



**Duracarb™**





GRADE	ISO RANGE	FEATURES & APPLICATION
DC210 UNCOATED	<b>N10</b>	<ul style="list-style-type: none"> <li>• For Aluminum machining</li> <li>• Uncoated grade</li> </ul>
DC610 CERMET	<b>P05</b> – <b>P15</b> <b>M05</b> – <b>M15</b> <b>K05</b> – <b>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>
DC820 CVD COATED	<b>K05</b> – <b>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>
DC810 CVD COATED	<b>P10</b> – <b>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> </ul>
<b>New</b> DC9015 CVD COATED	<b>P10</b> – <b>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>
DC7010 CVD COATED	<b>P15</b> – <b>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> </ul>
<b>New</b> DC9025 CVD COATED	<b>P15</b> – <b>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>New</b> DC8035 CVD COATED	<b>P20</b> – <b>P40</b> <b>M30</b> – <b>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>

GRADE	ISO RANGE	FEATURES & APPLICATION
DC9235 PVD COATED	<b>M30</b> – <b>M40</b> <b>S30</b> – <b>S40</b> <b>P30</b> – <b>P45</b>	<ul style="list-style-type: none"> <li>• For interrupted cutting and medium &amp; low cutting of Stainless Steel, Heat Resistance Alloy, Low Carbon Steel, Low Carbon Alloy Steel</li> <li>• Highest Toughness in turning grade</li> <li>• TiCN</li> </ul>
DC154 PVD COATED	<b>P20</b> – <b>P35</b>	<ul style="list-style-type: none"> <li>• For steel machining from light to heavy</li> <li>• TiCN</li> </ul>



GRADE	ISO RANGE	FEATURES & APPLICATION
DC325M UNCOATED	P30 – P40	<ul style="list-style-type: none"> <li>• For Steel milling</li> <li>• Uncoated grade</li> </ul>
DC9200 PVD COATED	K05 – K20 N05 – N20 H05 – H20	<ul style="list-style-type: none"> <li>• For Cast Iron</li> <li>• High wear resistance</li> <li>• TiAlN</li> </ul>
DC9235 PVD COATED	M30 – M40 P30 – P45 K20 – K40 N15 – N30 S20 – S30	<ul style="list-style-type: none"> <li>• For Low &amp; High feed machining for Steel and Stainless Steel</li> <li>• Strong cutting edge</li> <li>• TiCN</li> </ul>
DC9300 PVD COATED	P15 – P40	<ul style="list-style-type: none"> <li>• For Steel milling</li> <li>• High wear &amp; heat resistance</li> <li>• TiAlN</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</li> <li>• Improved tool life</li> <li>• TiAlN</li> </ul>



GRADE	ISO RANGE	FEATURES & APPLICATION
DC980N PVD COATED	K05 – K20 P05 – P20	<ul style="list-style-type: none"> <li>• High speed machining of Die Steel, general Steel and Cast Iron Steel</li> <li>• TiAlN</li> </ul>
DC980S PVD COATED	P05 – P20 H05 – H25	<ul style="list-style-type: none"> <li>• High speed machining of Hardened Steel</li> <li>• PVD coated grade</li> </ul>

# Insert Designation System

### 1. Shape

### 2. Clearance Angle

### 3. Tolerance

**M class**

IC	m ±	d ±
6.35	±0.08	±0.05
9.52	±0.08	±0.05
12.70	±0.13	±0.08

**G class**

기호	m	t	d
H	±0.013	±0.025	±0.013
E	±0.025	±0.025	±0.025
G	±0.025	±0.13	±0.025

### 4. Type

### 6. Thickness

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

C N M G 12 04 08 (R) 52

1    2    3    4    5    6    7    8    9

### 5. Cutting Edge Length

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

### 7. Coner R

ex) 0.8mm=08

### 8. Hand of Insert

**R** Right  
**L** Left

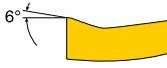
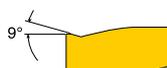
### 9. Chibreaker

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

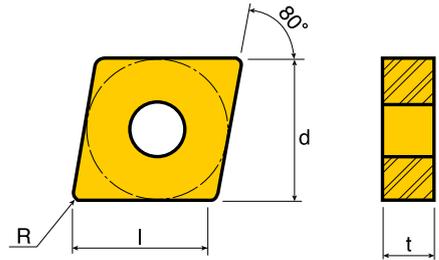
## Cutting Condition

Material		C'breaker	CVD						
			DC610	DC820	DC810	<sup>New</sup> DC9015	DC7010	<sup>New</sup> DC9025	<sup>New</sup> DC8035
			Cutting speed(m/min)						
Carbon Steel	Low 0.05-0.25% C SM18C	<b>41</b> <b>42</b> <b>43</b>	250-700	-	400-460	350-500	230-380	200-420	180-350
	Medium 0.25-0.55% C SM45C	<b>41</b> <b>42</b> <b>43</b> <b>52</b>	150-350	-	250-350	220-380	170-300	150-330	120-250
	High 0.55-0.80% C SM55C	<b>45</b> <b>52</b> <b>53</b>	120-300	-	200-350	180-380	140-280	120-300	-
Alloy Steel	Low Alloy SCM415	<b>41</b> <b>42</b> <b>43</b>	150-550	-	200-320	180-350	150-280	130-300	60-320
	Alloy SCM440	<b>45</b> <b>52</b> <b>53</b>	100-320	-	200-320	180-350	160-280	140-300	60-200
Cast Iron	Grey Cast Iron	<b>45</b> <b>52</b> <b>53</b>	100-300	180-440	100-270	90-300	-	-	-
	Ductile Cast Iron		100-250	200-340	100-260	90-280	-	-	-
Stainless Steel		<b>41</b> <b>42</b> <b>45</b>	200-270	-	-	-	-	-	100-210

## 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>
	<i>New</i> 42		 <ul style="list-style-type: none"> <li>• For medium machining in Stainless Steel and Low Carbon Steel</li> <li>• Low cutting force</li> </ul>
	<i>New</i> 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>
	<i>New</i> 45		 <ul style="list-style-type: none"> <li>• For medium machining in Steel and Alloy Steel</li> <li>• Semi finishing in Cast Iron</li> <li>• Applicable to various materials</li> </ul>
	52		 <ul style="list-style-type: none"> <li>• Medium to Roughing 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>
POSITIVE	51		 <ul style="list-style-type: none"> <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 finish 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

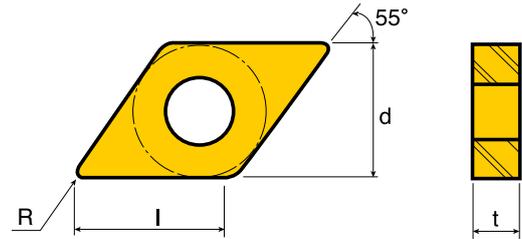


## CNM□

Insert	Designation	Dimension(mm)				Recommended cutting condition		Grade							
		l	d	t	R	Feed(mm/rev)	D.O.C(mm)	DC610	DC820	DC810	DC7010	DC9015	DC9025	DC8035	
	CNMA 120404	12.4	12.7	4.76	0.4	0.15 - 0.50	1.0 - 5.0		●						
	120408	12.0	12.7	4.76	0.8	0.15 - 0.60	1.0 - 6.0		●						
	120412	11.6	12.7	4.76	1.2	0.15 - 0.70	1.5 - 6.0		●						
	CNMG 120404 41	12.4	12.7	4.76	0.4	0.07 - 0.40	0.3 - 4.5	●		●	●				●
	120408 41	12.0	12.7	4.76	0.8	0.10 - 0.45	0.3 - 4.5	●		●	●				●
	120412 41	11.6	12.7	4.76	1.2	0.15 - 0.45	0.5 - 4.5			●	●				
	CNMG 120404 42	12.4	12.7	4.76	0.4	0.13 - 0.40	0.4 - 4.0								●
	120408 42	12.0	12.7	4.76	0.8	0.15 - 0.45	0.5 - 4.0								●
	120412 42	11.6	12.7	4.76	1.2	0.17 - 0.50	0.7 - 4.0								●
	CNMG 120404 43	12.4	12.7	4.76	0.4	0.13 - 0.40	0.4 - 3.0						●	●	
	120408 43	12.0	12.7	4.76	0.8	0.15 - 0.40	0.5 - 3.0						●	●	
	120412 43	11.6	12.7	4.76	1.2	0.17 - 0.45	0.6 - 3.0						●	●	
	CNMG 120404 45	12.4	12.7	4.76	0.4	0.17 - 0.45	0.5 - 4.0		●				●	●	●
	120408 45	12.0	12.7	4.76	0.8	0.20 - 0.50	0.5 - 4.0		●				●	●	●
	120412 45	11.6	12.7	4.76	1.2	0.22 - 0.55	0.8 - 4.0		●				●	●	●
	CNMG 120404 52	12.4	12.7	4.76	0.4	0.10 - 0.30	0.5 - 3.5		●	●	●				
	120408 52	12.0	12.7	4.76	0.8	0.12 - 0.35	0.7 - 3.5		●	●	●				
	120412 52	11.6	12.7	4.76	1.2	0.15 - 0.40	0.7 - 3.5		●	●	●				
	CNMG 120404 53	12.4	12.7	4.76	0.4	0.17 - 0.45	1.0 - 5.0		●	●	●				
	120408 53	12.0	12.7	4.76	0.8	0.23 - 0.60	1.5 - 5.0		●	●	●				
	120412 53	11.6	12.7	4.76	1.2	0.25 - 0.60	2.0 - 5.0		●	●	●				

● For Cast Iron ● For Steel ● For Stainless Steel

## Negative 55° Insert

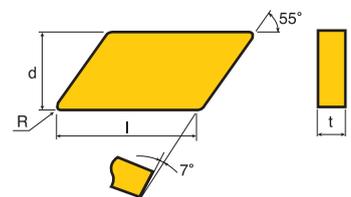


### DNM□

Insert	Designation	Dimension(mm)				Recommended cutting condition		Grade							
		l	d	t	R	Feed(mm/rev)	D.O.C(mm)	DC610	DC820	DC810	DC7010	New DC9015	New DC9025	New DC8035	
	DNMA 150608	14.7	12.7	6.35	0.8	0.15 - 0.65	0.8 - 4.0		●						
	150612	14.4	12.7	6.35	1.2	0.15 - 0.65	1.2 - 4.0		●						
	DNMG 150408 41	14.7	12.7	4.76	0.8	0.10 - 0.45	0.5 - 4.0	●		●					
	150604 41	15.1	12.7	6.35	0.4	0.07 - 0.40	0.3 - 4.0	●							
	150608 41	14.7	12.7	6.35	0.8	0.10 - 0.45	0.5 - 4.0	●							
<b>New</b>	DNMG 150604 42	15.1	12.7	6.35	0.4	0.13 - 0.40	0.4 - 4.0								●
	150608 42	15.1	12.7	6.35	0.8	0.15 - 0.45	0.4 - 4.0								●
	150612 42	14.7	12.7	6.35	1.2	0.17 - 0.5	0.7 - 4.0								●
<b>New</b>	DNMG 150604 43	15.1	12.7	6.35	0.4	0.12 - 0.35	0.4 - 3.0					●	●		
	150608 43	15.1	12.7	6.35	0.8	0.12 - 0.35	0.5 - 3.0					●	●		
	150612 43	14.7	12.7	6.35	1.2	0.15 - 0.35	0.6 - 3.0					●	●		
<b>New</b>	DNMG 150604 45	15.1	12.7	6.35	0.4	0.16 - 0.42	0.5 - 4.0		●			●	●	●	
	150608 45	15.1	12.7	6.35	0.8	0.18 - 0.45	0.5 - 4.0		●			●	●	●	
	150612 45	14.7	12.7	6.35	1.2	0.20 - 0.45	0.8 - 4.0		●			●	●	●	
	DNMG 150404 52	15.1	12.7	4.76	0.4	0.10 - 0.30	0.5 - 3.5								
	150408 52	14.7	12.7	4.76	0.8	0.12 - 0.35	0.7 - 3.5								
	150604 52	15.1	12.7	6.35	0.4	0.10 - 0.30	0.5 - 3.5		●	●					
	150608 52	14.7	12.7	6.35	0.8	0.12 - 0.35	0.7 - 3.5		●	●					
	150612 52	14.4	12.7	6.35	1.2	0.10 - 0.35	1.0 - 3.5		●	●					
	DNMG 150604 53	15.1	12.7	6.35	0.4	0.17 - 0.45	1.0 - 4.0		●	●					
	150608 53	14.7	12.7	6.35	0.8	0.17 - 0.55	1.5 - 4.0		●	●					
	150612 53	14.4	12.7	6.35	1.2	0.25 - 0.55	1.5 - 4.0		●	●					

● For Cast Iron ● For Steel ● For Stainless Steel

## Negative 55° Insert

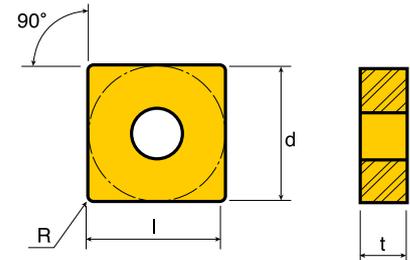


### KNUX

Insert	Designation	Dimension(mm)				Recommended cutting condition		Grade							
		l	d	t	R	Feed(mm/rev)	D.O.C(mm)	DC610	DC820	DC810	DC7010	New DC9015	New DC9025	New DC8035	
	KNUX 160405 R11	19.7	9.52	4.76	0.5	0.10 - 0.40	1.0 - 4.0				●				
	160405 L11	19.7	9.52	4.76	0.5	0.10 - 0.40	1.0 - 4.0				●				

● For Steel

# Negative 90° Insert

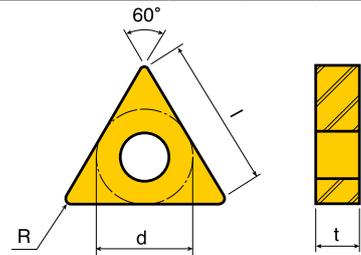


## SNM□

Insert	Designation	Dimension(mm)				Recommended cutting condition		Grade							
		l	d	t	R	Feed(mm/rev)	D.O.C(mm)	DC610	DC820	DC810	DC7010	DC9015 <sup>New</sup>	DC9025 <sup>New</sup>	DC8035 <sup>New</sup>	
 SNMA For Cast Iron	SNMA 120408	11.9	12.7	4.76	0.8	0.15 - 0.70	1.0 - 6.0		●						
	120412	11.5	12.7	4.76	1.2	0.20 - 0.80	1.5 - 6.0		●						
<b>New</b>  SNMG 42 For Stainless Steel	SNMG 120404 42	12.3	12.7	4.76	0.4	0.13 - 0.40	0.4 - 4.0								●
	120408 42	11.9	12.7	4.76	0.8	0.15 - 0.45	0.5 - 4.0								●
	120412 42	11.5	12.7	4.76	1.2	0.17 - 0.50	0.7 - 4.0								●
<b>New</b>  SNMG 45 Medium & Roughing	SNMG 120404 45	12.3	12.7	4.76	0.4	0.17 - 0.45	0.5 - 4.0		●			●	●	●	●
	120408 45	11.9	12.7	4.76	0.8	0.20 - 0.50	0.5 - 4.0		●			●	●	●	●
	120412 45	11.5	12.7	4.76	1.2	0.22 - 0.55	0.8 - 4.0		●			●	●	●	●
 SNMG 52 Medium	SNMG 120408 52	11.9	12.7	4.76	0.8	0.12 - 0.35	0.7 - 3.5		●	●	●				
	120412 52	11.5	12.7	4.76	1.2	0.15 - 0.40	0.7 - 3.5		●	●	●				
 SNMG 53 Medium & Roughing	SNMG 120404 53	12.3	12.7	4.76	0.4	0.17 - 0.45	1.0 - 5.0		●	●	●				
	120408 53	11.9	12.7	4.76	0.8	0.23 - 0.60	1.5 - 5.0		●	●	●				
	120412 53	11.5	12.7	4.76	1.2	0.25 - 0.60	2.0 - 5.0		●	●	●				

