ORTHOPHOS 3

Operating Instructions
Dear customer,

Thank you for purchasing your new Sirona X-ray unit ORTHOPHOS® 3 for panorama planigraphy. For this unit we have provided you with a set of technical literature: Operating Instructions, Installation Instructions, Installation Report / Warranty Passport, Wiring References, Pre-Installation, Dimensions, Technical Data. Keep this literature for quick and easy reference.

In order to protect your warranty rights, please fill out the “Installation Report / Warranty Passport” provided together with the technician immediately after installation of the unit.

Read the Operating Instructions to familiarize yourself with the unit before taking radiographs on the patient. Please observe the Radiation Protection Regulations and Warning and Safety Notes.

Your
ORTHOPHOS-Team

Maintenance

To ensure the safety of the patient, the operators and third parties, equipment inspections and maintenance work must be carried out at specified intervals in order to guarantee the operational safety and functional reliability of your product.

It is the responsibility of the operator to ensure that the inspections and maintenance work are carried out.

In the event that the operator fails to fulfill the obligation to carry out inspections and maintenance work or ignores error messages, Sirona Dental Systems GmbH or their contracted dealer cannot assume liability for any damage attributable to this.
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1 Warning and Safety Notes

Labeling of warning and safety information

To prevent any personal injury or material damage, please observe the warning and safety information provided in the present operating instructions. They are highlighted by the caption 

NOTE, CAUTION or WARNING.

Symbols used

⚠️ Observe accompanying documents (on name plate)

Intended use

This unit has been designed for use in creating panorama radiographic exposures.

This unit must not be used in areas where there is a risk of explosion.

Maintenance and repair

As manufacturers of electromedical equipment we can assume responsibility for safety-related performance of the equipment only if maintenance and repair are carried out only by us or agencies we have authorized for this purpose, and if components affecting safe operation of the unit are replaced with original spare parts.

We suggest that you request a certificate showing the nature and extent of the work performed from those who carry out such work; it must contain any changes in rated parameters or working ranges (if applicable), as well as the date, the name of the company and a signature.

Modifications to the system

Modifications to this system which could impair the safety of operators, patients or third persons are prohibited by legal provisions!

For reasons of product safety, this product may be operated only with original Sirona accessories or accessories manufactured by third parties expressly approved by Sirona. The user is responsible for dangers resulting from the use of non-approved accessories.

If any devices not approved by Sirona are connected, they must comply with the applicable standards:

- IEC 60950 for information technology equipment (e.g. PCs), and IEC60601-1 for medical electrical equipment.

Ventilation slots

Under no circumstances may the ventilation slots on the unit be covered, since otherwise the air circulation will be obstructed.

Do not spray disinfectants or other similar products into the ventilation slots.

X-rays of patients

X-rays of patients must be taken only when the system works without errors.
The system may only be operated by skilled or properly trained personnel.

The movements of the unit must not be obstructed by physical constitution nor clothing, dressings, wheelchairs or hospital beds!

Do not leave the patient unattended in the unit.

Electromagnetic compatibility (EMC)

Medical electrical devices are subject to special precautionary measures regarding EMC. They must be installed and operated as specified in the document “Installation Requirements”.

Information on avoiding, recognizing and eliminating unintended electromagnetic effects:
The ORTHOPHOS 3 acquisition unit is a Class B device (classified according to CISPR 11, EN 60601-1-2: 2001 based on IEC 60601-1-2).

This system may be operated in a residential area. Portable and mobile HF communication devices can influence medical electrical equipment. The use of mobile telephones in the practice or hospital area therefore must be prohibited.

Precautionary measures when switching on the unit

Following extreme temperature fluctuations, condensation may occur; therefore please do not switch on the system until it has reached normal room temperature (see chapter “Technical Description”).

No patient may be positioned in the unit during power-on.

In case of an error that requires switching off and subsequent switching on of the unit, the patient must be removed from the unit before switching it on again at the latest!

Emergency Stop

If parts of the unit contact the patient during the rotational movement, let go of the exposure release button (X-Ray) immediately and stop the unit by actuating the unit main switch or an Emergency Stop switch!

Disturbance of electronic devices worn on the patient’s body.

