

Milling Cutter for High Efficiency General  
Milling and Shoulder Milling

SEC-Sumi Dual Mill **DFC**Series

Rev. 6

**Economical double-sided insert  
Unique and precise insert design  
provides high efficiency  
and high accuracy milling**



**Expansion**

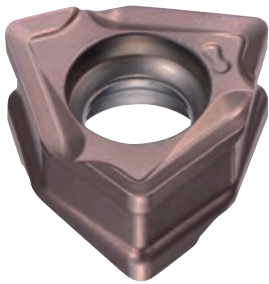
Improved chip control for shoulder milling  
**GS type Chipbreaker expansion**



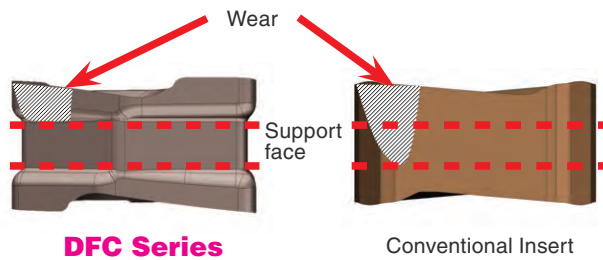
■ **General Features**

SEC-Sumi Dual Mill DFC type is a general purpose, high efficiency face milling cutter which uses an unique shaped insert that delivers both cutting edge sharpness and strength, in order to cover a wide range of applications including finishing. The new GS Chipbreaker allows for both facing and shoulder milling.

■ **Characteristics**



Unique insert shape delivers both cutting edge sharpness and strength.



Flank wear does not move pass the support face.

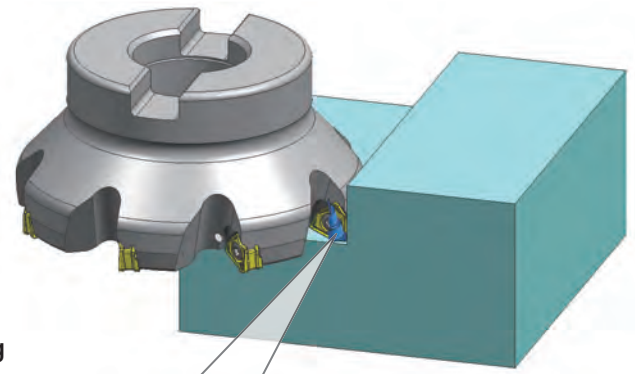


Suitable for face milling and shoulder milling with a 90° cutting edge angle.

**GS type chipbreaker for shoulder milling**

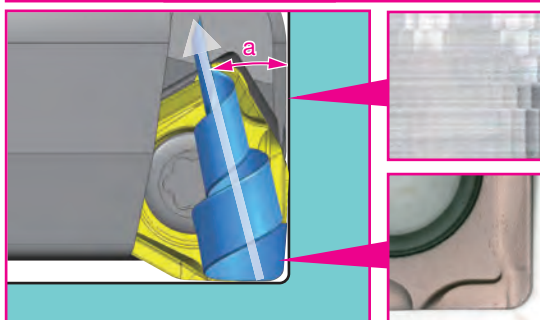
- Excellent chip control
- Suppression of deterioration of surface due to packing of chips

Material : S50C Cutting Diameter :  $\phi 100\text{mm}$   
 Cutting Conditions :  $v_c=200\text{m/min}$ ,  $f_z=0.2\text{mm/t}$ ,  $a_e=50\text{mm}$ ,  $a_p=3\text{mm} \times 6\text{pass Dry}$

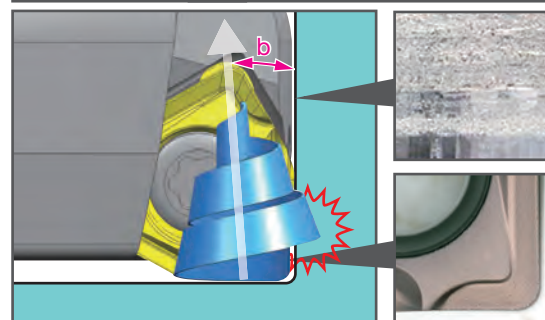


**Chip Generated image and Wall surface after processing**

**GS type Chipbreaker**



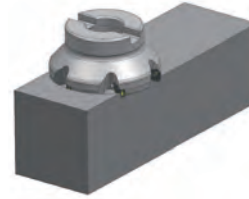
**Conventional**



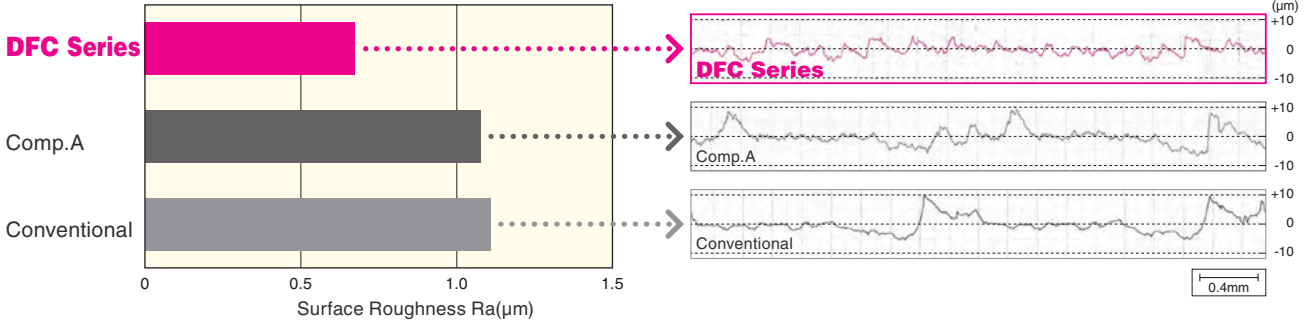
Controlling the direction of chip evacuation ( $a > b$ ) => Suppression of packing of chips

