

A white medical device, possibly a scale or a specialized weighing machine, with a control panel and a vertical scale. The device has a white body and a grey control panel. The scale is marked with the word "LATTIS" and has a vertical line with a horizontal bar at the top. The device is mounted on a stand with four legs. The background is white.

ENGLISH



Congratulations on your purchase of a Trophy radiography system. Thank you for your confidence in our products and we will do all in our power to ensure your complete satisfaction.

You now have the User Guide for the TROPHYPAN, the digital extra-oral X-ray unit. We recommend that you thoroughly familiarize yourself with this Guide in order to make the most effective use of your system.

The information contained in this Guide may be subject to modification without notice, justification or notification to the persons concerned.

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The RVG technology is the subject of an international patent registered by Trophy Radiologie.

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Revision date: 04/2003

TROPHYPAN complies with Directive 93/42/CEE relating to medical equipment.



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SECTION 9:REPLACEMENT PARTS

Notes for the User

X-rays are not innocuous and can be dangerous if not used properly. Therefore, the instructions and warnings contained in this Guide must be carefully followed.

As a manufacturer of radiology units which conform to the most stringent radiological protection standards in force throughout the world, Trophy's know-how guarantees the maximum degree of protection against radiation hazards.

Nonetheless, you are handling a radiology unit which is specially designed to emit a dose of x-rays in order to carry out a medical diagnosis with the aid of a Trophy digital imaging system (exclusive patent).

The room in which your radiology unit is to be installed must comply with all official regulations applicable to protection against radiation.

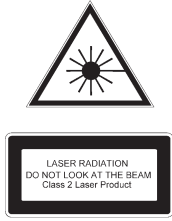
Your dealer will be pleased to assist with the initial use of your radiology unit and will supply any relevant information you may require.

The "WARNING" and "IONIZING RADIATION" symbols signify:
"WARNING: IONIZING RADIATION".

To install, operate and service the unit, follow the instructions contained in this Guide.



Warnings and safety instructions



CAUTION Laser radiation. Do not look into the beam.

Class 2 laser product

This unit emits laser radiation.

For maximum safety, advise the patient not to look at the beam.

Before illuminating the beams, lower the Frankfurt plane beam to the lowest level.

While making adjustments, ensure that the beam is not directed into the patient's eyes.

DANGER This is an electrical unit. Do not expose it to water spray.

Such action may cause an electric shock or a malfunction of the unit.

WARNING The user is responsible for the operation and maintenance of this unit.

This unit must only be operated by legally qualified persons.

The cover of the unit must not be opened by the operator.

When necessary, inspection and maintenance operations should only be carried out by an approved Trophy technician.

WARNING This unit must be installed in x-ray room which complies with current installation standards.

From this location, visual or audio communication must be maintained with the patient, together with access to the control interface during exposure.

WARNING The TROPHYPAN unit has been designed to comply with European and international medical standards. In order to ensure conformity, the PCI interface board must be installed in a computer configuration which conforms to IEC 950 Standard.

The PC and the peripheral equipment connected to it must not be located in the immediate vicinity of the patient, thus at least 1.5 m from the panoramic unit.

For details of the data processing system (PC and screen), refer to the installation guides for your computer. Sufficient clear space must be left around the CPU in order to ensure that it is properly ventilated.

In order to obtain maximum image quality and visual comfort, the screen should be positioned so as to avoid direct light reflections (internal or external lighting).

WARNING Do not operate the unit if there is the threat of an earthquake.

Following an earthquake, ensure that the unit is operating satisfactorily before using it again.

Failure to observe this precaution may expose patients to hazards.

WARNING X-ray equipment can be hazardous to patients and the operator if the exposure safety factors and operating instructions are not observed.

WARNING Do not place objects within the field of operation of the unit.

WARNING We recommend that the patient is wearing a protectrice lead-lined apron, unless other Radiation Protection Protocols apply locally.

Ensure that any parts of the unit which may come into contact with the patient and the operator have been disinfected after each patient has been exposed to X-rays.

While adjusting the height of the unit, the operator must ensure that the patient is kept clear of the mechanism.

When the unit is not in use, ensure that the ON/OFF switch is set to OFF (O).

If the unit develops a fault, switch it off (O) and display a notice 'Unserviceable'.

WARNING To dispose of the unit and/or its components, contact our representatives or our Company.

WARNING Do not rotate the arm unit by hand as this may damage the unit.

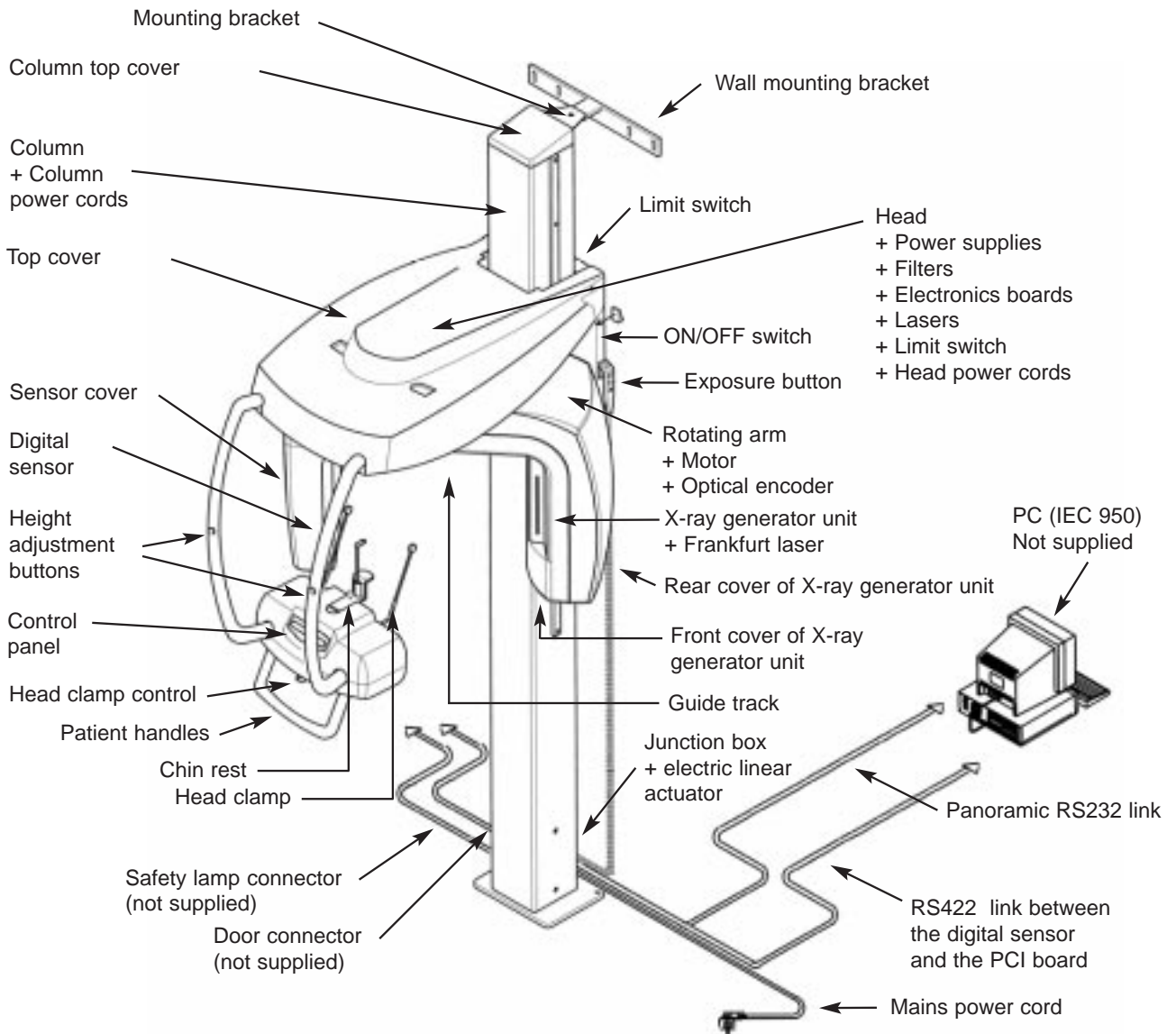
WARNING The operator must ask the patient to refrain from moving during the entire period of exposure.

WARNING The operator must ask the patient to refrain from moving until the ARM UNIT has stopped moving and throughout the RESET movement.

SECTION 1

FUNCTIONAL DESCRIPTION

Functional description of the panoramic unit



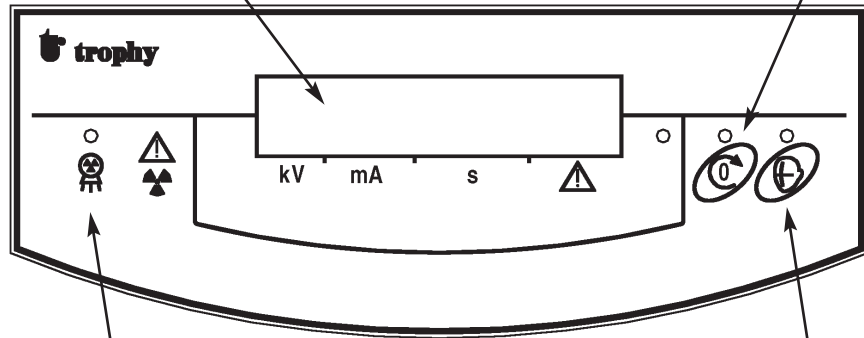
Operating controls

Operating controls on the TROPHYPAN

A/ The control panel

Display of the selected exposure parameters

Motion reset



X-ray emission warning lamp

Patient positioning lasers turned on

B/ The exposure button



Operating controls on the PC

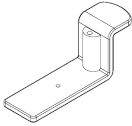
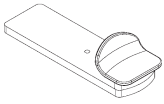
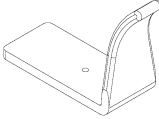
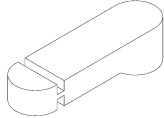
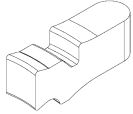


The graphic interface



(Refer to the next section for a description of the graphic user interface.)

