

# User Manual



## Servotome



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# Foreword

The medical device SATELEC<sup>®</sup> that you are about to install and use in your practice is a medical device designed for professional use. It comprises the chosen tool with which you will provide treatment within the context of your work.

To ensure optimum safety for yourself and your patients, comfort in your daily practice and to benefit fully from the technological features of your medical device, please read the documentation provided carefully.

If you have received this medical device by mistake, please contact the supplier to arrange for it to be collected.

This document contains the following information:

- documentation format;
- the documentation archiving period;
- warnings concerning user and patient populations;
- the treatment area;
- the medical device usage interactions, contraindications and prohibitions;
- electromagnetic compatibility;
- disposal and recycling of the medical device;
- manufacturer responsibility;
- unpacking and installing the medical device;
- using the medical device;
- monitoring and maintaining the medical device;
- technical specifications for the medical device;
- preparation of parts for sterilization;
- detailed manual and automatic protocols;
- information concerning conditioning for sterilization;
- recommendations for the inspection of parts.





# 1 Documentation

## 1.1 Contents of the document

This document contains the following information:

- indications for use;
- patient, practitioner and environment safety;
- description of the medical device;
- installation of the medical device;
- use of the medical device;
- preparation prior to cleaning and disinfecting the medical device ;
- monitoring and general maintenance of the medical device;
- maintenance to be performed by the user;
- manufacturer contact.

## 1.2 Associated documentation

This document must be used in association with the following documents:

Document title	References
Consulting electronic user instructions	J00000
Quick Start Servotome	I57211
Quick Clean Servotome	J57230
Warning sticker	J57234

## 1.3 Electronic documentation

The user instructions for your device are provided in electronic format and not in printed format. However, you can request a free printed copy of the user instructions within 7 days via our website, by telephone or in writing.

The electronic user instructions are available in PDF format (Portable Document Format) and you will need to have a PDF file read software installed to read the instructions.

The device user instructions can be consulted at the following address:[www.satelec.com/documents](http://www.satelec.com/documents)



Electronic user  
informations



It is important for you to have read and understood the content of the user instructions relating to the use of your device and its accessories prior to use.

We recommend that you visit the website regularly to consult and/or to download the latest version of your device's user instructions.

## 1.4 Archiving duration

Users are asked to keep documentation to hand so that it can be consulted when necessary.

All paper and electronic documentation relating to your medical device must be kept for the device's entire service life.

When loaning out or selling the medical device, the documentation must be provided with it.



## 2 Required information

### 2.1 Indication for use

This medical device is used for the incision and coagulation of soft gingival tissue.

It is used in conjunction with a bracelet (neutral electrode) and an electrode holder which can be fitted with a wide range of monopolar incision or coagulation electrodes using high-frequency electrical energy.

### 2.2 Operating principle

The medical device converts the low voltage electrical energy into high-frequency electrical energy which flows through the patient's body between the active electrode fixed to the electrode holder and a bracelet (neutral electrode) in contact with the patient.

The high-frequency electrical energy density at the end of the active electrode produces the desired effect, incision or coagulation.

### 2.3 Main performance characteristics

High-frequency electrical energy frequency.

Electrical power.

Characteristic impedance

Surface of electrodes.

### 2.4 Date of inclusion of EC marking

2013

### 2.5 Latest document update

04/2013

### 2.6 Repairing or modifying the device

Contact the supplier of your device. Using the services of an unapproved repairer could render your device dangerous for you and your patients.

Do not repair or modify the device without seeking the prior permission of SATELEC®.

If the device is modified or repaired, specific checks and tests must be carried out to ensure that the device is still safe to use.

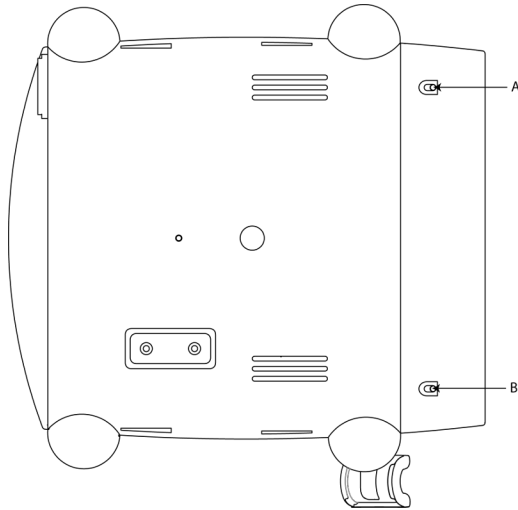
In the event of doubt, contact an approved dealer or the SATELEC® customer service team:

[www.acteongroup.com](http://www.acteongroup.com)

[satelec@acteongroup.com](mailto:satelec@acteongroup.com)

SATELEC® at the request of technical personnel working for the network of dealers approved by SATELEC®, provides all information required to repair the faulty parts on which they may perform repairs.

## 2.7 Warranty



The screws marked A and B must not, under any circumstances, be unscrewed by the user. Unscrewing these screws will invalidate the warranty for the medical device.

## 2.8 Accessory usage conditions

Accessories and medical devices must be cleaned, disinfected and sterilized prior to any use.

## 2.9 Manufacturer responsibility

The manufacturer shall under no circumstances be liable for:

- non-compliance with manufacturer recommendations during installation, whether this is the network voltage or the electromagnetic environment;
- maintenance or repair procedures performed by people who are unauthorised by the manufacturer;
- use on an electrical fixture that is not compliant with regulations in force;
- uses other than those specified in this manual;
- use of accessories not supplied by SATELEC;
- non-compliance with the instructions contained in this document.

Note: the manufacturer reserves the right to modify the medical device and/or any documentation without notice.

# 3 Warnings

## 3.1 Federal Law

| The indication below applies to the United States of America only.

The United States Federal Law restricts the use of this medical device in its territory to qualified dental health professionals, fit and certified to perform and manage their professional duties.

## 3.2 Warning applicable to all countries in which the device is sold

| The information below is based on the requirements of standards to which the manufacturers of medical devices must adhere (as stated in standard IEC62366).

## 3.3 User population

This medical device must only be used by qualified dental health practitioners, fit and certified to perform their professional duties.

Users must know and comply with the rules of dental practice in compliance with knowledge acquired in the field and the key medical hygiene principles including cleaning, disinfection and sterilization of medical devices.

The medical device can be used by any adult dental practitioner of any weight, age, height, gender and nationality.

The user must wear gloves.

The user is not the patient.

