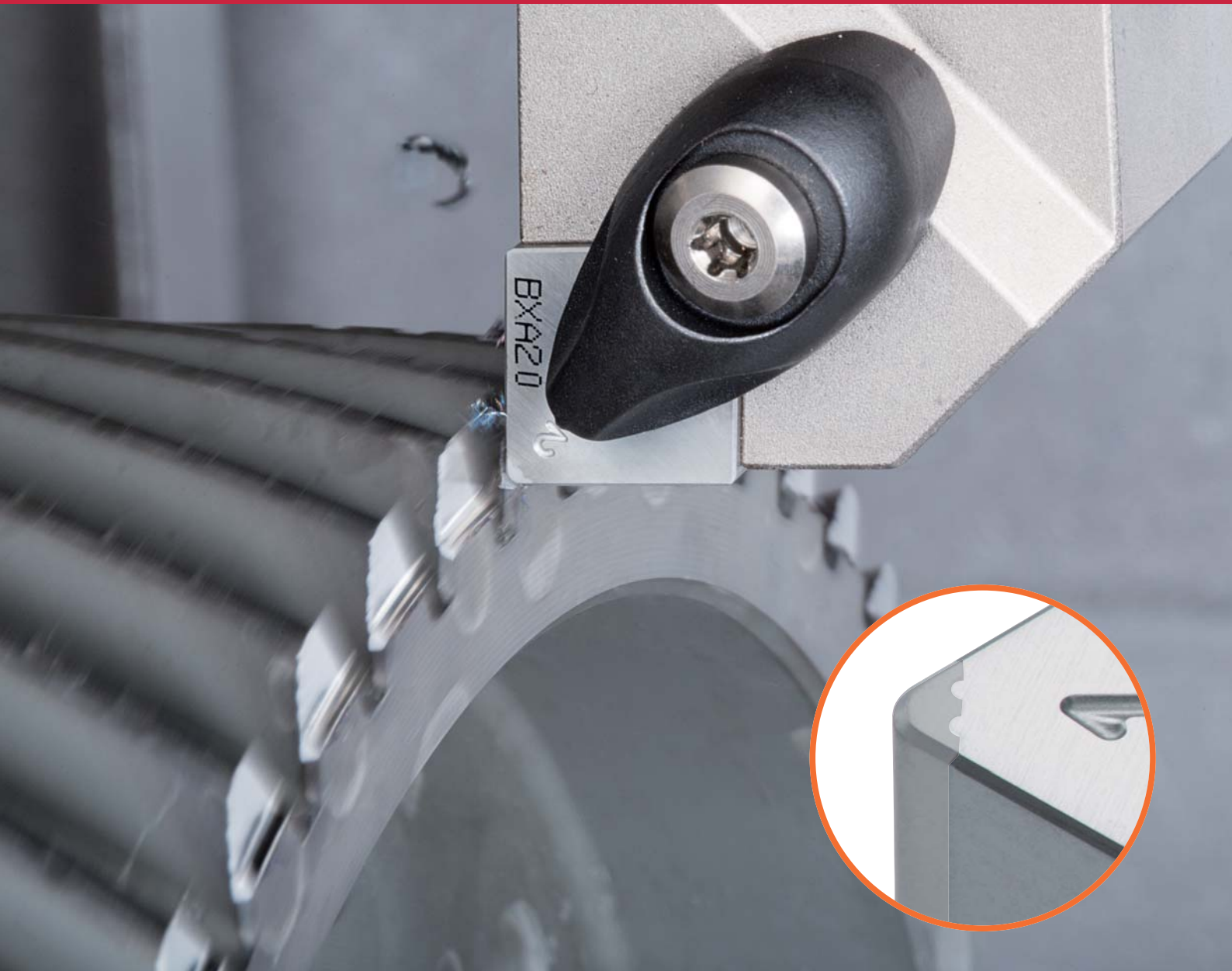


T-CBN SERIES

www.tungaloy.com

Tungaloy Report No. 515-G

CBN with **WavyJoint** technology achieves stable machining of hardened steels



INDUSTRY 4.0
FEED the SPEED!



ACCELERATED MACHINING

TurnLine

T-CBN SERIES

TUNGALOY

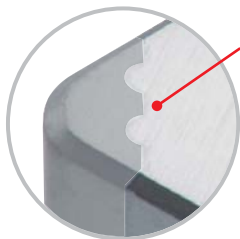


Robust as ever! For outstanding performance in hard turning applications.

