

Tungaloy

Member IMC Group

ISO TOOL™

Keeping the Customer First

Tungaloy Report No. 411-E

T-CBN Small CBN insert series

MINI T-CBN

NEW

For boring down to $\varnothing 4.5$ mm with CBN inserts



The World's smallest diameter tool for boring on hardened steels with its * $\varnothing 4.5$ mm

* with indexable tools

The smallest indexable CBN inserts in the world

When comparing to conventional brazed tool

- Higher cutting edge repeatability
- Reduced tool change time
- Longer tool life even at low cutting speeds

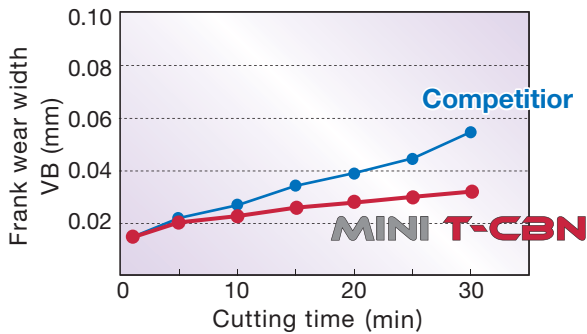
Applications

- Fuel injector components
- Boring of rocker arms



High wear resistance

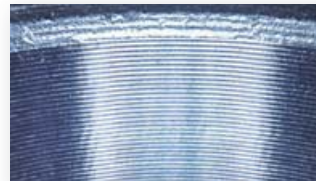
Offers long tool life even when boring small diameters



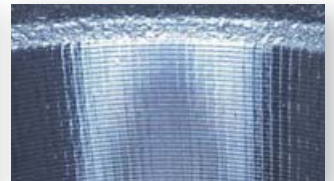
Excellent surface finish

Sharp cutting edge reduces the cutting forces
→ Prevents chattering and provides the finest machined surface.

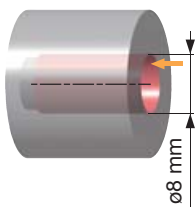
MINI T-CBN vs Competitor A



Outstanding surface quality



Chattering



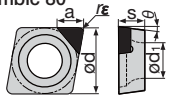

Insert : 1QP-CCGW04T102 BX310
 Toolholder : E06H-SCLCR04-D070
 Work material : Alloy steel
 SCM415H (60 HRC)
 Cutting speed : $V_c = 100$ m/min
 Depth of cut : $a_p = 0.1$ mm
 Feed : $f = 0.05$ mm/rev
 Machining mode: Internal turning
 Machine : Swiss type lathe

Insert : 1QP-CCGW04T104 BX310
 Toolholder : E06H-SCLCR04-D070
 Work material : Alloy steel
 SCM415H (60 HRC)
 Cutting speed : $V_c = 100$ m/min
 Depth of cut : $a_p = 0.1$ mm
 Feed : $f = 0.05$ mm/rev
 Boring dia. : $\varnothing 8$ mm

Standard cutting conditions

Application	Grades	Machining mode	Cutting Speed V_c (m/min)	Depth of cut a_p (mm)	Feed f (mm/rev)
H Hard Materials	BX310	Continuous cutting	30 - 150	0.03 - 0.20	0.03 - 0.10

