



LM-ProPower Technical manual



For technical support regarding the use of this manual, Error Codes and Cause Codes as well as repair procedures, please contact service@lm-dental.com .
For support regarding Return Material Authorizations and warranty returns, please contact info@lm-dental.com

This manual is valid for version C8.0 and higher of:

LM-ProPower UltraLED
LM-ProPower AirLED
LM-ProPower CombiLED

The version is indicated on the label on the backside of the device.

Manufacturer, marketing and sales

LM-Instruments Oy
PL 88 (Norrbyn rantatie 8)
FI-21601 Parainen, Finland
Phone: +358 2 4546 400
Fax: +358 2 4546 444
E-mail: info@lm-dental.com
Web: www.lm-dental.com

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1. Troubleshooting

1.1 UltraLED with tap water connector

Type of problem	Description
A. Unit is not responding and no lights are lit on the control panel	Page 4
B. Lights are flashing on the control panel	Page 4
C. No tip vibration	Page 5
D. Weak tip vibration	Page 5
E. Insufficient or no water flow	Page 5
F. Tip does not fit smoothly onto the handpiece	Page 5
G. Difficulty to remove the ErgoGrip	Page 6
H. Handpiece is overheated	Page 6
I. Weak or no LED light	Page 6

A. Unit is not responding and no lights are lit on the control panel

1. Check that the power cord is connected properly and double check the voltage (120V/230V).
2. Check the fuse and replace if necessary. See Maintenance-section of the user guide.
3. Check that the wall outlet and the fuse panel of your clinic are OK.
4. If the problem still remains – contact your dealer for support and indicate Error Code [E-X02](#)

B. Lights are flashing on the control panel

Four blue lights on the control panel are flashing simultaneously.	Check that the foot control cable is connected at both ends and is not damaged.
The blue light next to the ON-key is flashing alternately with three other blue lights on the control panel.	Check that the scaler handpiece is properly connected.
Three yellow lights are flashing in sequence.	The Working Mode has not been selected. Select the working mode by pressing one of the keys next to the yellow lights.
The light next to the C-key is flashing.	The cleaning function has been activated. Wait until the cleaning process has finished and the light stops flashing.

C. No tip vibration

1. Check that the tip is firmly tightened. Preferably use a torque wrench and tighten clockwise until the torque wrench slides. (The torque wrench prevents the tip from being overtightened.)
2. Check that the green light below the keys on the control panel is lit. If it is not lit, please see [Section A on page 4](#).
3. Check that the device has been turned on by pressing the ON-key and that the blue light next to the ON-key is lit.
4. Check 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 still remains – contact your dealer for support and indicate Error Code [E-S01](#)

D. Weak tip vibration

1. Check that the tip is firmly tightened. Preferably use a torque wrench and tighten clockwise until the torque wrench slides. (The torque wrench prevents the tip from being overtightened.)
2. Check 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 still remains – contact your dealer for support and indicate Error Code [E-S02](#)

E. Insufficient or no water flow when foot switch is activated

1. Check that the tap water hose is properly connected to the back of the device and that the tap water system is OK (tap/valve is open and possible filter is OK).
2. Check that dry mode is not activated i.e. that the blue light next to the crossed-out water drop is not lit. If it is lit, press the ON-key.
3. Adjust the water control ring on the handpiece to fully open (dots aligned).
4. Try with another tip.
5. Use the LM-ProPower Fixer to check that the water hose inside the handpiece has not stuck in the autoclave. Insert the Fixer carefully into the handpiece from the hose connector side. (To avoid the hose getting stuck, the water adjustment on the handpiece should be set to fully open before sterilization in autoclave.)
6. If the problem still remains – contact your dealer for support and indicate Error Code [E-S04](#)

F. 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 still remains, the threads of the handpiece may be damaged and the handpiece needs to be replaced. Contact your dealer and indicate Error Code [E-S06](#).

G. Difficulty to remove the ErgoGrip from the handpiece

1. Grab the ErgoGrip gently near the lens and at the same time twist and slide it off the handpiece
2. If the problem still remains, replace the ErgoGrip

H. Handpiece is overheated during use

1. Check that the fluid flow is sufficient (at least 20 ml/min)
2. If the problem still remains, replace the handpiece and contact your dealer

I. Weak or no LED light.

1. Note that there are two versions of the ErgoGrip with different lenses and light pattern and intensity: "ErgoGrip LED" and "ErgoGrip FocusLED".
2. Check that lens in the ErgoGrip is clear and clean. Clean or replace if necessary.
3. If you have an additional handpiece, try replacing the handpiece
4. If the problem still remains – contact your dealer for support and indicate Error Code [E-S03](#)

1.2 UltraLED with medicament/water bottle

Type of problem	Description
A. Unit is not responding and no lights are lit on the control panel	Page 7
B. Lights are flashing on the control panel	Page 7
C. No tip vibration	Page 8
D. Weak tip vibration	Page 8
E. Insufficient or no water flow	Page 8
F. Tip does not fit smoothly onto the handpiece	Page 8
G. Difficulty to remove the ErgoGrip	Page 9
H. Handpiece is overheated	Page 9
I. Weak or no LED light	Page 9

A. Unit is not responding and no lights are lit on the control panel

1. Check that the power cord is connected properly and double check the voltage (120V/230V).
2. Check the fuse and replace if necessary. See Maintenance-section of the user guide.
3. Check that the wall outlet and the fuse panel of your clinic are OK.
4. If the problem still remains – contact your dealer for support and indicate Error Code [E-X02](#)

B. Lights are flashing on the control panel

Four blue lights on the control panel are flashing simultaneously.	Check that the foot control cable is connected at both ends and is not damaged.
The blue light next to the ON-key is flashing alternately with three other blue lights on the control panel.	Check that the scaler handpiece is properly connected.
Three yellow lights are flashing in sequence.	The Working Mode has not been selected. Select the working mode by pressing one of the keys next to the yellow lights.
The light next to the C-key is flashing.	The cleaning function has been activated. Wait until the cleaning process has finished and the light stops flashing.

C. No tip vibration

1. Check that the tip is firmly tightened. Preferably use a torque wrench and tighten clockwise until the torque wrench slides. (The torque wrench prevents the tip from being overtightened.)
2. Check that the green light below the keys on the control panel is lit. If it is not lit, please see [Section A on page 4](#).
3. Check that the device has been turned on by pressing the ON-key and that the blue light next to the ON-key is lit.
4. Check 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 still remains – contact your dealer for support and indicate Error Code [E-S01](#)

D. Weak tip vibration

5. Check that the tip is firmly tightened. Preferably use a torque wrench and tighten clockwise until the torque wrench slides. (The torque wrench prevents the tip from being overtightened.)
6. Check 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.
7. If you have an additional handpiece, try replacing the handpiece.
8. If the problem still remains – contact your dealer for support and indicate Error Code [E-S02](#)

E. Insufficient or no water flow when foot switch is activated

1. Check that the medicament/water bottle is properly connected i.e. the cap is tightened and pushed in all the way onto the connector. Check that the o-rings on cap and connector are in good condition. Replace o-rings if worn. O-rings can be lubricated with a glycerine based lubricant (or vaseline).
2. Check that dry mode is not activated i.e. that the blue light next to the crossed-out water drop is not lit. If it is lit, press the ON-key.
3. Adjust the water control ring on the handpiece to fully open (dots aligned).
4. Try with another tip.
5. Use the LM-ProPower Fixer to check that the water hose inside the handpiece has not stuck in the autoclave. Insert the Fixer carefully into the handpiece from the hose connector side. (To avoid the hose getting stuck, the water adjustment on the handpiece should be set to fully open before sterilization in autoclave.)
6. If the problem still remains – contact your dealer for support and indicate Error Code [E-S04](#)

F. 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 still remains, the threads of the handpiece may be damaged and the handpiece needs to be replaced. Contact your dealer and indicate Error Code [E-S06](#).

G. Difficulty to remove the ErgoGrip from the handpiece

1. Grab the ErgoGrip gently near the lens and at the same time twist and slide it off the handpiece
2. If the problem still remains, replace the ErgoGrip

H. Handpiece is overheated during use

1. Check that the fluid flow is sufficient (at least 20 ml/min)
2. If the problem still remains, replace the handpiece and contact your dealer

I. Weak or no LED light

1. Note that there are two versions of the ErgoGrip with different lenses and light pattern and intensity: "ErgoGrip LED" and "ErgoGrip FocusLED".
2. Check that lens in the ErgoGrip is clear and clean. Clean or replace if necessary.
3. If you have an additional handpiece, try replacing the handpiece
4. If the problem still remains – contact your dealer for support and indicate Error Code [E-S03](#)

1.3 AirLED with tap water connector

Type of problem	Description
A. Unit is not responding and no lights are lit on the control panel	Page 10
B. Lights are flashing on the control panel	Page 10
C. Difficulty to remove the ErgoGrip	Page 10
D. Weak or no LED light	Page 11
E. Insufficient or no water flow	Page 11
F. Insufficient or no powder flow	Page 11
G. Water drips from the bottom of the device onto the table	Page 11

A. Unit is not responding and no lights are lit on the control panel

1. Check that the power cord is connected properly and double check the voltage (120V/230V).
2. Check the fuse and replace if necessary. See Maintenance-section of the user guide.
3. Check that the wall outlet and the fuse panel of your clinic are OK.
4. If the problem still remains – contact your dealer for support and indicate Error Code [E-X02](#)

B. Lights are flashing on the control panel

Four blue lights on the control panel are flashing simultaneously	Check that the foot control cable is connected at both ends and is not damaged.
The blue light next to the ON-key is flashing alternately with three other blue lights on the control panel.	Check that the polisher tubing is properly connected onto the connectors. Make sure it is pressed in all the way.
Two yellow lights are flashing alternately.	The Working Mode has not been selected. Select the working mode by pressing one of the keys next to the yellow lights.
The light next to the AP-key blinks twice and pauses.	The device reminds of the need to activate the cleaning cycle by pressing the AP-key (Air Purge). Please see user manual for details.
The light next to the C-key is flashing continuously.	The cleaning function has been activated. Wait until the cleaning process has finished and the light stops flashing.

C. Difficulty to remove the ErgoGrip from the handpiece

1. Grab the ErgoGrip gently near the lens and at the same time twist and slide it off the handpiece
2. If the problem still remains, replace the ErgoGrip

D. Weak or no LED light.

1. Note that there are two versions of the ErgoGrip with different lenses and light pattern and intensity: "ErgoGrip LED" and "ErgoGrip FocusLED".
2. Check that lens in the ErgoGrip is clear and clean. Clean or replace if necessary.
3. If you have an additional polisher tubing, try replacing the polisher tubing.
4. If the problem still remains – contact your dealer for support and indicate Error Code [E-P03](#)

E. Insufficient or no water flow

1. Check that the tap water hose is properly connected to the back of the device and that the tap water system is OK (tap/valve is open and possible filter is OK).
2. Check that Air Blow mode is not activated i.e. that the blue light next to the crossed-out water drop is not lit. If it is lit, press the ON-key.
3. Adjust water control on powder container cap to fully open.
4. Gently check that the nozzle is fully tightened
5. If you have an additional nozzle, replace the nozzle.
6. If the problem still remains – contact your dealer for support and indicate Error Code [E-P04](#)

F. Insufficient or no powder flow

1. Check 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 may be cleaned in an ultrasonic bath or in citric acid (or vinegar).
3. Unscrew and remove the powder container, nozzle and ErgoGrip and blow with compressed air into the handpiece.
4. If the problem still remains – contact your dealer for support and indicate [E-P01](#)

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

1. The 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 underneath the device. Normally there is no water at all or a very small amount (a few drops). If the amount of water is significant, the compressor of your clinic may need service. Please contact the manufacturer or dealer of your compressor.

