

# NEW PRODUCT NEWS



Tungaloy Report No. 423S1-G

Side cutter

## SLOTMILL SERIES

**NEW SLOT MILLING CUTTERS WITH PRECISION INTERNAL COOLANT SUPPLY FOR IMPROVED PART QUALITY**



## SLOTMILL SERIES

### Two types of cutter bodies with internal coolant supply

#### ■ Precision internal coolant supply for superior machining stability

Eliminates chip clogging and ensures proper cooling of the machining zone, significantly reducing downtime.



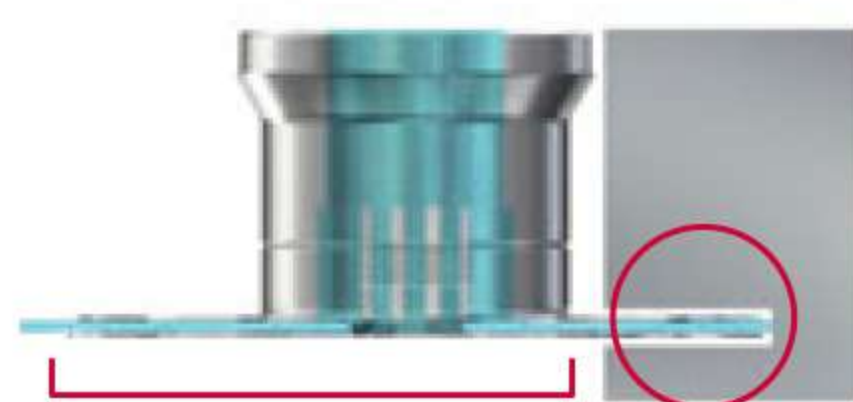
**Modular head**  
( for tool ø32 - 63 mm )



**Adapter for cutter head**  
( for tool ø80 - 125 mm )

#### Internal coolant supply

TUNG <sup>HIN</sup>SLIT



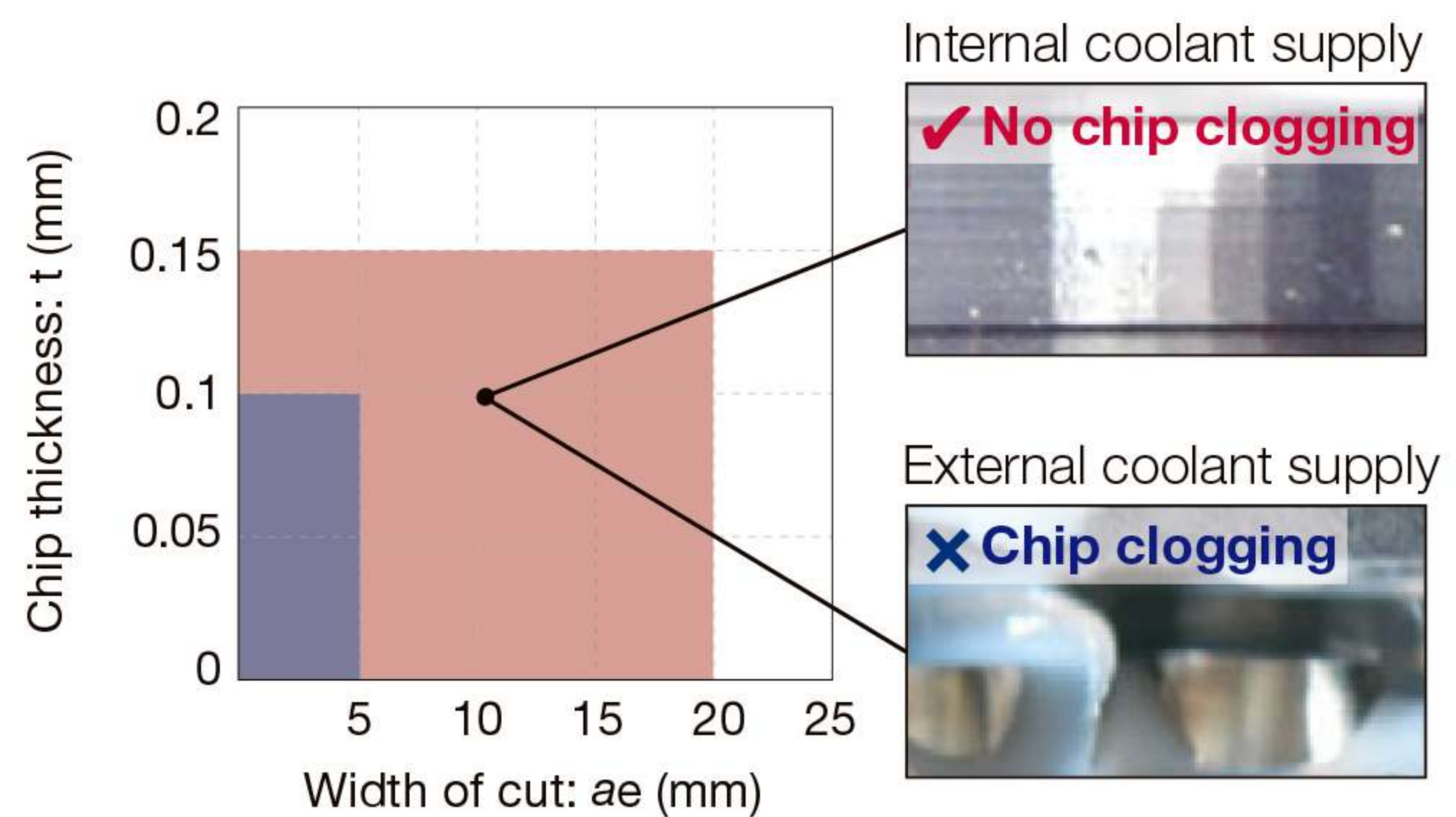
Effectively cools the machining zone, while eliminating chip clogging and part deformation.

#### External coolant supply

Conventional



② The machining zone is not properly cooled, causing part deformation. ① Poor chip evacuation leads to chip clogging.



