

Ziehm Vision (FD) Vario 3D

Exceptional 2D and 3D imaging
with smallest footprint

→ Flat-Panel Detector

→ Image Intensifier



ZIR for CT-like
3D reconstructions

➤ 08

Intuitive workflow
with synchronized TFT
touchscreens on C-arm
and monitor cart

➤ 10

High-dynamic CCD camera for
2D and 3D images of selected
anatomical structures

➤ 08

Variable isocenter for
easy positioning

➤ 10

Ziehm NaviPort:
Open interface to
navigation systems

➤ 06

Advanced Active Cooling for
demanding procedures

➤ 10

Pulsed monoblock
generator for optimal
image quality

➤ 08

Ziehm Vision Vario 3D. This C-arm combines excellent 2D image quality with a highly efficient intraoperative 3D imaging module. The fully automatic 3D scan saves time and helps increase precision and safety levels by delivering volume renderings and CT-like slices. Combined with navigation systems, the C-arm is particularly suited to orthopedics as well as trauma- and neurosurgery. Its intelligent, compact and space-saving design result in better patient access and unmatched ease of use. The Ziehm Vision Vario 3D benefits surgeons, medical staff and patients alike.

The new benchmark. 3D imaging with flat-panel technology.

→ Larger opening

Measuring 89.5cm, the larger C-arm opening allows patients to be more easily positioned and accessed.

→ Distortion-free imaging

The world's first 3D C-arm with flat-panel technology enables fully digital, distortion-free imaging and increases precision and safety levels. In addition, insensitivity to magnetic fields gives the operator added flexibility.

→ High-dynamic images

Due to its high-dynamic range, the flat-panel detector enables optimal concurrent soft tissue and skeletal imaging with more than 65,000 shades of gray.

→ Automatic adjustment

Ziehm Adaptive Image Processing (ZAIP) enhances image quality by adjusting settings fully automatically to anatomical conditions and regulating filters in real-time.

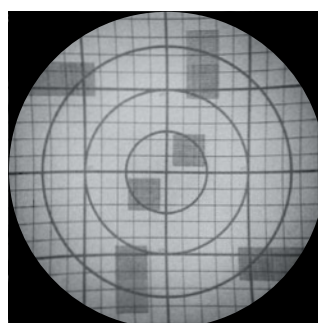
→ Larger field of view

Thanks to the panel's larger surface and square shape, the resulting 2D images are larger than those generated by conventional image intensifiers.

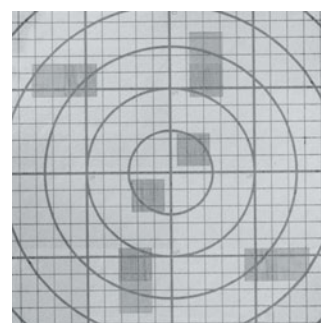
Compared field of view of flat-panel and conventional image intensifier



Image intensifier with S-shaped and pincushion distortion



Flat-panel with distortion-free image



ZIR for CT-like
3D reconstructions

↗ 08

High-dynamic
images with more
than 65,000 shades
of gray

↗ 08

Fully digital flat-panel
technology for image
acquisition with
exceptional quality

↗ 08

Flat-panel highlights:
→ Larger opening
→ Distortion-free imaging
→ High-dynamic images
→ Larger field of view

89.5 cm C-arm
opening for
easy handling



01 / Intraoperative 3D imaging. Immediate control for more precision and efficiency.

