

TurnLine

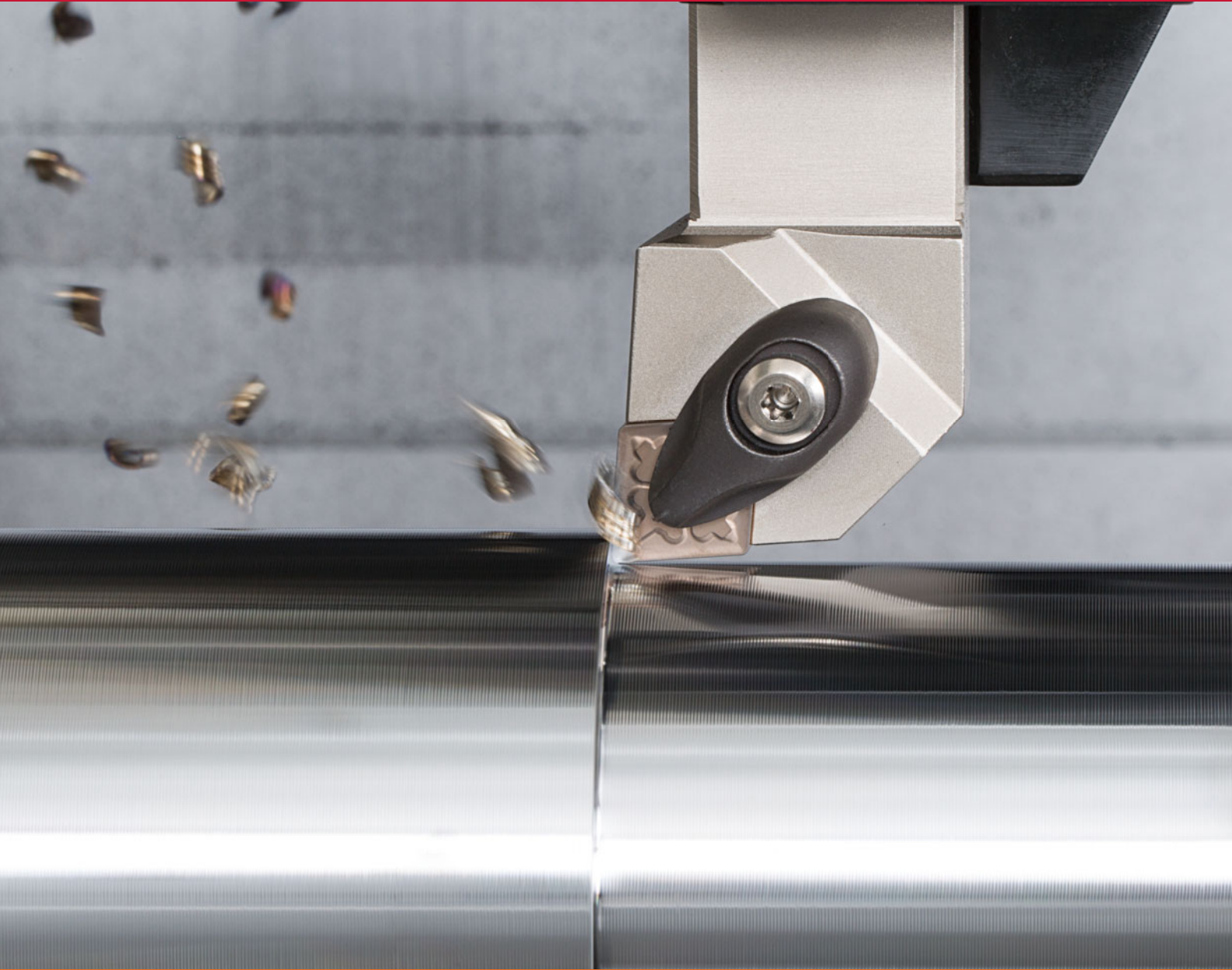
T9200SERIES

www.tungaloy.com

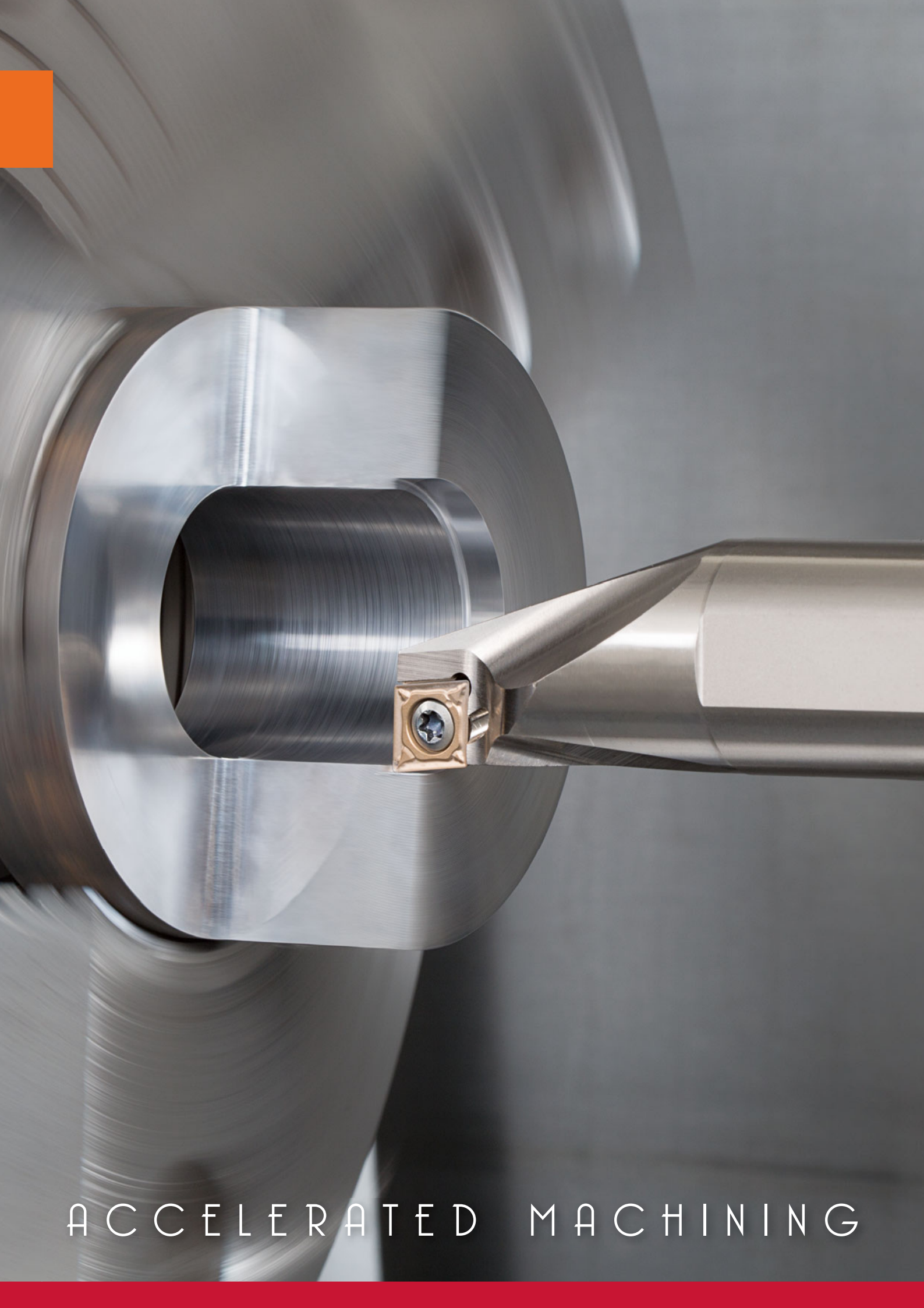
Tungaloy Report No. 513-G



T9200 series - a new generation of CVD grades for steel turning



INDUSTRY 4.0
FEED the SPEED!



ACCELERATED MACHINING



TurnLine

T9200SERIES

TUNGALOY



New generation of CVD grades for steel turning
with outstanding productivity

www.tungaloy.com

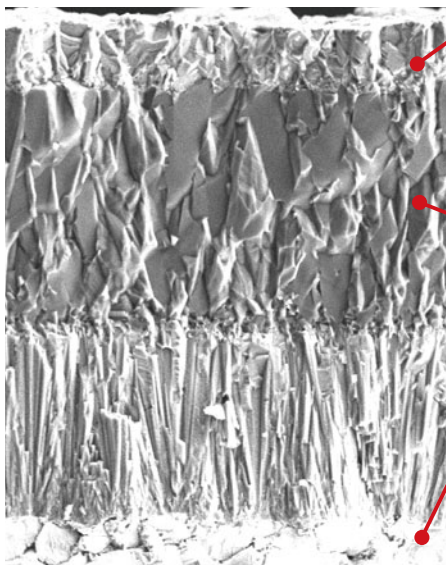
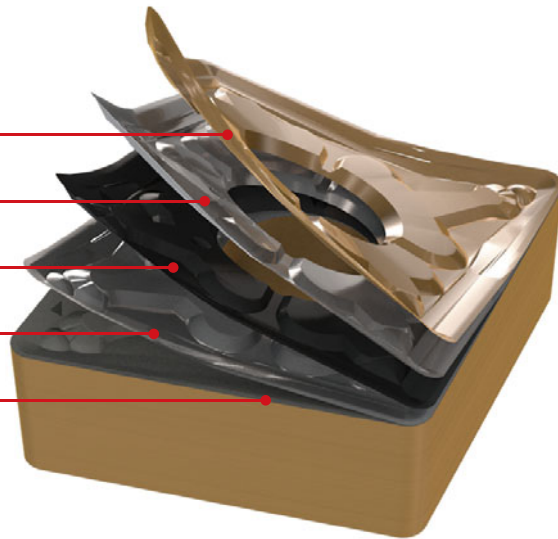
The T9200 series now offers T9225 to further improve your **machining efficiency**

PREMIUMTEC

TUNGALOY

A new surface treatment technology is applied, making T9200 series hard to break

- Outermost layer
- Ti-layer
- Al₂O₃
- Ti compound
- Specially designed substrate



Hard outer layer.

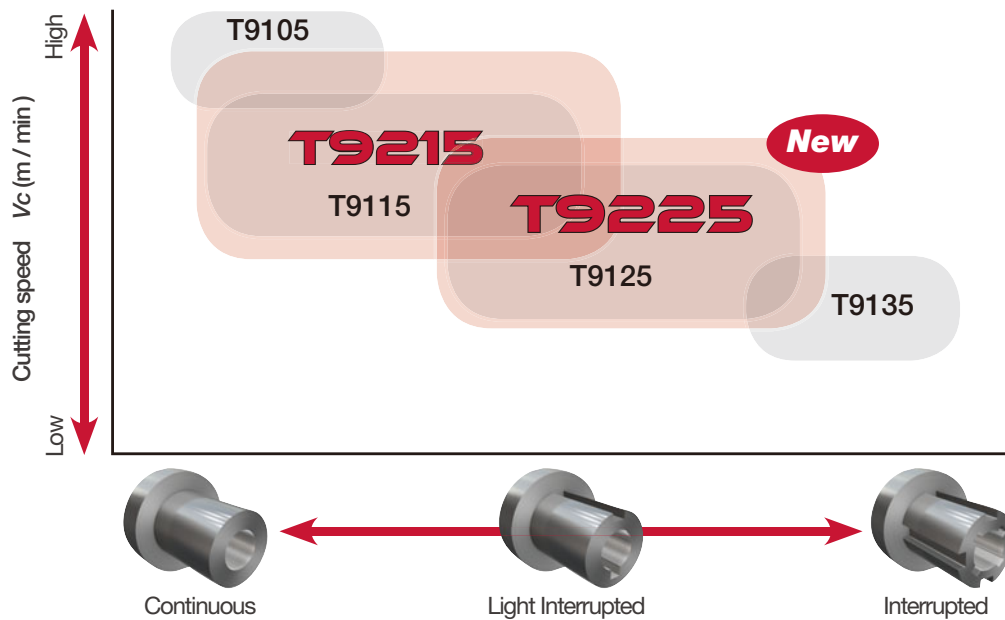
A new developed hard coating layer, with a high resistance to flank wear.

Thick Al₂O₃ layer with excellent resistance to high heat and crater wear, especially effective for high-speed machining.

New cemented carbide substrate.

Exclusively designed for T9200 series drastically reduces defects in alloys, which greatly improves fracture resistance.

APPLICATION AREA



Application	Grade	Substrate			Coating layer	
		Specific gravity	Hardness (HRA)	T.R.S. (GPa)	Main Composition	Thickness (μm)
P	T9215	14.0	90.5	2.6	Ti compound + Al ₂ O ₃	18
	T9225	13.4	89.8	2.7	Ti compound + Al ₂ O ₃	16



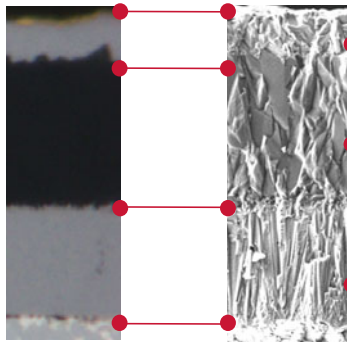
Excellent Crater Wear Resistance

Al₂O₃ coating with strengthened wear resistance



T9200SERIES

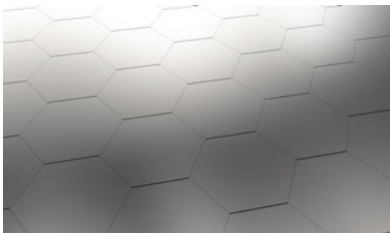
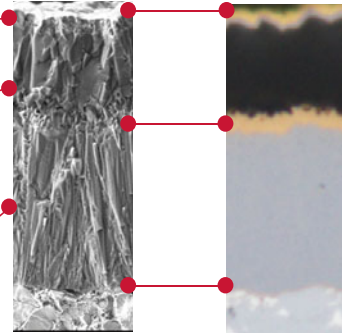
Existing



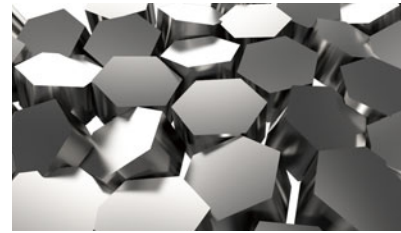
Ti-layer

Al₂O₃

Ti compound



Highly homogeneous structure of Al₂O₃



Surface image of Al₂O₃

Excellent Flank Wear Resistance

T9200 series Provided Outstanding Flank Wear Resistance!



T9200SERIES

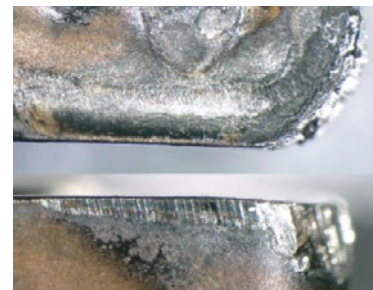
Existing



Long tool life and stable tool life

Extended tool life
High speed and high feed
Stable machining

Reduced machine downtime
Cost reduction
High productivity



Increased flank wear leads to small chipping and welding

Fracture

PREMIUMTEC

TUNGALOY

Excellent fracture resistance, due to a New improved surface coating treatment

A unique tough coating treatment technology that prevents cracks in operation and provides stable machining.

ADVANTAGE of the new technology

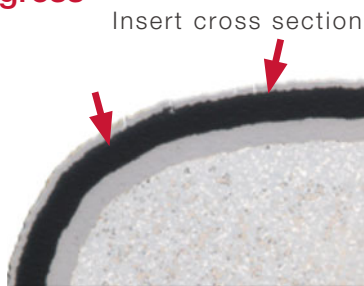
Effect of the new improved surface treatment which prolongs insert's tool life

T9200SERIES

Vs.

