

Sumi Dual Mill Series

DFC-Cutter

New Design for Reliable Results
Insert with 6 Corners Offers Economic Machining



- Stable and reliable tool life
- Wide milling cutter range to cover various applications
- 6 corner/insert for high cost efficiency
- Unique, precise insert design for superior accuracy
- High toughness and secure productivity

 **SUMITOMO**

CARBIDE - CBN - DIAMOND

Sumi Dual Mill DFC Type

General Features

The SEC-Sumi Dual Mill DFC type employs cost effective double-sided inserts for high toughness and enhanced accuracy.
The double-side inserts are flexible and reduces costs.



Large Line-up

- Diameter from Ø25mm to Ø160mm
- Available as standard, fine and extra-fine pitch
- Bore diameter: metric
- Insert geometry: L, G, H

Cutter Body

Type		Cat. No.	Diameter (mm)	No. of Teeth	Image
Shank	Standard Pitch	DFC 09000 E	Ø25~Ø63mm	2~5	
	Fine Pitch	DFC M 09000 E	Ø25~Ø63mm	3~7	
Shell	Standard Pitch	DFC 09000 RS	Ø50~Ø160mm	4~8	
	Fine Pitch	DFC M 09000 RS	Ø50~Ø160mm	5~12	
	Extra-Fine Pitch	DFC F 09000 RS	Ø50~Ø160mm	6~16	

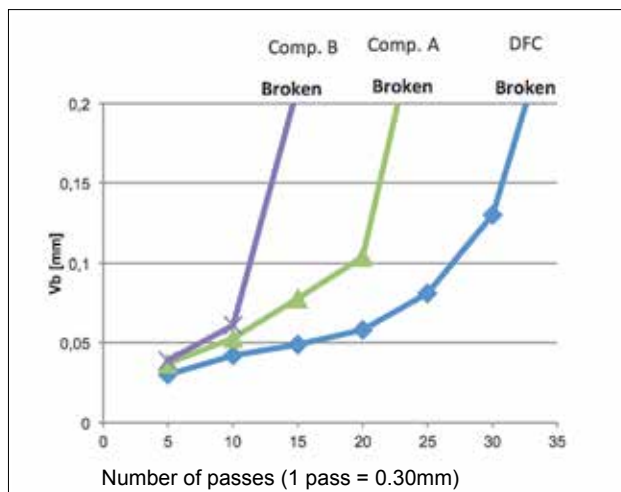
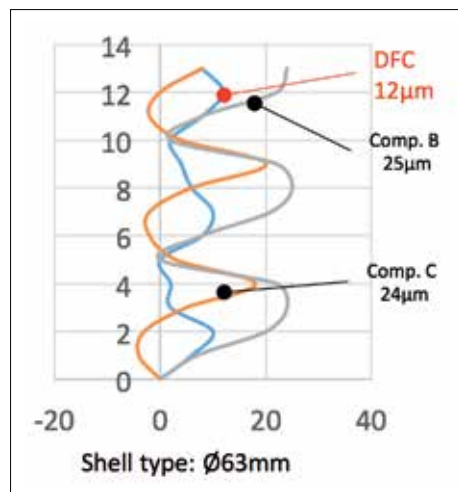
90 Degree Accuracy

Work material: Carbon steel

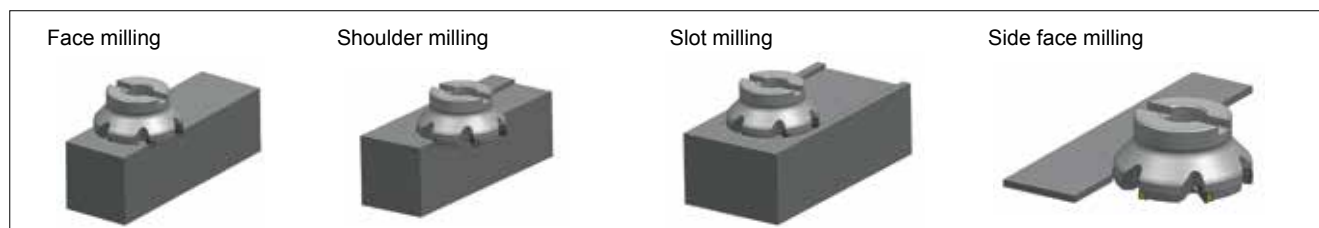
Cutting conditions:

$v_c=200\text{m/min}$, $f_t=0.1\text{mm/t}$

$a_e=5.0\text{mm}$, $a_p=5.0\text{mm} \times 3 \text{ pass}$



Suitable Applications



Sumi Dual Mill DFC(M/F) 09000RS Type

Body – Shell type

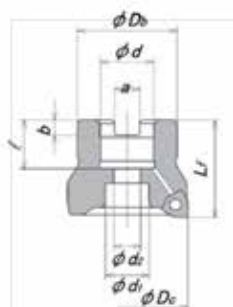


Fig.1

Rake Angle	Radial	-9°
	Axial	-5°

Max. a_p : 6mm

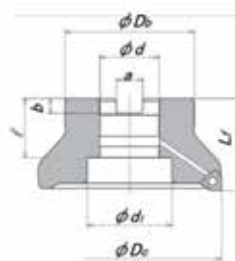


Fig.2

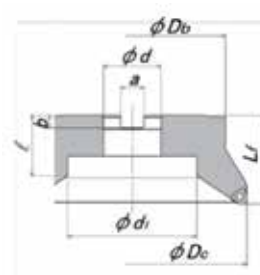


Fig.3

Body – Dimensions

Sumi Dual Mill DFC type, Standard Pitch

Cat. No.	Stock	Dimensions (mm)									No. of Teeth	Weight (kg)	Fig.
		Dc	Db	Lf	d	a	b	ℓ	d1	d2			
DFC09050RS	●	50	41	40	22	10.4	6.3	20	18	11	4	0.3	1
DFC09063RS	●	63	50	40	22	10.4	6.3	20	18	11	4	0.5	1
DFC09080RS	●	80	55	50	27	12.4	7	22	20	14	5	1.0	1
DFC09100RS	●	100	70	50	32	14.4	8	26	46	32	6	1.4	2
DFC09125RS	●	125	80	63	40	16.4	9	29	52	29	7	2.8	1
DFC09160RS	●	160	100	63	40	16.4	9	29	90	-	8	4.6	3

Sumi Dual Mill DFC type, Medium Pitch

Cat. No.	Stock	Dimensions (mm)									No. of Teeth	Weight (kg)	Fig.
		Dc	Db	Lf	d	a	b	ℓ	d1	d2			
DFCM09050RS	●	50	41	40	22	10.4	6.3	20	18	11	5	0.3	1
DFCM09063RS	●	63	50	40	22	10.4	6.3	20	18	11	6	0.5	1
DFCM09080RS	●	80	55	50	27	12.4	7	22	20	14	7	0.9	1
DFCM09100RS	●	100	70	50	32	14.4	8	26	46	32	8	1.4	2
DFCM09125RS	●	125	80	63	40	16.4	9	29	52	29	11	2.7	1
DFCM09160RS	●	160	100	63	40	16.4	9	29	90	-	12	4.5	3

Sumi Dual Mill DFC type, Fine Pitch

Cat. No.	Stock	Dimensions (mm)									No. of Teeth	Weight (kg)	Fig.
		Dc	Db	Lf	d	a	b	ℓ	d1	d2			
DFCF09050RS	●	50	41	40	22	10.4	6.3	20	18	11	6	0.3	1
DFCF09063RS	●	63	50	40	22	10.4	6.3	20	18	11	7	0.5	1
DFCF09080RS	●	80	55	50	27	12.4	7	22	20	14	9	0.9	1
DFCF09100RS	●	100	70	50	32	14.4	8	26	46	32	11	1.3	2
DFCF09125RS	●	125	80	63	40	16.4	9	29	52	29	14	2.6	1
DFCF09160RS	●	160	100	63	40	16.4	9	29	90	-	16	4.6	3

Identification Details

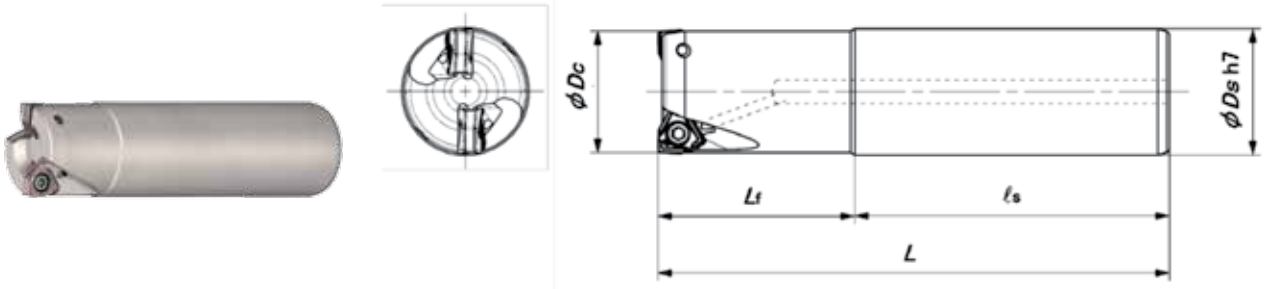
DFC	M	09	050	R	S
Cutter Series	M: Medium F: Fine	Insert Size	Cutter Diameter	Direction	Metric