■ Performance

Face Milling



① Surface Roughness **better results vs. competitor's products.**



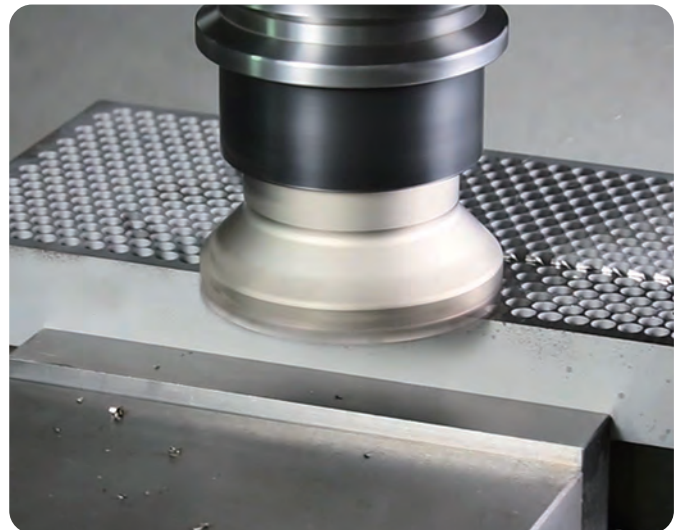
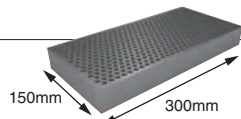
Material : S50C Tool : DFC 09100RS Insert : XNMU 060608PNER-G Grades : ACP200  
 Cutting Conditions :  $v_c=200\text{m/min}$ ,  $f_z=0.2\text{mm/t}$ ,  $a_p=3\text{mm}$ ,  $a_e=85\text{mm}$  Dry

② Cutting Edge Strength Edge in heavy interrupted milling applications  
**Stronger cutting edge than competitors' cutters with double-sided or tangential inserts**

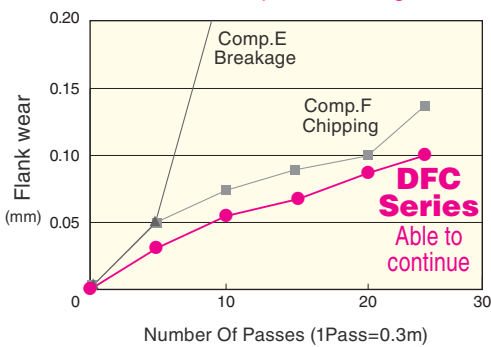
	$f_z$ (mm/t)		
	0.3	0.4	0.5
<b>DFC Series</b>	○	○	○
Comp. B (Double-Sided 6-Cornered Inserts)	○	Breakage	
Comp. C (Double-Sided 6-Cornered Inserts)	Breakage		
Comp. D (Double-Sided tangential Inserts)	Breakage		

(Cutting Distance : 0.9m)

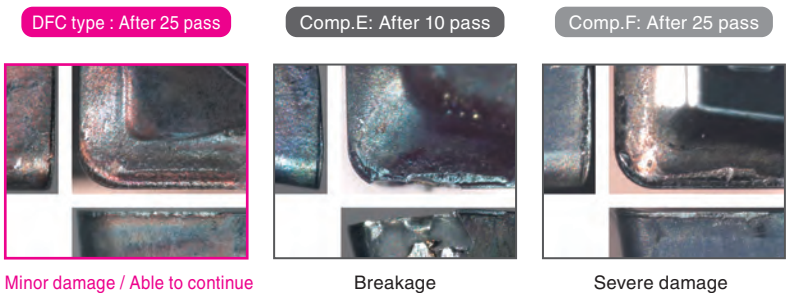
Material : S50C(with Holes)  
 Tool : DFC 09100RS  
 Insert : XNMU 060608PNER-G Grades : ACP300  
 Cutting Conditions :  $v_c=150\text{m/min}$ ,  $a_p=3\text{mm}$ ,  $a_e=50\text{mm}$  Dry



③ Wear Resistance  
**Excellent wear resistance provides longer tool life.**



Comparison of Cutting edge

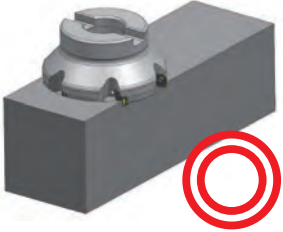


Material : S50C Tool : DFC 09100RS Insert : XNMU 060608PNER-G Grades : ACP200  
 Cutting Conditions :  $v_c=200\text{m/min}$ ,  $f_z=0.2\text{mm/t}$ ,  $a_p=3\text{mm}$ ,  $a_e=85\text{mm}$  Dry

■ Application and Chipbreaker Guidance

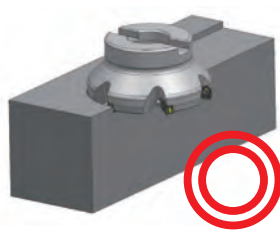
Face Milling

**G** G type chipbreaker



Shoulder Milling

**GS** GS type chipbreaker



Radial direction Maximum depth of cut  $a_e$   
 $G \leq 10\%$  of Cutter diameter  
 $GS \leq 50\%$  of Cutter diameter

Recommended feedrate  $a_p = 3\text{mm}$

Recommended feedrate  $f_z \leq 0.2\text{mm/t}$   
 (In case of general steel)

Side Milling

**G/GS** G type / GS type chipbreaker



Helical Milling

Ramping

**⚠ Not applicable**

■ Series

	Cat. No.	Series	Diameter range								Shape		
			ø25	ø32	ø40	ø50	ø63	ø80	ø100	ø125		ø160	ø200
Shell type	<b>DFC 09000R/RS</b> P7	Standard pitch	—	—	—	4	4	5	6	7	8	10	
	<b>DFCM 09000R/RS</b> P8	Fine pitch	—	—	—	5	6	7	8	11	12	16	
	<b>DFCF 09000R/RS</b> P9	Extra Fine pitch	—	—	—	6	7	9	11	14	16	20	
Shank type	<b>DFC 09000E</b> P10	Standard pitch	2	2	3	3*	4*	5*	—	—	—	—	
	<b>DFCM 09000E</b> P10	Fine pitch	—	3	4	5*	6*	7*	—	—	—	—	

