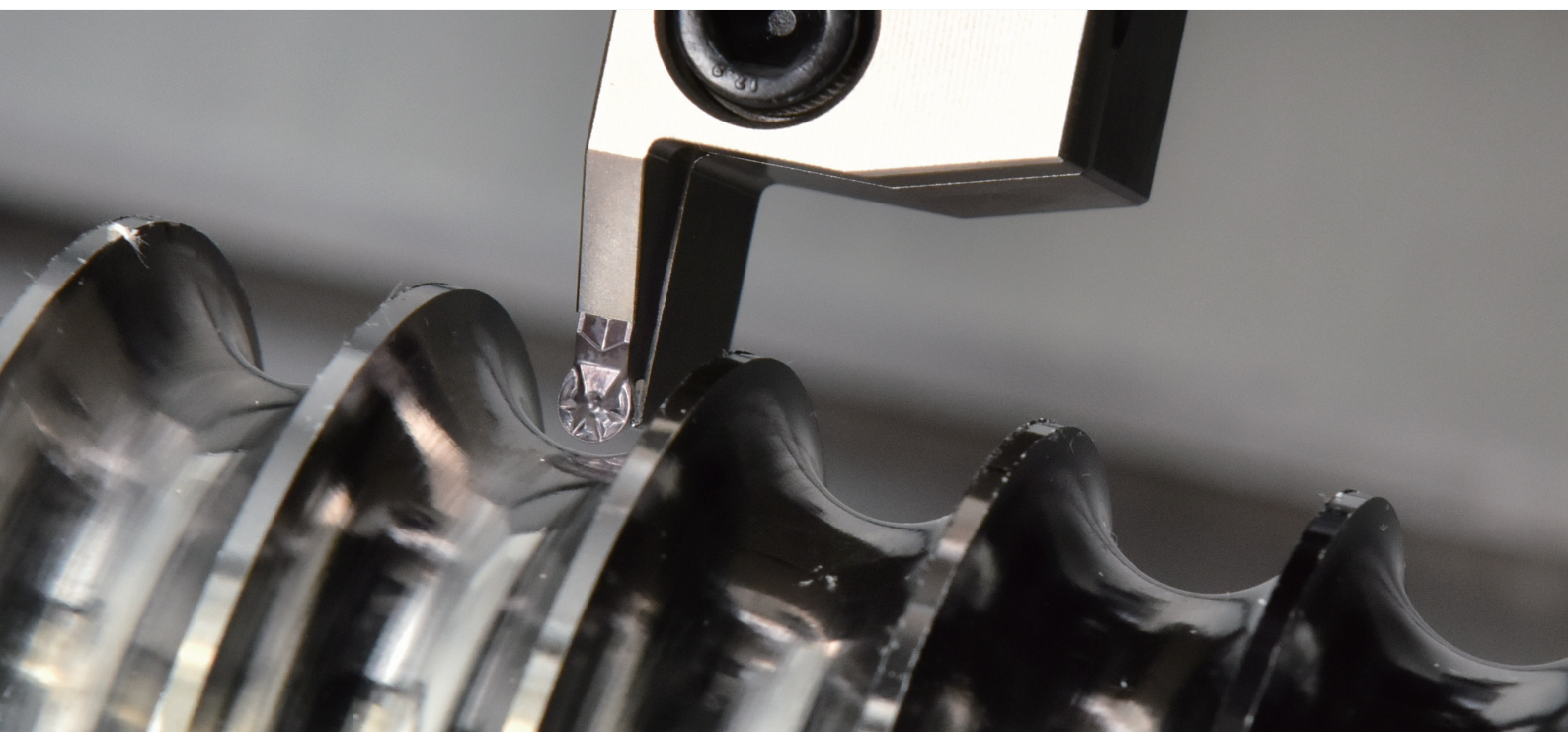


2024.12

New Grade for Diffcult-to-machine Material Grooving

—AP130S



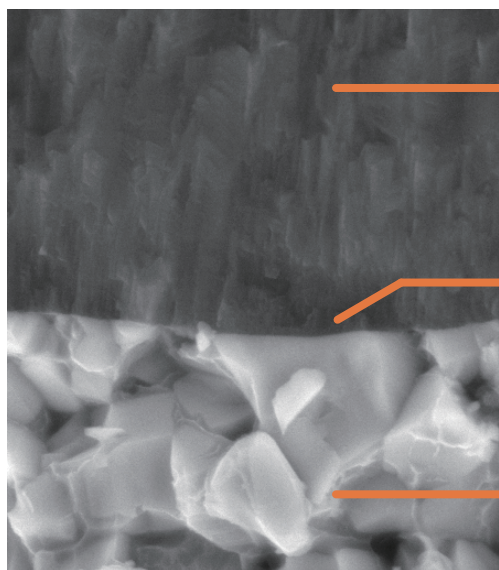
↑ *Coating toughening technology*
Stable performance, longer tool life

