MITSUBISHI MATERIALS
TOOLS NEWS B225G

Cutting Off & Grooving System

GW Series

New Product

Long Lasting, Easy to Use Cutting Off & Grooving System

Simplified

GW Series

Simplicity & convenience.
Introducing a new kind of cutting off & grooving system that maximizes usability without sacrificing machining performance.

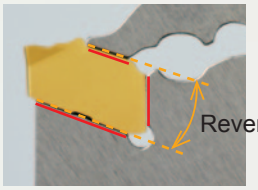
Efficiency

Easy to Utilize Configuration that Improves Tool Handling

Clamp

Simple insert clamping method offering high rigidity.

To prevent the insert from being pulled out during machining a reverse taper angle has been designed from the front of the insert, additionally the design also includes 3 large locating faces between the insert and the blade offering increased cutting edge reliability. The blade itself is made from a special alloy steel to suit this application.
In respect to insert indexing a unique wrench is supplied to ensure ease when changing the insert.

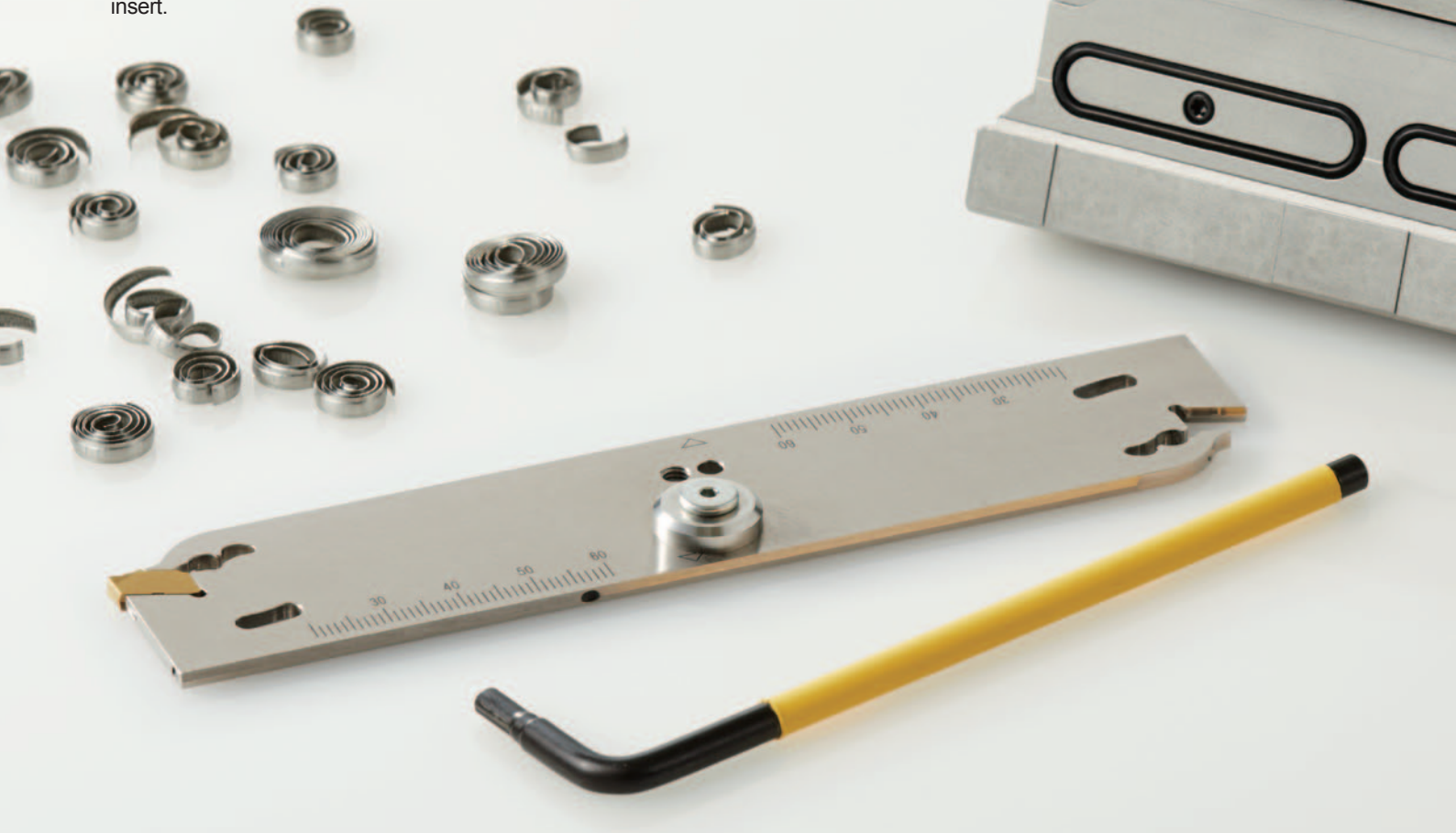


Reverse Taper Angle

Voice of Developer

Just how easy is it to set an insert?

With the use of a unique wrench, it is possible to locate and remove the insert with one simply action making it easier for use in the workshop.



Through Coolant Blade

Increased wear resistance due to the use of 2 through coolant ejection holes.

2 through coolant holes supply the coolant to both the rake and flank face, leading to effective cutting edge cooling and increased wear resistance.
Additionally this blade can also be used for both low pressure and high pressure coolant (7MPa).

Voice of Developer

How is it possible to reduce heat generation?

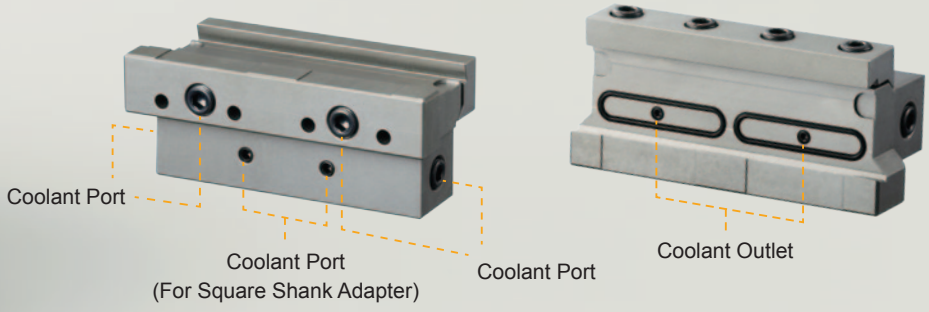
The 2 coolant holes used in the blade are capable of using high coolant pressures of up (7MPa), this is achieved by using as large as possible a through coolant hole diameter.
The ejection holes are located close to the cutting edge so as to improve the cutting edge cooling effect and increasing wear resistance.

GW video is available on YouTube.
GW 動画をYouTubeで公開しています。

Coolant Ports

Flexible set up possible with the use of 6 coolant ports.