Accessories

The following accessories, used for positioning the patient, are supplied with the unit in a separate carrying case:

Product	Code	Description	Quantity
	JR 265	Panoramic chinrest (supplied fitted to the unit)	1
	JR 263	Chinrest for the Maxillary Sinuses program	1
	JR 264	Nasal support for the TMJ program	1
	HY 048	Standard bite block	6
	HT 182	Bite block for 'Edentulous patients'	2
	FC 020	Bite block mounting	2
	BD 103	Plastic-coated protective covers (box of 500 items)	1

SECTION 2

DATA PROCESSING CONFIGURATIONS REQUIRED IN ORDER TO SAFEGUARD IMAGE QUALITY

Environment

For details of the data processing hardware (PC, monitor, printer), refer to the installation and user guides for your PC. Sufficient space must be left around the PC in order to provide satisfactory ventilation. To benefit from the enhanced image quality and for greater visual comfort, the screen should be oriented in such a way as to prevent direct reflections of light (room lighting and daylight).

Configuration of the display in Windows

Refer to the information in the table below to configure the graphics card according to the Trophy imaging peripherals which have already been installed.

Color	800x600	1024x768	1200x1024
True color 24 bits	RVG TROPHYPAN STV	RVG* TROPHYPAN* STV*	RVG* TROPHYPAN* STV*
True color 32 bits	RVG TROPHYPAN STV	RVG* TROPHYPAN* STV*	RVG* TROPHYPAN* STV*

NOTE
For optimal visual comfort it is recommended that TROPHYPAN should be used in 1024 x 768 mode.

* This resolution is only possible with SVGA cards containing 4 MB of video memory.

Minimum configuration of the PC

TROPHYPAN can only be used if the minimum configuration of the PC is as follows:

Microprocessor	Pentium III or equivalent
Standards	IEC 950
Hard disk	20 GB
Graphics card (SVGA)	4 MB
RAM (random access memory)	64 MB (Windows 98, 2nd edition), 128 MB (Windows 2000, XP, Me)
Operating system	Windows 98 (2nd edition), Me, 2000, XP
Type of PC	Multimedia
Available hardware slots	One PCI slot + One RS 232 serial communication port
Drivers	CD-ROM + floppy disk
Data backup system	high capacity magnetic medium

NOTE
The minimum configuration may change if an STV or an RVG is connected to the PC or if the Trophy Management software is used (refer to the relevant installation guides).

Quality of the monitors

Data processing monitors of different sizes are available (15-inch, 17-inch, 19-inch and 21-inch) as well as different qualities of tube (standard, high contrast, high definition). Since the quality of the TROPHYPAN image is dependent on the quality of the tube, the preferred choice is a monitor with high contrast and high definition, characterized by its deep black tube. The size (pitch) of the smallest pixel which can be displayed is equally important and determines the sharpness of the display; the pitch should be as fine as possible. The monitor is the final link in the digital imaging chain, so it must be selected with great care.

As far as flat-screen monitors are concerned, it is still difficult to find a version which is capable of satisfactorily reproducing the gray scales. Low-cost products with 15-inch screens should be avoided in favor of 17-inch versions. Particular attention should be paid to the fields of view which are a feature of every flat screen, as well as its luminosity. The higher the values for these parameters, the better the screen.

SECTION 3

THE GRAPHIC INTERFACE

The Trophy Windows software program forms the user interface with TROPHYPAN. Thus, the TROPHYPAN images are generated in the same way as STV or RVG images.

Trophy Windows was specially designed for use with Trophy sensors, which is why only this software program is able to exploit all the characteristics of the sensors.

NOTE

Also refer to the *User Guide* and the *Trophy Windows online Help* function.

In order to acquire a TROPHYPAN image (Panoramic, Sinus, TMJ), begin by selecting a patient medical record and then access the Trophy Windows Image Processing Module.

Activate the TROPHYPAN graphic interface. To do this, click on the acquisition icon (shown on the opposite page). The graphic interface is displayed.

At this stage it is possible to choose the type of image to be produced and to enter the exposure parameters. All the actions initiated on the graphic interface have a direct effect on the panoramic unit, to the extent that it is then only necessary to position the patient and press the exposure button as soon as all the options have been selected.

The image is displayed in real time in the Preview window. When acquisition is complete, the graphic interface disappears from the screen and is replaced by the Trophy Windows software program. The newly-acquired image is displayed in this program so that it can be read with the aid of the various digital imaging tools.

Acquisition icon



The configuration of the graphic interface is as shown below:

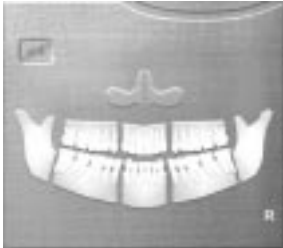


- ① **Image Preview window:** receives the image in real time as the tubehead is rotated.
- ② **Summary of Parameters and Selected Program window:** confirms the current settings of the panoramic unit. This information is stored in the TROPHYPAN image and can be accessed by clicking on the image with the right mouse button. It should be noted that this information is also incorporated in every image which is printed out via Trophy Windows.
- ③ **System Status window:** displays the various messages originating from the panoramic unit.

- ④ **Main Window Selector.** By clicking on the button or on the text, the User can display the different functional blocks: Program, Patient or Parameters.
- ⑤ **Functional Blocks:** click on the button or on the names "Program", "Patient" or "Parameters" to enter, in stages, all the information required for acquiring the image.

Functional blocks

Program



Configured as shown opposite, the Program block is used to select the type of image to be produced. Click on the segments to be X-rayed (posterior, anterior, TMJ or sinus). Only the segments which are highlighted on the display will be exposed to the X-rays and will appear on the image.

NOTE Nonetheless, the areas are approximate and are dependent on correct positioning of the patient and his/her morphology.

To produce a full panoramic image, the complete dental arch must be selected.

The Maxillary Sinuses program cannot be activated at the same time as a segment of the dental arch or the TMJs.

The TMJ program is selected by clicking on one of the TMJs. It consists of views of the left and right TMJs with the mouth either open or closed (at the choice of the operator).

A 4-view TMJ image can be produced by clicking on the "x4" icon. This consists of views of the left and right TMJs with the mouth open and the mouth closed.

The panoramic unit then makes an initial pass. Acquisition of the image is then suspended to allow time to issue new instructions for positioning the patient.

The panoramic unit then makes a return pass before recording the last two views. If the 'x4' icon is not activated, the image is acquired at the end of the first pass.

Patient

Configured as shown opposite, the Patient block is used to select the morphology of the patient to be X-rayed. First choose the basic morphology (Adult, Child), then the relative morphology (small, medium, large). Accurate selection of these parameters will influence the subsequent high quality of the image.

Example: If the Child/Medium morphology is selected while X-raying a rather stout adult, the image will be too light (under-exposed).



ATTENTION

This diagram is a representation of the jaw, viewed from the patient. The right side diagram shows the right side of the patient.

Depending on the configuration of Trophy Windows (refer to the 'Preferences' menu) the image may be viewed in mirror effect or as shown above.



Parameters

Configured as shown opposite, the exposure parameters are preprogrammed on the basis of the information supplied in the preceding two functional blocks. However, the kilovolt (kV) and milliampere (mA) values can be modified.

Then simply click on the + et – buttons provided for this purpose. At this stage it is possible to store the parameters by clicking on the "Mem" key in order to retain the previously-selected modifications to the size and morphology. If the "Mem" key is not used, the default parameters will be applied again when the next image is acquired.

As a general rule, the kilovolt values should be increased if the bone structure of the patient is dense. On the other hand, the kilovolt values should be reduced for patients with low bone density (children, elderly persons). Thus, it may be necessary to adjust the milliampere values in order to obtain darker images (higher mA values) or lighter images (lower mA values).

NOTE The higher the kilovolt values, the lower the contrast on the image. However, the clinical information is incorporated in the image and it can then be revealed by deploying the Highlight tool (refer to the digital tools).

Table of radiographic parameters preprogrammed by the manufacturer:

Morphology Parameters	Small		Medium		Large	
	kV	mA	kV	mA	kV	mA
Child	70	5.0	70	8.0	70	10.0
Adult	70	8.0	70	10.0	70	12.0

These parameters can be modified at any time by the User by accessing the "Parameters" functional block in the graphic interface (refer to Section 2).

Other functions



WARNING

Do not direct the laser beams into the eyes of the patient. Warn the patient of the potential risk.

Activate Laser Beams: this function is used to activate the light beams representing the Frankfurt plane, the canine plane and the sagittal-median plane, which are directed toward the patient's face. These laser beams assist with correctly positioning the patient in the panoramic unit. Also refer to the section of this Guide dealing with positioning of the patient.

NOTE The light beams are automatically turned off after a few seconds. They can be reactivated from the PC or directly from the panoramic unit.



