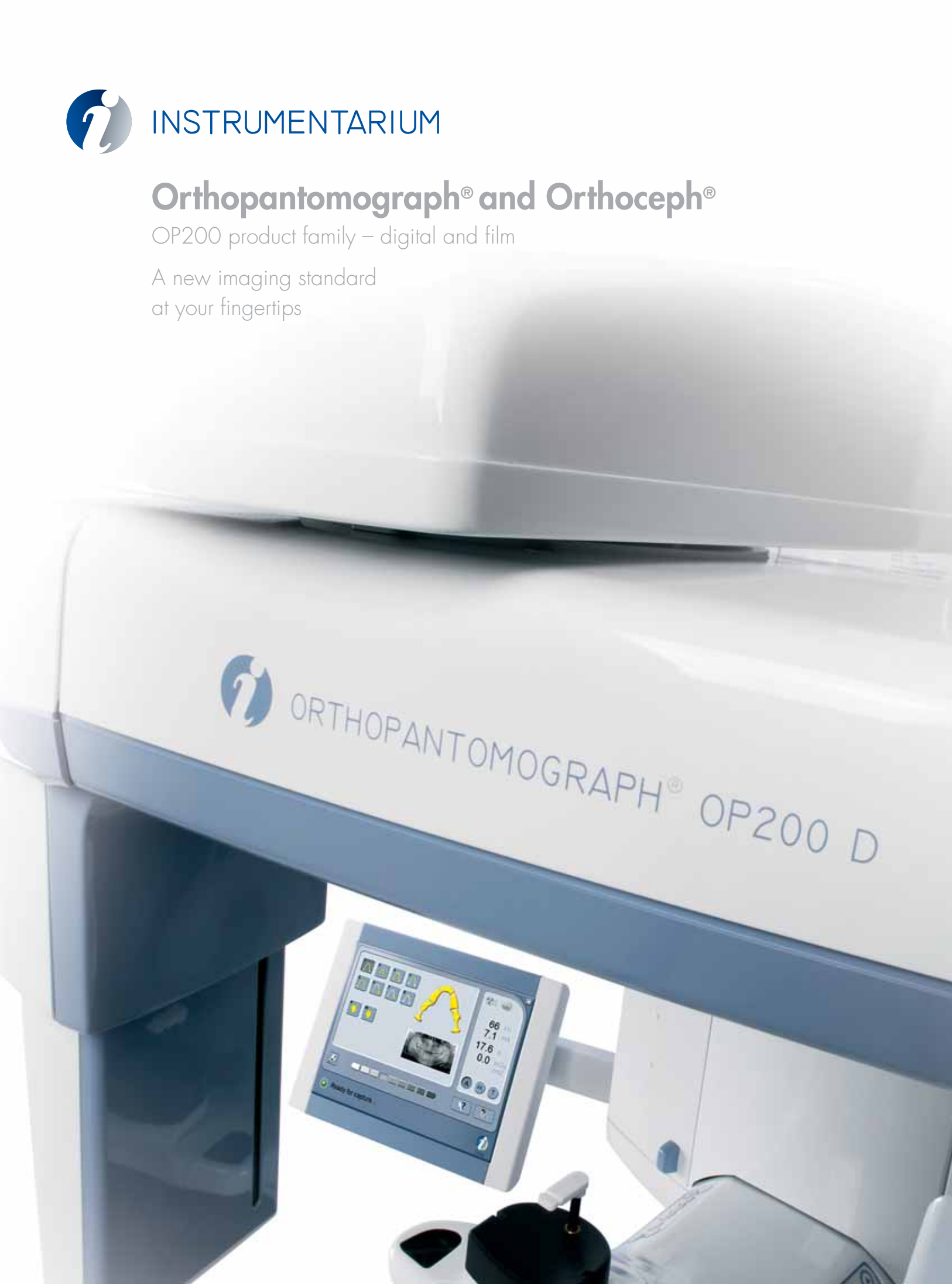
INSTRUMENTARIUM

Orthopantomograph® and Orthoceph®

OP200 product family – digital and film

A new imaging standard
at your fingertips



In 1961 dental and maxillofacial imaging experienced a revolutionary change – the very first dental panoramic X-ray Orthopantomograph® OP1 was introduced. Since the original OP1 was launched over 40 years ago, the name Orthopantomograph® has always stood for consistent reliability and clinically excellent maxillofacial imaging.

