

PCD Tools



UM DANDIA™ tooling solutions for the automotive industry



PCD Drill

OPTIMISATION IN THE AUTOMOTIVE INDUSTRY

LASH ADJUSTER
n = 10.000 rpm
f = 4.000 mm/min.

SPRING PLATFORM
① n = 10.000 rpm
f = 2.500 mm/min.
② n = 15.000 rpm
f = 3.600 mm/min.
③ n = 10.000 rpm
f = 4.000 mm/min.

SPARK PLUG "ONE-SHOT"
① n = 10.000 rpm
f = 3.000 mm/min.

DIESEL INJECTION
① n = 10.000 rpm
f = 3.000 mm/min.
② n = 6.200 rpm
f = 930 mm/min.

MOUNTING HOLE/SPOT FACING
n = 15.000 rpm
f = 3.600 mm/min.

CAM CAP HOLES
n = 10.000 rpm
f = 3.000 mm/min.

PIN BORE
n = 15.000 rpm
f = 8.000 mm/min.

CAM BORE
n = 15.000 rpm
f = 9.000 mm/min.

Patented CFS Chip Flow System

UM DANDIA™ – OPTIMUM SOLUTIONS

SEAT & GUIDE PARENT METAL
① n = 10.000 rpm
f = 4.000 mm/min.
② n = 15.000 rpm
f = 12.000 mm/min.

SEAT & GUIDE PARENT METAL
① n = 10.000 rpm
f = 4.500 mm/min.
② n = 15.000 rpm
f = 8.000 mm/min.

MISC. HOLES
① n = 10.000 rpm
f = 3.000 mm/min.
② n = 14.000 rpm
f = 3.500 mm/min.

MOUNTING HOLE
n = 15.000 rpm
f = 9.000 mm/min.

INDEX HOLE / ZERO POINT CLAMPING
n = 15.000 rpm
f = 3.000 mm/min.

WATER CONNECTION
① n = 15.000 rpm
f = 3.600 mm/min.
② n = 5.000 rpm
f = 1.800 mm/min.
③ n = 10.000 rpm
f = 3.600 mm/min.

Patented CFS Chip Flow System

Automotive

Mold & Die

Aerospace

High Performance

General




Special Tools

PCD Drill

OPTIMISATION IN THE AUTOMOTIVE INDUSTRY

SPOOL BORE MACHINING

- Automotive
- Mold & Die
- Aerospace
- High Performance
- General
- Special Tools**

			
PILOTING	PLUG/PILOT	SEMI-FINISHING	FINISHING
MULTI DIAMETER PCD TOOL n = 12,000 rpm f = 4800 mm/min	MULTI DIAMETER PCD TOOL n = 8,000 rpm f = 2400 mm/min	PCD STEP REAMER n = 8,000 rpm f = 3200 mm/min	PCD REAMER WITH GUIDE PADS n = 10,000 rpm f = 5000 mm/min

3 PASS PROCESS STRATEGY

2 PASS PROCESS STRATEGY

1 PASS PROCESS STRATEGY

PCD Drill

SPOOL BORE PROCESS STRATEGY

Out-of-the-box solution

KYOCERA UNIMERCO has customers who refer to UNIMERCO spool bore tooling solutions as “out-of-the-box performance”. In short, this means that in cases where the machine spindles are in good order, the toolholder assembly can be taken right out of the box and placed on the machine spindle, and the first part produced will be a good part. We supply the toolholder assembly pre-balanced, gauge length preset and with assembly set runout within 0.002mm.

