XO FLOW
INSTRUCTIONS FOR USE

XO FLOW (REF CF-100)

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1. INTRODUCTION AND INTENDED USE

These instructions concern the XO FLOW unit, also referred to as the unit in this document.

1.1. XO FLOW elements

The most important elements of the XO FLOW unit and patient chair are shown below.

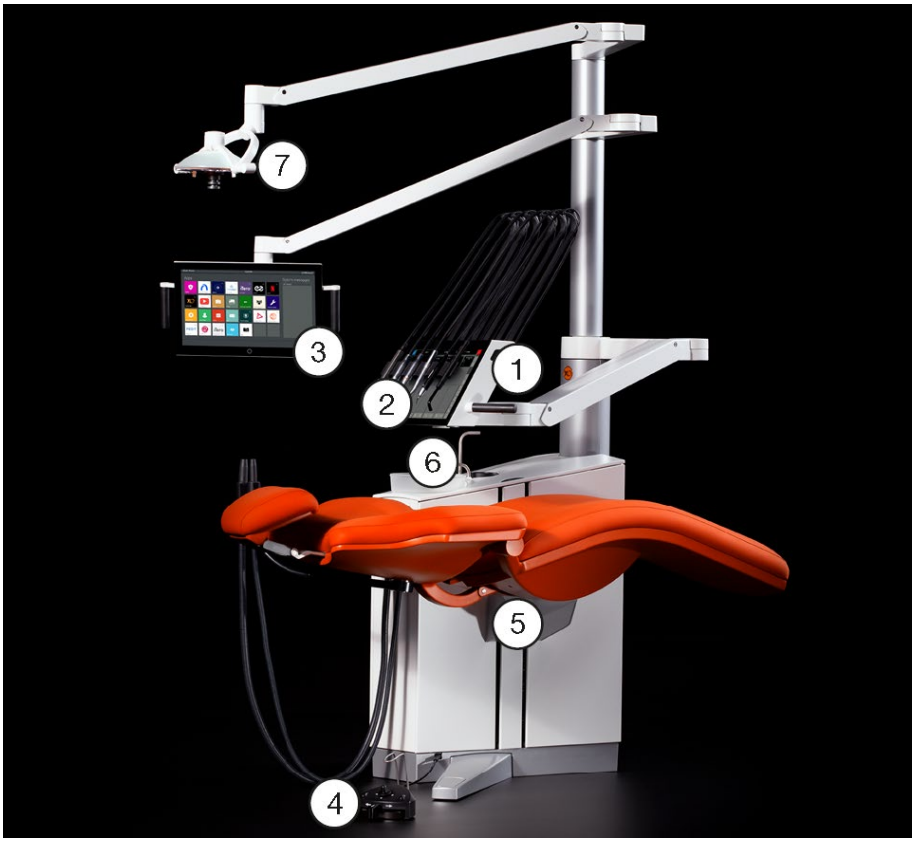

Figure 1 – XO FLOW: (1) instrument bridge, (2) Dashboard, (3) Navigator (optional), (4) foot control, (5) patient chair, (6) cuspidor and cup filler (optional), (7) operating light (optional).

	*See technical specifications for XO FLOW at xo-care.com.*

1.2. Standard / advanced configuration of XO FLOW

An XO FLOW with standard configuration is operated and setup using the digital Dashboard – a touchscreen with a graphical user interface integrated into the unit's instrument bridge.
The primary unit and patient chair functions are operated handsfree with the foot control.

When the Navigator – a second touchscreen connected to the unit's internal computer – is provided, it is possible to extend the XO FLOW unit with software options for creating an advanced configuration of the unit.

1.3. Individual function

These Instructions for use describe the factory default function of the unit.

It is possible to individualize the unit's function as described in section 6.2 for a unit with standard configuration and in section 4 for a unit with advanced configuration.

1.4. Intended use and precautions

	Intended use: *XO FLOW is a combined unit and patient chair, which is to be used by dentists and other qualified personnel for prevention and treatment of human teeth diseases.*

	Contraindications: *The unit is not suitable for treating patients with a weight of 150 kgs or more.*

	The unit must be operated in accordance with these instructions for use. *Use only original consumables, accessories and spare parts provided by XO CARE A/S.*

When XO FLOW is used by skilled dental operators no special training is required.

	To avoid injury to persons or material do not use the unit or its accessories if signs of operational, electrical or mechanical defects are found. *Do not use the unit 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.* *Do not simultaneously touch the patient and any external electrical equipment such as PCs, monitors, etc.* *Use of other equipment adjacent to or stacked on this equipment must be avoided because it could result in improper operation.* *Exercise caution when using the unit in combination with other equipment that can move.*

The unit must be operated under these conditions:
- Temperature : +15°C to +35°C
- Relative humidity: 20% – 80%
- Air pressure: 800 hPa – 1060 hPa
- Installation altitude: Max. 2.000 meters above sea level

2. POWER

For daily use switch the unit on using the switch (1) in Figure 2.

To shut down the unit, tap the shutdown button ◯ on the Dashboard – Figure 8 (3).
This will initiate the overnight infection control procedure and thereafter automatically shut down the unit.

Use the mains switch – Figure 2 (2) – for switching off/on all electric power.

	In case of emergency, use the mains switch to switch off the unit. *After switching off the unit wait for at least 30 seconds before the unit is switched on again.*

To minimize power consumption, it is possible to configure the unit with automatic stand-by and automatic shutdown functions.

If enabled, the unit enters stand-by mode when it has not been used for a while. The Dashboard and other energy-consuming elements of the unit will be shut off. Exit stand-by mode by activating the foot control, by touching the Dashboard or by lifting an instrument forward.

Figure 2 – Rear panel: (1) on switch, (2) mains switch, (3) 230 V socket, (4) external USB port.

3. SCREEN OPTIONS

3.1. General

The unit may optionally be fitted with a UHD screen or with the Navigator.

⚠	*The screen is not intended for diagnostic use but may be used to display x-ray and other images for informational purposes.*

3.2. UHD screen

If the unit is fitted with a UHD screen this must be connected to a remote computer using an HDMI cable available from XO CARE.

Figure 3 – UHD screen

3.3. Navigator

Another option is to fit the unit with the Navigator – a touchscreen connected to the unit's internal computer.

In the standard configuration – see 1.2, the Navigator can be used to interact with a remote computer provided that the remote computer is connected to the same local area network as the unit.

	*If the unit is fitted with the Navigator, the unit must be connected to a local area network*

An advanced configuration is realized when an XO FLOW unit with Navigator is enhanced with software options as described in section 4.

	*See details concerning available software options at xo-care.com.*

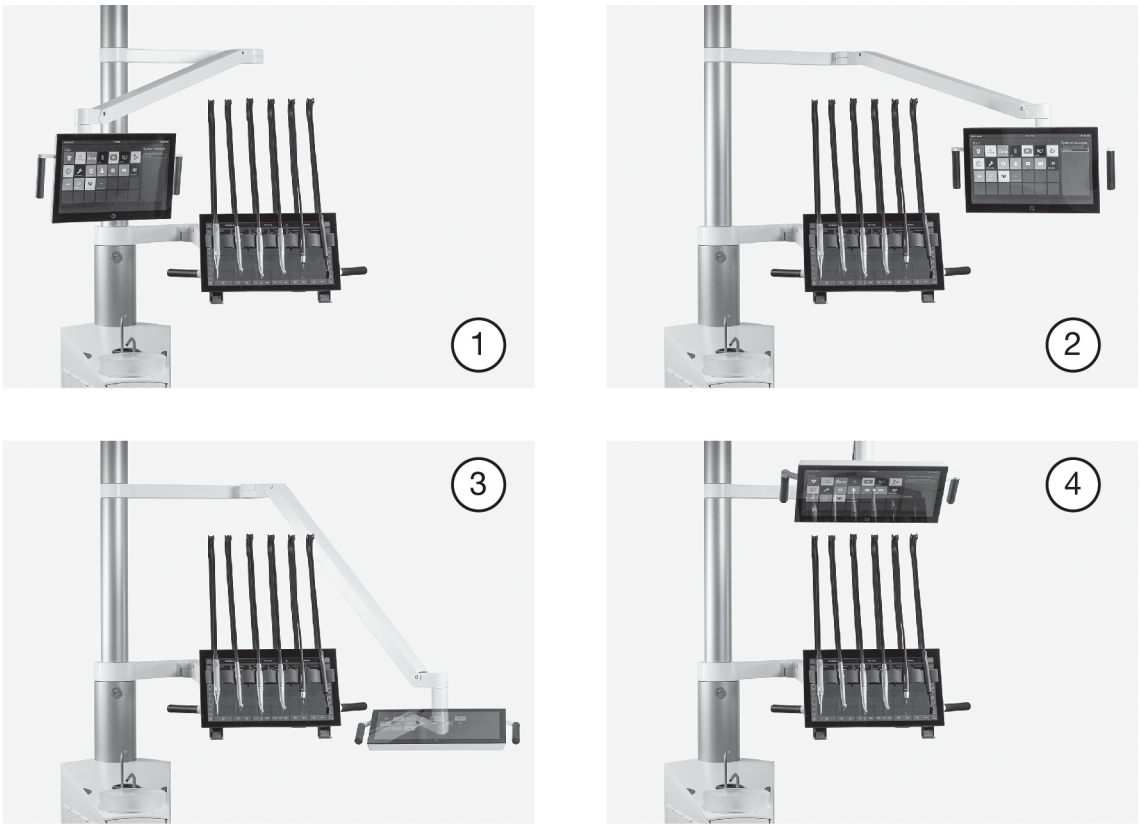

Figure 4 – Positioning the Navigator: (1) at the chairside assistant's side, (2) at the operator's side, (3) desk position, (4) patient viewing position.

