NEW PRODUCT NEWS

METAL WORK CO.,LTD

Tungaloy Report No. 391-G

Grooving and parting-off tool

TUNGSHORTCUT / TUNGCUT

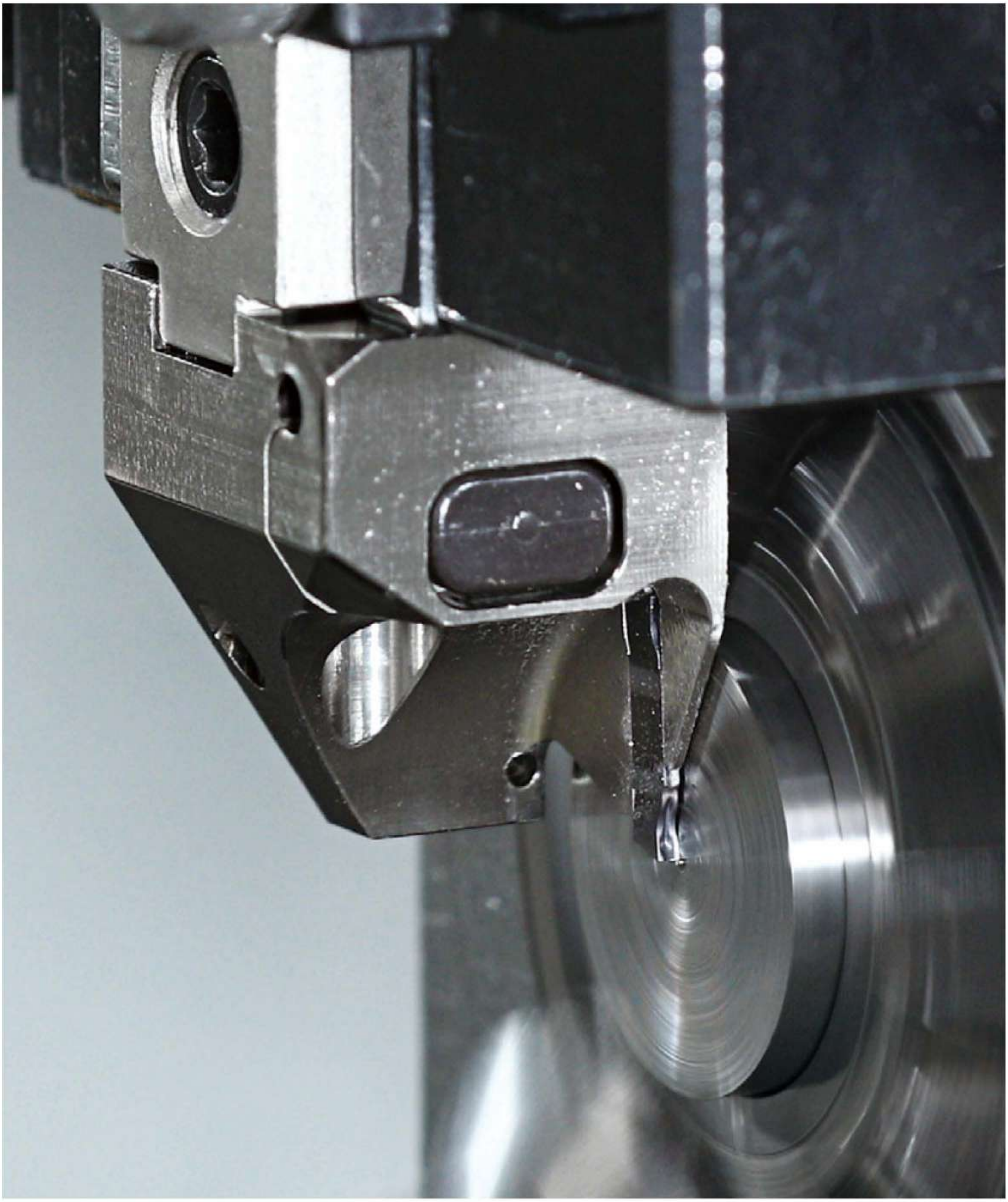
Introducing STR-HP full radius CBN tipped inserts with 3D chipbreaker + expansion of TungShortCut line

Member IMC Group Tungaloy INDUSTRY 4.0

TUNGALOY ADDFORCE ACCELERATED LINES

NEW PRODUCT NEWS

Tungaloy Report No. 391-G



NEW PRODUCT NEWS

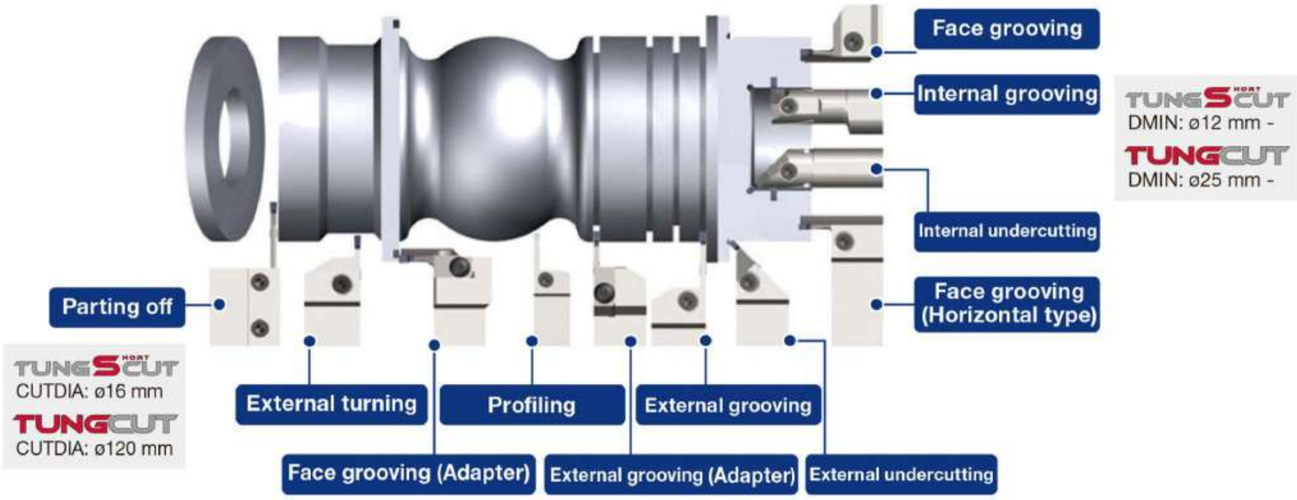
Tungaloy Report No. 391-G

TUNGSHORTCUT / TUNGCUT

Multi-functional tool series offering a wide range of grades, geometries and holder variations for **maximum performance with minimum tool investments**

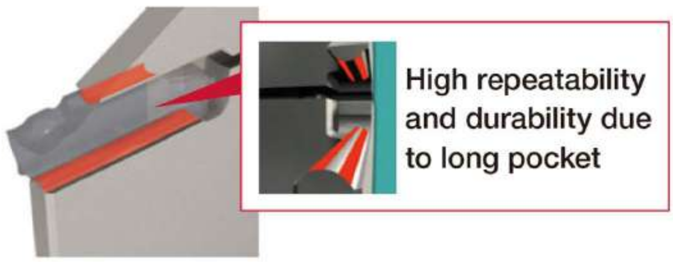
TUNGSHORTCUT / TUNGCUT

Multi-functional grooving tool series with excellent versatility

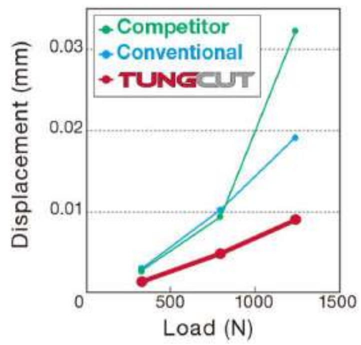


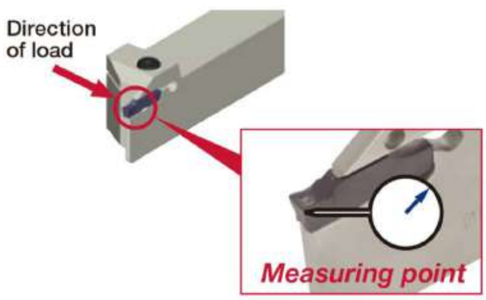
For stable tool life and accuracy

Clamping system

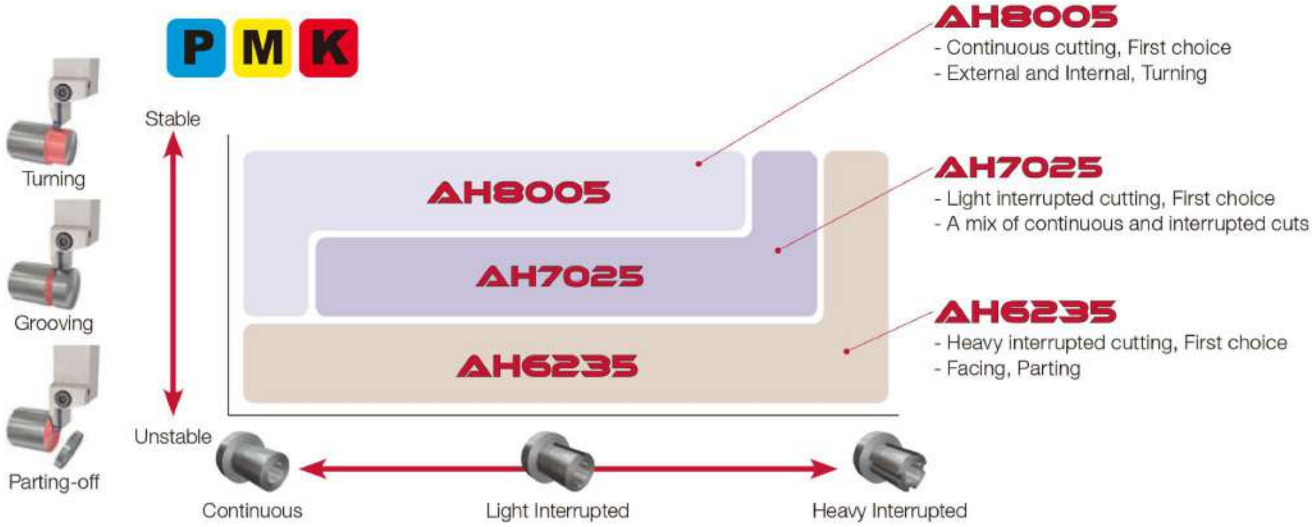


Minimizes cutting edge displacement





Grade selection system



GRADES

AH8005 P M K S
- First choice for external, internal, and side-turning, continuous cuts

AH7025 P M K S
- First choice for light interrupted cuts or a mix of continuous and interrupted cuts
- New PVD coating with high Al content provides excellent adhesion strength
- Improved wear and chipping resistance

AH6235 P M K
- First choice for heavy interrupted cuts, as well as parting and facing applications

New SH7025 P M
- The latest grade for high surface finishing quality and process security

AH725 P M S
- General purpose PVD grade for high fracture resistance

T515 K
- First recommended grade for cast iron
- Exellent wear resistance in high speed machining

T9225 P
- Suitable for steel machining at high speeds
- New CVD coating and substrate deliver an outstanding balance of wear and chipping resistance

