



Multifunction turning tools for Swiss machines

DUO^{FORCE}**FCUT**

Tungaloy Report No. 556-G

New insert lineups for **back turning, grooving, and threading** operations, expanding the multifunction turning tool series for various types of Swiss machines







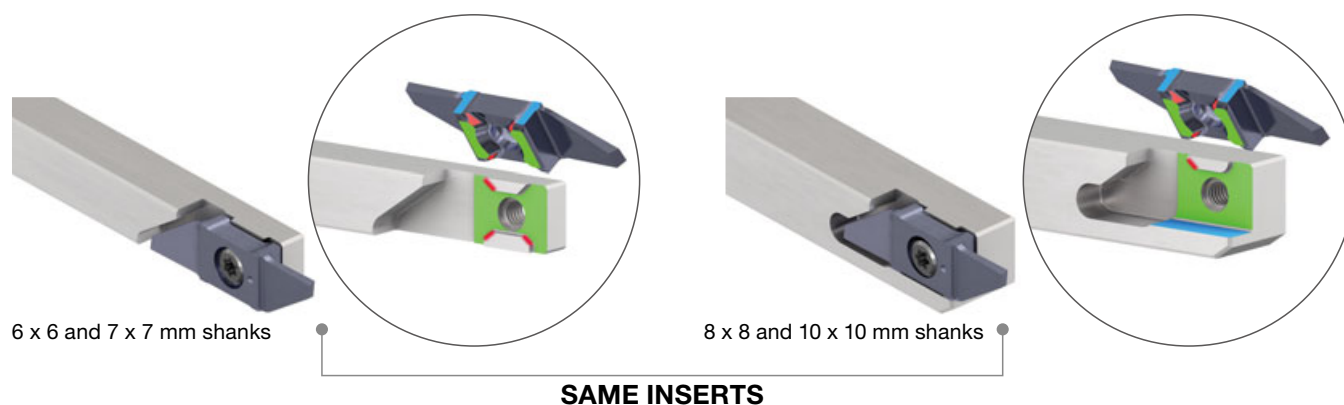
DUO F CUT



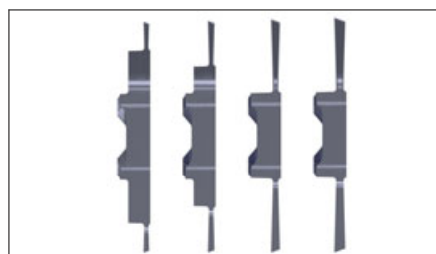
New flexible tool series with unique insert clamping system
Ideal for machining small parts of 12 mm or smaller diameters

■ Full lineup of shank sizes that can be used in cam-driven and CNC automatic lathes

- Minimum insert movement during machining thanks to the use of optimized screws
- Ground contact faces provide the insert with superior edge repeatability
- 6 x 6 to 10 x 10 mm shanks are available as standard
- Innovative insert clamping mechanism allows the use of the same insert with all toolholders of different sizes
- A flat toolholder design eliminates tool interference with the clamping unit, allowing free tool installations



