

**Duracarb**

Products Catalog



## Quality Standard

DURACARB has been certified by the prestigious Standards Institution, as being in full compliance with Quality and Environmental & Occupational Health and Safety Management Standards.

In addition, completed products are inspected before shipping, to ensure delivery of the finest quality goods. Quality control facilities include the metallurgical laboratory, raw metal testing, an online testing procedure and a machining center for tool performance testing and final product inspection.

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



# CONTENTS

<b>Grades</b>	4
 <b>D Turn</b>	8
ISO TURN INSERT	9
ISO EXTERNAL HOLDER	24
ISO BORING BAR	40
ISO TURN CERAMIC INSERTS	47
ISO CERAMIC HOLDERS	51
 <b>D Cut</b>	54
 <b>D Thread</b>	74
THREAD INSERTS	76
THREAD HOLDERS	85
 <b>D Drill</b>	92
DEC-DRILL INSERTS	94
DEC-DRILL	95
FLEX HEAD DRILL	99
FLEX HEAD INSERTS	101
 <b>D Mill</b>	102
D-MILL INSERTS	103
D-MILL CUTTERS	107
 <b>Technical Information</b>	141
 <b>Index</b>	

# Grade



GRADE	ISO RANGE	FEATURES & APPLICATION
<b>DC210 UNCOATED</b>	<b>N10</b>	<ul style="list-style-type: none"> <li>• For Aluminum machining</li> <li>• Uncoated grade</li> </ul>
<b>DC610 CERMET</b>	<b>P05 – P15</b> <b>M05 – M15</b> <b>K05 – K15</b>	<ul style="list-style-type: none"> <li>• Finishing &amp; Semi finishing of Steel, Cast Iron and Stainless Steel</li> <li>• General turning in Steel machining</li> <li>• Covering wide application range</li> </ul>
<b>DC820 CVD COATED</b>	<b>K05 – K15</b>	<ul style="list-style-type: none"> <li>• High speed machining in Cast Iron machining</li> <li>• Combination thick Al<sub>2</sub>O<sub>3</sub> coating layer and high wear resistant substrate for extreme wear resistance.</li> <li>• TiCN-Al<sub>2</sub>O<sub>3</sub>-TiN</li> </ul>
<b>DC9015 CVD COATED</b>	<b>P10 – P25</b>	<ul style="list-style-type: none"> <li>• First recommendation for high speed machining in Steel</li> <li>• Good combinaton wear resistance and toughness</li> <li>• TiN-TiCN-Al<sub>2</sub>O<sub>3</sub>-TiN</li> <li>• Improved chipping resistance</li> </ul>
<b>DC9025 CVD COATED</b>	<b>P15 – P35</b>	<ul style="list-style-type: none"> <li>• For general machining in Steel</li> <li>• Wide application range thanks to good wear resistance and toughness.</li> <li>• TiN-TiCN-Al<sub>2</sub>O<sub>3</sub>-TiN</li> <li>• Improved chipping resistance</li> </ul>
<b>DC8035 CVD COATED</b>	<b>P20 – P40</b> <b>M30 – M40</b>	<ul style="list-style-type: none"> <li>• For Low Carbon Steel, Low Carbon Alloy Steel and Stainless Steel</li> <li>• Interrupted cutting in general Steel</li> <li>• Excellent toughness</li> <li>• TiN-TiCN-Al<sub>2</sub>O<sub>3</sub>-TiN</li> </ul>



## Ceramic

GRADE	ISO RANGE	FEATURES & APPLICATION
DC11	K01 - K10 S01 - S10	<ul style="list-style-type: none"> <li>White ceramic, features high toughness and wear resistance.</li> <li>Used for high speed turning of cast iron.</li> </ul>
DC22	H05 - H25 K05 - K10	<ul style="list-style-type: none"> <li>Black ceramic (<math>\text{Al}_2\text{O}_3/\text{TiCN}</math>), used for high speed, light roughing and finishing of hardened steel and chilled cast iron.</li> </ul>
DC23	H10 - H30 K05 - K15	<ul style="list-style-type: none"> <li>Black ceramic (<math>\text{Al}_2\text{O}_3/\text{TiCN}</math>), used for machining grey and nodular cast iron at medium to finishing conditions.</li> </ul>
DC6	K01 - K10	<ul style="list-style-type: none"> <li>SAlON based ceramic grade for high speed machining of cast iron.</li> <li>Used for roughing and finishing at both wet and dry conditions of automotive parts such as brake drum, brake disk, etc.</li> <li>Provides high productivity also in roughing of mill rolls made of High-Cr steel and HSS.</li> </ul>
DC8	K01 - K20	<ul style="list-style-type: none"> <li>A silicon nitride grade, used for medium turning and milling applications. Can be used for interrupted cuts. Cutting speed range: 100-1500 m/min, feed range: 0.1-1.0 mm/rev.</li> </ul>
DC9	S20 - S30	<ul style="list-style-type: none"> <li>A silicon nitride ceramic grade, recommended for high speed machining and interrupted cut for nickel based, heat resistant alloys such as inconel, Wasgau cy and René.</li> </ul>
DC80	K01 - K20	<ul style="list-style-type: none"> <li>A CVD coated <math>\text{Si}_3\text{N}_4</math> ceramic grade. Used for rough turning and milling of grey and nodular cast iron.</li> </ul>
DC420	H05 - H25 K05 - K10	<ul style="list-style-type: none"> <li>Black ceramic (<math>\text{Al}_2\text{O}_3/\text{TiCN}</math>) TiN PVD coated, used for light roughing and finishing for high speed machining of hardened steel, chilled cast iron, high chromium steel, etc.</li> </ul>
DW7	H05 - H25 S20 - S30	<ul style="list-style-type: none"> <li>Whisker reinforced ceramic grade for machining high nickel alloys and hardened steel.</li> </ul>

## Grade

### DCut

### D Thread

GRADE	ISO RANGE	FEATURES & APPLICATION
DC9800 PVD COATED	P15 – P35 M10 – M30 K10 – K30 S10 – S25	<ul style="list-style-type: none"> <li>For steel and stainless steel machining</li> <li>Improved tool life</li> <li>TiAIN</li> </ul>
DC8235 PVD COATED	P30 – P45 M30 – M45 K20 – K40 N15 – N30 S20 – S30	<ul style="list-style-type: none"> <li>For roughing and low speed applications. High feed machining of steel, stainless steel and cast iron</li> <li>Coated grade with improved edge strength</li> <li>TiCN</li> </ul>
DC120 PVD COATED	P15 – P30 K10 – K20	<ul style="list-style-type: none"> <li>Very successful on stainless steel, cast iron and nonferrous materials, good also for interrupted cuts</li> <li>Has low wear resistance</li> </ul>
DC610 UNCOATED	P05 – P25 M05 – M15 K05 – K15	<ul style="list-style-type: none"> <li>A general grade used for grooving and turning applications. Recommended for semi-finishing and finishing operations when excellent surface finish is required.</li> <li>Wear resistant, prevents built-up edge.</li> </ul>

### DCut

GRADE	ISO RANGE	FEATURES & APPLICATION
DC610 CERMET	P05 – P15 M05 – M15 K05 – K15	<ul style="list-style-type: none"> <li>Finishing &amp; Semi finishing of Steel, Cast Iron and Stainless Steel</li> <li>General turning in Steel machining</li> <li>Covering wide application range</li> </ul>
DC9800 PVD COATED	M10 – M30 P15 – P35 K10 – K30 S10 – S25 H15 – H30	<ul style="list-style-type: none"> <li>For Steel and Stainless Steel machining</li> <li>Improved tool life</li> <li>TiAIN</li> </ul>

## Grade



GRADE	ISO RANGE	FEATURES & APPLICATION
<b>DC210 UNCOATED</b>	<b>K10</b>	<ul style="list-style-type: none"> <li>For Cast Iron milling</li> <li>Uncoated grade</li> </ul>
<b>DC325M UNCOATED</b>	<b>P30 – P40</b>	<ul style="list-style-type: none"> <li>For Steel milling</li> <li>Uncoated grade</li> </ul>
<b>DC7800 CVD COATED</b>	<b>P10 – P20</b> <b>M10 – M20</b>	<ul style="list-style-type: none"> <li>For heavy duty applications in milling of steel</li> <li>Improved edge strength and better toughness</li> </ul>
<b>DC9235 PVD COATED</b>	<b>M30 – M40</b> <b>P30 – P45</b> <b>K20 – K40</b> <b>N15 – N30</b> <b>S20 – S30</b>	<ul style="list-style-type: none"> <li>Interrupted and rough machining of steel and stainless steel</li> <li>Low speed and interrupted machining of heat-resistant alloy</li> </ul>
<b>DP7320 PVD COATED</b>	<b>K05 – K20</b>	<ul style="list-style-type: none"> <li>General machining for gray and ductile cast iron</li> <li>Finish and medium machining of hardened steel</li> </ul>
<b>DP9320 PVD COATED</b>	<b>P05 – P25</b> <b>K05 – K25</b>	<ul style="list-style-type: none"> <li>General milling of steel</li> <li>Heavy interrupted cutting of cast iron</li> </ul>
<b>DP5320 PVD COATED</b>	<b>P15 – P35</b> <b>M10 – M30</b> <b>S15 – S25</b>	<ul style="list-style-type: none"> <li>General machining of steel, stainless steel and heat-resistant alloy</li> </ul>
<b>DC154 PVD COATED</b>	<b>P20 – P35</b>	<ul style="list-style-type: none"> <li>For heavy duty applications in milling of steel</li> <li>Improved edge strength and better toughness</li> </ul>
<b>DC9800 PVD COATED</b>	<b>M10 – M30</b> <b>P15 – P35</b> <b>K10 – K30</b> <b>S10 – S25</b> <b>H15 – H30</b>	<ul style="list-style-type: none"> <li>For semi -roughing and medium machining applications</li> <li>Optimum mechanical shock resistance</li> <li>TiAlN</li> </ul>
<b>DP8330 PVD COATED</b>	<b>P30 – P45</b> <b>M25 – M40</b> <b>S15 – S30</b>	<ul style="list-style-type: none"> <li>High mechanical shock resistance</li> <li>PVD TiAlN coating</li> <li>For semi -roughing and medium machining applications</li> <li>TiAlN + TiN</li> </ul>



## Insert Designation System

1. Shape	2. Clearance Angle	3. Tolerance	4. Type	5. Thickness																																
R S K T C E D 55° 130° 180° W	N B C P I O	 <b>M class</b> <table border="1"> <thead> <tr> <th>Sign</th> <th>m</th> <th>l</th> <th>d</th> </tr> </thead> <tbody> <tr> <td>H</td> <td>±0.013</td> <td>±0.025</td> <td>±0.013</td> </tr> <tr> <td>E</td> <td>±0.025</td> <td>±0.025</td> <td>±0.025</td> </tr> <tr> <td>F</td> <td>±0.025</td> <td>±0.13</td> <td>±0.025</td> </tr> </tbody> </table>  <b>G class</b> <table border="1"> <thead> <tr> <th>Sign</th> <th>m</th> <th>l</th> <th>d</th> </tr> </thead> <tbody> <tr> <td>H</td> <td>±0.013</td> <td>±0.025</td> <td>±0.013</td> </tr> <tr> <td>E</td> <td>±0.025</td> <td>±0.025</td> <td>±0.025</td> </tr> <tr> <td>F</td> <td>±0.025</td> <td>±0.13</td> <td>±0.025</td> </tr> </tbody> </table>	Sign	m	l	d	H	±0.013	±0.025	±0.013	E	±0.025	±0.025	±0.025	F	±0.025	±0.13	±0.025	Sign	m	l	d	H	±0.013	±0.025	±0.013	E	±0.025	±0.025	±0.025	F	±0.025	±0.13	±0.025	N A F G M R W, B T, H Z, X	T1 T2 T3 T4 T5 T6 T7 T8 T9
Sign	m	l	d																																	
H	±0.013	±0.025	±0.013																																	
E	±0.025	±0.025	±0.025																																	
F	±0.025	±0.13	±0.025																																	
Sign	m	l	d																																	
H	±0.013	±0.025	±0.013																																	
E	±0.025	±0.025	±0.025																																	
F	±0.025	±0.13	±0.025																																	

**C N M G 12 04 08 (R) 52**

1 2 3 4 5 6 7 8 9

6. Cutting Edge Length								
10(-m)	C	D	R	S	T	V	W	X
3.97	03	04		06	06		02	
4.76	04	05		06	06		03	
5.56	05	06		06	06		03	
6.35	06	07		06	11	11	04	
7.14	08	09		07	13	13	05	
8.0			08					
9.52	09	11	08	09	16	16	06	16
10.0			10					
12.0			12					
12.7	12	15		12	22	22	08	
15.88	16	19	15	16	27	27	10	
16.0			16					
19.06	19	23	19	19	33	33	13	
20.0			20					
25.0			25					
25.4	25	31	25	25	44			
29.0			32					

7. Corner R	8. Hand of Insert	9. Chipbreaker
	Right Left	- 41 - 42 - 43 - 45 - 52 - 53

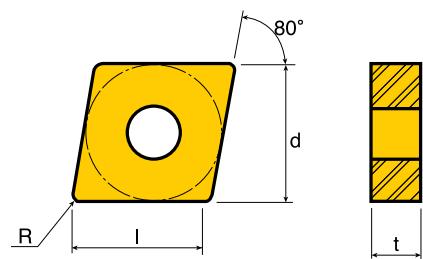
## Cutting Condition

Material		Chipbreaker	CVD					
			DC610	DC820	DC9015	DC9025	DC8035	
			Cutting speed(m/min)					
Carbon Steel	Low 0.05-0.25% C SM18C	<b>41</b>	250-700	-	350-500	200-420	180-350	
		<b>43</b>						
		<b>45</b>						
	Medium 0.25-0.55% C SM45C	<b>41</b>	150-350	-	220-380	150-330	120-250	
		<b>43</b>						
		<b>46</b>						
	High 0.55-0.80% C SM55C	<b>52</b>						
		<b>43</b>	120-300	-	180-380	120-300	-	
		<b>46</b>						
Alloy Steel	Low Alloy SCM415	<b>52</b>	150-550	-	180-350	130-300	60-320	
		<b>41</b>						
		<b>45</b>						
	Alloy SCM440	<b>43</b>	100-320	-	180-350	140-300	60-200	
		<b>46</b>						
Cast Iron	Grey Cast Iron	<b>52</b>	100-300	180-440	90-300	-	-	
		<b>46</b>						
	Ductile Cast Iron	<b>53</b>	100-250	200-340	90-280	-	-	
Stainless Steel		<b>41</b>	200-270	-	-	-	100-210	
		<b>42</b>						
		<b>45</b>						

## Feature of Chipbreaker

Type	Insert • Edge geometry	Feature • Application
NEGATIVE	41	<ul style="list-style-type: none"> <li>• For medium &amp; finishing</li> <li>• Good chip evacuation in low feed and depth of cut</li> <li>• Excellent chip control</li> </ul>
	43	<ul style="list-style-type: none"> <li>• Balance between strength and sharpness</li> <li>• For semi finishing to medium machining in steel and alloy steel</li> <li>• Good chip control in profiling</li> </ul>
	46 New	<ul style="list-style-type: none"> <li>• Medium for carbon steel and alloy steel</li> <li>• From medium to finishing of cast iron machining</li> <li>• Suitable for continuous to interrupted</li> <li>• Geometry of low cutting force</li> </ul>
	52	<ul style="list-style-type: none"> <li>• Medium in steel and cast Iron</li> <li>• Excellent chip control</li> <li>• Applicable to both interrupted and continuous</li> </ul>
	53	<ul style="list-style-type: none"> <li>• Medium to roughing in steel and cast iron</li> <li>• Strong cutting edge</li> <li>• Recommended for unstable conditions</li> </ul>
	42	<ul style="list-style-type: none"> <li>• For medium machining in stainless steel and low carbon steel</li> <li>• Low cutting force with sharp edge geometry</li> </ul>
	45	<ul style="list-style-type: none"> <li>• For medium machining in stainless steel, low carbon steel &amp; low carbon alloy steel</li> <li>• Semi finishing in cast Iron</li> <li>• Minimum of built-up edge from sharp edge geometry</li> </ul>
POSITIVE	51	<ul style="list-style-type: none"> <li>• Finishing on boring application</li> <li>• Good chip evacuation in low feed and depth of cut</li> <li>• Low cutting force &amp; good chip control</li> </ul>
	41	<ul style="list-style-type: none"> <li>• For semi-finishing to medium machining</li> <li>• Good chip evacuation in low feed and depth of cut</li> <li>• Good chip control</li> </ul>
	52	<ul style="list-style-type: none"> <li>• Medium to roughing in steel and cast iron</li> <li>• Applicable to both interrupted and continuous</li> </ul>
	AU	<ul style="list-style-type: none"> <li>• For aluminum machining</li> <li>• Low cutting force, excellent chip evacuation</li> </ul>

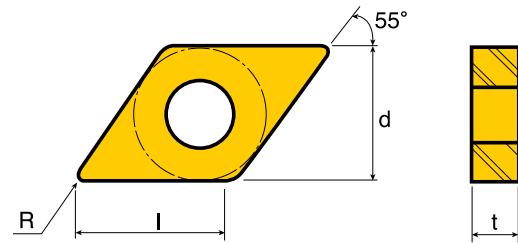
## Negative 80° Insert



### CNM□

Insert	Designation	Dimension(mm)				Recommended cutting condition		Grade				
		I	d	t	R	Feed(mm/rev)	D.O.C(mm)	D0810	D0820	D09015	D09025	D08035
 CNMA For Cast Iron	CNMA 120404	12.4	12.7	4.76	0.4	0.25 - 0.7	3.0 - 7.0		●			
	120408	12.0	12.7	4.76	0.8	0.25 - 0.7	3.0 - 7.0		●			
	120412	11.6	12.7	4.76	1.2	0.25 - 0.7	3.0 - 7.0		●			
 CNMG 41 Finishing & Medium	CNMG 120404 41	12.4	12.7	4.76	0.4	0.05 - 0.3	0.5 - 2.0	●		●	●	●
	120408 41	12.0	12.7	4.76	0.8	0.07 - 0.3	0.5 - 2.0	●		●	●	●
	120412 41	11.6	12.7	4.76	1.2	0.10 - 0.3	0.5 - 2.0		●	●		
 CNMG 42 For Stainless Steel	CNMG 120404 42	12.4	12.7	4.76	0.4	0.10 - 0.5	0.5 - 5.0					●
	120408 42	12.0	12.7	4.76	0.8	0.12 - 0.5	0.5 - 5.0					●
	120412 42	11.6	12.7	4.76	1.2	0.14 - 0.5	0.5 - 5.0					●
 CNMG 43 Semi finishing & Medium	CNMG 120404 43	12.4	12.7	4.76	0.4	0.12 - 0.52	0.7 - 4.8			●	●	
	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 - 0.5	1.2 - 5.0			●	●	●
	120408 45	12.0	12.7	4.76	0.8	0.15 - 0.5	1.2 - 5.0			●	●	●
	120412 45	11.6	12.7	4.76	1.2	0.15 - 0.5	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 120404 52	12.4	12.7	4.76	0.4	0.09 - 0.35	0.7 - 3.5	●		●	●	
	120408 52	12.0	12.7	4.76	0.8	0.10 - 0.35	0.7 - 3.5	●		●	●	
	120412 52	11.6	12.7	4.76	1.2	0.12 - 0.35	0.7 - 3.5	●		●	●	
 CNMG 53 Medium & Roughing	CNMG 120404 53	12.4	12.7	4.76	0.4	0.22 - 0.6	2.3 - 5.5	●		●	●	
	120408 53	12.0	12.7	4.76	0.8	0.22 - 0.6	2.3 - 5.5	●		●	●	
	120412 53	11.6	12.7	4.76	1.2	0.22 - 0.6	2.3 - 5.5	●		●	●	

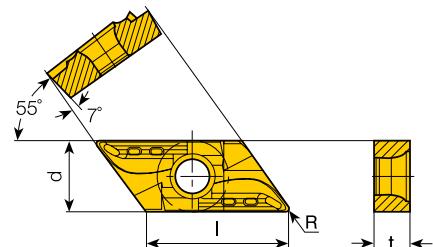
## Negative 55° Insert



**DNM**□

Insert	Designation	Dimension(mm)				Recommended cutting condition		Grade			
		I	d	t	R	Feed(mm/rev)	D.O.C(mm)	D0810	D0820	D09015	D09025
DNMA For Cast Iron	DNMA 150608	14.7	12.7	6.35	0.8	0.25 - 0.7	3.0 - 7.0		●		
	150612	14.4	12.7	6.35	1.2	0.25 - 0.7	3.0 - 7.0		●		
DNMG 41 Finishing & Medium	DNMG 150408 41	14.7	12.7	4.76	0.8	0.07 - 0.3	0.5 - 2.0	●		●	●
	150604 41	15.1	12.7	6.35	0.4	0.05 - 0.3	0.5 - 2.0	●		●	●
	150608 41	14.7	12.7	6.35	0.8	0.07 - 0.3	0.5 - 2.0	●		●	●
DNMG 42 For Stainless Steel	DNMG 150604 42	15.1	12.7	6.35	0.4	0.10 - 0.5	0.5 - 5.0				●
	150608 42	15.1	12.7	6.35	0.8	0.12 - 0.5	0.5 - 5.0				●
	150612 42	14.7	12.7	6.35	1.2	0.14 - 0.5	0.5 - 5.0				●
DNMG 43 Semi finishing & Medium	DNMG 150604 43	15.1	12.7	6.35	0.4	0.12 - 0.52	0.7 - 4.8		●	●	
	150608 43	15.1	12.7	6.35	0.8	0.12 - 0.52	0.7 - 4.8		●	●	
	150612 43	14.7	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 - 0.5	1.2 - 5.0		●	●	●
	150608 45	15.1	12.7	6.35	0.8	0.15 - 0.5	1.2 - 5.0		●	●	●
	150612 45	14.7	12.7	6.35	1.2	0.15 - 0.5	1.2 - 5.0		●	●	●
DNMG 46 Medium	DNMG 150604 46	15.1	12.7	6.35	0.4	0.15 - 0.40	0.8 - 4.0		●	●	●
	150608 46	15.1	12.7	6.35	0.8	0.17 - 0.50	1.0 - 4.0	●	●	●	●
	150612 46	14.7	12.7	6.35	1.2	0.20 - 0.50	1.3 - 4.0	●	●	●	●
DNMG 52 Medium	DNMG 150404 52	15.1	12.7	4.76	0.4	0.09 - 0.35	0.7 - 3.5				●
	150408 52	14.7	12.7	4.76	0.8	0.10 - 0.35	0.7 - 3.5				●
	150604 52	15.1	12.7	6.35	0.4	0.09 - 0.35	0.7 - 3.5	●	●	●	
	150608 52	14.7	12.7	6.35	0.8	0.10 - 0.35	0.7 - 3.5	●	●	●	
	150612 52	14.4	12.7	6.35	1.2	0.12 - 0.35	0.7 - 3.5	●	●	●	
DNMG 53 Medium & Roughing	DNMG 150604 53	15.1	12.7	6.35	0.4	0.22 - 0.6	2.3 - 5.5	●	●	●	
	150608 53	14.7	12.7	6.35	0.8	0.22 - 0.6	2.3 - 5.5	●	●	●	
	150612 53	14.4	12.7	6.35	1.2	0.22 - 0.6	2.3 - 5.5	●	●	●	

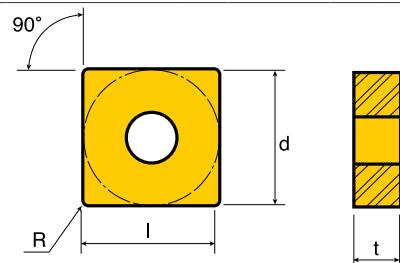
## Negative 55° Insert



### KNMX

Insert	Designation	Dimension(mm)				Recommended cutting condition		Grade		
		I	d	t	R	Feed(mm/rev)	D.O.C(mm)	DC610	DC9015	DC9025
	KNMX 160405 LP	19.7	9.52	4.76	0.5	0.15 - 0.35	1.5 - 5.0			•
	160405 RP	19.7	9.52	4.76	0.5	0.15 - 0.35	1.5 - 5.0			•

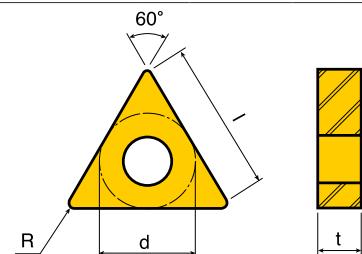
## Negative 90° Insert



**SNM□**

Insert	Designation	Dimension(mm)				Recommended cutting condition		Grade				
		l	d	t	R	Feed(mm/rev)	D.O.C(mm)	D0810	D0820	D09015	D09025	D0835
 SNMA For Cast Iron	SNMA 120408 120412	11.9	12.7	4.76	0.8	0.25 - 0.7	3.0 - 7.0		●			
		11.5	12.7	4.76	1.2	0.25 - 0.7	3.0 - 7.0		●			
 SNMG 42 For Stainless Steel	SNMG 120404 42 120408 42 120412 42	12.3	12.7	4.76	0.4	0.10 - 0.5	0.5 - 5.0					●
		11.9	12.7	4.76	0.8	0.12 - 0.5	0.5 - 5.0					●
		11.5	12.7	4.76	1.2	0.14 - 0.5	0.5 - 5.0					●
 SNMG 45 Medium & Roughing	SNMG 120404 45 120408 45 120412 45	12.3	12.7	4.76	0.4	0.15 - 0.5	1.2 - 5.0		●	●	●	
		11.9	12.7	4.76	0.8	0.15 - 0.5	1.2 - 5.0		●	●	●	
		11.5	12.7	4.76	1.2	0.15 - 0.5	1.2 - 5.0		●	●	●	
 SNMG 46 Medium	SNMG 120404 46 120408 46 120412 46	12.3	12.7	4.76	0.4	0.12 - 0.40	1.0 - 5.0		●	●	●	
		11.9	12.7	4.76	0.8	0.17 - 0.55	1.2 - 5.0		●	●	●	
		11.5	12.7	4.76	1.2	0.20 - 0.55	1.5 - 5.0		●	●	●	
 SNMG 52 Medium	SNMG 120408 52 120412 52	11.9	12.7	4.76	0.8	0.10 - 0.35	0.7 - 3.5		●	●	●	
		11.5	12.7	4.76	1.2	0.12 - 0.35	0.7 - 3.5		●	●	●	
 SNMG 53 Medium & Roughing	SNMG 120404 53 120408 53 120412 53	12.3	12.7	4.76	0.4	0.22 - 0.6	2.3 - 5.5		●	●	●	
		11.9	12.7	4.76	0.8	0.22 - 0.6	2.3 - 5.5		●	●	●	
		11.5	12.7	4.76	1.2	0.22 - 0.6	2.3 - 5.5		●	●	●	

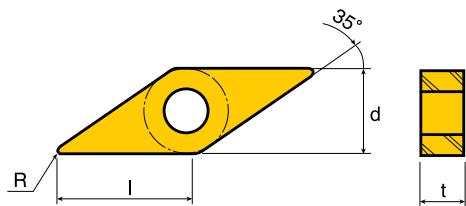
## Negative 60° Insert



**TNM** □

Insert	Designation	Dimension(mm)				Recommended cutting condition		Grade				
		I	d	t	R	Feed(mm/rev)	D.O.C(mm)	D0810	D0820	D09015	D09025	D08035
 TNMA For Cast Iron	TNMA 160404	15.5	9.52	4.76	0.4	0.25 - 0.7	3.0 - 7.0		●			
	160408	14.5	9.52	4.76	0.8	0.25 - 0.7	3.0 - 7.0		●			
	160412	13.5	9.52	4.76	1.2	0.25 - 0.7	3.0 - 7.0		●			
 TNMG 41 Finishing & Medium	TNMG 160404 41	15.5	9.52	4.76	0.4	0.05 - 0.3	0.5 - 2.0	●		●	●	
	160408 41	14.5	9.52	4.76	0.8	0.07 - 0.3	0.5 - 2.0	●		●	●	
 TNMG 42 For Stainless Steel	TNMG 160404 42	15.5	9.52	4.76	0.4	0.10 - 0.5	0.5 - 5.0					●
	160408 42	14.5	9.52	4.76	0.8	0.12 - 0.5	0.5 - 5.0					●
	160412 42	13.5	9.52	4.76	1.2	0.14 - 0.5	0.5 - 5.0					●
 TNMG 43 Semi finishing & Medium	TNMG 160404 43	15.5	9.52	4.76	0.4	0.12 - 0.52	0.7 - 4.8			●	●	
	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 160404 52	15.5	9.52	4.76	0.4	0.09 - 0.35	0.7 - 3.5		●	●	●	
	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 - 0.6	2.3 - 5.5		●	●	●	
	160408 53	14.5	9.52	4.76	0.8	0.22 - 0.6	2.3 - 5.5		●	●	●	
	160412 53	13.5	9.52	4.76	1.2	0.22 - 0.6	2.3 - 5.5		●	●	●	

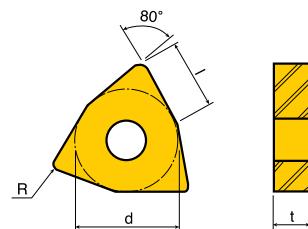
## Negative 35° Insert



### VNMG

Insert	Designation	Dimension(mm)				Recommended cutting condition		Grade				
		I	d	t	R	Feed(mm/rev)	D.O.C(mm)	D0610	D0820	D09015	D09025	D08035
VNMG 41 Finishing & Medium	VNMG 160404 41	15.6	9.52	4.76	0.4	0.05 - 0.3	0.5 - 2.0	●		●	●	
	160408 41	14.6	9.52	4.76	0.8	0.07 - 0.3	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			●	●	●
	160412 45	13.6	9.52	4.76	1.2	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			●	●	●
	160408 46	14.6	9.52	4.76	0.8	0.17 - 0.36	1.0 - 2.5	●		●	●	●
	160412 46	13.6	9.52	4.76	1.2	0.20 - 0.36	1.2 - 2.5	●		●	●	●
VNMG 53 Medium & Roughing	VNMG 160404 53	15.6	9.52	4.76	0.4	0.22 - 0.6	2.3 - 5.5	●		●	●	
	160408 53	14.6	9.52	4.76	0.8	0.22 - 0.6	2.3 - 5.5	●		●	●	
	160412 53	13.6	9.52	4.76	1.2	0.22 - 0.6	2.3 - 5.5	●		●	●	

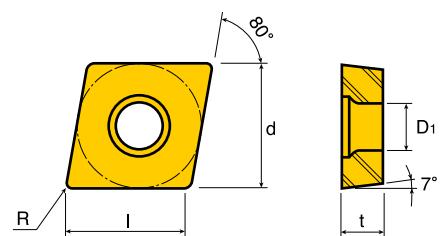
## Negative 80° Insert



### WNM

Insert	Designation	Dimension(mm)				Recommended cutting condition		Grade				
		I	d	t	R	Feed(mm/rev)	D.O.C(mm)	D0810	D0820	D0905	D0925	D0835
WNMA For Cast Iron	WNMA 080408	8.3	12.7	4.76	0.8	0.25 - 0.7	3.0 - 7.0		●			
	080412	8.2	12.7	4.76	1.2	0.25 - 0.7	3.0 - 7.0		●			
WNMG 41 Finishing & Medium	WNMG 080408 41	8.3	12.7	4.76	0.8	0.07 - 0.3	0.5 - 2.0	●		●	●	●
	080412 41	8.3	12.7	4.76	1.2	0.10 - 0.3	0.5 - 2.0	●		●	●	
WNMG 42 For Stainless Steel	WNMG 080404 42	8.4	12.7	4.76	0.4	0.10 - 0.5	0.5 - 5.0					●
	080408 42	8.3	12.7	4.76	0.8	0.12 - 0.5	0.5 - 5.0					●
	080412 42	8.2	12.7	4.76	1.2	0.14 - 0.5	0.5 - 5.0					●
WNMG 43 Semi finishing & Medium	WNMG 080404 43	8.4	12.7	4.76	0.4	0.12 - 0.52	0.7 - 4.8			●	●	
	080408 43	8.3	12.7	4.76	0.8	0.12 - 0.52	0.7 - 4.8			●	●	
	080412 43	8.2	12.7	4.76	1.2	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 - 0.5	1.2 - 5.0			●	●	●
	060408 45	6.1	9.52	4.76	0.8	0.15 - 0.5	1.2 - 5.0			●	●	●
	060412 45	6.0	9.52	4.76	1.2	0.15 - 0.5	1.2 - 5.0			●	●	●
	080404 45	8.4	12.7	4.76	0.4	0.15 - 0.5	1.2 - 5.0			●	●	●
	080408 45	8.3	12.7	4.76	0.8	0.15 - 0.5	1.2 - 5.0			●	●	●
	080412 45	8.2	12.7	4.76	1.2	0.15 - 0.5	1.2 - 5.0			●	●	●
WNMG 46 Medium	WNMG 080404 46	8.4	12.7	4.76	0.4	0.12 - 0.40	1.0 - 4.0			●	●	●
	080408 46	8.3	12.7	4.76	0.8	0.17 - 0.55	1.2 - 4.0	●		●	●	●
	080412 46	8.2	12.7	4.76	1.2	0.25 - 0.55	1.5 - 4.0	●		●	●	●
WNMG 52 Medium	WNMG 080404 52	8.3	12.7	4.76	0.4	0.09 - 0.35	0.7 - 3.5	●		●	●	
	080408 52	8.3	12.7	4.76	0.8	0.10 - 0.35	0.7 - 3.5	●		●	●	●
	080412 52	8.3	12.7	4.76	1.2	0.12 - 0.35	0.7 - 3.5	●				

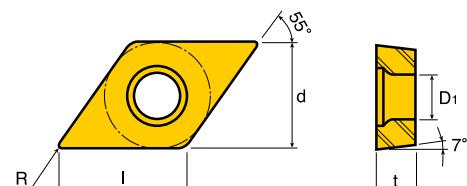
## Positive 80° Insert



### CCMT

Insert	Designation	Dimension(mm)					Recommended cutting condition		Grade			
		I	d	t	R	ØD <sub>1</sub>	Feed(mm/rev)	D.O.C(mm)	DC610	DC820	DC9015	DC9025
CCMT 41 Finishing & Medium	CCMT 060204 41	6.0	6.35	2.38	0.4	2.8	0.05 - 0.15	0.5 - 2.5	●		●	●
	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 Finishing	CCMT 09T304 51	9.2	9.52	3.97	0.4	4.4	0.05 - 0.15	0.5 - 2.5			●	●
	09T308 51	8.8	9.52	3.97	0.8	4.4	0.07 - 0.15	0.5 - 2.5			●	●
CCMT 52 Medium	CCMT 09T304 52	9.2	9.52	3.97	0.4	4.4	0.07 - 0.25	1.0 - 3.0	●	●	●	●
	09T308 52	8.8	9.52	3.97	0.8	4.4	0.09 - 0.25	1.0 - 3.0	●	●	●	●

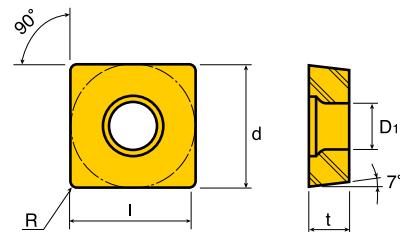
## Positive 55° Insert



### DCMT

Insert	Designation	Dimension(mm)					Recommended cutting condition		Grade			
		I	d	t	R	ØD <sub>1</sub>	Feed(mm/rev)	D.O.C(mm)	DC610	DC820	DC9015	DC9025
DCMT 41 Finishing & Medium	DCMT 070204 41	7.3	6.35	2.38	0.4	2.8	0.05 - 0.15	0.5 - 2.5	●		●	●
	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 Finishing	DCMT 11T304 51	11.2	9.52	3.97	0.4	4.4	0.05 - 0.15	0.5 - 2.5			●	●
	11T308 51	10.8	9.52	3.97	0.8	4.4	0.07 - 0.15	0.5 - 2.5			●	●
DCMT 52 Medium	DCMT 11T304 52	11.2	9.52	3.97	0.4	4.4	0.07 - 0.25	1.0 - 3.0	●	●	●	●
	11T308 52	10.8	9.52	3.97	0.8	4.4	0.09 - 0.25	1.0 - 3.0	●	●	●	●
	11T312 52	10.5	9.52	3.97	1.2	4.4	0.10 - 0.25	1.0 - 3.0	●	●	●	●

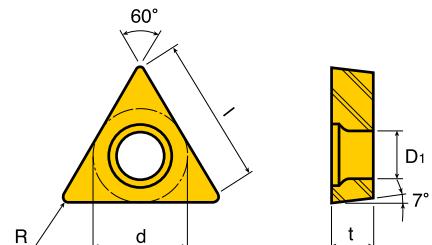
## Positive 90° Insert



### SCMT

Insert	Designation	Dimension(mm)					Recommended cutting condition		Grade			
		I	d	t	R	ØD1	Feed(mm/rev)	D.O.C(mm)	DC610	DC820	DC9015	DC9025
SCMT 51 Finishing	SCMT 09T304 51	9.2	9.52	3.97	0.4	4.4	0.05 - 0.15	0.5 - 2.5			●	●
	09T308 51	8.7	9.52	3.97	0.8	4.4	0.07 - 0.15	0.5 - 2.5			●	●
SCMT 52 Medium	SCMT 09T304 52	9.2	9.52	3.97	0.4	4.4	0.07 - 0.25	1.0 - 3.0		●	●	●
	09T308 52	9.2	9.52	3.97	0.4	4.4	0.09 - 0.25	1.0 - 3.0		●	●	●

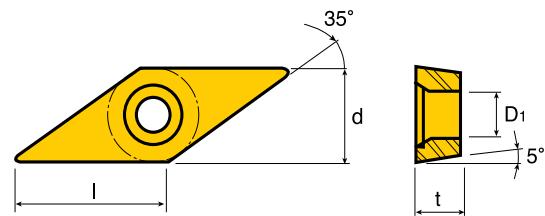
## Positive 60° Insert



### TCMT

Insert	Designation	Dimension(mm)					Recommended cutting condition		Grade			
		I	d	t	R	ØD1	Feed(mm/rev)	D.O.C(mm)	DC610	DC820	DC9015	DC9025
TCMT 41 Finishing & Medium	TCMT 110204 41	10.0	6.35	2.38	0.4	2.8	0.05 - 0.15	0.5 - 2.5			●	●
	16T304 51	15.5	9.52	3.97	0.4	4.4	0.05 - 0.15	0.5 - 2.5			●	●
TCMT 51 Finishing	16T308 51	14.5	9.52	3.97	0.8	4.4	0.07 - 0.15	0.5 - 2.5			●	●
	16T304 52	15.5	9.52	3.97	0.4	4.4	0.07 - 0.25	1.0 - 3.0		●	●	●
	16T308 52	14.5	9.52	3.97	0.8	4.4	0.09 - 0.25	1.0 - 3.0		●	●	●
TCMT 52 Medium	16T312 52	13.5	9.52	3.97	1.2	4.4	0.10 - 0.25	1.0 - 3.0		●	●	●

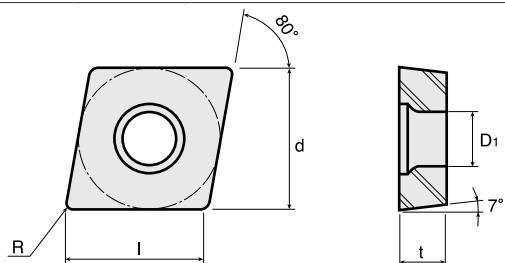
## Positive 35° Insert



### VBMT

Insert	Designation	Dimension(mm)					Recommended cutting condition		Grade			
		l	d	t	R	ØD <sub>1</sub>	Feed(mm/rev)	D.O.C(mm)	DC610	DC820	DC9015	DC9025
 VBMT 41 Finishing & Medium	VBMT 160404 41	15.6	9.52	4.76	0.4	4.4	0.05 - 0.15	0.5 - 2.5	•		•	•
		14.6	9.52	4.76	0.8	4.4	0.07 - 0.15	0.5 - 2.5	•		•	•
 VBMT 51 Finishing	VBMT 160404 51	15.6	9.52	4.76	0.4	4.4	0.05 - 0.15	0.5 - 2.5			•	•
		14.6	9.52	4.76	0.8	4.4	0.07 - 0.15	0.5 - 2.5			•	•
 VBMT 52 Medium	VBMT 160404 52	15.6	9.52	4.76	0.4	4.4	0.07 - 0.25	1.0 - 3.0	•	•	•	
		14.6	9.52	4.76	0.8	4.4	0.09 - 0.25	1.0 - 3.0	•	•	•	
		13.6	9.52	4.76	1.2	4.4	0.10 - 0.25	1.0 - 3.0	•	•	•	

