

# New Product Announcement

Feb 9<sup>th</sup>, 2023\_NPAI 2302



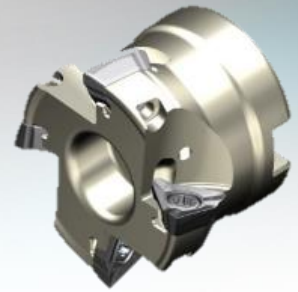
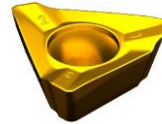
## New 90° shoulder milling

New technology developed with three cutting edges by YG1 can be provided very smooth cutting and exceptional performance for high productivity





Newly developed 90° shoulder mill products with exceptional performance and provides smooth cutting and economical insert



## 90° shoulder milling



YG1 newly developed and launched 3-corner 90° shoulder milling products designed for facing, slotting, side milling as well as various milling applications. The 3-corner positive insert is designed with high-helix cutting edge to reduce cutting force and provide smooth cutting, the high positive rake angle geometry provides optimized chip curl and minimized burrs, the new designed curved cutting edge can be minimized mismatching at step machining. The wide wiper edge will provide better surface finish on the floor of the work-piece.

The new grade YG612 which is developed with a Multi-Nano PVD coating improves the performance and offers longer tool life compared to existing YG602.

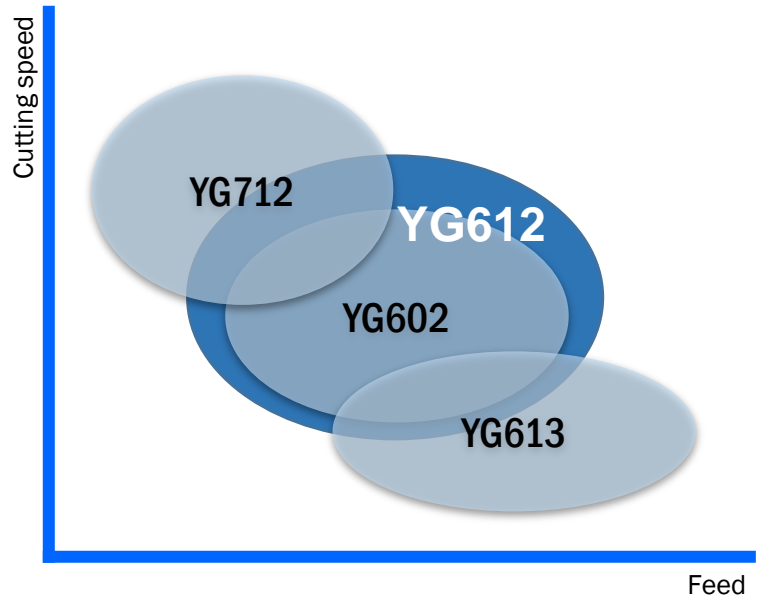
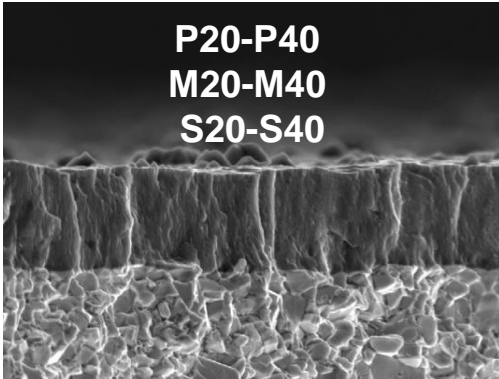
The new combination of newly developed YG612 grade with the new 3 cutting edges 90° shoulder milling inserts, these products will provide customers with superior performance when machining a variety of materials.



## YG612 GRADE



### Grade Features



- Sub-micron substrate maintaining a stable balance of wear resistance and toughness.
- Improving the adhesion properties through a new specialized PVD coating technology and improves oxidation resistance for extended and predictable tool life
- Significant improvement in chipping resistance and wear resistance through the application of Multi-Nano layer coating
- Easily identified used cutting edges with gold color

→ YG612 grade was able to get more than 20% better tool life than the existing grade in various materials from carbon steel to mold steel at customers.