Inserts positive type

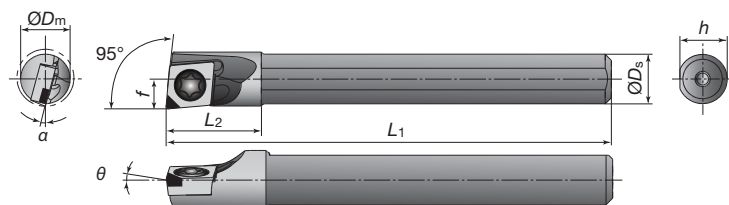
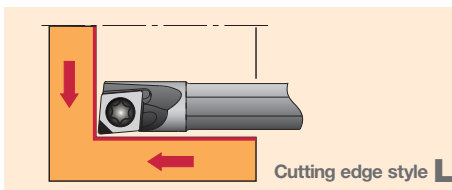
Application	Shape	Cat. No	Grade	No. of corner	Dimensions (mm)					
			BX310		Clearance angle θ	I.C. dia ϕd	Thickness s	Hole dia. ϕd_1	Corner radius r_ϵ	CBN Length a
Finishing to medium cutting	Rhombic 80° 	1QP-CCGW03X102	●	1	7°	3.57	1.39	1.9	0.2	1.4
		1QP-CCGW03X104	●	1	7°	3.57	1.39	1.9	0.4	1.3
		1QP-CCGW04T102	●	1	7°	4.37	1.79	2.3	0.2	1.9
		1QP-CCGW04T104	●	1	7°	4.37	1.79	2.3	0.4	1.8
Finishing to medium cutting	Rhombic 75° 	1QP-EPGW03X102	●	1	11°	3.57	1.39	1.9	0.2	1.4
		1QP-EPGW03X104	●	1	11°	3.57	1.39	1.9	0.4	1.3
		1QP-EPGW040102	●	1	11°	3.97	1.59	2.3	0.2	1.7
		1QP-EPGW040104	●	1	11°	3.97	1.59	2.3	0.4	1.6

Toolholders

SCLCR/L

Boring & internal facing

S-type (Positive, screw-on)



Carbide shank

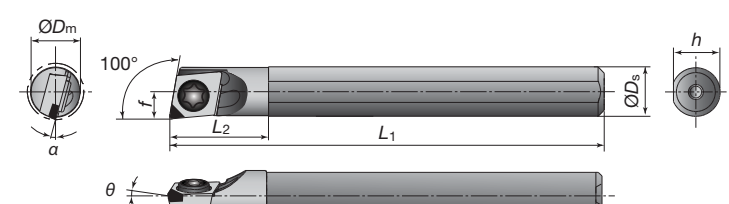
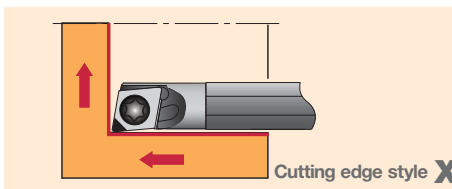
Right hand (R) shown

Cat. No	Stock		Min bore dia. ϕD_m	Dimensions (mm)							Std. corner radius r_ϵ	Insert	Parts		Torque (N·m)	
	R	L		ϕD_s	f	L_1	L_2	h	f_2	θ			α	Clamping screw		Wrench
E04G-SCLCR/L03-D050	●	●	5	4	2.5	90	9	3.8	-	0°	-15°	0.2	1QP-CCGW03X1**	CSTA-1.6	T-6F	0.6
E05G-SCLCR/L03-D060	●	●	6	5	3	90	10	4.8	-	0°	-13°	0.2	1QP-CCGW03X1**	CSTA-1.6	T-6F	0.6
E06H-SCLCR/L04-D070	●	●	7	6	3.5	100	12	5.75	-	0°	-13°	0.2	1QP-CCGW04T1**	CSTB-2	T-6F	0.6
E07H-SCLCR/L04-D080	●	●	8	7	4	100	14	6.75	-	0°	-11°	0.2	1QP-CCGW04T1**	CSTB-2	T-6F	0.6

SEXPR/L

Boring & internal facing

S-type (Positive, screw-on)