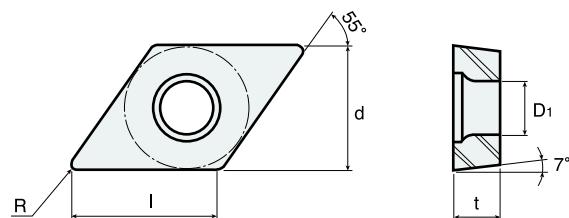
## Positive 80° Insert - For Aluminum



### CCGT AU

Insert	Designation	Dimension(mm)					Grade
		I	d	t	R	ØD <sub>1</sub>	
	CCGT 060202 AU	6.0	6.35	2.38	0.2	2.8	•
	060204 AU	6.0	6.35	2.38	0.4	2.8	•
	09T302 AU	9.2	9.52	3.97	0.2	4.4	•
	09T304 AU	9.2	9.52	3.97	0.4	4.4	•
	09T308 AU	9.2	9.52	3.97	0.8	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	•

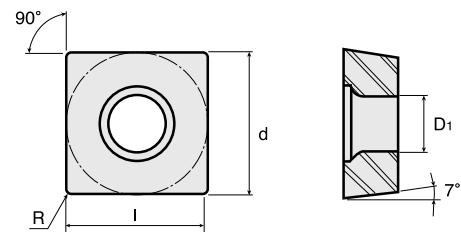
## Positive 55° Insert - For Aluminum



### DCGT AU

Insert	Designation	Dimension(mm)					Grade
		I	d	t	R	ØD <sub>1</sub>	
	DCGT 070202 AU	7.5	6.35	2.38	0.2	2.8	•
	070204 AU	7.3	6.35	2.38	0.4	2.8	•
	11T302 AU	11.4	9.525	3.97	0.2	4.4	•
	11T304 AU	11.4	9.525	3.97	0.4	4.4	•
	11T308 AU	11.2	9.525	3.97	0.8	4.4	•

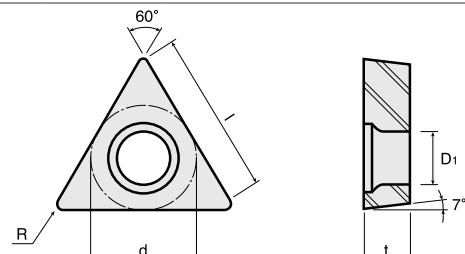
## Positive 90° Insert - For Aluminum



### SCGT AU

Insert	Designation	Dimension(mm)					Grade
		I	d	t	R	ØD <sub>1</sub>	
	SCGT 120404 AU	12.3	12.70	4.76	0.4	5.5	•
	120408 AU	11.9	12.70	4.76	0.8	5.5	•

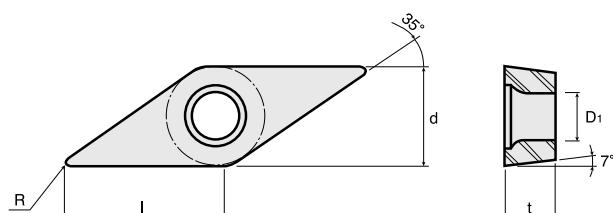
## Positive 60° Insert - For Aluminum



### TCGT AU

Insert	Designation	Dimension(mm)					Grade
		I	d	t	R	ØD <sub>1</sub>	
	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	•
	16T308 AU	15.5	9.525	3.97	0.8	4.4	•

## Positive 35° Insert - For Aluminum



### VCGT AU

Insert	Designation	Dimension(mm)					Grade
		I	d	t	R	ØD <sub>1</sub>	
	VCGT 110302 AU	10.0	6.35	3.18	0.2	2.8	•
	110304 AU	10.0	6.35	3.18	0.4	2.8	•
	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



P / Lever



C / Top Clamp



S / Screw Clamp



M / Multi Lock



W / Wedge Clamp

### 2. Insert Shape



C



D



K



R



S



T

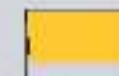


V

### 4. Insert Clearance Angle



N



B



C



P

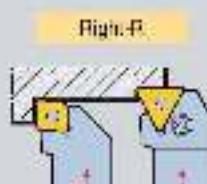
# P C L N R

1      2      3      4      5

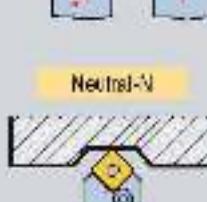
### 3. Approach Angle

Symbol	Shape	Offset	Symbol	Shape	Offset	Symbol	Shape	Offset
A		x	J		o	G		x
			K		o	W		o
B		x	L		o	X	Special	
			M		x			
D		x	N		x			
E		x	R		o			
F		o	S		o			
G		o	T		o			
		o	U		o			

### 5. Hand of Tool



Right-R



Neutral-N



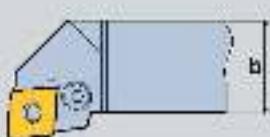
Left-L

6. Shank Height



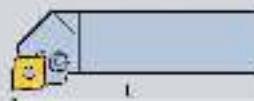
Integers to be preceded by 0  
e.g.: h=8mm indicated by 08

7. Shank Width



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

8. Tool Length



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

**25 25 M 12 -**

6

7

8

9

10

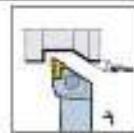
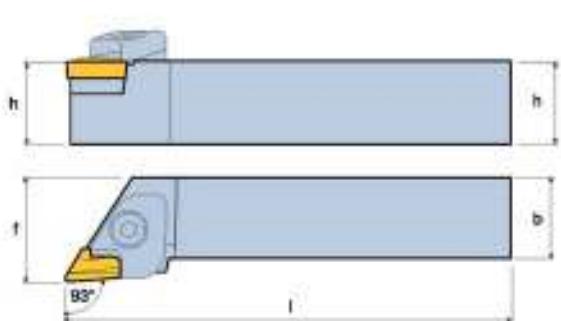
9. Cutting Edge Length



10. Manufacturer's Type

Unique to manufacturer

## CKJNR/L



Designation	Dimension (mm)				Insert
	h	b	l	t	
CKJNR/L, 2020 K16	20	20	125	25	
2525 M16	25	25	150	32	
3232 P16	32	32	170	40	55° KNUX 16 R/L 11 KNUX 16 R/L 12

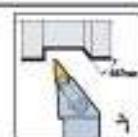
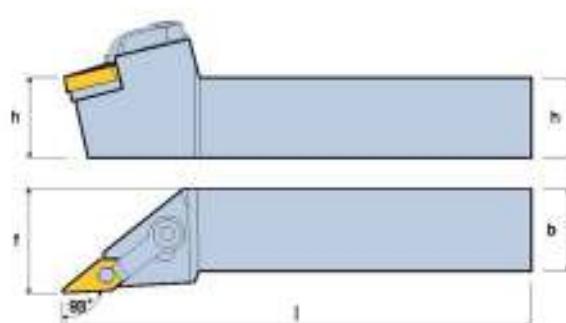
  

Holder/ Related insert	Component						
	Clamp	Screw	Clamp Spring	Pin & Spring	Shim	Shim Screw	Wrench
2020...16							
2525...16	DCC 16K/L	DCS 16K	DCS 90	DPS 48 DP 48S	DCS-K 1604RL	*DSP16K FH M3 X 0.5 X 10	DHLW-4
3232...16							

Insert page: 12

\* DSP16K is a shim pin.

## MVJNR/L

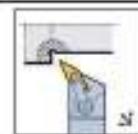
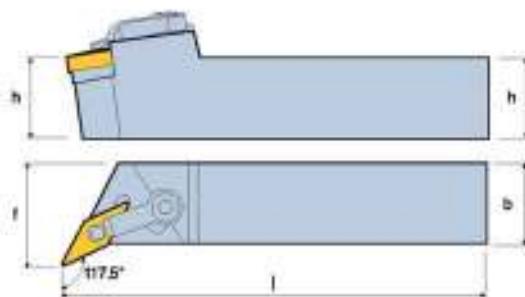


Designation	Dimension (mm)				Insert
	h	b	l	t	
MVJNR/L 2525 M16	25	25	150	32	35° VN00 1604 00

Holder/ Related Insert	Component				
	Clamp	Screw	Shim	Lock Pin	Wrench
.16	DMC 30	DNSM 0625	DMS-V 324	DLP 3	DHLW-2, DHLW-4

Insert page: 15

## MVQNR/L

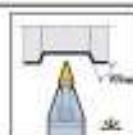
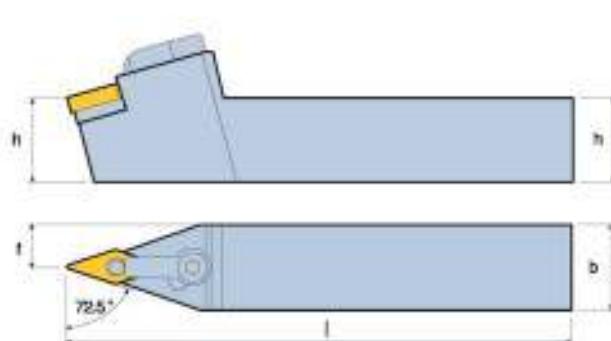


Designation	Dimension (mm)				Insert
	h	b	l	t	
MVQNR/L 2525 M16	25	25	150	32	35° VN00 1604 00

Holder/ Related Insert	Component				
	Clamp	Screw	Shim	Lock Pin	Wrench
.16	DMC 30	DNSM 0625	DMS-V 324	DLP 3	DHLW-2, DHLW-4

Insert page: 15

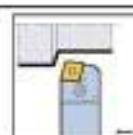
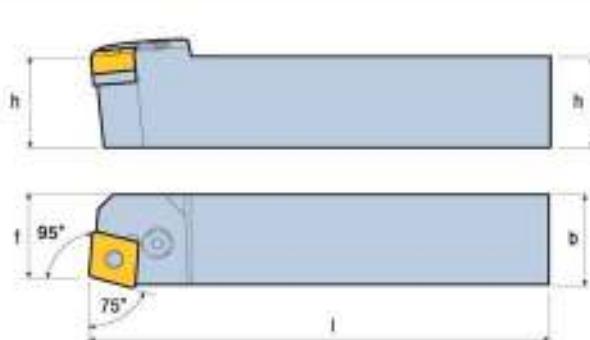
## MVVNN



Designation	Dimension (mm)				Insert
	h	b	l	f	
MVVNN 2020 K16	20	20	125	10.0	VN 1604
2525 M16	25	25	150	12.5	
<b>Component</b>					
Holder/ Related insert	Clamp	Screw	Shim	Lock Pin	Wrench
...16	DMC 30	DNSM 0825	DMS-V 324	DLP 3	DHLW-2-DHLW-4

Insert page: 15

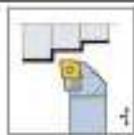
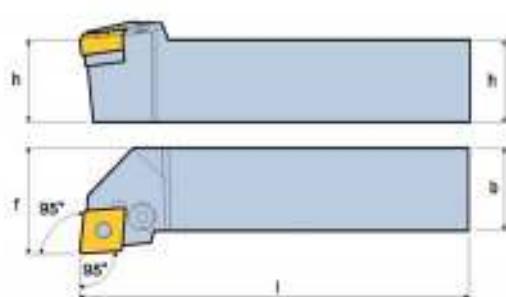
## PCBNR/L



Designation	Dimension (mm)				Insert
	h	b	l	f	
PCBNR/L 2020 K12	20	20	125	17.5	CN 1204
2525 M12	25	25	150	22.5	
3225 P12	32	25	170	22.5	
<b>Component</b>					
Holder/ Related insert	Lever	Screw	Shim	Shim Pin	Wrench
...12	DLC 4	DLCS 4	DLS-C 42	DSP 4	DHLW-3

Insert page: 11

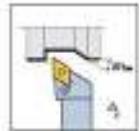
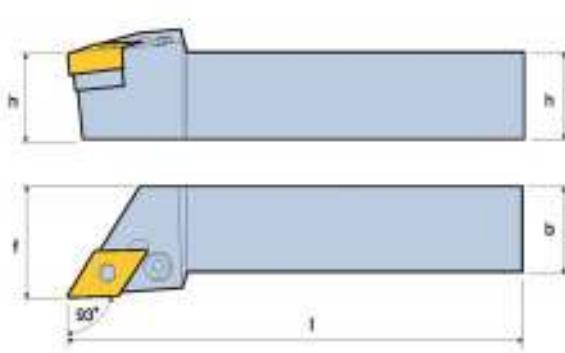
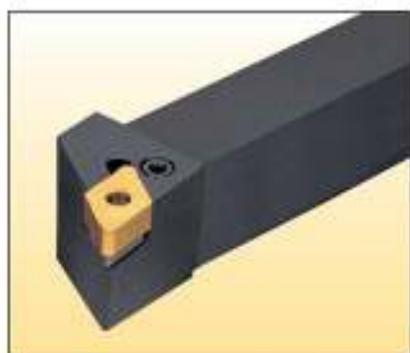
## PCLNR/L



Designation	Dimension (mm)				Insert	
	h	b	l	t		
PCLNR/L	1616 H12	16	16	100	20	CN 1204
	2020 K12	20	20	125	25	
	2525 M12	25	25	150	32	
	3225 P12	32	25	170	32	
	3232 P12	32	32	170	40	
	3232 P19	32	32	170	40	
Holder/ Related Insert	Component					
	Lever	Screw	Shim	Shim Pin	Wrench	
	...12	DLC 4	DLCS 4	DLS-C 42	DSP 4	DHLW-3
...19		DLC 6	DLCS 6	DLS-C 63	DSP 6	DHLW-4

Insert page: 11

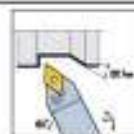
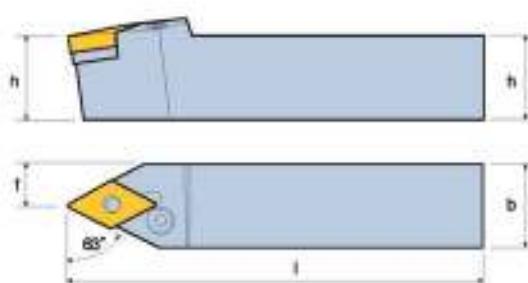
## PDJNR/L



Designation	Dimension (mm)				Insert	
	h	b	l	t		
PDJNR/L	2020 K15	20	20	125	25	DN 1506
	2525 M15	25	25	150	32	
	3232 P15	32	32	170	40	
Holder/ Related Insert	Component					
	Lever	Screw	Shim	Shim Pin	Wrench	
	...15	DLC 4A	DLCS 4	DLS-D 42	DSP 4	DHLW-3

Insert page: 12

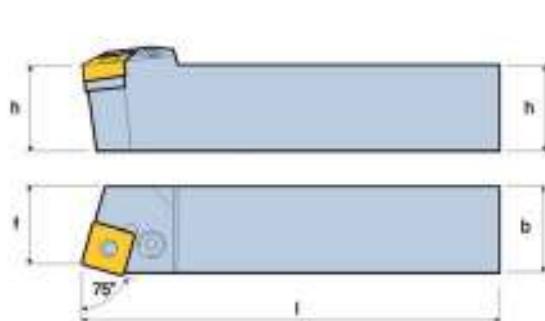
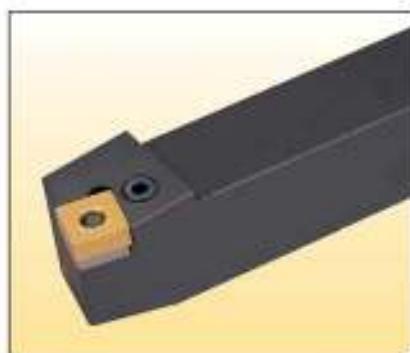
## PDNNR/L



Designation	Dimension (mm)				Insert
	h	b	l	t	
PDNNR/L 2525 M15	25	25	150	18.5	DN 1508
3232 P15	32	32	170	23.4	
Component					
Holder/ Related insert	Lever	Screw	Shim	Shim Pin	Wrench
_15	DLC 4A	DLC 4	DLS-D 42	DSP 4	DHLW-3

Insert page: 12

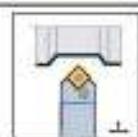
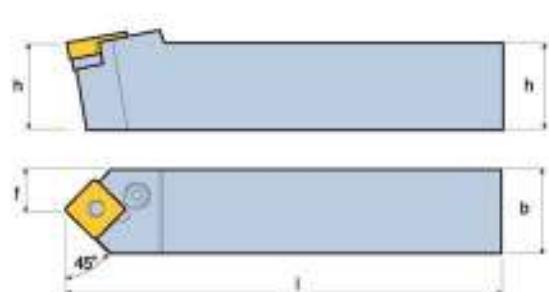
## PSBNR/L



Designation	Dimension (mm)				Insert
	h	b	l	t	
PSBNR/L 2020 K12	20	20	125	17	SN 1204
2525 M12	25	25	150	22	
Component					
Holder/ Related insert	Lever	Screw	Shim	Shim Pin	Wrench
_12	DLC 4	DLC 4	DLS-S 42	DSP 4	DHLW-3

Insert page: 13

## PSDNN

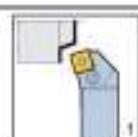
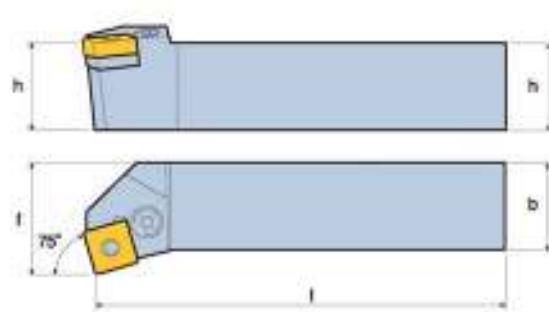


Designation	Dimension (mm)				Insert:
	h	b	l	t	
PSDNN 2020 K12	20	20	125	10.0	
2525 M12	25	25	150	12.5	
3225 P12	32	25	170	12.5	SN 1204

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

Insert page: 13

## PSKNR/L

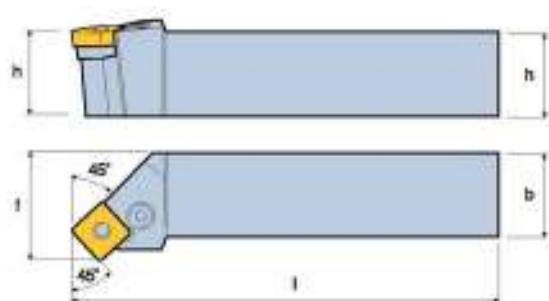
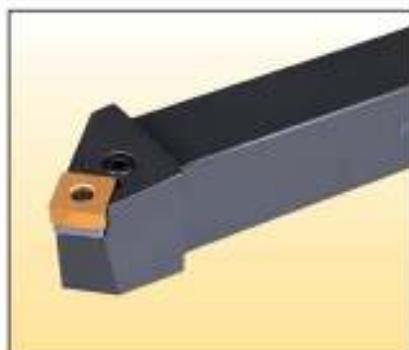


Designation	Dimension (mm)				Insert:
	h	b	l	t	
PSKNR/L 2525 M12	25	25	150	32	SN 1204

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

Insert page: 13

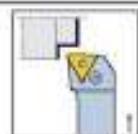
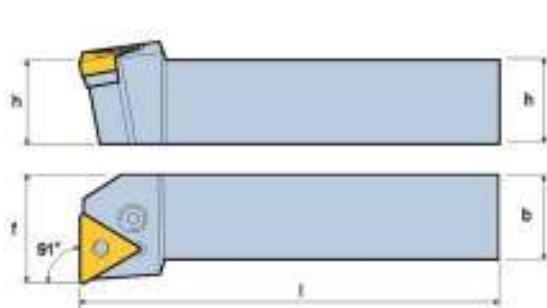
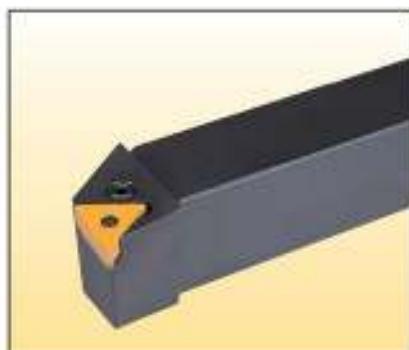
## PSSNR/L



Designation	Dimension (mm)				Insert
	h	b	l	t	
PSSNR/L 2020 K12	20	20	125	25	
2525 M12	25	25	150	32	SN□□ 1204 □□
Component					
Holder/ Related Insert	Lever	Screw	Shim	Shim Pin	Wrench
.12	DLC 4	DLCS 4	DLS-S 42	DSP 4	DHLW-3

Insert page: 13

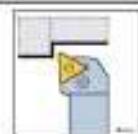
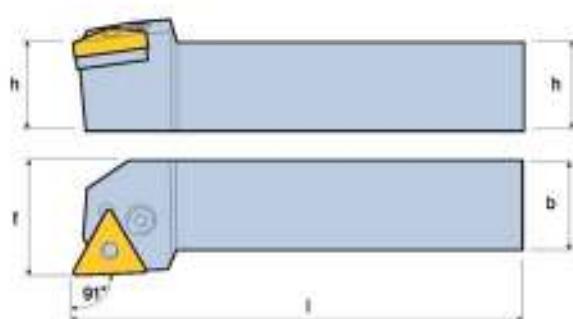
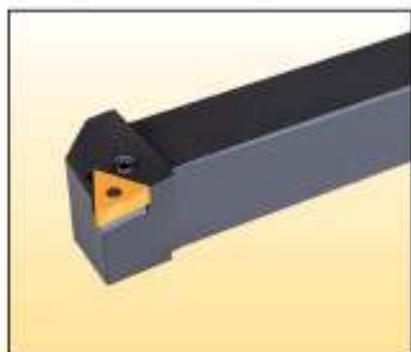
## PTFNR/L



Designation	Dimension (mm)				Insert
	h	b	l	t	
PTFNR/L 2020 K16	20	20	125	25	
2525 M16	25	25	150	32	TN□□ 1604 □□
Component					
Holder/ Related Insert	Lever	Screw	Shim	Shim Pin	Wrench
.16	DLC 3	DLCS 3	DLS-T 31.8	DSP 3A	DHLW-2.5

Insert page: 14

## PTGNR/L

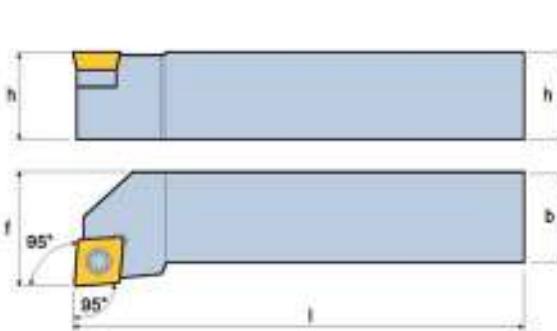
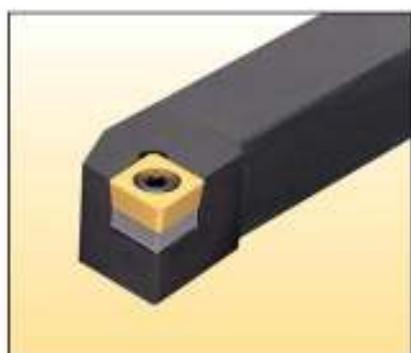


Designation	Dimension (mm)				Insert
	h	b	l	t	
PTGNR/L 1616 H16	16	16	100	20	
2020 K16	20	20	125	25	
2525 M16	25	25	150	32	TN□□ 1604 □□

Holder/ Related insert	Component				
	Lever	Screw	Shim	Shim Pin	Wrench
...16	DLC 3	DLCS 3	DLS-T 31,8	DSP 3A	DHLW-2,5

Insert page: 14

## SCLCR/L

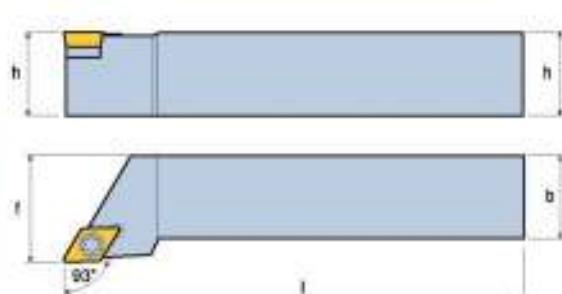
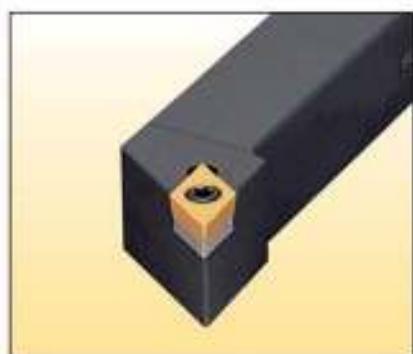


Designation	Dimension (mm)				Insert
	h	b	l	t	
SCLCR/L 1212 F09	12	12	80	16	
1616 H09	16	16	100	20	
2020 K09	20	20	125	25	CC□□ 09T3 □□
2525 M09	25	25	150	32	
2020 K12	20	20	125	25	
2020 M12	20	20	150	32	CC□□ 1204 □□

Holder/ Related insert	Component			
	Screw	Shim	Shim Screw	Wrench
1212...09	DS 35080I	-	-	DTFW-15
1616...09				
2020...09	DS 35124I	DSS-C 32	DSC 50090S	DTFW-15
2525...09				
2020...12	DS 45130I	DSS-C 43N	DSC 60105S	DTFW-20

Insert pages: 16, 20

## SDJCR/L

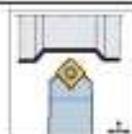
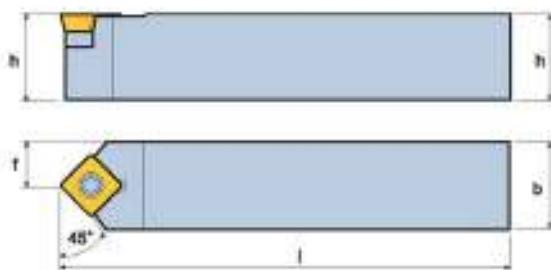


Designation	Dimension (mm)				Insert
	h	b	l	f	
SDJCR/L 1616 H11	16	16	100	20	
2020 K11	20	20	125	25	55° DC 11T3
2525 M11	25	25	150	32	

Holder/ Related Insert	Component			
	Screw	Shim	Shim Screw	Wrench
...11	DS 35124I	DSS-D 32	DSC 50090S	DTFW-15

Insert pages: 18, 20

## SSDCN



Designation	Dimension (mm)				Insert
	h	b	l	f	
SSDCN 1212 F09	12	12	80	6	
1616 H09	16	16	100	8	SDT 09T3
<b>Component</b>					
Holder/ Related insert	Screw	Shim	Shim Screw	Wrench	
1212...09	DS 35080I	-	-	DTFW-15	
1616...09	DS 35124I	DSS-S 32	DSC 50090S	DTFW-15	

Insert page: 19

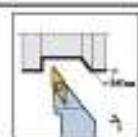
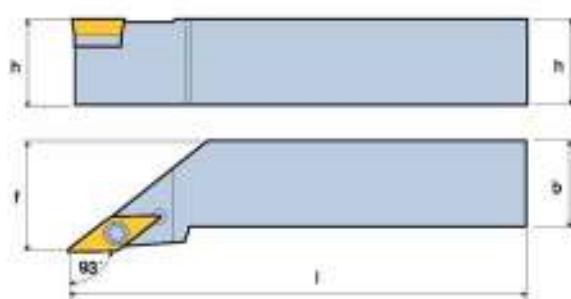
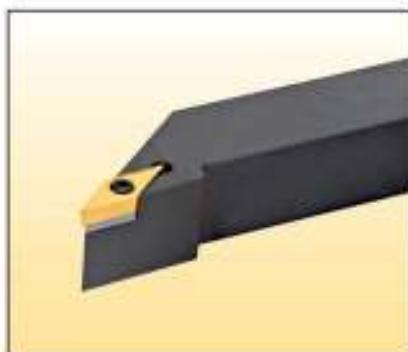
## STGCR/L



Designation	Dimension (mm)				Insert
	h	b	l	f	
STGCR/L 1616 H16	16	16	100	20	
2020 K16	20	20	125	25	TGT 16T3
2525 M16	25	25	150	32	
<b>Component</b>					
Holder/ Related insert	Screw	Shim	Shim Screw	Wrench	
...16	DS 35124I	DSS-T 32	DSC 50090S	DTFW-15	

Insert pages: 19, 21

## SVJBR/L



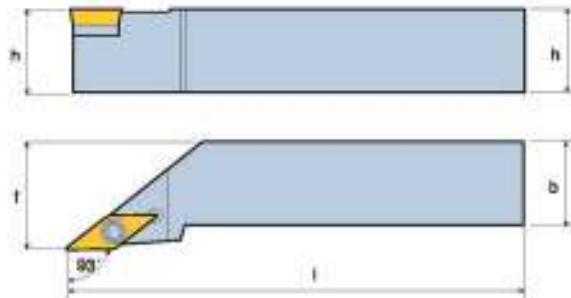
Designation	Dimension (mm)				Insert
	h	b	l	t	
SVJBR/L 2020 K16	20	20	125	25	VB 1604
2525 M16	25	25	150	32	

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

Insert page: 16

## SVJCR/L



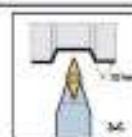
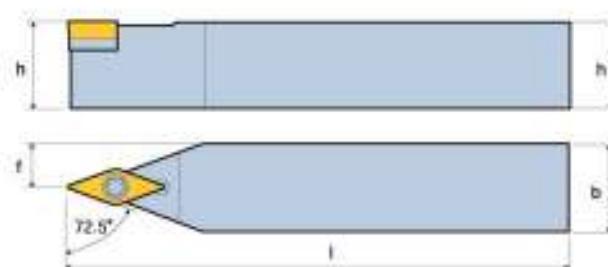
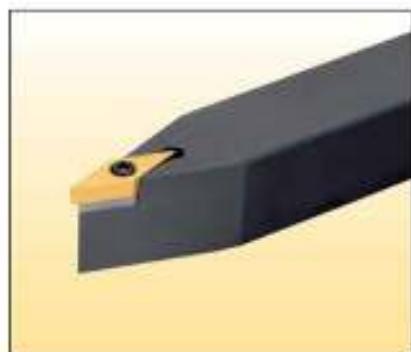
Designation	Dimension (mm)				Insert
	h	b	l	t	
SVJCR/L 2020 K16	20	20	125	25	VCG 1604
2525 M16	25	25	150	32	

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

Insert page: 21

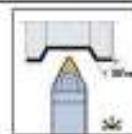
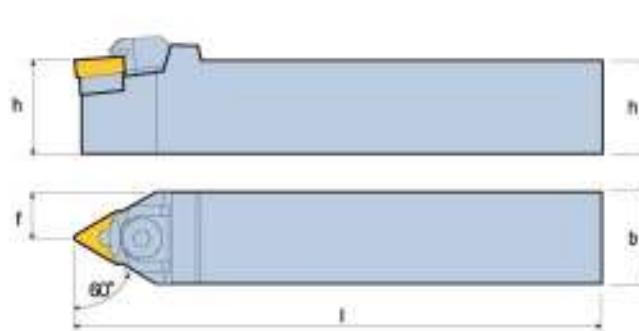
## SVVBN



Designation	Dimension (mm)				Insert	
	h	b	l	t		
SVVBN	2020 K16	20	20	125	10.0	VB 1604
	2525 M16	25	25	150	12.5	
Component						
Holder/ Related insert	Screw	Shim	Shim Screw	Wrench		
...16	DS 35124I	DSS-V 32	DSC 50080S	DTFW-15		

Insert page: 16

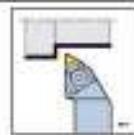
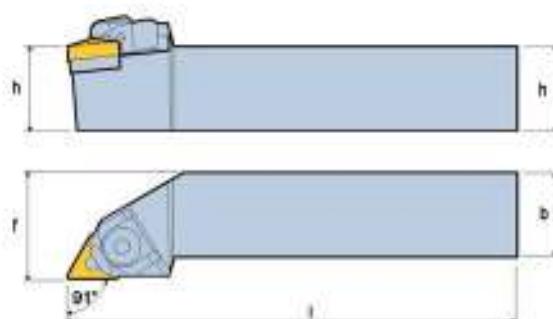
## WTENN



Designation	Dimension (mm)				Insert	
	h	b	l	t		
WTENN	2020 K16	20	20	125	10.0	TN 1604
	2525 M16	25	25	150	12.5	
...22	2525 M22	25	25	150	12.5	TN 2204
Component						
Holder/ Related insert	Wedge Clamp	Screw	Snap Ring	Shim	Pin Screw	
...16	DWC 33	DWCS 4	DWSR 4	DWS-T 33	DWSS 33	
...22	DWC 43			DWS-T 43	DWSS 43	
					DHLW-3	

Insert page: 14

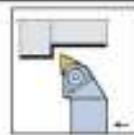
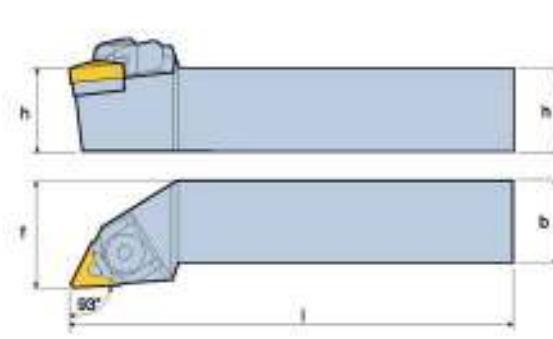
## WTGNR/L



Designation	Dimension (mm)				Insert
	h	b	l	t	
WTGNR/L 2020 K16	20	20	125	25	
2525 M16	25	25	150	32	TN□□ 1604 □□
<b>Component</b>					
Holder/ Related insert	Wedge Clamp	Screw	Snap Ring	Shim	Pin Screw
.16	DWC 33	DWCS 4	DWSR 4	DWS-T 33	DWSS 33
DHLW-3					

Insert page: 14

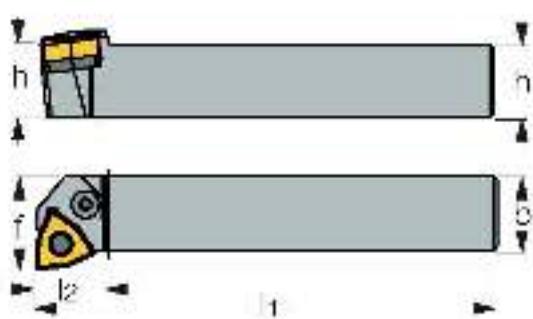
## WTJNR/L



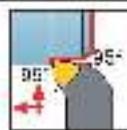
Designation	Dimension (mm)				Insert
	h	b	l	t	
WTJNR/L 2020 K16	20	20	125	25	
2525 M16	25	25	150	32	TN□□ 1604 □□
<b>Component</b>					
Holder/ Related insert	Wedge Clamp	Screw	Snap Ring	Shim	Pin Screw
.16	DWC 33	DWCS 4	DWSR 4	DWS-T 33	DWSS 33
DHLW-3					

Insert page: 14

## PWLNRL/L



PWLNRL/S

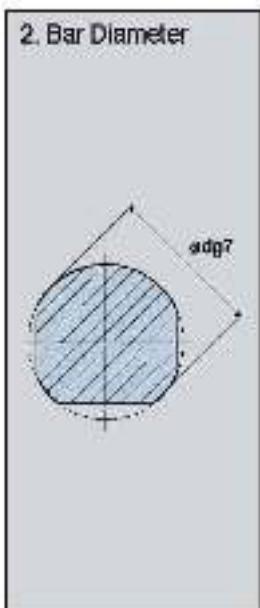


Designation	Dimension (mm)							Insert
	f	b	i	l	g	Ga <sup>+</sup>	Gr <sup>-</sup>	
2020 K08	20	20	125	21.6	25	-6	-6	
WTGNR/L 2525 M08	25	25	150	18.0	32	-6	-6	
3232 P08	32	32	170	27.0	40	-6	-6	WN 0804

Holder- Related Insert	Component					
	Seat	Spring Pin	Punch	Lever	Screw	Key
.08	DTWN 423	DSP 4	DPN 3.4	DLR 4	DS 117-2010	DHW 3.0

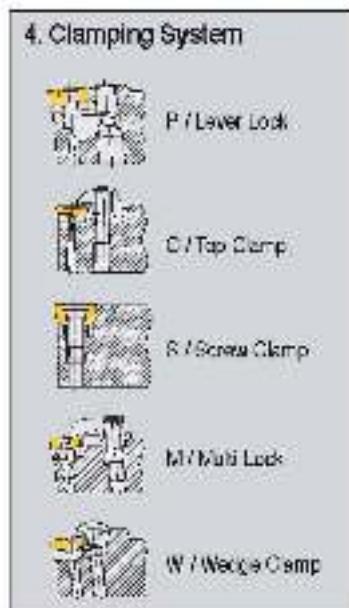
Insert page: 17

## Designation System of Internal Boring Bar



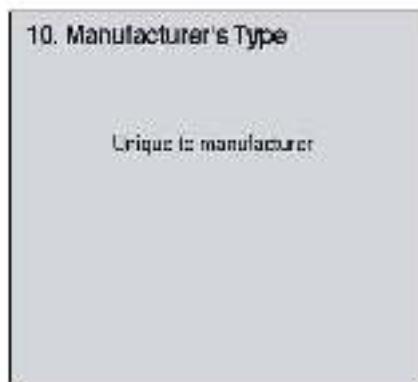
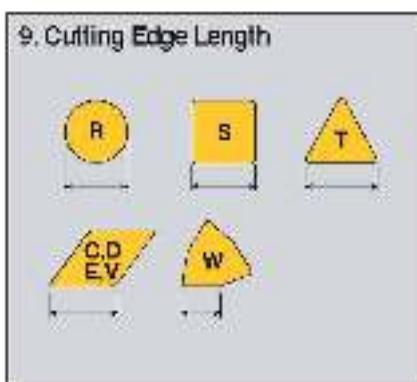
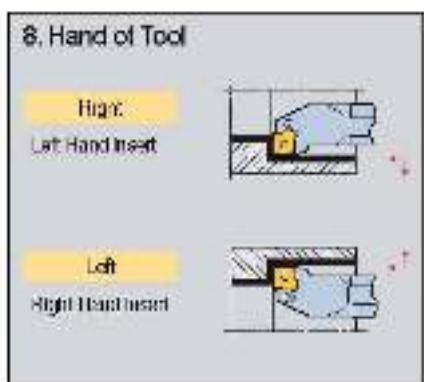
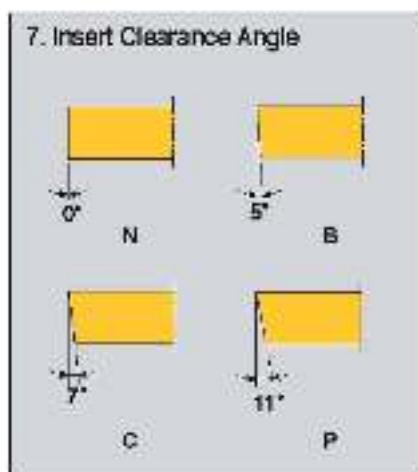
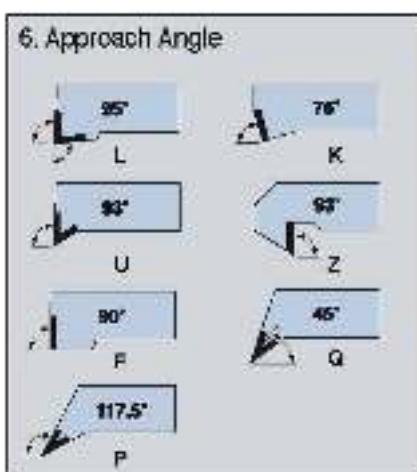
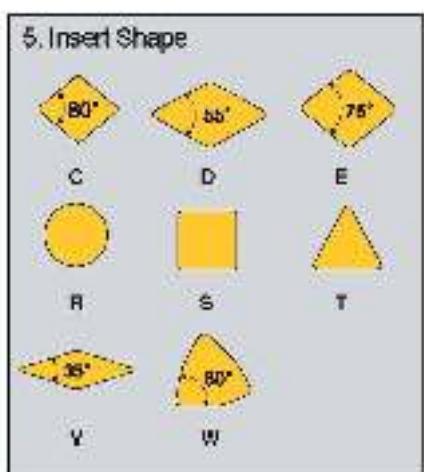
3. Tool Length

