



SUMITOMO

CARBIDE - CBN - DIAMOND

SEC-Sumi Dual Mill **DGC** series

- High-Productivity and Cost-Efficient milling cutter
- Unique body design can use two types of different inserts shapes
- Insert line-up includes double-sided SNMU and ONMU type

Up to 16 cutting edges can be used to improve cost-effectiveness



Coated carbide grades for milling stainless steel and exotic alloys

Expansion ACS2500/ACS3000 added to the DGC series lineup



General Features

SEC-Sumi Dual Mill DGC series employs double-sided inserts with up to 16 corners for excellent economy. This is a general-purpose cutter featuring high cutting edge strength for high-efficiency milling and a low-burr chipbreaker design that provides high machined surface quality.

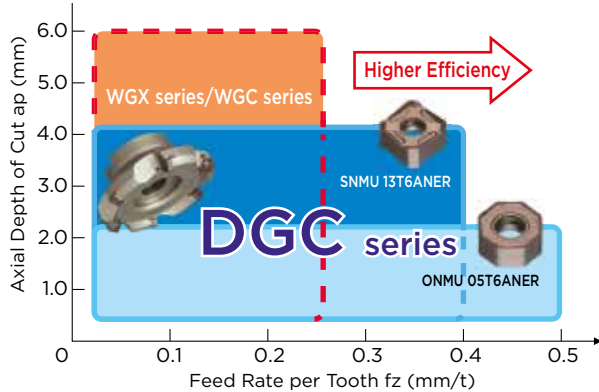


Features

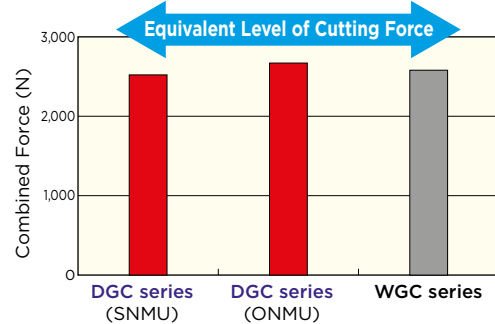
Same cutting performance as single-sided inserts plus superior economy

Achieves levels of cutting edge sharpness and machined surface quality equivalent to single-sided cutters at a maximum depth of cut of $a_p = 3\text{mm}$.

Application Range for General Steel Machining



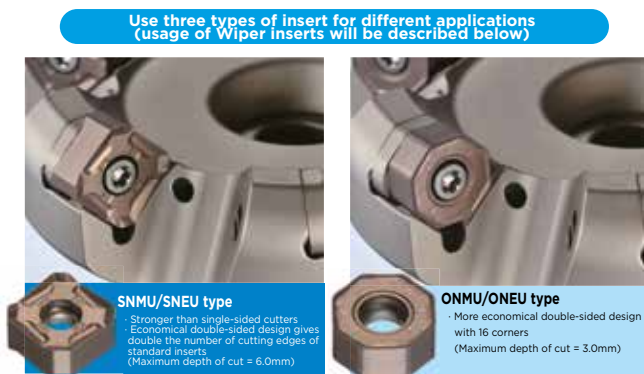
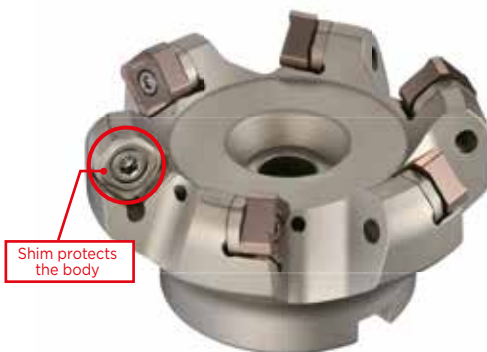
Comparison of Cutting Force



Work Material: 34CrMo4 Tool: $\phi 100$
Cutting Conditions: $v_c = 200\text{m/min}$, $f_z = 0.3\text{mm/t}$, $a_p = 3\text{mm}$, $a_e = 85\text{mm}$

Dual-purpose body features

Three types of inserts can be used with a single body depending on the milling application, to help reduce tool costs.