● For Cast Iron ● For Steel ● For Stainless Steel

# Negative 60° Insert

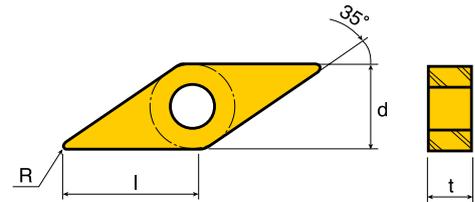


TNM

Insert	Designation	Dimension(mm)				Recommended cutting condition		Grade							
		l	d	t	R	Feed(mm/rev)	D.O.C(mm)	DC610	DC820	DC810	DC7010	DC9015	DC9025	DC8035	
 TNMA For Cast Iron	TNMA 160404	15.5	9.52	4.76	0.4	0.10 - 0.30	1.0 - 4.0		●						
	160408	14.5	9.52	4.76	0.8	0.15 - 0.40	1.0 - 4.0		●						
	160412	13.5	9.52	4.76	1.2	0.20 - 0.50	1.5 - 4.5		●						
 TNMG 41 Finishing & Medium	TNMG 160404 41	15.5	9.52	4.76	0.4	0.07 - 0.40	0.3 - 3.5	●							
	160408 41	14.5	9.52	4.76	0.8	0.10 - 0.45	0.5 - 3.5	●							
 New TNMG 42 For Stainless Steel	TNMA 160404 42	15.5	9.52	4.76	0.4	0.13 - 0.40	0.4 - 4.0								●
	160408 42	14.5	9.52	4.76	0.8	0.15 - 0.45	0.4 - 4.0								●
	160412 42	13.5	9.52	4.76	1.2	0.17 - 0.50	0.7 - 4.0								●
 New TNMG 43 Semi finishing & Medium	TNMA 160404 43	15.5	9.52	4.76	0.4	0.12 - 0.35	0.4 - 3.0					●	●		
	160408 43	14.5	9.52	4.76	0.8	0.12 - 0.35	0.5 - 3.0					●	●		
	160412 43	13.5	9.52	4.76	1.2	0.15 - 0.35	0.6 - 3.0					●	●		
 New TNMG 45 Medium & Roughing	TNMA 160404 45	15.5	9.52	4.76	0.4	0.16 - 0.42	0.5 - 4.0		●			●	●	●	
	160408 45	14.5	9.52	4.76	0.8	0.18 - 0.45	0.5 - 4.0		●			●	●	●	
	160412 45	13.5	9.52	4.76	1.2	0.20 - 0.45	0.8 - 4.0		●			●	●	●	
 TNMG 52 Medium	TNMG 160404 52	15.5	9.52	4.76	0.4	0.15 - 0.35	0.7 - 3.5		●	●					
	160408 52	14.5	9.52	4.76	0.8	0.17 - 0.40	0.7 - 3.5		●	●					
 TNMG 53 Medium & Roughing	TNMG 160404 53	15.5	9.52	4.76	0.4	0.17 - 0.45	1.5 - 3.5		●	●					
	160408 53	14.5	9.52	4.76	0.8	0.17 - 0.55	2.0 - 3.5		●	●					
	160412 53	13.5	9.52	4.76	1.2	0.25 - 0.55	2.0 - 3.5		●	●					

● For Cast Iron ● For Steel ● For Stainless Steel

## Negative 35° Insert

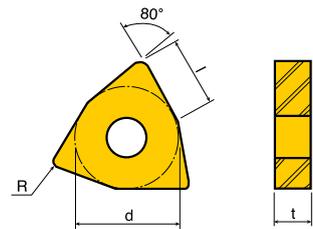


### VNMG

Insert	Designation	Dimension(mm)				Recommended cutting condition		Grade						
		l	d	t	R	Feed(mm/rev)	D.O.C(mm)	DC610	DC820	DC810	DC7010	DC9015 <sup>New</sup>	DC9025 <sup>New</sup>	DC8035 <sup>New</sup>
	VNMG 160404 41	15.6	9.52	4.76	0.4	0.10 - 0.32	0.5 - 2.5	●						
	160408 41	14.6	9.52	4.76	0.8	0.12 - 0.35	0.7 - 2.5	●						
<b>New</b> 	VNMG 160404 45	15.6	9.52	4.76	0.4	0.13 - 0.32	0.5 - 3.0		●			●	●	●
	160408 45	14.6	9.52	4.76	0.8	0.15 - 0.35	0.5 - 3.0		●			●	●	●
	160412 45	13.6	9.52	4.76	1.2	0.18 - 0.35	0.8 - 3.0		●			●	●	●
	VNMG 160404 53	15.6	9.52	4.76	0.4	0.17 - 0.40	1.0 - 3.0		●	●				
	160408 53	14.6	9.52	4.76	0.8	0.17 - 0.50	1.5 - 3.0		●	●				
	160412 53	13.6	9.52	4.76	1.2	0.20 - 0.50	1.5 - 3.0		●	●				

● For Cast Iron ● For Steel Holder: 36, 37page

## Negative 80° Insert

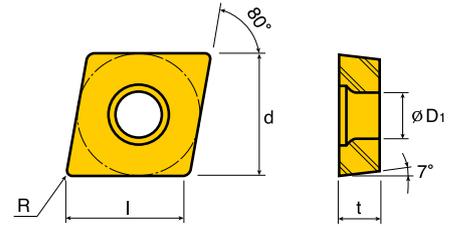


### WNM

Insert	Designation	Dimension(mm)				Recommended cutting condition		Grade						
		l	d	t	R	Feed(mm/rev)	D.O.C(mm)	DC610	DC820	DC810	DC7010	DC9015 <sup>New</sup>	DC9025 <sup>New</sup>	DC8035 <sup>New</sup>
	WNMA 080408	8.3	12.7	4.76	0.8	0.10 - 0.32	0.5 - 2.5		●					
	080412	8.2	12.7	4.76	1.2	0.12 - 0.35	0.7 - 2.5		●					
	WNMG 080408 41	8.3	12.7	4.76	0.8	0.07 - 0.40	0.3 - 4.5	●		●				
<b>New</b> 	WNMG 080404 42	8.4	12.7	4.76	0.4	0.13 - 0.40	0.4 - 4.0							●
	080408 42	8.3	12.7	4.76	0.8	0.15 - 0.45	0.5 - 4.0							●
	080412 42	8.2	12.7	4.76	1.2	0.17 - 0.50	0.7 - 4.0							●
<b>New</b> 	WNMG 080404 43	8.4	12.7	4.76	0.4	0.13 - 0.40	0.4 - 3.0					●	●	
	080408 43	8.3	12.7	4.76	0.8	0.15 - 0.40	0.5 - 3.0					●	●	
	080412 43	8.2	12.7	4.76	1.2	0.17 - 0.45	0.6 - 3.0					●	●	
<b>New</b> 	WNMG 060404 45	6.2	9.52	4.76	0.4	0.16 - 0.35	0.5 - 2.5		●			●	●	●
	060408 45	6.1	9.52	4.76	0.8	0.18 - 0.40	0.5 - 2.5		●			●	●	●
	060412 45	6.0	9.52	4.76	1.2	0.20 - 0.40	0.7 - 2.5		●			●	●	●
	080404 45	8.4	12.7	4.76	0.4	0.17 - 0.45	0.5 - 4.0		●			●	●	●
	080408 45	8.3	12.7	4.76	0.8	0.20 - 0.50	0.5 - 4.0		●			●	●	●
	080412 45	8.2	12.7	4.76	1.2	0.22 - 0.55	0.8 - 4.0		●			●	●	●
	WNMG 080408 52	8.3	12.7	4.76	0.8	0.12 - 0.35	0.7 - 2.5			●				●

● For Cast Iron ● For Steel ● For Stainless Steel

## Positive 80° Insert

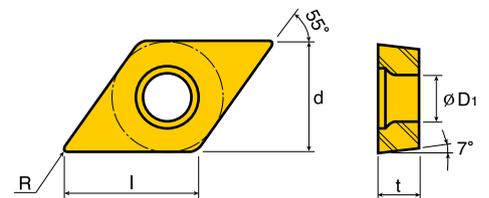


### CCMT

Insert	Designation	Dimension(mm)						Recommended cutting condition		Grade					
		l	d	t	R	ØD1	Feed(mm/rev)	D.O.C(mm)	DC610	DC820	DC810	DC7010	DC9015 <small>New</small>	DC9025 <small>New</small>	
	CCMT 060204 41	6.0	6.35	2.38	0.4	2.8	0.06 - 0.20	0.4 - 2.0				•		•	
	09T304 41	9.2	9.52	3.97	0.4	4.4	0.08 - 0.25	0.5 - 3.5	•			•		•	
	09T308 41	8.8	9.52	3.97	0.8	4.4	0.11 - 0.30	0.8 - 3.5				•		•	
	CCMT 09T304 51	9.2	9.52	3.97	0.4	4.4	0.07 - 0.20	0.4 - 2.0			•	•	•	•	
	09T308 51	8.8	9.52	3.97	0.8	4.4	0.10 - 0.25	0.6 - 2.0			•	•	•	•	
	CCMT 09T304 52	9.2	9.52	3.97	0.4	4.4	0.10 - 0.25	0.7 - 3.5		•					
	09T308 52	8.8	9.52	3.97	0.8	4.4	0.13 - 0.30	1.0 - 3.5		•					

• For Cast Iron • For Steel

## Positive 55° Insert

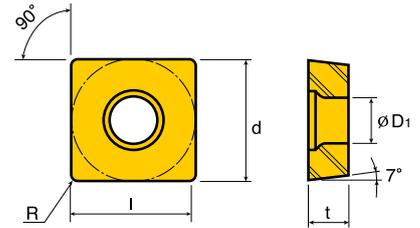


### DCMT

Insert	Designation	Dimension(mm)						Recommended cutting condition		Grade					
		l	d	t	R	ØD1	Feed(mm/rev)	D.O.C(mm)	DC610	DC820	DC810	DC7010	DC9015 <small>New</small>	DC9025 <small>New</small>	
	DCMT 070204 41	7.3	6.35	2.38	0.4	2.8	0.06 - 0.20	0.4 - 2.0	•			•		•	
	11T304 41	11.2	9.52	3.97	0.4	4.4	0.08 - 0.25	0.5 - 3.0				•		•	
	11T308 41	10.8	9.52	3.97	0.8	4.4	0.11 - 0.30	0.8 - 3.0				•		•	
	DCMT 11T304 51	11.2	9.52	3.97	0.4	4.4	0.10 - 0.25	0.6 - 2.0			•	•	•	•	
	11T308 51	10.8	9.52	3.97	0.8	4.4	0.10 - 0.25	0.6 - 1.5			•	•	•	•	
	DCMT 11T304 52	11.2	9.52	3.97	0.4	4.4	0.10 - 0.25	0.7 - 3.5		•					
	11T308 52	10.8	9.52	3.97	0.8	4.4	0.13 - 0.30	1.0 - 3.5		•					
	11T312 52	10.5	9.52	3.97	1.2	4.4	0.17 - 0.35	1.5 - 3.0		•	•	•	•	•	

• For Cast Iron • For Steel

## Positive 90° Insert

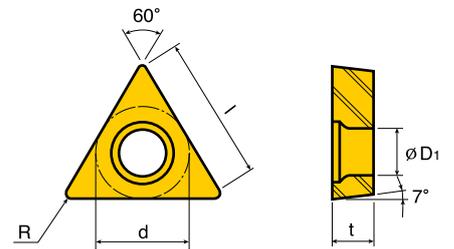


### SCMT

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	DC810	DC7010	New DC9015	New DC9025
	SCMT 09T304 51	9.2	9.52	3.97	0.4	4.4	0.08 - 0.25	0.6 - 2.0			•	•	•	•
	09T308 51	8.7	9.52	3.97	0.8	4.4	0.10 - 0.25	0.6 - 2.0			•	•	•	•
	SCMT 09T304 52	9.2	9.52	3.97	0.4	4.4	0.10 - 0.25	0.7 - 3.5		•	•	•	•	•
	09T308 52	9.2	9.52	3.97	0.4	4.4	0.13 - 0.30	1.0 - 3.5		•	•	•	•	•

• For Cast Iron • For Steel

## Positive 60° Insert

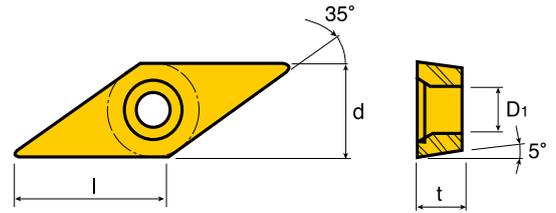


### TCMT

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	DC810	DC7010	New DC9015	New DC9025
	TCMT 110204 41	10.0	6.35	2.38	0.4	2.8	0.08 - 0.25	0.4 - 3.0				•		•
	TCMT 16T304 51	15.5	9.52	3.97	0.4	4.4	0.07 - 0.20	0.4 - 2.0			•	•	•	•
	16T308 51	14.5	9.52	3.97	0.8	4.4	0.10 - 0.25	0.6 - 2.0			•	•	•	•
	TCMT 16T304 52	15.5	9.52	3.97	0.4	4.4	0.10 - 0.25	0.8 - 5.0		•	•	•	•	•
	16T308 52	14.5	9.52	3.97	0.8	4.4	0.10 - 0.30	1.0 - 5.0		•		•	•	•
	16T312 52	13.5	9.52	3.97	1.2	4.4	0.10 - 0.30	1.5 - 5.0		•	•	•	•	•

• For Cast Iron • For Steel

# Positive 35° Insert

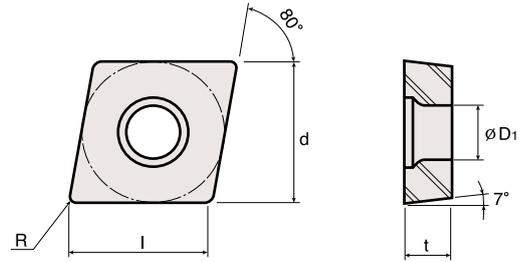


## VBMT

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	DC810	DC7010	DC9015	DC9025	
 VBMT 41 Finishing & Medium	VBMT 160404 41	15.6	9.52	4.76	0.4	4.4	0.08 - 0.25	0.4 - 3.0	●			●		●	
	160408 41	14.6	9.52	4.76	0.8	4.4	0.10 - 0.30	0.7 - 3.0	●			●		●	
 VBMT 51 Finishing	VBMT 160404 51	15.6	9.52	4.76	0.4	4.4	0.07 - 0.20	0.5 - 1.5			●	●	●	●	
	160408 51	14.6	9.52	4.76	0.8	4.4	0.10 - 0.25	0.7 - 2.0			●	●	●	●	
 VBMT 52 Medium	VBMT 160404 52	15.6	9.52	4.76	0.4	4.4	0.10 - 0.25	0.6 - 3.0		●					
	160408 52	14.6	9.52	4.76	0.8	4.4	0.13 - 0.30	0.9 - 3.0		●					
	160412 52	13.6	9.52	4.76	1.2	4.4	0.15 - 0.30	1.2 - 3.0		●	●	●	●	●	

● For Cast Iron ● For Steel

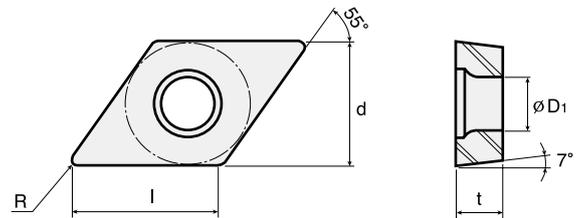
## Positive 80° Insert - For Aluminum



### CCGT AU

Insert	Designation	Dimension(mm)					Grade
		l	d	t	R	ØD1	
	CCGT 060204 AU	6.0	6.35	2.38	0.4	2.8	•
	09T304 AU	9.2	9.52	3.97	0.4	4.4	•
	120404 AU	12.4	12.7	4.76	0.4	5.5	•

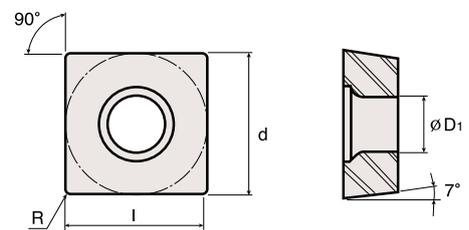
## Positive 55° Insert - For Aluminum



### DCGT AU

Insert	Designation	Dimension(mm)					Grade
		l	d	t	R	ØD1	
	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	11.2	9.525	3.97	0.4	4.4	•

## Positive 90° Insert - For Aluminum

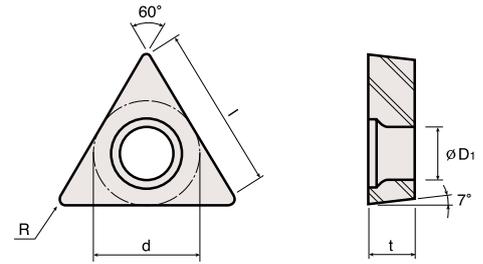


### SCGT AU

Insert	Designation	Dimension(mm)					Grade
		l	d	t	R	ØD1	
	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	•