To prevent the malfunctioning of electronic devices and data storage devices, e.g. radio-controlled watches, telephone cards, etc., these objects must be removed prior to X-raying.

Radiation protection

The valid radiation protection regulations must be observed.

The operator should move as far away from the X-ray tube assembly as allowed by the coiled cable of the exposure release button. The statutory radiation protection equipment must be used.
With the exception of the patient, no other persons without radiation protection are allowed to stay in the room. In exceptional cases, a third person may provide assistance, but not the practice staff. During the whole exposure, visual contact with the patient and the unit must be maintained.

In case of malfunctions, interrupt the exposure immediately by releasing the exposure release button.

Hygiene information

The protective covers must be exchanged for each new patient and the sterilizable accessories must be sterilized to prevent any transmission of infective agents which might cause serious illnesses.

Suitable hygienic measures must be taken to prevent cross contamination among patients, users and other persons.

Dismantling and reassembly

For dismantling and reassembly of the device, proceed according to the Installation Instructions for new installation in order to guarantee the operability and stability of the system.

Disposal

It applies generally that the national regulations have to be complied with when disposing of this product. Please observe the regulations applying in your country.

Within the European Economic Community the directive 2002/96/EEC (WEEE) for electrical and electronic devices requires environmentally compatible recycling / disposal.

Your product is marked with the adjacent symbol. With the goal of environmentally compatible recycling / disposal, your product must not be disposed of with the domestic refuse.

The black bar under the "refuse bin" symbol means that it has been put onto the market after 13.08.2005. (See EN 50419:2005)

Please note that this product is subject to the directive 2002/96/EEC (WEEE) and laws applicable in your country and must be sent for environmentally compatible recycling / disposal.

The X-ray tube assembly of this product contains a tube with a potential implosion hazard, a small amount of beryllium, a lead lining and mineral oil.

Please contact your dealer if your product should be finally disposed of.
Laser light localizers used

This product incorporates a laser of class 1.

The light localizers serve for the correct positioning of the patient.

They must not be used for other purposes. A minimum distance of 100mm must be maintained between the eye and the laser. Do not look into the beam. Safety operation is described in Section 6.2.

The light localizers may be switched on only if they function fault-free. Repair work may be carried out only by authorized personnel.
2 Technical Description

2.1 Technical Data

Nominal line voltage: 208V / 230V - 240V
Permissible line voltage fluctuation: ±10%
Nominal current: max 9.7A
Nominal frequency: 50/60Hz
Power line resistance: max. 0.8Ohm
Fuse at the distribution panel: 20A slow blow
Rating: 2.1kW
Tube voltage: 60 – 80kV
Tube current: 6 – 11mA
Curve form of high voltage: high frequency
Multipuls Residual ripple ≤4kV
Rotation time: see page 30
Exposure time: see page 30
Reproduction scale: With P1 program, medium mandibular arch (plane center) ca. 1:1.19. The image at the image receiver is approximately 19% larger than the real proportions.

Focus size, according to IEC 336, measured in central ray:

Focus marking:

Automatic exposure blockage (see page 27):

The duration of the exposure blockage (cool-off period) depends on the kV/mA step set and the actually triggered radiation time. Depending on the tube load, pause times up to 200s are set automatically.

Example: For P1 program with exposure data 74kV/10mA and a radiation time of 11.3s a pause of 200s results.

Equipment of protective class I
Protection against electric shock:
Protection against penetration of water:
Year of manufacture
Mode of operation:
Long time power rating:
ORTHOPHOS 3 has been inspected by the VDE Testing and Certification Institute for compliance with EN 60 601-1, / 1998, EN 60 601-2-7 / 1998, EN 60 601-2-28 / 1998, EN 60 601-1-3 / 1998, and has been found to comply with these regulations.

Original language: german

This product is provided with a CE marking in accordance with the regulations stated in the Directive 93/42/EEC of June 14, 1993 concerning medical products.

