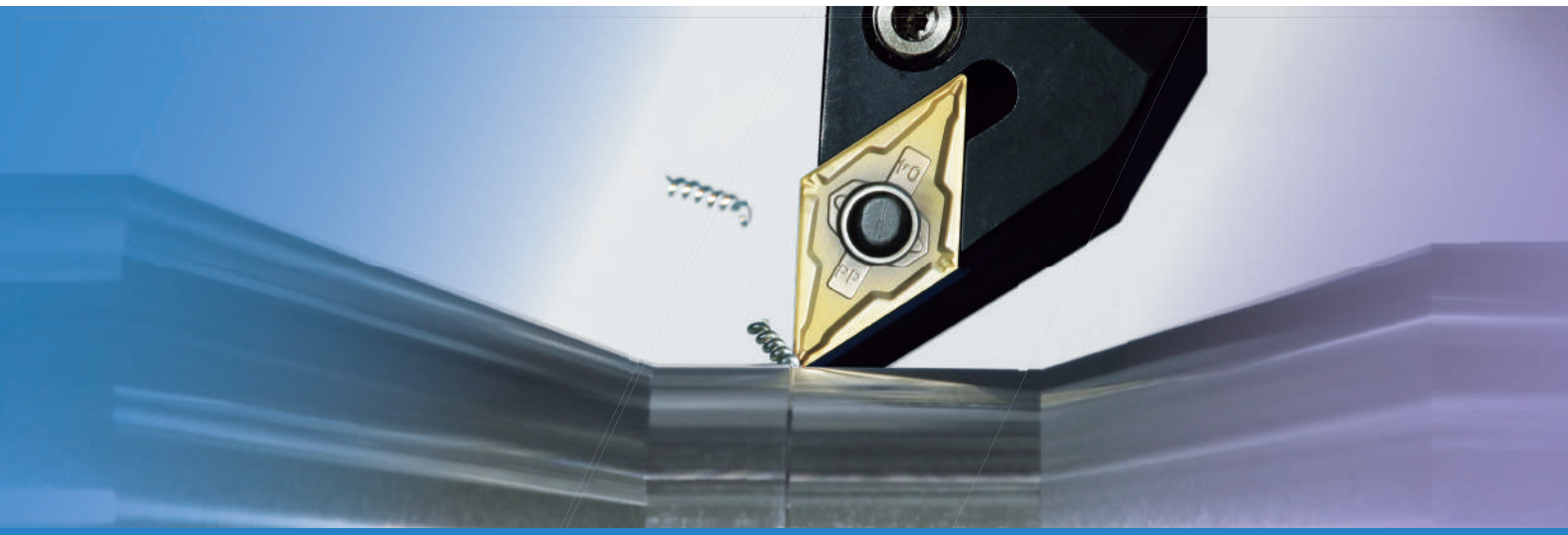
KYOCERA

Hybrid Cermet
for Steel Machining

PV720
PV730

Hybrid Cermet for Steel Machining

PV720 / PV730



Advanced Cermet Technology Provides High-quality Surface Finish and High-efficiency Machining

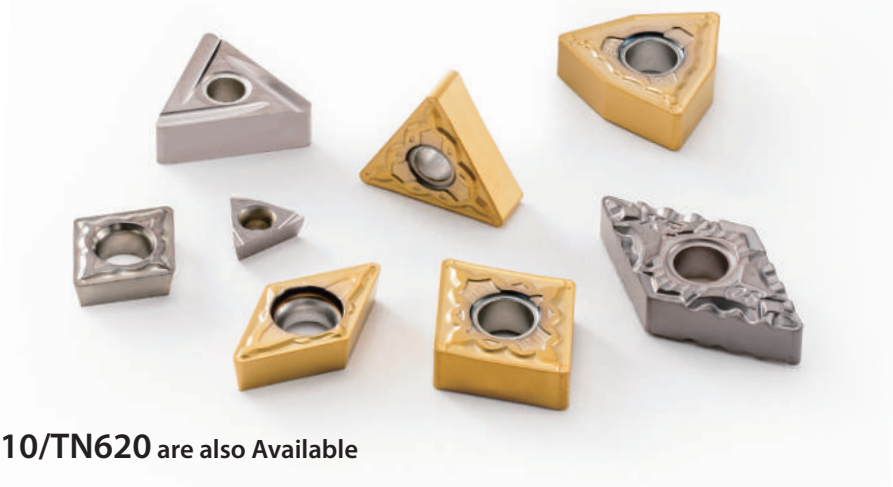
The Toughest Cermets in the History of Kyocera* - New PV730

Full Lineup for a Wide Range of Machining Applications

Three Types of Reinforcement Techniques Create a Unique Hybrid Cermet Technology

General Use
PV720

Stability Oriented
PV730 NEW



High Speed **PV710** Uncoated Cermet **TN610/TN620** are also Available

*Based on internal research conducted April 2020

Hybrid Cermet for Steel Machining

PV720 / PV730

Three types of reinforcement techniques creates a unique hybrid cermet technology achieving high-quality surface finish and efficient machining results. The Toughest Cermets in the History of Kyocera - New PV730

1 The Toughest Cermets in the History of Kyocera* - New PV730

*Based on internal research conducted April 2020

New Stability oriented PV730 added to lineup. Full lineup covers various machining applications.

High Speed

PV710

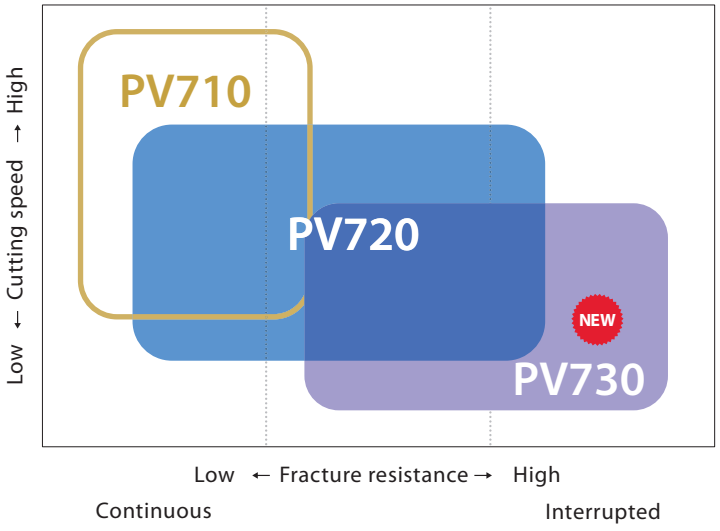
General Use

PV720 1st Recommendation -Excellent wear resistance-

Stability Oriented

PV730 NEW Tough Cermet - High stability -

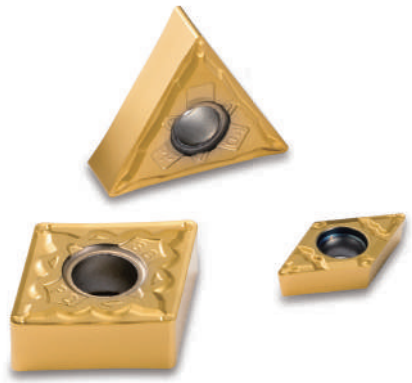
Fracture resistance: 2X more than competitors
(Internal evaluation)

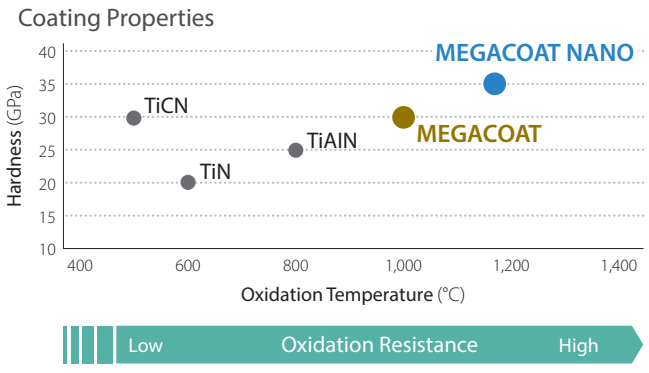


Uncoated Type is also Available TN610 / TN620

MEGACOAT NANO

Improve performance by composite lamination of MEGACOAT NANO and special TiN coating to combine high adhesion resistance and great visibility of the used cutting edge





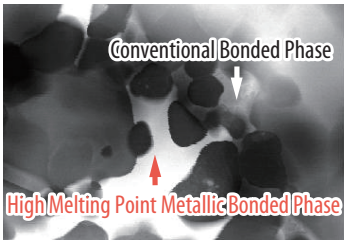
2 Three Types of Specialized Strengthening Technology (Hybrid Technology)

1. High Quality Surface Finish
-High Melting Point "Hybrid Bonded Phase"-

Combining the conventional cermet bonded phase (nickel, cobalt) and the special high melting point metallic bonded phase.

Provides high adhesion resistance to eliminate galling of the work piece for excellent surface finish

Specialized Strengthening Technology 1
High Melting Point Hybrid Bonded Phase

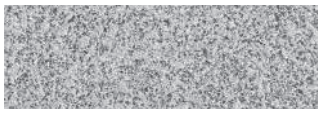


2. Excellent Fracture Resistance
- Micro Grain "Hybrid Hard Phase" -

Improved strength with uniform micro grain hard phase and superior compressive stress with high melting point bonded phase. This combination yields greater fracture resistance.

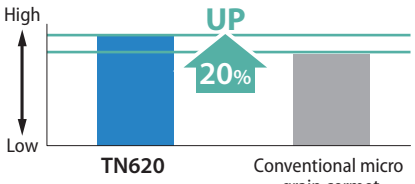
Specialized Strengthening Technology 2
Micro Grain "Hybrid Hard Phase"

TN620 structure



Internal structure

Compressive residual stress in hard phase comparison (Internal evaluation)



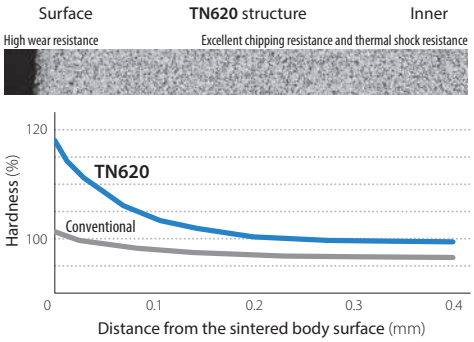
3. Superior Wear Resistance
-Special Surface-Hardened "Hybrid Structure"-

Excellent wear resistance with surface-hardened layer using gradient composition technology

Good balance of stable wear resistance and fracture resistance.