There are 6 coolant ports designed into the tool block. This makes it easier for the end user to set up the tool block and blade to a configuration that suits their needs. If necessary it is also possible to use coolant hose. The ejection type coolant also improves cutting edge cooling and chip evacuation.



Voice of Developer

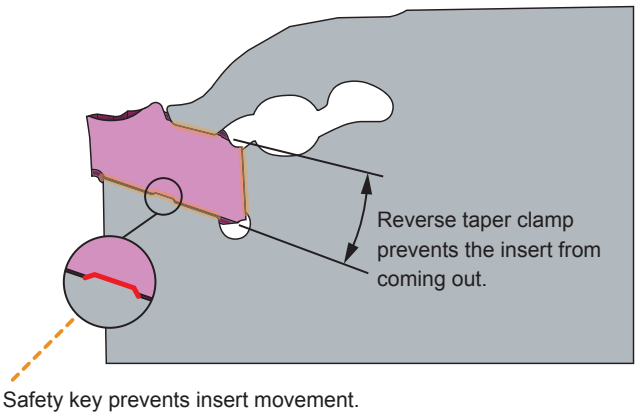
Possible to set up to suit the requirements of the workshop environment.

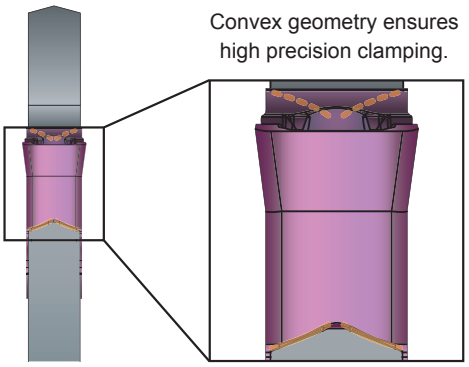
One of the objectives of this product is to respond to the customers complaints that “the product did not fit and could not be used”. Starting with the coolant outlet that prevents leaks even when oil quantity or overhangs change, everything from the material and the shape of the O-ring, to the length of the hose has been tailored to the effective use in the workshop.

Clamp Mechanism

Simple Insert Clamping Method Offering High Rigidity

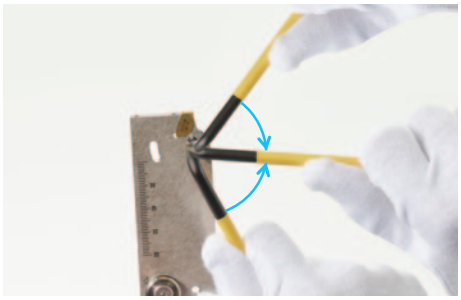
Highly Reliable Insert Clamping

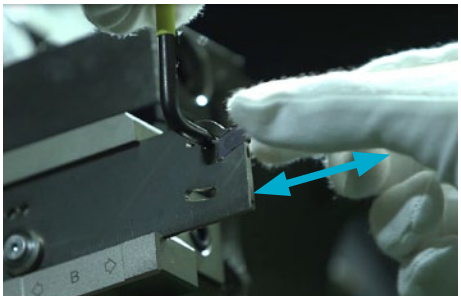




Easy Insert Indexing

The inserts can be indexed easily with a one action movement of the wrench.

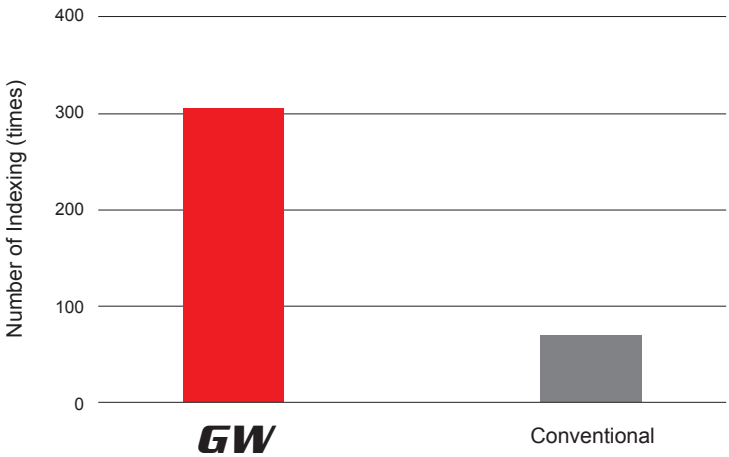




GW video is available on YouTube.

Excellent Clamp Durability

High clamp durability when compared to a conventional tool.

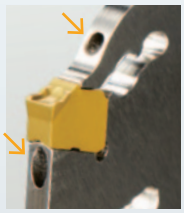


*Based on a 3mm width insert.

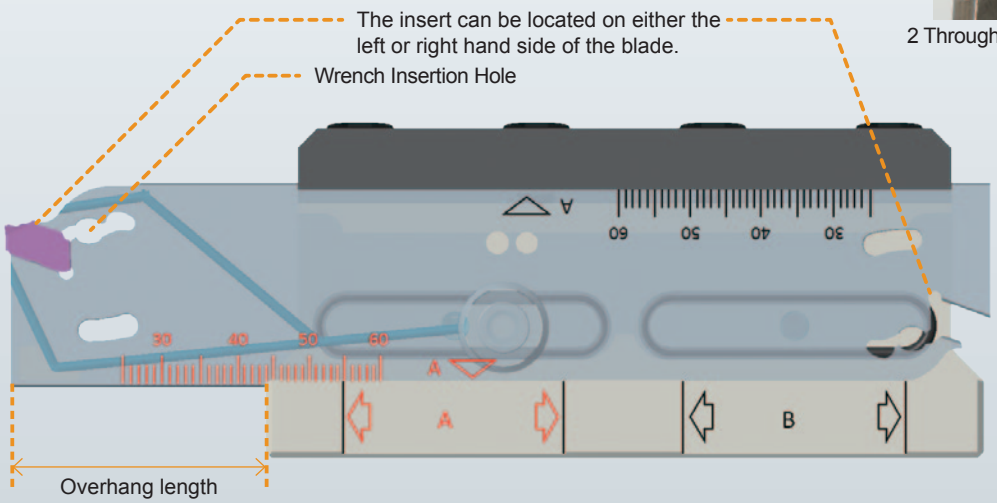
Internal Coolant

Suitable for Various Set Ups Improving Tool Handling

A scale is marked on the blade to make it easier to set the correct overhang length.
(As long as the arrow of the blade is set up with an overhang length that is within the band on the tool block then through coolant is possible)
The blade is possible to use with both external or through coolant.

