

General Safety Precautions

Cefl a Sc - Cefl a Dental Group guarantees the safety, reliability and performance of the equipment under the following conditions:

- Installation and technical service is performed by authorized technicians using Cefl a Sc - Cefl a Dental Group original spare parts.
- The electrical system in the dental surgery corresponds to standards I.E.C. 60364-7-710;V2 (Standards regarding electrical systems in a medical environment) or equivalent standards currently in force in the country where the equipment is installed.
- The place where the x-ray unit is installed must comply with official directives regulating radiation in the country where the equipment is used.
- The equipment is operated as directed in the instructions manual..

CONTENTS:

- Documentation and guarantee
- Disposable jig for installation
- Kit
- Wall back-plate (if requested)
- Wall-mounted plate

- Generator
- Tube
- Extension
- Collimator
- Double pantograph arm

Handling and storage

Indications regarding storage, handling and unpacking are given on the outside of the cardboard packaging.

These indications must be strictly observed.

- The package must be kept upright in the direction indicated by the arrows at all times during handling and storage.
- Avoid banging the package.
- Keep the package free from damp.
- Do not use hooks to handle the package.
- A nameplate indicates the required ambient conditions for storage.
 - temperature from -15° to 50° C.
 - relative humidity from 10 to 90%
 - atmospheric pressure from 500 to 1060 hPa.

Last updated: 8/12/2011

Before installation

Mechanical specifications required

If the wall is thin (hollow bricks or similar), use the backplate (part no. 99930887) to be mounted on the wall or placed on the side of the wall opposite the wall where the unit is to be installed.

Decide on a suitable system for fixing the plate according to the characteristics of the wall and its ability to resist a pull force of 220 Kg applied at each anchorage point.

If the wall is made of cement or solid bricks, use the wall plugs supplied.

Alternatively we recommend using the "FISHER" chemical wall plugs which include:

- Braid type injection insert (item FIP 16X85).
- Threaded bar with bar and washer (item FIP 16M, 8X110).
- Chemical fixer (item FIP C 150).

Central control unit power supply

The supply line running to the central control unit must be 3x2.5 mm and protected by a bipolar circuit breaker which conforms to the relevant electrical codes (10 A, 250 V, breaking power at least 6000 A, distance between contacts at least 3 mm).

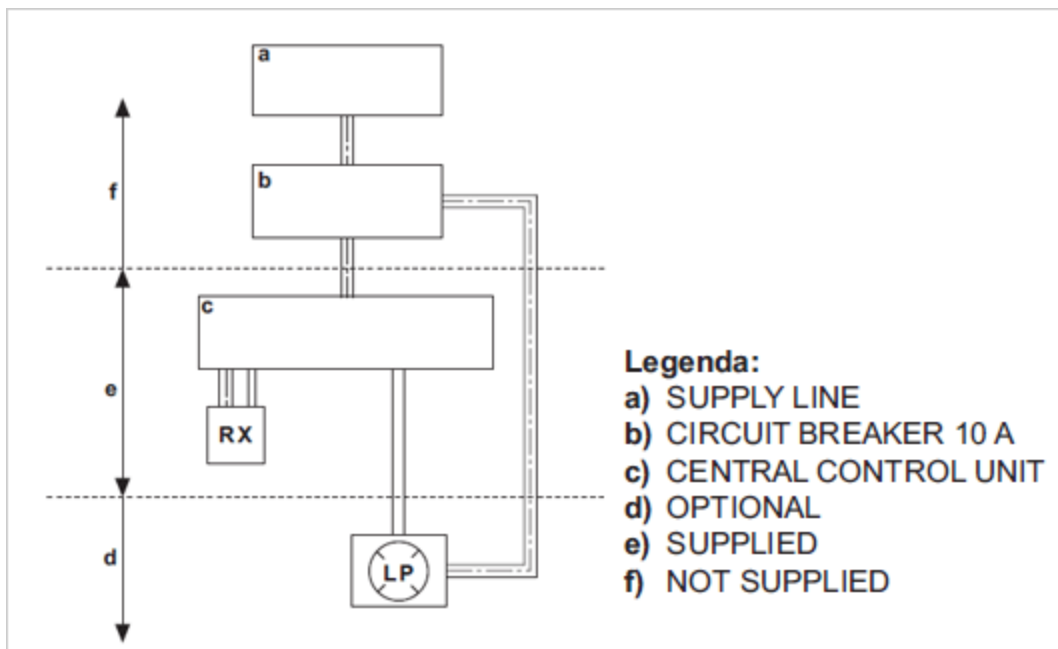
The colour of the three conductors (LINE, NEUTRAL and GROUND) must correspond to that established by regulations.

Wiring connection between central control unit and generator light

This connection enables the generator light (optional) located outside the surgery to be turned on.

To connect the LP generator light to the central control unit, use 2 conductors having a cross-section of 0.5 mm (see paragraph 4.8.).

LP light supply: 230V - 3x2.5 mm line.



Installation

The x-ray unit must be installed by a qualified technician in compliance with the installation instructions given below as regards both the mechanical and electrical parts.

WARNING! Always check that the voltage indicated on the generator's nameplate corresponds to that for the electrical system.

Positioning the x-ray unit's structure

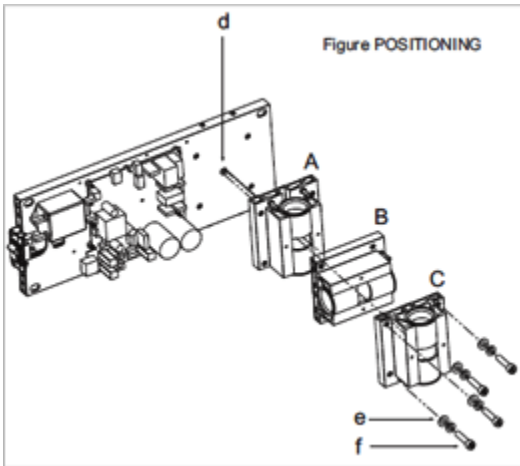


Figure POSITIONING

Block the middle clamp in the opening provided (d) according to which of the three positions available the structure needs to be placed in:

A – PRESET CONFIGURATION WITH WALL-MOUNTED STRUCTURE SET HORIZONTALLY TO THE RIGHT.

B - WALL-MOUNTED STRUCTURE SET VERTICALLY DOWNWARD.

C - WALL-MOUNTED STRUCTURE SET HORIZONTALLY TO THE LEFT.

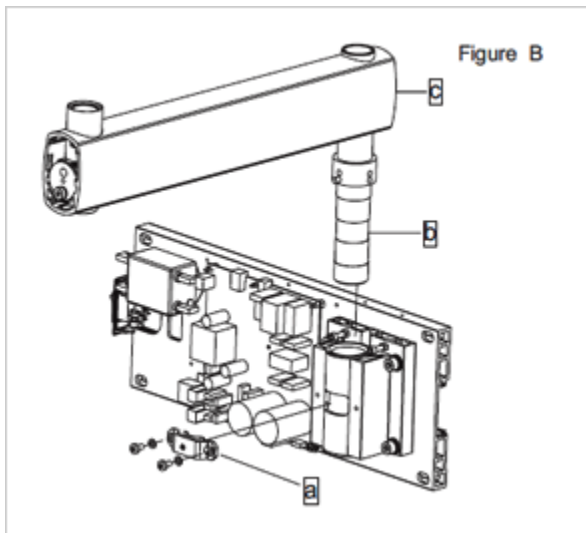
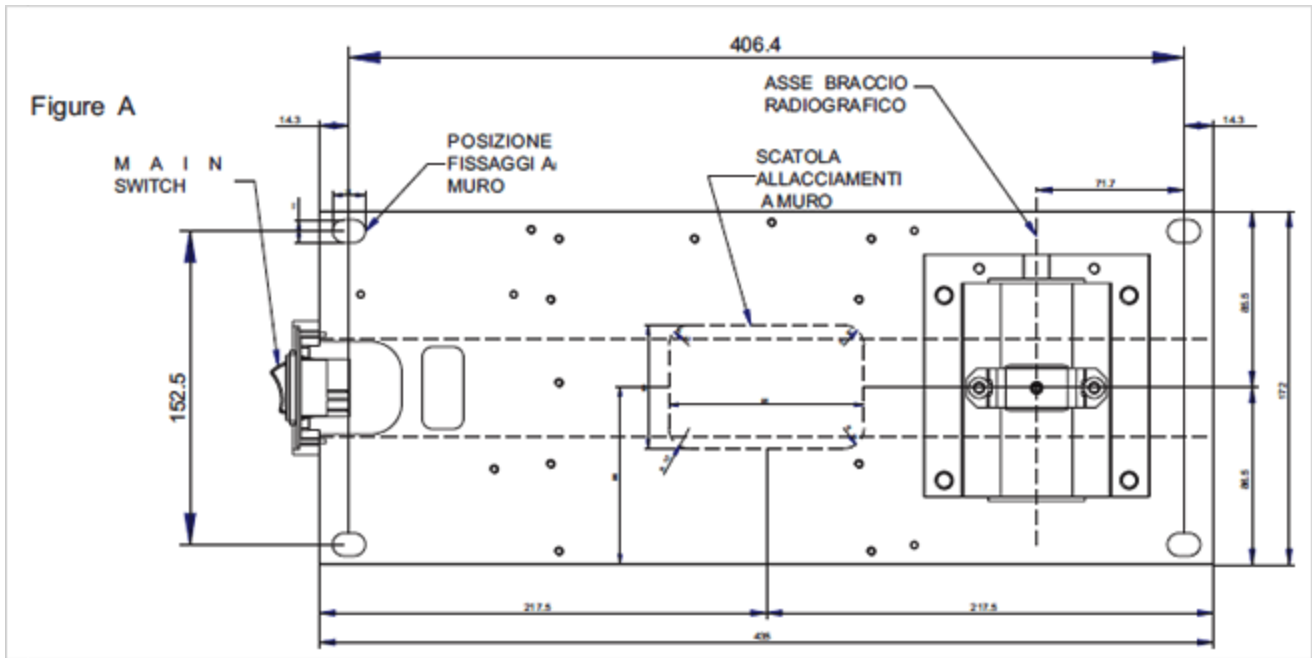
Secure the pin to the plate using the screws (f) and washers (e) provided.

Wall-mounted plate for supporting the x-ray unit

Figure A

Determine the position of the x-ray unit by using the INSTALLATION JIG.

- Position the wall-mount plate with the bottom holes at a height of approx. 120 cm from the floor.
- First check that the plate is at the correct height and perfectly horizontal and then mark out the four points where it is to be fixed on the wall. Drill the holes and install the most suitable type of fastening system according to the characteristics of the wall (see paragraph 3.1).
- Pass the supply cable through one of the holes in the wall-mount plate and fix this to the wall by partially tightening the top and bottom screws.



Extension arm

WARNING! Do not lubricate the pin of the extension arm: the wall-mounted plate is provided with self-lubricating bushings.

Figure B

- Insert the pin (b) of the extension arm (c) in the hole provided in the wall-mounted plate.
- Take the clutch (a) from the kit, install it on the plate using the corresponding screws and adjust the arm (c) as required

Figure C

- Use a spirit level to check that the arm (c) is slightly tilted upwards (approx. 1°). If necessary add a shim to the plate near the bottom wall plugs (d).
- Fully secure the plate.