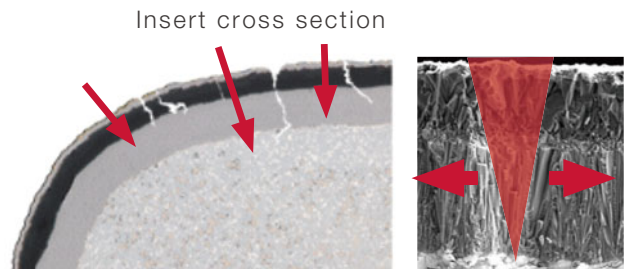
Existing

Suppress crack generation and progress



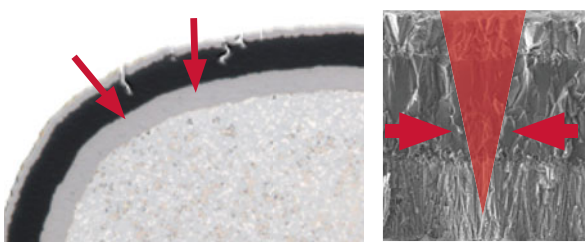
PREMIUMTEC
TUNGALOY

Crack occurs in coating files. Crack proceeds



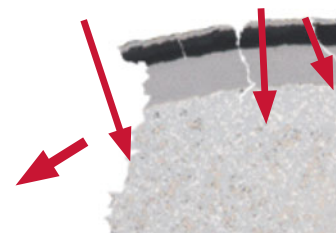
The crack gradually spreads

Suppress crack propagation

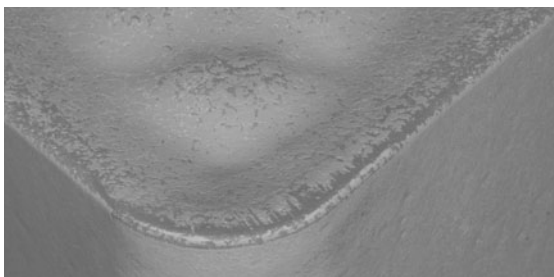


Still using

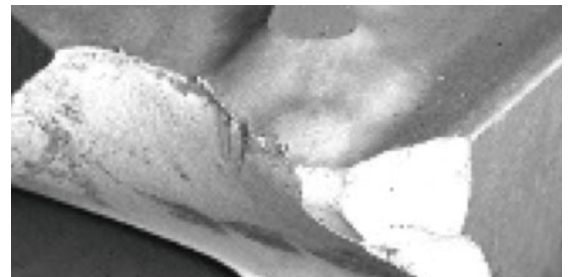
Fracture



Fracture



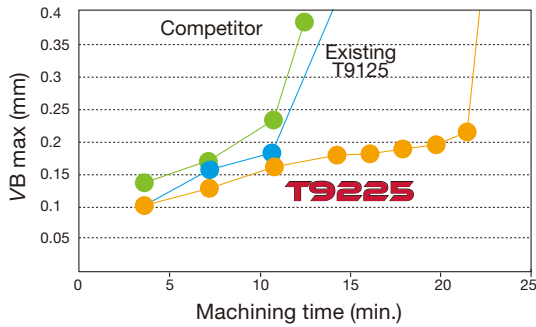
Results: stable machining!



T9225 CUTTING PERFORMANCE

P S45C / C45

T9225 provides better wear resistance, extending tool life over competitors' CVD grades

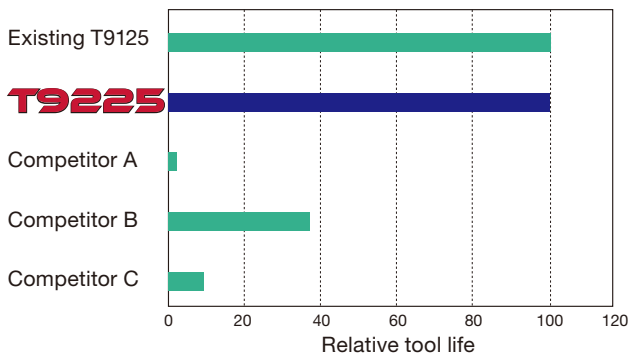


Insert : CNMG120408-**
 Cutting speed : $V_c = 250$ m/min
 Feed : $f = 0.28$ mm/rev
 Depth of cut : $a_p = 2.0$ mm
 Machining : Continuous cutting
 Coolant : Wet



P S45C / C45

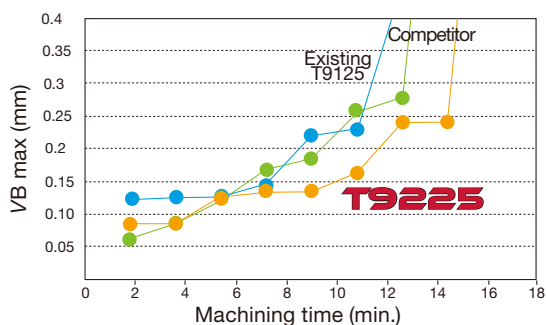
T9225 offers high fracture toughness over competitors' grades



Insert : CNMG120408-**
 Cutting speed : $V_c = 150$ m/min
 Feed : $f = 0.30$ mm/rev
 Depth of cut : $a_p = 1.5$ mm
 Machining : Interrupted cutting
 Coolant : Wet

P SCM440 / 42CrMo4

T9225 features superior resistance to wear resistance, making the grade ideal for a wide range of applications.



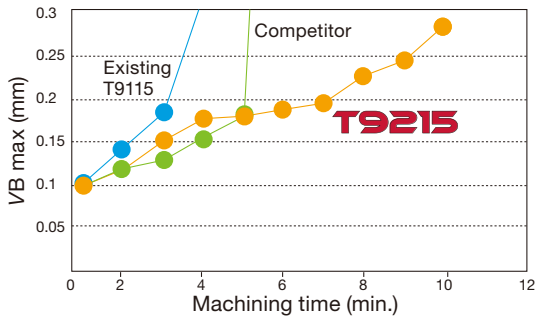
Insert : CNMG120408-**
 Cutting speed : $V_c = 250$ m/min
 Feed : $f = 0.28$ mm/rev
 Depth of cut : $a_p = 2.0$ mm
 Machining : Continuous cutting
 Coolant : Wet



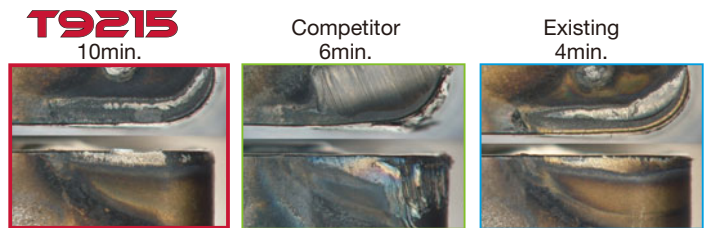
T9215 CUTTING PERFORMANCE

P S45C / C45 , High speed machining

Long tool life and stable machining in a wide range of applications is compared to existing equivalent P15 grade products.

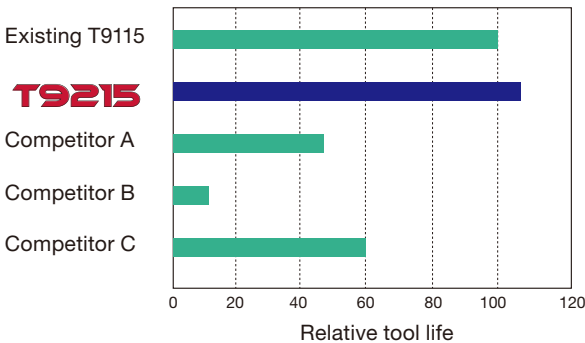


Insert : CNMG120408-**
Cutting speed : $V_c = 400$ m/min
Feed : $f = 0.28$ mm/rev
Depth of cut : $a_p = 2.0$ mm
Machining : Continuous cutting
Coolant : Wet



P S45C / C45

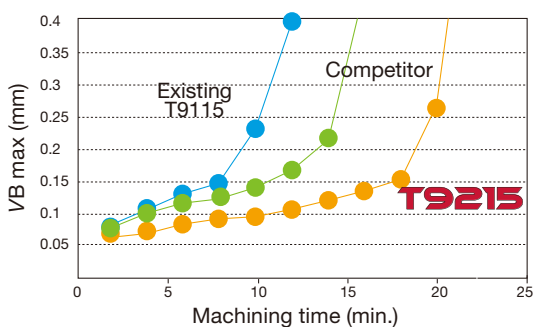
The fracture resistance of grade T9215 is equivalent to T9115 but exceeds the competitor's equivalent grades.



Insert : CNMG120408-**
Cutting speed : $V_c = 150$ m/min
Feed : $f = 0.15$ mm/rev
Depth of cut : $a_p = 1.5$ mm
Machining : Interrupted cutting
Coolant : Wet

P SCM440 / 42CrMo4

T9215 provides better wear resistance, extending tool life over competitors' CVD grades



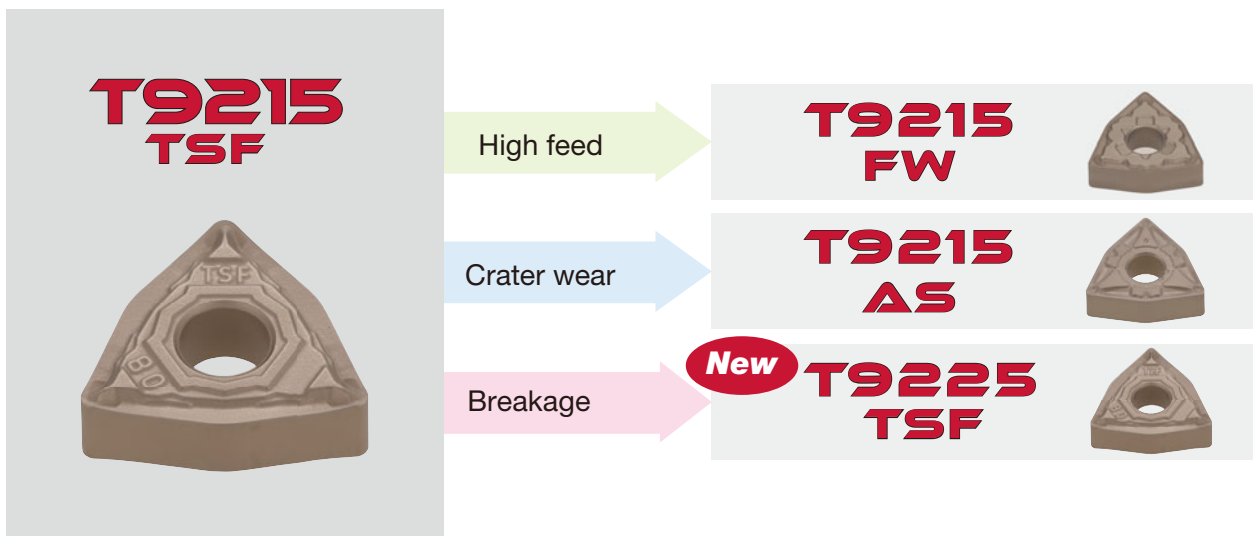
Insert : CNMG120408-**
Cutting speed : $V_c = 300$ m/min
Feed : $f = 0.28$ mm/rev
Depth of cut : $a_p = 2.0$ mm
Machining : Continuous cutting
Coolant : Wet



SELECTION GUIDE NEGATIVE TYPE

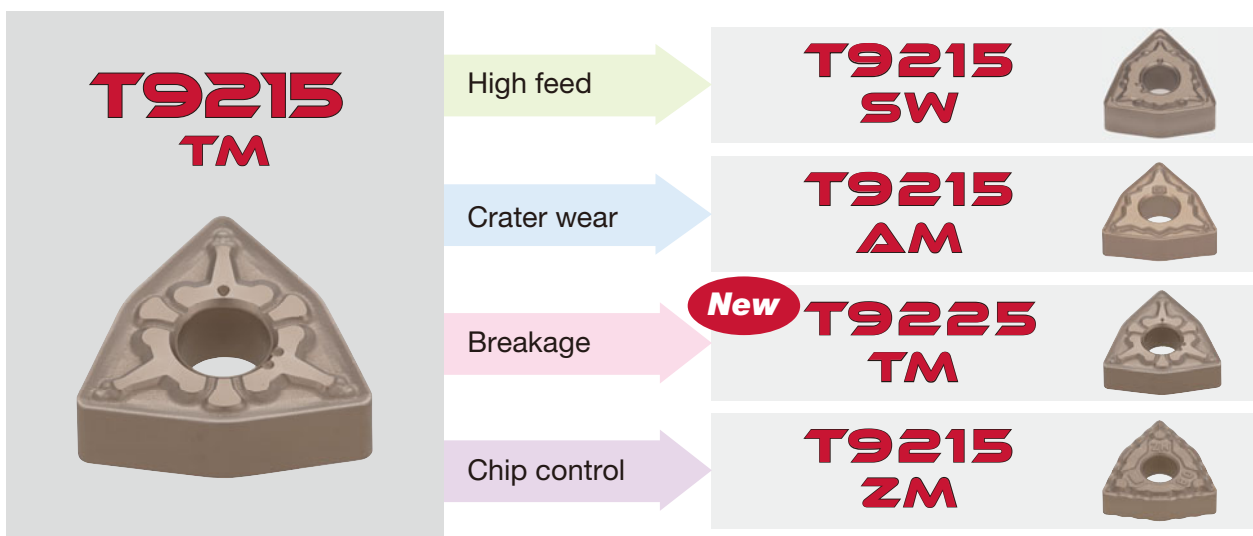
- For finishing ($a_p = 0.3 - 1.5 \text{ mm}$)

The 1st recommendation



- For finish to medium cutting ($a_p = 1.0 - 4.0 \text{ mm}$)

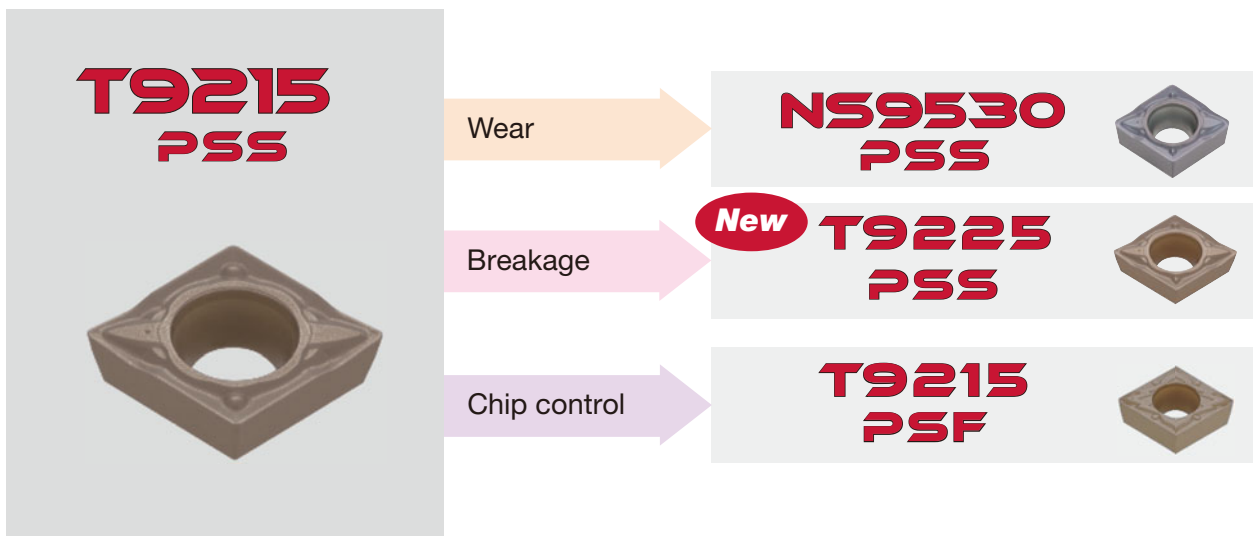
The 1st recommendation



POSITIVE TYPE

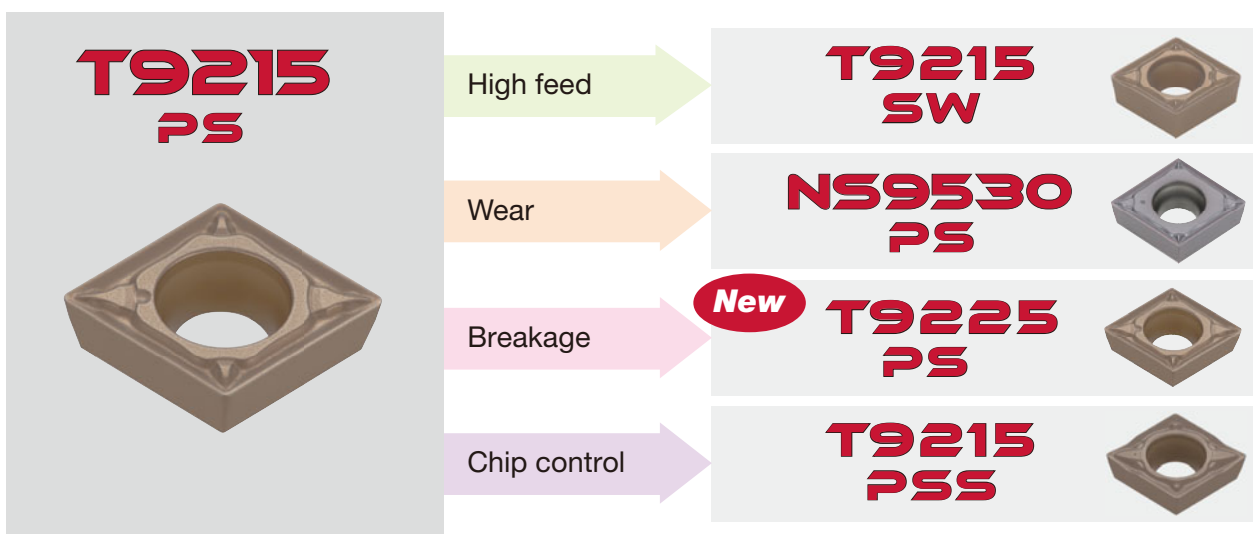
- For finishing ($a_p = 0.1 - 0.5 \text{ mm}$)