The user must not be prone to any of the following:

- visual impairments: any vision problems must be corrected by glasses or lenses;
- disability of the upper limbs that may prevent correct grip of an electrode holder, or lower limbs that may prevent operation of a control pedal;
- hearing difficulties that could prevent the hearing of alarms depending on the medical devices;
- difficulty memorizing or concentrating that could affect the setting of sequences or the performance of treatment protocols.

## 3.4 Specific user training

No specific training other than initial professional training is required to use this medical device.

The practitioner is responsible for performing clinical treatments and for dangers that may arise due to a lack of skill and/or training.

## 3.5 Patient population

This medical device is designed to be used with the following patient population:

- Children,
- Teenagers,
- Adults,
- Old Age Pensioners.

This medical device can be used on any patient of any weight (except children), age, height, gender and nationality.

## 3.6 Patient population restriction

This medical device must not be used on the following patient populations:

- infants;
- pregnant or breastfeeding women due to restrictions associated with the possible use of medical solutions such as anaesthetics;
- patients with medical issues;

- patients with allergies;
- patients with a clinical site not suitable for treatment;
- patients who wear an implantable medical devices such as a pacemaker, cochlear implants, vagus nerve stimulators.

The patient must be calm, relaxed, still, ideally lying flat on a dental chair.

The user is the only person who can decide whether or not to treat his/her patients.

Patients who have the items listed below must take additional precautions to prevent any risk of collateral injury:

- intraoral and perioral piercing;
- dental crowns;
- jewellery.

## 3.7 Parts of the body or types of tissues treated

Treatments must only be carried out on the patient's oral environment.

## 3.8 Essential performance

As stated in the applicable safety standard pertaining to electrical medical devices, SATELEC determined that the medical device did not manage essential performances.

## 3.9 Basic safety in normal use

The active part, the electrode holder and its electrode are in the practitioner's hand throughout the medical act. Being medically qualified, the practitioner is qualified to immediately detect any problem at the treatment site and to react accordingly.

The force applied to the electrode holder equipped with its electrode must be controlled by the practitioner according to good dental practices. Basic safety is created by the practitioner.

It is advisable to have a spare medical device or an alternative means with which to perform the medical treatment in the event of device failure.

## 3.10 Normal usage conditions

The normal usage conditions are as follows:

- storage;
- installation;
- use;
- maintenance;
- disposal.

## 3.11 Service life of electrodes

Because it is impossible to determine the maximum number of times the electrodes can be used (may depend on many parameters such as operating time, force exerted, wear, etc.), we recommend that you renew routinely used electrodes at least once a year.

## 3.12 Broken electrodes

An electrode is a medical device to which a mechanical force is applied to be able to carry out dental treatments.

The electrodes have been developed to ensure safe use in association with the electrode holder SATELEC® in accordance with the power levels defined.

However, the electrodes may break depending on frequency of use, force exerted or by being dropped.

To reduce all risk, however minimal, we recommend the use of a suction device such as a saliva suction cannula. You should also encourage your patient to breathe through their nose.

### 3.13 Warnings specific to electrosurgical devices

The following information is from the normalization requirements which the manufacturers of medical devices for high-frequency surgery are subject to (in the sense of the IEC60601-2-2 standard).

- The whole surface of the bracelet (neutral electrode) must be securely fastened to the patient's right wrist. The bracelet must be adjusted to remain in direct contact with the patient's skin. The patient must not have skin lesions.
- The patient should never come into contact with earthed or grounded metal parts or parts with a high capacitance (e.g. operating table, supports, etc.).
- Skin-to-skin contact (e.g. between the patient's arms and body) must be avoided, for example by placing a dry gauze between them.
- Contact between the patient's skin and that of the practitioner must be avoided.
- If the device is used simultaneously with physiological monitoring devices on the same patient, the monitoring electrodes should be placed as far away as possible from the surgical electrodes.
- Needle-type monitoring electrodes are not recommended. In all cases, monitoring systems with high-frequency current limiting are recommended.
- Surgical electrode cables must be positioned so that all contact with the patient or with other conductors is avoided.
- Active electrodes that are temporarily not being used must be kept well away from the patient.
- During surgical procedures in which the high-frequency current could flow through relatively thin parts of the body, the use of bipolar techniques may be desirable to avoid accidental damage to tissue.
- The selected output power must be the lowest possible for the required purpose.
- A low output power or malfunction of a high-frequency electrosurgical device at the normal operating settings may be due to an incorrectly fitted conductive bracelet (neutral electrode) or a bad contact in its connections. In this case, check that the neutral electrode and its connections are correctly fitted before selecting a higher power output.
- All use of flammable anesthetics or oxidizing gases such as nitrous oxide ( $N_2O$ ) and oxygen during the surgical operation must be avoided, unless these agents are evacuated by suction.
- Non-flammable agents must be used for cleaning and disinfection, where possible.
- The flammable products used for cleaning and disinfection or as adhesive solvents must be allowed to evaporate before beginning high-frequency surgery.
- There is a risk of buildup of flammable solutions under the patient or in the depressions or cavities of his/her body.
- Some materials like cotton wool or gauze may, when saturated with oxygen, be ignited by the sparks produced during the normal use of high-frequency electrosurgical devices.
- The interference produced by a high-frequency electrosurgical device may disrupt the operation of other electronic equipment.
- The operator must regularly check the accessories.
- In particular, the electrode cords and accessories must be checked.
- The failure of a high-frequency electrosurgical device may result in an accidental increase in the output power.
- The device must be used in combination with a surgical suction system to reduce the propagation of smoke.
- In some cases, electric arcs between the electrode and the clinical site may induce neuromuscular stimulation. This may result in injuries caused by involuntary and uncontrolled movements.

# 4 Interactions, contraindications, prohibitions

This includes information relating to the interactions, contraindications and prohibitions known by SATELEC® on the date on which this document was written.

## 4.1 Interferences with other medical devices

Interferences may occur when the system is used on patients fitted with a pacemaker.

The medical device presents potential risks due to the emission of electromagnetic fields.

It may in particular cause malfunction of implanted devices such as a pacemaker or implantable defibrillator and, generally, of any type of active implant:

- before using this product, check whether patients and practitioners are fitted with a device of this type;
- explain the situation;
- weigh up the benefits versus the risks and contact your patient's cardiologist or another qualified health professional prior to starting treatment;
- keep this system away from implantable devices;
- apply suitable emergency measures and act fast if the patient shows signs of being unwell.

Symptoms such as an increased heart beat, irregular pulse or dizziness may indicate a malfunction of a pacemaker or an implantable defibrillator.

