KODAK RVG 6500 System and KODAK RVG 6500 IPS System

User & Installation Guide

Notice

The User & Installation Guide for the KODAK RVG 6500 System includes information on the installation of the device as well as its usage. We recommend that you thoroughly familiarize yourself with this Guide in order to make the most effective use of your system.

The KODAK RVG 6500 System, wireless digital intra-oral X-ray system, is intended to produce an image of the dental area at the direction of dentists, oral surgeons and orthodontists for x-ray imaging of the dento-maxillo-facial area.

The KODAK RVG 6500 IPS System, in addition, provides the Intelligent Positioning System (IPS) to enable the dentist prior to acquisition to correctly align the X-ray beam to the RVG sensor.

WARNING: We recommend that you consult the "Safety, Regulatory and the Technical Specification User Guide" before using the KODAK RVG 6500 Systems.

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U.S. Federal law restricts this device to sale by or on the order of a dentist or physician.

This document is originally written in English.

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KODAK RVG 6500 System, complies with Directive 93/42/CEE relating to medical equipment.

CE
0086

Manufacturer

Carestream Health, Inc.
150 Verona Street
Rochester NY 14 608

Authorized Representative in the European Community

EC REP

TROPHY
4, Rue F. Pelloutier, Croissy-Beaubourg
77435 Marne la Vallée Cedex 2, France

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1 Conventions in This Guide

Conventions in this Guide

The following special messages emphasize information or indicate potential risk to personnel or equipment:

WARNING: Warns you to avoid injury to yourself or others by following the safety instructions precisely.

CAUTION: Alerts you to a condition that might cause serious damage.

Important: Alerts you to a condition that might cause problems.

Note: Emphasizes important information.

Tip: Provides extra information and hints.

2 KODAK RVG 6500 Systems Packaging

KODAK RVG 6500 Systems Description

The KODAK RVG 6500 Systems is available in 2 configurations:

- The KODAK RVG 6500 System
  OR
- The KODAK RVG 6500 Intelligent Positioning System (IPS) System

The KODAK RVG 6500 Systems information applies to both KODAK RVG 6500 System as well as the KODAK RVG 6500 IPS System.

The KODAK RVG 6500 IPS System information applies only to information relevant to the IPS system.

Packaging of KODAK RVG 6500 System

The KODAK RVG 6500 System packaging is composed of the following boxes:

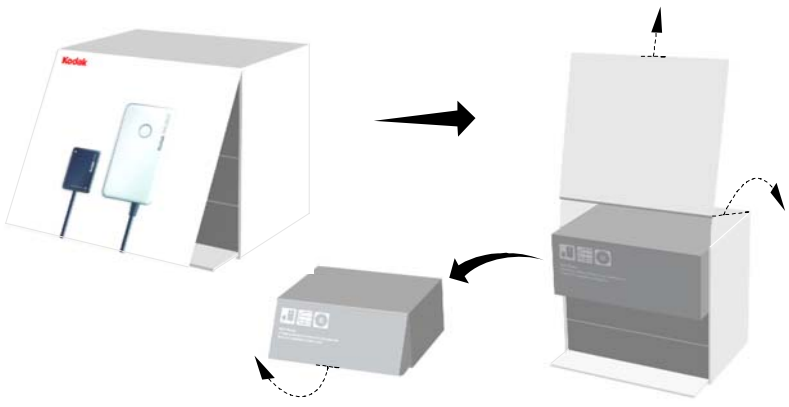
- The RVG sensor box
- The WiFi access point box
- The positioning kit box

Packaging of KODAK RVG 6500 IPS System

The KODAK RVG 6500 IPS System packaging is composed of the following boxes:

- The RVG sensor box with IPS features
- The IPS aiming ring box
- The WiFi access point box
- The positioning kit box

Opening the Boxes



3 KODAK RVG 6500 Systems Overview

KODAK RVG 6500 Systems Overview

- The KODAK RVG 6500 System
  OR
- The KODAK RVG 6500 Intelligent Positioning System (IPS) System

Figure 1 KODAK RVG 6500 System Components

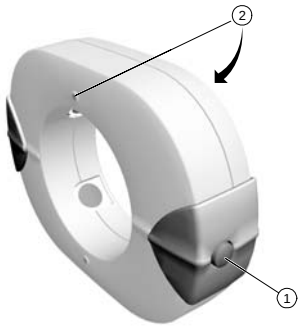
1 The sensor and the control box

2 The WiFi access point

3 The medical power supply for the RVG system

The KODAK RVG 6500 IPS System is composed of all the KODAK RVG 6500 system components and the IPS aiming ring. The IPS aiming ring enables you prior to acquisition to dynamically and visually center and align the X-ray beam to the RVG sensor.

Figure 2 IPS Aiming Ring

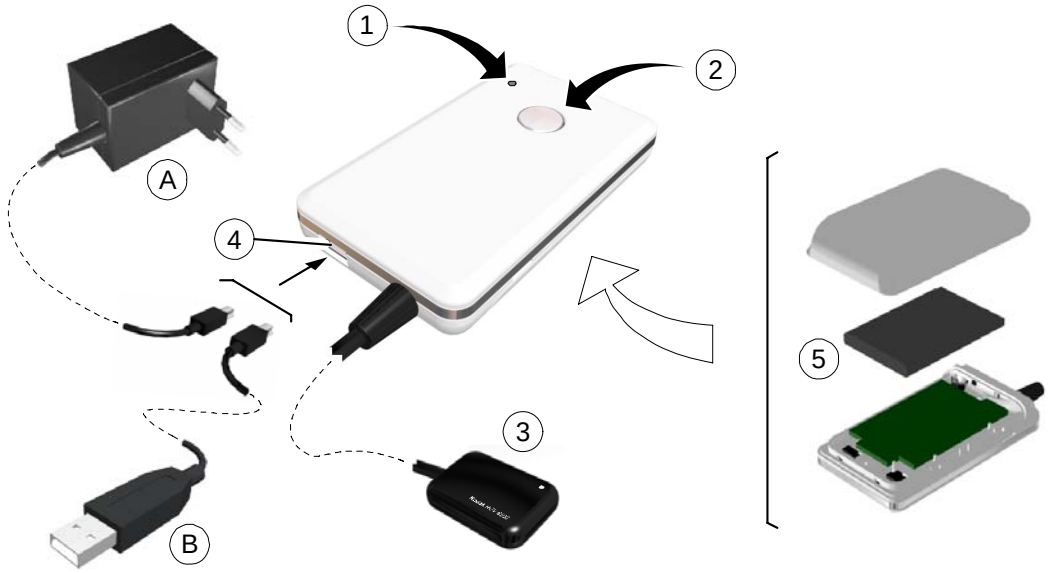


1 ON/OFF button: A quick push on the ON/OFF button will light the front or back LED.

2 4 LEDS

RVG Functional Components Overview

Figure 3 RVG Functional Components Overview



1 Battery status indicator LED:

●	Not charged
◉	Charging (blinking)
●	Charged with charger connection
OFF	Charged without charger connection

2 Sensor remote control button and the ON/OFF button:

○	OFF mode: Press 5 seconds to turn OFF
◉	〈 Connecting to WiFi AP (blinking): Press 2 seconds to turn ON. 〈 Transmitting acquired x-ray image (blinking)
●	〈 Connected to WiFi AP 〈 Standby mode
●	Ready for acquisition
●	Error mode

3 Sensor

4 USB connector for battery charging

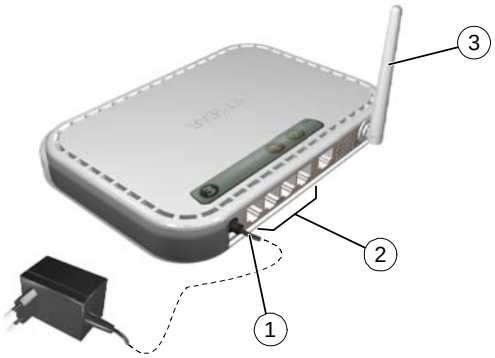
- (A) Medical charger
- (B) USB cable to charge with the computer

5 Battery

WiFi Access Point Functional Components Overview

The WiFi access point is the wireless equivalent of the wired internal Local Area Network (LAN). The WiFi access point provides connectivity between the computer and the RVG sensor(s) enabling you to use the KODAK RVG 6500 within your practice area. See the manufacturer guide for any detailed information on the WiFi access point.

Figure 4 WiFi AP Back Panel Overview

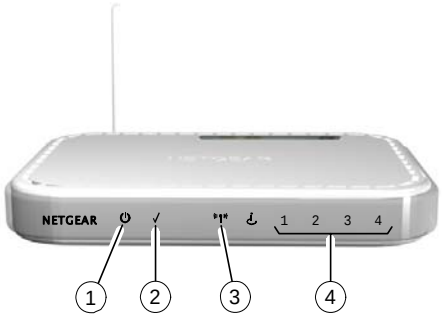


1 Power adapter outlet.

2 4 local LAN 10/100 Mpbs Ethernet ports for connecting the WiFi AP to the local computers.

3 Wireless antenna.

Figure 5 WiFi Access Point Front Panel Overview



1 Power indicator

2 Test indicator

3 Wireless transmission indicator

4 Local Area Network (LAN) indicator

4 Imaging Software Overview

Computer System Requirements

This section specifies the minimum computer system requirements for KODAK RVG 6500 intraoral imaging system software. If necessary you must update your computer system configuration.

The computer and its screen should ideally be situated in or close to the operating area, in the visual field of the practitioner when he is with the patient. The visual access of the acquired image for the patient encourages communication.

The KODAK RVG 6500 systems must run on a computer with a keyboard.

The KODAK RVG 6500 systems must run on a computer with a mouse equipped with a right and left button and a mouse wheel.

Important: It is MANDATORY to check that the computer system configuration is compatible with the computer system requirements for the KODAK RVG 6500 software.

Important: The screen with the proper technical display characteristics for visualization of radiological images will avoid any diagnostic error.

Table 1 Minimum Computer System Requirements

Item	Viewing and Acquisition	Comments
CPU	2 GHz Intel Duo Core	
RAM	2 GB	RAM has a major impact on system performance.
Hard disk drive	• 1.2 GB for software installation • 80 GB free space to use the software	
Graphic board	Nvidia/ATI based board supporting Open Glide 1.2 with 256 MB of video RAM on AGP x8 video bus (example: Nvidia GeForce 6800 GT)	The video RAM has major impact on system performance.
Monitor	• 1 monitor • 17” or larger • 1024 x 768 minimum screen resolution - 32 bits color mode	Your monitor is a vital component in displaying quality images. Low-quality screens will prevent you from proper diagnoses and treatment.

Table 1 Minimum Computer System Requirements (Continued)

Item	Viewing and Acquisition	Comments
Operating system	• Windows XP Home / Pro edition SP3 • Windows Vista 32 bits • Windows Vista SP1	
Ethernet interface	1 Ethernet interface	
USB 2.0	2 ports	
Wireless adapter	Wireless 802.11g Adapter (USB, PCMCIA or PCI)	
CD/DVD drive	DVD-ROM drive is required to install the product.	
Backup media	Removable/portable, external hard disk drive.	We strongly recommend a daily backup of x-ray images and patient records.

General Software Overview

The KODAK RVG 6500 intraoral imaging system operates with the following software:

- KODAK dental imaging software
- KODAK RVG 6500 systems software modules:
  - RVG acquisition interface
  - Intelligent Positioning System (IPS) interface (optional)
  - RVG Mobile Application for iPhone®/iPod® touch (optional) (see the relevant section)

KODAK Dental Imaging Software

The KODAK dental imaging software is a user-friendly working interface that was designed and developed specifically for radiological diagnosis. It is the common imaging platform for all our digital systems for dentistry.

The KODAK dental imaging software has the following features:

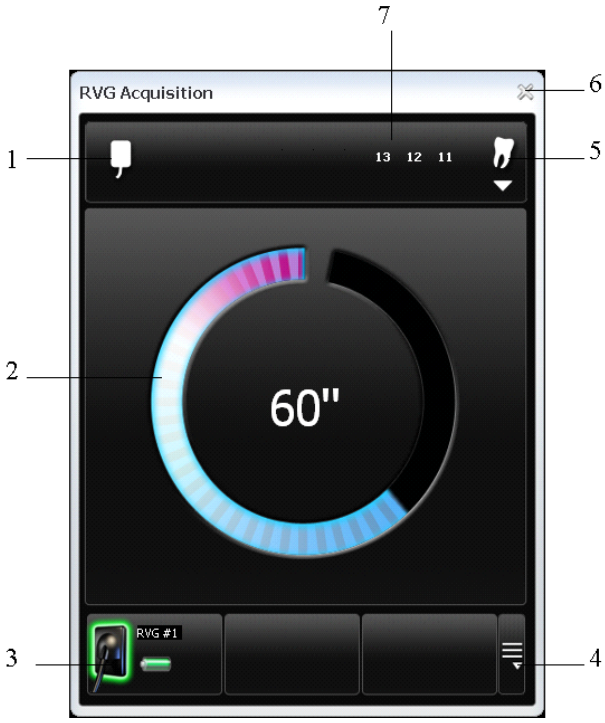
- Patient record management using **Patient Window** features.
- Extraoral and intraoral image management using **Imaging Window** features.