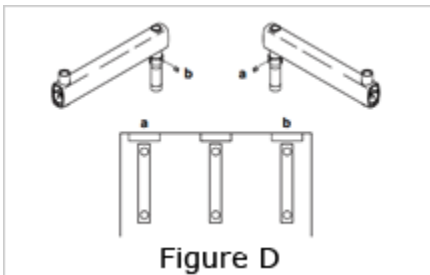
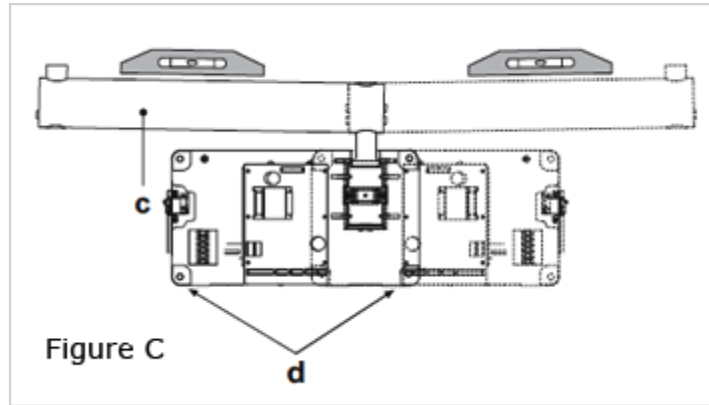
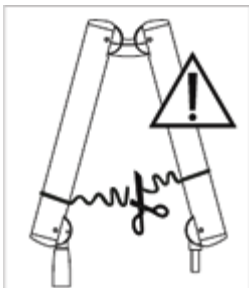


Figure D

- If the x-ray unit is installed in one of the corners of the dental surgery, make sure the extension arm cannot rotate too far (90°) by installing the two end-stop pins (included in the kit) on the x-ray unit itself.
- Find the right position for installing the pair of pins (a, b) and insert them in the holes provided using a hammer.



Installing the double pantograph arm

WARNING! The arms are supplied secured together by a belt.

This belt **should not be removed** until the two free ends of the arms have been connected to their corresponding attachments: the extension arm (already secured to the wall) and x-ray head. If the belt is loosened before fixing the arms in place, releasing them abruptly could damage them and the operator risks being injured.

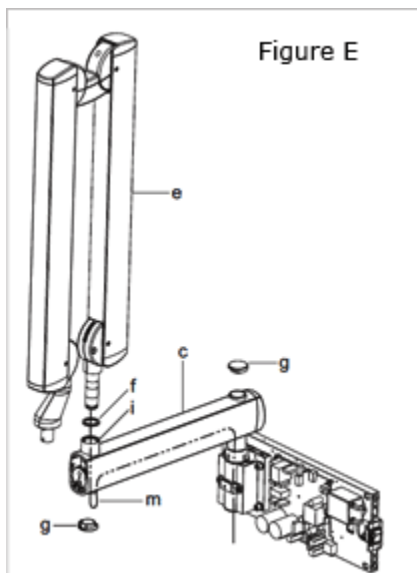


Figure E

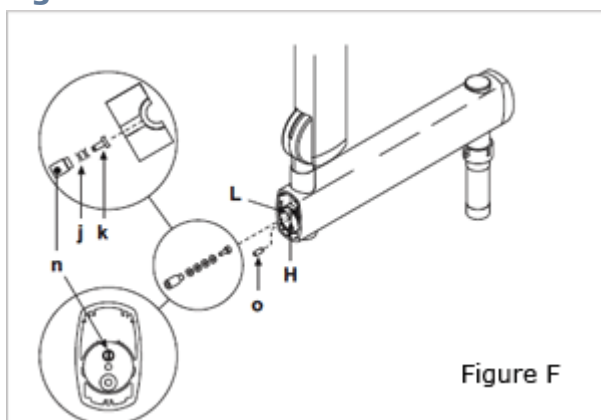
- Take the washer (f) from the kit and position it at point (i) corresponding to the extension arm (c).
- Pass the cable (m) of the pantograph arm (e) through the extension arm (c) so that it comes out of the hole below.
- Install the pantograph arm (e) on the extension arm (c)

NOTE:

The extension arm's bushing is self-lubricating.
Do not lubricate the pin of the double-pantograph arm.

- Pass the cable (m) through the inside of the extension arm (c) so that it comes out of the wall-mounted plate.
- Install the plugs (g) in the corresponding holes in the extension arm (c).

Figure F



Take the grubscrew used to stop rotation (o) from the x-ray unit kit and tighten it at point H (tighten it fully and then loosen by 1/2 turn).

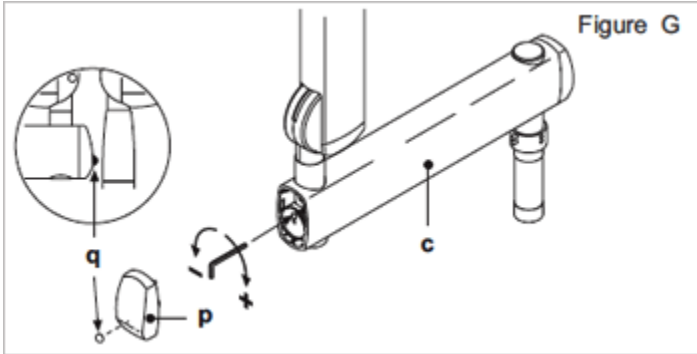
NOTE: Turn the pantograph arm to check that the adjustment has been made properly.

Take the clutch assembly (friction element, screw and 4 curved washers) from the x-ray unit kit and install it at point L.

NOTE: Insert the curved washers (j) and the friction element (k) as indicated in figure F.

NOTE: The friction element (k) can be placed in the correct position (vertical cut) by inserting a screwdriver in the hole provided for the screw (n).

Figure G

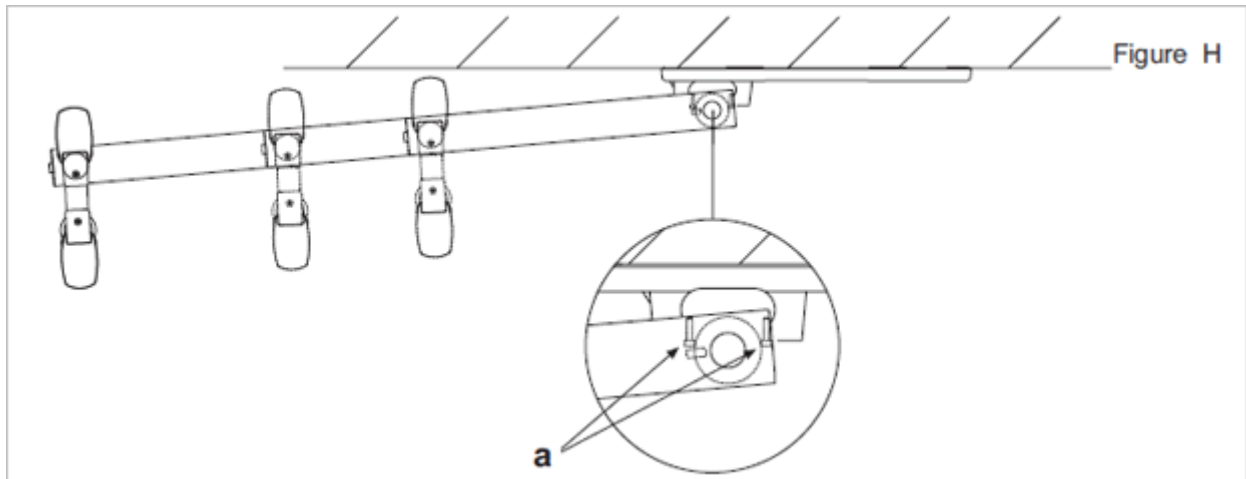


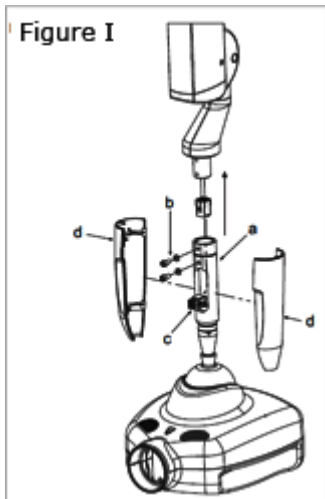
- Adjust the clutch which has just been installed.
- **NOTE:** Turn the pantograph arm during the adjustment to check that the clutch is providing the correct amount of friction.
- Install the plugs (p) on the extension arm (c).
- Attach the adhesive bumper (q) (supplied in the kit) in the centre of the plug at the point indicated in the diagram.

Figure H

There are 2 end-stop screws in the wall-mounted plate to which Loctite has been applied to provide friction. These have been adjusted according to the length of the extension arm supplied.

NOTE: Work on the screw itself (a) in order to make the extension arm stop before or after.

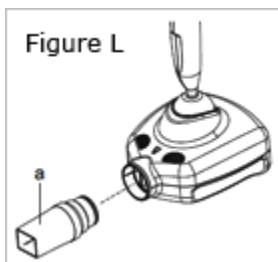




Installing the generator

Figure I

- Take the generator out of the packaging.
- Insert the pin (a) in the sleeve making sure the respective openings match and secure with the screws (b) provided.
- Insert the power cable in the generator's pin and run it out of the opening (c) provided.
- Lastly, put on the two side covers (d).



Installing the collimator

Figure L

- Take the collimator (a) out of the packaging.
- Insert it in the generator and block it in place by turning clockwise.

Balancing the double pantograph arm

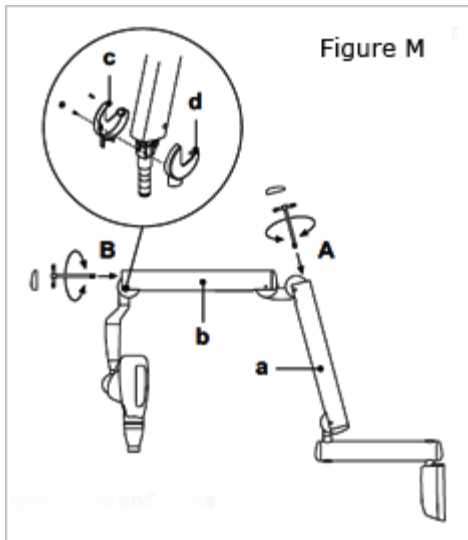


Figure M

If the double pantograph arm does not stay in a stable position, adjust the spring tension by using an 8mm Allen wrench about 20cm long.

