

TurnLine



T-CBN HARDBREAKER HP

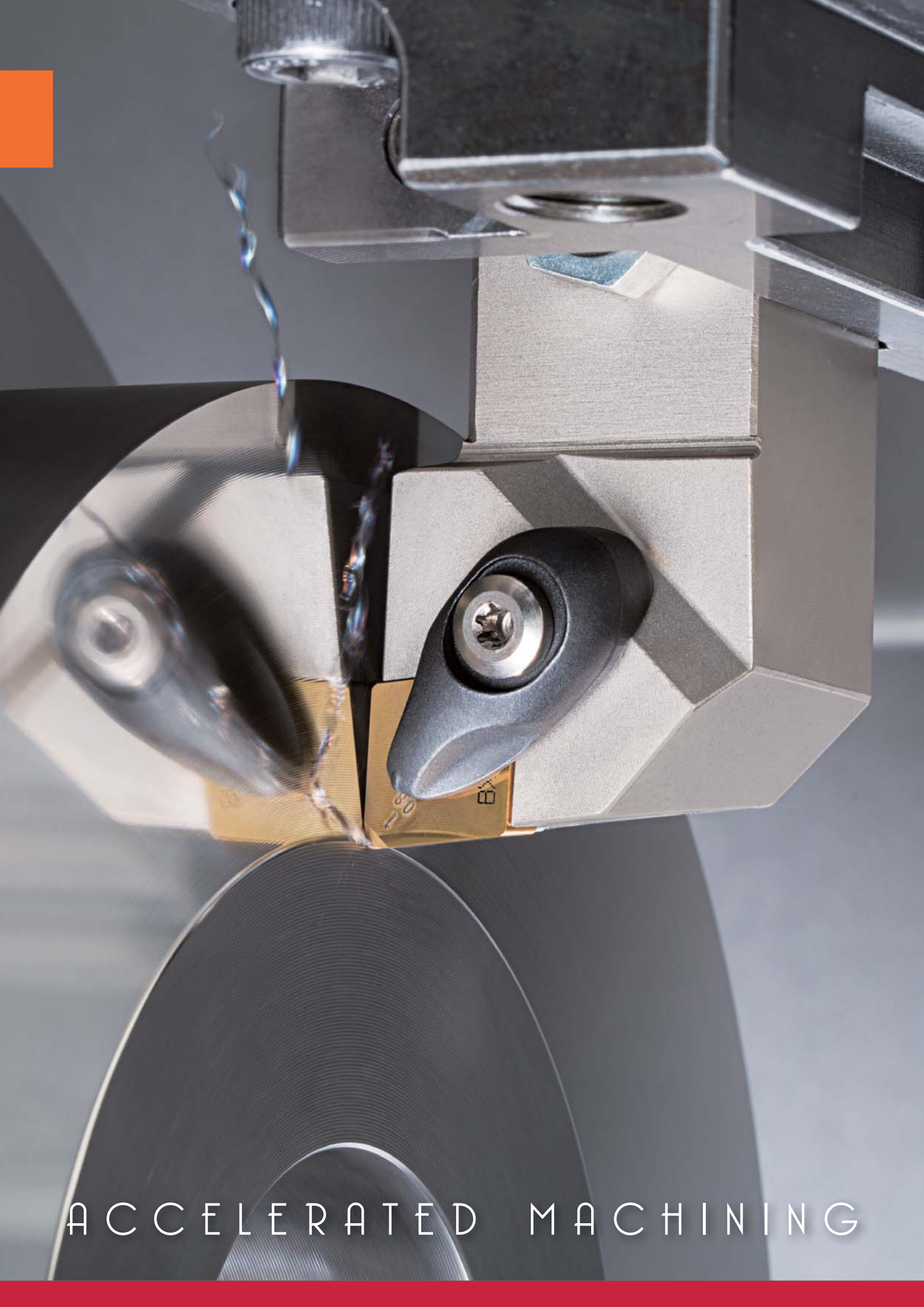
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Tungaloy Report No. 518-G

NEW chipbreaker for efficient hard turning



INDUSTRY 4.0
FEED the SPEED!



ACCELERATED MACHINING

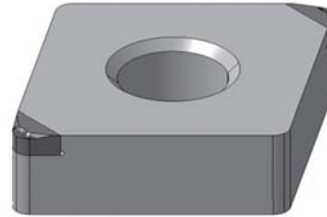




Innovative **3D chipbreaker** on T-CBN inserts for
efficient chip control

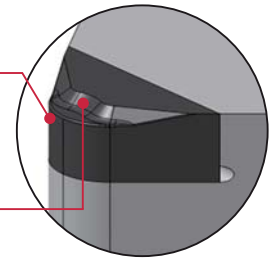
New HP Chipbreaker For Finishing Hardened Steel

- 1 By separating the chipbreaker from the cutting edge, the cutting force imposed on the cutting edge during machining is significantly reduced, thus providing long tool life.
- 2 The cutting edge preparation is designed to ensure easy cutting at low cutting forces, while maintaining close tolerances with no deviations.
- 3 The **HP** style chipbreaker, combined with built-in wipers, yields excellent surface quality and good chip control.

