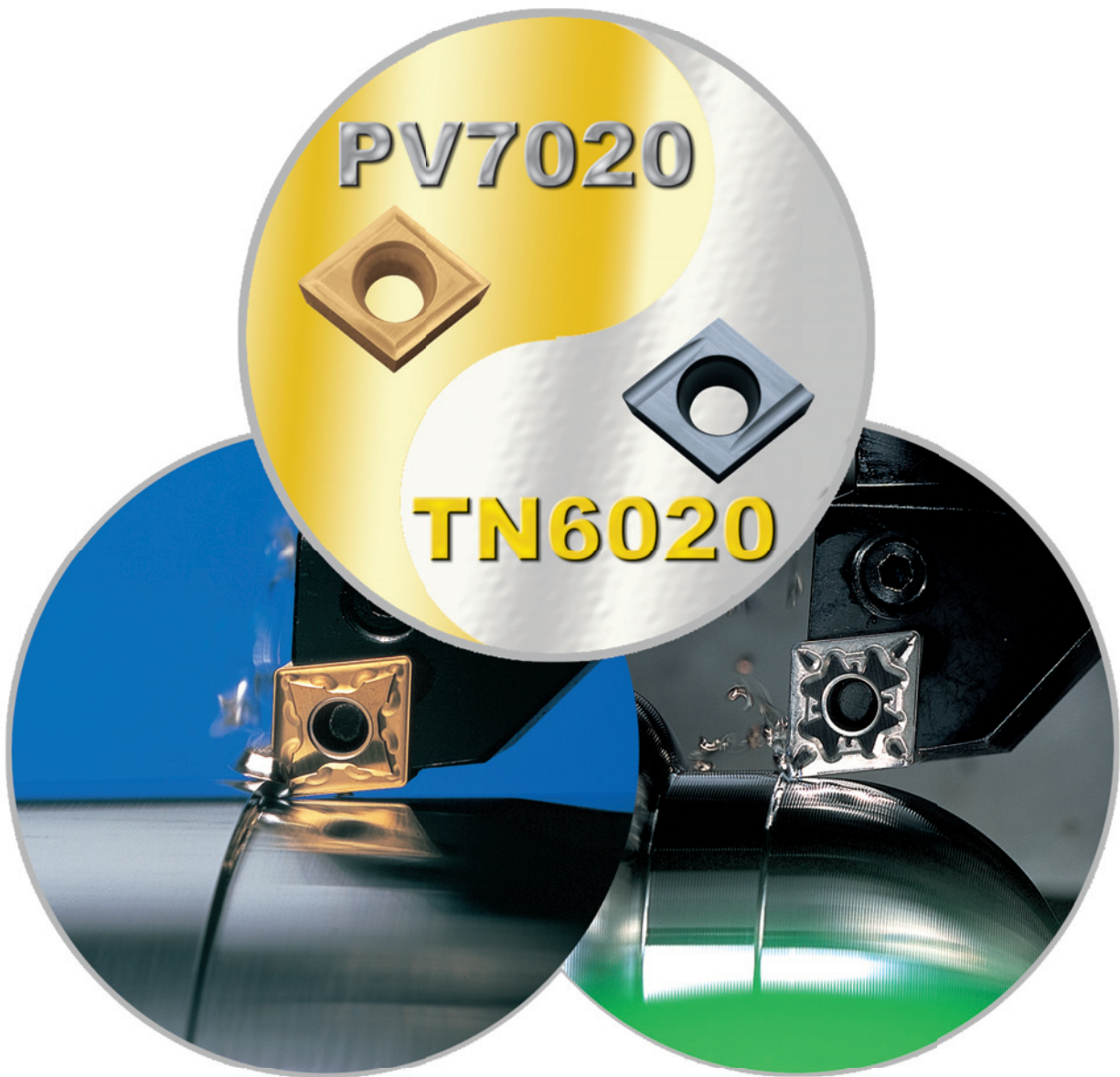


THE NEW VALUE FRONTIER

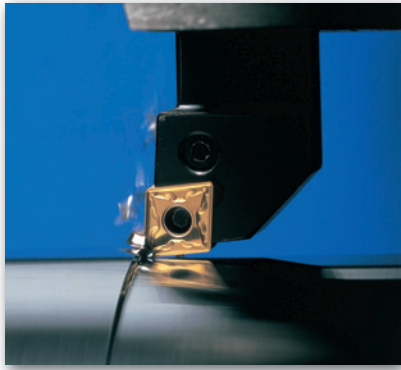


TN6020 & PV7020

Super Micro-Grain Cermets for High Speed
Machining & Excellent Surface Finishes



KYOCERA Industrial Ceramics Corp. ■ ph. 800-823-7284
www.kyocera.com/kicc ■ ceratip@kyocera.com