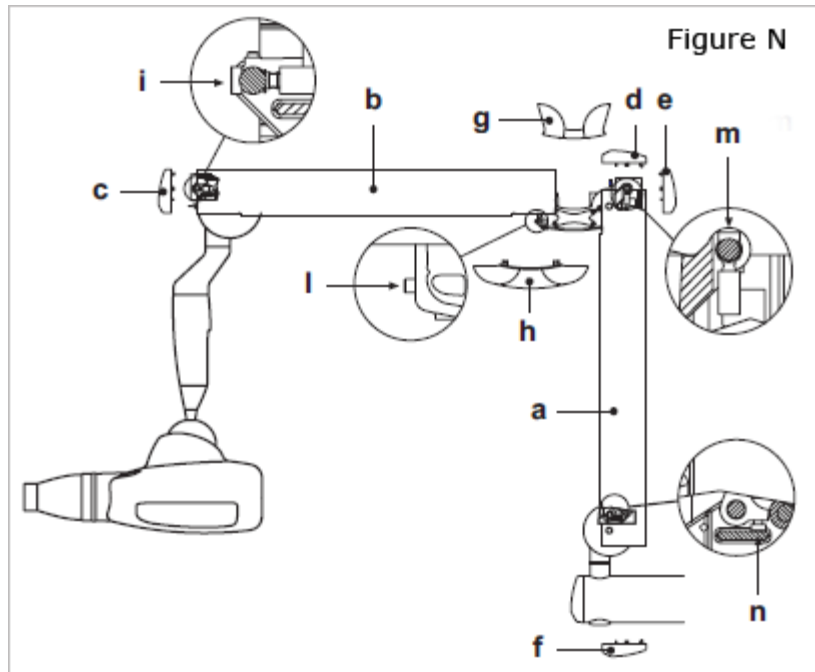
- To adjust the arm (a) connected to the extension: position it as shown in the figure and place the wrench at point A.
NOTE:
 TIGHTEN (clockwise) if the arm tends to move down.
 LOOSEN (anti-clockwise) if the arm tends to move up.
- To adjust the arm (b) connected to the generator: put the 2 covers (c) and (d) on the front pivot point, move the arm (b) into a horizontal position and insert the key in point B.
NOTE:
 TIGHTEN (clockwise) if the arm tends to move down.
 LOOSEN (anti-clockwise) if the arm tends to move up.

Adjusting the double pantograph arm end-stops

Figure N

If the end-stops of the double pantograph arm need to be adjusted, work on the screws (i - l - m - n) shown in the diagram.

NOTE: To adjust the screw (n) on the articulated joint of the extension side place the relevant arm (a) in a horizontal position.

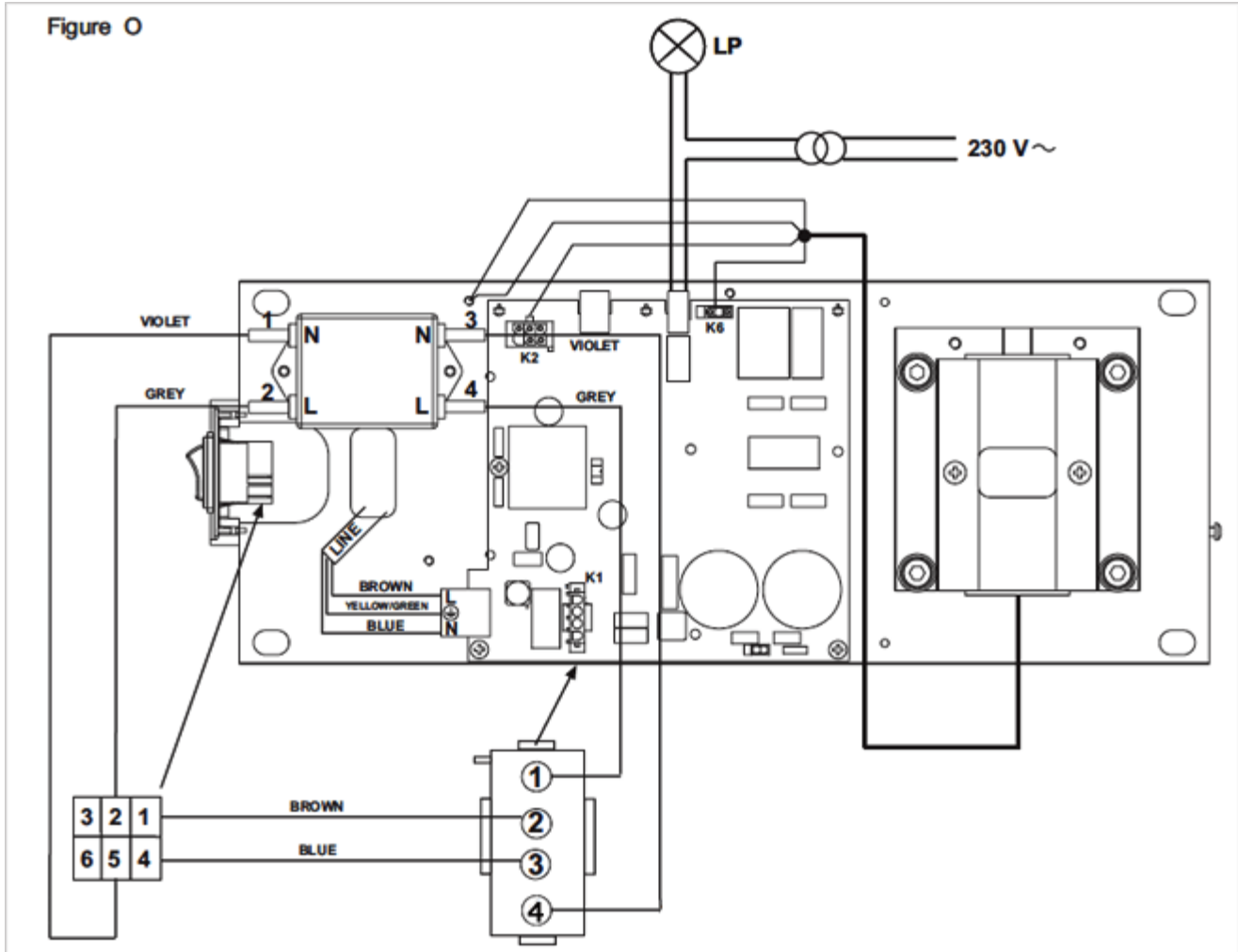


Wall-mounted plate wiring connections

Figure O

- Connect the power cable (LINE) to terminal K2, observing the following positions:
 L - SUPPLY (BROWN WIRE)
 - GROUND (YELLOW/GREEN wire)
 N - NEUTRAL (BLUE wire)
- Connect the generator's power cable to the respective connectors, observing the following positions:
 K6 - brown wire and blue wire.
 K5 - white wire - black wire - red wire - green wire - purple wire.
 Eyelet connectors - Both found near the card (see figure).
NOTE: Place the excess cable under the card..
- Connect the 2 control wires (0.5 mm cross-section) for the "generator on" indicator light (LP) to connector K3.

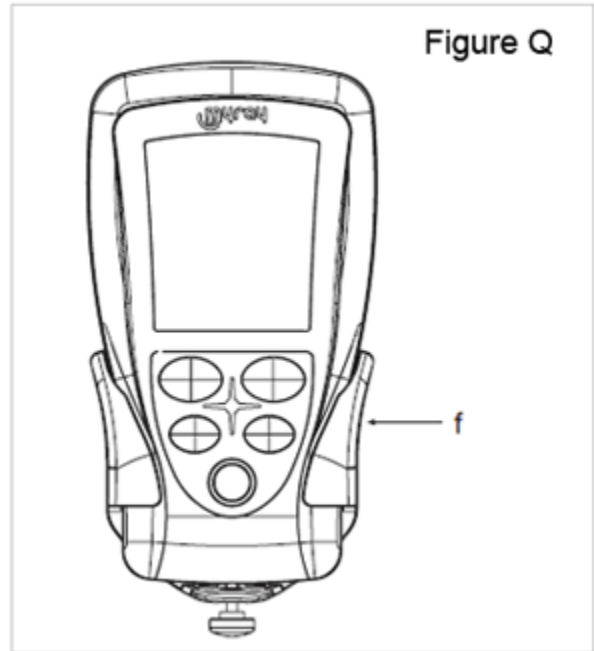
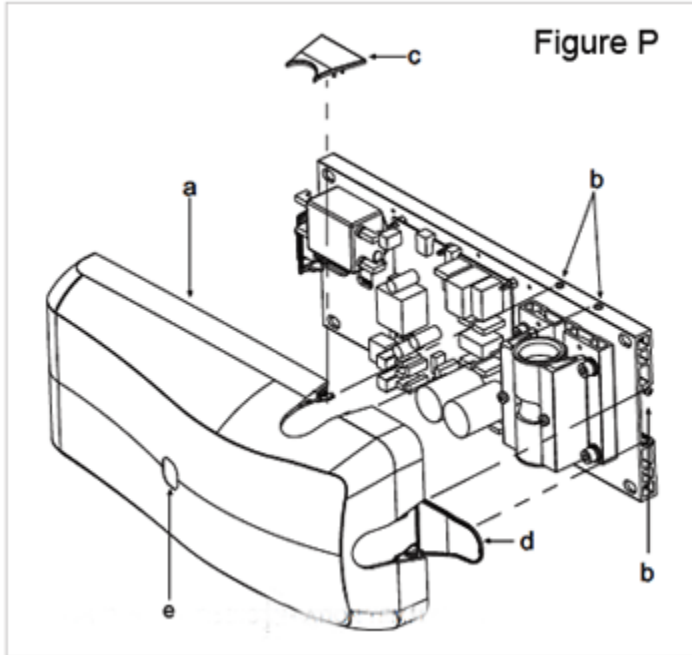
Figure O



Completion of wall-mounting plate and holder for hand-held.

Figure P and Figure Q

- Pick up the cover (a) and place it on the wall-mounting plate fully tightening the grub screws (b) provided and prescrewed on the plate.
- Place the cover (c) in the area shown in the figure. The door (d) will automatically close when the controller is closed.
- Put the controller label in the required area (e) on the cover directed according to the position in which the wall-mounting plate is installed.



DENTAL EQUIPMENT---> X-ray Intra Oral --> Myray Intraoral DC X-Ray

Myray Installation Guide

Steps: [1](#) [2](#) [3](#) [4](#) [5](#) [6](#) [7](#) [8](#) [9](#) [10](#) [11](#) [12](#) [13](#) [14](#) [15](#) [16](#) [17](#) [18](#) [19](#)

Factory Settings

The x-ray unit is supplied with the following factory settings:

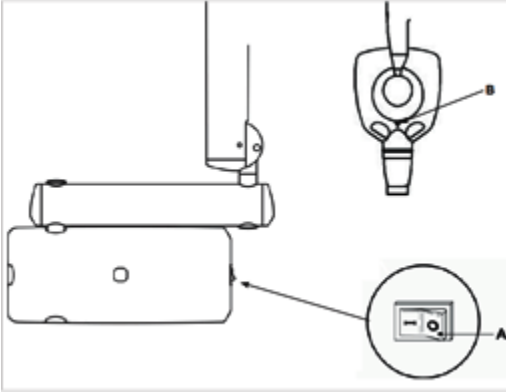
- Anode current: 7 mA (NORM mode).
- Sensitivity: level 19.
- Handheld stand by: 5 minutes
- Patient's built: adult (ADULT symbol selected).
- Collimator presence signaled on the display (collimator symbol off if the rectangular collimator is not turned on in the head).
- Exposure times according to standard R20: 0, 010-0, 011-0, 012-0, 014-0, 016-0, 018-0, 020-0, 022-0, 025-0, 028-0, 032-0, 036-0, 040-0, 045-0, 050-0, 056-0, 063-0, 071-0, 080-0, 090-0, 100-0, 112-0, 125-0, 140-0, 160-0, 180-0, 200-0, 224-0, 250-0, 280-0, 315-0, 355-0, 400-0, 500-0, 560-0, 630-0, 710-0, 800-0, 900-1, 000.

NOTE: These times comply with current standards I.E.C. 60601-2-7 (1999) and the ISO 497 series R'20 recommendations and CANNOT BE MODIFIED.

