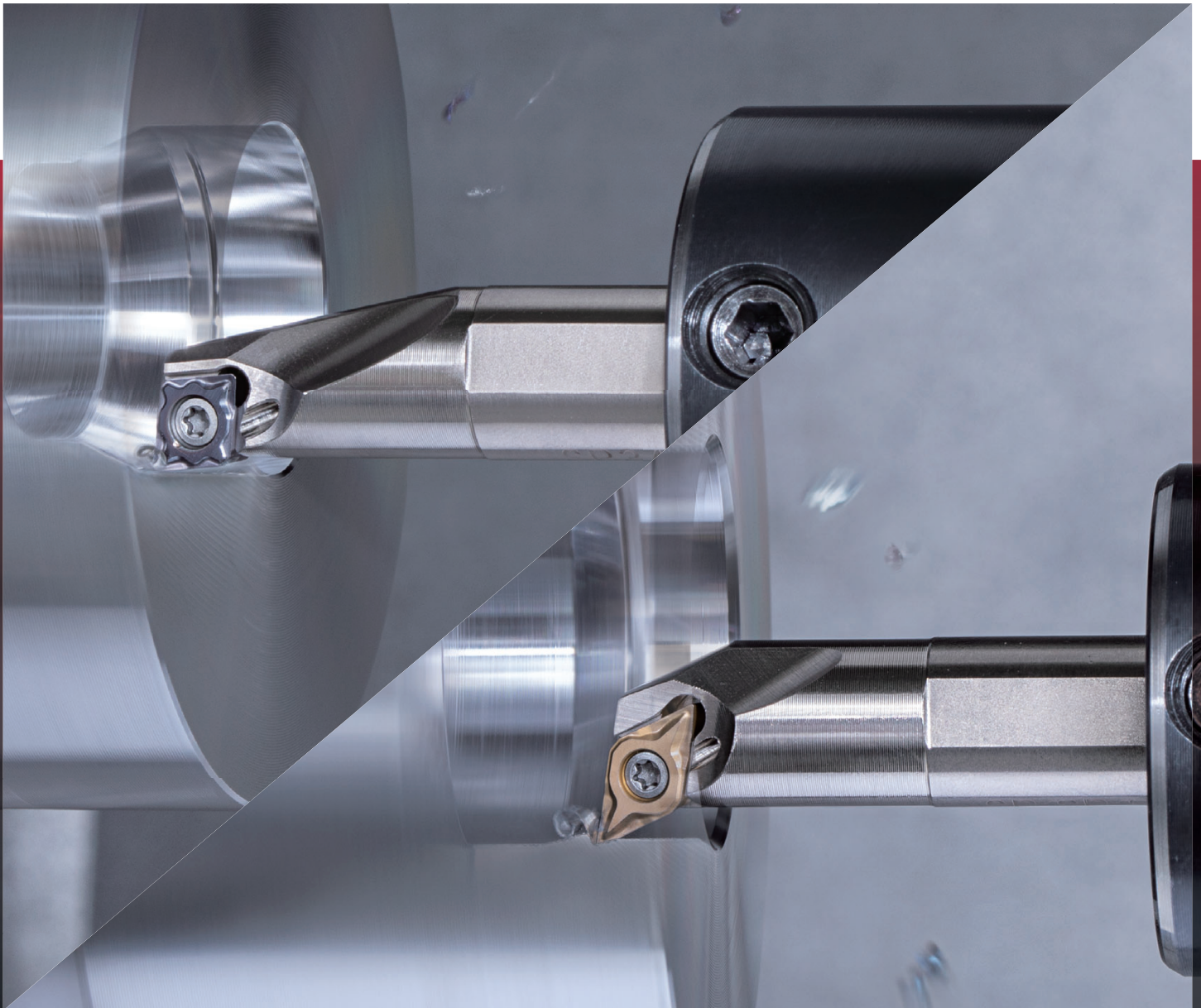


MINI^{FORCE}TURN

Tungaloy Report No. 417S1-G

Expansion of super economical **M class**
with double-sided positive insert





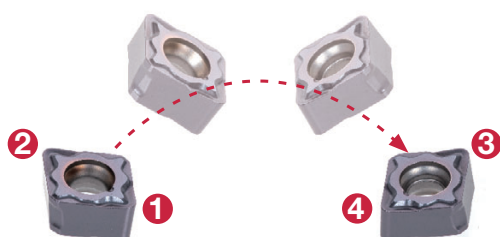
New geometry of CXMU insert and expansion of DXMU inserts