Target material: Tungsten
Loading factors concerning leakage radiation: 1.1 mA / 80 kV
Leakage radiation: ≤1 mGy/h
Transport and storing temperature: -40°C – +70°C (-40°F – 158°F)
Relative humidity: 10% – 95%
Permissible operating temperature: According to IEC 601-1 between +10°C and +40°C (50°F – 104°F)
Source - Image receptor distance: Panorama 497 mm
Cassette format:
Panorama 15 cm x 30 cm (6" x 12")
USA/CANADA 8 x 10 in.
Korea 10 x 8 in.

Laser light localizer
Magnitude: 300 mm long, 5 mm wide
Max. radiant power: 350 J/m²
Pulse duration: 100 s

Reg. No.: China SFDA (I) 20053301583
Cooling curve for the tube housing:

Anode cooling characteristic:

Heating curve for tube housing:

Reference axis:

Reference axis

Anode angle
Radiation fields of the laser light localizers:

- 32°
- 60°
- 5°
3 Operating Controls and Displays

3.1 Unit

1. Main switch
2. Patient positioning mirror
3. Head holder with adjusting knob for temple supports
4. Cassette holder with carriage
5. Diaphragm
6. Diaphragm wheel with locking button (locking button on unit with cephalometer only)
7. Height adjustment buttons
   Additional function: key ↑ switches light localizer on
8. Return key
9. Height adjustment
   Light localizer horizontal light beam FH
10. Light localizer central light beam
11. Multitimer
3.2 Multitimer

"Unit ON" LED
Radiation present indicator
Exposure key
Digital display for exposure program / exposure time with − + keys for exposure programs.
Digital display for kV/mA paired values with − + keys for overriding kV values.
Patient symbol keys with programmed kV/mA values
Memory program key kV/mA matched values
Key with service function
Rotation test key T without radiation
Return key R
The LED blinks when the system is not ready.
4 Accessories

4.1 Rests and supports

With* marked accessories can be sterilized. **Sterilize only in an autoclave at 135°C, 2.1 bar (275°F).**

For reorders:

- **A** Yellow bite block (5 pcs) Order No. 89 21 843
- **B** Yellow contact segment for patient without front teeth (5 pcs) Order No. 89 31 545
- **C** Head positioner complete, incl. 4x D Order No. 18 88 770
- **D** Ear fixation (10 pcs) Order No. 18 88 838
- **F** Contact spacer Order No. 33 10 336

4.2 Hygienic Protective Covers

Before each exposure, the hygienic protective (disposable) covers should be attached. For better illustration of the components, the following figures are shown without the hygienic protective covers.

For orders:

- **G** For temple supports and handles (500 pcs) Order No. 33 14 098
  Dimensions: 210 (140)mm x 57mm
- **H** For bite block and contact segment (500 pcs) Order No. 33 14 080
  Dimensions: 80mm x 40mm

4.3 Service Tool

Needle phantom Order No. 33 11 235
5 Exposure Programs

5.1 Program P 1

Complete standard exposure

- Yellow bite block or contact segment.

5.2 Program P 11

with constant 1.25-fold magnification
e.g. for implantology

- Yellow bite block or contact segment.

**NOTE**

*L* on the film means the left half of the cranium.
5.3 Program P 6.1 / P 6.2

Lateral exposures of the temporomandibular joints with closed and open mouth.
(4 exposures on one image)

- Insert head positioner (see page 18).

P6.1 Outer Image: Closed mouth
- Actuate P6.1
  After P6.1 is completed, the unit automatically returns to the initial position.

P6.2 Inner Image: Open mouth
- Have the patient open his mouth and actuate P6.2.

**NOTE**
L on the film means the left half of the cranium.
6 Operation

6.1 Preparing the Exposure

**Loading the Film Cassette**
Treat the film cassette and intensifier screen with care to avoid scratching the screen or denting the cassette housing.

**Opening the cassette**
Push the locks X forward as shown and lift up lever Y. Place film in the cassette.

**Closing the cassette**
Press the cover down uniformly on both sides until the locks click.

**Insert Contact Spacer F**
Application: For all exposure programs. Always place the contact spacer where, as a result of anatomical features, with correct head positioning there is no contact with the forehead (no 3-point fixing).
After positioning the head, press the contact spacer onto the tube and push it down to the forehead contact.

**Insert Head Positioner C**
Application: Exposure program P6. Open temple supports with knob (3). Remove rubber inserts Z and insert head positioner up to stop.