Note: For a complete information on how to use the KODAK Dental Imaging Software, click **?** in the menu bar to access the online help, or see *SM691 KDIS Quick Start Guide.*

The RVG Acquisition Interface

The **RVG Acquisition** interface module is a user-friendly working interface that was designed and developed specifically for the KODAK RVG 6500 intraoral imaging system.

Figure 6 RVG Acquisition Main Interface



1 **Sensor orientation:** Pre-orients how the x-ray image is displayed in the **Imaging Window**.

2 **Preview screen**:
- Indicates the 90 second activation time for acquisition.
- Displays the acquired x-ray image instantly after acquisition.

3 **Available sensor(s)**: Displays maximum 3 sensors with their name, sensor status and battery status.
- Blue: Sensor on standby
- Green: Sensor ready for acquisition
- Red: Error mode

4 **Sensor list:** Accesses the list of the sensors (see Figure 6).

5 **Dental arch interface:** Accesses the dental arch interface for tooth selection (see figure 7).

6 **Exit button:** Exits the **Acquisition Interface**.

7 **Tooth display:** Displays the selected tooth number.

Figure 7 List of Available Sensors

The sensor name and battery status:

Battery status.

The WiFi status:

Wifi transmission is available.

Wifi transmission is available but not good.

WiFi transmission is not available.

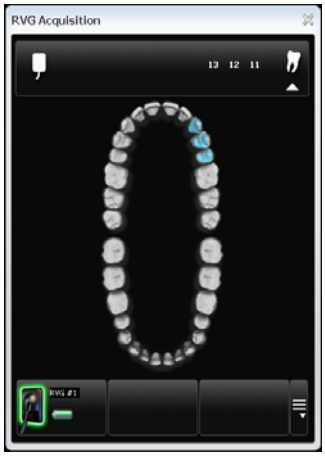
The Sensor availability:

Sensor is connected to your computer and ready for use. Click unlock to disconnect.

Sensor is not connected to your computer. Click lock to connect.

Refresh button refreshes the list of sensors visible in the computer.

Figure 8 Dental Arch for Tooth Selection



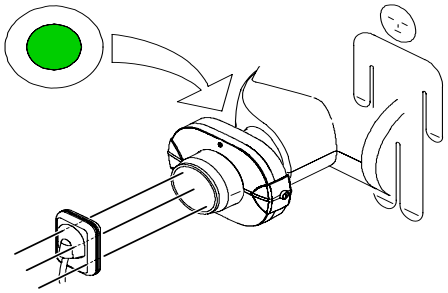
To select the desired tooth or teeth for acquisition, click on the tooth. The tooth number for acquisition is displayed as shown in the Figure 5.

The IPS Aiming Ring Interface Overview

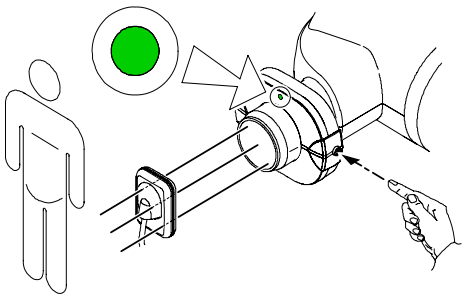
The IPS aiming ring interface is a user-friendly working interfaces that was designed and developed specifically for the KODAK RVG 6500 IPS System intraoral imaging system. It enables you prior to acquisition to dynamically and visually center the x-ray beam to the RVG sensor using the centering indicator.

IPS Aiming Ring Interface and RVG Sensor Display

The IPS aiming ring interface displays the RVG sensor according to where you are positioned, that is, in front or behind the aiming ring. The operator where positioned (in front or behind) must always see the LED (front or back) of the aiming ring ON. A quick push on the ON/OFF button will light the front or the back LED.



- Operator is positioned behind the aiming ring.
- Back LED is ON.
- Sensor active side is displayed.



- Operator is positioned in front of the aiming ring.
- Front LED is ON.
- Sensor back side is displayed.

IPS Aiming Ring Interface and RVG Sensor Centering

The IPS aiming ring interface enables you to correctly position the X-ray generator to the RVG sensor. The IPS interface enables you to manage the X-ray centering and the proper paralleling technique achievement.

Sensor Display

- Sensor is not centered.
- Centering indicators are red.

Result

- Sensor active surface not fully exposed to X-ray.
- Image will have a cone cut.
- Parallel technique not achieved.
- Image distortion.

Sensor Display

- Sensor is centered.
- Centering indicators are red.

Result

- Sensor active surface is fully exposed to X-ray;
- Image will have no cone cut.
- Parallel technique not achieved.
- Minimized risk of magnification and distortion.

Sensor Display

- Sensor is centered.
- Centering indicators are green.

Result

- Sensor active surface is fully exposed to X-ray;
- Image will have no cone cut.
- Parallel technique achieved*.
- Minimized risk of magnification and distortion.

Important: ***The paralleling technique is achieved when the digital sensor plane is placed parallel to the real axis of the tooth in the patient's mouth. This correct positioning is under the operator's responsibility.**

The RVG Mobile Application Overview

For the RVG Mobile Application overview, see the relevant Chapter.

5 Setting Up the KODAK RVG 6500 Systems

Important: Your computer must have an Ethernet board and be WiFi equipped before installing the KODAK RVG 6500 systems.

WiFi Access Point Setup Configurations

There are 2 WiFi access point setup configuration options:

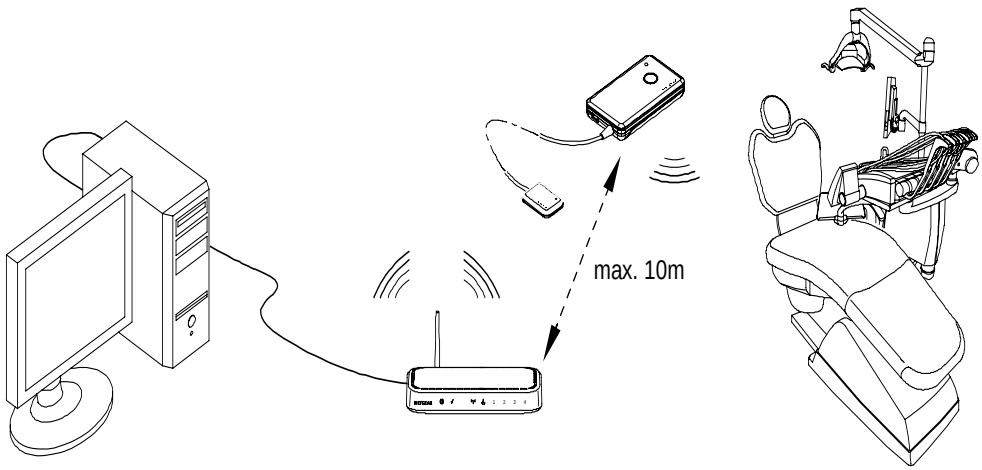
- The wired WiFi access point setup configuration
- The wireless WiFi access point setup configuration

You need to decide your setup configuration before starting the WiFi setup. Once you have decided you will be guided by the setup software (see **Installing the Setup Installation Software**).

WiFi Access Point Wired Configuration Setup

You can choose to have a wired WiFi access point configuration. In this configuration setup, the WiFi access point is connected to a single computer through an Ethernet cable. Several sensors can be connected to the same access point and computer.

The transmission range between the WiFi access point and the RVG sensor is up to 10 meters.



WiFi AP Wireless Configuring Setup

You can chose to have a wireless WiFi access point configuration. In this configuration setup, the computer is connected to the WiFi access point through a router, that is, through a dongle or a PCI card. In this configuration, several sensors can be connected to the same access point and shared between several computers and chairs.

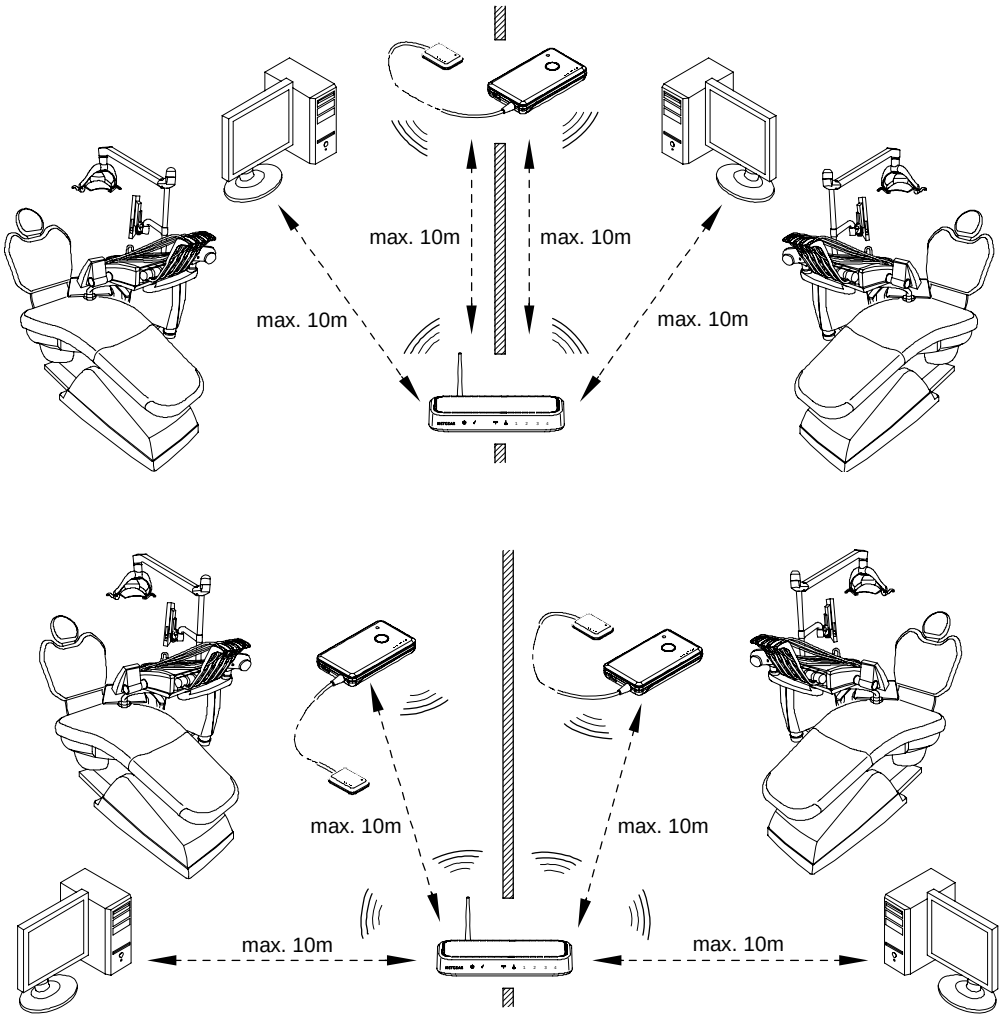
For optimal WiFi access point wireless setup, follow these setup recommendations:

- Place the WiFi access point in a visible and high location (not on the floor).
- Place the WiFi access point in a central location for a multiple access point transmission.
- Avoid any barriers along the line of transmission, for example, armored wall and door, cabinets, effronteries and metal file cabinets.
- Install the WiFi access point at 1 meter distance from other appliances transmitting the same frequency range.
- Install the WiFi access point away from electrical equipment that also generates interferences.

In this configuration, the transmission range between WiFi access point and:

- The RVG sensor is up to 10 meters.
- The computer is up to 10 meters.

.



Installing the KODAK Dental Imaging Software

Before installing the KODAK Dental Imaging Software, check that:

- The computer has all the PC system requirements
- You have the software DVD as of **version 6.12 or higher**

To install the KODAK Dental Imaging Software, follow these steps:

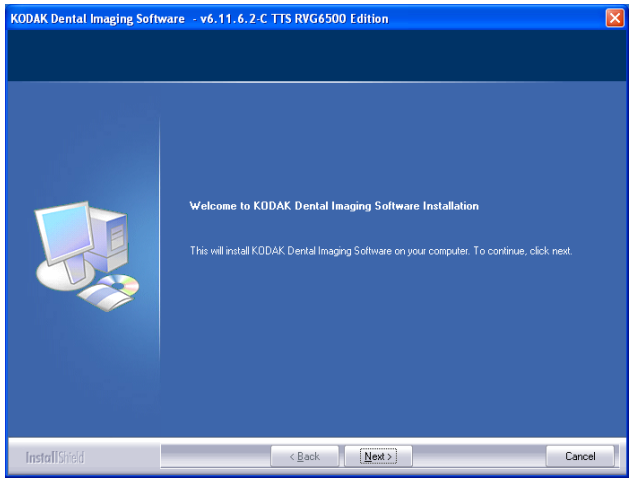
1 Insert the software DVD in the DVD-ROM drive of the computer.