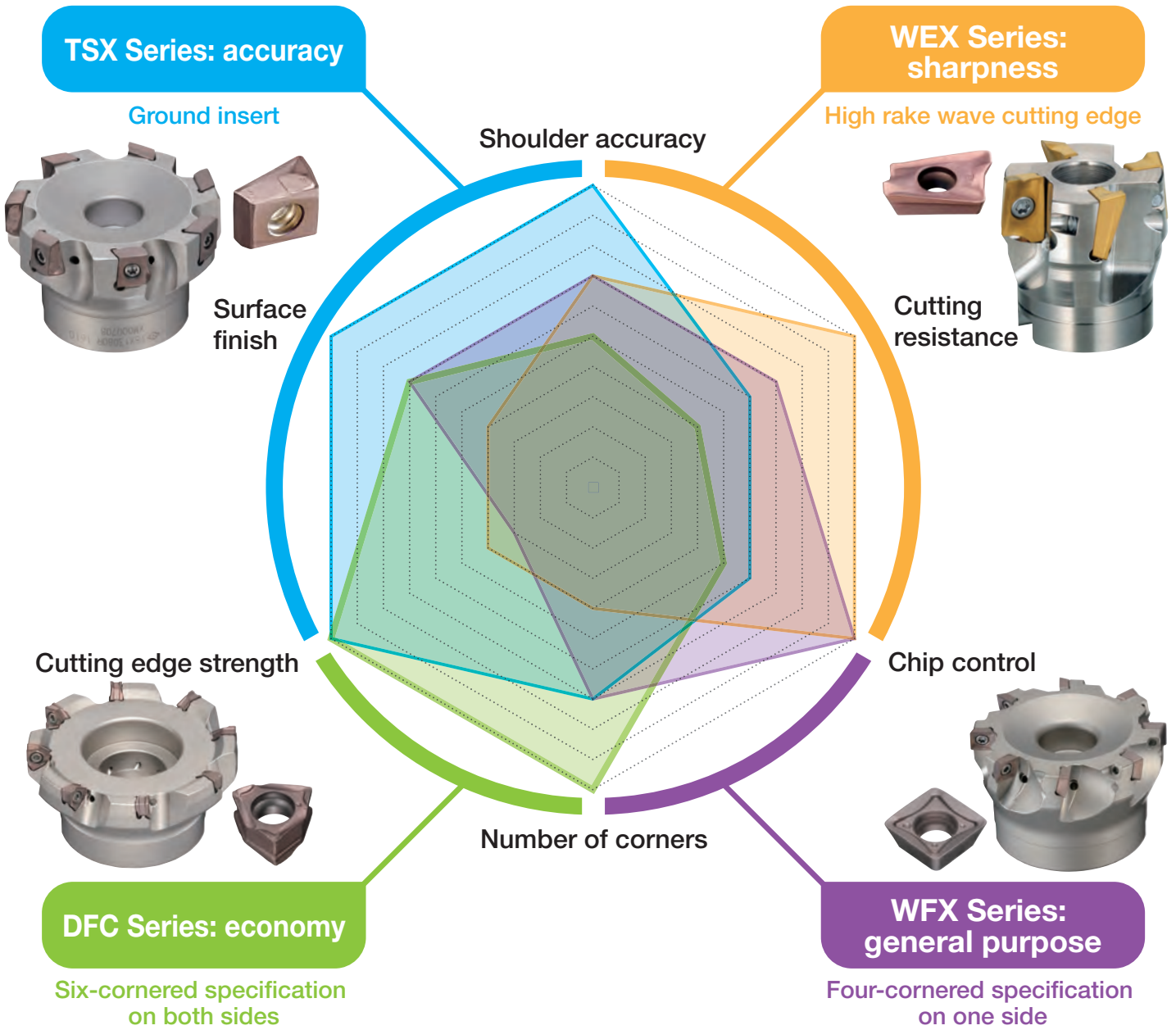
● : Only metric in stock, ◎ : Both metric and inch in stock, ※ : Shank diameter 42mm type (made-to-order), — : Not available

■ Insert Set-up



Place the insert flatly on the seat of the cutter and tighten the screw with the recommended torque.

■ Shoulder Milling Tool Selection Guide



★★★: Top recommendation

	Surface finish	Shoulder accuracy	Cutting resistance	Chip control	Number of corners	Cutting edge strength
<b>TSX Series</b>	★★★★	★★★★	★★	★★★	★★	★★★★
<b>DFC Series</b>	★★	★	★	★★★	★★★★	★★★★
<b>WEX Series</b>	★	★★★	★★★★	★★★★	★	★★
<b>WFX Series</b>	★★	★★	★★	★★★★	★★	★

\*See TSX Series (IGETALLOY News No. 523), WEX Series (IGETALLOY News No. 452) and WFX Series (IGETALLOY News No. 491) for more information on individual products.

■ Inserts Grades

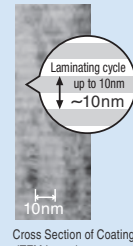
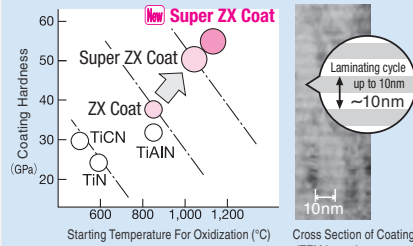
We have released **New** ACP100/**New** ACP200/**New** ACP300 grades for steel machining, ACM200/ACM300 grades for stainless steel machining, and **New** ACK200/**New** ACK300 grades for cast iron machining to cover a wide range of materials.