New

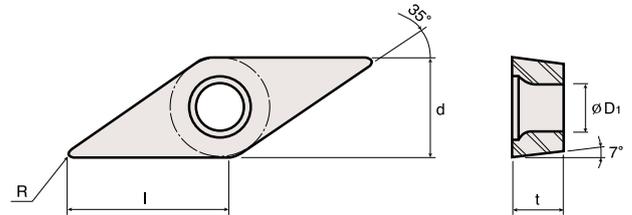
## Positive 60° Insert - For Aluminum



### TCGT AU

Insert	Designation	Dimension(mm)					Grade	
		l	d	t	R	ØD1	DC210	
	TCGT 110204 AU	10.0	6.35	2.38	0.4	2.8	•	
	16T304 AU	15.5	9.525	3.97	0.4	4.4	•	

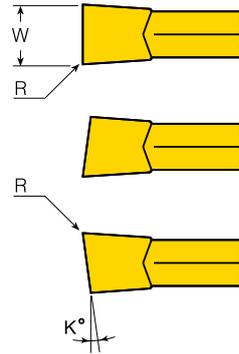
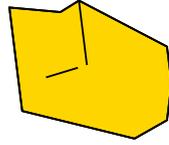
## Positive 35° Insert - For Aluminum



### VCGT AU

Insert	Designation	Dimension(mm)					Grade	
		l	d	t	R	ØD1	DC210	
	VCGT 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	•	

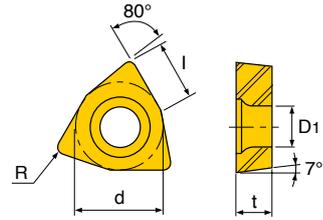
# Insert for Parting & Grooving



## DIMN

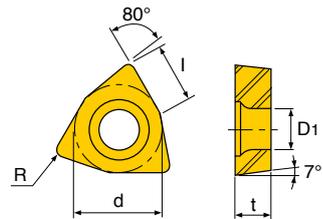
Insert	Designation	Dimension(mm)			Grade			
		W±0.10	R	K°	DC210	DC154	DC9235	
	DIMN	2	2.2	0.16	-	•	•	•
		3	3.1	0.20	-	•	•	•
		4	4.1	0.24	-	•	•	•
		5	5.1	0.28	-	•	•	•
		6	6.1	0.35	-		•	
		8	8.0	0.42	-		•	
		9	9.6	0.47	-		•	
		2.4	2.4	0.16	-		•	
		2B	2.2	0.20	-			•
		3A	3.1	0.20	-	•		
		3B	3.1	0.30	-		•	•
		4.8	4.8	0.28	-		•	
		4A	4.1	0.24	-	•		
		4B	4.1	0.40	-			•
<b>New</b>	DIML	2-15D	2.2	0.16	15°		•	
		3-8D	3.1	0.20	8°		•	
		3-15D	3.1	0.20	15°		•	
<b>New</b>	DIMR	2-4D	2.2	0.16	4°		•	
		2-8D	2.2	0.16	8°	•	•	
		2-15D	2.2	0.16	15°		•	
<b>New</b>	DIMR	3-4D	3.1	0.20	4°		•	
		3-8D	3.1	0.20	8°	•	•	
		3-15D	3.1	0.20	15°	•	•	
<b>New</b>	DIMR	4-4D	4.1	0.24	4°		•	
		4-8D	4.1	0.24	8°		•	

# Drill Insert



## WCMX □□□□□□

Insert	Designation	Dimension(mm)					Screw	Grade	
		d	t	R	ØD <sub>1</sub>	l		DC154	DC9800
	WCMX 050308	7.94	3.18	0.8	3.2	5.4	SO 30040I	●	●
	06T308	9.52	3.97	0.8	3.7	6.5	SO 35040I	●	●
	080412	12.70	4.76	1.2	4.3	8.7	SO 40050I	●	●



## WCGX □□□□□□-S

Insert	Designation	Dimension(mm)					Screw	Grade
		d	t	R	ØD <sub>1</sub>	l		DC9800
	WCGX 030204-S	5.56	2.38	0.4	2.55	3.8	SO 22050I	●
	040204-S	6.35	2.38	0.4	2.8	4.3	SO 25065I	●
	050308-S	7.94	3.18	0.8	3.4	5.4	SO 30040I	●
	06T308-S	9.52	3.97	0.8	4.4	6.5	SO 35080I	●
	080408-S	12.70	4.76	0.8	5.5	8.7	SO 50090I	●

# Designation System of Insert

### 1. Shape

### 2. Clearance Angle

### 3. Tolerance

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	0.05 d=9.525
			0.08 d=12.70
U	0.15	0.025	0.10 d=15.87
			0.013

### 5. Cutting Edge Length

### 6. Thickness

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

**A P K T 1 6 0 4 □ □ P D □ R**

1 2 3 4      5 6 7      8 9 10

### 4. Type

### 7. Corner Radius

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

### 8. Parallel Land

A=45°	C=7°
D=60°	P=11°
E=75°	D=15°
P=90°	E=20°
	F=25°

### 9. Edge Condition

### 10. Hand of Insert

## Milling Program

Designation	Features•Application	Edge Geometry & Picture	Cutter Designation
APKT 10 APKT 16	• High positive geometry for lower cutting force	<p><b>APKT</b></p>  	<ul style="list-style-type: none"> <li>• 90° Endmill</li> <li>• 90° Facemill</li> </ul>
OFMR 07	• For Stainless Steel & low machine power	<p><b>OFMR</b></p>  	<ul style="list-style-type: none"> <li>• 43° Facemill</li> </ul>
SPKN 12 SPKN 15	• For Steel	<p><b>SPKN</b></p>  	<ul style="list-style-type: none"> <li>• 75° ISO Facemill</li> </ul>
TPKN 16 TPKN 22	• For Steel	<p><b>TPKN</b></p>  	<ul style="list-style-type: none"> <li>• 90° ISO Facemill</li> </ul>



# Technical information

## Recommended Condition for SPKN 12,15, TPKN 16, 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
<b>P</b>	Low Carbon Steel	85 - 175	1.0	305	DC9300, DC325M	0.10 - 0.15
			2.5	275		0.10 - 0.15
			7.5	240		0.10 - 0.15
	High Carbon Steel	175 - 225	1.0	245	DC9300, DC325M	0.10 - 0.15
			2.5	210		0.10 - 0.15
			7.5	180		0.10 - 0.15
	Alloy Steel	275 - 325	1.0	210	DC9300, DC325M	0.10 - 0.15
			2.5	180		0.10 - 0.15
			7.5	135		0.10 - 0.12
	Tool Steel	200 - 250	1.0	125	DC9300, DC325M	0.05 - 0.15
			2.5	110		0.10 - 0.15
			7.5	90		0.10 - 0.12
<b>M</b>	Stainless Steel 300 Series	-	1.0	210	DC9300, DC325M	0.10 - 0.15
			2.5	180		0.10 - 0.15
			7.5	150		0.10 - 0.12
	Stainless Steel 400 Series	-	1.0	275	DC9300, DC325M	0.10 - 0.15
			2.5	230		0.10 - 0.15
			7.5	210		0.10 - 0.12
<b>S</b>	Heat-Resistance Alloy	-	1.0	45	DC9300	0.10 - 0.12
			2.5	30		0.10 - 0.12
			7.5	25		0.10 - 0.12
	Titanium Alloy	-	1.0	75	DC9300	0.10 - 0.12
			2.5	50		0.10 - 0.12
			7.5	35		0.10 - 0.12
<b>K</b>	Grey Cast Iron	190 - 220	1.0	260	DC9200	0.10 - 0.15
			2.5	230		0.10 - 0.15
			7.5	200		0.10 - 0.15
	Ductile Cast Iron	140 - 200	1.0	230	DC9200	0.10 - 0.15
			2.5	200		0.10 - 0.15
			7.5	170		0.10 - 0.15
<b>N</b>	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%

# Technical information

## Recommended condition of OFMR for 43° Facemill

ISO	Material	Hardness (HB)	Ap (mm)	Speed (m/min)	Recommended Grade***	Fz (mm/tooth)** OFCN, OFCR
<b>P</b>	Low Carbon Steel	85 - 175	1.0	360	DC9300	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	DC9300	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	DC9300	0.10 - 0.18
			2.5	180		0.10 - 0.16
			6.5	135		0.10 - 0.16
	Tool Steel	200 - 250	1.0	130	DC9300	0.10 - 0.18
			2.5	110		0.10 - 0.16
			6.5	100		0.10 - 0.16
<b>K</b>	Grey Cast Iron	190 - 220	1.0	300	DC9200	0.15 - 0.35
			2.5	250		0.15 - 0.35
			6.5	210		0.15 - 0.30
	Ductile Cast Iron	140 - 200	1.0	270	DC9200	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

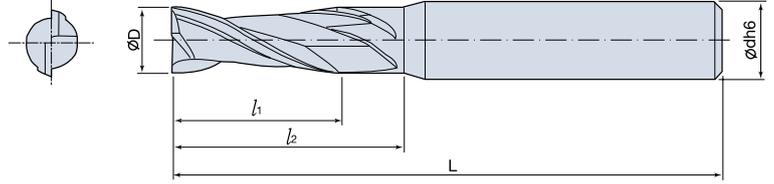
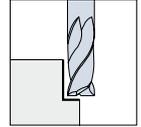
# Technical information

## Recommended Condition APKT 16 for 90° Facemill

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

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

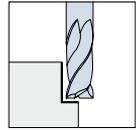
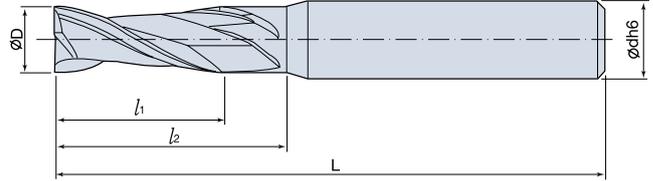
## 2Flute Square Endmill 30° Helix AlTiN Coated



### DF2M□□

Designation	Dimension(mm)						New Grade	
	D	R	L	l <sub>1</sub>	l <sub>2</sub>	d	DC980S	DC980N
DF2M010-6	1.0	-	50	3	5.5	6	●	●
DF2M015-6	1.5	-	50	4	6.5	6	●	●
DF2M020-6	2.0	-	50	6	9	6	●	●
DF2M025-6	2.5	-	50	8	11	6	●	●
DF2M030	3.0	-	50	10	13	6	●	●
DF2M030R03	3.0	0.3	50	10	13	6		●
DF2M030R05	3.0	0.5	50	10	13	6		●
DF2M035	3.5	-	50	10	13	6	●	●
DF2M040	4.0	-	50	12	15	6	●	●
DF2M040R02	4.0	0.2	50	12	15	6		●
DF2M040R05	4.0	0.5	50	12	15	6		●
DF2M040R10	4.0	1.0	50	12	15	6		●
DF2M045	4.5	-	50	14	17	6	●	●
DF2M050	5.0	-	50	15	18	6	●	●
DF2M050R02	5.0	0.2	50	15	18	6		●
DF2M050R05	5.0	0.5	50	15	18	6		●
DF2M055	5.5	-	50	15	18	6	●	●
DF2M060	6.0	-	57	15	-	6	●	●
DF2M060R05	6.0	0.5	57	15	-	6		●
DF2M060R10	6.0	1.0	57	15	-	6		●
DF2M065	6.5	-	63	18	21	8	●	●
DF2M070	7.0	-	63	20	23	8	●	●
DF2M075	7.5	-	63	20	23	8	●	●
DF2M080	8.0	-	63	20	-	8	●	●
DF2M080R05	8.0	0.5	63	20	-	8		●
DF2M080R10	8.0	1.0	63	20	-	8		●
DF2M080R15	8.0	1.5	63	20	-	8		●
DF2M080R20	8.0	2.0	63	20	-	8		●
DF2M085	8.5	-	72	22	25	10	●	●
DF2M090	9.0	-	72	22	25	10	●	●
DF2M095	9.5	-	72	25	28	10	●	●
DF2M100	10.0	-	72	25	-	10	●	●
DF2M100R05	10.0	0.5	72	25	-	10		●
DF2M100R10	10.0	1.0	72	25	-	10		●
DF2M100R15	10.0	1.5	72	25	-	10		●
DF2M100R20	10.0	2.0	72	25	-	10		●
DF2M100R25	10.0	2.5	72	25	-	10		●
DF2M100R30	10.0	3.0	72	25	-	10		●
DF2M105	10.5	-	83	28	31	12	●	●
DF2M110	11.0	-	83	30	35	12	●	●
DF2M115	11.5	-	83	30	35	12	●	●
DF2M120	12.0	-	83	30	-	12	●	●
DF2M120R05	12.0	0.5	83	30	-	12		●
DF2M120R10	12.0	1.0	83	30	-	12		●
DF2M120R15	12.0	1.5	83	30	-	12		●
DF2M120R20	12.0	2.0	83	30	-	12		●
DF2M120R25	12.0	2.5	83	30	-	12		●
DF2M120R30	12.0	3.0	83	30	-	12		●
DF2M130	13.0	-	90	35	40	14	●	●
DF2M140	14.0	-	90	35	40	14	●	●
DF2M150	15.0	-	100	42	47	16	●	●
DF2M160	16.0	-	100	42	-	16	●	●
DF2M160R05	16.0	0.5	100	42	-	16		●
DF2M160R10	16.0	1.0	100	42	-	16		●
DF2M160R15	16.0	1.5	100	42	-	16		●
DF2M160R20	16.0	2.0	100	42	-	16		●
DF2M160R30	16.0	3.0	100	42	-	16		●
DF2M200	20.0	-	105	48	-	20	●	●
DF2M200R05	20.0	0.5	105	48	-	20		●
DF2M200R10	20.0	1.0	105	48	-	20		●
DF2M200R15	20.0	1.5	105	48	-	20		●
DF2M200R20	20.0	2.0	105	48	-	20		●
DF2M200R30	20.0	3.0	105	48	-	20		●

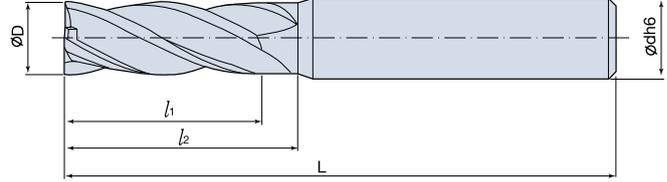
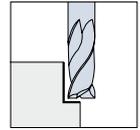
## 2Flute Square Endmill 30° Helix AlTiN Coated (long type)



### DF2L□□□

Designation	Dimension(mm)						Grade
	D	R	L	l <sub>1</sub>	l <sub>2</sub>	d	DC980N
DF2L020-6	2	-	60	10	13	6	●
DF2L030	3	-	60	15	18	6	●
DF2L030R05	3	0.5	60	15	18	6	●
DF2L040	4	-	60	20	23	6	●
DF2L040R05	4	0.5	60	20	23	6	●
DF2L050	5	-	60	25	28	6	●
DF2L050R05	5	0.5	60	25	28	6	●
DF2L060	6	-	70	30	-	6	●
DF2L060R05	6	0.5	70	30	-	6	●
DF2L060R10	6	1.0	70	30	-	6	●
DF2L070	7	-	80	35	38	8	●
DF2L080	8	-	80	35	-	8	●
DF2L080R05	8	0.5	80	35	-	8	●
DF2L080R10	8	1.0	80	35	-	8	●
DF2L080R15	8	1.5	80	35	-	8	●
DF2L080R20	8	2.0	80	35	-	8	●
DF2L090	9	-	95	40	43	10	●
DF2L100	10	-	95	45	-	10	●
DF2L100R05	10	0.5	95	45	-	10	●
DF2L100R10	10	1.0	95	45	-	10	●
DF2L100R15	10	1.5	95	45	-	10	●
DF2L100R20	10	2.0	95	45	-	10	●
DF2L100R25	10	2.5	95	45	-	10	●
DF2L100R30	10	3.0	95	45	-	10	●
DF2L120	12	-	105	50	-	12	●
DF2L120R05	12	0.5	105	50	-	12	●
DF2L120R10	12	1.0	105	50	-	12	●
DF2L120R15	12	1.5	105	50	-	12	●
DF2L120R20	12	2.0	105	50	-	12	●
DF2L120R25	12	2.5	105	50	-	12	●
DF2L120R30	12	3.0	105	50	-	12	●
DF2L140	14	-	120	50	55	16	●
DF2L160	16	-	120	60	-	16	●
DF2L160R05	16	0.5	120	60	-	16	●
DF2L160R10	16	1.0	120	60	-	16	●
DF2L160R15	16	1.5	120	60	-	16	●
DF2L160R20	16	2.0	120	60	-	16	●
DF2L160R30	16	3.0	120	60	-	16	●
DF2L180	18	-	130	60	70	20	●
DF2L200	20	-	130	65	-	20	●
DF2L200R05	20	0.5	130	65	-	20	●
DF2L200R10	20	1.0	130	65	-	20	●
DF2L200R15	20	1.5	130	65	-	20	●
DF2L200R20	20	2.0	130	65	-	20	●
DF2L200R30	20	3.0	130	65	-	20	●
DF2L250	25	-	160	80	-	25	●

