

KGZ**NEW****Strong, precise, and reliable cut-off performance**

Provides stable machining
and is easy to use with
unique clamp design

New coating PR20 series
provides longer tool life

Extensive product line-up
for a wide variety
of applications

New grooving inserts now
available. **NEW**

**KEEPS YOU
AHEAD**

Cut-off solutions for small parts machining

KGZ

Provides stable machining and is easy to use with unique clamp design.
New coating PR20 series provides longer tool life and supports a wide range of applications.

Challenge

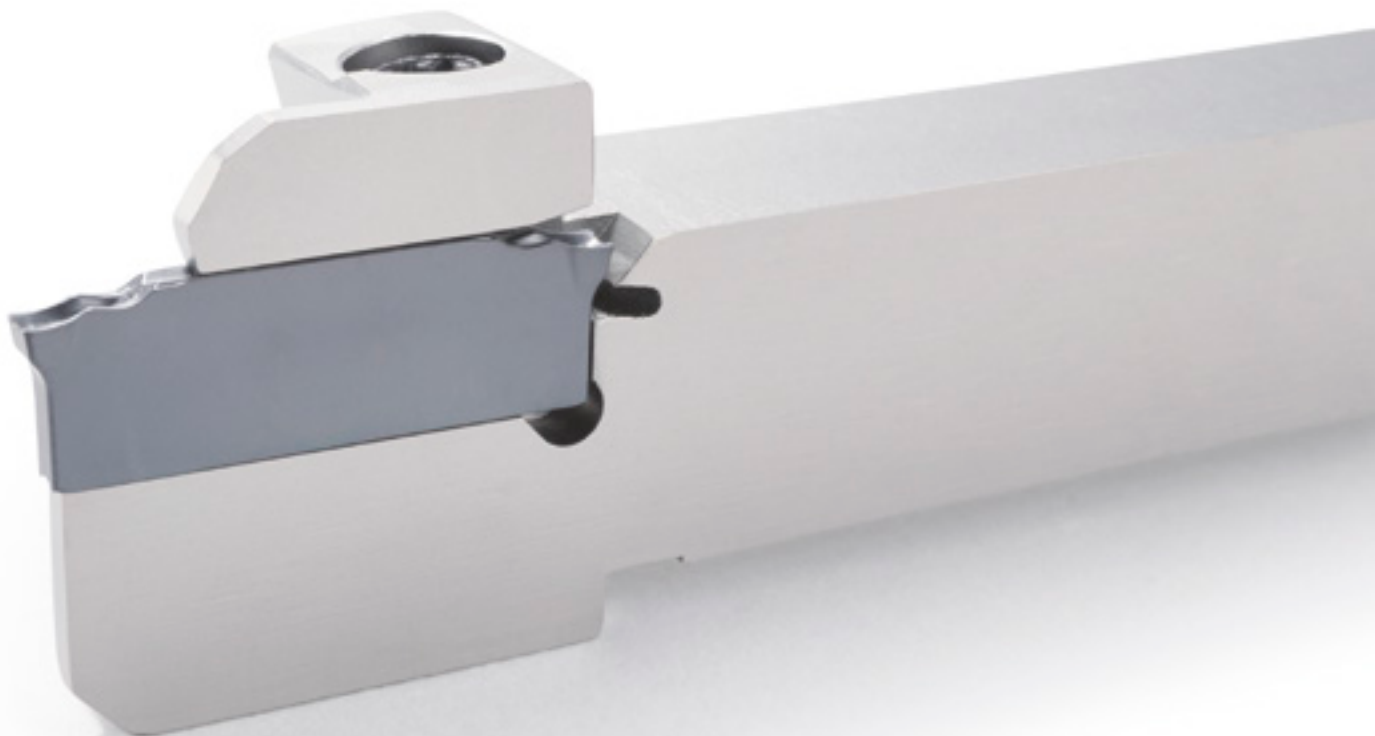
Cut-off is an important, but difficult process in small parts machining applications

Machining
performance

High machining load and tool rigidity issues.
Chatter / Insert and holder damage / Difficulty improving machining efficiency etc.

Usability

Inserts can be difficult to replace inside the machine resulting in time-consuming work and the possibility of insecure clamping.



Newly developed clamp creates a strong and rigid hold

Strength

Stable machining
with sturdy clamp design

- Greater chatter resistance provides excellent surface finish and stable tool life
- Toolholder durability reduces down-time and cuts cost
- Supports high efficiency machining and reduces cycle time.

Dependability

Easy insert management

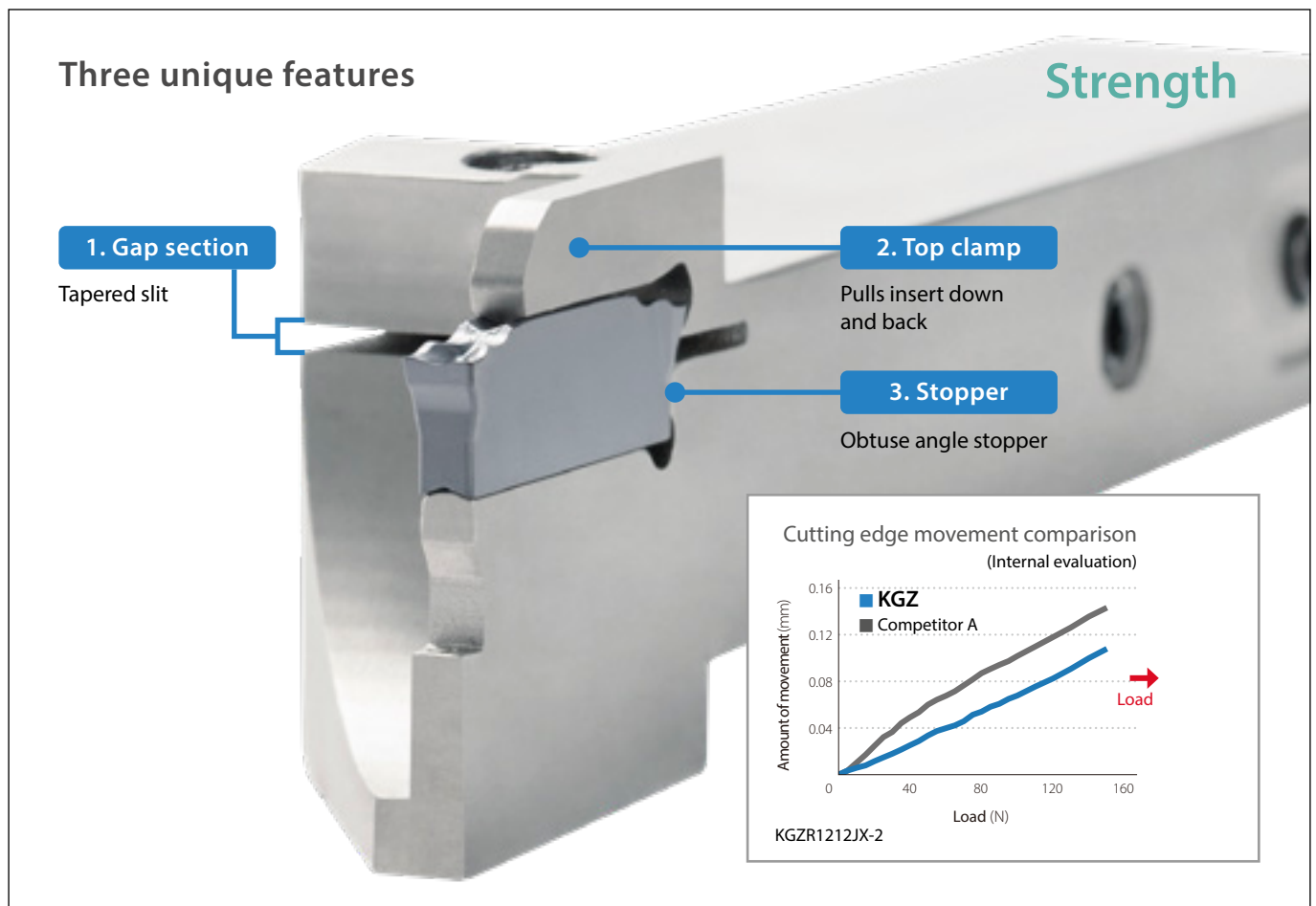
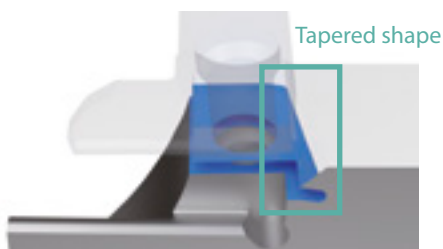
- Fast and secure insert installation
- Inserts are more resistant to wear and reduce the frequency of tool changes.



Line-up

Insert	Cut-off	Low feed PF	Medium feed PM	High feed PH	Low cutting force PG	Grades	PVD coating P M K PR2015 / PR2025 / PR2035	
							Cermet P DLC coating N TN620 PDL025	
Grooving	NEW	General purpose GM	Low feed GL	High feed PH	Copying CM	Low cutting force GS	PCD NB	Non-coated carbide K N GW15
								PCD N KPD001
Tool holder	Internal coolant JCTM Series for direct coolant				External coolant Standard type / for Sub-spindle tooling			

Toolholder Sturdy clamps

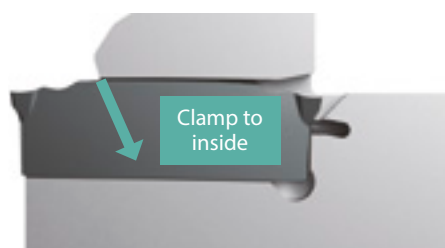
**1. Gab section** Tapered slit creates strong insert hold.

Ensures stability

Strong clamping force in the insert direction

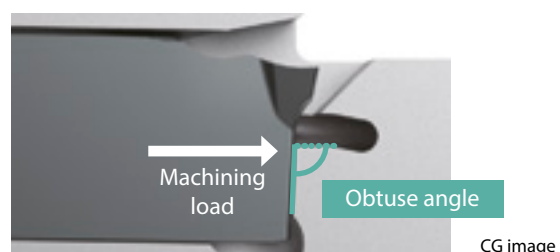
**2. Top clamp**

Pulls insert inward to increase hold.

**3. Stopper**

The insert stop is designed with an obtuse shape to resist machining load and a large surface area distributes stress.

Improved holder durability for high-efficiency machining.