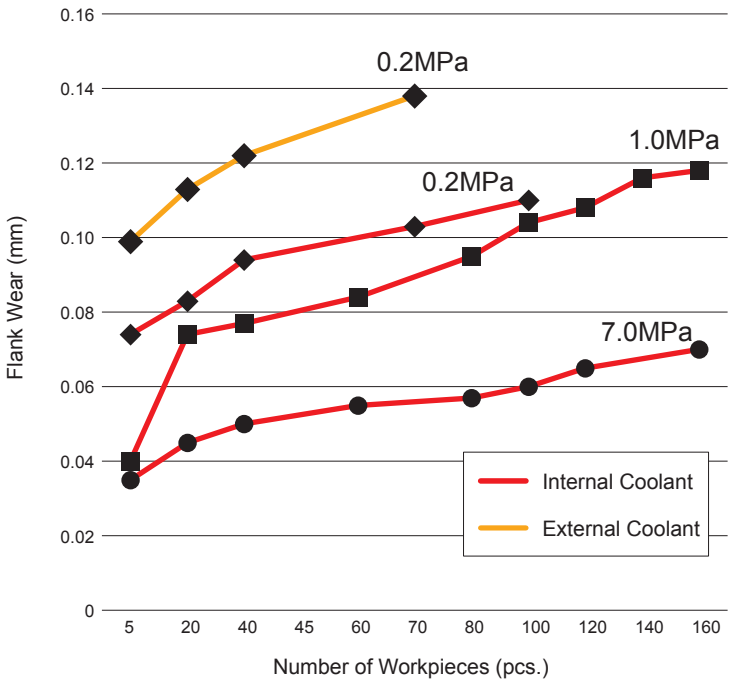


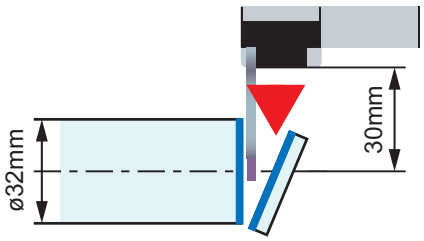
2 Through Coolant Holes



Effects of Through Coolant

Cutting Off





<Cutting Conditions>
Work Material : AISI 304 (ø32mm)
Insert : GW1M0300F030N-GW (VP20RT)
Grooving Width **CW**=3mm
Cutting Speed **vc** : 180m/min
Feed per Rev. **f** : 0.15mm/rev
ø10mm<0.03mm/rev
Overhang Length : 30mm

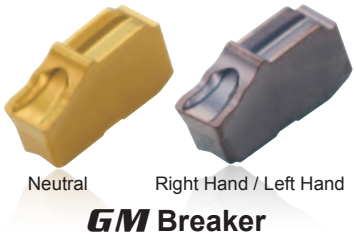
Chip Breaker

Breaker System Offering Excellent Chip Disposal Properties

Low Feeds

GS Breaker

Medium Feeds



Neutral　　Right Hand / Left Hand

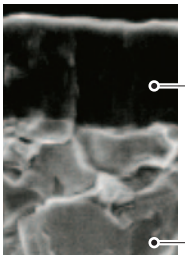
GM Breaker

GW video is available on YouTube.

Insert Grades

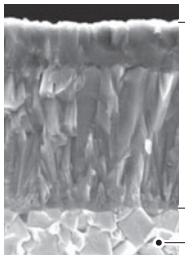
Work Material / Machining Condition	P Steel	M Stainless Steel	K Cast Iron	S Heat Resistant Alloy / Titanium Alloy
Stable	MY5015		MY5015	VP10RT
↑ Machining Condition	VP10RT	VP10RT	VP10RT	
	VP20RT	VP20RT	VP20RT	VP20RT
↓	VP30RT	VP30RT		
Unstable				

VP20RT (1st Recommendation)



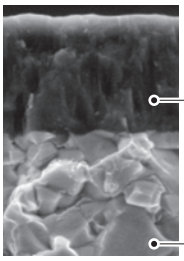
- PVD coated grade suitable for a wide range of applications. The combination of a special tough cemented carbide substrate with MIRACLE coating provides an excellent balance of wear and fracture resistance.

MY5015



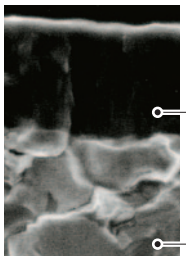
- MY5015 is a CVD coated grade with excellent wear resistance even at high temperatures. It provides longer tool life when machining cast and ductile cast irons. Also suitable for high speed continuous cutting of steels.

VP10RT



- PVD coated grade with a cemented carbide substrate harder than VP20RT. For use on difficult-to-cut materials and for extending tool life.

VP30RT

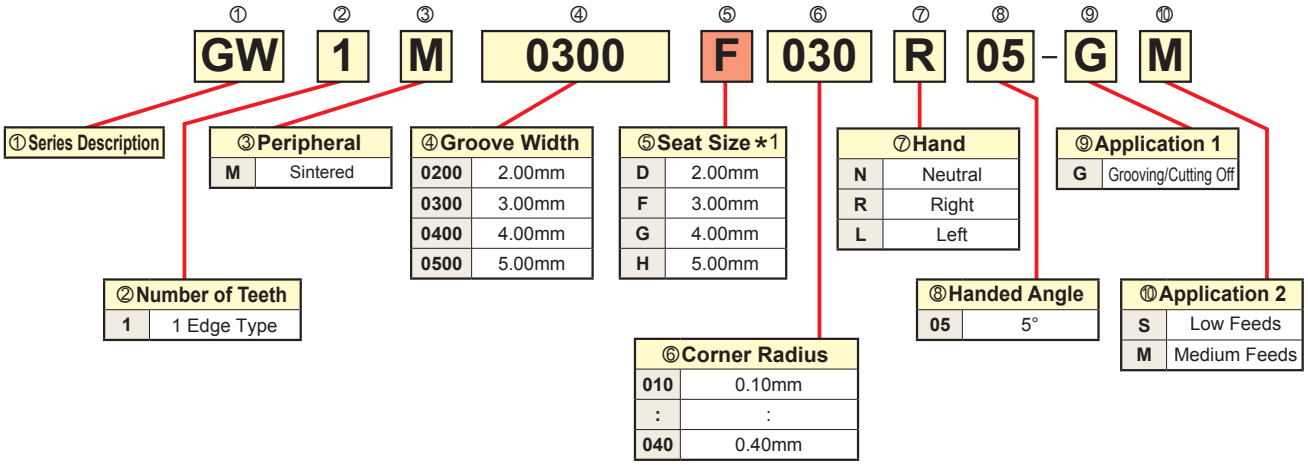


- A combination of a tough, special cemented carbide substrate and MIRACLE coating. Ideal for heavy interrupted cutting of stainless and general steels.