Work materials	Finishing to Light Cut	Medium Cut	Rough to Heavy Cut
<b>P</b> Steel	<b>New</b> ACP100	<b>New</b> ACP200	<b>New</b> ACP300
<b>M</b> Stainless Steel	ACM200	ACM300	
<b>K</b> Cast Iron	<b>New</b> ACK200	<b>New</b> ACK300	
<b>S</b> Exotic Alloy		ACM200	ACM300

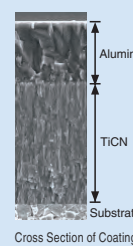
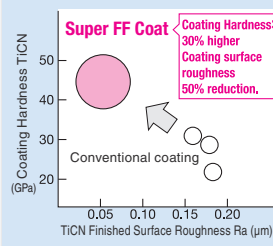
The letters "C" and "P" at either end of each grade indicate coating type.  
 ▽:CVD ▲:PVD

**NEW SUPER ZX COAT**



- Compared to conventional grades, the coating hardness has been increased by 40% and the oxidation starting temperature has been increased by 200°C.
- High speed, high efficiency machining of more than 1.5 times that of conventional grades is possible.
- Achieves a tool life 2x or better that of conventional grades.

**SUPER FF COAT**

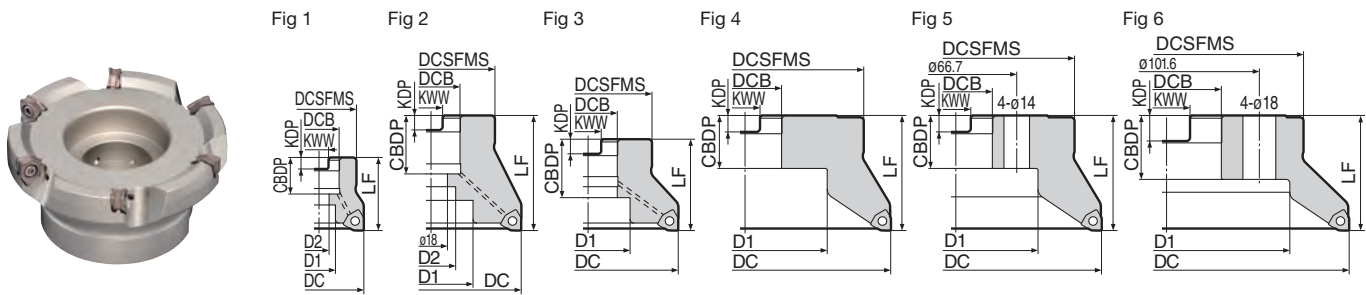


- Achieves excellent chipping resistance thanks to the smoothness of the coating and our coating stress control technology.
- High speed, high efficiency machining of more than 1.5 times that of conventional grades is possible due to hardening the coating layer.
- Achieves a tool life 2x or better that of conventional grades.

	L	G	GS	H
Chipbreakers				
Cutting Edge Figure				
Corner Radius	0.4, 0.8	0.4, 0.8, 1.2, 1.6	0.4, 0.8, 1.2, 1.6	0.8, 1.2, 1.6
Characteristic, Application	Light Cut, Low Rigidity Milling Low-Burr Design	Face Milling General - Interrupted Milling	Shoulder Milling	Heavy Cut, Heavy Interrupted Machining Hardened steel

Rake Angle	Radial	-9°	6mm	90°
	Axial	-5°		

<b>P</b> Steel	<b>M</b> Stainless Steel	<b>K</b> Cast Iron	<b>N</b> Ni-Co Alloy	<b>S</b> Titanium	<b>H</b> High Speed Steel
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### Body (Standard Pitch)

Cat. No.	Stock	Dimensions(mm)											No. of Teeth	Weight (kg)	Fig
		Diameter DC	Flange Diameter DCSFMS	Height LF	Hole Size DCB	Grooving Width KWW	Grooving Depth KDP	Mounting Depth CDBP	Bolt Size D1	Bolt Size D2					
Metric	DFC 09050RS	●	50	41	40	22	10.4	6.3	20	18	11	4	0.3	1	
	09063RS	●	63	50	40	22	10.4	6.3	20	18	11	4	0.5	1	
	09080RS	●	*80	55	50	27	12.4	7	22	20	14	5	1.0	1	
	09100RS	●	100	70	50	32	14.4	8	32	46	—	6	1.4	3	
	09125RS	●	125	80	63	40	16.4	9	29	52	29	7	2.8	1	
	09160RS	●	160	130	63	40	16.4	9	29	90	—	8	4.6	5	
09200RS	●	200	150	63	60	25.7	14	35	135	—	10	5.7	6		
Inch	DFC 09080R	●	*80	55	50	25.4	9.5	6	25	20	14	5	1.0	1	
	09100R	●	*100	70	63	31.75	12.7	8	32	46	27	6	2.0	2	
	09125R	●	125	80	63	38.1	15.9	10	35.5	55	30	7	2.8	1	
	09160R	●	160	100	63	50.8	19.1	11	38	72	—	8	3.6	4	
	09200R	●	200	150	63	47.625	25.4	14	35	135	—	10	6.0	6	

Check the arbor attachment size (DCB) when selecting the cutter. Inserts are not included.

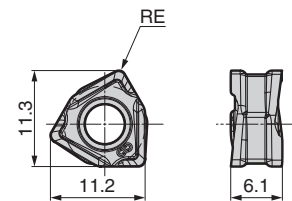


\* Please use JIS B1176 hexagonal bolt (ø80: M12x30 to 35mm, ø100: M16x40 to 45mm) for securing a ø80/ø100 cutter to the arbor.

