



New CVD coated carbide grade
for steel

CA115P
CA125P

THIEME
CNC-Werkzeugtechnik

CA115P/CA125P

NEW

Longer tool life in various steel machining environments

New coating and carbide substrate provide
excellent wear and fracture resistance

Longer tool life for a wide range of machining applications
Introducing PMG chipbreaker for medium-roughing

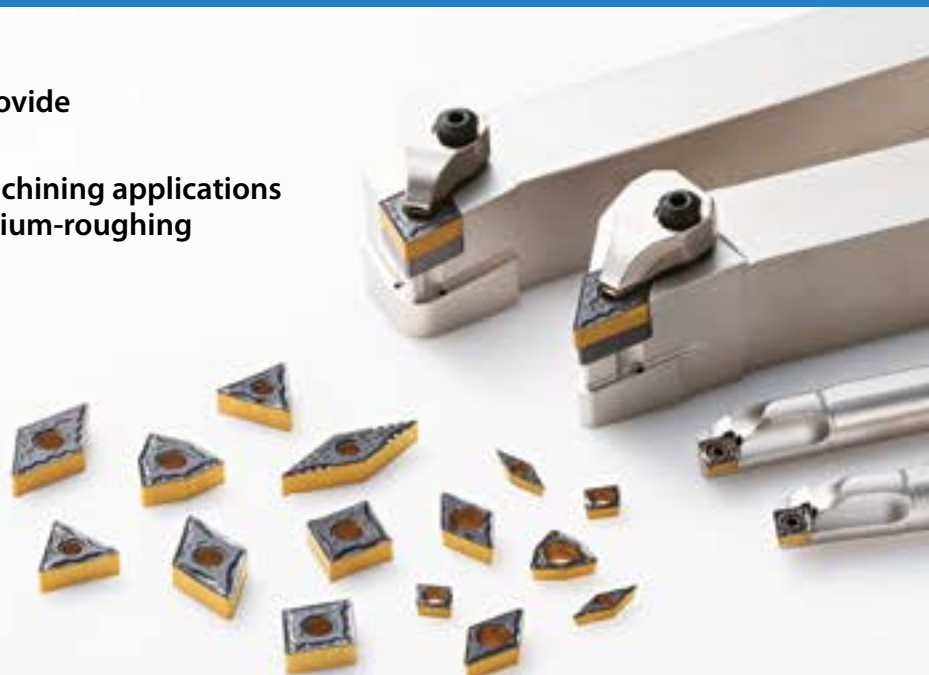
CA115P

Releasing
June 2023

Continuous to light interrupted machining
Highly-efficient machining

CA125P

Continuous to heavy interrupted machining
General purpose



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New CVD coated carbide grade for steel

CA115P/CA125P

The new standard for steel machining

Longer tool life in a wide range of machining environments

Expanded lineup of chipbreakers for steel machining in various applications

CA115P/CA125P drastically extends tool life

- Cost savings
- Reduced downtime
- Reduced inventory needed on hand
- Consistent machining quality
- Line automation and labor savings
- Promotes a carbon neutral society by reducing the amount of waste

Advancing technologies improve tool longevity

Advanced technology

New coating & New carbide substrate



Black & Gold

Excellent wear and fracture resistance





Innovative layering technology

Ultra-uniform alumina layering

Proprietary crystal forming technology
Achieving significant crystal growth uniformity and direction
Reduces crater wear and extends tool life



New development

PMG Chipbreaker for medium-roughing

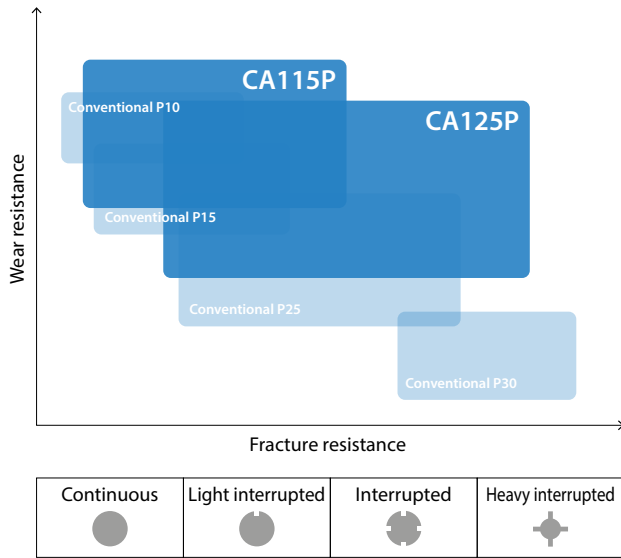
Unique design covers a wide range of machining applications
Maintains excellent chip control



1

Extended tool life in a wide variety of applications

Application map



CA115P

Releasing
June 2023

Continuous-light interrupted machining of steel
For high-efficient machining
with wear and chipping resistance

CA125P

Continuous-heavy interrupted steel machining
First recommendation for steel machining
High versatility

Solution

Long tool life in various machining environments from roughing to finishing

1 Shaft S43C



Good
Edge condition

CA125P maintained stability and achieved less wear than competitor A.

Edge condition



CA125P



Competitor A

Cutting conditions :
Vc = 200 m/min, ap = 0,5 mm
f = 0,3 mm/rev, Wet DNMG150408PP
Tool life : 150 pcs/corner

(User evaluation)

2 Sleeve HMM45



Tool life

2x

CA115P provides 2 times longer tool life than competitor B and maintained better edge wear.

Number of parts

CA115P **200 pcs/corner**

Competitor B **100 pcs/corner**

Cutting conditions :
Vc = 210 m/min, ap = 0,5 mm
f = 0,35 mm/rev, Wet DNMG150408PQ

(User evaluation)

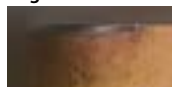
3 Automotive parts SCM420H



Good
Edge condition

CA125P provides stable machining without chipping even after reaching the end of estimated tool life.

Edge condition



CA125P



Competitor C

Cutting conditions :
Vc = 160 m/min, ap = 1.0 mm
f = 0.32 mm/rev, Wet CNMG120412PG
Tool life : 100 pcs/corner

(User evaluation)

4 Automotive parts Non-tempered steel



Tool life

1.4x

CA125P shows 1.4 times longer tool life than competitor D.

Number of parts

CA125P **80 pcs/corner**

Competitor D **55 pcs/corner**

Cutting conditions :
Vc = 160 m/min, ap = 0.2 mm
f = 0.32 mm/rev, Wet CNMG120408PG

(User evaluation)

Solution

New PMG chipbreaker provides up to 4 times longer tool life



5 Nut S45C

Tool life
↑
4x

CA115P provides 4 times longer tool life than competitor E. The amount of wear after machining is also comparable.



Number of parts

CA115P **1,440 pcs/corner**

Competitor E **360 pcs/corner**

Cutting conditions :
Vc = 190 m/min, ap = 1.3 mm
f = 0.2 mm/rev, Wet CNMG120408PMG

(User evaluation)

6 Gear S35C

Tool life
↑
2x

CA125P shows 2 times longer tool life than competitor F for stable machining even in interrupted machining sections.



Number of parts

CA125P **200 pcs/corner**

Competitor F **100 pcs/corner**

Cutting conditions :
Vc = 260 m/min, ap = 1.5 mm
f = 0.3 mm/rev, Wet CNMG120412PMG

(User evaluation)

7 Bearing SCM415

Edge condition
↑
Good

CA125P maintained machining without fractures compared to competitor G, which was damaged frequently during machining.



Edge condition



CA125P

Competitor G

Cutting conditions :
Vc = 270 m/min, ap = 1.3 mm
f = 0.25 mm/rev, Wet WNMG080408PMG
Tool life : 300 pcs/corner

(User evaluation)

8 Yoke S45C

Tool life
↑
2x

CA125P shows 2 times longer tool life than competitor H.



Number of parts

CA125P **100 pcs/corner**

Competitor H **50 pcs/corner**

Cutting conditions :
Vc = 160 m/min, ap = 1.0 mm
f = 0.37 mm/rev, Wet WNMG080408PMG

(User evaluation)

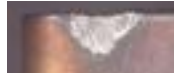
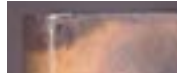
9 Bolt SCM440H

Edge condition
↑
Good

CA125P has better chipping resistance against competitor I.



Edge condition



CA125P

Competitor I

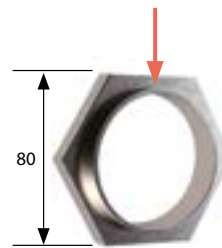
Cutting conditions :
Vc = 200 m/min, ap = 2.0 mm
f = 0.3 mm/rev, Wet TNMG160408PMG
Tool life : 130 pcs/corner

(User evaluation)

10 Nut S45C

Tool life
↑
2x

CA125P shows 2 times longer tool life than competitor J due to improved wear resistance.



