

EN

DRY MILLING WITH A PLUS.

The best seller,
plus extra spindle power.



Visibly
different
Noticeably
better

5
Axes

1
Disc

3
Blocks

16
Tools

Dry

Mill

CAM
Software
incl.

vhf
CREATING PERFECTION

VISIBLY DIFFERENT, NOTICEABLY BETTER: PLUS EXTRA POWER FOR HARD MATERIALS.

After its face lift, the K5+, our proven top selling five axis milling machine, has an all-new look. And, as if that wasn't enough: we added an over 60% more powerful spindle as well. That means you can always go all out when milling, making it much easier to machine tough materials like cobalt-chrome. Thanks to its proven reliability, the K5+ is a true driver of performance in any laboratory.



Did you know?

vhf has been using high-quality 4-fold hybrid ceramic bearings for over ten years, particularly for machining metals. For you, this means a significantly longer spindle service life, higher surface quality and noticeably better accuracy of fit.

PROVEN ADVANTAGES OF OUR BEST SELLER.



Power package with lots of features

The K5+ machines a particularly wide range of materials and indications in disc form with a thickness of up to 40 mm. That means it helps make your everyday work easier with lots of innovative technologies. Two particularly useful features are the **DIRECTDISC** Technology for single-handed, tool-free disc fixation, and an integrated ionizer that neutralizes most of the static charge of plastic chips – practically eliminating your cleaning work.

Thanks to its highly stable machine bed structure, made of a solid cast body, the machine generates less vibrations and delivers first-class surface quality.

You can also easily produce prefab abutments made of CoCr and block materials with the right holders (left image).



The K5+ processes discs up to a thickness of 40 mm. An ionizer neutralizes the charge of plastic chips (right image).

Keeping it all together

Tools and material blanks are stored in the machine's practical accessory drawer, so they are always close at hand. An Administrated Tool Board for milling tools is also integrated into the drawer. Its numbered slots are managed using the **DENTALCAM** software, creating an active tool pool of a total of 30 tools.



FEATURES AND BENEFITS? LOTS OF THEM!



Exceptional precision

- Restorations in ultra HD
- Premium spindle with four-fold ball bearing made of hybrid ceramic for the highest concentricity
- 3 µm repetition accuracy



Absolute independence

- Sheer unlimited material accessibility in 98 mm disc format, separate block and prefab abutment holders available
- Covers the broadest range of indications, due to $\pm 35^\circ$ rotation angle in the 5th axis, and blanks up to 40 mm thickness (metals up to 18 mm)



Tremendous stability

- Mills the toughest materials on the market, incl. CoCr
- Powerful 820 W, 60,000 rpm spindle
- Heavy industrial quality for maximum rigidity
- Solid cast body for the lowest vibrations



Outstanding reliability

- 100% engineered and manufactured in Germany
- Sophisticated sealing air concept to protect mechanics, electronics, and spindle
- 24-month warranty



Highly economical

- Ionizer and improved air circulation for easy machine cleaning
- **DIRECTDISC** Technology for tool-free disc fixation – insert your workpieces in seconds
- Automatic changer for 16 tools
- Webcam in the working chamber for remote monitoring and service
- Ethernet interface for stable connection
- Very easy operation via **DENTAL-CAM** software with **DIRECTMILL** – included in scope of delivery and without license fees

YOU CHOOSE: MATERIAL, MANUFACTURER, INDICATION.

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 die	Implant bar	Veneer
Surgery guide	Denture	Secondary crown	Screw-retained bridge	Protrusion splint

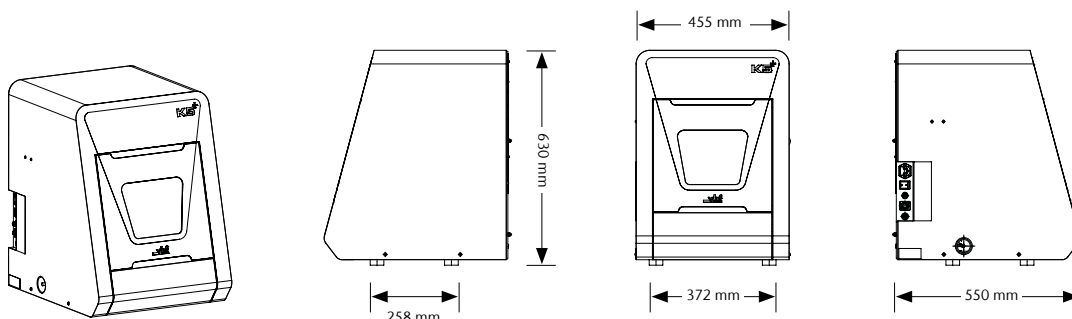
Be sure to review local and/or national regulations and/or regulations by other authorized organizations or entities (e.g. professional associations, health authorities).

A MATTER OF FACTS.

