	-	0.8	8					●					●		

Recommended Conditions for SPKN/SPKR 12, TPKN/TPKR 22.

ISO	Material	Hardness (HB)	Ap (mm)	Speed (m/min)	Recommended Grade***	Fz (mm/tooth) SPKN(R)/TPKN(R)/SEKN/TEKN
P	Low Carbon Steel	85 - 175	1.0	305	DC9300, DC325M	0.10 - 0.15
			2.5	275		0.10 - 0.15
			7.5	240		0.10 - 0.15
	High Carbon Steel	175 - 225	1.0	245	DC9300, DC325M	0.10 - 0.15
			2.5	210		0.10 - 0.15
			7.5	180		0.10 - 0.15
	Alloy Steel	275 - 325	1.0	210	DC9300, DC325M	0.10 - 0.15
			2.5	180		0.10 - 0.15
			7.5	135		0.10 - 0.12
	Tool Steel	200 - 250	1.0	125	DC9300, DC325M	0.05 - 0.15
			2.5	110		0.10 - 0.15
			7.5	90		0.10 - 0.12
M	Stainless Steel 300 Series	-	1.0	210	DC9300, DC325M	0.10 - 0.15
			2.5	180		0.10 - 0.15
			7.5	150		0.10 - 0.12
	Stainless Steel 400 Series	-	1.0	275	DC9300, DC325M	0.10 - 0.15
			2.5	230		0.10 - 0.15
			7.5	210		0.10 - 0.12
K	Grey Cast Iron	190 - 220	1.0	260	DC9200	0.10 - 0.15
			2.5	230		0.10 - 0.15
			7.5	200		0.10 - 0.15
	Ductile Cast Iron	140 - 200	1.0	230	DC9200	0.10 - 0.15
			2.5	200		0.10 - 0.15
			7.5	170		0.10 - 0.15
N	Aluminium Alloy	-	1.0	500+	DC210	0.15 - 0.50
			2.5	450+		0.15 - 0.35
			7.5	360+		0.15 - 0.35
S	Heat-Resistance Alloy	-	1.0	45	DC9300	0.10 - 0.12
			2.5	30		0.10 - 0.12
			7.5	25		0.10 - 0.12
	Titanium Alloy	-	1.0	75	DC9300	0.10 - 0.12
			2.5	50		0.10 - 0.12
			7.5	35		0.10 - 0.12

Reduce speed by 20% when channel milling
***In order of preference, uncoated carbide reduce speed 20%

Recommended Conditions for APKT 16

ISO	Material	Hardness (HB)	Ap (mm)	Speed (m/min)	Recommended Grade	Fz (mm/tooth) APKT 16
P	Low Carbon Steel	85 - 175	1.0	350	DC9300	0.10 - 0.25
			3.5	320		0.10 - 0.22
			7.0	280		0.10 - 0.20
	High Carbon Steel	175 - 225	1.0	260	DC9300	0.10 - 0.22
			3.5	230		0.10 - 0.20
			7.0	180		0.10 - 0.20
	Alloy Steel	275 - 325	1.0	230	DC9300	0.10 - 0.20
			3.5	180		0.10 - 0.15
			7.0	150		0.10 - 0.12
	Tool Steel	200 - 250	1.0	140	DC9300	0.10 - 0.18
			3.5	120		0.10 - 0.15
			7.0	90		0.10 - 0.12
M	Stainless Steel 300 Series	-	1.0	210	DC9300, DC325M	0.10 - 0.15
			2.5	180		0.10 - 0.15
			7.5	150		0.10 - 0.12
	Stainless Steel 400 Series	-	1.0	275	DC9300, DC325M	0.10 - 0.15
			2.5	230		0.10 - 0.15
			7.5	210		0.10 - 0.12
K	Grey Cast Iron	190 - 220	1.0	300	DC9200	0.10 - 0.25
			3.5	250		0.10 - 0.20
			7.0	200		0.10 - 0.15
	Ductile Cast Iron	140 - 200	1.0	280	DC9200	0.10 - 0.22
			3.5	220		0.10 - 0.18
			7.0	150		0.10 - 0.15

Reduce speed by 25% when endmill diameter is less than 18mm and DOC is bigger than 3.5mm
Reduce speed by 20% for facemills when slotting

Technical Information

Recommended Conditions for SNGU 12

ISO	Material	Brinell	D.O.C(mm)	Speed (m/min)	Recommended Grades	Feed(mm/tooth)
P	Low Carbon Steel	85-175	1.0-5.0	180-300	DC9800, DP5035, DP5320	0.10-0.22
	High Carbon Steel	175-225	1.0-5.0	130-280	DC9800, DP5035, DP5320	0.10-0.20
	Alloy Steel	275-325	1.0-5.0	120-250	DC9800, DP5035, DP5320	0.10-0.20
	Tool Steel	200-250	1.0-5.0	80-200	DP8330, DP5035, DC9800	0.10-0.18
M	Stainless 300 series	-	1.0-5.0	80-170	DP5035, DC9800, DC9300	0.10-0.18
	Stainless 400 series	-	1.0-5.0	100-210	DP5035, DC9800, DC9300	0.10-0.15
K	Grey Cast Iron	190-220	1.0-5.0	140-220	DC9200, DP7320	0.10-0.25
	Nodular Cast Iron	140-200	1.0-5.0	140-220	DC9200, DP7320	0.10-0.22
N	Aluminium	-	1.0-5.0	400-500	DC210	0.10-0.30
S	High - Temp Alloy Inconel	-	1.0-5.0	50-80	DP8330, DP5035, DC9800	0.1-0.12
	Titanium Alloy	-	1.0-5.0	55-90	DC9800, DP5035	0.10-0.12

Recommended Conditions for APKT 08

ISO	Material	Brinell	D.O.C(mm)	Speed (m/min)	Recommended Grades	Feed(mm/tooth)
P	Low Carbon Steel	85-175	1.0-6.0	180-300	DC9800, DP5035, DP5320	0.07-0.18
	High Carbon Steel	175-225	1.0-6.0	130-280	DC9800, DP5035, DP5320	0.07-0.18
	Alloyed Steel	275-325	1.0-6.0	120-250	DC9800, DP5035	0.07-0.15
	Tool Steel	200-250	1.0-6.0	90-140	DP5035, DP8330, DC9800	0.07-0.15
M	Stainless 300 Series	-	1.0-6.0	80-170	DP5035, DC9800, DC9300	0.05-0.12
	Stainless 400 Series	-	1.0-6.0	100-210	DP5035, DC9800, DC9300	0.05-0.15
K	Grey Cast Iron	190-220	1.0-6.0	150-350	DC9200, DP7320	0.1-0.12
	Nodular Cast Iron	140-200	1.0-6.0	100-250	DC9200, DP7320	0.1-0.12
N	Aluminium	-	1.0-6.0	350-500	DC210	0.1-0.3
S	High - Temp Alloy Inconel	-	1.0-6.0	30-100	DP8330, DP5035, DC9800	0.05-0.12
	Titanium Alloy	-	1.0-6.0	30-80	DC9800, DP5035	0.05-0.12

Technical Information

Recommended Conditions for ONHU 07, ONMU 07

ISO	Material	Brinell	D.O.C(mm)	Speed (m/min)	Recommended Grades	Feed(mm/tooth)
P	Low Carbon Steel	190-220	1.0-4.0	180-300	DC9300	0.10-0.25
	High Carbon Steel	140-190	1.0-4.0	130-280	DC9300	0.10-0.25
	Alloy Steel	190-280	1.0-4.0	120-250	Dc9800, DP5035, DP5320	0.10-0.25
	Tool Steel	85-175	1.0-4.0	80-200	DP9320	0.10-0.25
M	Stainless 300 series	175-225	1.0-4.0	80-170	DC9800, DP5035, DP5320	0.10-0.25
	Stainless 400 series	275-325	1.0-4.0	100-210	DP5320	0.10-0.25
K	Grey Cast Iron	190-220	1.0-4.0	150-300	DC9200, DP7320	0.1-0.25
	Nodular Cast Iron	140-200	1.0-4.0	100-250	DC9200, DP7320	0.1-0.25

Recommended Conditions for ONMU 05

ISO	Material	Brinell	D.O.C(mm)	Speed (m/min)	Recommended Grades	Feed(mm/tooth)
P	Low Carbon Steel	85-175	1.0-2.5	180-300	DC9300	0.10-0.22
	High Carbon Steel	175-225	1.0-2.5	130-280	DC9300	0.10-0.20
	Alloy Steel	275-325	1.0-2.5	120-250	Dc9800, DP5035, DP5320	0.10-0.20
	Tool Steel	200-250	1.0-2.0	80-200	DP5320, DC 9320	0.10-0.18
M	Stainless 300 series		1.0-2.5	80-170	DC9800, DP5035, DP5320	0.10-0.15
	Stainless 400 series		1.0-2.5	100-210	DC9800, DP5035, DP5320	0.10-0.15
K	Grey Cast Iron	190-220	1.0-2.5	140-220	DC9200, DP7320	0.10-0.25
	Nodular Cast Iron	140-200	1.0-2.5	140-220	DC9200, DP7320	0.10-0.22

Recommended Conditions for SNKU12 / SNGU 12

ISO	Material	Brinell	D.O.C(mm)	Speed (m/min)	Recommended Grades	Feed(mm/tooth)
P	Low Carbon Steel	85-175	1.0-6.0	180-300	DC9800, DP5035, DP5320	0.10-0.22
	High Carbon Steel	175-225	1.0-6.0	130-280	DC9800, DP5035, DP5320	0.10-0.20
	Alloyed Steel	275-325	1.0-6.0	120-250	DC9800, DP5035, DC9800	0.10-0.20
	Tool Steel	200-250	1.0-6.0	80-200	DP8330, DP5035, DC9800	0.10-0.18
M	Stainless 300 Series	-	1.0-6.0	80-170	DP5035, DC9800, DC9300	0.10-0.18
	Stainless 400 Series	-	1.0-6.0	100-210	DP5035, DC9800, DC9300	0.10-0.15
K	Grey Cast Iron	190-220	1.0-6.0	140-220	DC9200	0.10-0.25
	Nodular Cast Iron	140-200	1.0-6.0	140-220	DC9200	0.10-0.22
N	Aluminium	-	1.0-6.0	400-500	DC210	0.10-0.30
S	High - Temp Alloy Inconel	-	1.0-6.0	50-80	DP8330, DP5035, DC9800	0.1-0.12
	Titanium Alloy	-	1.0-6.0	55-90	DC9800, DP5035	0.10-0.12

Technical Information

Recommended Conditions for RDMT 10, 12

ISO	Material	Brinell	Speed (m/min)	Recommended Grades	Feed(mm/tooth)	
					D 10	D 12
P	Low Carbon steel	85-175	220-300	DC9800, DP5035, DP5320	0.12-0.44	0.13-0.59
	High Carbon Steel	175-225	150-200	DC9800, DP5035, DP5320	0.12-0.40	0.13-0.52
	Alloyed Steel	275-325	100-180	DC9800, DP5035, DC9800	0.12-0.34	0.13-0.45
	Tool Steel	200-250	85-150	DP8330, DP5035, DC9800	0.12-0.34	0.13-0.45
M	Stainless 300 Series	-	110-180	DP5035, DC9800, DC9300	0.12-0.40	0.13-0.52
	Stainless 400 Series	-	110-220	DP5035, DC9800, DC9300	0.12-0.40	0.13-0.52
S	Inconel Hastelloy Waspalloy	-	25-45	DP8330, DP5035, DC9800	0.09-0.28	0.10-0.37
	Titanium 6Al-4V	-	35-60	DC9800, DP5035	0.09-0.28	0.10-0.37

Recommended Conditions for GNMU 11

ISO	Material	Hardness (HB)	AP (mm)	Speed (m/min)	Recommended Grades	Feed (mm/tooth)
P	High Carbon Steel	175-225	1.0-7.0	180-260	DC5320	0.05-0.25
	Alloy Steel	275-325	1.0-7.0	150-230	DC5320	0.05-0.25
	Tool Steel	200-250	1.0-7.0	90-140	DC5320	0.05-0.25
M	Stainless Steel 300 series		1.0-7.0	150-240	DC5320	0.05-0.25
	Stainless Steel 400 series		1.0-7.0	150-260	DC5320	0.05-0.25

Recommended Conditions for GNMU 16

ISO	Material	Hardness (HB)	AP (mm)	Speed (m/min)	Recommended Grades	Feed (mm/tooth)
P	High Carbon Steel	175-225	1.0-10.0	180-260	DC5320	0.05-0.25
	Alloy Steel	275-325	1.0-10.0	150-230	DC5320	0.05-0.25
	Tool Steel	200-250	1.0-10.0	90-140	DC5320	0.05-0.25
M	Stainless Steel 300 series		1.0-10.0	150-240	DC5320	0.05-0.25
	Stainless Steel 400 series		1.0-10.0	150-260	DC5320	0.05-0.25

Recommended Conditions for TOMX 10

ISO	Material	Brinell	D.O.C(mm)	Speed (m/min)	Recommended Grades	Feed(mm/tooth)
P	Low Carbon Steel	85-175	1.0-6.0	180-300	Dc9235, DC9800	0.10-0.25
	High Carbon Steel	175-225	1.0-6.0	130-280	DC9235, DC9800	0.10-0.20
	Alloy Steel	275-325	1.0-6.0	120-250	DC9235, DC9800	0.10-0.20
	Tool Steel	200-250	1.0-4.0	80-200	DC9800, DC9235	0.10-0.18
M	Stainless 300 series	-	1.0-5.0	80-170	DC9800	0.10-0.15
	Stainless 400 series	-	1.0-5.0	100-210	DC9800	0.10-0.15
K	Grey Cast Iron	190-220	1.0-6.0	140-220	DC9200	0.10-0.25
	Nodular Cast Iron	140-200	1.0-6.0	140-220	DC9200	0.10-0.22

Technical Information

Recommended Conditions for SOMX 12

ISO	Material	Brinell	D.O.C(mm)	Speed (m/min)	Recommended Grades	Feed(mm/tooth)
P	Low Carbon Steel	85-175	1.0-6.0	180-300	DC9800, DP5035, DP5320	0.10-0.22
	High Carbon Steel	175-225	1.0-6.0	130-280	DC9800, DP5035, DP5320	0.10-0.20
	Alloyed Steel	275-325	1.0-6.0	120-250	DC9800, DP5035, DP5320	0.10-0.20
	Tool Steel	200-250	1.0-6.0	80-200	DP8330, DP5035, DC9800	0.10-0.18
M	Stainless 300 Series	-	1.0-6.0	80-170	DP5035, DC9800, DC9300	0.10-0.18
	Stainless 400 Series	-	1.0-6.0	100-210	DP5035, DC9800, DC9300	0.10-0.15
K	Grey Cast Iron	190-220	1.0-6.0	140-220	DC9200, DP7320	0.10-0.25
	Nodular Cast Iron	140-200	1.0-6.0	140-220	DC9200, DP7320	0.10-0.22
N	Aluminium	-	1.0-6.0	400-500	DC210	0.10-0.30
S	High - Temp Alloy Inconel	-	1.0-6.0	50-80	DP8330, DP5035, DC9800	0.1-0.12
	Titanium Alloy	-	1.0-6.0	55-90	DC9800, DP5035 DP5320	0.10-0.12

Recommended Conditions for SDKT 13

ISO	Material	Brinell	D.O.C(mm)	Speed (m/min)	Recommended Grades	Feed(mm/tooth)
P	Low Carbon Steel	85-175	1.5-4.0	180-300	DC9800, DP5035, DP5320	0.10-0.22
	High Carbon Steel	175-225	1.5-4.0	130-280	DC9800, DP5035, DP5320	0.10-0.20
	Alloyed Steel	275-325	1.5-4.0	120-250	DC9800, DP5035, DP5320	0.10-0.20
	Tool Steel	200-250	1.5-4.0	80-200	DP8330, DP5035, DC9800	0.10-0.18
M	Stainless 300 Series	-	1.0-3.0	80-170	DP5035, DC9800, DC9300	0.10-0.18
	Stainless 400 Series	-	1.0-3.0	100-210	DP5035, DC9800, DC9300	0.10-0.15
K	Grey Cast Iron	190-220	1.0-4.0	140-220	DC9200, DP7320	0.10-0.25
	Nodular Cast Iron	140-200	1.0-4.0	140-220	DC9200, DP7320	0.10-0.22
N	Aluminium	-	1.0-4.0	400-500	DC210	0.10-0.30
S	High - Temp Alloy Inconel	-	1.0-3.0	50-80	DP8330, DP5035, DC9800	0.1-0.12
	Titanium Alloy	-	1.0-3.0	55-90	DC9800, DP5035 DP5320	0.10-0.12

Recommended cutting conditions for SDMT 10

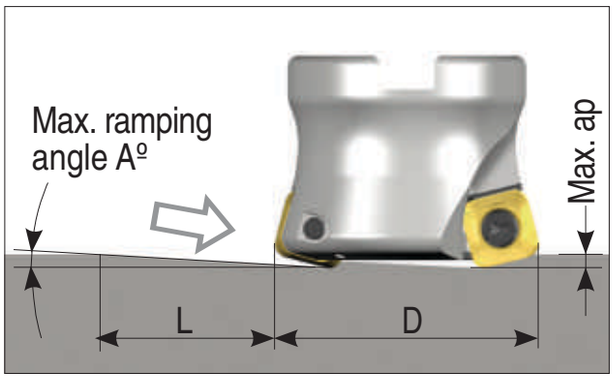
ISO	Material	Condition	Tensilo strength (N/mm2)	Hardness HB	Material No.	coated					
						DP5320	DP9320	DC7800	DP8330	DC9235	DP7320
P	Non-alloy steel, cast steel, free cutting steel <0.25%C	Annealed	420	125	1	220-370	250-410	160-270	170-250	150-210	
P	Non-alloy steel, cast steel, free cutting steel <=0.25%C	Annealed	650	190	2	180-310	200-380	140-210	130-220	120-200	
P	Non-alloy steel, cast steel, free cutting steel <0.55%C	Quenched and temperd	850	250	3	115-195	140-230	90-160	90-170	70-140	
P	Non-alloy steel, cast steel, free cutting steel <=0.55%C	Annealed	750	220	4	130-210	160-250	100-170	100-190	90-150	
P	Non-alloy steel, cast steel, free cutting steel	Quenched and temperd	1000	300	5	115-175	135-195	80-140	70-160	60-130	
P	Low alloy steel and cast steel (less then 5%of alloying elements)	Annealed	600	200	6	175-265	190-290	140-200	150-220	130-170	
P	Low alloy steel and cast steel (less then 5%of alloying elements)	Quenched and temperd	930	275	7	130-215	150-240	90-160	110-190	70-150	
P	Low alloy steel and cast steel (less then 5%of alloying elements)	Quenched and temperd	1000	300	8	105-185	135-225	70-150	80-160	60-110	
P	Low alloy steel and cast steel (less then 5%of alloying elements)	Quenched and temperd	1200	350	9	95-160	120-190	60-110	70-120	50-100	
P	High alloy steel, cast steel and tool steel	Annealed	680	200	10	85-155	100-150	60-90	70-110	50-80	
P	High alloy steel, cast steel and tool steel	Quenched and temperd	1100	325	11	75-135	90-140	50-90	60-100	40-80	
M	Stainless steel and cast steel	Ferritic / martensitic	680	200	12	115-270			90-210	75-170	
M	Stainless steel and cast steel	Martensitic	820	240	13	100-230			70-160	60-130	
M	Stainless steel and cast steel	Austenitic	600	180	14	120-275			100-210	80-180	
K	Gray cast iron (GG)	Ferritic		160	15						200-390
K	Gray cast iron (GG)	Pearlitic		250	16						160-300
K	Cast iron nodular (GGG)	Ferritic		180	17						130-250
K	Cast iron nodular (GGG)	Pearlitic		260	18						110-210
K	Malleable cast iron	Ferritic		130	19						210-330
K	Malleable cast iron	Pearlitic		230	20						130-280
N	Aluminium - wrought alloy	Not cureable		60	21						
N	Aluminium - wrought alloy	cured		100	22						
N	Aluminium cast alloyed <=12% Si	Not cureable		75	23						
N	Aluminium cast alloyed <=12% Si	Cured		90	24						
N	Aluminium cast alloyed >12% Si	High temp		130	25						
N	Copper alloys >1% Pb	Free cutting		110	26						
N	Copper alloys	Brass		90	27						
N	Copper alloys	Electrolitic copper		100	28						
N	Non metallic	Duro plastics, fiber plastics			29						
N	Non metallic	Hard rubber			30						
S	High temp alloys Fe based	Annealed		200	31	40-80			30-65		
S	High temp alloys Fe based	Cured		280	32	30-60			20-45		
S	High temp alloys Ni of Co based	Annealed		250	33	35-70			25-50		
S	High temp alloys Ni of Co based	Cured		350	34	30-60			20-40		
S	High temp alloys Ni of Co based	Cast		320	35	35-65			20-45		
S	Titanium Ti alloys				36	90-130			60-100		
S	Titanium Ti alloys	Alpha+beta alloys cured			37	35-70			25-55		
H	Hardened steel	Hardened		55HRC	38	40-75					
H	Hardened steel	Hardened		60HRC	39	30-55					
H	Chilled cast iron	Cast		400	40						
H	Cast iron nodular	Hardened		55HRC	41						

Steel Stainless steel Cast iron Nonferrous High temp. alloys Hardened steel

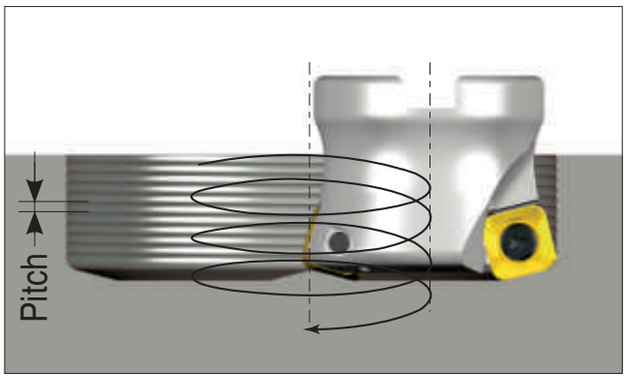
Programming technical data

1.Recommended ramping angle

- Straight ramping

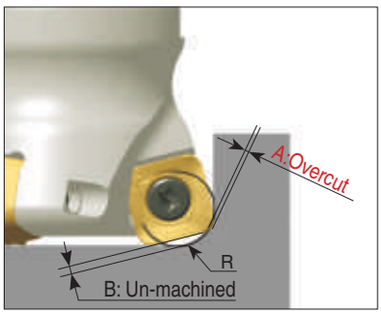


- Helical ramping



SDMT 1004-DM

Cutter Dia D1	Straight Ramp down			Helical Ramp down		
	Max. Ramp (A˚)	Max. ap (mm)	Min. Length (L)	Min. Dia (HD)	Max. Dia (HD)	Max. Pitch/Rev
25	2.3	1.2	10	36	45	1.2
32	2	1.2	17	57	59	1.2
40	1.5	1.2	25	66	75	1.2
50	1.3	1.2	35	86	95	1.2
63	1	1.2	48	112	121	1.2

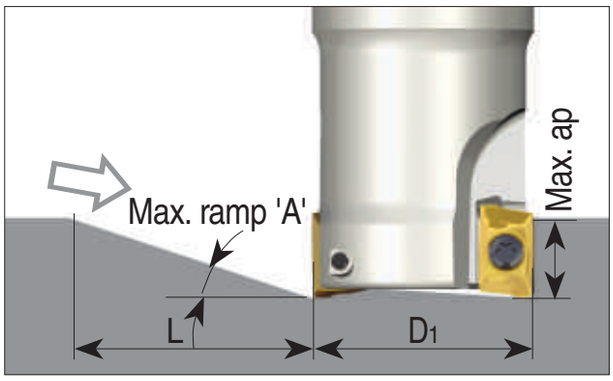


	Corner 'r' Program	A Over Cut	B Un- Machined Material Thickness
SDMT 1004-DM	1.75	0	0.46
	2	0	0.44
	2.25	0.02	0.42
	2.5	0.1	0.4
	3	0.27	0.36
	3.5	0.47	0.32

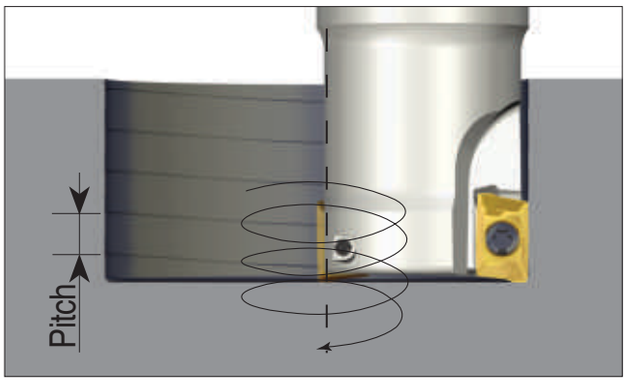
Programming technical data

1.Recommended ramping angle

- Straight ramping



- Helical ramping



APKT 16

Cutter Dia D1	Straight Ramp down			Helical Ramp down		
	Max. Ramp (A°)	Max. ap (mm)	Min. Length (L)	Min. Dia (HD)	Max. Dia (HD)	Max. Pitch/Rev
25	2.7	13	276	35		1.5
					50	3.7
32	1.7	13	438	49		1.6
					64	3.0
40	1.3	13	572	65		1.8
					80	2.9
50	0.9	13	827	85		1.7
					100	2.5
63	0.7	13	1064	111		1.9
					126	2.4
80	0.5	13	1489	145		1.8
					160	2.2
100	0.4	13	1862	185		1.9
					200	2.2

