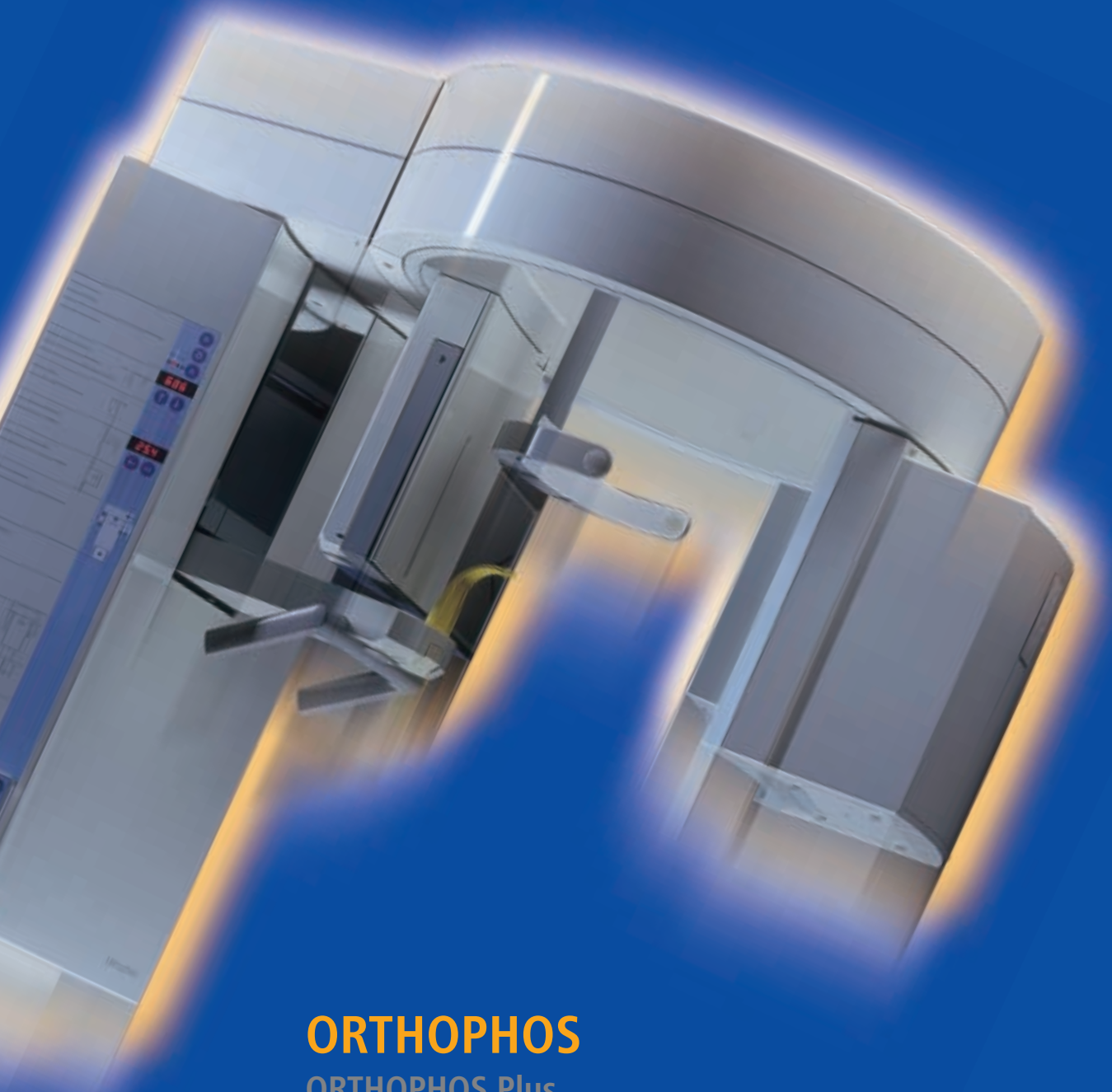


A step forward in diagnostics:
ORTHOPHOS panoramic X-ray systems.



ORTHOPHOS

ORTHOPHOS Plus

ORTHOPHOS Plus Ceph, ORTHOPHOS Plus DS

ORTHOPHOS Plus DS Ceph

The Dental Company

sirona.

A major step forward: ORTHOPHOS panoramic X-ray systems.



Accurate diagnosis and effective treatment are prerequisites for a successful dental practice. The ORTHOPHOS X-ray systems offer a broad range of programs and thus foster a comprehensive diagnostic approach. Their razor-sharp images provide a sound and meaningful basis for clearly focused therapy.



ORTHOPHOS Plus – a major step forward in diagnostics.

Versatile performers: the ORTHOPHOS family

The ORTHOPHOS Plus and ORTHOPHOS Plus Ceph use conventional film cassettes. In the case of the ORTHOPHOS Plus DS and ORTHOPHOS Plus DS Ceph all the imaging, processing and archiving functions are performed digitally. If you want to enter the digital age at a later date – no problem. All the models in the new ORTHOPHOS series can be upgraded to digital technology.

Panoramic X-rays have now become standard practice in first-time examinations. However, as soon as the patient's symptoms are associated with the mandibular joints and/or the maxillary sinuses you have no option but to extend the scope of the X-ray investigation to these regions. Such complex applications are beyond the capabilities of conventional panoramic X-ray units.

The ORTHOPHOS Plus, ORTHOPHOS Plus Ceph, ORTHOPHOS Plus DS and ORTHOPHOS Plus DS Ceph offer a choice of 16 different programs covering the entire spectrum of oral and maxillofacial X-ray imaging regions.

An investment that pays dividends

Robustly designed and technically sophisticated, the ORTHOPHOS X-ray systems enable you to solve complex clinical problems immediately using your own internal resources. The images turn out right every time – thanks to the multipulse generator, the dependable patient positioning system, automatic exposure preselection (in the film-based models) and automatic image preprocessing (in the digital systems). The digital X-ray systems display the images directly on the monitor, without any intermediate processing steps. The ORTHOPHOS Plus DS Ceph provides the basis for realizing digital panoramic and cephalometric X-rays on the basis of CCD sensor technology. Sirona's many years of experience in the area of panoramic and cephalometric radiography are your passport to optimum reliability, plus perceptible user benefits.

