

MillLine

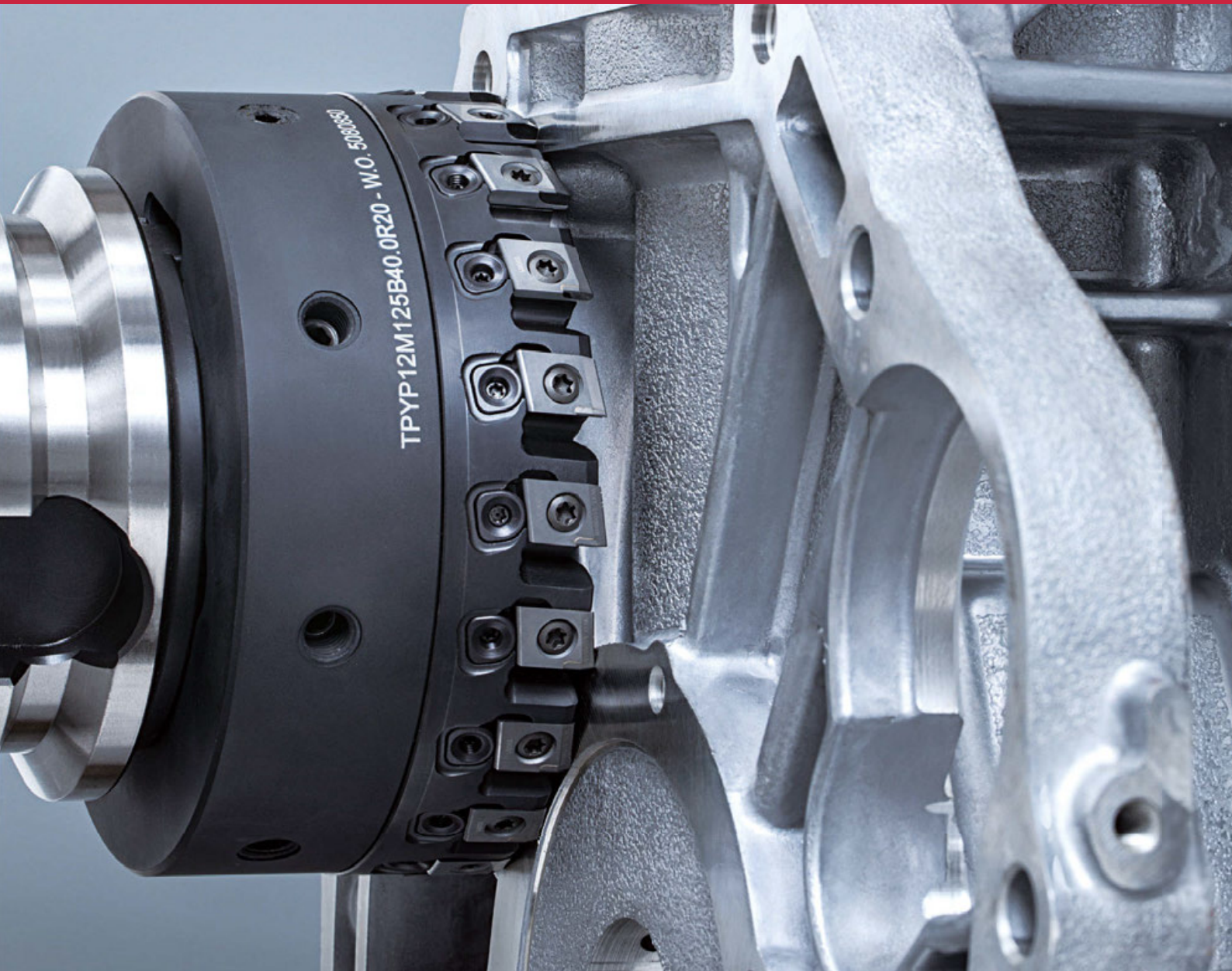


TUNG^{PEED}**MILL**

www.tungaloy.com

Tungaloy Report No. 516-G

High speed face milling cutter for finishing aluminum



INDUSTRY 4.0
FEED the SPEED!