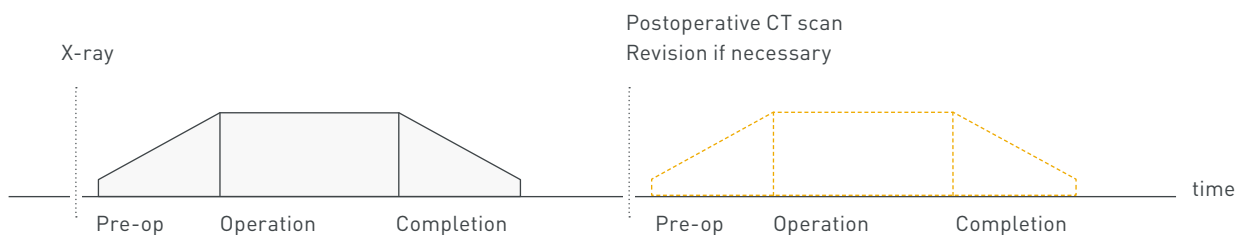
→ More information for increased safety

3D imaging is becoming increasingly popular in modern surgery as it gives surgeons more detailed information. This degree of detail is especially important for placing screws and repositioning fractures. By delivering volume renderings and slice views similar to those associated with CT scans, 3D imaging systems from Ziehm Imaging enable surgeons to perform procedures with the highest possible accuracy. Surgeons can then use this information to make immediate adjustments, such as repositioning screws. The ability to monitor progress on the fly helps surgeons ensure successful procedures, reduces the risk of hospitals having revisions and spares patients the need for another operation.

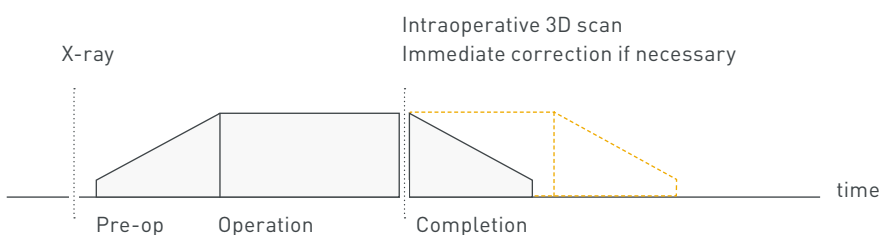
→ Mobile 3D imaging makes CT scans redundant

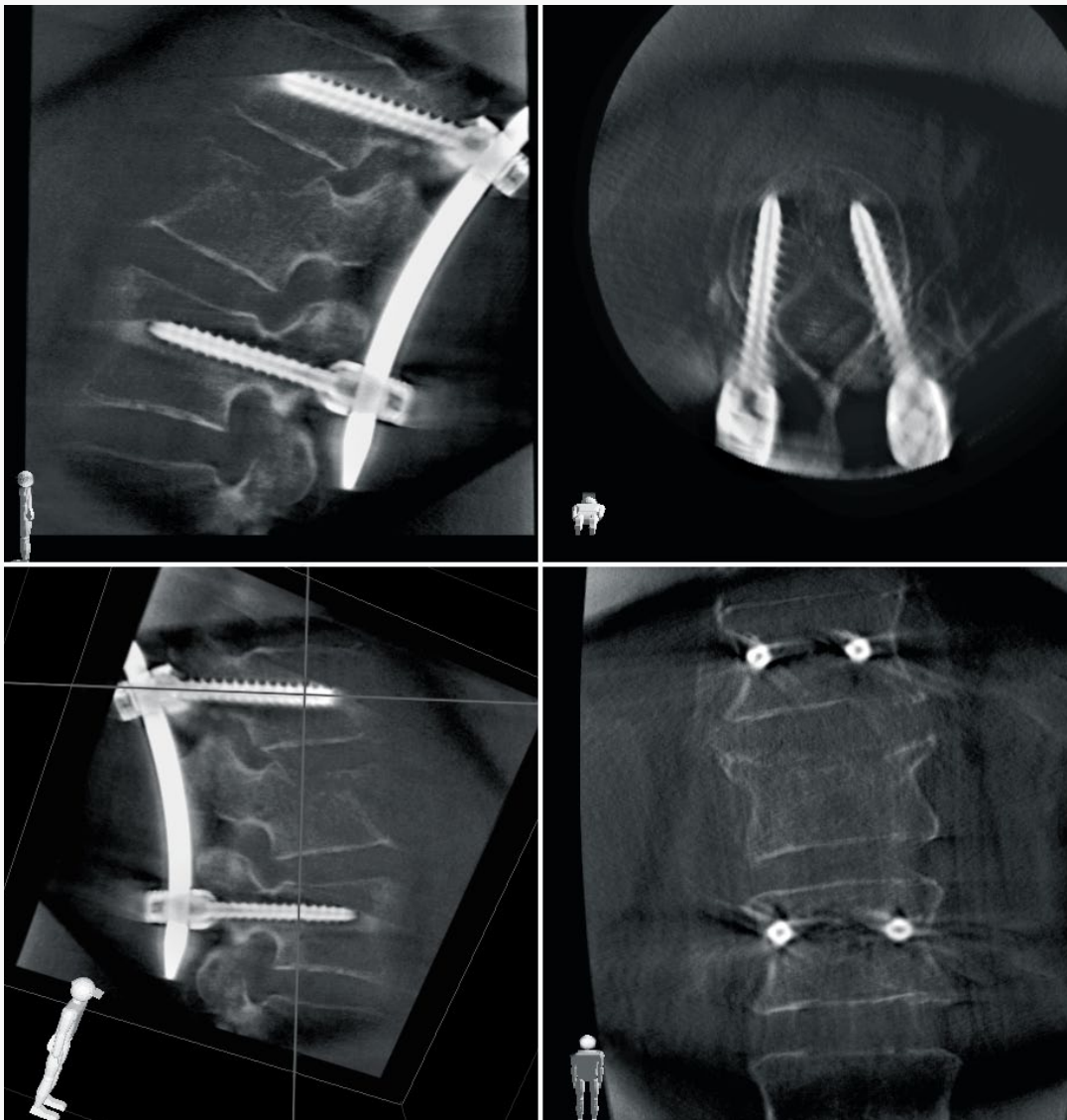
Clinical studies prove that intraoperative scans using Ziehm Imaging 3D C-arms with an image volume of up to 512^3 voxels clearly show the position of pedicle screws. This enables surgeons to immediately modify incorrectly placed screws without having to wait for a postoperative CT scan.