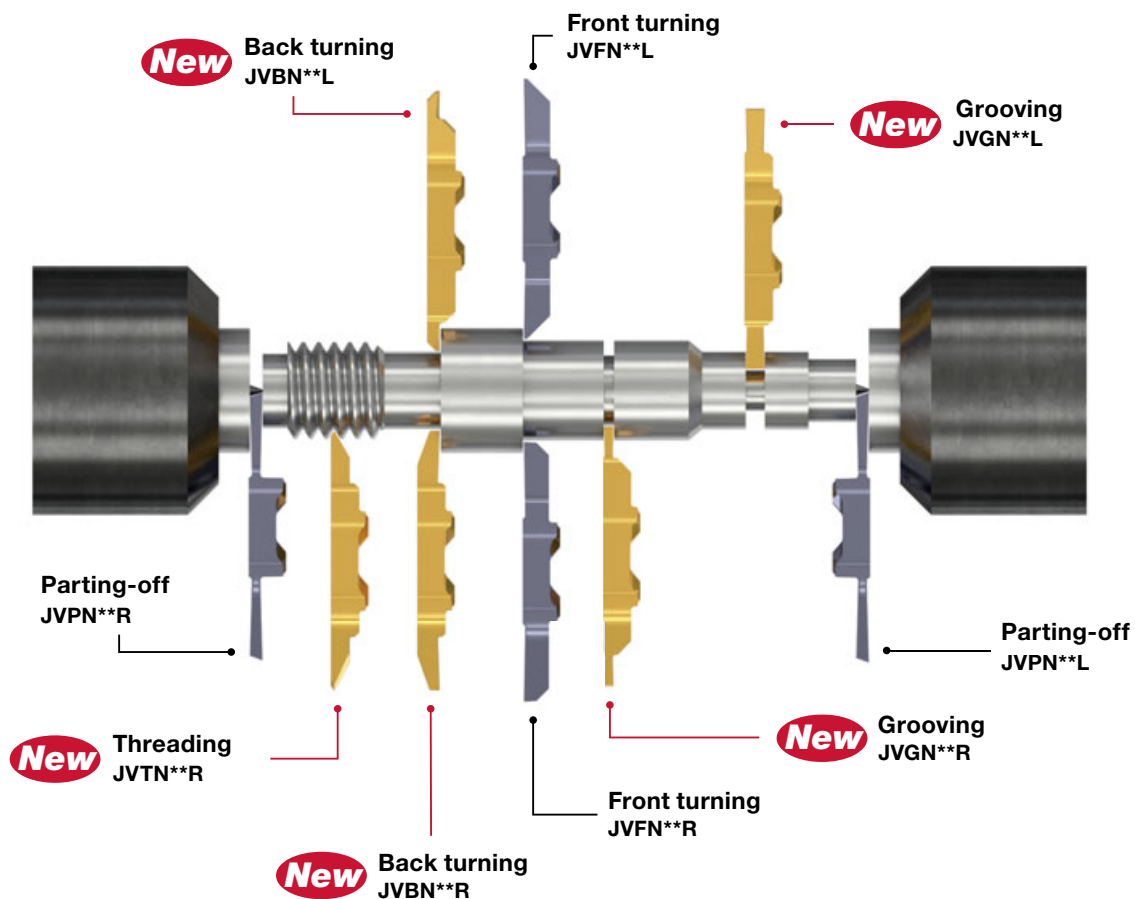
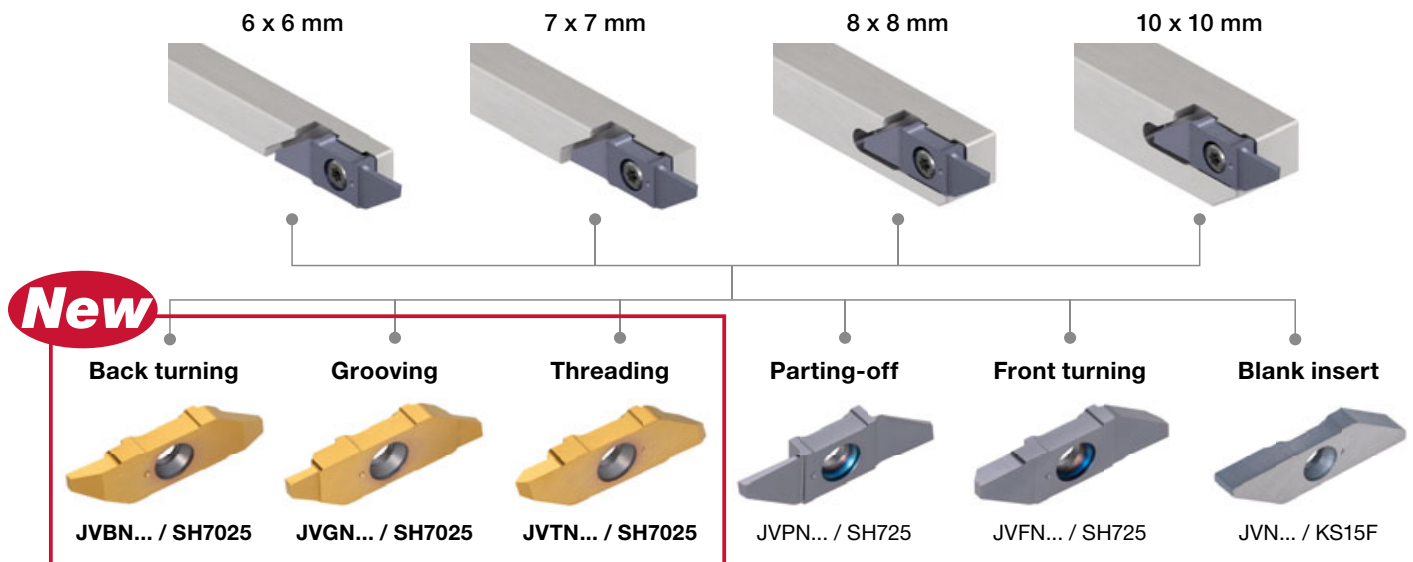
For turrets with radial tool arrangements



