

Expanded
Inserts

PCD (Polycrystalline Diamond)

NEW PETIT CUT INSERTS

Renewed version of Petit Cut PCD insert series

- Traditional PCD grade and breaker geometries now available in New Petit Cut geometry.
- Improved brazing strength for increased machining stability.



PCD (Polycrystalline Diamond) NEW PETIT CUT INSERTS

Features

Features of new petit cut PCD inserts

● Outstanding brazing strength

By adopting the same blank form and brazing technology from CBN inserts, the brazing strength has been increased.

● PCD with chip breaker

Chip breaker formed directly on the PCD portion delivers superior chip control.

● Economical inserts

The small PCD delivers long tool life. Eliminates the need for regrinding, making tool management easier and more economical.

● Wide selection

Suitable for a wide range of cutting applications from small diameter boring to general turning and milling.



Cutting edge of New Petit Cut

Features of PCD grade MD220

MD220 uses medium grain (10µm) diamond particles. Due to the high density of these diamond particles and high bonding strength, a balanced combination of high wear and fracture resistance can be achieved.

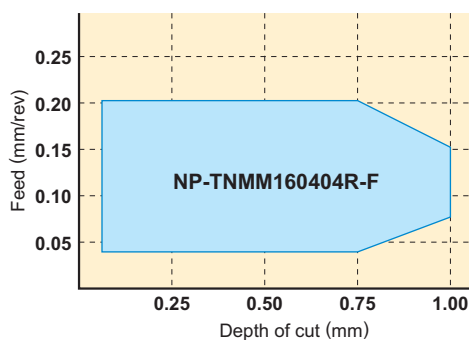
Suitable for a wider range of cutting applications from continuous to interrupted machining with milling tools.



Micro structure of MD220

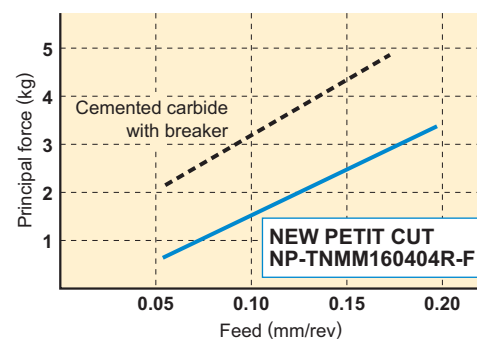
Cutting performance

Chip control



<Cutting conditions>
Workpiece : JIS A1050
Cutting speed : 400m/min
Wet cutting

Cutting resistance




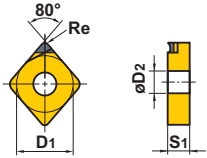
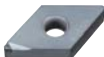
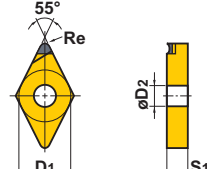

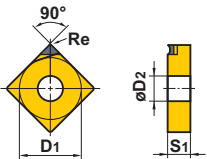

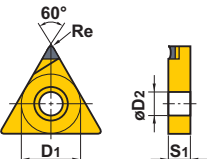

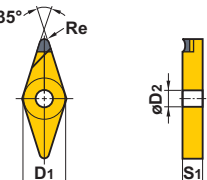
<Cutting conditions>
Workpiece : JIS A1050
Cutting speed : 400m/min
Depth of cut : 0.25mm
Wet cutting

Recommended cutting conditions

Work Material	Recommended Cutting Conditions		
	Cutting Speed (m/min)	Feed (mm/rev)	Depth of Cut (mm)
Aluminium Alloy	— 3,000	— 0.2	— 1.0
Copper alloy	— 1,200	— 0.2	— 1.0
Reinforced plastics	— 1,000	— 0.4	— 1.0
Carbon	— 600	— 0.3	— 1.0
Wood inorganic board	— 4,000	— 0.4	—
Cemented Carbide	— 20	— 0.2	— 0.5


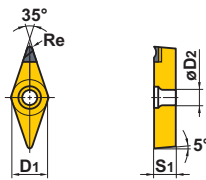
Inserts

● Negative Inserts (With hole)