An establisher and proven leader of panoramic X-ray imaging has news for you.
Now there's a new standard.

A proven leader in dental imaging

Leading the way through the decades

1946	Professor Y.V. Paatero published his first paper on Panoramic Tomography
1951	"Pantomography" equipment was first presented
1961	The first dental panoramic X-ray, Orthopantomograph® OP1, is developed
1964	Commercialization of Orthopantomograph® begins with models OP2 and OP3
1978	Orthopantomograph® is the leading name in the dental panoramic imaging producing models OP5/OC5, OP6 and OP10/OC10
1992	New innovations, such as lifting cassette head and linear tomography were introduced along with the OP100 product family
1999	Introduction of the direct digital Orthopantomograph® OP100 product family
2006	New Orthopantomograph® OP200 family

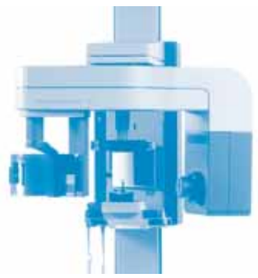
The new 200-generation of the Instrumentarium Dental Orthopantomograph® X-ray family represents everything you would expect from a high quality dental extraoral imaging unit – and more. It carries forward the reputation of reliability and clinical excellence that all Orthopantomograph® units have earned since their first introduction more than 40 years ago. Reliability and durability have always been one of our main design and manufacturing principles.

The OP products have also long been one of the most versatile extraoral X-ray units, with a number of installation options designed to fit each individual user's needs. Upgradeability has been our standard since the first OP100 product in 1992.

We have also always valued long-term partnerships with our local distributors in order to provide the purchasers of our product with quality installation and support.