Groove widths available from 0.5 to 1 mm

■ Inserts applicable for a wide range of applications

- Now offering the inserts for parting, front and back turning, groove turning, and thread turning operations
- Blank inserts are also available for customers to freely fabricate them into the desired groove profiles
- Even when the cutting edge is fractured during machining, the other unused cutting edge is securely protected by unique clamping system
- Right-hand & left-hand inserts

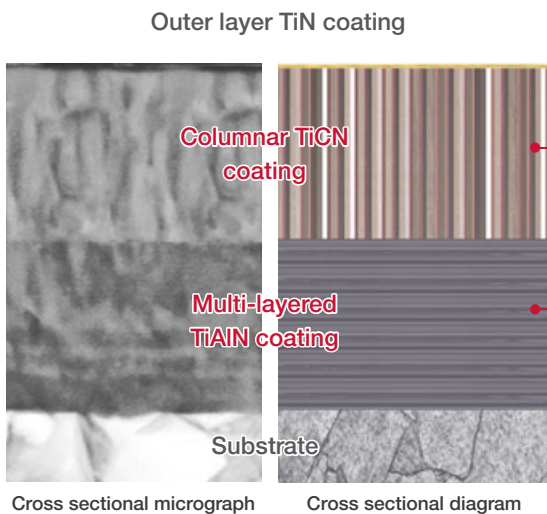


■ SH7025 - the latest PVD insert grade for superior surface quality and process security



SH7025

- The latest grade with sharp cutting edge designed for small part machining.
- A combination of a columnar-structured TiCN coating and multilayered TiAlN coating provides superior surface quality and process security.



For high surface quality

Built-up edge resistant TiCN coating improves surface finish quality.

For extremely long tool life

Wear-resistant columnar-structured TiCN coating ensures long tool life.

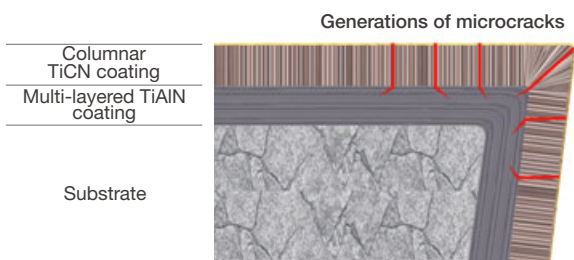
For superior process security

Chipping-resistant multi-layered TiAlN coating provides process security.

Superior process security

Chipping-resistant multi-layered TiAlN coating provides process security.

