

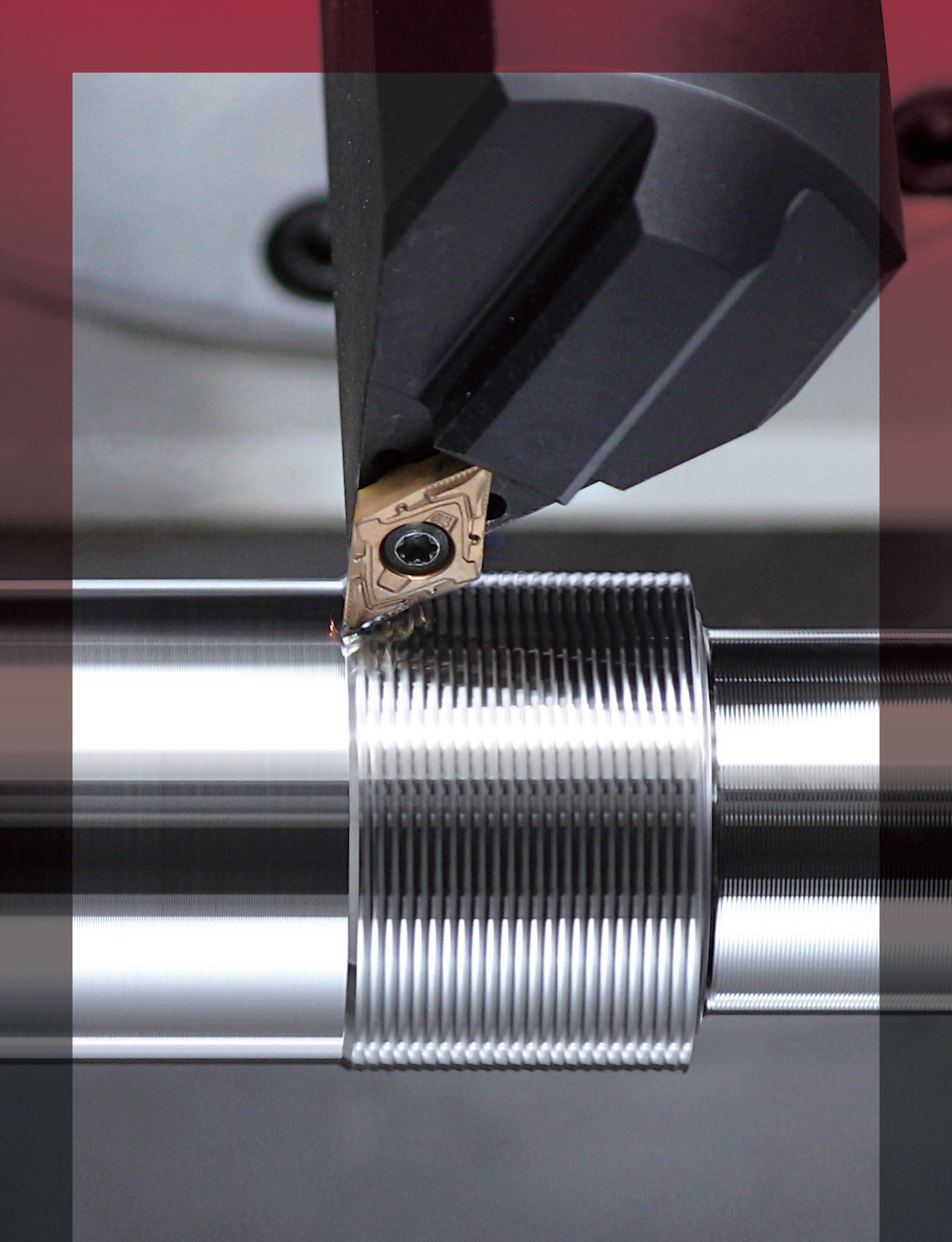
Y-axis turning tool

ADDY^{AXIS}TURN

Tungaloy Report No. 553-G

LEADING IN THE NEW DIRECTION — Y-axis turning tool
with PSC connection for multitasking machines





INDUSTRY 4.0
FEED the SPEED!



