

CBN insert

HARDBREAKER SERIES

Tungaloy Report No. 518S4-G

New HF chipbreaker for optimal removal of carburized layer



HARDBREAKER SERIES

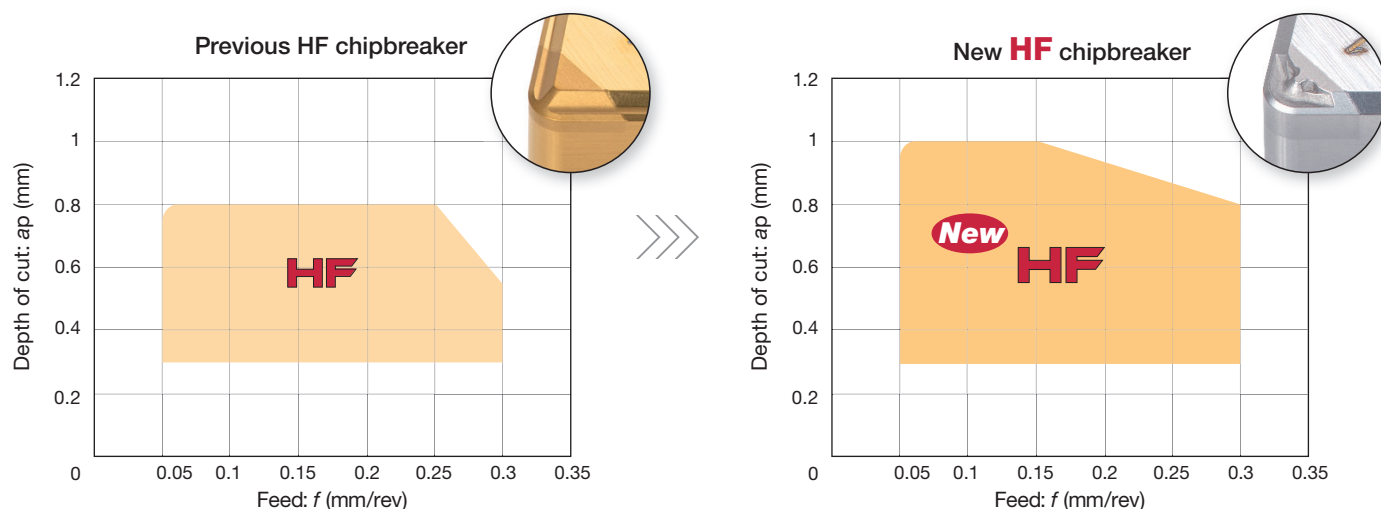


For more information

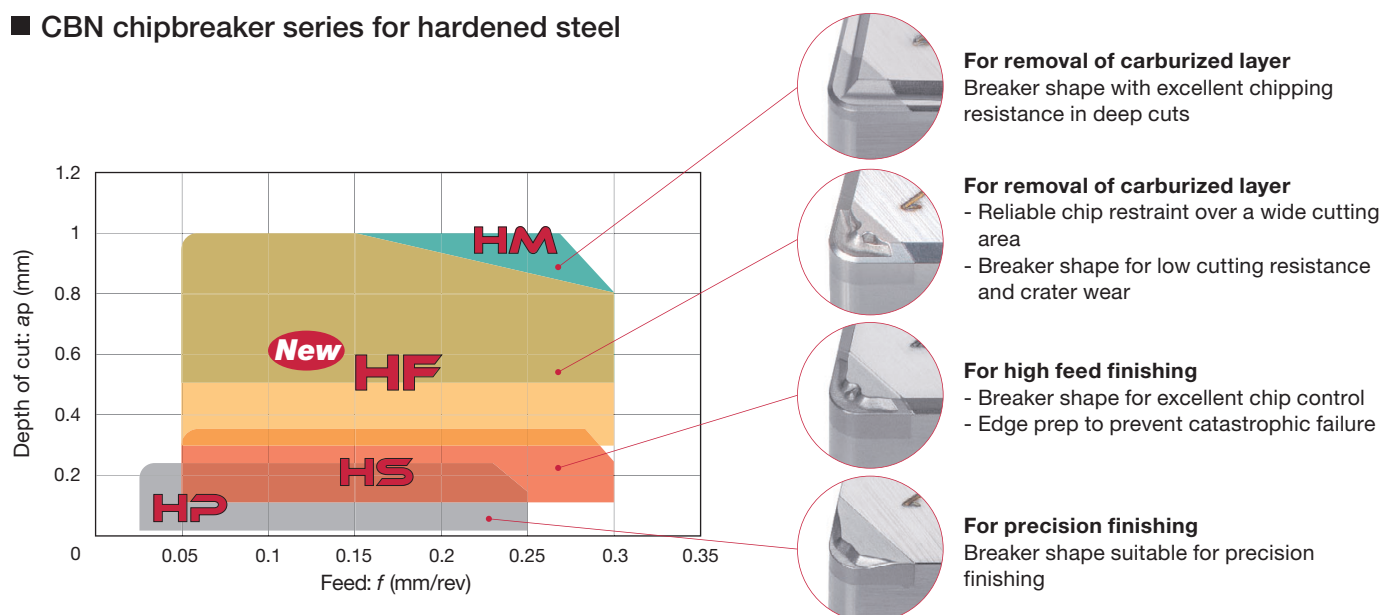
New HF chipbreaker for optimal removal of carburized layer