Wait for the installation program to start. If the program does not start automatically, click **Start > Run** and enter **D:\setup.exe** if D is the letter for the DVD-ROM drive, or the letter of the relevant drive on the computer.

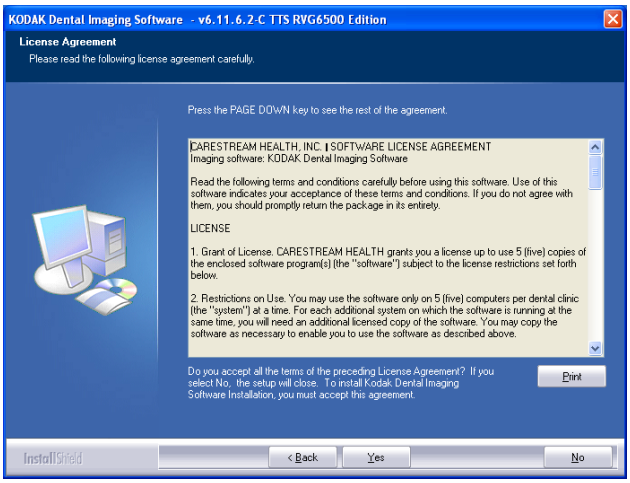
2 The **Choose Setup Language** dialog box is displayed. Select the installation language and click **OK.**

3 The **Kodak Dental Imaging Software** welcome page and the **InstallShield wizard** are displayed.

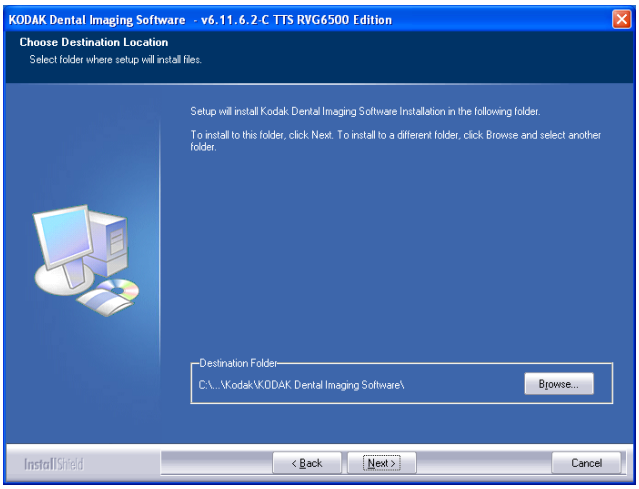
4 The **Welcome to KODAK Dental Imaging Software Installation** dialog box is displayed. Click **Next** to launch the installation.



5 The **License Agreement** dialog box is displayed. Accept and click **Yes.**



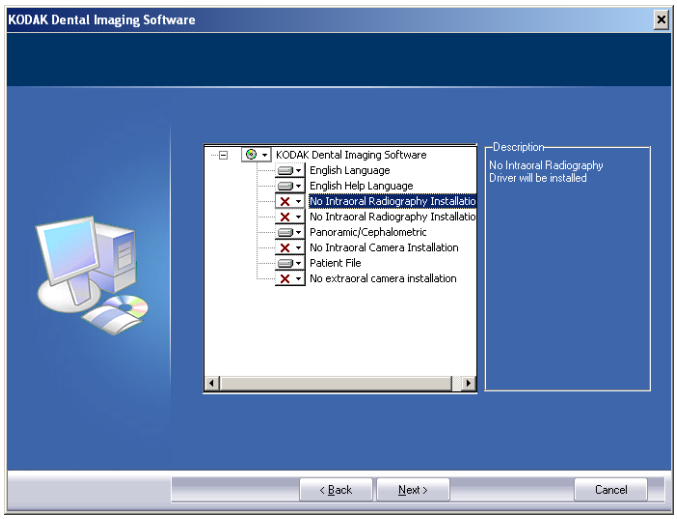
6 The **Choose Destination Location** dialog box is displayed. Click **Next** if you accept the default destination folder (c:\program files\Kodak\Kodak Dental Imaging Software) or browse to choose another destination folder.



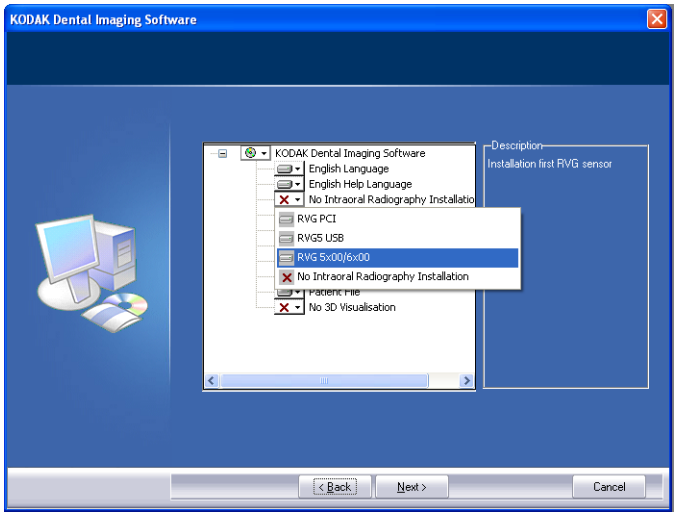
7 The **KODAK Dental Imaging Software** dialog box is displayed. The **Patient file** is selected by default but you must select the device.

8 To select the desired device, do the following:

〈 Click on the drop-down list of **No Intraoral Radiography Installation.**

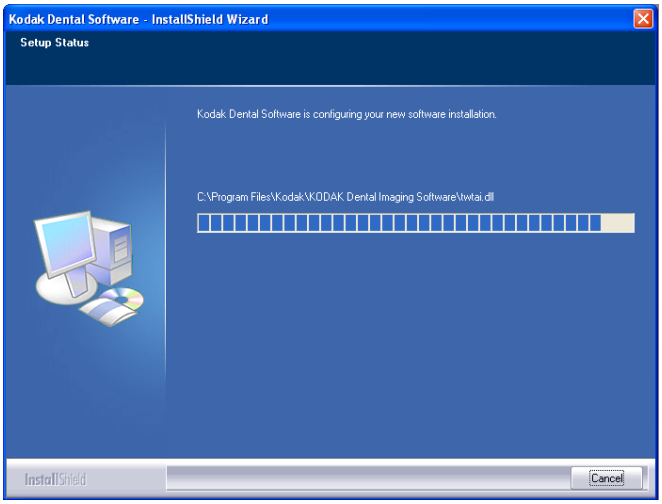


〈 Select **RVG 5x00/6x00**.



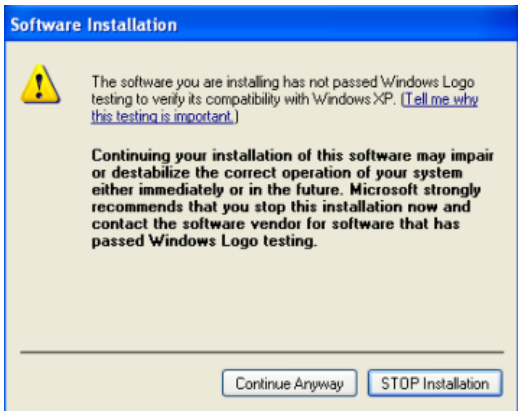
〈 Click **Next** to begin the installation.

The **InstallShield Wizard** is displayed. Let the installation process run automatically.

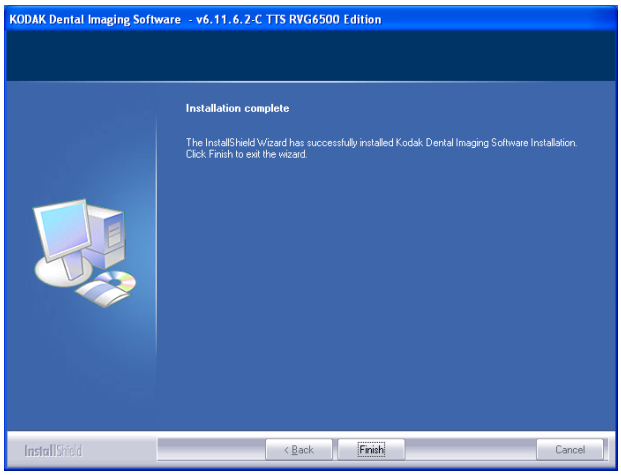


The **Kodak Patient file - InstallShield Wizard** is displayed while the patient files are installed on the hard drive.

The **Software Installation** dialog box is displayed while the installation process continues. Click **Continue Anyway** until the dialog box disappears.



9 The **Installation Complete** dialog box is displayed when the installation is finished. Click **Finish**.



The

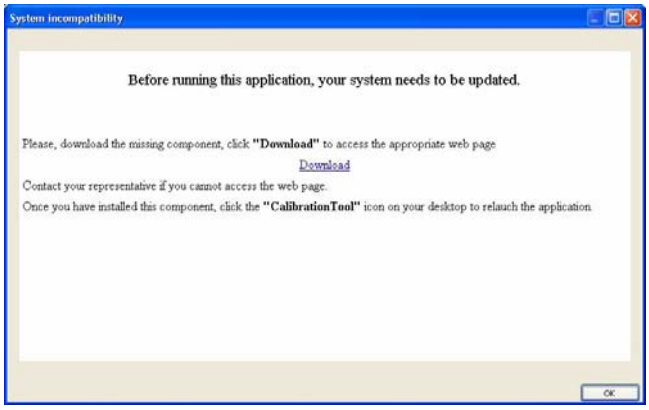
and

are installed on your desktop.

If your computer operating system is not compatible with the system requirements follow the instructions below, otherwise go to step 10.

If your PC operating system is not compatible with the system requirements

If your PC operating system is not compatible with the system requirements, the System incompatibility dialog box is displayed. Click Download, your application will close automatically.

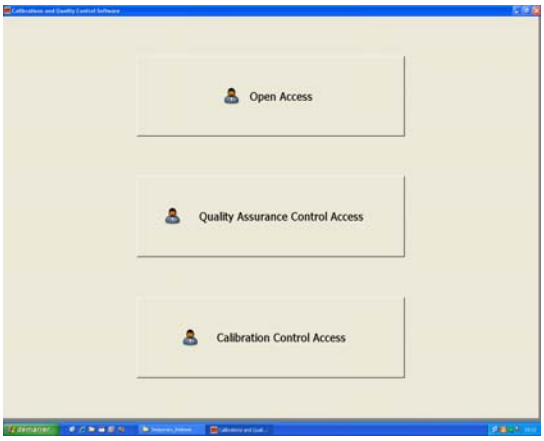


Follow the on-screen instructions to install the required “Windows Wireless component”. Reboot your PC when the installation is completed.

Installing the Setup Installation Software

10 Click

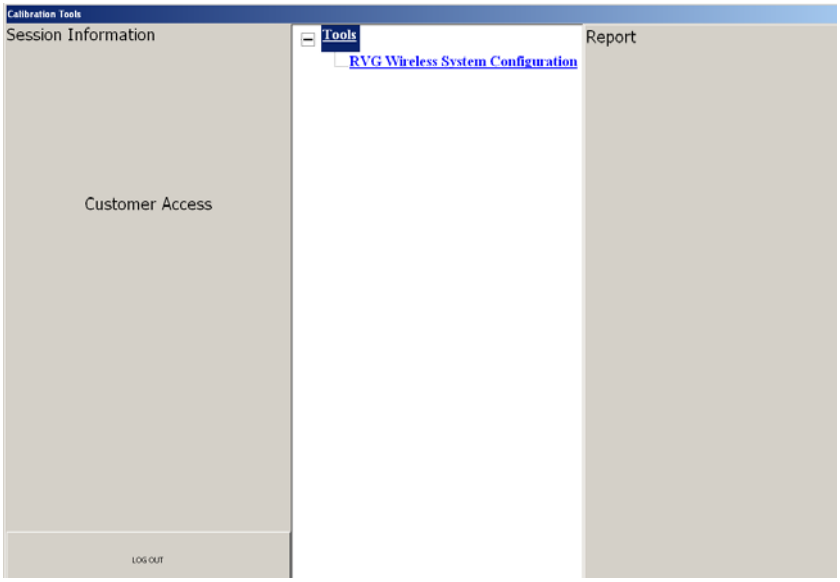
on your desktop. The **Calibration and Quality Control Software** window is displayed.



