

Small diameter internal turning tool

TINY^{INI}MTURN

Tungaloy Report No. 402S2-G

Three major additions to boost productivity

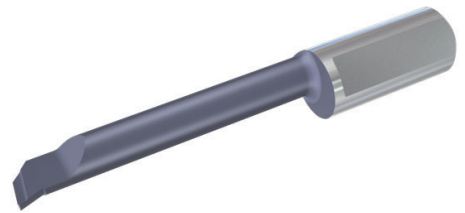




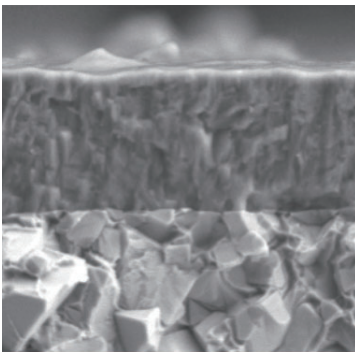
Expanded miniature boring tool lineup for a wider application coverage

① Expansion of SH725 grade for solid boring bar lineup

- Excellent wear and chipping resistance offers longer and predictable tool life combined with stable machining
- Solid bars without coolant hole



SH725



PVD coated grade SH725

(Ti,Al)N coating combined with a tough carbide substrate dedicated for small parts machining offers excellent coating adhesion and edge sharpness.

Excellent resistance to wear and chip welding

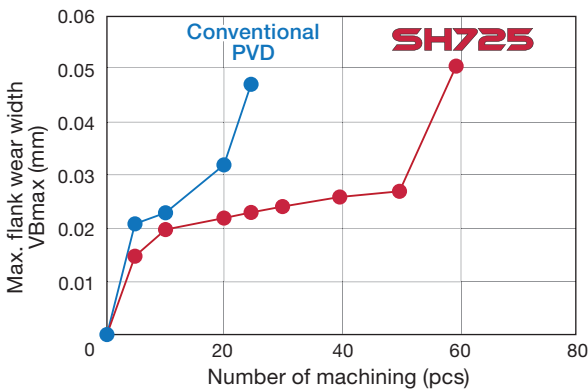
Smooth coating surface of the cutting edge prevents coating from peeling off, while its incredible wear resistance provides longer tool life than existing grades.

High resistance to plastic deformation

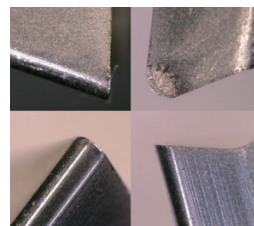
Tough carbide substrate offers stable and longer tool life.

CUTTING PERFORMANCE

M SUS316L / X2CrNiMo17-12-2

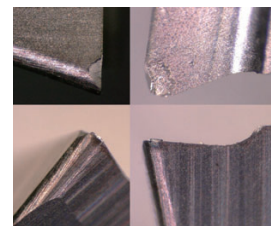


After machining 50 pcs



SH725

After machining 25 pcs



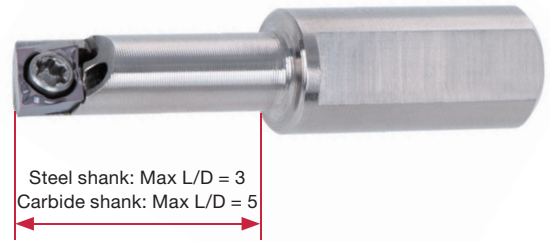
Conventional PVD

Solid bar : **TBTR07210015-D060**
 Grade : **SH725**
 Cutting speed : $V_c = 60$ m/min
 Feed : $f = 0.02$ mm/rev
 Depth of cut : $a_p = 0.5$ mm
 Coolant : Wet

SH725 showed excellent wear resistance.

② New economical indexable solution for miniature boring applications

- Applicable for boring operations as small as $\varnothing 5$ mm
- Available in a wide variety of chipbreakers and grades
- Provides excellent chip control due to unique chipbreakers
- Coolant-through tools dramatically improve chip evacuation
- Long overhang with carbide tools



Workpiece material	PMS	PMNS	PMS	SH	N
Chipbreaker	JS	W08	J08	None	None
Image					
Applicable grade EPG*04...	SH725 / SH730	SH725 / SH730 GT9530 / NS9530 TH10	SH725 / SH730 J740	BX310* / BX470*	DX140
Applicable grade EPG*03...	SH725 / SH730	SH725 / SH730 TH10	-	BX310* / BX470*	-
Chip control range				-	-

*Designation: 1QP-EPGW...

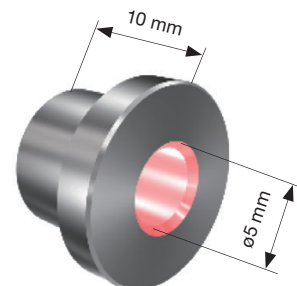
CUTTING PERFORMANCE

P S45C / C45

	New indexable tool	Conventional
Tool	<p>Tool: A07050-SEXPR03-3 Insert: EPGT040101F-JS SH725</p>	<p>Solid bar: Conventional PVD</p>
Chipbreaker		
Surface quality		

Cutting speed : $V_c = 80$ m/min
Feed : $f = 0.03$ mm/rev
Depth of cut : $a_p = 0.3$ mm
Coolant : Wet

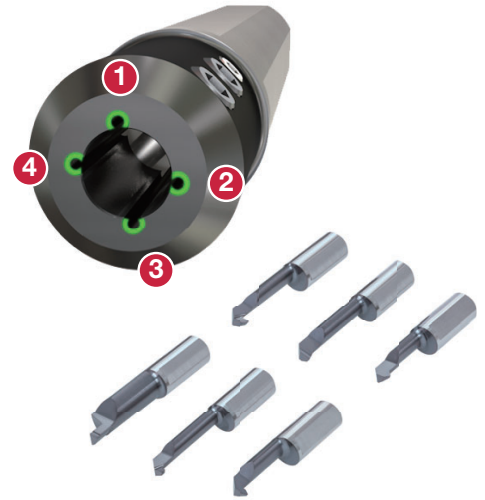
Excellent chip control and surface finish thanks to tool stability and perfect chip formation and evacuation.



TINY^{INI}TURN

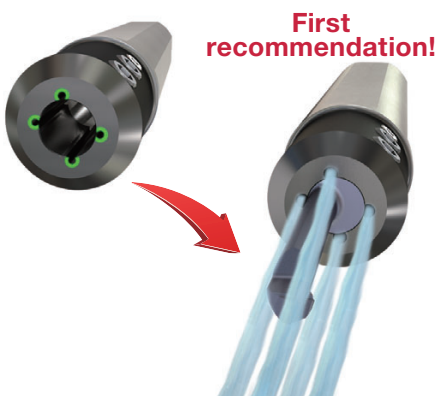
③ New sleeve with four coolant holes for optimal performance

- Optimum sleeve option for all boring operations. Sleeves with four coolant holes can be used with all TinyMini-Turn tools
- 4 streams of coolant jets are directed to the cutting point, improving chip evacuation
- Sufficient coolant supply eliminates chip bird-nesting on the tools or workpiece, enabling trouble-free, unattended operation over an extended time
- Significantly prolongs tool life



■ Perfect chip evacuation

Internal coolant sleeve

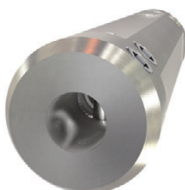


Excellent chip evacuation



- No chip jamming
- No machine stoppage
- No downtime

Conventional (External coolant)