1.4 AirLED with medicament/water bottle

Type of problem	Description
A. Unit is not responding and no lights are lit on the control panel	Page 12
B. Lights are flashing on the control panel	Page 12
C. Difficulty to remove the ErgoGrip	Page 13
D. Weak or no LED light	Page 13
E. Insufficient or no water flow	Page 13
F. Insufficient or no powder flow	Page 13
G. Water drips from the bottom of the device onto the table	Page 13

A. Unit is not responding and no lights are lit on the control panel

1. Check that the power cord is connected properly and double check the voltage (120V/230V).
2. Check the fuse and replace if necessary. See Maintenance-section of the user guide.
3. Check that the wall outlet and the fuse panel of your clinic are OK.
4. If the problem still remains – contact your dealer for support and indicate Error Code [E-X02](#)

B. Lights are flashing on the control panel

Four blue lights on the control panel are flashing simultaneously	Check that the foot control cable is connected at both ends and is not damaged.
The blue light next to the ON-key is flashing alternately with three other blue lights on the control panel.	Check that the polisher tubing is properly connected onto the connectors. Make sure it is pressed in all the way.
Two yellow lights are flashing alternately.	The Working Mode has not been selected. Select the working mode by pressing one of the keys next to the yellow lights.
The light next to the C-key blinks twice and pauses.	The device reminds of the need to activate the cleaning cycle by pressing the C-key. Please see user manual for details.
The light next to the C-key is flashing continuously.	The cleaning function has been activated. Wait until the cleaning process has finished and the light stops flashing.

C. Difficulty to remove the ErgoGrip from the handpiece

1. Grab the ErgoGrip gently near the lens and at the same time twist and slide it off the handpiece
2. If the problem still remains, replace the ErgoGrip

D. Weak or no LED light

1. Note that there are two versions of the ErgoGrip with different lenses and light pattern and intensity: "ErgoGrip LED" and "ErgoGrip FocusLED".
2. Check that lens in the ErgoGrip is clear and clean. Clean or replace if necessary.
3. If you have an additional polisher tubing, try replacing the polisher tubing.
4. If the problem still remains – contact your dealer for support and indicate Error Code [E-P03](#)

E. Insufficient or no water flow

1. Check that Air Blow mode is not activated i.e. that the blue light next 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. Check that the medicament/water bottle is properly connected i.e. the cap is tightened and pushed in all the way onto the connector. Check that the o-rings on cap and connector are in good condition. Replace o-rings if worn. O-rings can be lubricated with a glycerine based lubricant (or vaseline).
4. Gently check that the nozzle is fully tightened.
5. If you have an additional nozzle, replace the nozzle.
6. If the problem still remains – contact your dealer for support and indicate Error Code [E-P04](#)

F. Insufficient or no powder flow

1. Check 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 may be cleaned in an ultrasonic bath or in citric acid or (vinegar).
3. Unscrew and remove the powder container, nozzle and ErgoGrip and blow with compressed air into the handpiece.
4. If the problem still remains – contact your dealer for support and indicate [E-P01](#)

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

1. The 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 underneath the device. Normally there is no water at all or a very small amount (a few drops). If the amount of water is significant, the compressor of your clinic may need service. Please contact the manufacturer or dealer of your compressor.

1.5 CombiLED with tap water connector

Type of problem	Scaler	Polisher	Description
A. Unit is not responding and no lights are lit on the control panel	X	X	Page 14
B. Lights are flashing on the control panel	X	X	Page 14-15
C. Difficulty to remove the ErgoGrip	X	X	Page 15
D. Weak or no LED light	X	X	Page 15
E. No tip vibration	X		Page 15
F. Weak tip vibration	X		Page 15
G. Insufficient or no water flow	X		Page 16
H. Tip does not fit smoothly onto the handpiece	X		Page 16
I. Handpiece is overheated	X		Page 16
J. Insufficient or no water flow		X	Page 16
K. Insufficient or no powder flow		X	Page 16
L. Water drips from the bottom of the device onto the table	X	X	Page 16

A. Unit is not responding and no lights are lit on the control panel

1. Check that the power cord is connected properly and double check the voltage (120V/230V).
2. Check the fuse and replace if necessary. See Maintenance-section of the user guide.
3. Check that the wall outlet and the fuse panel of your clinic are OK.
4. If the problem still remains – contact your dealer for support and indicate Error Code [E-X02](#)

B. Lights are flashing on the control panel

Five blue lights on the control panel are flashing simultaneously	Check that the foot control cable is connected at both ends and is not damaged.
The blue lights next 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 next to the S -key is flashing alternately with three other blue lights on the control panel.	Check that the scaler handpiece is properly connected.
The blue light next to the P -key is flashing alternately with three other blue lights on the control panel.	Check that the polisher tubing is properly 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 next to the yellow lights.
The light next to the C-key flashes twice and pauses.	The device reminds of the need to activate the polisher cleaning cycle by pressing the C-key. Please see user manual for details.
The light next to the C-key is flashing continuously.	The cleaning function has been activated. Wait until the cleaning process has finished and the light stops flashing.

C. Difficulty to remove the ErgoGrip from the handpiece

1. Grab the ErgoGrip gently near the lens and at the same time twist and slide it off the handpiece
2. If the problem still remains, replace the ErgoGrip

D. Weak or no LED light

1. Note that there are two versions of the ErgoGrip with different lenses and light pattern and intensity: "ErgoGrip LED" and "ErgoGrip FocusLED".
2. Check that lens in the ErgoGrip is clear and clean. Clean or replace if necessary.
3. If you have an additional scaler handpiece (or polisher tubing), try replacing the scaler handpiece (or polisher tubing).
4. If the problem still remains – contact your dealer for support and indicate Error Code "[E-S03](#) No light in scaler handpiece" or "[E-P03](#) No light in polisher handpiece"

E. No tip vibration

1. Check that the tip is firmly tightened. Preferably use a torque wrench and tighten clockwise until the torque wrench slides. (The torque wrench prevents the tip from being overtightened.)
2. Check that the green light below the keys on the control panel is lit. If it is not lit, please see [Section A on page 4](#).
3. Check that the scaler has been turned on by pressing the S-key and that the blue light next to the S-key is lit.
4. Check 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 still remains – contact your dealer for support and indicate Error Code [E-S01](#)

F. Weak tip vibration

1. Check that the tip is firmly tightened. Preferably use a torque wrench and tighten clockwise until the torque wrench slides. (The torque wrench prevents the tip from being overtightened.)
2. Check 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 still remains – contact your dealer for support and indicate Error Code [E-S02](#)

G. Insufficient or no water flow when foot switch is activated (Scaler)

1. Check that the tap water hose is properly connected to the back of the device and that the tap water system is OK (tap/valve is open and possible filter is OK).
2. Check that dry mode is not activated i.e. that the blue light next to the crossed-out water drop is not lit. If it is lit, press the S-key.
3. Adjust the water control ring on the handpiece to fully open (dots aligned).
4. Try with another tip.
5. Use the LM-ProPower Fixer to check that the water hose inside the handpiece has not stuck in the autoclave. Insert the Fixer carefully into the handpiece from the hose connector side. (To avoid the hose getting stuck, the water adjustment on the handpiece should be set to fully open before sterilization in autoclave.)
6. If the problem still remains – contact your dealer for support and indicate Error Code [E-S04](#)

H. 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 still remains, the threads of the handpiece may be damaged and the handpiece needs to be replaced. Contact your dealer and indicate Error Code [E-S06](#).

I. Handpiece is overheated during use

1. Check that the fluid flow is sufficient (at least 20 ml/min)
2. If the problem still remains, replace the handpiece and contact your dealer

J. Insufficient or no water flow (Polisher)

1. Check that the tap water hose is properly connected to the back of the device and that the tap water system is OK (tap/valve is open and possible filter is OK).
2. Check that Air Blow mode is not activated i.e. that the blue light next to the crossed-out water drop is not lit. If it is lit, press the P-key.
3. Adjust water control on powder container cap to fully open.
4. Gently check that the nozzle is fully tightened
5. If you have an additional nozzle, replace the nozzle.
6. If the problem still remains – contact your dealer for support and indicate Error Code [E-P04](#)

K. Insufficient or no powder flow

1. Check 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 may be cleaned in an ultrasonic bath or in citric acid (or vinegar).
3. Unscrew and remove the powder container, nozzle and ErgoGrip and blow with compressed air into the handpiece.
4. If the problem still remains – contact your dealer for support and indicate Error Code [E-P01](#).

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

1. The 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 underneath the device. Normally there is no water at all or a very small amount (a few drops). If the amount of water is significant, the compressor of your clinic may need service. Please contact the manufacturer or dealer of your compressor.

1.6 CombiLED with medicament/water bottle

Type of problem	Scaler	Polisher	Description
A. Unit is not responding and no lights are lit on the control panel	X	X	Page 17
B. Lights are flashing on the control panel	X	X	Page 17-18
C. Difficulty to remove the ErgoGrip	X	X	Page 18
D. Weak or no LED light	X	X	Page 18
E. No tip vibration	X		Page 18
F. Weak tip vibration	X		Page 18
G. Insufficient or no water flow	X		Page 19
H. Tip does not fit smoothly onto the handpiece	X		Page 19
I. Handpiece is overheated	X		Page 19
J. Insufficient or no water flow		X	Page 19
K. Insufficient or no powder flow		X	Page 19
L. Water drips from the bottom of the device onto the table	X	X	Page 19

A. Unit is not responding and no lights are lit on the control panel

1. Check that the power cord is connected properly and double check the voltage (120V/230V).
2. Check the fuse and replace if necessary. See Maintenance-section of the user guide.
3. Check that the wall outlet and the fuse panel of your clinic are OK.
4. If the problem still remains – contact your dealer for support and indicate Error Code [E-X02](#)

B. Lights are flashing on the control panel

Five blue lights on the control panel are flashing simultaneously	Check that the foot control cable is connected at both ends and is not damaged.
The blue lights next 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 next to the S -key is flashing alternately with three other blue lights on the control panel.	Check that the scaler handpiece is properly connected.
The blue light next to the P -key is flashing alternately with three other blue	Check that the polisher tubing is properly connected onto the connectors. Make sure it

lights on the control panel.	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 next to the yellow lights.
The light next to the C-key flashes twice and pauses.	The device reminds of the need to activate the polisher cleaning cycle by pressing the C-key. Please see user manual for details.
The light next to the C-key is flashing continuously.	The cleaning function has been activated. Wait until the cleaning process has finished and the light stops flashing.

C. Difficulty to remove the ErgoGrip from the handpiece

1. Grab the ErgoGrip gently near the lens and at the same time twist and slide it off the handpiece
2. If the problem still remains, replace the ErgoGrip

D. Weak or no LED light

1. Note that there are two versions of the ErgoGrip with different lenses and light pattern and intensity: "ErgoGrip LED" and "ErgoGrip FocusLED".
2. Check that lens in the ErgoGrip is clear and clean. Clean or replace if necessary.
3. If you have an additional scaler handpiece (or polisher tubing), try replacing the scaler handpiece (or polisher tubing).
4. If the problem still remains – contact your dealer for support and indicate Error Code "[E-S03](#) No light in scaler handpiece" or "E-P03 No light in polisher handpiece"

E. No tip vibration

1. Check that the tip is firmly tightened. Preferably use a torque wrench and tighten clockwise until the torque wrench slides. (The torque wrench prevents the tip from being overtightened.)
2. Check that the green light below the keys on the control panel is lit. If it is not lit, please see [Section A on page 4](#).
3. Check that the device has been turned on by pressing the S-key and that the blue light next to the S-key is lit.
4. Check 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 still remains – contact your dealer for support and indicate Error Code "[E-S01](#) No vibration" or "[E-S02](#) Low power / vibration"

F. Weak tip vibration

1. Check that the tip is firmly tightened. Preferably use a torque wrench and tighten clockwise until the torque wrench slides. (The torque wrench prevents the tip from being overtightened.)
2. Check 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 still remains – contact your dealer for support and indicate Error Code [E-S02](#)

G. Insufficient or no water flow (Scaler)

1. Check that dry mode is not activated i.e. that the blue light next 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. Check that the medicament/water bottle is properly connected i.e. the cap is tightened and pushed in all the way onto the connector. Check that the o-rings on cap and connector are in good condition. Replace o-rings if worn. O-rings can be lubricated with a glycerine based lubricant.
4. Try with another tip.
5. Use the LM-ProPower Fixer to check that the water hose inside the handpiece has not stuck in the autoclave. Insert the Fixer carefully into the handpiece from the hose connector side. (To avoid the hose getting stuck, the water adjustment on the handpiece should be set to fully open before sterilization in autoclave.)
6. If the problem still remains – contact your dealer for support and indicate Error Code [E-S04](#)

H. 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 still remains, the threads of the handpiece may be damaged and the handpiece needs to be replaced. Contact your dealer and indicate Error Code [E-S06](#).

