LM

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LMProPower CombiLED

User Manual

This manual is valid for:

LM-ProPower 1007274

LM-ProPower 1007375

LM-ProPower 1007274us

LM-ProPower 1007375us

LM-ProPower 1007274jp

LM-ProPower 1007375jp

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CE 0537

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1. INTRODUCTION

Foreword

This is user manual for CombiLED product. Read and understand this manual before you use the product. If there are any questions regarding the contents of this manual, please contact LM-Instruments Oy. Keep User manual in place where it is easily available for all users.

General Requirements

Special precautions are necessary to this product regarding EMC (Electro Magnetic compatibility). It is necessary to install the product and put it into servicing referred to the EMC data in chapter “2.6. EMC Guidance and manufacturer’s declaration” on page 8.

Portable and mobile RF (Radio Frequency) communications equipment can have an unwanted effect on the product.

Connect the product to electricity-, water- and compressed air supply which obeys the requirements in the Technical data.

Servicing

Only approved service persons are permitted to do servicing to this product. The maintenance procedures which are introduced in this manual are for the user. User must obey the maintenance measures to keep safe and efficient operation of the product.

2. SAFETY INSTRUCTIONS

2.1. Safety notices

The safety notices shown on this page are used to identify safety messages in these instructions:

WARNING	**WARNING indicates a dangerous situation that, if not prevented, could cause death or injury.**

CAUTION	**CAUTION indicates a dangerous situation that, if not prevented, could cause minor or moderate injury.**

NOTICE!	**NOTICE indicates a situation that, if not prevented, could result in material damage.**

This general hazard symbol identifies important safety messages in this manual. Carefully read, understand and obey the messages. When you see this symbol,be alert: your and your patient safety is involved.

2.2. Electro magnetic compatibility

Special precautions are necessary to this product regarding EMC (Electro Magnetic compatibility). It is necessary to install the product and put it into servicing referred to the EMC data in chapter “2.6. EMC Guidance and manufacturer’s declaration” on page 8. Portable and mobile RF (Radio Frequency) communications equipment can affect the product.

2.3. Safety considerations to install, servicing and to repair the CombiLED unit

Connect the product to electricity-, water- and compressed air supply which obeys the requirements in the “9. Technical data” on page 39. Only persons with applicable professional knowledge are permitted to connect the unit to the air or water supply.

Only approved service persons are permitted to do servicing to this product.

In this manual are shown all the permitted maintenance procedures for the user, any other procedures are strictly prohibited. Before you do any maintenance work, read and understand maintenance instructions.

2.4. Intended and prohibited use

LM-ProPower CombiLED is designed for removal of biofilm and calculus on teeth, cleaning discoloured teeth and other dental work where the ultrasonic vibration and/or polishing is beneficial. The unit must only be used by licensed dental and professionals approved in the correct operation of scaling- and polishing devices.

Do not use LM-ProPower CombiLED unit where it is not intended to. If you are unsure about your operation, please contact your local dealer or place of purchase.

2.5. Declaration of conformity

The manufacturer hereby declares that the LM-ProPower CombiLED unit Class I, type B according to EN60601-1 equipped with original accessories conforms to the essential requirements of the Medical Device Directive 93/42/EEC with reference to the following harmonized standards:

IEC 60601-1, Third edition 2005 EN 60601-1: 2006.

Classification: Medical products, Class IIa:

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WARNING	**Do not make modifications to this product.**

2.6. EMC Guidance and manufacturer's declaration

Guidance and manufacturer's declaration - electromagnetic emissions		
The LM-ProPower is intended for use in the electromagnetic environment specified below. The customer or the user of the LM-ProPower should assure that it is used in such an environment.		
Emission test	**Compliance**	**Electromagnetic environment - guidance**
RF emissions CISPR 11	Group 1	The LM-ProPower uses RF energy only for its internal function. Therefore, it's RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class B	The LM-ProPower is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC 61000-3-2	Not applicable	
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Not applicable	

Guidance and manufacturer's declaration - electromagnetic immunity			
The LM-ProPower is intended for use in the electromagnetic environment specified below. The customer or the user of the LM-ProPower should assure that it is used in such an environment.			
Immunity test	**IEC 60601 test level**	**Compliance level**	**Electromagnetic environment - guidance**
Electrostatic discharge (ESD) IEC 61000-4-2	±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, the relative humidity should be at least 30%.
Electrical fast transient/ burst IEC 61000-4-4	±2 kV for power supply lines ±1 kV for input/output lines	±2 kV for power supply lines ±1 kV for input/output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	±1 kV differential mode ±2 kV common mode	±1 kV differential mode ±2 kV common mode	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	<5 % U_T (>95 % dip in U_T) for 0.5 cycle 40 % U_T (60 % dip in U_T) for 5 cycles 70 % U_T (30 % dip in U_T) for 25 cycles <5 % U_T (>95 % dip in U_T) for 5 sec	<5 % U_T (>95 % dip in U_T) for 0.5 cycle 40 % U_T (60 % dip in U_T) for 5 cycles 70 % U_T (30 % dip in U_T) for 25 cycles <5 % U_T (>95 % dip in U_T) for 5 sec	Mains power quality should be that of a typical commercial or hospital environment. If the user of the LM-ProPower requires continued operation during power mains interruption, it is recommended that the LM-ProPower be powered from an uninterruptible power supply or battery.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
NOTE U_T is the AC mains voltage prior to application of the test level.			

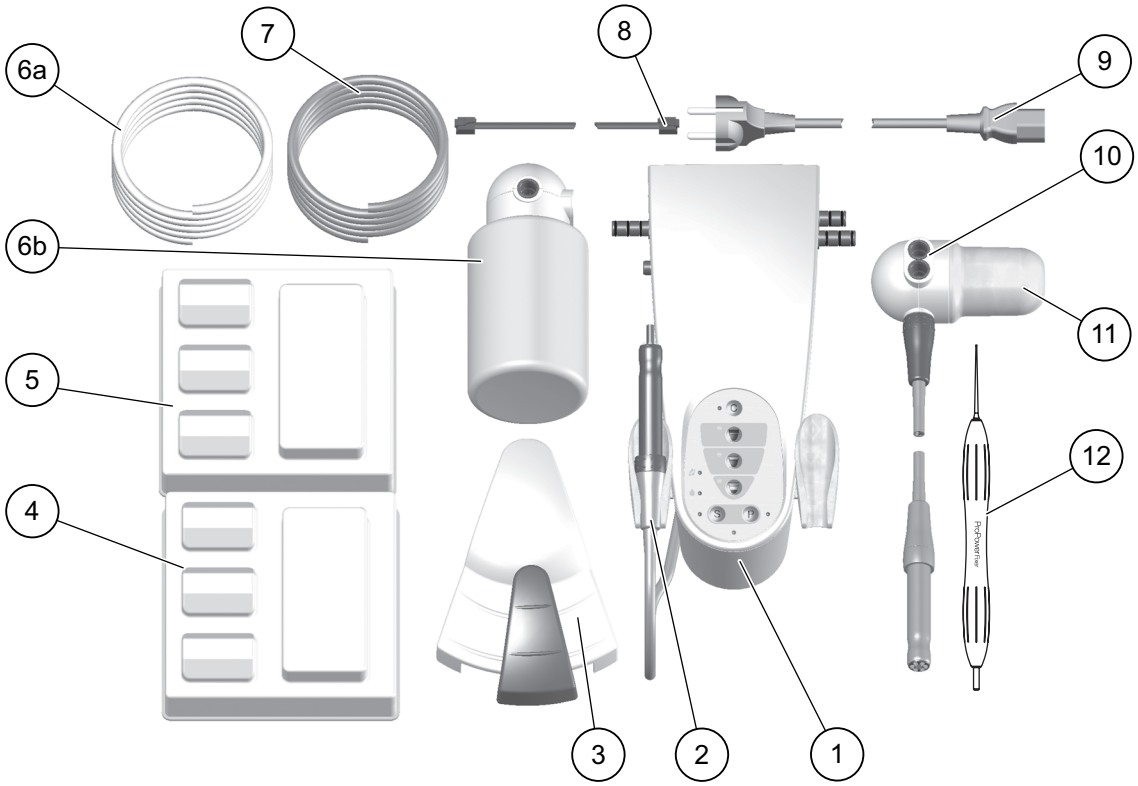
Guidance and manufacturer's declaration - electromagnetic immunity			
The LM-ProPower is intended for use in the electromagnetic environment specified below. The customer or the user of the LM-ProPower should assure that it is used in such an environment.			
Immunity test	**IEC 60601 test level**	**Compliance level**	**Electromagnetic environment - guidance**
			Portable and mobile RF communications equipment should be used no closer to any part of the LM-ProPower including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. **Recommended separation distance:**
Conducted RF IEC 61000-4-6	3 Vrms 150 kHz to 80 MHz	3 V	$d = 1.2\sqrt{P}$
Radiated RF IEC 61000-4-3	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 output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in metres (m). Field strengths from fixed RF transmitters as determined by an electromagnetic site survey,[a] should be less than the compliance level in each frequency range [b]. Interference may occur in the vicinity of equipment marked with the following symbol: 
NOTE 1 At 80 MHz and 800 MHz, the higher frequency range applies. NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			
a Field strengths from fixed transmitters, such as base stations fro radio (cellular/cordless) telephones and land mobile radios amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the LM-ProPower is used exceeds the applicable RF compliance level above, the LM-ProPower should be observed to verify normal operation. If abnormal performance is observed additional measures may be necessary, such as reorienting or relocating the LM-ProPower. **b** Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.			