Insert Ease insert installation

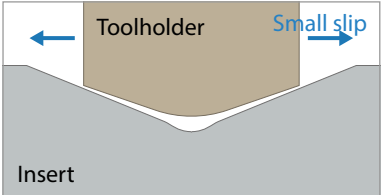
Top V-shape

Different groove angles at ends end centre

Dependability

Groove end

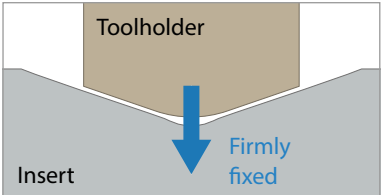
Small groove angle on top of insert.
These grooves prevent the insert from shifting and provide fast and accurate insert mounts.



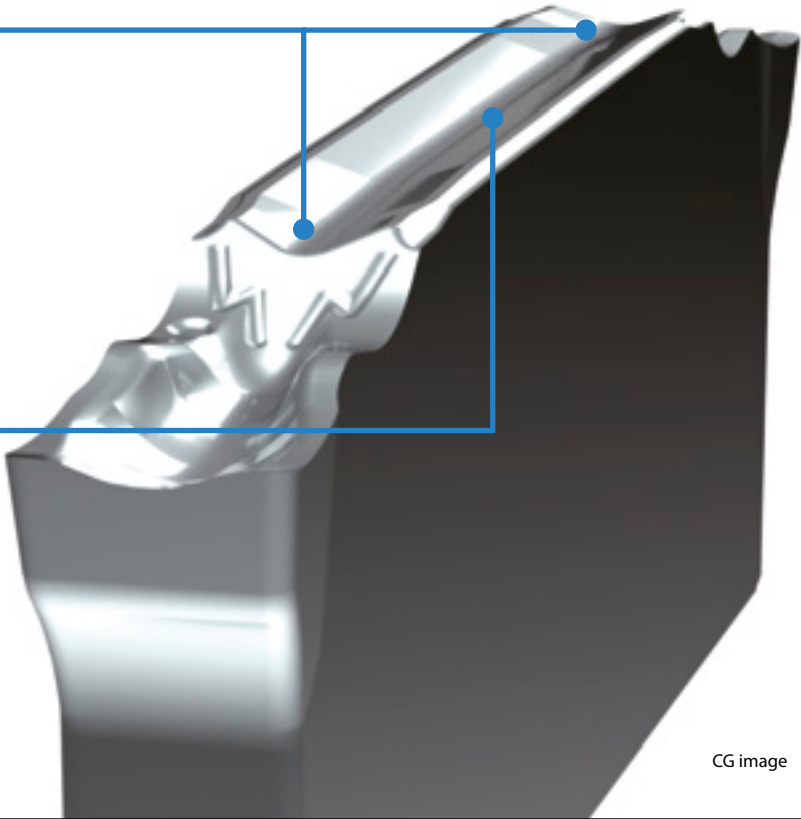
Image

Centre of groove

Large groove angle on top of insert.
Firmly engages the toolholder to increase hold.



Image

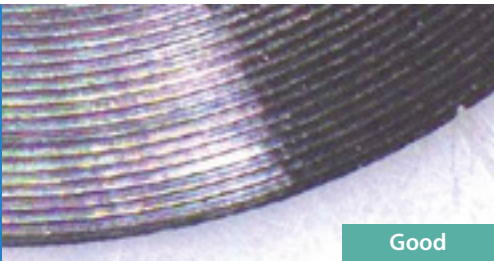


CG image

Excellent chatter resistance

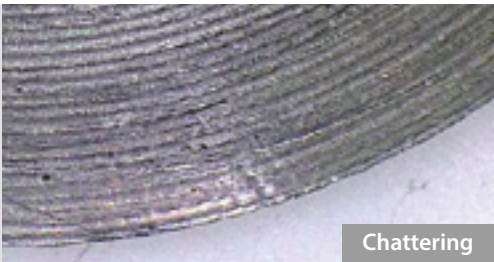
Machined surface comparison (Internal evaluation)

KGZ



Good

Competitor A



Chattering

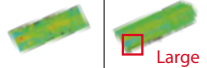
Cutting conditions: $V_c = \sim 60$ m/min., $f = 0.12$ mm/rev.
Workpiece: SUS303 ($\phi 14$). Wet (External coolant). KGZR1212JX-2.
Edge width: 2 mm (PM chipbreaker).

Strong toolholder durability

Toolholder durability comparison (Internal evaluation)

Toolholder damage comparison after 100,000 cuts

KGZ	Comp. A
0.015 mm	0.02 mm



Large

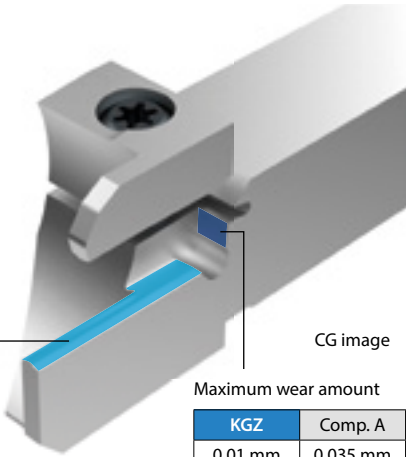
Maximum wear amount

KGZ	Comp. A
0.01 mm	0.035 mm



Large

CG image



Cutting conditions: $V_c = \sim 80$ m/min., $f = 0.1$ mm/rev.
Workpiece: SUS303 ($\phi 14$). Wet (External coolant). KGZR1212JX-2.
Edge width: 2 mm (PM chipbreaker).

5

2

New insert grades PR20 series is available MEGACOAT NANO EX coating technology provides longer tool life

New insert grades for grooving and cut-off solutions

PR20 Series

NEW

PR2015

1st recommendation for cast iron

Also available for steel and stainless steel.

PR2025

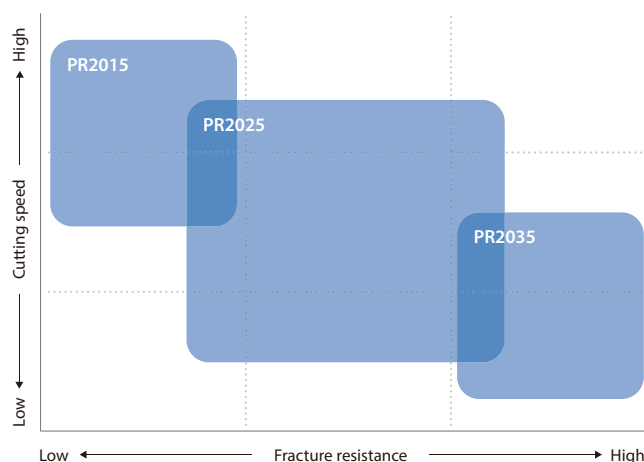
1st recommendation for steel

Also available for stainless steel.

PR2035

1st recommendation for stainless steel

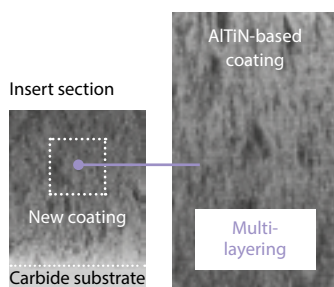
Also available for steel.



New coating for grooving and cut-off machining



Achieve long tool life and high stability with the combination of high content aluminium nano coating layer.



Special nano coating layer

Long tool life

Excellent wear and fracture resistance

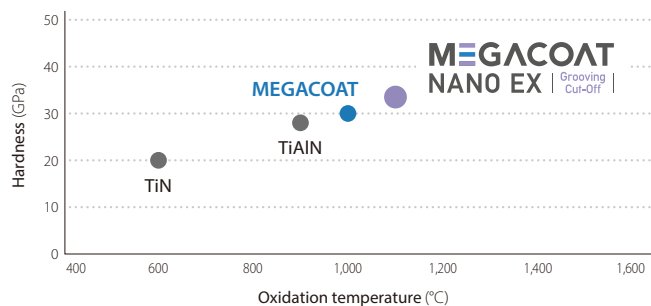
Multi-layering of high content aluminium nano layers added with high melting point material having different concentration. Suppresses hexagonal crystal precipitation and achieves excellent oxidation resistance.

Stable machining

High coating toughness

Crystal grain refinement. Optimised internal stress suppresses crack growth.

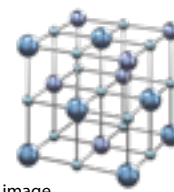
Coating characteristics (Internal evaluation)



Unique technology (Patent applied)

Proprietary coating process
Improve high content aluminium nano layers performance.

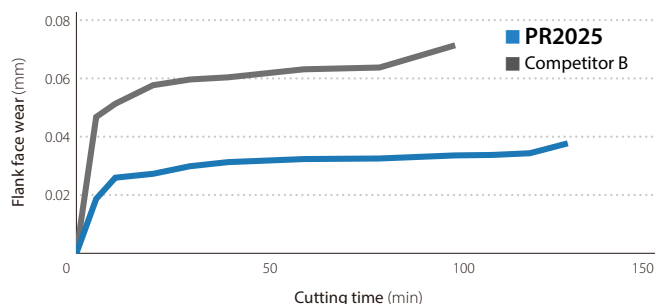
Maintains a cubic crystal structure to maximize the properties of aluminium (Al)



CG image

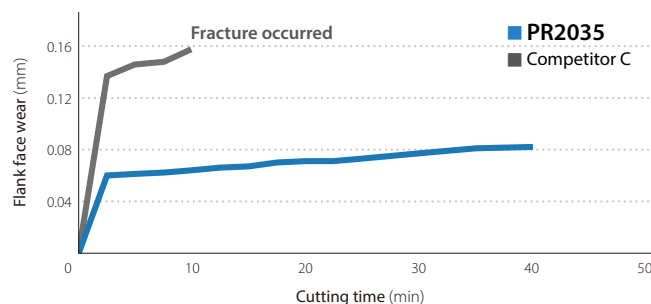
Cutting performance

S45C wear resistance comparison (Internal evaluation)



Cutting conditions : $V_c \sim 100$ m/min., $f = 0.1$ mm/rev
Workpiece : S45C ($\varnothing 20$) Wet (External coolant) GZM2020N-020PM

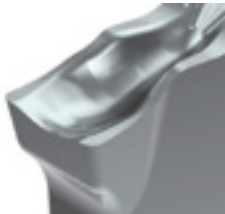
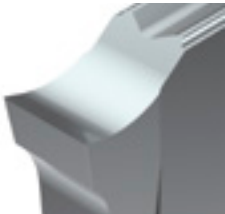
SUS304 wear resistance comparison (Internal evaluation)



Cutting conditions : $V_c \sim 80$ m/min., $f = 0.05$ mm/rev
Workpiece : SUS304 ($\varnothing 20$) Wet (External coolant) GZM2020N-020PM

3

Choose from a variety of insert and chipbreaker combinations for a wide range of applications

	Chip control oriented			Sharp edge
Chipbreakers (Cut-off)	Low feed machining PF chipbreaker	Medium feed machining PM chipbreaker	High feed machining PH chipbreaker	Low cutting force PG chipbreaker
				
	With/without lead angle	With/without lead angle	No lead angle	With/without lead angle
Grades	PR2015 PR2025 PR2035	PR2015 PR2025 PR2035	PR2015 PR2025 PR2035	PR2025 PR2035 PDL025 GW15
Features	Edge width from 1.3 mm. For reducing cost of steel workpiece.	High versatility. For a variety of machining.	Reduced cycle time. For high feed machining.	Superior sharpness. For aluminium alloy machining.
	  S10C »Chip control« video	  SUS304 »Chip control« video	  S45C »Chip control« video	  A6061 »Chip control« video

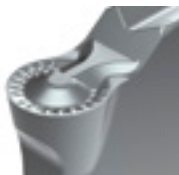
Expanded line-up of grooving chipbreakers and insert grades

NEW

Suitable for various workpiece materials and applications

High precision moulding technology with tolerance ± 0.03 mm

A comprehensive line-up of grades including the new PR20 series, Cermet, and PCD.

