Making the difference with Philips Live Image Guidance

Philips BV Vectra mobile C-arm specifications

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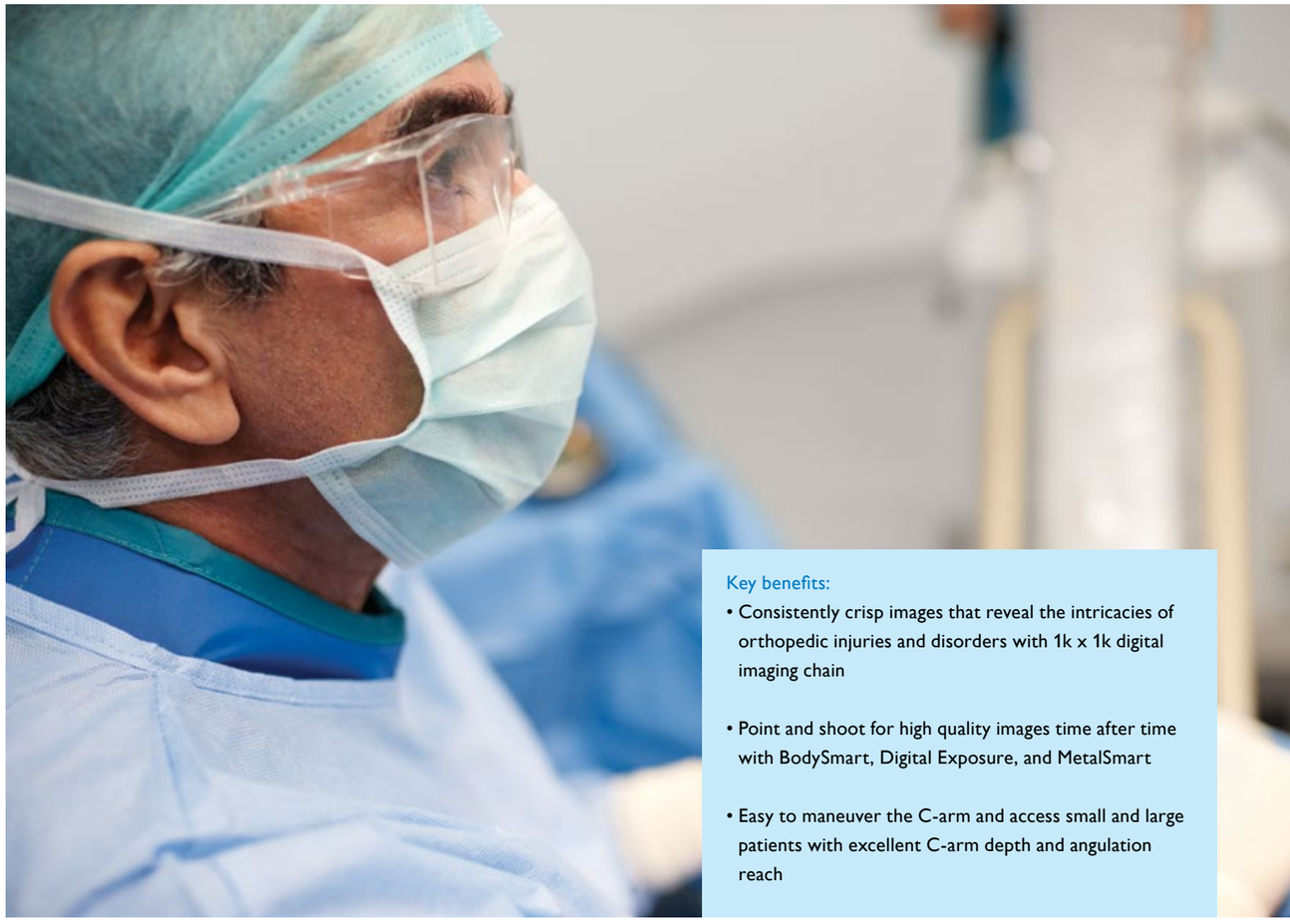
Introduction

The BV Vectra mobile C-arm system is a dedicated mobile fluoroscopy system for orthopedic surgical procedures, including trauma, spine, and pain management. It is intuitive to operate. You simply point and shoot. Its high quality images support you in providing excellent care. This system is perfect for visualizing difficult spiral or comminuted fractures to support the treatment of virtually everything from simple to challenging fractures.