*No applicable to PV730.

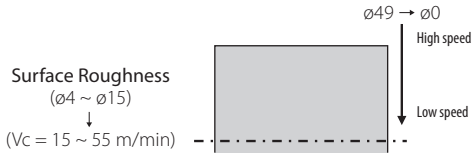
Specialized Strengthening Technology 3
Special Surface-Hardened Hybrid Structure



TN620's inner structure has high toughness and chipping resistance along with greater thermal shock and wear resistance than that of the conventional micro grain cermet. (Internal evaluation)

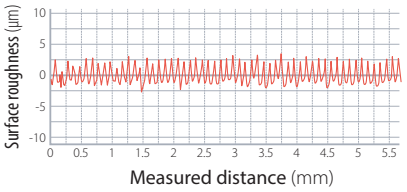
Beautiful Finish (Internal evaluation)

Cutting Conditions: Vc = 180 ~ 0 m/min (Constant revolutions), ap = 0.5 mm
f = 0.1 mm/rev, Wet, CNMG120404 type Workpiece: S10C



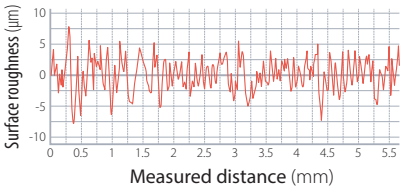
Good finish

PV720



The finished surface is clouded

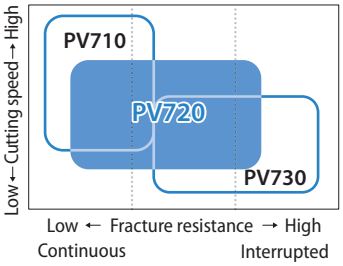
Competitor A



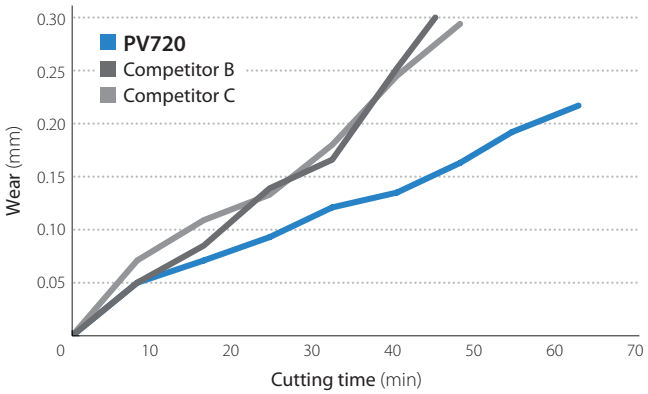
General Use

PV720

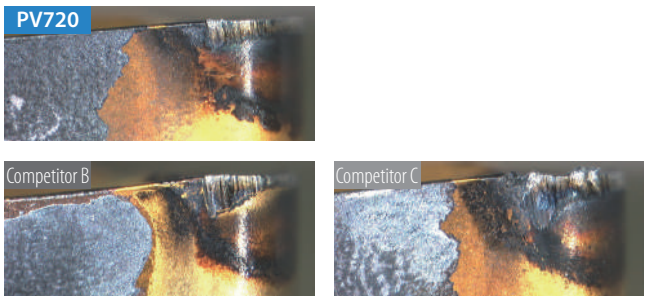
1st recommendation - Excellent Wear Resistance-
High-efficiency Machining and High Quality Surface Finish



Wear Resistance Comparison (Internal evaluation)

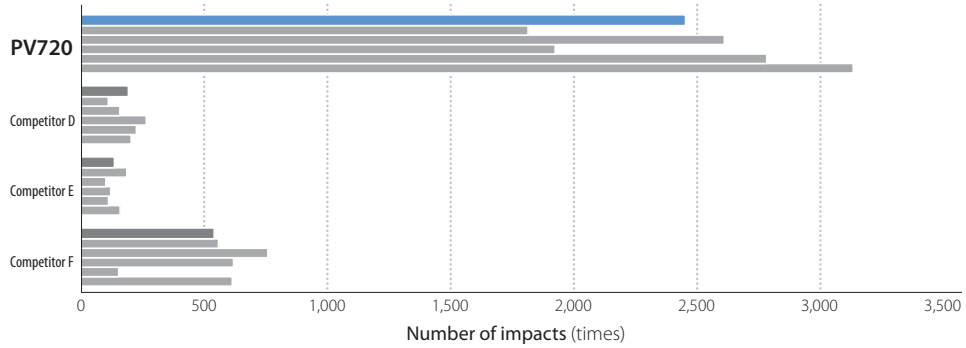


Cutting time: after 48 minutes



Cutting Conditions: Vc = 250 m/min, ap = 1.0 mm, f = 0.2 mm/rev, Wet, CNMG120408 Type Workpiece: SCM 435

Fracture Resistance Comparison (Internal evaluation)



The top bar is the average value.

Cutting Conditions : Vc = 250 m/min , ap = 1.0 mm , f = 0.2 mm/rev , Wet , CNMG120408 Type Workpiece : S45C (4 Grooves)

For High Speed and Continuous Machining

PV710

Long Tool Life in High-Speed and Continuous Machining

Uncoated Cermet TN610/TN620 are Available

Recommended Cutting Conditions

Cutting speed: Vc (m/min)

	Low Carbon Steel Low-carbon Alloy Steel 150 HB or less	Medium-carbon steel Medium-carbon Alloy Steel 250 HB or less	High-carbon Alloy Steel 300 HB or less
TN610	150 – **250** – 350		150 – **230** – 300
TN620	100 – **200** – 300		100 – **180** – 250

Cutting speed: Vc (m/min)

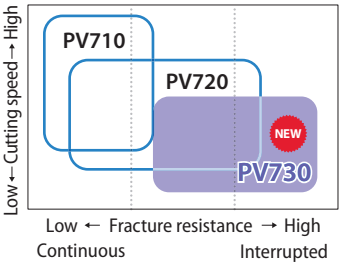
	Low Carbon Steel Low-carbon Alloy Steel 150 HB or less	Medium-carbon steel Medium-carbon Alloy Steel 250 HB or less	High-carbon Alloy Steel 300 HB or less
PV710	150 – **300** – 400		150 – **250** – 330
PV720	100 – **250** – 350		100 – **200** – 280
PV730	100 – **180** – 250		100 – **180** – 250

Stability Oriented

PV730

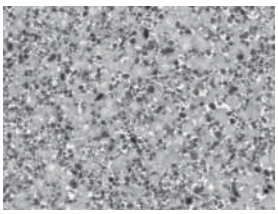
The Toughest Cermet in Kyocera History - High Stability -
High Stability and Excellent Finish

NEW

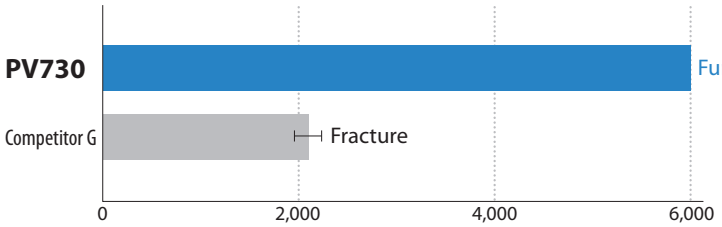


New Tough Micro Grain Cermet Improves Fracture Resistance Good Surface Finish and Wear Resistance

Newly Developed Tough Cermet Technology



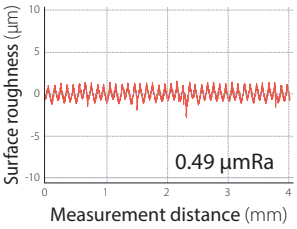
Fracture Resistance Comparison (Internal evaluation)



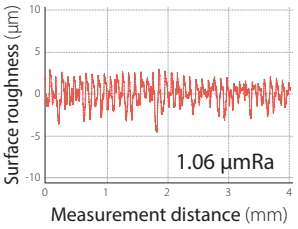
Cutting Conditions: Vc = 180 m/min
ap = 0.5 mm, f = 0.25 mm/rev, Wet
CNMG120408 Type
Workpiece : S45C (4 Grooves) n=3

Surface Roughness Comparison (Internal evaluation)

PV730



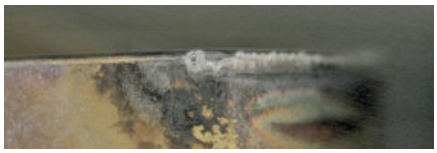
Competitor H



Cutting Conditions: Vc = 100 m/min, ap = 0.5 mm, f = 0.1 mm/rev, Wet, CNMG120408 Type Workpiece: S10C

Cutting edge conditions comparison - after 40 min machining - (Internal evaluation)

PV730



Competitor I

Cutting Conditions: Vc = 250 m/min
ap = 1.0 mm, f = 0.2 mm/rev, Wet
CNMG 120408 Type Workpiece: S45C

Small Parts Machining — **Molded G-class chipbreakers (sharp edge) with improved base material strength**

For finishing

NEW

SKS Chipbreaker

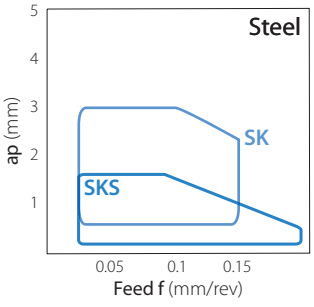
ap: 0.2 mm to 1.5 mm
Excellent chip control and surface finish

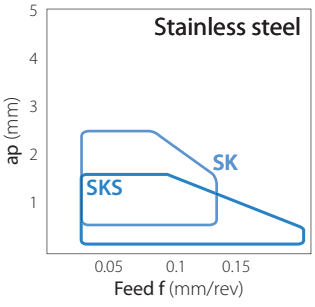
For semi-finishing

SK Chipbreaker

ap: 0.5 mm to 3.0 mm
Three-dimensional Chipbreaker with both sharpness and chip disposal

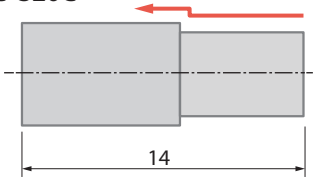
1st Recommended Chipbreaker (Low Cutting Force)