Recommended separation distances between portable and mobile RF communications equipment and the LM-ProPower			
The LM-ProPower is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the equipment can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the LM-ProPower as recommended below, according to the maximum output power of the communications equipment.			
Rated maximum output power of transmitter W	**Separation distance according to frequency of transmitter m**		
	150 kHz to 80 MHz $d = 1.2\sqrt{P}$	**80 MHz to 800 MHz** $d = 1.2\sqrt{P}$	**800 MHz to 2,5 GHz** $d = 2.3\sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23
For transmitters rated at a maximum output power not listed above, the recommended separation distance d in metres (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.			
NOTE 1 At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.			
NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			

3. CONTENT OF DELIVERY

Carefully unpack your LM-ProPower CombiLED unit and verify all accessories and components are included to the content list below. If anything is missing contact your place of purchase.

3.1. Content of unit



1	LM-ProPower CombiLED unit	7	Air hose 6 mm (1/4”)
2	Scaler handpiece connected to unit	8	Foot control cable
3	Foot control unit	9	Power cord
4	Polisher introkit (content varies depending on the order)	10	AirLED tubing with handpiece
5	Scaler introkit (content varies depending on the order)	11	Powder container
6a (*)	Water hose 6 mm (1/4”)	12	LM-ProPower fixer
6b (*)	500 ml medicament bottle		

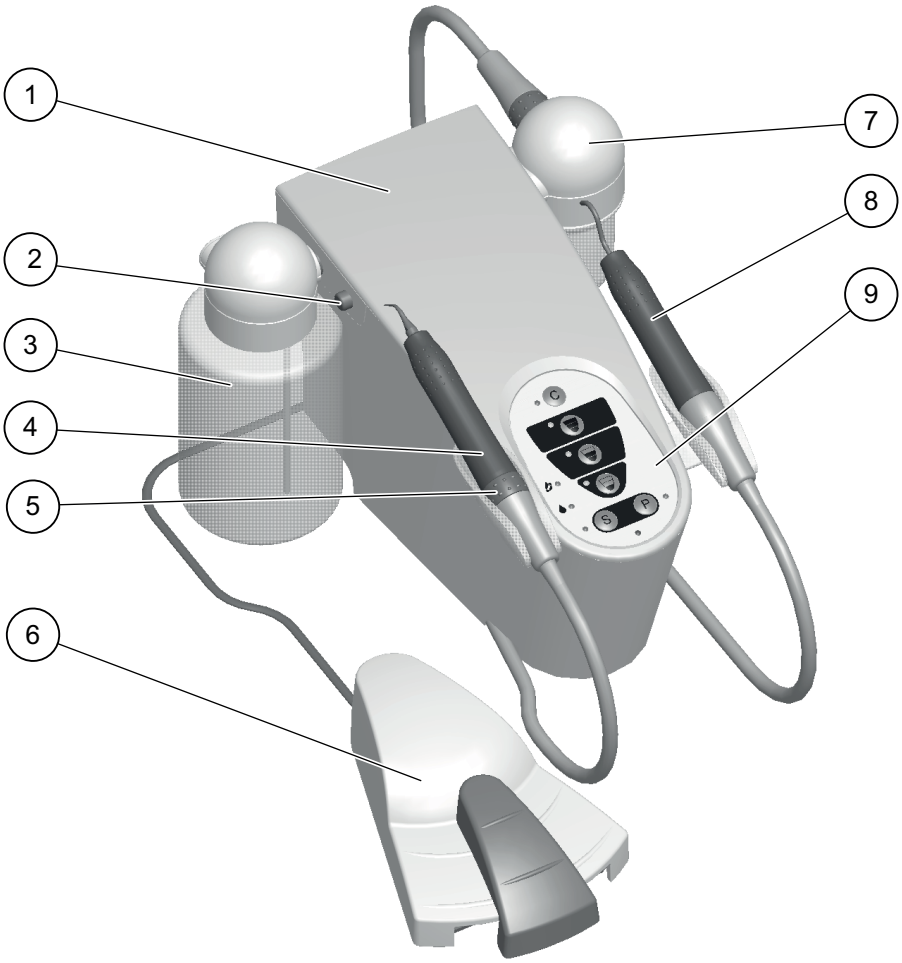
(*) depending of the type of the device

3.2. General description

LM-ProPower CombiLED combines an effective piezoelectric UltraLED scaler and an AirLED Polisher in one versatile and ergonomic appliance. The device’s LED lights, advanced electronics, quality, and high-durability LM-DuraGradeMAX tips enhance the execution of procedures which require great precision. Ergonomically designed LM-ErgoGrip handpieces with soft silicone handles give the user a comfortable, relaxed grip as well as an excellent feel.

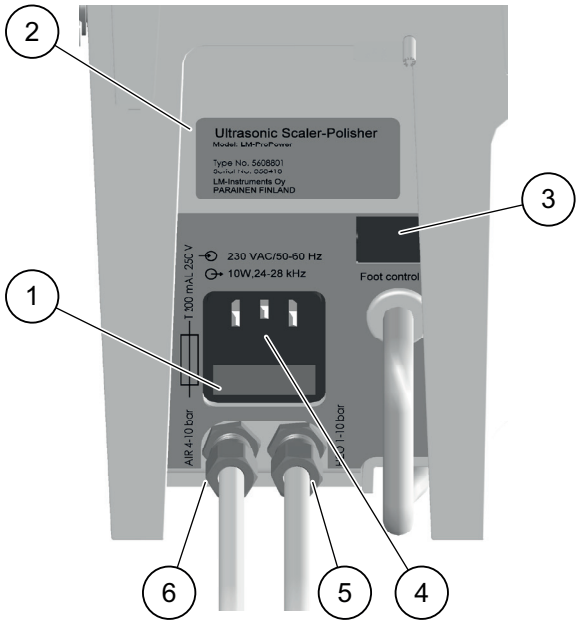
LM-ProPower is highly adaptable to any procedure or user approach. It is not only an outstanding scaling and cleaning device. It also brings power and versatility to endodontics, implantology, restorative treatments, minimally invasive treatments and apical surgery.

3.3. CombiLED unit



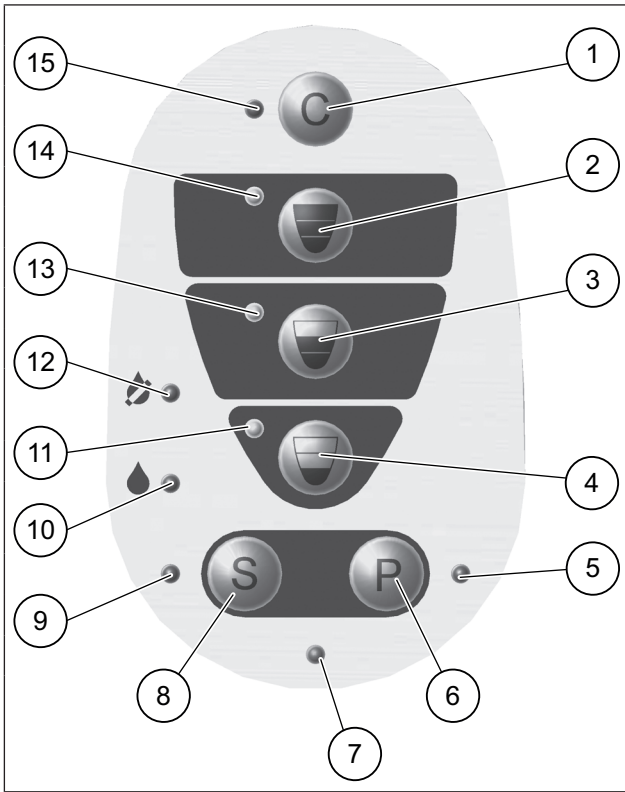
1	LM-ProPower CombiLED unit	7	Powder container
2	Depressurisation button	8	Polisher handpiece incl. tubing (with an ErgoGrip and a nozzle mounted)
3	Medicament bottle	9	Control panel
4	Scaler Handpiece (with an ErgoGrip and a tip installed)		
5	Scaler water flow control ring		
6	Foot control unit		

