

GrooveLine



SNG / CNG

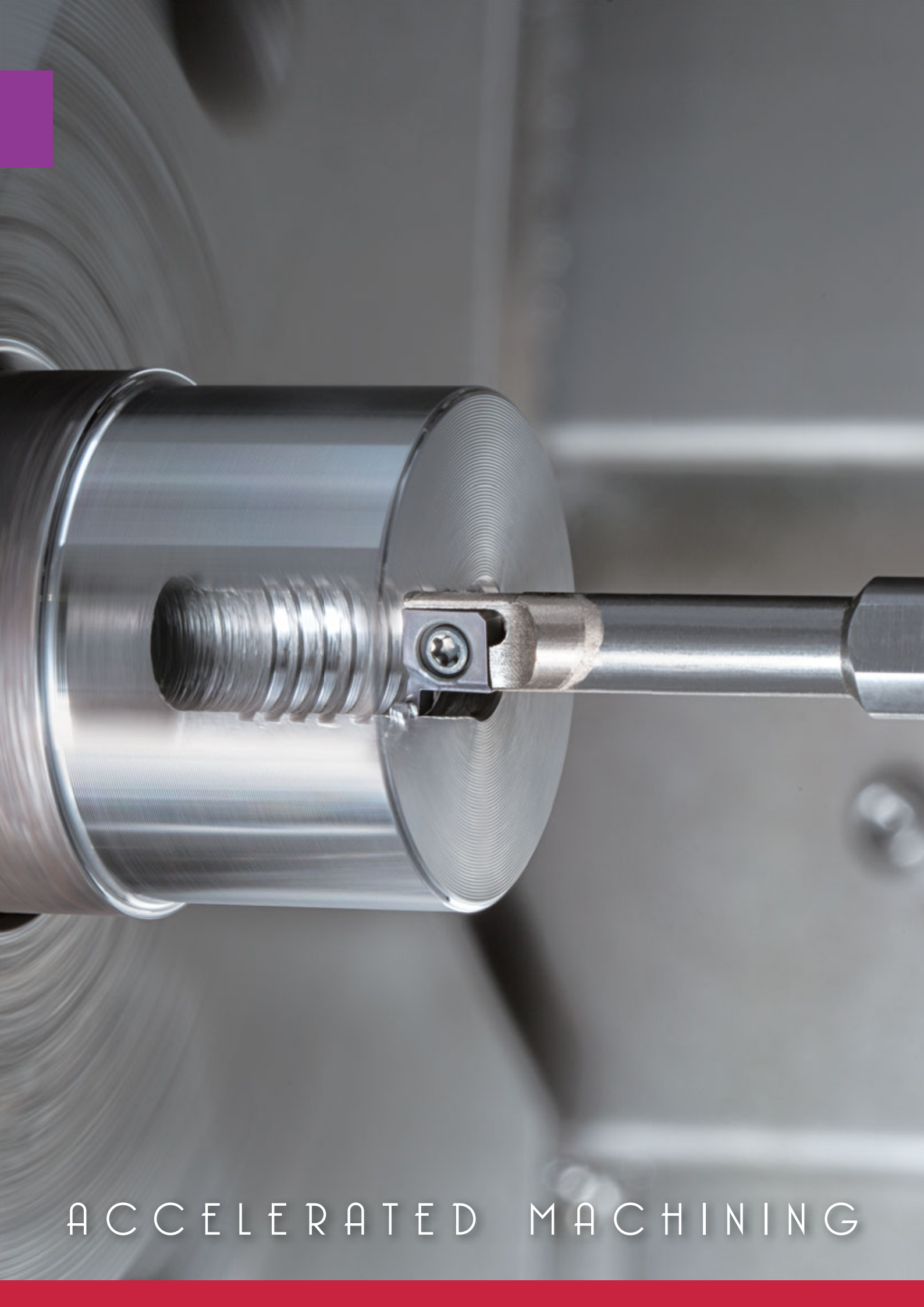
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Tungaloy Report No. 262-G

Internal grooving tool for $\varnothing 8$ mm holes
now offers **coolant-through holders**



INDUSTRY 4.0
FEED the SPEED!