Adjustable holder system

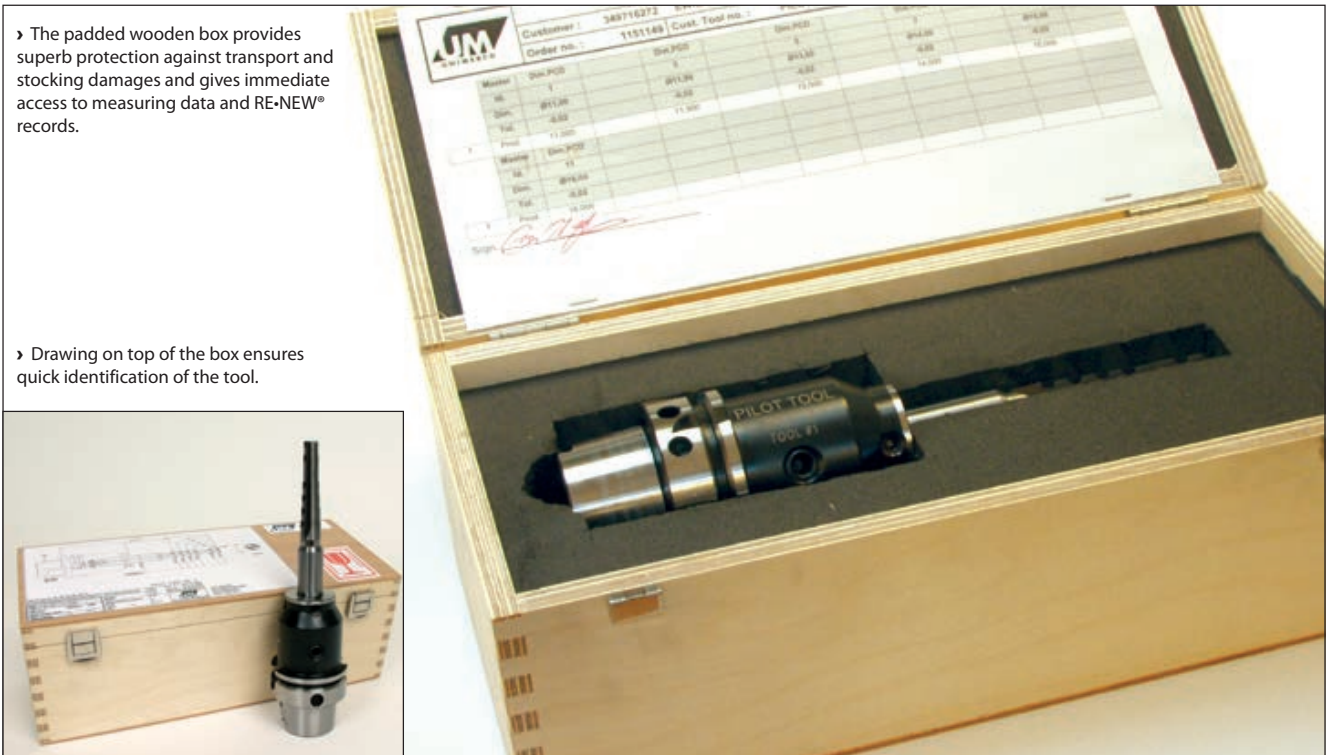
The UNIMERCO adjustable holder provides an effective user-friendly method of dialing in tools. Dialing in tools on a machine spindle becomes necessary when the machine spindle is worn or when the part tolerance is very narrow. The UNIMERCO adjustable holder can be set within a matter of minutes, maintaining 0.002mm or better runout. In the long-term, this will improve tool life and robustness, resulting in consistent part quality.

Life-long traceability of a tool

The UNIMERCO tools/assemblies are delivered in protective wooden boxes with foam surrounding the tools/holders. Additionally, the box contains a measuring report that provides valuable information for the end-user as well as KYOCERA UNIMERCO. We use this information to track tools for quality and rework purposes. For you it provides traceability, thus assuring repeatable performance from the new and renewed tool.

› The padded wooden box provides superb protection against transport and stocking damages and gives immediate access to measuring data and RE-NEW® records.

› Drawing on top of the box ensures quick identification of the tool.



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PCD Drill

PKD HELI-DRILL



ONE SHOT!

› FEATURES

The unique UM DANDIA™ sandwich drill point combined with helical guide pads and flute. The drill is designed as a one-shot solution and the point geometry can be designed to enter in machined surfaces as well as pre-casted bores. Internal coolant channel design for improved chip evacuation.

› BENEFIT

A high performance one-shot solution, reduced overall cycle time, less tool changes, fewer tools in operation. Maintaining IT9 tolerances up to 10 x d.

› CUTTING DATA EXAMPLE

n = 10000 RPM, fn = 0.4-0.5 mm/rev.

PCD STEP DRILL



› FEATURES

Step drill with the unique point geometry called "Twin Point". Drills in full material with interrupted cuts. Specially designed internal coolant channels ensure optimum chip flow.

› BENEFIT

Lowest possible machining time due to one-shot process. Very good tool life and process reliability.

› CUTTING DATA EXAMPLE

n = 6000 RPM, fn = 0.35 mm/rev.

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Special Tools

PCD Reamer

PCD HELI-REAMER



MQL

› FEATURES

A newly developed reamer design with a unique helical guidepad system, designed for high precision reaming applications. May be used for both wet and MQL machining, operates within extreme roundness, straightness, Ra and Rz values. Furthermore, CP and CPK values from 3.16 to as high as 6.7 have been reached.

› BENEFIT

Reduced overall cycle time due to fast cutting parameters and several steps built into "one" tool, extended tool life, less scrapped parts, high consistent part quality, fewer tools necessary.

› CUTTING DATA EXAMPLE

$n = 12000 \text{ RPM}$, $f_n = 0.35\text{-}0.50 \text{ mm/rev}$.

PCD VALVE GUIDE REAMER



FERROUS APPLICATIONS

› FEATURES

PCD reamer developed for powdered metal valve guides. Guidepad design allows for extended tool life and size control providing the customer with a very tight diameter range and high Cpk.

› BENEFIT

Unlike designs for bushed transfer lines and machining center applications. Extremely long tool life in addition to excellent size control. Very good seat to guide runout and great throughput. In transfer line applications, tool life is measured in weeks rather than number of parts.

› CUTTING DATA EXAMPLE

$n = 2400 \text{ RPM}$, $f_n = 0.2\text{-}0.3 \text{ mm/rev}$.

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PCD Reamer

PCD STEP REAMER



› FEATURES

Multi-diameter tool allowing for excellent hole size and concentricity between diameters.

› BENEFIT

Unique guidepad geometry allows for excellent roundness and straightness, even in an interrupted cut condition.