	General purpose GM Chipbreaker	Low feed GL Chipbreaker	Copying CM Chipbreaker	Low cutting force GS Chipbreaker	PCD NB (W/O chipbreaker)
Chipbreaker (Grooving)					
Grades	PR2015 PR2025 PR2035 TN620	PR2015 PR2025 PR2035 TN620	PR2015 PR2025 PR2035 TN620	PR2015 PR2025 PR2035 TN620 GW15	KPD001

Supports vibration/oscillation machining with stable chipcontrol and longer tool life

Stable machining

Breaks chips into small pieces with vibration machining

SUS304 chip control comparison (Internal evaluation)

PF chipbreaker



Good

Vibration
machining



Breaks chips into
small pieces

Cutting conditions : $V_c = \sim 120$ m/min., $f = 0.03$ mm/rev.
Workpiece: SUS304 ($\phi 14$). Wet (External coolant). KGZR1212JX-2. Edge width: 2 mm.

PM chipbreaker



Good

Vibration
machining



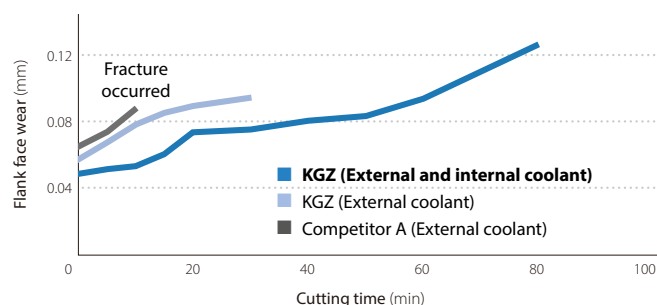
Breaks chips into
small pieces

Cutting conditions : $V_c = \sim 120$ m/min., $f = 0.05$ mm/rev.
Workpiece: SUS304 ($\phi 14$). Wet (External coolant). KGZR1616JX-2. Edge width: 2 mm.

Long tool life

Extended tool life in combination with internal coolant (JCTM)

Wear resistance comparison (Internal evaluation)



Cutting edge condition



After 40 minutes machining.



After 15 minutes machining.

Cutting conditions: $V_c = \sim 120$ m/min., $f = 0.05$ mm/rev. Workpiece: SUS304 ($\phi 14$). Wet. KGZR1218JX-2JCTM. Edge width: 2 mm. (PM chipbreaker).

Direct coolant holder for small parts machining

JCTM Series

Long tool life and stable machining by internal coolant with/without piping system.

Rectangular shank with optimised coolant channel design.

1st recommendation

Square shank is also available.

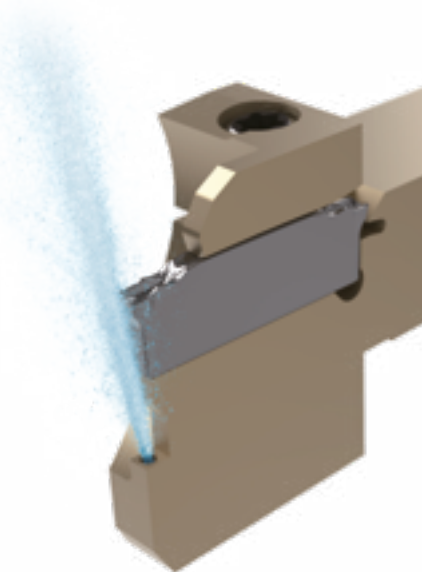
Without piping

When the tool turret supports direct coolant

- Coolant is supplied directly from tool turret into the holder.
- No need for piping just by installing tools.

With piping

- Compatible with internal coolant on any machine with standard piping parts.



CG image



1 Pin SUS304



Cutting conditions
Vc = ~ 36 m/min.
f = 0.02 mm/rev
Wet (External coolant)
Ø15
KGZL1616JX-2
GZM2020N-020PM (PR2035)

Number of parts

KGZ

10,000 pcs/corner

Competitor F

5,000 pcs/corner

Tool life

2x

Tool life was extended in stainless steel machining.
Machining surface quality and chip control were good.

(User evaluation)

2 Base metal S45C



Cutting conditions (KGZ)
Vc = ~ 104 m/min., f = 0.02 ~ 0.05 mm/rev
Wet (External coolant) Ø9.7
Edge width : 2 mm
KGZL1212JX-2
GZM2020N-020PM (PR2025)
Cutting conditions (Competitor G)
Vc = ~ 86 m/min., f = 0.02 ~ 0.05 mm/rev
Wet (External coolant) Ø9.7
Edge width: 2 mm

Machining efficiency

KGZ

Vc = ~104 m/min.

Competitor G

Vc = ~86 m/min.

Machining
efficiency



KGZ machined the workpieces equivalent to competitor G
with higher cutting speed.

The cutting edge was good.

(User evaluation)

3 Automotive parts SUS304F



Cutting conditions
Vc = ~ 108 m/min.
f = 0.12 mm/rev
Wet (External coolant)
Ø15.2
KGZR1212JX-2
GZM2020N-020PM (PR2035)

Number of parts

KGZ

250 pcs/corner

Competitor H

130 pcs/corner

Tool life

1.9x

Competitor H had welding. KGZ had no welding and good
chip control. Achieved about 1.9 times longer tool life.

(User evaluation)

4 Wedge S48C



Cutting conditions
n = 2,100 min-1 (Constant)
f = 0.12 mm/rev
Wet (External coolant)
Ø20
KGZR1616JX-3
GZM3020N-025PM (PR2015)

Number of parts

KGZ

2,000 pcs/corner

Competitor I

1,800 pcs/corner

Tool life

1.1x

Longer tool life under high feed conditions (f = 0.12 mm/rev).

(User evaluation)

5 Sleeve 12Cr



Cutting conditions
Vc = ~ 72 m/min.
f = 0.08 mm/rev
Wet (External coolant)
Ø65
KGZR2020JX-3D42
GZM3020N-025PM (PR2025)

Number of parts

KGZ

200 pcs/corner

Competitor J

100 pcs/corner

Tool life

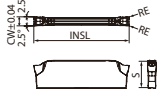
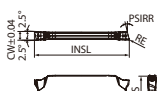
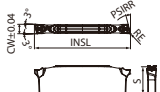
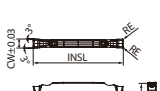
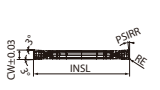
2x

Stable machining was possible even with hollow workpiece.

Double the tool life.

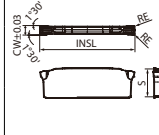
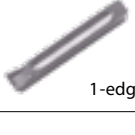
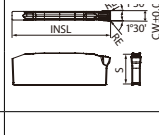
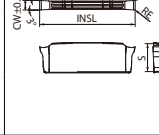
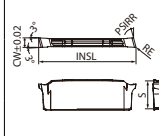
(User evaluation)

GZM (Cut-off)

Shape Handed insert shows Right-hand			Description	No. of corners	Dimensions (mm)				Angle	MEGACOAT NANO EX			DLC coating	Carbide	Applicable toolholders							
					CW	S	RE	INSL		PSIR R/L	PR2015	PR2025				PR2035	PDL025	GW15				
																			Tolerance			
Low feed (Cut-off)			GZM 1316N-003PF	1.3	+0.04 -0.04	4.4	0.03	16	-	●	●	●			KGZ R/L...1.3(D16) KGZS R/L...1.3A/B							
			1316N-015PF				0.15			●	●	●										
			1516N-003PF	1.5			0.03			●	●	●			KGZ R/L...1.5(D16) KGZS R/L...1.5A/B							
			1516N-015PF				0.15			●	●	●										
			GZM 1316R-003PF-15D	1.3			4.4	16		0.03	15°	●	●	●			KGZ R/L...1.3(D16) KGZS R/L...1.3A/B					
			1316L-003PF-15D							0.03		●	●	●								
			1516R-003PF-15D	1.5						0.03		●	●	●			KGZ R/L...1.5(D16) KGZS R/L...1.5A/B					
			1516L-003PF-15D							0.15		●	●	●								
										GZM 2020N-003PF		2	5.9	20	0.03	-	●	●	●			KGZ R/L...-2(...) KGZS R/L...-2A/B
										2020N-015PF					0.15		●	●	●			
	2520N-003PF	2.5				0.03	●	●	●			KGZ R/L...-2(...) KGZS R/L...-2.4(...) KGZS R/L...-2A/B										
	2520N-015PF					0.15	●	●	●													
	3020N-003PF	3				0.03	●	●	●			KGZ R/L...-2(...) KGZS R/L...-2.4(...) KGZS R/L...-3(...) KGZS R/L...-2A/B										
	3020N-015PF					0.15	●	●	●													
			GZM 2020R-003PF-15D	2		5.9	20	0.03	15°	●	●	●						KGZ R/L...-2(...) KGZS R/L...-2A/B				
			2020L-003PF-15D					0.15		●	●	●										
			2020R-015PF-15D					0.03		●	●	●										
			2520R-003PF-15D	2.5				0.03		●	●	●						KGZ R/L...-2(...) KGZS R/L...-2.4(...) KGZS R/L...-2A/B				
			2520L-003PF-15D					0.15		●	●	●										
			2520R-015PF-15D					0.03		●	●	●										
			3020R-003PF-15D	3				0.03		●	●	●						KGZ R/L...-2(...) KGZS R/L...-2.4(...) KGZS R/L...-3(...) KGZS R/L...-2A/B				
			3020L-003PF-15D					0.15		●	●	●										
	3020R-015PF-15D	3	0.15	●		●	●															
	Medium feed (Cut-off)			GZM 2020N-020PM		2	+0.03 -0.03	5.9	20	-	●	●			●				KGZ R/L...-2(...) KGZS R/L...-2A/B			
				2520N-020PM		2.5					●	●	●			KGZ R/L...-2(...) KGZS R/L...-2.4(...) KGZS R/L...-2A/B						
				3020N-025PM		3					●	●	●			KGZ R/L...-2(...) KGZS R/L...-3(...) KGZS R/L...-2A/B						
			GZM 2020R-020PM-6D	2	0.2	6°					●	●	●			KGZ R/L...-2(...) KGZS R/L...-2A/B						
			2520R-020PM-6D	2.5							●	●	●			KGZ R/L...-2(...) KGZS R/L...-2.4(...) KGZS R/L...-2A/B						
			3020R-025PM-6D	3							0.25	●	●	●			KGZ R/L...-2(...) KGZS R/L...-2.4(...) KGZS R/L...-3(...) KGZS R/L...-2A/B					

Using PF or PM chipbreaker for grooving will not create a flat bottom.
GZM and GZG inserts cannot be installed in KGM and KGD holders.

