



Side cutter

SLOTMILL SERIES

Tungaloy Report No. 423S1-G

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.



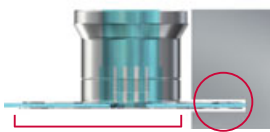
Modular head
(for tool $\varnothing 32 - 63$ mm)



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

Internal coolant supply

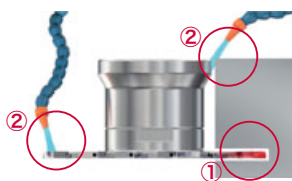
TUNGSLIT



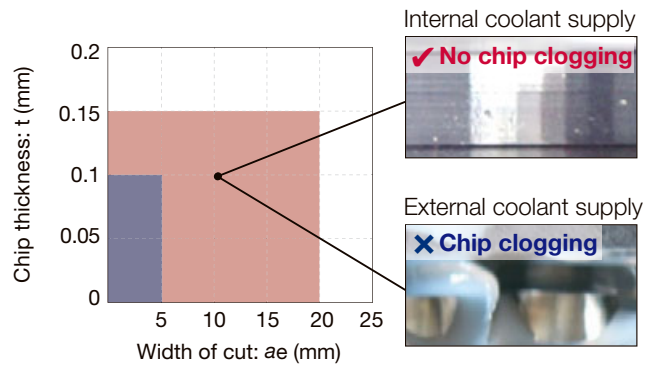
Effectively cools the machining zone, while eliminating chip clogging and part deformation.

External coolant supply

Conventional

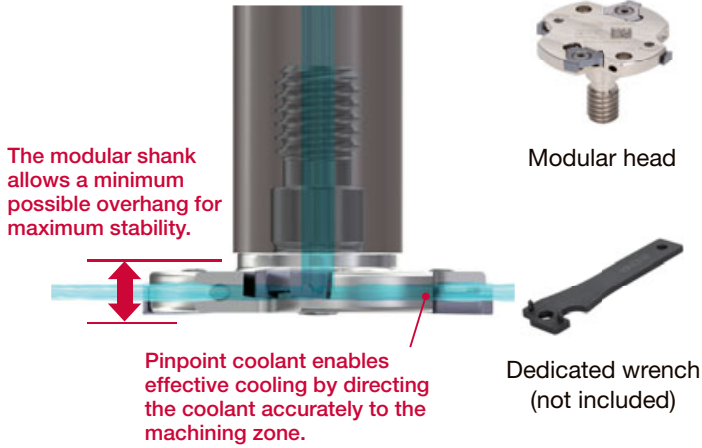


② The machining zone is not properly cooled, causing part deformation.
① Poor chip evacuation leads to chip clogging.

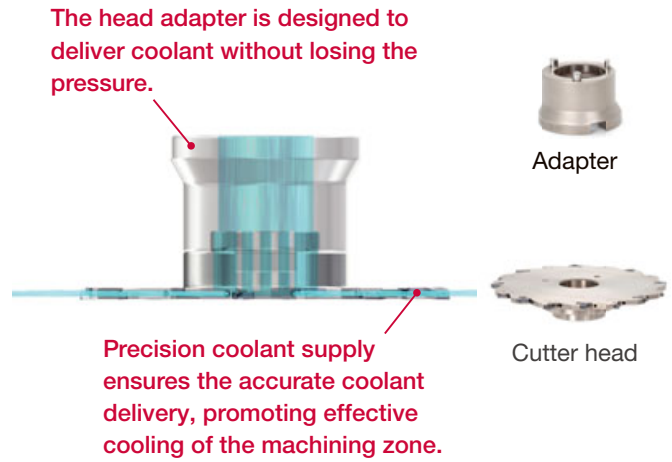


Cutter : TSV02R100A31.0-06W4.0C + TSA32-M25.4 ($\varnothing 100$ mm, ZEFP = 6)
 Insert : TVKX020202TN-MJ AH725
 Workpiece material : SUS304 / X5CrNi18-9
 Cutting speed : $V_c = 100$ m/min
 Groove width : $CW = 4$ mm
 Machine : Vertical M/C, BT50

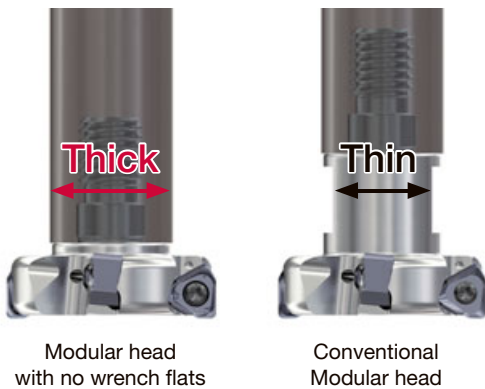
Modular head
(for tool $\varnothing 32 - 63$ mm)