■ Application areas

New 3D chipbreaker expanded application coverage



■ CBN chipbreaker series for hardened steel

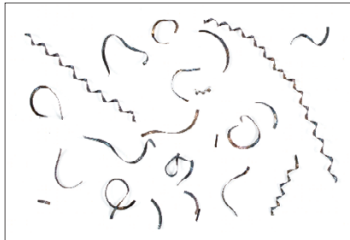


CUTTING PERFORMANCE (EXAMPLES OF ACTUAL PROCESSING)

■ Chip control

Comparisons of chip formations after machining 80 pcs of automotive shafts

New HF chipbreaker



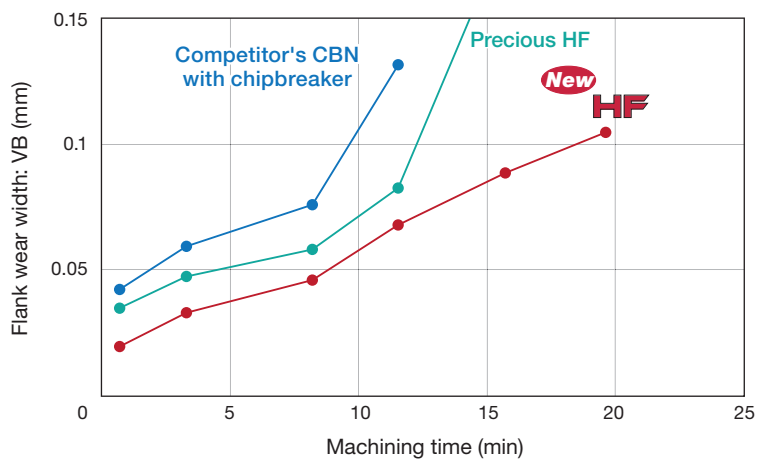
Competitor's CBN with chipbreaker



Insert : 2QP-CNGM120408-HF
Workpiece material: SCM415 (60HRC)
Cutting speed : $V_c = 180$ m/min
Feed : $f = 0.2$ mm/rev
Depth of cut : $a_p = 0.5$ mm x 3 passes
Holder : ACLNL25252M12-A
Machining : External continuous cutting
Coolant : Wet

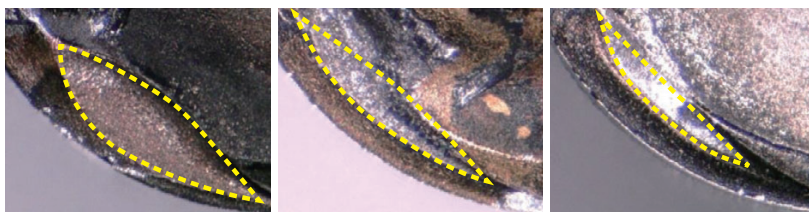
■ Crater wear resistance

Comparison of automotive clutch machining lifetime



Insert : 2QP-CNGM120408-HF
Workpiece material: SCM415 (60HRC)
Cutting speed : $V_c = 150$ m/min
Feed : $f = 0.15$ mm/rev
Depth of cut : $a_p = 0.5$ mm x 5 passes
Holder : ACLNL25252M12-A
Machining : External continuous cutting
Coolant : Wet

