



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

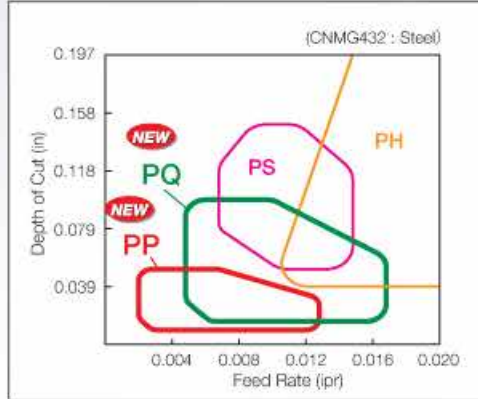
- ◆ **Innovative Design**
Covers a wide range of cutting conditions
- ◆ **Smooth Cutting Edges**
Substantially reduce cutting forces



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



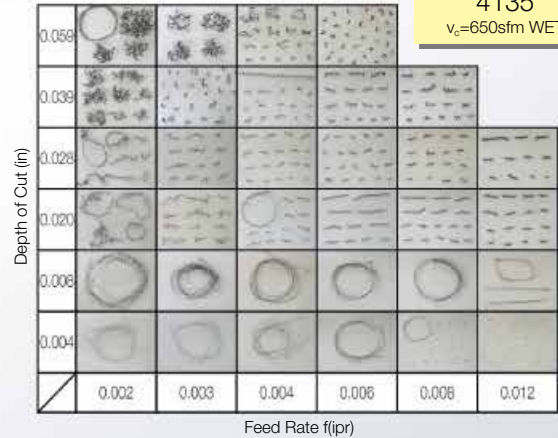
PP

CNMG431PP

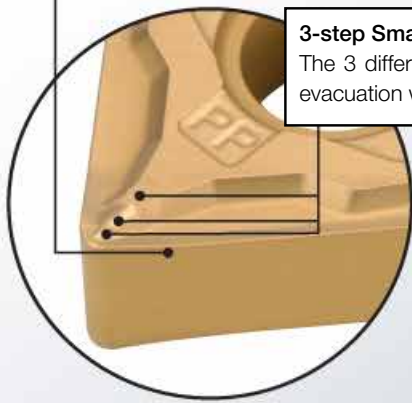
3.937in

4135

$v_c=650\text{sfm}$ WET

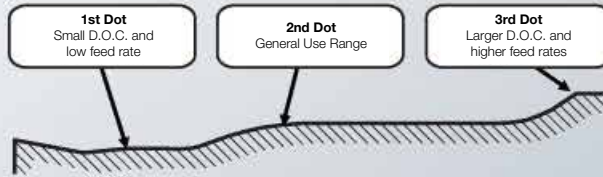


Smooth Taper Cutting Edge
Reduces Cutting Forces



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.=0.012in
 $f=0.012\text{ipr}$
Wet

Competitor A → PP Chipbreaker

Stable cutting due to less chip entanglement

Customer Evaluation

Automotive part (5120H)

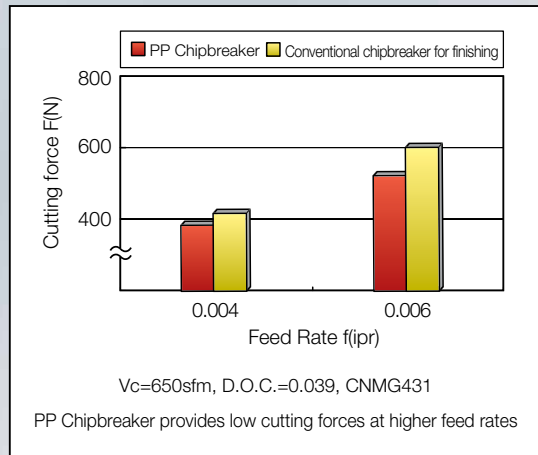
CNMG432PP
 $V_c=650\text{sfm}$
D.O.C.=0.008-0.012in
 $f=0.008-0.012\text{ipr}$
Wet

