

TurnLine



BX815

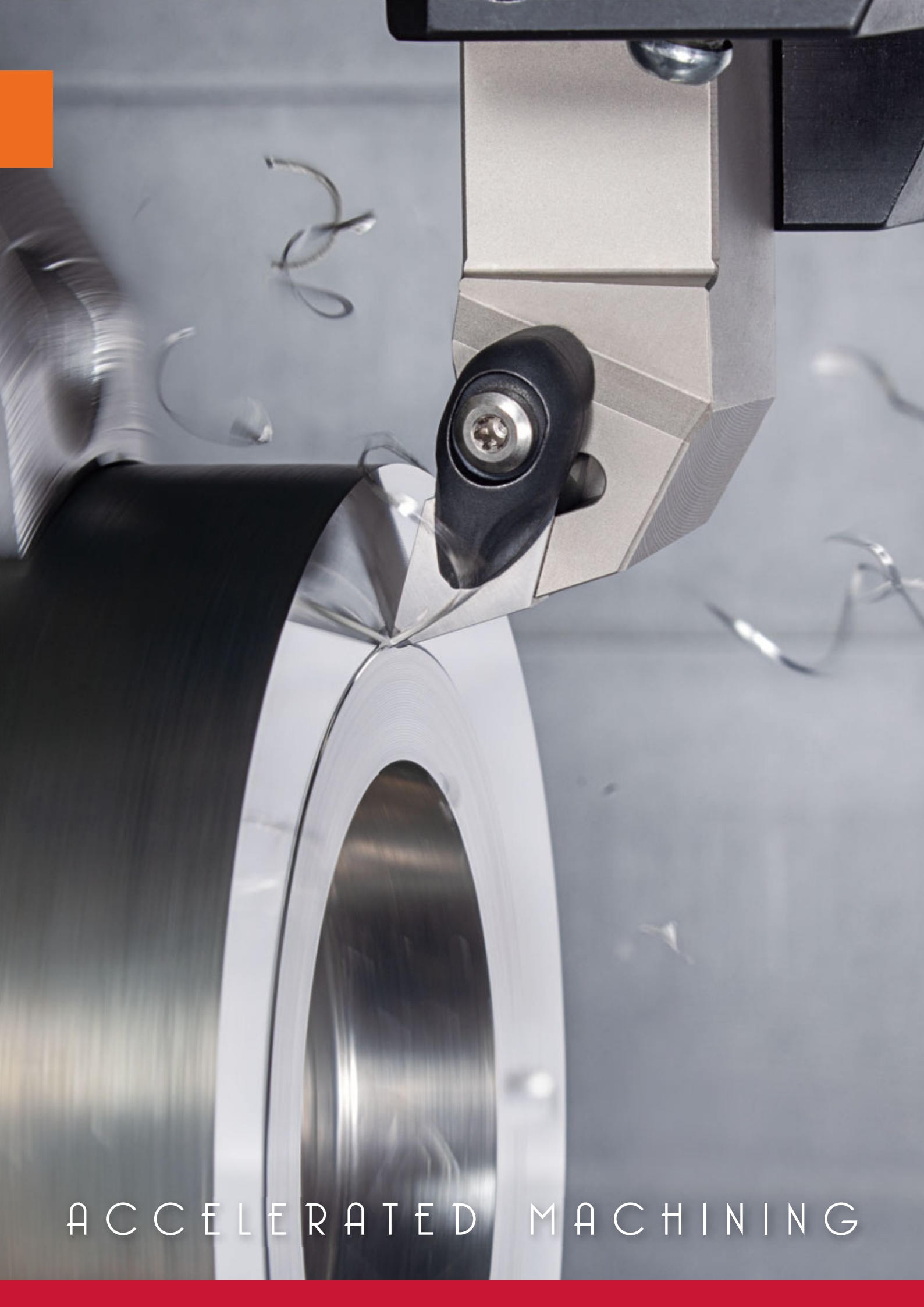
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Tungaloy Report No. 533-G

New CBN grade for superalloy machining



INDUSTRY 4.0
FEED the SPEED!



