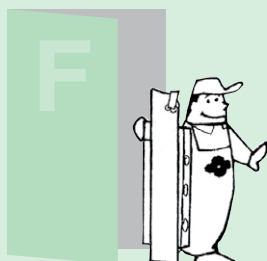


Grooving / Cut-Off Threading Tools

F1 to F32

F



Grooving Tools	Triangular Grooving Inserts	SEC-Grooving Tool Series Selection Guide F2	
		GWC Type (Shallow Grooves) F4	
		GWCS Type (Shallow Grooves) F5	
		GWCI Type (Internal Shallow Grooves) F5	
		Indexable Inserts for External & Internal Grooving TGA Type F6	
		Insert for GWC Type F7	
		Inserts with Chipbreaker SumiTurn B-Groove F8	
		Special Insert Request Form (Japan Domestic Market Only) F9	
		External Grooving	SEC-GND Type Tool F10
			GNDM Type / GNDML Type (Small Tool) F18
	GND S Type (Shallow Grooves) F19		
	GNDM Type / GNDMS Type (General Purpose) F20		
	GNDL Type / GNDLS Type (Deep Grooves) F22		
	SGE Type (Wide Grooves) F24		
	Internal Grooving		CKB Type F25
			SGIT Type (Small Diameter) F25
			GNDI Type (General Purpose Internal Grooving) F26
	Face Grooving		CKB Type (Very Small Diameter Grooves) F27
		GND F Type (General Purpose) F28	
	Hardened Steel	GND F S Type (General Purpose) F30	
SUMIBORON (CBN) GWB Type (Hardened Steel, Shallow Grooves) F31			
SUMIBORON (CBN) BNGG Type (Hardened Steel, Shallow Grooves) F32			

F Cut-Off Tools

SEC-Cut-Off Tool Series Selection Guide	F34
Introduction of SumiGrip	F35
SumiGrip Jr.	F36
SumiGrip	F38
SEC-Small Diameter Cut-off Tools	F40
SEC-Grooving / Cut-Off Tools	F42

F Threading Tools

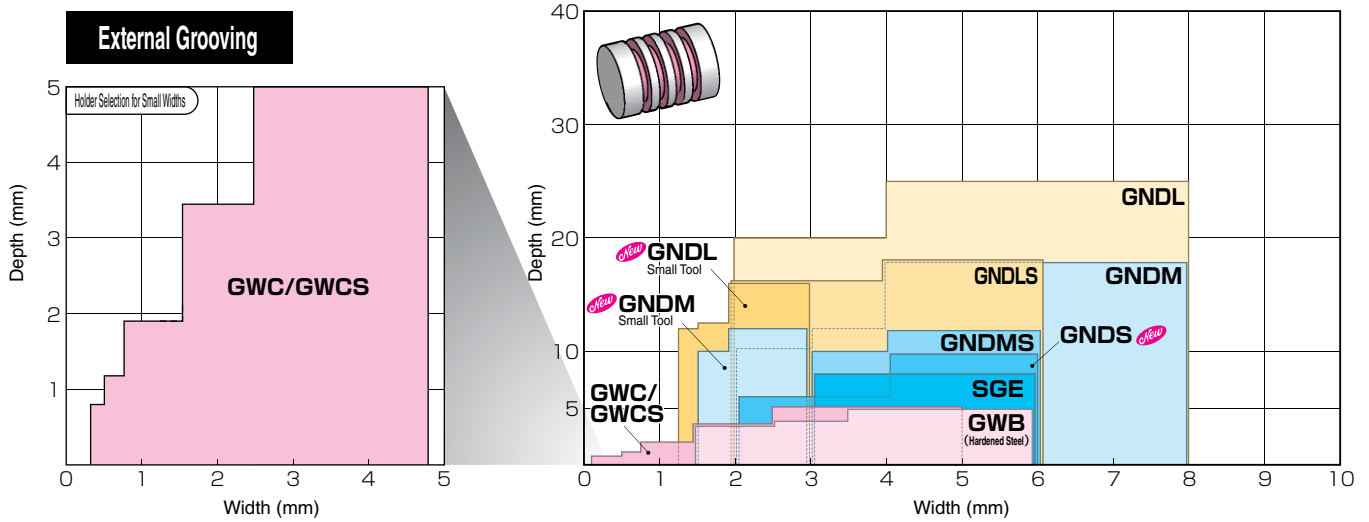
SEC-Internal Threading Tool Series Selection Guide	F48
Basics of Threads	F51
External Grooving / Internal Grooving	F52
External Grooving	F60
Internal Grooving	F65

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)

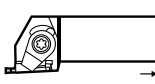

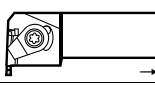
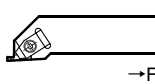

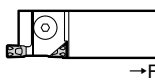

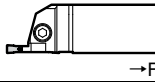

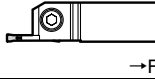
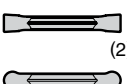
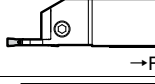




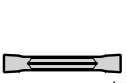
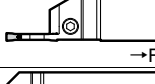
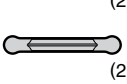
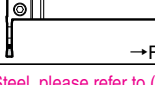

- * mark: Semi-standard stock (Please confirm stock availability)
- mark: Stock or planned stock (Please confirm stock availability)
- No mark: Made-to-order item
- mark: We cannot produce

SEC-Grooving Tool Series SELECTION GUIDE



EXTERNAL GROOVING TOOLS

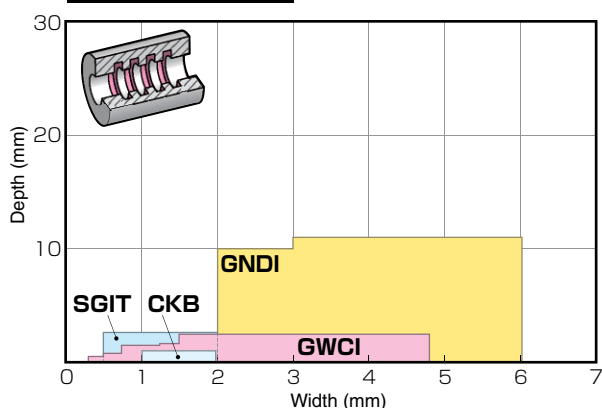
* For grooving depths and width combinations, refer to the above figures or the relevant page.

Application	Series	Shape	Structure			Insert Shape (): No. of corners	Depth* 10 20 30 40 (mm)					Characteristics
			Screw-on	Clamp-on	Double Clamp		Width* 2 4 6 8 10 (mm)					
Shallow Grooves	GWC				●		5.0	4.8				<ul style="list-style-type: none"> High rigidity double clamping (Inserts for GCE holders can be used) 3-cornered inserts Inserts with Chipbreaker are stocked
	GWCS				●	(3) (Standard, with Chipbreaker)	5.0	4.8				<ul style="list-style-type: none"> "L-styled" (side cut) GWC holder
	GWB Hardened Steel				●		5.0	6.0				<ul style="list-style-type: none"> High rigidity double clamping Employs coated SUMIBORON for interrupted cutting of hardened steel
General Grooves	SGE				●		8.0	6.0				<ul style="list-style-type: none"> Wide grooves possible
	GNDS NEW				●		10.0	6.0				<ul style="list-style-type: none"> High rigidity design reduces vibration Enables high-efficiency grooving and traversing thanks to its short tool overhang length
	GNDM Small Tool NEW				●		12.0	13.0				<ul style="list-style-type: none"> High rigidity design reduces vibration A 16mm square shank is available
	GNDM				●		18.0	8.0				<ul style="list-style-type: none"> High rigidity design reduces vibration Perfect for turning and copying
	GNDMS				●		23.0	6.0				<ul style="list-style-type: none"> "L-styled" (side cut) GNDM holder
Deep Grooves	GNDL Small Tool NEW				●		16.0	13.0				<ul style="list-style-type: none"> High rigidity design reduces vibration A 10mm, 12mm and 16mm square shank is available
	GNDL				●		25.0	8.0				<ul style="list-style-type: none"> High rigidity design reduces vibration Perfect for grooving, deep grooving and cut-off applications
	GNDLS				●		25.0	6.0				<ul style="list-style-type: none"> "L-styled" (side cut) GNDM holder

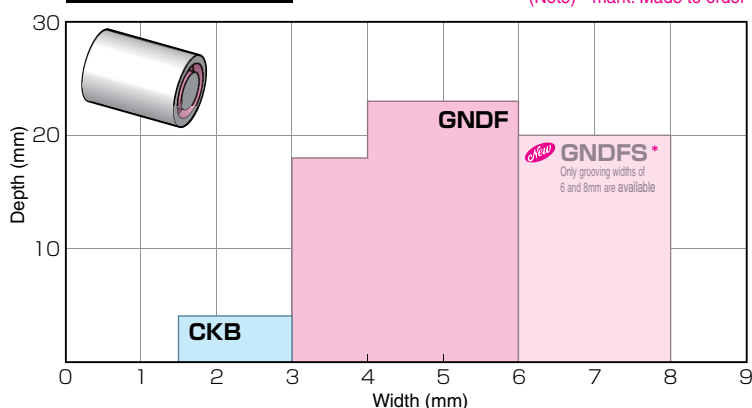
For Hardened Steel, please refer to (→F32) for SUMIBORON Grooving tools BNGG type

SEC-Grooving Tool Series SELECTION GUIDE

Internal Grooving



Face Grooving



INTERNAL GROOVING TOOLS

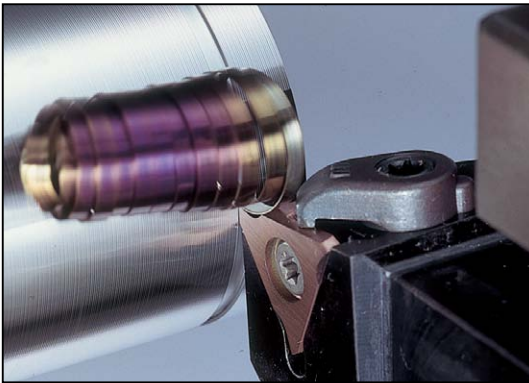
* For grooving depths and width combinations, refer to the above figures or the relevant page.

Application	Series	Shape	Structure			Insert Shape (): No. of corners	Depth* 10 20 30 (mm)				Min. Bore (mm)	Characteristics
			Screw-on	Clamp-on	Double Clamp		Width* 2 4 6 8 (mm)					
Small-Dia Grooves	CKB			●			1.0 1.0 2.0				φ 4	· Very small diameter grooving · High clamping force · Huge variety of holders
	SGIT			●			3.2 0.5 2.0				φ 10	· 3-cornered type
Shallow Grooves	GWCI			●			2.5 0.33 4.8				φ 35	· Using inserts for GWC holders · Inserts with Chipbreaker are stocked
General Deep Grooves	GNDI			●			11 2.0 6.0				φ 32	· High rigidity design reduces vibration

FACE GROOVING TOOLS

Note: * For grooving depths and width combinations, refer to the above figures or the relevant page.

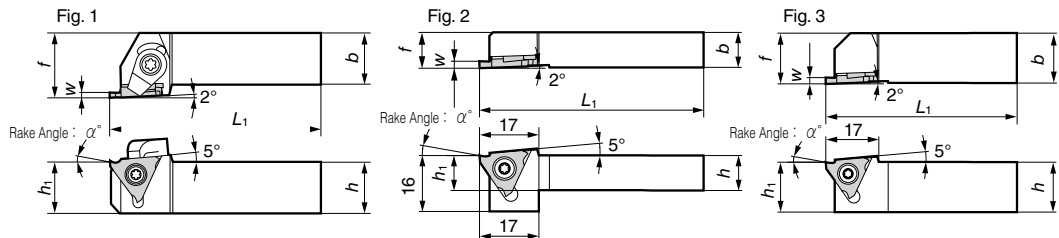
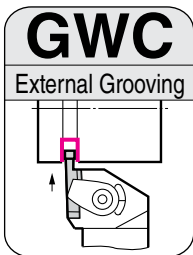
Application	Series	Shape	Structure			Insert Shape (): No. of corners	Depth* 10 20 30 (mm)				Work Dia. (mm)	Characteristics
			Screw-on	Clamp-on	Double Clamp		Width* 2 4 6 8 (mm)					
Very Small-Dia Grooves	CKB			●			4.0 1.5 3.0				From φ 6	· Face grooving for small lathes
General Deep Grooves	GNDF			●			23 3.0 6.0				φ 35 to φ 1,000	· High rigidity design reduces vibration
	GNDFS <small>(Made-to-order)</small>			●			20 6.0 8.0				From φ 70	· "L-styled" (side cut) holder · Wide Grooves



Characteristics of GWC Series

- Similar insert can be use for both external and internal grooving
- Full range of insert grades to cover a wide range of work materials available
Coated Carbide AC530U, Uncoated Carbide H1,
Coated Cermet T3000Z,
Cermet T1500A/T1200A,
SUMIBORON BN2000/BN250,
SUMIDIA DA2200.
- A wide variation of grooving widths from 0.33mm to 4.8mm
- Insert with Chipbreaker, **SumiTurn B-Groove**, are now stocked
- Customers can modify the grooving width, nose radius and rake angle according to their own requirements using the grooving insert blanks (* Sumitomo Electric Hardmetal also accepts special orders.)

External Shallow Grooves



Note 1: Refer to insert table on F5 for α° dimensions.
Note 2: Figures show right hand tools.

■ Spare Parts

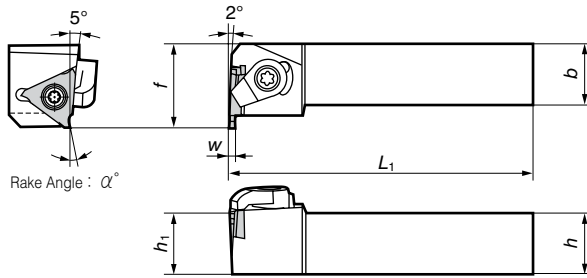
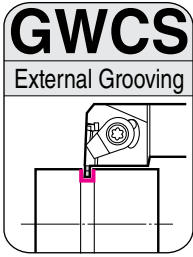
■ Holders

Right handed holders are applicable with right handed inserts.

Cat. No.	Stock		Dimensions (mm)					Fig.	Grooving Width (mm) w	Max. Grooving Depth (mm)	* Group No.	Spare Parts					
	R	L	h	b	L ₁	f	h ₁					Screw	Recommended Tightening Torque (N·m)	Spanner	Clamp	Double Screw	Spanner
GWC R/L1010-3	●	●	10	10	125	10	10	2	0.33 to 2.80	0.8 to 2.5	①						
GWC R/L1212-3	●	●	12	12	125	12	12	2	0.33 to 2.80	0.8 to 2.5	①	BFTX0409N	3.4	TRX15	—	—	—
GWC R/L1616-3	●	●	16	16	125	16	16	3	0.33 to 2.80	0.8 to 2.5	①						
GWC R/L2020-3	●	●	20	20	125	25	20	1	0.33 to 2.80	0.8 to 2.5	①						
GWC R/L2525-3	●	●	25	25	150	30	25	1	0.33 to 2.80	0.8 to 2.5	①	BFTX0409N	3.4	TRX15	CCM6B L/R	WB6-20T/TL	LT20
GWC R/L2020-15	●	●	20	20	125	25	20	1	1.00 to 1.45	2.0	②						
GWC R/L2020-25	●	●	20	20	125	25	20	1	1.50 to 2.30	3.5	③						
GWC R/L2020-35	●	●	20	20	125	25	20	1	2.50 to 4.80	5.0	④						
GWC R/L2525-15	●	●	25	25	150	30	25	1	1.00 to 1.45	2.0	②						
GWC R/L2525-25	●	●	25	25	150	30	25	1	1.50 to 2.30	3.5	③	BFTX0511N	5.0	TRX20	CCM8U L/R	WB8-22T/TL	LT27
GWC R/L2525-35	●	●	25	25	150	30	25	1	2.50 to 4.80	5.0	④						

* Refer to pages F6, F7, and F8 for applicable TGA type inserts. Select applicable inserts for the holders by using matching group numbers.

External L-Styled (Side Cut)



Note 1: Refer to insert table on this page for α° dimensions.
 Note 2: Figures show right hand tools.

■ Holders

Right handed holders are applicable with **left handed** inserts.

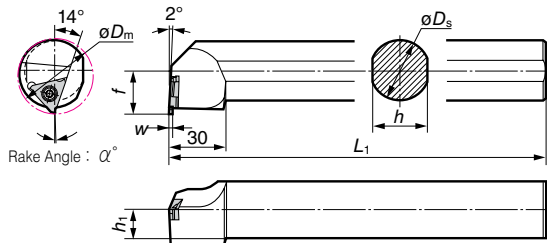
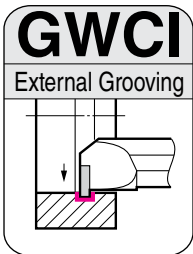
Cat. No.	Stock		Dimensions (mm)					Grooving Width (mm)	Max. Grooving Depth (mm)	* Group No.
	R	L	<i>h</i>	<i>b</i>	<i>L</i> ₁	<i>f</i>	<i>h</i> ₁	<i>w</i>		
GWCS R/L2020-3	●	●	20	20	125	25	20	0.33 to 2.80	0.8 to 2.5	①
GWCS R/L2525-3	●	●	25	25	150	30	25	0.33 to 2.80	0.8 to 2.5	①
GWCS R/L2020-15	●	●	20	20	125	27	20	1.00 to 1.45	2.0	②
GWCS R/L2020-25	●	●	20	20	125	27	20	1.50 to 2.30	3.5	③
GWCS R/L2020-35	●	●	20	20	125	27	20	2.50 to 4.80	5.0	④
GWCS R/L2525-15	●	●	25	25	150	32	25	1.00 to 1.45	2.0	②
GWCS R/L2525-25	●	●	25	25	150	32	25	1.50 to 2.30	3.5	③
GWCS R/L2525-35	●	●	25	25	150	32	25	2.50 to 4.80	5.0	④

* Refer to pages F6, F7, and F8 for TGA type inserts applicable with the GWCS holder.
 Select applicable inserts for the holders by using matching group numbers.

■ Spare Parts

Screw	Recommended Tightening Torque (N·m)	Spanner	Clamp	Double Screw	Spanner
BFTX0409N	3.4	TRX15	CCM6BR/L	WB6-20TL/T	LT20
BFTX0511N	5.0	TRX20	CCM8UR/L	WB8-22TL/T	LT27

Internal Grooving



Note 1: Refer to insert table on this page for α° dimensions.
 Note 2: Figures show right hand tools.

■ Holders

Right handed holders are applicable with **left handed** inserts.

Cat. No.	Stock		Dimensions (mm)					Min. Bore	Grooving Width (mm)	Max. Grooving Depth (mm)	* Group No.
	R	L	<i>h</i>	<i>b</i>	<i>L</i> ₁	<i>f</i>	<i>h</i> ₁	<i>øD</i> _m	<i>w</i>		
GWCI R/L325	●	●	25	23	220	17.5	11.5	35	0.33 to 2.80	0.5 to 2.0	①
GWCI R/L432	●	●	32	30	250	23.0	15.0	40	1.25 to 4.80	1.7 to 2.5	②③④

* Refer to pages F6, F7, and F8 for TGA type inserts applicable with the GWCI holder.
 Select applicable inserts for the holders by using matching group numbers.

■ Spare Parts

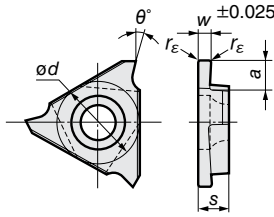
Screw	Recommended Tightening Torque (N·m)	Spanner
BFTX0409N	3.4	TRX15
BFTX0511N	5.0	TRX20

● Rake Angle when Fitted on Holder (α°)

	Coated Carbide	Carbide	Coated Cermet	Cermet		SUMIBORON		SUMIDIA
	AC530U	H1	T3000Z	T1500A	T1200A	BN2000	BN250	DA2200
Ext. Grooving GWC GWCS	10°	20°	10°	5°	5°	0°	0°	10°
Int. Grooving GWCI	1°	11°	1°	- 4°	- 4°	- 9°	- 9°	1°

TGA Type

Insert



Above figures show right hand tools.

Grade		Cutting Edge	θ°
Coated Carbide	AC530U	Honing	15°
Carbide	H1	Sharp	25°
Coated Cermet	T3000Z	Honing	15°
Cermet	T1500A	Sharp	10°
	T1200A	Sharp	10°
SUMIBORON	BN2000	Negative Land	5°
	BN250	Negative Land	5°
SUMIDIA	DA2200	Sharp	15°

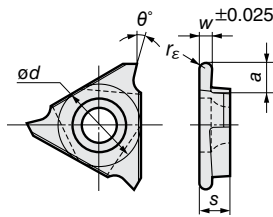
* For rake angle when fitted on the holder, refer to page F5.