ACCELERATED MACHINING





Provides reliable chip evacuation for hole diameters
as small as $\varnothing 8$ mm

New internal grooving tool series

Enables hole diameters as small as $\varnothing 8$ mm

Features and tool configuration

The new **GMR** insert with 3D chipbreaker complements the existing GR/L inserts, allowing further expansion of application options in internal grooving



Effective chip evacuation

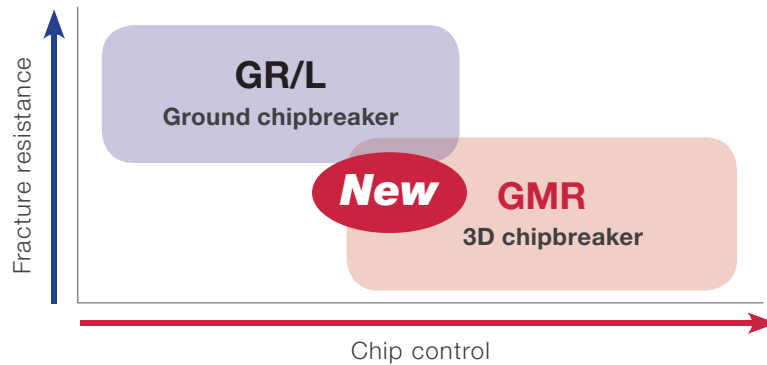


Chips are completely removed



Chip not completely removed, causing damages to parts

Chipbreaker selection



Chatter stability

		3D chipbreaker	Ground chipbreaker	
		New New chipbreaker	Conventional	Competitor
Hole diameter ø8 mm				
Feed rate (mm/rev)	0.1	✓	Fractured	Fractured
	0.05	✓	✓	Chatter
	0.03	—	—	✓

✓ = Stable

P Steel

Workpiece material : S45C / C45
 Pilot hole diameter (thru hole) : ø8 mm
 Cutting speed : $V_c = 80$ m/min
 Groove depth : 1.5 mm
 Coolant : Wet
 (External coolant)

		3D chipbreaker	Ground chipbreaker	
		New New chipbreaker	Conventional	Competitor
Hole diameter ø20 mm				
Feed rate (mm/rev)	0.1	✓	Chatter	✓
	0.05	✓	✓	✓
	0.03	—	—	✓

✓ = Stable

P Steel

Workpiece material : S45C / C45
 Pilot hole diameter (thru hole) : ø20 mm
 Cutting speed : $V_c = 80$ m/min
 Groove depth : 3 mm
 Coolant : Wet
 (External coolant)

Chip control (GMR)

V_c (m/min)	f (mm/rev)	$f = 0.03$	$f = 0.05$	$f = 0.07$	$f = 0.1$
$V_c = 50$					
	$V_c = 100$				

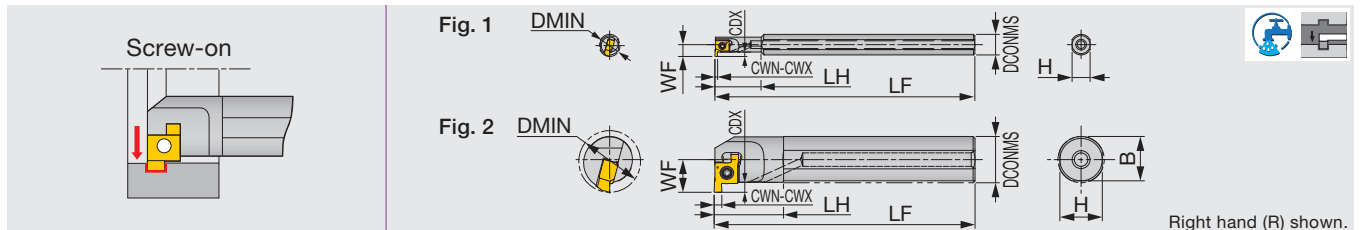
P Steel

Workpiece material : S45C / C45
 Pilot hole diameter : ø20 mm
 (thru hole)
 Cutting speed : $V_c = 80$ m/min
 Feed rate : $f = 0.05$ mm/rev
 Groove depth : 3 mm
 Coolant : Wet
 (External coolant)
 Insert : 9GMR200-020
 AH7025
 Toolholder : SNGR16Q09

