Automotive Industry

ISCAR's
Solutions for Manufacturing
Turbochargers

Machining Intelligently

ISCAR HIGH Q LINES

Member IMC Group

ISCAR

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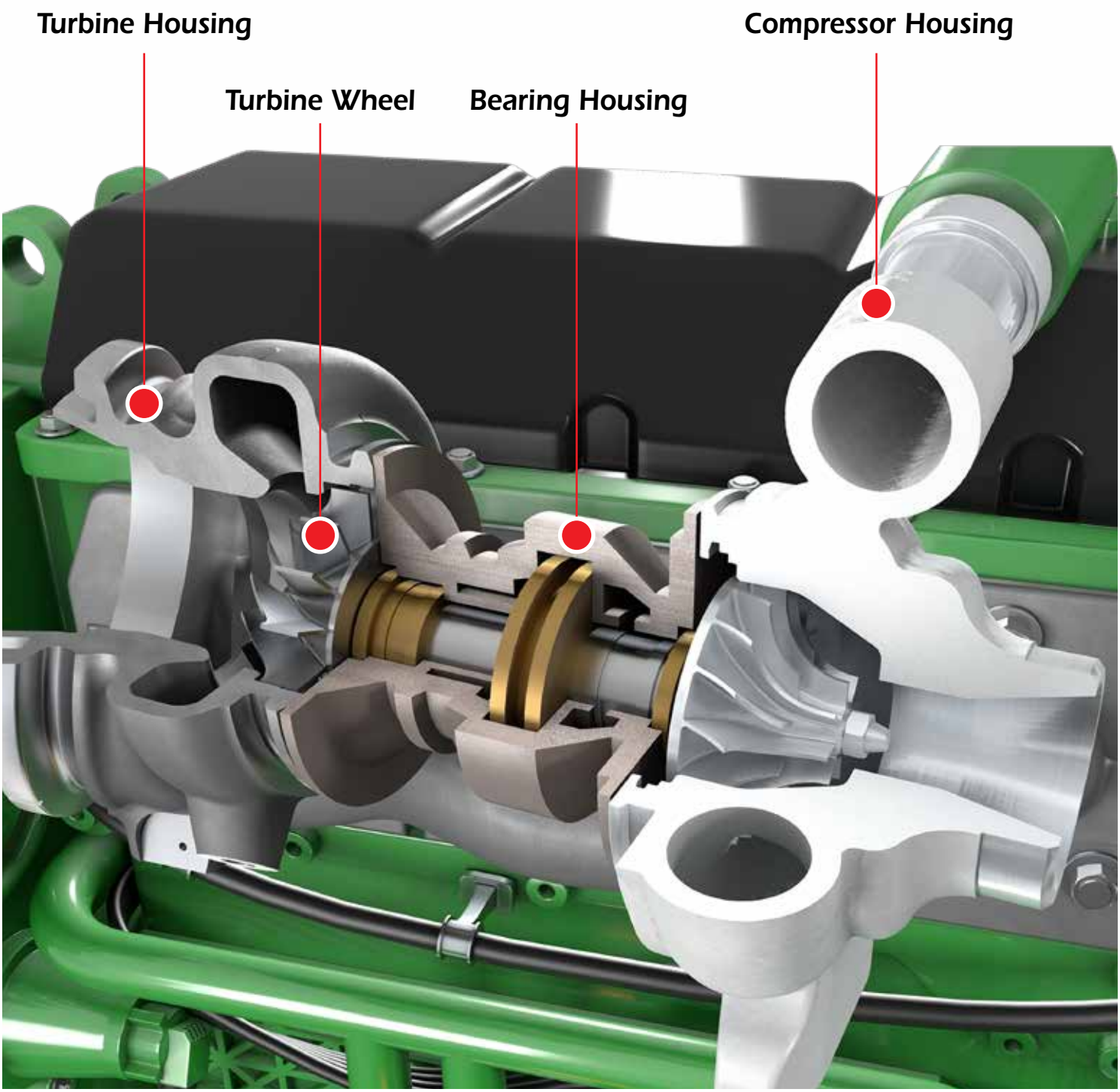
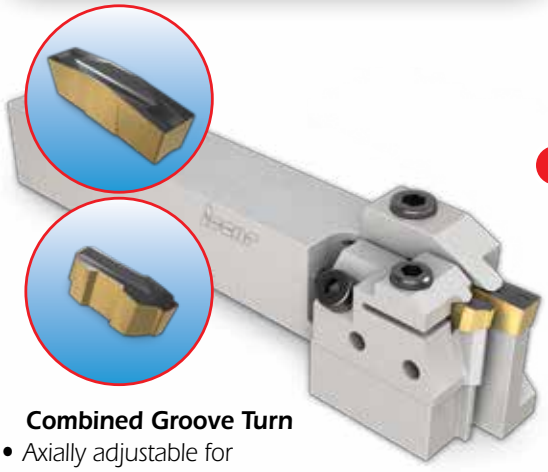
Turbocharger *Industries*



