

Small diameter internal turning tool

TINY^{INI}MTURN

Tungaloy Report No. 402S3-US

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

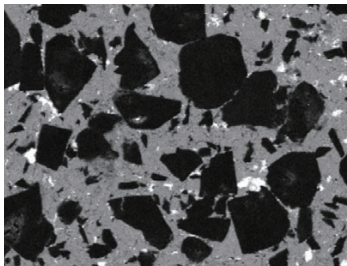




BX310 CBN grade ideal for small bore machining of hardened steel parts

TinyMini-Turn CBN for as small as 2.8mm (0.110") bore diameter

- Available in three minimum bore diameters (DMIN): 2.8 (0.110") , 4 (0.157") . 5 mm (0.194")
- Available in 2xD and 3xD tool lengths
- Through-coolant
- Mountable to TinyMini-Turn sleeves

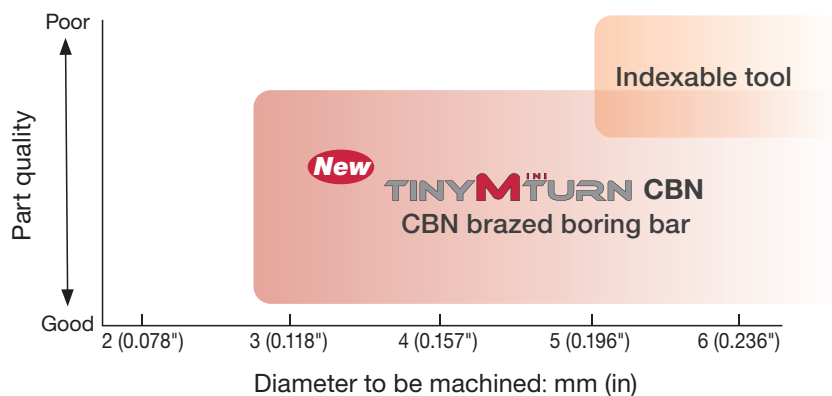


Uncoated CBN grade
BX310

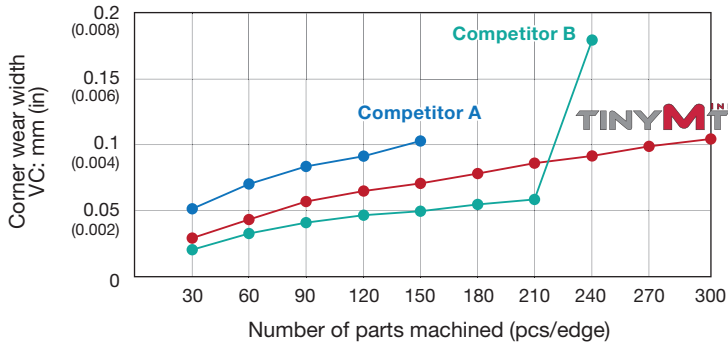
Thanks to extremely wear resistant Ti-ceramic binder, BX310 provides long and predictable tool life in small-diameter boring operations where high cutting speed operation is difficult.

■ Application range

For high precision machining of small bores



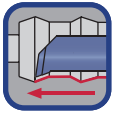
CUTTING PERFORMANCE



H Insert : JBTR04060010-D028ST BX310
 Sleeve : JBBS19-4-L100C
 Workpiece material : SCM420 (60-62HRC)
 Cutting speed : $V_c = 28$ m/min (92 sfm)
 Number of revolutions : $n = 3,000$ min⁻¹
 Feed : $f = 0.02$ mm/rev (0.0008")
 Depth of cut : $a_p = 0.01$ mm (0.0004")
 Coolant : Wet

