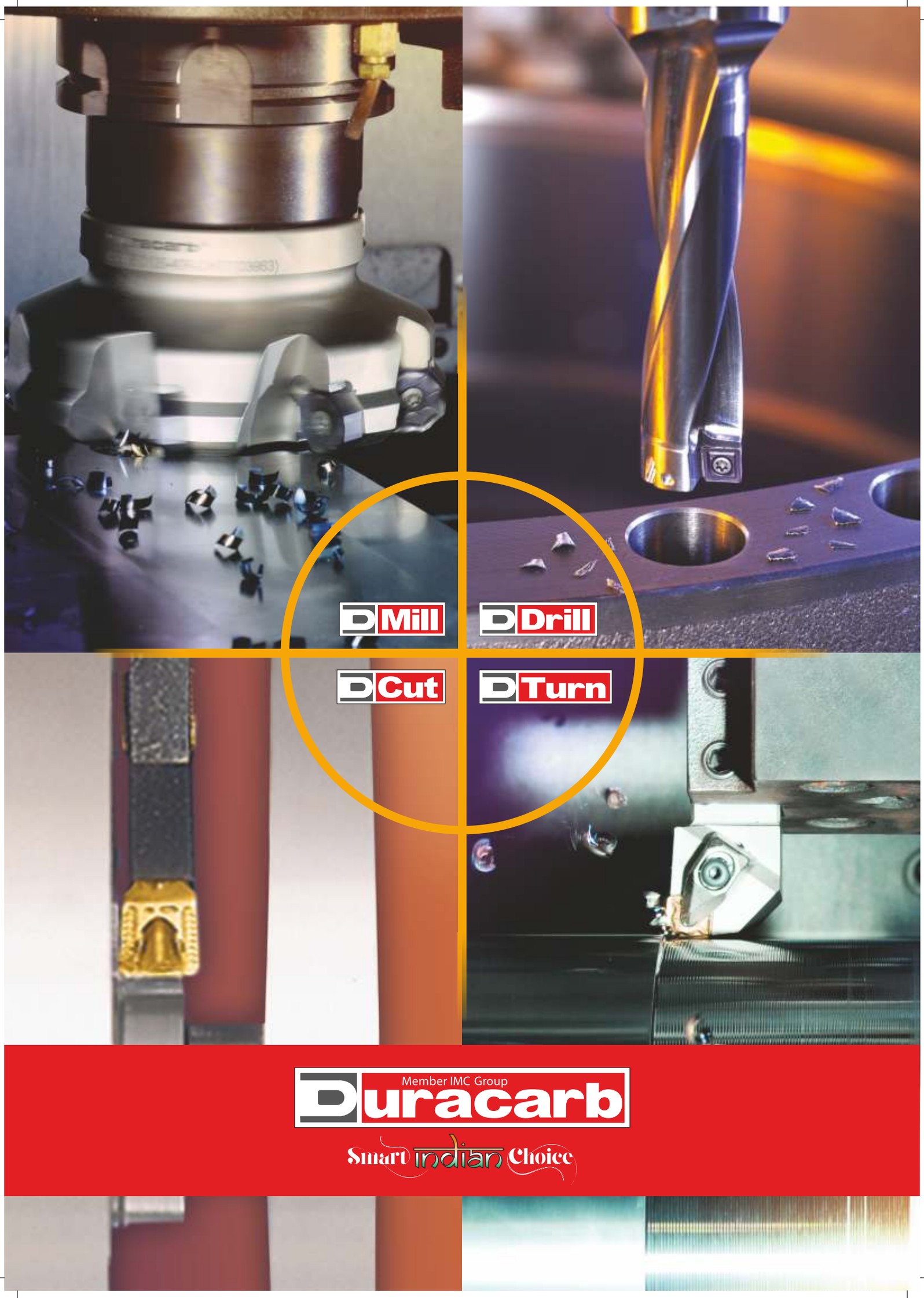

DMill
DDrill
DCut
DTurn
Member IMC Group
Duracarb
Smart indian Choice

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...







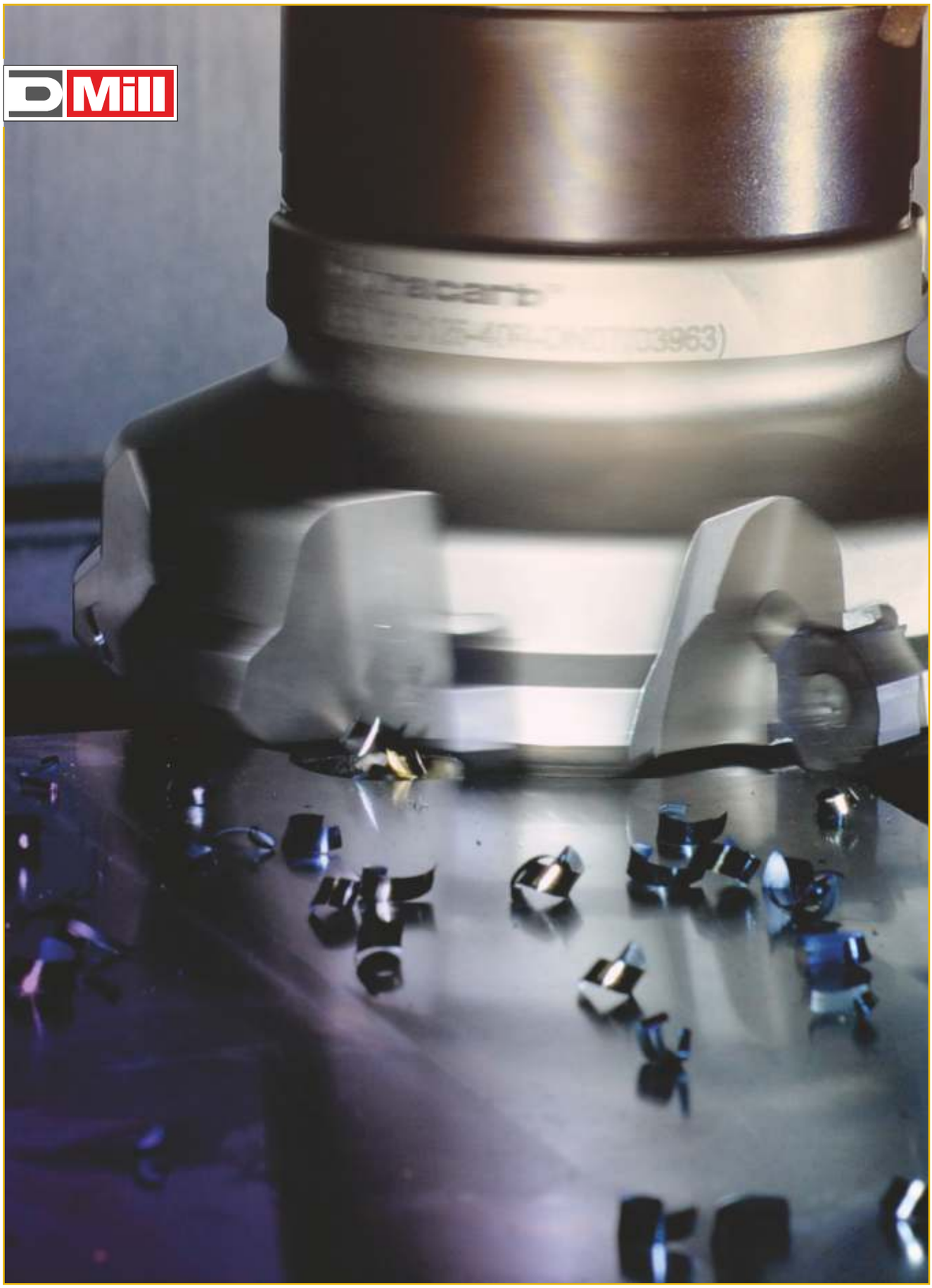
QUALITY @ DURACARB

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.

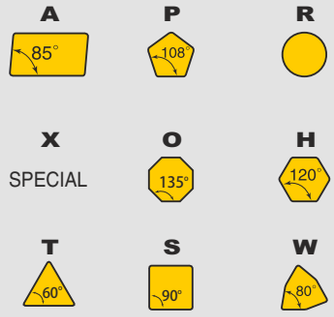
Quality control facilities include the metallurgical laboratory, raw metal testing and a machining center for tool performance testing and final product inspection.

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

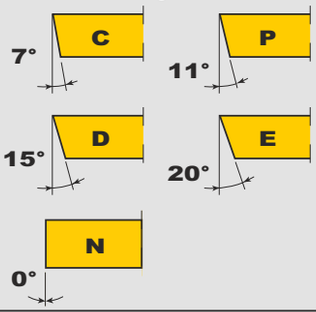

DMill

Insert Designation System

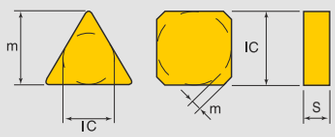
1. Shape



2. Clearance Angle

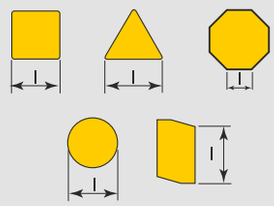


3. Tolerance

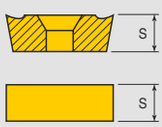


Class	Tolerance (mm)		
	m	t	I.C.
A	±0.005	±0.025	±0.025
E	±0.025	±0.025	±0.025
F	±0.005	±0.025	±0.013
G	±0.025	±0.130	±0.025
H	±0.013	±0.025	±0.013
K	±0.013	±0.025	±0.05
			±0.08
			±0.10
			±0.13
M	±0.08	±0.130	±0.05
	±0.13		±0.08
	±0.15		±0.10
	±0.18		±0.13

5. Cutting 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

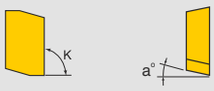
4. Type

SPECIAL

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)

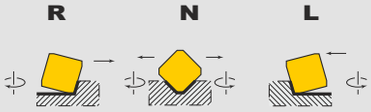
A=45°
D=60°
E=75°
P=90°
X= Special

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.

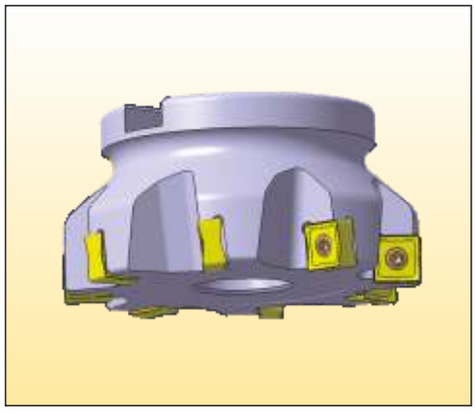
Milling Program

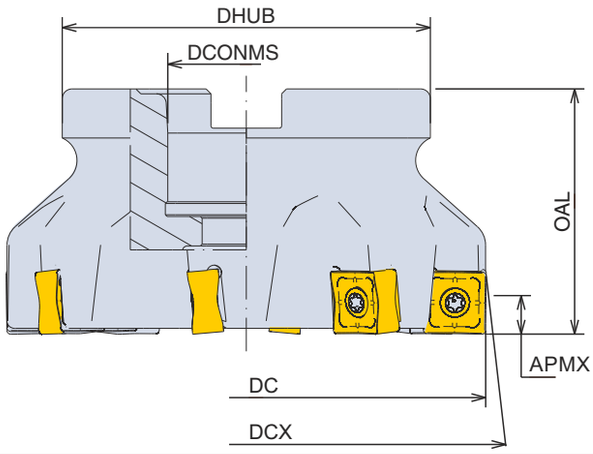
Designation	Features•Application	Edge Geometry & Picture	Cutter Designation
SNGU 12	• For general purpose machining of steel, cast iron		• 90° Facemill 90F…SN12
SNMU 12 SNMU 10	• For general purpose machining of steel, cast iron • First choice for economy		• 90° Facemill 90F…SN12 • 90° Facemill 90F…SN10
WNKU 07 WNKU 04	• High positive cutting edge • For general purpose machining of steel, cast iron • 6 edge, true 90°		• 90° End Milling 90…WN07 • 90° End Milling 90…WN04
GNMU 11,16	• Helical positive cutting geometry • For steel, Cast iron • For true 90° at higher depth's		• 90° Endmill 90E…GN11/16 • 90° Facemill 90F…GN11/16
SOMX 12DM SOMX 12ML	• Helical cutting edge for low cutting forces • For general purpose machining of steel, cast iron • For Stainless Steel Machining		• 90° Face mill 90F…SO12
TE 17	• Sharper geometry for low cutting forces • For Aluminium & Aluminium Alloy		• 90° Face mill 90F…TE17
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 • For higher depth's		• 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
SE 12	• High Rake face with Helical cutting edge for Lower cutting forces • For Aluminium & Aluminium Alloy		• 86° Face mill 86F…SE12
HE 05	• Sharp geometry for low cutting forces • For Aluminium and Aluminium Alloy • Wiper available for improved finish		• 60° Facemill 60F…HE05
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	• High feed Facemill • Ramping Capabilities		• 45° Facemill 45F…SN12 • Facemill 13F...SN12
SDKT 13	• Helical cutting edge for low cutting forces • Common insert for 45° & 75° • For general purpose machining of steel, cast iron		• 45° Face Mill 45F…SD13 • 75° Face Mill 75F…SD13
ONMU 07-M	• For cast iron & steel, medium roughing • Highly economical 16 edge solution		• 43° Facemill 43FW…ON7
ONHU 07-ML	• For cast iron & steel medium to light machining		
ONMU 05 ONMU 05-ML	• For general purpose machining of steel, cast iron at depths up to 2.5mm		• 43° Facemill 43FW…ON05 • 43° Endmill 43EW…ON05
RXMT 10 RXMT 12	• For general purpose face milling & profiling • For steel, cast iron • For general purpose rough face milling & profiling • For steel, cast iron		• Endmill ERX…10 • Facemill FRX…12

Milling Program

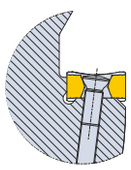
Designation	Features•Application	Edge Geometry & Picture	Cutter Designation
SDMT 10-DM	• High feed face milling. • Straight and Helical ramping capabilities		• End mill 10E…SD10 • Face mill 10F…SD10
WBET 07 WBET 09	• High feed Endmill • Ramping Capabilities		• End mill EW...07 EW...09
TPKN 22 TPKR 22	• For Steel and Cast Iron		
	• Lower cutting force for low carbon steel and stainless steel		
SPKN 12 SPKR 12	• For steel & Cast Iron		
	• Lower cutting force for low carbon steel and stainless steel		

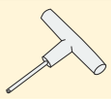
D2-Mill (90° Facemill)





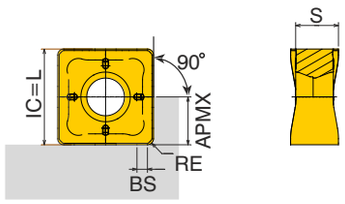
Designation	MIID	CICT	Dimension(mm)							Weight (Kg)	Mounting Bolt
			DC	DCX	DCONMS	DHUB	APMX	OAL	Arbour Style		
90F4 D50-22R-SN12	SNGU 120508-M SNMU 120508-M SNGU 120520-M	4	50	50.7	22	45	6	40	A	0.3	SH M10 X 1.5 X 30
90F5 D63-22R-SN12		5	63	63.7	22	47	6	40	A	0.5	SH M10 X 1.5 X 30
90F6 D80-27R-SN12		6	80	80.7	27	70	6	50	A	1.2	SH M12 X 1.75 X 35
90F9 D80-27R-SN12		9	80	80.7	27	70	6	50	A	1	SH M12 X 1.75 X 35
90F8 D100-32R-SN12		8	100	100.7	32	75	6	50	A	1.6	SH M16X2X30
90F11 D100-32R-SN12		11	100	100.7	32	75	6	50	A	1.4	SH M16X2X30
90F9 D125-40R-SN12		9	125	125.7	40	90	6	63	B	3.1	-
90F14 D125-40R-SN12		14	125	125.7	40	90	6	63	B	3	-



Component	
Screw	Wrench
	
DS 40B100I-TS	DTTW-15

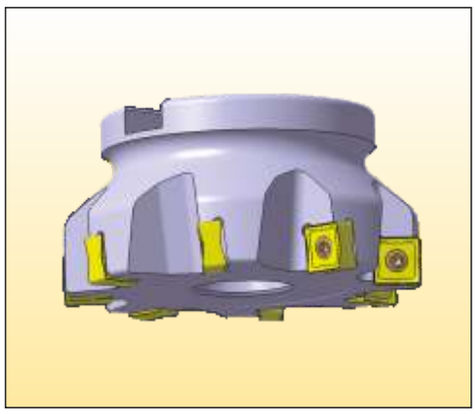
Cutting Condition Pg - 37-46
Arbor Style Pg - 53

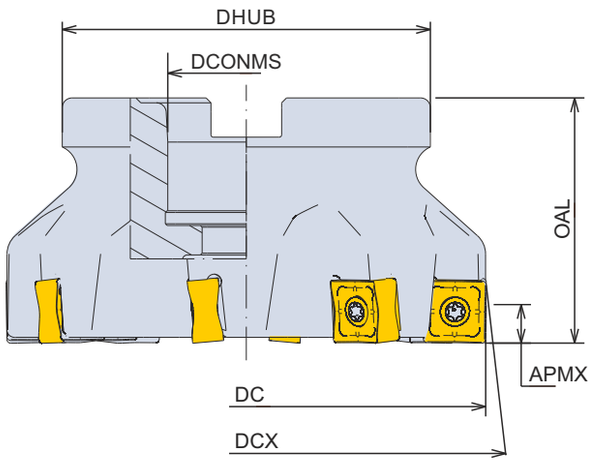
SNGU 12...M



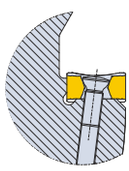
Insert	Designation	Dimension(mm)					Coated							Uncoated	
		IC=L	S	RE	APMX	BS	DP5320	DC9200	DP7320	DC9300	DC9800	DP5035	DP8330	DC210	DC325M
	SNGU 120508-M	12.7	6.02	0.8	6.0	1.6	●	●	●		●	●			
	SNMU 120508-M	12.7	6.02	0.8	6.0	1.6	●		●						
	SNGU 120520-M	12.7	6.02	2	6.0	-	●	●	●		●	●			

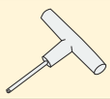
D2-Mill (90° Facemill)





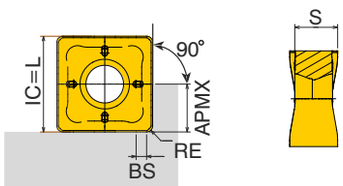
Designation	MIID	CICT	Dimension(mm)							Weight (Kg)	Mounting Bolt
			DC	DCX	DHUB	DCONMS	APMX	OAL	Arbour Style		
90F4 D40-16R-SN10	SNMU 100408-M	4	40	40.7	38	16	5	40	A	0.3	SH M8X1.25X25
90F5 D50-22R-SN10		5	50	50.7	45	22	5	40	A	0.4	SH M10X1.5X30
90F6 D63-22R-SN10		6	63	63.7	47	22	5	40	A	0.6	SH M10X1.5X30



Component	
Screw	Wrench
	
DS 35C110I	DTTW-15

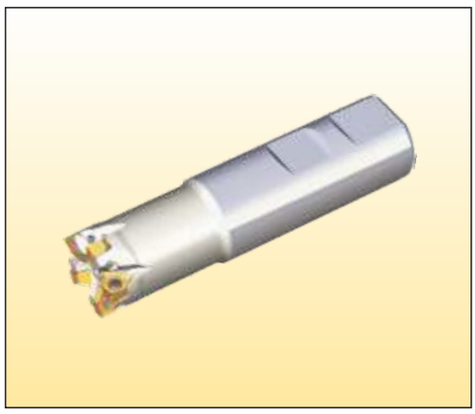
Cutting Condition Pg - 37-46
Arbor Style Pg - 53

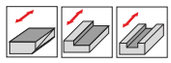
SNMU 10-M

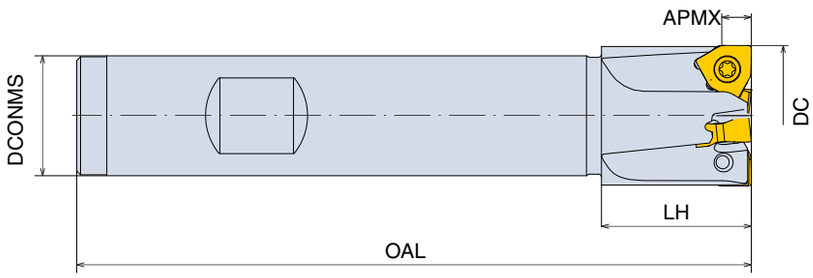


Insert	Designation	Dimension(mm)					Coated						Uncoated	
		IC=L	S	RE	APMX	BS	DP5320	DC9200	DP7320	DC9300	DC9800	DP5035	DC210	DC325M
	SNMU 100408-M	10.9	5.3	0.8	5.0	1		●			●			

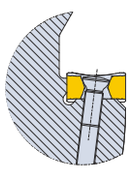
D2-Mill(90° End Mill)

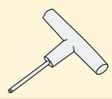






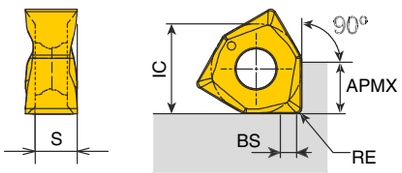
Designation	MIID	CICT	Dimension(mm)					Weight (Kg)
			DC	DCONMS	APMX	LH	OAL	
90E2 1616W-WN04-L90-NC	WNKU 040304R-M	2	16	16	3	20	90	0.2
90E3 1816W-WN04-L90-NC		3	18	16	3	20	90	0.25
90E4 2020W-WN04-L90-NC		4	20	20	3	30	90	0.3



Component	
Screw	Wrench
	
SR M2.5X6-T7-60	DTDW-7

Cutting Condition Pg - 37-46

WNKU 04



Insert	Designation	Dimension(mm)					Coated						Uncoated
		IC	S	BS	RE	APMX	DC9200	DC9800	DP7320	DP9020	DP5035	DP5320	DC210
	WNKU 040304R-M	6.36	2.88	1.5	0.4	3	●	●	●			●	

D2-Mill (90° Endmill)

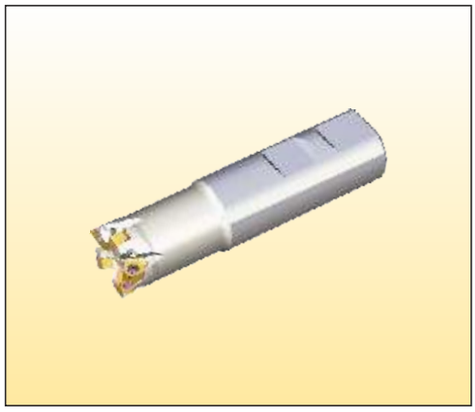


Fig.1

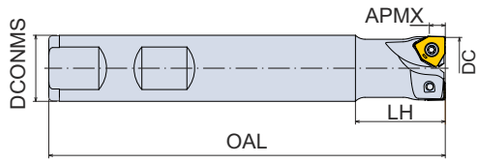
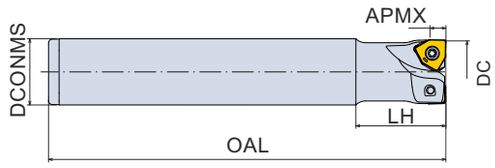
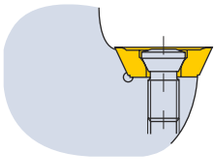


Fig.2



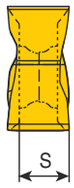
Designation	MIID	CICT	Dimension (mm)					Weight (kg)	Fig.
			DC	DCONMS	OAL	LH	APMX		
90E22525W-WN07-L100-NC	WNKU 070408R-M	2	25	25	100	30	6	0.6	1
90E22525-WN07-L150-NC		2	25	25	150	30	6	0.8	2
90E23232-WN07-L160-NC		2	32	32	160	40	6	0.9	2
90E33232W-WN07-L110-NC		3	32	32	110	40	6	0.95	1
90E33232-WN07-L160-NC		3	32	32	160	40	6	1	2

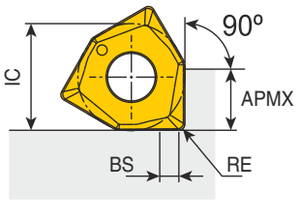


Component	
Screw	Wrench
	
DS 35A088I/HG	DTDW-10P

Cutting Condition Pg - 37-46

WNKU 07

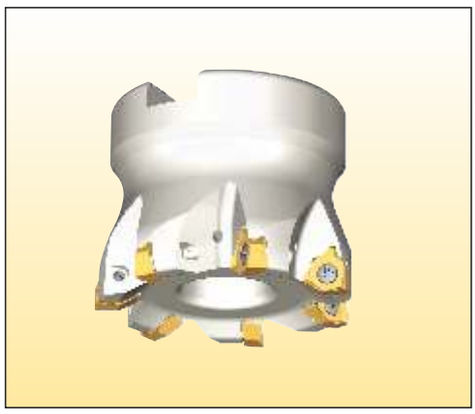


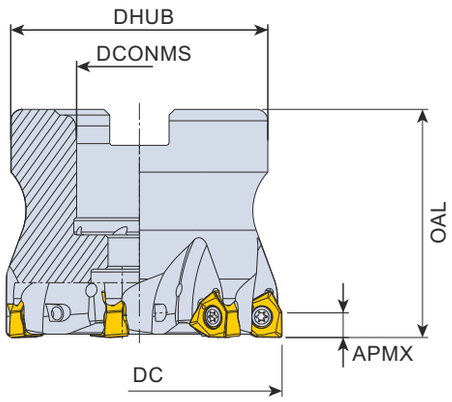


Insert	Designation	Dimension (mm)					Grade			
		IC	S	BS	RE	APMX	DP5320	DP7320	DP9200	DC9800
	WNKU 070408R-M	10.15	4.4	1.8	0.8	6	●	●	○	○

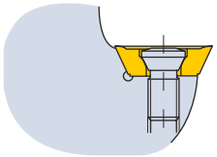
○ : On Request

D2-Mill (90° Facemill)





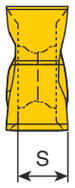
Designation	MIID	CICT	Dimension (mm)						Weight (kg)	Mounting Bolt
			DC	DHUB	DCONMS	OAL	APMX	Arbor style		
90F4-D40-16R-WN07 -NC	WNKU 070408R-M	4	40	38	16	40	6	A	0.3	SH M8X1.25X30
90F6-D50-22R-WN07 -NC		6	50	45	22	40	6	A	0.4	SH M10X1.5X30
90F7-D63-22R-WN07 -NC		7	63	47	22	40	6	A	0.53	SH M10X1.5X30
90F9-D80-27R-WN07-NC		9	80	58	27	50	6	A	1.13	SH M12X1.75X35
90F11-D100-32R-WN07-NC		11	100	85	32	50	6	A	1.81	SH M16X2X35
90F14-D125-40R-WN07-NC		14	125	85	40	63	6	A	3.25	SH M20X2.5X40

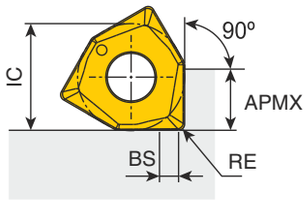


Component	
Screw	Wrench
	
DS 35A088I/HG	DTDW-10P

Cutting Condition Pg - 37-46
Arbor Style Pg - 53

WNKU 07

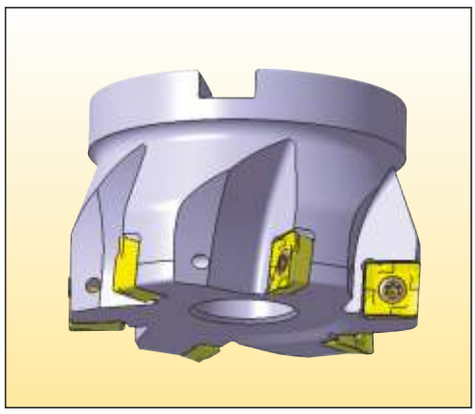


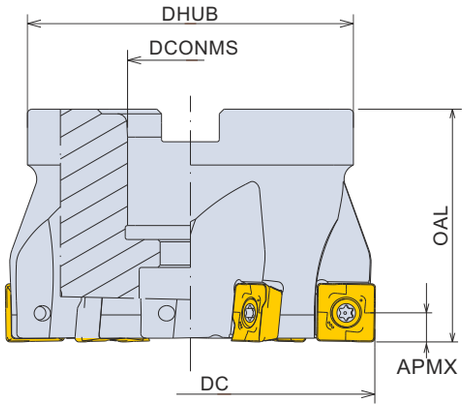


Insert	Designation	Dimension (mm)					Grade			
		IC	S	BS	RE	APMX	DP5320	DP7320	DP9200	DC9800
	WNKU 070408R-M	10.15	4.4	1.8	0.8	6	●	●	○	○

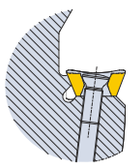
○ : On Request

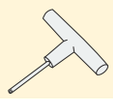
D-Mill (90° Facemill)





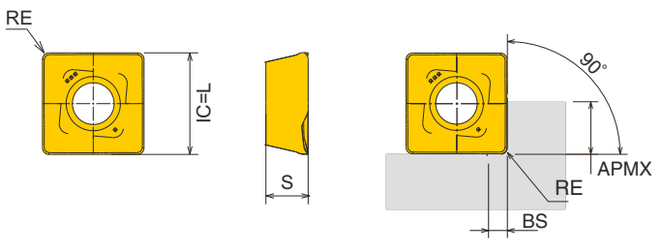
Designation	MIID	CICT	Dimension (mm)						Weight (kg)	Mounting Bolt
			DC	DHUB	DCONMS	APMX	OAL	Arbor style		
90F4-D50-22R-SO12	SOMX 120508PEER-DM	4	50	47	22	7	40	A	0.31	SH M10 X 1.5 X 30
90F5-D63-22R-SO12		5	63	47	22	7	40	A	0.43	SH M10 X 1.5 X 30
90F6-D80-27R-SO12	SOMX 120508PEER-ML	6	80	70	27	7	50	A	1.13	SH M12 X 1.75 X 35
90F8-D100-32R-SO12		8	100	85	32	7	50	A	1.81	SH M16 X 2 X 35
90F10-D125-40R-SO12		10	125	100	40	7	63	B	3.23	-



Component	
Screw	Wrench
	
DS40B100I - TS	DTTW-15

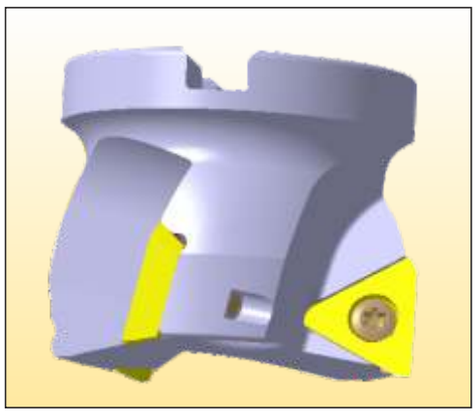
Cutting Condition Pg - 37-46
Arbor Style Pg - 53

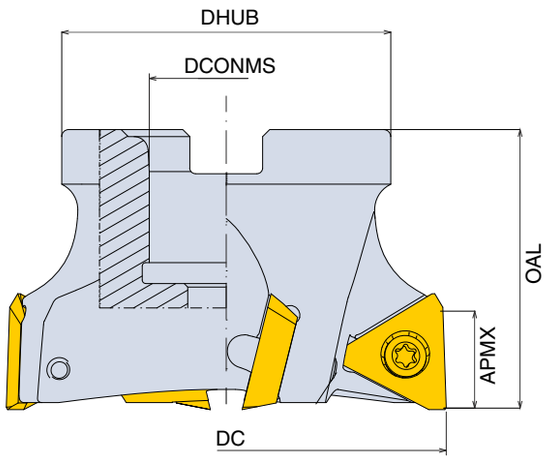
SOMX 12



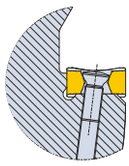
Insert	Designation	Dimension (mm)					Coated							Uncoated	
		IC=L	S	RE	APMX	BS	DC9200	DC9300	DP7320	DP5035	DP8330	DC9800	DP5320	DC210	
	SOMX 120508PEER-DM	12.5	5.2	0.8	7.0	2.5	•		•	•		•	•		
	SOMX 120508PEER-ML	12.5	5.2	0.8	7.0	2.2	•		•	•		•	•	•	

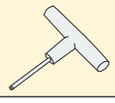
D-MILL(90° Facemill-Aluminum)





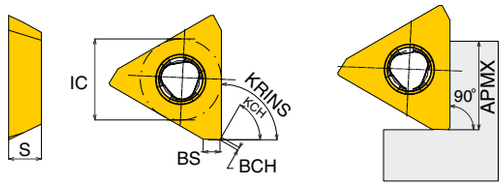
Designation	MIID	CICT	Dimension(mm)						Weight (Kg)	Mounting Bolt
			DC	DHUB	DCONMS	OAL	APMX	Arbour Style		
90F3 D50-16R-TE17	TE 1704-AL	3	50	47	16	40	10	A	0.4	SH M8X1.25X30
90F4 D63-22R-TE17		4	63	47	22	40	10	A	1.5	SH M10X1.5X25
90F5 D80-27R-TE17		5	80	58	27	50	10	A	0.8	SH M12X1.75X35
90F6 D100-32R-TE17		6	100	66	32	50	10	A	1.1	SH M16X2X30



Component	
Screw	Wrench
	
DS35C110I	DTFW-15

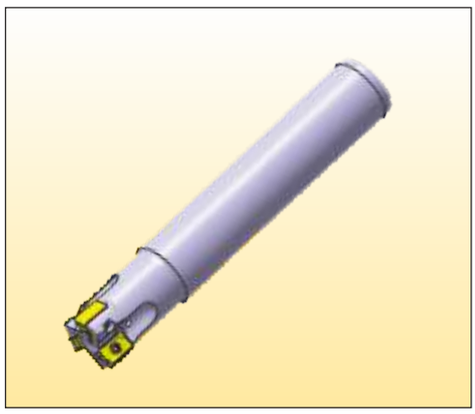
TE 17

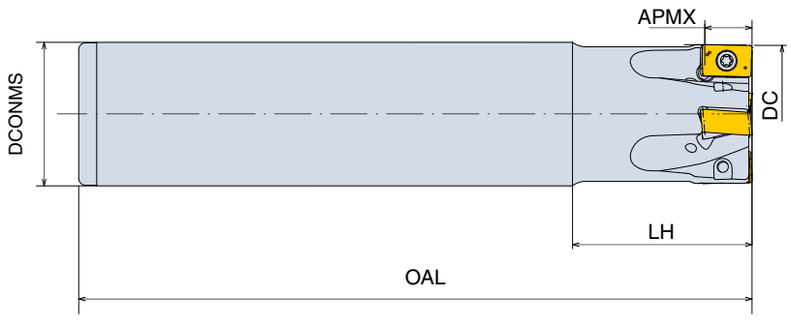
Cutting Condition Pg - 37-46
Arbor Style Pg - 53



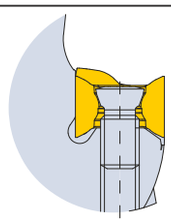
Insert	Designation	Dimension(mm)							Coated					Uncoated	
		IC	BS	BCH	APMX	KCH	KRINS	S	DC9200	DC9300	DC9800	DP5035	DP7320	DP5320	DC210
	TE 1704-AL	11.2	2.3	0.4	10	60°	90°	4.5	●						●

D2-Mill (90° Endmill)





Designation	MIID	CICT	Dimension (mm)					Weight (kg)	CSP
			DC	DCONMS	OAL	LH	APMX		
90E2-02020-GN11-L150	GNMU 110605R-M GNMU 110608R-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	○