Cat. No. <small>(Add E to the end of the Cat. No. for T1500A and T1200A grades)</small>	Coated Carbide		Carbide		Coated Cermet		Cermet				SUMIBORON		SUMIDIA	Grooving Width (mm) w	Max. Grooving Depth (mm)		Dimensions (mm)			* Group No.		
	AC530U	H1	T3000Z	T1500A	T1200A	BN2000	BN250	DA2200	W	External	Internal	a	re		od	s						
	R	L	R	L	R	L	R	L	R	L	R	L	R	L	W	External	Internal	a	re		od	s
TGA R/L3033(E)	●	●	●	●	●	●	●	●	▲	▲	—	—	—	—	0.33	0.8	0.5	1.0	0.05	9.525	3.18	①
TGA R/L3050(E)	●	●	●	●	●	●	●	●	▲	▲	—	—	—	—	0.50	1.2	0.8	1.4				
TGA R/L3075(E)	●	●	●	●	●	●	●	●	▲	▲	—	—	—	—	0.75	2.0	1.5	2.5	0.1 0.2 for T1500A/ T1200A	9.525	3.18	①
TGA R/L3095(E)	●	●	●	●	●	●	●	●	▲	▲	—	—	—	—	0.95							
TGA R/L3100(E)	●	●	●	●	●	●	●	●	▲	▲	—	—	—	—	1.00							
TGA R/L3110(E)	●	●	●	●	●	●	●	●	▲	▲	—	—	—	—	1.10							
TGA R/L3125(E)	●	●	●	●	●	●	●	●	▲	▲	—	—	—	—	1.25							
TGA R/L3135(E)	●	●	●	●	●	●	●	●	▲	▲	—	—	—	—	1.35							
TGA R/L3145(E)	●	●	●	●	●	●	●	●	▲	▲	—	—	—	—	1.45							
TGA R/L3150(E)	●	●	●	●	●	●	●	●	▲	▲	—	—	—	—	1.50							
TGA R/L3165(E)	●	●	●	●	●	●	●	●	▲	▲	—	—	—	—	1.65							
TGA R/L3175(E)	●	●	●	●	●	●	●	●	▲	▲	—	—	—	—	1.75							
TGA R/L3185(E)	●	●	●	●	●	●	●	●	▲	▲	—	—	—	—	1.85							
TGA R/L3200(E)	●	●	●	●	●	●	●	●	▲	▲	—	—	—	—	2.00	2.5	2.0	3.0	0.1 0.2 for T1500A/ T1200A	9.525	3.18	①
TGA R/L3220(E)	●	●	●	●	●	●	●	●	▲	▲	—	—	—	—	2.20							
TGA R/L3230(E)	●	●	●	●	●	●	●	●	▲	▲	—	—	—	—	2.30							
TGA R/L3250(E)	●	●	●	●	●	●	●	●	▲	▲	—	—	—	—	2.50							
TGA R/L3265(E)	●	●	●	●	●	●	●	●	▲	▲	—	—	—	—	2.65							
TGA R/L3270(E)	●	●	●	●	●	●	●	●	▲	▲	—	—	—	—	2.70							
TGA R/L3280(E)	●	●	●	●	●	●	●	●	▲	▲	—	—	—	—	2.80							
TGA R/L4125(E)	●	●	●	●	●	●	●	●	▲	▲	●	▲	●	—	1.25	2.0	1.7	2.5	0.2 *2	12.70	4.76	②
TGA R/L4145(E)	●	●	●	●	●	●	●	●	▲	▲	—	—	—	—	1.45							
TGA R/L4150(E)	●	●	●	●	●	●	●	●	▲	▲	●	▲	●	—	1.50	3.5	2.5	3.9	0.2 *2	12.70	4.76	③
TGA R/L4165(E)	●	●	●	●	●	●	●	●	▲	▲	—	—	—	—	1.65							
TGA R/L4175(E)	●	●	●	●	●	●	●	●	▲	▲	—	—	—	—	1.75							
TGA R/L4185(E)	●	●	●	●	●	●	●	●	▲	▲	—	—	—	—	1.85							
TGA R/L4200(E)	●	●	●	●	●	●	●	●	▲	▲	●	▲	●	—	2.00							
TGA R/L4220(E)	●	●	●	●	●	●	●	●	▲	▲	—	—	—	—	2.20							
TGA R/L4230(E)	●	●	●	●	●	●	●	●	▲	▲	—	—	—	—	2.30							
TGA R/L4250(E)	●	●	●	●	●	●	●	●	▲	▲	●	▲	●	—	2.50	5.0 *1	2.5	5.4 *1	0.3 *2	12.70	4.76	④
TGA R/L4265(E)	●	●	●	●	●	●	●	●	▲	▲	—	—	—	—	2.65							
TGA R/L4270(E)	●	●	●	●	●	●	●	●	▲	▲	—	—	—	—	2.70							
TGA R/L4280(E)	●	●	●	●	●	●	●	●	▲	▲	—	—	—	—	2.80							
TGA R/L4300(E)	●	●	●	●	●	●	●	●	▲	▲	●	▲	●	—	3.00							
TGA R/L4320(E)	●	●	●	●	●	●	●	●	▲	▲	—	—	—	—	3.20							
TGA R/L4330(E)	●	●	●	●	●	●	●	●	▲	▲	—	—	—	—	3.30							
TGA R/L4350(E)	●	●	●	●	●	●	●	●	▲	▲	●	▲	●	—	3.50							
TGA R/L4370(E)	●	●	●	●	●	●	●	●	▲	▲	—	—	—	—	3.70							
TGA R/L4390(E)	●	●	●	●	●	●	●	●	▲	▲	—	—	—	—	3.90							
TGA R/L4400(E)	●	●	●	●	●	●	●	●	▲	▲	●	▲	●	—	4.00	5.0	2.5	5.4	0.4 *2	12.70	4.76	④
TGA R/L4410(E)	●	●	●	●	●	●	●	●	▲	▲	—	—	—	—	4.10							
TGA R/L4420(E)	●	●	●	●	●	●	●	●	▲	▲	—	—	—	—	4.20							
TGA R/L4430(E)	●	●	●	●	●	●	●	●	▲	▲	—	—	—	—	4.30							
TGA R/L4440(E)	●	●	●	●	●	●	●	●	▲	▲	—	—	—	—	4.40							
TGA R/L4450(E)	●	●	●	●	●	●	●	●	▲	▲	—	—	—	—	4.50							
TGA R/L4480(E)	●	●	●	●	●	●	●	●	▲	▲	—	—	—	—	4.80							

* Refer to pages F4, F5 for applicable holders GWC, GWCS and GWCI types. Select applicable inserts for the holders by using matching group numbers.

* 1: SUMIBORON, SUMIDIA is a = 4.4 (4.0)
* 2: SUMIBORON is re = 0.2, SUMIDIA is re = 0.1

Insert



Above figures show right hand tools.

Grade	Cutting Edge	θ°	
Coated Carbide	AC530U	Honing	15°
Carbide	H1	Sharp	25°
Coated Cermet	T3000Z	Honing	15°
SUMIBORON	BN2000	Negative Land	5°
SUMIDIA	DA2200	Sharp	15°

* For rake angle when fitted on the holder, refer to page F5.

Cat. No.	Coated Carbide		Carbide		Coated Cermet		SUMIBORON		SUMIDIA		Grooving Width (mm)	Max. Grooving Depth (mm)		Dimensions (mm)				* Group No.
	AC530U		H1		T3000Z		BN2000		DA2200			External	Internal	a	r _ε	ød	s	
	R	L	R	L	R	L	R	L	R	L								
TGA R/L4050R	●	●	●	●	●						1.00	2.0	1.7	2.5	0.50	12.70	4.76	②
TGA R/L4075R	●	●	●	●	●						1.50	3.5	2.5	3.9	0.75			
TGA R/L4100R	●	●	●	●	●						2.00			5.0 * 1	2.5			5.4 * 1
TGA R/L4125R	●	●	●	●	●						2.50	5.4 * 1	2.5					5.4 * 1
TGA R/L4150R	●	●	●	●	●						3.00			5.4 * 1	2.5			5.4 * 1
TGA R/L4200R	●	●	●	●	●						4.00	5.4 * 1	2.5					5.4 * 1

* Refer to pages F4, F5 for applicable holders GWC, GWCS and GWCI types. Select applicable inserts for the holders by using matching group numbers.

* 1: SUMIBORON, SUMIDIA is a = 4.4 (4.0) Max. grooving depth 4.0 (Boring bars 2.5)

Recommended Cutting Conditions

Work Material	P General Steel			M Stainless Steel			N Non-Ferrous Metal		H Hardened Steel
Grade	AC530U	T3000Z	T1500A/T1200A	AC530U	T3000Z	T1500A/T1200A	H1	DA2200	BN2000/BN250
Cutting Speed v _c (m/min)	50 to 200	100 to 180	100 to 180	50 to 200	80 to 150	80 to 120	200 to 300	200 to 300	80 to 120
Feed Rate f (mm/rev)	0.02 to 0.10	0.05 to 0.10	0.05 to 0.08	0.02 to 0.10	0.05 to 0.08	0.05 to 0.08	0.05 to 0.15	0.05 to 0.15	0.03 to 0.07

Ordering Special TGA Type Inserts

Use the "Special Insert Request Form" on page F9 when ordering special inserts (with different shapes, grooving widths, and cutting edge lengths). Make a copy of the form, fill it out, and send it to a Sumitomo Electric Hardmetal dealer or distributor.

Insert Blanks

(Uncompleted inserts: Grooving width, nose radius and rake angle modification required)

Fig. 1

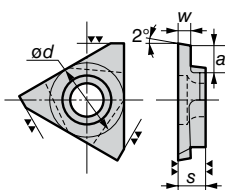
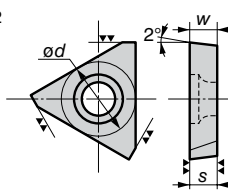


Fig. 2



Above figures show right hand tools.

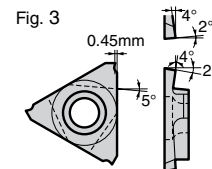
Cat. No.	Carbide				Cermet				Dimensions (mm)				Fig.		
	KH03		H1		EH510		T1500A		T1200A		w	a		ød	s
	R	L	R	L	R	L	R	L	R	L					
TGA R/L3-T18	●	●	●	●	●	●	●	●	▲	▲	1.85	(3.4)	9.525	3.18	1
TGA R/L3-T23	●	●	●	●	●	●	●	●	▲	▲	2.35	(3.4)	9.525	3.18	1
TGA R/L3-T31	●	●	●	●	●	●	●	●	▲	▲	3.18	—	9.525	3.18	2
TGA R/L4-T22	●	●	●	●	●	●	●	●	▲	▲	2.20	(4.8)	12.70	4.76	1
TGA R/L4-T37	●	●	●	●	●	●	●	●	▲	▲	3.75	(6.2)	12.70	4.76	1
TGA R/L4-T47	●	●	●	●	●	●	●	●	▲	▲	4.76	—	12.70	4.76	2

Note: Figures in parentheses are reference values.

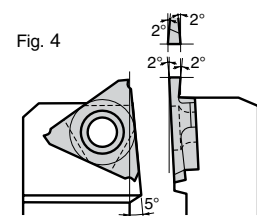
Precautions When Modifying Inserts

When modifying the rake face, please refer to the dimensions in Fig. 3. Dimensions shown in Fig. 4 is when the insert is mounted on the holder.

Recommended Modification



Mounted Insert Dimensions



* Sumitomo Electric Hardmetal also accepts special orders. Use the "Special Insert Request Form" on page F9 when ordering.

▲ mark : To be replaced by new item (Please confirm stock availability)

SumiTurn B-Groove



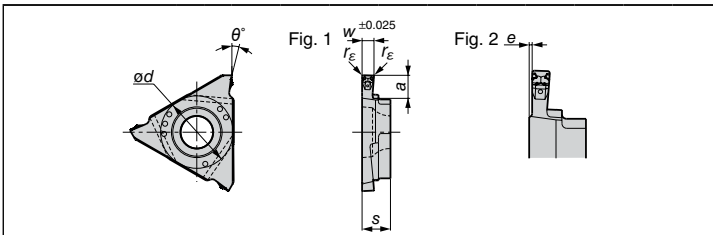
General Features

To solve chip control problems, grooving inserts with **SumiTurn B-Groove (BF Type)** chipbreakers have been added to the TGA Type insert line-up.

Characteristics

- Achieving good chip control in a wide range of grooving processes.
- Good chip control during final wide groove touch-up with traverse tool movement.
- A selection of 14 models for snap ring applications are available in edge widths from 1.4 to 4.5 mm for a total of 60 models.
- The **AC530U** grade with Super ZX Coat for a longer tool life, is now available to cover various work materials from Steel, Stainless Steel to Non-ferrous metals.

Chipbreaker Insert for Square Grooves BF Type



Grade	Cutting Edge	θ°
Coated Carbide	AC530U	Honing
		15°

* For rake angle when fitted on the holder, refer to page F5.

Note 1: Please note that cutting edge dimension e differs, for grooving widths below 1.85mm.

Note 2: Figures show right hand tools.



Cat. No.	Coated Carbide		Grooving Width (mm)	Max. Grooving Depth (mm)		Dimensions (mm)					Fig.	* Group No.
	AC530U			External	Internal	a	r_ϵ	ϕd	s	e		
	R	L										
TGA R/L4140BF01	●	●	1.40	2.0	1.7	2.5	0.1	12.70	4.76	0.300	2	②
TGA R/L4165BF01	●	●	1.65	3.5	2.5	3.9	0.1	12.70	4.76	0.175	2	③
TGA R/L4190BF01	●	●	1.90									
TGA R/L4220BF01	●	●	2.20									
TGA R/L4270BF02	●	●	2.70	5.0	2.5	5.4	0.2	12.70	4.76	0	1	④
TGA R/L4320BF02	●	●	3.20									
TGA R/L4420BF02	●	●	4.20									
TGA R/L4150BF	●	●	1.50	3.5	2.5	3.9	0.2	12.70	4.76	0.250	2	③
TGA R/L4165BF	●	●	1.65							0.175		
TGA R/L4175BF	●	●	1.75							0.125		
TGA R/L4185BF	●	●	1.85							0.075		
TGA R/L4200BF	●	●	2.00							0	1	
TGA R/L4220BF	●	●	2.20									
TGA R/L4230BF	●	●	2.30									
TGA R/L4250BF	●	●	2.50									
TGA R/L4265BF	●	●	2.65									
TGA R/L4270BF	●	●	2.70									
TGA R/L4280BF	●	●	2.80	5.0	2.5	5.4	0.3	12.70	4.76	0	1	④
TGA R/L4300BF	●	●	3.00									
TGA R/L4320BF	●	●	3.20									
TGA R/L4330BF	●	●	3.30									
TGA R/L4350BF	●	●	3.50									
TGA R/L4370BF	●	●	3.70									
TGA R/L4390BF	●	●	3.90									
TGA R/L4400BF	●	●	4.00									
TGA R/L4410BF	●	●	4.10									
TGA R/L4420BF	●	●	4.20									
TGA R/L4430BF	●	●	4.30	0.4								
TGA R/L4440BF	●	●	4.40									
TGA R/L4450BF	●	●	4.50									

Recommended Cutting Conditions

Work Material	Process	Cutting Conditions	Grooving Widths w (mm)			
			1.4 to 2.3	2.5 to 3.3	3.5 to 4.5	
P General Steel	Cutting	Cutting Speed v_c (m/min)	50 to 180	50 to 180	50 to 180	
		Feed Rate f (mm/rev)	0.03 to 0.12	0.04 to 0.12	0.05 to 0.12	
	Grooving	Depth of Cut a_p (mm)	External Diameter	UP to 3.5	UP to 5.0	UP to 5.0
			Internal Diameter	UP to 2.5	UP to 2.5	UP to 2.5
	Turning	Feed Rate f (mm/rev)	0.03~0.10	0.05~0.10	0.07~0.12	
		Depth of Cut a_p (mm)	UP to 0.3	UP to 0.5	UP to 0.7	
M Stainless Steel	Cutting	Cutting Speed v_c (m/min)	50 to 160	50 to 160	50 to 160	
		Feed Rate f (mm/rev)	0.03 to 0.12	0.04 to 0.12	0.05 to 0.12	
	Grooving	Depth of Cut a_p (mm)	External Diameter	UP to 3.5	UP to 5.0	UP to 5.0
			Internal Diameter	UP to 2.5	UP to 2.5	UP to 2.5
	Turning	Feed Rate f (mm/rev)	0.03 to 0.10	0.05 to 0.10	0.07 to 0.12	
		Depth of Cut a_p (mm)	UP to 0.3	UP to 0.5	UP to 0.7	

* Refer to pages F4, F5 for applicable holders GWC, GWCS and GWCI types. Select applicable inserts for the holders by using matching group numbers.



This form is applicable to Japan domestic market only

This form applies to the GWC Type (page F4), GWCS Type (page F5), GWCI Type (page F5) inserts.

To order special grooving inserts, fill out the form below (indicate preference by circling the item, or specify dimensions), and send it to a Sumitomo Electric Hardmetal dealer or distributor. (Make a copy of this form.)

For grooving inserts in a different shape, groove width, cutting edge length, or grade not listed below, contact your nearest Sumitomo Electric Hardmetal dealer or distributor.

Your Company/Contact Information (Phone/Fax/Address, etc.)

Type	①	②	③	④
Shape				
Uses	Internal Grooving, External Grooving			
Holders	GWC Type (page F4), GWCS Type (page F5), GWCI Type (page F5)			
Direction	Right-hand (R), Left-hand (L)			
Insert Size	"3" · · · ø9.525 "4" · · · ø12.70			
w				
a _r				
C ₁				
C ₂				
e				
r _{E1}				
r _{E2}				
θ ₁				
θ ₂				
Grades				
Quantity				
Remarks				

Form instructions

- The above illustration shows only external right-hand and internal left-hand inserts. (The inserts for an external left-hand and internal right-hand will be opposite the above illustration.)
- Two insert sizes are available.
 - 3 : Inscribed circle 9.525mm
 - 4 : Inscribed circle 12.70mm
- Dimension limits for groove width and groove depth.
 - (1) Max. groove width (w) : 4.8mm
 - Type ① and ④ w ≤ 4.8 (SumiTurn and B-Groove (BF Type): 4.5 mm)
 - Type ② : w + C₁ ≤ 4.8 (SumiTurn and B-Groove (BF Type): 4.5 mm)
 - Type ③ : w + S (or C₁) + C₂ ≤ 4.8 (SumiTurn and B-Groove (BF Type): 4.5 mm)
 - (2) Min. groove width (w) · Insert size 3 : w ≥ 0.33mm
 - Insert size 4 : w ≥ 0.75mm
 - (3) Depth (a_r)
 - Insert size 3 : a_r ≤ 0.8 to a_r ≤ 2.5mm (Internal grooving : a_r ≤ 0.8 to a_r ≤ 2.0)
 - Insert size 4 : a_r ≤ 2.0 to a_r ≤ 5.0mm (Internal grooving : a_r ≤ 2.0 to a_r ≤ 2.5)
- SumiTurn B-Groove inserts with chipbreaker are limited to insert size 4 and the AC530U grade. For shape details, please contact us directly.

- Standard tolerance for inserts.

Symbol	Standard Tolerance
w	±0.025mm
a _r	±0.05mm
θ ₁ 、θ ₂	±1°

Unless otherwise specified, inserts are made to standard tolerances.

- Grades are based on the catalogue number in stock.
- The applicable toolholders for Type ①, ②, and ④ should match dimension w. Contact us for Type ③.



Characteristics

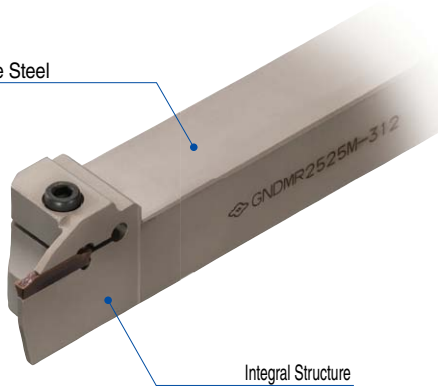
- **Wide range of application processes**
Applicable for grooving, turning, copying, facing, and boring
- **Achieving stable tool life**
An array of chipbreakers improves the efficiency in chip control in various applications, and prevents unexpected damages caused by chip blockage
- **Achieving reduced chattering and high efficiency machining**
Holders utilizing one-piece body construction made with special steel, reduces vibration during machining by 30% as compared to conventional models
- **Achieving high precision grooving widths with moulded inserts**
High precision sintering technology achieves an edge width tolerance of $\pm 0.03\text{mm}$ over a range of edge widths from 1.25 to 6.0mm

Performance

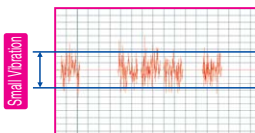
Reduces Chattering

Reduces vibration by up to 30% compared to conventional grades thanks to its high-rigidity design.