The 1st recommendation



- For finishing to medium cutting ($a_p = 0.5 - 2.5 \text{ mm}$)

The 1st recommendation



● : Continuous cutting
 ○ : Light interrupted cutting
 ✱ : Heavy interrupted cutting

TurnLine - Insert

NEGATIVE TYPE



Rhombic, 80° with hole

P Steel	●●○*	●	●●○*	✱															
M Stainless	●●																		
K Cast iron	●●		●●○●																
N Non-ferrous																			
S Superalloys																			
H Hard materials																			

Application	Chipbreaker	Designation	Corner radius	Coated																		
				T9215	T9225	T9105	T9115	T9125	T9135													
Finishing		TSF CNMG090404E-TSF	0.4	●	●		●	●														
		CNMG090408E-TSF	0.8	●	●		●	●														
		CNMG120404-TSF	0.4	●	●	●	●	●														
		CNMG120408-TSF	0.8	●	●	●	●	●	●													
		CNMG120412-TSF	1.2	●	●		●	●														
Finishing (Wiper)		FW CNMG090404E-FW	0.4	●	★	●	●	●														
		CNMG090408E-FW	0.8	●	★	●	●	●														
		CNMG120404-FW	0.4	●			●															
		CNMG120408-FW	0.8	●	★	●	●	●														
		*Wiper insert																				
Finishing		AFW CNMG120404-AFW	0.4	●	★		●	●														
		CNMG120408-AFW	0.8	●	★	●	●	●	●													
Finishing		ZF CNMG090404E-ZF	0.4	●	★		●	●														
		CNMG120404-ZF	0.4	●	★		●	●														
		CNMG120408-ZF	0.8	●	★		●	●	●													
		TS CNMG120404-TS	0.4	●	★		●	●	●													
		CNMG120408-TS	0.8	●	★	●	●	●	●													
		CNMG120412-TS	1.2	●	★		●	●	●													
	NS CNMG120408-NS	0.8	●	★		●	●															

* Please contact our sales representative for your inquiries about the program adjustment when using SW/FW for machining of radius shape or taper machining.

● : Line-up
 ● : New product
 ★ : To be released in summer 2019

● : Continuous cutting
 ● : Light interrupted cutting
 ✱ : Heavy interrupted cutting

TurnLine - Insert

NEGATIVE TYPE



Rhombic, 80°
with hole

P	Steel	●●●●✱	●	●●●●✱	✱															
M	Stainless	●●																		
K	Cast iron	●●	●●●●																	
N	Non-ferrous																			
S	Superalloys																			
H	Hard materials																			

Application	Chipbreaker	Designation	Corner radius	Coated																					
				T9215	T9225	T9105	T9115	T9125	T9135																
Finishing to medium cutting (Wiper)		SW CNMG090408E-SW	0.8	●	★	●	●	●																	
		CNMG090412E-SW	1.2	●	★	●	●	●																	
		CNMG120408-SW	0.8	●	★	●	●	●																	
		CNMG120412-SW	1.2	●	★	●	●	●																	
	* Wiper insert																								
		ASW CNMG120408-ASW	0.8	●	★	●	●	●																	
CNMG120412-ASW		1.2	●	★	●	●	●																		
High feed, small depth of cut		AS CNMG120404-AS	0.4	●	★	●	●	●																	
		CNMG120408-AS	0.8	●	★	●	●	●	●																
		CNMG120412-AS	1.2	●	★	●	●	●	●																
Medium cutting		TM CNMG090304-TM	0.4	●	●	●	●	●																	
		CNMG090308-TM	0.8	●	●	●	●	●	●																
		CNMG090404E-TM	0.4	●	●	●	●	●																	
		CNMG090408E-TM	0.8	●	●	●	●	●																	
		CNMG090412E-TM	1.2	●	●	●	●	●																	
		CNMG120404-TM	0.4	●	●	●	●	●	●																
		CNMG120408-TM	0.8	●	●	●	●	●	●																
		CNMG120412-TM	1.2	●	●	●	●	●	●																
		CNMG120416-TM	1.6	●	●	●	●	●	●																
		CNMG160612-TM	1.2	●	●	●	●	●	●																
		CNMG190608-TM	0.8	●	●	●	●	●	●																
		CNMG190612-TM	1.2	●	●	●	●	●	●																
Finishing to medium		AM CNMG120408-AM	0.8	●	★	●	●	●																	
		CNMG120412-AM	1.2	●	★	●	●	●																	
		CNMG120416-AM	1.6	●	★	●	●	●																	

* Please contact our sales representative for your inquiries about the program adjustment when using SW/FW for machining of radius shape or taper machining.

● : Line-up
 ● : New product
 ★ : To be released in summer 2019

● : Continuous cutting
 ● : Light interrupted cutting
 ✱ : Heavy interrupted cutting

TurnLine - Insert

NEGATIVE TYPE



Rhombic, 80°
with hole

	P	M	K	N	S	H
Steel	● ● ✱ ● ● ✱ ✱					
Stainless	● ●					
Cast iron	● ●	● ● ● ●				
Non-ferrous						
Superalloys						
Hard materials						

Application	Chipbreaker	Designation	Corner radius	Coated								
				T9215	T9225	T9105	T9115	T9125	T9135			
Finish to Medium cutting		CNMG120404-TQ	0.4	● ★								
		CNMG120408-TQ	0.8	● ★								
Medium cutting		CNMG120408-TA	0.8	● ★								
		CNMG120412-TA	1.2	● ★								
Finish to Medium cutting		CNMG120408-NM	0.8	● ★ ● ● ● ●								
		CNMG120412-NM	1.2	● ★ ● ● ● ●								
Finish to Medium cutting		CNMG090408E-ZM	0.8	● ★ ● ●								
		CNMG120408-ZM	0.8	● ★ ● ● ● ●								
		CNMG120412-ZM	1.2	● ★ ● ● ● ●								
		CNMG120416-ZM	1.6	● ★ ● ●								
Medium cutting		CNMG120404-DM	0.4	● ★ ● ●								
		CNMG120408-DM	0.8	● ★ ● ● ● ●								
		CNMG120412-DM	1.2	● ★ ● ● ● ●								

● : Line-up
 ● : New product
 ★ : To be released in summer 2019

TurnLine - Insert

- : Continuous cutting
- ◐ : Light interrupted cutting
- ✳ : Heavy interrupted cutting

NEGATIVE TYPE



**Rhombic, 80°
with hole**

P Steel	● ● ● ✳ ● ● ● ✳ ✳
M Stainless	● ●
K Cast iron	● ● ● ● ●
N Non-ferrous	
S Superalloys	
H Hard materials	

Application	Chipbreaker	Designation	Corner radius	Coated																	
				T9215	T9225	T9105	T9115	T9125	T9135												
Medium cutting		All-round CNMG090304	0.4	●	●		●	●													
		CNMG090308	0.8	●	●	●	●	●	●												
		CNMG120404	0.4	●	●	●	●	●	●												
		CNMG120408	0.8	●	●	●	●	●	●												
		CNMG120412	1.2	●	●	●	●	●	●												
		CNMG120416	1.6	●	●	●	●	●	●												
		CNMG160608	0.8	●	●	●	●	●	●												
		CNMG160612	1.2	●	●	●	●	●	●												
		CNMG160616	1.6	●	●	●	●	●	●												
		CNMG190608	0.8	●	●		●	●	●												
		CNMG190612	1.2	●	●	●	●	●	●												
		CNMG190616	1.6	●	●		●	●	●												
Finishing to medium cutting		27 CNMG120404-27	0.4	●	★		●	●													
		CNMG120408-27	0.8	●	★		●	●	●												
		CNMG120412-27	1.2		★			●													
Finishing to medium cutting		28 CNMG120404-28	0.4		★			●													
Medium cutting		33 CNMG120416-33	1.6	●			●														
		CNMG160612-33	1.2	●			●														
		CNMG190612-33	1.2	●			●														
	Medium cutting		37 CNMG120404-37	0.4	●			●													
CNMG120408-37			0.8	●			●														
CNMG120412-37			1.2	●			●														

- : Line-up
- : New product
- ★ : To be released in summer 2019

TurnLine - Insert

- : Continuous cutting
- : Light interrupted cutting
- ✱ : Heavy interrupted cutting

NEGATIVE TYPE

P	Steel	●	●	✱	●	●	●	✱																														
M	Stainless	●	●																																			
K	Cast iron	●	●		●	●	●																															
N	Non-ferrous																																					
S	Superalloys																																					
H	Hard materials																																					



Rhombic, 80° with hole

Application	Chipbreaker	Designation	Corner radius	Coated																																					
				T9215	T9225	T9105	T9115	T9125	T9135																																
Medium cutting		38 CNMG120408-38	0.8	●			●																																		
		TH	CNMG120408-TH	0.8	●	●	●	●	●	●																															
			CNMG120412-TH	1.2	●	●	●	●	●	●																															
			CNMG120416-TH	1.6	●	●	●	●	●	●																															
			CNMG160612-TH	1.2	●	●	●	●	●	●																															
			CNMG160616-TH	1.6	●	●	●	●	●	●																															
			CNMG190612-TH	1.2	●	●	●	●	●	●																															
			CNMG190616-TH	1.6	●	●	●	●	●	●																															
			Medium to heavy cutting		THS CNMG120408-THS	0.8	●	★	●	●	●	●																													
		CNMG120412-THS			1.2	●	★	●	●	●	●																														
CNMG120416-THS	1.6	●			★	●	●	●	●																																
CNMG160612-THS	1.2	●			★	●	●	●	●																																
CNMG160616-THS	1.6	●			★	●	●	●	●																																
CNMG190612-THS	1.2	●			★	●	●	●	●																																
CNMG190616-THS	1.6	●			★	●	●	●	●																																
CNMG190624-THS	2.4	●			★		●	●	●																																
CNMG250924-THS	2.4	●			★		●	●	●																																
Medium to heavy cutting (Single sided)		57 CNMM120404-57			0.4		★			●																															
		CNMM120408-57	0.8	●	★			●	●																																
		CNMM120412-57	1.2		★			●	●																																
		CNMM190612-57	1.2		★			●	●																																
		CNMM190616-57	1.6		★			●	●																																

- : Line-up
- : New product
- ★ : To be released in summer 2019

TurnLine - Insert

- : Continuous cutting
- : Light interrupted cutting
- ✱ : Heavy interrupted cutting

NEGATIVE TYPE



Rhombic, 55° with hole

	P	M	K	N	S	H
Steel	●●●✱	●	●●●✱	●	●	●
Stainless	●●	●●●	●●●	●	●	●
Cast iron	●●	●●●	●●●	●	●	●
Non-ferrous	●	●	●	●●●	●	●
Superalloys	●	●	●	●	●●●	●
Hard materials	●	●	●	●	●	●●●

Application	Chipbreaker	Designation	Corner radius	Coated																						
				T9215	T9225	T9105	T9115	T9125	T9135																	
Finishing to medium cutting		27 DNMG150404-27	0.4	●	✱																					
		DNMG150408-27	0.8	●	✱		●	●																		
		DNMG150412-27	1.2	●	✱			●																		
Medium cutting		All-round DNMG110404	0.4	●	●		●	●																		
		DNMG110408	0.8	●	●	●	●	●	●																	
		DNMG150404	0.4	●	●		●	●	●																	
		DNMG150408	0.8	●	●	●	●	●	●																	
		DNMG150412	1.2	●	●	●	●	●	●																	
		DNMG150416	1.6	●	●		●	●																		
		DNMG150604	0.4	●	●		●	●																		
		DNMG150608	0.8	●	●	●	●	●	●																	
		DNMG150612	1.2	●	●	●	●	●	●																	
		DNMG150616	1.6	●	●		●	●																		
Medium to heavy cutting		38 DNMG150412-38	1.2	●			●																			
		37 DNMG150608-37	0.8	●			●																			
Medium to heavy cutting		TH DNMG150408-TH	0.8	●	●		●	●	●																	
		DNMG150412-TH	1.2	●	●		●	●	●																	
		DNMG150416-TH	1.6	●	●		●	●																		
		DNMG150608-TH	0.8	●	●		●	●	●																	
		DNMG150612-TH	1.2	●	●		●	●	●																	
DNMG150616-TH	1.6	●	●		●	●																				

- : Line-up
- : New product
- ✱ : To be released in summer 2019

T9200SERIES

TUNGALOY

- : Continuous cutting
- ◐ : Light interrupted cutting
- ✱ : Heavy interrupted cutting

TurnLine - Insert

NEGATIVE TYPE



Rhombic, 55°
with hole

P Steel	●●●✱	●●●✱	✱																																			
M Stainless	●●																																					
K Cast iron	●●	●●●●																																				
N Non-ferrous																																						
S Superalloys																																						
H Hard materials																																						

Application	Chipbreaker	Designation	Corner radius	Coated																																					
				T9215	T9225	T9105	T9115	T9125	T9135																																
Medium to heavy cutting		THS DNMG150408-THS	0.8	●	★		●	●	●																																
		DNMG150412-THS	1.2	●	★		●	●	●																																
		DNMG150416-THS	1.6	●	★		●	●																																	
		DNMG150608-THS	0.8	●	★		●	●	●																																
		DNMG150612-THS	1.2	●	★		●	●	●																																
		DNMG150616-THS	1.6	●	★		●	●																																	
Medium cutting		S DNMG150404L-S	0.4		★				●	●																															
		DNMG150404R-S	0.4		★				●	●																															
		DNMG150408L-S	0.8		★				●	●																															
		DNMG150408R-S	0.8		★				●	●																															
		DNMG150604L-S	0.4		★				●	●																															
		DNMG150604R-S	0.4		★				●	●																															
		DNMG150608L-S	0.8		★				●	●																															
		DNMG150608R-S	0.8		★				●	●																															
Medium to heavy cutting (Single sided)		57 DNMM150608-57	0.8		★				●																																
		DNMM150612-57	1.2		★				●																																

- : Line-up
- : New product
- ★ : To be released in summer 2019

TurnLine - Insert

● : Continuous cutting
 ● : Light interrupted cutting
 ✱ : Heavy interrupted cutting

NEGATIVE TYPE



**Round,
with hole**

P Steel	● ● ● ● ✱ ● ● ● ● ✱ ✱																	
M Stainless	● ●																	
K Cast iron	● ●	● ● ● ●																
N Non-ferrous																		
S Superalloys																		
H Hard materials																		