The medical device is not designed to withstand electrical defibrillation shocks.

## 4.2 Using accessories not supplied by SATELEC®

The medical device was designed and developed with its accessories to guarantee maximum safety and performance. The use of accessories from another source could put you, your patients or your medical device at risk. Do not try to connect accessories not supplied by SATELEC® to the medical device connector(s).

Even if the manufacturer or distributor of your accessory claims full compatibility with SATELEC® equipment, it is advisable to exercise caution with regards to the origin and safety of the product offered. Look out in particular for lack of information, information in a foreign language, very attractive prices, suspect appearance, mediocre quality or premature wear. If necessary, contact an approved dealer or the SATELEC® customer services department.

## 4.3 Contraindications

The device must not be used in the presence of unruly, emotional or excessively nervous patients.

It must not be used in the following cases:

- incomplete anesthesia;
- delicate surgery (mucoperiosteal surgery, grafts);
- very fragile tissue;
- ignorance of the theory of electrosurgery;
- lack of practice on anatomical parts;
- insufficient knowledge of the patient or his general condition;
- presence of metallic surgical equipment implanted on the patient, especially on the high-frequency current conduction path.

## 4.4 Prohibited uses

- never cover the medical device and/or obstruct the air inlets;
- do not immerse or use outside;
- do not place the medical device next to a source of heat or in direct sunlight;
- do not expose the medical device to water spray or mist.

The medical device is not designed to operate near a source of ionising radiation.



A hot/cold temperature contrast can cause condensation to form in the medical device, which may be dangerous. If the medical device is to be transported from a cool location to a warm location, do not use it immediately, but only after it has reached the room's ambient temperature.

The medical device cannot not be stored or used outside the specified temperature and atmospheric pressure ranges. See "Environmental characteristics" page 37.

Do not touch accessible electrical connections.

## 4.5 Moving the medical device

After its initial installation, the medical device is not designed to be moved. The medical device must be fixed to ensure that it cannot be disassembled or moved without the use of a tool. Do not move the medical device during use.

## 4.6 Assembly and disassembly

Unless otherwise indicated in the instructions specific to your medical device:

- Control devices are not designed to be removed or disassembled;
- Access doors and/or flaps are not designed to be removed or disassembled.



# 5 Removal from packaging, installation, connections

## 5.1 Unpacking the medical device

When you receive your medical device, check for any damage that may have occurred during transportation. If you have received this medical device by mistake, please contact the supplier to arrange for it to be collected.

If you have any questions or requirements, contact your supplier.

The medical device includes the following items:

- a control unit;
- a control pedal;
- an electrode holder and its cord;
- a mains cord with ground conductor;
- a cord with bracelet (neutral electrode);
- a box of electrodes;
- a medical device [J57211] Quick Start guide;
- a medical device [J57230] Quick Clean guide;
- a warning about the bracelet [J57234].

## 5.2 Positioning the medical device

Place the control unit in the position that is suitable for your activity.

Check that the cords do not hinder the movement or free circulation of anyone.

The medical device must be placed on a secure and flat surface or a surface with a maximum slope of 5 degrees.

Fix your medical device using the attachments provided to ensure that the device cannot be removed without the use of a tool.

Adjust the position of your medical device to correspond to your angle of vision and the characteristics of your workstation, e.g. lighting or distance between the user and the medical device.

Ensure that you can access your medical device quickly.

| Do not install your medical device near or on another device.

## 5.3 Installing cords

Check that the cords do not hinder the movement or free circulation of anyone.

Never rotate the handpiece connector on its cord as this can damage your medical device.

Never wind the electrode holder cord around the medical device.

Make sure that it is not possible to wheel over or walk on the different cords.

The cord attached to its electrode holder must be easily accessible. Make sure that the cord is slack during use.

| Do not put the medical device cords in a cable cover or a cable tray.

## 5.4 Connecting the medical device to the electrical network

Have your medical device connected to the mains electricity supply by an approved dental installation technician.

Set the medical device to OFF position 0 and check that the mains voltage is compatible with that indicated on the medical device or its mains adapter. Next, connect the cord to the wall socket in compliance with the standards in force in the country of use.

A different voltage would cause damage to the medical device and could injure the patient and/or user. Any variation in the electrical network voltage or electromagnetic field that is non-compliant with the limits in force, could interfere with the medical device's operation.

medical devices equipped with a protective earth must be connected to a supply network equipped with a protective earth.

Do not plug the medical device into an extension lead and do not put the mains cord in a cable cover or cable tray.

If when using the medical device, a power outage can create an unacceptable risk, the user and the installer must ensure that the medical device is connected to an appropriate power source such as an uninterruptible power supply.

## 5.5 Installing the control pedal

The control pedal must be positioned near the feet of the operator and must be readily accessible.

## 5.6 Fixing the medical device to a non-removable support

The medical device that you have just acquired is not designed for mobile use. To avoid accidentally dropping the device, we recommend that you fix it in a precise place in your treatment room, using the mounting kit [F57229] supplied in the packaging box, to ensure that it cannot be dismantled or moved without needing a tool.

# 6 Description of the medical device

## 6.1 Before using the medical device for the first time

Before using the medical device for the first time, it is essential to carry out tests on anatomical parts (pieces of meat - ideally, a piece of beef heart, chicken breast, etc.) to determine how they react to incision and to help adopt the right clinical procedure (electrode movement speed). Do not hesitate to repeat these exercises as many times as necessary.

The accessories used on animal parts must not be reused on human patients.

Before using the medical device for the first time, it is essential that all the equipment is maintained and/or sterilized using the procedures defined in the chapter *Cleaning, disinfecting and sterilizing* page 23.


## 6.2 Connecting and disconnecting accessories during use

Do not connect or disconnect cords or the electrode holder when the medical device is on and the pedal is pressed down.

Do not tighten or loosen the electrodes when the electrode holder is activated.



## 6.3 Switching the medical device off

Keep the pedal well away to prevent accidentally activating it during the following phases.

- Switch the ON/OFF switch to ON position (I);
- the green light  on the front face lights up;
- the medical device is now ON and ready for use.

## 6.4 Using the medical device

Do not check the presence of the high-frequency current by creating electric arcs on metal parts, this will damage the device.

- Adjust the incision and coagulation power using the  and  control knobs.

This adjustment must be made before the surgical procedure otherwise there is a risk of burns or undesirable effects.

- Move the pedal close to your foot.
- Position the electrode on the clinical site.
- Press the pedal.