**ADD^YAXIS
TURN**



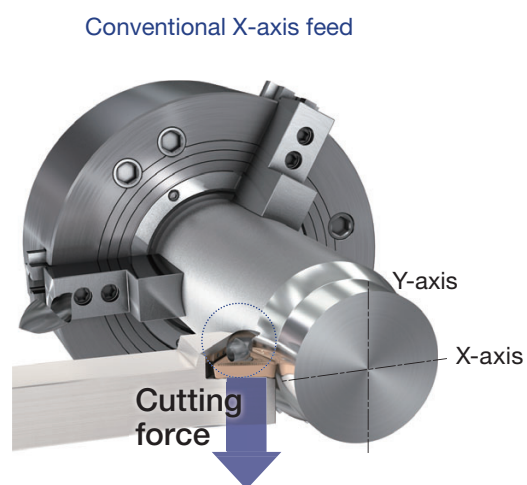
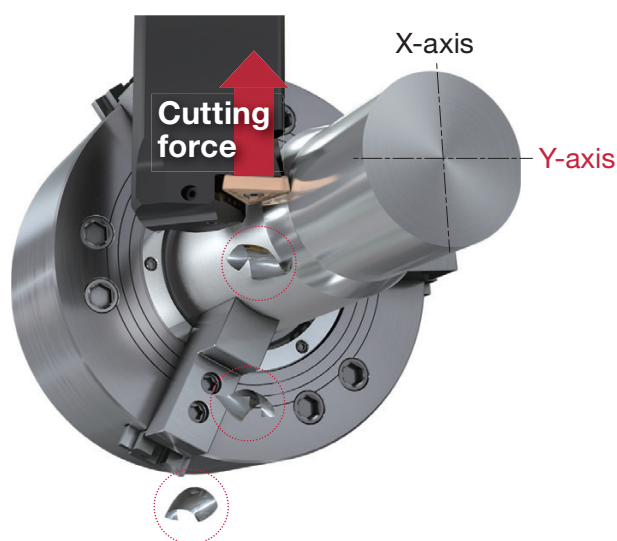
ADD a turning point to increase your productivity

ADD high productivity combined with multiple processes & tools into a single operation

Innovative Y-axis tools provides: High productivity, rigidity, accuracy, accessibility

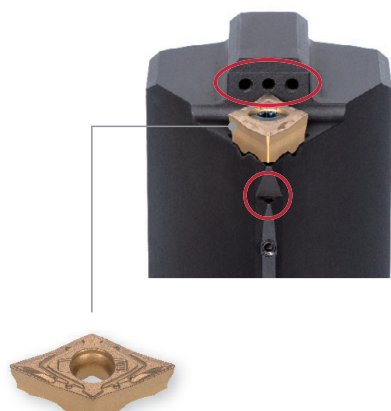
■ Y-axis machining benefits

- The cutting force vector is directed in the longitudinal axis of the tool, resulting in higher stability and minimized vibration
- No chip entanglements, chips are directed down and away from the workpiece and toolholder



■ PSC Y-axis tool for multitasking machines

- High rigidity design PSC tool body and through-coolant supply for tool life stability



