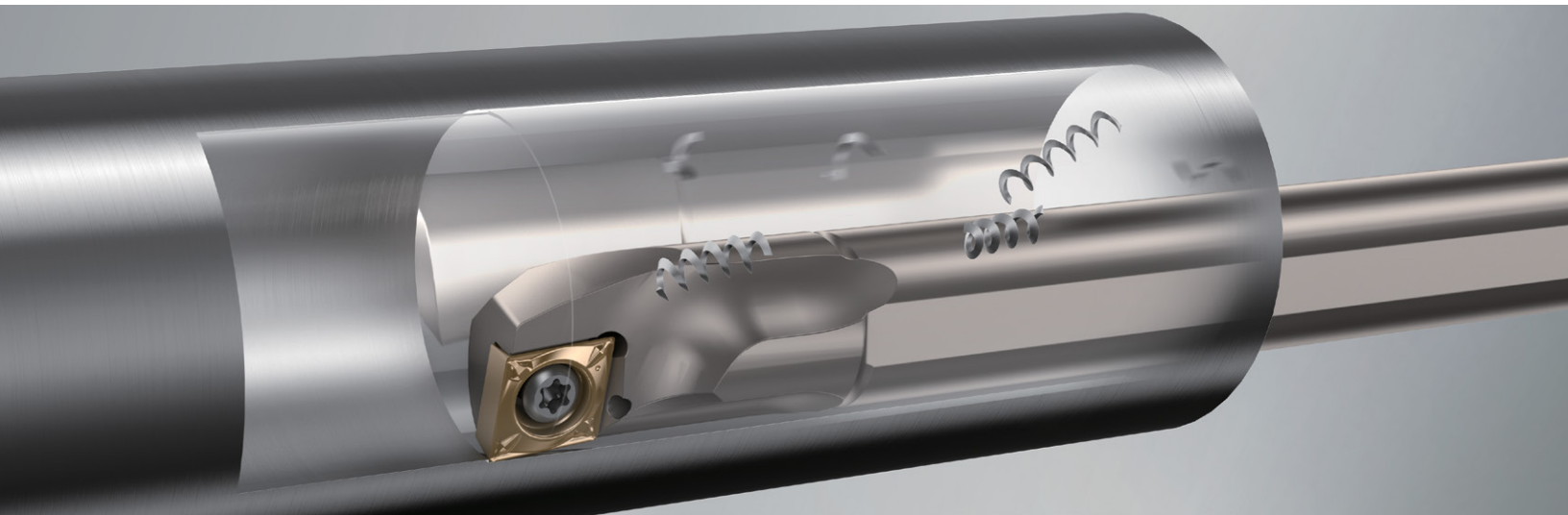




# WP Chipbreaker

Positive Wiper Insert



High Productivity with Newly Designed Wiper Edge Geometry

Excellent Surface Roughness and Smooth Chip Control During High Feed Machining

High Quality Surface Finish with No Galling

High Machining Accuracy with Low Cutting Forces



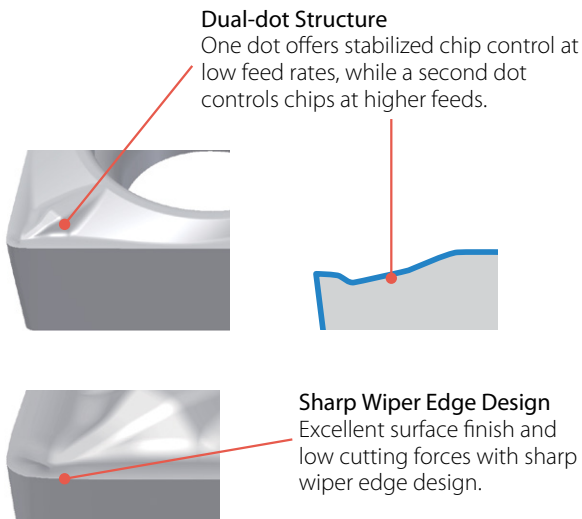
# WP Chipbreaker

Positive Wiper Insert

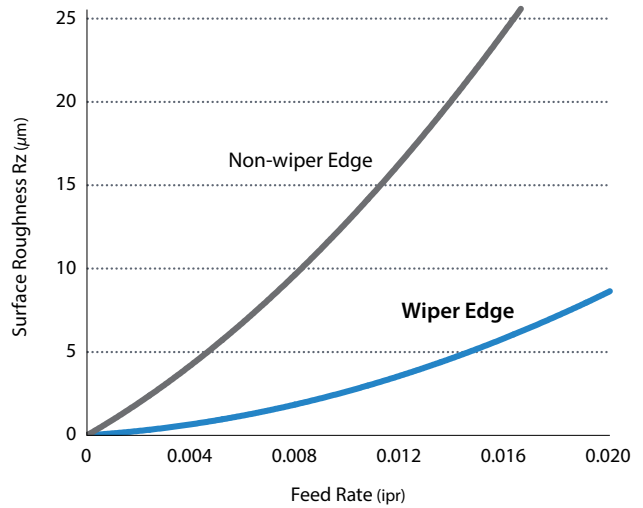
High Productivity with Newly Designed Wiper Edge Geometry