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

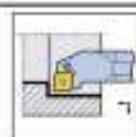
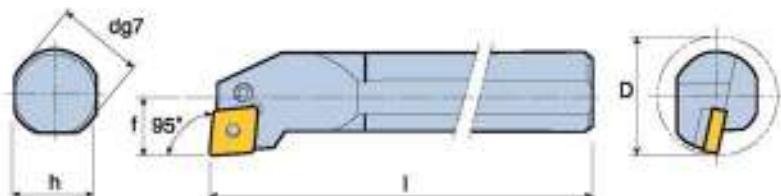


**S 25 T - P C L N R - 16 - □**

1      2      3      4      5      6      7      8      9      10



## S-PCLNR/L

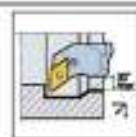
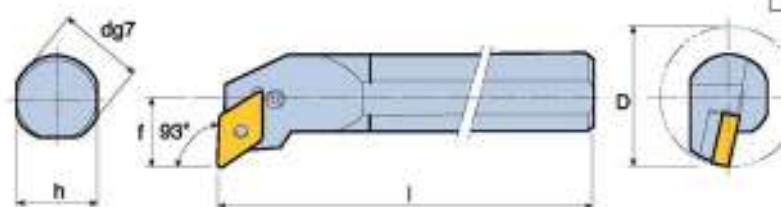


Designation	Dimension (mm)					Insert
	d	h	l	f	D	
S25T PCLNR/L 12	25	23	300	17	32	
S32S PCLNR/L 12	32	30	250	22	40	
S32T PCLNR/L 12	32	30	300	22	40	
S40V PCLNR/L 12	40	37	400	27	50	
S50W PCLNR/L 12	50	47	450	35	63	
S40T PCLNR/L 12	40	37	300	27	50	
S50U PCLNR/L 12	50	47	350	35	63	

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

Insert page: 11

## S-PDUNR/L

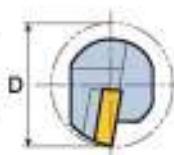
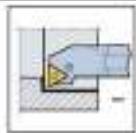
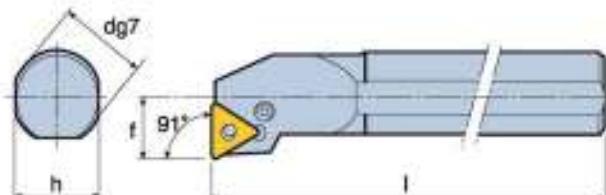


Designation	Dimension (mm)					Insert
	d	h	l	f	D	
S32T PDUNR/L 15	32	30	300	22	40	
S40V PDUNR/L 15	40	37	400	27	50	
S50W PDUNR/L 15	50	47	450	35	63	

Holder/ Related Insert	Component					
	Lever	Screw	Shim	Shim Pin	Wrench	
S32T..15	DLC 4A	DLC 4S				
S40V..15						
S50W..15		DLCS 4	DLS-D 42	DSP 4	DHLW-3	

Insert page: 12

## S-PTFNR/L

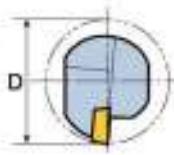
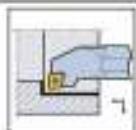
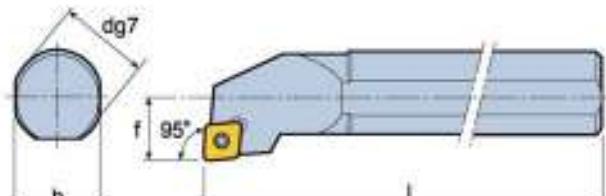


Designation	Dimension (mm)					Insert
	d	h	I	f	D	
S25T PTFNR/L 16	25	23	300	17	32	
S32T PTFNR/L 16	32	30	300	22	40	TN 1604

Holder/ Related Insert	Component					
	Lever	Screw	Shim	Shim Pin	Snap Ring	Wrench
S25T...16	DLC 3BH	DLCS 3B	-	-	DLSR 36	DHLW-2
S32T...16	DLC 3	DLCS 3	DLS-T 31.6	DSP 3A	-	DHLW-2.5

Insert page: 14

## S-SCLCR/L

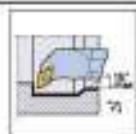
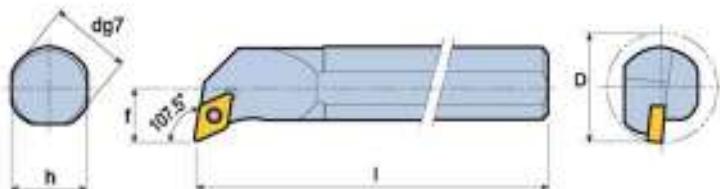


Designation	Dimension (mm)					Insert
	d	h	I	f	D	
S08K SCLCR/L 06	8	7	125	6	11	
S10K SCLCR/L 06	10	9	125	7	13	CC 0602
S12M SCLCR/L 06	12	11	150	9	16	
S12M SCLCR/L 09	12	11	150	9	16	
S16M SCLCR/L 09	16	15	150	11	20	
S16R SCLCR/L 09	16	15	200	11	20	
S20R SCLCR/L 09	20	18	200	13	25	
S20S SCLCR/L 09	20	18	250	13	25	CC 09T3
S25T SCLCR/L 09	25	23	300	17	32	

Holder/ Related Insert	Component	
	Screw	Wrench
S08K,S10K..06	DS 25050I	
S12M..06	DS 25065I	DTFW-7
..09	DS 35080I	DTFW-15

Insert pages: 18, 20

## S-SDQCR/L

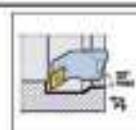
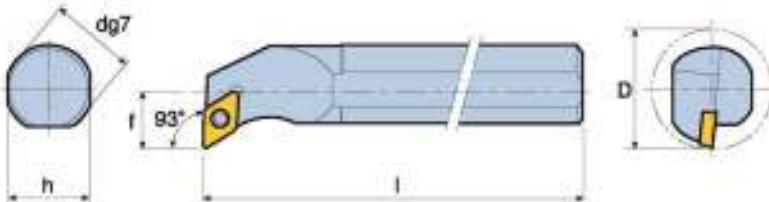


Designation	Dimension (mm)					Insert
	d	h	l	f	D	
S10K SDQCR/L 07	10	9	125	7	13	
S10M SDQCR/L 07	10	9	150	7	13	
S12M SDQCR/L 07	12	11	150	9	16	
S16R SDQCR/L 07	16	15	200	11	20	55°
S20S SDQCR/L 11	20	18	250	13	25	
S25T SDQCR/L 11	25	23	300	17	32	DC 0702
						DC 11T3

Holder/ Related Insert	Component	
	Screw	Wrench
S10K,S10M...07	DS 25050I	
S12M,S16R...07	DS 25065I	DTFW-7
...11	DS 35080I	DTFW-15

Insert pages: 18, 20

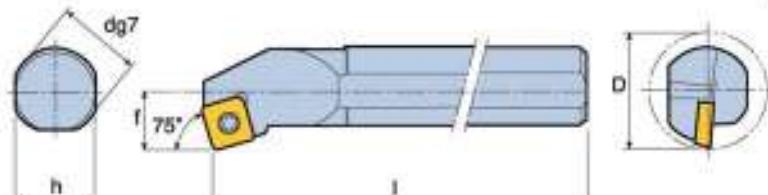
## S-SDUCR/L



Designation	Dimension (mm)					Insert
	d	h	l	f	D	
S10K SDUCR/L 07	10	9	125	7	13	
S12M SDUCR/L 07	12	11	150	9	16	
S16M SDUCR/L 07	16	15	150	11	20	
S16R SDUCR/L 07	16	15	200	11	20	55°
S16R SDUCR/L 11	16	15	200	11	20	
S20S SDUCR/L 11	20	18	250	13	25	
S25T SDUCR/L 11	25	23	300	17	32	DC 0702
S32U SDUCR/L 11	32	30	300	22	40	DC 11T3

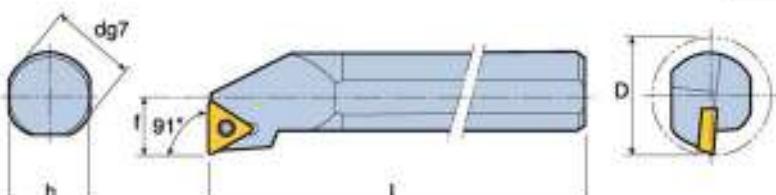
Holder/ Related Insert	Component	
	Screw	Wrench
S10K...07	DS 25050I	
S12M...07	DS 25065I	DTFW-7
...11	DS 35080I	DTFW-15

Insert pages: 18, 20

**S-SSKCR/L**

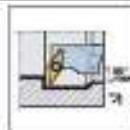
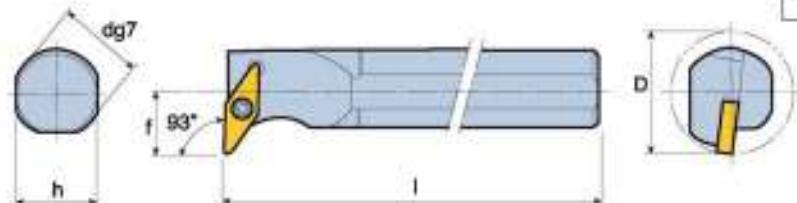
Designation	Dimension (mm)					Insert
	d	h	l	f	D	
S16R SSKCR/L 09	16	15	200	11	20	SC 09T3
S20S SSKCR/L 09	20	18	250	13	25	
Holder/ Related Insert	Component					
	Screw	Wrench				
...09	DS 35080I	DTFW-15				

Insert pages: 19, 20

**S-STFCR/L**

Designation	Dimension (mm)					Insert
	d	h	l	f	D	
S08K STFCR/L 09	8	7	125	6	11	
S10K STFCR/L 09	10	9	125	7	13	TC 0902
S12M STFCR/L 09	12	11	150	9	16	
S12M STFCR/L 11	12	11	150	9	16	
S16R STFCR/L 11	16	15	200	11	20	
S20S STFCR/L 11	20	18	250	13	25	TC 1102
S20S STFCR/L 16	20	18	250	13	25	
S25T STFCR/L 16	25	23	300	17	32	TC 16T3
Holder/ Related Insert	Component					
	Screw	Shim	Shim Screw	Wrench		
S08K..09	DS 22045I-TS					
S10K..09	DS 22050I	-	-			DTFW-7
...11	DS 25055I	-	-			
S20S..16	DS 35080I	DSS-T 32	-			DTFW-15
S25T..16	DS 35124I		DSC 50090S			

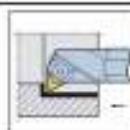
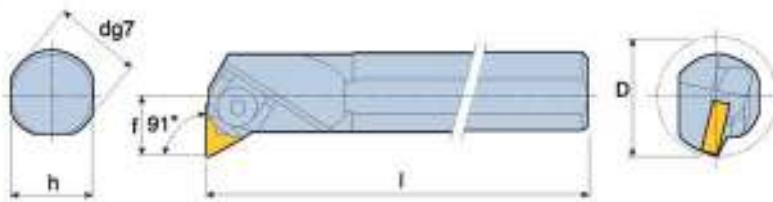
Insert pages: 19, 21

**S-SVUBR/L**

Designation	Dimension (mm)					Insert
	d	h	l	f	D	
S32T SVUBRL 16	32	30	300	22	40	VB 1604
S40V SVUBRL 16	40	37	400	27	50	

Holder/ Related Insert	Component			
	Screw	Shim	Shim Screw	Wrench
...11	DS 35124I	DSS-V 32	DSC 50090S	DTFW-15

Insert page: 16

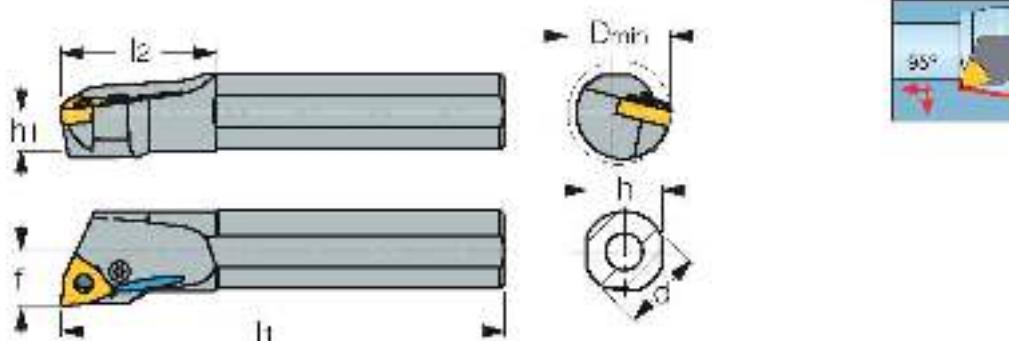
**S-WTFNR/L**

Designation	Dimension (mm)					Insert
	d	h	l	f	D	
S25T WTFNRL 16	25	23	300	17	32	TN 1604
S32U WTFNRL 16	32	30	350	22	40	

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

Insert page: 14

## A/S-PWLNR/L



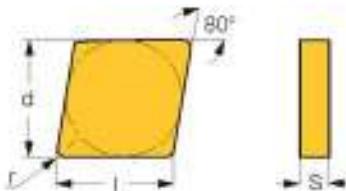
Designation	Dimensions (mm)									
	d	l	b	h	h1	f	D_min	G <sub>1</sub>	G <sub>2</sub>	Coolant
S25S PWLNP/L-08	25.00	250.00	47.0	23.0	11.5	17.0	32.00	-5	-12.5	N
S32T PWLNP/L-08	32.00	300.00	50.0	26.0	14.5	22.0	39.00	-8	-12	N
S40U PWLNP/L-08	40.00	350.00	59.0	36.0	18.0	27.0	49.00	-8	10	N

Holder-Related Insert	Component					
	Seat	Spring Pin	Punch	Lever	Screw	Key
.08	DTWN 423	DSP 4	DPN 3.4	DLR 4	DS 117-2010	DHW 3.0

Insert page: 17

**CNGN-Ceramic**

80° Rhombic Double-Sided Ceramic Inserts with a T-Land for Machining Cast Iron, Hardened Steel and Nickel Based Alloys

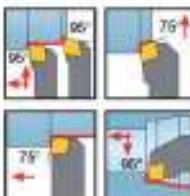
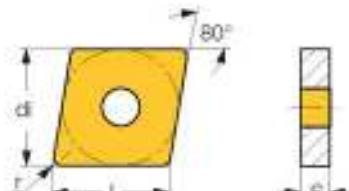


Designation	Dimensions				Tough → Hard						Recommended Machining Data		
	l	di	s	r	DW7	DC9	DC8	DC80	DC23	DC22	DC420	a <sub>o</sub> (mm)	f (mm/rev)
<b>CNGN 120404T</b>	12.90	12.70	4.76	0.40	●				●			1.00-3.00	0.10-0.43
<b>CNGN 120408E</b>	12.90	12.70	4.76	0.80		●						1.00-3.00	0.10-0.50
<b>CNGN 120408T</b>	12.90	12.70	4.76	0.80	●		●	●	●	●	●	1.00-3.00	0.10-0.50
<b>CNGN 120408T0225-WG<sup>(1)</sup></b>	12.90	12.70	4.76	0.80	●							1.00-3.00	0.10-0.50
<b>CNGN 120412E</b>	12.90	12.70	4.76	1.20		●						1.00-5.00	0.10-0.50
<b>CNGN 120412T</b>	12.90	12.70	4.76	1.20	●		●	●	●			1.00-4.00	0.10-0.50
<b>CNGN 120416T</b>	12.90	12.70	4.76	1.60	●		●	●				1.00-5.00	0.10-0.50
<b>CNGN 120708E</b>	12.90	12.70	7.94	0.80		●						1.00-4.00	0.10-0.50
<b>CNGN 120708T</b>	12.90	12.70	7.94	0.80	●					●		1.00-4.00	0.10-0.50
<b>CNGN 120712E</b>	12.90	12.70	7.94	1.20		●						1.00-5.00	0.10-0.50
<b>CNGN 120712T</b>	12.90	12.70	7.94	1.20	●		●	●				1.00-4.00	0.10-0.50
<b>CNGN 120716T</b>	12.90	12.70	7.94	1.60	●		●	●				1.00-5.00	0.10-0.50
<b>CNGN 160612T</b>	16.10	15.88	6.35	1.20			●					1.00-5.00	0.10-0.50

<sup>(1)</sup> Wiper edge configuration for finishing operations at high feeds.

**CNGA-Ceramic**

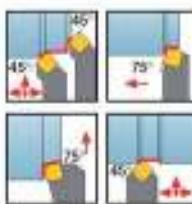
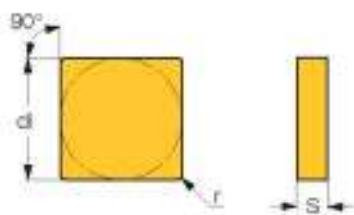
80° Rhombic Double-Sided Ceramic Inserts with a T-Land for Machining Cast Iron, Hardened Steel and Nickel Based Alloys



Designation	Dimensions				Tough → Hard						Recommended Machining Data			
	l	di	s	t	DC9	DC8	DC80	DC6	DC23	DC22	DC420	DC11	a <sub>o</sub> (mm)	f (mm/rev)
<b>CNGA 120404T</b>	12.90	12.70	4.76	0.40				●	●	●			0.07-0.40	0.05-0.20
<b>CNGA 120408E</b>	12.90	12.70	4.76	0.80	●								0.07-0.40	0.05-0.20
<b>CNGA 120408T</b>	12.90	12.70	4.76	0.80		●	●	●	●	●	●	●	0.07-0.40	0.05-0.20
<b>CNGA 120412T</b>	12.90	12.70	4.76	1.20		●		●	●	●	●		0.07-0.50	0.05-0.20
<b>CNGA 120416T</b>	12.90	12.70	4.76	1.60	●	●		●					0.07-0.50	0.05-0.20

## SNGN-Ceramic

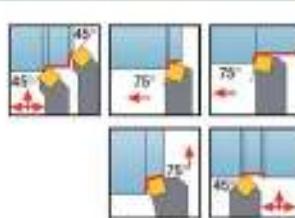
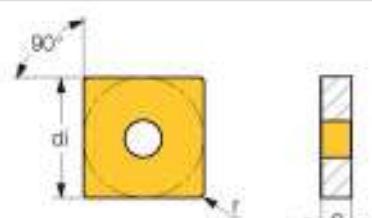
Square Double-Sided Ceramic Inserts with Flat Rake for Cast Iron, Hardened Steel and Super Alloys



Designation	Dimensions			Tough - - - Hard								Recommended Machining Data		
	di	S	r	DW7	DC9	DC8	DC80	DC6	DC23	DC22	DC420	DC11	a <sub>t</sub> (mm)	f (mm/rev)
<b>SNGN 090308T</b>	9.52	4.76	0.80	●									0.10-3.00	0.10-0.50
<b>SNGN 090412T</b>	9.52	4.76	1.20			●							0.10-3.00	0.10-0.50
<b>SNGN 120404T</b>	12.70	4.76	0.40							●			0.10-3.50	0.10-0.50
<b>SNGN 120408T</b>	12.70	4.76	0.80	●		●	●		●	●	●		0.10-3.50	0.10-0.50
<b>SNGN 120412T</b>	12.70	4.76	1.20	●		●	●	●	●	●	●	●	0.10-5.00	0.10-0.50
<b>SNGN 120416E</b>	12.70	4.76	1.60		●								0.10-5.00	0.10-0.50
<b>SNGN 120416T</b>	12.70	4.76	1.60	●		●	●			●	●		0.10-5.00	0.10-0.50
<b>SNGN 120420T</b>	12.70	4.76	2.00			●							0.10-5.00	0.10-0.50
<b>SNGN 120708T</b>	12.70	4.76	0.80	●					●	●	●		0.10-5.00	0.10-0.50
<b>SNGN 120712T</b>	12.70	7.94	1.20	●		●	●		●			●	0.10-5.00	0.10-0.50
<b>SNGN 120716T</b>	12.70	7.94	1.60	●		●	●		●	●		●	0.10-5.00	0.10-0.50
<b>SNGN 150712T</b>	15.87	6.35	1.20	●									0.10-5.00	0.10-0.50
<b>SNGN 150716T</b>	15.87	6.35	1.60	●		●							0.10-5.00	0.10-0.50

## SNGA-Ceramic

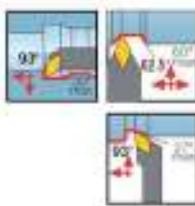
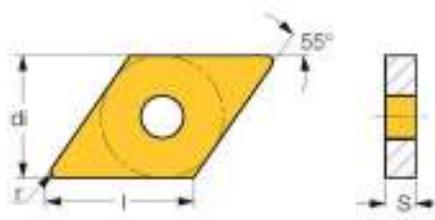
Square Double-Sided Ceramic Inserts with Flat Rake for Cast Iron and Hardened Steel



Designation	Dimensions			Tough - - - Hard				Recommended Machining Data	
	di	S	r	DCB	DC23	DC22	DC420	a <sub>t</sub> (mm)	f (mm/rev)
<b>SNGA 120404T</b>	12.70	4.76	0.40			●		0.10-3.00	0.05-0.30
<b>SNGA 120408T</b>	12.70	4.76	0.80	●	●	●	●	0.10-3.50	0.05-0.30
<b>SNGA 120412T</b>	12.70	4.76	1.20	●	●			0.10-4.00	0.05-0.30
<b>SNGA 120416T</b>	12.70	4.76	1.60	●				0.10-4.50	0.05-0.30

**DNGA-Ceramic**

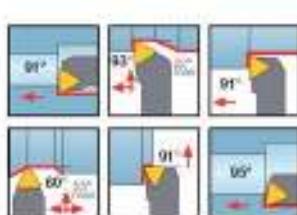
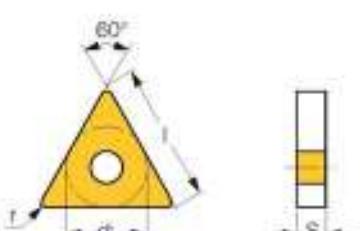
55° Rhombic Double-Sided Ceramic Inserts for Machining Cast Iron and Hardened Steel



Designation	Dimensions				Tough  Hard			Recommended Machining Data		
	<i>l</i>	<i>di</i>	<i>S</i>	<i>r</i>	DC8	DC23	DC22	DC420	<i>a<sub>c</sub></i> (mm)	<i>f</i> (mm/rev)
<b>DNGA 150404T</b>	15.50	12.70	4.76	0.40		●			0.10-3.00	0.07-0.50
<b>DNGA 150408T</b>	15.50	12.70	4.76	0.80	●	●	●	●	0.10-3.50	0.07-0.50
<b>DNGA 150412T</b>	15.50	12.70	4.76	1.20		●			0.10-4.00	0.07-0.50
<b>DNGA 150604T</b>	15.50	12.70	6.35	0.40		●			0.10-3.50	0.07-0.50
<b>DNGA 150608T</b>	15.50	12.70	6.35	0.80		●		●	0.10-4.00	0.07-0.50
<b>DNGA 150612T</b>	15.50	12.70	6.35	1.20			●	●	0.10-5.00	0.07-0.50

**TNGA-Ceramic**

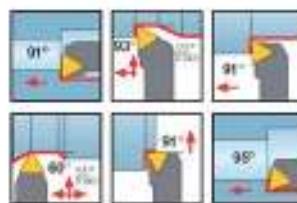
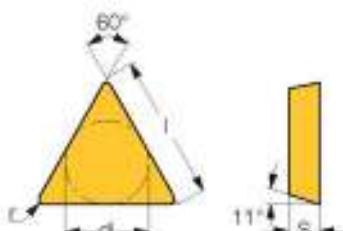
Triangular Double-Sided Ceramic Inserts for Machining Super Alloys and Hardened Steel



Designation	Dimensions				Tough  Hard			Recommended Machining Data		
	<i>l</i>	<i>di</i>	<i>S</i>	<i>r</i>	DC9	DC23	DC22	DC420	<i>a<sub>c</sub></i> (mm)	<i>f</i> (mm/rev)
<b>TNGA 160404T</b>	16.50	9.52	4.76	0.40		●	●	●	0.10-3.00	0.07-0.50
<b>TNGA 160408E</b>	16.50	9.52	4.76	0.80	●				0.10-3.50	0.07-0.50
<b>TNGA 160408T</b>	16.50	9.52	4.76	0.80		●	●	●	0.10-3.50	0.07-0.50
<b>TNGA 160412T</b>	16.50	9.52	4.76	1.20		●			0.10-4.00	0.07-0.50

**TPGN-Ceramic**

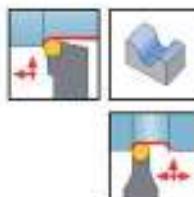
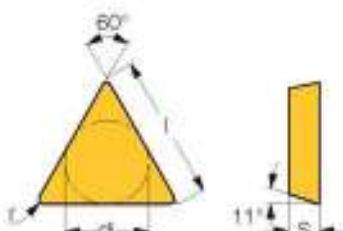
Triangular 11° Positive Flank Ceramic Inserts for Machining Hardened Steel



Designation	Dimensions				Tough - - Hard			Recommended Machining Data	
	l	di	s	r	DC23	DC22	DC420	a <sub>c</sub> (mm)	f (mm/rev)
<b>TPGN 090204T</b>	9.60	5.56	2.38	0.40		●		0.10-1.50	0.07-0.30
<b>TPGN 110304T</b>	11.00	6.35	3.17	0.40	●	●	●	0.10-1.50	0.07-0.30
<b>TPGN 110308T</b>	11.00	6.35	3.17	0.80	●	●	●	0.10-3.00	0.07-0.40
<b>TPGN 160304T</b>	16.50	9.52	3.17	0.40	●	●	●	0.10-4.00	0.07-0.50
<b>TPGN 160308T</b>	16.50	9.52	3.17	0.80	●	●	●	0.10-4.00	0.07-0.50
<b>TPGN 220408T</b>	22.00	12.70	4.76	0.80	●			0.10-5.00	0.07-0.50

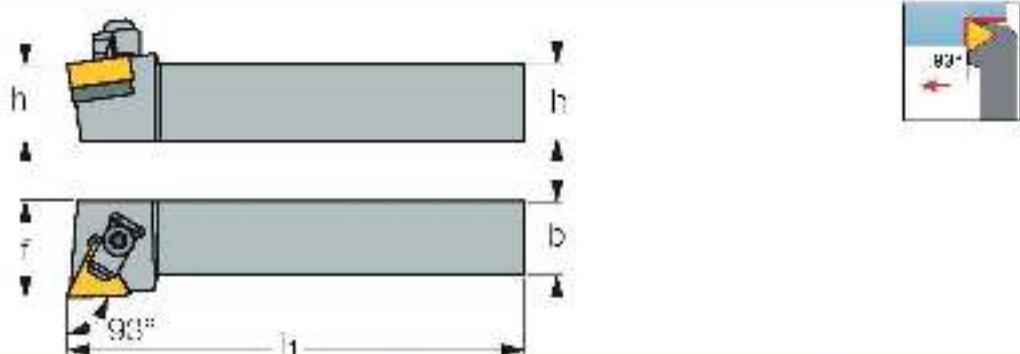
**RNGN-Ceramic**

Round Double-Sided Ceramic Inserts for Machining Cast Iron, Nickel Based Alloys and Hardened Steel



Designation	Dimensions		Tough - - Hard							Recommended Machining Data		
	di	s	DC7	DC9	DC8	DC80	DC23	DC22	DC420	DC11	a <sub>c</sub> (mm)	f (mm/rev)
<b>RNGN 090300T</b>	9.53	3.18	●								0.10-2.00	0.07-0.20
<b>RNGN 090400T</b>	9.53	4.76	●								0.10-2.00	0.07-0.20
<b>RNGN 120400E</b>	12.70	4.76	●	●							0.10-3.50	0.07-0.50
<b>RNGN 120400T</b>	12.70	4.76	●		●	●		●	●		0.10-3.50	0.07-0.50
<b>RNGN 120700 S6 01</b>	12.70	7.94	●								1.00-2.00	-
<b>RNGN 120700E</b>	12.70	7.94	●								0.10-2.00	0.07-0.20
<b>RNGN 120700E01 01</b>	12.70	7.94	●								1.00-2.00	-
<b>RNGN 120700T</b>	12.70	7.94	●	●			●	●	●		0.10-4.50	0.07-0.50
<b>RNGN 120700T01020</b>	12.70	7.94		●							0.10-4.50	0.07-0.50
<b>RNGN 120700T0220</b>	12.70	7.94	●								0.10-2.00	0.07-0.20
<b>RNGN 150700T</b>	15.76	7.94	●								0.10-3.00	0.07-0.20
<b>RNGN 190700T</b>	19.06	7.94	●								0.10-3.00	0.07-0.20
<b>RNGN 250700T</b>	25.00	7.94							●		0.10-5.00	0.07-0.50

## CTJNR/L



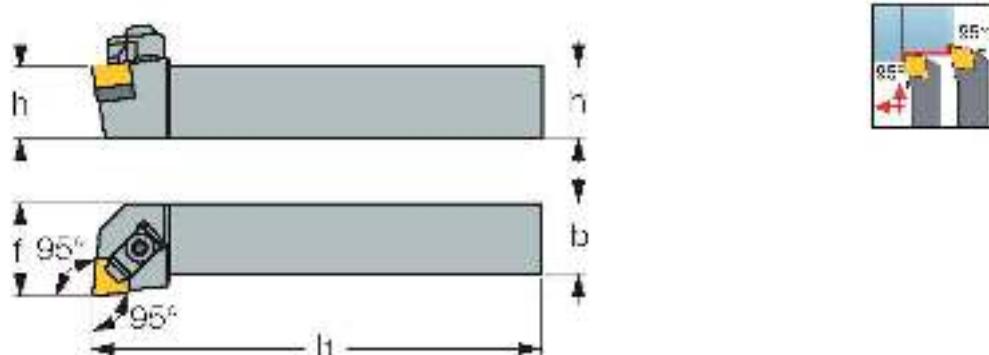
Designation	Dimension (mm)						Inserts
	h	b	l <sub>1</sub>	t	G <sub>s</sub>	G	
CTJNR/L 2020K-16CEA	20.0	20.0	125.00	25.0	-2	-1	
CTJNR/L 2525M-16CEA	25.0	25.0	150.00	32.0	-2	-4	TNGN 1604

### Spare Parts



Designation	Seal	Key	Clamp	Clamp Screw	Seat Screw
CTJNR/L	DSS-T3	DHLW4.0	DBCL 6 CLAMP	DS M5X1X25/SD07380	SE M5X0.8X10

## CCLNR/L External Toolholders for Ceramic Inserts



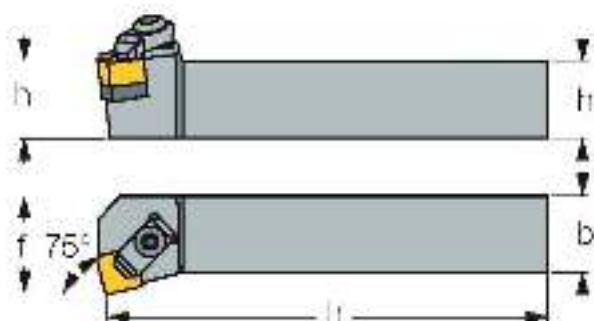
Designation	Dimension (mm)						Inserts
	h	b	l <sub>1</sub>	t	G <sub>s</sub>	G	
CCLNR/L 2020K-12CE	20.0	20.0	125.00	25.0	-2	-6	CNGN 1207
CCLNR 2020K-12CEA	20.0	20.0	125.00	25.0	-2	-6	CNGN 1204
CCLNR/L 2525M-12CE	25.0	25.0	150.00	32.0	-2	-6	CNGN 1207
CCLNR/L 2525M-12CEA	25.0	25.0	150.00	32.0	-2	-6	CNGN 1204

### Spare Parts



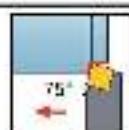
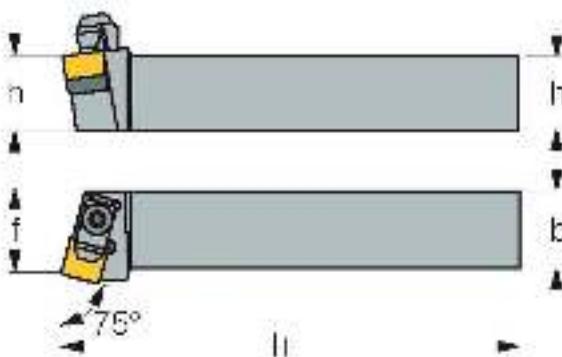
Designation	Seal	Key	Clamp	Clamp Screw	Seat Screw
CCLNR/L	DSS-S4B	DHLW4.0	DBCL 6 CLAMP	DS M5X1X25/SD07380	SE M5X0.8X10

## CSKNR/L



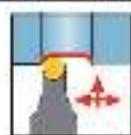
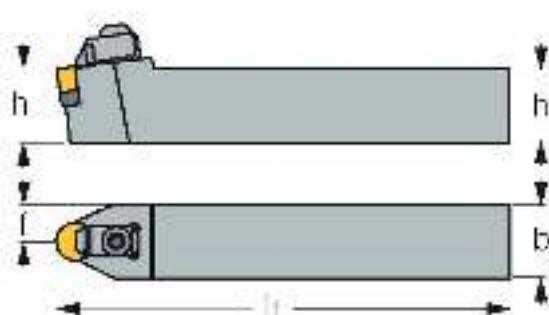
Designation	Dimension (mm)						Inserts
	$h$	$b$	$l_1$	$t$	$G_4$	$G_5$	
CSKNR/L 2525M-12CE	25.0	25.0	150.00	32.0	-4	-4	SNGN 1207
CSKNR 2525M-12CEA	25.0	25.0	150.00	32.0	-4	-4	SNGN 1204
CSKNR 3225P-12CE	32.0	25.0	170.00	32.0	-4	-4	SNGN 1207

## CSRNR/L



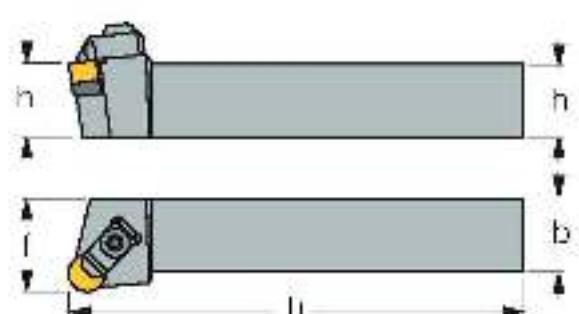
Designation	Dimension (mm)						Inserts
	$h$	$b$	$l_1$	$t$	$G_4$	$G_5$	
CSRNR 2020K-12CE	20.0	20.0	125.00	22.0	-3.2	-15	SNGN 1207
CSRNR/L 2525M-12CE	25.0	25.0	150.00	27.0	-3.2	-15	SNGN 1207
CSRNR/L 2525M-12CEA	25.0	25.0	150.00	27.0	-3.2	-15	SNGN 1204
CSRNR/L 3225P-12CE	32.0	25.0	170.00	27.0	-3.2	-15	SNGN 1207

## CRDNN

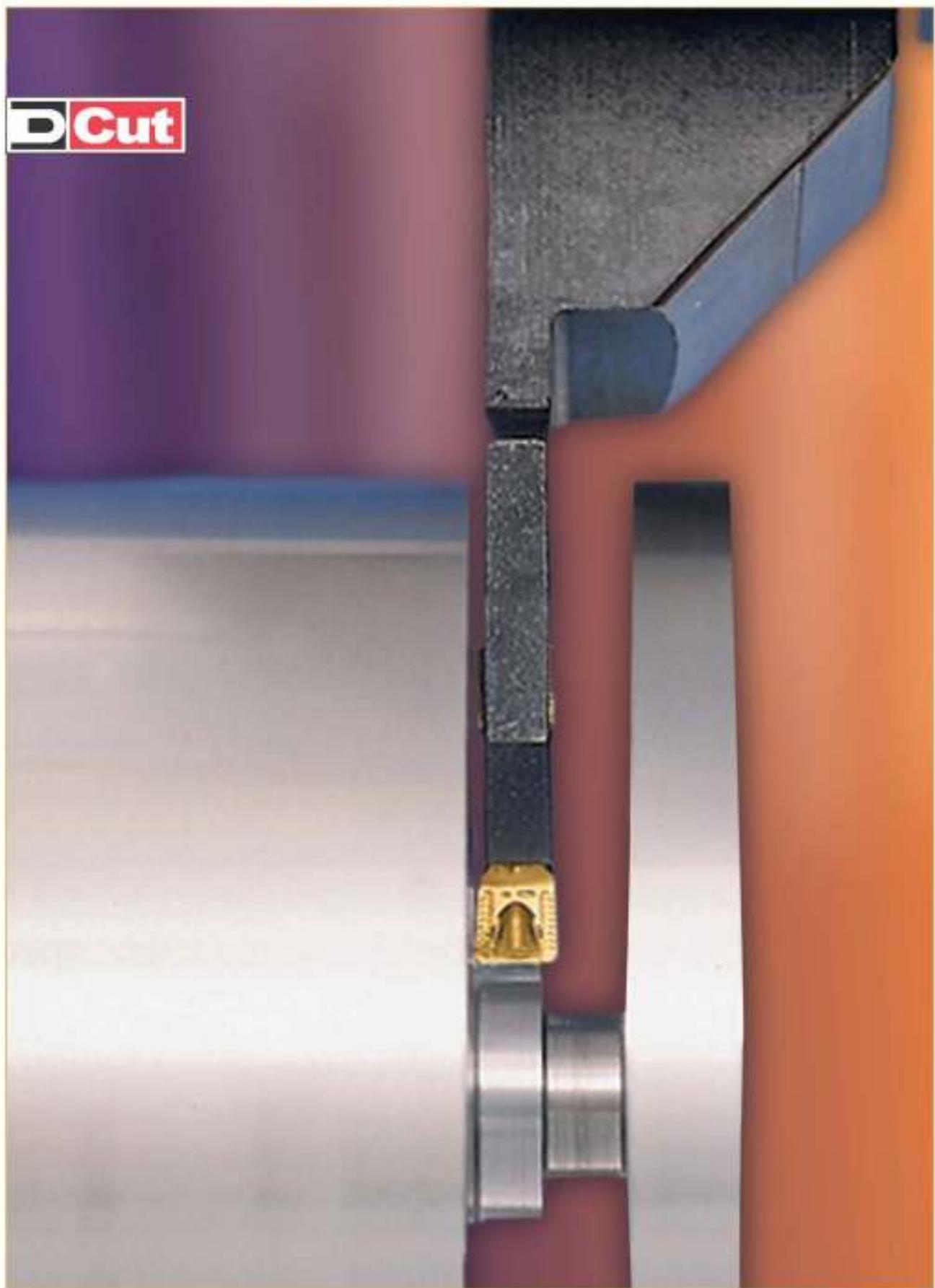


Designation	Dimensions (mm)						Inserts
	$h$	$b$	$l_1$	$t$	$'G_x'$	$'G_y'$	
CRDNN 2020K-12CE	20.0	20.0	125.00	10.0	-9.5	0	RNGN 120700
CRDNN 2020K-12CEA	20.0	20.0	125.00	10.0	-9.5	0	RNGN 120700
CRDNN 2525M-12CE	25.0	25.0	150.00	12.5	-9.5	0	RNGN 120700
CRDNN 2525M-12CEA	25.0	25.0	150.00	12.5	-9.5	0	RNGN 120700
CRDNN 3225P-12CE	32.0	25.0	170.00	12.5	-9.5	0	RNGN 120700

## CRGNR/L



Designation	Dimensions (mm)						Inserts
	$h$	$b$	$l_1$	$t$	$'G_x'$	$'G_y'$	
CRGNR/L 2020K-12CE	20.0	20.0	125.00	25.0	-3	-3	RNGN 120700
CRGNR/L 2020K-12CEA	20.0	20.0	125.00	25.0	-3	0	RNGN 120700
CRGNR/L 2525M-12CE	25.0	25.0	150.00	32.0	-3	-3	RNGN 120700
CRGNR/L 2525M-12CEA	25.0	25.0	150.00	32.0	-3	-3	RNGN 120700
CRGNR/L 3225P-12CE	32.0	25.0	170.00	32.0	-3	-3	RNGN 120700



<b>Cut System Presentation</b>	56	
<b>Cut Designation</b>	57-58	
<b>Inserts</b>	59-63	
<b>Blades</b>	- Cut-off and deep grooving.....	64
<b>Toolholders</b>	- Cut-off and grooving - Turning and grooving - Undercutting and recessing.....	65-66
<b>Boring Bars</b>	- ID turning and grooving.....	67
<b>Tool Blocks</b>	.....	68
<b>Technical Data</b>	.....	69-74

## System Presentation

### The D Cut System

The D Cut system covers a wide range of operations. The system is unique for its flexibility and economy. It offers three types of inserts and a wide versatile range of tools.

