

Easy Chip
EvacuationMedium and
Roughing
ApplicationsNew Generation
Inserts

NPA

New Product Announcement

ISOTURN

Highlights

New Round Inserts with New Chipbreakers for Turning Railway Wheels

Features

- The new M3P-R chipbreaker is designed for medium-duty turning operations and guarantees better chip evacuation when machining different types of steel.
- The new R3P-R chipbreaker is designed for rough turning under unstable cutting conditions.
- The new inserts are made of ISCAR's premium CVD coated grade IC8150.
- In addition, ISCAR introduces a single - sided square insert SNMM 25... with an R4P chipformer for rough turning intended for hard cutting conditions to improve boring performance of the central wheel hub bore.

[Click for Short Video](#)

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Wheels steel requirements according to UIC812-3 and EN 13262

Wheels material

The majority of wheel types (95%) are made of rolled steel, while other types are made of cast steel material standards in hardnesses which range from ER1 to ER9. Five steel categories, ER6, ER7, ER8, ER8 and ER9 are defined as common types. This standard can also apply to light rail and tramway applications.

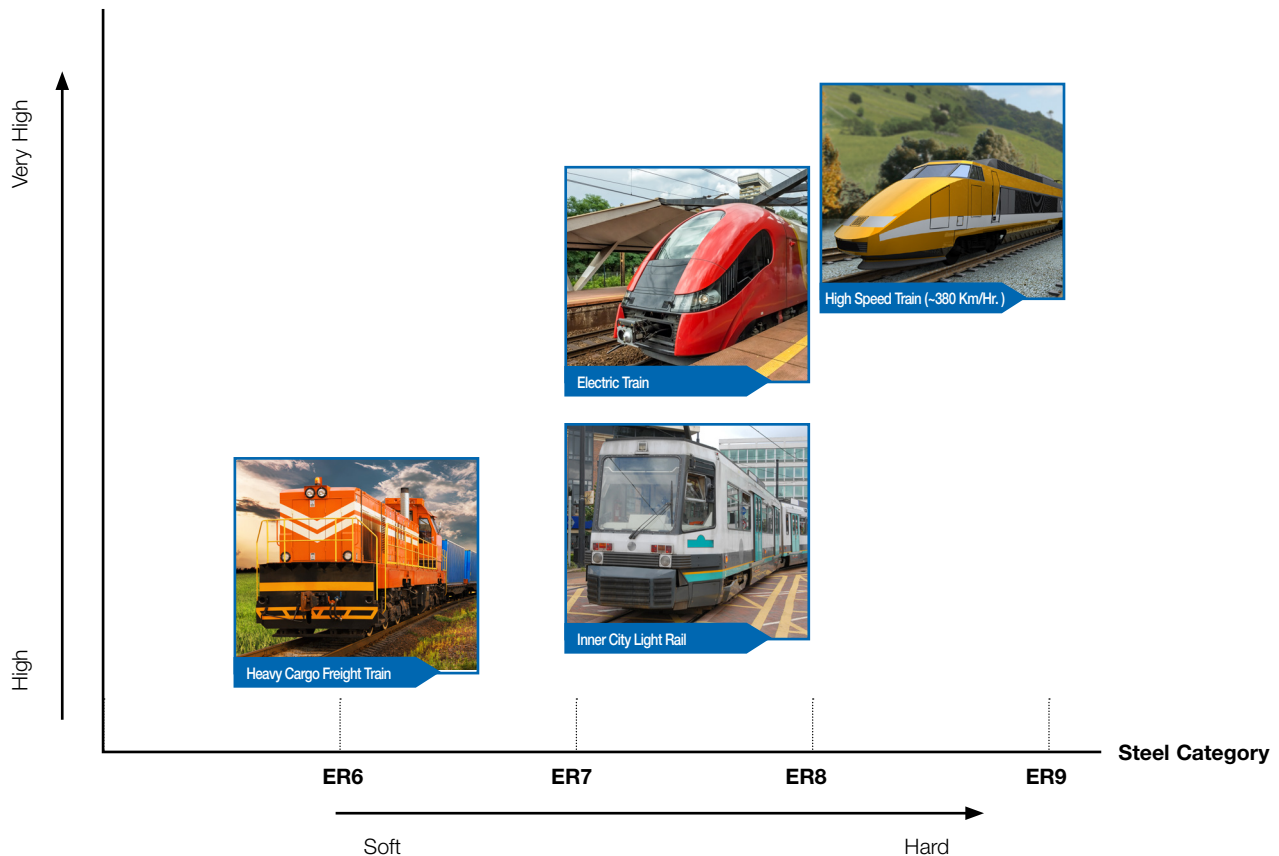
Wheel Dimensions

Different types of trains have different wheels. The wheel diameters range between 400 – 1200 mm:

