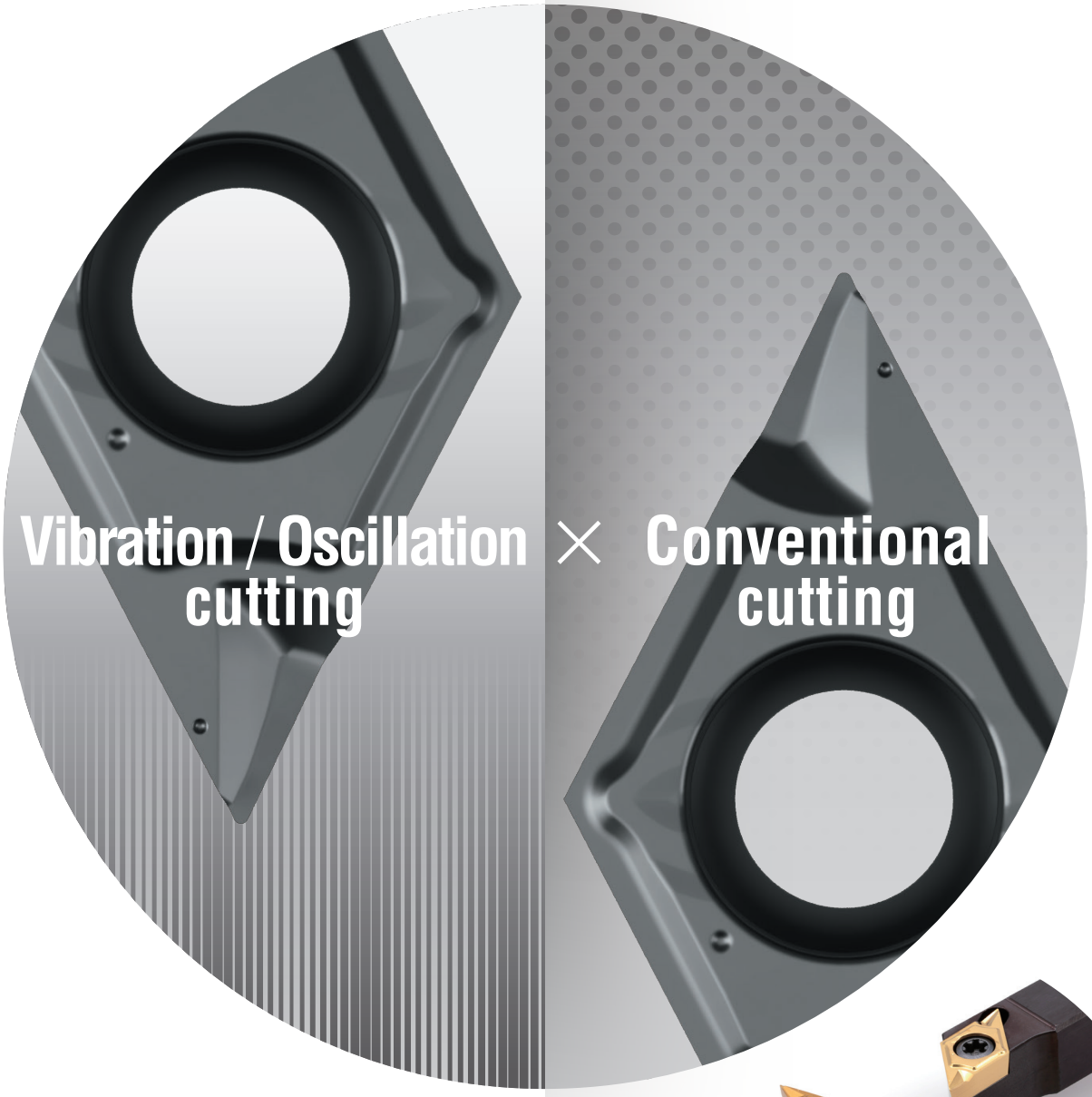
TMV Chipbreaker

For External turning | Vibration / Oscillation & Conventional cutting Dual-Purpose Chipbreaker

Member IMC Group
NTK CUTTING TOOLS



DOC range a_p=0.5～2.0mm

TMV chipbreaker can be used for both purposes, Vibration/Oscillating & Conventional cutting.
Wiper insert has been added to the lineup for broader use.