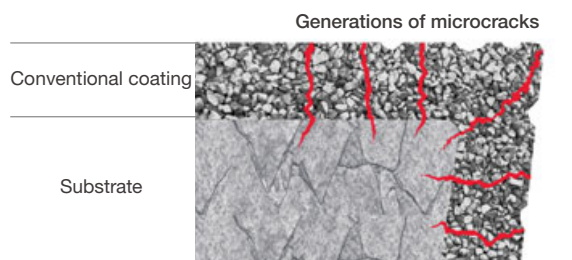
SH7025



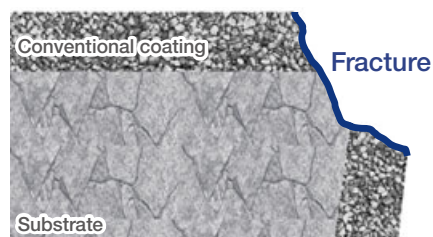
TiAlN coating prevents cracks from further propagation



Conventional



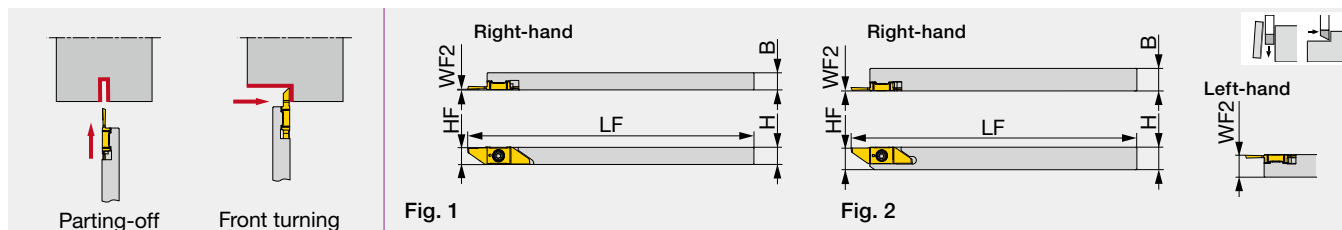
Crack reaches the substrate causing catastrophic failure



TOOLHOLDERS

JSXXR/L

Parting-off and front turning toolholders



Designation	H	B	LF	HF	WF ⁽¹⁾	Insert	Torque*	Fig.
JSXXL0606X05	6	6	120	5.6	5.8	JV*N..., JVN...	1.3	1
JSXXR/L0707X05	7	7	120	6.6	0.2/6.8	JV*N..., JVN...	1.3	1
JSXXR/L0808F05	8	8	85	7.7	0.2/7.8	JV*N..., JVN...	1.3	2
JSXXR/L0808H05	8	8	100	7.7	0.2/7.8	JV*N..., JVN...	1.3	2
JSXXR/L1010H05	10	10	100	9.7	0.2/9.8	JV*N..., JVN...	1.3	2

Torque*: Recommended clamping torque (N·m)

(1) The first value before "/" indicates the WF for the right-hand holder and the second value after "/" for the left-hand holder.

Note: Use the right-hand insert (JV***R...) for a right-hand holder (JSXXR...); the left-hand insert (JV***L...) for a left-hand holder (JSXXL...).

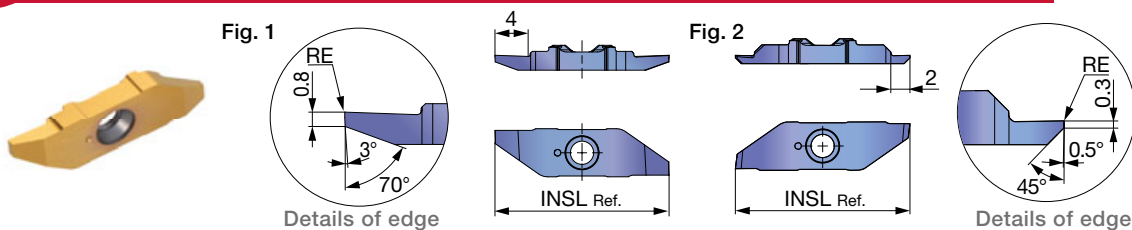
SPARE PARTS



Designation	Clamping screw	Wrench
JSXXR...05	CSTB-2.5L054DL	T-7F
JSXXL...05	CSTB-2.5L054DR	T-7F

INSERTS

New JVBN**R/L (Back turning)