2D-DCMT
ZF chipbreaker
D-type for finishing and profiling operation

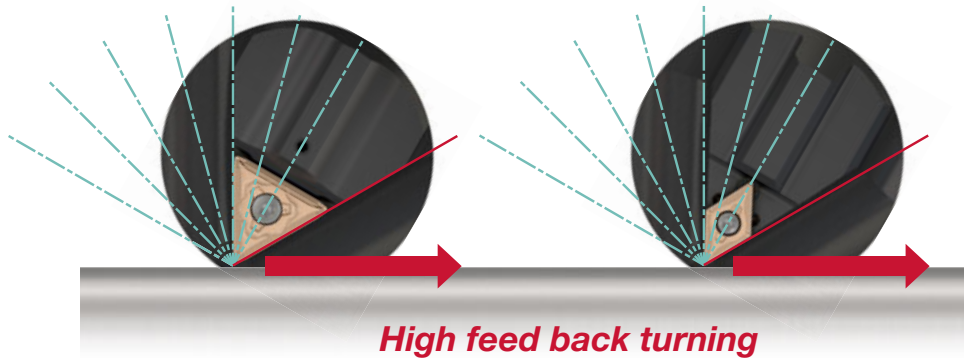


3C-TCMT
TM chipbreaker
T-type for medium cutting operation

■ Y-axis tooling concept providing small entry angle for high productivity

T-type : Max feed rate **2 mm/rev**

D-type : Max feed rate **1.2 mm/rev**



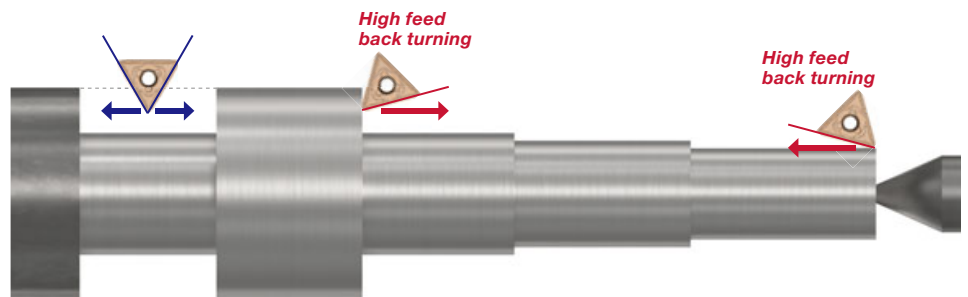
■ Tooling image of Y-axis orientation and applying high feed back turning

Medium cutting



3C-TCMT

Insert: 3C-TCMT29X608-TM
(Single-sided, 3 corners)



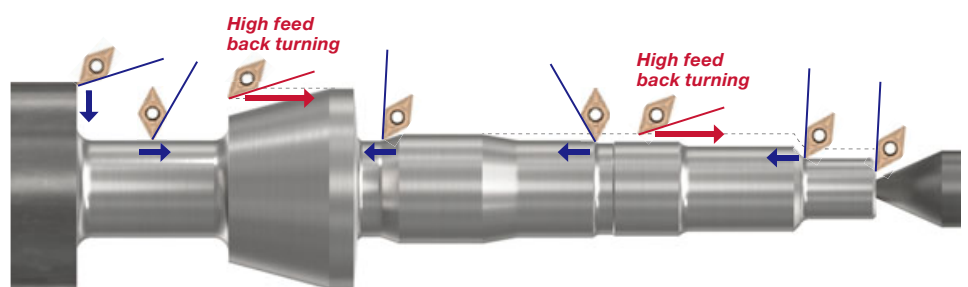
- Thanks to its high-feed geometry, **AddY-axisTurn** insert provides high productivity
- Y-axis tool orientation allows both sides of the cutting edge to be used, providing stable and long tool life

Finishing - Profiling



2D-DCMT

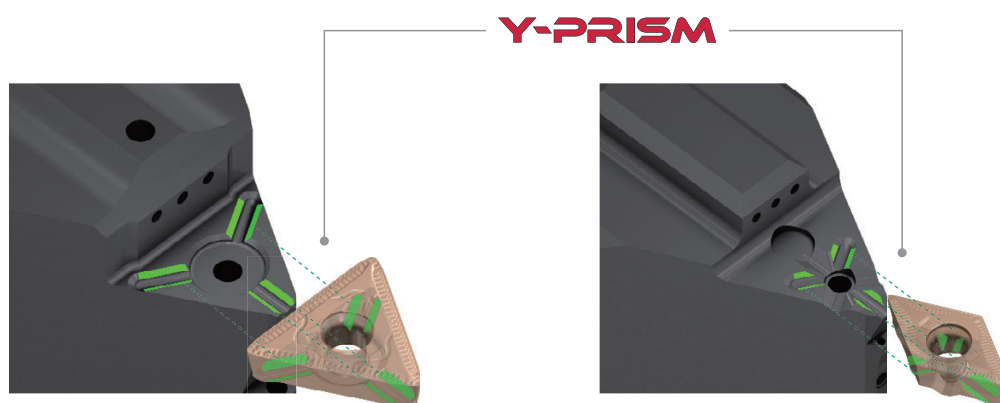
Insert: 2D-DCMT13T404-ZF
(Single-sided, 2 corners)