1951

1961



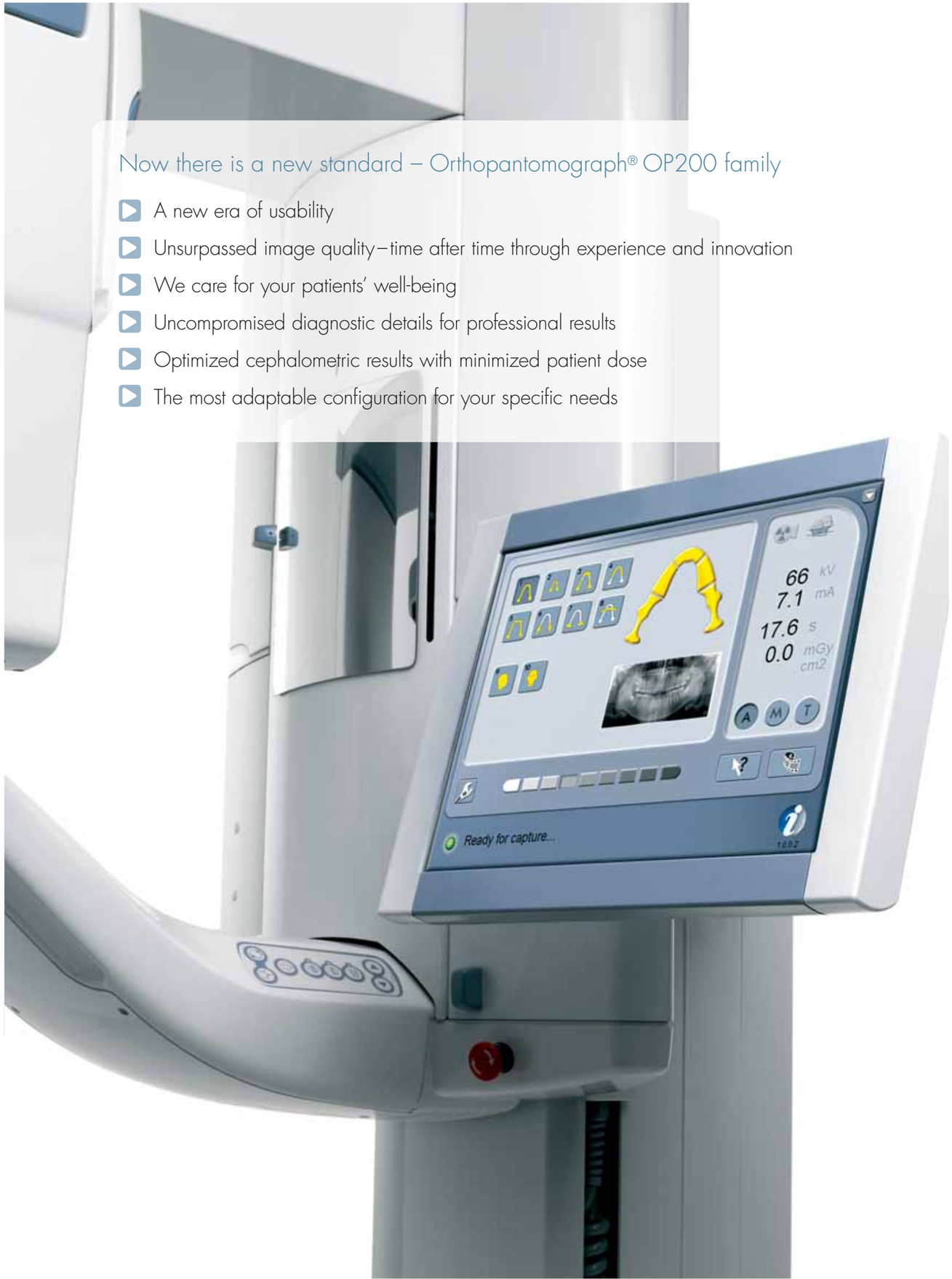
1984

1992

A wise investment for today and tomorrow

Now there is a new standard – Orthopantomograph® OP200 family

- A new era of usability
- Unsurpassed image quality–time after time through experience and innovation
- We care for your patients' well-being
- Uncompromised diagnostic details for professional results
- Optimized cephalometric results with minimized patient dose
- The most adaptable configuration for your specific needs



A new era of usability

SmartNav™ – everything at your fingertips

New completely integrated system

The OP200 digital unit includes a built-in reliable computer designed specifically for maximum performance of the OP200. Through innovative engineering, the computer has been directly integrated into the system. No additional computer is required.

Animated patient positioning guide

The user can select patient positioning animations specific to each imaging program to ensure proper patient position.

New smart compact handcontrol unit

The OP200 can be configured for the unit to be alternatively operated from a handcontrol instead of the SmartPad™.

Intelligent interactive navigator

The SmartNav™ software's navigation program provides easy selection of imaging programs, arch sections, lateral scanning start position, and more. The user can easily set the desired OP200 user parameters in SmartNav™. All information is displayed and described in an understandable way.

SmartPad™ full color high resolution touch screen

The SmartPad™ produces an easy to read and follow menu with simple and intuitive navigation through the operations.

Instant dynamic help

This feature provides quick and convenient information related to the imaging programs, such as the purpose of the program selected. Complete user manuals are also included in SmartNav™.

New completely integrated system

Correct imaging values – automatically

Instrumentarium Dental's unique and patented method of dose controlled Automatic Exposure Control (AEC) and individual Automated Spine Compensation (ASC) generates correct imaging values using the full CCD dynamic range at the lowest possible patient dose. This ensures outstanding image quality with any size patient exposure after exposure.

Digital OP200

Accurate and stable patient positioning

Correct patient positioning is assured by three positioning laser lights. Frankfurt and mid-sagittal lights aid in the correct angulation of the patient's head and the occlusion correction light ensures proper anterior positioning.

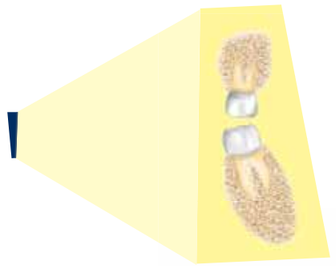
For easy adjustment, both the user and the patient can view the mid-sagittal plane in the curved mirror. A rigid 5-point positioning system including forehead support, chin rest and bite fork eliminates patient movement. The open design allows easy viewing and positioning of the patient from either the left or right side.