3.4. Coupling and type plate



1	Fuse holder
2	Type plate
3	Foot control connection
4	AC power input
5	Water hose coupling (optional)
6	Air hose coupling

3.5. Control panel



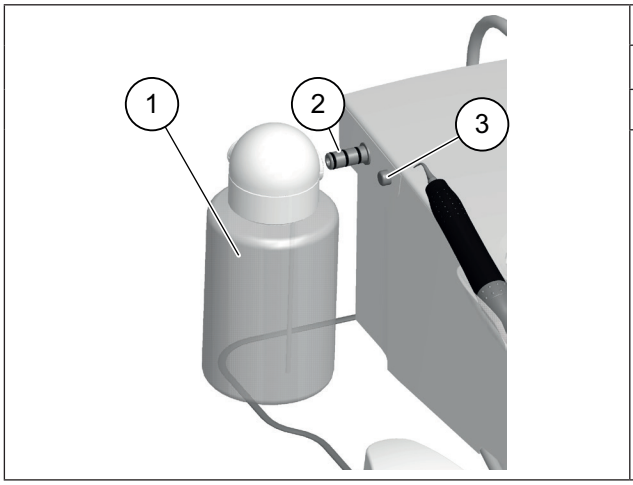
1	Cleaning key
2	Working mode 3 key
3	Working mode 2 key
4	Working mode 1 key
5	Polishing mode indicator
6	Polishing mode key
7	Standby indicator
8	Scaling mode key
9	Scaling mode indicator
10	Irrigation mode indicator (Scaler) Water-Jet mode indicator (Polisher)
11	Working mode 1 indicator
12	Dry mode indicator (Scaler) Air-Blow mode indicator (Polisher)
13	Working mode 2 indicator
14	Working mode 3 indicator
15	Cleaning mode indicator

3.6. Medicament bottle (optional)

LM-ProPower has a medicament dispenser system, making the device independent of a fixed water supply connection. The medicament bottle can be used for either medicament solutions or ordinary clean water. Approved medicament solutions:

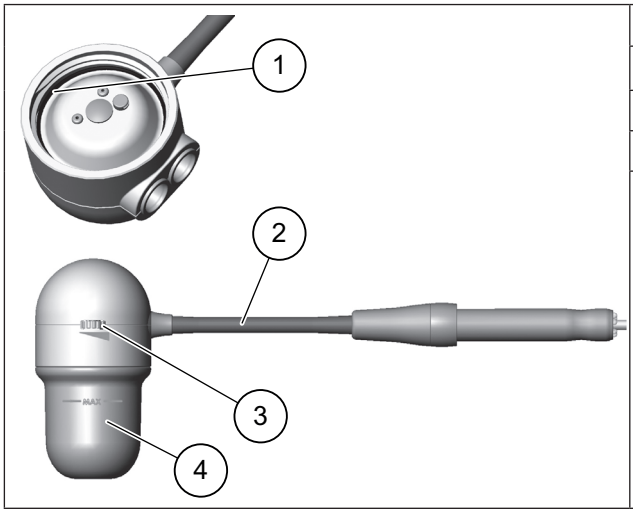
- Clean water
- Cetylpyridinium chloride
- Chlorhexidine
- Essential oils
- Hydrogen peroxide, 3% USP
- Povidine Iodine, 10% solution
- Saline solution
- Sangurinara extract
- Sodium hypochlorite 1% solution

The unit contains an electrically driven air compressor. When operating, the compressed air forces the fluid from the bottle through the hose and to the handpiece and to the tip/nozzle.



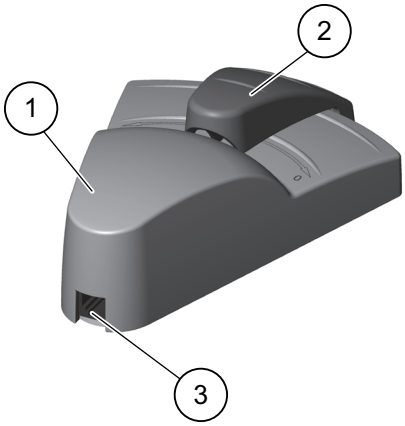
1	Medicament bottle
2	Bottle connector
3	Depressurisation button

3.7. AirLED Polisher



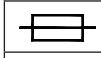
1	O-ring (installed in cap)
2	AirLED tubing with handpiece
3	Water flow control
4	Powder container

3.8. Foot Control unit



1	Foot control unit body
2	Foot control pedal
3	Connector for foot control cable

3.9. Symbols on the equipment

	Working mode 1
	Working mode 2
	Working mode 3
	Irrigation/Water-Jet mode
	Dry/Air-Blow mode
	Automatic cleaning function
	Scaling function
	Polisher function
	Example of type plate. The type plate is placed on the back side of the unit.
	Medical electrical equipment classified by ETL with respect to electric shock, fire, mechanical, and other specified hazards in accordance with the Safety Standards ANSI/AAMI ES 60601-1 and CAN/CSA C22.2 No 60601-1:08
	Caution
	Consult accompanying documents
	Compliance label indicating compliance with the Medical Device Directive 93/42/EEC. 0537 is the ID-number of the Notified Body: VTT
	Withstands autoclave temperature 135°C (275°F).
	Type B applied part according to the degree of protection against electrical shock.
	Fuse
	Input
	Output
	Please do not throw the equipment into the domestic refuse. Please use the return and collection systems available in your country for the disposal of this product. The equipment can also be returned to the manufacturer for disposal.

4. TAKING COMBILED IN TO USE

NOTICE!	**The product should not be used adjacent to or stacked with other equipment. If adjacent or stacked use is necessary, the product must be observed to verify correct operation in the configuration in which it will be used.**

NOTICE!	**Special skills required. Consult an approved technician to connect the unit to the air and water supply.**

NOTICE!	**Do not put the unit on or adjacent to a heat source. Excessive heat can damage the electronics.**

NOTICE!	**Product is not suitable for use in the presence of flammable gases.**

4.1. How to install the unit

- Put the unit horizontally with the handpieces in the holders and the hose hanging free.
- Put the unit where air is free to circulate on all sides and below it. Do not put the unit on a wall or adjacent to heat source.
- Do not put the unit in the immediate vicinity of sources of electromagnetic radiation, for example an electro surgery equipment.
- Connect the foot control cable to the foot control and at rear side of the unit.
- Install the scaler tubing in the grove below the unit, as in picture.

4.2. How to connect the unit to the air supply

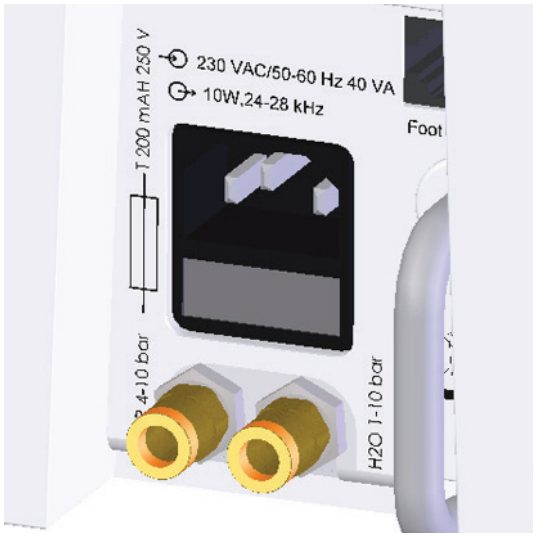
NOTICE!	Use only dry and filtered compressed air.

NOTICE!	Special skills required. Consult an approved technician to connect the unit to the air supply.

1. Set the air supply OFF.
2. Verify that the air pressure obeys to the data in the technical data section. See instructions “9. Technical data” on page 39
3. Use only dry and filtered compressed air.
4. Push the hose onto the quick connect coupling.
5. Connect the other end of the hose to the air supply.
6. Set the air supply ON.
7. To disconnect, push orange ring and pull tubing out when orange ring still is pushed in.

4.3. How to connect the unit for tap water (optional)

NOTICE!	Special skills required. Consult an approved technician to connect the unit to the water supply.



1. Set the water supply OFF.
2. Verify that the water pressure obeys to the data in the Technical data section. See instructions “9. Technical data” on page 39
3. Verify that the water supply fulfils the medical demands of hygiene.
4. Push the hose onto the quick connect coupling.
5. Connect the other end of the hose to the water supply.
6. Set the water supply ON.
7. To disconnect, push orange ring and pull tubing out when orange ring still is pushed in.