Simple operation and upgrading

The ORTHOPHOS X-ray systems are designed for optimum user-friendliness. Thanks to the 3-point fixing device, patient positioning involves only a few simple steps. The multitimer initiates the imaging process quickly and safely. Upgrading is a quick and simple procedure. All the new-generation film-based ORTHOPHOS models can be converted to digital imaging at a later date. Updates to the operating software and application programs are supplied on convenient memory cards (a feature common to all the ORTHOPHOS models).

All in keeping with the changing needs of your dental practice.

The benefits in brief

- **Reliable diagnosis**
16 panoramic programs
- **Brilliant image quality**
Automatic exposure pre-selection and image preprocessing respectively
Multipulse generator
- **Easy operation**
Multitimer
- **Cost-effective**
Sturdy construction
Tried-and-tested technology
- **Future-compatible**
Digitally upgradable
Memory card technology

The passport to high-quality X-rays.

Seeing is believing: the ORTHOPHOS X-ray systems deliver razor-sharp images every time. The multipulse generator emits consistently "hard" radiation, while automatic image preselection/image preprocessing ensures optimum exposures. The result? Brilliant X-rays that provide the basis for accurate diagnosis.

Repeat X-rays cost time and money. All the film-based ORTHOPHOS models offer automatic exposure preselection in the standard panorama program. The dose levels are determined individually for each patient in turn based on measurements carried out at the beginning of the X-ray procedure. The X-ray images therefore turn out right every time.

Digital image processing and archiving

The digital ORTHOPHOS Plus DS and ORTHOPHOS Plus DS Ceph models offer the user digital image acquisition, processing and archiving functions.

Any exposure errors are corrected by the automatic image preprocessing system. The multipulse generator ensures excellent definition and an evenly balanced image density. This makes repeat exposures a thing of the past. You can process the image on the monitor in any way you choose. The original image remains stored in the computer memory. The computer archives the X-ray images for future reference.

Pinpoint accuracy

The imaging unit orbits around the patient's head in a smoothly coordinated sequence of movements. Each orbit is offset against the previous one. A system of microprocessors calculates the correct orbits for each individual patient. Precision you can see with your own eyes.



ORTHOPHOS always selects the correct orbit, irrespective of whether the patient has a large, normal or small-sized jaw.

The benefits in brief

- **Razor-sharp images**
Automatic exposure preselection/image preprocessing
- **Computer-controlled orbits**
Highly integrated microprocessors
- **Consistently hard radiation**
Multipulse generator
- **Reduced radiation dose**



Top right: An indispensable diagnostic aid: the standard panoramic X-ray.

Bottom right: ORTHOPHOS calculates the precise orbit for each individual patient.

A triple benefit: The three-point patient fixing system.



Thanks to the 3-point fixing system the patient has no trouble in keeping still. The special bite segment and the chin, temple and forehead supports ensure ideal positioning. Light localizers provide a quick and precise means of determining the Frankfort horizontal and the mid-sagittal planes.

At the touch of a button the motor drive adjusts the ORTHOPHOS to the individual height of the patient. The bite segments and the hygienic protective sleeves are stored in the built-in draw, where they are immediately accessible.

Convenient features: Light localizers and multitimer

In panoramic radiography a single millimeter can make a big difference. Patient positioning has a determining influence on image quality. For this reason the ORTHOPHOS X-ray units deploy light localizers. The 3-point patient fixing system prevents kinetic blurring and "technical" asymmetries.

In addition, the patient's cranial circumference is measured via the temple and forehead support. The ORTHOPHOS unit then automatically selects the optimum orbital curve. In the event of anomalies in the patient's anterior teeth you can determine yourself to what extent the orbital curve should be corrected. A final

glance in the mirror – and you're ready to start. The exposure procedure is triggered using the multitimer control unit. With its easy-to-understand icons the multitimer is child's play to operate. It is available as a hand-held unit attached to a spiral cable or as a permanently installed remote control.

Digital recording

At the end of the X-ray procedure the ORTHOPHOS units present a read-out of all the various settings (e.g. exposure time) in the digital display. The digital models ORTHOPHOS Plus DS and ORTHOPHOS Plus DS Ceph store this data as well as other major parameters (height setting, forehead support setting, temple width) together with the X-ray image. This enables you to reproduce X-rays under identical conditions.



ORTHOPHOS – continuous motor-driven height adjustment.



ORTHOPHOS – all accessories within easy reach.

The benefits in brief

- **Convenient motor-driven settings**
Height adjustment and forehead support
- **Practical light localizers**
Frankfort horizontal/mid-sagittal plane
- **Reliable 3-point fixing**
Bite, forehead and temple supports
- **Simple operation**
Multitimer control unit
- **Outstanding hygiene**
Sterilization and/or protective sleeves
- **Clear digital displays**
Reproducibility, plus operator assistance

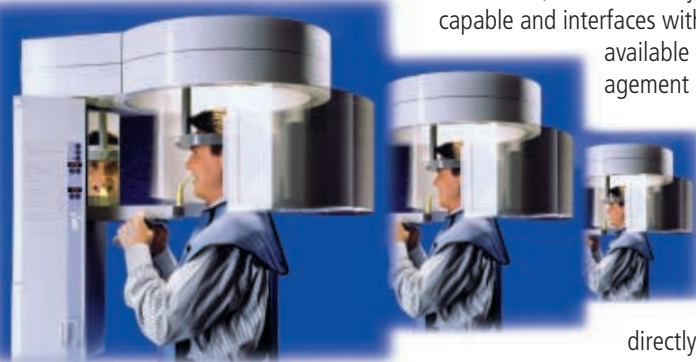


The digital dimension: ORTHOPHOS Plus DS and ORTHOPHOS Plus DS Ceph.

The future of radiology lies in digital technology. In addition to saving space it significantly reduces the amount of radiation. The X-ray image appears immediately on the monitor. The built-in computer automatically compensates for any exposure errors. This means that you receive flawless images every time. The software package SIDEXIS takes care of image archiving and patient data management and – if required – can interface directly with your practice management program.