The film-based version of the OP200 uses a unique, patented panoramic cassette identification system to prevent incorrect placement of the cassette into the cassette holder. The film-based OP200 also has a built-in Quality Assurance program to verify proper film processing, one of the most common problems in obtaining excellent films.

Clinically proven imaging geometry

Instrumentarium Dental's experience and understanding of imaging geometries ensures optimum imaging results.

The patented V-shaped X-ray beam adapts to the human anatomy, providing even greater detail and a wider mandibular image layer. V-shape beam also allows more penetrating power for maxillary.



Yellow area represents the focal through depth.

OP200 film unit

The latest digital technology

The super-sensitive Orthopantomograph® 200-series CCD sensor with hi-speed fiber optics and sophisticated software algorithms generates high quality, real time X-ray capture with a new larger image field. This is combined with an advanced high-frequency generator, small focal spot and smooth movements to produce excellent high resolution digital radiographs with reduced dose.

Unsurpassed image quality

Essentials for excellent panoramic imaging:

- **Advanced high frequency generator technology**
- **Small focal spot**
- **Clinically correct imaging geometry**
- **V-shaped X-ray beam**
- **Latest CCD technology**
- **Dose controlled Automatic Exposure Control (AEC)**
- **Automatic Spine Compensation (ASC)**
- **Accurate and stable 5 point patient positioning:**
  - **Open view of the patient**
  - **Side positioning**
  - **Three clear laser positioning lights**
- **Professional software tools**

Unsurpassed image quality time after time through experience and innovation

We care for your patient's well-being

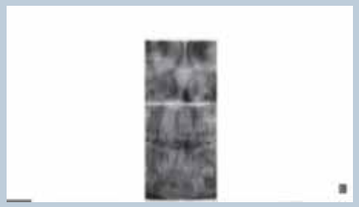
Unique automatic patient dose recording

The Orthopantomograph® OP200 D digital unit uses a built-in dose calculator to show the dose amount after every exposure. This dose information is automatically stored with other exposure parameters in the CliniView™ software.

Quick workflow and less retakes

Our long experience in panoramic imaging has allowed us to design a system that is non-intimidating to the patient as well as easy and efficient to use. This results in consistent diagnostic information that allows you to provide the very best care for your patients.

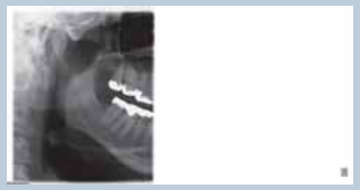
User controllable radiation field



Selecting the OP200 D pediatric program automatically reduces the radiation dose to small patients by incorporating a specially designed image layer geometry and limiting the exposure time.

A special pediatric collimator can be selected to limit the vertical field of exposure and further reduce the radiation that the patient receives.

When a full panoramic image is not required, 1 to 5 segments of the horizontal image can be selected to expose only regions of diagnostic interest.



Special geometry

The Ortho Zone program provides special geometry to solve two common imaging problems: metal artefacts in the molar region of the condyle, and the need for an exceptionally wide anterior layer for patients with malocclusion.

The very best care for your patients

Essentials for excellent cephalometric imaging:

- Clinically correct imaging geometry
- Fast adjustable lateral scan
- Automatic Facial Contour (AFC)
- Frankfurt horizontal plane laser light
- Stable patient positioning with ear holder locking
- Professional software tools
- Single and dual sensor options
- Right or left handed versions
- Twain connectivity
- Small footprint

Uncompromised diagnostic details for professional results

Maximized visibility of diagnostic information

The CliniView™ software, when combined with the OC200 D, adds value to the system by providing the optimum image display. Selecting the 16-bit image format in the software along with the adjustable sharpening or edge enhancement tool improves the visibility of important orthodontic reference points. These enhancement tools can also be stored in the software memory for automatic selection each time.

In addition to the normal image enhancement tools CliniView™ software provides excellent special functions for diagnosis. The region of interest tool contains a magnifying glass with equalizer function to optimize the area to be diagnosed. The isodensity and colorization tools can be used for patient education.

Animated patient positioning guide

Program specific positioning animations quickly guide the user to ensure proper patient position.

