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LM feel the difference

# LM Built-In



## User's Manual

PIEZO ULTRASONIC DEVICE

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## Important!

Read this manual carefully before using the product.

## How to read this manual

This manual contains instructions for several models of scalers. Each chapter starts with a section with general instructions for all models, which is followed by sections with additional information concerning each model. First read the general section and then proceed to the section that applies to your model of scaler. If there are any questions regarding the contents of this manual, please contact LM-Instruments Oy.

## Manufacturer

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## Copyright

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## Safety

### Intended use
This scaler is designed for dental purposes. It is designed for removal of tartar or calculus on teeth and other dental work where the ultrasonic vibration is beneficial. The scaler should only be used by licensed dental proffesionals trained in the proper use of scaling devices. Do not use it for applications where it is not intended. If you are unsure about your application, please contact your local dealer or place of purchase.

### General requirements
Installation and service of the product is only to be performed by authorized service personnel. The product must be connected to electricity supply and water supply meeting the requirements specified in the Technical data section on page 19.

### Contraindications
Do not use the scaler on patients with cardiac pacemakers. The scaler may disturb the function of the pacemaker.

### General precautions
- The product is not suitable for use in the presence of flammable gases.
- Only use the product in combination with LM and Amdent scaler tips.
- If the handpiece tubing is damaged or wornout, it must immediately be replaced to avoid exposing the user or the patient to electric hazard.

## Sécurité

### Utilisation
Cet appareil est conçu pour les objectifs dentaires. Il est conçu pour l'enlèvement de tartre ou de calculs sur la denture et autre travail dentaire où la vibration ultrasonique est avantageuse. Cet appareil doit être exclusivement manipulé par des professionnels dentaires diplômés ayant suivi une formation relative à l'utilisation correcte des dispositifs de détartrage. Si vous êtes incertain de votre application, veillez à contacter votre concessionnaire local ou lieu d'achat.

### Exigences générales
L'installation et le service du produit doivent seulement être effectués par le personnel de service autorisé. Le produit doit être branché sur l'alimentation en électricité et l'alimentation en eau répondant aux exigences déterminés dans la section Fiche technique à la page 19.

### Contre-indications
Ne pas utiliser l'appareil pour les patiens munis d'un pace maker cardiaque. L'ultrasons peut déranger la fonction du pace maker.

### Précautions générales
- Le produit ne doit pas être utilisé en présence de gaz inflammable.
- Utilisez uniquement le produit en combinaison avec les inserts LM-Instruments Oy et Amdent.
- Si le flexible d'une pièce à main est endommagé ou usé, remplacez-le sans délai fin d'éviter l'exposition de l'utilisateur ou du patient au danger électrique.



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## Safety notices in this manual / Notifications de sécurité dans ce manuel



**WARNING**
AVERTISSEMENT

*Warning* indicates a potentially dangerous situation. Non-observance may lead to death or injury.

« Avertissement » indique une situation potentiellement dangereuse. Le non-respect peut entraîner des préjudices corporels, voire la mort.



**Caution**
PRUDENCE

*Caution* indicates a potentially harmful situation. Non-observance may damage the equipment.

« Prudence » indique une situation potentiellement nocive. Le non-respect peut endommager l'appareil.



**Note**
NOTE

*Note* indicates a situation where special notice should be observed.

« Note » indique une situation requérant le respect d'une mise en garde spéciale.



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# 1 Unpacking

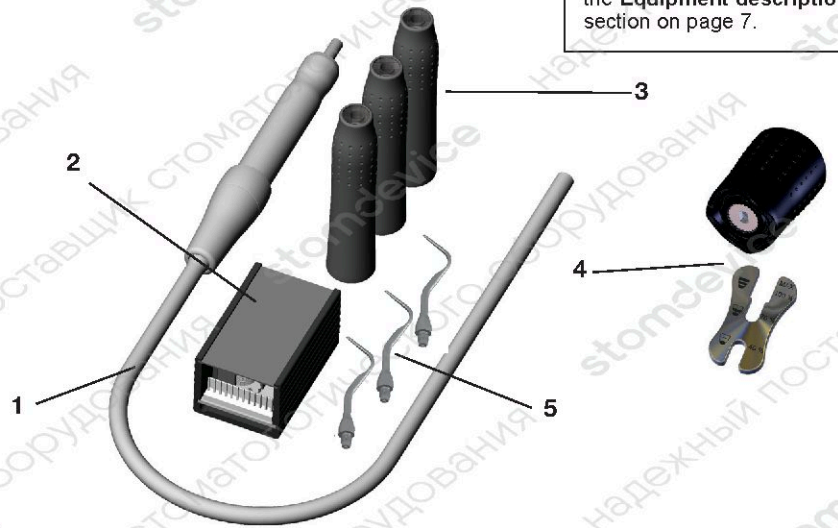
## 1.1 General content of delivery

1. Handpiece incl. tubing
2. Electronic unit (installed inside the unit)
3. ErgoGrips (type and quantity depending on what was ordered)
4. Tip wrenches (type and quantity depending on what was ordered)
5. Tips (type depending on what was ordered)

**Note**

This chapter describes the components of the delivery and can be used as a check-list when unpacking. Contact your place of purchase if anything is missing.

