



PP/PQ

Smart Chipbreakers For Steel Cutting

PP Chipbreaker
F i n i s h i n g

PQ Chipbreaker
M e d i u m t o
F i n i s h i n g

◆ **Innovative Design**

Covers a wide range of cutting conditions

◆ **Smooth Cutting Edges**

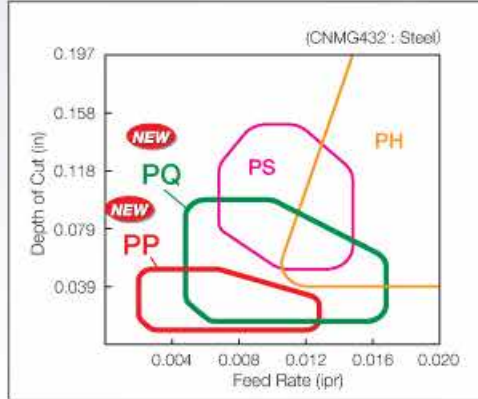
Substantially reduce cutting forces



Features

■ **3-step Smart Dot Structure** is applicable to a wide range of feed rates in steel finishing

■ **The Smooth Taper Cutting Edge** reduces cutting forces



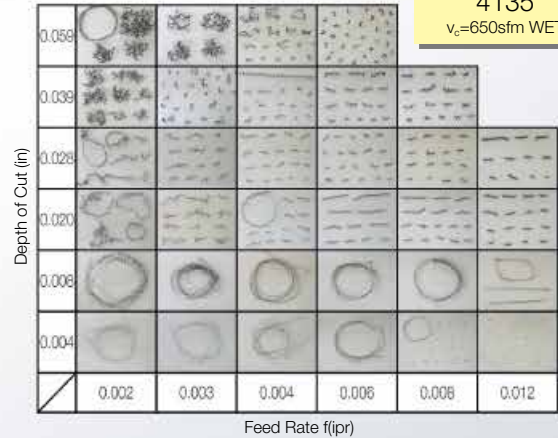
PP

CNMG431PP

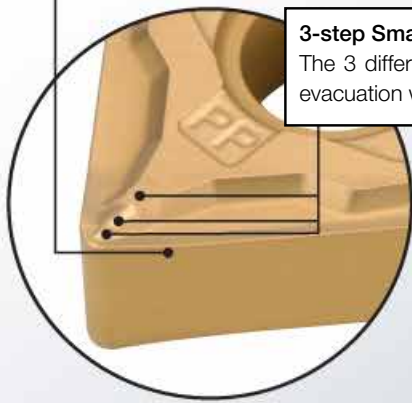
3.937in

4135

$v_c=650\text{sfm}$ WET

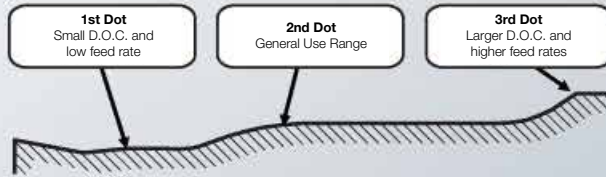


Smooth Taper Cutting Edge
Reduces Cutting Forces



3-step Smart Dot Structure
The 3 different dots provide smooth chip evacuation with a wide range of feed rates

• Each dot functions according to the cutting conditions



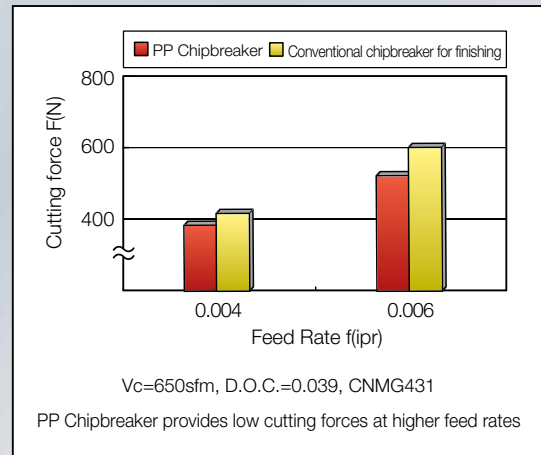
Your solution to prevent chip entanglement in small depths of cut or higher feed rates

■ Case Studies (Chip Control Comparison)