### The available operations with the D Cut system are:

- Grooving and cut-off
- Precision grooving and recessing
- Turning
- Undercutting and recessing

**D Cut** inserts are provided with three different types of chipbreakers.

Each is designed for optimum performance in a specific application field.

Select the geometry most suited for your applications.



#### C-Type

DIMC inserts are ideal for cut-off and grooving on most types of steel, alloy steel and stainless steel. It has a strong cutting edge, which makes it the first choice for hard materials and tough applications at medium-to-high feeds.



#### J-Type

DIMJ inserts are ideal for cut-off and grooving for general applications in low-to-medium feeds on carbon steel, alloy steel and austenitic stainless steel. The cutting edge has a positive rake, which makes it the first choice for soft materials, small diameters, and thin-walled parts.



#### V-Type

DIPV are made for precision grooving, recessing, turning and profiling. ( $\pm 0.02$  mm width tolerance). The DIPV are equipped with various corner radii. The V-type is a multi-directional chipformer.

## Cut-off Grooving and Profiling Inserts ISO Designation System

**1 Duracarb Insert****3 Chipbreaker Type**

- C- For general purpose cut-off and grooving.
- J- For low feed cut-off and grooving with short chips, and positive cutting edge.
- M- For precision grooving and turning/profiling with various widths, radii, and shapes.

**5 Cutting Edge**

- Void-ED Sharp (no minimum width)
- E- Honed

**DI P V 4.00 E 0.40 DC120****2 Tolerance**

M: W±0.1

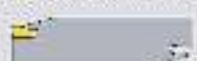
P: W±0.02

**4 Width****6 Cutting End Shape**Corner Radius or  
 $\frac{1}{2}W$  Full radius**7 Carbide Grade**PVD Coated DC 120  
DC 9205

## Toolholders, Grooving Bars and Blades ISO Designation System

**1** Duracarb Holder**3** Tool Type

1. Block/Handle Groove



2. Integra Toolholder



3. Integra Toolholder(4c/s)



4. Boring Bar D. (Bore)

**5** Application

1. External O. S.

2. Internal I.D. (Bore)

**7** Coolant Option

C. Coolant Bar

**DH**

1



2

**1**

3

**0**

4

**1**

5

**2525**

6



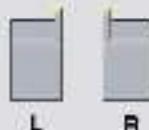
7

**4**

8

**2** Hand of Holder

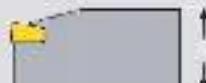
R= Right-Hand  
L= Left-Hand  
Blk= Double end Blade

**4** Insert Clamping System

0= Wedge clamping



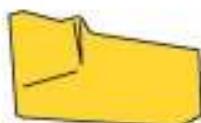
1= Screw clamping

**6** Shank Size**8** Nominal Width of Cut

## Inserts Parting and Deep Grooving

### DIMC

With C-type Chipbreakers



**DIMC**

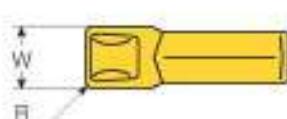
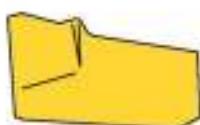
Designation	W	K (degrees)	R	Grades		
				DC120	Coated	DC9235
<b>DIMC 2</b>	2.2	0°	0.20	•		•
<b>DIMC 2 6L</b>	2.2	6°	0.20	•		•
<b>DIMC 2 6R</b>	2.2	6°	0.20	•		•
<b>DIMC 2.4</b>	2.4	0°	0.20	•		•
<b>DIMC 2.4 6L</b>	2.4	6°	0.20	•		•
<b>DIMC 2.4 6R</b>	2.4	6°	0.20	•		•
<b>DIMC 3</b>	3.1	0°	0.20	•		•
<b>DIMC 3 6L</b>	3.1	6°	0.20	•		•
<b>DIMC 3 6R</b>	3.1	6°	0.20	•		•

Width tolerance  $\pm 0.1$  mm

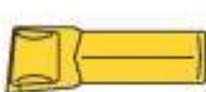
## Inserts Parting and Deep Grooving

**DIMC**

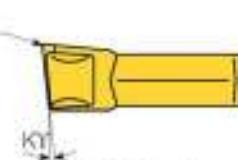
With C-type Chipbreakers



Neutral



Left-hand



Right-hand

**DIMC**

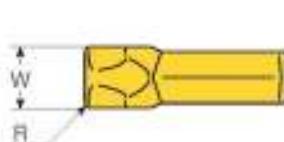
Designation	W	K (degrees)	R	Grades	
				DC120	Coated DC9235
DIMC 4	4.1	0°	0.25	•	•
DIMC 4.6L	4.1	6°	0.25	•	•
DIMC 4.6R	4.1	6°	0.25	•	•
DIMC 4.8	4.8	0°	0.28	•	•
DIMC 4.8.6L	4.8	6°	0.28	•	•
DIMC 4.8.6R	4.8	6°	0.28	•	•

Width tolerance  $\pm 0.1$  mm

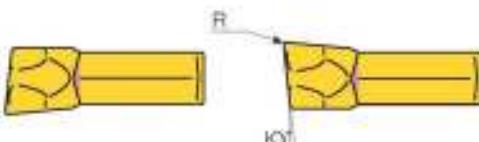
## Inserts Parting and Deep Grooving

### DIMJ

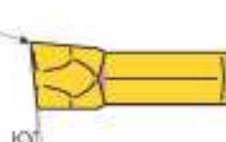
With J-type Chipbreakers



Neutral



Left-hand



Right-hand



DIMJ

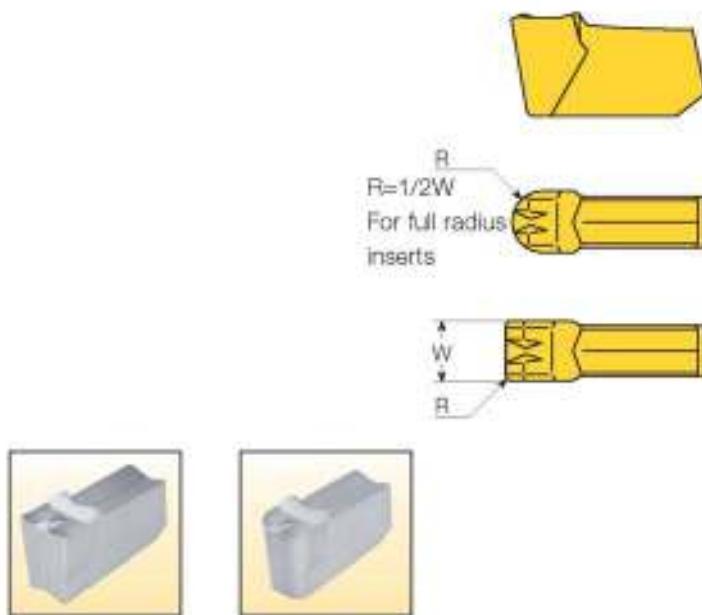
Designation	W	K (degrees)	R	Grades	
				DC120	Coated DC9235
DIMJ 2	2.2	0°	0.20	•	•
DIMJ 2 6L	2.2	6°	0.20	•	•
DIMJ 2 6R	2.2	6°	0.20	•	•
DIMJ 2.4	2.4	0°	0.20	•	•
DIMJ 2.4 6L	2.4	6°	0.20	•	•
DIMJ 2.4 6R	2.4	6°	0.20	•	•
DIMJ 3	3.1	0°	0.20	•	•
DIMJ 3 6L	3.1	6°	0.20	•	•
DIMJ 3 6R	3.1	6°	0.20	•	•
DIMJ 4	4.1	0°	0.25	•	•
DIMJ 4 6L	4.1	6°	0.25	•	•
DIMJ 4 6R	4.1	6°	0.25	•	•

Width tolerance  $\pm 0.1$  mm

## Inserts Precision Grooving and Turning (E-type)

**DIPV**

With V-type Chipbreakers

**DIPV...E**

Designation	W	R	Grades
			Coated DC9235
DIPV 3.00E 0.40	3.00	0.40	*
DIPV 4.00E 0.40	4.00	0.40	*
DIPV 5.00E 0.40	5.00	0.40	*
DIPV 3.00E 1.50	3.00	1.50	*
DIPV 4.00E 2.00	4.00	2.00	*

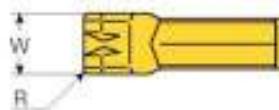
Width tolerance  $\pm 0.02$  mm

\* The E type inserts are honed.

## Inserts Precision Grooving

### DIPV

With V-type Chipbreakers



**DIPV**

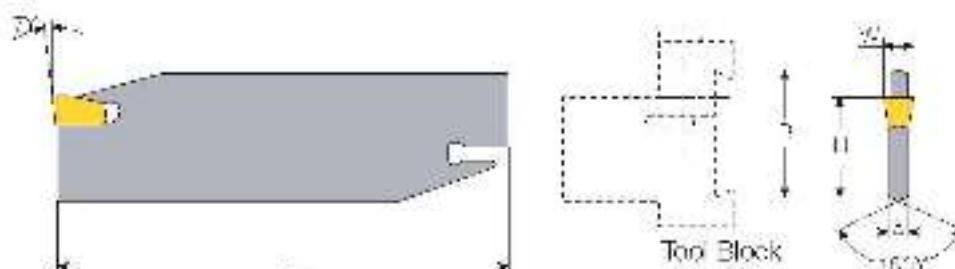
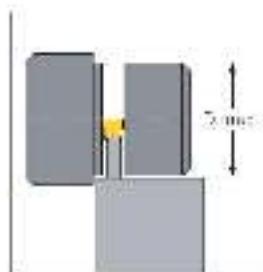
Designation	W	R	Grades	
			DC120	Coated
<b>DIPV 1.85 0.10</b>	1.85	0.10	•	•
<b>DIPV 2.00 0.20</b>	2.00	0.20	•	•
<b>DIPV 2.15 0.15</b>	2.15	0.15	•	•
<b>DIPV 2.65 0.15</b>	2.65	0.15	•	•
<b>DIPV 3.00 0.20</b>	3.00	0.20	•	•
<b>DIPV 3.18 0.20</b>	3.18	0.20	•	•
<b>DIPV 4.00 0.20</b>	4.00	0.20	•	•
<b>DIPV 4.15 0.15</b>	4.15	0.15	•	•

Width tolerance  $\pm 0.02$  mm

## Blades Cut-off and Deep Grooving

### DH 101

Use insert type: DMC, DMV, CFW



Designation	$\delta$	$\delta$ (max)	$\lambda$	$L$	$-$	Ures
DH 101 26 2		1.55-26	16*		27.4	50
DH 101 26 3	26	17.09	24	110	27.4	75
DH 101 26 4		27-47	32		27.4	80
DH 101 32 2		1.55-26	15*		34.0	50
DH 101 32 3	32	17.09	24	160	34.0	100
DH 101 32 4		33-67	32		34.0	100

Note: Blades should not be used for turning or profiling.

Blades supplied with insert extractor. Inserts must be ordered separately.

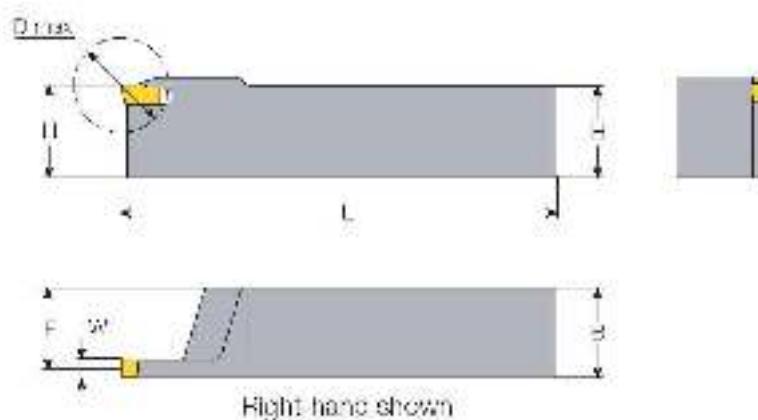
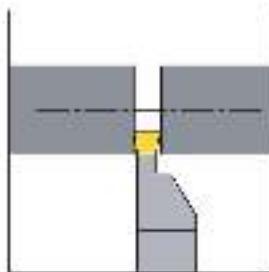
\* / - 26: 300 mm wide. Gage thickness is 16 mm

\* / - 32: 300 mm wide. Gage thickness is 24 mm

## Toolholders Cut-off and Grooving

### DHR/L 201

Use insert type: DING, DMJ, DPV



Designation	$\frac{D}{2}$	W [mm]	L <sub>MAX</sub>	$H$	L	T
DHR/L 201 1212 2	12	1.25-2.5	32	12	9	1.2
DHR/L 201 1212 3	12	2.5-3.9	32	12	10	1.6
DHR/L 201 1616 2	16	1.25-2.5	32	16	9	1.2
DHR/L 201 1616 3	16	2.5-3.9	36	16	10	1.8
DHR/L 201 2020 2	20	1.25-2.5	36	20	10	2.5
DHR/L 201 2020 3	20	2.5-3.9	92	20	20	8.8
DHR/L 201 2020 4	20	3.7-5.7	92	20	120	8.4
DHR/L 201 2525 3	25	2.5-3.9	92	25	150	23.1
DHR/L 201 2525 4	25	3.7-5.7	92	25	150	23.4

Toolholder supplied with insert extractor. Inserts must be ordered separately.

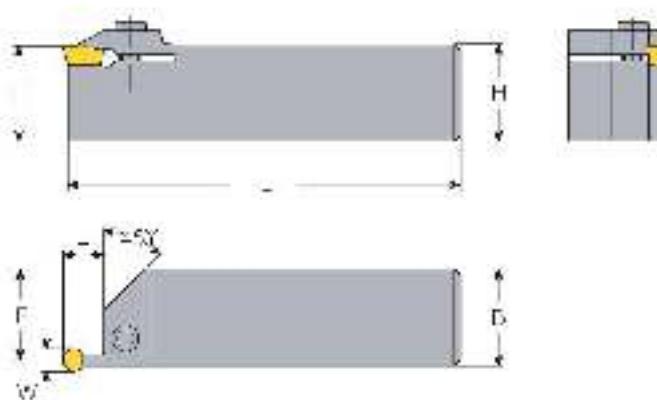
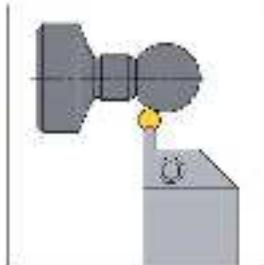
Note: These toolholders should not be used for turning operations.

Select DHM/L 211 toolholders for turning.

## Toolholders Turning and Grooving

### DHR/L 211

Use insert type: DMC, DMU, DCW



Right-hand shown

Designation	$\phi$ Tang.	F	H	z	-	T
DHR/L 211 1616 3	28.02	4.7	12	16	100	5.5
DHR/L 211 1616 4	36.02	4.2	12	16	100	5.5
DHR/L 211 2020 3	28.02	6.7	25	20	125	5.5
DHR/L 211 2020 4	36.02	8.2	25	20	125	5.5
DHR/L 211 2525 3	28.02	23.6	25	25	100	5.5
DHR/L 211 2525 4	36.02	23.2	25	25	100	10.0

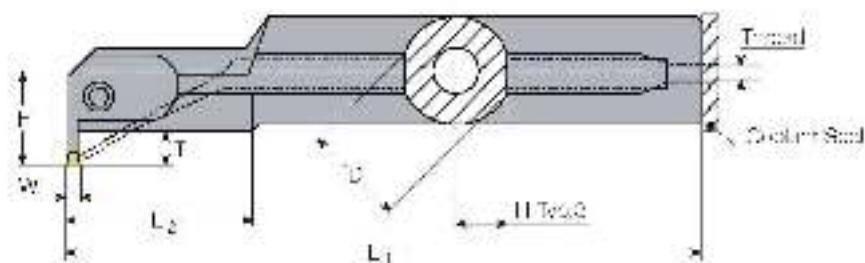
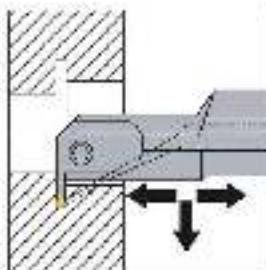
DMC and DMU inserts should be used for plugging applications only

## Boring Bars ID Turning and Grooving With Coolant

### DHR/L 619

Through shank coolant

Use insert type: DING, DMJ, DIPV



Right hand shown

Designation	J	W	Dimensions								
			Base	Max	Min	W	Barrel	-	L	L <sub>1</sub>	L <sub>2</sub>
DHR/L 619 25C 2	25	45	9.9	10.5	9.5	35.25	20	200	51	115	
DHR/L 619 25C 3	25	52	8	9.5	8.5	23.05	20.8	200	51	115	
DHR/L 619 25C 4	25	52	5	6.5	5.5	23.05	20.8	200	51	115	

DING and DIPV inserts should be used for plunging applications only.

Unrecommended cutting edge height above center for optimum results.

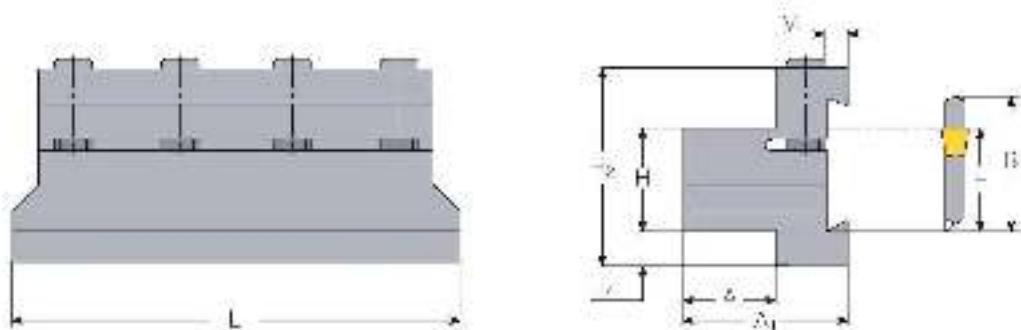
Seal thread: Metric 13x1/8

When using the seal, bar can be shortened by 10mm max.

Boring bar supplied complete with lock screw, T20 torx wrench, and seal, without insert.

## Tool Blocks KGTBN for Operations for D Cut Blades

### KGTBN



Designation	H	B	A <sub>1</sub>	A <sub>2</sub>	F <sub>2</sub>	-	M	L	Code	Base
KGTBN 20-5	20	29	19	33	28	8	5.0	5.7	S-M6x90	29
KGTBN 20-6	20	32	19	36	4E	10	5.6	10.0	S-M6x90	32
KGTBN 25-6	25	32	20	36	4E	8	5.7	13	S-M8x90	32

5 mm hex key supplied with block

## Grades Chart

**PVD Coated****DC 120**

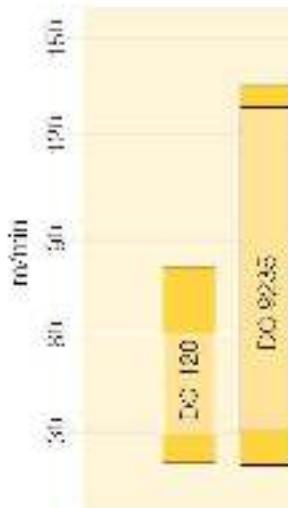
Very successful on stainless steel, cast iron, and nonferrous materials, good also for interrupted cuts.  
Has low wear resistance.

**PVD Coated****DC 9235**

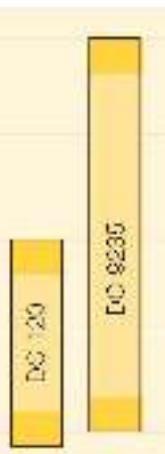
A TiN/TiCN PVD coated tough grade, used for wide range of workpieces, at low to medium cutting speeds.

## Selection of Carbide Grades for Different Materials for Turning and Profiling

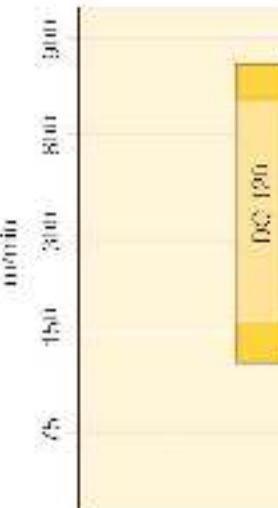
**Alloy & Hardened Steel**  
(180-300 BHN)



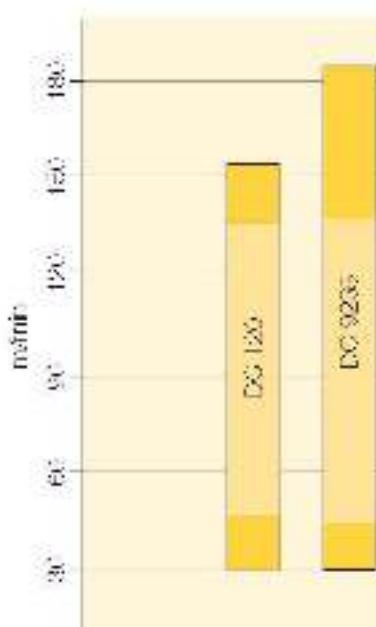
**Low Carbon, Medium Alky Steel**  
(120-220 BHN)



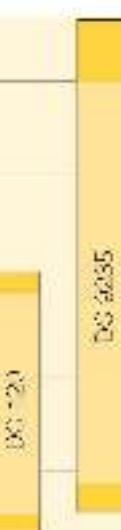
**Aluminum Alloys**



**Gray, Malleable Nodular Iron**  
(140-260 BHN)



**300 & 400 Stainless Steel**  
(130-225 BHN)



**High Temperature Alloys**



Normal Operation Range



## Machining Conditions Turning with DIPV-Type Inserts (E-type)

### Iron Base Alloys

Material	Commercial Designation	Condition	Cutting Speeds (in/min.)		
			Feed (in/min.)	Feed (in/min.)	Feed (in/min.)
V25-5-200	St. F.	SoI	50	35	25
Inconel 601, 601	SSA 2-3110	SoI	55	40	30
Austenitic stainless steel 302, 303, 304, 310 316, 317, 347	Annealed 1341-75-3N	SoI	50	35	25
Manganese-Stainless Steel 103, 105, 105-20, 433, 433	Annealed 1341-75-3N Q & T 20-30Rc	SoI	50	35	25
4140	SoI 20-30Rc	—	—	—	—
4340	SSA 20-30Rc	—	—	—	—
Machin. Steel 120, 150, 220, 250, 300, 300 Grade	Annealed 20-30Rc	—	—	—	—
120, 150 Grade	Machined 20-30Rc	—	—	—	—
200, 250, 300 300 Grade	Machined 20-30Rc	50	35	25	—

### High-Temp. Alloys

Material	Condition	Feed (in/min.)	Feed (in/min.)	Feed (in/min.)
02202	Annealed 1340 F.	50	35	25
04102	Annealed 20-30 F.	50	35	25
04102-291 041-142 041-142-13	SSA 20-30 R.	50	35	25
045 056	Annealed 1341-75-3N	100	75	50
71405	Annealed 20-30 R.	50	35	25

### Titanium Base Alloys

Material	Condition	Feed (in/min.)	Feed (in/min.)	Feed (in/min.)
02202	Annealed 1340 F.	50	35	25
04102	Annealed 20-30 F.	50	35	25
04102-291 041-142 041-142-13	SSA 20-30 R.	50	35	25
045 056	Annealed 1341-75-3N	100	75	50
71405	Annealed 20-30 R.	50	35	25

### Nickel Base Alloys

Material	Condition	Feed (in/min.)	Feed (in/min.)	Feed (in/min.)
Alnico 5 (90/10)	SoI 20-30 R.	—	25	20
Ulinet 30, 70	SSA 20-30 R.	—	25	20
Inconel 601, 602, 718	SoI 20-30 R.	—	25	20
7250, 740, 740Y	SSA 20-30 R.	—	25	20
7500, 760, C, X	Annealed 20-30 R.	—	30	25
7600, 820	Cold drawn 20-30 R.	—	25	20
H22	Stress relieved 20 R.	—	25	20

Key:  
 SSA = Solution Annealed  
 SoI = Sintered  
 Q & T = Quenched & Tempered

## General Rules for Turning & Profiling With DIPV Inserts

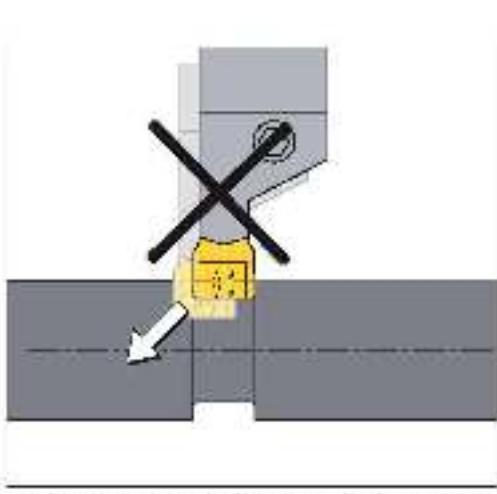
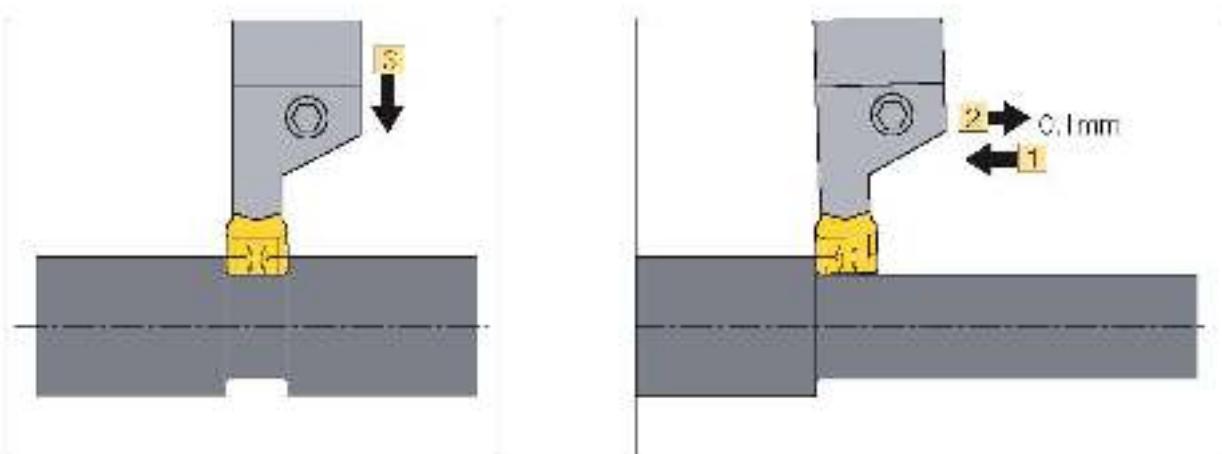
### Multi-Directional Operations/Turning & Grooving

The tools are able to operate in a sequence of turning and grooving operations. When changing direction from turning to grooving you need to give special consideration to the insert deflection.

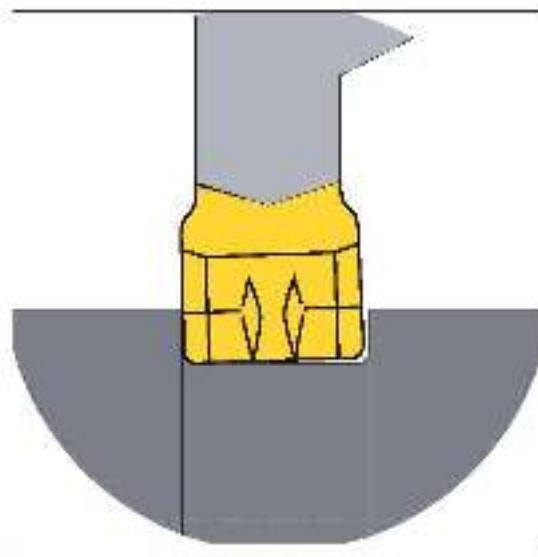
During the directional change, you must release the side deflection by following the machining sequence as listed below:

After completing the longitudinal turning (1), cut prior to plunging the groove, the side deflection must be released, (2). To do this, move the tool back approximately 0.1mm in the opposite direction. This will return the insert to the original position.

Only after the deflection has been released and the tool is perpendicular to the workpiece, can the grooving operation begin (3).



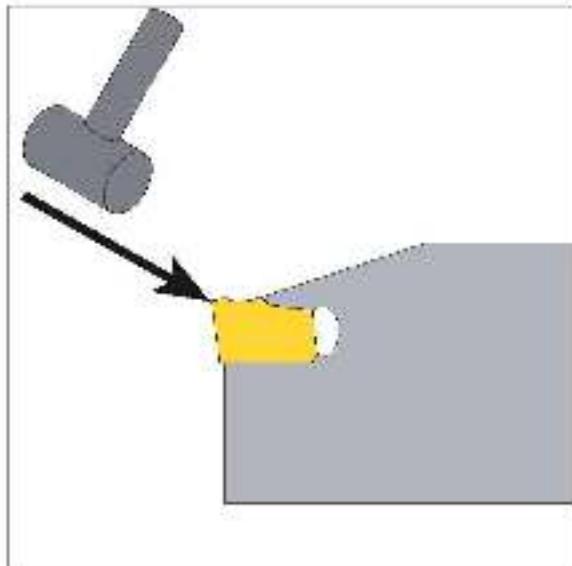
Diagonal cut is not recommended



Insert deflection

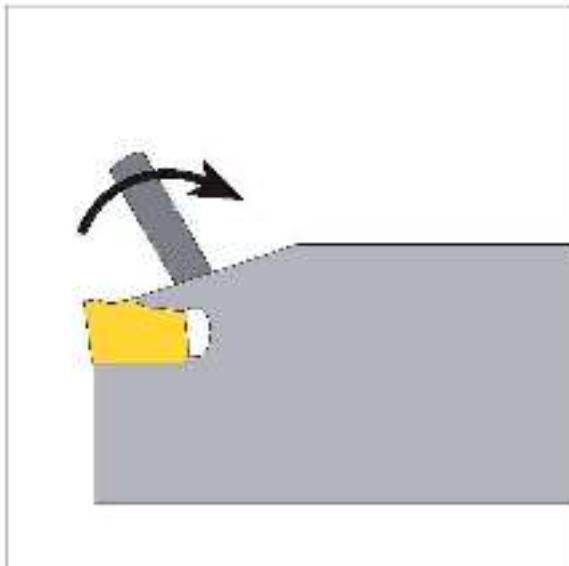
## General Recommendations

### Insert Mounting



By hand or with plastic hammer

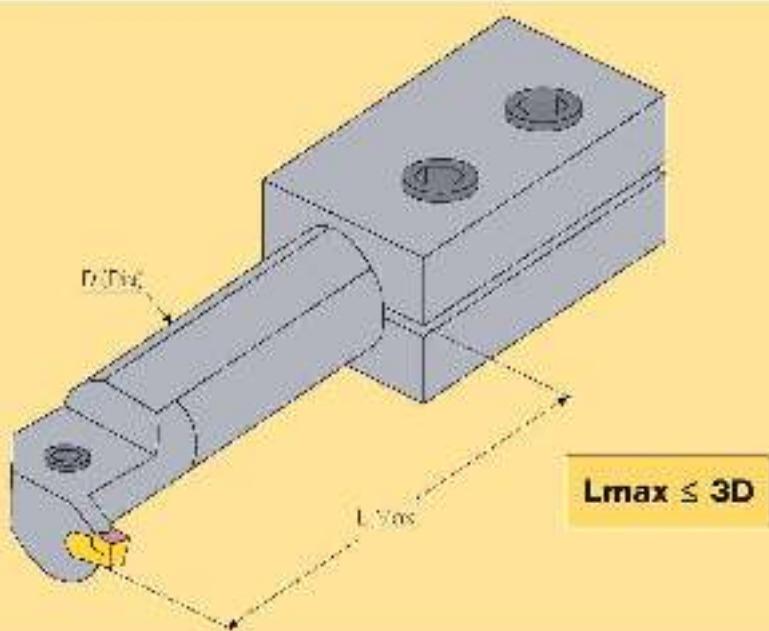
### Insert Extraction



With extractor key

### Boring and Profiling

Correct boring bar overhang



**$L_{max} \leq 3D$**



## Contents

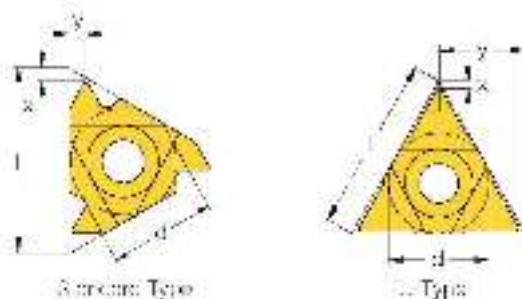
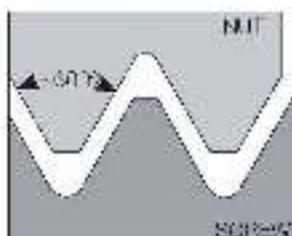
**Inserts**

Partial Profile 80°.....	76
Partial Profile 55°.....	77
ISO, Metric.....	78, 79
UN.....	80, 81
BSW.....	82, 83
NPT.....	84

**Toolholders**

External.....	85
Boring Bars.....	86

<b>Technical Data.....</b>	<b>87-91</b>
----------------------------	--------------

**Partial Profile 60°****External**

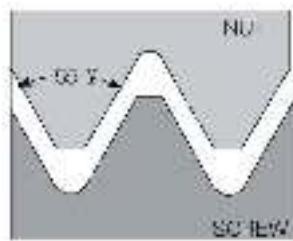
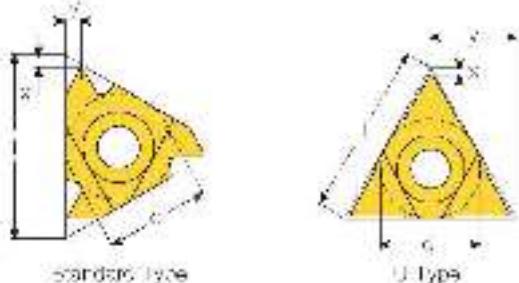
Designation	Pitch Range		Dimensions				
Right-Hand	Left-Hand	$\text{P}_{\text{mm}}$	$\text{P}_{\text{in}}$	$\text{L}$	$\text{x}$	$\text{y}$	
11 ER A 60	11 EL A 60	0.35	0.0135	18-19	1	0.8	0.9
16 ER A 60	16 EL A 60			18-19	1	0.8	0.9
16 ER G 60	16 EL G 60	0.53	0.0210	1-6	13	1.2	1.7
16 ER AG 60	16 EL AG 60			18-6		1.2	1.7
22 ER N 60	22 EL N 60	1.27	0.0500	2-6	17	2.6	3.6
22 U EIRL U 60				4.2-5.25	0.0	1.5	
27 ER Q 60	27 EL Q 60	1.98	0.0780	4-6	21	3.1	4.7
27 U EIRL U 60				9.5-10.5	1.0	18.7	

\* Grade DC9600

**Internal**

Designation	Pitch Range		Dimensions				
Right-Hand	Left-Hand	$\text{P}_{\text{mm}}$	$\text{P}_{\text{in}}$	$\text{L}$	$\text{x}$	$\text{y}$	
11 IR A 60	11 IL A 60	0.35	0.0135	40-45	11	0.5	0.6
16 IR A 60	16 IL A 60			40-45	10	0.5	0.6
16 IR G 60	16 IL G 60	0.53	0.0210	12-6	18	1.2	1.7
16 IR AG 60	16 IL AG 60			40-6		1.2	1.7
22 IR N 60	22 IL N 60	1.27	0.0500	7-6	22	1.7	2.6
22 U EIRL U 60				4.2-5.25	0.6	1.5	
27 IR Q 60	27 IL Q 60	1.98	0.0780	12-6	27	2.8	3.6
27 U EIRL U 60				4.2-5.25	1.0	18.7	

\* Grade DC9600

**Partial Profile 55°****External**

Designation Right-Hand	Left-Hand	$\frac{d}{2}$	Flute Length mm	TFI	Dimension $C$	$\gamma$	
11 ERA 55	11 EL A 55	8.05	6.5-6.5	40-15	17	2.0	0.9
16 ERA 55	16 EL A 55		6.5-6.5	40-15		2.0	0.9
16 ER G 55	16 EL G 55	9.23	7.75-30	14-0	16	1.2	1.7
16 ER AG 55	16 EL AG 55		6.5-6.5	40-0		1.2	1.7
22 ER N 55	22 EL N 55		6.5-6.5	7.5	22	1.7	2.5
22 U EIRL U 55		12.7	6.5-6.5	4.5-3.25		2.0	11.2
27 ER Q 55	27 EL Q 55		6.5-6.5	-3-1	27	2.0	2.8
27 U EIRL U 55		15.58	6.5-6.5	-2.75	12	1.2	13.7

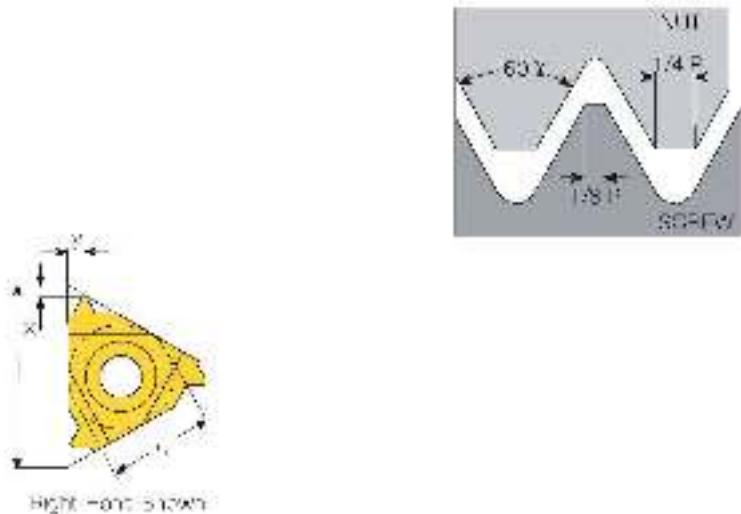
\* Grade DC9800

**Internal**

Designation Right-Hand	Left-Hand	$\frac{d}{2}$	Flute Length mm	TFI	Dimension $C$	$\gamma$	
11 IRA 55	11 IL A 55	9.45	10.5-15	48-15	1	1.8	0.9
16 IRA 55	16 IL A 55		10.5-15	48-15		1.8	0.9
16 IR G 55	16 IL G 55	9.28	7.75-30	14-0	16	1.2	1.7
16 IR AG 55	16 IL AG 55		6.5-6.5	40-0		1.2	1.7
22 IR N 55	22 IL N 55		6.5-6.5	7.5	22	1.7	2.5
22 U EIRL U 55		12.7	6.5-6.5	4.5-3.25		2.0	11.2
27 IR Q 55	27 IL Q 55		6.5-6.5	-3-1	27	2.0	2.8
27 U EIRL U 55		15.50	6.5-6.5	-2.75	12	1.2	13.7

