

IM3 PRO X

**INSTRUCTIONS
FOR USE**

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1 EXTRAORDINARY DENTISTRY

Dear Pro X user,

Please read this manual carefully and explore all the equipment’s extraordinary features:

- The unit shall be installed as described in section 2
- In section 3 we describe how you use the equipment for performing extraordinary dentistry
- You may configure the unit to your own personal needs – see details in section 4
- Read details about infection control and cleaning in section 5
- Maintain the unit as described in section 6
- PRO X must be inspected and serviced every 12 months by an iM3 authorized service provider to ensure safe operation and high uptime – see details in section 8
- In section 9 you find a checklist containing all infection control and maintenance procedures that must be observed
- Section 10 contains a complete list of accessories, detachable parts and consumables that you should be aware of
- In section 11 we list important legal information
- Please see section 12 for a list of symbols used and section 13 for technical product details
- Finally, in section 14 you see PRO X Quick Guide

Find more information at www.im3vet.eu.

	<p><i>PRO X must be inspected and serviced every 12 months by an iM3 authorized service provider to ensure safe operation and high uptime.</i></p>
	<p><i>iM3 offer 36 months warranty on PRO X provided that the unit is serviced as prescribed.</i></p>

2 INSTALLATION

PRO X is intended to be permanently installed in a dental operatory at least 220 cm wide and 360 cm long. See the required operation conditions in Table 1.

For transport and storage conditions see Table 1 and in Table 2 the installation requirements are given.


Table 1 – Operating and transport/storage conditions


Condition	Operation	Transport and storage
Temperature:	+15°C – +35°C	-40°C – +60°C
Relative humidity:	20% – 85%	10% – 95%
Air pressure:	800 hPa – 1060 hPa	700 hPa – 1060 hPa
Installation altitude	Max. 2,000 meters above sea level	-


Table 2 – Installation requirements


Electrical	Requirement	Length above floor surface
Mains supply	230 VAC \pm 10%, 50 Hz with earth. 3 x 1,5 mm ² Main fuse: the electrical installation must be secured with a 10 A fuse. Installation cable:	75 cm (of which 30 cm is stripped)
Equipotential earth (if required by national law)	1 x 4.0 mm ²	
Assistant call control cable	Min. 2 x 0.1 mm ² and max. 2 x 1.25 mm ² Max. 2 A / 60 VDC or 2 A / 25 VAC	75 cm
X-ray unit attached to the XO unit	Cable for X-Ray must have its own installations pipe. Cable shall be connected to an installation box in the floor.	
Suction motor control cable	Min. 2 x 0.1 mm ² and max. 2 x 1.25 mm ² Max. 2 A / 60 VDC or 2 A / 25 VAC	75 cm
Positioning of cables in the floor	See installation drawing YB-235.	
Data	Requirement	Length above floor surface
Isolation transformer	When connecting the external PC to the unit, the external PC must be equipped with a medical grade power supply or be powered via a medical grade isolating transformer! XO part number: XO-620	
RS-232 cable	Connect unit and external PC through a RS-232 cable, male/female. The cable's male connector to the unit end.	70 cm
HD Display	Connect HD Display and an external PC through a HDMI cable. Depending on the environment it might be necessary to use an HDMI amplifier with the HDMI cable.	10 cm
Intraoral video camera	Connect the intraoral video camera to an external PC through a USB A cable male/female. The cable's female connector is in the unit end. It is recommended to use a USB Extension 10 m cable with Repeater.	USB extension cable: 20 cm
Suction, air and water	Requirement	Height above floor surface
Suction	Suction machine power >600 l/min. Vacuum pressure at the connection point under static conditions: Min = 35 mbar, Max = 150 mbar. Plastic pipe \varnothing 32 mm with socket – see YB-235.	6 cm max.
Incoming (compressed) air	Pipe 3/8" female internal thread – preferably fitted with a ball valve – see YB-235. Incoming air: <ul style="list-style-type: none"> Air pressure 5.5 – 8 bar Air flow rate > 55 l/min Humidity dew point < -20°C at atmospheric pressure Oil contamination max. 0.5 mg/m³ Particulate contamination < 100 particles/m³ (particle size 1 – 5 μm) If the incoming air pressure exceeds 7,5 bar a reduction valve must be fitted. Air quality must be in accordance to local quality of air regulations.	7 cm max.
Incoming water	Pipe 3/8" female internal thread – preferably fitted with a ball valve – see YB-235 Incoming water: <ul style="list-style-type: none"> Inlet pressure 2.5 – 6 bar 	7 cm max.

	<ul style="list-style-type: none"> • Water flow rate > 5 l/min • Water hardness < 2.14 mmol/l (< 12 °dH) <p>In case of poorer water quality, water softener should be replaced more often than the normal recommendation, for example twice a year</p> <ul style="list-style-type: none"> • pH: 6.5 – 8.5 • Maximum particle size < 100µm <p>If the incoming water pressure exceeds 6 bar a reduction valve must be mounted before the unit. Water quality must be in accordance to local drinking water regulations.</p>	
Backflow prevention	If the unit is <u>not</u> supplied with “unit backflow water prevention” it must have an external backflow prevention device at the connection point with the water supply, or an air gab of at least 20 mm.	
Drain	Plastic pipe Ø 32 mm with socket – see YB-235. Gradient of waste water lines ≥ 1% Drainage capacity ≥ 10 l/min	6 cm max.

	<i>PRO X unit must be installed by an iM3 authorized service provider. Authorized service providers are listed under “Distributors” at www.iM3vet.eu</i>
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	<i>WARNING: To avoid the risk of electric shock, this equipment must be connected to a mains supply with protective earth.</i>
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	<i>To avoid the risk of electric shock always switch off the power to the unit in the electrical panel before opening or touching the internal components.</i>
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	<i>Installation instructions for PRO X can be downloaded from www.iM3Vet.eu</i>
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3 OPERATION

3.1 GENERAL

PRO X is a combined dental unit which is to be used by skilled dental operators for prevention and treatment of diseases in the oral cavity of animals.

The unit has a compact floor-mounted stand fitted with a single-column pivoting articulated balanced arms for the instrument bridge, operating light and display.



Please note that PRO X must be operated in accordance with this manual and by dental professionals only!



To avoid injury, do not use PRO X or its accessories if signs of operational, electrical or mechanical defects are found.



***Do not use PRO X in oxygen-rich environments!
This equipment does not have a gas sealed electronic enclosure and could ignite any flammable or explosive gases in its environment.***



Use of other equipment adjacent to or stacked on this equipment should be avoided because it could result in improper operation.



Exercise caution when using the unit in combination with other equipment that can move.



Do not simultaneously touch the patient and any external electrical equipment such as PCs, monitors, etc.



Do not simultaneously touch the patient and the supply connector for the monitor at the back of the monitor.



Do not simultaneously touch the patient and the connector for peristaltic pump on the rear panel of the unit.

3.2 SWITCH THE UNIT ON

Switch the unit on (and off) using the main switch – see Figure 1.

The unit is ready for use after a few seconds when the text “FLEX” is shown on the instrument bridge display and you hear the welcome tune.

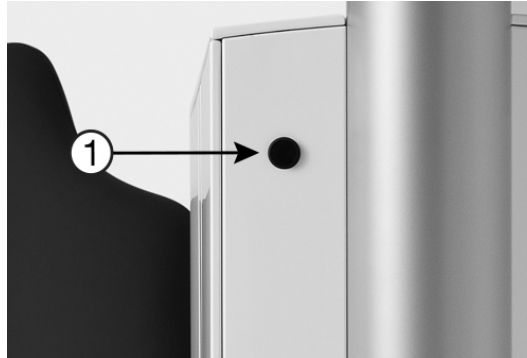


Figure 1 – Main switch (1)

The main switch is used for isolating the equipment electrically from the supply mains.



In case of emergency, use this switch to turn off the unit.

3.3 FOOT CONTROL

3.3.1 FUNCTION

PRO X is controlled hands free by using the foot control – see Figure 2.

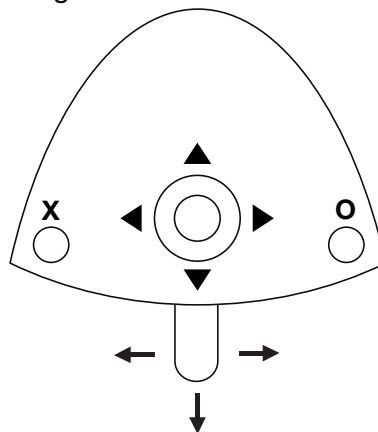


Figure 2 – Foot control

The foot control has:

- a pedal that can be moved to the right (→), to the left (←) and pressed down (↓)
- an **X** button
- an **O** button

When all unit instruments are at rest, the foot control manages functions related to the unit.
When a unit instrument is lifted forward, the foot control manages the active instrument.

	<i>In this manual, the above-presented terminology (e.g. ▲ = move joystick to north) will be used to explain the functions of PRO X.</i>
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	<i>See section 14 for an overview of the foot control and chair base joystick functions.</i>
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3.4 XO SMART LINK

SMART LINK is an optional software running on an external PC connected to Pro X. With SMART LINK you can configure the function of the foot control, work with instrument programs and use torque control on the micro motors. Please see “SMART LINK instructions for use”.

3.5 INSTRUMENT CONTROL

3.5.1 FOOT CONTROL OF INSTRUMENTS

You activate the first instrument lifted forward with the foot control pedal. To avoid unintentional activation of a second instrument lifted forward you will only be able to activate the second instrument when the first instrument is laid back and the foot control has been released.

The syringe may be used even though another instrument is lifted forward.

The intraoral video camera may be used simultaneously with another activated instrument – but control of camera functions via the foot control is only possible when the video camera is the only instrument lifted forward.

3.5.2 INSTRUMENTS ON THE INSTRUMENT BRIDGE

Up to 6 instruments may be fitted to the instrument bridge.

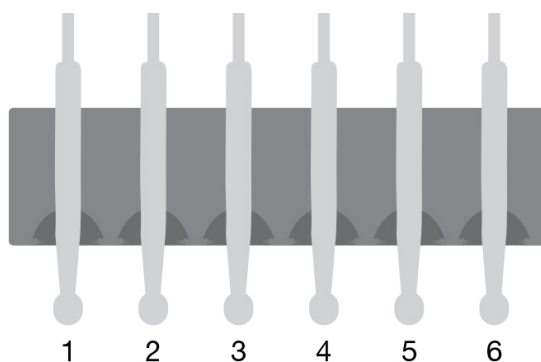


Figure 3 – Numbering of unit instruments

The instruments are numbered 1 – 6 starting from the left.

Your iM3 authorized service provider may add instruments or change the order of the instruments – the multifunction syringe, however, must always be placed to the left (right-handed operator) or to the right (left-handed operator).

3.5.3 INSTRUMENT BRIDGE DISPLAY

Data concerning the selected instrument is shown on the instrument bridge display – see Figure 4 – and the instrument may be controlled using the foot control.

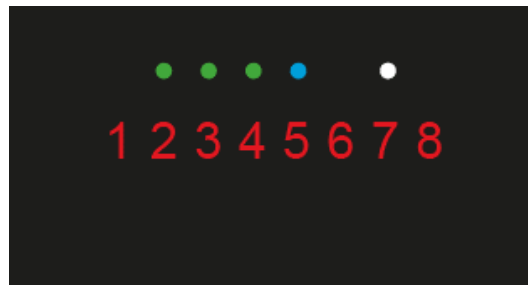


Figure 4 – Instrument bridge display

The display consists of:

- One red 8-digit text field mostly used for indication of the primary instrument parameter (for example, speed of a micro motor)
- Three green LEDs for indication of selected amount (three levels) of spray water or for spray water off (all LEDs off)
- One blue LED for indication of spray air on/off
- One white LED for indication of automatic chip blow enabled/disabled

3.6 SYRINGE – LUZZANI

The syringe is used as described in the manual supplied by Luzzani – or visit luzzani.com.

Lift the syringe forward and control it with the two buttons.

The syringe can be used at the same time as the other instruments.

3.7 MICROMOTOR – BIEN-AIR MC3 / BIEN-AIR MX2

The micromotor is used as described in the manual supplied by Bien-Air – or visit bienair.com.

The micromotor is intended to be used with contra-angles and handpieces with couplings as specified in ISO 3964, type 2 or type 3

Lift the micromotor forward and control it with the foot control.

Activate the motor clockwise in the range 100 RPM – select maximum speed¹ (see below) with → or counterclockwise with ←.

¹ Please note that this is the speed of the micro motor itself. When you fit a contra-angle the speed of the bur may be changed!

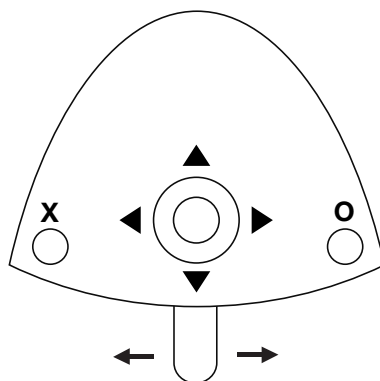



Figure 5 – Foot control of micromotor

See the maximum speed on the display when the foot control is not activated.

See the actual speed on the display when the motor is running.

Change spray selection (water & air, air only or no spray) with **X**.


Enable/disable automatic chip blow with **O**.

	<p><i>When the automatic chip blow is enabled a short burst of high-pressure air dries the preparation each time an instrument with spray water stops.</i></p> <p><i>Using the automatic chip blow function significantly reduces the number of shifts between rotation instrument and syringe.</i></p>
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Choose between three levels of spray water:

Increase amount of water with ►.

Decrease amount of water with ◀.

	<p><i>To avoid necrosis, it is generally recommended to work with a “wet” spray that gives at least 50 ml spray water per minute measured with the contra-angle fitted!</i></p> <p><i>In some cases – e.g. when preparing a cavity that is not close to the pulp – and you want to minimize the spray aerosol – it may be acceptable to use less water in the spray.</i></p>
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Choose between three maximum speed levels:

Increase maximum speed with ▲.