4.4. How to connect the unit to the supply current

WARNING	**ELECTRICAL HAZARD! Connect the unit to an AC power outlet supplied with a protective ground. USA and Canada: The power cable and plug must be classified as “Hospital Grade”.**

1. Verify that the voltage rating shown above type plate match the voltage of the AC power outlet.
2. Verify that the AC power supply is supplied with the protective ground.
3. Connect the power cable to the unit and the AC power supply. All indicator lamps illuminates for a short period when the unit does a self check.
4. The unit is standby when the green lamp is illuminated.

5. OPERATING INSTRUCTIONS ULTRALED SCALER

WARNING	**PERSONAL INJURY HAZARD! Do not use the scaler on patients with cardiac pacemakers. The scaler may disturb the function of the pacemaker.**
WARNING	**PERSONAL INJURY HAZARD! New tips are not sterilized upon delivery. Sterilize tips before use. Non-sterilized tip may cause infection to the patient.**
WARNING	**ELECTRICAL HAZARD! Do not use damaged or worn-out handpiece. Damaged handpiece may expose the user or the patient for the electrical shock.**
WARNING	**PERSONAL INJURY HAZARD! Do not use a tip that is bent, altered worn more than 2 mm. Prolonged use may cause tip breakage and injury to the patient. Notice that ultrasonic instruments with small diameters are subject to breakage at any time. If not used correctly or with too much power or force the instrument will break.**
CAUTION	**PERSONAL INJURY HAZARD! Do not use nickel-titanium root canal files with file holder. Nickel-titanium files breaks easily at high frequencies and may cause injury to the patient or to the user.**

5.1. How to install UltraLED Scaler to use

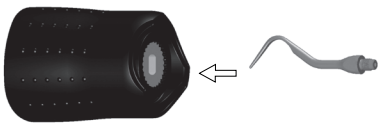
PREPARATIONS (BOTTLE VERSION)

1. Fill the medicament bottle with water or with approved medicament solution. Refer to the approved medicament solutions, See instructions “3.8. Medicament bottle (optional)” on page 14.
2. Turn the bottle cap onto the bottle and push it onto the connector.
3. Make sure that the unit is connected to the compressed air supply and the power cable is connected. Make sure that the unit is in standby mode, the green indicator lamp illuminates.

UltraLED Scaler

A

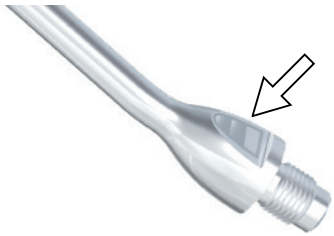
B



C

D

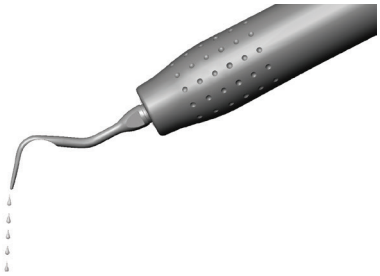
E



F

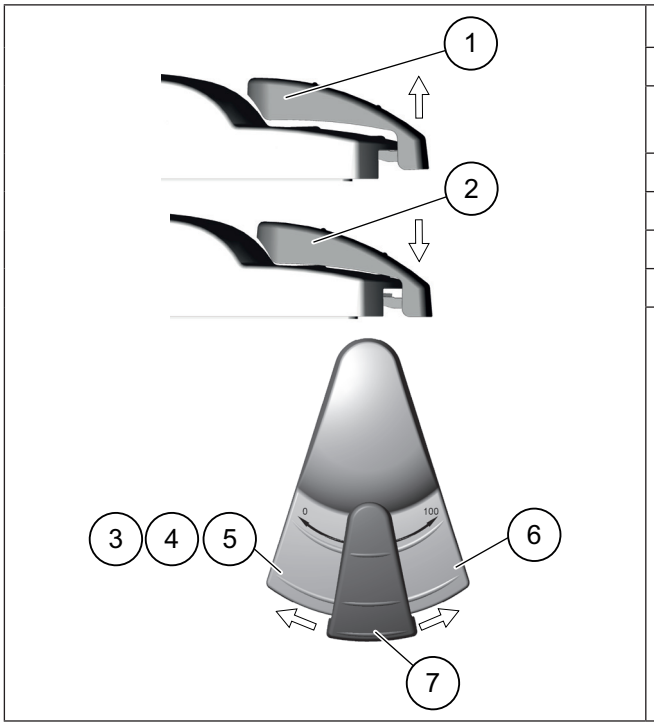
G

H



1. Carefully move the LM-ErgoGrip on to the scaler handpiece (A).
2. Carefully put the tip in the torque wrench (B).
3. Use the torque wrench and turn the tip clockwise on to the scaler handpiece (C). Tighten until resistance and the torque wrench slides. The torque wrench secures a correct tightening of the tip.
4. Press the key identified S on the keyboard (D) to set ON the UltraLED Scaler. The blue scaling indicator lamp illuminates and the scaling mode is activated.
5. The indicators adjacent to the working modes are flashing to remind that you must select a working mode. If some blue indicators are flashing alternatively, make sure that the scaler handpiece is connected. If the problem stays, refer to the trouble shooting section. See the recommended working mode that is identified on the tip (E) and push the related working mode key (F) on the keyboard. Remember to choose right working mode if changing scaler tip during the treatment.
6. Keep the handpiece above the cuspidor bowl and press the foot control in the leftmost position and adjust the water flow with the ring on the handpiece (G) until the water is dripping from handpiece (H). Recommended flow: 20 ml/min, operating with UltraLED scaler.

5.2. Foot control functions for Scaler



1	OFF position
2	ON position
3	Diagnostic function, set LED light ON or OFF by a single-click on the pedal
4	Irrigation position
5	Zero power position
6	Maximum power position
7	Power regulation

5.3. Power and working modes for Scaler

Scaling power

The power is controlled with the foot control from 0 to 100% in each working mode. See the recommended working mode that is identified on the tip. Press the related working mode key on the keyboard.

Dry mode for scaling

Press one time of the “S” key to activate the dry mode for scaling without water/medicament.

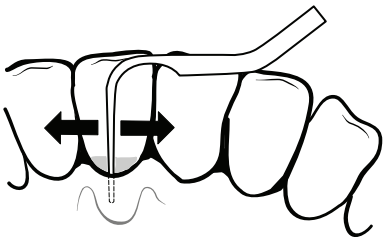
Irrigation mode

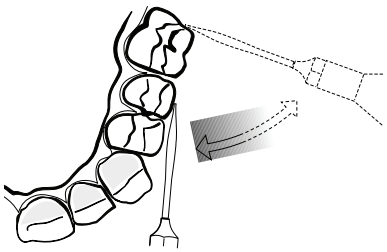
Press two times of the “S” key to activate the irrigation mode. You can also activate the irrigation mode in the scaling mode by pressing down the foot control in the leftmost position.

When you press the “S” key again and again, it will toggle between normal scaling, dry and irrigation mode.

5.4. How to operate with the UltraLED Scaler

⚠ CAUTION	**PERSONAL INJURY HAZARD! Keep patients lips, cheeks and tongue out of the way of the activated tip. Tip contact could cause burns because of the friction heat.**
NOTICE!	**Do not use too much power when operating with ultrasonic instruments. If not used correctly or with too much force, instruments will break.**
NOTICE!	**Without cooling fluid the maximum operating time for the scaler handpiece is 2 minutes followed by a cooling-down period of a 8 minutes. Operating without cooling fluid for more than 2 minutes could cause overheating of the scaler handpiece. After above cycle has been repeated 2 times, the scaler handpiece has to cool down for minimum 60 minutes.**
NOTICE!	**Increase the water flow if the handpiece feels too warm.**
NOTICE!	**Examine correct working mode from the tip.**





The first 2 mm of the tip are the most efficient! Scaling rarely requires more than 50% power level of each working mode. Hard to remove calculus might require a higher power setting.

The side of the tip-end will be applied to the tooth so that the movement of the tip is parallel to the tooth surface.

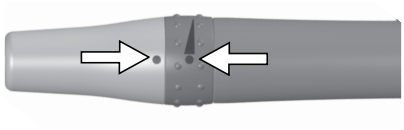
- Make sure that contact between the tip and the tooth surface is kept during scaling.
- Keep moving the tip slowly back and forth and let the instrument do the work. Use short and long strokes so that the whole surface of each tooth is scaled.
- The tip is usually pointed to the toothpocket. To keep the tip working parallel to the surface of each tooth, it is important to follow the anatomy of the tooth.
- With the correct power setting, applicable pressure against the tooth (approximately 20 grams but not exceeding 50) and the tip operating parallel to the surface, treatment will be gentle, quiet and efficient.
- If you hear a squeaking sound (loud and dominating) during the treatment, the pressure against the tooth might be too low or the tip is not parallel to the tooth surface.