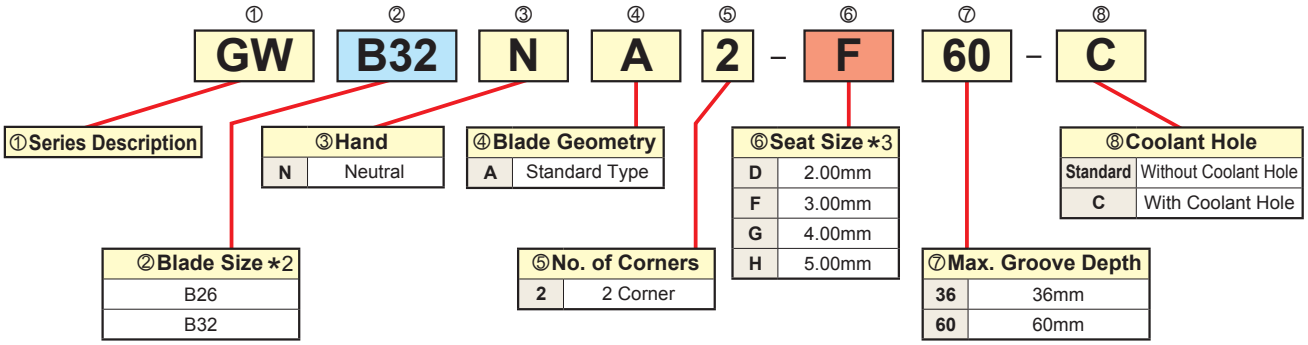
Identification of GW Series

Insert / Blade / Tool Block

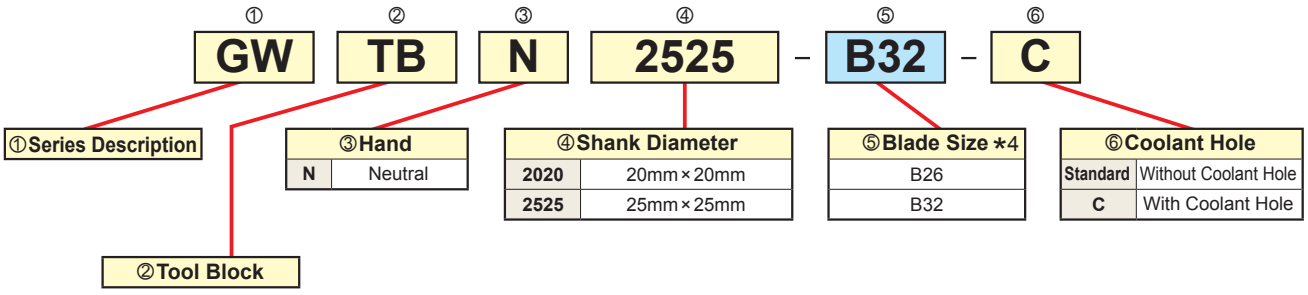
Insert



Blade



Tool Block



∗1 Select seat size with the same symbol as that of blade.
∗2 Select blade size with the same symbol as that of tool block.
∗3 Select seat size with the same symbol of the insert.
∗4 Select blade size with the same symbol as that of blade.

GW Blade

- Simple insert clamping method offering high rigidity.
- The blade is possible to use with both external or through coolant.
- Groove Depth CW 2.0–5.0mm

GW

For External Cutting Off / Grooving

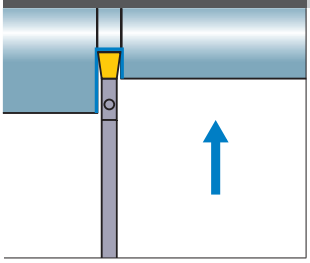


Fig.1

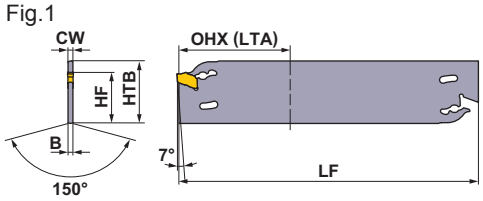
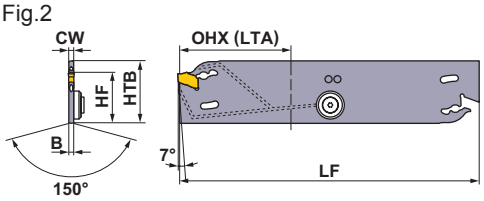


Fig.2



Without Coolant Hole

(mm)

Seat Size	CW	*1 CUTDIA	Order Number	Stock	*2 OHN	*3 OHX (LTA)	B	LF	HTB	HF	Fig.	Insert Type	Wrench	Tool Block Type
D	2.00	72	**GWB26NA2-D36**	●	16	36	1.55	110	26	21.4	1	GW1M0200D	GWY39L	GWTBN-B26
		120	**GWB32NA2-D60**	●	16	60	1.55	150	32	25	1	GW1M0200D	GWY39L	GWTBN-B32
F	3.00	72	**GWB26NA2-F36**	●	16	36	2.45	110	26	21.4	1	GW1M0300F	GWY39L	GWTBN-B26
		120	**GWB32NA2-F60**	●	16	60	2.45	150	32	25	1	GW1M0300F	GWY39L	GWTBN-B32
G	4.00	72	**GWB26NA2-G36**	●	19	36	3.35	110	26	21.4	1	GW1M0400G	GWY39L	GWTBN-B26
		120	**GWB32NA2-G60**	●	19	60	3.35	150	32	25	1	GW1M0400G	GWY39L	GWTBN-B32
H	5.00	72	**GWB26NA2-H36**	●	19	36	4.25	110	26	21.4	1	GW1M0500H	GWY39L	GWTBN-B26
		120	**GWB32NA2-H60**	●	19	60	4.25	150	32	25	1	GW1M0500H	GWY39L	GWTBN-B32

With Coolant Hole

(mm)

Seat Size	CW	*1 CUTDIA	Order Number	Stock	*2 OHN	*3 OHX (LTA)	B	LF	HTB	HF	Fig.	Insert Type	Wrench	Tool Block Type
D	2.00	72	**GWB26NA2-D36-C**	●	16	36	1.55	110	26	21.4	2	GW1M0200D	GWY39L	GWTBN-B26-C
		120	**GWB32NA2-D60-C**	●	26	60	1.55	150	32	25	2	GW1M0200D	GWY39L	GWTBN-B32-C
F	3.00	72	**GWB26NA2-F36-C**	●	16	36	2.45	110	26	21.4	2	GW1M0300F	GWY39L	GWTBN-B26-C
		120	**GWB32NA2-F60-C**	●	26	60	2.45	150	32	25	2	GW1M0300F	GWY39L	GWTBN-B32-C
G	4.00	72	**GWB26NA2-G36-C**	●	19	36	3.35	110	26	21.4	2	GW1M0400G	GWY39L	GWTBN-B26-C
		120	**GWB32NA2-G60-C**	●	26	60	3.35	150	32	25	2	GW1M0400G	GWY39L	GWTBN-B32-C
H	5.00	72	**GWB26NA2-H36-C**	●	19	36	4.25	110	26	21.4	2	GW1M0500H	GWY39L	GWTBN-B26-C
		120	**GWB32NA2-H60-C**	●	26	60	4.25	150	32	25	2	GW1M0500H	GWY39L	GWTBN-B32-C