NS9530 P
- Advanced cermet for finish cutting of steel
- Innovative grade with incredible fracture and high wear resistance

GH130 P M K
- Recommended for interrupted machining
- TiCNO PVD coating layer with high wear resistance
- High hardness wear resistance

AH905 S
- Remarkable for machining of heat resistant alloys
- Exclusive coating layer improves adhesion strength and wear resistance

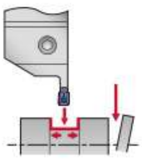
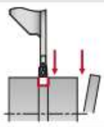
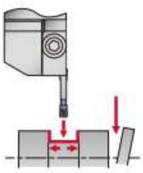
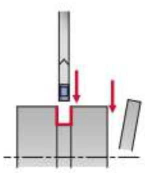
KS05F N S
- Recommended for non-ferrous materials and titanium

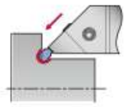
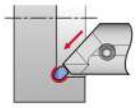
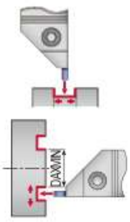
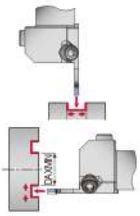
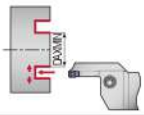
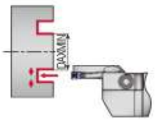
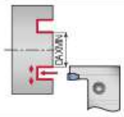
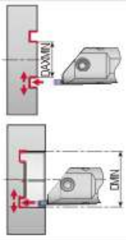
TH10 N
- Recommended for non-ferrous materials

BXA10 H
- Coated CBN grade designed for turning hardened steel parts

BX360 H
- Developed for grooving applications of hardened steel parts

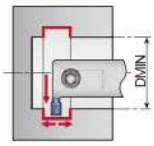
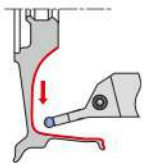
TUNGSHORTCUT/TUNGCUT Quick Guide

Application		Designation	Tool type	CW (mm)	CDX (mm)	Max. parting dia.: CUTDIA (mm)	Shank sizes	Product details
External grooving turning, and parting		**CTER/L-CHP**	Screw clamp, for high pressure coolant	2 - 6	17 - 25	-	20 x 20 mm, 25 x 25 mm	
		CTER/L	Screw clamp	2 - 8	8 - 36	-	16 x 16 mm - 32 x 32 mm	
		JCTER/L-CHP	Screw clamp, for high pressure coolant, small swiss-type CNC machines	2	-	ø25, ø32	12 x 12 mm - 20 x 20 mm	
		JCTER/L	Screw clamp, small swiss-type CNC machines	1.4 - 3	-	ø20 - ø42	10 x 10 mm - 20 x 20 mm	
		JTTER/L	Side clamping, small swiss-type CNC machines	1.2	-	ø12 - ø20	10 x 10 mm - 16 x 16 mm	
		JTTER/L-S	Side clamping, for sub spindle, small swiss-type CNC machines	1.2	-	ø12 - ø20	10 x 10 mm - 16 x 16 mm	
		New **QC-JTTER/LS-CHP**	Modular head, Side clamping, for high pressure coolant, small swiss-type CNC machines	0.8 - 1	-	ø16	10 x 12 mm - 12 x 12 mm	
		QC-JT/CTER/L-CHP	Modular head, Side clamping / Screw clamp, for high pressure coolant, small swiss-type CNC machines	1.2 - 3	-	ø12 - ø32	10 x 12 mm - 16 x 16 mm	JTTER/L JCTER/L
		**CGER/L**	Self clamp, small swiss-type CNC machines	1.4 - 4	9.7 - 20.3	ø29 - ø55	12 x 12 mm - 20 x 20 mm	
		**CAER/L-CHP**	Adapter type, screw clamp, for high pressure coolant	2 - 8	16 - 25	-	20 x 20 mm, 25 x 25 mm	
		CAER/L-MD	Adapter type, screw clamp	2 - 8	16 - 25	-	20 x 20 mm, 25 x 25 mm	
		CAER/L	Adapter type, screw clamp	3 - 6	16, 20	-	20 x 20 mm - 32 x 32 mm	
		**CGP-CHP**	Self clamp	2 - 6	-	ø50 - ø110	25 x 25 mm	
		CGP	Self clamp	1.4 - 8	-	ø26 - ø120	20 x 20 mm - 32 x 32 mm	
		CHGP	Self clamp	2 - 4	-	ø52, ø82	20 x 20 mm, 25 x 25 mm	

Application		Designation	Tool type	CW (mm)	CDX (mm)	Min. face grooving dia.: DAXMIN (mm)	Min. bore dia.: DMIN (mm)	Shank sizes	Product details
External and internal undercutting		**CGEUR/L**	Screw clamp	3 - 6	2.8, 3.4	-	-	16 x 16 mm - 25 x 25 mm	
		**CGIUR/L**	Screw clamp	3 - 6	2.8	-	-	ø20 mm - ø25 mm	
External and face grooving, and turning		**CTEFR/L**	Screw clamp	2 - 6	4.8	ø20 -	-	20 x 20 mm, 25 x 25 mm	
		**CAEFR/L-CHP**	Adapter type, screw clamp, for high pressure coolant	2 - 6	4.8	ø20 -	-	20 x 20 mm - 25 x 25 mm	
Face grooving and turning		**CTFR/L**	Screw clamp	3 - 6	10 - 25	ø22 -	-	25 x 25 mm	
		**CAFR/L-CHP**	Adapter type, screw clamp, for high pressure coolant	3 - 6	12 - 25	ø40 -	-	20 x 20 mm, 25 x 25 mm	
		CAFR/L	Adapter type, screw clamp	3 - 6	12 - 25	ø40 -	-	20 x 20 mm - 32 x 32 mm	
		**CTFVR/L**	Screw clamp	3 - 6	10 - 20	ø22 -	-	25 x 25 mm	
Face grooving, internal face grooving and turning		**CTIFR/L**	Screw clamp	2 - 6	5.5	ø20 -	ø26.3 -	ø25 mm - ø32 mm	

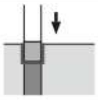
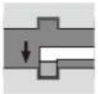
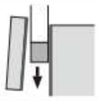
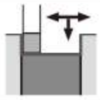
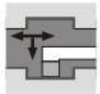
Scan the QR code for product details and dimensions.

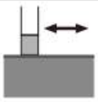
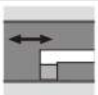
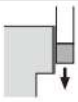
TUNGSHORTCUT/TUNGCUT Quick Guide

Application		Designation	Tool type	CW (mm)	CDX (mm)	Min. face grooving dia.: DAXMIN (mm)	Min. bore dia.: DMIN (mm)	Shank sizes	Product details
Internal grooving and turning		**CTIR/L**	Screw clamp	2 - 8	4 - 10	-	ø25 -	ø16 mm - ø40 mm	
		CTIRS**	Screw clamp	2, 3	3 - 6	-	ø12 -	ø10 mm - ø16 mm	
		S-CTIRS-H	Modular head, screw clamp, for high pressure coolant	2, 3	6, 7	-	ø32, ø40	ø25 mm, ø32 mm	
		S-CTIR/L-H	Modular head, screw clamp, for high pressure coolant	2 - 4	13, 17	-	ø52, ø62	ø32 mm - ø60 mm	
Profiling		**CTER/L-15A**	Screw clamp	6, 8	25, 30	-	-	25 x 25 mm	
		CGIUR/L-15A	Screw clamp	6, 8	50 - 85	-	ø160, ø200	ø40 mm, ø50 mm	

Scan the QR code for product details and dimensions.

INSERT APPLICATION

Insert	Application						
	Grooving			Parting	Turning		
	External	Internal	Face		External	Internal	Face
							
DGM / SGM	●	●	●	●			
DGS / SGS	●	●	●	●			
DGG	●	●	●	●			
DGL	●	●	●	●			
DGE	●						
DTM	●	●	●	●	●	●	●
DTE	●	●	●		●	●	●
DTX	●	●	●	●	●	●	●
DTR / STR					●	●	●
DTIU	● Undercutting	● Undercutting	● Undercutting				
DTI		●				●	
DGIM / DGIS		●					
DTF			●				●
DTA					● Al wheel machining	● Al wheel machining	
SGN	●	●	●	●			
STX	●	●	●	●	●	●	●
DTV					●	●	
DGS*S		●		●			
DTR*S		●				●	
STV*S						●	

Insert	Application		
	High feed turning		
	External	Internal	Face
			
STH	●	●	●

TUNGSHORTCUT

Double-ended short inserts

New

Modular head designed specifically for parting applications in Swiss machines

1 Modular head system with high pressure through-coolant

- Minimum tool overhang thanks to the new parting insert that is only 9 mm in length.
- Reduced downtime with quick tool changeovers thanks to the ModuMini-Turn modular system.

MODUMINITURN

CW = 0.8, 1 mm
CUTDIA = 16 mm

2 Thin inserts for 0.8 and 1 mm groove widths

- Reduces material wastes during parting operations.
- Provides consistent chip control and high-quality surface finish during low feed operations.
- Allows users to choose the optimal grade at all times based on their machining parameters.

DGS**S-003

AH725

- Lightly-honed cutting edge
- Extremely resistant to edge chipping
- Allows increased feeds and speeds

DGS**SF-003

SH7025

- Sharp cutting edge
- Light cutting with little resistance
- High surface finishing quality

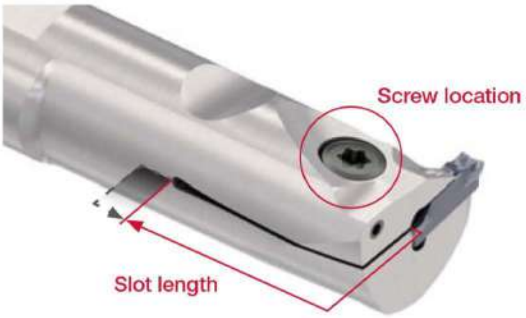
NEW PRODUCT NEWS

Tungaloy Report No. 391-G

High rigidity toolholder for internal groove turning operations

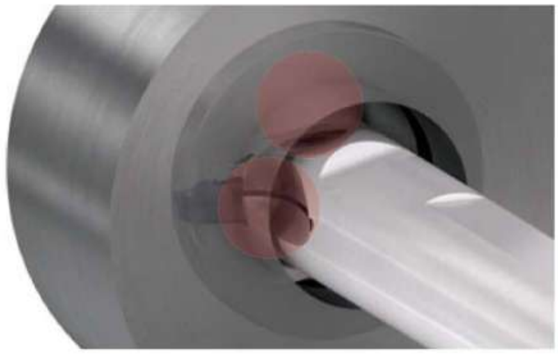
1 Improved chatter resistance

Optimized screw location and slot length enhances insert clamping capability.



2 Effective chip evacuation

Chip pocket and flute are designed to promote smooth chip evacuation.



3 Internal coolant system

Precision coolant delivered from the top to the cutting point for best performance and smooth chip evacuation.