Carbide shank

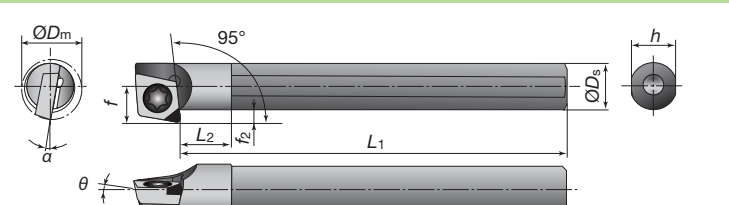
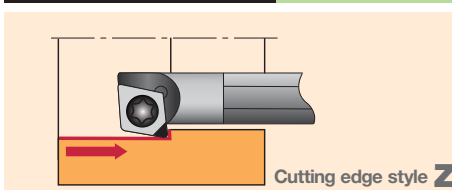
Right hand (R) shown

Cat. No	Stock		Min bore dia. ϕD_m	Dimensions (mm)							Std. corner radius r_ϵ	Insert	Parts		Torque (N·m)	
	R	L		ϕD_s	f	L_1	L_2	h	f_2	θ			α	Clamping screw		Wrench
E04G-SEXPR/L03-D045	●	●	4.5	4	2.3	90	9	3.8	-	0°	-15°	0.2	1QP-EPGW03X1**	CSTA-1.6	T-6F	0.6
E04G-SEXPR/L03-D050	●	●	5	4	2.5	90	9	3.8	-	0°	-13°	0.2	1QP-EPGW03X1**	CSTA-1.6	T-6F	0.6
E05G-SEXPR/L04-D055	●	●	5.5	5	2.65	90	10	4.8	-	0°	-12°	0.4	1QP-EPGW0401**	CSTB-2	T-6F	0.6
E06H-SEXPR/L04-D070	●	●	7	6	3.5	100	12	5.75	-	0°	-12°	0.4	1QP-EPGW0401**	CSTB-2	T-6F	0.6

SEZPR/L

Internal retracting

S-type (Positive, screw-on)



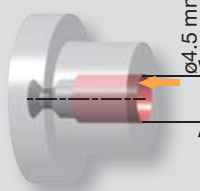
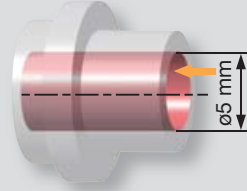
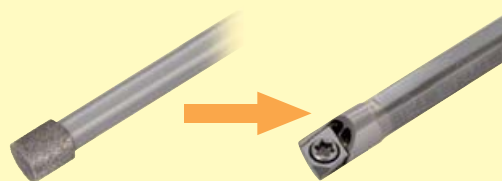
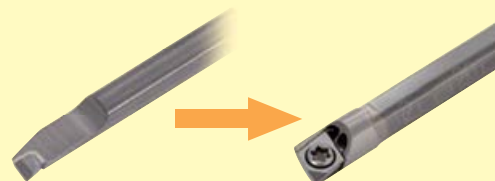
Carbide shank

Right hand (R) shown

Cat. No	Stock		Min bore dia. ϕD_m	Dimensions (mm)							Std. corner radius r_ϵ	Insert	Parts		Torque (N·m)	
	R	L		ϕD_s	f	L_1	L_2	h	f_2	θ			α	Clamping screw		Wrench
E04G-SEZPR/L03-D055	●	●	5.5	4	3.2	90	5	3.8	1.2	0°	-8°	0.2	1QP-EPGW03X1**	CSTA-1.6	T-6F	0.6
E05G-SEZPR/L03-D065	●	●	6.5	5	3.7	90	6	4.8	1.2	0°	-6°	0.2	1QP-EPGW03X1**	CSTA-1.6	T-6F	0.6

● : Stocked items

Practical examples

Workpiece type		Fuel injection part in common rail system	Automotive part (turbo charger component)
Insert		1QP-EPGW03X102	1QP-CCGW03X102
Grade		BX310	BX310
Work material		SUJ2 / B1 (60 HRC)	SCM435H / 34CrMo4 (60 HRC)
			
Cutting conditions	Cutting speed V_c (m/min)	60	70
	Feed f (mm/rev)	0.04	0.05
	Depth of cut a_p (mm)	0.1	0.06
	Machining mode	Internal turning (continuous cutting)	Internal turning (continuous cutting)
	Coolant	Wet	Wet
Results			
		Internal grinding MINI T-CBN Process time is reduced by 50% compared with grinding.	CBN brazed tool MINI T-CBN Tool cost: Reduced by 60% Tool change time: 1/10



Tungaloy Corporation

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.

