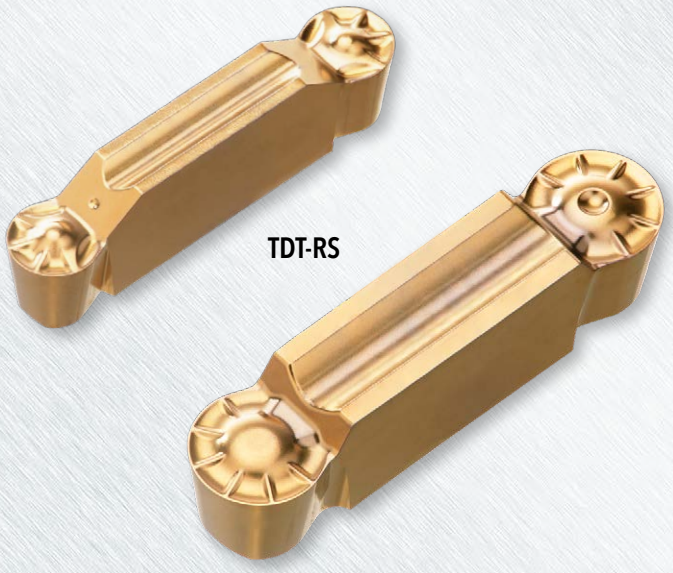
INDUSTRY 4.0 NEW PRODUCT ANNOUNCEMENT 2022

T-CLAMP ULTRA+

PARTING AND GROOVING PRODUCTS



TDT-RS

Insert Widths:
2 mm, 3 mm, 4 mm, 5 mm, 6 mm (.079", .118", .157", .197", .236")

Turning Feed Rates:
.004-.026 ipr

Grooving Feed Rates:
.003-.011 ipr

Double-Ended

Overall Length:
2-4 mm = 20 mm (.787")
5-6 mm = 25 mm (.984")

Grades: TT3010, TT9080, K10

Compatible with all T-Clamp Ultra+ holders

New Precision Round Type Inserts

TDT-RS inserts. Precision, double-ended, full-radius inserts for turning, grooving and profiling.

Ingersoll is expanding its well-established T-Clamp Ultra+ turn/groove product line to include TDT-RS precision, full-radius inserts. These inserts feature a ground flank face and high rake angle, which form a sharp cutting edge that reduces cutting force, provides an excellent surface finish, and extends tool life. A unique daisy wheel chip breaker design provides effective chip control at various cutting depths during profiling, making it ideal for medium to finishing machining applications. TDT-RS inserts are a superb choice when machining heat-resistant super alloys due to their precision, excellent surface finish and stable tool life.

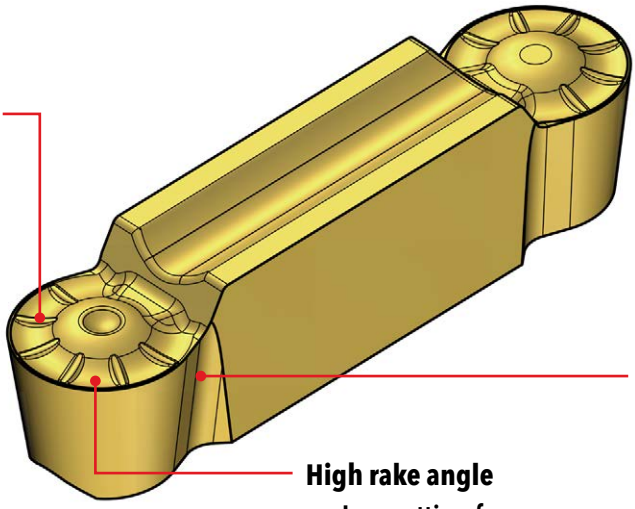
Features & Benefits:

- For external and internal turning, grooving and profiling applications
- Low cutting forces and good surface finish
- Excellent chip control in medium to finish machining
- Precision machining and excellent repeatability
- First choice when machining heat-resistant super alloys
- Grade TT3010 for excellent tool life in such materials