› CUTTING DATA EXAMPLE

$n = 6000-10000$ RPM, $f_n = 0.25-0.40$ mm/rev.

PCD STEP REAMER



› FEATURES

Special design for injection bore. The fluting and coolant geometry layout is specifically designed for this application. The tool enables high precision cutting with extremely fast cutting parameters (in several cases double-up in comparison to the "normal" market features).

› BENEFIT

Extreme cutting parameters shorten cycle time, thus reducing overall costs. Also, the long tool life that comes from UM DANDIA PCD tooling coupled with the possibility of RE-NEW® further reduces total tooling costs.

› CUTTING DATA EXAMPLE

$n = 10000$ RPM, $f_n = 0.3$ mm/rev.

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PCD Reamer

PCD STEP REAMER



› FEATURES

Monoblock reamer with uneven number of inserts allowing for excellent hole size and surface quality. The integrated spindle adapter and multiple step diameters ensure good concentricity between diameters. Internal coolant channel design for improved chip evacuation.

› BENEFIT

Reduced overall costs, due to reduction in cycle time provided by the very high cutting parameters. The very long tool life means that fewer tools are needed – also due to the possibility to RE-NEW® the tools.

› CUTTING DATA EXAMPLE

$n = 5000-7000$ RPM, $f_n = 0.3-0.5$ mm/.

PCD STEP/PROFILE REAMER



› FEATURES

Combining reamer and profile geometry on the PCD inserts, this multi-purpose PCD tool is able to cut three different difficult features in.

Fluting and cutting geometries developed specifically for this application.

› BENEFIT

This combination reamer enables reduced overall cycle time due to fewer operations and increased cutting parameters.

› CUTTING DATA EXAMPLE

$n = 8000-15000$ RPM, $f_n = 0.3-0.5$ mm/rev.

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General

Special Tools

PCD Combination Tool

PCD STEP REAMER/MILL



› FEATURES

A specially designed PCD insert and flute geometry combining several operations in one tool. Ensures a vibration-free finishing of all valve bore diameters in one pass, creates different surface roughness values within a specified range and a T-groove geometry.

› BENEFIT

Reduced overall cycle time with the multi-tasking tool design due to reduction of tool changes and number of tools necessary.

› CUTTING DATA EXAMPLE

$n = 3000 \text{ RPM}$, $f_n = 0.2\text{-}0.3 \text{ mm/rev}$.

PCD STEP DRILL/REAMER



› FEATURES

A special 2-fluted tool design for the shrink fit holder system. First step is drilling in solid material and the remaining steps are reaming pre-casted material. Internal coolant channel design for improved chip evacuation.

› BENEFIT

One-shot solution, reduced overall cycle time, less tool changes, fewer tools in operation.

› CUTTING DATA EXAMPLE

$n = 6500 \text{ RPM}$, $f_n = 0.3\text{-}0.4 \text{ mm/rev}$.

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PCD Combination Tool

PCD REAMER/COUNTERSINK TOOL



› FEATURES

Special PCD tool design in the flute opening, coolant placement and guidepad geometry. This tool is available as either a combination tool, with solid carbide tool body for the PCD reamer and steel body for the PCD bushing, or as a one-piece construction.

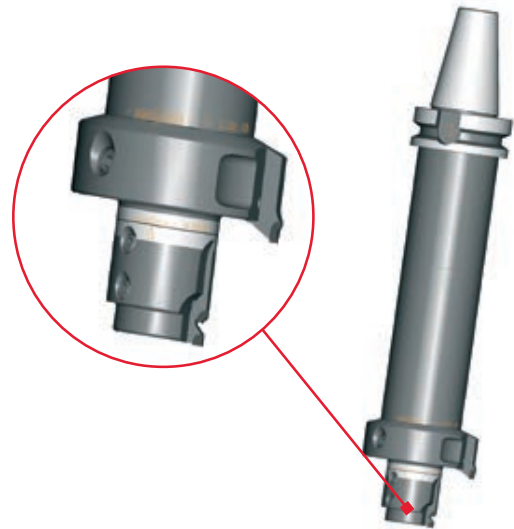
› BENEFIT

High cutting parameters yield reduced overall costs due to reduction in cycle time. Furthermore, fewer tools are required because of the long tool life coupled with our RE-NEW™ process.

› CUTTING DATA EXAMPLE

$n = 8000 - 15000 \text{ RPM}$, $f_n = 0.25 - 0.8 \text{ mm/rev}$.

OUT-BORE PCD REAMER, ADJUSTABLE



› FEATURES

Single flute, out-bore, multi diameter PCD tool. The different diameters can be adjusted separately fast and easy due to the unique UM DANDIA™ design. The toolholder / spindle adapter allows for customized design.

› BENEFIT

Very accurate hole quality and production reliability. Extremely easy to run in and reduced overall cycle time due to the separate diameter adjustability.

› CUTTING DATA EXAMPLE

$n = 2000 - 4000 \text{ RPM}$, $f_n = 0.1 - 0.2 \text{ mm/rev}$.

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ISO9001
JMI-0036



EMS 635470 / ISO 14001



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