Application		Chipbreaker	Designation	Corner radius	Coated																				
Heavy cutting	61				T9215	T9225	T9105	T9115	T9125	T9135															
					RNMG090300-61	-	●	★	●	●															
			RNMG120400-61	-	●	★	●	●	●	●															
			RNMG150600-61	-	●	★	●	●	●																
			RNMG190600-61	-	●	★	●	●	●	●															
			RNMG250900-61	-	●	★	●	●	●																

● : Line-up
 ● : New product
 ★ : To be released in summer 2019

- : Continuous cutting
- ◐ : Light interrupted cutting
- ✱ : Heavy interrupted cutting

TurnLine - Insert

NEGATIVE TYPE



Square, 90°
with hole

P Steel	●●●✱●●●●●✱
M Stainless	●●
K Cast iron	●●●●●
N Non-ferrous	
S Superalloys	
H Hard materials	

Application	Chipbreaker	Designation	Corner radius	Coated																				
				T9215	T9225	T9105	T9115	T9125	T9135															
Finishing		TSF SNMG120404-TSF	0.4	●	●		●	●																
		SNMG120408-TSF	0.8	●	●		●	●																
		SNMG120412-TSF	1.2	●	●		●	●																
		TS SNMG120404-TS	0.4	●	★		●	●																
		SNMG120408-TS	0.8	●	★	●	●	●	●															
		SNMG120412-TS	1.2	●	★		●	●	●															
High feed, small depth of cut		AS SNMG120408-AS	0.8	●		●	●																	
Finishing		NS SNMG120408-NS	0.8	●	★		●	●																
Medium cutting		TM SNMG090304-TM	0.4	●	●		●	●	●															
		SNMG090308-TM	0.8	●	●		●	●	●															
		SNMG120404-TM	0.4	●	●		●	●																
		SNMG120408-TM	0.8	●	●	●	●	●	●															
		SNMG120412-TM	1.2	●	●	●	●	●	●															
		SNMG120416-TM	1.6	●	●		●	●	●															
		SNMG150608-TM	0.8	●			●																	
		SNMG150612-TM	1.2	●			●																	
		SNMG190608-TM	0.8	●			●																	
		SNMG190612-TM	1.2	●			●																	

- : Line-up
- : New product
- ★ : To be released in summer 2019

T9200SERIES

TUNGALOY

TurnLine - Insert

- : Continuous cutting
- ◐ : Light interrupted cutting
- ✱ : Heavy interrupted cutting

NEGATIVE TYPE



Square, 90°
with hole

P Steel	● ● ● ✱ ● ● ● ✱ ✱
M Stainless	● ●
K Cast iron	● ● ● ● ● ●
N Non-ferrous	
S Superalloys	
H Hard materials	

Application	Chipbreaker	Designation	Corner radius	Coated																				
				T9215	T9225	T9105	T9115	T9125	T9135															
Medium cutting		33 SNMG120408-33	0.8	●	★		●	●																
		SNMG120412-33	1.2		★			●																
		SNMG150612-33	1.2	●	★			●	●															
		SNMG190616-33	1.6		★				●	●														
		37 SNMG120408-37	0.8	●				●																
		SNMG120412-37	1.2	●				●																
		S SNMG120404L-S	0.8		★					●	●													
		SNMG120404R-S	1.2		★					●	●													
		SNMG120408L-S	1.2		★					●	●													
		SNMG120408R-S	1.6		★					●	●													
	Medium to heavy cutting		TH SNMG120408-TH	0.8	●	●		●	●	●														
			SNMG120412-TH	1.2	●	●		●	●	●														
SNMG150612-TH			1.2	●	●	●	●	●																
SNMG150616-TH			1.6	●	●	●	●	●																
SNMG190612-TH			1.2	●	●	●	●	●	●															
SNMG190616-TH			1.6	●	●	●	●	●	●															
		THS SNMG120408-THS	0.8	●	★		●	●	●															
		SNMG120412-THS	1.2	●	★		●	●	●															
		SNMG150612-THS	1.2	●	★		●	●																
		SNMG150616-THS	1.6	●	★		●	●																
		SNMG190608-THS	0.8	●	★		●	●	●															
		SNMG190612-THS	1.2	●	★		●	●	●															
		SNMG190616-THS	1.6	●	★		●	●	●															
		SNMG190624-THS	2.4	●	★		●	●	●															
SNMG250716-THS	1.6	●	★		●	●	●																	
SNMG250724-THS	2.4	●	★		●	●	●																	

- : Line-up
- : New product
- ★ : To be released in summer 2019

● : Continuous cutting
 ● : Light interrupted cutting
 ✱ : Heavy interrupted cutting

TurnLine - Insert

NEGATIVE TYPE



Square, 90°
with hole

	P	M	K	N	S	H																														
Steel	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
Stainless	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Cast iron	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Non-ferrous	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Superalloys	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Hard materials	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Application	Chipbreaker	Designation	Corner radius	Coated																																				
				T9215	T9225	T9105	T9115	T9125	T9135																															
Medium to heavy cutting (Single sided)		TRS SNMM150612-TRS	1.2	●	★	●	●	●																																
		SNMM150616-TRS	1.6	●	★	●	●	●																																
		SNMM190616-TRS	1.6	●	★	●	●	●																																
		SNMM190624-TRS	2.4	●	★	●	●	●																																
		SNMM250924-TRS	2.4	●	★	●	●	●																																
Heavy cutting (Single sided)		TU SNMM190624-TU	2.4	●	★		●	●																																
		SNMM250724-TU	2.4	●	★			●	●																															
		SNMM250924-TU	2.4	●	★	●	●																																	
Heavy cutting (Single sided)		TUS SNMM190612-TUS	1.2	●	★	●	●	●																																
		SNMM190616-TUS	1.6	●	★	●	●	●																																
		SNMM190624-TUS	2.4	●	★	●	●	●																																
		SNMM250724-TUS	2.4	●	★	●	●	●																																
		SNMM250732-TUS	3.2	●	★	●	●																																	
		SNMM250924-TUS	2.4	●	★	●	●	●																																
		SNMM250932-TUS	3.2	●	★	●	●																																	
Medium to heavy cutting (Single sided)		57 SNMM120408-57	0.8	●	★	●	●																																	
		SNMM150616-57	1.6	●	★		●																																	
		SNMM190612-57	1.2	●	★		●																																	
	65 SNMM190612-65	1.2	●	★		●																																		
65 SNMM310924-65	2.4	●	★		●																																			

● : Line-up
 ● : New product
 ★ : To be released in summer 2019

- : Continuous cutting
- ◐ : Light interrupted cutting
- ◑ : Heavy interrupted cutting






TurnLine - Insert

NEGATIVE TYPE

P	Steel	●◐◑*	●	◐	◑	*																				
M	Stainless	●◐																								
K	Cast iron	●◐	●◐	◐	◑																					
N	Non-ferrous																									
S	Superalloys																									
H	Hard materials																									



Triangular, 60° with hole

Application	Chipbreaker	Designation	Corner radius	Coated																										
				T9215	T9225	T9105	T9115	T9125	T9135																					
High feed, small depth of cut 	AS	TNMG160404-AS	0.4	★			●	●																						
		TNMG160408-AS	0.8	●	★	●	●	●	●																					
		TNMG160412-AS	1.2	●	★	●	●	●																						
Boring (Double sided) 	CB	TNMG110304-CB	0.4	●			●																							
		TNMG110308-CB	0.8	●			●																							
Finishing 	NS	TNMG160404-NS	0.4	●	★		●	●																						
		TNMG160408-NS	0.8	●	★	●	●	●																						
Medium cutting 	TM	TNMG110304-TM	0.4	●	●		●	●	●																					
		TNMG110308-TM	0.8	●	●		●	●	●																					
		TNMG110404E-TM	0.4	●	●		●	●																						
		TNMG110408E-TM	0.8	●	●		●	●																						
		TNMG110412E-TM	1.2	●	●		●	●																						
		TNMG160404-TM	0.4	●	●		●	●	●																					
		TNMG160408-TM	0.8	●	●	●	●	●	●																					
		TNMG160412-TM	1.2	●	●	●	●	●																						
		TNMG220404-TM	0.4	●	●		●	●																						
		TNMG220408-TM	0.8	●	●	●	●	●	●																					
		TNMG220412-TM	1.2	●	●	●	●	●																						
		TNMG220416-TM	1.6	●	●		●	●																						
		Finishing to medium cutting 	AM	TNMG160408-AM	0.8	●	★		●	●																				
TNMG160412-AM	1.2			●	★		●	●																						

- : Line-up
- : New product
- ★ : To be released in summer 2019

- : Continuous cutting
- ◐ : Light interrupted cutting
- ✱ : Heavy interrupted cutting

TurnLine - Insert

NEGATIVE TYPE



Triangular, 60°
with hole

P	Steel	●●●✱●●●✱✱
M	Stainless	●●
K	Cast iron	●●●●
N	Non-ferrous	
S	Superalloys	
H	Hard materials	





			Coated																					
Application	Chipbreaker	Designation	Corner radius	T9215	T9225	T9105	T9115	T9125	T9135															
Finishing to medium cutting		TQ TNMG160404-TQ	0.4	●	★																			
		TQ TNMG160408-TQ	0.8	●	★																			
Medium cutting		TA TNMG160404-TA	0.4	●	★																			
		TA TNMG160408-TA	0.8	●	★																			
		TA TNMG160412-TA	1.2	●	★																			
Finishing to medium cutting		NM TNMG160408-NM	0.8		★			●																
		NM TNMG160412-NM	1.2	●	★		●	●																
Finishing to medium cutting		ZM TNMG160404-ZM	0.4	●	★		●	●	●															
		ZM TNMG160408-ZM	0.8	●	★		●	●	●															
		ZM TNMG160412-ZM	1.2	●	★		●	●	●															
		ZM TNMG220412-ZM	1.2		★			●																
Medium cutting		DM TNMG160408-DM	0.8	●	★	●	●	●	●															
		DM TNMG160412-DM	1.2	●	★		●	●																

- : Line-up
- : New product
- ★ : To be released in summer 2019

- : Continuous cutting
- : Light interrupted cutting
- ✱ : Heavy interrupted cutting

TurnLine - Insert

NEGATIVE TYPE			P	M	K	N	S	H												
			● ● ✱	●	● ● ✱	●	● ● ✱	●												
			● ●	● ●	● ● ● ●															

Application	Chipbreaker	Designation	Corner radius	Coated																		
				T9215	T9225	T9105	T9115	T9125	T9135													
Medium cutting		All-round TNMG110304	0.4	●	●		●	●														
		TNMG110308	0.8	●	●		●	●														
		TNMG160404	0.4	●	●	●	●	●	●													
		TNMG160408	0.8	●	●	●	●	●	●													
		TNMG160412	1.2	●	●	●	●	●	●													
		TNMG160416	1.6	●	●		●	●	●													
		TNMG160420	2.0	●	●		●	●	●													
		TNMG220408	0.8	●	●	●	●	●	●													
		TNMG220412	1.2	●	●	●	●	●	●													
		TNMG220416	1.6	●	●		●	●														
		TNMG270608	0.8		●			●														
		TNMG270612	1.2		●			●														
Finishing to medium cutting		27 TNMG160404-27	0.4	●	★		●	●														
		TNMG160408-27	0.8	●	★		●	●														
		TNMG160412-27	1.2	●	★		●	●														
		TNMG220404-27	0.4		★			●														
		TNMG220408-27	0.8		★			●														
		TNMG220412-27	1.2		★			●														
Medium cutting		33 TNMG160416-33	1.6		★			●														
		TNMG220404-33	0.4		★			●														
		TNMG220416-33	1.6		★			●														
		37 TNMG160404-37	0.4	●				●														
TNMG160408-37		0.8	●				●															

- : Line-up
- : New product
- ★ : To be released in summer 2019

TurnLine - Insert

- : Continuous cutting
- ◐ : Light interrupted cutting
- ✱ : Heavy interrupted cutting

NEGATIVE TYPE



Triangular, 60°
with hole

P Steel	● ● ● ✱ ● ● ● ✱ ✱
M Stainless	● ●
K Cast iron	● ● ● ● ● ●
N Non-ferrous	
S Superalloys	
H Hard materials	

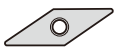
Application	Chipbreaker	Designation	Corner radius	Coated																
				T9215	T9225	T9105	T9115	T9125	T9135											
Medium cutting		S TNMG160404R-S	0.4	●	★	●	●	●												
		TNMG160404L-S	0.4		★		●	●												
		TNMG160408R-S	0.8		★		●	●												
		TNMG160408L-S	0.8		★		●	●												
		TNMG220404R-S	0.4		★		●	●												
		TNMG220404L-S	0.4		★		●	●												
		TNMG220408R-S	0.8		★		●	●												
		TNMG220408L-S	0.8		★		●	●												
Medium to heavy cutting		TH TNMG220408-TH	0.8	●	●	●	●	●												
		TNMG220412-TH	1.2	●	●	●	●	●												
		THS TNMG220408-THS	0.8	●	★	●	●	●												
		TNMG220412-THS	1.2	●	★	●	●	●												
Medium to heavy cutting (Single sided)		57 TNMM160408-57	0.8		★		●													
		TNMM220408-57	0.8		★		●													
		TNMM220412-57	1.2		★		●													

- : Line-up
- : New product
- ★ : To be released in summer 2019

- : Continuous cutting
- ◐ : Light interrupted cutting
- ◑ : Heavy interrupted cutting





TurnLine - Insert

NEGATIVE TYPE



Rhombic, 35° with hole

	P	M	K	N	S	H
Steel	●◐◑					
Stainless		●◐◑				
Cast iron			●◐◑			
Non-ferrous				●◐◑		
Superalloys					●◐◑	
Hard materials						●◐◑

Application	Chipbreaker	Designation	Corner radius	Coated																				
				T9215	T9225	T9105	T9115	T9125	T9135															
Medium cutting	DM	VNMG160408-DM	0.8	●	★	●	●	●	●															
		VNMG160412-DM	1.2	●	★	●	●	●																
Finishing to medium cutting	TQ	VNMG160404-TQ	0.4	●	★																			
		VNMG160408-TQ	0.8	●	★																			
Medium cutting	All-round	VNMG160404	0.4	●	●	●	●	●	●															
		VNMG160408	0.8	●	●	●	●	●																
		VNMG160412	1.2	●	●	●	●																	
		33	VNMG160404-33	0.4		★		●																
		VNMG160408-33	0.8	●	★	●	●																	
																								

- : Line-up
- : New product
- ★ : To be released in summer 2019

- : Continuous cutting
- ◐ : Light interrupted cutting
- ✱ : Heavy interrupted cutting

TurnLine - Insert

NEGATIVE TYPE



**Trigon, 80°
with hole**

P Steel	●●●●✱●●●●✱✱
M Stainless	●●
K Cast iron	●●●●●●
N Non-ferrous	
S Superalloys	
H Hard materials	

Application	Chipbreaker	Designation	Corner radius	Coated																	
				T9215	T9225	T9105	T9115	T9125	T9135												
Finishing		TSF WNMG060404E-TSF	0.4	●	●	●	●	●													
		WNMG060408E-TSF	0.8	●	●	●	●	●													
		WNMG060412E-TSF	1.2	●	●	●	●	●													
		WNMG060404-TSF	0.4	●	●	●	●	●													
		WNMG060408-TSF	0.8	●	●	●	●	●													
		WNMG080404-TSF	0.4	●	●	●	●	●	●												
		WNMG080408-TSF	0.8	●	●	●	●	●	●												
		WNMG080412-TSF	1.2	●	●	●	●	●	●												
Finishing to medium cutting (Wiper)		FW WNMG060404E-FW	0.4	●	★	●	●	●													
		WNMG060408E-FW	0.8	●	★	●	●	●													
		WNMG080404-FW	0.4	●	★	●	●	●													
		WNMG080408-FW	0.8	●	★	●	●	●													
	*Wiper insert																				
		AFW WNMG060404-AFW	0.4	●	★	●	●														
		WNMG060408-AFW	0.8	●	★	●	●	●	●												
		WNMG080404-AFW	0.4	●	★	●	●														
WNMG080408-AFW		0.8	●	★	●	●	●	●													
Finishing		ZF WNMG060404E-ZF	0.4	●	★	●	●														
		WNMG060404-ZF	0.4	●	★	●	●														
		WNMG060408-ZF	0.8	●	★	●	●														
		WNMG080404-ZF	0.4	●	★	●	●	●													
		WNMG080408-ZF	0.8	●	★	●	●	●													
		WNMG080412-ZF	1.2	●		●															
		TS WNMG080404-TS	0.4	●	★	●	●	●													
		WNMG080408-TS	0.8	●	★	●	●	●													
		WNMG080412-TS	1.2	●	★	●	●	●													

* Please contact our sales representative for your inquiries about the program adjustment when using SW/FW for machining of radius shape or taper machining.