Choose a tool to suit your application from a comprehensive lineup

Cutter Diameter: $\phi 40\text{mm}$ to $\phi 250\text{mm}$
No. of Teeth: 3 to 10
Mounting: Metric/Inch

Cutter Diameter: $\phi 50\text{mm}$ to $\phi 250\text{mm}$
No. of Teeth: 4 to 14
Mounting: Metric/Inch

Cutter Diameter: $\phi 50\text{mm}$ to $\phi 250\text{mm}$
No. of Teeth: 4 to 18
Mounting: Metric/Inch

Cutter Diameter: $\phi 40\text{mm}$ to $\phi 63\text{mm}$
No. of Teeth: 3 to 4
Mounting: Metric/Inch



DGC 13000R(S)
Standard Pitch



DGC M 13000R(S)
Fine Pitch



DGC F 13000R(S)
Extra Fine Pitch

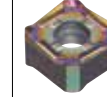
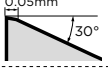
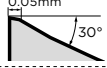
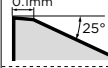
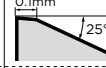
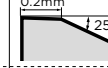
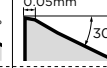
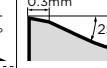


DGC 13000R EW
Shank Type

General-purpose grade applicable to a wide range of work materials

ACU2500 grade, applicable to machining various materials including steel, stainless steel, and cast iron, across a broad range of applications.

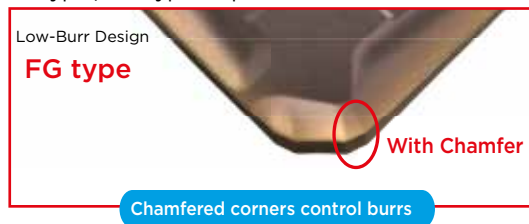
Chipbreaker Selection

Work Material	P M K S					N	P K
Applications	Light Cutting/ Burr Prevention	Light Cutting	General-purpose/ Burr Prevention	General-purpose	Heavy Cutting	Non-Ferrous Metal	Finishing Surface Emphasised
Features	Low Resistance- With Chamfer	Low Resistance	Standard/ With Chamfer	Standard	High Strength	High Rake	Wiper
Chipbreaker	FL type	L type	FG type	G type	H type	S type	W type
							
Cutting Edge Cross Section							
	8 16 Not Available	0.05mm 30°	Not Available	0.1mm 23°	Not Available	Not Available	Double-Sided, 2 Corners (*)

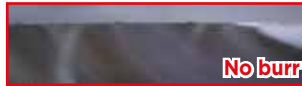
*Can only be used in combination with SNMU inserts (8 corner)

Improved machining quality

- FG type / FL type chipbreakers feature a chamfered corner to minimise burrs and provide excellent milling quality.



FG breaker



Competitor's Product

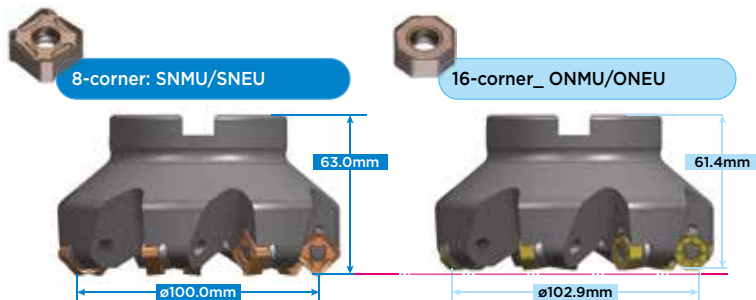


FG type chipbreakers with low-burr design enable high-quality milling with few burrs and minimal edge chipping



Work Material : 34CrMo4
Tool : ø100
Cutting Conditions : vc = 200m/min,
fz = 0.2mm/t
ap = 3mm, ae = 85mm

Cutter Diameter and Height



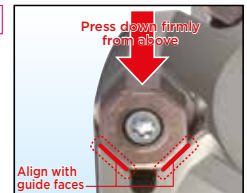
Note Note that while the 8-corner and 16-corner types can be used interchangeably on the same body, however they create different cutter diameters, cutting edge heights and maximum cutting depths.