TinyMini-Turn CBN enabled long and predictable tool life

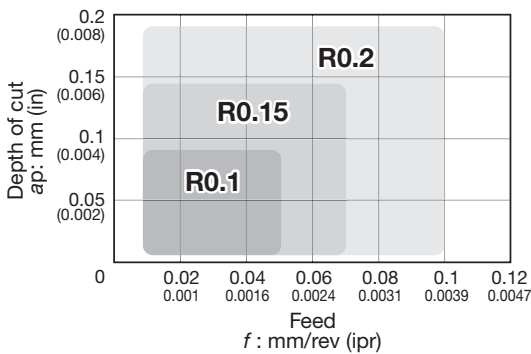
STANDARD CUTTING CONDITIONS



Boring, profiling, chamfering, back boring

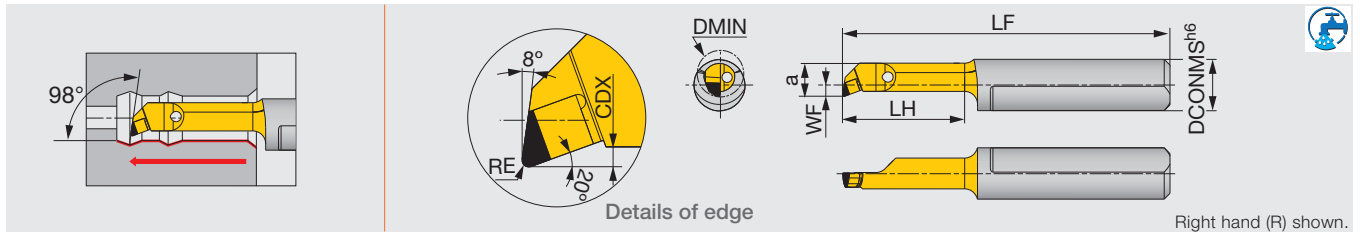
ISO	Workpiece material	Hardness	Grade	Cutting speed V_c (m/min) (sfm)	Feed f (mm/rev) (ipr)
H	Hardened steel	55 - 65 HRC	BX310	15 - 100 (49 - 328)	0.01 - 0.1* (0.0004 - 0.0039)

*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



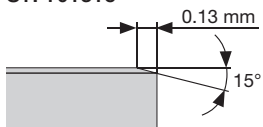
Right hand (R) shown.

Metric	BX310	DMIN	DCONMS	WF	a	LF	LH	CDX	RE ^{+0.05} ₀
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

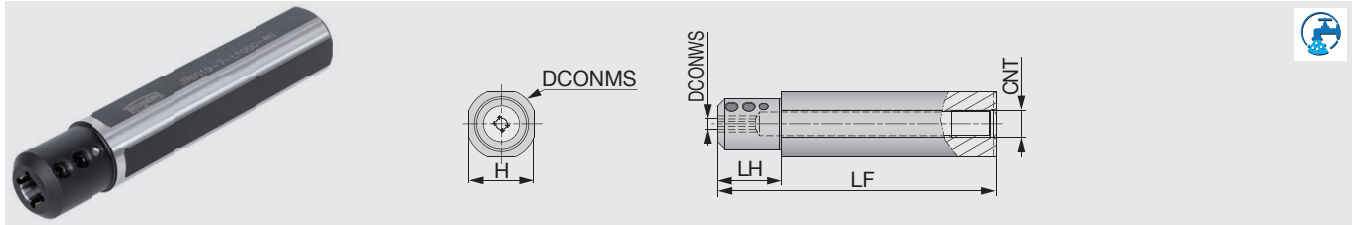
Edge preparation

ST: T01315



JBBS-4N

Sleeve for internal coolant supply with 4 coolant holes



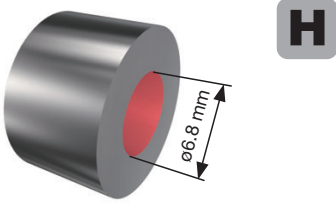
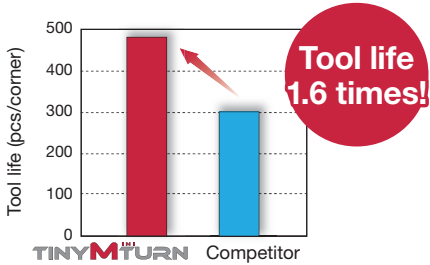
Metric	DCONMS	DCONWS	LF	LH	H	CNT
JBBS12-4-L80C-4N	12	4	80	10	10.3	Rc1/16
JBBS127-4-L80C-4N	12.7	4	80	10	11.6	Rc1/16
JBBS14-4-L80C-4N	14	4	80	10	12	Rc1/8
JBBS159-4-L100C-4N	15.875	4	100	10	14.58	Rc1/8
JBBS159-7-L100C-4N	15.875	7	100	10	14.58	Rc1/8
JBBS16-4-L100C-4N	16	4	100	10	15	Rc1/8
JBBS16-7-L100C-4N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