Key benefits:

- Consistently crisp images that reveal the intricacies of orthopedic injuries and disorders with 1k x 1k digital imaging chain
- Point and shoot for high quality images time after time with BodySmart, Digital Exposure, and MetalSmart
- Easy to maneuver the C-arm and access small and large patients with excellent C-arm depth and angulation reach

1 System overview

The BV Vectra is a fully counterbalanced mobile C-arm system. The system consists of a C-arm stand with compact foot and rear-wheel steering for easy maneuverability and positioning. The intelligent design of the Mobile View Station provides the user with excellent viewing and image storage capabilities.

Easy workflow
- Excellent C-arm depth and angulation to easily access all patients
- Point and shoot with BodySmart, Digital Exposure and MetalSmart

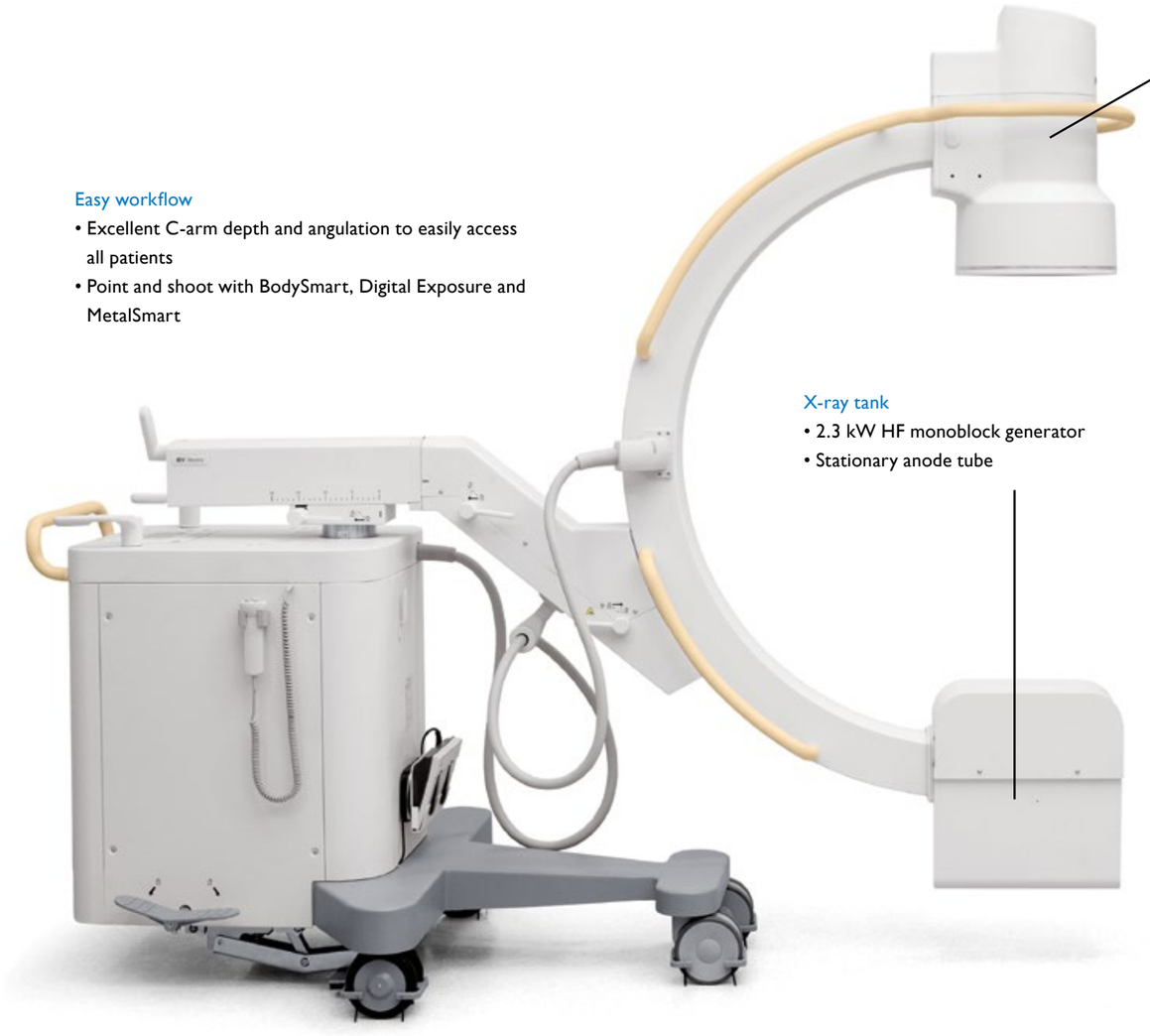


Image intensifier
- 1k² high resolution imaging chain
- 9" triple-mode image intensifier
- 9/6/4.5" (23/16/12 cm)

X-ray tank
- 2.3 kW HF monoblock generator
- Stationary anode tube

Monitors
- 19" LCD
- Maximum light output 300 cd/m²
- Flexible monitor height positioning at installation
- Remote Control (Optional)

Archiving and documentation
- Image disk storage: 140,000 images
- Integrated DICOM solution
- CD/DVD image storage
- Printer (optional)