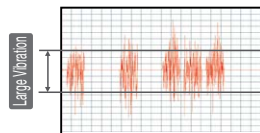
Employs Die Steel



Integral Structure



GND Type



Conventional Grade(Unit Type)

Ensures Both High Rigidity and Good Chip Evacuation Performance Internal

Wide Pocket Improves Chip Evacuation Performance

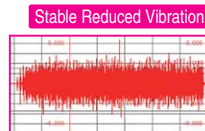


Employs Die Steel

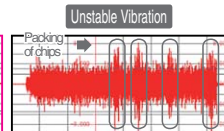
Integral Structure

Oil-hole ② Improved Chip Evacuation

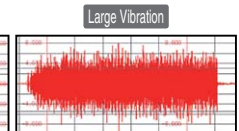
Oil-hole ① Coolant Sprayed Directly onto Rake Face of Cutting Edge



GND Type



Comp. A



Comp. B

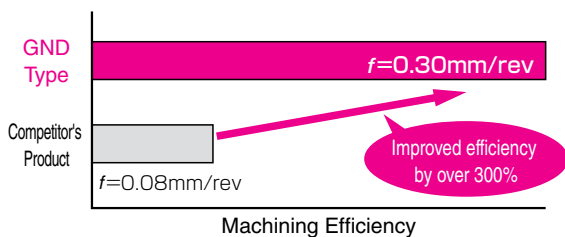
Work Material : SCM415
Holder : GNDL R2525M-220 Insert : GCM N2002-GG
Cutting Conditions : $v_c=100\text{m/min}$ $f=0.10\text{mm/rev}$ $a_p=20.0\text{mm}$, Wet

Work Material : SCM415
Holder : GNDI R2532-T306 Insert : GCM N3002-GG
Cutting Conditions : $v_c=100\text{m/min}$ $f=0.05\text{mm/rev}$ $a_p=3.0\text{mm}$, Wet

Application Examples

Substantially improved machining efficiency!!

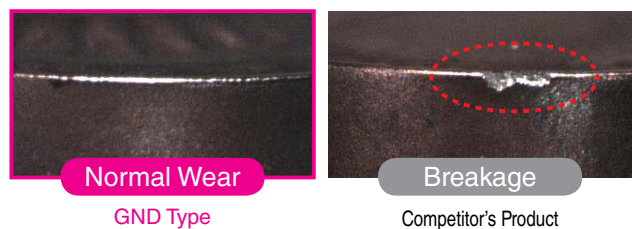
High rigidity holder enables high load machining at high feed rate.



Work Material : SCM435
Holder : GNDL R2525M-320 Insert : GCM N3002-GG (AC530U)
Cutting Conditions : $v_c=130\text{m/min}$ $f=0.30\text{mm/rev}$ Wet

Stable and long tool life ensures reliable functionality even on automatic production lines!!

Reduction of chattering prevents unexpected breakage.



Normal Wear

GND Type

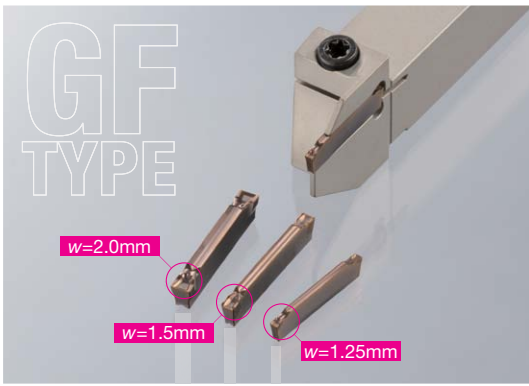
Breakage

Competitor's Product

Work Material : S53C
Holder : GNDM L2525M-618 Insert : GCM N6030-RG (AC530U)
Cutting Conditions : $v_c=130\text{m/min}$ $f=0.3\text{mm/rev}$ Wet

New

SEC-Grooving Tools
GND Type

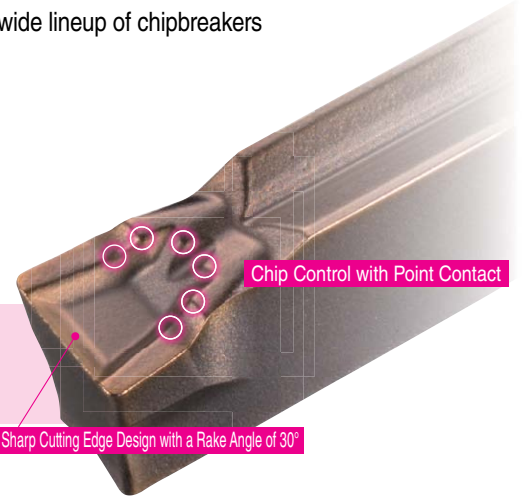


- Items for GND Type Small Lathes Expanded
 - **The lineup includes grooving widths of 1.25, 1.5, 2.0, and 3.0mm**
 - **Reduces chattering and achieves high-efficiency machining**
Reduces vibration during grooving while inheriting the high holder rigidity of the GND Type
 - **Reduces chip control problems**
To improve chip control under various conditions, we have newly added the GF Type to our wide lineup of chipbreakers

■ Low Cutting Resistance Chipbreaker GF Type

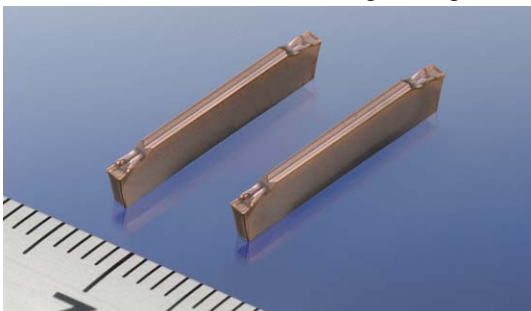
- Reduces chattering during cutting
- Ideal for machining using low-powered equipment such as small lathes
- Reduces adhesion to tools and achieves long tool life in machining of stainless steel, etc.

Achieves excellent chip control and reduced cutting resistance thanks to the sharp cutting edge design with a rake angle of 30° as well as the reduction of frictional resistance through chip control with point contact.



■ Min. groove width 1.25mm

Effective for reduction of material costs and for reduction of vibration during cutting off.



Work Material : SCM415 ϕ 22mm
Holder : GNDL R1212JX-1.2512
Insert : GCM N125005-GF (AC530U)
Cutting Conditions : $n=2000\text{min}^{-1}$ $f=0.03\text{mm/rev}$ Wet

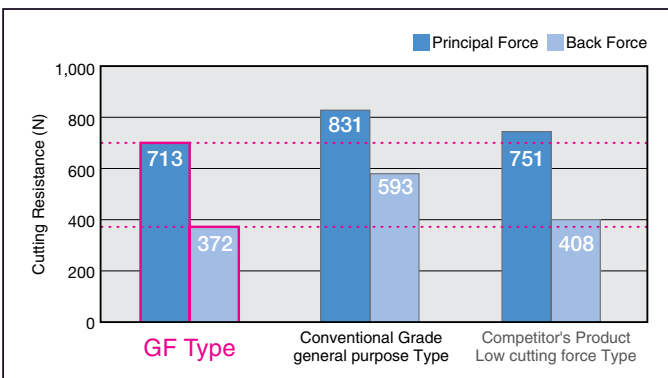
Provides Excellent Surface Finish and Chip Control



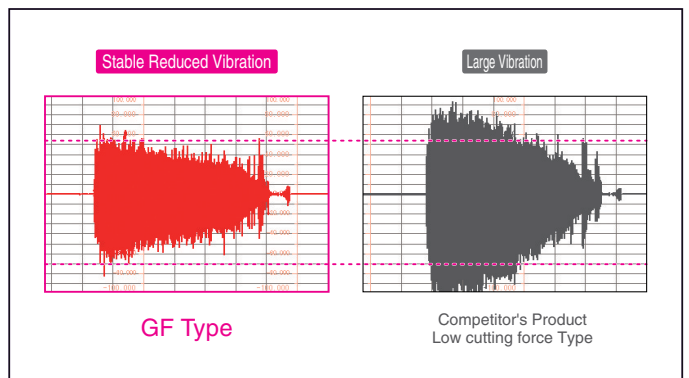
GND Type (GF Type)

Competitor's Product

■ Application Examples



Work Material : S45C ϕ 30mm Cut-off applications
Holder : GNDL R2525M-320 Insert : GCM N3002-GF (AC530U)
Cutting Conditions : $v_c=80\text{m/min}$ $f=0.10\text{mm/rev}$ Wet



Work Material : SUS316 ϕ 30mm Cut-off applications
Holder : GNDL R2525M-320 Insert : GCM N3002-GF (AC530U)
Cutting Conditions : $v_c=80\text{m/min}$ $f=0.10\text{mm/rev}$ Wet

■ Achieving stability and longer tool life... A variety of chipbreakers ensure outstanding chip control performance in many different types of applications.


Grooving/Turning			Grooving/Cut-Off			Copying			
General Purpose Type	Low Feed Type	General Purpose Type	Low Feed Type	Low cutting force Type	Cut-Off Type	General Purpose Type			
Standard insert for turning	For low-feed chip management	First choice for grooving	For low-feed chip management	Applicable to ultra-thin grooving	Ideal for cut-off applications	Perfect for copying			
MG Type	ML Type	GG Type	GL Type	GF Type <i>New</i>	CG Type	RG Type			
Cross Section of Cutting Edge	Cross Section of Cutting Edge	Cross Section of Cutting Edge	Cross Section of Cutting Edge	Cross Section of Cutting Edge	Cross Section of Cutting Edge	Cross Section of Cutting Edge			
Grooving Widths in Stock (mm)	Grooving Widths in Stock (mm)	Grooving Widths in Stock (mm)	Grooving Widths in Stock (mm)	Grooving Widths in Stock (mm)	Grooving Widths in Stock (mm)	Grooving Widths in Stock (mm)			
1.25 1.5 2.0	1.25 1.5 2.0	1.25 1.5 2.0	1.25 1.5 2.0	1.25* 1.5* 2.0*	1.25 1.5 2.0	1.25 1.5 2.0			
3.0 4.0 5.0	3.0 4.0 5.0	3.0 4.0 5.0	3.0 4.0 5.0	3.0 4.0 5.0	3.0 4.0 5.0	3.0 4.0 5.0			
6.0 7.0 8.0	6.0 7.0 8.0	6.0 7.0 8.0	6.0 7.0 8.0	6.0 7.0 8.0	6.0 7.0 8.0	6.0 7.0 8.0			
				* Only AC530U is in stock.		All the CG type products are handed.			
Stock	Stock	Stock	Stock	Stock	Stock	Stock			
AC830P AC425K	AC830P AC425K	AC830P AC425K	AC830P AC425K	AC830P AC425K	AC830P AC425K	AC830P AC425K			
AC520U AC530U	AC520U AC530U	AC520U AC530U	AC520U AC530U	AC520U AC530U	AC520U AC530U	AC520U AC530U			

Recommended Cutting Conditions

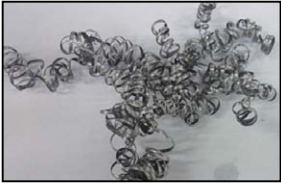
Work Material	P Carbon Steel, Alloy Steel			M Stainless Steel			K Cast Iron			S Exotic Alloy	
Grade	AC830P	AC520U	AC530U	AC830P	AC520U	AC530U	AC425K	AC520U	AC530U	AC520U	AC530U
Cutting Speed v_c (m/min)	80 to 200	80 to 200	50 to 200	70 to 150	70 to 150	50 to 150	80 to 200	60 to 200	50 to 200	20 to 80	20 to 60

Improved chip control

Grooving



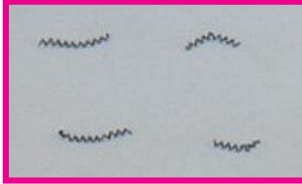
GND Type (GG Type Chipbreaker)




Conventional Grade

Work Material: SCM415
 Holder: GNDL R2525M-320 Insert: GCM N3002-GG
 Cutting Conditions: $v_c=100$ m/min $f=0.15$ mm/rev $a_p=12.0$ mm Wet

Traversing




GND Type (ML Type Chipbreaker)




Conventional Grade

Work Material: SCM415
 Holder: GNDM R2525M-312 Insert: GCM N3002-ML
 Cutting Conditions: $v_c=100$ m/min $f=0.10$ mm/rev $a_p=0.5$ mm Wet

Cut-Off Application




GND Type (CG Type Chipbreaker)




Competitor's Product

Work Material: SUS316($\phi 30$ mm)
 Holder: GNDL R2525M-220 Insert: GCM R2002-CG-05
 Cutting Conditions: $v_c=100$ m/min $f=0.15$ mm/rev Wet

Copying



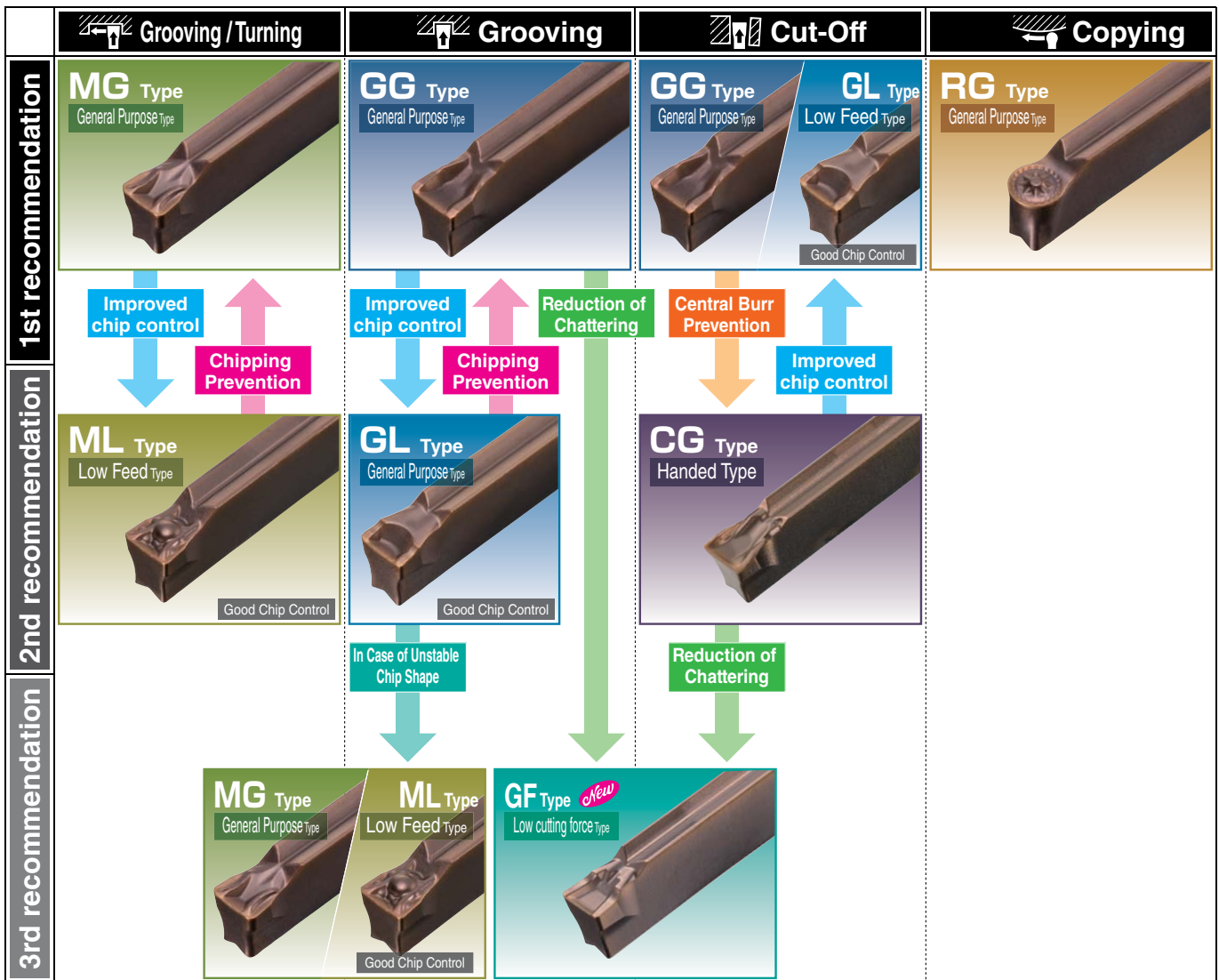
GND Type (RG Type Chipbreaker)



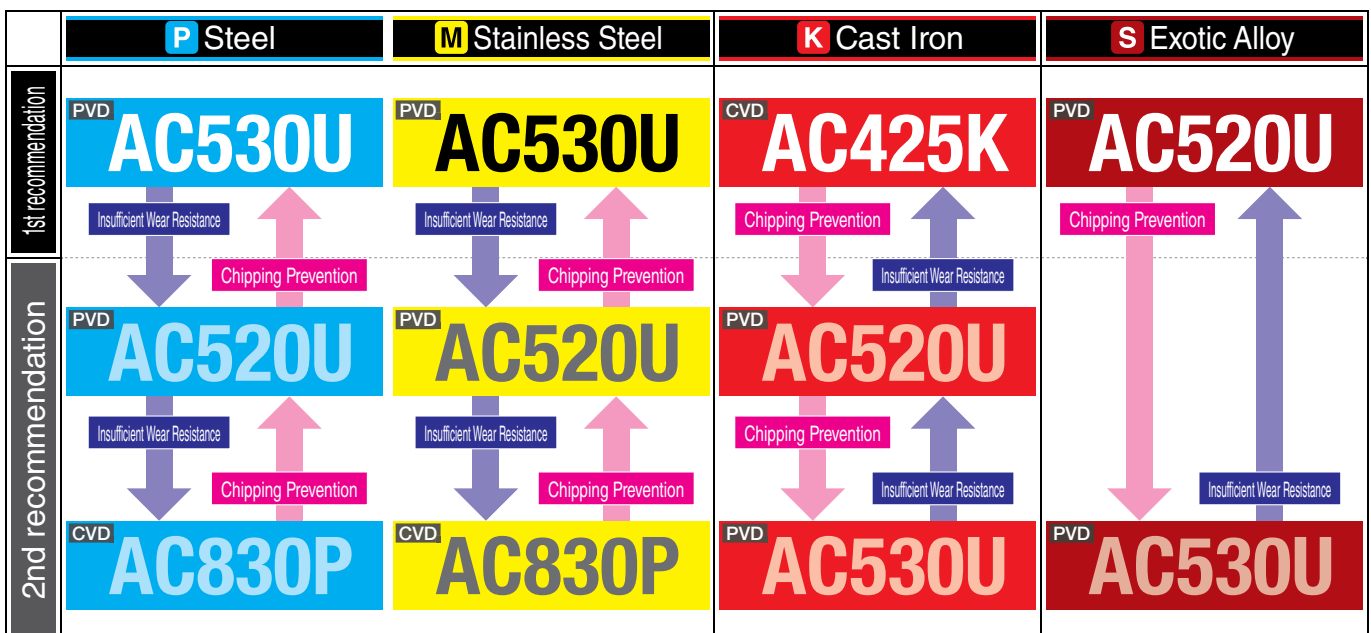
Conventional Grade

Work Material: SCM415
 Holder: GNDM R2525M-312 Insert: GCM N3015-RG
 Cutting Conditions: $v_c=100$ m/min $f=0.15$ mm/rev $a_p=0.1$ mm Wet

■ Chipbreaker Selection



■ Grade Selection



For External Machining

Turning / Copying

Grooving / Cut-Off

GNDM Type (Small Tools) Straight Type Shank Size (Height x Width) □ 16mm x 16mm F18, F46	GNDS Type (Shallow Grooves) Straight Type Shank Size (Height x Width) □ 20mm x 20mm □ 25mm x 25mm F19	GNDM Type Straight Type Shank Size (Height x Width) □ 20mm x 20mm □ 25mm x 25mm □ 32mm x 25mm F20, F42	GNDMS Type L Type Shank Size (Height x Width) □ 20mm x 20mm □ 25mm x 25mm F20	GNDL Type (Small Tools) Straight Type Shank Size (Height x Width) □ 10mm x 10mm □ 12mm x 12mm □ 16mm x 16mm F18	GNDL Type Straight Type Shank Size (Height x Width) □ 20mm x 20mm □ 25mm x 25mm □ 32mm x 25mm F22	GNDLS Type L Type Shank Size (Height x Width) □ 20mm x 20mm □ 25mm x 25mm F22
Applicable Grooving Width (mm) 1.25 1.5 2.0 3.0 4.0 5.0 6.0 7.0 8.0	Applicable Grooving Width (mm) 1.25 1.5 2.0 3.0 4.0 5.0 6.0 7.0 8.0	Applicable Grooving Width (mm) 1.25 1.5 2.0 3.0 4.0 5.0 6.0 7.0 8.0	Applicable Grooving Width (mm) 1.25 1.5 2.0 3.0 4.0 5.0 6.0 7.0 8.0	Applicable Grooving Width (mm) 1.25 1.5 2.0 3.0 4.0 5.0 6.0 7.0 8.0	Applicable Grooving Width (mm) 1.25 1.5 2.0 3.0 4.0 5.0 6.0 7.0 8.0	Applicable Grooving Width (mm) 1.25 1.5 2.0 3.0 4.0 5.0 6.0 7.0 8.0
Applicable Breaker MG ML GG GL GF RG CG	Applicable Breaker MG ML GG GL GF RG CG	Applicable Breaker MG ML GG GL GF RG CG	Applicable Breaker MG ML GG GL GF RG CG	Applicable Breaker MG ML GG GL GF RG CG	Applicable Breaker MG ML GG GL GF RG CG	Applicable Breaker MG ML GG GL GF RG CG