In today's modern world, engine downsizing continues to dominate the automotive industry. Nowadays, turbochargers not only appear in large diesel engines but also in gasoline engines.
A turbocharger can significantly boost the engine's horsepower without significantly increasing its weight, and provides high-performance and added benefits for modern cars.
The turbocharger provides many advantages for drivers, yet places a challenge for OEMs.
Surviving extreme operating conditions, very high temperatures and spinning at high speed revolutions per minute (rpm) are just some of the circumstances that drive OEMs to look for new materials and investigate new technologies during real time.
ISCAR's global industry experiences place the customer at the forefront, aiming to provide higher Productivity, Profitability and Performance gains.
In the automotive industry and field of turbochargers, ISCAR presents innovative solutions and full stable processes for turbocharger related components.
ISCAR views OEMs as high-priority customers and undertakes to build long-term cooperation.
ISCAR partnership goals recommend efficient and economical solutions and consequently provide high-quality products and long lasting support.

Bearing Housing

Material: Cast Iron



Combined Groove Turn
- Axially adjustable for precise grooving
- Strong gripping forces
- Quick insert replacement

1 CUTGRIP

GIF 8.00E... IC5010
- Double-ended insert
- Excellent chipbreaker
- High toughness

GIF 4.00E... IC5010
- Precisely ground insert
- Excellent chipping resistance
- Built-up edge elimination
- Increased cutting speed

Cutting conditions
Vc=250 m/min (820 sfm)
f=0.25 mm/rev (0.0098 inch/rev)

Integral Groove Turn
- Extremely rigid clamping
- Quick insert change
- Face grooving, turning and boring

2 HELIFACE

HFPR 4... IC5010
- Double-ended insert
- Twisted geometry
- Increased tool life
- Increased cutting speed

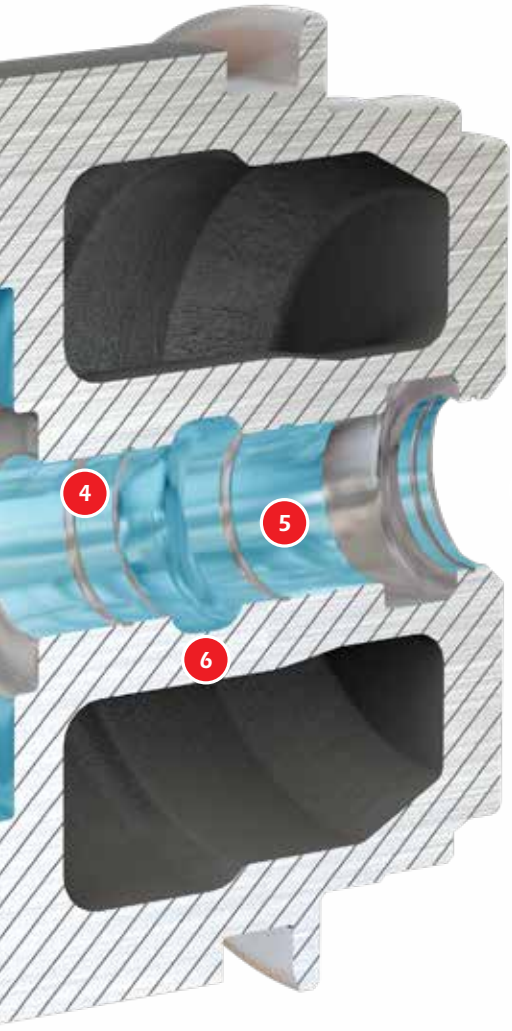
Cutting conditions
Vc=200 m/min (656 sfm)
f=0.15 mm/rev (0.0059 inch/rev)