I. Handpiece is overheated during use

1. Check that the fluid flow is sufficient (at least 20 ml/min)
2. If the problem still remains, replace the handpiece and contact your dealer

J. Insufficient or no water flow (Polisher)

1. Check that Air Blow mode is not activated i.e. that the blue light next 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. Check that the medicament/water bottle is properly connected i.e. the cap is tightened and pushed in all the way onto the connector. Check that the o-rings on cap and connector are in good condition. Replace o-rings if worn. O-rings can be lubricated with a glycerine based lubricant.
4. Gently check that the nozzle is fully tightened
5. If you have an additional nozzle, replace the nozzle.
6. If the problem still remains – contact your dealer for support and indicate Error Code [E-P04](#)

K. Insufficient or no powder flow

1. Check 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 may be cleaned in an ultrasonic bath or in citric acid (or vinegar).
3. Unscrew and remove the powder container, nozzle and ErgoGrip and blow with compressed air into the handpiece.
4. If the problem still remains – contact your dealer for support and indicate Error Code [E-P01](#).

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

1. The 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 underneath the device. Normally there is no water at all or a very small amount (a few drops). If the amount of water is significant, the compressor of your clinic may need service. Please contact the manufacturer or dealer of your compressor.

2. Cause Diagnosis and Cause Codes

Error Code	Scaler	Polisher	Diagnosis instructions	Cause code	Repair / Remedy instructions
E-S01 No vibration	X		1. Replace the handpiece with a working handpiece. If the device works with the working handpiece the handpiece is faulty.	C-001 Faulty Handpiece	Replace handpiece (spare part LM-10093). Fill in Customer Service Form indicating cause code C-001 and submit to LM fax +358 2 454 6444. After obtaining an RMA number from LM, return the faulty handpiece with the RMA number to LM for replacement.
			2. If there is no vibration with the working handpiece, the tubing is probably damaged.	C-002 Faulty tubing	<u>Level 1 Service Providers:</u> Fill in Customer Service Form indicating cause code C-002 and submit to LM fax +358 2 454 6444. After obtaining an RMA number from LM, return the entire device with accessories and the RMA number to LM for repair. <u>Level 2 Service Providers:</u> Replace tubing (spare part LM-15609061). See repair instructions in Section 2. Fill in Customer Service Form indicating cause code C-002 and submit to LM fax +358 2 454 6444. After obtaining an RMA number from LM, return the faulty hose for replacement.
			3. Measure the control voltages from the control circuit board to scaler electronic unit. See repair instructions Section 3.	C-003 Faulty electronic unit	If the voltages from the control circuit board are OK, replace the scaler electronic unit (spare part LM-15610221). See repair instructions Section 3. Fill in Customer Service Form indicating cause code C-003 and submit to LM fax +358 2 454 6444. After obtaining an RMA number from LM, return the faulty electronic unit for replacement.
			4. If above actions do not solve the problem, request authorization to return the device to LM-Instruments for repair.	C-004 Unidentified Loss of Vibration	Fill in Customer Service Form indicating cause code C-004 and submit to LM fax +358 2 454 6444. After obtaining an RMA number from LM, return the entire device with accessories and the RMA number to LM for repair.

Error Code	Scaler	Polisher	Diagnosis instructions	Cause code	Repair / Remedy instructions
E-S02 Low power / vibration	X		1. Check that the tip is an original LM-Instruments tip and that it is not worn beyond the limit on the tip check card. (The efficiency of the tip depends highly on the mechanical design and material. Tips from other manufacturers may provide significantly less power than original tips.) Check that the tip is firmly tightened with a torque tip wrench. Check working mode setting and test with foot control in max power position.	C-005 Faulty tip/copy tip	Offer the customer a new tip according to the standard spare part price list.
			2. Replace the scaler handpiece with a working handpiece. If the device provides normal power with the working handpiece the piezo elements of the handpiece are damaged due to overheating or leakage. The handpiece overheats if it is used in dry mode or with insufficient water flow for more than 2 min. (See user guide for details).	C-001 Faulty handpiece	Offer the customer a new handpiece according to the standard spare part price list. If the Customer has not used the device in dry mode or with low water flow, fill in a Customer Service Form indicating cause code C-001 and submit to LM fax +358 2 454 6444. Decision on replacement for overheating is made case by case. After obtaining an RMA number from LM, return the faulty handpiece with the RMA number to LM for replacement.
			3. Measure the control voltages from the control circuit board to scaler electronic unit. See repair instructions in Section 3.	C-003 Faulty electronic unit	If the voltages from the control circuit board are OK, replace the scaler electronic unit (spare part LM-15610221. See repair instructions in Section 3 . Fill in Customer Service Form indicating cause code C-003 and submit to LM fax +358 2 454 6444. After obtaining an RMA number from LM, return the faulty electronic unit for replacement.
			4. If above actions do not solve the problem, request authorization to return the device to LM-Instruments for repair.	C-006 Unidentified Reduced Power	Submit Customer Service Form indicating cause code C-006 to LM fax +358 2 454 6444. After obtaining an RMA number from LM, return the entire device with accessories and the RMA number to LM for repair.
E-S03 No light in handpiece	X		1. Replace the handpiece with a working handpiece. If the device works with the	C-001 Faulty Handpiece	Replace handpiece (spare part LM-10093). Fill in a Customer Service Form indicating cause code C-001

Error Code	Scaler	Polisher	Diagnosis instructions	Cause code	Repair / Remedy instructions
			working handpiece the handpiece is faulty.		and submit to LM fax +358 2 454 6444. After obtaining an RMA number from LM, return the faulty handpiece for replacement.
			2. If there is no Light with the working handpiece, the tubing is probably damaged.	C-002 Faulty tubing	<p><u>Level 1 Service Providers:</u> Fill in Customer Service Form indicating cause code C-002 and submit to LM fax +358 2 454 6444. After obtaining an RMA number from LM, return the entire device with accessories and the RMA number to LM for repair.</p> <p><u>Level 2 Service Providers:</u> Replace tubing. See repair instructions in Section 3. Fill in Customer Service Form indicating cause code C-002 and submit to LM fax +358 2 454 6444. After obtaining an RMA number from LM, return the faulty hose for replacement.</p>
			3. If above actions do not solve the problem, request authorization to return the device to LM-Instruments	C-007 Unidentified loss of handpiece light	Submit Customer Service Form indicating cause code C-007 to LM fax +358 2 454 6444. After obtaining an RMA number from LM, return the entire device with accessories for repair.
E-S04 No/low water flow	X		1. Double check that: <ul style="list-style-type: none"> - Water control ring on handpiece is fully open - the tip is removed (or new) 	C-017 Stuck waterline in handpiece	Use the LM-ProPower Fixer tool to open up the stuck water line. See repair instructions in Section 7.

Error Code	Scaler	Polisher	Diagnosis instructions	Cause code	Repair / Remedy instructions
(continued) E-S04 No/low water flow	X		- the water hose inside the handpiece is not stuck		
			2. Check whether any o-rings are worn (on handpiece and bottle cap and connectors when applicable).	C-021 O-rings	Replace o-rings. Fill in a Customer Service Form indicating cause code C-021 and submit to LM fax +358 2 454 6444.
			3. If replacing the o-rings does not solve the problem, there may be an internal malfunction	C-999 Level 1 SP Internal Malfunction	<u>Level 1 Service Providers:</u> Fill in Customer Service Form indicating Cause Code C-999 and Cause Code C-008 and submit to LM fax +358 2 454 6444. After obtaining an RMA number from LM, return the entire device with accessories and the RMA number to LM for repair.
			<u>Level 2 Service provider:</u> 4. Remove cover and casing from chassis. See repair instructions in Section 1. Check all water connections for leakage or squeezed tubing. Reassemble cover and connect foot control and handpiece. Try whether the device functions normally.	C-022 Internal tubing	
			5. If the device is of the bottle-version, listen if compressor is running when foot control is pressed. If not, the compressor is broken. (Not applicable to tap water version.)	C-009 Broken compressor	Replace compressor. See repair instructions in Section 5 . Fill in Customer Service Form indicating cause code C-009 and submit to LM fax +358 2 454 6444. After obtaining an RMA number from LM, return the faulty compressor for replacement.
			6. Listen if magnetic valve pos. 2 activates, if not, the magnetic valve is probably clogged.	C-010 Clogged magnetic valve	Clean magnetic valve. See repair instructions in Section 6.
			7. If cleaning the magnetic valve does not	C-011 Faulty coil	Replace coil. See instructions in Section 3.6 .

Error Code	Scaler	Polisher	Diagnosis instructions	Cause code	Repair / Remedy instructions
			solve the problem, the coil is probably faulty.		Fill in Customer Service Form indicating cause code and submit to LM fax +358 2 454 6444. After obtaining an RMA number from LM, return the faulty coil for replacement.
			8. If above actions do not solve the problem, request authorization to return the device to LM-Instruments for repair.	C-008 Unidentified no/low water flow.	Fill in a Customer Service Form indicating cause code and submit to LM fax +358 2 454 6444. After obtaining an RMA number from LM, return the entire device with accessories and the RMA number to LM for repair.
E-S05 Faulty tip	X		1. Check that the tip is an original LM-Instruments tip and for any obvious signs of misuse (e.g. dropped or bent). Measure the tip with a tip check card.	C-005 Faulty tip/copy tip	If the tip is not an original spare part or it has broken because of misuse or using it beyond the wear limit, offer the customer a new tip according to the standard spare part price list.
			2. If the tip is original and does not show any signs of misuse or wear, request authorization to return the tip to LM-Instruments	C-012 Unidentified tip fault	Submit Customer Service Form indicating cause code C-012 to LM fax +358 2 454 6444. Decision on replacement is made case by case. After obtaining an RMA number from LM, return the broken tip the RMA number to LM for replacement.
E-S06 Difficulty to screw tip onto handpiece	X		Check if there is any visible dirt or damage in the handpiece threads. Clean if necessary. Place a new tip on the handpiece. If the tip does not screw on smoothly, the handpiece threads are damaged.	C-020 Damaged handpiece threads	Check visually for any signs of misuse. Offer the customer a new handpiece according to the standard spare part price list. If the Customer has used the handpiece properly, fill in a Customer Service Form indicating cause code C-020 and submit to LM fax +358 2 454 6444. Decision on replacement for damaged threads is made case by case. After obtaining an RMA number from LM, return the faulty handpiece with the RMA number to LM for replacement
E-P01 No/low air flow		X	1. Replace the nozzle with a working nozzle.	C-013 Clogged nozzle	Clean the clogged nozzle in an ultrasonic bath or in citric acid for 10 min. Rinse with water afterwards and dry with compressed air. If above did not work, submit Customer Service Form indicating cause code C-013 to LM fax +358 2 454 6444. After obtaining an RMA number from LM, return the nozzle for repair.