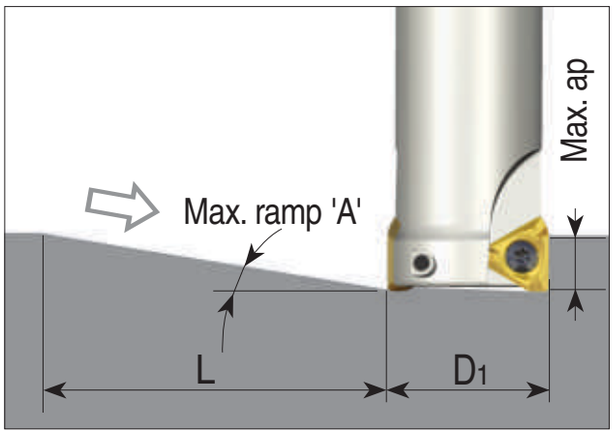
APKT 08

Cutter Dia D1	Straight Ramp down			Helical Ramp down		
	Max. Ramp (A°)	Max. ap (mm)	Min. Length (L)	Min. Dia (HD)	Max. Dia (HD)	Max. Pitch/Rev
16	3.3	6.5	112	23		1.3
					32	2.9
20	2.1	6.5	177	31		1.3
					40	2.3
25	1.5	6.5	248	41		1.3
					50	2.0
32	1	6.5	372	55		1.3
					64	1.7

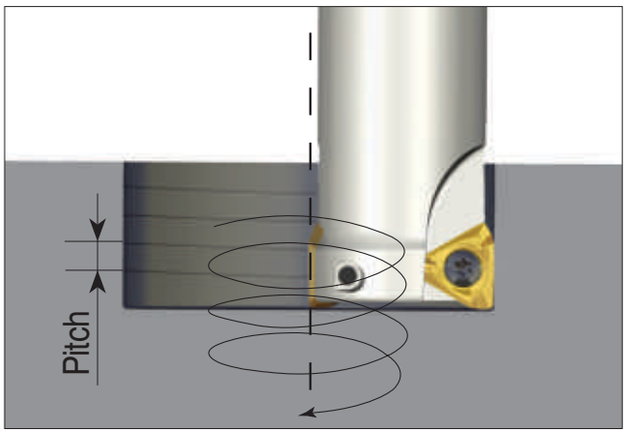
Programming technical data

1.Recommended ramping angle

- Straight ramping



- Helical ramping

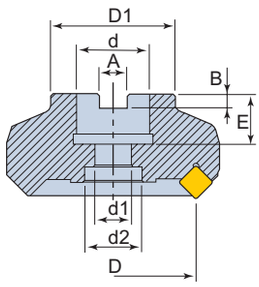


TOMX 10

Cutter Dia D1	Straight Ramp down			Helical Ramp down		
	Max. Ramp (A°)	Max. ap (mm)	Min. Length (L)	Min. Dia (HD)	Max. Dia (HD)	Max. Pitch/Rev
20	1.5	6	229	33		1.1
					40	1.6
25	1.2	6	286	43		1.2
					50	1.6
32	1	6	381	57		1.3
					64	1.6

Mounting Reference for Milling Cutter (Metric Abore Style)

Fig.A



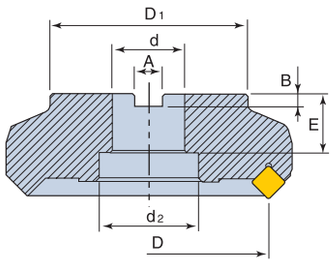


Fig.B

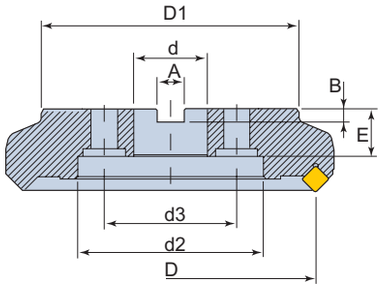


Fig.C

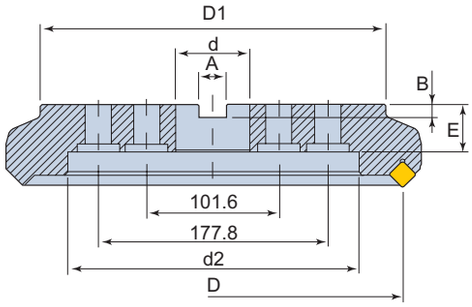


Fig.D

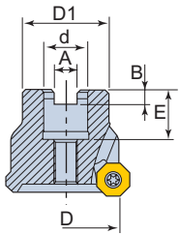
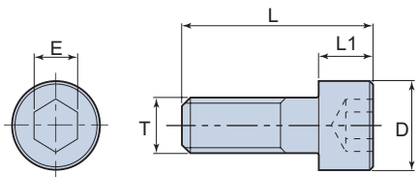


Fig.E

Dimension (mm)										Fig.
D	d	A	B	E	D1		d1	d2	d3	
					For Mold & Die	For General				
32	16	8.4	5.6	20	30	-	-	-	-	E
32	16	8.4	5.6	20	30	-	9	13.5	-	A
40	16	8.4	5.6	20	38	-	9	13.5	-	A
40	16	8.4	5.6	20	38	-	9	13.5	-	A
50	22	10.4	6.3	22	47	-	11	17	-	A
63	22	10.4	6.3	22	47	-	11	17	-	A
80	27	12.4	7	28	58	70	13	22	-	A
100	32	14.4	8	26	66	85	18	26	-	A
100	32	14.4	8	26	66	85	-	46	-	B
125	40	16.4	9	32	85	-	-	56	-	B
160	40	16.4	9	32	110	-	-	90	66.7	C
200	60	25.7	14	40	130	-	-	132	101.6	C
250	60	25.7	14	40	160	-	-	150	101.6	C
315	60	25.7	14	40	220	-	-	220	-	D

Mounting Bolt



SH Type

Designation	Dimension (mm)					Cutter Size
	D	L	L1	T	E	
SH M8X1.25X30(-C)	13	38	8	8	6	40
SH M10X1.5X30(-C)	16	40	10	10	8	50, 63
SH M12X1.75X35(-C)	18	47	12	12	10	80
SH M16X2X35(-C)	24	51	16	16	14	100

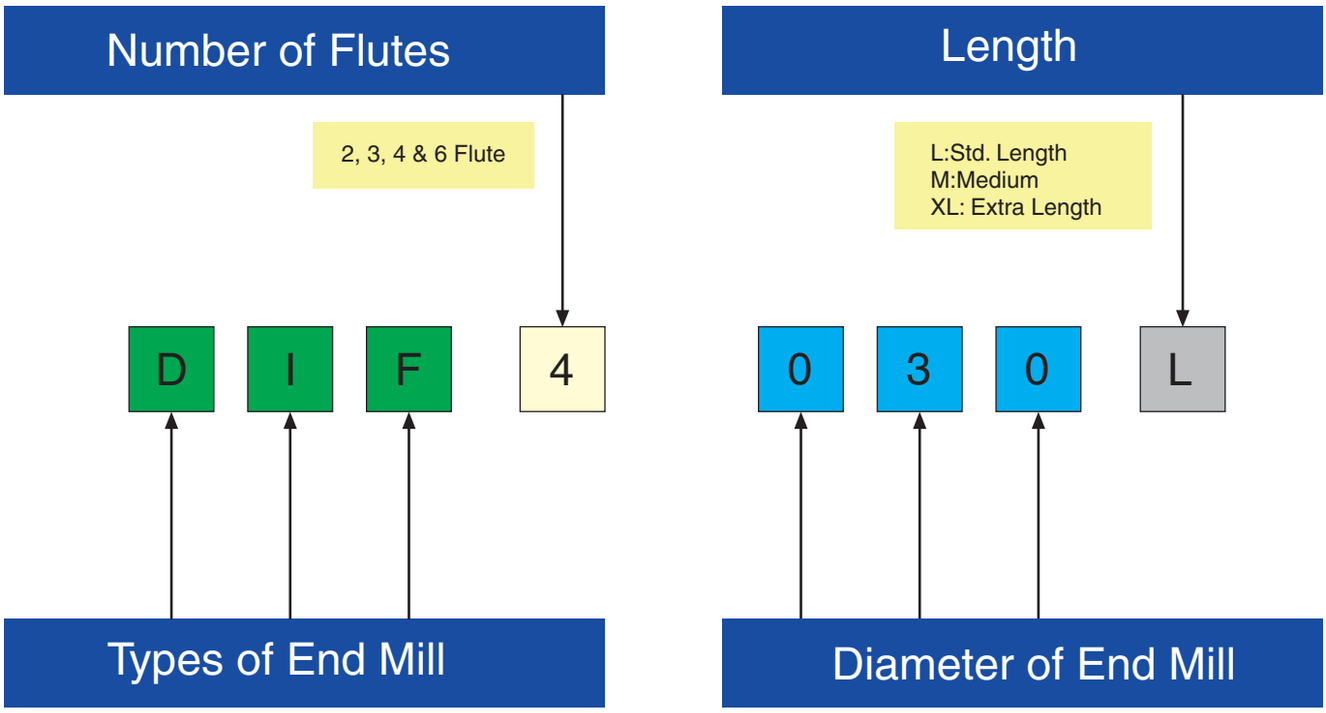
LH Type

Designation	Dimension (mm)					Cutter Size
	D	L	L1	T	E	
LH M10X1.5X25(-C)	16	31.5	6.5	10	8	50, 63
LH M12X1.75X30(-C)	18	36.9	6.9	12	10	80
LH M16X2X35(-C)	24	45	16	16	14	100

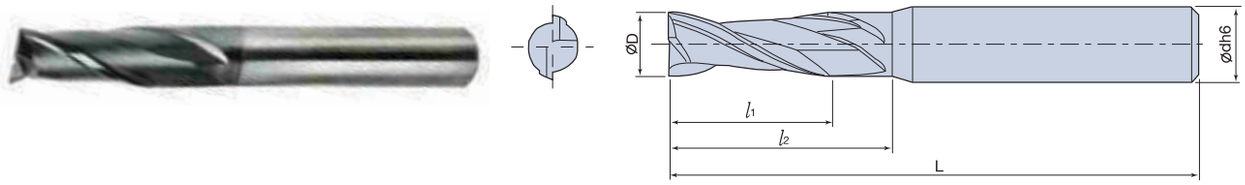
- "-C": Bolt with hole for internal coolant

EndMill

Designation System



2 Flute Square Endmill 30 °Helix



DIF2000M (Medium Type)

Designation	Dimension(mm)					Grade	
	D	L	L1	L2	d	DP5025	DP5015
DIF2M010-3	1	38	4	6.5	3	●	○
DIF2M015-3	1.5	38	4.5	7.5	3	●	○
DIF2M020-3	2	38	6	9	3	●	○
DIF2M025-3	2.5	38	9.5	13	3	●	○
DIF2M030	3	38	12	16.5	3	●	○
DIF2M040	4	50	14	20	4	●	○
DIF2M060	6	50	16	23.5	6	●	○
DIF2M080	8	63	20	30.5	8	●	○
DIF2M100	10	75	22	35.5	10	●	○
DIF2M120	12	75	25	40.5	12	●	○
DIF2M160	16	89	32	47.5	16	●	○

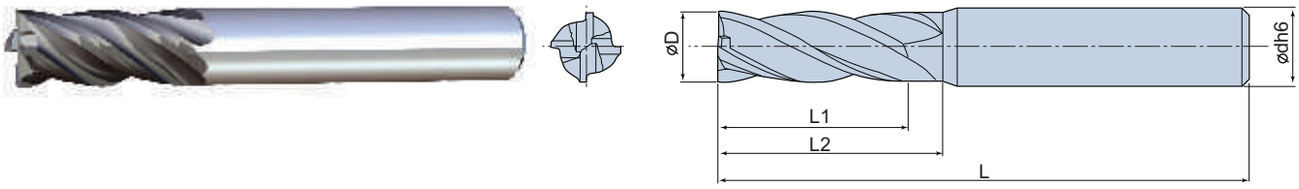
DIF2000L (Long Type)

Designation	Dimension(mm)					Grade	
	D	L	L1	L2	d	DP5025	DP5015
DIF2L030-4	3	75	12	16.5	4	●	○
DIF2L040	4	75	16	22	4	●	○
DIF2L060	6	75	20	27.5	6	●	○
DIF2L080	8	100	20	30.5	8	●	○
DIF2L100	10	100	25	38.6	10	●	○
DIF2L120	12	100	30	45.5	12	●	○

DIF2000XL (Extra Long Type)

Designation	Dimension(mm)					Grade	
	D	L	L1	L2	d	DP5025	DP5015
DIF2XL030-4	3	100	12	16.5	4	●	○
DIF2XL040	4	100	16	22	4	●	○
DIF2XL060	6	100	20	27.5	6	●	○
DIF2XL080	8	120	20	30.5	8	●	○
DIF2XL100	10	120	25	38.5	10	●	○
DIF2XL120	12	120	30	45.5	12	●	○

4 Flute Square Endmill 30° Helix



DIF4000 M (Medium Type)

Designation	Dimension(mm)					Grade	
	D	L	L1	L2	d	DP5025	DP5015
DIF4M010-3	1	38	4	6.5	3	●	○
DIF4M015-3	1.5	38	4.5	7.5	3	●	○
DIF4M020-3	2	38	6	8.5	3	●	○
DIF4M025-3	2.5	38	9.5	11.5	3	●	○
DIF4M030	3	38	12	13.5	3	●	○
DIF4M040	4	50	14	16	4	●	○
DIF4M060	6	50	19	22	6	●	○
DIF4M080	8	63	20	23	8	●	○
DIF4M100	10	75	22	26	10	●	○
DIF4M120	12	75	25	29	12	●	○
DIF4M160	16	89	32	37	16	●	○

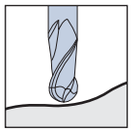
DIF4000L (Long Type)

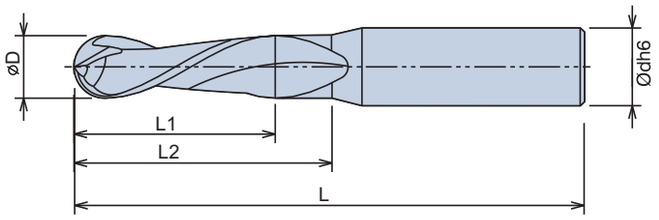
Designation	Dimension(mm)					Grade	
	D	L	L1	L2	d	DP5025	DP5015
DIF4L030-4	3	75	12	14.5	4	●	○
DIF4L040	4	75	16	17	4	●	○
DIF4L060	6	75	20	22.5	6	●	○
DIF4L080	8	100	20	22	8	●	○
DIF4L100	10	100	25	28	10	●	○
DIF4L120	12	100	30	33	12	●	○
DIF4L160	16	150	75	80	16	●	○

DIF4000XL (Extra Long Type)

Designation	Dimension(mm)					Grade	
	D	L	L1	L2	d	DP5025	DP5015
DIF4XL030-4	3	100	12	15	4	●	○
DIF4XL040	4	100	16	19	4	●	○
DIF4XL060	6	100	20	23	6	●	○
DIF4XL080	8	120	20	23	8	●	○
DIF4XL100	10	120	25	28	10	●	○
DIF4XL120	12	120	30	33	12	●	○

2 Flute Ball Endmill 30° Helix





DIB2000 M (Medium Type)

Designation	Dimension(mm)					Grade	
	D	L	L1	L2	d	DP5025	DP5015
DIB2M010-3	1	38	4	7	3	●	○
DIB2M015-3	1.5	38	4.5	9	3	●	○
DIB2M020-3	2	38	6	9.5	3	●	○
DIB2M025-3	2.5	38	9.5	14	3	●	○
DIB2M030	3	38	12	16	3	●	○
DIB2M040	4	50	14	20	4	●	○
DIB2M060	6	50	19	29	6	●	○
DIB2M080	8	63	20	31.5	8	●	○
DIB2M100	10	75	22	34	10	●	○
DIB2M120	12	75	25	39.5	12	●	○

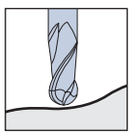
DIB2000 L (Long Type)

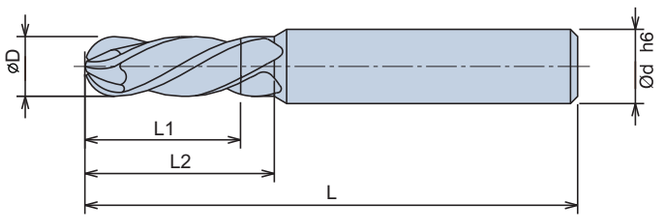
Designation	Dimension(mm)					Grade	
	D	L	L1	L2	d	DP5025	DP5015
DIB2L030-4	3	75	8	14	4	●	○
DIB2L030-6	3	75	8	14	6	●	○
DIB2L040	4	75	11	18	4	●	○
DIB2L040-6	4	75	11	18	6	●	○
DIB2L060	6	75	13	22	6	●	○
DIB2L080	8	100	16	27	8	●	○
DIB2L100	10	100	16	30	10	●	○
DIB2L120	12	100	25	39	12	●	○

DIB2000XL (Extra Long Type)

Designation	Dimension(mm)					Grade	
	D	L	L1	L2	d	DP5025	DP5015
DIB2XL030-4	3	100	8	15	4	●	○
DIB2XL030-6	3	100	8	14	6	●	○
DIB2XL040	4	100	11	18	4	●	○
DIB2XL040-6	4	100	11	18	6	●	○
DIB2XL060	6	100	13	22	6	●	○
DIB2XL080	8	120	20	31	8	●	○
DIB2XL100	10	120	25	39	10	●	○
DIB2XL120	12	120	30	44	12	●	○

4 Flute Ball Endmill 30° Helix





DIB4000 M (Medium Type)

Designation	Dimension(mm)					Grade	
	D	L	L1	L2	d	DP5025	DP5015
DIB4M010-3	1	38	4	7	3	●	○
DIB4M015-3	1.5	38	4.5	7.5	3	●	○
DIB4M020-3	2	38	6	9	3	●	○
DIB4M025-3	2.5	38	9.5	12.5	3	●	○
DIB4M030	3	38	12	14	3	●	○
DIB4M040	4	50	14	17	4	●	○
DIB4M060	6	50	19	22	6	●	○
DIB4M080	8	63	20	23	8	●	○
DIB4M100	10	75	22	27	10	●	○
DIB4M120	12	75	25	31	12	●	○

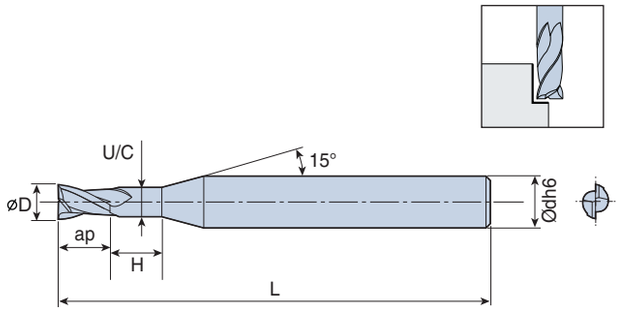
DIB4000 L (Long Type)

Designation	Dimension(mm)					Grade	
	D	L	L1	L2	d	DP5025	DP5015
DIB4L030-4	3	75	8	10	4	●	○
DIB4L030-6	3	75	8	10	6	●	○
DIB4L040	4	75	11	13	4	●	○
DIB4L040-6	4	75	11	13	6	●	○
DIB4L060	6	75	13	15	6	●	○
DIB4L080	8	100	16	18	8	●	○
DIB4L100	10	100	16	18	10	●	○
DIB4L120	12	100	25	27	12	●	○

DIB4000XL (Extra Long Type)

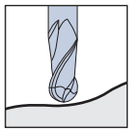
Designation	Dimension(mm)					Grade	
	D	L	L1	L2	d	DP5025	DP5015
DIB4XL030-4	3	100	8	10	4	○	○
DIB4XL030-6	3	100	8	10	6	○	○
DIB4XL040	4	100	11	13	4	○	○
DIB4XL040-6	4	100	11	13	6	○	○
DIB4XL060	6	100	13	15	6	○	○
DIB4XL080	8	120	20	22	8	○	○
DIB4XL100	10	120	25	27	10	○	○
DIB4XL120	12	120	30	32	12	○	○

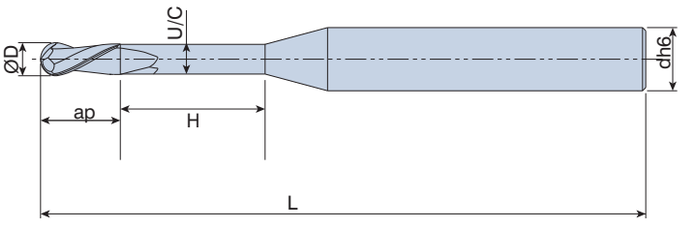
2 Flute Flat Endmill - DRIF MILL



Designation	Dimension(mm)						Grade	
	D	OAL	U/C	ap	H	d	DP5025	DP5015
DRF20806 DP5015	0.8	45	0.75	1.2	4.8	4		●
DRF20808 DP5015	0.8	45	0.75	1.2	6.8	4		●
DRF21006 DP5015	1	45	0.97	1.5	4.5	4		●
DRF21008 DP5015	1	45	0.95	1.5	6.5	4		●
DRF21010 DP5015	1	45	0.95	1.5	8.5	4		●
DRF21012 DP5015	1	45	0.93	1.5	10.5	4		●
DRF21016 DP5015	1	45	0.93	1.5	14.5	4		●
DRF21208 DP5015	1.2	45	1.15	1.8	6.2	4		●
DRF21212 DP5015	1.2	45	1.13	1.8	10.2	4		●
DRF21412 DP5015	1.4	45	1.33	2.1	9.9	4		●
DRF21506 DP5015	1.5	45	1.45	2.3	3.7	4		●
DRF21508 DP5015	1.5	45	1.45	2.3	5.7	4		●
DRF21510 DP5015	1.5	45	1.45	2.3	7.7	4		●
DRF21512 DP5015	1.5	45	1.43	2.3	9.7	4		●
DRF21516 DP5015	1.5	50	1.41	2.3	13.7	4		●
DRF21520 DP5015	1.5	50	1.41	2.3	17.7	4		●
DRF21612 DP5015	1.6	45	1.53	2.4	9.6	4		●
DRF21812 DP5015	1.8	45	1.73	2.7	9.3	4		●
DRF22006 DP5015	2	45	1.93	3	3	4		●
DRF22008 DP5015	2	45	1.93	3	5	4		●
DRF22010 DP5015	2	45	1.93	3	7	4		●
DRF22012 DP5015	2	45	1.93	3	9	4		●
DRF22016 DP5015	2	50	1.91	3	13	4		●
DRF22512 DP5015	2.5	45	2.4	3.7	18.3	4		●
DRF22516 DP5015	2.5	50	2.4	3.7	12.3	4		●
DRF23014 DP5015	3	50	2.85	4.5	9.5	6		●
DRF23018 DP5015	3	55	2.85	4.5	13.5	6		●

2 Flute Ball Endmill - DRIB MILL





Designation	Dimension(mm)						Grade	
	D	L	U/C	ap	H	d	DP5025	DP5015
DRB20403 DP5015	0.4	45	0.36	0.6	2.4	4		●
DRB20504 DP5015	0.5	45	0.45	0.7	3.3	4		●
DRB20508 DP5015	0.5	45	0.45	0.7	7.3	4		●
DRB20604 DP5015	0.6	45	0.45	0.9	3.1	4		●
DRB20606 DP5015	0.6	45	0.55	0.9	5.1	4		●
DRB20804 DP5015	0.8	45	0.75	1.2	2.8	4		●
DRB20806 DP5015	0.8	45	0.75	1.2	4.8	4		●
DRB20808 DP5015	0.8	45	0.75	1.2	6.8	4		●
DRB21006 DP5015	1	45	0.97	1.5	4.5	4		●
DRB21008 DP5015	1	45	0.95	1.5	6.5	4		●
DRB21010 DP5015	1	45	0.93	1.5	8.5	4		●
DRB21012 DP5015	1	45	0.93	1.5	10.5	4		●
DRB21016 DP5015	1	45	0.93	1.5	14.5	4		●
DRB21208 DP5015	1.2	45	1.15	1.8	6.2	4		●
DRB21212 DP5015	1.2	45	1.13	1.8	10.2	4		●
DRB21412 DP5015	1.4	45	1.33	2.1	9.9	4		●
DRB21508 DP5015	1.5	45	1.45	2.3	5.7	4		●
DRB21510 DP5015	1.5	50	1.41	2.3	7.7	4		●
DRB21512 DP5015	1.5	45	1.43	2.3	9.7	4		●
DRB21516 DP5015	1.5	50	1.41	2.3	13.7	4		●
DRB21520 DP5015	1.5	50	1.41	2.3	17.7	4		●
DRB21616 DP5015	1.6	50	1.51	2.4	13.6	4		●
DRB21816 DP5015	1.8	50	1.71	2.7	13.3	4		●
DRB22006 DP5015	2	45	1.95	3	3	4		●
DRB22008 DP5015	2	45	1.95	3	5	4		●
DRB22010 DP5015	2	45	1.95	3	7	4		●
DRB22012 DP5015	2	45	1.95	3	9	4		●
DRB22016 DP5015	2	50	1.91	3	13	4		●
DRB22020 DP5015	2	55	1.89	3	17	4		●
DRB23010 DP5015	3	55	2.85	1.5	5.5	6		●
DRB23012 DP5015	3	55	2.85	4.5	7.5	6		●
DRB23016 DP5015	3	55	2.85	4.5	11.5	6		●
DRB23020 DP5015	3	60	2.85	4.5	15.5	6		●
DRB24016 DP5015	4	60	3.85	6	10	6		●
DRB24020 DP5015	4	65	3.85	6	14	6		●