5.5. After Scaler treatment

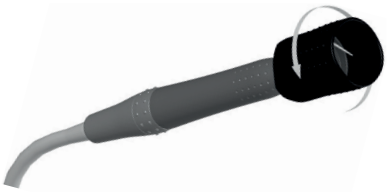
NOTICE!	**Immediately after using any type of medicament in the medicament bottle, run the automatic cleaning cycle with clean water in the medicament bottle for both the scaler and the polisher until clean water comes out of the handpieces.**

NOTICE!	**Set the water flow to fully open before running the cleaning cycle.**

A

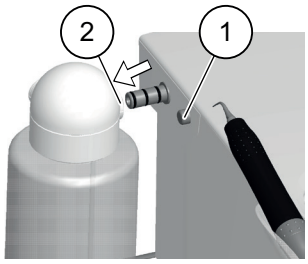


B



C

D



1. Set the water flow to fully open (A).
2. Run the automatic cleaning function. See instructions “7.2. Automatic cleaning function for the scaler and polisher” on page 30.
3. After the cleaning cycle is finished, turn off the tip counterclockwise with torque wrench (B).
4. Squeeze the ErgoGrip carefully at the top and at the same time move it off the handpiece (C). Do not squeeze too hard at the ErgoGrip as this make the removal difficult.
5. Press the depressurisation button (D1) (bottle version).
6. Pull the medicament bottle from the unit (D2) (bottle version).
7. Clean and sterilize equipment/components according to the cleaning and maintenance section. See instructions “7. Cleaning and maintenance” on page 30.

6. OPERATING INSTRUCTIONS AIRLED POLISHER

Indications for polishing:

- Biofilm removal and dissolution.
- To clean teeth prior to bleaching.
- To clean pits and fissures prior to sealant placement.
- To clean surfaces prior to any acid etch or bonding procedure.
- To clean orthodontically banded or bracketed teeth.
- Biofilm removal in implant maintenance therapy.

For optimal performance, use original LM-ProPower air polishing powders.

6.1. How to install AirLED Polisher to use

PREPARATIONS (BOTTLE VERSION)

1. Fill the medicament bottle with water or with approved medicament solution. Refer to the approved medicament solutions, See instructions “3.8. Medicament bottle (optional)” on page 14.
2. Turn the bottle cap onto the bottle and push it onto the connector.
3. Make sure that the unit is connected to the air supply, the power cable is connected and the unit is in standby mode, the green indicator lamp is illuminated.

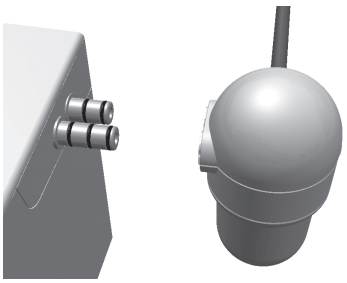
NOTICE!	**Tighten the powder container fully before activating the polisher.**

NOTICE!	**Do not activate the polisher before nozzle is installed.**

AirLED Polisher

A

B



C

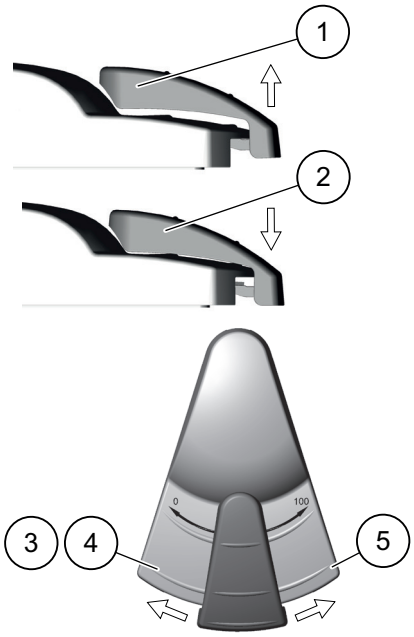
D

E

F

1. Unscrew the powder container from the cap and fill the powder container with LM-ProPower powder until MAX (A).
   NOTE: With LM-Glycine powder fill the powder container only half of the maximum to prevent too much powder consumption and dispersion.
2. Screw the container back in to the cap.
3. Connect the powder container cap to the connectors on the right side of the unit (B).
4. Bottle version: Connect the medicament bottle to the unit.
5. Carefully move the LM-ErgoGrip onto the polisher handpiece (C).
6. Screw the polisher nozzle clockwise into the handpiece until you feel a stop (D).
7. Press the key identified P on the control panel (E) to Set the polisher ON. The blue polisher indicator lamp illuminates.
8. The indicators adjacent to the working modes keys are flashing to remind that you must select a working mode. If some blue indicators are flashing alternatively, make sure that the polisher is connected. If the problem stays, refer to the trouble shooting section. Choose working mode 2 or 3 by pressing the related working mode key on the keyboard.
9. Adjust water flow for optimal performance.
   - Point the handpiece to the cuspidor and above the bowl. Push the foot switch to activate the polisher and adjust the water flow on the powder container (F).
   - Hold the polisher nozzle approximately 1 cm (0,4 in.) down right from the bottom of the bowl and press the foot control to activate the polisher.
   - Slowly reduce the water flow until the powder starts to collect on the surface as a white spot.
   - Increase the water flow until the spot just disappears. The air polisher is now balanced for optimum performance.

6.2. Foot control functions for Polisher

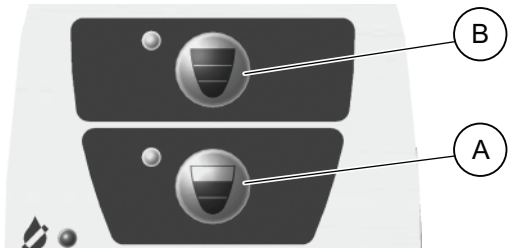


1	OFF position
2	ON position
3	Diagnostic function, set LED light ON or OFF by a single-click on the pedal
4	Water Jet position
5	Polisher ON (Power controlled on control panel)

6.3. Power and working modes for Polisher

Polishing power

The user controls the polishing power from the control panel. Working modes 2 and 3 are possible working modes for the polisher.



- Working mode 2 is approximately 60% of polishing power (A).
- Working mode 3 is approximately 100% of polishing power (B).

Choose correct working mode from the control panel.

- When working with a subgingival nozzle, always use working mode 2 (A).

Water-Jet cleaning

The Water-Jet cleaning mode is cleaning without powder. Select the Water-Jet cleaning mode with the foot control pressed down in the leftmost position. Only water and air comes out from the nozzle. User can also select the Water-Jet cleaning mode by pressing “P” key three times on the control panel.

Air-Blow mode

Press one time of the “P” key to activate the Air-blow mode for cleaning with just air.

When you press the “P” key again and again, it will toggle between normal polishing-, Air-blow - and Water-Jet mode.

6.4. Air purge quick cleaning function

With the polisher mode active, a press on the “C” key will air purge the handpiece for a few seconds. Air purge the handpiece after each treatment to prevent clogging. If the air purge are not performed the indicator adjacent to the “C” key will flash as an remainder. Running air purge resets the remind function.

6.5. How to operate with AirLED Polisher

A short learning period is required by the user, as with any new technique, until the ideal angulations, soft tissue protection and an effective treatment can be achieved.

 **WARNING**	**PERSONAL INJURY HAZARD! Patients suffering from chronic respiratory disease like bronchitis or asthma must not, under any circumstances, be treated with an air polishing device. The jet of air and powder could cause respiratory difficulties.**

 **WARNING**	**PERSONAL INJURY HAZARD! - GLYCINE** • Predisposed persons may be sensitive to glycine. If allergic reactions are observed, stop using the product and completely remove the powder from patiens mouth. • The treatment of deep periodontal pockets cause bacteraemia. Please apply appropriate restrictions for the treatment of risk patient's (general weakened immunity, endocarditis). • Do not direct the jet powder towards fillings, crowns or bridgework as this could damage these restorations.

 **WARNING**	**PERSONAL INJURY HAZARD! - SODIUM BICARBONATE**
	• Do not perform Sodium Bicarbonate polishing treatment for patients who:
	  • have a renal insufficiency
	  • are on sodium restricted diet
	  • have allergic reactions to flavour containing powders (Use neutral powder instead.)
	  • are on a long term steroid or diuretic therapy.
	• Do not direct the jet powder towards filling, crowns or bridgework as this could damage these restorations.
	• Do not direct the Sodium Bicarbonate spray onto the gingival sulcus or onto the gingival margin. Spray may cause unnecessary abrasion of the gingival tissues and / or extension of the periodontal pocketing with associated clinical complications.

