

**SAME-DAY DENTISTRY.
UNPARALLELED PERFECTION.**



 proto3000
ISO 9001:2015

 **vhf**
CREATING PERFECTION



**"THE Z4 GIVES ME THE ACCURACY
AND FLEXIBILITY IN MATERIALS
I NEED."**

Alan Jurim, DDS

Director for Digital Dentistry at Touro Dental College, New York

TOMORROW'S LEADING TECHNOLOGY. AVAILABLE TODAY.

The Z4: More than state of the art. Groundbreaking.

The digital workflow makes it happen: you and your patients can benefit from more pleasant treatments with first-class restorations in just one session. The Z4 is an investment that will pay off for you: high-quality

restorations with maximum independence. The number of machinable block materials constantly increases as well as the number of scanners and CAD software packages that are validated with the Z4.



Toolless block clamping in just two seconds. It couldn't be easier.

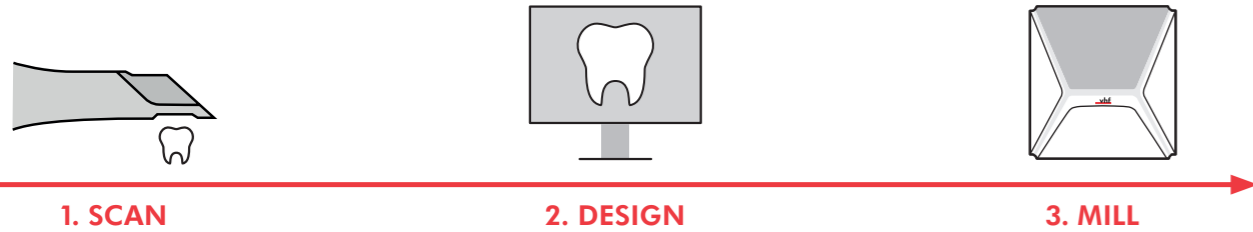


Perfect results. Mill and grind reliably with the Z4 in Ultra-HD.

EITHER WAY: THE Z4 FITS PERFECTLY INTO YOUR DIGITAL WORKFLOW.

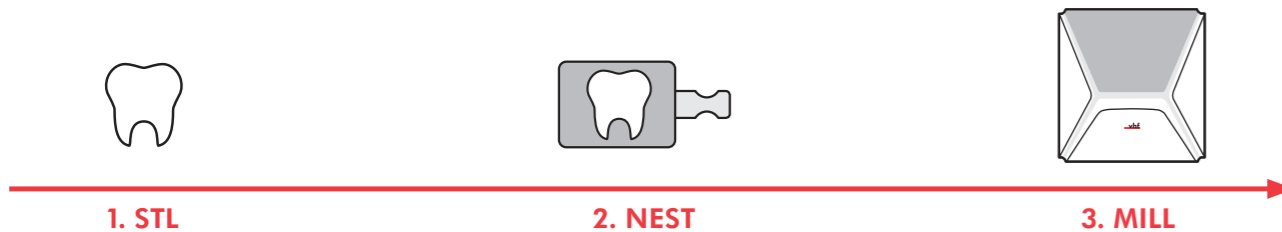
Integrated workflow with 3Shape, exocad & Dental Wings

One user interface and everything in your practice: scanning, designing, milling.



Unlimited possibilities with open STL workflow

Design in your practice or your favourite laboratory for maximum indication and material freedom.



CONVINCING ARGUMENTS GALORE!



Highest precision

- Milling and grinding in Ultra-HD
- Proven industrial quality
- 3 microns repetition accuracy



Fastest production

- Restorations in under 10 minutes
- 2-second block insertion
- 100,000 RPM electrical high frequency spindle



Complete independence

- 38 block materials from 20 manufacturers
- 800+ prefab titanium abutment blanks from 11 manufacturers
- Validated with all established scanners and design software
- Fully integrated workflow with TRIOS Design Studio (3Shape), DWOS chairside (Dental Wings) and exocad ChairsideCAD*
- Integrated PC with touch screen and Wi-Fi – no laptop necessary
- Built-in compressed air – no compressor needed



Extremely economical

- Clear water – no additives necessary
- Mill screw-access channels, to save costs for meso blocks
- Automatic changer for 6 tools
- Self-opening working chamber door and drawer
- Easy to learn, easy to operate
- 24 months warranty
- CAM software included
- Tool starter set included

* Material and indication availability may vary by CAD provider. Full range of indications and materials available in STL workflow.