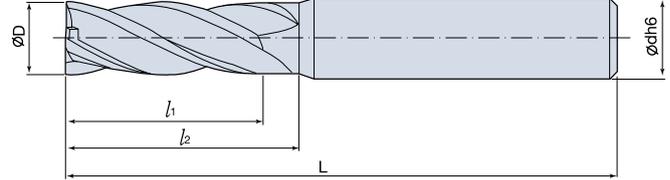
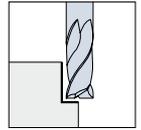
# 4Flute Square Endmill 30° Helix AlTiN Coated



## DF4M□□

Designation	Dimension(mm)						New Grade	
	D	R	L	l <sub>1</sub>	l <sub>2</sub>	d	DC980S	DC980N
DF4M020-6	2.0	-	50	6	9	6	●	●
DF4M030	3.0	-	50	10	13	6	●	●
DF4M030R03	3.0	0.3	50	10	13	6	●	●
DF4M030R05	3.0	0.5	50	10	13	6	●	●
DF4M035	3.5	-	50	10	13	6	●	●
DF4M040	4.0	-	50	12	15	6	●	●
DF4M040R02	4.0	0.2	50	12	15	6	●	●
DF4M040R05	4.0	0.5	50	12	15	6	●	●
DF4M040R10	4.0	1.0	50	12	15	6	●	●
DF4M045	4.5	-	50	14	17	6	●	●
DF4M050	5.0	-	50	15	18	6	●	●
DF4M050R02	5.0	0.2	50	15	18	6	●	●
DF4M050R05	5.0	0.5	50	15	18	6	●	●
DF4M055	5.5	-	50	15	18	6	●	●
DF4M060	6.0	-	57	15	-	6	●	●
DF4M060R05	6.0	0.5	57	15	-	6	●	●
DF4M060R10	6.0	1.0	57	15	-	6	●	●
DF4M065	6.5	-	63	18	21	8	●	●
DF4M070	7.0	-	63	20	23	8	●	●
DF4M075	7.5	-	63	20	23	8	●	●
DF4M080	8.0	-	63	20	-	8	●	●
DF4M080R05	8.0	0.5	63	20	-	8	●	●
DF4M080R10	8.0	1.0	63	20	-	8	●	●
DF4M080R15	8.0	1.5	63	20	-	8	●	●
DF4M080R20	8.0	2.0	63	20	-	8	●	●
DF4M085	8.5	-	72	22	25	10	●	●
DF4M090	9.0	-	72	22	25	10	●	●
DF4M095	9.5	-	72	25	28	10	●	●
DF4M100	10.0	-	72	25	-	10	●	●
DF4M100R05	10.0	0.5	72	25	-	10	●	●
DF4M100R10	10.0	1.0	72	25	-	10	●	●
DF4M100R15	10.0	1.5	72	25	-	10	●	●
DF4M100R20	10.0	2.0	72	25	-	10	●	●
DF4M100R25	10.0	2.5	72	25	-	10	●	●
DF4M100R30	10.0	3.0	72	25	-	10	●	●
DF4M105	10.5	-	83	28	31	12	●	●
DF4M110	11.0	-	83	30	35	12	●	●
DF4M115	11.5	-	83	30	35	12	●	●
DF4M120	12.0	-	83	30	-	12	●	●
DF4M120R05	12.0	0.5	83	30	-	12	●	●
DF4M120R10	12.0	1.0	83	30	-	12	●	●
DF4M120R15	12.0	1.5	83	30	-	12	●	●
DF4M120R20	12.0	2.0	83	30	-	12	●	●
DF4M120R25	12.0	2.5	83	30	-	12	●	●
DF4M120R30	12.0	3.0	83	30	-	12	●	●
DF4M130	13.0	-	90	35	40	14	●	●
DF4M140	14.0	-	90	35	40	14	●	●
DF4M150	15.0	-	100	42	47	16	●	●
DF4M160	16.0	-	100	42	-	16	●	●
DF4M160R05	16.0	0.5	100	42	-	16	●	●
DF4M160R10	16.0	1.0	100	42	-	16	●	●
DF4M160R15	16.0	1.5	100	42	-	16	●	●
DF4M160R20	16.0	2.0	100	42	-	16	●	●
DF4M160R30	16.0	3.0	100	42	-	16	●	●
DF4M200	20.0	-	105	48	-	20	●	●
DF4M200R05	20.0	0.5	105	48	-	20	●	●
DF4M200R10	20.0	1.0	105	48	-	20	●	●
DF4M200R15	20.0	1.5	105	48	-	20	●	●
DF4M200R20	20.0	2.0	105	48	-	20	●	●
DF4M200R30	20.0	3.0	105	48	-	20	●	●

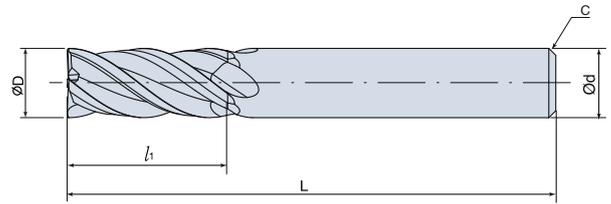
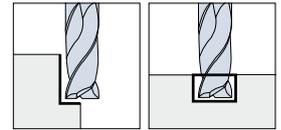
## 4Flute Square Endmill 30° Helix AlTiN Coated (long type)



### DF4L□□

Designation	Dimension(mm)						Grade
	D	R	L	l <sub>1</sub>	l <sub>2</sub>	d	DC980N
DF4L020-6	2	-	60	10	13	6	●
DF4L030	3	-	60	15	18	6	●
DF4L030R05	3	0.5	60	15	18	6	●
DF4L040	4	-	60	20	23	6	●
DF4L040R05	4	0.5	60	20	23	6	●
DF4L040R10	4	1.0	60	20	23	6	●
DF4L050	5	-	60	25	28	6	●
DF4L050R05	5	0.5	60	25	28	6	●
DF4L060	6	-	70	30	-	6	●
DF4L060R05	6	0.5	70	30	-	6	●
DF4L060R10	6	1.0	70	30	-	6	●
DF4L070	7	-	80	35	38	8	●
DF4L080	8	-	80	35	-	8	●
DF4L080R05	8	0.5	80	35	-	8	●
DF4L080R10	8	1.0	80	35	-	8	●
DF4L080R15	8	1.5	80	35	-	8	●
DF4L080R20	8	2.0	80	35	-	8	●
DF4L090	9	-	95	40	43	10	●
DF4L100	10	-	95	45	-	10	●
DF4L100R05	10	0.5	95	45	-	10	●
DF4L100R10	10	1.0	95	45	-	10	●
DF4L100R15	10	1.5	95	45	-	10	●
DF4L100R20	10	2.0	95	45	-	10	●
DF4L100R25	10	2.5	95	45	-	10	●
DF4L100R30	10	3.0	95	45	-	10	●
DF4L120	12	-	105	50	-	12	●
DF4L120R05	12	0.5	105	50	-	12	●
DF4L120R10	12	1.0	105	50	-	12	●
DF4L120R15	12	1.5	105	50	-	12	●
DF4L120R20	12	2.0	105	50	-	12	●
DF4L120R25	12	2.5	105	50	-	12	●
DF4L120R30	12	3.0	105	50	-	12	●
DF4L140	14	-	120	50	55	16	●
DF4L150	15	-	120	55	60	16	●
DF4L160	16	-	120	60	-	16	●
DF4L160R05	16	0.5	120	60	-	16	●
DF4L160R10	16	1.0	120	60	-	16	●
DF4L160R15	16	1.5	120	60	-	16	●
DF4L160R20	16	2.0	120	60	-	16	●
DF4L160R30	16	3.0	120	60	-	16	●
DF4L180	18	-	130	60	70	20	●
DF4L200	20	-	130	65	-	20	●
DF4L200R05	20	0.5	130	65	-	20	●
DF4L200R10	20	1.0	130	65	-	20	●
DF4L200R15	20	1.5	130	65	-	20	●
DF4L200R20	20	2.0	130	65	-	20	●
DF4L200R30	20	3.0	130	65	-	20	●
DF4L250	25	-	160	80	-	25	●

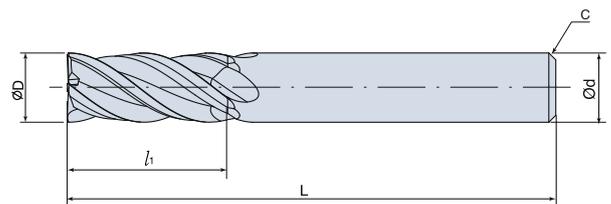
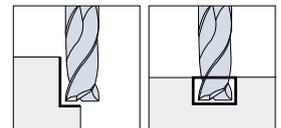
## 4Flute Square Endmill for Stainless (Vibration Free)



DCF4□□□

Designation	Dimension(mm)					Grade
	D	d	l <sub>1</sub>	L	Z	DC980N
DCF4030	3	6	10	57	4	●
DCF4040	4	6	12	57	4	●
DCF4050	5	6	13	57	4	●
DCF4060	6	6	13	57	4	●
DCF4070	7	8	16	63	4	●
DCF4080	8	8	19	63	4	●
DCF4090	9	10	19	72	4	●
DCF4100	10	10	22	72	4	●
DCF4120	12	12	26	83	4	●
DCF4140	14	14	26	83	4	●
DCF4160	16	16	32	92	4	●
DCF4180	18	18	32	92	4	●
DCF4200	20	20	38	104	4	●

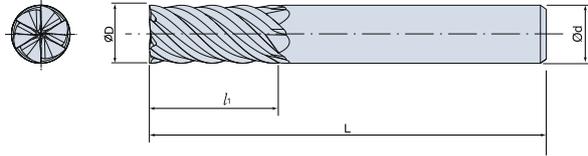
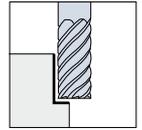
## 4Flute Square Endmill for Stainless (Vibration Free-Corner Radius type)



DCF4□□□ R

Designation	Dimension(mm)						Grade
	D	d	l <sub>1</sub>	L	Z	R	DC980N
DCF4030R01	3	6	10	57	4	0.1	●
DCF4040R02	4	6	12	57	4	0.2	●
DCF4050R02	5	6	13	57	4	0.2	●
DCF4060R02	6	6	13	57	4	0.2	●
DCF4070R02	7	8	16	63	4	0.2	●
DCF4080R02	8	8	19	63	4	0.2	●
DCF4090R02	9	10	19	72	4	0.2	●
DCF4100R02	10	10	22	72	4	0.2	●
DCF4120R03	12	12	26	83	4	0.3	●
DCF4140R03	14	14	26	83	4	0.3	●
DCF4160R03	16	16	32	92	4	0.3	●
DCF4180R03	18	18	32	92	4	0.3	●
DCF4200R03	20	20	38	104	4	0.3	●

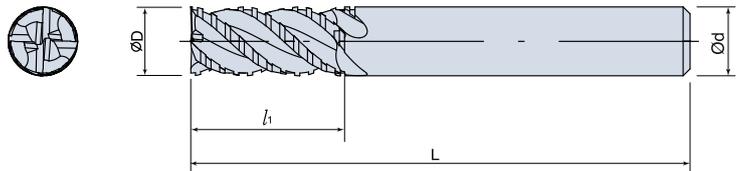
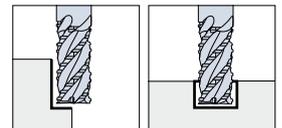
## 6Flute Square Endmill for Hardened Steel



### DHM6M

Designation	Dimension(mm)				Grade
	D	L	l <sub>1</sub>	d	
DHM6M030	3	47	10	6	●
DHM6M040	4	47	12	6	●
DHM6M050	5	52	15	6	●
DHM6M060	6	52	15	6	●
DHM6M070	7	60	18	8	●
DHM6M080	8	60	18	8	●
DHM6M090	9	68	22	10	●
DHM6M100	10	68	22	10	●
DHM6M120	12	76	26	12	●
DHM6M140	14	85	32	14	●
DHM6M160	16	90	32	16	●
DHM6M180	18	110	38	18	●
DHM6M200	20	110	38	20	●

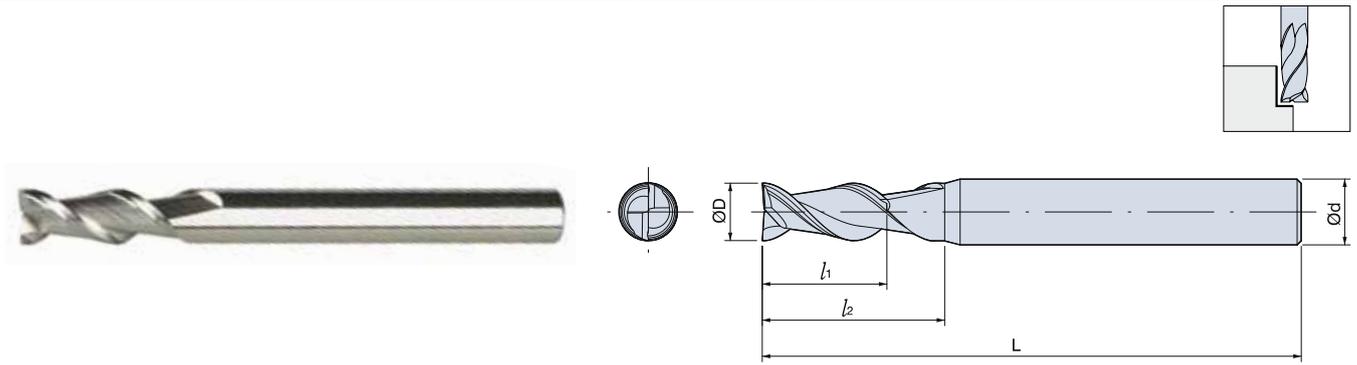
## Notch Endmill (Rough & Medium)



### DRN

Designation	Dimension(mm)				No. of Flutes	Grade
	D	L	l <sub>1</sub>	d		
DRN3M040	4	57	11	6	3	●
DRN4M050	5	57	13	6	4	●
DRN4M060	6	57	16	6	4	●
DRN4M070	7	63	16	8	4	●
DRN4M080	8	63	16	8	4	●
DRN4M090	9	72	19	10	4	●
DRN4M100	10	72	22	10	4	●
DRN4M120	12	83	26	12	4	●
DRN5M140	14	83	26	14	5	●
DRN5M160	16	92	32	16	5	●
DRN6M200	20	104	38	20	6	●

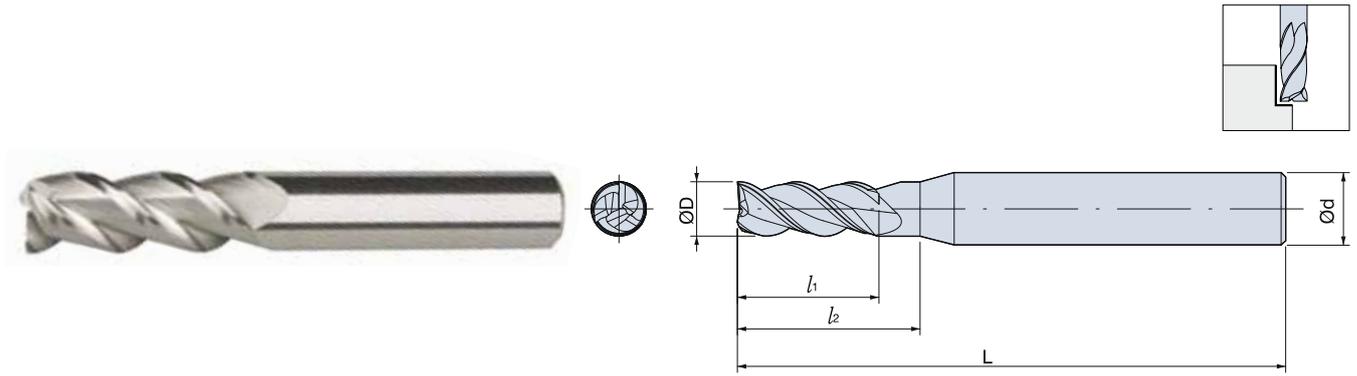
## 2Flute Endmill for Aluminum



### DA2M□□

Designation	Dimension(mm)					Grade
	D	L	l <sub>1</sub>	l <sub>2</sub>	d	DC208
DA2M010	1	40	3	5	4	●
DA2M010-6	1	47	3	5	6	●
DA2M015-6	1.5	47	5	7	6	●
DA2M020	2	40	6	8	4	●
DA2M020-6	2	47	6	8	6	●
DA2M025	2.5	40	8	10	4	●
DA2M025-6	2.5	47	8	10	6	●
DA2M030	3	47	11	14	6	●
DA2M035	3.5	47	12	15	6	●
DA2M040	4	47	13	16	6	●
DA2M045	4.5	52	15	20	6	●
DA2M050	5	52	17	22	6	●
DA2M055	5.5	52	17	22	6	●
DA2M060	6	52	17	-	6	●
DA2M065	6.5	60	22	28	8	●
DA2M070	7	60	22	28	8	●
DA2M080	8	60	22	-	8	●
DA2M085	8.5	68	27	33	10	●
DA2M090	9	68	27	33	10	●
DA2M100	10	68	27	33	10	●
DA2M110	11	76	32	39	12	●
DA2M120	12	76	32	-	12	●
DA2M125	12.5	76	32	39	12	●
DA2M130	13	95	37	42	14	●
DA2M140	14	95	37	42	14	●
DA2M150	15	100	42	52	16	●
DA2M160	16	100	42	-	16	●
DA2M165	16.5	100	42	52	16	●
DA2M170	17	110	48	58	18	●
DA2M180	18	110	48	58	18	●
DA2M190	19	110	48	58	20	●
DA2M200	20	110	48	-	20	●

