

Small diameter internal turning tool

# TINY<sup>INI</sup>MTURN

Tungaloy Report No. 402S3-G

## TinyMini-Turn CBN for as small as 2.8 mm bore diameter

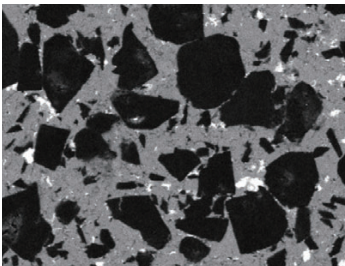




## BX310 CBN grade ideal for small bore machining of hardened steel parts

### TinyMini-Turn CBN for as small as 2.8 mm bore diameter

- Available in three minimum bore diameters (DMIN): 2.8, 4, and 5 mm
- Available in 2xD and 3xD tool lengths
- Through-coolant
- Mountable to TinyMini-Turn sleeves

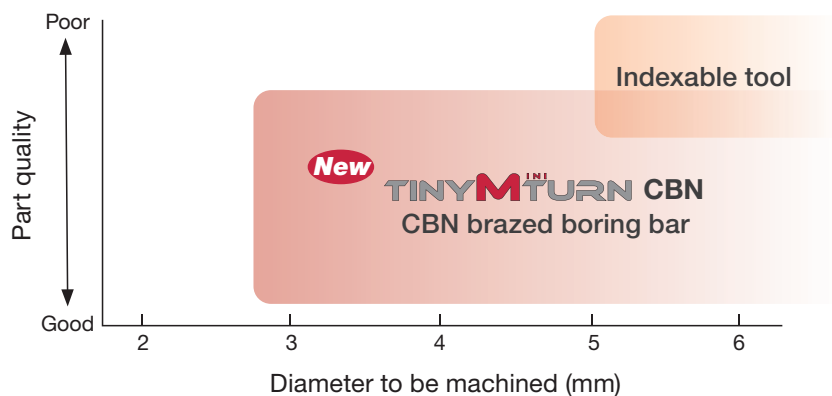


### Uncoated CBN grade **BX310**

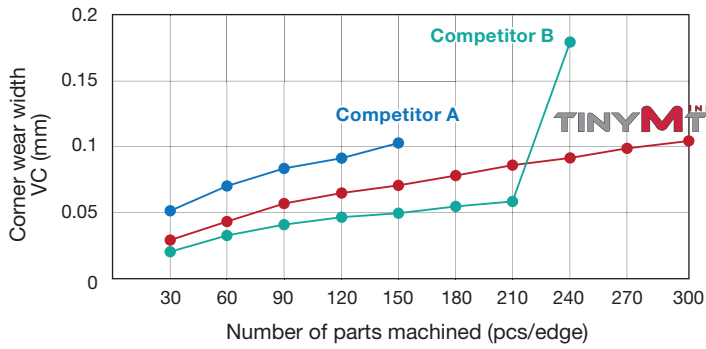
Thanks to extremely wear resistant Ti-ceramic binder, BX310 provides long and predictable tool life in small-diameter boring operations where high cutting speed operation is difficult.

### ■ Application range

For high precision machining of small bores



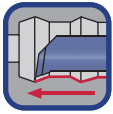
## CUTTING PERFORMANCE



**H** Insert : JBTR04060010-D028ST BX310  
 Sleeve : JBBS19-4-L100C  
 Workpiece material : SCM420 (60-62HRC)  
 Cutting speed :  $V_c = 28$  m/min  
 Number of revolutions :  $n = 3,000$  min<sup>-1</sup>  
 Feed :  $f = 0.02$  mm/rev  
 Depth of cut :  $a_p = 0.01$  mm  
 Coolant : Wet

**TinyMini-Turn CBN enabled long and predictable tool life**

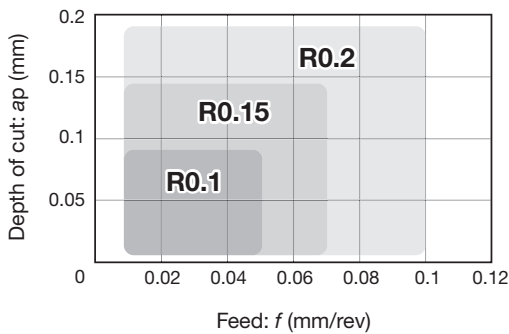
## STANDARD CUTTING CONDITIONS



Boring, profiling, chamfering, back boring

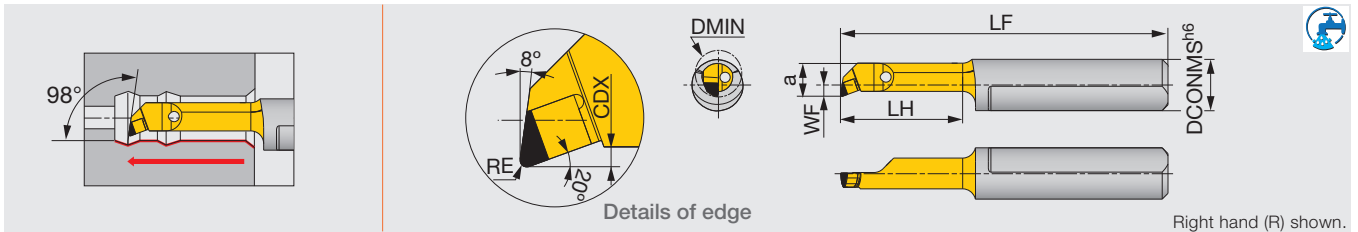
ISO	Workpiece material	Hardness	Grade	Cutting speed $V_c$ (m/min)	Feed $f$ (mm/rev)
<b>H</b>	Hardened steel	55 - 65 HRC	BX310	15 - 100	0.01 - 0.1*

\*Set the D.O.C. and feed according to the tool's corner radius (RE) outlined in the chart below.