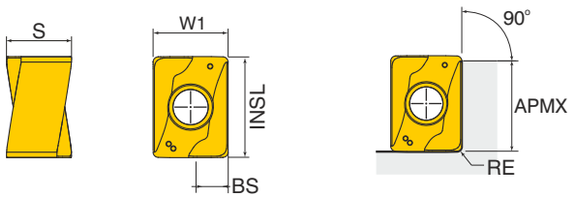


Designation	Component	
	Screw	Wrench
		
90E.....GN11	DS 30085I/HG-TS	DTDW-9
90E.....GN16	DS 50B106I/HG-TS	DTDW-20

Cutting Condition Pg - 37-46

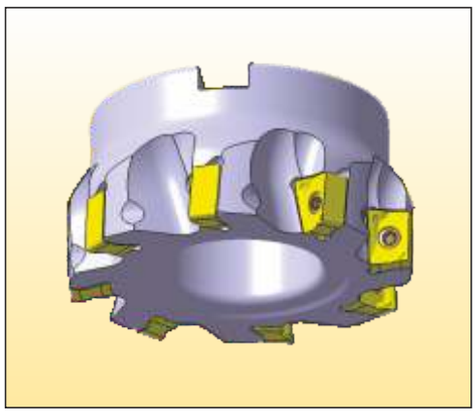
I Through coolant
○ Non-Through coolant

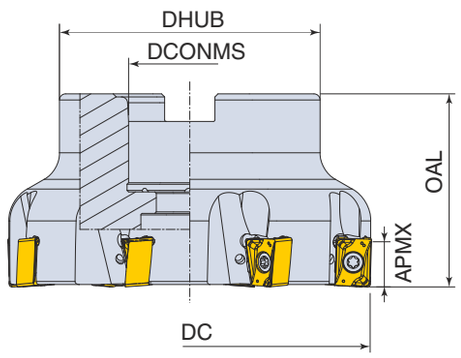
GNMU 11, GNMU16 / GNHU 11



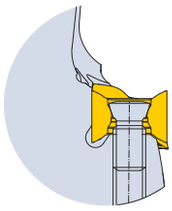
Insert	Designation	Dimension (mm)						Coated						Uncoated	
		INSL	W1	S	RE	BS	APMX	DP5320	DC9200	DP7320	DC9300	DC9800	DP5035	DC210	DC325M
	GNMU 110605R-M	11.00	7.10	6.6	0.50	1.20	10.0	●	●	●		●	●		
	GNMU 110608R-M	11.00	7.10	6.6	0.80	1.20	10.0	●	●	●		●	●		
	GNHU 110608R-M	11.00	7.10	6.6	0.80	1.20	10.0	●	●	●		●	●		
	GNMU 161008R-M	15.60	11.50	9.9	0.80	1.80	14.5	●	●	●		●	●		

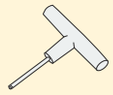
D2-Mill (90° Facemill)





Designation	MIID	CICT	Dimension (mm)					Weight (Kg)	CSP	Arbour style	Mounting Bolt
			DC	DCONMS	DHUB	OAL	APMX				
90F4-D40-16R-GN11	GNMU 110605R-M GNMU 110608R-M GNHU 110608R-M	4	40	16	38	40	10	0.3	1	A	SH M8X1.25X25
90F5-D50-22R-GN11		5	50	22	45	40	10	0.4	1	A	SH M10X1.5X30
90F6-D63-22R-GN11		6	63	22	47	40	10	0.6	1	A	SH M10X1.5X30
90F8-D80-27R-GN11		8	80	27	70	50	10	1.1	1	A	SH M12X1.75X35
90F9-D100-32R-GN11		9	100	32	80	50	10	2.0	○	B	-
90F4-D50-22R-GN16	GNMU 161008R-M	4	50	22	45	40	14.5	0.4	1	A	SH M10X1.5X30
90F4-D63-22R-GN16		4	63	22	47	40	14.5	0.6	1	A	SH M10X1.5X30
90F7-D80-27R-GN16		7	80	27	70	50	14.5	1.2	1	A	SH M12X1.75X35
90F8-D100-32R-GN16		8	100	32	85	50	14.5	2.1	○	B	-

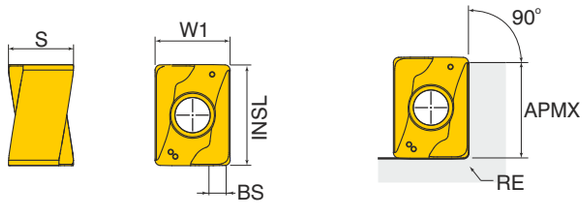


Designation	Component		
	Screw	Wrench	
			
90F.....GN11	DS 30085I/HG-TS	DTDW-9	-
90F.....GN16	DS 50B106I/HG-TS	-	DTTW-20

Cutting Condition Pg - 37-46 | Arbor Style Pg - 53

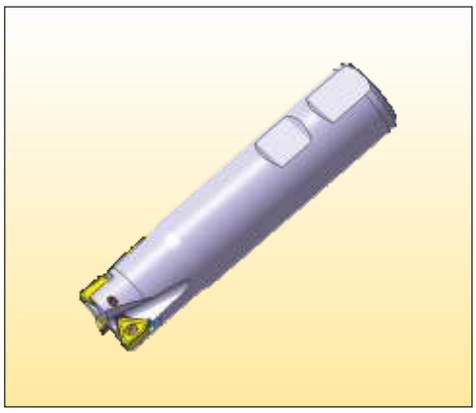
I Through coolant
○ Non-Through coolant

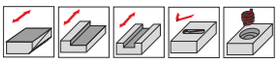
GNMU 11, GNMU16 / GNHU 11



Insert	Designation	Dimension (mm)						Coated						Uncoated	
		INSL	W1	S	RE	BS	APMX	DP5320	DC9200	DP7320	DC9300	DC9800	DP5035	DC210	DC325M
	GNMU 110605R-M	11.00	7.10	6.6	0.50	1.20	10.0	●	●	●		●	●		
	GNMU 110608R-M	11.00	7.10	6.6	0.80	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)





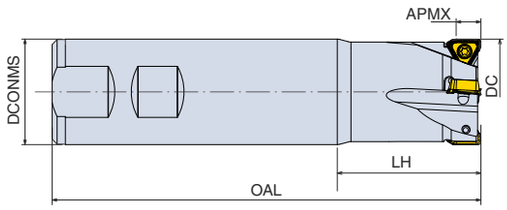


Fig.1

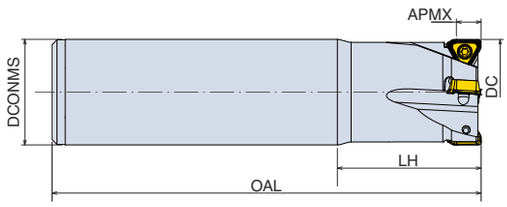
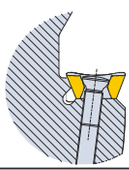


Fig.2

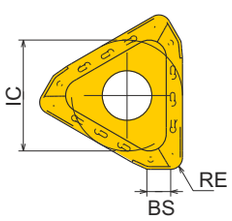
Designation	MIID	CICT	DC	DCONMS	LH	OAL	APMX	Fig	Weight (Kg)
90E2-02020W-TO10-L110	TOMX 100408 PDTR-DM	2	20	20	30	110	6	Fig 1	0.6
90E3-02525W-TO10-L110		3	25	25	30	110	6	Fig 1	0.8
90E4-03232W-TO10-L130		4	32	32	40	130	6	Fig 1	0.9
90E2-02020-TO10-L170		2	20	20	50	170	6	Fig 2	0.8
90E3-02525-TO10-L210		3	25	25	60	210	6	Fig 2	1.1
90E4-03232-TO10-L250		4	32	32	80	250	6	Fig 2	1.5

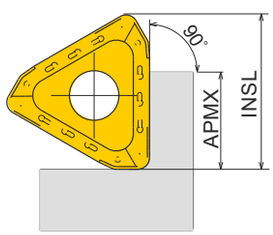


Designation	Component	
	Screw	Wrench
		
90E.....TO10	DS 25C065I/HG	DTDW-8

Cutting Condition
Pg - 37-46

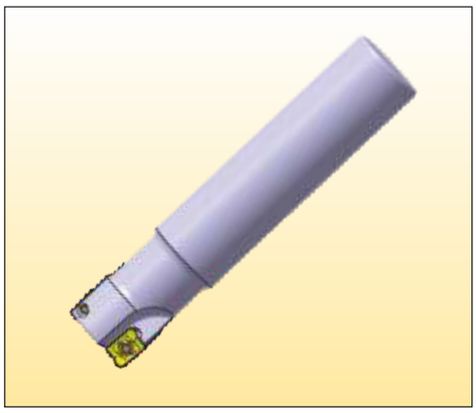
TOMX 10

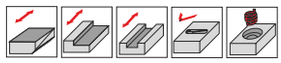


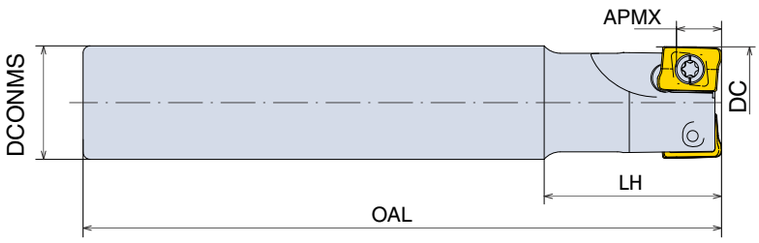


Insert	Designation	Dimension (mm)						Coated						Uncoated	
		IC	S	RE	BS	INSL	APMX	DC9235	DC9200	DP7320	DC9300	DC9800	DP5035	DC210	DC350M
	TOMX 100408 PDTR-DM	7.5	4.2	0.8	1.5	9.65	6		●			●			

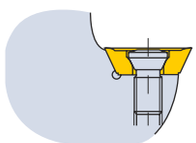
D-Mill (90° Endmill)







Designation	MIID	CICT	Dimension (mm)					Weight (Kg)
			DC	DCONMS	OAL	LH	APMX	
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

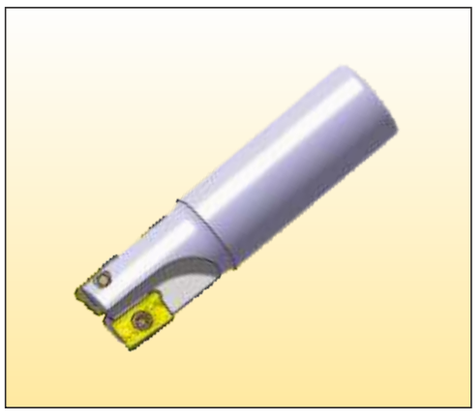
* For Ø25 cutter

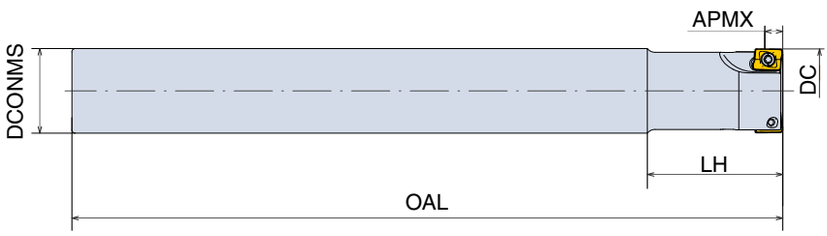
Cutting Condition
Pg - 37-46

APKT...08

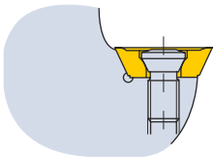
Insert	Designation	Dimension (mm)						Coated						
		INSL	W1	S	RE	BS	APMX	DP5320	DC9200	DP7320	DC9300	DC9800	DP5035	DC210
	APKT 080308R	9	6.21	3.6	0.8	1.0	6.5	●	●	●		●	●	●
	APKT 080316R	9	6.21	3.6	1.6	0.8	6.5	●	●	●		●	●	●

D-Mill (90° Endmill)





Designation	MIID	CICT	DC	DCONMS	OAL	LH	APMX	Weight (kg)
90E2-02525-AP16-L100	APKT 160408 PDSR	2	25	25	100	39	13	0.3
90E2-02525-AP16-L210		2	25	25	210	40	13	0.7
90E3-03232-AP16-L110		3	32	32	110	33	13	0.6
90E2-03232-AP16-L250		2	32	32	250	65	13	1.4
90E3-03232-AP16-L200		3	32	32	200	65	13	1.1

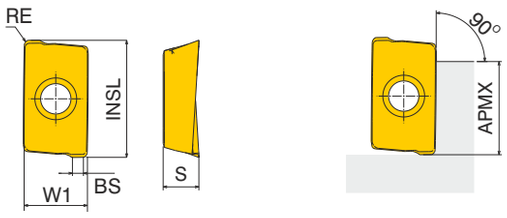


Component	
Screw	Wrench
	
*DS40080I-TS, DS40093I-TS	DTDW-9

* For Ø25 cutter

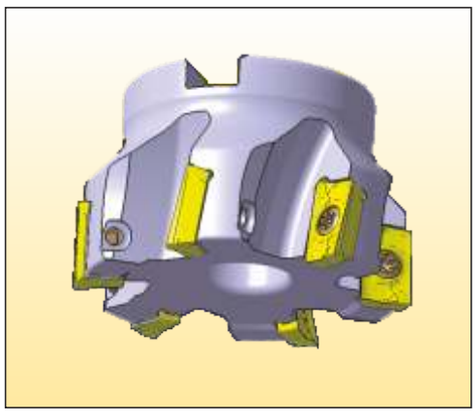
Cutting Condition Pg - 37-46

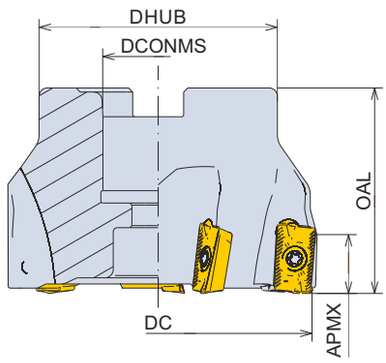
APKT...16



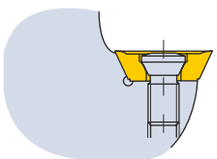
Insert	Designation	Dimension (mm)						Coated									Uncoated	
		INSL	W1	BS	S	RE	APMX	DC9200	DP7320	DP5320	DP8330	DC9300	DP9320	DC9800	DP5320	DP5035	DC210	DC325M
	APKT 160408 PDSR	16.4	9.45	1.7	5.25	0.8	13		•					•	•			

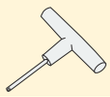
D-Mill (90° Facemill)





Designation	MMID	CICT	Dimension (mm)						Weight (Kg)	Mounting Bolt
			DC	DHUB	DCONMS	APMX	OAL	Arbour style		
90F4-D40-16-AP16	APKT 160408 PDSR	4	40	38	16	13	40	A	0.2	SH M8 X 1.25 X 25
90F5-D50-22-AP16		5	50	45	22	13	40	A	0.3	SH M10 X 1.5 X 30
90F6-D63-22-AP16		6	63	47	22	13	40	A	0.5	SH M10 X 1.5 X 30
90F7-D80-27-AP16		7	80	58	27	13	50	A	1.0	SH M12 X 1.75 X 35
90F8-D100-32-AP16		8	100	85	32	13	50	B	1.8	-

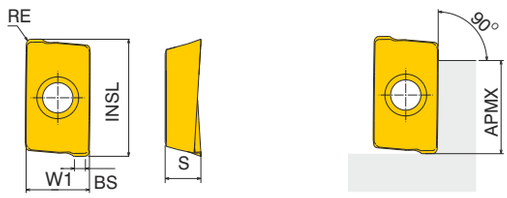


Component	
Screw	Wrench
	
*DS40093I-TS, DS40120I-TS	DTTW-15

* For Ø40-Ø63 cutter

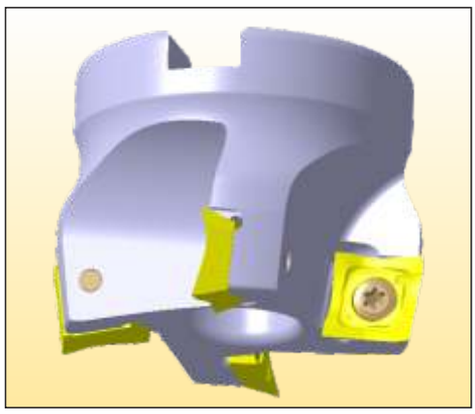
Cutting Condition Pg - 37-46
Arbor Style Pg - 53

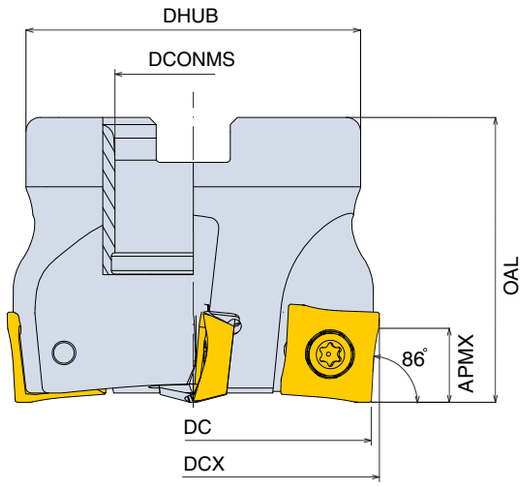
APKT...16



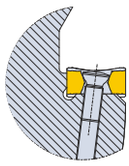
Insert	Designation	Dimension (mm)						Coated									Uncoated	
		INSL	W1	BS	S	RE	APMX	DC9200	DP7320	DP5320	DP8330	DC9300	DP9320	DC9800	DP5320	DP5035	DC210	DC325M
	APKT 160408 PDSR	16.4	9.45	1.7	5.25	0.8	13		•					•	•			

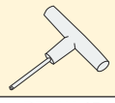
D-MILL(86° Facemill-Aluminium)





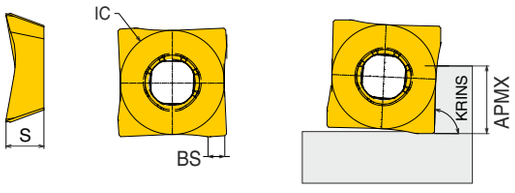
Designation	MIID	CICT	Dimension(mm)							Weight (Kg)	Mounting Bolt
			DC	DHUB	DCONMS	DCX	OAL	APMX	Arbour Style		
86F4 D50-22R-SE12	SE 1204-AL SE 1204-PCD	4	50	47	22	52.3	40	5	A	0.5	SH M10X1.5X25
86F4 D63-22R-SE12		4	63	47	22	65.3	40	5	A	0.7	SH M10X1.5X25
86F5 D80-27R-SE12		5	80	70	27	82.3	50	5	A	1.2	SH M12X1.75X35
86F6 D100-32R-SE12		6	100	85	32	102.3	50	5	B	1.6	

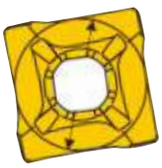


Component	
Screw	Wrench
	
DS 40B100I	DTTW-15

SE 12

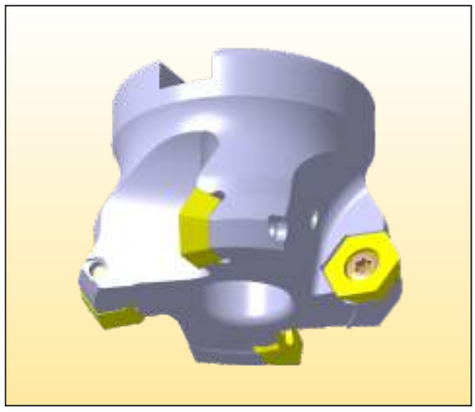
Cutting Condition Pg - 37-46
Arbor Style Pg - 53

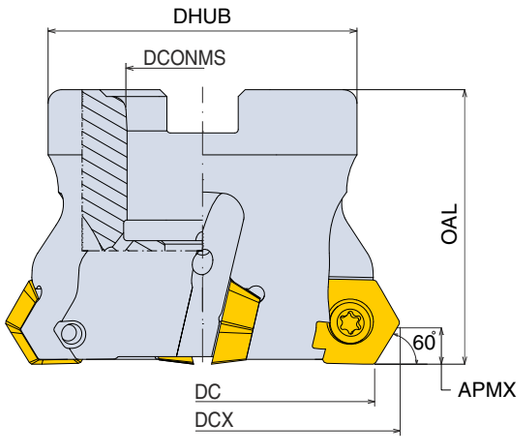


Insert	Designation	Dimension(mm)					Coated						Uncoated	
		IC	BS	S	APMX	KRINS	DC9200	DC9300	DC9800	DP5035	DP7320	DP5320	DC210	PCD
	SE 1204-AL	12.3	2.5	4.5	5	86°							●	
	SE 1204-AL PCD	12.3	2.5	4.5	2	86°								○

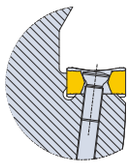
○ : On Request

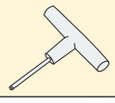
D-MILL(60° Facemill)





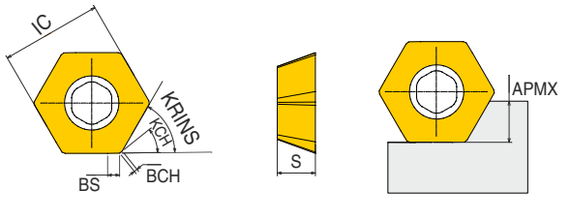
Designation	MIID	CICT	Dimension(mm)							Weight (Kg)	Mounting Bolt
			DC	DHUB	DCONMS	DCX	OAL	APMX	Arbour Style		
60F4 D50-22R-HE05	HE 0504 DER HE 0504 DETR	4	50	45	22	57.8	40	5	A	0.4	SH M10X1.5X25
60F5 D63-22R-HE05		5	63	47	22	70.8	40	5	A	0.7	SH M10X1.5X25
60F6 D80-27R-HE05		6	80	70	27	87.8	50	5	A	1.2	SH M12X1.75X35
60F8 D100-32R-HE05		8	100	85	32	107.9	50	5	A	1.9	SH M16X2X30



Component	
Screw	Wrench
	
DS 35C110I	DTTW-15

Cutting Condition Pg - 37-46
Arbor Style Pg - 53

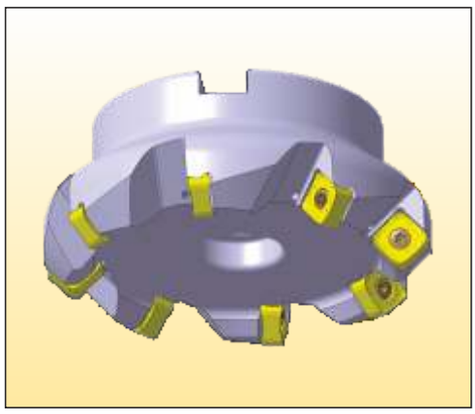
HE 05

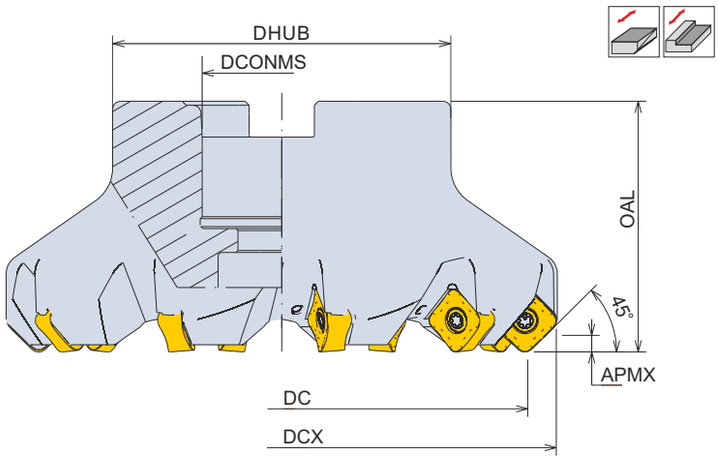


Insert	Designation	Dimension(mm)							Coated					Uncoated	
		IC	BS	BCH	APMX	KCH	KRINS	S	DC9200	DC9300	DC9800	DP5035	DP7320	DP5320	DC210
	HE 0504 DER	12.6	1.5	0.4	5	38.7°	60°	4.76	●	●					○
	HE 0504 DETR	12.6	1.5	0.4	5	38.7°	60°	4.76	○	●	●				

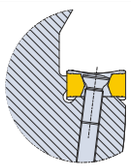
○ : On Request

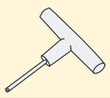
D2-Mill (45° Facemill)





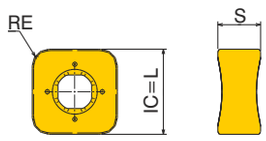
Designation	MMID	CICT	Dimension (mm)						Weight (Kg)	Arbour style	Mounting Bolt
			DC	DHUB	DCX	DCONMS	APMX	OAL			
45F5-D50-22R-SN12	SNKU 1205 XTN SNGU 1205 XTN	5	50	45	64.5	22	6	40	0.42	A	SH M10 X 1.5 X 30
45F6-D63-22R-SN12		6	63	47	77.5	22	6	40	0.61	A	SH M10 X 1.5 X 30
45F7-D80-27R-SN12		7	80	70	94.5	27	6	50	1.37	A	SH M12 X 1.75 X 30
45F10-D80-27R-SN12		10	80	70	94.5	27	6	50	1.3	A	SH M12 X 1.75 X 30
45F8-D100-32R-SN12		8	100	85	114.5	32	6	50	2.11	A	SH M16 X 2 X 30
45F12-D100-32R-SN12		12	100	85	114.5	32	6	50	2.1	A	SH M16 X 2 X 30
45F10-D125-40R-SN12		10	125	85	139.5	40	6	63	3.45	A	SH M20 X 2.5 X 40
45F15-D125-40R-SN12		15	125	85	139.5	40	6	63	3.4	A	SH M20 X 2.5 X 40

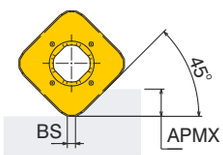


Component	
Screw	Wrench
	
DS40B100I-TS	DTTW-15

Cutting Condition Pg - 37-46
Arbor Style Pg - 53

SNKU 12 / SNGU 12

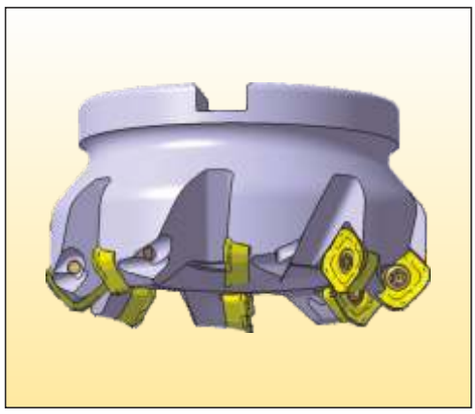


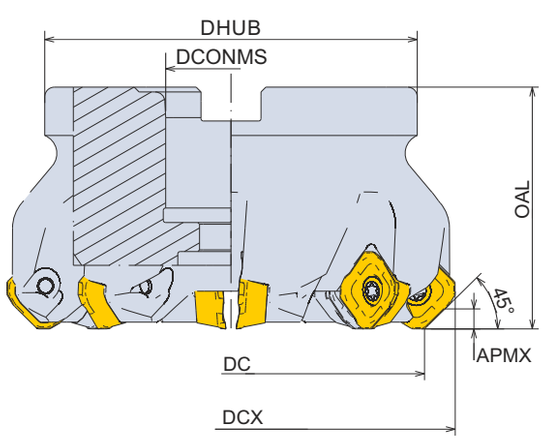


Insert	Designation	Dimension (mm)					Coated						Uncoated	
		IC=L	S	RE	APMX	BS	DP5320	DC9200	DP7320	DC9300	DC9800	DP5035	DC210	DC325M
	SNKU 1205 XTN	12.7	6.3	0.4	6	1.0		•			•	•		

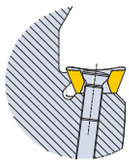
Insert	Designation	Dimension (mm)					Coated						Uncoated	
		IC=L	S	RE	APMX	BS	DP5320	DC9200	DP7320	DC9300	DC9800	DP5035	DC210	DC325M
	SNGU 1205 XTN	12.7	6.3	0.4	6	1.0	•	•	•		•			

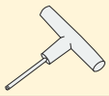
D-Mill (45° Facemill)





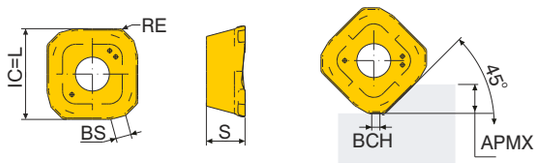
Designation	MMID	CICT	Dimension (mm)						Weight (Kg)	Mounting Bolt
			DC	DHUB	DCONMS	DCX	OAL	Arbour style		
45F4-D50-22R-SD13	SDKT 1305 XTR-M	4	50	50	22	63.1	40	A	0.46	SH M10 X 1.5 X 30
45F5-D63-22R-SD13		5	63	63	22	76.1	40	A	0.74	SH M10 X 1.5 X 30
45F6-D80-27R-SD13		6	80	77	27	93.1	50	A	1.42	SH M12 X 1.75 X 35
45F8-D80-27R-SD13		8	80	77	27	93.1	50	A	1.81	SH M12 X 1.75 X 35
45F8-D100-32R-SD13		8	100	90	32	113.1	50	A	2.4	SH M16 X 2 X 30
45F10-D100-32R-SD13		10	100	90	32	113.1	50	A	2.1	SH M16 X 2 X 30
45F10-D125-40R-SD13		10	125	110	40	138.1	63	B	3.7	—
45F12-D125-40R-SD13		12	125	110	40	138.1	63	B	3.8	



Component	
Screw	Wrench
	
DS40B100I-TS	DTTW-15

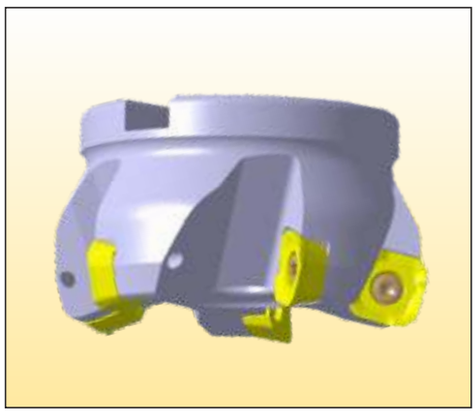
Cutting Condition Pg - 37-46
Arbor Style Pg - 53

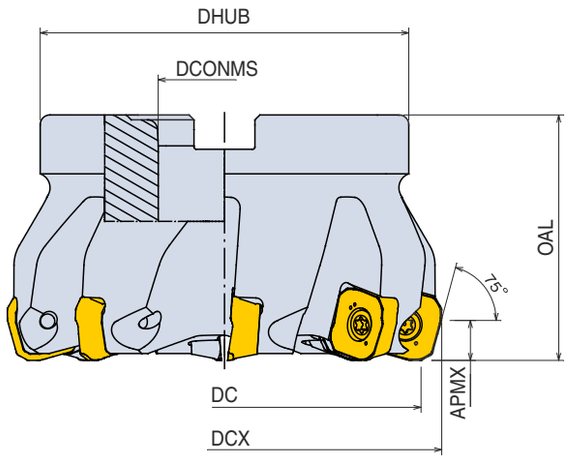
SDKT 13



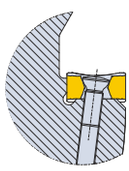
Insert	Designation	Dimension (mm)						Coated						Uncoated
		IC=L	S	RE	APMX	BS	BCH	DC9200	DC9300	DC9800	DP5035	DP7320	DP5320	DC210
	SDKT 1305 XTR-M	13.76	5.9	0.5	4.0	2.0	2.5	•		•		•	•	

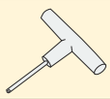
D-MILL(75° Facemill)





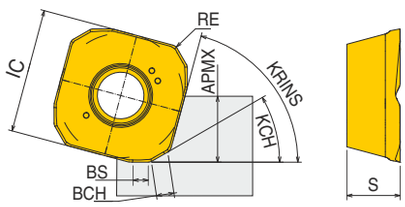
Designation	MIID	CICT	Dimension(mm)							Weight (Kg)	Mounting Bolt
			DC	DCX	APMX	OAL	DHUB	DCONMS	Arbour Style		
75F5-D63-22R-SD13	SDKT 1305 XTR-M	5	63	71.4	6	40	60	22	A	0.8	SH M10X1.5X30
75F6-D80-27R-SD13		6	80	88.4	6	50	75	27	A	1.5	SH M12X1.75X35
75F8-D80-27R-SD13		8	80	88.4	6	50	75	27	A	1.3	SH M12X1.75X35
75F8-D100-32R-SD13		8	100	108.4	6	50	90	32	A	2.1	SH M16X2X30
75F9-D100-32R-SD13		9	100	108.4	6	50	90	32	A	2	SH M16X2X30

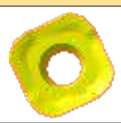


Component	
Screw	Wrench
	
DS40BI00I-TS	DTTW-15

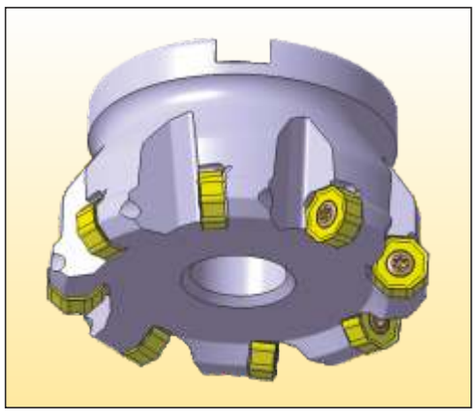
Cutting Condition Pg - 37-46
Arbor Style Pg - 53

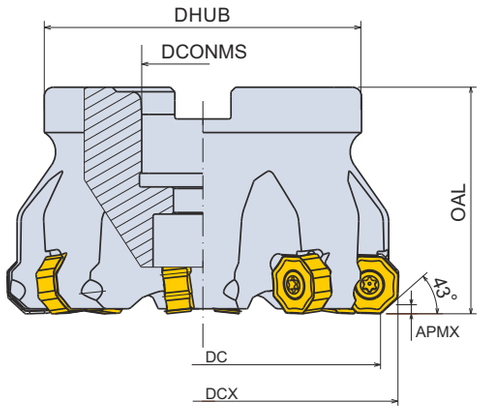
SDKT 13



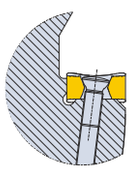
Insert	Designation	Dimension(mm)								Coated					Uncoated	
		IC	BCH	RE	APMX	KCH	BS	KRINS	S	DC9200	DC9300	DC9800	DP5035	DP7320	DP5320	DC210
	SDKT 1305 XTR-M	13.76	2.5	0.5	6	30°	1.7	75°	5.9	●		●		●	●	

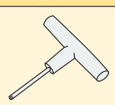
D2-Mill (43° Facemill)





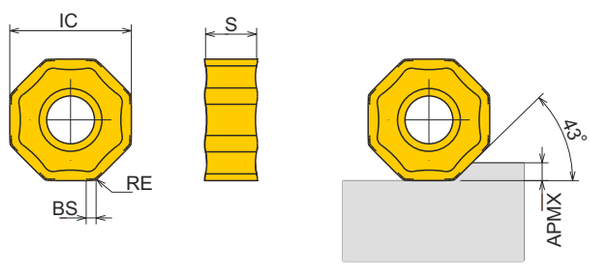
Designation	MMID	CICT	Dimension (mm)						Weight (Kg)	Arbour style	Mounting Bolt
			DC	DHUB	DCX	DCONMS	APMX	OAL			
43FW3 D40-16R-ON05	ONMU 050505-M ONMU 050508-M ONMU 050508-ML	3	40	38	48.2	16	2.5	40	0.26	A	SH M8X1.25X30
43FW4 D40-16R-ON05		4	40	38	48.2	16	2.5	40	0.24	A	SH M8X1.25X30
43FW5 D50-22R-ON05		5	50	45	58.2	22	2.5	40	0.36	A	SH M10X1.5X30
43FW7 D63-22R-ON05		7	63	55	71.2	22	2.5	50	0.8	A	SH M10X1.5X30
43FW8 D80-27R-ON05		8	80	70	88.2	27	2.5	50	1.3	A	SH M12X1.75X30
43FW10 D80-27R-ON05		10	80	70	88.2	27	2.5	50	1.24	A	SH M12X1.75X30
43FW10 D100-32R-ON05		10	100	90	108.2	32	2.5	50	2.2	A	SH M16X2X30
43FW12 D100-32R-ON05		12	100	90	108.2	32	2.5	50	2	A	SH M16X2X30
43FW12 D125-40R-ON05		12	125	105	133.2	40	2.5	63	3.6	B	
43FW15 D125-40R-ON05		15	125	105	133.2	40	2.5	63	3.5	B	