- **AddY-axisTurn** allows a precision workpiece completion with a single tool setup
- No interference with the tailstock
- Eliminates chip entanglement, promoting fully automated manufacturing

I Y-PRISM Secure insert clamping system

- **Y-PRISM**'s safe lock design has a rail on the toolholder and matching slot on the insert for tight interlocking and secure clamping.
- Prevents the cutting forces from affecting the insert position in any direction and ensures high stability.



GRADE

Grade	Recommended workpiece material	Feature
PREMIUMTEC T9215	P M K	- Well-balanced wear and chipping resistance - First choice for steel - High versatility for a wide range of applications

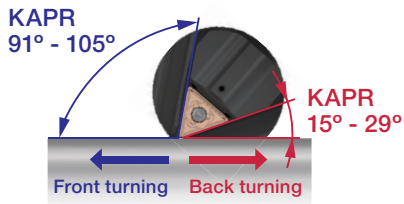
STANDARD CUTTING CONDITIONS

ISO	Operation	Chipbreaker	Grade	Cutting speed Vc (m/min)
P	Finishing	ZF	T9215	150 - 400
	Medium to heavy cutting	TM	T9215	150 - 400
M	Finishing	ZF	T9215	100 - 250
	Medium to heavy cutting	TM	T9215	100 - 250
K	Finishing	ZF	T9215	140 - 500
	Medium to heavy cutting	TM	T9215	140 - 500

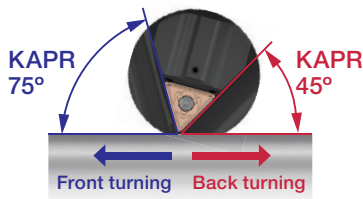
Application ranges according to tool angle orientations

3C-TCMT

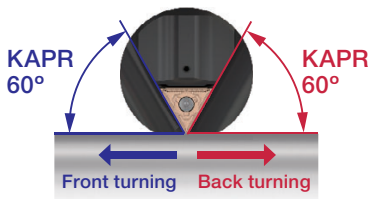
Note: When entering the cut, feed the tool at $f \leq 0.2$ mm/rev or use roll-in approach.



		D.O.C. (mm)					
		0.5	1	1.5	2	3	4
Max. feed rate (mm/rev)	Front turning	0.6				0.5	
	Back turning	2		1.8	1.4	0.8	0.6



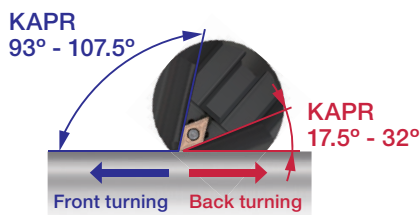
		D.O.C. (mm)					
		0.5	1	1.5	2	3	4
Max. feed rate (mm/rev)	Front turning	0.6					
	Back turning	2	1.6		1.4	0.8	0.6



		D.O.C. (mm)					
		0.5	1	1.5	2	3	4
Max. feed rate (mm/rev)	Front turning	0.6					
	Back turning	0.6					

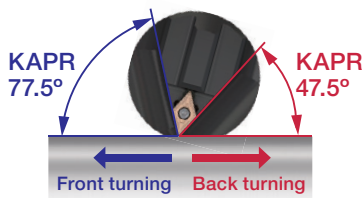
2D-DCMT

Note: When entering the cut, feed the tool at $f \leq 0.2$ mm/rev or use roll-in approach.