Body Shape (Example: With Cutter Diameter of ø100mm)

Insert	Cutter Dia. DC (mm)	Height LF (mm)	Max. Depth of Cut APMX (mm)
SNMU/SNEU	100.0	63.0	6.0
ONMU/ONEU	102.9	61.4	3.0

16-corner Mounting Method

Warning Firmly align insert with guide faces, press down in the direction of the arrow, and tighten the screw to fix the insert.



Recommended Cutting Conditions (SNMU/SNEU)

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - Optimum - Max.	Feed Rate fz (mm/t) Min. - Optimum - Max.	Depth of Cut ap (mm)	Insert Grade
P	General Steel	180 to 280 HB	150-200-250	0.10-0.25-0.40	< 4	ACU2500
	Mild Steel	≤ 180HB	180-250-350	0.10-0.30-0.45	< 4	ACP200
	Die Steel	200 to 220 HB	100-150-200	0.15-0.25-0.35	< 4	ACP300
M	Stainless Steel	—	160-200-250	0.15-0.23-0.30	< 3	ACU2500 ACS2500 ACS3000 ACM300
K	Cast Iron	250HB	100-200-250	0.10-0.25-0.40	< 5	ACU2500 ACK200 ACK300
N	Non-Ferrous Metal	—	500-750-1,000	0.15-0.23-0.30	< 3	DL1000
S	Exotic Alloy	—	30-50-80	0.10-0.20-0.30	< 3	ACU2500 ACS2500 ACS3000 ACM300

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

Recommended Cutting Conditions (ONMU/ONEU)

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - Optimum - Max.	Feed Rate fz (mm/t) Min. - Optimum - Max.	Depth of Cut ap (mm)	Insert Grade
P	General Steel	180 to 280 HB	150-200-250	0.10-0.30-0.50	< 2	ACU2500
	Mild Steel	≤ 180HB	180-250-350	0.10-0.50-0.50	< 2	ACP200
	Die Steel	200 to 220 HB	100-150-200	0.15-0.25-0.30	< 2	ACP300
M	Stainless Steel	—	160-200-250	0.15-0.23-0.30	< 2	ACU2500 ACS2500 ACS3000 ACM300
K	Cast Iron	250HB	100-200-250	0.10-0.30-0.50	< 2	ACU2500 ACK200 ACK300
S	Exotic Alloy	—	30-50-80	0.10-0.20-0.30	< 2	ACU2500 ACS2500 ACS3000 ACM300

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

Precautions When Using Wiper Inserts with Holes



- When mounting the wiper insert, attach it as shown in Fig 1.
- When mounted as shown in Fig 2, normal machined surface roughness cannot be obtained.
- The wiper insert has a single corner specification.

Grade Application Range

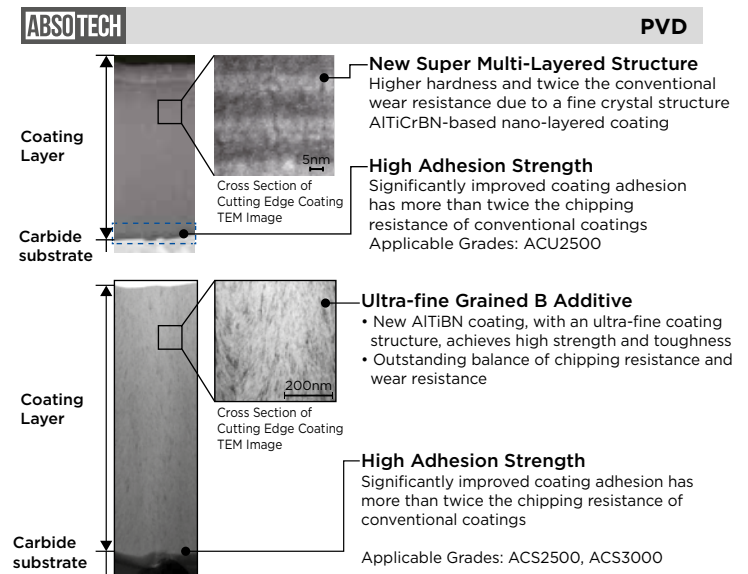
The wide lineup of grades now includes grades for stainless steel and exotic alloy **ACS2500/ACS3000**, supporting various work materials!