For a description of the features of the equipment, read the **Equipment description** section on page 7.






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# 2 Equipment description

## 2.1 General description

The LM Built-in series is a range of piezo ultrasonic scalers that are supposed to be mounted on a dental unit. The ultrasonic power can be regulated to provide a wide range of settings.
The LM Built-in is equipped with one of the handpieces; LM-ProPower Basic, LM-ProPower Ultra std. or LM-ProPower UltraLED std. The tips can easily be changed during the treatment and can also be cleaned and autoclaved together with the individual ErgoGrips in the same procedure.

## 2.2 Handpiece with LED additional description

The light will illuminate when the foot control is depressed.



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## 2.3 Symbols



Attention! Consult accompanying documents!

RECOGNIZED
ETL
9800163

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

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Compliance label indicating compliance with the Medical Device Directive 93/42/EEC




Withstands autoclave temperature 135°C (275°F).



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Type B equipment 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.



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# 3 Operating instructions

## 3.1 General

### Mode of operation

With cooling fluid, the scaler can be operated continuously. Recommended flow: 20 ml/min.

Without cooling fluid, the scaler may only be operated for shorter periods and the maximum operating time is 2 minutes followed by a cooling down period of 8 minutes. Operating without cool-ing fluid is recommended only for special clinical treatments, for example, crown removal and thixotropic cementing when cooling of the treated surface is not necessary. When performing root canal treatments, the canal must be filled with fluid.

**Note**

These instructions are valid for the LM-Power-Hand HP and HP LED.

**Caution**

Without cooling fluid, the maximum operating time is 2 minutes followed by a cooling down period of 8 minutes. Operating the scaler for more than 2 minutes may cause overheating and damage to the handpiece.

### Before treatment

1. To rinse the water line, hold the handpiece over the bowl.
   Depress the foot switch and allow the water to flow for 30 seconds.
2. Gently slide the ErgoGrip on to the handpiece.





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3. Carefully align the tip and screw it clockwise into the handpiece.



4. Use the tip- or torque wrench to firmly tighten the tip to the handpiece.





**WARNING**

A tip that is bent, altered, scratched or worn more than 2 mm will lose performance and must be exchanged. Prolonged use may cause tip breakage and injury to the patient.

The operator should be aware of 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 not use nickel-titanium files, since they easily break at high frequencies.



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## Scaling

1. Set the ultrasonic power to maximum position.
2. Keep the handpiece over the bowl and depress the foot control to activate the scaler.
3. Adjust the ultrasonic power according to the specific tip requirement.
4. Keep the patient's lips, cheeks, and tongue out of the way of the tip and perform treatment according to the following instructions.



**WARNING**

New tips are not sterile upon delivery. Sterilize before use according to the clinic's routines.

Keep the patient's lips, cheeks, and tongue out of the way of the activated tip, since contact may cause burns.



**Note**

At low power settings there will be no spray.



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## How to use the scaler

The side of the tip-end shall be applied to the tooth so that the movement of the tip is parallel to the surface of the tooth. The first 2 mm of the tip are the most efficient! Place the tip on the tooth surface before activating the foot switch.

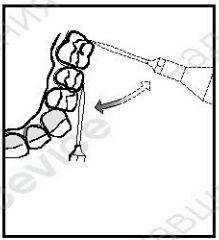
Normal scaling rarely requires more than 50% power level. However, hard to remove calculus might require a higher power setting.

Ensure that contact between the tip and the tooth surface is maintained 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 normally aimed towards 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, appropriate 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, during the treatment, a squeaking sound is heard (loud and dominating), the pressure against the tooth might be too low or the tip not parallel to the surface of the tooth.



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## After treatment

1. Screw off the tip, counter-clockwise, using the tip- or torque wrench.
2. Squeeze the ErgoGrip gently at the top and at the same time slide it off the handpiece. Do not squeeze too hard at the ErgoGrip as this can make the removal difficult.
3. Clean and sterilize the equipment according to the **General cleaning** procedure section on page 15.





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# 4 Cleaning and maintenance

## 4.1 General cleaning procedure

### After each treatment

1. Wipe off the handpiece and the hose with a soft cloth. Use a 45 % isopropanol and detergent solution.
2. Wash the ErgoGrip, the tip and the tip wrench and autoclave according to the clinic's routines.



**Caution**

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

Do not immerse the handpiece in any fluid. Moisture may permeate into it and damage the ultrasonic generator.



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## 4.2 Autoclave temperature




**135°C (275°F)**

- Tip
- Endo file
- Torque tip wrench
- Metal tip wrench
- LM-ErgoGrip Basic
- LM-ErgoGrip
- LM-ErgoGrip LED
- LM-ErgoGrip Focus LED

## 4.3 Maintenance

### Handpiece

Inspect the handpiece hose daily to insure that the equipment is in good condition without mechanical damage.