- Metro: 400 – 650 mm
- Heavy Cargo / Freight: 800 to 900 mm
- High speed: 900 to 1200 mm

Steel Category		Carbon Content (%)	Yield Strength (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (%)	Notch Impact Energy	
UIC 812-3	EN 13262	UIC/EN	EN 13262	UIC/EN	UIC/EN	UIC 812-3 U-notch (RT)	EN 13262 V-notch (-20°C)
R6 T, E	ER6	≤0.48	≥500	780...900	≥15	≥15	≥12
R7 T, E	ER7	≤0.52	≥520	820...940	≥14	≥15	≥10
R8 T, E	ER8	≤0.56	≥540	860...980	≥13	≥15	≥10
R9 T, E	ER9	≤0.60	≥580	900...1050	≥12	≥10	≥8

Precision Level



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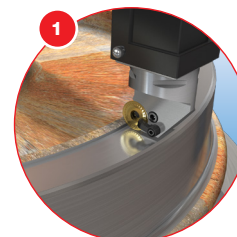
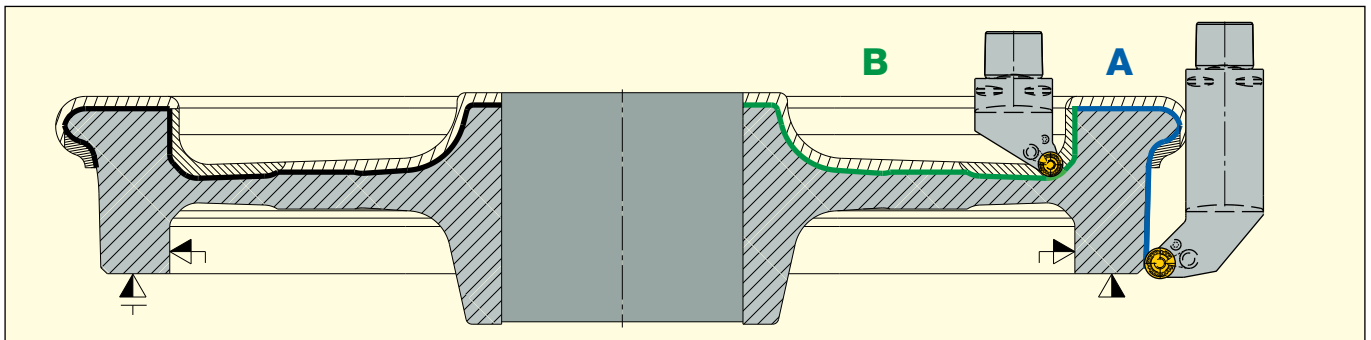
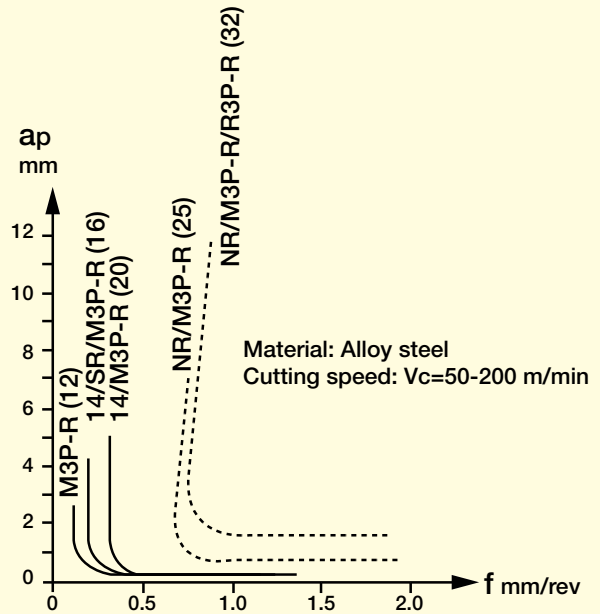
Cutting data by area:

Area	V _c	f
A	70 - 200 m/min	0.5 - 2.0 mm/rev
B	50 - 100 m/min	0.5 - 1.5 mm/rev

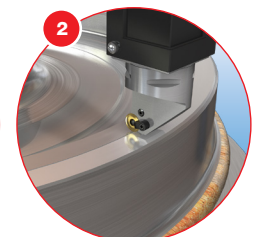
Depth of cut according to M3P-R (12) chipbreaker geometry:

14 / SR / M3P-R (16)	0.3 - 3.5 mm
14 / M3P-R (20)	1.5 - 7.0 mm
NR / M3P-R (25)	2.5 - 7.0 mm
NR / M3P-R/R3P-R (32)	3.0 - 12 mm

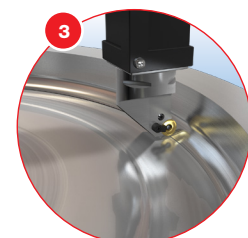
In case of worn wheels with skid flats, built-up shelled tread or thermal cracks, reduce the cutting speed to **ISCAR's** recommended minimum machining speed. High carbon wheels should be machined at **ISCAR's** recommended low range cutting speed. Feeds should be optimized within the recommended range per chipformer and actual chip formation.



Roughing Application



Finishing Application

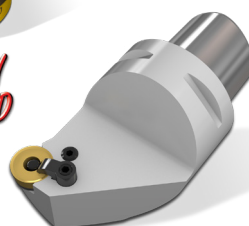


Finishing Application

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Round inserts and special **CAMFIX** holders with a screw and top lever for robust clamping.

SPECIALLY TAILORED



* Special holder per request

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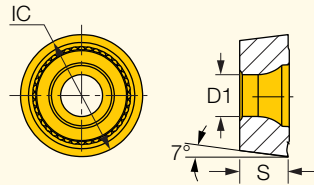
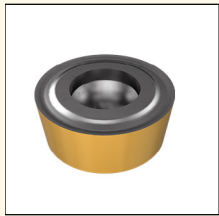
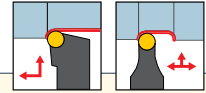
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RCMT-M3P

Round Inserts with a 7° Positive Flank for Medium

Profiling on a Wide Range of Materials

<https://www.iscar.com/eCatalog/Family.aspx?fnum=4801&mapp=IS&GFSTYP=M>

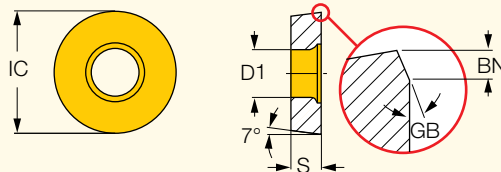
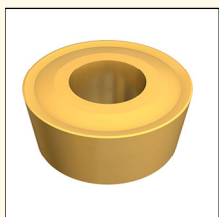
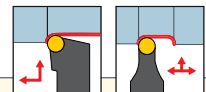


Designation	Dimensions				IC8150	Recommended Machining Data	
	IC	S	D1			a_p (mm)	f (mm/rev)
New RCMT 1204M0-M3P-R	12.00	4.76	5.50		•	1.50-6.00	0.30-0.55
New RCMT 1606M0-M3P-R	16.00	6.35	5.50		•	2.00-8.00	0.40-0.80

RCMT-14

Round Inserts with a 7° Positive Flank for Medium and Finish Profiling on a Wide Range of Materials

<https://www.iscar.com/eCatalog/Family.aspx?fnum=310&mapp=IS&GFSTYP=M>



Designation	Dimensions					Tough → Hard		Recommended Machining Data	
	IC	S	D1	GB	BN	IC8150	IC20	a_p (mm)	f (mm/rev)
RCMT 1606M0-14	16.00	6.35	5.50	15	0.25	•	•	2.00-8.00	0.40-0.60
RCMT 2006M0-14	20.00	6.35	6.50	15	0.25	•	•	2.50-10.00	0.50-0.70

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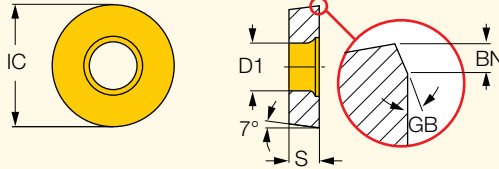
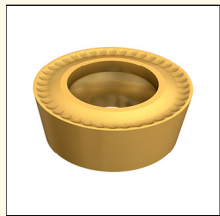
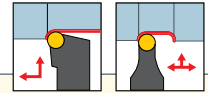
METRIC