SOLUTION **Small Parts Machining: SK Chipbreaker (PV730) showed a good surface finish and 4X longer tool life**

Valve S20C



Tool Life

PV730 (SK Chipbreaker) — (Required surface roughness: 6.3 µmRz) **3,000 pcs/corner (4.0 µmRz)**

Competitor J (PVD Coated Cermet) — **750 pcs/corner (5.0 µmRz)**

Tool Life ×4.0

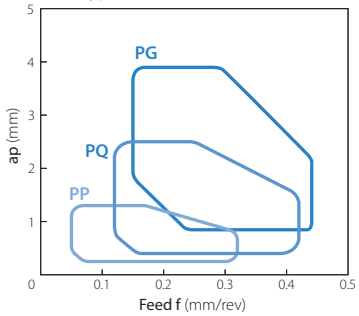
Cutting Conditions: Vc = 160 m/min, ap = 0.5 mm, f = 0.03 mm/rev Wet (oil), DCGT11T302 MFP-SK PV730

Smart Chipbreaker P Series for Steel Machining

PP/PQ/PG Chipbreaker

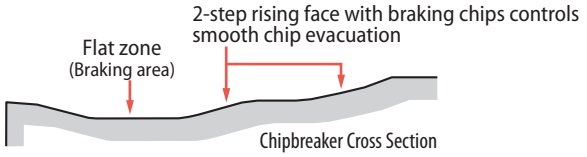
Negative Type

C12 Type: Steel = 12



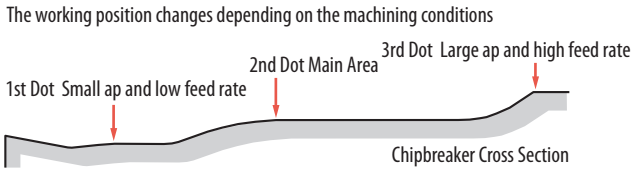
Finishing ~ Medium PQ Chipbreaker

Suppress clogging and increase in resistance during high feed
Braking effect for a wide range of applications



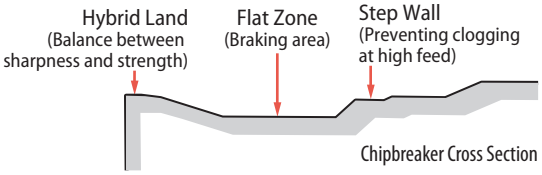
Finishing PP Chipbreaker

Improves chip clogging and biting during small D.O.C.and high-feed machining



Medium - Roughing PG Chipbreaker

Provides stable machining with wide chip control range



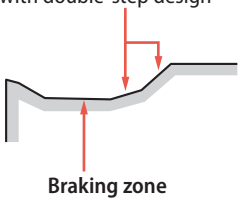
Wiper Insert

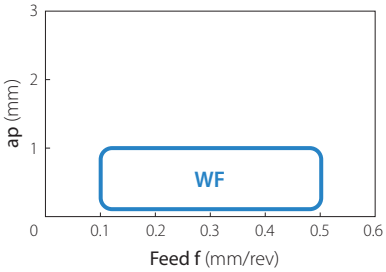
WE/WF Chipbreaker

Negative Type

Finishing WF Chipbreaker (Wiper insert)

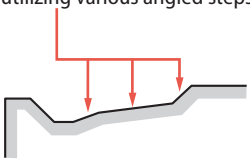
Chipbreaker Cross Section
Improved chip control with double-step design

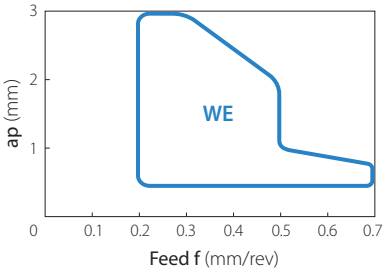




Finishing - Medium WE Chipbreaker (Wiper insert)

Chipbreaker Cross Section
Available for a wide range of machining operations utilizing various angled steps

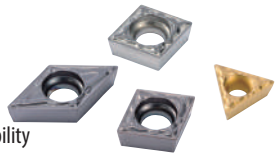




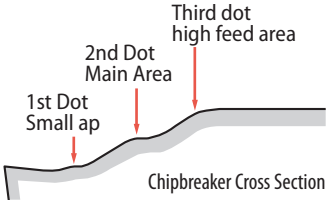
Positive type

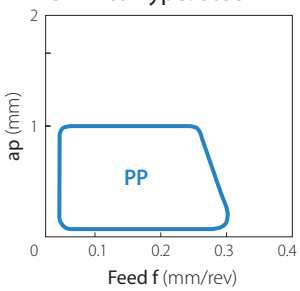
Finishing PP Chipbreaker

Improved productivity of finishing with high reliability



CPMT09 Type: Steel



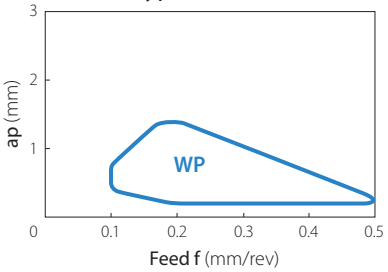


Finishing WP Chipbreaker (Wiper insert)

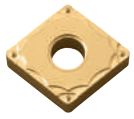
New design wiper edge for high productivity

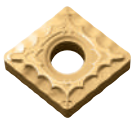
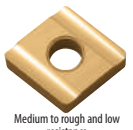
Two-step dot structure
Stable chip at low feed
Control chipbreaker effets even in high-feed, high-load machining

CCMT09 Type: Steel



Stock Items (Negative)

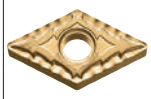
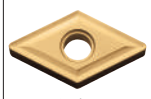
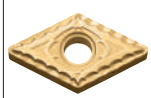
Shape	Description	Dimensions (mm) Inscribed Circle Diameter	Thickness	Hole Diameter	Corner R (RE)	PV710	PV720	PV730	TN610	TN620
 Finishing / with Wiper Edge	CNMG 120404 WF 120408 WF	12.70	4.76	5.16	0.4 0.8	● ●	● ●		● ●	● ●
 Finishing / with Wiper Edge	CNMG 120404 WP 120408 WP	12.70	4.76	5.16	0.4 0.8	● ●	● ●		● ●	● ●
 Finishing - Medium / with Wiper Edge	CNMG 120404 WE 120408 WE 120412 WE	12.70	4.76	5.16	0.4 0.8 1.2	● ● ●	● ● ●		● ● ●	● ● ●
 Finishing - Medium / with Wiper Edge	CNMG 120404 WQ 120408 WQ 120412 WQ	12.70	4.76	5.16	0.4 0.8 1.2	● ● 	● ● ●		● ● 	● ● ●
 Finishing	CNMG 120402 PP 120404 PP 120408 PP 120412 PP	12.70	4.76	5.16	0.2 0.4 0.8 1.2	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●
 Finishing	CNMG 090404 GP 090408 GP	9.525	4.76	3.81	0.4 0.8		● ●	● ●		● ●
	CNMG 120402GP 120404 GP 120408 GP	12.70	4.76	5.16	0.2 0.4 0.8	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
 Finishing - Medium	CNMG 120404PQ 120408PQ 120412PQ	12.70	4.76	5.16	0.4 0.8 1.2	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
 Finishing - Medium	CNMG 090404HQ 090408HQ	9.525	4.76	3.81	0.4 0.8		● ●	● ●		● ●
	CNMG 120404HQ 120408HQ 120412HQ	12.70	4.76	5.16	0.4 0.8 1.2	● ● 	● ● ●	● ● ●	● ● 	● ● ●
 Finishing - Medium/Up facing	CNMG 120404CQ 120408CQ	12.70	4.76	5.16	0.4 0.8	● ●	● ●	● ●	● ●	● ●
 Medium-Roughing	CNMG 090404GS 090408GS	9.525	4.76	3.81	0.4 0.8		● ●	● ●		● ●
	CNMG 120404GS 120408GS	12.70	4.76	5.16	0.4 0.8		● ●	● ●		● ●
 Medium-Roughing	CNMG 120404 PG 120408 PG 120412 PG	12.70	4.76	5.16	0.4 0.8 1.2	● ●	● ● ●	● ● ●	● ●	● ● ●
 Medium-Roughing	CNMG 120404 PS 120408 PS	12.70	4.76	5.16	0.4 0.8		● ●	● ●		● ●
 Roughing	CNMG 120404 120408	12.70	4.76	5.16	0.4 0.8	● ●	● ●	● ●	● ●	● ●

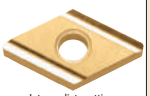
Shape The self-tip. Show right hand (R)	Description	Dimensions (mm) Inscribed Circle Diameter	Thickness	Hole Diameter	Corner R (RE)	PV710	PV720	PV730	TN610	TN620
 Mild steel, finishing, and small cuts	CNMG 120404 XF 120408 XF	12.70	4.76	5.16	0.4 0.8	● ●	● ●	● ●	● ●	● ●
 Mild steel and finishing	CNMG 120404 XP 120408 XP	12.70	4.76	5.16	0.4 0.8	● ●	● ●	● ●	● ●	● ●
 Mild steel and medium cutting	CNMG 120404 XQ 120408 XQ	12.70	4.76	5.16	0.4 0.8	● ●	● ●	● ●	● ●	● ●
 Mild steel and Roughing	CNMG 120408 XS	12.70	4.76	5.16	0.8	●	●	●	●	●
 Finished to medium and sharp edges Specular	CNGG 120402MFP-SK 120404MFP-SK	12.70	4.76	5.16	<0.2 <0.4			● ●		
 Finishing, emphasizing surface roughness, sharp edges	CNGG 090402 R/L-S 090404 R/L-S 090408 R/L-S	9.525	4.76	3.81	0.2 0.4 0.8	● ● ●	● ●		● ● ●	● ●
 Intermediate cutting	CNGG 120404 R/L 120408 R/L	12.70	4.76	5.16	0.4 0.8	● ●	● ●	● ●	● ●	● ●
 Medium to rough and low resistance	CNGG 120404 R/L-25R 120408 R/L-25R	12.70	4.76	5.16	0.4 0.8	● ●	● ●		● ●	● ●
 Finishing / with Wiper Edge	DNMX 150404 WF 150408 WF 150412 WF	12.70	4.76	5.16	0.4 0.8 1.2	● ● ●	● ● ●		● ● ●	● ● ●
	DNMX 150604 WF 150608 WF 150612 WF	12.70	6.35	5.16	0.4 0.8 1.2	● ● ●	● ● ●		● ● ●	● ● ●
 Finishing	DNMG 150402 PP 150404 PP 150408 PP 150412 PP	12.70	4.76	5.16	0.2 0.4 0.8 1.2	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●
	DNMG 150602 PP 150604 PP 150608 PP 150612 PP	12.70	6.35	5.16	0.2 0.4 0.8 1.2	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●
 Finishing	DNMG 110404 GP 110408 GP	9.525	4.76	3.81	0.4 0.8		● ●	● ●		● ●
	DNMG 150402 GP 150404 GP 150408 GP	12.70	4.76	5.16	0.2 0.4 0.8	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
	DNMG 150602 GP 150604 GP 150608 GP	12.70	6.35	5.16	0.2 0.4 0.8	● ● ●			● ● ●	