- : Line-up
- : New product
- ★ : To be released in summer 2019

TurnLine - Insert

- : Continuous cutting
- ◐ : Light interrupted cutting
- ⊛ : Heavy interrupted cutting

NEGATIVE TYPE



**Trigon, 80°
with hole**

P	Steel	●	●	●	●	⊛	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●														
M	Stainless	●	●																																																					
K	Cast iron	●	●	●	●	●																																																		
N	Non-ferrous																																																							
S	Superalloys																																																							
H	Hard materials																																																							

Application	Chipbreaker	Designation	Corner radius	Coated																																																						
				T9215	T9225	T9105	T9115	T9125	T9135																																																	
Finishing to medium cutting		AM WNMG080408-AM	0.8	●	★		●	●																																																		
		WNMG080412-AM	1.2	●	★		●	●																																																		
		WNMG080416-AM	1.6	●	★		●	●																																																		
		TQ WNMG080404-TQ	0.4	●	★																																																					
		WNMG080408-TQ	0.8	●	★																																																					
	Medium cutting		TA WNMG080408-TA	0.8	●	★																																																				
WNMG080412-TA			1.2	●	★																																																					
Finishing to medium cutting		NM WNMG060412E-NM	1.2		★				●																																																	
		WNMG080408-NM	0.8	●	★	●	●	●																																																		
		WNMG080412-NM	1.2	●	★	●	●	●	●																																																	
		ZM WNMG060408E-ZM	0.8	●	★		●	●																																																		
		WNMG060408-ZM	0.8	●	★		●	●	●																																																	
		WNMG060412-ZM	1.2	●	★		●	●	●																																																	
Medium cutting		DM WNMG080408-DM	0.8	●	★	●	●	●	●																																																	
		WNMG080412-DM	1.2	●	★	●	●	●	●																																																	

- : Line-up
- : New product
- ★ : To be released in summer 2019

TurnLine - Insert

- : Continuous cutting
- : Light interrupted cutting
- ✱ : Heavy interrupted cutting

NEGATIVE TYPE



**Trigon, 80°
with hole**

Material	Legend	T9215	T9225	T9105	T9115	T9125	T9135	Coated
P Steel	● ● ✱ ● ● ● ✱ ✱	●	● ●	●	● ●	● ●	● ●	
M Stainless	● ●	●	●	●	● ●	● ●	● ●	
K Cast iron	● ●	● ●	● ● ● ●					
N Non-ferrous								
S Superalloys								
H Hard materials								

Application	Chipbreaker	Designation	Corner radius	Coated																							
				T9215	T9225	T9105	T9115	T9125	T9135	Coated	Coated																
Medium cutting		All-round WNMG060404	0.4	● ●	● ●	● ●	● ●																				
		WNMG060408	0.8	● ●	● ●	● ●	● ●																				
		WNMG080404	0.4	● ●	● ●	● ●	● ●	● ●																			
		WNMG080408	0.8	● ●	● ●	● ●	● ●	● ●																			
		WNMG080412	1.2	● ●	● ●	● ●	● ●	● ●																			
		WNMG080416	1.6	● ●	● ●	● ●	● ●	● ●																			
Finishing to medium cutting	27	WNMG080408-27	0.8	●	✱		●																				
Medium cutting	37	WNMG080408-37	0.8	●			●																				
Medium to heavy cutting		TH WNMG080408-TH	0.8	● ●	● ●	● ●	● ●																				
		WNMG080412-TH	1.2	● ●	● ●	● ●	● ●																				
		WNMG080416-TH	1.6	● ●	● ●	● ●	● ●																				
		WNMG100612-TH	1.2	● ●	● ●	● ●	● ●																				
		WNMG100616-TH	1.6	● ●	● ●	● ●	● ●																				
		THS WNMG080408-THS	0.8	● ●	● ●	● ●	● ●																				
WNMG080412-THS	1.2	● ●	● ●	● ●	● ●																						
WNMG080416-THS	1.6	● ●	● ●	● ●	● ●																						
WNMG100612-THS	1.2	● ●	● ●	● ●	● ●																						
WNMG100616-THS	1.6	● ●	● ●	● ●	● ●																						

- : Line-up
- : New product
- ★ : To be released in summer 2019

- : Continuous cutting
- : Light interrupted cutting
- * : Heavy interrupted cutting

TurnLine - Insert

NEGATIVE TYPE



	P	M	K	N	S	H
Steel	●●●*	●●●	●●●	●●●	●●●	●●●
Stainless	●●	●●	●●	●●	●●	●●
Cast iron	●●	●●	●●●	●●	●●	●●
Non-ferrous	●●	●●	●●	●●●	●●	●●
Superalloys	●●	●●	●●	●●	●●●	●●
Hard materials	●●	●●	●●	●●	●●	●●

Application	Chipbreaker	Designation	Corner radius	Coated																				
				T9215	T9225	T9105	T9115	T9125	T9135															
Finishing		YNMG160404-ZF	0.4	★	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
		YNMG160408-ZF	0.8	★	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Finishing to medium cutting		YNMG160404-ZM	0.4	★	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
		YNMG160408-ZM	0.8	★	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

- : Line-up
- : New product
- ★ : To be released in summer 2019

T9200SERIES

TUNGALOY

- : Continuous cutting
- ◐ : Light interrupted cutting
- ✱ : Heavy interrupted cutting




TurnLine - Insert

POSITIVE TYPE



Rhombic, 80°
with hole
Positive 7°

P	Steel	●●●●●●●●●●●●●●●●●●
M	Stainless	●●
K	Cast iron	●● ●●
N	Non-ferrous	●●●●●●●●●●●●●●●●●●
S	Superalloys	●●●●●●●●●●●●●●●●●●
H	Hard materials	●●●●●●●●●●●●●●●●●●

Application	Chipbreaker	Designation	Corner radius	Coated			
				T9215	T9225	T9115	T9125
Finishing		PSF CCMT060204-PSF	0.4	●	★	●	●
		CCMT09T304-PSF	0.4	●	★	●	●
		CCMT09T308-PSF	0.8	●	★	●	●
	PF CCMT09T308-PF	0.8	●	★	●	●	
Finishing to light cutting		PSS CCMT060204-PSS	0.4	●	★	●	●
		CCMT060208-PSS	0.8	●	★	●	●
		CCMT09T304-PSS	0.4	●	★	●	●
		CCMT09T308-PSS	0.8	●	★	●	●
		CCMT120404-PSS	0.4	●	★	●	●
		CCMT120408-PSS	0.8	●	★	●	●
		CCMT120412-PSS	1.2	●	★	●	●
Finishing to medium cutting		PS CCMT060202-PS	0.2	●	●	●	●
		CCMT060204-PS	0.4	●	●	●	●
		CCMT060208-PS	0.8	●	●	●	●
		CCMT09T302-PS	0.2	●	●	●	●
		CCMT09T304-PS	0.4	●	●	●	●
		CCMT09T308-PS	0.8	●	●	●	●
		CCMT120404-PS	0.4	●	●	●	●
		CCMT120408-PS	0.8	●	●	●	●
		CCMT120412-PS	1.2	●	●	●	●

- : Line-up
- (red) : New product
- ★ : To be released in summer 2019

TurnLine - Insert

- : Continuous cutting
- ◐ : Light interrupted cutting
- ✱ : Heavy interrupted cutting

POSITIVE TYPE



**Rhombic, 80°
with hole
Positive 7°**

P Steel	●●●✱●●●✱
M Stainless	●●
K Cast iron	●● ●●
N Non-ferrous	
S Superalloys	
H Hard materials	

Application	Chipbreaker	Designation	Corner radius	Coated			
				T9215	T9225	T9115	T9125
Finishing to medium cutting (Wiper)		SW CCMT060204-SW	0.4	●	★	●	●
		CCMT060208-SW	0.8	●	★	●	●
		CCMT09T304-SW	0.4	●	★	●	●
		CCMT09T308-SW	0.8	●	★	●	●
		*Wiper insert					
Finishing to medium cutting		23 CCMT060204-23	0.4		★		●
		CCMT060208-23	0.8		★		●
		CCMT09T304-23	0.4		★		●
		CCMT09T308-23	0.8		★		●
Medium cutting		24 CCMT060202-24	0.2		★		●
		CCMT060204-24	0.4	●	★	●	●
		CCMT060208-24	0.8	●	★	●	●
		CCMT09T302-24	0.2		★		●
		CCMT09T304-24	0.4	●	★	●	●
		CCMT09T308-24	0.8	●	★	●	●
		CCMT120408-24	0.8	●	★	●	●
		PM CCMT060204-PM	0.4	●	★	●	●
		CCMT060208-PM	0.8	●	★	●	●
		CCMT09T304-PM	0.4	●	★	●	●
		CCMT09T308-PM	0.8	●	★	●	●
		CCMT09T312-PM	1.2	●	★	●	●

* Please contact our sales representative for your inquiries about the program adjustment when using SW/FW for machining of radius shape or taper machining.

- : Line-up
- : New product
- ★ : To be released in summer 2019

● : Continuous cutting
 ● : Light interrupted cutting
 ✖ : Heavy interrupted cutting

TurnLine - Insert

POSITIVE TYPE



**Rhombic, 80°
with hole
Positive 11°**

P Steel	●●●✖●●●✖
M Stainless	●●
K Cast iron	●● ●●
N Non-ferrous	
S Superalloys	
H Hard materials	

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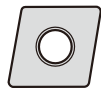
Application	Chipbreaker	Designation	Corner radius	Coated															
				T9215	T9225	T9115	T9125												
Finishing		PSF CPMT060204-PSF	0.4	●	★	●	●												
		CPMT080204-PSF	0.4	●	★	●	●												
		CPMT090304-PSF	0.4	●	★	●	●												
		CPMT09T304-PSF	0.4	●	★	●	●												
Finishing to light cutting		PSS CPMT060204-PSS	0.4	●	★	●	●												
		CPMT080204-PSS	0.4	●	★	●	●												
		CPMT080208-PSS	0.8	●	★	●	●												
		CPMT090304-PSS	0.4	●	★	●	●												
		CPMT090308-PSS	0.8	●	★	●	●												
		CPMT09T304-PSS	0.4	●	★	●	●												
		CPMT09T308-PSS	0.8	●	★	●	●												

● : Line-up
 ● : New product
 ★ : To be released in summer 2019

TurnLine - Insert

● : Continuous cutting
 ◐ : Light interrupted cutting
 ✱ : Heavy interrupted cutting

POSITIVE TYPE



Rhombic, 80° with hole
Positive 11°

P	Steel	●●●●	✱●●●	✱●●●																
M	Stainless	●●																		
K	Cast iron	●●	●●																	
N	Non-ferrous																			
S	Superalloys																			
H	Hard materials																			

Application	Chipbreaker	Designation	Corner radius	Coated																
				T9215	T9225	T9115	T9125													
Finishing to medium cutting		PS CPMT060202-PS	0.2	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
		CPMT060204-PS	0.4	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
		CPMT080202-PS	0.2	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
		CPMT080204-PS	0.4	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
		CPMT080208-PS	0.8	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
		CPMT090304-PS	0.4	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
		CPMT090308-PS	0.8	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
		CPMT09T302-PS	0.2	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
		CPMT09T304-PS	0.4	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
		CPMT09T308-PS	0.8	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Medium cutting		24 CPMT080204-24	0.4	●	●															
		CPMT080208-24	0.8		★	●														
		CPMT090308-24	0.8		★	●														
		CPMT160508-24	0.8		★	●														
		PM CPMT060208-PM	0.8		★	●														
		CPMT090304-PM	0.4		★	●														
		CPMT090308-PM	0.8		★	●														

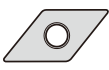
● : Line-up
 ● : New product
 ★ : To be released in summer 2019

TurnLine - Insert

- : Continuous cutting
- ◐ : Light interrupted cutting
- ✱ : Heavy interrupted cutting

POSITIVE TYPE

P Steel	●◐✱●◐✱
M Stainless	●◐
K Cast iron	●◐
N Non-ferrous	◐
S Superalloys	◐
H Hard materials	◐



Rhombic, 55°
with hole
Positive 7°

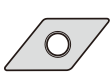
Application		Chipbreaker	Designation	Corner radius	Coated																			
					T9215	T9225	T9115	T9125																
Finishing		PSF	DCMT070204-PSF	0.4	●	★	●	●																
			DCMT11T304-PSF	0.4	●	★	●	●																
			DCMT11T308-PSF	0.8	●	★	●	●																
Finishing to light cutting		PSS	DCMT070204-PSS	0.4	●	★	●	●																
			DCMT070208-PSS	0.8	●	★	●	●																
			DCMT11T304-PSS	0.4	●	★	●	●																
			DCMT11T308-PSS	0.8	●	★	●	●																
			DCMT11T312-PSS	1.2	●	★	●	●																
Finishing to medium cutting		PS	DCMT070202-PS	0.2	●	●	●	●																
			DCMT070204-PS	0.4	●	●	●	●																
			DCMT070208-PS	0.8	●	●	●	●																
			DCMT11T302-PS	0.2	●	●	●	●																
			DCMT11T304-PS	0.4	●	●	●	●																
			DCMT11T308-PS	0.8	●	●	●	●																
			DCMT11T312-PS	1.2	●	●	●	●																

- : Line-up
- (red) : New product
- ★ : To be released in summer 2019

TurnLine - Insert

● : Continuous cutting
 ● : Light interrupted cutting
 ✱ : Heavy interrupted cutting

POSITIVE TYPE



**Rhombic, 55°
with hole
Positive 7°**

P Steel	●●✱●●✱
M Stainless	●●
K Cast iron	●● ●●
N Non-ferrous	
S Superalloys	
H Hard materials	

Application	Chipbreaker	Designation	Corner radius	Coated			
				T9215	T9225	T9115	T9125
Medium cutting		24 DCMT070204-24	0.4	●	★	●	●
		DCMT070208-24	0.8		★		●
		DCMT11T302-24	0.2		★		●
		DCMT11T304-24	0.4	●	★	●	●
		DCMT11T308-24	0.8	●	★	●	●
		PM DCMT070204-PM	0.4	●	★	●	●
		DCMT070208-PM	0.8	●	★	●	●
		DCMT11T304-PM	0.4	●	★	●	●
		DCMT11T308-PM	0.8	●	★	●	●
		DCMT11T312-PM	1.2		★		●

● : Line-up
 ● : New product
 ★ : To be released in summer 2019

● : Continuous cutting
 ● : Light interrupted cutting
 ✱ : Heavy interrupted cutting

TurnLine - Insert

POSITIVE TYPE



Square, 90°
with hole
Positive 7°

P	Steel	●●●✱●●●✱
M	Stainless	●●
K	Cast iron	●● ●●
N	Non-ferrous	
S	Superalloys	
H	Hard materials	

Application	Chipbreaker	Designation	Corner radius	Coated			
				T9215	T9225	T9115	T9125
Finishing to medium cutting		PS SCMT09T304-PS	0.4	●●●●	●●●●		
		SCMT09T308-PS	0.8	●●●●	●●●●		
		SCMT120404-PS	0.4	●●●●	●●●●		
		SCMT120408-PS	0.8	●●●●	●●●●		
		23 SCMT09T308-23	0.8		★	●	
		SCMT120408-23	0.8		★	●	
Medium cutting		24 SCMT070204-24	0.4		★	●	
		SCMT09T304-24	0.4		★	●	
		SCMT09T308-24	0.8	●●●●	★	●●●●	
		SCMT120404-24	0.4		★	●	
		SCMT120408-24	0.8		★	●	
		PM SCMT09T304-PM	0.4	●●●●	★	●●●●	
		SCMT09T308-PM	0.8	●●●●	★	●●●●	
		SCMT120408-PM	0.8	●●●●	★	●●●●	
		SCMT120412-PM	1.2		★	●	