11 Click

. The **Calibration Tools** window is displayed.

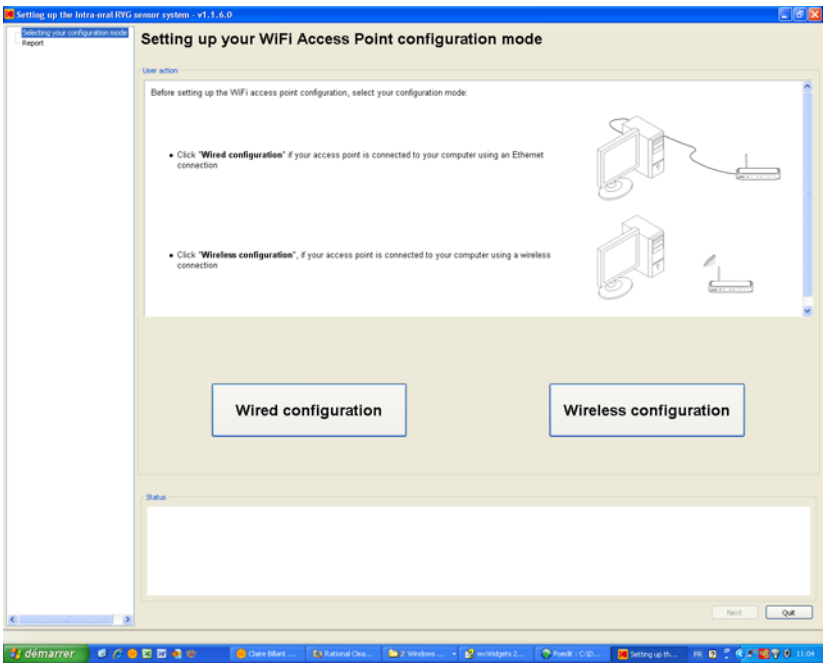
12 In the central pane, click **RVG Wireless System Configuration**, to access the "**Setting Up the WiFi AP**" window (see and follow step 10).



13 Before the setting up of the KODAK RVG 6500 System procedures, have with you the:

SSID	Password
RVG8_NETWORK	7794AA6500EC239BFF4554DD80

14 The "**Setting Up the WiFi AP**" window is automatically displayed. Follow the on-screen instructions to set up the RVG system.

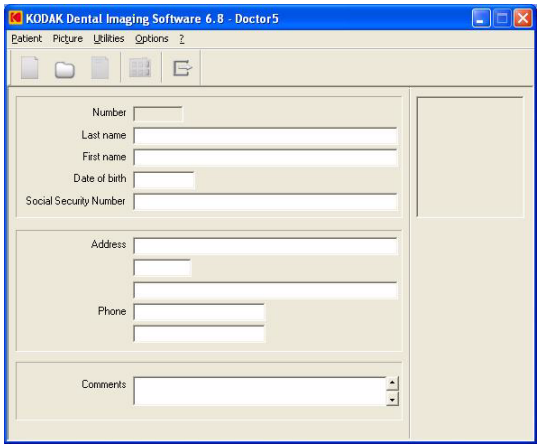


Once you have finished setting up the RVG system, you must register the KDIS Licence.

Registering the KDIS Licence

To register the KDIS licence, follow these steps:

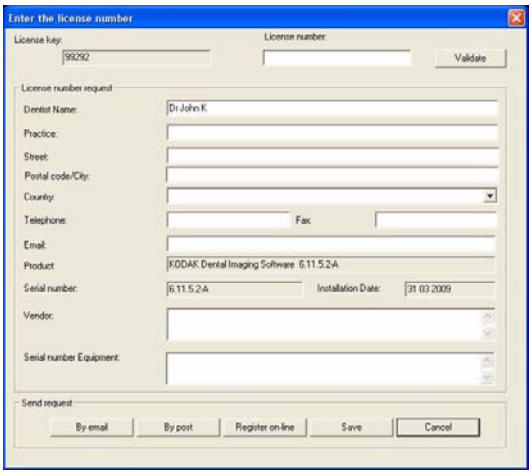
1 Double-click to open the **Patient Window**.



2 Create a patient record. From the toolbar, click and enter the required patient information.

Click to access the **Imaging Window**.

3 The **Enter the licence number** dialog box is displayed. Enter the licence number and click **Validate** if you have the licence number or click **Cancel** to continue.



The icon appears on the toolbar of the **Imaging Window**.

For the RVG Mobile Application installation (optional), see Chapter 7.

Mounting the RVG Holders

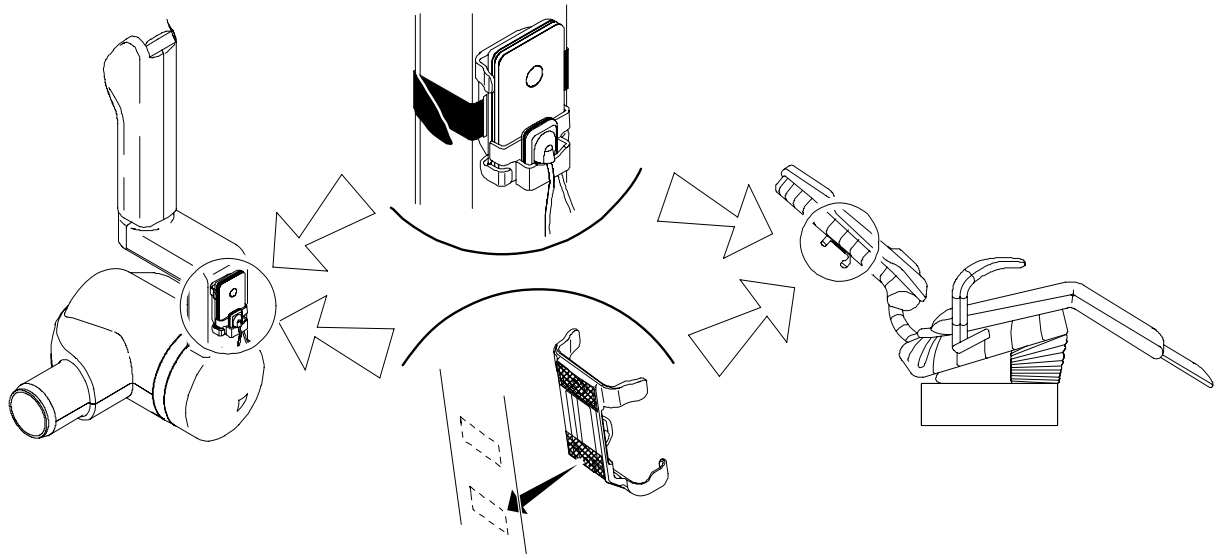
The RVG sensor and control box holders enable you to have them at reach to optimize your workflow. You need to install the RVG sensor and control box holders where it best suits your workflow, the X-ray generator arm, the chair, etc....

To mount the RVG sensor and control box holders, follow these steps:

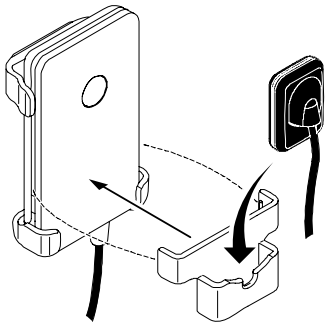
1 Attach the RVG control box holder with the double-face adhesive or the Velco strap supplied on the side of the X-ray generator arm.

You can also attach the RVG control box holder with the double-face adhesive or the Velco strap to the chair or any other flat surface close to the patient's chair.

The RVG control box holder can also be mounted on the wall with screws (not supplied).



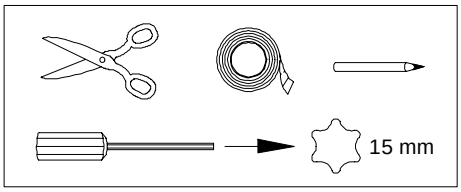
2 Clip the RVG sensor holder on the control box. Insert the RVG sensor in its holder.



Mounting the IPS Aiming Ring on the X-Ray Generator

Before mounting the IPS aiming ring, make sure that:

- You have the necessary tools:



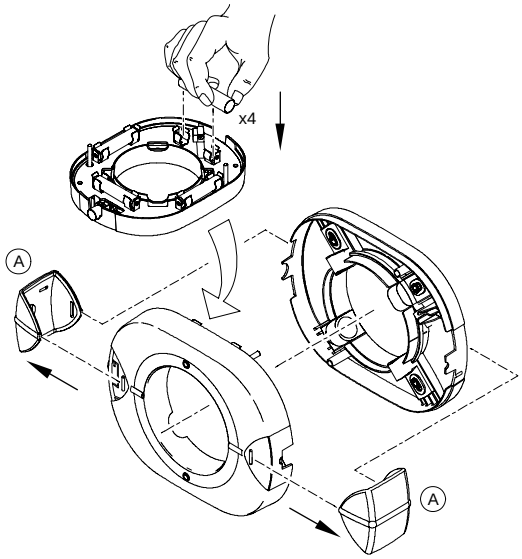
- You have cleaned the X-ray generator tube head with disposable cleaning wipes.
- You have asked the practitioner his preference for the position of the aiming ring on the X-ray tube head, with the ON/OFF button on the left or right side of the X-ray tube head.

To mount the IPS aiming ring on the X-ray generator tube head, follow these steps:

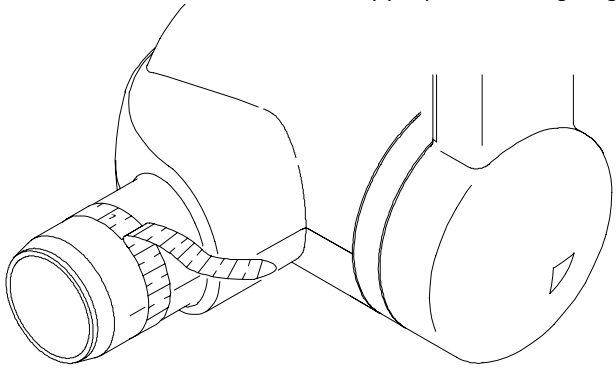
1 Remove the attachment brackets (A).

2 Remove the back cover.

3 Insert the 4 batteries on the board respecting the polarities.



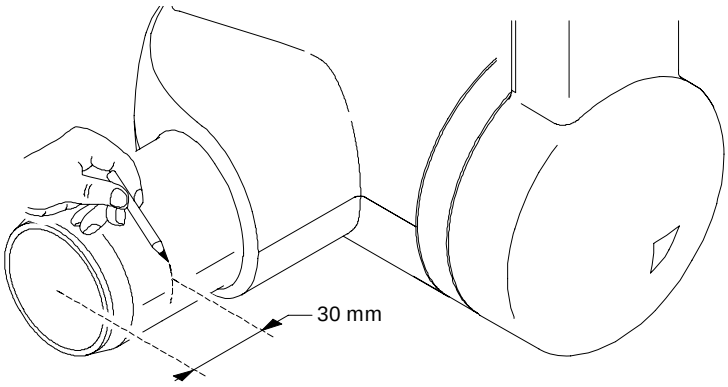
4 Measure the X-ray tube head diameter to select the appropriate aiming ring holding brackets.



5 Select the appropriate aiming ring holding brackets (B):

- For a cone shape x-ray tube head (HY415).
- For a cylindrical shape x-ray tube head with diameters from 55.5 mm to 65 mm (HY414).
- For a cylindrical shape x-ray tube head with diameters from 64 mm to 77.5 mm (HY413) mounted on the ring.