NO.097

www.achtecktool.com

AP130S Features

AP130S-Achteck's new developed grade for difficult-to-machine materials grooving, is mainly designed for machining on Nickel, Cobalt...; and much longer tool life; The new pre-treatment technology improves; the stability during machining.



Coating toughening technology holds the high hardness while increasing the anti-chipping ability of the coating. It reduces chipping, and prolongs the tool life, which can reduce the production cost.

The new pre-treatment improves the bond between the coating and the substrate, and reduces the peeling of coating, which improves the stability during working.

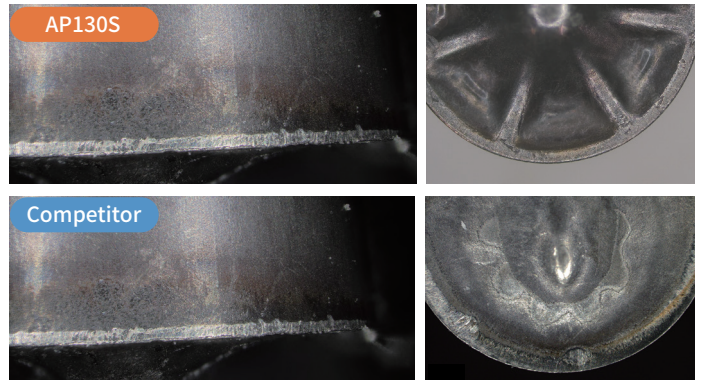
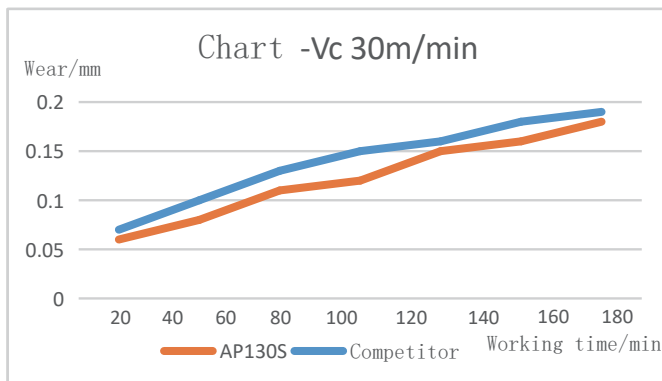
The substrate strengthening technology increases the bond between Cobalt and Tungsten, improving the substrate's strength, the wear resistance and the thermal oxidation resistance, which increases the tool life.

Applications and working condition

Material	Heat-resistant alloy/Titanium alloy					Stainless steel				
Application	Finishing ↔ Roughing					Finishing ↔ Roughing				
ISO	S01	S10	S20	S30	S40	M01	M10	M20	M30	M40
AP130S		AP130S ^{NEW}				AP130S ^{NEW}				
			AP301U					AP301U		

Application material		Hardness	Cutting speed (m/min)
S	Fe-based alloy	HB 200-410	20-100
	Ni-based alloy		
	Titanium alloy		
M	Austenitic, hardened	HB 200	60-180
	Austenitic, ferritic, duplex	HB 230	