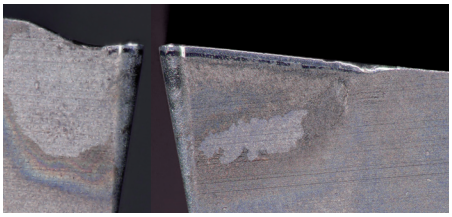
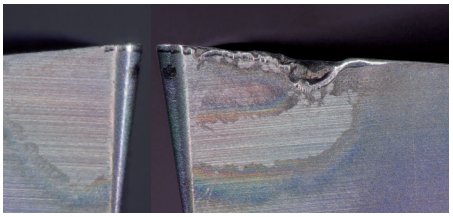
CERtainly [but not only] CERamics
Outstanding solutions for demanding applications

For Vibration/Oscillation cutting

Good chip control with Tough cutting edge

Practical examples

Machine	Cincom L20-LFV
Work material	SUS316L
Cutting speed	80 m/min
Feed	0.05 mm/rev
D.O.C. (a_p)	1.0 mm
Coolant	WET
Vibration conditions	mode1 Q0.5 D0.5

	TMV Chipbreaker	Conventional
Edge image Machining distance 8km		
Actual machining chips		

Recommended conditions

Grade	Workpiece material	Cutting conditions		
		Cutting speed (m/min)	Feed (mm/rev)	D.O.C (mm)
NTK650	Ni base alloy / Steel / Stainless steel (Inco718 / S45C / SUS440C etc.)	40 – 120	0.02 – 0.06	0.5 - 2.0
ST4	Austenitic stainless steel (SUS304 / SUS316L etc.)	40 - 100		
DM4	Carbon steel / Alloy steel / Free-cutting steel (S45C / SCM435 / SUM22 etc.)	50 - 120		
TM4	Non-ferrous (Aluminum / Titanium etc.)	60 - 150		

CITIZEN

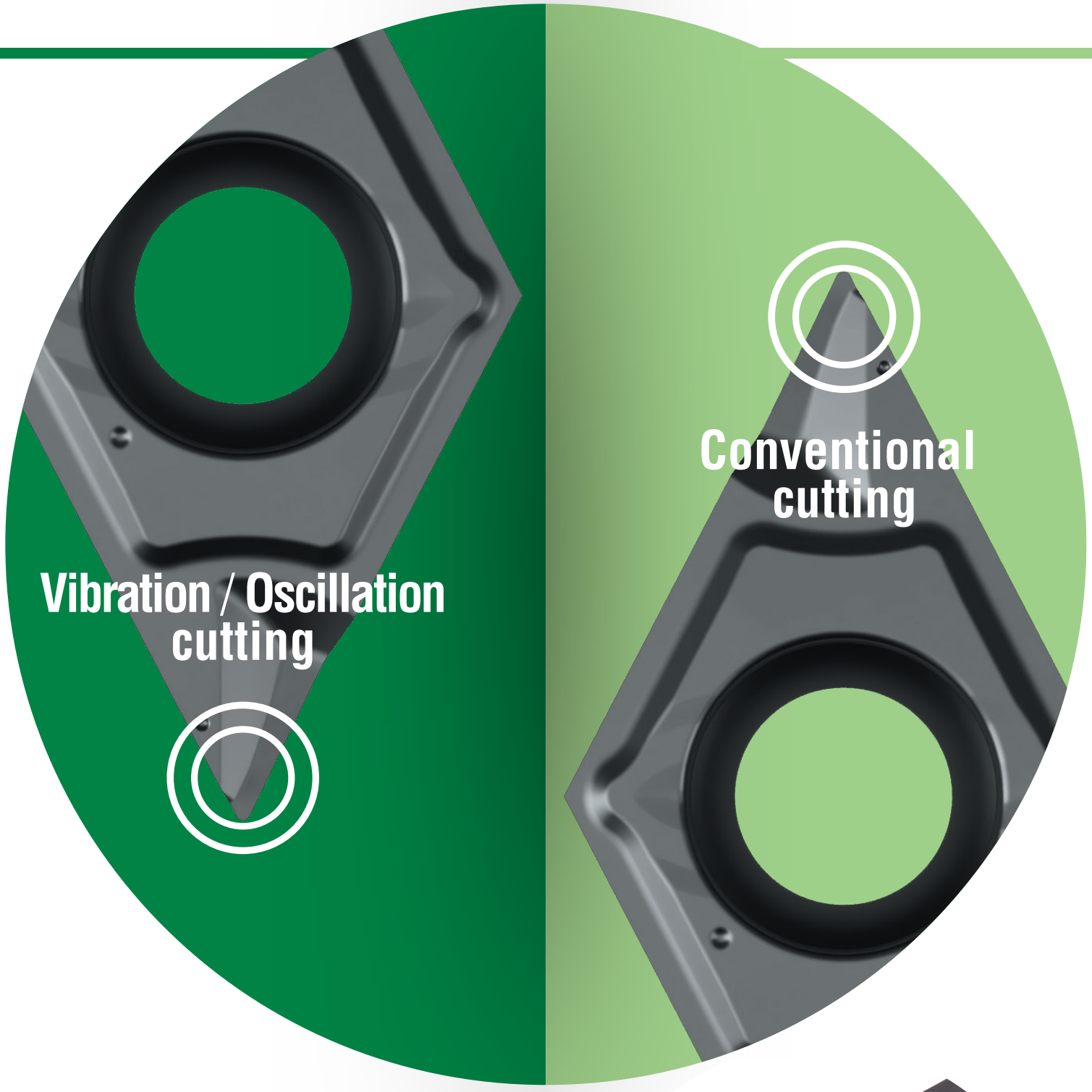
P Vibration mode	Q Vibration Ratio	D Frequency
mode1	0.5	0.5