GENERAL	
Fields of application	Dry machining
Materials	Plastic materials, wax, zirconia, composites, CoCr, model plaster <ul style="list-style-type: none"> • Blanks, height 10-40 mm (CoCr up to 18 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, occlusal splints, implant bars, veneers, drilling templates, dentures, table tops etc.
BASE SYSTEM	
Construction	Machine bed made of solid cast aluminum body
Housing	Sheet steel housing, white high-gloss lacquer finish with working chamber flap and accessories drawer
Number of axes	5
Linear axes X-/Y-/Z-axis	Precision ball screws · motors with resolution < 1 μm · ground precision guides made of high-alloyed steel · repetition accuracy ± 0.003 mm
Rotary axis A-axis	Backlash-free Harmonic-Drive® with the highest angular precision · rotation angle: 360°, infinite
Rotary axis B-axis	Precision ball screw with rotary transmission · rotation angle: ± 35° · axis arrangement in the workpiece
Control unit	5-axis simultaneous control electronics with continuous path progression and dynamic pre-calculation · hardware-based real-time operating system with standardized instruction 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 in the working chamber
Camera system	Integrated in the working chamber for easy remote support and possibility of internal recording
ATB	Integrated Administrated Tool Board (ATB) for 30 tools
SPINDLE	
General	High-frequency spindle, synchronous, with pneumatic tool clamping · sealing air to prevent debris from entering · automatic cone cleaning
Speed	Up to 60,000 rpm
Power	Peak power (P _{max}): 820 watts · nominal power (S6): 680 watts · continuous power (S1): 550 watts
Bearing	4-fold hybrid ceramic ball bearing · concentricity deviation at inner cone < 3 μm
Collet	Stainless steel collet for tools with 3 mm shank diameter and max. 40 mm total length
AUTOMATION	
Tool change	Tool magazine for 16 tools · length measurement and tool breakage monitoring via precision measuring key · access via working chamber flap, safety-locked
PROCESSING MODES	
Dry	Air nozzles on the spindle · hose connection for external suction unit on the side of the housing · vacuum sensor for monitoring the suction unit · 24 V switch output for controlling suction units · ionizer with 2 ion nozzles · disc change in DIRECTDISC Technology
CONNECTION REQUIREMENTS	
Compressed air	6 bar: 50 l/min to 8 bar: 64 l/min (without ionization) · 6 bar: 80 l/min to 8 bar: 102 l/min (with ionization) · air purity according to ISO 8573-1:2010
Power	100-240 volts · 50/60 Hz, 640 watts
Extraction System	Extraction filter class M, 2,500 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) (pending)
DIMENSIONS & WEIGHTS	
Dimensions (W/D/H)	455 × 550 × 630 mm with closed flap and drawer 455 × 550 × 711 mm with open flap and drawer
Footprint (W/D)	372 × 258 mm
Weight	91 kg
SCOPE OF DELIVERY	
CAM Software	DENTALCAM software included
Holder systems	3-fold block holder · Ivotion ¹ accessory kit (optional)
Accessories	Spindle service set · calibration set incl. stirrup measuring screw · working area crevice nozzle · tool magazine inserts (2 pieces) · spare screws · tool magazine cover · Torx and Allen wrenches · emergency release key · drill bit (tool positions) · measuring pin · compressed air hose with pressure reducer · power cable · Ethernet network cable · carrying aid for transporting the machine · operating manual

Subject to changes and errors.

¹ Ivotion is a brand of Ivoclar Vivadent



YOUR PLUS FOR MACHINING COBALT-CHROME: K5+

PERFORMANCE CLASS

PERFORMANCE CLASS machines are top performers in dental laboratories, and allow labs to work with outstanding efficiency. In this series, we offer all dry and all wet processing machines, as well as a combination of the two.

The optimal addition

The N4+ for wet processing of blocks and abutments is the ideal addition to the K5+ dry milling machine. Combined, the two machines can handle almost any indication.



WHAT DO THEY SAY IN EVERYDAY PRACTICE?



I do 80 % of my dental lab work with the K5+.

Sandra Braun

Master dental technician and owner of Individualis, milling center for innovative dental technology, Rottenburg, Germany



The K5+ gives me the accuracy and speed for crown and bridge, removable and implant cases that I need in my busy lab. I cannot afford to compromise.

Amir Juzbasic

CEO Lintec Dental Labs, Gaithersburg, Maryland, USA



CREATING PERFECTION.

With 35 years of experience, vhf is a leading manufacturer of dental milling machines. As a CAM full-service provider, vhf meticulously develops and produces each individual milling machine and the perfectly matched tools and software all in-house. Everything from a single source. Made in Germany.

Service. We are passionate about what we do.

Our products are extremely low-maintenance and highly durable, but the servicing of your machine is important to us. We provide customer support with our user-friendly DentalPortal, numerous online tutorials and personal assistance through our international service network.