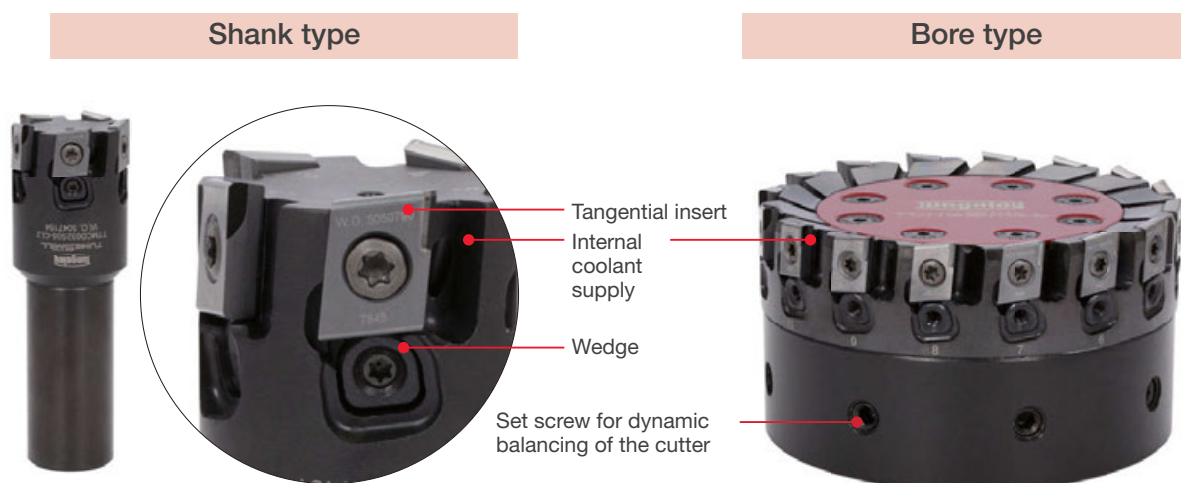
TungSpeed-Mill with **tangentially clamped inserts** for improved face milling efficiency

Features

- High density for high speed milling
- Tangential inserts create stronger insert orientation and higher productivity
- Cutter bodies are available in shell mill (bore) type in $\varnothing 50$ mm and larger and cylindrical (shank) type in $\varnothing 40$ mm and smaller
- PCD inserts come in various geometries including double-edged and long-edge styles

Tough body for high performance




The cutter body is made of part steel for secure insert clamping and durability and part aluminum for reduced cutter weight. Titanium body is also available upon request for higher durability and lighter weight.



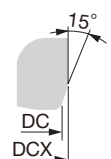
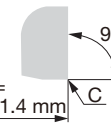
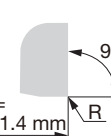
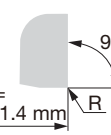
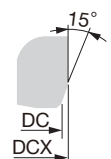
Designation system for Insert

Y P E B 1 2 X 3 - 1 A 0 1 R - D

1 2 3

1 Number of PCD tips on insert	
Symbol	Type
1	 <p>Single edge</p> <ul style="list-style-type: none"> - Cutting edge length = 4 mm - Grade: DX160 - General purpose
2	 <p>Double edges</p> <ul style="list-style-type: none"> - Cutting edge length = 4 mm - Grade: DX160 - Economical
F	 <p>Full edged</p> <ul style="list-style-type: none"> - Cutting edge length = 11 mm - Grade: DX160 - Long cutting edge length for deep depth of cut

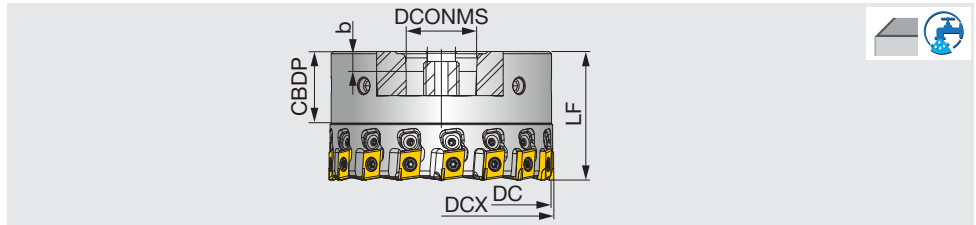
2 Cutter diameter	
Symbol	Type
P	<p>DC ≤ ø50 mm</p> <p>For cutter diameter of 50 mm or less</p>
A	<p>DC > ø50 mm</p> <p>For cutter diameter of over 50 mm (50 mm not inclusive)</p>