Cutting Parameters for Solid Carbide End Mill

TABLE - 1

ISO	Material	Strength [N/mm^2]	Correction factor [x fz]	Rough Mill and Slot Milling [Vc-m/min]	Shoulder Milling and Profile Milling [Vc-m/min]
P	General Steel	<800	1.2	100-150	200-240
	Free Cutting Steel	<800	1.2	100-150	200-240
	Case Hardened Steel - Not Alloyed	<800	1.2	100-150	200-240
	Alloyed Case Hardened Steel	<1000	1	90-120	170-200
	Tempering Steel - Not Alloyed	<850	1.2	90-130	180-200
		<1000	1	60-90	100-140
	Tempering Steel - Alloyed	<800	1.2	90-120	170-200
		<1300	0.8	60-80	90-120
	Steel Castings / Forged	<850	1.2	70-100	150-180
	Nitriding Steel	<1000	1	60-90	100-140
		<1200	0.8	60-80	90-120
	Bearing Steel	<1200	0.8	60-90	100-140
	Spring Steel	<1200	0.8	40-60	90-120
	High Speed Steel	<1300	0.8	40-50	40-50
	Cold Working Steel	<1300	0.8	60-70	90-100
	Hot Working Steel	<1300	0.8	60-70	90-100
M	Stainless Steel Cast - with Sulphur	<850	1	60-80	85-110
	Stainless Steel - Ferritic	<750	1	50-70	85-110
	Stainless Steel - Martensitic	<900	1	40-60	70-90
	Stainless Steel - Ferritic / Martensitic	<1100	0.9	30-40	60-80
	Stainless Steel - Austenitic / Ferritic	<850	1	50-70	80-110
	Stainless Steel - Austenitic	<750	1	60-80	80-110
	Heat Resistant Steel	<1100	0.9	30-40	60-80
K	Grey Cast Iron - Lamillar graphite	100-350	1	80-100	140-160
		300-1000	1	70-90	120-150
	Spheroidal Cast Iron	300-500	1	80-100	140-160
		550-800	1	70-90	120-150
	White Cast Iron - Tempered	350-450	1	80-100	140-160
		500-650	1	70-90	120-150
	Black Cast Iron - Tempered	350-450	1	80-100	140-160
		500-700	0.8	70-90	120-150

Flat End Mills Cutting Parameters

TABLE - 2

Operation : Shoulder Milling - Feed/tooth Chart					
Diameter D(mm)	Medium Machining		Rough Machining		
	Axial Depth 1.5xD		Axial Depth 1.5xD		
	Radial 0.1xD	Radial 0.2xD	Radial 0.4xD	Radial 0.6xD	Radial 0.8xD
1	0.003	0.002	0.001	0.001	0.001
2	0.008	0.005	0.004	0.003	0.002
3	0.012	0.008	0.006	0.005	0.004
4	0.014	0.01	0.008	0.006	0.005
5	0.017	0.013	0.01	0.008	0.006
6	0.02	0.015	0.012	0.009	0.007
8	0.027	0.02	0.016	0.013	0.01
10	0.033	0.025	0.02	0.019	0.012
12	0.04	0.03	0.024	0.022	0.015
14	0.046	0.035	0.028	0.026	0.017
16	0.053	0.04	0.032	0.029	0.02

Flat End Mills Cutting Parameters

TABLE - 3

Operation : Slot Milling - Feed / tooth Chart		
Diameter D(mm)	Medium Depth	Higher Depth
	Axial Depth 0.5xD	Axial Depth 1xD
	Radial 1xD	Radial 1xD
1	0.002	0.001
2	0.004	0.003
3	0.007	0.005
4	0.009	0.006
5	0.011	0.007
6	0.013	0.008
8	0.018	0.012
10	0.022	0.014
12	0.03	0.02
14	0.032	0.021
16	0.036	0.023

Ball Nose End Mills Cutting Parameters

TABLE - 4

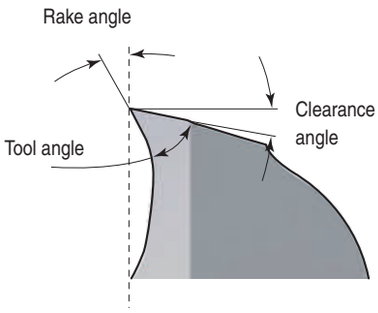
Operation : Profile Machining - Feed/tooth Chart			
Diameter D(mm)	Medium Machining		
	Axial Depth 0.1xD	Axial Depth 0.05xD	
	Radial 0.2xD	2 Flute	4 Flute
2	0.015	0.01	0.005
3	0.03	0.02	0.015
4	0.04	0.03	0.03
5	0.06	0.05	0.05
6	0.07	0.06	0.06
8	0.1	0.08	0.07
10	0.12	0.1	0.08
12	0.15	0.12	0.09
16	0.18	0.15	0.1

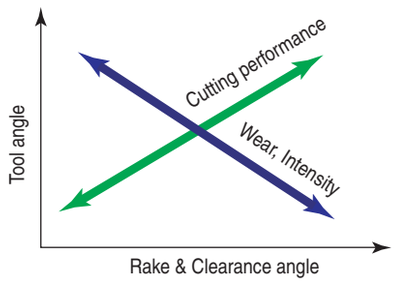
Notes:
Plunging Operation
Reduce Feed rate Vf by 90% of regular value

Profile and Contour Milling
1. ap: 1xD Increase feed per tooth values of Table-4 by 10%
2. ap: 2xD Reduce feed per tooth values of Table-4 by 30%
3. Reduce feed per tooth values by 20% for uncoated tools

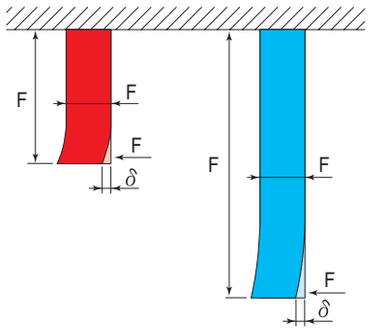
Example to Derive the actual Feed per tooth
For Medium machining of Radial Depth : 0.1xD
on General Steel with diameter10 mm end mill use fz value from Table : 2 times the correction factor from Table : 1
i.e. 0.033x1.2 = 0.039

Feature of cutting angle





Effect of cutting length

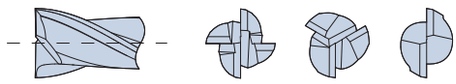


It is necessary to keep the tool overhang to the minimum possible.
Rigidity can vary along the cutter length or the length of cut by a factor of three.
The shorter the overhang, the better the rigidity and smaller the deflection

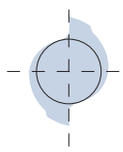
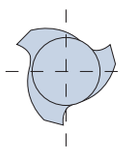
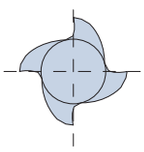
$$\delta = \frac{P \cdot L^3}{3 \cdot E \cdot I}$$

- δ : Deflection of end mill
- P : Cutting resistance
- L : Overhang
- E : Modulus of elasticity
- I : Moment of inertia

Features of end mills type

Type	Shape	Feature
Square type without center hole		Used for general machining including - slotting, side-milling, boring, plunging
Square type with center hole		Used for general machining including - slotting, side-milling, boring
Square type with corner radius		Used for high speed milling and radius milling
Ball type		Used for contour or copy milling

Number of flutes and section area (based on Ø10)

No. of cutting edges	2	3	4
Section shape			
Core diameter	60%	60%	60%
Cross section mass	42 mm^2	44 mm^2	47 mm^2
Section ratio	53.50%	56%	60%

2 flute design
- Large chip gullet
- Easy chip evacuation
- Recommended for slot milling applications
- Strong design for heavy duty milling applications

3 flute design
- Large section area - better rigidity than 2 flute cutters
- 3 flutes provide high quality surface finish

4 flute design
- 4 flute and multi flute cutters provide highest rigidity
- Provides high quality surface finish
- Recommended for profiling, side milling and shallow slotting

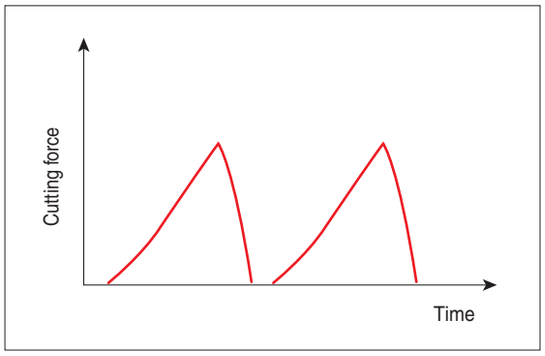
Helix angle effects

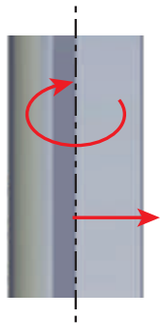
Helix angle	Cutting torque	Bending force	Surface finish	Rake wear	Relief wear	Breakage
Low	↓	↓	↓	↑	↑	↓
High	↑	↑	↑	↓	↓	↑

Helix angle

Advantage of helix flute : Increase feed rate and depth of cut by low feed force

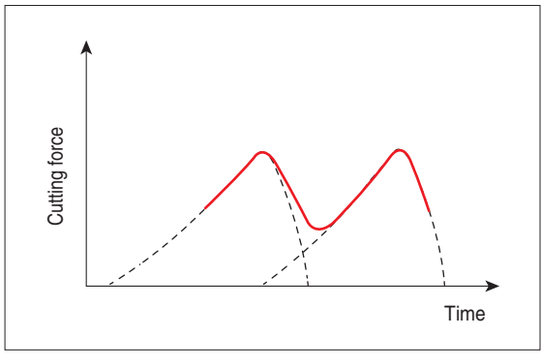
Straight flute





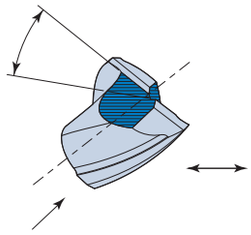
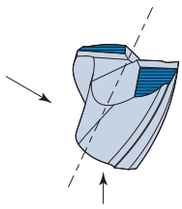
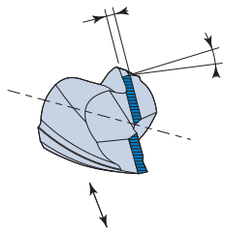
- High fluctuate of cutting force
- Interrupted machining

Helix flute



- Low fluctuate of cutting force

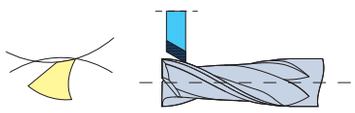
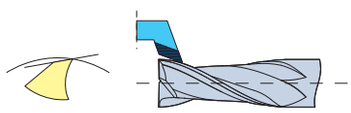
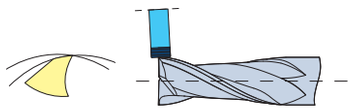
Regrinding of end teeth

Gash	2nd relief	1st relief
		
Use plain wheel Gash angle: 30 - 45º	Use cup wheel Relief angle: 15 - 25º	Use cup wheel Relief angle: 6 - 15º Width: 0.5 - 2mm

Evaluation reference for regrinding

Application	Dia. of end mill (mm)	Max. flank wear
Finishing	- Ø10 Ø11 - Ø30 Ø31 - Ø50	0.05 - 0.10 0.10 - 0.25 0.20 - 0.35
Roughing	- Ø10 Ø11 - Ø30 Ø31 - Ø50	0.08 - 0.15 0.15 - 0.35 0.30 - 0.45

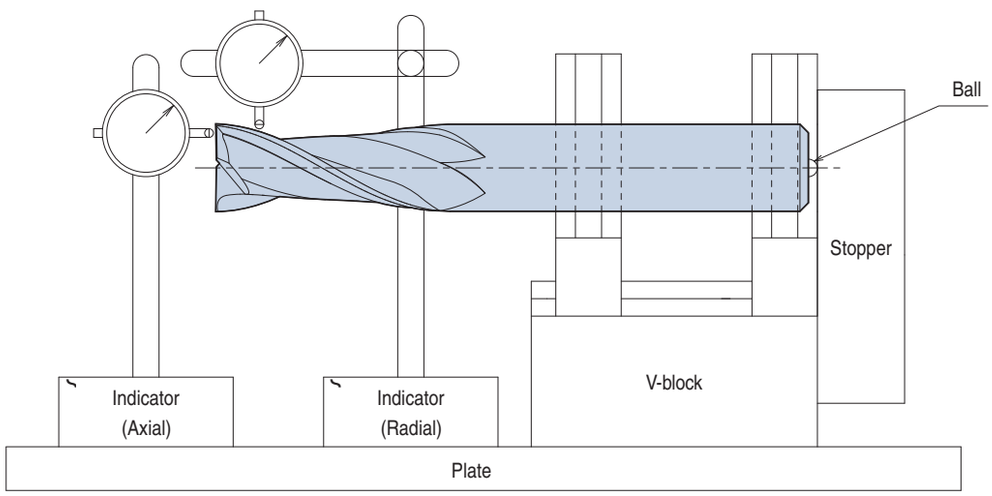
Regrinding of peripheral relief angle

Concave	Flat	Eccentric
		
For precise outer diameter of end mill Use flat wheel	Good machinability 2nd relief angle required For taper of ball end mill	Reliable cutting edge & excellent surface finish Recommended method

Inspection of cutter run-outs & surface roughness

Solid carbide cutters perform best when the cutting edge of each tooth runs true with the cutter axis.
When each tooth runs true the work load will be shared and this will optimize performance.
Radial and axial run out should be checked using a DTI after each regrind.
Put the cutter in a V-block and measure both the peripheral and end tooth run out,
also ensure that the cutter is rotated so that each tooth is checked in several positions.
If the cutter has centre holes, these can be used to check the cutter between centres.
Please refer to the tables on each page of this catalogue for tolerances and permissible run out.

Use a "Profilemeter" to check ground surface finish - maximum surface roughness permissible
is Rmax6.3. Rough or uneven surface finish of a ground cutter can effect the surface finish of the
workpiece and cause premature failure and chipping of the helical cutting edge.



Parameters for end mill operation

Factor	Instruction and advice
Rigidity of machine	Use a rigid machine whenever possible If rigidity is poor - adjust cutting conditions accordingly
Chuck and end mill run-out	Use rigid and high quality chucking system Check and minimise end mill run-out
Workpiece clamping	Ensure workpiece is firmly and securely clamped If this cannot be achieved or if vibrations occur - reduce cutting conditions accordingly
Cutting fluid and chip evacuation	Maximise coolant flow whenever possible Always use flood coolant for heavy roughing applications Please refer to manual for (dry machining conditions - HSM applications) - on hardened steels Use “air blow” for HSM applications Always ensure good evacuation of chips from the working area
End mill selection	Please ensure the correct cutter is selected - see technical data for detailed information and selection of correct cutter for task, application and material to be machined Refer to page 115 for more details
Cutting conditions	Please refer to recommended cutting condition data in this catalogue The recommended cutting conditions always refer to optimum conditions - if machine rigidity or work piece clamping is not ideal - these cutting conditions should be altered accordingly
Overhang of end mill from spindle nose	Always minimise the cutter overhang to the minimum possible If cutter overhang cannot be reduced - cutting conditions should be altered accordingly

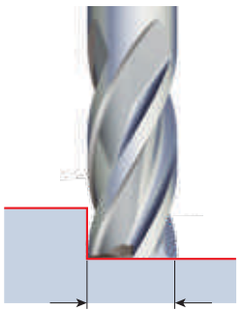
Actual diameter of ball nose end mill

Diameter		Depth of cut (ap, mm)						
Radius	Dia	0.01	0.02	0.03	0.04	0.05	0.08	0.1
0.1	0.2	0.087	0.12	0.143	0.16	0.173	0.196	0.2
0.2	0.4	0.125	0.174	0.211	0.24	0.265	0.32	0.35
0.3	0.6	0.154	0.215	0.262	0.299	0.332	0.41	0.45
0.4	0.8	0.178	0.25	0.304	0.349	0.387	0.48	0.53
0.5	1	0.199	0.28	0.341	0.392	0.436	0.54	0.6
1	2	0.282	0.398	0.486	0.56	0.624	0.78	0.87
1.5	3	0.346	0.488	0.597	0.688	0.768	0.97	1.08
2	4	0.399	0.564	0.69	0.796	0.889	1.12	1.25
2.5	5	0.447	0.631	0.722	0.891	0.995	1.25	1.4
3	6	0.489	0.692	0.846	0.977	1.091	1.38	1.54
4	8	0.565	0.799	0.978	1.129	1.261	1.59	1.78
5	10	0.632	0.894	1.094	1.262	1.411	1.78	1.99
6	12	0.693	0.979	1.198	1.383	1.546	1.95	2.18
7	14	0.748	1.058	1.295	1.495	1.67	2.11	2.36
8	16	0.8	1.131	1.384	1.598	1.786	2.26	2.52
9	18	0.848	1.199	1.468	1.695	1.895	2.39	2.68
10	20	0.894	1.264	1.548	1.787	1.997	2.52	2.82

Diameter		Depth of cut (ap, mm)							
Radius	Dia	0.15	0.2	0.3	0.5	0.8	1	2	3
0.1	0.2								
0.2	0.4	0.39	0.4						
0.3	0.6	0.52	0.57	0.6					
0.4	0.8	0.62	0.69	0.77					
0.5	1	0.71	0.8	0.92	1				
1	2	1.05	1.2	1.43	1.73	1.96	2		
1.5	3	1.31	1.5	1.8	2.24	2.65	2.83		
2	4	1.52	1.74	2.11	2.65	3.2	3.46	4	
2.5	5	1.71	1.96	2.37	3	3.67	4	4.9	
3	6	1.87	2.15	2.62	3.32	4.08	4.47	5.66	6
4	8	2.17	2.5	3.04	3.87	4.8	5.29	6.93	7.75
5	10	2.43	2.8	3.41	4.36	5.43	6	8	9.17
6	12	2.67	3.07	3.75	4.8	5.99	6.63	8.94	10.39
7	14	2.88	3.32	4.05	5.2	6.5	7.21	9.8	11.49
8	16	3.08	3.56	4.34	5.57	6.97	7.75	10.58	12.49
9	18	3.27	3.77	4.61	5.92	7.42	8.25	11.31	13.42
10	20	3.45	3.98	4.86	6.24	7.84	8.72	12	14.28

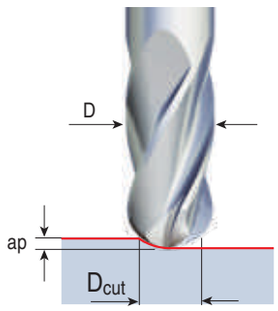
Calculation of actual diameter

Flat end mill



D cut = Diameter

Ball end mill



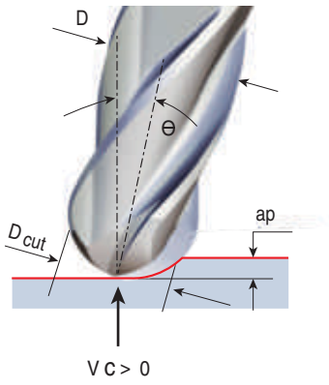
D cut ≠ Diameter

$$D_{cut} = 2x \sqrt{ap \times (D-ap)}$$

Calculation of actual diameter by the tool inclined

- This machining more efficient by eliminating cutting at nearly zero speed
- Tool life improves and better chip evacuation
- Excellent surface finish

$$D_{cut} = D \times \sin[\Theta \pm \cos^{-1}(D-2ap/D)]$$

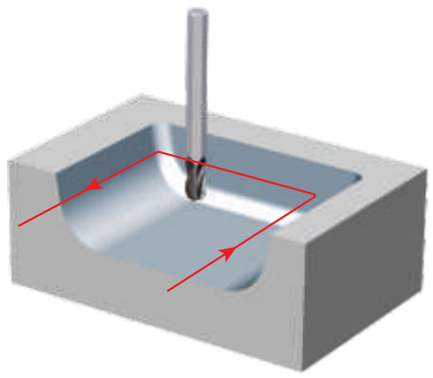


Operating recommendations

Contour milling

Recommended method

- Controlled easily by a continuous cut
- Enables milling with high speed(HSM) and feed
- Longer tool life
- Higher productivity
- Increased security



Copy milling

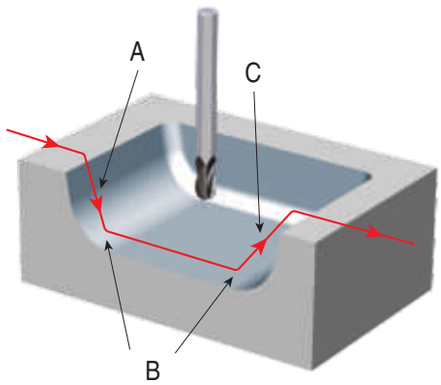
Conventional method

- Increased cutting force(Specially point B)
- Decrease feed
- Short tool life
- High productivity

Point A: poor chip evacuation

Point B: May cause chipping and vibration

Point C: Increased contact area



Problem	Cause	Solution
Chipping	- Sharp cutting edge	- Chamfer or round the cutting edge to reduce sharp edge
	- Chatter/Vibration	- Reduce RPM
	- Low cutting speed	- Increase RPM - or change to a high helix end mill
	- Excessive overhang	- Reduce tool overhang to minimum possible
	- Unreliable chucking of end mill	- Check run out and change to a more precise system
	- Unstable workpiece	- Try to improve stability and clamping or reduce cutting conditions
Wear	- High cutting speeds	- Check the cutting data - and select the recommended conditions
	- Low feedrate	- Check the cutting data - and select the recommended conditions
	- Incorrect helix on end mill	- Check the recommended cutter for the material being machined
	- Up milling	- Change to Down Mill machining
	- Hard material	- Replace end mill with correct style as recommended or change to TiAlN coated cutter
	- Poor chip evacuation	- Use air-blast or flood coolant to remove chips or replace cutter with a lower number of flutes.
	- Material with low heat conductivity - Too small primary relief angle	- Increase feedrate - use a sharp edged end mill - Change to large relief angle
Tool breakage	- Excessive chipping or wear	- Regrind cutter or replace
	- Excessive feedrate	- Reduce feedrate to recommended conditions
	- Excessive cutting forces	- Check conditions - reduce/increase RPM or feed to the recommended conditions
	- Excessive overhang	- Reduce to minimum possible
Surface finish	- Chatter	- Check recommended data and change cutting conditions
	- Built-up edge	- Increase speed - use higher helix cutter or climb mill and apply flood coolant
	- Tool wear	- Regrind or replace cutter
	- High feed - low speed	- Reduce feedrate and increase RPM to recommended conditions
Accuracy of finished workpiece	- Cutting condition	- Start with the recommended cutting conditions
	- Excessive feedrate	- Reduce as required to achieve the required surface finish and part accuracy
	- Number of flutes	- Replace high flute number end mill
	- Tool deflection	- Use large diameter and short fluted tool and minimize overhang
	- Poor rigidity	- Change machine holder or cutting conditions
Burrs	- Too much wear on primary relief	- Regrind at earlier stage
	- Incorrect conditions	- Correct milling conditions
	- Improper cutting angle	- Change to correct cutting angle


DDrill

Designation System of DEC-Drill

1. Drill Diameter

- 160 → 16.0 mm
- 210 → 21.0 mm

2. Shank Length

Integers to be preceded by 0

- 25 → ∅ 25 mm
- 45 → ∅ 45 mm

3. Drilling Depth

- 2 → 2 X D (dia.)
- 3 → 3 X D (dia.)
- 4 → 4 X D (dia.)

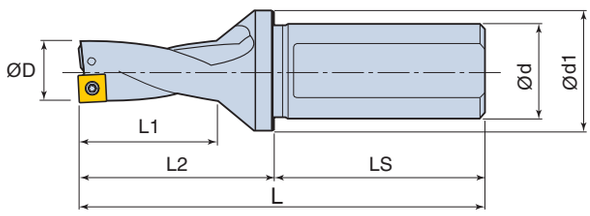
DEC D160S25 – 2D

Drill Program

DEC-Drill	• Indexable drill • Internal coolant • Diameter D12.5-D41mm • Drilling Depth : 2XD, 3XD, 4XD*	

* Note : For L/D 4 and drill sizes below 15.5, please send your enquires. They are offered as non standard solution.