- Chip jamming
- Increased machine downtime

STANDARD CUTTING CONDITIONS

For solid boring bar



Boring, profiling, chamfering, back boring

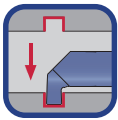
ISO	Workpiece material	Grade	Cutting speed Vc (m/min)	Feed f (mm/rev)
P	Low carbon steels S15C, S25C, etc. C15E, C15E4, etc.	SH725	40 - 140	0.01 - 0.08
	Carbon steels, Alloy steels S55C, SCM440, etc. C55, 42CrMo4, etc.	SH725	40 - 140	0.01 - 0.08
	Prehardened steels NAK80, PX5, etc.	SH725	40 - 140	0.01 - 0.08
M	Stainless steels SUS304, SUS316, etc. X5CrNi18-9, X5CrNiMo17-12-3, etc.	SH725	40 - 140	0.01 - 0.08
K	Grey cast irons FC250, FCD300, etc. GG25, 250, GG30, 300, etc.	SH725	30 - 100	0.01 - 0.08
	Ductile cast irons FC450, FCD600, etc. GGG60, 600-3, etc.	SH725	30 - 100	0.01 - 0.08
N	Aluminium alloys, Copper alloys Si < 12%	SH725	90 - 200	0.01 - 0.08
S	Titanium alloys Ti-6Al-4V, etc.	SH725	30 - 100	0.01 - 0.08
	Superalloys Inconel718, etc.	SH725	30 - 100	0.01 - 0.08



Threading (metric thread)

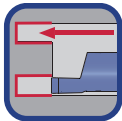
ISO	Workpiece material	Grade	Cutting speed Vc (m/min)	Number of passes Pitch (mm)				
				0.5	0.75	1	1.25	1.5
P	Low carbon steels S15C, S25C, etc. C15E, C15E4, etc.	SH725	40 - 140	6 - 8	8 - 10	10 - 12	12 - 15	15 - 18
	Carbon steels, Alloy steels S55C, SCM440, etc. C55, 42CrMo4, etc.	SH725	40 - 140	6 - 8	8 - 10	10 - 12	12 - 15	15 - 18
	Prehardened steels NAK80, PX5, etc.	SH725	40 - 140	6 - 8	8 - 10	10 - 12	12 - 15	15 - 18
M	Stainless steels SUS304, SUS316, etc. X5CrNi18-9, X5CrNiMo17-12-3, etc.	SH725	40 - 140	8	10	12	15	18
K	Grey cast irons FC250, FCD300, etc. GG25, 250, GG30, 300, etc.	SH725	30 - 100	7	9	12	14	17
	Ductile cast irons FC450, FCD600, etc. GGG60, 600-3, etc.	SH725	30 - 100	7	9	12	14	17
N	Aluminium alloys, Copper alloys Si < 12%	SH725	90 - 200	6	8	10	12	15

TINY^{MINI}TURN



Internal grooving

ISO	Workpiece material	Grade	Cutting speed Vc (m/min)	Feed f (mm/rev)
P	Low carbon steels S15C, S25C, etc. C15E, C15E4, etc.	SH725	40 - 140	0.01 - 0.03
	Carbon steels, Alloy steels S55C, SCM440, etc. C55, 42CrMo4, etc.	SH725	40 - 140	0.01 - 0.03
	Prehardened steels NAK80, PX5, etc.	SH725	40 - 140	0.01 - 0.03
M	Stainless steels SUS304, SUS316, etc. X5CrNi18-9, X5CrNiMo17-12-3, etc.	SH725	40 - 140	0.01 - 0.03
K	Grey cast irons FC250, FCD300, etc. GG25, 250, GG30, 300, etc.	SH725	30 - 100	0.01 - 0.03
	Ductile cast irons FC450, FCD600, etc. GGG60, 600-3, etc.	SH725	30 - 100	0.01 - 0.03
N	Aluminium alloys, Copper alloys Si < 12%	SH725	90 - 200	0.01 - 0.03
S	Titanium alloys Ti-6Al-4V, etc.	SH725	30 - 100	0.01 - 0.03
	Superalloys Inconel718, etc.	SH725	30 - 100	0.01 - 0.03



Face grooving

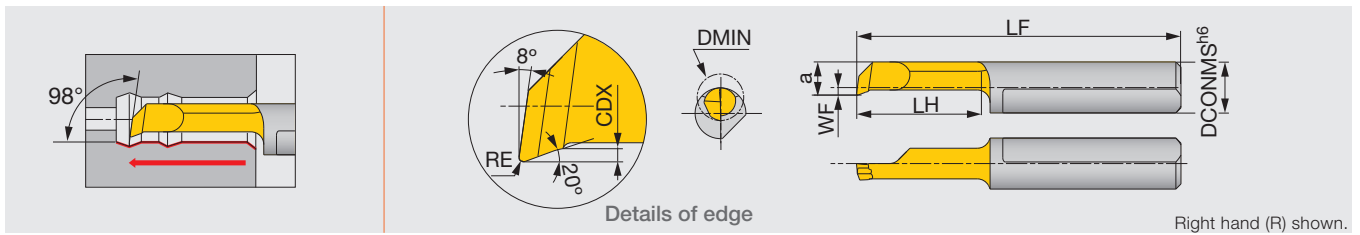
ISO	Workpiece material	Grade	Cutting speed Vc (m/min)	Feed f (mm/rev)
P	Low carbon steels S15C, S25C, etc. C15E, C15E4, etc.	SH725	40 - 140	0.01 - 0.05
	Carbon steels, Alloy steels S55C, SCM440, etc. C55, 42CrMo4, etc.	SH725	40 - 140	0.01 - 0.05
	Prehardened steels NAK80, PX5, etc.	SH725	40 - 140	0.01 - 0.05
M	Stainless steels SUS304, SUS316, etc. X5CrNi18-9, X5CrNiMo17-12-3, etc.	SH725	40 - 140	0.01 - 0.05
K	Grey cast irons FC250, FCD300, etc. GG25, 250, GG30, 300, etc.	SH725	30 - 100	0.01 - 0.05
	Ductile cast irons FC450, FCD600, etc. GGG60, 600-3, etc.	SH725	30 - 100	0.01 - 0.05
N	Aluminium alloys, Copper alloys Si < 12%	SH725	90 - 200	0.01 - 0.05
S	Titanium alloys Ti-6Al-4V, etc.	SH725	30 - 100	0.01 - 0.05
	Superalloys Inconel718, etc.	SH725	30 - 100	0.01 - 0.05

For new indexable boring bar (EPG*04 / EPG*03 insert)

ISO	Workpiece material	Grade	Cutting speed Vc (m/min)
P	Low carbon steels S15C, S25C, etc. C15E, C15E4, etc. Carbon steels S45C, S55C, etc. C45, C55, etc. Alloy steels SCM440, SCr420, etc. 42CrMo4, 20Cr4, etc.	SH725	50 - 200
		SH730	50 - 150
		J740	10 - 100
		NS9530	150 - 300
		GT9530	150 - 300
M	Stainless steels SUS304, SUS316, etc. X5CrNi18-9, X5CrNiMo17-12-3, etc.	SH725	50 - 200
		SH730	30 - 150
K	Grey cast iron FC250, GG25, 250, etc.	TH10	30 - 100
N	Aluminium alloys Si < 12%	TH10	> 100
		DX140	> 500
	Aluminium alloys Si > 12%	TH10	> 100
		DX140	> 400
	Copper alloys	TH10	> 100
		DX140	> 500
S	Titanium alloys Ti-6Al-4V, etc.	SH725	30 - 50
	Superalloys Inconel718, etc.	SH730	30 - 50
H	Hardened materials	BX310	30 - 150
Powder metal	Sintered powder metals	BX470	100 - 300