Internal coolant supply

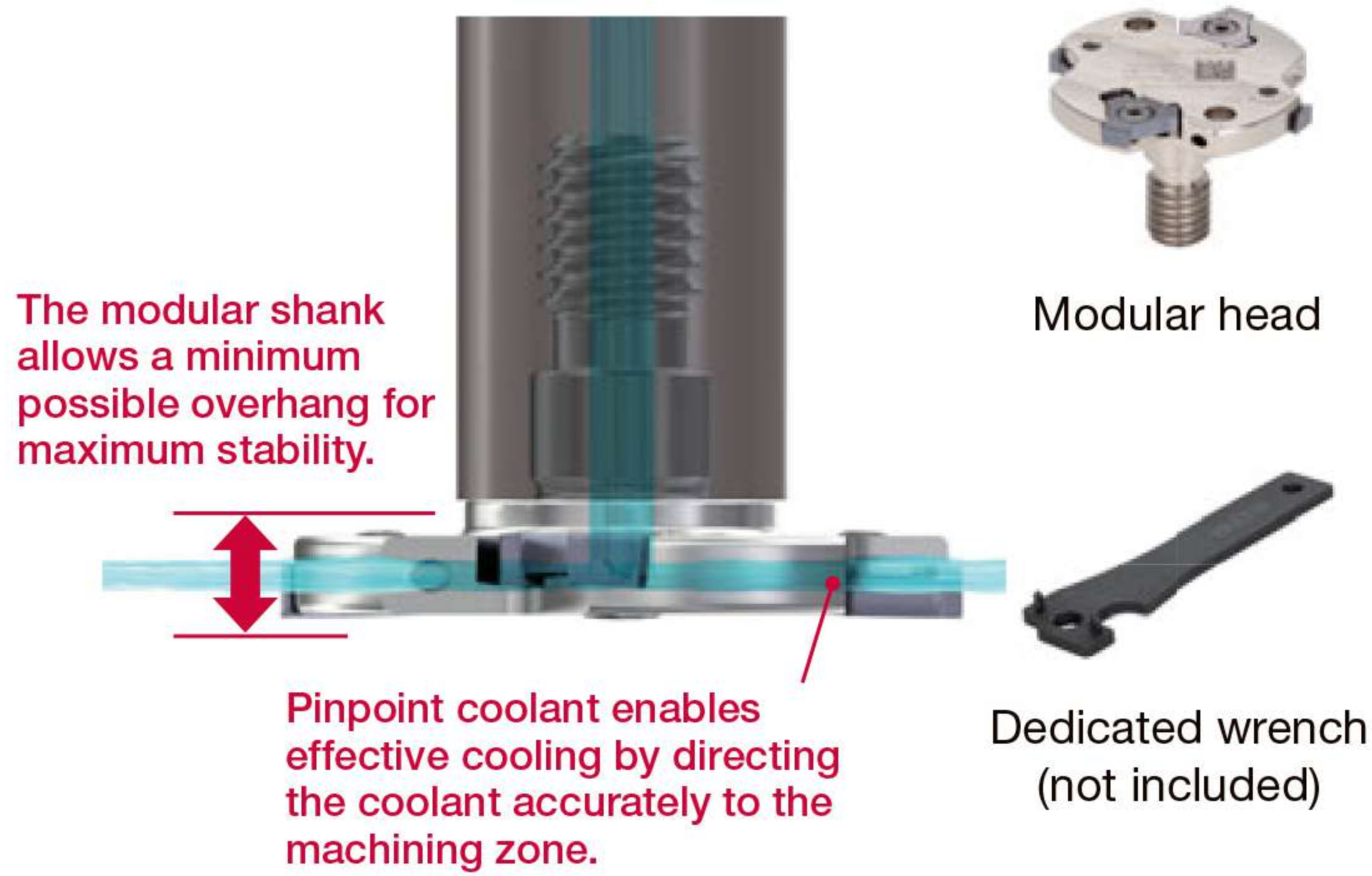
✓ No chip clogging

External coolant supply

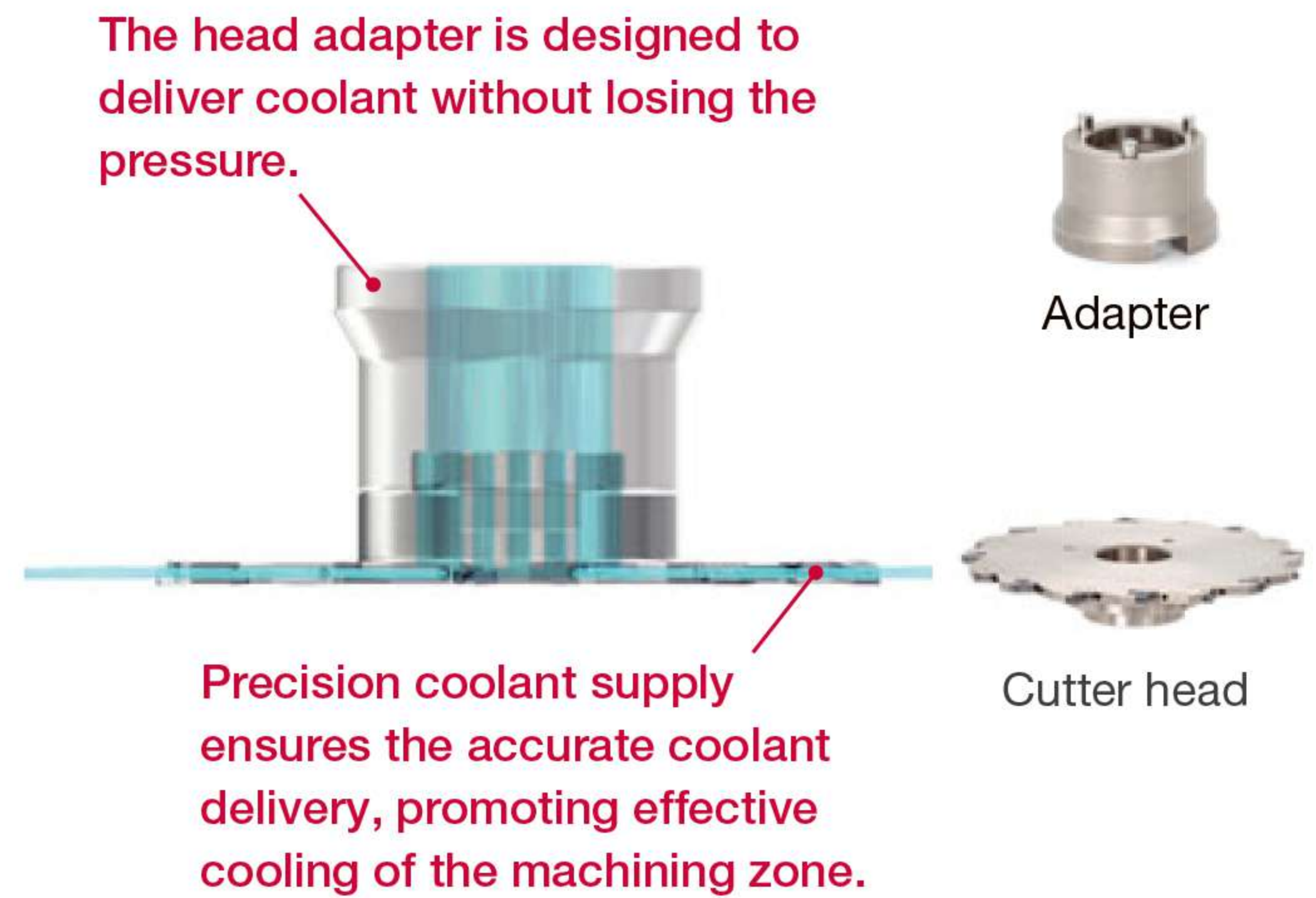
✗ Chip clogging

Cutter : TSV02R100A31.0-06W4.0C + TSA32-M25.4 (ø100 mm, ZEFP = 6)  
 Insert : TVKX020202TN-MJ AH725  
 Workpiece material : SUS304 / X5CrNi18-9  
 Cutting speed :  $V_c = 100$  m/min  
 Groove width :  $CW = 4$  mm  
 Machine : Vertical M/C, BT50