4. SOFTWARE OPTIONS

When the XO FLOW unit is fitted with the Navigator, it is possible to extend the unit with software options for creating an advanced configuration of the unit.

4.1. Software option: "Advanced functionality"

This option transforms the Navigator into a smart device with XO dental apps, a home screen and enables support for multiple users – see Figure 5.

The following XO dental apps are available:

- *Unit apps* for setting up and managing the unit, sending e-mails, handling images/ videos etc.
- *Remote desktop apps* ( ) for managing software running on remote computers connected to the same local network as the unit
- *Web apps* ( ) for accessing and managing web-based software solutions

Open an app with just one tap and return to the home screen by tapping the home button.

Figure 5 – Navigator home screen: (1) XO dental apps, (2) home button, (3) information bar, (4) system message window.

	Please note that the unit must be connected to the internet to take full advantage of the XO dental apps.

The following apps are included in the software option "Advanced functionality":

Administration app
This app is used by the clinic's administrator to set up the unit.

	Note that access to the Administration app is protected by a pin code. *The pin code is the last four digits of the unit's serial number displayed in the lower right corner of the Dashboard.*

Select which language to be displayed on the Dashboard and the Navigator by tapping . The selected language will only be active after the unit has been shut off and switched on again.

Tap "Apps" to select which apps to be displayed on the Navigator.

Select user app
Use this app to select the current user.

User settings app
Use this app to set up the unit and the instruments for the active user.

Help app
Tap the Help app for online access to:
- These instructions for use
- Short introduction videos on how to sit well, see well and work well – at the same time
- Short videos showing how *not* to work with XO units
- Infection control workflow videos
- How to replace consumables

Mail app
The Mail app is used for sending e-mails directly from the unit to e.g. service personnel.

Picture frame app
This app makes it possible to, for example, display a logo or a patient welcome message on the Navigator.

Infection control app
The Infection control app is used for manual disinfection of the unit's water and/or suction system. Normally the automatic disinfection procedure should be used – see section 31.

Technical settings app
This is used by authorized service personnel for setting up the unit.

Status app
This app shows system messages, statistics, infection control log and unit data.

Remote desktop app
Contains one remote desktop connection to a remote computer.
For increased functionality, the software option "Advanced remote desktop apps" is available.

4.2. Software option: "Images & Camera apps"
Use these apps for displaying, handling and exporting images and videos created with the intraoral camera built into the unit, if installed. See section 19.2.

4.3. Software option: "Ergonomics guide app"
See optimal operator and patient positions in relation to the tooth surface that shall be treated.

4.4. Software option: "Advanced remote desktop apps"
Dedicated remote desktop apps ( ) for interaction with specific third-party applications like intraoral scanner software, practice management and imaging systems installed on one or more remote Windows computers connected to the same local area network (but not necessarily in the same room) as the unit.

When the app is activated, the application is automatically brought to the foreground.

These apps also support audio routing from the remote computer to the speaker inside the instrument bridge and support multi-touch (e.g. pinch zoom).

From the Administration app tap "Remote desktop apps" to select and setup which remote desktop apps to be displayed on the Navigator.

For further details concerning Remote desktop apps, please see xo-care.com.

4.5. Software option: "Web apps"
The Web apps ( ) are used for accessing and managing third-party web-based software solutions – like e.g. practice management systems, access to xo-care.com or e.g. YouTube.

Partner web apps are apps created in collaboration with partners. See Figure 5.

Some Web apps must be set up from the Administration app using the "Web app configuration".

For further details concerning Web apps, please see xo-care.com.

4.6. Software option: "Instrument presets & workflows"

Instrument presets make it easy – with just one tap – to select optimal instrument settings related to a specific dental procedure.

See further details concerning this option in section 13.

Instrument workflows are used for execution of a sequence of steps with optimal instrument settings in each step.

See further details concerning this option in section 14.

5. INSTRUMENT BRIDGE AND INSTRUMENT MODULES

The instrument bridge contains the Dashboard and the instrument modules.

⚠	*The Dashboard protection foil prevents the glass plate being scratched by instruments or stained by e.g. hydrofluoric acid.*

Up to 6 instrument modules may be fitted – in any order – into the instrument bridge.

6. DASHBOARD

6.1. General

The Dashboard is a touchscreen with a graphical user interface as shown below.

The information bar displays time and the name of the unit/room.

The left and the right side menus contain buttons for controlling the unit and the patient chair.
The function of the side menu buttons can be configured.

All unit and patient chair functions can be activated from the Dashboard.
Tap to access the unit menu or to access the patient chair menu.
Thereafter activate the desired function and close the menu by tapping ↵.

Tap the button for locking the Dashboard (and the Navigator) while cleaning and disinfecting the glass surface(s).
Unlock the Dashboard (and the Navigator) by activating the foot control.

For each instrument, the Dashboard has a control window and a display.

If a system message is pending, an information ⓘ or a warning ⚠ symbol will be shown in the Dashboard information bar.

6.2. Dashboard – XO FLOW standard configuration

On a unit with standard configuration – see 1.2 – the Menu button (12) in Figure 6, opens the Main menu as shown in Figure 7.

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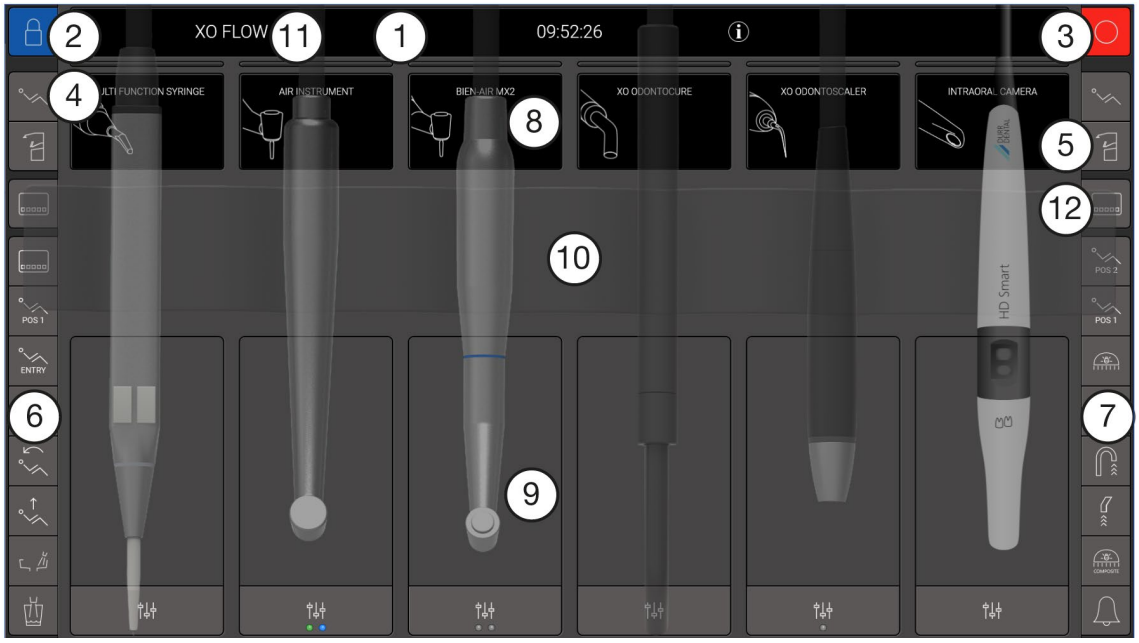


Figure 6 – Dashboard – XO FLOW standard configuration: (1) information bar, (2) lock Dashboard, (3) shutdown, (4) patient chair menu, (5) unit menu, (6) left side menu, (7) right side menu, (8) instrument display, (9) instrument control window, (10) instrument holder, (11) unit name, (12) Menu button.

	*Please remove all the instruments, to better access the Main menu. See Figure 59.*

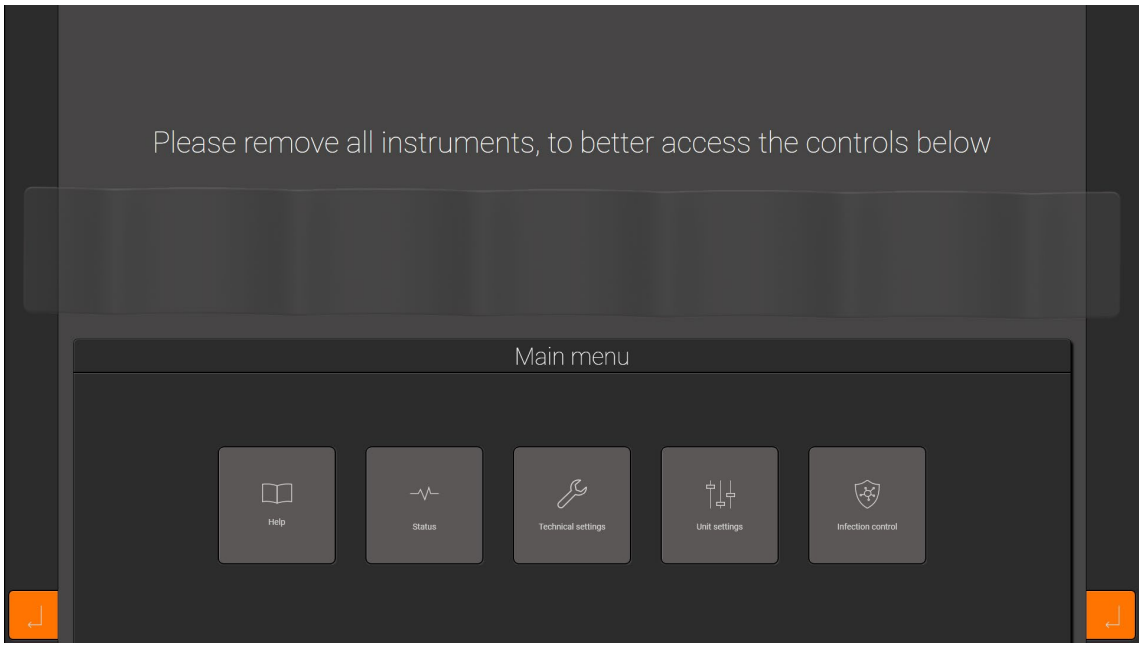


Figure 7 – Dashboard Main menu

Help button

Tap the Help button and scan the QR code with a smartphone to access:

- These instruction for use
- Short introduction videos on how to sit well, see well and work well – at the same time
- Short videos showing how *not* to work with XO FLOW
- Infection control workflow videos
- How to replace consumables

Status button

Tap this button to open the Status menu to see statistics, pending messages and system information.

