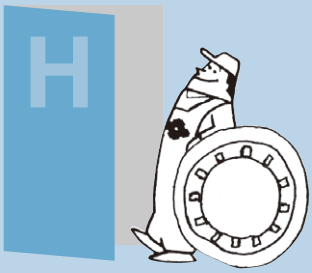
Milling Cutters (Special Purpose)

H133 to H147

H



Stock Indications and Symbols

●● mark: Standard stocked item
● mark: To be replaced by a new item featured on the same page
▲ mark: To be replaced by new item (Please confirm stock availability)
＊ mark: Semi-standard stock (Please confirm stock availability)
○○ mark: Stock or planned stock (Please confirm stock availability)
No mark: Made-to-order item
— mark: We cannot produce

GFX / GFS / GSV / GRV Type

General Features

SEC-Goal Mill cutters use tangentially-mounted screw-locking inserts developed for high efficiency machining and finishing of cast iron parts such as engine cylinder blocks, transmission cases, etc.

Characteristics

- Special cutters for high feed machining of cast iron
- Highly reliable shoulder milling cutter with tangential inserts
- Multi-edged design (approx. 3 edges per inch)
- Finishing models feature an easy-to-use edge runout fine adjustment
- Chipbreaker type inserts for low cutting force

Series

Series Code	GFX Type	GFS Type	GSV Type	GRV Type
Application	Finishing	Finishing/Shoulder Milling	Medium Finishing	Roughing
Surface Roughness	< Ra3.2	< Ra3.2	< Ra6.3	< Ra12.5
Appearance				

Refer to pages H146 and H147 for details and specifications on the two piece mounting system and adapter.

	Finishing to General Machining	Heavy Interrupted Machining
K Cast Iron	ACK260	ACK280

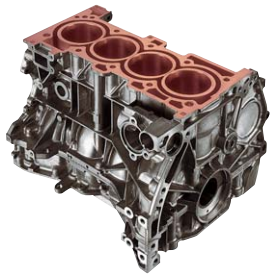
Characteristic Values of Grades

Classification	Grade	Hardness (HRA)	Toughness (GPa)	Main Coating Components	Coating Thickness (μm)	Characteristics
K Cast Iron	ACK260	92.6	2.6	Super ZX Coat	3	• For finishing to general machining of cast iron and ductile cast iron. • Employs new PVD coating consisting of multiple nanometre-thin layers of TiAlN and AlCrN, coupled with a tough, heat-resistant substrate for long and stable tool life.
K Cast Iron	ACK280	91.7	3.0	Super ZX Coat	3	• For heavy interrupted cutting and wet cutting of cast iron and ductile cast iron. • Employs new PVD coating consisting of multiple nanometre-thin layers of TiAlN and AlCrN, coupled with an ultra-tough substrate for superior fracture resistance, and thermal crack resistance during wet cutting.

Application Examples

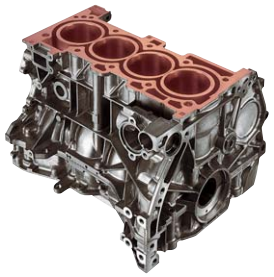
Application : Rough Cutting

Work : Top Face Of Cylinder Block		SEC-Goal Mill	Current Tool
Work Material : **FC250** Roughness Standard : Ra **6.3**µm Equipment : Special Machine	Tool	**GRV16250R**	ø250 (Special)
	Grade	**ACK100**	PVD
	Tool Shape	Tangential Screw Locked	Wedge Type
	No. of Teeth	30	30
	v_c (m/min)	80	80
	v_f (mm/min)	611	611
	f_z (mm/t)	0.20	0.20
	a_p (mm)	3.0 (Some Areas 6.0)	3.0 (Some Areas 6.0)
	Coolant	Remainder Wet	Remainder Wet
	Results	Tool / Workpieces/Corner (100, 200, 300): **GRV** 300 Units; Current Tool 100 Units	
	Evaluation	Eliminates breakage for extended tool life.	



Application : Finishing to Rough Cutting

Work : Top Face Of Cylinder Block		SEC-Goal Mill	Competitor's Product
Work Material : **FC250** Roughness Standard : Ra **3.2**µm Equipment : Special Machine	Tool	**GSV** ø265	ø250
	Grade	**ACK260 / ACK200** (Finishing / Roughing)	PVD
	Tool Shape	Tangential Screw Locked	Tangential Screw Locked
	No. of Teeth	24	24
	v_c (m/min)	265	250
	v_f (mm/min)	763	509
	f_z (mm/t)	0.10/0.60	0.10
	a_p (mm)	3.0	3.0
	Coolant	Wet	Wet
	Results	Initial Roughness Ra: 0.3 µm Finished surface equivalent to CBN.	



