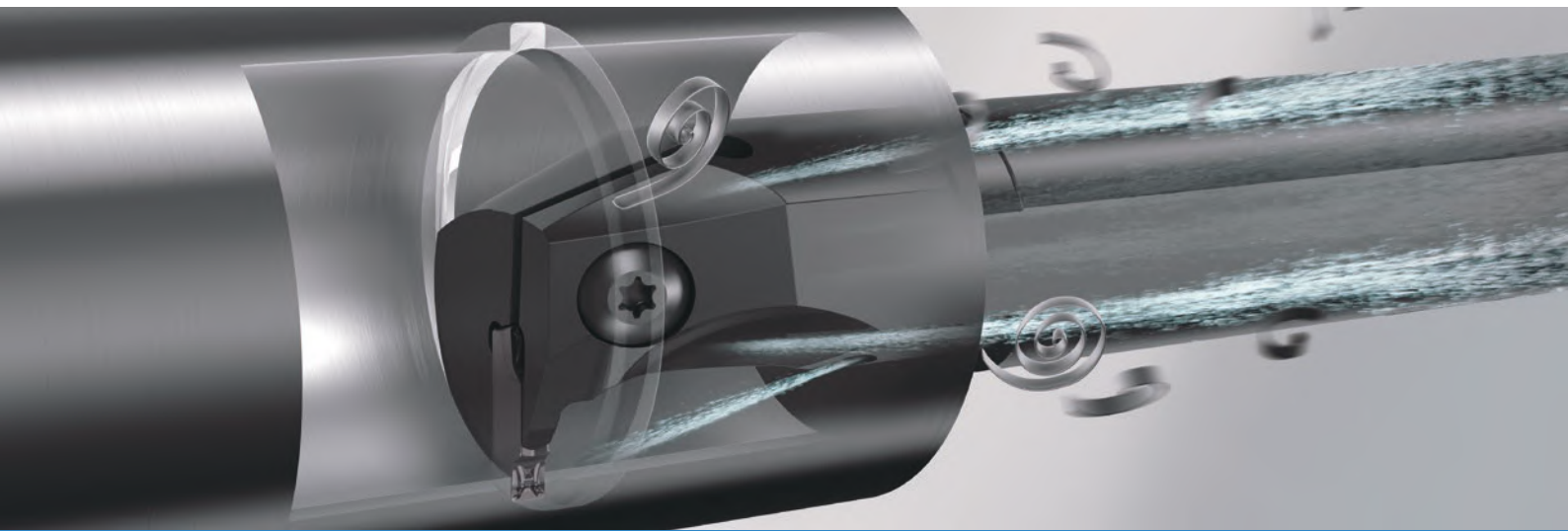


THE NEW VALUE FRONTIER



Internal grooving | **KGDI**

KGDI



Stable machining with excellent chip control and smooth chip evacuation

Good chip control with special chipbreaker.

Smooth chip evacuation by new chip pocket design.

Low cutting forces and stable machining.

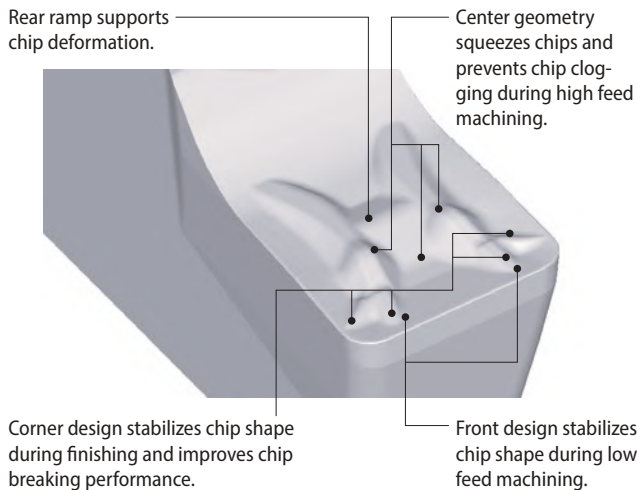


Stable machining with excellent chip control and smooth chip evacuation.

1

Excellent chip control with GMI chipbreaker for internal grooving

- Evenly breaks chips in various cutting conditions with newly designed chipbreaker geometry.
- Good chip control even in finishing applications with small depths of cut.