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



Cutting performance



	fz (mm/t)				
	0.04	0.06	0.09	0.13	0.15
TUNGUSLOT	✓	✓	✓	✓	✓
Competitor	✓	✗	✗	✗	✗

✓ OK
✗ Chatter



TUNGUSLOT

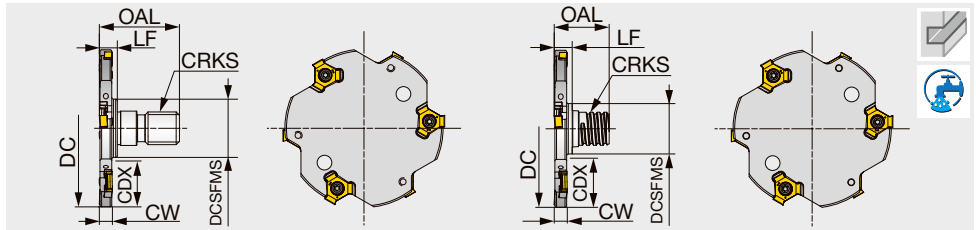


Competitor

M 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 : $ae = 6$ mm
Coolant : Internal
Overhang length : 58 mm, Steel shank
Machine : Vertical M/C, BT50

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...

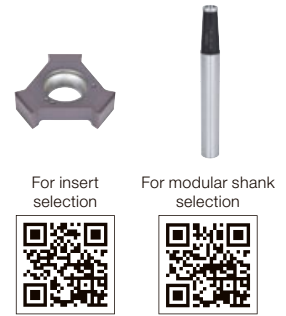
SPARE PARTS

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

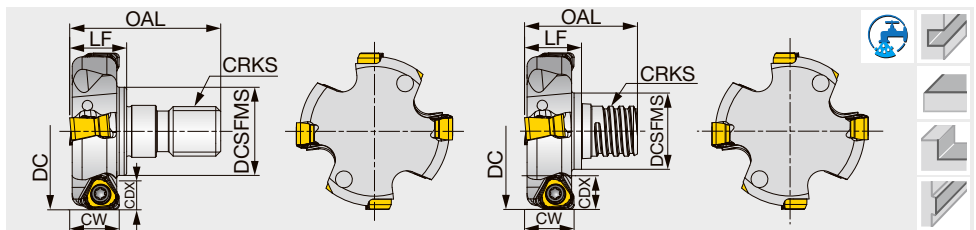
Recommended clamping torque: SR/L114-018-L3.40 = 0.7 N·m

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.



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

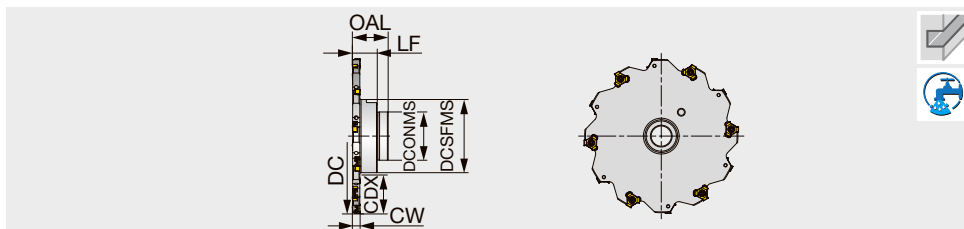
Recommended clamping torque: CSPB-2.5 = 1.3 N·m

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.



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...