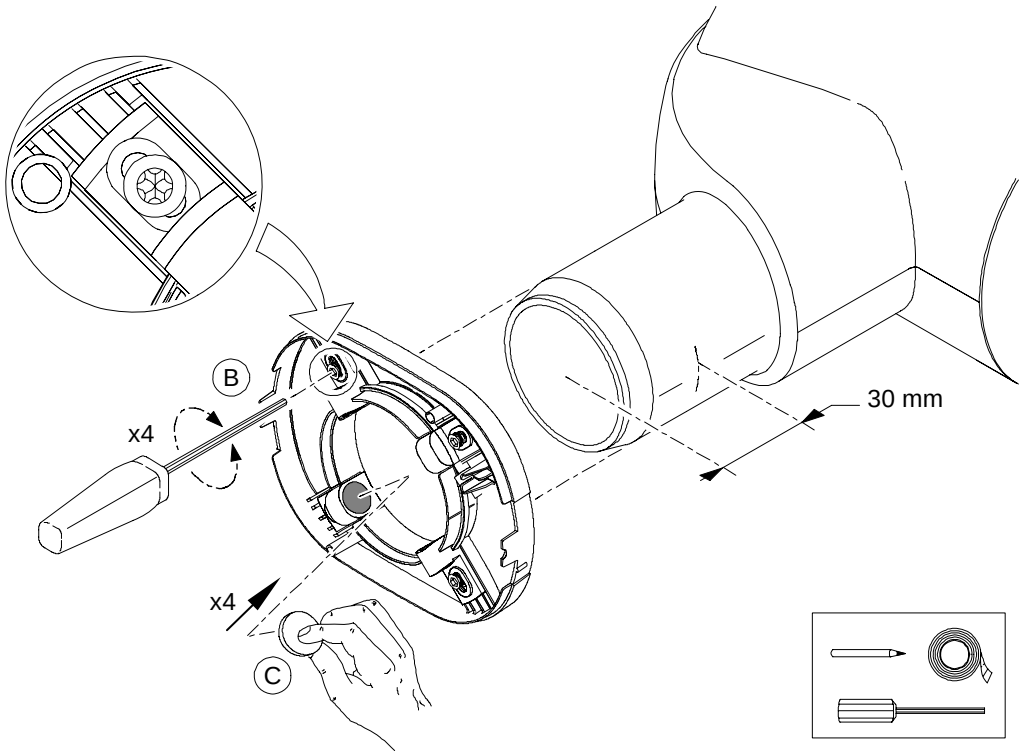
6 Measure from the opening of the x-ray tube head 30mm. Mark the 30mm with a pencil on both sides of the x-ray tube head.



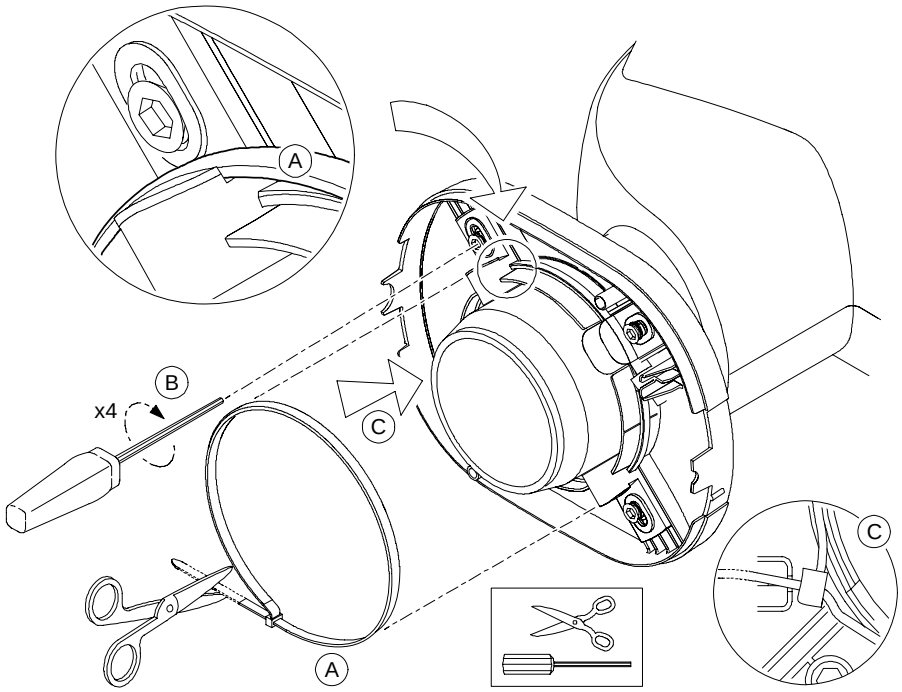
7 On the back cover, position the appropriate holding brackets (B) to adapt to the x-ray tube head diameter. Do not tighten the screws.

8 Stick the stickers on the back cover in the appropriate locations (C). Remove the protection on the stickers.

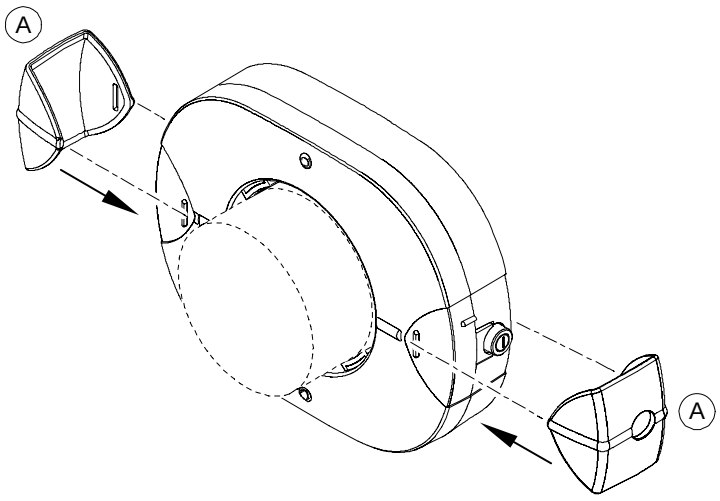
9 Using the 30mm marks, position the back cover on the x-ray tube head. Tighten the 4 screws.



10 Place the cable tie (A) around the holding brackets (B), make a knot and place it in the cable tie holder (C). Pull to tighten and cut what exceeds the knot. Retighten the screws, if needed.



11 Position correctly the front cover with the board making sure that the ON/OFF button is on the appropriate place.



12 Position correctly the attachment brackets (A).

13 Press quickly the ON/OFF button to turn ON the IPS device and check that the front upper LED is lit.

Press quickly the ON/OFF button to turn ON the back upper LED to check that it is lit.

14 Press and hold the ON/OFF button until all the LEDs are ON, then let go the ON/OFF button to turn OFF the IPS.

The IPS aiming ring installation is finished.

6 Acquiring an Image

Locking the RVG Sensor to the Computer

You need to lock the RVG sensor to the computer where the acquired image must appear.

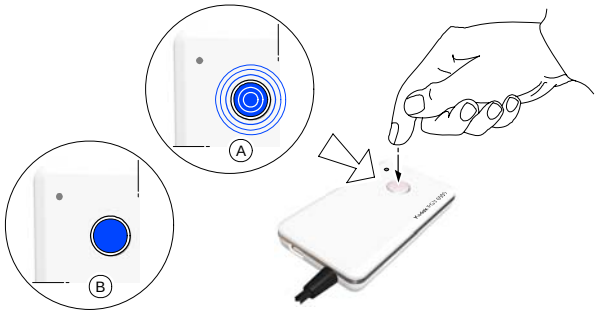
Important: You can use the RVG sensor to acquire an image while charging ONLY with the medical charger.

Locking a Single RVG Sensor to the Computer

If you have a single RVG sensor, you need to lock it only once to the computer where the acquired image must appear.

To Lock the RVG sensor to your computer, follow these steps:

1 Press the remote control button of the RVG control box to turn ON the device. The blinking blue light indicates the sensor attempt to connect to the WiFi access point. Wait for the blinking blue light (A) to become solid blue. (B) The sensor is connected to the WiFi access point.



2 Access the **Imaging Window.** Click to access the **RVG Acquisition** interface.

You can also access the **RVG Acquisition** interface, doing the following:

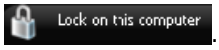
- Press the remote control button of the selected RVG control box, or
- Press F2 on the computer key board.

3 In the **RVG Acquisition** interface, click to access the RVG sensor list.

4 Find the RVG sensor in the sensor list. The sensor is identified with

5 Click

to connect the sensor to your computer,

becomes 

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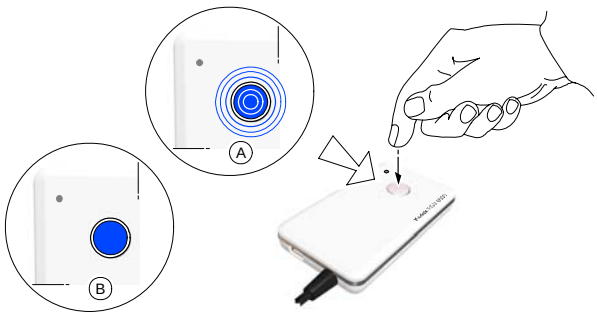
Locking Several Shared RVG Sensors to the Computer

If you have several shared RVG sensors, you need to lock the selected RVG sensor to the computer where the acquired image must appear.

To lock the selected RVG sensor to your computer, follow these steps:

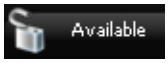
6 Press the remote control button of the RVG control box to turn ON the device. The blinking blue light indicates the sensor attempt to connect to the WiFi access point. Wait for the blinking blue light (A) to become solid blue. (B) The sensor is connected to the WiFi access point. Access the



Imaging Window. Click to access the **RVG Acquisition** interface.

7 In the **RVG Acquisition** interface, click to access the RVG sensor list. If needed, click to refresh the sensor list.

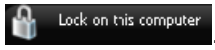
8 Find the selected RVG sensor in the sensor list:

If 

do the following:

Click

to lock the sensor to your computer,

becomes 

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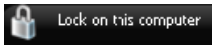
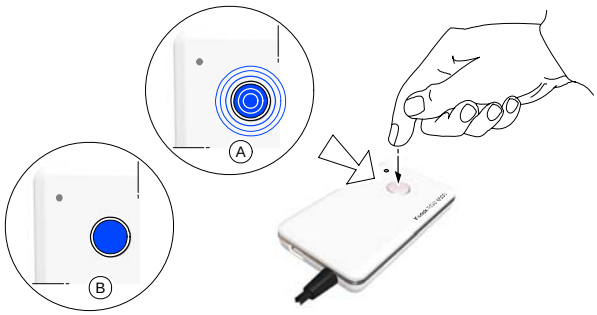
If 

do the following:

Click

to unlock from the computer it is locked to and **press quickly on the remote control button while the light is blink blue (A)**. If the unlocking was not executed you must redo the unlocking process.



Click

to lock the sensor to your computer,

becomes

.

9 Click to return to the **RVG Acquisition** interface.

Acquiring an Image with the RVG Sensor

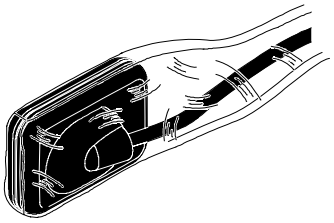
To acquire an image with the RVG sensor, follow the instructions in the presented order.

Preparing the RVG Sensor

To prepare the selected RVG sensor, follow these steps:

1 Select an appropriate positioner for the region of interest and the sensor size.

2 Cover with a disposable hygienic sleeves specifically designed for each sensor size.



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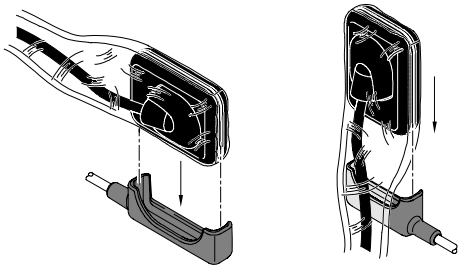
Important: To prevent cross-contamination, use a new hygienic barrier for each new patient.

3 Place the protected RVG sensor in the sensor positioner's biteblock.



Preparing the X-Ray Generator

To prepare the x-ray generator, follow these steps:

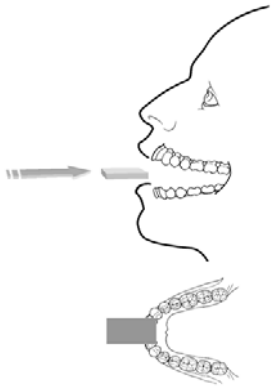
1 Press the remote control button of the selected RVG control box to access the **RVG Acquisition** interface.

(Optional) Press on the remote control button several times to pre-orient the sensor orientation. The acquired image is displayed with the last selected orientation on the **Imaging Window.**

(Optional) Click To select the tooth or teeth number. Click to return to the **RVG Acquisition** interface. The selected tooth number is displayed on the **RVG Acquisition** interface.

2 Select the x-ray timing according to the region of interest and the patient type (follow the user instructions of your x-ray generator).

3 Insert the sensor holding it horizontally in the patient's mouth. Positioning in the patient's mouth depends on the region of interest.



4 Approach the x-ray generator tube head to the patient.

(Optional) If you are using the IPS aiming ring system, press the ON button. If you are in front of the aiming ring, make sure that the front LED is ON. If you are positioned in the back of the aiming ring, a quick press on the ON/OFF button will turn on the LED on the back.

5 Align the x-ray tube head with the patient's tooth and the sensor and make sure that the tube head is not shacking.

(Optional) If you are using the IPS aiming ring system, position the X-ray generator parallel to the active surface of the RVG sensor. When the RVG sensor is correctly centered in the ring the centring indicator becomes a green cross.

Important: The IPS aiming ring turns off after 90 seconds.

