

THE GOLD STANDARD.

The 5-axis milling machine
for non-stop dry and wet machining.



R5



5
Axes

10
Discs

60
Blocks

16
Tools

Dry
Wet

Mill
Grind

CAM
Software
incl.

YOUR TICKET TO THE DENTAL HALL OF FAME.

Simply process everything, nonstop.

With the R5 you play in a new league of productivity: non-stop milling and grinding with maximum material freedom. You save valuable time by one-handed loading the changer with up to ten discs; this **DIRECTDISC** Technology is patent-pending.

And there is more! Switch quickly and effortlessly between wet and dry machining with the **DIRECTCLEAN** Technology. An ingenious package of ionizer, self-cleaning process and dryer enables you to produce first-class restorations around the clock.



Save time through automation.

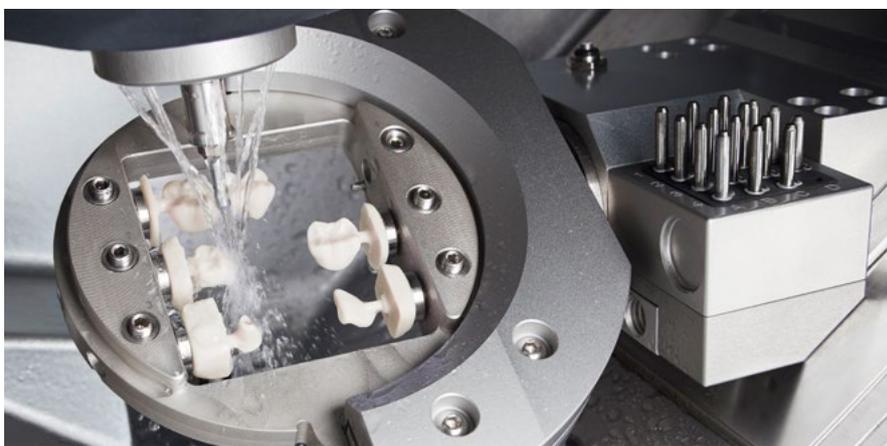
Up to ten discs or 60 blocks or abutments made from different materials can be processed without interruption. The easy-to-load, removable changer for 16 tools enables a production without user intervention. The intuitive handling provides best operating comfort.

Reliability meets precision.

The R5 offers German engineering at its best — with an impressive 150 kilograms of weight on a minimal footprint. The result: a machine rigidity that meets the highest demands. A repetition accuracy of the linear axes of ± 0.003 mm guarantees maximum precision in Ultra HD and lowest vibration in operation.



The R5 swivels the spindle (B axis) by up to $\pm 35^\circ$. This means that the workpiece holder only needs one moving axis (A axis) and gives the entire system stability.



*For wet machining, the R5 grinds with clear water — better for your materials and without annoying disposal. Moreover, the **DIRECTCLEAN** Technology enables a swift switch to dry milling and back.*



“When I go home, I literally have the R5 working and when I get back, 10 discs are ready for me in the next morning – this makes it really simple!”

Michael Scherer, DMD, MS
Dentist

FEATURES AND BENEFITS? LOTS OF THEM!



Highest precision

- Restorations in Ultra HD
- High-precision spindle with 800 watts of power and 80,000 rpm
- 3 µm repetition accuracy



Absolute independence

- Sheer unlimited material variety in 98 mm disc format, around 40 block materials, and 800+ titanium and CoCr prefabricated abutment blanks
- Covers the broadest range of indications, due to $\pm 35^\circ$ rotation angle in the 5th axis, and up to 40 mm disc height



Tremendous stability

- Mills and grinds the toughest materials on the market including all Ti and CoCr materials
- Proven industrial quality
- Solid cast-body for minimum vibrations



Outstanding reliability

- 100% engineered and manufactured in Germany
- Comprehensive sensor technology to monitor all vital system functions
- 24-month warranty



Highly economical

- One of the fastest machines on the market
- Revolutionary material loading with DIRECTDISC Technology (patent pending)
- Automatic changer holds up to 10 discs, 60 blocks, or 60 prefabricated abutments
- Webcam in working chamber for remote monitoring and service
- DIRECTCLEAN Technology enables wet and dry on the fly: ionizer, self-cleaning and built-in dryer (patent pending)
- Drilling of screw access channels – saves costs for “meso” blocks
- Very easy operation via DENTALCAM software with DIRECTMILL Technology – included in scope of delivery and without license fees

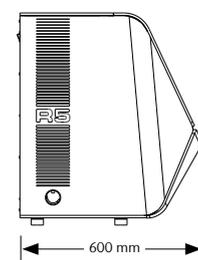
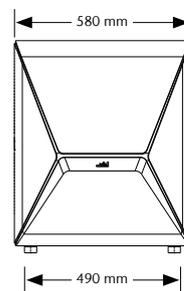
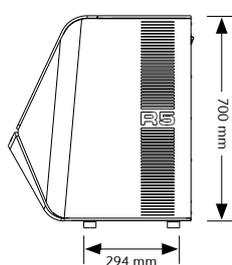
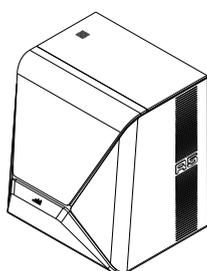
MATERIAL, MANUFACTURER, INDICATION. ENJOY THE FREEDOM OF CHOICE.