*1 CUTDIA : Maximum Cut Off Diameter *2 OHN : Minimum Overhang Length *3 OHX(LTA) : Maximum Overhang Length

* Recommended Maximum Coolant Pressure 7MPa

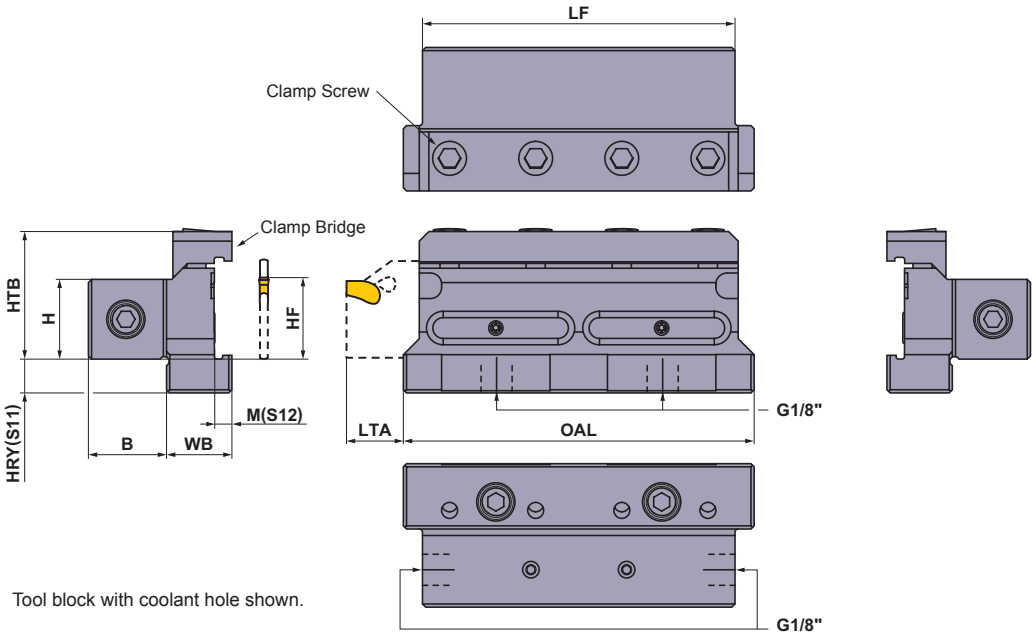
Spare Parts for Blades with Coolant Hole

(mm)

Order Number	CW	① ② Washer	Clamp Screw	Plug Wrench
GWB26NA2-D36-C	2.0	①GWW04038	GW04005F	HKY20R
GWB32NA2-D60-C	2.0	①GWW04038	GW04005F	HKY20R
GWB26NA2-F36-C	3.0	①GWW04038	GW04005F	HKY20R
GWB32NA2-F60-C	3.0	①GWW04038	GW04005F	HKY20R
GWB26NA2-G36-C	4.0	②GWW04026	GW04005F	HKY20R
GWB32NA2-G60-C	4.0	②GWW04026	GW04005F	HKY20R
GWB26NA2-H36-C	5.0	②GWW04026	GW04005F	HKY20R
GWB32NA2-H60-C	5.0	②GWW04026	GW04005F	HKY20R

● : **Inventory maintained in Japan.**

Tool Block



Tool block with coolant hole shown.

Without Coolant Hole (mm)

Order Number	Stock	H	HF	HTB	HRY (S11)	B	WB	M (S12)	LF	OAL	Clamp Bridge	Clamp Screw	Wrench
GWTBN2020-B26	●	20	20	33.5	11	19.5	20.0	5.0	75	85	①GWCW1	HSC06020	HKY50R
GWTBN2020-B32	●	20	20	35.0	15.6	19.5	20.5	5.5	100	110	②GWCW2	HSC06020	HKY50R
GWTBN2525-B26	●	25	25	38.5	6	24.5	20.0	5.0	75	85	①GWCW1	HSC06020	HKY50R
GWTBN2525-B32	●	25	25	40.0	10.6	24.5	20.5	5.5	100	110	②GWCW2	HSC06020	HKY50R

With Coolant Hole (mm)

Order Number	Stock	H	HF	HTB	HRY (S11)	B	WB	M (S12)	LF	OAL	Clamp Bridge	Clamp Screw	Wrench
GWTBN2020-B26-C	●	20	20	33.5	11	19.5	20.0	5.0	75	85	①GWCW1	HSC06020	HKY50R
GWTBN2020-B32-C	●	20	20	35.0	15.6	19.5	20.5	5.5	100	110	②GWCW2	HSC06020	HKY50R
GWTBN2525-B26-C	●	25	25	38.5	6	24.5	20.0	5.0	75	85	①GWCW1	HSC06020	HKY50R
GWTBN2525-B32-C	●	25	25	40.0	10.6	24.5	20.5	5.5	100	110	②GWCW2	HSC06020	HKY50R

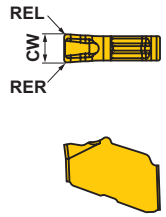
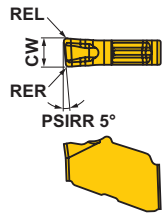
* Recommended Maximum Coolant Pressure 7MPa
* Clamp Torque (N • m) : HSC06020=7.0

Spare Parts for Tool Block with Coolant Hole

Order Number	① ② O-ring	Plug	Plug	Wrench	Plug	Wrench
GWTBN2020-B26-C	ORGW332N9	HGJ-PT1/8	HSD05004S	HKY25R	CS300590T	TKY08R
GWTBN2020-B32-C	ORGW457N9	HGJ-PT1/8	HSD05004S	HKY25R	CS300590T	TKY08R
GWTBN2525-B26-C	ORGW332N9	HGJ-PT1/8	HSD05004S	HKY25R	CS300590T	TKY08R
GWTBN2525-B32-C	ORGW457N9	HGJ-PT1/8	HSD05004S	HKY25R	CS300590T	TKY08R

Inserts

(mm)