Technical settings button
This opens the Technical settings menu that is used by authorized service personnel for setting up the unit.

Unit settings button
Use this button to open the Unit settings menu and set up the unit and the instruments.

Select which language to be displayed on the Dashboard.
The selected language will only be active after the unit has been shut off and switched on again.

Infection control button
Tap this button to open the Infection control menu for manual disinfection of the unit's water and/or suction system.
Normally the automatic disinfection procedure should be used – see section 32.

Return to the Dashboard by tapping ↵.

6.3. Dashboard – XO FLOW advanced configuration

Figure 8 shows the Dashboard on a unit with advanced configuration.

The name of the current user is displayed in the information bar.

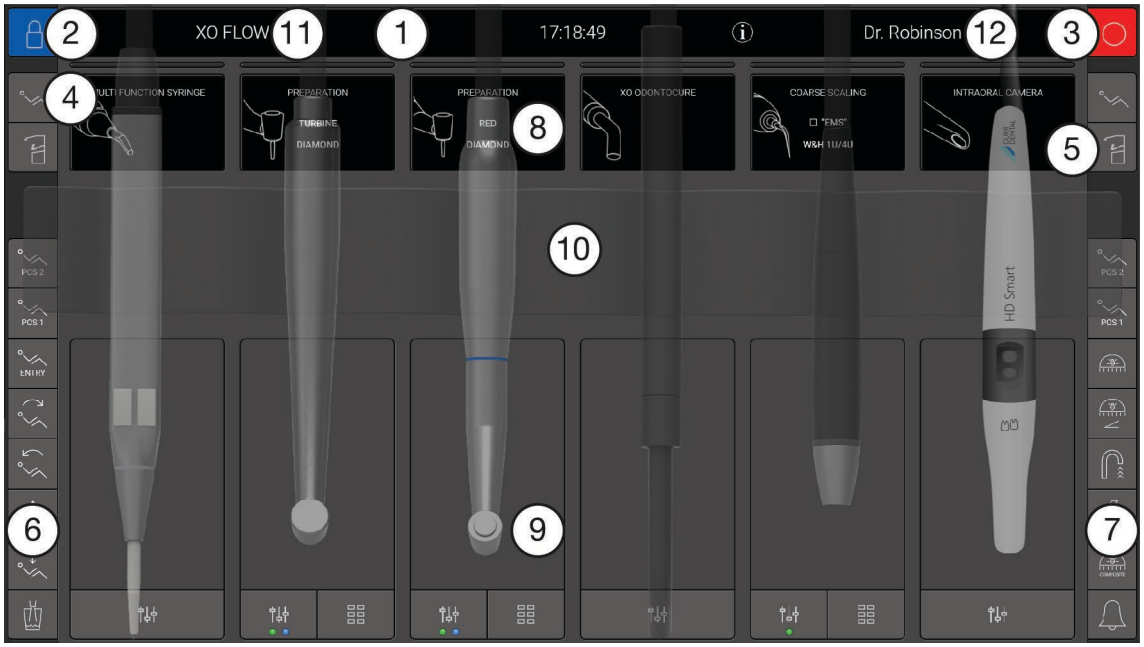


Figure 8 – Dashboard – XO FLOW advanced configuration: (1) information bar, (2) lock Dashboard & Navigator, (3) shutdown, (4) patient chair menu, (5) unit menu, (6) left side menu, (7) right side menu, (8) instrument display, (9) instrument control window, (10) instrument holder, (11) unit name, (12) name of current user.

7. POSITIONING THE INSTRUMENT BRIDGE

⚠	*Always use the handles to position the instrument bridge.* *Never move the instrument bridge dragging an instrument – this may damage the instrument suspension.*

To obtain easy access to and optimal balancing of the instruments, place the instrument bridge close to the center of the patient's chest – with a distance from the tips of the instruments to the oral cavity of 30 cm.

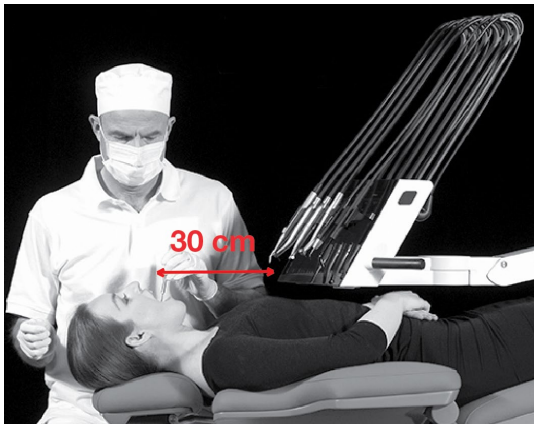


Figure 9 – Position of the instrument bridge while treating a patient.

Always place the instrument bridge in the parking position when the patient enters or leaves the chair.

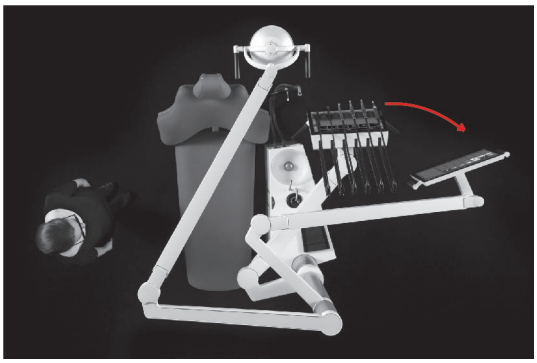


Figure 10 – Instrument bridge in the parking position.

In this position, the patient has easy access to the chair and does not notice the instruments when getting in and out of the chair. Further the instrument bridge is easily accessible for cleaning and disinfection.

8. WORKING WITH BALANCED INSTRUMENTS

Grab the instruments from below – thereby avoiding lifting the shoulder.

Figure 11 – Lifting an instrument forward.

All instruments should be in perfect balance when lifted forward – i.e. there should be no dragging from the instrument hose while holding the instrument!
If necessary, adjust the balance suspension using a use a 2,5 mm Allen key with the instrument suspension in the resting position. Turn the key clockwise to tighten the suspension resistance to balance heavier instruments, or counterclockwise for lighter instruments.

Figure 12 – Adjustment of instrument balance.

If necessary, adjust the angle of the instrument suspension using a 2,5 mm Allen key. Turn the key clockwise to move the instrument suspension's resting position angle slightly forward or turn the key counterclockwise to move it slightly backwards.

Figure 13 – Adjustment of instrument suspension angle.

9. FOOT CONTROL

9.1. General

The foot control has a pedal, a joystick and two buttons.

Use the foot control to activate the selected instrument and operate the patient chair.

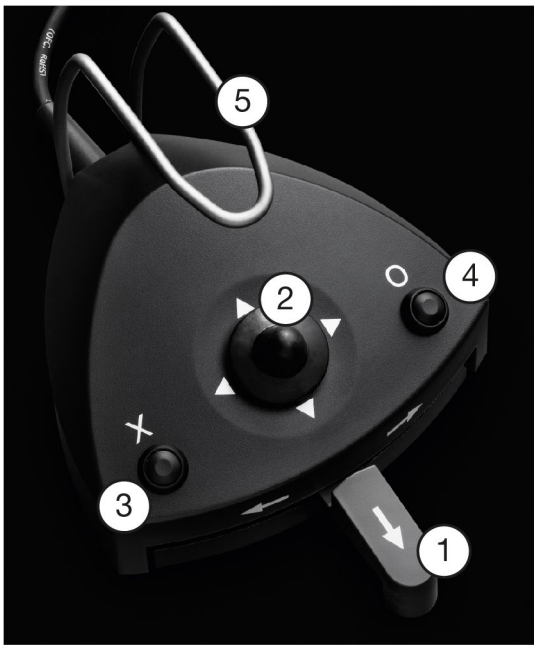


Figure 14 – Foot control: (1) pedal, (2) joystick, (3) X-button, (4) O-button, (5) hanger.

Use the hanger to – with the foot – place the foot control in the desired position on the floor.

9.2. Function

Table 1 – Foot control functions (factory default)

Input	Activation	No instrument selected	An instrument is selected
➞	Pedal right	No function	Activate the selected instrument
⬅	Pedal left	No function	Activate the selected instrument (micromotors: counterclockwise)
⬇	Pedal down	No function	Switch spray on/off for the selected instrument
▲	Joystick north	Lift chair	Increase the maximum value of the primary instrument parameter (e.g. speed)
▼	Joystick south	Lower chair	Decrease the maximum value of the primary instrument parameter (e.g. speed)
►	Joystick east	Increase backrest inclination	Increase the maximum value of the secondary instrument parameter (e.g. spray water)
◄	Joystick west	Decrease backrest inclination	Decrease the maximum value of the secondary instrument parameter (e.g. spray water)
X	X button	Programable chair position 1	Previous preset/workflow step
O	O button	Programable chair entry/rinse position	Next preset/workflow step

9.3. Degreasing the "rubber feet"

	*Degrease the foot control's "rubber feet" with **petroleum benzine** to avoid sliding!*

Figure 15 – Degreasing of foot control's "rubber feet".

