

TurnLine

BXA20

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Tungaloy Report No. 511-US

BXA20

Coated CBN grade with a whole new level of cutting performance for hardened steel





ACCELERATED MACHINING



Remarkably long tool life in hardened steel turning
with **a new coating layer and CBN substrate**

Incredible reliability in hardened steel turning

- Suitable for operations at low to medium cutting speed
- Covers a wide range of application areas from continuous to heavy interrupted cutting

Multi-layered coating 2 times thicker than the conventional grade

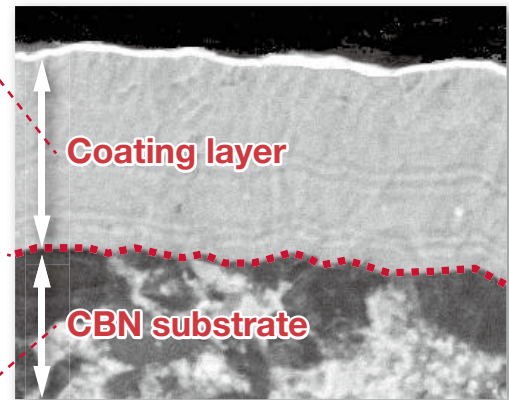
- Provides excellent wear resistance

Improved adhesion strength

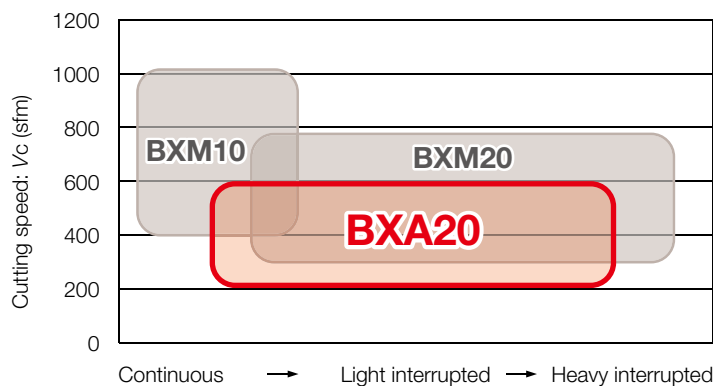
- Prevents peeling-off, providing excellent surface finish

Newly developed CBN substrate

- Optimum CBN content for high wear resistance and toughness



APPLICATION AREA



BXM10

Suitable for continuous to light interrupted cutting at high speed

BXM20

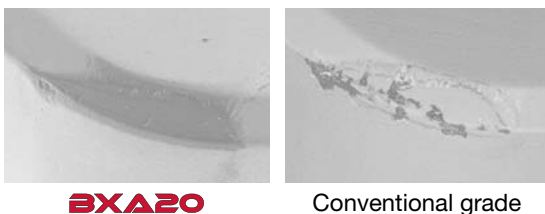
Suitable for continuous to heavy cutting at medium and high speed

BXA20

Great performance for continuous to heavy cutting at low and medium speed

CUTTING PERFORMANCE

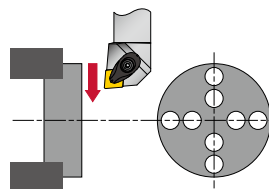
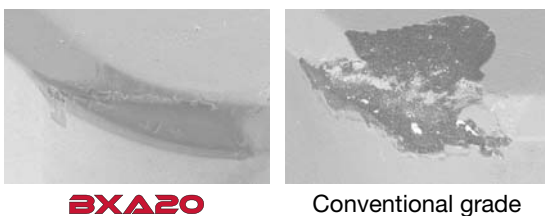
Machining length; 2300 ft



H Insert : 2QP-CNGA432
 Workpiece material : Low carbon alloy (60HRC)
 Cutting speed : $V_c = 330$ sfm
 Feed : $f = 0.004$ ipr
 Depth of cut : $a_p = 0.008$ inch
 Machining : Face turning
 (interrupted cutting)

Without peeling-off, tool life is extended even in heavy interrupted machining.

