



Product information

QR 270

Erosion machine for machining the tooth top
of PCD-tipped circular saw blades

QR 270

PCD circular saw blades for high-power sawing

High-power sawing is performed not only with carbide-tipped circular saw blades but also PCD-tipped (polycrystalline diamond) blades. Saw blades with PCD cutting edges are characterised by an extremely long tool life and an excellent cutting performance. The cutting quality is maintained throughout the service of the tool thanks to the outstanding cutting properties of the PCD material. PCD circular saw blades are mainly used to cut wooden and fibre based materials, and are universal in application.

Machining of PCD circular saw blades

Circular saw blades with PCD cutting edges are machined using the erosion technique. Here, VOLLMER utilises the advantages of electrodes made of copper-tungsten alloys with high erosion rates and a guaranteed optimal surface finish at the PCD cutting edge.



Working position of the rotary electrode on the chamfer facet of the PCD saw blade



Working position of the rotary electrode at the circumference of the saw blade

Design and structure of the machine

On the QR the PCD circular saw blades are machined on the top surfaces of the tooth tip. The saw blades are mounted in the vertical position to allow machining of very large diameters (up to 840mm) without restricting the accessibility of the working area. The copper-tungsten rotary electrode is positioned so that erosion is performed with the face of the cup wheel. The face of the electrode is used to achieve precise accuracy at the cutting edge with clearly defined



angles – a major advantage for the cutting performance of the saw blade.

The machine incorporates a polymer concrete block on which are mounted the operating components for the 8 CNC axes. As the dielectric fluid is oil based an automatic fire extinguishing system is included. The machine can be optionally equipped with a loading device and loading carriage.

Control system and software

The machine is equipped with a tried-and-tested VOLLMER PMC control system. Programming is performed via standard menus that are stored in the control system and displayed at the control desk. All the operator has to do, therefore, is to define the task by entering the relevant geometric and technological data. This makes programming very simple, quick and reliable.



Control desk

Measuring devices

As the circular saw blade is moved into the working position it is pre-positioned via an electro-mechanical saw stop.

The machine is equipped with a measuring probe, which allows the diameter of the circular saw blade to be determined and the infeed amount for the erosion process to be set. Other measured variables are the blade body thickness, cutting width and hook angle. It is also possible to identify different tooth heights or the tooth sequence.



Measuring probe in measuring position

Dressing

During erosion, the rotary electrode is subject to wear. It therefore has to be dressed at pre-set intervals in order to restore its original properties.



Dressing of the rotary electrode

Saw blade indexing unit

The saw blade indexing unit is a new design and now incorporates two CNC axes. Indexing is achieved by a feed pawl that operates on the tooth to be machined.

Automation

The QR can be equipped with a loading device with loading carriages to allow round-the-clock operation in three shifts, even at the weekend – your guarantee of maximum productivity and economy.



Feed unit with pawl



QR with loading system

QR 270

Technical data at a glance:

- Circular saw blades
 - Outer diameter from 100 to 840 mm
 - with robot ND2 100 to 630 mm
 - with robot ND3 200 to 840 mm
 - Bore diameter from 10 mm
 - with robot from 10 to 180 mm
 - Blade thickness up to 14 mm
 - with robot up to 5 mm
 - Tooth pitch from 6 to 120 mm
 - Erosion path length up to 15 mm
 - Clearance angle from 5° to 45°
 - Tooth top bevel up to 60°
 - Tooth height difference any
- Rotary electrode
 - Outer diameter max. 125 mm
 - Bore diameter 60 mm
 - Height 40 mm
- Rotary electrode drive
 - Rotational speed for erosion up to 700 rpm
 - Rotational speed for dressing up to 1600 rpm
 - Dielectric pump delivery rate 60 l/min
 - Dielectric tank capacity approx. 140 l
 - Connected load 4.0 KW/5.0 kVA
 - Dimensions 2295 mm x 1405 mm x 2050 mm
 - Weight approx. 3.300 kg

VOLLMER technology

- The machine features the VOLLMER PMC system with Multiprocessor control
- CNC-controlled axes
 - 1x for the tooth bevel (B-axis)
 - 1x for the rotary electrode infeed (X-axis)
 - 1x for the erosion path (Z-axis)
 - 2x for the tooth feed (V & W-axes)
 - 1x for measuring cross position & erosion (Y-axis)
 - 1x for the clearance angle adjustment (A-axis)
 - 1x for the saw positioning slide (R-axis)

Dimensions