Work Material		Finishing to Light Cutting	Medium Cutting	Rough to Heavy Cutting
P Steel	Coated Carbide	ACU2500	ACP100 ACP200	ACP300
	Cermet		T4500A	
M Stainless Steel	Coated Carbide	ACU2500	ACS2500	
S Exotic Alloy		ACM200	ACS3000	
			ACM300	
K Cast Iron	Coated Carbide	ACU2500	ACK200 ACK300	
N Non-Ferrous Metal	Coated Carbide	DL1000		
	Cemented Carbide		H1 EH520	

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

Grade Features

New coating technology that realises absolute stability **ABSOTECH™** (Absolute Technology)



ACP200/ACP300/ACK300/ACM300

NEW SUPER ZX COAT

Realises superb stability due to a carbide substrate optimised for steel, cast iron, and stainless steel with a highly chipping-resistant coating.

ACP100/ACK200/ACM200

SUPER FF COAT

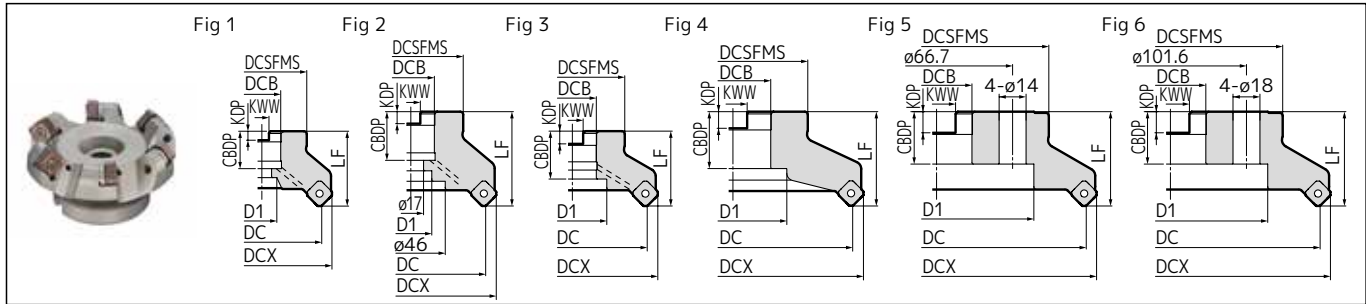
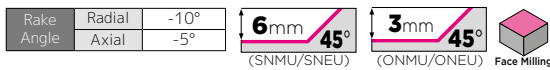
Realises superb stability in high-efficiency machining due to a carbide substrate optimised for steel, cast iron, and stainless steel with a highly wear-resistant coating.

DL1000

AURORA Coat (DLC (Diamond-like Carbon))

Second only to diamond in terms of hardness, this flat and smooth coating has a low coefficient of friction and provides excellent adhesion resistance to deliver better machined surface quality.

DGC13000R(S) type / DGCM13000R(S) type



Body (Standard Pitch)