New

A/E-SNGR

Toolholders for internal grooving, coolant-through



Designation	Material	CWN	CWX	DMIN	CDX	DCONMS	H	B	LF	LH	WF	Insert	Torque*	Fig.
A08H-SNGR06-D080	Steel	1	2	8	1.5	8	7	-	100	18	4.73	6GMR..., 6GR...	0.7	1
A08H-SNGR07-D100	Steel	1	2	10	1.5	8	7	-	100	23	5.8	7GMR..., 7GR...	1.0	1
A10K-SNGR07-D120	Steel	1	2	12	1.5	10	9	-	125	29	6.8	7GMR..., 7GR...	1.0	1
A10K-SNGR08-D140	Steel	1.5	3.5	14	2	10	9	-	125	15	7.6	8GMR..., 8GR...	1.0	2
A12M-SNGR08-D160	Steel	1.5	3.5	16	2	12	11	11.5	150	18	8.6	8GMR..., 8GR...	1.0	2
A16Q-SNGR09-D200	Steel	1.5	3.5	20	3	16	15	15.5	180	20	11.6	9GMR..., 9GR...	1.3	2
A20R-SNGR09-D240	Steel	1.5	3.5	24	3	20	18	19	200	25	13.6	9GMR..., 9GR...	1.3	2
E08X-SNGR07-D100	Carbide	1	2	10	1.5	8	7.5	-	120.5	35	5.8	7GMR..., 7GR...	1.0	1
E10X-SNGR07-D120	Carbide	1	2	12	1.5	10	9	-	143.5	45	6.8	7GMR..., 7GR...	1.0	1
E10X-SNGR08-D140	Carbide	1.5	3.5	14	2	10	9	-	146	-	7.6	8GMR..., 8GR...	1.0	2
E12X-SNGR08-D160	Carbide	1.5	3.5	16	2	12	11	-	174.8	-	8.6	8GMR..., 8GR...	1.0	2
E16X-SNGR09-D200	Carbide	1.5	3.5	20	3	16	15	-	194.6	-	11.6	9GMR..., 9GR...	1.5	2

Note: Use the right-hand insert (□GR) with the right-hand holder (□NGR).
*Torque: Recommended clamping torque (N·m)

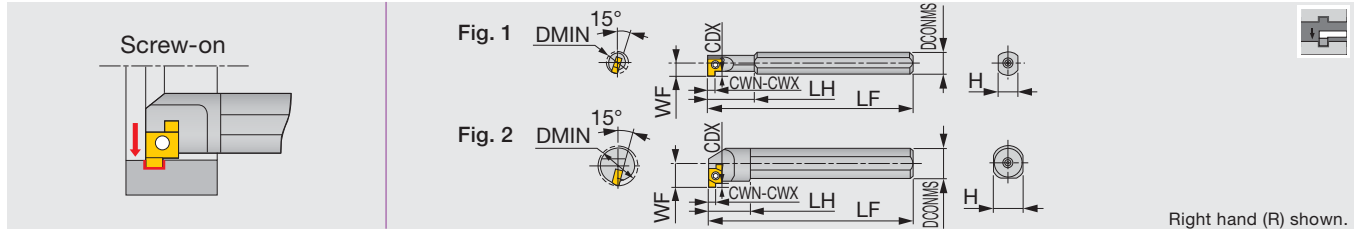
SPARE PARTS



Designation	Clamping screw	Wrench
A**-SNGR06-D...	CSTB-2L040	T-6F
A**-SNGR07-D...	CSTB-2.2S	T-7F
A**-SNGR08-D...	CSTB-2.2	T-7F
A**-SNGR09-D...	CSTB-2.5L080	T-8F
E**-SNGR07-D...	CSTB-2.2S	T-7F
E**-SNGR08-D...	CSTB-2.2	T-7F
E**-SNGR09-D...	CSTB-2.5L080	T-8F

SNGR/L

Toolholders for internal grooving



Right hand (R) shown.