ISOTURN

RCMT-SR

Round Inserts with a 7° Positive Flank for Medium Profiling on a Wide Range of Materials

<https://www.iscar.com/eCatalog/Family.aspx?fnum=2410&mapp=IS&GFSTYP=M>

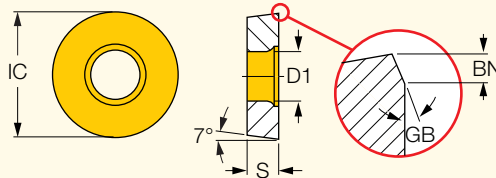
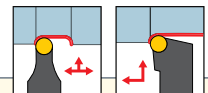


Designation	Dimensions						IC8150	Recommended Machining Data	
	IC	S	D1	GB	BN	a_p (mm)		f (mm/rev)	
RCMT 1606M0-SR	16.00	6.35	5.50	15	0.18	•	2.00-8.00	0.40-0.60	

RCMX-NR

Round 7° Inserts with a Positive Flank and Strong Cutting Edge for Rough Turning

<https://www.iscar.com/eCatalog/Family.aspx?fnum=2782&mapp=IS&GFSTYP=M>



Designation	Dimensions						IC8250	Recommended Machining Data	
	IC	S	D1	GB	BN	a_p (mm)		f (mm/rev)	
RCMX 250700-NR	25.00	7.94	7.20	17.0	0.30	•	4.00-10.00	0.50-1.50	
RCMX 3209M0-NR	32.00	9.52	9.50	17.0	0.30	•	7.00-13.00	0.70-2.00	

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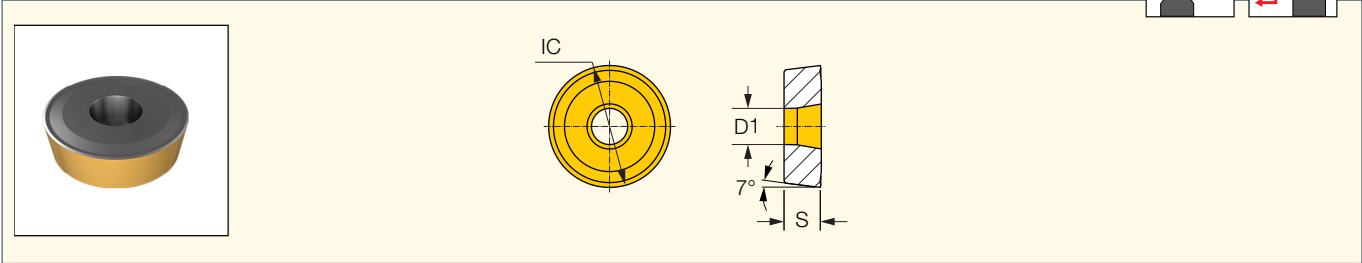
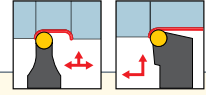
METRIC

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RCMX-M3P-R

Round 7° Insert with a Positive Cutting Edge for Machining Wheels

<https://www.iscar.com/eCatalog/Family.aspx?fnum=4802&mapp=IS&GFSTYP=M>

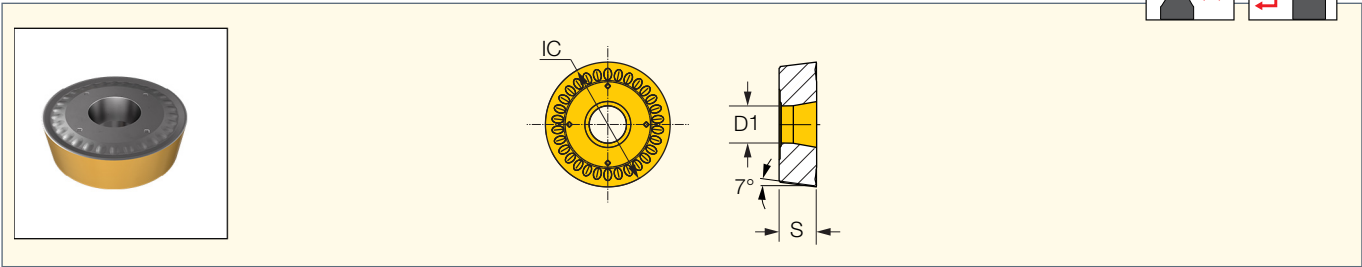
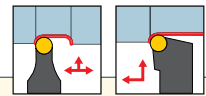