Application	Order Number	Stock Coating				CW		REL	RER	PSIRR	Geometry
		MY5015	VP10RT	VP20RT	VP30RT	Width of Cutting Edge	Tolerance				
Grooving, Cutting Off	**GW1M0200D020N-GS**		●	●	●	2.00	±0.03	0.2	0.2	–	
Grooving, Cutting Off	**GW1M0300F020N-GS**		●	●	●	3.00	±0.03	0.2	0.2	–	
Grooving, Cutting Off	**GW1M0400G020N-GS**		●	●	●	4.00	±0.04	0.2	0.2	–	
Grooving, Cutting Off	**GW1M0500H030N-GS**		●	●	●	5.00	±0.04	0.3	0.3	–	
Grooving, Cutting Off	**GW1M0200D020N-GM**	●	●	●	●	2.00	±0.03	0.2	0.2	–	
Grooving, Cutting Off	**GW1M0300F030N-GM**	●	●	●	●	3.00	±0.03	0.3	0.3	–	
Grooving, Cutting Off	**GW1M0400G030N-GM**	●	●	●	●	4.00	±0.04	0.3	0.3	–	
Grooving, Cutting Off	**GW1M0500H040N-GM**	●	●	●	●	5.00	±0.04	0.4	0.4	–	
Cutting Off	**GW1M0200D020R05-GM**		●	●	●	2.00	±0.03	0.2	0.2	5	
Cutting Off	**GW1M0200D020L05-GM**		●	●	●	2.00	±0.03	0.2	0.2	5	
Cutting Off	**GW1M0300F030R05-GM**		●	●	●	3.00	±0.03	0.3	0.3	5	
Cutting Off	**GW1M0300F030L05-GM**		●	●	●	3.00	±0.03	0.3	0.3	5	
Cutting Off	**GW1M0400G030R05-GM**		●	●	●	4.00	±0.04	0.3	0.3	5	
Cutting Off	**GW1M0400G030L05-GM**		●	●	●	4.00	±0.04	0.3	0.3	5	
Cutting Off	**GW1M0500H040R05-GM**		●	●	●	5.00	±0.04	0.4	0.4	5	
Cutting Off	**GW1M0500H040L05-GM**		●	●	●	5.00	±0.04	0.4	0.4	5	Right hand insert shown.

● : Inventory maintained in Japan. (10 inserts in one case)

Coolant Hose Kit

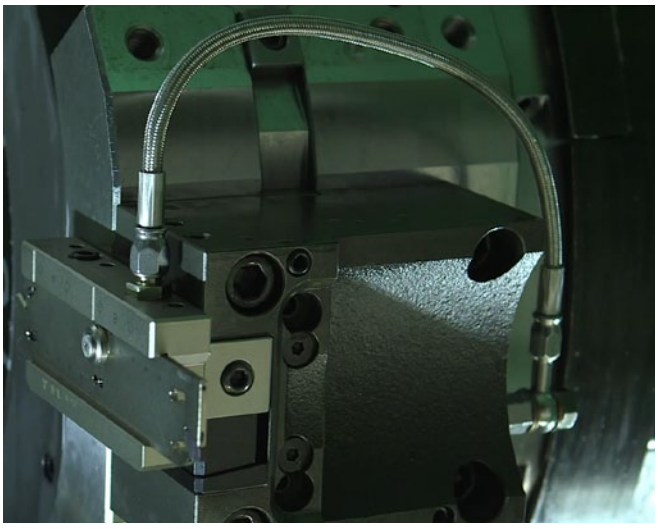
(mm)

Connector Type	Order Number	Stock	Hose Length	Kit Details								
				 Hose	 Banjo Adapter		 Banjo Bolt		 Adapter		 Washer	
				Code No.	Code No.	QTY.	Code No.	QTY.	Code No.	QTY.	Code No.	QTY.
Straight	**CS-1/8-150SS**	●	150	HOSE-1/8-150	—	—	—	—	AD-G1/8	2	WA-M10	2
Straight	**CS-1/8-200SS**	●	200	HOSE-1/8-200	—	—	—	—	AD-G1/8	2	WA-M10	2
Straight	**CS-1/8-250SS**	●	250	HOSE-1/8-250	—	—	—	—	AD-G1/8	2	WA-M10	2
Straight	**CS-1/8-300SS**	●	300	HOSE-1/8-300	—	—	—	—	AD-G1/8	2	WA-M10	2
Elbow Straight	**CS-1/8-150BS**	●	150	HOSE-1/8-150	AD-BM10	1	BB-G1/8	1	AD-G1/8	1	WA-M10	3
Elbow Straight	**CS-1/8-200BS**	●	200	HOSE-1/8-200	AD-BM10	1	BB-G1/8	1	AD-G1/8	1	WA-M10	3
Elbow Straight	**CS-1/8-250BS**	●	250	HOSE-1/8-250	AD-BM10	1	BB-G1/8	1	AD-G1/8	1	WA-M10	3
Elbow Straight	**CS-1/8-300BS**	●	300	HOSE-1/8-300	AD-BM10	1	BB-G1/8	1	AD-G1/8	1	WA-M10	3
Elbow	**CS-1/8-150BB**	●	150	HOSE-1/8-150	AD-BM10	2	BB-G1/8	2	—	—	WA-M10	4
Elbow	**CS-1/8-200BB**	●	200	HOSE-1/8-200	AD-BM10	2	BB-G1/8	2	—	—	WA-M10	4
Elbow	**CS-1/8-250BB**	●	250	HOSE-1/8-250	AD-BM10	2	BB-G1/8	2	—	—	WA-M10	4
Elbow	**CS-1/8-300BB**	●	300	HOSE-1/8-300	AD-BM10	2	BB-G1/8	2	—	—	WA-M10	4

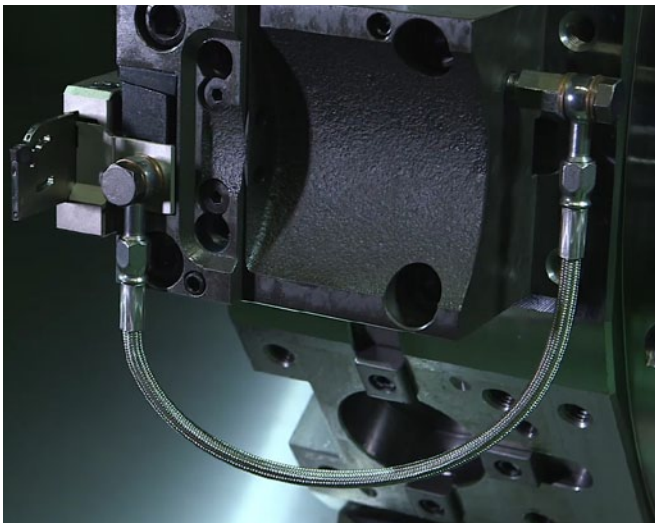
Connection Screw Size = G1/8"

