

DFC Series

DFC Series

High Efficiency, Double-sided 90° Milling Cutter

DFC Mill Features & Benefits

- High toughness insert design enables stable cutting and high efficiency machining with high feed rate
- Optimized machining accuracy by separating the insert contact areas and the cutting edges
- Large lineup for DFC available from 1" through 8" in standard, fine pitch and extra-fine pitch styles

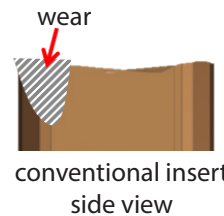
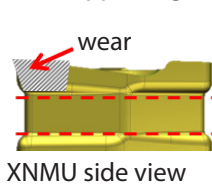
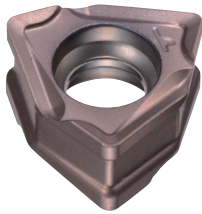


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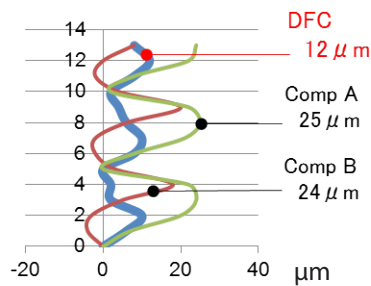
Insert Characteristics

Precise repositioning of inserts due to thick supporting area

Optimized cutting edge yields excellent machining accuracy



Squareness Performance



Work material : 1049 steel

Cutting Conditions: $v_c=650$ SFM $f_z=.0039$ IPT
 $D_c=63$ mm
 $a_p=.197$ " x 3 pass, $a_e=.197$ "

Cutting Edge Strength

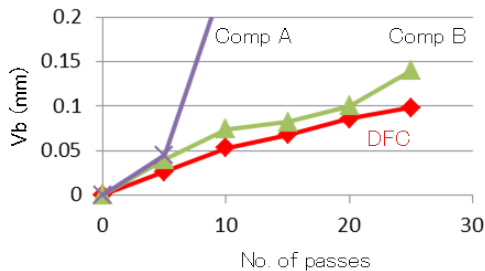
	Feed Per Tooth (in/t)		
	0.012	0.016	0.020
DFC	•	•	•
Comp A	•	damage	
Comp B	damage		

Work material:

Cutting Conditions:

1049 steel with holes
 $v_c=650$ SFM $f_z=.0079$ IPT
 $D_c=100$ mm cutter
 $a_p=.118$ ", $a_e=2.047$ " x 3 pass

Wear Resistance Chart

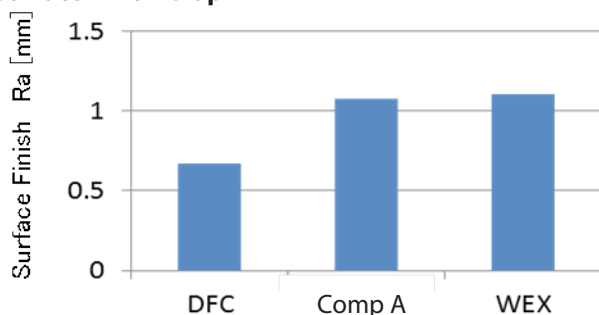


Work material:

Cutting Conditions:

1049 steel
 $v_c=650$ SFM $f_z=.0079$ IPT
 $D_c=100$ mm cutter
 $a_p=.118$ ", $a_e=3.346$ "

Surface Finish Graph

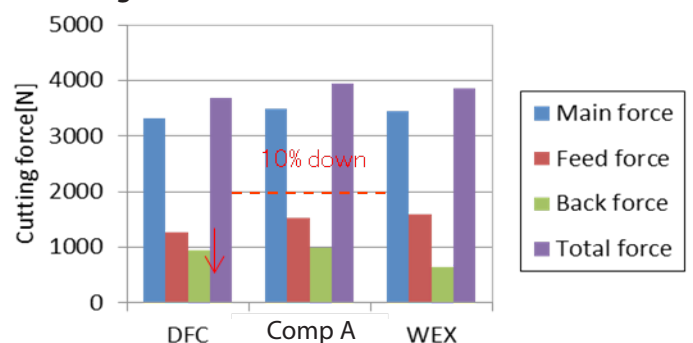


Work material:

Cutting Conditions:

1049 steel
 $v_c=650$ SFM $f_z=.0079$ IPT
 $D_c=100$ mm cutter
 $a_p=.118$ ", $a_e=3.346$ "

Cutting Force



Work material:

Cutting Conditions:

1049 steel
 $v_c=650$ SFM $f_z=.0079$ IPT
 $D_c=100$ mm cutter
 $a_p=.118$ ", $a_e=2.953$ "

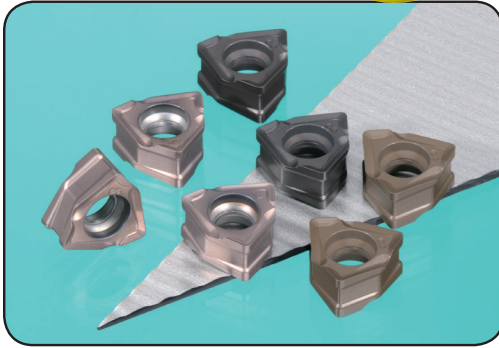


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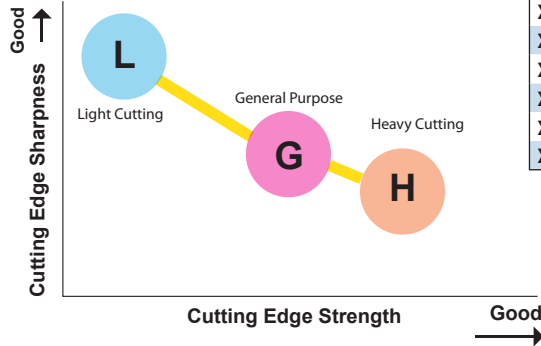
Inserts

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XNMU Inserts		Max. Depth of Cut: 6mm (.236")				
		11.2		3.2		
		11.3		6		
Catalog Number		P	K	M	S	Radius
XNMU060604PNER-L		●	●	●	●	.016
XNMU060608PNER-L		●	●	●	●	.031
XNMU060604PNER-G		●	●	●	●	.016
XNMU060608PNER-G		●	●	●	●	.031
XNMU060612PNER-G		●	●	●	●	.047
XNMU060616PNER-G		●	●	●	●	.063
XNMU060608PNER-H		●	●	●	●	.031
XNMU060612PNER-H		●	●	●	●	.047
XNMU060616PNER-H		●	●	●	●	.063

● USA stocked item



Material	P10/M10/C7	P20/M20/C6	P30/M30/C5A	P40/M40/C5
Steel	ACP100			
	ACP200			
	ACP300			
Stainless Steel	ACP100			
	ACP200			
	ACP300			
Material	K01	K10	K20	K30
Cast Iron	ACK200			
	ACK300			
Stainless Steel	ACM200			
	ACM300			
Exotic Material	ACM200			
	ACM300			

Work Material	Steel, Cast Iron		
	L type	G type	H type
Chip breaker			
Feature	Low cutting force	General purpose	Strong edge
Cutting edge figure			
Application	Light cut, low rigidity milling and reduced burr formation	Main breaker, General purpose to interrupted milling	Roughing, heavy interrupted and hardness steel milling.

Running Conditions

ISO	Work Material	Hardness	Cutting Speed (SFM)		Feed Rate (in./t)		D.O.C. (in.)	Grade
			Min.	Optimum - Max.	Min.	Optimum - Max.		
P	General Steel	180 ~ 280HB	500	650 - 820	0.004 - 0.008	0.012	<0.236	ACP200 ACP300
	Soft Steel	<180HB	600	820 - 1,150	0.006 - 0.010	0.014	< 0.236	ACP200 ACP300
	Die Steel	200 ~ 220HB	330	500 - 650	0.004 - 0.007	0.010	< 0.157	ACP200 ACP300
M	PH Stainless Steel	>220HB	300	500 - 750	0.004 - 0.007	0.010	<0.196	ACM200
	Austenitic Stainless	<250HB	525	675 - 820	0.005 - 0.007	0.010	<0.236	ACM300
K	Cast Iron	250HB	500	750 - 1150	0.004 - 0.008	0.012	<0.236	ACK200 ACK300