An insert which corner R(RE) dimension is shown with inequality sign(EX: <0.1, <0.2) indicates minus tolerance of corner R(RE)

●: Standard Stock

Stock Items (Negative)

Shape	Description	Dimensions (mm)				PV710	PV720	PV730	TN610	TN620
		Inscribed Circle Diameter	Thickness	Hole Diameter	Corner R (RE)					
 Finishing ~ Medium	DNMG 150404 PQ	12.70	4.76	5.16	0.4	●	●	●	●	●
	DNMG 150408 PQ				0.8	●	●	●	●	●
	DNMG 150412 PQ				1.2	●	●	●	●	●
	DNMG 150604 PQ	12.70	6.35	5.16	0.4	●	●	●	●	●
	DNMG 150608 PQ				0.8	●	●	●	●	●
	DNMG 150612 PQ				1.2	●	●	●	●	●
 Finishing ~ Medium	DNMG 110402 HQ	9.525	4.76	3.81	0.2		●	●		●
	DNMG 110404 HQ				0.4		●	●		●
	DNMG 150404 HQ	12.70	4.76	5.16	0.4	●	●	●	●	●
	DNMG 150408 HQ				0.8	●	●	●	●	●
	DNMG 150412 HQ				1.2	●	●	●	●	●
	DNMG 150604 HQ	12.70	6.35	5.16	0.4	●			●	
	DNMG 150608 HQ				0.8	●			●	
	DNMG 150612 HQ				1.2	●			●	
 Finishing ~ Medium/Raised	DNMG 150404 CQ	12.70	4.76	5.16	0.4	●	●	●	●	●
	DNMG 150408 CQ				0.8	●	●	●	●	●
	DNMG 150412 CQ				1.2	●	●	●	●	●
	DNMG 150604 CQ	12.70	6.35	5.16	0.4	●			●	
 Medium to coarse	DNMG 110404 GS	9.525	4.76	3.81	0.4		●	●		●
	DNMG 110408 GS				0.8		●	●		●
	DNMG 150404 GS	12.70	4.76	5.16	0.4		●	●		●
	DNMG 150408 GS				0.8		●	●		●
 Medium to coarse	DNMG 150404 PG	12.70	4.76	5.16	0.4	●	●	●	●	●
	DNMG 150408 PG				0.8	●	●	●	●	●
	DNMG 150412 PG				1.2		●	●		●
	DNMG 150604 PG	12.70	6.35	5.16	0.4	●	●	●	●	●
	DNMG 150608 PG				0.8	●	●	●	●	●
	DNMG 150612 PG				1.2		●	●		●
 Medium to coarse	DNMG 150404 PS	12.70	4.76	5.16	0.4		●	●		●
	DNMG 150408 PS				0.8		●	●		●
 Roughing	DNMG 150404	12.70	4.76	5.16	0.4	●	●	●	●	●
	DNMG 150408				0.8	●	●	●	●	●
 Mild steel, finishing, and small cuts	DNMG 150404 XF	12.70	4.76	5.16	0.4	●	●	●	●	●
	DNMG 150408 XF				0.8	●	●	●	●	●
 Mild steel and finishing	DNMG 150404 XP	12.70	4.76	5.16	0.4	●	●	●	●	●
	DNMG 150408 XP				0.8	●	●	●	●	●
	DNMG 150604 XP	12.70	6.35	5.16	0.4	●			●	
	DNMG 150608 XP				0.8	●			●	
 Mild steel and medium cutting	DNMG 150404 XQ	12.70	4.76	5.16	0.4	●	●	●	●	●
	DNMG 150408 XQ				0.8	●	●	●	●	●
 Mild steel and Roughing	DNMG 150408 XS	12.70	4.76	5.16	0.8	●	●	●	●	●
 Finished to medium and sharp edges Specular	DNGG 150402MFP-SK	12.70	4.76	5.16	<0.2			●		
	DNGG 150404MFP-SK				<0.4			●		

Shape The self-tip. Show right hand (R)	Description	Dimensions (mm)				PV710	PV720	PV730	TN610	TN620
		Inscribed Circle Diameter	Thickness	Hole Diameter	Corner R (RE)					
 Intermediate cutting	DNGG 150404 R/L	12.70	4.76	5.16	0.4	●	●	●	●	●
	DNGG 150408 R/L				0.8	●	●	●	●	●
 Medium to coarse	RNMG 090300	9.525	3.18	3.81	–		●			●
	RNMG 120400	12.70	4.76	5.16	–		●			●
 Finishing ~ Medium	SNMG 120404 PQ	12.70	4.76	5.16	0.4	●	●	●	●	●
	SNMG 120408 PQ				0.8	●	●	●	●	●
 Finishing ~ Medium	SNMG 120404 HQ	12.70	4.76	5.16	0.4	●	●	●	●	●
	SNMG 120408 HQ				0.8	●	●	●	●	●
	SNMG 120412 HQ				1.2	●	●	●	●	●
 Medium to coarse	SNMG 120408 PG	12.70	4.76	5.16	0.8	●	●	●	●	●
	SNMG 120412 PG				1.2		●	●		●
	SNMG 120416 PG				1.6		●	●		●
 Roughing	SNMG 090304	9.525	3.18	3.81	0.4	●	●	●	●	●
	SNMG 090308				0.8	●	●	●	●	●
	SNMG 120404	12.70	4.76	5.16	0.4	●	●	●	●	●
	SNMG 120408				0.8	●	●	●	●	●
	SNMG 120412				1.2		●			●
	SNMG 120416				1.6		●			●
	SNMG 120420				2.0		●			●
 Low Carbon Steel/Finishing	SNMG 120408 XP	12.70	4.76	5.16	0.8	●	●	●	●	●
 Low Carbon Steel/Finishing	SNMG 120408 XQ	12.70	4.76	5.16	0.8	●	●	●	●	●
 Low Carbon Steel/ Roughing	SNMG 120408 XS	12.70	4.76	5.16	0.8	●	●	●	●	●
 B: Finishing - Medium C: Medium - Roughing	SNGG 090304 R/L-B	9.525	3.18	3.81	0.4	●	●		●	●
	SNGG 090308 R/L-B				0.8	●	●		●	●
	SNGG 120404 R/L-C	12.70	4.76	5.16	0.4	●	●		●	●
	SNGG 120408 R/L-C				0.8	●	●		●	●
	SNMG 120404 R/L-C	12.70	4.76	5.16	0.4	●	●		●	●
	SNMG 120408 R/L-C				0.8	●	●		●	●
 Medium-Roughing / Low Cutting Resistance	SNGG 120404 R/L-25R	12.70	4.76	5.16	0.4	●	●		●	●
	SNGG 120408 R/L-25R				0.8	●	●		●	●
 Finishing / with Wiper Edge	TNMX 160404 WF	9.525	4.76	3.81	0.4	●	●		●	●
	TNMX 160408 WF				0.8	●	●		●	●
	TNMX 160412 WF				1.2	●	●		●	●

An insert which corner R(RE) dimension is shown with inequality sign(EX: <0.1, <0.2) indicates minus tolerance of corner R(RE)

Stock Items (Negative)

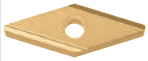
Shape	Description	Dimensions (mm)				PV710	PV720	PV730	TN610	TN620
		Inscribed Circle Diameter	Thickness	Hole Diameter	Corner R (RE)					
 Finishing	TNMG 160402 PP 160404 PP 160408 PP 160412 PP	9.525	4.76	3.81	0.2 0.4 0.8 1.2	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●
 Finishing	TNMG 110404 GP 110408 GP	6.35	4.76	2.26	0.4 0.8		● ●	● ●		● ●
	TNMG 160402 GP 160404 GP 160408 GP	9.525	4.76	3.81	0.2 0.4 0.8	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
 Finishing ~ Medium	TNMG 160404 PQ 160408 PQ 160412 PQ	9.525	4.76	3.81	0.4 0.8 1.2	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
 Finishing ~ Medium	TNMG 110404 HQ 110408 HQ	6.35	4.76	2.26	0.4 0.8		● ●	● ●		● ●
	TNMG 160404 HQ 160408 HQ 160412 HQ	9.525	4.76	3.81	0.4 0.8 1.2	● ●	● ● ●	● ● ●	● ● ●	● ● ●
 Finishing ~ Medium/Raised	TNMG 160404 CQ 160408 CQ 160412 CQ	9.525	4.76	3.81	0.4 0.8 1.2	● ●	● ● ●	● ● ●	● ● ●	● ● ●
 Medium to coarse	TNMG 110404 GS	6.35	4.76	2.26	0.4		●	●		●
	TNMG 160404 GS TNMG 160408 GS	9.525	4.76	3.81	0.4 0.8		● ●	● ●		● ●
 Medium to coarse	TNMG 160404 PG 160408 PG 160412 PG	9.525	4.76	3.81	0.4 0.8 1.2	● ●	● ● ●	● ● ●	● ● ●	● ● ●
 Medium to coarse	TNMG 160404 PS 160408 PS	9.525	4.76	3.81	0.4 0.8		● ●	● ●		● ●
 Roughing	TNMG 160404 160408 160412	9.525	4.76	3.81	0.4 0.8 1.2	● ●	● ● ●	● ● ●	● ● ●	● ● ●
	TNMG 220408	12.70	4.76	5.16	0.8		●			●
 Mild steel, finishing, and small cuts	TNMG 160404 XF 160408 XF	9.525	4.76	3.81	0.4 0.8	● ●	● ●	● ●	● ●	● ●
 Mild steel and finishing	TNMG 160404 XP 160408 XP	9.525	4.76	3.81	0.4 0.8	● ●	● ●	● ●	● ●	● ●
 Mild steel and medium cutting	TNMG 160404 XQ 160408 XQ	9.525	4.76	3.81	0.4 0.8	● ●	● ●	● ●	● ●	● ●
 Mild steel and Roughing	TNMG 160408 XS	9.525	4.76	3.81	0.8		●	●		●