Launching the X-Ray

To launch the x-ray, follow these steps:

1 Ask the patient to remain still.

2 Position yourself either 2 meters behind the x-ray generator or outside the door.

3 Keep visual contact with the patient during the x-ray.

4 Trigger the x-ray with the remote control of the x-ray generator.

The image appears in the preview screen of the **RVG Acquisition** interface. The light on the remote control button blinks blue indicating the image transmission.

When the acquisition ends, the **RVG Acquisition** interface disappears and the acquired image is displayed in the **Imaging Window.** The light on the remote control button becomes solid blue.

5 Check the image quality. If not satisfactory, redo the x-ray.

6 If satisfactory, remove the generator tube head.

7 Remove the RVG sensor from the patient's mouth. Remove the hygienic sensor protection.

Important: DO NOT pull the sensor by its cable when you remove the hygienic protection.

7 RVG Mobile Application

The RVG Mobile Application Overview

Important: iPhone®/iPod® touch devices are not included or delivered with the KODAK RVG 6500 Systems.

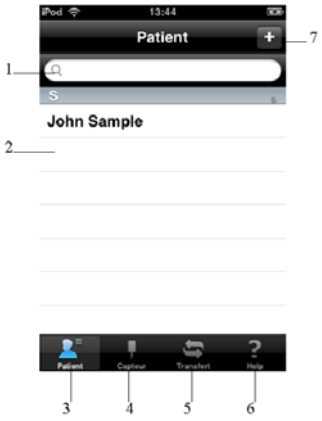
The RVG mobile interface is a user-friendly working interface that is designed and developed specifically for the KODAK RVG 6500 intraoral imaging system. The RVG mobile interface module, to be used on your **Apple iPhone®/iPod® touch, is downloadable from the Apple Store**. It enables you to acquire X-ray images without the presence of a computer in the patient's vicinity. For how to use your iPhone®/iPod® touch see the product's user manual.

The RVG mobile interface enables you to:

- Acquire X-ray images using your iPhone®/iPod® touch.
- View the acquired X-ray images on your iPhone®/iPod® touch.
- Transfer acquired X-ray images from your computer to your iPhone®/iPod® touch.
- Transfer acquired X-ray images from your iPhone®/iPod® touch to your computer.

Important: Your iPhone®/iPod® touch devices cannot be used as a diagnostic tool. You can only use your computer to view the X-ray image to make your diagnosis.

Figure 9 Patient Window



1 **Search field:** Searches a specific patient

2 **Patient list:** Lists patients in alphabetical order.

3 **Patient list button:** Accesses the **Patient** window.

4 **Sensor list button:** Accesses the **Sensor** list window

5 **Transfer button:** Uploads the images to the KDIS

6 **Help button:** Accesses the help documentation

7 **Edit button:** Accesses the **Edit Patient** window to modify or create the patient file

Touch the different fields to access the different options.

Figure 10 Editing Patient Window

1 **Cancel button:** Cancels all the new modifications

2 **Patient file field:** Displays patient information

3 **External ID field:** Displays patient ID number generated by the third party patient management software

4 **Key board:** Edits the patient information

5 **Upper/Lower case button:** Edits lower or upper case letters

6 **Number button:** Changes the keyboard from alphabetic to numeric keyboard

7 **Return button:** Leads you to the next field

8 **Delete button:** Deletes the entered letter or number

9 **Exit button:** Closes the accessed option, for example the calender.

10 **Done button:** Saves the edited information and accesses the **Edited Patient** file window

Figure 11 Calender Window

Figure 12 Edited Patient File Window

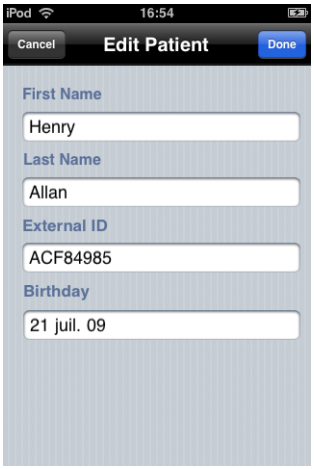


Figure 13 X-Ray Acquired Image Window

1 **Gallery button:** Accesses the slides of the acquired images.

2 **Preview screen:** Displays real-time the acquired image.

3 **Back button:** Returns to the previous image.

4 **Image contrast button:** Enhances the different zone of interest:
- **0:** Perio: Optimizes the display of periodontal tissues.
- **+:** Endo: Optimizes the contrast values over the entire range.
- **++:** Dentin-Enamel Junction (DEJ): Optimizes the values at the crown, the amelo-dentinal junction and the roots.

5 **Toggle between** **Contrast/Brightness button:** Manages the black and white contrast.

6 **Zoom button:** Enlarges and highlights a section of the image

7 **Reset button:** Resets to initial image

8 **Forward button:** Goes to the next image

9 **Information button:** Accesses the image information

Figure 14 IPS Aiming Ring Interface and Alignment Indicator

(optional) The IPS aiming ring enables you prior to acquisition to dynamically and visually center and align the X-ray beam to the RVG sensor.

Downloading the RVG Mobile Application

If iPhone/iPod Touch is Connected to the Internet

If your iPhone®/iPod® touch device is connected to the Internet, follow these steps:

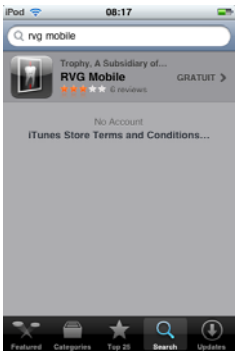
1 On the main window, tap

. A window is displayed with different applications.

2 Tap

. In the search field, enter **RVG mobile** and tap

. The RVG Mobile Icon is displayed.



3 Tap
. The RVG mobile detail window is displayed.

4 Tap

. The

is displayed.

5 Tap

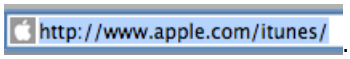
to start the download and follow the on-screen instructions.

If iPhone/iPod Touch is not Connected to the Internet

If your iPhone®/iPod® touch device is not connected to the Internet the **Application Store** window is displayed when you want to access the Apple Store to download.

In this case, follow these steps:

1 Connect your iPhone®/iPod® touch device to the computer.

2 Go to the Apple Store web site 

.

3 Click

. Follow the on-screen instructions. When the **iTunes** is installed on your computer,

appears on your desktop.

4 Double-click

. Enter the required on-screen information. The **iTunes** main window is displayed.

5 Select **Store > iTunes Store**. The **App Store** window is displayed.

6 On right top corner of the **App Store** window, in the search field enter **RVG mobile** and launch the search to find the **RVG Mobile Application**.

7 Click

. The RVG Mobile application download is launched. The download icon

appears on the lateral bar. Wait until the download ends.

8 In the lateral bar, select **Devices > iPod or iPhone** to upload the RVG mobile application on your device. Click on the tab **Application**.

9 Check **Sysnc Applications** and the check box of the **RVG Mobile Application.** Click Apply to send the **RVG Mobile Application** to your device.

10 Click when the upload process ends.

You must now connect your device to the WiFi access point.

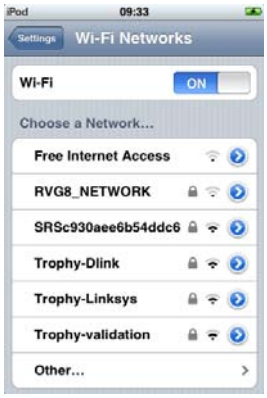
Connecting The Device to the WiFi Access Point

To connect your device to the WiFi access point, follow these steps:

1 On your device, tap the **Settings** window is displayed.

2 Tap Wi-Fi . Tap **OFF** to change to **ON**. The **WiFi Networks** window is displayed.

3 Tap **RVG8_Network.** The **Enter Password** window is displayed.



4 Enter the **Password: 7794AA6500EC239BFF4554DD80**. Tap Join

5 When the WiFi connection is established, iPod signal is displayed on the **WiFi Networks** window and a check appears next to **RVG8_Network**.

6 Tap Settings to return to the **Settings** window.

You must now configure the preference settings of the **RVG Mobile Application**.

Configuring the Preference Settings

To configure the preference settings, follow these steps:

1 In the **Settings** window, scroll down until the end and tap RVG Mobile. The **RVG Mobile** window is displayed. If you want to rename your RVG sensor, tap in the **Device Identification** field and enter the new name.

2 In the **RVG Mobile** window, tap the **Acquisition** field. The **Mode** window is displayed.

3 In the **Mode** window, tap **X-Ray** field, a check sign appears in the **X-Ray** field.

4 Tap

to return to the **RVG Mobile** window.

5 In the **RVG Mobile** window, tap **Image Processing** field.The **Processing** window is displayed.

6 In the **Processing** window, **Endo** (optimizes the contrast values over the entire range) is selected by default. We recommend that you keep this selection. You can select any type of image contrast while reviewing the acquired image using the image contrast functions of your device (see Figure 14).

7 Tap

to return to the **RVG Mobile** window.

8 In the **RVG Mobile** window, tap **Tooth numbering** field. The **Convention** window is displayed.

9 Tap the relevant convention. A check sign appears in the field that you have selected.

10 Tap

to return to the **RVG Mobile** window. The **Settings** window is displayed with the new selections. These selection are automatically saved.

11 If the settings are correct, tap the **Home button** to return to the main window. The configuration of the settings is saved and finished.

Locking the RVG Sensor to the Apple Device

To lock the RVG sensor on your Apple device, you need to have the RVG mobile application on your iPhone®/iPod® touch device.

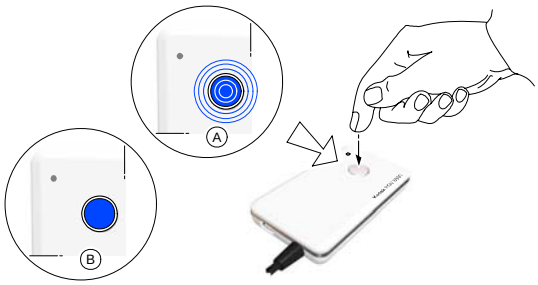
To ensure best use, follow the instructions in the following order.

Important: Make sure that you have connected your device to the WiFi access point before starting.

Accessing the Sensor List Window

You must access the **Sensor** list window before locking the RVG sensor to your Apple device. To access the sensor list window, follow these steps

1 With the sensor in hand, press the remote control button of the selected RVG control box to turn ON the device. Wait for the blinking blue light (A) to become solid blue (B).



2 Turn ON your Apple device. Tap to access the **Patient** window.

3 In the **Patient** window, tap

to access the **Sensor** list window. The **Sensor** list window is displayed. Find the desired sensor in the sensor list.

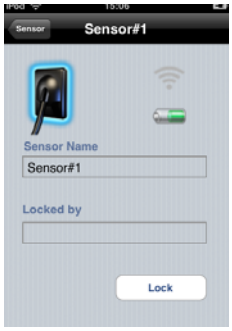
Locking a Single RVG Sensor to the Apple Device

If you have a single RVG sensor, you need to lock only once to the device where the acquired image must appear.

To lock the RVG sensor to your device, follow these steps:

1 In the **Sensor** list window, tap on the sensor.

2 Tap **Lock** . Tap **Lock** to validate.

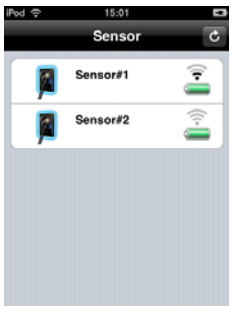


Locking Several Shared RVG Sensors to the Apple Device

If you have several shared RVG sensors, you need to lock the selected RVG sensor to the device where the acquired image must appear.

To lock the selected RVG sensor to your device, follow these steps:

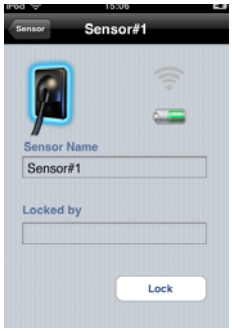
1 In the **Sensor** list window identify the selected sensor.



If : Sensor is locked on your device and ready for acquisition. You can continue to section “Finding or Creating a Patient File”.

If **: Sensor is available you must lock it on your device.**

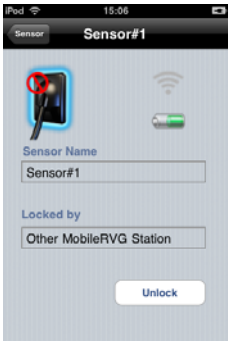
2 In the **Sensor** list window, tap the selected sensor. Then, tap **Lock** . Tap **Lock**.