Decrease maximum speed with ▼.

3.8 XO OSSEO MOTOR

XO OSSEO motor is intended for bone surgery in general and for dental implantology.

XO OSSEO motor is intended to be used with surgical contra-angles and handpieces with couplings as specified in ISO 3964, type 1.

3.8.1 SET-UP

Appropriate sterile handling procedures must be observed to ensure and maintain sterile conditions:

1. Remove the sterilized motor and hose from the autoclave bag – or wrap motor and hose immediately before use.
2. Connect the motor hose to the matching connector at the rear of the instrument bridge – see section 5.7. The instrument suspension shall be configured as MOTOR.
3. Prepare the peristaltic pump as described in section 3.13.
4. Remove the sterilized contra-angle from the autoclave bag just prior to surgery.
5. Slide the contra-angle firmly in place on the motor shaft.
6. Attach the sterile irrigation tube to the contra-angle using one of the two supplied outlets – See Figure 6. The choice of outlet depends on the contra-angle.



Figure 6 - Attaching the irrigation tube

3.8.2 OPERATION

Lift the motor forward and control it with the foot control.

Activate the motor clockwise in the range 100 RPM – select maximum speed² (see below) with → or counterclockwise with ←.

See the maximum speed on the display when the foot control is not activated. See the actual speed on the display when the motor is running.

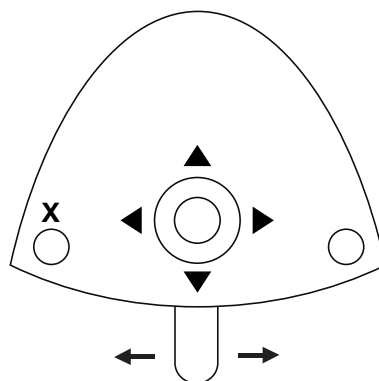


Figure 7 – Foot control of XO OSSEO motor

Switch irrigation on/off with **X**.

² Please note that this is the speed of the motor itself. When you fit a contra-angle the speed of the bur may be changed!

Choose between three levels of irrigation:
 Increase amount of irrigation with ►.
 Decrease amount of irrigation with ◀.



To avoid necrosis, it is generally recommended to work with an amount of irrigation of at least 50 ml per minute measured with the contra-angle fitted!

Choose between three maximum speed levels:
 Increase maximum speed with ▲.
 Decrease maximum speed with ▼.



***The motor operates at maximum torque.
 Please see section 3.8.3 if you need to control the maximum torque!***

3.8.3 IMPLANT SURGERY - OPERATION WITH SMART LINK

In combination with XO Smart Link you can work with instrument programs and implant treatments.

Please see “XO Smart Link – Instructions for use”.

3.9 AIR INSTRUMENT

An air turbine or an air scaler may be attached to the hose – in the following called “the air instrument”.

The air instrument is used as described by the supplier.

Air instruments with a type 3 coupling as specified in ISO 9168 shall be used.

Lift the air instrument forward and control it with the foot control.

Activate the air instrument (one step) with → or ←.

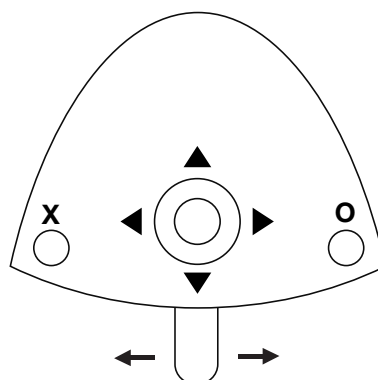


Figure 8 – Foot control of turbine

See drive air (in % of maximum) on the display.

Change spray selection (water & air, air only or no spray) with **X**.

Enable/disable automatic chip blow with **O**.



**When the automatic chip blow is enabled a short burst of high-pressure air dries the preparation each time an instrument with spray water stops.
Using the automatic chip blow function significantly reduces the number of shifts between rotation instrument and syringe.**

Choose between three levels of spray water:

Increase amount of water with **▶**.

Decrease amount of water with **◀**.



**To avoid necrosis, it is generally recommended to work with a “wet” spray that gives at least 50 ml spray water per minute measured with the turbine hand-piece fitted!
In some cases – e.g. when preparing a cavity that is not close to the pulp – and you want to minimize the spray aerosol – it may be acceptable to use less water in the spray.**

Choose between three drive air levels:

Increase drive air with **▲**.

Decrease drive air with **▼**.

3.10 ULTRASONIC SCALERS

The ultrasonic scaler is used as described by the supplier.

For 4212 scalers see below in section 3.11.

Lift the scaler forward and control it with the foot control.

Switch on the power (one step) with **→** or **←**.

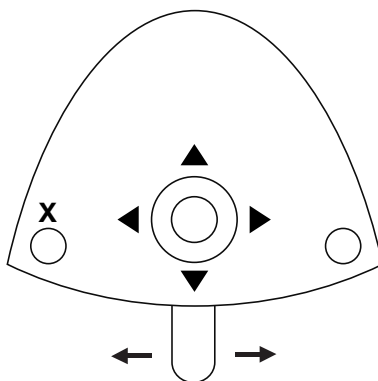


Figure 9 – Foot control of scaler

See the power (in % of maximum) on the display.

Enable/disable irrigation water with **X**.

Choose between three levels of irrigation water:

Increase amount of water with **▶**.

Decrease amount of water with **◀**.

Choose between three power levels:

- Increase maximum power with **▲**.
- Decrease maximum power with **▼**.

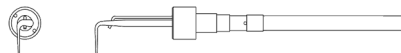
For details about iM3 4212 scaler see below and for details about other scalers see user manuals supplied by the manufacturer.

3.11 iM3 4212 ULTRASONIC SCALER

4212 is intended to be used for treatment in the oral cavity of animals. iM3 4212 is a multi-purpose dental scaler for periodontology, endodontics and prophylaxis.

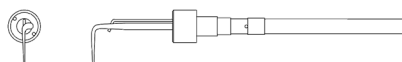
iM3 4212 is supplied with one handpiece and six instruments (consisting of a titanium tip fitted with an exchangeable ferrite rod) fitted into two autoclavable instrument holders in Teflon:

Universal instrument (209080) – 2 pieces



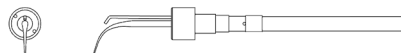
For removal of supra- and subgingival stain and calculus in all areas and for general scaling on patients with moderate plaque or calculus.

Perio instrument (209030)




Removes supra- and subgingival stain and calculus in all areas. Particularly useful for removal of subgingival calculus in pockets as deep as 13 mm. Use the tip as if using a periodontal probe.

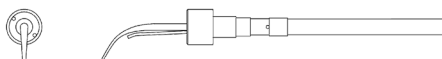
Thin Line Straight instrument (209034) – 2 pieces




Useful for fine planning after gross scaling with other iM3 4212 instruments. Provides good furcation access. Is also useful for root planning, but only after gross debridement with a Perio instrument.

	<p>For Thin Line instruments please observe: Use only for fine scaling or debridement after gross scaling with other instruments. Repeated use of Thin Line instruments for gross scaling can result in damage to the titanium tip. Thin Line instruments should never be used at power level settings more than 50 % of maximum power.</p>
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Heavy Duty Straight Instrument (209010)



Particularly useful for removal of supra- and subgingival calculus labially and lingually. Can be applied interproximally, using the rounded tip to remove calculus and other heavy deposits and stains.

	<p>Do not attempt to sharpen, bend or otherwise re-shape the instrument tips! Doing so may seriously degrade the performance of the instrument.</p>
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For a complete list of available instruments – including instruments for endo procedures – please visit www.iM3vet.eu

How to use the iM3 4212 Scaler

To fully benefit from the rotational titanium tip movement and high frequency, it is important that the instrument is properly handled and applied – see Figure 10.

Use short, sweeping, paintbrush-like, back and forth strokes over the surface being treated. Keep the tip moving back and forth with the end of the tip probing the pocket when necessary

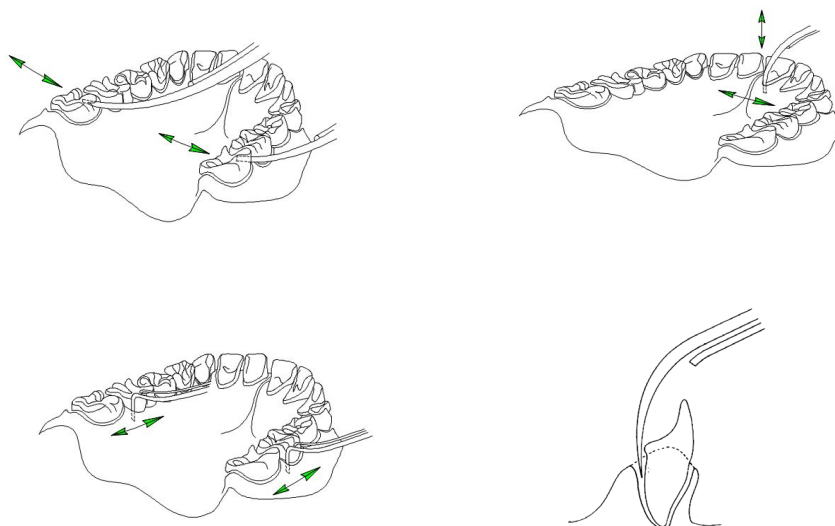





Figure 10 – Using 4212

	<p>When working with 4212:</p> <ul style="list-style-type: none"> • <i>Always use the instrument parallel to the tooth surface with the sides of the tip applied to the tooth surface</i> • <i>Do not apply the tip at right angles to the tooth surface</i> • <i>Do not use the tip as a pick – this will scratch the tooth surface</i> • <i>Always apply very little pressure to the tooth surface</i>
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	<p>Increasing the contact pressure will neither increase the efficiency nor improve the quality or speed of the treatment!</p>
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If you use 4212 scaler in this way you will achieve:


- Easy access to any tooth surface without awkward positioning of the hand-piece and hand. As the tip rotates and is "active" on all sides, you have a 360° highly efficient working surface without "dead zones".
- The rotational motion brushes rather than "hammers" the tooth. This has a gentle polishing effect on the tooth. It is generally much less painful for the patient and less tiring for the operator.

	<p>Only use 4212 on teeth and root surfaces.</p>
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Use the mirror to hold lips and tongue away from the instrument tip.

	<p>Risk of thermal injury! Avoid touching patient lips, tongue or other soft tissue with the non-cooled part of the instrument tip!</p>
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	<p>Handle the instruments carefully as the attached ferrite rod is fragile!</p>
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	<p>Always use as much irrigation water as practically possible to avoid unnecessary wear of the instrument.</p>
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3.11.1 CHANGING THE INSTRUMENT

Detach the instrument from the hand-piece just by pulling it out.

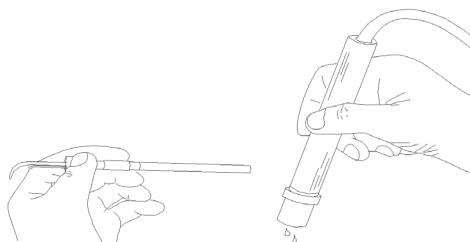


Figure 11 – Changing instrument



***Always empty the hand-piece of any water before applying a new instrument.
Wipe off any drops of water before applying an instrument.***



It is important that the instrument is always firmly seated in the hand-piece!

As a matter of course, the titanium tips will become worn down with time due to use. The efficiency of an instrument will therefore be gradually reduced.

Several factors contribute to wear of instruments:

- Time used
- The type and consistency of calculus deposits in patients
- The quantity of irrigation being used

The lifetime may therefore vary considerably from instrument to instrument.

3.11.2 IM3 4212 WITH ANTIMICROBIALS AND STERILE SALINE

In combination with Peristaltic Pump, iM3 4212 can be used with antimicrobials or sterile saline. Prepare the peristaltic pump as described in section 3.13.

Insert the connector piece (XO-069) between the hose and the handpiece – as shown in Figure 12.



Figure 12 – Connector piece for external irrigation of iM3 4212

Attach the irrigation tube to the connector piece using the appropriate outlet – see Figure 13.



Figure 13 – iM3 4212 connected to external irrigation

3.12 XO ODONTOCURE CURING LIGHT

The intended use of XO ODONTOCURE is polymerization of light cure resin based composites used for fillings in human teeth. XO ODONTOCURE is a “Polywave” type curing light, meaning the emitted light has two peak values making it suitable for filling composites containing several initiators.

XO ODONTOCURE is supplied with:

- 1 * Fiber glass rod (AP-915)
- 1 * Light Shield (AP-916)
- 5 * Protection caps (AP-917)
- 100 * Cross infection protection sleeves (AP-918)
- 1 * Testing device (AP-919) for measuring curing effectiveness

Lift the curing light forward and control it with the foot control.

See the current exposure time on the display before the foot control is activated.

Choose between three different exposure times with ▲ and ▼ and see the selected time on the instrument bridge display.

Start the curing process with → or ←.

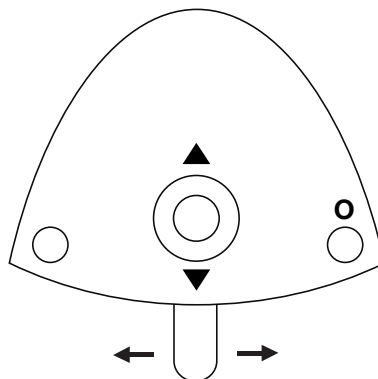




Figure 14 – Foot control of XO ODONTOCURE

See elapsed exposure time on the display during the process.

Hear a beep at intervals of 5 seconds.

For the best results, keep the distal end of the light guide should be held perpendicular at a distance of no more than 10 mm.

	<p><i>Never look directly into the light or direct it at the eyes of others!</i> <i>XO ODONTOCURE emits thermal radiation, and blue light and ultraviolet light in the range 385 – 515 nm at an intensity that requires protection of the eyes. Protect eyes with light shield and/or protective eyewear that removes light in the previously mentioned wavelengths.</i></p>
---	---

	<p><i>CAUTION! The high light intensity of XO ODONTOCURE is accompanied by heat generation on the exposed surface! Uninterrupted exposure of more than 20 seconds to the same surface shall be avoided. Curing at intermitted intervals is recommended.</i></p>
---	--

Switch soft-start on and off with **O** while the light is not activated.