Product Brochure

star

A Chip length coef.	D Amplitude coef.
2.0 or more	2.0 or more

Product Brochure



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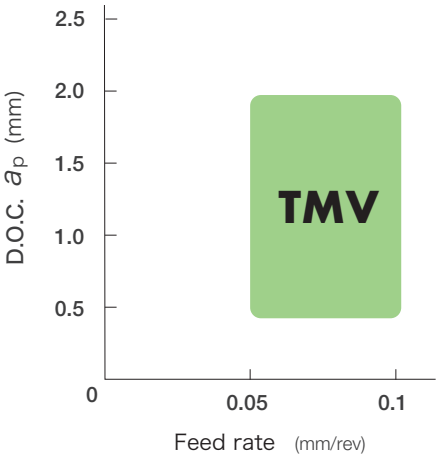
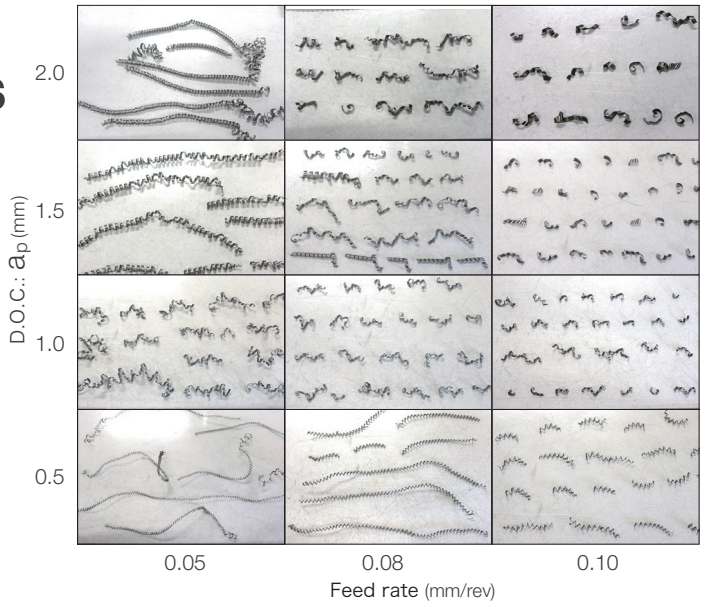
For Conventional cutting