Error Code	Scaler	Polisher	Diagnosis instructions	Cause code	Repair / Remedy instructions
(continued) E-P01 No/low air flow		X	2. Replace the AirLED tubing.	C-014 Faulty AirLED tubing	Replace AirLED tubing (spare part 15610261). Fill in Customer Service Form indicating cause code C-014 and submit to LM fax +358 2 454 6444. After obtaining an RMA number from LM, return the faulty part with the RMA number to LM for replacement.
			3. If replacing the AirLED tubing does not solve the problem, there may be an internal malfunction.	C-999 Level 1 SP Internal Malfunction	<u>Level 1 Service Providers:</u> Fill in Customer Service Form indicating Cause Code C-999 and submit to LM fax +358 2 454 6444. After obtaining an RMA number from LM, return the entire device with accessories and the RMA number to LM for repair.
			<u>Level 2 Service providers:</u> 4. Remove cover and casing from chassis. See repair instructions in Section 1. Check all air connections for leakage or squeezed tubing. Reassemble cover and connect foot control and handpiece. Try whether the device functions normally.	C-022 Internal tubing	
			5. Listen if magnetic valves pos. 3 and 4 activate. If not, the magnetic valves are probably clogged.	C-010 Clogged magnetic valve	Clean magnetic valve. See repair instructions in Section 3.6 .
			6. If cleaning the magnetic valve does not solve the problem, the coil is probably faulty.	C-011 Faulty coil	Replace coil. See instructions in Section 3.6 . Fill in Customer Service Form indicating cause code C-011 and submit to LM fax +358 2 454 6444. After obtaining an RMA number from LM, return the faulty coil for replacement.

Error Code	Scaler	Polisher	Diagnosis instructions	Cause code	Repair / Remedy instructions
			5. If above actions do not solve the problem, request authorization to return the device to LM-Instruments for repair.	C-015 Unidentified loss of air flow	Fill in a Customer Service Form indicating cause code C-015 and submit to LM fax +358 2 454 6444. After obtaining an RMA number from LM, return the entire device with accessories and the RMA number to LM for repair.
E-P03 No light in handpiece		X	1. Replace the AirLED tubing with a working polisher tubing. If this solved the problem the polisher tubing was faulty.	C-014 Faulty AirLED tubing.	Replace AirLED tubing (spare part 15610261). Fill in a Customer Service Form indicating cause code C-017 and submit to LM fax +358 2 454 6444. After obtaining an RMA number from LM, return the faulty tubing for replacement.
			2. If above action did not solve the problem, request authorization to return the device to LM-Instruments	C-007 Unidentified loss handpiece light	Fill in Customer Service Form indicating cause code C-007 and submit to LM fax +358 2 454 6444. After obtaining an RMA number from LM, return the entire device with accessories and the RMA number to LM for repair.
E-P04 No/low water flow		X	1. Check that the water control on the powder container cap is fully open. Replace the nozzle with a working nozzle. If this solved the problem clean the clogged nozzle.	C-013 Clogged nozzle	Clean the clogged nozzle in an ultrasonic bath or in citric acid for 10 min. Rinse with water afterwards and dry with compressed air. If above did not work, submit Customer Service Form indicating cause code C-013 to LM fax +358 2 454 6444. After obtaining an RMA number from LM, return the nozzle for repair.
			2. Check whether any o-rings are worn (polisher tubing connectors and bottle cap and connectors when applicable).	C-021 O-rings	Replace o-rings. Fill in a Customer Service Form indicating cause code C-021 and submit to LM fax +358 2 454 6444.

Error Code	Scaler	Polisher	Diagnosis instructions	Cause code	Repair / Remedy instructions
(continued) E-P04 No/low water flow		X	3. Replace the AirLED tubing.	C-014 Faulty AirLED tubing	Replace AirLED tubing (spare part 15610261). Fill in Customer Service Form indicating cause code C-014 and submit to LM fax +358 2 454 6444. After obtaining an RMA number from LM, return the faulty part with the RMA number to LM for replacement.
			4. If replacing the AirLED tubing does not solve the problem, there may be an internal malfunction.	C-999 Level 1 SP Internal Malfunction	<u>Level 1 Service Providers:</u> Fill in Customer Service Form indicating Cause Code C-999 and submit to LM fax +358 2 454 6444. After obtaining an RMA number from LM, return the entire device with accessories and the RMA number to LM for repair.
			<u>Level 2 Service Providers:</u> 5. Remove cover and casing from chassis. See repair instructions in Section 1. Check all water connections for leakage or squeezed tubing. Reassemble cover and connect foot control and handpiece. Try whether the device functions normally.	C-022 Internal tubing	
			6. Listen if magnetic valves in pos. 1 activate when pressing the foot control. If not, the magnetic valves are probably clogged.	C-010 Clogged magnetic valve	Clean magnetic valve. See instructions in Section 6.
			7. If cleaning the magnetic valve does not solve the problem, the coil is probably faulty.	C-011 Faulty coil	Replace coil. See instructions in Section 6. Fill in Customer Service Form indicating cause code C-011 and submit to LM fax +358 2 454 6444. After obtaining an RMA number from LM, return the faulty coil for replacement.
			8. If above actions do not solve the problem,	C-008 Unidentified	Fill in a Customer Service Form indicating cause code and

Error Code	Scaler	Polisher	Diagnosis instructions	Cause code	Repair / Remedy instructions
			request authorization to return the device to LM-Instruments for repair .	no/low water flow.	submit to LM fax +358 2 454 6444. After obtaining an RMA number from LM, return the entire device with accessories and the RMA number to LM for repair.
E-X01 Foot control not working	X	X	Replace foot control	C-016 Faulty foot control	Replace foot control (spare part 15608821). Fill in a Customer Service Form indicating cause code C-016 and submit to LM fax +358 2 454 6444. After obtaining an RMA number from LM, return the faulty handpiece for replacement.
E-X02 Unit not responding & green standby lamp does not illuminate	X	X	1. If the unit does not respond at all and the green standby light does not illuminate, probably a fuse is damaged.	C-018 Damaged fuse	Replace damaged fuse. See instructions in the Maintenance section of the User manual.
			2. If above actions does not solve the problem, request authorization to return the device	C-019 Unidentified power loss	Fill in Customer Service Form indicating cause code and submit to LM fax +358 2 454 6444. After obtaining an RMA number from LM, return the entire device with accessories and the RMA number to LM for repair.

3 Repair Instructions

Warning! Some tests and measurements require that the power cable is plugged in with the casing removed. This is only allowed for legally authorized electricians and extra caution must be taken because of exposed live parts.

3.1 Removing the cover and casing

Start with disconnecting the power cable before removing cover and casing.



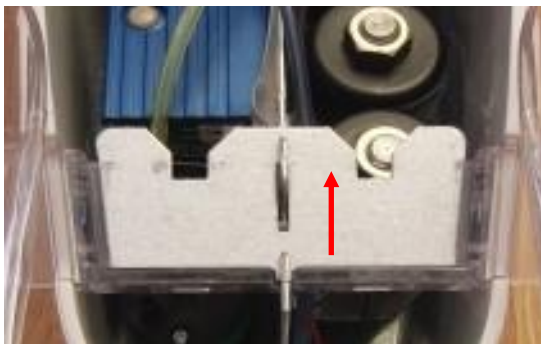
Unscrew the cover locking screw (Torx 20) on the backside



Slide the cover towards the back of the device.



Unlock the tail from the connector.
Make sure the tail is not twisted when reassembling the device.



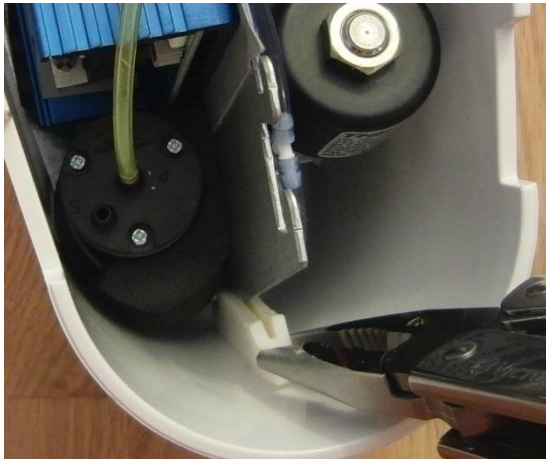
Unlock the handpiece holder by moving the metal plate upwards.



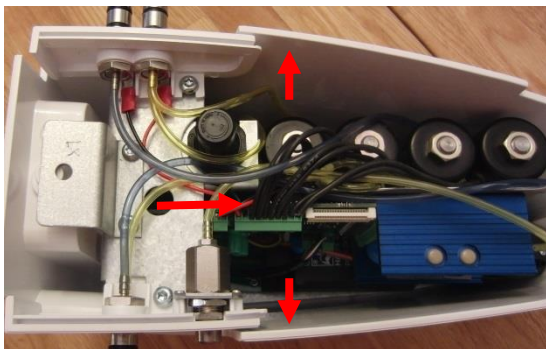
Remove the plate



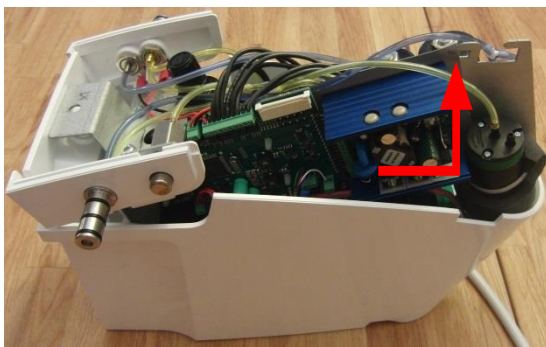
Twist the handpiece holder upwards and remove



Remove the support list by pulling it upwards



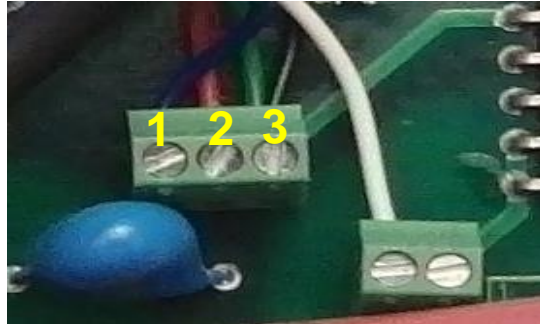
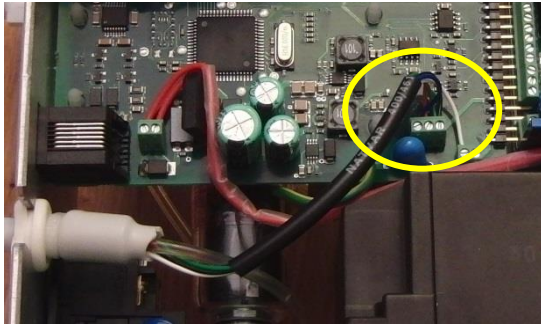
Expand the casing and slide the chassis towards the front



After sliding the chassis all the way to the front, lift it upwards with front part first. Reassemble in reverse order.

