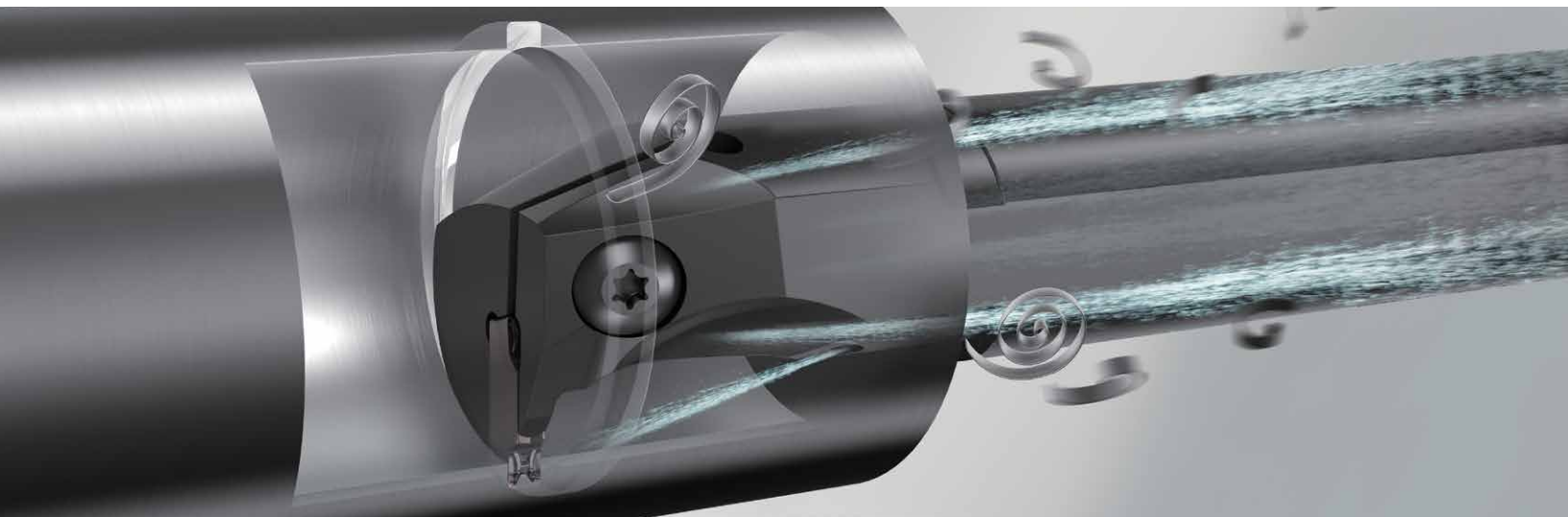




KGDI

Internal Grooving System



Stable Machining with Excellent Chip Control and Smooth Chip Evacuation

Good Chip Control with Special Chipbreaker

Smooth Chip Evacuation by Creating Chip Pocket

Low Cutting Forces and Stable Machining



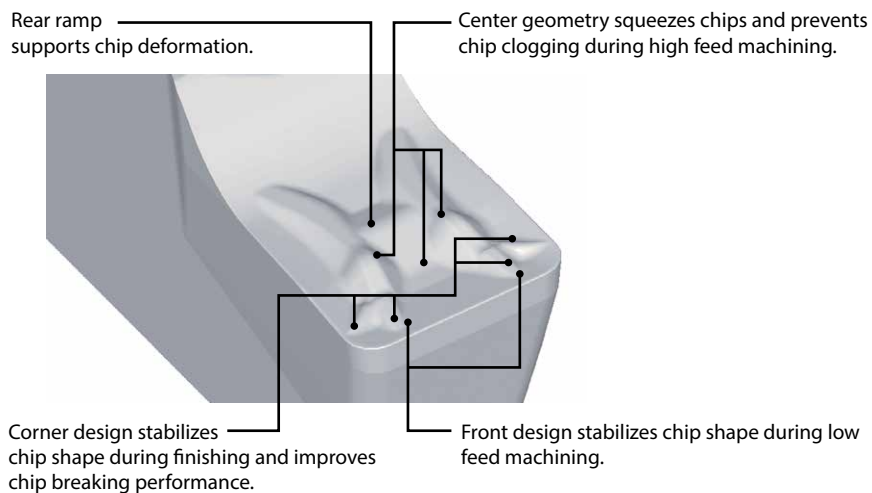
KGDI

Internal Grooving

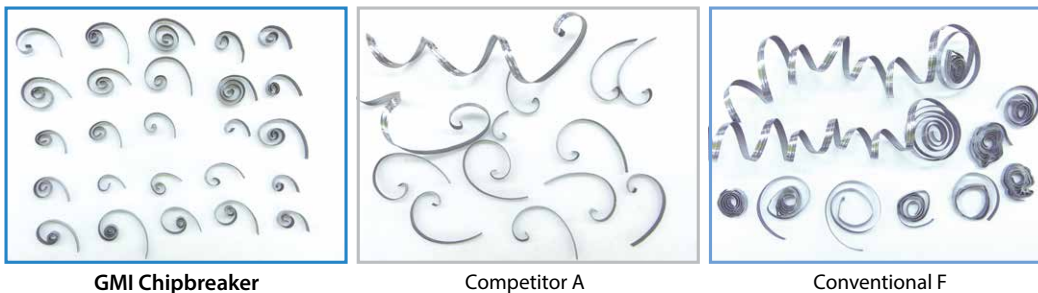
Stable Machining with Excellent Chip Control and Smooth Chip Evacuation

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 (Internal Evaluation)



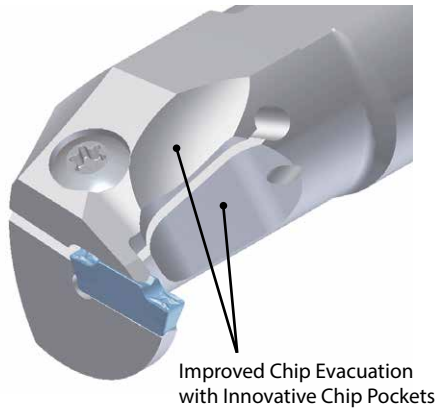
Smooth chip control with stable chip shape compared with Competitor A and Conventional F.