### Inserts

**P** Steel **M** Stainless Steel **K** Cast Iron **S** Exotic Alloy

Applications	Grades	Coated Carbide						Dimensions (mm)	
		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200		ACM300
High Speed/Light		●	●	●	●	●	●	Corner Radius RE	
General Purpose		●	●	●	●	●	●		
Roughing		●	●	●	●	●	●		
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	RE
XNMU 060604PNER-L		●	●	●	●	●	●	●	0.4
060608PNER-L		●	●	●	●	●	●	●	0.8
XNMU 060604PNER-G		●	●	●	●	●	●	●	0.4
060608PNER-G		●	●	●	●	●	●	●	0.8
060612PNER-G		●	●	●	●	●	●	●	1.2
060616PNER-G		●	●	●	●	●	●	●	1.6
XNMU 060604PNER-GS	<i>New</i>	●	●	●	●	●	●	●	0.4
060608PNER-GS	<i>New</i>	●	●	●	●	●	●	●	0.8
060612PNER-GS	<i>New</i>	●	●	●	●	●	●	●	1.2
060616PNER-GS	<i>New</i>	●	●	●	●	●	●	●	1.6
XNMU 060608PNER-H		●	●	●	●	●	●	●	0.8
060612PNER-H		●	●	●	●	●	●	●	1.2
060616PNER-H		●	●	●	●	●	●	●	1.6



### Identification Details

## DFC 09 050 R S

Cutter Series    Insert Size    Cutting Diameter    Direction    Metric Bore

### Parts

Wrench	Screw	Anti-seize Cream
TRDR15IP	BFTX03512IP	3.0 SUMI-P

Recommended Tightening Torque (N·m)

### Recommended Cutting Conditions

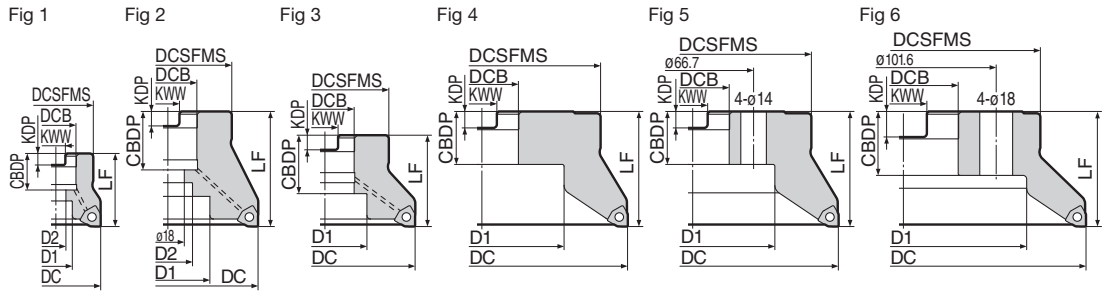
ISO	Material	Hardness	Cutting Speed $v_c$ (m/min) Min. - Optimum -Max.	Feed Rate $f_z$ (mm/t) Min. - Optimum -Max.	Depth of Cut (mm)	Grades
<b>P</b>	General Steel	180~280HB	150 - 200 - 250	0.10 - 0.20 - 0.30	<6	ACP200 ACP300
	Soft Steel	≤180HB	180 - 250 - 350	0.15 - 0.25 - 0.35	<6	
	Die Steel	200~220HB	100 - 150 - 200	0.10 - 0.18 - 0.25	<4	
<b>M</b>	Stainless Steel	—	160 - 205 - 250	0.12 - 0.18 - 0.25	<6	ACM300
<b>K</b>	Cast Iron	250HB	100 - 175 - 250	0.10 - 0.20 - 0.30	<6	ACK200 ACK300

GS type chipbreaker is recommended in shoulder milling.  
Please use that with  $a_e \leq 50\%$  of Cutter diameter and  $f_z \leq 0.2$ mm/t

Rake Angle	Radial	-9°
	Axial	-5°

6mm 90°

<b>P</b> Steel	<b>M</b> Stainless Steel	<b>K</b> Cast Iron	<b>N</b> Inconel	<b>N</b> Titanium	<b>S</b> Aluminum	<b>S</b> Exotic Alloy	<b>H</b> Hardened Steel
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## Body (Fine Pitch)

Dimensions(mm)

Cat. No.	Stock	Diameter		Height	Hole Size	Grooving Width	Grooving Depth	Mounting Depth	Bolt Size	Bolt Size	No. of Teeth	Weight (kg)	Fig	
		DC	DCSFMS											
Metric	DFCM 09050RS	●	50	41	40	22	10.4	6.3	20	18	11	5	0.3	1
	09063RS	●	63	50	40	22	10.4	6.3	20	18	11	6	0.5	1
	09080RS	●	*80	55	50	27	12.4	7	22	20	14	7	0.9	1
	09100RS	●	100	70	50	32	14.4	8	32	46	—	8	1.4	3
	09125RS	●	125	80	63	40	16.4	9	29	52	29	11	2.7	1
	09160RS	●	160	130	63	40	16.4	9	29	90	—	12	4.5	5
09200RS	●	200	150	63	60	25.7	14	35	135	—	16	5.6	6	
Inch	DFCM 09080R	●	*80	55	50	25.4	9.5	6	25	20	14	7	0.9	1
	09100R	●	*100	70	63	31.75	12.7	8	32	46	27	8	1.9	2
	09125R	●	125	80	63	38.1	15.9	10	35.5	55	30	11	2.7	1
	09160R	●	160	100	63	50.8	19.1	11	38	72	—	12	3.5	4
	09200R	●	200	150	63	47.625	25.4	14	35	135	—	16	5.9	6

Check the arbor attachment size (DCB) when selecting the cutter. Inserts are not included.

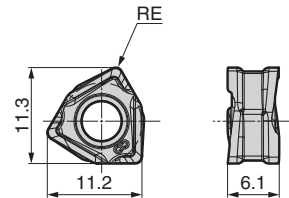


\* Please use JIS B1176 hexagonal bolt (ø80: M12x30 to 35mm, ø100: M16x40 to 45mm) for securing a ø80/ø100 cutter to the arbor.