●: Available

Shape Handed insert shows Right-hand			Description	No. of corners	Dimensions (mm)				Angle	MEGACOAT NANO EX			DLC coating	Carbide	Applicable toolholders		
					CW	S	RE	INSL		PSIR %/°	PR2015	PR2025				PR2035	
																	Tolerance
High feed (Grooving)			GZM 2020N-020PH	2	2	+0.03 -0.03	5.9	0.2	20	-	●	●	●		KGZ R/L...-2(...) KGZS R/L...-2A/B		
			2520N-020PH								2	2.5	●	●	●		KGZ R/L...-2(...) KGZ R/L...-2.4(...) KGZS R/L...-2A/B
			3020N-030PH								3	●	●	●		KGZ R/L...-2(...) KGZ R/L...-2.4(...) KGZS R/L...-2A/B	
			GZMS 2020N-020PH	1	2			0.2			●	●	●		KGZ R/L...-2(...) KGZS R/L...-2A/B		
			3020N-030PH		3			0.3			●	●	●		KGZ R/L...-2(...) KGZ R/L...-3(...) KGZS R/L...-2A/B		
Low cutting force (Cut-off)			GZG 2020N-005PG	2	2	+0.02 -0.02	5.9	0.05	20	-		●	●	●	●	KGZ R/L...-2(...) KGZS R/L...-2A/B	
			2520N-005PG		2.5							●	●	●	●	KGZ R/L...-2(...) KGZ R/L...-2.4(...) KGZS R/L...-2A/B	
			3020N-005PG		3							●	●	●	●	KGZ R/L...-2(...) KGZ R/L...-3(...) KGZS R/L...-2A/B	
			GZG 2020R-005PG-15D		2								●	●	●	●	KGZ R/L...-2(...) KGZS R/L...-2A/B
			2520R-005PG-15D		2.5								●	●	●	●	KGZ R/L...-2(...) KGZ R/L...-2.4(...) KGZS R/L...-2A/B
			3020R-005PG-15D		3								●	●	●	●	KGZ R/L...-2(...) KGZ R/L...-3(...) KGZS R/L...-2A/B

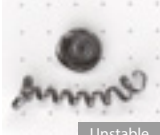
•: Available

Solution

High efficiency machining with PH chipbreaker

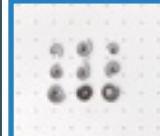
Supports high feed machining with $f = \sim 0.2$ mm/rev (steel) and $f = \sim 0.16$ mm/rev (stainless steel).
Excellent chip control in a wide range of machining area.

S45C chip control comparison (Internal evaluation)

f (mm/rev)	0.1	0.15	0.2
KGZ PH			
Competitor D			
Competitor E			

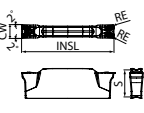
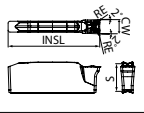
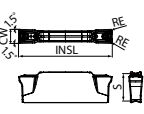
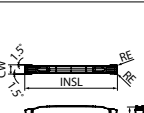
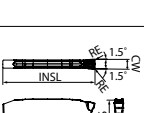
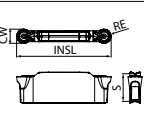
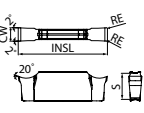
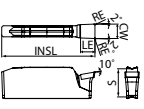
Cutting conditions: $V_c = \sim 150$ m/min. Workpiece: S45C ($\varnothing 14$).
Wet (External coolant). KGZR1616JX-2. Edge width: 2 mm (PH chipbreaker).

SUS304 chip control comparison (Internal evaluation)

f (mm/rev)	0.1	0.12	0.16
KGZ PH			
Competitor D			
Competitor E			

Cutting conditions: $V_c = \sim 80$ m/min. Workpiece: SUS304 ($\varnothing 14$).
Wet (External coolant). KGZR1616JX-2. Edge width: 2 mm (PH chipbreaker).

GZM/GZG (Grooving)

Shape Handed insert shows right-hand			Description	Edge preparation	No. of corners	Dimensions (mm)					MEGACOAT NANO EX			Carbide	Cemet	PCD	Applicable inserts				
						CW	S	RE	INSL	LE	PR2015	PR2025	PR2035	GW15	TiN620	KPD001					
																		Tolerance			
General purpose (Grooving)			GZM 2420N-020GM	-	2	2.4	5.9	0.2	20	-	●	●	●		●		KGZ [®] /L...2(...) KGZ [®] /L...2.4(...) KGZS [®] /L...2A/B				
			3020N-020GM			3					+0.03 -0.03	0.4		●	●	●		●		KGZ [®] /L...2(...) KGZ [®] /L...2.4(...) KGZ [®] /L...3(...)	
			3020N-040GM											●	●	●		●		KGZS [®] /L...2A/B	
			GZMS 2220N-020GM	-	1	2.2	5.9	0.2	20	-	●	●	●		●		KGZ [®] /L...2(...) KGZS [®] /L...2A/B				
			3020N-040GM			3					+0.03 -0.03	0.4		●	●	●		●		KGZ [®] /L...2(...) KGZ [®] /L...2.4(...) KGZ [®] /L...3(...) KGZS [®] /L...2A/B	
Low feed (Grooving)			GZM 2420N-020GL	-	2	2.4	5.9	0.2	20	-	●	●	●		●		KGZ [®] /L...2(...) KGZ [®] /L...2.4(...) KGZS [®] /L...2A/B				
			3020N-020GL			3					+0.03 -0.03	0.4		●	●	●		●		KGZ [®] /L...2(...) KGZ [®] /L...2.4(...) KGZ [®] /L...3(...)	
			3020N-040GL											●	●	●		●		KGZS [®] /L...2A/B	
High feed (Cut-off / Grooving)			GZM 2020N-020PH	-	2	2	5.9	0.2	20	-	●	●	●				KGZ [®] /L...2(...) KGZS [®] /L...2A/B				
			2520N-020PH			2.5					+0.03 -0.03	0.3	20		●	●	●				KGZ [®] /L...2(...) KGZ [®] /L...2.4(...) KGZ [®] /L...3(...) KGZS [®] /L...2A/B
			3020N-030PH			3									●	●	●				
			GZMS 2020N-020PH	-	1	2	5.9	0.2	20	-	●	●	●				KGZ [®] /L...2(...) KGZS [®] /L...2A/B				
			3020N-030PH			3					+0.03 -0.03	0.3		●	●	●				KGZ [®] /L...2(...) KGZ [®] /L...2.4(...) KGZ [®] /L...3(...) KGZS [®] /L...2A/B	
Copying (Grooving)			GZM 3020N-150R-CM	-	2	3	+0.03 -0.03	5.9	1.5	20	-	●	●	●		●		KGZ [®] /L...2(...) KGZ [®] /L...2.4(...) KGZ [®] /L...3(...) KGZS [®] /L...2A/B			
Low cutting force (Grooving)			GZG 2520N-020GS	-	2	2.5	5.9	0.2	20	-	●	●	●	●	●			KGZ [®] /L...2(...) KGZ [®] /L...2.4(...) KGZS [®] /L...2A/B			
			3020N-020GS			3					●	●	●	●	●			KGZ [®] /L...2(...) KGZ [®] /L...2.4(...) KGZ [®] /L...3(...) KGZS [®] /L...2A/B			
PCD (Grooving)			GZGS 2020N-020NB	F	1	2	+0.03 -0.03	5.9	0.2	20	2.9						●	KGZ [®] /L...2(...) KGZS [®] /L...2A/B			
			3020N-020NB			3												●	KGZ [®] /L...2(...) KGZ [®] /L...2.4(...) KGZ [®] /L...3(...) KGZS [®] /L...2A/B		

●: Available

CM chipbreaker [Depth of cut (ap) in back copying]

Maximum ap in back copying

Description	Maximum ap (mm)		
	Toolholder description		
	KGZ...2(...)	KGZ...2.4(...)	KGZ...3(...)
GZM3020N-150R-CM	0.24	0.24	0.2