The incision or coagulation effect is then obtained.

The orange indicator lamp lights up and the buzzer sounds. The indicator goes off as soon as the pressure on the pedal is released.

## 6.5 Control unit

The top of the control unit comprises the following control items:

- indicator lamps;
- incision and power control knobs.

The front of the control unit comprises the connector for the electrode holder cord.

The right side of the unit comprises the electrode holder rest.

The rear of the unit comprises the following items:

- a connector for the bracelet (neutral electrode);
- a pedal connector;
- a mains switch;
- fuse housing;

- a mains connector.

## 6.6 Bracelet

The medical device bracelet connector is used to connect the device to the bracelet cord.

This neutral electrode must be installed in accordance with the following criteria:

- put the bracelet around the patient's right wrist to divert the current between the active electrode and the bracelet away from the heart;
- adjust the bracelet so that its entire surface is in contact with the patient's wrist.

Remove all metal objects that are in direct contact with the patient's skin in the current's path: piercings, jewellery or other.

## 6.7 Control pedal

The ON/OFF type pedal is used by the practitioner to operate the medical device. The pedal connector connects the device to the control pedal.

Pressing the pedal automatically activates high frequencies.

The control pedal equipped with its cord can be disconnected. Its weight and antislip pad ensure good stability.

Pressing the control pedal activates the device's high-frequency output. For greater safety, the pedal can be fixed to the device by two attachment screws present on the pedal cord connector.

## 6.8 Indicator lamps and light indicators

### 6.8.1 Indicator lamp ON



This yellow indicator remains lit as long as the pedal is pressed and indicates the presence of the high-frequency current. Note that a buzzer sounds (audible signal meeting current standards) when the pedal is being pressed. The volume is not adjustable.

### 6.8.2 Indicator ON



This indicator is green; it lights up when the device's ON/OFF switch is in "I" position (ON).

## 6.9 Control knobs

The device is controlled by adjusting the power and coagulation control knobs.

Incision power settings .

Adjusts the incision power from the minimum value to the maximum value.

At maximum power (setting 10), the power delivered is 30 W approx.; however, it depends on the operating conditions and the patient's histological variables.

Coagulation settings .

- Value 1: Minimum coagulation.
- Value 10: Maximum coagulation.

## 6.10 Electrode holder connector

Connect one end of the electrode holder cord to the front face connector, then connect the electrode holder to the other end of the cord.

Only SATELEC® electrode holders can be connected to the medical device. The connector on the front face is designed to receive the electrode holder cord connector.

Do not connect/disconnect the electrode holder cord when the device is switched ON and the pedal is pressed.

The electrode holder rest can be cleaned with a wipe and must be removed for sterilization.

## 6.11 Installing an electrode

Do not use the electrode if the plastic sheath looks damaged (splits, holes, etc.) or is missing. If damaged or missing, replace the electrode.

- unscrew the electrode holder cap by a few turns;
- insert the electrode appropriate for the surgical procedure;
- push the electrode as far in as possible. the insulating plastic must be firmly against the end of the cap and no metal must protrude beyond the electrode holder cap;
- screw the electrode holder cap to secure the electrode in place.

It is essential to push the electrode well in so that no metal part is visible between the electrode holder cap and the electrode's plastic sheath. Any visible part would cause the current to flow and result in a painful incision in the wrong area of the patient's mouth.

Replace the electrode holder if it no longer holds the electrode tightly.

| Do not touch the electrode when the pedal is pressed.

### 6.11.1 Choosing an electrode

The blue electrodes (diameter 0.22mm) are for incision only.

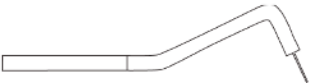






The yellow electrodes (diameter 0.40mm) are for coagulation incision only.

The white electrodes (diameter 0.22mm) are for excision only.

The red electrodes (diameters 1mm, 2.5mm and 3.2mm) are for fulguration and coagulation only.

The device can be used with a wide range of electrodes.

Adjust the device for the electrode used, as indicated in the settings table.

		
	6 - 8	3 - 4
	6 - 8	3 - 4
	6 - 8	3 - 4
	5 - 7	1 - 3

## 6.12 Fuse recess

The recess holds two mains fuses designed to protect the medical device in the event of overvoltage or an internal fault.

## 6.13 Switch


The mains switch is used to switch on (position I) or to stop (position O) the medical device.

## 6.14 Air inlets

Air inlets ensure correct ventilation of the control unit. Leave them uncovered to allow air to circulate.

## 6.15 Stopping the medical device

| Keep the pedal well away to prevent accidentally activating it during the following phases.

- set the medical device to minimum power using the  button;
- set the medical device mains switch to "O" OFF position;
- remove the bracelet from the patient;

- disconnect the cord from the medical device bracelet;
- disconnect the electrode holder from its cord;
- remove the electrode from the electrode holder;
- disconnect the electrode holder cord from the device.

At the end of each working day or before a long absence, the medical device must be switched OFF.

When not in use, or in storage or before a long absence, disconnect the medical device from the mains power supply.

- set the device's mains switch to OFF position O;
- take hold of the cord plug, hold the wall socket and disconnect the medical device.



# 7 Cleaning, disinfecting and sterilizing

The table below lists the elements of the medical device and their treatment methods.

Element	Wipes	Water + brush, bottle-brush, sandpaper	Ultrasonic tank	Drying + placing in a bag	Autoclave
Electrode	X	X	X	X	X
Electrode holder cap	X	X	X	X	X
Electrode holder	X	X	-	-	-
Bracelet	X	-	-	-	-
Unit	X	-	-	-	-
Cords	X	-	-	-	-
Pedal	X	-	-	-	-

## 7.1 Cleaning and disinfecting the medical device

The medical device must be in OFF or in O stop position during cleaning and disinfecting procedures.

| Avoid using cleaning and disinfection products that contain flammable agents.

Otherwise, ensure that the product has completely evaporated from or that there is not fuel left on the medical device and its accessories before switching it on.

| Do not use abrasive product to clean the medical device.

| Never apply sprays directly to the medical device to clean it. Always spray the product onto a wipe, then clean the medical device.

The medical device control unit, electrode holder cord and control pedal must be cleaned and disinfected daily. The following cleaning and disinfection products can be used:

- alkaline disinfectant products;
- dental surgery disinfectant wipes, SEPTOL™ type WIPES.

## 7.2 Cleaning, disinfecting and sterilizing accessories

### 7.2.1 Cleaning the bracelet and its cord

The bracelet and its cord must be cleaned and disinfected with disinfectant wipes.