Super economical M class double-sided positive insert

New

CXMU insert

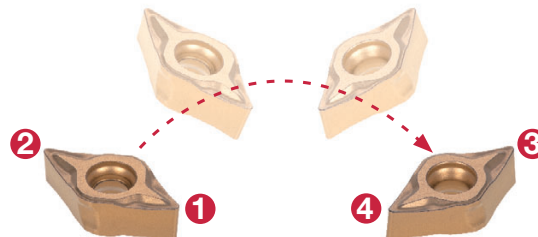
- 4 edges, rhombic 80°
- Chipbreaker: TS



New

DXMU insert

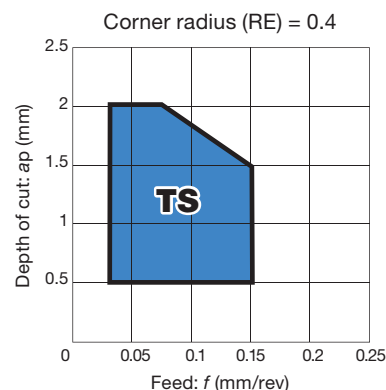
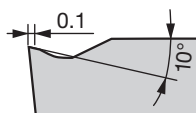
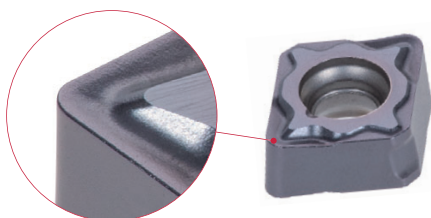
- 4 edges, rhombic 55°
- Chipbreaker: TS



APPLICATION AREA

TS chipbreaker

- First choice chipbreaker for medium to finish cutting
- Excellent chip control
- Ideal for small part machining



CHIP CONTROL

P

Depth of cut: ap (mm)	2				
	1.5				
	1				
	0.5				
ap/f		0.05	0.1	0.15	0.2
Feed: f (mm/rev)					

Workpiece : S45C / C45
 Insert : CXMU060304L-TS T9215
 Toolholder : A12M-SCLXR06-D140
 Cutting speed : $V_c = 150$ m/min
 Boring depth : $H = 36$ mm ($L/D = 3$)
 Coolant : Wet (internal supply)

M

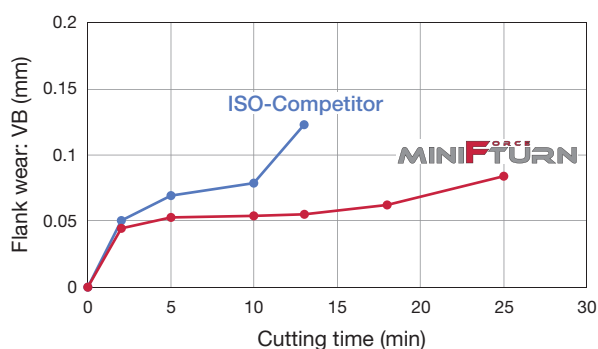
Depth of cut: ap (mm)	1.5				
	1				
	0.5				
	0.25				
ap/f		0.05	0.075	0.1	0.15
Feed: f (mm/rev)					

Workpiece : SUS304 / X5CrNi18-9
 Insert : CXMU060304L-TS AH8015
 Toolholder : A12M-SCLXR06-D140
 Cutting speed : $V_c = 80$ m/min
 Boring depth : $H = 36$ mm ($L/D = 3$)
 Coolant : Wet (internal supply)

GRADES

Grade	Recommended workpiece material	Feature
PREMIUMTEC New T9215	P M K	- Well-balanced between wear and chipping resistance - First choice for steel - High versatility for a wide range of applications
PREMIUMTEC New T9225	P	- First choice for roughing to medium cutting - High fracture resistance
PREMIUMTEC AH8015	P M K S	- PVD coated grade with a balanced resistance to wear and fracture - First choice for stainless steel and heat-resistant superalloys
PREMIUMTEC AH725	P M K	- Versatile PVD coated grade suitable for a wide range of work materials - Demonstrates a balanced resistance to wear and fracture