Prevents frequent machine stops caused by tangled chips.

Cutting Conditions: $V_c = 330$ sfm, $f = 0.003$ ipr Toolholder: KGDIR3225B-3
Insert: GDM3015N-040GMI Workpiece: 5120 Steel

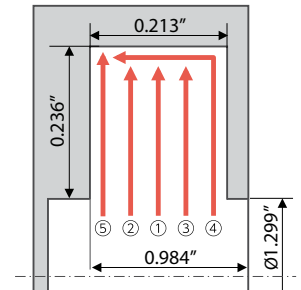
2

Smooth Chip Evacuation by Creating Chip Pocket

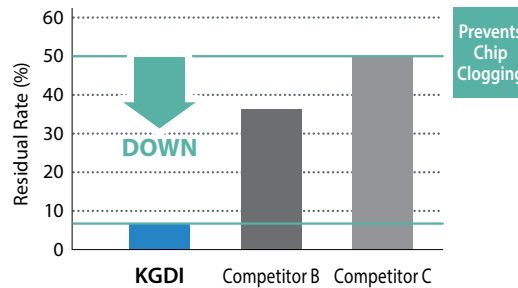
Smooth chip evacuation when grooving and finishing.



Cutting Conditions:
 $V_c = 330$ sfm
 ①: D.O.C. = 0.118", ②③: D.O.C. = 0.039", ④⑤: D.O.C. = 0.008"
 $f = 0.003$ ipr
 Toolholder: KGDIR3225B-3
 Insert: GDM3015N-040GMI
 Workpiece: 4131 Steel



Residual Chips (Internal Evaluation)



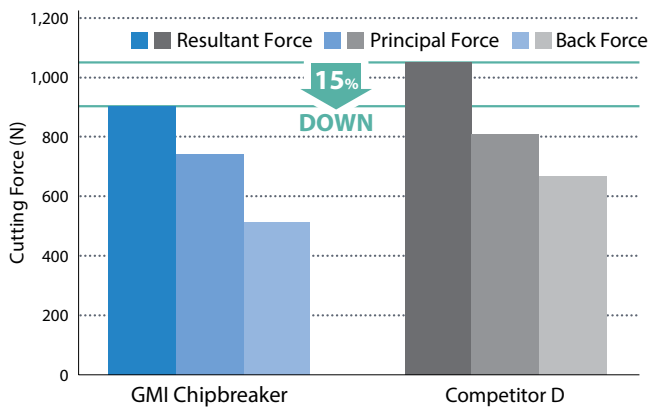
Chips remaining in machined bore were greatly reduced compared with Competitor B and C.

