INDUSTRY 4.0
PRODUCT ANNOUNCEMENT
UPDATE
2021

TCLAMP™

PARTING & GROOVING PRODUCTS

Insert Widths
3mm (.118")
5mm (.197")

Grade
TB2015 - CBN

Feed Rates
.016 ~ .047 ipr!

Depth of Cut
.003" ~ .005"

High Feed CBN Inserts for Hardened Materials

Features & Benefits:

- T-Clamp CBN inserts for high feed turning of high-hardened workpiece materials
- Inclined chip breaker for good chip control at shallow depths of cut (Maximum .0047")
- Optimized cutting edge design for high feed bi-directional turning
- Excellent surface finish
- Significantly improved productivity with a maximum feed rate from .031-.047 ipr
- TB2015 CBN grade
  - Excellent combination of high hardness and moderate fracture toughness
  - Continuous and light interrupted machining of hardened steel

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Ingersoll Cutting Tools

T-CLAMP™ KEY POINT

Ingersoll has released T-Clamp CBN inserts for high feed turning and excellent machining surface finish of high-hardness workpiece materials.

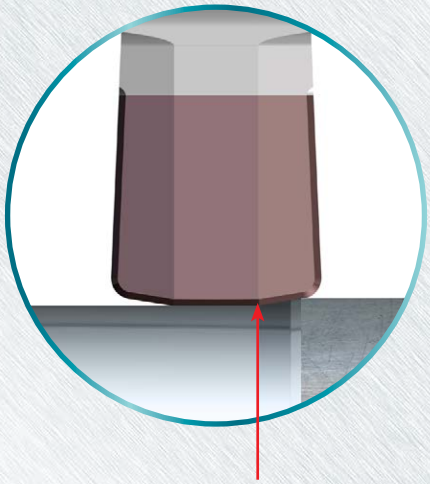
When excellent machining surface roughness is required in the high feed turning of high-hardness materials, the conventional solution is to use CBN turning inserts with a wiper. However, due to the excessive contact and bending by radial cutting forces at low depths of cut, there is a tendency to experience deterioration of the workpiece surface.

To solve this problem, Ingersoll developed a T-Clamp CBN insert that enables bi-directional, high feed turning and provides superior surface finish due to the natural bending of the T-Clamp holder during machining.

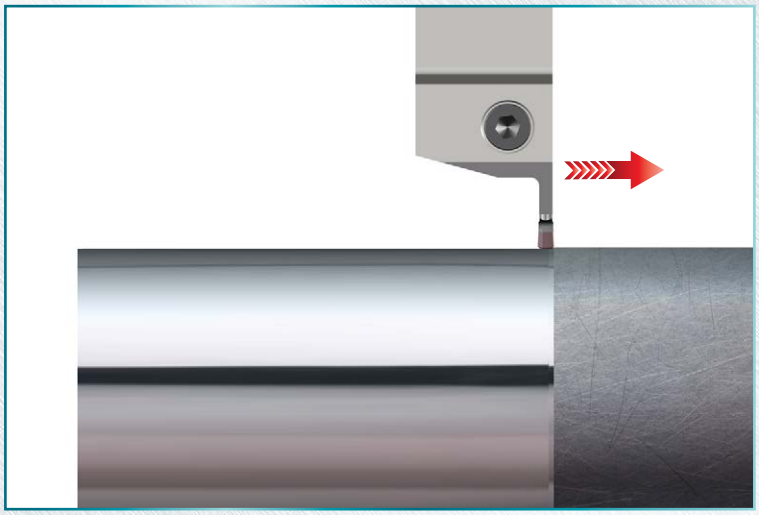
With a maximum feed rate of .031 to .047 ipr, this new line greatly contributes to the productivity improvement of high-hardness automotive parts such as shafts, gears and transmissions. Furthermore, it enables at least twice the high feed machining performance when compared to conventional turning CBN wiper inserts.

As part of the new SFeedUP campaign, the design of this new T-CLAMP insert highlights Ingersoll's hi-speed/hi-feed direction.