### Modular head ( for tool $\varnothing 32 - 63$ mm )



### Adapter for cutter head ( for tool $\varnothing 80 - 125$ mm )



### Cutting performance



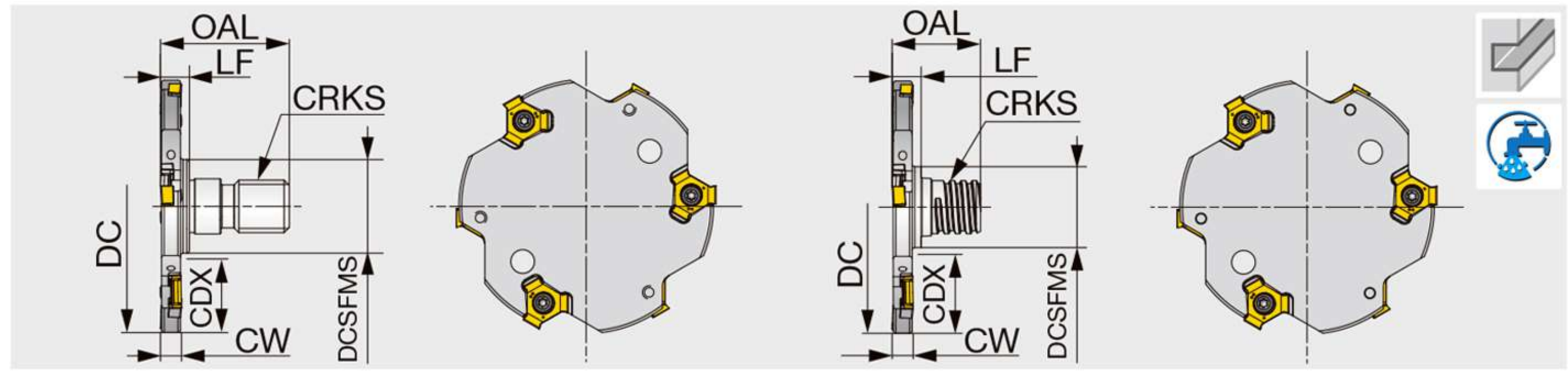
	fz (mm/t)					<input checked="" type="checkbox"/> OK <input type="checkbox"/> Chatter
	0.04	0.06	0.09	0.13	0.15	
TUNGUSLOT	✓	✓	✓	✓	✓	✓
Competitor	✓	✗	✗	✗	✗	✗



<b>M</b>	SUS304	Cutter	: HSW06R032M10-02-10.0C ( $\varnothing 32$ , ZEFP = 2, CICT = 4)
		Insert	: WNGU060308TN-MJ AH3135
		Modular shank	: SM10-L130-C20 (Steel)
		Workpiece material	: SUS304 / X5CrNi18-9
		Cutting speed	: $V_c = 100$ m/min
		Groove width	: CW = 10 mm
		Width of cut	: $a_e = 6$ mm
		Coolant	: Internal
		Overhang length	: 58 mm, Steel shank
		Machine	: Vertical M/C, BT50

### TUNG<sup>HIN</sup>SLIT HSV 02/03

Modular cutter head with no wrench flats



Designation	CW	DC	CICT	ZEFP	OAL	DCSFMS	LF	CRKS	CDX	WT(kg)	Insert
HSV02R032M08-02W4.0C	4	32	4	2	22.5	14.5	5.5	M8	7.75	0.02	TVKX0202...
HSV02R050M10-03W4.0C	4	50	6	3	24.5	17.8	5.5	M10	15.1	0.06	TVKX0202...
HSV02R063M10-04W4.0C	4	63	8	4	24.5	17.8	5.5	M10	21.6	0.09	TVKX0202...
HSV03R050M12-03W6.0C	6	50	6	3	29.5	23	7.5	M12	12.5	0.09	TVKX03X3...
HSV02R050S10-03W4.0C	4	50	6	3	16.8	15.4	5.5	S10	16.3	0.06	TVKX0202...

#### SPARE PARTS

Designation	Clamping screw 1	Clamping screw 2	Wrench
HSV02/03R...	SR114-018-L3.40	SL114-018-L3.40	T-6/3-L

Recommended clamping torque: SR/L114-018-L3.40 = 0.7 N·m

Dedicated wrench



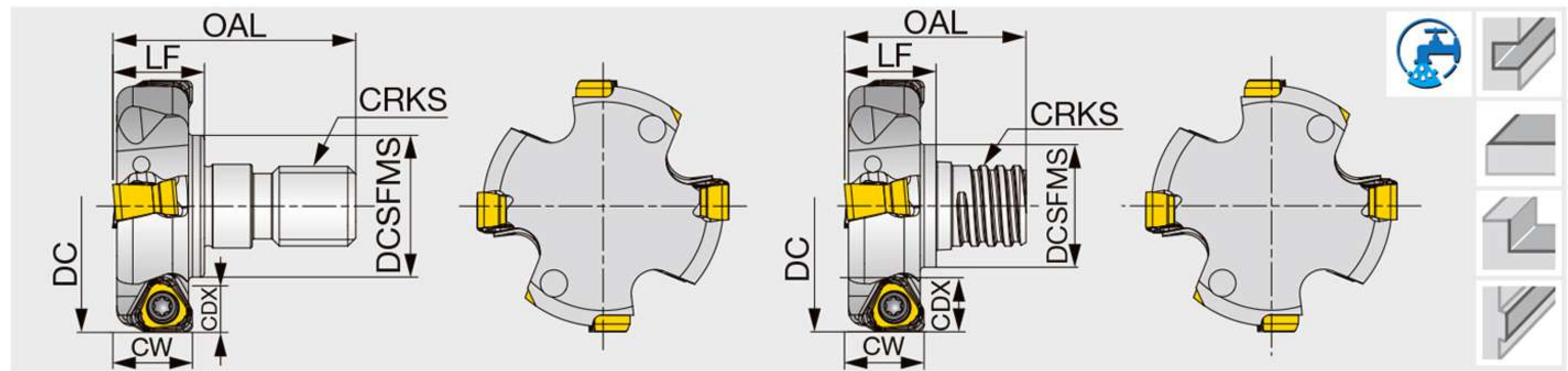
Designation	Wrench	Hexagonal hole	Recommended clamping torque (N·m)
HSV02R032M08...	SCW-2.9-23	8	23
HSV02R050M10...	SCW-4.0-32	14	46
HSV02R050S10...	SCW-4.0-32	14	28
HSV03R050M12...	SCW-4.0-32	14	60
HSV02R063M10...	SCW-4.0-32	14	46

Note : Dedicated wrench is sold separately.



### TUNG<sup>UNIVERSAL</sup>SLOT HSW06R

Modular cutter head with no wrench flats



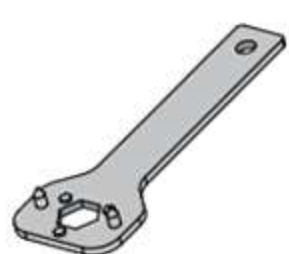
Designation	CW	DC	CICT	ZEFP	OAL	DCSFMS	LF	CRKS	CDX	WT(kg)	Insert
HSW06R032M10-02W10.0C	10	32	4	2	30.5	17.8	11.5	M10	6.1	0.05	WNGU0603...
HSW06R050M16-03W10.0C	10	50	6	3	34.5	28.8	11.5	M16	9.6	0.15	WNGU0603...
HSW06R063M16-04W10.0C	10	63	8	4	34.5	28.8	11.5	M16	16.1	0.22	WNGU0603...
HSW06R032S10-02W10.0C	10	32	4	2	22.8	15.4	11.5	S10	7.3	0.05	WNGU0603...