Machining length; 4600 ft



















STANDARD CUTTING CONDITIONS

ISO	Grade	Workpiece condition	Cutting speed V_c (sfm)	Depth of cut a_p (inch)	Feed f (ipr)
H	BXA20	Continuous	430 (200 - 590)	0.012 (0.002 - 0.020)	0.004 (0.002 - 0.012)
	BXA20	Interrupted	430 (200 - 590)	0.008 (0.002 - 0.012)	0.004 (0.002 - 0.008)

GRADE

Application	Grade Application code	Microstructure	Hardness (Hv)	T.R.S (Gpa)
H	BXA20 H10-H20		3500 - 3700	1.35 - 1.50

INSERTS

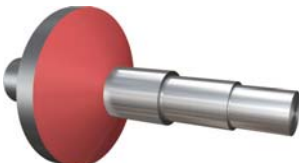

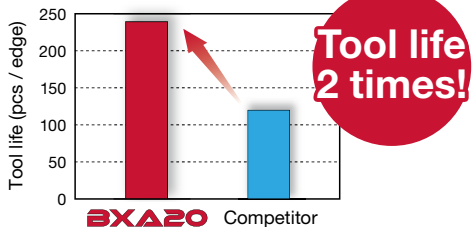
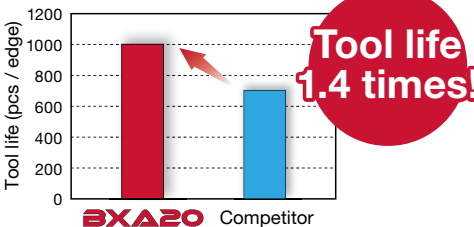