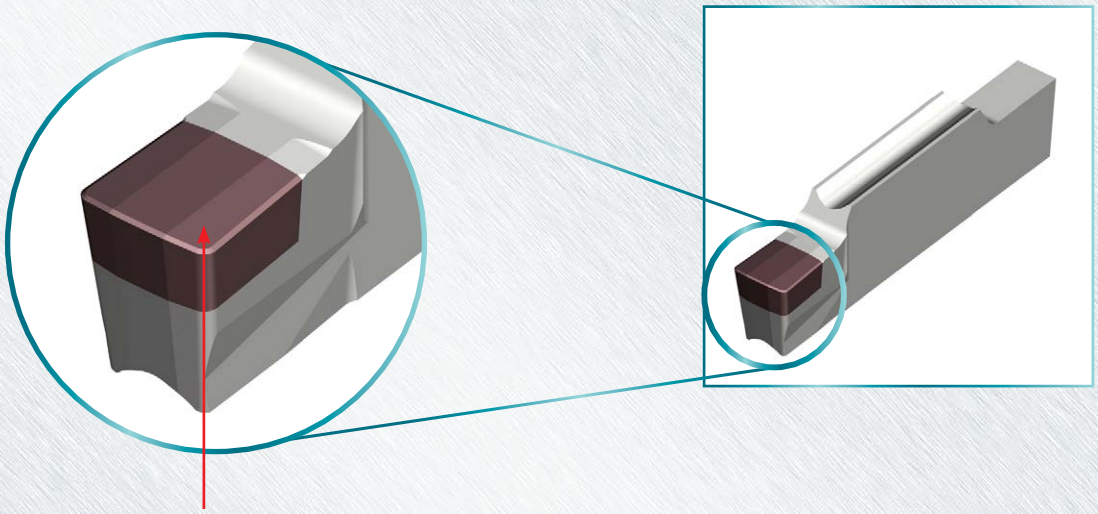
TCLAMP™ INSERT FEATURES



Optimized cutting edge design for bi-directional high feed turning

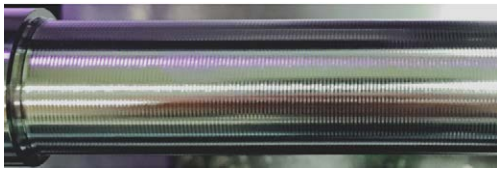
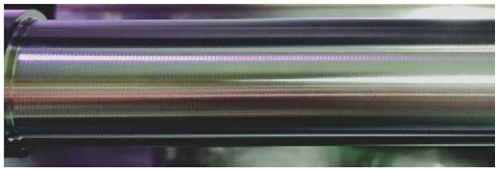


High feed turning with excellent surface finish



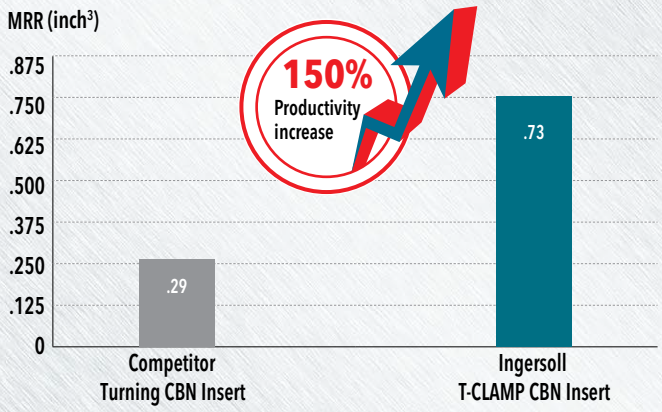
Inclined chip breaker design for chip control at low depths of cut

T-CLAMP™ CASE STUDY 1

		Competitor	Ingersoll
Material		D2, X165CrMoV12 (HRc 58)	
Operation		External Turning	
Insert		High-feed type CBN coated grip insert	TSG 3.0-0.5-HF TB2015
Holder		Grooving Holder	TTER25.4-3
Cutting speed	V (sfm)	330	330
Feed rate	f (ipr)	.030	.030
Depth of cut	ap (inch)	.004	.004
Coolant		Wet	Wet
Machined surface		 Vibration	 No vibration, Ra 0.6µm

