2017 Master Catalog

WIDIA™

Hole Finishing Capabilities and Custom Solutions

With our state-of-the-art CNC equipment and engineering processes, we can design complex geometries for reaming and countersinking. Special countersinks for pre-working and finishing operations minimize machine time and rationalize production. Our custom solution reamers deliver proven performance in applications that demand high surface qualities, narrow fit, alignment tolerances, and long tool life.

Hole Finishing Custom Solution Tool Styles:

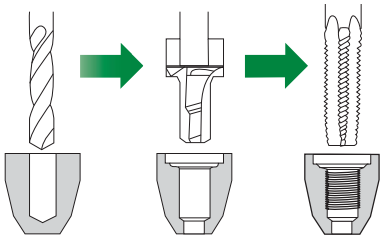
- Reaming
- Boring
- Countersinking
- PCD Round Tools

Hole Finishing Capabilities and Custom Solution Services

- Development, design, and production of different types of cutting tools for reaming, boring, and countersinking.
- Services provided by one engineering department fully integrated with all WIDIA™ focused factories.
- Capabilities with all common cutting materials such as high-speed steel (HSS-E), powdered metal, solid carbide, carbide-tipped, cermet, and PCD, with or without internal coolant.
- Complete tool competence from one source, from construction, application engineering, development, and production through tool reconditioning services.

Port Contour Cutters

- Each component has entry and exit points for the fluid involved called ports.
- Port shapes and forms are standardized.
- WIDIA™ offers porting tools to finish these ports in one-shot operations.



Standard Port	Available Cutters
JDS-G173.1	169-0XXX WITH GROOVE & 169-1XXX WITHOUT GROOVE & 269-0XXX WITH GROOVE & 269-1XXX WITHOUT GROOVE
AS5202	169-0XXX WITH GROOVE & 169-1XXX WITHOUT GROOVE & 269-0XXX WITH GROOVE & 269-1XXX WITHOUT GROOVE
ISO-6149-1	169-0XXX WITH GROOVE & 169-1XXX WITHOUT GROOVE & 269-0XXX WITH GROOVE & 269-1XXX WITHOUT GROOVE
SAE J2241/1	169-0XXX WITH GROOVE & 169-1XXX WITHOUT GROOVE & 269-0XXX WITH GROOVE & 269-1XXX WITHOUT GROOVE
NPTF/NPT	186, 187 & 287
MS 16142	163, 253, 263, 267, 367 & 467
CAT.IE2554	163, 253, 263, 267, 367 & 467
SAE J1926-1	163, 253, 263, 267, 367 & 467
BSPP/BSPF	265
AS1300	RCT SERIES/CUSTOM SOLUTION
MS33659	164, 264 & 268
AND10050	164, 264 & 268
ISO-1179-1	255 STD. LGHT. & 265 EXT. LGTH. REAMER
DIN-3852-2	225 SMALL, 235 LARGE & 245 EXT. LGTH. REAMER

Port Contour Cutters

CHALLENGE

- Dura-bar 65-45-12.
- Component: General cavity.
- Ream SAE#8.
- Surface finish below Ra 32 (inch).

SOLUTION

- Cermet-tipped port cutting tool.

CUTTING DATA

- 2100 RPM–20 IPM.
- Flood coolant.
- Machining center.

RESULT

- Surface finish of 7–15 RA (inch).

BENEFIT

- Increase productivity by one-shot finishing of port.

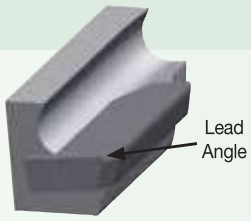
Reamer Custom Solutions

With our state-of-the-art equipment and engineering processes, we can design complex geometries for reaming and countersinking. Special countersinks for pre-working and finishing operations minimize machining time and rationalize production. Our custom solution reamers deliver proven performance in applications that demand high surface qualities, narrow fit, alignment tolerances, and long tool life.