Member IMC Group Ingersoll Cutting Tools

TOOLCLAMP ULTRA+ Features

TDT...-RS Insert



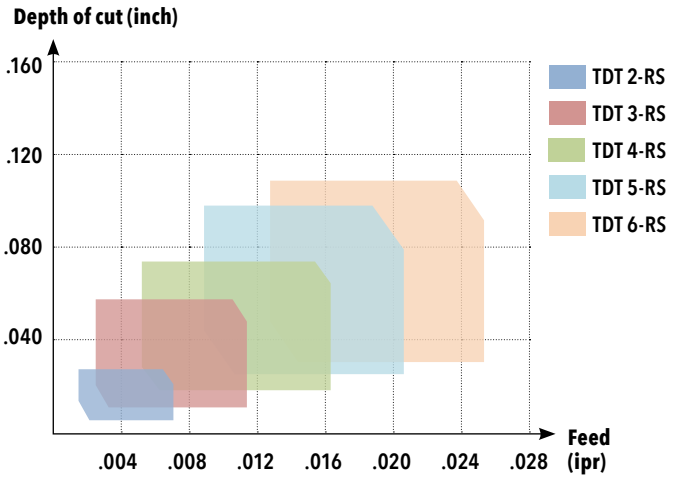
Daisy wheel chip breaker
- Good chip control in medium to finish machining
- Ideal for profiling

Precision insert
- Sharp cutting edge
- Good surface finish

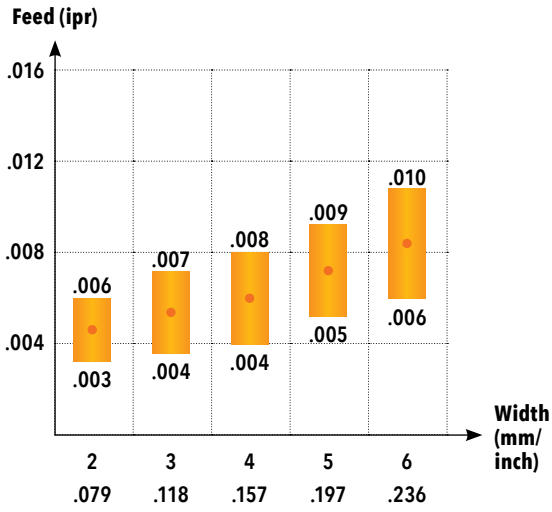
High rake angle
- Low cutting forces
- Reduces built-up-edge
- Suitable for difficult-to-cut materials

TOOLCLAMP ULTRA+ Cutting Conditions

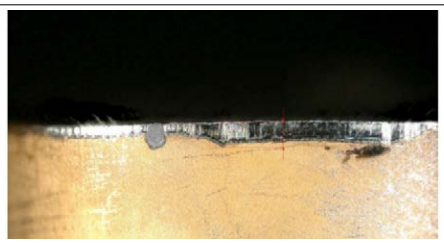
Turning



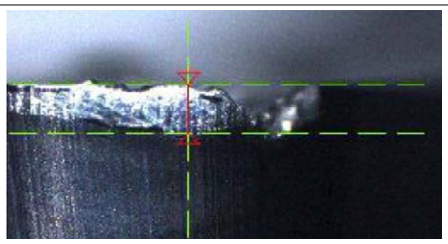
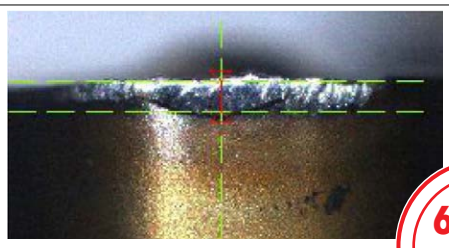
Grooving



TOOLCLAMP ULTRA+ Case Studies

Case Study 1		Competitor	Ingersoll
Material		Inconel 718 (turbine disc)	
Operation		External profiling (finish)	
Insert		Round type grooving insert (CVD coated)	TDT 6.00E-3.00-RS TT3010 (PVD coated)
Holder		Special	Special
Cutting speed	V (sfm)	122	122
Feed rate	f (ipr)	.006	.006
Depth of cut	ap (inch)	.047	.047
Coolant		Wet	Wet
Tool life (pcs)		1	1
Wear pattern			
Surface roughness		Bad	Good