TBTR/L

Solid boring bar for boring, profiling, and chamfering

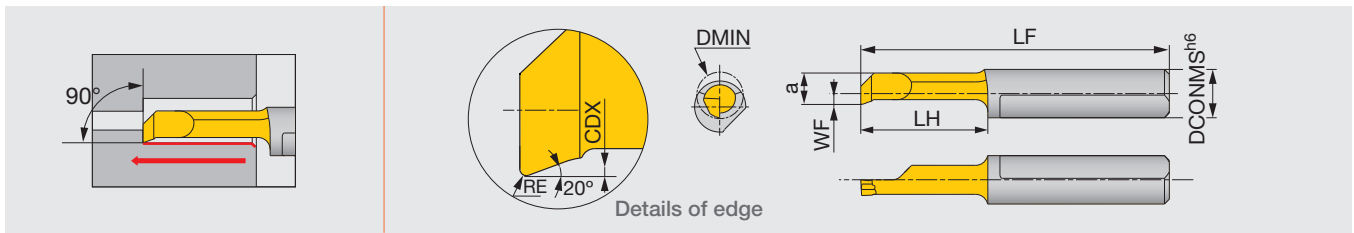


Designation	SH725	DMIN	DCONMS	WF	a	LF	LH	CDX	RE ^{+0.05}
TBTR04045005-D010	●	1	4	-1.1	0.9	21	4.5	0.1	0.05
TBTR04065005-D010	●	1	4	-1.1	0.9	23	6.5	0.1	0.05
TBTR04040005-D020	●	2	4	-0.3	1.7	20.5	4	0.1	0.05
TBTR04090005-D020	●	2	4	-0.3	1.7	25.5	9	0.1	0.05
TBTR04140005-D020	●	2	4	-0.3	1.7	30.5	14	0.1	0.05
TBTR/L04090010-D028	●	2.8	4	0.9	2.6	25.5	9	0.2	0.1
TBTR04150010-D028	●	2.8	4	0.9	2.6	31.5	15	0.2	0.1
TBTR04190010-D028	●	2.8	4	0.9	2.6	35.5	19	0.2	0.1
TBTR04090010-D040	●	4	4	1.5	3.5	25.5	9	0.3	0.1
TBTR04150010-D040	●	4	4	1.5	3.5	31.5	15	0.3	0.1
TBTR04190010-D040	●	4	4	1.5	3.5	35.5	19	0.3	0.1
TBTR04230010-D040	●	4	4	1.5	3.5	39.5	23	0.3	0.1
TBTR04270010-D040	●	4	4	1.5	3.5	43.5	27	0.3	0.1
TBTR07090015-D050	●	5	7	0.9	4.4	25	9	0.5	0.15
TBTR07140015-D050	●	5	7	0.9	4.4	30	14	0.5	0.15
TBTR07190015-D050	●	5	7	0.9	4.4	35	19	0.5	0.15
TBTR07240015-D050	●	5	7	0.9	4.4	40	24	0.5	0.15
TBTR07290015-D050	●	5	7	0.9	4.4	45	29	0.5	0.15
TBTR07340015-D050	●	5	7	0.9	4.4	50	34	0.5	0.15
TBTR07140015-D060	●	6	7	1.8	5.3	30	14	0.5	0.15
TBTR/L07210015-D060	●	6	7	1.8	5.3	37	21	0.5	0.15
TBTR07240015-D060	●	6	7	1.8	5.3	40	24	0.5	0.15
TBTR07290015-D060	●	6	7	1.8	5.3	45	29	0.5	0.15
TBTR07340015-D060	●	6	7	1.8	5.3	50	34	0.5	0.15
TBTR07410015-D060	●	6	7	1.8	5.3	57	41	0.5	0.15
TBTR07190015-D068	●	6.8	7	2.8	6.3	35	19	0.6	0.15
TBTR07240015-D068	●	6.8	7	2.8	6.3	40	24	0.6	0.15
TBTR07290015-D068	●	6.8	7	2.8	6.3	45	29	0.6	0.15
TBTR07340015-D070	●	7	7	2.8	6.3	50	34	0.6	0.15
TBTR07390015-D070	●	7	7	2.8	6.3	55	39	0.6	0.15
TBTR07440015-D070	●	7	7	2.8	6.3	60	44	0.6	0.15
TBTR07490015-D070	●	7	7	2.8	6.3	65	49	0.6	0.15

● : New product

TBPR

Solid boring bar for boring and chamfering

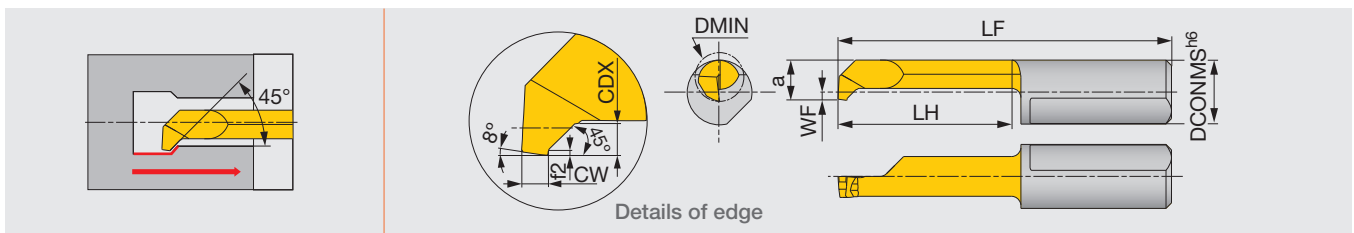


Designation	SH725	DMIN	DCONMS	WF	a	LF	LH	CDX	RE ^{+0.05}
TBPR04090010-D028	●	2.8	4	0.9	2.6	25.5	9	0.2	0.1
TBPR04150010-D040	●	4	4	1.5	3.5	31.5	15	0.3	0.1
TBPR07140015-D050	●	5	7	0.9	4.4	30	14	0.5	0.15
TBPR07190015-D050	●	5	7	0.9	4.4	35	19	0.5	0.15

● : New product

TBUR

Solid boring bar for back boring and chamfering

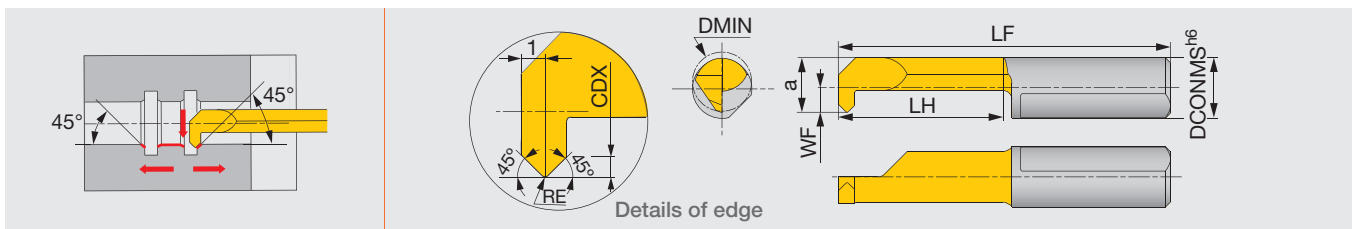


Designation	SH725	DMIN	DCONMS	WF	a	LF	LH	f2	CDX	CW ^{+0.05}
TBUR07140010-D050	●	5	7	0.9	4.4	30	14	0.2	1	1
TBUR07190010-D050	●	5	7	0.9	4.4	35	19	0.2	1	1

● : New product

TBCR

Solid boring bar for boring and 45° chamfering

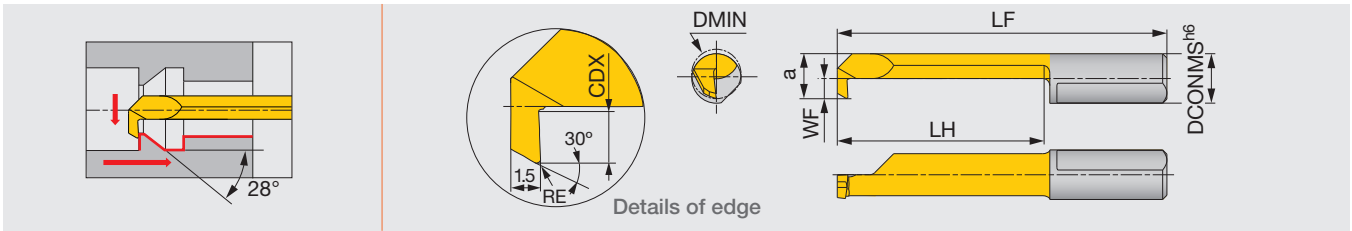


Designation	SH725	DMIN	DCONMS	WF	a	LF	LH	CDX	RE ^{+0.05}
TBCR07140020-D050	●	5	7	0.9	4.4	30	14	0.7	0.2
TBCR07190020-D068	●	6.8	7	2.8	6.3	35	19	0.7	0.2