For External Machining Product Range

■ MG: Multi-Functional-General Purpose Type
 ■ ML: Multi-Functional-Low Feed Type
 ■ GG: Grooving-General Purpose Type
 ■ GL: Grooving-Low Feed Type
 ■ GF: Grooving-Low cutting force Type
 ■ RG: Copying-General Purpose Type
 ■ CG: Cut-Off Type

Type	Shank Size (mm) Height(h): Width(b)	Cutting width (mm)								Series	Max. Grooving Depth (mm)						Ref. Page	Applicable Insert Breaker								
		1.25	1.5	2	3	4	5	6	7		8	5	10	15	20	25		30	MG	ML	GG	GL	GF	RG	CG	
Small Tools	10	10	1.25	1.5							GNDL Small	10						→ F18								
			2									10														
			3									10														
	12	12	1.25	1.5							GNDL Small	12.5						→ F18								
			2									12.5														
			3									12.5														
	16	16	1.5								GNDM Small	10						→ F18								
			1.5									12.5														
			2								GNDL Small	12						→ F18								
			2									16														
			3								GNDM Small	12						→ F18								
			3									16														
Straight Type	20	20	2							GNDS	6						→ F19									
			2								10															
			2								GNDL	20						→ F22								
			3									6														
			3								GNDM	12						→ F20								
			3									20														
	25	25	4							GNDS	10						→ F19									
			4								18															
			4								GNDL	25						→ F22								
			5	6								10														
			5	6							GNDM	18						→ F20								
			5	6								25														
	L Type	20	20	2							GNDLS	16						→ F22								
				3								10														
				3								GNDLS	16						→ F22							
				4									12													
				5								GNDMS	12						→ F20							
				2									18													
25		25	2							GNDLS	18						→ F22									
			3								12															
			3								GNDLS	18						→ F22								
			4									14														
			4								GNDMS	23						→ F22								
			5	6								14														
5	6							GNDLS	23						→ F22											

■ Stock * Made-to-order item (Shank Size □ 32x25mm)

⊙ 1st recommendation ○ 2nd recommendation

SEC-Grooving Tools GND Type



For Internal Machining

Grooving / Turning / Copying

GNDI Type
Straight Type

Shank Diameter
 $\phi 25\text{mm}$
 $\phi 32\text{mm}$
 $\phi 40\text{mm}$

F26

Applicable Grooving Width (mm)		
1.25	1.5	2.0
3.0	4.0	5.0
6.0	7.0	8.0

Applicable Breaker
MG ML GG GL GF RG CG



For Face Machining

Grooving / Turning / Copying

GNDF Type
Straight Type

Shank Size (Height x Width)
 $20\text{mm} \times 20\text{mm}$
 $25\text{mm} \times 25\text{mm}$

F29

Applicable Grooving Width (mm)		
1.25	1.5	2.0
3.0	4.0	5.0
6.0	7.0	8.0

Applicable Breaker
MG ML GG GL GF RG CG

GNDFS Type
L Type

Shank Size (Height x Width)
 $25\text{mm} \times 25\text{mm}$
 $32\text{mm} \times 32\text{mm}$

F30

Applicable Grooving Width (mm)		
1.25	1.5	2.0
3.0	4.0	5.0
6.0	7.0	8.0

Applicable Breaker
MG ML GG GL GF RG CG

For Internal Machining Product Range

MG: Multi-Functional-General Purpose Type ML: Multi-Functional-Low Feed Type GG: Grooving-General Purpose Type GL: Grooving-Low Feed Type GF: Grooving-Low cutting force Type RG: Copying-General Purpose Type CG: Cut-Off Type

Type	Shank Size ϕD_s (mm)	Cutting width (mm)					Series	Max. Grooving Depth (mm)					Min. Bore (mm)		Ref. Page	Applicable Insert Breaker									
		2	3	4	5	6		5	10	15	20	25	30				MG	ML	GG	GL	GF	RG	CG		
Straight Type	$\phi 32$	2					GNDI	6					$\phi 32$		→ F26										
	$\phi 40$	2						10					$\phi 40$												
	$\phi 25$		3	4				6					$\phi 32$												
	$\phi 32$		3	4				10					$\phi 40$												
	$\phi 40$		3	4				11					$\phi 50$												
	$\phi 25$				5			6					$\phi 32$												
	$\phi 32$				5			10					$\phi 40$												
	$\phi 40$				5			11					$\phi 50$												
$\phi 40$					6	11					$\phi 50$														

Stock

1st recommendation 2nd recommendation

For Face Machining Product Range

MG: Multi-Functional-General Purpose Type ML: Multi-Functional-Low Feed Type GG: Grooving-General Purpose Type GL: Grooving-Low Feed Type GF: Grooving-Low cutting force Type RG: Copying-General Purpose Type CG: Cut-Off Type

Type	Shank Size (mm)	Cutting width (mm)								Series	Max. Grooving Depth (mm)					Bore (mm)					Ref. Page	Applicable Insert Breaker						
		3	4	5	6	7	8	5	10		15	20	25	30	50	100	150	200	250	300		1,000	MG	ML	GG	GL	GF	RG
Straight Type	20	20	3						GNDF	12						$\phi 35$	$\phi 45$											
			3							12						$\phi 40$	$\phi 55$											
			3							18						$\phi 50$	$\phi 70$											
			3							18						$\phi 65$	$\phi 100$											
			3							18						$\phi 90$	$\phi 150$											
			3							18						$\phi 140$	$\phi 200$	$\phi 180$	$\phi 300$									
	25	25	4						GNDF	23						$\phi 40$	$\phi 55$											
			4							23					$\phi 50$	$\phi 70$												
			4							23					$\phi 65$	$\phi 90$												
			4							23					$\phi 85$	$\phi 130$												
			4							23					$\phi 125$	$\phi 200$	$\phi 180$	$\phi 300$										
			4							23					$\phi 180$	$\phi 280$	$\phi 900$	$\phi 1,000$										
20	25	5						GNDF	23						$\phi 50$	$\phi 70$												
		5							23					$\phi 65$	$\phi 90$													
		5							23					$\phi 85$	$\phi 130$													
		5							23					$\phi 125$	$\phi 200$	$\phi 180$	$\phi 300$											
		5							23					$\phi 180$	$\phi 280$	$\phi 900$	$\phi 1,000$											
		5							23					$\phi 280$	$\phi 1,000$													
L Type	20	20	6					GNDFS	20						$\phi 70$	$\phi 100$												
			6						20					$\phi 100$	$\phi 200$	$\phi 180$	$\phi 300$											
			6						20					$\phi 280$	$\phi 1,000$													
			6						20					$\phi 450$ to														
			6						20																			
			6						20																			
25	25	8					GNDFS	20						$\phi 70$	$\phi 100$													
		8						20					$\phi 100$	$\phi 200$	$\phi 180$	$\phi 300$												
		8						20					$\phi 280$	$\phi 1,000$														
		8						20					$\phi 450$ to															
		8						20																				
		8						20																				

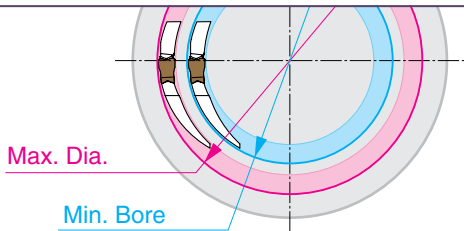
Stock

Made-to-order item

1st recommendation 2nd recommendation Inserts and holders need modification in some cases.

Key Points in Face Machining

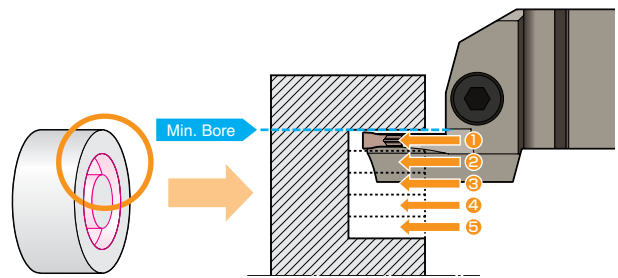
Select Holder



- Select a holder so that the outer diameter of the first groove to be machined comes within the range of **maximum** and **minimum** grooving diameter of the holder.
- If the first groove meets the range of the effective grooving diameter, the grooving diameter will not be limited for the second and later passes.

Select Holder Precautions for Groove Expansion

Recommended Chipbreaker **MG ML GG GL GF**

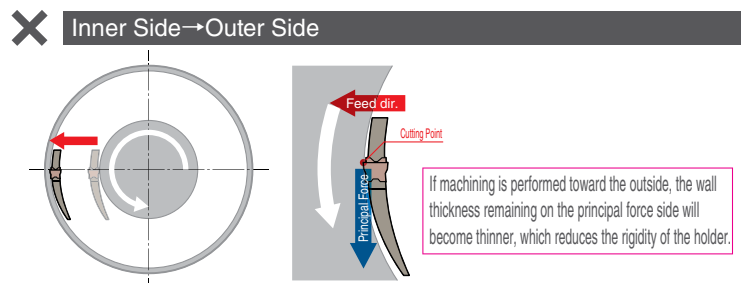
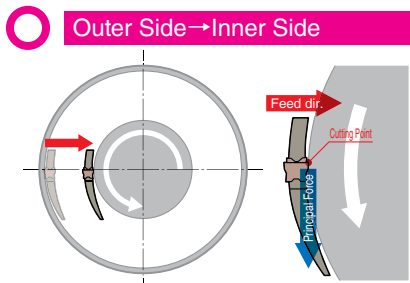


- If the first groove meets the range of the effective grooving diameter during groove expansion, the grooving diameter will not be limited for the second and later passes.

Precautions for Traversing

Recommended Chipbreaker **MG ML**

Considering the rigidity of the holder, we recommend machining from the outside to the inside.



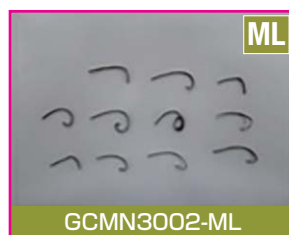
- If the first groove meets the range of the effective grooving diameter in face traversing, the grooving diameter will not be limited for the second and later passes.
- Select the chipbreaker of the lower limit side of the recommended cutting conditions and **straighten chips before evacuation**. (In face grooving, **broken chips easily get stuck in grooves**, which causes problems.)
- When breaking chips, step feed is required.

Key Points in Internal Machining

Precautions for Internal Machining

Recommended Chipbreaker **ML GL**

If the prepared hole diameter is small, use an **ML** type or **GL** type low-feed chipbreaker, each of which reduces chip curl diameter, to ensure adequate chip evacuation.



Work Material: SCM415 下穴径 $\phi 25\text{mm}$ Holder: GNDI R2532-T306 Insert: GCM N300-0-00
 Cutting Conditions: $v_c=100\text{m/min}$ $f=0.1\text{mm/rev}$ $a_p=3.0\text{mm}$ Wet

Internal Machining



External Machining



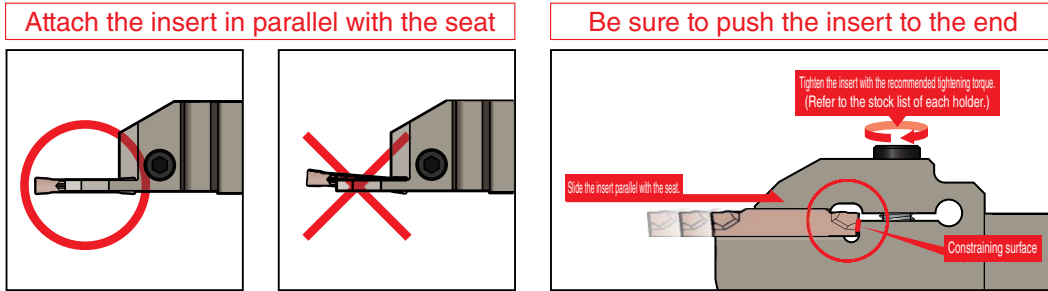
⚠ Chip shapes differ between internal and external machining even under the same cutting condition.

Work Material: SCM415
 Holder: GNDL R2525M-320 Insert: GCM N3002-GG
 Cutting Conditions: $v_c=100\text{m/min}$ $f=0.1\text{mm/rev}$ $a_p=5\text{mm}$ Wet

SEC-Grooving Tools GND Type Important Notes

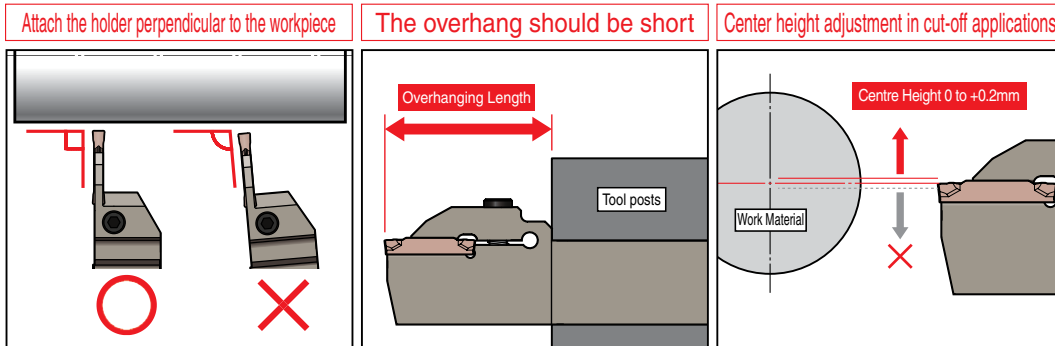
■ Precautions when Attaching Inserts

- (1) Remove any dust and oil from the insert seat before attaching the insert.
- (2) If there are scratches or burrs on the insert seat, scrape them away.
- (3) Attach the insert by sliding it parallel along the seat.
- (4) Clamp the insert with the opposite side (holder side) of the cutting edge secured on the constraining surface.
- (5) **Tighten the insert with the recommended tightening torque.** If you tighten the insert with excessive torque, the insert may be broken, which may lead to injury.



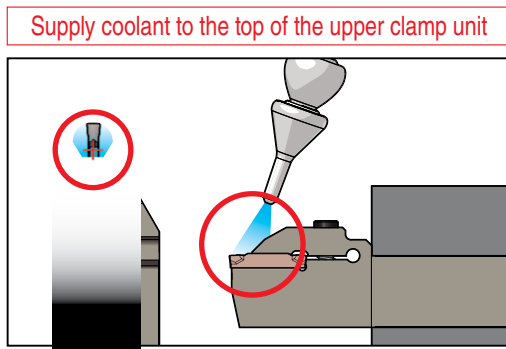
■ Precautions when Setting Holders

- (1) Remove any dust and oil from the tool post before setting the holder.
- (2) If there are scratches or burrs on the tool post, scrape them away.
- (3) Set the holder so that the insert becomes perpendicular to the workpiece. Failure to do so may result in chattering or a curved surface finish.
- (4) The overhang of the holder should be as short as possible.
- (5) When grooving or traversing, adjust the center height of the cutting edge to as close to ± 0 mm as possible. (Within ± 0.1 mm is recommended.)
Incorrect center height adjustment may cause chattering. In cut-off applications, adjust the center height of the cutting edge to a value from 0.0 to +0.2mm. A lower center height will result in larger central burrs.

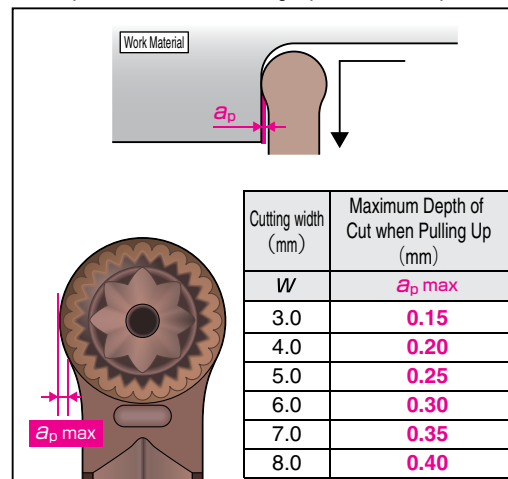


■ Precautions when Setting the Coolant Supply Nozzle

- (1) Set the coolant supply nozzle so that coolant can be supplied from the top of the upper clamp unit.

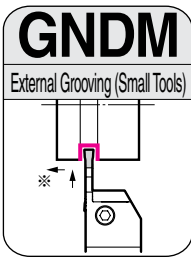


■ Depth of Cut when Pulling Up with RG Chipbreaker



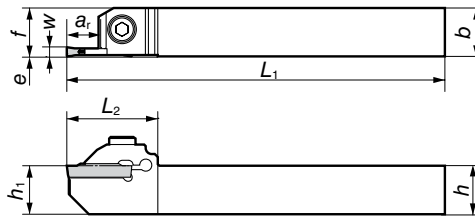
GNDM/GNDL Type (Zero Off-set)

External Multi-purpose Small Tools Type (Grooving, Turning, and Copying)



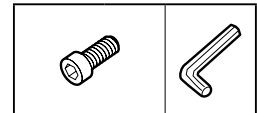
New

* Use the multi-purpose copying insert for turning (wide grooves).



Above figures show right hand tools

Spare Parts

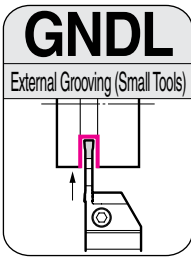


■ Holders

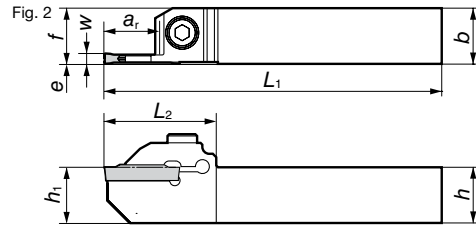
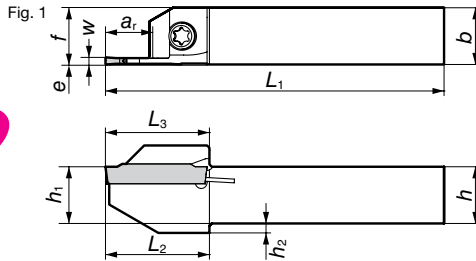
Cat. No.	Stock		Dimensions (mm)							Grooving Width (mm)	Max. Grooving Depth (mm)	Applicable Insert	Cap Screw	Recommended Tightening Torque (N·m)	Spanner
	R	L	h	b	L ₁	f	h ₁	L ₂	e	w	a _r				
GNDM R/L1616JX-1.510	●	●	16	16	120	(16)	16	26	0	1.5	10	GCM N150005-GF	BX0515	4.0	LH040
GNDM R/L1616JX-212	●	●	16	16	120	(16)	16	30	0	2.0	12	GCM □2000-□□			
GNDM R/L1616JX-312	●	●	16	16	120	(16)	16	30	0	3.0	12	GCM □3000-□□			

Select holders and inserts with the same grooving widths (w). Refer to F19 for applicable inserts.

External Grooving / Cut-Off Small Tools

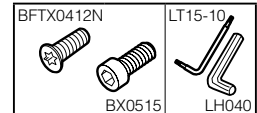


New



Above figures show right hand tools

■ Spare Parts



■ Holders

Cat. No.	Stock		Dimensions (mm)										Grooving Width (mm)	Max. Grooving Depth (mm)	Fig.	Applicable Insert	Cap Screw	Recommended Tightening Torque (N·m)	Spanner
	R	L	h	b	L ₁	f	h ₁	h ₂	L ₂	L ₃	e	w	a _r						
GNDL R/L1010JX-1.2510	●	●	10	10	120	(10)	10	2.0	18	18.3	0	1.25	10.0	1	GCM N125005-GF	BFTX0412N	3.0	LT15-10	
GNDL R/L1010JX-1.510	●	●	10	10	120	(10)	10	2.0	18	18.3	0	1.50	10.0		GCM N150005-GF				
GNDL R/L1010JX-210	●	●	10	10	120	(10)	10	2.0	22	22.3	0	2.00	10.0		GCM □2000-□□				
GNDL R/L1010JX-310	●	●	10	10	120	(10)	10	2.0	22	22.3	0	3.00	10.0		GCM □3000-□□				
GNDL R/L1212JX-1.2512	●	●	12	12	120	(12)	12	2.0	19	19.3	0	1.25	12.0	1	GCM N125005-GF	BFTX0412N	3.0	LT15-10	
GNDL R/L1212JX-1.512	●	●	12	12	120	(12)	12	2.0	19	19.3	0	1.50	12.0		GCM N150005-GF				
GNDL R/L1212JX-212.5	●	●	12	12	120	(12)	12	2.0	22	22.3	0	2.00	12.5		GCM □2000-□□				
GNDL R/L1212JX-312.5	●	●	12	12	120	(12)	12	2.0	22	22.3	0	3.00	12.5		GCM □3000-□□				
GNDL R/L1616JX-1.512.5	●	●	16	16	120	(16)	16	-	32	-	0	1.50	12.5	2	GCM N150005-GF	BX0515	4.0	LH040	
GNDL R/L1616JX-216	●	●	16	16	120	(16)	16	-	32	-	0	2.00	16.0		GCM □2000-□□				
GNDL R/L1616JX-316	●	●	16	16	120	(16)	16	-	32	-	0	3.00	16.0		GCM □3000-□□				

Select holders and inserts with the same grooving widths (w). Refer to F19 for applicable inserts.