## YG612 GRADE

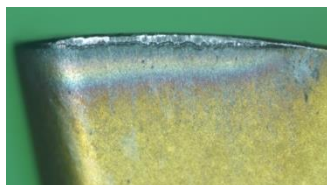
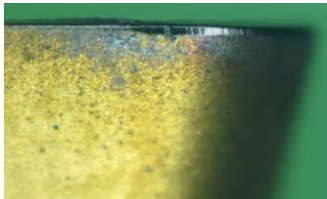
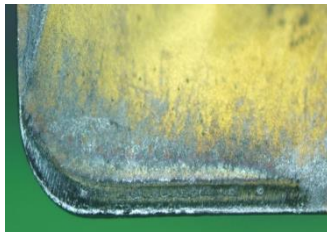


### Test of Internal machining performance

- Test method: Wear resistance
- Work-piece material: Alloy steel, HB220
- Cutting condition: Cutting speed( $V_c= 220\text{m/min}$ ), Feed( $F_z = 0.12\text{mm/tooth}$ ), Depth of cut( $A_p= 3\text{mm}$ ), Cutting width( $A_e= 90\text{mm}$ ), Dry
- Cutting operation: Face milling
- Used tool:  
Insert:: TPKT160508R-GN YG612  
Cutter: F90-TP16-D125Z10S4
- Test result

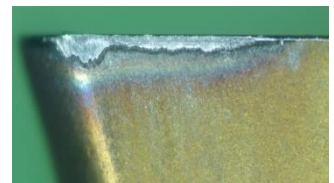
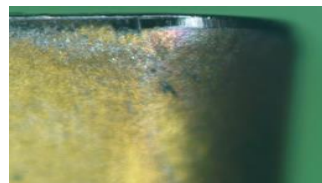
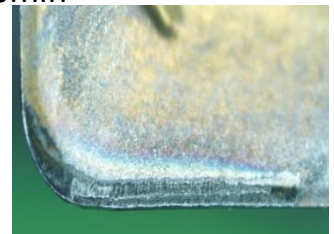
#### YG612

Wear pictures after 25min



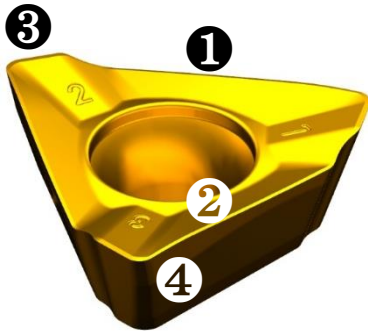
#### Competitor

Wear pictures after 20min



## TPKT1605

### Features of Insert



Economical 3 cutting edges positive insert

- ① High helix cutting edge
  - Smooth cutting and low cutting force
- ② High positive rake angle chip breaker
  - Optimized chip curl and minimized burr
- ③ Wide wiper edge
  - Excellent surface finish
- ④ Curved cutting edge
  - Minimized mismatch

### Features of cutter

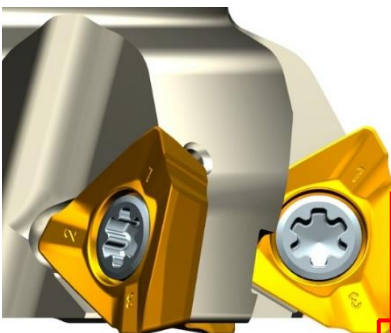
✓ True 90° shoulder milling

✓ Larger core size

- Higher rigidity

✓ Optimal insert placement

- More inserts for high productivity





## TPKT1605

### Success stories

#### Case 1

- **Component name:** Mold base
- **Work-piece material:** 304stainless steel
- **Existing insert:** 3PKT 150508R-M, PVD Coating
- **YG Insert:** TPKT 160508-GN YG612
- **YG Cutter:** E90-TP16-D40Z3C32-L200

45%  
High productivity

Cutting speed (m/min)	Feed (mm/tooth)	Depth of cut (mm)	Coolant	Rough/ Finishing	Tool life (min/edge )	
					TPKT	Competitor
150	0.17	0.5	Wet	Roughing	30min	30min
180	0.24					

Remark) Tool life was same but got 45% high productivity after increased cutting speed and feed rate.