Turning On

Turning The X-ray equipment on and off

Turning on the basic X-ray unit



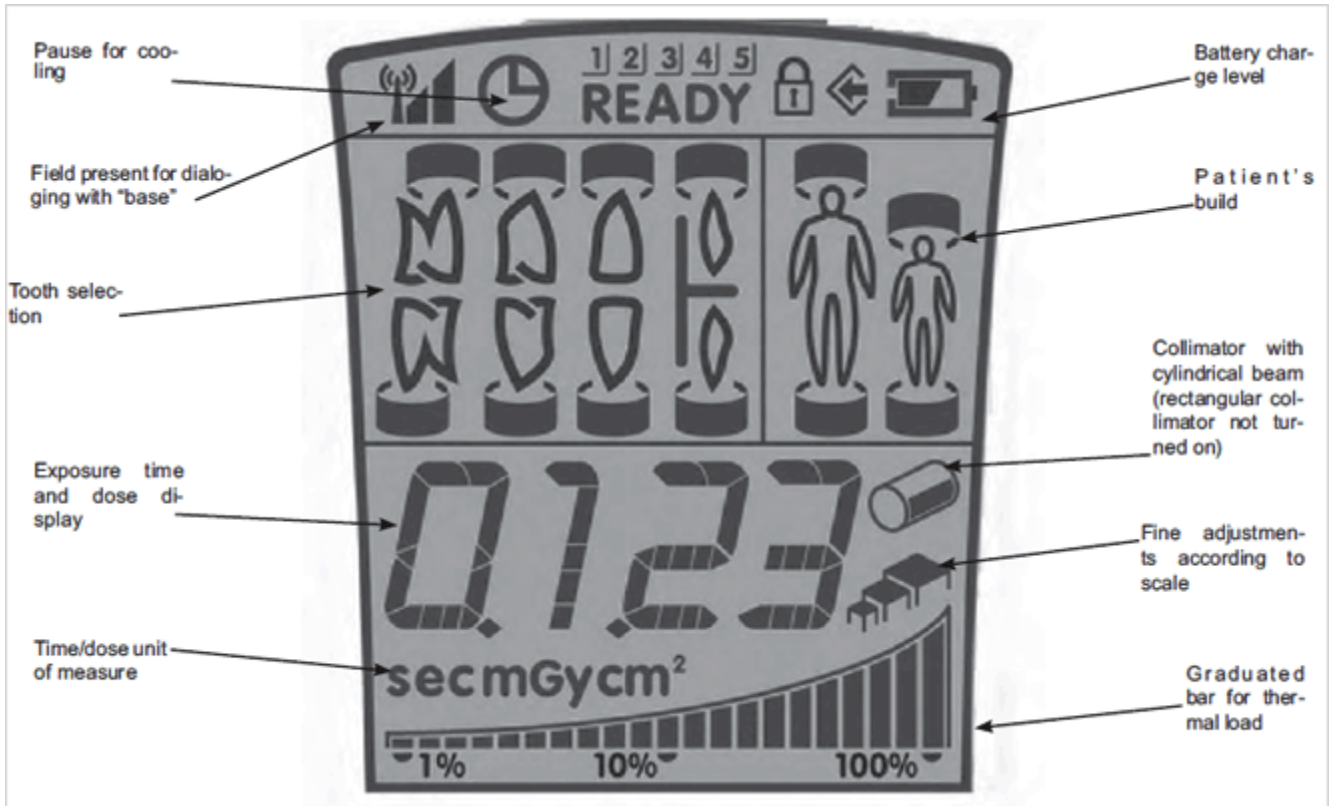
The control unit is turned on and off with the main switch (A), as illustrated in the figure below. The switch lights up when the control unit is energized. Whenever turned on, the equipment performs an operational test that takes a few seconds. Once the test has been completed, a buzzer rings and the indicator light (B) on the X-ray generator lights up at the same time.

NOTE: The exposure time and the parameters displayed when the unit is turned on are the last ones set before the central control unit was turned off. If the central control unit is left untouched for a few minutes it will go into stand-by mode. Simply press any key on the control panel to reactivate it.

Turning on the handheld

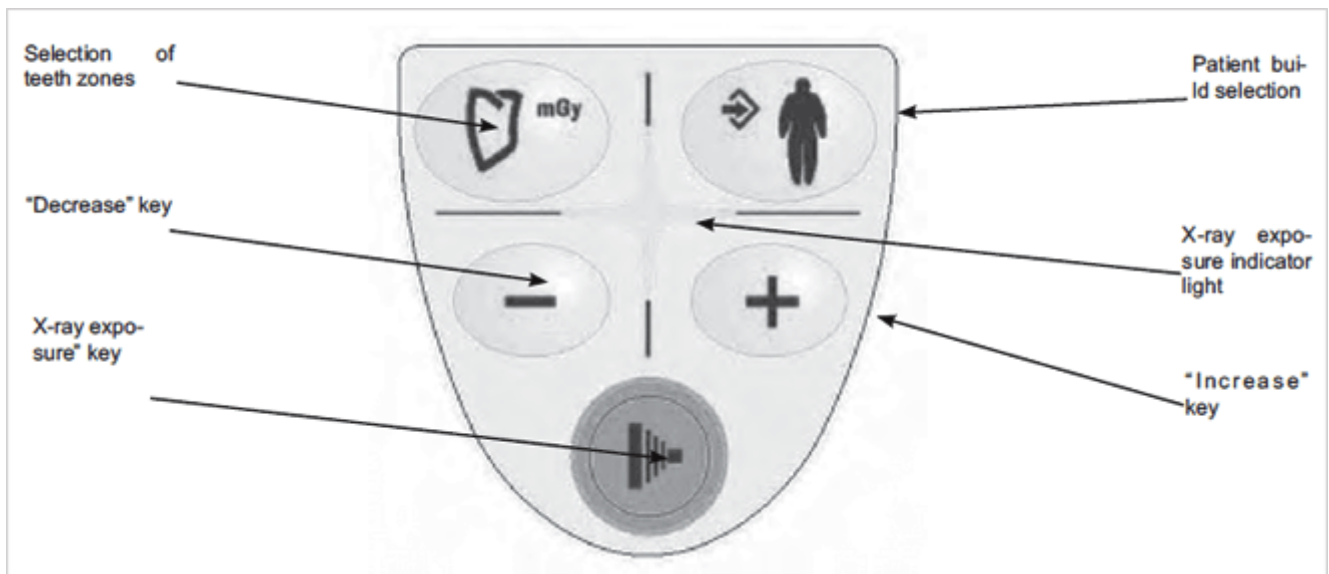
The handheld is turned on by pressing any key, except for the one for x-ray emission. A buzzer rings to confirm the apparatus has been turned on. The unit will be in the standard configuration described in detail in paragraph 3.1.3 and then search for the base it works with.

If the base is off, the handheld will not indicate the field nor status "ready". If the base is latter turned on, the handheld will detect it within thirty seconds or by pressing any function key on the pushbutton panel.


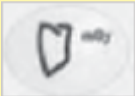
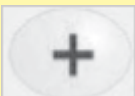
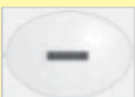



Control panel

As illustrated in the figure below, the handheld has four function keys and the exposure key.



The main functions of the keys on the handheld vary according to how they are pressed:

KEY	BRIEFLY PRESSED (less than 3 sec.)	PRESSED LONGER (more than 3 sec.)
	Changes over from ADULT to CHILD and vice versa (takes place when key is released).	Saves, if permitted, the sensitivity of the new time selected. The memo icon () lights up when the data item can be saved.
	Changes amongst the various types of teeth to select the area to be examined.	Displays the exposition time of the tooth in mGy and, if the key is held down a few more seconds, in mGy*cm2.
	Increases the exposure times in steps, according to the set scale.	Increases the scroll speed of the values in increasing order.
	Increases the exposure times in steps, according to the set scale.	Increases the scroll speed of the values in decreasing order.
	NO EFFECTS ARE OBTAINED IF THE KEY IS PRESSED LESS THAN A SECOND.	STARTS X-RAY EXPOSURE (the button has to be held down while the x-rays are being emitted, "dead man" function).

NOTE: "Dead man" function: the system that starts x-ray exposure with the dedicated key on the wireless handheld allows x-rays to be emitted only when the user presses and holds down the exposure key. X-ray emission will stop if the key is released ahead of time.

NOTE: The function related to pressing the key briefly is performed by pressing the key which will activate the function assigned to it. On the other hand, to perform the function carried out when the key is held down longer, press the key until the relative function is started. The buzzer will ring shortly to signal the function has started.

Automatic handheld shut off

About one minute after the base is turned off the handheld automatically shuts off. Similarly, the handheld will automatically shut off if it is far away or in any case outside the operating range for interfacing with the base.

Hand-held stand-by time

The entire x-ray unit will switch over to stand-by (even if the base is on) and the handheld will automatically shut off after approximately five minutes of non-use to save battery power. Press any key, except for the "exposure" key, to turn the handheld back on showing the last selection made by the user. To change the stand by time, refer to chapter 4 regarding the handheld's "Advanced options".

Checking the set parameters

Before actually taking an exposure, make sure the exposure parameters for the examination in progress are correctly set.

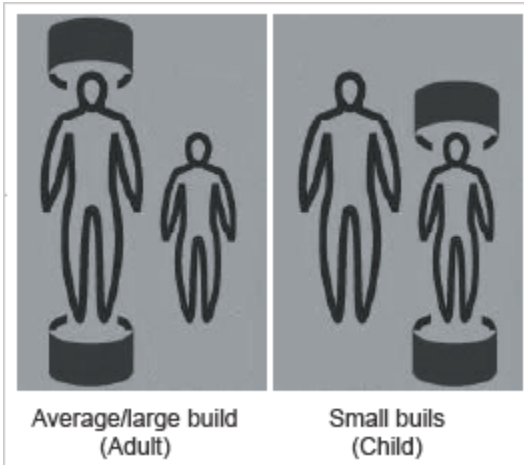
Checking the collimator used.

The icon on the handheld's screen should be on or off, depending on the operating mode selected:

Icon On: indicates that the cylindrical collimator is activated.

Icon Off: indicates the rectangular collimator is activated.

NOTE: After turning the collimator on or off, the preset exposure times and icon will automatically be modified within a few seconds.



Checking the set patient's build.

"Child" selected: indicates the x-ray unit is set for patients with small builds.

"Adult" selected: Indicates the x-ray unit is set for patients with average-large builds.

To change the selection, press the relative button.

NOTE: After the change has been made, the preset exposure times will automatically be modified.

Checking the set intraoral examination



Examination of upper molars



Examination of upper premolars/canine or rear "bite wing"



Examination of upper incisors or front "bite wing"



Examination of lower incisors



Examination of lower premolars/canine



Examination of lower molars

Batteries and charge level status

The handheld runs on two widely available AA alkaline batteries to assure sufficient stand-alone operation. The charge level of the batteries is given on the screen as follows:



Battery fully charged (a symbol does not appear in the area that shows the battery charge level).



Battery half-charged.



Battery charge level low or almost dead (causing the handheld to automatically shut off).

The batteries should be removed from the handheld if it is not going to be used for an extended period.