3 Cutter edge geometry			
Symbol	Shape	Applications	Surface finish quality
01	 <p>DC DCX</p>	Recommended for finishing surfaces without square shoulders. Suitable for roughing also.	$0.4 \leq Ra \leq 0.8$
02	 <p>DCX = DC + 1.4 mm C</p>	Recommended for finishing square shoulder surfaces. Suitable for roughing also.	$0.4 \leq Ra \leq 0.8$
05*	 <p>DCX = DC + 1.4 mm R</p>	Designed for roughing or for cutting material with a high impurity content or gates. Edge prepared (T-land: $0.2 \times 10^\circ$) for fracture resistance.	$0.4 \leq Ra \leq 1$
07	 <p>DCX = DC + 1.4 mm R</p>	Optimized for finishing rough surfaces.	$0.4 \leq Ra \leq 1$
09*	 <p>DC DCX</p>	For heavy roughing operations.	$0.8 \leq Ra \leq 3.2$

* Made to order

TPYP12

High speed PCD mill for non ferrous metal



Designation	DC	DCX	CICT	LF	DCONMS	CBDBP	KWW	b	WT(kg)	Air hole	Insert
TPYP12M050B22.0R08	50	51.4	8	55	22	20	10.4	6.3	0.9	With	YPEB12X3-*P...
TPYP12M063B22.0R10	63	64.4	10	55	22	20	10.4	6.3	1.3	With	YPEB12X3-*A...
TPYP12M080B27.0R12	80	81.4	12	58	27	22	12.4	7	2.2	With	YPEB12X3-*A...
TPYP12J080B25.4R12	80	81.4	12	58	25.4	26	9.5	6	2.2	With	YPEB12X3-*A...
TPYP12M100B32.0R16	100	101.4	16	58	32	25	14.4	8	1.9	With	YPEB12X3-*A...
TPYP12J100B31.7R16	100	101.4	16	58	31.75	32	12.7	8	1.9	With	YPEB12X3-*A...
TPYP12M125B40.0R20	125	126.4	20	58	40	28	16.4	9	2.9	With	YPEB12X3-*A...
TPYP12J125B38.1R20	125	126.4	20	58	38.1	38	15.9	10	2.9	With	YPEB12X3-*A...

*DCX: Outside diameter
DC: Diameter with O1 type insert

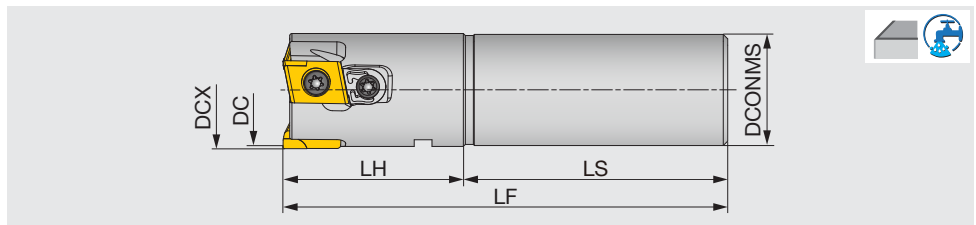
SPARE PARTS

Designation	Clamping screw	Wrench	Wedge fixing screw	Wedge	Wrench	Cover	Shell locking bolt
TPYP12M050B22.0R08	VX040024A	T-15F	RSRGR5M40	RSFTC1008	T-8F	-	RSFTS-050M
TPYP12M063B22.0R10	VX040024A	T-15F	RSRGR5M40	RSFTC1008	T-8F	RSFTS6063M	VC004762110035F
TPYP12M080B27.0R12	VX040024A	T-15F	RSRGR5M40	RSFTC1008	T-8F	RSFTS6080	VC00TED112040F
TPYP12J080B25.4R12	VX040024A	T-15F	RSRGR5M40	RSFTC1008	T-8F	RSFTS6080	VC00TED112040F
TPYP12M100B32.0R16	VX040024A	T-15F	RSRGR5M40	RSFTC1008	T-8F	RSFTS6100	VC00TANG16040F
TPYP12J100B31.7R16	VX040024A	T-15F	RSRGR5M40	RSFTC1008	T-8F	RSFTS6100	VC00TANG16040FI
TPYP12M125B40.0R20	VX040024A	T-15F	RSRGR5M40	RSFTC1008	T-8F	RSFTS6125	VC00TED120040F
TPYP12J125B38.1R20	VX040024A	T-15F	RSRGR5M40	RSFTC1008	T-8F	RSFTS6125	VC00TANGI20040F

*Recommended clamping torque (N·m): VX040024A=4.5

EPYP12

High speed PCD endmill for non ferrous metal



Designation	DC	DCX	CICT	DCONMS	LF	LH	LS	WT(kg)	Air hole	Insert
EPYP12M025C25.0R03	25	26.4	3	25	100	50	50	0.4	With	YPEB12X3-*P...
EPYP12M032C25.0R05	32	33.4	5	25	100	45	55	0.5	With	YPEB12X3-*P...