 **WARNING**	**PERSONAL INJURY HAZARD! - CALCIUM CARBONATE**
	• Do not perform Calcium Bicarbonate polishing treatment for patients who:
	  • have allergic reactions to components of the powder.
	  • have a disease or condition that may lead to hypercalcemia.
	• Do not direct the jet powder towards filling, crowns or bridgework as this could damage these restorations.
	• Do not direct the Calcium Carbonate spray onto the gingival sulcus or onto the gingival margin. Spray may cause unnecessary abrasion of the gingival tissues and / or extension of the periodontal pocketing with associated clinical complications.

6.5.1. Polishing for supragingival use:

1. Hold the nozzle approximately 3 mm (0.12 in.) from the operating surface. Keep the jet moving constantly in small circles. Do not point it at the same spot too long time. The polisher is most effective when you point the jet downright towards the tooth although the spray should be pointed away from the gingival onto the tooth.
2. Polish only one or two teeth at a time, with frequent rinsing performed. An efficient intraoral evacuation system will prevent excessive build-up of fluid and increase patient comfort.

6.5.2. Polishing for subgingival use:

CAUTION	**When you work with a subgingival nozzle, alwaus use working mode 2.**

1. Fill the powder container with LM-Glycine powder for subgingival cleaning. Fill the powder container only half of the maximum to prevent too much powder consumption and dispersion.
2. Screw the LM-Sub A nozzle into the handpiece and activate working mode 2 for the lowest powder.
3. Enter the pocket and point one of the openings towards the tooth. Make sure that the mixture of water, powder and biofilm can exit freely from the pocket cleaning.
4. Constantly move the nozzle following the tooth surface. The nozzle can be moved vertically, horizontally and diagonally. In general, a few seconds of cleaning is sufficient to remove the biofilm from the pocket.
5. Set OFF the device before lifting out the nozzle from the pocket.

6.6. After Polisher treatment

NOTICE!	**Air purge the polisher handpiece after each treatment to prevent clogging.**

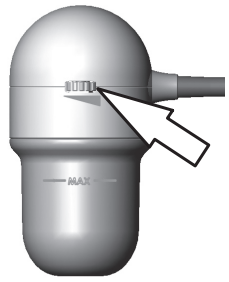
NOTICE!	**Immediately after using any type of medicament in the medicament bottle, run the automatic cleaning cycle with clean water in the medicament bottle for both the scaler and the polisher until clean water comes out of the handpieces.**

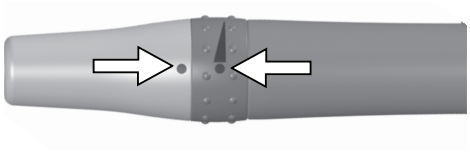
NOTICE!	**Do not leave powder in the powder container over a weekend or holiday or any other period during which the device is not used for several days.**

1. Without removing the nozzle, put the polisher handpiece above the bowl and press the “C” on the control panel to activate air purge cleaning.
2. The polisher air purges the handpiece for some seconds.
3. After the cleaning cycle is complete, turn off the nozzle from the handpiece.
4. Clean the nozzle in an ultrasonic bath (40-50°C), for minimum 3 minutes, before cleaning/sterilization. If ultrasonic cleaning is not possible, flush the nozzle with warm water.
5. Squeeze the LM-ErgoGrip carefully at the top and at the same time move it off the handpiece. Do not squeeze too hard at the LM-ErgoGrip as this can make the removal difficult.
6. Remove the powder container.
7. Before removing the medicament bottle, press the depressurisation button.
8. Pull the medicament bottle from the unit.
9. Clean and sterilize the equipment/components. See instructions “7. Cleaning and maintenance” on page 30.

7. CLEANING AND MAINTENANCE

NOTICE!	**Immediately after using any type of medicament in the medicament bottle, run the automatic cleaning cycle with clean water in the medicament bottle for both the scaler and the polisher until clean water comes out of the handpieces.**





Before cleaning and sterilizing, open water flow fully open of the scaler handpiece and the polisher (see images).

7.1. Air purge quick cleaning function

With the polisher mode active, a press on the C key will air purge the handpiece for some seconds. Air purge the handpiece after each treatment to prevent clogging.

7.2. Automatic cleaning function for the scaler and polisher

NOTICE!	**The automatic cleaning function must always be performed with the polisher nozzle installed in the handpiece.**

1. Set OFF the scaler or polisher by pressing the “S” or “P” key for 3 seconds. The blue function indicator sets off.
2. Open the water control completely.
3. Put the scaler and/or the polisher handpiece above the cuspidor bowl.
4. Press first the cleaning key “C” and then the “S” and/or “P” key.
5. The cleaning cycle starts and stops automatically after 80 seconds.

7.3. How to clean the equipment and the components

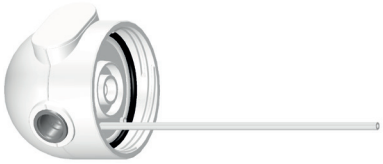
NOTICE!	**Autoclaving the handpiece regularly can decrease the life time of the scaler handpiece.**

NOTICE!	**Do not sterilize any scaler or polisher accessories using dry heat or chemical autoclaves. This may damage the material.**

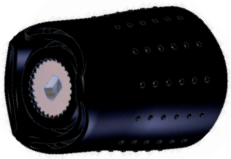
Clean with a soft cloth and use a surface disinfectant suitable for hard plastics

	Cover and control panel
	Polisher tubing with handpiece

Clean at max 65°C

	Powder container
	Medicament bottle
	Cap for the medicament bottle

Autoclave in steam at 134°C (max 135°C) for minimum 3 minutes

	Scaler tips
	Polisher nozzle
	Torque wrench
	LM-ErgoGrip Focus LED
	LM-ProPower Scaler handpiece

7.4. Recommended cleaning procedure

Beginning of the day

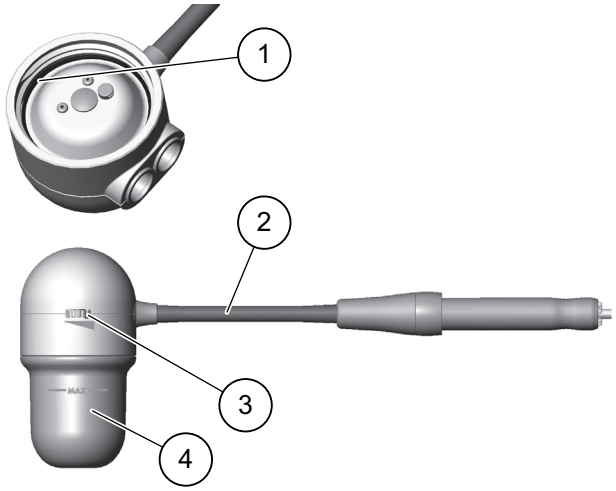
Run the automatic cleaning cycle with clean water for both scaler and polisher. See instructions chapter “7.2. Automatic cleaning function for the scaler and polisher” on page 30.

After each treatment

- To prevent clogging, air purge the polisher handpiece after each treatment. See instructions “6.4. Air purge quick cleaning function” on page 27.
- Run the automatic cleaning cycle with clean water for both the scaler and polisher. See instructions “7.2. Automatic cleaning function for the scaler and polisher” on page 30.
- Clean off the cover, control panel, handpieces and the hoses with a soft cloth. Use a surface disinfectant suitable for hard plastics.
- Clean the nozzle in an ultrasonic bath (40-50°C), for minimum 3 minutes, before cleaning/sterilization. If ultrasonic cleaning is not possible, flush the nozzle with warm water.
- Clean the ErgoGrip, the tip, the nozzle and possibly the scaler handpiece and autoclave according to the clinic’s routines.

End of the day

- Run the automatic cleaning cycle with clean water for both the scaler and polisher handpiece. See instructions “7.2. Automatic cleaning function for the scaler and polisher” on page 30.
- Remove and clean medicament bottle, bottle cap and powder container at a maximum temperature of 65 °C.
- Clean of the powder container cap with a soft cloth. Use a surface disinfectant suitable for hard plastics.
- Empty the powder container (4) and if some stays left, clean the O-ring (1) and cap with dry compressed/pressurized air.



Weekly (bottle version)

- Run the automatic cleaning cycle with an anti-microbial cleaning agent solution in the bottle, for both the scaler and polisher. See instructions “7.2. Automatic cleaning function for the scaler and polisher” on page 30. We recommend to use a separate bottle for the cleaning agent solution. Concerning exposure times of cleaning agent, follow instructions given by manufacturer.
- Before patient treatment. To flush the lines from cleaning agent solution, put clean water in the bottle and run the automatic cleaning cycle for both the scaler and polisher. Do automatic cleaning cycle again until clean water comes out of the handpiece.