Chip control comparison (In-house evaluation)



GMI chipbreaker

Competitor A

Conventional F

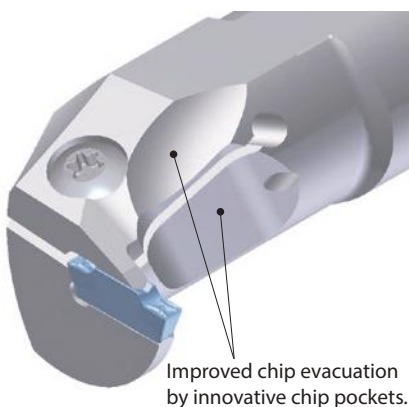
- Smooth chip control with stable chip shape compared with competitor A and conventional F.
- Prevents frequent machine stops caused by tangled chips.

Cutting conditions: $V_c = 100$ m/min, $f = 0.07$ mm/rev; Toolholder: KGDIR3225B-3
Insert: GDM3015N-040GMI; Workpiece: 20Cr4

2

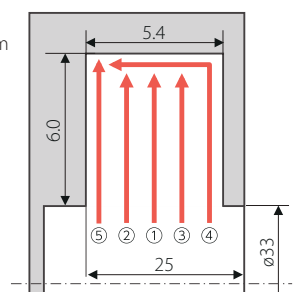
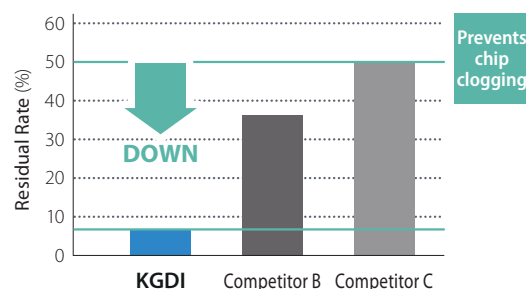
Smooth chip evacuation by creating chip pocket

Smooth chip evacuation when grooving and finishing.



Cutting Conditions: $V_c = 100$ m/min
①: $a_p = 3$ mm, ②③: $a_p = 1$ mm, ④⑤: $a_p = 0.2$ mm
 $f = 0.08$ mm/rev
Toolholder: KGDIR3225B-3
Insert: GDM3015N-040GMI
Workpiece: 15CrMo4

Residual chips (In-house evaluation)



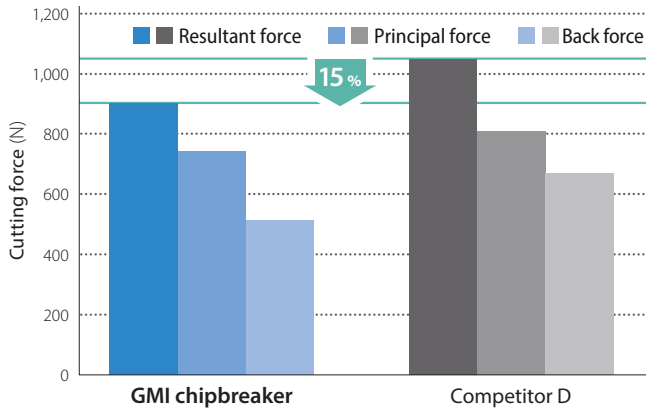
Chips remaining in machined bore were greatly reduced compared with competitor B and C.

3

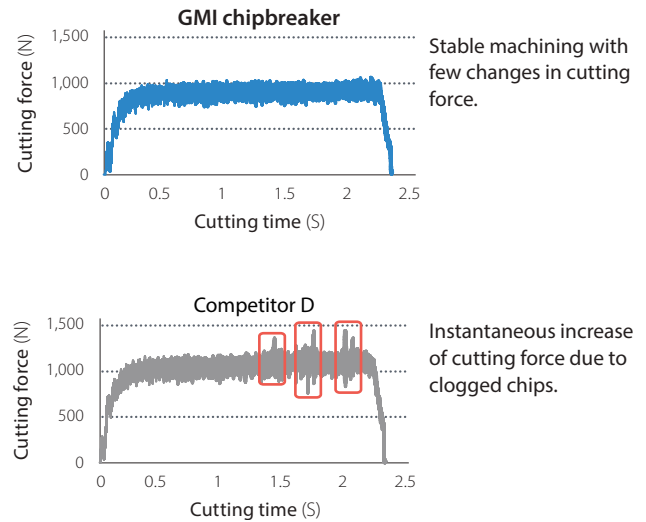
Low cutting forces and stable machining

GMI chipbreaker prevents chip clogging and reduces cutting forces.