*DCX: Outside diameter
DC: Diameter with O1 type insert

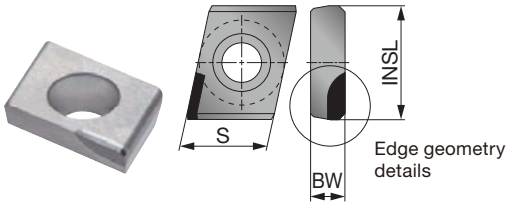
SPARE PARTS

Designation	Clamping screw	Wrench	Wedge fixing screw	Wedge	Wrench
EPYP12M025C25.0R03	VX040024A	T-15F	VX040028A	RSFTC1011	T-8F
EPYP12M032C25.0R05	VX040024A	T-15F	RSRGR5M40	RSFTC1009	T-8F

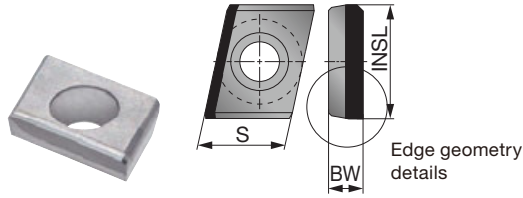
*Recommended clamping torque (N·m): VX040024A=4.5

INSERTS

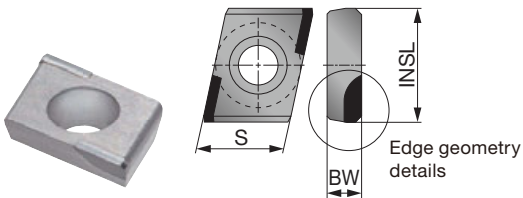
YPEB12X3-1A



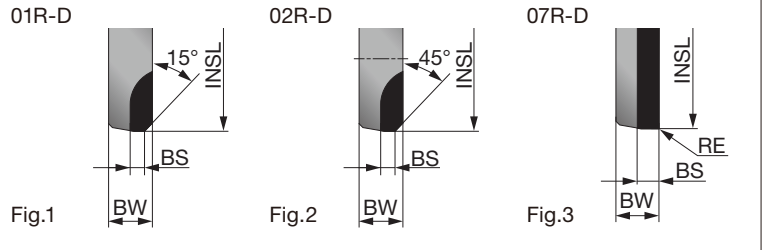
YPEB12X-FP



YPEB12X3-2A/P



Edge geometry details



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

★ : First choice
☆ : Second choice

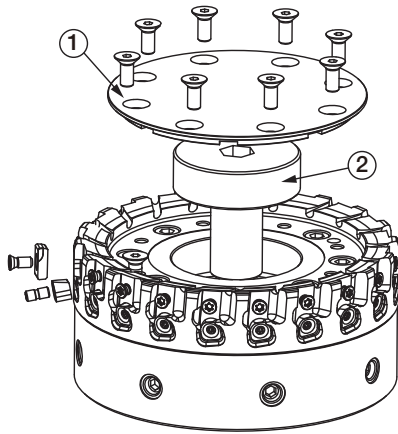
Designation	No. of corner	RE	APMX	PCD				INSL	S	BW	BS	Applicable cutter diameter	Fig.
				DX160									
YPEB12X3-1A01R-D	1	-	4	●				12.77	9.525	3.85	1.59	$D_c > \phi 50$ mm	1
YPEB12X3-1A02R-D	1	-	4	●				12.756	9.525	3.85	1.29	$D_c > \phi 50$ mm	2
YPEB12X3-1A07R-D	1	0.4	4	●				12.756	9.525	3.85	1.34	$D_c > \phi 50$ mm	3
YPEB12X3-1P02R-D	1	-	4	●				12.817	9.525	3.85	1.37	$D_c \leq \phi 50$ mm	2
YPEB12X3-1P07R-D	1	0.4	4	●				12.817	9.525	3.85	1.37	$D_c \leq \phi 50$ mm	3
YPEB12X3-FP02R-D	1	-	11	●				12.817	9.525	3.85	1.37	$D_c \leq \phi 50$ mm	2
YPEB12X3-FP07R-D	1	0.4	11	●				12.817	9.525	3.85	1.37	$D_c \leq \phi 50$ mm	3
YPEB12X3-2A01R-D	2	-	4	●				12.8	9.525	3.868	1.59	$D_c > \phi 50$ mm	1
YPEB12X3-2A02R-D	2	-	4	●				12.8	9.525	3.868	2.07	$D_c > \phi 50$ mm	2
YPEB12X3-2A07R-D	2	0.4	4	●				12.8	9.525	3.868	2.07	$D_c > \phi 50$ mm	3
YPEB12X3-2P07R-D	2	0.4	4	●				12.876	9.525	3.85	2.07	$D_c \leq \phi 50$ mm	3