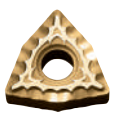
Shape The self-tip. Show right hand (R)	Description	Dimensions (mm)				PV710	PV720	PV730	TN610	TN620
		Inscribed Circle Diameter	Thickness	Hole Diameter	Corner R (RE)					
 Finishing ~ Medium	TNGG 160402 M-SK 160404 M-SK	9.525	4.76	3.81	<0.2 <0.4		● ●	● ●		
 Finished to medium and sharp edge mirror finish	TNGG 160401MFP-SK 160402MFP-SK 160404MFP-SK	9.525	4.76	3.81	<0.1 <0.2 <0.4			● ● ●		
 Medium to coarse	TNMG 160404 R/L-ST 160408 R/L-ST	9.525	4.76	3.81	0.4 0.8	●	● ●		●	● ●
 Without Chipbreaker	TNMA 160404 160408	9.525	4.76	3.81	0.4 0.8		● ●			● ●
Superfine  Finishing and sharp edges • For precision machining	TNEG 160402 R/L-SSF 160404 R/L-SSF	9.525	4.76	3.81	0.2 0.4	● ●	● ●	● ●	● ●	● ●
 Emphasis on finishing and surface roughness • Sharp Edge	TNGG 160401 R/L-S 160402 R/L-S 160404 R/L-S 160408 R/L-S	9.525	4.76	3.81	0.1 0.2 0.4 0.8	● ● ●	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●
 B: Finish to Medium C: Medium to coarse	TNGG 110302 R/L-B 110304 R/L-B	6.35	3.18	2.26	0.2 0.4	● ●	● ●		● ●	● ●
	TNGG 160402 R/L-B 160404 R/L-B 160408 R/L-B	9.525	4.76	3.81	0.2 0.4 0.8	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
	TNGG 160402 R/L-C 160404 R/L-C 160408 R/L-C 160412 R/L-C	9.525	4.76	3.81	0.2 0.4 0.8 1.2	● ● ●	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●
	TNGG 220404 R/L-C 220408 R/L-C	12.70	4.76	5.16	0.4 0.8		● ●			● ●
	TNMG 160404 R/L-C 160408 R/L-C	9.525	4.76	3.81	0.4 0.8	● ●	● ●	● ●	● ●	● ●
 Medium to rough and low resistance	TNGG 160404 R/L-25R 160408 R/L-25R	9.525	4.76	3.81	0.4 0.8	● ●	● ●	● ●	● ●	● ●
 Finishing	VNMG 160402 PP 160404 PP 160408 PP 160412 PP	9.525	4.76	3.81	0.2 0.4 0.8 1.2	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●
 Finishing	VNMG 160402 GP 160404 GP 160408 GP	9.525	4.76	3.81	0.2 0.4 0.8	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
 Finishing ~ Medium	VNMG 160404 R/L-VC 160408 R/L-VC 160412 R/L-VC	9.525	4.76	3.81	0.4 0.8 1.2	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●

An insert which corner R(RE) dimension is shown with inequality sign(EX: <0.1, <0.2) indicates minus tolerance of corner R(RE)

● : Standard Stock

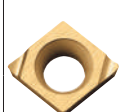
Stock Items (Negative)

Shape The self-tip. Show right hand (R)	Description	Dimensions (mm)				PV710	PV720	PV730	TN610	TN620
		Inscribed Circle Diameter	Thickness	Hole Diameter	Corner R (RE)					
 Finishing ~ Medium	VNMG 160404 VF 160408 VF 160412 VF	9.525	4.76	3.81	0.4 0.8 1.2	● ● 	● ● ●	● ● ●	● ● 	● ● ●
 Finishing ~ Medium	VNMG 160404 PQ 160408 PQ 160412 PQ	9.525	4.76	3.81	0.4 0.8 1.2	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
 Finishing ~ Medium	VNMG 160404 HQ 160408 HQ 160412 HQ	9.525	4.76	3.81	0.4 0.8 1.2	● ● 	● ● ●	● ● ●	● ● 	● ● ●
 Roughing	VNMG 160404 160408	9.525	4.76	3.81	0.4 0.8	● ●	● ●	● ●	● ●	● ●
 Finishing ~ Medium	VNGG 160402 M-SK 160404 M-SK	9.525	4.76	3.81	<0.2 <0.4	● ●	● ●	● ●	● ●	● ●
 Finished to medium and sharp edges Specular	VNGG160402MFP-SK 160404MFP-SK	9.525	4.76	3.81	<0.2 <0.4	 	 	● ●	 	
 Emphasis on finishing and surface roughness • Sharp Edge	VNGG 160402 R/L-S 160404 R/L-S	9.525	4.76	3.81	0.2 0.4	 	● ●	● ●	 	● ●
 Intermediate cutting	VNGG 160402 R/L 160404 R/L 160408 R/L	9.525	4.76	3.81	0.2 0.4 0.8	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
 Finishing / with Wiper Edge	WNMG 080404 WF 080408 WF	12.70	4.76	5.16	0.4 0.8	● ●	● ●	 	● ●	● ●
 Finishing / with Wiper Edge	WNMG 080404 WP 080408 WP	12.70	4.76	5.16	0.4 0.8	● ●	● ●	 	● ●	● ●
 Finishing ~ with cutting blade for middle and wiper blades	WNMG 080404 WE 080408 WE 080412 WE	12.70	4.76	5.16	0.4 0.8 1.2	● ● ●	● ● ●	 	● ● ●	● ● ●
 Finishing ~ with cutting blade for middle and wiper blades	WNMG 080404 WQ 080408 WQ 080412 WQ	12.70	4.76	5.16	0.4 0.8 1.2	● ● 	● ● ●	 	● ● 	● ● ●
 Finishing	WNMG 080402 PP 080404 PP 080408 PP 080412 PP	12.70	4.76	5.16	0.2 0.4 0.8 1.2	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●

Shape The self-tip. Show right hand (R)	Description	Dimensions (mm)				PV710	PV720	PV730	TN610	TN620
		Inscribed Circle Diameter	Thickness	Hole Diameter	Corner R (RE)					
 Finishing	WNMG 060404 GP 060408 GP	9.525	4.76	3.81	0.4 0.8	 	● ●	● ●	 	● ●
	WNMG 080404 GP 080408 GP	12.70	4.76	5.16	0.4 0.8	● ●	● ●	● ●	● ●	● ●
 Finishing ~ Medium	WNMG 080404 PQ 080408 PQ	12.70	4.76	5.16	0.4 0.8	● ●	● ●	● ●	● ●	● ●
 Finishing ~ Medium	WNMG 06T304 HQ	9.525	3.97	3.81	0.4	 	● ●	● ●	 	● ●
	WNMG 060404 HQ 060408 HQ	9.525	4.76	3.81	0.4 0.8	 	● ●	● ●	 	● ●
	WNMG 080404 HQ 080408 HQ 080412 HQ	12.70	4.76	5.16	0.4 0.8 1.2	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
 Finishing ~ Medium/Raised	WNMG 080404 CQ 080408 CQ 080412 CQ	12.70	4.76	5.16	0.4 0.8 1.2	● ● 	● ● ●	● ● ●	● ● 	● ● ●
 Medium to coarse	WNMG 060404 GS 060408 GS	9.525	4.76	3.81	0.4 0.8	 	● ●	● ●	 	● ●
	WNMG 080404 GS 080408 GS	12.70	4.76	5.16	0.4 0.8	 	● ●	● ●	 	● ●
 Medium to coarse	WNMG 080404 PG 080408 PG	12.70	4.76	5.16	0.4 0.8	● ●	● ●	● ●	● ●	● ●
 Medium to coarse	WNMG 080404 PS 080408 PS	12.70	4.76	5.16	0.4 0.8	 	● ●	● ●	 	● ●
 Roughing	WNMG 080404 080408	12.70	4.76	5.16	0.4 0.8	● ●	● ●	● ●	● ●	● ●
 Mild steel and finishing	WNMG 080404 XP 080408 XP	12.70	4.76	5.16	0.4 0.8	● ●	● ●	● ●	● ●	● ●
 Mild steel and medium cutting	WNMG 080404 XQ 080408 XQ	12.70	4.76	5.16	0.4 0.8	● ●	● ●	● ●	● ●	● ●
 Mild steel and Roughing	WNMG 080408 XS	12.70	4.76	5.16	0.8	 	● 	● 	 	●

An insert which corner R(RE) dimension is shown with inequality sign(EX: <0.1, <0.2) indicates minus tolerance of corner R(RE)

Stock Items (Positive)