## Inserts

**P** Steel **M** Stainless Steel **K** Cast Iron **S** Exotic Alloy

Applications	Grades	Coated Carbide						Dimensions (mm)	
	High Speed/Light								
Applications	General Purpose								
	Roughing								
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Corner Radius
XNMU 060604PNER-L		—	●	●	—	—	—	—	RE
060608PNER-L		—	●	●	—	—	—	—	0.4
XNMU 060604PNER-G		●	●	●	●	●	●	●	0.4
060608PNER-G		●	●	●	●	●	●	●	0.8
060612PNER-G		●	●	●	●	●	●	●	1.2
060616PNER-G		●	●	●	●	●	●	●	1.6
XNMU 060604PNER-GS <i>New</i>		●	●	●	—	—	●	●	0.4
060608PNER-GS <i>New</i>		●	●	●	—	—	●	●	0.8
060612PNER-GS <i>New</i>		●	●	●	—	—	●	●	1.2
060616PNER-GS <i>New</i>		●	●	●	—	—	●	●	1.6
XNMU 060608PNER-H		●	●	●	●	●	●	●	0.8
060612PNER-H		●	●	●	●	●	●	●	1.2
060616PNER-H		●	●	●	●	●	●	●	1.6



## Identification Details

# DFC M 09 050 R S

Cutter Series M : Fine Pitch Insert Size Cutting Diameter Direction Metric Bore

## Parts

Wrench	Screw	Anti-seizure Cream
TRDR151P	BFTX035121P 3.0	SUMI-P

Recommended Tightening Torque (N·m)

## Recommended Cutting Conditions

ISO	Material	Hardness	Cutting Speed $v_c$ (m/min) Min.- Optimum -Max.	Feed Rate $f_z$ (mm/t) Min.- Optimum -Max.	Depth of Cut (mm)	Grades
<b>P</b>	General Steel	180~280HB	150 - 200 - 250	0.10 - 0.20 - 0.30	<6	ACP200 ACP300
	Soft Steel	≤180HB	180 - 250 - 350	0.15 - 0.25 - 0.35	<6	
	Die Steel	200~220HB	100 - 150 - 200	0.10 - 0.18 - 0.25	<4	
<b>M</b>	Stainless Steel	—	160 - 205 - 250	0.12 - 0.18 - 0.25	<6	ACM300
<b>K</b>	Cast Iron	250HB	100 - 175 - 250	0.10 - 0.20 - 0.30	<6	ACK200 ACK300

GS type chipbreaker is recommended in shoulder milling.

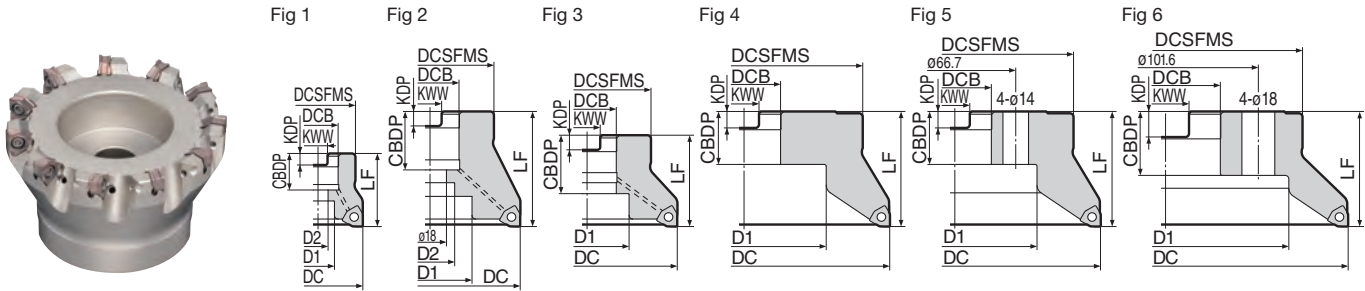
Please use that with  $a_e \leq 50\%$  of Cutter diameter and  $f_z \leq 0.2$ mm/t

● mark: Standard stocked item ● mark: Standard stocked item (expanded) Blank: Made-to-order item — mark: We cannot produce



Rake Angle	Radial	-9°	6mm	90°
	Axial	-5°		

<b>P</b> Steel	<b>M</b> Stainless Steel	<b>K</b> Cast Iron	<b>N</b> Inconel	<b>N</b> Titanium	<b>S</b> Exotic Alloy	<b>H</b> Hardened Steel
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## Body (Extra-Fine Pitch)

Dimensions(mm)

Cat. No.	Stock	Diameter		Height	Hole Size	Grooving Width	Grooving Depth	Mounting Depth	Bolt Size		No. of Teeth	Weight (kg)	Fig	
		DC	DCSFMS						D1	D2				
Metric	<b>DFCF 09050RS</b>	●	50	41	40	22	10.4	6.3	20	18	11	6	0.3	1
	<b>09063RS</b>	●	63	50	40	22	10.4	6.3	20	18	11	7	0.5	1
	<b>09080RS</b>	●	*80	55	50	27	12.4	7	22	20	14	9	0.9	1
	<b>09100RS</b>	●	100	70	50	32	14.4	8	32	46	—	11	1.3	3
	<b>09125RS</b>	●	125	80	63	40	16.4	9	29	52	29	14	2.6	1
	<b>09160RS</b>	●	160	130	63	40	16.4	9	29	90	—	16	4.5	5
Inch	<b>DFCF 09080R</b>	●	*80	55	50	25.4	9.5	6	25	20	14	9	0.9	1
	<b>09100R</b>	●	*100	70	63	31.75	12.7	8	32	46	27	11	1.9	2
	<b>09125R</b>	●	125	80	63	38.1	15.9	10	35.5	55	30	14	2.7	1
	<b>09160R</b>	●	160	100	63	50.8	19.1	11	38	72	—	16	3.5	4
	<b>09200R</b>	●	200	150	63	47.625	25.4	14	35	135	—	20	5.8	6



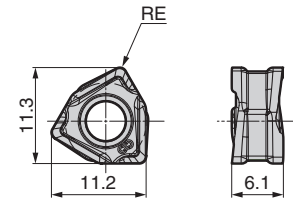
Check the arbor attachment size (DCB) when selecting the cutter. Inserts are not included.

\* Please use JIS B1176 hexagonal bolt (ø80: M12x30 to 35mm, ø100: M16x40 to 45mm) for securing a ø80/ø100 cutter to the arbor.