## TPKT1605



### Success stories

#### Case 2

- **Component name:** Machine part
- **Work-piece material:** Mild steel
- **Existing insert:** APKT 1705 PDR, PVD Coating
- **YG Insert:** TPKT 160508-GN YG612  
YG Cutter: E90-TP16-D40Z3C32-L200



Cutting speed (m/min)	Feed (mm/tooth)	Depth of cut (mm)	Coolant	Rough/ Finishing	Tool life (pcs/edge )	
					TPKT	Competitor
188	0.33	1	Wet	Roughing	15	10



## TPKT1605

### Success stories

#### Case 3

- **Component name:** Machine part
- **Work-piece material:** Grey cast iron
- **Existing insert:** APKT 160408 PDTR PVD coated
- **YG Insert:** TPKT 160508-GN YG612  
YG Cutter: E90-TP16-D40Z3C32-L200



Cutting speed (m/min)	Feed (mm/tooth)	Depth of cut (mm)	Coolant	Rough/ Finishing	Tool life (pcs/edge )	
					TPKT	Competitor
266	0.11	3	Wet	Roughing	20	10





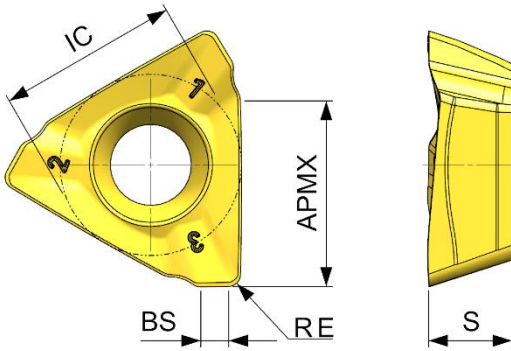
# New Product Announcement

## TPKT1605

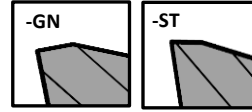


### Insert dimension and item list (Metric)

(mm)



Insert	IC	S	APMX	RE	BS
TPKT1605 (mm)	11.66	5.38	11	0.8	1.79
				1.6	1.2
				2.4	0.7



### Insert item List

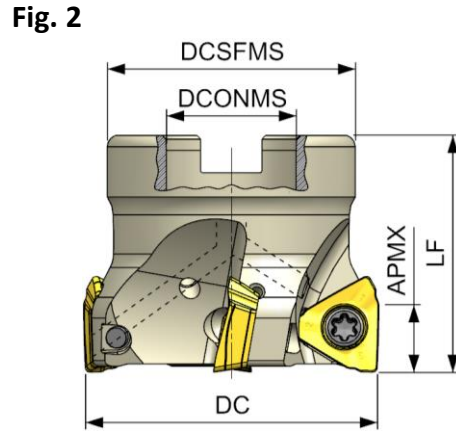
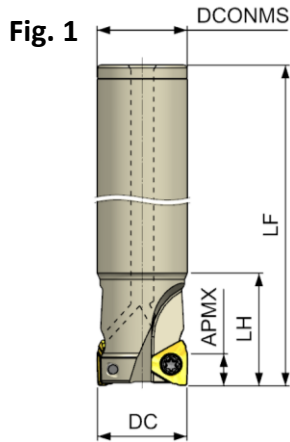
(mm)

Insert	Designation	Cutting Conditions		Grade				
		Ap (mm)	Feed (mm/z)	YG613	YG612	YG012	YG712	YG5020
	TPKT160508R-GN	0.5-11	0.27-0.05		● 0718	● 0781	● 0779	● 0780
	TPKT160516R-GN	2.0-11	0.27-0.05		● 0784	● 0785	● 0786	● 0787
	TPKT160524R-GN	3.0-11	0.27-0.05		● 0788	● 0789	● 0790	● 0791
	TPKT160508R-ST	0.5-11	0.17-0.05	● 0759	● 0758			