● : Line-up
 ● : New product
 ★ : To be released in summer 2019

TurnLine - Insert

- : Continuous cutting
- : Light interrupted cutting
- ✱ : Heavy interrupted cutting

POSITIVE TYPE



**Square, 90°
with hole
Positive 11°**

P	Steel	●●●✱●●●✱
M	Stainless	●●
K	Cast iron	●● ●●
N	Non-ferrous	
S	Superalloys	
H	Hard materials	

Application	Chipbreaker	Designation	Corner radius	Coated			
				T9215	T9225	T9115	T9125
Finishing to medium cutting		PS SPMT090304-PS	0.4	●	●	●	●
		SPMT090308-PS	0.8	●	●	●	●
		SPMT120404-PS	0.4	●	●	●	●
		SPMT120408-PS	0.8	●	●	●	●
Finishing to medium cutting		23 SPMT090304-23	0.4	✱	●		
		SPMT090308-23	0.8	✱	●		
Medium cutting		24 SPMT090304-24	0.4	✱	●		
		SPMT090308-24	0.8	✱	●		

- : Line-up
- : New product
- ✱ : To be released in summer 2019

- : Continuous cutting
- ◐ : Light interrupted cutting
- ⊛ : Heavy interrupted cutting

TurnLine - Insert

POSITIVE TYPE



Square, 90°
without hole
Positive 11°

Material	Steel	Stainless	Cast iron	Non-ferrous	Superalloys	Hard materials	Coated	Coated	Coated	Coated	Coated	Coated	Coated	Coated	Coated	Coated	Coated	Coated	Coated	Coated	Coated	Coated	
P	●	◐	◐	◐	◐	◐	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
M	●	●					●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
K	●		●				●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
N	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
S	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
H	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●


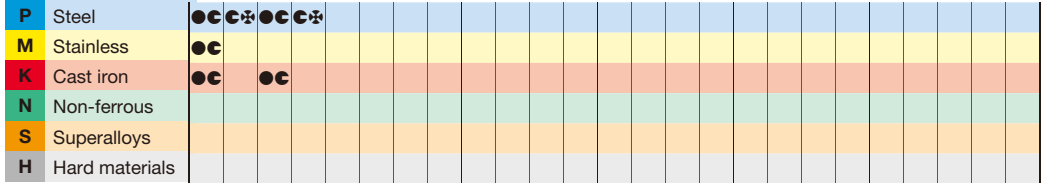
Application	Chipbreaker	Designation	Corner radius	Coated																			
				T9215	T9225	T9115	T9125																
Finishing to medium cutting	23	SPMR090308-23	0.8	★	●																		
		SPMR120304-23	0.4	★	●																		
		SPMR120308-23	0.8	★	●																		






- : Line-up
- : New product
- ★ : To be released in summer 2019

- : Continuous cutting
- : Light interrupted cutting
- ✱ : Heavy interrupted cutting

TurnLine - Insert

POSITIVE TYPE  Triangular, 60° with hole Positive 7°		<table border="1"> <tr><td>P</td><td>Steel</td><td>●●●✱●●●✱</td></tr> <tr><td>M</td><td>Stainless</td><td>●●</td></tr> <tr><td>K</td><td>Cast iron</td><td>●●</td></tr> <tr><td>N</td><td>Non-ferrous</td><td></td></tr> <tr><td>S</td><td>Superalloys</td><td></td></tr> <tr><td>H</td><td>Hard materials</td><td></td></tr> </table>	P	Steel	●●●✱●●●✱	M	Stainless	●●	K	Cast iron	●●	N	Non-ferrous		S	Superalloys		H	Hard materials		
P	Steel	●●●✱●●●✱																			
M	Stainless	●●																			
K	Cast iron	●●																			
N	Non-ferrous																				
S	Superalloys																				
H	Hard materials																				

Application	Chipbreaker	Designation	Corner radius	Coated																		
				T9215	T9225	T9115	T9125															
Finishing		PSF TCMT090204-PSF	0.4	●	★	●	●															
		TCMT110204-PSF	0.4	●	★	●	●															
		TCMT110304-PSF	0.4	●	★	●	●															
		TCMT16T304-PSF	0.4	●	★	●	●															
Finishing to light cutting		PSS TCMT090204-PSS	0.4	●	★	●	●															
		TCMT090208-PSS	0.8	●	★	●	●															
		TCMT110204-PSS	0.4	●	★	●	●															
		TCMT110208-PSS	0.8	●	★	●	●															
		TCMT110304-PSS	0.4	●	★	●	●															
		TCMT110308-PSS	0.8	●	★	●	●															
		TCMT16T304-PSS	0.4	●	★	●	●															
		TCMT16T308-PSS	0.8	●	★	●	●															
		TCMT16T312-PSS	1.2	●	★	●	●															
Finishing to medium cutting		PS TCMT110202-PS	0.2	●	●	●	●															
		TCMT110204-PS	0.4	●	●	●	●															
		TCMT110208-PS	0.8	●	●	●	●															
		TCMT110302-PS	0.2	●	●	●	●															
		TCMT110304-PS	0.4	●	●	●	●															
		TCMT110308-PS	0.8	●	●	●	●															
		TCMT16T302-PS	0.2	●	●	●	●															
		TCMT16T304-PS	0.4	●	●	●	●															
		TCMT16T308-PS	0.8	●	●	●	●															

- : Line-up
- : New product
- ★ : To be released in summer 2019

T9200SERIES

TUNGALOY

- : Continuous cutting
- ◐ : Light interrupted cutting
- ◑ : Heavy interrupted cutting

TurnLine - Insert

POSITIVE TYPE



Triangular, 60°
with hole
Positive 7°

P Steel	●●●●●●●●●●●●●●●●
M Stainless	●●●●●●●●●●●●●●●●
K Cast iron	●●●●●●●●●●●●●●●●
N Non-ferrous	●●●●●●●●●●●●●●●●
S Superalloys	●●●●●●●●●●●●●●●●
H Hard materials	●●●●●●●●●●●●●●●●

Application	Chipbreaker	Designation	Corner radius	Coated				TCMT090204-23	TCMT16T308-23	TCMT090204-24	TCMT110204-24	TCMT110208-24	TCMT16T304-24	TCMT16T308-24	TCMT110204-PM	TCMT110208-PM	TCMT16T304-PM	TCMT16T308-PM	TCMT16T312-PM	
				T9215	T9225	T9115	T9125													
Finishing to medium cutting		TCMT090204-23	0.4		★	●														
		TCMT16T308-23	0.8		★	●														
Medium cutting		TCMT090204-24	0.4	●	★	●	●													
		TCMT110204-24	0.4	●	★	●	●													
		TCMT110208-24	0.8		★	●	●													
		TCMT16T304-24	0.4	●	★	●	●													
	TCMT16T308-24	0.8	●	★	●	●														
		TCMT110204-PM	0.4	●	★	●	●													
		TCMT110208-PM	0.8	●	★	●	●													
		TCMT16T304-PM	0.4	●	★	●	●													
TCMT16T308-PM		0.8	●	★	●	●														
		TCMT16T312-PM	1.2	●	★	●	●													

- : Line-up
- : New product
- ★ : To be released in summer 2019

TurnLine - Insert

- : Continuous cutting
- ◐ : Light interrupted cutting
- ◑ : Heavy interrupted cutting

POSITIVE TYPE



Triangular, 60°
with hole
Positive 11°

P	Steel	●●●●●●●●●●●●●●●●●●●●●●●●●●●●
M	Stainless	●●●●●●●●●●
K	Cast iron	●●●●●●●●●●
N	Non-ferrous	●●●●●●●●●●●●●●●●●●●●●●●●●●●●
S	Superalloys	●●●●●●●●●●●●●●●●●●●●●●●●●●●●
H	Hard materials	●●●●●●●●●●●●●●●●●●●●●●●●●●●●

Application	Chipbreaker	Designation	Corner radius	Coated																			
				T9215	T9225	T9115	T9125																
Finishing		TPSF TPMT090204-PSF	0.4	●	★	●	●																
		TPMT110204-PSF	0.4	●	★	●	●																
		TPMT110304-PSF	0.4	●	★	●	●																
		TPMT130304-PSF	0.4	●	★	●	●																
		TPMT16T304-PSF	0.4	●	★	●	●																
Finishing to light cutting		TPSS TPMT090204-PSS	0.4	●	★	●	●																
		TPMT090208-PSS	0.8	●	★	●	●																
		TPMT110204-PSS	0.4	●	★	●	●																
		TPMT110208-PSS	0.8	●	★	●	●																
		TPMT110304-PSS	0.4	●	★	●	●																
		TPMT110308-PSS	0.8	●	★	●	●																
		TPMT130304-PSS	0.4	●	★	●	●																
		TPMT130308-PSS	0.8	●	★	●	●																
		TPMT16T304-PSS	0.4	●	★	●	●																
		TPMT16T308-PSS	0.8	●	★	●	●																
Finishing to medium cutting		TPS TPMT090202-PS	0.2	●	●	●	●																
		TPMT090204-PS	0.4	●	●	●	●																
		TPMT090208-PS	0.8	●	●	●	●																
		TPMT110202-PS	0.2	●	●	●	●																
		TPMT110204-PS	0.4	●	●	●	●																
		TPMT110208-PS	0.8	●	●	●	●																
		TPMT110304-PS	0.4	●	●	●	●																
		TPMT110308-PS	0.8	●	●	●	●																
		TPMT130302-PS	0.2	●	●	●	●																
		TPMT130304-PS	0.4	●	●	●	●																
		TPMT130308-PS	0.8	●	●	●	●																
		TPMT16T304-PS	0.4	●	●	●	●																
		TPMT16T308-PS	0.8	●	●	●	●																

- : Line-up
- : New product
- ★ : To be released in summer 2019

● : Continuous cutting
 ● : Light interrupted cutting
 ✱ : Heavy interrupted cutting

TurnLine - Insert

POSITIVE TYPE



Triangular, 60° with hole Positive 11°

P	Steel	●●✱●●✱
M	Stainless	●●
K	Cast iron	●● ●●
N	Non-ferrous	
S	Superalloys	
H	Hard materials	

Application	Chipbreaker	Designation	Corner radius	Coated														
				T9215	T9225	T9115	T9125											
Finishing to medium cutting		23 TPMT090204-23	0.4	★	●													
		TPMT110204-23	0.4	★	●													
		TPMT130304-23	0.4	★	●													
		TPMT130308-23	0.8	★	●													
		TPMT16T308-23	0.8	★	●													
Medium cutting		24 TPMT090204-24	0.4	★	●													
		TPMT110204-24	0.4	★	●													
		TPMT130304-24	0.4	★	●													
		TPMT130308-24	0.8	★	●													
		TPMT16T304-24	0.4	★	●													
		TPMT16T308-24	0.8	★	●													
		PM TPMT110204-PM	0.4	●	★	●	●											
		TPMT110208-PM	0.8	●	★	●	●											
		TPMT110304-PM	0.4	●	★	●	●											
		TPMT110308-PM	0.8	●	★	●	●											
		TPMT130304-PM	0.4		★	●												
		TPMT130308-PM	0.8		★	●												
		TPMT16T304-PM	0.4	★	●													
		TPMT16T308-PM	0.8	★	●													
		TPMT16T312-PM	1.2	★	●													

● : Line-up
 ● : New product
 ★ : To be released in summer 2019

TurnLine - Insert

- : Continuous cutting
- ◐ : Light interrupted cutting
- ✱ : Heavy interrupted cutting

POSITIVE TYPE



Triangular, 60°
without hole
Positive 11°

Material	Steel	Stainless	Cast iron	Non-ferrous	Superalloys	Hard materials
P	●●●✱●●●✱	●●	●●	●●	●●	●●
M	●●	●●	●●	●●	●●	●●
K	●●	●●	●●	●●	●●	●●
N	●●	●●	●●	●●	●●	●●
S	●●	●●	●●	●●	●●	●●
H	●●	●●	●●	●●	●●	●●

Application	Chipbreaker	Designation	Corner radius	Coated			
				T9215	T9225	T9115	T9125
Finishing to medium cutting		PS TPMR110304-PS	0.4	●	●	●	●
		TPMR110308-PS	0.8	●	●	●	●
		TPMR160304-PS	0.4	●	●	●	●
		TPMR160308-PS	0.8	●	●	●	●
Finishing to medium cutting		23 TPMR110304-23	0.4	●	★	●	●
		TPMR110308-23	0.8	●	★	●	●
		TPMR160304-23	0.4	●	★	●	●
		TPMR160308-23	0.8	●	★	●	●
Medium cutting		24 TPMR110304-24	0.4	●	★	●	●
		TPMR110308-24	0.8	●	★	●	●
		TPMR160304-24	0.4	●	★	●	●
		TPMR160308-24	0.8	●	★	●	●

- : Line-up
- : New product
- ★ : To be released in summer 2019

TurnLine - Insert





● : Continuous cutting
 ● : Light interrupted cutting
 ✱ : Heavy interrupted cutting

POSITIVE TYPE

P	Steel	● ● ● ✱ ● ● ● ✱
M	Stainless	● ●
K	Cast iron	● ● ● ●
N	Non-ferrous	
S	Superalloys	
H	Hard materials	

Rhombic, 35°
with hole
Positive 5°



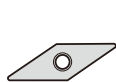
Application	Chipbreaker	Designation	Corner radius	Coated															
				T9215	T9225	T9115	T9125												
Finishing	PSF 	VBMT110304-PSF	0.4	●	★	●	●												
		VBMT160404-PSF	0.4	●	★	●	●												
	PF 	VBMT160408-PF	0.8		★	●													
Finishing to light cutting	PSS 	VBMT110304-PSS	0.4	●	★	●	●												
		VBMT110308-PSS	0.8	●	★	●	●												
		VBMT160404-PSS	0.4	●	★	●	●												
		VBMT160408-PSS	0.8	●	★	●	●												
		VBMT160412-PSS	1.2	●	★	●	●												
Finishing to medium cutting	PS 	VBMT110302-PS	0.2	●	★	●	●												
		VBMT110304-PS	0.4	●	★	●	●												
		VBMT110308-PS	0.8	●	★	●	●												
		VBMT160402-PS	0.2	●	★	●	●												
		VBMT160404-PS	0.4	●	★	●	●												
		VBMT160408-PS	0.8	●	★	●	●												

● : Line-up
 ● : New product
 ★ : To be released in summer 2019

TurnLine - Insert


● : Continuous cutting
 ● : Light interrupted cutting
 ✱ : Heavy interrupted cutting

POSITIVE TYPE



Rhombic, 35°
 with hole
 Positive 5°

P	Steel	●●●✱●●●✱																					
M	Stainless	●●																					
K	Cast iron	●●	●●																				
N	Non-ferrous																						
S	Superalloys																						
H	Hard materials																						

Application	Chipbreaker	Designation	Corner radius	Coated																		
				T9215	T9225	T9115	T9125															
Medium cutting	24	VBMT160404-24	0.4	●	★	●	●															
		VBMT160408-24	0.8	●	★	●	●															
																						

● : Line-up
 ● : New product
 ★ : To be released in summer 2019

● : Continuous cutting
 ● : Light interrupted cutting
 ✱ : Heavy interrupted cutting

TurnLine - Insert



**Trigon, 80°
with hole
Positive 11°**

POSITIVE TYPE			P	M	K	N	S	H															
			Steel	Stainless	Cast iron	Non-ferrous	Superalloys	Hard materials															
Application	Chipbreaker	Designation	Corner radius	Coated																			
				T9215	T9225	T9115	T9125																
Heavy cutting		WPMT090725ZPR-ML	2.5	●	★	●	●																
		WPMT090725ZPL-ML	2.5	●	★	●	●																

● : Line-up
 ● : New product
 ★ : To be released in summer 2019

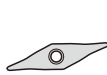
T9200SERIES

TUNGALOY

- : Continuous cutting
- ◐ : Light interrupted cutting
- ✱ : Heavy interrupted cutting



TurnLine - Insert

POSITIVE TYPE



Rhombic, 25°
with hole
Positive 7°

P Steel	●●◐✱●●◐✱
M Stainless	●●
K Cast iron	●● ●●
N Non-ferrous	
S Superalloys	
H Hard materials	