Internal Grooving
- Easy and fast edge indexing
- Rigid clamping system provides improved performance
- Excellent surface finish
- High grooving repeatability

3 PENTACUT

PENTA 24... IC907
- 5 cutting edges (economical)
- Precise profile
- Durable insert design

Cutting conditions
Vc=150 m/min (495 sfm)
f=0.1 mm/rev (0.0039 inch/rev)

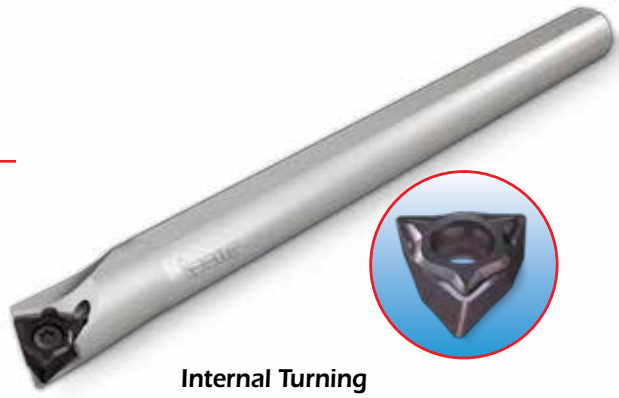


4 ISOTURN

WNGP 04... IC908

- Double-sided inserts
- Positive rake
- Low cutting forces

Cutting conditions
Vc=130 m/min (426 sfm)
f=0.1 mm/rev (0.0039 inch/rev)



Internal Turning

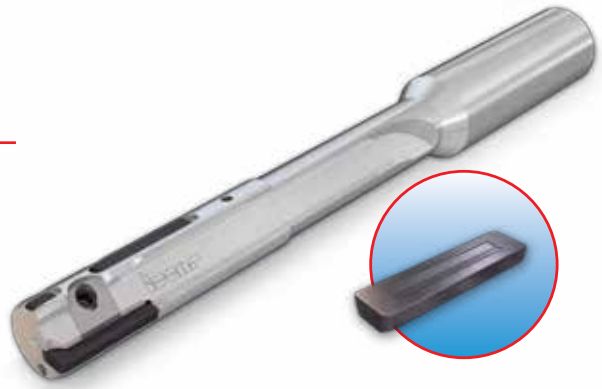
- Enables boring small diameters
- Rigid screw clamping
- Excellent finish surface
- Coolant nozzle directed to the cutting edge

5 INDEXH-REAM

RM-SEI... IC907

- 2 cutting edges
- High cutting speed
- Versatile lead and rake geometries selection
- Precisely ground insert

Cutting conditions
Vc=80 m/min (263 sfm)
f=0.25 mm/rev (0.0098 inch/rev)



Indexable Reaming

- Adjustable system
- Extreme accuracy (for IT5 tolerance and up)
- Suitable for reaming interrupted holes
- High surface finish

6 MINICUT MINI FACE LINE

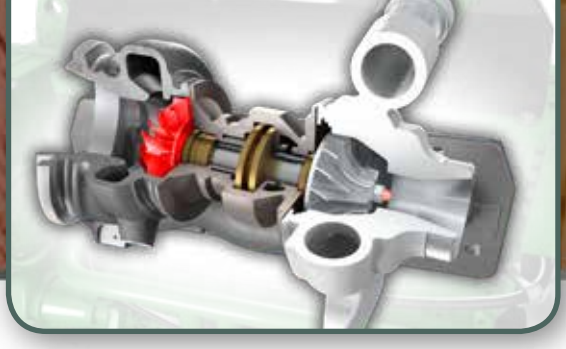
MIGR 8... IC908

- Unique convenient screw clamping
- Efficient in grooving at small diameters
- Wide range of insert profiles

Cutting conditions
Vc=110 m/min (360 sfm)
f=0.02 mm/rev (0.0007 inch/rev)

Internal Profiling

- Provides versatility advantages
- Coolant nozzle directed right to the cutting edge



Turbine Wheel/Shaft

Shaft Material: Steel
Wheel Material: Inconell, TiAl Alloy

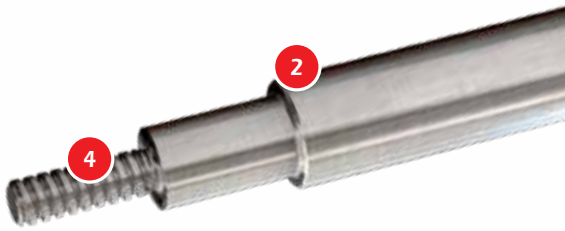
High Pressure Rough Turn
- High pressure coolant directed right to the cutting edge
- Shiftable telescopic coolant tube for easy and fast insert replacement
- Quick change lever lock mechanism