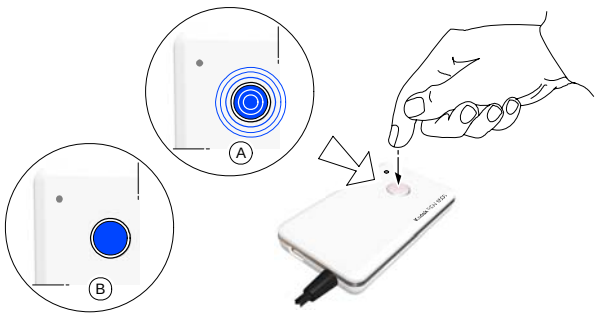
to validate.

If **: Sensor is not available (locked on another device). You must unlock and then lock the sensor on your device.**

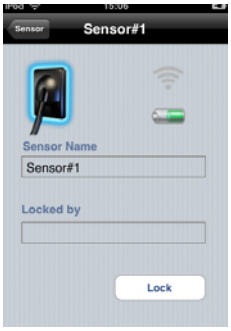
In the **Sensor** list window, tap the selected sensor. Then, tap **Unlock**. Tap **Unlock** to validate.



Press quickly on the remote control button while the light is blink blue (A). If the unlocking was not executed you must redo the unlocking process.



Then, tap **Lock** . Tap **Lock** to validate..



Finding or Creating a Patient File

To find or create a patient file, follow these steps:

1 Tap

to access the **Patient** window.

2 In the **Patient** window, in the search field enter the patient's name and tap to open the patient's file or search by alphabetical order.

If you need to create or edit a patient's information, tap to access the **Edit Patient** window. Tap the different fields to access the different options. Edit or modify the patient's information. Tap **Done** to save the patient information.

3 Tap on the selected name, the displayed window presents the patient information and the sensor status.

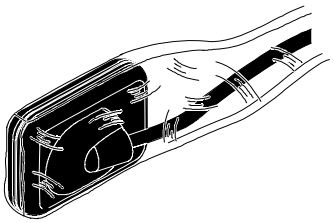
Acquiring an Image with the RVG Mobile Application

Preparing the RVG Sensor

To prepare the selected RVG sensor, follow these steps:

1 Select an appropriate positioner for the region of interest and the sensor size.

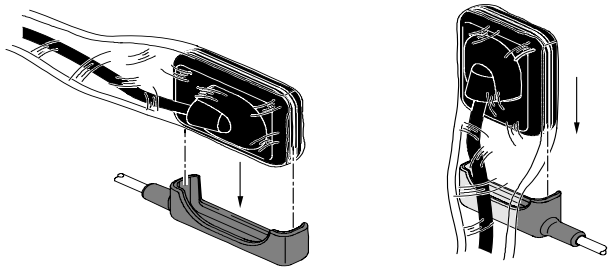
2 Cover with a disposable hygienic sleeves specifically designed for each sensor size.



.

Important: To prevent cross-contamination, use a new hygienic barrier for each new patient.

3 Place the protected RVG sensor in the sensor positioner's biteblock.

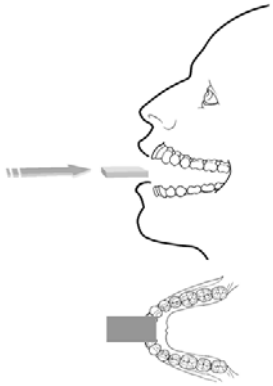


Preparing the X-Ray Generator

To prepare the x-ray generator, follow these steps:

1 Select the x-ray timing according to the region of interest and the patient type (follow the user instructions of your x-ray generator).

2 Insert the sensor holding it horizontally in the patient's mouth. Positioning in the patient's mouth depends on the region of interest.



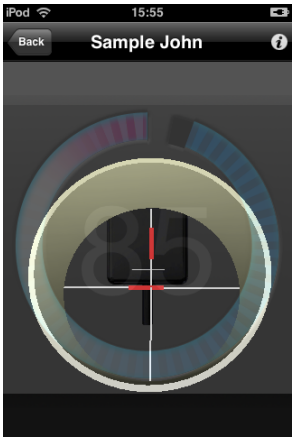
3 Approach the x-ray generator tube head to the patient's chair.

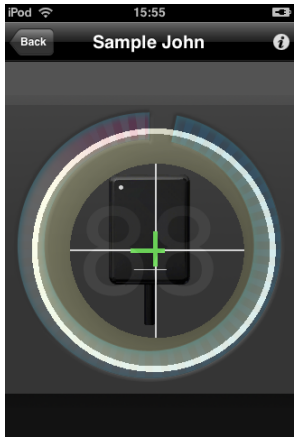
(Optional) If you are using the IPS aiming ring system, press the ON button. If you are in front of the aiming ring, make sure that the front LED is ON. If you are positioned in the back of the aiming ring, a quick press on the ON/OFF button will turn on the LED on the back.

4 Bring the tube head in front of the aiming ring if using the RINN positioner.

(Optional) If you are using the IPS aiming ring system, position the X-ray generator parallel to the active surface of the RVG sensor. When the RVG sensor is correctly centered in the ring the centring indicator becomes a green cross.

Important: The IPS aiming ring turns off after 90 seconds.





5 Correctly align the tube head with the sensor.

6 Make sure that the tube head is not shacking.

Launching the X-Ray

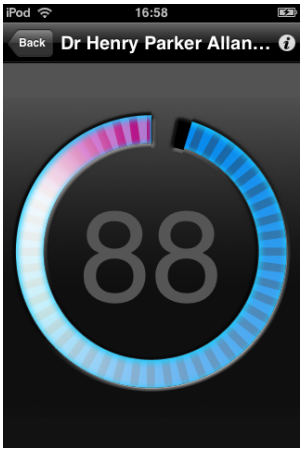
To launch the x-ray, follow these steps:

1 Ask the patient to remain still.

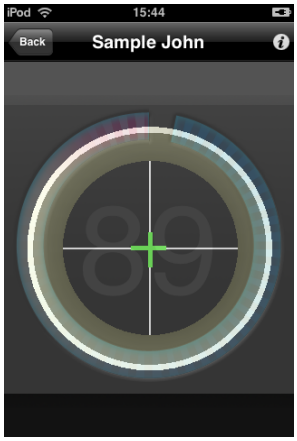
2 Position yourself either 2 meters behind the x-ray generator or outside the door.

3 Keep visual contact with the patient during the x-ray.

4 Touch Acquire to acquire an image.The 90 seconds timer is displayed. The RVG control box is solid green.



(Optional) If you are using the IPS aiming ring system



5 Trigger the x-ray with the remote control of the x-ray generator. The image appears in the preview screen of your device. The light on the remote control button blinks blue indicating the image transmission

6 When the acquisition ends, the light on the remote control button becomes solid green. At this stage, while the count down continues, you can continue acquiring other images.

If the count down ends and you wish to acquire other images then redo step 5.

7 Check the image quality. If not satisfactory, redo the x-ray. If satisfactory, remove the generator tube head.

8 Remove the RVG sensor from the patient's mouth. Remove the hygienic sensor protection.

Important: DO NOT pull the sensor by its cable when you remove the hygienic protection.

9 Tap on the acquired image to access the contrast tools. The acquired images is saved automatically.

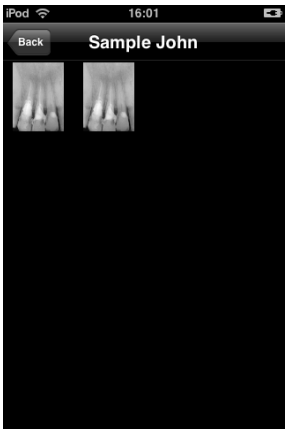
10 Touch to access the summary of the last acquired image. You can enter any comments in the yellow comment's field.

11 Tap to access the dental arch window. Tap and touch the selected tooth or teeth number.

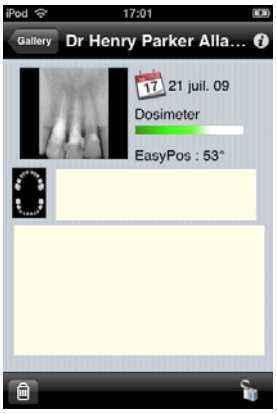
12 Tap to return to the previous window.

13 Tap

to view all the acquired images of the patient. You can touch each acquired image in the gallery and do step 10 and 11.

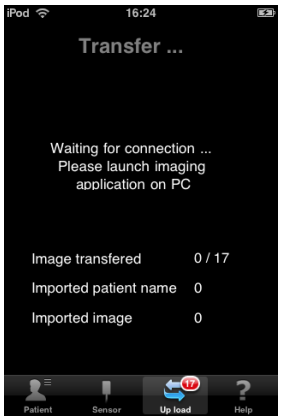


14 Tap Back to display the patient information.



15 Tap Back to access the **Patient** window.

16 When you want to transfer all the acquired images of the patients to your computer, in the **Patient** window, touch Transfert the transfer window is displayed.



17 Launch the KDIS, click , and follow the on-screen instructions.

8 Troubleshooting

Occasionally, malfunctions can occur during use in the event of an incorrect action. The quick trouble shooting and the Information "**I**", will guide you through the actions you need to take to correct the malfunction.

Important: If the malfunction persists or more serious conditions occur, contact your representative.

When you call your representative have the following information ready:

- Model Number: KODAK RVG 6500
- Error Code Number: I xx
- Message displayed on the popup on the computer screen.

Quick Trouble Shooting

The quick trouble shooting guides you through actions you need to take to correct the malfunction.

The following table lists the malfunctions and the action to take.

Table 2 Quick Trouble Shooting

Malfunction	Possible Cause	Action
When you turn ON your RVG sensor, the battery LED is red but the control box is solid blue.	The battery needs recharging.	Recharge the battery. You can continue acquiring images but the quality will deteriorate.
When you turn ON your RVG sensor, it blinks blue then it turns OFF.	The battery needs recharging.	Recharge the battery.
When you turn ON your RVG sensor, the battery LED is red and the control box is blinking red.	No battery	Recharge the battery
Image quality is not good and there are white lines on the image	The battery needs recharging.	Recharge the battery
When you turn ON your RVG sensor, it blinks blue then after a long time it becomes solid red.	• WiFi access point is not ON. • Configuration problem.	• Check that the WiFi access point is ON. • If it is ON and the problem persists contact your representative

Table 2 Quick Trouble Shooting (Continued)

Malfunction	Possible Cause	Action
When you turn ON your RVG sensor, it blinks blue then becomes solid blue but the sensor cannot be found in the sensor list on the computer.	• WiFi access point is not ON. • Configuration problem.	• Check that the WiFi access point is ON. • If it is ON and the problem persists contact your representative
When you turn ON your RVG sensor, it blinks blue then becomes solid blue but when you press the control box button to acquire an image it does not turn green.	The KDIS is not open	Launch the KDIS
When you turn ON your RVG sensor, it blinks blue then becomes solid blue but when you press the control box button to acquire an image it does not turn green.	The RVG sensor is not locked on any device.	Lock the RVG sensor on the computer or the iPhone®/iPod® touch device.
The IPS interface is frozen.	The IPS aiming ring connection problem.	• Check that the IPS aiming ring is ON (the shut down time is 90 sec.). • The IPS aiming ring is too far from the RVG sensor. • The IPS ailing ring is to close to the RVG sensor.
When you turn ON your RVG sensor, it blinks blue for a long time never becoming solid blue or solid red.		Contact your representative.
When you turn ON your RVG sensor, it blinks blue then rapidly it becomes solid red.		Contact your representative.

Information Messages

An information **"I"** error code with a message is displayed on the popup on your computer screen.

The following table lists the information messages and the action to take.

Table 3 Information Messages

Information Error Code	Information Message	Action
I 1	Communication problem with the wireless RVG sensor. Turn off then on your sensor or restart your computer. If the problem persists, contact your representative.	〈 Turn Off then ON the RVG sensor. 〈 Or reboot your computer. 〈 If the problem persists, contact your representative.
I 2	Wireless sensor error. Turn off then on your sensor and restart the acquisition software. If the problem persists, contact your representative.	1. Turn Off then ON the RVG sensor. 2. Click to access the **RVG Acquisition** interface. If the problem persists, contact your representative.
I 3	Error during image acquisition. Turn off then on your wireless sensor and restart the acquisition software. If the problem persists, contact your representative.	1. Turn Off then ON the RVG sensor. 2. Click to access the **RVG Acquisition** interface. If the problem persists, contact your representative.
I 4	Memory allocation problem. Turn off then on your wireless sensor. If the problem persists, contact your representative.	Turn Off then ON the RVG sensor. If the problem persists, contact your representative.
I 5	Wireless sensor has storage/transmission memory problem. Contact your representative.	Contact your representative.
I 6	Incorrect IPS calibration. Contact your representative	Contact your representative.
I 7	IPS Batteries have run down. Change the batteries.	Change the batteries of the IPS aiming ring.
I 9	Writing transmission error. Turn off then on your wireless sensor and restart the process. If the problem persists, contact your representative.	1. Turn Off then ON the RVG sensor. 2. Redo the process If the problem persists, contact your representative.
I 10	Reading transmission error. Turn off then on your wireless sensor and restart the process. If the problem persists, contact your representative.	1. Turn Off then ON the RVG sensor. 2. Redo the process If the problem persists, contact your representative.