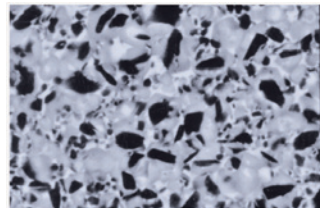
Super Micro-Grain Cermets

Achieve higher cutting speeds and excellent surface finishes with TN6020 and PV7020

“What are Super Micro-Grain Cermets?”

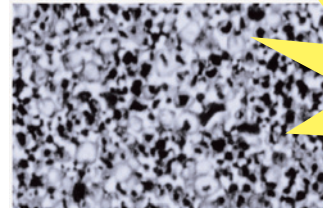
- Super Micro-Grain cermets feature grain sizes of 0.6 micrometer compared to conventional cermets’ 1.5~2.0 micrometer grain size.

Fine grain size & consistent structure create **higher toughness** and **stability**

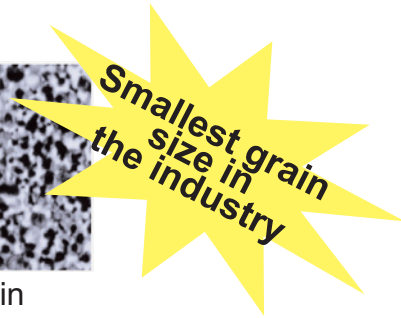


Conventional cermet grain size

VS.



Micro-Grain cermet grain size

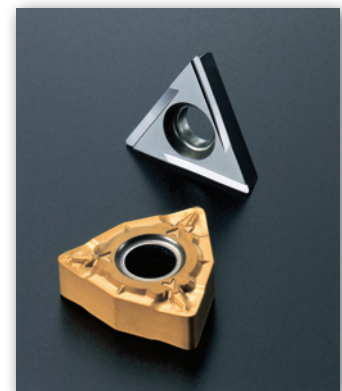


“Why should I use Super Micro-Grain Cermets?”

- Greater productivity
- Superior wear resistance
- Longer tool life
- Higher cutting speeds
- Excellent surface finish
- Good dimensional control
- Enhanced thermal shock resistance compared to traditional cermets

“When should I use Super Micro-Grain Cermets?”

- Use when excellent surface finish is required
- Use at higher cutting speeds than carbide to reduce cycle time
- Use for better wear than carbides to reduce downtime
- Use to minimize coolant



TN6020

- Bending strength equal to some carbides; twice that of conventional cermet
- Improved reliability with coolant
- Promotes excellent surface finishes

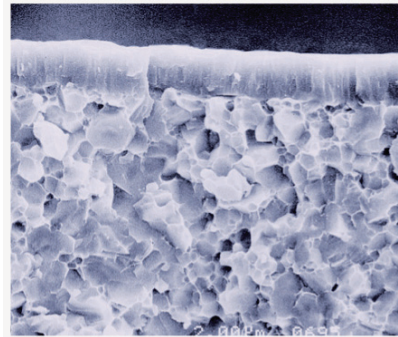
Cutting Speeds

	150~325 SFM	325~500 SFM	500~650 SFM	650~825 SFM
General Steel		PV7020		Optimal Conditions for Finishing
		TN6020	Optimal Conditions for Finishing	
	P15 Carbide	Optimal Conditions for Finishing		

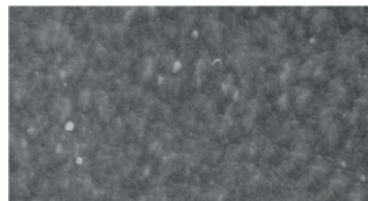
PV7020

- PVD TiN coating layer improves chip evacuation
- PVD TiAlN coating sub-layer provides very high wear resistance
- Fine surface coating promotes smoother cutting performance
- Best for high speed machining
- Long tool life reduces overall costs