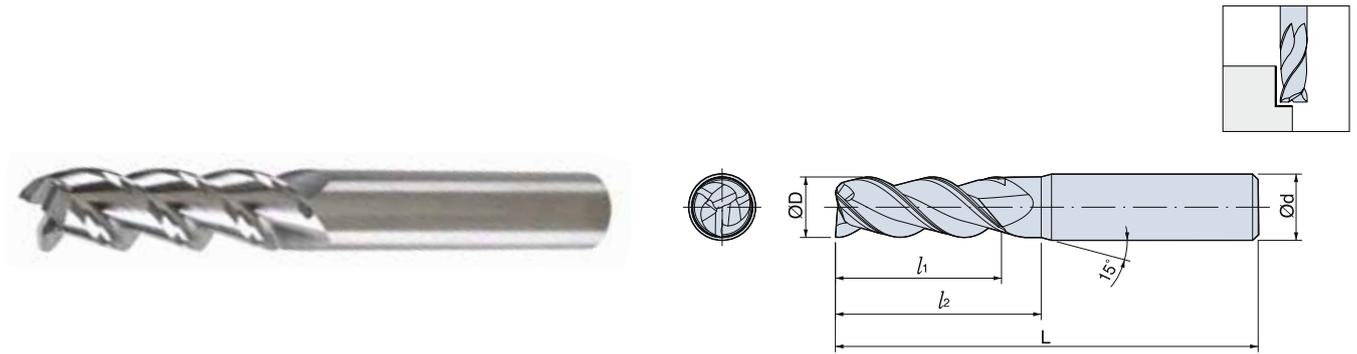
### 3Flute Endmill for Aluminum



### DA3M

Designation	Dimension(mm)					Grade
	D	L	l <sub>1</sub>	l <sub>2</sub>	d	DC208
DA3M020-6	2	47	6	8	6	●
DA3M030	3	47	11	14	6	●
DA3M040	4	47	13	16	6	●
DA3M050	5	52	17	22	6	●
DA3M060	6	52	17	-	6	●
DA3M070	7	60	22	28	8	●
DA3M080	8	60	22	-	8	●
DA3M090	9	68	27	33	10	●
DA3M100	10	68	27	-	10	●
DA3M110	11	76	32	39	12	●
DA3M120	12	76	32	-	12	●
DA3M130	13	95	37	42	14	●
DA3M140	14	95	37	42	14	●
DA3M150	15	100	42	52	16	●
DA3M160	16	100	42	-	16	●
DA3M170	17	110	48	58	18	●
DA3M180	18	110	48	58	18	●
DA3M190	19	110	48	58	20	●
DA3M200	20	110	48	-	20	●
DA3M250	25	140	65	-	25	●

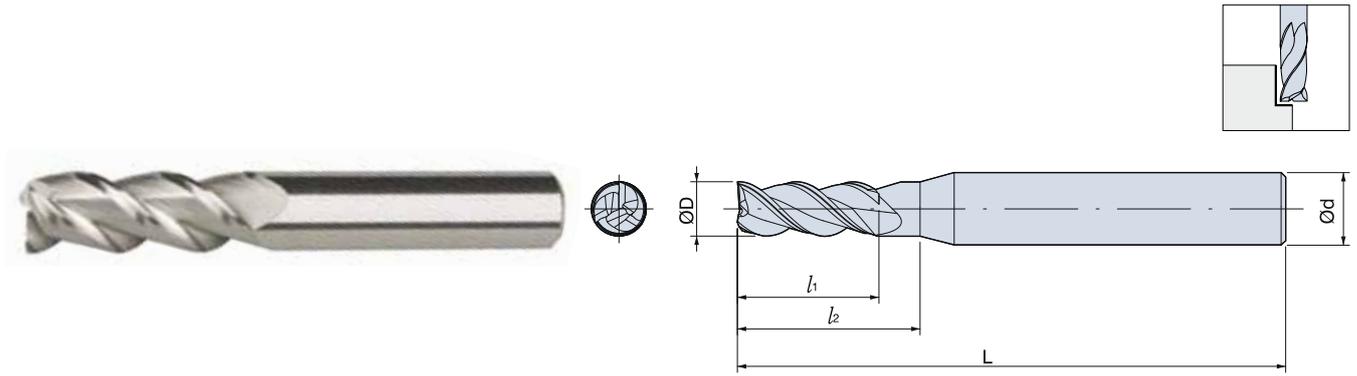
### 3Flute Endmill for Aluminum (long type)



#### DA3ML□□

Designation	Dimension(mm)					Grade
	D	L	l <sub>1</sub>	l <sub>2</sub>	d	DC208
DA3ML030	3	60	15	18	6	●
DA3ML040	4	60	20	25	6	●
DA3ML050	5	65	25	30	6	●
DA3ML060	6	65	25	-	6	●
DA3ML070	7	75	30	35	8	●
DA3ML080	8	75	30	-	8	●
DA3ML090	9	80	35	40	10	●
DA3ML100	10	80	35	-	10	●
DA3ML120	12	95	40	-	12	●
DA3ML140	14	110	55	62	16	●
DA3ML160	16	110	55	-	18	●
DA3ML180	18	125	60	70	20	●
DA3ML200	20	125	60	-	20	●

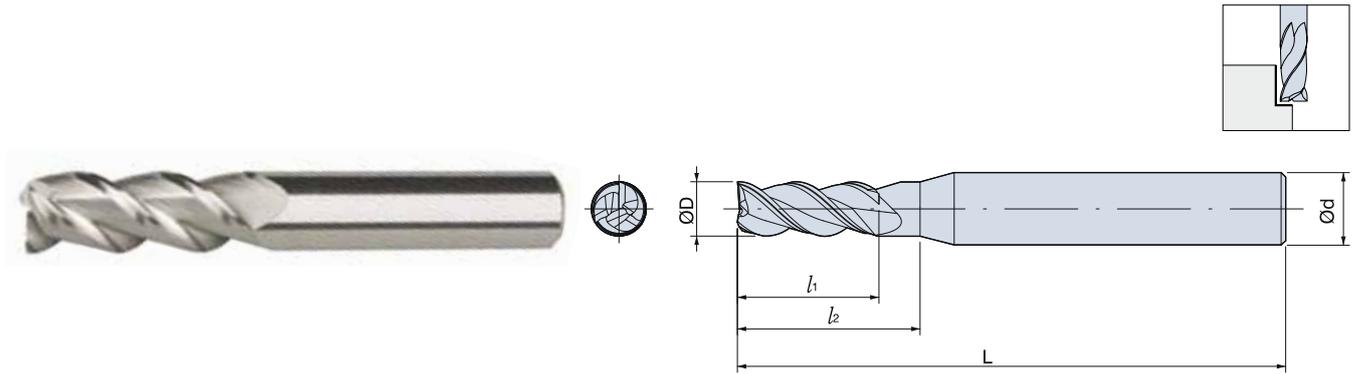
### 3Flute Endmill for Aluminum (long & extra long type)



#### DA3M

Designation	Dimension(mm)				Grade
	D	l <sub>1</sub>	L	d	DC208
DA3M030-13X50	3	13	50	6	●
DA3M030-15X65	3	15	65	6	●
DA3M030-21X60	3	21	60	6	●
DA3M030-26X65	3	26	65	6	●
DA3M030-31X70	3	31	70	6	●
DA3M040-16X50	4	16	50	6	●
DA3M040-21X60	4	21	60	6	●
DA3M040-26X60	4	26	60	6	●
DA3M040-31X70	4	31	70	6	●
DA3M040-36X75	4	36	75	6	●
DA3M040-41X75	4	41	75	6	●
DA3M050-21X60	5	21	60	6	●
DA3M050-26X65	5	26	65	6	●
DA3M050-31X70	5	31	70	6	●
DA3M050-36X75	5	36	75	6	●
DA3M050-41X75	5	41	75	6	●
DA3M060-21X60	6	21	60	6	●
DA3M060-26X65	6	21	65	6	●
DA3M060-31X65	6	31	65	6	●
DA3M060-36X75	6	36	75	6	●
DA3M060-41X80	6	41	80	6	●
DA3M060-46X80	6	46	80	6	●
DA3M060-51X90	6	51	90	6	●
DA3M080-26X60	8	26	60	8	●
DA3M080-31X70	8	31	70	8	●
DA3M080-36X75	8	36	75	8	●
DA3M080-41X80	8	41	80	8	●
DA3M080-46X90	8	46	90	8	●
DA3M080-51X100	8	51	100	8	●
DA3M080-56X100	8	56	100	8	●
DA3M080-61X110	8	61	110	8	●
DA3M100-31X70	10	31	70	10	●
DA3M100-36X75	10	36	75	10	●
DA3M100-41X80	10	41	80	10	●
DA3M100-46X90	10	46	90	10	●
DA3M100-51X100	10	51	100	10	●
DA3M100-56X110	10	56	110	10	●
DA3M100-61X110	10	61	110	10	●
DA3M100-66X110	10	66	110	10	●
DA3M100-71X120	10	71	120	10	●
DA3M120-36X80	12	36	80	12	●
DA3M120-41X85	12	41	85	12	●
DA3M120-46X90	12	46	90	12	●
DA3M120-51X100	12	51	100	12	●
DA3M120-56X110	12	56	110	12	●
DA3M120-61X110	12	61	110	12	●
DA3M120-66X120	12	66	120	12	●
DA3M120-71X120	12	71	120	12	●
DA3M120-76X140	12	76	140	12	●
DA3M120-81X140	12	81	140	12	●
DA3M160-56X110	16	56	110	16	●

### 3Flute Endmill for Aluminum (long & extra long type)

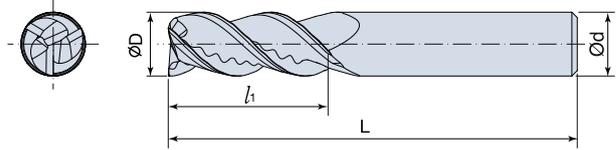


#### DA3M

Designation	Dimension(mm)				Grade
	D	L	l <sub>1</sub>	d	DC208
DA3M160-46X100	16	100	46	16	●
DA3M160-51X110	16	110	51	16	●
DA3M160-61X110	16	110	61	16	●
DA3M160-66X125	16	125	66	16	●
DA3M160-71X125	16	125	71	16	●
DA3M160-76X140	16	140	76	16	●
DA3M160-81X140	16	140	81	16	●
DA3M160-86X150	16	150	86	16	●
DA3M160-91X150	16	150	91	16	●
DA3M160-96X160	16	160	96	16	●
DA3M160-101X160	16	160	101	16	●
DA3M160-110X170	16	170	110	16	●
DA3M160-120X180	16	180	120	16	●
DA3M160-150X210	16	210	150	16	●
DA3M200-51X110	20	110	51	20	●
DA3M200-56X110	20	110	56	20	●
DA3M200-66X130	20	130	66	20	●
DA3M200-71X140	20	140	71	20	●
DA3M200-76X140	20	140	76	20	●
DA3M200-81X140	20	140	81	20	●
DA3M200-86X150	20	150	86	20	●
DA3M200-91X150	20	150	91	20	●
DA3M200-96X160	20	160	96	20	●
DA3M200-100X160	20	160	100	20	●
DA3M200-110X170	20	170	110	20	●
DA3M200-120X180	20	180	120	20	●
DA3M200-150X210	20	210	150	20	●

## 3Flute Endmill for Aluminum (wave type)

New



### DAW3S

Designation	Dimension(mm)				Grade
	D	L	l <sub>1</sub>	d	DC208
DAW3S080	8	60	14	8	●
DAW3S100	10	68	19	10	●
DAW3S120	12	76	22	12	●
DAW3S140	14	85	24	14	●
DAW3S160	16	90	30	16	●
DAW3S180	18	110	34	18	●
DAW3S200	20	110	38	20	●

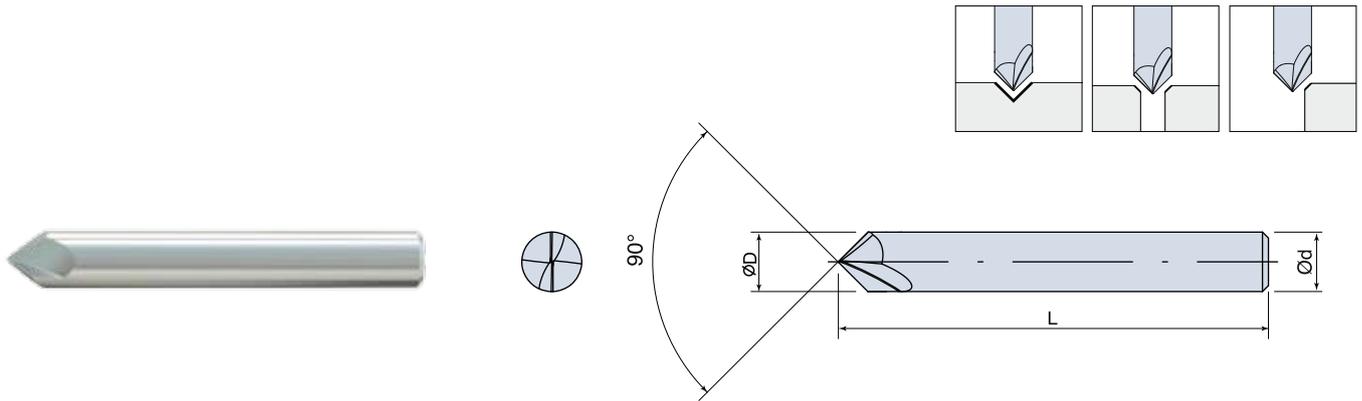
### DAW3M

Designation	Dimension(mm)				Grade
	D	L	l <sub>1</sub>	d	DC208
DAW3M080	8	75	20	8	●
DAW3M100	10	80	25	10	●
DAW3M120	12	95	30	12	●
DAW3M140	14	110	35	14	●
DAW3M160	16	110	40	16	●
DAW3M180	18	125	45	18	●
DAW3M200	20	125	45	20	●

### DAW3L

Designation	Dimension(mm)				Grade
	D	L	l <sub>1</sub>	d	DC208
DAW3L080	8	90	35	8	●
DAW3L100	10	100	45	10	●
DAW3L120	12	110	50	12	●
DAW3L140	14	110	50	14	●
DAW3L160	16	125	60	16	●
DAW3L180	18	150	70	18	●
DAW3L200	20	150	75	20	●