Number of parts

CA125P **720 pcs/corner**

Competitor J **360 pcs/corner**

Cutting conditions :
Vc = 200 m/min, ap = 2.2 mm
f = 0.2 mm/rev, Wet WNMG080408PMG

(User evaluation)



2 Newly developed proprietary coating and carbide substrate with superior wear and fracture resistance.

Optimized coating properties on rake and flank faces provides wear resistance and fracture resistance

The industry's most uniform alumina film* reduces crater wear

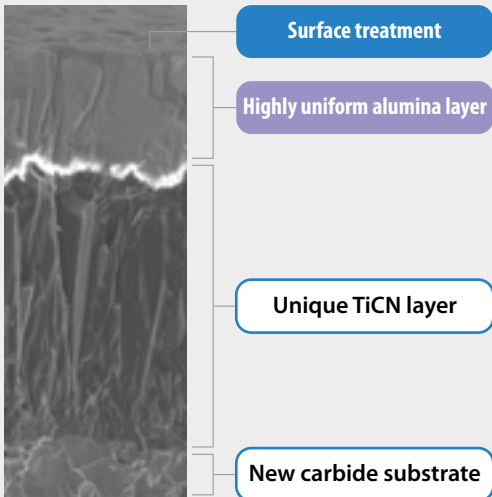
*March 2023, by Kyocera research

Black & Gold

Rake face

Suppresses crater wear and fracturing

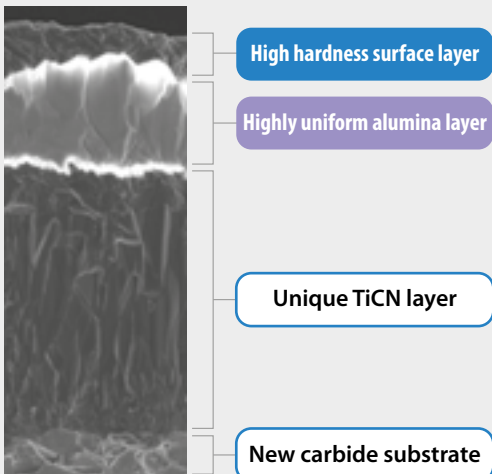
- New surface treatment technology improves fracture resistance
- Highly uniform alumina layer reduces wear



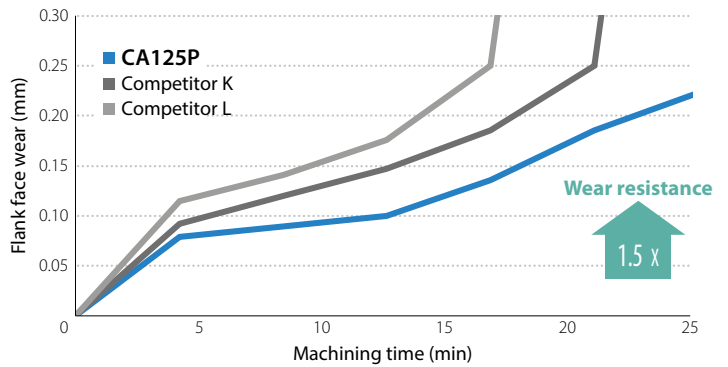
Flank face

Improved wear resistance

- High hardness surface layer suppresses abrasion
- Uniform alumina layer reduces wear
- Easy to see edge defects with golden surface

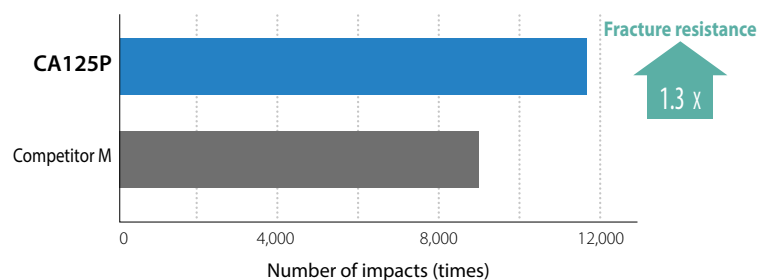


Wear resistance comparison (Internal evaluation)



Cutting conditions : Vc = 300 m/min, ap = 1.5 mm, f = 0.3 mm/rev, Wet Workpiece : SCM435

Fracture resistance comparison (Internal evaluation) Interrupted machining n = 3 mean



Cutting conditions : Vc = 300 m/min, ap = 1.5 mm, f = 0.35 mm/rev, Wet Workpiece : S45C (4 grooves)

Highly uniform alumina layer

Excellent wear resistance due to the most uniform crystal orientation in the industry.*

Alumina film crystal structure (CG image)

Uniform crystal orientation

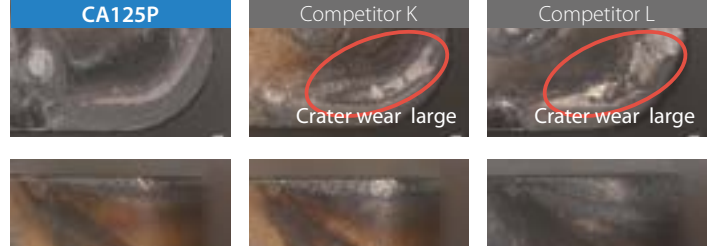
New crystal control technology provides industry-leading Al_2O_3 orientation

Comparison of cutting edge conditions (Internal evaluation)

After machining for 16.9 minutes

Improved wear resistance

Reduces crater wear and external abrasion caused by chip scraping



Cutting conditions : $V_c = 300$ m/min, $a_p = 1.5$ mm, $f = 0.3$ mm/rev, Wet
Workpiece : SCM435

*March 2023, by Kyocera research

Crystal orientation analysis (EBSD pattern)

A higher percentage of red indicates a more uniform growth pattern

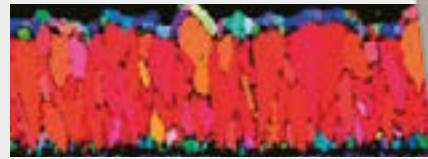
CA125P



Uniform crystal direction

(CG image)

Conventional A



Nonuniform crystal orientation

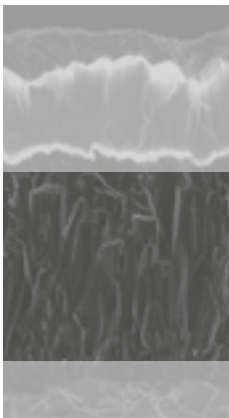
(CG image)

Unique TiCN layer

Proper TiCN particle size with proprietary crystal control technology

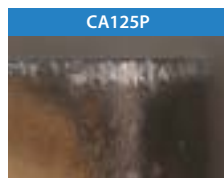
Greatly improved chipping resistance

TiCN layer (CA125P)



Edge condition comparison (Internal evaluation)

After machining 70 mm



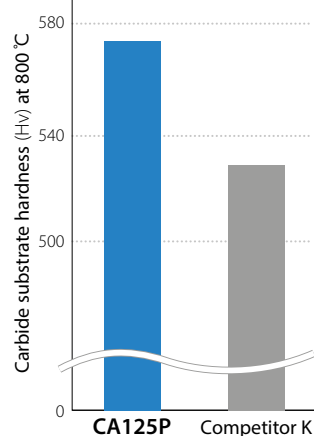
Cutting conditions : $V_c = 250$ m/min
 $a_p = 1.0$ mm, $f = 0.4$ mm/rev
 $L = 1.0$ mm, Wet, Workpiece : SUJ2

New carbide substrate

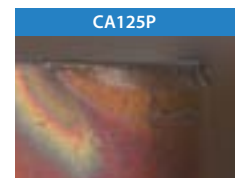
Improved resistance to plastic deformation with an increased temperature strength

Comparison of carbide substrate hardness (Internal evaluation)

(Internal evaluation)



Edge condition comparison (Internal evaluation)



Cutting conditions : $V_c = 300$ m/min
 $a_p = 1.0$ mm, $f = 0.4$ mm/rev
Dry, Workpiece : SCM435

3

A large variety of chipbreakers cover a wide range of machining applications and conditions

New lineup with expanded PMG chipbreakers for medium machining to roughing
Covers a wide area from finishing to roughing

Negative type

Smart chipbreaker P series for steel machining

PP

For finishing
Low resistance



PQ

For finishing-medium
Sharpness and strength



PMG NEW

For medium-roughing
Covers a wide range of machining areas



PG

For medium-roughing
Stability-oriented

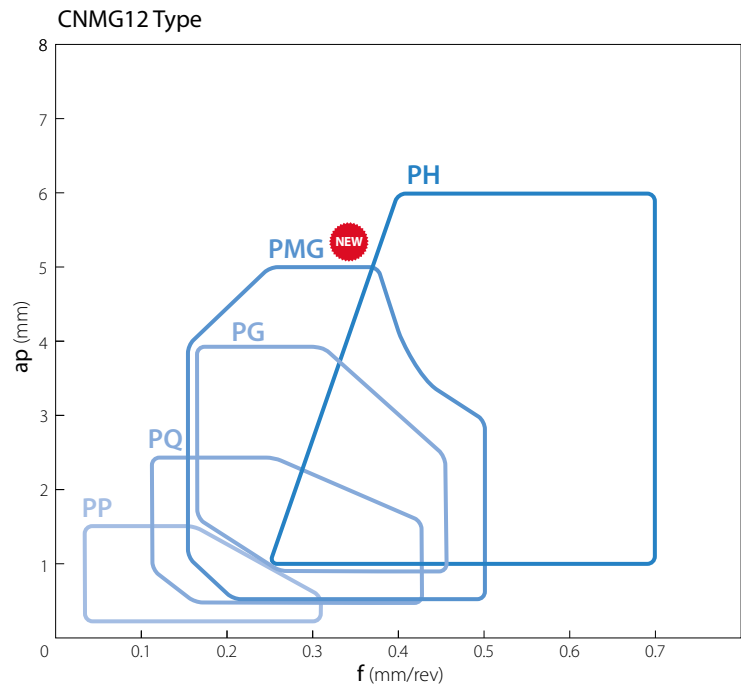


PH

For roughing
Tough edge design



Applicable chipbreaker range (ap indicates radius)



Positive type

For finishing

PP

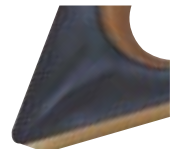
High reliability
Improving the productivity of finishing



