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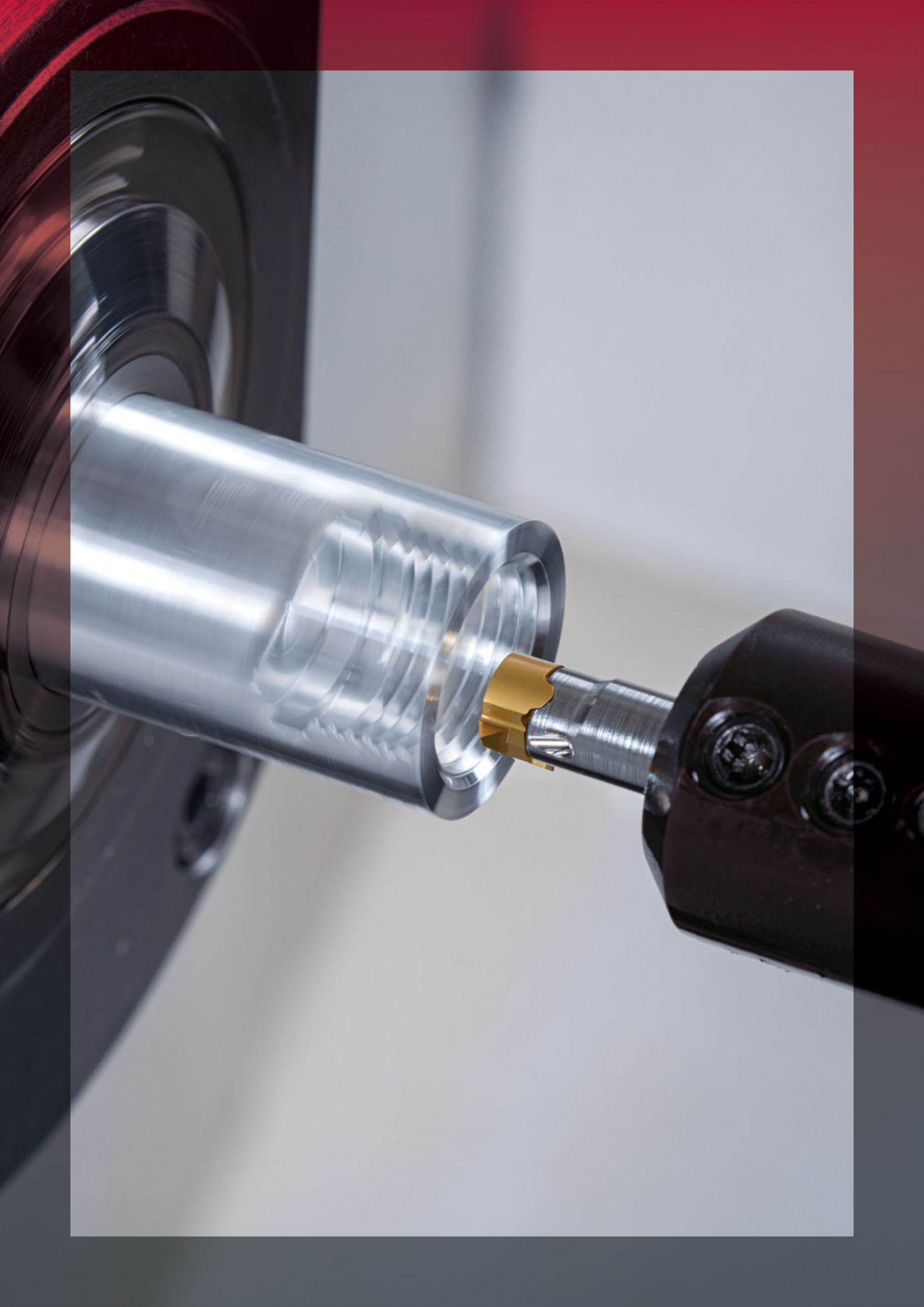
Small internal grooving and threading tool