Stable patient positioning

The Frankfurt horizontal plane laser light, nasion support and rigid ear rods with locking system makes patient positioning easy and convenient. Motorized vertical movement controls are located on the cephalostat secondary collimator for easy access. Exposure values and the correct program are automatically selected along with the image projection.

Clinically correct image geometry

In order to produce equal and accurate horizontal and vertical magnification, the OC200 D uses a patented method of synchronized tube head horizontal sweep and sensor movements while keeping the focal spot in the same position. This results in clinically correct imaging geometry equivalent to traditional film imaging and allows easy determination of orthodontic reference points and comparison with film images. Any focal spot movement during the scan would produce unequal magnification in the vertical and horizontal dimension.

Optimized cephalometric results with minimized patient dose

Fully adjustable horizontal lateral scan

The adjustable cephalometric scanning time correlated to the patient size ensures the optimum exposure time. Furthermore, the OC200 D incorporates an advanced user adjustable lateral scan method to expose only the desired portion of the skull to be visualized. This method reduces the scanning time to a minimum of 5 seconds and reduces the patient dose considerably.

The OC200 D uses the patented method of Automatic Facial Contour (AFC) for soft tissue enhancement in lateral views. The unit automatically adjusts the exposure values during the scan for better soft tissue definition. This results in improved dynamic range of the image and lower patient dose.

48 to 62% dose reduction

Area of lowered AFC dose

Depending on patient size and as compared to full lateral scan without AFC) This feature is available with OC200 digital model. By exposing only the necessary area, patient safety is greatly increased.

Full range of projections

The Orthoceph® patient positioning system provides a variety of imaging projections for cephalometric radiography. It is a comprehensive diagnostic device that includes lateral, facial, posterioranterior and oblique projections as well as the possibility for hand and wrist imaging.

Professional software tools

CliniView™ digital imaging software provides versatile tools, such as advanced print editor, which enables multiple images to be printed along with image information. If measurements are done from the prints, the magnification factor can be separately selected and is shown together with printed images.

Most adaptable solutions

Easy software connectivity

Special orthodontics software can also be used together with Orthopantomograph® OC200 D panoramic unit with cephalometric attachment. This is possible via our OC200 D Twain 3rd party software integration, that enables the image capture with any Twain compliant software and without special interface solutions. The Orthopantomograph® ImageTwain contains it's own image control functions to provide excellent image quality. Measurement calibration checks can also be done from the Orthopantomograph® nasion support mm scale.

System orientation matched to your preferences

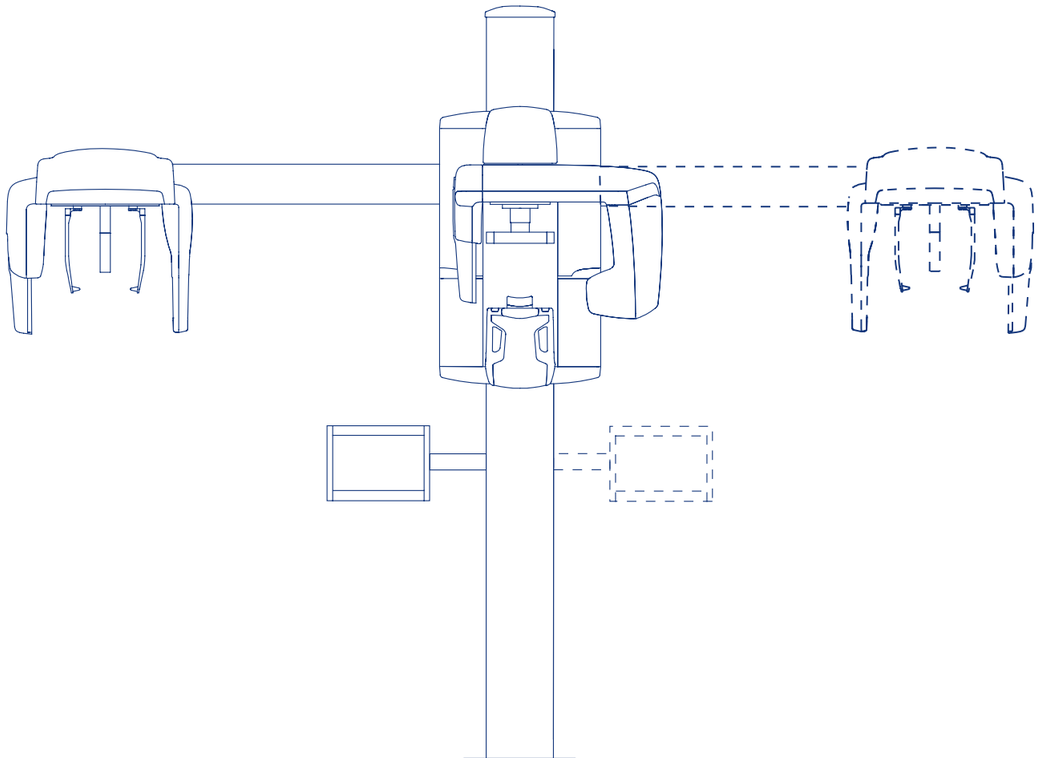
The OC200 D can be installed in your clinic for right- or left-handed cephalometric imaging and is "field changeable".