Wear comparison of dynamic profile grooving Inconel 718 - low cutting speed



Dynamic profile grooving wear comparison after 175.5 min working

<Cutting Condition>

Insert: ATD 420-RS

Cutting Speed: $V_c=30\text{m/min}$

Feed: $f=0.1\text{mm/rev}$

Cutting Depth: $a_p=0.5\text{mm}$

Material: Inconel 718

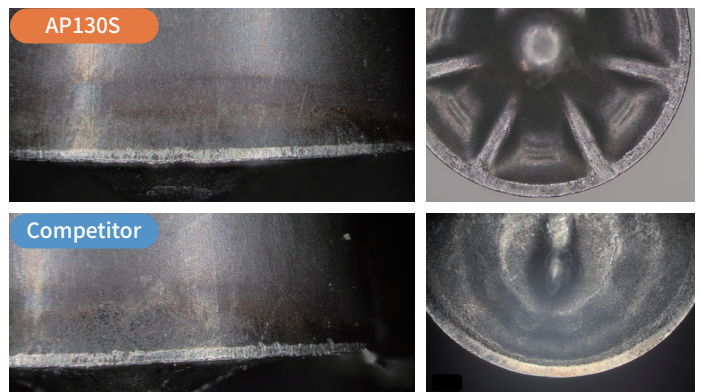
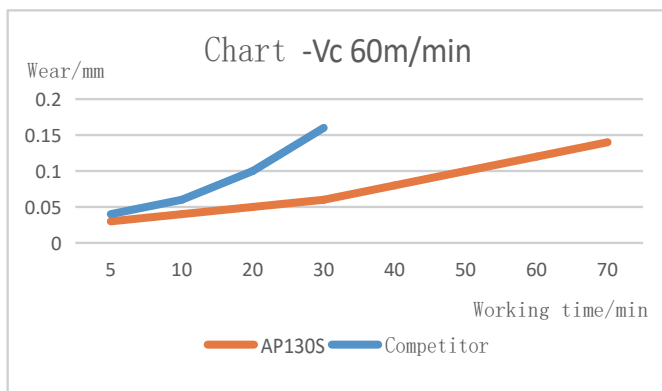
Coolant: Wet