Shape The self-tip. Show left hand (L)	Description	Dimensions (mm)					PV710	PV720	PV730	TN610	TN620
		Inscribed Circle Diameter	Thickness	Hole Diameter	Corner R (RE)	Escape Angle					
 Finishing / with Wiper Edge	CCMT 060202 WP 060204 WP 060208 WP	6.35	2.38	2.8	0.2 0.4 0.8	7°	● ● ●	● ● ●		● ● ●	● ● ●
	CCMT 09T302 WP 09T304 WP 09T308 WP	9.525	3.97	4.4	0.2 0.4 0.8	7°	● ● ●	● ● ●		● ● ●	● ● ●
 Finishing	CCMT 060202 PP 060204 PP	6.35	2.38	2.8	0.2 0.4	7°	● ●	● ●	● ●	● ●	● ●
	CCMT 09T302 PP 09T304 PP 09T308 PP	9.525	3.97	4.4	0.2 0.4 0.8	7°	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
 Finishing ~ Medium	CCMT 060202 GK 060204 GK	6.35	2.38	2.8	0.2 0.4	7°	● ●	● ●	● ●	● ●	● ●
	CCMT 09T302 GK 09T304 GK	9.525	3.97	4.4	0.2 0.4	7°	● ●	● ●	● ●	● ●	● ●
	CCMT 120404 GK 120408 GK	12.70	4.76	5.5	0.4 0.8	7°	● ●	● ●	● ●	● ●	● ●
 Finishing ~ Medium	CCMT 060202 HQ 060204 HQ	6.35	2.38	2.8	0.2 0.4	7°	● ●	● ●	● ●	● ●	● ●
	CCMT 09T302 HQ 09T304 HQ 09T308 HQ	9.525	3.97	4.4	0.2 0.4 0.8	7°	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
 Intermediate cutting	CCGT 060201 060202 060204	6.35	2.38	2.8	0.1 0.2 0.4	7°	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
	CCGT 09T301 09T302 09T304	9.525	3.97	4.4	0.1 0.2 0.4	7°	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
	CCMT 09T308	9.525	3.97	4.4	0.8	7°	●	●	●	●	●
 Medium finish, sharp edges Specular	CCGT 060201 MFP-SK 060202 MFP-SK 060204 MFP-SK	6.35	2.38	2.8	<0.1 <0.2 <0.4	7°			● ● ●		
	CCGT 09T301 MFP-SK 09T302 MFP-SK 09T304 MFP-SK	9.525	3.97	4.4	<0.1 <0.2 <0.4	7°			● ● ●		
 Finishes, sharp edges Specular	CCGT 0602005 MFP-SKS 060201 MFP-SKS 060202 MFP-SKS	6.35	2.38	2.8	<0.05 <0.1 <0.2	7°			● ● ●		
	CCGT 09T3005 MFP-SKS 09T301 MFP-SKS 09T302 MFP-SKS 09T304 MFP-SKS	9.525	3.97	4.4	<0.05 <0.1 <0.2 <0.4	7°			● ● ● ●		
 Finishing and sharp edges	CCET 030101 M R/L-F 030102 M R/L-F 030104 M R/L-F	3.5	1.4	1.9	<0.1 <0.2 <0.4	7°	● ● ●	L L L	L L L	● ● ●	L L L
	CCET 040101 M R/L-F 040102 M R/L-F 040104 M R/L-F	4.3	1.8	2.3	<0.1 <0.2 <0.4	7°	● ● ●	L L L	L L L	● ● ●	L L L

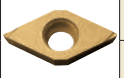
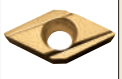
Shape The self-tip. Show left hand (L)	Description	Dimensions (mm)					PV710	PV720	PV730	TN610	TN620
		Inscribed Circle Diameter	Thickness	Hole Diameter	Corner R (RE)	Escape Angle					
 Low Feed /Sharp Edge	CCET 060201 MF R/L-U 060202 MF R/L-U	6.35	2.38	2.8	<0.1 <0.2	7°	● ●	● ●	● ●	● ●	● ●
	CCET 09T301 MF R/L-U 09T302 MF R/L-U	9.525	3.97	4.4	<0.1 <0.2	7°	● ●	● ●	● ●	● ●	● ●
 Low feed and housing available	CCGT 060201 E R/L-U 060202 E R/L-U 060204 E R/L-U	6.35	2.38	2.8	0.1 0.2 0.4	7°	● ● ●	L ● ●	L ● ●	● ● ●	L ● ●
	CCGT 09T301 E R/L-U 09T302 E R/L-U 09T304 E R/L-U	9.525	3.97	4.4	0.1 0.2 0.4	7°	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
 Finishing	CPMT 080202 PP 080204 PP	7.94	2.38	3.3	0.2 0.4	11°	● ●	● ●	● ●	● ●	● ●
	CPMT 090302 PP 090304 PP 090308 PP	9.525	3.18	4.4	0.2 0.4 0.8	11°	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
 Finishing	CPMT 080204 GP	7.94	2.38	3.3	0.4	11°	●	●	●	●	●
	CPMT 090304 GP 090308 GP	9.525	3.18	4.4	0.4 0.8	11°	● ●	● ●	● ●	● ●	● ●
 Finishing ~ Medium	CPMH 080204 HQ 080208 HQ	7.94	2.38	3.5	0.4 0.8	11°	● ●	● ●	● ●	● ●	● ●
	CPMH 090304 HQ 090308 HQ	9.525	3.18	4.5	0.4 0.8	11°	● ●	● ●	● ●	● ●	● ●
 Intermediate cutting	CPMH 080204 080208	7.94	2.38	3.5	0.4 0.8	11°	● ●	● ●	● ●	● ●	● ●
	CPMH 090304 090308	9.525	3.18	4.5	0.4 0.8	11°	● ●	● ●	● ●	● ●	● ●
 Mild steel and finishing	CPMT 080204 XP	7.94	2.38	3.3	0.4	11°	●	●	●	●	●
	CPMT 090304 XP 090308 XP	9.525	3.18	4.4	0.4 0.8	11°	● ●	● ●	● ●	● ●	● ●
 Mild steel, finished, medium	CPMT 090304 XQ 090308 XQ	9.525	3.18	4.4	0.4 0.8	11°	● ●	● ●	● ●	● ●	● ●
 Finishing ~ Medium	CPMH 080204 R/L-Y	7.94	2.38	3.5	0.4	11°	●	●	●	●	●
	CPMH 090304 R/L-Y	9.525	3.18	4.5	0.4	11°	●	●	●	●	●
 Finishing / with Wiper Edge	DCMX 070202 WP 070204 WP 070208 WP	6.35	2.38	2.8	0.2 0.4 0.8	7°	● ● ●	● ● ●		● ● ●	● ● ●
	DCMX 11T302 WP 11T304 WP 11T308 WP	9.525	3.97	4.4	0.2 0.4 0.8	7°	● ● ●	● ● ●		● ● ●	● ● ●

An insert which corner R(RE) dimension is shown with inequality sign(EX: <0.1, <0.2) indicates minus tolerance of corner R(RE)

● : Standard Stock R: Right Hand (R) Only in stock L: Only left hand (L) is in stock

Stock Items (Positive)

Shape The self-tip. Show left hand (L)	Description	Dimensions (mm)					PV710	PV720	PV730	TN610	TN620
		Inscribed Circle Diameter	Thickness	Hole Diameter	Corner R (RE)	Escape Angle					
 Finishing / with Wiper Edge	DCMX 070204 R/L-WP	6.35	2.38	2.8	0.4	7°		●			●
	DCMX 11T304 R/L-WP	9.525	3.97	4.4	0.4	7°		●			●
 Finishing	DCMT 070202 PP 070204 PP	6.35	2.38	2.8	0.2 0.4	7°	● ●	● ●	● ●	● ●	● ●
	DCMT 11T302 PP 11T304 PP 11T308 PP	9.525	3.97	4.4	0.2 0.4 0.8	7°	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
 Finishing	DCMT 070202 GP 070204 GP	6.35	2.38	2.8	0.2 0.4	7°	● ●	● ●	● ●	● ●	● ●
	DCMT 11T304 GP 11T308 GP	9.525	3.97	0.4	0.4 0.8	7°	● ●	● ●	● ●	● ●	● ●
 Finishing - Medium	DCMT 070202 GK 070204 GK 070208 GK	6.35	2.38	2.8	0.2 0.4 0.8	7°	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
	DCMT 11T302 GK 11T304 GK 11T308 GK	9.525	3.97	4.4	0.2 0.4 0.8	7°	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
 Finishing - Medium	DCMT 070202 HQ 070204 HQ 070208 HQ	6.35	2.38	2.8	0.2 0.4 0.8	7°	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
	DCMT 11T302 HQ 11T304 HQ 11T308 HQ	9.525	3.97	4.4	0.2 0.4 0.8	7°	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
 Medium	DCGT 070201 070202 070204	6.35	2.38	2.8	0.1 0.2 0.4	7°	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
	DCGT 11T301 11T302 11T304	9.525	3.97	4.4	0.1 0.2 0.4	7°	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
	DCMT 11T308	9.525	3.97	4.4	0.8	7°	●	●	●	●	●
 Semi-finishing / Sharp Edge /Mirror Surface Finish	DCGT 070201MFP-SK 070202MFP-SK 070204MFP-SK	6.35	2.38	2.8	<0.1 <0.2 <0.4	7°			● ● ●		
	DCGT 11T301MFP-SK 11T302MFP-SK 11T304MFP-SK	9.525	3.97	4.4	<0.1 <0.2 <0.4	7°			● ● ●		
 Finishing / Sharp Edge/ Mirror Surface Finish	DCGT 0702005MFP-SKS 070201MFP-SKS 070202MFP-SKS	6.35	2.38	2.8	<0.05 <0.1 <0.2	7°			● ● ●		
	DCGT 11T3005MFP-SKS 11T301MFP-SKS 11T302MFP-SKS 11T304MFP-SKS	9.525	3.97	4.4	<0.05 <0.1 <0.2 <0.4	7°			● ● ● ●		
 Low Carbon Steel / Finishing	DCMT 070204 XP	6.35	2.38	2.8	0.4	7°	●	●	●	●	●
	DCMT 11T302 XP 11T304 XP 11T308 XP	9.525	3.97	4.4	0.2 0.4 0.8	7°	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●