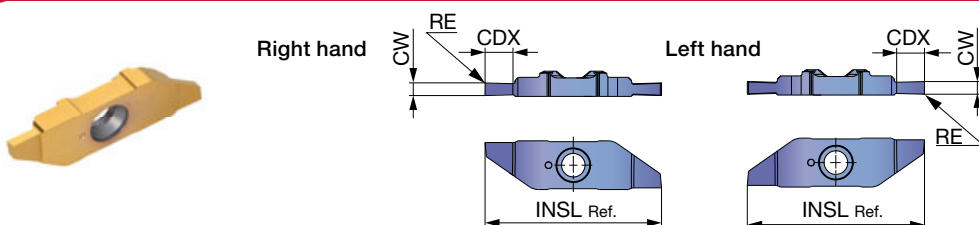
P	Steel	★							
M	Stainless	★							
K	Cast iron								
N	Non-ferrous	★							
S	Superalloys	★							
H	Hard materials								

★ : First choice

Designation	Right hand	Left hand	RE	Coated					INSL	Fig
				SH7025						
JVBN70R0308F	✓		0	●					21	1
JVBN45L0310FL		✓	0	●					21	2

● : New product

New JVGN**R/L (Grooving)



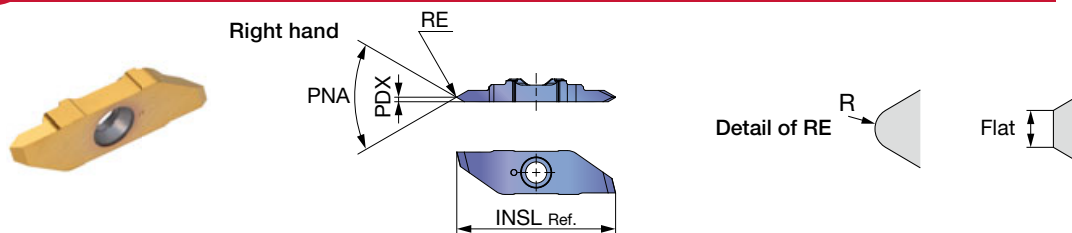
P	Steel	★							
M	Stainless	★							
K	Cast iron								
N	Non-ferrous	★							
S	Superalloys	★							
H	Hard materials								

★ : First choice

Designation	Right hand	Left hand	CW	RE	Coated					CDX	INSL
					SH7025						
JVGN15R050F000	✓		0.5	0	●					1.5	21
JVGN15L050F000		✓	0.5	0	●					1.5	21
JVGN20R075F000	✓		0.75	0	●					2	21
JVGN20L075F000		✓	0.75	0	●					2	21
JVGN30R095F000	✓		0.95	0	●					3	21
JVGN30L095F000		✓	0.95	0	●					3	21
JVGN25R100F000	✓		1	0	●					2.5	21
JVGN25L100F000		✓	1	0	●					2.5	21
JVGN30R150F000	✓		1.5	0	●					3	21
JVGN30L150F000		✓	1.5	0	●					3	21

● : New product

New JVTN**R (Threading)



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

★ : First choice

Designation	Right hand	RE	Coated				Pitches	PDX	PNA	INSL
			SH7025							
JVTN60R000FA	✓	Flat 0.05 max	●				0.2 - 0.4	0.25	60	21
JVTN60R005FA	✓	0.05	●				0.4 - 1	0.6	60	21
JVTN55R005FA	✓	0.05	●				0.6 - 1.5	0.8	55	21
JVTN60R000FB	✓	Flat 0.05 max	●				0.2 - 0.4	1.25	60	21
JVTN60R005FB	✓	0.05	●				0.4 - 1	0.9	60	21
JVTN55R005FB	✓	0.05	●				0.6 - 1.5	1.2	55	21