Competitor B → PP Chipbreaker

Stable cutting due to less chip entanglement

Customer Evaluation

■ Cutting Force Comparison Chart

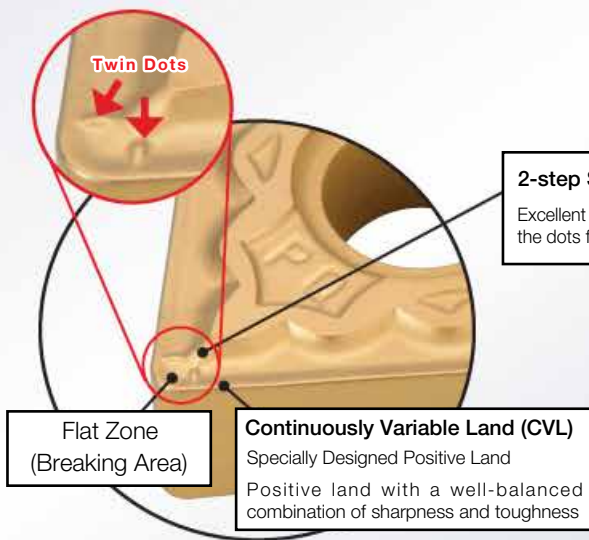


• Improved Surface Finish with MEGACOAT Cermet and PP Chipbreaker



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



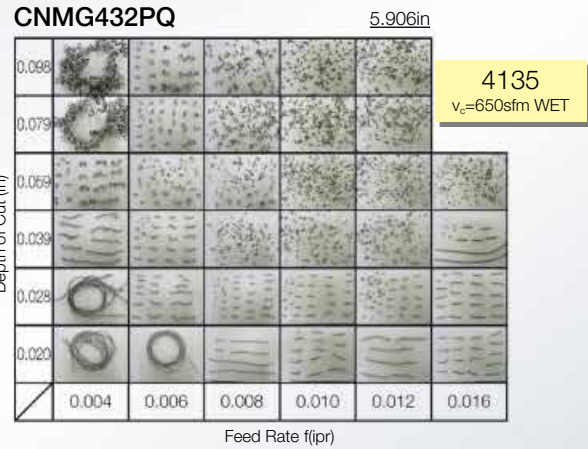
Prevents chip entanglement and reduces cutting forces at higher feed rates

■ Case Studies (Chip Control Comparison)

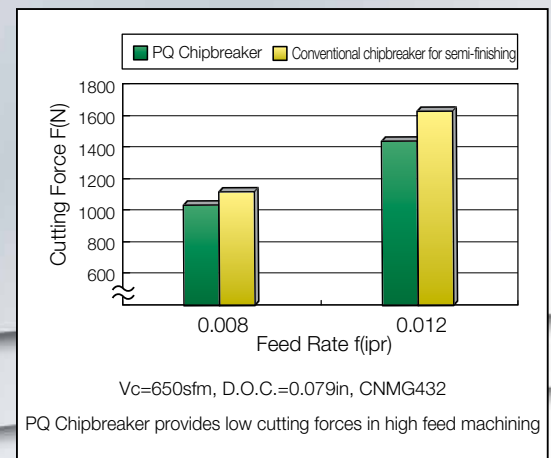
Automotive part (1045) DNMG432PQ $V_c=650$ $a_p=0.020-0.047\text{in}$ $f=0.012\text{ipr}$ Wet	Competitor C Minimized fracturing caused by chip entanglement Customer Evaluation	PQ Chipbreaker Customer Evaluation
---	---	---

Automotive part (1045) WNMG432PQ $V_c=825\text{sfm}$ $D.O.C.=0.039\text{in}$ $f=0.012\text{ipr}$ Wet	Competitor D 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	PQ Chipbreaker Customer Evaluation
--	--	---






PQ









■ Cutting Force Comparison Chart



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		



Kyocera Precision Tools

100 Industrial Park Road ■ Hendersonville, NC 28792
 Email: cuttingtools@kyocera.com
 Website: www.kyocera.com/cuttingtools
 Distributor Website: <http://mykicc.kyocera.com>
 Customer Service: 800.823.7284 - Option 1 Technical Support
 Support: 800.823.7284 - Option 2