Shape The self-tip. Show left hand (L)	Description	Dimensions (mm)					PV710	PV720	PV730	TN610	TN620
		Inscribed Circle Diameter	Thickness	Hole Diameter	Corner R (RE)	Escape Angle					
 Low Carbon Steel / Finishing - Medium	DCMT 11T304 XQ 11T308 XQ	9.525	3.97	4.4	0.4 0.8	7°	● ●	● ●	● ●	● ●	● ●
 Finishing /Sharp Edge	DCET 070201 M R/L-F 070202 M R/L-F 070204 M R/L-F	6.35	2.38	2.8	<0.1 <0.2 <0.4	7°	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
	DCET 11T301 M R/L-F 11T302 M R/L-F 11T304 M R/L-F	9.525	3.97	4.4	<0.1 <0.2 <0.4	7°	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
 Low Feed /Sharp Edge	DCET 070201 MF R/L-U 070202 MF R/L-U	6.35	2.38	2.8	<0.1 <0.2	7°	● ●	 ●	 ●	● ●	 ●
	DCET 11T301 MF R/L-U 11T302 MF R/L-U	9.525	3.97	4.4	<0.1 <0.2	7°	● ●	 ●	 ●	● ●	 ●
 Low Feed / With Horning	DCGT 070201 E R/L-U 070202 E R/L-U 070204 E R/L-U	6.35	2.38	2.8	0.1 0.2 0.4	7°	● ● ●	 ● ●	 ● ●	● ● ●	 ● ●
	DCGT 11T301 E R/L-U 11T302 E R/L-U 11T304 E R/L-U	9.525	3.97	4.4	0.1 0.2 0.4	7°	● ● ●	R ● ●	R ● ●	● ● ●	R ● ●
 Low Feed /Sharp Edge	DCET 11T301 MF R/L-J 11T302 MF R/L-J	9.525	3.97	4.4	<0.1 <0.2	7°	● ●			● ●	
 Low Feed / With Horning	DCGT 11T301 E R/L-J 11T302 E R/L-J 11T304 E R/L-J	9.525	3.97	4.4	0.1 0.2 0.4	7°	● ● ●	R R ●	R R ●	● ● ●	R R ●
 Medium	RCMX 1003 M0	10.0	3.18	3.6	–	7°		●	●		●
	RCMX 1204 M0	12.0	4.76	4.2	–	7°		●	●		●
 Finishing ~ Medium	SCMT 09T304 HQ 09T308 HQ	9.525	3.97	4.4	0.4 0.8	7°	● ●	● ●	● ●	● ●	● ●
 Medium	SPMR 090304 G 090308 G	9.525	3.18	–	0.4 0.8	11°		● ●	● ●		● ●
	SPMR 120304 G 120308 G	12.7	3.18	–	0.4 0.8	11°		● ●	● ●		● ●
 Finishing	SPGR 090304 R/L 090308 R/L	9.525	3.18	–	0.4 0.8	11°	● ●	● ●		● ●	● ●
	SPGR 120304 R/L 120308 R/L	12.7	3.18	–	0.4 0.8	11°	● ●	● ●		● ●	● ●
 Without Chipbreaker	SPMN 120308 120312	12.7	3.18	–	0.8 1.2	11°	● ●	● ●		● ●	● ●

An insert which corner R(RE) dimension is shown with inequality sign(EX: <0.1, <0.2) indicates minus tolerance of corner R(RE)

Stock Items (Positive)

Shape The self-tip. Show left hand (L)	Description	Dimensions (mm)					PV710	PV720	PV730	TN610	TN620
		Inscribed Circle Diameter	Thickness	Hole Diameter	Corner R (RE)	Escape Angle					
 Finishing	TBMT 060102 DP 060104 DP	3.97	1.59	2.3	0.2 0.4	5°	● ●	● ●	● ●	● ●	● ●
 Finishing	TBGT 060102 R/L 060104 R/L	3.97	1.59	2.3	0.2 0.4	5°	● ●	● ●	● ●	● ●	● ●
 Finishing / with Wiper Edge	TCMX 090204 WP	5.56	2.38	2.5	0.4	7°	●	●		●	●
	TCMX 110204 WP	6.35	2.38	2.8	0.4	7°	●	●		●	●
 Finishing ~ Medium	TCMT 090202 HQ 090204 HQ	5.56	2.38	2.5	0.2 0.4	7°	● ●	● ●	● ●	● ●	● ●
	TCMT 110202 HQ 110204 HQ 110208 HQ	6.35	2.38	2.8	0.2 0.4 0.8	7°	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
	TCMT 16T304 HQ 16T308 HQ	9.525	3.97	4.4	0.4 0.8	7°		● ●	● ●		● ●
 Finishing / with Wiper Edge	TPMX 090202 WP 090204 WP 090208 WP	5.56	2.38	2.8	0.2 0.4 0.8	11°	● ● ●	● ● ●		● ● ●	● ● ●
	TPMX 110302 WP 110304 WP 110308 WP	6.35	3.18	3.3	0.2 0.4 0.8	11°	● ● ●	● ● ●		● ● ●	● ● ●
 Finishing / with Wiper Edge	TPMX 110304 R/L-WP	6.35	3.18	3.3	0.4	11°		●			●
 Finishing	TPMT 090202 PP 090204 PP	5.56	2.38	2.8	0.2 0.4	11°	● ●	● ●	● ●	● ●	● ●
	TPMT 110302 PP 110304 PP 110308 PP	6.35	3.18	3.3	0.2 0.4 0.8	11°	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
 Finishing	TPMT 090202 GP 090204 GP	5.56	2.38	2.8	0.2 0.4	11°	● ●	● ●	● ●	● ●	● ●
	TPMT 110304 GP 110308 GP	6.35	3.18	3.3	0.4 0.8	11°	● ●	● ●	● ●	● ●	● ●
	TPMT 160304 GP	9.525	3.18	4.4	0.4	11°	●	●	●	●	●
 Finishing ~ Medium	TPMT 090202 HQ 090204 HQ	5.56	2.38	2.8	0.2 0.4	11°	● ●	● ●	● ●	● ●	● ●
	TPMT 110302 HQ 110304 HQ 110308 HQ	6.35	3.18	3.3	0.2 0.4 0.8	11°	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
	TPMT 160302 HQ 160304 HQ 160308 HQ	9.525	3.18	4.4	0.2 0.4 0.8	11°	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●

Shape The self-tip. Show left hand (L)	Description	Dimensions (mm)					PV710	PV720	PV730	TN610	TN620
		Inscribed Circle Diameter	Thickness	Hole Diameter	Corner R (RE)	Escape Angle					
 Mild steel and finishing	TPMT 090204 XP	5.56	2.38	2.8	0.4	11°	●	●	●	●	●
	TPMT 110304 XP 110308 XP	6.35	3.18	3.3	0.4 0.8	11°	● ●	● ●	● ●	● ●	● ●
	TPMT 160304 XP 160308 XP	9.525	3.18	4.4	0.4 0.8	11°	● ●	● ●	● ●	● ●	● ●
 Mild steel, finished, medium	TPMT 110304 XQ 110308 XQ	6.35	3.18	3.3	0.4 0.8	11°	● ●	● ●	● ●	● ●	● ●
	TPMT 160304 XQ 160308 XQ	9.525	3.18	4.4	0.4 0.8	11°	● ●	● ●	● ●	● ●	● ●
 Finishing	TPGH 080202 R/L 080204 R/L	4.76	2.38	2.3	0.2 0.4	11°	L L	● ●	● ●	L L	● ●
	TPGH 090202 R/L 090204 R/L	5.56	2.38	3.0	0.2 0.4	11°	L L	● ●	● ●	L L	● ●
	TPGH 110202 R/L 110204 R/L	6.35	2.38	3.5	0.2 0.4	11°	L L	L L	L L	L L	L L
	TPGH 110302 R/L 110304 R/L 110308 R/L	6.35	3.18	3.3	0.2 0.4 0.8	11°	L L ●	● ● ●	● ● ●	L L ●	● ● ●
	TPGH 160302 R/L 160304 R/L 160308 R/L	9.525	3.18	4.5	0.2 0.4 0.8	11°	● ● L	● ● L	● ● L	● ● L	● ● L
 Medium	TPGH 110302 L-H 110304 R/L-H 110308 L-H	6.35	3.18	3.3	0.2 0.4 0.8	11°	L L L	L ● L	L ● L	L L L	L ● L
	TPGH 160304 L-H	9.525	3.18	4.5	0.4	11°	L	L	L	L	L
	TPGT 160402 L-H 160404 L-H	9.525	4.76	4.4	0.2 0.4	11°	L L	L L	L L	L L	L L
 Without Chipbreaker	TPGB 080204	4.76	2.38	2.3	0.4	11°		●	●		●
	TPGB 090204	5.56	2.38	3.0	0.4	11°		●	●		●
	TPGB 110204	6.35	2.38	3.5	0.4	11°	●	●	●	●	●
	TPGB 110302 110304 110308	6.35	3.18	3.3	0.2 0.4 0.8	11°	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
	TPGB 160304 160308	9.525	3.18	4.5	0.4 0.8	11°	● ●	● ●	● ●	● ●	● ●
 Finishing	TPMR 110304 GP	6.35	3.18	–	0.4	11°		●	●		●
	TPMR 160304 GP	9.525	3.18	–	0.4	11°		●	●		●
 Finishing ~ Medium	TPMR 110304 HQ 110308 HQ	6.35	3.18	–	0.4 0.8	11°		● ●	● ●		● ●
	TPMR 160304 HQ 160308 HQ	9.525	3.18	–	0.4 0.8	11°	● ●	● ●	● ●	● ●	● ●

● : Standard Stock R: Right Hand (R) Only in stock L: Only left hand (L) is in stock

Stock Items (Positive)

Shape The self-tip. Show left hand (L)	Description	Dimensions (mm)					PV710	PV720	PV730	TN610	TN620
		Inscribed Circle Diameter	Thickness	Hole Diameter	Corner R (RE)	Escape Angle					
 Medium	TPMR 110304 G	6.35	3.18	–	0.4	11°		●	●		●
	TPMR 160304 G 160308 G	9.525	3.18	–	0.4 0.8	11°		● ●	● ●		● ●
 Medium	TPMR 110304 110308	6.35	3.18	–	0.4 0.8	11°	● ●	● ●		● ●	● ●
	TPMR 160304 160308	9.525	3.18	–	0.4 0.8	11°	● ●	● ●		● ●	● ●
 A: Finishing B: Finishing - Medium C: Medium	TPGR 110302 L-A 110304 L-A	6.35	3.18	–	0.2 0.4	11°	L L	L L	L L	L L	L L
	TPGR 110304 L-B 110308L-B	6.35	3.18	–	0.4 0.8	11°	L L	L L	L L	L L	L L
	TPGR 160302 R/L-B 160304 R/L-B 160308 R/L-B	9.525	3.18	–	0.2 0.4 0.8	11°	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
	TPGR 160304 R/L-C 160308 R/L-C	9.525	3.18	–	0.4 0.8	11°	● ●	● ●	● ●	● ●	● ●
 Without Chipbreaker	TPGN 110304 110308	6.35	3.18	–	0.4 0.8	11°	● ●	● ●		● ●	● ●
	TPGN 160304 160308	9.525	3.18	–	0.4 0.8	11°	● ●	● ●		● ●	● ●
 Finishing	VBMT 110302 PP 110304 PP 110308 PP	6.35	3.18	2.8	0.2 0.4 0.8	5°	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
	VBMT 160404 PP 160408 PP 160412 PP	9.525	4.76	4.4	0.4 0.8 1.2	5°	● ● ●	● ● ●	● ● 	● ● ●	● ● ●
 Finishing	VBMT 110304 GP	6.35	3.18	2.8	0.4	5°	●	●	●	●	●
	VBMT 160404 GP 160408 GP	9.525	4.76	4.4	0.4 0.8	5°	● ●	● ●	● ●	● ●	● ●
 Finishing	VBMT 110302 VF 110304 VF 110308 VF	6.35	3.18	2.8	0.2 0.4 0.8	5°	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
	VBMT 160402 VF 160404 VF 160408 VF 160412 VF	9.525	4.76	4.4	0.2 0.4 0.8 1.2	5°	● ● ● ●	● ● ● ●	● ● ● 	● ● ● ●	● ● ● ●
 Finishing - Medium	VBMT 110304 HQ 110308 HQ	6.35	3.18	2.8	0.4 0.8	5°	● ●	● ●	● ●	● ●	● ●
	VBMT 160404 HQ 160408 HQ 160412 HQ	9.525	4.76	4.4	0.4 0.8 1.2	5°	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
 Finishing / Sharp Edge	VBET 110301 M R/L-F 110302 M R/L-F	6.35	3.18	2.8	<0.1 <0.2	5°	●	● ●	● ●	●	● ●