Workflow without 3D



Improved workflow with intraoperative 3D imaging





“The need for a preoperative CT scan is eliminated, along with its associated financial and time costs. Incorrect screw placements can be corrected immediately, saving time and avoiding expensive revisions.” Prof. Dr. med. Christoph Josten et al., University of Leipzig, Germany

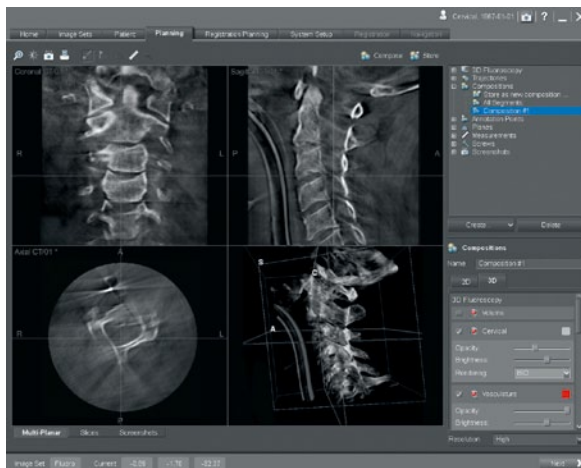
02/Navigation-ready. High levels of accuracy to guide the surgeon.

→ Open for all navigation systems

In combination with navigation systems and computer-aided surgery (CAS), Ziehm Imaging 3D C-arms enable high levels of precision in complex, minimally invasive and open surgery.

The Ziehm NaviPort interface links Ziehm Imaging's 3D C-arm for intraoperative imaging with all leading navigation systems. This development enables new levels of quality in image-guided navigation and provides maximum flexibility in choosing navigation systems.

The Ziehm Vision FD Vario 3D delivers distortion-free, highly dynamic image data, which can be automatically transmitted from the C-arm to the navigation system. Surgeons can then immediately use these 3D datasets to support image-guided surgery without the need for additional manual registration steps. Intraoperative assessments enable them to quickly and reliably check progress at all times and document results.