● : Line up
2 pieces per package

STANDARD CUTTING CONDITIONS

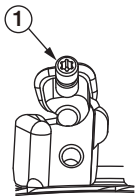
ISO	Workpiece material	Grade	Cutting speed V_c (m/min)	Feed per tooth f_z (mm/z)
N	Aluminum cast Si < 13%	DX160	≤ 6000	0.05 - 0.25
	Aluminum cast Si ≥ 13%	DX160	≤ 1500	0.05 - 0.25
	Copper, brass, etc.	DX160	≤ 2000	0.05 - 0.25
	Non metallic material	DX160	≤ 3000	0.05 - 0.25

■ Mounting on holder

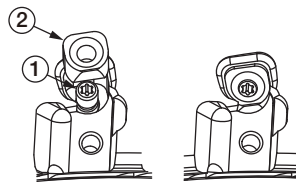


1. Remove the cover ① and the bolt ② from the cutter
2. Connect the holder to the cutter body, making sure the drivers of the holder fit into the cutter's slots
3. Drive in the bolt ②
4. Put the cover ① back on its seat
5. Fasten the cover ① with screws

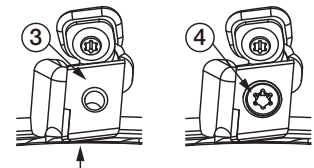
■ Mounting on inserts



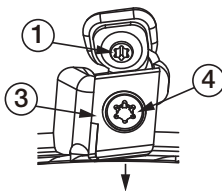
1. Insert set screw ① into its own seat and screw it down partially (1/2 threads).



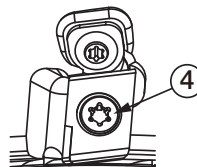
2. Connect wedge ② with its own set screw ① and screw it until the maximum gap over the cutter body is approximately 1 mm.



3. Put insert ③ into its own seat pushing as per the arrow. Slightly clamp clamping screw ④.



4. Apply torque on screw ① and then on clamping screw ④ if needed (unscrew slightly) to adjust the axial height of Insert ③.



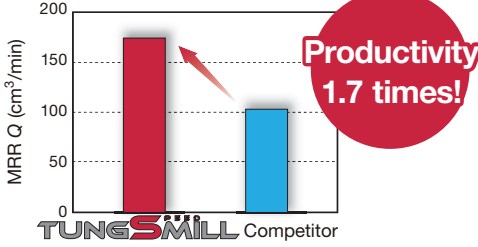
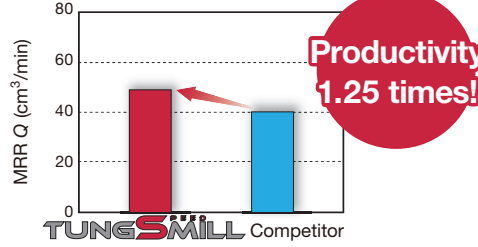


5. When axial location is achieved, tighten the clamping screw at 4.5 N.m ④. Repeat the procedure for each insert.

We recommend to replace screw ④ every two changes of the insert.

Note: Run out should not exceed 10 microns.

PRACTICAL EXAMPLES

Workpiece type		Case	Housing
Cutter		Special tool (ø32 mm, z = 5)	Special tool (ø32 mm, z = 5)
Insert		YPEB12X3-1A07R-D	YPEB12X3-1A07R-D
Grade		DX160	DX160
		ADC12	ADC12
Workpiece material		 N	 N
Cutting conditions	Cutting speed: Vc (m/min)	1,000	1,000
	Feed per tooth: fz (mm/t)	0.07	0.02
	Depth of cut: ap (mm)	2	2
	Width of cut: ae (mm)	25	25
	Coolant	Wet (Internal)	Wet (Internal)
Results	 <p>TungSpeed-Mill's ø32 mm cutter carrying 5 inserts vs the competitor's 3 inserts gained 1.7x productivity.</p>	 <p>Unpredictable tool life for the competitor's tool, lacking insert height adjusters. TungSpeed-Mill, with precision adjustments and high density design, provided improved predictability and 1.25x productivity.</p>	

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.

Indiabulls Finance Centre,
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



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!
machingcloud.com

