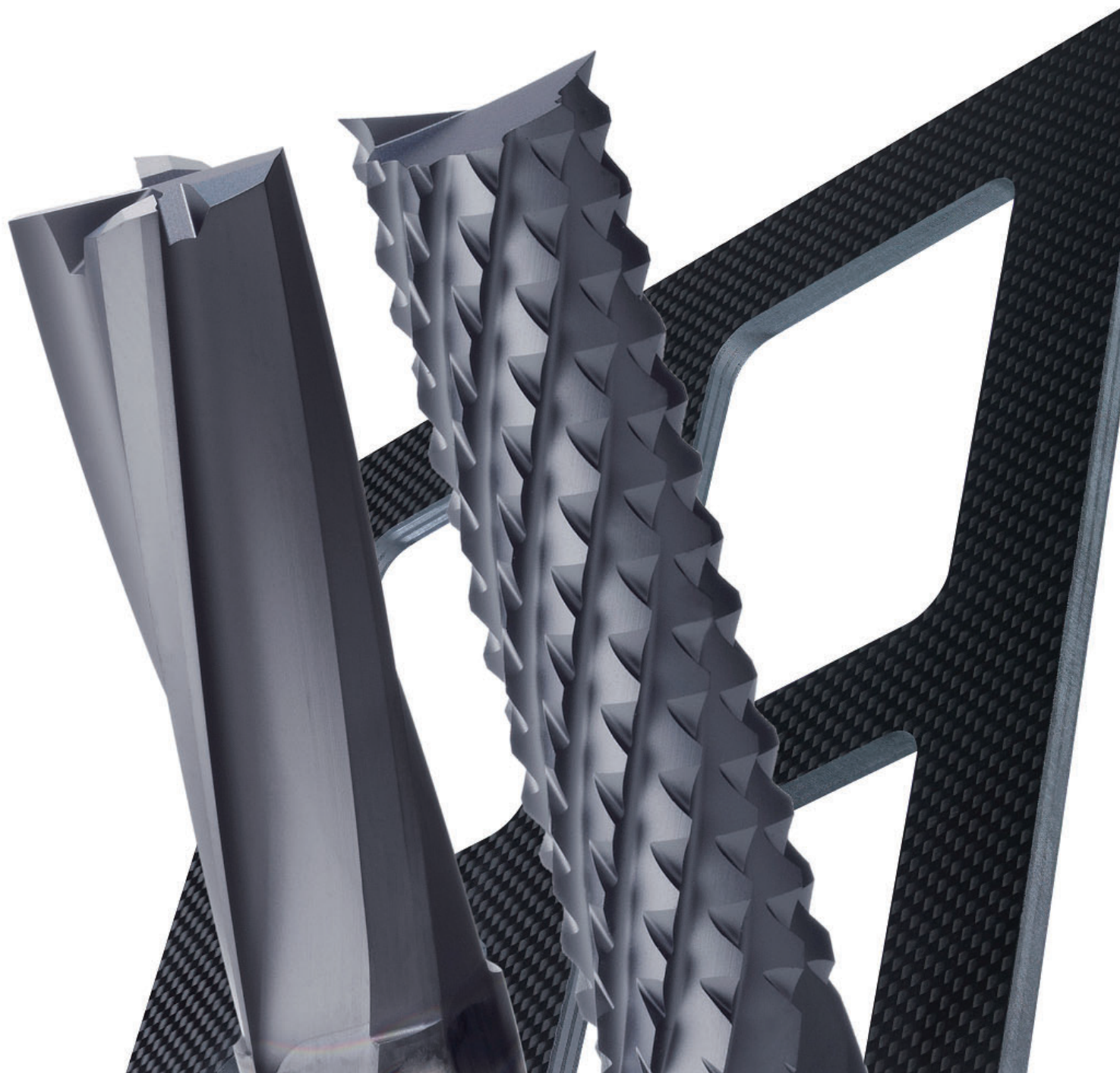


CVD diamond coated end mill for CFRP machining

# ***DFC Series***

## **End mills for high quality CFRP machining.**



CVD diamond coating with outstanding abrasion resistance and superior sharpness for high quality CFRP machining.

CVD diamond coated end mill for CFRP machining

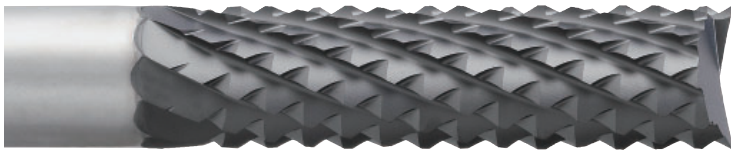
# DFC Series

## Geometry for CFRP machining

### DFC-4JC

■ For finishing (First recommendation)

The low resistance cutting edge with low helix angle reduces delamination and burrs when machining CFRP.



### DFC-JRT

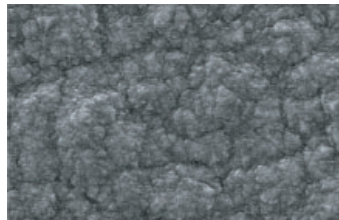
■ For efficient machining

The cross-nick type cutting edge allows high efficiency machining due to lower cutting resistance and reduced temperatures.

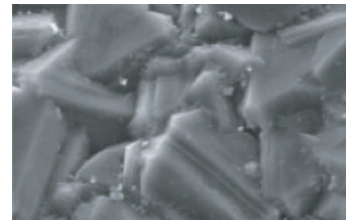
## Proprietary CVD diamond coating

■ CVD diamond coating surface comparison

The newly developed CVD diamond coated carbide material achieves outstanding abrasion resistance and smoothness due to a proprietary fine multilayer diamond crystal control technology.