3D image set is automatically transmitted from the C-arm to the navigation software



The reference clamp is attached to the patient's anatomy, and the reference kit is mounted on the C-arm



The navigation system's tracking device detects the markers and identifies the precise position of the patient and C-arm



The Ziehm Vision Vario 3D generates a high-resolution 3D scan of the patient



The Ziehm Vision Vario 3D generates a 3D scan in the OR for a final check and documentation



Physician performs navigated surgery with the aid of high-resolution 3D data



Ziehm NaviPort transfers the 3D dataset from the C-arm to the navigation system

03 / Convincing results. Highest image quality and minimized dose for a broad range of applications.

→ High-dynamic imaging

The high-dynamic CCD camera of the Ziehm Vision Vario 3D is a key component in the imaging chain. With 1k x 1k resolution and more than 4,000 shades of gray, it visualizes even the smallest anatomical structures. The flat-panel technology of the Ziehm Vision FD Vario 3D increases this to more than 65,000 shades of gray for even more detailed images.

→ Contrast-rich display

Ziehm Imaging's two 19" color flatscreens stand out for their exceptional brightness and contrast. Even at a distance, the high-end monitors provide physicians with optimal insights by visualizing the finest details – from every angle.

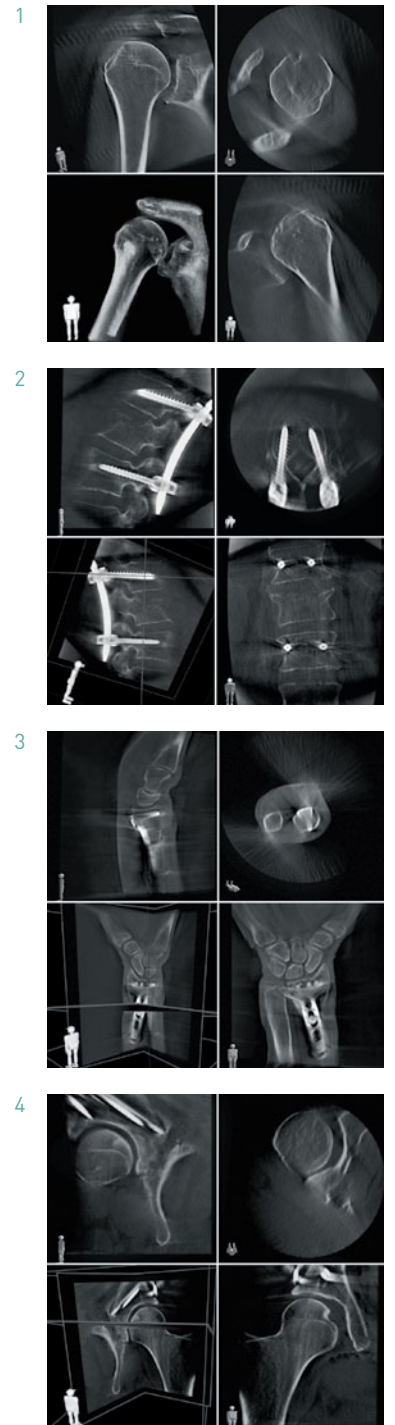
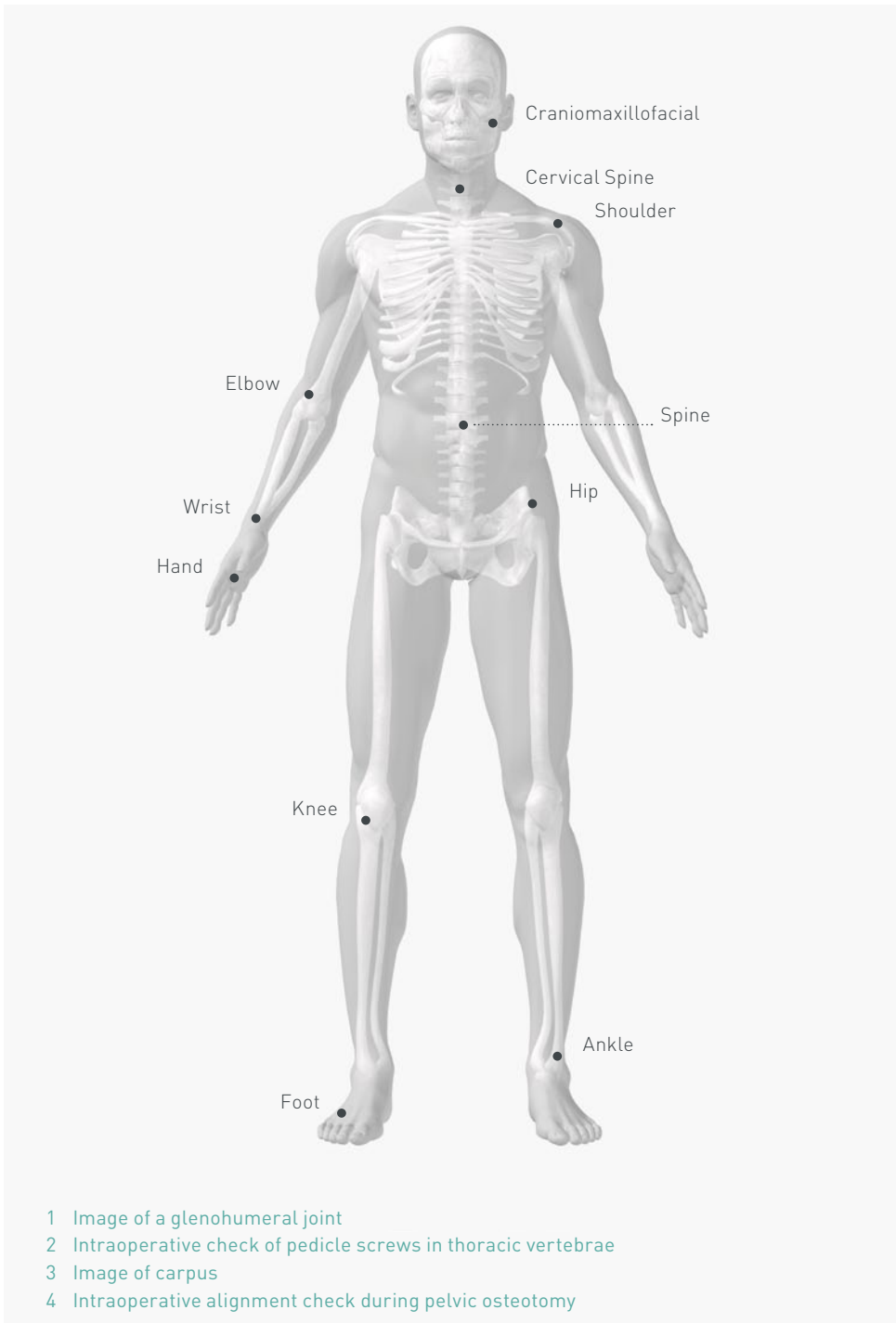
→ Distinguishable 3D reconstructions within seconds