Tool Life: 175.5min



The tool cost reduce **30%**
under the same working
condition

Wear comparison of dynamic profile grooving Inconel 718 - high cutting speed



Dynamic profile grooving wear

<Cutting Condition>

Insert: ATD 420-RS

Cutting Speed: $V_c=60\text{m/min}$

Feed: $f=0.1\text{mm/rev}$

Cutting Depth: $a_p=0.5\text{mm}$

Material: Inconel 718










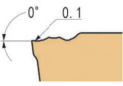


Coolant: Wet

Tool Life: 68.8min

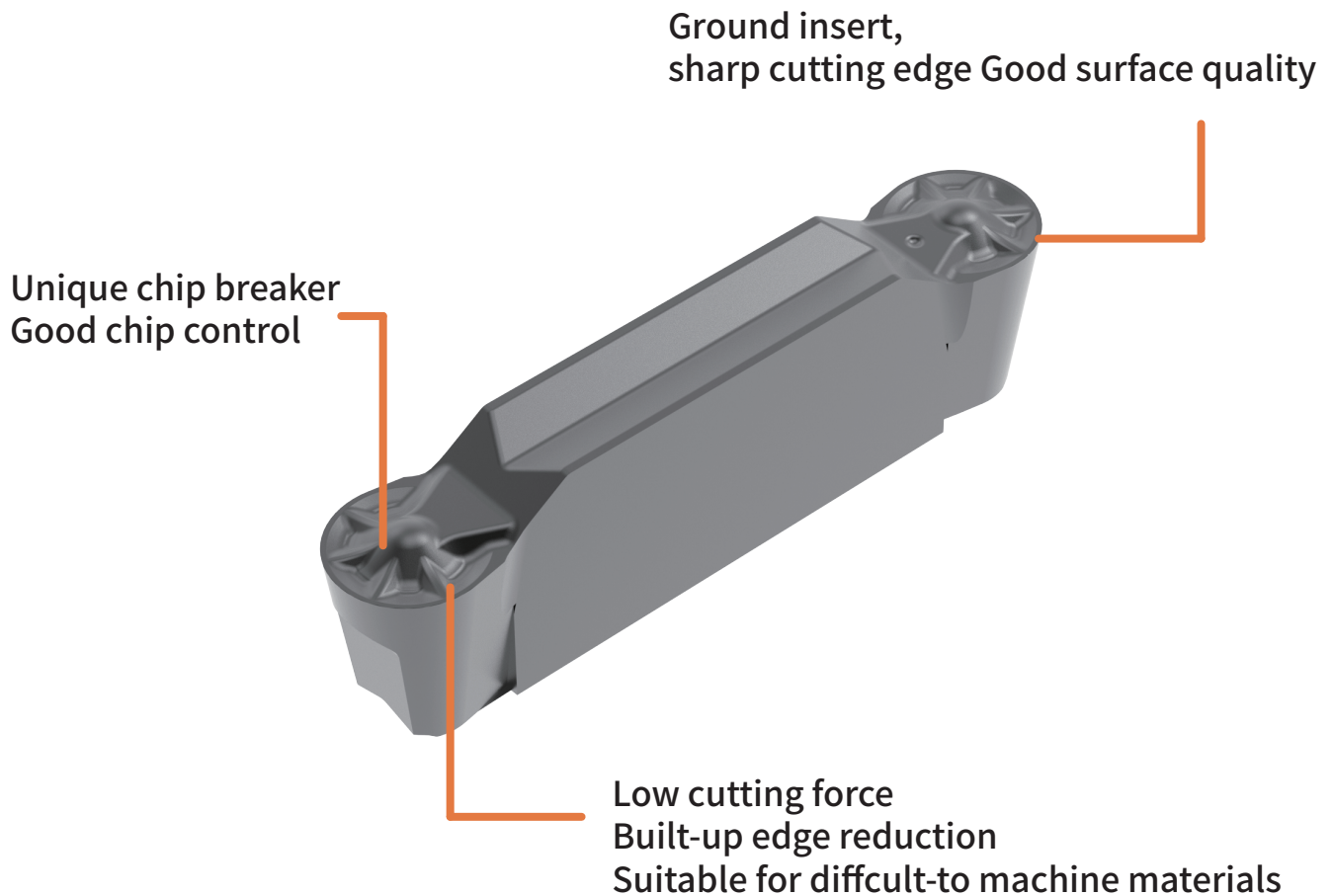


The tool life increased **148%**
under the same
working condition

• Geometry Introduction

Geometry	Insert	Shape of cutting edge	Features	Width (mm)								
				External grooving					Face grooving		Internal grooving	
				Grooving	Parting off	Turning	Profiling	Under cut	Grooving	Turning	Grooving	Turning
CS			<ul style="list-style-type: none"> ● Used in parting off & grooving steel, stainless steel ● Low feed rate 	2.0	2.0	-	-	-	3.0	-	3.0	-
				3.0	3.0	-	-	-	-	-	-	-
CM			<ul style="list-style-type: none"> ● Used in parting off & grooving steel and stainless steel ● Suitable for parting off the sticky material, pipe fitting, thin-walled component, with lower cutting force ● Low to medium feeding 	2.0	2.0	-	-	-	3.0	-	3.0	-
				3.0	3.0	-	-	-	-	-	-	-
GS			<ul style="list-style-type: none"> ● Excellent chip breaking ability, suitable for finish grooving and finish turning ● Finish grooving geometry, suitable for lower cutting force and lower feed rate, with good surface quality ● Ground insert, with higher precision, better positioning repeatability 	2.0	2.0	2.0	-	-	3.0	3.0	2.0	2.0
				4.0	4.0	4.0	-	-	4.0	4.0	4.0	4.0
TS			<ul style="list-style-type: none"> ● Multi-functional geometry ● Excellent chip control ● Low to medium feeding ● Wider application diameter range for internal grooving and face grooving 	2.0	2.0	2.0	-	-	-	-	2.0	2.0
				3.0	3.0	3.0	-	-	3.0	3.0	3.0	3.0
				4.0	4.0	4.0	-	-	4.0	4.0	4.0	4.0
				5.0	5.0	5.0	-	-	5.0	5.0	5.0	5.0
				6.0	6.0	6.0	-	-	6.0	6.0	6.0	6.0
RM			<ul style="list-style-type: none"> ● External grooving, turning and profiling ● Medium feed rate 	2.0	-	2.0	2.0	2.0	-	-	2.0	2.0
				3.0	-	3.0	3.0	3.0	3.0	3.0	3.0	3.0
				4.0	-	4.0	4.0	4.0	4.0	4.0	4.0	4.0
				5.0	-	5.0	5.0	5.0	5.0	5.0	5.0	5.0
				6.0	-	6.0	6.0	6.0	6.0	6.0	6.0	6.0
RS			<ul style="list-style-type: none"> ● External grooving, turning and profiling ● Strong cutting edge ● Low to medium feed rate ● Ground insert, high precision, good surface quality 	2.0	-	2.0	2.0	2.0	-	-	2.0	2.0
				3.0	-	3.0	3.0	3.0	3.0	3.0	3.0	3.0
				4.0	-	4.0	4.0	4.0	4.0	4.0	4.0	4.0
				5.0	-	5.0	5.0	5.0	5.0	5.0	5.0	5.0
				6.0	-	6.0	6.0	6.0	6.0	6.0	6.0	6.0