Designation	Material	CWN	CWX	DMIN	CDX	DCONMS	H	LF	LH	WF	Insert	Torque*	Fig.
SNGR/L08H06	Steel	1	2	8	1.5	8	7	100	18	4.7	6GMR..., 6GR/L...	0.7	1
SNGR/L08H07	Steel	1	2	10	1.5	8	7	100	23	5.8	7GMR..., 7GR/L...	1.0	1
SNGR/L10K07	Steel	1	2	12	1.5	10	9	125	29	6.8	7GMR..., 7GR/L...	1.0	1
SNGR/L10K08	Steel	1.5	3.5	14	2	10	9	125	15	7.6	8GMR..., 8GR/L...	1.0	2
SNGR/L12M08	Steel	1.5	3.5	16	2	12	11	150	18	8.6	8GMR..., 8GR/L...	1.0	2
SNGR/L16Q09	Steel	1.5	3.5	20	3	16	15	180	20	11.6	9GMR..., 9GR/L...	1.3	2
SNGR/L20R09	Steel	1.5	3.5	24	3	20	18	200	25	13.6	9GMR..., 9GR/L...	1.3	2
SNGR/L08K06SC	Carbide	1	2	8	1.5	8	7	125	28	4.7	6GMR..., 6GR/L...	0.7	1
SNGR/L08K07SC	Carbide	1	2	10	1.5	8	7	125	35	5.8	7GMR..., 7GR/L...	1.0	1
SNGR/L10M07SC	Carbide	1	2	12	1.5	10	9	150	45	6.8	7GMR..., 7GR/L...	1.0	1
SNGR/L10M08SC	Carbide	1.5	3.5	14	2	10	9	150	45	7.6	8GMR..., 8GR/L...	1.0	2
SNGR/L12Q08SC	Carbide	1.5	3.5	16	2	12	11	180	-	8.6	8GMR..., 8GR/L...	1.0	2
SNGR/L16R09SC	Carbide	1.5	3.5	20	3	16	15	200	-	11.6	9GMR..., 9GR/L...	1.5	2

Note: Use the right-hand insert (□GR) with the right-hand holder (□NGR), and use the left-hand insert (□GL) with the left-hand holder (□NGL).

*Torque: Recommended clamping torque (N·m)

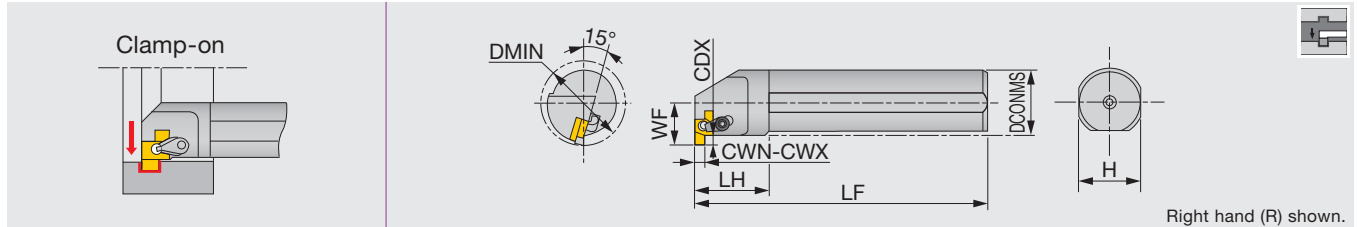
SPARE PARTS



Designation	Clamping screw	Wrench
SNGR/L***06	CSTB-2L040	T-6F
SNGR/L***07	CSTB-2.2S	T-7F
SNGR/L***08	CSTB-2.2	T-7F
SNGR/L***09	CSTB-2.5L080	T-8F
SNGR/L***06SC	CSTB-2L040	T-6F
SNGR/L***07SC	CSTB-2.2S	T-7F
SNGR/L***08SC	CSTB-2.2	T-7F
SNGR/L***09SC	CSTB-2.5L080	T-8F

CNGR/L

Toolholders for internal grooving



Right hand (R) shown.

Designation	CWN	CWX	DMIN	CDX	DCONMS	H	LF	LH	WF	Insert	Torque*
CNGR/L25S15	2	5	32	5	25	23	250	30	18.1	15GR/L...	7
CNGR/L32T15	2	5	40	5	32	30	300	35	22.1	15GR/L...	7
CNGR/L40U15	2	5	48	5	40	38	350	45	26.1	15GR/L...	7

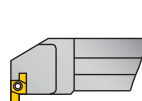
Note: Use the right-hand insert (□GR) with the right-hand holder (□NGR), and use the left-hand insert (□GL) with the left-hand holder (□NGL).