Shape The self-tip. Show left hand (L)	Description	Dimensions (mm)					PV710	PV720	PV730	TN610	TN620
		Inscribed Circle Diameter	Thickness	Hole Diameter	Corner R (RE)	Escape Angle					
 Finishing / Sharp Edge	VBGT 110301 R-F 110302 R-F	6.35	3.18	2.8	0.1 0.2	5°		R R	R R		R R
 Finished - Medium / Sharp Edge	VBET 110302 M R/L-Y 110304 M R/L-Y	6.35	3.18	2.8	<0.2 <0.4	5°	● ●	● ●	● ●	● ●	● ●
 Finishing - Medium	VBGT 110301 R-Y 110302 R/L-Y 110304 R/L-Y	6.35	3.18	2.8	0.1 0.2 0.4	5°		R ● ●	R ● ●		R ● ●
	VBGT 160402 R/L-Y 160404 R/L-Y	9.525	4.76	4.4	0.2 0.4	5°	● ●	● ●	● ●	● ●	● ●
 Finishing - Medium	VCMT 080202 PP 080204 PP	4.76	2.38	2.3	0.2 0.4	7°	● ●	● ●	● ●	● ●	● ●
	VCMT 160404 PP 160408 PP	9.525	4.76	4.4	0.4 0.8	7°	● ●	● ●	● ●	● ●	● ●
 Finishing	VCMT 080202 VF 080204 VF	4.76	2.38	2.3	0.2 0.4	7°	● ●	● ●	● ●	● ●	● ●
 Finishing - Medium	VCMT 080202 HQ 080204 HQ	4.76	2.38	2.3	0.2 0.4	7°	● ●	● ●	● ●	● ●	● ●
 Finishing	WBMT 060102 R/L-DP 060104 R/L-DP	3.97	1.59	2.3	0.2 0.4	5°	L L	● ●	● ●	L L	● ●
	WBMT 080202 R/L-DP 080204 R/L-DP	4.76	2.38	2.3	0.2 0.4	5°	L L	● ●	● ●	L L	● ●
 Finishing / Sharp Edge	WBET 060102 M R/L-F 060104 M R/L-F	3.97	1.59	2.3	<0.2 <0.4	5°	● ●	L L	L L	● ●	L L
	WBET 080201 M R/L-F 080202 M R/L-F 080204 M R/L-F	4.76	2.38	2.3	<0.1 <0.2 <0.4	5°	● ● ●	 L L	 L L	● ● ●	 L L
 Finishing	WPMT 110204 GP	6.35	2.38	2.8	0.4	11°		●	●		●
	WPMT 160304 GP	9.525	3.18	4.4	0.4	11°		●	●		●
 Finishing - Medium	WPMT 110202 HQ 110204 HQ	6.35	2.38	2.8	0.2 0.4	11°	● ●	● ●	● ●	● ●	● ●
	WPMT 160304 HQ 160308 HQ	9.525	3.18	4.4	0.4 0.8	11°	● ●	● ●	● ●	● ●	● ●

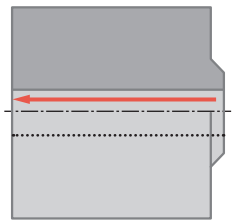
● : Standard Stock R: Right Hand (R) Only in stock L: Only left hand (L) is in stock

An insert which corner R(RE) dimension is shown with inequality sign(EX: <0.1, <0.2) indicates minus tolerance of corner R(RE)

Case Studies

Oil pump Sintered Steel

Vc = 160 m/min
ap = 0.2 mm
f = 0.1 mm/rev
Wet
TPGH090204L



Tool Life

PV720 Avg. **800** pcs/edge

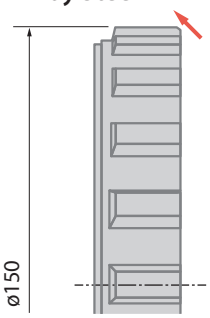
Competitor K (PVD Coated Cermet) **300** pcs/edge

Tool Life ×2.7

PV720 shows 2.7 times longer tool life compared to Competitor K (PVD Coated Cermet). (User evaluation)

Ring gear Special Alloy Steel

Vc = 300 m/min
ap = 0.2 mm
f = 0.2~0.4 mm/rev
Wet
WNMG080404PP



Tool Life

PV720 Avg. **10,000** pcs/edge

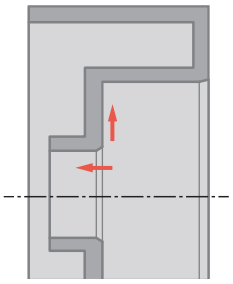
Competitor L (PVD Coated Cermet) **3,000** pcs/edge

Tool Life ×3.3

PV720 shows 3.3 times longer tool life compared to Competitor L (PVD Coated Cermet). (User evaluation)

Drum S30C

Vc = 300 m/min
ap = 0.5 mm
f = 0.2~0.3 mm/rev
Wet
CNMG090408HQ



Tool Life

TN620 **800** pcs/edge

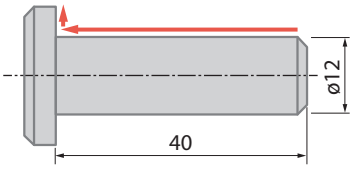
Competitor M (Cermet) **550-750** pcs/edge

Tool Life ×1.1-1.4

TN620 shows 1.1 to 1.4 times longer tool life compared to Competitor M (Cermet). (User evaluation)

Yoke Pin S35C

Vc = 75 m/min
ap = 0.15 mm
f = 0.12 mm/rev
Wet
TNGG160404R-S



Tool Life

TN620 **450** pcs/edge

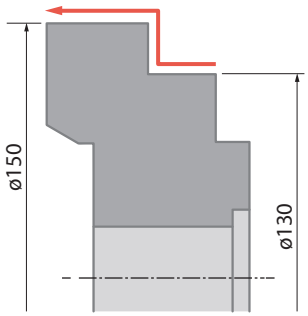
Competitor N (Cermet) **300** pcs/edge

Tool Life ×1.5

TN620 shows 1.5 times longer tool life compared to Competitor N (Cermet). Stable surface roughness and shiny surface finish. No chipping and stable machining. (User evaluation)

Piston S45C Normalized

Vc = 450 m/min
ap = 0.15~0.2 mm
f = 0.04 mm/rev
Wet (Water Soluble)
CNMG120404PP



Tool Life

PV710 **200** pcs/edge

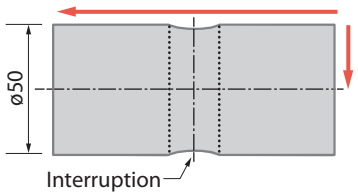
Competitor O (PVD Coated Cermet) **90** pcs/edge

Tool Life ×2.2

PV710 shows 2.2 times longer tool life compared to Competitor O (PVD Coated Cermet). (User evaluation)

Piston SCM415

Vc = 250 m/min
ap = 0.1~0.2 mm
f = 0.08 mm/rev
Wet (Water Soluble)
CNMG120404PP



Tool Life

PV710 **250** pcs/edge

Competitor P (PVD Coated Cermet) **180** pcs/edge

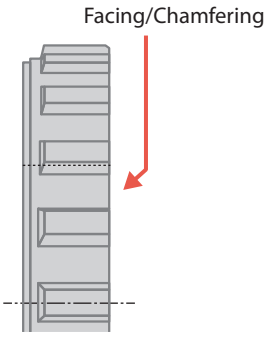
Tool Life ×1.3

PV710 shows 1.3 times longer tool life compared to Competitor P (PVD Coated Cermet). (User evaluation)

Case Studies

Sprocket SCM415H

Vc = 140 m/min
f = 0.09 mm/rev
ap = 0.15-0.30 mm Wet
TPMT110304PP PV730



Tool Life

PV730 **300 pcs/edge (Stable)**

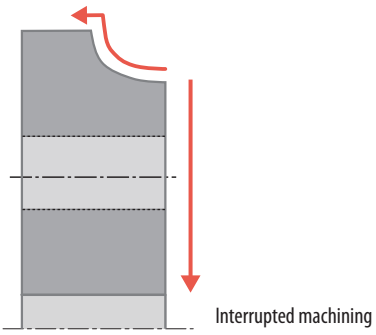
Competitor Q (PVD Coated Cermet) **300 pcs/edge (Unstable)**

Stability Improved

Competitor Q (PVD coated cermet) showed unstable machining with adhesion to the insert and chipping.
PV730 maintained a good cutting edge after stable machining of the same number of parts as Competitor Q. (User evaluation)

Flange S55C

Vc = 145-230 m/min
f = 0.22 mm/rev
ap = 0.2 mm Wet
TNMG160408HQ PV730



Tool Life

PV730 **500 pcs/edge**

Competitor R (PVD Coated Cermet) **200 pcs/edge**

Tool Life ×2.5

PV730 shows 2.5 times longer tool life compared to Competitor R (PVD Coated Cermet).
Superior surface finish

(User evaluation)

CP375-3