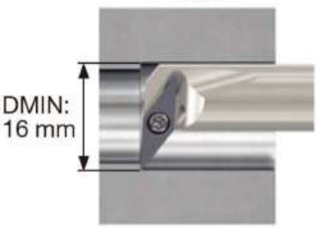
4 Produces various profiles

- Offered in the shape of a grooving insert with 35° inserts for profiling are now available, the new insert allows complex profiling without tool interference, which is not possible with conventional ISO turning inserts.
- Suitable for internal profiling of DMIN:12 mm

Push turning (towards the spindle)

TUNGSCUT STV

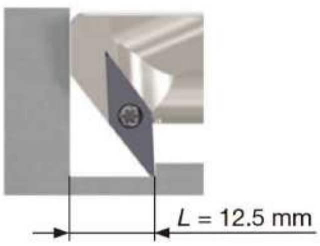
ISO insert V type



Pull turning (away from the spindle)

TUNGSCUT STV

ISO insert V type



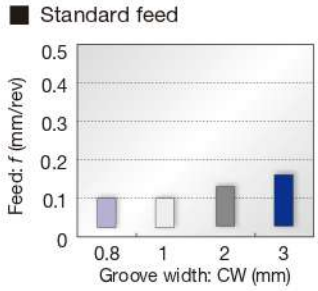
CHIPBREAKER GUIDE

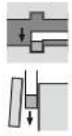
Internal grooving and parting

DGS*S type
(2 corners)

Lower cutting force and superior sharpness

Uniquely designed edge and chipbreaker
CW = 0.8 - 3 mm





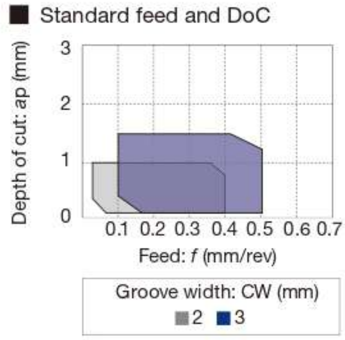
Profiling and undercutting

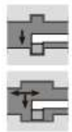
DTR*S type
(2 corners)

Full radius type

- Provides effective chip control during profile turning application
- Molded inserts available

CW = 2 - 3 mm





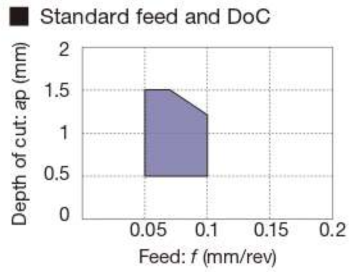
Profiling

STV*S type
(1 corner)

Full radius type

Incorporating excellent cutting edge integrity and chip control, JS chipbreaker provides process security during profile turning, in which chip control is typically challenging.

■ Note:
Depending on the depth of cut and cutting direction, the insert support may require modification to avoid tool collision.



Scan the QR code for product details and dimensions.

STANDARD CUTTING CONDITIONS

DGS*S, DTR*S

ISO	Workpiece material	Hardness	Grade	Cutting speed *Vc* (m/min)
P	Steel S45C, SCM435, etc. C45, 34CrMo4, etc.	< 300 HB	AH7025	50 - 180
M	Stainless steel SUS303, SUS304, etc. X10CrNiS18-9, X5CrNi18-9, etc.	< 200 HB	AH7025	50 - 120
K	Grey cast iron FC250, etc. 250, etc.	-	AH7025	50 - 180
K	Ductile cast iron FCD450, etc. 450-10S, etc.	-	AH7025	50 - 120
S	Superalloys Inconel718, etc.	< HRC 40	AH7025	20 - 60
S	Titanium alloys Ti-6Al-4V, etc.	< HRC 40	AH7025	20 - 80

Please see page **P12** for feed: *f* (mm/rev).

STV*S

ISO	Workpiece material	Grade	Cutting speed *Vc* (m/min)	Feed *f* (mm/rev)
P	Low carbon steel S15C, SS400, etc. C15E4, E275A, etc.	AH725	50 - 180	0.05 - 0.1
P	Carbon steel, Alloy steel S55C, SCM440, etc. C55, 42CrMo4, etc.	AH725	50 - 180	0.05 - 0.1
P	Free cutting steel SUH22, SUH23, etc.	AH725	50 - 180	0.05 - 0.1
M	Stainless steel SUS304, etc. X5CrNi18-9, etc.	AH725	50 - 120	0.05 - 0.1
K	Grey cast iron FC250, etc. 250, etc.	AH725	50 - 180	0.05 - 0.1
K	Ductile cast iron FCD450, etc. 450-10S, etc.	AH725	50 - 120	0.05 - 0.1
S	Superalloys Inconel718, etc.	AH725	20 - 80	0.05 - 0.1
S	Titanium alloys Ti-6Al-4V, etc.	AH725	20 - 80	0.05 - 0.1

NEW PRODUCT NEWS

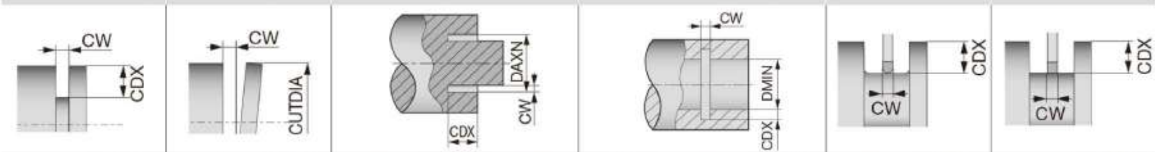
Tungaloy Report No. 391-G

MEGA TECH
METAL WORK CO.,LTD

TUNGCUT

Versatile groove turning tools — the first choice for all your grooving needs

1 Application ranges



External grooving		Parting		Face grooving			Internal grooving			Profiling (Full-R)		Turning	
CW (mm)	CDX (mm)	CW (mm)	CUTDIA (mm)	CW (mm)	CDX (mm)	DAXN (mm)	CW (mm)	CDX (mm)	DMIN (mm)	CW (mm)	CDX (mm)	CW (mm)	CDX (mm)
1.2 - 8	35	1.2 - 8	120	2 - 6	25	25	2 - 8	10	25	2 - 8	35	2 - 8	35

2 Toolholder variation

Monoblock toolholder
Shank sizes:
10 x 10 - 32 x 32 mm,
ø16 – ø40 mm

MODUMINITURN
Exchangeable head system for reduced changeover time. Designed for the use in Swiss machines.

BOREMEISTER
Exchangeable head system allowing long overhang for up to 14xD for internal machining.

TUNGFEEDBLADE
Blade + tool block system for high feed applications requiring tool rigidity.

TUNGMODULARSYSTEM
Adapter + TungCap toolholder

3 Extensive insert lineup

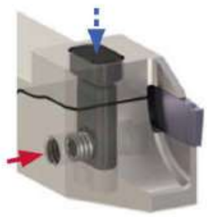
- Available for CW= 1.2 - 8 mm
- Various grades are offered, including CBN, for all material groups, such as non-ferrous metals and hardened steel parts.

Reduced downtime with new side clamp toolholder

- Easy insert changes by locking/unlocking from the side.
- Swift insert changes are possible while the toolholder remains on the machine, allowing significantly reduced setup time.

TUNGCUT Side Clamp toolholder

Clamping pin



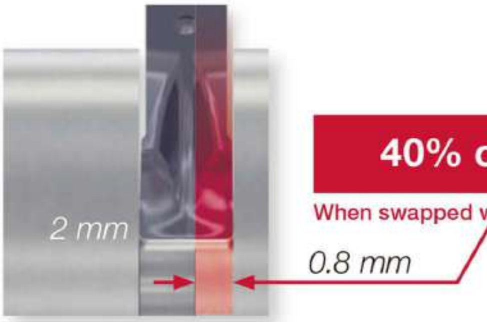
As the grub screw is tightened, the clamping pin moves downward to clamp the insert securely.

Conventional

Not enough room for a key to operate the screw. The entire tool has to be removed from the machine for insert change.

1.2 mm wide insert - the perfect solution for material cost reduction

Saves material by up to 40% by volume when compared with existing 2 mm wide insert.



40% cost cut!

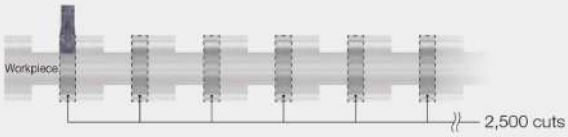
When swapped with 1.2 mm wide insert

Ex.) Lengths of materials wasted after 2,500 cuts by using 1.2 mm insert vs 2 mm insert:

New With 1.2 mm insert → 2,500 cuts x 1.2 mm/cut = **3,000 mm**

With 2 mm insert → 2,500 cuts x 2 mm/cut = **5,000 mm**

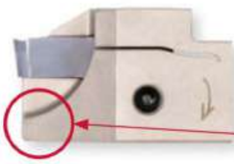
1.2 mm wide insert can save a 2,000 mm long bar stock worth of materials!!



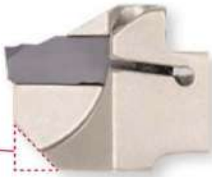
Robust tool design

Easy workpiece positioning after every cut-off

The robust toolholder design withstands repeating bar feeder pressures, allowing the toolholder to be used for workpiece positioning.



TUNGCUT 1.2 mm



Conventional

TUNGCUT

Strong holder design ensures excellent stability and productivity during demanding applications

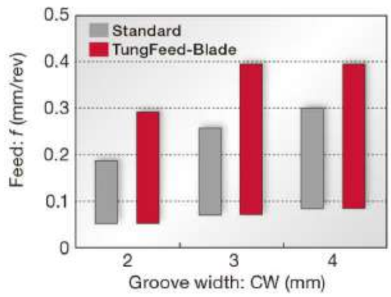
- The support blade is designed to eliminate chatter during machining, providing better surface finish and straightness of the groove.
- Each blade has three insert seats for tool economy.

TUNGFEEDBLADE

- The holder has two contact faces for enhanced rigidity.

DGM type (2 corners)
SGM type (1 corner)

■ Enhanced feed vs. conventional blade



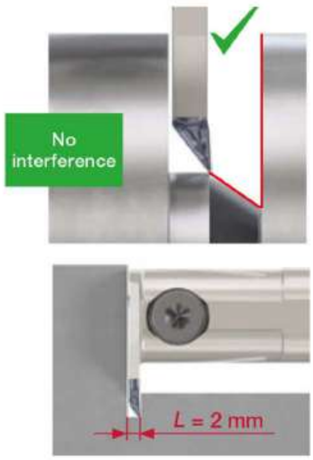
Enables high feed machining when used with high rigidity holders

DTV insert featuring 35° nose angle for profile turning applications

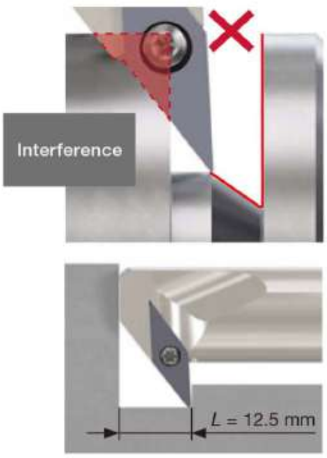
Produces various profiles

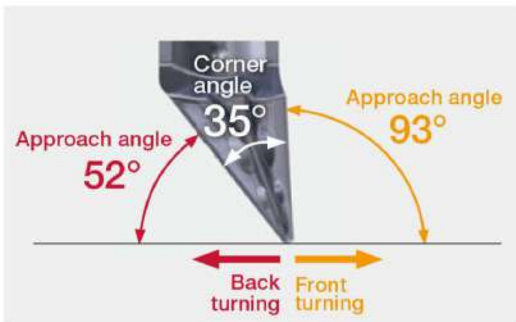
Offered in the shape of a grooving insert, the new insert allows complex profiling without tool interference, which is not possible with conventional ISO turning inserts.