10. SELECTION AND ACTIVATION OF AN INSTRUMENT

Select an instrument by lifting it forward, whereafter the instrument control window opens.

When an instrument is selected, the instrument selection indicator turns white – Figure 16 (11).

Activate the selected instrument with the foot control pedal (➞ or ⬅).

When the instrument is repositioned on the instrument bridge, the instrument control window closes.

11. MONITORING AND ADJUSTING INSTRUMENT PARAMETERS

To monitor and adjust the settings of an instrument lift it forward or tap (1) in Figure 16.

Figure 16 – Instrument control window and display for a (MX2) micromotor: (1) button (incl. spray water and air indicators) for opening and closing the instrument control window,(2) instrument control window, (3) speed slider, (4) spray water slider, (5) spray water on/off button, (6) spray air slider, (7) spray air on/off button, (8) automatic chip blow on/off button, (9) tactile mode on/off button , (10) instrument display, (11) instrument selection indicator.

When activated, the instrument operates in accordance with the settings shown in the instrument control window (2).

Figure 17 – Use the little finger of the hand holding the instrument to control buttons and sliders in the instrument control window.

	Please note that the foot control can be configured to replace or supplement the sliders and buttons of the instrument control window – thereby providing hands free instrument control.

12. MICROMOTORS – BIEN-AIR MX2 AND MCX LED

12.1. General

	To avoid risk of cross contamination, use only micromotor handpieces with built-in anti-retraction mechanisms.

	Never connect a handpiece to a running micromotor.

	Check that the O-rings are neither missing, broken nor scratched after removing the contra-angle. Replace them if necessary.

Figure 18 – Bien-Air micromotor: (1) O-rings.

12.2. Speed

Adjust the maximum speed with the "red" slider – Figure 16 (3) and see the new speed range in the display.

When the motor is activated, the actual speed is shown in the display – Figure 19.

Figure 19 – Instrument display when a micromotor is activated showing actual speed.

12.3. Spray

Adjust the amount of spray water with the "green" slider – Figure 16 (4) – and see the amount of spray water in the instrument display.
Switch spray water on and off using the button (5).
When spray water is switched off the "green" slider turns grey.

The spray air is shown and adjusted in the same way using the "blue" slider.
The spray air is switched off/on with .

Spray water and air may also – handsfree – be switched on/off using the foot control – see section 9.

	A micromotor module supplies the following amount of spray to the attached handpiece: *Spray water: 20-60 ml/min* *Spray air: max 3 Nl/min at 5,5 bar*

	Be sure to work with the amount of water and air in the spray that limits the temperature increase at the pulp to 5,5 °C while not using more spray than necessary to minimize the spray aerosol and maximize visibility. *Aerosols and splatter constitute a potentially biological hazard and must be reduced as much as possible.*

12.4. Automatic chip blow

The automatic chip blow function is enabled/disabled with – Figure 16 (8).
When the automatic chip blow is enabled a short blast of air dries the preparation each time the instrument stops. This enables clear eyesight of the work area thereby minimizing the need for changing to/from the syringe.

12.5. Tactile mode

This feature is available for micromotors when working with presets or workflows.
The tactile mode is enabled/disabled with in Figure 16 (9).
The tactile mode enhances the tactile sense and makes it possible to better feel the difference between drilling in decayed dentine and healthy dentine while excavating.

12.6. Rotating endo

This feature is available for Bien-Air MX2 micromotors when working with presets or workflows.

Torque control
To for example reduce the risk of fracturing the file when making endo preparations it may be useful to control the torque of the instrument.

Torque limitation can be either specified in % of maximum torque or in Ncm.
If the torque is specified in Ncm the gear ratio and the "efficiency" of the handpiece is considered.

It is possible to select:
- an auto-reverse function that reverses the micromotor when the torque limit is reached
- an auto-forward function that briefly reverses the micromotor when the torque limit is reached

When a torque feature is active, the torque limit is shown in the display, when the instrument is activated.

⚠	*The factory default endo presets and workflows are configured for use with Bien-Air CA ENDO contra-angles.* *If other contra-angles are used, the preset/workflow must be updated to match the gear ratio, and the "efficiency" of the contra-angle used.*

12.7. Reciprocating endo feature

To use the reciprocating endo feature, select the corresponding preset from the instrument control window, fit a CA ENDO contra-angle and an appropriate endo file.

⚠	*Only use the reciprocating feature in connection with Bien-Air CA ENDO contra-angles.*

The system supports WaveOne® Gold files by Dentsply Sirona, RECIPROC® files by VDW and R-Motion® files by FKG.

13. PRESETS

Presets are available on a unit extended with the software option: "Instrument presets & workflows" only.

Presets make it possible – with just one tap – to work with optimal instrument settings for a specific dental procedure.

For inspiration, a set of factory default presets is supplied for each instrument type.

⚠	*The factory default presets shall be regarded as a general guide on how to create and use presets.* *The professionally responsible for the dental practice shall ensure that presets used at the practice live up to the practice's professional standards.*

	Using the factory default presets must not replace the single dental operator's professional expertise and experience.

Figure 20 – Instrument control window and display for a micromotor, preset mode: (1) button for opening and closing instrument control window in preset mode, (2) button (incl. spray water and air indicators) for adjusting the preset, (3) instrument control window, (4) instrument display, (5) preset buttons.

Open the instrument control window in the preset mode by tapping (1) in Figure 20 and select a preset (5).

The display (4) shows the name of the preset and instructs the operators which contra-angle and bur etc. to use.

When activated, the instrument will operate in accordance with the preset and the speed of the *bur* (and if torque limitation is specified, the torque) is shown in the instrument display.

Select another preset by tapping the appropriate button (5) – or use the foot control – see 9.2.

Deactivate a preset by tapping the active preset button again.
The instrument now functions like described in section 11.

Monitor and adjust the preset by tapping (2).
The instrument now functions like described in section 11.

When a preset has been adjusted the word "ADJUSTED" is shown in the instrument display.
Adjustments are not saved.

The spray water and the spray air indicators – see Figure 20 (2) – are used to monitor spray while working with presets.

In most of the factory default micromotor presets, the speed is set to be constant. This means that the only function of the foot control pedal is to start and stop the instrument – not to adjust the speed. This ensures using the optimal speed in relation to the task at hand.

It is possible to create, delete and/or edit their presets from the User settings app.

14. WORKFLOWS

Workflows are available on a unit extended with the software option: "Instrument presets & workflows" only.

A workflow is a sequence of logically grouped presets, referred to as steps. Workflows are intended to be used when a treatment requires multiple different configurations (of the same instrument) to be used in succession like for example using endo file systems.

Enable workflows for micromotors and curing light from the User settings app. Select "Instrument control" and "Advanced control options".

To activate a workflow for an instrument, first open the Instrument workflows app on the Navigator. Next, tap the "Activate workflow" button below the instrument for which the workflow shall be used. Select a workflow from the list and tap "OK" to activate it.

Open the instrument control window in the workflow mode by tapping (1) in Figure 21, whereafter the first step in the workflow is automatically selected.

The display (4) shows the name of the workflow, the current step and instructs the operator to fit a corresponding contra-angle and bur or endo file.

When activated, the instrument will operate in accordance with the selected workflow step and instrument data is shown in the instrument display.

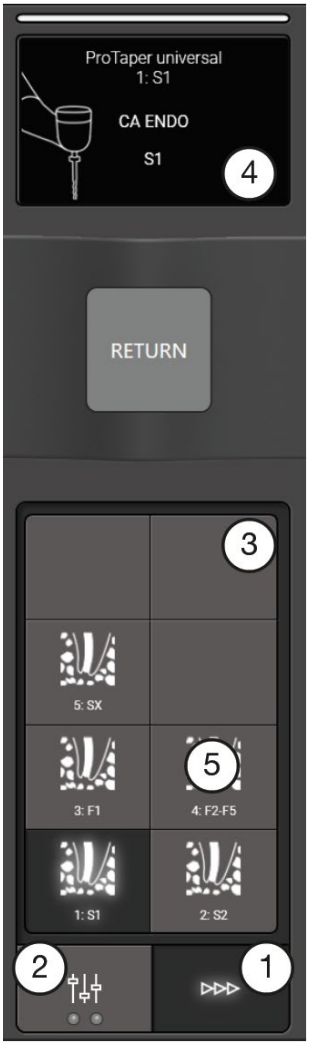


Figure 21 – Instrument control window and display for a micromotor, workflow mode: (1) button for opening and closing the instrument control window in workflow mode, (2) button (incl. spray water and air indicators) for adjusting the workflow step, (3) instrument control window, (4) instrument display, (5) workflow steps.

When the first step has been executed, select the next step by tapping the appropriate button in the instrument control window and continue like this until all steps have been executed.

Selection of workflow steps may also be done with the foot control - see 9.2.

Note that workflows are shared between all users of the unit and therefore cannot be configured on a per-user basis.

In all factory default workflow steps the speed is set to be constant. This means that the only function of the foot control pedal is to start and stop the instrument – not to adjust the speed. This ensures using the optimal speed in relation to the task at hand.