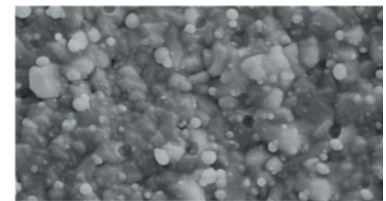
Fine Surface Coating Structure



- TiN coating layer
- TiAlN coating layer
- Super micro-grain cermet substrate



Fine Surface Coating



Traditional Coating

Running Conditions

Work Material	Insert Grade	Speed	Feed*
		SFM	IPR
Low-Carbon Steel/Alloy	TN6020	500 ~ 1000	.003 ~ .014
	PV7020	500 ~ 1200	.003 ~ .014
Medium-Carbon Steel/Alloy	TN6020	350 ~ 950	.002 ~ .014
	PV7020	400 ~ 1100	.002 ~ .014
High-Carbon Steel/Tool Steel	TN6020	300 ~ 800	.003 ~ .012
	PV7020	400 ~ 1000	.003 ~ .012
Stainless Steel (Austenitic)	PV7020	300 ~ 850	.003 ~ .008
Stainless Steel (Martensitic)	PV7020	300 ~ 1000	.003 ~ .006

*Feeds will vary for each chipbreaker.

Chipbreakers

Recommended General Purpose Chipbreakers

■ Finishing Chipbreakers

- Finishing chipbreakers combined with TN6020 / PV7020 are the first choice for light cutting of steel and stainless steel
- Cermets are ideal for machining with the light feeds experienced during most finishing applications
- The non-reactive nature of cermets provides excellent surface finishes and resists edge build-up

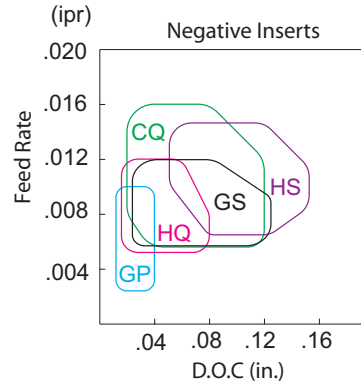
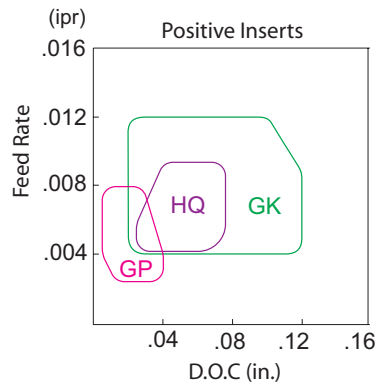
GP for light cutting

HQ for semifinishing

GK for semifinishing to midrange cutting

CQ for semifinishing to midrange cutting at higher speeds for profiling

Cutting Range	Name	Shape			Advantages
Finishing	GP				Finishing to light cutting. Good chip control.
Finishing-Medium	HQ				Sharp cutting performance. Broad chip control with 3-D rake angle and double projection design.
Finishing-Medium	GK				Good chip control for light to medium cutting.
Finishing-Medium	CQ				Good chip control at varied DOC such as copying. Suitable for up facing too.



■ Medium Machining Chipbreakers

- Using these chipbreakers with super micro-grain cermets, when continuous cutting, can provide improved tool life over coated carbide for medium machining of steel and stainless steel.
- Medium machining chipbreakers, when combined with super micro-grain cermets, are capable of heavier cuts than traditional cermets.

GS & HS for midrange cutting

Cutting Range	Name	Shape			Advantages
Medium-Roughing	HS				General purpose chipbreaker. Suitable for copying too.
Medium-Roughing	GS				Strong edge chipbreaker. Stable for continuous machining and light interrupted cutting.

Recommended Specialty Chipbreakers

■ Wiper Inserts

- Wiper geometries combined with TN6020 / PV7020 produce superior surface finishes on **steel and stainless steel** when compared to carbide.
- Increased feeds and speeds will boost productivity while maintaining surface finish requirements.
- Reduced cutting time results in longer tool life.