Optimum use of available space

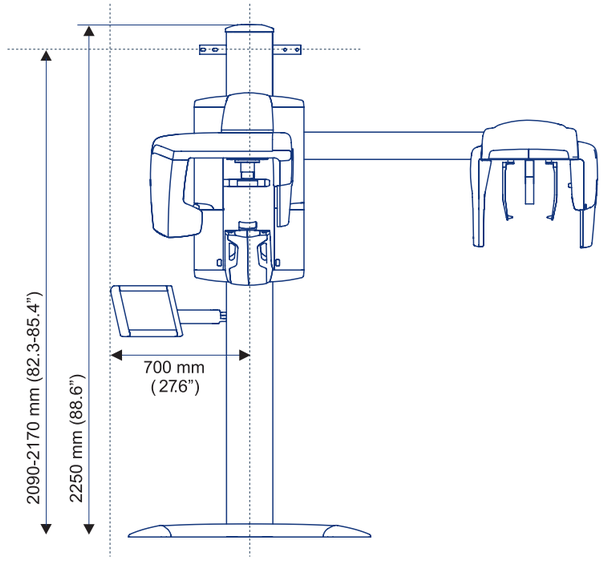
A standard wall mount with swivel joint allows the OC200 D to be installed at an angle for optimum use of room space and convenient patient positioning.

Selectable sensor configuration for efficient workflow

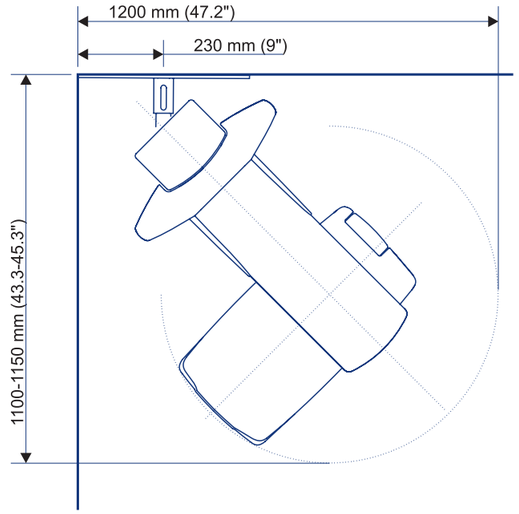
The use of two separate sensors (one for panoramic and one for cephalometric imaging) allows easier and quicker changeover between the two modalities. This eliminates the need to handle and move the sensor. A single interchangeable pan/ceph sensor system is also available as an option.