ISOTURN

1

DNMG... IC8250
- Double-sided insert
- Positive rake for low cutting forces
- High toughness

Cutting conditions
Vc=180 m/min (590 sfm)
f=0.25 mm/rev (0.0098 inch/rev)



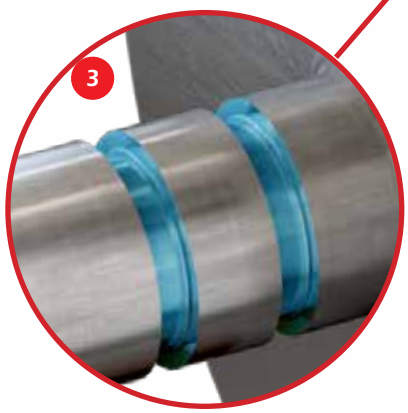
High Pressure Finish Turn
- High pressure coolant directed right to the cutting edge
- Shiftable telescopic coolant tube for easy and fast insert replacement
- Quick change lever lock mechanism

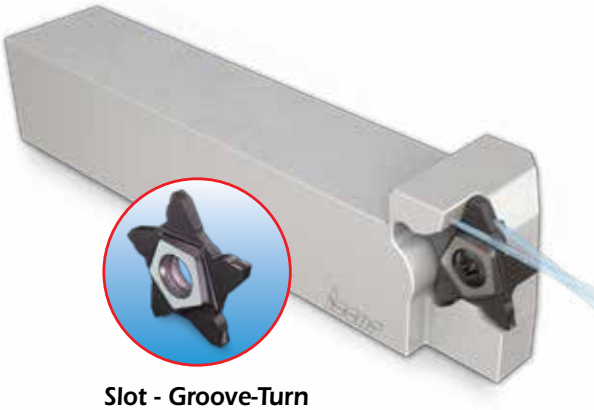
ISOTURN

2

VCMT... IC8250
- Moderated chipbreaker
- Precisely ground insert
- Excellent repeatability

Cutting conditions
Vc=180 m/min (590 sfm)
f=0.1 mm/rev (0.0039 inch/rev)





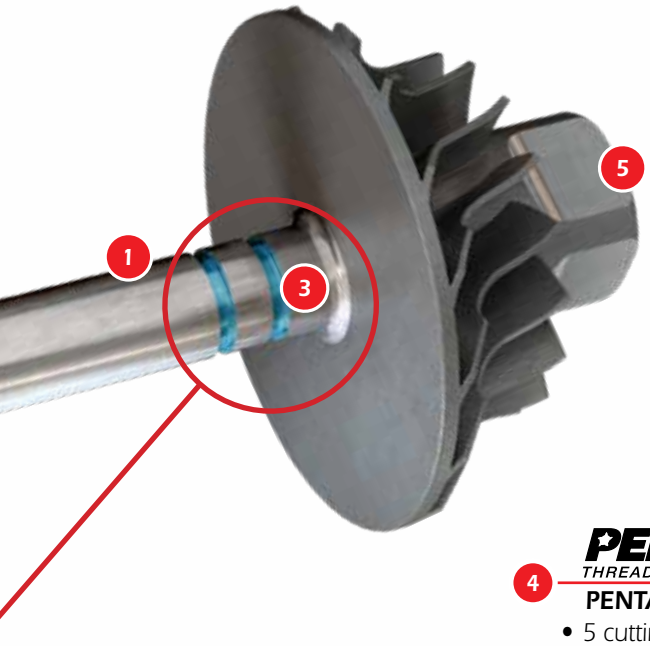
Slot - Groove-Turn
- Excellent surface finish
- High grooving repeatability
- High pressure coolant for chip evacuation and longer tool life