**Insert Bite Block A**
or contact segment B.
Application: Exposure programs P1 and P11.
Primary Diaphragm
- On units without cephalometer for tele-exposures the diaphragm 1 is fixed.
- On units with cephalometer the diaphragm 1 must be adjusted.

Adjust diaphragm 1 by pressing button (6) and rotating the diaphragm wheel up to the stop.
The number 1 appears in the upper right corner of the window.

Switching ON the Unit
Press the main switch (1) into the "I" position and allow one minute warm up time.
The LED in the upper left corner of the Multitimer will light up.
The unit adjusts itself automatically:
- The rotating unit moves a little to the right and left.
- The cassette carriage moves to the initial position.

**CAUTION**
No patient may be positioned in the unit during power-on. In case of an error that requires switching the unit off and back on again, the patient must be removed from the unit, at the latest before switching the unit on again!

At the Multitimer
the program and exposure parameters employed with the last patient appear.
- **A** shows you the exposure program sequentially and the respective maximum exposure time.
- **B** gives you the kV/mA matched value pair. The LED over the respective patient symbol lights up.
- **C** LED over the return key R blinks.

Move the rotating unit into place for patient positioning by tapping one of the return keys R.

**NOTE**
You can release a test rotation without radiation via the exposure button after having pressed the T button.
6.2 Positioning the Patient

- Have the patient remove all metallic objects, such as glasses and jewelry, from the head and neck regions. Have him take out removable dentures.
- Physical constitution, clothing, bandages etc. must not interfere with the functioning of the unit! Perform a test run with the T button, (see page 19)
- Insert bite block / contact segment or head positioner, see page 18
  For selection see chapter "Exposure Programs".

- Insert loaded film cassette (9) in the cassette carriage until the lock (10) engages.

**The cassette locks A must be placed up!**
- After positioning the patient swing in the cassette. The LED over the R key at the Multitimer switches off to let you know that the unit is ready for the exposure.

**Help Message**
Should the LED over the R key go on blinking, call up the help message H3 to look for the reason.
**List of Help Messages** see page 29.
Standard Exposure Program P1 and P11...

- The patient positions himself before the middle of the control mirror.

Pressing the height adjustment key ↑ automatically switches on the light localizer for 1 minute.

**NOTE**
Please make sure that the light beam strikes the eyes of the patient only very briefly.

... with Bite Block

- Using the ↑ and ↓ buttons, adjust unit height so that the bite block and the anterior teeth match up.
- Have the patient grip the handles.
- Have the patient bite the bite block at the indentation. The upper anterior teeth should be directly in the indentation, and the lower anterior teeth should be moved forward up to the stop.

... with Contact Segment

For patients without anterior teeth.

- Adjust the unit height so that contact segment and subnasals match up.
- The contact segment should be just under the patient’s nose.
- Ensure that the upper and lower jaws are lined up with each other. This is facilitated by a cotton roll.

**NOTE**
The height adjustment motor starts up slowly and then picks up speed. Motoric movement is accompanied by an acoustic signal.
- Make certain the spine is tilted slightly as shown. This moves the patient's cervical vertebrae into a more stretched out position. The cervical vertebrae "stretched out" ensures that the area of the anterior teeth is not over exposed. In special cases, it is also possible to position for sitting patients.

**CORRECT**

**INCORRECT**
• Swing out the mirror by pressing on A.
• Position the patient's head so that the bite plane is tilted slightly forward.
• Switch the light localizer on by pressing briefly on the height adjustment key ↑.

The light localizer serves for the correct positioning of the patient.

**NOTE**
Please make sure that the light beam strikes the eyes of the patient only very briefly.

**NOTE**
The light localizer switches off automatically after about 1 minute.

The horizontal light beam FH should go through the lower margins of the orbits and the upper margin of the external auditory orifices (Frankfurt Horizontal).

• For this reason the FH localizer (9) can be adjusted manually upwards and downwards.
• Finely adjust the head inclination for the FH line adjustment by tapping the buttons ↑ or ↓ for vertical unit movement.

The central light beam should be directed onto the center of the anterior teeth or the middle of the face.