Reset: this function resets the panoramic unit to its start position before producing a new image. If the camera is not in its start position, a message is displayed and the exposure button is disabled.



X-rays ON/OFF: this function is used to operate the panoramic unit without emitting X-rays ("X-Rays OFF" mode). If the X-ray emissions are turned off, the message 'Demo' is displayed in the status window in place of the "Ready" message.



NOTE In order to instill an atmosphere of confidence in children, it is possible to position them and simulate the acquisition of an image before actually acquiring the image.



Sound ON / OFF: this function is used to mute the audible messages emitted by the graphic interface .



Information: this function is used to identify the unit (by its serial number) and the installed software program. It can also be used to reinitialize the camera and to load the default parameters set by the manufacturer.



Exit from the TROPHYPAN graphic interface: this function is used to return to Trophy Windows. Warning: any modifications to the exposure parameters which have not been stored will be lost. If this button is pressed during the acquisition of an image, the emission of X-rays is immediately interrupted.

NOTE Do not exit from the Control Panel while an image is being acquired, otherwise it will be irrevocably lost.

NOTE The emission of X-rays is only possible if the graphic interface of the panoramic unit is active (PC turned on and control window in the foreground and visible). In this case, the message "Ready" is displayed.

Warning and indicator lamps



Generator ready

When this symbol is green, the generator is emitting X-rays when the exposure button is activated. When it is black, the exposure button is disabled, preventing the emission of X-rays.

This symbol changes color when the "X-Rays ON/OFF" button is pressed (refer to the earlier section in this Guide).

If the generator is not ready, a message is displayed in the System Status window, indicating the action to be taken in order to be able to produce an image (this message is associated with a code, enabling more detailed information to be found in this Guide). Otherwise, the "Ready" message is displayed.



If this symbol is yellow, X-rays are being emitted.

Thus it is normal for this symbol to change to black during the production of images comprising non-adjacent blocks, since the X-rays are not emitted while the generator is being moved toward the next zone to be X-rayed. In every other case, the symbol is black.

NOTE Also refer to the safety regulations relating to protection against ionizing radiation, as applied in the User's country.



Cooling of the generator

The countdown indicates the time required for cooling the generator before a new image can be produced with the selected exposure parameters (mm:ss). Until this count reaches zero, the exposure button is disabled and the "Generator Ready" icon is black.

This cooling period varies automatically according to the frequency of image acquisitions and the selected parameters. This is a safety precaution designed to guarantee the operating life of the generator.

Cooling-off time between 2 image acquisitions:

Program	Exposure parameters	Cooling period
Full Panoramic	60 kV – 2 mA	10 seconds
Full Panoramic	70 kV – 10 mA	1 minute 10 seconds
Full Panoramic	90 kV – 10 mA	1 minute 40 seconds
Full Panoramic	80 kV – 15 mA	2 minutes 50 seconds

SECTION 4

X-RAY PROCEDURES

Preparations before commissioning or during a long period of inactivity

By virtue of its technology, the TROPHYPAN is very easy to use and does not require any special procedures before it is commissioned.

However, to increase the operating life of the X-ray tube, if the unit has not been used for several days it is recommended that the following procedure should be applied

(while observing the safety regulations for protection against X-rays and with no patient in the unit):

1. Set the camera to 70 kV – 6.3 mA and produce a panoramic image.
2. Set the camera to 80 kV – 10 mA and produce a panoramic image.
3. Set the camera to 85 kV – 10 mA and produce a panoramic image.

You can then use the unit in the normal way.

Step-by-step instructions for acquiring a TROPHYPAN image



1. Start Trophy Windows and open (or create) the medical record for the patient concerned.
2. Access the Image Processing Module.
3. Click on the TROPHYPAN acquisition icon to open the graphic interface.
4. Check that the "Ready" message is displayed in the System Status window. If it is not displayed, click on the "Motion Reset" button.
5. Choose the program and the patient type then, if necessary, adjust the kilovolt and milliamperage values.
6. In the Overview window check that the selected parameters conform to the examination you wish to perform.
7. Position the patient in the unit, rigorously observing the instructions specified in the "Patient Positioning" section of this Guide (see below). These instructions vary according to the selected program.
8. Leave the irradiation field and initiate acquisition of the image, holding down the exposure button until the image has been acquired.
9. The image is displayed in real time in the Preview window.
10. Verify that the image quality is satisfactory (positioning, etc.).
11. Release the patient.
12. Analyze the image, making use of the Trophy Windows image processing tools.

NOTE

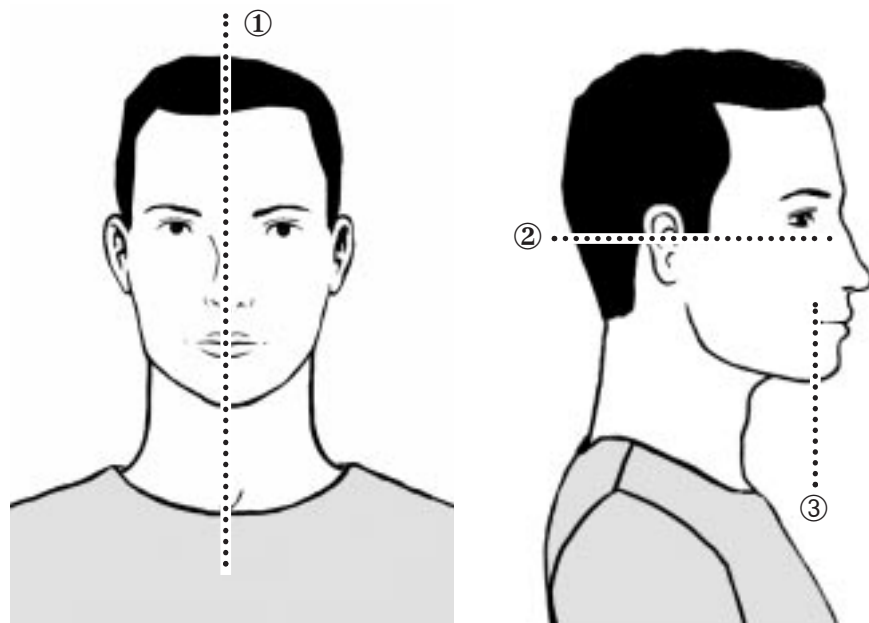
The acquisition and emission of X-rays can be terminated at any time by releasing the exposure button.

Procedures for positioning the patient according to the selected program

Radiological settings

With the TROPHYPAN, you can position your patient with the aid of 3 reference planes, identified by 3 laser beams:

- ① The sagittal-median plane
- ② The Frankfurt plane
- ③ The canine plane



① The sagittal-median plane

Adjust the position of the patient's face by aligning the sagittal-median laser beam with the sagittal-median plane of the patient.

The position of the patient's face is adjusted manually and is held in position by the 2 lateral head clamps.

② The Frankfurt plane

Adjust the Frankfurt plane with the aid of the button which is accessible on the X-ray generator unit. The laser beam must coincide with the auricular-orbital plane of the patient. If necessary, adjust the height of the sliding unit, using the adjusting buttons situated on the tubes.

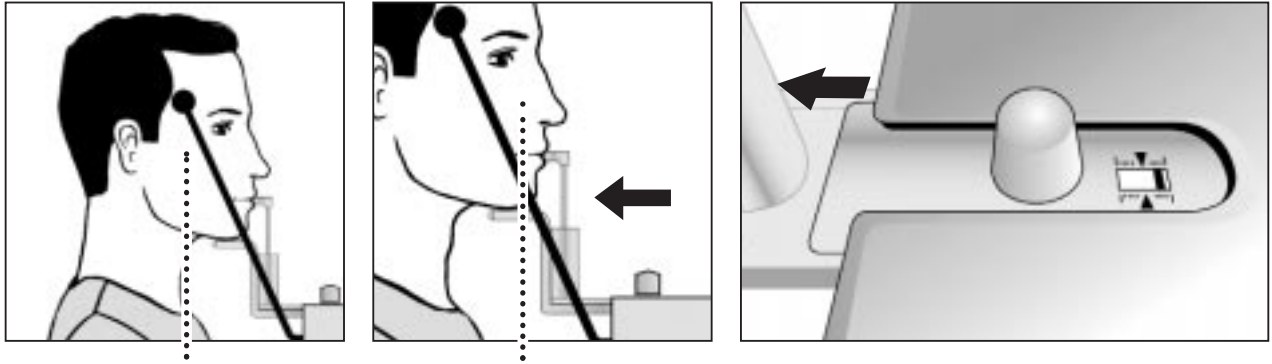
③ The canine plane

Adjust the canine plane by centering it on the canine of the patient. The upper canine of the patient acts as the reference for centering the patient in the section plane. Ensure that the apex points of the incisors are visible on the image.