## 1

### Excellent Surface Roughness During High Feed Machining



Wiper Edge Comparison (Internal Evaluation)



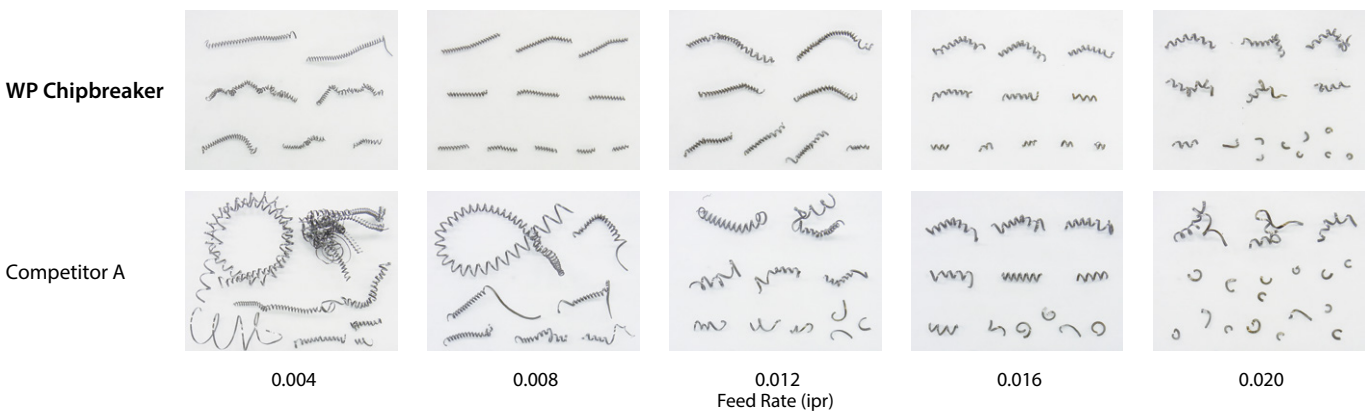
Cutting Conditions:  $V_c = 660$  sfm,  $a_p = 0.012''$   
Toolholder: A20R-SCLCR09-22AE Insert: CCMT3251

## 2

### Stable Chip Control in a Wide Range of Feed Rates

Smooth chip control from low feed to high feed rates.

Chip Control Comparison (Internal Evaluation)

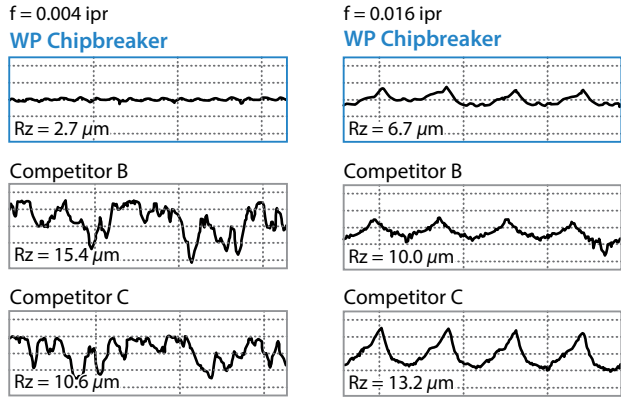
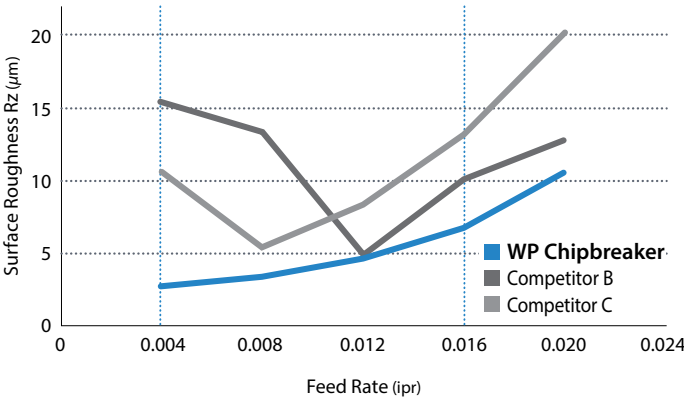