**TINY** <sup>INTERNAL</sup> **CUT**

Tungaloy Report No. 564-G

## Internal grooving and thread turning tool series for bores as small as $\varnothing 5$ mm







## TINY <sup>INTERNAL</sup> CUT

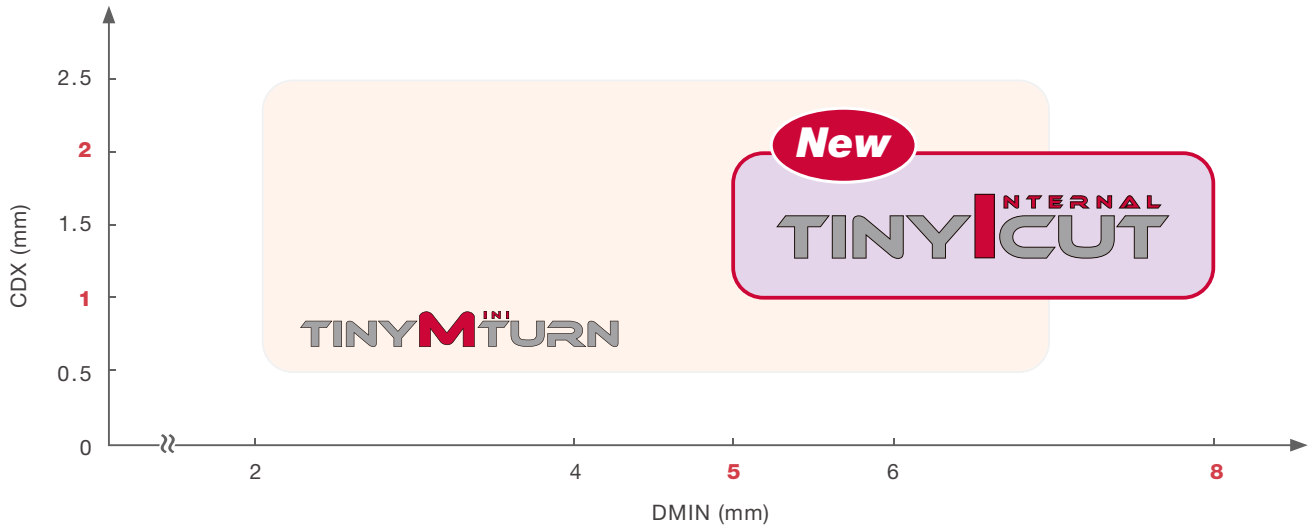
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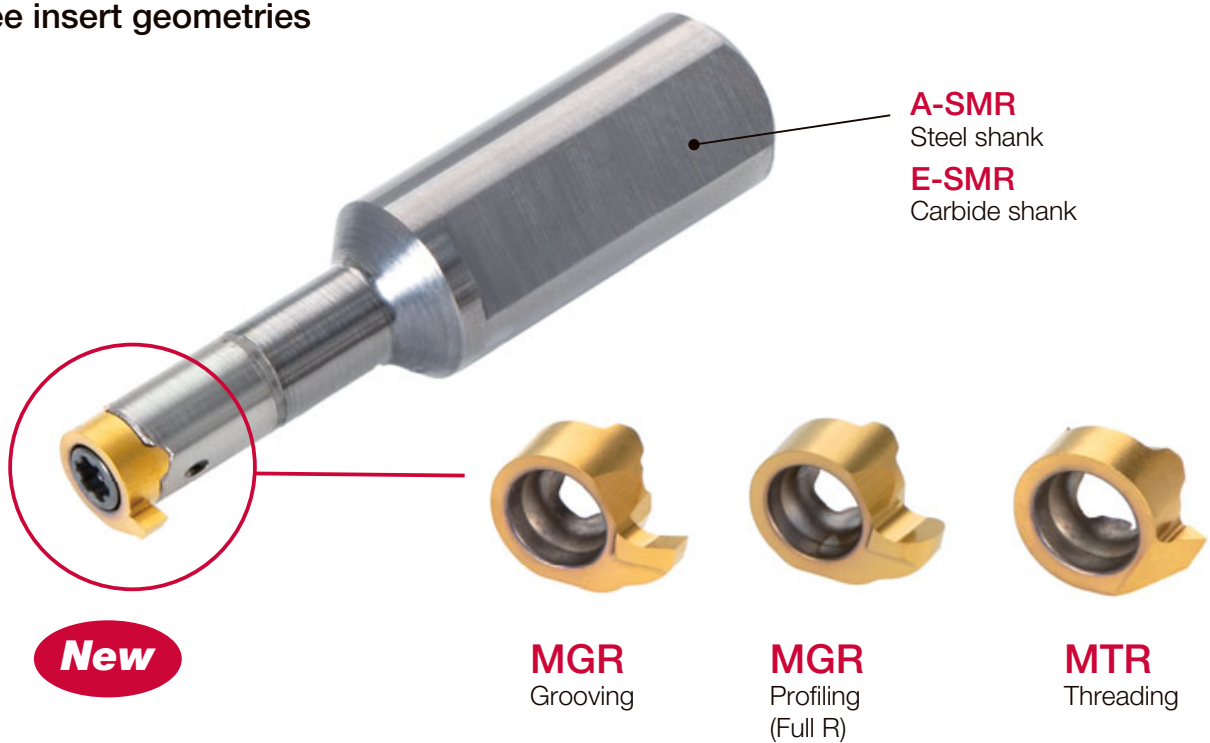
Indexable tooling solution for internal machining of  
small diameter bores