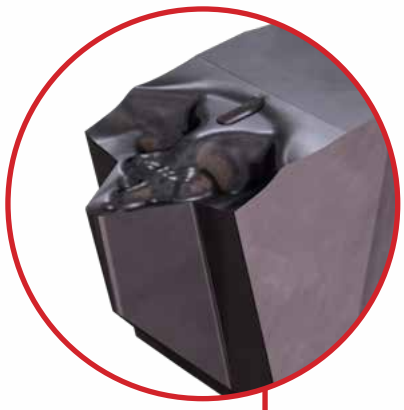
PENTACUT-24
PARTING GROOVING LINE

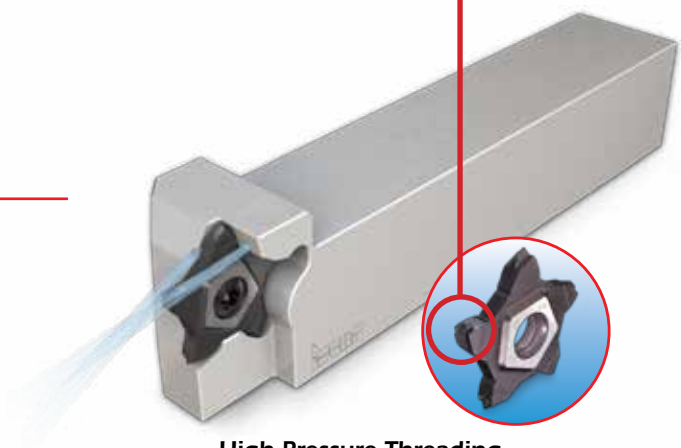
3

PENTA 24... IC908
- 5 cutting edges (economical)
- Precise profile
- Durable insert design
- Pressed chipbreaker for effective chip control

Cutting conditions
Vc=160 m/min (525 sfm)
f=0.08 mm/rev (0.0031 inch/rev)







PENTACUT THREADING LINE

4

PENTA 24... IC908

- 5 cutting corners
- High cutting speed
- Unique pressed chipformer
- Wide range of threading types

Cutting conditions
Vc=15 m/min (50 sfm)
f=Pitch

High Pressure Threading

- Extreme accuracy
- Excellent surface finish
- High pressure coolant for effective chip control and longer tool life

ISCARMILL

5

RXCR 07...- IC808

- Low cutting forces
- High stability cutting
- Moderated chipbreaker

Cutting conditions
Vc=35 m/min (115 sfm)
fz=0.1 mm/t (0.0039 inch/t)

Milling (Dynamic balance)

- Indexable profiling tool
- High material removal rate

Turbine Housing

Material: Austenitic Heat-Resistant Cast Steel

16MILL

1 **ONMU... IC5400**

- For ap ≤ 3.5 mm
- Economical: 16 cutting edges
- Precisely ground or utility insert

OR

HELIDO 800 HD LINE

1 **S845 SNHU 13... MS32**

- For ap ≤ 6 mm
- 8 cutting edges
- Precisely ground insert

Face Milling (Roughing)

Option 1. Standard solution

- Well-secured inserts
- Durable cutter body
- Versatile face mill (suitable for both inserts)

Cutting conditions

Vc=150 m/min (495 sfm)
fz=0.2 mm/t (0.0078 inch/t)

Option 2. Special solution

- Axially adjustable runout for precise overhang / uniform wear

Cutting conditions

Vc=150 m/min (495 sfm)
fz=0.25 mm/t (0.0098 inch/t)

DOVE IQ MILL 845 LINE

2 **IQ845 SYHU... IC5400**

- 8 cutting edges
- Smooth and stable cut
- Low power consumption
- Strong and durable design
- Excellent surface finish

Face Milling (Finishing)

- High-positive pocket inclination
- Extremely rigid clamping due to dovetail pocket
- Axial adjustment for fine surface finish
- Fine pitch for increased metal removal rate

Cutting conditions

Vc=115 m/min (378 sfm)
fz=0.18 mm/t (0.0070 inch/t)

Slot Milling

- Tangential clamping for maximum stability
- Safe clamping (no insert pulling out during machining)
- Self clamping mechanism (without screw)
- Designed for high speed machining

TANG-GRIP 300 LINE

3 **TAG N..MF IC5400**

- Durable tangential insert design
- Unique chipformer provides chip control
- Reinforced cutting edge for longer tool life

Cutting conditions

Vc=70 m/min (230 sfm)
fz=0.07 mm/t (0.0027 inch/t)

* **For SiMo, Ductile Cast ircon and other materials, insert grades to be selected accordingly**