Cutting force comparison (In-house evaluation)



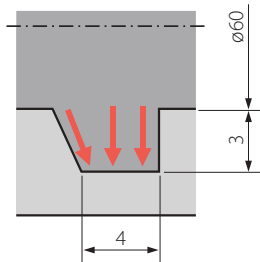
Cutting conditions: $V_c = 150$ m/min, $f = 0.1$ mm/rev; Toolholder: KGDIR3225B-3; Insert: GDM3015N-040GMI; Workpiece: 15CrMo4



Case studies

Bearing: 15CrMo4

$V_c = 250$ m/min
 $f = 0.15$ mm/rev
 Wet
 KGDIR3225B-3
 GDM3015N-040GMI / PR1225



GMI Chipbreaker

1200 pcs/edge

Tool life
1.5 times

Competitor E

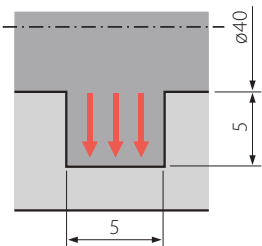
800 pcs/edge

- GMI chipbreaker PR1225 showed longer tool life compared with competitor E.
- Stable machining without chattering and cutting noise.

(User evaluation)

Automotive parts: 1.0040

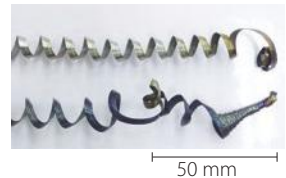
$V_c = 100$ m/min
 $f = 0.08$ mm/rev
 Wet
 KGDIR3225B-3
 GDM3015N-040GMI / PR1225



GMI Chipbreaker



Conventional G



- Competitor G creates scratches on the workpiece with long chips.
- GMI chipbreaker has no problem because of good chip control.

(User evaluation)

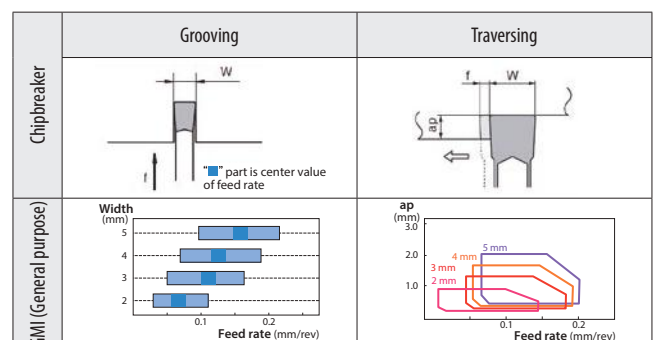
Recommended cutting conditions

(Cutting speed)