*Torque: Recommended clamping torque (N·m)

Optional parts for CNG holders

Use the following parts for screw clamp options.

SPARE PARTS				
Designation	Clamp set	Screw	Shim	Wrench
CNGR...	CSP22	DTS5-3.5	SGSR151	T-20F
CNGL...	CSP22	DTS5-3.5	SGSL151	T-20F

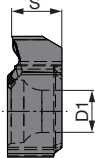
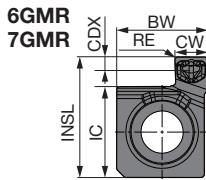


Designation	Clamping screw	Wrench
CNGR/L...	CSTB-3.5L	T-15F

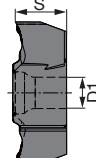
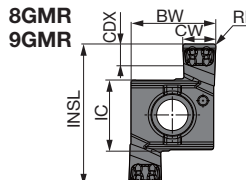
INSERTS

**GMR/L

New



Single edge



Double edge

Right hand (R) shown.

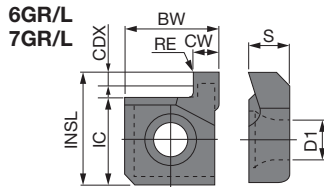
P	Steel	★							
M	Stainless	★							
K	Cast iron	★							
N	Non-ferrous								
S	Superalloys	★							
H	Hard materials								

★ : First choice
☆ : Second choice

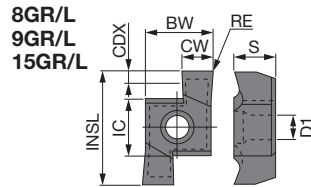
Designation	HAND	CW±0.025	RE	Coated					CDX	BW	S	IC	INSL	D1
				AH7025										
6GMR100-015	R	1	0.15	●					1.5	5.56	2.34	4.76	6.44	2.3
7GMR200-020	R	2	0.2	●					1.5	5.56	3.08	5.56	7.36	2.58
8GMR150-020	R	1.5	0.2	●					2	6.15	3.87	5.56	10.16	2.58
9GMR200-020	R	2	0.2	●					3	7.74	4.66	6.35	12.95	2.86
9GMR300-020	R	3	0.2	●					3	7.74	4.66	6.35	12.95	2.86

● : New product

****GR/L**



Single edge



Double edge

Right hand (R) shown.

P Steel	★			★		
M Stainless				★		
K Cast iron	☆		★			
N Non-ferrous			★			
S Superalloys			☆			
H Hard materials						