INCH Lineup DFC

DFC - Inch Lineup

High Efficiency, Double-sided 90° Milling Cutter

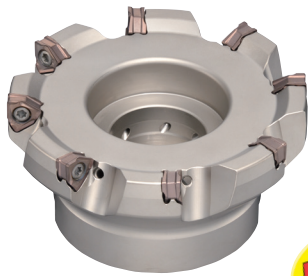


Figure 1

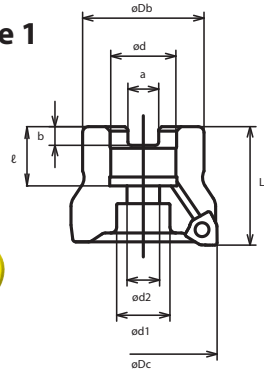
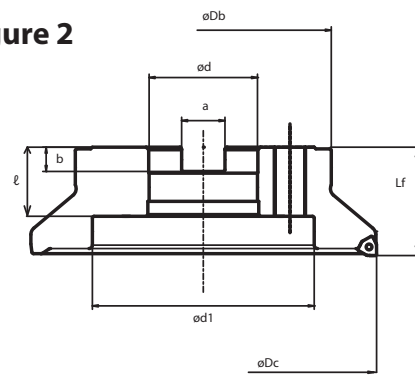