Sumi Dual Mill DFC(M) 09000E Type

■ Body – Dimensions

● Body – Shank Type

Rake Angle	Radial	-9°	Max. a_p : 6mm
	Axial	-5°	



● DFC type, Standard Pitch

Cat.No.	Stock	Dimensions (mm)					No. of Teeth
		Dc	Ds	Lf	ls	L	
DFC09025E	●	25	25	40	80	120	2
DFC09032E	●	32	32	50	80	130	2
DFC09040E	●	40	32	50	80	130	3
DFC09050E	●	50	32	50	80	130	3
DFC09050E-42	○	50	42	50	100	150	3
DFC09063E	●	63	32	50	80	130	4
DFC09063E-42	○	63	42	50	100	150	4
DFC09080E	●	80	32	50	80	130	5
DFC09080E-42	○	80	42	50	100	150	5

● DFC type, Medium Pitch

Cat.No.	Stock	Dimensions (mm)					No. of Teeth
		Dc	Ds	Lf	ls	L	
DFCM09032E	●	32	32	50	80	130	3
DFCM09040E	●	40	32	50	80	130	4
DFCM09050E	●	50	32	50	80	130	5
DFCM09050E-42	○	50	42	50	100	150	5
DFCM09063E	●	63	32	50	80	130	6
DFCM09063E-42	●	63	42	50	100	150	6
DFCM09080E	○	80	32	50	80	130	7
DFCM09080E-42	●	80	42	50	100	150	7

○ Japan stock

● Euro stock

DFC	M	09	050	E
Cutter Series	M: Medium F: Fine	Insert Size	Cutter Diameter	Shank Type

■ Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed (m/min)		Depth of Cut (mm)	Grade
			Min. - Optimum - Max.	Min. - Optimum - Max.		
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	ACP200 ACP300
	Die Steel	200~220HB	100 - 150 - 200	0.10 - 0.18 - 0.25	< 4	ACP200 ACP300
M	Stainless Steel	-	160 - 205 - 250	0.12 - 0.18 - 0.25	< 6	ACM200 ACM300
K	Cast Iron	250HB	100 - 175 - 250	0.10 - 0.20 - 0.30	< 6	ACK200 ACK300

■ Spare Parts

Screw	Wrench
BFTX03512IP	TRDR15IP Torque: 3.0 Nm

■ Insert

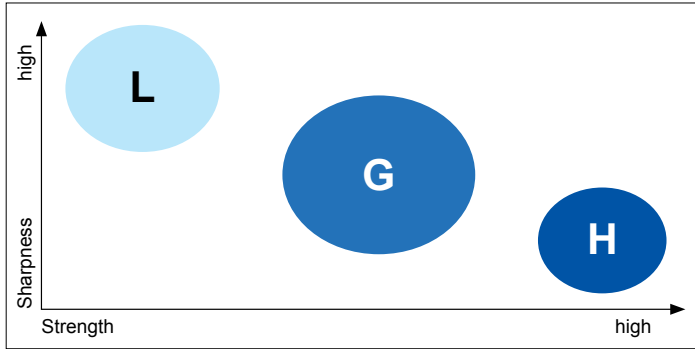
Application	Grade		Coated Carbide						Steel	
	High Speed / Light Cutting	P	P	K	M	S	M	S	M	Stainless Steel
	General Purpose Cutting	P	P	K	M	S	M	S	K	Cast Iron
	Rough Cutting	P	P	K	M	S	M	S	S	Exotic Alloy
Cat. No		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Length	
XNMU060608PNER-L		-	●	●	-	●	-	●	0.8	
XNMU060608PNER-G		●	●	●	●	●	●	●	0.8	
XNMU060608PNER-H		●	●	●	●	●	●	●	0.8	

Sumi Dual Mill DFC Type

■ New Insert Design Provides Excellent Machining Accuracy

- The new insert design separates the location area and cutting edge producing an optimized solution.
- Machining accuracy is comparable to single sided inserts provided the DOC is less than 3mm.
- The SEC-Sumi Dual Mill design, equips the user with a highly stable cutter for high feed machining applications.