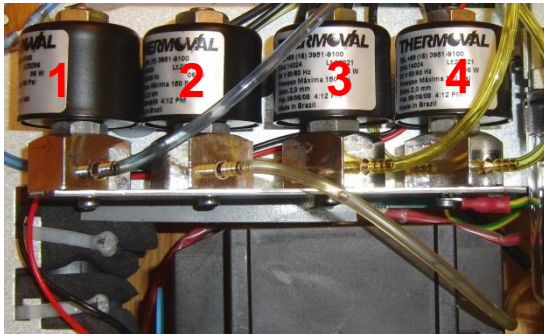
3.2 Replacing the scaler handpiece tubing

First remove cover and casing, [see instruction section 1](#)



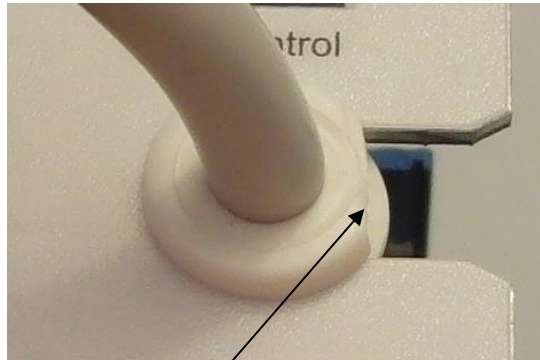
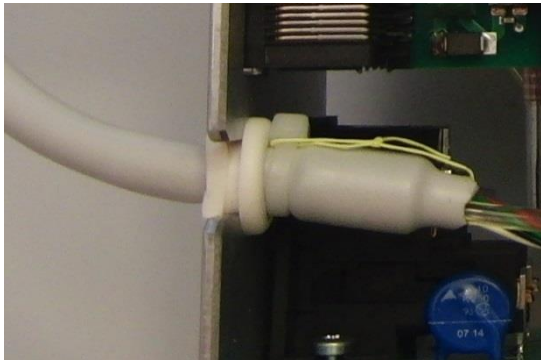
Disconnect the handpiece wires, note the colors.

From left: 1 - Blue, 2 - Red, 3 - Black and Green together, White at separate connector.



Disconnect the water tubing (clear) from the magnetic valve (pos 2).

Note: CombiLED has 4 valves, UltraLED has 1 valve and AirLED 3 valves.

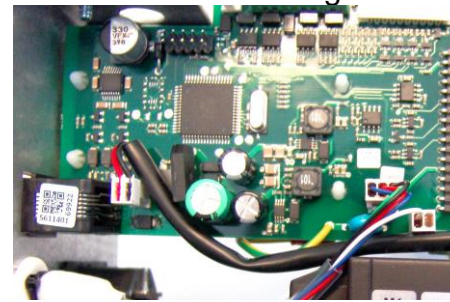


Replace the tubing. Reassemble in reverse order.

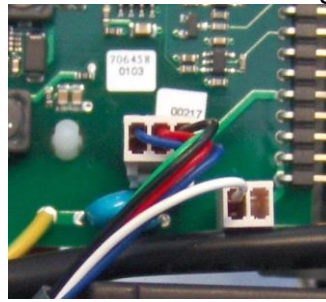
Note the position of the cut part of the plastic cable gland.

The case does not fit properly if the gland is incorrectly positioned.

New connection Design

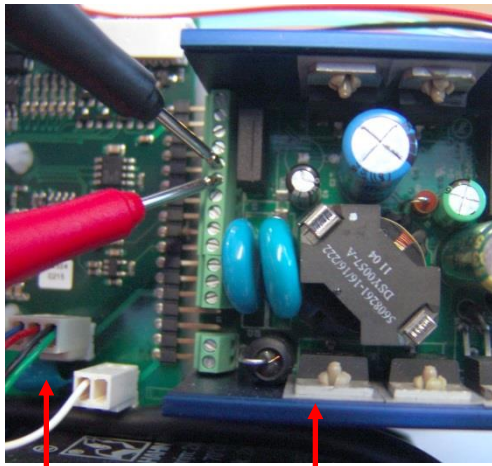


New connection Design

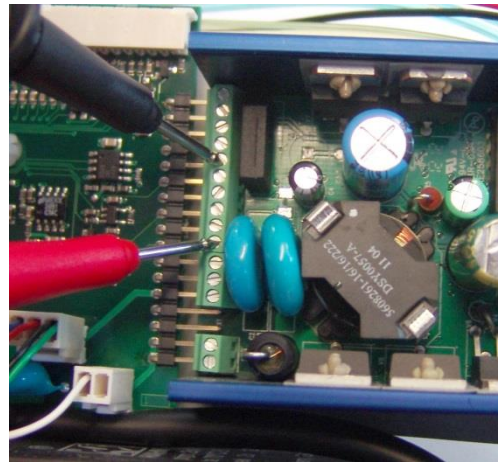


3.3 Measuring the voltages from the control circuit board to the scaler electronics unit

Remove cover and casing, [see instruction section 1](#).



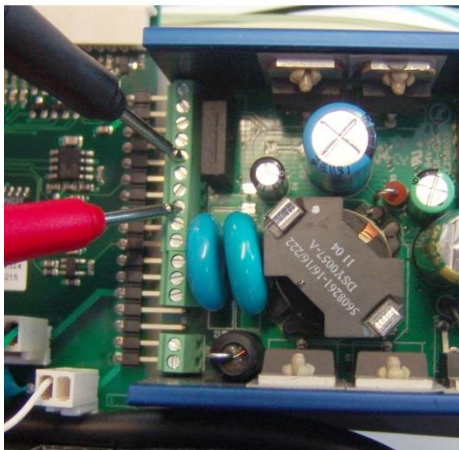
Control Circuit Board



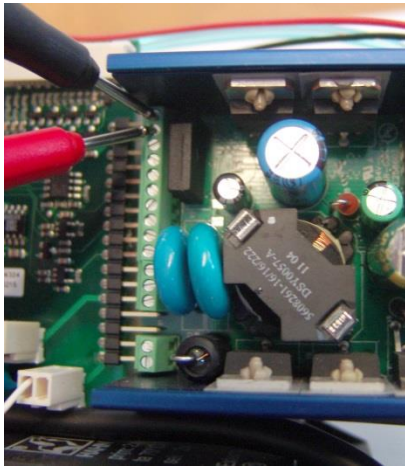
Scaler Electronics Unit

Measure the output voltage from control circuit board to scaler electronics unit.

Pin 5-6 and pin 5-10 (see pictures above), reading should be $10 \pm 0,5$ Vdc when running at working mode 3 and with foot control at maximum power.



Also measure the ON-signal to the scaler, pin 5-8. When the foot control is activated the reading should drop from approx. 15 Vdc down to zero. (Working mode 3 and with foot control at maximum power.)

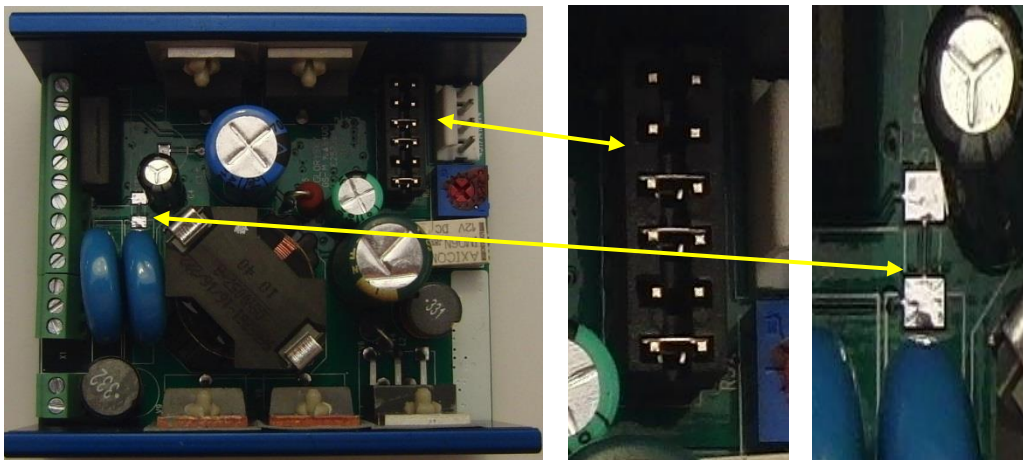


Measure the power supply to the scaler pin 1-2. Reading should be aprox. 30 Vdc.

If all measurements were as above, the control circuit board is functioning properly and giving the correct control signals to the scaler electronics unit. But the scaler electronic unit is probably malfunctioning and must be replaced, see Section 4.

3.4 Replacing the scaler electronics unit

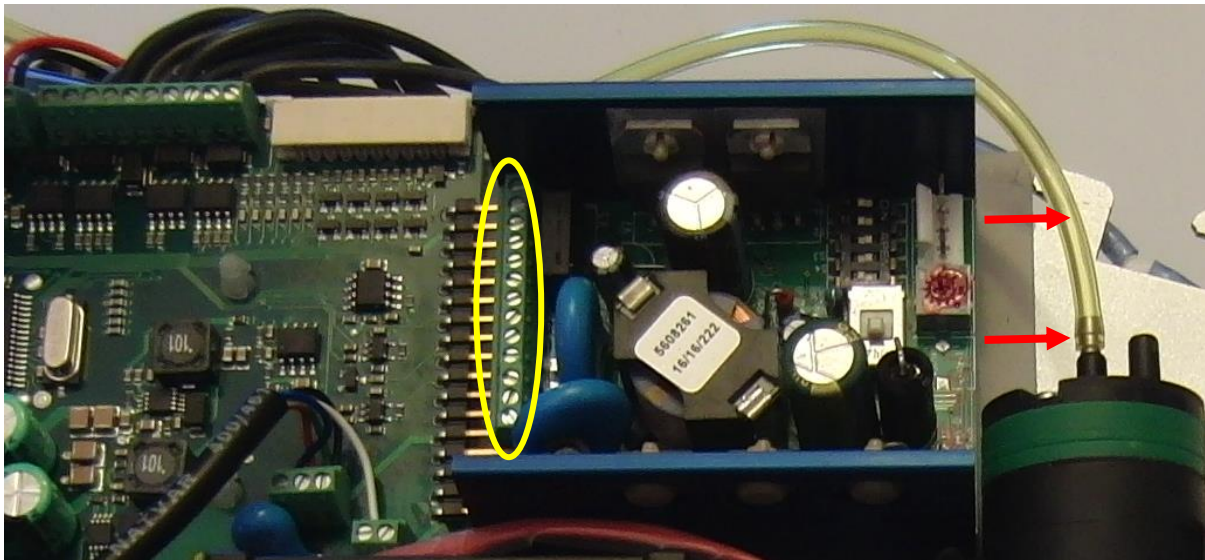
First remove cover and casing, [see instruction in section 1](#).



On the new scaler electronics unit, double check the socket jumper configuration and that the circuit board wire jumper is cut. See pictures above.



If applicable (CombiLED), dismount the left magnetic valve coil to access the mounting screw.



Loosen all screws from electrical connectors and slide out the scaler electronics unit.

Reassemble in reverse order.

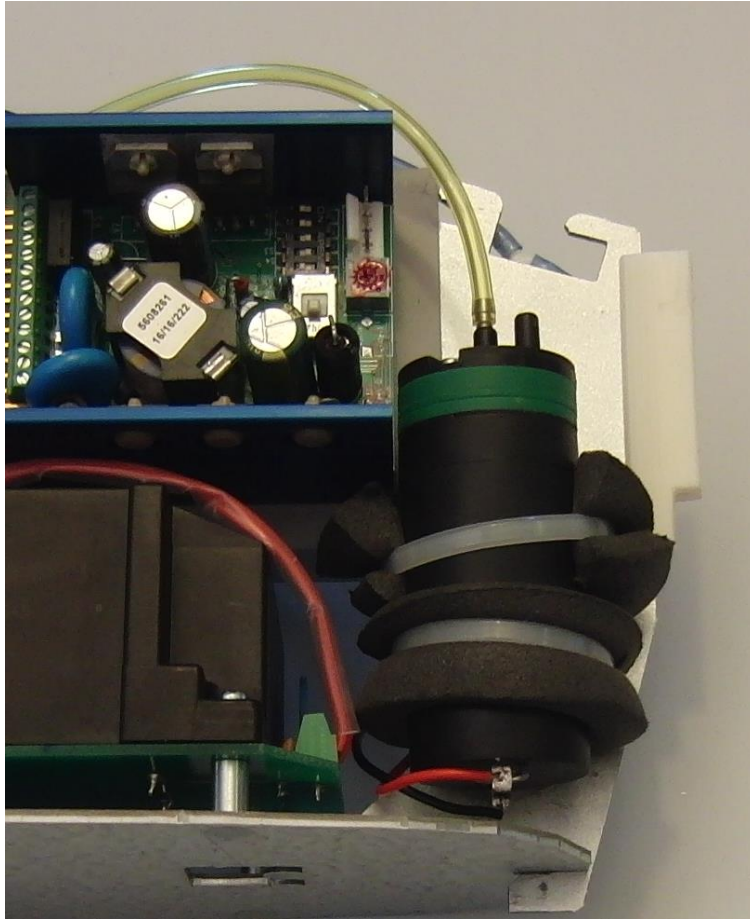
3.5 Replacing the compressor

First remove cover and casing, see [instruction section 1](#).