WP for light cutting at high feedrates
WQ for midrange cutting at high feedrates

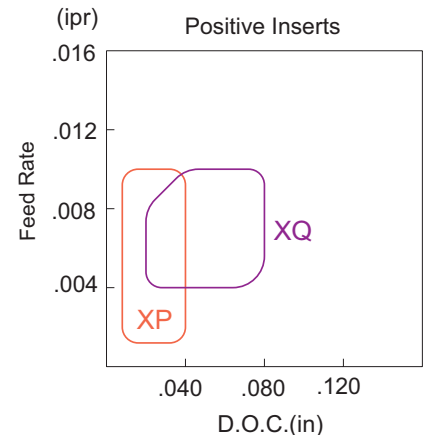
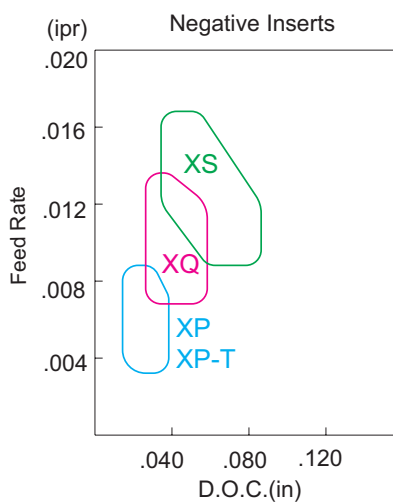
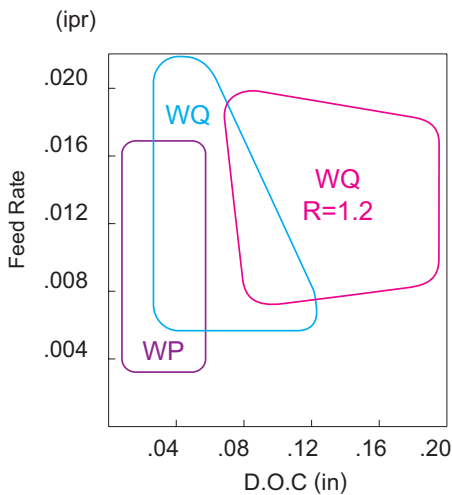
Cutting Range	Name	Shape			Advantages
Finishing (With Wiper Edge)	WP				Wiper insert, double feed rate possible when finishing or light cutting; maintains a smooth finish.
Finishing-Medium (With Wiper Edge)	WQ				Wiper insert. Double feed rate possible while maintaining a smooth finish. High efficiency and good chip control.

■ X-Series Chipbreakers

- X-Series chipbreakers combined with TN6020 / PV7020 provide excellent surface finish and chip control in **low carbon steels** and other sticky materials at high speeds.
- Reduction of long chips results in less down time and better surface finishes.
- Good chip control leads to reliable tool life.

XP for light cutting in sticky materials
XQ for semi-finishing in sticky materials
XS for semi-finishing to semi-roughing at higher speeds in sticky materials

Cutting Range	Name	Shape			Advantages
Finishing	XP				Short chips when finishing due to sharp cutting and special design.
Finishing	XP-T				Tough edge for finishing. Recommended for interrupted cutting and unstable finishing operations.
Semi-Finishing	XQ				Consistent chip breaking due to moderate rake face and special design.
Roughing	XS				Consistent chip breaking when roughing due to special rake face and rake angle design.



● PV7020 Test Data

303SS	
<p>External Thread Nut</p> <ul style="list-style-type: none"> • V = 625 SFM • DOC = .008 • f = .004 ipr • Wet • CCGT32.51 PV7020 • CCGT32.51 P15 Carbide 	
PV7020	2500 pcs/edge
Competitor Carbide	500 pcs/edge
<p>Purpose of Test:</p> <ul style="list-style-type: none"> • Improve tool life <p>Results of Test:</p> <ul style="list-style-type: none"> • Kyocera improved tool life by 400% over competitor's carbide. <p>Customer Comments:</p> <ul style="list-style-type: none"> • "Being able to run a complete lot without changing inserts is an incredible savings!" 	

A2 10-15Rc	
<p>Lineman Pin</p> <ul style="list-style-type: none"> • V = 600 SFM • DOC = .050" • f = .006 ipr • Wet • CNMG432HQ TN6020 • CNMG432FF1 Coated Carbide @400 SFM, .008 ipr 	
PV7020	120+ pcs/edge 3.70 Minutes in Cut
Competitor Carbide	100 pcs/edge 4.0 Minutes in Cut
<p>Purpose of Test:</p> <ul style="list-style-type: none"> • Improve tool life • Reduce cycle time <p>Results of Test:</p> <ul style="list-style-type: none"> • Kyocera improved tool life by 120% over competitor's carbide • Kyocera reduced cycle time by 18 seconds and gave better surface finish than existing carbide 	

● TN6020 Test Data

1010	
<p>Yoke</p> <ul style="list-style-type: none"> • V = 656 SFM • DOC = .055" • f = .012 ipr • Wet • WNMG432WQ • WNMG432LUW 	
TN6020	900 pcs/edge
Competitor Cermet	300 pcs/edge
<p>Purpose of Test:</p> <ul style="list-style-type: none"> • Improve tool life • Achieve 12.5Rz surface finish <p>Results of Test:</p> <ul style="list-style-type: none"> • Kyocera improved tool life by 300% over competitor's cermet • Kyocera achieved the required surface finish specification 	