The darkroom is thus rendered superfluous. In place of a conventional film cassette these digital X-ray units feature a two-dimensional line sensor. Prior to triggering the X-ray you simply enter the patient's name on the PC and select the desired program on the ORTHOPHOS unit. After a mere 60–100 seconds the image appears on the high-resolution PC monitor. The X-ray image and the relevant exposure data (radiation time, mA, kV, etc.) are stored automatically in the

patient file index. It goes without saying that each image (both the original and any post-processed versions) can be recalled within seconds.



SIDEXIS: convincing images

A picture says more than a thousand words. With just a few mouse clicks the SIDEXIS software enlarges important details and creates inverse, pseudo-color or relief images in line with your specific

needs. Such processed X-ray images make it a lot easier to explain to patients the need for complex courses of treatment.

In addition, SIDEXIS is fully network-capable and interfaces with the widely available practice management programs as well as with orthodontic analysis software. The image capture card is integrated

directly into the ORTHOPHOS unit. In other words, you're not dependent on any particular PC in your practice network. And this results in greater flexibility. Your local dealer will be glad to supply further details.

Equipped for the future

All the film-based models in the new ORTHOPHOS series can be upgraded to digital technology at a later date.

Digital technology reduces radiation doses. In the case of panoramic X-rays the dose can be up to 50% lower by comparison with conventional film-based units. In the case of digital cephalometric X-rays the radiation dose can be reduced by as much as 70%.

Facing page: ORTHOPHOS digital – brilliant real-time images; reduced radiation doses.



The benefits in brief

- **Razor-sharp real-time images**
No film processing, no scanning, no readouts
- **Environmental protection**
No darkroom, no chemicals
- **Reduced radiation doses**
Radiation dose reductions ranging from 50% (panoramic) to 70% (cephalometric)
- **SIDEXIS software**
Simple and effective image processing; automatic patient-related archiving; interfaces with practice management and orthodontic measurement programs
- **Future-oriented**
Subsequent upgrading to digital technology; memory card technology



Two-fold benefits for oral surgery and orthodontics: ORTHOPHOS Plus Ceph and ORTHOPHOS Plus DS Ceph.

Cephalometric and panoramic radiography in a single unit. The ORTHOPHOS Plus Ceph produces film-based images, the ORTHOPHOS Plus DS Ceph is fully digital. Both models offer a choice of 16 panorama programs, plus sophisticated cephalometric capabilities. This puts you in the position to fulfil all orthodontic and oral surgery requirements.

You can choose from a wide variety of cephalometric techniques: lateral; posterior-anterior or anterior-posterior in the direction of radiation; hand X-rays.

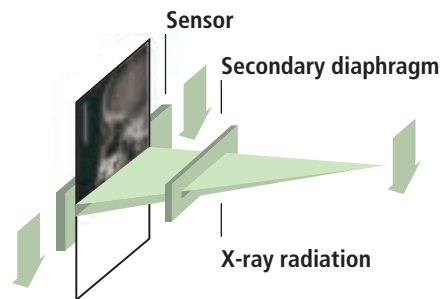
ORTHOPHOS Plus DS Ceph:
Low radiation dose thanks to short exposure times

In conventional cephalometric applications the entire skull is exposed to a pyramid-shaped X-ray beam. The ORTHOPHOS Plus DS Ceph technique offers a unique method: The motorized image receptor scans the patient's head for approx. 15 seconds using a flat fan-shaped beam. The actual exposure time, however, is only 270 milliseconds. Compared with a film-screen combination with a sensitivity of $S = 250$, the radiation dose can be reduced by up to 70 %. By comparison with a $S = 400$ film-screen combination the dose reduction is in the region of 50 %.

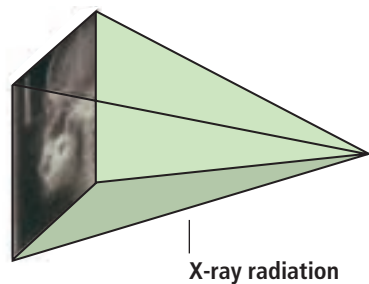
Save valuable time: interfacing with orthodontic analysis software

Using our software package SIDEXIS you can transfer the X-ray images directly to your orthodontic analysis program – e.g. Computer Forum's "Dental Vision". This program is available as an optional extra together with the ORTHOPHOS Plus DS Ceph. The images can be measured directly on your PC (either immediately or at a later date). Once again, you have the chance to save valuable time for your practice. Ask your local dealer whether your preferred analysis program is already compatible with SIDEXIS.

Principle of digital cephalometric radiography



Principle of film-based cephalometric radiography



ORTHOPHOS – the ideal solution for film-based and digital cephalometric radiography.

The benefits in brief

- Cephalometric radiography**
- **Panoramic and cephalometric radiography**
Combined in a single unit
- **Panoramic or cephalometric radiography**
Quick and easy change-over
- **Film-based or digital**
Digital technology is available ex works or as a retrofit option

- Digital cephalometric radiography**
- **Radiation dose reduction**
Up to 70 %
- **Patient-related image archiving**
Fully automatic
- **Software interfaces**
For practice management and orthodontic measurement programs
- **Razor-sharp real-time images**
No film processing, no scanning, no readouts
- **Environmental protection**
No darkroom, no chemicals



Visible benefits: the 16 ORTHOPHOS programs.

Panoramic X-rays have become an indispensable tool in the area of dental diagnostics. This is especially true in the case of first-time examinations, due to the large number of pathological findings and secondary findings that this X-ray technique reveals.

By comparison with a series of individual exposures the standard panoramic X-ray (Fig. 1) extends the diagnosable region by approx. 70 % and reduces the skin surface dose by approx. 90 %.

The additional projection techniques supported by the ORTHOPHOS Plus/Plus Ceph and the ORTHOPHOS Plus DS/Plus DS Ceph facilitate the comprehensive diagnosis of the entire jaw region – i.e. temporomandibular joints, maxillary sinuses and the anterior teeth. These sophisticated X-ray systems also offer special programs for implantology and for low-dose follow-up X-rays.