#### SPARE PARTS

Designation	Clamping screw	Wrench
HSW06R...	CSPB-2.5	IP-8D

Recommended clamping torque: CSPB-2.5 = 1.3 N·m

Dedicated wrench



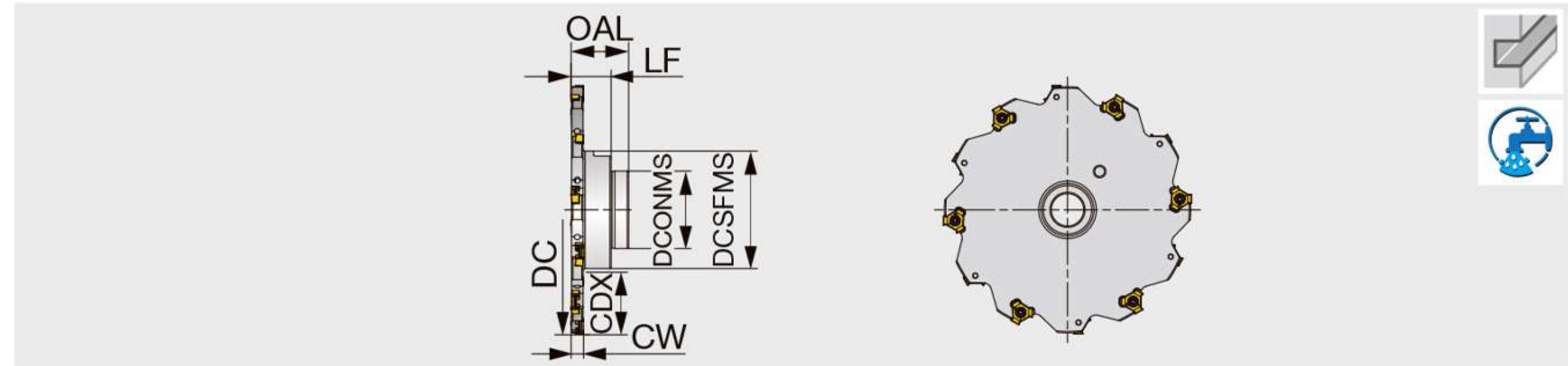
Designation	Wrench	Hexagonal hole	Recommended clamping torque (N·m)
HSW06R032M10...	SCW-2.9-23	8	46
HSW06R032S10...	SCW-2.9-23	8	28
HSW06R050M16..	SCW-4.0-32	14	80
HSW06R063M16...	SCW-4.0-32	14	80

Note : Dedicated wrench is sold separately.



### TUNG<sup>HIN</sup>SLIT TSV 02/03/04/05

Axial drive slot mill, for tangentially mounted inserts



Designation	CW	DC	CICT	ZEFP	OAL	DCSFMS	LF	DCONMS	CDX	WT(kg)	SS	Insert
TSV02R080A27.0-05W4.0C	4	80	10	5	23	41	16	27	18.5	0.23	TSA27-...	TVKX0202...
TSV02R100A31.0-06W4.0C	4	100	12	6	23	47	16	31	25.5	0.33	TSA31-...	TVKX0202...
TSV02R125A37.0-08W4.0C	4	125	16	8	23	55	16	37	34	0.46	TSA37-...	TVKX0202...
TSV03R100A31.0-06W5.0C	5	100	12	6	23	47	16	31	25.5	0.36	TSA31-...	TVKX03X3...
TSV03R125A37.0-08W5.0C	5	125	16	8	23	55	16	37	34	0.53	TSA37-...	TVKX03X3...
TSV04R125A37.0-06W6.0C	6	125	12	6	23	55	16	37	34	0.6	TSA37-...	TVKX04H3...
TSV05R125A37.0-06W8.0C	8	125	12	6	23	55	16	37	34	0.69	TSA37-...	TVKX0505...

#### SPARE PARTS

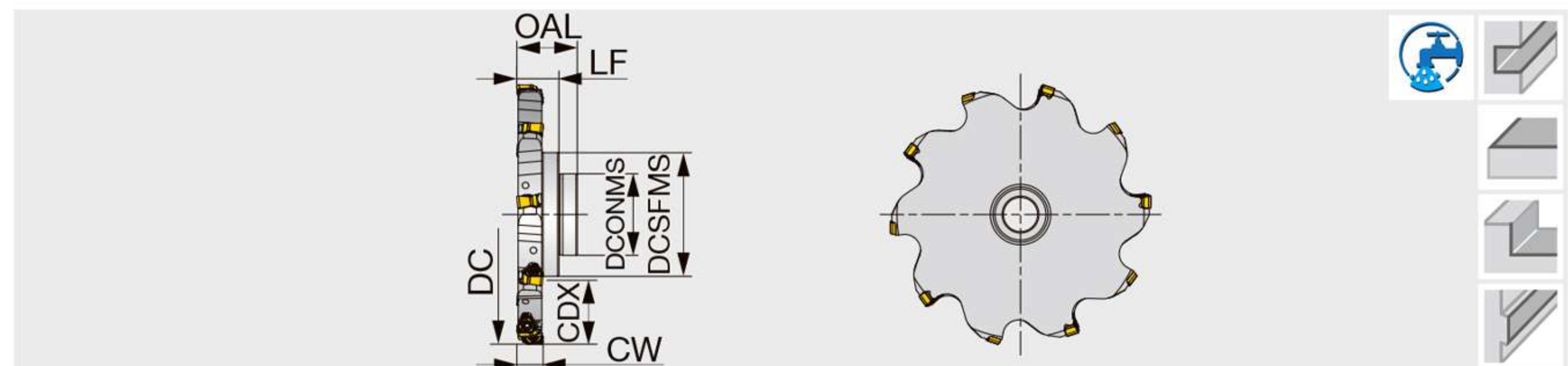
Designation	Clamping screw 1	Clamping screw 2	Wrench
TSV02/03R...	SR114-018-L3.40	SL114-018-L3.40	T-6/3-L
TSV04R125A37.0-06W6.0C	SR14-500-L5.1	SL14-500-L5.1	T-15LB
TSV05R125A37.0-06W8.0C	SR14-500-L7.0	SL14-500-L7.0	T-15LB

Recommended clamping torque: SR/L114-018-L3.40 = 0.7 N·m, SR/L14-500/L5.1, SR/L14-500-L7.0 = 3.5 N·m



### TUNG<sup>UNIVERSAL</sup>SLIT TSW 06/09

Screw - clamp slot milling cutter head with boss



Designation	CW	DC	CICT	ZEFP	OAL	DCSFMS	LF	DCONMS	CDX	WT(kg)	SS	Insert
TSW06R080A27.0-04W10.0C	10	80	8	4	23	41	16	27	18.5	0.31	TSA27-...	WNGU0603...
TSW06R100A31.0-05W10.0C	10	100	10	5	23	47	16	31	25.5	0.51	TSA31-...	WNGU0603...
TSW06R125A37.0-06W10.0C	10	125	12	6	23	55	16	37	34	0.8	TSA37-...	WNGU0603...
TSW09R100A31.0-05W16.0C	16	100	10	5	23	47	16	31	25.5	0.73	TSA31-...	WNGU0904...