## JBTR

For boring, profiling, and chamfering



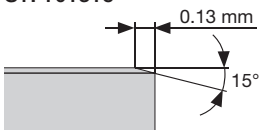
Right hand (R) shown.

Designation	BX310	DMIN	DCONMS	WF	a	LF	LH	CDX	RE <sup>+0.05</sup> <sub>0</sub>
JBTR04060010-D028ST	●	2.8	4	0.9	2.6	22	6	0.3	0.1
JBTR04095010-D028ST	●	2.8	4	0.9	2.6	25.5	9.5	0.3	0.1
JBTR04070015-D040ST	●	4	4	1.5	3.5	23	7	0.5	0.15
JBTR04110015-D040ST	●	4	4	1.5	3.5	27	11	0.5	0.15
JBTR07090020-D050ST	●	5	7	0.6	4.15	25	9	0.4	0.2
JBTR07140020-D050ST	●	5	7	0.6	4.15	30	14	0.4	0.2

● : New product

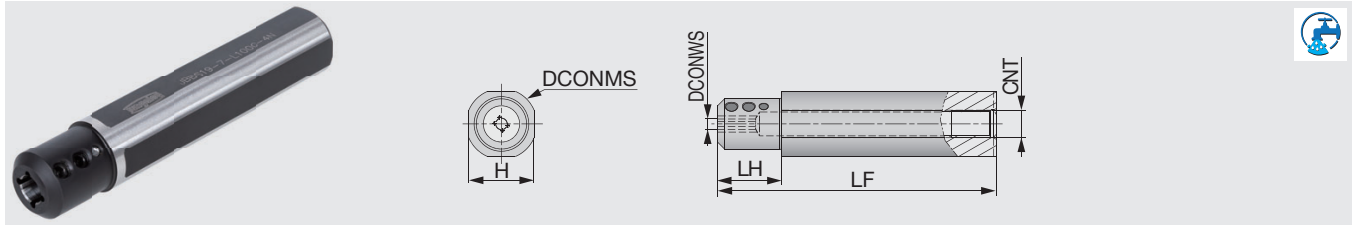
### Edge preparation

ST: T01315



## JBBS-4N

Sleeve for internal coolant supply with 4 coolant holes



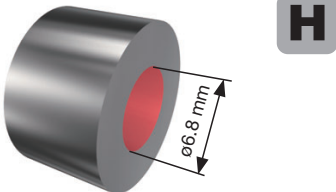
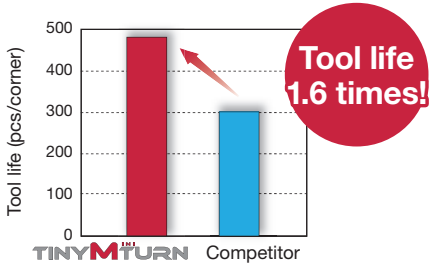
Designation	DCONMS	DCONWS	LF	LH	H	CNT
JBBS12-4-L80C-4N	12	4	80	10	10.3	Rc1/16
JBBS127-4-L80C-4N	12.7	4	80	10	11.6	Rc1/16
JBBS14-4-L80C-4N	14	4	80	10	12	Rc1/8
JBBS159-4-L100C-4N	15.875	4	100	10	14.58	Rc1/8
JBBS159-7-L100C-4N	15.875	7	100	10	14.58	Rc1/8
JBBS16-4-L100C-4N	16	4	100	10	15	Rc1/8
JBBS16-7-L100C-4N	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 EXAMPLE

Workpiece type		Machine part
Sleeve		JBBS16-4-7
Insert		JBTR07140020-D050ST
Grade		BX310
Workpiece material		SNCM420 (58HRC)
		
Cutting conditions	Cutting speed: $V_c$ (m/min)	80
	Feed : $f$ (mm/rev)	1st pass: 0.1, 2nd pass: 0.06
	Depth of cut : $a_p$ (mm)	1st pass: 0.1, 2nd pass: 0.1
	Machining	Internal turning
	Coolant	Wet (External)
Results		 <p><b>BX310</b> provided the insert with wear resistance in hardened steel parts, achieving 1.6 times tool life increase over the competitor tool. Also, easy-to-change <b>TinyMini-Turn</b> shortened machine downtime.</p>

MEMO

A large grid area for writing a memo, consisting of 20 columns and 30 rows of small squares. The grid is empty and occupies most of the page.

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