From the Administration app, it is possible to enable the factory default workflows as well as create, edit and delete workflows for each instrument type.

⚠	*The factory default workflows shall be regarded as a general guide on how to create and use workflows.* *The professionally responsible for the dental practice shall ensure that workflows used at the practice live up to the practice's professional standards.*

	Using the factory default workflows must not replace the single dental operator's professional expertise and experience.

15. AIR INSTRUMENT

15.1. General

Instruments powered by compressed air (drive air) – for example turbine handpieces or air scalers – are called air instruments.

Air instruments may be attached to an air instrument module and to a micromotor module.

⚠	*To avoid risk of cross contamination, only use air instrument handpieces with built-in anti-retraction mechanisms.*

15.2. Drive air

Adjust the drive air range with the "red" slider – Figure 22 (3) – and see the new range in the display.

Figure 22 – Instrument control window and display for an air instrument: (1) button (incl. spray water and air indicators) for opening and closing instrument control window, (2) instrument control window, (3) drive air range slider, (4) spray water slider, (5) spray water on/off button, (6) spray air slider, (7) spray air on/off button, (8) automatic chip blow on/off button, (9) instrument display.

For drive air settings please note:

The minimum and the maximum (100%) drive air that can be supplied to an air instrument must be set by authorized service personnel to best match the needs of the dental practice.

When the air instrument is activated, the actual drive air level is shown in the display.

	An air instrument (and a micromotor) module supplies drive air to an attached handpiece as follows: *Drive air: max 50 Nl/min at 3 bar*

15.3. Spray and automatic chip blow

Spray and automatic chip blow functions are identical to those offered with micromotors. See sections 12.3 and 12.4.

	An air instrument (and a micromotor) module supplies the following amount of spray to the attached handpiece: *Spray water: 20-60 ml/min* *Spray air: max 3 Nl/min at 5,5 bar*

15.4. Air instrument presets

It is possible to enable presets for the air instrument. Follow the instructions given in section 13.

Different air instruments (e.g. turbines) operated at different drive air settings may be used on a unit by creating a preset for each instrument.

16. ULTRASONIC SCALER – XO ODONTOSCALER

	XO ODONTOSCALER is a piezoceramic scaler intended for removal of supragingival calculus and subgingival concretions, for endodontic applications and for preparation of tooth enamel.

	Misuse may damage the scaler and hence cause risks and hazards for patients, operators and third parties.

16.1. Amplitude

Adjust the amplitude with the "red" slider – Figure 23 (3) – and see the new amplitude range in the display.

Figure 23 – Instrument control window and display for a scaler: (1) button (incl. irrigation indicator) for opening and closing the instrument control window, (2) instrument control window, (3) amplitude slider, (4) irrigation slider, (5) irrigation on/off button, (6) instrument display.

⚠	*When adjusting the amplitude consult the instructions for use issued by the manufacturer of the instrument tips.* *Be careful not to exceed the recommended amplitude when carrying out periodontal treatments on hypersensitive patients to minimize patient pain.* *With periodontal tips, the instrument is suitable for the removal of concretions in the subgingival region, but not for applications which demand sterile conditions.*

16.2. Irrigation

Adjust the amount of irrigation with the "green" slider – Figure 23 (4) – and see the amount of irrigation in the instrument display.

Switch on and off the irrigation using the button (5).
When irrigation is switched off the "green" slider turns grey.

Irrigation on/off is also shown in the instrument display (7).

⚠	*Be sure to work with an amount of irrigation that limits the temperature increase at the pulp to 5,5 °C while not using more irrigation than necessary to minimize the aerosol and maximize visibility.*

	Aerosols and splatter constitute a potentially biological hazard and must be reduced as much as possible.

16.3. Scaler presets
It is possible to enable presets for the scaler. Follow the instructions given in section 13.

16.4. Scaling

⚠	***Always** use the tip in parallel with the tooth surface – Figure 24.* ***Never** use the tip perpendicular onto the tooth surface.*

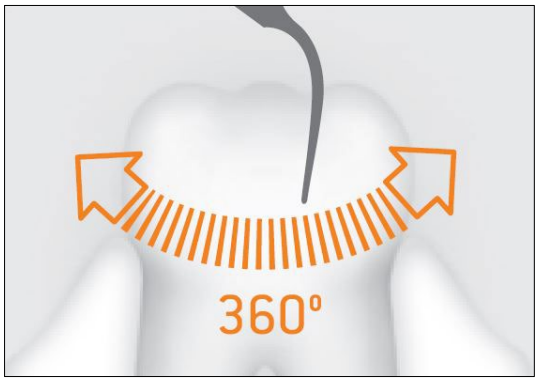


Figure 24 – Correct use of the tip.

Note that the scaler will not function when the tip is worn out or without a tip inserted into the handpiece.

⚠	*Perform a test run each time before use.* *Do not hold the scaler close to the eyes!* *Do not look directly into the optic outlet.* *Only touch the tooth surface after the scaler has been activated.* *Never operate the scaler freely oscillating without irrigation as this will damage the tips.* *For scaling never operate the instrument without irrigation water for more than 30 seconds as this will cause both tip and handpiece to become overheated.* *Check the scaler for damage and loose parts each time before use (e.g. tip, handpiece cap).* *Do not operate the scaler if it is damaged.* *Do not twist, kink or squeeze the hose (risk of damage).*

16.5. Tips
XO ODONTOSCALER is available in two different versions indicated with:

- ▢ for W&H tips and tips with EMS compatible thread (for example 1U) – grey tip changer base.
- ⬭ for tips with ACTEON® compatible thread (for example 1US) – blue tip changer base.

The thread type (▢ or ⬭) is indicated on the handpiece as shown in Figure 25, on the tips, on the tip changer and in the instrument display when using presets.

Figure 25 – XO ODONTOSCALER handpiece: (1) mark of tip thread of type.

Use the different scaler tips as follows:

Table 2 – Use of scaler tips

Type	REF	Intended use	Ideal / maximum power	Note
1U 1US	UH-402 UH-405	For coarse depuration of supragingival calculus.	75% / 100%	
4U	N.A.	For coarse depuration of supragingival calculus, in particular for the removal of large areas of calculus.	75% / 100%	Supplied by W&H
3U 3US	UH-403 UH-406	For polishing to remove supragingival calculus, particularly for interdental cleaning.	50% / 75%	
1P 1PS	UH-404 UH-407	Removal of subgingival deposits, particularly suitable for deep periodontal pockets.	25% / 75%	

⚠	*Please note that these instructions for use only apply for the tips supplied with XO ODONTOSCALER or tips supplied by W&H.*

16.6. Exchange of tips

Insert the tip as shown in Figure 26:

1. Ensure the matching thread system (☐ or ⬭) at the handpiece, tip changer and tip
2. Position the tip on the thread of the handpiece (1)
3. Turn the tip changer until a *click sound is heard* (2)
4. Withdraw the tip changer (3)

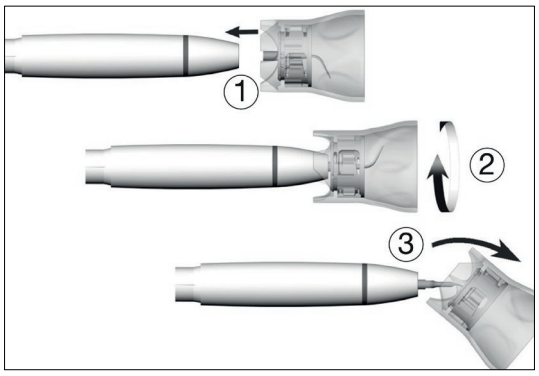


Figure 26 – XO ODONTOSCALER: Changing the tip.

⚠	*Use only tip changers with torque limitation as the tip changers supplied with XO ODONTOSCALER.* *Using other tip changers may damage both the tips and handpiece!* *Verify full engagement!*

	Press the tip with about 1 N (= 100 g) pressure onto a firm object to test the loading capacity of the tip.

Remove the tip as follows:
1. Place the tip changer onto the tip
2. Unscrew the tip with the tip changer

⚠	*After removal of the tip leave it in the tip changer until cleaning, disinfection and sterilization.*

⚠	*Ensure that the original shape of the tip is not affected (e.g. if dropped).* *The tip must not be bent back into shape or re-sharpened.* *Do not activate the instrument while inserting and removing the tip.* *Never touch the tip while vibrating.* *Insert the tip changer onto the inserted tip of the scaler after every treatment (protection against injury and infection, tip protection).* *Do not touch the inside of the tip changer (with tip inserted).* *Check for the effect of wear on the tip using the accompanying tip card.* *Dispose the tip if it shows visible signs of wear.*

16.7. Replacement of O-rings

⚠	*Replace damaged or leaking O-rings immediately.*

Slide on the new O-rings with a pair of tweezers.

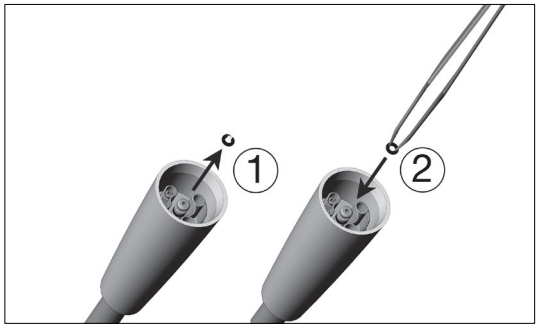


Figure 27 – XO ODONTOSCALER: (1) removal of O-ring, (2) positioning of O-ring.