#### SPARE PARTS

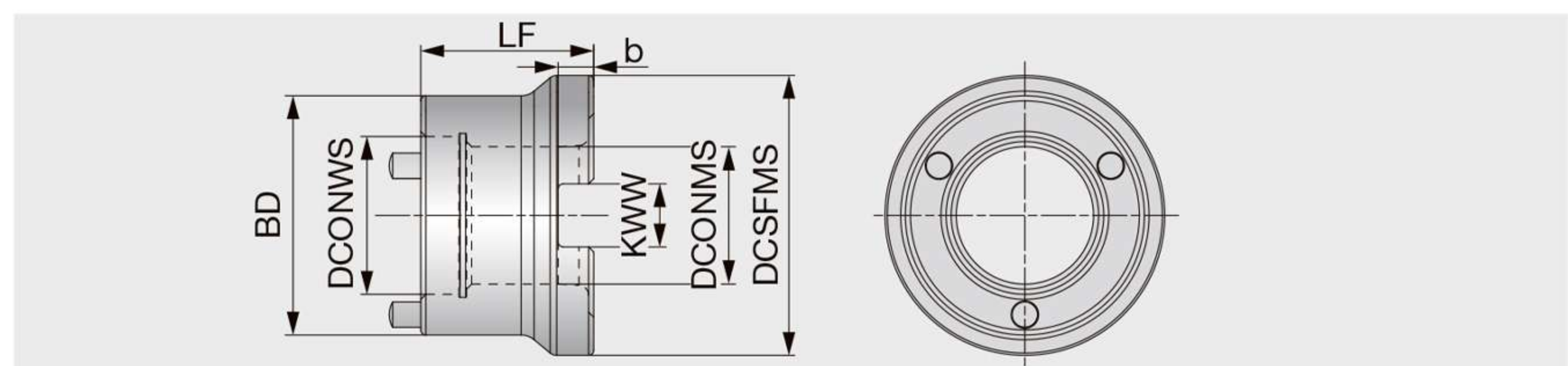
Designation	Clamping screw 1	Clamping screw 2	Glip	Torx bit	Wrench
TSW06R...	CSPB-2.5	-	-	-	IP-8D
TSW09R100A31.0-05W16.0C	-	CSPB-3.5	H-TB2W	BLD IP15/S7	-

Recommended clamping torque: CSPB-2.5 = 1.3 N·m, CSPB-3.5 = 3.5 N·m



#### TSA

Adapter



Designation	DCSFMS	DCONMS	DCONWS	BD	LF	KWW	b	WT(kg)
TSA27-M22	47	22	27	41	34	10.4	6.3	0.21
TSA31-M25.4	55	25.4	31	47	34	9.5	6	0.35
TSA31-M27	55	27	31	47	34	12.4	7	0.33
TSA37-M31.75	64	31.75	37	55	39	12.7	8	0.52
TSA37-M32	64	32	37	55	39	14.4	8	0.52

### STANDARD CUTTING CONDITIONS

#### TUNG<sup>THIN</sup>SLIT

ISO	Workpiece material	Hardness	Priority	Grade	Cutting speed Vc (m/min)	Feed per edge line: fz (mm/t)			
						HSV / TSV			
						ae / DC (mm)		ae / DC (mm)	
10%	20%	30%	≤ 50%						
P	Low carbon steels SS400, etc. E275A, etc.	- 200 HB	First choice	AH725	90 - 180	0.08 - 0.25	0.06 - 0.19	0.05 - 0.16	0.05 - 0.15
			Fracture resistance	AH130	90 - 180	0.08 - 0.25	0.06 - 0.19	0.05 - 0.16	0.05 - 0.15
	High carbon steels S45C, etc. C45, etc.	200 - 300 HB	First choice	AH725	90 - 180	0.07 - 0.22	0.05 - 0.16	0.04 - 0.14	0.04 - 0.13
			Fracture resistance	AH130	90 - 180	0.07 - 0.22	0.05 - 0.16	0.04 - 0.14	0.04 - 0.13
	Alloy steels SCM440, etc. 42CrMo4, etc.	150 - 300 HB	First choice	AH725	90 - 180	0.07 - 0.22	0.05 - 0.16	0.04 - 0.14	0.04 - 0.13
			Fracture resistance	AH130	90 - 180	0.07 - 0.22	0.05 - 0.16	0.04 - 0.14	0.04 - 0.13
Tool steels SKD61, etc. X40CrMoV5-1, etc.	- 300 HB	First choice	AH725	90 - 180	0.07 - 0.22	0.05 - 0.16	0.04 - 0.14	0.04 - 0.13	
		Fracture resistance	AH130	90 - 180	0.07 - 0.22	0.05 - 0.16	0.04 - 0.14	0.04 - 0.13	
M	Stainless steel SUS304, etc. X5CrNi18-9, etc.	- 200 HB	-	AH130	90 - 200	0.07 - 0.22	0.05 - 0.16	0.04 - 0.14	0.04 - 0.13
K	Grey cast irons FC250, etc. 250, etc.	150 - 250 HB	-	AH120	120 - 230	0.08 - 0.25	0.06 - 0.19	0.05 - 0.16	0.05 - 0.15
	Ductile cast irons FCD400, etc. 400-15S, etc.	150 - 250 HB	-	AH120	90 - 150	0.08 - 0.25	0.06 - 0.19	0.05 - 0.16	0.05 - 0.15
S	Titanium alloys Ti-6Al-4V, etc.	- 40 HRC	First choice	AH725	30 - 40	0.07 - 0.12	0.05 - 0.09	0.04 - 0.07	0.04 - 0.07
			Fracture resistance	AH130	30 - 40	0.07 - 0.12	0.05 - 0.09	0.04 - 0.07	0.04 - 0.07
	Nickel-based alloys Inconel 718, etc.	- 40 HRC	First choice	AH725	20 - 35	0.07 - 0.12	0.05 - 0.09	0.04 - 0.07	0.04 - 0.07
			Fracture resistance	AH130	20 - 35	0.07 - 0.12	0.05 - 0.09	0.04 - 0.07	0.04 - 0.07