* **All the tools are available for dry machining, MQL and coolant**

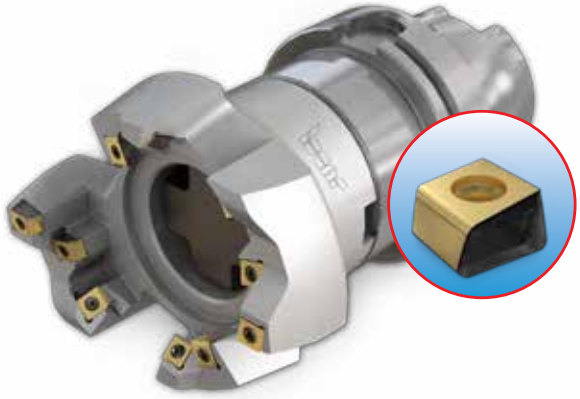
TANGPLUNGE
PLUNGING LINE

4

HTP LN... IC808

- 4 cutting edges
- Positive rake - low cutting forces
- Tangential durable design

Cutting conditions
Vc=100 m/min (330 sfm)
fz=0.16 mm/t (0.0062 inch/t)



Plunging (Roughing)

- One path solution (combined tool)
- Excellent surface finish
- Efficient utilization of the insert edges

CUTGRIP

5

GIP... IC806

- Precise profiling
- Double - ended insert
- Excellent surface finish

Cutting conditions
Vc=90 m/min (295 sfm)
f=0.2 mm/rev (0.0078 inch/rev)

Interpolation Turning (Finishing)

- Rigid clamping method
- Adjustable design for high precision

TANGPLUNGE
PLUNGING LINE

6

HTP LN... IC808

- 4 cutting edges
- Positive rake - low cutting forces

ISOTURN

SVMT-SM... IC8150

- Smooth cut
- High wear resistance

Cutting conditions
Vc=100 m/min (330 sfm)
fz=0.1 mm/t (0.0039 inch/t)

Spot Facing & Chamfering

- High effective solution
- One path solution

Turbine Housing

Material: Austenitic Heat-Resistant Cast Steel

Drill & Chamfering

- Indexable head drills with chamfering inserts
- Drilling and chamfering in one tool
- No setup time
- High productivity

Reaming

- Unique quick-change bayonet mechanism
- High cutting speeds and feeds
- Low runout (maximum 3µm)
- No setup time

Drill & Chamfering

- Two tools in one operation
- Excellent performance

1 SUMOCHAM CHAMDRILL LINE

ICP... IC908

- Exchangeable drill heads
- NO setup time
- High repeatability
- High productivity

PRETHREAD

AOMT 06...-45DT IC908

- Optimal chipformation
- 2 cutting edges
- Suitable for chamfer and boring operations

Cutting conditions

Vc=100 m/min (330 sfm)
f=0.1 mm/rev (0.0039 inch/rev)

2 BAYOT-REAM

RM-BN...LBS IC908

- Interchangeable solid carbide heads
- Quick change bayonet mechanism
- ZERO setup time
- For IT6 tolerance and up
- Coolant access to each cutting edge

Cutting conditions

Vc=40 m/min (130 sfm)
f=0.6 mm/rev (0.0023 inch/rev)

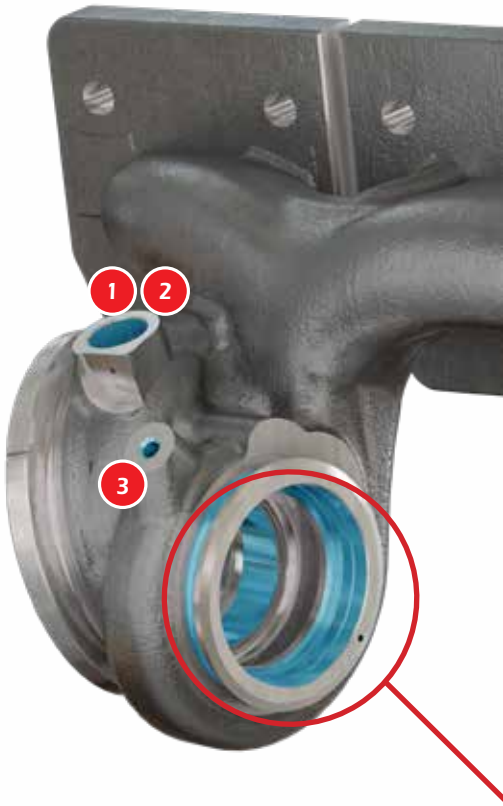
3 PRETHREAD

SCDT... IC908

- Stepped drill for pre-threading (standard)
- Reduced cycle time
- Coolant through