### 7.2.2 Cleaning electrodes and the electrode holder

- Do not use steel wool or abrasive cleaners.
- Avoid solutions containing iodine or with a high chlorine content.
- The pH of the detergents/disinfectants must be between 7 and 11.
- The cleaning method for electrodes and the electrode holder recommended by SATELEC® is manual or automatic.
- All devices must be carefully cleaned and then undergo a final sterilization before use.
- The sterilization parameters are only valid for correctly cleaned devices.
- The electrodes require special attention during cleaning.

During automatic cleaning, the electrodes must be placed on suitable instrument holders or in small baskets to prevent them from being damaged during washing.

It is the responsibility of the end user to ensure that all equipment used to recondition SATELEC® devices is properly installed, validated, maintained and calibrated.

Whenever possible, a washer/disinfector should be used for the electrodes and electrode holder. Prevent the overloading of wash baskets for ultrasonic cleaning or cleaning in a washer/disinfector.

### 7.2.3 Cleaning/sterilization cycle limits

Repeated conditioning cycles that include ultrasonic cleaning, manual or automatic washing and sterilization have a minimal effect on the electrodes and electrode holder.

End of service life is normally determined by wear and damage due to use.

- Soiled devices should be separated from non-contaminated devices to avoid contamination of personnel or surroundings.
- Cover the devices with a soft lint-free cloth dampened with purified water to prevent blood and/or debris from drying.

### 7.2.4 Containment and transportation

Soiled devices must be transported separately from non-contaminated devices to avoid contamination.

### 7.2.5 Preparation for pre-disinfection/cleaning

It is advisable to recondition devices as soon as possible after use.

| SATELEC® devices must be reconditioned within two hours of use.

Unscrew the electrode after each use and before cleaning.

### 7.2.6 Pre-disinfection and cleaning - Manual method

Equipment: soft brush, soft lint-free swab, lint-free cloth, alkaline cleaner, ultrasonic cleaner.

Step time (minimum)	Cleaning instructions
1 minute	Rinse the soiled device under cold running water. Use a soft-bristled brush or a soft and lint-free clean cloth to remove most of the contamination and debris.
10 minutes	In an ultrasonic cleaner, immerse the device in a freshly prepared alkaline cleaning solution of pH 11 approx.
1 minute	Rinse the device under cold running water.
2 minutes	Manually wash the device in a freshly prepared alkaline cleaning solution. Use a soft brush to remove the soiling and debris, paying particular attention to the end of the electrode (metal part and intersection between the metal part and the sheath)
1 minute	Thoroughly rinse the device with distilled or purified water.
	Repeat the pre-cleaning procedure until all the visible soil is removed from the device.
	Perform a final rinse of the device using distilled or purified water.
	Dry the device with a soft, lint-free cloth or with clean compressed air.

### 7.2.7 Pre-disinfection and cleaning - Automated method

| The manual pre-disinfection/pre-cleaning method must be performed prior to the automatic cleaning.

Equipment: soft brush, soft lint-free swab, lint-free cloth, ultrasonic cleaner, washer/disinfector, alkaline cleaner.

Step time (minimum)	Cleaning instructions
1 minute	Rinse the soiled device under cold running water. Use a soft-bristled brush or a soft and lint-free clean cloth to remove most of the contamination and debris.
5 minutes	In an ultrasonic cleaner, immerse the device in a freshly prepared alkaline cleaning solution of pH 11 approx.
1 minute	Rinse the device under cold running water.
1 minute	Manually wash the device in a freshly prepared alkaline cleaning solution. Use a soft brush to remove the soil and debris, paying particular attention to the end of the electrode (metal part and intersection between the metal part and the sheath). Repeat the pre-cleaning procedure until no visible contamination remains on device.
1 minute	Thoroughly rinse the device with distilled or purified water.
	Repeat the pre-cleaning procedure until no visible contamination remains on device.

### 7.2.8 Automated cleaning method

Step	Time	Cleaning instructions
Pre-washing	2 minutes	Cold tap water
Washing	10 minutes	Warm tap water (> 40 °C); use an alkaline cleaning solution pH 11
Neutralization	2 minutes	Warm tap water with neutralizer, if necessary (> 40 °C)
Rinsing	2 minutes	Rinse with warm distilled or purified water (> 40 °C)
Drying	40 minutes	90 °C

### 7.2.9 Inspection

- Devices must be inspected to check that no contamination remains, that they are not corroded, dulled, discoloured or damaged.
- Before conditioning and sterilizing the cleaned devices, check they are clean, undamaged and function properly.
- Damaged devices must be discarded, they must not be lubricated.

### 7.2.10 Packaging

Use suitable packaging or a rigid reusable container for sterilization; the sterile barrier system must comply with ISO standard 11607. Prevent any contact between devices and other objects that could damage their surface or the sterile barrier system.

### 7.2.11 Sterilization

Unless otherwise specified, non-sterile products can be resterilized using validated steam sterilization methods (ISO 17665 or national standards).

SATELEC<sup>®</sup> recommendations for packed electrodes and electrode holders are as follows:

Type of cycle	Sterilization exposure time	Sterilization exposure temperature	Drying time
Saturated steam - forced air removal (pre-vacuum)	3 minutes to 18 minutes	134°C	Minimum 20 minutes

Dry times generally range from 20 to 60 minutes due to the difference in packaging materials (Sterile Barrier System, e.g. reusable rigid containers or wraps), steam quality, device materials, total mass, sterilizer performance, and varying cool-down time.

The distributor and manufacturer accept no responsibility for sterilization procedures performed by the customer that are not performed according to these SATELEC® recommendations.

## 7.2.12 Storage

Storage conditions for products labelled “STERILE” are printed on the packaging label. Packaged products should be stored in a clean, dry environment, protected from direct sunlight, pests, humidity and extreme temperatures. Use products in the order in which they are received (“first in, first out” principle), taking into account the expiry date indicated on the label.

## 8 Monitoring the medical device

Before and after each use, check the whole medical device and its accessories to detect any problems. This is necessary to detect any isolation fault or damage. If necessary, replace damaged parts.

Monitor the cleanliness of the air inlets on the control unit to prevent any heating.



# 9 Maintenance

The only preventive maintenance the medical device requires is:

- checking of accessories;
- everyday cleaning, disinfection and sterilization procedures;
- cleaning.