ACCELERATED MACHINING



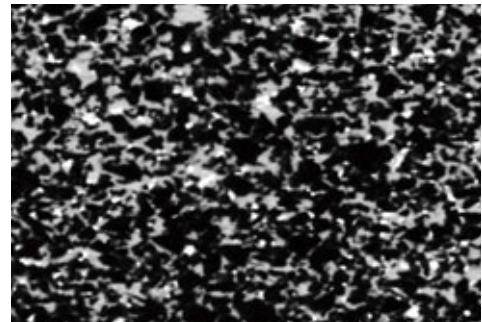


Provides excellent wear resistance in exotic materials under high-speed conditions

New CBN grade for high speed finishing of super alloys

BX815

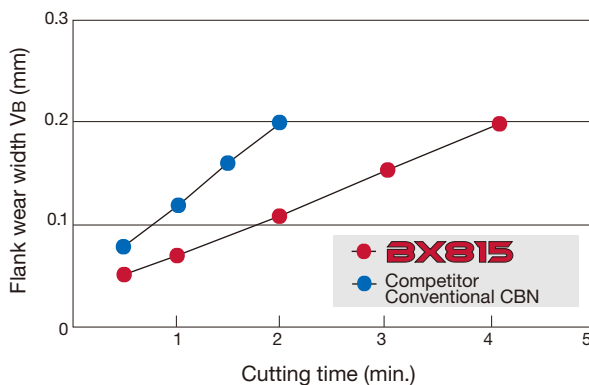
- Heat resistance and oxidation resistance are improved by using Alumina-based binders. Maximizes high-speed machining of super alloys
- Well-dispersed Zirconia grains improve fracture resistance
- Excellent finished surface is obtained by using fine cBN particles.



Microstructure image of BX815

CUTTING PERFORMANCE

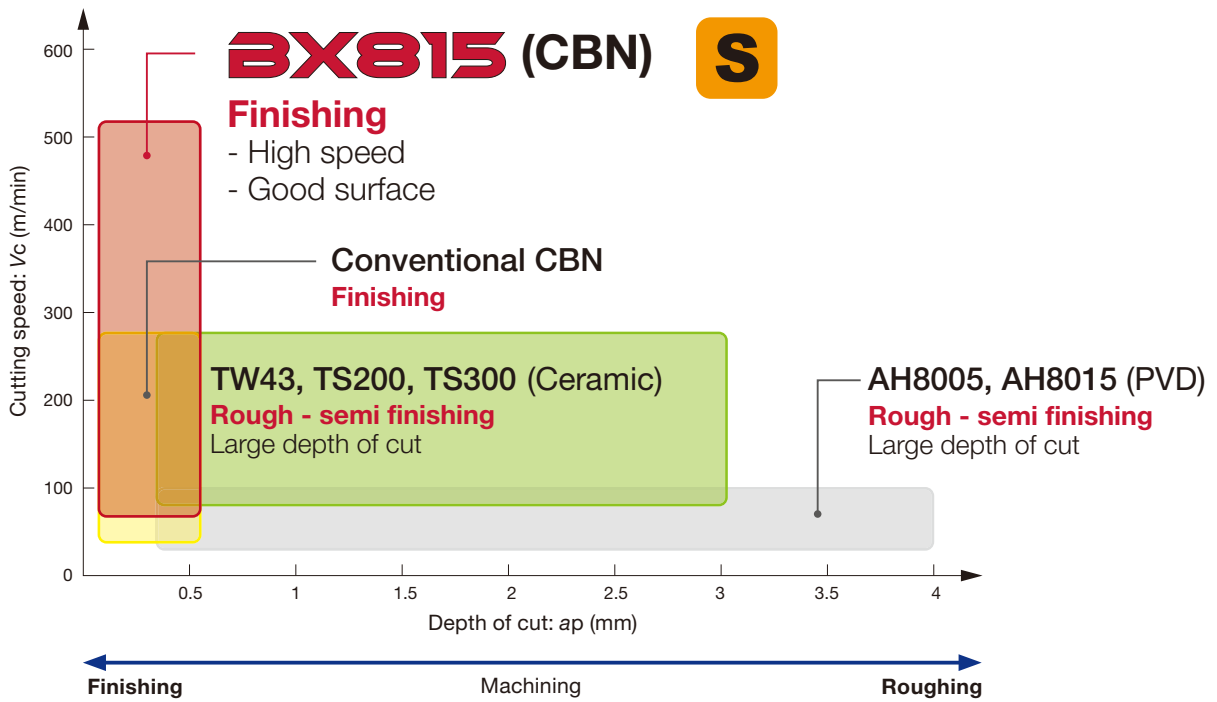
Comparison of wear resistance



Insert : DNGA150412 BX815
Workpiece material : Inconel 718 (44 HRC) Continuous cutting
Cutting speed : **Vc = 400 m/min**
Feed : f = 0.2 mm/rev
Depth of cut : ap = 0.2 mm
Coolant : Wet