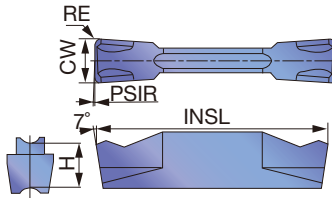
Application	Chipbreaker	Designation	Corner radius	Coated																				
				T9215	T9225	T9115	T9125																	
Finishing to medium cutting		ZF YWMT11T202-ZF	0.2		★	●																		
		YWMT11T204-ZF	0.4		★	●																		
		YWMT16T302-ZF	0.2		★	●																		
		YWMT16T304-ZF	0.4		★	●																		
		YWMT16T308-ZF	0.8		★	●																		
		ZM YWMT11T204-ZM	0.4		★	●																		
		YWMT16T304-ZM	0.4		★	●																		
		YWMT16T308-ZM	0.8		★	●																		

- : Line-up
- : New product
- ★ : To be released in summer 2019

TurnLine - Inserts for grooving and parting off

DGM

External grooving and parting off, 2 corner

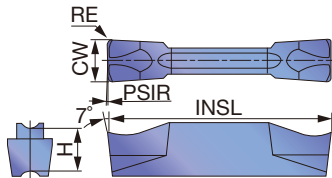


Designation	Insert seat size	CW \pm 0.05	RE	Coated		INSL	H	PSIRR/L
				T9225	T9125			
DGM2-020	2	2	0.2	★	●	20	5	0
DGM3-020	3	3	0.2	★	●	20	5	0
DGM4-030	4	4	0.3	★	●	20	5	0
DGM5-030	5	5	0.3	★	●	25	5.5	0
DGM6-030	6	6	0.3	★	●	25	5.5	0
DGM8-040	8	8	0.4	★	●	30	6.7	0

● : Line-up
★ : To be released in summer 2019

DGS

External grooving and parting off, 2 corner

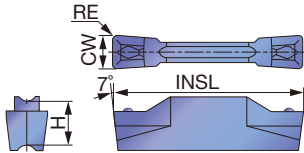


Designation	Insert seat size	CW \pm 0.05	RE	Coated		INSL	H	PSIRR/L
				T9225	T9125			
DGS2-020	2	2	0.2	★	●	20	5	0
DGS3-020	3	3	0.2	★	●	20	5	0
DGS4-030	4	4	0.3	★	●	20	5	0
DGS5-030	5	5	0.3	★	●	25	5.5	0
DGS6-030	6	6	0.3	★	●	25	5.5	0

● : Line-up
★ : To be released in summer 2019

DTE

External, grooving and turning

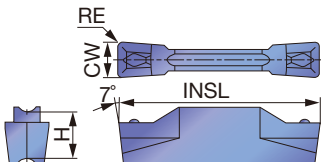


Designation	Insert seat size	CW \pm 0.02	RE	Coated		INSL	H
				T9225	T9125		
DTE265-015	3	2.65	0.15	★	●	20	5
DTE300-020	3	3	0.2	★	●	20	5
DTE300-040	3	3	0.4	★	●	20	5
DTE315-015	3	3.15	0.15	★	●	20	5
DTE400-040	4	4	0.4	★	●	20	5
DTE400-080	4	4	0.8	★	●	20	5
DTE415-015	4	4.15	0.15	★	●	20	5
DTE478-055	5	4.78	0.55	★	●	25	5.5
DTE500-040	5	5	0.4	★	●	25	5.5
DTE500-080	5	5	0.8	★	●	25	5.5
DTE515-015	5	5.15	0.15	★	●	25	5.5
DTE600-080	6	6	0.8	★	●	25	5.5
DTE600-120	6	6	1.2	★	●	25	5.5
DTE800-080	8	8	0.8	★	●	30	6.7
DTE800-120	8	8	1.2	★	●	30	6.7

● : Line-up

★ : To be released in summer 2019

External, grooving and turning



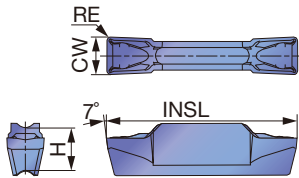
Designation	Insert seat size	CW \pm 0.05	RE	Coated		INSL	H
				T9225	T9125		
DTE3-040	3	3	0.4	★	●	20	5
DTE4-040	4	4	0.4	★	●	20	5

● : Line-up

★ : To be released in summer 2019

DTX

External, internal, face grooving and traversing



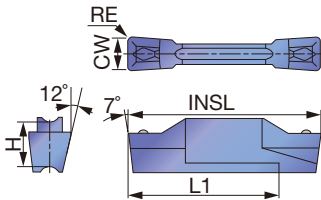
Designation	Insert seat size	CW \pm 0.05	RE	Coated		INSL	H
				T9225	T9125		
DTX3-030	3	3	0.3	★	●	20	5
DTX4-040	4	4	0.4	★	●	20	5
DTX5-040	5	5	0.4	★	●	25	5.5

● : Line-up

★ : To be released in summer 2019

DTF

Face grooving and traversing



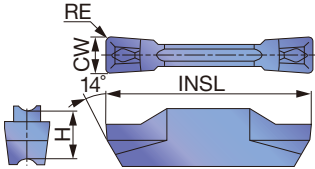
Designation	Insert seat size	CW \pm 0.05	RE	Coated				INSL	H	L1
				T9225		T9125				
				R	L	R	L			
DTF3-040-R/L	3	3	0.4	★	★	●	●	20	5	16
DTF4-040-R/L	4	4	0.4	★	★	●	●	20	5	16

● : Line-up

★ : To be released in summer 2019

DTI

Internal grooving and turning (for high-precision machining)

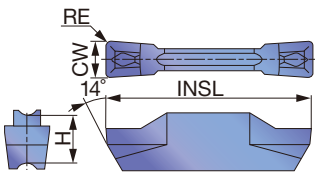


Designation	Insert seat size	CW \pm 0.02	RE	Coated		INSL	H
				T9225	T9125		
DTI300-040	3	3	0.4	★	●	20	5
DTI400-040	4	4	0.4	★	●	20	5
DTI400-080	4	4	0.8	★	●	20	5
DTI500-040	5	5	0.4	★	●	25	5.5
DTI500-080	5	5	0.8	★	●	25	5.5
DTI600-080	6	6	0.8	★	●	25	5.5
DTI600-120	6	6	1.2	★	●	25	5.5
DTI800-080	8	8	0.8	★	●	30	5.7
DTI800-120	8	8	1.2	★	●	30	6.7

● : Line-up

★ : To be released in summer 2019

Internal grooving and turning



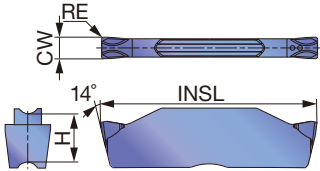
Designation	Insert seat size	CW \pm 0.05	RE	Coated		INSL	H
				T9225	T9125		
DTI3-040	3	3	0.4	★	●	20	5
DTI4-040	4	4	0.4	★	●	20	5

● : Line-up

★ : To be released in summer 2019

DGIM

Small diameter internal grooving



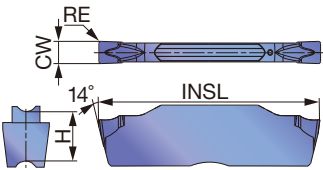
Designation	Insert seat size	CW \pm 0.05	RE	Coated		INSL	H
				T9225	T9125		
DGIM2-020	2	2	0.2	★	●	20	5

● : Line-up

★ : To be released in summer 2019

DGIS

Small diameter internal grooving



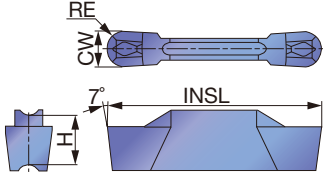
Designation	Insert seat size	W \pm 0.05	RE	Coated		INSL	H
				T9225	T9125		
DGIS2-020	2	2	0.2	★	●	20	5

● : Line-up

★ : To be released in summer 2019

DTR

Profiling and undercutting (for high-precision machining)

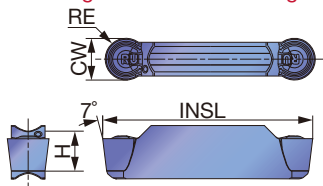


Designation	Insert seat size	CW \pm 0.02	RE	Coated		INSL	H
				T9225	T9125		
DTR300-150	3	3	1.5	★	●	20	5
DTR400-200	4	4	2	★	●	20	5
DTR478-239	5	4.78	2.39	★	●	25	5.5
DTR500-250	5	5	2.5	★	●	25	5.5
DTR600-300	6	6	3	★	●	25	5.5

● : Line-up

★ : To be released in summer 2019

Profiling and undercutting



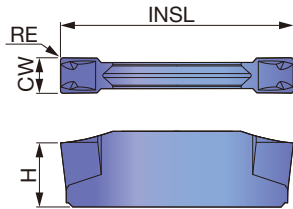
Designation	Insert seat size	CW \pm 0.05	RE	Coated		INSL	H
				T9225	T9125		
DTR3-150	3	3	1.5	★	●	20	5
DTR4-200	4	4	2	★	●	20	5
DTR5-250	5	5	2.5	★	●	25	5.5
DTR6-300	6	6	3	★	●	25	5.5
DTR8-400	8	8	4	★	●	30	5.7

● : Line-up

★ : To be released in summer 2019

WGE

For general parting off and grooving

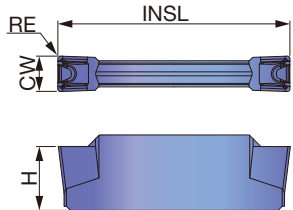


Designation	CW ^{+0.1} ₀	RE	Coated		INSL	H
			T9225	T9125		
WGE20	2	0.2	★	●	20	4.7
WGE30	3	0.2	★	●	20	5.5
WGE40	4	0.2	★	●	25	5.7
WGE50	5	0.2	★	●	25	5.9

● : Line-up
★ : To be released in summer 2019

WGT

Traversing (Grooving and parting off)

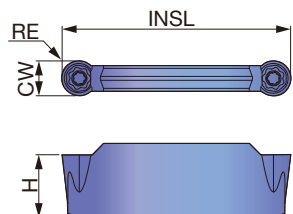


Designation	CW ^{+0.1} ₀	RE	Coated		INSL	H
			T9225	T9125		
WGT30	3	0.4	★	●	20	5.5
WGT40	4	0.4	★	●	25	5.7
WGT50	5	0.4	★	●	25	5.9

● : Line-up
★ : To be released in summer 2019

WGR

Profiling (Full radius)

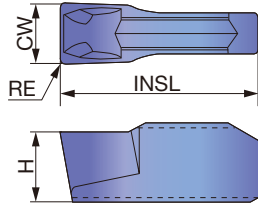


Designation	CW ^{+0.1} ₀	RE	Coated		INSL	H
			T9225	T9125		
WGR30	3	1.5	★	●	20	5.5
WGR40	4	2	★	●	25	5.7

● : Line-up
★ : To be released in summer 2019

GE

Grooving and parting off

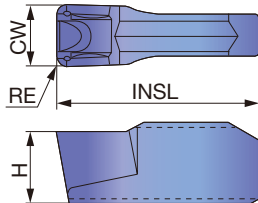


Designation	CW ^{+0.1} ₀	RE	Coated		INSL	H
			T9225	T9125		
GE30	3	0.2	★	●	10	3.5
GE40	4	0.2	★	●	10	4
GE50	5	0.2	★	●	12	4.5

● : Line-up
★ : To be released in summer 2019

GT

Traversing (Grooving and parting off)

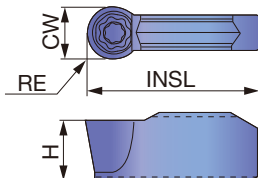


Designation	CW ^{+0.1} ₀	RE	Coated		INSL	H
			T9225	T9125		
GT50	5	0.4	★	●	12	4.5

● : Line-up
★ : To be released in summer 2019

GR

Profiling (Full radius)

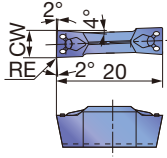


Designation	CW ^{+0.1} ₀	RE	Coated		INSL	H
			T9225	T9125		
GR40	4	2.0	★	●	10	4
GR50	5	2.5	★	●	12	4.5

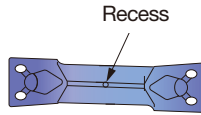
● : Line-up
★ : To be released in summer 2019

FLEX(R/L)

External, face and internal grooving



Right hand (R) shown.



Left hand inserts are identified with a recessed dot.

Designation	CW \pm 0.05	RE	Coated			
			T9225		T9125	
			R	L	R	L
FLEX50R/L	5	0.4	★	★	●	●

● : Line-up

★ : To be released in summer 2019

Standard cutting conditions

For Negative Inserts

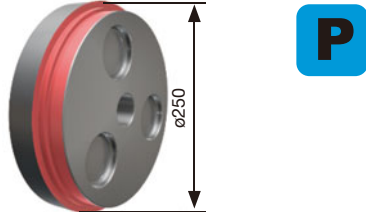
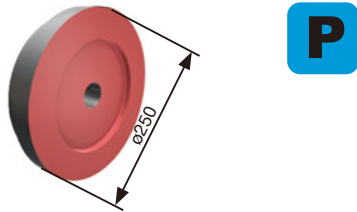
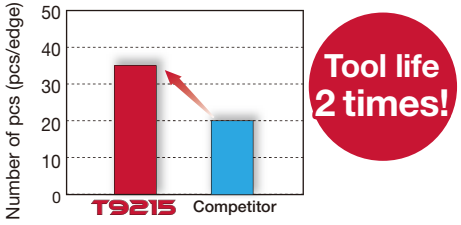
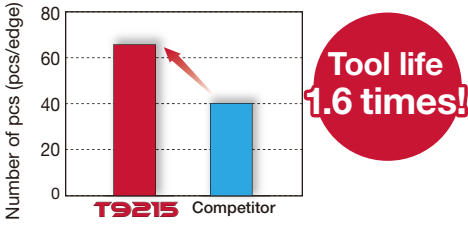
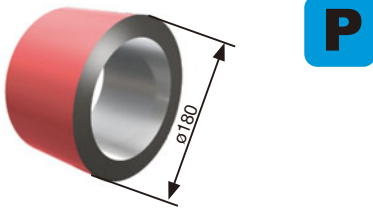
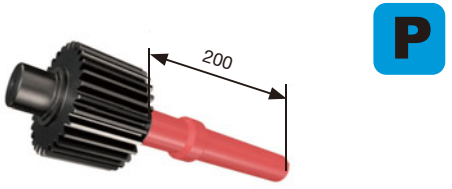
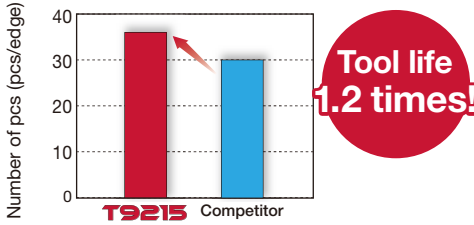
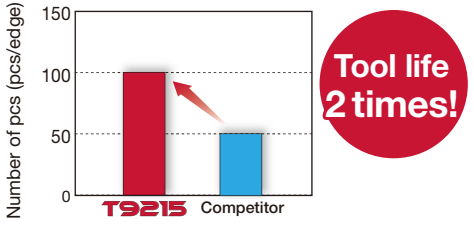
ISO	Operation	Chipbreaker	Grades	Depth of cut ap (mm)	Feed f (mm/rev)	Cutting speed: Vc (m/min)		
						Low carbon steels, alloy steels	Medium carbon steels, alloy steels	High carbon steels, alloy steels
P	Finishing	TSF	T9215	0.2 - 1.5	0.08 - 0.4	150 - 400	150 - 400	120 - 300
			T9225			120 - 300	120 - 300	100 - 250
		AS	T9215	0.5 - 2.0	0.2 - 0.6	150 - 400	150 - 400	120 - 300
			T9225			120 - 300	120 - 300	100 - 250
		FW	T9215	0.5 - 1.5	0.2 - 0.4	150 - 400	150 - 400	120 - 300
			T9225			120 - 300	120 - 300	100 - 250
	Medium cutting	TM	T9215	1 - 5	0.2 - 0.5	150 - 400	150 - 400	120 - 300
			T9225			120 - 300	120 - 300	100 - 250
		AM	T9215	1.5 - 4.5	0.2 - 0.6	150 - 400	150 - 400	120 - 300
			T9225			120 - 300	120 - 300	100 - 250
		SW	T9215	0.5 - 2	0.3 - 0.6	150 - 400	150 - 400	120 - 300
			T9225			120 - 300	120 - 300	100 - 250
Medium to heavy cutting	TH	T9215	3 - 6	0.3 - 0.6	150 - 400	150 - 400	120 - 300	
			T9225			120 - 300	120 - 300	100 - 250
M	Finishing	TSF	T9215	0.2 - 1.5	0.08 - 0.4	Stainless steel		
			T9225		0.08 - 0.4	100 - 250	100 - 250	100 - 250
	Medium cutting	TM	T9215	1 - 5	0.2 - 0.5	100 - 250	100 - 250	100 - 250
			T9225		0.2 - 0.5	100 - 250	100 - 250	100 - 250
K	Finishing	TSF	T9215	0.2 - 1.5	0.08 - 0.4	Cast iron		
			T9225		0.08 - 0.4	140 - 500	140 - 500	140 - 500
	Medium cutting	TM	T9215	1 - 5	0.2 - 0.5	140 - 500	140 - 500	140 - 500
			T9225		0.2 - 0.5	140 - 500	140 - 500	140 - 500