Figure 2

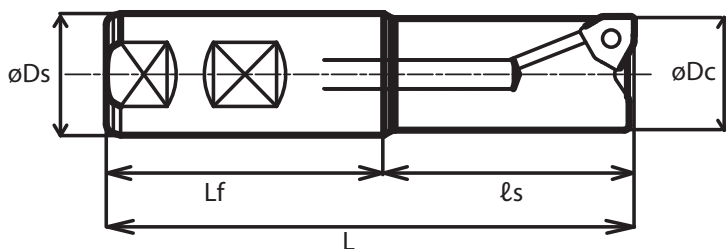


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Body (Standard Pitch) - Inch													
Cat. No.	Stock	Dimensions (in.)									No. of Teeth	Weight (lbs)	Fig.
		øD _c	øD _b	L _f	ød	a	b	ℓ	ød ₁	ød ₂			
DFC22000R	●	2.000	1.500	1.750	0.750	0.312	0.190	0.750	0.609	0.406	4	0.75	1
DFC22500R	●	2.500	1.750	1.750	1.000	0.375	0.220	0.750	0.797	0.531	5	1.08	1
DFC23000R	●	3.000	2.250	1.750	1.000	0.375	0.220	0.750	0.797	0.531	6	1.81	1
DFC24000R	●	4.000	2.870	2.000	1.250	0.500	0.280	0.750	1.000	0.656	6	3.84	1
DFC24000R-1.50	●	4.000	3.150	2.500	1.500	0.625	0.380	1.000	2.000	1.181	6	4.76	1
DFC25000R	●	5.000	3.750	2.500	1.500	0.625	0.380	1.000	2.000	1.181	7	7.87	1
DFC26000R	●	6.000	4.380	2.500	1.500	0.625	0.380	1.000	2.000	1.181	8	11.64	1
DFC28000R	●	8.000	5.906	2.500	2.500	1.000	0.560	1.594	5.118	-	10	15.00	2
Body (Fine Pitch) - Inch													
Cat. No.	Stock	Dimensions (in.)									No. of Teeth	Weight (lbs)	Fig.
		øD _c	øD _b	L _f	ød	a	b	ℓ	ød ₁	ød ₂			
DFCM22000R	●	2.000	1.500	1.750	0.750	0.312	0.190	0.750	0.609	0.406	5	0.75	1
DFCM22500R	●	2.500	1.750	1.750	1.000	0.375	0.220	0.750	0.797	0.531	6	1.05	1
DFCM23000R	●	3.000	2.250	1.750	1.000	0.375	0.220	0.750	0.797	0.531	8	1.79	1
DFCM24000R	●	4.000	2.870	2.000	1.250	0.500	0.280	0.750	1.000	0.656	10	3.79	1
DFCM24000R-1.50	●	4.000	3.150	2.500	1.500	0.625	0.380	1.000	2.000	1.181	10	4.67	1
DFCM25000R	●	5.000	3.750	2.500	1.500	0.625	0.380	1.000	2.000	1.181	12	7.78	1
DFCM26000R	●	6.000	4.380	2.500	1.500	0.625	0.380	1.000	2.000	1.181	14	11.55	1
DFCM28000R	●	8.000	5.906	2.500	2.500	1.000	0.560	1.594	5.118	-	15	14.79	2
Body (Extra-Fine Pitch) - Inch													
Cat. No.	Stock	Dimensions (in.)									No. of Teeth	Weight (lbs)	Fig.
		øD _c	øD _b	L _f	ød	a	b	ℓ	ød ₁	ød ₂			
DFCF22000R	●	2.000	1.500	1.750	0.750	0.312	0.190	0.750	0.609	0.406	6	0.71	1
DFCF22500R	●	2.500	1.750	1.750	1.000	0.375	0.220	0.750	0.797	0.531	7	1.03	1
DFCF23000R	●	3.000	2.250	1.750	1.000	0.375	0.220	0.750	0.797	0.531	9	1.76	1
DFCF24000R	●	4.000	2.870	2.000	1.250	0.500	0.280	0.750	1.000	0.656	11	3.64	1
DFCF24000R-1.50	●	4.000	3.150	2.500	1.500	0.625	0.380	1.000	2.000	1.181	11	4.54	1
DFCF25000R	●	5.000	3.750	2.500	1.500	0.625	0.380	1.000	2.000	1.181	14	7.54	1
DFCF26000R	●	6.000	4.380	2.500	1.500	0.625	0.380	1.000	2.000	1.181	16	11.29	1
DFCF28000R	●	8.000	5.906	2.500	2.500	1.000	0.560	1.594	5.118	-	20	14.59	2



● USA stocked item

DFC Endmill Inch Lineup



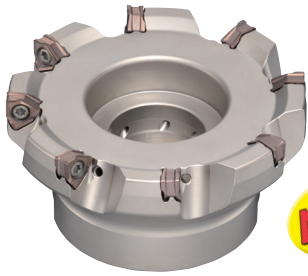
Body (Shank Type)								
Cat. No.	Stock	Dimensions (in.)					No. of Teeth	Weight (lbs)
		øD _c	øD _s	L _f	ℓ _s	L		
DFC21000EW	●	1.000	1.000	2.060	2.281	4.341	2	0.77
DFC21250EW	●	1.250	1.250	2.060	2.281	4.341	3	1.26
DFC21500EW	●	1.500	1.250	2.060	2.281	4.341	3	1.52
DFC22000EW	●	2.000	1.250	2.060	2.281	4.341	4	1.72
DFC22500EW	●	2.500	1.250	2.060	2.281	4.341	5	2.12
DFCM21500EW	●	1.500	1.250	2.060	2.281	4.341	4	1.50
DFCM22000EW	●	2.000	1.250	2.060	2.281	4.341	5	1.70
DFCM22500EW	●	2.500	1.250	2.060	2.281	4.341	7	2.07