Comparisons of crater wear sizes (After 8 min)



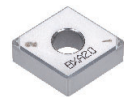
Competitor's chipbreaker

Previous HF chipbreaker

New **HF** chipbreaker

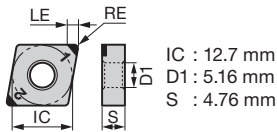
CBN Insert NEGATIVE TYPE

With chipbreaker



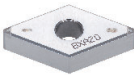
CN□□1204

Rhombic, 80°
with hole



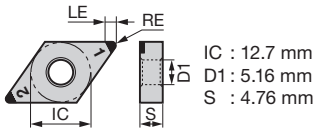
Application	Designation	Dimension (mm)		No. of corners	Wiper	Material																
		RE	LE																			
Medium cutting	2QP-CNGM120408-HF	0.8	2.2	2		●c																
	4QS-CNGG120408-HF		1.8	4		●c																
	2QP-CNGM120412-HF	1.2	2.4	2		●c																
	4QS-CNGG120412-HF		2.2	4		●c																

● : New product



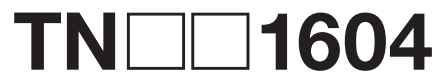
DN□□1504

Rhombic, 55°
with hole

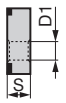


Application	Designation	Dimension (mm)		No. of corners	Wiper	Material																
		RE	LE																			
Medium cutting	2QP-DNGM150408-HF	0.8	2.1	2		●c																
	4QS-DNGG150408-HF		2	4		●c																
	2QP-DNGM150412-HF	1.2	2	2		●c																
	4QS-DNGG150412-HF		2.6	4		●c																

● : New product



With chipbreaker



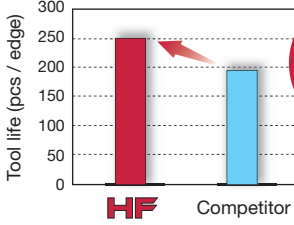
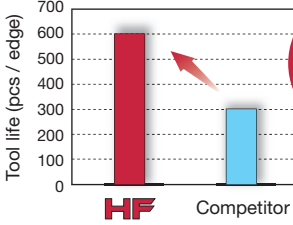
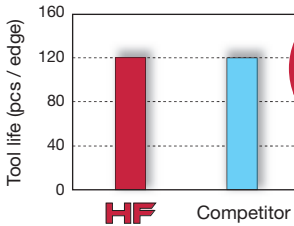
K	Cast iron
S	Superalloy
H	Hard material
	Sintered metal

● : New product



HARDBREAKER SERIES

PRACTICAL EXAMPLES

Workpiece type		Automotive part	Automotive part (shaft)
Insert		2QP-CNGM120408-HF	4QS-CNGG120408-HF
Grade		BXA20	BXA20
Workpiece material		SCr420 / 20Cr4 (40 - 55HRC)	SCr420 / 20Cr4 (40 - 55HRC)
		 H	 H
Cutting conditions	Cutting speed: V_c (m/min)	130	140
	Feed : f (mm/rev)	0.24	0.22
	Depth of cut : a_p (mm)	0.5 x 2 passes	0.3 x 3 passes
	Coolant	Wet	Wet
Results		 Tool life 1.3 times! HF chipbreaker reduced crater wear, while providing 1.3 times tool life increase.	 Tool life 2 times! The competitor's insert could not control chips from the beginning and ended up with short tool life. HF chipbreaker provided reliable chip forming and double tool life.
Workpiece type		Automotive parts (shaft)	
Insert		2QP-CNGM120408-HF	
Grade		BXA20	
Workpiece material		SCM420 / 18CrMo4 (40 - 54HRC)	
		 H	
Cutting conditions	Cutting speed: V_c (m/min)	160 - 180	
	Feed : f (mm/rev)	0.2	
	Depth of cut : a_p (mm)	0.4 - 0.5 x 3 passes	
	Coolant	Wet	
Results		 Excellent chip control! Birdnesting occurred when using the competitor's CBN with chipbreaker. HF chipbreaker has eliminated birdnesting.	

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