• Align the center of the anterior teeth or the middle of the face to the central light line.
• Close the temple supports with knob (3).
• Insert contact spacer F (see page 18) and slide down until it makes contact with the front.
• Swing back the mirror.
• Have the patient take a small step toward the column.
• Recheck the FH position.
Exposure of the Temporo-mandibular Joint.
P6 Program with Head Positioner

- Insert the head positioner (see page 18).
- Remove bite block / contact segment.
- Using the ↑ and ↓ keys, adjust the unit height so that the ear olives and external auditory canals match.

- Position the patient’s head in the head positioner. Close the temple supports so that the ear fixations are inserted in the external auditory canals.
- Swing out the mirror.
- To set the correct position, switch on the light localizer by pressing the height adjustment key ↑.
  The horizontal light beam FH should go through the lower margins of the orbits and the upper margins of the external auditory orifices (Frankfurt Horizontal plane FH).
  For this reason the FH localizer (9) can be adjusted manually upwards and downwards.

- Ensure that the spine is slightly tilted as described before.
  (Have the patient take a small step toward the column).
- Close temple supports (3) with knob.
- Insert contact spacer F (see page 18) and slide down until it makes contact with the front.
- Swing back the mirror.
6.3 Selecting Data at the Multitimer

Select the Exposure Program
by pressing the – + keys.
The exposure program selected, e.g. P1, and the corresponding maximum exposure time are alternatively shown on the digital display.

Select Exposure Data
by tapping one of the four patient symbol keys.
The LED above the key will then light up, and the respective kV/mA matched pair will appear on the digital display.
The exposure data can be modified manually with the – + keys.
The LED over the patient symbol key is then no longer illuminated.
The mA value is the same for all kV values (see section “Program Values”).
The kV/mA matched values for the patient symbol keys are factory programmed. Should you need to modify these values, see the chapter entitled “Programming”. 
6.4 Releasing the Exposure

**CAUTION**
Operator: Observe the radiation protection guidelines explained, see page 5. Before releasing the exposure always check display for proper exposure data for the patient being radiographed.

- The exposure is released by keeping the exposure key pressed.

The rotation movement runs automatically in accordance with the exposure program selected.

For P6 program only
The rotation unit returns back into the start position after having completed the program part P6.1. Then have the patient open his mouth wide and initiate the second program part P6.2.

During radiation
the X-ray radiation indicator lights up. The radiation duration is additionally accompanied by an acoustic signal.

- The exposure ends when the LED over the R key flashes. Rotation and radiation automatically switch off.

Open the temple supports and have the patient step out.

Interrupting the Exposure
Automatic Exposure Blockage and Error Message see next page.

The program number (e.g. P1) is indicated at the Multitimer.

After terminating the exposure, the exposure time actually required is displayed.

After the exposure
remove the film cassette.

Press one of the return keys R twice.

After return travel to the start position and after loading the cassette with a new film the unit is automatically ready for another exposure. See section ‘Positioning the Patient’.

If no further exposures are to be made switch the unit OFF.
Interrupting the Exposure

If the exposure key is prematurely released, the exposure is interrupted and terminated.

The kV/mA value and the LED over key R blink at the Multitimer.

The exposure time passed until the interruption is shown.

Press the R key on the Multitimer twice.

Check patient positioning and repeat the exposure.

Automatic Exposure Blockage

(Protection of X-ray tube)

The automatic exposure blockage prevents premature triggering of a new exposure.

After the exposure key has been actuated, the automatic cool-down pause is indicated.

The LED over key R continues flashing until the cool-off time has elapsed.

The exposure cannot be triggered until the LED over key R has gone out.

Example see page 9.

Error Message E ...

Messages such as E2/01 in the kV/mA field indicate errors.

The LED over the R key blinks.

All unit functions are blocked.

- Press the key R on the Multitimer to reset display (poss. more than once).
- If the error message is still displayed turn OFF the unit and then turn it ON again.

If error message has disappeared, all unit functions are normal again.

For List of Error Messages with description of remedies see page 34
kV/mA values have been assigned to the four program buttons at the factory. For free programming the buttons can be programmed with different values. See chapter ‘Program Values’.