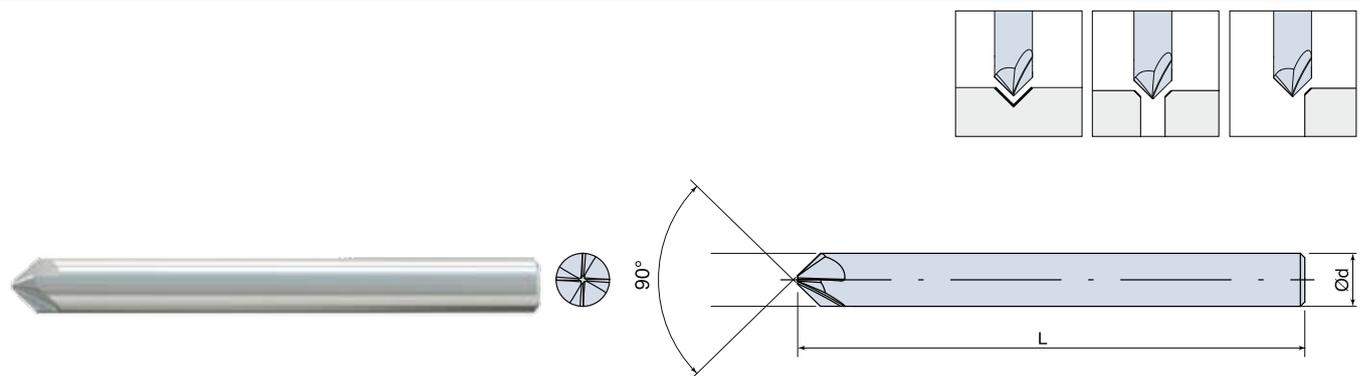
## 2Flute Chamfer Endmill



DEC2□□□

Designation	Dimension(mm)			Grade
	D	L	d	DC208
DEC2020-C010	2	57	6	●
DEC2030-C015	3	57	6	●
DEC2040-C020	4	57	6	●
DEC2050-C025	5	57	6	●
DEC2060-C030	6	57	6	●
DEC2080-C040	8	63	8	●
DEC2100-C050	10	72	10	●
DEC2120-C060	12	83	12	●
DEC2160-C080	16	92	16	●
DEC2200-C100	20	104	20	●

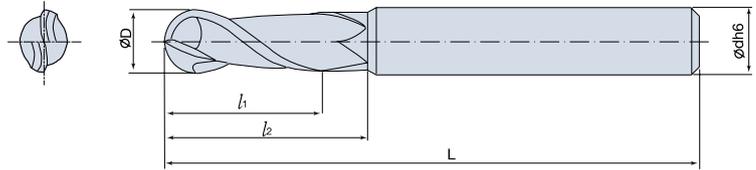
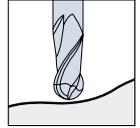
## 4Flute Chamfer Endmill



DEC4□□□

Designation	Dimension(mm)			Grade
	D	L	d	DC208
DEC4060-C030	6	57	6	●
DEC4080-C040	8	63	8	●
DEC4100-C050	10	72	10	●
DEC4120-C060	12	83	12	●
DEC4160-C080	16	92	16	●

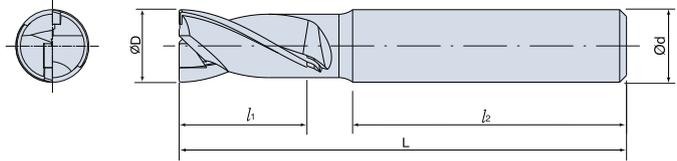
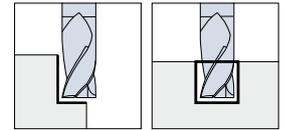
## 2Flute Ball Endmill 30° Helix AlTiN Coated



DB2M□□□

Designation	Dimension(mm)						Grade
	D	R	L	$l_1$	$l_2$	d	DC980N
DB2M010-6	1.0	0.5	52	3	4.5	6	●
DB2M015-6	1.5	0.75	52	4	5.5	6	●
DB2M020-6	2.0	1.0	52	5	7	6	●
DB2M025-6	2.5	1.25	70	6	9	6	●
DB2M030	3.0	1.5	70	8	11	6	●
DB2M035	3.5	1.75	70	8	11	6	●
DB2M040	4.0	2.0	70	8	11	6	●
DB2M045	4.5	2.25	70	10	13	6	●
DB2M050	5.0	2.5	80	12	15	6	●
DB2M055	5.5	2.75	80	12	15	6	●
DB2M060	6.0	3.0	80	12	-	6	●
DB2M065	6.5	3.25	90	12	16	8	●
DB2M070	7.0	3.5	90	12	16	8	●
DB2M080	8.0	4.0	90	16	-	8	●
DB2M090	9.0	4.5	100	18	22	10	●
DB2M100	10.0	5.0	100	20	-	10	●
DB2M120	12.0	6.0	110	25	-	12	●
DB2M140	14.0	7.0	120	30	40	16	●
DB2M150	15.0	7.5	125	35	45	16	●
DB2M160	16.0	8.0	125	35	-	16	●
DB2M180	18.0	8.0	150	40	50	20	●
DB2M200	20.0	10.0	150	40	-	20	●

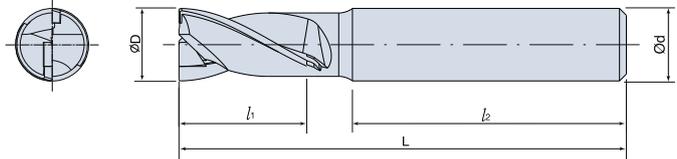
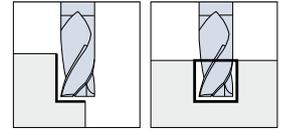
## 2Flute Square Endmill (Brazed)



### DFE2M□□□

Designation	Dimension(mm)					Grade
	D	L	l <sub>1</sub>	l <sub>2</sub>	d	
DFE2M140	14	95	30	55	16	●
DFE2M150	15	95	30	55	16	●
DFE2M160	16	95	30	55	16	●
DFE2M170	17	115	30	60	20	●
DFE2M180	18	115	30	60	20	●
DFE2M190	19	115	30	60	20	●
DFE2M200	20	115	30	60	20	●
DFE2M210	21	115	30	60	20	●
DFE2M220	22	115	30	60	20	●
DFE2M230	23	125	40	65	25	●
DFE2M240	24	125	40	65	25	●
DFE2M250	25	125	40	65	25	●
DFE2M260	26	125	40	65	25	●
DFE2M270	27	125	40	65	25	●
DFE2M280	28	125	40	65	25	●
DFE2M290	29	150	40	70	32	●
DFE2M300	30	150	50	70	32	●
DFE2M310	31	150	50	70	32	●
DFE2M320	32	150	50	70	32	●
DFE2M330	33	150	50	70	32	●
DFE2M340	34	150	50	70	32	●
DFE2M350	35	150	50	70	32	●
DFE2M360	36	150	50	70	32	●
DFE2M370	37	150	50	70	32	●
DFE2M380	38	150	55	70	32	●
DFE2M400	40	150	55	70	32	●
DFE2M420	42	150	55	70	32	●
DFE2M450	45	160	63	70	32	●
DFE2M500	50	160	63	70	32	●

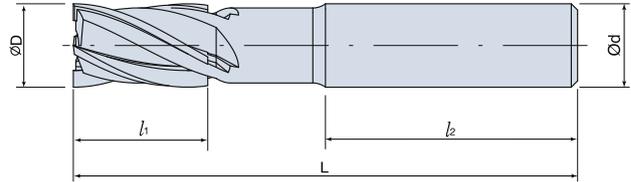
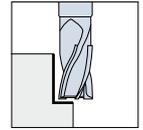
## 2Flute Square Endmill (Brazed, long type)



### DFE2L□□□□

Designation	Dimension(mm)					Grade
	D	L	l <sub>1</sub>	l <sub>2</sub>	d	
DFE2L140	14	120	50	55	16	●
DFE2L150	15	120	50	55	16	●
DFE2L160	16	120	50	55	16	●
DFE2L170	17	120	50	60	20	●
DFE2L180	18	140	60	60	20	●
DFE2L190	19	140	60	60	20	●
DFE2L200	20	140	60	60	20	●
DFE2L210	21	140	60	60	20	●
DFE2L220	22	140	60	60	20	●
DFE2L230	23	150	70	65	25	●
DFE2L240	24	150	70	65	25	●
DFE2L250	25	150	70	65	25	●
DFE2L260	26	150	70	65	25	●
DFE2L270	27	150	70	65	25	●
DFE2L280	28	150	70	65	25	●
DFE2L290	29	180	80	70	32	●
DFE2L300	30	180	80	70	32	●
DFE2L310	31	190	90	70	32	●
DFE2L320	32	190	90	70	32	●
DFE2L330	33	200	100	70	32	●
DFE2L340	34	200	100	70	32	●
DFE2L350	35	200	100	70	32	●
DFE2L360	36	220	100	70	32	●
DFE2L370	37	220	100	70	32	●
DFE2L380	38	220	100	70	42	●
DFE2L400	40	220	100	70	42	●
DFE2L420	42	220	100	70	42	●
DFE2L450	45	230	100	70	42	●
DFE2L500	50	230	100	70	42	●

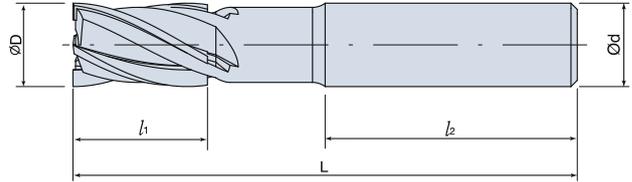
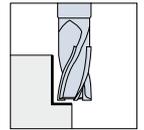
## 4Flute Square Endmill (Brazed)



### DFE4M□□□

Designation	Dimension(mm)					Grade
	D	L	l <sub>1</sub>	l <sub>2</sub>	d	
DFE4M140	14	95	30	55	16	●
DFE4M150	15	95	30	55	16	●
DFE4M160	16	95	30	55	16	●
DFE4M170	17	115	30	60	20	●
DFE4M180	18	115	30	60	20	●
DFE4M190	19	115	30	60	20	●
DFE4M200	20	115	30	60	20	●
DFE4M210	21	115	30	60	20	●
DFE4M220	22	115	30	60	20	●
DFE4M230	23	125	40	65	25	●
DFE4M240	24	125	40	65	25	●
DFE4M250	25	125	40	65	25	●
DFE4M260	26	125	40	65	25	●
DFE4M270	27	125	40	65	25	●
DFE4M280	28	125	40	65	25	●
DFE4M290	29	150	40	70	32	●
DFE4M300	30	150	50	70	32	●
DFE4M310	31	150	50	70	32	●
DFE4M320	32	150	50	70	32	●
DFE4M330	33	150	50	70	32	●
DFE4M340	34	150	50	70	32	●
DFE4M350	35	150	50	70	32	●
DFE4M360	36	150	50	70	32	●
DFE4M370	37	150	50	70	32	●
DFE4M380	38	150	55	70	32	●
DFE4M400	40	150	55	70	32	●
DFE4M420	42	150	55	70	32	●
DFE4M450	45	160	63	70	32	●
DFE4M500	50	160	63	70	32	●

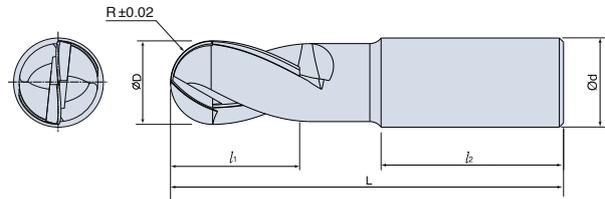
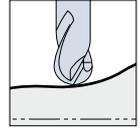
## 4Flute Square Endmill (Brazed, long type)



### DFE4L□□□□

Designation	Dimension(mm)					Grade
	D	L	l <sub>1</sub>	l <sub>2</sub>	d	
DFE4L140	14	120	50	55	16	●
DFE4L150	15	120	50	55	16	●
DFE4L160	16	120	50	55	16	●
DFE4L170	17	120	50	60	20	●
DFE4L180	18	140	60	60	20	●
DFE4L190	19	140	60	60	20	●
DFE4L200	20	140	60	60	20	●
DFE4L210	21	140	60	60	20	●
DFE4L220	22	140	60	60	20	●
DFE4L230	23	150	70	65	25	●
DFE4L240	24	150	70	65	25	●
DFE4L250	25	150	70	65	25	●
DFE4L260	26	150	70	65	25	●
DFE4L270	27	150	70	65	25	●
DFE4L280	28	150	70	65	25	●
DFE4L290	29	180	80	70	32	●
DFE4L300	30	180	80	70	32	●
DFE4L310	31	190	90	70	32	●
DFE4L320	32	190	90	70	32	●
DFE4L330	33	200	100	70	32	●
DFE4L340	34	200	100	70	32	●
DFE4L350	35	200	100	70	32	●
DFE4L360	36	220	100	70	32	●
DFE4L370	37	220	100	70	32	●
DFE4L380	38	220	100	70	42	●
DFE4L400	40	220	100	70	42	●
DFE4L420	42	220	100	70	42	●
DFE4L450	45	230	100	70	42	●
DFE4L500	50	230	100	70	42	●

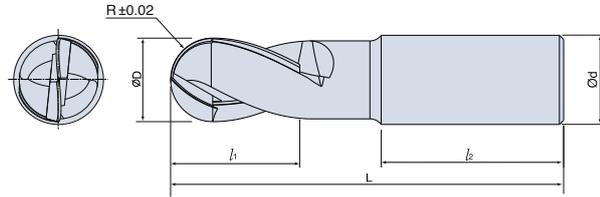
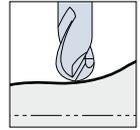
## 2Flute Ball Endmill (Brazed)



### DBE2M□□□

Designation	Dimension(mm)						Grade
	R	D	L	l <sub>1</sub>	l <sub>2</sub>	d	DC208
DBE2M140	7	14	100	30	50	16	●
DBE2M150	7.5	15	100	35	50	16	●
DBE2M160	8.0	16	100	35	50	16	●
DBE2M170	8.5	17	100	35	50	16	●
DBE2M180	9.0	18	110	35	55	20	●
DBE2M190	9.5	19	110	35	55	20	●
DBE2M200	10.0	20	110	35	55	20	●
DBE2M210	10.5	21	110	35	55	20	●
DBE2M220	11.0	22	110	35	55	20	●
DBE2M230	11.5	23	120	40	60	25	●
DBE2M240	12.0	24	120	40	60	25	●
DBE2M250	12.5	25	120	40	60	25	●
DBE2M260	13.0	26	120	40	60	25	●
DBE2M270	13.5	27	130	40	60	25	●
DBE2M280	14.0	28	130	40	60	25	●
DBE2M290	14.5	29	130	50	65	32	●
DBE2M300	15.0	30	130	50	65	32	●
DBE2M310	15.5	31	140	50	65	32	●
DBE2M320	16.0	32	140	50	65	32	●
DBE2M330	16.5	33	150	50	65	32	●
DBE2M340	17.0	34	150	50	65	32	●
DBE2M350	17.5	35	150	50	65	32	●
DBE2M360	18.0	36	150	50	65	32	●
DBE2M370	18.5	37	160	50	65	32	●
DBE2M380	19.0	38	160	50	65	32	●
DBE2M400	20.0	40	160	50	65	32	●
DBE2M420	21.0	42	160	60	65	32	●
DBE2M450	22.5	45	170	60	65	32	●
DBE2M500	25.0	50	170	60	65	32	●

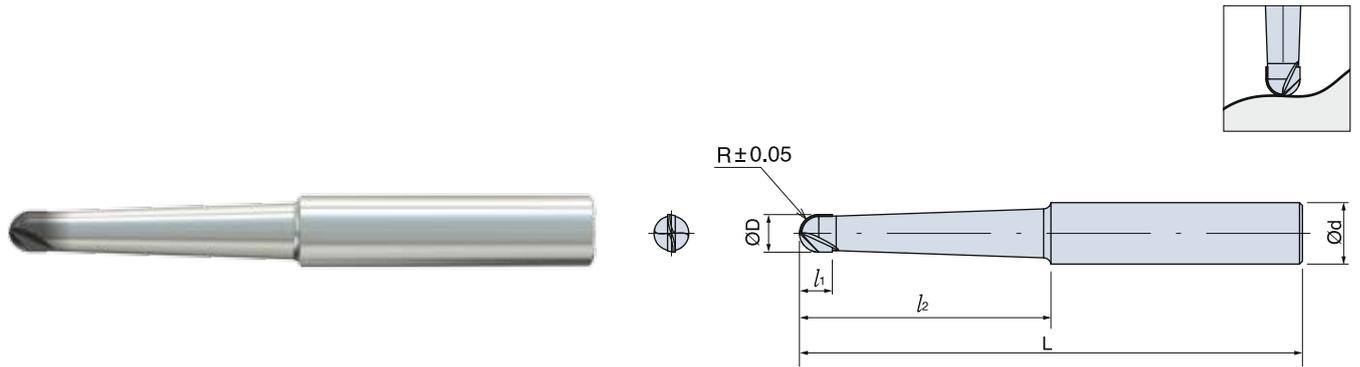
## 2Flute Ball Endmill (Brazeed, long type)