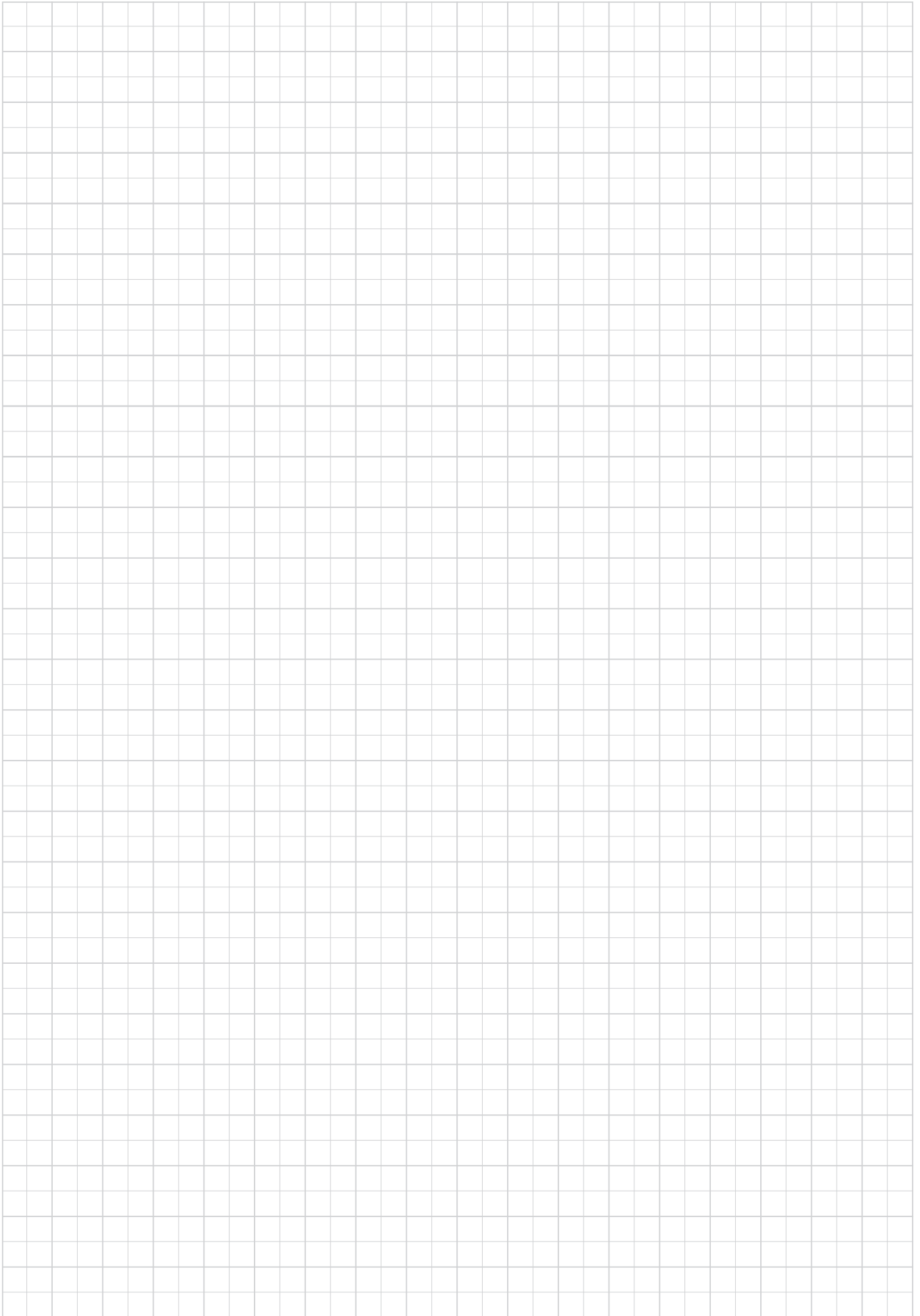


Designation	Clamping screw	Wrench
JBBS**-4-L***C-4N	SSHM5-6PF-S	P-2.5
JBBS**-7-L***C-4N	SSHM5-4PF-S	P-2.5

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 (260 sfm)
	Feed : f (mm/rev)	1st pass: 0.1 (0.002 ipr), 2nd pass: 0.06 (0.004 ipr)
	Depth of cut : a_p (mm)	1st pass: 0.1 (0.004"), 2nd pass: 0.1 (0.004")
	Machining	Internal turning
	Coolant	Wet (External)
Results		 <p>BX310 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 TinyMini-Turn shortened machine downtime.</p>

MEMO



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