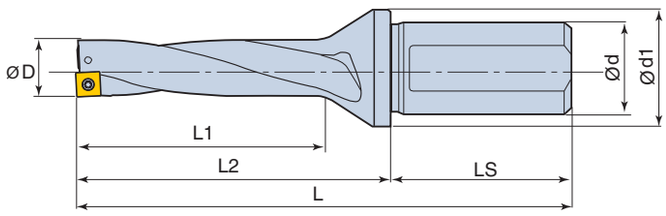
DEC-Drill Drilling Depth: 2XD



Designation	Dimension(mm)							Insert	Component			Torque (N•cm)
	D	d	d_1	LS	L_2	L_1	L		Screw	Wrench	Plug	
DEC D155S25Y-2D	15.5	25	32	56	52	32	108	SPMX 06T204 MG	DS 22052I/HG	DTDW7	DSL 25	80-100
DEC D160S25Y-2D	16	25	32	56	52	32	108					80-100
DEC D165S25Y-2D	16.5	25	32	56	54	34	110					80-100
DEC D170S25Y-2D	17	25	32	56	54	34	110					80-100
DEC D175S25Y-2D	17.5	25	32	56	57	36	113					80-100
DEC D180S25Y-2D	18	25	32	56	57	36	113					80-100
DEC D185S25Y-2D	18.5	25	32	56	59	38	115					80-100
DEC D190S25Y-2D	19	25	32	56	59	38	115					80-100
DEC D195S25Y-2D	19.5	25	32	56	63	40	119					80-100
DEC D200S25Y-2D	20	25	32	56	63	40	119					80-100
DEC D205S25Y-2D	20.5	25	32	56	65	42	121					80-100
DEC D210S25Y-2D	21	25	32	56	65	42	121					80-100
DEC D215S25Y-2D	21.5	25	32	56	67	44	123					80-100
DEC D220S25Y-2D	22	25	32	56	67	44	123	SPMX 070308 MG	DS 25064I	DTDW8	DSL 25	100-120
DEC D225S25Y-2D	22.5	25	45	56	71	46	127					100-120
DEC D230S25Y-2D	23	25	45	56	71	46	127					100-120
DEC D235S25Y-2D	23.5	25	45	56	74	48	130					100-120
DEC D240S25Y-2D	24	25	45	56	74	48	130					100-120
DEC D245S32Y-2D	24.5	32	45	60	77	50	137				DSL 32	100-120
DEC D250S32Y-2D	25	32	45	60	77	50	137					100-120
DEC D255S32Y-2D	25.5	32	45	60	79	52	139					100-120
DEC D260S32Y-2D	26	32	45	60	79	52	139					100-120
DEC D265S32Y-2D	26.5	32	45	60	81	54	141					100-120
DEC D270S32Y-2D	27	32	45	60	81	54	141					100-120
DEC D275S32Y-2D	27.5	32	45	60	84	56	144					100-120
DEC D280S32Y-2D	28	32	45	60	84	56	144	SPMX 09T308 MG	DS 35088I	DTDW10	DSL 32	300-340
DEC D285S32Y-2D	28.5	32	45	60	86	58	146					300-340
DEC D290S32Y-2D	29	32	45	60	86	58	146					300-340
DEC D295S32Y-2D	29.5	32	55	60	91	60	151					300-340
DEC D300S32Y-2D	30	32	55	60	91	60	151					300-340
DEC D305S32Y-2D	30.5	32	55	60	94	62	154					300-340
DEC D310S32Y-2D	31	32	55	60	94	62	154					300-340
DEC D315S32Y-2D	31.5	32	55	60	96	64	156					300-340
DEC D320S32Y-2D	32	32	55	60	96	64	156					300-340
DEC D325S32Y-2D	32.5	32	55	60	99	66	159					300-340
DEC D330S32Y-2D	33	32	55	60	99	66	159					300-340
DEC D340S40Y-2D	34	40	55	70	101	68	171	SPMX 11T308 MG	DS 40093I	DTDW15	DSL 40	450-520
DEC D350S40Y-2D	35	40	55	70	104	70	174					450-520
DEC D360S40Y-2D	36	40	55	70	107	72	177					450-520
DEC D370S40Y-2D	37	40	55	70	110	74	180					450-520
DEC D380S40Y-2D	38	40	55	70	113	76	183					450-520
DEC D390S40Y-2D	39	40	55	70	115	78	185					450-520
DEC D400S40Y-2D	40	40	60	70	118	80	188					450-520
DEC D410S40Y-2D	41	40	60	70	121	82	191					450-520

* All Drills are with through coolant

DEC-Drill Drilling Depth: 3XD

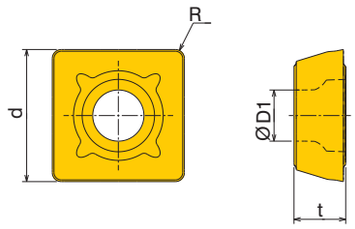


Designation	Dimension(mm)							Insert	Component			Torque (N•cm)
	D	d	d_1	LS	L_2	L_1	L		Screw	Wrench	Plug	
DEC D155S25Y-3D	15.5	25	32	56	68	48	124	SPMX 06T204 MG	DS 22052I/HG	DTDW7	DSL 25	80-100
DEC D160S25Y-3D	16	25	32	56	68	48	124					80-100
DEC D165S25Y-3D	16.5	25	32	56	71	51	127					80-100
DEC D170S25Y-3D	17	25	32	56	71	51	127					80-100
DEC D175S25Y-3D	17.5	25	32	56	75	54	131					80-100
DEC D180S25Y-3D	18	25	32	56	75	54	131					80-100
DEC D185S25Y-3D	18.5	25	32	56	78	57	134					80-100
DEC D190S25Y-3D	19	25	32	56	78	57	134					80-100
DEC D195S25Y-3D	19.5	25	32	56	83	60	139					80-100
DEC D200S25Y-3D	20	25	32	56	83	60	139					80-100
DEC D205S25Y-3D	20.5	25	32	56	86	63	142					80-100
DEC D210S25Y-3D	21	25	32	56	86	63	142					80-100
DEC D215S25Y-3D	21.5	25	32	56	89	66	145					80-100
DEC D220S25Y-3D	22	25	32	56	89	66	145	SPMX 070308 MG	DS 25064I	DTDW8	DSL 25	100-120
DEC D225S25Y-3D	22.5	25	45	56	94	69	150					100-120
DEC D230S25Y-3D	23	25	45	56	94	69	150					100-120
DEC D235S25Y-3D	23.5	25	45	56	98	72	154					100-120
DEC D240S25Y-3D	24	25	45	56	98	72	154					100-120
DEC D245S32Y-3D	24.5	32	45	60	102	75	162				DSL 32	100-120
DEC D250S32Y-3D	25	32	45	60	102	75	162					100-120
DEC D255S32Y-3D	25.5	32	45	60	105	78	165					100-120
DEC D260S32Y-3D	26	32	45	60	105	78	165					100-120
DEC D265S32Y-3D	26.5	32	45	60	108	81	168					100-120
DEC D270S32Y-3D	27	32	45	60	108	81	168					100-120
DEC D275S32Y-3D	27.5	32	45	60	112	84	172					100-120
DEC D280S32Y-3D	28	32	45	60	112	84	172	SPMX 09T308 MG	DS 35088I	DTDW10	DSL 32	300-340
DEC D285S32Y-3D	28.5	32	45	60	115	87	171					300-340
DEC D290S32Y-3D	29	32	45	60	115	87	175					300-340
DEC D295S32Y-3D	29.5	32	55	60	121	90	181					300-340
DEC D300S32Y-3D	30	32	55	60	121	90	181					300-340
DEC D305S32Y-3D	30.5	32	55	60	125	93	185					300-340
DEC D310S32Y-3D	31	32	55	60	125	93	185					300-340
DEC D315S32Y-3D	31.5	32	55	60	128	96	188					300-340
DEC D320S32Y-3D	32	32	55	60	128	96	188					300-340
DEC D325S32Y-3D	32.5	32	55	60	132	99	192					300-340
DEC D330S32Y-3D	33	32	55	60	132	99	192					300-340
DEC D340S40Y-3D	34	40	55	70	135	102	205	SPMX 11T308 MG	DS 40093I	DTDW15	DSL 40	450-520
DEC D350S40Y-3D	35	40	55	70	139	105	209					450-520
DEC D360S40Y-3D	36	40	55	70	143	108	213					450-520
DEC D370S40Y-3D	37	40	55	70	147	111	217					450-520
DEC D380S40Y-3D	38	40	55	70	151	114	221					450-520
DEC D390S40Y-3D	39	40	55	70	154	117	224					450-520
DEC D400S40Y-3D	40	40	60	70	158	120	228					450-520
DEC D410S40Y-3D	41	40	60	70	162	123	232					450-520

Note : Cooling hole plug to be ordered separately.

* Note : For L/D 4 and drill sizes bellow 15.5, Pls send your enquires. They are offered as Non standard Solution.

DEC-Drill Insert



SPMX□□□□□□ MG

Insert	Designation	Dimension(mm)				Screw	Grade	
		d	t	R	ØD1		DC9800	DC9235
	SPMX 05T204 MG	5	2.68	0.4	2.25	DS 20043I/HG-P	●	
	06T204 MG	6	2.8	0.4	2.61	DS 22052I/HG	●	
	070308 MG	7.94	3.5	0.8	2.85	DS 25064I	●	
	09T308 MG	9.8	3.8	0.8	4.05	DS 35088I	●	
	11T308 MG	11.5	4.3	0.8	4.45	DS 40093I	●	

DEC-Drill Cutting Conditions

ISO	Workpiece Material	Vc (m/min)	Feed (mm/rev)			
			Ø16 - Ø21.5	Ø22 - Ø27.5	Ø28 - Ø33	Ø34 - Ø41
P	Low Carbon Steel (- 0.3% C)	180 - 240	0.06 - 0.10	0.06 - 0.12	0.07 - 0.13	0.08 - 0.14
	Carbon Steel (0.3% C-)	150 - 220	0.08 - 0.15	0.10 - 0.18	0.12 - 0.22	0.12 - 0.22
	Alloy Steel (- HB300)	140 - 200	0.08 - 0.14	0.10 - 0.18	0.12 - 0.22	0.08 - 0.12
	Alloy Steel (HB300-)	120 - 180	0.08 - 0.15	0.10 - 0.20	0.12 - 0.23	0.12 - 0.15
M	Stainless Steel	150 - 220	0.06 - 0.12	0.08 - 0.15	0.09 - 0.16	0.10 - 0.17
K	Cast Iron	160 - 240	0.08 - 0.16	0.12 - 0.20	0.15 - 0.25	0.16 - 0.26
	Ductile Cast Iron	120 - 200	0.08 - 0.15	0.10 - 0.18	0.12 - 0.20	0.16 - 0.23
N	Aluminum	250 - 350	0.08 - 0.15	0.10 - 0.20	0.12 - 0.22	0.14 - 0.24
S	Titanum Alloy (Ti 6Al)	30 - 60	0.06 - 0.14	0.08 - 0.18	0.10 - 0.22	0.14 - 0.22

Hole Tolerance (Based on stable conditions)

Depth of drilling	Hole tolerance (mm)
2XD	0/+0.2
3XD	0/+0.25

DCut

D-CUT

PARTING GROOVING

Holder Designation System

D C E R 20 T09 - 3

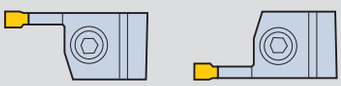
1 2 3 4 5 6

1. Duracarb

2. Machining Type

E External maching

3. Hand of Holder

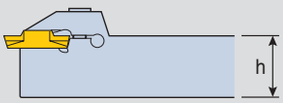


L — Left-hand

R — Right-hand

4. Shank Height

Height

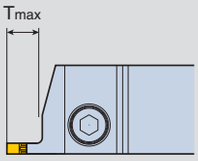


16, 20, 25,

Width

16, 20, 25,

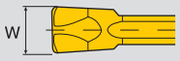
5. Tmax



T09 - 9

T16 - 16

6. Insert Size



2, 3, 4,5

Insert Designation System - Parting and Grooving

D D M 3

1 2 3 4

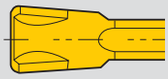
1. Duracarb

2. Cutting Edge Type

D

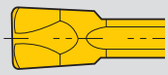
Double ended insert

3. Chip Breaker Type



M

For medium

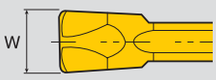


L

For light

G For Groove Turn

4. Width of Insert

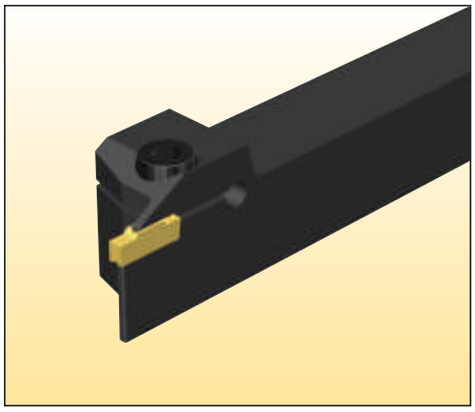


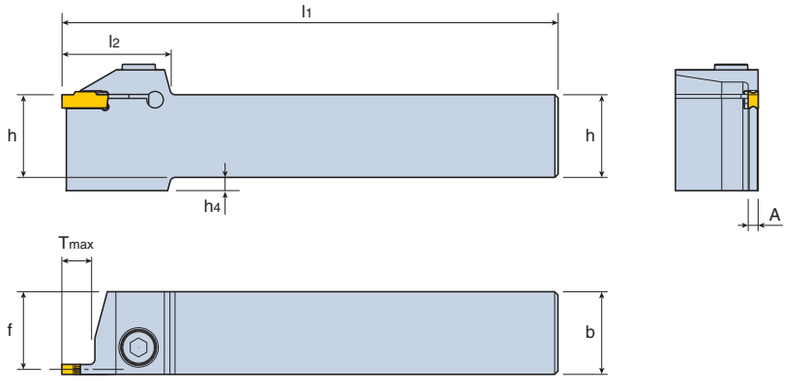
2 = 2.0 mm

3 = 3.0 mm

4 = 4.0 mm

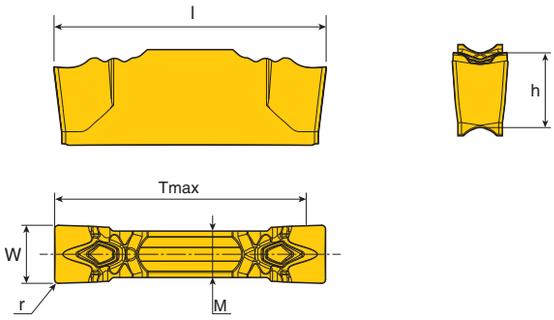
DCER/L





Designation		Insert seat size	Dimension(mm)							Component	
			h	b	l1	l2	A	h4	Tmax	Screw	Wrench
DCER/L	16T09-2	2	16	16	110	33	1.8	4	9.0	DS M6X1X20-SH	DHLW-5
	20T09-2	2	20	20	125	33	1.8	-	9.0	DS M6X1X20-SH	DHLW-5
	25T09-2	2	25	25	150	33	1.8	-	9.0	DS M6X1X25-SH	DHLW-5
	16T16-2	2	16	16	110	35	1.8	4	16.0	DS M6X1X20-SH	DHLW-5
	20T16-2	2	20	20	125	35	1.8	-	16.0	DS M6X1X20-SH	DHLW-5
	25T16-2	2	25	25	150	35	1.8	-	16.0	DS M6X1X25-SH	DHLW-5
	16T09-3	3	16	16	110	33	2.4	4	9.0	DS M6X1X20-SH	DHLW-5
	20T09-3	3	20	20	125	33	2.4	-	9.0	DS M6X1X20-SH	DHLW-5
	25T09-3	3	25	25	150	33	2.4	-	9.0	DS M6X1X25-SH	DHLW-5
	16T16-3	3	16	16	110	35	2.4	4	16.0	DS M6X1X20-SH	DHLW-5
	20T16-3	3	20	20	125	35	2.4	-	16.0	DS M6X1X20-SH	DHLW-5
	25T16-3	3	25	25	150	35	2.4	-	16.0	DS M6X1X25-SH	DHLW-5
	16T09-4	4	16	16	110	33	3.0	4	9.0	DS M6X1X20-SH	DHLW-5
	20T09-4	4	20	20	125	33	3.0	-	9.0	DS M6X1X20-SH	DHLW-5
	25T09-4	4	25	25	150	33	3.0	-	9.0	DS M6X1X25-SH	DHLW-5
	16T16-4	4	16	16	110	35	3.0	4	16.0	DS M6X1X20-SH	DHLW-5
	20T16-4	4	20	20	125	35	3.0	-	16.0	DS M6X1X20-SH	DHLW-5
	25T16-4	4	25	25	150	35	3.0	-	16.0	DS M6X1X25-SH	DHLW-5
DCER/L	20T20-5 New	5	20	20	125	37	3.85	-	20.0	DS M6X1X20-SH	DHLW-5
	25T20-5 New	5	25	25	150	37	3.85	-	20.0	DS M6X1X20-SH	DHLW-5

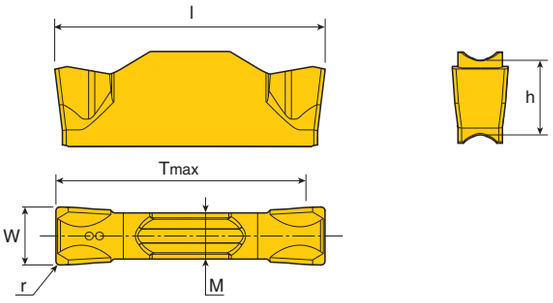
Insert for Parting & Grooving



DDL

Insert	Designation	Insert seat size	Dimension(mm)						Grade	
			W±0.05	r	M	l	h	Tmax	DP5320	DC154
	2	2	2.0	0.20	1.7	14.0	4.0	13	●	●
	3	3	3.0	0.20	2.4	14.0	4.0	13	●	●
	4	4	4.0	0.30	3.0	14.0	4.0	13	●	●
	New 5	5	5.2	0.30	4.0	17.5	5.1	17	●	●

Insert for Parting & Grooving

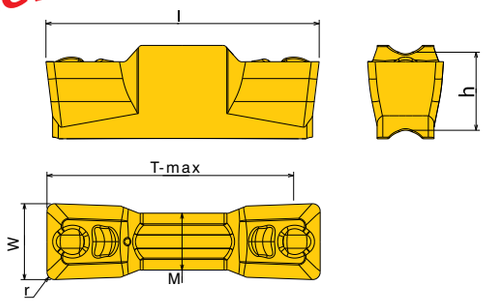


DDM

Insert	Designation	Insert seat size	Dimension(mm)						Grade	
			W±0.05	r	M	l	h	Tmax	DP5320	DC154
	2	2	2.0	0.20	1.7	14.0	4.0	13	●	●
	3	3	3.0	0.20	2.4	14.0	4.0	13	●	●
	4	4	4.0	0.30	3.0	14.0	4.0	13	●	●
	New 5	5	5.2	0.30	4.0	17.5	5.1	17	●	●

Insert for Parting, Grooving & Turning

New



DDG

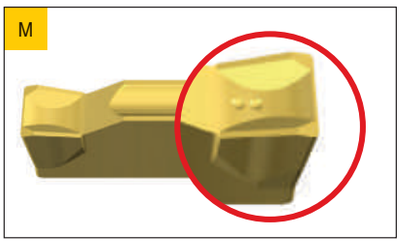
Insert	Designation	Insert seat size	Dimension(mm)						Grade	
			W±0.05	r	M	l	h	Tmax	DP5320	DC154
	30040	3	3.0	0.40	1.7	14.0	4.0	13	●	●
	40040	4	4.0	0.40	3.0	14.0	4.0	13	●	●
	50040 Coming Soon	5	5.0	0.40	4.0	17.5	5.1	17	●	●

Workpiece materials

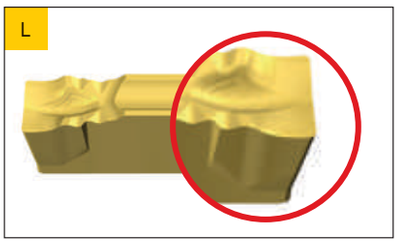
CUTTING CONDITION	ALLOY STEEL	AUSTENITIC STAINLESS	CAST IRON	NON-FERROUS	HIGH-TEMP ALLOYS
HIGH FEED	M	M	M	BRASS M	M
LOW FEED	L	L	M	L ALUMINIUM	L **TITANIUM**

GRADE	ISO RANGE	FEATURES & APPLICATION
DC154 **PVD coated**	P25 – P45 M25 – M45	• Medium cutting and semi-roughing of carbon steel alloy steel and stainless steel • Toughness enhanced grade, TiCN
DP5320 **PVD coated**	P15 – P35 M10 – M30 K10 – K30	• Unique combination of high wear resistance and high toughness • Versatile grade of for semi-roughing and medium cutting on all kinds of materials • High mechanical shock resistance • TiAlN coating on sub-micron substrate

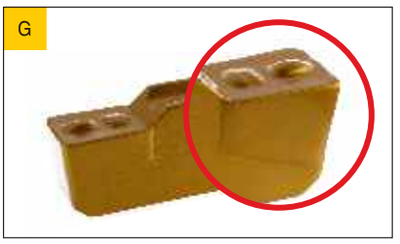
Selection of chip breakers



- For hard materials and tough applications
- For general applications on steel, alloy steel and stainless steel
- Medium-to-high feeds



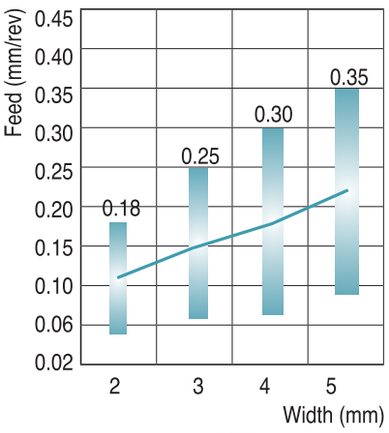
- For soft materials, parting of tubes, small diameters and thin-walled parts
- Low forces and smaller burrs
- Improved straightness
- Low-to-medium feeds



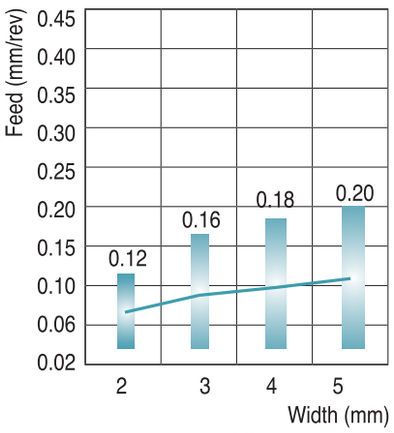
- For groove-turning steel, alloy steel and stainless steel.
- Central chip-breaking island for multi-directional chip control

Recommended feed range for grooving as a function of insert width

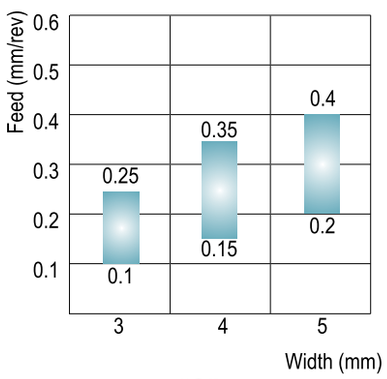
Material; SAE4140 (HB240)



"M"

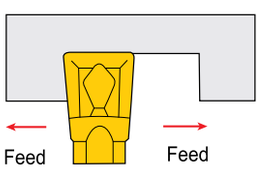


"L"

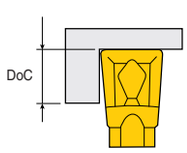


"G"

Recommended feed and depth for turning with DDG



- Maximum feed is 5% of width of insert

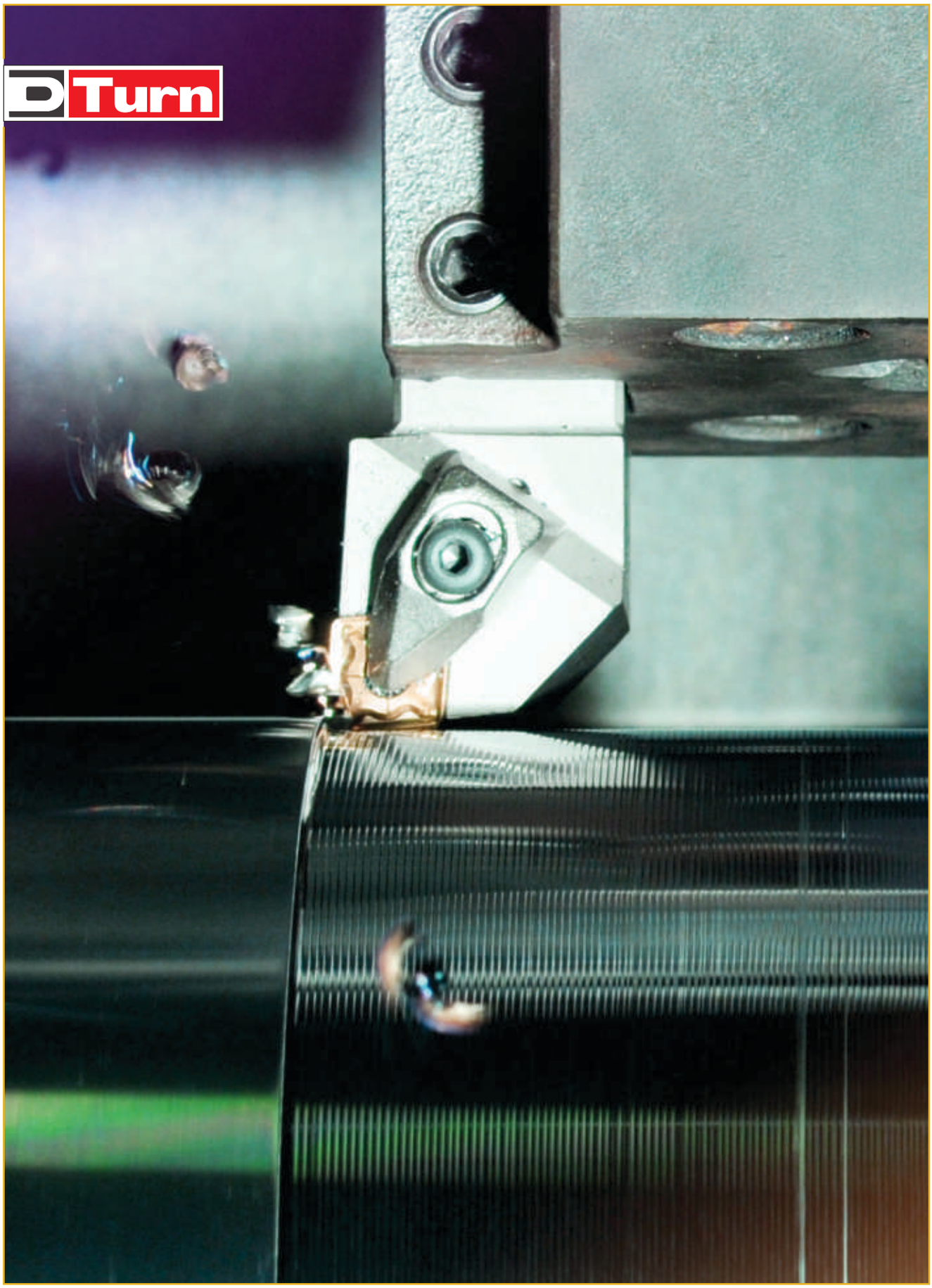


- Maximum depth of cut is 80% of width of insert

Recommended Cutting Conditions - Parting and Grooving

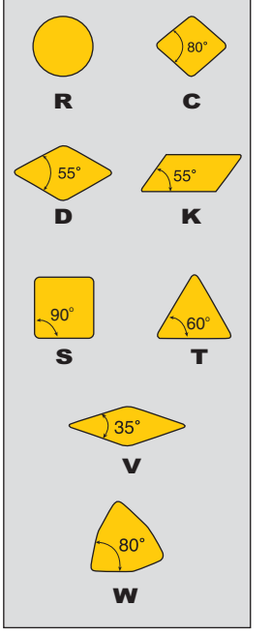
ISO	Material		Condition	Tensile strength (N/mm^2)	Hardness HB	Cutting speed Vc(m/min)
P	Non-alloy steel, cast steel, free cutting steel	<0.25%C	Annealed	420	125	140-250
		>=0.25%C	Annealed	650	190	130-220
		<0.55%C	Quenched and tempered	850	250	90-200
		>=0.55%C	Annealed	750	220	100-220
			Quenched and tempered	1000	300	70-170
	Low alloy steel and cast steel (Less than 5% of alloying elements)		Annealed	600	200	90-120
			Quenched and tempered	930	275	80-170
				1000	300	70-130
				1200	350	50-120
	High alloy steel, cast steel and tool steel		Annealed	680	200	60-140
			Quenched and tempered	1100	325	50-70
M	Stainless steel and cast steel		Ferritic / martensitic	680	200	70-170
			Martensitic	820	240	60-150
			Austenitic	600	180	90-180
K	Gray cast iron (GG)		Ferritic		160	100-230
			Pearlitic		250	90-180
	Cast iron nodular (GGG)		Ferritic		180	190-300
			Pearlitic		260	120-220
	Malleable cast iron		Ferritic		130	120-250
			Pearlitic		230	100-210
S	High temp. alloys	Fe based	Annealed		200	40-70
			Cured		280	30-50
		Ni or Co based	Annealed		250	30-40
			Cured		350	15-25
			Cast		320	15-30
	Titanium, Ti alloys					90-190
			Alpha+beta alloys cured			30-60