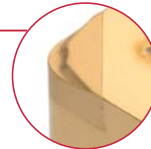
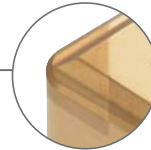
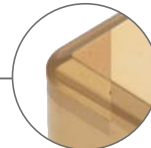
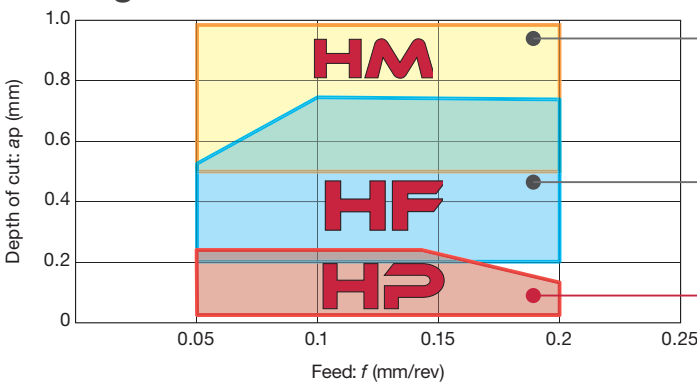


Optimized edge preparation for low cutting force

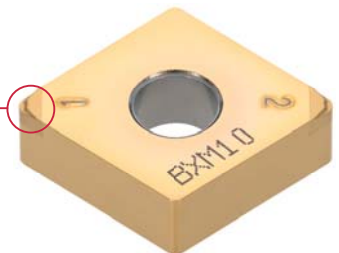
HP chipbreaker



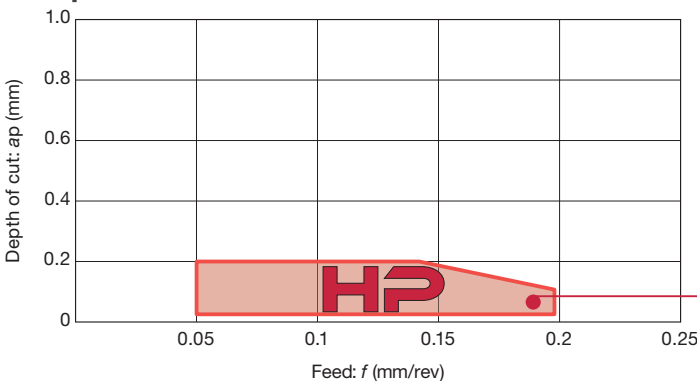
For negative insert



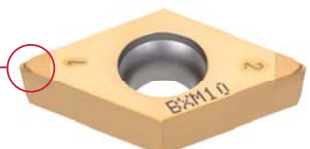
HP



For positive insert




HP




CUTTING PERFORMANCE

Chip control is stable for a long time

HARDBREAKER HP






Vs.

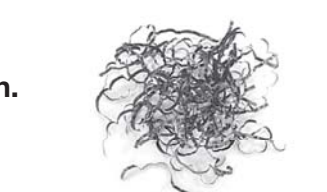
40 min.

↓

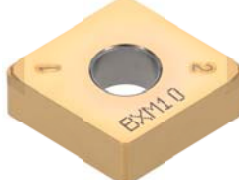
80 min.

Competitor





HP



Insert : 2QP-CNGM120408-HP BXM10
 Workpiece material : JIS SCM420 58HRC
 Cutting speed : $V_c = 180$ m/min
 Feed : $f = 0.15$ mm/rev
 Depth of cut : $a_p = 0.15$ mm
 Holder : ACLNR2525M12-A
 Coolant : Wet
 Machining : External continuous cutting

Chatter stability

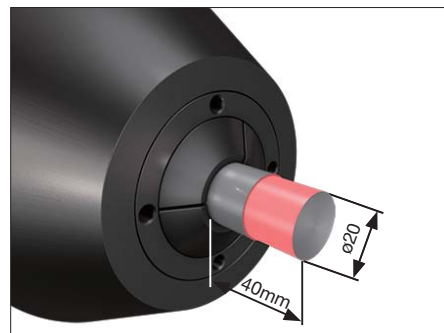
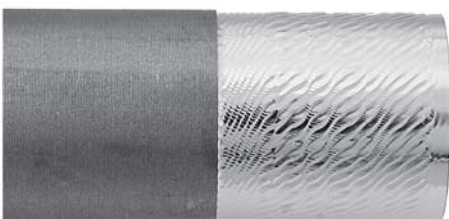
→ Prevents chattering and provides the finest machined surface

HARDBREAKER HP



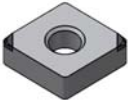
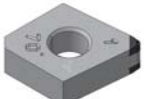
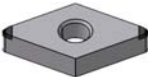
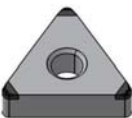

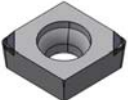
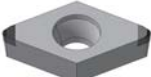
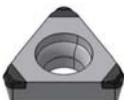
Due to low cutting force, chatter stability is greatly improved