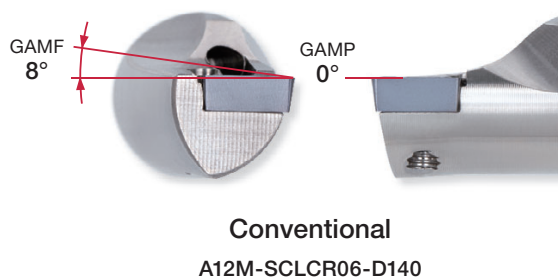
TOOL LIFE



P Insert : DXMU070304L-TS T9215 (**MiniForce-Turn**)
 DCMT070204 type Competitor's PVD-P15 grade (ISO)
 Toolholder : A20R-SDXXR07-D240 (**MiniForce-Turn**)
 A20R-SDUCR11-D270 (ISO)
 Workpiece material : SCM440 / 42CrMo4
 Cutting speed : $V_c = 250$ m/min
 Feed : $f = 0.1$ mm/rev
 Depth of cut : $a_p = 1$ mm
 Coolant : Wet

New M class **MiniForce-Turn** and latest CVD grade **T9215** provides high productivity and high wear resistance compared to competitor's ISO positive PVD grade insert.

Low cutting force machining with high rake angle



CUTTING PERFORMANCE

Excellent chatter stability

Workpiece : S45C / C45
 Insert : CXMU060304L-TS AH725
 Toolholder : A12M-SCLXR06-D140
 Cutting speed : $V_c = 150$ m/min
 Overhang length : 36 mm ($L/D = 3$)
 Coolant : Wet (internal supply)

MINIForce-Turn

Depth of cut a_p (mm)	2	OK	OK	OK	OK
	1.5	OK	OK	OK	OK
1	OK	OK	OK	OK	OK
	0.5	OK	OK	OK	OK
a_p/f	0.05	0.1	0.15	0.2	
	Feed: f (mm/rev)				

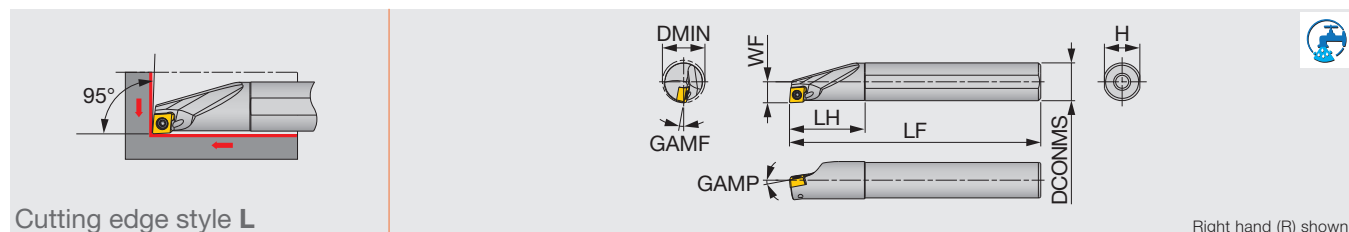
ISO positive insert, M class

Depth of cut a_p (mm)	2	OK	OK	OK	OK
	1.5	OK	OK	OK	OK
1	OK	OK	OK	OK	OK
	0.5	OK	OK	OK	OK
a_p/f	0.05	0.1	0.15	0.2	
	Feed: f (mm/rev)				

New

A/E-SCLXR/L

Screw-on boring bar, for CXMU inserts



Cutting edge style L

Right hand (R) shown.

Designation	Material	DMIN	DCONMS	WF	LF	LH	H	GAMP	GAMF	RE**	Insert	Torque*
A10K-SCLXR/L06-D120	Steel	12	10	6	125	20	9	-10°	-14.5°	0.4	CXMU0603**L/R...	0.9
A12M-SCLXR/L06-D140	Steel	14	12	7	150	24	11	-10°	-12.5°	0.4	CXMU0603**L/R...	0.9
A16Q-SCLXR/L06-D180	Steel	18	16	9	180	32	15	-10°	-9.5°	0.4	CXMU0603**L/R...	0.9
A20R-SCLXR/L06-D220	Steel	22	20	11	200	36	18	-10°	-8°	0.4	CXMU0603**L/R...	0.9
E10M-SCLXR/L06-D120	Carbide	12	10	6	150	25	9	-10°	-14.5°	0.4	CXMU0603**L/R...	0.9
E12Q-SCLXR/L06-D140	Carbide	14	12	7	180	27	11	-10°	-12.5°	0.4	CXMU0603**L/R...	0.9
E16R-SCLXR/L06-D180	Carbide	18	16	9	200	32	15	-10°	-9.5°	0.4	CXMU0603**L/R...	0.9
E20S-SCLXR/L06-D220	Carbide	22	20	11	250	36	18	-10°	-8°	0.4	CXMU0603**L/R...	0.9