### DBE2L□□□□

Designation	Dimension(mm)						Grade
	R	D	L	l <sub>1</sub>	l <sub>2</sub>	d	DC208
DBE2L140	7	14	130	60	50	16	●
DBE2L150	7.5	15	130	70	50	16	●
DBE2L160	8.0	16	130	70	50	16	●
DBE2L170	8.5	17	130	70	50	16	●
DBE2L180	9.0	18	150	70	55	20	●
DBE2L190	9.5	19	150	70	55	20	●
DBE2L200	10.0	20	150	70	55	20	●
DBE2L210	10.5	21	150	70	55	20	●
DBE2L220	11.0	22	150	70	55	20	●
DBE2L230	11.5	23	160	80	60	25	●
DBE2L240	12.0	24	160	80	60	25	●
DBE2L250	12.5	25	160	80	60	25	●
DBE2L260	13.0	26	160	80	60	25	●
DBE2L270	13.5	27	160	80	60	25	●
DBE2L280	14.0	28	160	80	60	25	●
DBE2L290	14.5	29	180	100	65	32	●
DBE2L300	15.0	30	180	100	65	32	●
DBE2L310	15.5	31	180	100	65	32	●
DBE2L320	16.0	32	180	100	65	32	●
DBE2L330	16.5	33	180	100	65	32	●
DBE2L340	17.0	34	180	100	65	32	●
DBE2L350	17.5	35	180	100	65	32	●
DBE2L360	18.0	36	180	100	65	32	●
DBE2L370	18.5	37	180	100	65	32	●
DBE2L380	19.0	38	180	100	65	32	●
DBE2L400	20.0	40	180	100	65	32	●
DBE2L420	21.0	42	220	120	65	32	●
DBE2L450	22.5	45	220	120	65	32	●
DBE2L500	25.0	50	220	120	65	32	●

## 2Flute Ball Endmill (Braze, Eco type)

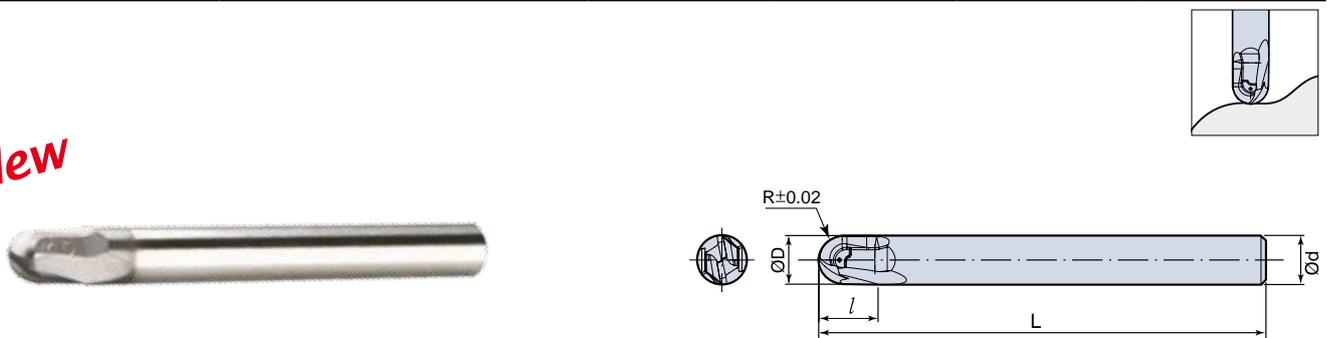


### DSG2□□□

Designation	Dimension(mm)					Grade
	D	L	l <sub>1</sub>	l <sub>2</sub>	d	DC980N
DSG2160	16	100	15	40	25	●
DSG2200	20	110	17	45	32	●
DSG2250	25	120	21	55	32	●
DSG2300	30	130	25	65	32	●
DSG2320	32	140	25	75	32	●

## 2Flute Ball Endmill (Eco type)

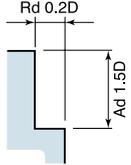
**New**



### DBE2 SM □□□

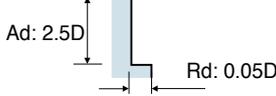
Designation	Dimension(mm)					Grade
	D	R	L	l	d	DC980N
DBE2 SM 060	6	3	70	7	6	●
DBE2 SM 080	8	4	80	9	8	●
DBE2 SM 100	10	5	90	11	10	●
DBE2 SM 120	12	6	100	12	12	●

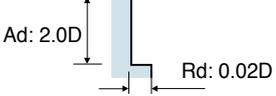
### DF2L

Material	Carbon Steel, Alloy Steel, Cast Iron		Carbon Steel, Alloy Steel		Hardened Steel		Stainless Steel, Ti-Alloy		Depth of Cut 
Hardness	- HRC30		HRC30 - HRC40		HRC40 - HRC50				
Diameter(D)	RPM	Feed	RPM	Feed	RPM	Feed	RPM	Feed	
4	6,800	272	4,200	190	3,100	70	3,500	160	
6	5,000	320	3,000	200	2,100	80	2,600	180	
8	3,800	330	2,300	190	1,700	90	1,900	180	
10	2,900	300	1,800	170	1,400	85	1,500	160	
12	2,500	260	1,500	160	1,200	80	1,200	130	
14	2,200	200	1,300	120	1,000	70	1,050	100	
16	1,900	180	1,100	100	880	70	950	90	
18	1,700	170	1,000	90	780	60	840	80	
20	1,500	100	950	80	700	50	760	70	

### DF4L

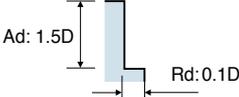
Material	Alloy Steel, Cast Iron		Alloy Steel		Hardened Steel	
Hardness	- HRC30		HRC30 - HRC45		HRC45 - HRC50	
Strength	- 850N/mm <sup>2</sup>		850 - 1600N/mm <sup>2</sup>		1600 - 2000N/mm <sup>2</sup>	
Diameter(D)	RPM	Feed	RPM	Feed	RPM	Feed
2	9000	160	5000	70	3200	30
3	6200	180	3600	80	2300	30
4	5000	200	3000	90	1800	30
5	4300	220	2600	120	1600	35
6	3800	250	2100	160	1400	40
8	2800	300	1600	160	1100	40
10	2400	300	1400	160	900	40
12	2000	220	1200	150	700	30
16	1700	210	900	120	600	30
20	1200	180	700	80	450	25

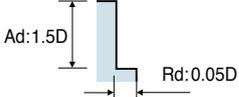


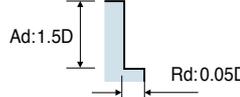


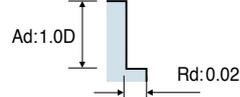
### DHM6M

Material	Alloy Steel, Cast Iron		Alloy Steel		Stainless Steel		Hardened Steel	
Hardness	- HRC30		HRC30 - HRC45		HRC50 - HRC60		HRC60 - HRC65	
Strength	- 850N/mm <sup>2</sup>		850 - 1600N/mm <sup>2</sup>		1600 - 2000N/mm <sup>2</sup>		2000N/mm <sup>2</sup> -	
Diameter(D)	RPM	Feed	RPM	Feed	RPM	Feed	RPM	Feed
6	5600	1900	3900	1250	1600	200	1100	130
8	4200	1900	3000	1250	1200	200	900	130
10	3400	1900	2400	1250	1000	200	700	130
12	2800	1600	2000	1000	900	200	600	110
16	2100	1200	1500	800	900	150	450	70
20	1700	1000	1200	700	500	120	300	60

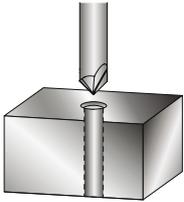
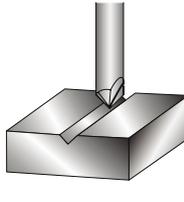
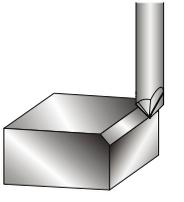








## Recommended Application - DEC2, DEC4

	Chamfer Boring	Centering	V-slot milling	Chamfer Milling
Chamfer Angle				
DEC2 (90°)	●	△ <sup>2)</sup>	●	●
DEC4 (90°)	●	×	×	●

1) ● : recommended, ×: not recommended

2) Centering by DEC 2000-C90 is only applicable on cast iron and non-ferrous material.

## Recommended Condition

### ● Chamfer boring, Centering

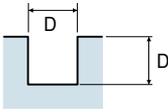
### ● Chamfer Milling

### ● V-Slot Milling

Material	V (m/min)	f (mm/rev)			V (m/min)	f (mm/rev)			V (m/min)	f (mm/rev)		
		Ø4 - Ø6	Ø8 - Ø12	Ø16 - Ø20		Ø4 - Ø6	Ø8 - Ø12	Ø16 - Ø20		Ø4 - ø6	Ø8 - Ø12	Ø16 - Ø20
Cast Iron	30 - 60	0.08 - 0.1	0.1 - 0.2	0.15 - 0.2	40 - 70	0.03 - 0.06	0.05 - 0.1	0.07 - 0.15	30 - 60	0.02 - 0.04	0.04 - 0.06	0.06 - 0.08
Aluminum Alloy	40 - 80	0.08 - 0.15	0.1 - 0.2	0.15 - 0.2	50 - 120	0.04 - 0.08	0.06 - 0.12	0.08 - 0.17	50 - 100	0.04 - 0.06	0.05 - 0.08	0.08 - 0.15
Carbon Steel	30 - 60	0.03 - 0.06	0.05 - 0.09	0.07 - 0.15	40 - 80	0.03 - 0.05	0.04 - 0.07	0.05 - 0.09	30 - 60	0.02 - 0.04	0.03 - 0.05	0.05 - 0.1
Alloy Steel	20 - 40	0.02 - 0.04	0.03 - 0.06	0.06 - 0.15	30 - 60	0.02 - 0.04	0.03 - 0.05	0.04 - 0.06	20 - 40	0.01 - 0.02	0.02 - 0.04	0.04 - 0.06

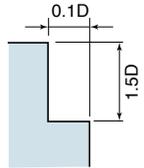
### DF2M

Material	Carbon Steel, Alloy Steel, Tool Steel		Carbon Steel, Alloy Steel, Tool Steel		Carbon Steel, Alloy Steel, Tool Steel		Stainless Steel, Ti-Alloy		Cast Iron		Aluminum Alloy		Copper, Brass, Non-Ferrous Material	
Hardness	- HRC20		HRC20 - HRC30		HRC30 - HRC40									
Strength	500 - 800N/mm <sup>2</sup>		800 - 1000N/mm <sup>2</sup>		1000 - 1300N/mm <sup>2</sup>									
Diameter(D)	RPM	Feed	RPM	Feed	RPM	Feed	RPM	Feed	RPM	Feed	RPM	Feed	RPM	Feed
2	5500	80	4800	70	3800	55	3100	50	6500	150	16000	320	12000	240
3	4100	90	3400	75	2600	60	2300	60	4200	150	11000	320	8000	240
4	3200	120	2700	120	2000	80	1900	80	3200	150	8000	320	6000	240
5	2700	160	2200	120	1600	95	1500	90	2500	150	6400	320	4800	240
6	2300	180	1900	140	1300	85	1300	90	2100	180	5300	340	4000	260
8	1700	170	1400	140	1000	100	1000	100	1600	190	4000	340	3000	260
10	1300	150	1000	120	800	80	800	90	1300	200	3200	340	2400	260
12	1000	120	800	95	660	65	660	75	1000	210	2600	340	2000	260
14	900	110	700	80	570	60	500	55	900	220	2300	340	1700	260
16	700	75	600	70	500	60	450	50	800	225	2000	340	1500	260
20	550	65	500	60	400	50	400	45	640	240	1600	340	1200	260



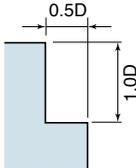
### DF4M

Material	Carbon Steel, Alloy Steel, Tool Steel		Cast Iron		Aluminum Alloy		Aluminum Alloy							
Hardness	- HRC20		HRC20 - HRC30		HRC30 - HRC40									
Strength	500 - 800N/mm <sup>2</sup>		800 - 1000N/mm <sup>2</sup>		1000 - 1300N/mm <sup>2</sup>									
Diameter(D)	RPM	Feed	RPM	Feed	RPM	Feed	RPM	Feed	RPM	Feed	RPM	Feed	RPM	Feed
2	5500	140	4800	120	3800	100	3100	80	6500	450	16000	960	12000	720
3	4100	150	3400	130	2600	100	2300	80	4200	450	11000	960	8000	720
4	3200	250	2700	200	2000	130	1900	110	3200	450	8000	960	6000	720
5	2700	260	2200	210	1600	140	1500	125	2500	450	6400	960	4800	720
6	2300	280	1900	240	1300	150	1300	130	2100	540	5300	1020	4000	780
8	1700	280	1400	240	1000	140	1000	140	1600	570	4000	1020	3000	780
10	1300	250	1000	220	800	130	800	125	1300	600	3200	1020	2400	780
12	1000	220	800	190	660	110	660	100	1000	630	2600	1020	2000	780
14	900	200	700	150	570	90	500	80	900	660	2300	1020	1700	780
16	700	160	600	130	500	80	450	70	800	680	2000	1020	1500	780
20	550	120	500	110	400	65	400	60	640	720	1600	1020	1200	780



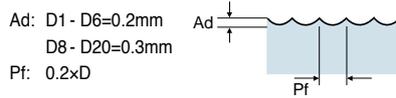
### DCF4

Material	Carbon Steel, Alloy Steel		Stainless Steel		Ti-Alloy	
Hardness	-HRC30					
Strength	-1000N/mm <sup>2</sup>					
Diameter(D)	RPM	Feed	RPM	Feed	RPM	Feed
3	9980	510	4070	310	3410	250
4	9070	570	3700	350	3100	280
5	7570	600	3020	360	2530	300
6	6670	660	3690	410	2270	330
7	5740	766	2500	400	1950	390
8	5040	710	2020	380	1680	350
9	4500	720	1800	360	1500	300
10	3900	610	1600	300	1350	300
12	3300	520	1350	250	1090	240
13	3000	480	1200	240	950	228
14	2640	410	1090	200	850	200
16	2250	360	950	190	750	180
18	2020	320	850	160	670	150
20	550	120	400	60	1200	780



### DB2S

Material	Alloy Steel, Cast Iron		Alloy Steel		Hardened Steel	
Hardness	- HRC30		HRC30 - HRC45		HRC45 - HRC65	
Strength	- 850N/mm <sup>2</sup>		850 - 1600N/mm <sup>2</sup>		1600N/mm <sup>2</sup> -	
Diameter(D)	RPM	Feed	RPM	Feed	RPM	Feed
2	15000	730	11500	500	5000	150
3	13000	680	11000	460	4500	150
4	10000	740	8400	530	4200	180
5	9000	820	7300	580	3700	180
6	8500	1000	7000	830	3200	190
8	7100	1300	5800	920	2500	220
10	6400	1600	5000	1020	2000	230
12	5800	1700	4600	1100	1800	250
16	4800	1700	3800	1000	1350	250
20	4100	1680	3300	1000	1110	250



Ad: D1 - D6=0.2mm  
D8 - D20=0.3mm  
Pf: 0.1xD

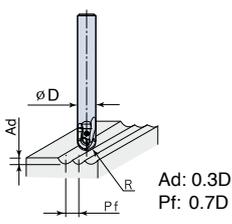
### DB2S (High Speed)

Material	Alloy Steel, Cast Iron		Hardened Steel		Depth of Cut
Hardness	- HRC45		HRC45 - HRC65		
Strength	- 1600N/mm <sup>2</sup>		1600N/mm <sup>2</sup> -		
Diameter(D)	RPM	Feed	RPM	Feed	 Ad: D1 - D6=0.2mm D8 - D20=0.3mm Pf: 0.05xD
2	21000	1480	21000	940	
3	21000	2000	17000	1000	
4	21000	3000	13800	1160	
5	21000	3600	12000	1200	
6	21000	4000	10500	1250	
8	16700	4000	8360	1250	
10	14000	3900	7000	1200	
12	12200	3900	6100	1200	
16	9600	3500	4800	1000	
20	8000	3180	4000	900	

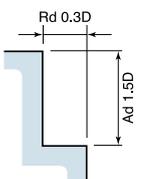
### DB2M

Material		Cast Iron, Carbon Steel		Alloy Steel, Tool Steel		Alloy Steel, Tool Steel		Hardened Steel		Depth of Cut
Hardness				-HRC30		HRC30 - HRC40		HRC40 - HRC50		
Radius	Dia.(D)	RPM	Feed	RPM	Feed	RPM	Feed	RPM	Feed	 Ad: 0.3D Pf: 0.7D
R1	2	21,000	360	13,000	210	11,000	150	7,000	130	
R2	4	10,500	780	6,600	340	5,500	290	3,500	150	
R3	6	7,000	880	4,400	440	3,600	330	2,300	165	
R4	8	5,300	980	3,300	500	2,700	360	1,800	200	
R5	10	4,200	1,100	2,600	500	2,200	360	1,400	220	
R6	12	3,500	1,200	2,200	540	1,900	420	1,700	230	
R7	14	2,900	1,200	1,850	540	1,600	420	1,450	230	
R8	16	2,600	1,450	1,650	580	1,400	400	880	220	
R9	18	2,300	1,500	1,400	580	1,250	400	780	220	
R10	20	2,100	1,500	1,300	580	1,100	360	720	200	