4140 38-42 Rc	
<p>Automotive Injector</p> <ul style="list-style-type: none"> • V = 443 SFM • DOC = .030" • f = .003 - .0075 ipr • Coolant • CNMG432HQ TN6020 • CNMG432HQ Existing Cermet 	
TN6020	180 pcs/edge
Existing Cermet	100 pcs/edge
<p>Purpose of Test:</p> <ul style="list-style-type: none"> • Improve tool life <p>Results of Test:</p> <ul style="list-style-type: none"> • Kyocera improved tool life by 180% over the existing cermet 	

	Description	I.C.	Thk.	Hole Dia.	R.	TN6020	PV7020
	CCGT 1.10.90.5L-F	.138	.055	.075	.008		●
	CCGT 1.10.91L-F				.016		●
	CCGT 1.41.10.5L-F	.169	.071	.091	.008		●
	CCGT 1.41.11L-F				.016		●
	CCGT 21.50.2	.250	.094	.110	.004	●	●
	CCGT 21.50.5				.008	●	●
	CCGT 21.51				.016	●	●
	CCGT 32.50.2	.375	.156	.173	.004	●	●
	CCGT 32.50.5				.008	●	●
	CCGT 32.51				.016	●	●
	CCGT 21.50.5EL-U	.250	.094	.110	.008		●
	CCGT 21.51 EL-U				.016		●
	CCGT 21.50.5FL-U	.250	.094	.110	.008		●
	CCMT 32.52	.375	.156	.173	.031		●
	CCMT 21.50.5GK	.250	.094	.110	.008		●
	CCMT 21.51GK				.016		●
	CCMT 32.50.5GK	.375	.156	.173	.008		●
	CCMT 32.51GK				.016		●
	CCMT 431GK				.016		●
	CCMT 432GK	.500	.187	.217	.031		●
	CCMT 433GK				.047		●
	CCMT 21.50.5HQ	.250	.094	.110	.008	●	●
	CCMT 21.51HQ				.016	●	●
	CCMT 32.50.5HQ	.375	.156	.173	.008	●	●
	CCMT 32.51HQ				.016	●	●
	CCMT 32.52HQ				.031	●	●
	CNMG 431	.500	.187	.203	.016	●	
	CNMG 432				.031	●	
	CNMG 431CQ	.500	.187	.203	.016		●
	CNMG 432CQ				.031		●

	Description	I.C.	Thk.	Hole Dia.	R.	TN6020	PV7020
	CNMG 430.5GP	.500	.187	.203	.008		●
	CNMG 431GP				.016	●	●
	CNMG 432GP				.031	●	●
	CNMG 431GS	.500	.187	.203	.016		●
	CNMG 432GS				.031		●
	CNMG 433GS				.047		●
	CNMG 432GT	.500	.187	.203	.031		●
	CNMG 433GT				.047		●
	CNMG 431HQ	.500	.187	.203	.016	●	●
	CNMG 432HQ				.031	●	●
	CNMG 431HS	.500	.187	.203	.016	●	●
	CNMG 432HS				.031	●	●
	CNMG 433HS				.047		●
	CNMG 431WP	.500	.187	.203	.016	●	●
	CNMG 432WP				.031	●	●
	CNMG 431WQ	.500	.187	.203	.016	●	●
	CNMG 432WQ				.031	●	●
	CNMG 433WQ				.047	●	●
	CNMG 431XP	.500	.187	.203	.016		●
	CNMG 432XP				.031		●
	CNMG 431XQ	.500	.187	.203	.016		●
	CNMG 432XQ				.031		●
	CNMG 432XS	.500	.187	.203	.031		●
	CPMH 2.51.51	.313	.094	.138	.016	●	●
	CPMH 2.51.52				.031	●	●
	CPMH 321	.375	.125	.177	.016	●	●
	CPMH 322				.031	●	●
	CPMH 2.51.51HQ	.313	.094	.138	.016	●	●
	CPMH 2.51.52HQ				.031	●	●
	CPMH 321HQ	.375	.125	.177	.016	●	●
CPMH 322HQ	.031				●	●	