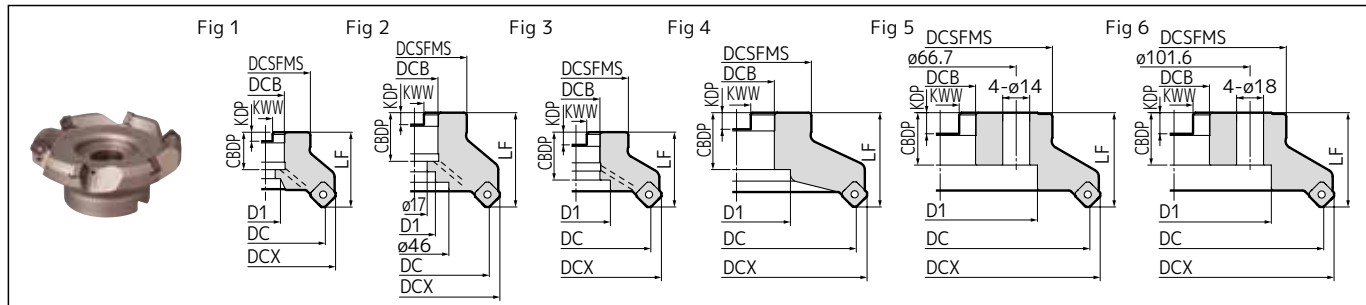
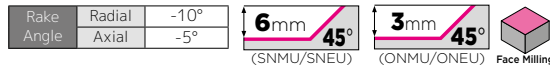
Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Weight (kg)	Fig
Metric	DGC 13040RS	●	40(42.9)	54(50.8)	36	40(38.44)	16	8.4	5.6	18	13.5	3	0.3	1
	13050RS	●	50(52.9)	64(60.8)	40	40(38.44)	22	10.4	6.3	20	18	3	0.4	1
	13063RS	●	63(65.9)	77(73.8)	50	40(38.44)	22	10.4	6.3	20	18	4	0.5	1
	13080RS	●	80(82.9)	94(90.8)	60	50(48.44)	27	12.4	7	25	20	4	1.2	1
	13100RS	●	100(102.9)	114(110.8)	70	50(48.44)	32	14.4	8.5	32	46	5	1.6	3
	13125RS	●	125(127.9)	139(135.8)	80	63(61.44)	40	16.4	9.5	29	52	6	2.8	1
	13160RS	●	160(162.9)	174(170.8)	100	63(61.44)	40	16.4	9.5	29	88	7	4.5	5
	13200RS	○	200(202.9)	214(210.8)	130	63(61.44)	60	25.7	14	35	130	8	7.1	6
	13250RS	○	250(252.9)	264(260.8)	130	63(61.44)	60	25.7	14	35	160	10	10.6	6
Inch	DGC 13080R	○	80(82.9)	94(90.8)	60	50(48.44)	25.4	9.5	6	25	20	4	1.2	1
	13100R	○	100(102.9)	114(110.8)	70	63(61.44)	31.75	12.7	8	32.5	28	5	2.2	2
	13125R	○	125(127.9)	139(135.8)	80	63(61.44)	38.1	15.9	10	35.5	55	6	2.8	1
	13160R	○	160(162.9)	174(170.8)	100	63(61.44)	50.8	19.1	11	38	72	7	4.5	4
	13200R	○	200(202.9)	214(210.8)	130	63(61.44)	47.625	25.4	14	35	130	8	7.1	6
	13250R	○	250(252.9)	264(260.8)	130	63(61.44)	47.625	25.4	14	35	150	10	11.0	6

() indicates value for ONMU/ONEU type inserts.

Inserts are sold separately. Sizes ø160mm and above do not have coolant holes.

For mounting the ø80 and ø100mm sized cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).



Body (Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Weight (kg)	Fig
Metric	DGCM 13050RS	●	50(52.9)	64(60.8)	40	40(38.44)	22	10.4	6.3	20	18	4	0.3	1
	13063RS	●	63(65.9)	77(73.8)	50	40(38.44)	22	10.4	6.3	20	18	5	0.5	1
	13080RS	●	80(82.9)	94(90.8)	60	50(48.44)	27	12.4	7	25	20	6	1.1	1
	13100RS	●	100(102.9)	114(110.8)	70	50(48.44)	32	14.4	8.5	32	46	7	1.5	3
	13125RS	●	125(127.9)	139(135.8)	80	63(61.44)	40	16.4	9.5	29	52	8	2.8	1
	13160RS	●	160(162.9)	174(170.8)	100	63(61.44)	40	16.4	9.5	29	88	10	4.6	5
	13200RS	○	200(202.9)	214(210.8)	130	63(61.44)	60	25.7	14	35	130	12	7	6
	13250RS	○	250(252.9)	264(260.8)	130	63(61.44)	60	25.7	14	35	160	14	10.5	6
Inch	DGCM 13080R	○	80(82.9)	94(90.8)	60	50(48.44)	25.4	9.5	6	25	20	6	1.1	1
	13100R	○	100(102.9)	114(110.8)	70	63(61.44)	31.75	12.7	8	32.5	28	7	2.2	2
	13125R	○	125(127.9)	139(135.8)	80	63(61.44)	38.1	15.9	10	35.5	55	8	2.8	1
	13160R	○	160(162.9)	174(170.8)	100	63(61.44)	50.8	19.1	11	38	72	10	4.6	4
	13200R	○	200(202.9)	214(210.8)	130	63(61.44)	47.625	25.4	14	35	130	12	7	6
	13250R	○	250(252.9)	264(260.8)	130	63(61.44)	47.625	25.4	14	35	150	14	11.0	6

() indicates value for ONMU/ONEU type inserts. Inserts are sold separately. Sizes ø160mm and above do not have coolant holes.