7.5. Maintenance

NOTICE!	A petroleum based lubricant on the O-rings can decrease their durability time.

Power cable

- Do an inspection of the power cable, cables and the handpiece hose daily to ensure that the equipment is in good condition without mechanical damage.

O-rings (bottle and powder container connectors)

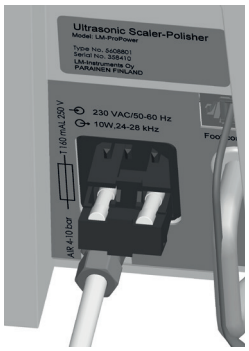
- Lubricate the O-rings regularly with water soluble lubricant.
- Do not lubricate the O-ring in the polisher cap.
- Clean the O-ring in the polisher cap and the cap with compressed air.

Tips

CAUTION	**PERSONAL INJURY HAZARD! Do not use a tip that is bent, altered worn more than 2 mm. Prolonged use could cause tip breakage and injury to the patient. Notice that ultrasonic instruments with small diameters are subject to breakage at any time. If not used correctly or with too much power or force the instrument will break.**

- Do an inspection of the tips. When a tip is bent, altered, or worn more than 2 mm it will loose performance and you must interchange the tip.
- Examine the tip length weekly by comparing the tip to a tip check card.

How to change fuses



1. Disconnect the power cable from the AC power supply and the unit.
2. Open the fuse holder on the rear side of the unit.
3. Examine the fuses for damages. Replace damaged fuses with new ones. Verify the fuse specifications. Refer to the Technical data section. See section “9. Technical data” on page 39.
4. Close the fuse holder.

8. TROUBLESHOOTING COMBILED

Type of problem	Scaler	Polisher	See chapter
Unit does not give a result and no lights are lit on the control panel	x	x	8.1
Lights are flashing on the control panel	x	x	8.2
Difficult to remove the LM-ErgoGrip	x	x	8.3
Weak or no LED light	x	x	8.4
No tip vibration	x	x	8.5
Weak tip vibration	x		8.6
Not sufficient or no water flow (Scaler)	x		8.7
Tip does not fit smoothly onto the handpiece	x		8.8
Handpiece is overheated	x		8.9
Control panel does not respond when pressing the P-key		x	8.10
Not sufficient or no water flow (Polisher)		x	8.11
Not sufficient or no powder flow		x	8.12
Water drips from the bottom of the device onto the table	x	x	8.13

8.1. Unit does not give a result and no lights are lit on the control panel

1. Make sure that the power cable is connected correctly and do a double check the voltage (120V/230V).
2. Examine the fuse and replace if necessary. See Maintenance-section of the user guide.
3. Examine that the wall outlet and the fuse panel of your clinic are OK.
4. If the problem stays – contact your dealer for support and indicate Error Code E-X02.

8.2. Lights are flashing on the control panel

Error	Action
Five blue lights on the control panel are flashing at the same time.	Make sure that the foot control cable is connected at both ends and is not damaged.
The blue lights adjacent to the S- and P-keys are flashing alternately when pressing the foot control.	The Scaler / Polisher has not been switched on. Press the S-key to select the scaler or press the P-key to select the polisher.
The blue light adjacent to the S-key is flashing alternately with three other blue lights on the control panel.	Make sure that the scaler handpiece is correctly connected.
The blue light adjacent to the P-key is flashing alternately with three other blue lights on the control panel.	Make sure that the powder container is correctly connected onto the connectors. Make sure it is pressed in all the way.
Two or three yellow lights are flashing in sequence.	The Working Mode has not been selected. Select the working mode by pressing one of the keys adjacent to the yellow lights.
The light adjacent to the C-key flashes twice and pauses.	The device reminds of the necessary to activate the polisher cleaning cycle by pressing the C-key. Please see user manual for instructions.
The light adjacent to the C-key is flashing continuously.	The cleaning function has been activated. Wait until the cleaning process has completed and the light stops flashing.

8.3. Difficult to remove the LM-ErgoGrip from the handpiece

1. Hold the LM-ErgoGrip carefully near the lens and at the same time twist and move it off the handpiece.
2. If the problem stays, replace the LM-ErgoGrip.

8.4. Weak or no LED light

1. Examine that lens in the LM-ErgoGrip is clear and clean. Clean or replace if necessary.
2. If you have an additional scaler handpiece (or polisher tubing), try replacing the scaler handpiece (or polisher tubing).
3. If the problem stays – contact your dealer for support and indicate Error Code “E-S03 No light in scaler handpiece“ or “E-P03 No light in polisher handpiece”.

8.5. No tip vibration

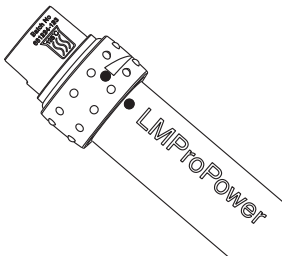
1. Make sure that the tip is tightly tightened. Preferably use a torque wrench and tighten clockwise until the torque wrench slides and make sure that the tip is fully tightened. (The torque wrench secures a correct tightening of the tip.)
2. Examine that the green light below the keys on the control panel is lit. If it is not lit, please see Section 8.1.
3. Make sure that the device has been set on by pressing the S-key and that the blue light adjacent to the S-key is lit.
4. Make sure that the Working Mode has been selected by pressing one of the Working Mode keys and that one of the yellow lights on the control panel is lit.
5. If you have an additional handpiece, try replacing the handpiece.
6. If you have an additional foot control cable, try replacing the foot control cable.
7. If you have an additional foot control, try replacing the foot control.
8. If the problem stays – contact your dealer for support and indicate Error Code “E S01 No vibration” or “E-S02 Low power / vibration”.

8.6. Weak tip vibration

1. Make sure that the tip is tightly tightened. We recommend that you use a torque wrench and tighten clockwise until the torque wrench slides. (The torque wrench prevents the tip from being overtightened.)
2. Examine that the tip is not worn out. Use a tip check card to evaluate wearing or try an unused tip. Use original LM instruments tips for reliable performance.
3. If you have an additional handpiece, try replacing the handpiece.
4. If the problem stays – contact your dealer for support and indicate Error Code E-S02.

8.7. Not sufficient or no water flow (Scaler)

1. Make sure that the Dry Mode is not activated i.e. that the blue light adjacent to the crossed-out water drop is not lit. If it is lit, press the S-key.
2. Adjust the water control ring on the handpiece to fully open (dots aligned).



3. If the unit are equipped with a water bottle: Make sure that the medicament/water bottle is correctly connected i.e. the cap is tightened and pushed in all the way onto the connector. Examine that the O-rings on cap and connector are in good condition. Replace O-rings if worn. O-rings can be lubricated with a water soluble lubricant.
4. If the unit is connected with tap water: Make sure that the tap water hose is correctly connected to the back of the device and that the tap water system is OK (tap/valve is open and possible filter is OK).
5. Try with different tip.

6. Use the LM-ProPower Fixer to examine that the water hose inside the handpiece has not stuck in the autoclave. Put the Fixer carefully into the handpiece from the hose connector side. (To prevent the hose getting stuck, the water adjustment on the handpiece should be set to fully open before sterilization in autoclave.)

7. If the problem stays – contact your dealer for support and indicate Error Code E-S04.30.

8.8. Tip does not fit smoothly onto the handpiece

1. Clean handpiece threads with compressed air and try with a new tip.
2. If the problem stays, the threads of the handpiece can be damaged and it is necessary to replace the handpiece. Contact your dealer and indicate Error Code E-S06.

8.9. Handpiece is overheated during use

1. Examine that the fluid flow is sufficient (minimum 20 ml/min).
2. If the problem stays, replace the handpiece and contact your dealer.

8.10. Control panel does not respond when pressing the P-key

1. Check that the polisher tubing is connected properly i.e. the powder container cap is pressed in all the way onto the connector. Check that the O-rings on the connector are in good condition. Replace O-rings if worn. O-rings can be lubricated with a glycerine based lubricant.
2. If you have an additional polisher tubing, try replacing the polisher tubing.
3. If the problem still remains – contact your dealer for support and indicate Error Code E-X02.