*Torque: Recommended clamping torque (N-m) **RE: Standard corner radius

Use right-hand toolholders (R) with left-hand inserts (L); and left-hand toolholders (L) with right-hand inserts (R).

SPARE PARTS

Designation	Clamping screw	Wrench
A/E**-SCLXR/L...	SR34-514	T-7F

- 1 Use the right hand toolholder (R) for the left hand insert (L)
- 2 Use the left hand toolholder (L) for the right hand insert (R)



1 Right hand toolholder with left hand insert shown



2 Left hand toolholder with right hand insert shown

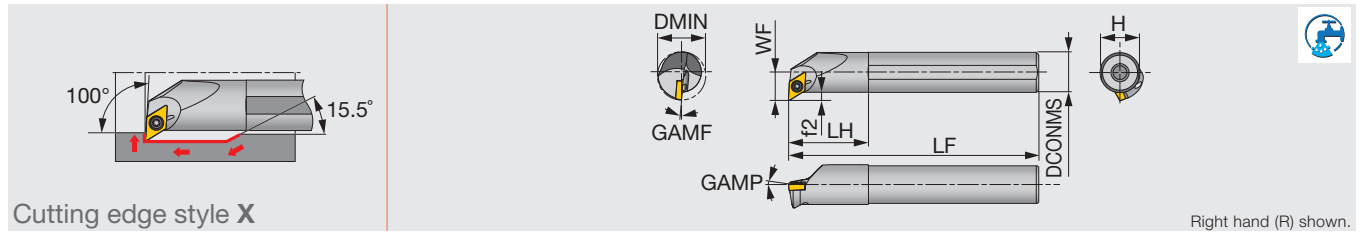
MARKING



Insert hand is identified on the flank side

A/E-SDXXR/L

Screw-on boring bar, for DXMU/DXGU inserts



Designation	Material	DMIN	DCONMS	WF	LF	LH	H	f2	GAMP	GAMF	RE**	Insert	Torque*
A10K-SDXXR/L07-D130	Steel	13	10	7.6	125	20	9	2.6	-14°	-16°	0.4	DXMU/DXGU0703**L/R...	0.9
A12M-SDXXR/L07-D160	Steel	16	12	8.6	150	24	11	2.6	-14°	-14°	0.4	DXMU/DXGU0703**L/R...	0.9
A16Q-SDXXR/L07-D200	Steel	20	16	10.6	180	32	15	2.6	-13°	-13°	0.4	DXMU/DXGU0703**L/R...	0.9
A20R-SDXXR/L07-D240	Steel	24	20	12.6	200	36	18	2.6	-13°	-12°	0.4	DXMU/DXGU0703**L/R...	0.9
E10M-SDXXR/L07-D130	Carbide	13	10	7.6	150	25	9	2.6	-14°	-16°	0.4	DXMU/DXGU0703**L/R...	0.9
E12Q-SDXXR/L07-D160	Carbide	16	12	8.6	180	27	11	2.6	-14°	-14°	0.4	DXMU/DXGU0703**L/R...	0.9
E16R-SDXXR/L07-D200	Carbide	20	16	10.6	200	32	15	2.6	-13°	-13°	0.4	DXMU/DXGU0703**L/R...	0.9
E20S-SDXXR/L07-D240	Carbide	24	20	12.6	250	36	18	2.6	-13°	-12°	0.4	DXMU/DXGU0703**L/R...	0.9

*Torque: Recommended clamping torque (N-m) **RE : Standard corner radius

Use right-hand toolholders (R) with left-hand inserts (L); and left-hand toolholders (L) with right-hand inserts (R)

SPARE PARTS

Designation	Clamping screw	Wrench
A/E**-SDXXR/L...	SR34-514	T-7F

- 1 Use the right hand toolholder (R) for the left hand insert (L)
- 2 Use the left hand toolholder (L) for the right hand insert (R)