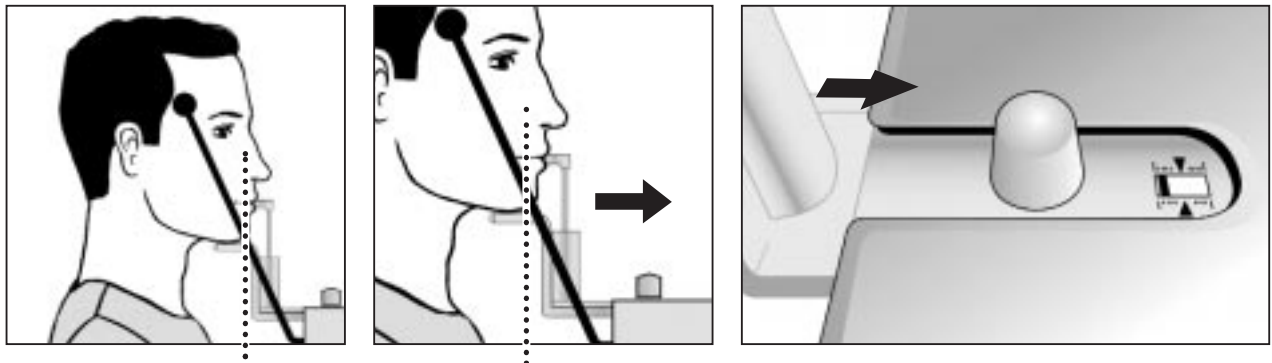
If this is not the case, adjust the position of the patient's face. Move the chinrest with the aid of the button situated in the center of the chinrest.

• Case 1:

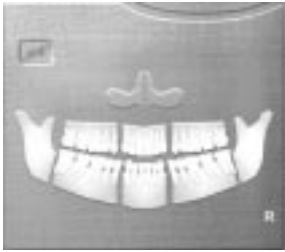
If the laser beam from the canine is set too far away from the patient's face, move the chinrest support backward, using the graduation as a guide.

**• Case 2:**

If the laser beam from the canine is set too close to the patient's face, move the chinrest support forward, using the graduation as a guide.



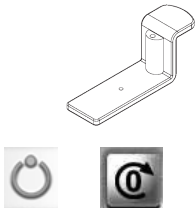
NOTE Never exceed the limits of the graduation.



Standard panoramic program

The procedure for positioning the patient is described below. This procedure must be rigidly observed.

It is summarized in point 7 of the step-by-step instructions described above. Once the procedure has been implemented, follow the subsequent step-by-step instructions as far as point 12.



1. Install the chinrest support and the bite block provided for the panoramic type of image. Secure the support by rotating the adjusting button so that the "0" reference is aligned with the reference mark.
2. Open the side arms of the head clamp.
3. Check that the "Ready" message is displayed on the control panel. If not, press the "Reset Motion" button on the control panel or from the graphic interface in order to reset the arm to its initial position.



NOTE Ask the patient to remove any metallic object (spectacles, hearing aids, earrings, necklaces, etc.) which may adversely affect the quality of the X-ray image.

We recommend that the patient is wearing a protective lead-lined apron, unless other Radiation Protection Protocols apply locally.

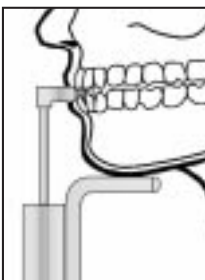
4. Position the patient in the unit.



NOTE The patient must stand upright, with his/her hands on the lower handle and his/her feet slightly forward. This positioning is essential in order to release the nape of the neck of the patient and reduce the shadow of the column transferred to the image.

Adjust the height of the unit, using the buttons fitted to the vertical pillars. You can activate one (or both) switches by simply pressing them. Then adjust the height of the camera in such a way that the position of the chinrest support is at the same height as the patient's chin. Then release the button.

4.



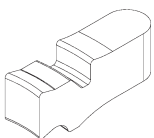
5. Ask the patient to bite into the recesses in the bite block and to place his/her chin on the chinrest support. Ensure that the bite block is correctly centered on the incisors and that the occlusion is produced in the recess of the bite block.

NOTE The bite block must be protected by a plastic-coated cover.

If the patient is edentulous, or if the standard bite block is not compatible with the dentition of the patient, you can replace it with the bite block for edentulous patients.

If this bite block is not satisfactory, we advise you to remove the bite block and ask the patient to bite on a cotton reel in order to slightly open his/her jaw.

NOTE The bite block for edentulous patients is not supplied with a protective plastic-coated cover. For this reason, ensure that the bite block is sterilized using cold sterilization techniques before using on another patient.

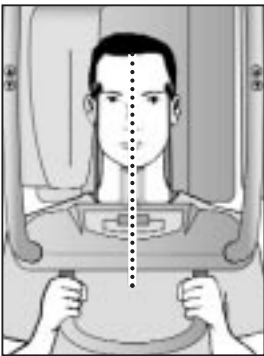


5.

6. Move the button of the Frankfurt plane to the lower position in order to avoid directing the laser beam into the eyes. Turn on the laser beams by means of the "Activate Laser Beams" button on the control panel of the panoramic unit or on the graphic interface.
The laser beams can be turned on or off at any time by simply pressing the button. In any event, the beams are automatically turned off after a period of 60 seconds.



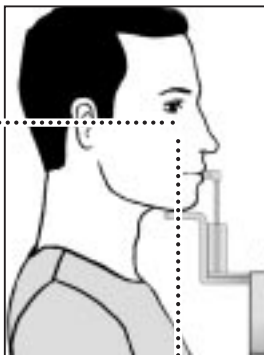
WARNING Laser Radiation. Do not stare directly into the beam. Class 2 laser product.



7.

7. Adjust the position of the patient's head in such a way that the sagittal-median plane of the face coincides with the median beam. The reference line is an imaginary line which passes through the center of the two incisors and the mid-nasal point between the two ocular orbits.

8. Adjust the button of the Frankfurt plane so that the light beam follows an imaginary line which passes below the orbit of the patient and level with the tragus. This adjustment can be made:
- a. By means of the cursor located on the generator of the panoramic unit
 - a. And by adjusting the height of the unit in order to orientate the patient's head by rotation. The fixed point should be located level with the recesses in the bite block.



8. 9.

NOTE Check that the patient is still standing upright with his/her shoulders relaxed. His/her hands should be holding the handle without applying any force. It is important that the patient remains relaxed in order to prevent any movement while the tubehead is rotating and to lower the shoulders.

9. Ask the patient to smile, then check the alignment of the vertical beam with the upper canine of the patient. If this is not the case (due to major prognathous or other deformities in the patient), the position of the patient must be adjusted in such a way that the set of incisors is in the section plane. Then move the chinrest, using the central button, so that the beam coincides with the canine. Use the graduated scale as a reference. Do not exceed the graduated scale. Check that the sagittal-median plane and the Frankfurt plane are still correctly adjusted.
10. Secure the side arms of the head clamp in order to immobilize the patient's head.
11. The patient is ready for acquisition of the X-ray image. Ensure that the patient's shoulders are lowered and that his/her back is straight. Ask him/her to remain immobile and to swallow so that his/her tongue is in contact with the palate.

12. The image can now be acquired.
Make sure that you leave the room or that you move well away from the camera in accordance with current regulations.

Press the exposure button, holding it down until the image has been acquired. An audible beep and two yellow indicator lamps (one on the control panel and one on the graphic interface) indicate that X-rays are being emitted. A voice message reminds the patient to keep still.

In the event of a problem, you can interrupt the image acquisition process at any time by releasing the exposure button.

In the event of a technical problem, a prompt is displayed on the graphic interface and on the camera control panel. Make a note of the error code and refer to the section "Technical Problems".

13. When the image has been acquired, check the quality of the image obtained, then open the head clamp and release the patient.

WARNING When the "Reset Motion" button is pressed - the button is accessible from the control panel or from the graphic interface-the arm rotates once before returning to its initial position. Stand clear of the arc of rotation and ensure that the patient is immobile in the panoramic unit.

The unit can be reset even if the patient is still in position in the panoramic unit. However, it is essential to ensure that the patient does not move while the unit is rotating.

Pediatric panoramic program

Before acquiring an image of the child's mouth, you can rotate the unit without emitting X-rays, in order to reassure the child and explain to him/her how the device works.



In this case, simply click on the icon "Rotation without X-rays" on the graphic interface.

To disable this function, simply click on this icon again. Your panoramic unit is now ready to acquire another image.

The procedure for positioning the patient is described below. This procedure must be rigidly observed.



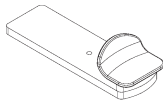
Follow the same procedure as described in the section "Step-by-step instructions for producing a TROPHYPAN image". At point 5, click on the "child" icon to select the type of patient.

The procedure for positioning the patient (point 7) must be exactly the same as described in the Standard Panoramic program above.

Maxillary sinuses program

The procedure for positioning the patient is described below. This procedure must be rigidly observed.

Follow the same procedure as described in the section "Step-by-step instructions for producing a TROPHYPAN image". At point 5, click on the "sinus" icon to select the type of program.

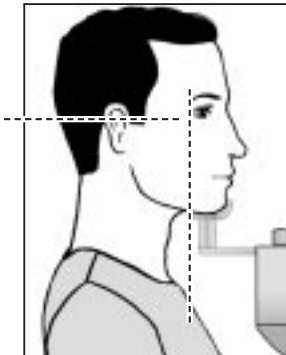


The procedure for positioning the patient (point 7) is the same as the Standard Panoramic program described above, with the following minor differences:

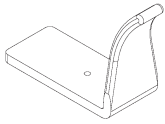
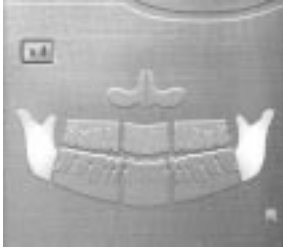
- As the patient is being positioned in the panoramic unit, be sure to use a chinrest support that is compatible with the "Sinus" mode. Secure the support by rotating the adjusting button so that the "0v" reference is aligned with the reference mark.