- USB image storage

2 Image detection

Experience a whole new way of working with the Philips BV Vectra. Compact and flexible, this surgical imaging system is versatile to use, easy to move, and can handle a full range of demanding orthopedic procedures.

2.1 Image intensifier

The BV Vectra comes with a 9" image intensifier and can go wherever you need it – surgery, intensive care, and the emergency room.

Detection

Feature	Specification
Image intensifier type	Triple mode 9" HRC
Nominal II formats	23 cm, 16 cm and 12 cm (9",6" and 4.5")
Entrance screen	Caesium iodide
Grid type	Circular, carbon fiber; 60 lines/cm Ratio = 1:10 SID = 100 cm
TV camera type	Progressive CCD. High resolution 1k^2
Image rotation	Digital, live and on LIH
Image reversal	Yes
Mirror up/down	Digital, on LIH
Mirror left/right	Digital, on LIH
Automatic anatomical measuring field	Yes, with BodySmart and MetalSmart

The 9" triple-mode image intensifier provides high-resolution imaging to support orthopedic procedures

3 X-ray generation

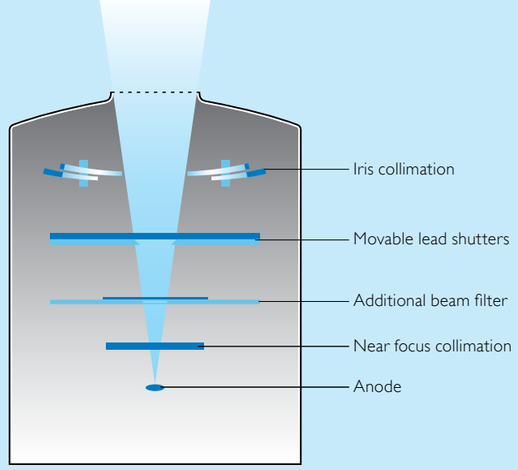
The BV Vectra uses a fixed anode X-ray tank with an excellent cooling rate for challenging orthopedic procedures.

3.1 X-ray generator

The BV Vectra uses a microprocessor-controlled X-ray generator. The tank unit is designed for maximum cooling capacity, allowing prolonged procedures.