Cut-off

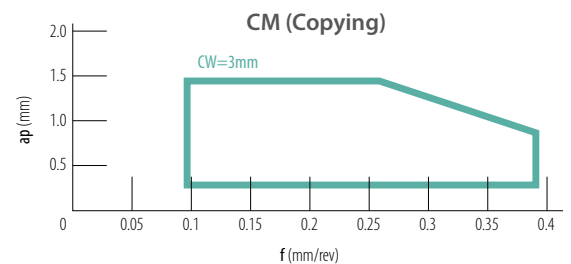
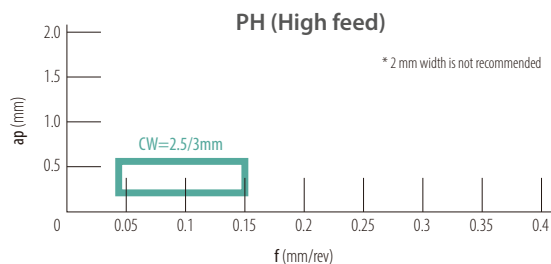
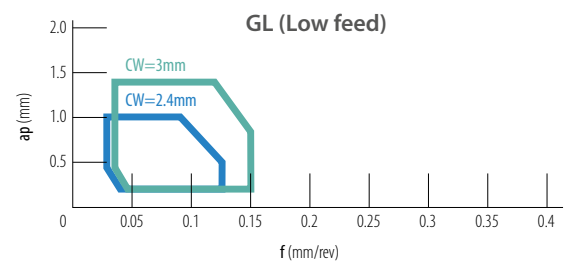
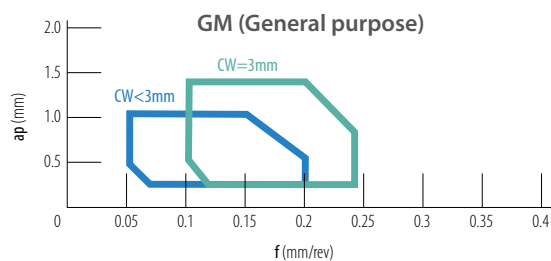
Workpiece	Vc (m/min)					f (mm/rev)										Remarks
	MEGACOAT NANO EX			DLC	Carbide	PF (RE = 0.03)			PF (RE = 0.15)			PM	PH	PG		
						CW (mm)										
	PR2015	PR2025	PR2035	PDL025	GW15	1.3~1.5	2.0	2.5~3.0	1.3~1.5	2.0	2.5~3.0	2.0~3.0	2.0~3.0	2.0	2.5~3.0	
Carbon steel	☆ 70~180	★ 70~150	☆ 70~150	-	-	0.01~ 0.04	0.02~ 0.06	0.02~ 0.08	0.01~ 0.05	0.03~ 0.08	0.04~ 0.10	0.05~ 0.15	0.10~ 0.20	0.01~ 0.04	0.01~ 0.05	
Alloy steel	☆ 70~180	★ 70~150	☆ 70~150	-	-											
Stainless steel	☆ 60~150	☆ 60~120	★ 60~120	-	-	0.01~ 0.03	0.01~ 0.04	0.01~ 0.05	0.01~ 0.04	0.03~ 0.07	0.04~ 0.08	0.04~ 0.12	0.08~ 0.16	0.01~ 0.03	0.01~ 0.04	
Cast iron	★ 80~200	-	-	-	☆ 50~100	0.01~ 0.05	0.02~ 0.07	0.03~ 0.08	0.01~ 0.06	0.03~ 0.09	0.04~ 0.10	0.05~ 0.15	0.10~ 0.20	0.01~ 0.04	0.01~ 0.05	
Aluminum alloy	-	-	-	★ 200~500	☆ 200~450	-	-	-	-	-	-	-	-	0.01~ 0.05	0.01~ 0.06	
Brass	-	-	-	-	★ 100~200	-	-	-	-	-	-	-	-	0.01~ 0.07	0.01~ 0.08	

Grooving

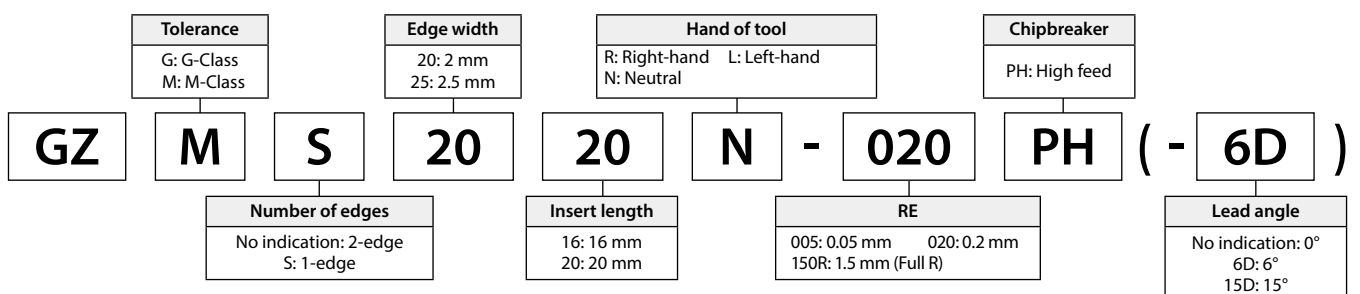
Workpiece	Vc (m/min)						f (mm/rev)									Remarks
	MEGACOAT NANO EX			Cermet	Carbide	PCD	GM		GL		PH	CM	GS	NB		
							CW (mm)									
	PR2015	PR2025	PR2035	TN620	GW15	KPD001	2.2/2.4	3.0	2.4	3.0	2.0~3.0	3.0	2.5/3.0	2.0	3.0	
Carbon steel	☆ 70~180	★ 70~150	☆ 70~150	★ 80~150	-	-	0.13	0.17	0.11	0.15	0.20	0.15	0.09	-	-	
Alloy steel	☆ 70~180	★ 70~150	☆ 70~150	★ 80~150	-	-										
Stainless steel	☆ 60~150	☆ 60~120	★ 60~120	-	-	-	0.03~ 0.12	0.05~ 0.15	0.02~ 0.10	0.03~ 0.12	0.08~ 0.16	0.04~ 0.12	0.03~ 0.08	-	-	
Cast iron	★ 80~200	-	-	-	☆ 50~100	-	0.05~ 0.13	0.07~ 0.17	0.03~ 0.11	0.04~ 0.15	0.10~ 0.20	0.05~ 0.15	0.04~ 0.09	-	-	
Aluminum alloy	-	-	-	-	☆ 200~450	★ 150~2,000	-	-	-	-	-	-	0.03~ 0.07	0.05~ 0.15	0.05~ 0.15	
Brass	-	-	-	-	☆ 100~200	★ 200~800	-	-	-	-	-	-				

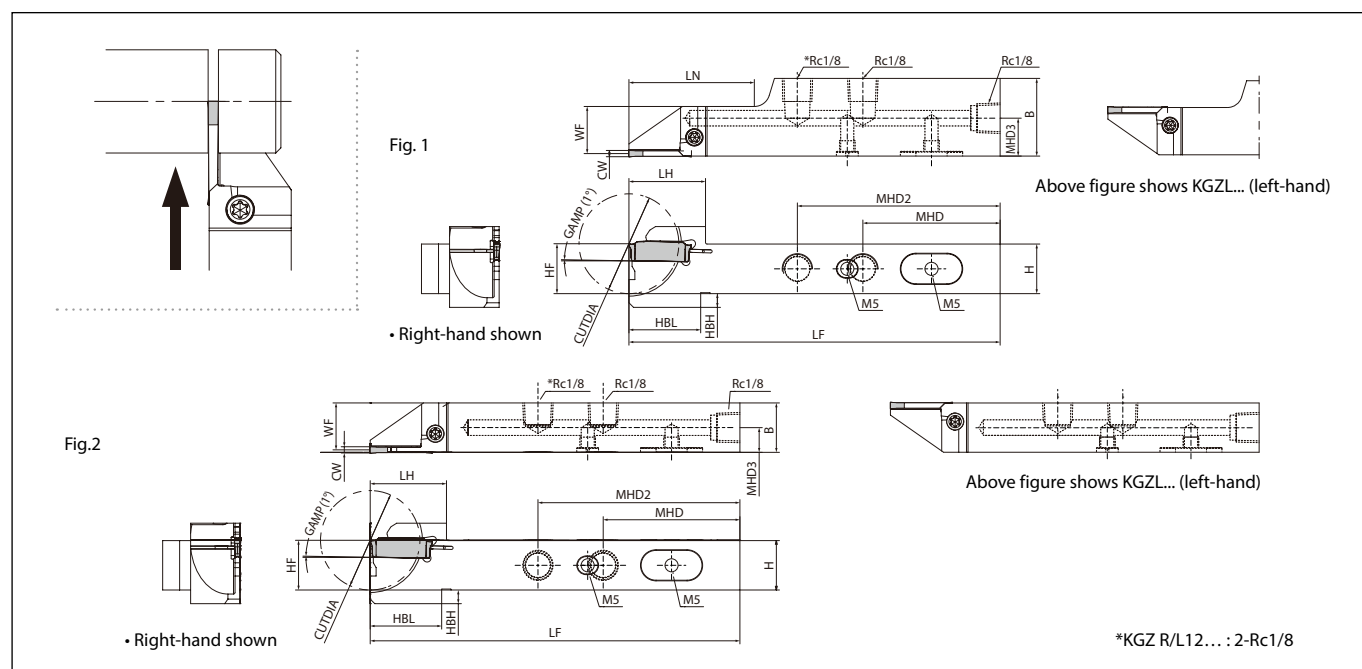
Turning

(Workpiece material : S50C)



Inserts identification system





Description	Availability		Dimensions (mm)													Edge width CW (mm)		Shape	Spare Parts				Applicable inserts								
	R	L	CUTDIA	H	B	LH	MHD	MHD2	MHD3	HF	HBH	HBL	LF	LN	WF	MIN.	MAX.		Plug 1	Plug 2	Clamp Screw	Wrench									
																															
KGZR 1218JX-2JCTM	●		24	12	18	19.8	54	-	8.4	12	8.5	19.8	120	43.7	11.2	2	3	Fig. 1	GP-1	HSSX 4LP	SB- 40120 TR	LTW- 155	GZ....2020... GZ....2220... GZ....2420... GZ....2520... GZ....3020...								
KGZL 1218JX-2JCTM		●							7.7																						
KGZR 1625JX-2JCTM	●		32	16	25	24.8	44	65	12.2	16	4.5	23.2												40.0	15.2	Fig. 1	GP-1	HSSX 4LP	SB- 40120 TR	LTW- 155	GZ....2420... GZ....2520... GZ....3020...
KGZL 1625JX-2JCTM		●							7.7																						
KGZR 1218JX-2.4JCTM	●		24	12	18	19.8	54	-	8.4	12	8.5	19.8	120	43.7	11.0	2.4	3	Fig. 1	GP-1	HSSX 4LP	SB- 40120 TR	LTW- 155	GZ....2420... GZ....2520... GZ....3020...								
KGZL 1218JX-2.4JCTM		●							7.7																						
KGZR 1625JX-2.4JCTM	●		32	16	25	24.8	44	65	12.2	16	4.5	23.2												40.0	15.0	Fig. 1	GP-1	HSSX 4LP	SB- 40120 TR	LTW- 155	GZ....2420... GZ....2520... GZ....3020...
KGZL 1625JX-2.4JCTM		●							7.7																						
KGZR 1218JX-3JCTM	●		24	12	18	19.8	54	-	8.6	12	8.5	19.8	120	43.7	10.8	3	3	Fig. 1	GP-1	HSSX 4LP	SB- 40120 TR	LTW- 155	GZ....3020...								
KGZL 1218JX-3JCTM		●							7.7																						
KGZR 1625JX-3JCTM	●		32	16	25	24.8	44	65	12.2	16	4.5	23.2												40.0	14.8	Fig. 1	GP-1	HSSX 4LP	SB- 40120 TR	LTW- 155	GZ....3020...
KGZL 1625JX-3JCTM		●							7.7																						
KGZ % 1212JX-2JCTM	●	●	24	12	12	19.8	59	-	6	12	5	19.8	120		11.2	2	3	Fig. 2	GP-1	HSSX 4LP	SB- 40120 TR	LTW- 155	GZ....2020... GZ....2220... GZ....2420... GZ....2520... GZ....3020...								
KGZ % 1616JX2D26JCTM	●	●	26	16	16	24.8	44	65	8	16	1	23.2			15.2																
KGZ % 1616JX-2JCTM	●	●	32								4.5																				
KGZ % 1212JX-2.4JCTM	●	●	24	12	12	19.8	59	-	6	12	5	19.8			120									-	11.0	2.4	3	Fig. 2	GP-1	HSSX 4LP	SB- 40120 TR
KGZ % 1616JX2.4D26JCTM	●	●	26	16	16	24.8	44	65	8	16	1	23.2	15.0																		
KGZ % 1616JX-2.4JCTM	●	●	32								4.5																				
KGZ % 1212JX-3JCTM	●	●	24	12	12	19.8	59	-	6	12	5	19.8	120			10.8	3	3	Fig. 2	GP-1	HSSX 4LP	SB- 40120 TR	LTW- 155		GZ....3020...						
KGZ % 1616JX3D26JCTM	●	●	26	16	16	24.8	44	65	8	16	1	23.2			14.8																
KGZ % 1616JX-3JCTM	●	●	32								4.5																				