The procedure for adjusting the position of the patient in the section plane differs slightly from the panoramic procedure:

- Adjust the position of the patient's head so that the sagittal-median plane of the face coincides with the median beam.
- Use the cursor, located on the casing of the panoramic unit, to set the level of the Frankfurt plane. If it is not directed through the Frankfurt plan of the patient, the laser beam must remain parallel to the Frankfurt plane.
- Check that the canine section plane beam coincides with the outer corner of the eye. If necessary, rotate the adjustment button on the chinrest support in order to slightly reposition the patient's face.



2-section lateral TMJs program



The procedure for positioning the patient is described below. This procedure must be rigidly observed.

Follow the same procedure as described in the section "Step-by-step instructions for producing a TROPHYPAN image". At point 5, click on one of the "TMJ" icons to select the type of program. The "2-View Lateral TMJs" program is selected.

At point 7, as the patient is being positioned in the panoramic unit, be sure to use the nasal support designed for the "TMJ" program. Secure the support by rotating the adjusting button so that the "0" reference is aligned with the reference mark.

- a) Open the side arms of the head clamp.
- b) Check that the "Ready" message is displayed on the control panel. If not, press the "Reset Motion" button on the control panel or from the graphic interface in order to reset the arm to its initial position.

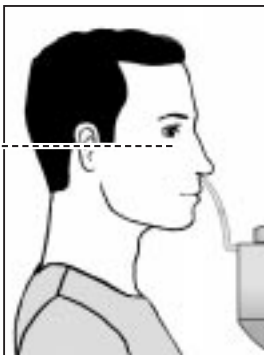
NOTE Ask the patient to remove any metallic object (spectacles, hearing aids, earrings, necklaces, etc.) which may adversely affect the quality of the X-ray image. We recommend that the patient is wearing a protectrice lead-lined apron, unless other Radiation Protection Protocols apply locally.

- c) Position the patient in the panoramic unit.

NOTE The patient must stand upright, with his/her hands on the lower handle and his/her feet slightly forward. This positioning is essential in order to release the nape of the neck of the patient and reduce the shadow of the column transferred to the image.

NOTE

The beam of the canine section plane is not used for positioning the patient for the 2-Section TMJ exposure program.



- d) Adjust the height of the TROPHYPAN, using the buttons fitted to the vertical pillars. You can activate one (or both) switches by simply pressing them. Then adjust the height of the unit in such a way that the nasal support is in contact with the patient's nose. Then release the button.
- e) Adjust the position of the patient's head so that the sagittal-median plane of the face coincides with the median beam.
- f) Use the cursor, located on the casing of the panoramic unit, to set the level of the Frankfurt plane. If it is not directed through the Frankfurt plan of the patient, the laser beam must remain parallel to the Frankfurt plane.
- g) Secure the side arms of the head clamp in order to immobilize the patient's head.
- h) The patient is ready for acquisition of the X-ray image. Ensure that the patient's shoulders are lowered and that his/her back is straight. Ask him/her to remain immobile and to swallow so that his/her tongue is in contact with the palate.

- i) The image can now be acquired.
Make sure that you leave the room or that you move well away from the camera in accordance with current regulations.
Press the exposure button, holding it down until the image has been acquired. An audible beep and two yellow indicator lamps (one on the control panel and one on the graphic interface) indicate that X-rays are being emitted. A voice message reminds the patient to keep still.
In the event of a problem, you can interrupt the image acquisition process at any time by releasing the exposure button.
In the event of a technical problem, a prompt is displayed on the computer interface system and on the TROPHYPAN control panel. Make a note of the error code and refer to the section "Technical Problems".
- j) When the image has been acquired, check the quality of the image obtained, then open the head clamp and release the patient.

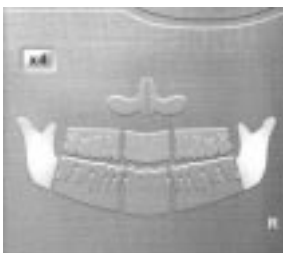
WARNING When the "Reset Motion" button is pressed - the button is accessible from the control panel or from the graphic interface - the arm rotates once before returning to its initial position. Stand clear of the arc of rotation and ensure that the patient is immobile in the panoramic unit.

The unit can be reset even if the patient is still in position in the panoramic unit. However, it is essential to ensure that the patient does not move while the unit is rotating.

4-section lateral TMJs program

The procedure for positioning the patient is described below. This procedure must be rigidly observed.

Follow the same procedure as described in the section entitled "2-Section Lateral TMJs program".



As you select the program - after you have selected the TMJ program as explained above, using the "2-Section Lateral TMJs program" procedure - click on the "x4" icon which is displayed above the dental arch. The "TMJ 4 Lateral Views" program is now selected.

You can confirm this from the "Overview" window to the left of the graphic interface: an "x4" symbol is displayed in the top left corner of this window.

Then follow the instructions described in the "2-Section Lateral TMJs program" procedure.

NOTE The 4-section TMJs procedure is implemented in 2 stages. Acquisition of the image is interrupted after the initial rotation of the arm in order to allow the patient to change position (mouth open or mouth closed).

When the first image has been acquired, the audible warning signal is turned off. You can then release the exposure button. Approach the patient and then press the "Reset Motion" key on the control panel in order to return the arm to the starting position. Ensure that the patient remains immobile during this operation.

Ask the patient to open or close his/her mouth (changeover from mouth closed to mouth open or vice-versa). Use the laser beams to ensure that the patient is still positioned in the section plane.

The image can now be acquired.

Make sure that you leave the room or that you move well away from the unit in accordance with current regulations.

Press the exposure button to initiate acquisition of the second series of TMJ images.

Informations relative to dosimetry

Conforming to EURATOM 97/43 directive

CAUTION This table provides you with an estimation of the emitted dose, which allows to calculate the effective dose received by the patient for one image.

kV	mGy . cm ² / mAs	kV	mGy . cm ² / mAs
60	0,424	75	0,699
61	0,442	76	0,719
62	0,459	77	0,739
63	0,477	78	0,758
64	0,495	79	0,778
65	0,512	80	0,798
66	0,531	81	0,818
67	0,549	82	0,839
68	0,567	83	0,859
69	0,586	84	0,880
70	0,604	85	0,900
71	0,623	86	0,921
72	0,642	87	0,942
73	0,661	88	0,963
74	0,680	89	0,985
		90	1,006

Dose measured at the exit of the primary collimator.

Dose precision: +/- 20 %.

Width of the primary slit: 0.5 mm

Height of the primary slit: 18.2 mm

CAUTION If your panoramic unit has a serial number prior to March 2003, the table mentioned above is not appropriate. Please contact your Trophy certified dealer to obtain the corresponding dose table.

Implementation

When the image has been acquired, your image is automatically displayed in your Trophy Windows imaging software. The radiological parameters used (for instance: 70 kV – 10 mA – 13.9 sec.) are displayed in the blue band at the top of the image. To calculate the dose emitted by the unit, refer to the table mentioned below to find out the coefficient corresponding to the kV value used to acquire the image. This value is expressed in mGy.cm²/mAs.

As an example, for 70 kV, the corresponding value is 0.604 mGy.cm²/mAs. Multiply this value by the mA and the time to get the emitted dose during the acquisition.

At 70 kV, 10 mA and 13.9 secondes, the emitted dose is:

$$0.604 \times 10 \times 13.9 = 84 \text{ mGy.cm}^2$$

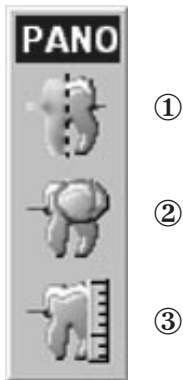
SECTION 5

THE PRINCIPAL DIGITAL TOOLS IN THE TROPHY WINDOWS SOFTWARE PROGRAM

The TROPHYPAN toolbar

NOTE

For information about any buttons that are not detailed below, refer to the online Help function of the Trophy Windows software program.



The TROPHYPAN toolbar, shown opposite, is displayed when a TROPHYPAN image is active on the screen. It incorporates the following functions:

- ① **Contrast filter:** this tool is used to optimize contrast values. The filter is an additional aid to enhancing the clinical details contained in the image. However, it may have the effect of outlining amalgam fillings and crowns. It is therefore advisable to confirm the diagnosis with this tool deactivated in order to obtain a pure image which contains the complete clinical information.
- ② **Highlight:** this tool is used to enhance the contrast values on an area of interest which has been previously selected in the image. It has the effect of emphasizing details which are barely perceptible to the naked eye. This tool can be applied to pure or filtered images, in window display mode, in full screen display mode (image at a scale of 1:1) or in zoom display mode.
- ③ **Measurement:** this tool is used to make measurements on the image. It should be noted that the validity of a given measurement is dependent on correct positioning of the patient. In addition, a panoramic image, of necessity, incorporates enlargements which are not consistent over the entire image. It is strongly recommended that the Measurement tool is calibrated (refer to the Trophy Windows Help function) using a ball of a known size in the area of interest in which the measurement is to made.

NOTE Calibration using a ball indicates the magnification factor. Once the calibration process has been completed, software-based compensation is only relevant in an area close to the ball since, by definition, the magnification factors are not consistent over the entire image. The measurements on the images should only be regarded as a general indication. It is recommended that a supplementary measuring method should be used, in accordance with accepted codes of practice.

Diagnostics image size

NOTE

The use of tools 1 and 2 and the display of the diagnostics image size is strongly recommended as an aid to diagnosis.