Feature	Specification
Generator type	HF generator
Max. generator output	2.3 kW
Max. X-ray tube voltage	110 kV
Max. X-ray tube current	21 mA

User interface C-arm stand



3.2 X-ray tube

The BV Vectra uses a fixed anode tube. The tank unit has a 0.5/1.5 IEC dual focus, supporting different types of applications. An integrated beam-filter helps to reduce patient skin dose. Automatic settings provide consistent image quality for every examination.

X-ray tube/tank unit

Feature	Specification
Tube type	Fixed anode
Nominal focal spot values (IEC 60336)	0.5 IEC and 1.5 IEC
Nominal X-ray tube voltage	110 kV
Maximum anode heat content	35.5 kJ = 50 kHU
Anode cooling capacity	36 kJ/min = 50 kHU/min
Maximum housing heat content	500 kJ = 700 kHU
Inherent filtration	Yes 1.8 mm Al eq.
Complementary filtration	3 mm Al eq. + 0.1 mm Cu

3.3 X-ray collimation

Collimation reduces scatter radiation and improves image quality. BV Vectra makes collimation easy. Its full lead shutters can be rotated and moved symmetrically.

Feature	Specification
Shutters	Two lead shutters can be rotated and moved
Shutter material	1 mm Pb
Adjustment	Stepless Rotation 360°
Minimal iris diameter	< 50 mm on II entrance

Operating values

Continuous fluoroscopy

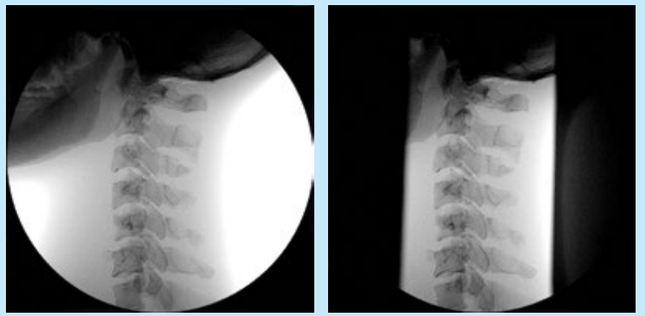
Feature	Specification
kV range	40 to 110 kV
mA range for Low Dose Fluoroscopy mode	0.10 to 3.00 mA
mA range for High Definition Fluoroscopy mode	0.2 to 6.00 mA

Half Dose Fluoroscopy / Pulsed Fluoroscopy

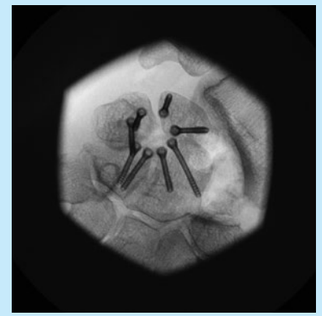
Feature	Specification
kV range	40 to 110 kV
mA range	0.1 mA to 6.0 mA
Pulse widths	66.6 ms
Pulse rate	7.5 pulses/second

Digital Exposure

Feature	Specification
kV range	40 to 110 kV
mA range	0.7 to 21 mA
Pulse widths	472 ms



Parallel shutters avoid unnecessary radiation dose



Iris collimation

4 Geometry

The BV Vectra consists of a fully counterbalanced mobile C-arm stand for image acquisition and a Mobile View Station with two LCD monitors for image processing, review, archiving, and display.