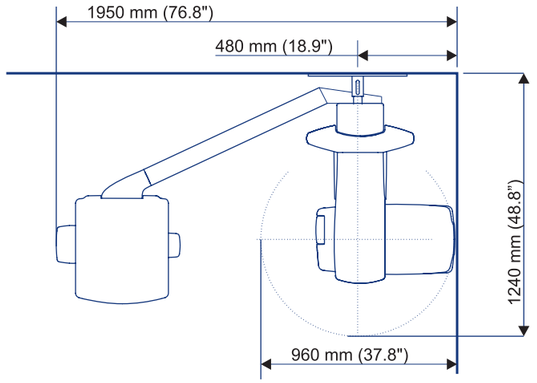
Film and digital unit height and SmartPad™ width

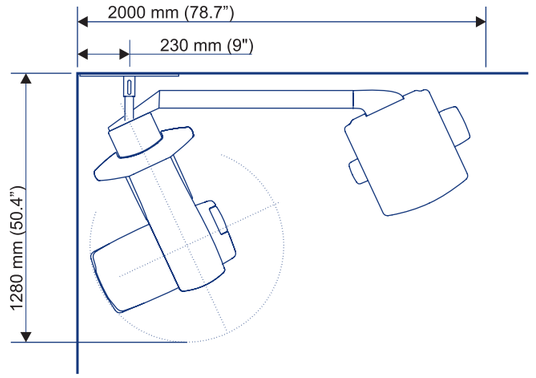


Panoramic unit corner installation
(SmartPad™ may have to be installed on the wall)

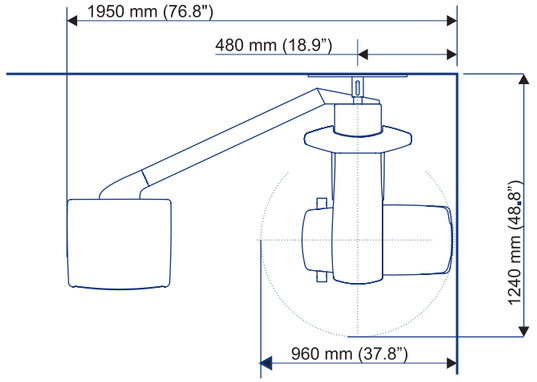


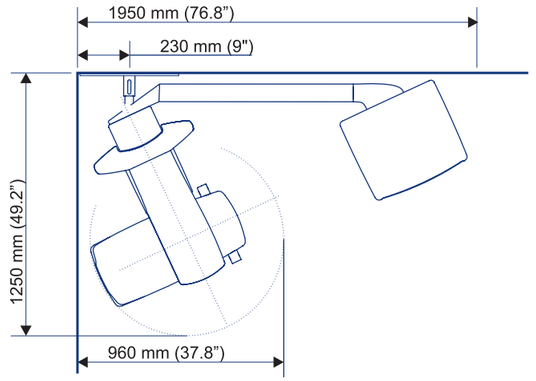
Minimum space requirement for digital unit including built-in PC and the SmartPad™ mounted on ceph side.





Minimum space requirement for film unit





Imaging programs

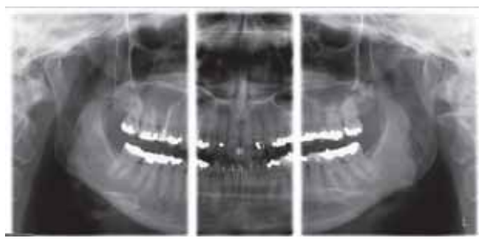
Versatile imaging programs

In addition to the many standard panoramic programs, special imaging programs are available to facilitate easy diagnosis even with difficult clinical conditions:

P1 *Standard panoramic imaging program P1 provides clear image of adult patients.*

P2 *Pediatric panoramic program has clinically adapted image layer and reduced image height for child patients.*

P4 *The Orthogonal program reduces overlapping of the teeth.*



P3 *The Ortho Zone provides special geometry for an exceptionally wide anterior image layer.*

P8 *Sinus maxillary imaging program. P10 with film unit.*

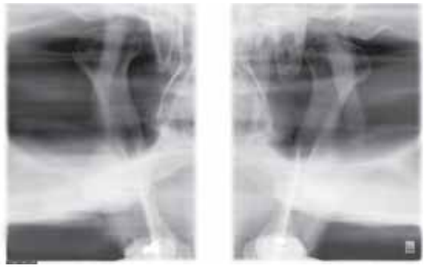
P5 *The Wide Arch program is appropriate for the patients with wider than average dental anatomy.*

P6 *Tempero-mandibular joint (TMJ) lateral view can be taken with mouth closed or open.*

P7 *With the film unit a special program is provided for taking both open and closed TMJ views on same film.*