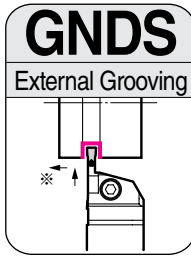
■ Recommended Cutting Conditions (GNDM(Small Tools)/GNDL(Small Tools)/GNDL)

Work Material	P Carbon Steel / Alloy Steel			M Stainless Steel			K Cast Iron			S Exotic Alloy	
Grade	AC830P	AC520U	AC530U	AC830P	AC520U	AC530U	AC425K	AC520U	AC530U	AC520U	AC530U
Cutting Speed v _c (m/min)	80 to 200	80 to 200	50 to 200	70 to 150	70 to 150	50 to 150	80 to 200	60 to 200	50 to 200	20 to 80	20 to 60

Grooving / Cut-Off	Breaker	Feed Rate f (mm/rev)							Turning	Breaker	MG		ML		RG	
		MG	ML	GG	GL	GF	RG	CG			Feed Rate f (mm/rev)	Depth of Cut a _p (mm)	Feed Rate f (mm/rev)	Depth of Cut a _p (mm)	Feed Rate f (mm/rev)	Depth of Cut a _p (mm)
	Grooving Widths w (mm)	1.25	1.5	2.0	3.0	4.0	5.0	6.0		Grooving Widths w (mm)	3.0	4.0	5.0	6.0		
		-	-	-	-	0.01 to 0.08	-	-			0.08 to 0.25	0.4 to 1.5	0.05 to 0.18	0.3 to 1.5	0.10 to 0.40	0.3 to 1.2
		-	-	-	-	0.02 to 0.10	-	-			0.10 to 0.30	0.5 to 2.0	0.05 to 0.20	0.4 to 2.0	0.15 to 0.45	0.6 to 1.6
		-	-	0.05 to 0.25	0.03 to 0.15	0.03 to 0.12	-	0.05 to 0.20			0.12 to 0.35	0.8 to 2.5	0.08 to 0.25	0.5 to 2.5	0.20 to 0.50	0.8 to 2.0
		0.08 to 0.20	0.03 to 0.15	0.10 to 0.30	0.05 to 0.18	0.05 to 0.15	0.05 to 0.15	0.08 to 0.25			0.15 to 0.35	1.0 to 3.0	0.10 to 0.30	0.5 to 3.0	0.30 to 0.60	1.0 to 2.2
		0.10 to 0.25	0.05 to 0.20	0.15 to 0.35	0.08 to 0.22	0.05 to 0.18	0.10 to 0.20	0.10 to 0.30								
		0.12 to 0.30	0.08 to 0.25	0.20 to 0.40	0.10 to 0.25	0.08 to 0.20	0.15 to 0.25	-								
		0.15 to 0.35	0.10 to 0.30	0.20 to 0.45	0.12 to 0.30	0.10 to 0.25	0.20 to 0.30	-								

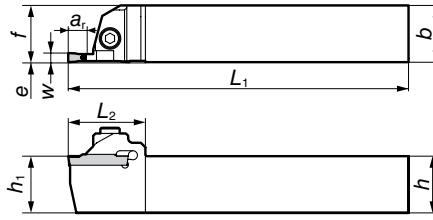
GNDS Type

External Multi-purpose Shallow Grooves Type (Grooving, Turning, and Copying)



New

* Use the multi-purpose copying insert for turning (wide grooves).



Above figures show right hand tools

■ Holders

Cat. No.	Stock		Dimensions (mm)						Grooving Width (mm)	Max. Grooving Depth (mm)	Applicable Insert	Cap Screw	Recommended Tightening Torque (N·m)	Spanner
	R	L	h	b	L ₁	f	h ₁	L ₂	w	a _r				
GNDS R/L2020K-206	●	●	20	20	125	20	20	30	2.0	6	GCM □20○○-□□	BX0520	5.0	LH040
GNDS R/L2020K-306	●	●	20	20	125	20	20	30	3.0	6	GCM □30○○-□□			
GNDS R/L2020K-410	●	●	20	20	125	20	20	34	4.0	10	GCM □40○○-□□			
GNDS R/L2020K-510	●	●	20	20	125	20	20	34	5.0	10	GCM N50○○-□□			
GNDS R/L2020K-610	●	●	20	20	125	20	20	34	6.0	10	GCM N60○○-□□			
GNDS R/L2525M-206	●	●	25	25	150	25	25	30	2.0	6	GCM □20○○-□□			
GNDS R/L2525M-306	●	●	25	25	150	25	25	30	3.0	6	GCM □30○○-□□			
GNDS R/L2525M-410	●	●	25	25	150	25	25	34	4.0	10	GCM □40○○-□□			
GNDS R/L2525M-510	●	●	25	25	150	25	25	34	5.0	10	GCM N50○○-□□			
GNDS R/L2525M-610	●	●	25	25	150	25	25	34	6.0	10	GCM N60○○-□□			

Select holders and inserts with the same grooving widths (w).

■ GNDS (Small Tools)/GNDL (Small Tools)/GNDS Insert

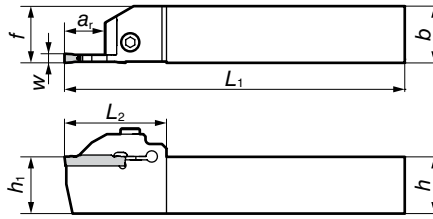
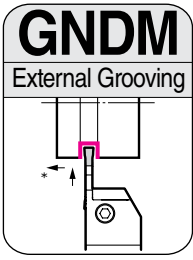
Application	Shape	Appearance	Cat. No.	Coated Carbide				Dimensions (mm)				Pcs./Pack	Fig.				
				AC830P	AC425K	AC520U	AC530U	w		r _ε	ℓ			s			
								Cutting width	Tolerance								
Grooving / Turning		MG Type General Purpose Type	GCM N3004-MG	●	●	●	●	3.0	±0.03	0.4	21.1	3.8	5	1			
			GCM N4008-MG	●	●	●	●	4.0	±0.03	0.8	26.4	4.0					
			GCM N5008-MG	●	●	●	●	5.0	±0.03	0.8	26.4	4.1					
			GCM N6008-MG	●	●	●	●	6.0	±0.03	0.8	26.4	4.5					
			GCM N3002-ML	●	●	●	●	3.0	±0.03	0.2	21.1	3.8					
		ML Type w=4.0mm Low Feed Type w=5.0mm Low Feed Type	GCM N4004-ML	●	●	●	●	4.0	±0.03	0.4	26.4	4.0	5	1			
			GCM N5004-ML	●	●	●	●	5.0	±0.03	0.4	26.4	4.1					
			GCM N6004-ML	●	●	●	●	6.0	±0.03	0.4	26.4	4.5					
			GG Type General Purpose Type	GCM N2002-GG	●	●	●	●	2.0	±0.03	0.2	21.1			3.6	5	1
				GCM N3002-GG	●	●	●	●	3.0	±0.03	0.2	21.1			3.8		
GCM N4002-GG	●	●		●	●	4.0	±0.03	0.2	26.4	4.0							
GCM N5002-GG	●	●		●	●	5.0	±0.03	0.2	26.4	4.1							
GCM N6002-GG	●	●		●	●	6.0	±0.03	0.2	26.4	4.5							
Grooving / Cut-Off		GL Type Low Feed Type	GCM N3004-GG	●	●	●	●	3.0	±0.03	0.4	21.1	3.8	5	1			
			GCM N4004-GG	●	●	●	●	4.0	±0.03	0.4	26.4	4.0					
			GCM N5004-GG	●	●	●	●	5.0	±0.03	0.4	26.4	4.1					
			GCM N6004-GG	●	●	●	●	6.0	±0.03	0.4	26.4	4.5					
			GCM N2002-GL	●	●	●	●	2.0	±0.03	0.2	21.1	3.6					
		GL Type Low Feed Type	GCM N3002-GL	●	●	●	●	3.0	±0.03	0.2	21.1	3.8	5	1			
			GCM N4002-GL	●	●	●	●	4.0	±0.03	0.2	26.4	4.0					
			GCM N5002-GL	●	●	●	●	5.0	±0.03	0.2	26.4	4.1					
			GCM N6002-GL	●	●	●	●	6.0	±0.03	0.2	26.4	4.5					
			GF Type Low cutting force Type	GCM N125005-GF	—	—	—	●	1.25	±0.03	0.05	17.4			3.2	5	1
GCM N150005-GF	—	—		—	●	1.5	±0.03	0.05	17.4	3.7							
GCM N2002-GF	—	—		—	●	2.0	±0.03	0.2	21.1	3.6							
GCM N3002-GF	●	●		●	●	3.0	±0.03	0.2	21.1	3.8							
GCM N4002-GF	●	●		●	●	4.0	±0.03	0.2	26.4	4.0							
GF Type Low cutting force Type	GCM N5002-GF	●	●	●	●	5.0	±0.03	0.2	26.4	4.1	5	1					
	GCM N6002-GF	●	●	●	●	6.0	±0.03	0.2	26.4	4.5							
	RG Type General Purpose Type	GCM N3015-RG	●	●	●	●	3.0	±0.03	1.5	21.1			3.8	5	2		
		GCM N4020-RG	●	●	●	●	4.0	±0.03	2.0	26.4			4.0				
		GCM N5025-RG	●	●	●	●	5.0	±0.03	2.5	27.2			4.1				
GCM N6030-RG		●	●	●	●	6.0	±0.03	3.0	27.5	4.5							
Cut-Off			CG Type General Purpose Type	GCM R/L2002-CG-05	●	●	●	●	2.0	±0.03	0.2	21.1	3.6			5	3
	GCM R/L3002-CG-05			●	●	●	●	3.0	±0.03	0.2	21.3	3.8					
	GCM R/L4002-CG-05			●	●	●	●	4.0	±0.03	0.2	26.7	4.0					

Select holders and inserts with the same grooving widths (w). Recommended Cutting Conditions **F18**

● mark: Standard stocked item (expanded item)

GNDM/GNDMS Type

External Multi-purpose Type (Grooving, Turning, and Copying)



* Use the multi-purpose copying insert for turning (wide grooves).

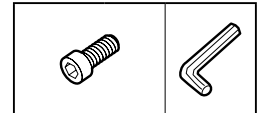
Above figures show right hand tools

■ Holders

Cat. No.	Stock		Dimensions (mm)						Grooving Width (mm)	Max. Grooving Depth (mm)	Applicable Insert	Cap Screw	Recommended Tightening Torque (N·m)	Spanner
	R	L	h	b	L ₁	f	h ₁	L ₂	w	a _r				
GNDM R/L2020K-210	●	●	20	20	125	20	20	33.6	2.0	10	GCM □20○○-□□	BX0520	5.0	LH040
GNDM R/L2020K-312	●	●	20	20	125	20	20	36.6	3.0	12	GCM □30○○-□□			
GNDM R/L2020K-418	●	●	20	20	125	20	20	45.0	4.0	18	GCM □40○○-□□			
GNDM R/L2020K-518	●	●	20	20	125	20	20	45.0	5.0	18	GCM N50○○-□□			
GNDM R/L2020K-618	●	●	20	20	125	20	20	45.0	6.0	18	GCM N60○○-□□			
GNDM R/L2525M-210	●	●	25	25	150	25	25	33.6	2.0	10	GCM □20○○-□□			
GNDM R/L2525M-312	●	●	25	25	150	25	25	36.6	3.0	12	GCM □30○○-□□			
GNDM R/L2525M-418	●	●	25	25	150	25	25	45.0	4.0	18	GCM □40○○-□□			
GNDM R/L2525M-518	●	●	25	25	150	25	25	45.0	5.0	18	GCM N50○○-□□			
GNDM R/L2525M-618	●	●	25	25	150	25	25	45.0	6.0	18	GCM N60○○-□□			
GNDM R/L3225P-312			32	25	170	25	32	36.6	3.0	12	GCM □30○○-□□			
GNDM R/L3225P-418			32	25	170	25	32	45.0	4.0	18	GCM □40○○-□□			
GNDM R/L3225P-518			32	25	170	25	32	45.0	5.0	18	GCM N50○○-□□			
GNDM R/L3225P-618			32	25	170	25	32	45.0	6.0	18	GCM N60○○-□□			
GNDM R/L3225P-718			32	25	170	25	32	50.0	7.0	18	GCM N70○○-□□			
GNDM R/L3225P-818			32	25	170	25	32	50.0	8.0	18	GCM N80○○-□□			
GNDM R/L3232P-312	●	●	32	32	170	32	32	36.6	3.0	12	GCM □30○○-□□	BX0620	6.0	LH050
GNDM R/L3232P-418	●	●	32	32	170	32	32	45.0	4.0	18	GCM □40○○-□□			
GNDM R/L3232P-518	●	●	32	32	170	32	32	45.0	5.0	18	GCM N50○○-□□			
GNDM R/L3232P-618	●	●	32	32	170	32	32	45.0	6.0	18	GCM N60○○-□□			
GNDM R/L3232P-718	●	●	32	32	170	32	32	50.0	7.0	18	GCM N70○○-□□			
GNDM R/L3232P-818	●	●	32	32	170	32	32	50.0	8.0	18	GCM N80○○-□□			

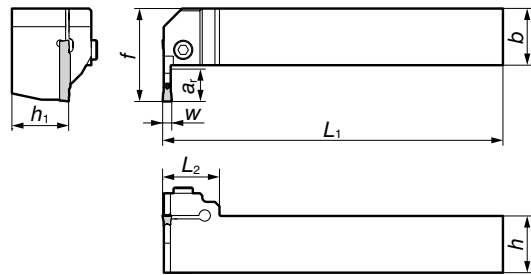
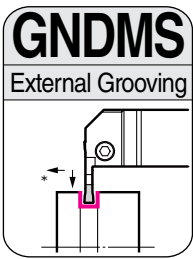
Select holders and inserts with the same grooving widths (w). Refer to F21 for applicable inserts.

■ Spare Parts



F Grooving Tools

External L-Styled (Side Cut) Multi-purpose Type (Grooving, Turning, and Copying)



* Use the multi-purpose copying insert for turning (wide grooves).

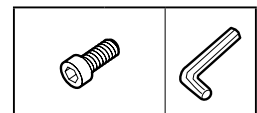
Above figures show right hand tools

■ Holders

Cat. No.	Stock		Dimensions (mm)						Grooving Width (mm)	Max. Grooving Depth (mm)	Applicable Insert	Cap Screw	Recommended Tightening Torque (N·m)	Spanner
	R	L	h	b	L ₁	f	h ₁	L ₂	w	a _r				
GNDMS R/L2020K-310	●	●	20	20	125	32	20	25	3.0	10	GCM □30○○-□□	BX0520	5.0	LH040
GNDMS R/L2020K-412	●	●	20	20	125	34	20	25	4.0	12	GCM □40○○-□□			
GNDMS R/L2020K-512	●	●	20	20	125	34	20	25	5.0	12	GCM N50○○-□□			
GNDMS R/L2525M-312	●	●	25	25	150	39	25	25	3.0	12	GCM □30○○-□□			
GNDMS R/L2525M-414	●	●	25	25	150	41	25	25	4.0	14	GCM □40○○-□□			
GNDMS R/L2525M-514	●	●	25	25	150	41	25	25	5.0	14	GCM N50○○-□□			
GNDMS R/L2525M-614	●	●	25	25	150	41	25	25	6.0	14	GCM N60○○-□□			

Select holders and inserts with the same grooving widths (w). Refer to F21 for applicable inserts.

■ Spare Parts



GNDM/GNDMS Type

■ For GNDM/GNDMS

Application	Shape	Appearance	Cat. No.	Coated Carbide				Dimensions (mm)				Pcs./Pack	Fig.						
				AC830P	AC425K	AC520U	AC530U	w		r _ε	ℓ			s					
								Cutting width	Tolerance										
Grooving / Turning			GCM N3004-MG	●	●	●	●	3.0	±0.03	0.4	21.1	3.8	5	1					
			GCM N4008-MG	●	●	●	●	4.0	±0.03	0.8	26.4	4.0							
			GCM N5008-MG	●	●	●	●	5.0	±0.03	0.8	26.4	4.1							
			GCM N6008-MG	●	●	●	●	6.0	±0.03	0.8	26.4	4.5							
			GCM N7008-MG	●	●	●	●	7.0	±0.04	0.8	28.75	5.5							
			GCM N8008-MG	●	●	●	●	8.0	±0.04	0.8	28.75	6.0							
			GCM N3002-ML	●	●	●	●	3.0	±0.03	0.2	21.1	3.8	5	1					
			GCM N4004-ML	●	●	●	●	4.0	±0.03	0.4	26.4	4.0							
			GCM N5004-ML	●	●	●	●	5.0	±0.03	0.4	26.4	4.1							
			GCM N6004-ML	●	●	●	●	6.0	±0.03	0.4	26.4	4.5							
			GCM N7004-ML	●	●	●	●	7.0	±0.04	0.4	28.75	5.5							
			GCM N8004-ML	●	●	●	●	8.0	±0.04	0.4	28.75	6.0							
			Grooving / Cut-Off			GCM N2002-GG	●	●	●	●	2.0	±0.03			0.2	21.1	3.6	5	1
						GCM N3002-GG	●	●	●	●	3.0	±0.03			0.2	21.1	3.8		
GCM N4002-GG	●	●				●	●	4.0	±0.03	0.2	26.4	4.0							
GCM N5002-GG	●	●				●	●	5.0	±0.03	0.2	26.4	4.1							
GCM N6002-GG	●	●				●	●	6.0	±0.03	0.2	26.4	4.5							
GCM N8002-GG	●	●				●	●	8.0	±0.04	0.4	28.75	6.0							
	GCM N2002-GL	●			●	●	●	2.0	±0.03	0.2	21.1	3.6	5	1					
	GCM N3002-GL	●			●	●	●	3.0	±0.03	0.2	21.1	3.8							
	GCM N4002-GL	●			●	●	●	4.0	±0.03	0.2	26.4	4.0							
	GCM N5002-GL	●			●	●	●	5.0	±0.03	0.2	26.4	4.1							
	GCM N6002-GL	●			●	●	●	6.0	±0.03	0.2	26.4	4.5							
	GCM N7002-GL	●			●	●	●	7.0	±0.04	0.4	28.75	5.5							
	GCM N8002-GL	●			●	●	●	8.0	±0.04	0.4	28.75	6.0							
		GCM N2002-GF			●	●	●	●	2.0	±0.03	0.2	21.1			3.6	5	1		
GCM N3002-GF		●	●	●	●	3.0	±0.03	0.2	21.1	3.8									
GCM N4002-GF		●	●	●	●	4.0	±0.03	0.2	26.4	4.0									
GCM N5002-GF		●	●	●	●	5.0	±0.03	0.2	26.4	4.1									
GCM N6002-GF		●	●	●	●	6.0	±0.03	0.2	26.4	4.5									
GCM N8002-GF		●	●	●	●	8.0	±0.04	0.4	28.75	6.0									
Copying			GCM N3015-RG	●	●	●	●	3.0	±0.03	1.5	21.1	3.8	5	2					
			GCM N4020-RG	●	●	●	●	4.0	±0.03	2.0	26.4	4.0							
			GCM N5025-RG	●	●	●	●	5.0	±0.03	2.5	27.2	4.1							
			GCM N6030-RG	●	●	●	●	6.0	±0.03	3.0	27.5	4.5							
			GCM N7035-RG	●	●	●	●	7.0	±0.04	3.5	29.05	5.5							
			GCM N8040-RG	●	●	●	●	8.0	±0.04	4.0	29.25	6.0							
			Cut-Off			GCM R/L2002-CG-05	●	●	●	●	2.0	±0.03			0.2	21.1	3.6	5	3
						GCM R/L3002-CG-05	●	●	●	●	3.0	±0.03			0.2	21.3	3.8		
GCM R/L4002-CG-05	●	●				●	●	4.0	±0.03	0.2	26.7	4.0							
	●	●				●	●												

Select holders and inserts with the same grooving widths (w).