Diameter

- .055–1.968" (1,4–50mm).
- Up to tolerance IT6 depending on application.
- Diameter steps.

Leads

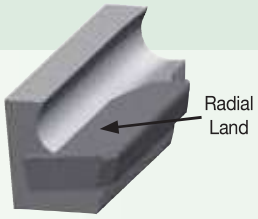


- 25–90° leads for smoother cutting or better positioning.
- Double leads for better surface quality.
- Radius leads for optimal CI machining.

Grades

- Various grades available tailored to your specific application.

Radial Land

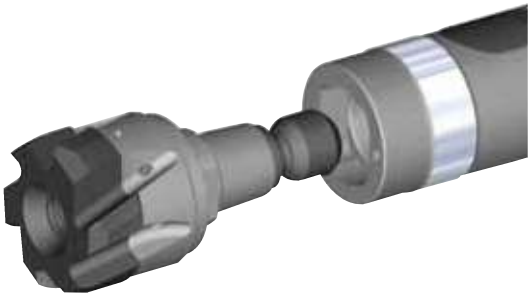


- Cylindrical for better guiding and form.
- Upsharp (no land) for best surface finishes and less passive forces.
- Narrow land to reduce forces.

TRM — TOP REAM MODULAR

CHALLENGE

- Tube holes Ø .994" (25,25mm).
- Tolerance range 100 µm.
- Alloy steel, long-chipping.
- Machining center with internal coolant.



SOLUTION

- Six cutting edges.
- Coated cermet.
- Standard 5 x D body clamped into hydraulic chuck.

CUTTING DATA

- vc = 295 SFM (90 m/min).
- f = .019 IPR (0,48 mm/rev).

RESULT

- After more than 30 minutes only minor wear visible.

BENEFIT

- Reduction of machining time in total to less than 60 minutes per plate with 180 holes.
- Predictable tool life as only 2 µm diameter deviation after 30 minutes tool life.

PCD STEP REAMER

CHALLENGE

- Bearing bore Ø 130mm.
- Tolerance range 25 µm S6.
- Aluminum AlSi8Cu3.
- Varying depth of cut ca. 0,5–5mm.
- Machining center with internal coolant.

SOLUTION

- PCD tipped, steel-based tool with HSK interface and internal coolant.
- Six effective cutting and chamfering teeth in positive cutting position.

CUTTING DATA

- vc = 1.148 SFM (350 m/min).
- f = .024 IPR (0,60 mm/rev).

RESULT

- Tool life increase versus previous solution.
- Surface finish Ra 0.2 µm.