● Chipbreaker Selection Map

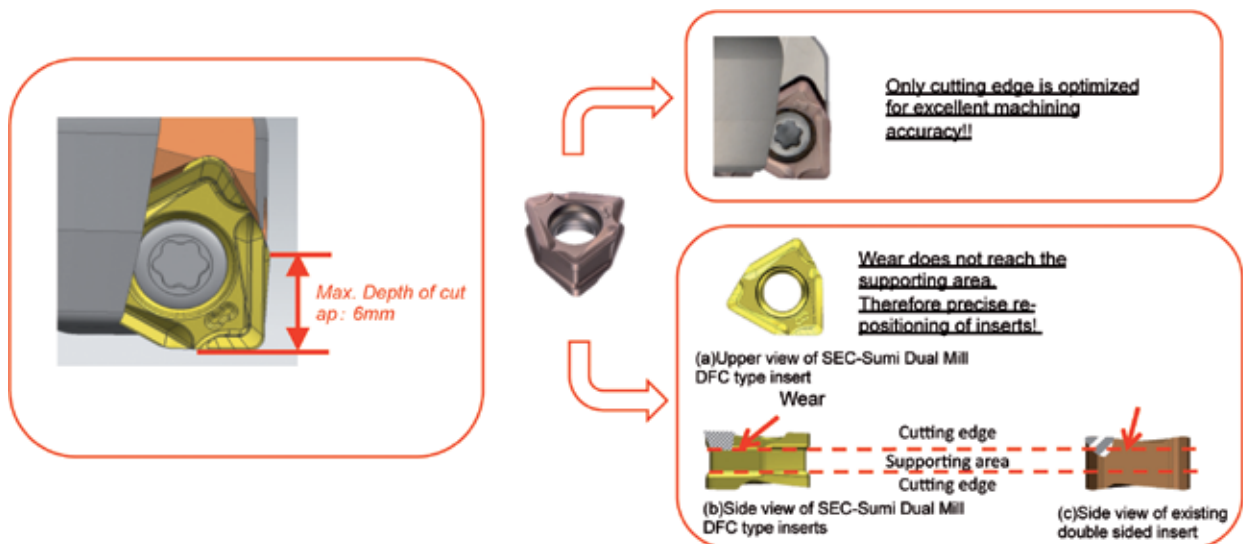


Cat. No.	R0.8
XNMMU0606__PNER-L	●
XNMMU0606__PNER-G	●
XNMMU0606__PNER-H	●

Work Material	Steel, Cast Iron		
Chip breaker	L type	G type	H type
Feature	Low cutting force	General purpose	Strong edge
Cutting edge geometry	30°	25°	20°
Application	Light cut, low rigidity milling and reduced burrs	Main breaker for General purpose applications	Roughing, heavy interrupted and hardness steel milling


■ Stable and High Cutting Performance Combined with High Toughness


- The excellent cutter performance offers efficient machining, enables high feed rate capability.
- The new insert construction provides extremely accurate edge to edge indexing whilst the location area offers high security and stability.





Sumi Dual Mill DFC Type

Application Examples

Work piece		Sumitomo	Comp.
Workpiece material: Steel (HRB 269-330) 	Breaker	G	
	Grade	ACP200	
	Vc m/min	226	200
	Vf mm/min	1260	
	ft mm/t	0.28	0.2
	ap mm	2	2
	ae mm	5	5
	DRY or WET	WET	WET
	Tool diameter	80	
	N. o. t.	5	
Result	Efficiency: 158% achieved.		
Evaluation	Wear resistance, efficiency		

Work piece		Sumitomo	Comp.
Workpiece material: S235 (Carbon steel) Face milling 	Breaker	G	
	Grade	ACP200	
	Vc m/min	180	180
	Vf mm/min	1092	910
	ft mm/t	0.3	0.2
	ap mm	2pass x 2mm	2pass x 2mm
	ae mm	50	50
	DRY or WET	DRY	DRY
	Tool diameter	63mm	63mm
	N. o. t.	4	5
Result	Efficiency: 120% achieved.		
Evaluation	Wear resistance, efficiency		

Work piece		Sumitomo	Comp.
Workpiece material: Cast Iron 	Breaker	G	
	Grade	ACP200	
	Vc m/min	156	156
	Vf mm/min	536	404
	ft mm/t	0.17	0.09
	ap mm	2.2	2.2
	ae mm	63.5	63.5
	DRY or WET	DRY	DRY
	Tool diameter	80mm	80mm
	N. o. t.	5	7
Result	Efficiency: 133% achieved. Tool life: 138% achieved.		
Evaluation	Efficiency, tool life		

Work piece		Sumitomo	Comp.
Workpiece material: Cr-Mo alloy 	Breaker	G	
	Grade	ACP200	
	Vc m/min	200	200
	Vf mm/min	838	838
	ft mm/t	0.2	0.13
	ap mm	6	6
	ae mm	43	43
	DRY or WET	DRY	DRY
	Tool diameter	80mm	80mm
	N. o. t.	5	8
Result	Tool life: 120% achieved.		
Evaluation	Efficiency		



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