3

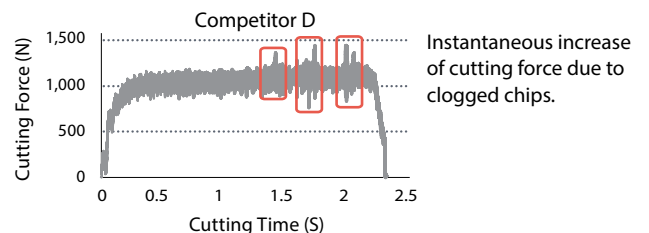
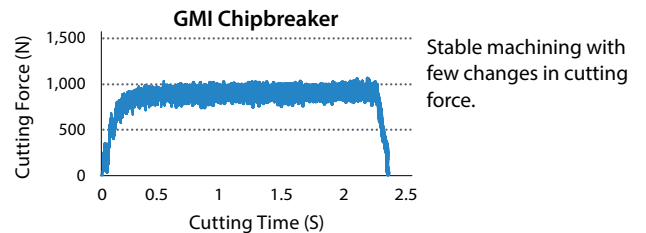
Low Cutting Forces and Stable Machining

GMI chipbreaker prevents chip clogging and reduces cutting forces.

Cutting Force Comparison (Internal Evaluation)



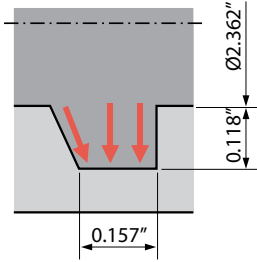
Cutting Conditions: $V_c = 490$ sfm, $f = 0.004$ ipr Toolholder: KGDIR3225B-3
 Insert: GDM3015N-040GMI Workpiece: 4131 Steel



Case Studies

Bearing SCM415

Structural Steel
 $V_c = 820$ sfm
 $f = 0.006$ ipr
 Wet
 KGDIR3225B-3
 GDM3015N-040GMI PR1225



GMI Chipbreaker

1200 pcs/edge



Competitor E

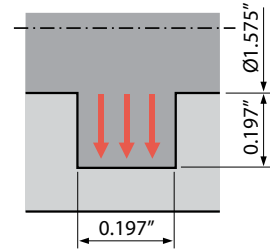
800 pcs/edge

GMI chipbreaker PR1125 showed longer tool life compared with Competitor E. Stable machining without chattering and cutting noise.

(User Evaluation)

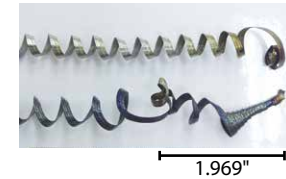
Automotive Parts

Stainless Steel
 $V_c = 330$ sfm
 $f = 0.003$ ipr
 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)

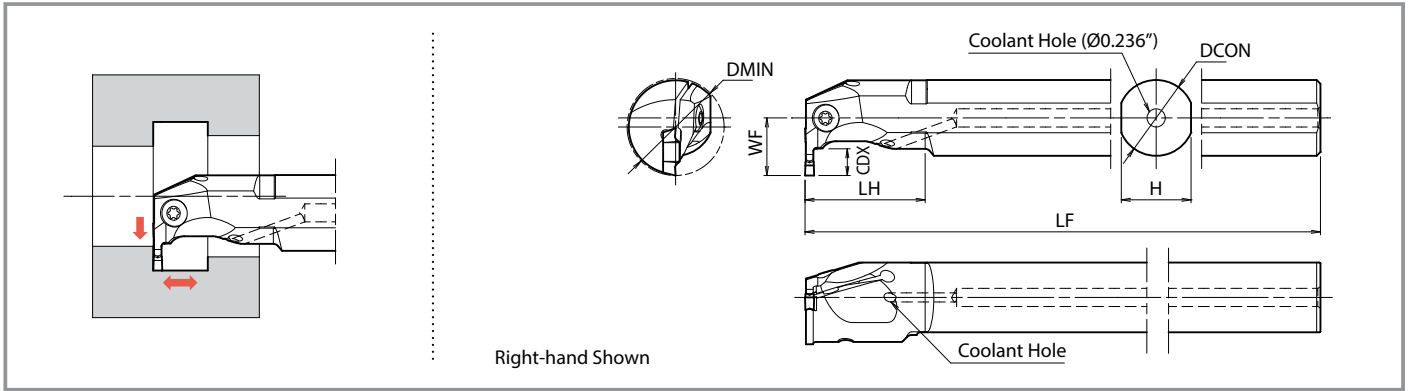
Workpiece	Chipbreaker	Recommended Insert Grade (V_c : sfm)					Notes
		Cermet	MEGACOAT NANO	MEGACOAT		Uncoated Carbide	
		TN620	PR1535	PR1225	PR1215	GW15	
Carbon Steel	GMI CM	330 – 720 ☆	260 – 490 ☆	260 – 660 ★	330 – 660 ☆	-	Wet
Alloy Steel		260 – 660 ☆	230 – 490 ☆	230 – 590 ★	260 – 590 ☆	-	
Stainless Steel		230 – 590 ☆	200 – 490 ★	200 – 490 ★	200 – 490 ☆	-	
Cast Iron		-	-	-	330 – 660 ★	-	
Non-Ferrous Metals	GS	-	-	-	-	660 – 1,640 ★	