1 Program 1:
Standard panoramic
image

2 Program 2:
Normal image, re-
stricted to the denti-
tion region without
ascending branches

3 Program 3:
Maxillary sinuses,
two images on one
film

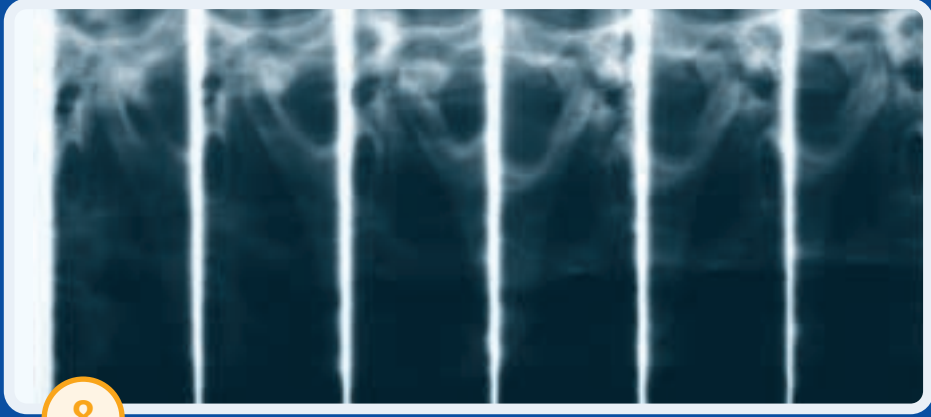
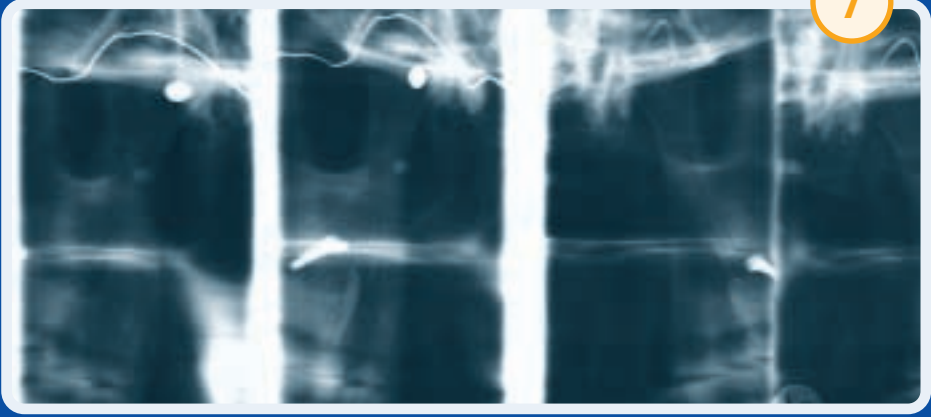
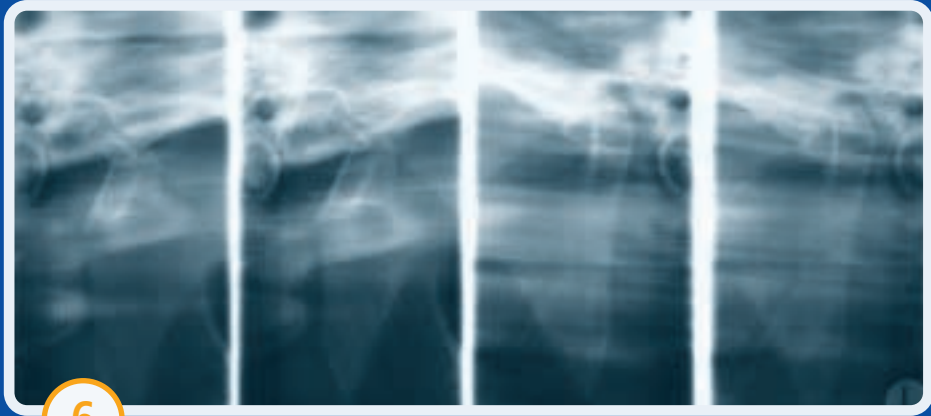
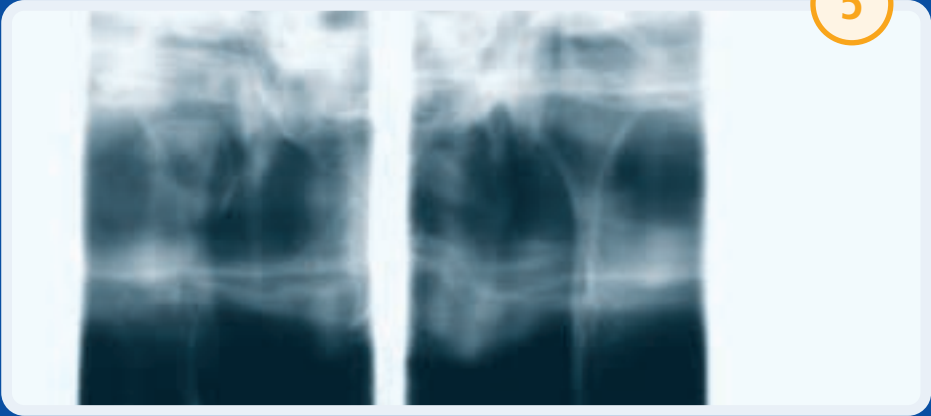
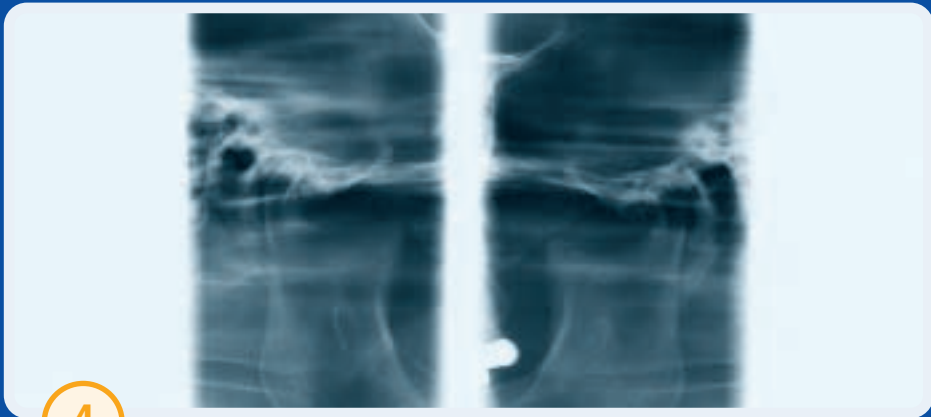
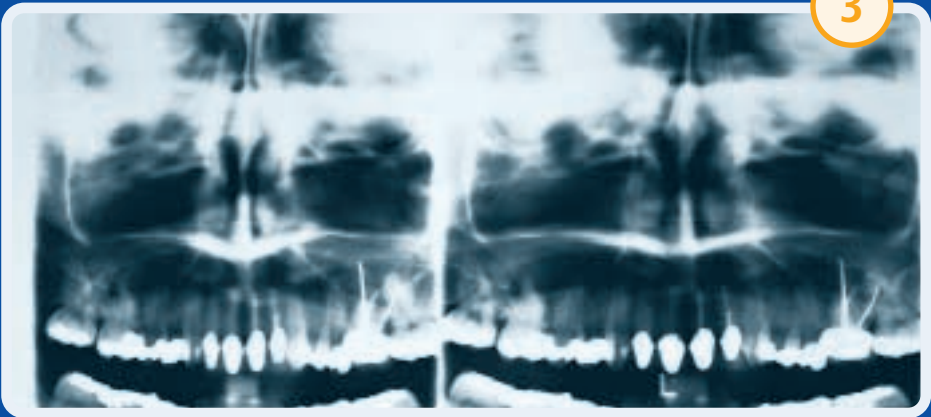
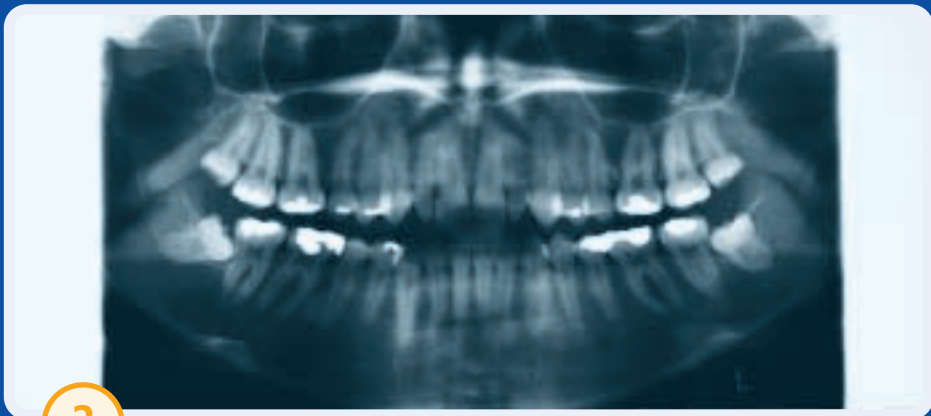
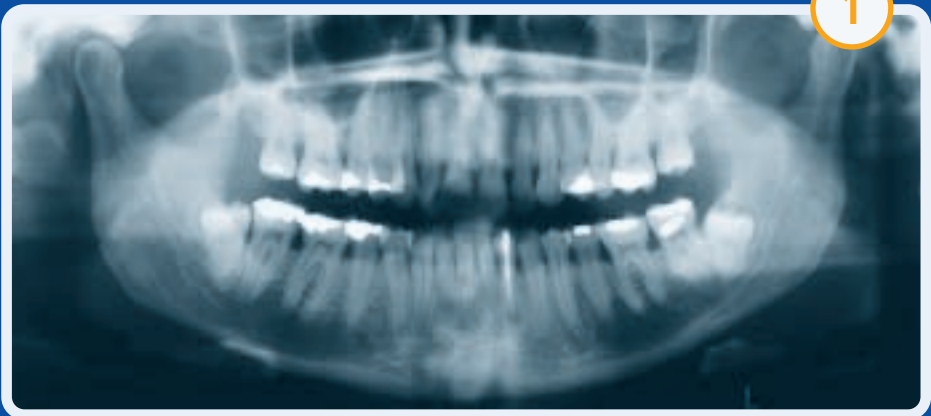
4 Program 4:
Lateral view of the
temporomandibular
joints, ascending
branches