In application of the French Decree of 5 December 2001 and of the corresponding Order of 3 March 2003 relating to the obligation of maintenance and quality inspection of medical devices, the operator, who must ensure that the applicable maintenance operations are carried out, should refer to and apply the maintenance operations routinely encountered for high-frequency surgical devices.

## 9.1 Thermal cutout

The operating cycle is as follows:

- 5 x 10-second operating cycles;
- 30-second stop;
- 10-minute stand-by.

| A thermal cutout is activated if the unit is used intensively.

## 9.2 Identifying incorrect operation

In the event of incorrect operation, refer to the tables below to quickly identify and repair the non-complex parts of the medical device.

If the incorrect operation is not described in the tables below, please contact your supplier or the SATELEC® After-Sales team.

Do not use the medical device if it appears to be damaged or faulty. Isolate the medical device and make sure that it cannot be used.

### 9.2.1 Not working

Symptoms: the medical device is not working

Possible causes	Solutions
No electrical current	Contact your electrician
Faulty connection between the mains cord and the mains connector	Connect the mains cord to the mains connector.
Faulty connection between the mains cord and the electrical wall socket	Connect the mains cord to the electrical wall socket.
Mains switch in position O	Set the mains switch to position I
Internal fuse not working	Return to SATELEC® After-Sales team
Mains fuses in the mains connector not working	Replace the mains fuses with fuses of the same type and rating

| The medical device also has an internal fuse (ref. F1 on the printed circuit board) that cannot be accessed by the user.

### 9.2.2 Indicators or buzzer not working

Symptoms: The green indicator lamp lights up but the orange indicator does not and the buzzer does not work.

Possible causes	Solutions
Pedal cord not properly connected	Push the pedal cord plug firmly in
Faulty pedal	Replace the pedal or contact the dealer
Device thermal cut-out	Wait for the device to cool down

Symptoms: The indicator lamps come on and the buzzer is working but there is no high-frequency current

Possible causes	Solutions
Electrode holder cord not properly connected	Check both ends of the electrode holder cord, on the device and on the electrode holder
Bracelet connector not properly connected	Check the bracelet connector
Other possibilities	Contact the After-Sales Department SATELEC®

## 9.3 The electrode is not working or is working incorrectly

Symptoms: The electrode incises with difficulty or is not incising at all

Possible causes	Solutions
Intensive use. Thermal cut-out activated	Allow the device to cool down
Neutral electrode (bracelet) in the wrong position	Check that the whole surface of the neutral electrode (bracelet) is in contact with the patient
Soiled electrode	Switch the device to "O" (OFF). Clean the electrode
Electrode moving too fast	Reduce electrode movement speed
Inappropriate electrode	Select the appropriate electrode for the operating procedure
Electrode worn	Replace the electrode

Symptoms: The electrode sticks to the biological tissue

Possible causes	Solutions
Power set too low	Increase power up to the incision threshold. Exceeding the threshold serves no purpose
Inappropriate electrode	Select the appropriate electrode for the operating procedure

Symptoms: The electrode incises but there are sparks

Possible causes	Solutions
Incision power set too high	Reduce the incision power down to the incision threshold. Exceeding the threshold serves no purpose

## 9.4 Corrective Maintenance

In the event of faulty operation, the following corrective maintenance actions may be performed by the user.

### 9.4.1 Replacing the fuses

The medical device is protected by two fuses in the mains connector.

To replace the fuses, perform the following operations:

- stop the medical device (position O);
- disconnect the mains cord from the electrical network;
- disconnect the mains cord from the mains connector;
- insert the tip of a flathead screwdriver into the notch on top of the fuse holder to release it;
- remove the used fuses;
- replace the used fuses with fuses of the same type and same rating;
- place the fuse holder in its recess by pushing it until you hear a click that confirms it is in the correct position;
- connect the mains cord to the connector;
- connect the mains cord to the electrical network;

| The medical device also has an internal fuse that cannot be accessed by the user.



# 10 Electromagnetic compatibility

All the information below is based on the requirements of standards to which the manufacturers of electrical medical devices must adhere (as stated in standard IEC60601-1-2).

The medical device complies with the electromagnetic compatibility standards in force. However, the user will make sure that any electromagnetic interference does not create an additional risk, such as radiofrequency transmitters, or other electronic devices.

This chapter contains the information required for you to install and use your medical device in optimum conditions in terms of electromagnetic compatibility.

The different medical device cords must be kept away from each other.

Some types of mobile telecommunication devices such as mobile phones may interfere with the medical device. The separation distances recommended in this chapter must be strictly respected.

The medical device must not be used near another device or placed on top of it. If this cannot be avoided, correct operation of the device in operating conditions must be checked prior to use.

The use of accessories other than those specified or sold by Satelec as replacement parts, may increase the transmission or reduce the immunity of the medical device.

## 10.1 Cable length

Cables and accessories	Maximum length	Test type	In compliance with:
Cables/Cords	< 3m	RF emission	CISPR 11, Class B
		Harmonic current emission	IEC61000-3-2
		Voltage fluctuation and flickers	IEC61000-3-3
		Electrostatic discharge immunity	IEC61000-4-2
		Radiated immunity - Electromagnetic fields	IEC61000-4-3
		Electrical fast transient/burst immunity	IEC61000-4-4
		Surge immunity	IEC61000-4-5
		Immunity to conducted disturbances, induced by radio-frequency fields	IEC61000-4-6
		Radiated immunity - Magnetic fields	IEC61000-4-8
		Voltage dips, short interruptions and voltage variation immunity	IEC 61000-4-11

## 10.2 Recommended separation distances

The medical device is designed to be used in an electromagnetic environment in which interferences caused by RF radiation are controlled.

The user or installer of the medical device may help to prevent electromagnetic interference by maintaining a minimum distance, depending on the maximum power of the handheld and mobile radiofrequency transmission equipment (transmitters), between the medical device and the equipment as recommended in the table below.

	Separation distance in meters (m) according to emitter frequency		
Max. nominal power of the transmitter in Watts	From 150 kHz to 80 Mhz $d = \sqrt{P} \cdot 1.2$	From 80 MHz to 800 MHz $d = \sqrt{P} \cdot 1.2$	From 800 MHz to 2.5 GHz $d = \sqrt{P} \cdot 2.3$
0.01	0.12 m	0.12 m	0.23 m
0.1	0.38 m	0.38 m	0.73 m
1	1.2 m	1.2 m	2.3 m
10	3.8 m	3.8 m	7.3 m
100	12 m	12 m	23 m
With regards to transmitters for which the maximum power is not listed above, the recommended separation distance (d) in metres (m) can be estimated by using the equation applicable to the transmitter frequency where (P) is the maximum power of the transmitter in watts (W) according to the manufacturer.			