Position of the patient

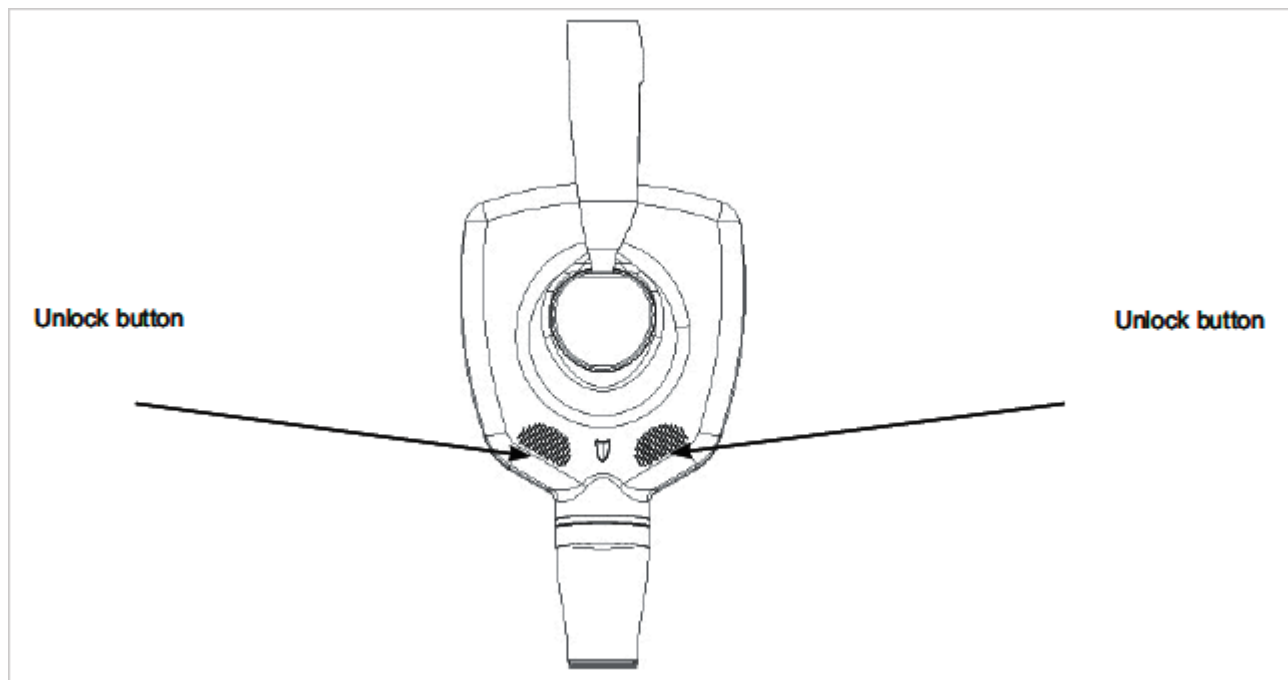
A positioner or alignment device specific for the selected image receiver should always be used to assure the x-rays are correctly aligned regardless of the position the patient's head is in.

Putting the x-ray unit cone into the required position

The x-ray unit cone is initially locked in place by an electric brake. To release the brake and turn the cone on the pivot point, use only the touch-sensitive unlock areas (see figure below).

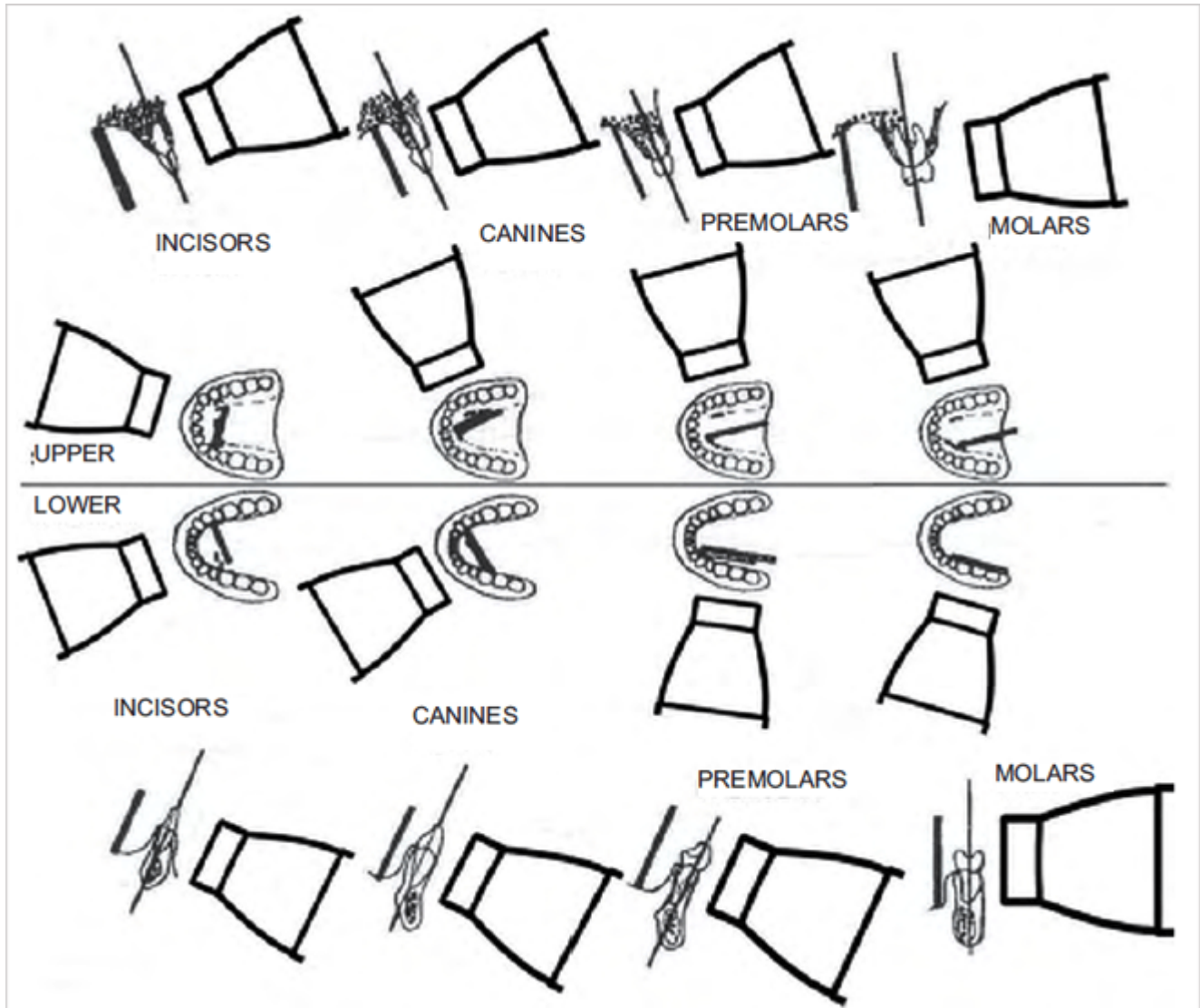
Hold down the unlock buttons to tilt the cone the extent desired by the dentist to take the exposure and then simply release the unlock buttons to lock it in place.

NOTE: The cone should be firmly held in place with both hands while pressing the release buttons and turning the cone on the pivot point.



Position of the X-ray plate or sensor

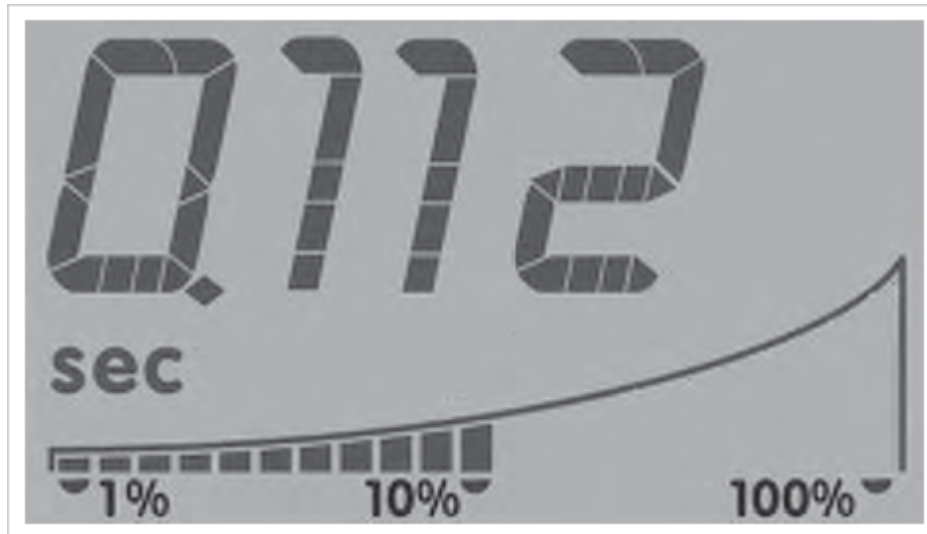
The parallel technique, where applicable, provides more accurate images in terms of size compared to the bisecting technique. A rectangular collimator, with 30 cm focus-skin distance, is always preferred to obtain better quality pictures. To avoid exposing the image receiver only partly (whether it is a sensor or photostimulable phosphor plate system) an alignment device that gives rectangular collimators guidelines should be used. These lines are usually given on the alignment ring.



- The x ray emission axis is perpendicular to the image receiver (for example a sensor or photostimulated phosphor plate) which in turn is parallel with the tooth's long axis.
- As a result, the picture of the tooth will only be deformed by the divergence of the x rays in relation to the focus spot.
- Radiographic enlargement may reach up to 15%.
- For some "special" pictures, for example occluded ones, it may be necessary to remove the rectangular collimator and use the round one if a positioner is not present.

Checking the exposure time on the display

Before starting exposure, check the time setting on the handheld's screen (see the tables with the original exposure times, paragraph 3.1.4). To change the value, use keys "+" and "-".



Note: Changing the exposure time is only temporary: if the new time is not stored in the memory it will be lost.

Procedure to be followed when taking the x-ray

- Pick up the handheld and go a safe distance away (at least 2 meters) maintaining visual contact with the patient and x-ray unit during the exposure. Make sure "ready" is indicated.
- Tell the patient to stay still.
- Press and hold down the "Exposure" key on the handheld until the audible warning sound (beep) stops and the yellow light goes out.



NOTE: If the "EMIT X-RAY" key is released at any time, exposure will be interrupted and error code E01 will appear on the display.

Once exposure has been completed, it is possible to proceed with the next exposure unless the x-ray unit has reached the maximum allowable temperature. The percentage the cone exceeds the maximum allowable temperature is always shown on the screen (see icon below).

Once the maximum temperature is reached, it is necessary to wait a certain time to allow the instrument to cool down. This condition is indicated by this symbol.





At this point the exposure function will be disabled until the screen shows "ready" again.

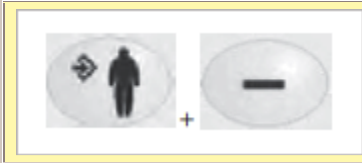
As soon as "READY" appears on the handheld, another exposure can be taken.

Technician and user setup menu

The handheld allows a number of work parameters to be viewed and edited by simply pressing a combination of keys present on the control panel. Key serves to confirm/save the function, key is used to undo/quit the menu while keys **[+]** and **[-]** edit the values of the selected parameters on all the setup menus.