Soft-start is a feature that can help reduce shrinkage. When enabled, the light will emit light at a reduced intensity for a manually preset number of seconds before going to full intensity.

For curing of posterior teeth use a protection cap:




Figure 15 Protection cap

For curing of anterior teeth use the light shield:



Figure 16 Light Shield

	<p><i>ODONTOCURE is intended for intermittent use. If activated continuously the message “TOO HOT” is displayed and the instrument is turned off. After some seconds, depending on the temperature, the light is ready for re-activation.</i></p>
---	--


3.13 XO PERISTALTIC PUMP


XO Peristaltic Pump is intended for supplying sterile saline or antimicrobials when using instruments with external water delivery.

Irrigation liquid is carried by means of the pump and an irrigation tube, from a reservoir or a bag located at the rear of the unit to an instrument of the operator's choosing. The irrigation tube is part of a disposable irrigation kit that contains the different tube parts needed for connecting a reservoir or bag with the different supported instrument types.

The pump is detachable and can be shared among multiple Pro X units.

The pump is automatically detected by the unit when attached.


	<p><i>Use of peristaltic pumps requires that the unit be prepared for it (i.e. unit must be equipped with option XO-051).</i></p>
---	--

	<p><i>Do not touch the connector of the XO Peristaltic Pump and the patient simultaneously!</i></p>
--	--

3.13.1 DISPOSABLE IRRIGATION KIT

The irrigation kit is manufactured for iM3 as an accessory for XO Peristaltic Pump.

The kit consists of a main tubing part and two alternative outlet parts. The main tube is equipped with a bag inlet cannula and an insert piece for the pump. Two alternative outlet parts are provided: one for connecting hand-pieces with a single inlet and one for connecting hand-pieces with two inlets.

	<p><i>Risk of contamination!</i> <i>The disposable irrigation kit package has been sterilized by ethylene oxide gas. Sterility cannot be relied upon if 1) the package has been opened or damaged or 2) the expiration date stamped on the package has passed.</i> <i>Appropriate sterile handling procedures must be observed to ensure and maintain sterile conditions.</i> <i>The disposable irrigation kits are for one-time use only. Do not re-sterilize!</i></p>
---	--

Peristaltic Pump is delivered with five sample disposable irrigation kits. Additional kits can be ordered from your iM3 distributor:

- Pre-sterilized, disposable irrigation kit, 50 pcs (XO-055)
- Pre-sterilized, disposable irrigation kit, 10 pcs (XO-056)

3.13.2 ATTACHING THE PUMP MODULE

Attach the pump module as shown in Figure 17.



Figure 17 – Attaching the pump module to the unit

After use, the pump module can be safely removed from the unit. It is not necessary to switch off the unit before detaching the pump.

3.13.3 ATTACHING THE IRRIGATION TUBE

Release the pump head by turning the handle (1) counter-clockwise – see Figure 18.

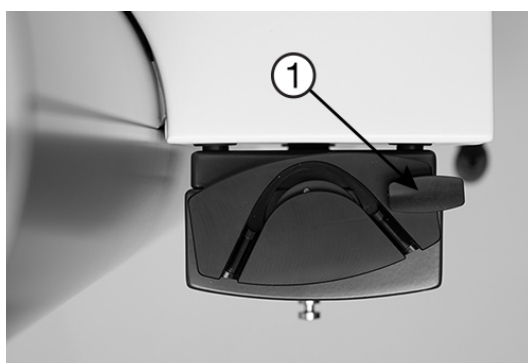


Figure 18 – Releasing the pump head

Attach the irrigation tubing to the pump head as shown in Figure 19. Make sure the tube is held in place by the two plastic connectors.



Figure 19 – Attaching the irrigation tubing

Lock the pump head by turning the handle (1) clockwise – see Figure 20.

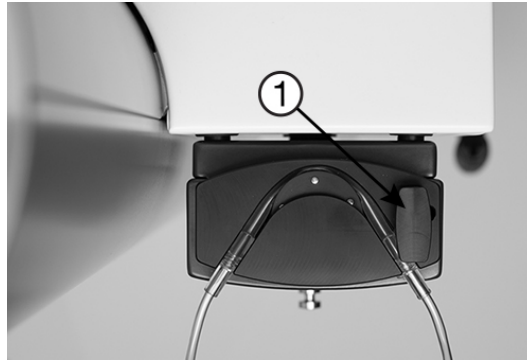


Figure 20 – Locking the pump head

Place the irrigation tube into the tube guide and attach it to the instrument bridge arm, as shown in Figure 21.



Figure 21 – Placing the irrigation tube

Attach the irrigation tube to the hose of the instrument to be used using the stainless steel clips – see Figure 22.

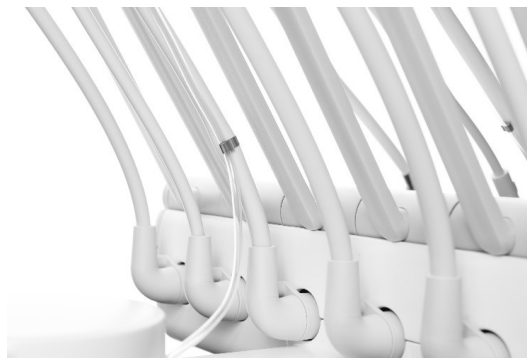


Figure 22 – Attaching the irrigation tube to the instrument hose

3.13.4 IRRIGATION BAG

Insert the bag inlet cannula into the irrigation bag and hang the bag containing the irrigation liquid from the knob at the bottom of the pump module – see Figure 23.



Figure 23 – Irrigation bag

3.13.5 IRRIGATION RESERVOIR

Place the reservoir containing the irrigation liquid into the holder below the pump – see Figure 24.



Figure 24 – Placing the reservoir

Using an appropriate sterile tool (e.g. a pair of scissors), cut the inlet cannula off the irrigation tubing. Attach the irrigation tubing to the spear and place the spear in the reservoir. See Figure 25.

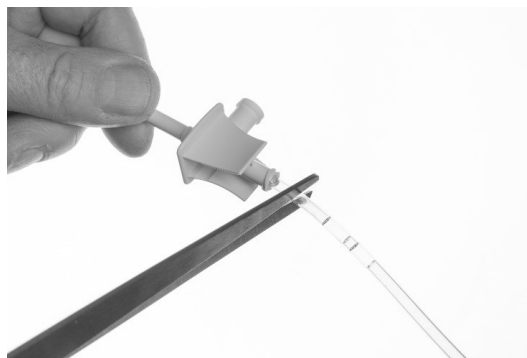


Figure 25 - Cutting the irrigation tubing bag inlet cannula

3.13.6 DESIGNATION OF INSTRUMENT

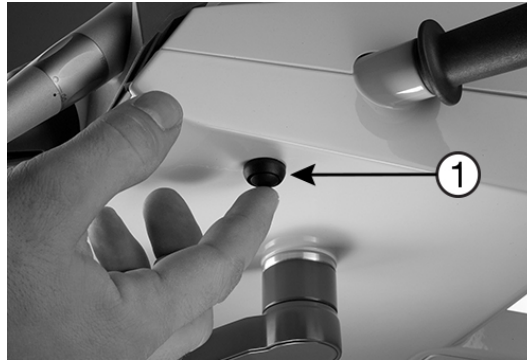


Figure 26 – Initiating selection of instrument to be used with XO Peristaltic Pump

Before the pump can be used, a designated instrument must be selected. With all instruments at rest, press the button (1) once – see Figure 26. The unit enters configuration mode and a menu will be shown on the display.

Activate ▲ and ▼ of the foot control joystick to navigate to the menu item labeled “PUMP”.

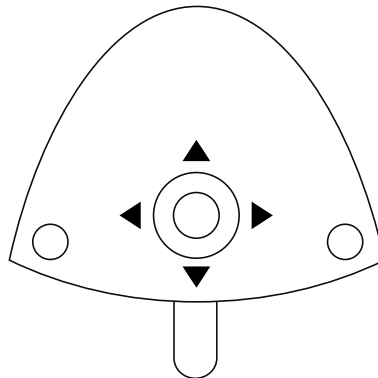


Figure 27 – Foot control configuration of XO peristaltic pump

Activate ► to access configuration of the pump – see Figure 28.

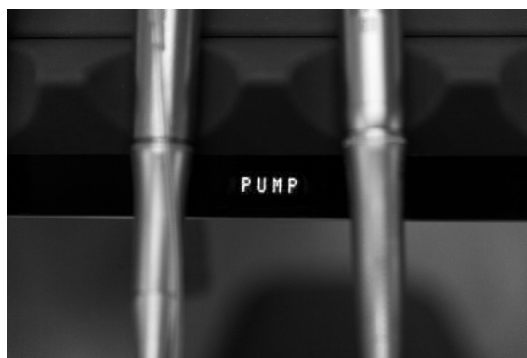


Figure 28 – Display

Use ▲ and ▼ to select the designated suspension that should be used with the pump – see numbers in Figure 3, page 12.



Figure 29 – Displaying instrument suspension

Use ◀ to confirm the choice of suspension.

Press the configuration button (1) on Figure 26 once to exit configuration mode.

When the designated instrument has been selected, the green LED will blink.

If you want to use the designated instrument without peristaltic pump, select “NONE” in the PUMP menu.

3.13.7 ADJUSTING THE FLOW LEVEL

Choose between three levels of irrigation:

Increase irrigation with ▶

Decrease irrigation with ◀

3.14 INTRAORAL HD VIDEO CAMERA

Dürr VistaCam iX HD Smart is supplied with:

- 1 * HD Smart camera
- 1 * exchangeable head (CAM)
- 20 * Cross infection protection sleeves
- Installation CD for Dürr DBSWin imaging software
- 2 * extra o-rings for the handpiece

Exchangeable heads and spacers available from Dürr Dental, please see duerrdental.com for further information:



Figure 30 – exchangeable heads



Figure 31 – Spacer for the camera

3.15 CONNECTING THE CAMERA TO THE COMPUTER

The camera connects to the computer via USB cable.

It is always recommended to use a USB cable with a build-in repeater to support a more stable video connection.



***The intraoral camera must be connected to an external PC!
This is done during installation of the camera and shall be done by an IM3 authorized service provider.***

3.16 USING THE CAMERA

Unlike all other unit instruments, you may use the video camera also when another instrument is active.

Lift the camera forward and display a video image on a screen.

Control the video camera with the buttons on the handpiece. The small button is to focus the image, the big button is for switching between “still” and “live” mode.



Figure 32 – buttons on the camera

You may also control the video camera with the foot control when no other instruments are active. Toggle between “still” and “live” mode with ←. Save the active video image to the connected PC with →.

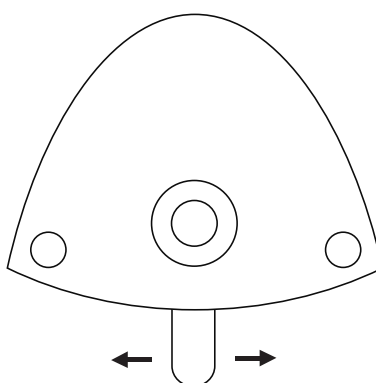


Figure 33 – Foot control of intraoral video camera

	<p><i>To use the foot control for controlling the camera, the PC must be appropriately configured, and a compatible imaging program must be used. Furthermore, the PC must be connected to the unit by means of a RS-232 serial cable for carrying the control signals from the foot control to the imaging program. This is in addition to the USB cable carrying the video signal. Please consult your IM3 authorized service provider for further details.</i></p>
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For other information please see the enclosed information from Dürr Dental or visit duerrdental.com.

3.17 OPERATING LIGHT

3.17.1 POSITION THE LIGHT

	<p><i>Place the light head 70 cm from the patient’s lips and position the light head so that the direction of the light is parallel to your viewing direction. See Figure 34.</i></p>
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This position of the light head also prevents the instrument suspensions from touching the light head while working.



Figure 34 – Correct position of light

3.17.2 SWITCH THE LIGHT ON AND ADJUST THE LIGHT INTENSITY

Manage the light manually by activating the no-touch sensor under the light head – see Figure 35 (1).

Hold your hand within activation distance for less than one second and the lamp switches on/off. Change the light intensity (3 levels) by activating the sensor for more than one second.

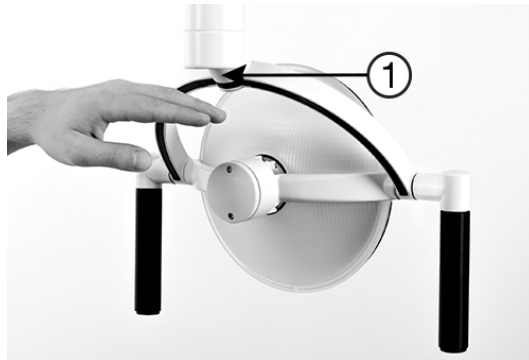


Figure 35 – No-touch sensor

Optionally, you may configure the operating light to be switched on/off using the foot control while the instruments rest:

- Switch the light on/off with a short activation of ↓
- You change light intensity by holding ↓ down

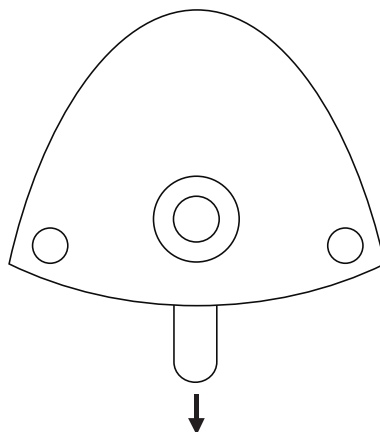





Figure 36 – Optional foot control of light


	<p><i>When working with light-curing composites please note that the operating light may influence the curing process. Switch to a lower light intensity or switch the light off if necessary!</i></p>
---	---

3.18 HD DISPLAY

	<p><i>Please note that HD Display must be connected to an external PC!</i></p>
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	<p><i>The best image quality is obtained using the native resolution of 1920 * 1080 pixels.</i></p>
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The display contains 6 sensor buttons at the bottom right (see Figure 37). The meanings of the buttons are described in Table 3. Note that some buttons have different functionality depending on whether the on-screen-display (OSD) is shown or not.