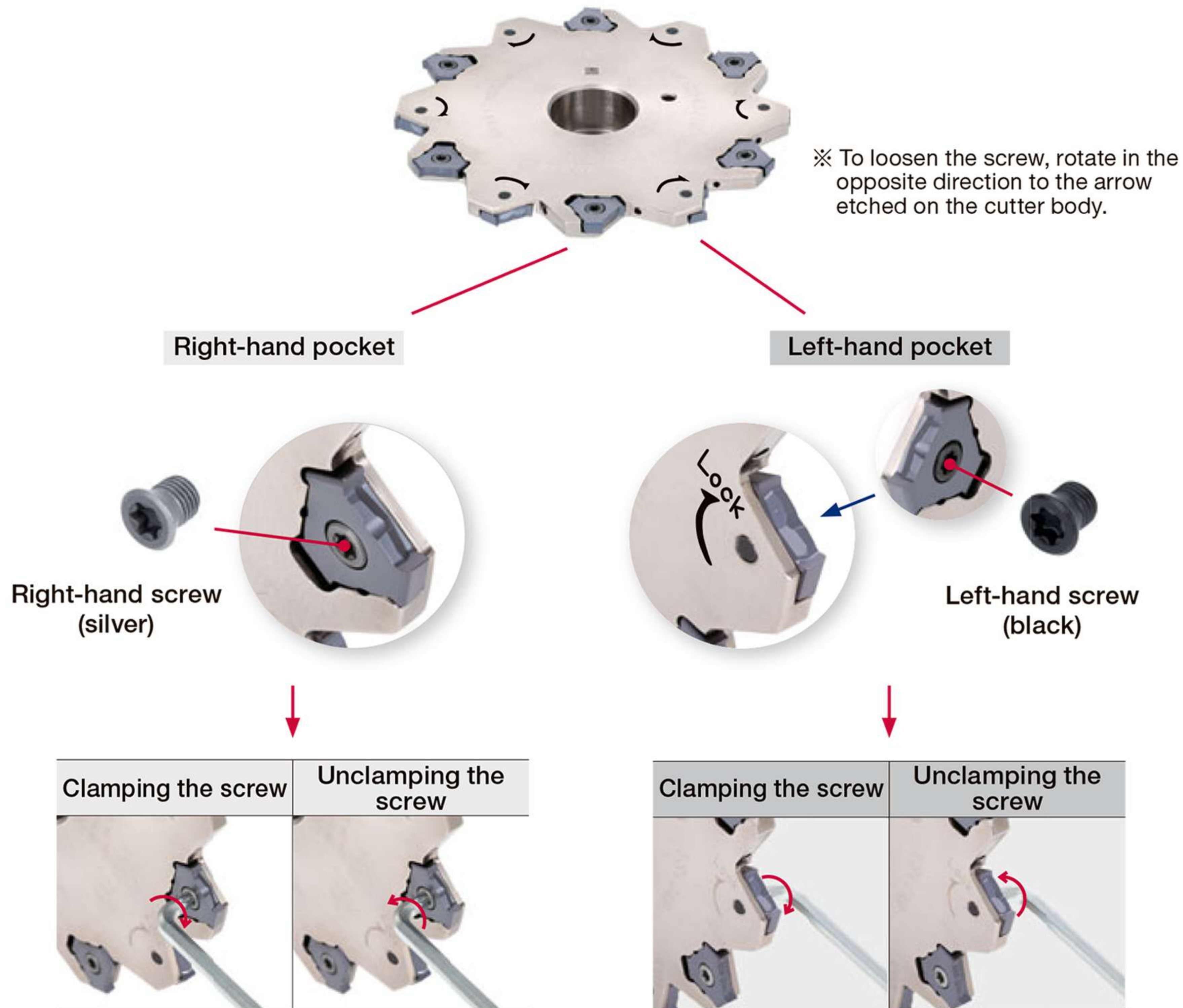
#### TUNG<sup>UNIVERSAL</sup>SLOT

ISO	Workpiece material	Hardness	Priority	Grade	Cutting speed Vc (m/min)	Feed per edge line: fz (mm/t)			
						HSW / TSW			
						ae / DC (mm)			
10%	20%	30%	≤ 50%						
P	Low carbon steels SS400, etc. E275A, etc.	- 200 HB	First choice	AH725	90 - 180	0.12 - 0.33	0.09 - 0.25	0.07 - 0.21	0.07 - 0.2
			Fracture resistance	AH130	90 - 180	0.12 - 0.33	0.09 - 0.25	0.07 - 0.21	0.07 - 0.2
	High carbon steels S45C, etc. C45, etc.	200 - 300 HB	First choice	AH725	90 - 180	0.12 - 0.33	0.09 - 0.25	0.07 - 0.21	0.07 - 0.2
			Fracture resistance	AH130	90 - 180	0.12 - 0.33	0.09 - 0.25	0.07 - 0.21	0.07 - 0.2
	Alloy steels SCM440, etc. 42CrMo4, etc.	150 - 300 HB	First choice	AH725	90 - 180	0.12 - 0.33	0.09 - 0.25	0.07 - 0.21	0.07 - 0.2
			Fracture resistance	AH130	90 - 180	0.12 - 0.33	0.09 - 0.25	0.07 - 0.21	0.07 - 0.2
Tool steels SKD61, etc. X40CrMoV5-1, etc.	- 300 HB	First choice	AH725	90 - 180	0.12 - 0.33	0.09 - 0.25	0.07 - 0.21	0.07 - 0.2	
		Fracture resistance	AH130	90 - 180	0.12 - 0.33	0.09 - 0.25	0.07 - 0.21	0.07 - 0.2	
M	Stainless steel SUS304, etc. X5CrNi18-9, etc.	- 200 HB	-	AH130	90 - 200	0.12 - 0.33	0.09 - 0.25	0.07 - 0.21	0.07 - 0.2
K	Grey cast irons FC250, etc. 250, etc.	150 - 250 HB	-	AH120	120 - 230	0.12 - 0.42	0.09 - 0.31	0.07 - 0.27	0.07 - 0.25
	Ductile cast irons FCD400, etc. 400-15S, etc.	150 - 250 HB	-	AH120	90 - 150	0.12 - 0.42	0.09 - 0.31	0.07 - 0.27	0.07 - 0.25
S	Titanium alloys Ti-6Al-4V, etc.	- 40 HRC	First choice	AH725	30 - 40	0.1 - 0.17	0.08 - 0.13	0.06 - 0.11	0.06 - 0.1
			Fracture resistance	AH130	30 - 40	0.1 - 0.17	0.08 - 0.13	0.06 - 0.11	0.06 - 0.1
	Nickel-based alloys Inconel 718, etc.	- 40 HRC	First choice	AH725	20 - 35	0.1 - 0.17	0.08 - 0.13	0.06 - 0.11	0.06 - 0.1
			Fracture resistance	AH130	20 - 35	0.1 - 0.17	0.08 - 0.13	0.06 - 0.11	0.06 - 0.1

# TUNG<sup>HIN</sup>SLIT

## Assembling the inserts

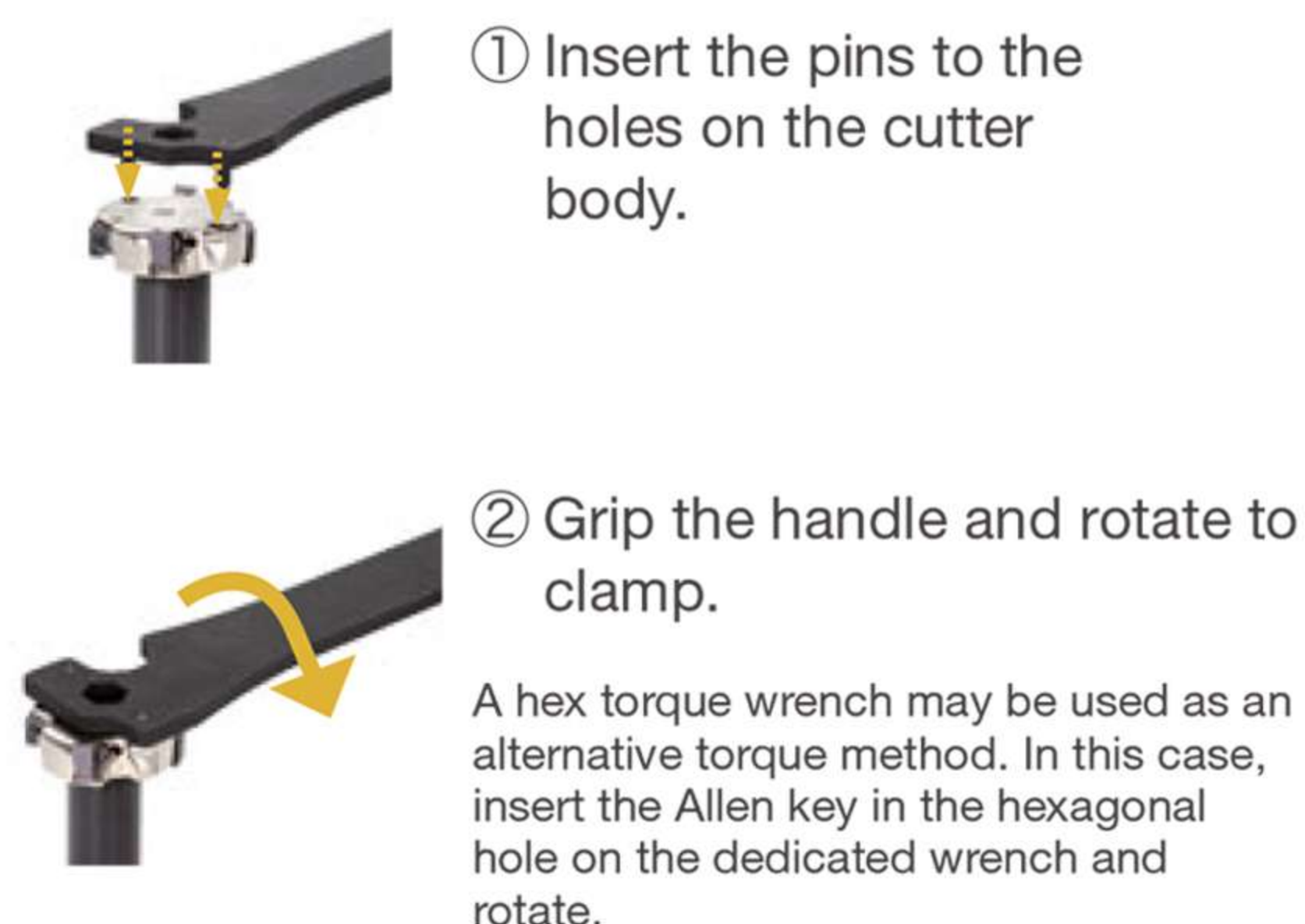
Always use the right-hand screws for the right hand pockets and left-hand screws for the left-hand pockets.