The image can also be viewed at its true size by double-clicking on the image (scale 1:1, one sensor pixel for each screen pixel). It is then possible to view all the details contained in the image.

For details of the other buttons, refer to the Trophy Windows online Help function.

Display tips

The TROPHYPAN images are displayed in windows which can be moved across the screen with the aid of the mouse. Three types of display can be selected by clicking on different areas of the active window:

- ① These icons are located in the top right corner of the image window and can be used to change the display from full screen mode to window mode.



Full screen



Window

- ② These icons, also located in the top right corner of the window, can be used either to reduce the image to the form of an icon - which is then displayed at the base of the screen and is restored by clicking on it - or to close the image.



Close



Minimize

- ③ The image can be displayed at its actual size, i.e. one pixel of the image is represented by one pixel on the screen (scale 1:1).

Tips on combining TMJs

The procedure for converting 2-view images to 4-view images is as follows: Two single TMJ images can be combined after they have been acquired, provided that both images are associated with the same patient and were acquired on the same date.

Then open the two images. Hold down the Ctrl button on the keyboard of the PC and click on each of the images. Then request a combination of the images via the Trophy Windows "File\Combination of TMJs" menu.

Printing the TROPHYPAN image

Images in TROPHYPAN Windows can be printed using any printer connected to the PC and recognized by Windows. The natural preference is for a black-and-white printer, either inkjet or thermal for optimal reproduction (some printers which are only equipped with one color cartridge reproduce gray scales with the aid of basic colors and, for this reason, the image quality is impaired).

NOTE Only large format black-and-white thermal printers are capable of producing film-quality printouts. Warning: In view of the diversity of printers and their configuration, the scale of the image is never guaranteed and it is therefore strongly recommended that measurements should not be made on the printed image.

Recording the TROPHYPAN image

NOTE

Also, refer to the online Help function of the Trophy Windows software program.

TROPHYPAN images can be saved. When you close the Imaging screen, TROPHYPAN Windows automatically checks any images that have not been saved and, for each one, asks whether it should be saved. The saved images are stored in the Patient Medical Record.

When the image is saved, it is possible to complete the comments associated with the images (the default comments being the exposure parameters).

NOTE The comments can be edited and amended by clicking on the image with the right mouse button.

WARNING

The complete information is only retained if the image is recorded in large format. Compression may result in a loss of clinical information.

It is strongly recommended that all the images should be saved in large format in order to maintain the integrity of the clinical information. Compressed (small format) images may be subject to irretrievable loss of information. The compressed format is generally used to forward a copy to a third party, either by e-mail or on a floppy disk.

Sharing TROPHYPAN images between different workstations

As soon as they have been saved in the patient's medical record, TROPHYPAN images can be analyzed on each of the declared workstations in the network. The Trophy Windows software program must be installed on all the consultation workstations in order to ensure that the relevant patient medical record can be opened and the images can be analyzed.

In this case, it is assumed that the information is stored on a common disk and that the access path to the database has been specified for each of the consultation workstations in the Trophy Windows Options (consult your installer).

SECTION 6

ADVICE ON SERVICING AND MAINTENANCE

Daily maintenance of your panoramic unit

Accessories	Servicing advice
Standard bite block	Cold sterilization before the next patient is X-rayed
Bite block for Edentulous patients	Cold sterilization before the next patient is X-rayed
Head support	Before the next patient is X-rayed, the head support and chinrest must be disinfected with medical-grade alcohol with an alcohol content in excess of 76%
Chinrest (panoramic, sinus and TMJ)	
All components which come into contact with the patient and the operator	Before the next patient is X-rayed, these components must be disinfected with medical-grade alcohol with an alcohol content in excess of 76%
Outer covers of the panoramic unit	Wipe the TROPHYPAN with a dry cloth and the end of each day's operation

WARNING Ensure that the TROPHYPAN unit is turned off before cleaning. Do not allow liquid to penetrate inside the unit. Do not use detergents or solvents to clean the covers of the panoramic unit.

Monthly maintenance

Accessories	Servicing advice
Outer covers of the panoramic unit	Wipe the TROPHYPAN with a soft dry cloth

SECTION 7

ERROR DIAGNOSTICS

Information of the information messages

Code	Message	Action
11	X-ray tube cooling	Cooling in progress. Wait until the counter has reached zero.
12	Thermal security	Cooling in progress. Wait until the counter has reached zero.
13	Release handswitch	Release the exposure button. Reinitialize the movement and restart the exposure.
I 6	Wrong arm position	The movement is not in its starting position, so the exposure button is inactive. Reinitialize the movement of the camera unit.
I 15	Interface inactive	Check that TROPHYPAN is actually turned on. Check that only the TROPHYPAN graphic interface is displayed on the screen, to the exclusion of any other menu.

Diagnosis of possible technical problems

Error messages identified by the unit

In the event of a malfunction or an incorrect action by the operator, a message - accompanied by an error code - is simultaneously displayed on your control panel and on your graphic interface. A warning is also issued in the form of a voice message.

Please refer to the following table and follow the relevant instructions.

If the malfunction persists or the type of fault is not described, please contact an approved Trophy dealer.

Code	Message	Action
E 1	"Handswitch was released before the end of exposure"	The X-ray exposure button has been released prematurely. Restart acquisition of the image if it is not satisfactory.
E 2	"Mains power failure detected"	Acknowledge the error and restart acquisition of the image. If the problem persists, check the electrical installation of the panoramic unit.
E 3	"kV measurement problem"	Acknowledge the error and restart acquisition of the image. If the problem persists, call a qualified technician.
E 4	"kV measurement problem"	Acknowledge the error and restart acquisition of the image. If the problem persists, call a qualified technician.

Code	Message	Action
E 6	"Problem inside generator"	Acknowledge the error and restart acquisition of the image. If the problem persists, call a qualified technician.
E 7	"mA measurement problem"	Acknowledge the error and restart acquisition of the image. If the problem persists, call a qualified technician.
E 8	"mA measurement problem"	Acknowledge the error and restart acquisition of the image. If the problem persists, call a qualified technician.
E 9	"Filament heating problem"	Acknowledge the error and restart acquisition of the image. If the problem persists, call a qualified technician.
E 10	"Filament heating problem"	Acknowledge the error and restart acquisition of the image. If the problem persists, call a qualified technician.
E 11	"Safety device activated on high voltage capacitors"	Acknowledge the error and restart acquisition of the image. If the problem persists, call a qualified technician.
E 12	"Problem with switch"	Acknowledge the error and restart acquisition of the image. If the problem persists, call a qualified technician.
E 13	"Travel measurement problem"	Acknowledge the error and restart acquisition of the image. If the problem persists, call a qualified technician.
E 14	"Travel measurement reproducibility problem"	Acknowledge the error and restart acquisition of the image. If the problem persists, call a qualified technician.
E 15	"Movement too long"	Acknowledge the error and restart acquisition of the image. If the problem persists, call a qualified technician.
E 16	"Movement too short"	Acknowledge the error and restart acquisition of the image. If the problem persists, call a qualified technician.
E 17	"Movement measurement reproducibility problem"	Acknowledge the error and restart acquisition of the image. If the problem persists, call a qualified technician.
E 22	"Capture stopped. Interface has been masked"	The graphic interface of the panoramic unit was closed during acquisition of the image. The graphic interface must always be active and it should be placed in the foreground before an image can be acquired.
E 23	"No movement detected"	Acknowledge the error. If the problem persists, call a qualified technician.
E 24	"Heating voltage self-calibration timeout"	Acknowledge the error. If the problem persists, call a qualified technician.
E 25	"Heating voltage lower limit reached"	Acknowledge the error. If the problem persists, call a qualified technician.

Code	Message	Action
E 26	"Heating voltage higher limit reached"	Acknowledge the error. If the problem persists, call a qualified technician.
E 50	"Program evolution problem"	Acknowledge the error. If the problem persists, call a qualified technician.
E 51	"Serial Eeprom read error"	Acknowledge the error. If the problem persists, call a qualified technician.
E 52	"Communication problem with console"	Acknowledge the error. If the problem persists, call a qualified technician.
E 53	"Backup battery out of service"	The operating life of the clock battery in the panoramic unit is approximately 10 years. Call a qualified technician to replace the battery.
E 54	"Inconsistency in calibration parameters"	Choose the 'Restart' option in the Error window. If the problem persists, choose 'Restore' to retrieve the result of the previous save operation. If this fails to cure the problem, call a qualified technician.
E 55	"Error in stored parameters"	Choose the 'Restart' option in the Error window. If the problem persists, choose 'Restore' to retrieve the result of the previous save operation. If this fails to cure the problem, call a qualified technician.
E 56	"Error in manufacturing parameters"	Choose the 'Restart' option in the Error window. If the problem persists, choose 'Restore' to retrieve the result of the previous save operation. If this fails to cure the problem, call a qualified technician.
E 57	"Error in user preferences"	Choose the 'Restart' option in the Error window. If the problem persists, choose 'Restore' to retrieve the result of the previous save operation. If this fails to cure the problem, call a qualified technician.
E 58	"Exposure context error"	Acknowledge the error and check the selections before reacquiring an image. If the problem persists, call a qualified technician.
E 59	"Program evolution error"	Acknowledge the error. If the problem persists, call a qualified technician.
E 60	"Hardware error detected"	Acknowledge the error. If the problem persists, call a qualified technician.