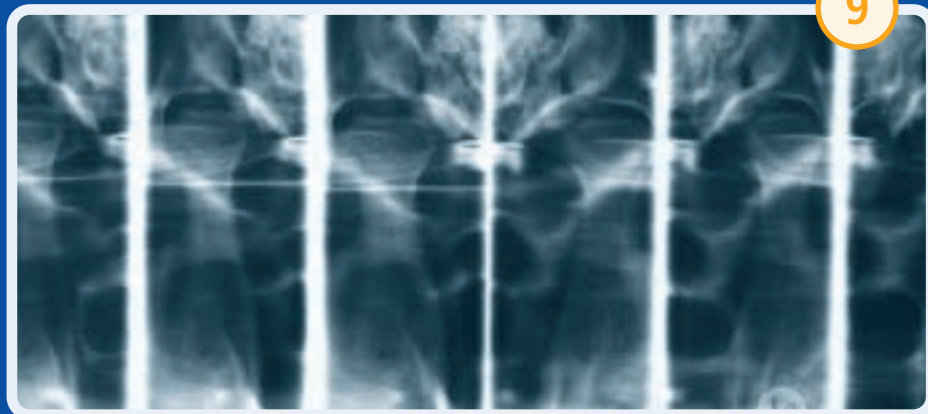
5 Program 5:
Temporomandibular
joints in direction of
irradiation, posterior/
anterior

6 Program 6.1/6.2
Lateral view of the
temporomandibular
joints, closed/open
mouth on one film

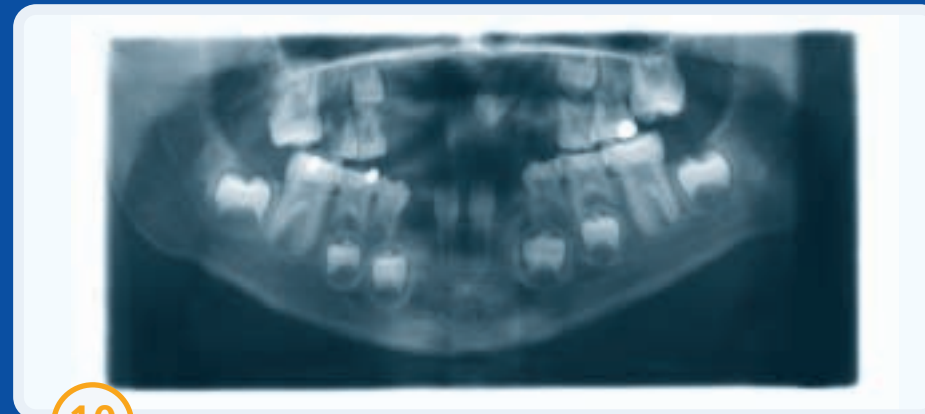
7 Program 7.1/7.2:
Temporomandibular
joints in direction of
irradiation, posterior/
anterior, open/closed
mouth on one film