Steel Stainless steel Cast iron High temp. alloys

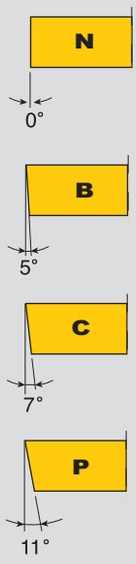

DTurn

Insert Designation System

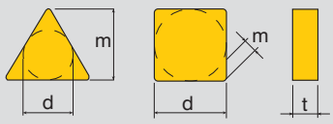
1. Shape



2. Clearance Angle



3. Tolerance



M class

Tolerance mm			
IC	m	d	t
6.35	±0.08	±0.05	±0.13
9.52	±0.08	±0.05	
12.70	±0.13	±0.08	

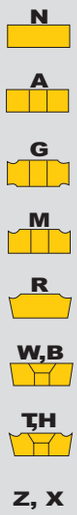
U class

Tolerance mm			
IC	m	d	t
9.52	±0.13	±0.08	±0.13

G class

Tolerance mm		
m	d	t
±0.025	±0.025	±0.13

4. Type



N — No chipbreaker No hole

A — No chipbreaker Straight hole

G — Double-sided CB Straight hole

M — Single-sided CB Straight hole

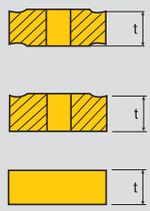
R — Single-sided CB No hole

W,B — No chipbreaker Screw hole

T,H — Single-sided CB Screw hole

Z, X — Special

6. Thickness



02 = 2.38mm
03 = 3.18mm
T3 = 3.97mm
04 = 4.76mm
06 = 6.35mm
07 = 7.94mm
09 = 9.52mm

C N M G 12 04 08 (R) 52

1 2 3 4 5 6 7 8 9

5. Cutting Edge Length

I.C(mm)	C	D	R	S	T	V	W	K
3.97	03	04		03	06		02	
4.76	04	05		04	08	08		
5.56	05	06		05	09	09	03	
6.35	06	07		06	11	11	04	
7.94	08	09		07	13	13	05	
8.0			08					
9.52	09	11	09	09	16	16	06	16
10.0			10					
12.0			12					
12.7	12	15		12	22	22	08	
15.88	16	19	15	15	27	27	10	
16.0			16					
19.05	19	23	19	19	33	33	13	
20.0			20					
25.0			25					
25.4	25	31	25	25	44			
32.0			32					

7. Corner R

ex) 0.8mm=08

8. Hand of Insert

R Right

L Left

9. Chipbreaker

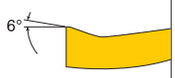
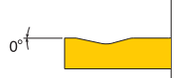
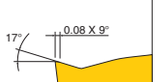
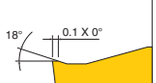
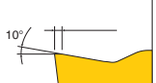
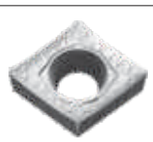
– 41
– 42
– 43
– 45
– 46
– 52
– 53

GRADE	ISO RANGE	FEATURES & APPLICATION
DC610 **UNCOATED CERMET**	P10 – P20 M10 – M20 K10 – K20	• Low coefficient friction • Excellent wear resistance
DC210 **UNCOATED**	K05 – K15 N05 – N15	• For machining non-ferrous materials like aluminium and copper alloy • Good wear resistance
DC820 **CVD COATED**	K10 – K25	• High speed machining in cast iron • Combination of thick Al O coating layer and high wear resistant substrate for extreme wear resistance • TiCN-Al_2O_3-TiN
DC9015 **CVD COATED**	P05 – P25	• First recommendation for high speed machining in steel • Excellent wear resistance and heat resistance • TiN-TiCN-Al_2O_3-TiN • Improved chipping resistance
DC9025 **CVD COATED**	P15 – P35	• For general machining in steel • Wide application range due to good wear resistance and toughness • TiN-TiCN-Al_2O_3-TiN • Improved chipping resistance
DC8035 **C**VD COATED	P20 – P35 M15 – M35 S15 – S35	• For low carbon steel, low carbon alloy steel and stainless steel • Interrupted cutting in general steel • Excellent adhesion resistance • TiN-TiCN-Al_2O_3-TiN
DP5010 **PVD COATED**	S05 – S20 M05 – M20	• For a wide range of turning of high-temp alloys. • Very hard submicron substrate with good fracture toughness.
DC9800 **PVD COATED**	P15 – P35 M10 – M30 K10 – K30 S10 – S25	• High mechanical shock resistance • TiAlN coating on sub-micron substrate • For medium to semi-roughing on all kinds of materials

Cutting Conditions

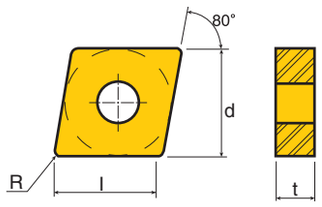
Material		Chipbreaker	CVD				
			DC610	DC820	DC9015	DC9025	DC8035
			Cutting speed(m/min)				
Carbon Steel	Low 0.05-0.25% C SM18C	41 43 45	250-700	-	350-500	200-420	180-350
	Medium 0.25-0.55% C SM45C	41 43 46	150-350	-	220-380	150-330	120-250
	High 0.55-0.80% C SM55C	41 43 46 53	120-300	-	180-380	120-300	-
Alloy Steel	Low Alloy SCM415	41 43 45	150-550	-	180-350	130-300	60-320
	Alloy SCM440	41 43 46 53	100-320	-	180-350	140-300	60-200
Cast Iron	Grey Cast Iron	46 53	100-300	180-440	90-300	-	-
	Ductile Cast Iron		100-250	200-340	90-280	-	-
Stainless Steel		41 42 45	200-270	-	-	-	100-210

Feature of Chipbreaker

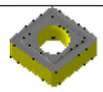
Type	Insert • Edge geometry		Feature • Application
NEGATIVE	41 		• For medium & finishing • Good chip evacuation in low feed and depth of cut • Excellent chip control
	43 		• Balance between strength and sharpness • For semi finishing to medium machining in steel and alloy steel • Good chip control in profiling
	46 		• Medium for carbon steel and alloy steel • From medium to finishing of cast iron machining • Suitable for continuous to interrupted • Geometry of low cutting force
	52 		• Medium in steel and cast Iron • Excellent chip control • Applicable to both interrupted and continuous
	53* 		• Medium to roughing in steel and cast iron • Strong cutting edge • Recommended for unstable conditions
	42 		• For medium machining in stainless steel and low carbon steel • Low cutting force with sharp edge geometry
	45 		• For medium machining in stainless steel, low carbon steel & low carbon alloy steel • Semi finishing in cast Iron • Minimum of built-up edge from sharp edge geometry
POSITIVE	41 		• Finishing on boring applications • Good chip evacuation in low feed and depth of cut • Low cutting force & good chip control for steel and stainless steel machining
	51 		• Medium machining in steel, stainless steel and cast iron • Applicable to both interrupted and continuous machining
	52 		• For medium to semi - roughing. • For steel and cast iron.
	AU 		• For aluminum machining • Low cutting force, excellent chip evacuation

*Not in stocking program; please contact our engineers

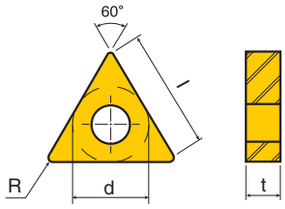
Negative 80° Insert



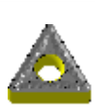
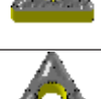
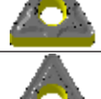
CNM□

Insert		Designation	Dimension (mm)			Recommended Cutting Conditions		Grade							
			d	t	R	Feed (mm/rev)	D.O.C. (mm)	DC820	DC9015	DC9025	DC8035	DP5010	DP5020	DP9235	DP9800
	CNMA For Cast Iron	CNMA 090408	9.52	4.76	0.8	0.15 - 0.60	3.0 - 7.0	●							
		090412	9.52	4.76	1.2	0.15 - 0.70	3.0 - 7.0	●							
	CNMG D3 Semi-Finishing & Medium	CNMG 090408 D3	9.52	4.76	0.8	0.15 - 0.40	0.5 - 2.0		●	●					
		090412 D3	9.52	4.76	1.2	0.18 - 0.50	0.5 - 2.0		●	●					
	CNMG M3 For stainless steel	CNMG 090408 M3	9.52	4.76	0.8	0.20 - 0.50	0.7 - 4.8					●	●	●	●
		090412 M3	9.52	4.76	1.2	0.23 - 0.50	0.7 - 4.8					●	●	●	●
	CNMG D5 Medium to Roughing	CNMG 090408 D5	9.52	4.76	0.8	0.10 - 0.45	1.2 - 5.0	●							
		090412 D5	9.52	4.76	1.2	0.10 - 0.55	1.2 - 5.0	●							

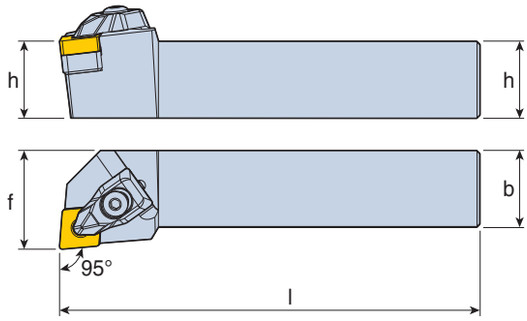
Negative 60° Insert

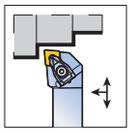


TNM□

Insert		Designation	Dimension (mm)			Recommended Cutting Conditions		Grade							
			d	t	R	Feed (mm/rev)	D.O.C. (mm)	DC820	DC9015	DC9025	DC8035	DP5010	DP5020	DP9235	DP9800
	TNMA For Cast Iron	TNMA 130408	7.94	4.76	0.8	0.15 - 0.60	1.0 - 3.5	●							
	TNMG D3 Semi-finishing & Medium	TNMG 130404 D3	7.94	4.76	0.4	0.10 - 0.30	0.4 - 3.0		●	●					
		130408 D3	7.94	4.76	0.8	0.15 - 0.40	0.5 - 3.0		●	●					
		130412 D3	7.94	4.76	1.2	0.18 - 0.50	0.6 - 3.0		●	●					
	TNMG M3 For Stainless Steel	TNMG 130408 M3	7.94	4.76	0.8	0.20 - 0.50	0.5 - 3.0					●		●	●
		130412 M3	7.94	4.76	1.2	0.23 - 0.50	0.7 - 3.0					●		●	●
	TNMG R5 Medium & Roughing	TNMG 130412 R5	7.94	4.76	1.2	0.10 - 0.55	0.5 - 3.5	●		●					

DCLNR/L



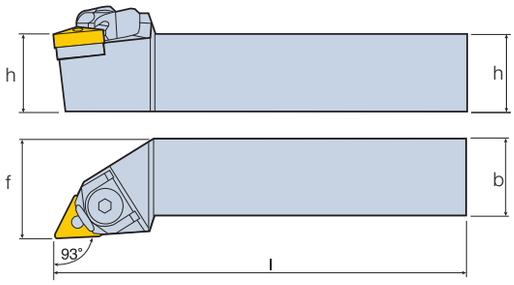


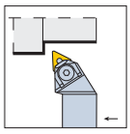
Designation		Dimension (mm)				Insert
		h	b	l	f	
DCLNR/L	2020 K0904	20	20	125	25	80° CN□□ 0904□□
	2525 M0904	25	25	150	32	

Spares

Holder/ Related insert	Clamp	Clamp screw	Shim	Shim screw	Spring	Wrench	
...0904	DTC 3-NX	DTCS 3	DLS-C 32A	DS 40085I	DSPR 3	DHLW-2.5	DTFW 15

WTJNR/L



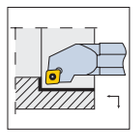


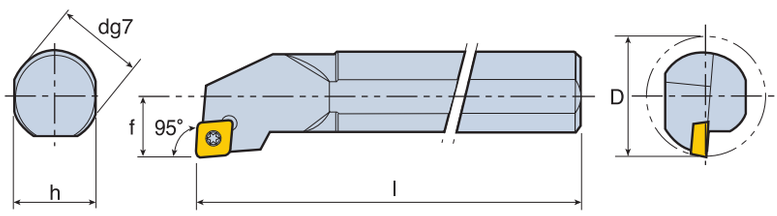
Designation		Dimension (mm)				Insert
		h	b	l	f	
WTJNR/L	2020 K1304 - C	20	20	125	25	60° TN□□ 1304□□
	2525 M1304 - C	25	25	150	32	

Spares

Holder/ Related insert	Wedge Clamp	Screw	Snap Ring	Shim	Pin Screw	Wrench
...1304-C	DWC 2.53	DWCS 2.5	DCSR 2	DWS-T 2.52	DWSS 2.52	DHLW-2.5

S-SCLNR/L



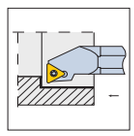


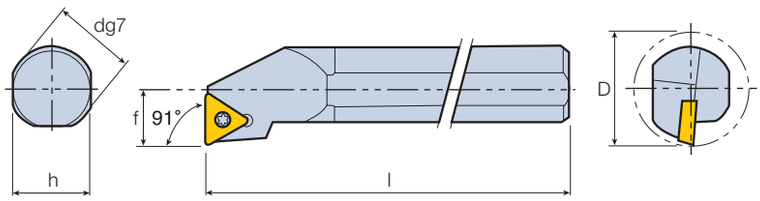
Designation		Dimension (mm)					Insert
		d	h	l	f	D	
S16Q	SCLNR/L 0904 - C	16	15	180	11	20	 CN□□ 0904□□
S20Q	SCLNR/L 0904 - C	20	18	180	11	20	

Spares

Holder/ Related Insert	Screw	Wrench
		
...0904-C	DS 35083I/HG-TS	DTFW-10

S-STFNR/L



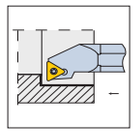


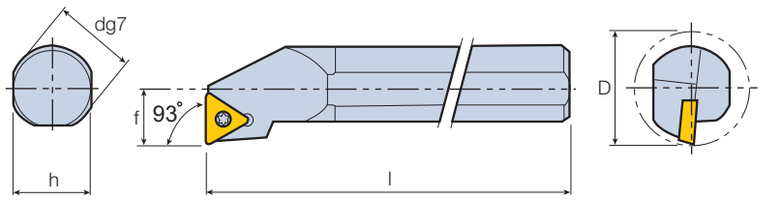
Designation		Dimension (mm)					Insert
		d	h	l	f	D	
S16Q	STFNR/L 1304 - C	16	15	180	11	20	 TN□□ 1304□□
S20R	STFNR/L 1304 - C	20	18	180	13	25	

Spares

Holder/ Related Insert	Screw	Wrench
		
...1304-C	DS 30080I/HG-TS	DTFW-9

S-STUNR/L



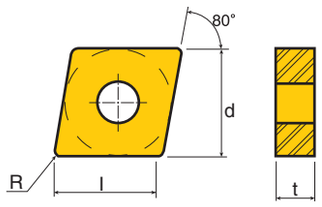


Designation		Dimension (mm)					Insert
		d	h	l	f	D	
S16Q	STUNR/L 1304 - C	16	15	180	11	20	 TN□□ 1304□□
S20R	STUNR/L 1304 - C	20	18	180	13	25	

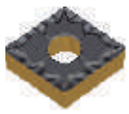
Spares

Holder/ Related Insert	Screw	Wrench
		
...1304-C	DS 30080I/HG-TS	DTFW-9

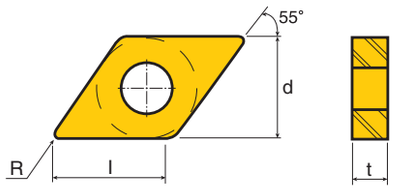
Negative 80° Insert



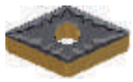
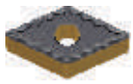
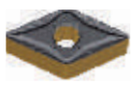
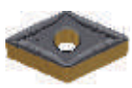
CNM□

Insert		Designation	Dimension (mm)				Recommended Cutting Conditions		Grade					
			l	d	t	R	Feed (mm/rev)	D.O.C. (mm)	DC610	DC820	DC9015	DC9025	DC8035	DP5010
	CNMA For Cast Iron	CNMA 120408	12.0	12.7	4.76	0.8	0.25 - 0.70	3.0 - 7.0		●				
		120412	11.6	12.7	4.76	1.2	0.25 - 0.70	3.0 - 7.0		●				
	CNMG 41 Finishing & Medium	CNMG 120404 41	12.4	12.7	4.76	0.4	0.05 - 0.30	0.5 - 2.0	●					●
		120408 41	12.0	12.7	4.76	0.8	0.07 - 0.30	0.5 - 2.0	●		●	●		●
	CNMG 42 For Stainless Steel	CNMG 120404 42	12.4	12.7	4.76	0.4	0.10 - 0.50	0.5 - 5.0					●	●
		120408 42	12.0	12.7	4.76	0.8	0.12 - 0.50	0.5 - 5.0					●	●
		120412 42	11.6	12.7	4.76	1.2	0.14 - 0.50	0.5 - 5.0					●	●
	CNMG 43 Semi-finishing & Medium	CNMG 120408 43	12.0	12.7	4.76	0.8	0.12 - 0.52	0.7 - 4.8			●	●		
		120412 43	11.6	12.7	4.76	1.2	0.12 - 0.52	0.7 - 4.8			●	●		
	CNMG 45 Medium & Roughing	CNMG 120404 45	12.4	12.7	4.76	0.4	0.15 - 0.50	1.2 - 5.0	●	●	●	●	●	●
		120408 45	12.0	12.7	4.76	0.8	0.15 - 0.50	1.2 - 5.0		●	●	●	●	●
		120412 45	11.6	12.7	4.76	1.2	0.15 - 0.50	1.2 - 5.0		●	●	●	●	●
	CNMG 46 Medium	CNMG 120404 46	12.4	12.7	4.76	0.4	0.15 - 0.40	1.0 - 5.0			●	●	●	●
		120408 46	12.0	12.7	4.76	0.8	0.17 - 0.55	1.2 - 5.0		●	●	●	●	
		120412 46	11.6	12.7	4.76	1.2	0.20 - 0.55	1.5 - 5.0		●	●	●	●	
	CNMG 52 Medium	CNMG 120408 52	12.0	12.7	4.76	0.8	0.10 - 0.35	0.7 - 3.5			●	●	●	

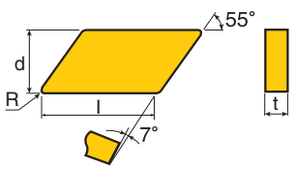
Negative 55° Insert



DNM□

Insert	Designation	Dimension (mm)				Recommended Cutting Conditions		Grade					
		l	d	t	R	Feed (mm/rev)	D.O.C. (mm)	DC610	DC820	DC9015	DC9025	DC8035	DP5010
 DNMG 41 Finishing & Medium	DNMG 150604 41	15.1	12.7	6.35	0.4	0.05 - 0.30	0.5 - 2.0			●	●	●	●
	150608 41	14.7	12.7	6.35	0.8	0.07 - 0.30	0.5 - 2.0			●	●	●	●
 DNMG 43 Semi-finishing & Medium	DNMG 150608 43	15.1	12.7	6.35	0.8	0.12 - 0.52	0.7 - 4.8			●	●	●	
	150612 43	14.3	12.7	6.35	1.2	0.12 - 0.52	0.7 - 4.8			●	●	●	
 DNMG 45 Medium & Roughing	DNMG 150604 45	15.1	12.7	6.35	0.4	0.15 - 0.50	1.2 - 5.0		●	●	●	●	
	150608 45	15.1	12.7	6.35	0.8	0.15 - 0.50	1.2 - 5.0	●	●	●	●	●	
	150612 45	14.3	12.7	6.35	1.2	0.15 - 0.50	1.2 - 5.0		●	●	●	●	
 DNMG 46 Medium	DNMG 150608 46	15.1	12.7	6.35	0.8	0.17 - 0.50	1.0 - 4.0			●	●	●	
 DNMG 52 Medium	DNMG 150608 52	14.7	12.7	6.35	0.8	0.10 - 0.35	0.7 - 3.5			●	●	●	

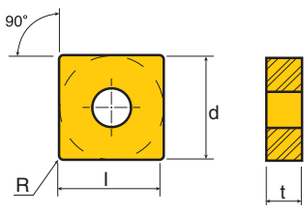
Negative 55° Insert



KNUX

Insert	Designation	Dimension (mm)				Recommended Cutting Conditions		Grade			
		l	d	t	R	Feed (mm/rev)	D.O.C. (mm)	DC820	DC9015	DC9025	DC8035
 Right hand Medium	KNUX 160405 L11	19.7	9.52	4.76	0.5	0.15 - 0.35	1.5 - 5.0				●
	160405 R11	19.7	9.52	4.76	0.5	0.15 - 0.35	1.5 - 5.0				●
	160410 L11	19.7	9.52	4.76	1.0	0.21 - 0.45	2.0 - 5.0				●
	160410 R11	19.7	9.52	4.76	1.0	0.21 - 0.45	2.0 - 5.0				●

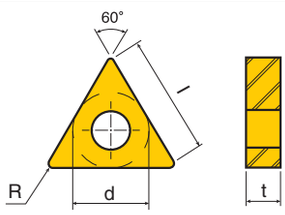
Negative 90° Insert



SNM□

Insert		Designation	Dimension (mm)				Recommended Cutting Conditions		Grade					
			l	d	t	R	Feed (mm/rev)	D.O.C. (mm)	DC610	DC820	DC9015	DC9025	DC8035	DP5010
	SNMA For Cast Iron	SNMA 120408	11.9	12.7	4.76	0.8	0.25 - 0.70	3.0 - 7.0		●				
		120412	11.5	12.7	4.76	1.2	0.25 - 0.70	3.0 - 7.0		●				
	SNMG 45 Medium & Roughing	SNMG 120404 45	12.3	12.7	4.76	0.4	0.15 - 0.50	1.2 - 5.0		●		●		
		120408 45	11.9	12.7	4.76	0.8	0.15 - 0.50	1.2 - 5.0		●	●	●	●	●
		120412 45	11.5	12.7	4.76	1.2	0.15 - 0.50	1.2 - 5.0				●	●	

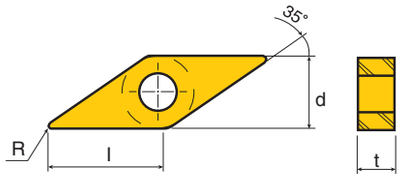
Negative 60° Insert



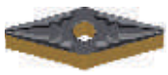
TNM□

Insert		Designation	Dimension (mm)				Recommended Cutting Conditions		Grade					
			l	d	t	R	Feed (mm/rev)	D.O.C. (mm)	DC610	DC820	DC9015	DC9025	DC8035	DP5010
	TNMA For Cast Iron	TNMA 160408	14.5	9.52	4.76	0.8	0.25 - 0.70	3.0 - 7.0		●				
		160412	13.5	9.52	4.76	1.2	0.25 - 0.70	3.0 - 7.0		●				
	TNMG 41 Finishing & Medium	TNMG 160404 41	15.5	9.52	4.76	0.4	0.05 - 0.30	0.5 - 2.0	●		●	●	●	
		160408 41	14.5	9.52	4.76	0.8	0.07 - 0.30	0.5 - 2.0	●		●	●		
	TNMG 42 For Stainless Steel	TNMG 160404 42	15.5	9.52	4.76	0.4	0.10 - 0.50	0.5 - 5.0					●	●
		160408 42	14.5	9.52	4.76	0.8	0.12 - 0.50	0.5 - 5.0					●	●
		160412 42	13.5	9.52	4.76	1.2	0.14 - 0.50	0.5 - 5.0					●	●
	TNMG 43 Semi-finishing & Medium	TNMG 160408 43	14.5	9.52	4.76	0.8	0.12 - 0.52	0.7 - 4.8			●	●	●	
		160412 43	13.5	9.52	4.76	1.2	0.12 - 0.52	0.7 - 4.8				●	●	
	TNMG 45 Medium & Roughing	TNMG 160404 45	15.5	9.52	4.76	0.4	0.15 - 0.5	1.2 - 5.0	●	●	●	●	●	●
		160408 45	14.5	9.52	4.76	0.8	0.15 - 0.5	1.2 - 5.0		●	●	●	●	
		160412 45	13.5	9.52	4.76	1.2	0.15 - 0.5	1.2 - 5.0		●	●	●	●	
	TNMG 52 Medium	TNMG 160408 52	14.5	9.52	4.76	0.8	0.10 - 0.35	0.7 - 3.5			●	●	●	
	TNMG 46 Medium	TNMG 160404 46	15.5	9.52	4.76	0.4	0.17 - 0.40	1.0 - 3.5			●	●	●	●
		160408 46	14.5	9.52	4.76	0.8	0.17 - 0.50	1.2 - 3.5		●	●	●	●	●
		160412 46	13.5	9.52	4.76	1.2	0.20 - 0.50	1.5 - 3.5		●	●	●	●	●