Anything goes: discs, blocks and abutments

Composites	Plastics Wax	Glass ceramics	Zirconia	Titanium	CoCr
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Maximum freedom of indication

Crown Bridge	Inlay Onlay	Abutment	Telescopic crown	Model plate
Model cast	Occlusal splint	Model tooth	Implant bar	Veneer
Drilling template	Denture	Secondary crown	Screw-retained bridge	Protrusion splint



TECHNICAL DATA.

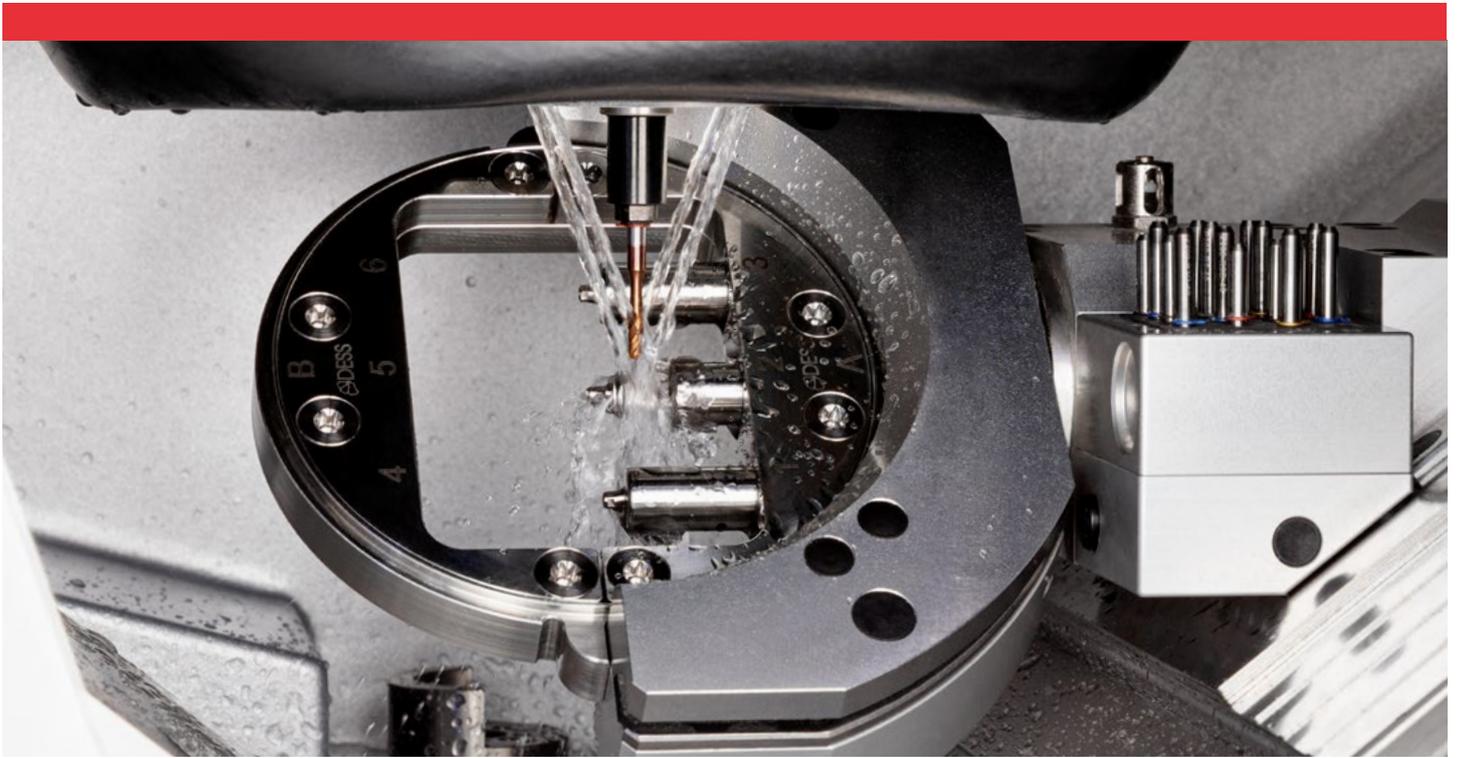
GENERAL	
Fields of application	Dry and wet machining
Materials	Plastic materials, wax, zirconia, composites, CoCr, model plaster, glass ceramics, titanium - Discs: Height 10–40 mm , diameter 98.5 mm - Blocks up to 45 × 20 × 20 mm
Indications	Crowns, bridges, fully anatomical crowns and bridges, inlays, onlays, abutments, telescopic crowns, models, model castings, bite splints, implant bars, veneers, drilling templates, dentures, table tops etc.
BASE SYSTEM	
Construction	Machine bed made of solid cast aluminum body
Housing	Sheet steel, white high-gloss lacquer finish with working chamber door and flap combination for blank changer/cooling liquid tank
Number of axes	5
Linear axes	Precision ball screws, rolled version · motors with resolution < 1 µm · ground precision guides made of high-alloy steel · repetition accuracy ± 0.003 mm
X-/Y-/Z-axis	
Rotary axis	Backlash-free Harmonic-Drive® with highest concentricity · rotation angle: 360°, infinite
A-axis	
Rotary axis	Precision ball screw with rotary transmission · Angle of rotation: ± 35° · Axis arrangement in the tool
B-axis	
Control unit	5-axis simultaneous control electronics with continuous path progression and dynamic pre-calculation · hardware-based real-time operating system with standardised command set · FPGA-integrated processor · updateable hardware · real-time path calculation via dedicated hardware engines in the FPGA · four-quadrant control of the motors for particularly smooth running · multiple analogue and digital I/Os for controlling the peripherals · integrated inverter for synchronous and asynchronous motors, electronic gate detection · Ethernet and USB interface
Lighting	RGB LED lighting with status display (3x working chamber / 1x blank changer)
Camera system	Integrated in the working chamber for easy remote support and possibility of internal recording
SPINDLE	
General	High-frequency spindle, synchronous with pneumatic tool clamping · sealing air to prevent debris from entering · automatic cone cleaning
Speed	Up to 80,000 rpm
Power	Peak power (Pmax): 800 watts · nominal power (S6): 600 watts · continuous power (S1): 440 watts
Bearing	4-fold hybrid ceramic ball bearing · concentricity deviation at inner cone < 3 µm
Collet	Stainless steel collet with ceramic coating for tools with a shank diameter of 3 mm and max. 40 mm total length
AUTOMATION	
Tool change	Tool magazine for 16 tools, removable · Length measurement and tool breakage monitoring via precision measuring key