TUNGCUT
DTV



ISO insert
V type





Will be released on April 14, 2025

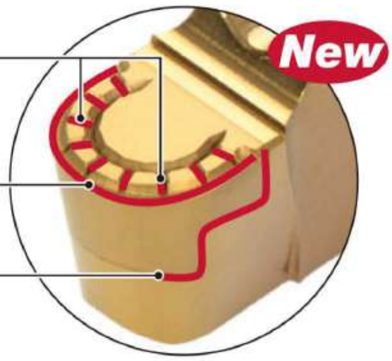
CBN tipped profiling insert with 3D chipbreaker for hardened steel parts

STR type

Eliminate chip bird nesting during hard part turning

STR inserts WAVYJOINT

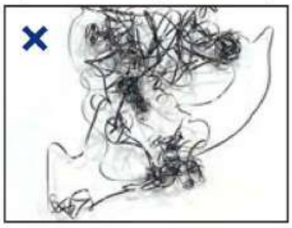
- **TungCut** full radius inserts with HP chipbreaker features chip former that is integrated into the rake face all round the cutting edge, eliminating chip nesting
- The geometry is designed to reduce cutting loads, eliminating chatter generation during machining
- Secure bondage between the CBN tip and insert enabled with WavyJoint technology



Chip control

STR insert
(with chipbreaker)

Competitor
(with no chipbreaker)



H

Insert	: STR300-HP BXA10
Toolholder	: CTEL2525-3T09
Workpiece material	: SUJ2 / B1 (60 - 62HRC)
Cutting speed	: Vc = 120 m/min
Feed	: f = 0.2 mm/rev
Depth of cut	: ap = 0.15 mm
Application	: External profiling, continuous
Coolant	: Dry

STR insert provided better chip control.

NEW PRODUCT NEWS

Tungaloy Report No. 391-G

TUNGCUT

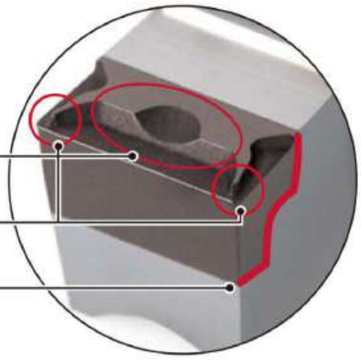
CBN tipped grooving insert with 3D chipbreaker for hardened steel parts


STX type

No more concerns with chip bird-nesting during grooving of hardened steel parts

STX inserts WAVYJOINT

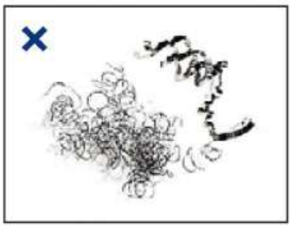
- Functions during grooving processes
- Functions during groove wall cutting and side turning
- Secure bondage between the CBN tip and insert enabled with WavyJoint technology



■ Chip control

STX insert (with chipbreaker)

Competitor (with no chipbreaker)



H

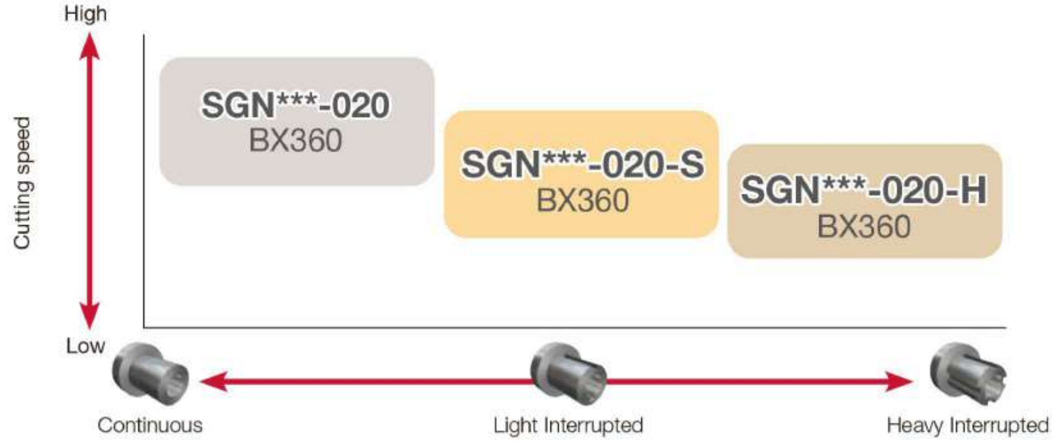
Insert	: STX300-020 BX360
Toolholder	: CTEL2525-3T09
Workpiece material	: SCM415 (60-62HRC)
Cutting speed	: *Vc* = 120 m/min
Feed	: *f* = 0.05 mm/rev
Depth of cut	: ap = 0.3 mm
Application	: O.D. grooving and wall cutting, continuous
Coolant	: Wet

STX insert provided better chip control.

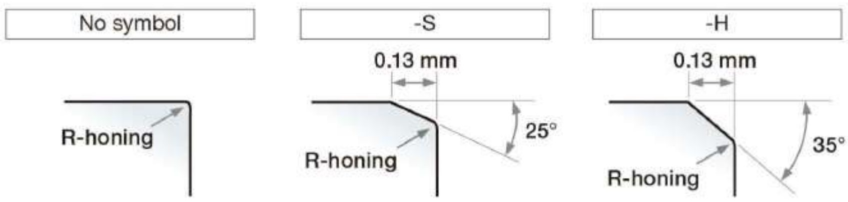
CBN inserts for grooving applications of hardened steel parts

SGN type

Three standard types of edge preparations are available according to the cutting conditions

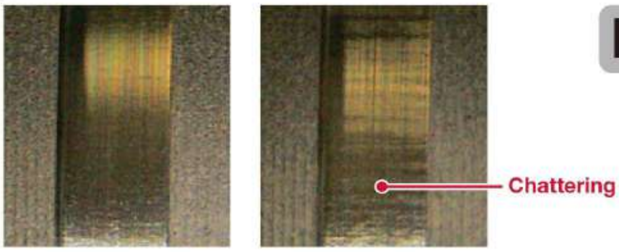


Edge preparations



CUTTING PERFORMANCE

Continuous grooving



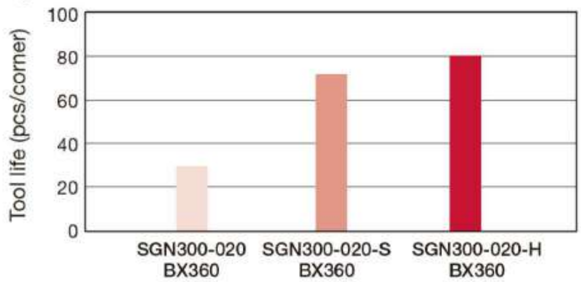
SGN300-020 BX360 | **SGN300-020-S** BX360

H

Toolholder	: CTEL2525-3T
Workpiece material	: SCM420 (58HRC)
Cutting speed	: *Vc* = 150 m/min
Feed	: *f* = 0.05 mm/rev
Coolant	: Wet

Inserts without edge preparation symbol recommended for continuous grooving.

Heavy interrupted grooving



H

Toolholder	: CTEL2525-3T
Workpiece material	: SCM435 (58HRC)
Cutting speed	: *Vc* = 100 m/min
Feed	: *f* = 0.05 mm/rev
Coolant	: Dry

-H type edge preparation recommended for heavy interrupted grooving.

TUNGCUT

CBN insert for high feed turning of hardened steel parts

Innovative insert design for turning

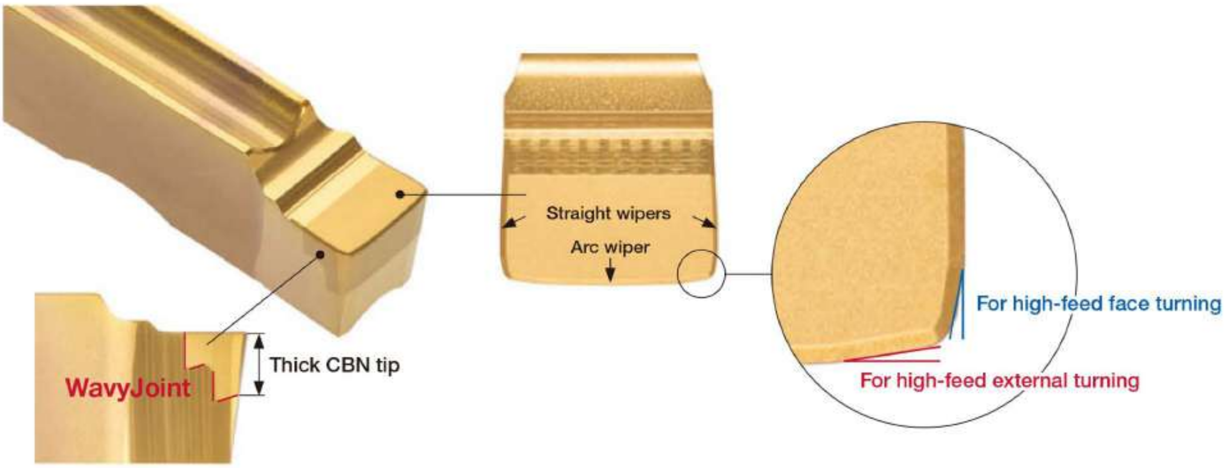
Optimized cutting edge geometry for high feed turning

- Turning insert in the shape of grooving insert—This innovative design allows the cutting edge to have longer wipers than traditional ISO wiper inserts, providing superior surface finishing in high feed machining.
- Front and side cutting edges form small entry angles that generate chip thinning effect during machining at a high feed rate.

Note: When used for grooving, the insert will not provide the groove bottom with square corners due to the cutting edge profile with an arc wiper.

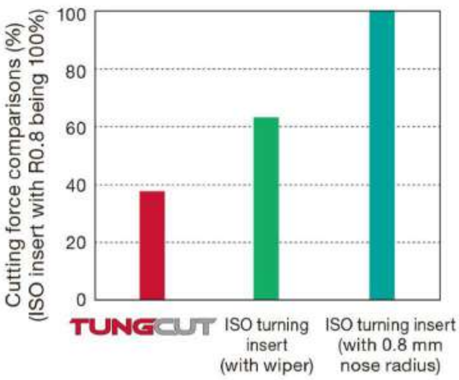
WavyJoint technology for enhanced brazing

- WavyJoint technology provides enhanced CBN tip and carbide insert bonding. A thick CBN tip dissipates the heat accumulated on the cutting edge during high feed machining, preventing the CBN tip from de-brazing.



Low cutting force

Optimized for high feed machining, the cutting edge creates thin chips, generating lower cutting forces than ISO inserts.



H

Insert	: STH500-SR BXA10
	: 2QP-CNGA120408WL BXA10
	: 2QP-CNGA120408 BXA10
Holder	: CTEL2525-5T12
	: ACLNL2525M12-A
Workpiece material	: SCM415 (60HRC)
Cutting speed	: Vc = 150 m/min
Feed	: f = 0.9 mm/rev
Depth of cut	: ap = 0.1 mm
Application	: External turning, continuous cut
Coolant	: Wet

High productive machining (for external turning)

An arc wiper on the front cutting edge provides superior surface finish when external turning at high feed rates.