Designation	Dimensions			IC8150	Recommended Machining Data	
	IC	S	D1		a_p (mm)	f (mm/rev)
New RCMX 200600-M3P-R	20.00	6.35	5.50	•	1.50-10.00	0.40-0.80
New RCMX 320900-M3P-R	32.00	9.52	9.50	•	7.00-13.00	0.70-2.00

RCMX-R3P-R

Round 7° Insert with a Positive Cutting Edge for Machining Wheels

<https://www.iscar.com/eCatalog/Family.aspx?fnum=4803&mapp=IS&GFSTYP=M>



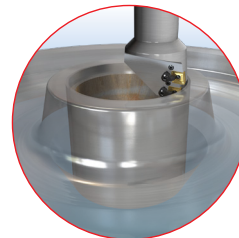
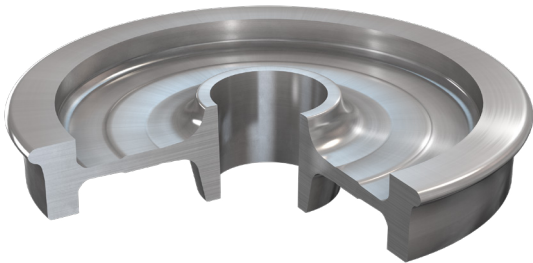
Designation	Dimensions			IC8150	Recommended Machining Data	
	IC	S	D1		a_p (mm)	f (mm/rev)
New RCMX 320900-R3P-R	32.00	9.52	9.50	•	7.00-13.00	0.70-2.00

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Hub - Boring (rough & finish)

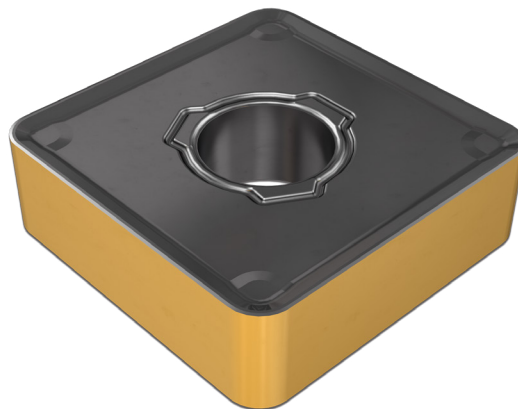
Internal boring of the central wheel hole is considered a popular turning application. There are two methods of machining with single inserts by use of several passes depending on the material being machined. A combi-bore solution by use of two inserts mounted on a special holder can be applied for roughing and finishing (*).

It is recommended to use single sided inserts CNMM 190624-H3P or SNMM...19/25... with aggressive chipformers such as: "H3P/R3P" or the new "R4P" chipformer designed for roughing operations under unstable conditions with high machining loads (Ap & Feed)



(*) Roughing and Finishing Combi-Bore

SNMM 190624-H3P (IC8150 / IC8250)
CNMM 190624-H3P (IC8150 / IC8250)
SNMM 250724-R4P (IC8150) - NEW



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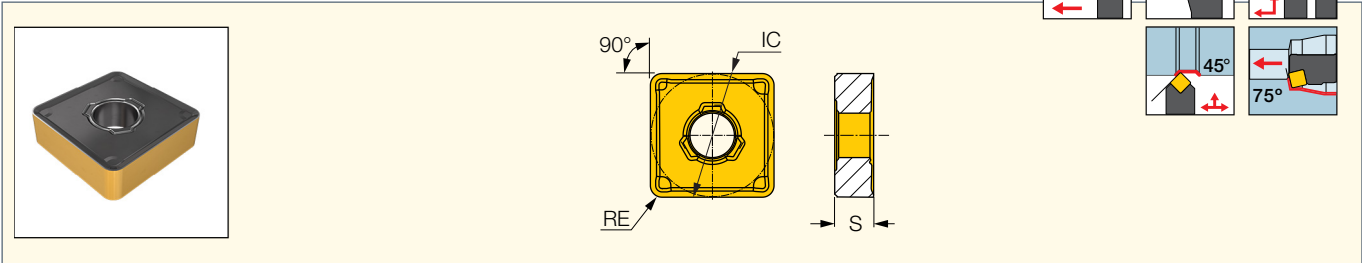
METRIC