Smoother finish

Case Study 2		Competitor	Ingersoll
Material		Inconel 718 (round bar)	
Operation		External turning (finish)	
Insert		Round type grooving insert (PVD coated)	TDT 3.00E-1.50-RS TT3010 (PVD coated)
Holder		25X25 shank size for grooving	TTER 2525-3T09
Cutting speed	V (sfm)	148	148
Feed rate	f (ipr)	.006	.006
Depth of cut	ap (inch)	.039	.039
Coolant		Wet	Wet
Wear pattern			
Tool life (min)		36	60

60% Tool life increase

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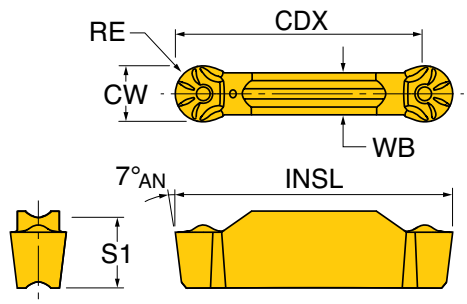
TOOLCLAMP ULTRA+ TDT-RS (FULL-RADIUS)

PRECISION DOUBLE-ENDED INSERTS FOR EXTERNAL TURNING, GROOVING AND PROFILING



Dimensions (inch)					
CW Cutting Width	RE Corner Radius	CDX Cutting Depth Max.	WB Body Width	INSL Insert Length	S1 Thickness
.079" (2 mm)	.039	.784	.067	.787	.185
.118" (3 mm)	.059	.728	.094	.787	.185
.157" (4 mm)	.079	.709	.118	.787	.185
.197" (5 mm)	.098	.886	.157	.984	.205
.236" (6 mm)	.118	.866	.197	.984	.205

Insert	Part Number	Insert Seat Size	Turning		Grooving	Coated		Uncoated
			ap (inch)	f (ipr)	f (ipr)	TT3010	TT9080	K10
	**TDT 2.00E-1.00-RS**	2	.000–.039	.004–.009	.003–.006	•	•	•
	TDT 3.00E-1.50-RS	3	.000–.059	.006–.011	.004–.007	•	•	•
	TDT 4.00E-2.00-RS	4	.000–.079	.007–.014	.004–.008	•	•	•
	TDT 5.00E-2.50-RS	5	.000–.098	.010–.021	.005–.009	•	•	•
	TDT 6.00E-3.00-RS	6	.000–.118	.012–.026	.006–.011	•	•	•

•: Standard items

TOCLAMP ULTRA+ Operating Guidelines

ISO	Material		Conditon	Tensile Strength (N/mm²)	Hardness (HB)	Matl No.	Cutting Speed Vc (SFM)		
							TT3010	TT9080	K10
P	Non-alloy steel, cast steel, free cutting steel	<0.25%C	Annealed	420	125	1	–	330–655	–
		>=0.25%C	Annealed	650	190	2	–	330–590	–
		<0.55%C	Quenched and tempered	850	250	3	–	260–525	–
		>=0.55%C	Annealed	750	220	4	–	260–525	–
			Quenched and tempered	1000	300	5	–	230–425	–
	Low alloy steel and cast steel (less than 5% of alloying elements)		Annealed	600	200	6	–	330–525	–
			Quenched and tempered	930	275	7	–	260–525	–
			Quenched and tempered	1000	300	8	–	260–495	–
			Quenched and tempered	1200	350	9	–	260–425	–
	High alloy steel, cast steel and tool steel		Annealed	680	200	10	–	295–425	–
			Quenched and tempered	1100	325	11	–	165–265	–
S	High temp. alloys	Fe based	Annealed	–	200	31	130–200	100–165	100–130
			Cured	–	280	32	100–165	65–130	65–130
		Ni or Co based	Annealed	–	250	33	100–130	65–100	65–100
			Cured	–	350	34	80–115	50–65	50–65
			Cast	–	320	35	80–115	50–65	50–65
	Titanium, Ti alloys		–	Rm 400	–	36	460–590	425–560	330–425
			Alpha + beta alloys cured	Rm 1050	–	37	130–260	130–230	65–165