● : New product

TBBR

Solid boring bar for back boring

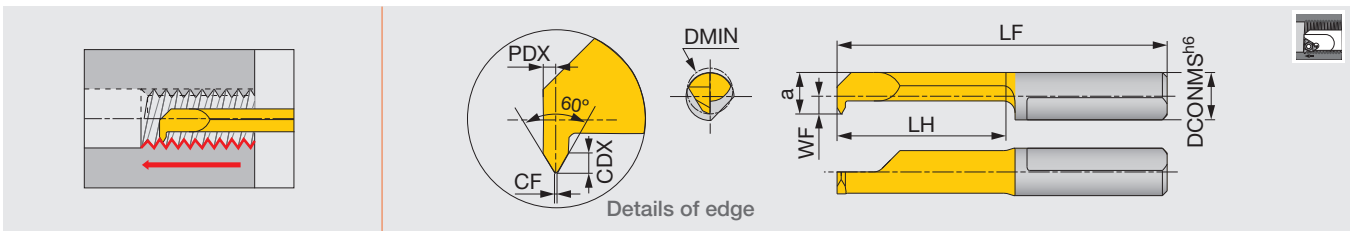


Designation	SH725	DMIN	DCONMS	WF	a	LF	LH	CDX	RE ^{+0.05} ₀
TBBR04140020-D030	●	3	4	0.6	2.6	30	14	0.5	0.2
TBBR04140015-D040	●	4	4	1.5	3.5	30	14	0.8	0.15
TBBR07190020-D050	●	5	7	0.9	4.4	35	19	1	0.2

● : New product

TBIR

Solid boring bar for threading (metric)

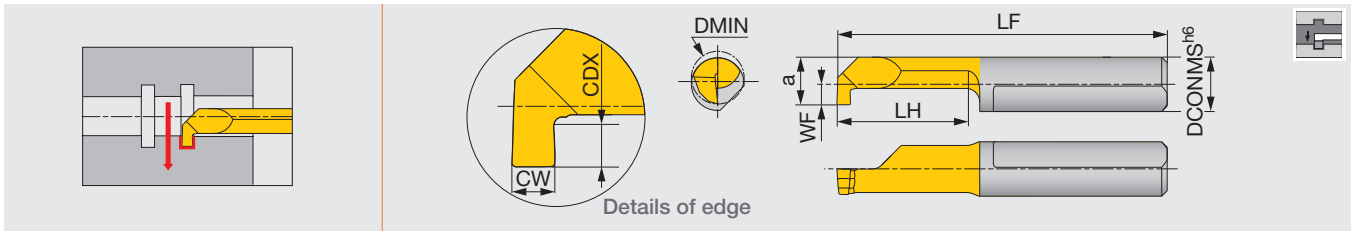


Designation	SH725	Pitch	DMIN	CF ⁰ _{-0.02}	DCONMS	WF	a	LF	LH	CDX	PDX
TBIR04140050-D040	●	0.5	4	0.06	4	1.5	3.5	30	14	0.3	0.35
TBIR07140050-D050	●	0.5	5	0.06	7	0.9	4.4	30	14	0.3	0.35
TBIR07140075-D050	●	0.75	5	0.09	7	0.9	4.4	30	14	0.4	0.45
TBIR07140100-D048	●	1	4.8	0.12	7	0.9	4.4	30	14	0.6	0.55
TBIR07140100-D060	●	1	6	0.12	7	1.8	5.3	30	14	0.6	0.55
TBIR07140150-D060	●	1.5	6	0.18	7	1.8	5.3	30	14	0.8	0.75

● : New product

TBGR

Solid boring bar for internal grooving



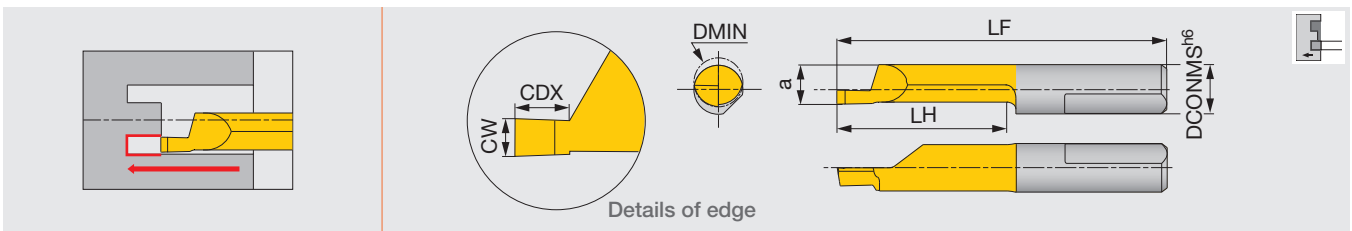
Designation	SH725	$CW^{+0.05}_0$	DMIN	DCONMS	WF	a	LF	LH	CDX
TBGR04100050-D020	●	0.5	2	4	-0.2	1.8	26	10	0.4
TBGR04090100-D040	●	1	4	4	1.5	3.5	25.5	9	0.8
TBGR04150100-D040	●	1	4	4	1.5	3.5	31.5	15	0.8
TBGR07090200-D050	●	2	5	7	0.9	4.4	25	9	1
TBGR07090100-D060	●	1	6	7	1.8	5.3	25	9	1.8
TBGR07140100-D060	●	1	6	7	1.8	5.3	30	14	1.8
TBGR07090150-D060	●	1.5	6	7	1.8	5.3	25	9	1.8
TBGR07090200-D060	●	2	6	7	1.8	5.3	25	9	1.8
TBGR07140200-D060	●	2	6	7	1.8	5.3	30	14	1.8
TBGR07090100-D068	●	1	6.8	7	2.7	6.2	25	9	2.5
TBGR07090150-D068	●	1.5	6.8	7	2.7	6.2	25	9	2.5
TBGR07140150-D068	●	1.5	6.8	7	2.7	6.2	30	14	2.5
TBGR07090200-D068	●	2	6.8	7	2.7	6.2	25	9	2.5
TBGR07140200-D068	●	2	6.8	7	2.7	6.2	30	14	2.5
TBGR07210200-D068	●	2	6.8	7	2.7	6.2	37	21	2.5
TBGR07290200-D068	●	2	6.8	7	2.7	6.2	45	29	2.5

* Corner radius : less than 0.1 mm.

● : New product

TBFR

Solid boring bar for face grooving



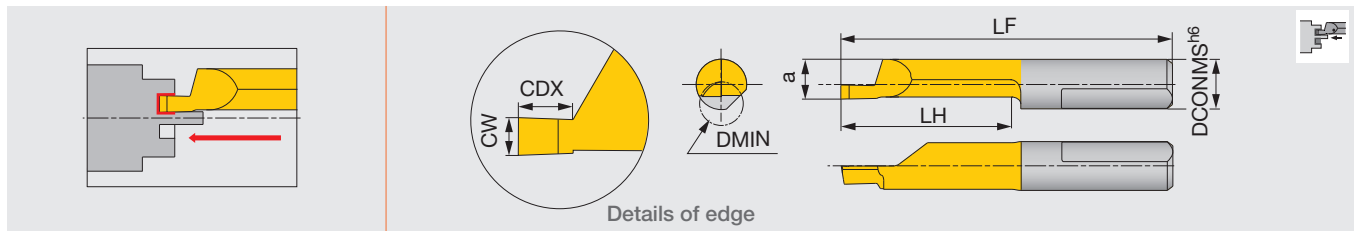
Designation	SH725	$CW^{+0.05}_0$	DMIN	DCONMS	a	LF	LH	CDX
TBFR07110100-D060	●	1	6	7	5.2	26	10	1.5
TBFR07110200-D060	●	2	6	7	5.2	26	10	3
TBFR07110100-D080	●	1	8	7	5.9	27	11	1.5
TBFR07110250-D080	●	2.5	8	7	5.9	27	11	3.5
TBFR07300300-D080	●	3	8	7	5.9	46	30	3.5
TBFR07200250-D150	●	2.5	15	7	5.9	36	20	20
TBFR07200300-D150	●	3	15	7	5.9	36	20	20
TBFR07300300-D150	●	3	15	7	5.9	46	30	30

* Corner radius : less than 0.1 mm.