16.8. Service

⚠	*In the event of operating malfunctions (e.g. vibrations, unusual noise, overheating, irrigation supply failure or leakage) stop the instrument immediately and contact authorized service personnel.* *It is recommended to service the complete scaler handpiece by authorized service personnel after 500 processing cycles or every 12 months.*

17. CURING LIGHT – XO ODONTOCURE

17.1. General

⚠	*The intended use of XO ODONTOCURE is polymerization of light cure resin-based composites used for fillings in human teeth.*

❗	*For the best results, the distal end of the light rod should be held perpendicular and as close as possible to the tooth surface.*

XO ODONTOCURE is a "multipeak" type curing light, meaning the emitted light has two peak values making it suitable for filling composites containing several initiators.

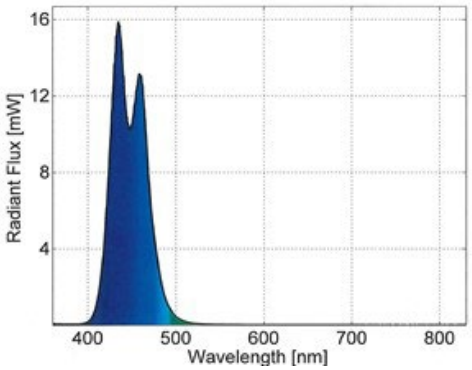


Figure 28 – XO ODONTOCURE – Spectral power distribution

ℹ	*For intermittent use only: 300 seconds on and thereafter 40 seconds off and 20 seconds on.* *Technical specifications:* • *Light source: Multipeak, 3rd generation LED* • *Wave lengths: 385 - 515 nm* • *Peak values: 400±10 nm and 460 ±5 nm* • *Radiant exitance: 800 - 1,600 mW/cm² ± 20%* • *Radiant power: 352 - 704 mW ± 20%* • *Fiber glass rod outer diameter: 8 mm* • *Cross-sectional area of optics (effective): 0,44 cm²* • *Maximum handpiece temperature during use: 46 °C* • *Curing activator classification: Class 2, Type 1*

⚠	*XO ODONTOCURE emits blue and ultraviolet light in the 385 – 515 nm range at an intensity that requires protection of the eyes.* *Direct and long-term exposure to the light may cause permanent eye damage. Therefore, never look directly into the light or direct it at the eyes of others!* *Protect the eyes of the dental operators and the patient with light shield and protective eyewear that removes light in the abovementioned wavelengths.* *XO ODONTOCURE is not field-repairable.*

While curing the anterior teeth use the UV filter.

Figure 29 – XO ODONTOCURE: UV filter

17.2. Exposure time

Use the "red" slider – Figure 30 (3) – to adjust the exposure time and see the new exposure time in the instrument display.

17.3. Radiant exitance

Use the "yellow" slider (4) to adjust the radiant exitance and see the new radiant exitance in the instrument display.

⚠	*Adjust the radiant exitance and exposure time as prescribed by the manufacturer of the composite material.* *The high radiant exitance generated by XO ODONTOCURE is accompanied by heat generation in the exposed tooth tissue! Make sure to keep tooth tissue temperature increase below 5,5 °C.*

Figure 30 – Instrument control window and display for composite curing light: (1) button for opening and closing the instrument control window, (2) instrument control window, (3) curing time slider, (4) radiant exitance slider, (5) instrument display.

17.4. Curing light – workflows

It is possible to enable curing light workflows. Follow the instructions given in section 14

17.5. Start the curing cycle

When the instrument is selected, start the curing cycle with the foot control pedal (→ or ←).

See the remaining exposure time in the instrument display.

Stop the curing cycle, if necessary, with →, ← or by deselecting the instrument.

Hear a sound signal after the end of the curing cycle.

It is possible to setup the Dashboard side menu with a button for starting the curing cycle.

17.6. Testing of effectiveness

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.
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. Cure the composite material using an exposure time of 10 seconds and a radiant exitance of 1,200 mW/cm^2.
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 – Figure 32.

5. The curing depth is measured using a caliper. Measure the depth at the shallowest point – Figure 33.
6. The measured depth of the polymerized material shall be recorded and is now the target reference for future measurements.

Every month perform the following steps:
1. Please repeat steps 1.-6. above
2. Compare the result of this test with the reference made upon receiving the instrument

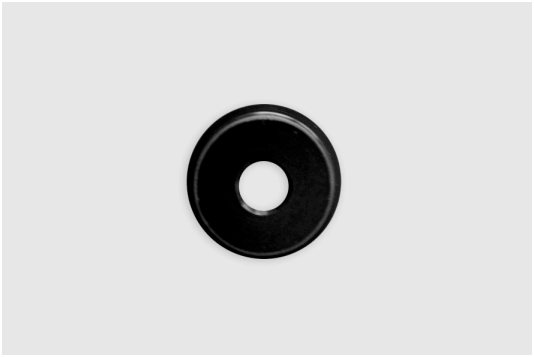


Figure 31 – XO ODONTOCURE: Testing device.

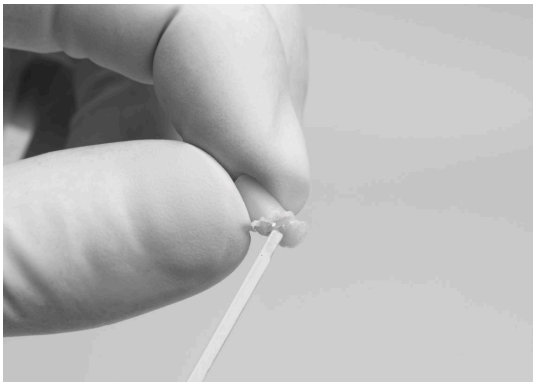


Figure 32 – Non-polymerized material is removed from composite testing device.

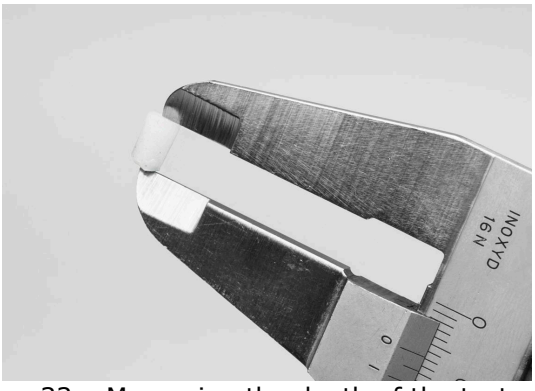


Figure 33 – Measuring the depth of the test plug.

⚠	*If the curing depth deviates more than 0,8 mm from the reference, the fiber rod may be replaced and retested.* *If the problem persists, technical assistance from authorized service personnel is required.*

Note: The above-described verification of performance does not reflect the actual curing depth in human teeth

18. THREE-WAY SYRINGE & SIX-WAY (HEATED) SYRINGE – LUZZANI

Select water, air or spray and adjust the amount of water and air using the two buttons on the syringe handpiece:

- Water by activating the button
- Air by activating the button
- Spray by activating both buttons simultaneously

	To minimize the spray aerosol do not use more air and water spray than necessary. *Aerosols and splatter constitute a potentially biological hazard and must be reduced as much as possible.*

Enable/disable the heating element (six-way syringe only) for water and air by tapping in the instrument control window.

The syringe may be used while another instrument is selected and activated.

19. INTRAORAL CAMERA – DÜRR VISTACAM IX HD SMART

19.1. General

	The intended use of the intraoral camera is to capture and store images and videos aiding diagnosis and providing information for the patient.

The camera has buttons as shown below.

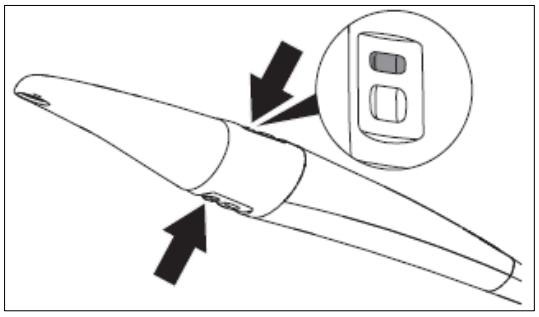


Figure 34 – Dürr VistaCam handpiece: Two focus buttons.

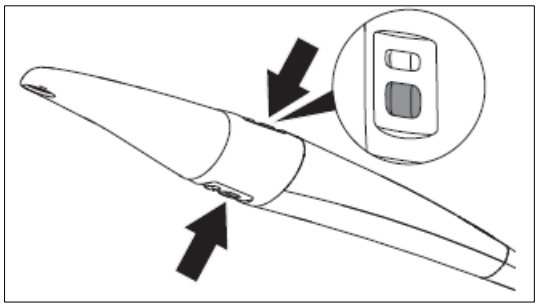


Figure 35 – Dürr VistaCam handpiece: Two trigger buttons.

The camera may be used while another instrument is selected and activated.

Dürr Dental supplies optional spacers that – when fitted to the camera handpiece – makes it easier to focus and increase image quality.

See more details concerning the camera at duerrdental.com.

19.2. Intraoral camera connected to the unit's internal computer

On a unit with software option "Images & Camera apps" the camera can be used as described in this section.

Select the camera by lifting it forward.

The camera is now ready in live mode and the live image is shown on the Navigator (the Camera app opens automatically) and in the instrument display – (4) in Figure 36.

From the instrument control window, choose between capturing an image (1) or a video (2).

Figure 36 – Instrument control window and display for intraoral camera:
(1) camera mode, (2) video mode, (3) rotate image 180°, (4) live image.

Activate the foot control pedal (⬇) or use one of the two focus buttons (1) or (2) on the handpiece – Figure 34 – to focus on the object.
Activate the foot control pedal (➞ or ➞) or use one of the two trigger buttons (1) or (2) in Figure 35 to capture an image or to start (and to stop) a video recording to be stored in the units' internal computer.