Shape	Order Number	Stock	Dimensions (mm)				Geometry
		<i>MD220</i>	D1	S1	Re	D2	
	NP-CNMM120402R-F	●	12.7	4.76	0.2	5.16	 Right hand insert shown.
	120402L-F	□	12.7	4.76	0.2	5.16	
	120404R-F	●	12.7	4.76	0.4	5.16	
	120404L-F	□	12.7	4.76	0.4	5.16	
	120408R-F	●	12.7	4.76	0.8	5.16	
	120408L-F	□	12.7	4.76	0.8	5.16	
(With Breaker)							
	NP-DNMM150402R-F	●	12.7	4.76	0.2	5.16	 Right hand insert shown.
	150402L-F	□	12.7	4.76	0.2	5.16	
	150404R-F	●	12.7	4.76	0.4	5.16	
	150404L-F	□	12.7	4.76	0.4	5.16	
	150408R-F	●	12.7	4.76	0.8	5.16	
	150408L-F	□	12.7	4.76	0.8	5.16	
(With Breaker)							
	NP-SNMM120404R-F	●	12.7	4.76	0.4	5.16	 Right hand insert shown.
	120404L-F	□	12.7	4.76	0.4	5.16	
	120408R-F	●	12.7	4.76	0.8	5.16	
	120408L-F	□	12.7	4.76	0.8	5.16	
(With Breaker)							
	NP-TNMM160402R-F	●	9.525	4.76	0.2	3.81	 Right hand insert shown.
	160402L-F	□	9.525	4.76	0.2	3.81	
	160404R-F	●	9.525	4.76	0.4	3.81	
	160404L-F	□	9.525	4.76	0.4	3.81	
	160408R-F	●	9.525	4.76	0.8	3.81	
	160408L-F	□	9.525	4.76	0.8	3.81	
(With Breaker)							
	NP-VNMM160402R-F	●	9.525	4.76	0.2	3.81	 Right hand insert shown.
	160402L-F	□	9.525	4.76	0.2	3.81	
	160404R-F	●	9.525	4.76	0.4	3.81	
	160404L-F	□	9.525	4.76	0.4	3.81	
	160408R-F	●	9.525	4.76	0.8	3.81	
	160408L-F	□	9.525	4.76	0.8	3.81	
(With Breaker)							


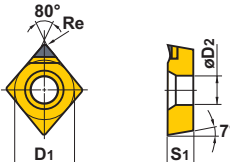

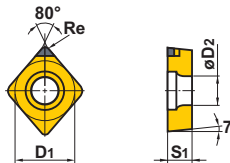

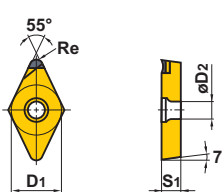
Inserts

● 5° Positive Inserts (With hole)


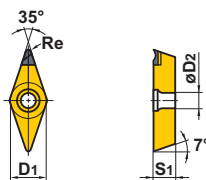
Shape	Order Number	Stock	Dimensions (mm)				Geometry
		<i>MD220</i>	D1	S1	Re	D2	
 (With Breaker)	NP-VBGT1103V5R-F	●	6.35	3.18	0.05	2.85	
	110301R-F	●	6.35	3.18	0.1	2.85	
	110302R-F	●	6.35	3.18	0.2	2.85	
	110304R-F	●	6.35	3.18	0.4	2.85	

Right hand insert only.

● 7° Positive Inserts (With hole)


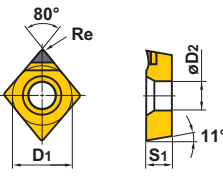

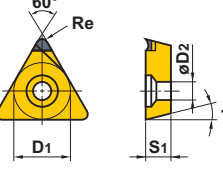

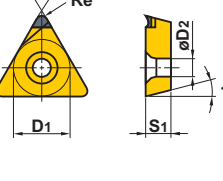
Shape	Order Number	Stock	Dimensions (mm)				Geometry
		<i>MD220</i>	D1	S1	Re	D2	
 (With Breaker)	NP-CCMH060202	●	6.35	2.38	0.2	2.8	
	060204	●	6.35	2.38	0.4	2.8	
 (With Breaker)	NP-CCMW03S102	●	3.57	1.39	0.2	2.0	
	03S104	●	3.57	1.39	0.4	2.0	
	04T002	●	4.37	1.79	0.2	2.4	
	04T004	●	4.37	1.79	0.4	2.4	
 (With Breaker)	NP-DCMT070202R-F	●	6.35	2.38	0.2	2.8	
	070202L-F	●	6.35	2.38	0.2	2.8	
	070204R-F	●	6.35	2.38	0.4	2.8	
	070204L-F	●	6.35	2.38	0.4	2.8	
	11T302R-F	●	9.525	3.97	0.2	4.4	
	11T302L-F	●	9.525	3.97	0.2	4.4	
	11T304R-F	●	9.525	3.97	0.4	4.4	
	11T304L-F	●	9.525	3.97	0.4	4.4	

Right hand insert shown.