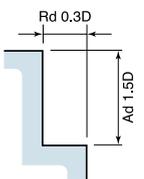
### DB2SM

Material	Roughing (DOC: <0.2R)				Finishing (DOC: <0.05R)				Depth of Cut 
	Alloy Steel, Tool Steel, Pre-Hardened Steel		Hardened Steel		Alloy Steel, Tool Steel, Pre-Hardened Steel		Hardened Steel		
Hardness	HrC30 - HrC45		HrC45 - HrC55		HrC30 - HrC45		HrC45 - HrC55		
Dia.	RPM	Feed	RPM	Feed	RPM	Feed	RPM	Feed	
6.0	12,000	800	7,000	400	17,000	1,600	12,000	1,000	
8.0	10,000	1,000	5,000	420	14,000	1,500	8,000	900	
10.0	7,000	900	4,000	500	10,000	1,400	7,000	800	
12.0	6,000	750	3,400	400	8,000	1,300	6,000	750	

### DAW3S, DAW3M, DAW3L

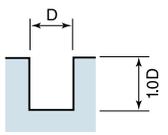
Material	Aluminum Alloy (< Si 4%)		Aluminum Alloy (< Si 8%)		Aluminum Alloy (Cu based)		
	RPM	Feed	RPM	Feed	RPM	Feed	
8	14,400	3,900	11,800	3,200	9,600	2,600	
10	11,400	3,700	9,600	3,100	7,500	2,400	
12	9,600	3,500	7,900	2,900	6,300	2,300	
14	8,100	3,200	6,700	2,700	5,400	2,100	
16	7,200	3,300	6,000	2,700	4,800	2,200	
18	6,300	2,800	5,200	2,400	4,200	1,900	
20	5,700	2,600	4,800	2,200	3,800	1,700	

### DA2M, DA3M

Material	Aluminum Alloy (< Si 4%)		Aluminum Alloy (< Si 8%)		Aluminum Alloy (Die Casting)		Aluminum Alloy (Cu based)		
Speed	Vc =100 - 300m/min		Vc =100 - 250m/min		Vc =100 - 200m/min		Vc =100 - 150m/min		
Dia.(D)	RPM	Feed	RPM	Feed	RPM	Feed	RPM	Feed	
4	24,000	4,800	19,900	3,980	16,000	3,200	12,000	2,400	
6	16,000	3,840	13,200	3,160	10,600	2,544	8,000	1,920	
8	12,000	3,600	9,900	2,970	8,000	2,400	6,000	1,800	
10	9,500	3,420	8,000	2,880	6,300	2,260	4,800	1,720	
12	8,000	3,200	6,600	2,640	5,300	2,120	4,000	1,600	
14	6,800	2,990	5,600	2,460	4,500	1,980	3,400	1,490	
16	6,000	3,000	5,000	2,500	4,000	2,000	3,000	1,500	
18	5,300	2,600	4,400	2,200	3,500	1,750	2,600	1,300	
20	4,800	2,400	4,000	2,000	3,200	1,600	2,400	1,200	

✘ Reduce feed by 30% for DA2M and DA3M Long Type.

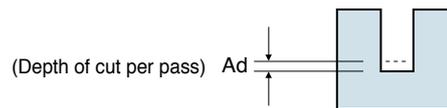
### DA2M

Material	Aluminum Alloy (< Si 4%)		Aluminum Alloy (< Si 8%)		Aluminum Alloy (Die Casting)		Aluminum Alloy (Cu based)		
Speed	Vc =100 - 300m/min		Vc =100 - 250m/min		Vc =100 - 200m/min		Vc =100 - 150m/min		
Dia.(D)	RPM	Feed	RPM	Feed	RPM	Feed	RPM	Feed	
4	24,000	3,840	19,900	2,980	16,000	2,240	12,000	1,440	
6	16,000	3,072	13,200	2,370	10,600	1,780	8,000	1,150	
8	12,000	2,880	9,900	2,230	8,000	1,680	6,000	1,080	
10	9,500	2,730	8,000	2,160	6,300	1,580	4,800	1,030	
12	8,000	2,560	6,600	1,980	5,300	1,480	4,000	960	
14	6,800	2,390	5,600	1,845	4,500	1,380	3,400	890	
16	6,000	2,400	5,000	1,870	4,000	1,400	3,000	900	
18	5,300	2,080	4,400	1,650	3,500	1,220	2,600	780	
20	4,800	1,920	4,000	1,500	3,200	1,260	2,400	720	

✘ Reduce feed by 30% for DA2M Long Type.

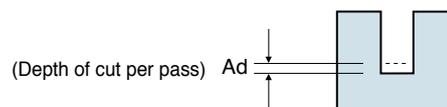
### DSRF

Material	Carbon Steel, Alloy Steel, Cast Iron			Alloy Steel, Heat Resistance Alloy			Hardened Steel		
Hardness	- HRC30			HRC30 - HRC45			HRC45 - HRC55		
Strength	- 850N/mm <sup>2</sup>			850 - 1600N/mm <sup>2</sup>			1600 - 2000N/mm <sup>2</sup>		
Dia.(D)	RPM	Feed	Ad(mm)	RPM	Feed	Ad(mm)	RPM	Feed	Ad(mm)
0.4	31000 - 40000	200 - 440	0.007 - 0.018	22500 - 28000	85 - 340	0.007 - 0.018	14300 - 17000	30 - 90	0.004 - 0.008
0.5	31000 - 40000	200 - 440	0.009 - 0.022	22500 - 28000	85 - 340	0.009 - 0.022	14300 - 17000	30 - 90	0.004 - 0.009
0.6	31000 - 40000	250 - 570	0.011 - 0.026	22500 - 28000	110 - 430	0.011 - 0.026	14300 - 17000	40 - 110	0.005 - 0.011
0.7	31000 - 40000	250 - 570	0.012 - 0.031	22500 - 28000	110 - 430	0.012 - 0.031	14300 - 17000	40 - 110	0.006 - 0.013
0.8	27000 - 35000	280 - 630	0.014 - 0.035	19500 - 24500	120 - 480	0.014 - 0.035	12500 - 14800	45 - 125	0.007 - 0.015
0.9	25000 - 31500	280 - 720	0.030 - 0.060	17500 - 22500	160 - 540	0.030 - 0.060	11000 - 12500	55 - 130	0.008 - 0.016
1	22500 - 28000	280 - 810	0.045 - 0.090	15700 - 20000	190 - 600	0.045 - 0.090	10000 - 12500	65 - 130	0.009 - 0.018
1.2	18500 - 22500	280 - 900	0.055 - 0.100	13000 - 16500	190 - 600	0.055 - 0.100	8300 - 10500	65 - 130	0.010 - 0.022
1.4	16000 - 20000	280 - 900	0.062 - 0.125	11500 - 14000	190 - 600	0.062 - 0.125	7200 - 9000	65 - 130	0.012 - 0.025
1.5	14500 - 18500	280 - 900	0.070 - 0.135	10500 - 13500	190 - 600	0.070 - 0.135	6700 - 8200	65 - 130	0.014 - 0.028
1.6	14000 - 18000	280 - 900	0.075 - 0.145	10200 - 12800	190 - 600	0.075 - 0.145	6400 - 8000	65 - 130	0.015 - 0.030
1.8	13000 - 16500	280 - 900	0.080 - 0.160	9200 - 11500	190 - 600	0.080 - 0.160	5700 - 7200	65 - 130	0.016 - 0.032
2	12000 - 14500	280 - 900	0.090 - 0.180	8300 - 10500	190 - 600	0.090 - 0.180	5300 - 6600	65 - 130	0.018 - 0.035
2.5	9500 - 12000	280 - 900	0.112 - 0.235	6700 - 8500	190 - 600	0.112 - 0.235	4300 - 5300	65 - 130	0.022 - 0.045
3	8000 - 10000	280 - 900	0.135 - 0.270	5500 - 7000	190 - 600	0.135 - 0.270	3500 - 4400	65 - 130	0.028 - 0.055



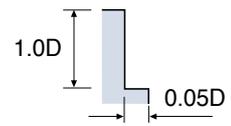
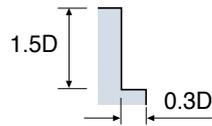
### DSRB

Material	Carbon Steel, Alloy Steel, Cast Iron			Alloy Steel, Heat Resistance Alloy			Hardened Steel		
Hardness	- HRC30			HRC30 - HRC45			HRC45 - HRC55		
Strength	- 850N/mm <sup>2</sup>			850 - 1600N/mm <sup>2</sup>			1600 - 2000N/mm <sup>2</sup>		
Dia(D)	RPM	Feed	Ad(mm)	RPM	Feed	Ad(mm)	RPM	Feed	Ad(mm)
0.4	31000 - 40000	175 - 490	0.018 - 0.036	22500 - 28500	88 - 270	0.018 - 0.036	14300 - 18000	88 - 175	0.004 - 0.007
0.5	31000 - 40000	175 - 490	0.023 - 0.045	22500 - 28500	88 - 270	0.023 - 0.045	14300 - 18000	88 - 175	0.005 - 0.009
0.6	31000 - 40000	225 - 630	0.027 - 0.054	22500 - 28500	110 - 350	0.027 - 0.054	14300 - 18000	110 - 225	0.005 - 0.011
0.8	31000 - 40000	225 - 630	0.036 - 0.072	22500 - 28500	110 - 350	0.036 - 0.072	14300 - 18000	110 - 225	0.007 - 0.014
1	29000 - 36500	250 - 700	0.045 - 0.090	20500 - 26000	125 - 390	0.045 - 0.090	13000 - 16300	125 - 250	0.009 - 0.018
1.2	24000 - 30500	250 - 780	0.055 - 0.100	17000 - 21500	125 - 390	0.055 - 0.100	10800 - 13700	125 - 250	0.010 - 0.022
1.4	21000 - 26000	250 - 780	0.062 - 0.125	15000 - 18000	125 - 390	0.062 - 0.125	9400 - 11700	125 - 250	0.012 - 0.025
1.5	19000 - 24000	250 - 780	0.070 - 0.135	13500 - 17500	125 - 390	0.070 - 0.135	8700 - 10700	125 - 250	0.014 - 0.028
1.6	18000 - 23500	250 - 780	0.075 - 0.145	13200 - 16500	125 - 390	0.075 - 0.145	8300 - 10400	125 - 250	0.015 - 0.030
1.8	17000 - 21500	250 - 780	0.080 - 0.160	12000 - 15000	125 - 390	0.080 - 0.160	7400 - 9400	125 - 250	0.016 - 0.032
2	15500 - 19000	250 - 780	0.090 - 0.180	11000 - 13500	125 - 390	0.090 - 0.180	6900 - 8600	125 - 250	0.018 - 0.035
3	10500 - 13000	250 - 780	0.135 - 0.270	7000 - 9000	125 - 390	0.135 - 0.270	4600 - 5700	125 - 250	0.028 - 0.055



**DRN**

Material	Carbon Steel, Alloy Steel, Tool Steel		Carbon Steel, Alloy Steel, Tool Steel		Carbon Steel, Alloy Steel, Tool Steel		Stainless Steel, Ti-Alloy		Aluminum Alloy	
	- HRC20		HRC20 - HRC30		HRC30 - HRC40					
	500 - 800N/mm <sup>2</sup>		800 - 1000N/mm <sup>2</sup>		1000 - 1300N/mm <sup>2</sup>					
Dia. (D)	RPM	Feed	RPM	Feed	RPM	Feed	RPM	Feed	RPM	Feed
6	15,600	2,320	12,400	840	8,400	570	3,400	260	2,400	190
8	11,600	2,320	9,200	840	6,300	570	2,400	240	1,800	180
10	9,200	2,320	7,600	840	5,100	570	2,000	290	1,300	190
12	8,000	2,400	6,000	800	4,200	570	1,680	260	1,200	190
14	6,800	2,400	5,200	840	3,600	570	1,400	200	900	130
16	6,000	2,400	4,800	760	3,300	510	1,200	160	800	110
18	5,200	2,320	4,400	720	2,700	420	1,100	150	700	100
20	4,800	2,160	3,600	560	2,400	360	1,000	150	660	100



# Technical information

## Grade Comparison Table

	Duracarb	Korloy	Sandvik	Walter	Seco	Kennametal	Mitsubishi	Sumitomo	Tungaloy	Kyocera	TaeguTec	ISCAR
Turning	DC210	H01	H10 H10A		HX		HTi10	H1 EH10	G1F H10T TH10		K10	IC20
	DC610	CN1000 CN2000	CT5015 CT5005	WCE10	CM CM15	KT125 KT150	NX2525 NX3035	T110A T1200A	NS730 NS720	TN60 TN6020	CT3000	IC20N
	DC820	NC305K NC6110	GC3205 GC3210	WAK10 WAK20	TK1000 TK2000	KCK05 KCK15	UC5105 UC5115	AC410K AC700G	T5105 T5115 T5125	CA4505 CA4515	TT1300 TT7310	IC5005 IC5010
	DC810 DC9015	NC3010 NC3015	GC4205 GC4215	WPP01 WPP10 WAP10	TP1000 TP1500	KCP05 KCP10	UE6105 UE6110	AC1000 AC700G	T9005 T9015 T9115	CA5505 CA5515 CR7015	TT8115	IC8150 IC9150
	DC7010 DC9025	NC3120 NC3020	GC4225 GC4025	WPP20 WAP20	TP2000 TP2500	KCP25 KC9125	UE6020	AC820P AC2000	T9125 T9025	CA5525 CR7025	TT8125 TT5100	IC8250 IC9250
	DC8035											
D-Cut	DC154	PC3500	GC1025 GC4125	-	-		-	-	-	-	TT7220	IC350
	DC9235	PC9030 PC9530	GC2145	WXP43	CP600 F40M	KC935M KC722	-	ACZ350	AH140 GH330	-	TT8020	IC328
Milling	DC325M		S30 SM30		S35M			A30N A30	TX30 UX30		P30	IC50M
	DC9200	PC6510 PC215K	GC1020		MK2000	KC915M	F5010	ACZ310 ACK200 ACK300	AH120		TT6030	IC810 IC910
	DC9300	PC3500 PC3535 PC3525 PC130	GC4020	WAM20	T250M				AH330	PR630 PR660 PR730	TT7030	IC950
	DC9235	PC9030 PC9530	GC2145	WXP43	CP600 F40M	KC935M KC722	-	ACZ350	AH140 GH330	-	TT8020	IC328
	DC9800	PC9530	GC1030 GC2030	WAM30	F30M	KC522M KC635M	VP15TF	ACP200	GH330	PR830 PR925 PR1025	TT9030	IC808 IC908
	DC980N		GC1610 GC1620		F30M		VP15TF	GSX2000		PGS, HFS	TT1040	

# Technical information

## Chipbreaker

Description			Duracarb	Korloy	Kyocera	Sandvik	Kenna	Seco	Walter	Mitsubishi	Sumitomo	Tungaloy	TaeguTec	ISCAR	
Negative	Steel	Double sided	41	VG, HF, GF VF VQ	HQ	QF	FP FN	MF2	NF3	SH	SU SE	ZF ZM, TS, NS, NM TSF	FG	NF	
			New 43	VL, VB, HC	CJ CQ	PF, LC			NS6	FY, SA	LU		FC		
			52	HC	GS	SM	MN	MR3	NM4			AS	MC		
			New 45	VM HM, GM	PS HS CS	PM	MP RP	M3	NM6 NS8	MP, MV MA	GE, GU UX, UG	TM	PC MT	GN	
			53	B20, B25	MG- C		UN	M4	MG- MG-		UZ	38 DM, MG- 33, 37	MG- MG-	MG-	
	Stainless	Double sided	New 42	HS	MU MS	MM	UP	MF4	NM4	MS	EX	SS	EM		
	Cast Iron	Double sided	New 45, 53	B25	MG- C	KF, KM	FN RP		NM5	MA MG-	UZ	CF CM	MT MG-		
	Positive	Steel		51	VF HMP, C05	HQ	UM	FP LF	F1	PS4 PS5	SQ, SV	FK SU SC, SK		FG	SM 16, GT-
				52	C25	MT-	PR, UR	MF	F2	E47, MT-	PM5 MQ, MV MT- G	SF, MU	PM	MT	14, 17 19, MT-
		Aluminum		AU	AR	AH	AL	HP	AL	PM2	AZ	AG	AL	FL	AF, AS



**Duracarb™**