	<p><i>Please do not press the sensor buttons too hard or you may damage the buttons!</i></p>
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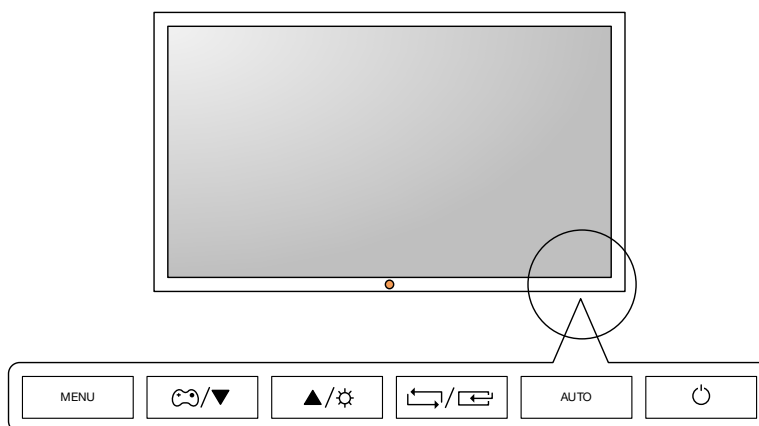




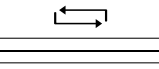
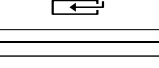
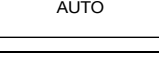




Figure 37 – Control panel sensor buttons – HD display

Table 3 Control panel sensor buttons – HD display

BUTTON	DESCRIPTION
	<p>Menu Button. Press this button to show the on-screen-display (OSD). This button is also used to exit the OSD or to return to a higher-level OSD menu.</p> <p>If held pressed for 10 seconds, this button will lock the OSD. When locked, it is not possible to change the OSD settings. The lock can be disabled by holding the menu button pressed for 10 seconds.</p>

BUTTON	DESCRIPTION
	Game mode button (not relevant for dental use).
	Up/down buttons. These buttons are used for navigating the menu or to adjust values in the OSD.
	Brightness button. This button is used to control the brightness of the display.
	Switch input button. Use this button to switch between analogue and digital input.
	Select button. Used for selecting functions in the OSD.
	Auto button. Use this button to automatically adjust the display settings when using an analog input.
	ON/OFF button. Switches the display on and off. Note: Switching off the unit will also switch off the display. When the unit is on again, the display will automatically be switched on as well.

	<i>Do not simultaneously touch the patient and the supply connector for the monitor at the back of the monitor.</i>
---	--

3.19 HAND INSTRUMENTS


The optimal place for hand-instruments is near the patient’s head where both you and your assistant can reach the instruments in healthy postures.

Alternatively, the unit may be configured with a hand-instrument table fitted under the instrument bridge – see Figure 38.



Figure 38 – Hand-instrument table attached to PRO X

Please note that the brake and the balance spring of the arm system should be adjusted by an iM3 authorized service provider in accordance with the load of the hand instrument table.

	<i>Maximum load on hand instrument table attached to PRO X unit is 1.5 kg! Exceeding the limit may compromise the balance of the instrument bridge and could cause the bridge suspension arm to fail altogether exposing the patient to a risk.</i>
---	--

3.20 SUCTION

Activate each suction hose individually by lifting it from the holder. When working solo, move the suction hose holder forward to facilitate easy access to the suction hoses.



Figure 39 – Suction – (1) DUO position / (2) SOLO position

Relieve the suction hose by pressing it into the slot in the suction hose holder.



Figure 40 – Relieving the suction hose

3.21 ASSISTANT CALL

Activating **O** while all unit instruments are at rest will activate a relay contact that may be connected to a bell or other external signaling devices.

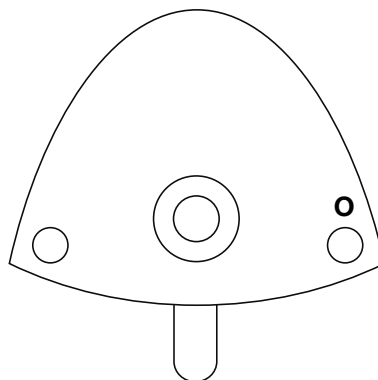


Figure 41 – Foot control of assistant call

3.22 SOUND GENERATOR AND SOUNDS

The instrument bridge is fitted with a sound generator that indicates events as described below:

Table 4 - Sounds


Sound	Meaning
Welcome	The unit is turned on and ready to use
Wrong	You try to do something that does not make sense
Setting saved	Setting saved successfully
Notification	A non-urgent event occurred
Connection lost	Computer connection is disconnected

3.23 SYSTEM MESSAGES

The unit generates messages that can be seen from the instrument bridge display. See details in section 7.

3.24 XO SEAT AND XO STOOL

We recommend you sit in an upright, balanced position with an angle between thighs and upper body of about 120°.

	<p><i>To maintain a healthy sitting position, it is extremely important to individually adjust the height and seat angle of the operator’s stool as described in this section!</i></p>
---	---

XO SEAT and XO STOOL are available in two heights: 1) for operators up to about 180 cm tall and 2) for operators who are taller. If your XO SEAT/XO STOOL is too low or too high, it is possible to replace the gas spring with a shorter or longer version. Please contact your iM3 authorized service provider.

If the height difference between the operator and the chairside assistant is more than 10 cm, a foot-ring may be fitted.

4 CONFIGURATION

This section describes the many aspects of PRO X that can be customized to fit your personal needs.

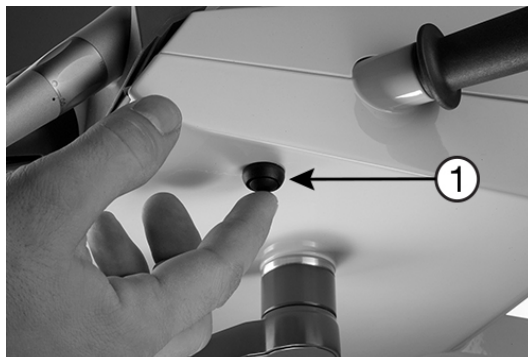


Figure 42 – Configuration button (1) under the instrument bridge

4.1 CONFIGURATION OF GENERAL UNIT

1. Activate the configuration button (1) while all instruments are resting – see Figure 42.
2. Activate ▲ / ▼ or ↓ – see Figure 43 – to browse the parameter to change (see Table 5)
3. Activate ► to select the parameter to change
4. Use ▲ / ▼ to change the value of the selected parameter or ↓ to increase the value
5. Activate ◀ to save the new value
6. Press the configuration button again

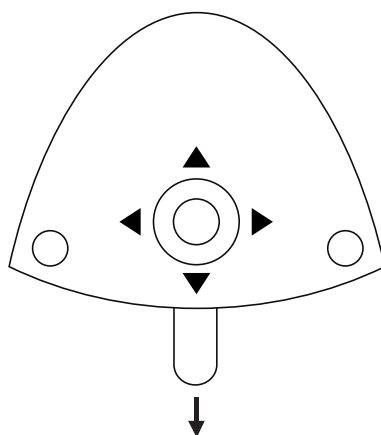


Figure 43 – Configuration using the foot control

Table 5 – Unit and patient chair parameters that can be configured

Parameter	Display text	Factory default configuration	Possible settings
Enabling Peristaltic Pump	PUMP	None	None, POS. 1 – 6
Light on/off with foot control	LAMP/PD	Disabled	Disabled, enabled
Reset unit to “factory standard”	RESET	-	Yes, No

4.2 CONFIGURATION OF UNIT INSTRUMENTS

1. Lift the instrument to be programmed forward
2. Activate the configuration button (1) until the display shows the instrument setting – see Figure 42
3. Activate ▲ / ▼ or ↓ – see Figure 43 – to browse the parameter to change (see Table 6)
4. Activate ► to select the parameter to change
5. Use ▲ / ▼ to change the value of the selected parameter or ↓ to increase the value
6. Activate ◀ to save the new parameter
7. If an additional instrument parameter is to be configured, use ▲ / ▼ until the display shows the parameter in question
8. Place the instrument on the bridge again

Table 6 – Unit instrument parameters that can be configured

Parameter	Display text	Factory default configuration	Possible settings
Bien-Air MC3 / MX2 micro motor			
Maximum speed ³ – Level 3	LEVEL 3	40,000 RPM	100 – 40,000 ± 10% RPM
Maximum speed – Level 2	LEVEL 2	10,000 RPM	100 – 40,000 ± 10% RPM
Maximum speed – Level 1	LEVEL 1	4.000 RPM	100 – 40,000 ± 10% RPM
Amount of spray water – Level 3	W LEVEL 3	Without contra-angle (what you see on the display): 100 ml/min With contra-angle: approximately 70 ml/min	Without contra-angle: 10 – 100 ml/min
Amount of spray water – Level 2	W LEVEL 2	Without contra-angle (what you see on the display): 50 ml/min With contra-angle: approximately 50 ml/min	Without contra-angle: 10 – 100 ml/min
Amount of spray water – Level 1	W LEVEL 1	Without contra-angle (what you see on the display): 35 ml/min With contra-angle: approximately 35 ml/min	Without contra-angle: 10 – 100 ml/min
Amount of spray air	AIR	70%	0 – 100%
Automatic chip blow	CHIP	Enabled	Enabled, Disabled
Spray selection	4 STATES	Disabled	Enabled, Disabled

³ Please note that it is the speed of the micromotor itself. When you fit a contra-angle the speed of the bur may be changed!

OSSEO motor			
Maximum speed ⁴ – Level 3	LEVEL 3	40,000 RPM	100 – 40,000 ± 10% RPM
Maximum speed – Level 2	LEVEL 2	16,000 RPM	100 – 40,000 ± 10% RPM
Maximum speed – Level 1	LEVEL 1	300 RPM	100 – 40,000 ± 10% RPM
Amount of spray water – Level 3	W LEVEL 3	50 ml/min	Peristaltic pump irrigation flow rate: 10 – 90 ml/min ± 20%
Amount of spray water – Level 2	W LEVEL 2	30 ml/min	Peristaltic pump irrigation flow rate: 10 – 90 ml/min ± 20%
Amount of spray water – Level 1	W LEVEL 1	10 ml/min	Peristaltic pump irrigation flow rate: 10 – 90 ml/min ± 20%
Turbine (Air instrument)			
Drive air – Level 3	LEVEL 3	100%	0 – 100%
Drive air – Level 2	LEVEL 2	90%	0 – 100%
Drive air – Level 1	LEVEL 1	70%	0 – 100%
Amount of spray water – Level 3	W LEVEL 3	Without turbine hand-piece (what you see on the display): 100 ml/min With turbine hand-piece: approximately 70 ml/min	Without turbine hand-piece: 10 – 100 ± 20% ml/min
Amount of spray water – Level 2	W LEVEL 2	Without turbine hand-piece (what you see on the display): 50 ml/min With turbine hand-piece: approximately 50 ml/min	Without turbine hand-piece: 10 – 100 ± 20% ml/min
Amount of spray water – Level 1	W LEVEL 1	Without turbine hand-piece (what you see on the display): 35 ml/min With turbine hand-piece: approximately 35 ml/min	Without turbine hand-piece: 10 – 100 ± 20% ml/min
Amount of spray air	AIR	70%	0 – 100%
Automatic chip blow	CHIP	Enabled	Enabled, Disabled
iM3 4212 or other ultrasonic scaler			
Power – Level 3	LEVEL 3	100%	0 – 100%

⁴ Please note that it is the speed of the micromotor itself. When you fit a contra-angle the speed of the bur may be changed!

Power – Level 2	LEVEL 2	70%	0 – 100%
Power – Level 1	LEVEL 1	40%	0 – 100%
Amount of irrigation water – Level 3	W LEVEL 3	40 ml/min	10 – 90 ± 10% ml/min
Amount of irrigation water – Level 2	W LEVEL 2	30 ml/min	10 – 90 ± 10% ml/min
Amount of irrigation water – Level 1	W LEVEL 1	20 ml/min	10 – 90 ± 10% ml/min
XO ODONTOCURE curing light			
Curing time 3	TIME 3	20 s	1 – 300 s
Curing time 2	TIME 2	10 s	1 – 300 s
Curing time 1	TIME 1	5 s	1 – 300 s
Soft-start	SOFT T.	Disabled	Enabled/disabled
Soft-start	SOFT T.	5 s	1 – 300 s 20% power



If the unit is fitted with two or more identical unit instruments (e.g. two micromotors), the configured data (e.g. amount of spray water) will apply to all identical unit instruments.

5 CLEANING AND INFECTION CONTROL


The following procedures are recommended to minimize the risk of cross-contamination.

5.1 CLEANING, DISINFECTION AND STERILIZATION PROCEDURES

The following definitions apply:

Table 7 – Cleaning, disinfection and sterilization definitions

Procedure	Purpose	Method(s)
Cleaning	Removal of visible blemishes spots, stains etc.	<ul style="list-style-type: none"> Physical/chemical use of detergents (will not significantly reduce the number of pathogens) Application of thermo-disinfection 90°C/194°F, 1 minute
Disinfection	Significantly reduce the number of pathogenic microorganisms	<ul style="list-style-type: none"> Application of chemical disinfectants to surfaces Application of thermo-disinfection 90°C/194°F, 1 minute
Autoclaving	Elimination/destruction of all living pathogenic microorganisms	Steam sterilization at: <ul style="list-style-type: none"> 134°C/273°F with a holding time exceeding 3 minutes or 121°C/250°F with a holding time exceeding 15 minutes


	<p><i>Please note that some instruments and accessories are not designed for thermo-disinfectors or autoclaves!</i></p> <p><i>Please note that autoclaving and thermo-disinfection processes wear down the materials and may cause change of color and/or shorten the lifetime.</i></p>
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Concerning the number of thermo-disinfection/autoclave cycles for detachable parts of the unit see section 10.2.