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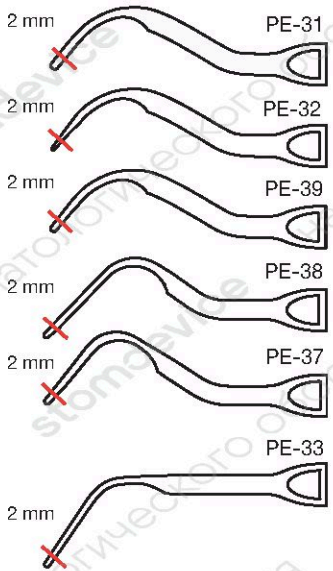
## Tips

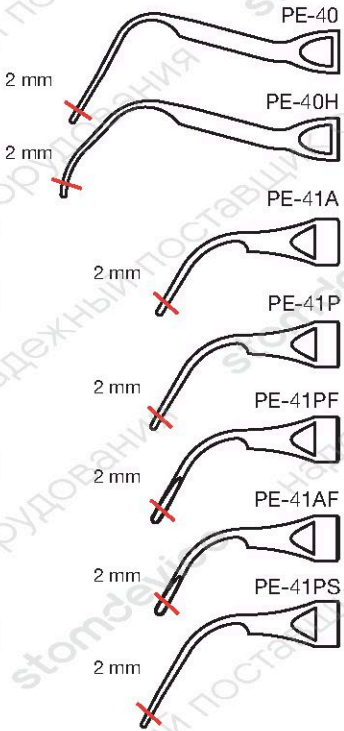
When a tip is bent, altered, scratched or worn more than 2 mm it will lose performance and must be exchanged. Check the tip length weekly by comparing the tip to the template below.

**WARNING**

A tip that is bent, altered, scratched or worn more than 2 mm will lose performance and must be exchanged. Prolonged use may cause tip breakage and injury to the patient.

The operator should be aware of 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.






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# 5 Troubleshooting

| | |
|---|---|
| The tip does not vibrate properly. | Check that the tip is firmly tightened.<br><br>Check that the tip is not worn more than acceptable according to the tip template in the **Maintenance** section on page 17.<br><br>If the problem is not resolved, try another tip, preferably unused. |
| The tip threads don't fit smoothly onto the handpiece. | If the tip threads are damaged, blow off the handpiece threads with compressed air and try another tip, preferably unused. Throw away the damaged tip.<br><br>If the problem still remains, contact your dealer for service instructions, because the handpiece threads might be damaged. |
| Insufficient fluid flow. | Open the water adjustment knob completely.<br><br>If the fluid is still insufficient, remove the tip and inspect if fluid comes out of the handpiece. If yes, replace the tip. |
| The handpiece is overheated | Check that the fluid flow is sufficient (recommended: 20 ml/min). |
| If problems cannot be resolved according to this troubleshooting guide, please contact your dealer for further service support. | |



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# 6 Technical data

| | | |
|---|---|---|
| Input voltage (different models) | 24 Vac, 50-60 Hz or 22-32 Vdc | |
| | | |
| Output | Maximum 10 W, 24 kHz - 28 kHz, automatic tuning | |
| Ambbient temperature | Transport & storage | -40°C to 70°C<br>(-40°F to 158°F) |
| | Operation | 10°C to 40°C<br>(50°F to 104°F) |
| Relative humidity | Transport & storage | 10% to 100% |
| | Operation | 10% to 95% |
| Water consumption | 10 ml/min - 50 ml/min | |

Further technical descriptions on request. The manufacturer provides the qualified technical staff of the dealer or distributor with necessary information for service of the equipment.



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# 7 Warranty and Declaration of conformity

## 7.1 Warranty

The manufacturer hereby warrants that the Scaler will be free from defects arising from faulty materials or workmanship ("Limited Warranty"). This Limited Warranty does not cover the ultrasonic scaling tips. This Limited Warranty applies only if the scaler and/or the ultrasonic scaling tips are installed and used by the customer according to the instruction furnished herein, is connected to a proper power supply, is not misused or abused, and there is no evidence of tampering, mishandling, neglect, accidental or wilful damage or modifications. The customer must contact the authorized dealer from whom the Scaler and/or ultrasonic scaling tips were purchased to request repair or replacement under this Limited Warranty.

This Limited Warranty is void if service or repair is performed by persons not authorized by the manufacturer. Normal wear and tear is specifically excluded from this Limited Warranty. Manufacturer disclaims any express warranty not provided herein and any implied warranty, guarantee or representation as to suitability for any particular purpose, performance, quality, and absence of hidden defects, and any remedy for breach of contract, which but for this provision, might arise by implication, operation of law, custom of trade, or course of dealing, including implied warranties of merchantability and fitness for a particular purpose, except as provided in this limited warranty. The manufacturer further disclaims any responsibility for losses, expenses, inconveniences, special, indirect, secondary, or consequential damages arising from ownership or use of the product.

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## 7.2 Declaration of conformity

The manufacturer hereby declares that the Piezo Ultrasonic Scaler Built-in, all models type B according to EN 60601-1, 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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