Application : One-Pass Finishing

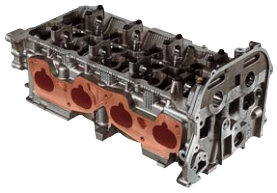
Work : Front Face Of Cylinder Block		SEC-Goal Mill
Work Material : **FC250** Roughness Standard : Ra **6.3**µm Equipment : Special Machine	Tool	**GSV16315R**
	Grade	**ACK260**
	Tool Shape	Tangential Screw Locked
	No. of Teeth	36
	v_c (m/min)	136
	v_f (mm/min)	693
	f_z (mm/t)	0.14
	a_p (mm)	Max. 6.0
	Coolant	Dry
	Results	What would normally require two processes (roughing and finishing) was finished in a single process, reducing process time.

Application : Finishing

Work : Side Face Of Cylinder Block		SEC-Goal Mill	Competitor's Product
Work Material : **FC250** Roughness Standard : Rz **12.5**µm Equipment : Horizontal Machining Centre	Tool	**GFXC13100R**	ø100
	Grade	**BN7000**	CVD
	Tool Shape	Tangential Screw Locked	Wedge Type
	No. of Teeth	4	10
	v_c (m/min)	1,200	251
	v_f (mm/min)	10,000	500
	f_z (mm/t)	0.65	0.063
	a_p (mm)	0.5	0.5
	Coolant	Dry	Dry
	Results	・v_f =10,000mm/min ・Achieves a v_f value that is 20 times larger than our competitors' products.	

Application : Finishing

Work : Side Face Of Cylinder Block		SEC-Goal Mill	Competitor's Product
Work Material : **FC250** Roughness Standard : Rz **12.5**µm Equipment : Horizontal Screw Locked	Tool	**GFXC13125R**	ø125
	Grade	**BN7000**	PVD
	Tool Shape	Tangential Screw Locked	Horizontal Screw Locked
	No. of Teeth	4	12
	v_c (m/min)	1,000	216
	v_f (mm/min)	6,000	376
	f_z (mm/t)	0.59	0.057
	a_p (mm)	0.5	1.0
	Coolant	Dry	Dry
	Results	・v_f =6,000mm/min ・Improves efficiency by 16 times and provides better surface roughness than our competitors' products.	



Application : Finishing

Work : Bottom Face Of Cylinder Block		SEC-Goal Mill	Conventional Grade
Work Material : **FC250** Roughness Standard : Ra **6.3**µm Equipment : Horizontal Machining Centre	Tool	**GFXC13125R**	ø125
	Grade	**ACK260**	CBN
	Tool Shape	Tangential Screw Locked	Wedge Type
	No. of Teeth	10	4
	v_c (m/min)	250	510
	v_f (mm/min)	1,020	1,020
	f_z (mm/t)	0.16	0.20
	a_p (mm)	0.5	0.5
	Coolant	Remainder Wet	Remainder Wet
	Results	・Carbide tools providing a tool life as long as CBN cutters. ・Reduces costs.	

Application : Finishing

Work : Bottom Face Of Cylinder Block		SEC-Goal Mill	Competitor's Product
Work Material : **FC250** Roughness Standard : Ra **3.2**µm Equipment : Special Machine	Tool	**GFX16315R** (Special)	ø315
	Grade	**ACK260**	PVD
	Tool Shape	Tangential Screw Locked	Wedge Type
	No. of Teeth	44 (effective)	40
	v_c (m/min)	148	148
	v_f (mm/min)	720	720
	f_z (mm/t)	0.11	0.12
	a_p (mm)	0.5	0.5
	Coolant	Dry	Dry
	Results	Tool / Workpieces/Corner (1,500, 2,500, 3,500): **GSV** 3,500 Units; Competitor's Product 2,300 Units	
	Evaluation	Provides a tool life that is approximately 1.5 times longer than our competitors' products.	

Application : Finishing

Work : Lathe Bed		SEC-Goal Mill	Competitor's Product
Work Material : **FC250** Roughness Standard : Ra **6.3**µm Equipment : Double Column Machining Centre	Tool	**GFX16125R**	ø125
	Grade	**ACK260**	Ceramics
	Tool Shape	Tangential Screw Locked	—
	No. of Teeth	16	10
	v_c (m/min)	300	785
	v_f (mm/min)	3,057	3,000
	f_z (mm/t)	0.25	0.15
	a_p (mm)	0.3	0.3
	Coolant	Dry	Dry
	Results	Equivalent v_f value to ceramics achieved with carbide	
	Evaluation	Reduced running costs	

Application Examples

Application : Finishing

Work : Housing		SEC-Goal Mill	Competitor's Product
Work Material : **FC250** Roughness Standard : Ra **1.6**µm Equipment : Horizontal Machining Centre	Tool	**GFXC13100R**	ø100
	Grade	**ACK260**	CVD
	Tool Shape	Tangential Screw Locked	Horizontal Screw Locked
	No. of Teeth	8	10
	v_c (m/min)	250	250
	v_f (mm/min)	960	530
	f_z (mm/t)	0.15	0.066
	a_p (mm)	0.1	0.1
	Coolant	Dry	Dry
	Results	・Provides higher efficiency, accuracy, and visually better compared to our competitors' products. ・Achieves a tool life that is over 2.5 times longer than our competitors' products.	