5.2 DETERGENTS AND DISINFECTANTS FOR CLEANING AND/OR DISINFECTION OF THE UNIT


Please only use detergents and disinfectants listed in section 10.3 for cleaning and disinfection of the unit.

When using chemical cleaning and disinfection agents, always follow the instructions provided by the manufacturer of the agent regarding concentration and contact time.

	<p><i>Please note: Do not use any other disinfectants for cleaning and disinfection of the unit. Doing so may damage the product!</i></p> <p><i>Failure to comply with these precautions may affect iM3's product warranty.</i></p> <p><i>Specifically, avoid using Alpro PlastiSept ECO as this disinfectant is known to damage the silver/aluminum surfaces of the unit.</i></p>
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5.3 GENERAL CLEANING OF UNIT SURFACE

Use a mild detergent for cleaning the surfaces of the unit using a twisted lint-free cloth. Look out for liquid dripping from the cloth.

	<p><i>When cleaning the surfaces – do not use an excessive amount of liquid – and make sure that the liquid has evaporated before fitting instrument holder pad.</i></p>
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5.4 GENERAL DISINFECTION OF UNIT SURFACES

Disinfect the surfaces of the unit using a lint-free cloth with Dürr FD 333 or Dürr 366 – please see details in section 10.3. Look out for disinfection liquid dripping from the cloth.

	<p><i>When disinfecting surfaces – do not use an excessive amount of disinfectant – and make sure that the disinfectant has evaporated before fitting instrument holder pad.</i></p>
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5.5 INFECTION CONTROL INSTRUMENT AND BRIDGE PROTECTION PAD

The instrument pad and bridge protection pad can be cleaned and disinfected in a thermo-disinfector and autoclaved.



Figure 44 – Instrument pad and bridge protection pad

5.6 AUTOCLAVING HANDLES

The instrument bridge, light and suction hose holder handles can be removed to be autoclaved by pressing the knob (1) at the end of the handle – see Figure 45.



Figure 45 – Removing the handle

5.7 DISINFECTION OF INSTRUMENT HOSES AND SUSPENSIONS

Remove the instrument hose by turning the release handle (1) counter-clockwise and pulling out the plug as shown in Figure 46.

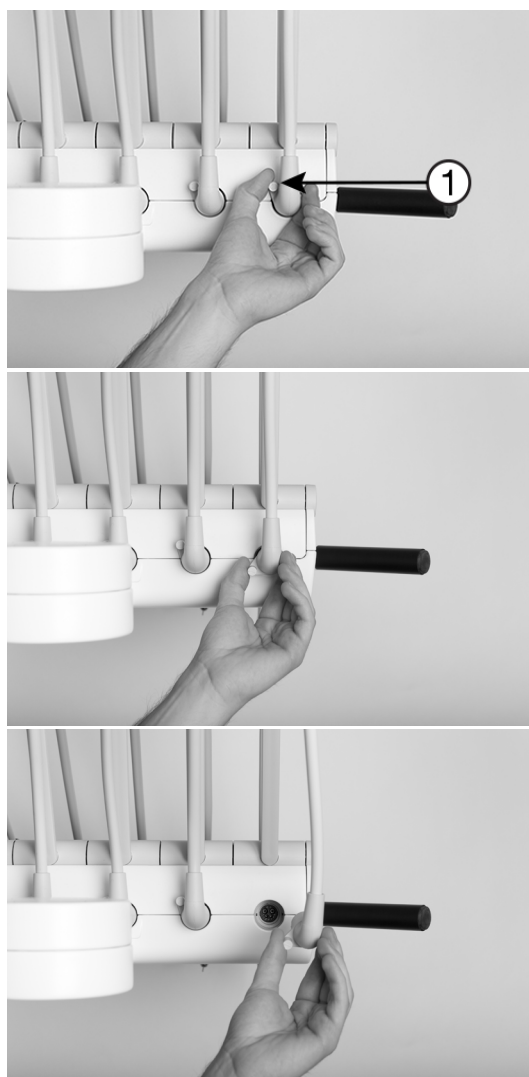


Figure 46 – Removing instrument hose, (1) release handle


Disinfect instrument hoses with Dürr FD 333.

Wipe the cloth from the instrument coupling towards the plug to prevent disinfection liquid from leaking into the instrument coupling! See Figure 47.




Figure 47 – Wiping direction, instrument hose-cleaning

Instrument suspensions (not the instrument hoses) can be washed in a thermo-disinfector.

	<p><i>Do <u>not</u> wash instrument hoses in a thermo-disinfector!</i></p>
---	---

When refitting the instrument hoses, the unit will inform you in case an instrument hose is fitted to a “wrong” position.

	<p><i>Make sure that the instrument hose plugs and sockets in the instrument bridge are completely dry before the hoses are re-mounted on the instrument bridge!</i></p>
--	---

5.8 INFECTION CONTROL LUZZANI SYRINGE


Follow the instructions for use supplied by Luzzani.

5.9 INFECTION CONTROL BIEN-AIR MICROMOTORS

Follow the instructions for use supplied by Bien-Air.

5.10 AUTOCLAVING OF XO OSSEO MOTOR

The recommended infection control procedure is to autoclave the motor with hose after each use.

	<p><i>Prior to autoclaving push the end of the sealing plug into the open center of the motor shaft – see Figure 48.</i> <i>Failure to autoclave the motor with the sealing plug in place may cause damages to the motor.</i></p>
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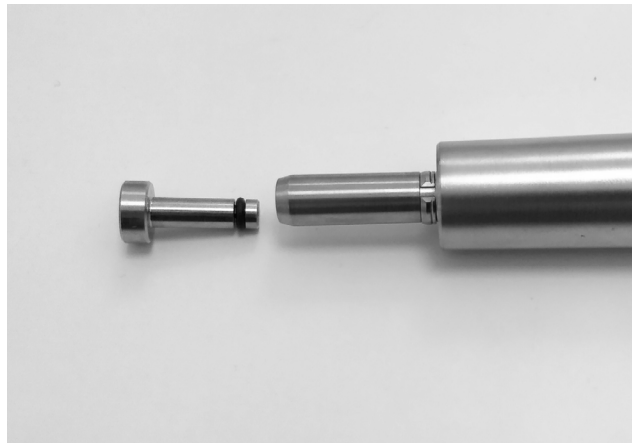


Figure 48 – Sealing plug in XO OSSEO motor shaft

	<p><i>Do not leave the motor and hose in the autoclave overnight. Doing so may cause damages to the motor.</i></p>
	<p><i>Do not wash the motor and the hose in the thermo-disinfector. Doing so may cause damages to the motor.</i></p>
	<p><i>Do not lubricate through the open front end of the motor.</i></p>

5.11 INFECTION CONTROL 4212

The instruments can be cleaned and sterilized using all clinically acceptable methods.

The handpiece can be cleaned and disinfected with Dürr FD 333 or autoclaved (max 121°C).

5.12 INFECTION CONTROL ODONTOCURE CURING LIGHT

Use the supplied cross infection protection sleeves to decrease the risk of cross contamination and prevent the composite from bonding to the end of the rod.

Every day the light rod should be examined for stuck restorative material and mechanical damages.

Remove the light rod from the instrument by pulling it with your hand.
Autoclave the rod and protection cap.

Disinfect the handpiece and hose with Dürr FD 333.



Figure 49 – Removing the light rod from XO ODONTOCURE handpiece

5.13 INFECTION CONTROL OTHER INSTRUMENTS

For turbines, other ultrasonic scalers, intraoral video cameras and other instruments please refer to the user manual supplied with the instrument.

5.14 INFECTION CONTROL PERISTALTIC PUMP

Clean and disinfect the surfaces of the pump unit using a lint-free piece of soft cloth with Dürr FD 333.

Tubing clips and spear can be autoclaved.

Tube guide can be thermo-disinfected.



Risk of contamination!

The pre-sterilized disposable irrigation kits are for single-use only and must be discarded after use.

The tubing must not be re-sterilized.

5.15 DISINFECTION OF LIGHT

Be sure to switch off the unit before cleaning the light.

The protection screen may be detached for cleaning by removing the two screws – see Figure 50.

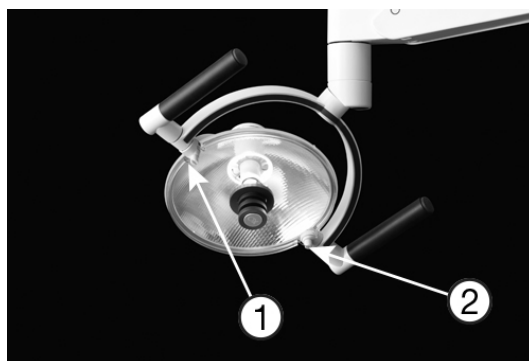




Figure 50 – Removing the protection screen, (1) screws and (2) protection screen

	<i>Do not spray water, disinfectants or cleaning agents directly onto the protection screen and the reflector.</i>
---	---

Take care not to scratch the protection screen surface with any hard or abrasive material. Dust, finger marks, grease etc. can be removed from the protection screen and from the reflector with a lint-free piece of soft cloth (a small amount of mild detergent can be used on the cloth).

5.16 INFECTION CONTROL HD DISPLAY

Be sure to switch off the unit when cleaning the display.

	<i>Do not spray water, disinfectants or cleaning agents directly onto the display.</i>
---	---

5.16.1 FRONT PANEL

Take care not to scratch the front surface with any hard or abrasive material.

Dust, finger marks, grease etc. can be removed with a lint-free piece of soft cloth (a small amount of mild detergent can be used on the cloth).

Do not apply water or detergent directly to the front surface as this may cause staining or damage the electronic components.

Never use any solvent on the front panel as this may cause permanent damage.

Wipe off water drops immediately. Long contact with water may cause discoloration spots.

5.17 DISINFECTION OF SUCTION LINES

5.17.1 GENERAL

The suction valves and tubes inside the unit are constantly flushed with clean water while the suction is activated.

To prevent the suction system from clogging and breaking down, it is also necessary to clean and disinfect the suction system daily.

1. Lift both suction hoses from the suction holder
2. Remove the covers from both suction nozzles – see Figure 51
3. Activate the suction disinfection button (2) – see Figure 52 – to deactivate the suction
4. Place the two suction nozzles on the suction hose connectors (3) and activate the button (2) again – see Figure 52 – hereafter the flushing procedure starts



Figure 51 – Removal of suction nozzle covers

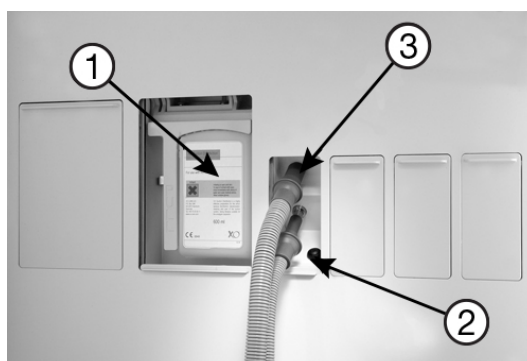



Figure 52 – Suction Disinfection (1) Suction Disinfection cartridge
(2) button for activation of Suction Disinfection (3) suction hose connectors

The process takes approximately 6 minutes, depending on the suction power.

The display shows the progress of the disinfection process.

When “SUCTION OK” appears on the display, the process has been carried out successfully.

	<p><i>Please note that manual cancellation of flushing is not possible.</i></p>
---	--

In case of emergency you may switch off the unit, place the suction hoses in the holder – and switch on the unit again.

The suction nipple covers can be autoclaved.

If much blood has been sucked through the system, we recommend that the system be flushed with at least 1 liter of cold water. After this, the system can be disinfected with Suction Disinfection.

Disinfect the suction system with Dürr MD 555 1 – 2 times per week, if the unit is equipped with an amalgam separator or if the above described procedure is not sufficient. Please see the instructions provided by Dürr Dental.

Please note that Water Clean and XO Suction Disinfection cannot be activated simultaneously!

5.17.2 SUCTION FILTERS

Every evening the suction filters must be cleaned:

1. Disconnect the suction hoses from the unit – see Figure 53
2. Eject the filters by pressing the button – see Figure 54
3. Remove the filter cartridge from the filter holder – see Figure 55
4. Empty the filters
5. Wash the filters in a thermo-disinfector
6. For lubrication of O-rings, please use a silicon grease, approved for drinking water applications and suitable for both EPDM and NBR rubber




Figure 53 – Removal of suction hoses and filters



Figure 54 – Press the button to eject the filter



Figure 55 – Removing filter cartridge from filter holder

	<p><i>Suction filters and hoses may contain mercury and contaminated material. They must therefore be handled in accordance with national or local requirements!</i></p>
---	---


Replace the suction filter holder if air starts to leak from the suction filters.


5.17.3 REPLACEMENT OF SUCTION DISINFECTION CARTRIDGE


When the cartridge is almost empty a “warning-sound” is heard and the message “CHECK YELLOW BOTTLE” appears in the unit display.


The Suction Disinfection cartridge is replaced as follows:

1. Lower the right-hand service panel – see Figure 52
2. Pull the yellow handle forward to get access to the cartridge
3. Pull the cartridge downwards to get it free
4. Replace the cartridge, push the yellow handle in and close the service panel

	<p><i>Suction Disinfection is a corrosive liquid. Please see section 10.3, the safety data sheets at xo-care.com and the detailed instructions supplied with Suction Disinfection.</i></p>
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	<p><i>To avoid accidentally exposing the patient to Suction Disinfection be careful not to interchange Water Clean cartridges (white) and Suction Disinfection cartridges (yellow)! Suction Disinfection is not poisonous but is not intended for ingestion.</i></p>
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	<p><i>Be careful not to spill the fluid as the painted surfaces may become stained. Any spills must be wiped away immediately. Then clean the surface with a damp cloth.</i></p>
---	---

	<p><i>Do not use any other disinfectants for cleaning the suction system as this may compromise the effectiveness of the system and damage vital parts in the suction system! Please note that failure to comply with this will affect iM3’s warranty liability.</i></p>
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5.18 DISINFECTION OF UNIT WATER LINES

XO Water Disinfection continuously dispenses a solution of a non-toxic disinfectant which contains hydrogen peroxide (potency resolution contains 0.0235% hydrogen peroxide) to the unit water. The disinfectant has proved to maintain the amount of microbials on a level suitable for drinking water. XO Water Disinfection prevents formation of limescale by binding calcium carbonate.