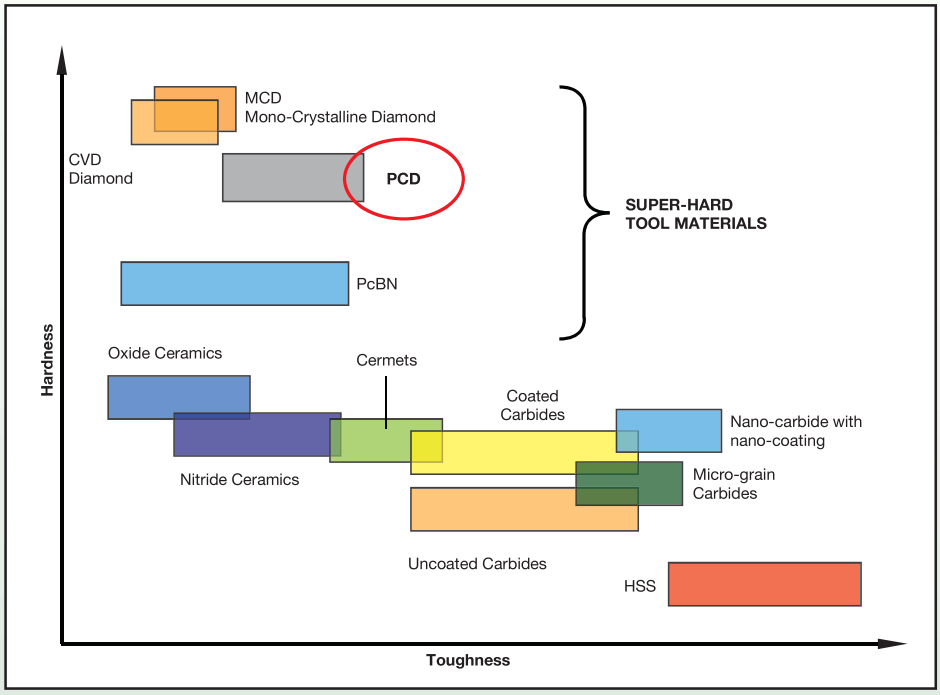
BENEFIT

- Secure process.
- Most productive solution at large diameter.
- Very long tool life.
- Reconditionable.

Highly uneven flute design reduces vibrations.

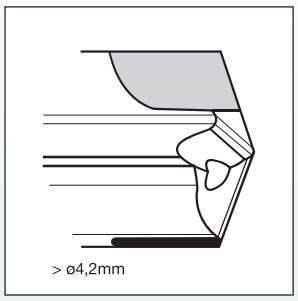
PCD • Round Tools for Holemaking

Cutting Materials • Hardness vs. Toughness



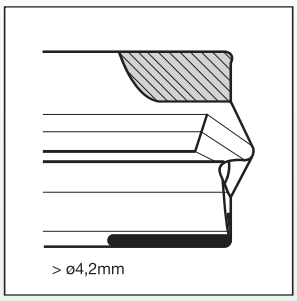
WIDIA™ PCD Drill-Pointed Geometries

Type: **CT**
Corner tipped



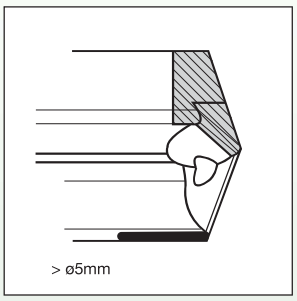
For general applications.

Type: **CTE**
Corner tipped with center point



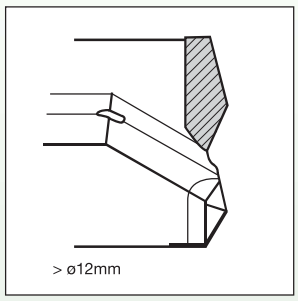
For precasted bores.

Type: **SW**
Sandwich



For highly abrasive materials.

Type: **MT**
For body = steel

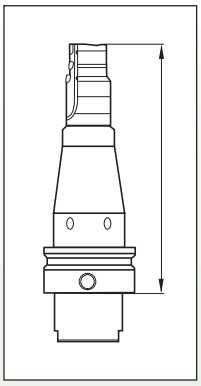


For breaking through the casting skin.

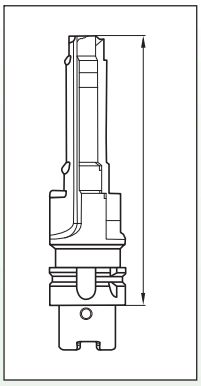
Non-Ferrous Materials

N2	Low-Silicon Aluminum Alloys (Hypoeutectic <12.2% Si) and Magnesium Alloys
N3	High-Silicon Aluminum Alloys (Hypereutectic >12.2% Si) and Magnesium Alloys
N4	Copper, Brass, Zinc-Based Materials
N5	Nylon, Plastics, Rubber, Phenolics, Resins, Fiberglass, Glass
N6	Carbon and Graphite Composites: Brush Alloys, Kevlar, Graphite
N7	MMCs — Aluminum-Based Metal Matrix Composites