For mounting the ø80 and ø100mm sized cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

● Stock Europe ○ Stock Japan



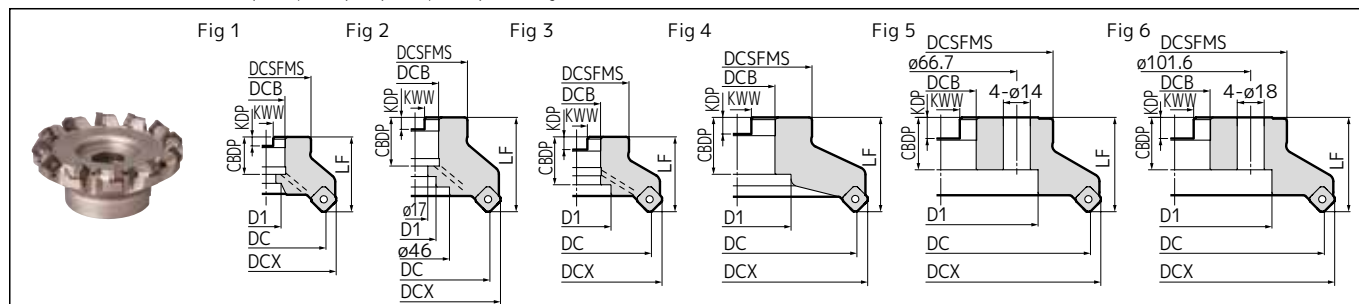
Recommended Tightening Torque (N·m) Blank: Made-to-order item — mark: Not available

DGCF13000R(S) type / DGC13000EW type

Rake Angle	Radial	-10°
	Axial	-5°

6mm	45°
(SNMU/SNEU)	

3mm	45°
(ONMU/ONEU)	

Body (Extra Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Weight (kg)	Fig
Metric	DGCF 13050RS	●	50(52.9)	64(60.8)	40	40(38.44)	22	10.4	6.3	20	18	5	0.3	1
	13063RS	●	63(65.9)	77(73.8)	50	40(38.44)	22	10.4	6.3	20	18	6	0.5	1
	13080RS	●	80(82.9)	94(90.8)	60	50(48.44)	27	12.4	7	25	20	8	1.1	1
	13100RS	●	100(102.9)	114(110.8)	70	50(48.44)	32	14.4	8.5	32	46	10	1.4	3
	13125RS	●	125(127.9)	139(135.8)	80	63(61.44)	40	16.4	9.5	29	52	12	2.7	1
	13160RS	●	160(162.9)	174(170.8)	100	63(61.44)	40	16.4	9.5	29	88	14	4.4	5
	13200RS	○	200(202.9)	214(210.8)	130	63(61.44)	60	25.7	14	35	130	16	6.9	6
Inch	13250RS	○	250(252.9)	264(260.8)	130	63(61.44)	60	25.7	14	35	160	18	10.4	6
	DGCF 13080R	○	80(82.9)	94(90.8)	60	50(48.44)	25.4	9.5	6	25	20	8	1.1	1
	13100R	○	100(102.9)	114(110.8)	70	63(61.44)	31.75	12.7	8	32.5	28	10	2.1	2
	13125R	○	125(127.9)	139(135.8)	80	63(61.44)	38.1	15.9	10	35.5	55	12	2.7	1
	13160R	○	160(162.9)	174(170.8)	100	63(61.44)	50.8	19.1	11	38	72	14	4.4	4
	13200R	○	200(202.9)	214(210.8)	130	63(61.44)	47.625	25.4	14	35	130	16	6.9	6
	13250R	○	250(252.9)	264(260.8)	130	63(61.44)	47.625	25.4	14	35	150	18	10.9	6