Recommended tightening torque: 2.0 Nm / (SB-40120TR).

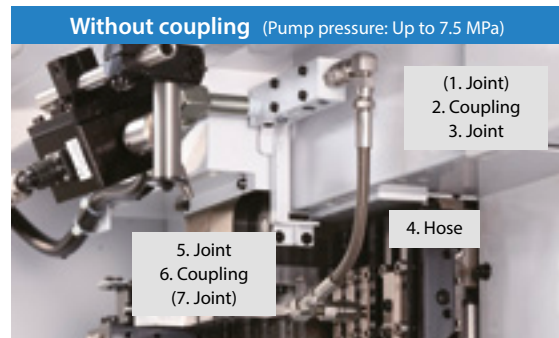
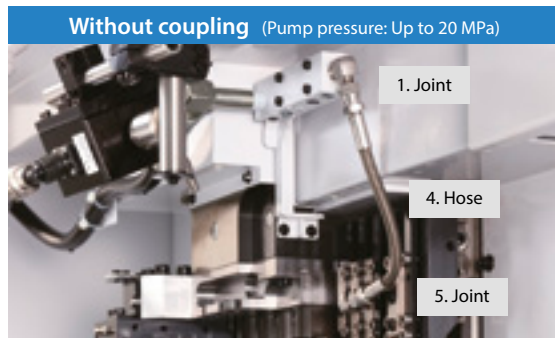
GM* and GD* inserts cannot be installed in the KGZ holder (GMM, GMG, GMN, GMR/L, GDM, GDG, GDGS, GDMS).

●: Available

Piping parts

Piping parts will be required separately if internal coolant is used

Pump pressure : Up to 20 MPa. Pump pressure: Up to 7.5 MPa if coupling is used.



Combination part description (Example)

Spare parts	Description
1. Joint	J-AN-R1/8-G1/8
4. Hose	HS-G1/8-G1/8-200
5. Joint	J-AN-R1/8-G1/8

Convert the thread standards on the machine's side (Rc1/4, Rc1/8, NPT1/8, etc.) to the thread standard on the hose side (G1/8) for use.

Use sealing agents such as seal tapes when installing piping parts.

Combination part description (Example)

Spare parts	Description
(1. Joint)	—
2. Coupling	CP-ST-R1/8 • P-ST-RC1/8
3. Joint	J-AN-R1/8-G1/8
4. Hose	HS-G1/8-G1/8-200
5. Joint	J-AN-R1/8-G1/8
6. Coupling	P-ST-RC1/8 • CP-ST-R1/8
(7. Joint)	—

Convert the thread standards on the machine's side (Rc1/4, Rc1/8, NPT1/8, etc.) to thread standards of the coupling (Rc1/8, etc.) or hose (G1/8) for use.

Use sealing agents such as seal tapes when installing piping parts.

Piping part dimensions

Joint (1/3/5/7) Pressure: ~20.0 MPa

(Unit: mm)

Shape	Description	Availability	ød1	ød2	L	L1	L2	T1	T2
	J-ST-R1/4-G1/8	●	5.5	4.0	34	13	13	R1/4	G1/8
	J-ST-NPT1/8-G1/8	●	3.5	3.5	29	10	13	NPT1/8	G1/8
	J-ST-R1/8-G1/8	●	4.0	4.0	29	10	13	R1/8	G1/8
	J-ST-R1/8-G1/8-L	●	4.0	4.0	40	20	14	R1/8	G1/8
	J-AN-R1/8-G1/8	●	4.0	4.0	27	14	13	R1/8	G1/8
	J-AN-R1/8-G1/8-L	●	4.0	4.0	34	20	14	R1/8	G1/8
	J-ST-R1/4-RC1/8	●	—	—	17	12	—	R1/4	Rc1/8
	J-ST-NPT1/8-RC1/8	●	3.5	—	30	10	—	NPT1/8	Rc1/8
	J-ST-R1/8-RC1/8	●	3.5	—	33	13	—	R1/8	Rc1/8

Elbow piping (J-AN-R1/8-G1/8) is recommended.

●: Available

Coupling (2/6) Pressure: ~7.5 MPa

(Unit: mm)

Shape	Description	Availability
	CP-ST-R1/8	●
	P-ST-RC1/8	●

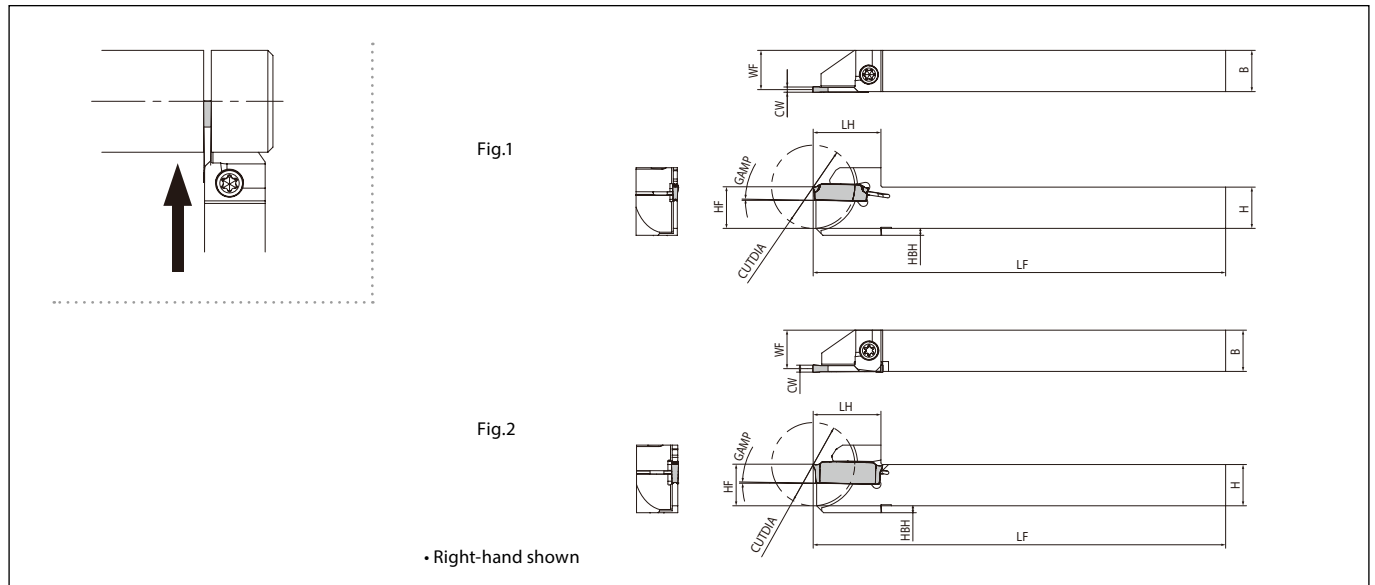
●: Available

Hose (4) Pressure: ~20.0 MPa

(Unit: mm)

Shape	Description	Availability	L
	HS-G1/8-G1/8-200	●	200
	HS-G1/8-G1/8-300	●	300
	HS-G1/8-G1/8-400	●	400
	HS-G1/8-G1/8-500	●	500
	HS-G1/8-G1/8-600	●	600
	HS-G1/8-G1/8-800	●	800

●: Available



Description		Availability		Dimensions (mm)								Cutting width (mm)		Angle	Shape	Spare parts		Applicable inserts			
		R	L	CUTDIA	H	B	LH	HF	HBH	LF	WF	MIN.	MAX.	GAMP		Clamp screw	Wrench				
																					
KGZ ^R / _L	1010JX-1.3D16	●	●	16	10	10	17.8	10	2.1	120	9.5	1.3	1.3	1°	Fig.1	SB-40120TR	LTW-15S	GZM1316...			
	1010JX-1.3	●	●	20	12	12	18.7	12		120	11.5										
	1212F-1.3D16	●	●	16			17.8			85											
	1212JX-1.3D16	●	●	24			19.8			120											
	1212F-1.3	●	●	120																	
	1212JX-1.3	●	●	120																	
KGZ ^R / _L	1010JX-1.5D16	●	●	16	10	10	17.8	10	2.1	120	9.4	1.5	1.5	1°	Fig.1	SB-40120TR	LTW-15S	GZM1516...			
	1010JX-1.5	●	●	20	12	12	18.7	12		85	11.4										
	1212F-1.5D16	●	●	16			17.8			120											
	1212JX-1.5D16	●	●	24			19.8			85											
	1212F-1.5	●	●	120																	
	1212JX-1.5	●	●	120																	
KGZ ^R / _L	1010JX-2	●	●	20	10	10	18.7	10	2.1	120	9.2	2	3	1°	Fig.2	SB-40120TR	LTW-15S	GZ...2020... GZ...2220... GZ...2420... GZ...2520... GZ...3020...			
	1212F-2	●	●	24	12	12	19.8	12		85	11.2										
	1212JX-2	●	●	32	16	16	24.8	16		120	15.2										
	1616JX-2	●	●	34	20	20	26.8	20	-	125	11.2					SE-50125TR	LTW-20				
	2012K-2D34	●	●								19.2										
	2020K-2D34	●	●								24.2										
	2525K-2D34	●	●	25	25	32.7	25	125	24.2	2.4	3					1°	Fig.2		SB-40120TR	LTW-15S	GZ...2420... GZ...2520... GZ...3020...
	1010JX-2.4	●	●	20	10	10	18.7	10	2.1												
1212F-2.4	●	●	24	12	12	19.8	12	85				11									
1212JX-2.4	●	●	32	16	16	24.6	16	-				120	15								
1616JX-2.4	●	●	34	20	20	26.6	20		125			11	SE-50125TR	LTW-20							
2012K-2.4D34	●	●										19									
2020K-2.4D34	●	●						24													
2525K-2.4D34	●	●	25	25	32.7	25	125	24	3	3	1°	Fig.2	SB-40120TR	LTW-15S	GZ...3020...						
KGZ ^R / _L	1212JX-3	●	●	24	12	12	19.8	12								2.1	120	10.8			
	1616JX-3	●	●	32	16	16	24.6	16									120	14.8			
	1616JX-3D38	●	●	38	19	13	28.6	19					125	11.8							
	1913K-3D38	●	●										20	12			30.7	20	120	10.8	
	2012JX-3D42	●	●																		35.2
	2012JX-3D51	●	●	35.2																	
	2020JX-3D42	●	●	42	20	20	30.7	20					120	18.8							
	2020JX-3D51	●	●														35.2				
	2525K-3D51	●	●														25	25	41.7	25	125