★ : First choice
☆ : Second choice

Designation	HAND	CW±0.025	RE	Cermet		Uncoated		CDX	BW	S	IC	INSL	D1
				NS9530		TH10	UX30						
6GR100	R	1	0.2	●		●	●	1.5	5.6	2.34	4.76	6.44	2.3
6GL100	L	1	0.2				●	1.5	5.6	2.34	4.76	6.44	2.3
6GR150	R	1.5	0.2	●		●	●	1.5	5.6	2.34	4.76	6.44	2.3
6GL150	L	1.5	0.2			●	●	1.5	5.6	2.34	4.76	6.44	2.3
6GR200	R	2	0.2	●		●	●	1.5	5.6	2.34	4.76	6.44	2.3
6GL200	L	2	0.2			●	●	1.5	5.6	2.34	4.76	6.44	2.3
7GR100	R	1	0.2	●		●	●	1.5	5.6	3.08	5.56	7.36	2.58
7GR150	R	1.5	0.2	●		●	●	1.5	5.6	3.08	5.56	7.36	2.58
7GR200	R	2	0.2	●		●	●	1.5	5.6	3.08	5.56	7.36	2.58
7GL200	L	2	0.2			●	●	1.5	5.6	3.08	5.56	7.36	2.58
8GR150	R	1.5	0.2	●		●	●	2	6.2	3.87	5.56	10.16	2.58
8GR200	R	2	0.2	●		●	●	2	6.2	3.87	5.56	10.16	2.58
8GL200	L	2	0.2			●		2	6.2	3.87	5.56	10.16	2.58
8GR250	R	2.5	0.2	●		●	●	2	6.2	3.87	5.56	10.16	2.58
8GL250	L	2.5	0.2			●	●	2	6.2	3.87	5.56	10.16	2.58
8GR300	R	3	0.2	●		●	●	2	6.2	3.87	5.56	10.16	2.58
8GL300	L	3	0.2			●	●	2	6.2	3.87	5.56	10.16	2.58
8GR350	R	3.5	0.2	●		●	●	2	6.2	3.87	5.56	10.16	2.58
9GR150	R	1.5	0.2	●		●	●	2	7.7	4.66	6.35	12.95	2.86
9GL150	L	1.5	0.2	●			●	2	7.7	4.66	6.35	12.95	2.86
9GR200	R	2	0.2	●		●	●	3	7.7	4.66	6.35	12.95	2.86
9GL200	L	2	0.2	●		●	●	3	7.7	4.66	6.35	12.95	2.86
9GR250	R	2.5	0.2	●		●	●	3	7.7	4.66	6.35	12.95	2.86
9GL250	L	2.5	0.2	●			●	3	7.7	4.66	6.35	12.95	2.86
9GR300	R	3	0.2	●		●	●	3	7.7	4.66	6.35	12.95	2.86
9GL300	L	3	0.2	●		●	●	3	7.7	4.66	6.35	12.95	2.86
9GR350	R	3.5	0.2	●		●	●	3	7.7	4.66	6.35	12.95	2.86
9GL350	L	3.5	0.2	●			●	3	7.7	4.66	6.35	12.95	2.86
15GR200	R	2	0.2	●		●	●	3	10.8	5.1	9.2	20.8	4.8
15GR250	R	2.5	0.2	●		●	●	3	10.8	5.1	9.2	20.8	4.8
15GR300	R	3	0.2	●		●	●	3	10.8	5.1	9.2	20.8	4.8
15GL300	L	3	0.2				●	3	10.8	5.1	9.2	20.8	4.8
15GR350	R	3.5	0.2	●		●	●	3	10.8	5.1	9.2	20.8	4.8
15GR400	R	4	0.2	●		●	●	4	10.8	5.1	9.2	20.8	4.8
15GR450	R	4.5	0.2	●		●	●	4	10.8	5.1	9.2	20.8	4.8
15GL450	L	4.5	0.2			●	●	4	10.8	5.1	9.2	20.8	4.8
15GR500	R	5	0.2	●		●	●	5	10.8	5.1	9.2	20.8	4.8

Note: Use the right-hand insert (□GR) with the right-hand holder (□NGR), and use the left-hand insert (□GL) with the left-hand holder (□NGL).

● : Line up

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Grade	Cutting speed Vc (m/min)	Feed rate: <i>f</i> (mm/rev)	
				New **GMR...	**GR/L...
P	Carbon steel S45C, C45, etc.	AH7025	80 - 180	0.03 - 0.12	-
		NS9530	80 - 200	-	0.05 - 0.15
		UX30	40 - 150	-	0.05 - 0.15
	Alloy steel SCM435, 34CrMo4, etc.	AH7025	80 - 180	0.03 - 0.12	-
		NS9530	80 - 200	-	0.05 - 0.15
		UX30	40 - 150	-	0.05 - 0.15
M	Stainless steel SUS304, X5CrNi18-9, etc.	AH7025	50 - 120	0.03 - 0.12	-
		UX30	40 - 100	-	0.03 - 0.10
K	Grey cast irons F250, GG25, 250, etc.	AH7025	50 - 220	0.03 - 0.12	-
		TH10	60 - 200	-	0.05 - 0.15
	Ductile cast irons FCD400, etc.	AH7025	50 - 180	0.03 - 0.12	-
		TH10	40 - 160	-	0.05 - 0.15
S	Titanium alloys Ti-6Al-4V, etc.	AH7025	30 - 80	0.03 - 0.12	-
		TH10	20 - 50	-	0.05 - 0.08
	Superalloys Inconel718, etc.	AH7025	20 - 60	0.03 - 0.12	-
		TH10	10 - 30	-	0.03 - 0.08

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