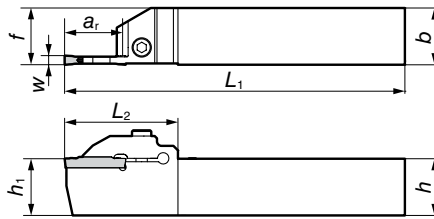
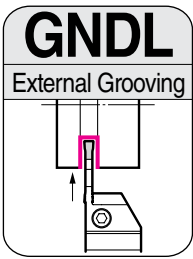
■ Recommended Cutting Conditions (GNDM/GNDMS)

Work Material	P Carbon Steel / Alloy Steel			M Stainless Steel			K Cast Iron			S Exotic Alloy	
Grade	AC830P	AC520U	AC530U	AC830P	AC520U	AC530U	AC425K	AC520U	AC530U	AC520U	AC530U
Cutting Speed v _c (m/min)	80 to 200	80 to 200	50 to 200	70 to 150	70 to 150	50 to 150	80 to 200	60 to 200	50 to 200	20 to 80	20 to 60

Grooving / Cut-Off	Breaker	Feed Rate f (mm/rev)							MG	ML	RG									
		MG	ML	GG	GL	GF	RG	CG												
		2.0	-	-	0.05 to 0.25	0.03 to 0.15	0.03 to 0.12	-				0.05 to 0.20								
Grooving Widths w (mm)	3.0	0.08 to 0.20	0.03 to 0.15	0.10 to 0.30	0.05 to 0.18	0.05 to 0.15	0.05 to 0.15	0.08 to 0.25	Turning	Breaker	MG	ML	RG							
	4.0	0.10 to 0.25	0.05 to 0.20	0.15 to 0.35	0.08 to 0.22	0.05 to 0.18	0.10 to 0.20	0.10 to 0.30						Feed Rate f (mm/rev)	Depth of Cut a _p (mm)	Feed Rate f (mm/rev)	Depth of Cut a _p (mm)	Feed Rate f (mm/rev)	Depth of Cut a _p (mm)	
	5.0	0.12 to 0.30	0.08 to 0.25	0.20 to 0.40	0.10 to 0.25	0.08 to 0.20	0.15 to 0.25	-						3.0	0.08 to 0.25	0.4 to 1.5	0.05 to 0.18	0.3 to 1.5	0.10 to 0.40	0.3 to 1.2
	6.0	0.15 to 0.35	0.10 to 0.30	0.20 to 0.45	0.12 to 0.30	0.10 to 0.25	0.20 to 0.30	-						4.0	0.10 to 0.30	0.5 to 2.0	0.05 to 0.20	0.4 to 2.0	0.15 to 0.45	0.6 to 1.6
	7.0	0.18 to 0.40	0.12 to 0.35	0.20 to 0.50	0.15 to 0.35	-	0.25 to 0.35	-						5.0	0.12 to 0.35	0.8 to 2.5	0.08 to 0.25	0.5 to 2.5	0.20 to 0.50	0.8 to 2.0
	8.0	0.20 to 0.45	0.15 to 0.40	0.20 to 0.55	0.18 to 0.40	-	0.35 to 0.40	-						6.0	0.15 to 0.40	1.0 to 3.0	0.10 to 0.30	0.5 to 3.0	0.30 to 0.60	1.0 to 2.2
														7.0	0.18 to 0.45	1.2 to 3.5	0.12 to 0.35	0.7 to 3.5	0.35 to 0.65	1.2 to 2.5
														8.0	0.20 to 0.50	1.5 to 4.0	0.15 to 0.40	0.7 to 4.0	0.35 to 0.70	1.5 to 3.0

GNDL/GNDLS Type

External Deep Grooving & Cut-Off



Above figures show right hand tools

■ Holders

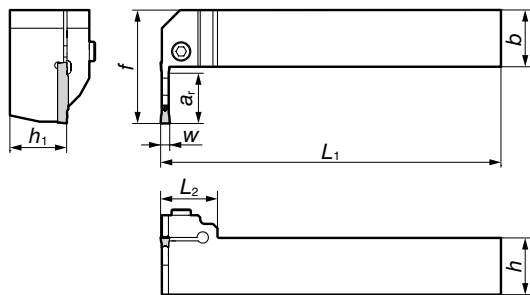
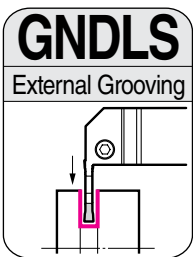
Cat. No.	Stock		Dimensions (mm)						Grooving Width (mm)	Max. Grooving Depth (mm)	Applicable Insert
	R	L	h	b	L ₁	f	h ₁	L ₂	w	a _r	
GNDL R/L2020K-220	●	●	20	20	125	20	20	44.5	2.0	20	GCM □2000-□□
GNDL R/L2020K-320	●	●	20	20	125	20	20	44.5	3.0	20(18)	GCM □3000-□□
GNDL R/L2020K-425	●	●	20	20	125	20	20	50.0	4.0	25(23)	GCM □4000-□□
GNDL R/L2020K-525	●	●	20	20	125	20	20	50.0	5.0	25(23)	GCM N5000-□□
GNDL R/L2020K-625	●	●	20	20	125	20	20	50.0	6.0	25(23)	GCM N6000-□□
GNDL R/L2525M-220	●	●	25	25	150	25	25	44.5	2.0	20	GCM □2000-□□
GNDL R/L2525M-320	●	●	25	25	150	25	25	44.5	3.0	20(18)	GCM □3000-□□
GNDL R/L2525M-425	●	●	25	25	150	25	25	50.0	4.0	25(23)	GCM □4000-□□
GNDL R/L2525M-525	●	●	25	25	150	25	25	50.0	5.0	25(23)	GCM N5000-□□
GNDL R/L2525M-625	●	●	25	25	150	25	25	50.0	6.0	25(23)	GCM N6000-□□
GNDL R/L3225P-320			32	25	170	25	32	44.5	3.0	20(18)	GCM □3000-□□
GNDL R/L3225P-425			32	25	170	25	32	50.0	4.0	25(23)	GCM □4000-□□
GNDL R/L3225P-525			32	25	170	25	32	50.0	5.0	25(23)	GCM N5000-□□
GNDL R/L3225P-625			32	25	170	25	32	50.0	6.0	25(23)	GCM N6000-□□
GNDL R/L3225P-725			32	25	170	25	32	50.0	7.0	25(23)	GCM N7000-□□
GNDL R/L3225P-825			32	25	170	25	32	50.0	8.0	25(23)	GCM N8000-□□
GNDL R/L3232P-320	●	●	32	32	170	32	32	44.5	3.0	20(18)	GCM □3000-□□
GNDL R/L3232P-425	●	●	32	32	170	32	32	50.0	4.0	25(23)	GCM □4000-□□
GNDL R/L3232P-525	●	●	32	32	170	32	32	50.0	5.0	25(23)	GCM N5000-□□
GNDL R/L3232P-625	●	●	32	32	170	32	32	50.0	6.0	25(23)	GCM N6000-□□
GNDL R/L3232P-725	●	●	32	32	170	32	32	50.0	7.0	25(23)	GCM N7000-□□
GNDL R/L3232P-825	●	●	32	32	170	32	32	50.0	8.0	25(23)	GCM N8000-□□

■ Spare Parts

Cap Screw	Recommended Tightening Torque (N·m)	Spanner
BX0520	5.0	LH040
BX0620	6.0	LH050
BX0620	6.0	LH050

Select holders and inserts with the same grooving widths (w). Dimensions in parentheses under maximum grooving depth are for applications that use copying inserts (RG Type Breakers). Refer to F23 for applicable inserts.

External L-Styled (Side Cut) Grooving



Above figures show right hand tools

■ Holders

Cat. No.	Stock		Dimensions (mm)						Grooving Width (mm)	Max. Grooving Depth (mm)	Applicable Insert
	R	L	h	b	L ₁	f	h ₁	L ₂	w	a _r	
GNDLS R/L2020K-216	●	●	20	20	125	38	20	25	2.0	16	GCM □2000-□□
GNDLS R/L2020K-316	●	●	20	20	125	38	20	25	3.0	16	GCM □3000-□□
GNDLS R/L2525M-218	●	●	25	25	150	45	25	25	2.0	18	GCM □2000-□□
GNDLS R/L2525M-318	●	●	25	25	150	45	25	25	3.0	18	GCM □3000-□□
GNDLS R/L2525M-423	●	●	25	25	150	50	25	25	4.0	23	GCM □4000-□□
GNDLS R/L2525M-523	●	●	25	25	150	50	25	25	5.0	23	GCM N5000-□□
GNDLS R/L2525M-623	●	●	25	25	150	50	25	25	6.0	23	GCM N6000-□□

■ Spare Parts

Cap Screw	Recommended Tightening Torque (N·m)	Spanner
BX0520	5.0	LH040

Select holders and inserts with the same grooving widths (w). Refer to F23 for applicable inserts.

GNDL/GNDLS Type

■ For GNDM/GNDMS

Application	Shape	Appearance	Cat. No.	Coated Carbide				Dimensions (mm)				Pcs./Pack	Fig.						
				AC830P	AC425K	AC520U	AC530U	w		r _ε	ℓ			s					
				Cutting width		Tolerance													
Grooving / Turning Fig. 1 	MG Type 	General Purpose Type	GCM N3004-MG	●	●	●	●	3.0	±0.03	0.4	21.1	3.8	5	1					
			GCM N4008-MG	●	●	●	●	4.0	±0.03	0.8	26.4	4.0							
			GCM N5008-MG	●	●	●	●	5.0	±0.03	0.8	26.4	4.1							
			GCM N6008-MG	●	●	●	●	6.0	±0.03	0.8	26.4	4.5							
			GCM N7008-MG	●	●	●	●	7.0	±0.04	0.8	28.75	5.5							
			GCM N8008-MG	●	●	●	●	8.0	±0.04	0.8	28.75	6.0							
			ML Type 	Low Feed Type w=4.0mm w=5.0mm	GCM N3002-ML	●	●	●	●	3.0	±0.03	0.2			21.1	3.8	5	1	
					GCM N4004-ML	●	●	●	●	4.0	±0.03	0.4			26.4	4.0			
	GCM N5004-ML	●			●	●	●	5.0	±0.03	0.4	26.4	4.1							
	GCM N6004-ML	●			●	●	●	6.0	±0.03	0.4	26.4	4.5							
	GCM N7004-ML	●			●	●	●	7.0	±0.04	0.4	28.75	5.5							
	GCM N8004-ML	●			●	●	●	8.0	±0.04	0.4	28.75	6.0							
	Grooving / Cut-Off Fig. 1 	GG Type 			General Purpose Type	GCM N2002-GG	●	●	●	●	2.0	±0.03	0.2	21.1	3.6	5			1
						GCM N3002-GG	●	●	●	●	3.0	±0.03	0.2	21.1	3.8				
			GCM N4002-GG	●		●	●	●	4.0	±0.03	0.2	26.4	4.0						
			GCM N5002-GG	●		●	●	●	5.0	±0.03	0.2	26.4	4.1						
GCM N6002-GG			●	●		●	●	6.0	±0.03	0.2	26.4	4.5							
GCM N3004-GG			●	●		●	●	3.0	±0.03	0.4	21.1	3.8							
GCM N4004-GG			●	●		●	●	4.0	±0.03	0.4	26.4	4.0							
GCM N5004-GG			●	●		●	●	5.0	±0.03	0.4	26.4	4.1							
GL Type 		Low Feed Type	GCM N2002-GL	●	●	●	●	2.0	±0.03	0.2	21.1	3.6	5	1					
			GCM N3002-GL	●	●	●	●	3.0	±0.03	0.2	21.1	3.8							
			GCM N4002-GL	●	●	●	●	4.0	±0.03	0.2	26.4	4.0							
			GCM N5002-GL	●	●	●	●	5.0	±0.03	0.2	26.4	4.1							
			GCM N6002-GL	●	●	●	●	6.0	±0.03	0.2	26.4	4.5							
			GCM N7004-GL	●	●	●	●	7.0	±0.04	0.4	28.75	5.5							
			GCM N8004-GL	●	●	●	●	8.0	±0.04	0.4	28.75	6.0							
			GF Type 	Low cutting force Type	GCM N2002-GF	●	●	●	●	2.0	±0.03	0.2			21.1	3.6	5	1	
GCM N3002-GF	●	●			●	●	3.0	±0.03	0.2	21.1	3.8								
GCM N4002-GF	●	●			●	●	4.0	±0.03	0.2	26.4	4.0								
GCM N5002-GF	●	●			●	●	5.0	±0.03	0.2	26.4	4.1								
Copying Fig. 2 	RG Type 	General Purpose Type	GCM N3015-RG	●	●	●	●	3.0	±0.03	1.5	21.1	3.8	5	2					
			GCM N4020-RG	●	●	●	●	4.0	±0.03	2.0	26.4	4.0							
			GCM N5025-RG	●	●	●	●	5.0	±0.03	2.5	27.2	4.1							
			GCM N6030-RG	●	●	●	●	6.0	±0.03	3.0	27.5	4.5							
			GCM N7035-RG	●	●	●	●	7.0	±0.04	3.5	29.05	5.5							
			GCM N8040-RG	●	●	●	●	8.0	±0.04	4.0	29.25	6.0							
			Cut-Off Fig. 3 	CG Type 	General Purpose Type	GCM R/L2002-CG-05	●	●	●	●	2.0	±0.03			0.2	21.1	3.6	5	3
						GCM R/L3002-CG-05	●	●	●	●	3.0	±0.03			0.2	21.3	3.8		
GCM R/L4002-CG-05	●	●				●	●	4.0	±0.03	0.2	26.7	4.0							

Select holders and inserts with the same grooving widths (w).

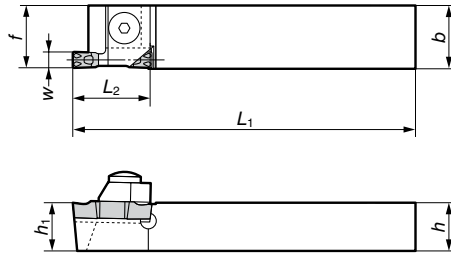
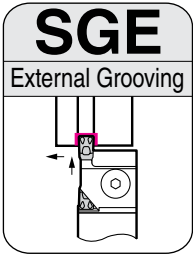
■ Recommended Cutting Conditions (GNDM/GNDLS)

Work Material	P Carbon Steel / Alloy Steel			M Stainless Steel			K Cast Iron			S Exotic Alloy	
Grade	AC830P	AC520U	AC530U	AC830P	AC520U	AC530U	AC425K	AC520U	AC530U	AC520U	AC530U
Cutting Speed v _c (m/min)	80 to 200	80 to 200	50 to 200	70 to 150	70 to 150	50 to 150	80 to 200	60 to 200	50 to 200	20 to 80	20 to 60

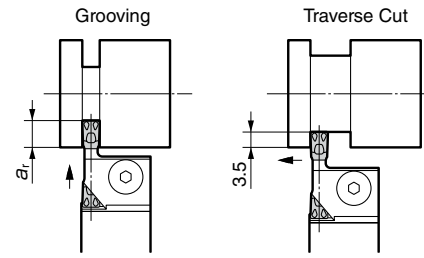
Grooving / Cut-Off	Breaker	Feed Rate f (mm/rev)						
		MG	ML	GG	GL	GF	RG	CG
Grooving Widths w (mm)	2.0	-	-	0.05 to 0.25	0.03 to 0.15	0.03 to 0.12	-	0.05 to 0.20
	3.0	0.08 to 0.20	0.03 to 0.15	0.10 to 0.30	0.05 to 0.18	0.05 to 0.15	0.05 to 0.15	0.08 to 0.25
	4.0	0.10 to 0.25	0.05 to 0.20	0.15 to 0.35	0.08 to 0.22	0.05 to 0.18	0.10 to 0.20	0.10 to 0.30
	5.0	0.12 to 0.30	0.08 to 0.25	0.20 to 0.40	0.10 to 0.25	0.08 to 0.20	0.15 to 0.25	-
	6.0	0.15 to 0.35	0.10 to 0.30	0.20 to 0.45	0.12 to 0.30	0.10 to 0.25	0.20 to 0.30	-
	7.0	0.18 to 0.40	0.12 to 0.35	0.20 to 0.50	0.15 to 0.35	-	0.25 to 0.35	-
	8.0	0.20 to 0.45	0.15 to 0.40	0.20 to 0.55	0.18 to 0.40	-	0.35 to 0.40	-

SGE Type

External Shallow Grooves



Maximum Grooving Depth



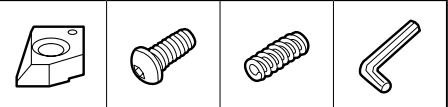
■ Holders

Above figures show right hand tools.

Cat. No.	Stock		Holder Dimensions (mm)						Grooving Width (mm) <i>w</i>	Max. Grooving Depth <i>a_r</i> (mm)	Applicable Insert	Clamp	Clamp Bolt	Spring	Spanner
	R	L	<i>h</i>	<i>b</i>	<i>L₁</i>	<i>f</i>	<i>h₁</i>	<i>L₂</i>							
SGE R/L1016-3	●	●	10	16	120	15.7	10	19.5	3.0	6.2	GEN3000	GCL R/L-3	FBH 0516NT	GSP-5	LH025NT
SGE R/L1216-3	●	●	12	16	120	15.7	12	19.5							
SGE R/L1616-3	●	●	16	16	120	15.7	16	22.0							
SGE R/L2020-3	●	●	20	20	120	19.7	20	22.0							
SGE R/L1016-45	●	●	10	16	120	15.7*	10	19.5	4.0 5.0	6.2	GEN4000 GEN5000	GCL R/L-4	FBH 0516NT	GSP-5	LH025NT
SGE R/L1216-45	●	●	12	16	120	15.7*	12	19.5							
SGE R/L1616-45	●	●	16	16	120	15.7*	16	22.0							
SGE R/L2020-45	●	●	20	20	120	19.7*	20	22.0							
SGE R/L1020-6	●	●	10	20	120	19.7	10	19.5	6.0	6.2	GEN6000	GCL R/L-6	FBH 0516NT		
SGE R/L1220-6	●	●	12	20	120	19.7	12	19.5							
SGE R/L1620-6	●	●	16	20	120	19.7	16	22.0							
SGE R/L2020-6	●	●	20	20	120	19.7	20	22.0							

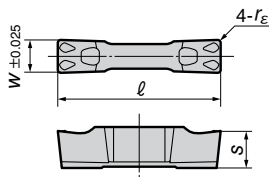
* Reference for *f* taken when *w* = 4.0mm. When *w* = 5.0mm, *f* is larger by 0.5mm.

■ Spare Parts



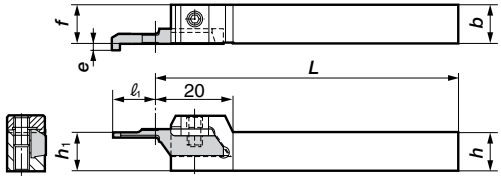
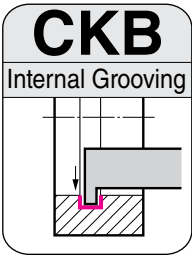
■ Inserts

Cat. No.	Coated Carbide	Dimensions (mm)				Applicable Holder
	ACZ150	<i>w</i>	<i>ℓ</i>	<i>s</i>	<i>r_E</i>	
GEN 3002	●	3.00	20	4.64	0.2	SGE R/L 0000-3
GEN 3004	●	3.00	20	4.64	0.4	
GEN 4002	●	4.00	20	4.50	0.2	SGE R/L 0000-45
GEN 4004	●	4.00	20	4.50	0.4	
GEN 5002	●	5.00	20	4.50	0.2	
GEN 5004	●	5.00	20	4.50	0.4	
GEN 6002	●	6.00	20	4.50	0.2	SGE R/L 0000-6
GEN 6004	●	6.00	20	4.50	0.4	



CKB/SGIT Type

Internal Grooving



Please refer to the insert table below for dimensions of e and l_1 .