Recommended tightening torque: 2.0Nm / (SB-40120TR) • 2.5Nm / (SE-50125TR) • 6.5Nm / (HHSX16).

●: Available

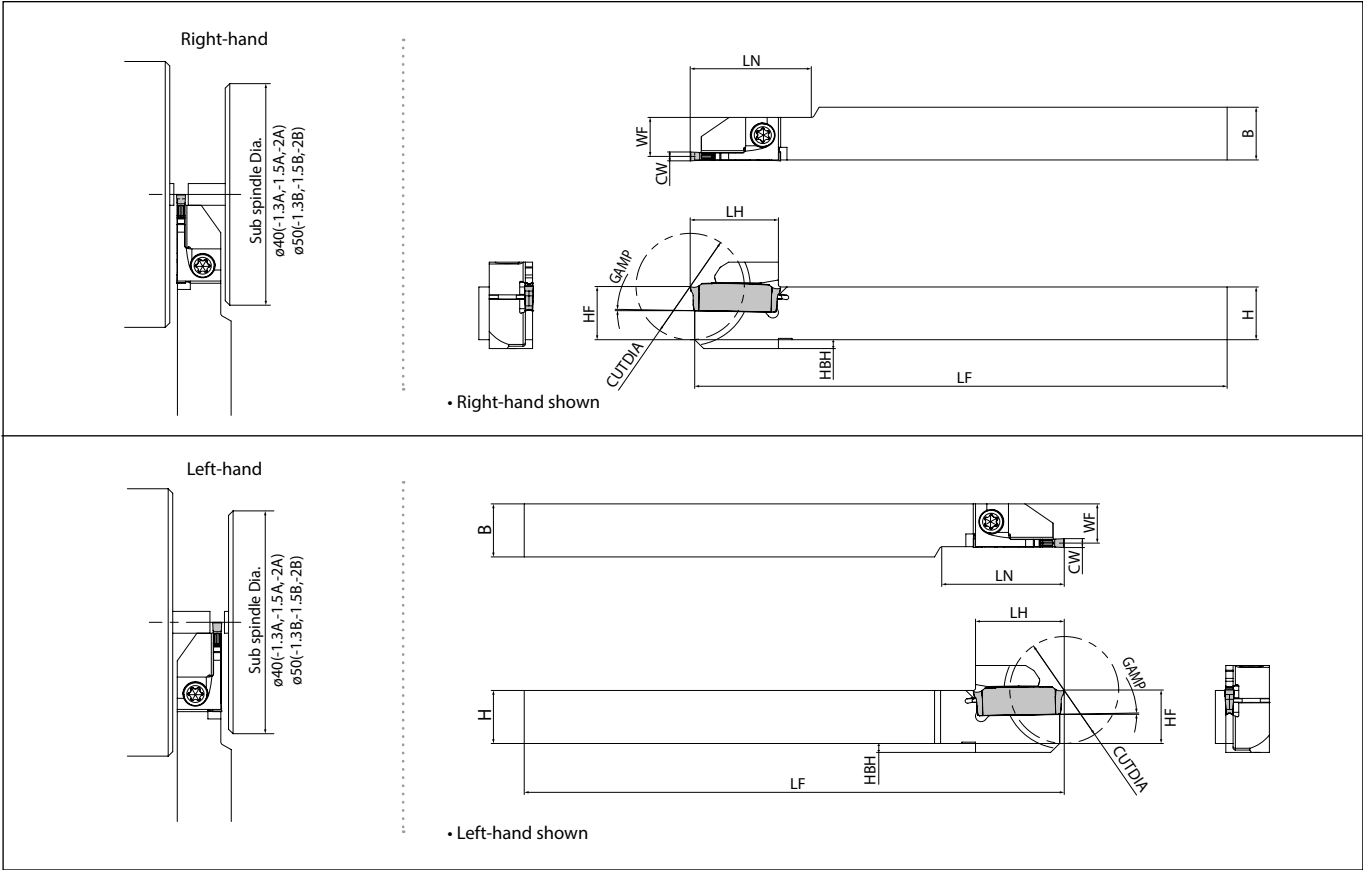
When machining large cutting diameters (over 36 mm) with KGZ $\frac{R}{L}$...-3D38 or KGZ $\frac{R}{L}$...-3D42, please follow the instructions below:

• Use 1-edge inserts

• Maximum workpiece diameter for 2-edge inserts is $\phi 36$

KGZ* and GD* inserts cannot be installed in the KGZ holder (GMM, GMG, GMN, GMR/L, GDM, GDG, GDGS, GDMS).

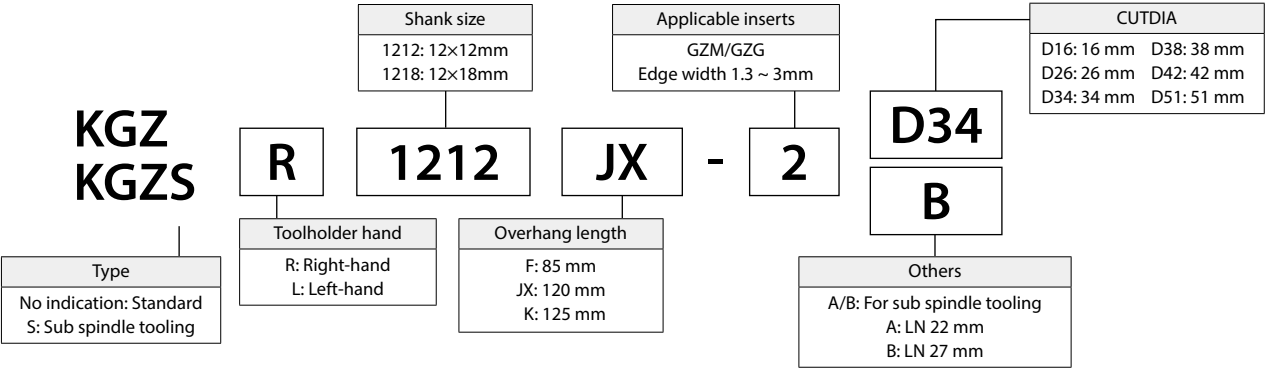
KGZS (For cut-off operation near sub spindle side)



Description		Availability		Dimensions (mm)								Cutting width (mm)		Angle	Spare parts		Applicable inserts		
		R	L	CUTDIA	H	B	LH	HF	HBH	LF	LN	WF	MIN.		MAX.	GAMP		Clamp screw	Wrench
																			
KGZS ^{R/L}	1212F-1.3A	●	●	24	12	12	19.8	12	2.1	85	22	8.4	1.3	1.3	1°	SB-40120TR	LTW-15S	GZM1316...	
	1212JX-1.3B	●	●		16	16		16	-	120	27								
	1616JX-1.3B	●	●		12	12		12	2.1	85	22	8.4	1.5	1.5					
	1212JX-1.5B	●	●		16	16		16	-	120	27								
	1616JX-1.5B	●	●		12	12		12	2.1	85	22	8.7	2	3				GZ...2020..., GZ...2220..., GZ...2420..., GZ...2520..., GZ...3020...	
	1212F-2A	●	●		16	16		16	-	120	27								
	1212JX-2B	●	●		12	12		12	2.1	85	22								
	1616JX-2B	●	●		16	16		16	-	120	27								

●: Available

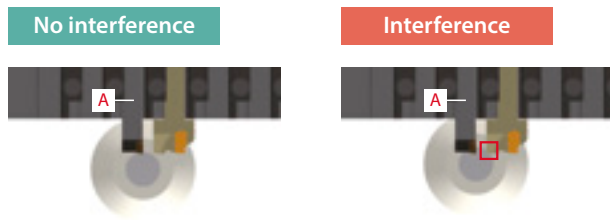
Toolholder identification system



Precautions

Maximum ap of the next tool (indicated as tool A) and holder interference

When using JCTM holder 1218/1212, note maximum ap of the next tool to avoid interference.



Estimated maximum ap of tool A (mm)

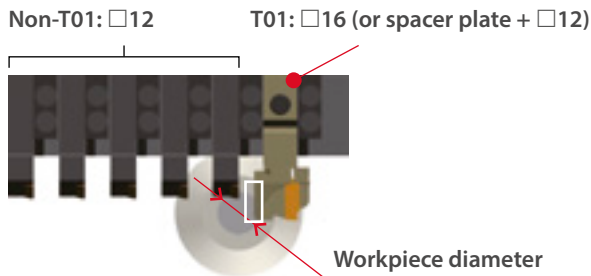
Workpiece diameter / JCTM description	ø12	ø16	ø20
KGZ [®] / 1218JX-*JCTM	2.4	2.0	1.7
KGZ [®] / 1212JX-*JCTM	—	—	3.8

When using the JCTM holder 1218/1625/1616 for T01 on the following target models, please check the workpiece diameter in advance to avoid interference.

Target Models

T01: Machines where both □16 (or spacer plate + □12) holders can be mounted

Non-T01: Machines where only □12 holders can be mounted.