T-CLAMP™ CASE STUDY 2

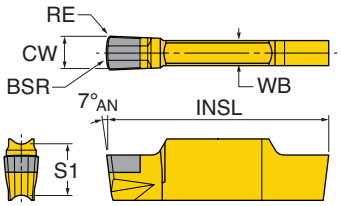
		Competitor	Ingersoll
Material		D2, X165CrMoV12 (HRc 58)	
Operation		External Turning	
Insert		CNGA 432 CBN wiper insert	TSG 5.0-0.3-HF TB2015
Holder		MCLNR16-4D	TTER25.4-5
Cutting speed	V (sfm)	400	400
Feed rate	f (ipr)	.016	.040
Depth of cut	ap (inch)	.004	.004
Table feed	F (ipm)	8.0	20.0
Coolant		Wet	Wet
MRR (inch³)		.29	.73



TCLAMP™ SERIES TSG-HF

CBN INSERTS FOR HIGH FEED TURNING

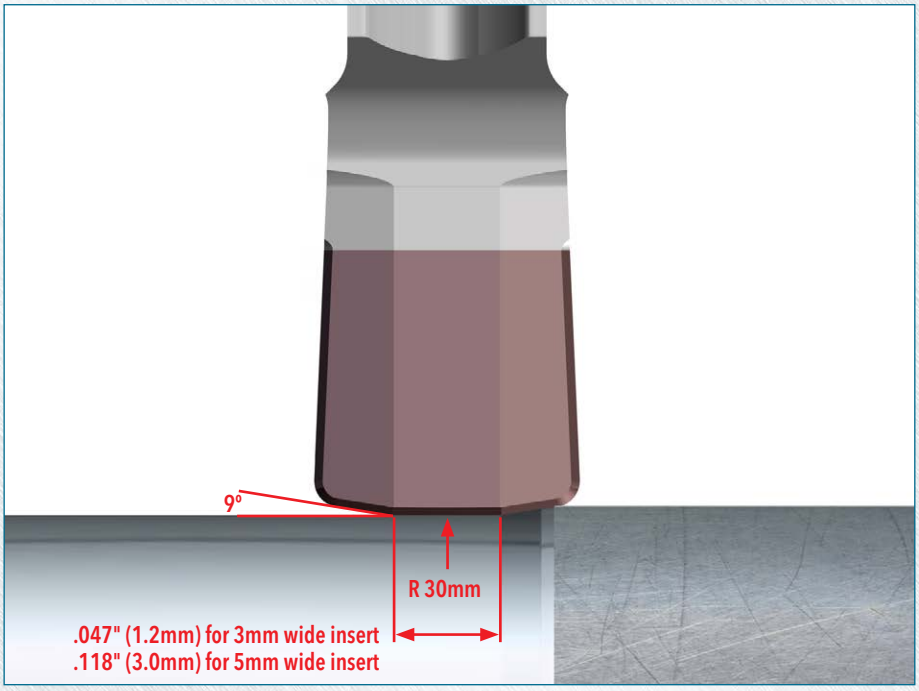
Turning



Part Number	SSC Insert Seat Size	Dimensions (inch)							CBN
		CW Cutting Width	RE Corner Radius	WB Body Width	INSL Insert Length	BSR Wiper Edge Radius	ap Depth of Cut (inch)	Feed (ipr)	TB2015
TSG 3.0-0.3-HF	3	.118 (3mm)	0.012	0.087	0.79	1.18	.003-.005	.016-.031	•
TSG 5.0-0.3-HF	5	.197 (5mm)	0.012	0.157	0.98	1.18	.003-.005	.016-.047	•

Refer to Ingersoll website for complete list of T-Clamp Ultra+ holders.

•: Standard items



T-Clamp CBN High Feed inserts feature 9-degree lead angles (left and right sides) along with a large radius on the end of the insert in order to reduce vibration. The presence of these features should be taken into consideration when programming the work piece.