Cutting conditions

Vc=60 m/min (197 sfm)
f=0.08 mm/rev (0.0032 inch/rev)



* For SiMo, Ductile Cast ircon and other materials, insert grades to be selected accordingly
* All the tools are available for dry machining, MQL and coolant

4 TANGPLUNGE PLUNGING LINE

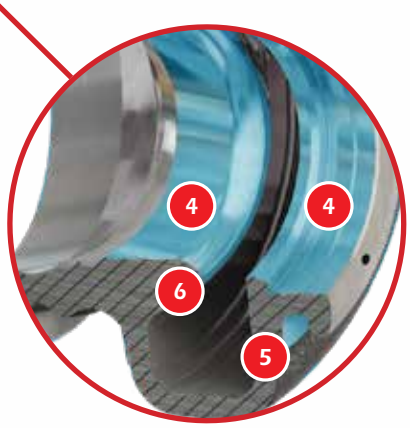
HTP LN... IC808

- 4 cutting edges
- Positive rake - low cutting forces
- Tangential durable design

Cutting conditions
Vc=100 m/min (330 sfm)
fz=0.16 mm/t (0.0063 inch/t)

Plunging Roughing

- Reduces cut-to-cut time
- Several operations with one tool
- Adjustment mechanism for precise face



5 TANGPLUNGE PLUNGING LINE

LNET... IC908

- 2 cutting edges
- Precisely ground insert

Cutting conditions
Vc=80 m/min (263 sfm)
fz=0.11 mm/t (0.0043 inch/t)

Circular Interpolation Finishing

- Shortest possible cycle time
- Suitable for machining in places with limited approach
- Rigid tangential clamping method

6 MINI-TANGSLOT

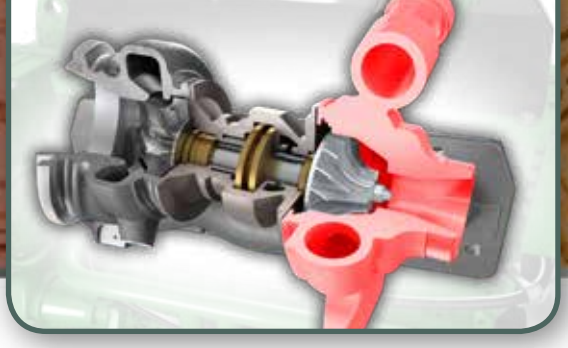
LNET... IC928

- 4 cutting edges
- Reduced cutting forces
- Precision grooving
- Reduced chatter

Cutting conditions
Vc=65 m/min (215 sfm)
fz=0.2 mm/t (0.0078 inch/t)

Grooving (safety cut)

- Tangentially clamped inserts
- High efficiency and economy
- Coolant through



Compressor Housing

Material: Aluminum Alloy

External Form Milling

- Prolonged tool life
- Excellent surface finish
- High speed machining of aluminum alloys
- Coolant through for improved chip control

ISCAR PCD LINE

1

- High accuracy
- Brazed PCD tips
- Precisely ground profile
- High machining parameters

Cutting conditions

Vc=600 m/min (1970 sfm)
fz=0.08 mm/t (0.0032 inch/t)

Internal Form Boring

- High effective solution
- Excellent surface finish
- High profile repeatability
- Coolant through for improved chip control

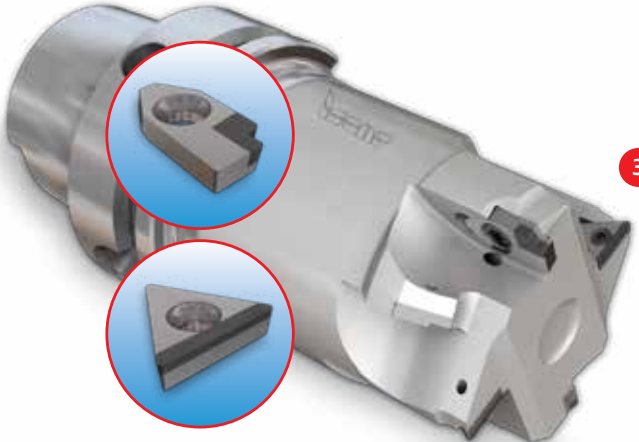
ISCAR PCD LINE

2

- Brazed PCD tips
- Precisely ground profile
- Improved wear resistance

Cutting conditions

Vc=400 m/min (1300 sfm)
fz=0.12 mm/t (0.0047 inch/t)