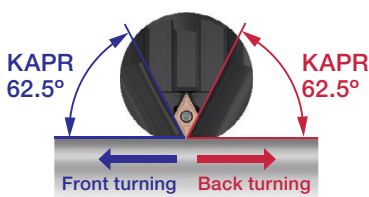


		D.O.C. (mm)				
		0.5	1	1.5	2	2.5
Max. feed rate (mm/rev)	Front turning	0.3				
	Back turning	1.2		0.3		(0.3)*

*In back turning KAPR = 17.5°, D.O.C. = 2.5 mm is not applicable
D.O.C. = 2.5 mm is applicable from KAPR $\geq 25^\circ$



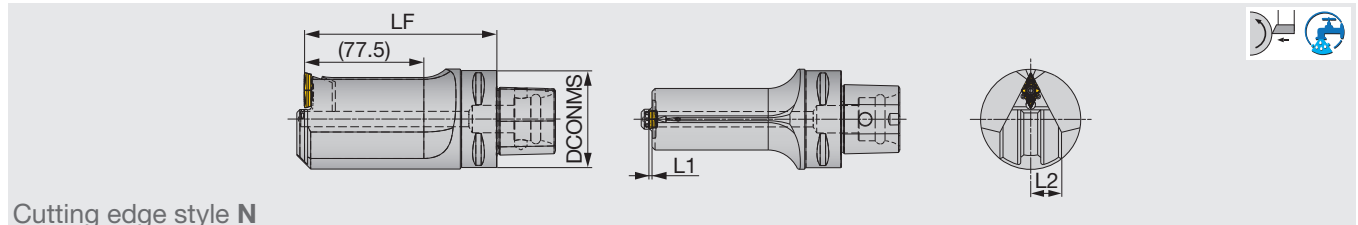
		D.O.C. (mm)				
		0.5	1	1.5	2	2.5
Max. feed rate (mm/rev)	Front turning	0.3				
	Back turning	1.2	1		0.3	



		D.O.C. (mm)				
		0.5	1	1.5	2	2.5
Max. feed rate (mm/rev)	Front turning	0.3				
	Back turning	0.3				

C6SDNCN-Y-CHP

Screw-on Y-axis turning toolholder with TungCap connection, for positive 55° rhombic inserts



Cutting edge style N

Designation	SS	DCONMS	LF	L1	L2	RE	Insert	Torque*
C6SDNCN00125-13-Y-CHP	C6	63	125	2	20	0.4	2D-DCMT13T4...	3.5

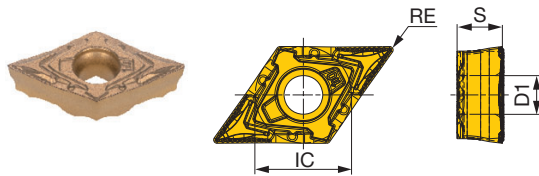
Torque*: Recommended clamping torque (N-m)

SPARE PARTS

Designation	Clamping screw	Grip	Torx bit
C6SDNCN00125-13-Y-CHP	CSTB-4M	H-TB2W	BT15M

INSERT

2D-DCMT**-ZF



Designation	RE	Coated								IC	S	D1
		T9215										
2D-DCMT13T404-ZF	0.4	●								11	5.16	4.4