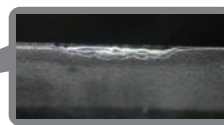
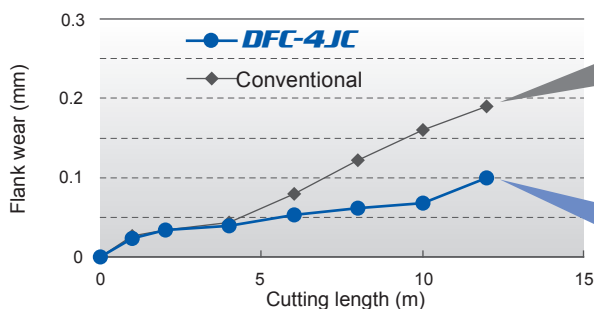
New coating grade



Conventional

### ● Tool life

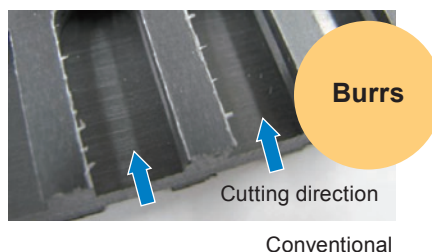
Long tool life



End mill	DFC4JCD1000 (ø10)
Work material	CFRP (Thick : 5.3mm)
Revolution	6400min <sup>-1</sup> (200m/min)
Feed rate	800mm/min (0.03mm/tooth)
Cutting fluid	Air blow

### ● Burr comparison

Excellent surface finish



End mill	DFC4JCD1000 (ø10)
Work material	CFRP (Thick : 6mm)
Revolution	6000min <sup>-1</sup> (188m/min)
Feed rate	750mm/min (0.03mm/tooth)
Cutting fluid	Air blow

# CVD diamond coated end mill for CFRP machining

## DFC-4JC

End mill, Semi long cut length, 4 flute, For CFRP

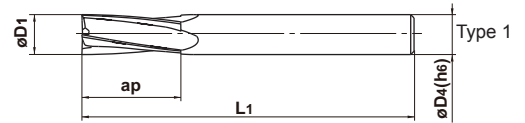


0 -- 0.03



D4 = 6 0 -- -0.008  
 8 ≤ D4 ≤ 10 0 -- -0.009  
 D4 = 12 0 -- -0.011

CFRP



- 4 flute end mill with original CVD diamond coating for CFRP machining.

Unit : mm

Order Number	Dia. D1	Length of Cut ap	Overall Length L1	Shank Dia. D4	No. of Flutes N	Stock	Type
DFC4JCD0600	6	20	70	6	4	●	1
D0800	8	30	80	8	4	●	1
D1000	10	30	90	10	4	●	1
D1200	12	30	100	12	4	●	1

(Note) Please contact Mitsubishi Materials for geometries and through coolant types other than standard.

### Recommended cutting conditions

Work material	CFRP	
Dia. (mm)	Revolution (min <sup>-1</sup> )	Feed rate (mm/min)
6	11000	950
8	8000	780
10	6400	700
12	5300	650

- 1) Cutting conditions may differ considerably due to the kind of CFRP, the rigidity of the machine, or the clamping and geometry of the workpiece. Please use the above table as a standard starting point.
- 2) When high machining accuracy is needed, or large burrs or delamination occurs. We recommend reducing the feed rate.
- 3) When the depth of cut is greater than 0.8D<sub>1</sub>, we recommend reducing the feed rate.
- 4) Please take precautions against dust.

● : Inventory maintained.

# CVD diamond coated end mill for CFRP machining

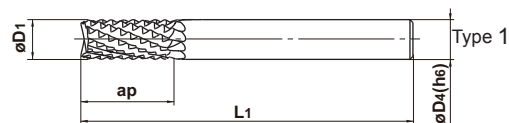
## DFC-JRT

Cross-nick type end mill, Semi long cut length, For CFRP



D4 = 6 0 -- -0.008  
 8 ≤ D4 ≤ 10 0 -- -0.009  
 D4 = 12 0 -- -0.011

CFRP



- Cross-nick type end mill with original CVD diamond coating for CFRP machining.

Unit : mm

Order Number	Dia. D1	Length of Cut ap	Overall Length L1	Shank Dia. D4	No. of Flutes N	Stock	Type
DFCJRTO600	6	20	70	6	10	●	1
D0800	8	30	80	8	10	●	1
D1000	10	30	90	10	12	●	1
D1200	12	30	100	12	12	●	1

(Note) Please contact Mitsubishi Materials for geometries and through coolant types other than standard.

### Recommended cutting conditions

Work material	CFRP	
Dia. (mm)	Revolution (min <sup>-1</sup> )	Feed rate (mm/min)
6	11000	1200
8	8000	1000
10	6400	900
12	5300	850

- 1) Cutting conditions may differ considerably due to the kind of CFRP, the rigidity of the machine, or the clamping and geometry of the workpiece. Please use the above table as a standard starting point.
- 2) When high machining accuracy is needed, or large burrs or delamination occurs. We recommend reducing the feed rate.
- 3) When the depth of cut is greater than 0.8D<sub>1</sub>, we recommend reducing the feed rate.
- 4) Please take precautions against dust.

#### For Your Safety

●Don't handle inserts and chips without gloves. ●Please machine within the recommended application range and exchange expired tools with new ones in advance of breakage. ●Please use safety covers and wear safety glasses. ●When using compounded cutting oils, please take fire precautions. ●When attaching inserts or spare parts, please use only the correct wrench or spanner. ●When using rotating tools, please make a trial run to check run-out, vibration and abnormal sounds etc.

## MITSUBISHI MATERIALS CORPORATION

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(Tools specifications subject to change without notice.)