Disconnect the yellow air tubing.

Cut the cable ties.

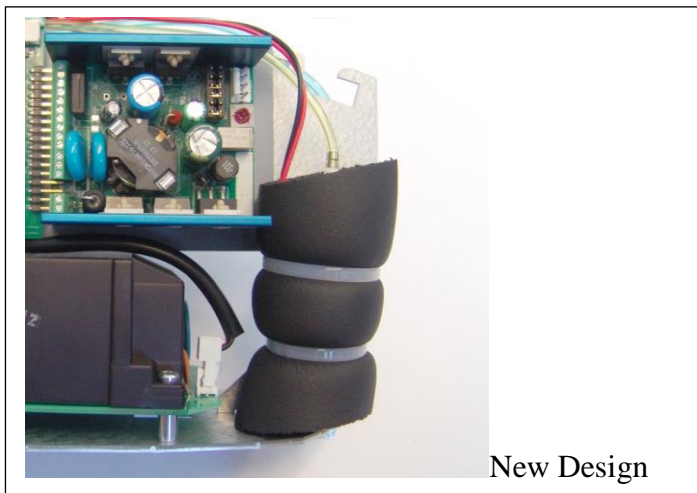
Disconnect the electrical wires at the connector on the control board (note the polarity).



Old Design

Replace the compressor and reassemble in reverse order.

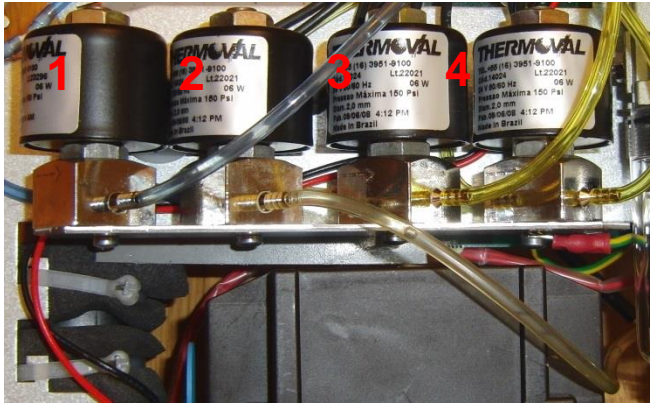
Note that the compressor should not be in contact with the chassis to avoid vibration noise and short circuiting the connectors of the compressor.



New Design

3.6 Cleaning a magnetic valve

First remove cover and casing, [see instruction section 1.](#)



Magnetic valves function:

- 1: Polisher water
- 2: Scaler water
- 3: Polisher cleaning air
- 4: Polisher air

Locate the valve according to picture above.

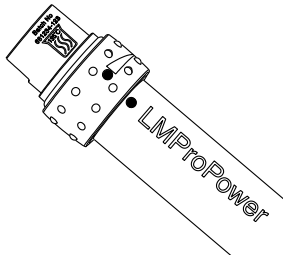


Dismount the coil and the valve plug.
Inspect and clean. Replace if necessary.

Reassemble in reverse order.

3.7 Opening a stuck waterline in the scaler handpiece

First remove the scaler handpiece from the tubing.

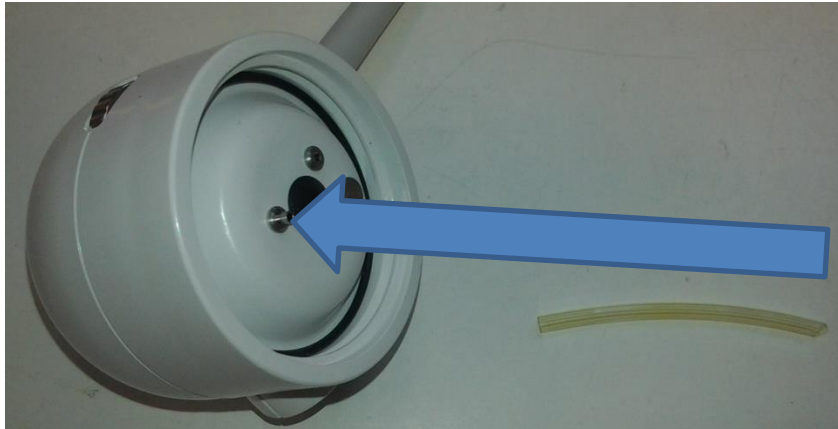


Set the water control ring to fully open (dot-dot).



Gently insert the LM-ProPower Fixer tool into the handpiece from the connector side to open up the stuck water line.

3.8 Cleaning of clogged system in AirLED



Connect a small tube approx. 40mm length to the powder outlet



Fill the powder chamber with citric acid* up to the max level. Put it back on the unit and run the cleaning cycle. The air pressure will flow the citric acid through the clogged tubing. The citric acid will dissolve the powder quite rapidly. Flush with two containers with clean water afterwards, and purge dry with air by running the long cleaning cycle at least 3 times. The tip can be mounted during the cleaning. Note that the nozzle could be cleaned separately in citric acid if they get clogged. Always change nozzle immediately when tendency of clogging.
*Concentration: Mix 100g Citric acid powder with 500 ml water.

4 Spare parts

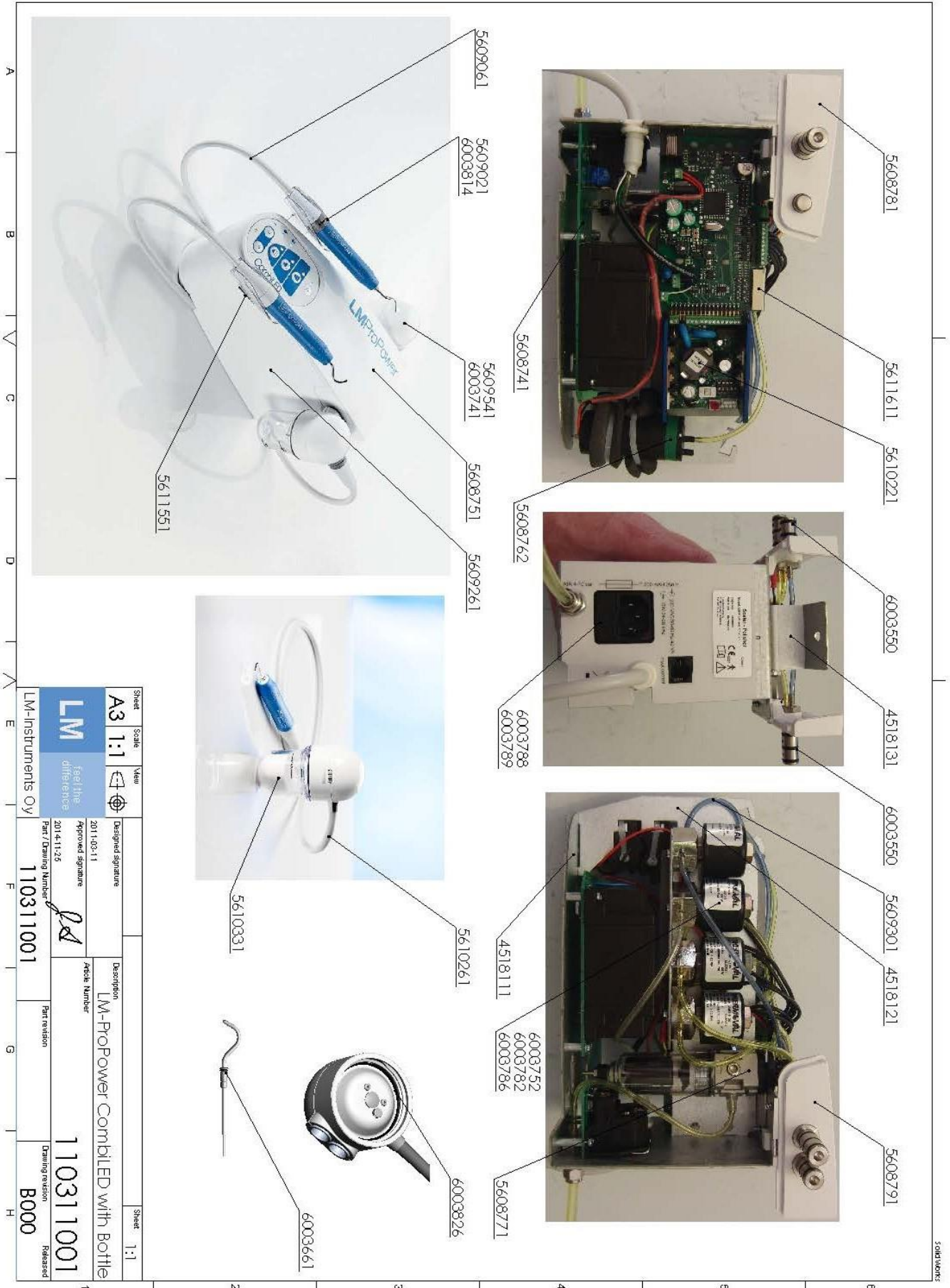
4.1 CombiLED

LM-ProPower CombiLED with bottle

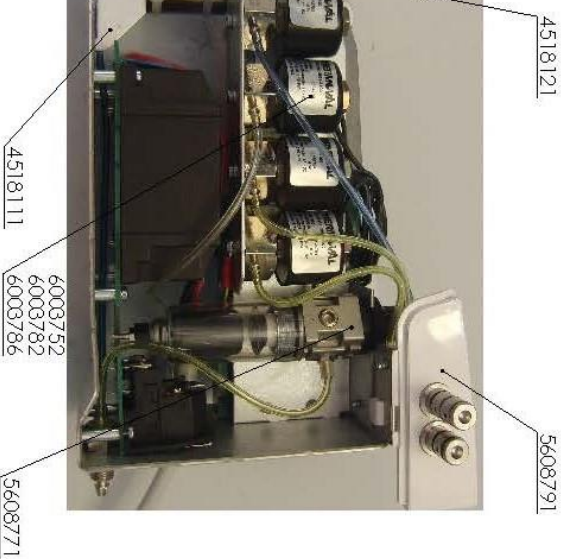
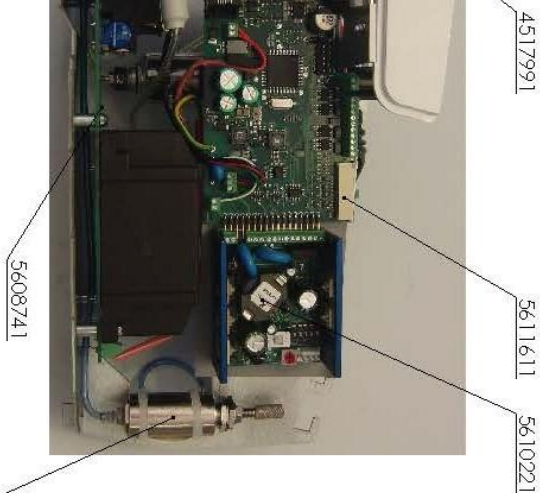
Code	Description	Amount	
4518111	Chassis	1	PCS
4518121	Mounting Plate	1	PCS
4518131	Attachment plate	1	PCS
5608741	Power Board	1	PCS
5608751	Cover CombiLED	1	PCS
5608762	Compressor	1	PCS
5608771	Regulator	1	PCS
5608781	Bottle connector	1	PCS
5608791	Polisher connector	1	PCS
5609021	Handpiece UltraLED+	1	PCS
5609061	Scaler hanpiece tubing	1	PCS
5609261	Casing	1	PCS
5609301	Y-tubing filter	1	PCS
5609541	Medicament bottle	1	PCS
5610221	Scaler electronic unit	1	PCS
5610261	AirLED Tubing	1	PCS
5610331	AirLED Powder Container	1	PCS
5611611	Control Board CombiLED	1	PCS
5611551	HP Holder double	1	PCS
6003550	O-ring 7,1x1,6 Perox	8	PCS
6003661	O-ring 3,0x1,0 Viton	1	PCS
6003741	O-ring 44x2,5 NBR 70	1	PCS
6003752	Valve / magnetic valve	4	PCS
6003782	Coil / magnetic valve	4	PCS
6003786	Nut / magnetic valve	4	PCS
6003788	Fuse 200mA T H (230V unit)	2	PCS
6003789	Fuse 400mA T H (115V unit)	2	PCS
6003814	O-Ring 14,0x1,78	1	PCS
6003826	O-ring kit AirLED tubing	1	PCS