EDP 1200..  
● : Stock

## TPKT1605

### Cutter item list (Metric)



EDP No.	Item description	CICT	Dimension (mm)						Coolant	Fig.
			DC	DCSFMS	DCONMS	LH	LF	APMX		
17000941	E90-TP16-D32Z2C32-L150	2	32	-	32	40	150	11	●	1
17000942	E90-TP16-D32Z2C32-L250	2	32	-	32	80	250	11	●	1
17000929	E90-TP16-D33Z2C32-L200	2	33	-	32	40	200	11	●	1
17001010	E90-TP16-D33Z2C32-L250	2	33	-	32	40	250	11	●	1
17000944	E90-TP16-D40Z3W32-L110	3	40	-	32	40	110	11	●	1
17000945	E90-TP16-D40Z4C32-L200	4	40	-	32	40	200	11	●	1
17000931	F90-TP16-D50Z4S22	4	50	42	22	-	40	11	●	2
17000932	F90-TP16-D63Z5S22	5	63	48	22	-	40	11	●	2
17000947	F90-TP16-D63Z6S22	6	63	48	22	-	40	11	●	2
17000948	F90-TP16-D80Z6S27	6	80	56	27	-	50	11	●	2
17000949	F90-TP16-D80Z7S27	7	80	56	27	-	50	11	●	2
17000950	F90-TP16-D100Z8S32	8	100	67	32	-	50	11	●	2
17000951	F90-TP16-D125Z10S40	10	125	89	40	-	63	11	●	2
17000952	F90-TP16-D125Z12S40	12	125	89	40	-	63	11	●	2
17000953	F90-TP16-D160Z11S40	11	160	110	40	-	63	11	x	2
17000955	F90-TP16-D200Z11S60	11	200	160	60	-	63	11	x	2

\*CICT: Cutting item count

### Spare part list

Part	EDP No.	Description
Screw	18000264	TP2045105
Wrench	18000256	TPWBTP20

\*Clamping Torque = 5Nm

#### < B.O.M of Wrench >

Part	EDP No.	Description
Handle	18000210	DH-H6
Bit	18000257	DB-TP20



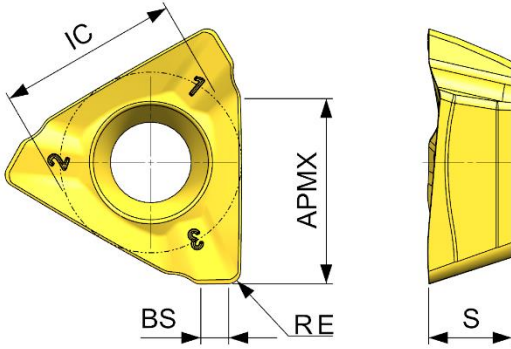
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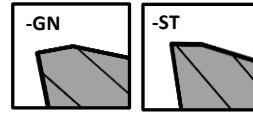


### Insert dimension and item list (Inch)

(inch)



Insert	IC	S	APMX	RE	BS
TPKT1605 (in)	0.46"	0.21"	0.43"	0.07	0.0314
				0.0472	0.063
				0.0275	0.0945



### Insert item List

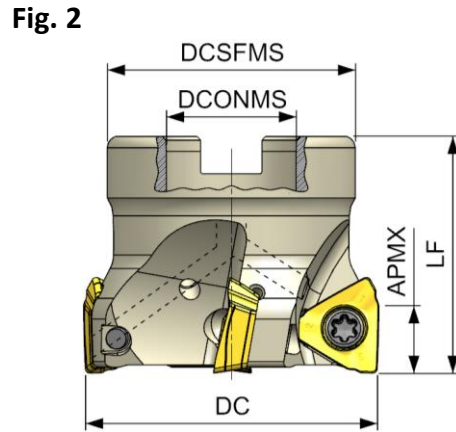
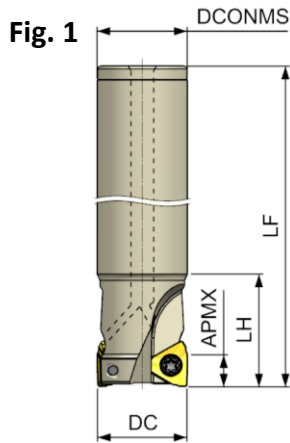
(inch)