┆ Note 1: At 80 MHz and 800 MHz, the higher frequency range applies.

┆ Note 2: These specifications may not be applicable in all situations.

The electromagnetic propagation is reduced by the absorption and reflection of structures, objects and people.

## 10.3 Electromagnetic emissions

The medical device is designed to be used in the electromagnetic environment described in the table below.

The user and/or installer must ensure that the medical device is used in the environment described below.

Emission test	Conformity	Electromagnetic environment - comments
RF emission (CISPR 11)	Group 1	The medical device uses RF energy for its internal operation. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emission (CISPR 11)	Class B	
Harmonic current emission (IEC61000-3-2)	Class A	
Voltage fluctuation and flickers (IEC61000-3-3)	Conforming	The medical device is suitable for use in all establishments, including domestic and those directly connected to the low voltage energy supply public network supplying buildings used for domestic purposes.


## 10.4 Electromagnetic immunity

The medical device is designed to be used in the magnetic and electromagnetic environment specified in the table below. The user and/or installer must ensure conformity of the electromagnetic environment.

Immunity test	Test level in accordance with IEC60601	Conformity level	Electromagnetic environment / comments
Electrostatic discharge (ESD) (IEC61000-4-2)	± 6 kV contact ± 8 kV air	± 6 kV contact ± 8 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material (carpet, etc.) the relative humidity should be at least 30%.
Electrical fast transient (IEC61000-4-4)	± 2 kV for electricity supply lines	± 2 kV for electricity supply lines	The quality of the electricity supply must be equivalent to that of a typical commercial environment or hospital establishment (hospital, clinic).
Surge (IEC61000-4-5)	± 1 kV differential mode ± 2 kV common mode	± 1 kV differential mode ± 2 kV common mode	The quality of the electricity supply must be equivalent to that of a typical commercial environment or a hospital.
Magnetic field at 50 hz/60 hz (IEC61000-4-8)	3A/m	3A/m	The magnetic field intensity must be equal to the level found in a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variation (IEC 61000-4-11)	< 5% UT (>95% dip in UT) for 0.5 cycles  40% UT (60% dip in UT) for 5 cycles  70% UT (30% dip in UT) for 25 cycles  < 5% UT (>95% dip in UT) for 250 cycles	< 5% UT (>95% dip in UT) for 0.5 cycles  40% UT (60% dip in UT) for 5 cycles  70% UT (30% dip in UT) for 25 cycles  < 5% UT (>95% dip in UT) for 250 cycles	Mains power quality should be that of a typical commercial or hospital environment. If the use of the system requires continuous operation during mains power outages, it is advisable to supply the medical device using a separate current source (UPS, etc.).

## 10.5 Electromagnetic immunity, handheld radiofrequency equipment

The medical device is designed for use in the magnetic and electromagnetic environment described in the table below. The user and/or installer must ensure conformity of the electromagnetic environment.

Immunity test	Test level	Conformity level	Electromagnetic environment - comments
Handheld and mobile radiofrequency communication devices must not be used near the medical device (including cables) at a distance below that recommended and calculated according to the frequency and power of the transmitter.			
Radiated radiofrequency electromagnetic field (IEC61000-4-3)	3 V/m 80 MHz to 2.5 GHz	3 V/m	$d = 1.2 \sqrt{P}$ 80 MHz to 800 MHz $d = 2.3 \sqrt{P}$ 800 MHz to 2.5 GHz Where (P) is the maximum nominal power of the transmitter in Watts (W) according to the manufacturer specifications and (d) is the minimum recommended separation distance in metres (m).
Radiofrequency conducted disturbance (IEC61000-4-6)	3 V/m 150KHz to 80MHz	3 V/m	Recommended separation distance: $d = 1.2 \sqrt{P}$
<p>The electromagnetic field strengths of fixed radiofrequency emitters, as determined by an electromagnetic environment measurement (a), must be less than the compliance level in each frequency range (b). Interference may occur near equipment marked with the symbol below:</p> 			

| Note 1: At 80 MHz and 800 MHz, the highest frequency range applies.

| Note 2: These specifications cannot be applied to all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and persons.

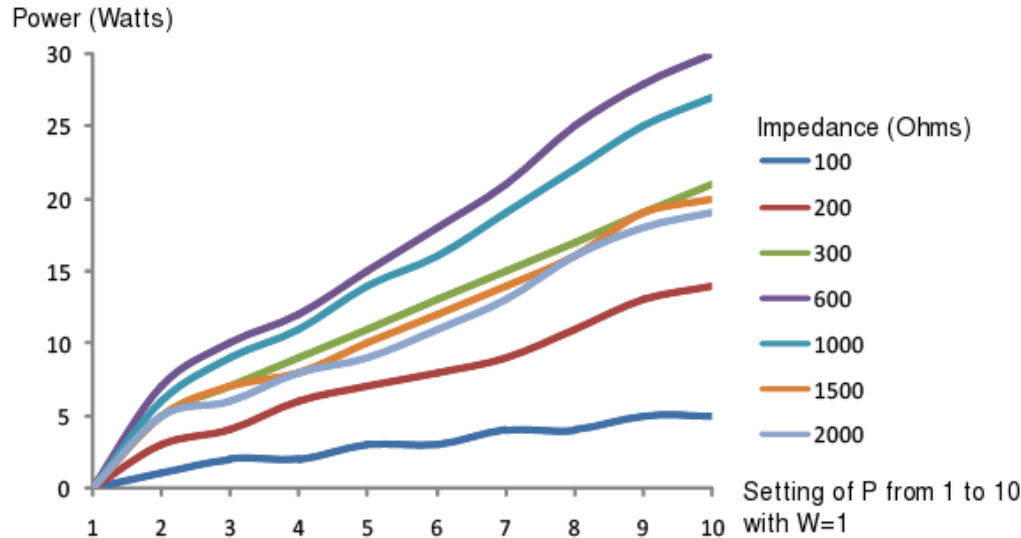
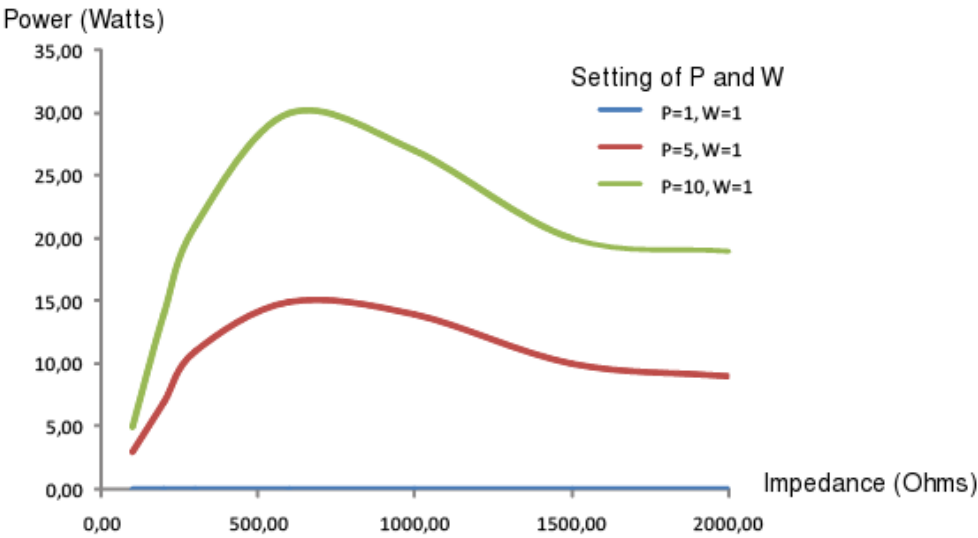
(a) The electromagnetic field intensity of fixed radiofrequency transmitters, such as base stations for portable phones (mobiles / wireless), mobile radios, radio amateurs, AM/FM radio transmissions and TV transmissions cannot be determined accurately by the theory.