	Description	I.C.	Thk.	Hole Dia.	R.	TN6020	PV7020
	CPMT 2.51.51GP	.313	.094	.138	.016		●
	CPMT 321GP CPMT 322GP	.375	.125	.177	.016 .031	●	●
	CPMH 2.51.51L-Y	.313	.094	.138	.016		●
	CPMH 321L-Y	.375	.125	.177	.016		●
	CPMT 2.51.51XP	.313	.094	.138	.016		●
	CPMT 321XP CPMT 322XP	.375	.125	.177	.016 .031		●
	CPMT 321XQ CPMT 322XQ	.375	.125	.177	.016 .031		●
	DCGT 21.50.2 DCGT 21.50.5 DCGT 21.51	.250	.094	.110	.004 .008 .016	●	●
	DCGT 32.50.5 DCGT 32.51	.375	.156	.173	.008 .016	●	●
	DCMT 32.52	.375	.156	.173	.031		●
	DCGT 21.50.5 E ^{R/L} _U DCGT 21.51 E ^{R/L} _U	.250	.094	.110	.008 .016		●
	DCGT 32.50.5 E ^{R/L} _U DCGT 32.51 E ^{R/L} _U	.375	.156	.173	.008 .016	●	●
	DCGT 21.50.2 F ^{R/L} _{-U} DCGT 21.50.5 F ^{R/L} _{-U}	.250	.094	.110	.004 .008	●	●
	DCGT 32.50.5 F ^{R/L} _{-U}	.375	.156	.173	.008	●	●
	DCMT 21.50.5GK DCMT 21.51GK DCMT 21.52GK	.250	.094	.110	.008 .016 .031		●
	DCMT 32.50.5GK DCMT 32.51GK DCMT 32.52GK	.375	.156	.173	.008 .016 .031		●
	DCMT 21.50.5GP DCMT 21.51GP	.250	.094	.110	.008 .016	●	●
	DCMT 32.51GP DCMT 32.52GP	.375	.156	.173	.016 .031	●	●
	DCMT 21.50.5HQ DCMT 21.51HQ DCMT 21.52HQ	.250	.094	.110	.008 .016 .031	●	●

	Description	I.C.	Thk.	Hole Dia.	R.	TN6020	PV7020
	DCMT 32.50.5HQ DCMT 32.51HQ DCMT 32.52HQ	.375	.156	.173	.008 .016 .031	●	●
	DCMT 21.51XP DCMT 32.50.5XP DCMT 32.51XP DCMT 32.52XP	.250	.094	.110	.016 .008 .016 .031		●
	DCMT 32.51XQ DCMT 32.52XQ	.375	.156	.173	.016 .031	●	●
	DNGG 431 ^{R/L} DNGG 432 ^{R/L}	.500	.187	.203	.016 .031		●
	DNMG 431 DNMG 432	.500	.187	.203	.016 .031	●	●
	DNMG 431CQ DNMG 432CQ DNMG 433CQ	.500	.187	.203	.016 .031 .047		●
	DNMG 430.5GP DNMG 431GP DNMG 432GP	.500	.187	.203	.008 .016 .031	●	●
	DNMG 431GS DNMG 432GS	.500	.187	.203	.016 .031		●
	DNMG 431HQ DNMG 432HQ DNMG 433HQ	.500	.187	.203	.016 .031 .047	●	●
	DNMG 431HS DNMG 432HS DNMG 433HS	.500	.187	.203	.016 .031 .047	●	●
	DNMG 431XP DNMG 432XP	.500	.187	.203	.016 .031		●
	DNMG 431XQ DNMG 432XQ	.500	.187	.203	.016 .031		●
	DNMG 432XS	.500	.187	.203	.031		●
	RCMX 1003MO RCMX 1204MO	.394 .472	.125 .187	.142 .165	-	●	●
	SNMG 431 SNMG 432	.500	.187	.203	.016 .031	●	●
	SNMG 431HQ SNMG 432HQ SNMG 433HQ	.500	.187	.203	.016 .031 .047	●	●