4.1 C-arm stand

Feature	Specification
Longitudinal movement	20 cm (7.9")
Panning movement (swivel)	± 12.5°
Vertical movement	43 cm (+40 cm/-3 cm) (+15.7"/-1.2") motorized
Rotation	± 180°
Angulation	+90°, -35°
Source to Image Distance	98 cm (38.6")
Free space within C-arm	76 cm (29.92")
C-arm depth	66 cm (25.98")
Brakes for all movements	Yes, manual
Steering	Rear wheel
Parallel movement	Dedicated parallel movement via rear wheel control, for easy positioning along operating table
Cable deflectors	Yes
C-arm stand weight	335 kg (738 lb)
C-arm stand length	210 cm (82.7")
C-arm stand width	86 cm (37.8")
C-arm stand height	180 cm (70.9")

4.2 Mobile View Station

Feature	Specification
Mobile view station depth	87 cm (34.25")
Mobile view station width	91 cm (35.9")
Mobile view station height	186 cm (73.2")
Weight (including options)	160 kg/352 lbs

Movements of BV Vectra C-arm stand

5 Workflow

The BV Vectra combines intelligent, ergonomic design with workflow-friendly features. From transport to setup to operation, the BV Vectra is a system built for the way you want to work.

5.1 Mobile View Station

The compact Mobile View Station fits perfectly in the surgical workflow. The intelligent design of the Mobile View Station provides the user with easy system set-up, excellent viewing capabilities, and easy and safe transportation. Its unique design also makes it easy to clean.

5.2 Connectivity

USB storage provides a convenient way to store images for use in reports or presentations.

Feature	Specification
USB Storage	DICOM/JPEG format

5.3 DICOM

BV Vectra can be equipped with the Philips Integrated DICOM solution, which transfers images from the BV Vectra onto the hospital network in a DICOM Secondary or a DICOM XA format. The Standard DICOM package supports the DICOM Print and DICOM Store.

The BV Vectra supports DICOM Structured Dose Reporting.

It's easy to transport the system from one place to another, and move it around the patient and other equipment, even in a crowded OR thanks to the compact design of the C-arm.

6 Imaging

With every new system, we build on our decades of imaging experience to look at how we can further reduce X-ray dose while increasing image quality.

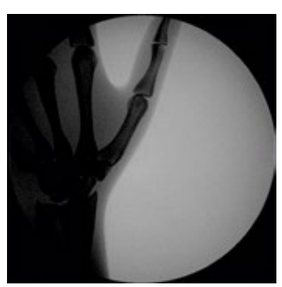
6.1 Advanced imaging features

- Unique BodySmart software allows free positioning of the anatomy, even at the edge of the image intensifier. It detects the anatomy and adjusts the technique and image processing to produce optimal images.
- Users can optimize and adjust contrast and brightness manually for the desired effect.
- Unique dynamic movement detection minimizes motion artifacts. Millions of calculations are made every second to apply the appropriate level of noise reduction to every pixel in the image. Less noise reduction is applied to dynamic structures to eliminate motion artifacts. More integration is applied to static structures to produce crisp, virtually noise-free images.

6.2 DoseWise

- Our MetalSmart feature corrects metal artifacts without affecting the contrast and brightness of the image or X-ray dose.
- Pulsed fluoroscopy mode can reduce X-ray dose significantly.
- Our unique beam filters reduce patient skin dose by approximately 40% over conventional filters.
- Dose reporting, dose display, and an alert when exceeding a pre-defined procedure dose-level contribute to an increased dose awareness in the OR.

High quality images are available fast thanks to Philips unique BodySmart and MetalSmart technology, which delivers consistently superb image contrast. It tracks and precisely defines the field of view to anatomy – no matter where it is on the image intensifier irrespective of metal in field of view.



Hand Off Center without BodySmart

Hand Off Center with BodySmart

Clinical image without using the MetalSmart feature

Using the MetalSmart feature excludes the metal in the field of view

6.3 Fluoroscopy settings

Different fluoroscopy settings are available to visualize the intricacies of orthopedic injuries and disorders:

- Fluoroscopy
- High Definition Fluoroscopy

6.4 Real time processing functions

Features
360° digital rotation, mirror left/right and up/down without radiation
Contrast and brightness controls
Dynamic noise reduction (Adaptive temporal recursive noise reduction)
Adaptive 2D edge enhancement
White compression
Image disk storage: 140,000 images