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SNMM-R4P

Single-Sided Square Inserts for Heavy Turning Applications

<https://www.iscar.com/eCatalog/Family.aspx?fnum=4800&mapp=IS&GFSTYP=M>



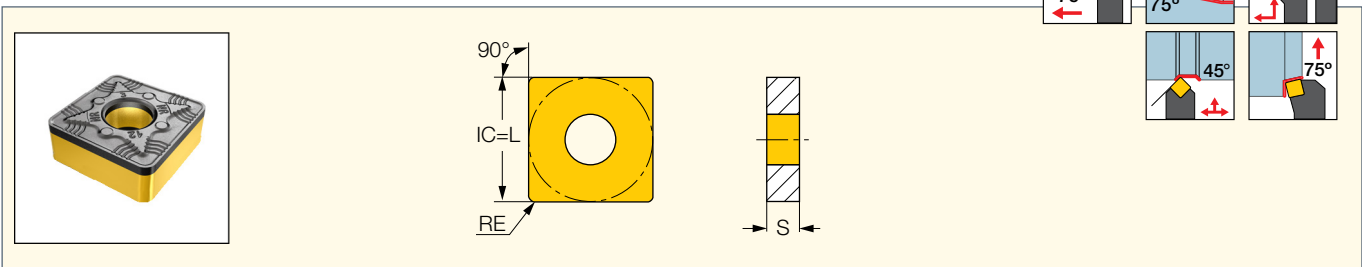
Designation	Dimensions			IC8150	Recommended Machining Data	
	IC	S	RE		a_p (mm)	f (mm/rev)
SNMM 250724-R4P	25.40	9.52	2.40	●	4.00-17.00	0.60-1.30

New

SNMM-NR

Single-Sided Square Inserts with a Special Chipformer for Roughing Machining

<https://www.iscar.com/eCatalog/Family.aspx?fnum=1034&mapp=IS&GFSTYP=M>



Designation	Dimensions			Tough ↔ Hard			Recommended Machining Data	
	IC	S	RE	IC8350	IC8250	IC8150	a_p (mm)	f (mm/rev)
SNMM 190616-NR	19.05	6.35	1.60	●	●	●	2.50-8.00	0.35-1.00
SNMM 250724-NR	25.40	7.94	2.40	●	●	●	5.00-15.00	0.35-1.00

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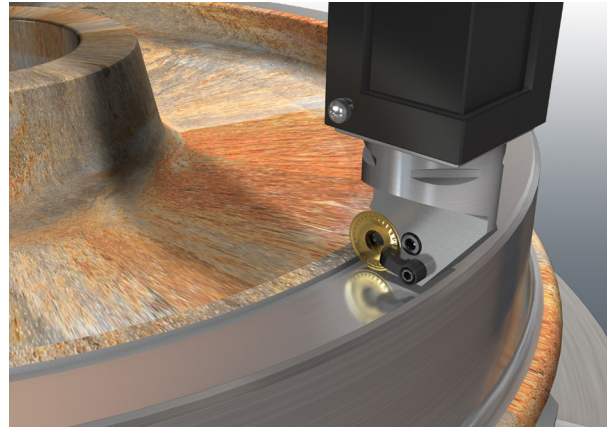
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TEST REPORTS

Part Name: Railway wheels

Material: Forging (hardness 363 HB)

	ISCAR
Insert Type	RCMX 200600-M3P
Carbide Grade	IC8150
Cutting Speed (m/min)	80
Part Diameter (mm)	990
Feed Per Revolution (mm/rev)	0.50-1.10
Depth of Cut (mm)	1.50
Number of passes	1
Number of parts per edge	9



Part Name: Railway wheels

Material: Forging (330 -350 BHN)

	ISCAR	Competitor
Tool	Special holder	Special holder
Insert Type	RCMX 320900-R3P	RCMX 320900-R1
Carbide Grade	8150	4215
Diameter - externa (mm)	870	870
Diameter - internal (mm)	285	285
Cutting Speed (m/min)	105	100
N= Spindle Speed (rpm)	38	38
Feed Per Revolution (mm/rev)	0.88-1.43	0.8-1.30
Depth of Cut (mm)	5-10	5-10
Length of cut (mm)	400	400
Number of passes	2	2
Number of parts per edge	9	3