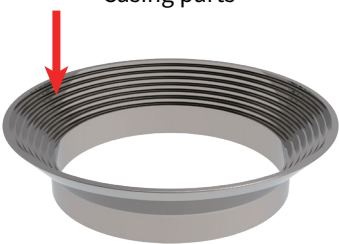
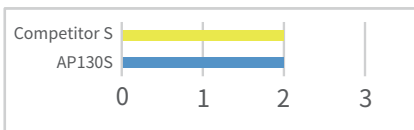
- New RS geometry-features

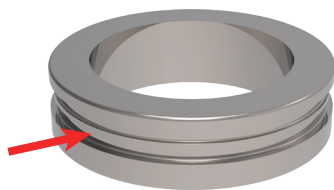
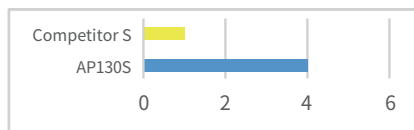



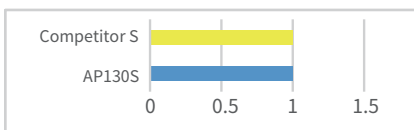
Features:

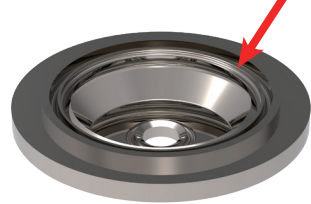
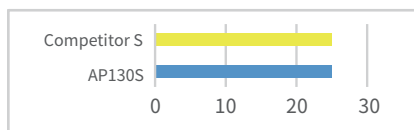
1. Used in profiling, grooving
2. Sharp cutting edge, low cutting force, good surface quality
3. Good chip control from finish to medium grooving

Application case

Insert	ATD 420-RS AP130S
Workpiece	<p>Casing parts</p> 
Material	Inconel 718
Vc	42m/min
f	0.12mm/rev
ap	0.5mm
Coolant	Emulsion
Result	 <p>AP130S has stable performance. Under the same condition, tool life is same, tool cost is decreased by 30%.</p>

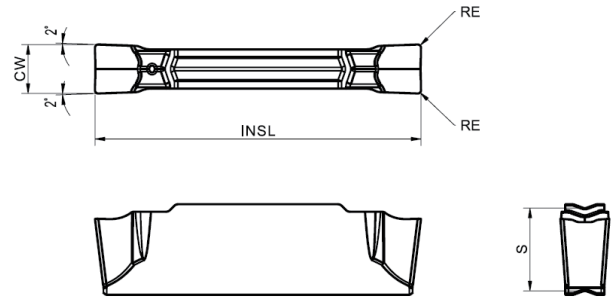
Insert	ATD 303-TSR AP130S
Workpiece	<p>Disc parts</p> 
Material	Inconel 718
Vc	40m/min
f	0.05mm/rev
ap	13.5mm
Coolant	Emulsion
Result	 <p>AP130S has stable performance. Under the same condition, tool life is increased by 300%, tool cost is decreased by 50%.</p>


Insert	ATD 315-RS AP130S
Workpiece	<p>Rotating band</p> 
Material	DMD0489, HB \geq 321
Vc	38m/min
f	0.05mm/rev
ap	-
Coolant	Emulsion
Result	 <p>AP130S has stable performance. Under the same condition, tool life is same, tool cost is decreased by 25%.</p>

Insert	ATD 315-RS AP130S
Workpiece	<p>Internal supporting parts</p> 
Material	GH4648
Vc	53m/min
f	0.12mm/rev
ap	2mm
Coolant	Emulsion
Result	 <p>AP130S has stable performance. Under the same condition, tool life is same, tool cost is decreased by 45%.</p>