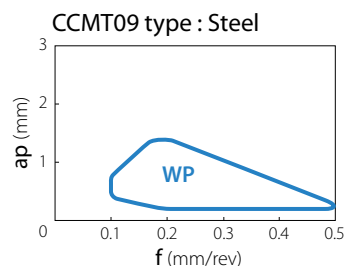
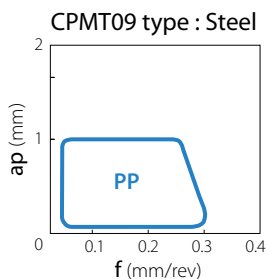
Wiper insert

WP

Newly designed wiper edge geometry
High productivity



Applicable chipbreaker range (ap indicates radius)



For medium-roughing

PMG chipbreaker NEW

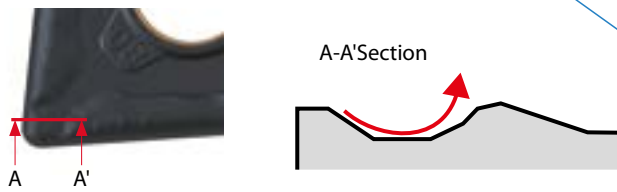
Covers a wide range of machining applications from medium machining to roughing
 Excellent wear resistance with low cutting force design
 Reduces chip shape inconsistencies and improves tool life

Step breaker structure

Suppresses chip entanglement during large D.O.C. machining with a gently rising surface

Circle dot

Control chips during small D.O.C. machining



High rake perimeter

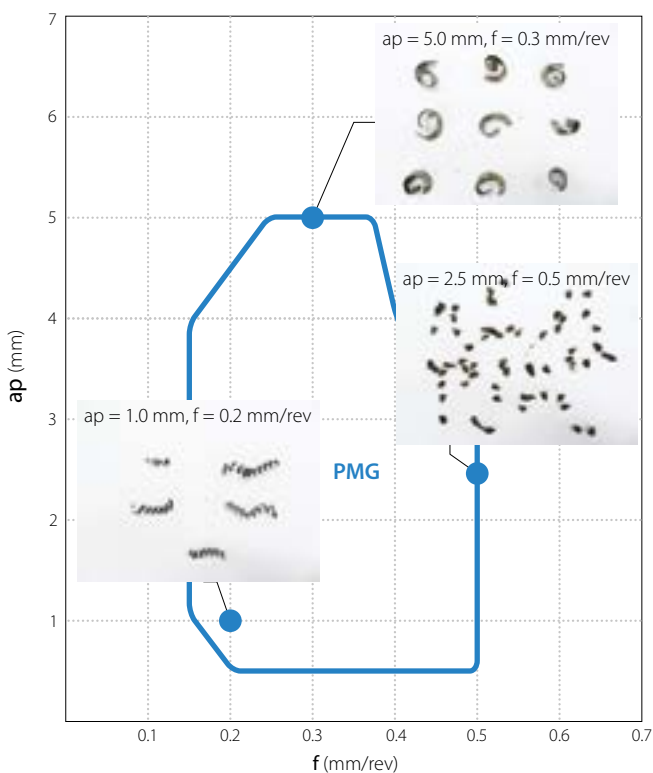
Low resistance design suppresses rake face temperature rise
 Reduces chipbreakers wear and chip shape changes



Excellent chip control

Good chip control in a wide range of machining areas

Applicable chipbreaker range



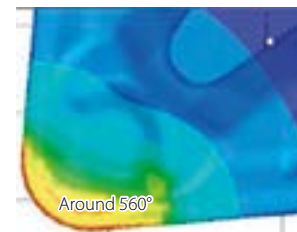
Cutting conditions: $V_c = 300$ m/min, $a_p = 0.5 \sim 5.0$ mm, $f = 0.1 \sim 0.5$ mm/rev
 Workpiece: SCr420 CNMG120408PMG

Achieves longer tool life

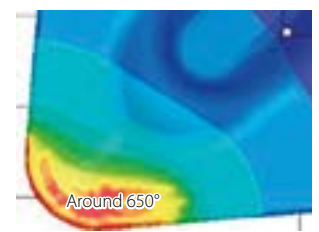
Suppresses rise in rake face temperature. Reduces crater wear

Edge temperature simulation comparison (Internal evaluation)

PMG chipbreaker



Conventional B



Cutting conditions: $V_c = 270$ m/min, $a_p = 1.5$ mm, $f = 0.3$ mm/rev
 Workpiece: SCM430





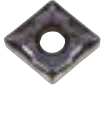





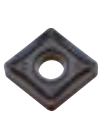

Consistent, small, and even chip shapes


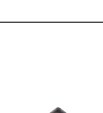

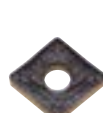



Chip shape

| | PMG chipbreaker | Conventional B |
|--------------------------|-----------------|----------------|
| Initial machining | | |
| After 27.2 min machining | | |


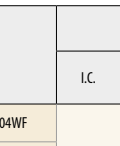


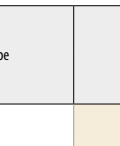
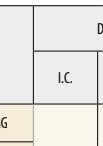
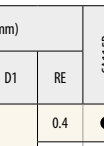
Cutting conditions: $V_c = 300$ m/min, $a_p = 1.5$ mm, $f = 0.3$ mm/rev
 Wet (External coolant) Workpiece: SCM435 WNMG080408PMG

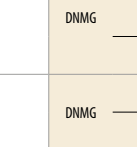
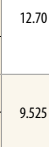

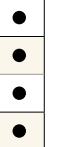
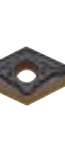
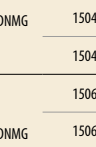


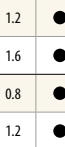
Negative type inserts

| | Shape | Description | Dimensions (mm) | | | | CA115P | CA125P | | | |
|------------------------------|---|-------------|-----------------|------|------|-------|--------|--------|-----|---|---|
| | | | I.C. | S | D1 | RE | | | | | |
| Wiper Edge |  | 120404WF | 12.70 | 4.76 | 5.16 | 0.4 | ● | ● | | | |
| | | 120408WF | | | | 0.8 | ● | ● | | | |
| Wiper Edge |  | 120404WP | 12.70 | 4.76 | 5.16 | 0.4 | ● | ● | | | |
| | | 120408WP | | | | 0.8 | ● | ● | | | |
| Wiper Edge |  | 120404WE | 12.70 | 4.76 | 5.16 | 0.4 | ● | ● | | | |
| | | 120408WE | | | | 0.8 | ● | ● | | | |
| | | 120412WE | | | | 1.2 | ● | ● | | | |
| Wiper Edge |  | 120404WQ | 12.70 | 4.76 | 5.16 | 0.4 | ● | ● | | | |
| | | 120408WQ | | | | 0.8 | ● | ● | | | |
| | | 120412WQ | | | | 1.2 | ● | ● | | | |
| Finishing |  | 120402PP | 12.70 | 4.76 | 5.16 | 0.2 | ● | ● | | | |
| | | 120404PP | | | | 0.4 | ● | ● | | | |
| | | 120408PP | | | | 0.8 | ● | ● | | | |
| | | 120412PP | | | | 1.2 | ● | ● | | | |
| Finishing |  | 120402GP | 12.70 | 4.76 | 5.16 | 0.2 | ● | ● | | | |
| | | 120404GP | | | | 0.4 | ● | ● | | | |
| | | 120408GP | | | | 0.8 | ● | ● | | | |
| Finishing-Medium |  | 120404PQ | 12.70 | 4.76 | 5.16 | 0.4 | ● | ● | | | |
| | | 120408PQ | | | | 0.8 | ● | ● | | | |
| | | 120412PQ | | | | 1.2 | ● | ● | | | |
| Finishing-Medium |  | 090404HQ | 9.525 | 4.76 | 3.81 | 0.4 | ● | ● | | | |
| | | 090408HQ | | | | 0.8 | ● | ● | | | |
| | | 120404HQ | 12.70 | 4.76 | 5.16 | 0.4 | ● | ● | | | |
| | | 120408HQ | | | | 0.8 | ● | ● | | | |
| Finishing-Medium |  | 120412HQ | 12.70 | 4.76 | 5.16 | 1.2 | ● | ● | | | |
| | | 120404CQ | | | | 12.70 | 4.76 | 5.16 | 0.4 | ● | ● |
| | | 120408CQ | | | | | | | 0.8 | ● | ● |
| | | 120412CQ | | | | | | | 1.2 | ● | ● |
| Finishing-Medium / Up Facing |  | 160608CQ | 15.875 | 6.35 | 6.35 | 0.8 | ● | ● | | | |
| | | 160612CQ | | | | 1.2 | ● | ● | | | |
| | | 120408CJ | 12.70 | 4.76 | 5.16 | 0.8 | ● | ● | | | |
| | | 120412CJ | | | | 1.2 | ● | ● | | | |
| Finishing-Medium / Up Facing |  | 160616CJ | 15.875 | 6.35 | 6.35 | 1.6 | ● | ● | | | |
| | | 120404PMG | | | | 12.70 | 4.76 | 5.16 | 0.4 | ● | ● |
| | | 120408PMG | | | | | | | 0.8 | ● | ● |
| 120412PMG | 1.2 | ● | ● | | | | | | | | |
| 120416PMG | 1.6 | ● | ● | | | | | | | | |
| Medium-Roughing |  | 160608PMG | 15.875 | 6.35 | 6.35 | 0.8 | ● | ● | | | |
| | | 160612PMG | | | | 1.2 | ● | ● | | | |
| | | 160616PMG | 15.875 | 6.35 | 6.35 | 1.6 | ● | ● | | | |
| | | 090404GS | | | | 9.525 | 4.76 | 3.81 | 0.4 | ● | ● |
| 090408GS | 0.8 | ● | ● | | | | | | | | |