To assess the electromagnetic environment due to fixed radiofrequency emitters, an electromagnetic environment measurement must be made. If the measured radiofrequency field strength in the immediate environment where the product is used exceeds the compliance level specified above, the performance of the product must be tested to verify whether it conforms to the specification. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the product.

(b) In the 150 kHz to 80 Mhz frequency range, the electromagnetic fields must be less than 3 V/m.

# 11 Technical specifications for the medical device

## 11.1 Characteristic curves



## 11.2 Identification

Manufacturer	SATELEC®
Name of medical device	SERVOTOME®

## 11.3 Applied parts

Part in direct contact with the patient	Electrodes
Parts in indirect contact with the patient	Electrode insulator Electrode holder

## 11.4 Power settings

Incision setting (relative units)	1 - 10
Coagulation setting (relative units)	1 - 10

## 11.5 Control unit

Width (in mm)	250
Height (in mm)	110
Depth (in mm)	240
Weight (in g)	1200

Ingress protection rating: IP21

## 11.6 Generator

Supply voltage	115 V AC / 230 V AC
Power supply frequency	50 Hz / 60 Hz
Power consumption	70 VA to 230 VAC
Power output	30 W
Output voltage	650 V PP - P = 10, W = 1
Characteristic impedance	600 $\Omega$
Output impedance range	100 $\Omega$ to 2 k $\Omega$
Output frequency	1.2 MHz +/- 0.2 MHz
High-frequency output type	Floating (isolated from ground)
Power setting range	
Operating mode	5 cycles (10 sec. ON / 30 sec. OFF)
Type of leakage currents	LF
Electrical rating	I
Internal fuse not accessible to the user	F1: 5mm - 500 mA T / 250 VAC
Fuse (mains connector) - 115 V	5mm x 20mm / 2 A T
Fuse (mains connector) - 230 V	5mm x 20mm / 1.25 A T

## 11.7 Length of cords

Electrode holder cord (in mm)	> 2000
Bracelet cord (in mm)	> 2000
Control pedal cord (in mm)	> 2000

## 11.8 Control pedal

Width (in mm)	70
Height (in mm)	30
Depth (in mm)	95
Weight (in g)	150

Ingress protection rating: IPX1

## 11.9 Environmental characteristics

Operating temperature	+10 °C - +30 °C
Storage temperature	-20 °C - +70 °C
Operating humidity	30% - 75%
Maximum storage humidity	10% - 100%, including condensation
Atmospheric pressure	800 hPa - 1060 hPa
Altitude	≤ 2000m

## 11.10 Environmental restrictions

Usage premises	Usable in all medical premises. The medical device must not be used in operating theatres.
Use in gas-filled atmosphere	The medical device is not designed for use in a type AP or APG gas-filled atmosphere or in the presence of anaesthetic gases.
Immersion	The medical device must not be immersed.





# 12 Regulations and standards
















## 12.1 Official Texts

This medical device complies with the essential requirements of European Directive 93/42/EEC. This equipment is designed and developed in compliance with Electrical Safety standard IEC60601-1 in force. It was designed and manufactured in accordance with an EN ISO 13485-certified quality assurance system.

## 12.2 Medical class of the device

The device designed by SATELEC® is a class IIb medical device (European Directive no. 93/42/EEC pertaining to medical devices. Transposition into French national law by Decree no. 95/292 dated 16/03/1995).

## 12.3 Standardised Symbols

Symbols	Meaning
	Incision
	Coagulation
	Neutral electrode, bracelet
	Patient circuit isolated from ground (earth) at high frequency
	Refer to the accompanying documentation
	Consult the User Manual
 Electronic user informations	Accompanying documentation in electronic format
	LF type
I	Class 1
	Alternating voltage
	Sterilization at 134°C in an autoclave
	Washer disinfectant for thermal disinfection
	EC marking
	Do not dispose of as household waste
YYYY 	Year of manufacture
	Control pedal
0	Device OFF
I	Device ON

Symbols	Meaning
IPX1	IP: ingress protection ratings procured by a range X: no ingress of protection rating claim against the penetration of solids 1: protects against the vertical falls of drops of water
IP21	IP: ingress protection ratings procured by a range 2: protected against the penetration of solids larger than 12mm 1: protects against the vertical falls of drops of water
Rx	For USA only: the United States Federal Law restricts the use of this device solely to qualified, trained and competent dental professionals

## 12.4 Manufacturer identification

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## 13.1 Disposal and recycling

As an item of Electrical and Electronic Equipment, the medical device must be disposed of via a specialist collection, removal, recycling or destruction channel. This applies in particular to the European market, in reference to Directive 2002/96/EC dated 27/01/2003.

When your medical device has reached the end of its service life, contact your nearest dental equipment dealer, or ACTEON GROUP head office or one of the company branches to find out how to proceed. The relevant contact details are given in the chapter *Branch addresses page 43*.





Ref: J57211 • V6 • (13) • 04/2013 • NE28EN010F

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