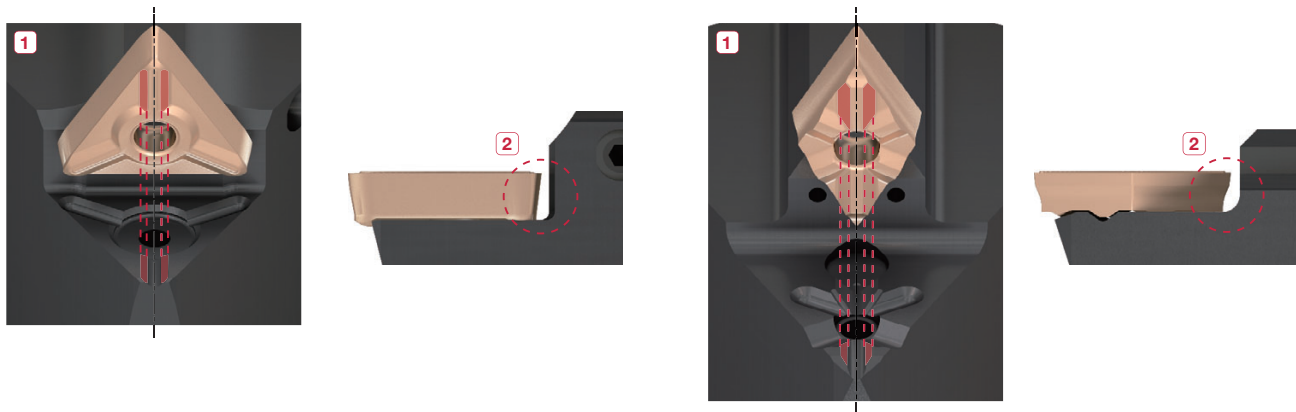
Please note that 2D-DCMT... insert is not recommended for pull face-turning method (pulling the insert away from the part center).

● : Line up

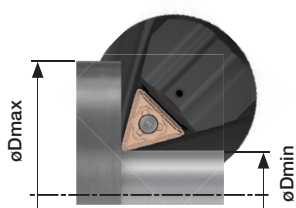
CAUTIONS

- 1 Ensure that the rail on the toolholder is positioned on the matching slot on the insert
- 2 Ensure that the clamp is tightened on the insert using the proper torque

As the insert and toolholder are interlocked on the rail and slot, it is no problem to have the clearance shown below.

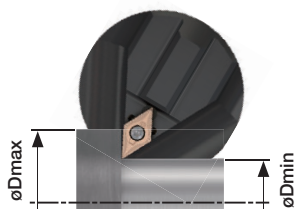


- 3 Restrictions of machining flange



3C-TCMT

øDmin	20	40	60	80	100	125	150	175	200	225	250	254
øDmax	162	167	174	182	193	207	224	242	262	282	303	306
Flange height	71	63.5	57	51	46.5	41	37	33.5	31	28.5	26.5	26

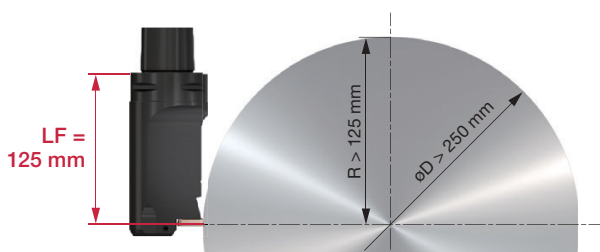


2D-DCMT

øDmin	20	40	60	80	100	125	150	175	200	225	250	254
øDmax	166	170	176	185	195	209	226	244	263	283	303	307
Flange height	73	65	58	52.5	47.5	42	38	34.5	31.5	29	26.5	26.5



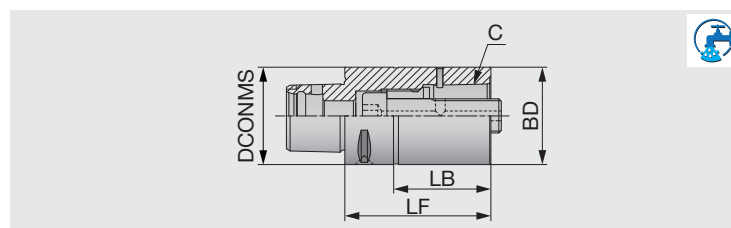
- 4 For larger work radius (over LF = 125 mm), please use extension adapters.



C-EX

Extension adapter

TUNGCAP



Designation	C	DCONMS	BD	LF	LB	Nm ⁽¹⁾	Wrench size
C6EX-100	C6	63	63	100	78	170	14
C6EX-140	C6	63	63	140	118	170	14

(1) Recommended clamping torque (N·m)

Scan or click
for more
information
on adapters



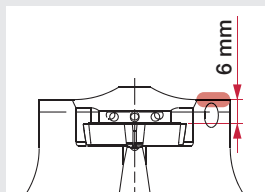
5 Tool presetting

Please offset the cutting edge position by referring to the top and side positions.