● : New product

TBSR

Solid boring bar for face grooving (for shaft)



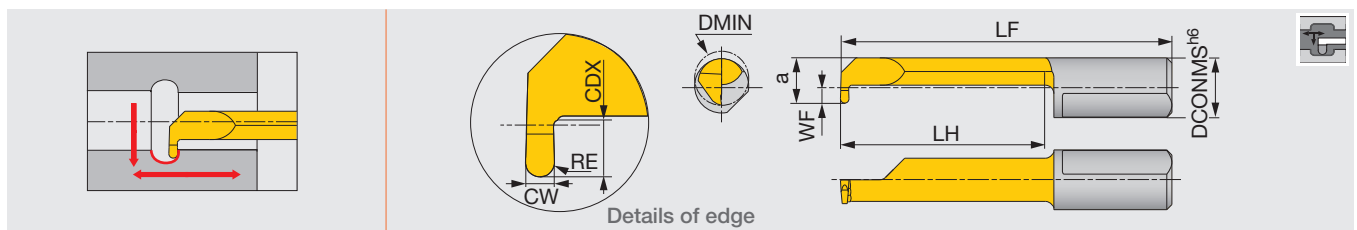
Designation	SH725	$CW^{+0.05}_0$	DMIN	DCONMS	a	LF	LH	CDX
TBSR07200200-D060	●	2	6	7	5.2	36	20	4

* Corner radius : less than 0.1 mm.

● : New product

TBRR

Solid boring bar for boring and profiling

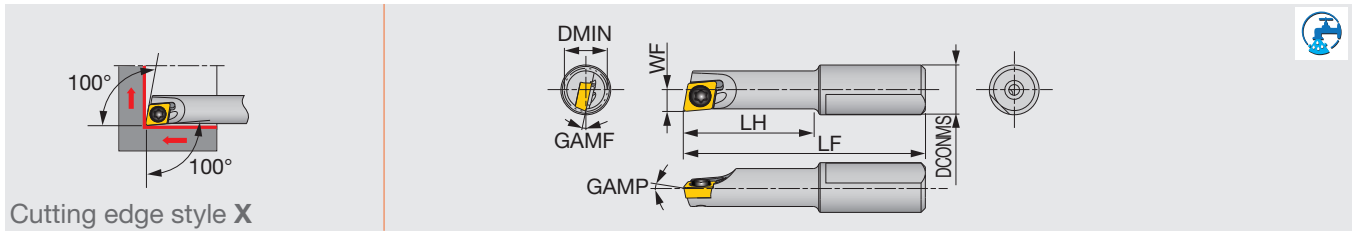


Designation	SH725	$CW^{+0.05}_0$	DMIN	DCONMS	WF	a	LF	LH	CDX	RE
TBRR07190050-D050	●	1	5	7	0.9	4.4	35	19	1	0.5
TBRR07240050-D060	●	1	6	7	1.8	5.3	40	24	1.8	0.5
TBRR07290050-D068	●	1	6.8	7	2.8	6.3	45	29	2.5	0.5

● : New product

A/E-SEXPR

Screw-on boring bar, for positive 75° rhombic inserts



Cutting edge style X

Designation	Material	DMIN	DCONMS	WF	LF	LH	GAMP	GAMPF	RE**	Insert	Torque*
A07050-SEXPR03-3	Steel	5	7	2.5	31	15	0°	-13°	0.2	EPGT03X1...	0.6
A07060-SEXPR04-3	Steel	6	7	3.1	34	18	0°	-12°	0.2	EPGT0401...	0.6
E07050-SEXPR03-4	Carbide	5	7	2.5	37	20	0°	-13°	0.2	EPGT03X1...	0.6
E07050-SEXPR03-5	Carbide	5	7	2.5	42	25	0°	-13°	0.2	EPGT03X1...	0.6
E07060-SEXPR04-5	Carbide	6	7	3.1	46	30	0°	-12°	0.2	EPGT0401...	0.6

*Torque: Recommended clamping torque (N-m)

**RE : Standard corner radius

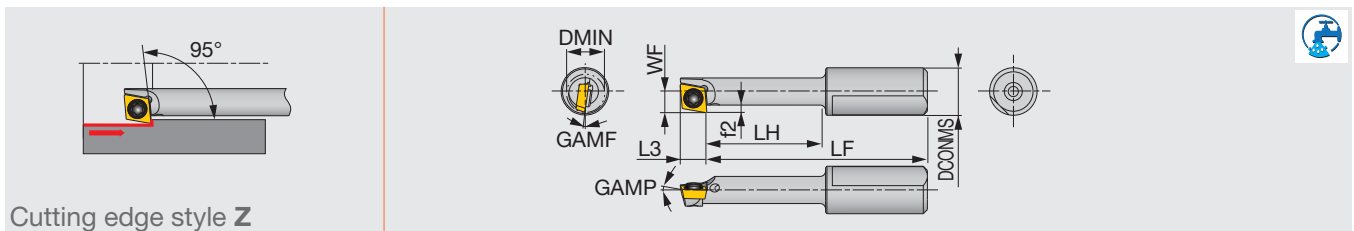
Note: Use right-hand toolholders (SEXPR**) with left-hand inserts (L).

SPARE PARTS

Designation	Clamping screw	Wrench
A/E070**03-...	CSTA-1.6	T-6F
A/E070**04-...	CSTB-2	T-6F

A/E-SEZPR

Screw-on boring bar, for positive 75° rhombic inserts



Cutting edge style Z

Designation	Material	DMIN	DCONMS	WF	LF	LH	f2	L3	GAMP	GAMPF	RE**	Insert	Torque*
A07055-SEZPR03-3	Steel	5.5	7	3.2	32.5	16.5	1.2	3.9	0°	-8°	0.2	EPGT03X1...	0.6
E07055-SEZPR03-5	Carbide	5.5	7	3.2	44.7	27.5	1.2	3.9	0°	-8°	0.2	EPGT03X1...	0.6

*Torque: Recommended clamping torque (N-m)

**RE : Standard corner radius

Note: Use right-hand toolholders (SEZPR**) with right-hand inserts (R).

SPARE PARTS

Designation	Clamping screw	Wrench
A/E070**03-...	CSTA-1.6	T-6F

Insert POSITIVE TYPE

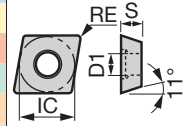
● : Continuous cutting
 ● : Light interrupted cutting
 ✱ : Heavy interrupted cutting

EP



Rhombic, 75°
with hole
Positive 11°

Material	P Steel	M Stainless	K Cast iron	N Non-ferrous	S Superalloy	H Hard material
Coated	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●
Coated cermet	●●	●●	●●	●●	●●	●●
Cermet	●●	●●	●●	●●	●●	●●
Uncoated	●●	●●	●●	●●	●●	●●