8 Program 8:
Lateral multi-layer
image of the tem-
poromandibular
joints

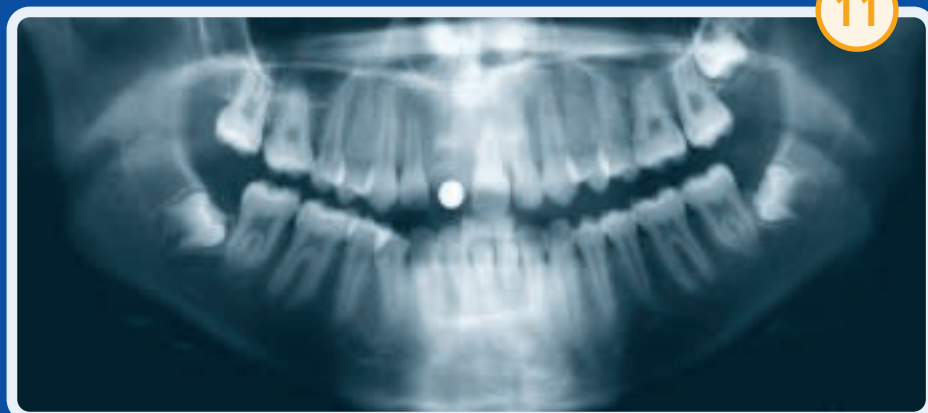




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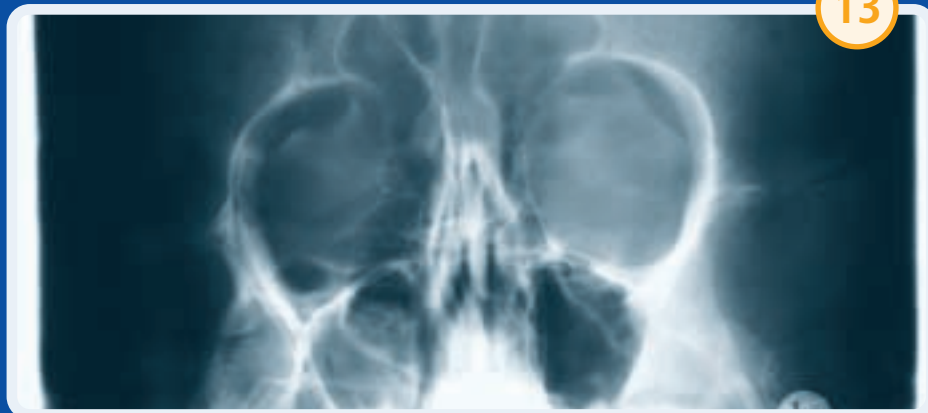
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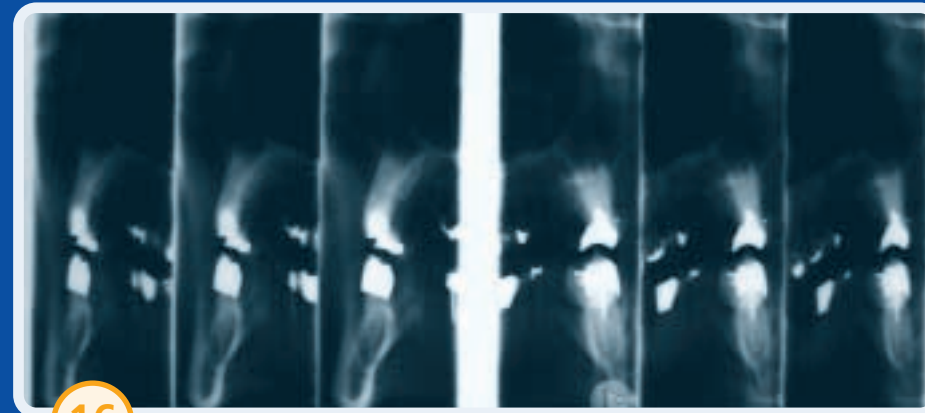
13



14



15



16

9 Program 9:
Multi-layer image of
the temporomandib-
ular joints in direc-
tion of irradiation,
posterior/anterior

10 Program 10:
Normal X-ray for
children (considerable
dose reduction)

11 Program 11:
Normal X-ray with
constant 1.25 fold
magnification for
measuring applica-
tions

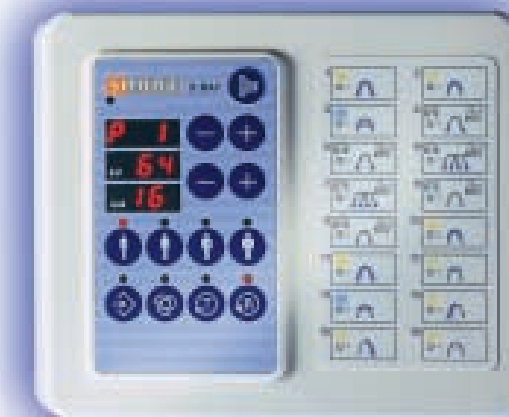
12 Program 12:
Thick layer, anterior
region

13 Program 13:
Paranasal sinuses

14 Program 14:
Left side reduced-
dose follow-up X-ray

15 Program 15:
Right side reduced-
dose follow-up X-ray

16 Program 16:
Multi-layer image
of the lateral tooth
region



Remote Control optionally available

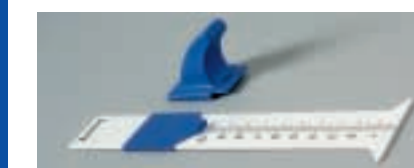
Transverse layer extension kit – also available in a digital version

The special programs for transverse tomo-
grams create an enhanced decision-
making basis in the area of oral surgery
and implantology. Sirona has realized an
extremely low depth of field (in some
programs less than 0.9 mm). In other
words, you receive X-ray images of out-
standing diagnostic relevance.