In only one minute, the C-arm captures more than 100 images and automatically generates a 3D dataset. Dose exposure is reduced to a minimum during the scan due to a rotation of only 135° and predefined dose settings on the software side.

The in-house developed, hardware-based and specialized algorithm ZIR (Ziehm Iterative Reconstruction) minimizes fan and metal artifacts in 3D reconstructions. This new technology leads to significantly more distinguishable anatomy, defined bone crests and optimum slice views in the coronal, axial, sagittal and individually adjustable planes, so far only known from CT imaging.

→ Isocentric cine loops for visualizing objects

A comprehensive range of viewing options including isocentric cine loops from 2D fluoroscopy images, volume views based on volume rendering as well as 3D slice views and multiplanar reconstruction (MPR) make the Ziehm Vision Vario 3D the surgeon's 'third eye'. The 3D volume with a resolution of 512³ voxels enables even the tiniest anatomical structures to be visualized.

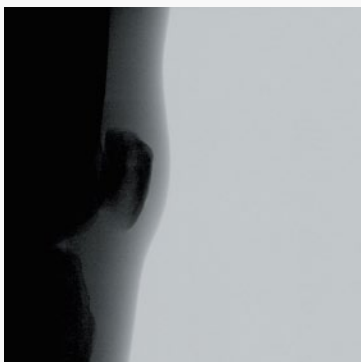


→ Automatic adjustment

The Ziehm Vision Vario 3D is equipped with Object Detected Dose Control (ODDC). This function adapts all settings to the patient's anatomy. With 256 measurement cells, it automatically detects the object's position in the field of view and adjusts the system accordingly to always get a crystal-clear image – even if the object is not centered. ODDC also dynamically adjusts generator output and video levels to the patient's anatomy by detecting motion and any metallic devices located in the region of interest.

To achieve best results in intraoperative imaging, all C-arms with flat-panel detector are equipped with ZAIP (Ziehm Adaptive Image Processing) using hardware-based filters and the latest algorithms for noise filtering, edge enhancement and dose optimization.

ODDC Highlights



Conventional image quality



ODDC: Grid-controlled adjustment of dose levels, filters and pulse frequency



ODDC: Crystal-clear images achieved with minimal doses



→ Comprehensive concept for dose reduction

Ziehm Imaging has incorporated SmartDose in the current generation of mobile C-arms. This comprehensive concept sets the benchmark in user-friendly adjustment of dose exposure and allows the physician and staff to significantly reduce dose while optimizing image quality. SmartDose benefits both patients and staff alike.



SmartDose

Best image quality. Minimized dose.

1

Positioning with laser light
integrated and remotely
operable

2

Correct selection
of anatomical program
anatomically adjusted
and dose-optimized

3

Low dose mode
for all anatomical
programs

4

Reduction of pulse
frequency manually
or automatically

5

Exposure-free display
with virtual collimators

6

ZAIP Ziehm Adaptive
Image Processing for
automatic dose reduction
(flat-panels only)

7

Automatic LPK:
automatic adjustment
for obese patients with
no additional dose
increase

8

PreMag for
exposure-free
magnification

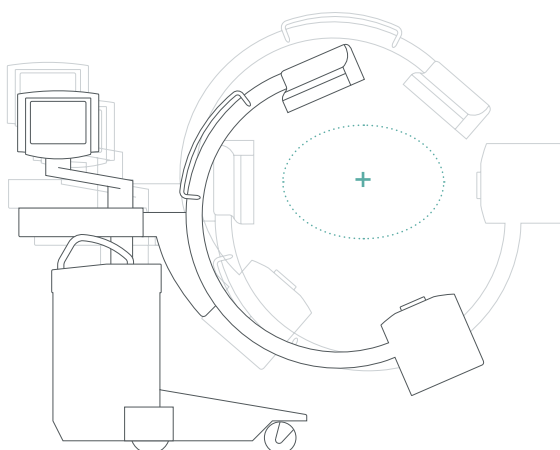
04 / New dimension in usability. Our C-arms support clinical workflows and set standards for intuitive guidance.

→ Best-in-class ergonomics

With a footprint of 0.8 m², the Ziehm Vision Vario 3D is one of the smallest 3D C-arms on the market. Its compact design and easy-drive system means it can be maneuvered with minimal effort during procedures. The steer and brake functions are activated via a single lever. All C-arm movements are fully counterbalanced in every position, making the unit extremely convenient to use. Furthermore, color-coded levers allow surgeons and staff to quickly and easily select the functions they need.

→ Intuitive workflow

The touchscreen user interface offers an intelligent workflow that makes operating the C-arm easy and intuitive. Users benefit from synchronized touchscreens on the monitor cart and the C-arm, as well as clear and easy-to-follow icons. The intuitive 3D workflow guides the user through all steps of the preparation and scanning process. Operators simply select the desired option from a list of anatomical programs, and the system automatically adjusts settings to the region of interest, always ensuring the best image quality and lowest dose.



The variable isocenter can be freely adjusted to different patient positions by operators, ensuring more flexible image capture and a wider range of applications, such as shoulder scans. Elliptical scanning further reduces dose levels by bringing the flat-panel or image intensifier closer to the patient's body.

→ Fit for the future

The graphical user interface and an open, modular software architecture ensure maximum flexibility. The Ziehm Vision Vario 3D can be upgraded and expanded as needs change.