Automotive part (G41300) Steel CNMG432PP $V_c=1150\text{sfm}$ $D.O.C.=0.012\text{in}$ $f=0.012\text{ipr}$ Wet	Competitor A 	PP Chipbreaker
	Stable cutting due to less chip entanglement Customer Evaluation	

Automotive part (5120H) CNMG432PP $V_c=650\text{sfm}$ $D.O.C.=0.008-0.012\text{in}$ $f=0.008-0.012\text{ipr}$ Wet	Competitor B 	PP Chipbreaker
	Stable cutting due to less chip entanglement Customer Evaluation	

■ Cutting Force Comparison Chart

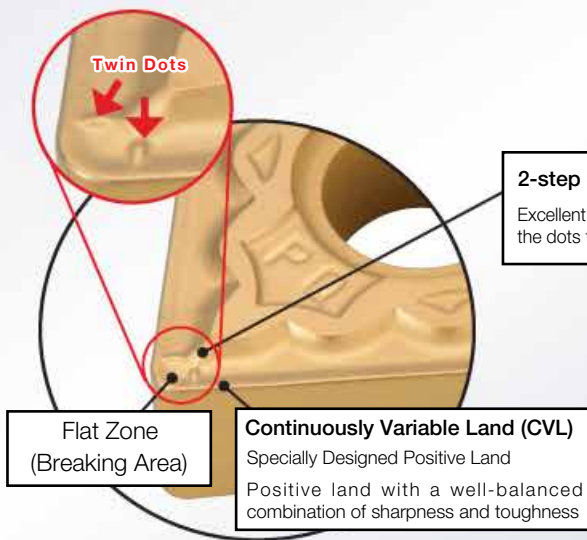


• Improved Surface Finish with MEGACOAT Cermet and PP Chipbreaker



Features

- Stable chip control in a wide range of applications from medium to finishing due to the newly developed "Flat Zone" (Breaking Area) and a 2-step smooth rising Smart Wall effect
- Twin dots on the edge tip provide smooth chip control at low depths of cut and higher feed rates
- Specially designed Positive Land with a well-balanced combination of edge sharpness and toughness



2-step Smart Wall (2-step smooth rising surface)

Excellent chip control in a wide range of applications prevents the dots from being damaged at high feed machining

- Efficient chipbreaking for a wide range of applications



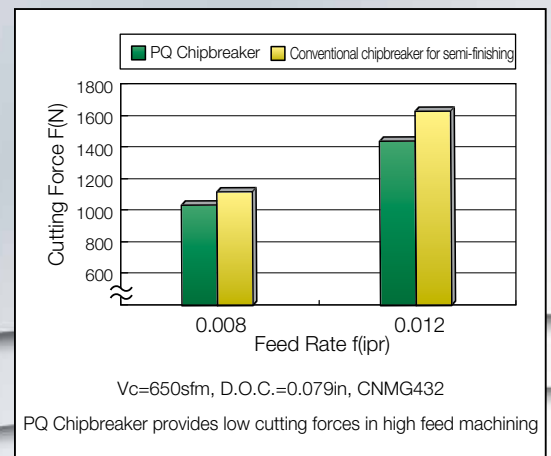
Prevents chip entanglement and reduces cutting forces at higher feed rates

■ Case Studies (Chip Control Comparison)

Automotive part (1045)	Competitor C	PQ Chipbreaker
<p>DNMG432PQ Vc=650 ap=0.020-0.047in f=0.012ipr Wet</p>		
	Minimized fracturing caused by chip entanglement	
	Customer Evaluation	






Automotive part (1045)	Competitor D	PQ Chipbreaker
<p>WNMG432PQ Vc=825sfm D.O.C.=0.039in f=0.012ipr Wet</p>		
	With Competitor D, chips were entangled in the turret and the operation was stopped frequently, but the PQ Chipbreaker breaks chips into smaller pieces, improving the productivity	
	Customer Evaluation	







