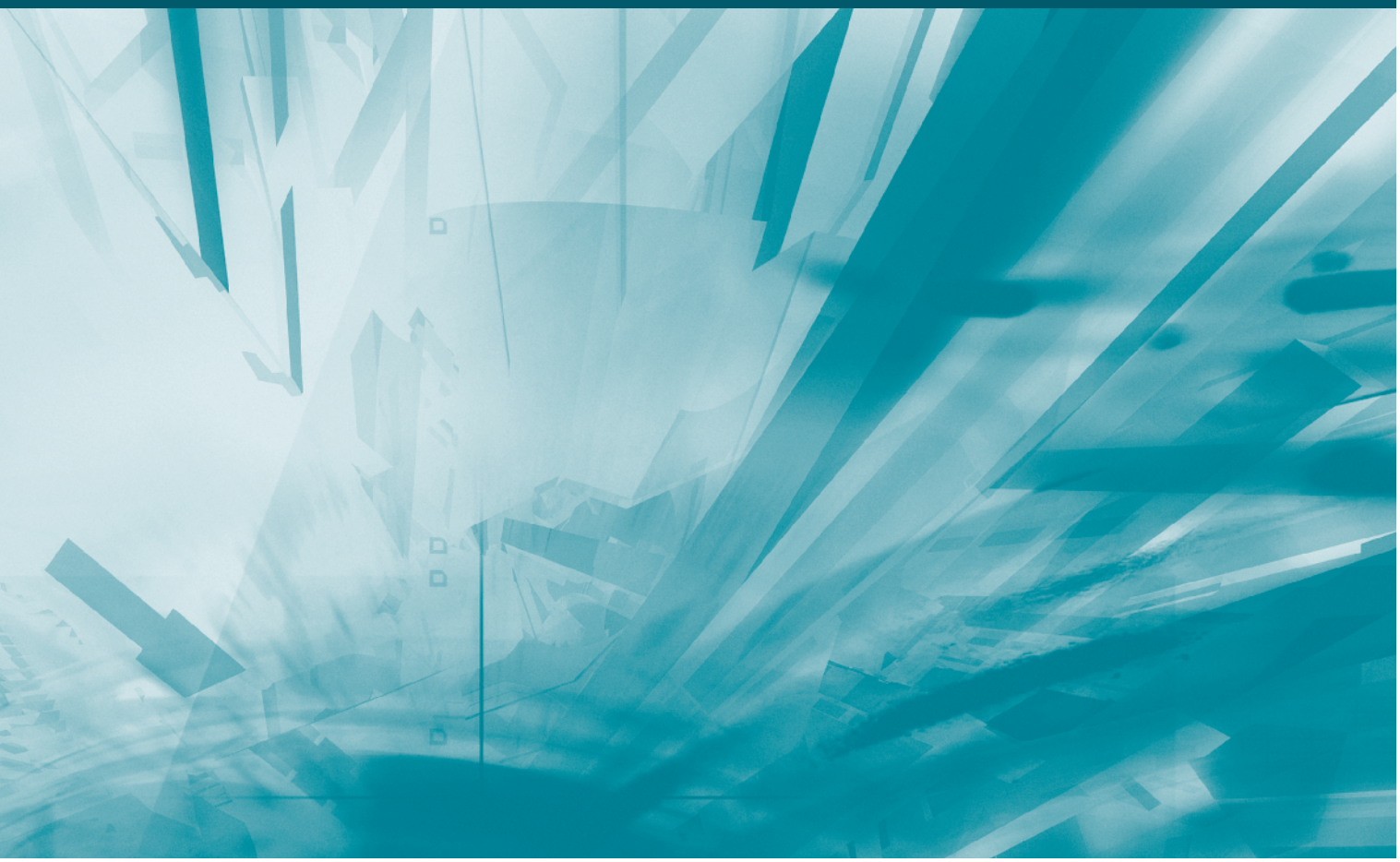


HIGH SPEED DENTAL MILLING MACHINES

OPEN, INDUSTRIAL AND HIGHLY EFFICIENT

HIGH TECH IS OUR BUSINESS.

röders TEC

Röders: Tradition and 200 Years of Innovation

Reliability Through Permanence

For over 200 years, 6 generations in direct descent, Röders has been a family owned and operated company. Customers and business partners have always valued Röders as a reliable and fair partner. The company started out as a pewter manufacturer at a time when there was no industry. This tradition has been continued to the present day.