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

ONMU 05*

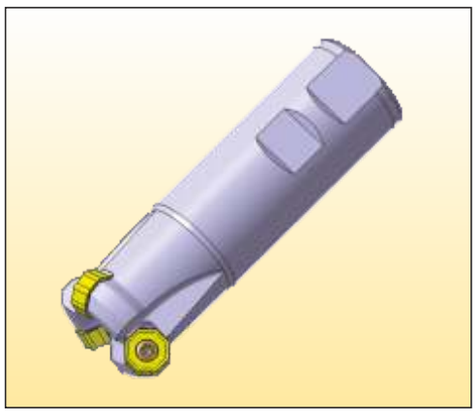
Cutting Condition Pg - 37-46
Arbor Style Pg - 53

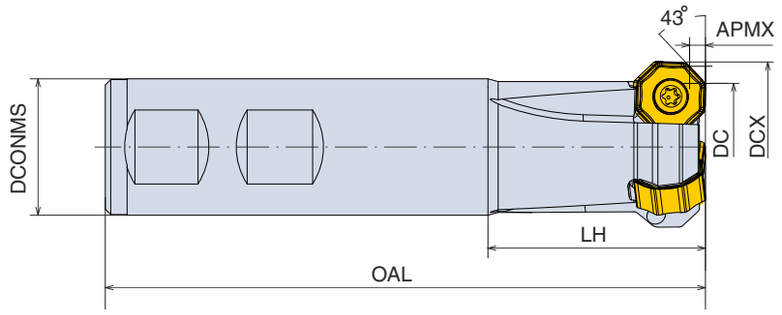


Insert	Designation	Dimension (mm)					Coated						Uncoated	
		IC	S	RE	APMX	BS	DP5320	DC9200	DP7320	DC9300	DC9800	DP5035	DC210	DC325M
	ONMU 050505-M	12.7	5	0.5	2.5	0.8	●	●	●		●			
	ONMU 050508-M	12.7	5	0.8	2.5	0.8	●	●	●		●			
	coming soon ONMU 050508-ML	12.7	5	0.8	2.5	0.8		●			●	●		

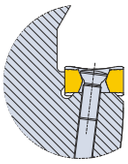
* : Launching soon with wiper option. Ask for NPA

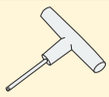
D2-Mill (43° Endmill)





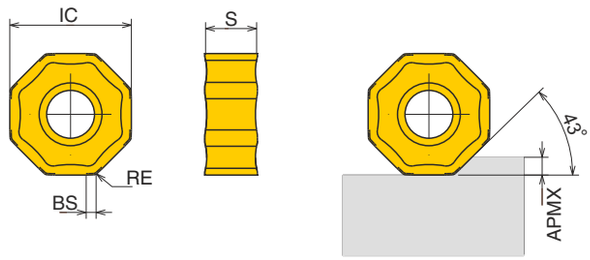
Designation	MIID	CICT	Dimension (mm)						Weight (Kg)
			DC	DCX	DCONMS	LH	OAL	APMX	
43EW3-02525W-ON05-L110	ONMU 050505-M ONMU 050508-M ONMU 050508-ML	3	25	33.2	25	40	110	2.5	0.6
43EW3-03232W-ON05-L110		3	32	40.2	32	40	110	2.5	0.8
43EW4-04032W-ON05-L110		4	40	48.2	32	40	110	2.5	0.9



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

ONMU 05*

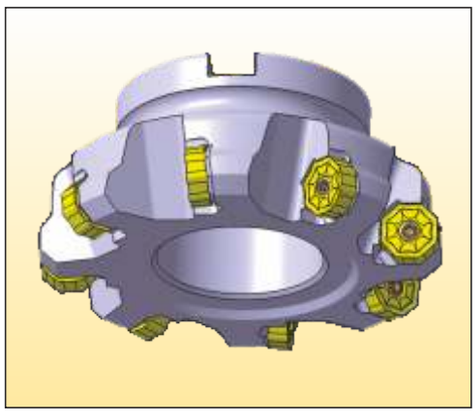
Cutting Condition
Pg - 37-46

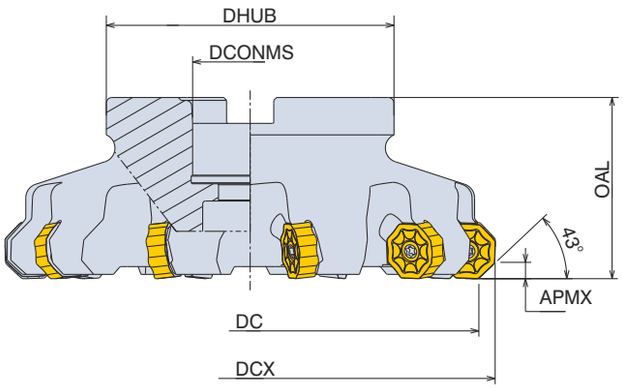


Insert	Designation	Dimension (mm)					Coated						Uncoated	
		IC	S	RE	APMX	BS	DP5320	DC9200	DP7320	DC9300	DC9800	DP5035	DC210	DC325M
	ONMU 050505-M	12.7	5	0.5	2.5	0.8	●	●	●		●			
	ONMU 050508-M	12.7	5	0.8	2.5	0.8	●	●	●		●			
	coming soon ONMU 050508-ML	12.7	5	0.8	2.5	0.8		●			●	●		

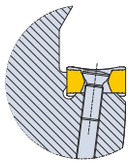
* : Launching soon with wiper option. Ask for NPA

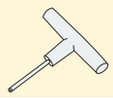
D2-Mill (43° Facemill)





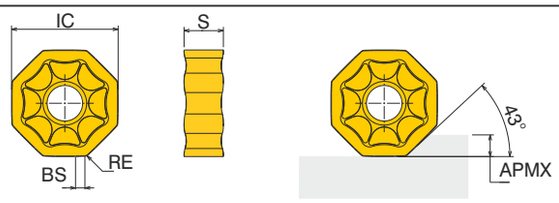
Designation	MIID	CICT	Dimension (mm)						Weight (Kg)	Arbour style	Mounting Bolt
			DC	DCX	DHUB	DCONMS	APMX	OAL			
43FW5-D63-22R-ON07	ONMU 070608-M ONHU 070608-ML	5	63	75.2	55	22	4	50	0.72	A	SH M10 X 1.5 X 30
43FW6-D80-27R-ON07		6	80	92.2	70	27	4	50	1.15	A	SH M12 X 1.75 X 30
43FW8-D80-27R-ON07		8	80	92.2	70	27	4	50	1.2	A	SH M12 X 1.75 X 30
43FW7-D100-32R-ON07		7	100	112.2	85	32	4	63	2.46	A	SH M16 X 2 X 30
43FW10-D100-32R-ON07		10	100	112.2	85	32	4	63	2.5	A	SH M16 X 2 X 30
43FW8-D125-40 R-ON07		8	125	137.2	85	40	4	63	3.0	B	-
43FW13-D125-40 R-ON07		13	125	137.2	85	40	4	63	3.1	B	-
43FW10-D160-40 R-ON07		10	160	172.2	110	40	4	63	5.2	C	SH M20 X 2.5 X 40
43FW15-D160-40 R-ON07		15	160	172.2	110	40	4	63	5.4	C	SH M20 X 2.5 X 40



Component	
Screw	Wrench
	
DS50C130I/HG-TS	DTTW-20

ONMU 07 / ONHU 07*

Cutting Condition Pg - 37-46
Arbor Style Pg - 53

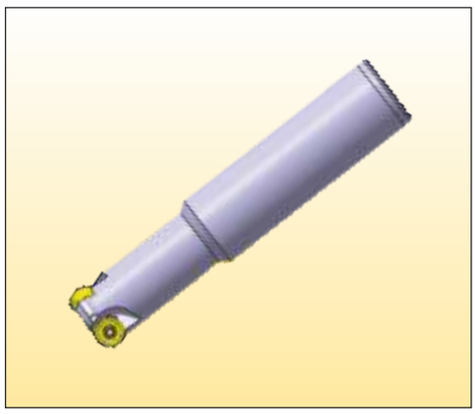


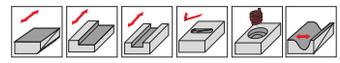
Insert	Designation	Dimension (mm)					Coated						Uncoated	
		IC	S	RE	APMX	BS	DP5320	DC9200	DP7320	DC9300	DC9800	DP5035	DC210	DC325M
	ONMU 070608-M	19	06	0.8	4	1.0	●	●	●		●	●		

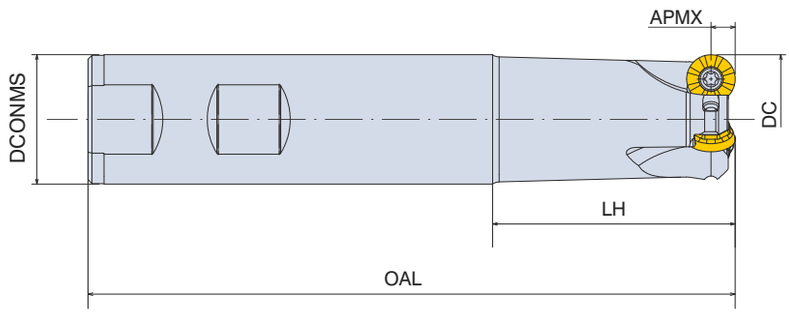
Insert	Designation	Dimension (mm)					Coated						Uncoated	
		IC	S	RE	APMX	BS	DP5320	DC9200	DP7320	DP8330	DC9800	DP5035	DC210	DC325M
	ONHU 070608-ML	19	06	0.8	4	1.7	●	●	●	●	●	●		

* : Launching soon with wedge clamping. Ask for NPA

D-Mold (Button Endmill)

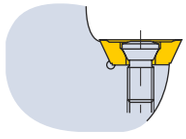






Designation	MIID	CICT	Dimension(mm)					Weight (kg)	Component	
			DC	OAL	DCONMS	LH	APMX		Screw	Wrench
ERX2-2020W-10-L160	RXMT 1003-M RXMT 1003-MR	2	20	160	20	60	5	0.32	DS 35070I/HG	DTDW-15
ERX2-2525W-10-L160		2	25	160	25	60	5	0.52	DS 35070I/HG	

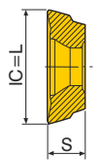
* RDMT 10 insert can be mounted on the same cutter body

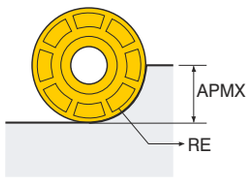


Component	
Screw	Wrench
	
DS 35070I/HG	DTDW-15

Cutting Condition
Pg - 37-46

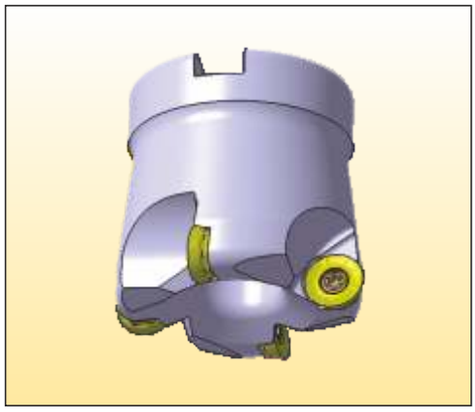
RXMT10

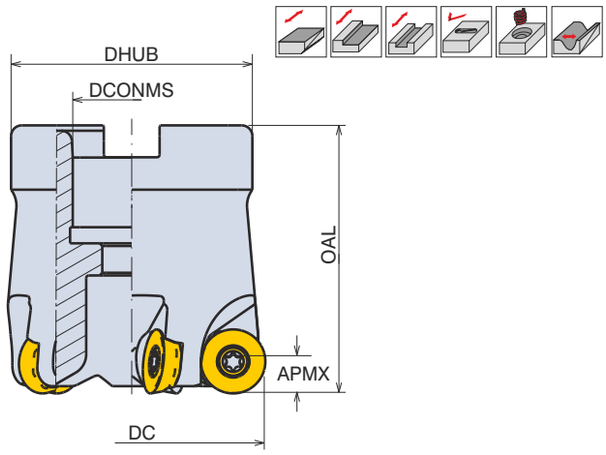




Insert	Designation	Dimension(mm)				Coated					
		IC=L	S	APMX	RE	DP5320	DC9200	DP7320	DC9300	DC9800	DP5035
	RXMT 1003-M	10	3.18	5	5					•	
	RXMT 1003-MR	10	3.18	5	5					•	

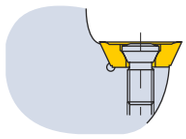
D-Mold (Button Facemill)





Designation	MIID	CICT	Dimension(mm)					Weight (kg)	Arbour style	Mounting Bolt
			DC	OAL	DHUB	DCONMS	APMX			
FRX5-D50-22R-12	RXMT 12T3-M RXMT 12T3-MR	5	50	50	45	22	6	0.4	A	SH M10 X 1.5 X 30
FRX4-D52-22R-12		4	52	50	45	22	6	0.45	A	SH M10 X 1.5 X 30

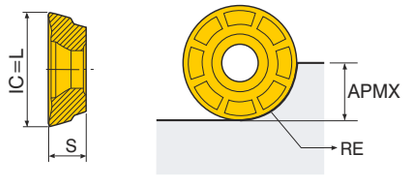
* RDMT 12 insert can be mounted on the same cutter body



Component	
Screw	Wrench
	
DS 35085I/HG	DTDW-15

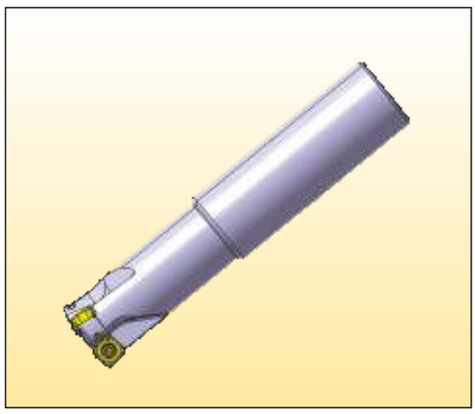
Cutting Condition Pg - 37-46
Arbor Style Pg - 53

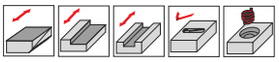
RXMT12

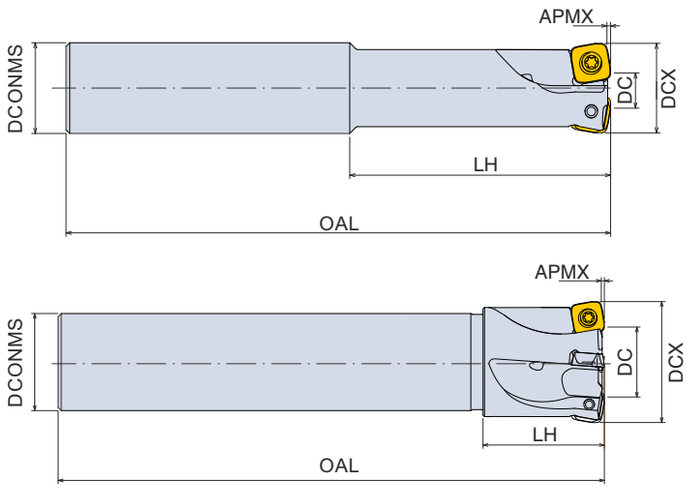


Insert	Designation	Dimension(mm)				Coated							
		IC=L	S	APMX	RE	DP5320	DC9200	DC9235	DC9300	DC9800	DP5035	DP7320	DP4020
	RXMT 12T3-M	12	3.97	6	6					•			
	RXMT 12T3-MR	12	3.97	6	6					•			

D-Feed (High Feed End Mill)





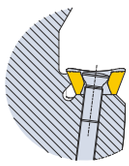


Designation	MIID	CICT	Dimension(mm)						Weight (kg)	CSP	Fig
			DCX	DC	DCONMS	LH	OAL	APMX			
10E2-D25-25-SD10-L150	SDMT 1004-DM	2	25	11.5	25	70	150	1.2	0.5	1	1
10E3-D32-32-SD10-L160		3	32	18.5	32	70	160	1.2	0.8	1	1
10E3-D32-32-SD10-L220		3	32	18.5	32	120	220	1.2	1	1	1
10E4-D40-32-SD10-L180		4	40	26.5	32	40	180	1.2	1	1	2
10E4-D40-32-SD10-L250		4	40	26.5	32	40	250	1.2	1.4	1	2

Cutting Condition Pg - 37-46

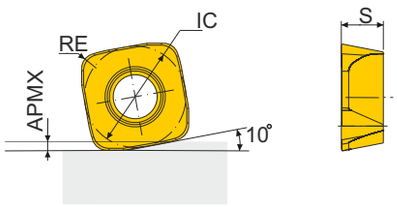
1 Through coolant

○ Non-Through coolant



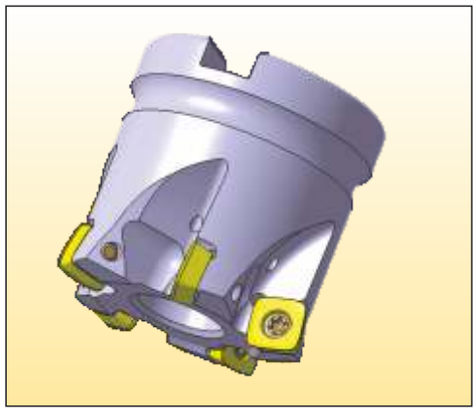
Component	
Screw	Wrench
	
DS 35D100I/HG	DTDW-15

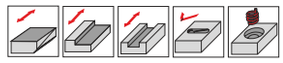
SDMT 10

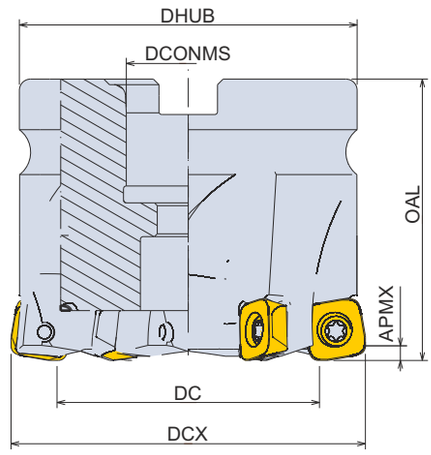


Insert	Designation	Dimension(mm)				Coated					
		IC	S	RE	APMX	DP8330	DP7320	DP5320	DC9200	DP8330	DC9800
	SDMT 1004- DM	10.3	4.3	1.5	1.2	●	●	●			

D-Feed (High Feed Face Mill)



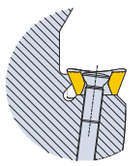




Designation	MIID	CICT	Dimension(mm)						Weight (kg)	CSP	Mouting Bolt
			DCX	DC	DCONMS	DHUB	OAL	APMX			
10F4-D40-16R-SD10	SDMT 1004-DM	4	40	26.5	16	38	40	1.2	0.19	1	SH M8X1.25X25
10F5-D50-22R-SD10		5	50	36.5	22	48	50	1.2	0.43	1	SH M10X1.5X30
10F5-D52-22R-SD10		5	52	38.5	22	50	50	1.2	0.49	1	SH M10X1.5X30
10F6-D63-22R-SD10		6	63	49.5	22	60	50	1.2	0.72	1	SH M10X1.5X30

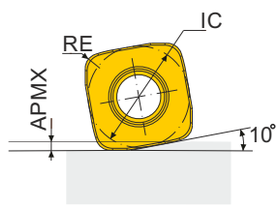
Cutting Condition Pg - 37-46
Arbor Style Pg - 53

1 Through coolant
○ Non-Through coolant



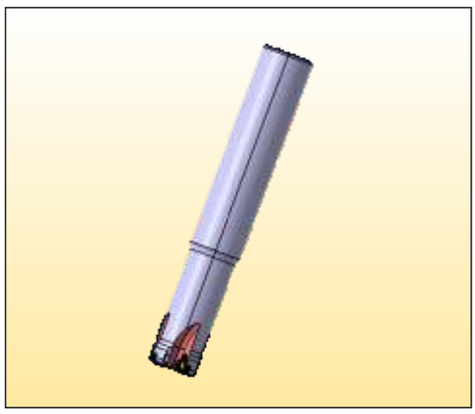
Component	
Screw	Wrench
	
DS 35D100I/HG	DTDW-15

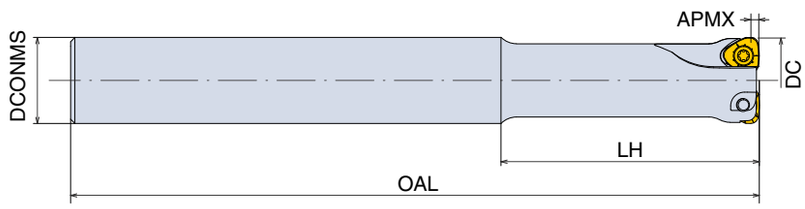
SDMT 10



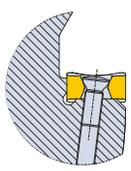
Insert	Designation	Dimension(mm)				Coated					
		IC	S	RE	APMX	DP8330	DP7320	DP5320	DC9200	DP8330	DC9800
	SDMT 1004- DM	10.3	4.3	1.5	1.2	●	●	●			

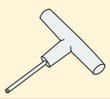
D-Feed (High Feed End Mill)





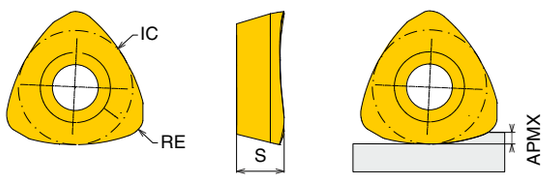
Designation	MIID	CICT	Dimension(mm)					Weight (Kg)
			DC	DCONMS	LH	OAL	APMX	
EW2 D18-20-07	WBET 0703-EW WBET 0703-RW	2	18	20	60	160	0.5	0.4
EW2 D20-20-07		2	20	20	60	160	0.5	0.6
EW4 D25-25-07		4	25	25	60	160	0.5	0.8



Component	
Screw	Wrench
	
DS 30100I	DTDW-9

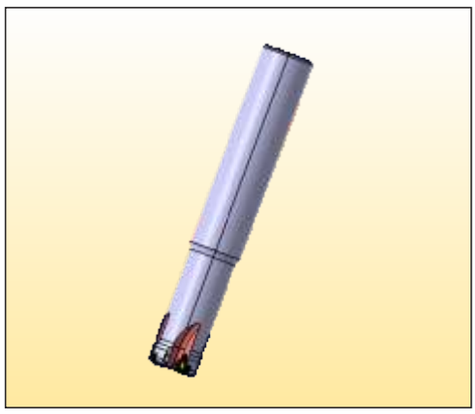
Cutting Condition Pg - 37-46

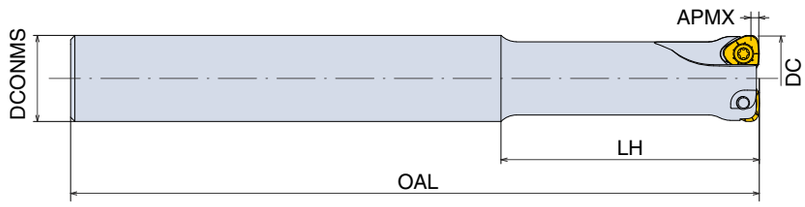
WBET 07



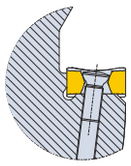
Insert	Designation	Dimension(mm)				Coated					Uncoated	
		IC	RE	APMX	S	DC9200	DC9300	DC9800	DP5035	DP7320	DP5320	DC210
	WBET 0703-EW	7.29	1.7	0.5	3.18			●				
	WBET 0703-RW	7.29	1.7	0.5	3.18			●				

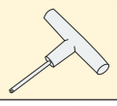
D-Feed (High Feed End Mill)





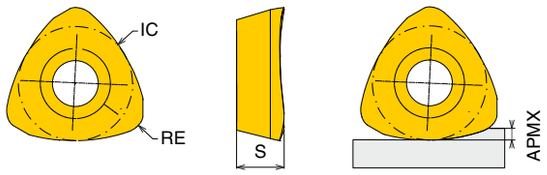
Designation	MIID	CICT	Dimension(mm)					Weight (Kg)
			DC	DCONMS	LH	OAL	APMX	
EW2 D25-25-09	WBET 09T3-M	2	25	25	60	160	1	0.6
EW2 D25-25-09L		2	25	25	100	200	1	0.8
EW2 D28-25-09		2	28	25	60	160	1	0.7
EW2 D28-25-09L		2	28	25	100	200	1	0.9
EW3 D32-32-09		3	32	32	60	160	1	0.9
EW3 D32-32-09L		3	32	32	140	250	1	1.5



Component	
Screw	Wrench
	
DS 35085I/HG	DTDW-15

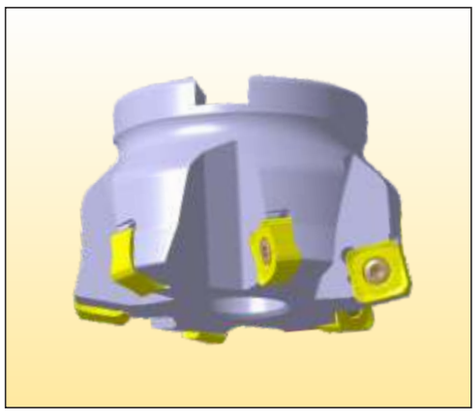
Cutting Condition Pg - 37-46

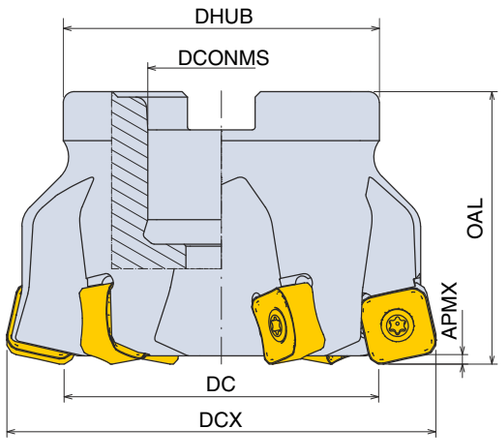
WBET 09



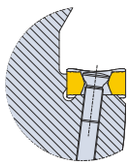
Insert	Designation	Dimension(mm)				Coated						Uncoated
		IC	RE	APMX	S	DC9200	DC9800	DP7320	DP4020	DP5035	DP5320	DC210
	WBET 09T3-M	9.5	2	1	3.9		●					

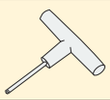
D2-Feed (High Feed End Mill)





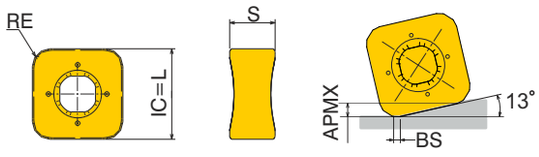
Designation	MIID	CICT	Dimension(mm)						Arbour	Weight (kg)	Mouting Bolt
			DCX	DC	APMX	OAL	DHUB	DCONMS			
13F4-D50-22R-SN12	SNKU 1205 XTN	4	50	31.1	1.5	40	40	22	A	0.5	SH M10X1.5X30
13F5-D63-22R-SN12		5	63	44.1	1.5	40	47	22	A	0.7	SH M10X1.5X30
13F6-D80-27R-SN12		6	80	61.1	1.5	50	58	27	A	1	SH M12X1.75X35



Component	
Screw	Wrench
	
DS40B100I-TS	DTTW-15

SNKU 1205 XTN

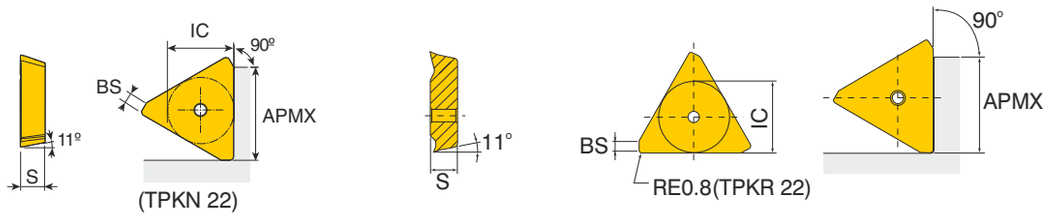
Cutting Condition Pg - 37-46



Insert	Designation	Dimension(mm)					Coated					Uncoated	
		IC	S	RE	BS	APMX	DC9200	DC9300	DC9800	DP5035	DP7320	DP5320	DC210
	SNKU 1205 XTN	12.7	6.3	0.4	1	1.5	●		●	●			

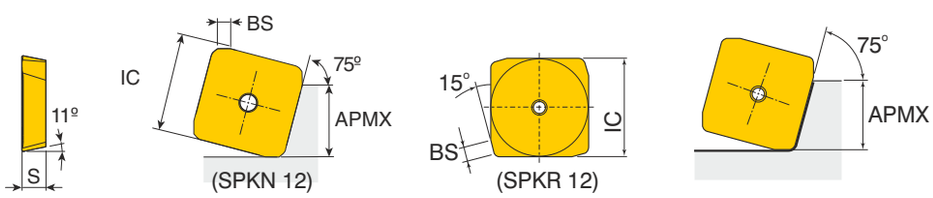
D-Mill (ISO Inserts)

TPKN 22 & TPKR 22



Insert	Designation	Dimension (mm)				Coated									Uncoated	
		IC	S	BS	APMX	DC9200	DP7320	DC9235	DP8330	DC9300	DP9320	DC9800	DP5320	DC7800	DP5035	DC210	DC325M
	TPKN 2204 PDR	12.7	4.76	1.7	16	●						●					
	TPKN 2204 PDSR	12.7	4.76	1.8	16	●						●					
	TPKR 2204 PDR - DM	12.7	4.76	1.72	18	●						●					

SPKN 12 & SPKR 12



Insert	Designation	Dimension (mm)					Coated										Uncoated	
		IC	S	BS	RE	APMX	DC9200	DP7320	DC9235	DP8330	DC9300	DP9320	DC9800	DP5320	DC7800	DP5035	DC210	DC325M
	SPKN 1203 EDR	12.7	3.18	1.4	-	9.5	●						●					
	SPKN 1203 EDSR	12.7	3.18	1.33	-	9.5	●						●					
	SPKR 1203 EDR - DM	12.7	3.18	1.70	0.8	8	●						●					

Technical Information

Recommended Conditions for SNMU 12/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	280-260	DP5320, DC9800, DP5035	0.1-0.25
	High Carbon Steel	175-225	1.0-6.0	180-260	DP5320, DC9800, DP5035	0.1-0.22
	Alloy Steel	275-325	1.0-6.0	150-230	DP5320, DC9800, DP5035	0.1-0.2
	Tool Steel	200-250	1.0-6.0	90-140	DP5320, DC9800, DP5035	0.1-0.18
M	Stainless 300 series	-	1.0-6.0	150-210	DP5320, DC9800, DP5035	0.1-0.15
	Stainless 400 series	-	1.0-6.0	210-275	DP5320, DC9800, DP5035	0.1-0.15
K	Grey Cast Iron	190-220	1.0-6.0	200-300	DC9200, DP7320	0.1-0.25
	Nodular Cast Iron	140-200	1.0-6.0	150-280	DC9200, DP7320	0.1-0.22

Recommended Conditions for SNMU 10

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	DP5320, DC9800, DP5035	0.10-0.22
	High Carbon Steel	175-225	1.0-5.0	130-280	DP5320, DC9800, DP5035	0.10-0.20
	Alloy Steel	275-325	1.0-5.0	120-250	DP5320, DC9800, DP5035	0.10-0.20
	Tool Steel	200-250	1.0-5.0	80-200	DP5320, DC9800, DP5035	0.10-0.18
M	Stainless 300 series	-	1.0-5.0	80-170	DP5320, DC9800, DP5035	0.10-0.18
	Stainless 400 series	-	1.0-5.0	100-210	DP5320, DC9800, DP5035	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
S	High - Temp Alloy Inconel	-	1.0-5.0	50-80	DP5320, DC9300	0.1-0.12
	Titanium Alloy	-	1.0-5.0	55-90	DP5320, DC9300	0.10-0.12

Recommended Conditions for WNKU 07

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	DP5320, DC9800, DP5035	0.07-0.18
	High Carbon Steel	175-225	1.0-6.0	130-280	DP5320, DC9800, DP5035	0.07-0.18
	Alloyed Steel	275-325	1.0-6.0	120-250	DP5320, DC9800, DP5035	0.07-0.15
	Tool Steel	200-250	1.0-6.0	90-140	DP5320, DC9800, DP5035	0.07-0.15
M	Stainless 300 Series	-	1.0-6.0	80-170	DP5320, DC9800, DP5035	0.05-0.12
	Stainless 400 Series	-	1.0-6.0	100-210	DP5320, DC9800, DP5035	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
S	High - Temp Alloy Inconel	-	1.0-6.0	30-100	DP5320, DC9300	0.05-0.12
	Titanium Alloy	-	1.0-6.0	30-80	DP5320, DC9300	0.05-0.12

Technical Information

Recommended Conditions for WNKU 04

ISO	Material	Brinell	D.O.C(mm)	Speed (m/min)	Recommended Grades	Feed(mm/tooth)
P	Low Carbon Steel	85-175	0.5-3.0	180-300	DP5320, DC9800, DP5035	0.05-0.15
	High Carbon Steel	175-225	0.5-3.0	130-280	DP5320, DC9800, DP5035	0.05-0.15
	Alloy Steel	275-325	0.5-3.0	120-250	DP5320, DC9800, DP5035	0.05-0.15
	Tool Steel	200-250	0.5-3.0	90-140	DP5320, DC9800, DP5035	0.05-0.15
M	Stainless 300 series	-	0.5-3.0	80-170	DP5320, DC9800, DP5035	0.05-0.15
	Stainless 400 series	-	0.5-3.0	100-210	DP5320, DC9800, DP5035	0.05-0.15
K	Grey Cast Iron	190-220	0.5-3.0	150-350	DC9200, DP7320	0.05-0.15
	Nodular Cast Iron	140-200	0.5-3.0	100-250	DC9200, DP7320	0.05-0.15
S	High - Temp Alloy Inconel	-	0.5-3.0	30-100	DP5320, DC9300	0.05-0.15
	Titanium Alloy	-	0.5-3.0	30-80	DP5320, DC9300	0.05-0.15

Recommended Conditions for GNMU 11

ISO	Material	Brinell	D.O.C(mm)	Speed (m/min)	Recommended Grades	Feed(mm/tooth)
P	High Carbon Steel	175-225	1.0-10.0	180-260	DP5320, DC9800, DP5035	0.05-0.25
	Alloy Steel	275-325	1.0-10.0	150-230	DP5320, DC9800, DP5035	0.05-0.25
	Tool Steel	200-250	1.0-10.0	90-140	DP5320, DC9800, DP5035	0.05-0.25
M	Stainless 300 series		1.0-10.0	150-240	DP5320, DC9800, DP5035	0.05-0.25
	Stainless 400 series		1.0-10.0	150-260	DP5320, DC9800, DP5035	0.05-0.25

Recommended Conditions for GNMU 16

ISO	Material	Brinell	D.O.C(mm)	Speed (m/min)	Recommended Grades	Feed(mm/tooth)
P	High Carbon Steel	175-225	1.0-14.5	180-260	DP5320, DC9800, DP5035	0.05-0.25
	Alloy Steel	275-325	1.0-14.5	150-230	DP5320, DC9800, DP5035	0.05-0.25
	Tool Steel	200-250	1.0-14.5	90-140	DP5320, DC9800, DP5035	0.05-0.25
M	Stainless 300 series		1.0-14.5	150-240	DP5320, DC9800, DP5035	0.05-0.25
	Stainless 400 series		1.0-14.5	150-260	DP5320, DC9800, DP5035	0.05-0.25

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	1.0-7.0	180-300	DP5320, DC9800, DP5035	0.10-0.22
	High Carbon Steel	175-225	1.0-7.0	130-280	DP5320, DC9800, DP5035	0.10-0.20
	Alloy Steel	275-325	1.0-7.0	120-250	DP5320, DC9800, DP5035	0.10-0.20
	Tool Steel	200-250	1.0-7.0	80-200	DP5320, DC9800, DP5035	0.10-0.18
M	Stainless 300 series		1.0-7.0	80-170	DP5320, DC9800, DP5035	0.10-0.15
	Stainless 400 series		1.0-7.0	100-210	DP5320, DC9800, DP5035	0.10-0.15
K	Grey Cast Iron	190-220	1.0-7.0	140-220	DC9200, DP7320	0.10-0.25
	Nodular Cast Iron	140-200	1.0-7.0	140-220	DC9200, DP7320	0.10-0.22
N	Aluminum-wrought alloy	60-100	1.0-7.0	550-700	DC210	0.1-0.5
	Aluminum-cast alloyed	75-130	1.0-7.0	500-700	DC210	0.1-0.5
	Copper alloys	90-110	1.0-7.0	300-400	DC210	0.1-0.5
	Non-metallic	-	1.0-7.0	-	DC210	-