BX815 exhibited excellent wear resistance in high speed machining of superalloy.

APPLICATION AREAS

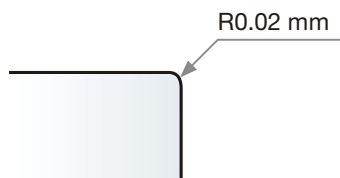


TYPES OF CUTTING EDGE PREPARATIONS

Two types available for high speed cutting of superalloys.

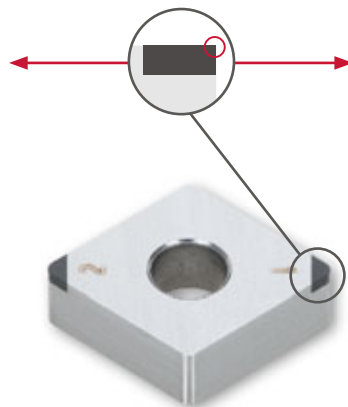
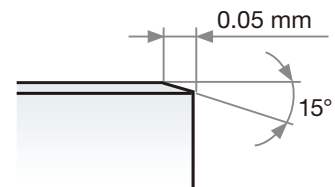
E: Honing

- Prevent vibration
- Suppress work deformation





LT: Chamfer

Suppress cutting edge fracture





CBN Insert NEGATIVE TYPE

- : Continuous cutting
- ◐ : Light interrupted cutting
- ✱ : Heavy interrupted cutting

Shape	Designation	BX815	Dimension (mm)					Edge prep.						Wiper	Chipbreaker		
			No. of corners	LE	RE	IC	S	D1	Standard	E	LFLC	L	H			F	LT
	2QP-CNGA**E 2QP-CNGA120404-E	●	2	2.3	0.4	12.7	4.76	5.16	○								
	2QP-CNGA120408-E	●	2	2.2	0.8	12.7	4.76	5.16	○								
	2QP-CNGA120412-E	●	2	2.4	1.2	12.7	4.76	5.16	○								
	2QP-CNGA120416-E	●	2	3.3	1.6	12.7	4.76	5.16	○								
	2QP-CNGA120420-E	●	2	3.2	2	12.7	4.76	5.16	○								
	2QP-CNGA**LT 2QP-CNGA120404-LT	●	2	2.3	0.4	12.7	4.76	5.16								○	
	2QP-CNGA120408-LT	●	2	2.2	0.8	12.7	4.76	5.16								○	
	2QP-CNGA120412-LT	●	2	2.4	1.2	12.7	4.76	5.16								○	
	2QP-CNGA120416-LT	●	2	3.3	1.6	12.7	4.76	5.16								○	
	2QP-CNGA120420-LT	●	2	3.2	2	12.7	4.76	5.16								○	



● : Line up

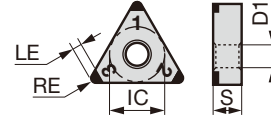
Shape	Designation	BX815	Dimension (mm)					Edge prep.						Wiper	Chipbreaker		
			No. of corners	LE	RE	IC	S	D1	Standard	E	LFLC	L	H			F	LT
	2QP-DNGA**E 2QP-DNGA150404-E	●	2	2.5	0.4	12.7	4.76	5.16	○								
	2QP-DNGA150408-E	●	2	2.1	0.8	12.7	4.76	5.16	○								
	2QP-DNGA150412-E	●	2	2	1.2	12.7	4.76	5.16	○								
	2QP-DNGA**LT 2QP-DNGA150404-LT	●	2	2.5	0.4	12.7	4.76	5.16								○	
	2QP-DNGA150408-LT	●	2	2.1	0.8	12.7	4.76	5.16								○	
	2QP-DNGA150412-LT	●	2	2	1.2	12.7	4.76	5.16								○	