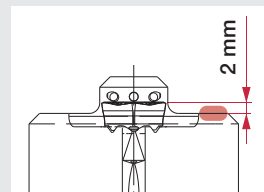
X-axis presetting



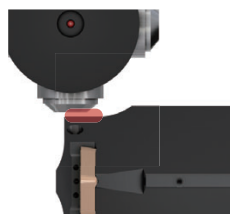
3C-TCMT



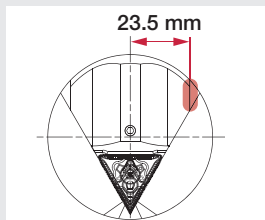
2D-DCMT



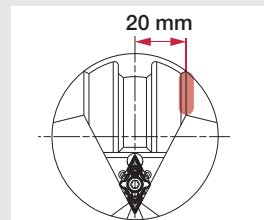
Z-axis presetting



3C-TCMT



2D-DCMT

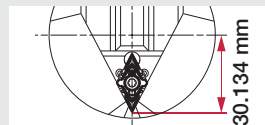


Y-axis offset

3C-TCMT



2D-DCMT

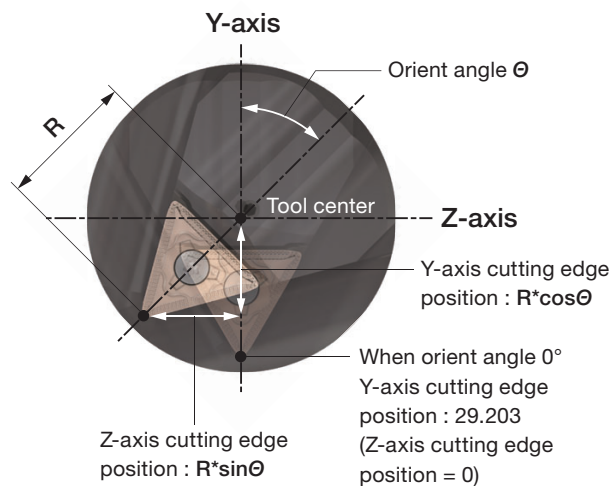
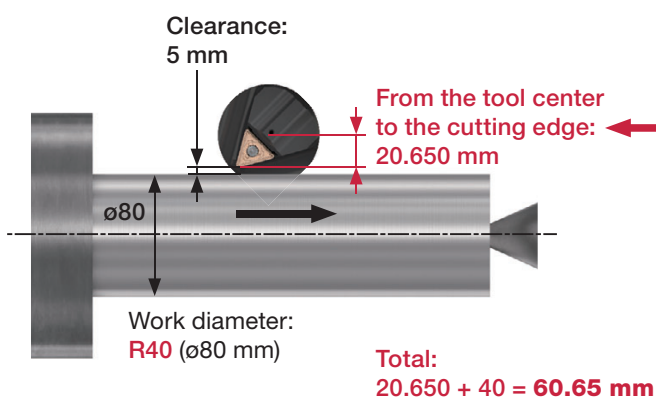


M Code of adjusting the approach angle

M111	:	Spindle chuck unclamp
M19	S45 (S315)	: Orient spindle S: 0° to 360°
M110	:	Spindle chuck clamp

Adjust the spindle and theoretical cutting edge positions

For the R value, use the offset value for the Y-axis.



When **S45 (45°)**

Y-axis cutting edge position : $29.203 \cdot \cos 45 = 20.6496$
Z-axis cutting edge position : $29.203 \cdot \sin 45 = 20.6496$

Note: In actual machining manual offset might be needed from the theoretical cutting edge position.

```
G90G00X100.0Y[60.65+5.0]Z-50.0
X0.0
G01Y[60.65-2.0]F0.2
Z1.0F0.6
G00Y[60.65+5.0]
X100.0
```


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