★ 1st Choice ☆ 2nd Choice

Recommended Cutting Conditions (f , D.O.C.)

Chipbreaker	Grooving	Turning
GMI (General Purpose)		

KGDI Toolholder (Inch Size)



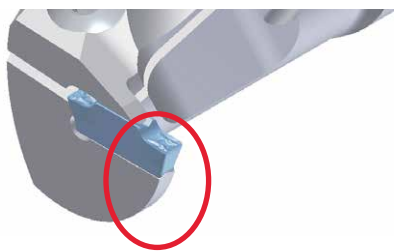
Toolholder Dimensions

Description	Stock	Min. Bore Dia.		Dimensions (in)							Edge Width CW (in)		Spare Parts			
		DMIN		DCON	H	LF	LH	WF	CDX	MIN.	MAX.	Clamp Screw		Wrench		
		GMI	CM													
KGDIR 10B-2	●	0.709	-	0.625	0.591	6	0.984	0.374	0.177	0.079	0.079	GS-50	-	LW-3	-	
	●	0.984	-	0.75	0.709	7	1.181	0.571	0.236	0.079	0.079	GS-50	-	LW-3	-	
	●	1.26	-	1	0.906	8	1.575	0.748	0.276	0.079	0.079	-	SB-5TR	-	LTW-20	
KGDIR 10B-3	●	0.787	0.827	0.625	0.591	6	0.984	0.453	0.217	0.118	0.118	GS-50	-	LW-3	-	
	●	0.984	1.024	0.75	0.709	7	1.181	0.571	0.236	0.118	0.118	GS-50	-	LW-3	-	
	●	1.26	1.299	1	0.906	8	1.575	0.748	0.315	0.118	0.118	-	SB-5TR	-	LTW-20	
KGDIR 16B-4	●	1.26	A: 1.575 B: 1.299	1	0.906	8	1.575	0.748	0.335	0.157	0.197	-	SB-5TR	-	LTW-20	
	●	1.575	A: 1.890 B: 1.614	1.25	1.142	8.5	1.969	0.925	0.433	0.157	0.197	-	SB-5TR	-	LTW-20	
KGDIR 16B-5	●	1.26	A: 1.457 B: 1.338	1	0.906	8	1.575	0.748	0.335	0.197	0.197	-	SB-5TR	-	LTW-20	
	●	1.575	A: 1.772 B: 1.653	1.25	1.142	8.5	1.969	0.925	0.433	0.197	0.197	-	SB-5TR	-	LTW-20	

A : Available with Original Holder Shape

B : Available with Modified Holder Shape (Below)