Recommended Conditions for SE 12

ISO	Material	Brinell	D.O.C(mm)	Speed (m/min)	Recommended Grades	Feed(mm/tooth)
N	Aluminum-wrought alloy	60-100	1.0-8.0	550-700	DC210	0.1-0.35
	Aluminum-cast alloyed	75-130	1.0-8.0	500-700	DC210,PCD	0.1-0.35
	Copper alloys	90-110	1.0-8.0	300-400	DC210,PCD	0.1-0.35
	Non-metallic	-	1.0-8.0	-	DC210	-

Recommended Conditions for TE 17

ISO	Material	Brinell	D.O.C(mm)	Speed (m/min)	Recommended Grades	Feed(mm/tooth)
K	Grey Cast Iron	190-220	1.0-12.0	140-220	DC9200, DP7320	0.1-0.35
	Nodular Cast Iron	140-200	1.0-12.0	140-220	DC9200, DP7320	0.1-0.35
N	Aluminum-wrought alloy	60-100	1.0-12.0	550-700	DC210	0.1-0.35
	Aluminum-cast alloyed	75-130	1.0-12.0	500-700	DC210	0.1-0.35
	Copper alloys	90-110	1.0-12.0	300-400	DC210	0.1-0.35
	Non-metallic	-	1.0-12.0	-	DC210	-

Technical Information

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	DP5320, DC9800, DP5035	0.10-0.22
	High Carbon Steel	175-225	1.0-6.0	130-280	DP5320, DC9800, DP5035	0.10-0.20
	Alloyed Steel	275-325	1.0-6.0	120-250	DP5320, DC9800, DP5035	0.10-0.20
	Tool Steel	200-250	1.0-6.0	80-200	DP5320, DC9800, DP5035	0.10-0.18
M	Stainless 300 Series	-	1.0-6.0	80-170	DP5320, DC9800, DP5035	0.10-0.18
	Stainless 400 Series	-	1.0-6.0	100-210	DP5320, DC9800, DP5035	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
S	High - Temp Alloy Inconel	-	1.0-6.0	50-80	DP5320, DC9300	0.1-0.12
	Titanium Alloy	-	1.0-6.0	55-90	DP5320, DC9300	0.10-0.12

Recommended Conditions for APKT 16

ISO	Material	Hardness (HB)	D.O.C (mm)	Speed (m/min)	Recommended Grades	Feed (mm/tooth)
P	High Carbon Steel	175-225	1.0-13.0	180-260	DP5320, DC9800, DP5035	0.05-0.25
	Alloy Steel	275-325	1.0-13.0	150-230	DP5320, DC9800, DP5035	0.05-0.25
	Tool Steel	200-250	1.0-13.0	90-140	DP5320, DC9800, DP5035	0.05-0.25
M	Stainless Steel 300 series		1.0-13.0	150-240	DP5320, DC9800, DP5035	0.05-0.25
	Stainless Steel 400 series		1.0-13.0	150-260	DP5320, DC9800, DP5035	0.05-0.25

Recommended Conditions for APKT 08

ISO	Material	Brinell	D.O.C (mm)	Speed (m/min)	Recommended Grades	Feed(mm/tooth)	
						D 10	D 12
P	Low Carbon steel	85-175	1.0-6.5	220-300	DP5320, DC9800, DP5035	0.12-0.44	0.13-0.59
	High Carbon Steel	175-225	1.0-6.5	150-200	DP5320, DC9800, DP5035	0.12-0.40	0.13-0.52
	Alloyed Steel	275-325	1.0-6.5	100-180	DP5320, DC9800, DP5035	0.12-0.34	0.13-0.45
	Tool Steel	200-250	1.0-6.5	85-150	DP5320, DC9800, DP5035	0.12-0.34	0.13-0.45
M	Stainless 300 Series	-	1.0-6.5	110-180	DP5320, DC9800, DP5035	0.12-0.40	0.13-0.52
	Stainless 400 Series	-	1.0-6.5	110-220	DP5320, DC9800, DP5035	0.12-0.40	0.13-0.52
S	Inconel Hastelloy Waspalloy	-	1.0-6.5	25-45	DP5320, DC9300	0.09-0.28	0.10-0.37
	Titanium 6Al-4V	-	1.0-6.5	35-60	DP5320, DC9300	0.09-0.28	0.10-0.37
N	Aluminum-wrought alloy	60-100	1.0-6.5	550-700	DC210		0.1-0.5
	Aluminum-cast alloyed	75-130	1.0-6.5	500-700	DC210		0.1-0.5
	Copper alloys	90-110	1.0-6.5	300-400	DC210		0.1-0.5
	Non-metallic	-	1.0-6.5	-	DC210		-

Technical Information

Recommended Conditions for SNKU12...XTN / SNGU 12...XTN

ISO	Material	Hardness (HB)	D.O.C (mm)	Speed (m/min)	Recommended Grades	Feed (mm/tooth)
P	High Carbon Steel	175-225	1.0-6.0	180-260	DP5320, DC9800, DP5035	0.05-0.25
	Alloy Steel	275-325	1.0-6.0	150-230	DP5320, DC9800, DP5035	0.05-0.25
	Tool Steel	200-250	1.0-6.0	90-140	DP5320, DC9800, DP5035	0.05-0.25
M	Stainless Steel 300 series		1.0-6.0	150-240	DC9200, DC9800, DP5035	0.05-0.25
	Stainless Steel 400 series		1.0-6.0	150-260	DC9200, DC9800, DP5035	0.05-0.25
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

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	1.0-4.0	180-300	DP5320, DC9800, DP5035	0.10-0.25
	High Carbon Steel	175-225	1.0-4.0	130-280	DP5320, DC9800, DP5035	0.10-0.20
	Alloy Steel	275-325	1.0-4.0	120-250	DP5320, DC9800, DP5035	0.10-0.20
	Tool Steel	200-250	1.0-4.0	80-200	DP5320, DC9800, DP5035	0.10-0.18
M	Stainless 300 series	-	1.0-4.0	80-170	DP5320, DC9800, DP5035	0.10-0.15
	Stainless 400 series	-	1.0-4.0	100-210	DP5320, DC9800, DP5035	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

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	85-175	1.0-4.0	180-300	DP5320, DC9800, DP5035	0.10-0.25
	High Carbon Steel	175-225	1.0-4.0	130-280	DP5320, DC9800, DP5035	0.10-0.25
	Alloyed Steel	275-325	1.0-4.0	120-250	DP5320, DC9800, DP5035	0.10-0.25
	Tool Steel	200-250	1.0-4.0	80-200	DP5320, DC9800, DP5035	0.10-0.25
M	Stainless 300 Series	-	1.0-4.0	80-170	DP5320, DC9800, DP5035	0.10-0.25
	Stainless 400 Series	-	1.0-4.0	100-210	DP5320, DC9800, DP5035	0.10-0.25
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	0.10-0.25
S	High- Temp Alloy Inconel	-	1.0-4.0	50-80	DP5320, DC9300	0.10-0.25
	Titanium 6Al-4V	-	1.0-4.0	55-90	DP5320, DC9300	0.10-0.25

Technical Information

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	DP5320, DC9800, DP5035	0.10-0.20
	High Carbon Steel	175-225	1.0-2.5	130-280	DP5320, DC9800, DP5035	0.10-0.20
	Alloyed Steel	275-325	1.0-2.5	120-250	DP5320, DC9800, DP5035	0.10-0.20
	Tool Steel	200-250	1.0-2.5	80-200	DP5320, DC9800, DP5035	0.10-0.20
M	Stainless 300 Series	-	1.0-2.5	80-170	DP5320, DC9800, DP5035	0.10-0.20
	Stainless 400 Series	-	1.0-2.5	100-210	DP5320, DC9800, DP5035	0.10-0.20
K	Grey Cast Iron	190-220	1.0-2.5	140-220	DC9200, DP7320	0.10-0.20
	Nodular Cast Iron	140-200	1.0-2.5	140-220	DC9200, DP7320	0.10-0.20
N	Aluminium	-	1.0-2.5	400-500	DC210	0.10-0.20
S	High - Temp Alloy Inconel	-	1.0-2.5	50-80	DP5320, DC9300	0.10-0.20
	Titanium Alloy	-	1.0-2.5	55-90	DP5320, DC9300	0.10-0.20

Recommended Conditions for RXMT 10

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	DP5320, DC9800, DP5035	0.10-0.35
	High Carbon Steel	175-225	1.0-5.0	130-280	DP5320, DC9800, DP5035	0.10-0.35
	Alloyed Steel	275-325	1.0-5.0	120-250	DP5320, DC9800, DP5035	0.10-0.35
	Tool Steel	200-250	1.0-5.0	80-200	DP5320, DC9800, DP5035	0.10-0.35
M	Stainless 300 Series	-	1.0-5.0	80-170	DP5320, DC9800, DP5035	0.10-0.35
	Stainless 400 Series	-	1.0-5.0	100-210	DP5320, DC9800, DP5035	0.10-0.35
K	Grey Cast Iron	190-220	1.0-5.0	140-220	DC9200, DP7320	0.10-0.35
	Nodular Cast Iron	140-200	1.0-5.0	140-220	DC9200, DP7320	0.10-0.35
S	High - Temp Alloy Inconel	-	1.0-5.0	50-80	DP5320, DC9300	0.10-0.35
	Titanium Alloy	-	1.0-5.0	55-90	DP5320, DC9300	0.10-0.35

Note - RXMT 1003 M, is recommended for medium machining
RXMT 1003 MR, is recommended for rough machining

Technical Information

Recommended Conditions for RXMT 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	DP5320, DC9800, DP5035	0.10-0.35
	High Carbon Steel	175-225	1.0-6.0	130-280	DP5320, DC9800, DP5035	0.10-0.35
	Alloyed Steel	275-325	1.0-6.0	120-250	DP5320, DC9800, DP5035	0.10-0.35
	Tool Steel	200-250	1.0-6.0	80-200	DP5320, DC9800, DP5035	0.10-0.35
M	Stainless 300 Series	-	1.0-6.0	80-170	DP5320, DC9800, DP5035	0.10-0.35
	Stainless 400 Series	-	1.0-6.0	100-210	DP5320, DC9800, DP5035	0.10-0.35
K	Grey Cast Iron	190-220	1.0-6.0	140-220	DC9200, DP7320	0.10-0.35
	Nodular Cast Iron	140-200	1.0-6.0	140-220	DC9200, DP7320	0.10-0.35
S	High - Temp Alloy Inconel	-	1.0-6.0	50-80	DP5320, DC9300	0.10-0.35
	Titanium Alloy	-	1.0-6.0	55-90	DP5320, DC9300	0.10-0.35

Note - RXMT 12T3 M is recommended for medium machining
RXMT 12T3 MR is recommended for rough machining

Recommended Conditions for SDMT 10

ISO	Material	Brinell	D.O.C(mm)	Speed (m/min)	Recommended Grades	Feed(mm/tooth)
P	Low Carbon Steel	85-175	0.5-1.2	180-300	DP5320, DC9800, DP5035	0.3-1.0
	High Carbon Steel	175-225	0.5-1.2	130-280	DP5320, DC9800, DP5035	0.3-1.0
	Alloyed Steel	275-325	0.5-1.2	120-250	DP5320, DC9800, DP5035	0.3-1.0
	Tool Steel	200-250	0.5-1.2	80-200	DP5320, DC9800, DP5035	0.3-1.0
M	Stainless 300 Series	-	0.5-1.2	80-170	DP5320, DC9800, DP5035	0.3-1.0
	Stainless 400 Series	-	0.5-1.2	100-210	DP5320, DC9800, DP5035	0.3-1.0
K	Grey Cast Iron	190-220	0.5-1.2	140-220	DC9200, DP7320	0.3-1.0
	Nodular Cast Iron	140-200	0.5-1.2	140-220	DC9200, DP7320	0.3-1.0
H	Prehardened steel	270-320	0.5-1.2	80-160	DP5320	0.3-1.0
	Hardened steel	320-420	0.5-1.2	60-80	DP5320	0.3-1.0

Recommended Conditions for WBET 07

ISO	Material	Brinell	D.O.C(mm)	Speed (m/min)	Recommended Grades	Feed(mm/tooth)
P	Low Carbon Steel	85-175	0.25-0.5	180-300	DP5320, DC9800, DP5035	0.3-1.0
	High Carbon Steel	175-225	0.25-0.5	130-280	DP5320, DC9800, DP5035	0.3-1.0
	Alloyed Steel	275-325	0.25-0.5	120-250	DP5320, DC9800, DP5035	0.3-1.0
	Tool Steel	200-250	0.25-0.5	80-200	DP5320, DC9800, DP5035	0.3-1.0
M	Stainless 300 Series	-	0.25-0.5	80-170	DP5320, DC9800, DP5035	0.3-1.0
	Stainless 400 Series	-	0.25-0.5	100-210	DP5320, DC9800, DP5035	0.3-1.0
K	Grey Cast Iron	190-220	0.25-0.5	140-220	DC9200, DP7320	0.3-1.0
	Nodular Cast Iron	140-200	0.25-0.5	140-220	DC9200, DP7320	0.3-1.0
H	Prehardened steel	270-320	0.25-0.5	80-160	DC9800	0.3-1.0
	Hardened steel	320-420	0.25-0.5	60-80	DC9800	0.3-1.0

Note - WBET 0703-EW is recommended for medium machining
WBET 0703-RW is recommended for rough machining

Technical Information

Recommended Conditions for WBET 09

ISO	Material	Brinell	D.O.C(mm)	Speed (m/min)	Recommended Grades	Feed(mm/tooth)
P	Low Carbon Steel	85-175	0.5-1.0	180-300	DP5320, DC9800, DP5035	0.3-1.5
	High Carbon Steel	175-225	0.5-1.0	130-280	DP5320, DC9800, DP5035	0.3-1.5
	Alloyed Steel	275-325	0.5-1.0	120-250	DP5320, DC9800, DP5035	0.3-1.5
	Tool Steel	200-250	0.5-1.0	80-200	DP5320, DC9800, DP5035	0.3-1.5
M	Stainless 300 Series	-	0.5-1.0	80-170	DP5320, DC9800, DP5035	0.3-1.5
	Stainless 400 Series	-	0.5-1.0	100-210	DP5320, DC9800, DP5035	0.3-1.5
K	Grey Cast Iron	190-220	0.5-1.0	140-220	DC9200, DP7320	0.3-1.5
	Nodular Cast Iron	140-200	0.5-1.0	140-220	DC9200, DP7320	0.3-1.5
H	Prehardened steel	270-320	0.5-1.0	80-160	DC9800	0.3-1.5
	Hardened steel	320-420	0.5-1.0	60-80	DC9800	0.3-1.5

Recommended Conditions for SNKU12...XTN / SNGU 12...XTN (High Feed)

ISO	Material	Hardness (HB)	D.O.C (mm)	Speed (m/min)	Recommended Grades	Feed (mm/tooth)
P	Low Carbon Steel	85-175	0.2-1.5	180-250	DP5320, DC9800, DP5035	1.2-0.2
	High Carbon Steel	175-225	0.2-1.5	130-250	DP5320, DC9800, DP5035	1.2-0.2
	Alloy Steel	275-325	0.2-1.5	120-200	DP5320, DC9800, DP5035	1.2-0.2
	Tool Steel	200-250	0.2-1.5	80-200	DP5320, DC9800, DP5035	1.2-0.2
K	Grey Cast Iron	190-220	0.2-1.5	140-220	DC9200, DP7320	1.2-0.2
	Nodular Cast Iron	140-200	0.2-1.5	140-220	DC9200, DP7320	1.2-0.2

Recommended Conditions for HE 05

ISO	Material	Brinell	D.O.C(mm)	Speed (m/min)	Recommended Grades	Feed(mm/tooth)
P	Low Carbon Steel	85-175	0.8-3.5	180-300	DP5320, DC9800, DP5035	0.1-0.25
	High Carbon Steel	175-225	0.8-3.5	130-280	DP5320, DC9800, DP5035	0.1-0.25
	Alloyed Steel	275-325	0.8-3.5	120-250	DP5320, DC9800, DP5035	0.1-0.25
	Tool Steel	200-250	0.8-3.5	80-200	DP5320, DC9800, DP5035	0.1-0.25
M	Stainless 300 Series	-	0.5-1.0	80-170	DP5320, DC9800, DP5035	0.1-0.25
	Stainless 400 Series	-	0.5-1.0	100-210	DP5320, DC9800, DP5035	0.1-0.25
K	Grey Cast Iron	190-220	0.8-3.5	80-170	DC9200, DP7320	0.1-0.15
	Nodular Cast Iron	140-200	0.8-3.5	100-210	DC9200, DP7320	0.1-0.15
N	Aluminum Alloy	60-100	0.8-3.5	500-1000	DC210	0.1-0.25
	Cooper Alloy	75-130	0.8-3.5	500-1000	DC210	0.1-0.25

Note - HE0504 DER is recommended for aluminum & cast iron,
HE0504 DETR Is recommended for steel & heavy interrupted cut of cast iron

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

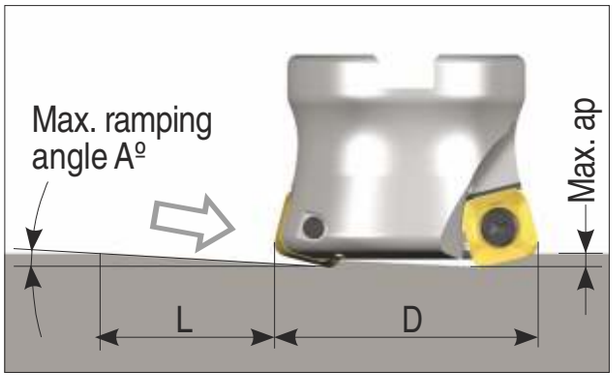
ISO	Material	Hardness (HB)	D.O.C (mm)	Speed (m/min)	Recommended Grade***	Fz (mm/tooth) SPKN(R)/TPKN(R)
P	Low Carbon Steel	85 - 175	1.0	305	DP5320, DC9800, DP5035	0.10 - 0.15
			2.5	275		0.10 - 0.15
			7.5	240		0.10 - 0.15
	High Carbon Steel	175 - 225	1.0	245	DP5320, DC9800, DP5035	0.10 - 0.15
			2.5	210		0.10 - 0.15
			7.5	180		0.10 - 0.15
	Alloy Steel	275 - 325	1.0	210	DP5320, DC9800, DP5035	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	DP5320, DC9800, DP5035	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	DP5320, DC9800, DP5035	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	DP5320, DC9800, DP5035	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, DP7320	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, DP7320	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	DP5320, DC9300	0.10 - 0.12
			2.5	30		0.10 - 0.12
			7.5	25		0.10 - 0.12
	Titanium Alloy	-	1.0	75	DP5320, 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%

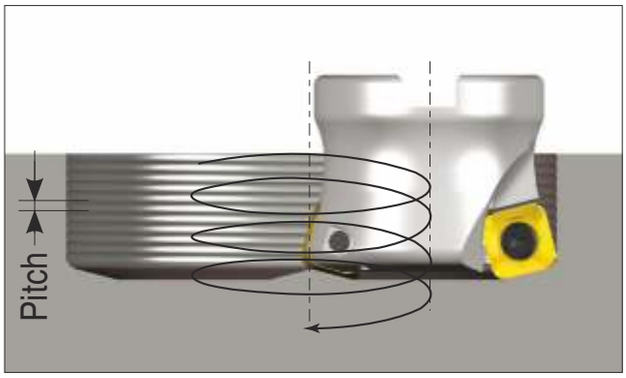
Programming technical data

1.Recommended ramping angle

- Straight ramping

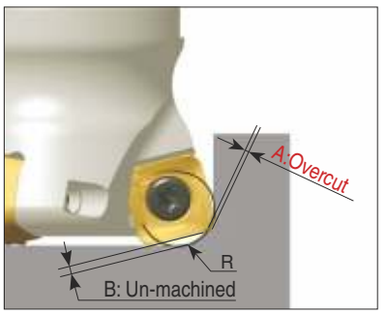


- Helical ramping



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
52	1.2	1.2	37	90	99	1.2
63	1	1.2	48	112	121	1.2

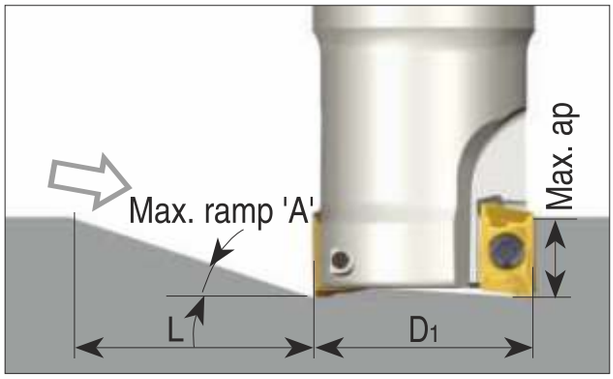


	Corner 'r' Program	A Over Cut	B Un- Machined Material Thickness
SDMT 1004-DM	1.75	0	0.46
	2	0	0.44
	2.25	0.02	0.42
	2.5	0.1	0.4
	3	0.27	0.36
	3.5	0.47	0.32

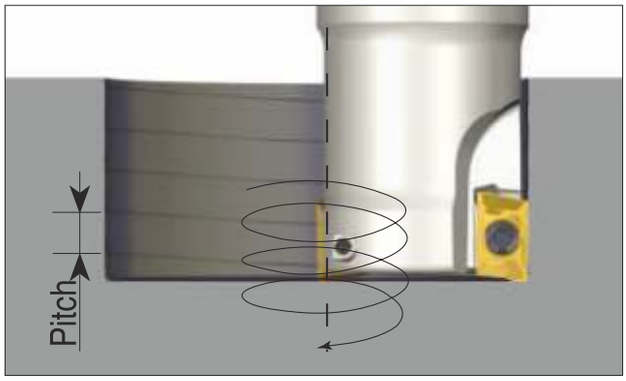
Programming technical data

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

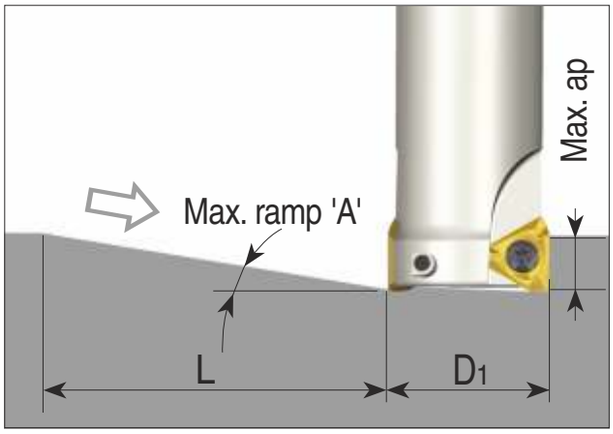
APKT 08

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

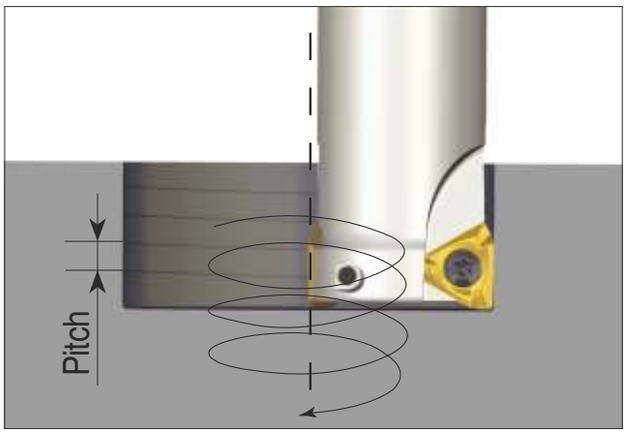
Programming technical data

1.Recommended ramping angle

- Straight ramping



- Helical ramping



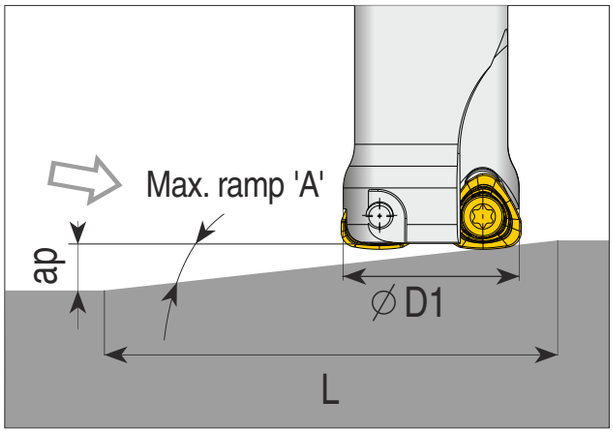
TOMX 10

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

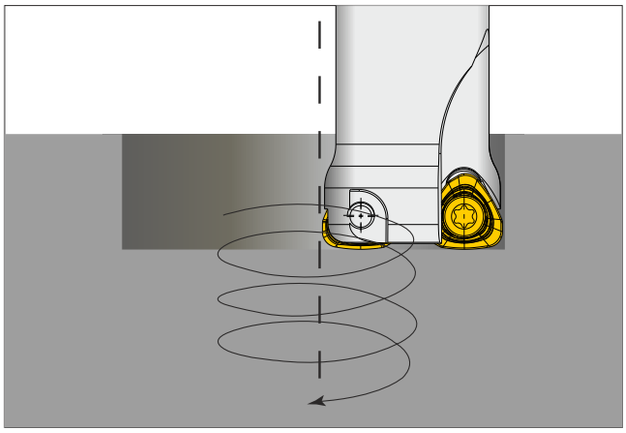
Programming technical data

1.Recommended ramping angle

- Straight ramping

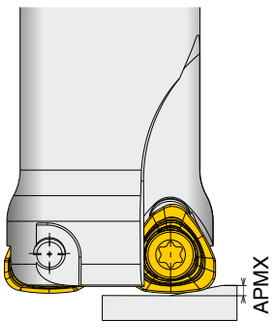


- Helical ramping



WBET 07

Cutter Dia D1	Straight Ramp down			Helical Ramp down	
	Max. Ramp (A°)	Max. ap (mm)	Min. Length (L)	Min. Dia (HD)	Max. Dia (HD)
18	4.5	0.5	6.4	26	34.3
20	4.5	0.5	6.4	28	38.3
25	4	0.5	7.2	34	48.3

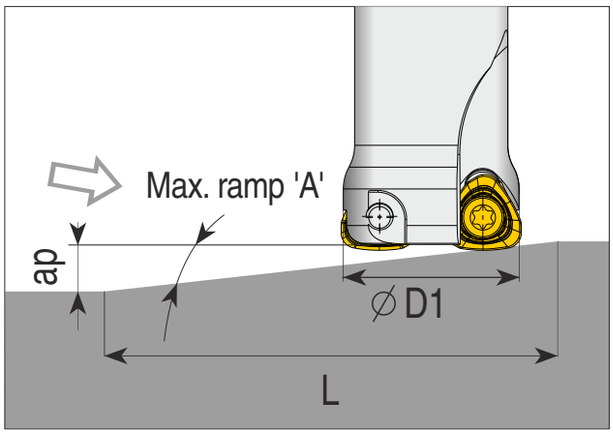


APMX = 0.5mm

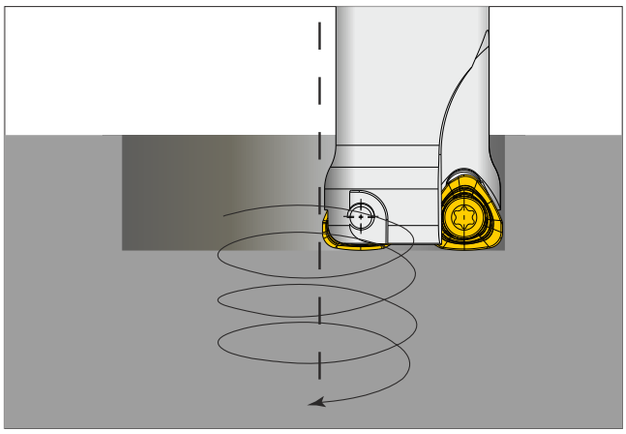
Programming technical data

1.Recommended ramping angle

- Straight ramping

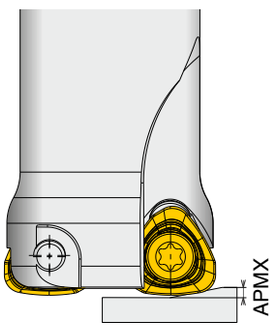


- Helical ramping



WBET 09

Cutter Dia D1	Straight Ramp down			Helical Ramp down	
	Max. Ramp (A°)	Max. ap (mm)	Min. Length (L)	Min. Dia (HD)	Max. Dia (HD)
25	4	1	14.3	34	46
28	4	1	14.3	40	52
32	3.5	1	16.35	42	60

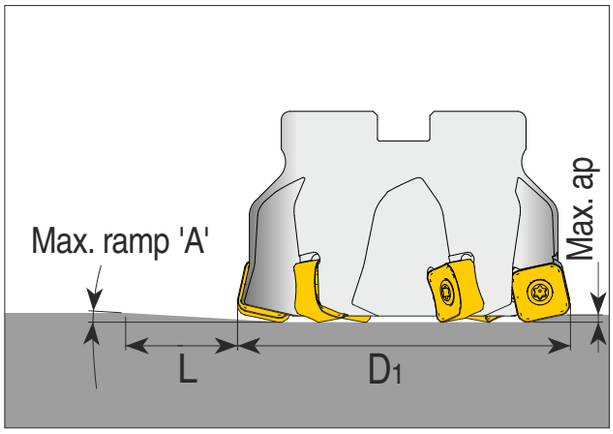


APMX = 1mm

Programming technical data

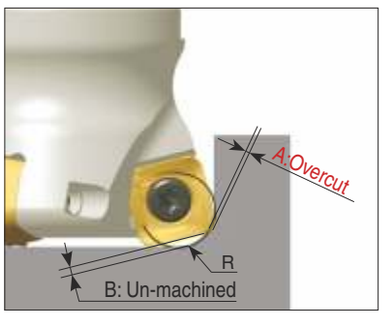
1.Recommended ramping angle

- Straight ramping



SNKU1205 XTN -HF

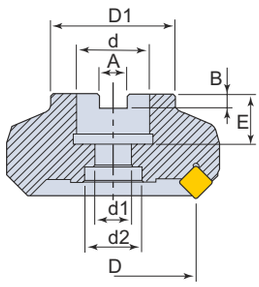
Cutter Dia D1	Straight Ramp down		
	Max. Ramp (A°)	Max. ap (mm)	Min. Length (L)
50	1.75	1.5	49.1
63	1.25	1.5	68.7
80	1	1.5	86



SNKU 1205-XTN	Corner 'r' Program	A Over Cut	B Un- Machined Material Thickness
	1.75	0	0.2
	2	0	0.139
	2.25	0.07	0

Mounting Reference for Milling Cutter (Metric Abore Style)

Fig.A



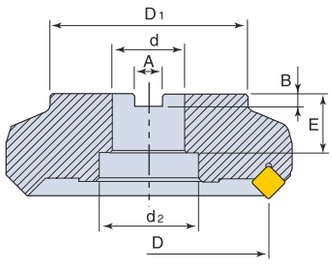


Fig.B

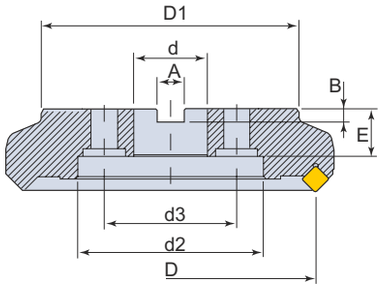


Fig.C

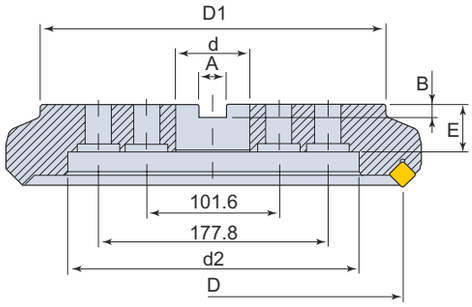


Fig.D

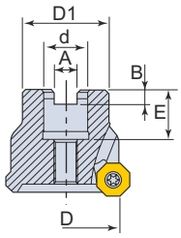
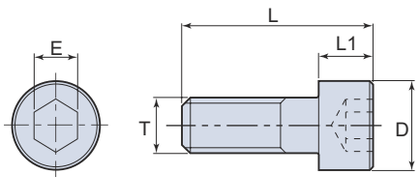


Fig.E

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
SH M20X2.5X40(-C)	30	60	20	20	17	125,160

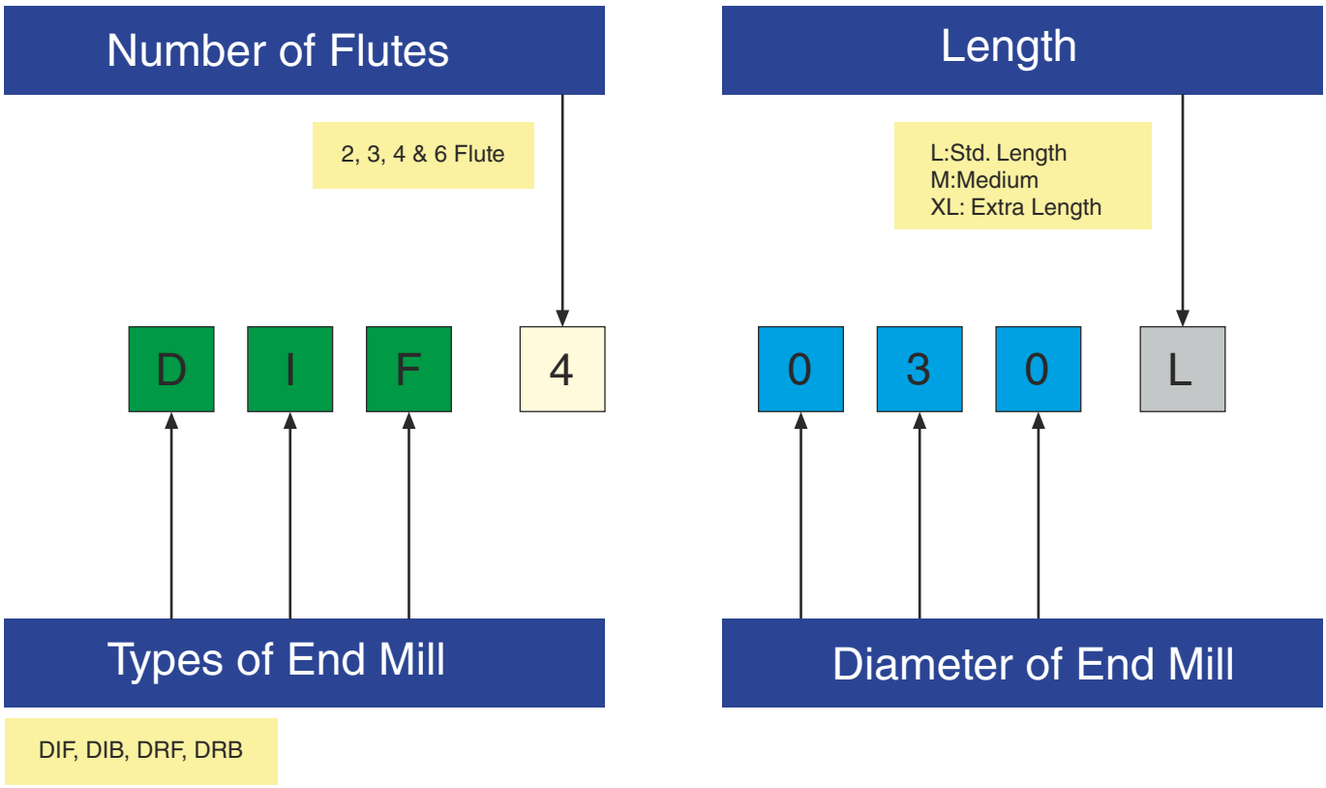
LH Type

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

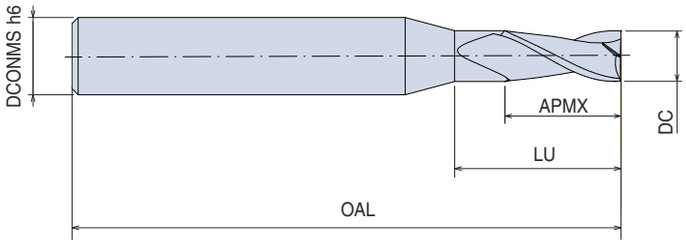
- "-C": Bolt with hole for internal coolant