| | Shape | Description | Dimensions (mm) | | | | CA115P | CA125P |
|-----------------------------------|---|-------------|-----------------|-------|------|-------|--------|--------|
| | | | I.C. | S | D1 | RE | | |
| Medium-Roughing (Interpolation) |  | 120404PG | 12.70 | 4.76 | 5.16 | 0.4 | ● | ● |
| | | 120408PG | | | | 0.8 | ● | ● |
| | | 120412PG | | | | 1.2 | ● | ● |
| | | 120416PG | | | | 1.6 | ● | ● |
| Roughing |  | 120404 | 12.70 | 4.76 | 5.16 | 0.4 | ● | ● |
| | | 120408 | | | | 0.8 | ● | ● |
| | | 120412 | | | | 1.2 | ● | ● |
| | | 160608 | 15.875 | 6.35 | 6.35 | 0.8 | ● | ● |
| | | 160612 | | | | 1.2 | ● | ● |
| | | 190612 | 19.05 | 6.35 | 7.94 | 1.2 | ● | ● |
| | | 190616 | | | | 1.6 | ● | ● |
| | | 120408PH | | | | 12.70 | 4.76 | 5.16 |
| | | 120412PH | 1.2 | ● | ● | | | |
| | | 120416PH | 1.6 | ● | ● | | | |
| Roughing |  | 160608PH | 15.875 | 6.35 | 6.35 | 0.8 | ● | ● |
| | | 160612PH | | | | 1.2 | ● | ● |
| | | 160616PH | | | | 1.6 | ● | ● |
| | | 190608PH | 19.05 | 6.35 | 7.94 | 0.8 | ● | ● |
| | | 190612PH | | | | 1.2 | ● | ● |
| | | 190616PH | | | | 1.6 | ● | ● |
| | | 190624PH | 19.05 | 6.35 | 7.94 | 2.4 | ● | ● |
| | | 120408PX | | | | 12.70 | 4.76 | 5.16 |
| 120412PX | 1.2 | ● | ● | | | | | |
| 120416PX | 1.6 | ● | ● | | | | | |
| Single-Sided Roughing / High Feed |  | 160608PX | 15.875 | 6.35 | 6.35 | 0.8 | ● | ● |
| | | 160612PX | | | | 1.2 | ● | ● |
| | | 160616PX | | | | 1.6 | ● | ● |
| | | 190608PX | 19.05 | 6.35 | 7.94 | 0.8 | ● | ● |
| | | 190612PX | | | | 1.2 | ● | ● |
| | | 190616PX | | | | 1.6 | ● | ● |
| 190624PX | 19.05 | 6.35 | 7.94 | 2.4 | ● | ● | | |
| 120404XP | | | | 12.70 | 4.76 | 5.16 | 0.4 | ● |
| 120408XP | 0.8 | ● | ● | | | | | |
| Low Carbon Steel |  | 120404XQ | 12.70 | 4.76 | 5.16 | 0.4 | ● | ● |
| 120408XQ | | 0.8 | | | | ● | ● | |
| Low Carbon Steel |  | 120404XQ | 12.70 | 4.76 | 5.16 | 0.4 | ● | ● |
| 120408XQ | | 0.8 | | | | ● | ● | |
| Low Carbon Steel |  | 120408XS | 12.70 | 4.76 | 5.16 | 0.8 | ● | ● |
| | | | | | | | | |

● : Available

| Shape | Description | Dimensions (mm) | | | | CA115P | CA125P | |
|---|---|--|-------|------|------|--------|--------|---|
| | | I.C. | S | D1 | RE | | | |
| Wiper Edge  | DNMX 150404WF 150408WF 150412WF | 12.70 | 4.76 | 5.16 | 0.4 | ● | ● | |
| | | | | | 0.8 | ● | ● | |
| | | | | | 1.2 | ● | ● | |
| | DNMX 150604WF 150608WF 150612WF | 12.70 | 6.35 | 5.16 | 0.4 | ● | ● | |
| | | | | | 0.8 | ● | ● | |
| | | | | | 1.2 | ● | ● | |
| Finishing  | DNMG 150402PP 150404PP 150408PP 150412PP | 12.70 | 4.76 | 5.16 | 0.2 | ● | ● | |
| | | | | | 0.4 | ● | ● | |
| | | | | | 0.8 | ● | ● | |
| | | | | | 1.2 | ● | ● | |
| | DNMG 150602PP 150604PP 150608PP 150612PP | 12.70 | 6.35 | 5.16 | 0.2 | ● | ● | |
| | | | | | 0.4 | ● | ● | |
| | | | | | 0.8 | ● | ● | |
| | | | | | 1.2 | ● | ● | |
| | Finishing  | DNMG 110404GP 110408GP | 9.525 | 4.76 | 3.81 | 0.4 | ● | ● |
| | | | | | | 0.8 | ● | ● |
| | | DNMG 150402GP 150404GP 150408GP | 12.70 | 4.76 | 5.16 | 0.2 | ● | ● |
| | | | | | | 0.4 | ● | ● |
| 0.8 | | | | | | ● | ● | |
| 1.2 | | | | | | ● | ● | |
| Finishing-Medium  | DNMG 150404PQ 150408PQ 150412PQ | 12.70 | 4.76 | 5.16 | 0.4 | ● | ● | |
| | | | | | 0.8 | ● | ● | |
| | | | | | 1.2 | ● | ● | |
| | DNMG 150604PQ 150608PQ 150612PQ | 12.70 | 6.35 | 5.16 | 0.4 | ● | ● | |
| | | | | | 0.8 | ● | ● | |
| | | | | | 1.2 | ● | ● | |
| Finishing-Medium  | DNMG 110402HQ 110404HQ | 9.525 | 4.76 | 3.81 | 0.2 | ● | ● | |
| | | | | | 0.4 | ● | ● | |
| | DNMG 150404HQ 150408HQ 150412HQ | 12.70 | 4.76 | 5.16 | 0.4 | ● | ● | |
| | | | | | 0.8 | ● | ● | |
| | | | | | 1.2 | ● | ● | |
| | | | | | 1.2 | ● | ● | |
| | DNMG 150604HQ 150608HQ 150612HQ | 12.70 | 6.35 | 5.16 | 0.4 | ● | ● | |
| | | | | | 0.8 | ● | ● | |
| | | | | | 1.2 | ● | ● | |
| | | | | | 1.2 | ● | ● | |
| | Finishing-Medium / Up Facing  | DNMG 150404CQ 150408CQ 150412CQ | 12.70 | 4.76 | 5.16 | 0.4 | ● | ● |
| | | | | | | 0.8 | ● | ● |
| 1.2 | | | | | | ● | ● | |
| DNMG 150604CQ 150608CQ 150612CQ | | 12.70 | 6.35 | 5.16 | 0.4 | ● | ● | |
| | | | | | 0.8 | ● | ● | |
| | | | | | 1.2 | ● | ● | |
| Finishing-Medium / Up Facing  | DNMG 150408CJ 150412CJ | 12.70 | 4.76 | 5.16 | 0.8 | ● | ● | |
| | | | | | 1.2 | ● | ● | |
| | DNMG 150608CJ 150612CJ | 12.70 | 6.35 | 5.16 | 0.8 | ● | ● | |
| | | | | | 1.2 | ● | ● | |
| | | | | | 1.2 | ● | ● | |
| | | | | | 1.2 | ● | ● | |







| Shape | Description | Dimensions (mm) | | | | CA115P | CA125P | |
|--|---|--|-------|------|------|--------|--------|---|
| | | I.C. | S | D1 | RE | | | |
| Medium-Roughing  | DNMG 150404PMG 150408PMG 150412PMG 150416PMG | 12.70 | 4.76 | 5.16 | 0.4 | ● | ● | |
| | | | | | 0.8 | ● | ● | |
| | | | | | 1.2 | ● | ● | |
| | | | | | 1.6 | ● | ● | |
| | DNMG 150604PMG 150608PMG 150612PMG 150616PMG | 12.70 | 6.35 | 5.16 | 0.4 | ● | ● | |
| | | | | | 0.8 | ● | ● | |
| | | | | | 1.2 | ● | ● | |
| | | | | | 1.6 | ● | ● | |
| | Medium  | DNMG 110404GS 110408GS | 9.525 | 4.76 | 3.81 | 0.4 | ● | ● |
| | | | | | | 0.8 | ● | ● |
| | Medium-Roughing (Interruption)  | DNMG 150404PG 150408PG 150412PG 150416PG | 12.70 | 4.76 | 5.16 | 0.4 | ● | ● |
| | | | | | | 0.8 | ● | ● |
| 1.2 | | | | | | ● | ● | |
| 1.6 | | | | | | ● | ● | |
| DNMG 150604PG 150608PG 150612PG 150616PG | | 12.70 | 6.35 | 5.16 | 0.4 | ● | ● | |
| | | | | | 0.8 | ● | ● | |
| | | | | | 1.2 | ● | ● | |
| | | | | | 1.6 | ● | ● | |
| Roughing  | DNMG 150404 150408 | 12.70 | 4.76 | 5.16 | 0.4 | ● | ● | |
| | | | | | 0.8 | ● | ● | |
| | DNMG 150608 150612 | 12.70 | 6.35 | 5.16 | 0.8 | ● | ● | |
| | | | | | 1.2 | ● | ● | |
| Roughing  | DNMG 150408PH 150412PH 150416PH | 12.70 | 4.76 | 5.16 | 0.8 | ● | ● | |
| | | | | | 1.2 | ● | ● | |
| | | | | | 1.6 | ● | ● | |
| | | | | | 1.6 | ● | ● | |
| | DNMG 150608PH 150612PH 150616PH | 12.70 | 6.35 | 5.16 | 0.8 | ● | ● | |
| | | | | | 1.2 | ● | ● | |
| 1.6 | | | | | ● | ● | | |
| 1.6 | | | | | ● | ● | | |
| Single-Sided Roughing / High Feed  | DNMM 150408PX 150412PX 150416PX | 12.70 | 4.76 | 5.16 | 0.8 | ● | ● | |
| | | | | | 1.2 | ● | ● | |
| | DNMM 150608PX 150612PX 150616PX | 12.70 | 6.35 | 5.16 | 0.8 | ● | ● | |
| | | | | | 1.2 | ● | ● | |
| | | | | | 1.6 | ● | ● | |
| | | | | | 1.6 | ● | ● | |
| Low Carbon Steel  | DNMG 150404XP 150408XP | 12.70 | 4.76 | 5.16 | 0.4 | ● | ● | |
| | | | | | 0.8 | ● | ● | |
| Low Carbon Steel  | DNMG 150404XQ 150408XQ | 12.70 | 4.76 | 5.16 | 0.4 | ● | ● | |
| | | | | | 0.8 | ● | ● | |
| Low Carbon Steel  | DNMG 150408XS | 12.70 | 4.76 | 5.16 | 0.8 | ● | ● | |
| | | | | | 0.8 | ● | ● | |