● : Standard Item



A : Original



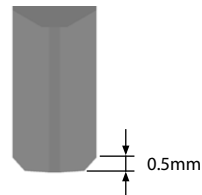
B : Modified



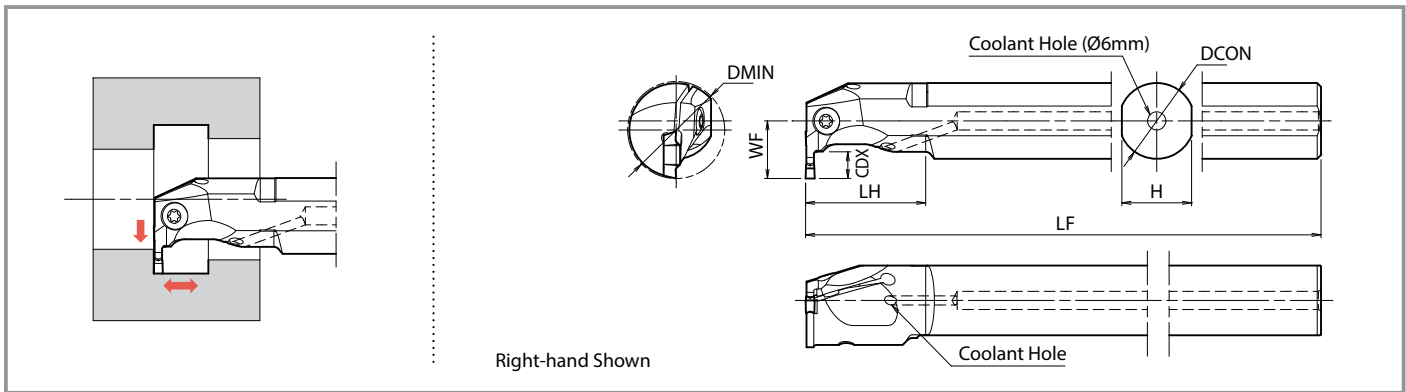
A : Top View



B : Top View



KGDI Toolholder (Metric Size)




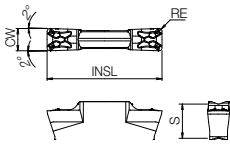

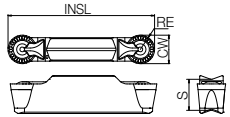

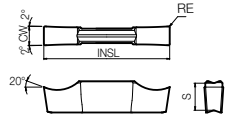
Toolholder Dimensions

Description	Stock		Min. Bore Dia.		Dimensions (mm)							Edge Width CW (mm)		Spare Parts			
	R	L	DMIN		DCON	H	LF	LH	WF	CDX	MIN.	MAX.	Clamp Screw		Wrench		
			GMI	CM													
KGDI 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 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 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 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

● : Standard Item

Applicable Inserts

Usage Classification		P	Carbon Steel / Alloy Steel			●	☺	●	☺						Applicable Toolholder
● : Continuous - Light Interruption / 1st Choice ☺ : Continuous - Light Interruption / 2nd Choice ● : Continuous / 1st Choice ○ : Continuous / 2nd Choice		M	Stainless Steel				●	☺	☺						
		K	Cast Iron						●						
		N	Non-Ferrous Metals							●					
Shape	Part Number	Dimensions (in)						Cermet	MEGACOAT NANO	MEGACOAT			Uncoated Carbide		
		CW			RE	INSL	S			TN620	PR1535	PR1225		PR1215	GW15
		in	mm	Tolerance											
 <p>General Purpose</p> 	GDM 2013N-020GMI	0.079	2.0		0.008	0.531	0.169	●	●	●	●		KGDI [®] /L ...-2		
	GDM 3015N-040GMI	0.118	3.0	±0.0012	0.016	0.610	0.181	●	●	●	●		KGDI [®] /L ...-3		
	GDM 4020N-040GMI	0.157	4.0		0.016	0.787	0.169	●	●	●	●		KGDI [®] /L ...-4		
	GDM 5020N-040GMI	0.197	5.0	±0.0016	0.016	0.787	0.169	●	●	●	●		KGDI [®] /L ...-4 5		
	GDM 5020N-080GMI	0.197	5.0		0.031	0.787	0.169	●	●	●	●		KGDI [®] /L ...-4 5		
 <p>Full Radius</p> 	GDM 3015N-150R-CM	0.118	3.0	±0.0012	0.059	0.642	0.181	●	●	●	●		KGDI [®] /L ...-3		
	GDM 4020N-200R-CM	0.157	4.0		0.079	0.787	0.169	●	●	●	●		KGDI [®] /L ...-4		
	GDM 5020N-250R-CM	0.197	5.0	±0.0016	0.098	0.827	0.169	●	●	●	●		KGDI [®] /L ...-4 5		
 <p>NEW Low Cutting Force</p> 	GDG 3015N-020GS	0.118	3.0	±0.0008	0.008	0.787	0.169					●	KGDI [®] /L ...-3		

● : Standard Item



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