Insert	Designation	Cutting Conditions		Grade				
		Ap (inch)	Feed (inch/z)	YG613	YG612	YG012	YG712	YG5020
	TPKT160508R-GN	0.02-0.43	0.011-0.002		● 0718	● 0781	● 0779	● 0780
	TPKT160516R-GN	0.079-0.43	0.011-0.002		● 0784	● 0785	● 0786	● 0787
	TPKT160524R-GN	0.118-0.43	0.011-0.002		● 0788	● 0789	● 0790	● 0791
	TPKT160508R-ST	0.02-0.43	0.006-0.002	● 0759	● 0758			

EDP 1200..  
● : Stock

## TPKT1605

### Cutter item list (Inch)



EDP No.	Item description	CICT	Dimension (inch)						Coolant	Fig.
			DC	DCSFMS	DCONMS	LH	LF	APMX		
17000957	E90-TP16-200Z4W125-L450I	4	2	-	2	1.5	4.5	0.43	●	1
17000959	F90-TP16-D200Z4S075I	4	2	1.750	0.75	-	1.75	0.43	●	2
17000960	F90-TP16-D200Z5S075I	5	2	1.750	0.75	-	1.75	0.43	●	2
17000961	F90-TP16-D250Z6S075I	6	2.5	1.750	0.75	-	1.75	0.43	●	2
17000962	F90-TP16-D300Z6S100I	6	3	2.189	1	-	1.75	0.43	●	2
17000963	F90-TP16-D300Z7S100I	7	3	2.189	1	-	1.75	0.43	●	2
17000964	F90-TP16-D400Z6S150I	6	4	2.874	1.5	-	2.375	0.43	●	2
17000965	F90-TP16-D400Z8S150I	8	4	2.874	1.5	-	2.375	0.43	●	2
17000966	F90-TP16-D500Z9S150I	9	5	3.807	1.5	-	2.375	0.43	●	2
17000968	F90-TP16-D600Z8S150I	8	6	4.882	1.5	-	2.375	0.43	●	2
17000967	F90-TP16-D600Z12S150I	12	6	4.882	1.5	-	2.375	0.43	●	2

\*CICT: Cutting item count

### Spare part list

Part	EDP No.	Description
Screw	18000264	TP2045105
Wrench	18000256	TPWBTP20

\*Clamping Torque = 5Nm

#### < B.O.M of Wrench >

Part	EDP No.	Description
Handle	18000210	DH-H6
Bit	18000257	DB-TP20



# New Product Announcement

## TPKT1605



### Recommendation cutting speed by work-piece material

Unit : m/min.  
( ) : SFM

Material	VDI	YG612	YG613	YG012	YG5020	YG712
Non-alloyed steel	1~5	180~280 (591~919)	100~210 (328~689)	180~280 (591~919)	-	220~320 (722~1050)
Low-alloyed steel	6~9	150~250 (492~820)	70~180 (230~591)	150~250 (492~820)	-	190~290 (623~951)
High-alloyed steel	10~11	70~140 (230~459)	40~90 (131~295)	80~150 (262~492)	-	90~155 (295~509)
Ferritic & Martensitic stainless steel	12~13	120~200 (394~656)	70~180 (230~591)		-	-
Austenitic stainless steel	14	130~250 (427~820)	70~200 (230~656)		-	-
Grey cast iron	15~16	120~250 (394~820)			200~350 (656~1148)	-
Nodular cast iron	17~18	130~220 (427~722)			150~300 (492~984)	-
Malleable cast iron	19~20	-			-	-
Non-ferrous metals (Al)	21~30	-			-	-
Super alloys & Titanium	31~37	25~45 (82~148)			-	-
Hardened steel	38~41			70~120 (230~394)	-	-



## TPKT1605



### Ramping angle by cutting size

Kind of cutter	Cutter type	Cutter diameter	Ramping Angle(°)
Metric	End-Mill	32	3.4
		33	3.3
		40	1.9
	Face-Mill	50	1.4
		63	1.1
		80	0.8
		100	0.6
		125	0.5
		160	0.3
		200	0.2
Inch	End-Mill	2	1.4
	Face-Mill	2.5	1.1
		3	0.9
		4	0.6
		5	0.5
		6	0.4