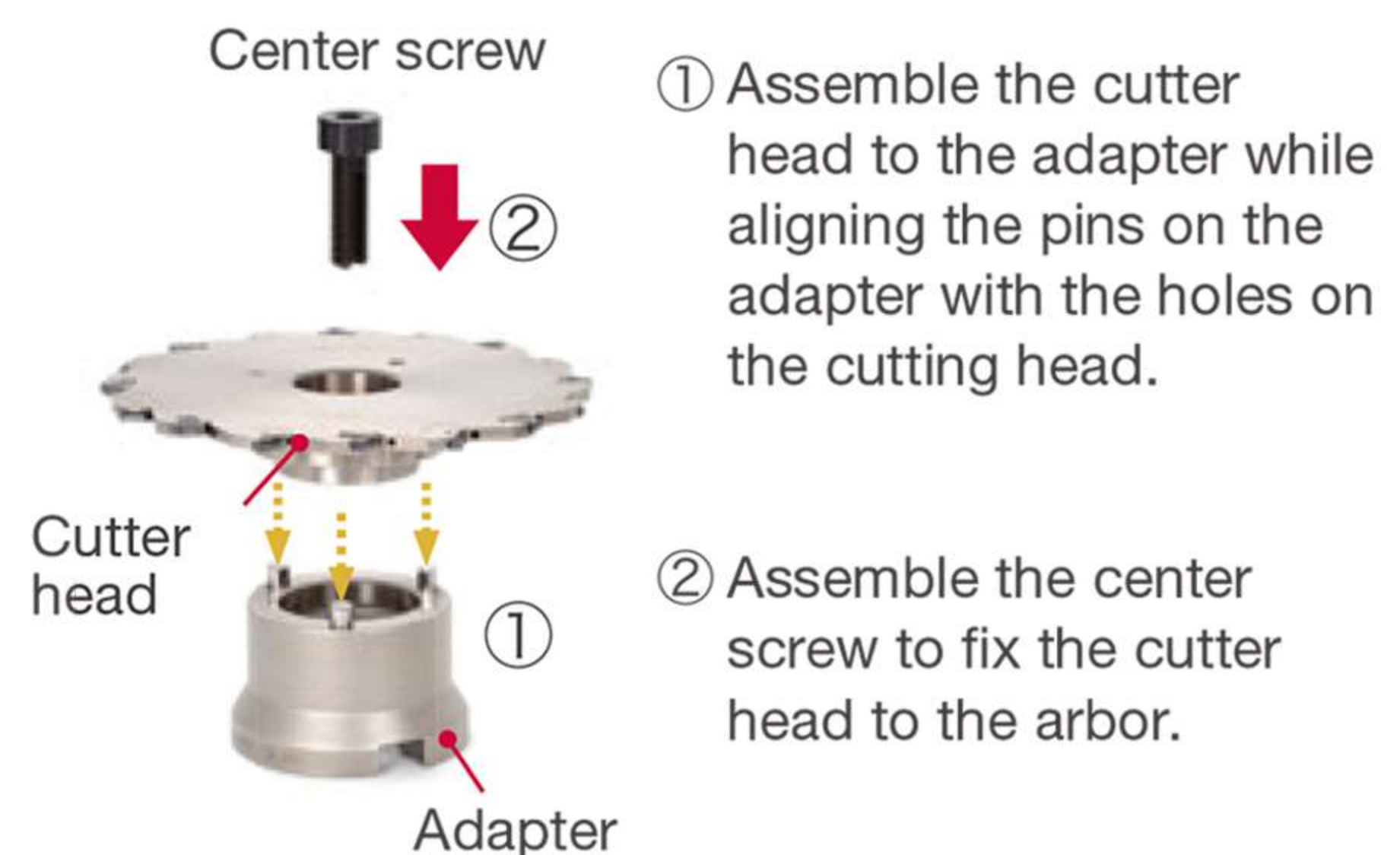
■ Recommended tightening torque: 0.7 N·m for TSV02/03...inserts, 3.5 N·m for TSV04/05 inserts

When loosening the left-hand screws, be cautious not to rotate them in the wrong (tightening) direction, as is done for the right-hand screws. This may damage the insert screw hole and the screw head recess.