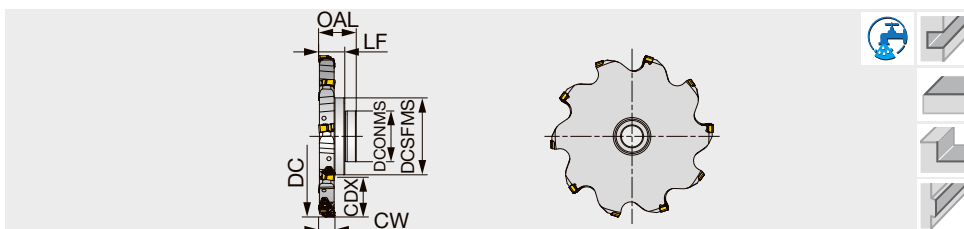
SPARE PARTS

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



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

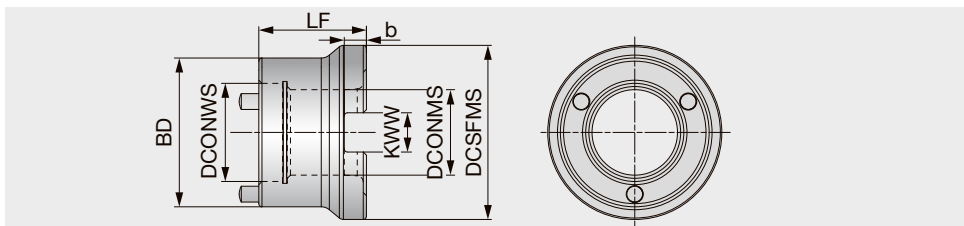
Designation	Clamping screw 1	Clamping screw 2	Glip	Torx bit	Wrench
TSW06R...	CSPB-2.5	-	-	-	IP-8D
TSW09R100A31.0-05W16.0C	-	CSPB-3.5	H-TB2W	BLD IP15/S7	-

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

TUNGSLIT

For recommended cutting data based on the chip thickness



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

TUNGUNIVERSAL

For recommended cutting data based on the chip thickness



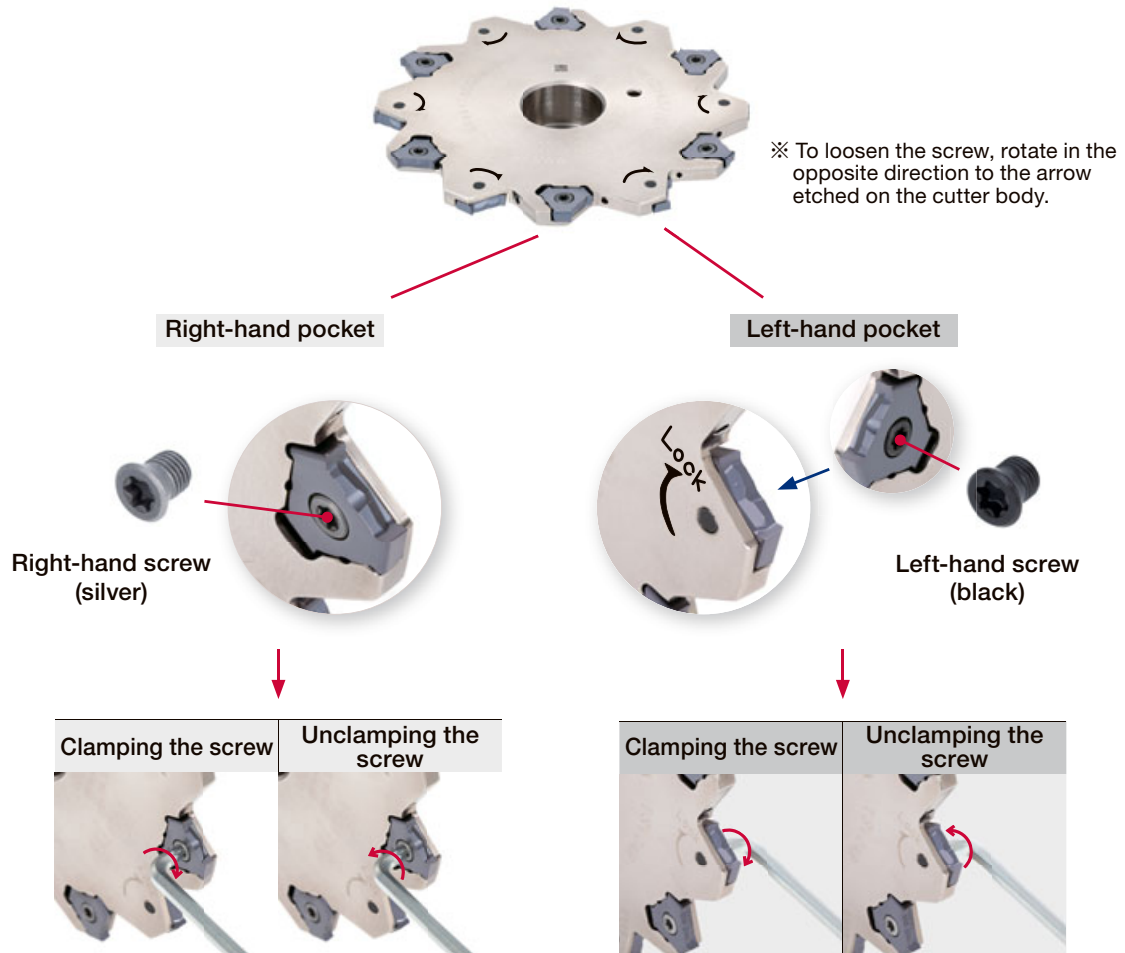
ISO	Workpiece material	Hardness	Priority	Grade	Cutting speed Vc (m/min)	Feed per edge line: fz (mm/t)			
						HSW / TSW			
						ae / DC (mm)			
10%	20%	30%	≤ 50%						
P	Low carbon steels SS400, etc. E275A, etc.	- 200 HB	First choice	AH725	90 - 180	0.12 - 0.33	0.09 - 0.25	0.07 - 0.21	0.07 - 0.2
			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