For Positive Inserts

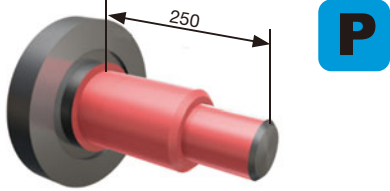
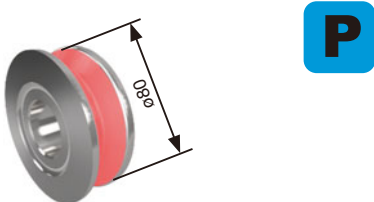
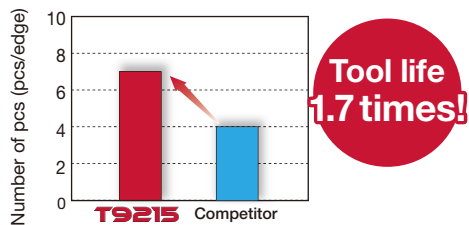
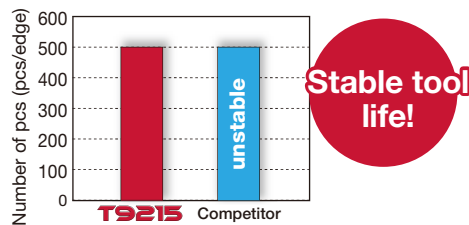
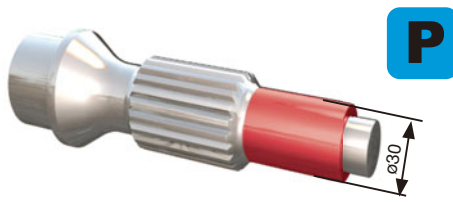
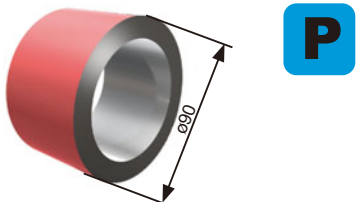
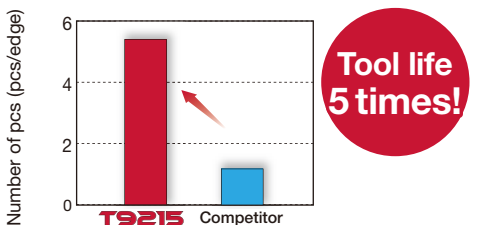
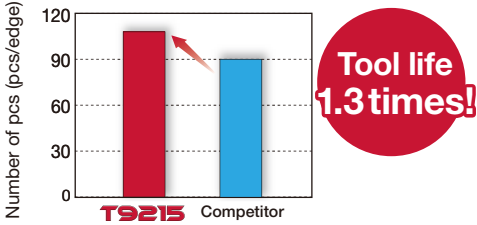
ISO	Operation	Chipbreaker	Grades	Depth of cut ap (mm)	Feed f (mm/rev)	Cutting speed: Vc (m/min)				
						Low carbon steels, alloy steels	Medium carbon steels, alloy steels	High carbon steels, alloy steels		
P	Finishing	PSF	T9215	0.1 - 0.5	0.05 - 0.3	120 - 350	100 - 350	80 - 250		
			T9225			100 - 300	80 - 300	80 - 250		
	Medium	PS	T9215	0.5 - 2.5	0.08 - 0.3	120 - 300	100 - 300	80 - 250		
			T9225			100 - 300	80 - 250	80 - 200		
			T9215			0.5 - 2	0.15 - 0.4	150 - 350	150 - 350	120 - 300
	Medium to heavy cutting	PM	T9215	1 - 3	0.15 - 0.3	100 - 300	100 - 300	80 - 250		
T9225			120 - 300			100 - 300	80 - 200			
M	Finishing	PSF	T9215	0.1 - 0.5	0.05 - 0.3		50 - 200			
			T9225				50 - 200			
	Medium	PS	T9215	0.5 - 2.5	0.08 - 0.3		50 - 200			
			T9225				50 - 200			
K	Finishing	PSF	T9215	0.1 - 0.5	0.05 - 0.3			100 - 350		
			T9225		0.05 - 0.3			100 - 350		
	Medium	PS	T9215	0.5 - 2.5	0.08 - 0.3			100 - 350		
			T9225		0.08 - 0.3			100 - 350		



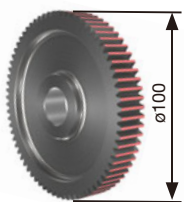
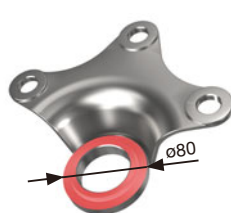
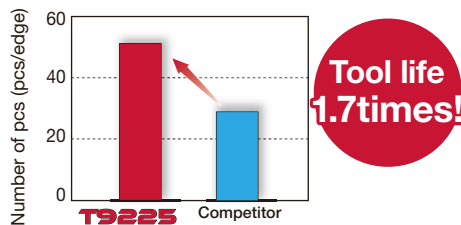
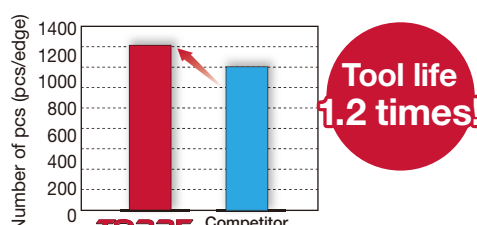
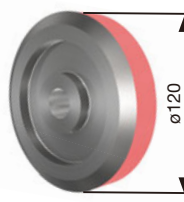
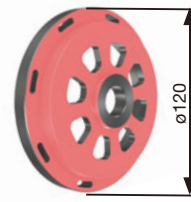
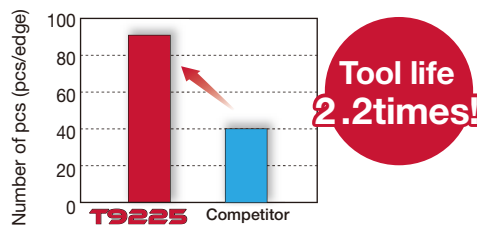
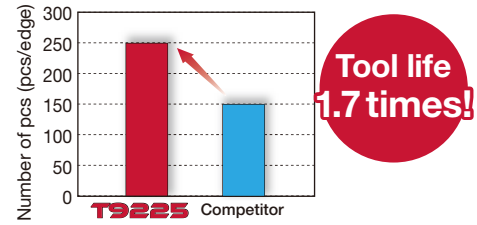
PRACTICAL EXAMPLES

Workpiece type		Automotive part	Automotive part
Insert		WNMG080408-AM	WNMG080408-AM
Grade		T9215	T9215
		S55C / C55	S55C / C55
			
Cutting conditions	Cutting speed: V_c (m/min)	300	300
	Feed : f (mm/rev)	0.25	0.3
	Depth of cut : a_p (mm)	1.5	1.0
	Coolant	Wet	Wet
Results		 <p>Our newest grade, T9215, has outstanding wear resistance and extended tool life by 2.0 times.</p>	 <p>Our newest grade, T9215, has outstanding wear resistance and extended tool life by 1.6 times.</p>
Workpiece type		Carrier	Top shaft
Insert		WNMG080408-SW	CNMG120408-AM
Grade		T9215	T9215
		S45C / C45	Alloy steel
Workpiece material			
Cutting conditions	Cutting speed: V_c (m/min)	300	250
	Feed : f (mm/rev)	0.4	0.25 - 0.35
	Depth of cut : a_p (mm)	1.0	2.0
	Coolant	Wet	Wet
Results		 <p>Combination of T9215 and the latest Wiper series provides a stable, longer tool life of about 1.2 times compared to the current product.</p>	 <p>T9215 is superior in wear resistance and fracture resistance, providing twice the stable long life as the current product!</p>

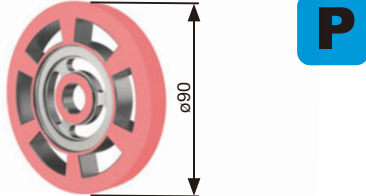
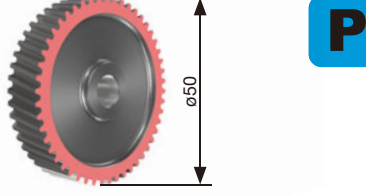
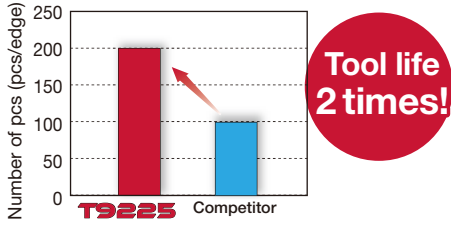
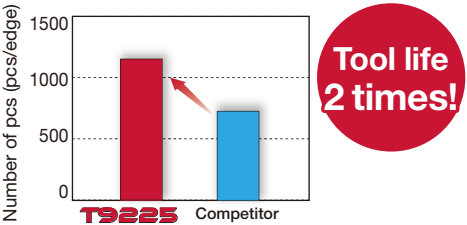
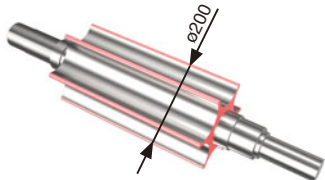
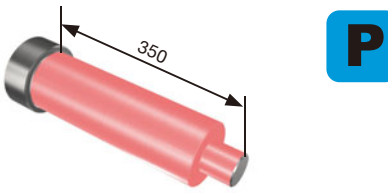
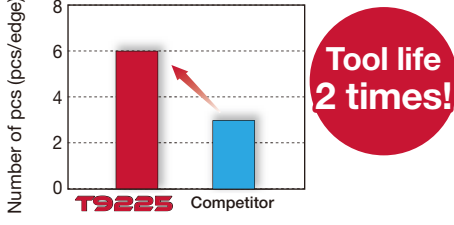
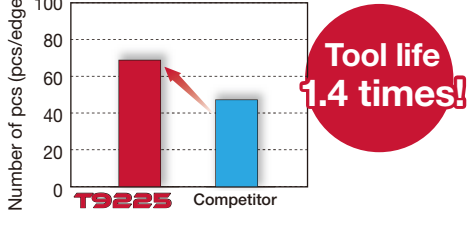
PRACTICAL EXAMPLES

Workpiece type		Shaft	Bearing part	
Insert		CNMG120408-TM	DNMG150408-AM	
Grade		T9215	T9215	
		SCM440 / 42CrMo4	SUJ2 / B1	
				
Cutting conditions	Cutting speed: V_c (m/min)	250	250	
	Feed : f (mm/rev)	0.3	0.25 - 0.35	
	Depth of cut : a_p (mm)	3.5	0.25	
	Coolant	Wet	Wet	
Results	 <p>Tool life 1.7 times!</p> <p>T9215 has excellent balance between wear resistance and chipping resistance, achieving a stable long life of about 1.7 times that of the current product!</p>		 <p>Stable tool life!</p> <p>T9215 decreases the occurrence of sudden breakage and achieves stable processing!</p>	
Workpiece type		Shaft	Pipe	
Insert		DNMG150412-TM	DNMG150608-TM	
Grade		T9215	T9215	
		SCM440 / 42CrMo4	SM490 / E355D	
Workpiece material				
Cutting conditions	Cutting speed: V_c (m/min)	140	200	
	Feed : f (mm/rev)	0.38	0.35	
	Depth of cut : a_p (mm)	4mm x 6 pass	3	
	Coolant	Wet	Wet	
Results	 <p>Tool life 5 times!</p> <p>T9215 demonstrates exceptional wear resistance, combined with the optimization of the tool path, achieves a stable long life of about 5 times that of the current product!</p>		 <p>Tool life 1.3 times!</p> <p>With exceptional wear resistance and optimization of processing conditions, T9215 achieves about 1.3 times longer tool life than the current product! In addition, we succeeded in greatly shortening machining time!</p>	

PRACTICAL EXAMPLES

Workpiece type		Gear parts	Automotive parts	
Insert		VNMG160408-TM	CCMT09T304-PS	
Grade		T9225	T9225	
		SCM415	SCr420H	
				
		P	P	
Cutting conditions	Cutting speed: V_c (m/min)	300	150	
	Feed : f (mm/rev)	0.3	0.2 - 0.3	
	Depth of cut : a_p (mm)	1.5	1 - 2.5	
	Coolant	Wet	Wet	
Results	 <p>Tool life 1.7times!</p> <p>T9225 improved tool life by 1.7x and provided stability over that of the competitor's thanks to its superior fracture toughness.</p>		 <p>Tool life 1.2 times!</p> <p>T9225 provided better wear and fracture resistance and stability over the competitor, improving tool life by 1.2x.</p>	
Workpiece type		Pulley parts	Clutch parts	
Insert		WNMG080408-TM	WNMG080412-TM	
Grade		T9225	T9225	
		SCM415	SCM420	
Workpiece material				
		P	P	
Cutting conditions	Cutting speed: V_c (m/min)	210	220	
	Feed : f (mm/rev)	0.25	0.3	
	Depth of cut : a_p (mm)	1.5	1.0	
	Coolant	Wet	Wet	
Results	 <p>Tool life 2.2times!</p> <p>T9225 provided better wear and fracture resistance and stability over the competitor, improving tool life by 2.2x.</p>		 <p>Tool life 1.7 times!</p> <p>T9225 improved tool life by 1.7x and provided stability over that of the competitor's thanks to its superior fracture toughness.</p>	

PRACTICAL EXAMPLES

Workpiece type		Rotor parts	Ring gear parts
Insert		WNMG080412-TM	WNMG080408-TM
Grade		T9225	T9225
		S10C	SCr420
			
Cutting conditions	Cutting speed: V_c (m/min)	400	280
	Feed : f (mm/rev)	0.45	0.25
	Depth of cut : a_p (mm)	1.5	1.0
	Coolant	Wet	Wet
Results		 <p>Tool life 2 times!</p> <p>T9225 provided outstanding stability over the competitor due to its superior fracture toughness, doubling tool life.</p>	 <p>Tool life 2 times!</p> <p>T9225 provided better wear and fracture resistance and stability over the competitor, doubling tool life.</p>
Workpiece type		Machine parts	Shaft parts
Insert		CNMG120408-TM	DNMG150408-AM
Grade		T9225	T9225
		S35C	SCM440
Workpiece material			
Cutting conditions	Cutting speed: V_c (m/min)	150	180
	Feed : f (mm/rev)	0.25 - 0.4	0.3
	Depth of cut : a_p (mm)	0.5 - 1.5	1.0
	Coolant	Wet	Wet
Results		 <p>Tool life 2 times!</p> <p>T9225 doubled tool life and provided stability over the competitor during heavy interrupted cutting thanks to its superior fracture toughness.</p>	 <p>Tool life 1.4 times!</p> <p>T9225 provided better wear and fracture resistance and stability over the competitor, improving tool life by 1.4x.</p>

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