LM-ProPower CombiLED for tap Water

Code	Description	Amount	
4517991	Bottle Holder Blind	1	PCS
4518111	Chassis	1	PCS
4518121	Mounting Plate	1	PCS
4518131	Attachment plate	1	PCS
5608741	Power Board	1	PCS
5608751	Cover CombiLED	1	PCS
5608771	Regulator	1	PCS
5608791	Polisher connector	1	PCS
5609021	Handpiece UltraLED+	1	PCS
5609061	Scaler hanpiece tubing	1	PCS
5609261	Casing	1	PCS
5610221	Scaler electronic unit	1	PCS
5610261	AirLED Tubing	1	PCS
5610331	AirLED Powder Container	1	PCS
5611611	Control Board CombiLED	1	PCS
5611551	HP Holder double	1	PCS
5610391	Miniature Regulator	1	pcs
6003550	O-ring 7,1x1,6 Perox	5	PCS
6003661	O-ring 3,0x1,0 Viton	1	PCS
6003752	Valve / magnetic valve	4	PCS
6003782	Coil / magnetic valve	4	PCS
6003786	Nut / magnetic valve	4	PCS
6003788	Fuse 200mA T H (230V unit)	2	PCS
6003789	Fuse 400mA T H (115V unit)	2	PCS
6003814	O-Ring 14,0x1,78	1	PCS
6003826	O-ring kit AirLED tubing	1	PCS



Sheet	Scale	View	Designed signature	Description	Article Number	Part revision	Released
A3	1:1	3D	2011-02-11	LM-ProPower Compiled with Bottle	110311001	B000	
LM-Instruments Oy		feel the difference	Approved signature 2014-11-25	Part / Drawing Number	110311001	Drawing revision	B000

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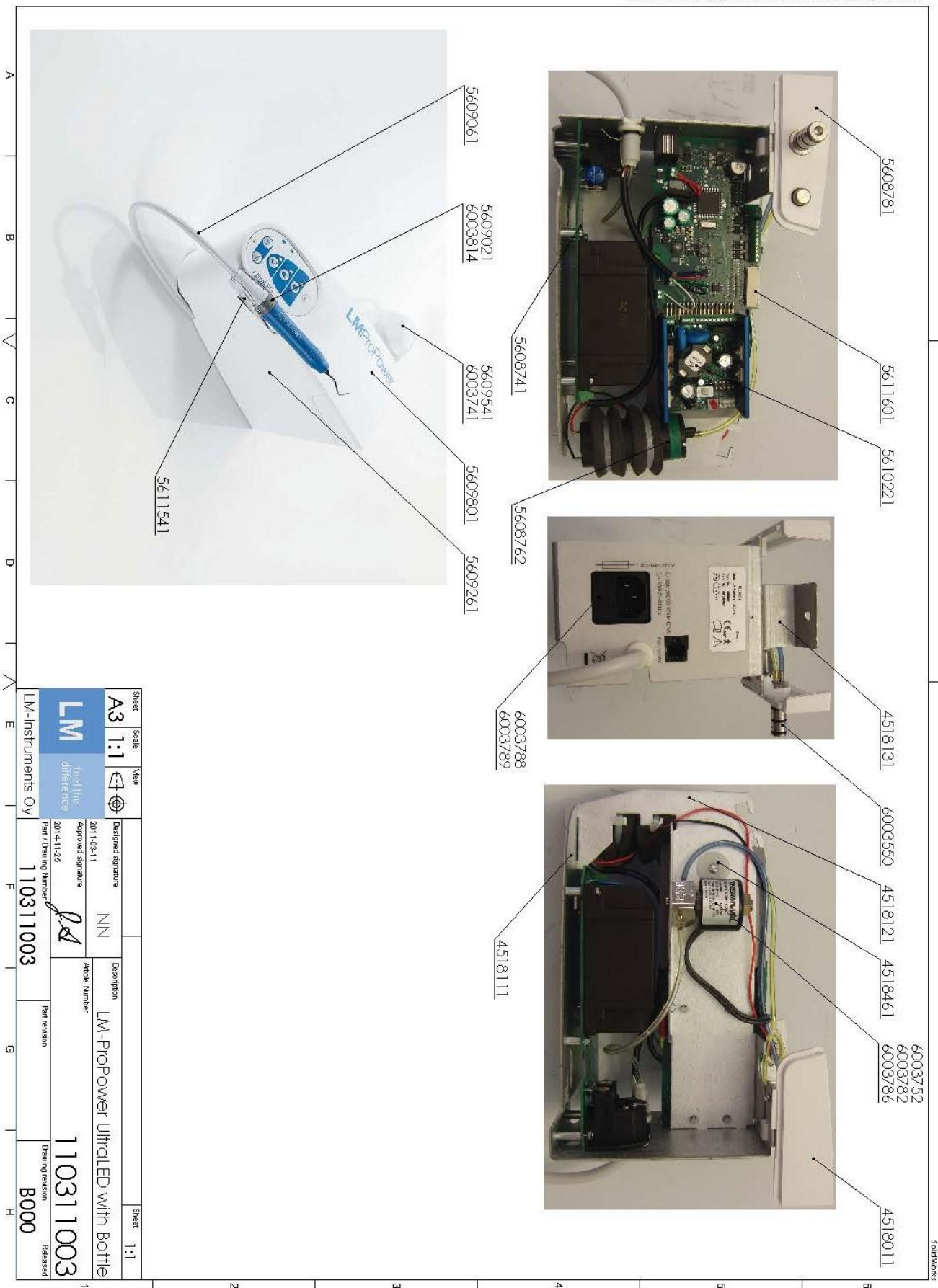
4.2 UltraLED Scaler

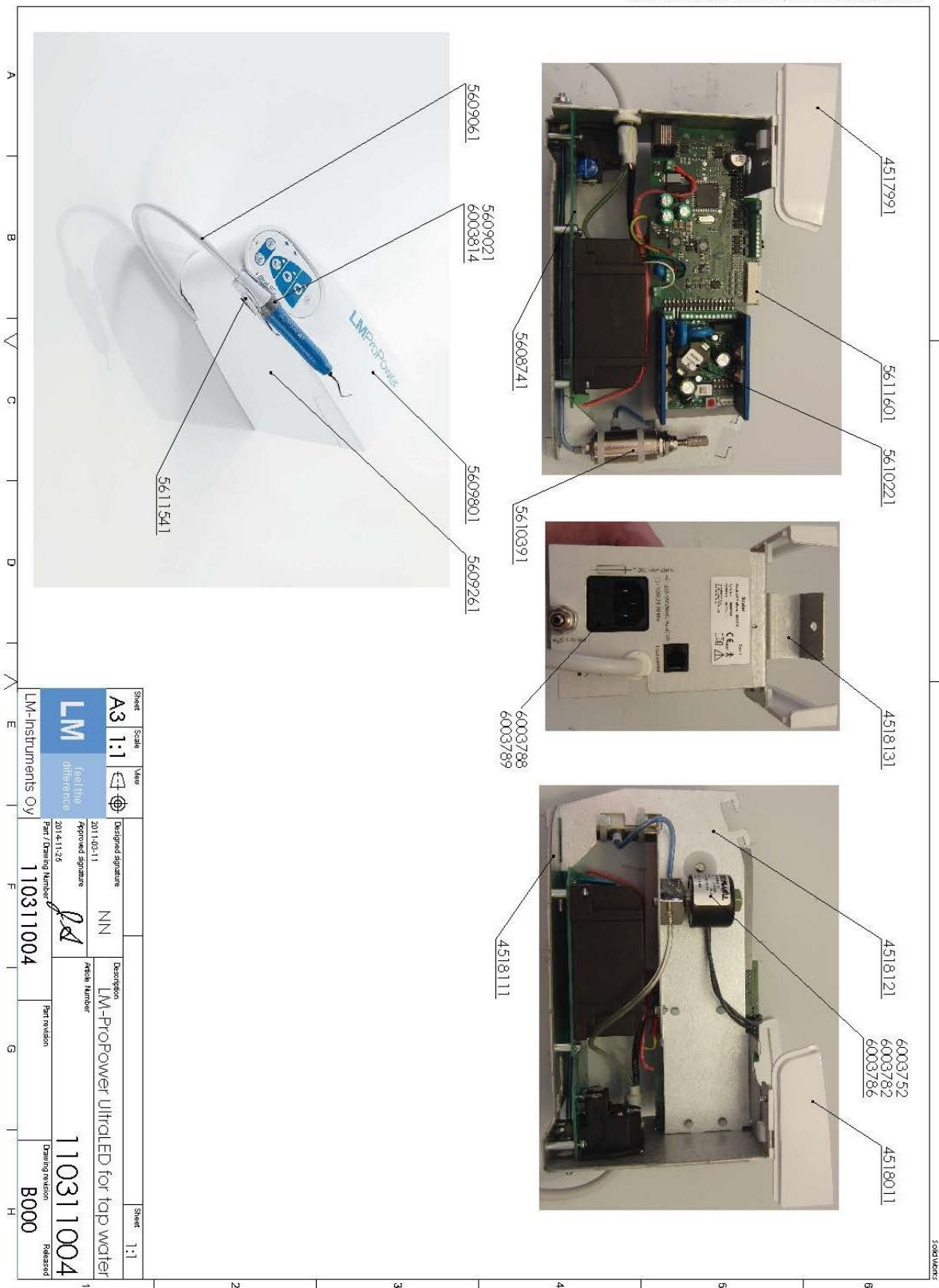
LM-ProPower UltraLED with bottle

Code	Description	Amount	
4518011	Polisher Holder Blind	1	PCS
4518111	Chassis	1	PCS
4518121	Mounting Plate	1	PCS
4518131	Attachment plate	1	PCS
4518461	Insulating bush	1	PCS
5608741	Power Board	1	PCS
5608762	Compressor	1	PCS
5608781	Bottle connector	1	PCS
5609021	Handpiece UltraLED+	1	PCS
5609061	Scaler hanpiece tubing	1	PCS
5609261	Casing	1	PCS
5609541	Medicament bottle	1	PCS
5609801	Cover UltraLED	1	PCS
5610221	Scaler electronic unit	1	PCS
5611601	Control Board UltraLED	1	PCS
5611541	HP Holder singel	1	PCS
6003550	O-ring 7,1x1,6 Perox	3	PCS
6003741	O-ring 44x2,5 NBR 70	1	PCS
6003752	Valve / magnetic valve	1	PCS
6003782	Coil / magnetic valve	1	PCS
6003786	Nut / magnetic valve	1	PCS
6003788	Fuse 200mA T H (230V unit)	2	PCS
6003789	Fuse 400mA T H (115V unit)	2	PCS
6003814	O-Ring 14,0x1,78	1	PCS