Stable chip control under a wide range of conditions





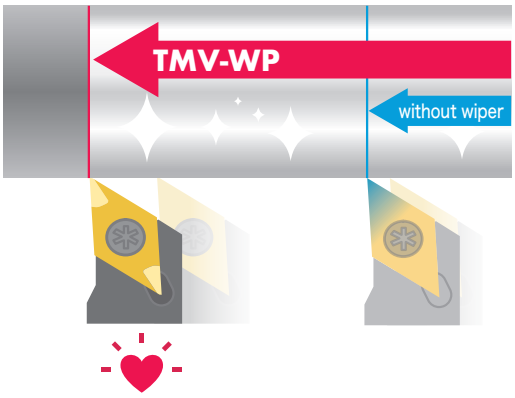
Cutting conditions

Work material	:	SUS316L ϕ16
Cutting speed	:	V_c=80m/min
Feed	:	f=0.05~0.10mm/rev
Coolant	:	WET

TMV-WP New

Double the feed rate and toollife & Reduce machining time by half.

Superior surface finish even under high feed conditions thanks to the wiper. Contributes to extended tool life by increasing feed.

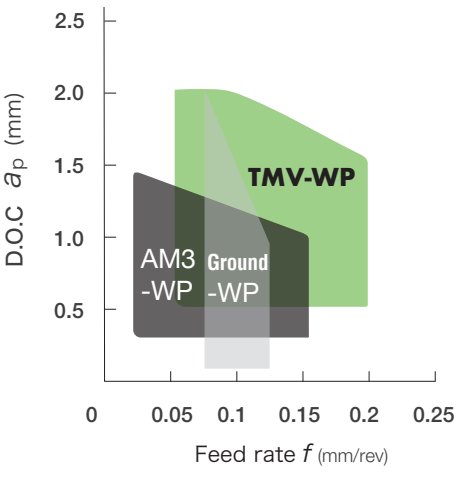


Increased feed rate reduces machining time!

Surface roughness is maintained by wiper

Extend toollife by reducing cutting distance

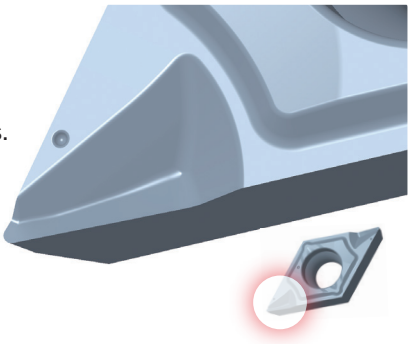
Function range



Please use 93 degree set angle toolholder

* The wiper function is effective when the cutting edge is parallel to the workpiece surface.

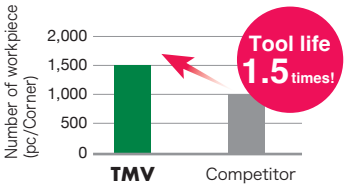
For Vibration/Oscillation or Conventional cutting, It can extend tool life and achieve good chip control.



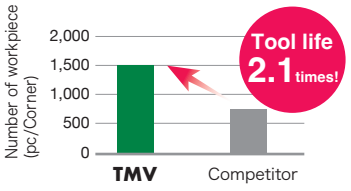
Performance

- **Significantly reduces cutting edge damage**
  Longer tool life can be expected even when machining difficult-to-cut materials.
- **Stable chip control**
  The large chipbreaker produces regular and stable chip shapes.

Vibration/Oscillation cutting practical examples

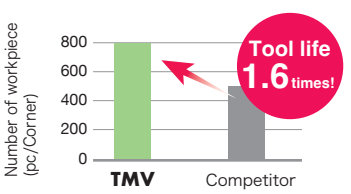
Component name		Piston
Insert		CCGT09T301MRTMV ST4
Tool Holder		SCLCR type
Workpiece		SUS430 / 430SS
Cutting conditions	Cutting speed (m/min)	45
	Revolutions per minute (rpm)	1,200
	Feed (mm/rev)	0.02
	DOC (mm)	2.0
	Machining area	Facing + OD turning
	Coolant	WET
Results		

Current tool had short tool life due to sudden breakage and poor machined surface quality, TMV successfully improved both and gaining 1.5 times longer tool life.