Rapid troubleshooting

The following information can be used without specialist knowledge to rectify the majority of obvious malfunctions that may be encountered during use. The information is based on the assumption that the system has been correctly installed.

Try to rectify the malfunction by following the instructions given below.

If the malfunction persists or the of fault is not described, please contact an approved Trophy dealer.

Symptom	Cause and remedy
The TROPHYPAN graphic interface is not displayed after clicking on the acquisition icon in Trophy Windows	<ol style="list-style-type: none"> 1- Check that the panoramic unit has been switched on. 2- Ensure that all the connectors between the panoramic unit and the PC are in place. 3- Check that the driver for the PCI card has been installed.
There is no movement when the X-ray exposure button is pressed.	<ol style="list-style-type: none"> 1- The 'Ready' message is not displayed on the control screen. Click on the 'Reset Motion' button to obtain the 'Ready' message. 2- The panoramic unit is in cooling mode. Wait until the counter has returned to zero. 3- The panoramic unit is in thermal overload mode. Wait until the 'Generator Ready' icon changes back to green.
No image appears on the screen after the X-rays have been activated.	<ol style="list-style-type: none"> 1- Ensure that the X-ray emissions have not been deactivated. 2- Check the consistency of the firing parameters (type of patient, kV and mA values) with the actual morphology of the patient.
The image contrast is satisfactory but there are vertical faults (darker strips).	<ol style="list-style-type: none"> 1- During rotation, the patient's shoulders may have impeded the movement of the generator, reducing its speed and resulting over-exposure of the image in certain areas. Ensure that the patient is correctly positioned.
The image is too dark	<ol style="list-style-type: none"> 1- Reduce the dose of X-rays. Begin by reducing the kV values, followed by the mA values.
The image is too light	<ol style="list-style-type: none"> 1- Increase the dose of X-rays. Begin by increasing the kV values, followed by the mA values.

SECTION 8

TECHNICAL SPECIFICATIONS

General technical specifications

Product identification	Digital Panoramic Radiology Unit, controlled from a PC interface. Face-to-face positioning	
Digital sensor	CCD + optical fiber sensor	
Dimensions of the matrix	2,500 x 1,244 pixels	
Gray scales	4,096 – 12 bits	
High tension generator	140 kHz (max.) 60 - 90 kV 2 – 15 mA	
Line voltage	230-240 V / 50 Hz , 230-240 V / 60 Hz 110 - 130 V / 60 Hz	
Focal spot of tube	0.5 mm (IEC 336)	
Total filtration	> 2.5 mm eq. Al	
Anode voltage	90 kV max.	
Cathode current	15 mA max.	
Imaging procedures	Panoramic Segmented panoramic Maxillary sinus Lateral TMJ, 2 sections Lateral TMJ, 4 sections	
Period of exposure	Adult panoramic:	13.9 sec.
	Pediatric panoramic:	13.2 sec.
	Maxillary sinus:	10.7 sec.
	Lateral TMJ, 2 sections:	4.6 sec.
	Lateral TMJ, 4 sections:	9.2 sec.
Exposure mode	2 programs (adult and child) 3 sizes (adjustable by the user)	
Magnification	x 1.27	
Dimensions (standard installation) (with base plate)	888 (L) x 1180 (D) x 2315 (H) mm* 888 (L) x 1180 (D) x 2330 (H) mm	
Weight	120 kg	

* On request, the height of the column can be adjusted at the factory

International standards

Electromagnetic compatibility

With regard to EMC, this product complies with European Directive 89/336/CEE.

This product complies with European Standard EN 60601-1-2 (1993). Its classification is Group I, Class B.

Conforming to IEC Standards 601.2.7 (1998) and 601-1 (1995)

MANUFACTURER:

TROPHY

4, rue F. Pelloutier, Croissy-Beaubourg
77437 Marne la Vallée Cedex 2, France

MODEL:

TROPHYPAN, radiographic dental diagnostic unit, IEC 601.2.7 (1998), Class 1, Type B, Intermittent Operation, with protection against X-rays complying with IEC 601.1.3 (1994)

AMBIENT OPERATING CONDITIONS

Temperatures	5 -35 °C
Relative humidity	30 - 85%
Atmospheric pressure	700 - 1060 hpa

STORAGE CONDITIONS

Temperature	-10 - 60 °C
Relative humidity	10 - 95%
Atmospheric pressure	700 - 1060 hpa

TRANSPORT CONDITIONS

Temperature	-10 - 60 °C
Relative humidity	10 - 95%
Atmospheric pressure	700 - 1060 hpa

Type of electrical power supply:	230 - 240 V ($\pm 10\%$) 50/60 Hz, single-phase	110 -130 V ($\pm 10\%$) 60 Hz, single-phase
Apparent resistance of the power supply circuit	0.5 Ω (max.)	0.12 Ω (max.)
Permanent absorbed current	0.45 A	0.9 A
Current absorbed during the X-rays emission	9.5 A	17 A
Max. absorbed power	2.2 kVA	1.9 kVA
Protection for the power supply system	By shutter release at a max. current of 16 A and a differential current of 30 mA	By shutter release at a max. current of 20 A and a differential current of 30 mA
Nominal high tension	90 kV	90 kV
Maximum corresponding tube current	10 mA	10 mA
Nominal tube current	15 mA	15 mA
Maximum corresponding high tension	80 kV	68 kV
Tube current/voltage combination for maximum output power	80 kV, 15 mA	85 kV, 12 mA
Nominal power for an exposure time of 0.1 s.	at 80 kV, 15 mA: 1200 W	at 85 kV, 12 mA: 1020 W

Utilization rate in continuous mode (for example: one exposure – 85 kV, 5 mA – 13.9 sec every 3 minutes)	33 W.
Utilization rate in intermittent mode (for example: one exposure – 80 kV, 15 mA – 13.9 sec every 3 minutes)	93 W.

Selection of the load parameters:	
kV (in increments of 1 kV)	From 60 to 90 kV
mA (in increments of 25%)	From 2 to 15 mA

Cooling conditions:	
Maximum dissipation of heat from the X-ray radiogenic assembly into the ambient air (for a utilization rate in continuous mode):	70 W

Details of the load parameters:	
High tension:	kV $\pm 10\%$
Current in the tube:	mA $\pm 20\%$
Exposure time:	seconds $\pm (10\% + 1\text{ms})$

Measurement conditions:	
KV	Indirect on the peak kilovoltmeter
MA	Direct measurement in the circuit using an oscilloscope
Exposure time:	Measurement at 75% of the kV values

Characteristics of the X-ray radiogenic assembly

Conforming to IEC Standard 601.1.3 (1994)

IEC Standard 601.1.3 (1994)	Compliant
Nominal value of the inherent filtration at 70 kV	2.8 mm (0.11") eq. Al
Nominal value of the supplementary filtration at 70 kV	Not applicable
Nominal value of the total filtration at 70 kV	2.8 mm (0.11") eq. Al
Filtration value for the enclosure of the radiogenic unit (at 100 kV)	0.2 mm (0.08") eq Al
Filtration value for the enclosure of the image receiver unit (at 100 kV)	0.2 mm (0.08") eq Al
Filtration value for the sensor case	0.8 mm (0.31") Al
Value for the arms of the head clamp (at 100 kV)	1.0 mm (0.039") eq Al
Distance between the focal spot and the sensor	522 mm (20.55 " .)
Location of the reference axis	Refer to the diagram below
Size of the beam at the sensor	5 x 126 mm
Radiation leakage after one hour's operation (<i>maximum utilization rate of 93 W, i.e. 90 kV, 10 mA, 13.9 sec. every 2 minutes 15 sec.</i>)	< 1 mGy

Conforming to IEC Standard 601.2.28 (1993)

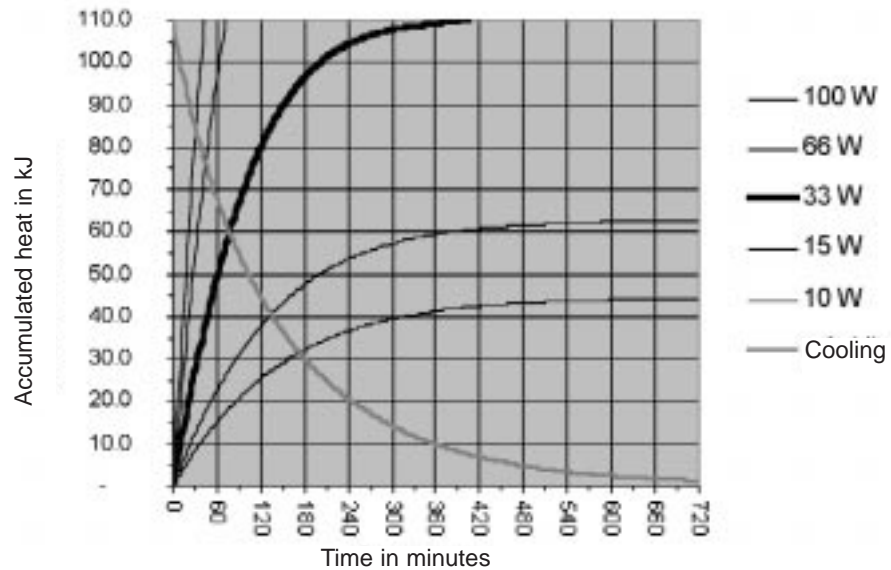
The radiogenic unit comprises:

- a transformer and a radiogenic tube, together with their associated electronic components immersed in oil.
- an aluminum filter which enhances the quality of the beam and reduces the dose received by the patient.
- a unit which limits the size of the beam at the image receiver unit.
- a thermal cutout which trips at an operating temperature of 65 °C ± 5 °C.