Cutting Conditions:  $V_c = 660$  sfm, D.O.C. = 0.012"; Wet Toolholder: A20R-SCLCR09-22AE Insert: CCMT3251 Workpiece: 4118 Steel

# 3 Excellent Surface Finish

WP chipbreaker offers excellent surface roughness across a wide range of cutting conditions.

Surface Finish Comparison (Internal Evaluation)

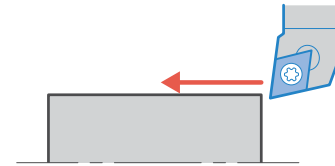
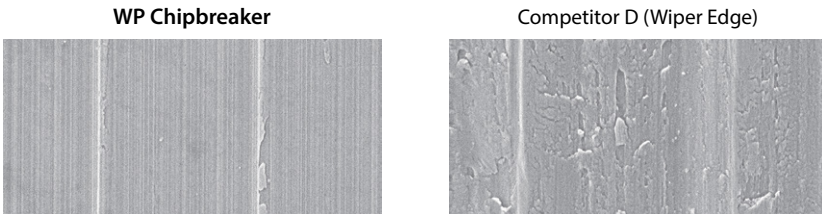


Cutting Conditions: Vc = 490 sfm, D.O.C. = 0.020", Wet Toolholder: A20R-SCLCR09-22AE Insert: CCMT3251 Workpiece: 4118 Steel

# 4 Reduces Surface Finish Galling

WP chipbreaker reduces tearing of the finished surface by controlling adhesion with the newly designed wiper edge.

(Internal Evaluation)

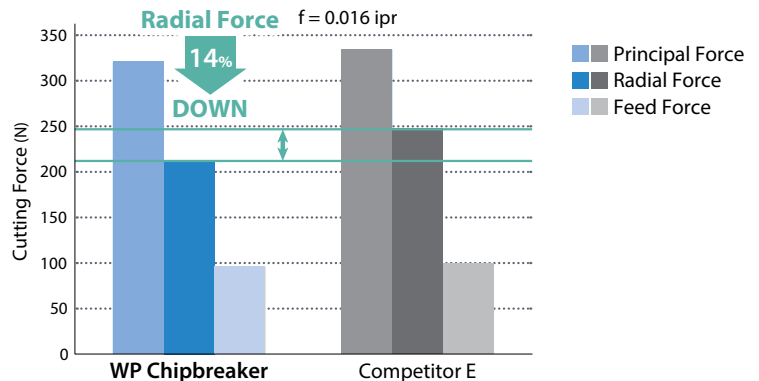
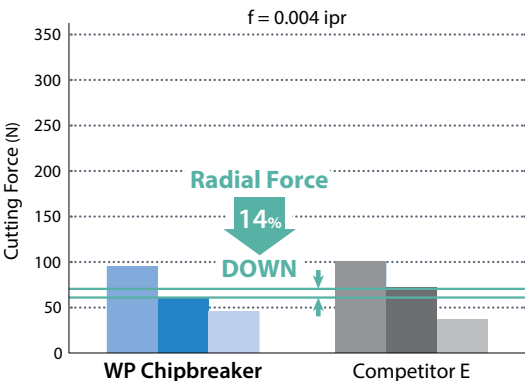


Cutting Conditions: Vc = 260 sfm, D.O.C. = 0.029", f = 0.006 ipr, Wet Insert: CCMT3251 Workpiece: Steel

# 5 High Machining Accuracy with Low Radial Forces

Prevents tool deflection by reducing radial forces.