\* Grade DC9800

## ISO Metric

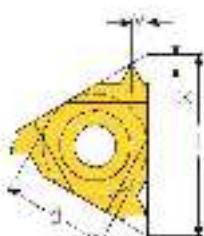


## External

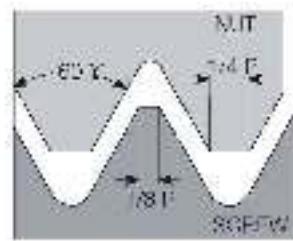
Designation Right-Hand	Left-Hand	d	Pitch mm	Dimension 1	2	3
11 ER 0.35 ISO	11 EL 0.35 ISO		0.35	0.8	0.4	
11 ER 0.4 ISO	11 EL 0.4 ISO		0.4	0.7	0.4	
11 ER 0.45 ISO	11 EL 0.45 ISO		0.45	0.7	0.4	
11 ER 0.5 ISO	11 EL 0.5 ISO		0.5	0.8	0.5	
11 ER 0.6 ISO	11 EL 0.6 ISO		0.6	0.8	0.6	
11 ER 0.7 ISO	11 EL 0.7 ISO		0.7	0.8	0.6	
11 ER 0.75 ISO	11 EL 0.75 ISO	6.35	0.75	1	0.8	0.6
11 ER 0.8 ISO	11 EL 0.8 ISO		0.8	0.8	0.6	
11 ER 1.0 ISO	11 EL 1.0 ISO		1.0	0.7	0.7	
11 ER 1.25 ISO	11 EL 1.25 ISO		1.25	0.8	0.8	
11 ER 1.5 ISO	11 EL 1.5 ISO		1.5	0.8	1.0	
11 ER 1.75 ISO	11 EL 1.75 ISO		1.75	0.8	1.1	
16 ER 0.35 ISO	16 EL 0.35 ISO		0.35	0.8	0.4	
16 ER 0.4 ISO	16 EL 0.4 ISO		0.4	0.7	0.4	
16 ER 0.45 ISO	16 EL 0.45 ISO		0.45	0.7	0.4	
16 ER 0.5 ISO	16 EL 0.5 ISO		0.5	0.8	0.5	
16 ER 0.6 ISO	16 EL 0.6 ISO		0.6	0.8	0.6	
16 ER 0.7 ISO	16 EL 0.7 ISO		0.7	0.8	0.6	
16 ER 0.75 ISO	16 EL 0.75 ISO		0.75	0.8	0.6	
16 ER 0.8 ISO	16 EL 0.8 ISO	9.50	0.8	8	0.8	0.6
16 ER 1.0 ISO	16 EL 1.0 ISO		1.0	0.7	0.7	
16 ER 1.25 ISO	16 EL 1.25 ISO		1.25	0.8	0.8	
16 ER 1.5 ISO	16 EL 1.5 ISO		1.5	0.8	1.2	
16 ER 1.75 ISO	16 EL 1.75 ISO		1.75	0.8	1.3	
16 ER 2.0 ISO	16 EL 2.0 ISO		2.0	1.0	1.3	
16 ER 2.5 ISO	16 EL 2.5 ISO		2.5	1.1	1.5	
16 ER 3.0 ISO	16 EL 3.0 ISO		3.0	1.2	1.5	
22 ER 3.5 ISO	22 EL 3.5 ISO		3.5	1.6	2.3	
22 ER 4.0 ISO	22 EL 4.0 ISO	12.7	4.0	2	1.6	2.3
22 ER 4.5 ISO	22 EL 4.5 ISO		4.5	1.7	2.4	
22 ER 5.0 ISO	22 EL 5.0 ISO		5.0	1.7	2.5	
27 ER 5.5 ISO	27 EL 5.5 ISO	17.84	5.5	2	1.8	2.5
27 ER 6.0 ISO	27 EL 6.0 ISO		6.0	2.0	2.2	
22 U ERL 5.5 ISO		12.7	5.5	22	2.3	1
22 U ERL 6.0 ISO			6.0	2.0	2.1	
27 U ERL 8.0 ISO		13.30	8.0	27	2.4	1.7

\* Grade DC9800

## ISO METRIC



Right Hand Shown

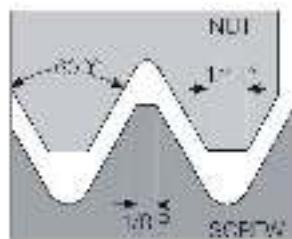
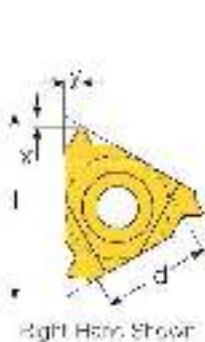


## Internal

Designation			Pitch	Dimensions	
Right-Hand	Left-Hand		mm	x	z
11 IR 0.35 ISO	11 IL 0.35 ISO		0.35	0.3	0.3
11 IR 0.4 ISO	11 IL 0.4 ISO		0.4	0.3	0.4
11 IR 0.45 ISO	11 IL 0.45 ISO		0.45	0.3	0.4
11 IR 0.5 ISO	11 IL 0.5 ISO		0.5	0.3	0.5
11 IR 0.6 ISO	11 IL 0.6 ISO		0.6	0.3	0.6
11 IR 0.7 ISO	11 IL 0.7 ISO		0.7	0.3	0.6
11 IR 0.75 ISO	11 IL 0.75 ISO	0.35	0.75	0.3	0.6
11 IR 0.8 ISO	11 IL 0.8 ISO		0.8	0.3	0.6
11 IR 1.0 ISO	11 IL 1.0 ISO		1.0	0.3	0.7
11 IR 1.25 ISO	11 IL 1.25 ISO		1.25	0.3	0.9
11 IR 1.5 ISO	11 IL 1.5 ISO		1.5	0.3	1.0
11 IR 1.75 ISO	11 IL 1.75 ISO		1.75	0.3	1.1
16 IR 0.35 ISO	16 IL 0.35 ISO		0.35	0.3	0.3
16 IR 0.4 ISO	16 IL 0.4 ISO		0.4	0.3	0.4
16 IR 0.45 ISO	16 IL 0.45 ISO		0.45	0.3	0.4
16 IR 0.5 ISO	16 IL 0.5 ISO		0.5	0.3	0.5
16 IR 0.6 ISO	16 IL 0.6 ISO		0.6	0.3	0.6
16 IR 0.7 ISO	16 IL 0.7 ISO		0.7	0.3	0.6
16 IR 0.75 ISO	16 IL 0.75 ISO	0.35	0.75	0.3	0.6
16 IR 0.8 ISO	16 IL 0.8 ISO		0.8	0.3	0.6
16 IR 1.0 ISO	16 IL 1.0 ISO		1.0	0.3	0.7
16 IR 1.25 ISO	16 IL 1.25 ISO		1.25	0.3	0.9
16 IR 1.5 ISO	16 IL 1.5 ISO		1.5	0.3	1.0
16 IR 1.75 ISO	16 IL 1.75 ISO		1.75	0.3	1.2
16 IR 2.0 ISO	16 IL 2.0 ISO		2.0	0.3	1.2
16 IR 2.5 ISO	16 IL 2.5 ISO		2.5	0.3	1.5
16 IR 3.0 ISO	16 IL 3.0 ISO		3.0	0.3	1.5
22 IR 3.5 ISO	22 IL 3.5 ISO		3.5	1.2	2.0
22 IR 4.0 ISO	22 IL 4.0 ISO	12.7	4.0	1.2	2.0
22 IR 4.5 ISO	22 IL 4.5 ISO		4.5	1.2	2.1
22 IR 5.0 ISO	22 IL 5.0 ISO		5.0	1.2	2.3
27 IR 5.5 ISO	27 IL 5.5 ISO	15.88	5.5	1.2	2.3
27 IR 6.0 ISO	27 IL 6.0 ISO		6.0	1.2	2.5
22 UIRL 5.5 ISO		12.7	5.5	1.2	1
22 UIRL 6.0 ISO			6.0	1.2	1
27 UIRL 6.0 ISO		15.88	6.0	1.2	1.8

\* Grade DC9800

## UN



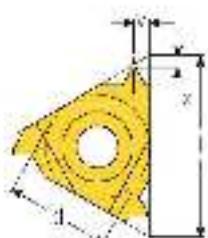
Right Hand Shear

## External

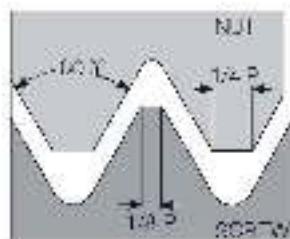
Designation			Finish	Diameter		
Right-Hand	Left-Hand	d	T3	t	r	s
11 ER 48 UN	11 EL 48 UN		15		0.6	1.8
11 ER 44 UN	11 EL 44 UN		14		0.8	1.8
11 ER 40 UN	11 EL 40 UN		13		0.8	1.8
11 ER 36 UN	11 EL 36 UN		12		0.8	1.8
11 ER 32 UN	11 EL 32 UN	6.25	11		0.6	1.8
11 ER 28 UN	11 EL 28 UN		10		0.8	1.8
11 ER 27 UN	11 EL 27 UN		9		0.7	1.8
11 ER 24 UN	11 EL 24 UN		8		0.7	1.8
11 ER 20 UN	11 EL 20 UN		7		0.8	1.8
11 ER 18 UN	11 EL 18 UN		6		0.8	1.8
11 ER 16 UN	11 EL 16 UN		5		0.9	1.1
11 ER 14 UN	11 EL 14 UN		4		0.9	1.1
16 ER 72 UN	16 EL 72 UN		7.5		0.9	1.4
16 ER 64 UN	16 EL 64 UN		6.5		0.8	1.4
16 ER 56 UN	16 EL 56 UN		5.5		0.7	1.4
16 ER 48 UN	16 EL 48 UN		5		0.6	1.8
16 ER 44 UN	16 EL 44 UN		4.5		0.6	1.8
16 ER 40 UN	16 EL 40 UN		4		0.8	1.8
16 ER 36 UN	16 EL 36 UN		3.5		0.8	1.8
16 ER 32 UN	16 EL 32 UN	9.50	3		0.8	1.8
16 ER 28 UN	16 EL 28 UN		3		0.8	1.8
16 ER 27 UN	16 EL 27 UN		2.5		0.7	1.8
16 ER 24 UN	16 EL 24 UN		2.5		0.7	1.8
16 ER 20 UN	16 EL 20 UN		2		0.8	1.8
16 ER 18 UN	16 EL 18 UN		1.5		0.8	1.8
16 ER 16 UN	16 EL 16 UN		1.5		0.9	1.1
16 ER 14 UN	16 EL 14 UN		1.5		1.0	1.2
16 ER 13 UN	16 EL 13 UN		1.5		1.0	1.2
16 ER 12 UN	16 EL 12 UN		1.5		1.1	1.4
16 ER 11.5 UN	16 EL 11.5 UN		1.5		1.1	1.4
16 ER 11 UN	16 EL 11 UN		1.5		1.1	1.4
16 ER 10 UN	16 EL 10 UN		1.5		1.1	1.4
16 ER 9 UN	16 EL 9 UN		1.5		1.2	1.4
16 ER 8 UN	16 EL 8 UN		1.5		1.2	1.4
22 ER 7 UN	22 EL 7 UN		7		1.8	2.2
22 ER 6 UN	22 EL 6 UN	12.7	6	22	1.8	2.2
22 ER 5 UN	22 EL 5 UN		5		1.7	2.2
27 ER 4.5 UN	27 EL 4.5 UN	17.65	4.5	27	1.9	2.7
27 ER 4 UN	27 EL 4 UN		4		2.1	3.0
22 U ERL 4.5 UN		17.7	4.5	27	2.0	1.1
22 U ERL 4 UN			4		2.0	1.1
27 U ERL 3 UN		17.45	3	27	2.0	1.7

\* Grade DC9600

## UN

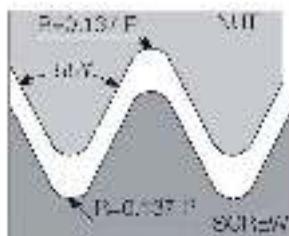
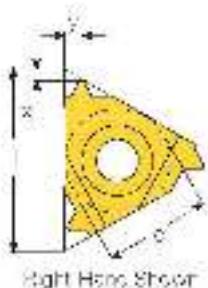


Right Hand shown

**Internal**

Designation Right-Hand	Left-Hand	Pitch P	Dimensions		
			A	B	C
11 IR 72 UN	11 IL 72 UN	72		0.5	0.8
11 IR 54 UN	11 IL 64 UN	64		0.5	0.8
11 IR 56 UN	11 IL 56 UN	56		0.5	0.8
11 IR 48 UN	11 IL 48 UN	48		0.5	0.8
11 IR 44 UN	11 IL 44 UN	44		0.5	0.8
11 IR 40 UN	11 IL 40 UN	40		0.5	0.8
11 IR 36 UN	11 IL 36 UN	36		0.5	0.8
11 IR 32 UN	11 IL 32 UN	32		0.5	0.8
11 IR 28 UN	11 IL 28 UN	28		0.5	0.8
11 IR 27 UN	11 IL 27 UN	27		0.5	0.8
11 IR 24 UN	11 IL 24 UN	24		0.5	0.8
11 IR 20 UN	11 IL 20 UN	20		0.5	0.8
11 IR 18 UN	11 IL 18 UN	18		0.5	1.0
11 IR 16 UN	11 IL 16 UN	16		0.5	1.1
11 IR 14 UN	11 IL 14 UN	14		0.5	1.1
16 IR 72 UN	16 IL 72 UN	72		0.5	0.8
16 IR 54 UN	16 IL 64 UN	64		0.5	0.8
16 IR 56 UN	16 IL 56 UN	56		0.5	0.8
16 IR 48 UN	16 IL 48 UN	48		0.5	0.8
16 IR 44 UN	16 IL 44 UN	44		0.5	0.8
16 IR 40 UN	16 IL 40 UN	40		0.5	0.8
16 IR 36 UN	16 IL 36 UN	36		0.5	0.8
16 IR 32 UN	16 IL 32 UN	32		0.5	0.8
16 IR 28 UN	16 IL 28 UN	28		0.5	0.8
16 IR 27 UN	16 IL 27 UN	27		0.7	0.8
16 IR 24 UN	16 IL 24 UN	24		0.7	0.8
16 IR 20 UN	16 IL 20 UN	20		0.5	0.8
16 IR 18 UN	16 IL 18 UN	18		0.5	1.0
16 IR 16 UN	16 IL 16 UN	16		0.5	1.1
16 IR 14 UN	16 IL 14 UN	14		0.5	1.2
16 IR 13 UN	16 IL 13 UN	13			1.3
16 IR 12 UN	16 IL 12 UN	12			1.3
16 IR 11.5 UN	16 IL 11.5 UN	11.5			1.2
16 IR 11 UN	16 IL 11 UN	11			1.2
16 IR 10 UN	16 IL 10 UN	10			1.2
16 IR 9 UN	16 IL 9 UN	9			1.2
16 IR 8 UN	16 IL 8 UN	8			1.2
22 IR 7 UN	22 IL 7 UN	7		1.0	0.8
22 IR 6 UN	22 IL 6 UN	6	19.7	1.0	0.8
22 IR 5 UN	22 IL 5 UN	5	19.7	1.0	0.8
27 IR 4.5 UN	27 IL 4.5 UN	4.5	16.03	1.0	0.8
27 IR 4 UN	27 IL 4 UN	4	16.03	1.0	0.7
22 U IRL 4.5 UN		4.5	19.7	2.4	1.1
22 U IRL 4 UN		4	19.7	2.4	1.1
27 U IRL 3 UN		3	16.03	2.7	1.0

Grade DC9000\*

**BSW**

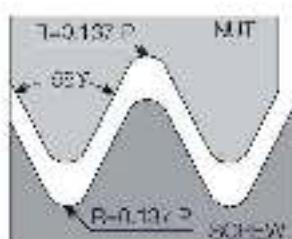
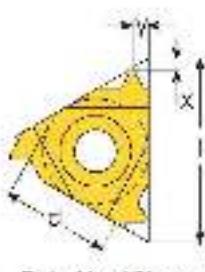
Right Hand Shear

**External**

Designation		Diam.	Dimensions	
Right-Hand	Left-Hand	d	D	t
11 ER 40 W	11 EL 40 W		40	0.0
11 ER 36 W	11 EL 36 W		39	0.0
11 ER 32 W	11 EL 32 W		32	0.0
11 ER 28 W	11 EL 28 W		28	0.7
11 ER 26 W	11 EL 26 W		26	0.8
11 ER 24 W	11 EL 24 W		24	0.7
11 ER 22 W	11 EL 22 W		22	0.8
11 ER 20 W	11 EL 20 W		20	0.9
11 ER 19 W	11 EL 19 W		19	1.0
11 ER 18 W	11 EL 18 W		18	1.0
11 ER 16 W	11 EL 16 W		16	1.1
11 ER 14 W	11 EL 14 W		14	1.2
15 ER 40 W	15 EL 40 W		40	0.0
15 ER 36 W	15 EL 36 W		36	0.0
15 ER 32 W	15 EL 32 W		32	0.0
15 ER 28 W	15 EL 28 W		28	0.7
15 ER 26 W	15 EL 26 W		26	0.7
15 ER 24 W	15 EL 24 W		24	0.7
15 ER 22 W	15 EL 22 W		22	0.8
15 ER 20 W	15 EL 20 W		20	0.9
15 ER 19 W	15 EL 19 W		19	1.0
15 ER 18 W	15 EL 18 W		18	1.0
15 ER 16 W	15 EL 16 W		16	1.1
15 ER 14 W	15 EL 14 W		14	1.2
15 ER 12 W	15 EL 12 W		12	1.1
15 ER 11 W	15 EL 11 W		11	1.1
15 ER 10 W	15 EL 10 W		10	1.1
15 ER 9 W	15 EL 9 W		9	1.2
15 ER 8 W	15 EL 8 W		8	1.2
22 ER 7 W	22 EL 7 W		7	1.6
22 ER 6 W	22 EL 6 W	12.7	6	1.6
22 ER 5 W	22 EL 5 W		5	1.7
27 ER 4.5 W	27 EL 4.5 W	15.88	4.5	1.3
27 ER 4 W	27 EL 4 W		4	2.0
22 U ERL 4.5 W		12.7	4.5	2.0
22 U ERL 4 W			4	1.0
27 U ERL 3.50 W			3.5	2.1
27 U ERL 3.25 W			3.25	2.0
27 U ERL 3.00 W			3	2.3
27 U ERL 2.75 W			2.75	2.1

\* Grade DC9600

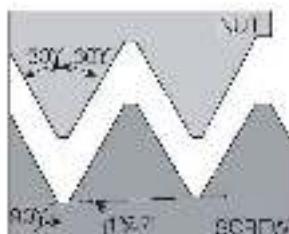
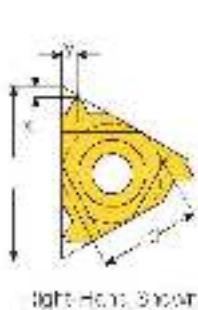
## BSW



## Internal

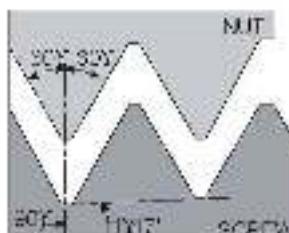
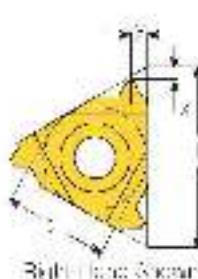
Designation Right-Hand	Designation Left-Hand	D	EOT	Dimensions	X	Y
11 IR 36 W	11 IL 36 W		36		0.6	0.6
11 IR 32 W	11 IL 32 W		32		0.6	0.6
11 IR 28 W	11 IL 28 W		28		0.6	0.6
11 IR 26 W	11 IL 26 W	11.05	26	11	0.7	0.6
11 IR 24 W	11 IL 24 W		24		0.7	0.6
11 IR 22 W	11 IL 22 W		22		0.8	0.6
11 IR 20 W	11 IL 20 W		20		0.8	0.6
11 IR 19 W	11 IL 19 W		19		0.9	0.6
11 IR 18 W	11 IL 18 W		18		0.9	0.6
11 IR 16 W	11 IL 16 W		16		0.9	0.6
11 IR 14 W	11 IL 14 W		14		0.9	0.6
16 IR 72 W	16 IL 72 W		72		0.7	0.4
16 IR 60 W	16 IL 60 W		60		0.7	0.4
16 IR 56 W	16 IL 56 W		56		0.7	0.4
16 IR 48 W	16 IL 48 W		48		0.6	0.4
16 IR 40 W	16 IL 40 W		40		0.6	0.4
16 IR 36 W	16 IL 36 W		36		0.6	0.4
16 IR 32 W	16 IL 32 W		32		0.6	0.4
16 IR 28 W	16 IL 28 W		28		0.6	0.4
16 IR 26 W	16 IL 26 W		26		0.7	0.6
16 IR 24 W	16 IL 24 W		24		0.7	0.6
16 IR 22 W	16 IL 22 W	9.53	22	16	0.7	0.6
16 IR 20 W	16 IL 20 W		20		0.7	0.6
15 IR 19 W	15 IL 19 W		19		0.6	0.5
15 IR 18 W	15 IL 18 W		18		0.6	0.5
15 IR 16 W	15 IL 16 W		16		0.6	0.5
15 IR 14 W	15 IL 14 W		14		0.6	0.5
15 IR 12 W	15 IL 12 W		12		0.6	0.4
15 IR 11 W	15 IL 11 W		11		0.6	0.4
15 IR 10 W	15 IL 10 W		10		0.6	0.4
15 IR 9 W	15 IL 9 W		9		0.7	0.5
15 IR 8 W	15 IL 8 W		8		0.7	0.5
22 IR 7 W	22 IL 7 W		7		1.6	0.9
22 IR 6 W	22 IL 6 W	10.7	6	20	1.6	0.9
22 IR 5 W	22 IL 5 W		5		1.7	0.4
27 IR 4.5 W	27 IL 4.5 W		4.5		1.0	0.5
27 IR 4 W	27 IL 4 W	13.00	4	27	0.9	0.4
22 U IRL 4.5 W			4.5		2.3	-
22 U IRL 4 W		12.5	4	27	1.3	-
27 U IRL 3.50 W			3.5		2	0.7
27 U IRL 3.25 W		12.85	3.25	27	2.0	0.7
27 U IRL 3.00 W			3		2.3	0.7
27 U IRL 2.75 W			2.75		2.1	0.7

\* Grade DC9800

**NPT****External**

Designation			Pitch	Diameter	$\gamma$
Right-Hand	Left-Hand		P	$d$	$\gamma$
16 ER 27 NPT	16 EL 27 NPT		0.7	0.7	0.0
16 ER 18 NPT	16 EL 18 NPT		1.0	0.9	1.0
16 ER 14 NPT	16 EL 14 NPT	0.8C	1.4	0.3	1.2
16 ER 11.5 NPT	16 EL 11.5 NPT		1.15	0.7	1.8
16 ER 8 NPT	16 EL 8 NPT		0.5	0.3	1.0

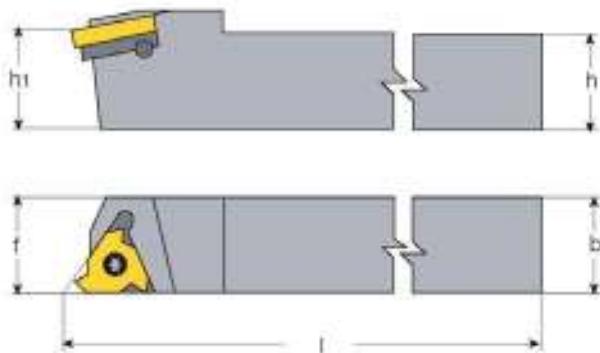
\* Grade DC9600

**Internal**

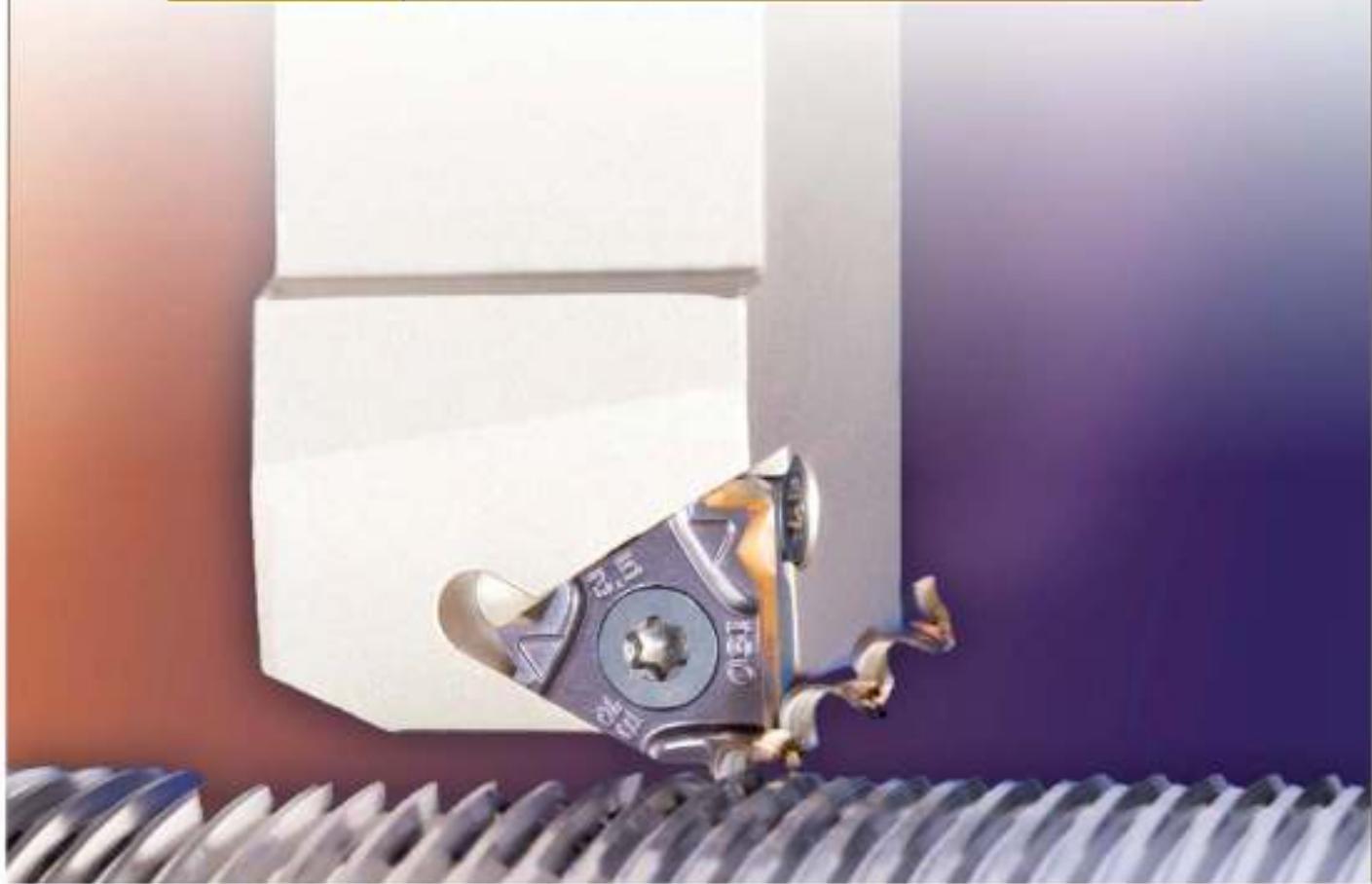
Designation			Pitch	Diameter	$\gamma$
Right-Hand	Left-Hand		P	$d$	$\gamma$
11 IR 27 NPT	11 IL 27 NPT		0.7	0.7	0.0
11 IR 18 NPT	11 IL 18 NPT	0.8C	0.9	0.8	1.0
11 IR 14 NPT	11 IL 14 NPT		1.1	0.8	1.2
16 IR 27 NPT	16 IL 27 NPT		0.7	0.7	0.0
16 IR 18 NPT	16 IL 18 NPT		0.9	0.8	1.0
16 IR 14 NPT	16 IL 14 NPT	0.8C	0.9	0.8	1.0
16 IR 11.5 NPT	16 IL 11.5 NPT		1.15	0.7	1.8
16 IR 8 NPT	16 IL 8 NPT		0.5	0.3	1.0

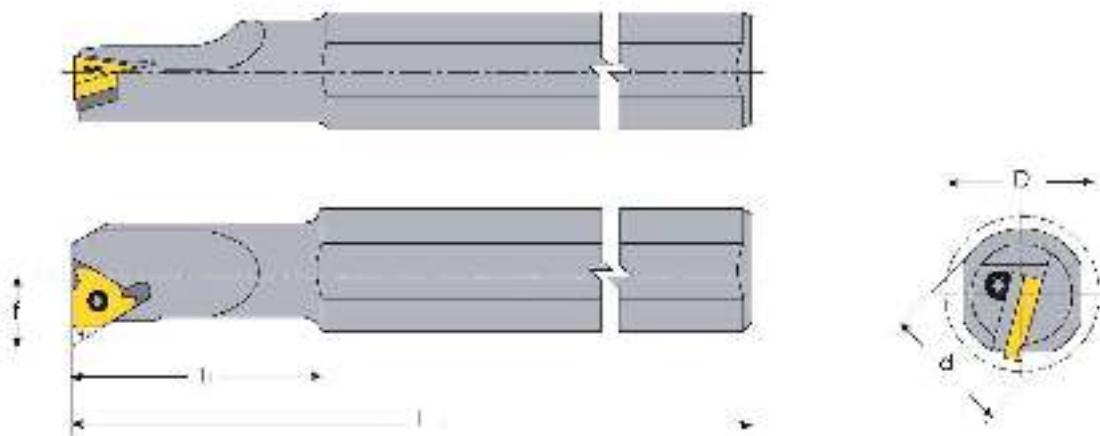
Grade DC8800\*

## External Toolholders



Designation	Dimensions			Spare Parts					
	$h+h_1$	$b$	$l$	$f$	Insert Screw	Anvil Screw	Torx Key	Anvil RH	Anvil LH
SER/L 2020 K16 -D	20	20	125	20					
SER/L 2525 M16 -D	25	25	150	25	S16	A16	K16	AE16	AI 16
SER/L 3232 P16 -D	32	32	170	32					

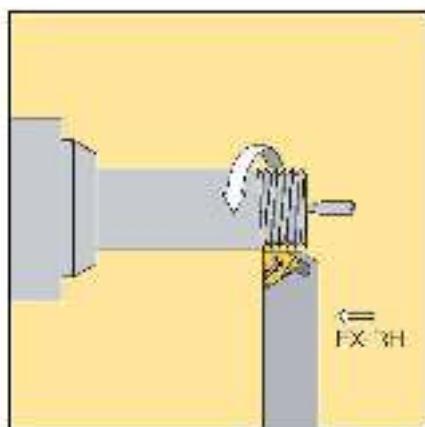


**Boring Bars**

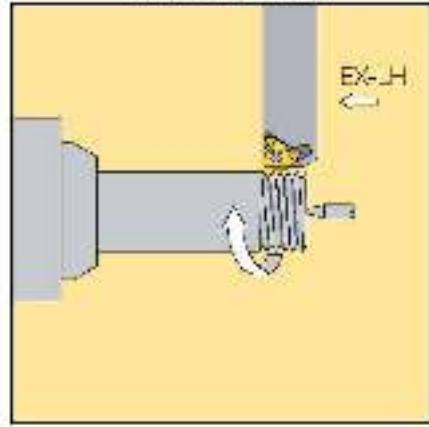
Designation	INTERFERENCES					Spindle Speed	Insert Series	Adv Speed	Adv Feed	Adv RH
	S	I	J	K	L					
SIR/L 0010 H11 -D	11	12	13	12	11					
SIR/L 0010 K11 -D	11	125	95	12	55	911		21		
SIR/L 0013 M16 -D	13	175	92	13	100					
SIR/L 0016 P16 -D	20	175	20	18	112					
SIR/L 0020 P16 -D	25	175	24	17	132	916	A16	415	A16	AP16
SIR/L 0025 R16 -D	25	175	25	22	138					
SIR/L 0020 P22 -D	25	175	24	20	130					
SIR/L 0025 R22 -D	25	90	25	75	130	893	A22	425	A22	AP22
SIR/L 0032 S22 -D	32	90	48	210	138					
SIR/L 0040 T22 -D	32	90	48	258	138					

## Selection of the Number of Cutting Passes

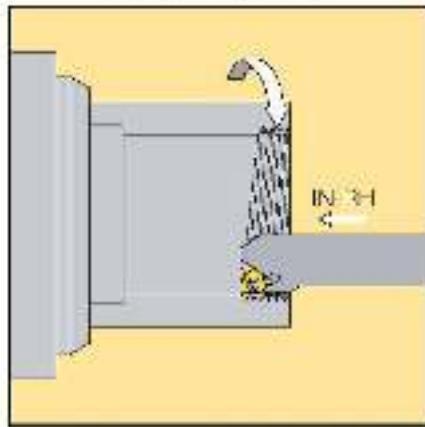
**EXTERNAL  
RIGHT THREAD**



**EXTERNAL  
LEFT THREAD**



**INTERNAL  
RIGHT THREAD**

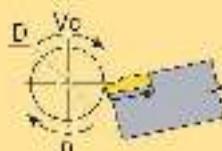


**INTERNAL  
LEFT THREAD**



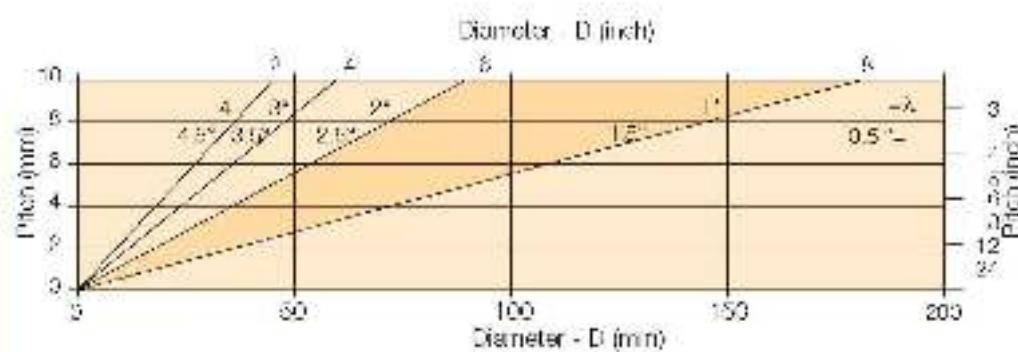
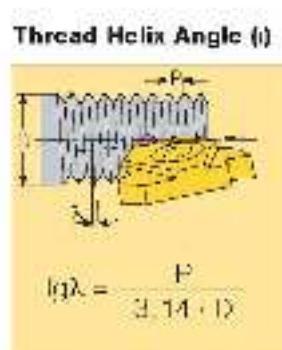
PITCH mm	Hv T <sub>p</sub>	0.5 40	1.0 22	1.5 15	2.0 12	2.5 10	3.0 8	4.0 5	5.0 4
NUMBER OF PASSES		8-0	9-4	11-2	13-6	15-7	17-0	20-10	22-11

## **Carbide Grades and Cutting Speed Selection Thread Helix Angle ( $\lambda$ ) Standard and Slanted Anvils**



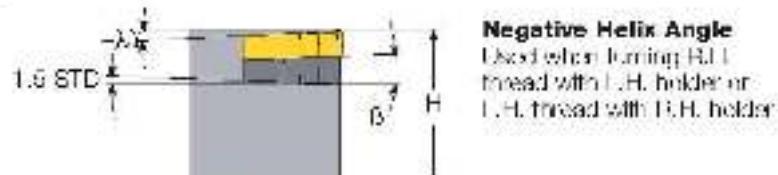
**ISO**

**ASA**



#### **Standard and Slanted Anvils**

P = Pitch in mm  
 D = Effective diameter of thread (mm)  
 k = Angle of inclination



Note: H dimension remains constant for every anvil combination.

Breadth-Axis Angle		0°	30°	60°	90°	120°	150°	180°	
	Anterograde	+	+	+	+	+	+	+	
(d)	Posterior	-	-	-	-	-	-	-	
1.	ZAF-07-N-LH	A= 70 -12.5	AF= 70 +0.5	AF= 70 -12.5	A= 70	A= 70 +0.5	AF= 70 +12.5	A= 70	AF= 70 +12.5
2.	ZAF-07-N-RH	A= 70 +12.5	AF= 70 +0.5	AF= 70 +12.5	A= 70	A= 70 +0.5	AF= 70 +12.5	A= 70	AF= 70 +12.5
3.	ZAF-07-X-LH	A= 90 -12.5	AF= 90 +0.5	AF= 90 -12.5	A= 90	A= 90 +0.5	AF= 90 +12.5	A= 90	AF= 90 +12.5
4.	ZAF-07-X-RH	A= 90 +12.5	AF= 90 +0.5	AF= 90 +12.5	A= 90	A= 90 +0.5	AF= 90 +12.5	A= 90	AF= 90 +12.5
5.	ZAF-07-X-LH	A= 90 -12.5	AF= 90 +0.5	AF= 90 -12.5	A= 90	A= 90 +0.5	AF= 90 +12.5	A= 90	AF= 90 +12.5
6.	ZAF-07-X-RH	A= 90 +12.5	AF= 90 +0.5	AF= 90 +12.5	A= 90	A= 90 +0.5	AF= 90 +12.5	A= 90	AF= 90 +12.5
7.	ZAF-07-N-LH	A= 97 -12.5	AF= 97 +0.5	AF= 97 -12.5	A= 97	A= 97 +0.5	AF= 97 +12.5	A= 97	AF= 97 +12.5
8.	ZAF-07-N-RH	A= 97 +12.5	AF= 97 +0.5	AF= 97 +12.5	A= 97	A= 97 +0.5	AF= 97 +12.5	A= 97	AF= 97 +12.5
9.	ZAF-07-X-LH	A= 220 -12.5	AF= 220 +0.5	AF= 220 -12.5	A= 220	A= 220 +0.5	AF= 220 +12.5	A= 220	AF= 220 +12.5
10.	ZAF-07-X-RH	A= 220 +12.5	AF= 220 +0.5	AF= 220 +12.5	A= 220	A= 220 +0.5	AF= 220 +12.5	A= 220	AF= 220 +12.5
11.	ZAF-07-X-LH	A= 270 -12.5	AF= 270 +0.5	AF= 270 -12.5	A= 270	A= 270 +0.5	AF= 270 +12.5	A= 270	AF= 270 +12.5
12.	ZAF-07-X-RH	A= 270 +12.5	AF= 270 +0.5	AF= 270 +12.5	A= 270	A= 270 +0.5	AF= 270 +12.5	A= 270	AF= 270 +12.5

## Threading Grades

DURACARB GRADE	ISO	PHYSICAL PROPERTIES	WORKPIECE MATERIAL	RECOMMENDED APPLICATIONS
DC9600	F18-F30 K20-K40 N15-N25	PVD Coated TiCN	All types of steel & stainless steel, hard alloys	For precision and wear resistance in roughing operations. For interrupted cut and difficult conditions.