For **high efficiency** hardened steel machining

New brazing technology for increased machining efficiency - "WavyJoint"

- A maximum depth of cut up to 0.8 mm
→ Reduces the number of passes to increase productivity
- Innovative WavyJoint brazing technology
→ Prevents the CBN tips from debrazing, eliminating abrupt insert fractures during demanding dry machining, while securing stable and predictable hard turning operations.



The "wavy" contact surface enhances the brazing strength.

Strong joint

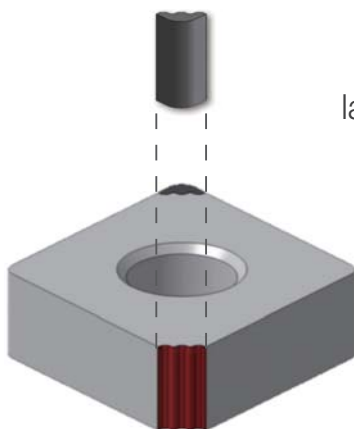
4 cutting edges



WavyJoint BXA20

Vs.

Standard

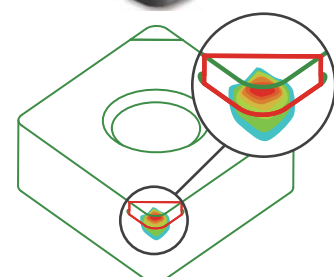
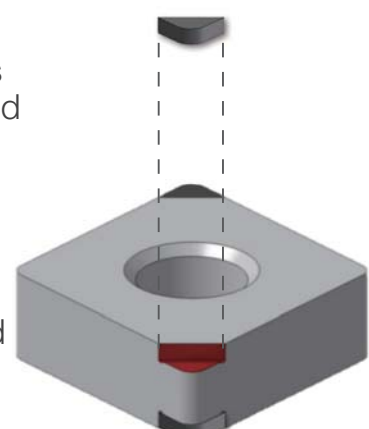


CBN tip size:
Using the cBN tip in a mass as large as **200x** provides increased thermal conductivity and helps reduce the temperature at the cutting edge

Brazing area:
Increased **160%** for enhanced brazing strength

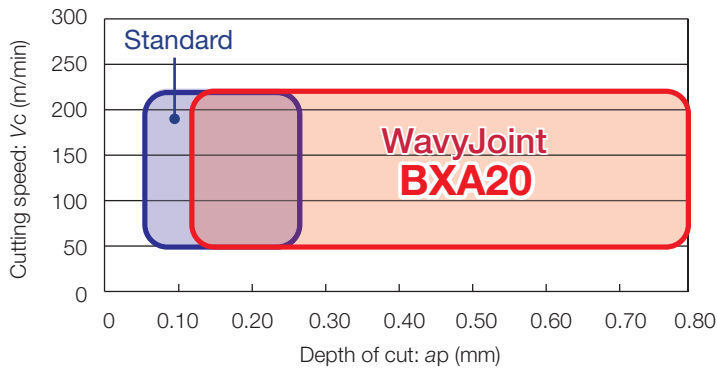
Temperature during machining is concentrated on the CBN tip, reducing temperature issues in the brazing zone.

Workpiece material : SCM420 / 20CrMo4 (60HRC)
Cutting speed : $V_c = 150$ m/min
Feed : $f_z = 0.20$ mm/rev
Depth of cut : $a_p = 0.75$ mm
Coolant : Dry



APPLICATION

Hard Turning



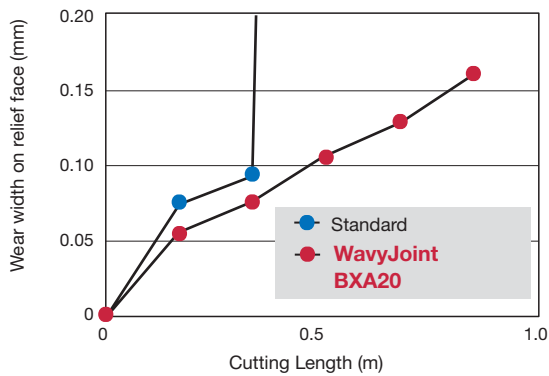
H

WavyJoint BXA20

Great performance for continuous to heavy interrupted cutting at low and medium speeds.