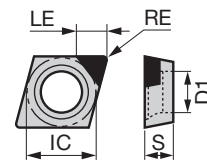
Application	Chipbreaker	Designation	Coated		Coated cermet	Cermet	Uncoated	Dimension (mm)			
			GH110 SH725 SH730 J740		GT9530	NS9530	TH10	RE	IC	S	D1
Internal finishing (sharp edge)		W08 EPGT03X100FR/L-W08	●					0.03	3.57	1.39	1.9
		EPGT03X101FR/L-W08	●					0.1	3.57	1.39	1.9
		EPGT03X102FR/L-W08	●					0.2	3.57	1.39	1.9
		EPGT03X104FR/L-W08	●					0.4	3.57	1.39	1.9
		EPGT040100FR/L-W08	●					0.03	3.97	1.59	2.3
		EPGT040101FR/L-W08	●					0.1	3.97	1.59	2.3
		EPGT040102FR/L-W08	●					0.2	3.97	1.59	2.3
		EPGT040104FR/L-W08	●					0.4	3.97	1.59	2.3
Internal finishing		W08 EPGT03X100R/L-W08		●			●	0.03	3.57	1.39	1.9
		EPGT03X101R/L-W08		●			●	0.1	3.57	1.39	1.9
		EPGT03X102R/L-W08		●			●	0.2	3.57	1.39	1.9
		EPGT03X104R/L-W08		●			●	0.4	3.57	1.39	1.9
		EPGT040100R-W08		●			●	0.03	3.97	1.59	2.3
		EPGT040100L-W08	●	●		●	●	0.03	3.97	1.59	2.3
		EPGT040101R/L-W08		●			●	0.1	3.97	1.59	2.3
		EPGT040102R-W08	●	●		●	●	0.2	3.97	1.59	2.3
		EPGT040102L-W08	●	●	●	●	●	0.2	3.97	1.59	2.3
		EPGT040104R-W08	●	●		●	●	0.4	3.97	1.59	2.3
EPGT040104L-W08	●	●	●	●	●	0.4	3.97	1.59	2.3		
Internal finishing (sharp edge)		JS EPGT03X101F-JS	●					<0.1	3.57	1.39	1.9
		EPGT03X102F-JS	●					<0.2	3.57	1.39	1.9
		EPGT03X104F-JS	●					<0.4	3.57	1.39	1.9
		EPGT040101F-JS	●					<0.1	3.97	1.59	2.3
		EPGT040102F-JS	●					<0.2	3.97	1.59	2.3
		EPGT040104F-JS	●					<0.4	3.97	1.59	2.3
		EPGT040104L-JS	●	●	●	●	●	<0.4	3.97	1.59	2.3
Internal finishing		JS EPGT03X101-JS		●				<0.1	3.57	1.39	1.9
		EPGT03X102-JS		●				<0.2	3.57	1.39	1.9
		EPGT03X104-JS		●				<0.4	3.57	1.39	1.9
		EPGT040101-JS		●				<0.1	3.97	1.59	2.3
		EPGT040102-JS		●				<0.2	3.97	1.59	2.3
		EPGT040104-JS		●				<0.4	3.97	1.59	2.3
Internal finishing (sharp edge)		J08 EPGT040100FL-J08	●					0.03	3.97	1.59	2.3
		EPGT040102FL-J08	●					0.2	3.97	1.59	2.3
		EPGT040104FL-J08	●					0.4	3.97	1.59	2.3
Internal finishing		J08 EPGT040100L-J08		●●				0.03	3.97	1.59	2.3
		EPGT040102L-J08		●●				0.2	3.97	1.59	2.3
		EPGT040104L-J08		●●				0.4	3.97	1.59	2.3

*Nose radius (RE) values with "<" indicate that the nose radius is made to a minus tolerance

● : Line up


- : Continuous cutting
- ◐ : Light interrupted cutting
- ⊛ : Heavy interrupted cutting

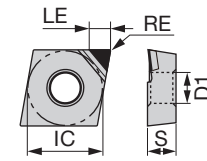
Shape	Designation	BX310	BX470	Dimension (mm)			
				RE	IC	S	D1
	1QP-EPGW 1QP-EPGW03X102	●	●	0.2	3.57	1.39	1.9
	1QP-EPGW03X104	●	●	0.4	3.57	1.39	1.9
	1QP-EPGW040102	●	●	0.2	3.97	1.59	2.3
	1QP-EPGW040104	●	●	0.4	3.97	1.59	2.3



● : Line up

Positive type with rake

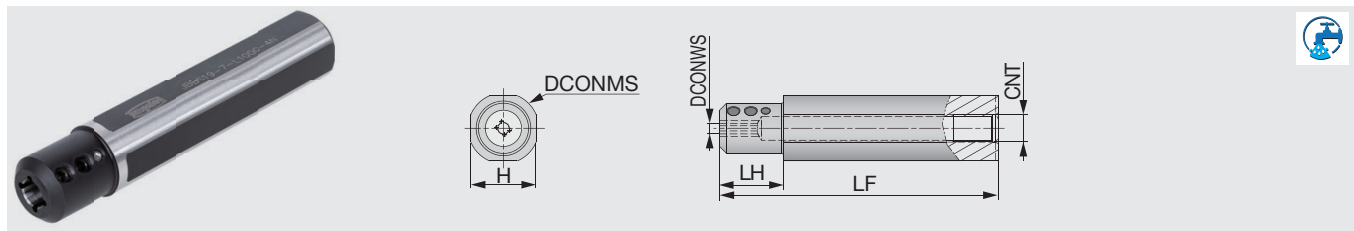
Shape	Designation	DX140	Dimension (mm)			
			RE	IC	S	D1
	EPGW** -DIA EPGW040102-DIA	●	0.2	3.97	1.59	2.3
	EPGW040104-DIA	●	0.4	3.97	1.59	2.3



● : Line up

JBBS-4N

Sleeve for internal coolant supply with 4 coolant holes





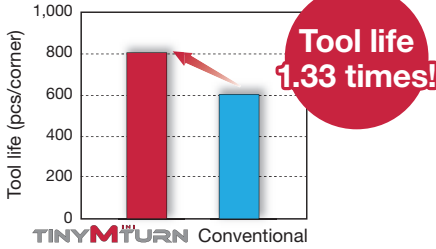
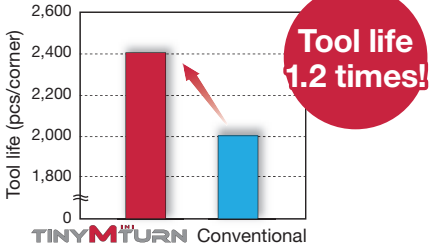
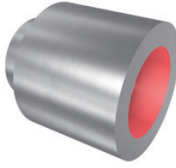
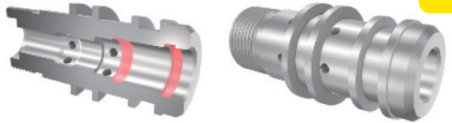
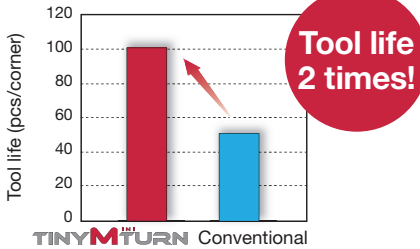
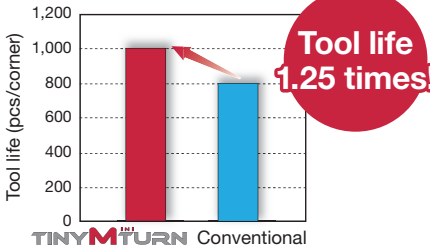
Designation	DCONMS	DCONWS	LF	LH	H	CNT
JBBS12-4-L80C-4N	12	4	80	10	10.3	Rc1/16
JBBS127-4-L80C-4N	12.7	4	80	10	11.6	Rc1/16
JBBS14-4-L80C-4N	14	4	80	10	12	Rc1/8
JBBS159-4-L100C-4N	15.875	4	100	10	14.58	Rc1/8
JBBS159-7-L100C-4N	15.875	7	100	10	14.58	Rc1/8
JBBS16-4-L100C-4N	16	4	100	10	15	Rc1/8
JBBS16-7-L100C-4N	16	7	100	10	15	Rc1/8
JBBS19-4-L100C-4N	19.05	4	100	20	17.2	Rc1/8
JBBS19-7-L100C-4N	19.05	7	100	20	17.2	Rc1/8
JBBS20-4-L100C-4N	20	4	100	20	18	Rc1/8
JBBS20-7-L100C-4N	20	7	100	20	18	Rc1/8
JBBS22-4-L100C-4N	22	4	100	20	20	Rc1/8
JBBS22-7-L100C-4N	22	7	100	20	20	Rc1/8
JBBS25-4-L100C-4N	25	4	100	23	23	Rc1/8
JBBS25-7-L100C-4N	25	7	100	23	23	Rc1/8
JBBS254-4-L100C-4N	25.4	4	100	23	23.4	Rc1/8
JBBS254-7-L100C-4N	25.4	7	100	23	23.4	Rc1/8