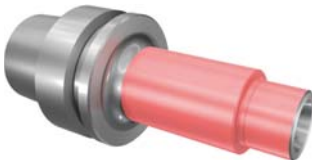
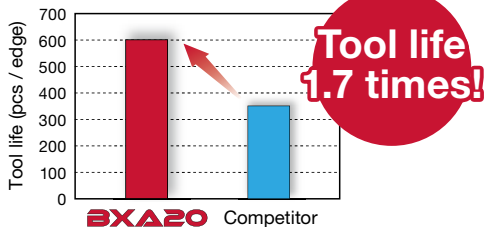
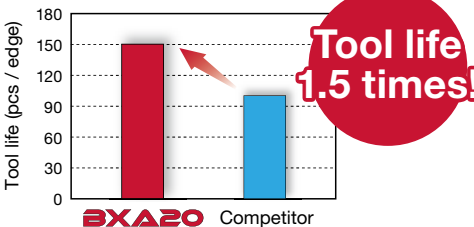
Feature	Shape	Designation	Grade	No. of corners	Dimension (inch)					
			BXA20		I. C. dia. ϕd	Thickness s	Hole dia. $\phi d1$	Corner radius r_c	CBN length a	
Standard		2QP-CNGA431	●	2	0.500	0.187	0.203	0.016	0.091	
		2QP-CNGA432	●	2	0.500	0.187	0.203	0.031	0.087	
		2QP-CNGA433	●	2	0.500	0.187	0.203	0.047	0.094	
		2QP-DNGA432	●	2	0.500	0.187	0.203	0.031	0.083	
		2QP-DNGA442	●	2	0.500	0.250	0.203	0.031	0.083	
		3QP-TNGA331	●	3	0.375	0.187	0.150	0.016	0.087	
		3QP-TNGA332	●	3	0.375	0.187	0.150	0.031	0.075	
		3QP-TNGA333	●	3	0.375	0.187	0.150	0.047	0.094	
		2QP-VNGA331	●	2	0.375	0.187	0.150	0.016	0.122	
		2QP-VNGA332	●	2	0.375	0.187	0.150	0.031	0.087	
		3QP-WNGA432	●	3	0.500	0.187	0.150	0.031	0.087	
		2QP-GNGA431	●	2	-	0.187	0.203	0.016	0.091	
		2QP-GNGA432	●	2	-	0.187	0.203	0.031	0.087	
		2QP-GNGA433	●	2	-	0.187	0.203	0.047	0.094	
	Heavy honing		2QP-CNGA432-H	●	2	0.500	0.187	0.203	0.031	0.087
			2QP-DNGA432-H	●	2	0.500	0.187	0.203	0.031	0.083
			3QP-TNGA332-H	●	3	0.375	0.187	0.150	0.031	0.075
			3QP-TNGA333-H	●	3	0.375	0.187	0.150	0.047	0.094
		2QP-VNGA331-H	●	2	0.375	0.187	0.150	0.016	0.122	
		2QP-VNGA332-H	●	2	0.375	0.187	0.150	0.031	0.087	
With chipbreaker		2QP-CNGM432-HM	●	2	0.500	0.187	0.203	0.031	0.087	
		2QP-CNGM433-HM	●	2	0.500	0.187	0.203	0.047	0.094	
With wiper		2QP-CNGA432WL	●	2	0.500	0.187	0.203	0.031	0.087	
		2QP-DNGA431WJ	●	2	0.500	0.187	0.203	0.016	0.083	
		2QP-DNGA432WJ	●	2	0.500	0.187	0.203	0.031	0.083	
		3QP-TNGA331WG	●	3	0.375	0.187	0.150	0.016	0.087	
	Standard		2QP-CCGW060204	●	2	0.250	0.094	0.110	0.016	0.091
2QP-CCGW09T304			●	2	0.375	0.156	0.173	0.016	0.091	
2QP-CCGW09T308			●	2	0.375	0.156	0.173	0.031	0.087	
		2QP-DCGW070202	●	2	0.250	0.094	0.110	0.008	0.106	
		2QP-DCGW070204	●	2	0.250	0.094	0.110	0.016	0.098	
		2QP-DCGW11T308	●	2	0.375	0.156	0.173	0.031	0.083	
		3QP-TPGW110304	●	3	0.250	0.125	0.134	0.016	0.087	
		3QP-TPGW110308	●	3	0.250	0.125	0.134	0.031	0.079	
		2QP-VBGW110304	●	2	0.250	0.125	0.110	0.016	0.122	
		2QP-VBGW110308	●	2	0.250	0.125	0.110	0.031	0.087	
		2QP-VBGW160404	●	2	0.375	0.187	0.173	0.016	0.122	
		2QP-VBGW160408	●	2	0.375	0.187	0.173	0.031	0.087	

● : Line-up

Specification of standard honing

	BXA20
Negative inserts	S01325
Positive inserts	S01325

PRACTICAL EXAMPLES

Workpiece type		Automotive parts (CVT)	Automotive parts (CVJ)
Insert		2QP-DNGA433	2QP-DNGA433
Grade		BXA20	BXA20
Workpiece material		5120 (59HRC)	5120 (60HRC)
		 H	 H
Cutting conditions	Cutting speed: V_c (sfm)	560	490
	Feed : f (ipr)	0.012	0.01
	Depth of cut : a_p (inch)	0.004	0.008
	Coolant	Wet	Wet
Results		 <p>Tool life 2 times!</p> <p>Tool life is doubled due to higher wear resistance.</p>	 <p>Tool life 1.4 times!</p> <p>The operation is stable with BXA20 even in interrupted machining.</p>
Workpiece type		Automotive parts (Popette)	Machine part
Insert		2QP-CCGW09T304	2QP-DNGA431
Grade		BXA20	BXA20
Workpiece material		Alloy steel (58HRC)	4320H (60HRC)
		 H	 H
Cutting conditions	Cutting speed: V_c (sfm)	430	490
	Feed : f (ipr)	0.0016	0.003
	Depth of cut : a_p (inch)	0.008	0.006
	Coolant	Wet	Wet
Results		 <p>Tool life 1.7 times!</p> <p>BXA20 provides stable tool life as only normal wear occurs without chipping.</p>	 <p>Tool life 1.5 times!</p> <p>Surface roughness is minimized with BXA20.</p>

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