● : Available

| | Shape | Description | Dimensions (mm) | | | | CA115P | CA125P | |
|-----------------------------------|-----------|----------------|-----------------|-------|------|------|--------|--------|---|
| | | | I.C. | S | D1 | RE | | | |
| Medium-Roughing | | RNMG 090300 | 9.525 | 3.18 | 3.81 | - | ● | ● | |
| | | RNMG 120400 | 12.70 | 4.76 | 5.16 | - | ● | ● | |
| | | RNMG 150600 | 15.875 | 6.35 | 6.35 | - | ● | ● | |
| Finishing-Medium | | 120404PQ | 12.70 | 4.76 | 5.16 | 0.4 | ● | ● | |
| | | SNMG 120408PQ | | | | 0.8 | ● | ● | |
| | | 120412PQ | | | | 1.2 | ● | ● | |
| Finishing-Medium | | 120404HQ | 12.70 | 4.76 | 5.16 | 0.4 | ● | ● | |
| | | SNMG 120408HQ | | | | 0.8 | ● | ● | |
| | | 120412HQ | | | | 1.2 | ● | ● | |
| Medium-Roughing | | 120408PMG | 12.70 | 4.76 | 5.16 | 0.8 | ● | ● | |
| | | SNMG 120412PMG | | | | 1.2 | ● | ● | |
| | | 120416PMG | | | | 1.6 | ● | ● | |
| Medium | | 120408PG | 12.70 | 4.76 | 5.16 | 0.8 | ● | ● | |
| | | SNMG 120412PG | | | | 1.2 | ● | ● | |
| | | 120416PG | | | | 1.6 | ● | ● | |
| Roughing | | 090304 | 9.525 | 3.18 | 3.81 | 0.4 | ● | ● | |
| | | SNMG 090308 | | | | 0.8 | ● | ● | |
| | | 120408 | 12.70 | 4.76 | 5.16 | 0.8 | ● | ● | |
| | | SNMG 120412 | | | | 1.2 | ● | ● | |
| | | 120416 | | | | 1.6 | ● | ● | |
| Roughing | | 120408PH | 12.70 | 4.76 | 5.16 | 0.8 | ● | ● | |
| | | SNMG 120412PH | | | | 1.2 | ● | ● | |
| | | 120416PH | | | | 1.6 | ● | ● | |
| | | 150612PH | 15.875 | 6.35 | 6.35 | 1.2 | ● | ● | |
| | | SNMG 150616PH | | | | 1.6 | ● | ● | |
| 190612PH | 19.05 | 6.35 | 7.94 | 1.2 | ● | ● | | | |
| SNMG 190616PH | | | | 1.6 | ● | ● | | | |
| Single Sided Roughing / High Feed | | 120408PX | 12.70 | 4.76 | 5.16 | 0.8 | ● | ● | |
| | | SNMM 120412PX | | | | 1.2 | ● | ● | |
| | | 120416PX | | | | 1.6 | ● | ● | |
| | | 150612PX | 15.875 | 6.35 | 6.35 | 1.2 | ● | ● | |
| | | SNMM 150616PX | | | | 1.6 | ● | ● | |
| | | 190612PX | 19.05 | 6.35 | 7.94 | 1.2 | ● | ● | |
| | | SNMM 190616PX | | | | 1.6 | ● | ● | |
| 190624PX | 2.4 | ● | | | | ● | | | |
| Low Carbon Steel | | SNMG 120408XP | 12.70 | 4.76 | 5.16 | 0.8 | ● | ● | |
| Low Carbon Steel | Finishing | | SNMG 120408XQ | 12.70 | 4.76 | 5.16 | 0.8 | ● | ● |
| Low Carbon Steel | Medium | | SNMG 120408XS | 12.70 | 4.76 | 5.16 | 0.8 | ● | ● |
| Low Carbon Steel | Roughing | | SNMG 120408XS | 12.70 | 4.76 | 5.16 | 0.8 | ● | ● |







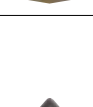


| | Shape | Description | Dimensions (mm) | | | | CA115P | CA125P |
|-----------------------------------|-------|----------------|-----------------|------|------|------|--------|--------|
| | | | I.C. | S | D1 | RE | | |
| Wiper Edge | | 160404WF | 9.525 | 4.76 | 3.81 | 0.4 | ● | ● |
| | | TNMX 160408WF | | | | 0.8 | ● | ● |
| | | 160412WF | | | | 1.2 | ● | ● |
| Finishing | | 160402PP | 9.525 | 4.76 | 3.81 | 0.2 | ● | ● |
| | | TNMG 160404PP | | | | 0.4 | ● | ● |
| | | 160408PP | | | | 0.8 | ● | ● |
| | | 160412PP | | | | 1.2 | ● | ● |
| Finishing | | 160402GP | 9.525 | 4.76 | 3.81 | 0.2 | ● | ● |
| | | TNMG 160404GP | | | | 0.4 | ● | ● |
| | | 160408GP | | | | 0.8 | ● | ● |
| Finishing-Medium | | 160404PQ | 9.525 | 4.76 | 3.81 | 0.4 | ● | ● |
| | | TNMG 160408PQ | | | | 0.8 | ● | ● |
| | | 160412PQ | | | | 1.2 | ● | ● |
| Finishing-Medium | | 110404HQ | 6.35 | 4.76 | 2.26 | 0.4 | ● | ● |
| | | TNMG 110408HQ | | | | 0.8 | ● | ● |
| | | 160404HQ | 9.525 | 4.76 | 3.81 | 0.4 | ● | ● |
| | | TNMG 160408HQ | | | | 0.8 | ● | ● |
| 160412HQ | 1.2 | ● | ● | | | | | |
| Finishing-Medium / Up Facing | | 160404CQ | 9.525 | 4.76 | 3.81 | 0.4 | ● | ● |
| | | TNMG 160408CQ | | | | 0.8 | ● | ● |
| | | 160412CQ | | | | 1.2 | ● | ● |
| Finishing-Medium / Up Facing | | 220408CQ | 12.70 | 4.76 | 5.16 | 0.8 | ● | ● |
| | | TNMG 220412CQ | | | | 1.2 | ● | ● |
| | | 160404PMG | 9.525 | 4.76 | 3.81 | 0.4 | ● | ● |
| TNMG 160408PMG | 0.8 | ● | | | | ● | | |
| 160412PMG | 1.2 | ● | ● | | | | | |
| Medium-Roughing | | 220404PMG | 12.70 | 4.76 | 5.16 | 0.4 | ● | ● |
| | | TNMG 220408PMG | | | | 0.8 | ● | ● |
| | | 220412PMG | | | | 1.2 | ● | ● |
| | | 220416PMG | | | | 1.6 | ● | ● |
| | | 110404GS | | | | 6.35 | 4.76 | 2.26 |
| TNMG 110408GS | 0.8 | ● | ● | | | | | |
| Medium-Roughing (Interchangeable) | | 160404PG | 9.525 | 4.76 | 3.81 | 0.4 | ● | ● |
| | | TNMG 160408PG | | | | 0.8 | ● | ● |
| | | 160412PG | | | | 1.2 | ● | ● |
| Roughing | | 160404 | 9.525 | 4.76 | 3.81 | 0.4 | ● | ● |
| | | TNMG 160408 | | | | 0.8 | ● | ● |
| | | 160412 | | | | 1.2 | ● | ● |
| | | 220408 | 12.70 | 4.76 | 5.16 | 0.8 | ● | ● |
| | | TNMG 220412 | | | | 1.2 | ● | ● |