• **Characteristics of the radiogenic unit**

IEC Standard 601.2.28 (1993)	Compliant
Manufacturer	Trophy
Degree of protection against electric shock	Class I
Degree of protection of the parts applied to the leakage current from the patient	Type B
Maximum accumulated heat	110 kJ
Maximum continuous heat dissipation	33 W.
Nominal value of the focal spot (IEC 336/192)	0.5 mm
Tolerances on the position of the focal spot	+/- 2.5 mm
Weight	8.2 kg
Dimensions	235 x 245 x 120 mm

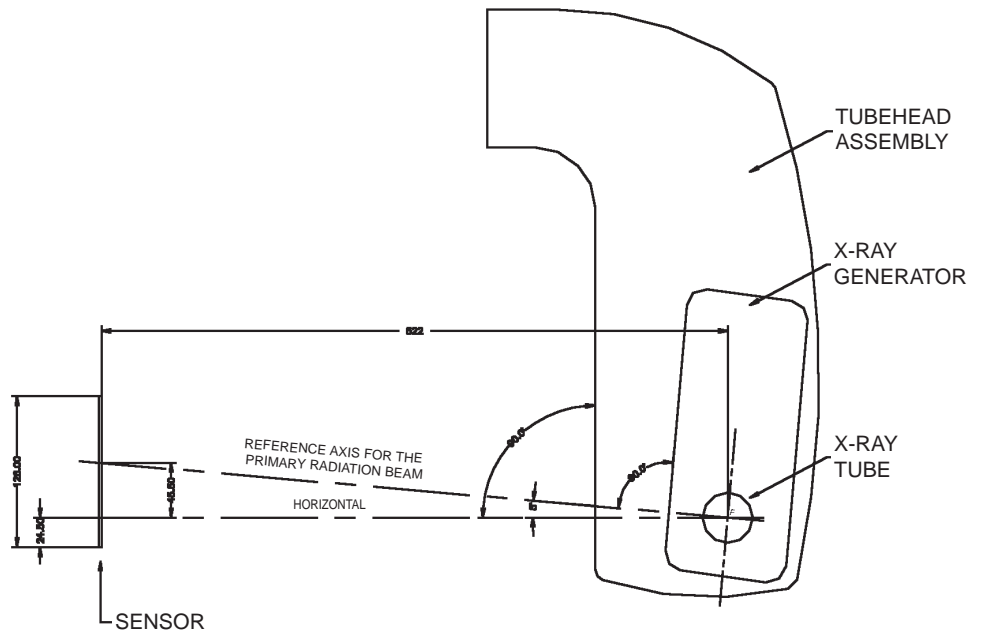
• **Heating and cooling curves:**



• **Beam limitation unit:**

Manufacturer	Trophy
Type	Rigidly mounted unit with fixed window dimensions, not removable and integrated x-ray generator
Maximum symmetrical field of radiation 5 mm to 126 mm at a distance of 522 mm from the focal point	Complies with IEC Standard 806 (1994)

• **Position of the reference axis:**

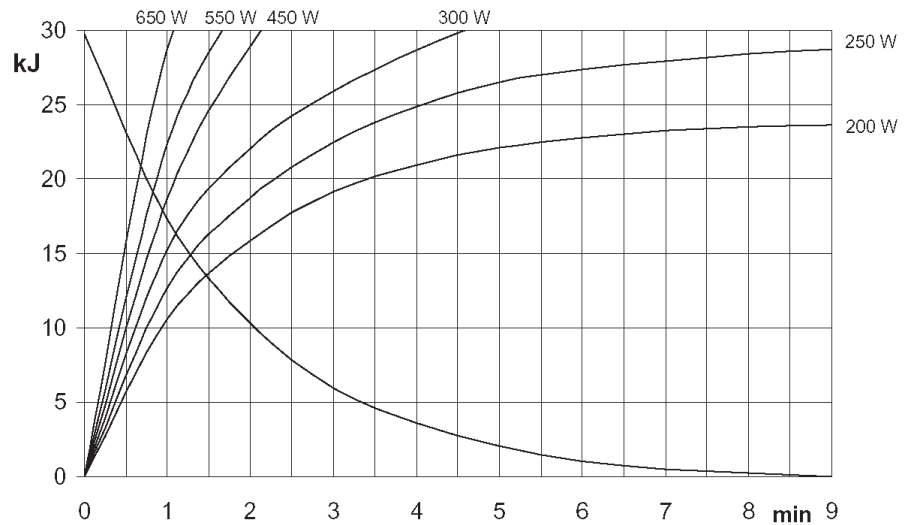


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• **Characteristics of the X-ray tube:**

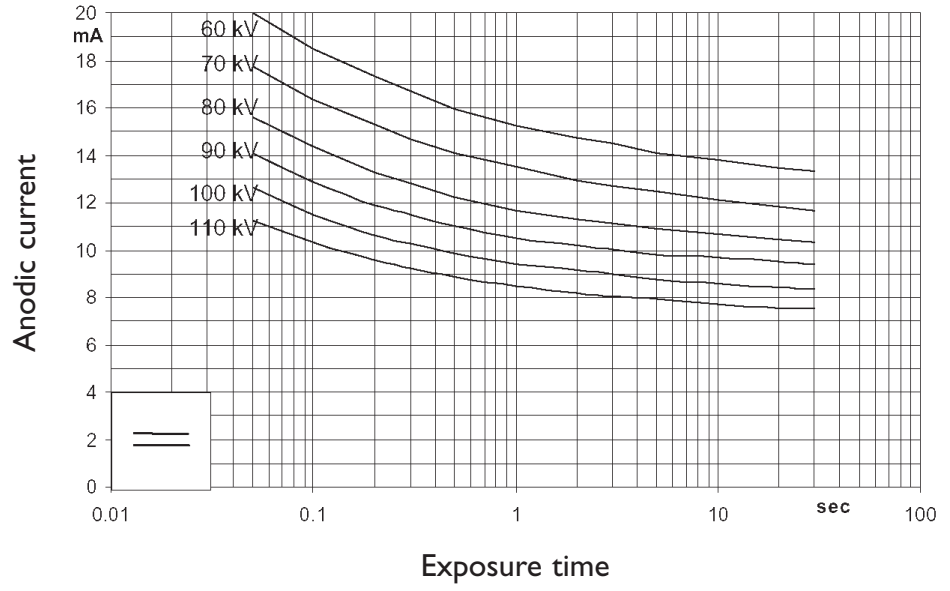
Manufacturer's name	CEI
Type	OPX 105
Nominal high tension	90 kV
Nominal anodic power	810 W
Maximum amount of heat accumulated in the anode	30 kJ
Nominal focusing value (IEC 336/1982)	0.5 mm (0.020")
Collector electrode materials	Tungsten
Angle of the collector electrode	5°
Inherent filtration	0.5 mm (0.20 ") eq. Al

• **Heating and cooling curves:**

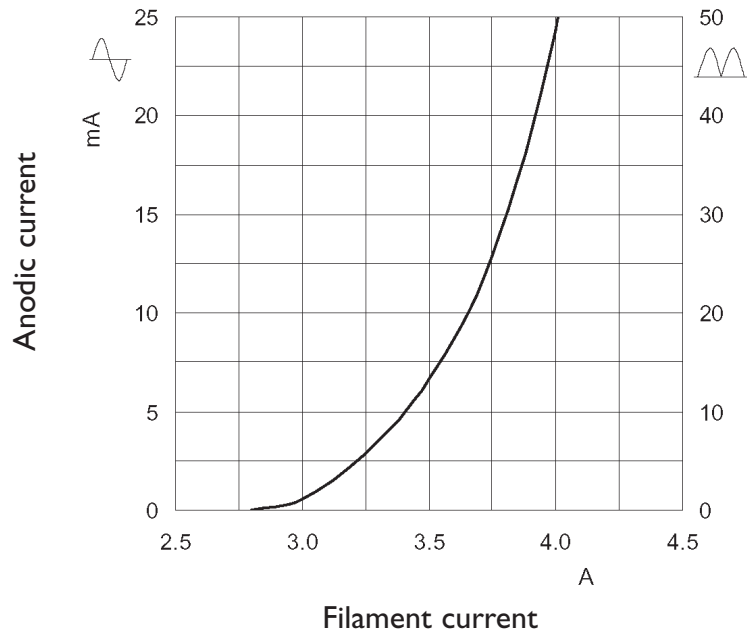


ENGLISH

• **Load alignment chart:**

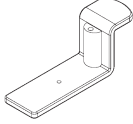
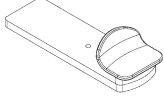
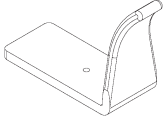
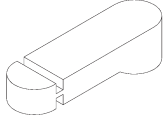
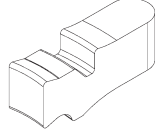




• **Characteristics of emissions from the filament:**



SECTION 9

REPLACEMENT PARTS

Product	Code	Description
	JR 265	Panoramic chinrest
	JR 263	Chinrest for the Maxillary Sinuses program
	JR 264	Nasal support for the TMJ program
	HY 048	Standard bite block
	HT 182	Bite block for 'Edentulous patients'
	FC 020	Bite block mounting
	BD 103	Plastic-coated protective covers (box of 500 items)