Mounting Example

Elbow Straight Type



Elbow Type



Recommended Cutting Conditions

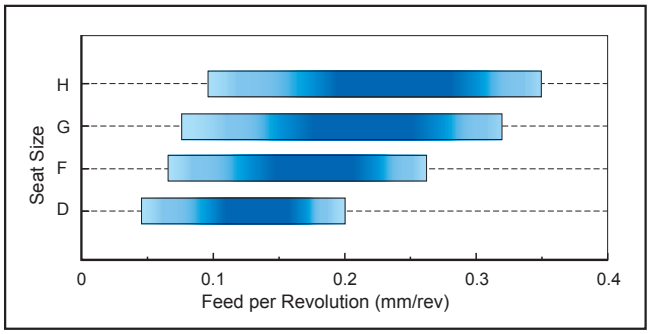
Cutting Speed

	Work Material	Properties	Grade	Cutting Speed (m/min) 50 100 150 200 250 300
P	Mild Steel	≤160HB	VP20RT	100 – 240
			VP10RT	110 – 250
	Carbon Steel Alloy Steel	160–280HB	VP20RT	80 – 200
			VP10RT	90 – 210
			VP30RT	60 – 180
			MY5015	110 – 250
		≥280HB	VP20RT	60 – 160
			VP10RT	70 – 170
			VP30RT	40 – 140
			MY5015	90 – 210
M	Stainless Steel	≤270HB	VP20RT	60 – 180
			VP10RT	70 – 190
			VP30RT	40 – 160
K	Gray Cast Iron	Tensile Strength ≤300MPa	VP20RT	80 – 200
			VP10RT	90 – 210
			MY5015	140 – 300
	Ductile Cast Iron	Tensile Strength ≤800MPa	VP20RT	60 – 160
			VP10RT	70 – 170
			MY5015	90 – 210
S	Heat Resistant Alloy Titanium Alloy	—	VP20RT	30 – 60
			VP10RT	40 – 70

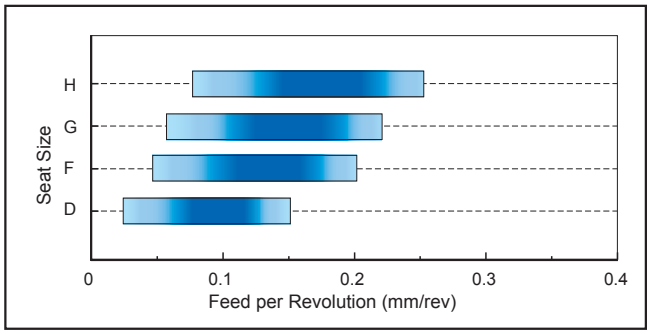
(Note 1) VP20RT is the first recommended grade for materials.
(Note 2) For VP10RT, VP20RT, VP30RT and MY5015, wet cutting is recommended.

Feed per Revolution

GM Breaker



GS Breaker

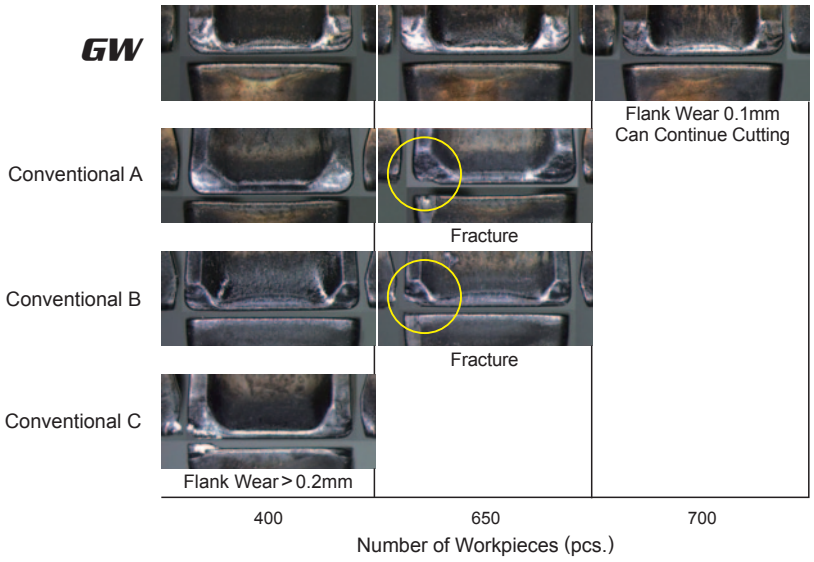


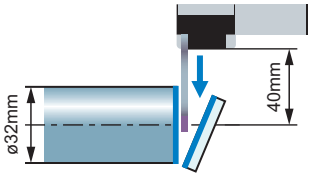
Chip Breaker	Feed per Revolution (mm/rev)			
	Seat Size D	Seat Size F	Seat Size G	Seat Size H
GM Breaker	0.05–0.20	0.07–0.26	0.08–0.32	0.10–0.35
GS Breaker	0.03–0.15	0.05–0.20	0.06–0.22	0.08–0.25

Cutting Performance

Cutting Off of Alloy Steel (AISI 4140)

No abnormal cutting edge damage, possible to extend tool life.

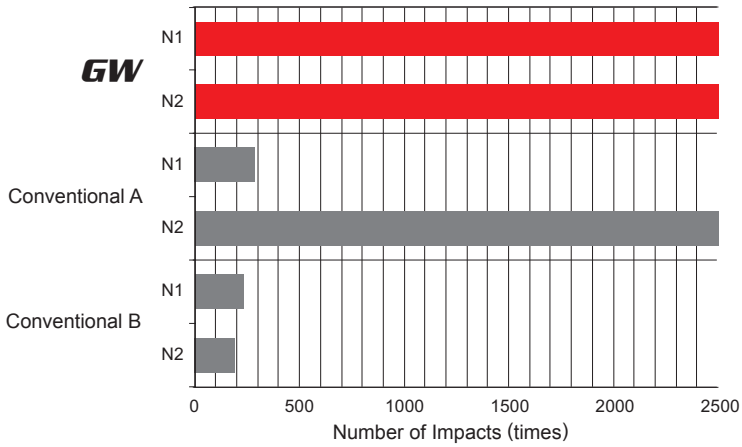


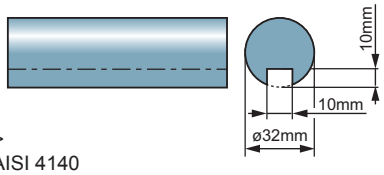


<Cutting Conditions>
Work Material : AISI 4140
Insert : GW1M0300F030N-GM (MY5015)
Grooving Width **CW** 3mm
Cutting Speed **vc** : 170m/min
Feed per Rev. **f** : 0.15mm/rev
ø10mm < 0.03mm/rev
Overhang Length : 40mm
Cutting Mode : Internal Coolant 1MPa

*Tool Life Criteria : Flank wear up to 0.2mm or fracture.