8.11. Not sufficient or no water flow (Polisher)

1. Make sure that the Air Blow mode is not activated i.e. that the blue light adjacent to the crossed-out water drop is not lit. If it is lit, press the P-key.
2. Adjust water control on powder container cap to fully open.
3. If the unit are equipped with a water bottle: Make sure that the medicament/water bottle is correctly connected i.e. the cap is tightened and pushed in all the way onto the connector. Examine that the O-rings on cap and connector are in good condition. Replace O-rings if worn. O-rings can be lubricated with water soluble lubricant.
4. If the unit are equipped with a tap water connection: Make sure that the tap water hose is correctly connected to the back of the device and that the tap water system is OK (tap/valve is open and possible filter is OK).
5. Make sure that the nozzle is fully tightened.
6. If you have an additional nozzle, replace the nozzle.
7. If the problem stays – contact your dealer for support and indicate Error Code E-P04.

8.12. Not sufficient or no powder flow

1. Make sure that there is powder in the powder container and that the O-ring in the cap is in correct position.
2. If you have an additional nozzle, replace the nozzle. A clogged nozzle can be cleaned in an ultrasonic bath or in citric acid.
3. Unscrew and remove the powder container, nozzle and LM-ErgoGrip and blow with compressed air into the handpiece.
4. If the problem stays – contact your dealer for support.

8.13. Water drips from the bottom of the device onto the table

1. The LM-ProPower device has a built-in water trap that removes humidity from the pressurized air coming from the compressor in the compressor room of your clinic. The water trap condenses the humidity in the pressurized air into water which is then released below the device. Usually there is no water at all or a very small quantity (a few drops). If the quantity of water is large, the compressor of your clinic possibly needs service. Please contact the manufacturer or dealer of your compressor.

9. TECHNICAL DATA

Manufacturer	LM-Instruments Oy, PL 88 (Norrbyn rantatie 8) FI-21601 Parainen, Finland
Model	LM-ProPower CombiLED
Classification	EN60601-1: Class 1, Type B 93/42/EEC: Medical products, class IIa
L x W x H	270 x 110 x 165 mm (without bottle and powder container)
Weight	3400 g
Voltage	100 Vac, 50-60 Hz 115 Vac, 50-60 Hz 230 Vac, 50-60 Hz
Primary fuse	T500 mA, 250 V, Ø5x20 mm (100 Vac) T400 mA, 250 V, Ø5x20 mm (115 Vac) T200 mA, 250 V, Ø5x20 mm (230 Vac)
Power cable	Separate with protective earth plug
Power consumption	Max. 40 VA
Scaler power consumption	Max. 24 VA
Scaler power output	Max. 10 W (24 kHz - 28 kHz, automatic tuning)
Ambient temperature	Transport and storage -40°C to 70°C (-40°F to 158°F) Operation 10°C to 40°C (50°F to 104°F)
Relative humidity	Transport and storage 10% to 100% Operation 10% to 95%
Water supply pressure (version conn. to tap water)	1 - 10 bar (0.1–1,0 MPa, 14.5–145 PSI)
Water consumption	10 - 50 ml/min
Bottle volume (bottle version)	500 ml
Air supply pressure	4 - 10 bar (0.4 - 1.0 MPa, 58 - 145 PSI) Use only dry and filtered compressed air.
Air consumption	Max. 20 l/min
Powder container capacity	40 g

10. WARRANTY

10.1. Warranty terms

The following warranty terms apply to the sale of LM-Instruments Oy's products (hereinafter "Products") to a purchasing company or individual by LM-Instruments Oy (hereinafter "Manufacturer").

Manufacturer here by warrants that the Products will be free from defects arising from faulty materials or workmanship for a period of twenty four (24) months from the date of purchase by a customer from Manufacturer's authorized dealer (hereinafter "Authorized Dealer"). The warranty period is exceptionally three (3) months for products with a life inherently shorter than 24 months due to normal wear and tear, for example tips of ultrasonic scalers, tips of endodontic.

This warranty shall not apply to Products or parts thereof; which have been subject to abuse, misuse, negligence or accident or are not connected to proper power supply; to which any modification, alteration or attachment has been made without written consent of the Manufacturer; or which are installed or operated violating instructions for installation, use and maintenance; which are normally consumed in operation.

The sole and exclusive remedy under this warranty shall be limited to correct or circumvent the errors or to repair or replacement of defective parts of Products by the Manufacturer, EXW Manufacturer's factory, providing that a written claim of the defect is sent to the Manufacturer within the warranty period and the original part is returned to Manufacturer's factory by the Authorized Dealer, and Manufacturer's inspection establishes the existence of such a defect.

The customer must contact the Authorized Dealer from whom the products were purchased to request repair or replacement under this warranty and a written claim of the defects and send the original Product the Authorized Dealer.

This warranty is void if service or repair is performed by persons not authorized by the manufacturer.

Any Products not manufactured by the Manufacturer, carries only such warranty, if any, as given by any manufacturer thereof.

This warranty is the Manufacturer's only warranty in respect of the Products and the Manufacturer disclaims all other warranties, whether of merchantability, fitness for particular purpose or otherwise, guarantees and liabilities, express or implied, arising by law or otherwise. In no event shall the Manufacturer be liable for any general, consequential or incidental damages, loss of use or loss of profits by reason of the manufacturer's negligence or otherwise in connection with the sale, delivery, installation, repair or use of the Products.

The Manufacturer shall have no liability whatsoever to the Authorized Dealer or customer or any other person for or on account of any injury, loss or damage of any kind or nature, sustained by, or any damages assessed or asserted against, or any other liability incurred by or imposed upon the handling, use, operation, maintenance or repairs of Products by anyone other than the Manufacturer. This exclusion of liability does not apply pursuant to the laws on product liability in case of personal injury and property damage to privately used objects resulting from the Products.

10.2. Delivery Information

Device Model	LM-ProPower CombiLED
Water connection	Bottle / Tap water connection
Device Serial Number	
Purchase order number	
Order date	
Delivery date	

Installation Information

Installation done (date)	
Installation done by (person)	
Installation location (address)	
Installation location (building and room number)	

10.3. Installation check-list

Task	Description	OK	Initials	Date
Visual check	Delivery packing was undamaged			
Content of the delivery	All the devices and part were according to the section “3. Content of delivery” on page 11“			
Visual check	All the parts were intact			
Mains connection	Mains supply is in compliance with back panel label information (picture in section 3.7) voltage:_____ V, ___Hz			
Air supply	Air pressure ____is according to specification 4-10 bar (0.4 – 1.0 MPa).			
	Compressed air is dry and medical grade			
	Air connection is close-knit and no indications of leakage is seen or heard			
Water supply (bottle model)	Bottle filled with clean water, and bottle in place according to instructions in section “3.8. Medicament bottle (optional)” on page 14			
Water supply (tap water model)	Tap water pressure is ____, and according to the specification 1-10 bar (0.1 – 1.0 MPa).			
	Water connection is close-knit and no indications of leakage is seen or heard			
Foot control	Cable connected to the main unit			
Powder container	Filled with LM-ProPower powder and connected to mains unit according to the instructions in section “6.1. How to install AirLED Polisher to use” on page 25.			
Polisher handpiece	ErgoGrip and nozzle assembled according to the instructions in section “6.1. How to install AirLED Polisher to use” on page 25.			
Scaler handpiece	ErgoGrip and tip assembled according to the instructions in section “5.1. How to install UltraLED Scaler to use” on page 20.			

Instrument assembly is now ready for the operational test.

10.4. Operational test

Additional equipment needed: Artificial denture, cup for water flow, timer.

Task	Description	Pass/Fail	Initials	Date
Connect cable to mains	Green standby light is illuminated			
Select mode	Select scaler mode by pressing S on control panel.			
Test Scaler Irrigation mode	Test the water regulation of the handpiece by selecting irrigation mode and testing handpiece water flow ring positions. Continuous mist and dripping should be reached according the control ring angle.			
Test scaling with water -mode	Select WM1 (40%) and test foot pedal response. Use artificial denture in this test.			
Test scaling with water -mode	Select WM2 (70%) and test foot pedal response. Use artificial denture in this test.			
Test scaling with water -mode	Select WM3 (100%) and test foot pedal response. Use artificial denture in this test.			
Test dry mode	Select 40% mode and test the foot pedal response. Use artificial denture in this test			
Test dry mode	Select 70% mode and test the foot pedal response. Use artificial denture in this test.			
Test dry mode	Select 100% mode and test the foot pedal response. Use artificial denture in this test.			
Test Polisher	Select working mode 2 and test polishing on the artificial denture.			
	Select working mode 3 and test polishing on the artificial denture.			
Test diagnostic function	Set LED on and off with the foot pedal.			
Test Air-Blow mode	Select air-blow mode by pressing P. Test air blow on the artificial denture.			
Test Air Purge function	Select polisher mode by pressing P on control panel. Press C on control panel and record function.			

After all the above mentioned tests are passed the instrument is ready for the routine operation.

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