LM-ProPower UltraLED for tap water

Code	Description	Amount	
4517991	Bottle Holder Blind	1	PCS
4518011	Polisher Holder Blind	1	PCS
4518111	Chassis	1	PCS
4518121	Mounting Plate	1	PCS
4518131	Attachment plate	1	PCS
5608741	Power Board	1	PCS
5609021	Handpiece UltraLED+	1	PCS
5609061	Scaler hanpiece tubing	1	PCS
5609261	Casing	1	PCS
5609801	Cover UltraLED	1	PCS
5610221	Scaler electronic unit	1	PCS
5611601	Control Board UltraLED	1	PCS
5611541	HP Holder singel	1	PCS
5610391	Miniature Regulator	1	PCS
6003752	Valve / magnetic valve	1	PCS
6003782	Coil / magnetic valve	1	PCS
6003786	Nut / magnetic valve	1	PCS
6003788	Fuse 200mA T H (230V unit)	2	PCS
6003789	Fuse 400mA T H (115V unit)	2	PCS
6003814	O-Ring 14,0x1,78	1	PCS





Sheet	Scale	View	Designed signature	Description	Sheet
A3	1:1		NN	LM-ProPower UltraLED for tap water	1:1
LM	LM		20110311	Part Number	
LM	LM		2014.11.25	Part revision	
LM-Instruments Oy	LM-Instruments Oy		110311004	Released	

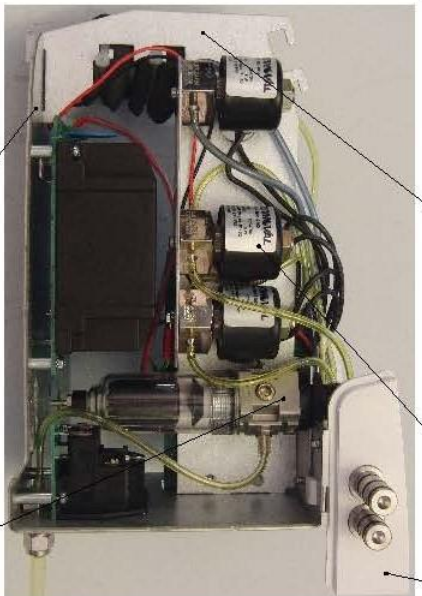
4.3 AirLED Polisher

LM-ProPower AirLED with bottle

Code	Description	Amount	
4518111	Chassis	1	PCS
4518121	Mounting Plate	1	PCS
4518131	Attachment plate	1	PCS
5608741	Power Board	1	PCS
5608762	Compressor	1	PCS
5608771	Regulator	1	PCS
5608781	Bottle connector	1	PCS
5608791	Polisher connector	1	PCS
5609261	Casing	1	PCS
5609541	Medicament bottle	1	PCS
5609791	Cover AirLED	1	PCS
5610261	AirLED Tubing	1	PCS
5610331	AirLED Powder Container	1	PCS
5611591	Control Board AirLED	1	PCS
5611541	HP Holder singel	1	PCS
6003550	O-ring 7,1x1,6 Perox	8	PCS
6003661	O-ring 3,0x1,0 Viton	1	PCS
6003741	O-ring 44x2,5 NBR 70	1	PCS
6003752	Valve / magnetic valve	3	PCS
6003782	Coil / magnetic valve	3	PCS
6003786	Nut / magnetic valve	3	PCS
6003788	Fuse 200mA T H for 230V	2	PCS
6003789	Fuse 400mA T H for 115V	2	PCS
6003826	O-ring kit AirLED tubing	1	PCS

LM-ProPower AirLED for tap water

Code	Description	Amount	
4517991	Bottle Holder Blind	1	PCS
4518111	Chassis	1	PCS
4518121	Mounting Plate	1	PCS
4518131	Attachment plate	1	PCS
5608741	Power Board	1	PCS
5608771	Regulator	1	PCS
5608791	Polisher connector	1	PCS
5609261	Casing	1	PCS
5609791	Cover AirLED	1	PCS
5610261	AirLED Tubing	1	PCS
5610331	AirLED Powder Container	1	PCS
5611591	Control Board AirLED	1	PCS
5611541	HP Holder singel	1	PCS
5610391	Miniature Regulator	1	PCS
6003550	O-ring 7,1x1,6 Perox	5	PCS
6003661	O-ring 3,0x1,0 Viton	1	PCS
6003752	Valve / magnetic valve	3	PCS
6003782	Coil / magnetic valve	3	PCS
6003786	Nut / magnetic valve	3	PCS
6003788	Fuse 200mA T H (230V unit)	2	PCS
6003789	Fuse 400mA T H (115V unit)	2	PCS
6003826	O-ring kit AirLED tubing	1	PCS



08791

5608771

3826



6003661

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4.4 Recommended spare part stock

Code	Description	Amount	UltraLED	AirLED	CombiLED
15608821	Foot control	2 Pcs	X	X	X
15610261	AirLED polisher tubing	2 Pcs		X	X
15609541	Medicament bottle	2 Pcs	X	X	X
15610331	AirLED powder container	2 Pcs		X	X
16003762	Foot control cable	2 Pcs	X	X	X
15610221	Scaler electronic unit	2 Pcs	X		X
15608751	Cover CombiLED	2 Pcs			X
15609801	Cover UltraLED	2 Pcs	X		
15609791	Cover AirLED	2 Pcs		X	
15608761	Compressor	1 Pcs	B	B	B
15609021	Scaler handpiece ProPower	2 Pcs	X		X
15609061	Scaler handpiece tubing	2 Pcs	X		X
15610391	Miniature Regulator	2 Pcs	T	T	T
16003550	O-ring for connectors	16 Pcs	X	X	X
16003782	Coil / magnetic valve	1 Pcs	X	X	X
16003788	Fuse T200mA (230V-unit)*	10 Pcs	X	X	X
16003789	Fuse T400mA (115V-unit)*	10 Pcs	X	X	X
16003826	O-ring for powder container	5 Pcs		X	X
16003661	O-ring for nozzle	5 Pcs		X	X
16003741	O-ring for 500ml bottle	5 Pcs	B	B	B
16003814	O-ring for water control ring	5 Pcs	X		X
100139	Tip for testing	2 Pcs	X		X
15610301	Nozzle for testing	2 Pcs		X	X

* Alternatives depending on region

B For versions with medicament bottle

T For versions with Tap Water connection.

5 Technical data

5.1 Technical data CombiLED

Manufacturer	LM-Instruments Oy PL 88 (Norrbyn rantatie 8) FIN-21601 Parainen, FINLAND
Model	LM-ProPower CombiLED
Classification	EN60601-1: Class 1, Type BF 93/42 EU: 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 cord	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 MPa - 1,0 Mpa, 58 PSI - 145 PSI) Use only dry and filtered compressed air.
Air consumption	Max. 20 l/min
Powder container capacity	40 g

5.2 Technical data UltraLED Scaler

Manufacturer	LM-Instruments Oy PL 88 (Norrbyn rantatie 8) FIN-21601 Parainen, FINLAND
Model	LM-ProPower UltraLED
Classification	EN60601-1: Class 1, Type BF 93/42 EU: Medical products, class IIa
L x W x H	270 x 140 x 165 mm (without bottle)
Weight	2900 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 cord	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

5.3 Technical data AirLED Polisher

Manufacturer	LM-Instruments Oy PL 88 (Norrbyn rantatie 8) FIN-21601 Parainen, FINLAND
Model	LM-ProPower AirLED
Classification	EN60601-1: Class 1, Type BF 93/42 EU: 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 cord	Separate with protective earth plug
Power consumption	Max. 40 VA
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 MPa - 1,0 Mpa, 58 PSI - 145 PSI) Use only dry and filtered compressed air.
Air consumption	Max. 20 l/min
Powder container capacity	40 g

6. Warranty Terms

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

Manufacturer hereby 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 hand instruments, tips of ultrasonic scalers, tips of endodontic files, front surface mirrors and grinding stones of sharpening devices.

This warranty shall not apply to Products or parts thereof;

- a) which have been subject to abuse, misuse, negligence or accident or are not connected to proper power supply;
- b) to which any modification, alteration or attachment has been made without written consent of the Manufacturer; or
- c) which are installed or operated violating instructions for installation, use and maintenance;
- d) which are normally consumed in operation for example working tips of LM-MultiHolder, strips for LM-Cello, LM-ProColor disinfection solution.

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.

7 Return Shipment Policy

Return of Equipment (power scalers, air polishers and sharpeners as well as their parts)

1. A Return Material Authorization number (RMA -number) must be obtained by fax, phone or e-mail from LM-Instruments prior to any product return shipments. The RMA-number consists of the letters "RMA" followed by a four digit number, e.g. "RMA1234"
2. An RMA-number can be requested by submitting a filled "Customer Service Form" stating all the reasons for the return shipment. A "Customer Service Form"-template can be ordered from service@lm-dental.com. A properly filled "Customer Service Form" form must be faxed or e-mailed to LM-Instruments prior to any product return shipments.

The fax number to LM-Instruments is: +358 2 4546 444 and the e-mail address is service@lm-dental.com.

3. For small equipment (i.e. power scalers, air polishers, sharpening devices as well as their parts) it is important to indicate the serial number of the device as well as the original LM-Instruments invoice number. In addition, a copy of the Authorized Dealer's invoice to the end customer (or other proof of purchase) must be included.
4. Each of the returned items must be tagged with the RMA-number and packed properly. The RMA-number(s) must also be clearly marked on each package.
5. Used products are not accepted for return unless they are under warranty or repair consideration.
6. Defective products or parts under warranty will be repaired free-of-charge.
7. The warranty does not cover postal charges or delivery fees of any kind for return or replacement shipments of individual products or parts. LM-Instruments covers the costs for one batch return per calendar quarter from the Authorized Dealer to LM-Instruments according to LM-Instruments shipping policies.
8. A credit invoice can be requested if the Authorized Dealer has decided to provide the end customer with a spare part and placed a corresponding spare part order to LM-Instruments after said decision. If a credit invoice is requested, the "Customer Service Form" for the parts to be returned for credit consideration must be faxed or e-mailed to LM-instruments within 14 days from the date of the invoice.
9. No credit invoices can be issued unless the original invoice number is presented in the return documents.
10. Returned goods showing customer abuse, design modification or damages caused by the Authorized Dealer during the installation or stripped modification kits will not be accepted as a return for credit or repair.
11. LM-Instruments will not accept any product returns unless notified in advance which goods are being returned, why the goods are being returned and whether the goods are under warranty. All the above mentioned documents must be properly filled and the RMA-number clearly indicated with the return delivery. Unauthorized shipments will be returned to the sender at the sender's expenses.

Customer Service Form

Please fill in and return to:

LM-Instruments Oy
PO Box 88 (Norrbyn rantatie 8)
FI-21601 Parainen, Finland
Fax +358 2 4546 444
service@lm-dental.com



Customer identification

Dealer name	Contact person	Date
Phone	Address	
Email	Fax	

Practice name	Contact person	Date of Purchase <input type="checkbox"/> Copy of invoice attached
Phone	Address	
Email	Fax	

List of products for return

Quantity	Product / Part name	Item code and serial no (for equipment)

- ☐ For repair or replacement under warranty
- ☐ For credit under warranty (replacement has already been provided to end customer).
Invoice number: _____ (Customer Service Form submission within 14 days of invoice date)
- ☐ For repair outside warranty

Reason for product return/complaint/request (obligatory)

Description	Please be specific! The Error Code and Cause Code must be provided for equipment (power scalers, air polishers and sharpeners as well as their parts).
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☐ Contact with charge estimate before proceeding any repairs / replacements outside warranty.

For company use only

Date of receipt / ref.		Forwarded to	RMA-Number	Date
Final report to / by				Date