## Indexable solution for small holes!

### Application ranges / Internal grooving holder



### Three insert geometries

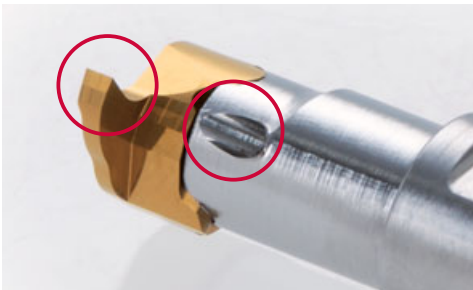


**Unique clamping system for highly rigid clamping**



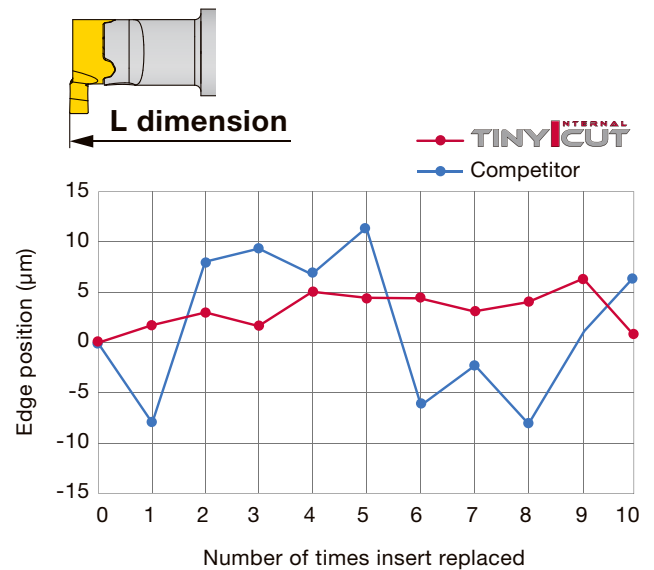
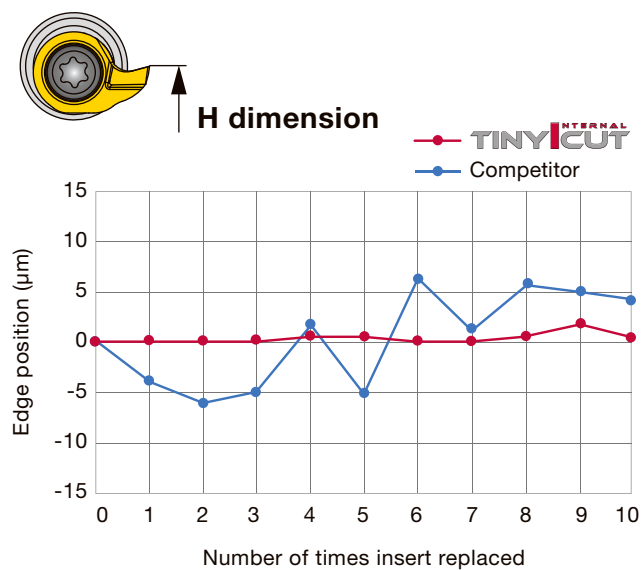
**Tool body with through coolant**

Make sure that, when assembling, the cutting edge is in line with the coolant outlet for effective chip evacuation.