● : Available

| Shape Handed insert shows Right-hand | Description | Dimensions (mm) | | | | CA115P | CA125P |
|--|-------------------|-----------------|------|------|-----|--------|--------|
| | | I.C. | S | D1 | RE | | |
| Roughing  | TNMG 160408PH | 9.525 | 4.76 | 3.81 | 0.8 | ● | ● |
| | 160412PH | | | | 1.2 | ● | ● |
| | TNMG 220408PH | 12.70 | 4.76 | 5.16 | 0.8 | ● | ● |
| | 220412PH | | | | 1.2 | ● | ● |
| | 220416PH | | | | 1.6 | ● | ● |
| Single-Edge Roughing / High Feed  | TNMM 160408PX | 9.525 | 4.76 | 3.81 | 0.8 | ● | ● |
| | 160412PX | | | | 1.2 | ● | ● |
| | TNMM 220408PX | 12.70 | 4.76 | 5.16 | 0.8 | ● | ● |
| | 220412PX | | | | 1.2 | ● | ● |
| | 220416PX | | | | 1.6 | ● | ● |
| Low Carbon Steel Finishing  | TNMG 160404XP | 9.525 | 4.76 | 3.81 | 0.4 | ● | ● |
| 160408XP | 0.8 | | | | ● | ● | |
| Low Carbon Steel Medium  | TNMG 160404XQ | 9.525 | 4.76 | 3.81 | 0.4 | ● | ● |
| 160408XQ | 0.8 | | | | ● | ● | |
| Low Carbon Steel Roughing  | TNMG 160408XS | 9.525 | 4.76 | 3.81 | 0.8 | ● | ● |
| Medium-Roughing  | TNMG 160404R/L-ST | 9.525 | 4.76 | 3.81 | 0.4 | ● | ● |
| | 160408R/L-ST | | | | 0.8 | ● | ● |

| Shape Handed insert shows Right-hand | Description | Dimensions (mm) | | | | CA115P | CA125P |
|---|-------------------|-----------------|------|------|-----|--------|--------|
| | | I.C. | S | D1 | RE | | |
| Finishing  | VNMG 160402PP | 9.525 | 4.76 | 3.81 | 0.2 | ● | ● |
| | 160404PP | | | | 0.4 | ● | ● |
| | 160408PP | | | | 0.8 | ● | ● |
| | 160412PP | | | | 1.2 | ● | ● |
| Finishing  | VNMG 160402GP | 9.525 | 4.76 | 3.81 | 0.2 | ● | ● |
| | 160404GP | | | | 0.4 | ● | ● |
| | 160408GP | | | | 0.8 | ● | ● |
| Finishing-Medium  | VNMG 160404R/L-VC | 9.525 | 4.76 | 3.81 | 0.4 | ● | ● |
| | 160408R/L-VC | | | | 0.8 | ● | ● |
| | 160412R/L-VC | | | | 1.2 | ● | ● |
| Finishing-Medium  | VNMG 160404VF | 9.525 | 4.76 | 3.81 | 0.4 | ● | ● |
| | 160408VF | | | | 0.8 | ● | ● |
| | 160412VF | | | | 1.2 | ● | ● |
| Finishing-Medium  | VNMG 160404PQ | 9.525 | 4.76 | 3.81 | 0.4 | ● | ● |
| | 160408PQ | | | | 0.8 | ● | ● |
| | 160412PQ | | | | 1.2 | ● | ● |
| Finishing-Medium  | VNMG 160404HQ | 9.525 | 4.76 | 3.81 | 0.4 | ● | ● |
| | 160408HQ | | | | 0.8 | ● | ● |
| | 160412HQ | | | | 1.2 | ● | ● |
| Roughing  | VNMG 160404 | 9.525 | 4.76 | 3.81 | 0.4 | ● | ● |
| | 160408 | | | | 0.8 | ● | ● |

● : Available

| | Shape | Description | Dimensions (mm) | | | | CA115P | CA125P |
|------------------------------|---|-------------|-----------------|------|------|-----|--------|--------|
| | | | I.C. | S | D1 | RE | | |
| Wiper Edge |  | 080404WF | 12.70 | 4.76 | 5.16 | 0.4 | ● | ● |
| | | 080408WF | | | | 0.8 | ● | ● |
| Wiper Edge |  | 080404WP | 12.70 | 4.76 | 5.16 | 0.4 | ● | ● |
| | | 080408WP | | | | 0.8 | ● | ● |
| Wiper Edge |  | 080404WE | 12.70 | 4.76 | 5.16 | 0.4 | ● | ● |
| | | 080408WE | | | | 0.8 | ● | ● |
| | | 080412WE | | | | 1.2 | ● | ● |
| Wiper Edge |  | 080404WQ | 12.70 | 4.76 | 5.16 | 0.4 | ● | ● |
| | | 080408WQ | | | | 0.8 | ● | ● |
| | | 080412WQ | | | | 1.2 | ● | ● |
| Finishing |  | 080402PP | 12.70 | 4.76 | 5.16 | 0.2 | ● | ● |
| | | 080404PP | | | | 0.4 | ● | ● |
| | | 080408PP | | | | 0.8 | ● | ● |
| | | 080412PP | | | | 1.2 | ● | ● |
| Finishing-Medium |  | 080404PQ | 12.70 | 4.76 | 5.16 | 0.4 | ● | ● |
| | | 080408PQ | | | | 0.8 | ● | ● |
| | | 080412PQ | | | | 1.2 | ● | ● |
| Finishing-Medium |  | 06T304HQ | 9.525 | 3.97 | 3.81 | 0.4 | ● | ● |
| | | 06T308HQ | | | | 0.8 | ● | ● |
| | | 060404HQ | 9.525 | 4.76 | 3.81 | 0.4 | ● | ● |
| | | 060408HQ | | | | 0.8 | ● | ● |
| | | 080404HQ | 12.70 | 4.76 | 5.16 | 0.4 | ● | ● |
| | | 080408HQ | | | | 0.8 | ● | ● |
| 080412HQ | 1.2 | ● | | | | ● | | |
| Finishing-Medium / Up Facing |  | 080404CQ | 12.70 | 4.76 | 5.16 | 0.4 | ● | ● |
| | | 080408CQ | | | | 0.8 | ● | ● |
| | | 080412CQ | | | | 1.2 | ● | ● |
| Finishing-Medium / Up Facing |  | 080408CJ | 12.70 | 4.76 | 5.16 | 0.8 | ● | ● |
| | | 080412CJ | | | | 1.2 | ● | ● |




















| | Shape | Description | Dimensions (mm) | | | | CA115P | CA125P |
|-------------------------------|---|-------------|-----------------|------|------|-----|--------|--------|
| | | | I.C. | S | D1 | RE | | |
| Medium-Roughing |  | 080404PMG | 12.70 | 4.76 | 5.16 | 0.4 | ● | ● |
| | | 080408PMG | | | | 0.8 | ● | ● |
| | | 080412PMG | | | | 1.2 | ● | ● |
| | | 080416PMG | | | | 1.6 | ● | ● |
| Medium-Roughing (Continuous) |  | 060404GS | 9.525 | 4.76 | 3.81 | 0.4 | ● | ● |
| | | 060408GS | | | | 0.8 | ● | ● |
| Medium-Roughing (Interrupted) |  | 080404PG | 12.70 | 4.76 | 5.16 | 0.4 | ● | ● |
| | | 080408PG | | | | 0.8 | ● | ● |
| | | 080412PG | | | | 1.2 | ● | ● |
| | | 080416PG | | | | 1.6 | ● | ● |
| Roughing |  | 080404 | 12.70 | 4.76 | 5.16 | 0.4 | ● | ● |
| | | 080408 | | | | 0.8 | ● | ● |
| | | 080412 | | | | 1.2 | ● | ● |
| Roughing |  | 080408PH | 12.70 | 4.76 | 5.16 | 0.8 | ● | ● |
| | | 080412PH | | | | 1.2 | ● | ● |
| Low Carbon Steel |  | 080404XP | 12.70 | 4.76 | 5.16 | 0.4 | ● | ● |
| | | 080408XP | | | | 0.8 | ● | ● |
| Low Carbon Steel |  | 080404XQ | 12.70 | 4.76 | 5.16 | 0.4 | ● | ● |
| | | 080408XQ | | | | 0.8 | ● | ● |
| Low Carbon Steel |  | 080408XS | 12.70 | 4.76 | 5.16 | 0.8 | ● | ● |




