Programming Procedure

1. Push buttons – + to select program number P1... to be changed.
2. Push – + buttons to set desired kV value on the digital display.
3. Push memory button. The LED over the memory button blinks.
4. Push the patient symbol button to be reprogrammed. The LED above this button lights up. The LED above the memory button is switched off. The new values are now stored.

Programming is complete.
Please enter the new value in the ‘Freely programmed values’ table, see page 30.

Adjustment of the Exposure

The adjustment of the exposure is set to 03 at the factory. If the degree of exposure is to be changed, use the supplied screwdriver as shown in the illustration. During adjustment the corresponding switch position is briefly displayed (example 04).

- Step switch set to– = lower dose, lighter exposure
- Step switch set to+ = higher dose, darker exposure

**NOTE**
Changing the film density automatically alters the programmed kV/mA values. Refer to ‘Program Values’, see page 30.
You want to release an exposure but the Ready LED on Multitimer above the R key is still blinking:

⚠️ **CAUTION**

*In case of unit failure the test key T on the Multitimer must be pressed first (radiation protection measure!)*.

- Press the X-ray exposure key on Multitimer. H3/H4 help message appears on the kV/mA display.
- Read from the following list what is required to prepare the unit for the exposure.
- **Before** carrying out the corresponding indication, press return key R on the Multitimer to acknowledge the help message.

**Help Message H3**

- **H3 01**  Press one of the R buttons to return the rotation unit to the start position.
- **H3 04**  Swing in cassette holder up to stop.
- **H3 06**  Engage locking button on diaphragm wheel correctly.
- **H3 11**  Swing out cassette holder up to stop.
- **H3 12**  Press one of the R keys to move rotation unit in position for teleradiography.
- **H3 20**  Press R key on Multitimer to confirm exposure data.
9 Program Values

9.1 Program Values world-wide (except USA and Asia)

Intensifying Screen Kodak Lanex Regular (sensitive to green) with film Kodak T-Mat G, Agfa Ortholux. Differences in film density depending on film and development tolerances can be compensated by changing the position of the density switch (see page 28).

From 03 to 02 when the density is too high, from 03 to 04 when the density is too low.

Index 30

<table>
<thead>
<tr>
<th>Program</th>
<th>Program duration approx.</th>
<th>Exposure time</th>
<th>Factory-programmed values with a film density of 03</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>21s</td>
<td>11.3s</td>
<td>66/10 70/10 74/10 78/10</td>
</tr>
<tr>
<td>P6.1 + P6.2</td>
<td>21s + 21s</td>
<td>7.8s</td>
<td>68/10 72/10 76/10 80/10</td>
</tr>
<tr>
<td>P11</td>
<td>18s</td>
<td>11.3s</td>
<td>66/10 70/10 74/10 78/10</td>
</tr>
</tbody>
</table>

These values serve only as user reference times.

Possible kV/mA combinations – can be selected manually

<table>
<thead>
<tr>
<th>kV</th>
<th>mA</th>
</tr>
</thead>
<tbody>
<tr>
<td>60</td>
<td>10</td>
</tr>
<tr>
<td>62</td>
<td>10</td>
</tr>
<tr>
<td>64</td>
<td>10</td>
</tr>
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<td>66</td>
<td>10</td>
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<td>68</td>
<td>10</td>
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<td>70</td>
<td>10</td>
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<td>72</td>
<td>10</td>
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<td>74</td>
<td>10</td>
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<tr>
<td>76</td>
<td>10</td>
</tr>
<tr>
<td>78</td>
<td>10</td>
</tr>
<tr>
<td>80</td>
<td>10</td>
</tr>
</tbody>
</table>

Film and Processing Notes

The programmed values apply to Kodak T-Mat G and Agfa Ortholux films in combination with the Kodak Lanex Regular intensifying screen.

Process according to the manufacturer of the developing equipment's guidelines or follow instructions on the chemicals.
9.2 Program Values USA

Intensifying Screen Kodak Lanex Regular (sensitive to green) with film Kodak T-Mat G, Agfa Ortholux. Differences in film density depending on film and development tolerances can be compensated by changing the position of the density switch (see page 28). From 03 to 02 when the density is too high, from 03 to 04 when the density is too low.