Expertise Based on Practical Experience

Part of every pewter manufacturer is a mould shop, which serves for the production of steel cavities for casting tin. More than 30 years ago Röders expanded and transformed their mould shop into a state-of the-art mould production plant and began manufacturing blow moulds for PET bottles. In this production plant, Röders manufactures over 5000 blow moulds annually with highest efficiency on their own machines and with their own automation.

>> Röders has a highly modern and industrial machine production and quality control as well as a world wide service network

Success by Innovation

Initiated by internal needs in the blow mould production a new technology was born: **H**igh **S**peed **C**utting. With original innovative developments and totally new concepts Röders already leveraged the HSC Technology in 1991. Since then, over 2,000 Röders machines have been installed worldwide.

Röders has also been a pioneer in the dental field. In 2000 the first Röders HSC machines have been installed for dental applications.

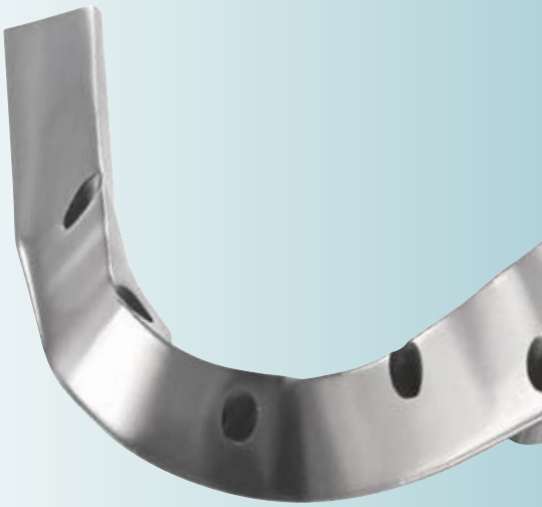
One Machine – Many Applications

With the Röders machine technology dental production is highly flexible. Shortest machining times and high precision are combined in one machine. The pictures show a small extract of the substantial possibilities in dental production on Röders machines.

Lithium disilicate ceramic highly precise ground

<< Bridge made of zirconium oxide

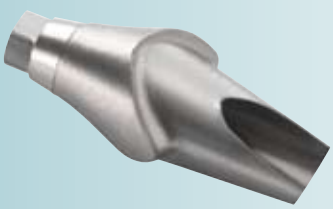
<< Bridge
made of chromium cobalt



Implant bar
made of chromium cobalt

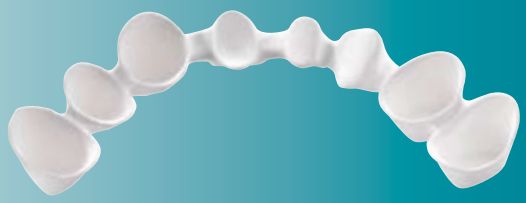
Implant bar
made of chromium cobalt

Abutment produced individually
made of titan



Mould for dentures

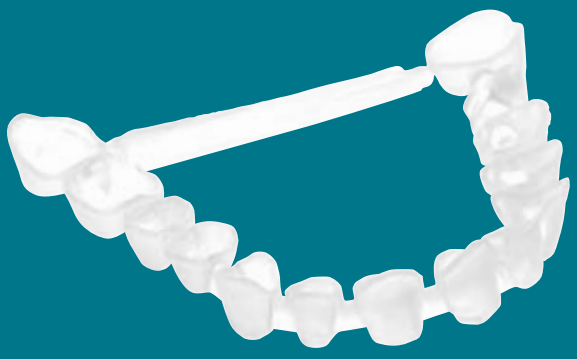
Bridge framework
made of zirconium oxide