Proceed as directed below to access the menus:

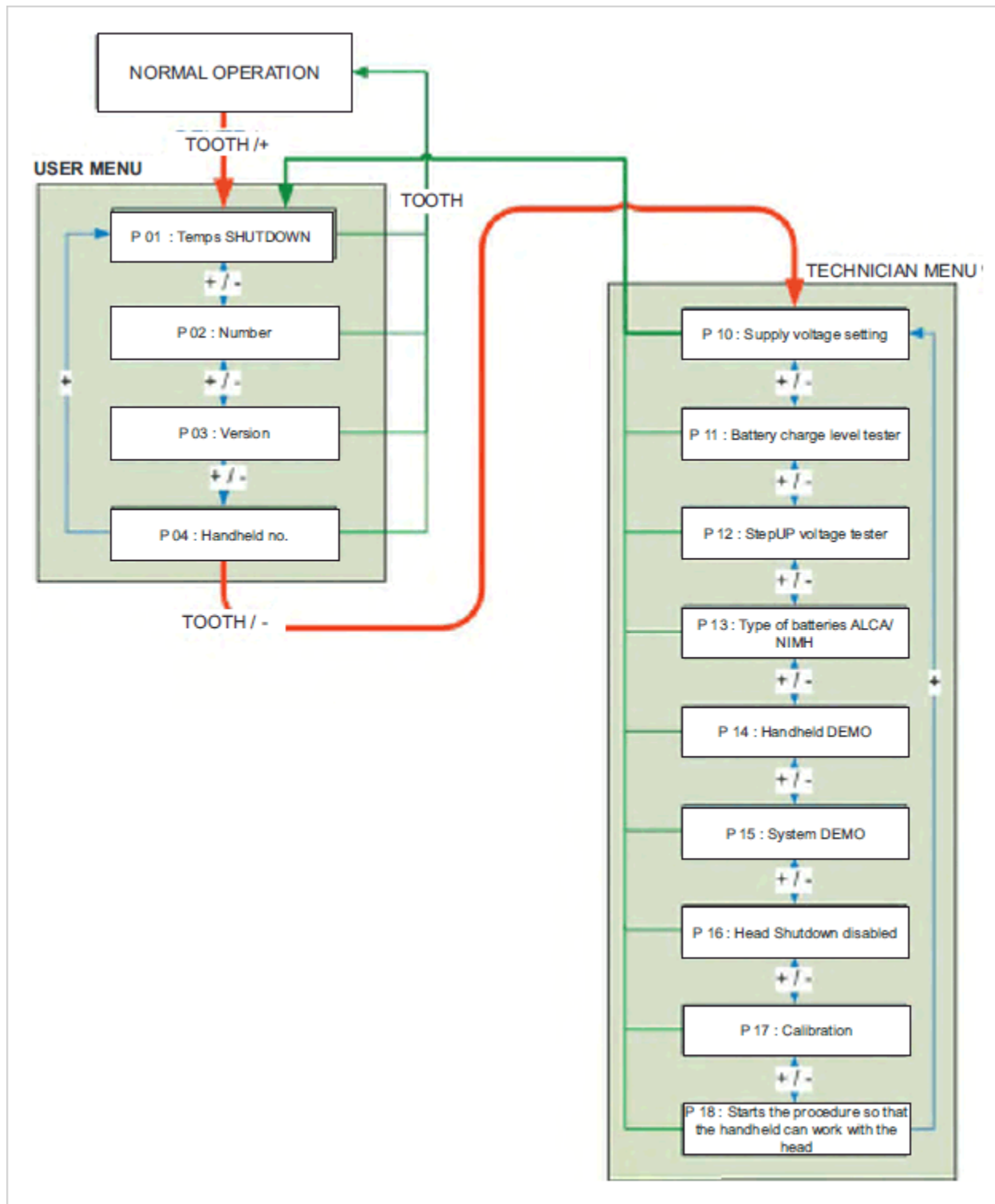
Combination of keys	Description
	<p>Sensitivity levels Press these two keys to adjust the sensitivity levels (determined based on the table given below and type of sensor/receptor used). Set the current sensitivity level to a value within the allowable range (on a scale from 1 to 25), with keys "+" and "-"; to confirm the desired level and go back to the main screen press key "adult".</p>
	<p>Setting the rated current (7mA or 3.5mA) Press these two keys at the same time to set the rated current used to take the x-rays. The normal configuration, identified by the word "NORM" corresponding to 7mA, should always be used unless otherwise indicated by technical support personnel.</p>
	<p>User setup menu Hold down these two keys to go to the user setup menu (from P01 to P04). Press key to make the selection. Use keys "+" and "-" to scroll and make the selection by pressing key "adult" again. The items that can be set are given below:</p> <p>P 01: Sets the handheld standby time (from 5 to 30 minutes), the factory setting is 5. P 02: Assigns an identification tag based on the x-ray unit (from 1 to 5 or none, using "+" and "-"). P 03: Shows the software version indexes (from 1 to 3, using "+" and "-"). P 04: -</p>
	<p>Technician setup menu Hold down these two keys when in position P4 on the user menu, to go to the advanced setup menu (from P 10 to P 18). As for the previous menu, the selection is made by pressing key "adult". Once the single configurations have been accessed, scroll them with keys "+" and "-" and make the selection by pressing key "adult" again. The items that can be set are given below:</p> <p>P 10: Supply voltage setting a: A shot can be taken to improve the reading b: The mains voltage is shown in real time on the screen and refreshed every 5 seconds. If a shot is taken the reading is refreshed every second during the cool down period. c: As soon as key + or - is pressed the display is blocked until the change is confirmed.</p> <p>P 11: Displays the voltage or charge level of the batteries; the reading may range from 1.5 to 3Vdc</p> <p>P 12: StepUp value, this value should be 3.3 + 0 - 0.2Vdc if a value outside this range is displayed there is a fault in the handheld card.</p> <p>P 13: shows the type of batteries used for the handheld: a: "ALCA" default setting, indicates that disposable alkaline batteries are being used. b: "NIHM" indicates rechargeable batteries are being used **</p> <p>P 14: indicates DEMO status of the handheld a: "PALM" default setting, standard operating mode b: "DEMO" when the handheld is in this mode it does not communicate with the head but READY is shown on the display even if the control unit is shut off.</p> <p>P 15: indicates DEMO status of the entire system a: "SHOT" default setting, standard operating mode b: "DEMO" a pad lock shaped icon appears on the display; all the functions are operative as if in standard mode, the handheld communicates regularly with the head but x rays are not emitted when the shoot button is pressed.</p> <p>P 16: STAND BY function of the head is shut off</p> <p>P 17: When this menu is opened, the handheld starts a special procedure to deactivate the DSP default settings. A number of shots are required at a set time of 0.100 sec to recalibrate the card.</p>



Restoring the factory settings

Press these two keys at the same time to immediately restore the "factory settings" (see paragraph 3.1.4) NOTE: This function can be accessed only if the advanced options menu is opened, i.e. after pressing buttons "tooth" and "adult"