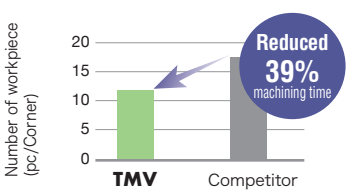
Component name		Bolt
Insert		DCGT11T302MRTMV ST4
Tool Holder		SDJCR type
Workpiece		SUS304 / 304SS
Cutting conditions	Cutting speed (m/min)	51
	Revolutions per minute (rpm)	4,680
	Feed (mm/rev)	0.03
	DOC (mm)	1.2
	Machining area	Facing + OD turning
	Coolant	WET
Results		

Current tool had short tool life due to dimensional and appearance defects, TMV improved dimensional accuracy and chip control. Additionally, burrs and protrusions were reduced, achieving double life time.

Conventional cutting practical examples

Component name		Precision equipment
Insert		DCGT11T302MRTMV TM4
Tool Holder		SDJCR type
Workpiece		SUS303 / 303SS
Cutting conditions	Cutting speed (m/min)	80
	Revolutions per minute (rpm)	910
	Feed (mm/rev)	0.07
	DOC (mm)	0.4
	Machining area	OD turning
	Coolant	WET
Results		

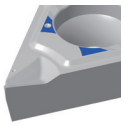
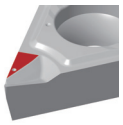
Current tool had unbroken long continuous chips. TMV can have broken chips even in conventional cutting, reducing surface roughness caused by chips and extending tool life 1.6 times.

Component name		Valve
Insert		DCGT11T302MRTMV TM4
Tool Holder		SDJCR type
Workpiece		A2017 fairly
Cutting conditions	Cutting speed (m/min)	250
	Revolutions per minute (rpm)	5,000
	Feed (mm/rev)	0.08
	DOC (mm)	1.0
	Machining area	Facing + OD turning
	Coolant	WET
Results		

TMV can have broken chips with higher feed rate, Reducing machining time 39% even in conventional cutting. Additionally, the broken chips reduce cleaning frequency inside the machine, enhancing productivity.

Lineup

NEW

Shape	Item number	PVD grade				Dimension				TMV centerline height amount *	
	Metric	NTK650	ST4	DM4	TM4	IC	Thickness	Corner Radius	Wiper width	Centerline height from the reference surface (Blue) 	Centerline height from the reference surface (Red) 
	DCGT11T301MRTMV	●	●	●	●	9.525	3.97	0.08	-	0.51	0.08
	DCGT11T302MRTMV	●	●	●	●	9.525	3.97	0.18	-	0.53	0.10
	DCGT11T304MRTMV	●	●	●	●	9.525	3.97	0.38	-	0.55	0.12
	DCGT11T301MRTMV-WP	●	●	○	○	9.525	3.97	0.08	(0.3)	0.51	0.08
	DCGT11T302MRTMV-WP	●	●	○	○	9.525	3.97	0.18	(0.3)	0.53	0.10
	CCGT09T301MRTMV	●	●	●	●	9.525	3.97	0.08	-	0.52	0.08
	CCGT09T302MRTMV	●	●	●	●	9.525	3.97	0.18	-	0.53	0.09
	CCGT09T304MRTMV	●	●	●	●	9.525	3.97	0.38	-	0.55	0.12
	VCGT110302MRTMV	●	●	●	●	6.35	3.18	0.18	-	0.53	0.07
	VCGT110304MRTMV	●	●	●	●	6.35	3.18	0.38	-	0.55	0.10
	TNGG160402MRTMV	●	●	●	●	9.525	4.76	0.18	-	0.53	0.09
	TNGG160404MRTMV	●	●	●	●	9.525	4.76	0.38	-	0.56	0.11

○ Made-to-order products

*Centerline height is nominal, please adjust using actual measured values during setup.

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