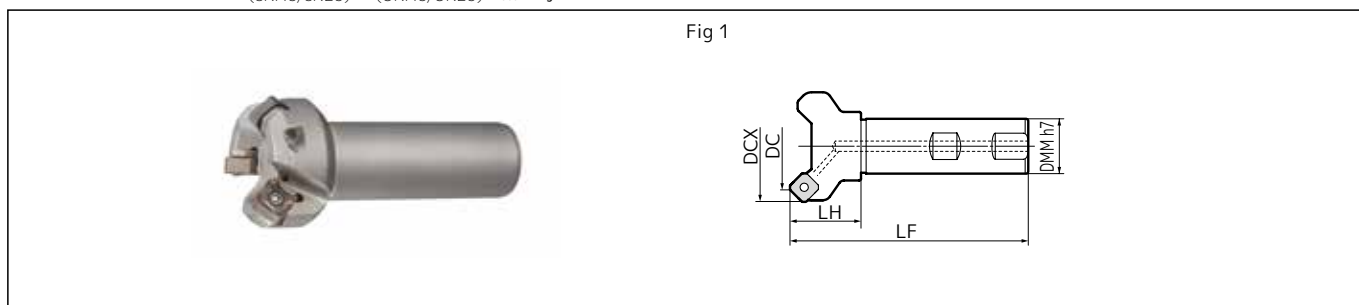
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 For mounting the ø80 and ø100mm sized cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Rake Angle	Radial	-10°
	Axial	-5°

6mm	45°
(SNMU/SNEU)	

3mm	45°
(ONMU/ONEU)	

Body (Shank type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
DGC 13040EW	●	40(42.9)	54(50.8)	32	40(38.44)	125	3	0.7	1
13050EW	●	50(52.9)	64(60.8)	32	40(38.44)	125	3	0.9	1
13063EW	●	63(65.9)	77(73.8)	32	40(38.44)	125	4	1.1	1

() indicates value for ONMU/ONEU type inserts.
Inserts are sold separately.

DGCF13000R(S) type / DGC13000EW type

Insert

Dimensions (mm)

Grade Classification	Coated Carbide												Cemented Carbide	DLC	Cermet	Fig	
High-speed/Light Cutting		P			K									N			
Medium Cutting					K									N	P		
Roughing					K												
Cat. No.	ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000	ACS2500	ACS3000	ACM200	ACM300		H1	EH520	DL1000	T4500A	
SNMU 13T6ANER-L	○	○	○	○	○	○							—	○	—	—	1
13T6ANER-G	○	○	○	○	○	○		○	○				—	—	—	—	1
13T6ANER-H	○	○	○	○	○	○							—	—	—	—	1
13T6ANER-FL	○	○	○	○	○	○							—	—	—	—	2
13T6ANER-FG	○	○	○	○	○	○							—	—	—	—	2
SNEU 13T6ANER-L										○	○						1
13T6ANER-G								○	○	○	○						1
13T6ANER-FL										○	○						2
13T6ANER-FG										○	○						2
13T6ANFR-S													○		○		1
XNEU 13T6ANEN-W	○		○			○										○	3
ONMU 05T6ANER-L	○	○	○	○	○	○							—		—	—	4
05T6ANER-G	○	○	○	○	○	○		○	○				—		—	—	4
ONEU 05T6ANER-L										○	○						4
05T6ANER-G										○	○						4

Fig 1 8-cornered

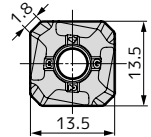


Fig 2 8-cornered

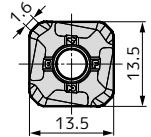


Fig 3 Wiper Insert

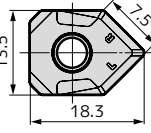
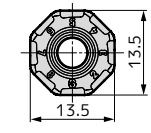


Fig 4 16-cornered



Wiper inserts can only be used in combination with 8-cornered inserts (SNMU/SNEU).

Fig 1 8-cornered

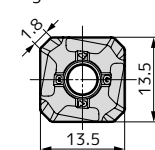


Fig 2 8-cornered

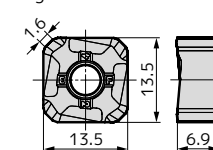


Fig 3 Wiper Insert

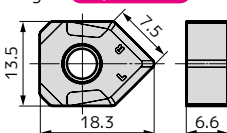
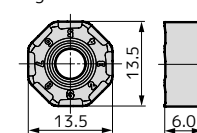


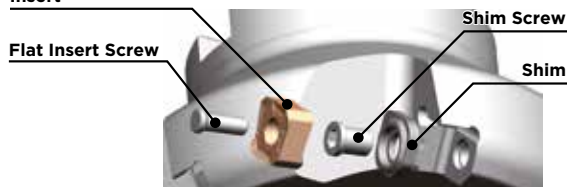
Fig 4 16-cornered



Wiper inserts can only be used in combination with 8-cornered inserts (SNMU/SNEU).