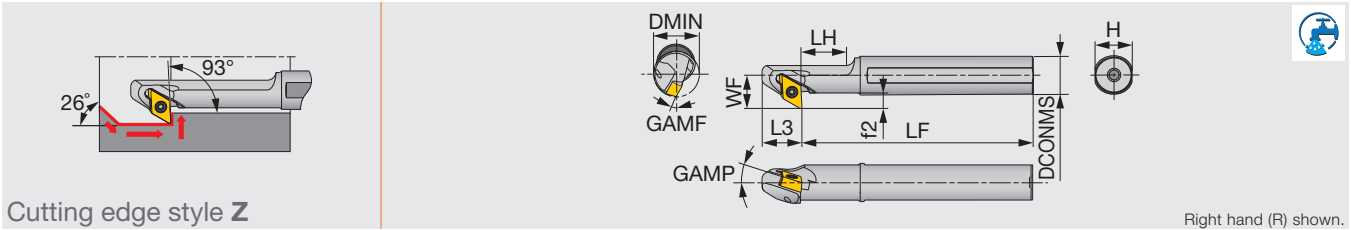
- 1 Right hand toolholder with left hand insert shown



- 2 Left hand toolholder with right hand insert shown

A/E-SDZXR/L

Screw-on boring bar, for DXMU/DXGU inserts



Designation	Material	DMIN	DCONMS	WF	LF	LH	L3	H	f2	GAMP	GAMF	RE**	Insert	Torque*
A12M-SDZXR/L07-D140	Steel	14	12	10.5	150	30	13	11	4.5	-10°	-14°	0.4	DXMU/DXGU0703**R/L...	0.9
A16Q-SDZXR/L07-D160	Steel	16	16	12.5	180	35	13	15	4.5	-10°	-12.5°	0.4	DXMU/DXGU0703**R/L...	0.9
A20R-SDZXR/L07-D200	Steel	20	20	14.5	200	40	13	18	4.5	-10°	-10.5°	0.4	DXMU/DXGU0703**R/L...	0.9
E12Q-SDZXR/L07-D180	Carbide	18	12	10.5	180	-	13	11	4.5	-11°	-11°	0.4	DXMU/DXGU0703**R/L...	0.9
E16R-SDZXR/L07-D220	Carbide	22	16	12.5	200	-	13	15	4.5	-11°	-9°	0.4	DXMU/DXGU0703**R/L...	0.9

*Torque: Recommended clamping torque (N·m) **RE : Standard corner radius
Use right-hand toolholders (R) with right-hand inserts (R); and left-hand toolholders (L) with left-hand inserts (L).

SPARE PARTS		
Designation	Clamping screw	Wrench
A/E**-SDZXR/L...	SR34-514	T-7F

- 1 Right hand toolholders (R) are used with right hand inserts (R)
- 2 Left hand toolholders (L) are used with left hand inserts (L)



1 Right hand toolholder with right hand insert shown

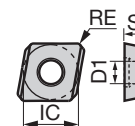


2 Left hand toolholder with left hand insert shown

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



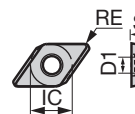
**Rhombic, 80°
with hole**

[illegible]

Application	Chipbreaker	Designation	Coated																				Dimension (mm)							
			T9215	T9225	AH8015	AH725																					RE	IC	S	D
Finishing to medium cutting	TS	CXMU060302R-TS	●	●	●	●																					0.2	6.35	3.18	2.7
		CXMU060302L-TS	●	●	●	●																					0.2	6.35	3.18	2.7
		CXMU060304R-TS	●	●	●	●																					0.4	6.35	3.18	2.7
		CXMU060304L-TS	●	●	●	●																					0.4	6.35	3.18	2.7
		CXMU060308R-TS	●	●	●	●																					0.8	6.35	3.18	2.7
		CXMU060308L-TS	●	●	●	●																					0.8	6.35	3.18	2.7



**Rhombic, 55°
with hole**

[illegible]

Application	Chipbreaker	Designation	Coated														Dimension (mm)			
			T9215	T9225	AH8015	AH725											RE	IC	S	D
Finishing to medium cutting		TS	DXMU070302R-TS	●	●	●	●										0.2	6.35	3.18	2.7
			DXMU070302L-TS	●	●	●	●										0.2	6.35	3.18	2.7
			DXMU070304R-TS	●	●	●	●										0.4	6.35	3.18	2.7
			DXMU070304L-TS	●	●	●	●										0.4	6.35	3.18	2.7
			DXMU070308R-TS	●	●	●	●										0.8	6.35	3.18	2.7
			DXMU070308L-TS	●	●	●	●										0.8	6.35	3.18	2.7