	Description	I.C.	Thk.	Hole Dia.	R.	TN6020	PV7020
	SNMG 432HS				.031		●
	SNMG 433HS	.500	.187	.203	.047		●
	SNMG 434HS				.063		●
	SNMG 432XP	.500	.187	.203	.031		●
	SNMG 432XQ	.500	.187	.203	.031		●
	SNMG 432XS	.500	.187	.203	.031		●
	TBGT 1.210.5L	.156	.063	.094	.008		●
	TBGT 1.211L				.016		●
	TBMT 1.210.5DP	.156	.063	.094	.008		●
	TBMT 1.211DP				.016		●
	TNEG 330.5 ^{R/L} SSF	.375	.187	.150	.008		●
	TNEG 331 ^{R/L} SSF				.016		●
	TNGG 330.2 ^{R/L} S				.004		●
	TNGG 330.5 ^{R/L} S	.375	.187	.150	.008		●
	TNGG 331 ^{R/L} S				.016		●
	TNGG 332 ^{R/L} S				.031		●
	TNGG 330.5 ^{R/L} B	.375	.187	.150	.008		●
	TNGG 331 ^{R/L} B				.016		●
	TNGG 330.5 ^{R/L} C				.008		●
	TNGG 331 ^{R/L} C	.375	.187	.150	.016		●
	TNGG 332 ^{R/L} C				.031		●
	TNGG 331 ^{R/L} 25R	.375	.187	.150	.016		●
	TNGG 332 ^{R/L} 25R				.031		●
	TNMG 331	.375	.187	.150	.016	●	
	TNMG 332				.031	●	

	Description	I.C.	Thk.	Hole Dia.	R.	TN6020	PV7020
	TNMG 331CQ				.016		●
	TNMG 332CQ	.375	.187	.150	.031	●	●
	TNMG 333CQ				.047		●
	TNMG 331DP				.016		●
	TNMG 332DP	.375	.187	.150	.031		●
	TNMG 330.5GP				.008	●	●
	TNMG 331GP	.375	.187	.150	.016	●	●
	TNMG 332GP				.031	●	●
	TNMG 331GS	.375	.187	.150	.016		●
	TNMG 332GS				.031		●
	TNMG 332GT	.375	.187	.150	.031		●
	TNMG 333GT				.047		●
	TNMG 331HQ				.016	●	●
	TNMG 332HQ	.375	.187	.150	.031	●	●
	TNMG 333HQ				.047		●
	TNMG 331HS				.016	●	●
	TNMG 332HS	.375	.187	.150	.031	●	●
	TNMG 333HS				.047		●
	TNMG 331XP	.375	.187	.150	.016		●
	TNMG 332XP				.031		●
	TNMG 331XQ	.375	.187	.150	.016		●
	TNMG 332XQ				.031		●
	TNMG 332XS	.375	.187	.150	.031		●
	TNMG 331 ^{R/L} -C	.375	.187	.150	.016		●
	TNMG 332 ^{R/L} -C				.031		●
	TPGB 1.51.51	.187	.094	.095	.016	●	●
	TPGB 1.81.51	.218		.118	.031	●	●
	TPGB 220.5				.008	●	●
	TPGB 221	.250	.125	.138	.016	●	●
	TPGB 222				.031	●	●
	TPGH 1.51.50.5 ^{R/L}	.187	.094	.095	.008	●	●
	TPGH 1.51.51 ^{R/L}				.016	●	●
	TPGH 1.81.50.5 ^{R/L}	.218	.094	.118	.008	●	●
	TPGH 1.81.51 ^{R/L}				.016	●	●

	Description	I.C.	Thk.	Hole Dia.	R.	TN6020	PV7020
	TPGH 220.5 ^{R/L}				.008	●	●
	TPGH 221 ^{R/L}	.250	.125	.138	.016	●	●
	TPGH 321L	.375	.125	.173	.016		●
	TPGH 220.5L-H				.008		●
	TPGH 221 ^{R/L} H	.250	.125	.138	.016		●
	TPGH 222L-H				.031		●
	TPGH 321L-H	.375	.125	.173	.016		●
	TPGR 220.5L-A				.008		●
	TPGR 221L-A	.250	.125	.138	.016		●
	TPGR 221L-B	.250	.125	.138	.016	●	●
	TPGR 320.5L-B				.008	●	●
	TPGR 321L-B	.375	.125	.173	.016	●	●
	TPGR 322L-B				.031	●	●
	TPGR 321L-C	.375	.125	.173	.016		●
	TPGR 322L-C				.031		●
	TPMR 221GP	.250	.125	.138	.016		●
	TPMR 321GP	.375	.125	.173	.016		●
	TPMT 1.81.50.5GP	.218	.094	.118	.008		●
	TPMT 1.81.51GP	.218	.094	.118	.016	●	●
	TPMT 221GP	.250	.125	.138	.016	●	●
	TPMT 222GP				.031	●	●
	TPMT 321GP	.375	.125	.173	.016		●
	TPMT 1.81.50.5HQ	.218	.094	.118	.008		●
	TPMT 1.81.51HQ				.016	●	●
	TPMT 220.5HQ				.008		●
	TPMT 221HQ	.250	.125	.138	.016	●	●
	TPMT 222HQ				.031	●	●
	TPMT 321HQ	.375	.125	.173	.016		●
	TPMT 1.81.51XP	.218	.094	.118	.016		●
	TPMT 221XP	.250	.125	.138	.016		●
	TPMT 222XP				.031		●
	TPMT 321XP	.375	.125	.173	.016		●
	TPMT 322XP				.031		●
	TPMT 221XQ	.250	.125	.138	.016		●
	TPMT 222XQ				.031		●
	TPMT 321XQ	.375	.125	.173	.016		●
	TPMT 322XQ				.031		●