→ Prolonged use

C-arms need to be in continuous use during lengthy, demanding procedures such as multi-level interventions during spinal surgery. The unique liquid cooling system, Advanced Active Cooling (AAC), of the Ziehm Vision Vario 3D is more effective than cooling systems of conventional devices and keeps the generator at an ideal operating temperature. This guarantees uninterrupted usage even during long and difficult procedures.

→ Seamless integration

The open Ziehm NetPort interface enables easy integration into existing IT networks. Patient data saved in DICOM 3.0 format is transferred – via WLAN for example – to the PACS or HIS/RIS. Data can be retrieved from the monitor cart at any time. Data can also be backed up to DVD or USB and printed on transparencies or paper.



05 / Broadest application spectrum. Our units are engineered for the widest range of clinical applications.

The Ziehm Vision Vario 3D's small footprint and variable isocenter make it ideal for 3D imaging during surgery. The fully automatic 3D scanning procedure saves time and helps to reduce radiological follow-up examinations. Combined with navigation systems, this C-arm is particularly suited to spinal, orthopedic as well as trauma, neuro and craniomaxillofacial surgery and brachytherapy.



Ziehm Vision FD Vario 3D



Ziehm Vision Vario 3D



Ziehm NaviPort



Stryker



Brainlab



Medtronic

Applications	Ziehm Vision FD Vario 3D	Ziehm Vision Vario 3D
Ortho/trauma	•••	•••
Spine	•••	•••
Vascular	•	•
Interventional radiology	•••	••
Neurosurgery	•••	•••
Urology	•	•
Craniomaxillofacial surgery	•••	•••
Brachytherapy	•••	••
Features		
1k x 1k technology	•	•
Shades of gray	65,536	4,096
Fully digital distortion-free imaging	•	–
ZIR (Ziehm Iterative Reconstruction)	•	•
ZAIP (Ziehm Adaptive Image Processing)	•	–
ODDC	•	•
DICOM	optional	optional
WLAN	optional	optional
Advanced Active Cooling	•	•
C-arm opening	89.5cm	76 cm
Field of view (23 cm image intensifier)	–	363 cm ²
Field of view (20 cm x 20 cm flat-panel)	392 cm ²	–

06 / Maximize your uptime. Make sure to get the best service for your daily business.



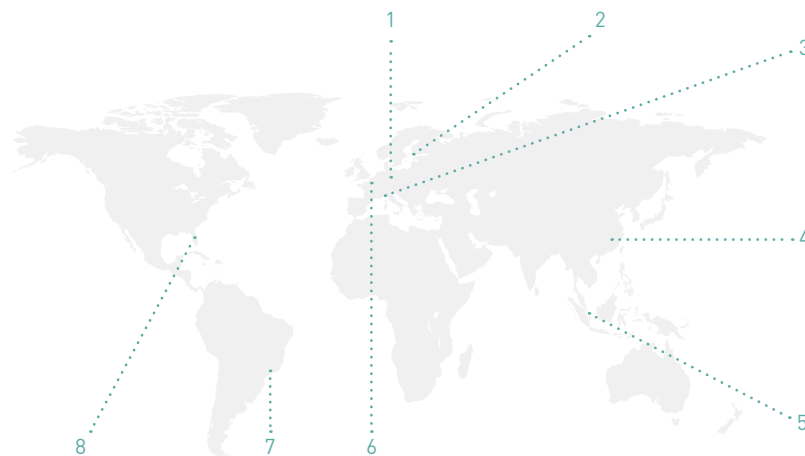
Rely on Ziehm Imaging for flexible and fast service to stay at the cutting edge of technology. Tailored service packages, remote service, and individual upgrade paths keep you competitive in your daily hospital routine.

→ Ziehm Service Packages

With tailored service packages we offer you peace of mind and financial security, making yearly costs, including spare parts and traveling costs, more predictable.

→ Ziehm Remote Service

Regardless of your needs, our experts are on hand. Ziehm Remote Service delivers faster and easier troubleshooting for your system. Thanks to our worldwide network of service centers, you can always rely on Ziehm Imaging for flexible and solution-oriented service.



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