● : New product

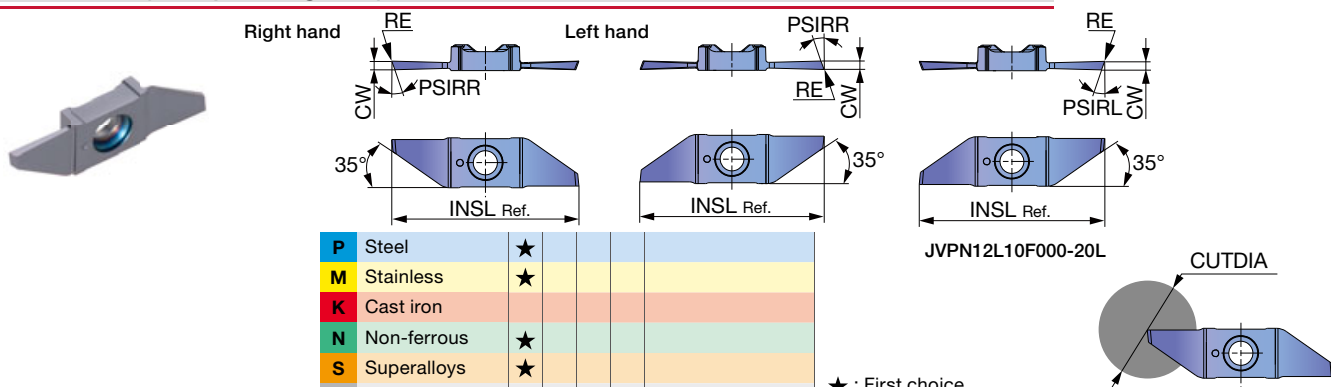
EDGE ORIENTATION AND DESCRIPTION OF THREADING INSERTS

JVTN 60 R 000 F A

Insert shape Thread angle Hand Corner radius Sharp edge Edge orientation

Edge Orientation	
Type A	Type B

JVPN**R/L (For parting-off)



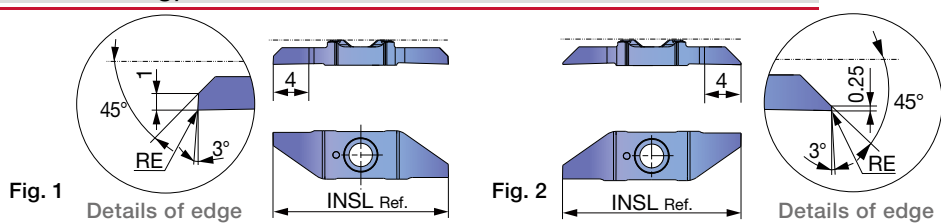
P	Steel	★							
M	Stainless	★							
K	Cast iron								
N	Non-ferrous	★							
S	Superalloys	★							
H	Hard materials								

★ : First choice

Designation	Right hand	Left hand	CW±0.025	RE	Coated				CUTDIA	INSL	PSIRR	PSIRL
					SH725							
JVPN04R05F000-20	✓		0.5	0	●				4	21.4	20°	-
JVPN04L05F000-20		✓	0.5	0	●				4	21.4	20°	-
JVPN04R05F005-20	✓		0.5	0.05	●				4	21.3	20°	-
JVPN04L05F005-20		✓	0.5	0.05	●				4	21.3	20°	-
JVPN07R06F000-20	✓		0.6	0	●				7	21.4	20°	-
JVPN07L06F000-20		✓	0.6	0	●				7	21.4	20°	-
JVPN07R06F005-20	✓		0.6	0.05	●				7	21.4	20°	-
JVPN07L06F005-20		✓	0.6	0.05	●				7	21.4	20°	-
JVPN12R08F000-20	✓		0.8	0	●				12	21.6	20°	-
JVPN12L08F000-20		✓	0.8	0	●				12	21.6	20°	-
JVPN12R08F005-20	✓		0.8	0.05	●				12	21.5	20°	-
JVPN12L08F005-20		✓	0.8	0.05	●				12	21.5	20°	-
JVPN12R10F000-20	✓		1	0	●				12	21.7	20°	-
JVPN12L10F000-20		✓	1	0	●				12	21.7	20°	-
JVPN12R10F005-20	✓		1	0.05	●				12	21.7	20°	-
JVPN12L10F005-20		✓	1	0.05	●				12	21.7	20°	-
JVPN12L10F000-20L		✓	1	0	●				12	21.7	-	20°