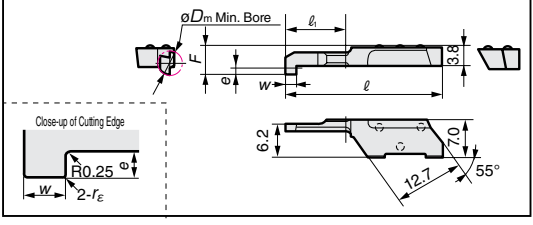
■ Holders

Cat. No.	Stock	Dimensions (mm)					Clamp	Double Screw	Spanner
		h	b	L	f	h_1			
CKB R1010-16	●	10	10	100	10	10	CKBW16	WB4-8	LH020
CKB R1212-16	●	12	12	125	12	12			
CKB R1616-16	●	16	16	125	16	16			
CKB R2020-16	●	20	20	125	20	20			
CKB R2525-16	●	25	25	150	25	25			

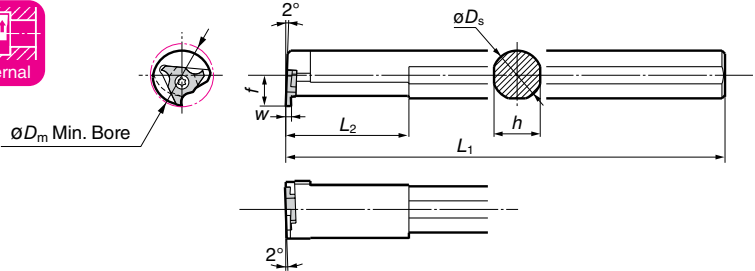
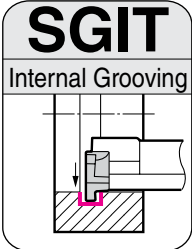
■ Spare Parts



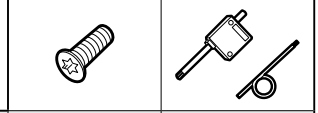
■ Inserts



Cat. No.	Coated Carbide	Min. Bore	Grooving Width (mm)	Dimensions (mm)					
	ACZ310			ϕD_m	w	F	e	r_{ϵ}	l
KBMG R0411-05	●	4.0	1.00	4.90	1.1	0.05	28.5	11	
KBMG R0411-10	●	4.0	2.00	4.90	1.1	0.10	28.5	11	
KBMG R0511-05	●	5.0	1.00	5.10	1.3	0.05	28.5	11	
KBMG R0511-10	●	5.0	2.00	5.10	1.3	0.10	28.5	11	



■ Spare Parts

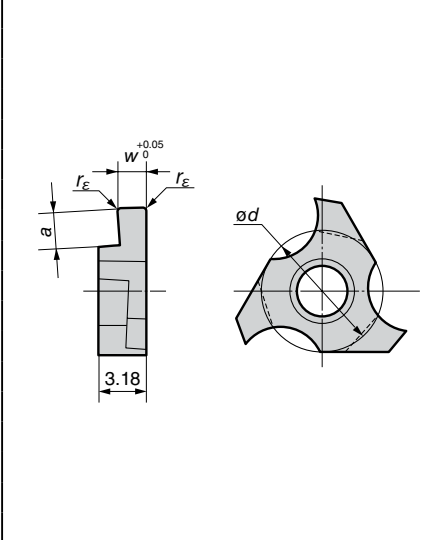


■ Holders

Cat. No.	Stock	Dimensions (mm)					Min. Bore (mm)	Grooving Width (mm)	Max. Grooving Depth (mm)	Applicable Insert	Screw	Spanner
		ϕD_s	h	L_1	f	L_2						
SGIT R08	●	8	7.0	125	5.0	20	10.0	0.50 to 2.00	0.8*	GITL3000	BFTX02506NS	RT08
SGIT R10	●	10	9.0	150	6.0	25	12.0	0.8*				
SGIT R12	●	12	11.0	180	7.0	30	14.0	1.00 to 2.00	1.8	GITL5000	BFTX0307NS	RT10
SGIT R14	●	14	13.0	180	8.0	35	16.0	1.8				
SGIT R16	●	16	15.0	200	10.0	40	20.0	1.50 to 2.00	2.8			
SGIT R20	●	20	19.0	200	12.0	40	25.0	2.8	2.8	GITL6000		

*Maximum grooving depth is 0.5mm when GITL3050 is set.

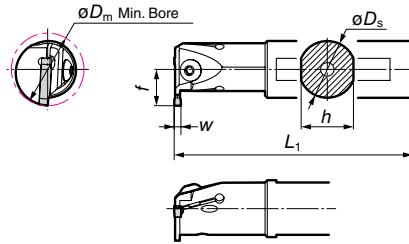
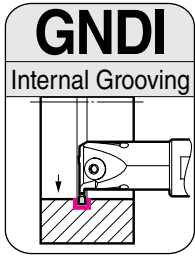
■ Inserts



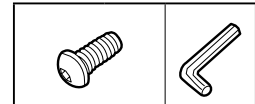
Cat. No.	Coated Carbide	Dimensions (mm)				Applicable Holder
	ACZ150	w	a	r_{ϵ}	ϕd	
GIT L3050	●	0.50	1.2	0.05	5.56	SGIT R08 SGIT R10
GIT L3065	●	0.65	1.2	0.05	5.56	
GIT L3075	●	0.75	1.2	0.05	5.56	
GIT L3100	●	1.00	1.2	0.05	5.56	
GIT L3125	●	1.25	1.2	0.20	5.56	
GIT L3145	●	1.45	1.2	0.20	5.56	
GIT L3150	●	1.50	1.2	0.05	5.56	
GIT L3200	●	2.00	1.2	0.10	5.56	
GIT L5100	●	1.00	2.2	0.05	7.94	SGIT R12 SGIT R14
GIT L5145	●	1.45	2.2	0.20	7.94	
GIT L5150	●	1.50	2.2	0.05	7.94	
GIT L5175	●	1.75	2.2	0.20	7.94	
GIT L5200	●	2.00	2.2	0.10	7.94	
GIT L6150	●	1.50	3.2	0.20	9.525	SGIT R16 SGIT R20
GIT L6175	●	1.75	3.2	0.20	9.525	
GIT L6200	●	2.00	3.2	0.20	9.525	

GNDI Type

Internal Grooving



Spare Parts



■ Holders

Above figures show right hand tools.

Cat. No.	Stock		Dimensions (mm)				Min. Bore (mm)	Grooving Width (mm)	Max. Grooving Depth (mm)	Applicable Insert	Clamp Bolt	Recommended Tightening Torque (N·m)	Spanner
	R	L	øDs	h	L1	f							
GNDI R/L2532-T206	●	●	25	23	200	16	32	2.0	6	GCM N2000-□□	BH0516	5.0	LH030
GNDI R/L3240-T210	●	●	32	30	250	26	40	2.0	10	GCM N2000-□□	BH0616	6.0	LH040
GNDI R/L2532-T306	●	●	25	23	200	16	32	3.0	6	GCM N3000-□□	BH0516	5.0	LH030
GNDI R/L3240-T310	●	●	32	30	250	26	40	3.0	10	GCM N3000-□□	BH0616	6.0	LH040
GNDI R/L4050-T311	●	●	40	38	300	31	50	3.0	11	GCM N3000-□□	BH0616	6.0	LH040
GNDI R/L2532-T406	●	●	25	23	200	19	32	4.0	6	GCM N4000-□□	BH0516	5.0	LH030
GNDI R/L3240-T410	●	●	32	30	250	26	40	4.0	10	GCM N4000-□□	BH0616	6.0	LH040
GNDI R/L4050-T411	●	●	40	38	300	31	50	4.0	11	GCM N4000-□□	BH0616	6.0	LH040
GNDI R/L2532-T506	●	●	25	23	200	19	32	5.0	6	GCM N5000-□□	BH0516	5.0	LH030
GNDI R/L3240-T510	●	●	32	30	250	26	40	5.0	10	GCM N5000-□□	BH0616	6.0	LH040
GNDI R/L4050-T511	●	●	40	38	300	31	50	5.0	11	GCM N5000-□□	BH0616	6.0	LH040
GNDI R/L4050-T611	●	●	40	38	300	31	50	6.0	11	GCM N6000-□□	BH0616	6.0	LH040

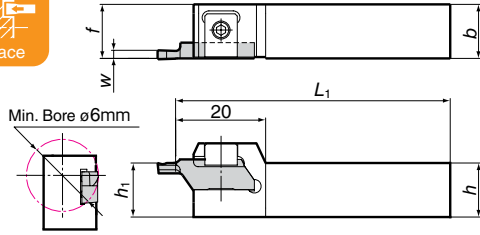
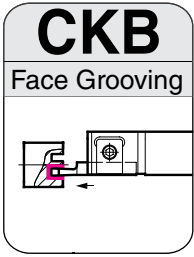
Select holders and inserts with the same grooving widths (w).

■ For GNDI

Application	Shape	Appearance	Cat. No.	Coated Carbide				Dimensions (mm)					Pcs./Pack	Fig.			
				AC830P	AC425K	AC520U	AC530U	w		rε	ℓ	s					
								Cutting width	Tolerance								
Grooving / Turning	Fig. 1	MG Type General Purpose Type	GCM N3004-MG	●	●	●	●	3.0	±0.03	0.4	21.1	3.8	5	1			
			GCM N4008-MG	●	●	●	●	4.0	±0.03	0.8	26.4	4.0					
			GCM N5008-MG	●	●	●	●	5.0	±0.03	0.8	26.4	4.1					
			GCM N6008-MG	●	●	●	●	6.0	±0.03	0.8	26.4	4.5					
			GCM N3002-ML	●	●	●	●	3.0	±0.03	0.2	21.1	3.8					
		ML Type Low Feed Type	GCM N4004-ML	●	●	●	●	4.0	±0.03	0.4	26.4	4.0	5	1			
			GCM N5004-ML	●	●	●	●	5.0	±0.03	0.4	26.4	4.1					
			GCM N6004-ML	●	●	●	●	6.0	±0.03	0.4	26.4	4.5					
			GG Type	GCM N2002-GG	●	●	●	●	2.0	±0.03	0.2	21.1			3.6	5	1
				GCM N3002-GG	●	●	●	●	3.0	±0.03	0.2	21.1			3.8		
GCM N4002-GG	●	●		●	●	4.0	±0.03	0.2	26.4	4.0							
GCM N5002-GG	●	●		●	●	5.0	±0.03	0.2	26.4	4.1							
GCM N6002-GG	●	●		●	●	6.0	±0.03	0.2	26.4	4.5							
Grooving / Cut-Off	Fig. 1	GG Type General Purpose Type	GCM N3004-GG	●	●	●	●	3.0	±0.03	0.4	21.1	3.8	5	1			
			GCM N4004-GG	●	●	●	●	4.0	±0.03	0.4	26.4	4.0					
			GCM N5004-GG	●	●	●	●	5.0	±0.03	0.4	26.4	4.1					
			GCM N6004-GG	●	●	●	●	6.0	±0.03	0.4	26.4	4.5					
			GL Type Low Feed Type	GCM N2002-GL	●	●	●	●	2.0	±0.03	0.2	21.1			3.6	5	1
		GCM N3002-GL	●	●	●	●	3.0	±0.03	0.2	21.1	3.8						
		GCM N4002-GL	●	●	●	●	4.0	±0.03	0.2	26.4	4.0						
		GCM N5002-GL	●	●	●	●	5.0	±0.03	0.2	26.4	4.1						
		GCM N6002-GL	●	●	●	●	6.0	±0.03	0.2	26.4	4.5						
		GF Type Low cutting force Type	GCM N2002-GF	●	●	●	●	2.0	±0.03	0.2	21.1	3.6	5	1			
GCM N3002-GF	●		●	●	●	3.0	±0.03	0.2	21.1	3.8							
GCM N4002-GF	●		●	●	●	4.0	±0.03	0.2	26.4	4.0							
GCM N5002-GF	●		●	●	●	5.0	±0.03	0.2	26.4	4.1							
GCM N6002-GF	●		●	●	●	6.0	±0.03	0.2	26.4	4.5							
Copying	Fig. 2	RG Type General Purpose Type	GCM N3015-RG	●	●	●	●	3.0	±0.03	1.5	21.1	3.8	5	2			
			GCM N4020-RG	●	●	●	●	4.0	±0.03	2.0	26.4	4.0					
			GCM N5025-RG	●	●	●	●	5.0	±0.03	2.5	27.2	4.1					
			GCM N6030-RG	●	●	●	●	6.0	±0.03	3.0	27.5	4.5					

Select holders and inserts with the same grooving widths (w).

Very Small Diameter Face Grooving



Spare Parts

Clamp	Double Screw	Spanner
CKBW16	WB4-8	LH020

■ Holders

Cat. No.	Stock	Dimensions (mm)					Clamp	Double Screw	Spanner
		<i>h</i>	<i>b</i>	<i>L</i> ₁	<i>f</i>	<i>h</i> ₁			
CKBR 1010-16	●	10	10	100	10	10	CKBW16	WB4-8	LH020
CKBR 1212-16	●	12	12	125	12	12			
CKBR 1616-16	●	16	16	125	16	16			
CKBR 2020-16	●	20	20	125	20	20			
CKBR 2525-16	●	25	25	150	25	25			

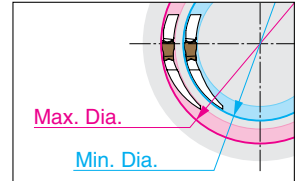
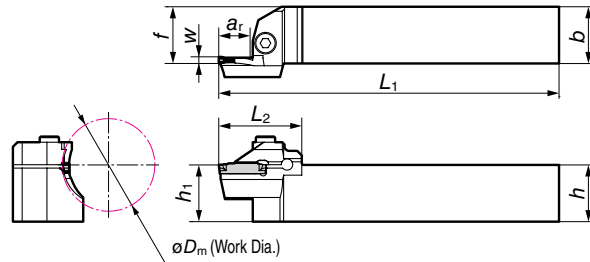
* For round shank holder, refer to page E12.

■ Inserts

	Cat. No.	Coated Carbide	Min. Bore (mm) $\varnothing D_m$	Dimensions (mm)					Max. Grooving Depth (mm)
		ACZ150		<i>F</i>	<i>e</i>	<i>w</i>	<i>r</i> _ε	<i>ℓ</i>	
		KBMF R0615-05		●	6.0	4.0	0.2	1.5	
KBMF R0620-05	●	6.0	4.0	0.2	2.0	0.05	21.8	4.0	
KBMF R0630-05	●	6.0	4.0	0.2	3.0	0.05	21.8	4.0	

GNDF Type

Face Grooving



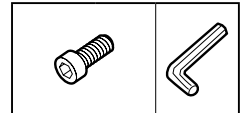
Work diameters in the stock table indicate external diameters of face grooves.

* Use the multi-purpose copying insert for turning (wide grooves).

Above figures show right hand tools.

■ Holders

■ Spare Parts



Cat. No.	Stock		Dimensions (mm)						Work Dia. (mm)	Grooving Width (mm)	Max. Grooving Depth (mm)	Applicable Insert	Cap Screw	Recommended Tightening Torque (N·m)	Spanner
	R	L	h	b	L ₁	f	h ₁	L ₂	øD _m	w	a _r				
GNDF R/L2020K-312-035	●	●	20	20	125	20	20	35.6	35 to 45	3.0	12	GCM N3000-□□	BX0520	5.0	LH040
GNDF R/L2020K-312-040	●	●	20	20	125	20	20	35.6	40 to 55	3.0	12				
GNDF R/L2020K-318-050	●	●	20	20	125	20	20	41.6	50 to 70	3.0	18				
GNDF R/L2020K-318-065	●	●	20	20	125	20	20	41.6	65 to 100	3.0	18				
GNDF R/L2020K-318-090	●	●	20	20	125	20	20	41.6	90 to 150	3.0	18				
GNDF R/L2020K-318-140	●	●	20	20	125	20	20	41.6	140 to 200	3.0	18				
GNDF R/L2020K-318-180	●	●	20	20	125	20	20	41.6	180 to 300	3.0	18				
GNDF R/L2020K-418-040	●	●	20	20	125	20	20	41.6	40 to 55	4.0	18	GCM N4000-□□	BX0520	5.0	LH040
GNDF R/L2020K-423-050	●	●	20	20	125	20	20	46.6	50 to 70	4.0	23				
GNDF R/L2020K-423-065	●	●	20	20	125	20	20	46.6	65 to 90	4.0	23				
GNDF R/L2020K-423-085	●	●	20	20	125	20	20	46.6	85 to 130	4.0	23				
GNDF R/L2020K-423-125	●	●	20	20	125	20	20	46.6	125 to 200	4.0	23				
GNDF R/L2020K-423-180	●	●	20	20	125	20	20	46.6	180 to 300	4.0	23				
GNDF R/L2020K-423-280	●	●	20	20	125	20	20	46.6	280 to 1000	4.0	23				
GNDF R/L2020K-523-050	●	●	20	20	125	20	20	46.6	50 to 70	5.0	23	GCM N5000-□□	BX0520	5.0	LH040
GNDF R/L2020K-523-065	●	●	20	20	125	20	20	46.6	65 to 90	5.0	23				
GNDF R/L2020K-523-085	●	●	20	20	125	20	20	46.6	85 to 130	5.0	23				
GNDF R/L2020K-523-125	●	●	20	20	125	20	20	46.6	125 to 200	5.0	23				
GNDF R/L2020K-523-180	●	●	20	20	125	20	20	46.6	180 to 300	5.0	23				
GNDF R/L2020K-523-280	●	●	20	20	125	20	20	46.6	280 to 1000	5.0	23				
GNDF R/L2020K-623-050	●	●	20	20	125	20	20	46.6	50 to 75	6.0	23	GCM N6000-□□	BX0520	5.0	LH040
GNDF R/L2020K-623-070	●	●	20	20	125	20	20	46.6	70 to 110	6.0	23				
GNDF R/L2020K-623-100	●	●	20	20	125	20	20	46.6	100 to 200	6.0	23				
GNDF R/L2020K-623-180	●	●	20	20	125	20	20	46.6	180 to 300	6.0	23				
GNDF R/L2020K-623-280	●	●	20	20	125	20	20	46.6	280 to 1000	6.0	23				
GNDF R/L2525M-312-035	●	●	25	25	150	25	25	35.6	35 to 45	3.0	12				
GNDF R/L2525M-312-040	●	●	25	25	150	25	25	35.6	40 to 55	3.0	12				
GNDF R/L2525M-318-050	●	●	25	25	150	25	25	41.6	50 to 70	3.0	18				
GNDF R/L2525M-318-065	●	●	25	25	150	25	25	41.6	65 to 100	3.0	18				
GNDF R/L2525M-318-090	●	●	25	25	150	25	25	41.6	90 to 150	3.0	18				
GNDF R/L2525M-318-140	●	●	25	25	150	25	25	41.6	140 to 200	3.0	18				
GNDF R/L2525M-318-180	●	●	25	25	150	25	25	41.6	180 to 300	3.0	18				
GNDF R/L2525M-418-040	●	●	25	25	150	25	25	41.6	40 to 55	4.0	18	GCM N4000-□□	BX0520	5.0	LH040
GNDF R/L2525M-423-050	●	●	25	25	150	25	25	46.6	50 to 70	4.0	23				
GNDF R/L2525M-423-065	●	●	25	25	150	25	25	46.6	65 to 90	4.0	23				
GNDF R/L2525M-423-085	●	●	25	25	150	25	25	46.6	85 to 130	4.0	23				
GNDF R/L2525M-423-125	●	●	25	25	150	25	25	46.6	125 to 200	4.0	23				
GNDF R/L2525M-423-180	●	●	25	25	150	25	25	46.6	180 to 300	4.0	23				
GNDF R/L2525M-423-280	●	●	25	25	150	25	25	46.6	280 to 1000	4.0	23				
GNDF R/L2525M-523-050	●	●	25	25	150	25	25	46.6	50 to 70	5.0	23	GCM N5000-□□	BX0520	5.0	LH040
GNDF R/L2525M-523-065	●	●	25	25	150	25	25	46.6	65 to 90	5.0	23				
GNDF R/L2525M-523-085	●	●	25	25	150	25	25	46.6	85 to 130	5.0	23				
GNDF R/L2525M-523-125	●	●	25	25	150	25	25	46.6	125 to 200	5.0	23				
GNDF R/L2525M-523-180	●	●	25	25	150	25	25	46.6	180 to 300	5.0	23				
GNDF R/L2525M-523-280	●	●	25	25	150	25	25	46.6	280 to 1000	5.0	23				
GNDF R/L2525M-623-050	●	●	25	25	150	25	25	46.6	50 to 75	6.0	23	GCM N6000-□□	BX0520	5.0	LH040
GNDF R/L2525M-623-070	●	●	25	25	150	25	25	46.6	70 to 110	6.0	23				
GNDF R/L2525M-623-100	●	●	25	25	150	25	25	46.6	100 to 200	6.0	23				
GNDF R/L2525M-623-180	●	●	25	25	150	25	25	46.6	180 to 300	6.0	23				
GNDF R/L2525M-623-280	●	●	25	25	150	25	25	46.6	280 to 1000	6.0	23				

Select holders and inserts with the same grooving widths (w).