Index 2A

<table>
<thead>
<tr>
<th>Program</th>
<th>Program duration approx.</th>
<th>Exposure time</th>
<th>Factory-programmed values with a film density of 03</th>
<th>Freely programmed values or values with other film density: … – please enter here –</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>21s</td>
<td>11.3s</td>
<td>66/10 70/10 74/10 78/10</td>
<td></td>
</tr>
<tr>
<td>P6.1 + P6.2</td>
<td>21s + 21s</td>
<td>7.8s</td>
<td>68/10 72/10 76/10 80/10</td>
<td></td>
</tr>
<tr>
<td>P11</td>
<td>18s</td>
<td>11.3s</td>
<td>66/10 70/10 74/10 78/10</td>
<td></td>
</tr>
</tbody>
</table>

These values serve only as user reference times.

By actuating one of the two smaller or one of the two larger patient symbols, you can change between the two kv/mA pair groups. By actuating the kv/mA + - keys, you can select the individual values of the kv/mA groups.

Possible kv/mA value pairs – manually selectable with the two smaller patient symbols

<table>
<thead>
<tr>
<th>60 60 60 62 64 66 68 70 72 74 76</th>
<th>kv</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 7 10 10 10 10 10 10 10 10 10</td>
<td>mA</td>
</tr>
</tbody>
</table>

Possible kv/mA value pairs – manually selectable with the two larger patient symbols

<table>
<thead>
<tr>
<th>60 62 64 66 68 70 72 74 76 78 80</th>
<th>kv</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 10 10 10 10 10 10 10 10 10 10</td>
<td>mA</td>
</tr>
</tbody>
</table>

Film and Processing Notes

The programmed values apply to Kodak T-Mat G and Agfa Ortholux films in combination with the Kodak Lanex Regular intensifying screen.

Process according to the manufacturer of the developing equipment's guidelines or follow instructions on the chemicals.
### Program Values Asia

Intensifying Screen Kodak Lanex Regular (sensitive to green) with film Kodak T-Mat G, Agfa Ortholux. Differences in film density depending on film and development tolerances can be compensated by changing the position of the density switch (see page 28). From 03 to 02 when the density is too high, from 03 to 04 when the density is too low.

**Index 1A**

<table>
<thead>
<tr>
<th>Program</th>
<th>Program duration approx.</th>
<th>Exposure time</th>
<th>Factory-programmed values with a film density of 03</th>
<th>Freely programmed values or values with other film density: ... – please enter here –</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>21s</td>
<td>11.3s</td>
<td>68/10 72/10 76/11 78/11</td>
<td></td>
</tr>
<tr>
<td>P6.1 + P6.2</td>
<td>21s + 21s</td>
<td>7.8s</td>
<td>70/10 74/10 78/11 80/11</td>
<td></td>
</tr>
<tr>
<td>P11</td>
<td>18s</td>
<td>11.3s</td>
<td>68/10 72/10 76/11 78/11</td>
<td></td>
</tr>
</tbody>
</table>

These values serve only as user reference times.

By actuating one of the two smaller or one of the two larger patient symbols, you can change between the two kv/mA pair groups. By actuating the kv/mA + - keys, you can select the individual values of the kv/mA groups.

**Possible kv/mA value pairs – manually selectable with the two smaller patient symbols**

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<tr>
<th></th>
<th>60</th>
<th>62</th>
<th>64</th>
<th>66</th>
<th>68</th>
<th>70</th>
<th>72</th>
<th>74</th>
<th>76</th>
<th>78</th>
<th>80</th>
<th>kV</th>
<th>mA</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
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<td></td>
<td></td>
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</tbody>
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**Possible kv/mA value pairs – manually selectable with the two larger patient symbols**

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<th>80</th>
<th>kV</th>
<th>mA</th>
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</table>

**Film and Processing Notes**

The programmed values apply to Kodak T-Mat G and Agfa Ortholux films in combination with the Kodak Lanex Regular intensifying screen.