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

All common block materials up to 45 mm length and even abutments					
composites	plastics/wax	glass ceramics	zirconia	titanium	CoCr
●	●	●	●	●	–

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	occlusally screw-retained bridge	protrusion splint

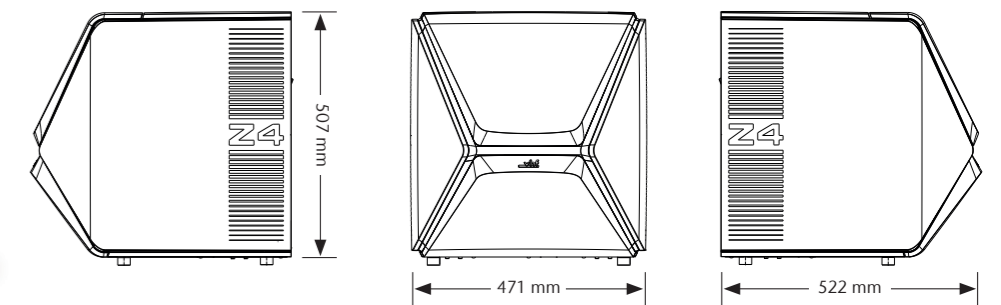


Exemplary representation of a selection of materials. New materials are being added continuously.

A MATTER OF FACTS. TECHNICAL DATA.



GENERAL	
Fields of application	Wet machining
Materials	Glass ceramics, titanium, zirconia, composites, plastics
Indications	Crowns, bridges, fully anatomical crowns and bridges, inlays, onlays, abutments, veneers, table-tops
BASIC SYSTEM	
Construction	Machine bed of massive aluminum cast
Number of axes	4
Drives	Precise ball screw spindles for the 3 linear axes · motor resolution < 1 µm · ground steel precision guide rails
Repetition accuracy linear axes	± 0.003 mm
Housing	Complete encapsulation of the working chamber with integrated sound insulation · Automatically lockable front cover
Working chamber illumination/camera system	2 RGB LED with status indication · integrated camera for support purposes
Dimensions (W/D/H)	Approx. 471 × 522 × 507 mm closed · approx. 471 × 737 × 608 mm opened
Weight	Approx. 66 kg
ROTARY AXES	
Features	A axis: highest true running accuracy · rotation range: 200°
Fixing device	For 1 block with round shank up to 45 × 20 × 20 mm
Exchange of workpieces	Tool-free workpiece change due to automatically actuated workpiece fixing
CONTROLLER	
Features	Simultaneous axis control · feed: 0.003 mm/s to 45 mm/s (per linear axis)
Integrated CAM calculator	Intel® Atom™ E3950, 4 kernels, 1.60 – 2.00 GHz, 8 GB RAM · additional HDMI display interface · Wi-Fi
Display	5-inch touchscreen display integrated into the front cover
SPINDLE	
Features	Rotational speed range up to 100,000 RPM · Peak power (P _{max}): 340 Watt · nominal power under periodic operation (S6): 220 Watt · nominal power under continuous operation (S1): 170 Watt · hybrid ceramic ball bearing · concentricity deviation at the inner taper of the precision shaft < 2 µm · sealing air prevents entering of debris or moisture in the bearing area · cone cleaning
Collet chuck	Pneumatic stainless steel collet chuck for tools with 3 mm shank diameter and max. 35 mm total length
TOOL CHANGE	
Features	Automatic tool changer for 6 tools with haptic tool length detection and tool breakage monitoring · 5 tool changer inserts (6 tools each) coded for different applications/materials
WET GRINDING	
Features	Cooling via liquid nozzles · removable reservoir (2 liters) for cooling water · no additives necessary
Suction	No suction required
OTHER	
Additional equipment	Abutment holder for various systems
Special features	North America model: certification according to ANSI/UL 61010-1 for USA and Canada
CONNECTION REQUIREMENTS	
Compressed air supply	Built-in compressed air · no compressor needed
Power supply	100 – 240 Volt · 50/60 Hz, max. 750 Watt
Network	RJ45 socket for Ethernet or integrated Wi-Fi
Further connections	1 × HDMI · 2 × USB
ENVIRONMENTAL CONDITIONS	
Temperature and relative humidity	Between 10 °C and 35 °C · relative humidity: max. 80%, non-condensing
SCOPE OF DELIVERY	
Inclusive	5 × tool magazines (in the drawer) incl. accessories · power cord · Ethernet network cable (type: straight) · spindle service set · blank holder service set · measuring pin · drill for tool positions (2.8 mm) · calibration set: 1 micrometer, 5 blanks for the production of test and calibration bodies · cleaning set · spare wiper for inspection window · filter service set · printed operating instructions · carrying aid for the transport of the machine · tools for user-replaceable wear parts