● : Available

| Shape | Description | Dimensions (mm) | | | | Relief Angle | CA115P | CA125P |
|------------------|--|-----------------|------|-----|-----|--------------|--------|--------|
| | | I.C. | S | D1 | RE | | | |
| Wiper Edge | CCMT 060202WP 060204WP 060208WP | 6.35 | 2.38 | 2.8 | 0.2 | 7° | ● | ● |
| | | | | | 0.4 | | ● | ● |
| | | | | | 0.8 | | ● | ● |
| Finishing | CCMT 09T302WP 09T304WP 09T308WP | 9.525 | 3.97 | 4.4 | 0.2 | 7° | ● | ● |
| | | | | | 0.4 | | ● | ● |
| | | | | | 0.8 | | ● | ● |
| Finishing | CCMT 060202PP 060204PP 09T302PP 09T304PP 09T308PP | 6.35 | 2.38 | 2.8 | 0.2 | 7° | ● | ● |
| | | | | | 0.4 | | ● | ● |
| | | | | | 0.8 | | ● | ● |
| Finishing-Medium | CCMT 060202GK 060204GK 09T302GK 09T304GK | 6.35 | 2.38 | 2.8 | 0.2 | 7° | ● | ● |
| | | | | | 0.4 | | ● | ● |
| | | | | | 0.8 | | ● | ● |
| Finishing-Medium | CCMT 120404GK 120408GK 120412GK | 12.70 | 4.76 | 5.5 | 0.4 | 7° | ● | ● |
| | | | | | 0.8 | | ● | ● |
| | | | | | 1.2 | | ● | ● |
| Finishing-Medium | CCMT 060202HQ 060204HQ 09T302HQ 09T304HQ 09T308HQ | 6.35 | 2.38 | 2.8 | 0.2 | 7° | ● | ● |
| | | | | | 0.4 | | ● | ● |
| | | | | | 0.8 | | ● | ● |
| Medium | CCMT 09T308 | 9.525 | 3.97 | 4.4 | 0.8 | 7° | ● | ● |
| Finishing | CPMT 080202PP 080204PP 090302PP 090304PP 090308PP | 7.94 | 2.38 | 3.3 | 0.2 | 11° | ● | ● |
| | | | | | 0.4 | | ● | ● |
| | | | | | 0.8 | | ● | ● |
| Finishing | CPMT 080204GP 090304GP 090308GP | 7.94 | 2.38 | 3.3 | 0.4 | 11° | ● | ● |
| | | | | | 0.4 | | ● | ● |
| | | | | | 0.8 | | ● | ● |
| Finishing-Medium | CPMH 080204HQ 080208HQ 090304HQ 090308HQ | 7.94 | 2.38 | 3.5 | 0.4 | 11° | ● | ● |
| | | | | | 0.8 | | ● | ● |
| | | | | | 0.8 | | ● | ● |
| Medium | CPMH 080204 080208 090304 090308 | 7.94 | 2.38 | 3.5 | 0.4 | 11° | ● | ● |
| | | | | | 0.8 | | ● | ● |
| | | | | | 0.8 | | ● | ● |
| Low Carbon Steel | CPMT 080204XP 090304XP 090308XP | 7.94 | 2.38 | 3.3 | 0.4 | 11° | ● | ● |
| | | | | | 0.4 | | ● | ● |
| | | | | | 0.8 | | ● | ● |
| Low Carbon Steel | CPMT 090304XQ 090308XQ | 9.525 | 3.18 | 4.4 | 0.4 | 11° | ● | ● |
| | | | | | 0.8 | | ● | ● |

| Shape | Description | Dimensions (mm) | | | | Relief Angle | CA115P | CA125P |
|------------------|--|-----------------|------|-----|-----|--------------|--------|--------|
| | | I.C. | S | D1 | RE | | | |
| Wiper Edge | DCMX 070202WP 070204WP 070208WP | 6.35 | 2.38 | 2.8 | 0.2 | 7° | ● | ● |
| | | | | | 0.4 | | ● | ● |
| | | | | | 0.8 | | ● | ● |
| Finishing | DCMX 11T302WP 11T304WP 11T308WP | 9.525 | 3.97 | 4.4 | 0.2 | 7° | ● | ● |
| | | | | | 0.4 | | ● | ● |
| | | | | | 0.8 | | ● | ● |
| Finishing | DCMT 070202PP 070204PP 11T302PP 11T304PP 11T308PP | 6.35 | 2.38 | 2.8 | 0.2 | 7° | ● | ● |
| | | | | | 0.4 | | ● | ● |
| | | | | | 0.8 | | ● | ● |
| Finishing | DCMT 070202GP 070204GP 11T304GP 11T308GP | 6.35 | 2.38 | 2.8 | 0.2 | 7° | ● | ● |
| | | | | | 0.4 | | ● | ● |
| | | | | | 0.8 | | ● | ● |
| Finishing-Medium | DCMT 070202GK 070204GK 070208GK | 6.35 | 2.38 | 2.8 | 0.2 | 7° | ● | ● |
| | | | | | 0.4 | | ● | ● |
| | | | | | 0.8 | | ● | ● |
| Finishing-Medium | DCMT 11T302GK 11T304GK 11T308GK | 9.525 | 3.97 | 4.4 | 0.2 | 7° | ● | ● |
| | | | | | 0.4 | | ● | ● |
| | | | | | 0.8 | | ● | ● |
| Finishing-Medium | DCMT 070202HQ 070204HQ 070208HQ | 6.35 | 2.38 | 2.8 | 0.2 | 7° | ● | ● |
| | | | | | 0.4 | | ● | ● |
| | | | | | 0.8 | | ● | ● |
| Finishing-Medium | DCMT 11T302HQ 11T304HQ 11T308HQ | 9.525 | 3.97 | 4.4 | 0.2 | 7° | ● | ● |
| | | | | | 0.4 | | ● | ● |
| | | | | | 0.8 | | ● | ● |
| Low Carbon Steel | DCMT 070204XP 11T302XP 11T304XP 11T308XP | 6.35 | 2.38 | 2.8 | 0.4 | 7° | ● | ● |
| | | | | | 0.4 | | ● | ● |
| | | | | | 0.8 | | ● | ● |
| Low Carbon Steel | DCMT 11T304XQ 11T308XQ | 9.525 | 3.97 | 4.4 | 0.4 | 7° | ● | ● |
| | | | | | 0.8 | | ● | ● |

● : Available

| Shape | Description | Dimensions (mm) | | | | Relief Angle | CA115P | CA125P |
|------------------|---|-----------------|------|-----|-----|--------------|--------|--------|
| | | I.C. | S | D1 | RE | | | |
| Medium |  RCMX 1003M0 | 10.0 | 3.18 | 3.6 | - | 7° | ● | ● |
| |  RCMX 1204M0 | 12.0 | 4.76 | 4.2 | - | | ● | ● |
| Finishing-Medium |  09T304HQ | 9.525 | 3.97 | 4.4 | 0.4 | 7° | ● | ● |
| |  09T308HQ | | | | 0.8 | | ● | ● |
| Medium |  090304 | 9.525 | 3.18 | - | 0.4 | 11° | ● | ● |
| |  090308 | | | | 0.8 | | ● | ● |
| SPMR |  120304 | 12.7 | 3.18 | - | 0.4 | 11° | ● | ● |
| |  120308 | | | | 0.8 | | ● | ● |
| Finishing |  060102DP | 3.97 | 1.59 | 2.3 | 0.2 | 5° | ● | ● |
| |  060104DP | | | | 0.4 | | ● | ● |
| Wiper Edge |  090204WP | 5.56 | 2.38 | 2.5 | 0.4 | 7° | ● | ● |
| |  110204WP | 6.35 | 2.38 | 2.8 | 0.4 | 7° | ● | ● |
| Finishing-Medium |  110204HQ | 6.35 | 2.38 | 2.8 | 0.4 | 7° | ● | ● |
| |  110208HQ | | | | 0.8 | | ● | ● |
| Wiper Edge |  090202WP | 5.56 | 2.38 | 2.8 | 0.2 | 11° | ● | ● |
| |  090208WP | | | | 0.8 | | ● | ● |
| TPMX |  110302WP | 6.35 | 3.18 | 3.3 | 0.2 | 11° | ● | ● |
| |  110304WP | | | | 0.4 | | ● | ● |
| Finishing |  110308WP | 6.35 | 3.18 | 3.3 | 0.8 | 11° | ● | ● |
| | 090202PP | | | | 0.2 | | ● | ● |
| TPMT | 090204PP | 5.56 | 2.38 | 2.8 | 0.4 | 11° | ● | ● |
| | 110302PP | | | | 0.2 | | ● | ● |
| TPMT | 110304PP | 6.35 | 3.18 | 3.3 | 0.4 | 11° | ● | ● |
| | 110308PP | | | | 0.8 | | ● | ● |
| Finishing | 090204GP | 5.56 | 2.38 | 2.8 | 0.4 | 11° | ● | ● |
| | 110304GP | 6.35 | 3.18 | 3.3 | 0.4 | 11° | ● | ● |
| TPMT | 110308GP | 6.35 | 3.18 | 3.3 | 0.8 | 11° | ● | ● |
| | 160304GP | | | | 0.4 | | ● | ● |
| TPMT | 160308GP | 9.525 | 3.18 | 4.4 | 0.4 | 11° | ● | ● |
| | 160304GP | | | | 0.4 | | ● | ● |

| Shape | Description | Dimensions (mm) | | | | Relief Angle | CA115P | CA125P |
|------------------|---|-----------------|------|-----|-----|--------------|--------|--------|
| | | I.C. | S | D1 | RE | | | |
| Finishing-Medium |  TPMT 090202HQ | 5.56 | 2.38 | 2.8 | 0.2 | 11° | ● | ● |
| |  TPMT 090204HQ | | | | 0.4 | | ● | ● |
| TPMT |  110302HQ | 6.35 | 3.18 | 3.3 | 0.2 | 11° | ● | ● |
| |  110304HQ | | | | 0.4 | | ● | ● |
| TPMT |  110308HQ | 9.525 | 3.18 | 4.4 | 0.8 | 11° | ● | ● |
| |  160304HQ | | | | 0.4 | | ● | ● |
| TPMT |  160308HQ | 9.525 | 3.18 | 4.4 | 0.8 | 11° | ● | ● |
| |  TPMT 090204XP | | | | 0.4 | | ● | ● |
| Low Carbon Steel |  TPMT 110304XP | 6.35 | 3.18 | 3.3 | 0.4 | 11° | ● | ● |
| |  TPMT 110308XP | | | | 0.8 | | ● | ● |
| Finishing |  TPMT 160304XP | 9.525 | 3.18 | 4.4 | 0.4 | 11° | ● | ● |
| |  TPMT 160308XP | | | | 0.8 | | ● | ● |
| Low Carbon Steel |  TPMT 110304XQ | 6.35 | 3.18 | 3.3 | 0.4 | 11° | ● | ● |
| |  TPMT 110308XQ | | | | 0.8 | | ● | ● |
| Finishing-Medium |  TPMT 160304XQ | 9.525 | 3.18 | 4.4 | 0.4 | 11° | ● | ● |
| |  TPMT 160308XQ | | | | 0.8 | | ● | ● |
| Finishing |  TPMT 160304GP | 9.525 | 3.18 | - | 0.4 | 11° | ● | ● |
| |  TPMT 110304HQ | | | | 0.4 | | ● | ● |
| Finishing-Medium |  TPMT 110308HQ | 6.35 | 3.18 | - | 0.8 | 11° | ● | ● |
| | TPMT 160304HQ | | | | 0.4 | | ● | ● |
| TPMR | TPMT 160308HQ | 9.525 | 3.18 | - | 0.8 | 11° | ● | ● |
| | TPMT 110304 | | | | 0.4 | | ● | ● |
| Medium | TPMT 110308 | 6.35 | 3.18 | - | 0.8 | 11° | ● | ● |
| | TPMT 160304 | | | | 0.4 | | ● | ● |
| TPMR | TPMT 160308 | 9.525 | 3.18 | - | 0.8 | 11° | ● | ● |
| | TPMT 160304 | | | | 0.4 | | ● | ● |