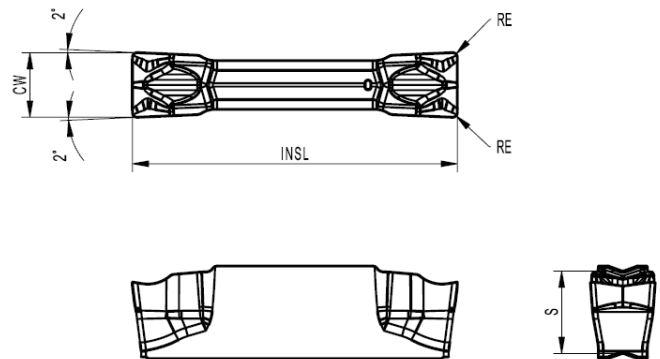
Item details

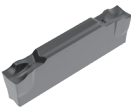
CS: Pressing insert,
used in parting off and grooving



Insert	Product Code	Parameters		Dimensions(mm)				Stock
		CDX	f(mm/rev)	CW	RE	INSL	S	
	ACD 202 CS	19.7	0.04-0.13	2	0.2	20	5.1	●
	ACD 302 CS	19.7	0.05-0.15	3	0.2	20	5.1	●

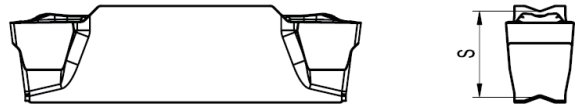
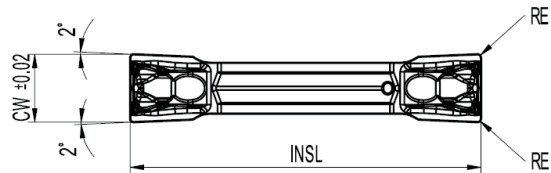
CM: Pressing insert,
used in parting off and grooving



Insert	Product Code	Parameters		Dimensions(mm)				Stock
		CDX	f(mm/rev)	CW	RE	INSL	S	
	ACD 202-CM	19.7	0.04-0.15	2	0.2	20	5.1	●
	ACD 302-CM	19.7	0.05-0.16	3	0.2	20	5.1	●

Item details

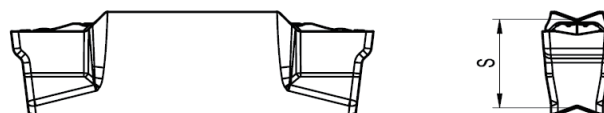
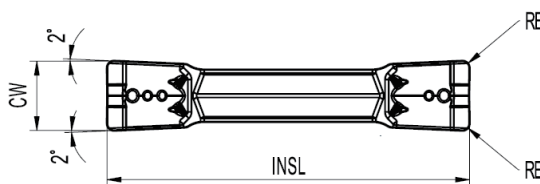
GS: Double-end insert, used in external grooving, internal grooving, face turning and grooving




Insert	Product Code	Parameters			Dimensions(mm)				Stock
		Grooving	Turning		CW	RE	INSL	S	
		f(mm/rev)	f(mm/rev)	Ap(mm)					
	ATD 200E020-GS	0.04-0.20	0.05-0.20	0.30-1.5	2	0.20	20.70	5.1	●
	ATD 300E020-GS	0.04-0.20	0.05-0.20	0.30-2.0	3.00	0.20	20.70	5.1	●
	ATD 300E040-GS	0.04-0.20	0.05-0.20	0.45-2.0	3.00	0.40	20.70	5.1	●
	ATD 400E020-GS	0.05-0.25	0.07-0.25	0.25-2.50	4.00	0.20	20.70	5.1	●
	ATD 400E040-GS	0.05-0.25	0.07-0.25	0.45-2.50	4.00	0.40	20.70	5.1	●

Item details

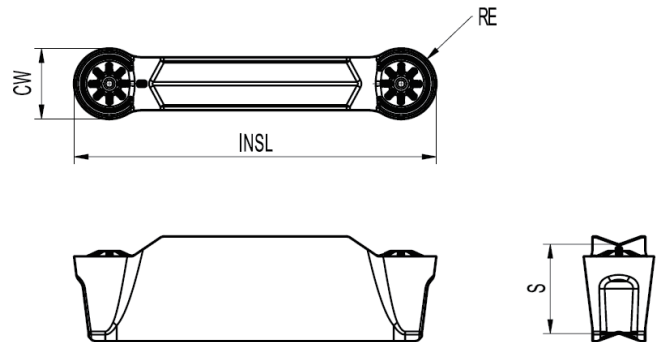
TSR: Double-end insert, used in external grooving, internal grooving, face turning, grooving and parting off