	Feed: *f* (mm/rev)					
	0.1	0.3	0.6	0.9	1.2	1.5
TUNGCUT	✓	✓	✓	✓	✓	✓
ISO turning insert (with wiper)	✓	✓	×	×	×	×
ISO turning insert (with 0.8 mm nose radius)	✓	×	×	×	×	×

✓ Rz = less than 3.2 μm
× Rz = 3.2 μm or greater

H

Insert	: STH500-SR BXA10
	: 2QP-CNGA120408WL BXA10
	: 2QP-CNGA120408 BXA10
Holder	: CTEL2525-5T12
	: ACLNL2525M12-A
Workpiece material	: SCM415 (60HRC)
Cutting speed	: *Vc* = 150 m/min
Feed	: *f* = 0.1 - 1.5 mm/rev
Depth of cut	: *ap* = 0.1 mm
Application	: External turning, continuous cut
Coolant	: Wet

High productive machining (for face turning)

Straight wipers on the side cutting edges provides superior surface finish when face turning at high feed rates.

	Feed: *f* (mm/rev)					
	0.1	0.3	0.6	0.9	1.2	1.5
TUNGCUT	✓	✓	✓	×	×	×
ISO turning insert (with wiper)	✓	✓	×	×	×	×
ISO turning insert (with 0.8 mm nose radius)	✓	×	×	×	×	×

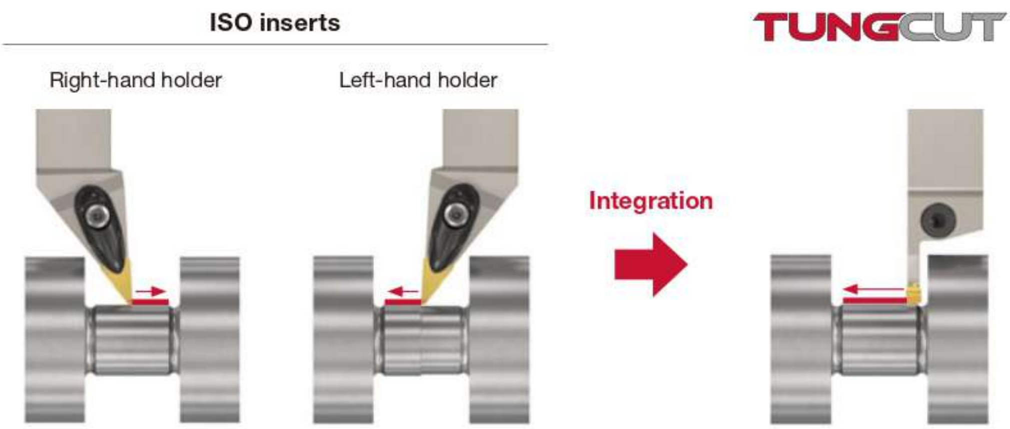
✓ Rz = less than 3.2 μm
× Rz = 3.2 μm or greater

H

Insert	: STH500-SR BXA10
	: 2QP-CNGA120408WL BXA10
	: 2QP-CNGA120408 BXA10
Holder	: CTEL2525-5T12
	: ACLNL2525M12-A
Workpiece material	: SCM415 (60HRC)
Cutting speed	: *Vc* = 120 m/min
Feed	: *f* = 0.1 - 1.5 mm/rev
Depth of cut	: *ap* = 0.1 mm
Application	: Face turning, continuous cut
Coolant	: Wet

Integration of machining processes

To avoid tool interference, conventional turning method with ISO inserts requires two passes with two different turning holders. Using TungCut CBN insert with a grooving toolholder enables the machining processes to be integrated in a single machining pass.

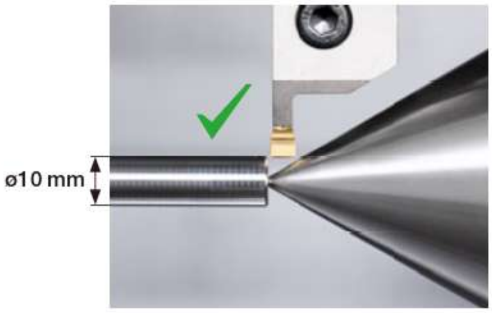


TUNGCUT

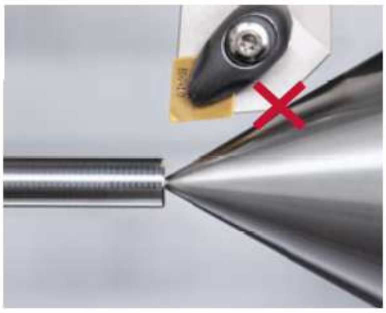
Minimum tool interference

TungCut insert is positioned perpendicular to the workpiece center axis. This minimizes tool interference when entering the cut from the tail stock side, making it easy to machine small diameter shafts.

TUNGCUT



ISO inserts



CAUTIONS WHEN TURNING WITH TUNGCUT

Since the wiper geometry consists of a long arc, **TungCut CBN** insert provides wavy surface finishing, despite the results with excellent Ra values.

TUNGCUT
Feed: f = 1 mm/rev

Surface quality
Ra = 0.3 µm

ISO turning insert
(with 0.8 mm nose radius)
Feed: f = 0.1 mm/rev

Surface quality
Ra = 0.4 µm

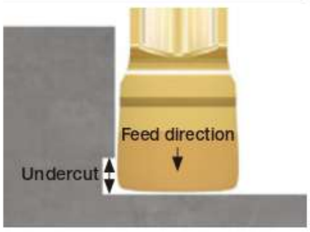
H

Insert	: STH500-SR BXA10
	: 2QP-CNGA120408 BXA10
Holder	: CTEL2525-5T12
	: ACLNL2525M12-A
Workpiece material	: SCM415 (60HRC)
Cutting speed	: *Vc* = 150 m/min
Feed	: f = 0.1, 1 mm/rev
Depth of cut	: *ap* = 0.1 mm
Application	: External turning, continuous cut
Coolant	: Wet

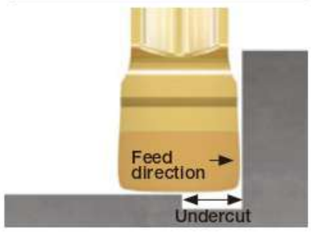
Due to the wiper geometry, ensure machine is programmed so that the wiper section of the cutting edge completely passes over the workpiece edge when external turning or face turning, otherwise, material will be left uncut on the workpiece. When cutting towards the wall or bottom, provide proper undercutting, as listed below, at the wall or bottom to eliminate uncut material.

Designation	CW±0.025	Application	Minimum undercutting required (mm)
STH300-SR	3	External	1.5
		Face	0.4
STH500-SR	5	External	2.5
		Face	0.7

Face turning



External turning



CHIPBREAKER GUIDE

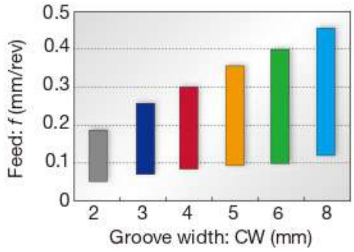
External/internal grooving and parting

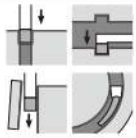
DGM type (2 corners)
SGM type (1 corner)

1st choice for grooving and parting

- Smooth chip evacuation
- Well-designed edge with high strength
- Handed insert available

CW = 2 - 8 mm



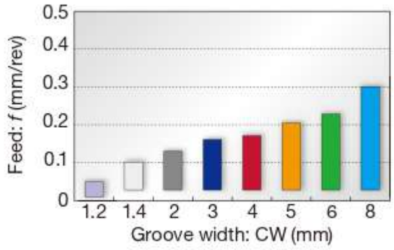


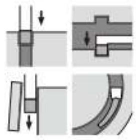
DGS type (2 corners)
SGS type (1 corner)

Lower cutting force and superior sharpness

- Unique-designed edge and chipbreaker
- Handed insert available

CW = 1.2 - 8 mm



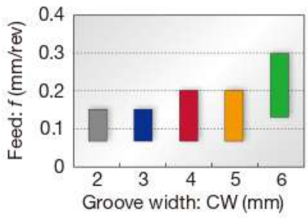


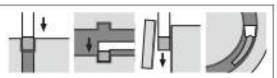
DGL type (2 corners)

1st choice for mild steel

- Chipbreaker with excellent chip control at low feed
- Suitable for mild steel that often gives difficulties in chip control

CW = 2 - 6 mm



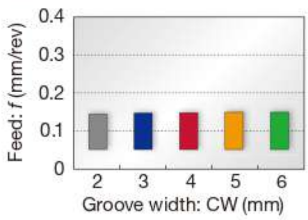


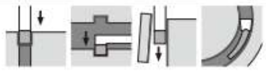
DGG type (2 corners)

For non-ferrous materials and titanium

- Chipbreaker with low cutting force
- Sharp cutting edge that prevents vibration and delivers fine surface finish

CW = 2 - 6 mm



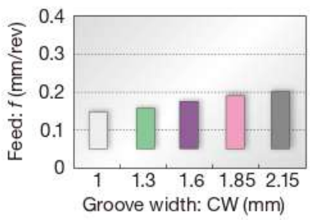


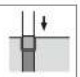
DGE type (2 corners)

For high accurate and shallow groove

Excellent chip control

CW = 1 - 2.15 mm





Scan the QR code for product details and dimensions.

TUNGCUT

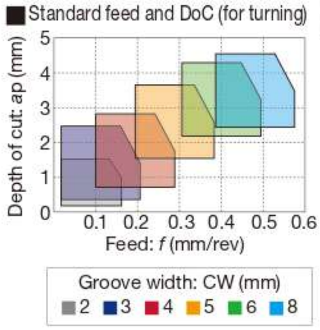
External/internal/face grooving and turning

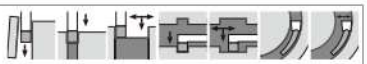
DTM type (2 corners)

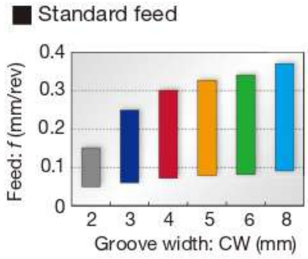
General purpose

- 1st choice for grooving and turning
- Suitable for light to medium cutting
- Excellent chip control in machining steel, alloy steel, stainless steel, and heat-resistant alloy

CW = 2 - 8 mm





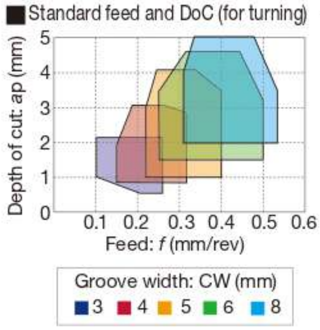


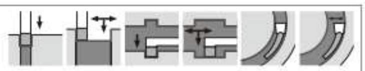
DTE type (2 corners)

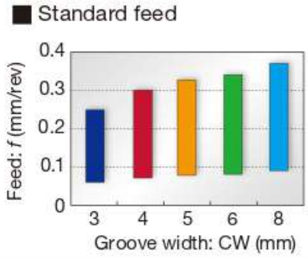
General purpose

- Unique chipbreaker makes chips shorter
- Molded and ground inserts available

CW = 2.65 - 8 mm





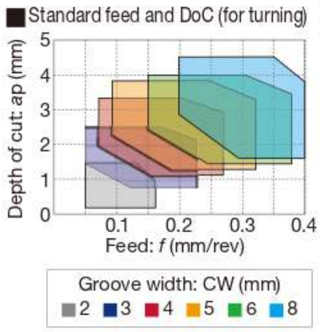


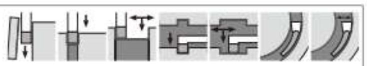
DTX type (2 corners)

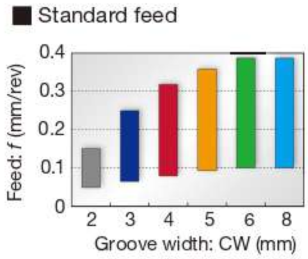
Multi-functional type

- Well balanced sharpness and strength
- Multi-functional insert

CW = 2 - 8 mm







Scan the QR code for product details and dimensions.