Hardware

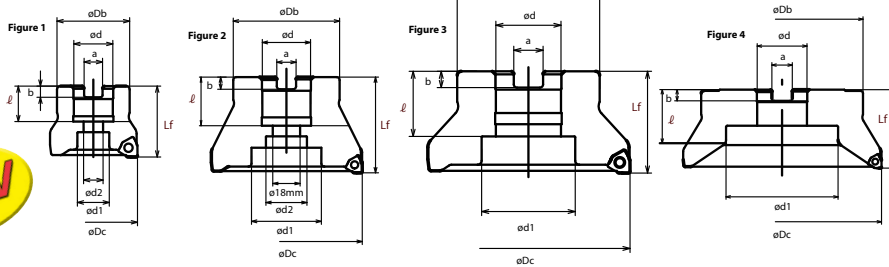
Insert Screw	Insert Wrench	Coolant Through Bolts	
 BFTX03512IP	 TRDR15IP Torque: 3.0 N·m	Catalog Number	Cutter Size
		BFXH 3/8 x 1	2.00"
		BFXH 1/2 x 1 1/4	2.50"
		BFXH 1/2 x 1 1/4	3.00"
		BFXH 5/8 x 1 1/4	4.00"
		BFXH 3/4 x 2	5.00"



High Efficiency, Double-sided 90° Milling Cutter



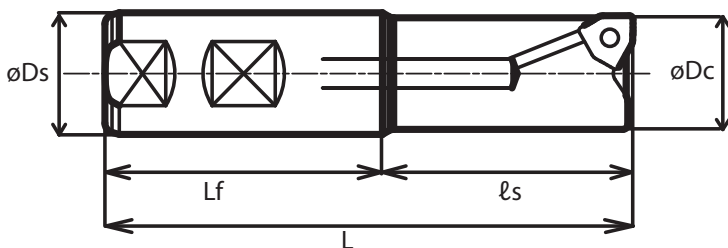
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Body (Standard Pitch) - Metric													
Cat. No.	Stock	Dimensions (mm)									No. of Teeth	Weight (kg)	Fig.
		øD _C	øD _B	L _f	ød	a	b	ℓ	ød ₁	ød ₂			
DFC09050RS	★	50	41	40	22	10.4	6.3	20	18	11	4	0.3	1
DFC09063RS	★	63	50	40	22	10.4	6.3	20	18	11	4	0.5	1
DFC09080RS	★	80	55	50	27	12.4	7	22	20	14	5	1	1
DFC09100RS	★	100	70	50	32	14.4	8	26	46	32	6	1.4	3
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	4
DFC09080R	★	80	55	50	25.4	9.5	6	25	20	14	5	1	1
DFC09100R	★	100	70	63	31.75	12.7	8	32	27	18	6	2	2
DFC09125R	★	125	80	63	38.1	15.9	10	35.5	55	30	7	2.8	1
DFC09160R	★	160	100	63	50.8	19.1	11	38	72	-	8	3.6	4
Body (Fine Pitch) - Metric													
Cat. No.	Stock	Dimensions (mm)									No. of Teeth	Weight (kg)	Fig.
		øD _C	øD _B	L _f	ød	a	b	ℓ	ød ₁	ød ₂			
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	3
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	4
DFCM09080R	★	80	55	50	25.4	9.5	6	25	20	14	7	0.9	1
DFCM09100R	★	100	70	63	31.75	12.7	8	32	27	18	8	1.9	2
DFCM09125R	★	125	80	63	38.1	15.9	10	35.5	55	30	11	2.7	1
DFCM09160R	★	160	100	63	50.8	19.1	11	38	72	-	12	3.5	4
Body (Extra-Fine Pitch) - Metric													
Cat. No.	Stock	Dimensions (mm)									No. of Teeth	Weight (kg)	Fig.
		øD _C	øD _B	L _f	ød	a	b	ℓ	ød ₁	ød ₂			
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	3
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	4
DFCF09080R	★	80	55	50	25.4	9.5	6	25	20	14	9	0.9	1
DFCF09100R	★	100	70	63	31.75	12.7	8	32	27	18	11	1.9	2
DFCF09125R	★	125	80	63	38.1	15.9	10	35.5	55	30	14	2.7	1
DFCF09160R	★	160	100	63	50.8	19.1	11	38	72	-	16	3.5	4

★ worldwide warehouse item

DFC Endmill Metric Lineup



Body (Shank Type)							
Cat. No.	Stock	Dimensions (mm)					No. of Teeth
		øD _C	øD _S	L _f	ℓ _s	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
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