6.5 Post processing functions

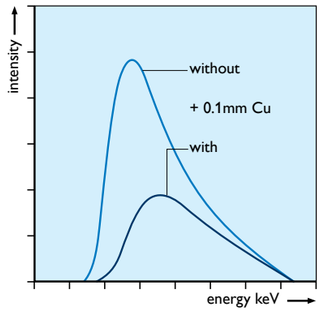
Features
360° digital rotation, mirror left/right and up/down
Contrast and Brightness
Annotation (for a single image or all images in an examination)
Image invert (negative)
Zoom and roam
Measurement (to precisely quantify lengths and angles in images)

6.6 Mobile View Station monitors

Two 19" LCD monitors for diagnostic image quality display.

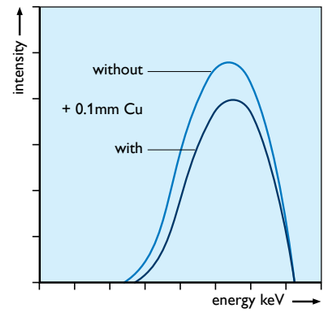
Feature	Specification
Resolution	1280 x 1024 pixels
Maximum light output	300 cd/m^2
Contrast Ratio	1300:1
Viewing angle	170° in horizontal and vertical direction

Patient Entrance dose



Additional beam filter reduces soft radiation that does not contribute to the image

Detector dose



7 Options

Handheld remote control

The remote control unit is a handheld infrared keypad used to control the main image handling functions. For sterile operation, it can be used in a transparent sterile plastic cover.

The functions include:

- Pan
- Zoom
- Laser Pointer
- Retrieve previous image
- Retrieve next image
- Park image on reference monitor

Printer

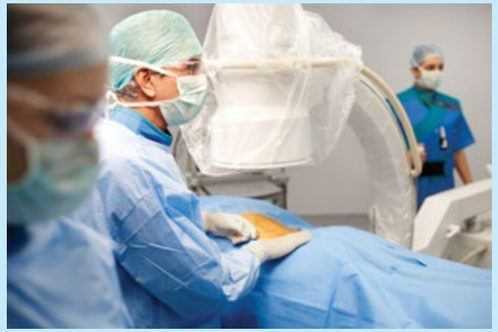
Feature	Specification
Paper/transparency printer	Thermal printer to print images from the Sony UP-990AD live monitor onto paper or transparencies during or after examinations. Print up to 16 images on one page in landscape or portrait format.

8 Application configurations

The BV Vectra is a versatile imaging system that can support a wide variety of orthopedic applications. A number of features are available to adapt the system to your specific needs.

Fracture Repair

Spinal surgery



Pain management

9 Service

Philips BV Vectra enables remote serviceability. Philips worldwide Remote Services is an advanced, virtual private network that links your BV Vectra to our global Remote Services Customer Care Centers. Services that formerly required on-site visits are now available by connecting to our remote experts. Philips offers a range of service agreements to meet your needs, priorities, and technologies. To give you flexibility, Philips provides you with a choice of service support that meets your specific requirements, whether on-site or remote. Our global presence guarantees that no matter where you are, Philips is there for you.

Services – a full lifecycle solution

The success of your organization depends on people. Philips Services are designed with that in mind—creating healing environments, developing your staff, improving your organization's performance, and increasing patient satisfaction. Rely on us. The resources, training, and support we offer, enable you to focus on what's most important - your patients. Philips provides a full lifecycle solution designed around your patients, your people, and your organization. We help you succeed in every phase of system ownership, from planning to start-up, through peak usage and renewal.

Planning

Understand how and when the right equipment and services contribute to better patient care and better economics.

Start-up

Make the most of your system as quickly as possible.