GNDF Type

■ For GNDF

Application	Shape	Appearance	Cat. No.	Coated Carbide				Dimensions (mm)			Pcs./Pack	Fig.							
				AC830P	AC425K	AC520U	AC530U	w		r _ε			ℓ	s					
								Cutting width	Tolerance										
Grooving / Turning	Fig. 1 	MG Type General Purpose Type	GCM N3004-MG	●	●	●	●	3.0	±0.03	0.4	21.1	3.8	5	1					
			GCM N4008-MG	●	●	●	●	4.0	±0.03	0.8	26.4	4.0							
			GCM N5008-MG	●	●	●	●	5.0	±0.03	0.8	26.4	4.1							
			GCM N6008-MG	●	●	●	●	6.0	±0.03	0.8	26.4	4.5							
		ML Type Low Feed Type w=4.0mm w=5.0mm	GCM N3002-ML	●	●	●	●	3.0	±0.03	0.2	21.1	3.8	5	1					
			GCM N4004-ML	●	●	●	●	4.0	±0.03	0.4	26.4	4.0							
			GCM N5004-ML	●	●	●	●	5.0	±0.03	0.4	26.4	4.1							
			GCM N6004-ML	●	●	●	●	6.0	±0.03	0.4	26.4	4.5							
			Grooving / Cut-Off	Fig. 1 	GG Type General Purpose Type	GCM N3002-GG	●	●	●	●	3.0	±0.03			0.2	21.1	3.8	5	1
						GCM N4002-GG	●	●	●	●	4.0	±0.03			0.2	26.4	4.0		
GCM N5002-GG	●	●				●	●	5.0	±0.03	0.2	26.4	4.1							
GCM N6002-GG	●	●				●	●	6.0	±0.03	0.2	26.4	4.5							
GL Type Low Feed Type	GCM N3004-GG	●			●	●	●	3.0	±0.03	0.4	21.1	3.8	5	1					
	GCM N4004-GG	●			●	●	●	4.0	±0.03	0.4	26.4	4.0							
	GCM N5004-GG	●			●	●	●	5.0	±0.03	0.4	26.4	4.1							
	GCM N6004-GG	●			●	●	●	6.0	±0.03	0.4	26.4	4.5							
	GL Type Low Feed Type	GCM N3002-GL			●	●	●	●	3.0	±0.03	0.2	21.1			3.8	5	1		
		GCM N4002-GL			●	●	●	●	4.0	±0.03	0.2	26.4			4.0				
GCM N5002-GL		●	●	●	●	5.0	±0.03	0.2	26.4	4.1									
GCM N6002-GL		●	●	●	●	6.0	±0.03	0.2	26.4	4.5									
GF Type Low cutting force Type		GCM N3002-GF	●	●	●	●	3.0	±0.03	0.2	21.1	3.8	5	1						
		GCM N4002-GF	●	●	●	●	4.0	±0.03	0.2	26.4	4.0								
	GCM N5002-GF	●	●	●	●	5.0	±0.03	0.2	26.4	4.1									
	GCM N6002-GF	●	●	●	●	6.0	±0.03	0.2	26.4	4.5									

Select holders and inserts with the same grooving widths (w).

■ Recommended Cutting Conditions (GNDM/GNDMS)

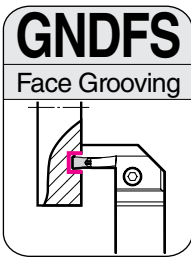
Work Material	P Carbon Steel / Alloy Steel			M Stainless Steel			K Cast Iron			S Exotic Alloy	
Grade	AC830P	AC520U	AC530U	AC830P	AC520U	AC530U	AC425K	AC520U	AC530U	AC520U	AC530U
Cutting Speed v _c (m/min)	80 to 200	80 to 200	50 to 200	70 to 150	70 to 150	50 to 150	80 to 200	60 to 200	50 to 200	20 to 80	20 to 60

Grooving / Cut-Off	Breaker	Feed Rate f (mm/rev)						Turning	Breaker	MG		ML		RG			
		MG	ML	GG	GL	GF	RG			Feed Rate f (mm/rev)	Depth of Cut a _p (mm)	Feed Rate f (mm/rev)	Depth of Cut a _p (mm)	Feed Rate f (mm/rev)	Depth of Cut a _p (mm)		
		Grooving Widths w (mm)		Grooving Widths w (mm)		Grooving Widths w (mm)				Grooving Widths w (mm)		Grooving Widths w (mm)		Grooving Widths w (mm)			
Grooving / Cut-Off	Breaker	2.0	-	-	0.05 to 0.25	0.03 to 0.15	0.03 to 0.12	-	Turning	Breaker	MG		ML		RG		
		3.0	0.08 to 0.20	0.03 to 0.15	0.10 to 0.30	0.05 to 0.18	0.05 to 0.15	0.05 to 0.15			3.0	0.08 to 0.25	0.4 to 1.5	0.05 to 0.18	0.3 to 1.5	0.10 to 0.40	0.3 to 1.2
		4.0	0.10 to 0.25	0.05 to 0.20	0.15 to 0.35	0.08 to 0.22	0.05 to 0.18	0.10 to 0.20			4.0	0.10 to 0.30	0.5 to 2.0	0.05 to 0.20	0.4 to 2.0	0.15 to 0.45	0.6 to 1.6
		5.0	0.12 to 0.30	0.08 to 0.25	0.20 to 0.40	0.10 to 0.25	0.08 to 0.20	0.15 to 0.25			5.0	0.12 to 0.35	0.8 to 2.5	0.08 to 0.25	0.5 to 2.5	0.20 to 0.50	0.8 to 2.0
		6.0	0.15 to 0.35	0.10 to 0.30	0.20 to 0.45	0.12 to 0.30	0.10 to 0.25	0.20 to 0.30			6.0	0.15 to 0.40	1.0 to 3.0	0.10 to 0.30	0.5 to 3.0	0.30 to 0.60	1.0 to 2.2
		7.0	0.18 to 0.40	0.12 to 0.35	0.20 to 0.50	0.15 to 0.35	-	0.25 to 0.35			7.0	0.18 to 0.45	1.2 to 3.5	0.12 to 0.35	0.7 to 3.5	0.35 to 0.65	1.2 to 2.5
		8.0	0.20 to 0.45	0.15 to 0.40	0.20 to 0.55	0.18 to 0.40	-	0.35 to 0.40			8.0	0.20 to 0.50	1.5 to 4.0	0.15 to 0.40	0.7 to 4.0	0.35 to 0.70	1.5 to 3.0

Note: Modifications to inserts and holders are required to perform machining such as R-grooving when using the RG type chipbreaker with the GNDFS type holder for facing.

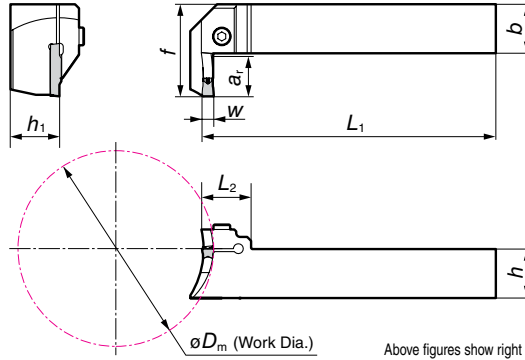
GNDFS Type

Face Grooving L-Styled (Non-adjustable Type)



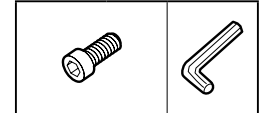
New

* Use the multi-purpose copying insert for turning (wide grooves).



Above figures show right hand tools.

Spare Parts



■ Holders

Cat. No.	Stock		Dimensions (mm)						Work Dia. (mm)	Grooving Width (mm)	Max. Grooving Depth (mm)	Applicable Insert	Cap Screw	Recommended Tightening Torque (N·m)	Spanner
	R	L	h	b	L ₁	f	h ₁	L ₂	øD _m	w	a _r				
GNDFS R/L2525M-620-070			25	25	150	47	25	25	70 to 100	6.0	20	GCM N6000-□□	BX0520	5.0	LH040
GNDFS R/L2525M-620-100			25	25	150	47	25	25	100 to 200	6.0	20				
GNDFS R/L2525M-620-180			25	25	150	47	25	25	180 to 300	6.0	20				
GNDFS R/L2525M-620-280			25	25	150	47	25	25	280 to 1000	6.0	20				
GNDFS R/L2525M-620-450			25	25	150	47	25	25	From 450	6.0	20				
GNDFS R/L3232P-620-070			32	32	170	54	32	25	70 to 100	6.0	20	GCM N6000-□□	BX0620	6.0	LH050
GNDFS R/L3232P-620-100			32	32	170	54	32	25	100 to 200	6.0	20				
GNDFS R/L3232P-620-180			32	32	170	54	32	25	180 to 300	6.0	20				
GNDFS R/L3232P-620-280			32	32	170	54	32	25	280 to 1000	6.0	20				
GNDFS R/L3232P-620-450			32	32	170	54	32	25	From 450	6.0	20				
GNDFS R/L2525M-820-070			25	25	150	47	25	30	70 to 100	8.0	20	GCM N8000-□□	BX0620	6.0	LH050
GNDFS R/L2525M-820-100			25	25	150	47	25	30	100 to 200	8.0	20				
GNDFS R/L2525M-820-180			25	25	150	47	25	30	180 to 300	8.0	20				
GNDFS R/L2525M-820-280			25	25	150	47	25	30	280 to 1000	8.0	20				
GNDFS R/L2525M-820-450			25	25	150	47	25	30	From 450	8.0	20				
GNDFS R/L3232P-820-070			32	32	170	54	32	30	70 to 100	8.0	20	GCM N8000-□□	BX0620	6.0	LH050
GNDFS R/L3232P-820-100			32	32	170	54	32	30	100 to 200	8.0	20				
GNDFS R/L3232P-820-180			32	32	170	54	32	30	180 to 300	8.0	20				
GNDFS R/L3232P-820-280			32	32	170	54	32	30	280 to 1000	8.0	20				
GNDFS R/L3232P-820-450			32	32	170	54	32	30	From 450	8.0	20				

Select holders and inserts with the same grooving widths (w).

■ For GNDFS

Application	Shape	Type	Cat. No.	Coated Carbide				Dimensions (mm)					Pcs./Pack	Fig.
				AC830P	AC425K	AC520U	AC530U	w		r _ε	ℓ	s		
Grooving / Turning	Fig. 1 	General Purpose Type	GCM N6008-MG	●	●	●	●	6.0	±0.03	0.8	26.4	4.5	5	1
			GCM N8008-MG	●	●	●	●	8.0	±0.04	0.8	28.75	6.0		
		Low Feed Type	GCM N6004-ML	●	●	●	●	6.0	±0.03	0.4	26.4	4.5	5	1
			GCM N8004-ML	●	●	●	●	8.0	±0.04	0.4	28.75	6.0		
Grooving / Cut-Off	Fig. 1 	General Purpose Type	GCM N6002-GG	●	●	●	●	6.0	±0.03	0.2	26.4	4.5	5	1
			GCM N6004-GG	●	●	●	●	6.0	±0.03	0.4	26.4	4.5		
		Low Feed Type	GCM N8004-GG	●	●	●	●	8.0	±0.04	0.4	28.75	6.0	5	1
			GCM N6002-GL	●	●	●	●	6.0	±0.03	0.2	26.4	4.5		
	Low cutting force Type	GCM N8004-GL	●	●	●	●	8.0	±0.04	0.4	28.75	6.0	5	1	
		GCM N6002-GF <i>New</i>	●	●	●	●	6.0	±0.03	0.2	26.4	4.5			

Select holders and inserts with the same grooving widths (w).

■ Recommended Cutting Conditions

Work Material	P Carbon Steel / Alloy Steel			M Stainless Steel			K Cast Iron			S Exotic Alloy	
Grade	AC830P	AC520U	AC530U	AC830P	AC520U	AC530U	AC425K	AC520U	AC530U	AC520U	AC530U
Cutting Speed v _c (m/min)	80 to 200	80 to 200	50 to 200	70 to 150	70 to 150	50 to 150	80 to 200	60 to 200	50 to 200	20 to 80	20 to 60

Grooving / Cut-Off	Breaker	Feed Rate f (mm/rev)						Turning	Breaker	MG		ML		RG	
		MG	ML	GG	GL	GF	RG			Feed Rate f (mm/rev)	Depth of Cut a _p (mm)	Feed Rate f (mm/rev)	Depth of Cut a _p (mm)	Feed Rate f (mm/rev)	Depth of Cut a _p (mm)
Grooving Widths w (mm)	6.0	0.15 to 0.35	0.10 to 0.30	0.20 to 0.45	0.12 to 0.30	0.10 to 0.25	0.20 to 0.30	6.0	0.15 to 0.40	1.0 to 3.0	0.10 to 0.30	0.5 to 3.0	0.30 to 0.60	1.0 to 2.2	
	8.0	0.20 to 0.45	0.15 to 0.40	0.20 to 0.55	0.18 to 0.40	-	0.35 to 0.40								8.0

Note: Modifications to inserts and holders are required to perform machining such as R-grooving when using the RG type chipbreaker with the GNDFS type holder for facing.

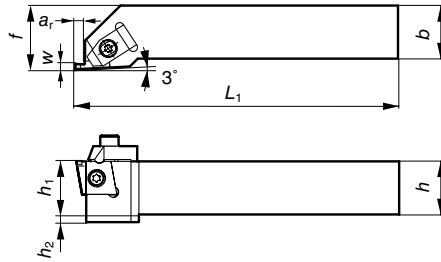
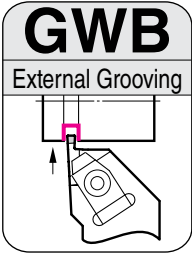
GWB Type



Characteristics

- Tangentially-mounted insert enhances tool rigidity.
- New double clamping holder design improves stability during continuous and interrupted cutting, and also allows traverse tool movement.
- Long tool life in interrupted cutting applications with the new Coated SUMIBORON **BNC30G** for grooving. (**BN250/BN2000** recommended for continuous cutting applications.)
- Suited for grooving various types of hardened steel. Variety of widths available from 1.5 to 6.0mm.

Hardened Steel Grooves



Spare Parts

Clamp	Cap Screw	Recommended Tightening Torque (N·m)	Screw	Spring	Spanner
TF-72 (Right Hand) TF-73 (Left Hand)	BX0520T	5.0	BFTX0511N	GSP06	TRX20

Holders

Cat. No.	Stock		Dimensions (mm)					Grooving Width (mm)	Max. Grooving Depth (mm)	Applicable Insert No.	
	R	L	h	b	L ₁	f	h ₁	h ₂	w	a _r	
GWB R/L 2020-45			20	20	151 (150)	25	20	5	1.5 ≤ w ≤ 4.5	3.5 to 5.0	①
GWB R/L 2525-45	●	●	25	25	151 (150)	30	25	—			
GWB R/L 2525-60	●	●	25	25	151	30	25	—	4.5 < w ≤ 6.0	5.0	②

Dimensions in parentheses are taken when "w" 3.0 or less. * Right handed toolholders are applicable with right handed inserts.

Inserts

Cat. No.	Stock					Dimensions (mm)					Insert No.	Applicable Holder	
	BN2000		BN250		BNC30G	w	a _r	r _ε	ød	s			
	R	L	R	L	R	L							
CGA R/L 1504150	●	●	▲	▲	●	●	1.5	3.5	0.2	15.875	4.76	①	GWB R/L 2020-45 GWB R/L 2525-45
CGA R/L 1504200	●	●	▲	▲	●	●	2.0	3.5					
CGA R/L 1504250	●	●	▲	▲	●	●	2.5	4.0					
CGA R/L 1504300	●	●	▲	▲	●	●	3.0	4.0					
CGA R/L 1504350	●	●	▲	▲	●	●	3.5	5.0					
CGA R/L 1504400	●	●	▲	▲	●	●	4.0	5.0					
CGA R/L 1504450	●	●	▲	▲	●	●	4.5	5.0					
CGA R/L 1506500	●	●	▲	▲	●	●	5.0	5.0	0.2	15.875	6.35	②	GWB R/L 2525-60
CGA R/L 1506550	●	●	▲	▲	●	●	5.5	5.0					
CGA R/L 1506600	●	●	▲	▲	●	●	6.0	5.0					

* It is also possible to manufacture grooving widths other than those listed above (w = 1.5 to 6.0mm)

Characteristics of Grades

Grade	Application	Characteristics	HV (GPa)	TRS (GPa)
BN2000	Continuous Grooving	General purpose grade with superior wear resistance	31 to 34	1.0 to 1.1
BNC30G	Interrupted Grooving	Recommended for interrupted cutting. Features a tough substrate, and special ceramic coating that exhibits both peel-off and wear resistance.	33 to 35	1.1 to 1.2

Recommended Cutting Conditions

Cutting Conditions	Hardened Steel
Cutting Speed v _c (m/min)	80 to 120
Feed Rate f (mm/rev)	0.04 to 0.08

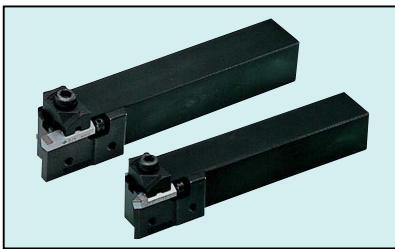
* In order to avoid thermal cracking of the SUMIBORON cutting edge during interrupted cutting, ensure that the work is thoroughly dry before cutting.

Application Examples

Process	Work Material	Tool No.	Cutting Conditions	Tool Life Comparison
Shaft Grooving: Continuous Required Finish for Groove Sides: Ra 0.4µm	Carburised Steel 58 to 62 HRC	CGAR1504200 BN2000	v _c : 120m/min f : 0.05mm/rev Grooving Depth : 2mm Dry	GWB Type BN2000 No Chipping Competitor's Chipping
Splines Depth: Interrupted 	Carburised Steel 58 to 62 HRC	CGAR1504200 BNC30G	v _c : 100m/min f : 0.05mm/rev Grooving Depth : 1.6mm Dry	GWB Type BNC30G No Chipping Competitor's Chipping

▲ mark : To be replaced by new item (Please confirm stock availability)

BNGG Type

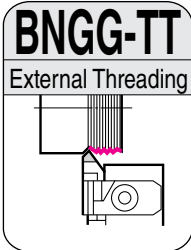


Characteristics

- Improved rigidity for longer tool life
Strong clamping reduces vibration and enhance chipping resistance.
- Grooving and threading operations
Grooving and threading can be adopted by changing the support.

SEC-grooving tool + SUMIBORON insert can be used for hardened steel grooving.

Hardened Steel, Shallow Grooves



Holders

Inserts are sold separately.

Fig. 1 Grooving	Cat. No.	Stock		Dimensions (mm)			Fig.	Applicable Insert
		R	L	f	l_1	L_1		
	BNGG R/L2525-200	●		30.5	4	150	1	BNGNT0200 R/L
	BNGG R/L2525-250	●		30.5	4	150		BNGNT0250 R/L
	BNGG R/L2525-300	●		30.5	5	150		BNGNT0300 R/L
	BNGG R/L2525-400	●		30.5	6	151		BNGNT0400 R/L
	BNGG R/L2525-500	●		30.5	6	151		BNGNT0500 R/L
	BNGG R/L2525-600	●		30.5	7	152		BNGNT0600 R/L
Fig. 2 Threading	BNGG R/L2525-TT	●		28.5	5	150	2	BNTT1020 R/L BNTT1530 R/L

* Holder can be configured for grooving or threading by changing the support.

Inserts

Fig. 1 Grooving	Cat. No.	Stock				Dimensions (mm)					Fig.	Applicable Holder				
		BN250		BNX20		BN350		BNX25		w			l_1	r_ϵ	l	F
		R	L	R	L	R	L	R	L							
	BNGNT0200 R/L	●				●				2.0	4.0	0.2	25	6.0	1	BNGG R/L 2525-200
	BNGNT0250 R/L	●				●				2.5	4.0	0.2	25	6.0		BNGG R/L 2525-250
	BNGNT0300 R/L	●				●				3.0	5.0	0.4	25	6.0		BNGG R/L 2525-300
	BNGNT0400 R/L	●				●				4.0	6.0	0.4	26	6.0		BNGG R/L 2525-400
	BNGNT0500 R/L	●				●				5.0	6.0	0.4	26	6.0		BNGG R/L 2525-500
	BNGNT0600 R/L	●				●				6.0	7.0	0.4	27	6.0		BNGG R/L 2525-600
Fig. 2 Threading	BNTT1020 R/L	●								Pitch 1.0 to 2.0	0.14	25	4.0	2	BNGG R/L 2525-TT	
	BNTT1530 R/L	●								Pitch 1.5 to 3.0	0.2	25	4.0			

Spare Parts

Applicable Holder	Support	Clamp	Axial Screw	Spring	Cap Screw	Spanner	
BNGG R/L2525-200	BNGS R/L 200	BNGC R/L	FMJ	GSP06	BX0615 (Clamp)	LH050 (Clamp)	1.8 × 45
BNGG R/L2525-250	BNGS R/L 250						
BNGG R/L2525-300	BNGS R/L 300						
BNGG R/L2525-400	BNGS R/L 400						
BNGG R/L2525-500	BNGS R/L 500						
BNGG R/L2525-600	BNGS R/L 600						
BNGG R/L2525-TT	BNGS R/L TT						

Recommended Cutting Conditions

Grooving

Cutting Conditions	H Hardened Steel
Cutting Speed v_c (m/min)	80 to 120
Feed Rate f (mm/rev)	0.03 to 0.07

Threading

Cutting Conditions	H Hardened Steel
Cutting Speed v_c (m/min)	80 to 120
Feed Rate f (mm)	Largest Pitch 3.0