

DRY MILLING WITH A PLUS.

The 5-axis milling machine
for dry machining.



K5+

5
Axes

1
Disc

3
Blocks

16
Tools

Dry

Mill

**CAM
Software
incl.**

THE TOP SELLER FOR DENTAL LABORATORIES.



Feature variety in a powerful machine

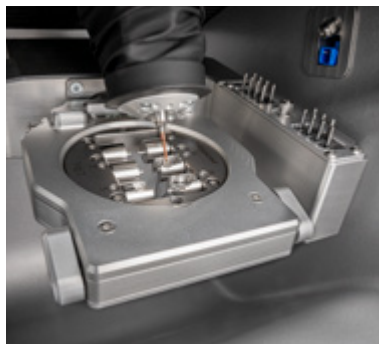
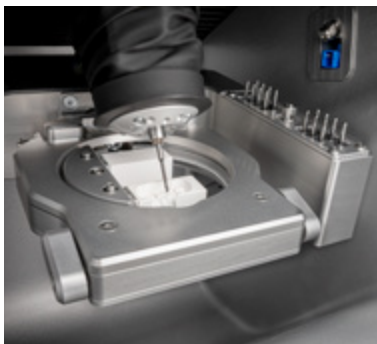
With the K5+, our top seller among the 5-axis milling machines, you can machine a particularly wide range of materials and indications (blanks up to 40 mm in height).

Revolutionary technologies such as **DIRECTDISC** Technology for one-handed and tool-free blank clamping and an integrated ionizer, which largely neutralizes the static charge of plastic chips such as PMMA and thus considerably reduces the cleaning effort, help you to achieve this.

In addition, the particularly stable machine bed design made of a solid cast body reduces vibration and ensures first-class machining results – even when milling cobalt chrome.

Everything under control

In the machine's practical accessories drawer, tools and material blanks are well organized and immediately at hand. An Administered Tool Board for milling tools is also integrated into the drawer. Its numbered slots are managed via the **DENTALCAM** software, resulting in an active tool pool of 30 pieces in total.



K5+ accessories:

With the appropriate holders, you can also easily fabricate block materials as well as CoCr prefab abutments.

Basic version K5:

*For interested customers the basic model K5 is still available in our portfolio. With this version some features like ionizer, camera and the tool-free blank clamping with **DIRECTDISC TECHNOLOGY** are omitted.*



FEATURES AND BENEFITS? LOTS OF THEM!



Exceptional precision

- Restorations in ultra HD
- Premium spindle with 4-fold hybrid ceramic ball bearings for highest running accuracy
- 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 up to 40 mm discs



Tremendous stability

- Mills the toughest materials on the market, incl. CoCr
- Powerful 500 watt spindle and 60,000 rpm
- 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 revolutionary disc clamping
- 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

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



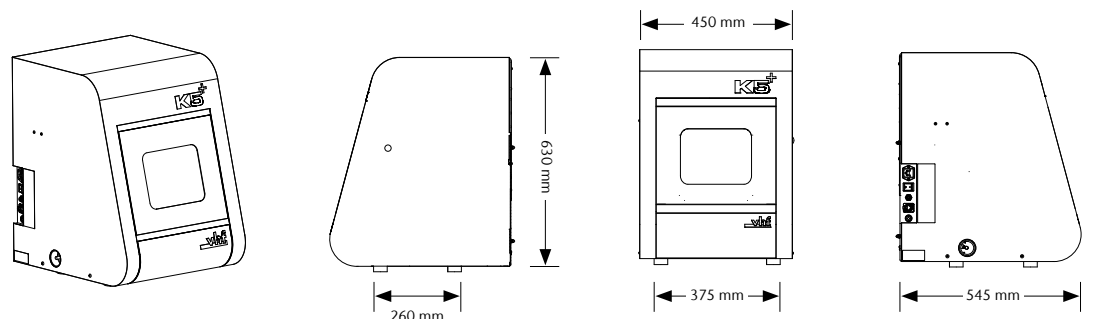
„The K5+ gives me the accuracy and speed for crown and bridge, removable and implant cases that I need in my busy lab. I cannot afford to compromise, I need to be as efficient as possible. With the vhf K5+ I found the right tool to succeed.“

Amir Juzbasic
CEO Lintec Dental Labs

A MATTER OF FACTS.

GENERAL	
Fields of application	Dry machining
Materials	Plastic materials, wax, zirconia, composites, CoCr, model plaster - Blanks, 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, 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, rolled version · 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 highest concentricity · rotation angle: 360°, infinite
Rotary axis B-axis	Precision ball screw with rotary transmission · angle of rotation: ± 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 Administrator 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 (Pmax): 500 watts · nominal power (S6): 450 watts · continuous power (S1): 300 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, removable · 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 · loniser with 3 ion nozzles · disc change in DIRECTDISC Technology
CONNECTION REQUIREMENTS	
Compressed air	6 bar: 50 l/min to 8 bar: 64 l/min (without ionisation) · 6 bar: 80 l/min to 8 bar: 102 l/min (with ionisation) · air purity according to ISO 8573-1:2010
Power	100-240 volts · 50/60 Hz, 640 watts
Extraction System	Extraction filter class M, 2500 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)	450 × 545 × 630 mm with closed flap and drawer 450 × 695 × 680 mm with open flap and drawer
Footprint (W/D)	375 × 260 mm
Weight	91 kg
SCOPE OF DELIVERY	
CAM Software	DENTALCAM software included
Holder systems	3-fold block holder
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.