Application : Finishing

Work : Large Diesel Engine (Base Plate)		SEC-Goal Mill	Current Tool
Work Material : **FC250-FC300** Roughness Standard : Ra **3.2**µm Size : **1,600**mm×**1,800**mm Equipment : Horizontal Machining Centre	Tool	**GFX16160R**	ø160
	Grade	**ACK260**	CBN
	Tool Shape	Tangential Screw Locked	Blade Type
	No. of Teeth	20	10
	v_c (m/min)	300	980
	v_f (mm/min)	2,980	1,950
	f_z (mm/t)	0.25	0.10
	a_p (mm)	0.3	0.3
	Coolant	Dry	Dry
	Results	Carbide tools achieve 1.5 times the efficiency of CBN and provides machined surfaces equivalent to those machined with CBN on visual inspection.	

Application : Finishing

Work : Side of Lathe Bed (11m Long)		SEC-Goal Mill	Competitor's Product
Work Material : **FC300** Roughness Standard : Ra **3.2**µm Equipment : Horizontal Machining Centre	Tool	**GFX16160R**	ø160
	Grade	**ACK260**	CVD
	Tool Shape	Tangential Screw Locked	Horizontal Screw Locked
	No. of Teeth	20	8
	v_c (m/min)	120	125
	v_f (mm/min)	477	400
	f_z (mm/t)	0.10	0.20
	a_p (mm)	0.3	0.3
	Coolant	Dry	Dry
	Results	Tool: **GFX** — Cutting Length/Corner (20m, 40m): 40m Competitor's Product: 10m	
	Evaluation	Achieves a cutting distance 4 times longer than competitor's.	

Application : Finishing

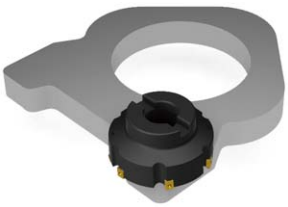
Work : Angle Plate		SEC-Goal Mill
Work Material : **FC300** Roughness Standard : Ra **3.2**µm Equipment : Horizontal Machining Centre	Tool	**GFS13125R**
	Grade	**ACK260**
	Tool Shape	Tangential Screw Locked
	No. of Teeth	6
	v_c (m/min)	137
	v_f (mm/min)	1,000
	f_z (mm/t)	0.47
	a_p (mm)	0.015
	Coolant	Dry
	Results	Surface roughness: Ra 1.0µm No level differences. Final grinding process eliminated.

Application : Finishing

Work :Hydraulic Component		SEC-Goal Mill	Competitor's Product
Work Material : **FCD450** Roughness Standard : Ra **3.2**µm Equipment : Double Column Machining Centre	Tool	**GFX13080R**	ø80
	Grade	**ACK260**	PVD
	Tool Shape	Tangential Screw Locked	Horizontal Screw Locked
	No. of Teeth	8	6
	v_c (m/min)	218	180
	v_f (mm/min)	1,600	650
	f_z (mm/t)	0.23	0.15
	a_p (mm)	0.1	0.1
	Coolant	Wet	Wet
	Results	Tool: **GFXC** — Workpieces/Corner (50, 100, 150): 148 Units Competitor's Product: 100 Units	
	Evaluation	Provides higher efficiency, accuracy, and visually better compared to competitors'.	

Application : Finishing

Work : Rear Hub Carrier		SEC-Goal Mill	Current Tool
Work Material : **FCD450** Roughness Standard : Rz **25**µm Equipment : Horizontal Machining Centre	Tool	**GFX16100R**	ø100
	Grade	**ACK260**	CVD
	Tool Shape	Tangential Screw Locked	Wedge Type
	No. of Teeth	12	14
	v_c (m/min)	250	150
	v_f (mm/min)	3,150	800
	f_z (mm/t)	0.33	0.12
	a_p (mm)	0.5-1.0	0.5-1.0
	Coolant	Wet	Wet
	Results	・Current tools make level differences in machined surfaces. ・Efficiency improved.	