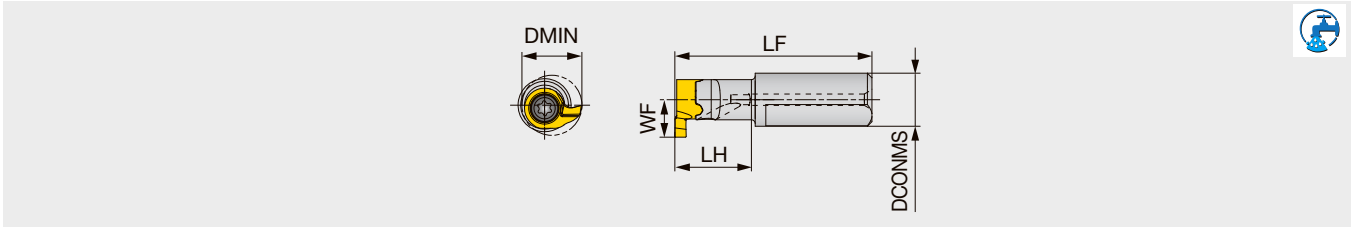
**Extremely precise edge repeatability**

Exchangeable head system with extremely high repeatability



## A/E-SMR

### Screw-on boring bar



Designation	Material	DCONMS	LH	LF	Insert	Torque*
A07080-SMR4	Steel	7	8	24	M*R4...	0.5
E07120-SMR4	Carbide	7	12	29	M*R4...	0.5
A07100-SMR5	Steel	7	10	26	M*R5...	1.3
E07180-SMR5	Carbide	7	18	34	M*R5...	1.3

\*Torque: Recommended clamping torque (N-m)

For A/E-SMR4, the above LF and LH dimensions are true with MGR4100F000-D05 insert assembled.

For A/E-SMR5, the above LF and LH dimensions are true with MGR5150F003-D07 insert assembled.

The DMIN and WF sizes vary depending on the insert sizes used.

### SPARE PARTS

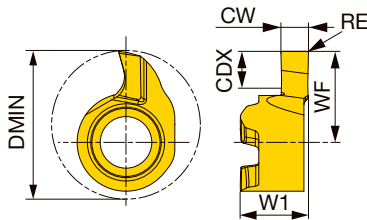
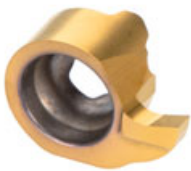


Designation	Clamping screw	Wrench
A/E07**-SMR4	CSPB-1.8L3.6	IP-6F
A/E07**-SMR5	CSTB-2.5L054DR	T-7F

## INSERTS

### MGR

#### Grooving



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

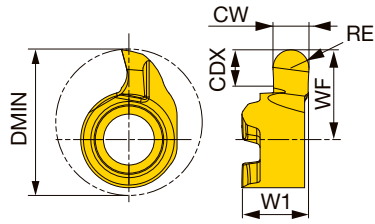
★ : First choice

Designation	CW	RE	Coated						CDX	DMIN	WF	W1
			SH7025									
MGR4100F000-D05	1	0	●						1	5	2.95	2.3
MGR5100F003-D07	1	0.03	●						1	7	3.95	3.7
MGR5150F003-D07	1.5	0.03	●						1	7	3.95	3.7
MGR5100F003-D08	1	0.03	●						2	8	4.95	3.7
MGR5150F010-D08	1.5	0.1	●						2	8	4.95	3.7
MGR5200F020-D08	2	0.2	●						2	8	4.95	3.7

● : New product

## MGR

### Profiling (Full R)



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

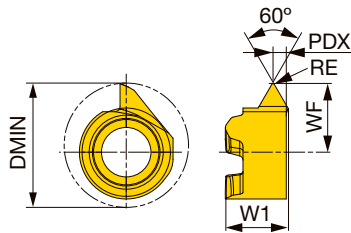
★ : First choice

Designation	CW	RE	Coated								CDX	DMIN	WF	W1
			SH7025											
MGR5100F050-D07	1	0.5	●								1	7	3.95	3.7
MGR5150F075-D07	1.5	0.75	●								1	7	3.95	3.7
MGR5200F100-D08	2	1	●								2	8	4.95	3.7