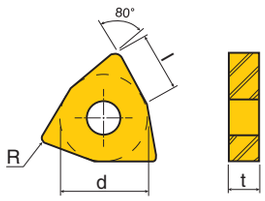
Negative 35° Insert



VNMG

Insert		Designation	Dimension (mm)				Recommended Cutting Conditions		Grade					
			l	d	t	R	Feed (mm/rev)	D.O.C. (mm)	DC610	DC820	DC9015	DC9025	DC8035	DP5010
	VNMG 41 Finishing & Medium	VNMG 160404 41	15.6	9.52	4.76	0.4	0.05 - 0.30	0.5 - 2.0		●		●	●	●
		160408 41	14.6	9.52	4.76	0.8	0.07 - 0.30	0.5 - 2.0		●		●	●	●
	VNMG 45 Medium & Roughing	VNMG 160404 45	15.6	9.52	4.76	0.4	0.15 - 0.5	1.2 - 5.0		●	●	●	●	●
		160408 45	14.6	9.52	4.76	0.8	0.15 - 0.5	1.2 - 5.0		●	●	●	●	●
	VNMG 46 Medium	VNMG 160404 46	15.6	9.52	4.76	0.4	0.15 - 0.36	0.8 - 3.0			●	●	●	●

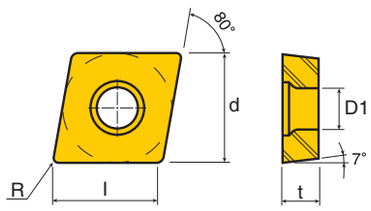
Negative 80° Insert



WNM□

Insert		Designation	Dimension (mm)				Recommended Cutting Conditions		Grade					
			l	d	t	R	Feed (mm/rev)	D.O.C. (mm)	DC610	DC820	DC9015	DC9025	DC8035	DP5010
	WNMA For Cast Iron	WNMA 080408	8.3	12.7	4.76	0.8	0.25 - 0.70	3.0 - 7.0		●				
		080412	8.2	12.7	4.76	1.2	0.25 - 0.70	3.0 - 7.0		●				
	WNMG 43 Semi finishing & Medium	WNMA 080408 43	8.3	12.7	4.76	0.8	0.12 - 0.52	0.7 - 4.8			●	●	●	
	WNMG 45 Medium & Roughing	WNMG 060404 45	6.2	9.52	4.76	0.4	0.15 - 0.50	1.2 - 5.0		●	●	●		
		060408 45	6.1	9.52	4.76	0.8	0.15 - 0.50	1.2 - 5.0		●	●	●	●	●
		080404 45	8.4	12.7	4.76	0.4	0.15 - 0.50	1.2 - 5.0				●		
		080408 45	8.3	12.7	4.76	0.8	0.15 - 0.50	1.2 - 5.0		●	●	●	●	
		080412 45	8.2	12.7	4.76	1.2	0.15 - 0.50	1.2 - 5.0		●		●	●	
	WNMG 46 Medium	WNMG 060408 46	6.1	9.52	4.76	0.8	0.12 - 0.35	1.0- 3.0						
		080408 46	8.3	12.7	4.76	0.8	0.17 - 0.55	1.2 - 4.0		●	●	●	●	

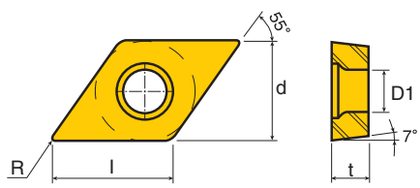
Positive 80° Insert



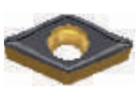
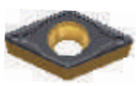
CCMT

Insert	Designation	Dimension (mm)					Recommended Cutting Conditions		Grade					
		l	d	t	R	D_1	Feed (mm/rev)	D.O.C. (mm)	DC610	DC820	DC9015	DC9025	DC8035	DP5010
 CCMT 41 Finishing	CCMT 09T304 41	9.2	9.52	3.97	0.4	4.4	0.05 - 0.15	0.5 - 2.5			●	●		
	09T308 41	8.8	9.52	3.97	0.8	4.4	0.07 - 0.15	0.5 - 2.5			●	●		
 CCMT 51 Medium	CCMT 09T304 51	9.2	9.52	3.97	0.4	4.4	0.07 - 0.25	1.0 - 3.0	●	●	●	●	●	●
	09T308 51	8.8	9.52	3.97	0.8	4.4	0.09 - 0.25	1.0 - 3.0		●	●	●	●	●
 CCMT 52 Medium & Roughing	CCMT 060204 52	6.0	6.35	2.38	0.4	2.8	0.10 - 0.25	1.0 - 2.0	●			●	●	●
	09T304 52	9.2	9.52	3.97	0.4	4.4	0.12 - 0.30	1.2 - 3.0	●			●	●	
	09T308 52	8.8	9.52	3.97	0.8	4.4	0.12 - 0.30	1.2 - 3.0	●			●		

Positive 55° Insert

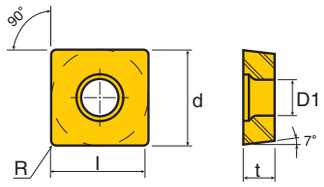


DCMT

Insert	Designation	Dimension (mm)					Recommended Cutting Conditions		Grade					
		l	d	t	R	D_1	Feed (mm/rev)	D.O.C. (mm)	DC610	DC820	DC9015	DC9025	DC8035	DP5010
 DCMT 41 Finishing	DCMT 11T304 41	11.2	9.52	3.97	0.4	4.4	0.05 - 0.15	0.5 - 2.5			●	●		
	11T308 41	10.8	9.52	3.97	0.8	4.4	0.07 - 0.15	0.5 - 2.5			●	●		
 DCMT 51 Medium	DCMT 11T304 51	11.2	9.52	3.97	0.4	4.4	0.07 - 0.25	1.0 - 3.0	●	●	●	●	●	●
	11T308 51	10.8	9.52	3.97	0.8	4.4	0.09 - 0.25	1.0 - 3.0	●	●	●	●	●	●
 DCMT 52 Medium & Roughing	DCMT 11T304 52	11.2	9.52	3.97	0.4	4.4	0.12 - 0.30	1.2 - 3.0	●					
	11T308 52	10.8	9.52	3.97	0.8	4.4	0.12 - 0.30	1.2 - 3.0	●					

Positive 90° Insert

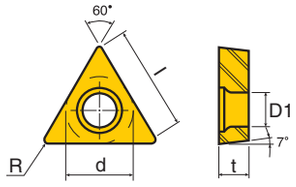
SCMT



Insert	Designation	Dimension (mm)					Recommended Cutting Conditions		Grade					
		l	d	t	R	D_1	Feed (mm/rev)	D.O.C. (mm)	DC610	DC820	DC9015	DC9025	DC8035	DP5010
 SCMT 51 Medium	SCMT 09T308 51	9.2	9.52	3.97	0.4	4.4	0.09 - 0.25	1.0 - 3.0		●	●		●	

Positive 60° Insert

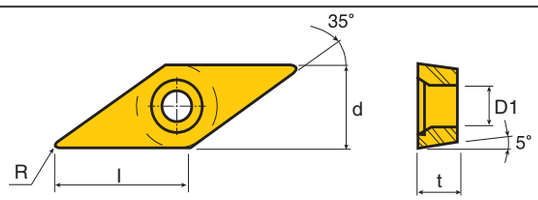
TCMT



Insert	Designation	Dimension (mm)					Recommended Cutting Conditions		Grade					
		l	d	t	R	D_1	Feed (mm/rev)	D.O.C. (mm)	DC610	DC820	DC9015	DC9025	DC8035	DP5010
 TCMT 41 Finishing	TCMT 16T304 41	15.5	9.52	3.97	0.4	4.4	0.05 - 0.15	0.5 - 2.5			●	●		
	16T308 41	14.5	9.52	3.97	0.8	4.4	0.07 - 0.15	0.5 - 2.5			●	●		
 TCMT 51 Medium	TCMT 16T304 51	15.5	9.52	3.97	0.4	4.4	0.07 - 0.25	1.0 - 3.0					●	
	16T308 51	14.5	9.52	3.97	0.8	4.4	0.09 - 0.25	1.0 - 3.0		●	●	●	●	
	16T312 51	13.5	9.52	3.97	1.2	4.4	0.10 - 0.25	1.0 - 3.0						
 TCMT 52 Medium & Roughing	TCMT 110204 52	10.0	6.35	2.38	0.4	2.8	0.10 - 0.25	1.0 - 2.5	●			●	●	●

Positive 35° Insert

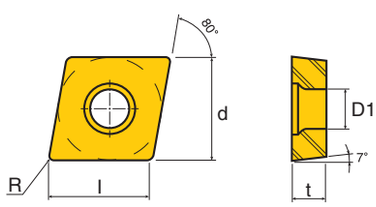
VBMT

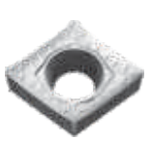


Insert		Designation	Dimension (mm)					Recommended Cutting Conditions		Grade					
			l	d	t	R	D1	Feed (mm/rev)	D.O.C. (mm)	DC610	DC820	DC9015	DC9025	DC8035	DP5010
	VBMT 41 Finishing	VBMT 160404 41	15.6	9.52	4.76	0.4	4.4	0.05 - 0.15	0.5 - 2.5			●	●		
		160408 41	14.6	9.52	4.76	0.8	4.4	0.07 - 0.15	0.5 - 2.5			●	●		
	VBMT D4 Medium	VBMT 160404 D4	15.6	9.52	4.76	0.4	4.4	0.07 -0.25	1.0 - 3.0		●	●	●	●	
		160408 D4	14.6	9.52	4.76	0.8	4.4	0.09 - 0.25	1.0 - 3.0	●	●	●	●	●	
		160412 D4	13.6	9.52	4.76	1.2	4.4	0.10 - 0.25	1.0 - 3.0			●			
	VBMT 52 Medium & Roughing	VBMT 160404 52	15.6	9.52	4.76	0.4	4.4	0.1 - 0.25	1.2 - 3.0	●					
		160408 52	14.6	9.52	4.76	0.8	4.4	0.1 - 0.30	1.2 - 3.0	●					

Positive 80° Insert - For Aluminum

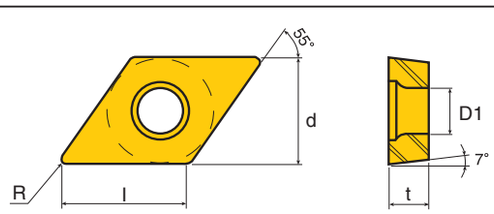
CCGT AU



Insert	Designation	Dimension (mm)					Grade
		l	d	t	R	D1	DC210
	CCGT 060204 AU	6.0	6.35	2.38	0.4	2.8	●
	09T304 AU	9.2	9.52	3.97	0.4	4.4	●
	120404 AU	12.4	12.7	4.76	0.4	5.5	●
	120408 AU	12.4	12.7	4.76	0.8	5.5	●

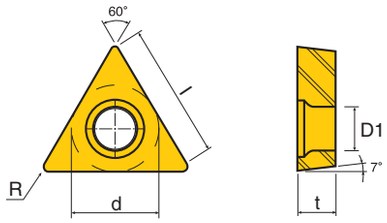
Positive 55° Insert - For Aluminum

DCGT AU



Insert	Designation	Dimension (mm)					Grade
		l	d	t	R	D1	DC210
	DCGT 11T304 AU	11.2	9.525	3.97	0.4	4.4	●

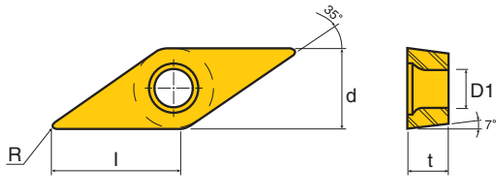
Positive 60° Insert - For Aluminum



TCGT AU

Insert	Designation	Dimension (mm)					Grade
		l	d	t	R	D_1	DC210
	TCGT 110204 AU	10.0	6.35	2.38	0.4	2.8	●
	16T304 AU	15.5	9.525	3.97	0.4	4.4	●

Positive 35° Insert - For Aluminum

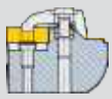


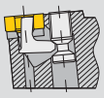
VCGT AU

Insert	Designation	Dimension (mm)					Grade
		l	d	t	R	D_1	DC210
	VCGT 160404 AU	15.6	9.52	4.76	0.4	4.4	●
	160408 AU	14.6	9.52	4.76	0.8	4.4	●

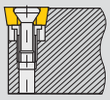
Designation System of External Holder

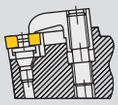
1. Clamping System

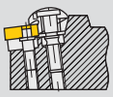

D / Clamp


P / Lever

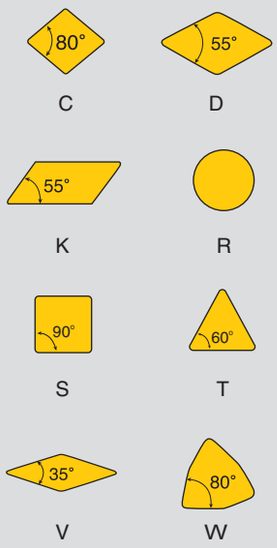

C / Top Clamp


S / Screw Clamp

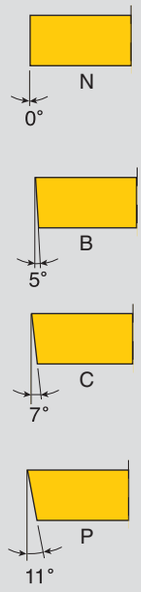

M / Multi Lock


W / Wedge Clamp

2. Insert Shape



4. Insert Clearance Angle



P C L N R

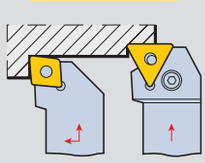
1 2 3 4 5

3. Approach Angle

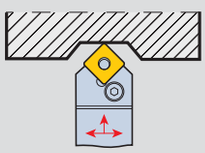
Symbol	Shape	Offset	Symbol	Shape	Offset	Symbol	Shape	Offset
A	90°	×	J	93°	O	V	72.5°	×
	90°		K	75°	O	W	60°	O
B	75°	×	L	95°	O	X	Special	
			M	50°	×			
D	45°	×	N	63°	×			
E	60°	×	R	75°	O			
F	90°	O	S	45°	O			
G	90°	O	T	60°	O			
	90°		U	93°	O			

5. Hand of Tool

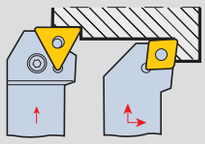
Right-R



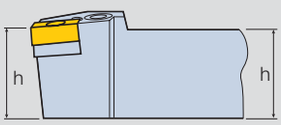
Neutral-N



Left-L

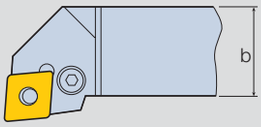


6. Shank Height



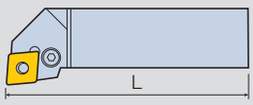
Integers to be preceded by 0
e.g.: h=8mm indicated by 08

7. Shank Width



Integers to be preceded by 0
e.g.: b=8mm indicated by 08

8. Tool Length

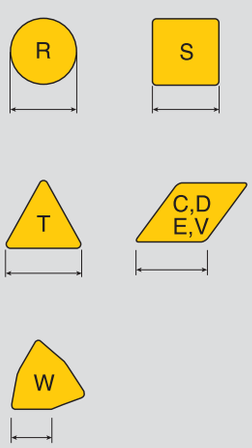


L (mm)	Symbol	L (mm)	Symbol
32	A	160	N
40	B	170	P
50	C	180	Q
60	D	200	R
70	E	250	S
80	F	300	T
90	G	350	U
100	H	400	V
110	J	450	W
125	K	500	Y
140	L	Special	X
150	M		

25 25 M 12 - C

6 7 8 9 10

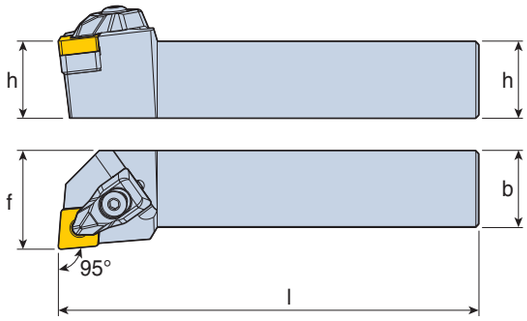
9. Cutting Edge Length

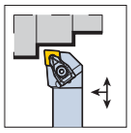


10. Manufacturer's Type

Unique to manufacturer

DCLNR/L



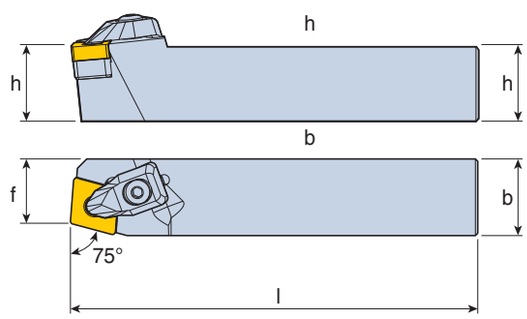


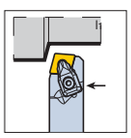
Designation		Dimension (mm)				Insert
		h	b	l	f	
DCLNR/L	2020 K12	20	20	125	25	80° CN□□ 1204□□
	2525 M12	25	25	150	32	

Spares

Holder/ Related insert	Clamp	Clamp screw	Shim	Shim screw	Spring	Wrench	
							
···12	DTC 4	DTCS4	DTS-C 44	DS 40050I	DSPR 4	DHLW-3	DTFW 15

DCBNR/L



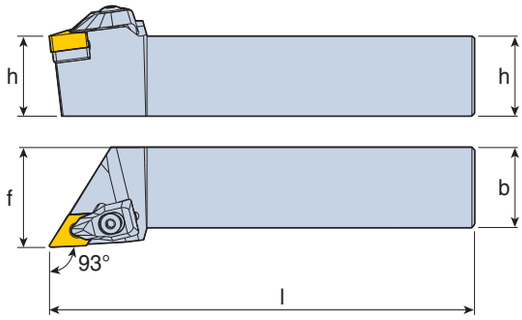


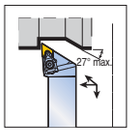
Designation		Dimension (mm)				Insert
		h	b	l	f	
DCBNR/L	2525 M12	25	25	150	22.5	80° CN□□ 1204□□

Spares

Holder/ Related insert	Clamp	Clamp screw	Shim	Shim screw	Spring	Wrench	
							
···12	DTC 4	DTCS4	DTS-C 44	DS 40050I	DSPR 4	DHLW-3	DTFW 15

DDJNR/L



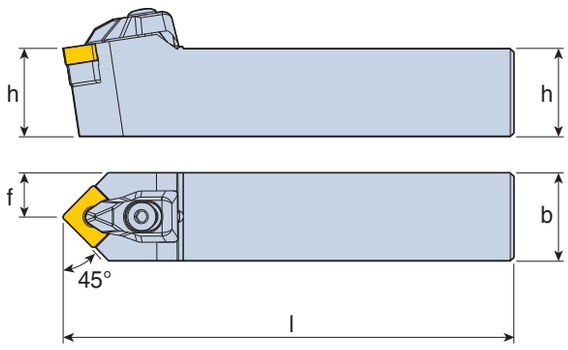


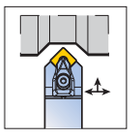
Designation	Dimension (mm)				Insert
	h	b	l	f	
DDJNR/L 2525 M15	25	25	150	32	55° DN□□ 1506□□

Spares

Holder/ Related insert	Clamp	Clamp screw	Shim	Shim screw	Spring	Wrench	
···15	DTC 4	DTCS4	DTS-D 43	DS 40050I	DSPR 4	DHLW-3	DTFW 15

DSDNN



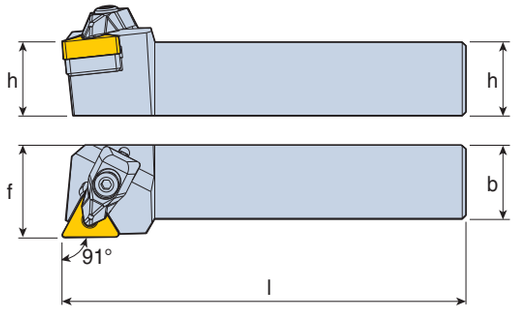


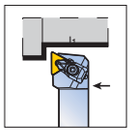
Designation	Dimension (mm)				Insert
	h	b	l	f	
DSDNN 2525 M12	25	25	150	12.5	90° SN□□ 1204□□

Spares

Holder/ Related insert	Clamp	Clamp screw	Shim	Shim screw	Spring	Wrench	
···12	DTC 4	DTCS4	DTS-S 44	DS 40050I	DSPR 4	DHLW-3	DTFW 15

DTJNR/L



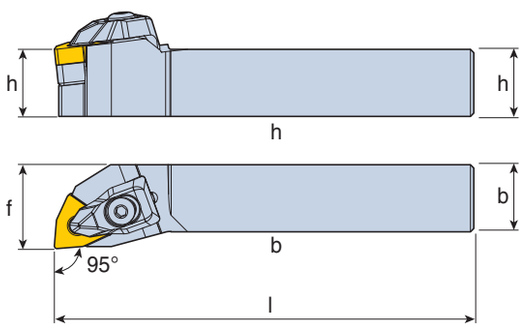


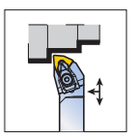
Designation		Dimension (mm)				Insert
		h	b	l	f	
DTJNR/L	2020 K16	20	20	125	25	60° TN□□ 1604□□
	2525 M16	25	25	150	32	

Spares

Holder/ Related insert	Clamp	Clamp screw	Shim	Shim screw	Spring	Wrench	
							
···16	DTC 3	DTCS3	DTS-T 33	DS 35080I	DSPR 3	DHLW-2.5	DTFW 15

DWLNR/L



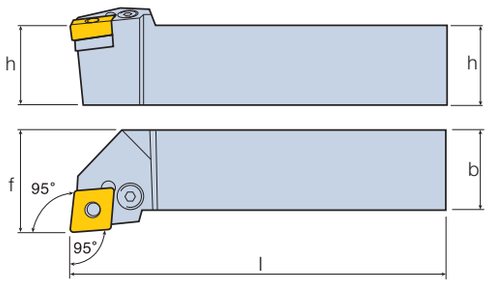


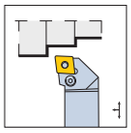
Designation		Dimension (mm)				Insert	
		h	b	l	f		
DWLNR/L	2020 K06 - C	20	20	125	25	80°	WN□□ 0604□□
	2525 M06 - C	25	25	150	32		
DWLNR/L	2525 M08 - C	25	25	150	32		WN□□ 0804□□

Spares

Holder/ Related insert	Clamp	Clamp screw	Shim	Shim screw	Spring	Wrench	
							
···06-C	DTC 3	DTCS3	DTS-W 32	DS 40090I	DSPR 3	DHLW-2.5	DTFW 15
···08-C	DTC 4	DTCS4	DTS-W 44	DS 40050I	DSPR 4	DHLW-3	DTFW 15

PCLNR/L



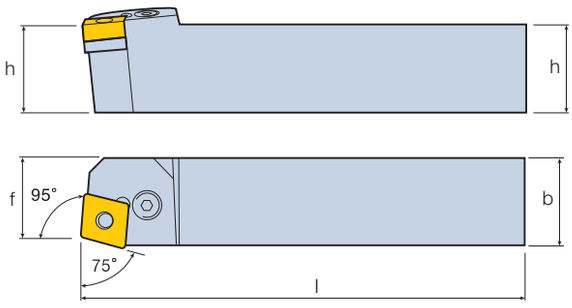


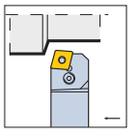
Designation		Dimension (mm)				Insert
		h	b	l	f	
PCLNR/L	2020 K12 - C	20	20	125	25	80° CN□□ 1204□□
	2525 M12 - C	25	25	150	32	

Spares

Holder/ Related insert	Lever	Screw	Shim	Shim Pin	Wrench
					
...12-C	DLC 4	DLCS 4	DLS-C 42	DSP 4-C	DHLW-3

PCBNR/L



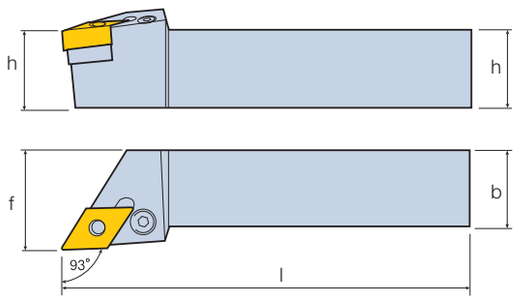


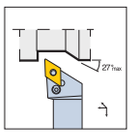
Designation		Dimension (mm)				Insert
		h	b	l	f	
PCBNR/L	2020 K12 - C	20	20	125	17.5	80° CN□□ 1204□□
	2525 M12 - C	25	25	150	22.5	