● : Line up

JVFN45R/L (For front turning)



★ : First choice

● : Line up

JVNR/L (Semi-finished blanks)



★ : First choice

● : Line up

STANDARD CUTTING CONDITIONS

Back turning

ISO	Workpiece materials	Grade	Cutting speed V _c (m/min)	Feed f (mm/rev)
P	Low carbon steels S15C, SS400, etc. C15E4, E275A, etc.	SH7025	50 - 180	0.01 - 0.03
	Carbon steels, Alloy steels S55C, SCM440, etc. C55, 42CrMo4, etc.	SH7025	50 - 180	0.01 - 0.03
	Free cutting steels SUH22, SUH23, etc.	SH7025	50 - 180	0.01 - 0.03
M	Stainless steels SUS304, X5CrNi18-9, etc.	SH7025	50 - 120	0.01 - 0.03
N	Aluminium alloys A5056, A6061, etc.	SH7025	150 - 200	0.01 - 0.03
	Copper alloys C2600, C280C, etc.	SH7025	100 - 200	0.01 - 0.03
S	Titanium alloys Ti-6Al-4V, etc.	SH7025	30 - 80	0.01 - 0.03
	Superalloys Inconel718, etc.	SH7025	30 - 80	0.01 - 0.03

Grooving

ISO	Workpiece materials	Grade	Cutting speed V _c (m/min)	Feed f (mm/rev)
P	Low carbon steels S15C, SS400, etc. C15E4, E275A, etc.	SH7025	50 - 180	0.01 - 0.05
	Carbon steels, Alloy steels S55C, SCM440, etc. C55, 42CrMo4, etc.	SH7025	50 - 180	0.01 - 0.05
	Free cutting steels SUH22, SUH23, etc.	SH7025	50 - 180	0.01 - 0.05
M	Stainless steels SUS304, X5CrNi18-9, etc.	SH7025	50 - 120	0.01 - 0.05
N	Aluminium alloys A5056, A6061, etc.	SH7025	150 - 200	0.01 - 0.05
	Copper alloys C2600, C280C, etc.	SH7025	100 - 200	0.01 - 0.05
S	Titanium alloys Ti-6Al-4V, etc.	SH7025	30 - 80	0.01 - 0.05
	Superalloys Inconel718, etc.	SH7025	30 - 80	0.01 - 0.05

Threading

ISO	Workpiece materials	Grade	Cutting speed V _c (m/min)
P	Low carbon steels S15C, SS400, etc. C15E4, E275A, etc.	SH7025	50 - 180
	Carbon steels, Alloy steels S55C, SCM440, etc. C55, 42CrMo4, etc.	SH7025	50 - 180
	Free cutting steels SUH22, SUH23, etc.	SH7025	50 - 180
M	Stainless steels SUS304, X5CrNi18-9, etc.	SH7025	50 - 120
N	Aluminium alloys A5056, A6061, etc.	SH7025	150 - 200
	Copper alloys C2600, C280C, etc.	SH7025	100 - 200
S	Titanium alloys Ti-6Al-4V, etc.	SH7025	30 - 80
	Superalloys Inconel718, etc.	SH7025	30 - 80