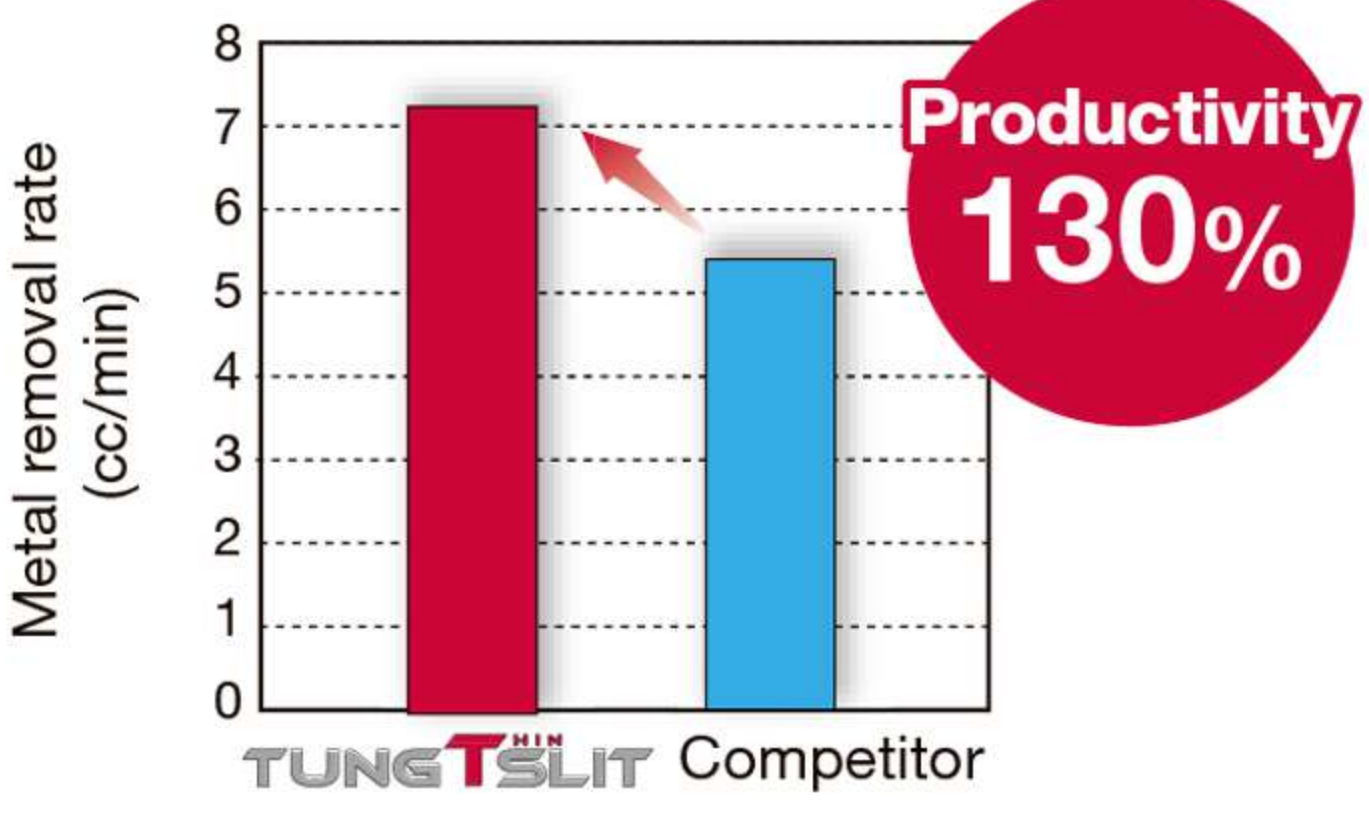
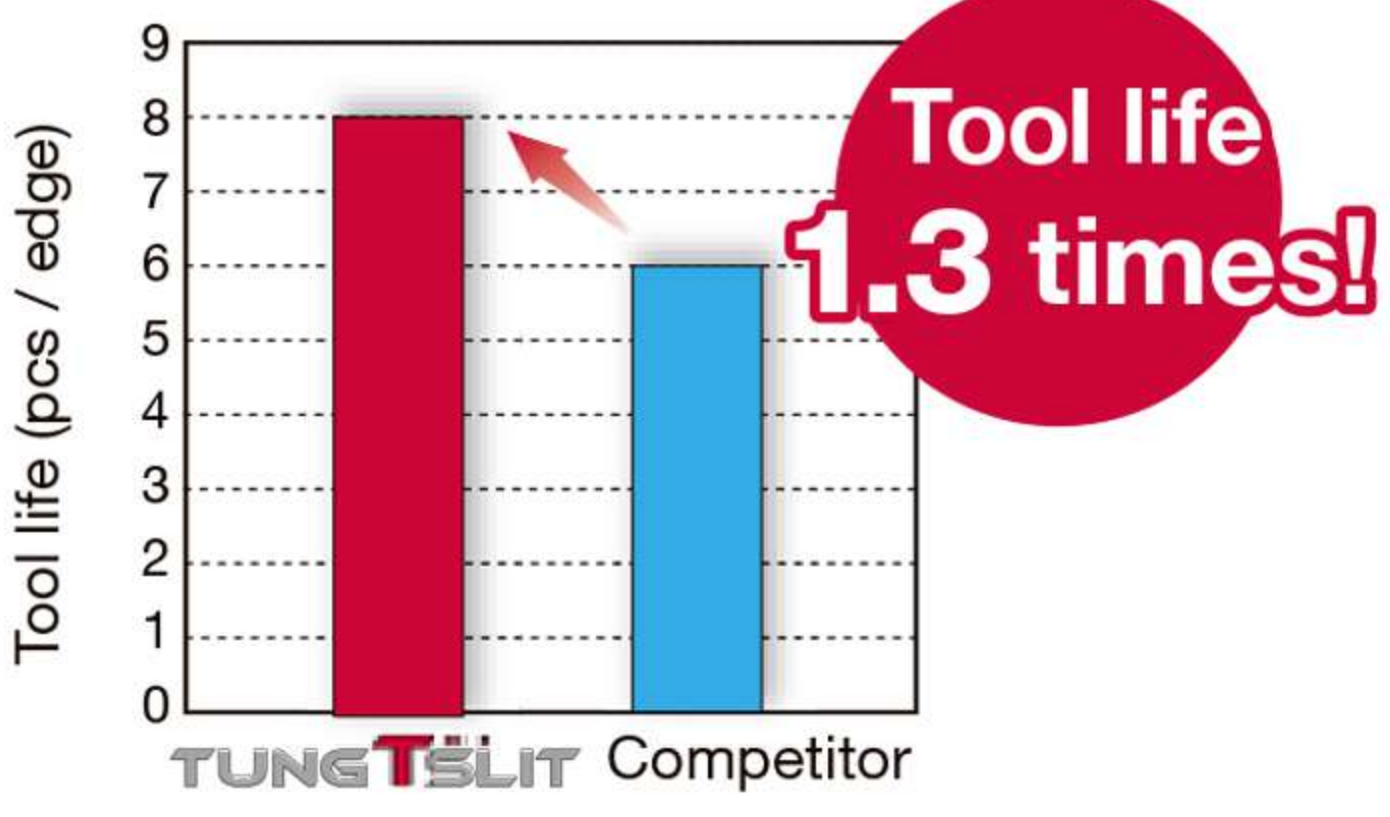
### Modular head



### Adapter for cutter head



### PRACTICAL EXAMPLES

Workpiece type	York	Parts for power generator	
<b>Cutter</b>	HSV02R063M10-04W4.0C (ø63 mm, ZEFP = 4)	TSV04R125A37.0-06W6.0C(ø125 mm, ZEFP = 6)	
<b>Insert</b>	TVKX020202TN-MJ	TVKX04H302FN-MJ	
<b>Grade</b>	AH725	AH725	
<b>Workpiece material</b>	Carbon steel	Inconel718	
	 <b>P</b>	 <b>S</b>	
<b>Cutting conditions</b>	Grooving width : CW (mm)	4	6
	Cutting speed: Vc (m/min)	150	30
	Feed per tooth: fz (mm/t)	0.033	0.07
	Feed speed : Vf (mm/min)	100	32
	Width of cut : ae (mm)	18	0.8
	<b>Machining</b>	Slotting	Slotting
	<b>Coolant</b>	Internal	Internal
	<b>Machine</b>	Vertical M/C, BT30	Horizontal M/C, BT50
<b>Results</b>	 <p><b>Productivity 130%</b></p> <p>TungThinSlit modular solution provided tool rigidity, achieving significant stability with no chatter.</p>	 <p><b>Tool life 1.3 times!</b></p> <p>With precision internal coolant system, TungThinSlit eliminated chip clogging, while providing tool life predictability and superior surface quality.</p>	



# CONTACT US



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