Peak Usage

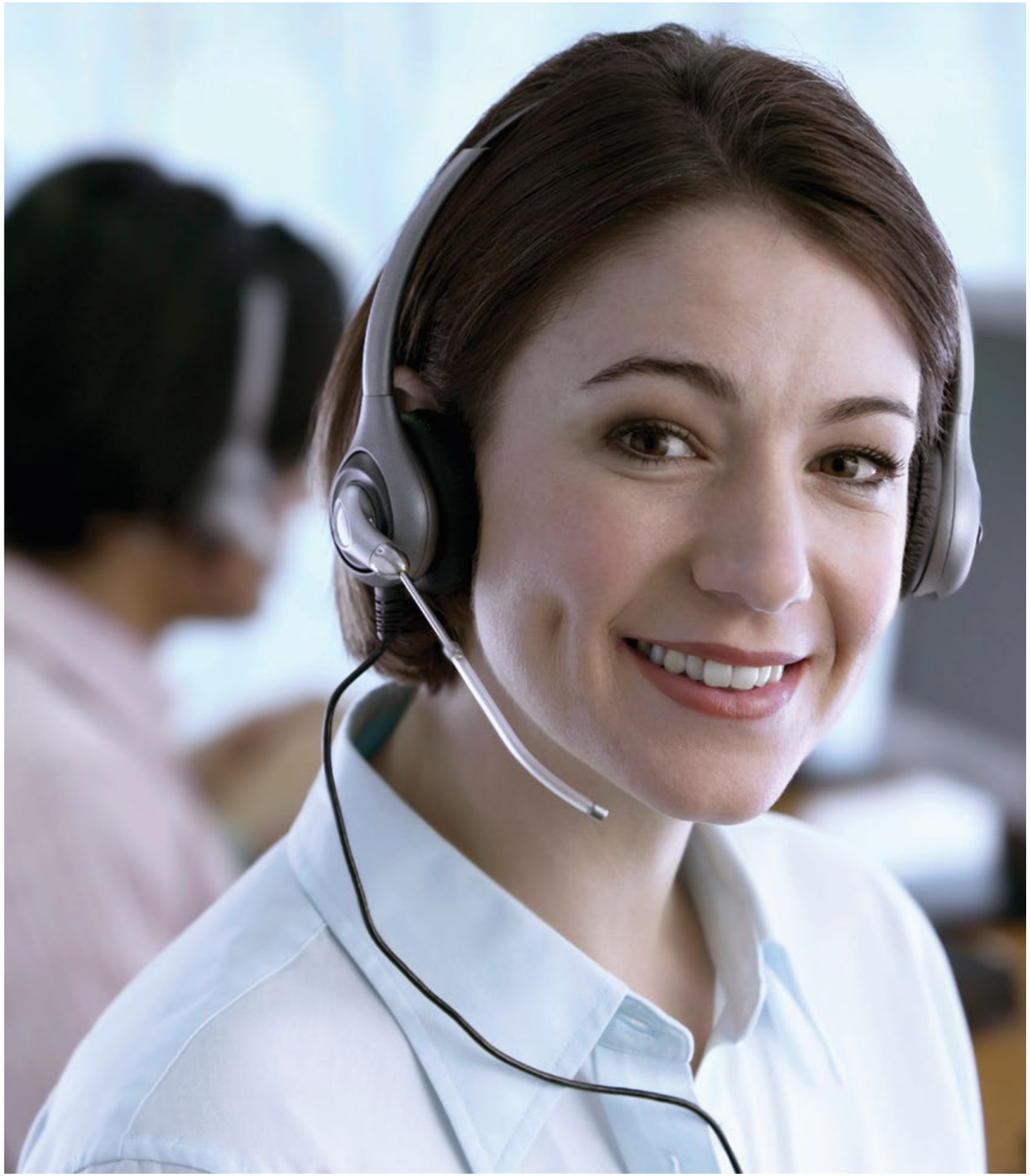
Extract maximum utility out of your system day to day.

Renewal

We'll help you make smart decisions on upgrading or transitioning to a new system.