5.18.1 OVERNIGHT WATER TREATMENT

Normally, the overnight water treatment procedure should be used every day after the last patient:

Step 1 (evening):

1. Fit the water disinfection instrument holder on the bucket
2. Place all water-bearing unit instruments in the disinfection instrument holder on the bucket
(make sure that the heating on the syringe is switched off)
3. Attach the tubing to the outlet as shown in Figure 57
4. Activate the left button (A or X) on the foot control for a couple of seconds – see Figure 58 and the internal water tank is emptied
5. Wait for 3 minutes – the instrument bridge display will show the remaining time of the process
6. Switch the unit off and leave the unit instruments in the instrument holder on the bucket

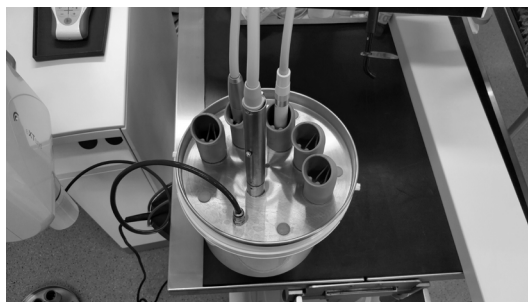


Figure 56 – Water bearing instruments fitted in instrument holder



Figure 57 – Attachment of tubing

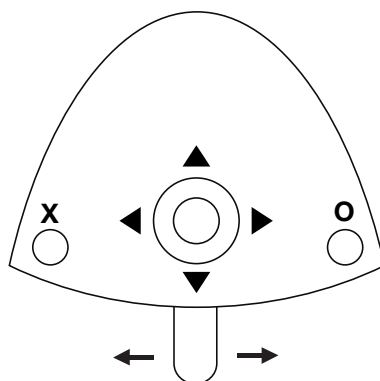



Figure 58 - Foot control

Step 2 (morning):

1. Check that the unit instruments are still in the instrument holder on the bucket and that the tube to the unit outlet is attached
2. Switch on the unit
3. The internal water tank is filled, and the unit instruments and water lines are flushed with disinfection liquid for 6 minutes – the display will show the remaining time of the disinfection process
4. When "FLUSH OK" appears on the display, the process has been carried out successfully
5. Place the unit instruments on the instrument bridge

	<p><i>Please note that manual cancellation of this process is not possible.</i></p>
---	---

In case of emergency you may switch off the unit, place the unit instruments on the instrument bridge, remove the water disinfection instrument holder etc. – and switch on the unit again.


Please note that XO Water Disinfection and XO Suction Disinfection cannot be activated simultaneously!

5.18.2 INTENSIVE WATER TREATMENT


Intensive water treatment should be carried out when the bacterial load of the unit water lines is considered higher than usual, for instance, after vacation or other longer periods without usage.

1. Place all water-bearing unit instruments in the instrument holder on the bucket (**make sure that the heating on the 6F syringe is switched off**)
2. Attach the tubing to the outlet as shown in Figure 57
3. Activate the right button (B or O) on the foot control Figure 56 and the instruments and water lines are flushed
4. Watch the display for the remaining time of the disinfection process

When "FLUSH OK" appears in the display, the process has been carried out successfully.

	<p><i>Please note that manual cancellation of this process is not possible.</i></p>
---	--

In case of emergency you may switch off the unit, place the unit instruments on the instrument bridge, remove the water disinfection instrument holder etc. – and switch on the unit again.

	<p><i>We recommend to perform this procedure once after the weekend. When the unit has not been used for a week or more, we recommend that the intensive procedure be performed three consecutive times.</i></p>
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5.18.3 REPLACEMENT OF WATER CLEAN CARTRIDGE

When the cartridge is almost empty a “warning-sound” is heard and the message “CHECK WHITE BOTTLE” appears in the unit display.

The Water Clean cartridge is exchanged as follows:

1. Lower the left-hand service panel – Figure 59
2. Pull the white handle forward to get access to the cartridge
3. Pull the cartridge downwards to get it free
4. Replace the cartridge, push the white handle in and close the service panel

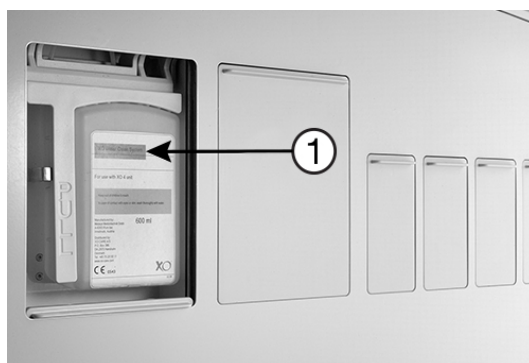








Figure 59 – Replacing the XO Water Clean cartridge

	<p><i>Please see section 10, the safety data sheets at xo-care.com and the detailed instructions supplied with Water Clean.</i></p>
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	<p><i>Be careful not to spill the fluid as the painted surfaces may become stained. Any spills must be wiped away immediately. Then clean the surface with a damp cloth.</i></p>
---	---

	<p><i>To avoid accidentally exposing the patient to suction disinfection additive be careful not to interchange Water Clean cartridges (white) and Suction Disinfection cartridges (yellow)! The suction disinfection additive is not poisonous, but it is not intended for ingestion.</i></p>
	<p><i>Risk of contamination! Do not use any other disinfectants for cleaning the water system!</i></p>
	<p><i>Do not use any other disinfectants for cleaning the water system! Doing so may damage the product! Failure to comply with this will affect iM3's warranty liability.</i></p>

6 MAINTENANCE AND REPAIRS

	<p><i>Danger of electric shock!</i> <i>Do not attempt to open the product unless you are an authorized service provider!</i></p>
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6.1 FOOT CONTROL

The foot control is fitted with four rubber feet providing a stable attachment to the floor. If the rubber feet and the floor become greasy with soap the friction may be reduced and the foot control may slide on the floor when activated.


	<p><i>If necessary, clean the rubber feet and floor with petroleum benzine to avoid the foot control from sliding when activated!</i></p>
---	--



Figure 60 – Cleaning of foot control “rubber feet”

6.2 XO OSSEO MOTOR

6.2.1 MOTOR REPAIR

If necessary, the XO OSSEO motor must be repaired at the factory.


6.3 IM3 4212

6.3.1 HANDPIECE REPAIR

If necessary, the iM3 4212 handpiece must be repaired at the factory.

6.3.2 TIGHTENING / EXCHANGING THE FERRITE ROD

If an instrument has lost its efficiency, it may help to re-tighten the ferrite rod – see Figure 61 – and check that the inside of the hand-piece is free of water and foreign bodies.

	<p><i>Regularly - and especially in the case of instrument malfunction – check and tighten the ferrite rod to the titanium tip.</i></p>
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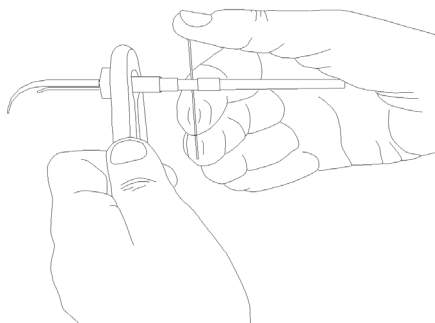


Figure 61 – Tightening / exchange of ferrite rod

If this does not correct the problem, you may try to exchange the ferrite rod. If there is still no improvement, then it is necessary to replace the titanium tip or the whole instrument with a new one.

4212 is supplied with a service kit:

- Ferrite rod (209100)
- Steel pin (209300) and clamp (309300) for exchange of ferrite rod

6.4 XO ODONTOCURE

6.4.1 HANDPIECE REPAIR

If necessary, the XO ODONTOCURE handpiece must be repaired at the factory.

6.4.2 MANUAL MEASUREMENT OF CURING EFFECTIVENESS

The curing effectiveness of XO ODONTOCURE should be measured once a month to ensure that the effectiveness of the lamp is consistent. A substantial change in effectiveness is indicative of a fault, which may affect the curing result adversely. iM3 delivers a testing device that can be used for the curing tests.

Upon receiving the instrument, measure the curing effectiveness of XO ODONTOCURE as follows:

1. Place the testing device on a flat surface and fill the cavity with the composite material to be used. See Figure 62.
2. Place the curing light tip on top of the testing device. The tip of the instrument must be placed in parallel with the surface of the testing device.
3. Apply the curing light for 10 seconds.
4. Press the test plug out of the cavity immediately. Carefully remove the non-polymerized soft material at the bottom of the test plug with a plastic spatula. See Figure 63.
5. The curing depth is measured using a caliper. Measure the depth at the shallowest point. See Figure 61.

- The measured depth of the polymerized material shall be recorded and is now the target reference for future measurements.

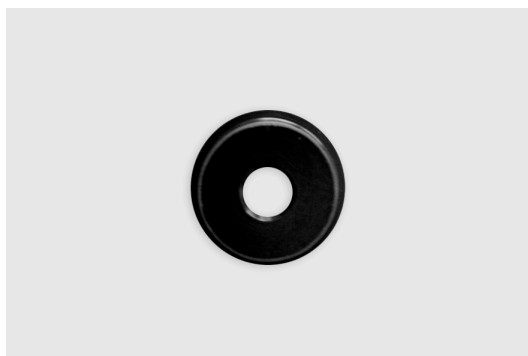


Figure 62 – Testing device



Figure 63 – Non-polymerized material is removed from composite test plug




Figure 64 – Measuring the depth of the test plug

At an interval of approximately 1 month, perform the following steps:

- Please refer to points 1-5 on page 56.
- Compare the result of this test with the reference made upon receiving the instrument. If the curing depth deviates more than 0.8mm from the reference, a fault may be present, and you might need to contact your iM3 service provider to remedy the fault.



Note: *This is a technical verification of performance; it does not reflect actual curing depth in a tooth.*

	<p><i>In case of faulty performance, the fiber rod may be replaced and retested. In case the problem persists, technical assistance from an authorized service provider is required.</i></p>
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6.5 XO PERISTALTIC PUMP

Please refer to Table 9 on page 62 to see an overview of the service messages that may appear on the display while using XO Peristaltic Pump.

6.6 ADJUSTMENT OF THE HAND INSTRUMENT TABLE

You can adjust the angle of the hand instrument table using a 4 mm Allen key.



Figure 65 – Adjustment of the hand instrument table


6.7 CUSPIDOR VALVE – CLEANING THE COURSE FILTER

If the unit is equipped with a cuspidor valve, the coarse filter should be cleaned upon notification (approximately every month):

1. Lower the service panel – see Figure 66
2. Empty the filter house by activating the manual valve button (1) in Figure 66 for 5 seconds
3. Remove the filter (2)
4. Clean the filter
5. Replace the filter



Figure 66 – Manual activation of cuspidor valve (1) and cuspidor valve filter (2)

	<p><i>Amalgam waste is considered hazardous to the environment and should therefore be disposed of safely and in accordance with regulatory requirements. Remember to use safety gloves.</i></p>
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6.8 FLUSHING OF CUSPIDOR DRAIN

If the unit is equipped with a cuspidor valve, you may flush the cuspidor drain if necessary as follows:


1. Lower the service panel – see Figure 66
2. Activate the manual valve (1) button for min. 3s. while you pour clean water in the cuspidor bowl.
3. After flushing procedure, remove and clean the yellow filter.

6.9 SUCTION HOSES

If the suction hoses dry up, you may hear a noise when activating the suction.

	<p><i>To avoid unintended noise from the suction hoses, use each suction hose to empty a glass of water at the beginning of the day and if necessary during the workday.</i></p>
--	---

Suction hoses and filters should be exchanged every 12 months. Replacement suction filters are included in the infection control kits – see section 10.3.

	<p><i>Amalgam waste is considered hazardous to the environment and should therefore be disposed of safely and in accordance with regulatory requirements. Remember to use safety gloves.</i></p>
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6.10 AIR AND AMALGAM SEPARATOR


6.10.1 DÜRR CS1 COMBI-SEPMATIC – AIR SEPARATOR

Service and replacement of this air separator shall be done by an iM3 authorized service provider.

6.10.2 DÜRR CAS 1 COMBI-SEPARATOR – AIR AND AMALGAM SEPARATOR

If your PRO X unit is equipped with an amalgam separator you need to replace the amalgam collector vessel every 6–9 months.

Contact your iM3 authorized service provider.

	<p><i>A warning signal will be heard from the amalgam separator when the amalgam collector vessel is 95% full or more.</i></p>
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6.11 COIN CELL BATTERY

The instrument bridge contains a coin cell battery, type 2032, which shall be replaced every 5th year. Contact your service provider to perform the replacement.

7 UNIT MESSAGES AND REMEDIAL ACTIONS

7.1 ERROR MESSAGES

Certain functional errors can be detected by PRO X and written onto the instrument bridge display.