SPARE PARTS

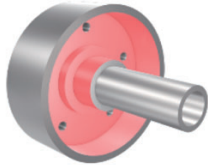
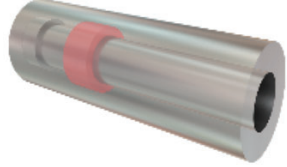




Designation	Clamping screw	Wrench
JBBS**-4-L***C-4N	SSHM5-6PF-S	P-2.5
JBBS**-7-L***C-4N	SSHM5-4PF-S	P-2.5

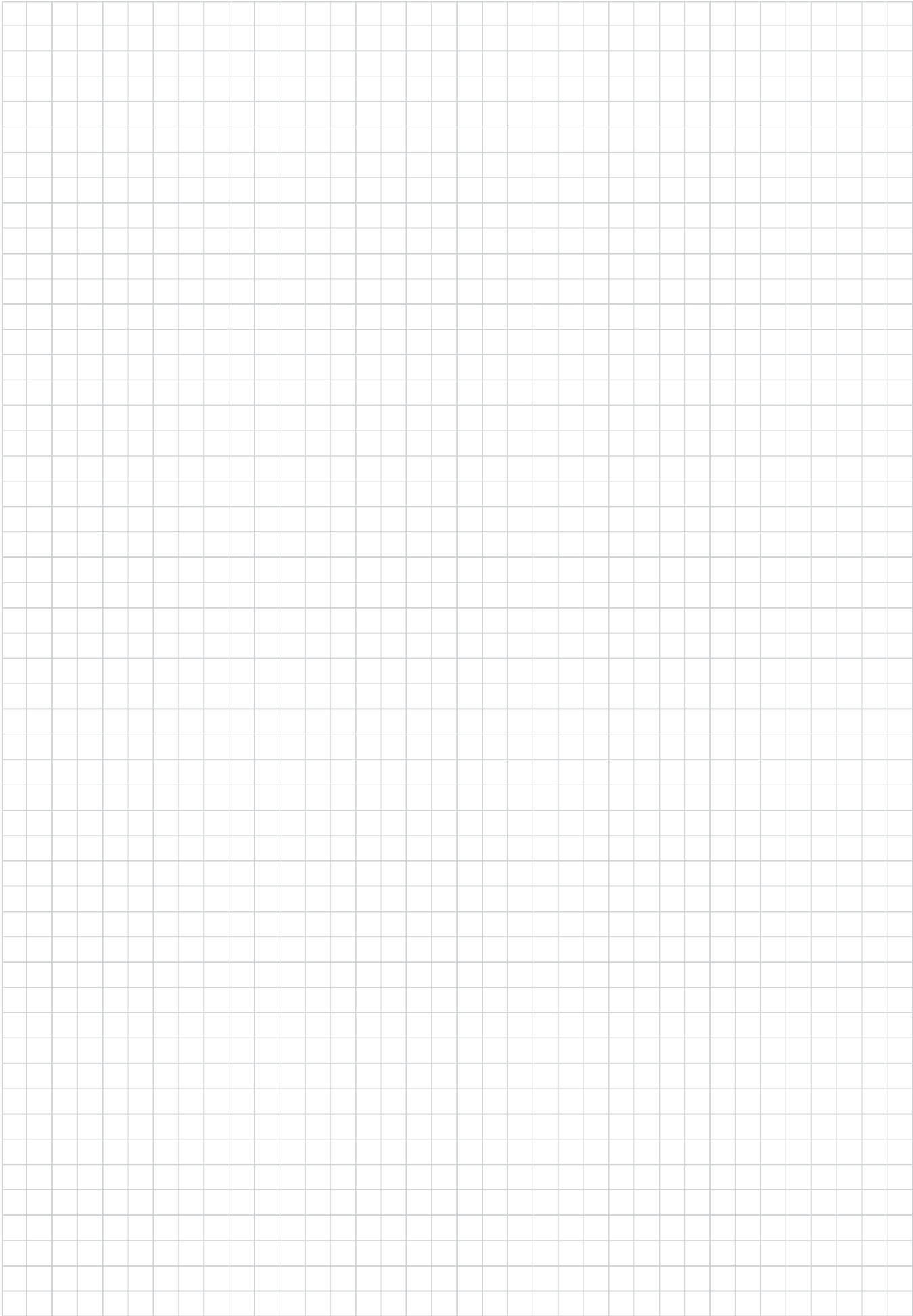
PRACTICAL EXAMPLES

Workpiece type		Sleeve	Motor part	
Sleeve / Toolholder		JBBS16-4-7	JBBS25-4-7 / A07050-SEXPR03-3	
Insert		TBTR04090010-D028	EPGT03X102F-JS	
Grade		SH725	SH725	
Workpiece material		SUS303 / X10CrNiS18-9	SUM24L / 11SmnPb28	
		 M	 P	
Cutting conditions	Cutting speed: V_c (m/min)	61	120	
	Feed : f (mm/rev)	0.02	0.02	
	Depth of cut : a_p (mm)	0.5	0.1	
	Machining	Internal turning	Internal turning	
	Coolant	Wet (External)	Wet (External)	
Results	 <p>TinyMini-Turn SH725 provides high adhesion and excellent wear resistance, achieving 1.33 times longer tool life than the competitor.</p>		 <p>SH725 grade combined with JS geometry drastically improved chip control over the competitor's solid bar, providing 1.2 times tool life.</p>	
Workpiece type		Socket	Connector	
Sleeve		JBBS16-7-L100C-4N	JBBS25-7-L100C-4N	
Insert		TBTR07140015-D060	TBBR07190020-D050	
Grade		SH725	SH725	
Workpiece material		SUS316 / X5CrNiMo17-12-3	SUS304 / X5CrNi18-9	
		 M	 M	
Cutting conditions	Cutting speed: V_c (m/min)	60	90	
	Feed : f (mm/rev)	0.06	0.05	
	Depth of cut : a_p (mm)	0.15	0.1	
	Machining	Internal turning	Back boring	
	Coolant	Wet (Internal)	Wet (Internal)	
Results	 <p>New JBBS-4N sleeve, combined with SH725 grade insert, eliminated chip jamming thanks to its four streams of coolant jets, while achieving double tool life.</p>		 <p>New JBBS-4N sleeve, combined with SH725 grade insert, eliminated chip jamming in back boring application, thanks to its four streams of coolant jets, while achieving 1.25 times tool life.</p>	