Phone: +1-888-554-8394 Fax: +1-888-554-8392
www.tungaloyamerica.com

Tungaloy Canada

Phone: +1-519-758-5779 Fax: +1-519-758-5791
www.tungaloyamerica.com

Tungaloy de Mexico S.A.

Phone: +52-449-929-5410 Fax: +52-449-929-5411
www.tungaloyamerica.com

Tungaloy do Brasil Comércio de Ferramentas de Corte Ltda.

Phone: +55-19-38262757 Fax: +55-19-38262757
www.tungaloy.co.jp/br

Tungaloy Germany GmbH

Phone: +49-2173-90420-0 Fax: +49-2173-90420-19
www.tungaloy.de

Tungaloy France S.A.S.

Phone: +33-1-6486-4300 Fax: +33-1-6907-7817
www.tungaloy.fr

Tungaloy Italia S.r.l.

Phone: +39-02-252012-1 Fax: +39-02-252012-65
www.tungaloy.it

Tungaloy Czech s.r.o

Phone: +420 532 123 391 Fax: +420 532 123 392
www.tungaloy.cz

Tungaloy Ibérica S.L.

Phone: +34 93 113 1360 Fax: +34 93 876 2798
www.tungaloy.es

Tungaloy Rus, LLC

Phone: +7 4722 58 57 57 Fax: +7 4722 58 57 83
www.tungaloy.co.jp/ru

Tungaloy Polska Sp. z o.o

Phone: +48-22-617-0890 Fax: +48-22-617-0890
www.tungaloy.co.jp/pl

Tungaloy UK Ltd

Phone: +44 121 309 0163 Fax: +44 121 270 9694
www.tungaloy.co.jp/uk

Tungaloy Hungary Kft

Phone: +36 1 781-6846 Fax: +36 1 781-6866
www.tungaloy.co.jp/hu

Tungaloy Turkey

Phone: +90 216 540 04 67 Fax: +90 216 540 04 97
www.tungaloy.co.jp/tr

Tungaloy Cutting Tool (Shanghai) Co.,Ltd.

Phone: +86-21-3632-1880 Fax: +86-21-3621-1918
www.tungaloy.co.jp/tcts

Tungaloy Cutting Tool (Thailand) Co.,Ltd.

Phone: +66-2-714-3130 Fax: +66-2-714-3134
www.tungaloy.co.th

Tungaloy Singapore (Pte.),Ltd.

Phone: +65-6391-1833 Fax: +65-6299-4557
www.tungaloy.co.jp/tpsl

Tungaloy India Pvt. Ltd.

Phone: +91-22-6124-8804 Fax: +91-22-6124-8899
www.tungaloy.co.jp/in

Tungaloy Korea Co., Ltd

Phone: +82-2-6393-8930 Fax: +82-2-6393-8952
www.tungaloy.co.jp/kr

Tungaloy Malaysia Sdn Bhd

Phone: +603-7805-3222 Fax: +603-7804-8563
www.tungaloy.co.jp/my

Tungaloy Australia Pty Ltd

Phone: +612-9672-6844 Fax: +612-9672-6866
www.tungaloy.co.jp/au



ISO 9001 certified
QC00J0056
Tungaloy Corporation

18/10/1996

ISO 14001 certified
EC97J1123
Tungaloy Group
Japan site and Asian
production site
26/11/1997

Distributed by:



ISO TOOL AB

Estridsväg 17
SE-291 65 Kristianstad
Tel: 044-245570 / Fax: 044-245540
info@isotool.se / www.isotool.se



06989315