	Description	I.C.	Thk.	Hole Dia.	R.	TN6020	PV7020
	VBGT 220.5 ^{R/L} F	.250	.125	.110	.008	●	●
	VBGT 220.5 ^{R/L} Y	.250	.125	.110	.008	●	●
	VBGT 221 ^{R/L} Y				.016	●	●
	VBMT 221GP	.250	.125	.110	.016	●	●
	VBMT 331GP	.375	.187	.173	.016	●	●
	VBMT 332GP				.031	●	●
	VBMT 221HQ	.250	.125	.110	.016	●	●
	VBMT 222HQ				.031	●	●
	VBMT 331HQ				.016	●	●
	VBMT 332HQ	.375	.187	.173	.031	●	●
	VBMT 333HQ				.047		●
	VCMT 1.51.50.5HQ	.187	.094	.091	.008		●
	VCMT 1.51.51HQ				.016		●
	VNGG 330.5 ^{R/L}	.375	.187	.150	.008		●
	VNGG 331 ^{R/L}				.016		●
	VNMG 331	.375	.187	.150	.016	●	●
	VNMG 332				.031	●	●
	VNMG 330.5GP				.008	●	●
	VNMG 331GP	.375	.187	.150	.016	●	●
	VNMG 332GP				.031	●	●
	VNMG 331HQ				.016	●	●
	VNMG 332HQ	.375	.187	.150	.031	●	●
	VNMG 333HQ				.047		●
	VNMG 331VF				.016	●	●
	VNMG 332VF	.375	.187	.150	.031	●	●
	VNMG 333VF				.047	●	●
	WBGT 1.210.5L-F	.156	.063	.091	.008	●	●
	WBGT 1.211 ^{R/L} F				.016	●	●
	WBGT 1.51.50.5L-F	.187	.094	.091	.008	●	●
	WBGT 1.51.51 ^{R/L} F				.016	●	●
	WBMT 1.210.5L-DP	.156	.063	.091	.008		●
	WBMT 1.211L-DP				.016		●
	WBMT 1.51.50.5 L-DP	.187	.094	.091	.008		●
	WBMT 1.51.51 L-DP				.016		●

	Description	I.C.	Thk.	Hole Dia.	R.	TN6020	PV7020
	WNMG 431CQ	.500	.187	.203	.016		●
	WNMG 432CQ				.031		●
	WNMG 433CQ				.047		●
	WNMG 431GS	.500	.187	.203	.016		●
	WNMG 432GS				.031		●
	WNMG 433GS				.047		●
	WNMG 431HQ	.500	.187	.203	.016	●	●
	WNMG 432HQ				.031	●	●
	WNMG 433HQ				.047		●
	WNMG 431HS	.500	.187	.203	.016		●
	WNMG 432HS				.031	●	●
	WNMG 433HS				.047		●
	WNMG 431WP	.500	.187	.203	.016	●	●
	WNMG 432WP				.031	●	●
	WNMG 333WQ	.375	.187	.150	.047	●	●
	WNMG 431WQ	.500	.187	.203	.016	●	●
	WNMG 432WQ				.031	●	●
	WNMG 433WQ				.047	●	●
	WNMG 431XP	.500	.187	.203	.016		●
	WNMG 432XP				.031		●
	WNMG 431XQ	.500	.187	.203	.016		●
	WNMG 432XQ				.031		●
	WNMG 432XS	.500	.187	.203	.031		●
	WPMT 21.51HQ	.250	.094	.110	.016	●	●
	WPMT 321HQ	.375	.125	.173	.016	●	●
	WPMT 322HQ				.031		●

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