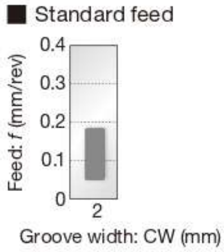
Internal grooving

DGIM type (2 corners)

2 mm insert width only (For general purpose)

- Unique chipbreaker for excellent chip control
- Excellent fracture resistance due to optimum land on the cutting edge
- For general applications on steels & stainless steels

CW = 2 mm

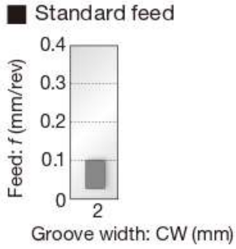


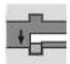
DGIS type (2 corners)

2 mm insert width only (Lower cutting force)

- Lower cutting force
- Excellent fracture resistance due to optimum land on the cutting edge
- Applicable for low carbon steels & stainless steels

CW = 2 mm





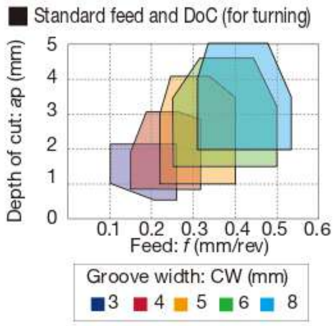
Internal grooving and turning

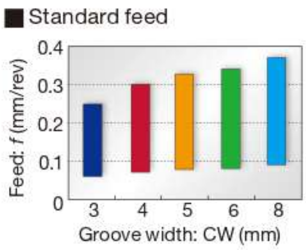
DTI type (2 corners)

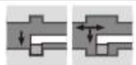
For general purpose I.D. grooving

- Unique chipbreaker makes chips shorter
- Molded and ground inserts available

CW = 3 - 8 mm







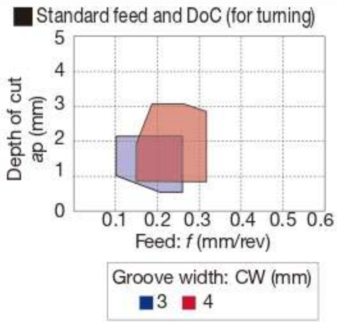
Face grooving and turning

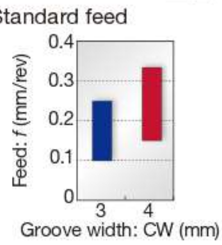
DTF type (2 corners)

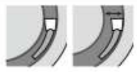
For face grooving

- 1st choice for face grooving
- Unique chipbreaker makes chips shorter

CW = 3, 4 mm







Scan the QR code for product details and dimensions.

Profiling

DTV type (2 corners)

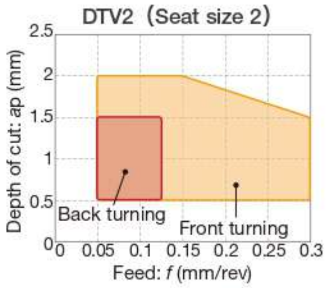
35° nose angle for profiling

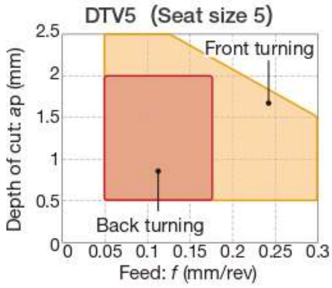
- Produces various profiles
- Excellent chip control

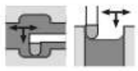
CW = 1.85, 4, 5 mm

■ Note:
Depending on the depth of cut and cutting direction, the insert support may require modification to avoid tool collision.

■ Standard feed and DoC







Profiling and undercutting

DTR type (2 corners)
STR type (1 corner)

Molded
DTR, STR

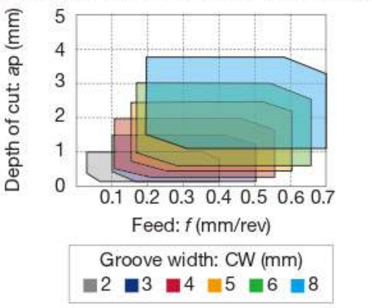
Ground
DTR

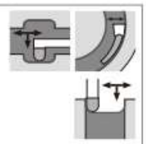
Full radius type

- Excellent chip control
- Molded and ground inserts available

CW = 2 - 8 mm

■ Standard feed and DoC (for turning)



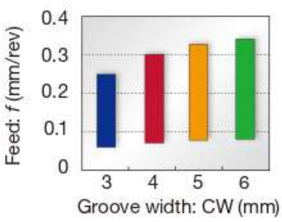


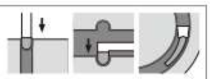
DTIU type (2 corners)

Full radius type

Excellent chip control for undercutting
CW = 3 - 6 mm

■ Standard feed and DoC





Scan the QR code for product details and dimensions.

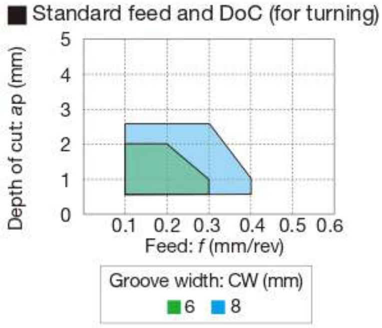
Aluminium wheel machining

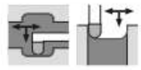
DTA type (2 corners)

Full radius type

- Excellent chip control
- For aluminium wheel profiling
- Ground insert

CW = 6, 8 mm





External/internal/face grooving and turning of hardened steel

STX type (1 corner)

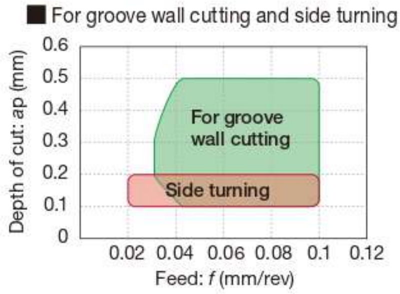
For hardened steel cutting

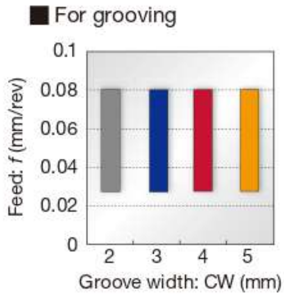
- Grooving insert with 3D chipbreaker for hardened steel parts. Provides excellent chip control
- High tolerance width for finishing

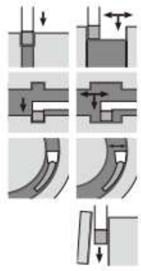
CW = 2 - 5 mm

(Tol. : ±0.025 mm)

Standard feed and DoC







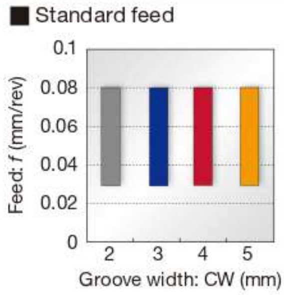
SGN type (1 corner)

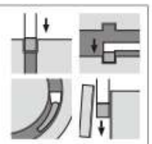
For hardened steel cutting

- Optimum cutting edge shape for grooving of hardened steels
- High tolerance width for finishing

CW = 2 - 5 mm

(Tol. : ±0.025 mm)





Scan the QR code for product details and dimensions.

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New

External profiling of hardened steel

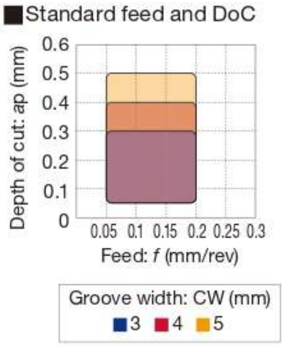
STR type (1 corner)	Full radius type	

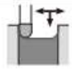
STR type
(1 corner)

Full radius type

Profile insert with 3D chipbreaker that delivers excellent chip control during hard part turning.
CW = 3 - 5 mm

Note: This insert is not recommended for use in grooving applications.





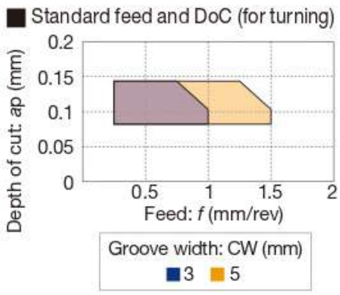
High feed external/internal/face turning of hardened steel

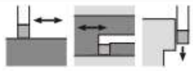
STH type
(1 corner)

For high feed turning of hardened steel parts

High efficiency machining using light D.O.C. and increased feeds
CW = 3, 5 mm

Note: This insert is not recommended for use in grooving applications.





Scan the QR code for product details and dimensions.

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Hardness	Priority	Grade	Cutting speed Vc (m/min)
P	Steel S45C, SCM435, etc. C45, 34CrMo4, etc.	< 300 HB	First choice	AH7025, AH725	50 - 180
		< 300 HB	Wear resistance	T9225, AH8005	80 - 300
		< 300 HB	Impact resistance	AH6235, GH130	50 - 120
		< 300 HB	Surface quality	NS9530	80 - 220
M	Stainless steel SUS303, SUS304, etc. X10CrNiS18-9, X5CrNi18-9, etc.	< 200 HB	First choice	AH7025, AH725	50 - 120
		< 200 HB	Wear resistance	AH8005	50 - 120
		< 200 HB	Impact resistance	AH6235, GH130	50 - 120
K	Grey cast iron FC250, etc. 250, etc.	-	First choice	T515	150 - 700
		-	Impact resistance	AH8005, AH7025, AH6235, GH130	50 - 180
	Ductile cast iron FCD450, etc. 450-10S, etc.	-	First choice	T515	150 - 300
		-	Impact resistance	AH8005, AH7025, AH6235, GH130	50 - 120
N	Aluminium alloys Si < 12%	-	First choice	TH10	100 - 500
		-	First choice	KS05F	100 - 600
S	Superalloys Inconel718, etc.	< HRC 40	First choice	AH8005	20 - 60
		< HRC 40	Impact resistance	AH7025, AH725, AH6235	20 - 40
	Titanium alloys Ti-6Al-4V, etc.	< HRC 40	First choice	KS05F	20 - 100
		< HRC 40	Impact resistance	AH7025, AH725	20 - 80

Please see page **P23 - 28** for feed: *f* (mm/rev).