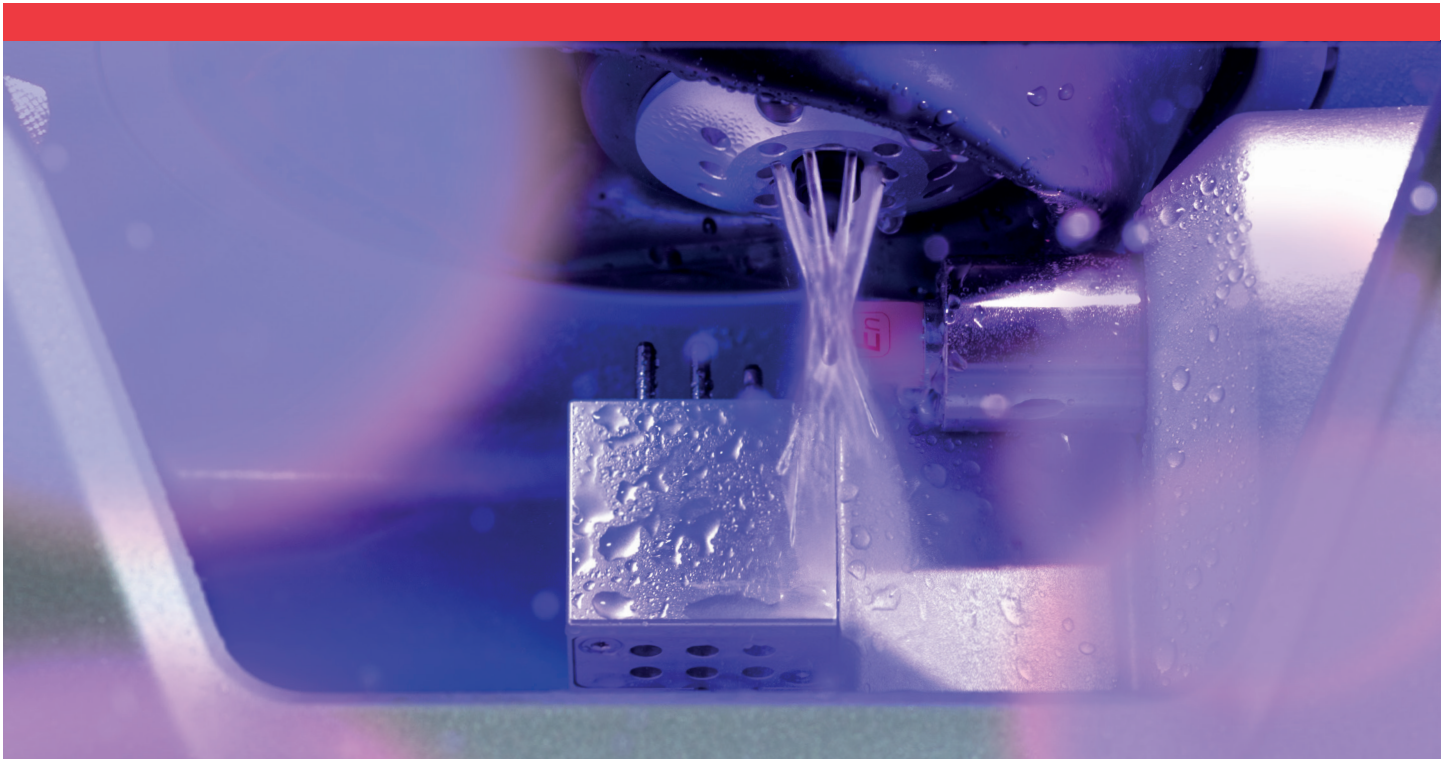


University of Washington Study confirms: Z4 drills screw-access channels in highest quality



A scientific study at the University of Washington proved that using the Z4, users can drill screw-access channels for hybrid implant restorations into ceramic blocks with no significant difference in flexural strength compared to factory-fabricated materials, known as "meso" blocks. These blocks are significantly more expensive, and the laboratory design method requires a more sophisticated CAD process. Thus, processing standard blocks with the Z4 means less cost for material and less material inventory necessary.

Jack M. Keesler, DDS, MSD. Effect of milling screw-access channels on flexural strength of CAD/CAM ceramic materials. MSD Master's Thesis, University of Washington, 2019.



The Z4 works with clear water. No additives needed – better for your materials and without annoying disposal.



as of: 01/2020

CREATING PERFECTION.

For more than 30 years.

As CAM solution provider, vhf carefully 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 Z4.

DESIGN | SCANNING | 3D PRINTING | MILLING | MATERIALS | POST-PROCESSING



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