Process according to the manufacturer of the developing equipment's guidelines or follow instructions on the chemicals.
10 Care the surfaces

Cleaning

Remove dirt and disinfectant residues regularly with a normal commercial cleaning medium.
Do not allow any liquid to enter the ventilating slots!
To avoid permanent staining, quickly clean away any medicament that spills on the surface.
Do not clean the lens of the laser with alcohol.

Disinfecting

Disinfecting is possible by spraying or wiping with surface disinfectant. Observe the directions of the manufacturer when using! Use only tested and approved media!

**Do not use** agents containing the components phenol, peracetic acid, peroxide and other agents splitting up oxygen, sodium hypochlorite and agents splitting off iodine.
11 List of Error Messages

11.1 Error Messages

<table>
<thead>
<tr>
<th>Error message E..</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>E1 01 One of the keys on the Multitimer was pressed during start-up of the unit.</td>
<td>Press R key on Multitimer to reset display.</td>
</tr>
<tr>
<td>E1 03 Faulty communication with the unit.</td>
<td>Press R key on Multitimer to reset display.</td>
</tr>
<tr>
<td>E2 01 Appears after pressing exposure key. X-ray head overheated. Cool-down periods ignored.</td>
<td>Press R key on Multitimer to reset display.</td>
</tr>
<tr>
<td>E2 03 Faulty communication with the Multitimer.</td>
<td>Press R key on Multitimer to reset display.</td>
</tr>
<tr>
<td>E2 04 Zero-Power was re-initialized.</td>
<td>Press R key on Multitimer to reset display. Freely programmed values (see page 30) are canceled. Please reprogram (see page 28).</td>
</tr>
<tr>
<td>E2 10 Max. radiation time of program exceeded.</td>
<td>Press R key on Multitimer to reset display.</td>
</tr>
<tr>
<td>E2 20 Appears after pressing the exposure key, e.g. if X-ray room door contact not closed. Exposure lead in Multitimer cable damaged.</td>
<td>Close X-ray room door. Press R key on Multitimer to reset display. If error reappears, poss. break in cable.</td>
</tr>
<tr>
<td>E2 35 Invalid data in data memory.</td>
<td>Press R key on Multitimer to reset display.</td>
</tr>
<tr>
<td>E3 09 Movement of height adjustment obstructed.</td>
<td>Check that height adjustment can move freely. Press R key on Multitimer to reset display.</td>
</tr>
<tr>
<td><strong>WARNING</strong></td>
<td></td>
</tr>
<tr>
<td>If this error message occurs repeatedly during the motor-driven up and down movement of the rotary unit, especially when no patient is positioned, switch off the unit immediately and inform your service engineer without delay.</td>
<td></td>
</tr>
<tr>
<td>E3 36 Film cassette swings out of panorama exposure position during exposure.</td>
<td>Swing panoramic cassette holder into panorama position. Press R key on Multitimer to reset display.</td>
</tr>
</tbody>
</table>

In case of an error message not contained in this list, switch the unit OFF and ON again.

**CAUTION**

If an error is displayed again after switching the unit off and then on again, please contact your service technician.
12 Inspection and Maintenance

As the operator, you should ensure the safety and reliability of your system by performing maintenance on it at regular intervals (at least once annually) or having this work performed by your dental dealership.

**Annual inspection performed by the operator or other authorized personnel**

As the operator, you should ensure the safety and reliability of your system by performing maintenance on it at regular intervals (at least once annually) or having this work performed by your dental dealership.

**Maintenance performed by the service technician**

In addition to the scheduled annual inspection by the user or persons contracted to perform this, a maintenance inspection must be performed after 4, 7, 10 and then every two years.

**Checking image quality**

At regular intervals, however at least once a year, the user must evaluate the image quality.

For X-rays requiring developing of films, the increase in the kV/mA value pairs and the change in the density serve as the evaluation criterion (for cephalometry, the increase in switching times as well).

If these evaluation criteria are fulfilled independently of the patient anatomy and of possible sources of error, such as developing of film or patient positioning, contact a service technician immediately in order to eliminate possible unit faults.

In addition it is necessary to observe country-specific requirements.

Furthermore, we would like to call your attention to the brochures of film manufacturers and also to our Quality Image Service. For this, please contact your dental dealer or the manufacturer directly.
We reserve the right to make any alterations which may be due to technical improvements.