CUTTING PERFORMANCE

Effect of increased brazing area

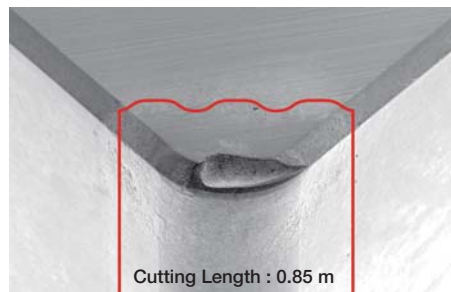


H

Insert : Standard = 2QP-CNGM12408-HM BXA20
 WavyJoint = 4QS-CNGG120408-HM BXA20
 Workpiece material : SCM420 / 20CrMo4 (60HRC) ϕ 63 External turning
 Cutting speed : $V_c = 150$ m/min
 Feed : $f_z = 0.20$ mm/rev
 Depth of cut : $a_p = 0.75$ mm
 Coolant : Dry












Standard



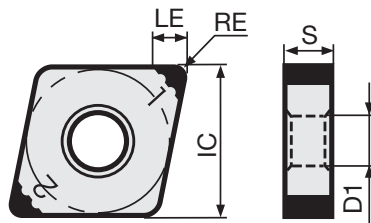
WavyJoint BXA20

The WavyJoint technology prevents the braze from overheating due to the increase in cutting edge temperature during dry cutting, greatly improving the brazing strength. The result: stable machining and extended tool life.

INSERT

Feature	Shape	Designation	Grade	No. of corners	I. C. dia.	Thick-ness	Hole dia.	Corner radius	CBN length
			Coated						
			BXA20						
					IC	S	D1	RE	LE
Heavy horning		4QS-CNGA120408-H	●	4	12.7	4.76	5.16	0.8	1.5
		4QS-CNGA120412-H	●	4	12.7	4.76	5.16	1.2	1.7
With chipbreaker		4QS-CNGG120408-HM	●	4	12.7	4.76	5.16	0.8	1.5
		4QS-CNGG120412-HM	●	4	12.7	4.76	5.16	1.2	1.7
Heavy horning		4QS-DNGA150408-H	●	4	12.7	4.76	5.16	0.8	1.6
		4QS-DNGA150412-H	●	4	12.7	4.76	5.16	1.2	1.6
With chipbreaker		4QS-DNGG150408-HM	●	4	12.7	4.76	5.16	0.8	1.6
Heavy horning		6QS-TNGA160408-H	●	6	9.525	4.76	3.81	0.8	1.6
		6QS-TNGA160412-H	●	6	9.525	4.76	3.81	1.2	1.8
With chipbreaker		6QS-TNGG160408-HM	●	6	9.525	4.76	3.81	0.8	1.6
Heavy horning		4QS-VNGA160408-H	●	4	9.525	4.76	3.81	0.8	1.7
With chipbreaker		4QS-VNGG160408-HM	●	4	9.525	4.76	3.81	0.8	1.7
Heavy horning		6QS-WNGA080408-H	●	6	12.7	4.76	5.16	0.8	1.5


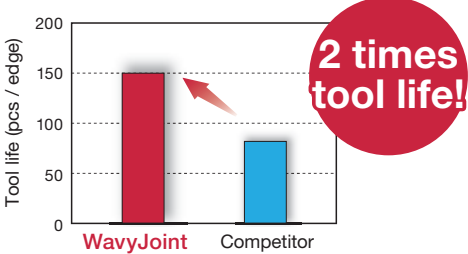
● : Line-up



STANDARD CUTTING CONDITIONS

ISO	Workpiece materials	Grade	Work condition	Cutting speed Vc(m/min)	Depth of cut ap (mm)	Feed f (mm/rev)
H	Hardened steel	BXA20	Continuous	50 - 220	0.12 - 0.80	0.10 - 0.30
		BXA20	Interrupted	50 - 200	0.12 - 0.80	0.10 - 0.20

PRACTICAL EXAMPLES

Workpiece type	Automotive part
Insert	4QS-CNGA120412
Grade	BXA20
Workpiece material	SCM420 / 20CrMo4 (60HRC) H
Cutting conditions	
Cutting speed : Vc (m/min)	100
Feed : f (mm/rev)	0.1 - 0.2
Depth of cut : ap (mm)	0.7 - 1.0
Coolant	Dry
Results	 <p>2 times tool life!</p> <p>The WavyJoint technology insert successfully machined 150 pcs/corner, almost twice that of the competitor's, without CBN tip failure.</p>

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