Cutting Force Comparison (Internal Evaluation)

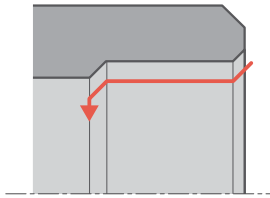


Cutting Conditions: Vc = 660 sfm, D.O.C. = 0.013", Wet Toolholder: A20R-SCLCR09-22AE Insert: CCMT3251 Workpiece: 4118 Steel

## Case Studies

### Hub 1045

Vc = 520 sfm  
D.O.C. = 0.006" (1 pass)  
f = 0.003 ipr  
Wet  
A16Q-SCLCR09-18AE  
CCMT09T304WP TN620



WP Chipbreaker  
**TN620**

**2.3 sec.**

50%  
and more  
Cutting Time

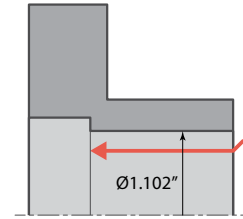
Competitor F  
(No Wiper)

**5.6 sec.**

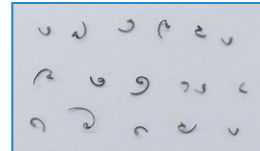
WP chipbreaker reduced the cutting time by more than 50% by increasing feed rate and reducing number of cuts (2 passes to 1 pass)  
Wiper edge also improved surface roughness. (User Evaluation)

### Sleeve 1045

Vc = 590 sfm  
D.O.C. = 0.008"  
f = 0.011 ipr  
Wet  
S16-SCLCR09 type  
CCMT09T304WP PV720



WP Chipbreaker



Competitor G (Wiper Edge)

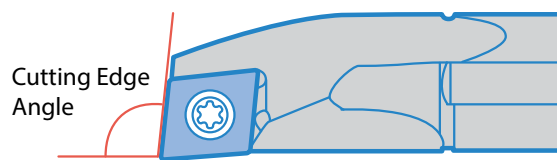


WP chipbreaker improved chip control compared to Competitor G  
Machining efficiency was improved by increasing feed rate. Tool life extended to 1.5 times that of Competitor G. (User Evaluation)

## Corresponding Toolholders / Lead Angles

### Applicable Cutting Edge Angle

Insert	Cutting Edge Angle
CCMT215.. / CCMT325..	95°
DCMX2151 / DCMX3251	93°
TCMX18151 / TCMX2151	95°
TPMX18151 / TPMX221	95°



### Applicable Toolholder

Insert	Application	Description	Applicable
CCMT215.. CCMT325..	Boring	A-SCLC-AE	Yes
		S-SCLC-A	
		E-SCLC-A	
		HA-SCLC09	
CCMT215.. CCMT325..	External Turning	ACLFC-FF	Yes
		SCLC-FF	
		SCLC	
		S-SCLC	
DCMX2151 DCMX3251	Boring	A-SDUC-AE	Yes
		S-SDUC-A	
		E-SDUC-A	
		HA-SDUC11	
		A-SDZC-AE	No
		S-SDZC-A	
		E-SDZC-A	
		A-SDQC-AE	
S-SDQC-A	No		
E-SDQC-A			

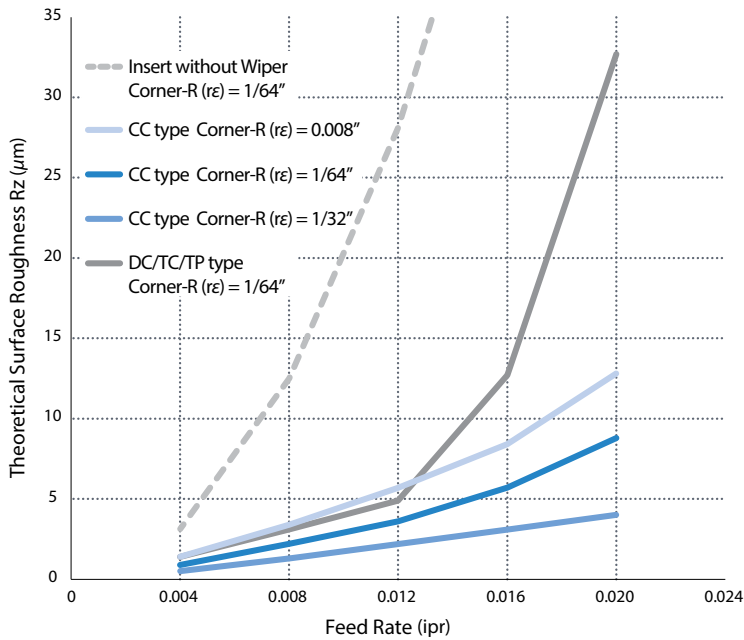
Insert	Application	Description	Applicable
DCMX2151 DCMX3251	External Turning	ADJC-FF	Yes
		SDJC-FF	
		SDJC	
		S-SDUC	See Caution
		SDLFC-FF	
		S-SDLC	
		SDXC	
TCMX18151 TCMX2151	Boring	A-STLC-AE	Yes
	External Turning	S-STLC-A	No
		STGC	
TPMX18151 TPMX221	Boring	A-STLP-AE	Yes
		S-STLP-A	
		E-STLP-A	
		S-STWP-E	No
	S-STWP		
	External Turning	C-STXP	No
STGP			