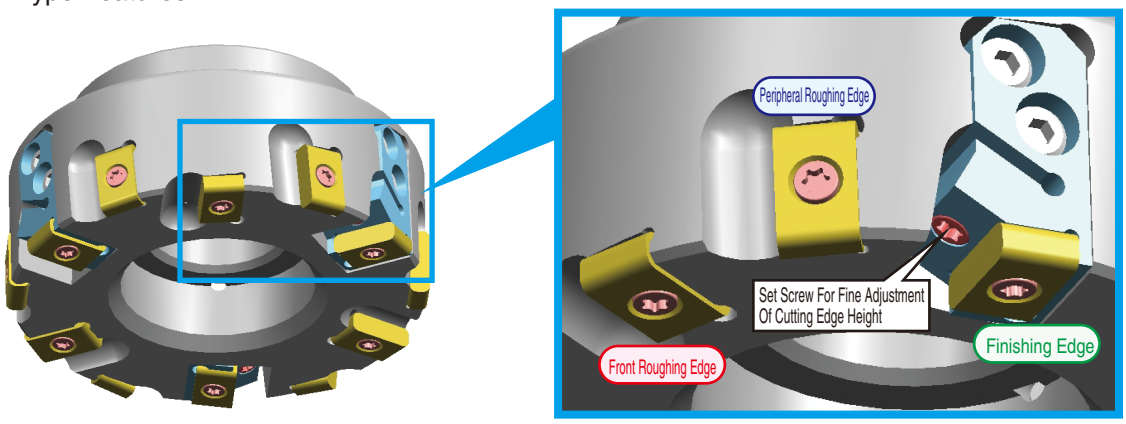
Application : Finishing

Work : Hydraulic Component		SEC-Goal Mill	Conventional
Work Material : **FCD600** Roughness Standard : Ra **1.6**µm Equipment : Horizontal Machining Centre	Tool	GFX16125R (Special)	ø125
	Grade	**ACK260**	PVD
	Tool Shape	Tangential Screw Locked	Wedge Type
	No. of Teeth	6	6
	v_c (m/min)	160	150
	v_f (mm/min)	733	110
	f_z (mm/t)	0.30/1.20	0.05
	a_p (mm)	0.25	0.25
	Coolant	Wet	Wet
	Results	Tool: **GFX** — Life Time/Corner (200min., 400min.): 350 min Competitor's Product: 150 min	
	Evaluation	Provides a tool life that is approximately 2.3 times longer than conventional.	

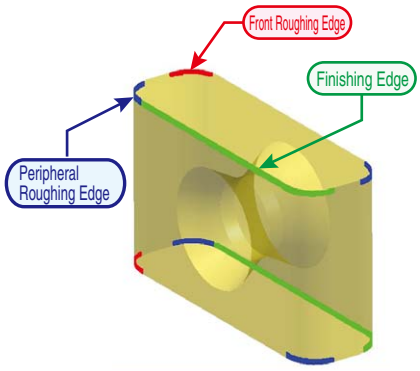
Application : Simultaneous Finishing

Work : Crankcase		SEC-Goal Mill	Competitor's Product
Work Material : **Al** + **FC250** Roughness Standard : Ra **3.2**µm Equipment : Vertical Machining Centre	Tool	**GFX13100R**	ø100
	Grade	**ACK260**	PVD
	Tool Shape	Tangential Screw Locked	Vertical Drawing Pins
	No. of Teeth	12	12
	v_c (m/min)	400	314
	v_f (mm/min)	1,529	1,440
	f_z (mm/t)	0.10	0.12
	a_p (mm)	0.3	0.3
	Coolant	Wet	Wet
	Results	Tool: **GFX** — Workpieces/Corner (100, 200, 300): 250 Units Competitor's Product: 100 Units	
	Evaluation	Provides a tool life that is approximately 2.5 times longer than competitors'.	

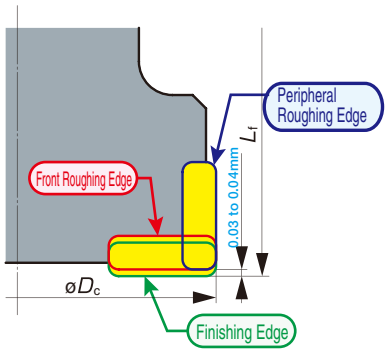
■ GFX Type Features

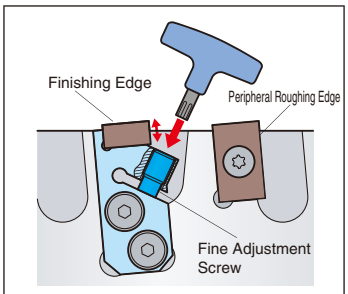


Finishing edge run-out can be adjusted by 5μm or less simply by turning set screw.



Arraying the same number of vertical and horizontal inserts allows 8-corner configuration.



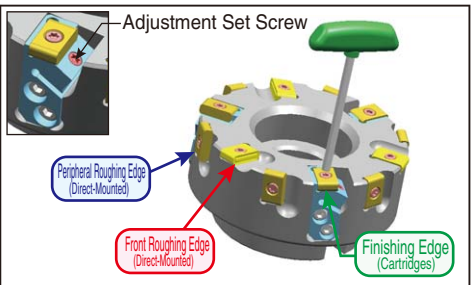


Finishing Edge Adjustment on GFX Type

■ GFX Type Finishing Edge Run-Out Adjustment Procedure

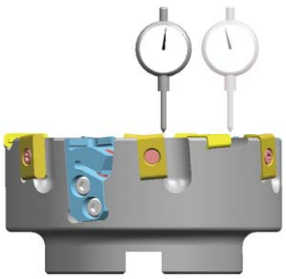
(1)Attach Insert

Attach insert to cutter body. When doing so, check that the cartridge adjustment set screw is completely loose.



