

# Disc milling with ease.

The innovative solution for dry processing  
in the practice and the laboratory.



■ EASE CLASS

# 5-axis dry milling: Let's go with EASE.

First-class results with extremely simple operation.

## Ideal for the practice lab and the laboratory

The **EASE CLASS** from vhf stands for high-quality dental restorations paired with simplicity. The E5, specialized in the dry milling of discs, is an important part of this series. With this 5-axis milling machine, you enjoy maximum freedom and achieve first-class results with impressive indication versatility.

## Typical vhf – an open system

The E5's open system architecture allows for your seamless entry into the digital production of dental restorations, integrating perfectly into your workflows. Hit the ground running with the dental**cam** CAM software provided! As for the entire **EASE CLASS**, the motto for the E5 is Plug & Mill: unpack, switch on, start milling!

## Premium dental milling made easy!

The E5's simple handling is shown in many ways: easy transportation thanks to its low weight of just 47 kg, an absolutely service-friendly design which even allows you to replace central components if desired – and all this paired with maximum convenience during operation.

## Intuitive operating logic meets sophisticated machining strategies

The high level of convenience is evident in both the hardware and the software: For example, the generously sized working chamber, despite the machine's compact footprint, makes it easy to mount the blank and equip the tool magazine. On the software side, dental**cam** supports you with its open interface: It features an intuitive operating logic, fast and sophisticated machining strategies and an extensive material library.

## 90° processing – for perfect anterior teeth

With its C-shaped disc holder, the E5 can also process anterior teeth at a 90° angle. The milling cutter works perpendicular to the anterior side of the teeth. This significantly reduces the amount of residual material caused by narrow interdental spaces or undercuts.

# No compressed air thanks to clever technology.

The vhf **airtool**: cost-saving and sustainable.

One special innovation of the E5 is that it does not require compressed air: Neither external compressed air connection nor a built-in compressor is needed. This makes it significantly more cost-effective and sustainable as compressed air is an especially energy-intensive medium. You also enjoy maximum freedom in your choice of installation site.

This is made possible by our patent-pending **airtool** for dry processing. Its turbine blades use the speed of the high-frequency spindle to generate a powerful air flow. This keeps the blank free from dust and chips. The extraction system removes them downstream.



The E5 has been a total game changer!



Dr. Craig Spodak  
Dentist, Delray Beach, Florida, USA



Disc milling made easy – with the E5 you can mill all kinds of materials, including CoCr sintered metals. The sky's the limit in the variety of indications.



# Compelling arguments? Lots of them!

The key features of the E5.

## Fast & precise

- Grinding and milling in ultra HD
- 800 W spindle with 60,000 rpm
- 3 µm repetition accuracy
- Cast aluminum body for low vibration in operation
- Optimum manufacturing results and high durability thanks to the exclusive use of high-quality industrial components
- 100% developed and manufactured in Germany

## Independent

- Mills almost all materials, including CoCr sintered metals in a 98.5 mm disc format
- C-holder enables 90° processing of anterior teeth
- Holders available for 110 mm discs and blocks
- Maximum indication versatility thanks to a ±35° rotating angle in the 5th axis and blanks with a thickness of up to 40 mm

## Cost-effective

- Enables a fast and cost-effective entry into CAM fabrication in the laboratory environment
- Sustainable and affordable operation with no compressed air thanks to the patent-pending **airtool**
- Environmentally friendly shipping due to the low weight of the machine
- Ultra-easy operation with dental-**cam** and its open interface to CAD software and materials