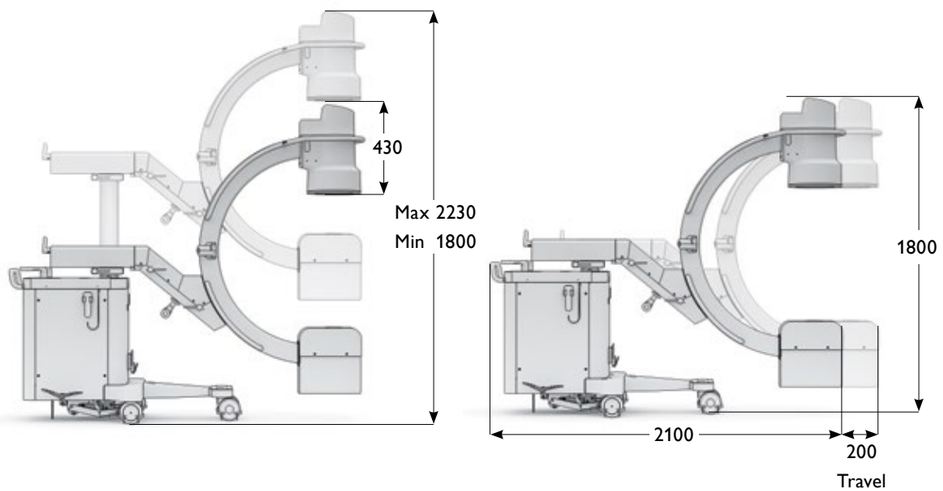
First-rate care

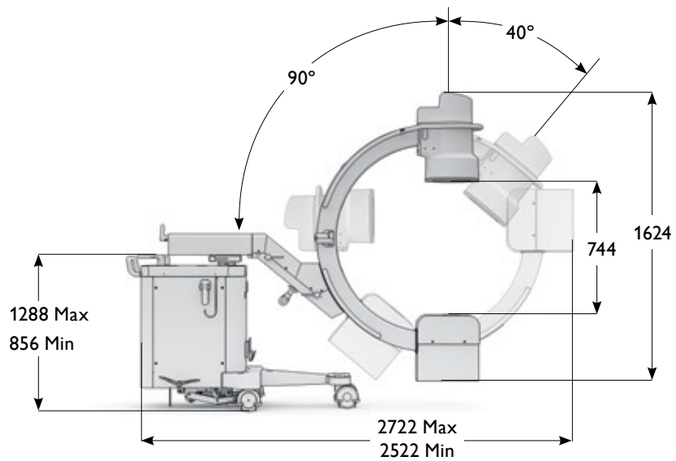
Philips global service network, our highly qualified service engineers, the individual attention of our service technicians, and the international availability of spare parts combine to provide our seamless service support.



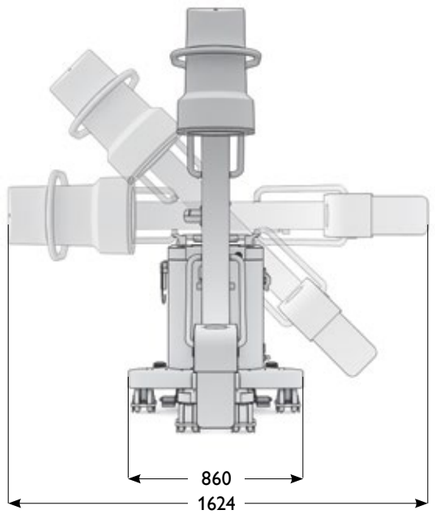
10 Dimensions

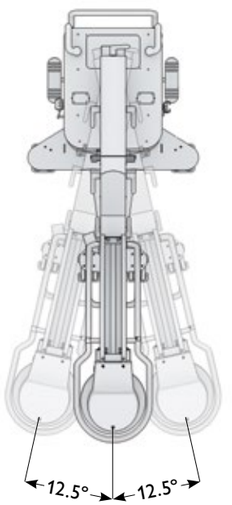
10.1 C-arm stand





Note: all dimensions are in millimeters





10.2 Mobile View Station