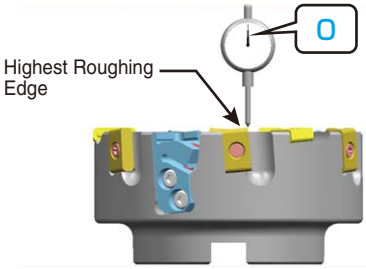
(2)Check Roughing Edge Run-Out

Measure face run-out of roughing edge and check the cutting edge that sticks up the most.



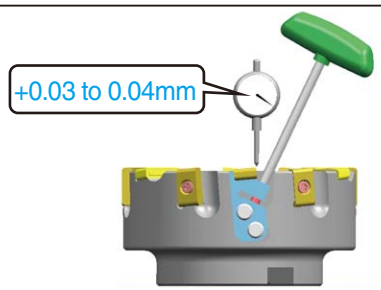
(3)Set Reference Roughing Edge

Set the cutting edge height checked in (2) as "0".



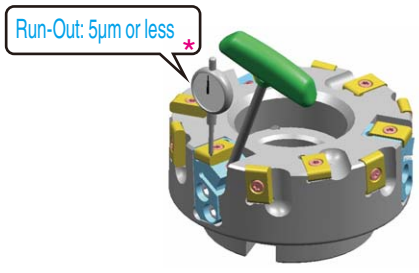
(4)Adjust Finishing Edge Height

Select a finishing edge and adjust the set screw so that the edge sticks up around 0.03 to 0.04mm compared to (3).



(5)Adjust Run-Out

With the finishing edge from (4) as a reference, adjust the position of the other finishing edges so that run-out is equal to or less than 5μm.



- Always adjust finishing edge height before use.
- Using the tool with the set screw loosened may result in tool breakage.

*Adjusting finishing edge run-out to 2μm or less will result in a better machined surface.

GFX16000/GFX13000 Type

Rake Angle		
	Radial	−8°
	Axial	−5°

1 mm 89° to 89°30'

P Steel	M Stainless Steel	K Cast Iron	N Non-Ferrous Met	N Aluminum	S Exotic Alloy	H Hardened Steel
×	×	◎	×	×	×	×

High Feed Finishing Of Cast Iron

Fig 1

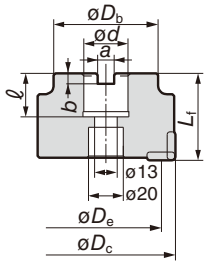


Fig 2

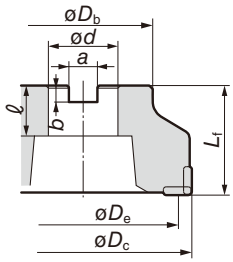


Fig 3

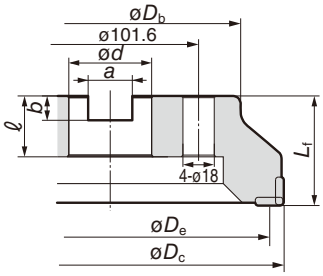
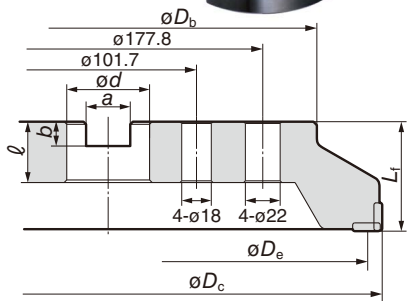


Fig 4



Body (GFX 13000)

Inch

Cat. No. (R)	Stock	Cat. No. (L)	Stock	Dimensions (mm) øDc	øDe	øDb	Lf	ød	a	b	ℓ	Total Teeth	No. of Finishing Edges	Effective Teeth	Weight (kg)	Fig
GFX 13080R	●	**GFX 13080L**		*80	67.3	60	50	**25.4**	9.5	6	25	8	2	8	1.4	1
13100R	●	**13100L**		**100**	87.3	70	50	**31.75**	12.7	8	32	12	3	12	1.9	2
13125R	●	**13125L**		**125**	112.3	80	63	**38.1**	15.9	10	38	16	4	16	3.3	2
13160R	●	**13160L**		**160**	147.3	120	63	**50.8**	19.1	11	38	20	5	20	6.4	2
13200R		**13200L**		**200**	187.3	150	63	**47.625**	25.4	14	35	28	7	28	7.8	3
13250R		**13250L**		**250**	237.3	200	63	**47.625**	25.4	14	35	36	9	36	12.6	3
13315R		**13315L**		**315**	302.3	240	80	**47.625**	25.4	14	35	44	11	44	20.2	4

Inserts are not included.

Body (GFX 16000)

Inch

GFX 16080R		**GFX 16080L**		*80	64.1	60	50	**25.4**	9.5	6	25	8	2	8	1.4	1
16100R	●	**16100L**		**100**	84.1	70	50	**31.75**	12.7	8	32	12	3	12	1.9	2
16125R	●	**16125L**		**125**	109.1	80	63	**38.1**	15.9	10	38	16	4	16	3.3	2
16160R	●	**16160L**		**160**	144.1	120	63	**50.8**	19.1	11	38	20	5	20	6.4	2
16200R	●	**16200L**		**200**	184.1	150	63	**47.625**	25.4	14	35	28	7	28	7.8	3
16250R		**16250L**		**250**	234.1	200	63	**47.625**	25.4	14	35	36	9	36	12.6	3
16315R		**16315L**		**315**	299.1	240	80	**47.625**	25.4	14	35	44	11	44	20.2	4

Inserts are not included.