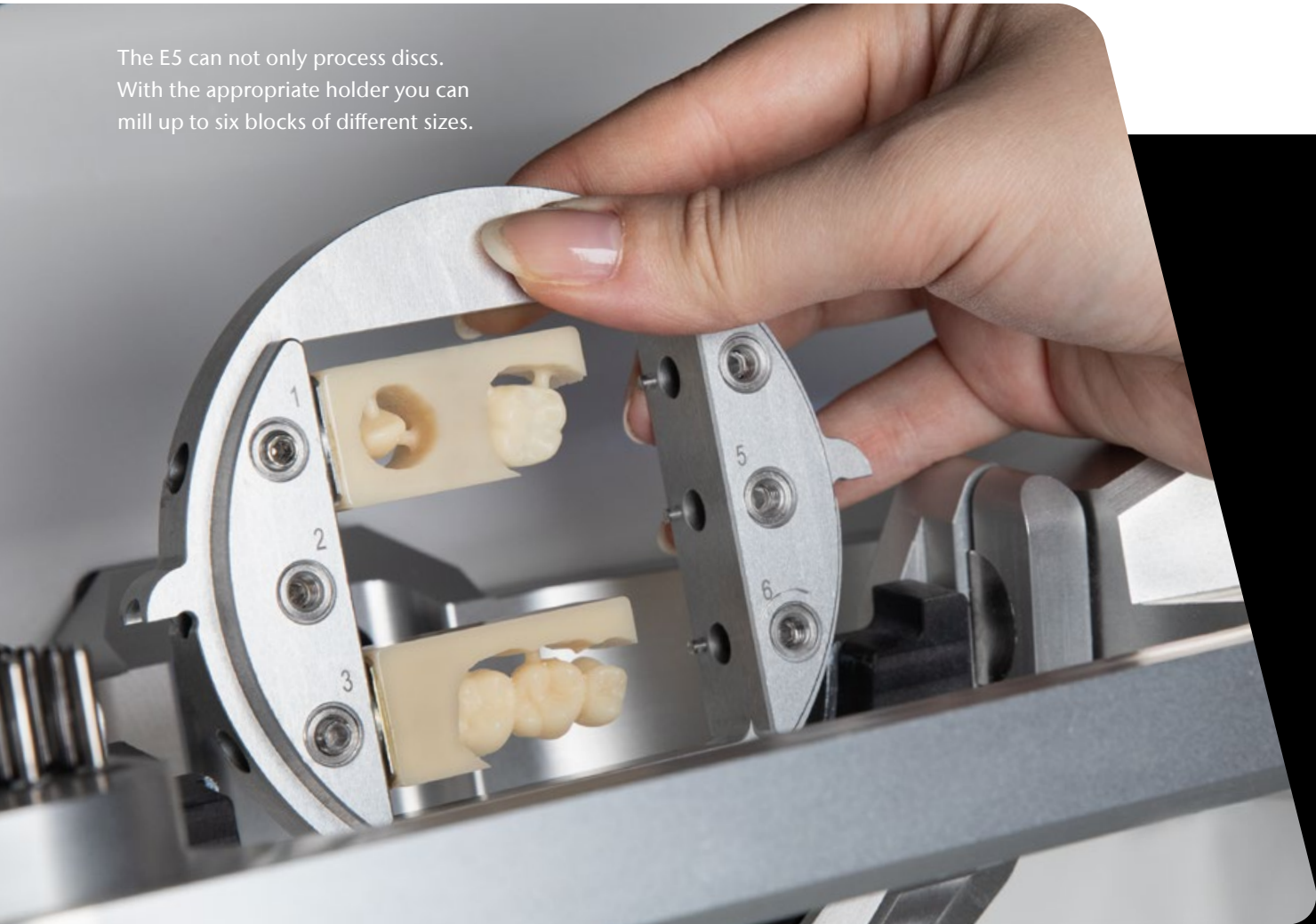


Despite its compact design, the E5 offers a generously sized working chamber for easy mounting of blanks.


















The automatic tool magazine with space for 16 standard tools plus an **airtool**.

The E5 can not only process discs. With the appropriate holder you can mill up to six blocks of different sizes.



# Material, manufacturer, indication.

Enjoy the freedom of choice.\*

 Crown   Bridge	 Inlay   Onlay	 Veneer	Composites
 Occlusal splint	 Full denture	 Denture-framework	Plastics Wax
 Implant bar	 Abutment	 Screw-retained crown	Glass ceramics
 Screw-retained bridge	 Surgery guide	 Primary crown	Zirconia
 Secondary crown	 Model plate	 Model tooth die	Titanium
			CoCr sintered metals

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

# The path to digital dentistry.

"I'm totally won over by the vhf dental milling machines!"

The decision to invest in the E4 and E5 dental milling machines was not a difficult one for Dr. Tim Wiesner. Since his purchase, the two vhf **EASE CLASS** machines have been in operation almost every day. In our conversation, he explains why he opted for the two vhf machines and outlines his journey to digital chairside fabrication.



Read the full  
interview with  
Dr. Tim Wiesner here



Dr. Tim Wiesner  
Dentist, Tübingen, Germany



The turbine blades of the patent-pending **airtool** keep the blank free of chips, thus enabling milling without compressed air.