Table 8 – Error messages

Error message	Interpretation	Remedial action
FOOT CONTROL FAIL!! CALL SERVICE	Displayed after start-up of unit if no communication with foot control is detected.	Call your iM3 authorized service provider.
NETWORK FAIL!! CALL SERVICE	Displayed after start-up of unit if no communication with Stand Controller and foot control is detected.	Call your iM3 authorized service provider.
NO WATER FLOW	Displayed when unit detects that it takes more than 90 seconds to fill the mixing cup.	Check the water supply to the unit or call your iM3 authorized service provider.
POWER DRIVER FAIL!! CALL SERVICE	Displayed after start-up of unit if no communication with Power Driver is detected.	Call your iM3 authorized service provider.
STAND CONTROL FAIL!! CALL SERVICE	Displayed after start-up of unit if no communication with Stand Controller is detected.	Call your iM3 authorized service provider.
SUCTION CLEAN FAIL!! CALL SERVICE	Displayed when unit detects that it takes more than 90 seconds to fill the mixing cup or mixing cup cannot be emptied within 4 minutes.	Call your iM3 authorized service provider.
UNIT NOT READY	Displayed if unit detects that the foot control is activated – or an instrument is lifted forward during start-up.	Switch off the unit and try again. If this does not help, call your iM3 authorized service provider.
WAIT	Patient chair lifting motor is overheated. Do not adjust the height or inclination of the chair for 10 minutes and try again.	If this does not help, contact your iM3 authorized service provider.
WATER LEAK CALL SERVICE	Water leakage. Switch off water supply and try to localize leakage.	If necessary, contact your iM3 authorized service provider.
WRONG INSTRUMENT	One or more unit instruments are not fitted correctly. Check that numbers on instrument hoses fit correct positions at instrument bridge – see Figure 3, page 12. Another possible error is that a unit instrument hose is defective.	If necessary, contact your iM3 authorized service provider.

7.2 SERVICE MESSAGES AND REMEDIAL ACTIONS


Below you see an overview of the service messages that may appear on the instrument bridge display.


Table 9 – Service messages

Service message	Reason for message	Remedial action
CHECK YELLOW BOTTLE	The unit will soon run out of Suction Disinfection.	Make sure you have Suction Disinfection cartridges (AN-354) in stock.
CHECK WHITE BOTTLE	The unit will soon run out of Water Clean	Make sure you have Water Clean cartridges (AO-980) in stock.
FLUSH MM MIN	Water lines are being flushed. MM = remaining minutes to completion of process.	Please wait – do not shut off power or activate any buttons.
FLUSH OK	Water line flushing completed. Unit operational again.	
NEXT SERVICE YYYY-MM-DD	Less than 30 days to next preventive service and safety inspection.	Call your iM3 authorized service provider and require a preventive service and safety inspection.
SERVICE OVERDUE YYYY-MM-DD	Date for preventive service and safety inspection is overdue.	Call your iM3 authorized service provider and require a preventive service and safety inspection.
SUCTION OK	Suction disinfection process completed. Unit operational again.	
SUCTION X %	The suction disinfection process is ongoing. X = remaining time in %.	Please wait – do not shut off power or activate any buttons.
WATER CLEAN ACTIVE WAIT MM	Water tank discharging water. MM = remaining minutes to completion of process.	Please wait – do not shut off power or activate any buttons.
PUMP NOT READY	Pump detached or no connection to unit.	Attach pump correctly.
NO PUMP	Pump not connected to the selected suspension/instrument	Attach pump correctly. Check configuration of the pump.
TOO HOT	If XO ODONTOCURE is activated continuously the message “TOO HOT” is displayed and the instrument is turned off.	Depending on the temperature, the light is ready for re-activation after a few seconds.

8 PREVENTIVE SERVICE, SAFETY INSPECTIONS AND REPAIRS

8.1 GENERAL

	<i>Preventive service and safety inspection as well as repair of the equipment must be done by an iM3 authorized service provider as prescribed by iM3.</i>
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	<i>While maintaining or servicing the unit there must be no patient in the patient chair!</i>
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8.2 PREVENTIVE SERVICE AND SAFETY INSPECTION

8.2.1 PREVENTIVE SERVICE AND SAFETY INSPECTION A – 12, 36 ETC. MONTHS AFTER INSTALLATION

Service A includes a general checkup and exchange of parts contained in PRO X Service Kit A.

Main activities see Table 10.

Expected labor time for service A is 1.5 hours.

8.2.2 PREVENTIVE SERVICE AND SAFETY INSPECTION B – 24, 48 ETC. MONTHS AFTER INSTALLATION

Service B includes a general checkup and exchange of parts contained in PRO X Service Kit B.

Main activities – see Table 10.

Expected labor time for service B is 3.5 hours.

Table 10 – Preventive service and safety inspection

A service	B service	Activity
X	X	Clean main water filter and replace filter cartridge
	X	Open and clean water valves
X	X	Clean main water valve and replace gasket
X	X	Replace water softener filter
X	X	Clean and replace parts of water backflow prevention
X	X	Clean suction disinfection system
X	X	Clean suction- and drain system

8.2.3 SERVICE NOTIFICATION


Approximately 30 days before the next preventive service and safety inspection a message appears on the instrument bridge display after power-on.


If the preventive service and safety inspection becomes overdue a warning message will appear on the display.


When the preventive service and safety inspection has been performed the iM3 authorized service provider will set the date for the next preventive service and safety inspection.

8.3 ADJUSTMENT OF THE ARM SYSTEMS

All arm joints are fitted with roller bearings, adjustable tension springs and friction brakes for smooth and effortless operation.


	<p><i>The instrument bridge, the operating light and the HD display should be in balance and easy to maneuver with “two fingers”. If this is not the case – please contact your iM3 authorized service provider for adjustment of arm brakes and balance springs.</i></p>
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	<p><i>Please note that the brake and the balance spring of the instrument bridge arm system should be adjusted by an iM3 authorized service provider in accordance with the load on the norm tray fitted under the instrument bridge.</i></p>
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	<p><i>Adjustments of arm systems must be done by qualified personnel only! Maladjustment may result in a mechanical hazard!</i></p>
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8.4 ADJUSTMENT OF BALANCED INSTRUMENT SUSPENSION ARMS

Each instrument suspension is fitted with a spring that can be adjusted so that the instrument is perfectly in balance.

	<p><i>All instruments should be in perfect balance when lifted forward – i.e. you should feel no dragging from the instrument hose when holding an instrument! If this is <u>not</u> the case – please contact your iM3 authorized service provider for adjustment.</i></p>
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8.5 REPLACEMENT OF OPERATING LIGHT SOURCE

The expected lifetime of the LED light source is 10 years.
For replacement of the LED light source please contact your iM3 authorized service provider.

8.6 HD DISPLAY

HD Display does not contain any field-serviceable parts. A faulty display must be returned to iM3 for repair. Contact your iM3 authorized service provider.

9 INFECTION CONTROL AND MAINTENANCE CHECKLIST

Below is a summary of infection control (section 5) and maintenance procedures (section 6):

Table 11 – Infection control and maintenance routines

What	How	Parts/consumables needed
Every morning		
Fit clean suction filters	See section 5.17.2	
Check that the rubber feet of the foot control are clean to avoid sliding	See section 6.1	Petroleum benzine
Switch the unit on		
Before each patient		
Fit sterile / disinfected / new:		Extra:
<ul style="list-style-type: none"> Unit instrument pad Bridge protection pad 	See section 5.5	<ul style="list-style-type: none"> unit instrument pad bridge protection pad
<ul style="list-style-type: none"> Handles on instrument bridge, light and HD Display 	See section 5.6	<ul style="list-style-type: none"> handles
<ul style="list-style-type: none"> Covers for suction nozzles 	See section 5.17.1	See sections 10.2 and 10.3.
<ul style="list-style-type: none"> Unit instrument hoses and balance suspensions if necessary 	See section 5.7	See section 10.2.
Fit sterile / disinfected unit instruments	Syringe – see section 5.8 Micromotors – see section 5.9 XO Peristaltic Pump – see section 5.14 XO ODONTOCURE – see section 5.12	Extra: <ul style="list-style-type: none"> syringe tips syringe covers micromotor covers, please see bienair.com XO ODONTOCURE light rods etc. See sections 10.2 and 10.3.
Place a new cup		
After each patient		
Remove contaminated: <ul style="list-style-type: none"> Unit instruments Unit instrument pad Bridge protection pad Handles on instrument bridge, light and unit HD Display 		
Clean and disinfect all surfaces.	See section 5.4	See section 10.3.
Every evening		
Clean and disinfect the suction lines	See section 5.17	Suction Disinfection cartridges See section 10.3.
Clean suction filters	See section 5.17.2	Silicone Grease, O-rings See section 10.3.
Every month		
Empty coarse filter in cuspidor valve, if installed.	See section 6.7	
Measure curing depth of XO ODONTOCURE	See section 6.2	XO ODONTOCURE testing device – see section 10.3 – and/or LED UV measuring device
Every year		

What	How	Parts/consumables needed
12, 36 etc. months after installation of the unit: Preventive service and safety inspection A.	See section 8.2.1	PRO X Service Kit A See section 10.3.
24, 48 etc. months after installation of the unit: Preventive service and safety inspection B.	See section 8.2.2	PRO X Service Kit B See section 10.3.
Replace: <ul style="list-style-type: none"> • suction hoses • syringe tip 		PRO X Infection Control Kit See section 10.3.

10 ACCESSORIES, DETACHABLE PARTS AND CONSUMABLES

10.1 ACCESSORIES

Table 12 – PRO X accessories/upgrades

Description	Ref.
Kit for external irrigation	XO-069
Peristaltic Pump	XO-053
Suction hose holder on instrument bridge, XO-908 or XB-937	XO-218

10.2 DETACHABLE PARTS

Table 13 – Detachable parts


Product	No. of thermo-disinfection cycles	No. of autoclaving cycles	Ref.
Instrument pad	250	250	AP-725
Bridge protection pad	250	250	AP-728
Handles	250	250	AP-732
High volume suction hose complete. 2090 mm long	None	None	AP-710
Saliva suction hose complete. 2090 mm long	None	None	AP-711
Cover for high volume suction nozzle	250	250	AP-714
Cover for saliva suction nozzle	250	250	AP-715
Suction hose filters	250	None	MR-075
3F Syringe hose	None	None	AN-382
6F Syringe hose	None	None	AN-383
Hose for turbine	None	None	AN-385
Hose for micro motor, MC3	None	None	AN-384
Hose for micro motor, MX2	None	None	AO-446
Tip for syringe	250	250	SD-214
Cover for syringe	250	250	SD-510
iM3 4212 handpiece	None	None	AP-842
Connector piece when iM3 4212 used with XO Peristaltic pump	None	None	XO-069
Fiber glass rod for XO ODONTOCURE	250	None	AP-915
Light shield for XO ODONTOCURE	None	None	AP-916
Protection cap for XO ODONTOCURE	None	None	AP-917
XO OSSEO motor with hose	None	250	
XO OSSEO motor sealing plug	None	250	160095

10.3 CONSUMABLES**Table 14 – Consumables**


Product	Purpose	Note	Supplied units	Ref.
Dürr FD 333	For <u>disinfection of alcohol-resistant surfaces</u> .	Do <u>not</u> use on: <ul style="list-style-type: none"> Painted surfaces of the patient chair The operating light protection screen See details at duerrdental.com		
Dürr FD 366	For rapid <u>disinfection and cleaning of sensitive surfaces</u> such as plastics or other artificial leather surfaces, suction hose holders, cuspidors, etc.	See details at duerrdental.com		
Pro X Water Clean	Disinfection of unit water and water lines.	Disinfection additive: Significantly reduces, but does not eliminate pathogens in unit water	6 * 0.6-liter cartridges	AO-980
Pro X Suction Disinfection	Disinfection of suction hoses and suction system.	Disinfection additive: Significantly reduces, but does not eliminate pathogens in suction and suction lines	6 * 0.6-liter cartridges	AN-354
Suction filter	Collects particles larger than 0.75 * 0.6 mm.	-	1 pcs	MR-075
Suction filter holder	Holder for the suction filter.	-	1 pcs	AP-795
XO ODONTOCURE protection caps	Protects the eyes against emitted light.	-	5 pcs	AP-917
XO ODONTOCURE cross infection protection sleeves	Reduce risk of cross contamination.	-	100 pcs	AP-918
XO ODONTOCURE testing device	Measure curing effectiveness.	-	3 pcs	AP-920
Disposable irrigation kit – XO Peristaltic pump	Irrigation tubes for peristaltic pump.	-	50 pcs	XO-055
Disposable irrigation kit – XO Peristaltic pump	Irrigation tubes for peristaltic pump.	-	10 pcs	XO-056
Silicone Grease	Greasing of O-rings.	-	1 pcs	UG-928
Peroxide test strips	Control of water disinfection.	-	100 pcs	UH-238
PRO X Service Kit A	Parts used for preventive service and safety inspection A.			AP-655
PRO X Service Kit B	Parts used for preventive service and safety inspection B.			AP-656


11 LEGAL


11.1 MODIFICATION OF THE EQUIPMENT


	<p>WARNING: No unauthorized modification of this equipment is allowed!</p>
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11.2 WARRANTY


	<p><i>iM3 warrant that this product is free from defects in materials and workmanship for a period of 12 months from the date of installation.</i></p> <p><i>iM3 extend the warranty to 36 months from the date of installation under the condition that:</i></p> <ol style="list-style-type: none"> <i>1. The distributor has filled out and returned the installation report to iM3 immediately after installation and</i> <i>2. Preventive service and safety inspection are carried out and documented as described in section 8!</i>
---	---

	<p><i>iM3 holds no responsibility for defects due to ordinary wear and tear, or if iM3's instructions on handling, cleaning, disinfection, sterilization or service have not been adhered to.</i></p>
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	<p><i>iM3 undertake no responsibility for warranties, safety, reliability and function if:</i></p> <ul style="list-style-type: none"> <i>• the equipment has not been used, cleaned, disinfected and sterilized under normal conditions for its intended purpose and in strict accordance with this user manual and/or</i> <i>• technical changes including repairs, adjustments/calibrations and reconstructions not in conformity with iM3's instructions have been done and/or</i> <i>• the product has been installed, serviced or repaired by anyone not certified by iM3 and/or</i> <i>• non-original spare parts and accessories have been used</i>
---	--

	<p><i>Any claim for warranty must be made to iM3.</i></p>
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11.3 EXPECTED SERVICE LIFE

	<p><i>The expected lifetime of PRO X is 10 years.</i></p> <p><i>This means that iM3 will support the product and supply spare parts from the date of manufacturing plus 10 years.</i></p>
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11.4 3RD PARTY INSTRUMENTS AND ACCESSORIES

Instruments or accessories manufactured by 3rd party manufacturers supplied with this product are supplied under the responsibility of mentioned 3rd party manufacturers.