Scan the QR code to watch the tutorial video

Assembling the inserts

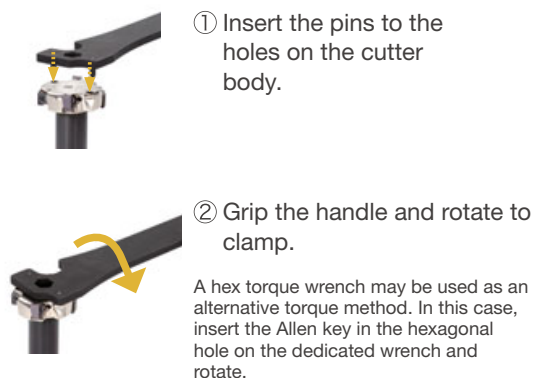
Always use the right-hand screws for the right hand pockets and left-hand screws for the left-hand pockets.



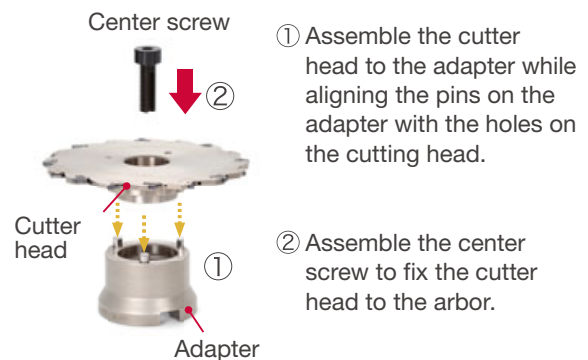
Recommended tightening torque: 0.7 N·m for TSV02/03...inserts, 3.5 N·m for TSV04/05 inserts

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.



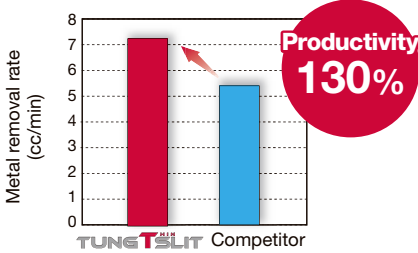
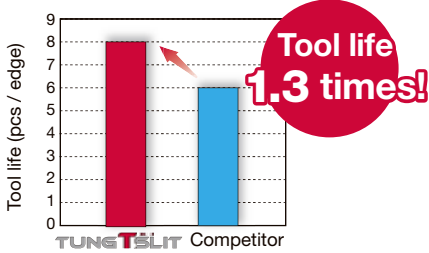
Modular head



Adapter for cutter head



PRACTICAL EXAMPLES

Workpiece type	York	Parts for power generator	
Cutter	HSV02R063M10-04W4.0C (ø63 mm, ZEFP = 4)	TSV04R125A37.0-06W6.0C(ø125 mm, ZEFP = 6)	
Insert	TVKX020202TN-MJ	TVKX04H302FN-MJ	
Grade	AH725	AH725	
Workpiece material	Carbon steel	Inconel718	
	 P	 S	
Cutting conditions	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
	Machining	Slotting	Slotting
	Coolant	Internal	Internal
	Machine	Vertical M/C, BT30	Horizontal M/C, BT50
Results	 <p>Productivity 130%</p> <p>TungThinSlit modular solution provided tool rigidity, achieving significant stability with no chatter.</p>	 <p>Tool life 1.3 times!</p> <p>With precision internal coolant system, TungThinSlit eliminated chip clogging, while providing tool life predictability and superior surface quality.</p>	



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