Interrupted Cutting Off of Alloy Steel (AISI 4140)



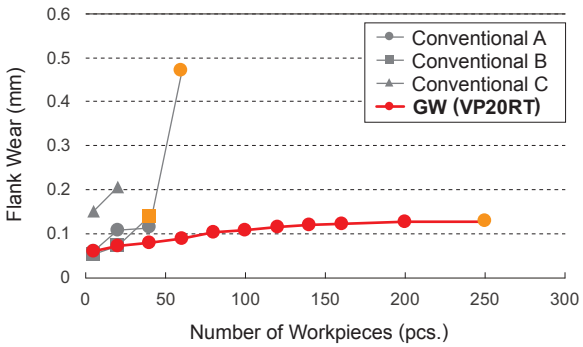


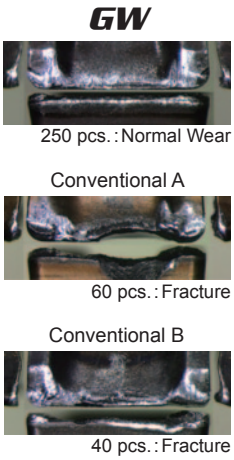
<Cutting Conditions>
Work Material : AISI 4140
Insert : GW1M0300F030N-GM (VP30RT)
Grooving Width **CW** 3mm
Cutting Speed **vc** : 120m/min
Feed per Rev. **f** : 0.20mm/rev
ø10mm < 0.03mm/rev
Overhang Length : 30mm
Cutting Mode : Internal Coolant 1MPa

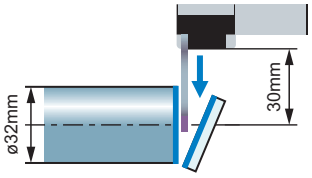
*Tool Life Criteria : Fracture or breakage.

Cutting Off of Stainless Steel (AISI 304)

No abnormal cutting edge damage, 4 time longer tool life was achieved.



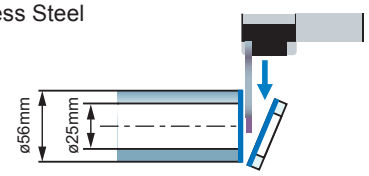
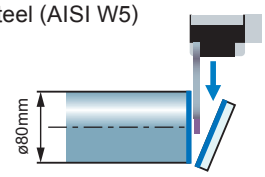
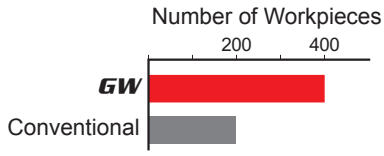
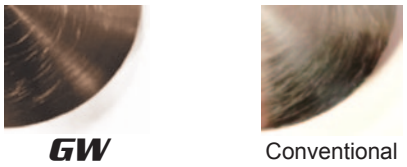


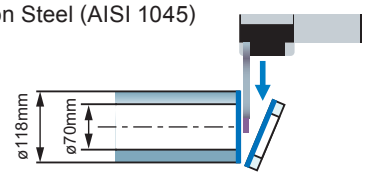
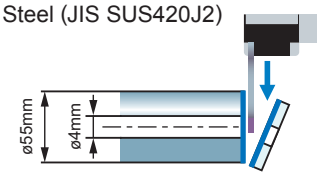
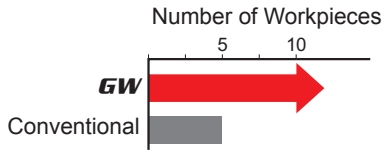
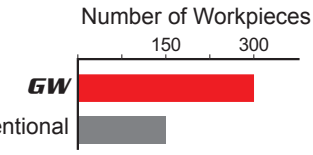


<Cutting Conditions>
Work Material : AISI 304
Insert : GW1M0300F030N-GM (VP20RT)
Grooving Width **CW** 3mm
Cutting Speed vc : 180m/min
Feed per Rev. **f** : 0.15mm/rev
ø10mm < 0.03mm/rev
Overhang Length : 30mm
Cutting Mode : Internal Coolant 1MPa

*Tool Life Criteria : Flank wear up to 0.2mm or fracture.

Application Examples

Insert	GW1M0300F030N-GM(VP20RT)	GW1M0300F030N-GM(VP20RT)
Workpiece	Stainless Steel 	Carbon Tool Steel (AISI W5) 
Component	Machine Parts	Machine Parts
Cutting Method	Cutting Off	Cutting Off
Cutting Conditions: Cutting Speed **vc** (m/min)	160	180
Cutting Conditions: Feed per Rev. **f** (mm/rev)	0.1	0.13
Cutting Mode	Internal Coolant (2MPa)	Internal Coolant (0.5MPa)
Results	As compared to the conventional item double the tool life was achieved. Additionally due to the use of the unique wrench tool handling was improved. 	A good surface finish was obtained due to smooth chip evacuation when compared to the conventional item. 

Insert	GW1M0300F030N-GM(VP30RT)	GW1M0300F030N-GM(VP20RT)
Workpiece	Carbon Steel (AISI 1045) 	Stainless Steel (JIS SUS420J2) 
Component	Machine Tool Parts	Machine Parts
Cutting Method	Cutting Off	Cutting Off
Cutting Conditions: Cutting Speed **vc** (m/min)	100	110
Cutting Conditions: Feed per Rev. **f** (mm/rev)	0.1	0.04
Cutting Mode	External Coolant	Internal Coolant
Results	While the conventional item broke during machining, the GW was able to machine more than double the number of workpieces. 	As compared to the conventional item double the number of workpieces was achieved. 

The examples shown are actual applications and can differ from the recommended cutting conditions.

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

MITSUBISHI MATERIALS CORPORATION

MMC HARDMETAL INDIA PVT LTD
Head Office
Prasad Enclave, #118/119, 1st Floor, 2nd Stage BBMP Ward #11,
(New #38),Industrial Suburb,Yeshwanthpura, Bengaluru-560 022
Karnataka, India, Tel : +91 80 2204 3600
E-mail : mb-mmci@mmc.co.jp

REGIONAL OFFICES

Pune Office
Plot No, A-27 & A-28, H-Block,
Pimpri Waghere,Pimpri Industrial Area MIDC,
Pune – 411018,Maharashtra,India
Tel :: +91 020-27456959

Gurugram Office
#407, 4th Floor,JMD Galleria, Sohna Road,
Opposite Malibu Town, Sector-48,
Gurgaon-122 001 Haryana, India.
Tel : +91 124 4089163

Chennai Office
MM Complex,2Nd Floor,Part 30/10 Hopman 2nd
Street, 100 Feet Main Road,Alandur,
Chennai – 600 016 Tamilnadu, India.
Tel: +91 44 4550 7006

Ahmedabad Office
210, Sigma Arcade, 2nd Floor, Visat Circle,
Ahmedabad-Mehsana Road, Chandkheda,
Ahmedabad – 382 424, Gujarat, India.
Tel : +91 79 2329 9300

http://www.mitsubishicarbide.com/en/
(Tools specifications subject to change without notice.)

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