## ISO Application Range

ISO	P				K			
	10	20	50	40	05	10	20	30
Uncoated								
PVD Coated			DC 9800				DC 9600	

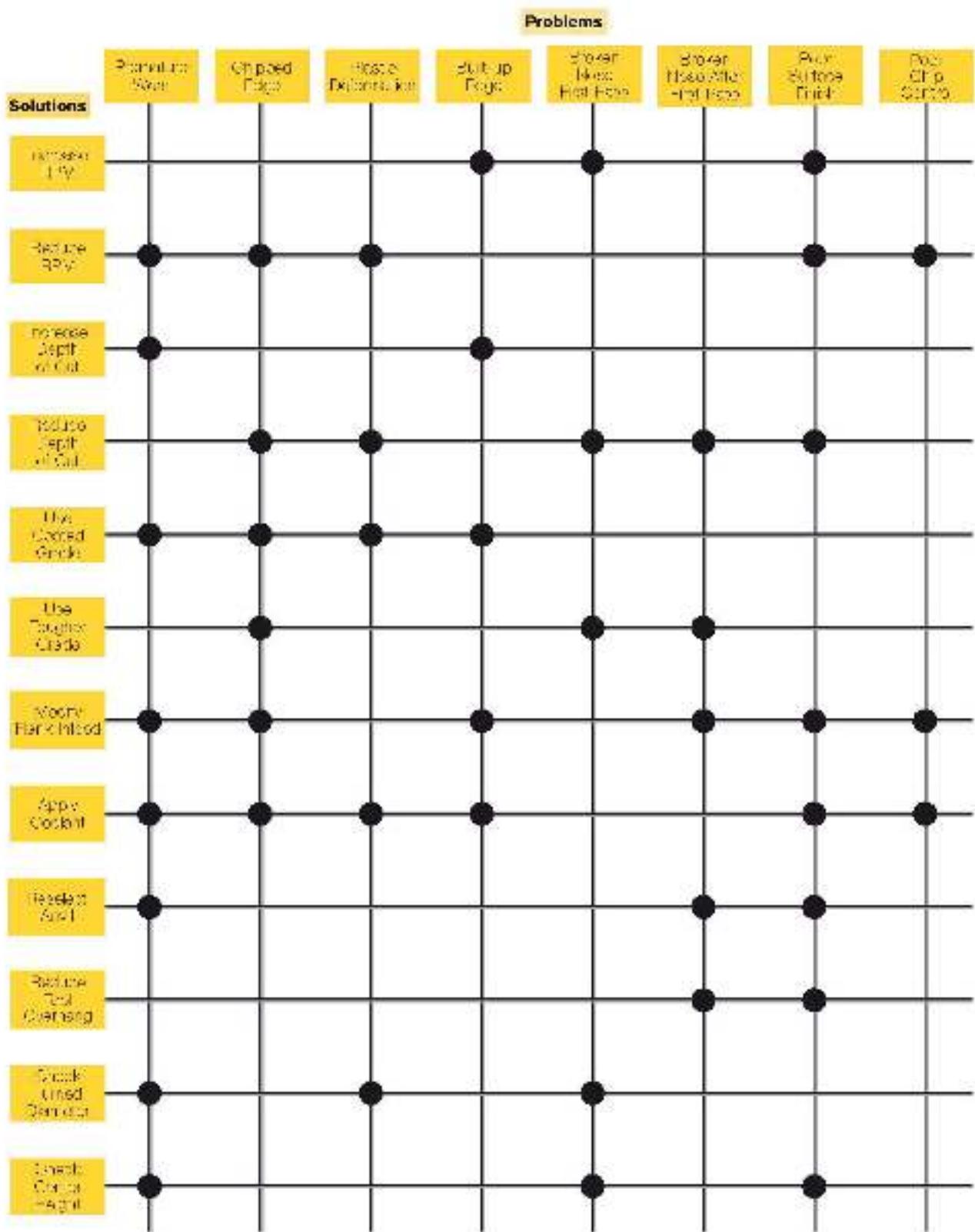
16

E R

12

UN

I	d
1	1/4
2	5/16
3	7/16
4	1/2
5	9/16
6	5/8
7	11/16
8	3/4
9	13/16
10	7/8
11	15/16
12	1
13	17/16
14	19/16
15	21/16
16	23/16
17	25/16
18	27/16
19	29/16
20	31/16
21	33/16
22	35/16
23	37/16
24	39/16
25	41/16
26	43/16
27	45/16
28	47/16
29	49/16
30	51/16
31	53/16
32	55/16
33	57/16
34	59/16
35	61/16
36	63/16
37	65/16
38	67/16
39	69/16
40	71/16
41	73/16
42	75/16
43	77/16
44	79/16
45	81/16
46	83/16
47	85/16
48	87/16
49	89/16
50	91/16
51	93/16
52	95/16
53	97/16
54	99/16
55	101/16
56	103/16
57	105/16
58	107/16
59	109/16
60	111/16
61	113/16
62	115/16
63	117/16
64	119/16
65	121/16
66	123/16
67	125/16
68	127/16
69	129/16
70	131/16
71	133/16
72	135/16
73	137/16
74	139/16
75	141/16
76	143/16
77	145/16
78	147/16
79	149/16
80	151/16
81	153/16
82	155/16
83	157/16
84	159/16
85	161/16
86	163/16
87	165/16
88	167/16
89	169/16
90	171/16
91	173/16
92	175/16
93	177/16
94	179/16
95	181/16
96	183/16
97	185/16
98	187/16
99	189/16
100	191/16
101	193/16
102	195/16
103	197/16
104	199/16
105	201/16
106	203/16
107	205/16
108	207/16
109	209/16
110	211/16
111	213/16
112	215/16
113	217/16
114	219/16
115	221/16
116	223/16
117	225/16
118	227/16
119	229/16
120	231/16
121	233/16
122	235/16
123	237/16
124	239/16
125	241/16
126	243/16
127	245/16
128	247/16
129	249/16
130	251/16
131	253/16
132	255/16
133	257/16
134	259/16
135	261/16
136	263/16
137	265/16
138	267/16
139	269/16
140	271/16
141	273/16
142	275/16
143	277/16
144	279/16
145	281/16
146	283/16
147	285/16
148	287/16
149	289/16
150	291/16
151	293/16
152	295/16
153	297/16
154	299/16
155	301/16
156	303/16
157	305/16
158	307/16
159	309/16
160	311/16
161	313/16
162	315/16
163	317/16
164	319/16
165	321/16
166	323/16
167	325/16
168	327/16
169	329/16
170	331/16
171	333/16
172	335/16
173	337/16
174	339/16
175	341/16
176	343/16
177	345/16
178	347/16
179	349/16
180	351/16
181	353/16
182	355/16
183	357/16
184	359/16
185	361/16
186	363/16
187	365/16
188	367/16
189	369/16
190	371/16
191	373/16
192	375/16
193	377/16
194	379/16
195	381/16
196	383/16
197	385/16
198	387/16
199	389/16
200	391/16
201	393/16
202	395/16
203	397/16
204	399/16
205	401/16
206	403/16
207	405/16
208	407/16
209	409/16
210	411/16
211	413/16
212	415/16
213	417/16
214	419/16
215	421/16
216	423/16
217	425/16
218	427/16
219	429/16
220	431/16
221	433/16
222	435/16
223	437/16
224	439/16
225	441/16
226	443/16
227	445/16
228	447/16
229	449/16
230	451/16
231	453/16
232	455/16
233	457/16
234	459/16
235	461/16
236	463/16
237	465/16
238	467/16
239	469/16
240	471/16
241	473/16
242	475/16
243	477/16
244	479/16
245	481/16
246	483/16
247	485/16
248	487/16
249	489/16
250	491/16
251	493/16
252	495/16
253	497/16
254	499/16
255	501/16
256	503/16
257	505/16
258	507/16
259	509/16
260	511/16
261	513/16
262	515/16
263	517/16
264	519/16
265	521/16
266	523/16
267	525/16
268	527/16
269	529/16
270	531/16
271	533/16
272	535/16
273	537/16
274	539/16
275	541/16
276	543/16
277	545/16
278	547/16
279	549/16
280	551/16
281	553/16
282	555/16
283	557/16
284	559/16
285	561/16
286	563/16
287	565/16
288	567/16
289	569/16
290	571/16
291	573/16
292	575/16
293	577/16
294	579/16
295	581/16
296	583/16
297	585/16
298	587/16
299	589/16
300	591/16
301	593/16
302	595/16
303	597/16
304	599/16
305	601/16
306	603/16
307	605/16
308	607/16
309	609/16
310	611/16
311	613/16
312	615/16
313	617/16
314	619/16
315	621/16
316	623/16
317	625/16
318	627/16
319	629/16
320	631/16
321	633/16
322	635/16
323	637/16
324	639/16
325	641/16
326	643/16
327	645/16
328	647/16
329	649/16
330	651/16
331	653/16
332	655/16
333	657/16
334	659/16
335	661/16
336	663/16
337	665/16
338	667/16
339	669/16
340	671/16
341	673/16
342	675/16
343	677/16
344	679/16
345	681/16
346	683/16
347	685/16
348	687/16
349	689/16
350	691/16
351	693/16
352	695/16
353	697/16
354	699/16
355	701/16
356	703/16
357	705/16
358	707/16
359	709/16
360	711/16
361	713/16
362	715/16
363	717/16
364	719/16
365	721/16
366	723/16
367	725/16
368	727/16
369	729/16
370	731/16
371	733/16
372	735/16
373	737/16
374	739/16
375	741/16
376	743/16
377	745/16
378	747/16
379	749/16
380	751/16
381	753/16
382	755/16
383	757/16
384	759/16
385	761/16
386	763/16
387	765/16
388	767/16
389	769/16
390	771/16
391	773/16
392	775/16
393	777/16
394	779/16
395	781/16
396	783/16
397	785/16
398	787/16
399	789/16
400	791/16
401	793/16
402	795/16
403	797/16
404	799/16
405	801/16
406	803/16
407	805/16
408	807/16
409	809/16
410	811/16
411	813/16
412	815/16
413	817/16
414	819/16
415	821/16
416	823/16
417	825/16
418	827/16
419	829/16
420	831/16
421	833/16
422	835/16
423	837/16
424	839/16
425	841/16
426	843/16
427	845/16
428	847/16
429	849/16
430	851/16
431	853/16
432	855/16
433	857/16
434	859/16
435	861/16
436	863/16
437	865/16
438	867/16
439	869/16
440	871/16
441	873/16
442	875/16
443	877/16
444	879/16
445	881/16
446	883/16
447	885/16
448	887/16
449	889/16
450	891/16
451	893/16
452	895/16
453	897/16
454	899/16
455	901/16
456	903/16
457	905/16
458	907/16
459	909/16
460	911/16
461	913/16
462	915/16
463	917/16
464	919/16
465	921/16
466	923/16
467	925/16
468	927/16
469	929/16
470	931/16
471	933/16
472	935/16
473	937/16
474	939/16
475	941/16
476	943/16
477	94



**D**Drill



**D**Drill

## Designation System of DEC-Drill

# **DEC D160S25 - 2D**

**1****2****3****1. Drill Diameter**

- D160 → Ø 16.0 mm
- D210 → Ø 21.0 mm

**2. Shank Length**

- S25 → Ø 25.0 mm
- S32 → Ø 32.0 mm

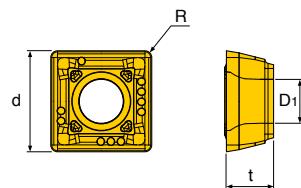
**3. Drilling Depth**

- 2D → 2XD
- 3D → 3XD

## Drill Programme

<b>DEC-Drill</b>	<ul style="list-style-type: none"><li>• Indexable Drill</li><li>• Internal coolant</li><li>• Diameter D12.5-D41mm</li><li>• Drilling Depth : 2XD, 3XD, 4XD</li></ul>	
------------------	--	---

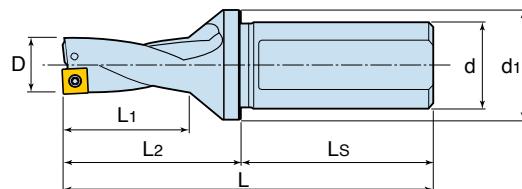
## DEC-Drill Insert



### SPMX □□□□□ MG

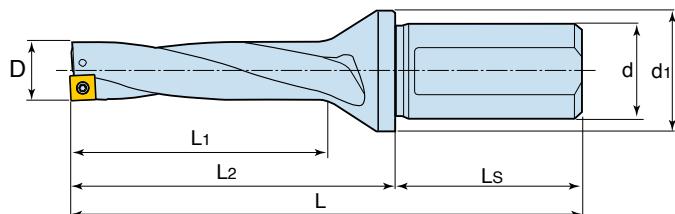
Insert	Designation	Dimension(mm)				Diameter(mm)	Grade	
		d	t	R	ØD <sub>1</sub>		DC9800	DC9235
	SPMX 05T204 MG	5	2.68	0.4	2.25	TS 20043I/HG-P	●	●
	06T204 MG	6	2.8	0.4	2.61	TS 22052I/HG	●	●
	070308 MG	7.94	3.5	0.8	2.85	TS 25064I	●	●
	09T308 MG	9.8	3.8	0.8	4.05	TS 35088I	●	●
	11T308 MG	11.5	4.3	0.8	4.45	TS 40093I	●	●

## DEC-Drill Drilling Depth: 2XD



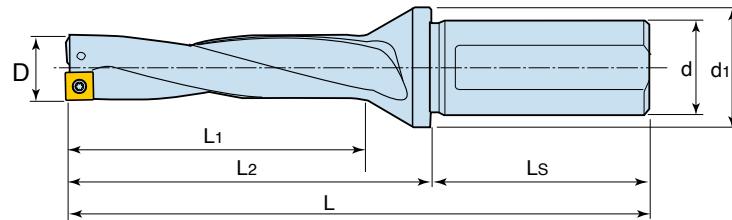
Designation	Dimension(mm)							Insert	Component				Torque (N·cm)
	D	d	d1	LS	L2	L1	L		Screw	Wrench	Plug	Set Screw	
DEC D125S20-2D	12.5	20	25	50	44	26	94	SPMX 05T204 MG	TS 20043I/ HG-P	TD 6P	SL 20 M	-	50-70
DEC D130S20-2D	13	20	25	50	44	26	94						50-70
DEC D135S20-2D	13.5	20	25	50	46	28	96						50-70
DEC D140S20-2D	14	20	25	50	46	28	96						50-70
DEC D145S20-2D	14.5	20	25	50	49	30	99						50-70
DEC D150S20-2D	15	20	25	50	49	30	99						50-70
DEC D155S25-2D	15.5	25	32	56	52	32	108	SPMX 06T204 MG	TS 22052I/HG	TD 7	SL 25	-	80-100
DEC D160S25-2D	16	25	32	56	52	32	108						80-100
DEC D165S25-2D	16.5	25	32	56	54	34	110						80-100
DEC D170S25-2D	17	25	32	56	54	34	110						80-100
DEC D175S25-2D	17.5	25	32	56	57	36	113						80-100
DEC D180S25-2D	18	25	32	56	57	36	113						80-100
DEC D185S25-2D	18.5	25	32	56	59	38	115						80-100
DEC D190S25-2D	19	25	32	56	59	38	115						80-100
DEC D195S25-2D	19.5	25	32	56	63	40	119						80-100
DEC D200S25-2D	20	25	32	56	63	40	119						80-100
DEC D205S25-2D	20.5	25	32	56	65	42	121						80-100
DEC D210S25-2D	21	25	32	56	65	42	121						80-100
DEC D215S25-2D	21.5	25	32	56	67	44	123						80-100
DEC D220S25-2D	22	25	32	56	67	44	123	SPMX 070308 MG	TS 25064I	TD 8	SL 25	-	100-120
DEC D225S25-2D	22.5	25	45	56	71	46	127						100-120
DEC D230S25-2D	23	25	45	56	71	46	127						100-120
DEC D235S25-2D	23.5	25	45	56	74	48	130						100-120
DEC D240S25-2D	24	25	45	56	74	48	130						100-120
DEC D245S32-2D	24.5	32	45	60	77	50	137						100-120
DEC D250S32-2D	25	32	45	60	77	50	137						100-120
DEC D255S32-2D	25.5	32	45	60	79	52	139						100-120
DEC D260S32-2D	26	32	45	60	79	52	139						100-120
DEC D265S32-2D	26.5	32	45	60	81	54	141						100-120
DEC D270S32-2D	27	32	45	60	81	54	141						100-120
DEC D275S32-2D	27.5	32	45	60	84	56	144						100-120
DEC D280S32-2D	28	32	45	60	84	56	144	SPMX 09T308 MG	TS 35088I	TD10	SS M6X1X6	300-340	300-340
DEC D285S32-2D	28.5	32	45	60	86	58	146						300-340
DEC D290S32-2D	29	32	45	60	86	58	146						300-340
DEC D295S32-2D	29.5	32	55	60	91	60	151						300-340
DEC D300S32-2D	30	32	55	60	91	60	151						300-340
DEC D305S32-2D	30.5	32	55	60	94	62	154						300-340
DEC D310S32-2D	31	32	55	60	94	62	154						300-340
DEC D315S32-2D	31.5	32	55	60	96	64	156						300-340
DEC D320S32-2D	32	32	55	60	96	64	156						300-340
DEC D325S32-2D	32.5	32	55	60	99	66	159						300-340
DEC D330S32-2D	33	32	55	60	99	66	159						300-340
DEC D340S40-2D	34	40	55	70	101	68	171	SPMX 11T308 MG	TS 40093I	TD 15	SS M6X1X6	450-520	450-520
DEC D350S40-2D	35	40	55	70	104	70	174						450-520
DEC D360S40-2D	36	40	55	70	107	72	177						450-520
DEC D370S40-2D	37	40	55	70	110	74	180						450-520
DEC D380S40-2D	38	40	55	70	113	76	183						450-520
DEC D390S40-2D	39	40	55	70	115	78	185						450-520
DEC D400S40-2D	40	40	60	70	118	80	188						450-520
DEC D410S40-2D	41	40	60	70	121	82	191						450-520

## DEC-Drill Drilling Depth: 3XD



Designation	Dimension(mm)							Insert	Component				Torque (N·cm)
	D	d	d1	LS	L2	L1	L		Screw	Wrench	Plug	Set Screw	
DEC D125S20-3D	12.5	20	25	50	57	39	107	SPMX 05T204 MG	TS 20043I/ HG-P	TD 6P	SL 20 M	-	50-70
DEC D130S20-3D	13	20	25	50	57	39	107						50-70
DEC D135S20-3D	13.5	20	25	50	60	42	110						50-70
DEC D140S20-3D	14	20	25	50	60	42	110						50-70
DEC D145S20-3D	14.5	20	25	50	64	45	114						50-70
DEC D150S20-3D	15	20	25	50	64	45	114						50-70
DEC D155S25-3D	15.5	25	32	56	68	48	124	SPMX 06T204 MG	TS 22052I/HG	TD 7	SL 25	-	80-100
DEC D160S25-3D	16	25	32	56	68	48	124						80-100
DEC D165S25-3D	16.5	25	32	56	71	51	127						80-100
DEC D170S25-3D	17	25	32	56	71	51	127						80-100
DEC D175S25-3D	17.5	25	32	56	75	54	131						80-100
DEC D180S25-3D	18	25	32	56	75	54	131						80-100
DEC D185S25-3D	18.5	25	32	56	78	57	134						80-100
DEC D190S25-3D	19	25	32	56	78	57	134						80-100
DEC D195S25-3D	19.5	25	32	56	83	60	139						80-100
DEC D200S25-3D	20	25	32	56	83	60	139						80-100
DEC D205S25-3D	20.5	25	32	56	86	63	142						80-100
DEC D210S25-3D	21	25	32	56	86	63	142						80-100
DEC D215S25-3D	21.5	25	32	56	89	66	145						80-100
DEC D220S25-3D	22	25	32	56	89	66	145	SPMX 070308 MG	TS 25064I	TD 8	SL 25	-	100-120
DEC D225S25-3D	22.5	25	45	56	94	69	150						100-120
DEC D230S25-3D	23	25	45	56	94	69	150						100-120
DEC D235S25-3D	23.5	25	45	56	98	72	154						100-120
DEC D240S25-3D	24	25	45	56	98	72	154						100-120
DEC D245S32-3D	24.5	32	45	60	102	75	162						100-120
DEC D250S32-3D	25	32	45	60	102	75	162						100-120
DEC D255S32-3D	25.5	32	45	60	105	78	165						100-120
DEC D260S32-3D	26	32	45	60	105	78	165						100-120
DEC D265S32-3D	26.5	32	45	60	108	81	168						100-120
DEC D270S32-3D	27	32	45	60	108	81	168						100-120
DEC D275S32-3D	27.5	32	45	60	112	84	172						- SS M6X1X6 100-120
DEC D280S32-3D	28	32	45	60	112	84	172	SPMX 09T308 MG	TS 35088I	TD10	SS M6X1X6	300-340	300-340
DEC D285S32-3D	28.5	32	45	60	115	87	171						300-340
DEC D290S32-3D	29	32	45	60	115	87	175						300-340
DEC D295S32-3D	29.5	32	55	60	121	90	181						300-340
DEC D300S32-3D	30	32	55	60	121	90	181						300-340
DEC D305S32-3D	30.5	32	55	60	125	93	185						300-340
DEC D310S32-3D	31	32	55	60	125	93	185						300-340
DEC D315S32-3D	31.5	32	55	60	128	96	188						300-340
DEC D320S32-3D	32	32	55	60	128	96	188						300-340
DEC D325S32-3D	32.5	32	55	60	132	99	192						300-340
DEC D330S32-3D	33	32	55	60	132	99	192	SPMX 11T308 MG	TS 40093I	TD 15	SS M8X1.25X8	450-520	450-520
DEC D340S40-3D	34	40	55	70	135	102	205						450-520
DEC D350S40-3D	35	40	55	70	139	105	209						450-520
DEC D360S40-3D	36	40	55	70	143	108	213						450-520
DEC D370S40-3D	37	40	55	70	147	111	217						450-520
DEC D380S40-3D	38	40	55	70	151	114	221						450-520
DEC D390S40-3D	39	40	55	70	154	117	224						450-520
DEC D400S40-3D	40	40	60	70	158	120	228						450-520
DEC D410S40-3D	41	40	60	70	162	123	232						450-520

## DEC-Drill Drilling Depth: 4XD



Designation	Dimension(mm)							Insert	Component				Torque (N·cm)
	D	d	d1	LS	L2	L1	L		Screw	Wrench	Plug	Set Screw	
DEC D125S20-4D	12.5	20	25	50	70	52	120	SPMX 05T204 MG	TS 20043I/ HG-P	TD 6P	SL 20 M	-	50-70
DEC D130S20-4D	13	20	25	50	70	52	120						50-70
DEC D135S20-4D	13.5	20	25	50	74	56	124						50-70
DEC D140S20-4D	14	20	25	50	74	56	124						50-70
DEC D145S20-4D	14.5	20	25	50	79	60	129						50-70
DEC D150S20-4D	15	20	25	50	79	60	129						50-70
DEC D155S25-4D	15.5	25	32	56	84	64	140	SPMX 06T204 MG	TS 22052I/HG	TD 7	SL 25	-	80-100
DEC D160S25-4D	16	25	32	56	84	64	140						80-100
DEC D165S25-4D	16.5	25	32	56	88	68	144						80-100
DEC D170S25-4D	17	25	32	56	88	68	144						80-100
DEC D175S25-4D	17.5	25	32	56	93	72	149						80-100
DEC D180S25-4D	18	25	32	56	93	72	149						80-100
DEC D185S25-4D	18.5	25	32	56	97	76	153						80-100
DEC D190S25-4D	19	25	32	56	97	76	153						80-100
DEC D195S25-4D	19.5	25	32	56	103	80	159						80-100
DEC D200S25-4D	20	25	32	56	103	80	159						80-100
DEC D205S25-4D	20.5	25	32	56	107	84	163						80-100
DEC D210S25-4D	21	25	32	56	107	84	163						80-100
DEC D215S25-4D	21.5	25	32	56	111	88	167						80-100
DEC D220S25-4D	22	25	32	56	111	88	167	SPMX 070308 MG	TS 25064I	TD 8	SL 25	-	100-120
DEC D225S25-4D	22.5	25	45	56	117	92	173						100-120
DEC D230S25-4D	23	25	45	56	117	92	173						100-120
DEC D235S25-4D	23.5	25	45	56	122	96	178						100-120
DEC D240S25-4D	24	25	45	56	122	96	178						100-120
DEC D245S32-4D	24.5	32	45	60	127	100	187						100-120
DEC D250S32-4D	25	32	45	60	127	100	187						100-120
DEC D255S32-4D	25.5	32	45	60	131	104	191						100-120
DEC D260S32-4D	26	32	45	60	131	104	191						100-120
DEC D265S32-4D	26.5	32	45	60	135	108	195						100-120
DEC D270S32-4D	27	32	45	60	135	108	195						100-120
DEC D275S32-4D	27.5	32	45	60	140	112	200						- SS M6X1X6 100-120
DEC D280S32-4D	28	32	45	60	140	112	200	SPMX 09T308 MG	TS 35088I	TD10	SS M6X1X6	300-340	
DEC D285S32-4D	28.5	32	45	60	144	116	204						300-340
DEC D290S32-4D	29	32	45	60	144	116	204						300-340
DEC D295S32-4D	29.5	32	55	60	151	120	211						300-340
DEC D300S32-4D	30	32	55	60	151	120	211						300-340
DEC D305S32-4D	30.5	32	55	60	156	124	216						300-340
DEC D310S32-4D	31	32	55	60	156	124	216						300-340
DEC D315S32-4D	31.5	32	55	60	160	128	220						300-340
DEC D320S32-4D	32	32	55	60	160	128	220						300-340
DEC D325S32-4D	32.5	32	55	60	165	132	225						300-340
DEC D330S32-4D	33	32	55	60	165	132	225	SPMX 11T308 MG	TS 40093I	TD 15	SS M8X1.25X8	450-520	
DEC D340S40-4D	34	40	55	70	169	136	239						450-520
DEC D350S40-4D	35	40	55	70	174	140	244						450-520
DEC D360S40-4D	36	40	55	70	179	144	249						450-520
DEC D370S40-4D	37	40	55	70	184	148	254						450-520
DEC D380S40-4D	38	40	55	70	189	152	259						450-520
DEC D390S40-4D	39	40	55	70	193	156	253						450-520
DEC D400S40-4D	40	40	60	70	198	160	268						450-520
DEC D410S40-4D	41	40	60	70	203	164	273						450-520

## DEC-Drill Cutting Condition

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

## Flex Head Drills Drilling Depth 1.5xD

Range ø10 to 19.9 for CHDU Inserts



### DHM 1.5XD

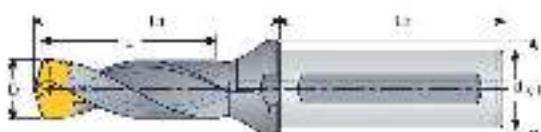
dDrill Range	L	Designation	d	L <sub>1</sub>	L <sub>2</sub>	Pocket Size	Key	Drilling Heads
10-10.9	15	DHM 1.5 100-015-15B	15	31.3	48	10	K DHM-10	
11-11.9	17	DHM 1.5 110-017-15B	15	34.1	48	11	K DHM-11	
12-12.9	18	DHM 1.5 120-018-15B	15	35.9	48	12	K DHM-12	
13-13.9	20	DHM 1.5 130-020-15B	15	39.8	48	13	K DHM-13	
14-14.9	21	DHM 1.5 140-021-15B	15	42.3	48	14	K DHM-14	GHDP
15-15.9	23	DHM 1.5 150-023-23B	23	45.3	50	15	K DHM-15	GHDM
16-16.9	24	DHM 1.5 160-024-23B	23	47.9	50	16	K DHM-16	GHDK
17-17.9	26	DHM 1.5 170-026-23B	23	50.5	50	17	K DHM-17	GHDN
18-18.9	27	DHM 1.5 180-027-25B	25	53.1	56	18	K DHM-18	
19-19.9	29	DHM 1.5 190-029-25B	25	56.2	56	19	K DHM-19	

For drilling heads, see page 101.

Hole tolerance: D+0.02 in average conditions. However, it can be higher or lower according to machine and tooling conditions.

## Flex Head Drills Drilling Depth 3xD

Range ø10 to 19.9 for CHDU Inserts



### DHM 3XD

dDrill Range	L	Designation	d	L <sub>1</sub>	L <sub>2</sub>	Pocket Size	Key	Drilling Heads
10-10.9	30	DHM 1.5 030-10A	15	20	46.0	10	K DHM-10	
11-11.9	32	DHM 1.5 032-11A	15	20	50.6	11	K DHM-11	
12-12.9	36	DHM 1.5 036-12A	15	20	54.9	12	K DHM-12	
13-13.9	36	DHM 1.5 036-13A	15	20	59.1	13	K DHM-13	
14-14.9	42	DHM 1.5 042-14A	15	20	63.4	14	K DHM-14	GHDP
15-15.9	46	DHM 1.5 046-15A	20	25	67.5	15	K DHM-15	GHDM
16-16.9	46	DHM 1.5 046-16A	20	25	71.9	16	K DHM-16	GHDK
17-17.9	51	DHM 1.5 051-17A	20	25	76.2	17	K DHM-17	GHDN
18-18.9	54	DHM 1.5 054-18A	25	32	80.5	18	K DHM-18	
19-19.9	57	DHM 1.5 057-19A	25	32	84.8	19	K DHM-19	

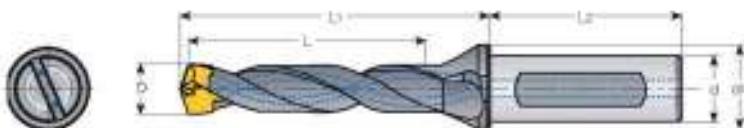
(\*) Select insert size according to either standard range or 10% more.

For drilling heads, see page 101.

Hole tolerance: D+0.05 in average conditions. However, it can be higher or lower according to machine and tooling conditions.

## Flex Head Drills Drilling Depth 5xD

Range  **$\phi 10$**  to  **$\phi 19.9$**  for GHD $\square$  Inserts



### DHM 5xD

$\phi D(1)$ Range	L	Designation	d	$d_1$	$L_1$	$L_2$	Pocket Size	Key	Drilling Heads
10-10.9	50	DHMS 100-050-16A	16	20	66.0	48	10	K DHM-10	
11-11.9	55	DHMS 110-055-16A	16	20	72.6	48	11	K DHM-11	
12-12.9	60	DHMS 120-060-16A	16	20	78.9	48	12	K DHM-12	
13-13.9	65	DHMS 130-065-16A	16	20	85.1	48	13	K DHM-13	
14-14.9	70	DHMS 140-070-16A	16	20	91.4	48	14	K DHM-14	
15-15.9	75	DHMS 150-075-20A	20	25	97.5	50	15	K DHM-15	
16-16.9	80	DHMS 160-080-20A	20	25	103.9	50	16	K DHM-16	GHD $\square$
17-17.9	85	DHMS 170-085-20A	20	25	110.2	50	17	K DHM-17	GHD $\square$
18-18.9	90	DHMS 180-090-25A	25	32	116.5	56	18	K DHM-18	GHD $\square$
19-19.9	95	DHMS 190-095-25A	25	32	122.8	56	19	K DHM-19	GHD $\square$

**(1)** Do not mount smaller drilling heads than specified range for drill body.

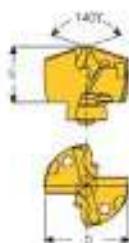
For drilling heads, see page 101.

**Hole tolerance:**  $D+0.05$  in average conditions. However, it can be higher or lower according to machine and tooling conditions.



## Drilling Heads for DHM Drills

Range 10-19.9



### GHD (P/M/K/N)

Designation	D Range (1)	S	Pocket Size	DC9800
<b>GHD P 000</b>	10-10.9	7.0	10.0	●
	11-11.9	7.7	11.0	●
	12-12.9	7.8	12.0	●
	13-13.9	8.4	13.0	●
<b>GHD M 000</b>	14-14.9	8.8	14.0	●
<b>GHD K 000</b>	15-15.9	9.2	15.0	●
<b>GHD N 000/4</b>	16-16.9	9.8	16.0	●
	17-17.9	9.8	17.0	●
	18-18.9	10.5	18.0	●
	19-19.9	10.8	19.0	●

(1) Heads are available in increments of 0.1 mm.

Available in DC208 only.

For 13.3 drill head: GHD P 133 DC 9800

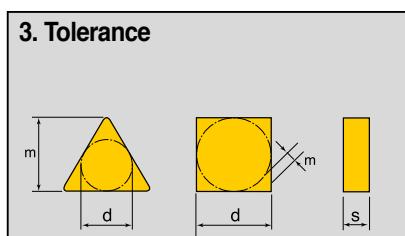
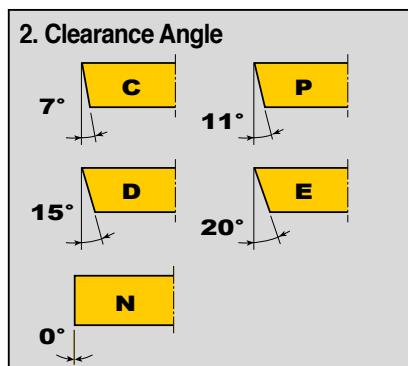
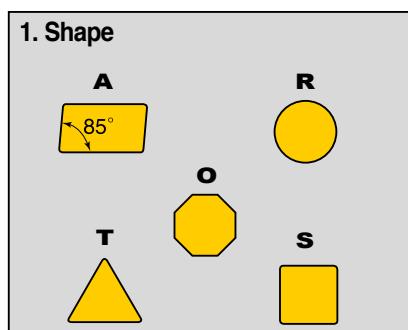
### Diameter Range 10.0-19.9 mm



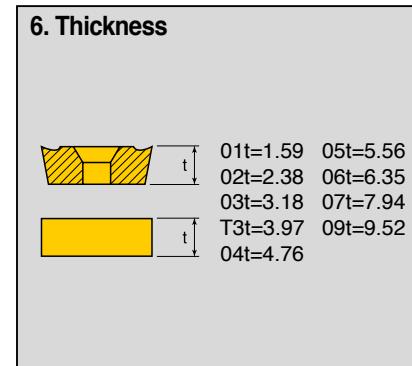
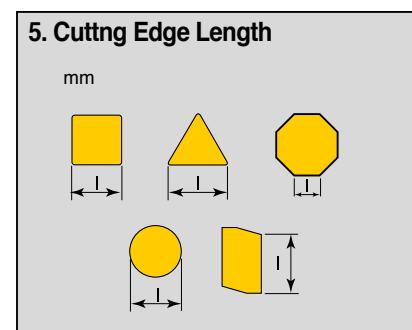
█ ISO P   
 █ ISO M   
 █ ISO K   
 █ ISO N



## Designation System of Insert

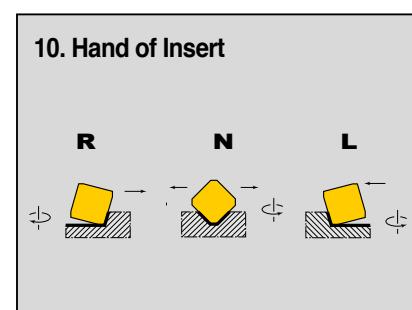
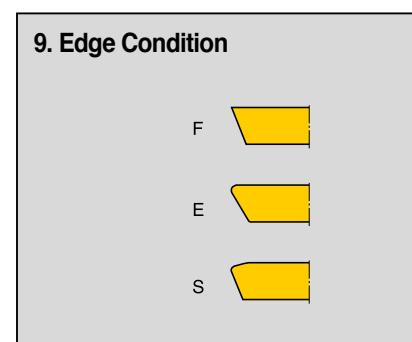
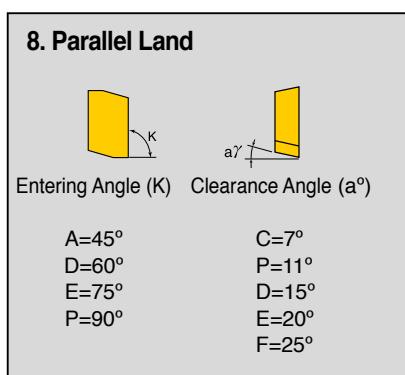
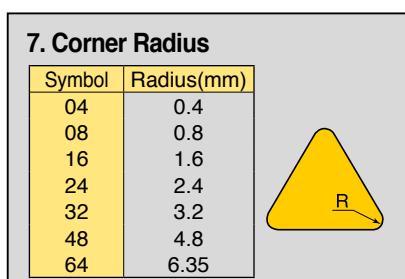
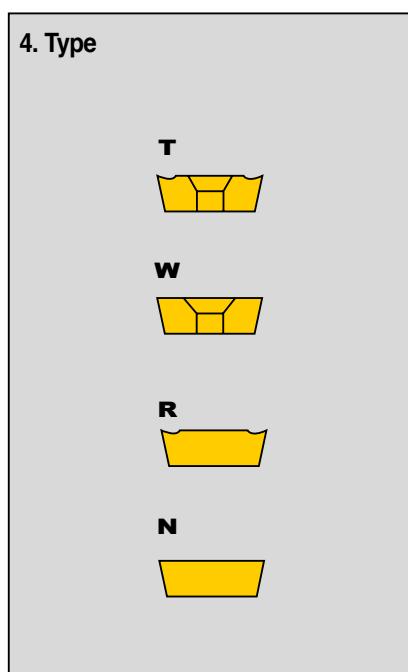


Symbol	$\pm \Delta m$	$\pm \Delta s$	$\pm \Delta d$
A	0.005	0.025	0.025
C	0.013	0.025	0.025
E	0.025	0.025	0.025
K	0.013	0.025	0.05 d=9.525 0.08 d=12.70 0.10 d=15.87
M	0.07 0.13	0.13	0.05 d=9.525 0.08 d=12.70
U	0.15 0.013	0.025	0.10 d=15.87 0.013



**A P K T 1 6 0 4 □□ P D □ R**

1 2 3 4      5      6      7      8      9      10



## Milling Program

Designation	Features•Application	Edge Geometry & Picture	Cutter Designation		
New GNMU 11, 16	• For steel, cast iron	M		• 90° Endmill • 90° Facemill	90E..GN11/16 90F..GN11/16 110 109
New SNMU 12	• For steel, cast iron	ANSN-M		• 45° Facemill	45F..SN12 111
New ONMU ONHU	• For steel	TN-MM			
	• For cast iron	TN□/PL		• 45° Facemill (wedge) • 45° Facemill (screw) • 75° Facemill (screw)	45FW..ON08 45FS..ON08 75FF..ON08 112 113 114
	• For general machining	N-HP			
	• Wiper geometry	AN-N-W			
		APMT-PDER		• 90° Endmill • 90° Facemill	90E..AP16 90F..AP16 136 137
APKT 08	• High positive geometry for lower cutting force	APKT-PDR		• 90° Endmill	90E..08A 139
APKT 12	• High positive geometry for lower cutting force	APKT-PDR		• 90° Endmill	90E..12A 138
OFCN 07 OFCR 07	• High feed & hardend steel	OFCN			
	• Stainless steel & low machine finish	OFCR		• 43° Facemill	43F..OF07 140
	• Ground insert & good surface finish	OFCR-G			

## Milling Program

Designation	Features•Application	Edge Geometry & Picture		Cutter Designation
SDKN 12, 42 SDKN 15, 53	• For steel	MT-HPN		<ul style="list-style-type: none"> <li>• 45° Facemill 45F...SD12</li> <li>• 45° Facemill 45F...SD15</li> </ul>
	• For steel	MT-GPN		
SEKN 12 SEKN 15	• For steel	AFSN-HPN		<ul style="list-style-type: none"> <li>• 45° Facemill 45F...SE12</li> <li>• 45° Facemill 45F...SE15</li> <li>• 45° DM Facemill DMF45...SE12</li> <li>• 45° DM Facemill DMF45...SE15</li> <li>• 45° DM Facemill DMFN45...SE12</li> </ul>
	• For steel	AFSN-GPN		
SPKN 12 SPKN 15	• General machining for cast iron	EDR-HPN		<ul style="list-style-type: none"> <li>• 75° ISO Facemill 75F...SP12</li> <li>• 75° ISO Facemill 75F...SP15</li> <li>• 75°(87.5°) DM Endmill DME75(87.5)...SP12</li> <li>• 75° DM Facemill DMF75...SP15</li> <li>• 75° DM Facemill DMF75...SP12</li> <li>• 75° DM Facemill DMFN75...SP12</li> <li>• 75° DM Facemill DMFN75...SP15</li> </ul>
	• For general machining	EDSR-HPN		
	• For general machining	EDSR-GPN		
SNCN 12 SNKN 12 SNKR 12	• For general machining	SNCN-EN		<ul style="list-style-type: none"> <li>• 45° Facemill 45F...SN12</li> <li>• 75° Facemill 75F...SN12</li> </ul>
	• For general machining	SNKN-EN-EM+		
	• For general machining	SNKR-XTN-EM		