Menu for version 1.2



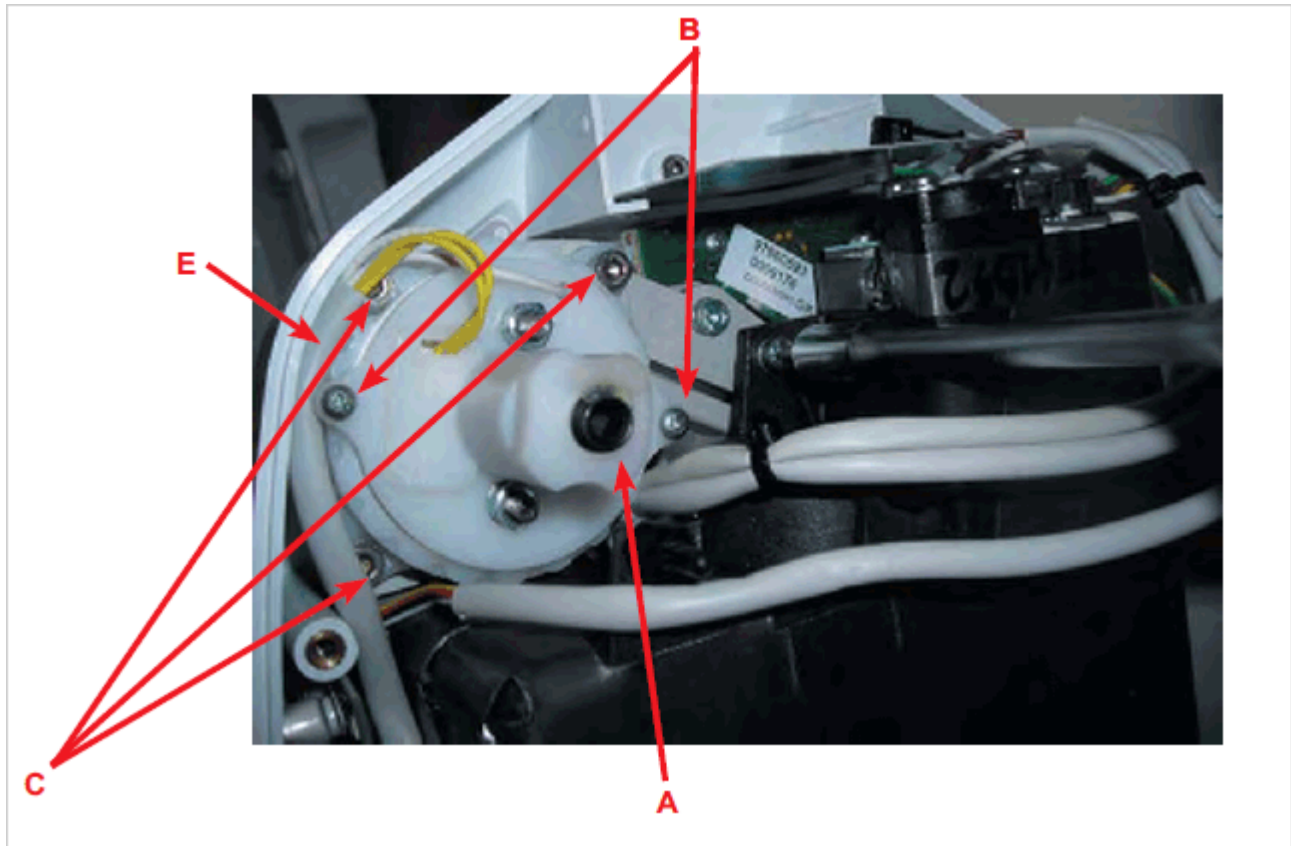
Actuator unit

Adjusting and replacing the actuator

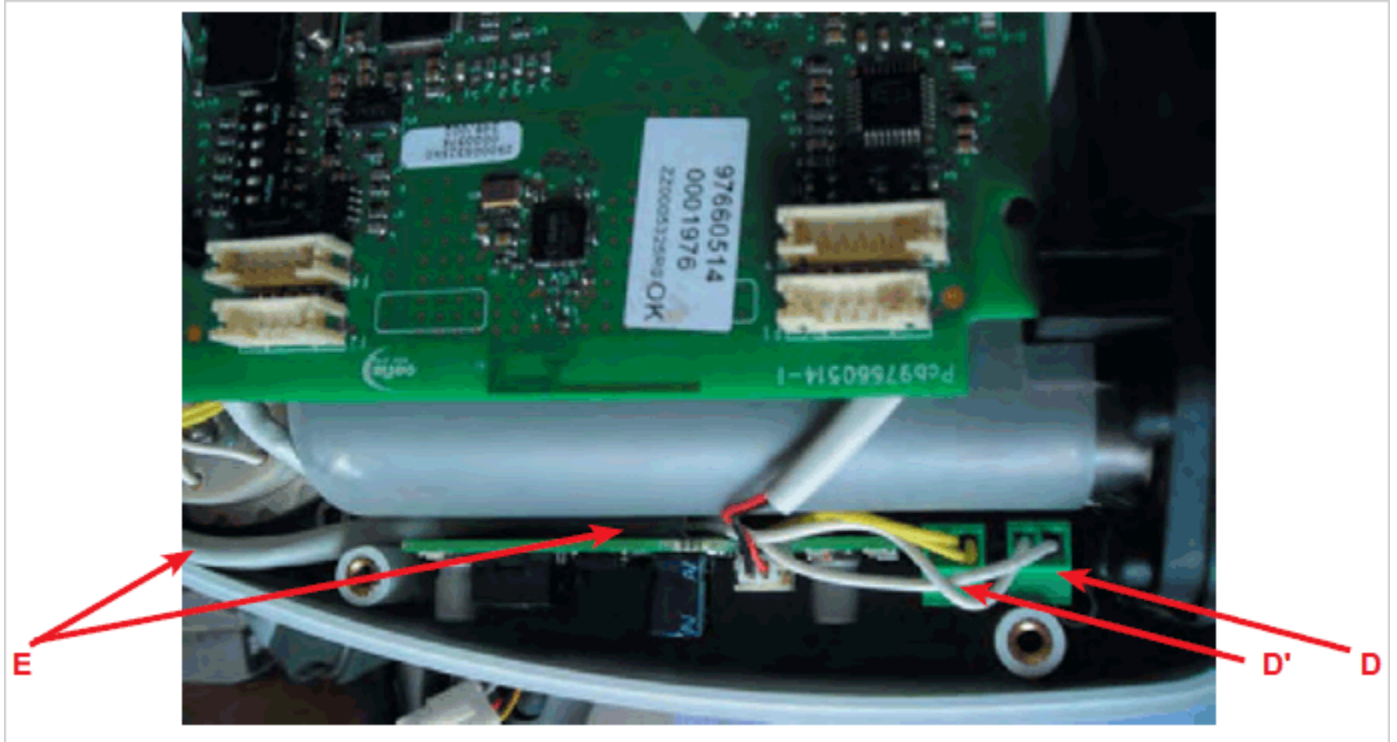
Pull out the collimator and panel stop ring, take off the screw cover caps and loosen the screws that secure the lower cover. Work on grub screw A with an Allen wrench to adjust the pressure the brake applies on the ball. Run the actuator's supply wires behind the control card.

Close the cover tightening the four fixing screws and put the cover caps back on top of the screws.

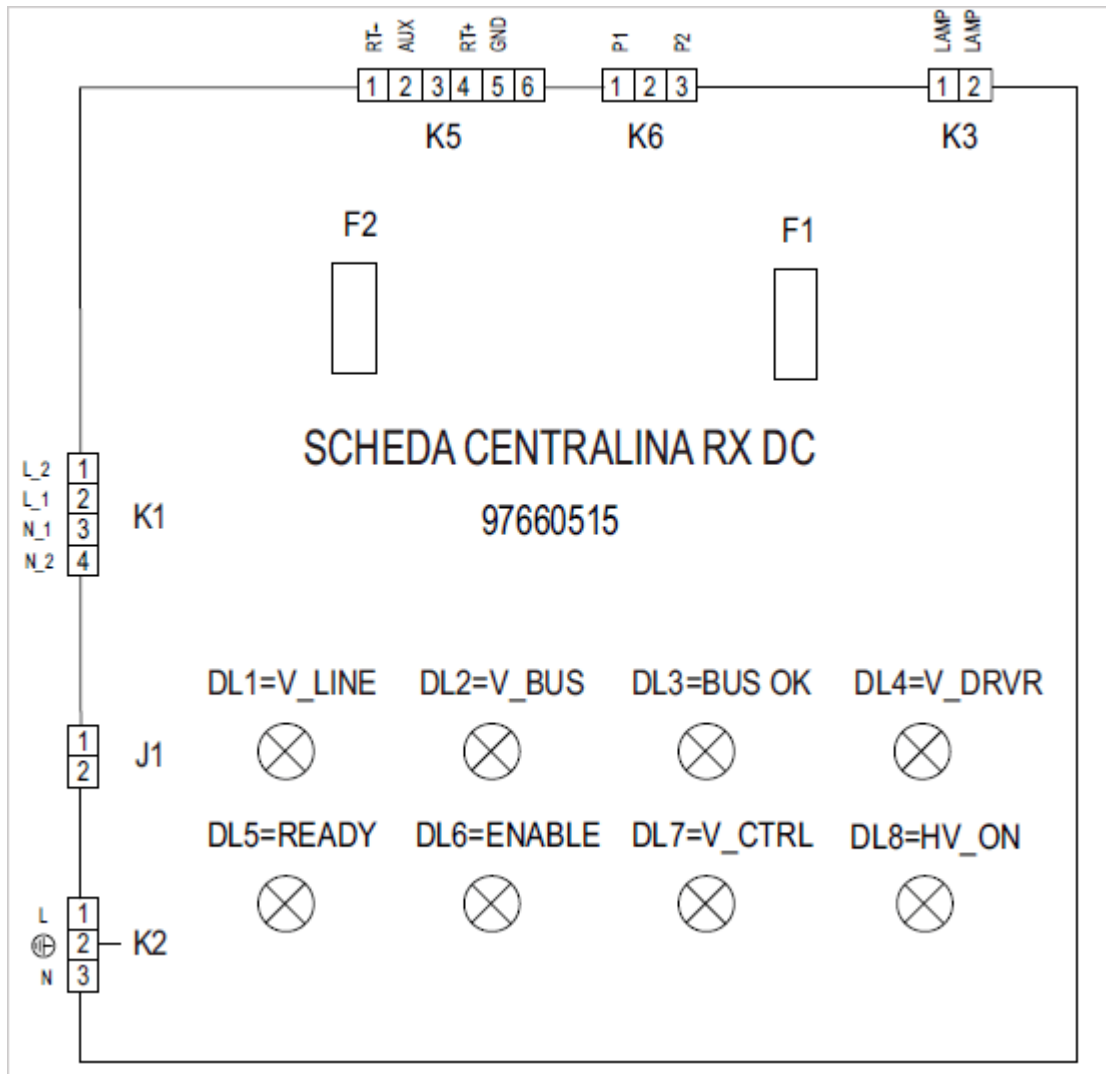
If the grub screw A cannot adequately adjust the brake, completely loosen grub screw A, loosen screws B and tighten the entire actuator unit sliding it until it encounters a bit of resistance. Tighten screws B again to prevent turning, making sure the screws match their seats. Adjust grub screw A again and close the cover as previously directed, being careful to lay cable E as shown in the figure.



To replace the entire actuator unit: detach supply wires D and the wires of temperature sensor D' connected to the actuator control card. Loosen the three screws C that secure the unit and replace it with a new one. Once secured with screws C, follow the instructions given above to adjust and then connect wires D and D' again.



Control unit card Code 97660515



Diagnostic Led indicators

LED	Color	Status	
DL1	Red	On	Indicates 230Volt input voltage if 110Volt the led indicator is illuminated but not as bright.
DL2	Red	On	Indicates the input voltage to the capacitors.
DL3			
DL4	Green	On	Indicates the power control part fed 12Volt
DL5	Yellow	On	If the head is connected it indicates READY status, relay RL1 is closed, the indicator light's signal is activated
DL6	Yellow	Off	It lights up if x-rays are emitted.
DL7	Green	On	Indicates 15Volt output voltage to supply the card inside the head

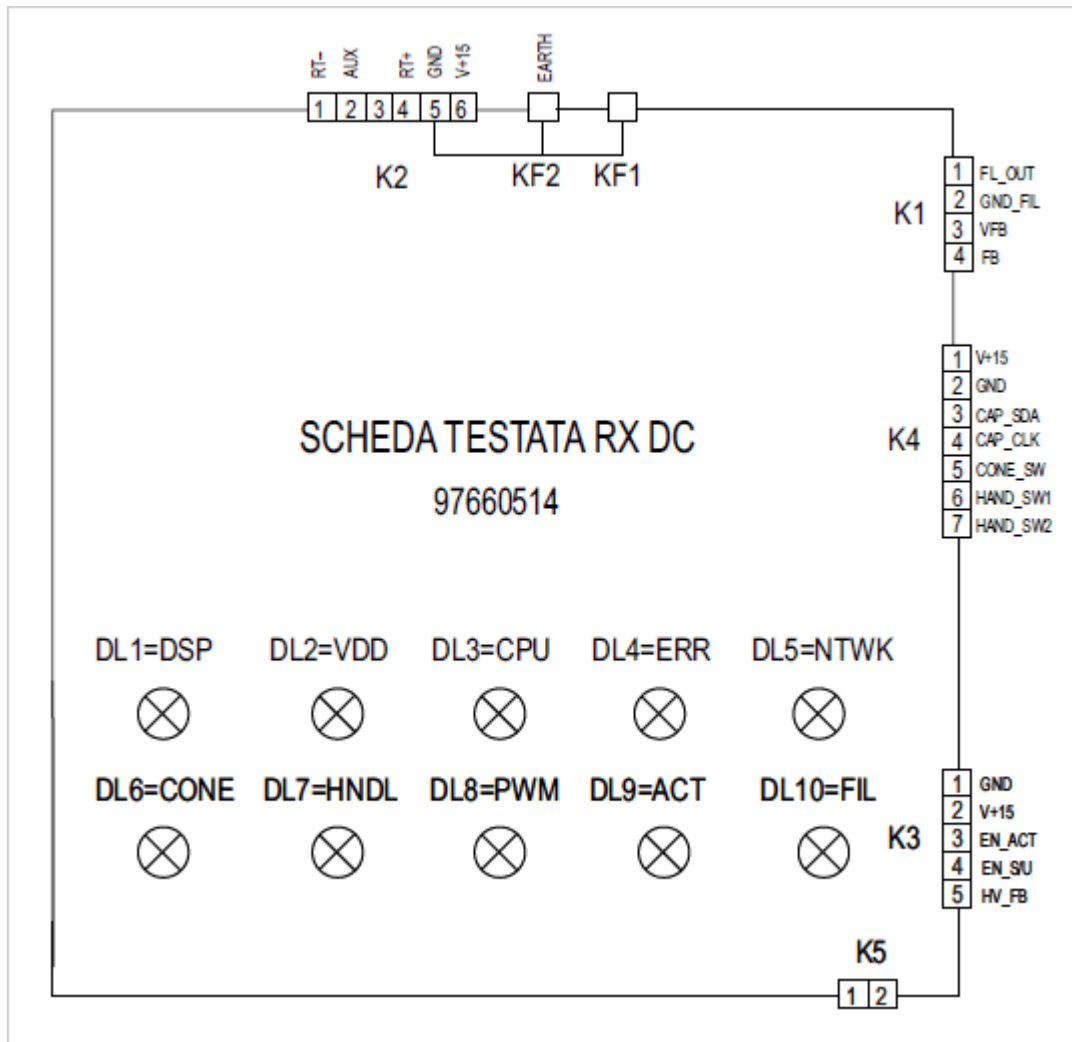
Fuses

F1	6,3A	Main fuse if blown all the led indicators are off.
F2	1,6A	Fuse for capacitors if blown only DL1 is illuminated all the others are off.

Deep-switch

Con corrente di utilizzo 230Volt Tutti i deep-switch devono essere in posizione OFF, mentre se si utilizza una corrente di 110Volt il deep-switch 1 (se la versione di software della scheda è la 1.2) deve essere posizionato in ON. Se la versione del software è la 1.1 deve essere posizionato in ON solo il deep-switch 4.