Integral Boring

- Quick insert change
- No need for regrindings
- Extremely rigid clamping
- Coolant through

ISCAR PCD LINE

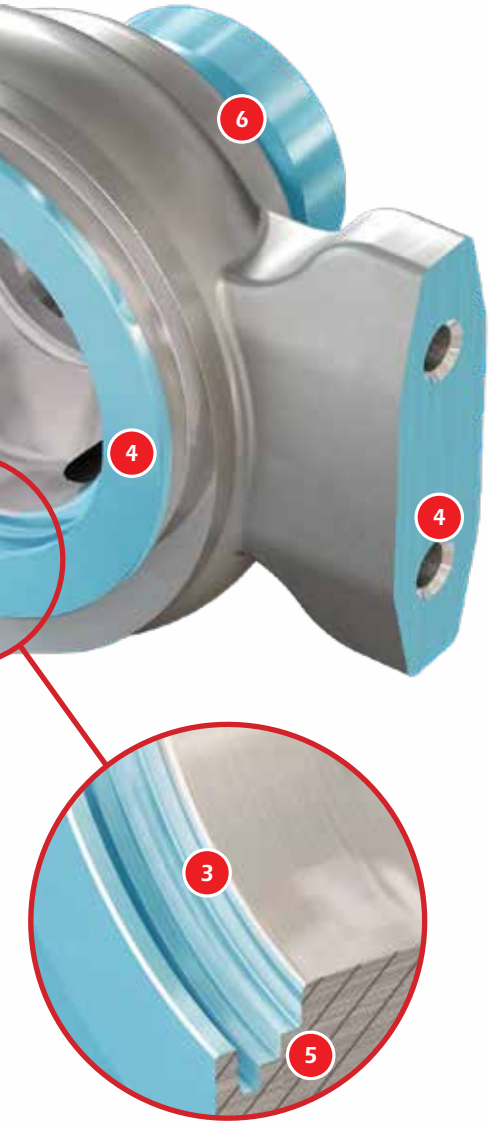
3

XNUW.../ TCMT... ID5

- Brazed PCD tips inserts
- Increased cutting parameters

Cutting conditions

Vc=700 m/min (1970 sfm)
fz=0.2 mm/t (0.0078 inch/t)



ALUFRAISE

4

CA-SPM... ID5

- PCD tipped cartridge
- High accuracy Ra0.4µm
- Wide range of insert types
- High machining parameters

Cutting conditions
Vc=2500 m/min (8200 sfm)
fz=0.07 mm/t (0.0028 inch/t)

Face Miling

- Lightweight body
- Unique coolant system through a cover
- Axially adjustable cartridges for runout ellimination
- User-friendly adjustment system
- High speed machining

ISCAR PCD LINE

5

- Brazed PCD tips
- Smooth top surface
- Precisely ground profile

Cutting conditions
Vc=1200 m/min (3900 sfm)
fz=0.08 mm/t (0.0032 inch/t)

Slot Milling

- Excellent surface finish
- Excellent part straightness
- Coolant supply to each cutting edge

ISCAR PCD LINE

6

- Excellent tool life
- High cutting speed

Cutting conditions
Vc=600 m/min (1970 sfm)
fz=0.1 mm/t (0.0039 inch/t)

External Forming

- Extreme accuracy
- High surface finish
- Coolant through

ISCAR's High Productivity Solutions for the Automotive Industry

SUMOCHAM IQ
CHAMDRILL LINE

Indexable drilling heads
for high productivity
and extended tool life

DOVE IQ MILL
845 LINE

Dovetail clamped milling insert with 8 edges, for
less power consumption and smooth finish

PENTA IQ GRIP
PARTING LINE

Unique 5 cornered insert for larger parting
diameter and deeper grooving capacities

Machining Intelligently

ISCAR HIGH Q LINES

No Time for Downtime!

BAYOT-REAM

Interchangeable solid carbide reaming head system for accuracy and high productivity

FLASHTURN
FCO LINE

Wide range of ISOTURN small sized inserts for increased profitability

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Automotive Industry

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