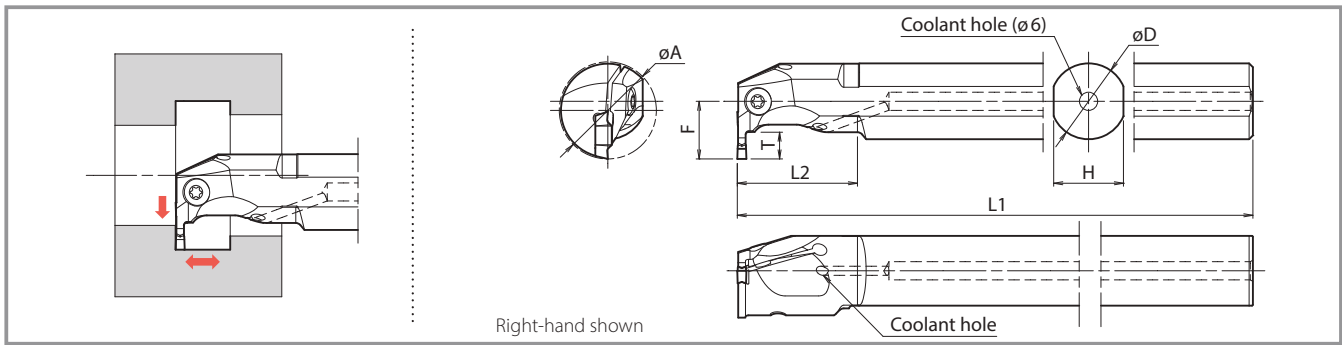
★ 1st choice ☆ 2nd choice

Workpiece	Chipbreaker	Recommended insert grade (Vc: m/min)				Notes
		Cermet	MEGACOAT NANO	MEGACOAT		
		TN620	PR1535	PR1225	PR1215	
Carbon steel	GMI CM	☆ 100 – 220	☆ 80 – 150	★ 80 – 200	☆ 100 – 200	Wet
Alloy steel		☆ 80 – 200	☆ 70 – 150	★ 70 – 180	☆ 80 – 180	
Stainless steel		☆ 70 – 180	★ 60 – 150	★ 60 – 150	☆ 60 – 150	
Cast iron					★ 100 – 200	

Recommended cutting conditions (f , ap)



KGDI toolholder



Toolholder dimensions

Description	Availability		Min. bore dia.		Dimensions (mm)							Edge width W (mm)		Spare parts			
														Clamp screw		Wrench	
	R	L	øA		øD	H	L1	L2	F	T	MIN.	MAX.					
			With GMI	With CM													
KGDI ^{R/L} 1816B-2	●	●	18	—	16	15	150	25	9.5	4.5	2	2	GS-50	—	LW-3	—	
2520B-2	●	●	25	—	20	18	180	30	14.5	6	2	2	GS-50	—	LW-3	—	
3225B-2	●	●	32	—	25	23	200	40	19	7	2	2	—	SB-5TR	—	LTW-20	
KGDI ^{R/L} 2016B-3	●	●	20	21	16	15	150	25	11.5	5.5	3	3	GS-50	—	LW-3	—	
2520B-3	●	●	25	26	20	18	180	30	14.5	6	3	3	GS-50	—	LW-3	—	
3225B-3	●	●	32	33	25	23	200	40	19	8	3	3	—	SB-5TR	—	LTW-20	
KGDI ^{R/L} 3225B-4	●	●	32	40 (34*)	25	23	200	40	19	8.5	4	5	—	SB-5TR	—	LTW-20	
4032B-4	●	●	40	48 (42*)	32	29	220	50	23.5	11	4	5	—	SB-5TR	—	LTW-20	
KGDI ^{R/L} 3225B-5	●	●	32	37 (34*)	25	23	200	40	19	8.5	5	5	—	SB-5TR	—	LTW-20	
4032B-5	●	●	40	45 (42*)	32	29	220	50	23.5	11	5	5	—	SB-5TR	—	LTW-20	

* Possible by slightly chamfering toolholder's tip about 0.5 mm

● : Available

Applicable inserts

Shape		Description	Dimensions (mm)					Cermet	MEGACOAT NANO	MEGACOAT		Applicable toolholder
			W*	re	M	L	H			PR1535	PR1225	PR1215
		GDM2013N-020GMI	2.0	0.2	1.5	13.5	4.3	●	●	●	●	KGDI R/L...-2
		GDM3015N-040GMI	3.0	0.4	2.4	15.5	4.6	●	●	●	●	KGDI R/L...-3
		GDM4020N-040GMI	4.0	0.4	3.4	20	4.3	●	●	●	●	KGDI R/L...-4
		GDM5020N-040GMI	5.0	0.4	4.4	20	4.3	●	●	●	●	KGDI R/L...-4
		GDM5020N-080GMI	5.0	0.8	4.4	20	4.3	●	●	●	●	KGDI R/L...-4
		GDM3015N-150R-CM	3.0	1.5	2.3	16.3	4.6	○	○	●	●	KGDI R/L...-3
		GDM4020N-200R-CM	4.0	2.0	3.3	20	4.3	○	○	●	●	KGDI R/L...-4
		GDM5020N-250R-CM	5.0	2.5	4.2	21	4.3	○	○	●	●	KGDI R/L...-4

*Tolerance: ±0.03 for W = 2.0 and 3.0 and 4.0, ±0.04 for W = 5.0

● : Available ○ : Check availability