Caution:

The SDLFC-FF and S-SDLC toolholders have a 5° lead angle. While the DCMX...WP can offer surface finish improvements over non-wiper inserts in those toolholders, optimum performance will be obtained by using a 3° lead angle, such as ADJC-FF, SDJC-FF, SDJC, S-SDUC, etc.

# Setting Conditions for Wiper Inserts

## Theoretical Surface Roughness

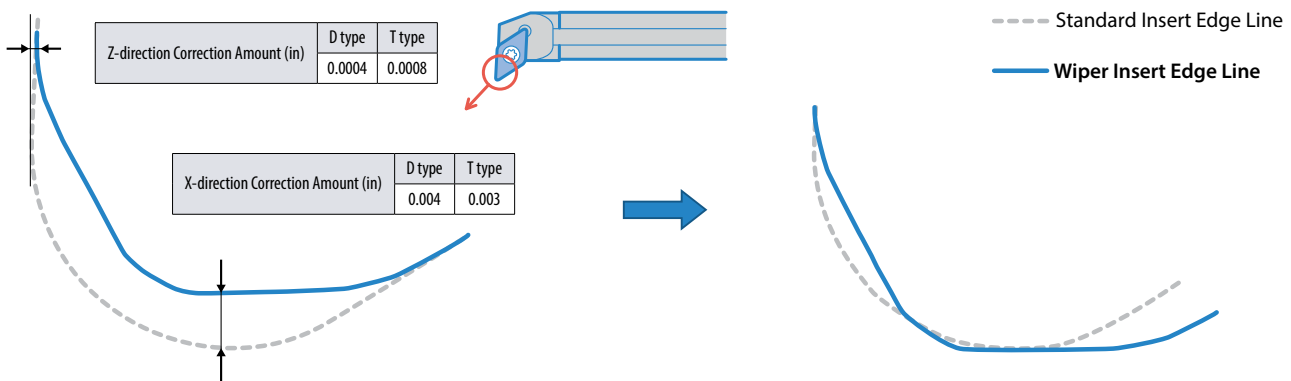


The theoretical surface roughness of a wiper insert is lower than inserts without a wiper.

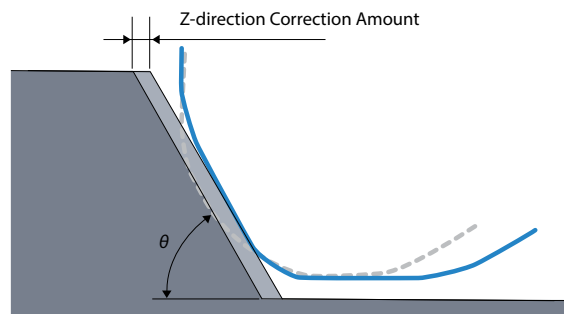
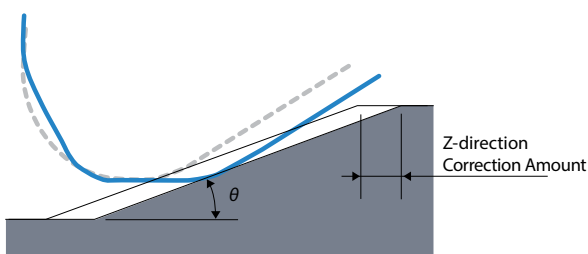
When selecting a feed rate, see left chart for theoretical surface roughness.

## WP Chipbreaker Edge Position Offset Adjustment

For D type and T type, cutting edge offsets are required.



For D type and T type, program corrections are required for ramping and profiling.