DEndMill

Designation System



2 Flute Square Endmill 30 ° Helix



DIF2000M (Medium Type)

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

DIF2000L (Long Type)

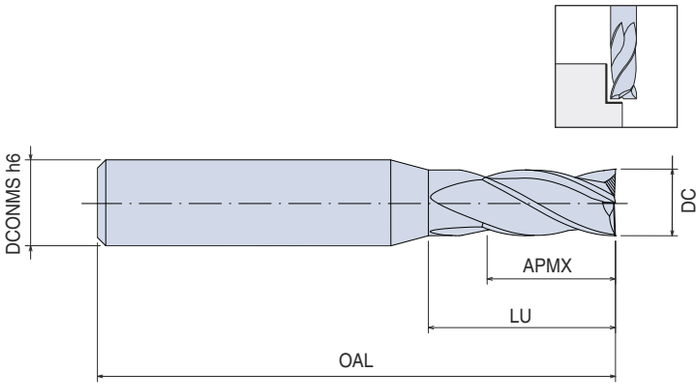
Designation	Dimension(mm)						Grade	
	DC	OAL	APMX	NOF	LU	DCONMS	DP5025	DP5015
DIF2L030-4	3	75	12	2	16.5	4	●	○
DIF2L040	4	75	16	2	22	4	●	○
DIF2L060	6	75	20	2	27.5	6	●	○
DIF2L080	8	100	20	2	30.5	8	●	○
DIF2L100	10	100	25	2	38.6	10	●	○
DIF2L120	12	100	30	2	45.5	12	●	○

DIF2000XL (Extra Long Type)

Designation	Dimension(mm)						Grade	
	DC	OAL	APMX	NOF	LU	DCONMS	DP5025	DP5015
DIF2XL030-4	3	100	12	2	16.5	4	●	○
DIF2XL040	4	100	16	2	22	4	●	○
DIF2XL060	6	100	20	2	27.5	6	●	○
DIF2XL080	8	120	20	2	30.5	8	●	○
DIF2XL100	10	120	25	2	38.5	10	●	○
DIF2XL120	12	120	30	2	45.5	12	●	○

Cutting Condition Pg - 75-77

4 Flute Square Endmill 30° Helix



DIF4000 M (Medium Type)

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

DIF4000L (Long Type)

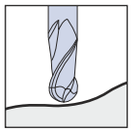
Designation	Dimension(mm)						Grade	
	DC	OAL	APMX	LU	DCONMS	NOF	DP5025	DP5015
DIF4L030-4	3	75	12	14.5	4	4	●	○
DIF4L040	4	75	16	17	4	4	●	○
DIF4L060	6	75	20	22.5	6	4	●	○
DIF4L080	8	100	20	22	8	4	●	○
DIF4L100	10	100	25	28	10	4	●	○
DIF4L120	12	100	30	33	12	4	●	○
DIF4L160	16	150	75	80	16	4	●	○

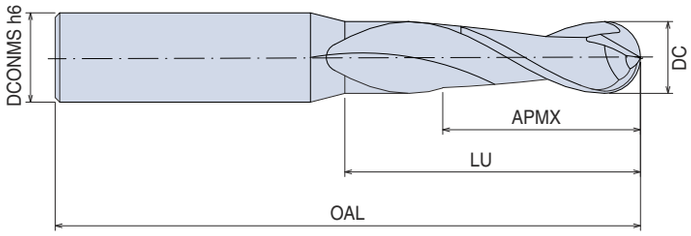
DIF4000XL (Extra Long Type)

Designation	Dimension(mm)						Grade	
	DC	OAL	APMX	LU	DCONMS	NOF	DP5025	DP5015
DIF4XL030-4	3	100	12	15	4	4	●	○
DIF4XL040	4	100	16	19	4	4	●	○
DIF4XL060	6	100	20	23	6	4	●	○
DIF4XL080	8	120	20	23	8	4	●	○
DIF4XL100	10	120	25	28	10	4	●	○
DIF4XL120	12	120	30	33	12	4	●	○

Cutting Condition Pg - 75-77

2 Flute Ball Endmill 30° Helix





DIB2000 M (Medium Type)

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

DIB2000 L (Long Type)

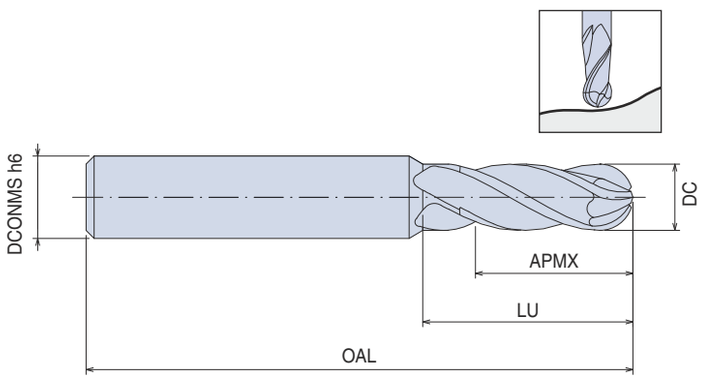
Designation	Dimension(mm)						Grade	
	DC	OAL	APMX	LU	DCONMS	NOF	DP5025	DP5015
DIB2L030-4	3	75	8	14	4	2	●	○
DIB2L030-6	3	75	8	14	6	2	●	○
DIB2L040	4	75	11	18	4	2	●	○
DIB2L040-6	4	75	11	18	6	2	●	○
DIB2L060	6	75	13	22	6	2	●	○
DIB2L080	8	100	16	27	8	2	●	○
DIB2L100	10	100	16	30	10	2	●	○
DIB2L120	12	100	25	39	12	2	●	○

DIB2000XL (Extra Long Type)

Designation	Dimension(mm)						Grade	
	DC	OAL	APMX	LU	DCONMS	NOF	DP5025	DP5015
DIB2XL030-4	3	100	8	15	4	2	●	○
DIB2XL030-6	3	100	8	14	6	2	●	○
DIB2XL040	4	100	11	18	4	2	●	○
DIB2XL040-6	4	100	11	18	6	2	●	○
DIB2XL060	6	100	13	22	6	2	●	○
DIB2XL080	8	120	20	31	8	2	●	○
DIB2XL100	10	120	25	39	10	2	●	○
DIB2XL120	12	120	30	44	12	2	●	○

Cutting Condition Pg - 75-77

4 Flute Ball Endmill 30° Helix



DIB4000 M (Medium Type)

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

DIB4000 L (Long Type)

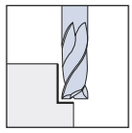
Designation	Dimension(mm)						Grade	
	DC	OAL	APMX	LU	DCONMS	NOF	DP5025	DP5015
DIB4L030-4	3	75	8	10	4	4	●	○
DIB4L030-6	3	75	8	10	6	4	●	○
DIB4L040	4	75	11	13	4	4	●	○
DIB4L040-6	4	75	11	13	6	4	●	○
DIB4L060	6	75	13	15	6	4	●	○
DIB4L080	8	100	16	18	8	4	●	○
DIB4L100	10	100	16	18	10	4	●	○
DIB4L120	12	100	25	27	12	4	●	○

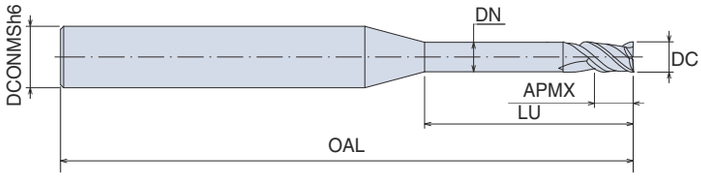
DIB4000XL (Extra Long Type)

Designation	Dimension(mm)						Grade	
	DC	OAL	APMX	LU	DCONMS	NOF	DP5025	DP5015
DIB4XL030-4	3	100	8	10	4	4	○	○
DIB4XL030-6	3	100	8	10	6	4	○	○
DIB4XL040	4	100	11	13	4	4	○	○
DIB4XL040-6	4	100	11	13	6	4	○	○
DIB4XL060	6	100	13	15	6	4	○	○
DIB4XL080	8	120	20	22	8	4	○	○
DIB4XL100	10	120	25	27	10	4	○	○
DIB4XL120	12	120	30	32	12	4	○	○

Cutting Condition Pg - 75-77

2 Flute Flat Endmill - DRF MILL

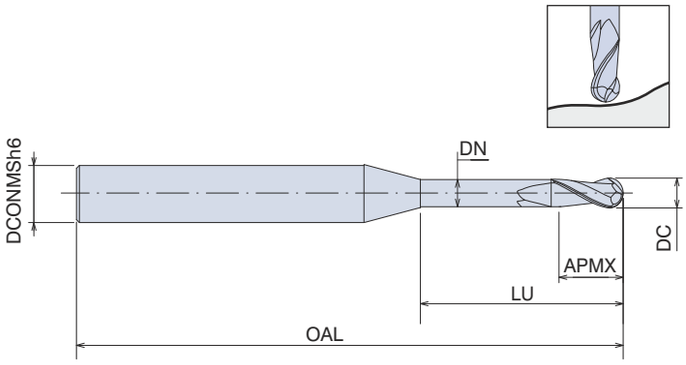




Designation	Dimension(mm)							Grade	
	DC	OAL	DN	APMX	LU	DCONMS	NOF	DP5025	DP5015
DRF20806 DP5015	0.8	45	0.75	1.2	6	4	2		●
DRF20808 DP5015	0.8	45	0.75	1.2	8	4	2		●
DRF21006 DP5015	1	45	0.97	1.5	6	4	2		●
DRF21008 DP5015	1	45	0.95	1.5	7	4	2		●
DRF21010 DP5015	1	45	0.95	1.5	10	4	2		●
DRF21012 DP5015	1	45	0.93	1.5	12	4	2		●
DRF21016 DP5015	1	45	0.93	1.5	16	4	2		●
DRF21208 DP5015	1.2	45	1.15	1.8	8	4	2		●
DRF21212 DP5015	1.2	45	1.13	1.8	12	4	2		●
DRF21412 DP5015	1.4	45	1.33	2.1	12	4	2		●
DRF21506 DP5015	1.5	45	1.45	2.3	6	4	2		●
DRF21508 DP5015	1.5	45	1.45	2.3	8	4	2		●
DRF21510 DP5015	1.5	45	1.45	2.3	10	4	2		●
DRF21512 DP5015	1.5	45	1.43	2.3	12	4	2		●
DRF21516 DP5015	1.5	50	1.41	2.3	16	4	2		●
DRF21520 DP5015	1.5	50	1.41	2.3	20	4	2		●
DRF21612 DP5015	1.6	45	1.53	2.4	12	4	2		●
DRF21812 DP5015	1.8	45	1.73	2.7	12	4	2		●
DRF22006 DP5015	2	45	1.93	3	6	4	2		●
DRF22008 DP5015	2	45	1.93	3	8	4	2		●
DRF22010 DP5015	2	45	1.93	3	10	4	2		●
DRF22012 DP5015	2	45	1.93	3	12	4	2		●
DRF22016 DP5015	2	50	1.91	3	16	4	2		●
DRF22512 DP5015	2.5	45	2.4	3.7	22	4	2		●
DRF22516 DP5015	2.5	50	2.4	3.7	16	4	2		●
DRF23014 DP5015	3	50	2.85	4.5	14	6	2		●
DRF23018 DP5015	3	55	2.85	4.5	18	6	2		●

Cutting Condition Pg - 75-77

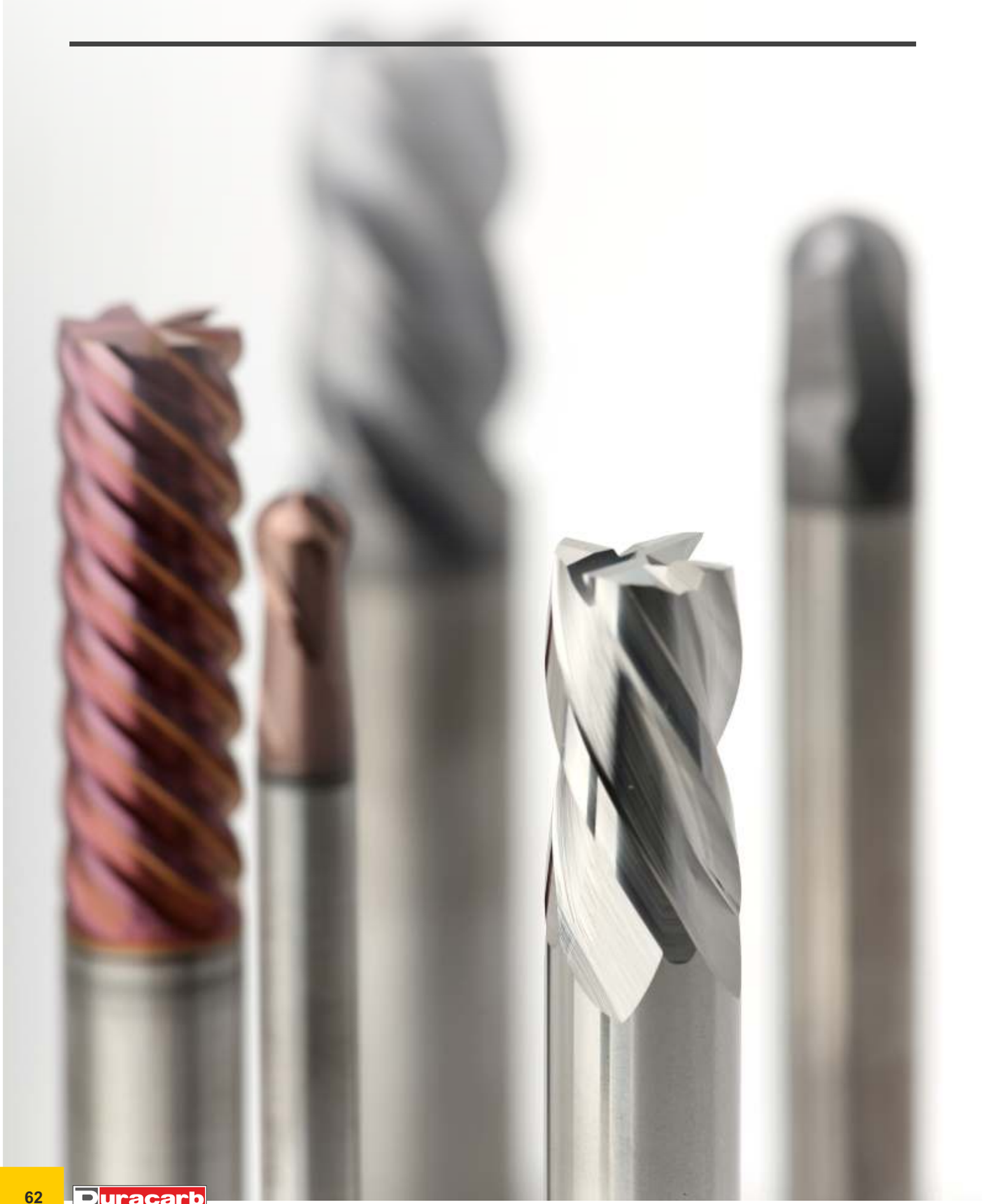
2 Flute Ball Endmill - DRB MILL



Designation	Dimension(mm)							Grade	
	DC	OAL	DN	APMX	LU	DCONMS	NOF	DP5025	DP5015
DRB20403 DP5015	0.4	45	0.36	0.6	3	4	2		●
DRB20504 DP5015	0.5	45	0.45	0.7	4	4	2		●
DRB20508 DP5015	0.5	45	0.45	0.7	8	4	2		●
DRB20604 DP5015	0.6	45	0.45	0.9	4	4	2		●
DRB20606 DP5015	0.6	45	0.55	0.9	6	4	2		●
DRB20804 DP5015	0.8	45	0.75	1.2	4	4	2		●
DRB20806 DP5015	0.8	45	0.75	1.2	6	4	2		●
DRB20808 DP5015	0.8	45	0.75	1.2	8	4	2		●
DRB21006 DP5015	1	45	0.97	1.5	6	4	2		●
DRB21008 DP5015	1	45	0.95	1.5	8	4	2		●
DRB21010 DP5015	1	45	0.93	1.5	10	4	2		●
DRB21012 DP5015	1	45	0.93	1.5	12	4	2		●
DRB21016 DP5015	1	45	0.93	1.5	16	4	2		●
DRB21208 DP5015	1.2	45	1.15	1.8	8	4	2		●
DRB21212 DP5015	1.2	45	1.13	1.8	12	4	2		●
DRB21412 DP5015	1.4	45	1.33	2.1	12	4	2		●
DRB21508 DP5015	1.5	45	1.45	2.3	8	4	2		●
DRB21510 DP5015	1.5	50	1.41	2.3	10	4	2		●
DRB21512 DP5015	1.5	45	1.43	2.3	12	4	2		●
DRB21516 DP5015	1.5	50	1.41	2.3	16	4	2		●
DRB21520 DP5015	1.5	50	1.41	2.3	20	4	2		●
DRB21616 DP5015	1.6	50	1.51	2.4	16	4	2		●
DRB21816 DP5015	1.8	50	1.71	2.7	16	4	2		●
DRB22006 DP5015	2	45	1.95	3	6	4	2		●
DRB22008 DP5015	2	45	1.95	3	8	4	2		●
DRB22010 DP5015	2	45	1.95	3	10	4	2		●
DRB22012 DP5015	2	45	1.95	3	12	4	2		●
DRB22016 DP5015	2	50	1.91	3	16	4	2		●
DRB22020 DP5015	2	55	1.89	3	20	4	2		●
DRB23010 DP5015	3	55	2.85	1.5	7	6	2		●
DRB23012 DP5015	3	55	2.85	4.5	12	6	2		●
DRB23016 DP5015	3	55	2.85	4.5	16	6	2		●
DRB23020 DP5015	3	60	2.85	4.5	20	6	2		●
DRB24016 DP5015	4	60	3.85	6	16	6	2		●
DRB24020 DP5015	4	65	3.85	6	20	6	2		●

Cutting Condition Pg - 75-77

DURACARB extends solid carbide program with three new series of End Mills suitable to machine High Hardened Materials, Super alloys and Non ferrous Materials



Suitable for machining Alloy steel, Stainless steel, Titanium alloys

Features and Benefits

- Grade DP5010S capable of withstanding shocks and vibrations while machining exotic material
- Unique geometry with strong cutting edge for better chip control, smooth machining and excellent surface finish
- Differential pitch and variable helix resulting in reduced cutting forces
- Corner chamfer ensures strong cutting edge
- Wider chip flute for smooth chip evacuation
- Suitable for roughing and finishing in slot milling, shoulder milling and profile milling

D-END MILL DESIGNATION SYSTEM

DFS	4	M	-	03	-	8	-	6
1	2	3		4		5		6

1.

DFS : Flat End Mill

2. No. of Flutes

2 = 2 flutes
4 = 4 flutes

3. Length Type

S = Small
M = Medium
L=Long
XL=Extra Long

4. Cutting Dia

03 = 3 mm
20= 20mm

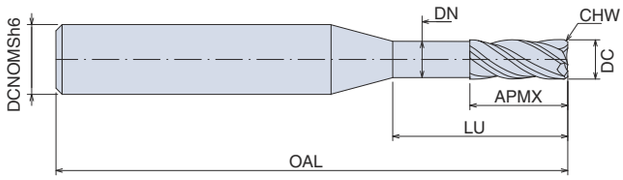
5. Flute Length

8 = 8 mm
40 =40 mm

6. Shank Diameter

6 = 6 mm
Not Indicated=Parallel Shank

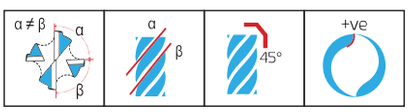
4 Flute Square Endmills for Steels, SS & Titanium upto 42HRC



P
M
S

APPLICATION DETAILS
Suitable for machining Alloyed Steel's up to 38Hrc, Stainless Steels, Titanium Endmills with 40°/41° Variable Helix, to reduce Vibration & Chattering, Rigid Core, Strong cutting edge, Broad chip space

Tolerance
DC : e_8



4 Flute 40° / 41° Helix - Medium Length Endmill with Corner Chamfer

Designation	Dimension (mm)								Coating
	DC	DCONMS	DN	OAL	NOF	APMX	LU	CHW	
DFS4M030-6	3.00	6	2.8	57	4	8	15	0.15x45 Deg	DP5010S
DFS4M040-6	4.00	6	3.8	57	4	11	17		
DFS4M050-6	5.00	6	4.8	57	4	13	19		
DFS4M060	6.00	6	5.8	57	4	13	21		
DFS4M080	8.00	8	7.8	63	4	19	27		
DFS4M0100	10.00	10	9.5	72	4	22	32		
DFS4M0120	12.00	12	11.5	83	4	26	38		

Application Parameters

MATERIAL		TENSILE STRENGTH (Mpa)	HARDNESS	ap* X d1	ae* X d1	Vc* (m/min)	Recommended feed (mm/tooth) for diameter (d1)				
							3&4	5&6	8	10	12
P	STEELS, ALLOY STEELS & TOOL STEELS	<850	<35	1	1	100-150	0.02	0.03	0.04	0.05	0.06
	FERRTIC, MARTENSITIC, PH STAINLESS STEEL	600_900	<35	1	1	60-90	0.02	0.03	0.04	0.05	0.06
M	STAINLESS STEEL-AUSTENITIC	<600	–	1	1	95-120	0.02	0.03	0.04	0.05	0.06
	HIGH STRENGTH AUSTENITIC AND CAST STAINLESS STEEL	600-800	<25	1	1	80-90	0.02	0.03	0.04	0.05	0.06
	DUPLEX STAINLESS STEEL	<800	<30	≤1	≤0.5	60-80	0.016	0.024	0.032	0.04	0.048
S	TITANIUM AND TITANIUM ALLOYS	900-1600	33-48	≤1	≤0.3	50-60	0.014	0.021	0.028	0.035	0.042

* a_p - Axial depth of cut
* a_e - Radial width of cut
* V_c - Cutting Speed

Application - Machining Non Ferrous materials

Features and Benefits

- Ultrafine K10 grade with polished flutes to avoid built up edge and stickiness.
- Sharp cutting edge with high rake face resulting in lower cutting forces at high speeds and feeds.
- Strong and unique core to withstand varying cutting loads.
- High helix angle to reduce resonance while machining Aluminum alloys.
- End mills available in 3 flutes and wider chip flute for easy chip evacuation
- For machining Non ferrous materials such as Aluminum and alloys, Copper, Brass etc.

D-END MILL DESIGNATION SYSTEM

DFA	3	M	-	03	-	8	-	6
1	2	3		4		5		6

1.

DFA : Aluminum Flat End Mill

2. No. of Flutes

2 = 2 flutes
3 = 3 flutes

3. Length Type

S = Small
M = Medium
L=Long
XL=Extra Long

4. Cutting Dia

03 = 3 mm
20= 20mm

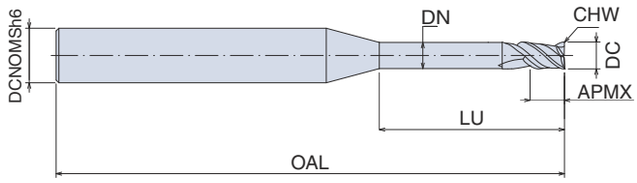
5. Flute Length

8 = 8 mm
40 =40 mm

6. Shank Diameter

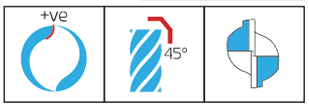
6 = 6 mm
Not Indicated=Parallel Shank

2 & 3 Flute Square end mills for Non Ferrous, Aluminum Material



APPLICATION DETAILS
Suitable for machining Non ferrous materials such as Aluminum & alloys, Copper, Brass. Endmills with 38°-45° Helix, for smooth entry, Sharp cutting edge reduce cutting force, Fluting with good surface to flow chips faster.

Tolerance DC : h_6



2 Flute 45° Helix - Medium Length with Corner Chamfer

Designation	Dimension (mm)								Coating
	DC	DCONMS	DN	LU	OAL	APMX	NOF	CHW	
DFA2M030-6	3.00	6	2.8	9.5	57	7	2	0.15x45 Deg	K10
DFA2M040-6	4.00	6	3.8	12.5	57	8	2		
DFA2M050-6	5.00	6	4.8	15.5	57	10	2		
DFA2M060	6.00	6	5.8	18.5	57	12	2		
DFA2M080	8.00	8	7.6	24	63	16	2		
DFA2M100	10.00	10	9.5	30	72	20	2		
DFA2M120	12.00	12	11.5	36	83	24	2		

3 Flute 38° Helix - Medium Length with Corner Chamfer

Designation	Dimension (mm)								Coating
	DC	DCONMS	DN	LU	OAL	APMX	NOF	CHW	
DFA3M030-6	3.00	6	2.8	9.5	7	7	3	0.15x45 Deg	K10
DFA3M040-6	4.00	6	3.8	12.5	8	8	3		
DAF3M050-6	5.00	6	4.8	15.5	10	10	3		
DFA3M060	6.00	6	5.8	18.5	12	12	3		
DFA3M080	8.00	8	7.6	24	16	16	3		
DFA3M100	10.00	10	9.5	30	20	20	3		
DFA3M120	12.00	12	11.5	36	24	24	3		

Application Parameters

N	MATERIAL	TENSILE STRENGTH (Mpa)	HARDNESS	ap* X d1	ae* X d1	Vc* (m/min)	Recommended feed (mm/tooth) for diameter (d1)				
							3&4	5&6	8	10	12
	WROUGHT ALUMINIUM	–	–	1	1	500-1000	0.021	0.042	0.056	0.07	0.084
	LOW SILICON ALLOY & MAGNESIUM ALLOYS Si<5%	–	–	1	1	500-1000	0.021	0.042	0.056	0.07	0.084
	HIGH SILICON ALLOY & MAGNESIUM ALLOYS Si<5%	–	–	1	1	100-500	0.021	0.042	0.056	0.07	0.084

* a_p - Axial depth of cut
* a_e - Radial width of cut
* V_c - Cutting Speed

Suitable for machining D2, High hardened material.

Features and Benefits

- DP5010H grade suitable for machining hare materials uptill 70Hrc
- Optimized cutting edge geometry with strong wedge angle to withstand heavy cutting loads
- Wider chip space for smooth chip evacuation
- Bigger core diameter ensures rigidity while cutting hard materials
- 2 and 4 flute end mill program available as flat, ball nose, with corner radius, both in long and short series.
- Application range – Die and Mould, Finish shoulder, Machining of Hi hardened material for finishing operations

D END MILL : DESIGNATION SYSTEM

DFH	4	12	-	26	-	83	-	6	-	R12
1	2	3		4		5		6		7

1.

DFH : Flat End Mill
DRH : Radius End Mill
DBH : Ball End Mill

2. No. of Flutes

2 = 2 flutes
4 = 4 flutes
6 = 6 flutes

3. Cutting Dia

03 = 3 mm
12= 12mm

4. Flute Length

8 = 8 mm
26 =26 mm

5. Over All Length

83 = 83 mm
100 =100 mm

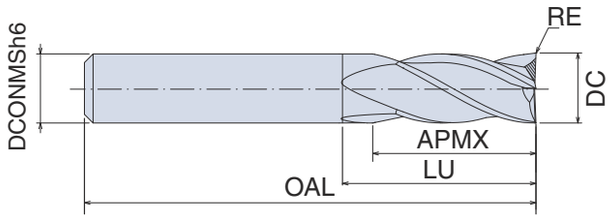
6. Shank Diameter

6 = 6 mm
Not Indicated=Parallel Shank

7. Corner Radius

R12 = 1.2 mm
Not Indicated = Corner chamfer

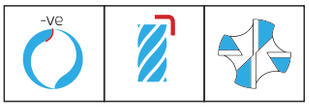
4 Flute Radius Square End Mill for Hardened Steel up to 70Hrc



H

4 Flute Flat End mill with Corner radius - High Speed and Hardened Materials 45-70 Hrc
Features: 30° Helix with rigid core, strong cutting edges due to bigger wedge angle, wider chip space.

Tolerance
DC : h_{10}



30° Helix Square Flat Stub Length Endmill

Designation	Dimension (mm)								Coating
	DC	DCONMS	LU	OAL	APMX	NOF	RE	FHA	
DRH4S060-R05	6	6	10.5	50	8	4	0.5	30 Deg	DP5010H
DRH4S060-R10	6	6	10.5	50	8	4	1		
DRH4S080-R05	8	8	13.5	60	10	4	0.5		
DRH4S080-R10	8	8	13.5	60	10	4	1		
DRH4S100-R05	10	10	16.5	75	12	4	0.5		
DRH4S100-R10	10	10	16.5	75	12	4	1		
DRH4S120-R05	12	12	19.5	75	15	4	0.5		
DRH4S120-R10	12	12	19.5	75	15	4	0.5		

30° Helix Square Flat Long Length Endmill

Designation	Dimension (mm)								Coating
	DC	DCONMS	LU	OAL	APMX	NOF	RE	FHA	
DRH4L060-R05	6	6	10.5	100	8	4	0.5	30 Deg	DP5010H
DRH4L060-R10	6	6	10.5	100	8	4	1		
DRH4L080-R05	8	8	13.5	100	10	4	0.5		
DRH4L080-R10	8	8	13.5	100	10	4	1		
DRH4L100-R05	10	10	16.5	100	12	4	0.5		
DRH4L100-R10	10	10	16.5	100	12	4	1		
DRH4L120-R05	12	12	19.5	100	15	4	0.5		
DRH4L120-R10	12	12	19.5	100	15	4	0.5		

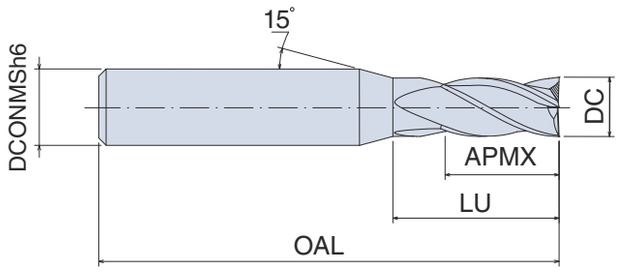
Application Parameters

H	MATERIAL	TENSILE STRENGTH (Mpa)	HARDNESS	ap* X d1	ae* X d1	Vc* (m/min)	Recommended feed (mm/tooth) for diameter (d1)				
							3&4	5&6	8	10	12
	HARDENED STEEL	–	48-55	1	≤0.3	65-100	0.014	0.026	0.032	0.038	0.045
	HARDENED STEEL	–	56-60	1	≤0.3	65-100	0.011	0.021	0.026	0.03	0.037
	HARDENED STEEL	–	>60	≤0.5	≤0.3	65-100	0.009	0.018	0.021	0.025	0.03

* a_p - Axial depth of cut
* a_e - Radial width of cut
* V_c - Cutting Speed

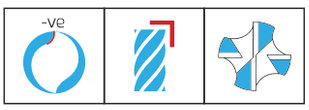
4 Flute Flat End Mill - High Speed and Hardened Materials 45-70 Hrc

H



*RIGID CORE/STRONG TEETH/FREE FLOWING CHIPROOM
*APPLICATION: SLOTTING & CONTOUR MILLING
*WORKING MATERIAL GROUP : HARDENED STEEL 50-70 HRC

Tolerance
DC : h_{10}



30° Helix Ball Nose Stub Length Endmill

Designation	Dimension (mm)							Grade
	DC	DCONMS	LU	OAL	APMX	NOF	FHA	
DFH4S030-6	3	6	11	50	9	4	30 Deg	DP5010H
DFH4S040-6	4	6	16	50	14	4		
DFH4S050-6	5	6	17.5	50	15	4		
DFH4S060	6	6	20	50	17	4		
DFH4S080	8	8	24	60	20	4		
DFH4S100	10	10	30	75	25	4		
DFH4S120	12	12	35	75	30	4		

30° Helix Ball Nose Long Length Endmill

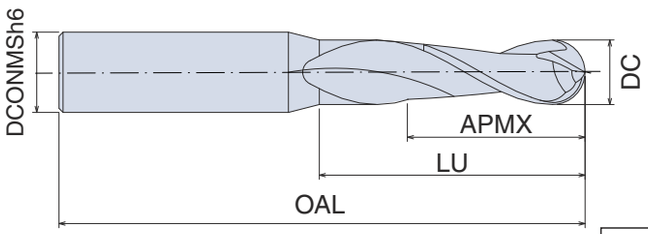
Designation	Dimension (mm)							Grade
	DC	DCONMS	LU	OAL	APMX	NOF	FHA	
DFH4L040-6	4	6	22	75	20	4	30 Deg	DP5010H
DFH4L050-6	5	6	23.5	75	20	4		
DFH4L060	6	6	34	75	30	4		
DFH4L080	8	8	38	100	35	4		
DFH4L100	10	10	44	100	40	4		
DFH4L120	12	12	54	100	50	4		

Application Parameters

H	MATERIAL	TENSILE STRENGTH (Mpa)	HARDNESS	ap* X d1	ae* X d1	Vc* (m/min)	Recommended feed (mm/tooth) for diameter (d1)				
							3&4	5&6	8	10	12
	HARDENED STEEL	–	48-55	1	≤0.3	65-100	0.014	0.026	0.032	0.038	0.045
	HARDENED STEEL	–	56-60	1	≤0.3	65-100	0.011	0.021	0.026	0.03	0.037
	HARDENED STEEL	–	>60	≤0.5	≤0.3	65-100	0.009	0.018	0.021	0.025	0.03

* a_p - Axial depth of cut
* a_e - Radial width of cut
* V_c - Cutting Speed

2 Flute ball nose end mills for hardened steel up to 70Hrc



H

2 Flute Ball Nose End Mill - High Speed and Hardened Materials 45-70 Hrc
Features: 30° Helix with rigid core, strong cutting edges due to bigger wedge angle, wider chip space.