## Inserts

**P** Steel **M** Stainless Steel **K** Cast Iron **S** Exotic Alloy

Applications	Grades	Coated Carbide						Dimensions (mm)
		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	
High Speed/Light		●	●	●	●	●	●	Corner Radius RE
General Purpose		●	●	●	●	●	●	
Roughing		●	●	●	●	●	●	
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300
<b>XNMU 060604PNER-L</b>		—	●	●	—	—	—	—
<b>060608PNER-L</b>		—	●	●	—	—	—	—
<b>XNMU 060604PNER-G</b>		●	●	●	●	●	●	●
<b>060608PNER-G</b>		●	●	●	●	●	●	●
<b>060612PNER-G</b>		●	●	●	●	●	●	●
<b>060616PNER-G</b>		●	●	●	●	●	●	●
<b>XNMU 060604PNER-GS</b>	<i>New</i>	●	●	●	—	—	●	●
<b>060608PNER-GS</b>	<i>New</i>	●	●	●	—	—	●	●
<b>060612PNER-GS</b>	<i>New</i>	●	●	●	—	—	●	●
<b>060616PNER-GS</b>	<i>New</i>	●	●	●	—	—	●	●
<b>XNMU 060608PNER-H</b>		●	●	●	●	●	●	●
<b>060612PNER-H</b>		●	●	●	●	●	●	●
<b>060616PNER-H</b>		●	●	●	●	●	●	●



## Identification Details

# DFC F 09 050 R S

Cutter Series: F: Extra-Fine Pitch    Insert Size: 09    Cutting Diameter: 050    Direction: R    Metric Bore: S

## Parts

Wrench	Screw	Anti-seize Cream
TRDR15IP	BFTX03512IP 3.0	SUMI-P

Recommended Tightening Torque (N·m)

## Recommended Cutting Conditions

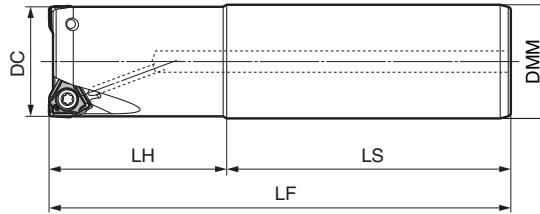
ISO	Material	Hardness	Cutting Speed $v_c$ (m/min) Min. - Optimum -Max.	Feed Rate $f_z$ (mm/t) Min. - Optimum -Max.	Depth of Cut (mm)	Grades
<b>P</b>	General Steel	180~280HB	150 - 200 - 250	0.10 - 0.20 - 0.30	<6	ACP200 ACP300
	Soft Steel	≤180HB	180 - 250 - 350	0.15 - 0.25 - 0.35	<6	
	Die Steel	200~220HB	100 - 150 - 200	0.10 - 0.18 - 0.25	<4	
<b>M</b>	Stainless Steel	—	160 - 205 - 250	0.12 - 0.18 - 0.25	<6	ACM300
<b>K</b>	Cast Iron	250HB	100 - 175 - 250	0.10 - 0.20 - 0.30	<6	ACK200 ACK300

GS type chipbreaker is recommended in shoulder milling.  
Please use that with  $a_e \leq 50\%$  of Cutter diameter and  $f_z \leq 0.2\text{mm/t}$

● mark: Standard stocked item    ● mark: Standard stocked item (expanded)    Blank: Made-to-order item    — mark: We cannot produce

Rake Angle	Radial	-9°
	Axial	-5°

6mm 90°



### Body (Standard Pitch)

Dimensions(mm)

Cat. No.	Stock	Diameter		Head Length	Shank Length		Total Length	No. of Teeth
		DC	DMM		LH	LS		
DFC 09025E	●	25	25	40	80	120	2	
09032E	●	32	32	50	80	130	2	
09040E	●	40	32	50	80	130	3	
09050E	●	50	32	50	80	130	3	
09050E-42		50	42	50	100	150	3	
09063E	●	63	32	50	80	130	4	
09063E-42		63	42	50	100	150	4	
09080E	●	80	32	50	80	130	5	
09080E-42		80	42	50	100	150	5	

### Body (Fine Pitch)

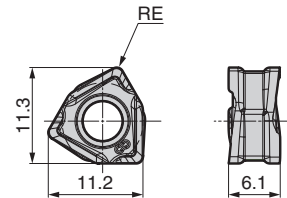
Dimensions(mm)

Cat. No.	Stock	Diameter		Head Length	Shank Length		Total Length	No. of Teeth
		DC	DMM		LH	LS		
DFCM 09032E	●	32	32	50	80	130	3	
09040E	●	40	32	50	80	130	4	
09050E	●	50	32	50	80	130	5	
09050E-42		50	42	50	100	150	5	
09063E	●	63	32	50	80	130	6	
09063E-42		63	42	50	100	150	6	
09080E	●	80	32	50	80	130	7	
09080E-42		80	42	50	100	150	7	

### Inserts

P Steel M Stainless Steel K Cast Iron S Exotic Alloy

Grades		Coated Carbide						Dimensions (mm)
Applications	Grades	P	M	K	S	S	Corner Radius	
High Speed/Light		●	●	●	●	●	RE	
General Purpose		●	●	●	●	●	RE	
Roughing		●	●	●	●	●	RE	
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300
XNMU 060604PNER-L		—	●	●	—	—	—	—
060608PNER-L		—	●	●	—	—	—	—
XNMU 060604PNER-G		●	●	●	●	●	●	●
060608PNER-G		●	●	●	●	●	●	●
060612PNER-G		●	●	●	●	●	●	●
060616PNER-G		●	●	●	●	●	●	●
XNMU 060604PNER-GS	New	●	●	●	—	—	●	●
060608PNER-GS	New	●	●	●	—	—	●	●
060612PNER-GS	New	●	●	●	—	—	●	●
060616PNER-GS	New	●	●	●	—	—	●	●
XNMU 060608PNER-H		●	●	●	●	●	●	●
060612PNER-H		●	●	●	●	●	●	●
060616PNER-H		●	●	●	●	●	●	●