The extension kit is available factory-
fitted or else as a retrofit option.

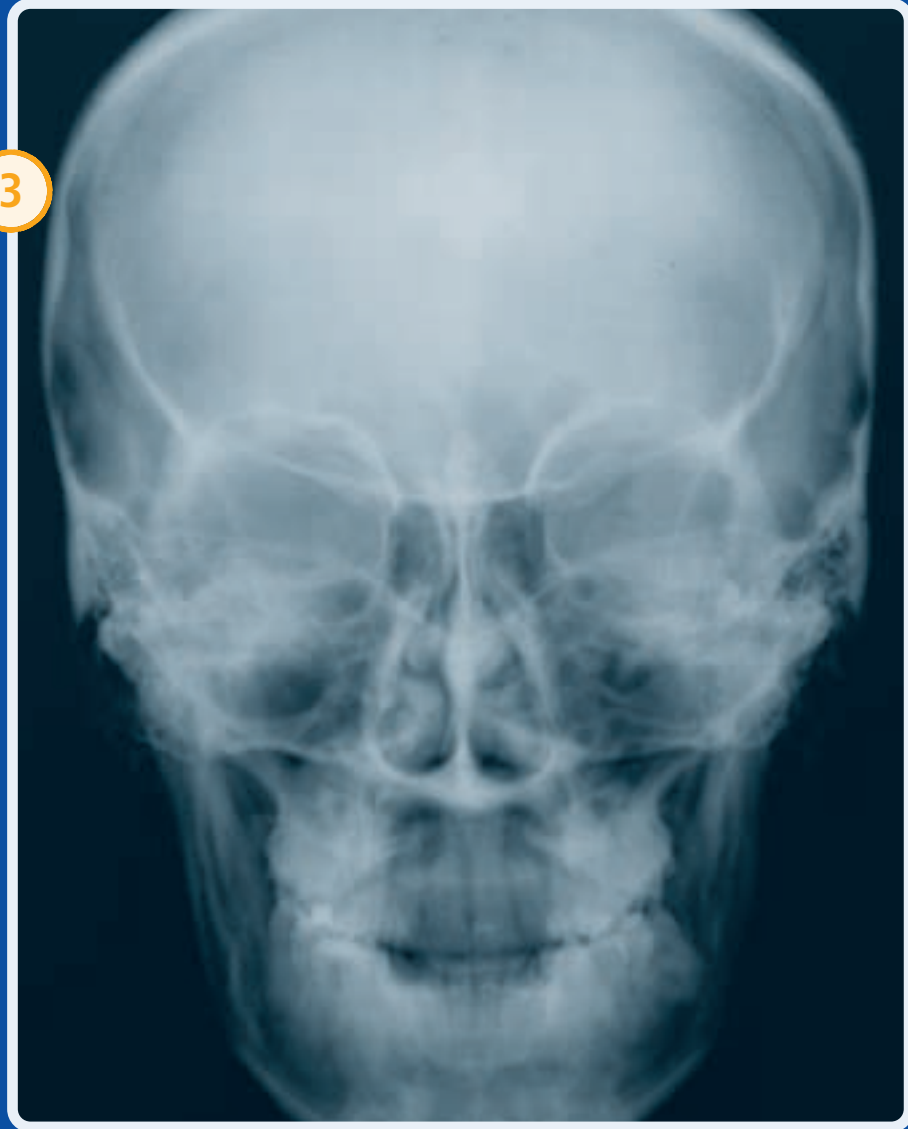
An extension kit is also available for
the digital ORTHOPHOS Plus DS and
ORTHOPHOS Plus DS Ceph X-ray units.
Existing systems can be upgraded at a
later date. The special Sirona sensor en-
sures very low depths of field and hence
excellent image quality.

For further information please order our
brochure "Transverse Layers".



Various adjustment devices are available for
quick and precise patient positioning purposes
– for example, the new TSA rule.

16 plus 4: the additional cephalometric functions supported by ORTHOPHOS Plus Ceph and ORTHOPHOS Plus DS Ceph.



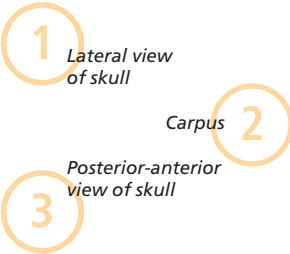
In addition to the 16 panoramic programs the ORTHOPHOS Plus Ceph and ORTHOPHOS Plus DS Ceph offer you the choice of four cephalometric projections, thus making these X-ray units genuine all-rounders for orthodontics and oral surgery.

The settings are precise, stable and reproducible at any time – thanks to the motor-driven height adjustment and the patient fixing system consisting of ear tip supports and nose support. The ORTHOPHOS features an individually adjustable soft-tissue filter. In the

ORTHOPHOS Plus DS Ceph this function is performed electronically. In both cases you have access to easily recognizable patient profiles – a prerequisite for high-quality lateral/posterior-anterior/ anterior-posterior X-rays and hand X-rays.

Sirona’s many years of experience with sensor-based digital panoramic and cephalometric X-ray systems are a guarantee for optimum reliability. Thousands of installed systems world-wide – including more than 1,000 ORTHOPHOS Plus DS Ceph units – provide convincing practical proof.

Standard formats supported by the ORTHOPHOS Plus Ceph and ORTHOPHOS Plus DS Ceph: 18 x 24 cm asymmetrical, 18 x 24 cm symmetrical



ORTHOPHOS in figures.