Bridge framework
made of chromium cobalt

Bridge framework
made of chromium cobalt

Bridge
made of chromium cobalt



Bridge framework
made of PMMA

Bridge
made of titanium

Röders
RXD4, RXD5 and RXD5C

> Röders RXD 4, RXD 5 and RXD 5C:

Extreme cost reduction due to highly efficient machine technology

Advantages of Röders RXD Dental Milling Machines

- Proven technology resulting from over 20 years experience in High Speed Cutting
- Wear-free axis drives with linear motor technology
- Extremely short machining times, partially below 5 minutes per unit
- Long lasting tool life resulting in very low tool costs due to high machine stiffness avoiding tool vibrations
- Highly efficient material utilization resulting in the production of significantly more units per disc (up to 30 % more), achieved by a one sided clamping of the discs
- Highest Precision, also for 5-axis machining
- Up to 50.000 rpm available with standard spindle, ideal for filigree dental works
- All materials machineable in one HSC machine, also mixed operation possible
- 4- and 5-axis HSC machines available
- Tool length measurement, break and wear control with integrated measuring laser, automatic continuation of next job in case of tool breakage, automatic tool change in case of wear
- Integration into Röders own manifold automation solutions possible, also after installation of the HSC machine

RXD 4

- 180° swivel axis as fourth axis
- 2 swivel positions for machining the upper and lower side (0° and 180°)
- Automatic clamping unit for fixing the Röders disc holder on the swivel axis
- One sided clamping of the disc in the Röders disc holder for optimum material utilization

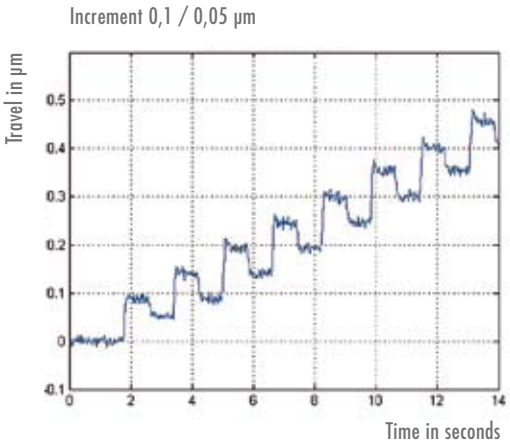
RXD 5 and RXD 5C

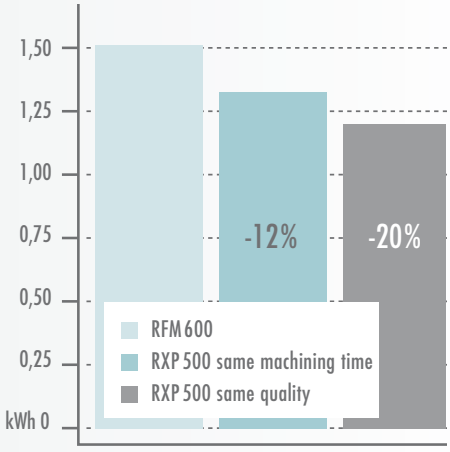
- RXD 5C for very large swivel angles up to 135°, RXD 5 up to 115°
- Integrated highly dynamic rotary swivel unit for simultaneous 5-axis machining, positioned freely
- Equipped with wear-free direct drives
- Extremely stiff construction with counter bearing
- Automatic clamping unit for fixing the Röders disc holder
- One sided clamping of the disc in the Röders disc holder for optimum material utilization

The Technology in Detail

- Linear motor technology in all axes for highest precision and dynamics
- Wear-free and thereby high reliability
- Water cooled for high efficiency and long durability

- Highly precise tool measurement with the measuring laser
- Tool breakage detection and wear control also possible
- Protected against chips in the tool changer





- Axis movement in smallest increments possible for highest precision
- Internal resolution of the control smaller than 1 nanometer