Tolerance
DC : h_{10}

30˚ Helix Ball Nose Stub Length Endmill

Designation	Dimension (mm)							Grade
	DC	DCONMS	OAL	LU	APMX	NOF	FHA	
DBH2S030-6	3	6	50	10	6	2	30 Deg	DP5010H
DBH2S040-6	4	6	50	14	8	2		
DBH2S050-6	5	6	50	15.5	10	2		
DBH2S060	6	6	50	20.5	12	2		
DBH2S080	8	8	60	26.5	16	2		
DBH2S100	10	10	75	33	20	2		
DBH2S120	12	12	75	39	24	2		

30˚ Helix Ball Nose Long Length Endmill

Designation	Dimension (mm)							Grade
	DC	DCONMS	OAL	LU	APMX	NOF	FHA	
DBH2L030-6	3	6	75	10	6	2	30 Deg	DP5010H
DBH2L040-6	4	6	75	14	8	2		
DBH2L050-6	5	6	75	15.5	10	2		
DBH2L060	6	6	75	20.5	12	2		
DBH2L080	8	8	75	26.5	16	2		
DBH2L100	10	10	100	33	20	2		
DBH2L120	12	12	100	39	24	2		

30˚ Helix Ball Nose Extra Long Length Endmill

Designation	Dimension (mm)							Grade
	DC	DCONMS	OAL	LU	APMX	NOF	FHA	
DBH2XL030-6	3	6	100	10	6	2	30 Deg	DP5010H
DBH2XL040-6	4	6	100	14	8	2		
DBH2XL050-6	5	6	100	15.5	10	2		
DBH2XL060	6	6	100	20.5	12	2		
DBH2XL080	8	8	100	26.5	16	2		

Application Parameters

H	MATERIAL	TENSILE STRENGTH (Mpa)	HARDNESS	ap* X d1	ae* X d1	Vc* (m/min)	Recommended feed (mm/tooth) for diameter (d1)				
							3&4	5&6	8	10	12
	HARDENED STEEL	–	48-55	1	≤0.3	65-100	0.014	0.026	0.032	0.038	0.045
	HARDENED STEEL	–	56-60	1	≤0.3	65-100	0.011	0.021	0.026	0.03	0.037
	HARDENED STEEL	–	>60	≤0.5	≤0.3	65-100	0.009	0.018	0.021	0.025	0.03

* a_p - Axial depth of cut * a_e - Radial width of cut * V_c - Cutting Speed

Grade Information

Grade	Application	Features	Advantages
DP5010S	Machining of Alloy Steel up to 42Hrc and below hardness.Suitable for softer, sticky material like Stainless Steel 300 and 400 SeriesSuperalloy material Inconel, Chromium and Nickel Base Material	High wear resistant, Special coating to Ability to withstand heat and vibration	Multitasking capabilities in machining of exotic materials in dry and wet conditions
DP5010H	Machining of High hardened steel between 42-70 HRC.Finishing of shoulder and slot milling	Coating with Multilayer and high resistance to oxidation, thermal cracks.	Machining of high hardened material for finishing,
K10	Machining of non ferrous material like Copper, and its alloys. Best choice for machining of Aluminum (<10% Si) and alloys	Uncoated	High speed machining on Aluminum, Due to its edge conditions ability to reduce Built up edge

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

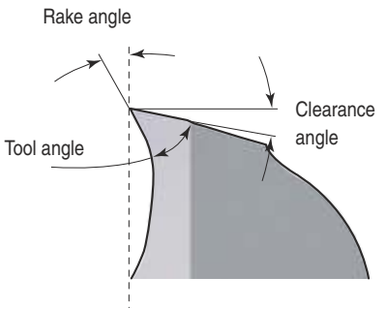
Operation : Profile Machining - Feed/tooth Chart			
Diameter D(mm)	Medium Machining		
	Axial Depth 0.1xD	Axial Depth 0.05xD	
	Radial 0.2xD	2 Flute	4 Flute
2	0.015	0.01	0.005
3	0.03	0.02	0.015
4	0.04	0.03	0.03
5	0.06	0.05	0.05
6	0.07	0.06	0.06
8	0.1	0.08	0.07
10	0.12	0.1	0.08
12	0.15	0.12	0.09
16	0.18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

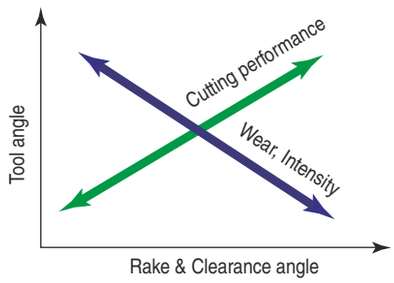
Notes:
Plunging Operation
Reduce Feed rate Vf by 90% of regular value

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

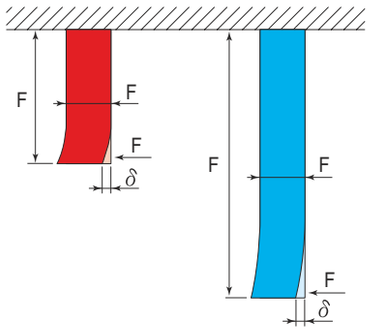
Example to Derive the actual Feed per tooth
For Medium machining of Radial Depth : 0.1xD
on General Steel with diameter10 mm end mill use fz value from Table : 2 times the correction factor from Table : 1
i.e. 0.033x1.2 = 0.039

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

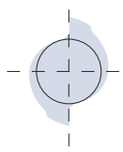
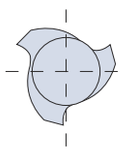
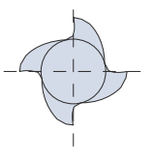
$$\delta = \frac{P \cdot L^3}{3 \cdot E \cdot I}$$

- 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

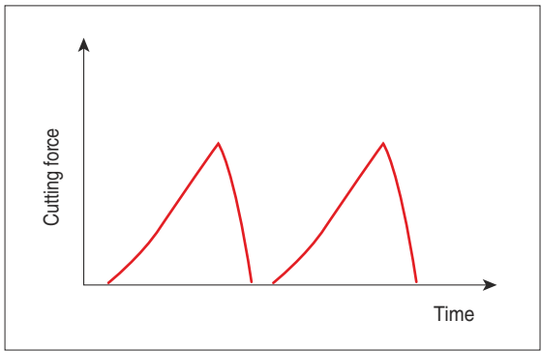
Helix angle effects

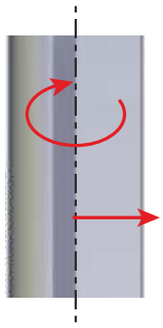
Helix angle	Cutting torque	Bending force	Surface finish	Rake wear	Relief wear	Breakage
Low	↓	↓	↓	↑	↑	↓
High	↑	↑	↑	↓	↓	↑

Helix angle

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

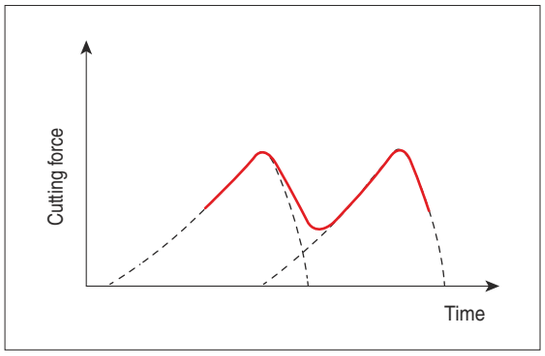
Straight flute





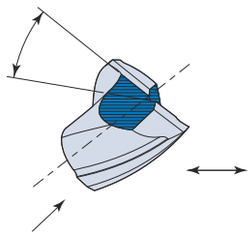
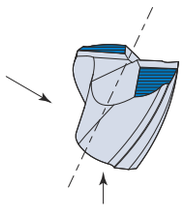
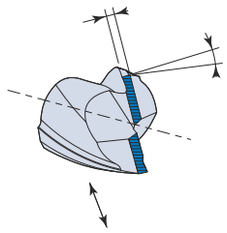
- High fluctuate of cutting force
- Interrupted machining

Helix flute



- Low fluctuate of cutting force

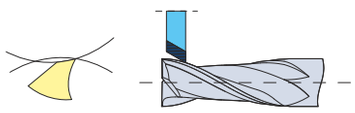
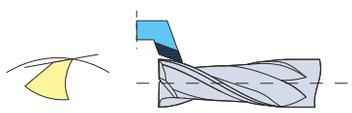
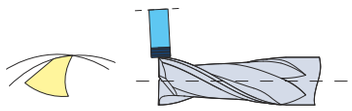
Regrinding of end teeth

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

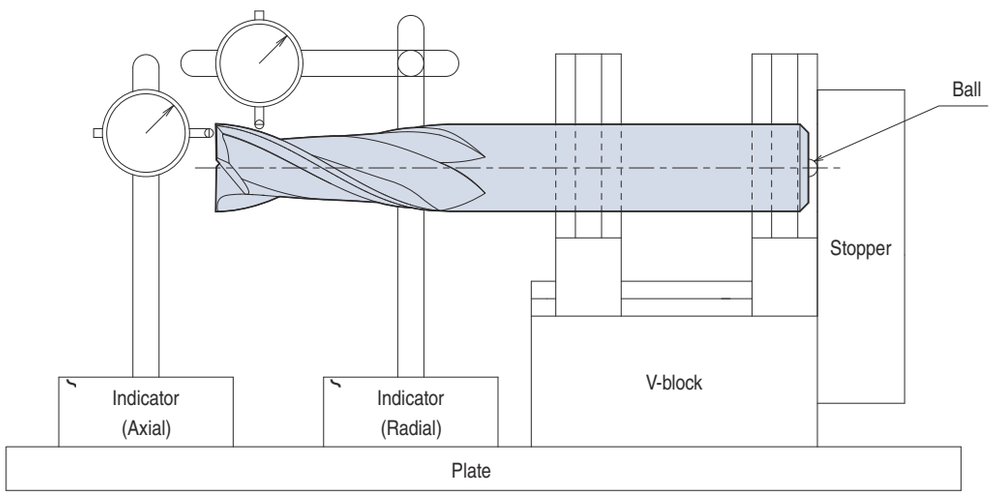
Regrinding of peripheral relief angle

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

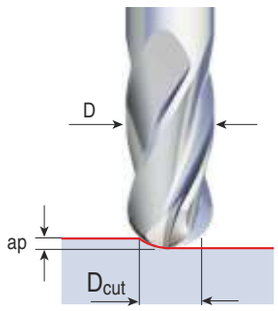
Diameter		Depth of cut (ap, mm)							
Radius	Dia	0.15	0.2	0.3	0.5	0.8	1	2	3
0.1	0.2								
0.2	0.4	0.39	0.4						
0.3	0.6	0.52	0.57	0.6					
0.4	0.8	0.62	0.69	0.77					
0.5	1	0.71	0.8	0.92	1				
1	2	1.05	1.2	1.43	1.73	1.96	2		
1.5	3	1.31	1.5	1.8	2.24	2.65	2.83		
2	4	1.52	1.74	2.11	2.65	3.2	3.46	4	
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



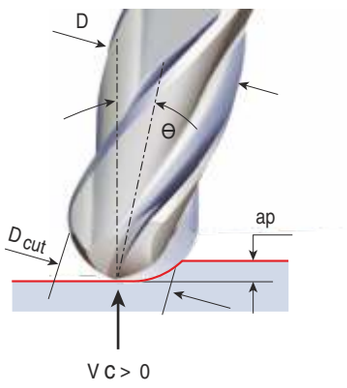
D cut ≠ Diameter

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

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

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

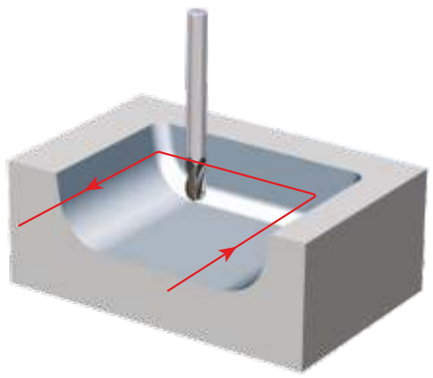


Operating recommendations

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

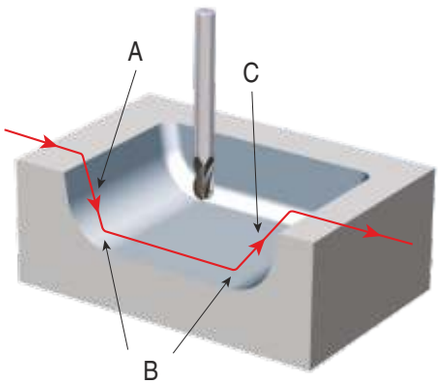
Conventional method

- 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 Diameter

Integers to be preceded by 0

- 25 → ∅ 25 mm
- 32 → ∅ 32 mm
- 40 → ∅ 40 mm

3. Drilling Depth

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

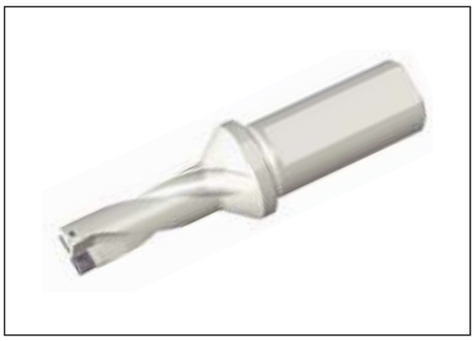
DEC D160S25 – 2D

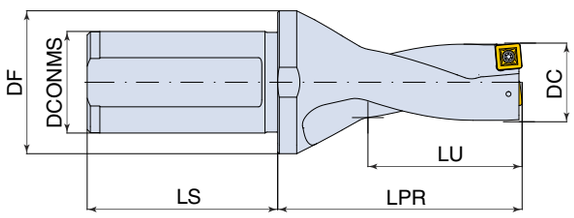
Drill Program

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

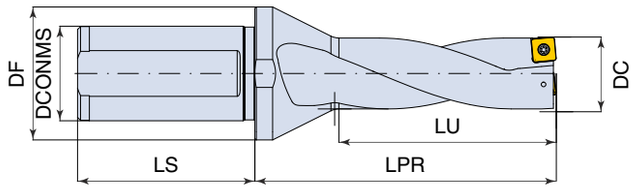




Designation	Dimension(mm)							Insert	Component		
	DC	DCONMS	DF	LS	LPR	LU	OAL		Screw	Wrench	Plug
DEC D155S25Y-2D	15.5	25	32	56	52	32	108	SPMX 06T204 MG	DS 22052I/HG	DTDW7	DSL 25
DEC D160S25Y-2D	16	25	32	56	52	32	108				
DEC D165S25Y-2D	16.5	25	32	56	54	34	110				
DEC D170S25Y-2D	17	25	32	56	54	34	110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

* All Drills are with through coolant

DEC-Drill Drilling Depth: 3XD

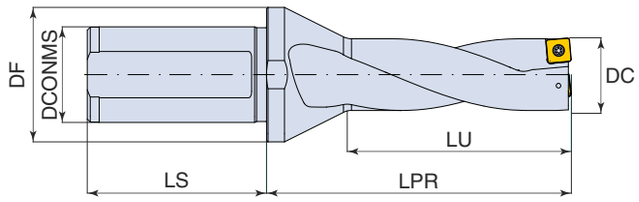


Designation	Dimension(mm)							Insert	Component		
	DC	DCONMS	DF	LS	LPR	LU	OAL		Screw	Wrench	Plug
DEC D155S25Y-3D	15.5	25	32	56	68	48	124	SPMX 06T204 MG	DS 22052I/HG	DTDW7	DSL 25
DEC D160S25Y-3D	16	25	32	56	68	48	124				
DEC D165S25Y-3D	16.5	25	32	56	71	51	127				
DEC D170S25Y-3D	17	25	32	56	71	51	127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

Note : Cooling hole plug to be ordered separately.

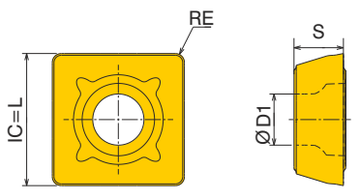
* Note : For L/D 4 and drill sizes bellow 15.5, Pls send your enquires. They are offered as Non standard Solution.

DEC-Drill Drilling Depth: 4XD



Designation	Dimension(mm)							Insert	Component		
	DC	DCONMS	DF	LS	LPR	LU	OAL		Screw	Wrench	Plug
DEC D155S25Y-4D	15.5	25	32	56	84	64	140	SPMX 06T204 MG	DS 22052I/HG	DTDW7	DSL 25
DEC D160S25Y-4D	16	25	32	56	84	64	140				
DEC D165S25Y-4D	16.5	25	32	56	88	68	144				
DEC D170S25Y-4D	17	25	32	56	88	68	144				
DEC D175S25Y-4D	17.5	25	32	56	93	72	149				
DEC D180S25Y-4D	18	25	32	56	93	72	149				
DEC D185S25Y-4D	18.5	25	32	56	97	76	153				
DEC D190S25Y-4D	19	25	32	56	97	76	153				
DEC D195S25Y-4D	19.5	25	32	56	103	80	159				
DEC D200S25Y-4D	20	25	32	56	103	80	159				
DEC D205S25Y-4D	20.5	25	32	56	107	84	163				
DEC D210S25Y-4D	21	25	32	56	107	84	163				
DEC D215S25Y-4D	21.5	25	32	56	111	88	167				
DEC D220S25Y-4D	22	25	32	56	111	88	167	SPMX 070308 MG	DS 25064I	DTDW8	DSL 25
DEC D225S25Y-4D	22.5	25	32	56	117	92	173				
DEC D230S25Y-4D	23	25	32	56	117	92	173				
DEC D235S25Y-4D	23.5	25	32	56	122	96	178				
DEC D240S25Y-4D	24	25	32	56	122	96	178				
DEC D245S25Y-4D	24.5	25	32	56	131	100	183				
DEC D250S32Y-4D	25	32	45	60	127	100	187				DSL 32
DEC D255S32Y-4D	25.5	32	45	60	131	104	191				
DEC D260S32Y-4D	26	32	45	60	131	104	191				
DEC D285S32Y-4D	28.5	32	45	60	144	116	204	SPMX 09T308 MG	DS 35088I	DTDW10	DSL 32
DEC D295S32Y-4D	29.5	32	45	60	151	120	211				

DEC-Drill Insert



SPMX□□□□□□MG

Insert	Designation	Dimension(mm)				Screw	Grade		
		IC=L	S	RE	ØD		DC9800	DC9235	DP8330
	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
4XD	0/+0.25

DCut

D-CUT

PARTING GROOVING

Holder Designation System

D C E R 20 T09 - 3

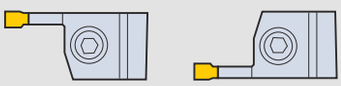
1 2 3 4 5 6

1. Duracarb

2. Machining Type

E External maching

3. Hand of Holder

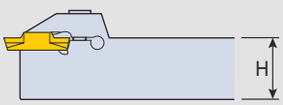


L Left-hand

R Right-hand

4. Shank Size

Height

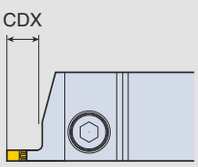


20, 25

Width

20, 25

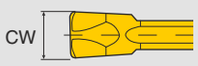
5. CDX



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

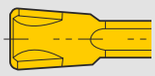
1. Duracarb

2. Number of edges

D

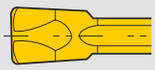
Double ended insert

3. Chip Breaker Type



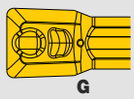
M

For medium



L

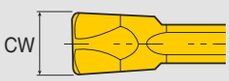
For light



G

For Groove Turn

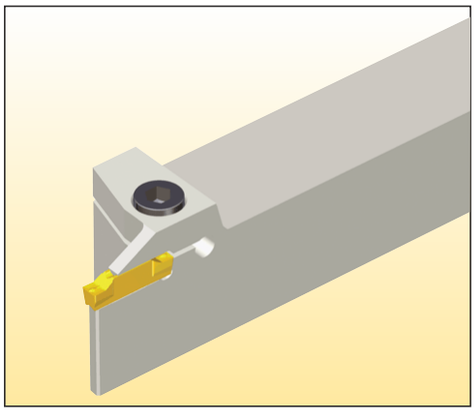
4. Width of Insert

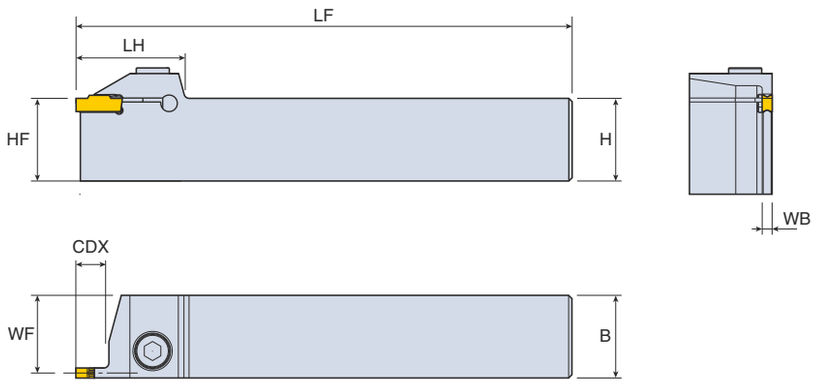


2 = 2.0 mm
3 = 3.0 mm
4 = 4.0 mm
5 = 5.0 mm

DCER/L

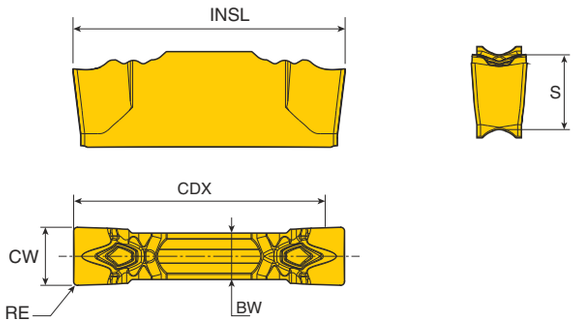
External grooving holder





Designation		Insert seat size	Dimension(mm)							Component	
			H	HF	B	LF	LH	WB	CDX	Screw	Wrench
DCER/L	20T09-2	2	20	20	20	125	33	1.8	9.0	DS M6X1X20-SH	DHLW-5
	25T09-2	2	25	25	25	150	33	1.8	9.0	DS M6X1X25-SH	DHLW-5
	20T16-2	2	20	20	20	125	35	1.8	16.0	DS M6X1X20-SH	DHLW-5
	25T16-2	2	25	25	25	150	35	1.8	16.0	DS M6X1X25-SH	DHLW-5
	20T09-3	3	20	20	20	125	33	2.4	9.0	DS M6X1X20-SH	DHLW-5
	25T09-3	3	25	25	25	150	33	2.4	9.0	DS M6X1X25-SH	DHLW-5
	20T16-3	3	20	20	20	125	35	2.4	16.0	DS M6X1X20-SH	DHLW-5
	25T16-3	3	25	25	25	150	35	2.4	16.0	DS M6X1X25-SH	DHLW-5
	20T09-4	4	20	20	20	125	33	3.0	9.0	DS M6X1X20-SH	DHLW-5
	25T09-4	4	25	25	25	150	33	3.0	9.0	DS M6X1X25-SH	DHLW-5
	20T16-4	4	20	20	20	125	35	3.0	16.0	DS M6X1X20-SH	DHLW-5
	25T16-4	4	25	25	25	150	35	3.0	16.0	DS M6X1X25-SH	DHLW-5
	20T20-5	5	20	20	20	125	37	3.85	20.0	DS M6X1X20-SH	DHLW-5
	25T20-5	5	25	25	25	150	37	3.85	20.0	DS M6X1X20-SH	DHLW-5

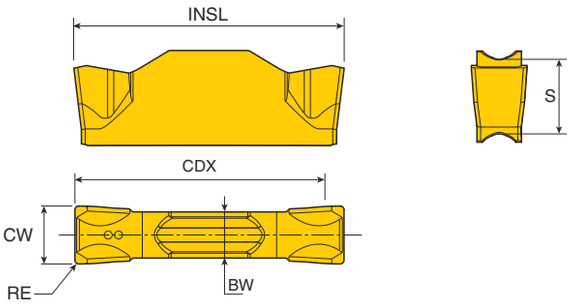
Insert for Parting & Grooving



DDL

Insert	Designation	Insert seat size	Dimension(mm)						Grade		
			CW	RE	BW	INSL	S	CDX	DC9800	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	●	○	○
	5	5	5.0	0.30	4.0	17.5	5.1	17	●	○	○

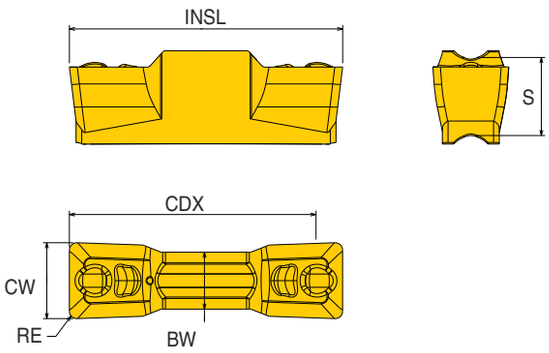
Insert for Parting & Grooving



DDM

Insert	Designation	Insert seat size	Dimension(mm)						Grade		
			CW	RE	BW	INSL	S	CDX	DC9800	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	●	○	○
	5	5	5.0	0.30	4.0	17.5	5.1	17	●	○	○

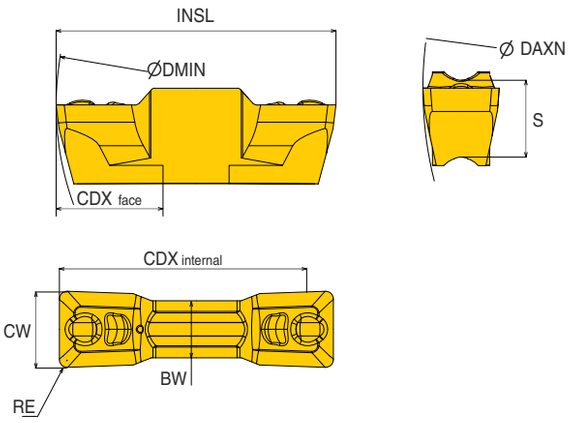
Insert for Parting, Grooving & Turning



DDG

Insert	Designation	Insert seat size	Dimension(mm)						Grade		
			CW	RE	BW	INSL	S	CDX	DC9800	DP5320	DC154
	30040	3	3.0	0.40	1.7	14.4	4.0	13	●	○	○
	40040	4	4.0	0.40	3.0	14.4	4.0	13	●	○	○
	50040	5	5.0	0.40	4.0	17.9	5.1	17	●	○	○

Insert for Internal operations and operations on face



DDGI *coming soon*

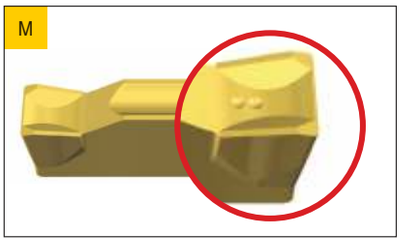
Insert	Designation	Insert seat size	Dimension(mm)									Grade
			CW	RE	BW	INSL	S	DMIN	CDX Internal	DAXN	CDX External	DC9800
	30040	3	3	0.4	1.7	14.4	4	23	13	36	5	●
	40040	4	4	0.4	3	14.4	4	23	13	32	5	●
	50040	5	5	0.4	4	17.5	5.1	33	17	36	6	●

Workpiece materials

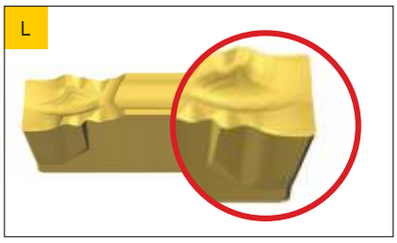
CUTTING CONDITION	ALLOY STEEL	AUSTENITIC STAINLESS	CAST IRON	NON-FERROUS	HIGH-TEMP ALLOYS
HIGH FEED	M	M	M	BRASS M	M
↕	↕	↕	↕	↕	↕
LOW FEED	L	L	M	L ALUMINIUM	L **TITANIUM**

GRADE	ISO RANGE	FEATURES & APPLICATION
New DC 9800 PVD coated	P15 – P35 M10 – M30 K10 – K30	• For semi-roughing and medium cutting on all kinds of materials • High mechanical shock resistance • TiAlN coated on sub-micron substrate
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

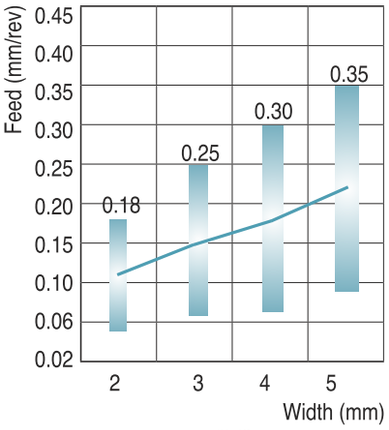


- For soft materials, parting of tubes, small diameters and thin-walled parts
- Low forces and smaller burrs
- Improved straightness
- Low-to-medium feeds

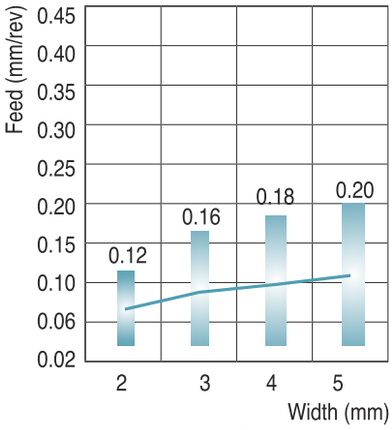
- For groove-turning steel, alloy steel and stainless steel.
- Central chip-breaking island for multi-directional chip control

Recommended feed range for grooving as a function of insert width

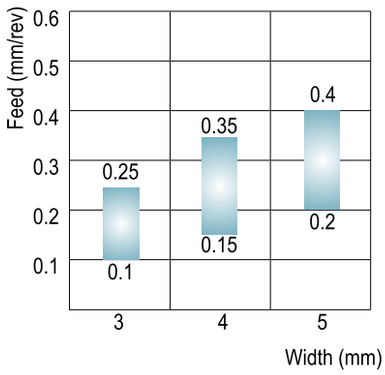
Material; SAE4140 (HB240)



"M"

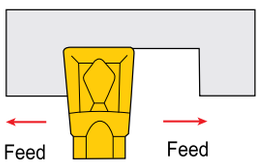


"L"

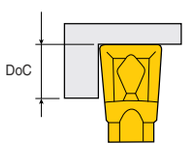


"G"

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

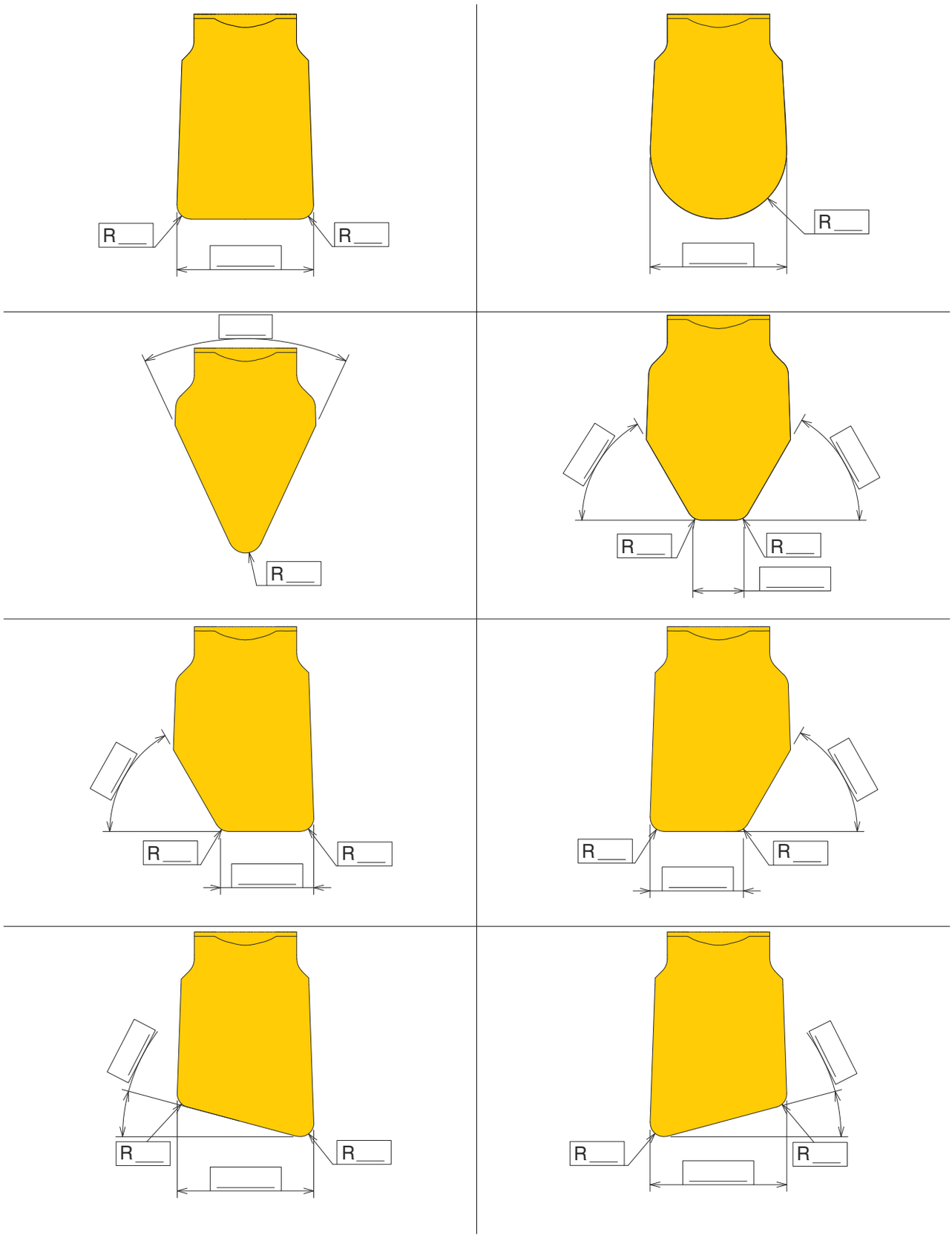
Recommended Cutting Conditions - Parting and Grooving

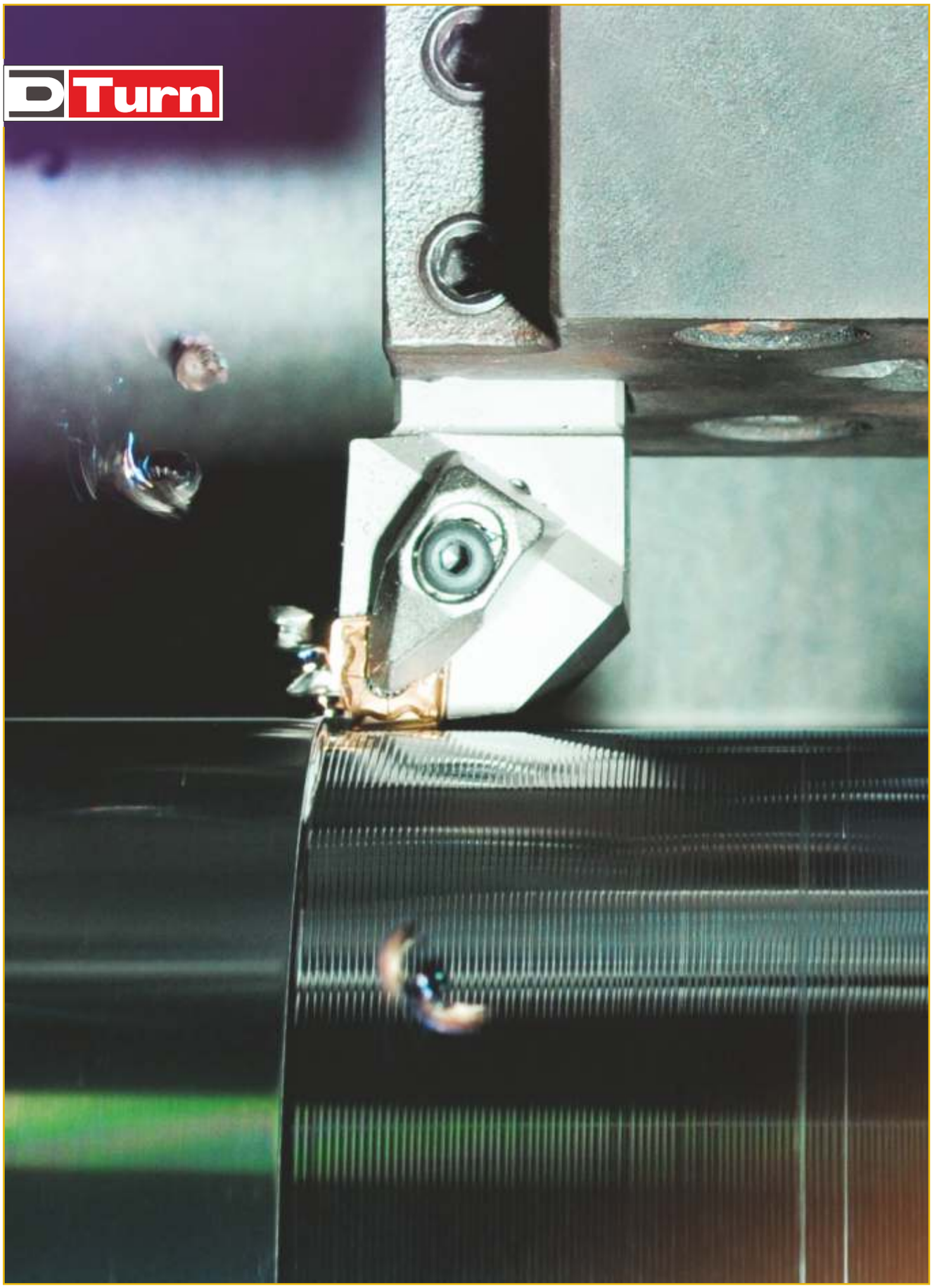
ISO	Material		Condition	Hardness HB	Cutting speed Vc(m/min)
P	Non-alloy steel, cast steel, free cutting steel	<0.25%C	Annealed	125	100 – 200
		>=0.25%C	Annealed	190	100 – 180
		<0.55%C	Quenched and tempered	250	80 – 160
		>=0.55%C	Annealed	220	80 – 160
			Quenched and tempered	300	70 – 130
	Low alloy steel and cast steel (Less than 5% of alloying elements)		Annealed	200	100 – 160
			Quenched and tempered	275	80 – 160
				300	80 – 150
				350	80 – 130
	High alloy steel, cast steel and tool steel		Annealed	200	90 – 130
			Quenched and tempered	325	50 – 80
M	Stainless steel and cast steel		Ferritic / martensitic	200	80 – 170
			Martensitic	240	80 – 150
			Austenitic	180	80 – 170
K	Gray cast iron (GG)		Ferritic	160	110 – 250
			Pearlitic	250	90 – 140
	Cast iron nodular (GGG)		Ferritic	180	120 – 230
			Pearlitic	260	90 – 180
	Malleable cast iron		Ferritic	130	90 – 180
			Pearlitic	230	80 – 150
S	High temp. alloys	Fe based	Annealed	200	20 – 40
			Cured	280	15 – 30
		Ni or Co based	Annealed	250	15 – 20
			Cured	350	15 – 20
			Cast	320	15 – 20
	Titanium, Ti alloys				90 – 120
			Alpha+beta alloys cured		20 – 50