*Please use hexagonal bolt (JISB1176) M12 x 30-35 mm for securing ϕ80 cutter to the arbor.

Inserts

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy H Hardened Steel

Fig 5

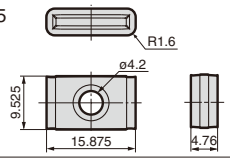
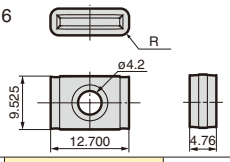


Fig 6



Grade		Coated Carbide			Carbide		
Application	High Speed/Light	K			K		
	General Purpose	K					
	Roughing		K	K			
Cat. No.		ACK260	ACK280	ACK300	H10E		Fig
LNGX 160516PNFN-W		●	●		●		5
LNGX 130508PNFN-W		●	●		●		6
130516PNFN-W		●	●		●		6

Application Examples

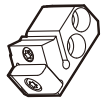
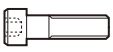
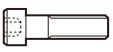
H135

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - Optimum - Max.	Feed Rate f_z (mm/t) Min. - Optimum - Max.	Grade
K	Cast Iron	250HB	200-**250**-350	0.15-**0.33**-0.50	ACK260

Note Calculate cutting conditions based on effective teeth.

Spare Parts

Cartridge (For 16000 Type)	Cartridge (For 13000 Type)	Fine adjustment screw	Spanner	Insert Screw	Spanner (For Adjustment)	Cartridge Screw	Cartridge Screw	Spanner (For Cartridges)	Anti-seizure Cream
									
GFVK5R/L	GFXK4R/L	BTD05F09	TTX15W	BFTX03588	LT15	BX0414	BX0418	TH030	SUMI-P

N·m 3.0

N·m Recommended Tightening Torque (N·m)

*Finishing cartridges do not come assembled with inserts.

GFS13000 Type

Rake Angle		
	Radial	−11°
	Axial	−3°

10mm 90°

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum | S Exotic Alloy | H Hardened Steel

High Feed Finishing/Shoulder Milling Of Cast Iron

Fig 1

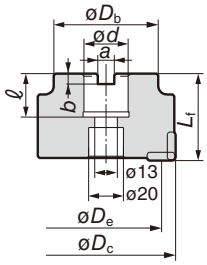
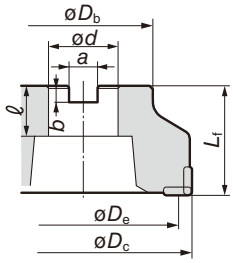


Fig 2



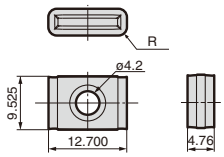
Body Inch

Cat. No. (R)	Stock	Cat. No. (L)	Stock	Dimensions (mm) øDc	øDe	øDb	Lf	ød	a	b	ℓ	Total Teeth	No. of Finishing Edges	Effective Teeth	Weight (kg)	Fig
GFS 13080R		**GFS 13080L**		*80	66.9	60	50	**25.4**	9.5	6	25	5	1	4	1.4	1
13100R		**13100L**		**100**	86.9	70	50	**31.75**	12.7	8	32	6	1	5	1.9	2
13125R		**13125L**		**125**	111.9	80	63	**38.1**	15.9	10	38	8	2	6	3.3	2
13160R		**13160L**		**160**	147.3	120	63	**50.8**	19.1	11	38	10	2	8	6.4	2

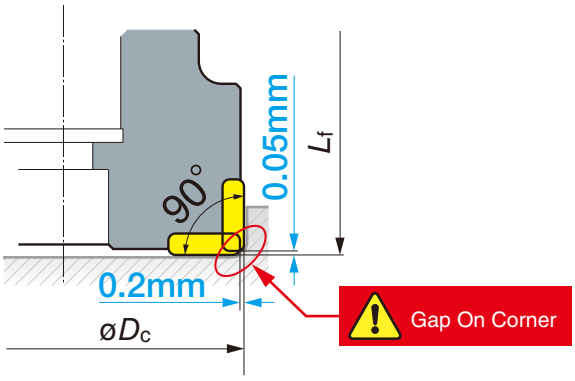
Inserts are not included.

*Please use hexagonal bolt (JISB1176) M12 x 30-35 mm for securing ϕ80 cutter to the arbor.