The camera may be used while another instrument is selected and activated. Please note that in this case the foot control will control the other active instrument and may *not* be used to control the camera.

Images and videos captured using the Camera can be viewed in the Images app.

Open the Images app from the Navigator home screen or by tapping the small image inserted into the Camera app when an image or video has been captured.

From the Images app, it is also possible to delete images/videos and to send them to other devices.

If set up correctly, captured images and videos can automatically be stored in a designated network drive.

	*Please note: The unit's internal computer is not a database and cannot be relied upon for long-term storage of images and videos. A maximum of 4 GB of images and videos can be stored on the computer. If the capacity is reached, the oldest images and videos will automatically be deleted.*

19.3. Intraoral camera connected to a remote computer

The intraoral camera can alternatively be connected directly to a remote computer via a USB cable. In this case, the camera is controlled by the software on the remote computer.

Third-party imaging software is needed to configure and use the camera.

Note that the function of the camera depends on the imaging software used.

20. TRAYS

20.1. Use

One or two click-on tray holders may be fitted under the instrument bridge.

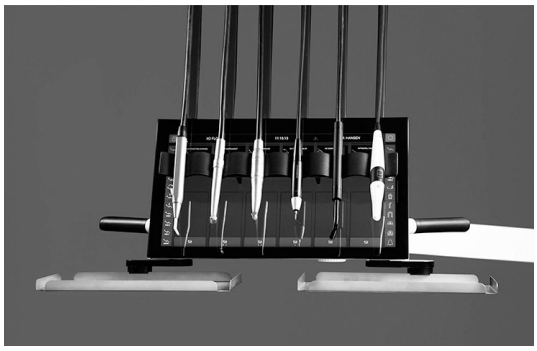


Figure 37– Instrument bridge with two tray holders.

Place the tray in the tray holder just by pushing it sideways into the holder – see Figure 38.
In this way, instruments and other objects will remain in place while the tray is inserted.

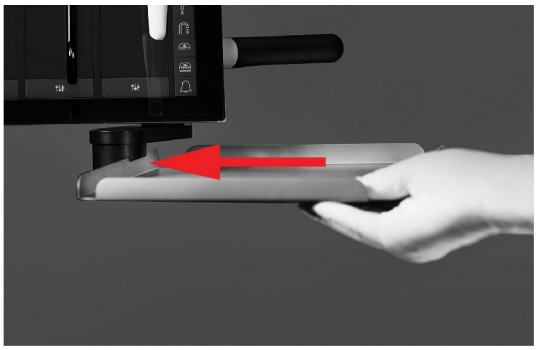


Figure 38 – Pushing the tray into the click-on tray holder.

Remove the tray by 1) releasing the tray holder mechanism by pushing it upwards and 2) then pull the tray sideways out as shown in Figure 39.

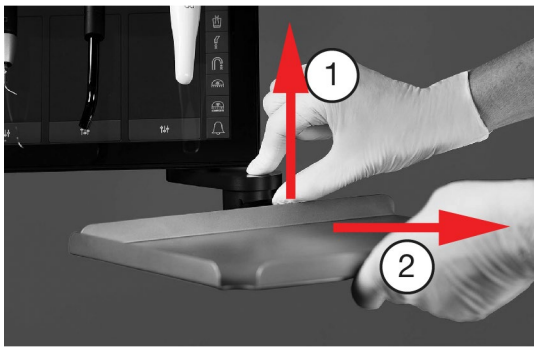


Figure 39 – Removal of the tray.

⚠	*The tray holder(s) (one or two) may be loaded with a maximum total weight of 1.5 kg (incl. the weight of the tray(s)).* *Exceeding this limit may compromise the balance of the instrument bridge and could cause the bridge suspension arm to fail thereby exposing the patient to a health hazard.*

20.2. Adjustments

The tray holder is designed for use with standard metal instrument trays with a height in the range 15,6-24,6 mm or with an XO Tray for carrying other types of instrument trays (in plastic for example) etc.

If necessary, adapt the tray holder to the height of the instrument tray to be used by fitting one of the two supplied shims as shown in Figure 40 (2).
Please note that each shim can be fitted in two different ways.

If this is not sufficient the supplied spacer (3) may be fitted (using a 5 mm Allen key).

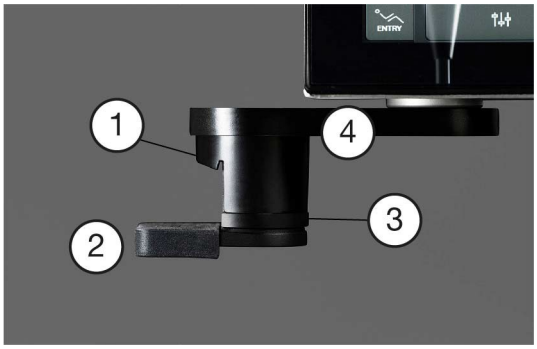


Figure 40 – Tray holder: (1) tray holder mechanism, (2) shim, (3) 5 mm spacer, (4) tray arm.

Table 3 – Use of shims and spacer for adjusting the tray holder to various metal tray heights.

Shim	Spacer	Tray height	Use for
None	5 mm	24,6 mm	Directa cover
1 mm	5 mm	23,6 mm	
2 mm	5 mm	22,6 mm	
3 mm	5 mm	21,6 mm	
4 mm	5 mm	20,6 mm	
None	None	19,6 mm	
1 mm	None	18,6 mm	
2 mm	None	17,6 mm	XO Tray / aluminum
3 mm	**None**	**16,6 mm**	**XO Tray / stainless** and Directa
4 mm	None	15,6 mm	

Adjust the surface of the tray to horizontal using a 2,5 mm Allen key as shown in Figure 41.

Figure 41 – Adjustment of the tray holder to horizontal.

Adjust the rotational friction of the tray arm by:

1) removing the tray arm using a 5 mm Allen key
2) loosen or tighten the two Allen screws in the tray arm bearing to achieve desired friction as shown in Figure 42

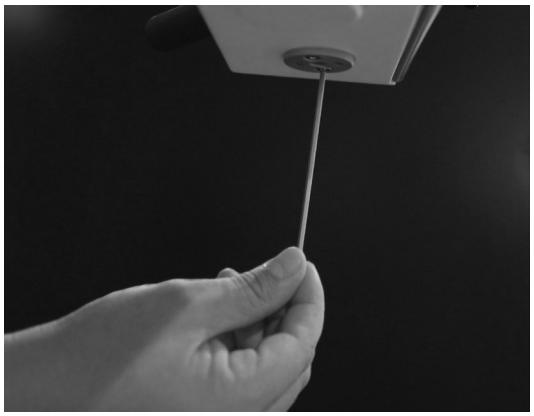


Figure 42 – Adjusting the tray arm rotational frictional break.

Adjust rotational friction brake in the tray holder mechanism using a 2,5 mm Allen key as shown in Figure 43.

Figure 43 – Adjusting the tray holder mechanism rotational friction brake

	*To achieve easy movement of the instrument bridge, please note that the brake and the balance spring of the instrument bridge arm system should be adjusted in accordance with the load on the tray(s) fitted to the instrument bridge.*

	Please see details in section 22.

21. OPERATING LIGHT – XO BRIGHT LIGHT

Position the light 70 cm from the work field in a position so that the direction of the light is parallel to the viewing direction.

This light position gives the best illumination of the work area, and it prevents the instrument suspensions from touching the light.

Figure 44 – Correct position and distance of operating light.

The light automatically switches on when the patient chair reaches a programmable chair position or previous position.

The light automatically switches off when the patient chair is activated towards a programmable position or previous position.

The operating light may also be operated from the Dashboard and/or with the foot control.

	*Operating light on/off.*
	*Operating light intensity.*
	*Composite mode (only active if the unit is enhanced with "Composite function for XO Bright light").*

	*Please note that the light intensity is factory limited to 35.000 LUX.* *It is possible to increase the light intensity limit.* *Please note that using a high light intensity over long time may have an adverse effect on the operator's eyes.* *The use of maximum light intensity is recommended only for operators with reduced eye sensitivity.*

22. ARM SYSTEMS

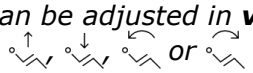
The instrument bridge (the Navigator) and the operating light should be in balance and easy to maneuver with two fingers. If this is not the case – please contact authorized service personnel for adjustment of arm brakes and balance springs.

⚠	*Adjustments of arm systems must be done by authorized service personnel only!* *It may result in a mechanical failure and health hazard if the brakes and balance springs are not adjusted correctly.*

23. PATIENT CHAIR

Operating the chair's programable positions as well as adjustment of height and the backrest inclination can be done using the foot control and/or the side menu buttons on the Dashboard.