The ACP100 and ACK200 may vary in colour or lustre, but these variations do not affect the performance. Refer to P.3 "Precautions When Using Wiper Inserts With Holes" (Mounting Precautions).

Insert



Identification Code

DGC F 13 050 R S

Series Code Extra Fine Pitch Insert Size Dia. Feed Direction Metric

Parts

(Sold Separately)

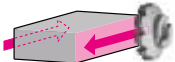
Applicable Cutter	Shim	Shim Screw	Wrench	Flat Insert Screw	Integrated Wrench	Anti-seizure Cream	Flat Insert Screw (*)
DC ø50 to 125 Other than above	DGCS13R	BW0609F	LH040	BFTX0412IP	3.0	— SUMI-P	BFTX0418IP 3.0

*Insert corners can be changed simply by loosening the screw. Only applies to ø80mm size DGC/DGCM types.

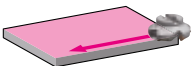
● Stock Europe ○ Stock Japan ▲ mark: To be replaced by a new product or discontinued (please confirm stock availability)

Recommended Tightening Torque (N·m) Blank: Made-to-order item — mark: Not available

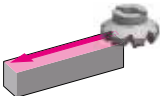
Application Examples

		Component/Work Material	Machine Component/C50	
	Tool	Cat. No.	DGC series	Conventional Tool
		Body	DGCM13160R (ø160)	ø160
		Insert	SNMU13T6ANER-FG (8 Corners)	Single-Sided (8 Corners)
		Number of Teeth	10	10
		Grade	ACP200	PVD Grade
	Cutting Conditions	Vc (m/min)	133	133
		fz (mm/t)	0.132	0.132
		Vf (mm/min)	350	350
		ap (mm)	2.5	2.5
		Cutting Time	287min	287min
		Dry/Wet	Dry	Dry
Reduces burr and achieves higher milling quality compared to conventional tools.				

	Component/Work Material		Machine Component/Cast Iron	
	Tool	Cat. No.	DGC series	Conventional Tool
		Body	DGCM13125R (ø125)	ø125
		Insert	SNMU13T6ANER-G (8 Corners)	Double-Sided (8 Corners)
		Number of Teeth	8	8
		Grade	ACU2500	PVD Grade
	Cutting Conditions	Vc (m/min)	157	157
		fz (mm/t)	0.12	0.12
		Vf (mm/min)	384	384
		ap (mm)	2.5	2.5
Number of Workpieces (pcs/corner)		480	480	
Dry/Wet		Wet	Wet	
Drastically reduced cutting edge failure with the same output. Able to continue longer tool life.				

	Component/Work Material		Machine Component/Stainless Steel	
	Tool	Cat. No.	DGC series	Conventional Tool
		Body	DGC13100R (ø100)	ø100
		Insert	SNEU13T6ANER-G (8 Corners)	Single-Sided (4 Corners)
		Number of Teeth	5	5
		Grade	ACM300	PVD Grade
	Cutting Conditions	Vc (m/min)	150	150
		fz (mm/t)	0.15	0.15
		Vf (mm/min)	360	360
		ap (mm)	2.0	2.0
Dry/Wet		Wet	Wet	

Doubles the number of cutting edges and provides over 3 times longer tool life per corner compared to conventional tools.

	Component/Work Material		Machine Component/Cast Steel	
	Tool	Cat. No.	DGC series	Conventional Tool
		Body	DGCM13125R (ø125)	ø125
		Insert	ONMU05T6ANER-G (16 Corners)	Double-Sided (8 Corners)
		Number of Teeth	8	8
		Grade	ACP200	PVD Grade
	Cutting Conditions	Vc (m/min)	160	160
		fz (mm/t)	0.29	0.29
		Vf (mm/min)	945	945
		ap (mm)	2.5	2.5
Dry/Wet		Dry	Dry	
Reduces tool costs by doubling the number of cutting edges.				



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