Spares

Holder/ Related insert	Lever	Screw	Shim	Shim Pin	Wrench
					
...12-C	DLC 4	DLCS 4	DLS-C 42	DSP 4-C	DHLW-3

PDJNR/L



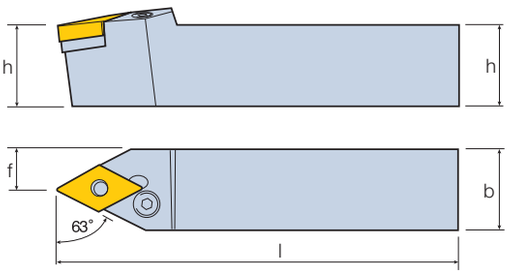


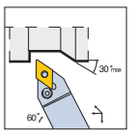
Designation		Dimension (mm)				Insert
		h	b	l	f	
PDJNR/L	2020 K15 - C	20	20	125	25	55° DN□□ 1506□□
	2525 M15 - C	25	25	150	32	

Spares

Holder/ Related insert	Lever	Screw	Shim	Shim Pin	Wrench
					
...15-C	DLC 4A	DLCS 4	DLS-D 42	DSP 4-C	DHLW-3

PDNNR/L



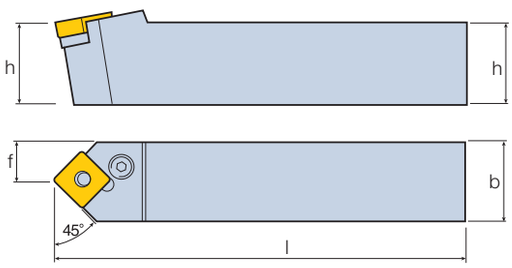


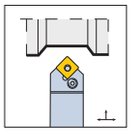
Designation		Dimension (mm)				Insert
		h	b	l	f	
PDNNR/L	2525 M15 - C	25	25	150	18.5	55° DN□□ 1506□□

Spares

Holder/ Related insert	Lever	Screw	Shim	Shim Pin	Wrench
					
...15-C	DLC 4A	DLCS 4	DLS-D 42	DSP 4-C	DHLW-3

PSDNN



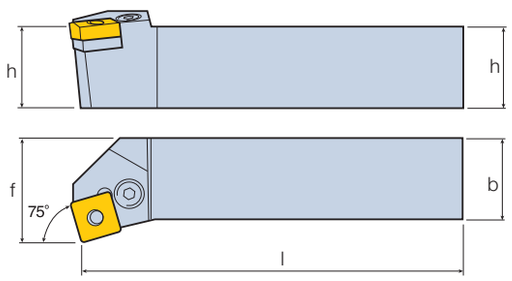


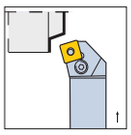
Designation		Dimension (mm)				Insert
		h	b	l	f	
PSDNN	2020 K12 - C	20	20	125	10.0	90° SN□□ 1204□□
	2525 M12 - C	25	25	150	12.5	

Spares

Holder/ Related insert	Lever	Screw	Shim	Shim Pin	Wrench
...12-C	DLC 4	DLCS 4	DLS-S 42	DSP 4-C	DHLW-3

PSKNR/L



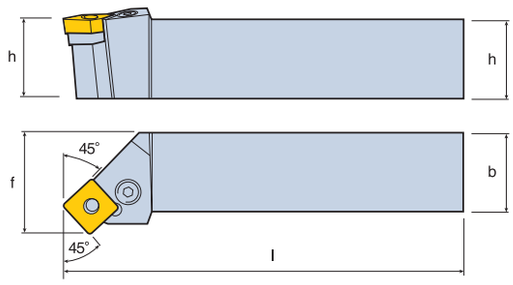


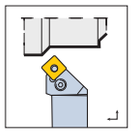
Designation		Dimension (mm)				Insert
		h	b	l	f	
PSKNR/L	2525 M12 - C	25	25	150	32	90° SN□□ 1204□□

Spares

Holder/ Related insert	Lever	Screw	Shim	Shim Pin	Wrench
...12-C	DLC 4	DLCS 4	DLS-S 42	DSP 4-C	DHLW-3

PSSNR/L



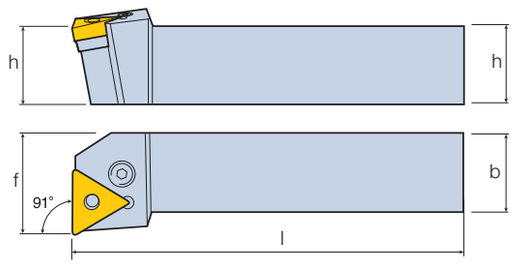


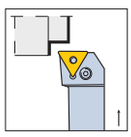
Designation		Dimension (mm)				Insert
		h	b	l	f	
PSSNR/L	2020 K12 - C	20	20	125	25	 SN□□ 1204□□
	2525 M12 - C	25	25	150	32	

Spares

Holder/ Related insert	Lever	Screw	Shim	Shim Pin	Wrench
					
...12-C	DLC 4	DLCS 4	DLS-S 42	DSP 4-C	DHLW-3

PTFNR/L



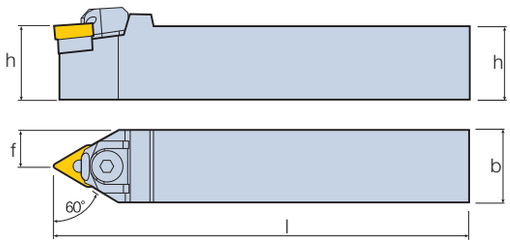


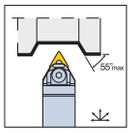
Designation		Dimension (mm)				Insert
		h	b	l	f	
PTFNR/L	2020 K16 - C	20	20	125	25	 TN□□ 1604□□
	2525 M16 - C	25	25	150	32	

Spares

Holder/ Related insert	Lever	Screw	Shim	Shim Pin	Wrench
					
...16-C	DLC 3	DLCS 3	DLS-T 31.8	DSP 3A	DHLW-2.5

WTENN



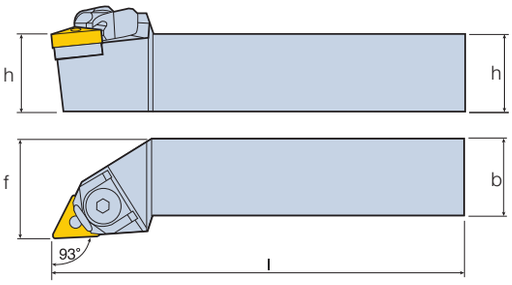


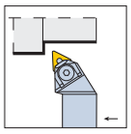
Designation		Dimension (mm)				Insert
		h	b	l	f	
WTENN	2020 K16 - C	20	20	125	10.0	 TN□□ 1604□□
	2525 M16 - C	25	25	150	12.5	

Spares

Holder/ Related insert	Wedge Clamp	Screw	Snap Ring	Shim	Pin Screw	Wrench
						
...16-C	DWC 33	DWCS 4	DWSR 4	DWS-T 33	DWSS 33	DHLW-3

WTJNR/L



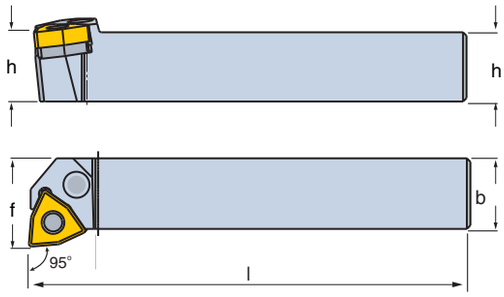


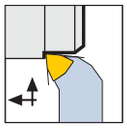
Designation		Dimension (mm)				Insert
		h	b	l	f	
WTJNR/L	2020 K16 - C	20	20	125	25	 TN□□ 1604□□
	2525 M16 - C	25	25	150	32	

Spares

Holder/ Related insert	Wedge Clamp	Screw	Snap Ring	Shim	Pin Screw	Wrench
						
...16-C	DWC 33	DWCS 4	DWSR 4	DWS-T 33	DWSS 33	DHLW3

PWLNR/L



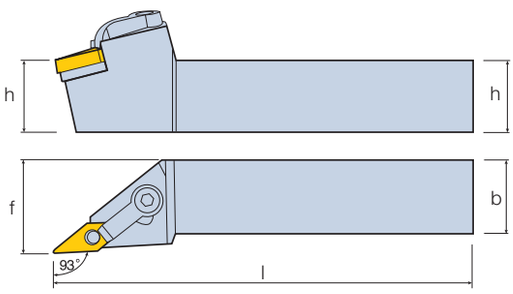


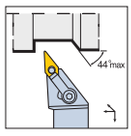
Designation		Dimension (mm)				Insert	
		h	b	l	f		
PWLNR/L	2020 K06-C	20	20	125	25	80°	WN□□ 0604□□
	2525 M06-C	25	25	150	32		
	2020 K08-C	20	20	125	25		WN□□ 0804□□
	2525 M08-C	25	25	150	32		

Spares

Holder/ Related insert	Shim	Shim Pin	Lever	Screw	Key
...06-C	DTWN 322	DSP 3A	DCL 3	DLCS 3	DHLW 2.5
...08-C	DTWN 423	DSP 4	DCL 4	DLCS 4	DHLW 3

MVJNR/L



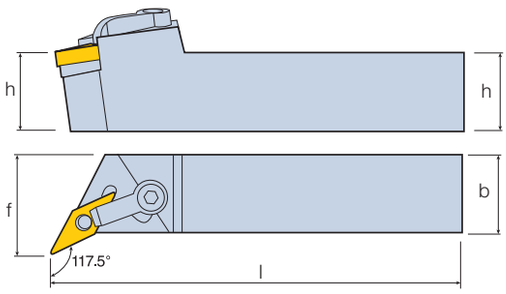


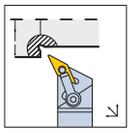
Designation		Dimension (mm)				Insert	
		h	b	l	f		
MVJNR/L	2525 M16 - C	25	25	150	32	35°	VN□□ 1604□□

Spares

Holder/ Related insert	Clamp	Screw	Shim	Lock Pin	Wrench
...16-C	DMC 30	DNSM 0825	DMS-V 324	DLP 3	DHLW-2, DHLW-4

MVQNR/L



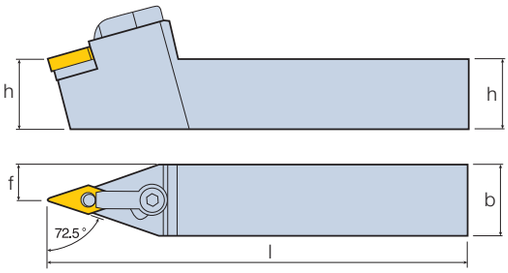


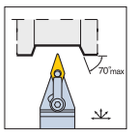
Designation		Dimension (mm)				Insert
		h	b	l	f	
MVQNR/L	2525 M16 - C	25	25	150	32	35° VN□□ 1604□□

Spares

Holder/ Related insert	Clamp	Screw	Shim	Lock Pin	Wrench
					
...16-C	DMC 30	DNSM 0825	DMS-V 324	DLP 3	DHLW-2, DHLW-4

MVVNN



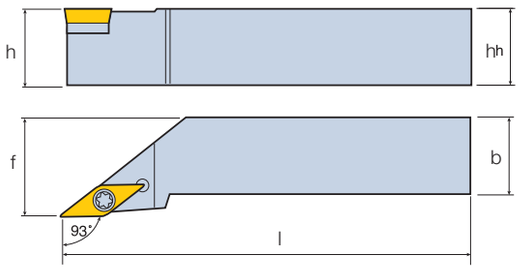


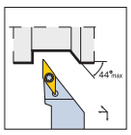
Designation		Dimension (mm)				Insert
		h	b	l	f	
MVVNN	2020 K16 - C	20	20	125	10.0	35° VN□□ 1604□□
	2525 M16 - C	25	25	150	12.5	

Spares

Holder/ Related insert	Clamp	Screw	Shim	Lock Pin	Wrench
					
...16-C	DMC 30	DNSM 0825	DMS-V 324	DLP 3	DHLW-2, DHLW-4

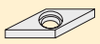
SVJBR/L



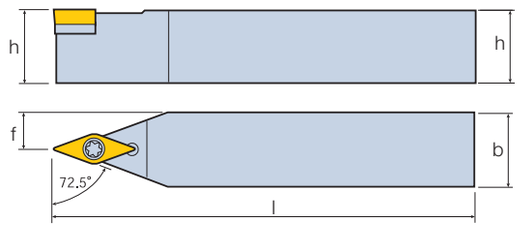


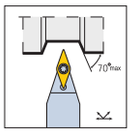
Designation		Dimension (mm)				Insert
		h	b	l	f	
SVJBR/L	2020 K16 - C	20	20	125	25	35° VB□□ 1604□□
	2525 M16 - C	25	25	150	32	

Spares

Holder/ Related insert	Screw	Shim	Shim Screw	Wrench
				
...16-C	DS 35124I	DSS-V 32	DSC 5035062S-TS	DTFW-15

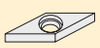
SVVBN





Designation		Dimension (mm)				Insert
		h	b	l	f	
SVVBN	2020 K16 - C	20	20	125	10.0	35° VB□□ 1604□□
	2525 M16 - C	25	25	150	12.5	

Spares

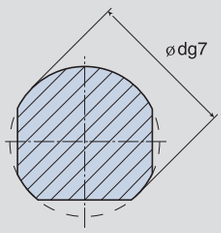
Holder/ Related insert	Screw	Shim	Shim Screw	Wrench
				
...16-C	DS 35124I	DSS-V 32	DSC 50090S	DTFW-15

Designation System of Internal Boring Bar

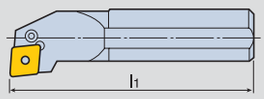
1. Type of Boring

S: Steel Shank

2. Bar Diameter

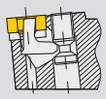


3. Tool Length



K	125	U	350
M	150	V	400
Q	180	W	450
R	200	Y	500
S	250	X	Special
T	300		

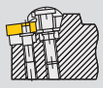
4. Clamping System


P / Lever Lock


C / Top Clamp


S / Screw Clamp

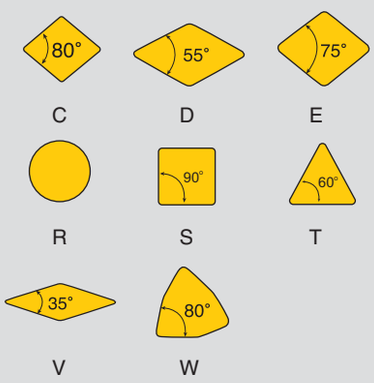

M / Multi Lock


W / Wedge Clamp

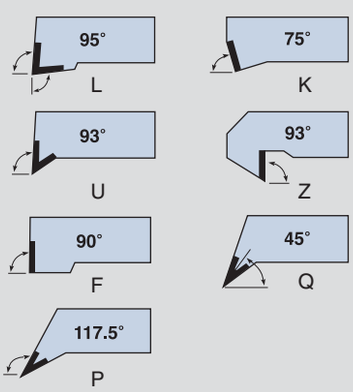
S 25 T - P C L N R - 12 - C

1 2 3 4 5 6 7 8 9 10

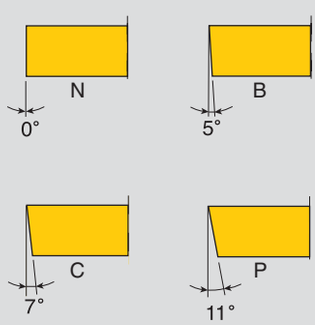
5. Insert Shape



6. Approach Angle

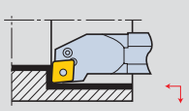


7. Insert Clearance Angle

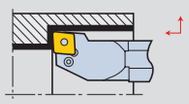


8. Hand of Tool

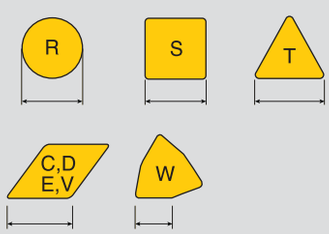
Right



Left



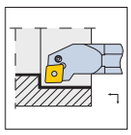
9. Cutting Edge Length

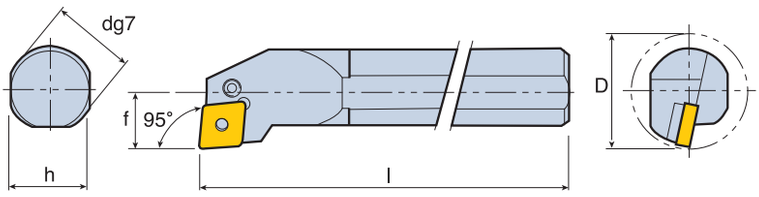


10. Manufacturer's Type

Unique to manufacturer

S-PCLNR/L



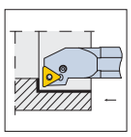


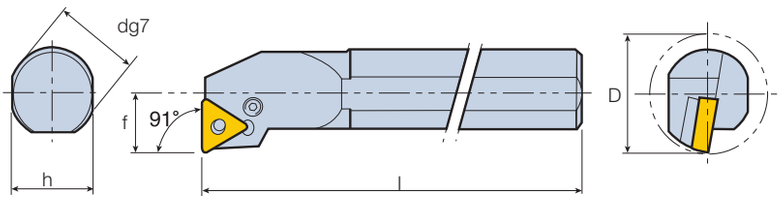
Designation		Dimension (mm)					Insert
		d	h	l	f	D	
S25T	PCLNR/L 12 - C	25	23	300	17	32	 CN□□ 1204□□
S32T	PCLNR/L 12 - C	32	30	300	22	40	
S40V	PCLNR/L 12 - C	40	37	400	27	50	
S50W	PCLNR/L 12 - C	50	47	450	35	63	

Spares

Holder/ Related Insert	Lever	Screw	Shim	Shim Pin	Snap Ring	Wrench
						
S25T...12-C	DLC 4B	DLCS 4B	-	-	DLSR 4B	DHLW-2.5
S32S...12-C	DLC 4	DLCS 4S	DLS-C 42	DSP 4	-	DHLW-3
S32T...12-C						
S40V...12-C		DLCS 4				
S50W..12-C						

S-PTFNR/L



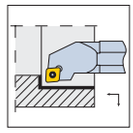


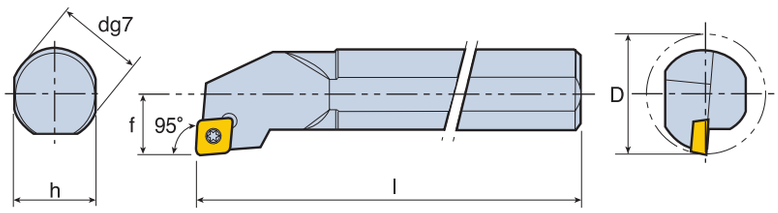
Designation		Dimension (mm)					Insert
		d	h	l	f	D	
S25T	PTFNR/L 16 - C	25	23	300	17	32	 TN□□ 1604□□

Spares

Holder/ Related Insert	Lever	Screw	Snap Ring	Wrench
				
S25T...16-C	DLC 3BH	DLCS 3B	DLSR 3B	DHLW2

S-SCLCR/L



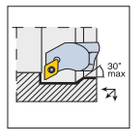


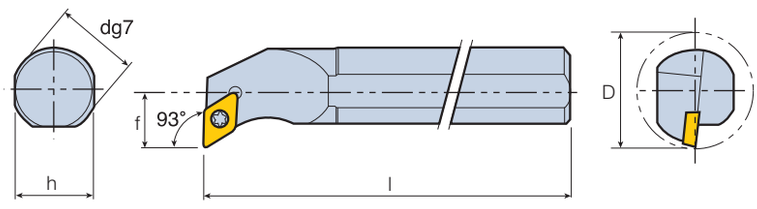
Designation		Dimension (mm)					Insert	
		d	h	l	f	D		
S08K	SCLCR/L 06 - C	8	7	125	6	11	80°	CC□□ 0602□□
S10K	SCLCR/L 06 - C	10	9	125	7	13		
S12M	SCLCR/L 06 - C	12	11	150	9	16		
S12M	SCLCR/L 09 - C	12	11	150	9	16		CC□□ 09T3□□
S16R	SCLCR/L 09 - C	16	15	200	11	20		
S20S	SCLCR/L 09 - C	20	18	250	13	25		
S25T	SCLCR/L 09 - C	25	23	300	17	32		

Spares

Holder/ Related Insert	Screw	Wrench
		
S80K,S10K...06-C	DS 25050I	DTFW-7
S12M...06-C	DS 25065I	
...09-C	DS 35080I	DTFW-15

S-SDUCR/L



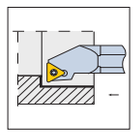


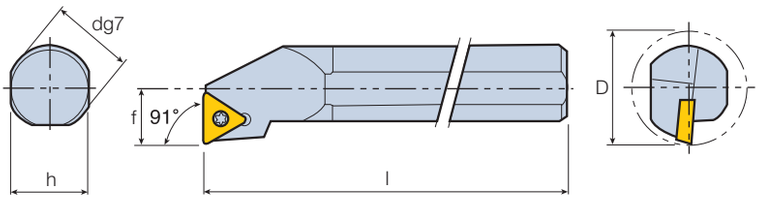
Designation		Dimension (mm)					Insert	
		d	h	l	f	D		
S16R	SDUCR/L 11 - C	16	15	200	11	20	55°	DC□□ 11T3□□
S20S	SDUCR/L 11 - C	20	18	250	13	25		
S25T	SDUCR/L 11 - C	25	23	300	17	32		

Spares

Holder/ Related Insert	Screw	Wrench
		
...11-C	DS 35080I	DTFW-15

S-STFCR/L



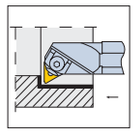


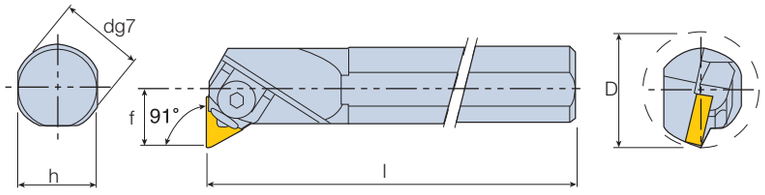
Designation		Dimension (mm)					Insert
		d	h	l	f	D	
S12M	STFCR/L 11 - C	12	11	150	9	16	TC□□ 1102□□
S16R	STFCR/L 11 - C	16	15	200	11	20	

Spares

Holder/ Related Insert	Component	
	Screw	Wrench
		
...11-C	DS 25065I	DTFW-7

S-WTFNR/L





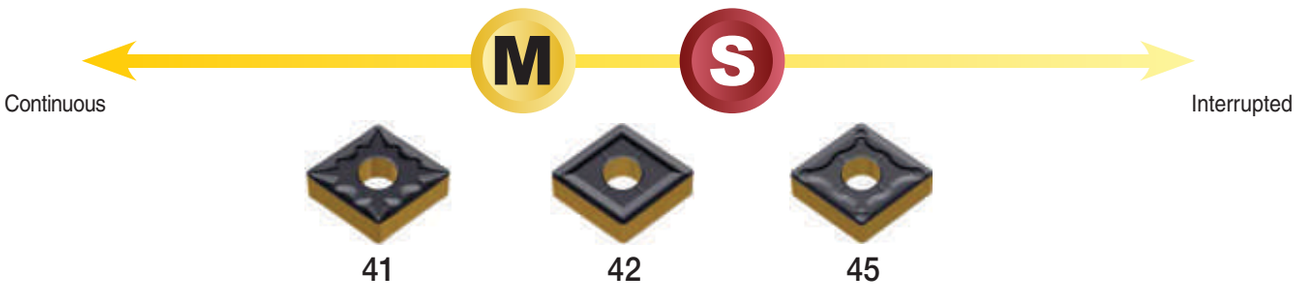
Designation		Dimension (mm)					Insert
		d	h	l	f	D	
S25T	WTFNR/L 16 - C	25	23	300	17	32	TN□□ 1604□□
S32U	WTFNR/L 16 - C	32	30	350	22	40	

Spares

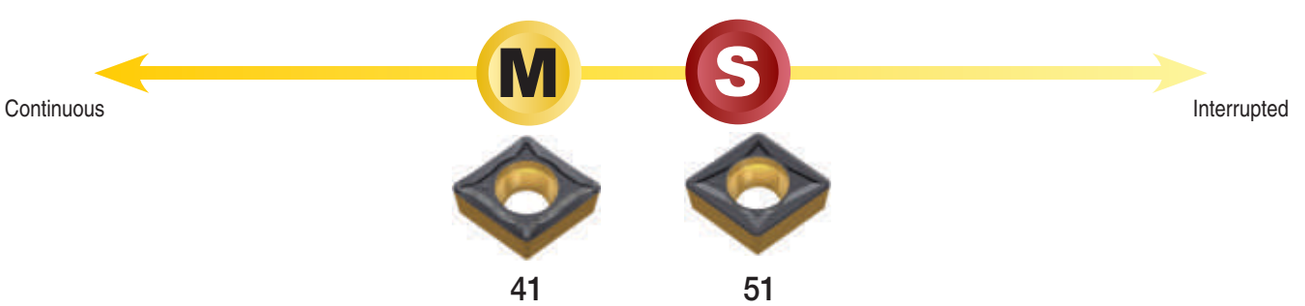
Holder/ Related Insert	Wedge Clamp	Screw	Snap Ring	Shim	Pin Screw	Wrench
						