## Technical data

### General

**Fields of application:** Dry machining

**Materials:** Composites, plastics/wax, zirconia, CoCr sintered metals

- Discs, height 10–40 mm, diameter 98.5 mm
- Blocks up to 40 × 20 × 20 mm (block holder required)

**Indications:** Crowns, bridges, inlays, onlays, veneers, occlusal splints, full dentures, denture frameworks, implant bars, abutments, screw retained crowns, screw retained bridges, surgery guides, primary crowns, secondary crowns, model plates, model tooth dies

**Holder systems:** Holder for 98.5 mm discs (integrated) · holder for 110 mm discs (optional) · block holder (optional) · Ivotion1 accessory kit (optional)

**Warranty:** 24 months/2,000 hours of operation (whichever comes first)

### Base system

**Construction:** Machine bed made of solid cast aluminum body

**Housing:** White high-gloss lacquer finish · upward opening lift door to the workroom

**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 tension shaft gear with highest angular accuracy · rotation angle: 360°, infinite

**Rotary axis (B-axis):** Backlash-free tension shaft gear with highest angular accuracy · rotation angle: ± 35°

**Control unit:** SControl 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 and ramp calculation via dedicat-

ed hardware engines in the FPGA · four-quadrant control of the motors for particularly smooth running · multiple 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 indication

### Spindle

**General:** High-frequency spindle with electromechanical tool change

**Speed:** Up to 60,000 rpm

**Power:** Peak power ( $P_{max}$ ): 800 watts · nominal power (S6): 400 watts · continuous power (S1): 300 watts

**Bearing:** 2-fold hybrid ceramic ball bearing

**Collet:** For tools with 3 mm shank diameter and max. 40 mm total length

### Automation

**Tool change:** Tool magazine for 16 tools plus one **airtool** · length measurement and tool breakage monitoring via precision measuring key · access via front-door, safety-locked

### Processing mode

**Dry:** Compressed air-free operation through use of **airtools** · hose connection for external suction unit on the back of the housing · 24 V switch output for controlling suction units

### Connection requirements

**Compressed air:** no compressed air required

**Power supply:** 100–240 volts · 50/60 Hz, 500 watts

**Extraction system:** Filter class M, 2,500 l/min extraction capacity at 200 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

**North America model:** UL 61010-1, CAN/CSA C22.2 No. 61010-1

### Dimensions & weights

**Dimensions (W/D/H):** 472 × 484 × 734 mm with closed door · 472 × 567 × 734 mm with open door

**Footprint (W/D):** 387 × 370 mm

**Weight:** 47 kg

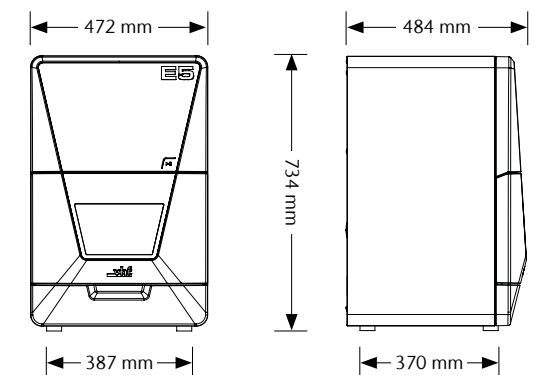
### scope of delivery

**CAM software:** vhf dentalcam

**Accessories:** Spindle service set · calibration set incl. stirrup measuring screw · tool magazine insert (1 piece) · Torx wrench set · torque driver 1.5 Nm · **airtool** for PMMA/wax · drill bit (tool positions) · cleaning brush and microfiber cloth · Administrated Tool Board (ATB) for tool storage · power cable · Ethernet network cable

<sup>1</sup> Ivotion is a brand of Ivoclar Vivadent

Subject to changes and errors.





# The EASE CLASS at a glance.

Premium dental restorations made easy.

The **EASE CLASS** machines are notable for their ability to operate without compressed air, their compact design at a low weight and a service-friendly concept: Premium dental restorations made easy.

The **E3** is our specialized machine for the efficient trimming of thermoformed dental splints. It delivers first-class results in the shortest time – without complicated reworking.

The **E4** was specially developed for an easy entry into chairside production. As a wet grinding machine with a dry milling option, it enables the precise grinding and milling of blocks.

With the **E5**, our dry milling machine for discs and blocks, you can achieve milling results at the highest level and do so with extreme ease of use.



## CREATING PERFECTION.

**vhf – synonymous with innovation and perfection since 1988.**

With over 35 years of experience in mechanical engineering, vhf is one of the leading manufacturers of dental milling machines. As a full-service CAM provider, vhf carefully develops and produces every single milling machine as well as the perfectly matched tools and software completely in-house. Everything from a single source. Made in Germany.

**Service. A matter close to our hearts.**

Despite their short maintenance intervals and particularly long service lives, servicing your machines is very important to us. We support you with our user-friendly dental **portal**, numerous online tutorials and personal support through our international service network.



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