TINY^{INI}TURN

Workpiece type		Gear head	Gear part
Sleeve		JBBS16-7-L100C-4N	JBBS20-7-L100C-4N
Insert		TBFR07110250-D080	TBGR07140200-D060
Grade		SH725	SH725
Workpiece material		SUS316L	SUJ2 / 100Cr6
Cutting conditions			
Cutting speed: V_c (m/min)		80	152
Feed : f (mm/rev)		0.02	0.1
Grooving depth (mm)		3	1
Machining		Face grooving	Internal grooving
Coolant		Wet (Internal)	Wet (Internal)
Results		 <p>Tool life 1.5 times!</p> <p>TINY^{INI}TURN Conventional</p> <p>New JBBS-4N sleeve, combined with SH725 grade insert, eliminated chip jamming in face grooving application, thanks to its four streams of coolant jets, while achieving 1.5 times tool life.</p>	 <p>Tool life 1.5 times!</p> <p>TINY^{INI}TURN Conventional</p> <p>New JBBS-4N sleeve, combined with SH725 grade insert, eliminated chip jamming thanks to its four streams of coolant jets, while providing 1.5 times tool life.</p>
Workpiece type		Thrust spacer	Valve
Sleeve / Toolholder		JBBS16-7-L100C-4N / A07050-SEXPR03-3	JBBS19-7-L100C-4N / E07060-SEXPR04-5
Insert		EPGT03X104R-W08	1QP-EPGW040102
Grade		SH725	BX310
Workpiece material		S15C / C15	SCM415H
Cutting conditions			
Cutting speed: V_c (m/min)		113	60
Feed : f (mm/rev)		0.05	0.03
Depth of cut : a_p (mm)		0.3	0.05
Machining		Internal turning	Internal turning
Coolant		Wet (Internal)	Wet (Internal)
Results		 <p>Tool life 1.5 times!</p> <p>TINY^{INI}TURN Conventional</p> <p>New JBBS-4N sleeve, combined with W08 geometry & SH725 grade insert, eliminated chip jamming thanks to its four streams of coolant jets, while achieving 1.5 times tool life.</p>	 <p>Tool life 2 times!</p> <p>TINY^{INI}TURN Conventional</p> <p>New JBBS-4N sleeve, combined with BX310 grade insert, eliminated chip jamming thanks to its four streams of coolant jets, while achieving double tool life.</p>

MEMO



Tungaloy Corporation (Head office)

11-1 Yoshima-Kogyodanchi
Iwaki-city, Fukushima 970-1144 Japan
Phone: +81-246-36-8501
Fax: +81-246-36-8542
www.tungaloy.co.jp

Tungaloy America, Inc.

3726 N Ventura Drive
Arlington Heights, IL 60004, U.S.A.
Phone: +1-888-554-8394
Fax: +1-888-554-8392
www.tungaloy.com/us

Tungaloy Canada

432 Elgin St. Unit 3
Brantford, Ontario N3S 7P7, Canada
Phone: +1-519-758-5779
Fax: +1-519-758-5791
www.tungaloy.com/ca

Tungaloy de Mexico S.A.

C. Los Arellano 113,
Parque Industrial Siglo XXI
Aguascalientes, AGS, Mexico 20290
Phone: +52-449-929-5410
Fax: +52-449-929-5411
www.tungaloy.com/mx

Tungaloy do Brasil Ltda.

Avd. Independencia N4158 Residencial Flora
13280-000 Vinhedo, São Paulo, Brasil
Phone: +55-19-38262757
Fax: +55-19-38262757
www.tungaloy.com/br

Tungaloy Germany GmbH

An der Alten Ziegelei 1
D-40789 Monheim, Germany
Phone: +49-2173-90420-0
Fax: +49-2173-90420-19
www.tungaloy.com/de

Tungaloy France S.A.S.

ZA Courtaboeuf - Le Rio
1 rue de la Terre de feu
F-91952 Courtaboeuf Cedex, France
Phone: +33-1-6486-4300
Fax: +33-1-6907-7817
www.tungaloy.com/fr

Tungaloy Italia S.r.l.

Via E. Andolfato 10
I-20126 Milano, Italy
Phone: +39-02-252012-1
Fax: +39-02-252012-65
www.tungaloy.com/it

Tungaloy Czech s.r.o.

Turanka 115
CZ-627 00 Brno, Czech Republic
Phone: +420-532 123 391
Fax: +420-532 123 392
www.tungaloy.com/cz

Tungaloy Ibérica S.L.

C/Miquel Servet, 43B, Nau 7
Pol. Ind. Bufalvent
ES-08243 Manresa (BCN), Spain
Phone: +34 93 113 1360
Fax: +34 93 876 2798
www.tungaloy.com/es

Tungaloy Scandinavia AB

Bultgatan 38
442 40 Kungälv, Sweden
Phone: +46-462119200
Fax: +46-462119207
www.tungaloy.com/se

Tungaloy Rus, LLC

Andropova avenue, h.18/7,
11 floor, office 3, 115432,
Moscow, Russia
Phone: +7-499-683-01-80
Fax: +7-499-683-01-81
www.tungaloy.com/ru

Tungaloy Polska Sp. z o.o.

Ul. Irysowa 1, 55-040 Bielany
Wroclawskie, Poland
Phone: +48 607 907 237
www.tungaloy.com/pl

Tungaloy U.K. Ltd

Gallan Park, Watling Street,
Cannock, WS110XG, UK
Phone: +44 121 4000 231
Fax: +44 121 270 9694
www.tungaloy.com/uk

Tungaloy Hungary Kft

Erzsébet királyné útja 125
H-1142 Budapest, Hungary
Phone: +36 1 781-6846
Fax: +36 1 781-6866
www.tungaloy.com/hu

Tungaloy Turkey

Serifali Mah.bayraktar Bulvari Kule Sk. No:26
34775 Umraniye / Istanbul / Turkey
Phone: +90 216 540 04 67
Fax: +90 216 540 04 87
www.tungaloy.com/tr

Tungaloy Benelux b.v.

Tjalk 70
NL-2411 NZ Bodegraven, Netherlands
Phone: +31 172 630 420
Fax: +31 172 630 429
www.tungaloy.com/nl

Tungaloy Croatia

Ulica bana Josipa Jelačića 87,
10430, Samobor, Croatia
Phone: +385 1 3326 604
Fax: +385 1 3327 683
www.tungaloy.com/hr

Tungaloy Cutting Tool (Shanghai) Co.,Ltd.

Rm No 401 No.88 Zhabei
Jiangchang No.3 Rd
Shanghai 200436, China
Phone: +86-21-3632-1880
Fax: +86-21-3621-1918
www.tungaloy.com/cn

Tungaloy Cutting Tools (Taiwan) Co.,Ltd.

9F. No.293, Zhongyang Rd,
Xinzhuan Dist, New Taipei City,
24251 Taiwan
Phone: +886-2-8521-9986
Fax: +886-2-8521-8935
www.tungaloy.com/tw

Tungaloy Cutting Tools (Thailand) Co.,Ltd.

Interlink tower 4th Fl.
1858/5-7 Bangna-Trad Road
km.5 Bangna, Bangna, Bangkok 10260
Thailand
Phone: +66-2-751-5711
Fax: +66-2-751-5715
www.tungaloy.com/th

Tungaloy Singapore (Pte.), Ltd.

62 Ubi Road 1, #06-11 Oxley BizHub 2
Singapore 408734
Phone: +65-6391-1833
Fax: +65-6299-4557
www.tungaloy.com/sing

Tungaloy Vietnam

LE04.38, Lexington Residence
67 Mai Chi Tho St., Dist. 2,
Ho Chi Minh City, Vietnam
Phone: +84-2837406660
www.tungaloy.com/sing

Tungaloy India Pvt. Ltd.

One International Center,
Unit # 902-A, 9th Floor,
Tower 1, Senapati Bapat Marg,
Elphinstone Road (West),
Mumbai-400013, India
Phone: +91-22-6124-8804
Fax: +91-22-6124-8899
www.tungaloy.com/in

Tungaloy Korea Co., Ltd

#1312, Byucksan Digital Valley 5-cha
Beotkkot-ro 244, Geumcheon-gu
153-788 Seoul, Korea
Phone: +82-2-2621-6161
Fax: +82-2-6393-8952
www.tungaloy.com/kr

Tungaloy Malaysia Sdn Bhd

50 K-2, Kelana Mall, Jalan SS6/14
Kelana Jaya, 47301
Petaling Jaya, Selangor Darul Ehsan
Malaysia
Phone: +603-7805-3222
Fax: +603-7804-8563
www.tungaloy.com/my

Tungaloy Australia Pty Ltd

Unit 68 1470 Ferntree Gully Road
Knoxfield 3180 Victoria, Australia
Phone: +61-3-9755-8147
Fax: +61-3-9755-6070
www.tungaloy.com/au

PT. Tungaloy Indonesia

Kompleks Grand Wisata Block AA-10 No.3-5
Cibitung
Bekasi 17510, Indonesia
Phone: +62-21-8261-5808
Fax: +62-21-8261-5809
www.tungaloy.com/id



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