Insert	Product Code	Parameters				Dimensions(mm)				Stock
		Grooving	CDX	Turning		CW	RE	INSL	S	
		f(mm/rev)		f(mm/rev)	Ap(mm)					
	ATD 203-TSR	0.04-0.20	19.7	0.12-0.19	0.40-1.50	2	0.3	20.7	5.1	
	ATD 303-TSR	0.05-0.25	19.7	0.15-0.23	0.45-2.00	3	0.3	20.7	5.1	●
	ATD 404-TSR	0.06-0.27	19.7	0.18-0.25	0.50-2.50	4	0.4	20.7	5.1	●
	ATD 408-TSR	0.06-0.27	19.7	0.18-0.25	1.00-2.50	4	0.8	20.7	5.1	●
	ATD 504-TSR	0.07-0.30	24.7	0.20-0.30	0.55-3.50	5	0.4	25.7	5.0	●
	ATD 508-TSR	0.07-0.30	24.7	0.20-0.30	1.00-3.50	5	0.8	25.7	5.0	●
	ATD 604-TSR	0.10-0.40	24.7	0.22-0.45	0.65-3.80	6	0.4	25.7	5.0	●
	ATD 608-TSR	0.10-0.40	24.7	0.22-0.45	1.0-3.80	6	0.8	25.7	5.0	●
	ATD 808-TSR	0.12-0.45	30.5	0.28-0.50	1.0-4.50	8	0.8	31.5	6.1	

Item details

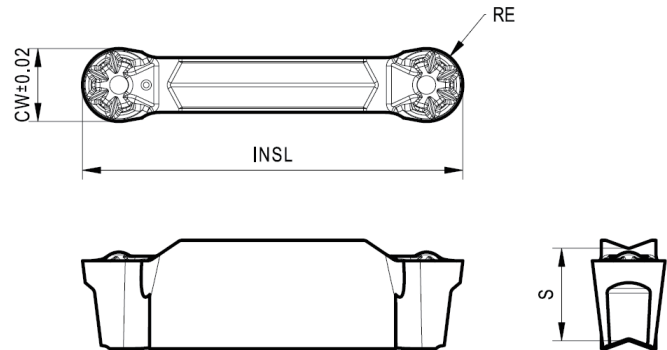
RMR: Double-end round insert, used in external turning, grooving and profiling



Insert	Product Code	Parameters			Dimensions(mm)				Stock
		Grooving	Turning		CW	RE	INSL	S	
		f(mm/rev)	f(mm/rev)	Ap(mm)					
	ATD 210-RMR	0.06-0.15	0.12-0.25	0.4-1.0	2	1	20.7	5.1	●
	ATD 315-RMR	0.08-0.18	0.15-0.30	0.5-1.5	3	1.5	20.7	5.1	●
	ATD 420-RMR	0.10-0.20	0.18-0.35	0.6-2.0	4	2	20.7	5.1	●
	ATD 525-RMR	0.12-0.25	0.20-0.40	0.7-2.5	5	2.5	25.7	5.0	●
	ATD 630-RMR	0.15-0.30	0.25-0.50	0.9-3.0	6	3	25.7	5.0	
	ATD 840-RMR	0.18-0.35	0.30-0.60	1.0-4.0	8	4	31.5	6.1	

Item details

RS: Double-end finish ground insert, used in turning, profiling and grooving



Insert	Product Code	Parameters			Dimensions(mm)				Stock
		Grooving	Turning		CW	RE	INSL	S	
		f(mm/rev)	f(mm/rev)	Ap(mm)					
	ATD 210-RS	0.08-0.15	0.10-0.22	0-1.0	2.0	1.0	20.7	5.1	●
	ATD 315-RS	0.08-0.18	0.15-0.30	0-1.5	3.0	1.5	20.7	5.1	●
	ATD 420-RS	0.10-0.20	0.18-0.35	0-2.0	4.0	2	20.7	5.1	●
	ATD 525-RS	0.13-0.25	0.25-0.55	0-2.5	5.0	2.5	25.7	5.0	●
	ATD 630-RS	0.15-0.28	0.30-0.65	0-3.0	6.0	3	25.7	5.0	●
	ATD 840-RS	0.18-0.35	0.35-0.65	0-4.0	8.0	4	31.5	6.1	