Competitor (without breaker)



Insert : 2QP-CNGM120408-HP BXM10
 Work material : JIS SCM420 58HRC
 Cutting speed : $V_c = 150$ m/min
 Feed : $f = 0.15$ mm/rev
 Depth of cut : $a_p = 0.15$ mm
 Machining : External continuous cutting

INSERT

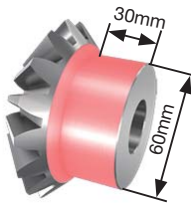
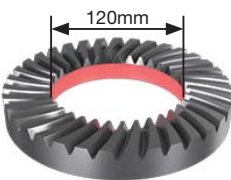
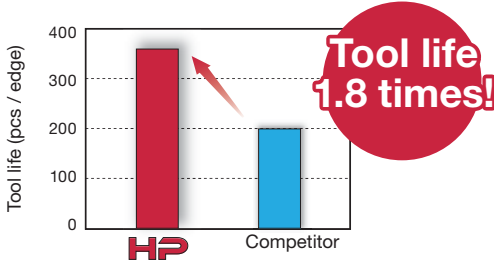
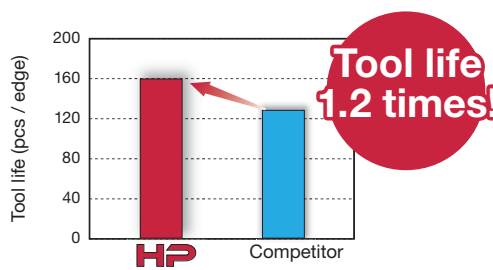
Shape	Designation	Grade		I. C. dia.	Thick-ness	Hole dia.	Corner radius	CBN length
		Coated						
		BXMT10	BXA20					
		IC	S	D1	RE	LE		
	2QP-CNGM120404-HP	●	●	12.7	4.76	5.16	0.4	2.3
	2QP-CNGM120408-HP	●	●	12.7	4.76	5.16	0.8	2.2
	2QP-CNGM120408WL-HP	●	●	12.7	4.76	5.16	0.8	2.2
	2QP-GNGG120404-HP	●	●	12.7	4.76	5.16	0.4	2.3
	2QP-GNGG120408-HP	●	●	12.7	4.76	5.16	0.8	2.2
	2QP-DNGM150404-HP	●	●	12.7	4.76	5.16	0.4	2.5
	2QP-DNGM150408-HP	●	●	12.7	4.76	5.16	0.8	2.1
	3QP-TNGM160404-HP	●	●	9.525	4.76	3.81	0.4	2.2
	3QP-TNGM160408-HP	●	●	9.525	4.76	3.81	0.8	1.9
	2QP-VNGM160408-HP	●	●	9.525	4.76	3.81	0.8	2.2
	2QP-CCGT060204-HP	●		6.35	2.38	2.8	0.4	2.3
	2QP-CCGT09T304-HP	●		9.525	3.97	4.4	0.4	2.3
	2QP-CCGT09T308-HP	●		9.525	3.97	4.4	0.8	2.2
	2QP-CCGT09T304WL-HP	●		9.525	3.97	4.4	0.4	2.3
	2QP-CCGT09T308WL-HP	●		9.525	3.97	4.4	0.8	2.2
	2QP-DCGT070204-HP	●		6.35	2.38	2.8	0.4	2.5
	2QP-DCGT11T304-HP	●		9.525	3.97	4.4	0.4	2.5
	2QP-DCGT11T308-HP	●		9.525	3.97	4.4	0.8	2.1
	3QP-TPGT110304-HP	●		6.35	3.18	3.4	0.4	2.2
	3QP-TPGT110308-HP	●		6.35	3.18	3.4	0.8	1.9

● : New product
 ● : To be released in 2018

STANDARD CUTTING CONDITIONS

ISO	Grade	Work condition	Cutting speed V_c (m/min)	Depth of cut a_p (mm)	Feed f (mm/rev)
H	BXM10	Continuous	120 - 350	0.05 - 0.20	0.05 - 0.20
	BXA20	Continuous	70 - 180	0.05 - 0.20	0.05 - 0.20
		Light interrupted	70 - 180	0.05 - 0.20	0.05 - 0.20

PRACTICAL EXAMPLES

Workpiece type	Bevel gear	Gear Wheel
Insert	2QP-CNGM120408-HP	2QP-CNGM120408WL-HP
Grade	BXA20	BXA20
Workpiece material	JIS SCM420 (HRC58)	JIS SCM420 (HRC58)
		
Cutting conditions	Cutting speed: V_c (m/min)	160
	Feed : f (mm/rev)	0.10
	Depth of cut : a_p (mm)	0.15
	Coolant	Wet
Results	 <p>Competitor's inserts had a short tool life because of chip re-cutting. The -HP chipbreaker insert solved chip entanglement issues, prolonging tool life and achieving excellent surface finish quality.</p>	 <p>The -HP chipbreaker insert with wiper provided good chip flow and machined surface.</p>

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