● : Available

| Shape | Description | Dimensions (mm) | | | | Relief Angle | CA115P | CA125P |
|------------------|-------------|-----------------|-------|------|-----|--------------|--------|--------|
| | | I.C. | S | D1 | RE | | | |
| Finishing | VBMT | 110302PP | 6.35 | 3.18 | 2.8 | 5° | ● | ● |
| | | 110304PP | | | | | ● | ● |
| | | 110308PP | | | | | ● | ● |
| | VBMT | 160404PP | 9.525 | 4.76 | 4.4 | 5° | ● | ● |
| | | 160408PP | | | | | ● | ● |
| | | 160412PP | | | | | ● | ● |
| Finishing | VBMT | 110304GP | 6.35 | 3.18 | 2.8 | 5° | ● | ● |
| | | 160404GP | | | | | ● | ● |
| | VBMT | 160408GP | 9.525 | 4.76 | 4.4 | 5° | ● | ● |
| Finishing | VBMT | 110302VF | 6.35 | 3.18 | 2.8 | 5° | ● | ● |
| | | 110304VF | | | | | ● | ● |
| | | 110308VF | | | | | ● | ● |
| | VBMT | 160402VF | 9.525 | 4.76 | 4.4 | 5° | ● | ● |
| | | 160404VF | | | | | ● | ● |
| | | 160408VF | | | | | ● | ● |
| | | 160412VF | | | | | ● | ● |
| | | 160402VF | | | | | ● | ● |
| | | 160404VF | | | | | ● | ● |
| Finishing-Medium | VBMT | 110304HQ | 6.35 | 3.18 | 2.8 | 5° | ● | ● |
| | | 110308HQ | | | | | ● | ● |
| | VBMT | 160404HQ | 9.525 | 4.76 | 4.4 | 5° | ● | ● |
| | | 160408HQ | | | | | ● | ● |
| 160412HQ | ● | ● | | | | | | |

| Shape | Description | Dimensions (mm) | | | | Relief Angle | CA115P | CA125P |
|------------------|-------------|-----------------|-------|------|-----|--------------|--------|--------|
| | | I.C. | S | D1 | RE | | | |
| Finishing | VCMT | 080202PP | 4.76 | 2.38 | 2.3 | 7° | ● | ● |
| | | 080204PP | | | | | ● | ● |
| | VCMT | 160404PP | 9.525 | 4.76 | 4.4 | 7° | ● | ● |
| | | 160408PP | | | | | ● | ● |
| Finishing | VCMT | 080202VF | 4.76 | 2.38 | 2.3 | 7° | ● | ● |
| | | 080204VF | | | | | ● | ● |
| Finishing-Medium | VCMT | 080202HQ | 4.76 | 2.38 | 2.3 | 7° | ● | ● |
| | | 080204HQ | | | | | ● | ● |
| Finishing | WBMT | 060102L-DP | 3.97 | 1.59 | 2.3 | 5° | L | L |
| | | 060104L-DP | | | | | L | L |
| | WBMT | 080202L-DP | 4.76 | 2.38 | 2.3 | 5° | L | L |
| | | 080204L-DP | | | | | L | L |
| Finishing | WPMT | 110204GP | 6.35 | 2.38 | 2.8 | 11° | ● | ● |
| | | 160304GP | | | | | 9.525 | 3.18 |
| Finishing-Medium | WPMT | 110202HQ | 6.35 | 2.38 | 2.8 | 11° | ● | ● |
| | | 110204HQ | | | | | ● | ● |
| | WPMT | 160304HQ | 9.525 | 3.18 | 4.4 | 11° | ● | ● |
| | | 160308HQ | | | | | ● | ● |

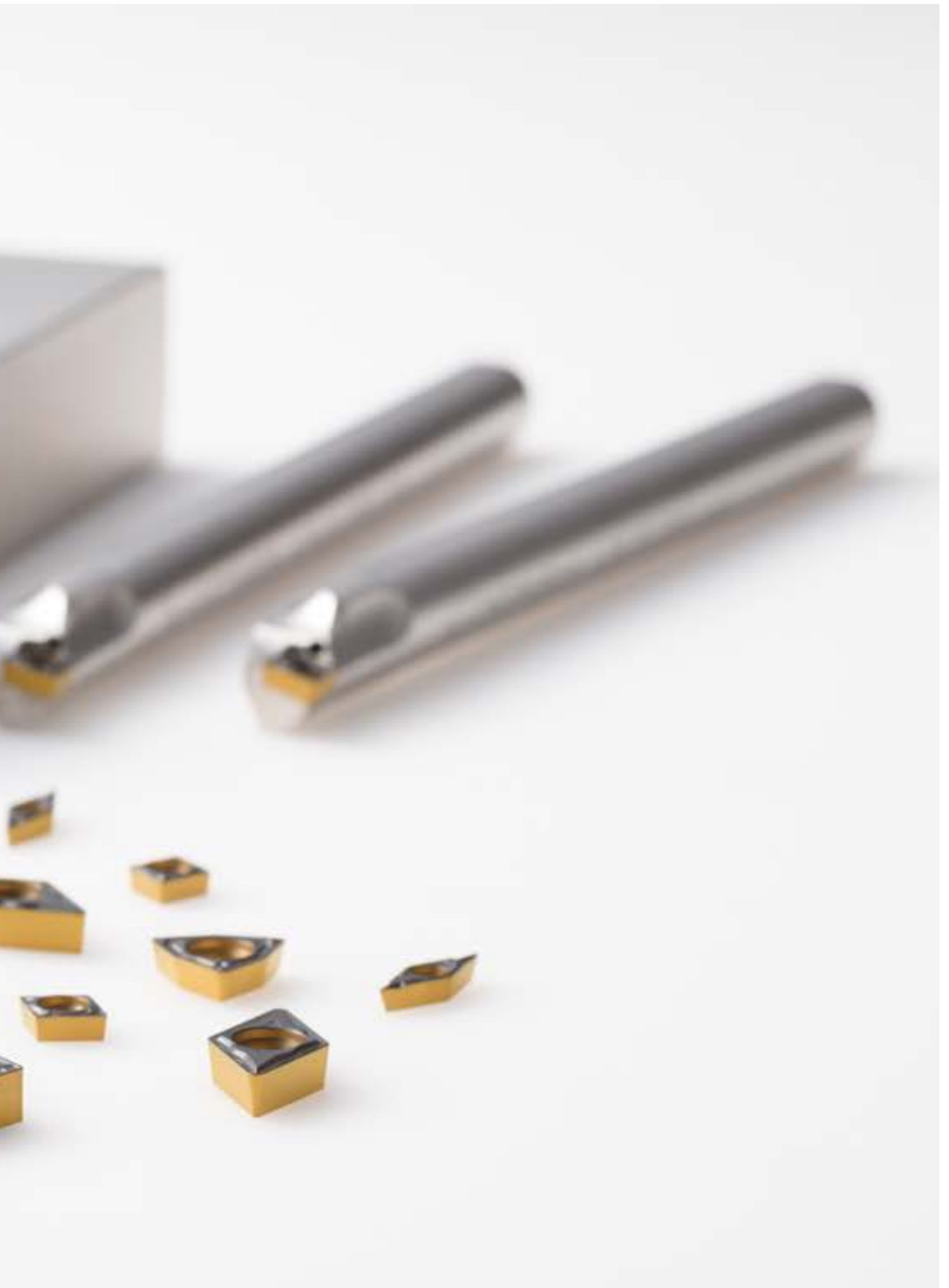
● : Available
L : Left-hand Only

Recommended cutting conditions

Vc (m/min)

| | | Low carbon steel Low carbon alloy steel | Medium carbon steel Medium carbon alloy steel | High carbon alloy steel |
|--------|----------|--|--|-------------------------|
| | | 150 HB or below | 250 HB or below | 300 HB or below |
| CA115P | Negative | 150 ~ 300 ~ 400 | | 150 ~ 280 ~ 360 |
| | Positive | 120 ~ 240 ~ 320 | | 110 ~ 220 ~ 290 |
| CA125P | Negative | 150 ~ 240 ~ 320 | | 150 ~ 220 ~ 280 |
| | Positive | 120 ~ 190 ~ 260 | | 110 ~ 170 ~ 230 |





C
V
D

Chemical Vapor Deposition

CVD
TECHNOLOGY



KYOCERA'S COATING WORLD

Achieving Unprecedented Tool Life



P
V
D

Physical Vapor Deposition

MEGACOAT
NANO EX | Milling