DTV

ISO	Workpiece material	Grade	Cutting speed Vc (m/min)	Feed f (mm/rev)
P	Low carbon steel S15C, SS400, etc. C15E4, E275A, etc.	AH7025	50 - 180	0.05 - 0.3
	Carbon steel, Alloy steel S55C, SCM440, etc. C55, 42CrMo4, etc.	AH7025	50 - 180	0.05 - 0.3
	Free cutting steel SUH22, SUH23, etc.	AH7025	50 - 180	0.05 - 0.3
M	Stainless steel SUS304, X5CrNi18-9, etc.	AH7025	50 - 120	0.05 - 0.3
K	Grey cast iron FC250, etc. 250, etc.	AH7025	50 - 180	0.05 - 0.3
	Ductile cast iron FCD450, etc. 450-10S, etc.	AH7025	50 - 120	0.05 - 0.3
S	Titanium alloys Ti-6Al-4V, etc.	AH7025	20 - 80	0.05 - 0.3
	Superalloys Inconel718, etc.	AH7025	20 - 80	0.05 - 0.3

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STX

ISO	Workpiece material	Hardness	Priority	Grade	Cutting speed *Vc* (m/min)
H	External grooving	> 50 HRC	First choice	BX360	80 - 150
	Groove wall cutting				
	Side turning				
	Internal grooving	> 50 HRC	First choice	BX360	80 - 120
	Face grooving				

SGN

ISO	Grade	Edge preparation	Workpiece condition	Cutting speed *Vc* (m/min)	Feed *f* (mm/rev)
H	BX360	No symbol	Continuous	80 - 150	0.03 - 0.08
		-S	Light interrupted	50 - 120	0.03 - 0.08
		-H	Heavy interrupted	40 - 100	0.03 - 0.06

STR

ISO	Workpiece material	Hardness	Priority	Grade	Cutting speed *Vc* (m/min)
H	External profiling	> 50 HRC	First choice	BXA10	80 - 180

STH

ISO	Grade	CW	Application	Cutting speed *Vc* (m/min)	Depth of cut *ap* (mm)	Feed *f* (mm/rev)
H	BXA10	3	External turning	100 - 230	0.08 - 0.12	0.4 - 1
			Face turning	100 - 230	0.08 - 0.12	0.4 - 0.8
		5	External turning	100 - 230	0.08 - 0.12	0.5 - 1.5
			Face turning	100 - 230	0.08 - 0.12	0.5 - 0.8

GUIDELINE FOR ORDERING SPECIAL INSERTS

Specially designed inserts are available upon request.

Acceptable specification

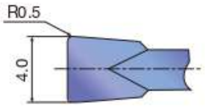
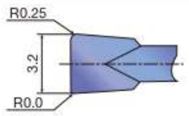
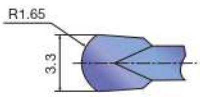
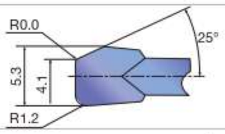
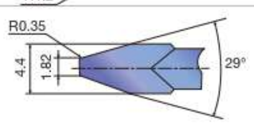
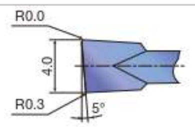
Special inserts are manufactured from the base insert styles shown below.
Please contact Tungaloy for more details.

External grooving & turning			Internal grooving & turning	Profiling & undercutting	
DTE (Ground) 	**DGE (Ground)** 	**SGG (Ground)** 	**DTI (Ground)** 	**DTR (Ground)** 	**DTIU (Ground)** 

Designation system for special inserts (sample)

DTE	320	-	000R-025L	AH725
❶ Main style of insert	❷ Max. width of insert		❸ Additional codes	❹ Grade

Shape samples

Shape	Samples of designation	Note
	**DTE400-050 AH7025**	Base style: DTE type Special corner radius
	**DTE320-000R 025L AH725**	Base style: DTE type Special corner radius, asymmetric type
	**DTR330-165 T515**	Base style: DTR type Full radius type with special insert width
	**DTE530-120R-25LA T9225**	Base style: DTE type Special figure of groove, asymmetric type
	**DGG440-035-29A KS05F**	Base style: DTE type Special figure of groove
	**DTE400-030R-005RA NS9530**	Base style: DTE type Right handed insert with special angle and corner radius.

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Expedited delivery service for **special grooving insert**

Expedited delivery service for special grooving inserts is rendered under the following lead time and quantity terms. Please note that this service is applicable only for the order of an initial test batch; a repeat order is to be placed through the regular ordering process.

ORDER
3 - 15 pcs.

LEAD TIME
from the point of order receipt
(excluding transportation)

COATED INSERT
4 weeks

NON-COATED INSERT
3 weeks

DELIVERY

TUNGCUT

Special width
& corner radii

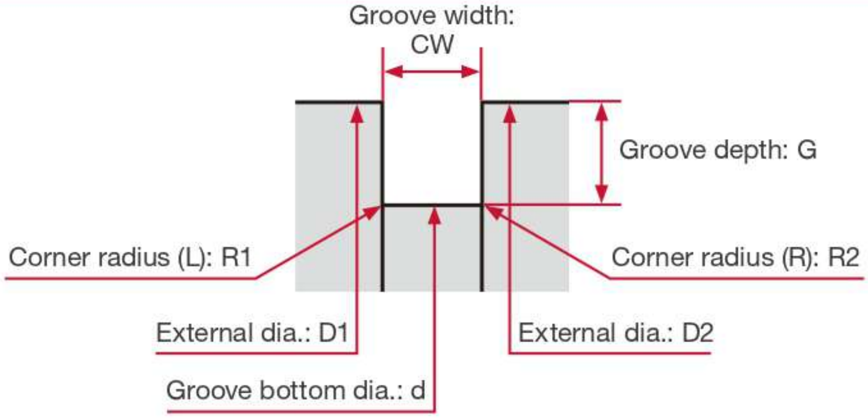
With chamfer
edges

DGN Chipbreaker

DTE Chipbreaker

	Grade		
	Coated carbide		Cermet
	AH7025	AH725	NS9530
DGN200	●	●	●
DGN300	●	●	●
DGN400	●	●	●
DGN500	●	●	●
DGN600	●	●	●
DTE300	●	●	●
DTE400	●	●	●
DTE500	●	●	●
DTE600	●	●	●
DTE800	●	●	

Special width & corner radii



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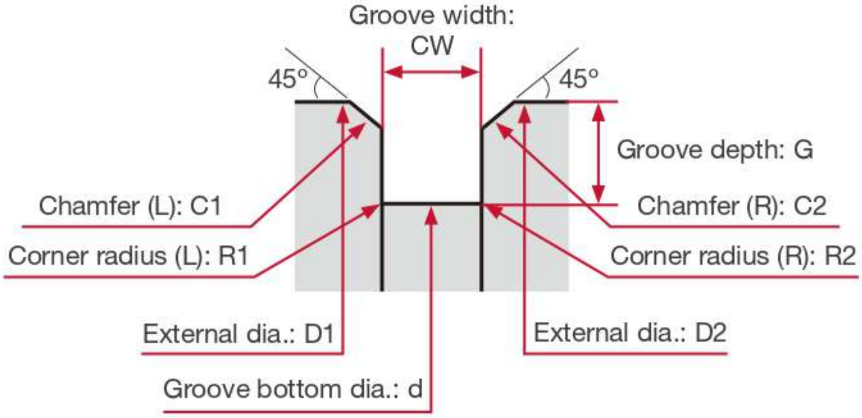
Edge type	Insert blank	Seat size	Groove width (CW)	Max. groove depth (G)	Corner radii (R1 / R2)	Toolholder
A	DGN* DTE*	2 - 6	0.5 - 0.74 mm	- 1.5 mm	0 or 0.05 - W/2 (Full radius is available)	CTEFR/L
			0.75 - 0.99 mm	- 1.8 mm		
			1 - 1.49 mm	- 2.5 mm		
			1.5 - 6 mm	- 4.8 mm		
B	DGN300/DTE300	3	2.65 - 3 mm	Up to holder (Max.18 mm)		CTER/L
	DGN400/DTE400	4	3.3 - 4 mm			
	DGN500/DTE500	5	4.2 - 5 mm	Up to holder (Max.28 mm)		CTEFR/L
	DGN600/DTE600	6	5.2 - 6 mm			
	DTE800	8	6.4 - 8 mm			CTER/L

Tolerances of the insert are based on the standard item.

Edge type A

Edge type B

Grooving & chamfering



TUNGCUT

Insert blank	Seat size	Groove width (CW)	Max. groove depth (G)	Corner radii (R1 / R2)	Toolholder
DGN200 DGN300 DGN400 DGN500 DGN600	2 - 6	1 - 4.8 mm	1 - 4 mm	0 or 0.05 - W/2 (Full radius is available)	CTEFR/L CTEFR/L (Modified)

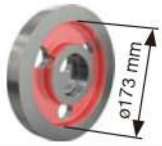
Tolerances of the insert are based on the standard item.

Max. width of chamfer is 0.5 mm.

Some combinations of a groove width, depth, a corner radius(R), and chamfer may not be manufacturable.

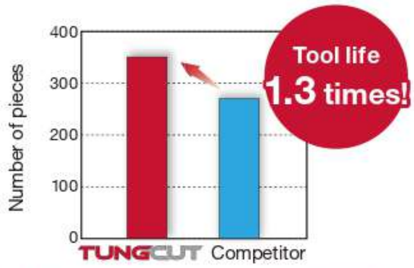
TUNGSHORTCUT/TUNGCUT

PRACTICAL EXAMPLES

Workpiece type	Hexagonal bushing	Distributor block
Toolholder	CTER2020-3T12	CAFR6T25-150250-CHP
Insert	DGM3-020	DTR6-300
Grade	AH6235	AH8005
Workpiece material	SS400 / E275A P 	Stainless steel M 
Cutting conditions: Grooving width : CW (mm)	3	6
Cutting speed : *Vc* (m/min)	65	170
Feed : *f* (mm/rev)	0.06	0.1
Cutting edge depth : CDX (mm)	5	20
Machining	External grooving	Face grooving
Coolant	Wet	Wet

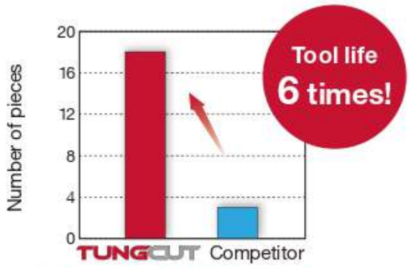
Results

Hexagonal bushing:



TungCut, with its extremely tough AH6235 grade insert, provided 1.3 times tool life increase, while eliminating edge chipping during the machining of interrupted O.D. grooving operation.

Distributor block:

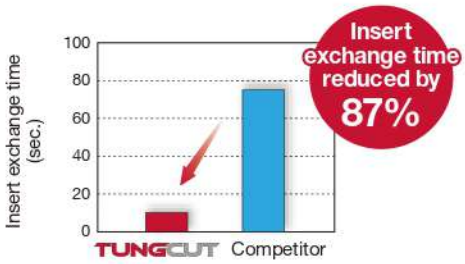


TungCut and **TungModularSystem** provided rigid insert clamping and coolant-through capability, allowing significant tool life increase.