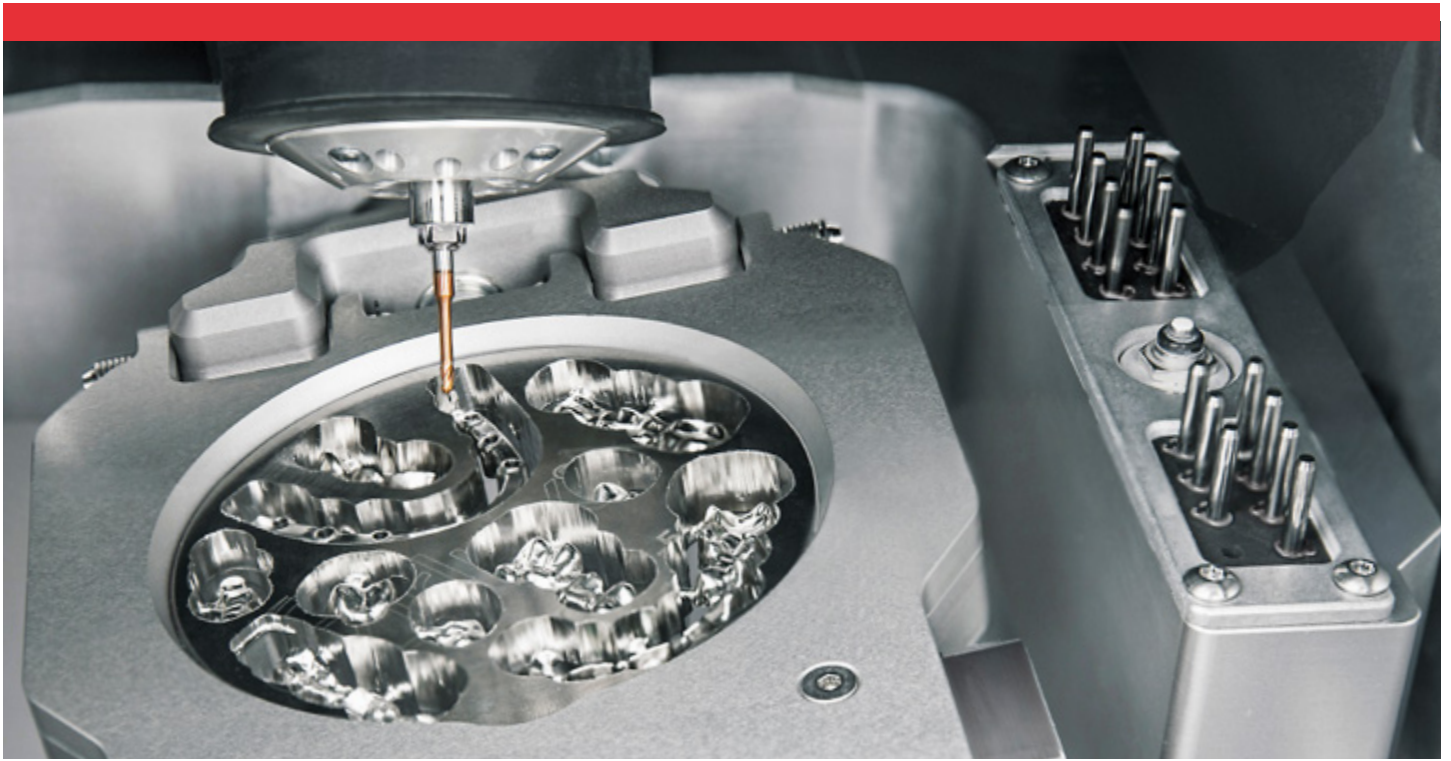




Sandra Braun

Master dental technician and owner of INDIVIDUALIS,
Milling center for innovative dental technology, Rottenburg, Germany

**"I CAN DO 80% OF MY WORK
WITH THE K5+."**



No matter what you have in mind, the K5+ guarantees fast workflows and provides you with optimum support during production.



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.

HQ Europe

vhf camfacture AG
Lettenstraße 10
72119 Ammerbuch
Germany
+49 7032 97097 000
info@vhf.de | vhf.de

North America

vhf Inc.
80 Davids Drive, Suite 5
Hauppauge, NY 11788
USA
+1 631 524 5252
info@vhf.com | vhf.com

Asia

vhf Trading (Shanghai) Co., Ltd.
Room 2902, Building T1, Tianshan SOHO,
No. 421 Ziyun Road, Changning District, Shanghai
China
asia@vhf.de | asia.vhf.de



Global: vhf.de/en/K5+



The Americas: vhf.com/K5+