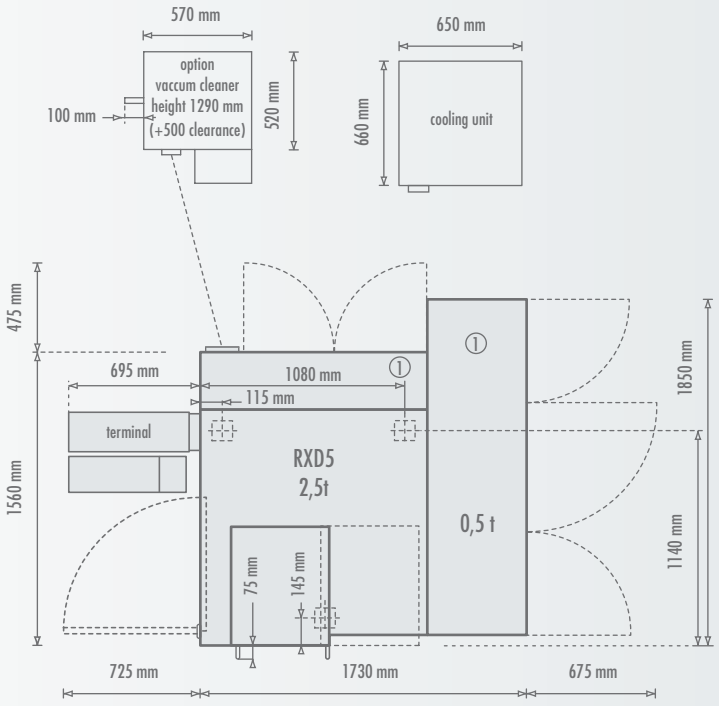
- Automatic tool changer
- Exchange of sister tools depending on tool wear possible

- Energy saving modern drive and linear motor technology, especially compared to machines with ball screws

Technical specifications

Construction	highly rigid portal design
Feed	0 – 40,000 mm/min
Speed	50,000 rpm, HSK E25 standard
Work piece clamping	one sided with special Röders holder
Tool changer	12 places, optionally 40 places
Tool measurement	fully automatic with integrated measuring laser
Dust exhaustion	optional, large filter surface and automatic filter cleaning
Machine weight	approx. 3.2 t
Required space	W 2430 mm x L 1850 mm x H 2070 mm (RXD 5C: H 2160 mm)

Floor plan



For machine transportation the operator terminal and the electrical cabinet may be taken off.

Automation for Absolute Cost Minimization

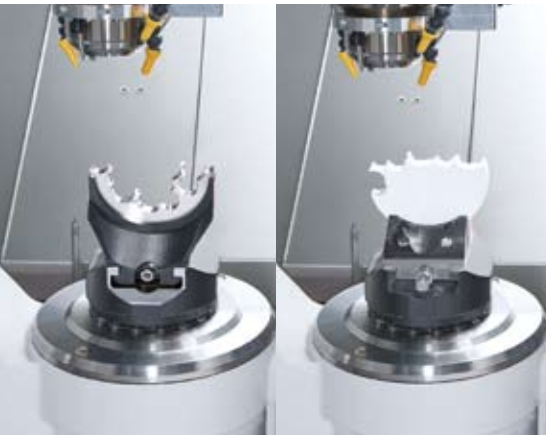
> Röders Automation

With the Röders Automation the maximum in cost reduction in dental machining is achieved. Proven solutions allow for a reliable production also at very high quantities. A simple and easy to operate software controls the complete system and insures clarity at all times, optionally also in the entire laboratory.

- Loading of Röders holder with fixed chromium cobalt disc into the machine
- Automatic clamping on the rotary axis

- Separation of the dental works into cups
- Funnel and cup positioned below the disc
- Automatic cut-through of the pins

- Cup exchange by the automation system
- Cushioned cups for avoidance of damage to dental works



- Efficient material utilization by one sided clamping of discs
- "Complete" machining of disc, up to 30 % more units per disc

- Automatic checking of the magazine setting
- Optional labelling of the cups with RFID chips allowing for automatic referencing of the machined dental works to the cup ID by the software

- Use of the cup identification in the entire laboratory, for example at manual workplaces
- Identification of the machined dental work in the cup with a handheld chip reader is possible anytime
- Integration of a printer for labels or other devices possible

>> HSC Machines and Automation >> Blow Moulds for PET Bottles
>> Röders Pewter & Röders ART

Subject to technical changes – 1501

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