### Identification Details

**DFC M 09 025 E**

Cutter Series M : Fine Pitch Insert Size Cutting Diameter Endmill Type

### Parts

Wrench	Screw	Anti-seizure Cream
TRDR151P	BFTX03512IP 3.0	SUMI-P

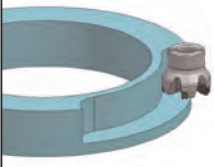
Recommended Tightening Torque (N·m)

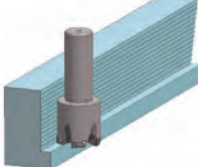
### Recommended Cutting Conditions

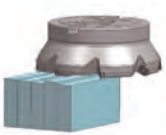
ISO	Material	Hardness	Cutting Speed $v_c$ (m/min) Min.- Optimum -Max.	Feed Rate $f_z$ (mm/t) Min.- Optimum -Max.	Depth of Cut (mm)	Grades
P	General Steel	180~280HB	150 - 200 - 250	0.10 - 0.20 - 0.30	<6	ACP200 ACP300
	Soft Steel	≤180HB	180 - 250 - 350	0.15 - 0.25 - 0.35	<6	
	Die Steel	200~220HB	100 - 150 - 200	0.10 - 0.18 - 0.25	<4	
M	Stainless Steel	—	160 - 205 - 250	0.12 - 0.18 - 0.25	<6	ACM300
K	Cast Iron	250HB	100 - 175 - 250	0.10 - 0.20 - 0.30	<6	ACK200 ACK300


GS type chipbreaker is recommended in shoulder milling.  
Please use that with  $a_s \leq 50\%$  of Cutter diameter and  $f_z \leq 0.2\text{mm/t}$

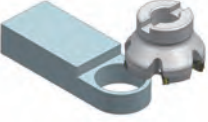
■ Application Examples

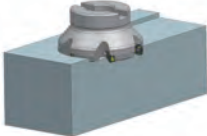
Ring Parts	Material	SCM440	Sumitomo	Comp.
	Tool	DFCM09050RS	Double-sided 6-cornered	—
	Grade	ACP200	—	—
	Chipbreakers	GS	—	—
	Tool Diameter(mm)	50	50	—
	No. of Teeth	5	5	—
	$V_c$ (m/min)	140	140	—
	$V_f$ (mm/min)	1,113	1,113	—
	$f_z$ (mm/t)	0.25	0.25	—
	$a_p$ (mm)	2.5	2.5	—
	$a_e$ (mm)	30	30	—
	Coolant	Dry	Dry	—
	Results	6 times tool life		

Machine Vice	Material	S45C	Sumitomo	Comp.
	Tool	DFCM09050E	Single-sided 2-cornered	—
	Grade	ACP200	—	—
	Chipbreakers	GS	—	—
	Tool Diameter	50	50	—
	No. of Teeth	5	5	—
	$V_c$ (m/min)	188	188	—
	$V_f$ (mm/min)	1,200	800	—
	$f_z$ (mm/t)	0.20	0.13	—
	$a_p$ (mm)	5	5	—
	$a_e$ (mm)	13	13	—
	Coolant	Air Blow	Air Blow	—
	Results	150% milling efficiency		

Block material Simultaneous Cutting	Material	SCMnH1	Sumitomo	Comp.
	Tool	DFC09160RS	Double-sided 8-cornered	—
	Grade	ACP300	—	—
	Chipbreakers	G	—	—
	Tool Diameter(mm)	160	160	—
	No. of Teeth	8	12	—
	$V_c$ (m/min)	150	150	—
	$V_f$ (mm/min)	500	500	—
	$f_z$ (mm/t)	0.21	0.14	—
	$a_p$ (mm)	1.0	0.5	—
	$a_e$ (mm)	100	100	—
	Coolant	Wet	Wet	—
	Results	200% milling efficiency 300% tool life		

Construction Machine Parts	Material	S50C	Sumitomo	Comp.
	Tool	DFC09063RS	Single-sided 2-cornered	—
	Grade	ACP200	—	—
	Chipbreakers	G	—	—
	Tool Diameter(mm)	63	63	—
	No. of Teeth	4	5	—
	$V_c$ (m/min)	180	180	—
	$V_f$ (mm/min)	1,092	910	—
	$f_z$ (mm/t)	0.3	0.2	—
	$a_p$ (mm)	2.0	2.0	—
	$a_e$ (mm)	50	50	—
	Coolant	Dry	Dry	—
	Results	120% milling efficiency		

Automotive Parts	Material	S50C	Sumitomo	Comp.
	Tool	DFC09080RS	Single-sided 4-cornered	—
	Grade	ACP200	—	—
	Chipbreakers	G	—	—
	Tool Diameter(mm)	80	80	—
	No. of Teeth	5	5	—
	$V_c$ (m/min)	226	200	—
	$V_f$ (mm/min)	1,260	800	—
	$f_z$ (mm/t)	0.28	0.20	—
	$a_p$ (mm)	2.0	2.0	—
	$a_e$ (mm)	5.0	5.0	—
	Coolant	Wet	Wet	—
	Results	160% milling efficiency		

Pump Part	Material	FCD400	Sumitomo	Comp.
	Tool	DFCF09100R	Double-sided 6-cornered	—
	Grade	ACK300	—	—
	Chipbreakers	G	—	—
	Tool Diameter(mm)	100	100	—
	No. of Teeth	11	8	—
	$V_c$ (m/min)	335	335	—
	$V_f$ (mm/min)	1,825	1,825	—
	$f_z$ (mm/t)	0.15	0.21	—
	$a_p$ (mm)	2.0	2.0	—
	$a_e$ (mm)	75	75	—
	Coolant	Dry	Dry	—
	Results	150% or more tool life		



- Very hot or lengthy chips may be discharged while the machine is in operation. Therefore, machine guards, safety goggles or other protective covers must be used. Fire safety precautions must also be considered.

**< SAFETY NOTES >**

- Please handle with care as this product has sharp edges.
- Improper cutting conditions or mis-handling of the tool may result in breakages or projectiles. Therefore, please use the tool within its recommended conditions.

- When using non-water soluble cutting oil, precautions against fire must be taken and please ensure that a fire extinguisher is placed near the machine.

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