+ + + + + +

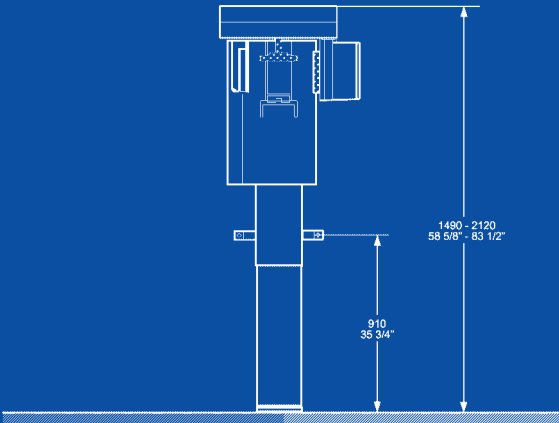
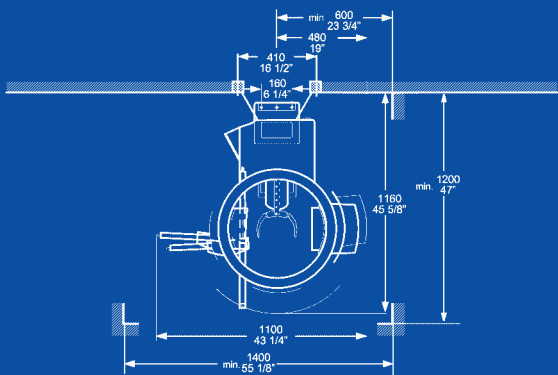
Technical data	ORTHOPHOS units
Radiation generator	Multipulse generator
X-ray tube	SR 90/15 FN
Focal spot size according to IEC 336/82	0.5 mm x 0.5 mm
Total filter	2.5 mm AL
Tube voltage	60 – 90 kV
Tube current	9 – 16 mA
Nominal voltage	230 V, 50 – 60 Hz
Nominal current	12 A
Line internal resistance	max. 0.8 Ohm
Fuse	16 A (slow blowing)
Power consumption	2.8 kW
Permissible line voltage fluctuations	+6, –10 %
Panoramic rotation times	19 s – 108 s
Panoramic exposure times	4.9 s – 25.3 s
Ceph film switching times	0.1 s – 4.0 s (17 steps)
Ceph Digital	
Radiation time	15.7 s
Effective exposure time	approx. 270 ms
Dimensions	
ORTHOPHOS Plus, Plus DS	1100 x 1490 – 2120 x 1160 mm*
ORTHOPHOS Plus Ceph	1855 x 1490 – 2120 x 1160 mm*
ORTHOPHOS Plus DS Ceph	1800 x 1490 – 2120 x 1180 mm*
* (width x height x depth)	

All the features at a single glance.

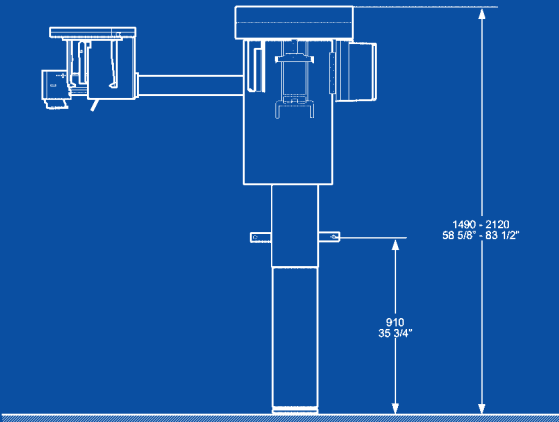
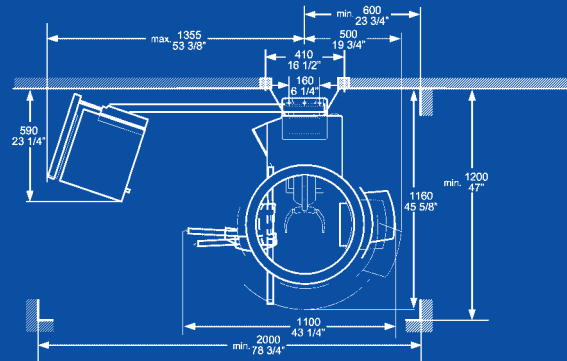
Equipment features	ORTHOPHOS Plus	ORTHOPHOS Plus Ceph	ORTHOPHOS Plus DS	ORTHOPHOS Plus DS Ceph
Panoramic programs				
1 – 16	●	●	●	●
Transverse layers (17–23), digital (17–26)	▲	▲	▲	▲
Cephalometric radiography				
Image/cassette format 18 x 24 symm./asymm.		●		●
Cassette format 24 x 30		▲		
Digital radiography				
Digital			●	●
Digitally upgradable	●	●		
Patient positioning				
Light localizer for FH and mid-sagittal plane	●	●	●	●
Precise layer position determination by automatic measurement of the skull width	●	●	●	●
Automatic exposure preselection	●	●		
Automatic image preprocessing for optimum exposure in all programs			●	●
Compensation for anomalies in the anterior tooth region	●	●	●	●
Digital displays for height adjustment, forehead support position, anomaly compensation, exposure values, help messages	●	●	●	●
Operation, service, upgradability				
Multitimer	●	●	●	●
Remote Control	▲	▲	▲	▲
Memory card technology	●	●	●	●
● standard ▲ optional				

19

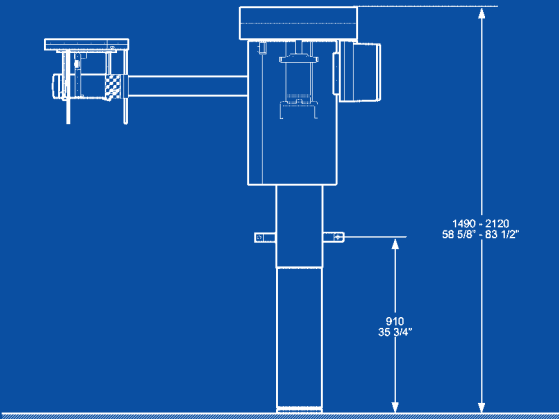
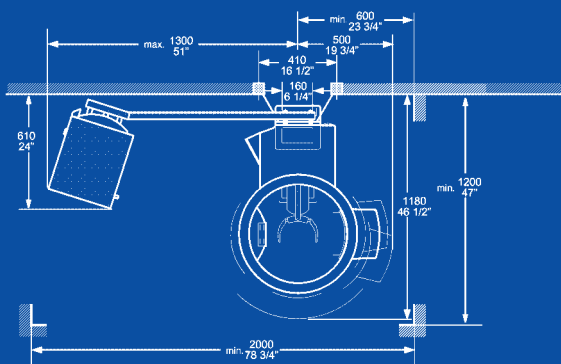
ORTHOPHOS Plus, ORTHOPHOS Plus DS



ORTHOPHOS Plus Ceph



ORTHOPHOS Plus DS Ceph





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