● : New product

## MTR

### Threading



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

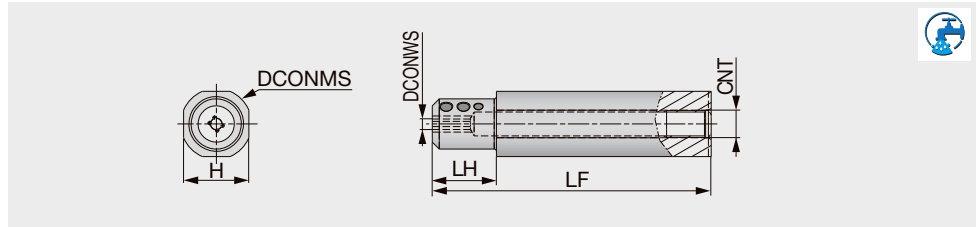
★ : First choice

Designation	RE	Coated								Pitch min	Pitch max	DMIN	PDX	WF	W1	
		SH7025														
MTR460F003-D05	0.03	●									0.5	0.75	5	0.65	2.9	2.1
MTR560F007-D07	0.07	●									1	1.25	7	0.9	3.9	3.6

● : New product

## JBBS-4N

Sleeve for internal coolant supply with 4 coolant holes



Designation	DCONMS	DCONWS	LF	LH	H	CNT
JBBS159-7-L100C-4N	15.875	7	100	10	14.58	Rc1/8
JBBS16-7-L100C-4N	16	7	100	10	15	Rc1/8
JBBS19-7-L100C-4N	19.05	7	100	20	17.2	Rc1/8
JBBS20-7-L100C-4N	20	7	100	20	18	Rc1/8
JBBS22-7-L100C-4N	22	7	100	20	20	Rc1/8
JBBS25-7-L100C-4N	25	7	100	23	23	Rc1/8
JBBS254-7-L100C-4N	25.4	7	100	23	23.4	Rc1/8

### SPARE PARTS



Designation	Clamping screw	Wrench
JBBS**-7-L**C-4N	SSHM5-4PF-S	P-2.5



## STANDARD CUTTING CONDITIONS

### Internal grooving

ISO	Workpiece material	Grade	Cutting speed Vc (m/min)	Feed: f (mm/rev)			
				RE = 0 mm	RE = 0.03 mm	RE = 0.1 mm	RE = 0.2 mm
<b>P</b>	Low carbon steel S15C, etc., C15E4, etc.	SH7025	10 - 100	0.005 - 0.015	0.005 - 0.02	0.01 - 0.02	0.01 - 0.03
	Carbon steels, Alloy steel S55C, SCM440, etc., C55, 42CrMoS4, etc.	SH7025	10 - 60	0.005 - 0.01	0.005 - 0.015	0.005 - 0.015	0.01 - 0.03
	Prehardened steel NAK80, PX5, etc.	SH7025	10 - 40	0.005 - 0.008	0.005 - 0.01	0.005 - 0.01	0.01 - 0.025
<b>M</b>	Stainless steel SUS304, etc., X5CrNi18-9, etc.	SH7025	10 - 80	0.005 - 0.008	0.005 - 0.01	0.005 - 0.015	0.01 - 0.02

### Profiling - full radius

ISO	Workpiece material	Grade	Cutting speed Vc (m/min)	Feed: f (mm/rev)		
				RE = 0 mm (Max.ap = 0.35 mm)	RE = 0.03 mm (Max.ap = 0.5 mm)	RE = 0.2 mm (Max.ap = 0.7 mm)
<b>P</b>	Low carbon steel S15C, etc., C15E4, etc.	SH7025	10 - 120	0.005 - 0.015	0.005 - 0.02	0.01 - 0.02
	Carbon steels, Alloy steel S55C, SCM440, etc., C55, 42CrMoS4, etc.	SH7025	10 - 100	0.005 - 0.01	0.005 - 0.018	0.01 - 0.015
	Prehardened steel NAK80, PX5, etc.	SH7025	10 - 80	0.005 - 0.008	0.005 - 0.015	0.005 - 0.013
<b>M</b>	Stainless steel SUS304, etc., X5CrNi18-9, etc.	SH7025	10 - 100	0.005 - 0.01	0.005 - 0.012	0.005 - 0.01

### Threading

ISO	Workpiece material	Grade	Cutting speed Vc (m/min)	Feed: f (mm/rev)
<b>P</b>	Low carbon steel S15C, etc., C15E4, etc.	SH7025	10 - 100	30 - 60
	Carbon steels, Alloy steel S55C, SCM440, etc., C55, 42CrMoS4, etc.	SH7025	10 - 60	10
	Prehardened steel NAK80, PX5, etc.	SH7025	10 - 40	10 - 20
<b>M</b>	Stainless steel SUS304, etc., X5CrNi18-9, etc.	SH7025	10 - 80	10 - 80