P6 *The standard lateral TMJ program can be replaced with the alternative Ortho TMJ program for obtaining a corrected lateral condylar angle view.*

P9 *With the film unit, a special TMJ program provides both lateral and PA views on same film.*



P7 *TMJ PA projection gives clear view of condyles with 1.8 magnifigation. P8 with film unit.*

P9 *Cephalostat lateral view. P11 with film unit.*

P10 *The Orthoceph® patient positioning system enables variety of imaging projections for cephalometric radiography. It includes facial, posterioranterior and Submentovertex projections among others. P12 with film unit.*

Carpus imaging. Optional in some markets.

Orthopantomograph®
Orthoceph®
digital

OC200 D unit shown with optional base plate for free standing.

Imagination turned into reality

Technical specifications

generator	high frequency DC, 75-150 kHz
X-ray tube	D-051S
focal spot size	0,5 mm, according to IEC 336
total filtration	minimum 3.2 mm Al
tube voltage	57 - 85 kV
tube current	2 - 16 mA
nominal voltage	110/230 VAC +/- 10% 50/60 Hz
main fuses	10 A @ 230 VAC, 15 A @ 110 VAC
power consumption	2.3 kVA @ 230 VAC, 1.65 kVA @ 110 VAC

	OP200 D	OC200 D	OP200	OC200
patient positioning lights	3	4	3	3
dose controlled AEC	yes (P1-P5)	yes (P1-P5)	yes (P1-P5)	yes (P1-P5)
nominal magnification	1.3	1.14 (ceph)	1.3	1.08 - 1.14 (ceph)
number of imaging programs	8	10	10	12
imaged area variations	31	9	31	3
automatic spine compensation ASC	yes (P1-P5)	yes (P1-P5)	yes (P1-P5)	yes (P1-P5)
occlusion correction	yes	yes	yes	yes
automatic facial contour AFC	n/a	yes	n/a	semi-automatic
exposure time	2.7 - 17.6 s	5 - 20 s	2.7 - 17.6 s	0.1 - 3.2 s
control device	SmartPad™/handcontrol	SmartPad™/handcontrol	handcontrol	handcontrol
weight approx.	175 kg / 385 lbs	210 kg / 465 lbs	175 kg / 385 lbs	210 kg / 465 lbs

Film and cassette sizes

panoramic cassette	15 x 30 cm (6" x 12")
optional panoramic cassette	24 x 30 cm or 10" x 12" (CR model)
standard cephalostat cassettes	18 x 24 cm or 8" x 10"
optional cephalostat cassettes	24 x 30 cm or 10" x 12"

Digital specification	OP200 D	OC200 D
sensor pixel size	48 x 48 µm	48 x 48 µm
image pixel size	96 x 96 µm	96 x 96 µm
image field height	5.8 inches / 147 mm 4.7 inches / 120 mm pediatric (P2)	8.7 inches / 221 mm
PC minimum requirement	Pentium 800 Mhz or equivalent, 256 Mb, 40 Gb, 1 PCI slot	Pentium 800 Mhz or equivalent, 256 Mb, 40 Gb, 1 PCI slot
operating system	WIN 2000 / XP / 2003 Server	WIN 2000 / XP / 2003 Server
DICOM compatibility	optional	optional
TWAIN connectivity	optional	optional
embedded PC	optional	optional

Orthopantomograph®
Orthoceph®

film

Optional carpus holder for accurate wrist imaging with digital ceph.

Left handed digital ceph comes with additional positioning mirror.

The Ortho™ ID, optional film marking system.

Handcontrol can be used insted of the SmartPad.

Imagination turned into reality

Orthopantomograph® OP200 D

INSTRUMENTARIUM

Extraoral panoramic imaging

Extraoral cephalometric imaging

Intraoral imaging

INSTRUMENTARIUM DENTAL develops and manufactures premium quality dental imaging solutions. Present models of legendary Orthopantomograph® – OP200, OC200, OP200 D and OC200 D – serve demanding panoramic and cephalometric diagnostic needs both in film and digital environment. FOCUS™ X-ray and SIGMA™ sensors combine an intelligent solution for advanced intraoral imaging.

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