Table 3 Information Messages (Continued)

Information Error Code	Information Message	Action
I 12	Memory allocation problem. Restart your computer. If the problem persists, contact your representative.	〈 Reboot your computer. 〈 If the problem persists, contact your representative.
I 13	Error during the image transfer. Turn OFF then ON your wireless sensor and restart the acquisition software. If the problem persists, contact your representative.	1. Turn Off then ON the RVG sensor. 2. Click to access the **RVG Acquisition** interface. If the problem persists, contact your representative.
I 14	System error. Close and restart the acquisition software. If the problem persists, contact your representative.	1. Exit the **KDIS**. 2. Click to access the **RVG Acquisition** interface. If the problem persists, contact your representative.
I 15	Image storage problem in the patient database. Check the disk space, local file system, write access. Check the storage possibility of your computer.	1. Check that you can access the patient database. 2. Check the hard disk storage availability. 3. Check if there is enough space in the patient database. If the problem persists, contact your representative.

9 Maintenance

This chapter describes the maintenance task that you need to perform regularly for your KODAK RVG 6500 system and the accessories.

Daily

The RVG Sensor

The RVG sensor is supplied in a **non-sterile state**. Single-use disposable protective hygienic sleeves must cover the RVG sensor before placing it in the patient's mouth. These sleeves are conform to the ISO EN 10993.

To prevent cross-contamination, use a new hygienic barrier for each new patient and disinfect the RVG sensor.

WARNING: Never place the sensor and/or control box in an autoclave as this could result in serious damage to the sensor.

Cleaning and Disinfecting the RVG Sensor

WARNING: You must first clean the RVG sensor before disinfecting it.

You must first clean the RVG sensor before disinfecting it. To do so, follow these steps:

1 Remove the protective hygienic sleeves.

2 Remove debris or organic matter from the sensor surfaces with a disposable wipe or surface brush.

3 Inspect the sensor for debris. Repeat cleaning if there is any debris left.

1 Clean and disinfect with disinfecting wipes.

If you choose disinfecting solutions, use disinfectant suitable for medical devices and composed of Ethanol and/or Isopropanol, and/or Quaternary ammonium (follow the chemical manufacturer's instruction).

Cleaning the RVG Sensor Control Box

The RVG sensor control box must be cleaned with disposable cleaning wipes similar to those used for the computer screens.

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WARNING: Never immerse the RVG sensor control box in any solution.

Cleaning the Positioning Accessories

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WARNING: Do not use chemical autoclave for the toothbrush holders and avoid direct contact with the metallic part of the autoclave.

Table 4 Positioning Accessories Daily Maintenance Tasks

Accessories	Maintenance Tasks
Toothbrush holders Bite blocks	1. Remove any residue with hot water and soap. 2. Put the metal and plastic parts in separate sterilization pouch and autoclave up to 132°C (273° F) before the next patient.
RINN Arm & ring	1. Disassemble the metal arm and the plastic ring. 2. Remove any residue with hot water and soap. 3. Put the metal and plastic parts in separate sterilization pouch and autoclave up to 132°C (273° F) before the next patient.
IPS aiming ring	Wipe clean with disposable cleaning wipes.

Monthly

Wipe the outer covers of the WiFi AP with a soft and dry cloth.

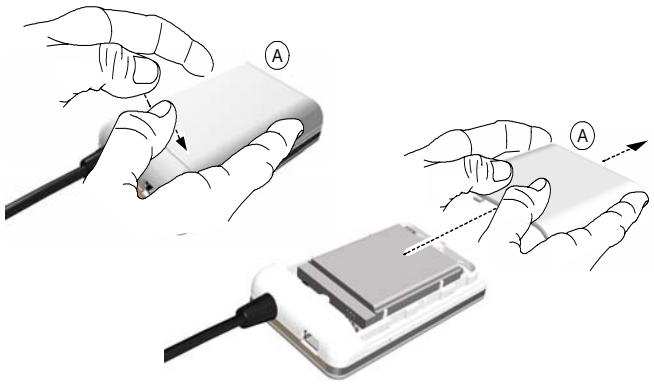
Replacing the RVG Battery

To replace the RVG battery, follow these steps:

1 Turn OFF the RVG sensor.

2 Make sure that the RVG sensor is not connected to the mains outlet.

1 Press down with fingers and slide the trap door (A) protecting the battery on the back of the control box.



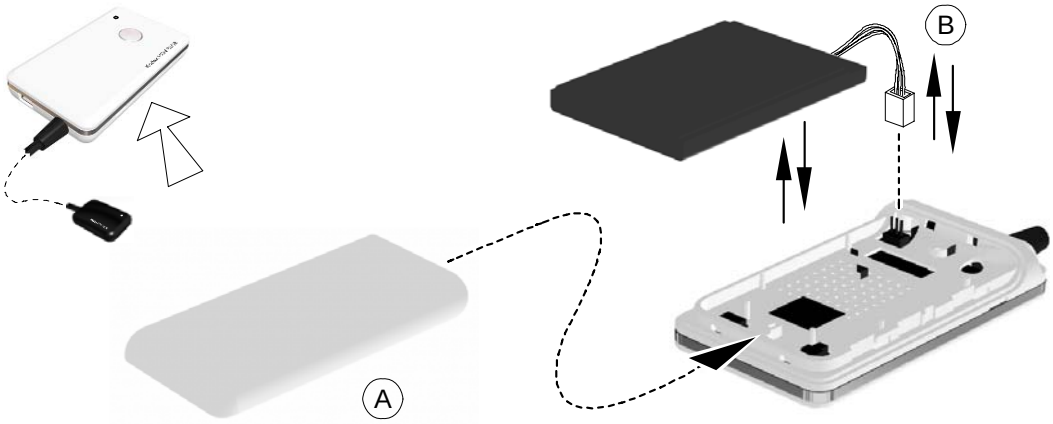
2 Remove carefully the connector (B) to remove the used battery.

3 Insert the connector (B) of the appropriate battery.

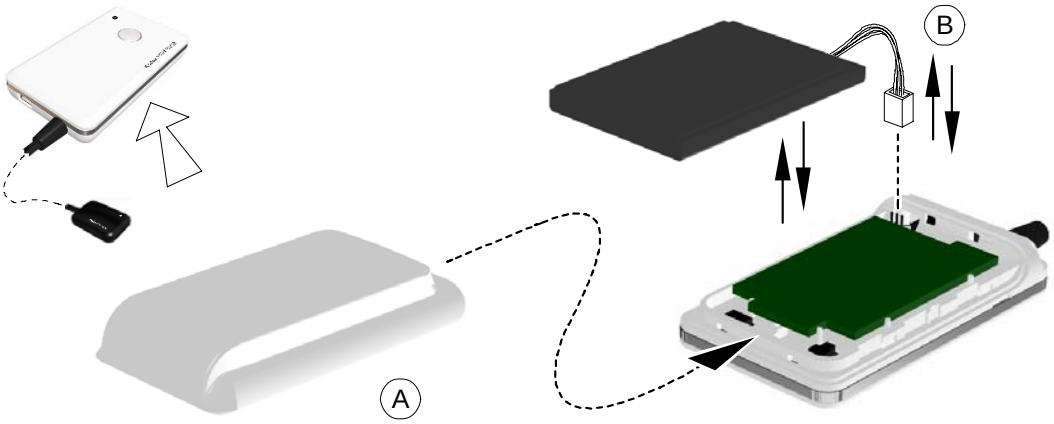
WARNING: Make sure that the battery is inserted correctly in its connector.

4 Slide and close the trap door (A) protecting the battery.

RVG Control Box



RVG Control Box with IPS board

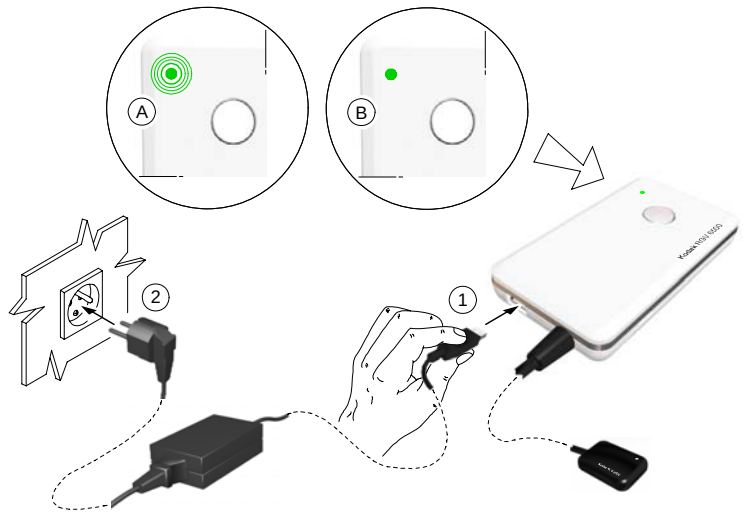


Important: For the RVG with IPS board, make sure that you insert the battery gently avoiding any damage to the IPS board.

5 Plug one end of the medical charger in the USB port of the RVG control box.

6 Plug the other end to the mains outlet.

The blinking green light of the battery status (A) on the control box indicates the charging process. The first charging takes about 4hours. When the green light becomes solid green (B) the charging is complete.



With a fully charged battery you can acquire 180 images.

Important: You can use the RVG sensor to acquire an image while charging ONLY with the medical charger.

7 You can use the USB cable to charge RVG battery with the computer.

WARNING: NEVER use the RVG sensor to acquire an image while charging with the USB cable.

Important: Remove the battery from the control box if you will not use it for a long period of time.

Replacing the IPS Aiming Ring Battery

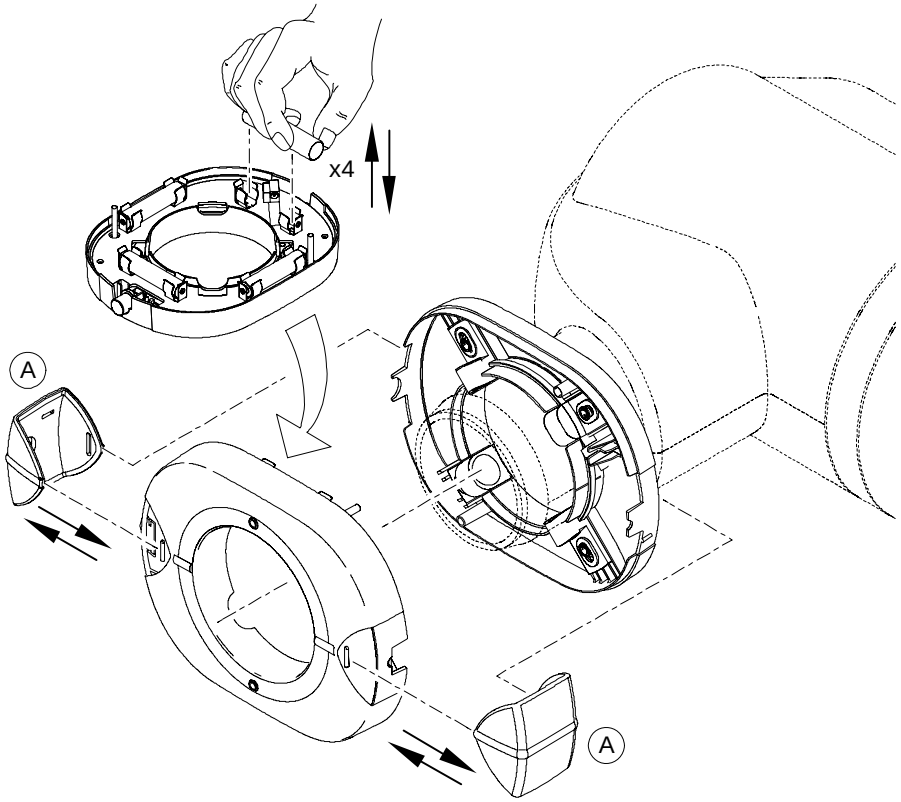
Important: When the battery is low the LEDs light becomes orange. You need to replace the IPS battery.

To replace the IPS aiming ring battery, follow these steps:

1 Remove the attachment brackets (A).

2 Remover the front cover.

3 Remove the used 4 batteries.



4 Replace correctly the new 4 batteries respecting the polarities.

5 Replace the front cover.

6 Replace the attachment brackets (A).

7 Turn ON the IPS aiming ring to check that the batteries are replaced correctly.

Important: Remove the battery from the IPS aiming ring if you will not use it for a long period of time.