■ Cutting Force Comparison Chart



- Long Tool Life with CVD Coating CA5515/CA5525 and PQ Chipbreaker

Stock

Insert	Description	Dimension (in)				Stock Grades						
						MEGACOAT Cermet	Cermet		CVD Coated Carbide			
		I.C.	Thickness	Hole	Corner-R (re)	PV7010	PV7025	TN6010	TN6020	CA5515	CA5525	
	CNMG 4305PP	0.500	0.187	0.203	0.008	●	●	●	●	●	●	
	431PP				0.016	●	●	●	●	●	●	●
	432PP				0.031	●	●	●	●	●	●	●
	433PP				0.047	●	●	●	●	●	●	●
	DNMG 4305PP	0.500	0.187	0.203	0.008	●	●	●	●	●	●	
	431PP				0.016	●	●	●	●	●	●	●
	432PP				0.031	●	●	●	●	●	●	●
	433PP				0.047	●	●	●	●	●	●	●
	DNMG 4405PP	0.500	0.250	0.203	0.008	●	●	●	●	●	●	
	441PP				0.016	●	●	●	●	●	●	●
	442PP				0.031	●	●	●	●	●	●	●
	443PP				0.047	●	●	●	●	●	●	●
	TNMG 3305PP	0.375	0.187	0.150	0.008	●	●	●	●	●	●	
	331PP				0.016	●	●	●	●	●	●	●
	332PP				0.031	●	●	●	●	●	●	●
	333PP				0.047	●	●	●	●	●	●	●
	VNMG 3305PP	0.375	0.187	0.150	0.008	●	●	●	●	●	●	
	331PP				0.016	●	●	●	●	●	●	●
	332PP				0.031	●	●	●	●	●	●	●
	333PP				0.047	●	●	●	●	●	●	●
	WNMG 4305PP	0.500	0.187	0.203	0.008	●	●	●	●	●	●	
	431PP				0.016	●	●	●	●	●	●	●
	432PP				0.031	●	●	●	●	●	●	●
	433PP				0.047	●	●	●	●	●	●	●

Insert	Description	Dimension (in)				Stock Grades						
						MEGACOAT Cermet	Cermet		CVD Coated Carbide			
		I.C.	Thickness	Hole	Corner-R (re)	PV7010	PV7025	TN6010	TN6020	CA5515	CA5525	
	CNMG 431PQ	0.500	0.187	0.203	0.016	●	●	●	●	●	●	
	432PQ				0.031	●	●	●	●	●	●	●
	433PQ				0.047	●	●	●	●	●	●	●
	DNMG 431PQ	0.500	0.187	0.203	0.016	●	●	●	●	●	●	
	432PQ				0.031	●	●	●	●	●	●	●
	433PQ				0.047	●	●	●	●	●	●	●
	DNMG 441PQ	0.500	0.250	0.203	0.016	●	●	●	●	●	●	
	442PQ				0.031	●	●	●	●	●	●	●
	443PQ				0.047	●	●	●	●	●	●	●
	SNMG 431PQ	0.500	0.187	0.203	0.016	●	●	●	●	●	●	
	432PQ				0.031	●	●	●	●	●	●	●
	433PQ				0.047	●	●	●	●	●	●	●
	TNMG 331PQ	0.375	0.187	0.150	0.016	●	●	●	●	●	●	
	332PQ				0.031	●	●	●	●	●	●	●
	333PQ				0.047	●	●	●	●	●	●	●
	VNMG 331PQ	0.375	0.187	0.150	0.016	●	●	●	●	●	●	
	332PQ				0.031	●	●	●	●	●	●	●
	333PQ				0.047	●	●	●	●	●	●	●
	WNMG 431PQ	0.500	0.187	0.203	0.016	●	●	●	●	●	●	
	432PQ				0.031	●	●	●	●	●	●	●
	433PQ				0.047	●	●	●	●	●	●	●

Recommended Cutting Condition

PP Chipbreaker

Workpiece Material	Insert Grade	Min. - Recommendation - Max.		
		Cutting Speed Vc (sfm)	D.O.C. (in)	Feed Rate (ipr)
Carbon Steel / Alloy Steel	PV7010	700-875-1250	0.008-0.020-0.059	0.002-0.006-0.011
	PV7025	625-875-1225		
	TN6010	650-875-1225		
	TN6020	625-875-1175		
	CA5515	525-850-1125		
	CA5525	500-775-1050		

PQ Chipbreaker

Workpiece Material	Insert Grade	Min. - Recommendation - Max.		
		Cutting Speed Vc (sfm)	D.O.C. (in)	Feed rate (ipr)
Carbon Steel / Alloy Steel	PV7010	650-850-1225	0.020-0.039-0.098	0.006-0.010-0.016
	PV7025	600-825-1150		
	TN6010	625-850-1175		
	TN6020	600-825-1125		
	CA5515	500-775-1050		
	CA5525	450-725-975		



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