## Milling Program

Designation	Features•Application	Edge Geometry & Picture		Cutter Designation
TPKN 16/22	• General machining for cast iron	PDR-HPN		<ul style="list-style-type: none"><li>• 90° ISO Facemill 90F...TP22</li><li>• 90° DM Endmill DME90...TP22</li><li>• 90° DM Endmill DME90...TP16</li></ul>
	• For general machining	PDSR-HPN		
	• For general machining	PDSR-GPN		
	• For general machining	PPSR-GPN		
TEKN 22	• For general machining	PESR-GPN		<ul style="list-style-type: none"><li>• 90° DM Facemill DMFN90...TE22</li><li>• 90° DM Facemill DMF90...TE22</li></ul>

## D2-Mill (90° Facemill)

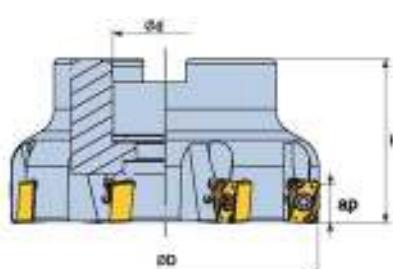


Fig.1

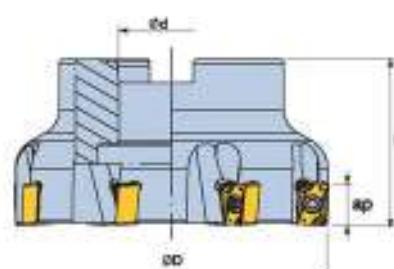
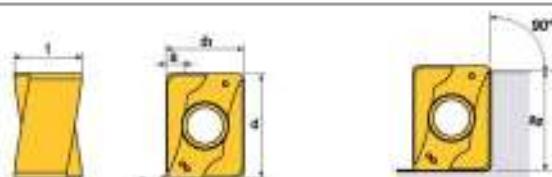


Fig.2

Designation	Insert		Dimension (mm)				Weight (Kg)		Fig.	Mounting Bolt
			D	d	H	ap				
90F4-D40-16R-GN11			4	40	16	40	10	0.3	O	1
90F5-D50-22R-GN11			5	50	22	40	10	0.4	O	1
90F6-D63-22R-GN11			6	63	22	40	10	0.6	O	1
90F8-D80-25.4R-GN11			8	80	25.4	50	10	1.1	O	1
90F9-D100-31.75R-GN11			9	100	31.75	50	10	2.0	X	2
90F4-D50-22-GN16			4	50	22	40	14.5	0.4	O	1
90F4-D63-22-GN16			4	63	22	40	14.5	0.6	O	1
90F7-D80-25.4-GN16			7	80	25.4	50	14.5	1.2	O	1
90F8-D100-31.75-GN16			8	100	31.75	50	14.5	2.1	X	2

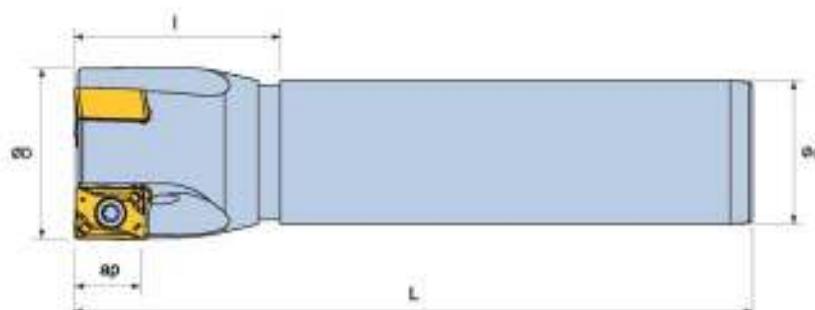
	Designation	Component			
		Screw		Wrench	
	90F...GN11	DS 300851/HG-TS		DTDW-9	-
New	90F...GN16	DS 50B1061/HG-TS	-		DTTW-20

## GNMU 11, 16



Insert	Designation	Dimension (mm)						Cermet	Coated				Uncoated	
		d	d1	t	R	a	ap		DP5320	DC9200	DC9235	DC9300	DC9800	DC210
	GNMU 110605R-M	11.00	7.10	6.6	0.50	1.20	10.0	●						
	GNMU 161008R-M	16.00	11.50	9.9	0.80	1.80	14.5	●						

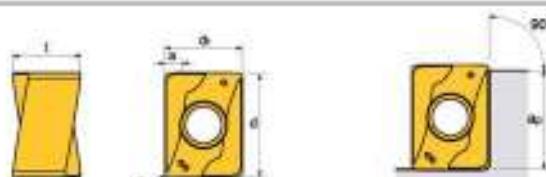
## D2-Mill (90° Endmill)



Designation	Insert		Dimension (mm)				
			D	d	L	t	ap
90E2-02020-GN11-L150	GNMU 110605R-M	2	20	20	150	40	10
90E3-02525-GN11-L150		3	25	25	150	40	10
90E4-03232-GN11-L150		4	32	32	150	40	10
90E2-03232-GN16-L150	GNMU 161008R-M	2	32	32	150	45	14.5
90E3-04032-GN16-L150		3	40	32	150	45	14.5

	Designation	Component		
		Screw		Wrench
	90E... GN11	DS 30085I/HG-TS		DTDW-9
	90E... GN16	DS 506108I/HG-TS		DTDW-20

## GNMU 11, 16



Insert	Designation	Dimension (mm)						Cermet	Coated				Uncoated	
		d	d <sub>s</sub>	t	R	a	ap		DP5320	DC9200	DC9235	DC9300	DC9800	DC210 DC325M
	GNMU 110605R-M	11.00	7.10	8.8	0.50	1.20	10.0		•					
	GNMU 161008R-M	15.60	11.50	9.9	0.80	1.80	14.5		•					

## D2-Mill (45° Facemill)

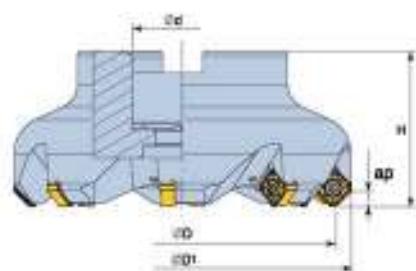


Fig.1

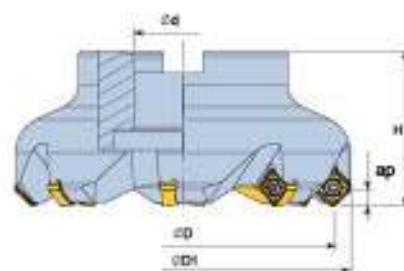


Fig.2

Designation	Insert		Dimension (mm)				Weight (Kg)		Fig.	Mounting Bolt
			D	d	H	ap				
45F4-D50-22R-SN12	SNMU 1206 ANSN-M		4	50	22	40	6	0.4	O	1 LH M10X1.5X25
45F5-D50-22R-SN12			5	50	22	40	6	0.4	O	1 LH M10X1.5X25
45F5-D63-22R-SN12			5	63	22	40	6	0.6	O	1 LH M10X1.5X25
45F6-D63-22R-SN12			6	63	22	40	6	0.6	O	1 LH M10X1.5X25
45F4-D80-25.4R-SN12			4	80	25.4	50	6	1.4	O	1 LH M12X1.75X30
45F7-D80-25.4R-SN12			7	80	25.4	50	6	1.4	O	1 LH M12X1.75X30
45F5-D100-31.75R-SN12			5	100	31.75	50	6	2.0	X	2 -
45F8-D100-31.75R-SN12			8	100	31.75	50	6	2.0	X	2 -
45F6-D125-38.1R-SN12			6	125	38.1	63	6	3.5	X	2 -
45F10-D125-38.1R-SN12			10	125	38.1	63	6	3.6	X	2 -

	Component	
	Screw	Wrench
	DS 40B100i-TS	DTTW-15

## SNMU 12



Insert	Designation	Dimension (mm)					Cermel		Coated				Uncoated		
		d	1	R	a	ap			DC630	DP5320	DC9200	DC9235	DC9300	DC9800	DC210
	SNMU 1206 ANSN-M	12.00	6.3	0.40	2.1	6.0		*							

## D2-Mill (45° Facemill)

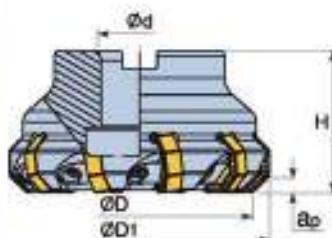


Fig. 2

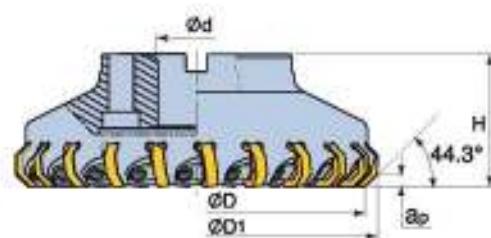
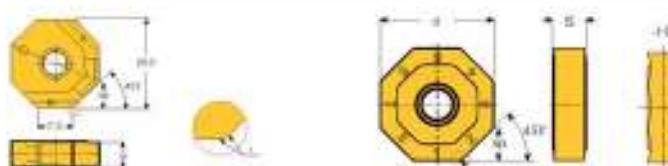


Fig. 3

Designation	Insert		Dimension (mm)				Weight (Kg)	Fig
			D	D <sub>1</sub>	d	H		
45FW10 D80-27R-ON08	ONMU 080608-TN-MM ONHU 080608-TN-MM ONMU 080608-TN ONHU 080608-TN ONHU 0806AN-N-W	10	80	92	27	50	1.40	2
45FW14 D100-32R-ON08		14	100	112	32	63	2.10	2
45FW18 D125-40R-ON08		18	125	137	40	63	3.60	2
45FW22 D160-40R-ON08		22	160	172	40	63	5.30	3
45FW22 D200-60R-ON08		22	200	212	60	63	8.67	3
45FW28 D200-60R-ON08		28	200	212	60	63	8.50	3
45FW36 D250-60R-ON08		36	250	262	60	63	11.90	3
45FW44 D315-60R-ON08		44	315	327	60	80	20.00	3

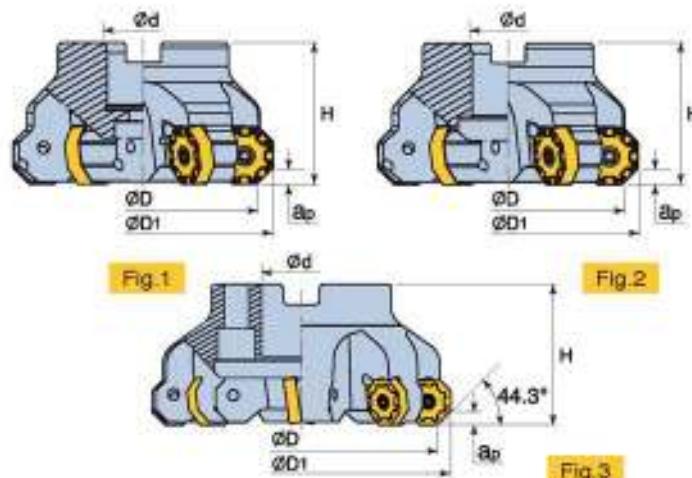
	Component			
	Wedge	Screw	Wrench	Wrench
	DLW 35-475/M	DSR 118-089	DBLD IP20/S7	DSW6-T

## ONMU/ONHU



Insert	Designation	Dimension (mm)					DC9800	DC7610	DC9200	DC8236	DC9300	DC235	DC9235
		d	t	a	ap	r							
	ONMU 080608-TN	20.2	6	0.8	5.5	-	•	•					
	ONMU 080608-TN-MM	20.2	6	0.8	5.5	-	•			•		•	•
	ONHU 080608-TN-MM	20.2	6	0.8	5.5	-	•				•	•	•
	ONHU 080608-TN	20.2	6	0.8	5.5	-		•	•				
	ONHU 080600-N-PL	20.2	6		5.5	-				•			
	ONHU 080612-HL	20.2	6	1.2	5.5	-				•			
	ONHU 080608 AN-N-HP	20.2	6	0.8	2.5	-						•	•
	ONHU 0806AN-N-W	20.4	6	-	5.5	0.4		•	•				

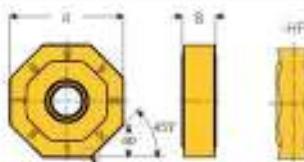
## D2-Mill (45° Facemill)



Designation	Insert		Dimension (mm)				Weight (Kg)	Fig.	Mounting Bolt
			D	D1	d	H			
45FS5 D63-22R-ON08	ONMU 080608-TN-MM ONMU 080608-TN ONHU 080608-TN	5	63	75.5	22	40	1.40	1	SR M10X25 DIN 912
45FS6 D80-27R-ON08		6	80	92.5	27	50	2.10	2	-
45FS7 D100-32R-ON08		7	100	112.5	32	60	3.60	2	-
45FS8 D125-40R-ON08		8	125	137.5	40	63	5.30	2	-
45FS10 D150-40R-ON08		10	160	172.5	40	63	8.67	3	-
45FS12 D200-60R-ON08		12	200	212.5	60	63	8.50	3	-
45FS14 D250-60R-ON08		14	250	262.5	60	63	11.90	3	-
45FS16 D315-60R-ON08		16	315	324.5	60	80	20.00	3	-

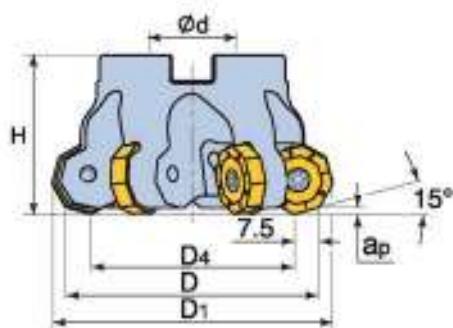
	Component		
	Screw	Wrench	Wrench
	DSR 14-591/H	DBLD T20/S7	DSW6-T

## ONMU/ONHU



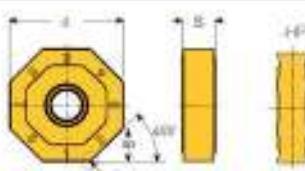
Insert	Designation	Dimension (mm)				DC9800	DC7610	DC9200	DC8236	DC9300	DC235	DC9235
		d	t	a	ap							
	ONMU 080608-TN	20.2	6	0.8	5.5		•	•				
	ONMU 080608-TN-MM	20.2	6	0.8	5.5	•				•		•
	ONHU 080608-TN	20.2	6	0.8	5.5		•	•			•	•

## D2-Mill (High Feed Facemill)



Designation	Insert		Dimension (mm)				
			D	D <sub>1</sub>	D <sub>2</sub>	H	Ap max
75FF6 D80-27R-ON08	ONMU 080612-HL ONMU 080608-TN-MM	6	80	88	64.5	50	2
		Component:					
Screw		Wrench			Wrench		
DSR 14-591/H		DBLD T20/S7			DSWB-T		

## ONMU/ONHU



Insert	Designation	Dimension (mm)				Grade						
		d	t	a	ap	DC9800	DC7610	DC9200	DC8236	DC8300	DC235	DC8235
<b>New</b> 	ONMU 080608-TN-MM	20.2	6	0.8	5.5	•			•		•	•
<b>New</b> 	ONHU 080612-HL	20.2	6	1.2	5.5		•					

## 90° Endmill

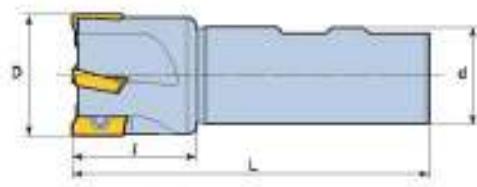


Fig. 1

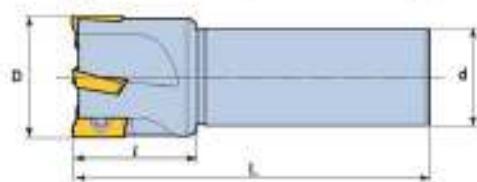


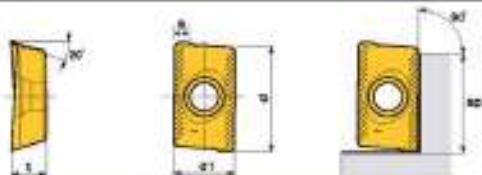
Fig. 2

Designation	Insert		Dimension (mm)				Fig	
			D	d	L	l		
90E02525W-AP16-L100			2	25	25	100	39	1
90E02525-AP16-L210			2	25	25	210	40	2
90E02625-AP16-L200			2	26	25	200	40	2
90E02625-AP16-L250			2	26	25	250	40	2
90E03232WF-AP16-L110			3	32	32	110	33	1
90E03232-AP16-L250			2	32	32	250	65	2
90E03332-AP16-L250			2	33	32	250	40	2
90E03332F-AP16-L250			3	33	32	250	55	2
90E03332-AP16-L300			2	33	32	300	40	2
90E03232W-AP16-L200			3	32	32	200	65	1
90E04032-AP16-L250			2	40	32	250	54	2
90E04032F-AP16-L200			3	40	32	200	54	2

	Component		DS40080I-TS, DS40120I-TS	DTTW-15
	Screw	Wrench		

\* DS40080W-TS: For Q25 cutter

## APMT 1604 PDER



Insert	Designation	Dimension (mm)						Coated						Uncoated			
		d	d1	a	l	R	ap	DC920	DP720	DC925	DP830	DC930	DP820	DC980	DP820	DC210	DC325M
	APMT 1604 PDER	16.4	9.45	1.7	5.25	0.8	13	•		•		•		•			

## 90° Facemill

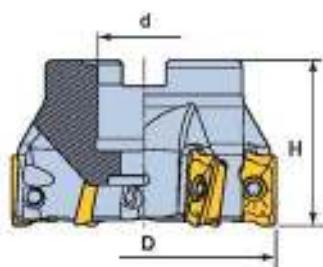


Fig.1

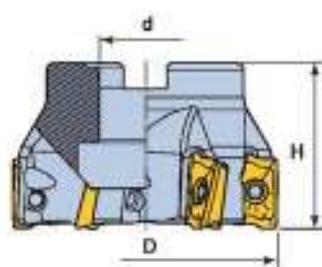


Fig.2

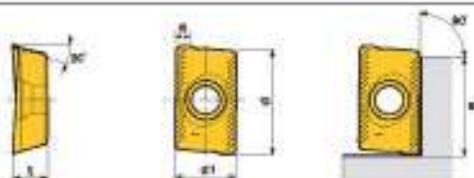
Designation	Insert		Dimension (mm)			Fig.	Mounting Bolt
			D	d	H		
90F-D50-22-AP16	APMT 1604 PDER	3	50	22	40	1	SH M10 X 1.5 X 30
90F-D63-22-AP16		4	63	22	40	1	SH M10 X 1.5 X 30
90F-D80-27-AP16		5	80	27	50	1	SH M12 X 1.75 X 35
90F-D100-32-AP16		6	100	32	50	2	-

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

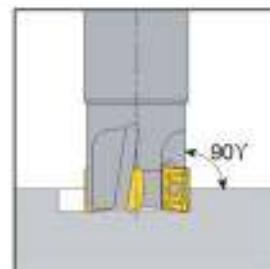
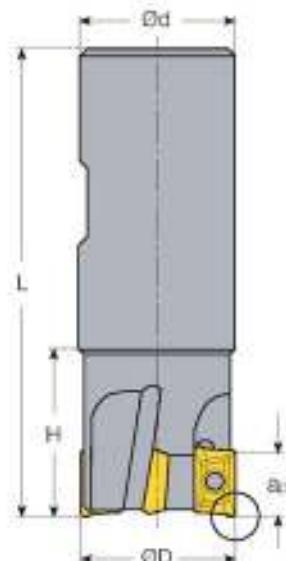
\* DS40093W-TS: For Ø50-Ø63 cutter

## APMT 1604 PDER



Insert	Designation	Dimension (mm)						Coated						Uncoated			
		d	d1	a	t	R	ap	DC9200	DP7320	DC9225	DP8330	DC9300	DP8320	DC9300	DP5320	DC7900	DC210
	APMT 1604 PDER	16.4	9.45	1.7	5.25	0.8	13	*	*	*	*	*	*				

## 90° Endmill - APKT 1203

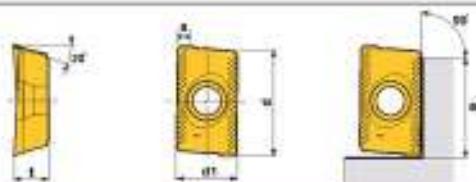


**Cutting angles**  
**Lead angle** 90°  
**Axial rake** 3°  
+13°  
**Radial rake** 20°

Designation	Insert		Dimension (mm)				ap
			D	d	H	L	
90E01216S-12A	APKT 1203	1	12	16	20	75	12
90E01616S-12A		1	16	16	25	85	12
90E02020S-12A		2	20	20	28	90	12
90E02525S-12A		3	25	25	32	100	12
90E03232S-12A		4	32	32	30	110	12

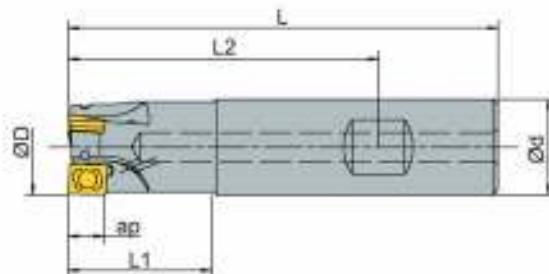
	Component	
	Screw	Wrench
	SM30-065-00	
	DTTW09	

## APKT..1203



Insert	Designation	Dimension (mm)				Coated			Uncoated
		d	d <sub>1</sub>	t	R	DC9245	DC9800	DC9200	DC9254
	APKT 1203PDR	12.2	8	3.8	0.8	•	•	•	•
	APKT 120316R	12.2	8	3.8	1.6	•		•	•
	APKT 120332R	12.2	8	3.8	3.2	•		•	•
	APKT 120364R	12.2	8	3.8	6.4	•			•

## 90° Endmill - APKT 0803



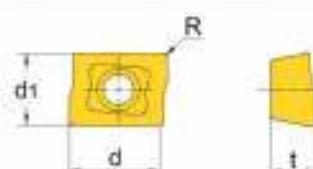
Designation	Insert		Dimension (mm)							Weight (Kg)
			D	d	L	L1	L2	ap		
90E010 16W-08A	APKT 0803	1	10	16	80	18	58	7.5	✓	0.08
90E012 16W-08A		1	12	16	80	20	58	7.5	✓	0.09
90E016 16W-08A		2	16	16	85	26	61	7.5	✓	0.10
90E020 20W-08A		3	20	20	90	30	65	7.5	✓	0.18
90E025 25W-08A		4	25	25	100	40	88	7.5	✓	0.32
90E032 32W-08A		4	32	32	155	93	119	7.5	✓	0.85

	Component	
	Screw	Wrench
	SM25-054-00 SM25-064-00	DS-T08S DS-T08S

For D10-D12 SM25-054-00

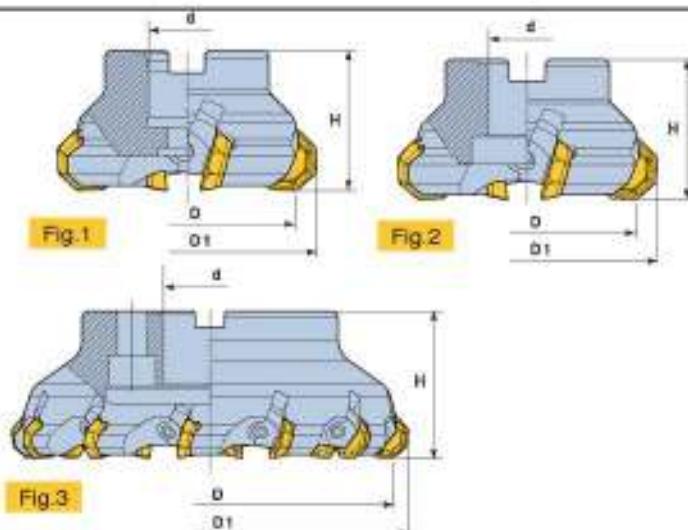
For D16-D32 SM25-064-00

## APKT...0803



Insert	Designation	Dimension (mm)				Coated				
		d	d1	t	R	DC285	DC925	DC150	DC8800	DC8200
	APKT 080304R	7.9	6.2	3.45	0.4		•	•	•	•
	APCR 080304R	7.9	6.2	3.45	0.4		•			
	APCR 080304R-P	7.9	6.2	3.45	0.4	•				

## 43° Facemill

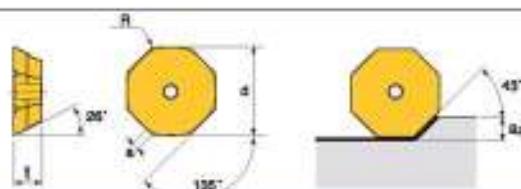


Designation	Insert		Dimension (mm)				Weight (Kg)	Fig.	Mounting Bolt
			D	D1	d	H			
43F-D63-22-OF07	OFCN 0704 OFCR 0704-G	4	63	75.4	22	40	0.5	1	SH M10 X 1.5 X 30
43F-D80-27-OF07		5	80	92.3	27	50	1.2	1	SH M12 X 1.75 X 35
43F-D100-32-OF07		6	100	112.3	32	50	1.8	2	-
43F-D125-40-OF07		8	125	137.7	40	63	3	2	-
43F-D160-40-OF07		10	160	172.3	40	63	4.7	3	-
43F-D200-60-OF07		12	200	212.3	60	63	7	3	-
43F-D80-25.4-OF07		5	80	92.3	25.4	50	1.2	1	SH M12 X 1.75 X 35
43F-D100-31.75-OF07		6	100	112.3	31.75	50	1.8	2	-
43F-D125-38.1-OF07		8	125	137.7	38.1	63	3	2	-
43F-D160-50.8-OF07		10	160	172.3	50.8	63	4.7	3	-

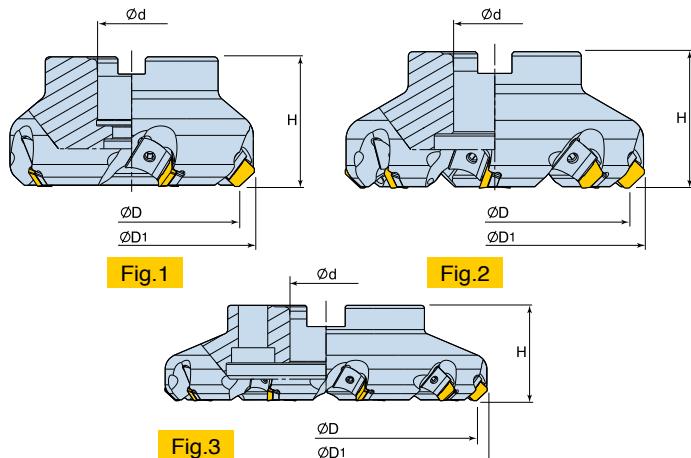
	Component		
	Wedge	Screw	Wrench
DWFO-6Z	DWS8S	DTTW-4	

## OFCN 07 &amp; OFCR 07



Insert	Designation	Dimension (mm)					Coated						Uncoated			
		d	t	a	R	ap	DC9210	DC9220	DC9235	DC9330	DC9340	DC9320	DC9600	DC7800	DC5320	DC210
	OFCN 0704	17.94	5.1	1.7	0.8	5	•				•					
	OFCR 0704-G	17.94	5.1	1.7	0.8	5	•				•					

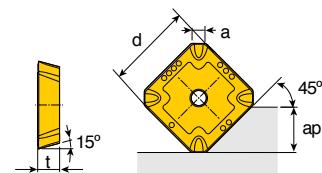
## 45° ISO Facemill (ISO Insert)



Designation	Insert		Dimension(mm)				Weight (Kg)	Fig.	Mounting Bolt
			D	D <sub>1</sub>	d	H			
45F-D80-25.4-SD12	SDKN 1203 MT-HPN SDKN 42 MT-GPN	4	80	93.8	25.4	50	1.6	1	LH M12 X 1.75 X 30
45F-D100-31.75-SD12		5	100	113.8	31.75	60	2.8	1	LH M16 X 2 X 35
45F-D125-38.1-SD12		6	125	138.8	38.1	63	3.5	2	-
45F-D160-50.8-SD12		8	160	173.9	50.8	63	5.5	2	-
45F-D200-47.625-SD12		10	200	213.9	47.625	63	7.6	3	-
45F-D250-47.625-SD12		12	250	263.9	47.625	63	12.6	3	-

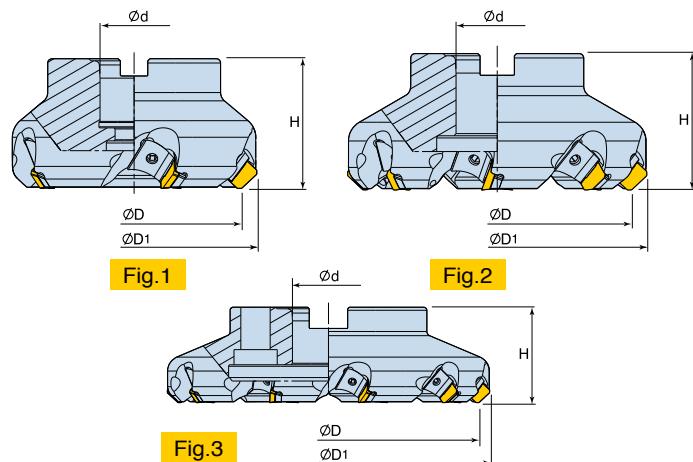
	Component				
	Shim	Wedge	Shim Screw	Wedge Screw	Wrench
	DSSDSE 12N	DWPA 8	DS 40B100I-TS	DS 80200W-TS	DTTW-4

## SDKN 12



Insert	Designation	Dimension(mm)				Coated				Uncoated	
		d	t	a	ap	DP5320	DP7320	DP9320	DC7800	DC9235	DC210
	SDKN 1203 MT-HPN	12.7	3.18	2.0	6.4				•		
	SDKN 42 MT-GPN	12.7	3.18	2.0	6.4				•	•	•

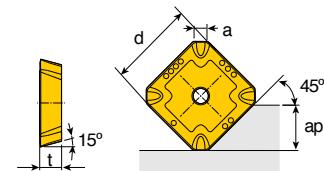
## 45° ISO Facemill (ISO Insert)



Designation	Insert		Dimension(mm)				Weight (Kg)	Fig.	Mounting Bolt
			D	D <sub>1</sub>	d	H			
45F-D80-25.4-SD15	SDKN 1504 MT-HPN SDKN 53 MT-HPN SDKN 53 MT-GPN	4	80	98.3	25.4	50	1.6	1	LH M12 X 1.75 X 30
45F-D100-31.75-SD15		5	100	118.6	31.75	60	2.8	1	LH M16 X 2 X 35
45F-D125-38.1-SD15		6	125	143.6	38.1	63	3.5	2	-
45F-D160-50.8-SD15		8	160	178.6	50.8	63	5.5	2	-
45F-D200-47.625-SD15		10	200	218.6	47.625	63	7.6	3	-
45F-D250-47.625-SD15		12	250	268.6	47.625	63	12.6	3	-

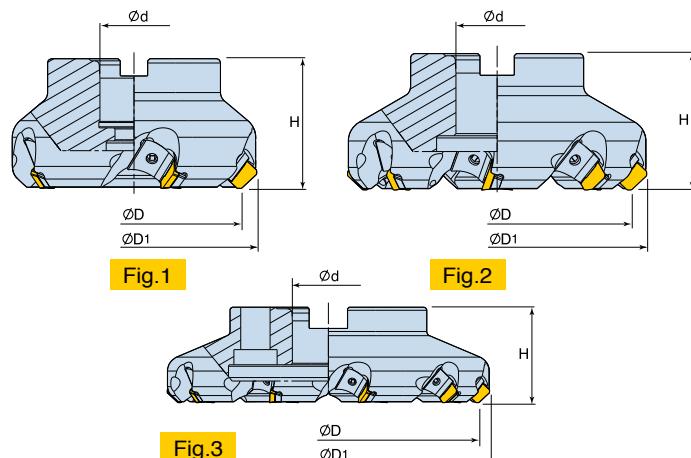
	Component				
	Shim	Wedge	Shim Screw	Wedge Screw	Wrench
	 DSSDSE 15N	 DWPA 8	 DS 40B100I-TS	 DS 80200W-TS	 DTTW-4

## SDKN 15



Insert	Designation	Dimension(mm)					Coated				Uncoated	
		d	t	a	ap		DP5320	DP7320	DP9320	DC7800	DC9235	DC210
	SDKN 1504 MT-HPN	15.875	4.76	1.89	8.5				•			
	SDKN 53 MT-HPN	15.875	4.76	1.89	8.5				•			
	SDKN 53 MT-GPN	15.875	4.76	1.89	8.5			•	•	•		•

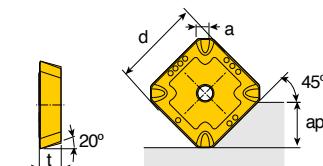
## 45° ISO Facemill (ISO Insert)



Designation	Insert		Dimension(mm)				Weight (Kg)	Fig.	Mounting Bolt
			D	D <sub>1</sub>	d	H			
45F-D80-25.4-SE12	SEKN 1203 AFSN-GPN SEKN 1203 AFSN-HPN	4	80	93.7	25.4	55	1.5	1	LH M12 X 1.75 X 30
45F-D100-31.75-SE12		5	100	113.6	31.75	60	2.4	1	LH M16 X 2 X 35
45F-D125-38.1-SE12		6	125	138.6	38.1	63	2.7	2	-
45F-D160-50.8-SE12		8	160	173.6	50.8	63	4.2	2	-
45F-D200-47.625-SE12		10	200	213.5	47.625	63	6.1	3	-
45F-D250-47.625-SE12		12	250	263.5	47.625	63	11.1	3	-
45F-D315-47.625-SE12		14	315	328.5	47.625	63	17.5	3	-

	Component				
	Shim	Wedge	Shim Screw	Wedge Screw	Wrench
	DSSDSE 12N	DWPA 8	DS 40B100I-TS	DS 80200W-TS	DTTW-4

## SEKN 12



Insert	Designation	Dimension(mm)				Coated				Uncoated		
		d	t	a	ap	DP5320	DP7320	DP9320	DC7800	DC9235	DC210	DC325M
	SEKN 1203 AFSN-HPN	12.7	3.18	2.0	6.4				•			
	SEKN 1203 AFSN-GPN	12.7	3.18	2.08	6.4			•	•	•		•

## 45° ISO Facemill (ISO Insert)

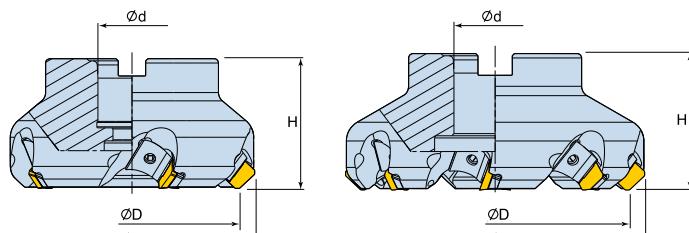


Fig.1

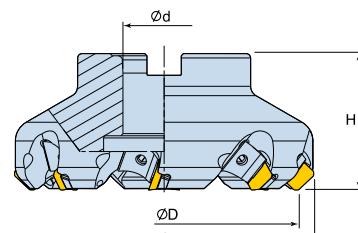


Fig.2

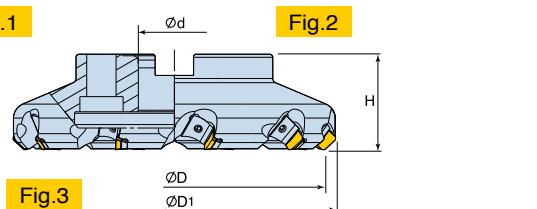
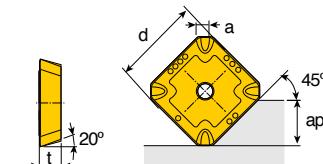


Fig.3

Designation	Insert		Dimension(mm)				Weight (Kg)	Fig.	Mounting Bolt
			D	D <sub>1</sub>	d	H			
45F-D80-25.4-SE15	SEKN 1504 AFSN-GPN SEKN 1504 AFSN-HPN	4	80	93.7	25.4	55	1.5	1	LH M12 X 1.75 X 30
45F-D100-31.75-SE15		5	100	113.6	31.75	60	2.4	1	LH M16 X 2 X 35
45F-D125-38.1-SE15		6	125	138.6	38.1	63	2.7	2	-
45F-D160-50.8-SE15		8	160	173.6	50.8	63	4.2	2	-
45F-D200-47.625-SE15		10	200	213.5	47.625	63	6.1	3	-
45F-D250-47.625-SE15		12	250	263.5	47.625	63	11.1	3	-

	Component				
	Shim	Wedge	Shim Screw	Wedge Screw	Wrench
	DSSDSE 15N	DWPA 8	DS 40B100I-TS	DS 80200W-TS	DTTW-4

## SEKN 15



Insert	Designation	Dimension(mm)				Coated				Uncoated		
		d	t	a	ap	DP5320	DP7320	DP9320	DC7800	DC9235	DC210	DC325M
	SEKN 1504 AFSN-HPN	15.875	4.76	1.89	8.5			•	•	•		
	SEKN 1504 AFSN-GPN	15.875	4.76	2.06	8.5			•	•	•		•

## 45° Facemill

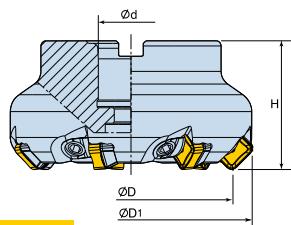


Fig.1

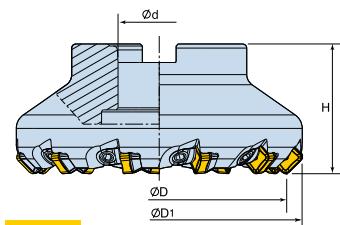


Fig.2

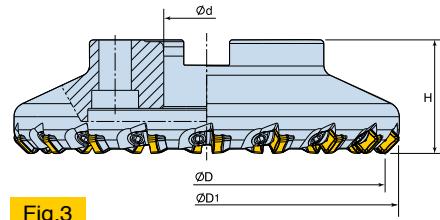
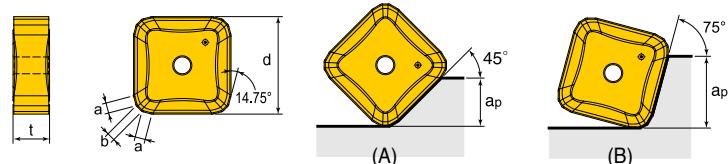


Fig.3

Designation	Insert		Dimension(mm)				Weight (Kg)	Fig.	Mounting Bolt
			D	D1	d	H			
45F-D80-25.4-SN12	SNCN 1204 EN SNKN 1204 EN-EM+ SNKR 1204 XTN-EM	6	80	95	25.4	50	1.7	1	LH M12X1.75X30
45F-D100-31.75-SN12		8	100	115	31.75	50	2.2	2	-
45F-D125-38.1-SN12		10	125	140	38.1	63	3.7	2	-
45F-D160-50.8-SN12		14	160	175	50.8	63	5.6	2	-
45F-D200-47.625-SN12		18	200	215	47.625	63	7.5	3	-
45F-D250-47.625-SN12		22	250	265	47.625	63	10.9	3	-

	Component				
	Shim	Wedge	Shim Screw	Wedge Screw	Wrench
	DTSSN 12N	DWFZ 8H-SN	DS 40B100I-TS	DWS 8	DTTW-4

## SNCN 12 & SNKN 12 & SNKR 12



Insert	Designation	Dimension(mm)						Coated				Uncoated	
		d	t	a	b	ap(A)	ap(B)	DP5320	DP7320	DP9320	DC780	DC9235	DC210
	SNCN 1204 EN	12.7	4.76	1.50	0.9	-	-	●					●
	SNKN 1204 EN-EM+	12.7	4.76	1.34	1.06	6.2	9.3	●	●				●
	SNKR 1204 XTN-EM	12.7	4.76	1.34	1.06	6.2	9.3	●	●	●			