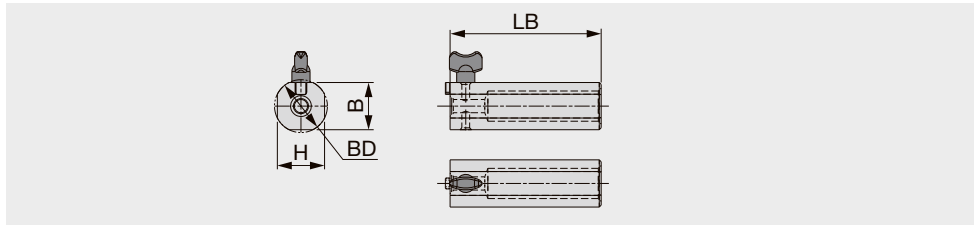
### Recommended infeeding passes for thread pitches

Thread pitch (mm)	Insert designation	RE (mm)	Total depth of feed	Recommended number of passes	Depth of cut per pass (mm)								
					Pass 1	Pass 2	Pass 3	Pass 4	Pass 5	Pass 6	Pass 7	Pass 8	Pass 9
0.5	MTR460F003-D05	0.03	0.3	5	0.08	0.07	0.06	0.05	0.04				
0.75		0.03	0.47	6	0.12	0.1	0.08	0.07	0.06	0.04			
1	MTR560F007-D07	0.07	0.6	6	0.18	0.15	0.1	0.08	0.05	0.04			
1.25		0.07	0.76	7	0.18	0.15	0.12	0.1	0.1	0.07	0.04		

## ACCESSORY

### QC-12D28EXC

Holder for insert change



Designation	BD	LB	H	B
QC-12D28EXC	28	80	25	25

Note: This is a dedicated holder designed to facilitate insert changes. Do not use this holder for machining as it may cause damages to tool, workpiece, machine, and possible human injury.

### SPARE PARTS


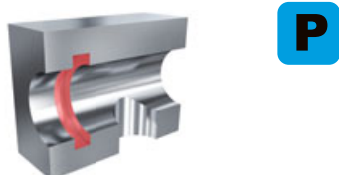
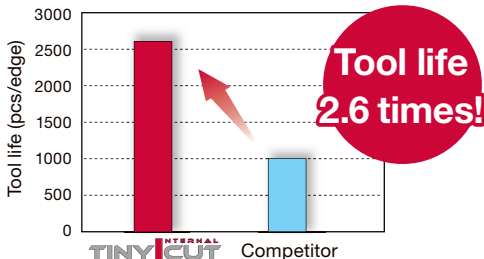
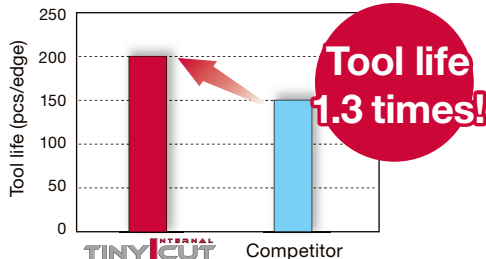


Designation	Fixing screw
QC-12D28EXC	KNOBM5X10



**TinyInternalCut** heads are small. When it is difficult to change inserts while holding the modular head with fingers, use the dedicated holder to facilitate insert changes.

## ■ PRACTICAL EXAMPLES

Workpiece type	Cover	Valve seat	
Toolholder	A07080-SMR4	A07080-SMR4	
Insert	MGR4100F000-D05	MGR4100F000-D05	
Grade	SH7025	SH7025	
Workpiece material	Alloy steel	Alloy steel	
			
Cutting conditions	Cutting speed: $V_c$ (m/min)	38	50
	Feed : $f$ (mm/rev)	0.01	0.01
	Groove width : $CW$ (mm)	1	1
	Groove depth : $CDX$ (mm)	0.7	0.5
	Machining	Internal grooving	Internal grooving
	Coolant	Wet	Wet
Results	 <p>With rigid insert clamping and the use of JBBS-4N tool sleeve, TinyInternalCut eliminated chip bird-nesting and provided 2.6 times tool life increase.</p>	 <p>With excellent edge line security and sharpness, TinyInternalCut eliminated burr generation and extended tool life by 1.3 times.</p>	

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