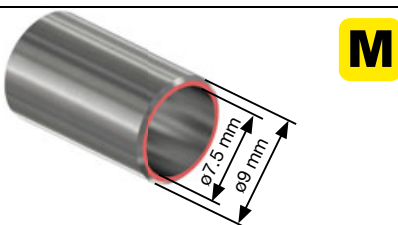
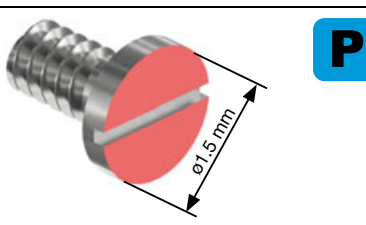
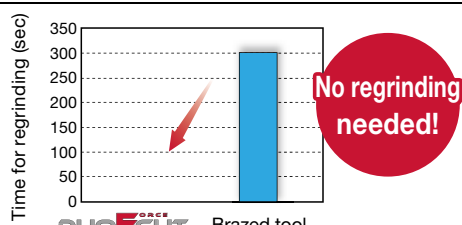
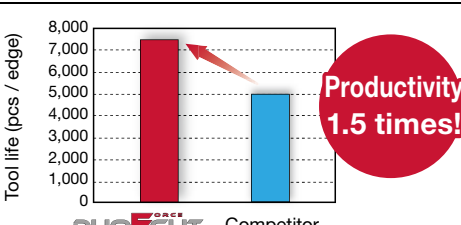
Parting-off

ISO	Workpiece materials	Grade	Cutting speed V_c (m/min)	Feed f (mm/rev)
P	Low carbon steels S15C, SS400, etc. C15E4, E275A, etc.	SH725	50 - 180	0.01 - 0.05
	Carbon steels, Alloy steels S55C, SCM440, etc. C55, 42CrMo4, etc.	SH725	50 - 180	0.01 - 0.05
	Free cutting steels SUH22, SUH23, etc.	SH725	50 - 180	0.01 - 0.05
M	Stainless steels SUS304, X5CrNi18-9, etc.	SH725	50 - 120	0.01 - 0.05
N	Aluminium alloys A5056, A6061, etc.	SH725	150 - 200	0.01 - 0.05
	Copper alloys C2600, C280C, etc.	SH725	100 - 200	0.01 - 0.05
S	Titanium alloys Ti-6Al-4V, etc.	SH725	30 - 80	0.01 - 0.05
	Superalloys Inconel718, etc.	SH725	30 - 80	0.01 - 0.05

Front turning

ISO	Workpiece materials	Grade	Cutting speed V_c (m/min)	Feed f (mm/rev)
P	Low carbon steels S15C, SS400, etc. C15E4, E275A, etc.	SH725	50 - 180	0.01 - 0.03
	Carbon steels, Alloy steels S55C, SCM440, etc. C55, 42CrMo4, etc.	SH725	50 - 180	0.01 - 0.03
	Free cutting steels SUH22, SUH23, etc.	SH725	50 - 180	0.01 - 0.03
M	Stainless steels SUS304, X5CrNi18-9, etc.	SH725	50 - 120	0.01 - 0.03
N	Aluminium alloys A5056, A6061, etc.	SH725	150 - 200	0.01 - 0.03
	Copper alloys C2600, C280C, etc.	SH725	100 - 200	0.01 - 0.03
S	Titanium alloys Ti-6Al-4V, etc.	SH725	30 - 80	0.01 - 0.03
	Superalloys Inconel718, etc.	SH725	30 - 80	0.01 - 0.03

PRACTICAL EXAMPLES

Workpiece type		Engine part	Timepiece part
Toolholder		JSXXR0707X05	JSXXR0808H05
Insert		JVPN12R10F000-20	JVPN12R08F000-20
Grade		SH725	SH725
Workpiece material		SUS316L	SK4
			
Cutting conditions	Cutting speed: Vc (m/min)	75	50
	Feed : f (mm/rev)	0.03	0.01
	Groove width : CW (mm)	1	0.8
	Machining	Parting-off	Parting-off
	Coolant	Oil	Oil
Results		 The use of an indexable DuoForceCut tool eliminated the extra costs and lead times for regrinding of brazed tools.	 DuoForceCut provided high part quality thanks to its tool rigidity, enabling 1.5 times tool life.



tungaloy.com

follow us at:

facebook.com/tungaloyjapan

twitter.com/tungaloyjapan

www.youtube.com/tungaloycorporation

Distributed by:



FIND US ON THE CLOUD!
machiningcloud.com



AS9100 Certified
78006
2015.11.04
ISO 14001 Certified
EC97J1123
1997.11.26