Coating Hole: Coated(O), Uncoated (X)

## 75° Facemill

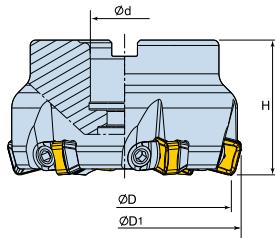


Fig.1

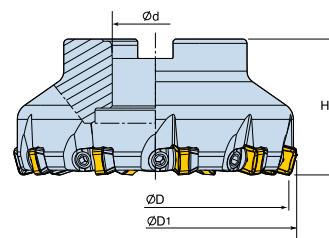


Fig.2

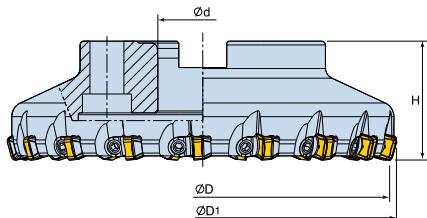
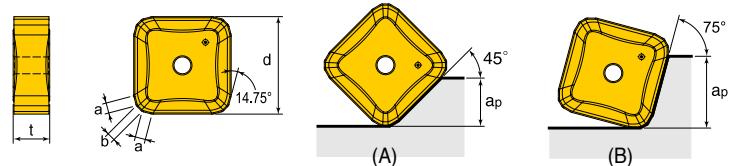


Fig.3

Designation	Insert		Dimension(mm)				Weight (Kg)	Fig.	Mounting Bolt
			D	D1	d	H			
75F-D80-25.4-SN12	SNCN 1204 EN SNKN 1204 EN-EM+ SNKR 1204 XTN-EM	5	80	87.4	25.4	50	1.6	1	SH M12X1.75X35
75F-D100-31.75-SN12		8	100	107.4	31.75	50	2.1	2	-
75F-D125-38.1-SN12		10	125	132.4	38.1	63	3.6	2	-
75F-D160-50.8-SN12		14	160	167.4	50.8	63	5	2	-
75F-D200-47.625-SN12		18	200	207.4	47.625	63	7.5	3	-
75F-D250-47.625-SN12		22	250	257.4	47.625	63	10.9	3	-

	Component				
	Shim	Wedge	Shim Screw	Wedge Screw	Wrench
	DSSP 12N	DWFZ 8H-SN	DS 40B100I-TS	DWS 8	DTTW-4

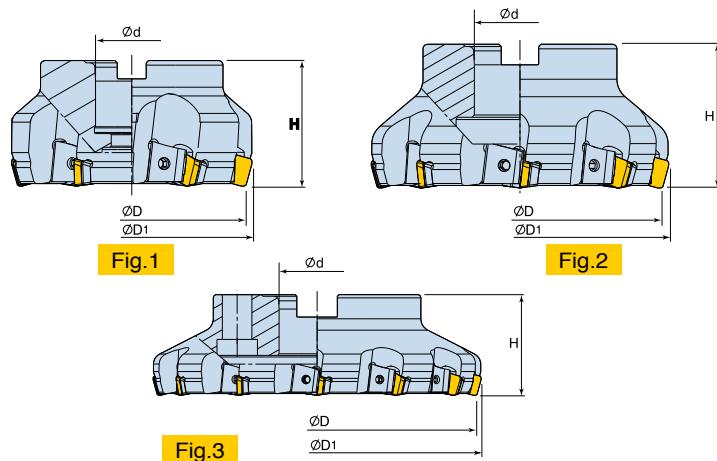
## SNCN 12 & SNKN 12 & SNKR 12



Insert	Designation	Dimension(mm)						Coated				Uncoated	
		d	t	a	b	ap(A)	ap(B)	DP5320	DP7320	DP9320	DC7800	DC9235	DC210
	SNCN 1204 EN	12.7	4.76	1.50	0.9	-	-	●					●
	SNKN 1204 EN-EM+	12.7	4.76	1.34	1.06	6.2	9.3	●	●				●
	SNKR 1204 XTN-EM	12.7	4.76	1.34	1.06	6.2	9.3	●	●	●			

Coating Hole: Coated(O), Uncoated (X)

## 75° ISO Facemill (ISO Insert)

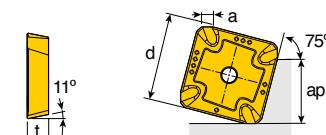


Designation	Insert		Dimension(mm)				Weight (Kg)	Fig.	Mounting Bolt
			D	D1	d	H			
75F-D80-25.4-SP12	SPKN 1203 EDR-HPN SPKN 1203 EDSR-HPN SPKN 1203 EDSR-GPN	5	80	85.4	25.4	50	1.2	1	SH M12 X 1.75 X 35
75F-D100-31.75-SP12		5	100	105.4	31.75	55	1.8	1	LH M16 X 2 X 35
75F-D125-38.1-SP12		8	125	130.4	38.1	63	2.8	2	-
75F-D160-50.8-SP12		10	160	165.4	50.8	63	4.8	2	-
75F-D200-47.625-SP12		12	200	205.4	47.625	63	6.4	3	-
75F-D250-47.625-SP12		16	250	255.4	47.625	63	11.1	3	-
75F-D315-47.625-SP12		20	315	320.4	47.625	63	17.3	3	-

	Component				
	Shim	Wedge	Shim Screw	Wedge Screw	Wrench
	DSSP 12N	DWPA 8	DS 40B100I-TS	DS 80200W-TS, *DS 80160W-TS	DTTW-4

\* DS 80160W-TS: For Ø80 cutter

## SPKN 12



Insert	Designation	Dimension(mm)					Coated				Uncoated		
		d	t	a	ap		DP5320	DP7320	DP9320	DC7800	DC9235	DC210	DC325M
	SPKN 1203 EDR-HPN	12.7	3.18	1.6	8			•					•
	SPKN 1203 EDSR-HPN	12.7	3.18	1.2	8				•		•		
	SPKN 1203 EDSR-GPN	12.7	3.18	1.3	8				•				•

## 75° ISO Facemill (ISO Insert)

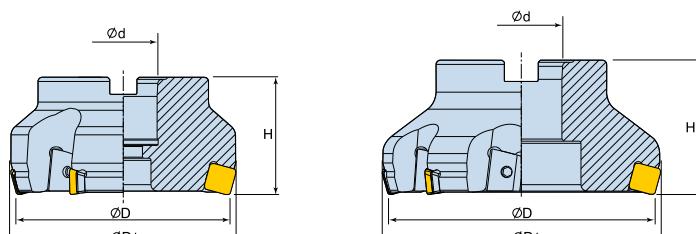


Fig.1

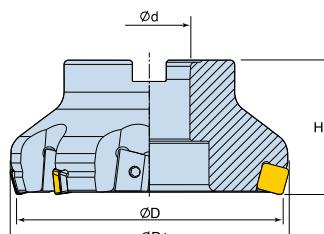


Fig.2

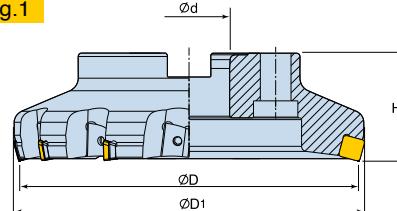
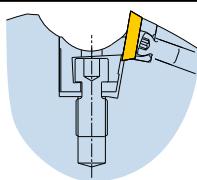


Fig.3

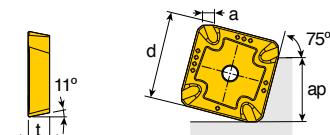
Designation	Insert		Dimension(mm)				Weight (Kg)	Fig.	Mounting Bolt
			D	D <sub>1</sub>	d	H			
75F-D80-25.4-SP15	SPKN 1504 EDR-HPN SPKN 1504 EDSR-HPN SPKN 1504 EDSR-GPN	5	80	87.0	25.4	55	1.3	1	SH M12 X 1.75 X 35
75F-D100-31.75-SP15		5	100	107.0	31.75	55	2.0	1	LH M16 X 2 X 35
75F-D125-38.1-SP15		8	125	132.0	38.1	63	2.7	2	-
75F-D160-50.8-SP15		10	160	166.9	50.8	63	4.7	2	-
75F-D200-47.625-SP15		12	200	206.9	47.625	63	6.4	3	-
75F-D250-47.625-SP15		16	250	256.9	47.625	63	10.8	3	-
75F-D315-47.625-SP15		20	315	321.9	47.625	63	17.9	3	-



Component				
Shim	Wedge	Shim Screw	Wedge Screw	Wrench
DSSP 15N	DWPA 8	DS 40B100I-TS	DS 80200W-TS, *DS 80160W-TS	DTTW-4

\* DS 80160W-TS: For Ø80 cutter

## SPKN 15



Insert	Designation	Dimension(mm)					Coated					Uncoated		
		d	t	a	ap		DP5320	DP7320	DP9320	DC7800	DC9235	DC9300	DC210	DC325M
	SPKN 1504 EDR-HPN	15.875	4.76	1.6	12		●	●			●			●
	SPKN 1504 EDSR-HPN	15.875	4.76	1.4	12				●					
	SPKN 1504 EDSR-GPN	15.875	4.76	1.5	12		●	●						●

## 90° ISO Facemill (ISO Insert)

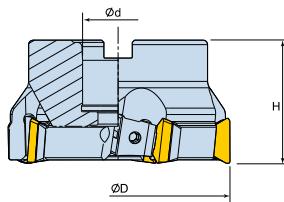


Fig.1

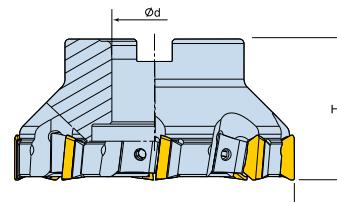


Fig.2

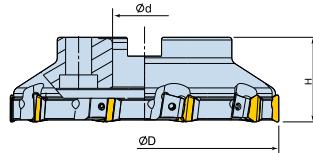
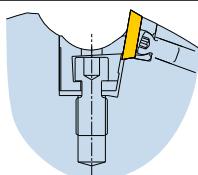


Fig.3

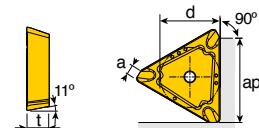
Designation	Insert		Dimension(mm)			Weight (Kg)	Fig.	Mounting Bolt
			D	d	H			
90F-D80-25.4-TP22	TPKN 2204 PDR-HPN TPKN 2204 PDSR-HPN TPKN 2204 PDSR-GPN	4	80	25.4	50	0.9	1	SH M12 X 1.75 X 35
90F-D100-31.75-TP22		5	100	31.75	55	1.8	1	LH M16 X 2 X 35
90F-D125-38.1-TP22		6	125	38.1	63	2.6	2	-
90F-D160-50.8-TP22		8	160	50.8	63	4.3	2	-
90F-D200-47.625-TP22		10	200	47.625	63	5.9	3	-
90F-D250-47.625-TP22		12	250	47.625	63	10.5	3	-
90F-D315-47.625-TP22		14	315	47.625	63	16.7	3	-



Component				
Shim	Wedge	Shim Screw	Wedge Screw	Wrench
DSTP 22N	DWPA 8	DS 40B100I-TS	DS 80200W-TS, *DS 80160W-TS	DTTW-4

\* DS 80160W-TS: For Ø80 cutter

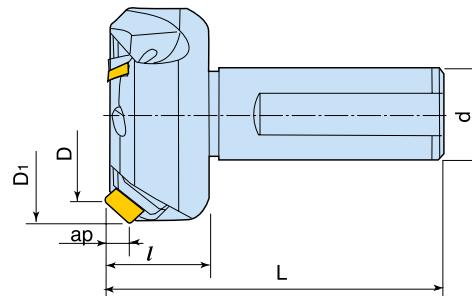
## TPKN 22



Insert	Designation	Dimension(mm)					Coated					Uncoated	
		d	t	a	ap		DP5320	DP7320	DP9320	DC7800	DC9235	DC210	DC325M
	TPKN 2204 PDR-HPN	12.7	4.76	1.7	16			●			●		●
	TPKN 2204 PDSR-HPN	12.7	4.76	1.41	16				●		●		
	TPKN 2204 PDSR-GPN	12.7	4.76	1.5	16				●				

## 45° ISO Facemill (ISO Insert)

### Type 1 (Wedge + Shim Clamp)

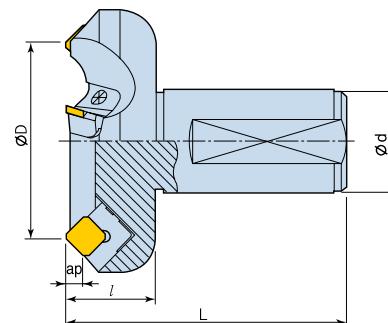


Designation	Insert		Dimension(mm)					
			D	D <sub>1</sub>	d	L	l	ap
DMFN45-D63-SE12	SEKN 1203 AFSN-HPN SEKN 1203 AFSN-GPN	3	63	76.5	32	115	35	6

	Component					
	Shim	Wedge	Shim Screw	Wedge Screw	Wrench	Shim Screw Wrench
	DSSDSE 12N	DWPA 8	DS 40B100I-TS	DS 80200W-TS	DTTW-4	DTTW-15 (1)

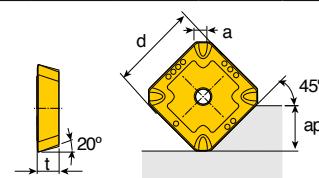
• DTTW-15(1) is not included in the package

### Type 2 (Wedge)



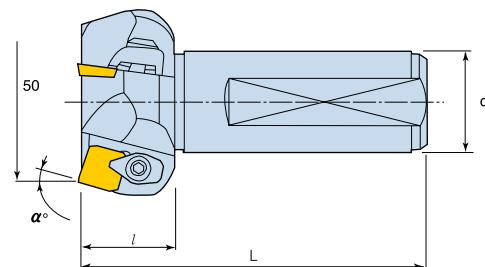
Designation	Insert		Dimension(mm)				
			D	d	L	l	ap
DMF45-D63-SE12	SEKN 1203 AFSN-HPN SEKN 1203 AFSN-GPN	3	63	32	115	35	4
DMF45-D63-SE15	SEKN 1504 AFSN-HPN SEKN 1504 AFSN-GPN	3	63	32	115	35	5
DMF45-D80-SE15		4	80	42	115	37	5

	Designation	Component				
		Anvil	Wedge	Anvil Screw	Wedge Screw	Wrench
		DASE54R	DWSE54R	SH M4 X 0.7 X 8	DWS8	DTTW-4
	DMF45...SE12					
	DMF45...SE15					

**SEKN 12/15**

Insert	Designation	Dimension(mm)					Coated				Uncoated		
		d	t	a	ap		DP5320	DP7320	DP9320	DC7800	DC9235	DC210	DC325M
	SEKN 1203 AFSN-HPN	12.7	3.18	2.0	6.4				•				
	SEKN 1504 AFSN-HPN	15.875	4.76	1.89	8.5			•	•		•		
	SEKN 1203 AFSN-GPN	12.7	3.18	2.08	6.4			•	•		•		•
	SEKN 1504 AFSN-GPN	15.875	4.76	2.06	8.5			•	•		•		•

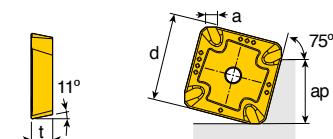
## 75° (87.5°) DM Endmill (ISO Insert)



Designation	Insert		Dimension(mm)					
			$a^\circ$	d	L	l	ap	d
DME87.5-D50-SP12	SPGN 120308	3	2° 30'	Ø32	110	30		50
DME75-D50-SP12	SPKN 1203 EDR-HPN SPKN 1203 EDSR-HPN SPKN 1203 EDSR-GPN	3	15°	Ø32	110	30		50

	Component			
	Clamp	Clamp Screw	Snap Ring	Wrench
	DCL3C	DCLS3C	DCSR 2	DHLW-3

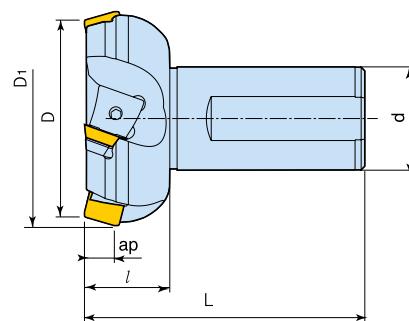
## SPKN 12



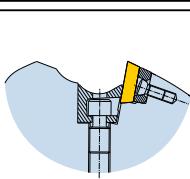
Insert	Designation	Dimension(mm)					Coated					Uncoated	
		d	t	a	ap		DP5320	DP7320	DP9320	DC7800	DC9235	DC210	DC325M
	SPKN 1203 EDR-HPN	12.7	3.18	1.6	8			•					•
	SPKN 1203 EDSR-HPN	12.7	3.18	1.2	8			•			•		
	SPKN 1203 EDSR-GPN	12.7	3.18	1.3	8			•					•

## 75° ISO Facemill (ISO Insert)

### Type 1 (Wedge + Shim Clamp)



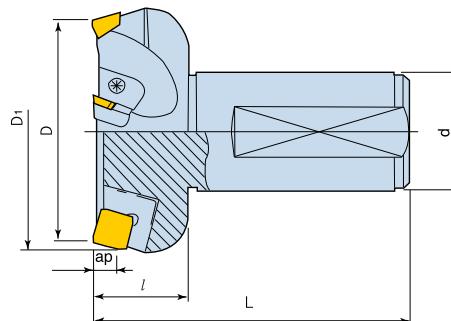
Designation	Insert		Dimension(mm)					
			D	D <sub>1</sub>	d	L	l	ap
DMFN75-D63-SP12	SPKN 1203 EDR-HPN SPKN 1203 EDSR-HPN SPKN 1203 EDSR-GPN	3	63	68.3	32	115	35	8
DMFN75-D80-SP15	SPKN 1504 EDR-HPN SPKN 1504 EDSR-HPN SPKN 1504 EDSR-GPN	4	80	86.9	42	115	35	12



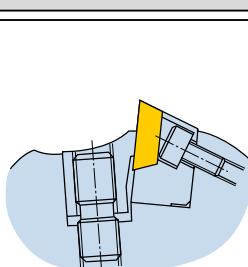
	Component				
	Shim	Wedge	Shim Screw	Wedge Screw	Wrench
	DSSP 12N	DWPA 8	DS 40B100I-TS	DS 80200W-TS	DTTW-4
	DSSP 15N			*DS 80160W-TS	

\* DS 80160W-TS: For Ø80 cutter

### Type 2 (Wedge)

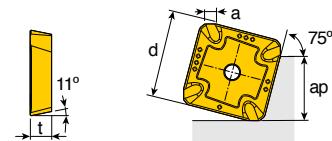


Designation	Insert		Dimension(mm)					
			D	D <sub>1</sub>	d	L	l	ap
DMF75-D63-SP12	SPKN 1203 EDR-HPN SPKN 1203 EDSR-HPN SPKN 1203 EDSR-GPN	3	63	68.3	32	115	35	10
DMF75-D80-SP15	SPKN 1504 EDR-HPN SPKN 1504 EDSR-HPN SPKN 1504 EDSR-GPN	4	80	86.9	42	115	35	14



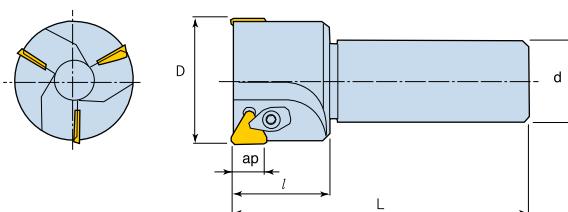
	Designation	Component				
		Anvil	Wedge	Anvil Screw	Wedge Screw	Wrench
	DMF75-D63-SP12					
		DASP 4NR	DWSP 45R	DS 40E113I/HG-TS	DWS 8/DWS 8M	DTTW-4
	DMF75-D80-SP15					
		DASP 45R	DWSP 45R	DS M4X0.7X8-SH	DWS 8/DWS 8M	DTTW-4

## SPKN 12/15



Insert	Designation	Dimension(mm)				Coated				Uncoated		
		d	t	a	ap	DP5320	DP7320	DP9320	DC7800	DC9235	DC210	DC325M
	SPKN 1203 EDR-HPN	12.7	3.18	1.6	8			●			●	
	SPKN 1504 EDR-HPN	15.875	4.76	1.6	12		●	●		●		●
	SPKN 1203 EDSR-HPN	12.7	3.18	1.2	8			●		●		
	SPKN 1504 EDSR-HPN	15.875	4.76	1.4	12			●				
	SPKN 1203 EDSR-GPN	12.7	3.18	1.3	8			●				●
	SPKN 1504 EDSR-GPN	15.875	4.76	1.5	12		●	●				●

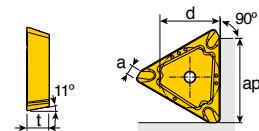
## 90° DM Endmill (ISO Insert)



Designation	Insert		Dimension(mm)				
			D	d	L	l	ap
DME90-D25-TP16	TPKN 1603 PPSR-GPN	1	25	25	120	40	14
DME90-D30-TP16		2	30	32	120	40	14
DME90-D32-TP16		2	32	32	120	40	14
DME90-D35-TP16		2	35	32	120	40	14
DME90-D40-TP16		3	40	32	120	40	14
DME90-D50-TP16		3	50	32	120	40	14
DME90-D60-TP16		3	60	32	120	40	14
DME90-D40-TP22	TPKN 2204 PDR-HPN	2	40	32	120	40	19
DME90-D50-TP22		2	50	32	120	40	19
DME90-D60-TP22		3	60	32	120	40	19

	Designation	Component			
		Clamp	Clamp Screw	Snap Ring	Wrench
		DME90...TP16	DCL3C	DCSR 2	DHLW-3
		DME90...TP22	DCL4	DCSR 4	DHLW-4

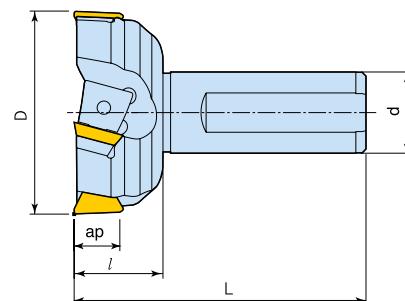
## TPKN 16/22



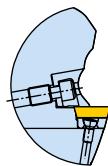
Insert	Designation	Dimension(mm)					Coated				Uncoated		
		d	t	a	ap		DP5320	DP7320	DP9320	DC7800	DC9235	DC210	DC325M
	TPKN 1603 PPSR-GPN	9.525	3.18	1.5	13			●	●		●		
	TPKN 2204 PDR-HPN	12.7	4.76	1.7	16			●			●		●
	TPKN 2204 PDSR-HPN	12.7	4.76	1.41	16				●		●		
	TPKN 2204 PDSR-GPN	12.7	4.76	1.5	16				●				

## 90° ISO Facemill (ISO Insert)

### Type 1 (Wedge + Shim Clamp)



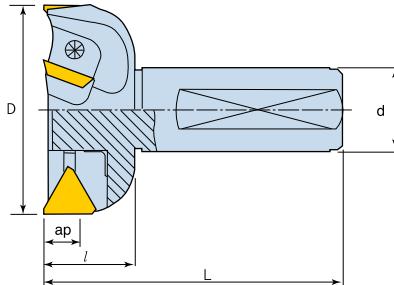
Designation	Insert		Dimension(mm)				
			D	d	L	l	ap
DMFN90-D80-TE22	TEKN 2204 PESR-GPN	4	80	32	115	35	18



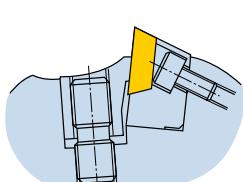
Component					
Shim	Wedge	Shim Screw	Wedge Screw	Wrench	Shim Screw Wrench
DSTE 22N	DWPA 8	DS 40B100I-TS	DS 80160W-TS	DTTW-4	DTTW-15 <sup>(1)</sup>

• DTTW-15<sup>(1)</sup> is not included in the package

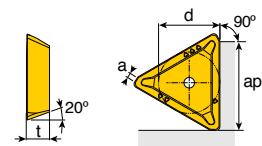
### Type 2 (Wedge)



Designation	Insert		Dimension(mm)				
			D	d	L	l	ap
DMF90-D50-TE22	TEKN 2204 PESR-GPN	3	50	32	115	35	19
DMF90-D63-TE22		3	63	32	115	35	19
DMF90-D80-TE22		4	80	32	115	35	19



Designation	Component				
	Anvil	Wedge	Anvil Screw	Wedge Screw	Wrench
DMF90-D50-TE22 DMF90-D63-TE22	DATEM450R	DWTEMR	SH M3 X 0.5 X 6	DWS8S	DTTW-4
DMF90-D80-TE22		DWTE54R	SH M4 X 0.7 X 8	DWS8M	DTTW-4

**TEKN 22**

Insert	Designation	Dimension(mm)				Coated				Uncoated		
		d	t	a	ap	DP5320	DP7320	DP9320	DC7800	DC9235	DC210	DC325M
	TEKN 2204 PESR-GPN	12.7	4.76	1.2	17.5		●	●		●		

## Recommended Condition of GNMU 11

ISO	Material	Hardness (HB)	Ap (mm)	Speed (m/min)	Recommended Grade	Fz (mm/tooth)
P	Carbon Steel	175 - 225	1.0 - 7.0	180 - 260	DP 5320	0.05 - 0.25
	Alloy Steel	275 - 325	1.0 - 7.0	150 - 230	DP 5320	0.05 - 0.25
	Tool Steel	200 - 250	1.0 - 7.0	90 - 140	DP 5320	0.05 - 0.25
M	Stainless Steel 300 Series		1.0 - 7.0	150 - 240	DP 5320	0.05 - 0.25
	Stainless Steel 400 Series		1.0 - 7.0	150 - 260	DP 5320	0.05 - 0.25

## Recommended Condition of GNMU 16

ISO	Material	Hardness (HB)	Ap (mm)	Speed (m/min)	Recommended Grade	Fz (mm/tooth)
P	Carbon Steel	175 - 225	1.0 - 10.0	180 - 260	DP 5320	0.05 - 0.25
	Alloy Steel	275 - 325	1.0 - 10.0	150 - 230	DP 5320	0.05 - 0.25
	Tool Steel	200 - 250	1.0 - 10.0	90 - 140	DP 5320	0.05 - 0.25
M	Stainless Steel 300 Series		1.0 - 10.0	150 - 240	DP 5320	0.05 - 0.25
	Stainless Steel 400 Series		1.0 - 10.0	150 - 260	DP 5320	0.05 - 0.25

## Recommended Condition of SNMU 12

ISO	Material	Hardness (HB)	Ap (mm)	Speed (m/min)	Recommended Grade	Fz (mm/tooth)
P	Carbon Steel	175 - 225	1.0 - 6.0	180 - 270	DP 5320	0.10 - 0.25
	Alloy Steel	275 - 325	1.0 - 6.0	135 - 200	DP 5320	0.10 - 0.25
	Tool Steel	200 - 250	1.0 - 6.0	90 - 125	DP 5320	0.10 - 0.25
M	Stainless Steel 300 Series		1.0 - 6.0	150 - 210	DP 5320	0.10 - 0.35
	Stainless Steel 400 Series		1.0 - 6.0	200 - 250	DP 5320	0.10 - 0.35
K	Grey Cast Iron	190 - 220	1.0 - 6.0	180 - 240	DP 5320	0.10 - 0.35
	Ductile Cast Iron	140 - 200	1.0 - 6.0	180 - 240	DP 5320	0.10 - 0.35

## Recommended Condition of SEKN 12/15 for 45° Facemill

ISO	Material	Hardness (HB)	Ap (mm)	Speed (m/min)	Recommended Grade***	Fz (mm/tooth) SEKN12/15
P	Low Carbon Steel	85 - 175	1.0	360		0.15 - 0.30
			2.5	300	DP9320, DC325M	0.15 - 0.25
			6.5	270		0.15 - 0.25
	High Carbon Steel	175 - 225	1.0	260		0.15 - 0.30
			2.5	180	DP9320, DC325M	0.15 - 0.25
			6.5	210		0.15 - 0.25
	Alloy Steel	275 - 325	1.0	210		0.12 - 0.20
			2.5	180	DP9320, DC325M	0.10 - 0.15
			6.5	135		0.10 - 0.15
K	Tool Steel	200 - 250	1.0	130		0.12 - 0.20
			2.5	110	DP9320, DC325M	0.10 - 0.15
			6.5	100		0.10 - 0.15
	Grey Cast Iron	190 - 220	1.0	300		0.15 - 0.30
			2.5	250	DP7320	0.15 - 0.25
			6.5	210		0.15 - 0.20
N	Ductile Cast Iron	140 - 200	1.0	270		0.15 - 0.25
			2.5	240	DP7320	0.15 - 0.25
			6.5	210		0.15 - 0.20
N	Aluminum Alloy	-	1.0	500+		0.15 - 0.50
			2.5	500+	DC210	0.15 - 0.35
			6.5	500+		0.15 - 0.30

Reduce speed by 20% when channel milling

\*\*\*In order of preference, uncoated carbide reduce speed 20%

## Recommended Condition of SPKN 12/15, TPKN 16/22, SEKN 12/15, TEKN 22 for 75°, 90° Facemill

ISO	Material	Hardness (HB)	Ap (mm)	Speed (m/min)	Recommended Grade***	Fz (mm/tooth) SPKN(R)/TPKN(R)/SEKN/TEKN
P	Low Carbon Steel	85 - 175	1.0	305	DP9320, DC325M	0.10 - 0.15
			2.5	275		0.10 - 0.15
			7.5	240		0.10 - 0.15
	High Carbon Steel	175 - 225	1.0	245	DP9320, DC325M	0.10 - 0.15
			2.5	210		0.10 - 0.15
			7.5	180		0.10 - 0.15
	Alloy Steel	275 - 325	1.0	210	DP9320, DC325M	0.10 - 0.15
			2.5	180		0.10 - 0.15
			7.5	135		0.10 - 0.12
M	Tool Steel	200 - 250	1.0	125	DP9320, DC325M	0.05 - 0.15
			2.5	110		0.10 - 0.15
			7.5	90		0.10 - 0.12
	Stainless Steel 300 Series	-	1.0	210	DP9320, DC325M	0.10 - 0.15
			2.5	180		0.10 - 0.15
			7.5	150		0.10 - 0.12
S	Heat-Resistance Alloy	-	1.0	45	DP9320	0.10 - 0.12
			2.5	30		0.10 - 0.12
			7.5	25		0.10 - 0.12
	Titanium Alloy	-	1.0	75	DP9320	0.10 - 0.12
			2.5	50		0.10 - 0.12
			7.5	35		0.10 - 0.12
K	Grey Cast Iron	190 - 220	1.0	260	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	DP7320	0.10 - 0.15
			2.5	200		0.10 - 0.15
			7.5	170		0.10 - 0.15
N	Aluminum Alloy	-	1.0	500+	DC210	0.15 - 0.50
			2.5	450+		0.15 - 0.35
			7.5	360+		0.15 - 0.35

Reduce speed by 20% when channel milling

\*\*\*In order of preference, uncoated carbide reduce speed 20%

## Recommended condition of OFCN, OFCR for 43° Facemill

ISO	Material	Hardness (HB)	Ap (mm)	Speed (m/min)	Recommended Grade***	Fz (mm/tooth)** OFCN, OFCR
P	Low Carbon Steel	85 - 175	1.0	360	DP9320	0.15 - 0.35
			2.5	300		0.15 - 0.30
			6.5	270		0.15 - 0.30
	High Carbon Steel	175 - 225	1.0	260	DP9320	0.10 - 0.30
			2.5	180		0.10 - 0.25
			6.5	210		0.10 - 0.25
	Alloy Steel	275 - 325	1.0	210	DP9320	0.10 - 0.18
			2.5	180		0.10 - 0.16
			6.5	135		0.10 - 0.16
K	Tool Steel	200 - 250	1.0	130	DP9320	0.10 - 0.18
			2.5	110		0.10 - 0.16
			6.5	100		0.10 - 0.16
	Grey Cast Iron	190 - 220	1.0	300	DP7320	0.15 - 0.35
			2.5	250		0.15 - 0.35
			6.5	210		0.15 - 0.30
Ductile Cast Iron	140 - 200	140 - 200	1.0	270	DP7320	0.10 - 0.25
			2.5	240		0.10 - 0.25
			6.5	210		0.10 - 0.25

Reduce speed by 20% when channel milling

\*\*\*In order of preference, uncoated carbide reduce speed 20%

\*\*Feed(mm/tooth) adjusted to compensate for radial chip thinning

## Recommended Condition APKT 16 for 90° Facemill

ISO	Material	Hardness (HB)	Ap (mm)	Speed (m/min)	Recommended Grade	Fz (mm/tooth) APKT 16
P	Low Carbon Steel	85 - 175	1.0	350	DP9320	0.10 - 0.25
			3.5	320		0.10 - 0.22
			7.0	280		0.10 - 0.20
	High Carbon Steel	175 - 225	1.0	260	DP9320	0.10 - 0.22
			3.5	230		0.10 - 0.20
			7.0	180		0.10 - 0.20
	Alloy Steel	275 - 325	1.0	230	DP9320	0.10 - 0.20
			3.5	180		0.10 - 0.15
			7.0	150		0.10 - 0.12
K	Tool Steel	200 - 250	1.0	140	DP9320	0.10 - 0.18
			3.5	120		0.10 - 0.15
			7.0	90		0.10 - 0.12
	Grey Cast Iron	190 - 220	1.0	300	DP7320	0.10 - 0.25
			3.5	250		0.10 - 0.20
			7.0	200		0.10 - 0.15
Ductile Cast Iron	140 - 200	140 - 200	1.0	280	DP7320	0.10 - 0.22
			3.5	220		0.10 - 0.18
			7.0	150		0.10 - 0.15

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

Reduce 20% speed by 20% for Facemills when slotting

# Technical Information

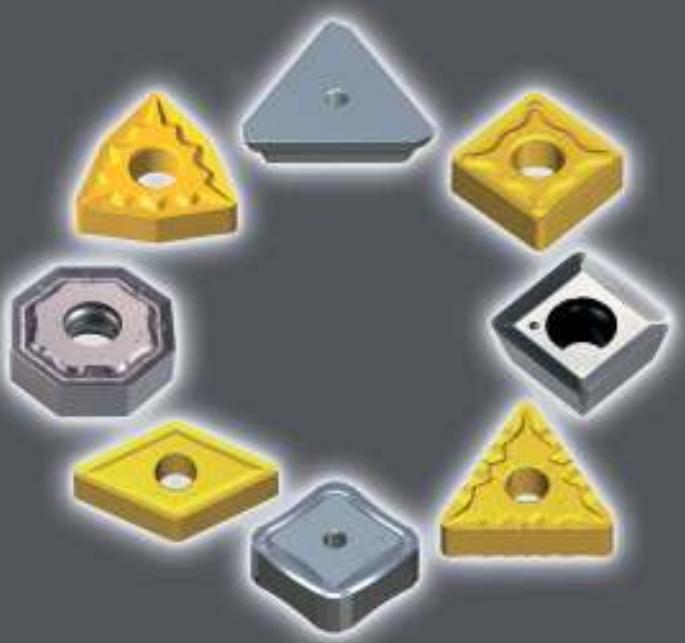
## Grade Comparison Table

	Duracarb	Korloy	Sandvik	Walter	Seco	Kennametal	Nitteublidi	Sumitomo	Tungaloy	Kyocera	TaeguTec	ISCAR
Turning	DC210	H-01	H10 H104		HX		HT10	H1 EH10	G1 <sup>+</sup> H10T TH10		K10	IC23
	DC810	CN1000 CN2000	CT5015 CT5025	WCE10	CM CM'5	KT129 KT150	NX2505 NX3006	T1104 T1200A	N6730 N6720	TN60 TN620	CT3000	IC20A
	DC820	NC308K NC3110	GC3205 GC3210	WA10 WA20	TK1000 TK2000	KOK05 KOK15	UC5105 UC5115	AC4104 AC700G	T5105 T5115 T5125	CA4505 CA4515	TT1300 TT7310	IC5305 IC5210
	DC9015	NC3010 NC3015	GC4205 GC4215	WPP01 WPP10 WAP10	TP1000 TP1500	KCP05 KCP10	UE6105 UE6110	AC1000 AC700G	T9005 T9015 T9115	CA5205 CA5515 CR7015	TT8115	IC8150 IC8152
	DC9025	NC3120 NC3020	GC4225 GC4025	WPP20 WAP20	TP2000 TP2500	KCP25 KC9125	UE9020	AC820P AC2000	T9125 T9025	CA5525 CR7025	TT8250 TT5100	IC9250 IC9250
	DC8035											
D-Cut	DC210	H-01	H10 H104		HX		HT10	H1 EH10	G1 <sup>+</sup> H10T TH10		K10	IC23
	DC9235	PC3515 PC5300	SC2040 S40T	W2M80 W3M80 WSP45	F40M MM4500 MS2500	KC725M	F730 VP50RT MP9030	ACP200 EH202 EH5202	AH130 AH140 SI-730	PR1225 PR905	TT8000	C83C C33C C929
	DC210	H-01	H10 H104		HX		HT10	H1 EH10	G1 <sup>+</sup> H10T TH10		K10	IC23
	DC925M		S30 SM30		S35M			A30N A30	T800 UX30		P30	IC53M
	DC9230	PC3510 PC215K	SC1020		M2000	KC815M	F5310	AC2210 ACK200 ACK200	AH120		TT6000	C81C C91C
	DC9300	PC3530 PC3535 PC3525 PC130	SC4020	WAN80	T250M				AH-330	PR830 PR850 PR730	TT7000	C95C
Milling	DC7320	PC3510 PC215K PC5300	SC3020 SC1020	WKP25 WKP35	M2000 M3000	KCK15 KC620M	MP8010 VP15TF F5310	ACK200 ACK300 ACK310	T1015 T1115 AH120 GH110	PR805 PR610 PR610	TT6000	C81C C91C
	DC9235	PC3545 PC5300	SC2040 S40T	WXM85 W3M85 WSP45	F40M MM4500 MS2500	KC725M	F730 VP50RT MP9030	ACP200 EH202 EH5202	AH130 AI-140 SI-730	PR1225 PR905	TT8000	C83C C33C C929
	DP8330	PC3545 PC5300	SC2040 S40T	WXM80 W3M80 WSP45	F40M MM4500 MS2500	KC725M	F730 VP50RT MP9030	ACP200 EH202 EH5202	AH130 AH140 SI-730	PR1225 PR805	TT6000	C83C C33C C929
	DP9320	PC3500 PC3535 PC3525	SC4220 SC4250	WAP25 WAN10	M21500 MP2500				I3130 AH230 I3730	PR830 PR660 PR730	TT7000	C95C
	DC9300	PC3530 NC3530 PC3530	SC1020 SC4240	WAN80	F30M MP3000	KC522M KC635M	VP15TF VP20RT	ACP200	AI-725 AI-730 GH330 AI-120	PR830	TT5000	C80E C90E
	DP5320	PC3530 NC3530 PC3530	SC1030 SC4240	WAN80	F30M MP2000	KC522M KC635M	VP15TF VP20RT	ACP200	AH-725 AH-730 SI-630 AH120	PR830	TT9000	C80E C90E
Drilling	DC7820	PC3545 PC5300	SC2040 S40T	WXM80 W3M85 WSP45	F40M MM4500 MS2500	KC725M	F730 VP50RT MP9030	ACP200 EH202 EH5202	AH130 AI-140 SI-730	PR1225 PR905	TT7000	C83C C33C C929
	DC150	PC3500	SC1025 SC4125								TT7220	C35C
	DC9800	PC9530	SC1030 SC2030	WAN80	F30M	KC522M KC635M	VP15TF	ACP200	SI-630	PR830 PR925 PR1025	TT9000	C80E C90E
	DC154	PC3500	SC1025 SC4125								TT7220	C35C

# Technical information

## Chipbreaker

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



**Duracarb**

Products Catalog

[info@duracarb.com](mailto:info@duracarb.com)