Basic head control card Code 97660514



Diagnostic Led indicators

LED	Color	Status	
DL1	Yellow	Flashing	If the diagnostic Led indicator fl ashes: once a second everything is OK once every 0.5 a second count the times it fl ashes and check the error in the error table very quickly check the error on the handheld
DL2	Green	On	Indicates 3.3Volt input voltage
DL3	Yellow	Flashing	If the diagnostic Led indicator fl ashes:: once a second everything is OK If steady replace the card

DL4	Red	Off	Lights up to signal an error
DL5	Green	On	Indicates the radio frequency communication network has been created
DL6			Not used
DL7	Yellow	Off	Lights up if one of the two keys is pressed
DL8	Yellow	On	Indicates the indicator light is illuminated It works simultaneously with DL5 for card 97660515
DL9	Yellow	Off	If illuminated it indicates the actuator's button has been pressed and the output signal from this card has been generated
DL10	Yellow	Off	If illuminated it indicates voltage at the filament, on during preheating

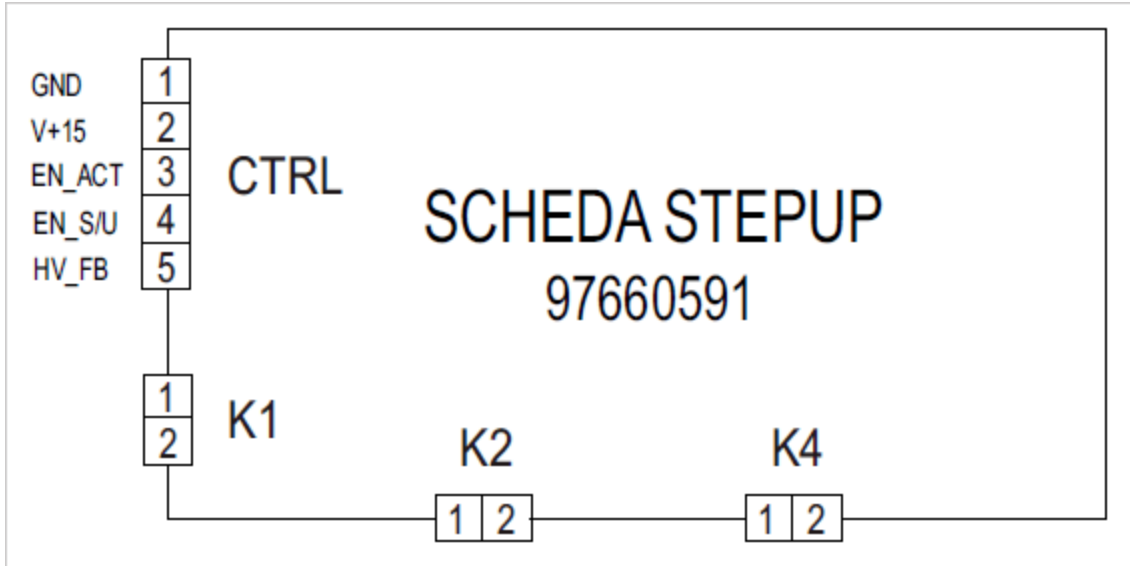
Replacing the basic head control card

Pull out the collimator and panel stop ring, take off the screw cover caps and loosen the screws that secure the lower cover. Detach all the connectors and work on the two support pins to pull out the card. Put the new card back in the correct position, being careful to run the cables behind the card support pins as shown in the figure. Make sure they do not pass in front of the x-ray collimator.

Before closing the cover, turn on the x-ray unit and make sure the diagnostic led indicator is as shown in the table. After the basic head control card has been replaced, associate the handheld to the head by following the instructions given in the relevant paragraph.



Actuator control card Code 97660591

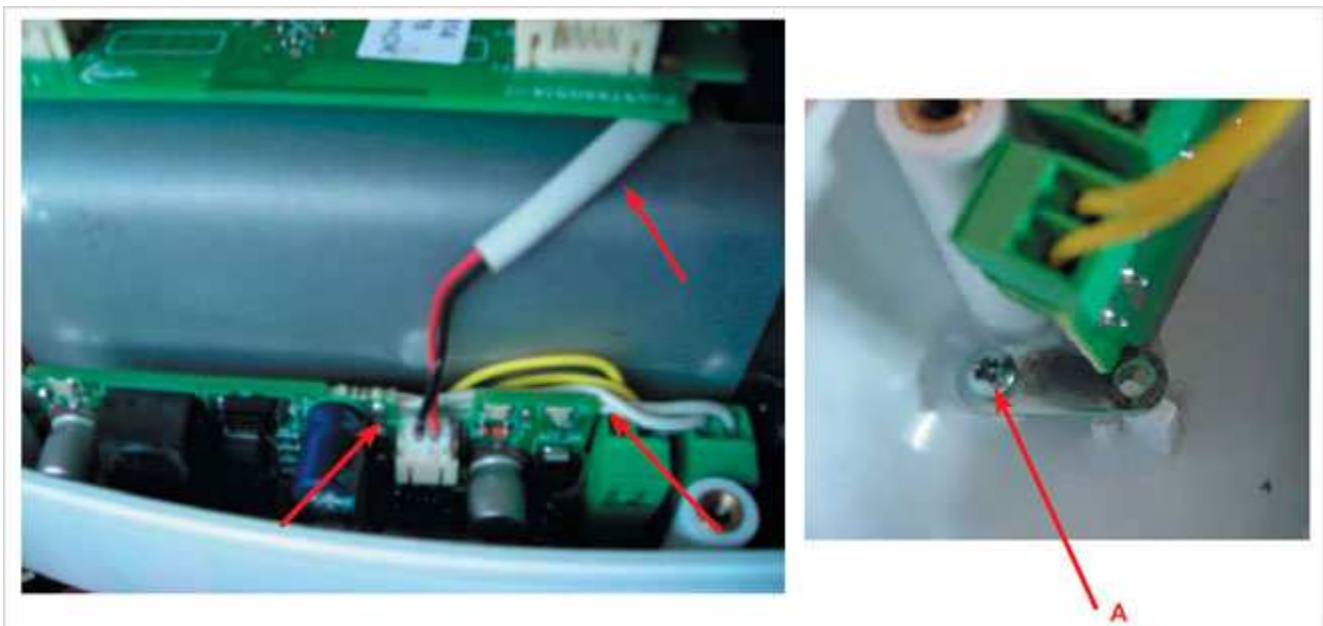


Diagnostic Led indicators

LED	Color	Status	
DL1	Green	On	Indicates 15Volt input voltage.
DL2	Green	On	Indicates 40Volt present to actuate the actuator
DL3	Yellow	Off	Lights up when one of the two actuator control buttons is pressed.

Replacing the actuator control card

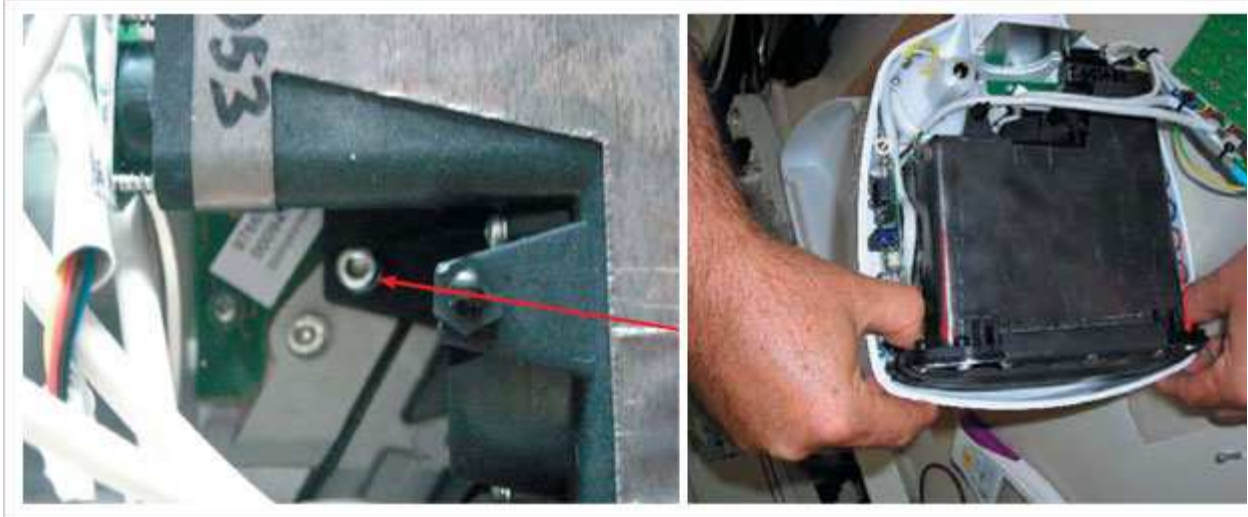
Pull out the collimator and panel stop ring, take off the screw cover caps and loosen the screws that secure the lower cover. Loosen screw A that secures the card and pull it out. Detach the connectors and replace the card reconnecting the connectors and securing it with screw A. Be careful to lay the actuator cable behind the control card and the cable that connects the actuator card to the capacitors' one as shown in the figure so that they are not crushed by the cover.



X-ray head

Replacement

Follow the instructions given above to remove the basic head control card Code 97660514. Detach all the cables connected to the head that may get in the way. Loosen the screw A that secures the head, move it to the rear and lift it as shown in the figure.



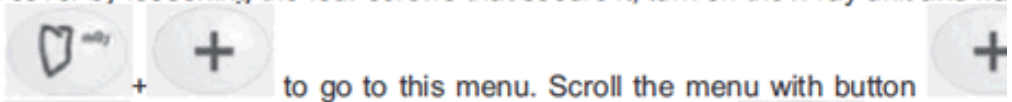
To reinstall the head, perform the procedure in reverse order, being careful to lay the cables properly.

Associating the handheld to the x-ray head

If the handheld or head control Code 97660514 is replaced, the handheld needs to be associated to the head as directed below:

1) Open the head cover by loosening the four screws that secure it, turn on the x-ray unit and ha

P18. Press keys



to go to this menu. Scroll the menu with button

Press



to go to the technician menu and press key several tir

Press key



to open the menu.

At this point, press button SW3 on head control card Code 97660514. If association was succ

radio field icon



should appear with the word READY. On the contrary, repeat the o

Error codes given on the handheld

When an error appears on the handheld screen it can be reset by pressing keys



or

unit back to READY. If the error is still displayed even after pressing the two keys mentioned a code and solution given in the table below.

Handheld errors

N°	Error code description
E 01	Button released in advance
E 02	Max. shooting time 7s
E 03	CPU internal error
E 04	Software internal error
E 05	ALU internal error
E 06	Status switching too long
E 07	RF field too low (16 consecutive messages lost)
E 08	Incorrect firmware version
E 09	Wrong handheld serial number
E 10	Button released in advance
E 11	Cone type error
E 12	Hardware internal error
E 13	Emission time greater than 4.9s
E 14 E 15 E 16	DSP or internal cycle error
E 17	Mains voltage over maximum limit (more than 15%)
E 18	Mains voltage below minimum limit (more than 15%)
E 30	0x0010 0x0020 0x0030
E 31	0x0400
E 32	0x2100
E 33	0x8000 0x8010 0x8020 0x8030