● : New product

STANDARD CUTTING CONDITIONS

FOR INTERNAL TURNING

ISO	Workpiece material	Grade		Cutting speed Vc (m/min)	Depth of cut ap (mm)	Feed f (mm/rev)
		First choice	Second choice			
P	Low carbon steel / Low alloy steel	T9215	-	120 - 350	0.3 - 2	0.08 - 0.3
		T9225	-	100 - 300	0.3 - 2	0.08 - 0.3
		AH8015	-	50 - 200	0.3 - 2	0.08 - 0.3
		-	AH725	50 - 180	0.3 - 2	0.08 - 0.3
		-	NS9530	80 - 250	0.3 - 2	0.08 - 0.3
		-	GT9530	80 - 300	0.3 - 2	0.08 - 0.3
	Carbon steel / Alloy steel	T9215	-	80 - 350	0.3 - 2	0.08 - 0.3
		T9225	-	80 - 300	0.3 - 2	0.08 - 0.3
		AH8015	-	50 - 200	0.3 - 2	0.08 - 0.3
		-	AH725	50 - 180	0.3 - 2	0.08 - 0.3
		-	NS9530	80 - 250	0.3 - 2	0.08 - 0.3
		-	GT9530	80 - 300	0.3 - 2	0.08 - 0.3
M	Stainless steel (Austenitic)	AH8015	-	50 - 150	0.3 - 2	0.08 - 0.3
		-	AH725	50 - 150	0.3 - 2	0.08 - 0.3
		-	T9215	50 - 200	0.3 - 2	0.08 - 0.3
	Stainless steel (Martensitic and ferritic)	AH8015	-	50 - 150	0.3 - 2	0.08 - 0.3
		-	AH725	50 - 150	0.3 - 2	0.08 - 0.3
		-	T9215	50 - 200	0.3 - 2	0.08 - 0.3
	Stainless steel (Precipitation hardening)	AH8015	-	50 - 150	0.3 - 2	0.08 - 0.3
		-	AH725	50 - 150	0.3 - 2	0.08 - 0.3
K	Grey cast iron	T9215	-	100 - 350	0.3 - 2	0.08 - 0.3
		T9225	-	100 - 350	0.3 - 2	0.08 - 0.3
		-	AH8015	50 - 200	0.3 - 2	0.08 - 0.3
		-	AH725	50 - 180	0.3 - 2	0.08 - 0.3
		-	NS9530	80 - 250	0.3 - 2	0.08 - 0.3
		-	GT9530	80 - 300	0.3 - 2	0.08 - 0.3
	Ductile cast iron	T9215	-	100 - 350	0.3 - 2	0.08 - 0.3
		T9225	-	100 - 350	0.3 - 2	0.08 - 0.3
		-	AH8015	50 - 200	0.3 - 2	0.08 - 0.3
		-	AH725	50 - 180	0.3 - 2	0.08 - 0.3
		-	NS9530	80 - 250	0.3 - 2	0.08 - 0.3
		-	GT9530	80 - 300	0.3 - 2	0.08 - 0.3
N	Aluminum alloys	KS05F	-	100 - 300	0.3 - 2	0.08 - 0.3
	Copper alloys	KS05F	-	100 - 300	0.3 - 2	0.08 - 0.3
S	Titanium alloys	AH8015	-	20 - 80	0.3 - 2	0.08 - 0.3
	Nickel-based alloys	AH8015	-	20 - 80	0.3 - 2	0.08 - 0.3
H	Hardened steel	BXA20	-	50 - 220	0.12 - 0.8	0.1 - 0.3
		-	BXA10	50 - 220	0.12 - 0.8	0.1 - 0.3



www.tungaloy.com
 follow us at:
 facebook.com/tungaloyjapan
 twitter.com/tungaloyjapan
 www.youtube.com/tungaloycorporation



AS9100 Certified
 78006
 2015.11.04
 ISO 14001 Certified
 EC97J1123
 1997.11.26

Distributed by:



FIND US ON THE CLOUD!
 machiningcloud.com