Ramping Angle $\theta$	0°	5°	10°	15°	20°	25°
Z-direction Correction Amount (in) D type	0	-0.0055	-0.0059	-0.0063	-0.0063	-0.0067





Profiling Angle $\theta$	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
Z-direction Correction Amount (in) D type	0.0000	0.0028	0.0024	0.0016	0.0012	0.0008	0.0004	0.0000	-	-	-
Z-direction Correction Amount (in) T type	0.0000	0.0028	0.0024	0.0020	0.0020	0.0016	0.0012	0.0008	0.0004	0.0004	0.0000

Profiling Angle $\theta$	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°	90°
Z-direction Correction Amount (in) D type	-0.0004	-0.0008	-0.0012	-0.0016	-0.0020	-0.0020	-0.0016	-0.0012	-0.0008	-0.0004	0.0000
Z-direction Correction Amount (in) T type	-	-	-	-0.0004	-0.0008	-0.0012	-0.0016	-0.0012	-0.0008	-0.0004	0.0000

# Stock Items

Usage Classification

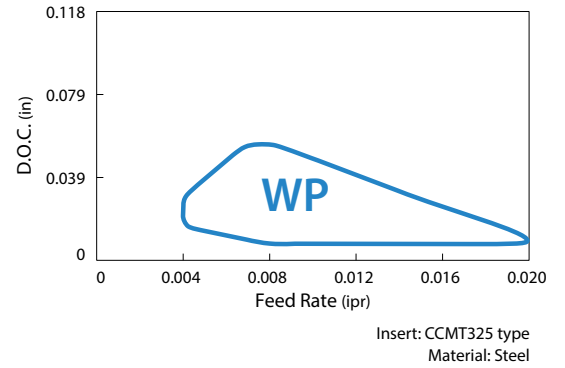
✱ : Interruption / 1st Choice ✪ : Interruption / 2nd Choice ● : Continuous - Light Interruption / 1st Choice  
 ☺ : Continuous - Light Interruption / 2nd Choice ● : Continuous / 1st Choice ○ : Continuous / 2nd Choice

		P	Carbon Steel / Alloy Steel					●	●	○	●	●	✱	●	☺
		M	Stainless Steel											☺	●
Shape	Description	Dimensions (in)					Cermets		CVD Coated Carbide				MEGACOAT NANO	MEGACOAT	
		I.C.	Thickness	Hole	Corner-R (rε)	Relief Angle	TN620	PV720	CA510	CA515	CA525	CA530	PR1425	PR1225	
	CCMT 21505WP	1/4	3/32	0.110	0.008	7°	○	○	○	●	●	○	●	●	
	2151WP	1/4	3/32	0.110	1/64	7°	○	○	○	●	●	○	●	●	
	CCMT 3251WP	3/8	5/32	0.173	1/64	7°	○	○	○	●	●	○	●	●	
	3252WP	3/8	5/32	0.173	1/32	7°	○	○	○	●	●	○	●	●	
	DCMX 2151WP	1/4	3/32	0.110	1/64	7°	○	○	○	●	●	○	●	●	
	DCMX 3251WP	3/8	5/32	0.173	1/64	7°	○	○	○	●	●	○	●	●	
	TCMX 18151WP	7/32	3/32	0.098	1/64	7°	○	○	○	○	○	○	○	○	
	TCMX 2151WP	1/4	3/32	0.110	1/64	7°	○	○	○	○	○	○	○	○	
	TPMX 18151WP	7/32	3/32	0.110	1/64	11°	○	○	○	○	○	○	○	○	
	TPMX 221WP	1/4	1/8	0.130	1/64	11°	○	○	○	○	○	○	○	○	

● : U.S. Stock ○ : World Express (Shipping: 7-10 Business Days)

## Recommended Cutting Conditions

Workpiece	Insert Grade	Min. - Recommendation - Max.		
		Cutting Speed Vc (sfm)	D.O.C. (in)	Feed f (ipr)
Carbon Steel / Alloy Steel	TN620	260 - 490 - 690	0.006 - 0.012 - 0.059	0.004 - 0.010 - 0.020
	PV720	260 - 490 - 690		
	CA510	390 - 560 - 720		
	CA515	330 - 520 - 690		
	CA525	300 - 460 - 620		
	CA530	260 - 390 - 520		
	PR1425	200 - 390 - 660		
	PR1225	160 - 260 - 490		



## Recommended Insert Grade

Carbon Steel / Alloy Steel

Applications		Target	Base Material	Coating	Recommended Grade
	Continuous	Surface Quality	Cermet	Non-coated	<b>TN620</b>
		Wear Resistance		MEGACOAT NANO	<b>PV720</b>
	Light Interrupted	Wear Resistance (High Speed)	Carbide	CVD	<b>CA510 / CA515 / CA525 / CA530</b>
		Fracture Resistance (Small Parts)		MEGACOAT NANO MEGACOAT	<b>PR1425 / PR1225</b>



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