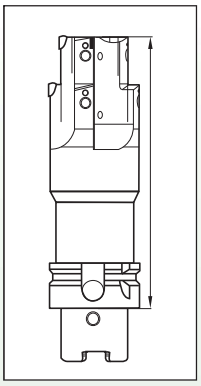
WIDIA™ PCD Styles for Reamers/CS



PKD ST —
Steel Shank



PKD STM —
Monoblock



PKD STMJ —
Adjustable Cutting Edges

PKD SC —
Solid Carbide Shank

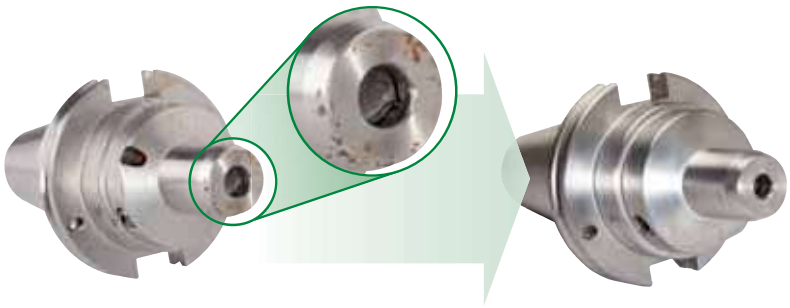
Material	Coolant Style Grade	Coolant Style Grade	Coolant Style Grade
Al <7%	MQL, Emulsion	PCD SC PCD STM PCD STMU	WBK45U
Al <12%	MQL, Emulsion		WBK45U
Al <12%	Emulsion	PCD SC	WBK45U
Mg Alloys	Emulsion	PCD SC	WBK45U
CFK	Dry	PCD SC	WBK45U

WIDIA™ Repair Services

WIDIA tooling products are produced to the highest specifications and manufactured from premium materials. However, like all mechanical devices, they wear and require repair.

- Milling cutters
- Boring bars — standard, tunable, and de-vibe
- Indexable drills
- Line boring bars
- Feed-out heads
- Motion tools
- Standard indexable tooling
- Eccentric toolholders
- Floating toolholders
- Hydraulic chucks
- KM™ clamping units (manual and spring packs)
- KM-LOC™ and KM-LOC II™ clamping units

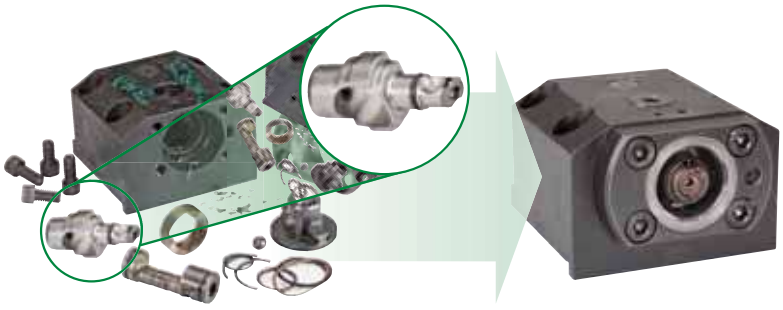
Hydraulic Chucks



Damaged WIDIA Tools

Repaired WIDIA Tools

KM-LOC™



Damaged WIDIA Tools

Repaired WIDIA Tools

Tools Are Valuable. Protect Them and Get the Most from Your Investment.

EXTREME **CHALLENGES.**
EXTREME **RESULTS.**

- Live/driven tooling
- Milling chucks
- Right-angle heads
- Tapping holders (excluding tap adapters)
- Integral tapping tools (excluding tap adapters)
- Tuned tooling units

When your WIDIA™ advanced tooling products need to be serviced, the WIDIA Service and Repair Department has the highly trained staff to provide expert assistance.

For about half the cost of a new WIDIA tool purchase, your existing damaged WIDIA tools can be repaired to like-new condition. In certain circumstances, it is not cost effective to repair some tooling. Contact the WIDIA Service and Repair Department with any questions about your requirements.

For more information, contact your local WIDIA Authorized Distributor or visit **widia.com/services**.

WIDIA™