Workpiece change	Integrated blank changer for up to 10 blanks, block holders or abutment holders · Design in DIRECTDISC Technology · Robot arm with pneumatic gripper · Monitored end positions
Access to the working chamber	Motorized opening and closing of the working chamber door, movement parallel to the chassis
Access to combination chamber	Access to the multi-purpose compartment containing the blank changer and cooling liquid tank via an electric flap
PROCESSING MODES	
Dry	Air nozzles on the spindle · Hose connection for external suction unit on the side of the housing · underpressure sensor for monitoring the suction unit · 24 V switch output for controlling suction units · Powerful ioniser with 2 ion nozzles
Wet	Liquid nozzles on the spindle · integrated cooling liquid tank (3 litres) for cooling liquid with active carbon filter system · flow-sensor for monitoring the liquid supply · PUREWATER: no grinding additives except for titanium processing
Wet / Dry	DIRECTCLEAN Technology (ionization/rinsing/drying/ventilation) for any change between wet and dry processing
CONNECTION REQUIREMENTS	
Compressed air	6 bar · 100 l/min · 8 bar · 110 l/min · Air purity according to ISO 8573-1:2010
Power	100-240 volts · 50/60 Hz, 750 watts
Extraction System	Filter class M, 3500 l/min extraction capacity at 220 hPa
Data	10/100/1000 Mbit/s BaseT port (auto-sensing) Ethernet via RJ-45 socket
ENVIRONMENTAL CONDITIONS	
Operating temperature	Between 10 °C and 35 °C
Air moisture	Max. 80 % (relative), non-condensing
APPROVALS	
All models	CE, VDE
North America model	UL, FCC (according to ANSI/UL 61010-1)
DIMENSIONS & WEIGHTS	
Dimensions (W/D/H)	580 × 600 × 700 mm with closed flap 580 × 720 × 880 mm with open flap
Footprint (W/D)	490 × 294 mm
Weight	150 kg
SCOPE OF DELIVERY	
CAM Software	DENTALCAM software included
Holder systems	Abutment holders for various systems (optional)
Accessories	Spindle service set · calibration set incl. micrometer · brush for nozzle plate · cleaning brush · microfibre cloth · spare filters · active carbon pellets · Tec Powder (3 bags) · spare wiper for viewing window · tool magazine inserts (1 piece) · Torque wrench · 2 Allen wrenches · drill bit (tool positions) · measuring pin · power cable · Ethernet network cable · carrying aid for transporting the machine · operating instructions



Miguel Stanley, DDS

Founder and Clinical Director of White Clinic, Lisbon, Portugal

„TALKING ABOUT PRECISION AND
SPEED, THIS MILLING MACHINE IS
TRULY UNPARALLELED.“



The future of dental manufacturing comes from vhf: with the flagship machine R5, there are no limits.



CREATING PERFECTION.

For more than 30 years.

As CAM solution provider, vhf thoroughly develops and produces every single milling machine and the perfectly matching tools and CAM software. Everything from one source. Made in Germany.

Support. A topic close to our hearts.

The service of your machine is important to us: We train our sales partners according to the highest requirements – so you receive first-class support for your R5.

GET IN TOUCH.

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