Note : Use DC154 at low Cutting speeds.
For internal and face operation grooving operations, reduce cutting speed by 25%

Tailor made grooving insert

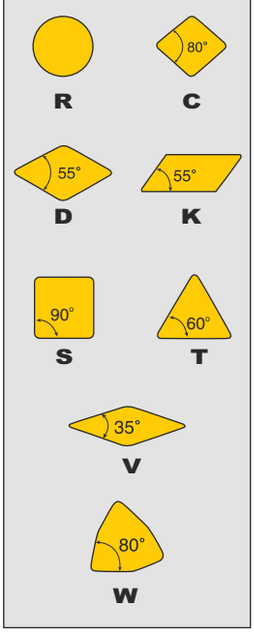
We offer grooving inserts with special profiles tailored to suit your requirements.
Please contact our engineers



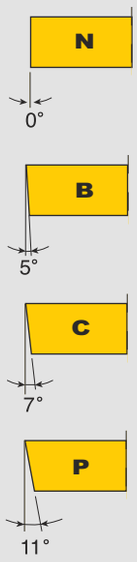

DTurn

Insert Designation System

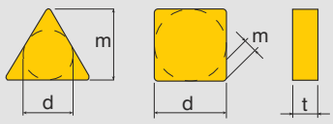
1. Shape



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

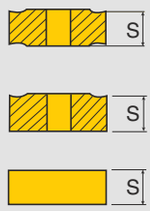
G class

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) 46

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

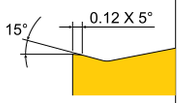
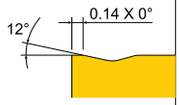
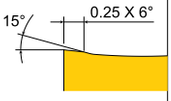
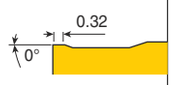
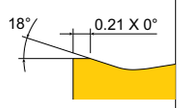
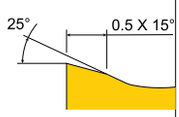
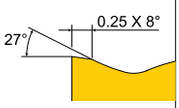
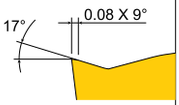
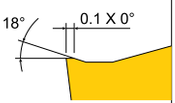
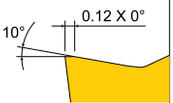
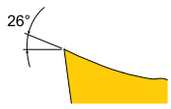
– 41
– 42
– 43
– 45
– 46
– 52
– 56

GRADE	ISO RANGE	FEATURES & APPLICATION
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 CVD 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

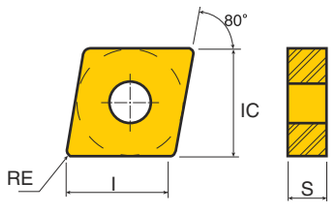
Cutting Conditions

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 56	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 56	100-320	-	180-350	140-300	60-200
Stainless Steel		41 42 45	200-270	-	-	-	100-210
Cast Iron	Grey Cast Iron	46 56	100-300	180-440	90-300	-	-
	Ductile Cast Iron		100-250	200-340	90-280	-	-

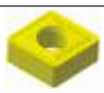
Feature of Chipbreaker

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
	56 		• For rough machining of steel and cast iron. • Very strong edge and rake geometry.
	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 application • Good chip evacuation in low feed and depth of cut • Low cutting force & good chip control
	51 		• For semi-finishing to medium machining • Good chip evacuation in low feed and depth of cut • Good chip control
	52 		• Medium to roughing in steel and cast iron • Applicable to both interrupted and continuous
	AU 		• For aluminum machining • Low cutting force, excellent chip evacuation

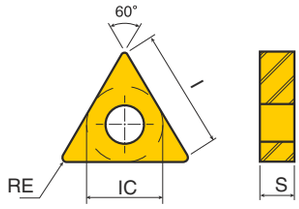
Negative 80° Insert



CNM□

Insert		Designation	Dimension (mm)			Recommended Cutting Conditions		Grade							
			IC	S	RE	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	1.0 – 3.5	●							
		090412	9.52	4.76	1.2	0.15 - 0.70	1.0 – 3.5	●							
	CNMG D3 Semi-Finishing & Medium	CNMG 090408 D3	9.52	4.76	0.8	0.15 - 0.40	0.5 – 2.5		●	●					
		090412 D3	9.52	4.76	1.2	0.18 - 0.50	0.6 – 2.5		●	●					
	CNMG M3 For stainless steel	CNMG 090408 M3	9.52	4.76	0.8	0.12 – 0.30	1.0 – 3.0					●	●	●	●
		090412 M3	9.52	4.76	1.2	0.15 – 0.40	1.5 – 3.0					●	●	●	●
	CNMG D5 Medium to Roughing	CNMG 090408 D5	9.52	4.76	0.8	0.15 – 0.40	0.5 – 3.5	●							
		090412 D5	9.52	4.76	1.2	0.17 – 0.45	0.6 – 3.5	●							

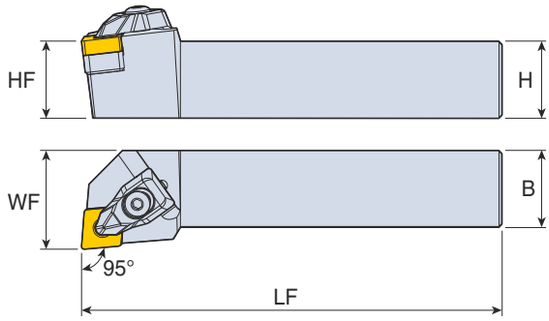
Negative 60° Insert

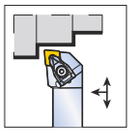


TNM□

Insert		Designation	Dimension (mm)			Recommended Cutting Conditions		Grade							
			IC	S	RE	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	0.12 – 0.30	1.0 - 3.0					●		●	●
		130412 M3	7.94	4.76	1.2	0.12 – 0.30	1.5 - 3.0					●		●	●
	TNMG R5 Medium & Roughing	TNMG 130412 R5	7.94	4.76	1.2	0.25 – 0.50	2.0-3.0	●		●					

DCLNR/L



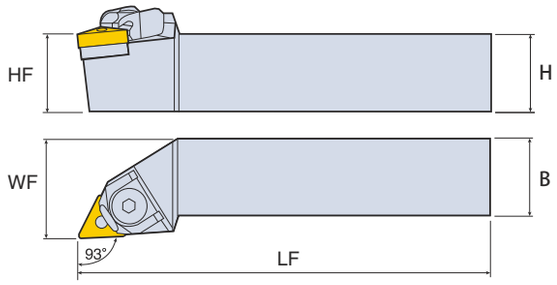


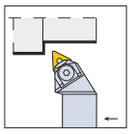
Designation		Dimension (mm)					Insert
		H	HF	B	LF	WF	
DCLNR/L	2020 K0904	20	20	20	125	25	80° CN□□ 0904□□
	2525 M0904	25	25	25	150	32	

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



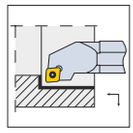


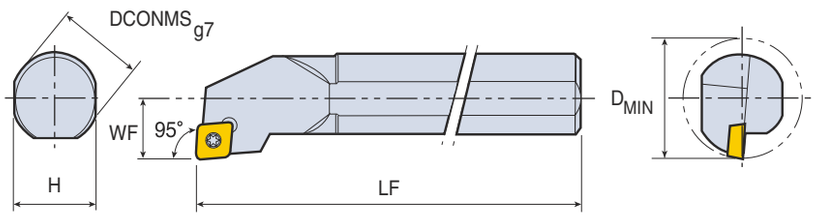
Designation		Dimension (mm)					Insert
		H	HF	B	LF	WF	
WTJNR/L	2020 K1304 - C	20	20	20	125	25	60° TN□□ 1304□□
	2525 M1304 - C	25	25	25	150	32	

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



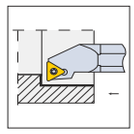


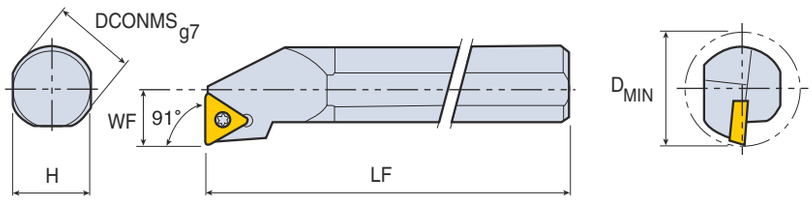
Designation		Dimension (mm)					Insert	
		DCONMS	H	LF	WF	D_{MIN}		
S16Q	SCLNR/L 0904 - C	16	15	180	11	20	80°	CN□□ 0904□□
S20Q	SCLNR/L 0904 - C	20	18	180	11	20		

Spares

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

S-STFNR/L



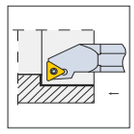


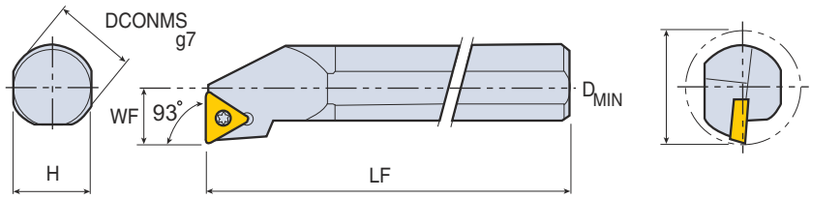
Designation		Dimension (mm)					Insert	
		DCONMS	H	LF	WF	D_{MIN}		
S16Q	STFNR/L 1304 - C	16	15	180	11	20	60°	TN□□ 1304□□
S20R	STFNR/L 1304 - C	20	18	180	13	25		

Spares

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

S-STUNR/L



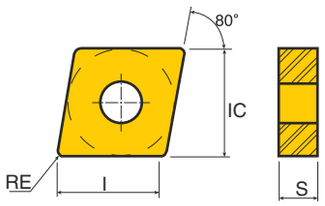


Designation		Dimension (mm)					Insert
		DCONMS	H	LF	WF	D_{MIN}	
S16Q	STUNR/L 1304 - C	16	15	180	11	20	 TN□□ 1304□□
S20R	STUNR/L 1304 - C	20	18	180	13	25	

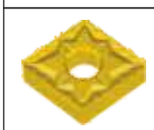
Spares

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

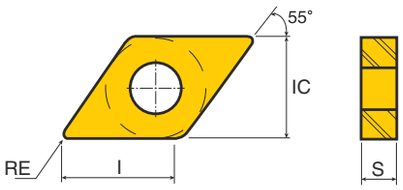
Negative 80° Insert



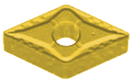
CNM□

Insert		Designation	Dimension (mm)				Recommended Cutting Conditions		Grade				
			l	IC	S	RE	Feed (mm/rev)	D.O.C. (mm)	DC820	DC9015	DC9025	DC8035	DP5010
	CNMA For Cast Iron	CNMA 120408	12.0	12.7	4.76	0.8	0.15 - 0.60	1.0 - 3.0	●				
		120412	11.6	12.7	4.76	1.2	0.15 - 0.70	1.0 - 3.0	●				
	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		●	●	●	
	CNMG 53 Medium & Roughing	CNMG 120404 53	12.4	12.7	4.76	0.4	0.22 - 0.60	2.3 - 5.5	●				
		120408 53	12.0	12.7	4.76	0.8	0.22 - 0.60	2.3 - 5.5	●	●	○		
		120412 53	11.6	12.7	4.76	1.2	0.22 - 0.60	2.3 - 5.5	○	○	○		
	CNMG 56 Roughing	CNMG 120408 56	12	12.7	4.76	0.8	0.25~0.70	2.5~6.0	●	●	●		
		120412 56	11.6	12.7	4.76	1.2	0.25~0.70	2.5~6.0	●	●	●		
		120416 56	11.2	12.7	4.76	1.6	0.30~0.70	2.5~6.0	●	●	●		

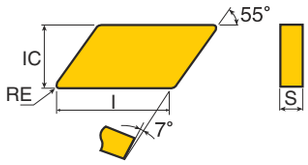
Negative 55° Insert



DNM□

Insert		Designation	Dimension (mm)				Recommended Cutting Conditions		Grade				
			I	IC	S	RE	Feed (mm/rev)	D.O.C. (mm)	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

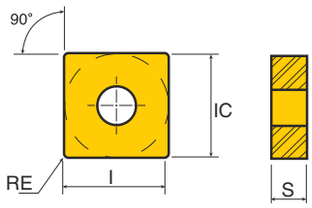


KNUX

Insert		Designation	Dimension (mm)				Recommended Cutting Conditions		Grade			
			I	IC	S	RE	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				●

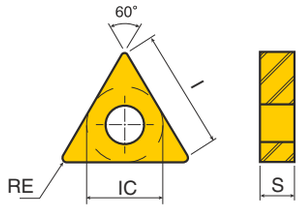
Negative 90° Insert

SNM□



Insert		Designation	Dimension (mm)				Recommended Cutting Conditions		Grade				
			l	IC	S	RE	Feed (mm/rev)	D.O.C. (mm)	DC820	DC9015	DC9025	DC8035	DP5010
	SNMA For Cast Iron	SNMA 120408	11.9	12.7	4.76	0.8	0.15 - 0.70	1.0 - 6.0	●				
		120412	11.5	12.7	4.76	1.2	0.20 - 0.80	1.5 - 6.0	●				
	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			●	●	

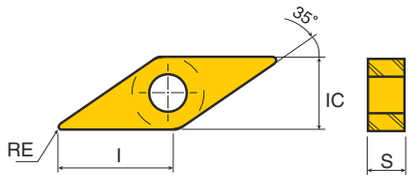
Negative 60° Insert



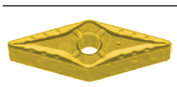
TNM□

Insert		Designation	Dimension (mm)				Recommended Cutting Conditions		Grade				
			l	IC	S	RE	Feed (mm/rev)	D.O.C. (mm)	DC820	DC9015	DC9025	DC8035	DP5010
	TNMA For Cast Iron	TNMA 160408	14.5	9.52	4.76	0.8	0.15 - 0.40	1.0 - 4.0	●				
		160412	13.5	9.52	4.76	1.2	0.20 - 0.50	1.5 - 4.5	●				
	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 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	●	●	●	●	●
	TNMG 52 Medium	TNMG 160408 52	14.5	9.52	4.76	0.8	0.10 - 0.35	0.7 - 3.5		●	●	●	
	TNMG 53 Medium & Roughing	TNMG 160404 53	15.5	9.52	4.76	0.4	0.22 - 0.60	2.3 - 5.5	●		○		
		160408 53	14.5	9.52	4.76	0.8	0.22 - 0.60	2.3 - 5.5	●	○	●		
		160412 53	13.5	9.52	4.76	1.2	0.22 - 0.60	2.3 - 5.5		○	●		
	TNMG 56 Roughing	TNMG 160408 56	14.5	9.52	4.76	0.8	0.25 - 0.65	2.0 - 5.0	●	●	●		
		160412 56	13.5	9.52	4.76	1.2	0.25 - 0.65	2.0 - 5.0	●	●	●		

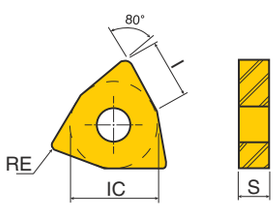
Negative 35° Insert



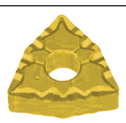
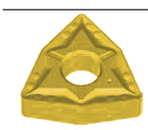
VNMG

Insert	Designation	Dimension (mm)				Recommended Cutting Conditions		Grade				
		I	IC	S	RE	Feed (mm/rev)	D.O.C. (mm)	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

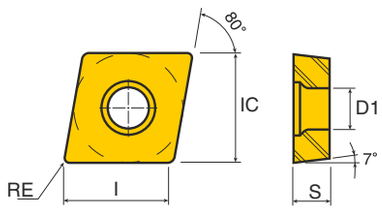


WNM□

Insert	Designation	Dimension (mm)				Recommended Cutting Conditions		Grade				
		I	IC	S	RE	Feed (mm/rev)	D.O.C. (mm)	DC820	DC9015	DC9025	DC8035	DP5010
 WNMA For Cast Iron	WNMA 080408	8.3	12.7	4.76	0.8	0.15 - 0.70	1.0 - 5.0	●				
	080412	8.2	12.7	4.76	1.2	0.20 - 0.80	1.5 - 5.0	●				
 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	●	●	●	●	
 WNMG 56 Roughing	*Coming Soon* WNMG 080408 56	8.3	12.7	4.76	0.8	0.25 - 0.70	2.5 - 4.0					
	080412 56	8.2	12.7	4.76	1.2	0.25 - 0.70	2.5 - 4.0			●	●	

Positive 80° Insert

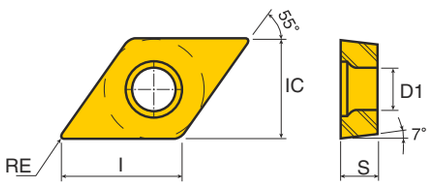
CCMT



Insert	Designation	Dimension (mm)					Recommended Cutting Conditions		Grade				
		I	IC	S	RE	D_1	Feed (mm/rev)	D.O.C. (mm)	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

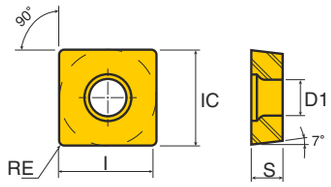
DCMT



Insert	Designation	Dimension (mm)					Recommended Cutting Conditions		Grade				
		I	IC	S	RE	D_1	Feed (mm/rev)	D.O.C. (mm)	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

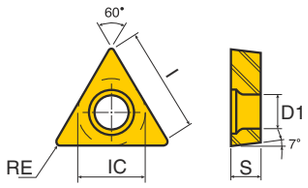
SCMT



Insert	Designation	Dimension (mm)					Recommended Cutting Conditions		Grade				
		l	IC	S	RE	D_1	Feed (mm/rev)	D.O.C. (mm)	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

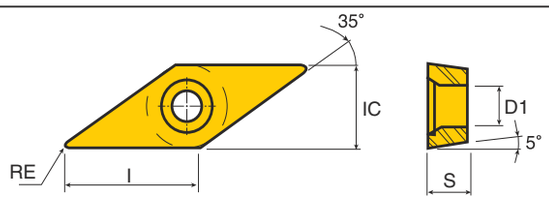
TCMT



Insert	Designation	Dimension (mm)					Recommended Cutting Conditions		Grade				
		l	IC	S	RE	D_1	Feed (mm/rev)	D.O.C. (mm)	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

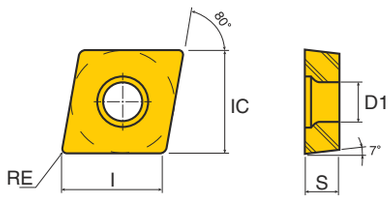
VBMT

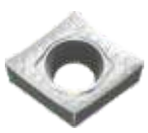


Insert	Designation	Dimension (mm)					Recommended Cutting Conditions		Grade				
		l	IC	S	RE	D1	Feed (mm/rev)	D.O.C. (mm)	DC820	DC9015	DC9025	DC8035	DP5010
 VBMT 41 Finishing	VBMT 160404 41	15.6	9.52	4.76	0.4	4.4	0.05 - 0.15	0.5 - 2.5		●	●		
	160408 41	14.6	9.52	4.76	0.8	4.4	0.07 - 0.15	0.5 - 2.5		●	●		
 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

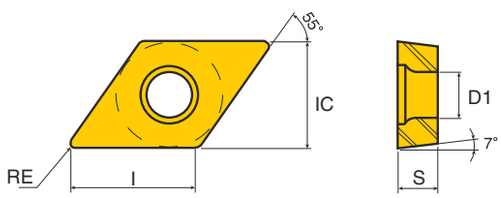
CCGT AU



Insert	Designation	Dimension (mm)					Grade
		l	IC	S	RE	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	●

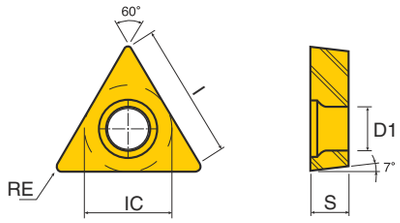
Positive 55° Insert - For Aluminum

DCGT AU



Insert	Designation	Dimension (mm)					Grade
		l	IC	S	RE	D1	DC210
	DCGT 11T304 AU	11.2	9.525	3.97	0.4	4.4	●

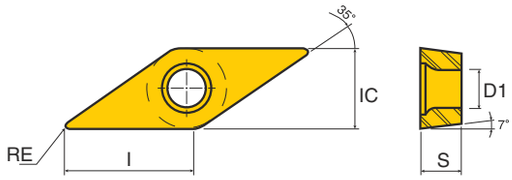
Positive 60° Insert - For Aluminum



TCGT AU

Insert	Designation		Dimension (mm)					Grade
			l	IC	S	RE	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



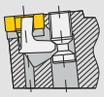
VCGT AU

Insert	Designation		Dimension (mm)					Grade
			l	IC	S	RE	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	●

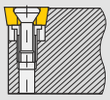
Designation System of External Holder

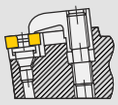
1. Clamping System

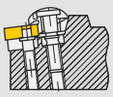

D / Clamp


P / Lever

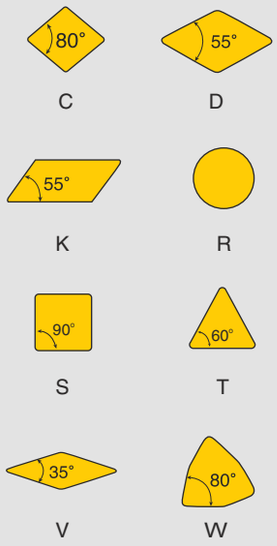

C / Top Clamp


S / Screw Clamp

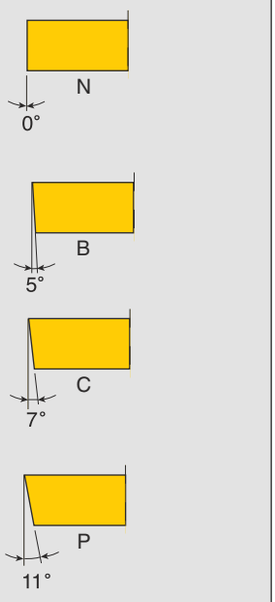

M / Multi Lock


W / Wedge Clamp

2. Insert Shape



4. Insert Clearance Angle



P C L N R

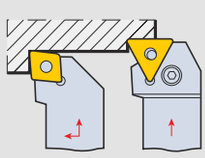
1 2 3 4 5

3. Approach Angle

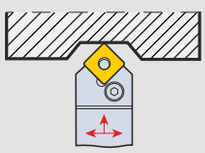
Symbol	Shape	Offset	Symbol	Shape	Offset	Symbol	Shape	Offset
A	90°	×	J	93°	O	V	72.5°	×
	90°		K	75°	O	W	60°	O
B	75°	×	L	95°	O	X	Special	
			M	50°	×			
D	45°	×	N	63°	×			
E	60°	×	R	75°	O			
F	90°	O	S	45°	O			
G	90°	O	T	60°	O			
	90°		U	93°	O			

5. Hand of Tool

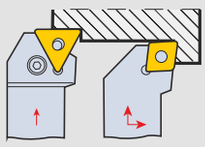
Right-R



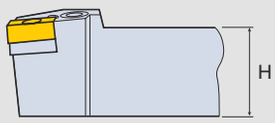
Neutral-N



Left-L

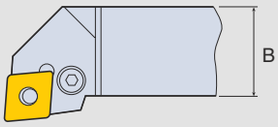


6. Shank Height



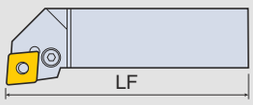
Integers to be preceded by 0
e.g.: h=8mm indicated by 08

7. Shank Width



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

8. Tool Length

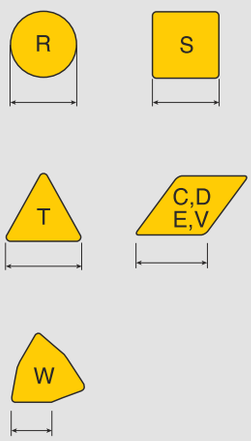


LF	Symbol	LF	Symbol
32	A	160	N
40	B	170	P
50	C	180	Q
60	D	200	R
70	E	250	S
80	F	300	T
90	G	350	U
100	H	400	V
110	J	450	W
125	K	500	Y
140	L	Special	X
150	M		

25 25 M 12 - C

6 7 8 9 10

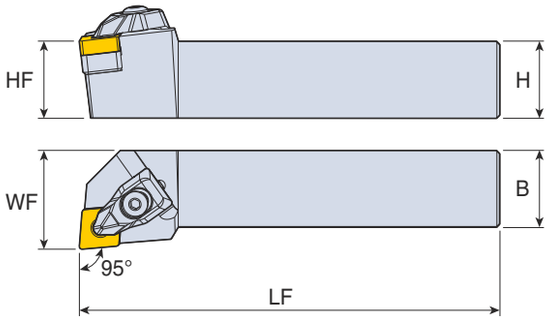
9. Cutting Edge Length

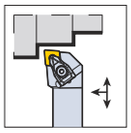


10. Manufacturer's Type

Unique to manufacturer

DCLNR/L



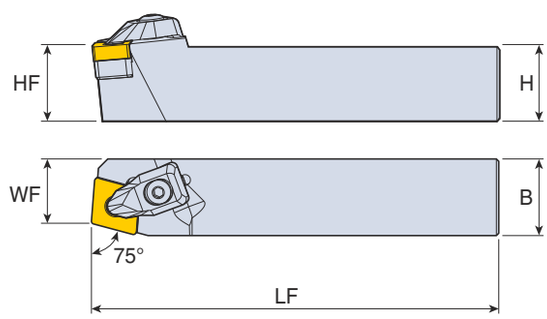


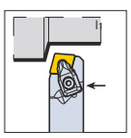
Designation		Dimension (mm)					Insert
		H	HF	B	LF	WF	
DCLNR/L	2020 K12	20	20	20	125	25	80° CN□□ 1204□□
	2525 M12	25	25	25	150	32	

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



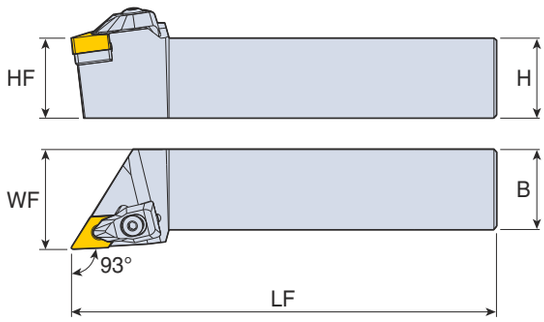


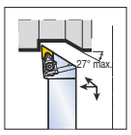
Designation		Dimension (mm)					Insert
		H	HF	B	LF	WF	
DCBNR/L	2525 M12	25	25	25	150	22.5	80° CN□□ 1204□□

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



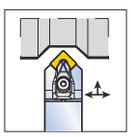


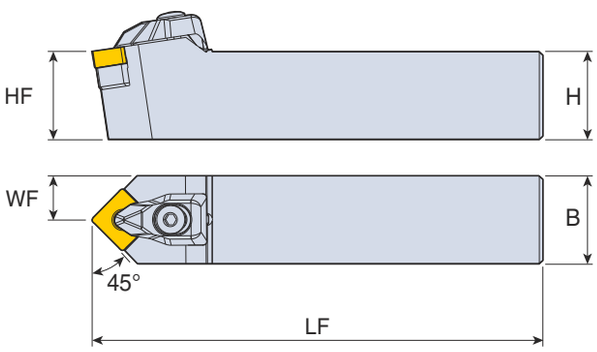
Designation	Dimension (mm)					Insert
	H	HF	B	LF	WF	
DDJNR/L 2525 M15	25	25	25	150	32	55° DN□□ 1506□□

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



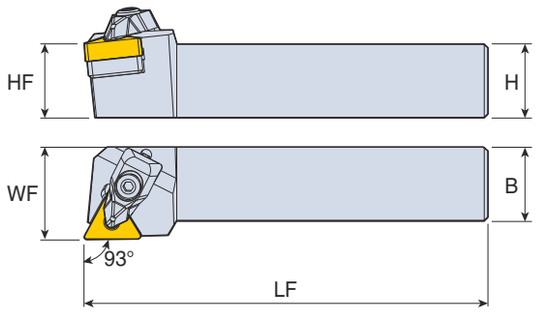


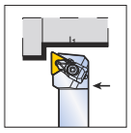
Designation	Dimension (mm)					Insert
	H	HF	B	LF	WF	
DSDNN 2525 M12	25	25	25	150	12.5	90° SN□□ 1204□□

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



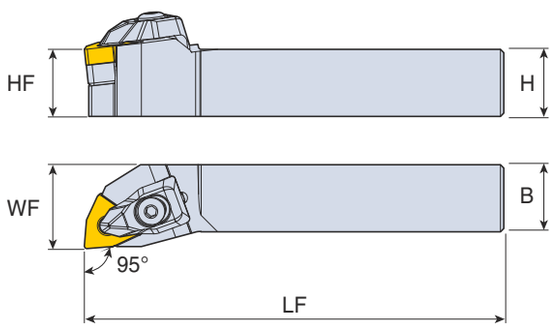


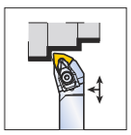
Designation		Dimension (mm)					Insert
		H	HF	B	LF	WF	
DTJNR/L	2020 K16	20	20	20	125	25	60° TN□□ 1604□□
	2525 M16	25	25	25	150	32	

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



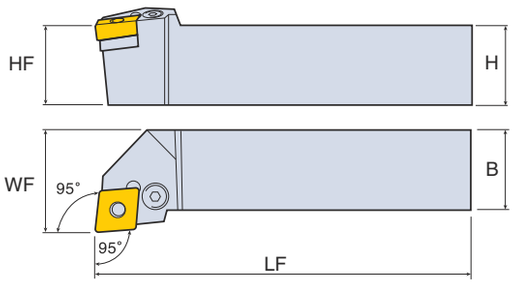


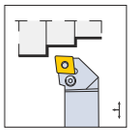
Designation		Dimension (mm)					Insert	
		H	HF	B	LF	WF		
DWLNR/L	2020 K06 - C	20	20	20	125	25	80°	WN□□ 0604□□
	2525 M06 - C	25	25	25	150	32		
DWLNR/L	2525 M08 - C	25	25	25	150	32		WN□□ 0804□□

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



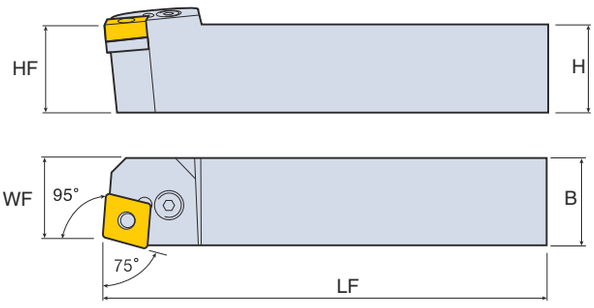


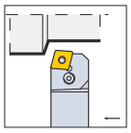
Designation		Dimension (mm)					Insert
		H	HF	B	LF	WF	
PCLNR/L	2020 K12 - C	20	20	20	125	25	80° CN□□ 1204□□
	2525 M12 - C	25	25	25	150	32	

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



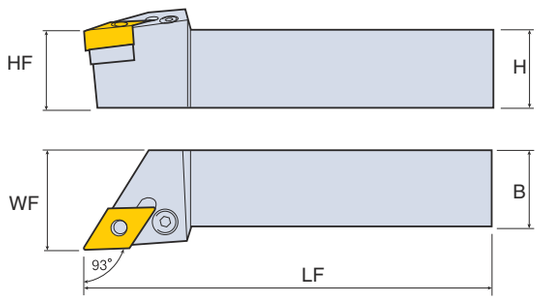


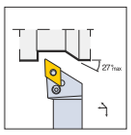
Designation		Dimension (mm)					Insert
		H	HF	B	LF	WF	
PCBNR/L	2020 K12 - C	20	20	20	125	17.5	80° CN□□ 1204□□
	2525 M12 - C	25	25	25	150	22.5	

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



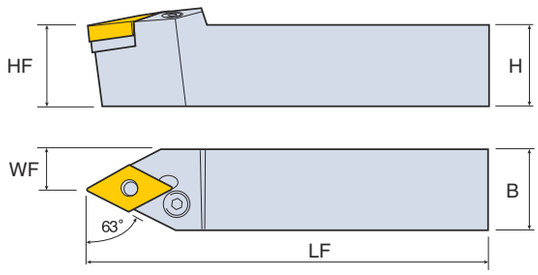


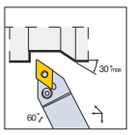
Designation		Dimension (mm)					Insert
		H	HF	B	LF	WF	
PDJNR/L	2020 K15 - C	20	20	20	125	25	 DN□□ 1506□□
	2525 M15 - C	25	25	25	150	32	

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



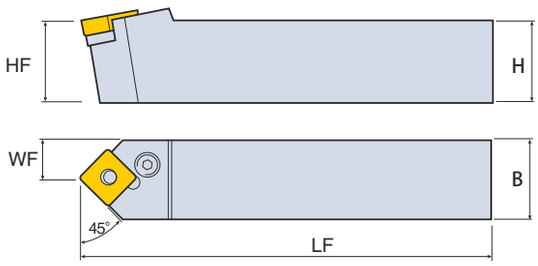


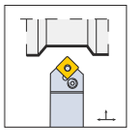
Designation		Dimension (mm)					Insert
		H	HF	B	LF	WF	
PDNNR/L	2525 M15 - C	25	25	25	150	18.5	 DN□□ 1506□□

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



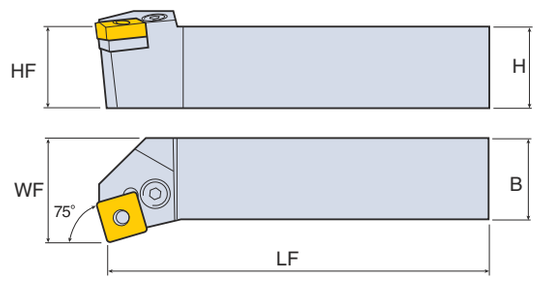


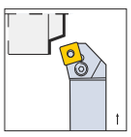
Designation		Dimension (mm)					Insert
		H	HF	B	LF	WF	
PSDNN	2020 K12 - C	20	20	20	125	10.0	90° SN□□ 1204□□
	2525 M12 - C	25	25	25	150	12.5	

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



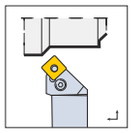


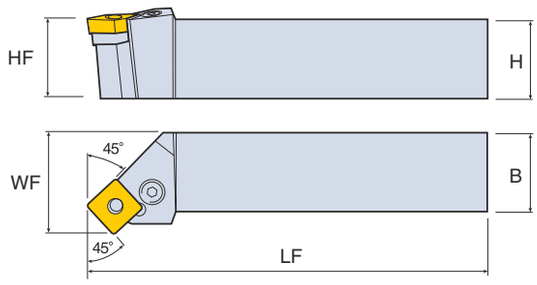
Designation		Dimension (mm)					Insert
		H	HF	B	LF	WF	
PSKNR/L	2525 M12 - C	25	25	25	150	32	90° SN□□ 1204□□