Inserts P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy H Hardened Steel



Grade		Coated Carbide			Carbide	
Application	High Speed/Light	K			K	
	General Purpose	K				
	Roughing		K	K		
Cat. No.		ACK260	ACK280	ACK300	H10E	
LNGX 130508PNFN-W		●	●		●	
130516PNFN-W		●	●		●	



Spare Parts

Finishing Cartridge*	Fine adjustment screw	Spanner	Insert Screw	Spanner (For Adjustment)	Cartridge Screw	Spanner (For Cartridges)	Anti-seizure Cream
							
GFSK4R/L	BTD05F09	TTX15W	BFTX03588	LT15	BX0520	TH040	SUMI-P

N·m Recommended Tightening Torque (N·m) 3.0

*Finishing cartridges do not come assembled with inserts.

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - Optimum - Max.	Feed Rate f_z (mm/t) Min. - Optimum - Max.	Grade
K	Cast Iron	250HB	200-**250**-300	0.10-**0.15**-0.30	ACK260

Note Calculate cutting conditions based on effective teeth.

GSV16000 Type

Rake Angle		
	Radial	−14° to −6°
	Axial	−5°

8mm / 65°

P Steel ✕ | M Stainless Steel ✕ | K Cast Iron ◎ | N Non-Ferrous Metal ✕ | N Aluminum ✕ | S Exotic Alloy ✕ | H Hardened Steel ✕

Medium Finishinig of Cast Iron

Fig 1

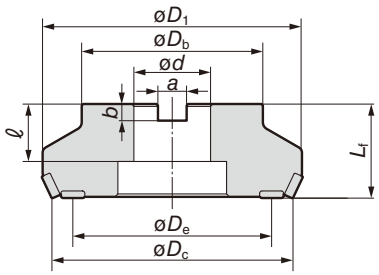


Fig 2

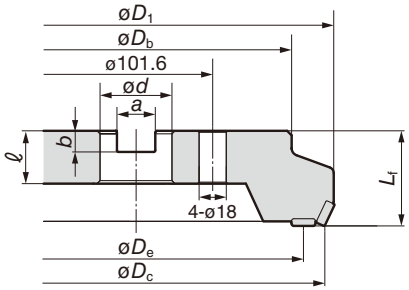
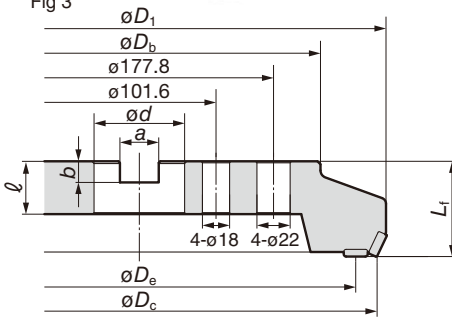


Fig 3



Body

Inch

Cat. No.(R)	Stock	Cat. No.(L)	Stock	Dimensions (mm)									Total Teeth	No. of Finishing Edges	Effective Teeth	Weight (kg)	Fig
				øDc	øDe	øD1	øDb	Lf	ød	a	b	ℓ					
GSV 16160R		GSV 16160L		192	160	206	120	63	50.8	19.1	11	38	20	2	18	9.8	1
16200R		16200L		232	200	246	150	63	47.625	25.4	14	35	28	4	24	11.0	2
16250R		16250L		282	250	296	200	63	47.625	25.4	14	35	34	4	30	18.3	2
16315R		16315L		347	315	361	240	80	47.625	25.4	14	35	40	4	36	28.5	3

Inserts are not included.

Inserts

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy H Hardened Steel

Fig 4

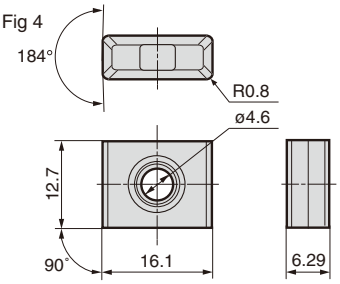
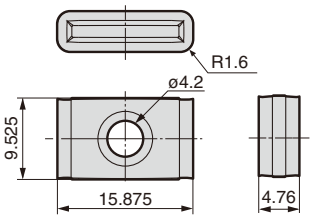
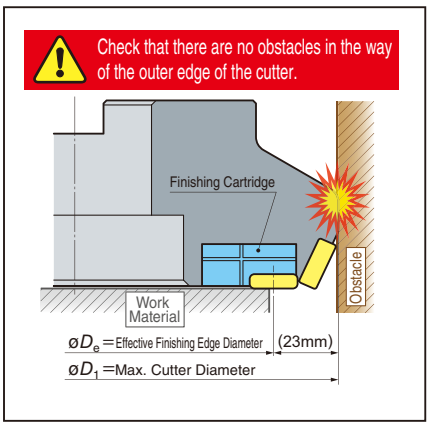


Fig 5 Wiper Insert



Grade		Coated Carbide					
Application	High Speed/Light	K	K	K			
	General Purpose	K	K	K			
	Roughing				K	K	
Cat. No.		ACK100	ACK200	ACK260	ACK280	ACK300	Fig
LNMX 160608PNSN-G			●			●	4
160608PNSN-H		●	●			●	4
LNGX 160516PNFN-W				●	●		5



Application Examples

H135

Spare Parts

Finishing Cartridge*	Fine adjustment screw	Screw (For Finishing Inserts)		Cartridge Screw	Screw (For Roughing Edge Inserts)		Spanner	Spanner	Spanner (For Fine Adjustment)	Anti-seizure Cream
			N·m			N·m				
GSVK5R/L	BTD05F09	BFTX03588	3.0	BX0612	BFTX0412N	3.0	TTX15W	TH050	LT15	SUMI-P

N·m Recommended Tightening Torque (N · m)

*Finishing cartridges do not come assembled with inserts.