● : Line up

CBN Insert NEGATIVE TYPE

- : Continuous cutting
- ◐ : Light interrupted cutting
- ✱ : Heavy interrupted cutting



Shape	Designation	BX815	Dimension (mm)						Edge prep.								
			No. of corners	LE	RE	IC	S	D1	Standard	E	LFLC	L	H	F	LT	Wiper	Chipbreaker
	3QP-TNGA**-E 3QP-TNGA160408-E	●	3	1.9	0.8	9.525	4.76	3.81	○								
	3QP-TNGA**-LT 3QP-TNGA160408-LT	●	3	1.9	0.8	9.525	4.76	3.81							○		

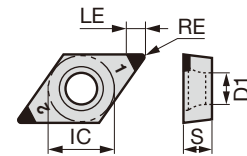


● : Line up

CBN Insert POSITIVE TYPE

- : Continuous cutting
- ◐ : Light interrupted cutting
- ✱ : Heavy interrupted cutting

Shape	Designation	BX815	Dimension (mm)						Edge prep.								
			No. of corners	LE	RE	IC	S	D1	Standard	E	LFLC	L	H	F	LT	Wiper	Chipbreaker
	2QP-DCGW**-E 2QP-DCGW11T304-E	●	2	2.5	0.4	9.525	3.97	4.4	○								
	2QP-DCGW**-LT 2QP-DCGW11T304-LT	●	2	2.5	0.4	9.525	3.97	4.4							○		

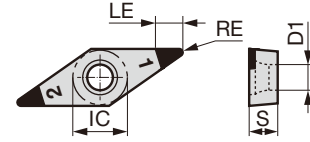




● : Line up

CBN Insert POSITIVE TYPE

- : Continuous cutting
- ◐ : Light interrupted cutting
- ✱ : Heavy interrupted cutting

P	Steel																			
M	Stainless																			
K	Cast iron																			
N	Non-ferrous																			
S	Superalloy	●	◐																	
H	Hard material																			
	Sintered metal																			



Shape	Designation	BX815	Dimension (mm)						Edge prep.						Wiper	Chipbreaker				
			No. of corners	LE	RE	IC	S	D1	Standard	E	LFLC	L	H	F			LT			
	2QP-VCGW160408-E	●	2	2.2	0.8	9.525	4.76	4.4		○										
	2QP-VCGW160412-E	●	2	3	1.2	9.525	4.76	4.4		○										
	2QP-VCGW160408-LT	●	2	2.2	0.8	9.525	4.76	4.4											○	
	2QP-VCGW160412-LT	●	2	3	1.2	9.525	4.76	4.4											○	


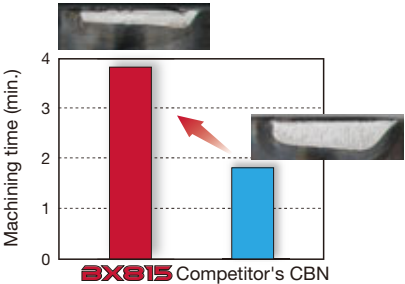
●: Line up

STANDARD CUTTING CONDITIONS

ISO	Workpiece materials	Grade	Work condition	Cutting speed Vc (m/min)	Depth of cut ap (mm)	Feed f (mm/rev)
S	Super alloy (Inconel718, etc.)	BX815	Continuous to light interrupted	80 - 300 - 500	0.05 - 0.25 - 0.5	0.05 - 0.2 - 0.3

for high-efficiency machining **Vc** = 200 - 500 m/min
for longer tool life **Vc** = 80 - 200 m/min

PRACTICAL EXAMPLES

Workpiece type		Disk
Toolholder		PDJNL type special
Insert		2QP-DNGA150412
Grade		BX815
Workpiece material		Inconel718
		
Cutting conditions	Cutting speed: Vc (m/min)	350
	Feed : f (mm/rev)	0.2
	Depth of cut : ap (mm)	0.5
	Machining	External turning
	Coolant	Wet
Results		<p>After 2 minutes machining</p>  <p>BX815 showed twice the tool life compared to the previous grade.</p>

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