S25T...16-C	DWC 33	DWCS 4B	DWSR 4	-	DWSS 33-1	DHLW-3
S32U...16-C				DWS-T 33	DWSS 33	

Chip breaker selection according to workpiece shape

Negative Insert

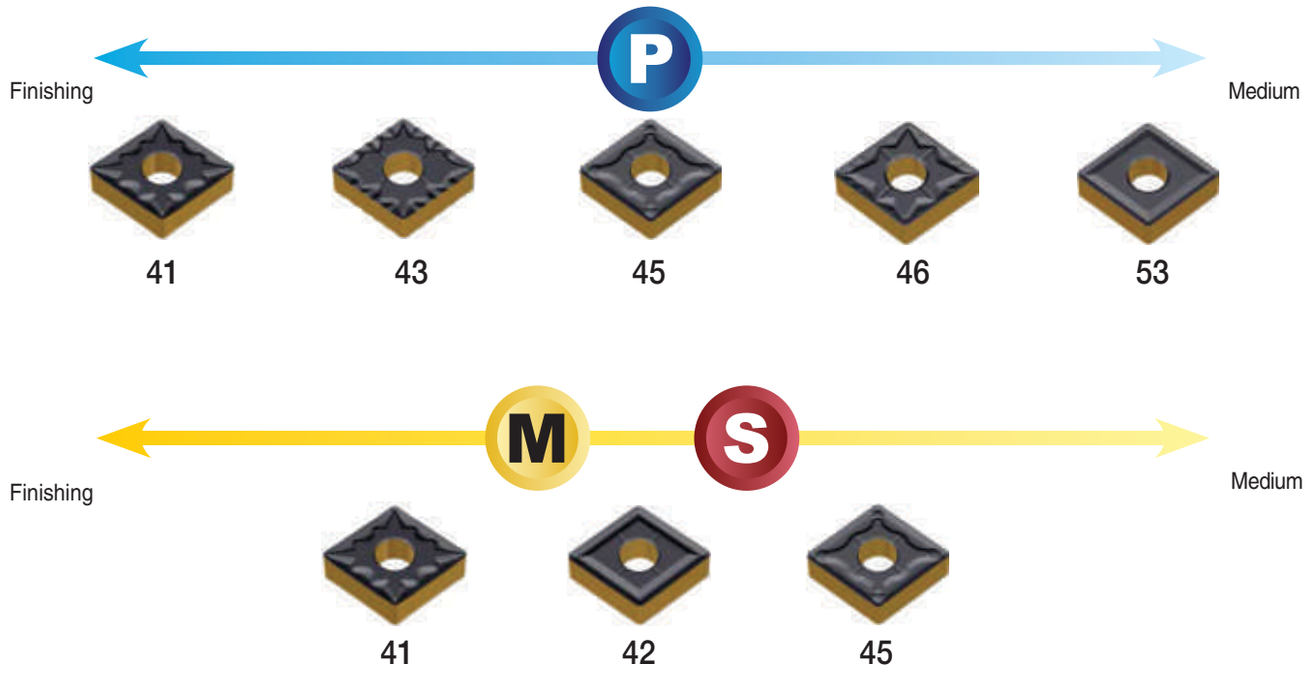


Positive Insert

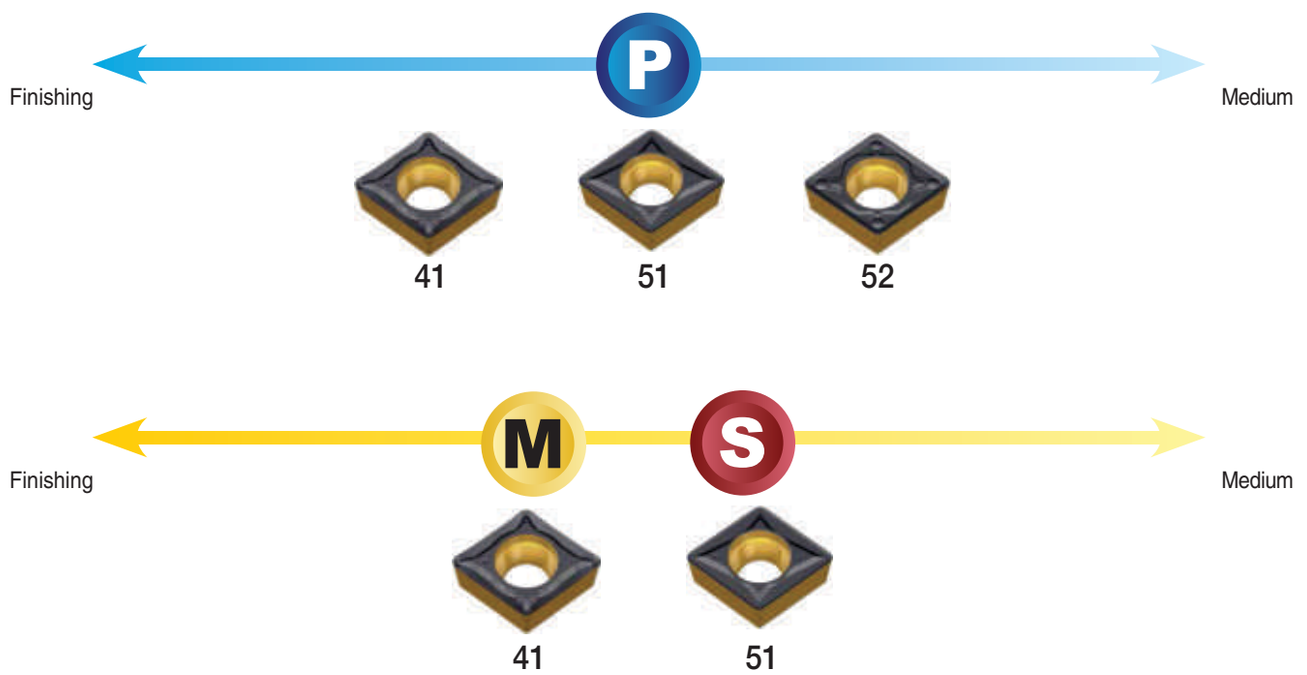


Chip-Breaking

Negative Insert



Positive Insert



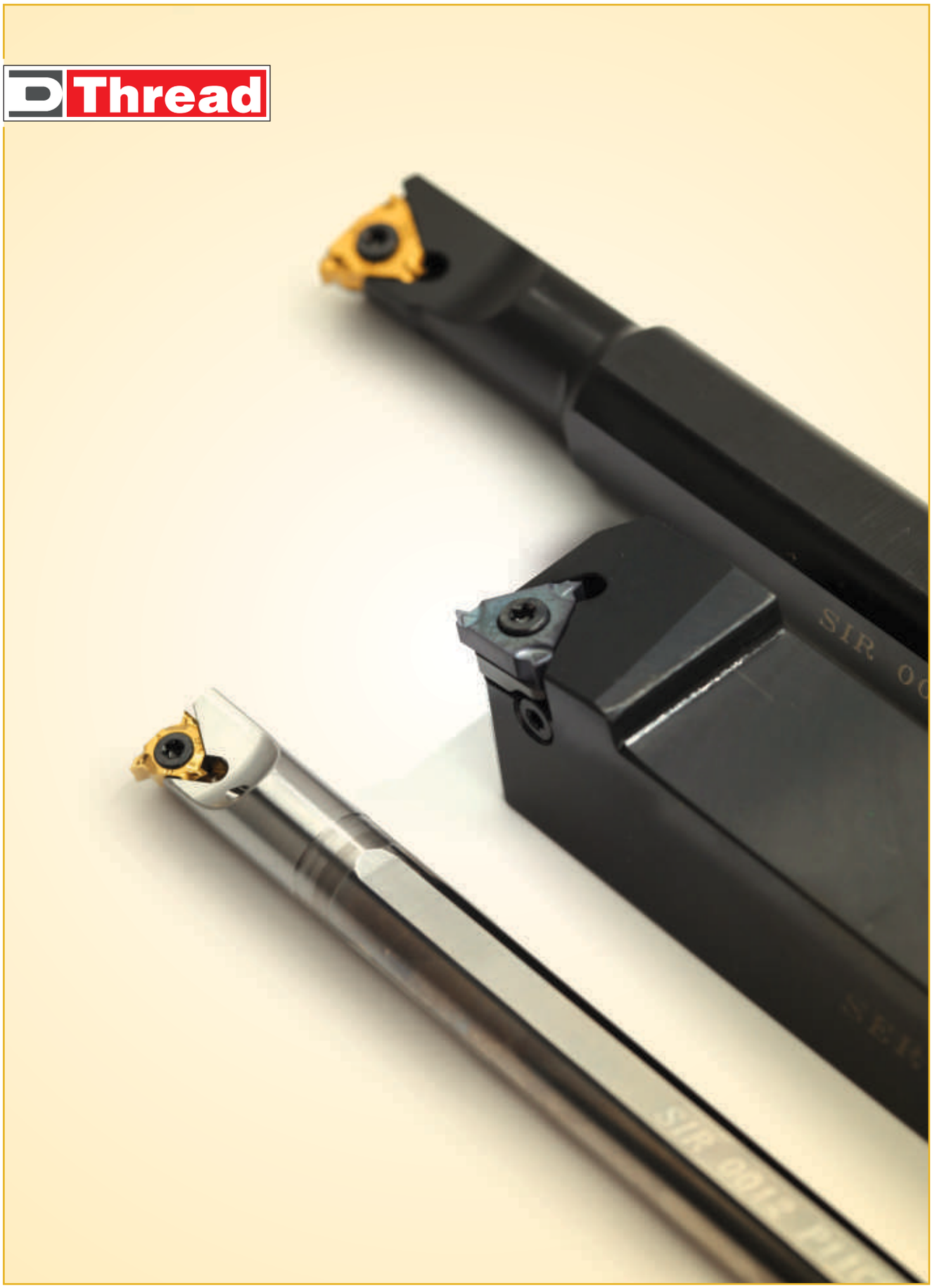
Material	Operation	1st	2nd
Carbon Steel & Alloy Steel (S45C, SCM4…..)	Finishing	41	43
	Medium	43 / 46	
	Roughing	46	53
Low Carbon Steel & Low Alloy Steel (S20C, SCM415…)	Finishing	41	43
	Medium	45	42
	Roughing	45	46
Stainless Steel	Finishing	41	42
	Medium	42	45
	Roughing	45	46
Cast Iron	Finishing	46	
	Medium	46	
	Roughing	53	46

Chipbreaker comparison table

Description		Duracarb	Mitsubishi	Sumitomo	Kyocera	Tungaloy	Korloy	Sandvik	Kennametal	Seco	Walter	ISCAR
Negative Double sided	Steel	41	SY SH	SU LU	HQ	TSF TF	VF GF	QF PF	FP FN	MF2	NF3	NF
		43	SA SH	GE	CQ PS	TSF TM	VC	PF	FN	MF3	NS6	TF
		46	MV	GU	HS	TM	VM	PM	MN	M3	NM6	GN
		52	MH	UX	GS	AS	HC	SM	MP	MR3	NM4	
		53*	MG-	UZ	C	MG-	B25		MG		MG	
	Stainless Steel	42	MS	EX	MU, MS	SS	HS	MM	UP	MF4	NMS	TMN
		45	MA	GU	HU	SM	GS	MR	RP	MF5	NR4	
	Cast Iron	52	MH	UX	GS	AS	HC	SM	MP	MR3	NM6	
		53*	MG-	UZ	C	MG-	B25		MG		MG	
Positive Single sided	Steel	41	SQ	LU	GP	PF	HPF	PF	FP, LF	F1	PS4	SM
		51	MT	SU	GK	PS	HMP	PM	MP		PF2	17
		52	SV	MU	HQ	PM	C25	UM	MF	F2	PM5	19
	Aluminum	AU	AZ	AG	AH	AL	AR	AL	HP	AL	PM2	AF, AS

*Not in stocking program; please contact our engineers

DThread



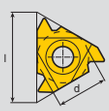
Insert Designation System

16 E R M A 60 DC9800

1 2 3 4 5 6 7

1. Insert size

l	d	
11	6.35	1/4”
16	9.525	3/8”



2.Application

E	External
I	Internal

3. Hand

R	Right Hand
L	Left Hand

4. Type

M	Chipbreaker

5. Pitch

Partial profile			
	l	Pitch range	
		mm	TPI
A	11	0.50-1.50	48-16
A	16	0.50-1.50	48-16
AG		0.50-3.00	48-8
G		1.75-3.00	14-8

Full profile: Value by number
0.35 ~ 8.00 mm
72 ~ 2 TPI

6.Threadstandard

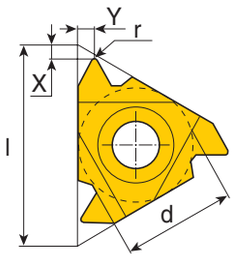
60	Partial profile 60°
ISO	ISO metric

7. Grade

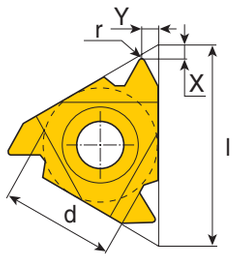
DC9800

Partial Profile 60°

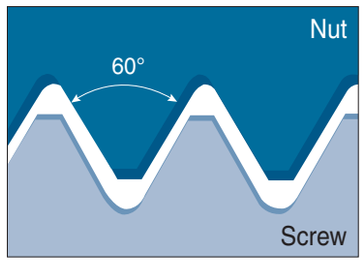
External & Internal



External right hand



Internal right hand



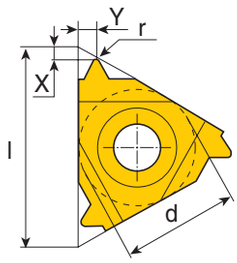
• Application: General industry

Insert		Designation	Pitch		Dimension (mm)					Grade
			mm	TPI	d	l	r	X	Y	DC9800
	External M	**16ERM A 60**	0.5-1.5	48-16	3/8″	16	0.05	0.8	0.9	●
		16ERM AG 60	0.5-3.0	48-8	3/8″	16	0.06	1.2	1.7	●
		16ERM G 60	1.75-3.0	14-8	3/8″	16	0.17	1.2	1.7	●
	Internal M	**11IRM A 60**	0.5-1.5	48-16	1/4″	11	0.05	0.7	0.9	●
		16IRM A 60	0.5-1.5	48-16	3/8″	16	0.05	0.8	0.9	●
		16IRM AG 60	0.5-3.0	48-8	3/8″	16	0.05	1.2	1.7	●
		16IRM G 60	1.75-3.0	14-8	3/8″	16	0.10	1.2	1.7	●

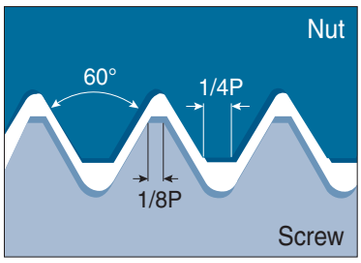
●: Standard item

External ISO Metric

Full profile (DIN13 12-1986 class: 6G)



External right hand



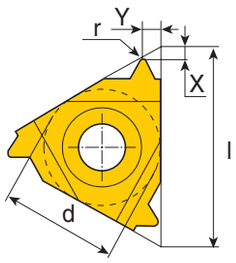
- Application: General industry

Insert	Designation	Pitch	Dimension (mm)					Grade
		mm	d	l	r	X	Y	DC9800
 External M	16ERM 0.75 ISO	0.75	3/8″	16	0.08	0.6	0.6	●
	16ERM 1.00 ISO	1.00	3/8″	16	0.11	0.7	0.7	●
	16ERM 1.25 ISO	1.25	3/8″	16	0.14	0.8	0.9	●
	16ERM 1.50 ISO	1.50	3/8″	16	0.19	0.8	1.0	●
	16ERM 1.75 ISO	1.75	3/8″	16	0.20	0.9	1.2	●
	16ERM 2.00 ISO	2.00	3/8″	16	0.24	1.0	1.3	●
	16ERM 2.50 ISO	2.50	3/8″	16	0.30	1.1	1.5	●
	16ERM 3.00 ISO	3.00	3/8″	16	0.38	1.2	1.6	●

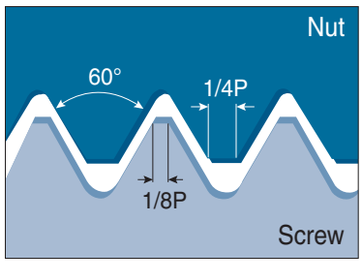
●: Standard item

Internal ISO Metric

Full profile (DIN13 12-1986 class: 6H)



Internal right hand



- Application: General industry

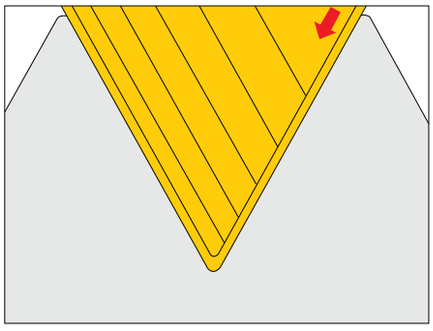
Insert	Designation	Pitch	Dimension (mm)					Grade
		mm	d	l	r	X	Y	DC9800
 Internal M	**11IRM 1.00 ISO**	1.00	1/4″	11	0.05	0.6	0.7	●
	11IRM 1.50 ISO	1.50	1/4″	11	0.08	0.8	1.0	●
	16IRM 1.00 ISO	1.00	3/8″	16	0.05	0.6	0.7	●
	16IRM 1.25 ISO	1.25	3/8″	16	0.06	0.8	0.9	●
	16IRM 1.50 ISO	1.50	3/8″	16	0.08	0.8	1.0	●
	16IRM 1.75 ISO	1.75	3/8″	16	0.10	0.9	1.2	●
	16IRM 2.00 ISO	2.00	3/8″	16	0.11	1.0	1.3	●
	16IRM 2.50 ISO	2.50	3/8″	16	0.14	1.1	1.5	●
	16IRM 3.00 ISO	3.00	3/8″	16	0.17	1.1	1.5	●

●: Standard item

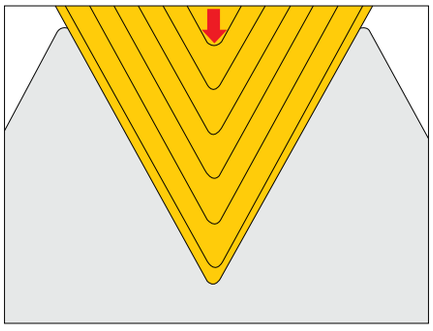
GRADE	ISO RANGE	FEATURES & APPLICATION
DC9800 **PVD coated**	P20 – P40 M20 – M40 S20 – S40	• General machining of steel, stainless steel and heat-resistance alloys

Infeed methods for threading operations

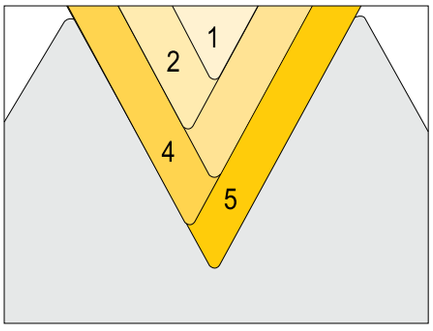
Flank infeed



Radial infeed

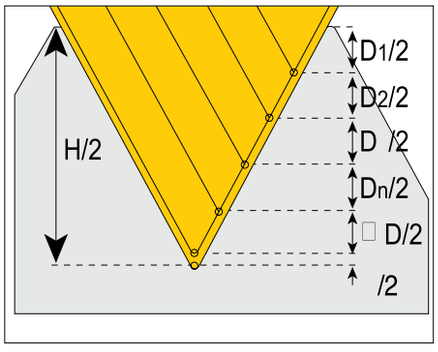


Alternating flank infeed



Flank equal

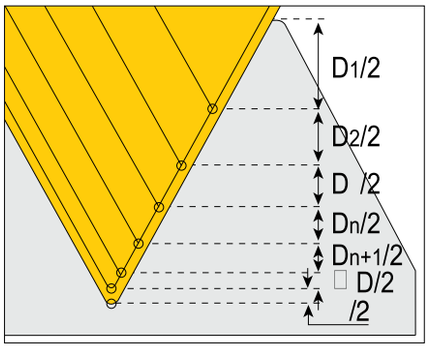
Equal depth of cut for each pass



$$\frac{D_1}{2} = \frac{D_2}{2} = \frac{D}{2} = \frac{D_n}{2}$$

Flank diminishing

Diminished depth of cut for each pass



$$\frac{D_1}{2} > \frac{D_2}{2} > \frac{D}{2} > \frac{D_n}{2} > \frac{D_{n+1}}{2}$$

Cutting Conditions

Material	Hardness	DC9800
		Cutting speed (m/min)
Non-alloy steel, Cast steel, Free cutting steel	125 - 190	140 - 220
	220 - 250	130 - 210
	300	110 - 190
Low alloy steel and cast steel	200	70 - 120
	275	110 - 190
	300 - 350	90 - 140
High alloy steel, cast steel and tool steel	200	70 - 100
	325	40 - 80
Stainless steel, cast steel	180	60 - 110
	200	90 - 130
	240	130 - 190
Grey cast iron	160 - 250	100 - 150
Nodular cast iron	180 - 260	80 - 150
Malleable cast iron	130 - 230	80 - 150
Al alloy <=12% Si	75 - 90	370 - 800
Al alloy <12% Si	130	200 - 280
Brass	90	100 - 140
Copper alloys	100 - 110	250 - 450
High temp. alloys Fe based	200 - 280	30 - 70
High temp. alloys Ni/Co based	250 - 320	20 - 50
Ti alloys		120 - 140
Hardened steel, Chilled cast iron	55HRC - 60HRC	20 - 60

Grade Comparison Table

Application	Duracarb	Korloy	Sandvik	Walter	Seco	Kennametal	Mitsubishi	Sumitomo	Tungaloy	Kyocera	ISCAR
Turning	DC210	H01	H10 H10A		HX		HTi10	H1 EH10	G1F TH10		IC20
	DC610	CN1000 CN2000	CT5015 CT5005	WCE10	CM CM15	KT125 KT150	NX2525 NX3035	T110A T1200A	NS730 NS720 NS9530	TN60 TN6020	IC20N
	DC820	NC305K NC6110	GC3205 GC3210	WAK10 WAK20	TK1000 TK2000	KCK05 KCK15	UC5105 UC5115	AC410K AC700G	T5105 T5115 T5125	CA4505 CA4515	IC5005 IC5010
	DC9015	NC3010 NC3015	GC4205 GC4215	WPP01 WPP10 WAP10	TP1000 TP1500	KCP05 KCP10	UE6105 UE6110	AC1000 AC700G	T9105 T9115	CA5505 CA5515 CR7015	IC8150 IC9150
	DC9025	NC3120 NC3020	GC4225 GC4025	WPP20 WAP20	TP2000 TP2500	KCP25 KC9125	UE6020	AC820P AC2000	T9125	CA5525 CR7025	IC8250 IC9250
	DC8035	NC320 NC3020	GC2025 GC4025	WPP20	TP2000	KC9125	UE6020	AC2000	T6120 T6130 AH630 AH640	CR7025	IC9250
	DP5010		GC1025		CP200		VP15TF	EH510Z		CA6015	IC907
Parting & Grooving	DC154	PC3500	GC1025 GC4125								IC350
	DP5320	PC5300 PC9530 NC5330	GC1030 GC2030 S30T	WAM30 WQM35	MH1000 MP2500 F30M	KC635M	VP15TF	ACP200	T3130 AH725 AH120	PR730 PR830 PR925 PR1025	IC808 IC908
Milling	DC210	H01	H10 H10A		HX		HTI10	H1 EH10	G1F H10T TH10		IC20
	DC325M		S30 SM30		S35M			A30N A30	TX30 UX30		IC50M
	DC9200	PC6510 PC215K	GC1020		MK2000	KC915M	F5010	ACZ310 ACK200 ACK300	AH120		IC810 IC910
	DC9300	PC3500 PC3535 PC3525 PC130	GC4020	WAM20	T250M				AH330	PR630 PR660 PR730	IC950
	DC7320	PC6510 PC215K PC5300	GC3020 GC1020	WKP25 WKP35	MK2000 MK3000	KCK15 KC520M	MP8010 VP15TF F5010	ACK200 ACK300 ACK310	T1015 T1115 AH120 GH110	PR905 PR510 PR610	IC810 IC910
	DC9235	PC3545 PC5300	GC2040 S40T	WXM35 WSM35 WSP45	F40M MM4500 MS2500	KC725M	F7030 VP30RT MP9030	ACP300 EH202 EH5202	AH130 AH140 SH730	PR1225 PR905	IC830 IC330 IC928
	DP8330	PC3545 PC5300	GC2040 S40T	WXM35 WSM35 WSP45	F40M MM4500 MS2500	KC725M	F7030 VP30RT MP9030	ACP300 EH202 EH5202	AH130 AH140 SH730	PR1225 PR905	IC830 IC330 IC928
	DP9320	PC3500 PC3535 PC3525	GC4220 GC4230	WAP25 WAM10	MP1500 MP2500				T3130 AH330	PR630 PR660 PR730	IC950
	DC9800	PC5300 NC5330 PC9530	GC1030 GC4240	WAM30	F30M MP3000	KC522M KC635M	VP15TF VP20RT	ACP200	AH725 AH730 GH330 AH120	PR830	IC808 IC908
	DP5320	PC5300 NC5330 PC9530	GC1030 GC4240	WAM30	F30M MP3000	KC522M KC635M	VP15TF VP20RT	ACP200	AH725 AH730 GH330 AH120	PR830	IC808 IC908
	DC7800	PC3545 PC5300	GC2040 S40T	WXM35 WSM35 WSP45	F40M MM4500 MS2500	KC725M	F7030 VP30RT MP9030	ACP300 EH202 EH5202	AH130 AH140 SH730	PR1225 PR905	IC830 IC330 IC928
	DC150	PC3500	GC1025 GC4125								IC350
Drilling	DC9800	PC9530	GC1030 GC2030	WAM30	F30M	KC522M KC635M	VP15TF	ACP200	GH330	PR830 PR925 PR1025	IC808 IC908
	DC154	PC3500	GC1025 GC4125								IC350


Smart Indian Choice
WHEN COST SOUNDS LIKE A FOUR-LETTER WORD...
TURN TO OUR TOOLS!
Member IMC Group
Duracarb
sales@duracarb-india.com
DC/V5/01/2019