Workpiece type	Pneumatic part	Bolt parts
Toolholder	JTTER1010H1.2D12	CHGP82-4T / CHTBR2525-82
Insert	DGS1.2-003	SGS4-030
Grade	AH725	AH7025
Workpiece material	SUS304 / X5CrNi18-9 M 	S45C / C45 P 
Cutting conditions: Grooving width : CW (mm)	1.2	4
Cutting speed : *Vc* (m/min)	50	70
Feed : *f* (mm/rev)	0.02	0.15
Cutting edge depth : CDX (mm)	4	25
Machining	Parting-off	Parting-off
Coolant	Wet	Wet

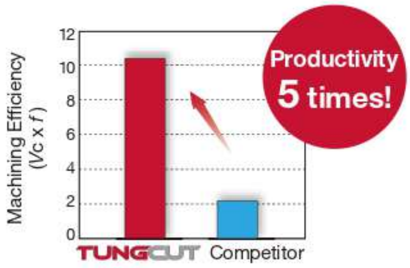
Results

Pneumatic part:



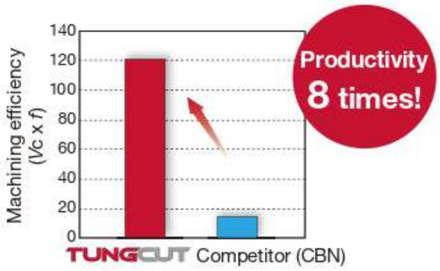
The innovative Side Clamp insert clamping method eliminated the need for removing the entire tool from the tool post, reducing tool change time by 87%.

Bolt parts:

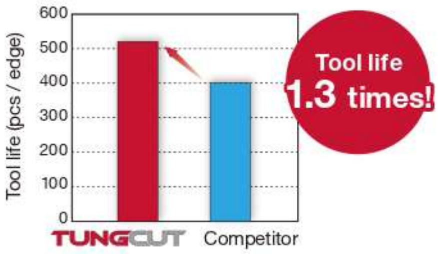


TungFeed-Blade doubled tool life, while also increasing feed rate 5 times when used with the high rigidity CHTBR holder.

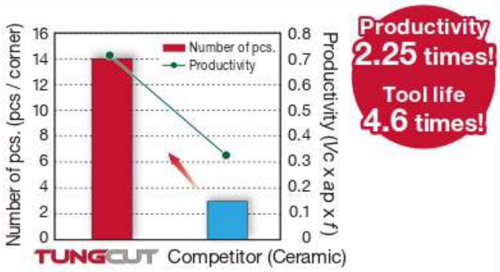
Workpiece type	Cutting Tool	Shaft
Toolholder	CTER2525-4T10	CTER2525-3T09
Insert	SGN400-020-H	SGN300-020-H
Grade	BX360	BX360
Workpiece material	Hardened steel (46 - 51HRC)  H	20MnCr5 (55 - 58HRC)  H
Cutting conditions – Grooving width : *CW* (mm)	4	3
Cutting conditions – Cutting speed: *Vc* (m/min)	79 - 135	50
Cutting conditions – Feed : *f* (mm/rev)	0.11	0.05
Cutting conditions – Machining	External grooving, interrupted cuts	External grooving, interrupted cuts
Cutting conditions – Coolant	Dry	Dry
Results	 **TungCut CBN** provided excellent fracture resistance during heavy interrupted cutting, achieving 1.5 times tool life increase over the competitor.	 **TungCut CBN** provided excellent fracture resistance during the machining of spline shafts, extending tool life over the competitor.

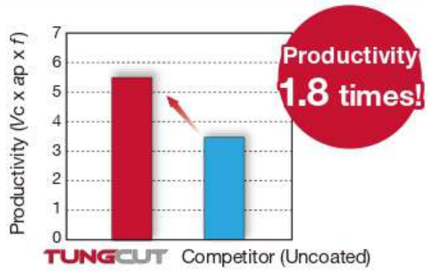
Workpiece type	Shaft	Shaft
Toolholder	CTER2525-3T25	CTER2525-3T09
Insert	STH300-SR	STH300-SR
Grade	BXA10	BXA10
Workpiece material	SUJ2 / B1 (60HRC)  H	SKD11 / X153CrMoV12 (60 - 64HRC)  H
Cutting conditions – Cutting speed: *Vc* (m/min)	150	120
Cutting conditions – Feed : *f* (mm/rev)	0.8	1
Cutting conditions – Depth of cut : *ap* (mm)	0.1 x 3 passes	0.055 x 91 passes
Cutting conditions – Machining	External turning	External turning
Cutting conditions – Coolant	Wet	Wet
Results	 **TungCut CBN** enabled 8x higher feed rate than ISO insert.	5 mm stock had to be removed by external turning. **TungCut CBN** provided a high feed rate of 1 mm/rev., providing significantly reduced machining time.

![TUNGSHORTCUT/TUNGCUT]

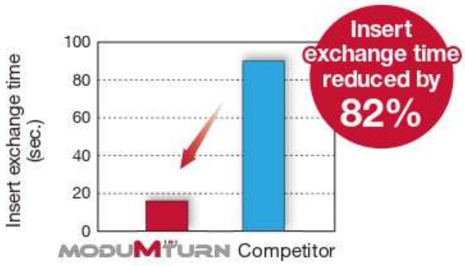
<table>
<tr><th colspan="2">Workpiece type</th><th>Piston head</th><th>Shaft</th></tr>
<tr><td colspan="2">Toolholder</td><td>CTEL2525-5T12</td><td>CTER2525-4T10</td></tr>
<tr><td colspan="2">Insert</td><td>STX500-020</td><td>STX400-020</td></tr>
<tr><td colspan="2">Grade</td><td>BX360</td><td>BX360</td></tr>
<tr><td colspan="2" rowspan="2">Workpiece material</td><td>SCM415 (50-60HRC)</td><td>SKD61 / X40CrMoV5-1 (58-62HRC)</td></tr>
<tr><td> H</td><td> H</td></tr>
<tr><td rowspan="5">Cutting conditions</td><td>Groove width : CW (mm)</td><td>5</td><td>4</td></tr>
<tr><td>Cutting speed : Vc (m/min)</td><td>97 - 106 (for groove walls), 79 (for side-turning)</td><td>120</td></tr>
<tr><td>Feed : f (mm/rev)</td><td>0.03 (for groove walls), 0.08 (for side-turning)</td><td>0.06 (for groove walls), 0.1 (for side-turning)</td></tr>
<tr><td>Machining</td><td>External grooving, wall cutting, and side turning</td><td>External grooving, wall cutting, and side turning</td></tr>
<tr><td>Coolant</td><td>Dry</td><td>Wet</td></tr>
<tr><td colspan="2">Results</td><td>

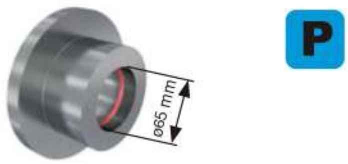
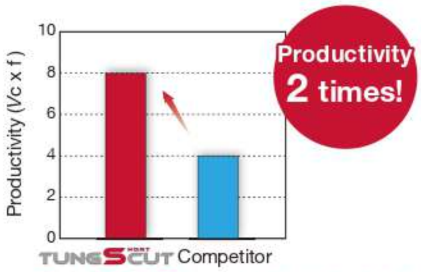
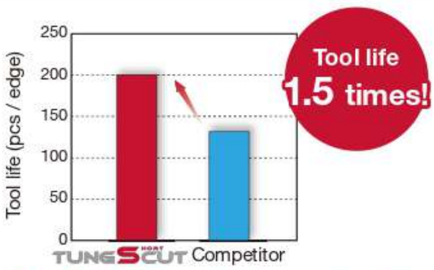
TungCut CBN tipped STX insert provided excellent chip control, while eliminating nesting of chips.
As a result, tool life increased by 1.3 times.</td><td>

TungCut CBN tipped STX insert provided excellent chip control, while eliminating bird nesting of chips.
As a result, tool life increased by 1.3 times.</td></tr>
<tr><th colspan="2">Workpiece type</th><th>New Roll</th><th>New Crush cut knife</th></tr>
<tr><td colspan="2">Toolholder</td><td>CTER2525-3T12</td><td>CTEL2020-3T09</td></tr>
<tr><td colspan="2">Insert</td><td>STR300-HP</td><td>STR300-HP</td></tr>
<tr><td colspan="2">Grade</td><td>BXA10</td><td>BXA10</td></tr>
<tr><td colspan="2" rowspan="2">Workpiece material</td><td>SKD11 / X153CrMoV12 (62 - 64HRC)</td><td>SUJ2 / 100Cr6 (61 HRC)</td></tr>
<tr><td> H</td><td> H</td></tr>
<tr><td rowspan="5">Cutting conditions</td><td>Groove width : CW (mm)</td><td>3</td><td>3</td></tr>
<tr><td>Cutting speed : Vc (m/min)</td><td>180</td><td>180</td></tr>
<tr><td>Feed : f (mm/rev)</td><td>0.08</td><td>0.07</td></tr>
<tr><td>Machining</td><td>External profile turning</td><td>External profile turning</td></tr>
<tr><td>Coolant</td><td>Wet</td><td>Dry</td></tr>
<tr><td colspan="2">Results</td><td>

TungCut provided 2.25x productivity and 4.6x tool life over the competitor's ceramic insert.</td><td>

TungCut achieved 1.8x productivity over the competitor's coated carbide insert.</td></tr>
</table>

Workpiece type	Part for camera	Torsion bar
Shank	QC-1212X-CHP	QC-1012H-CHP
Head	QC12-JTTEL1.2D20-CHP	QC10-JTTER1.4D16-CHP
Insert	DGS1.2-003	DGS1.4-016
Grade	AH725	AH7025
Workpiece material	SUS303 / X10CrNiS18-9 	Alloy steel 
Cutting conditions: Cutting speed : *Vc* (m/min)	45	85
Cutting conditions: Feed : *f* (mm/rev)	0.03	0.08
Cutting conditions: Machining	Parting-off (CW = 1.2 mm)	Parting
Cutting conditions: Coolant	Wet	Wet
Results	 Thanks to **ModuMini-Turn** quick change system, insert change time was reduced by 82%.	 Using **ModuMini-Turn** modular tooling system eliminated time-consuming external coolant subassembly and provided 86% shorter insert change time.

Workpiece type	Oil hydraulic equipment parts	Flywheel
Toolholder	CTIR10-S2T03-D120	CTIR16S2T06-D200
Insert	STV2S-020-35L-JS	DGS2S-010
Grade	AH725	AH7025
Workpiece material	SUS316 / X5CrNiMo17-12-3 	SCr420 / 20Cr4 
Cutting conditions: Groove width : CW (mm)	-	2
Cutting conditions: Cutting speed : *Vc* (m/min)	80	100
Cutting conditions: Feed : *f* (mm/rev)	0.1	0.2
Cutting conditions: Depth of cut : *ap* (mm)	1	-
Cutting conditions: Machining	Internal turning	Internal grooving
Cutting conditions: Coolant	Wet	Wet
Results	 **TungShortCut** STV insert eliminated chip clogging thanks to its excellent chip control, enabling a higher feed rate than the competitors solid carbide boring bar.	 **TungShortCut** provided superior chip evacuation, eliminating chip jamming. As a result, 1.5x tool life.

CONTACT US

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