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



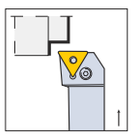


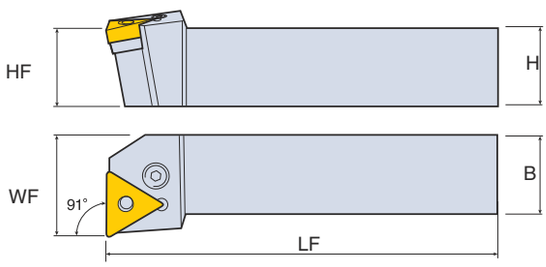
Designation		Dimension (mm)					Insert
		H	HF	B	LF	WF	
PSSNR/L	2020 K12 - C	20	20	20	125	25	 SN□□ 1204□□
	2525 M12 - C	25	25	25	150	32	

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



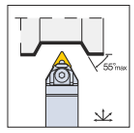


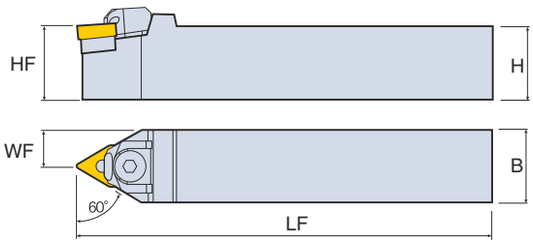
Designation		Dimension (mm)					Insert
		H	HF	B	LF	WF	
PTFNR/L	2020 K16 - C	20	20	20	125	25	 TN□□ 1604□□
	2525 M16 - C	25	25	25	150	32	

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



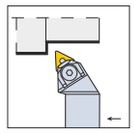


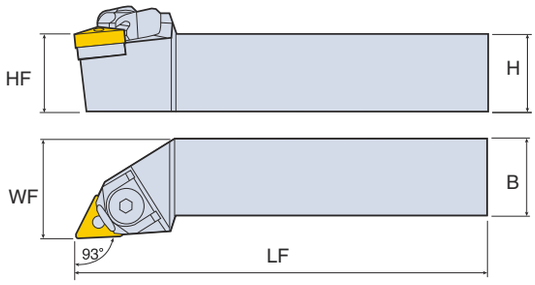
Designation		Dimension (mm)					Insert
		H	HF	B	LF	WF	
WTENN	2020 K16 - C	20	20	20	125	10.0	 TN□□ 1604□□
	2525 M16 - C	25	25	25	150	12.5	

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



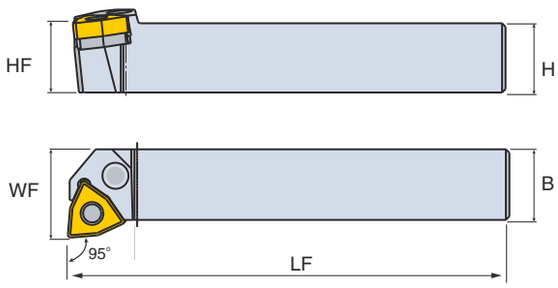


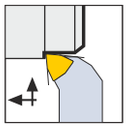
Designation		Dimension (mm)					Insert
		H	HF	B	LF	WF	
WTJNR/L	2020 K16 - C	20	20	20	125	25	 TN□□ 1604□□
	2525 M16 - C	25	25	25	150	32	

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



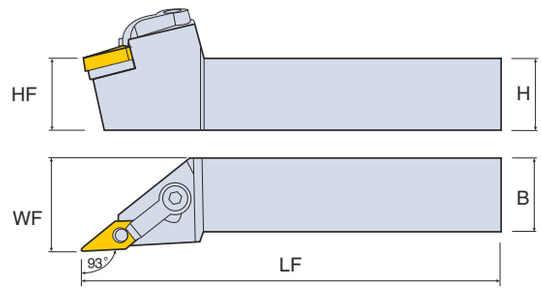


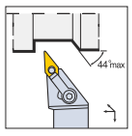
Designation		Dimension (mm)					Insert	
		H	HF	B	LF	WF		
PWLNR/L	2020 K06-C	20	20	20	125	25	80°	WN□□ 0604□□
	2525 M06-C	25	25	25	150	32		
	2020 K08-C	20	20	20	125	25		WN□□ 0804□□
	2525 M08-C	25	25	25	150	32		

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



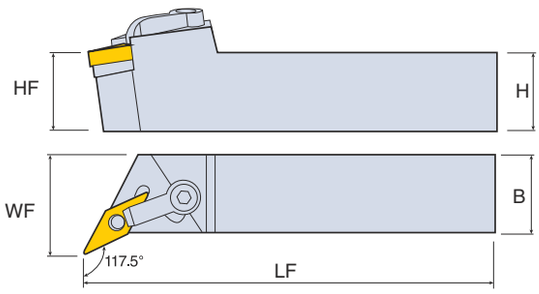


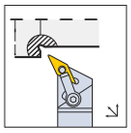
Designation		Dimension (mm)					Insert	
		H	HF	B	LF	WF		
MVJNR/L	2525 M16 - C	25	25	25	150	32	35°	VN□□ 1604□□

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



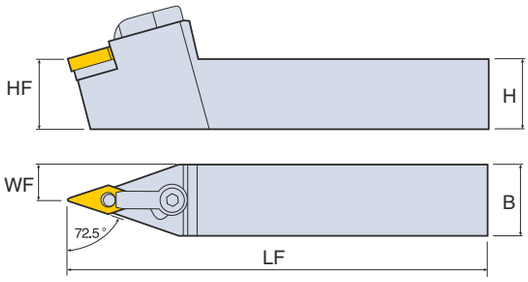


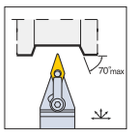
Designation		Dimension (mm)					Insert
		H	HF	B	LF	WF	
MVQNR/L	2525 M16 - C	25	25	25	150	32	35° VN□□ 1604□□

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



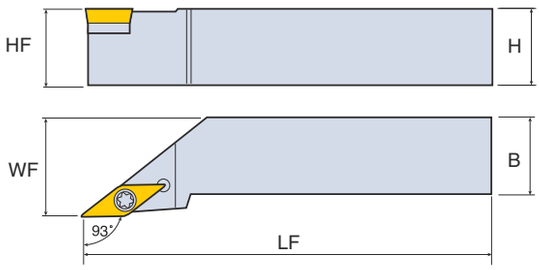


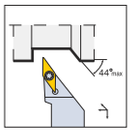
Designation		Dimension (mm)					Insert
		H	HF	B	LF	WF	
MVVNN	2020 K16 - C	20	20	20	125	10.0	35° VN□□ 1604□□
	2525 M16 - C	25	25	25	150	12.5	

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

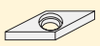
SVJBR/L



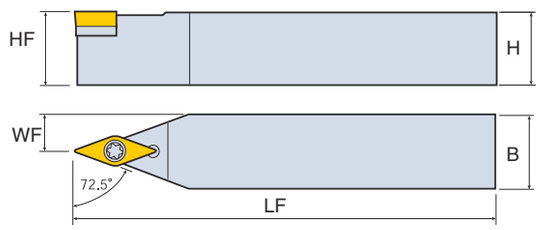


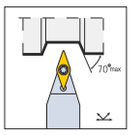
Designation		Dimension (mm)					Insert
		H	HF	B	LF	WF	
SVJBR/L	2020 K16 - C	20	20	20	125	25	35° VB□□ 1604□□
	2525 M16 - C	25	25	25	150	32	

Spares

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

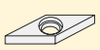
SVVBN





Designation		Dimension (mm)					Insert
		H	HF	B	LF	WF	
SVVBN	2020 K16 - C	20	20	20	125	10.0	35° VB□□ 1604□□
	2525 M16 - C	25	25	25	150	12.5	

Spares

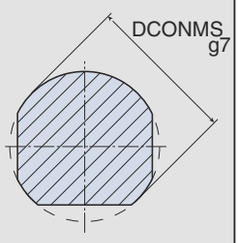
Holder/ Related insert	Screw	Shim	Shim Screw	Wrench
				
...16-C	DS 35124I	DSS-V 32	DSC 50090S	DTFW-15

Designation System of Internal Boring Bar

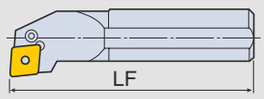
1. Type of Boring

S: Steel Shank

2. Bar Diameter

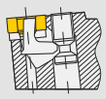


3. Tool Length



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

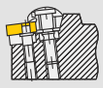
4. Clamping System


P / Lever Lock


C / Top Clamp


S / Screw Clamp

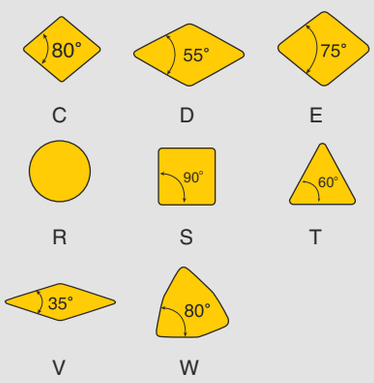

M / Multi Lock


W / Wedge Clamp

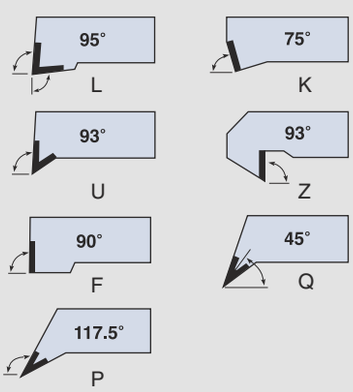
S 25 T - P C L N R - 12 - C

1 2 3 4 5 6 7 8 9 10

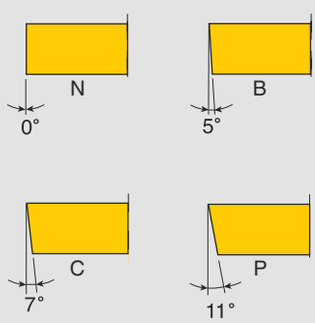
5. Insert Shape



6. Approach Angle

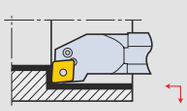


7. Insert Clearance Angle

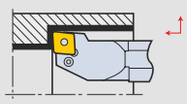


8. Hand of Tool

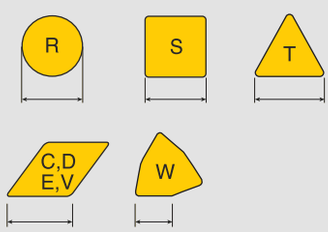
Right



Left



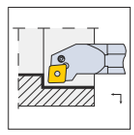
9. Cutting Edge Length

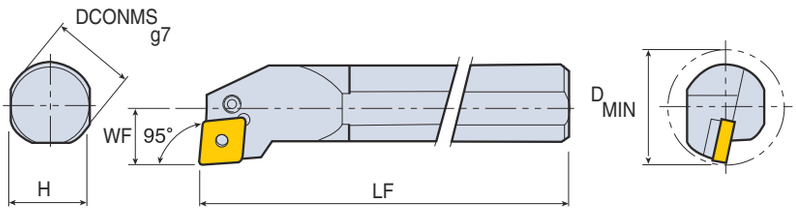


10. Manufacturer's Type

Unique to manufacturer

S-PCLNR/L



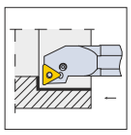


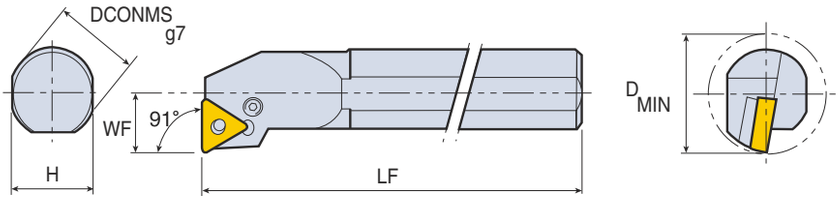
Designation		Dimension (mm)					Insert
		DCONMS	H	LF	WF	D_{MIN}	
S25T	PCLNR/L 12 - C	25	23	300	17	32	 CN□□ 1204□□
S32T	PCLNR/L 12 - C	32	30	300	22	40	
S40V	PCLNR/L 12 - C	40	37	400	27	50	
S50W	PCLNR/L 12 - C	50	47	450	35	63	

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



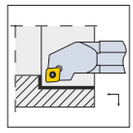


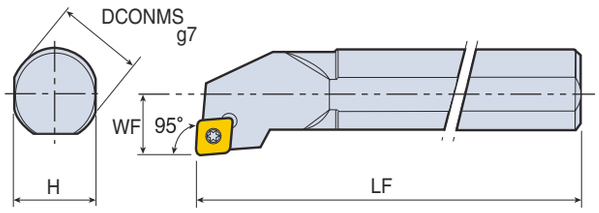
Designation		Dimension (mm)					Insert
		DCONMS	H	LF	WF	D_{MIN}	
S25T	PTFNR/L 16 - C	25	23	300	17	32	 TN□□ 1604□□

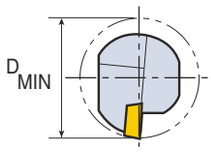
Spares

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

S-SCLCR/L





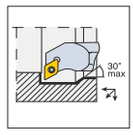


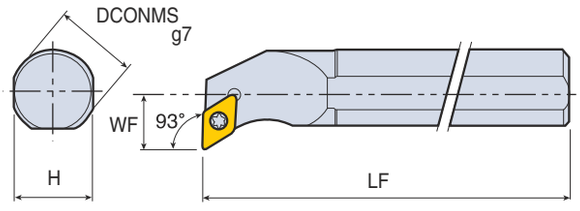
Designation		Dimension (mm)					Insert	
		DCONMS	H	LF	WF	D_{MIN}		
S08K	SCLCR/L 06 - C	8	7	125	6	11	80°	CC□□ 0602□□
S10K	SCLCR/L 06 - C	10	9	125	7	13		
S12M	SCLCR/L 06 - C	12	11	150	9	16		
S12M	SCLCR/L 09 - C	12	11	150	9	16		CC□□ 09T3□□
S16R	SCLCR/L 09 - C	16	15	200	11	20		
S20S	SCLCR/L 09 - C	20	18	250	13	25		
S25T	SCLCR/L 09 - C	25	23	300	17	32		

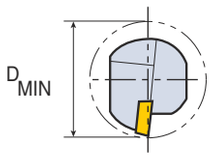
Spares

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





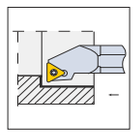


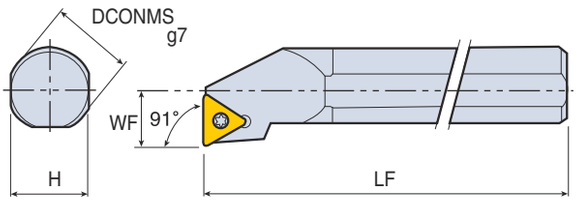
Designation		Dimension (mm)					Insert	
		DCONMS	H	LF	WF	D_{MIN}		
S16R	SDUCR/L 11 - C	16	15	200	11	20	55°	DC□□ 11T3□□
S20S	SDUCR/L 11 - C	20	18	250	13	25		
S25T	SDUCR/L 11 - C	25	23	300	17	32		

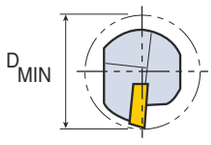
Spares

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

S-STFCR/L





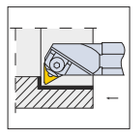


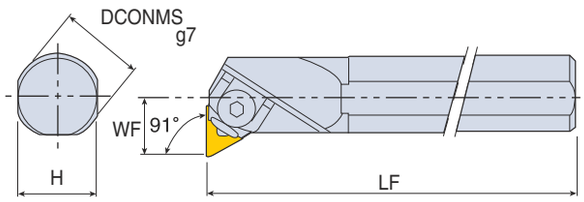
Designation		Dimension (mm)					Insert
		DCONMS	H	LF	WF	D_{MIN}	
S12M	STFCR/L 11 - C	12	11	150	9	16	60° TC□□ 1102 □□
S16R	STFCR/L 11 - C	16	15	200	11	20	

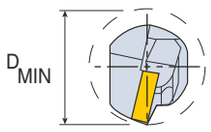
Spares

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

S-WTFNR/L







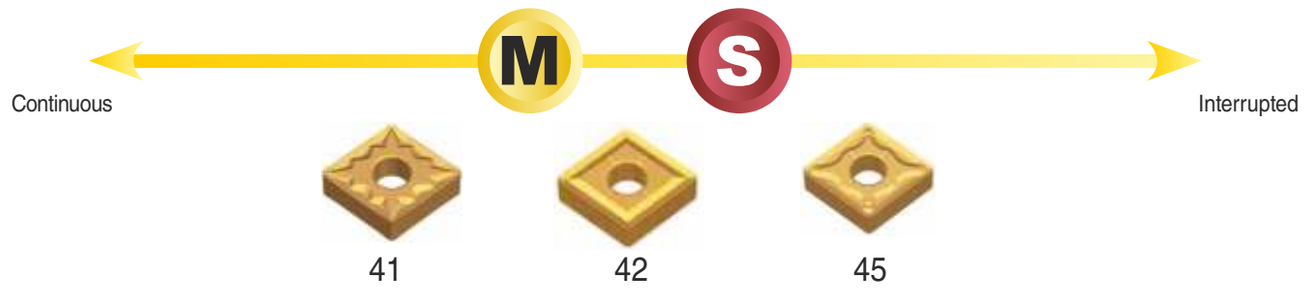
Designation		Dimension (mm)					Insert
		DCONMS	H	LF	WF	D_{MIN}	
S25T	WTFNR/L 16 - C	25	23	300	17	32	60° TN□□ 1604 □□
S32U	WTFNR/L 16 - C	32	30	350	22	40	

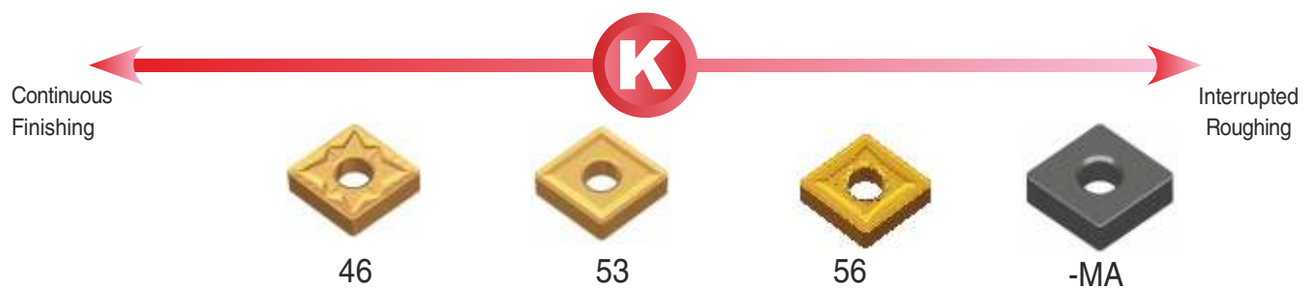
Spares

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	

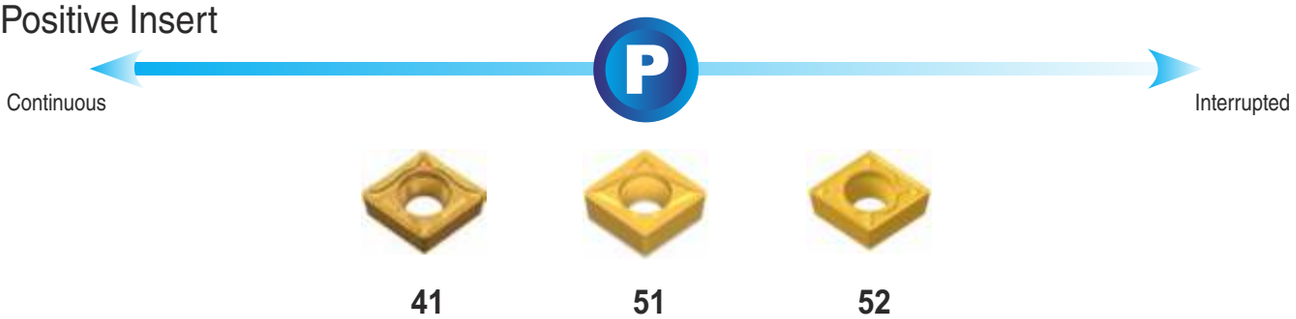
Chip breaker selection according to workpiece shape

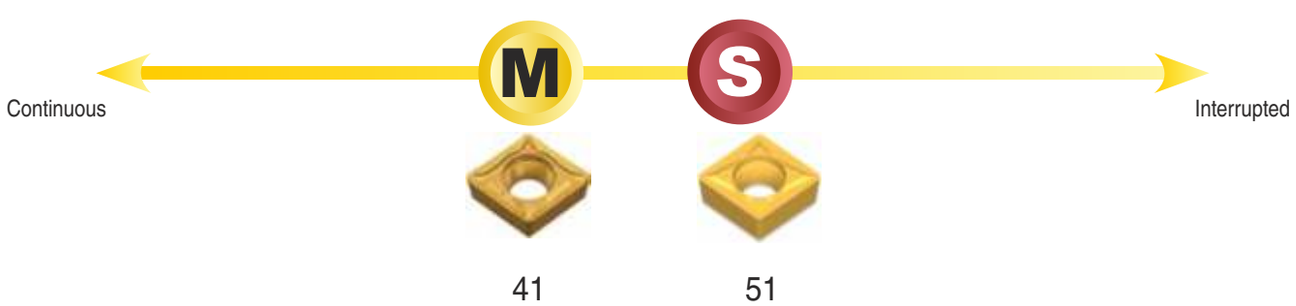
Negative Insert





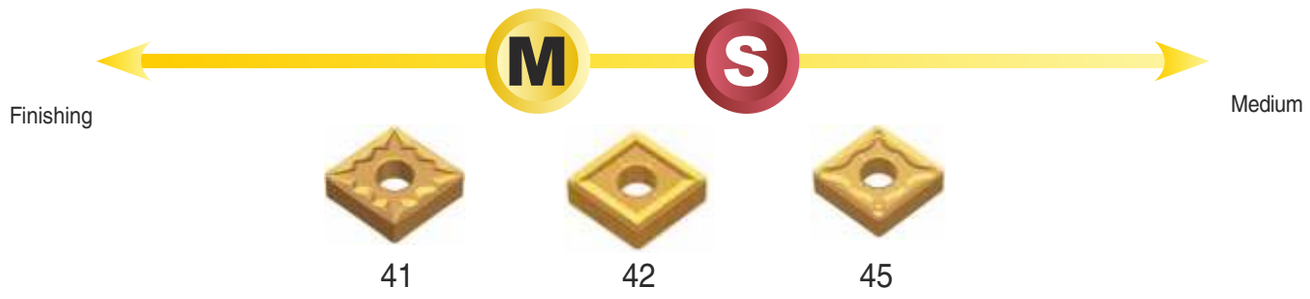
Positive Insert



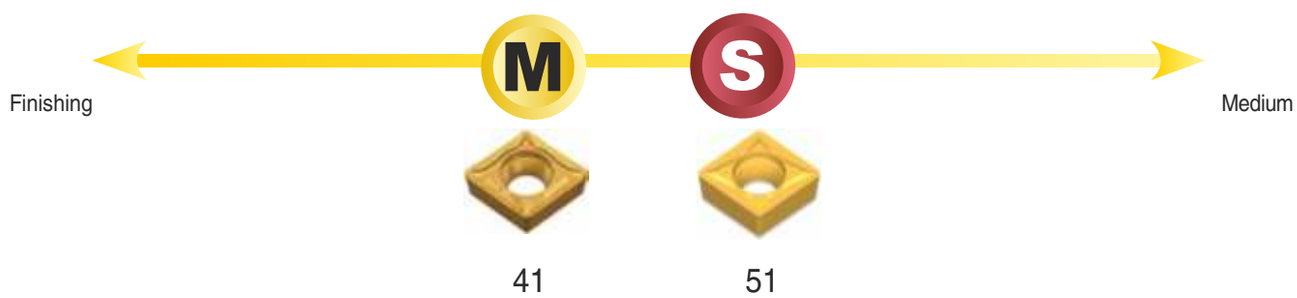


Chip-Breaking

Negative Insert



Positive Insert

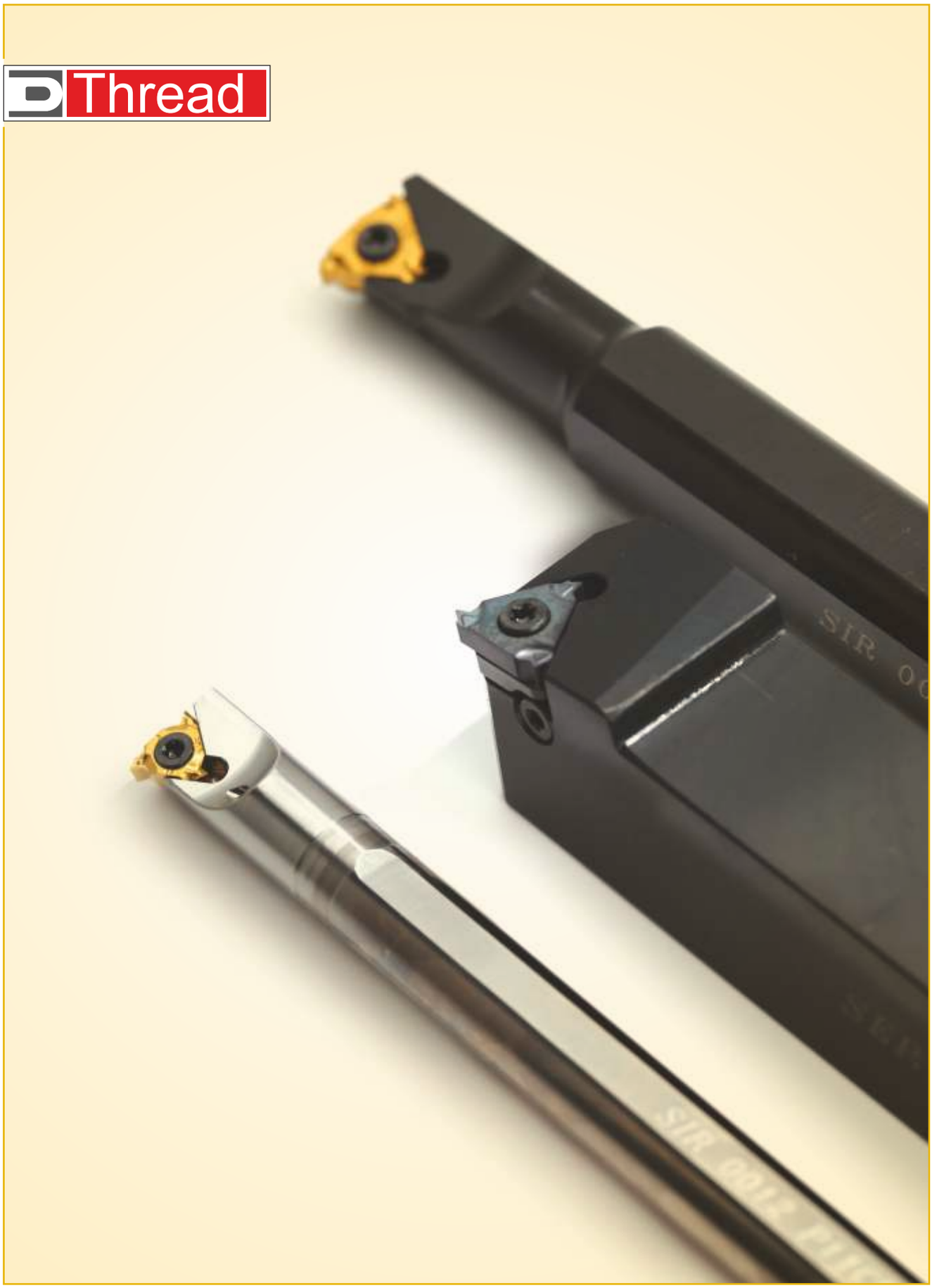


Material	Operation	1st	2nd
Carbon Steel & Alloy Steel (S45C, SCM4…..)	Finishing	41	43
	Medium	43 / 46	
	Roughing	46	56
Low Carbon Steel & Low Alloy Steel (S20C, SCM415…)	Finishing	41	43
	Medium	45	42
	Roughing	45	46
Stainless Steel	Finishing	41	42
	Medium	42	45
	Roughing	45	46
Cast Iron	Finishing	46	
	Medium	46	
	Roughing	56	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		UX,GX	HS		HM,GM	HM,XMR	MP		NM6	GN
		52	MH	UX	GS	AS	HC	SM	MP	MR3	NM4	
		53	MG-	UZ	C	MG-	B25		MG		MG	
		56	MH, GJ GH HAS, HDS	ME MU, MX	GT, PT PH, HT	TH	HR, GR	PR HM	UM RN MG-	M5 MR7	NM5, NM7 NRT, RP5 NM6, NM9	NR
	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	
		56	GH	GZ	ZS, GC	CH	GR	KR	UN	MR7		
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

DThread



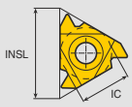
Insert Designation System

16 E R M A 60 DC9800

1 2 3 4 5 6 7

1. Insert size

I	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			
	INSL	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

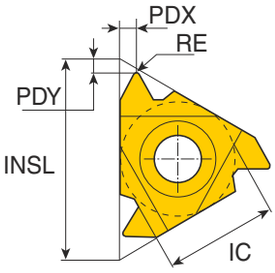
60	Partial profile 60°
ISO	ISO metric

7. Grade

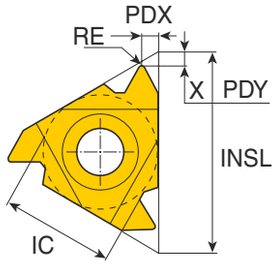
DC9800

Partial Profile 60°

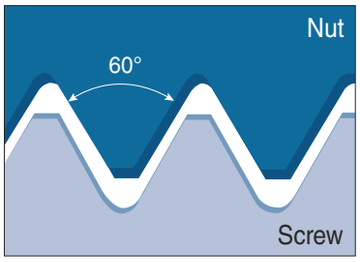
External & Internal



External right hand



Internal right hand



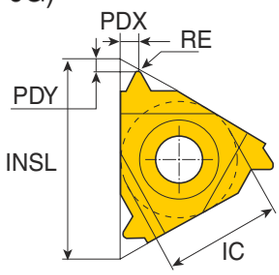
• Application: General industry

Insert		Designation	Pitch		Dimension (mm)					Grade
			mm	TPI	IC	INSL	RE	PDY	PDX	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	●

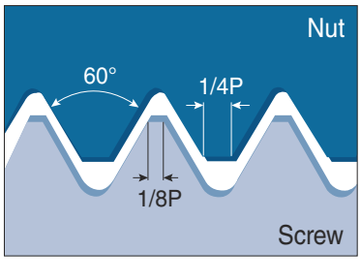
●: Standard item

External ISO Metric

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



External right hand



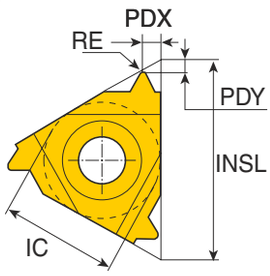
- Application: General industry

Insert	Designation	Pitch	Dimension (mm)					Grade
		mm	IC	INSL	RE	PDY	PDX	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	●

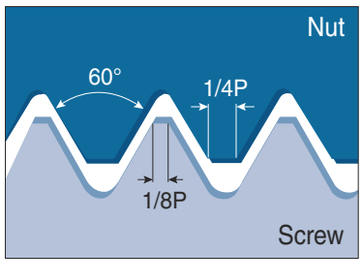
●: Standard item

Internal ISO Metric

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



Internal right hand



- Application: General industry

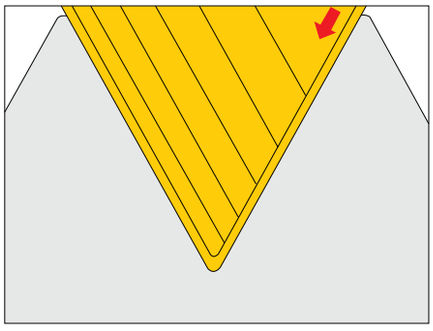
Insert	Designation	Pitch	Dimension (mm)					Grade
		mm	IC	INSL	RE	PDY	PDX	DC9800
 Internal M	**11IRM 1.00 ISO**	1.00	1/4″	11	0.05	0.6	0.7	●
	11IRM 1.50 ISO	1.50	1/4″	11	0.08	0.8	1.0	●
	16IRM 1.00 ISO	1.00	3/8″	16	0.05	0.6	0.7	●
	16IRM 1.25 ISO	1.25	3/8″	16	0.06	0.8	0.9	●
	16IRM 1.50 ISO	1.50	3/8″	16	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

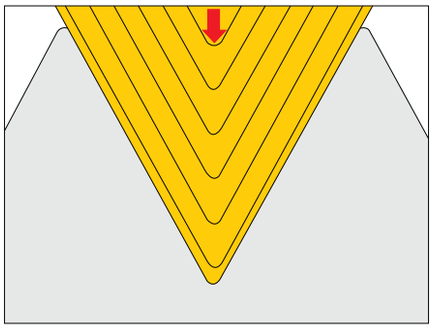
GRADE	ISO RANGE	FEATURES & APPLICATION
DC9800 PVD coated	P20 – P40 M20 – M40 S20 – S40	• General machining of steel, stainless steel and heat-resistance alloys

Infeed methods for threading operations

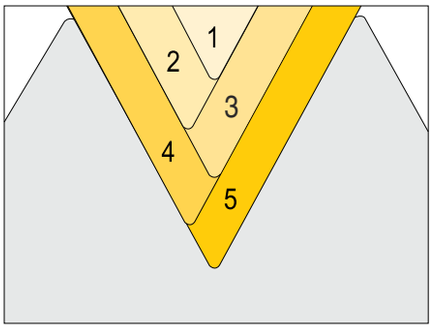
Flank infeed



Radial infeed

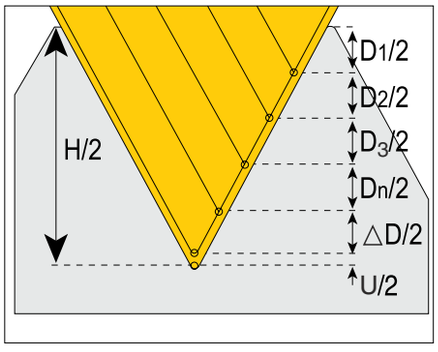


Alternating flank infeed



Flank equal

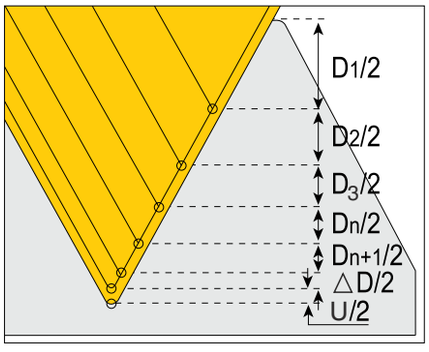
Equal depth of cut for each pass



$$\frac{D_1}{2} = \frac{D_2}{2} = \frac{D_3}{2} = \frac{D_n}{2}$$

Flank diminishing

Diminished depth of cut for each pass



$$\frac{D_1}{2} > \frac{D_2}{2} > \frac{D_3}{2} > \frac{D_n}{2} > \frac{D_{n+1}}{2}$$

H – depth of thread profile on diameter.
D – depth of pass on diameter.
U – depth of finishing pass on diameter.

Cutting Conditions

	Material	Hardness HB	DC9800 Cutting speed (m/min)
P	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
M	Stainless steel, cast steel	180	60 - 110
		200	90 - 130
		240	130 - 190
K	Grey cast iron	160 - 250	100 - 150
	Nodular cast iron	180 - 260	80 - 150
	Malleable cast iron	130 - 230	80 - 150
N	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
S	High temp. alloys Fe based	200 - 280	30 - 70
	High temp. alloys Ni/Co based	250 - 320	20 - 50
	Ti alloys		120 - 140
H	Hardened steel, Chilled cast iron	55HRC - 60HRC	20 - 60

Technical Information

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
	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
	New DC9800 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

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DC/V6/01/2022