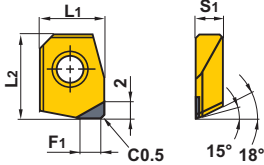

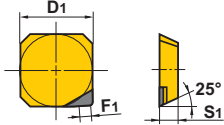
 (With Breaker)	NP-VCGT0802V5R-F	●	4.76	2.38	0.05	2.4	
	080201R-F	●	4.76	2.38	0.1	2.4	
	080202R-F	●	4.76	2.38	0.2	2.4	
	080204R-F	●	4.76	2.38	0.4	2.4	
	1103V5R-F	●	6.35	3.18	0.05	2.8	
	110301R-F	●	6.35	3.18	0.1	2.8	
	110302R-F	●	6.35	3.18	0.2	2.8	
	110304R-F	●	6.35	3.18	0.4	2.8	

Right hand insert only.

● 11° Positive Inserts (With hole)

Shape	Order Number	Stock	Dimensions (mm)				Geometry
		<i>MD220</i>	D1	S1	Re	D2	
	NP-CPMH080202	●	7.94	2.38	0.2	3.5	
	080204	●	7.94	2.38	0.4	3.5	
	090302	●	9.525	3.18	0.2	4.5	
	090304	●	9.525	3.18	0.4	4.5	
(With Breaker)							
	NP-TPMX090202R-F	●	5.56	2.38	0.2	3.0	
	090202L-F	●	5.56	2.38	0.2	3.0	
	090204R-F	□	5.56	2.38	0.4	3.0	
	090204L-F	●	5.56	2.38	0.4	3.0	
	090208R-F	□	5.56	2.38	0.8	3.0	
	090208L-F	●	5.56	2.38	0.8	3.0	
	110302R-F	□	6.35	3.18	0.2	3.5	
	110302L-F	●	6.35	3.18	0.2	3.5	
	110304R-F	□	6.35	3.18	0.4	3.5	
	110304L-F	●	6.35	3.18	0.4	3.5	
	110308R-F	□	6.35	3.18	0.8	3.5	
	110308L-F	●	6.35	3.18	0.8	3.5	
	160302R-F	□	9.525	3.18	0.2	4.8	
	160302L-F	●	9.525	3.18	0.2	4.8	
160304R-F	□	9.525	3.18	0.4	4.8		
160304L-F	●	9.525	3.18	0.4	4.8		
160308R-F	□	9.525	3.18	0.8	4.8		
160308L-F	●	9.525	3.18	0.8	4.8		
(With Breaker)							Left hand insert shown.
	NP-TPMH080202R-F	●	4.76	2.38	0.2	2.5	
	080202L-F	●	4.76	2.38	0.2	2.5	
	080204R-F	●	4.76	2.38	0.4	2.5	
	080204L-F	●	4.76	2.38	0.4	2.5	
	090202R-F	●	5.56	2.38	0.2	2.9	
	090202L-F	●	5.56	2.38	0.2	2.9	
	090204R-F	●	5.56	2.38	0.4	2.9	
	090204L-F	●	5.56	2.38	0.4	2.9	
	110302R-F	●	6.35	3.18	0.2	3.4	
	110302L-F	●	6.35	3.18	0.2	3.4	
	110304R-F	●	6.35	3.18	0.4	3.4	
	110304L-F	●	6.35	3.18	0.4	3.4	
	160302R-F	●	9.525	3.18	0.2	4.4	
	160302L-F	●	9.525	3.18	0.2	4.4	
160304R-F	●	9.525	3.18	0.4	4.4		
160304L-F	●	9.525	3.18	0.4	4.4		
(With Breaker)							Right hand insert shown.

● Rotating Tool Insert

Cutter Type Shape	Order Number	Stock	Dimensions (mm)					Geometry
			MD220	L1	L2	D1	S1	
	NP-GDCW1240PDFR2	●	9.5	12	—	4	2	
 (Wiper)	NP-WFC42ZFER2	●	—	—	12.4	3.175	2.4	

Note) For the recommended cutting conditions, please refer to the general catalogue .

● : Inventory maintained. (1 insert in one case)

For Your Safety

- Don't handle inserts and chips without gloves. ● Please machine within the recommended application range and exchange expired tools with new ones in advance of breakage. ● Please use safety covers and wear safety glasses. ● When using compounded cutting oils, please take fire precautions. ● When attaching inserts or spare parts, please use only the correct wrench or spanner. ● When using rotating tools, please make a trial run to check run-out, vibration and abnormal sounds etc.

MITSUBISHI MATERIALS CORPORATION

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(Tools specifications subject to change without notice.)