11.5 PRODUCT UPDATES

iM3 has no obligation to update this product if newer versions or updates are introduced after the time of delivery.

11.6 FIRMWARE VERSION

The products described in this manual are according to firmware version 4.02.

It is possible to update to newer firmware versions if available. Please contact your iM3 authorized service provider.

11.7 MARKING PLATE

Please see the PRO X marking plate at the base of the unit stand at 6 o'clock.

11.8 OTHER LABELS

Please see other silver labels with serial numbers, color codes etc. for specific parts of the unit as follows:

- **Unit:** Under right rear panel
- **Operator chairs:** Under the seat

11.9 PRODUCT DISPOSAL INFORMATION

Within the European Union this product must not be disposed of with household waste. Instead, it is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, or your supplier's office.

Disposal of electrical products in countries outside the European Union should be done in line with local regulations.









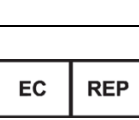
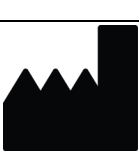















This product is to be disposed of as required by local ordinances or regulations!

12 SYMBOLS

List of symbols used on the product and in this manual.

Table 15 – List of symbols

	Warning <i>Used to emphasize important safety related information about the use of the device</i>
	Warning: dangerous voltage
	Follow instructions for use
	Mandatory action
	Information <i>Other important messages not related to safety</i>
	Do not reuse. For single use only.
	Serial Number <i>This information is found on the marking plate on the unit.</i>
	Sterilized by ethylene oxide
	EU representative
	Manufacturer <i>This information is found on the marking plate on the unit.</i>
	Date of manufacture <i>This information is found on the marking plate on the unit.</i>

	<p><i>Dispose in accordance with instructions provided in this manual</i></p>
	<p><i>Type B applied part (degree of protection against electrical shock)</i></p>
	<p><i>Type BF applied part (degree of protection against electrical shock) Intraoral camera</i></p>
	<p><i>Foot control pedal right</i></p>
	<p><i>Foot control pedal left</i></p>
	<p><i>Foot control pedal down</i></p>
	<p><i>X button on foot control</i></p>
	<p><i>O button on foot control</i></p>
	<p><i>Foot control joystick north</i></p>
	<p><i>Foot control joystick west</i></p>
	<p><i>Foot control joystick south</i></p>
	<p><i>Foot control east</i></p>

13 DIMENSIONS AND TECHNICAL DATA

13.1 DIMENSIONS AND RANGE OF MOVEMENT

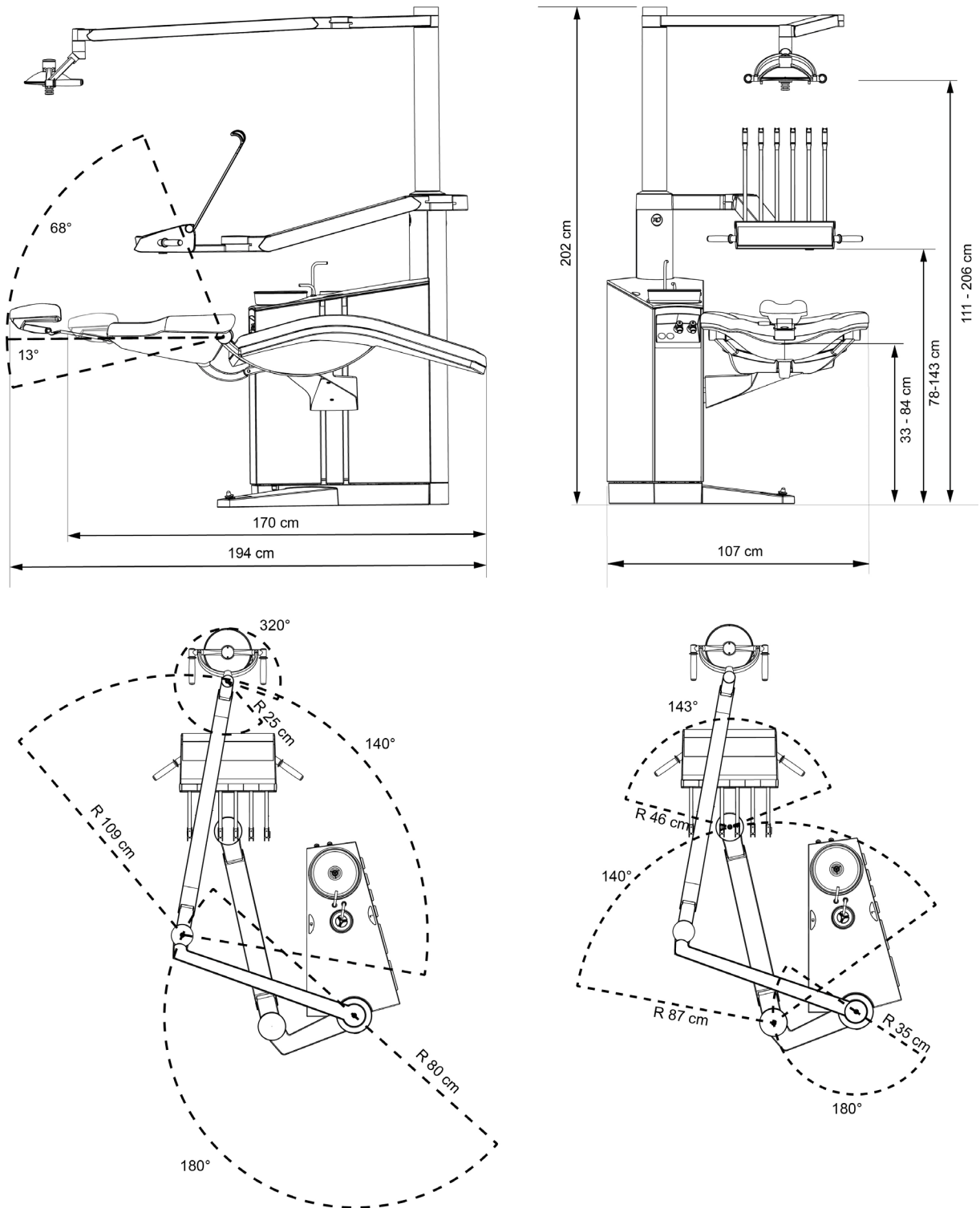


Figure 67 – PRO X dimensions and range of motion

13.2 TECHNICAL SPECIFICATIONS**Table 16 – Technical specifications**

Part	Specification
Instrument bridge	
Number of instruments	≤ 6
Force to move the instrument bridge corresponding to	400 g – 1,500 g
Luzzani syringe	
Water	20 – 100 ml/min ± 20%
Air	10 – 100 %
Other	See luzzani.com
Heating element, maximum power loading	100 W
Bien-Air MC3 micromotor	
Rotational speed	Variable in the range 100 – 40,000 RPM ± 10%
Torque (contra-angle gear ratio 1:1)	2.5 Ncm
Spray water (without contra-angle)	20 – 70 ml/min ± 20%
Spray air (without contra-angle)	10 – 100 %
Cooling air	10 l/min
Contra angles according to	ISO 3964, type 2 or type 3
Other	See bienair.com
Bien-Air MX2 micromotor	
Rotational speed	Variable in the range 100 – 40,000 RPM ± 10%
Torque (contra-angle gear ratio 1:1)	2.5 Ncm
Spray water (without contra-angle)	20 – 70 ml/min ± 20%
Spray air (without contra-angle)	10 – 100 %
Cooling air	10 l/min
Contra angles according to	ISO 3964, type 2 or type 3
Other	See bienair.com
XO OSSEO motor	
Rotational speed	Variable in the range 100 – 40,000 RPM ± 10%
Output power	125 W
Torque (contra-angle gear ratio 1:1)	6.5 Ncm ± 20%
Irrigation (XO Peristaltic Pump)	10 – 90 ml/min ± 20%
Cooling air	None
Contra angles according to	ISO 3964, type 1
Air instrument	
Drive air flow	55 NI/m; 3.2 bar
Drive air adjustment	One step in the range 50 – 100 %
Spray water (without contra-angle)	20 – 70 ml/min ± 20%

Part	Specification
Spray air (without contra-angle)	10 – 100 %
Turbine hand-pieces and other air instruments according to	ISO 9168:2009, type 3
iM3 4212	
Type	Magnetostrictive with ferrite rod
Amplitude of instrument movement	10 – 20 µm
Instrument movement pattern	Circular
Instrument frequency	42 kHz
Instrument material	Titanium
Power setting	One step in the range 10 – 100 %
Irrigation	10 – 90 ml/min ± 20%
XO ODONTOCURE	
Light source	LED
Wave lengths	385 – 515 nm (peaks at 400 nm ±10 nm and at 460 ± 3 nm).
Power output – Normal mode	1650 mW/cm ²
Power output – Soft Start	375 mW/cm ²
Fiber glass rod outer diameter	8 mm
Cross-sectional area of optics (effective)	0,44 cm ² (44,2 mm ²)
Hand piece temperature during use	46°C
Curing activator classification	Class 2, Type 1
Intraoral Camera	
Connection	USB 2.0 (USB 3.0 compatible)
Activation	Via switch on the handpiece top or bottom, or via foot control (requires software and a serial connection between com and unit)
Handpiece weight	70g
Handpiece length	200mm
Driver	Uses standard windows drivers, no additional drivers required
Resolution	1280x1024 pixel
Lighting (depending on head type)	CAM 2 LED's 400-780 nm Proof 405 nm ultraviolet Proxi 850 nm infrared
Ambient Operating Temperature	10-40°C
Operating light	
Light intensity	3,000 – 30,000 lux
Color rendering index (CRI)	> 95
Color temperature	5,500 K
Illuminance pattern	In accordance with ISO 9680 - see Figure 68 below
Suction	

Part	Specification	
The unit shall be connected to a suction machine with	High flow rate	
Type of suction	Wet or dry	
Inner diameter of high volume suction nozzle	16 mm	
Inner diameter of saliva suction nozzle	7 mm	
Head loss between the suction installation and the atmospheric end of the high-volume suction cannula	Flow [l/min]	Head loss [mbar]
	250	33,9
	300	59,3
	350	84,7
	450	110,1
Head loss between the suction installation and the atmospheric end of the saliva suction cannula	Flow [l/min]	Head Loss [mbar]
	250	33,9
	300	42,3
	350	67,7
	450	84,7
Mesh size suction filters	< 1 mm	
Weighted noise level from the suction system through the connected cannulas at a distance of 0.5 m from the cannula connect	<65 dB (A)	
Water and air supply		
Mesh size air filter	5 µm	
Mesh size water filter	50 µm	
Maximum inlet water conductivity	850 µS/m	
Water disinfection (XO Water Clean)		
Continuously dispersion of a solution of non-toxic disinfectant to the procedural water.	0.0235% hydrogen peroxide	

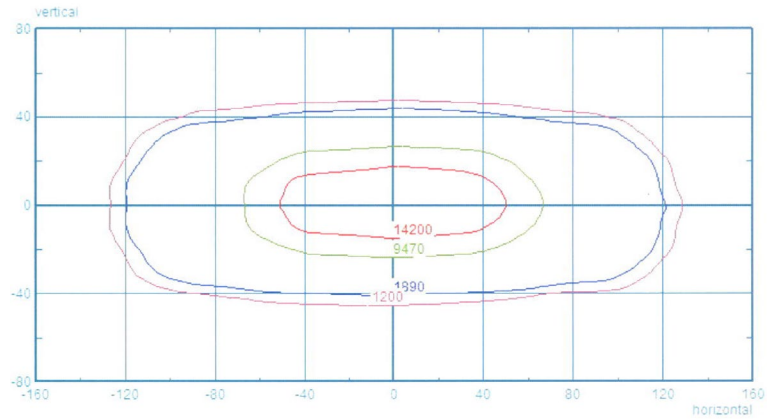


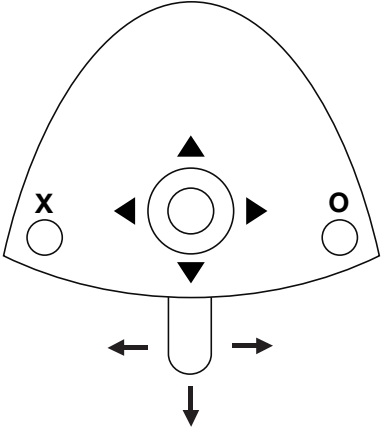
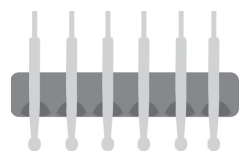
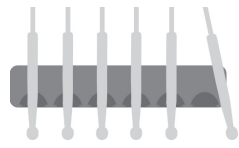
Figure 68 – OP Light – Illuminance pattern contour lines corresponding to 10%, 50% and 75% of the maximum illuminance

Table 17 – Boxes dimensions and weight

Box	Dimensions (cm) L x W x H	Gross weight (kg)
Unit stand	120 x 72.1 x 140	150 – 170
Arm and instrument bridge	134.4 x 72.4 x 44	35
Operating light	118 x 53 x 40	15
XO SEAT	60 x 60 x 37	10.3
STOOL	60 x 60 x 37	14.6
HD display incl. arm	93 x 63.8 x 43	19
Steel installation plate	120 x 93 x 18	54 incl. pallet

14 PRO X QUICK GUIDE

Table 18 – PRO X Quick Guide

		
	▲	
▼		
▶		
◀		
X	No function	
O	Call chairside assistant	
↓	Short: Operating light on/off	
⏏	Long: Change operating light intensity	
		
▲	Increase (maximum) speed / power / time	
▼	Decrease (maximum) speed / power / time	
▶	Increase amount of spray water	
◀	Decrease amount of spray water	
X	Enable/disable automatic chip blow Video: Save active video image	
O	Change spray selection Video: Toggle between “still” and “live”	
→	Activate instrument	
←	Activate instrument (counter-clockwise) – if possible	

Product
PRO X

2019-07-01
Ref. YB-646 Ver. 2.00

Subject to change.