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Grade
K	Cast Iron	250HB	200-**250**-300	0.15-**0.23**-0.30	ACK200 ACK300

Note Calculate cutting conditions based on effective teeth.

GRV 16000 Type

Rake Angle		
	Radial	−14° to −6°
	Axial	−5°

8mm 45°

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum | S Exotic Alloy | H Hardened Steel

High Feed Roughing for Cast Iron

Fig 1

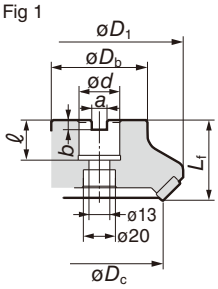


Fig 2

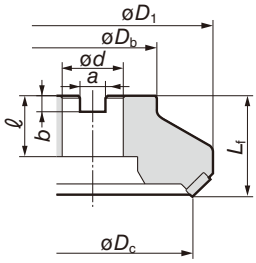


Fig 3

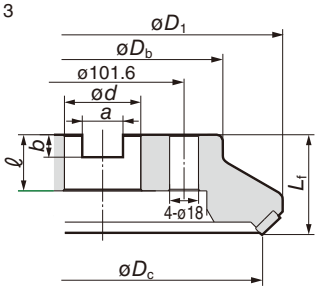
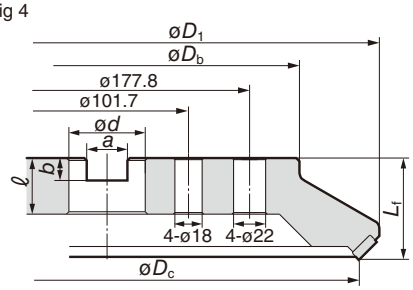


Fig 4



Body

Inch

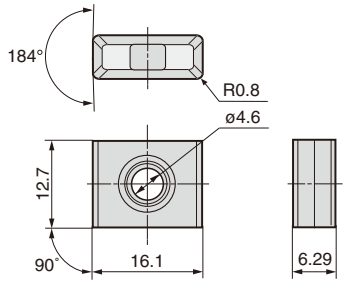
Cat. No.(R)	Stock	Cat. No.(L)	Stock	Dimensions (mm)								No. of Teeth	Weight (kg)	Fig
				øDc	øD1	øDb	Lf	ød	a	b	ℓ			
GRV 16080R		**GRV 16080L**		*80	104	60	50	**25.4**	9.5	6	25	9	1.9	1
16100R		**16100L**		**100**	124	70	50	**31.75**	12.7	8	32	12	3.2	2
16125R		**16125L**		**125**	149	80	63	**38.1**	15.9	10	38	15	4.3	2
16160R		**16160L**		**160**	184	120	63	**50.8**	19.1	11	38	18	5.7	2
16200R		**16200L**		**200**	225	150	63	**47.625**	25.4	14	35	24	8.1	3
16250R		**16250L**		**250**	275	200	63	**47.625**	25.4	14	35	30	13.5	3
16315R		**16315L**		**315**	340	240	80	**47.625**	25.4	14	35	36	21.6	4

Inserts are not included.

*Please use hexagonal bolt (JISB1176) M12 x 30-35 mm for securing ϕ80 cutter to the arbor.

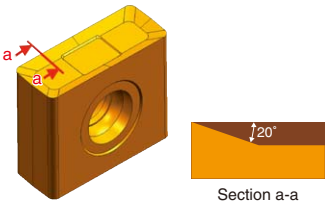
Insert

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy | H Hardened Steel



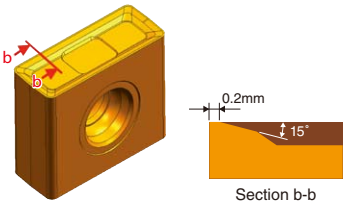
General Purpose G-Type

Fig 5



Strong Edge H Type

Fig 6



Grade		Coated Carbide		
Application	High Speed/Light	K	K	
	General Purpose	K	K	
	Roughing			K

Cat. No.	ACK100	ACK200	ACK300	Application	Remarks	Fig
LNMX 160608PNSN-G		●	●	General Purpose	Recommended	5
160608PNSN-H	●	●	●	Heavy interrupted cutting and other unstable applications		6

Spare Parts

Screw	Wrench	Anti-seizure Cream
		
BFTX0412N **3.0**	TTX15W	SUMI-P

N·m Recommended Tightening Torque (N · m)

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Grade
K	Cast Iron	250HB	200-**250**-300	0.15-**0.23**-0.30	ACK200 ACK300

Note Calculate cutting conditions based on effective teeth.