KGZ compatibility

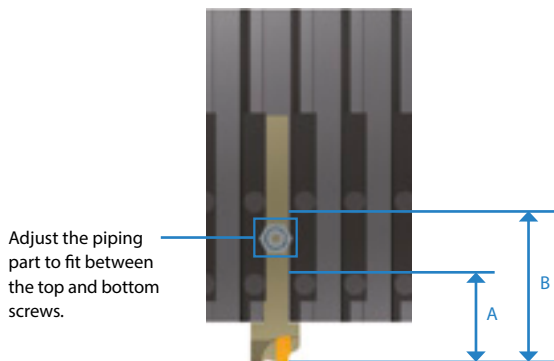
Workpiece diameter / JCTM description	ø14 or smaller	ø14 or larger
KGZ [®] / 1218JX-*JCTM	Compatible	Please use KGZ [®] / 1212JX-*JCTM or KGZ [®] / 1616JX*D26JCTM
KGZ [®] / 1625JX-*JCTM		
KGZ [®] / 1616JX-*JCTM		

Piping part interference avoidance

Rectangular shank (KGZ[®]/1218..., KGZ[®]/1625...) are recommended for use with piping parts connected to JCTM holders.

When connecting the J-**-R1/8-G1/8-L piping parts to the rectangular shank, please check for any potential interference with the machine in advance.

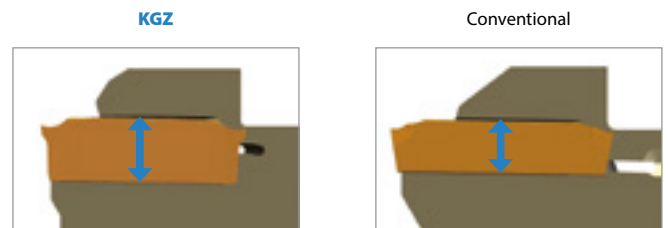
When connecting piping parts to the JCTM square shank, check the lengths of A and B below to avoid interference with the screws of the tool turret.



Shank size	Availability of square shank use
□12	"A" shorter than 51.5 mm and "B" longer than 68.5 mm → Available Other than the above conditions → Use J-**-R1/8-G1/8-L or a (Use a rectangular shank)
□16	Available

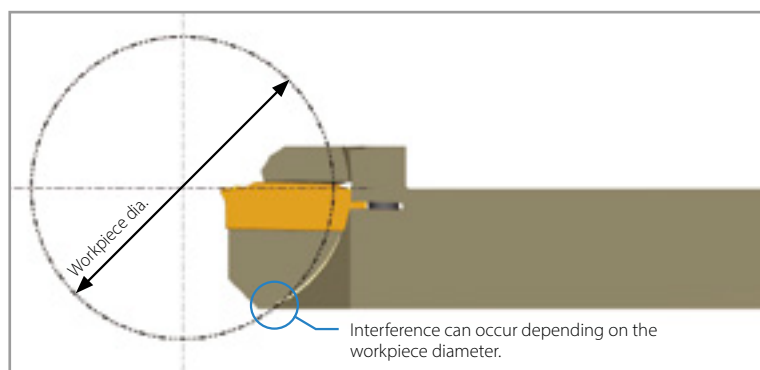
Compatibility with conventional tools

KGZ is not compatible with the conventional tools (KGD/KGM).



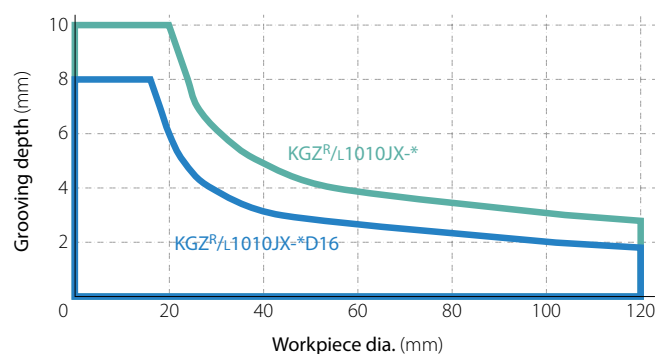
Limitation on maximum grooving depth

There is a limit to available grooving depth depending on the workpiece diameter.

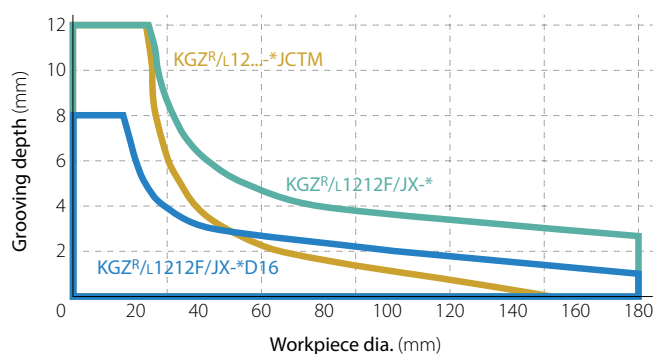


Guideline for grooving depth

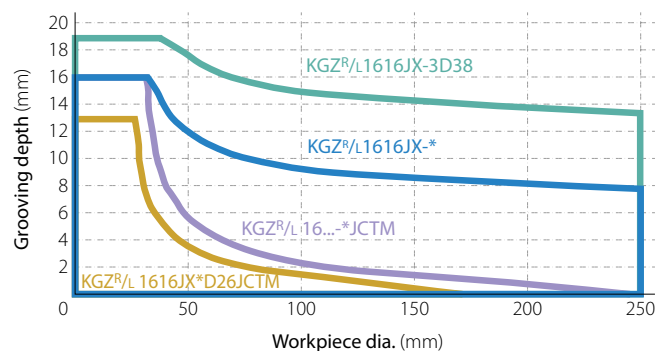
□10 toolholders



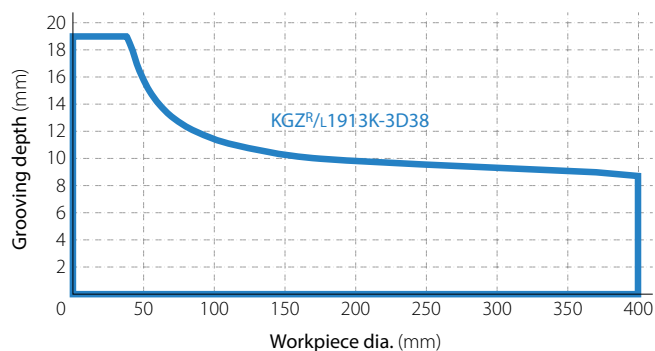
□12 toolholders



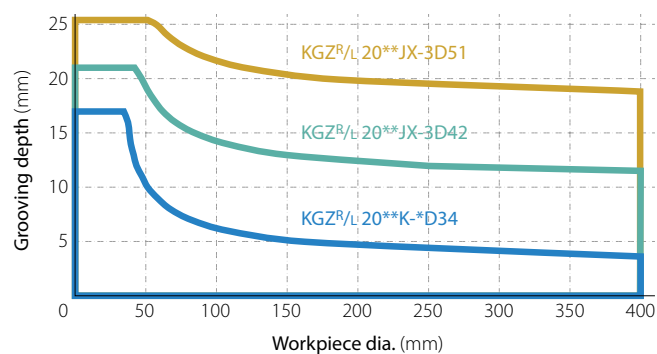
□16 toolholders



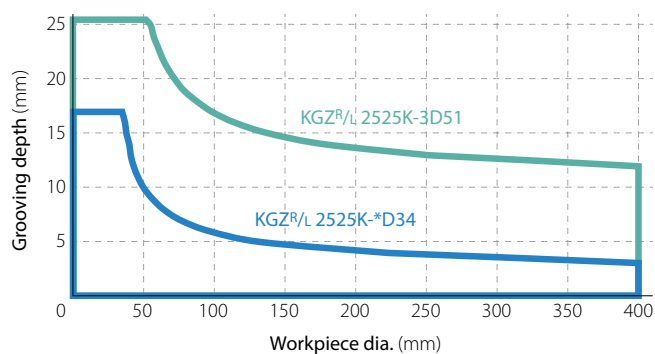
□19 toolholders



□20 toolholders



□25 toolholders



Tips for external grooving

Point 1 - Turning after grooving

1. **Grooving depth over 0.5 mm:** For roughing - refer to fig. 1
Before turning, pull the tool back about 0.1 mm after grooving, instead of turning subsequent to grooving.
(To apply the lead on the cutting edge in only one direction)
2. **Grooving depth under 0.5 mm:** For finishing - refer to fig. 2
Turning subsequent to grooving is possible because shallow groove depths result in a small load on the cutting edge.
Retention time is not necessary.

Point 2

1. When widening the groove width (Refer to Fig. 3), apply the »Step Turning«.
2. The widened groove and side walls should be finished last. For better chip control, A_p over 0.5 mm is recommended.

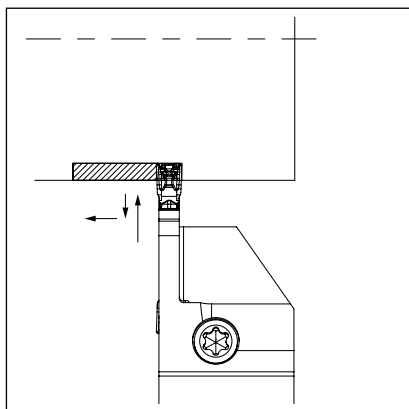


Fig. 1
Before turning, pull the tool back about 0.1 mm after grooving.
Grooving depth over 0.5 mm : At roughing

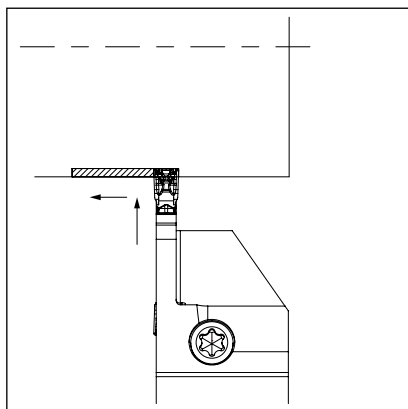


Fig. 2
Turning subsequent to grooving.
Grooving depth under 0.5 mm : At finishing

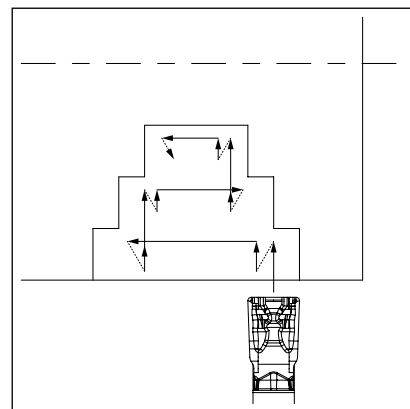


Fig. 3