	*Lift patient chair.*
	*Lower patient chair.*
	*Increase backrest inclination.*
	*Decrease backrest inclination.*
	*Patient chair to entry / rinse position.* *An alternative to using the side menu button is to use the foot control (the O- button on the foot control).*
	*Programable patient chair position 1.* *An alternative to using the side menu button is to use the foot control (the X- button on the foot control).* *In total the chair has 4 programmable positions.*
	*Patient chair to previous position.* *The previous position is the last stable position the chair has been in for more than 5 seconds.*

ⓘ	*Hint: The position of the chair can be adjusted in **very small steps** for use with e.g. a microscope by briefly activating*  *.*

23.1. Neck rest

While the patient chair is moving towards a programmable chair position:

1. Use the left hand and adjust the longitudinal position of the neck rest to fit the height of the patient – Figure 45 (1)
2. When the chair has reached the programable chair position, adjust the neck rest for treating the upper or lower jaw using the release handle (2)

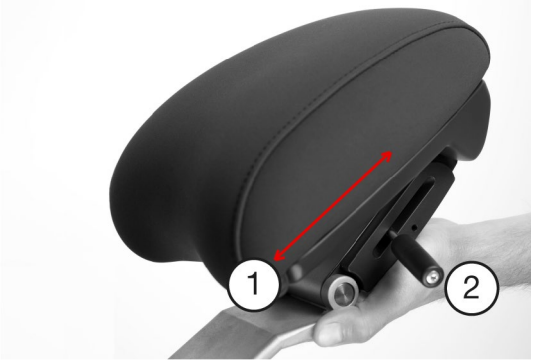


Figure 45 – Neck rest: (1) push/pull the neck rest while the chair moves and (2) release handle.

The friction in the longitudinal movement of the neck rest can – if necessary – be adjusted by authorized service personnel.

23.2. Child cushion

For the treatment of children, a child cushion is available.

Figure 46 – Child cushion.

23.3. Patient chair safety

The patient chair has been designed with an automatic collision detection function meaning that the legs of the operators or anything else cannot be trapped under the chair when moving downwards.

	In addition to the automatic collision function, the patient chair is also equipped with a stop function: *In case of a risk of health hazard, the operator must interrupt all automatic chair movements immediately by touching any button on the foot control or by lifting an instrument forward.*

	The patient chair is dimensioned to carry a patient with a weight of up to 150 kg! *Exceeding the maximum allowed weight will compromise the structural stability of the unit and the patient chair and could result in health hazard.*

24. SUCTION

The unit is equipped with a high-volume suction (for cannulas with a nominal diameter of 16 mm) and a saliva suction (cannulas with a nominal diameter of 7 mm).

Each suction hose starts automatically when lifted from the holder and stops when it is repositioned.

The suction may also be operated from the Dashboard and/or with the foot control.

	Switches the high-volume suction on/off (can be used to remove excess filling materials etc. while the hose is placed in the suction holder).

	Switches the saliva suction on/off.

The suction holder may be positioned for four-handed and two-handed work for both right-handed and left-handed operators as shown in Figure 47.

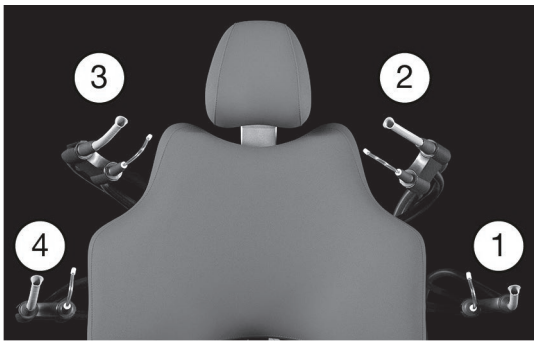


Figure 47 – Suction holder: (1) Right-handed/duo position, (2) Right-handed/solo position, (3) Left-handed/solo position or (4) Left-handed/duo position.

When working four-handed, the suction holder should be positioned in the duo position and the chairside assistant should grab the high-volume suction with the right hand as shown in Figure 48.

Figure 48 – Chairside assistant grabs the high-volume suction hose with the right hand.

When working solo, the suction holder should be positioned in the solo position and the high-volume suction a should be grabbed as shown in Figure 49.

Figure 49 – Solo working operator grabs the high-volume suction hose with the left hand.

If necessary, relieve the weight of the suction hoses by pressing it into the slot in the suction holder as shown in Figure 50.

Figure 50 – Relieving the suction hose.

After use just let go of the hose and it will automatically reposition in the suction holder.

If the unit is permanently used by a right-handed operator the short version (175 cm) of the suction hoses should be used.
If the unit is (permanently or part time) used by a left-handed operator the long version (260 cm) of the suction hoses must be used.

	When using the long suction hoses, it is necessary to attach the hoses to the suction holder arm using the supplied Velcro® tape as shown in Figure 51. *It is possible to shorten the hoses using a hobby knife. To avoid damaging the inner hose please do this from the end connected to the suction filter.*

Figure 51 – Attachment of suction hoses.

	To minimize the spread of aerosols in the treatment room an efficient suction technique using the high-volume suction tip adjacent to the aerosol-generating instrument is necessary.

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, repeat this action during workday.

For further noise reduction and easy suction handling, it is recommended to use a bent suction cannula with the high-volume suction.

Figure 52 – Bent suction cannula.

25. CUSPIDOR AND CUP FILLER

The cuspidor flush starts automatically after the cup filler has been activated and when the patient chair reaches the chair entry/rinse position.

Alternatively, the cuspidor and cup filler can be activated manually from the unit top plate – see Figure 53, from the Dashboard and/or with the foot control.

	Start the cuspidor flush manually with a short activation of . *The rinsing stops automatically after the preset rinsing time.* *Abort the cuspidor rinse with while rinsing.* *If is touched for more than half a second, the cuspidor flushes only while the button is activated.*
	Start the cup filler manually by tapping . *The glass fills with the pre-configured amount of water.* *Abort the cup filler with while filling.* *If is activated for more than half a second, water fills the cup only while the button is activated.*

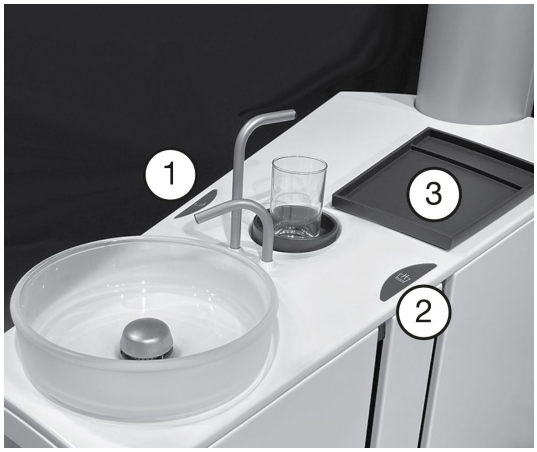


Figure 53 – Manual start of cuspidor (1), cup filler (2) and (3) (small) patient tray (used to place the patient's personal belonging during the treatment).

Figure 54 – Patient tray (large) for unit without cuspidor.

If the unit does not have a cuspidor and a cup filler, a large patient tray is fitted over the drainpipe used during disinfection of the unit's water lines.

26. CALL ASSISTANT

The assistant call can be activated from the Dashboard and/or with the foot control.

	Call assistant.

27. 230 V SOCKET

A 230 V AC mains socket – Figure 2 (3) – makes it possible to supply power to small external instruments and devices.

	The power consumption of the connected device should not exceed 500 VA. *Risk of devices failure: Connecting devices using more than 500 VA may trigger the mains fuse (F1) and the unit will shut down and cannot be turned on before the fuse is replaced.* *Risk of death or injury from electric shock: Before servicing or inspecting the 230 V socket turn off the unit on the mains switch – (2) in Figure 2 – or disconnect entirely.* *Risk of death or injury from electric shock: Devices must be connected with an IEC 60320-2-2/E style connector and connected devices must adhere to EN 60601-1, EN 62368-1 or EN 60950-1.*

An extension cord (2,5 meters, IEC 60320-2-2/E style connector C14G) can be supplied by XO CARE.

28. EXTERNAL USB PORT

The external USB port – Figure 2 (4) – allows for USB devices such as phones, x-ray devices, cameras etc. to be connected via the unit to an external USB charger or remote computer. The external USB port must be connected to the desired USB host (charger or computer) by authorized service personnel.

Power specifications for USB are 5 V and 500 mA.

Note that the external USB port is not electrically connected to the unit internals and cannot be used to access data stored in the unit's internal computer.

	When used to access a remote computer, the external USB port can be used as an attack vector for cyber-attacks targeting the external computer. In such cases, it is strongly recommended not allow untrusted USB devices to be connected to the external USB port of the unit.

29. QUICK-CONNECTIONS FOR WATER AND COMPRESSED AIR

Optionally quick-connections for tap water and compressed air for supplying external devices can be fitted – see Figure 70.

	Please note that the quick connection for water supplies tap water that has not been processed by the internal water disinfection system.

30. INFECTION CONTROL IN GENERAL

	All infection control activities described in these instructions for use can be done by the users provided that the provisions are strictly followed. *Wear protective clothing, safety glasses, a face mask and gloves.* *Surfaces close to the point of care that are exposed to contamination from splashes/aerosols during patient treatment can be covered with plastic that is changed after each patient.* *Before using the unit for the first time it must be cleaned, disinfected and/or sterilized as described below.* *For any instruments not manufactured by XO CARE A/S, always follow the cleaning, disinfection and sterilization instructions included by the manufacturer!* *Before using a thermal disinfector and an autoclave read the instructions for use for the devices and be aware of the warnings provided by the manufacturers.* *Pack items to be sterilized in sterilization packages that meet the following requirements:* • *The sterilization package must meet applicable standards in respect of quality and use and must be suitable for the sterilization method* • *The sterilization package must be large enough for the sterilization goods* • *The filled sterilization package must not be under tension* *Store sterile goods dust-free and dry.* *Please note that in addition to the procedures described in these instructions for use, there may be national, regional or local infection control regulations that must be followed.*
	Please note that some instruments and accessories are not designed for thermal disinfectors and/or autoclaves! *Please note that autoclaving and thermal disinfector processes wear down the materials and may cause change of color and/or shorten the lifetime.* *The shelf life of the sterile goods depends on the storage conditions and type of packaging.*
	If the described cleaning, disinfection and sterilization methods are not followed carefully: • *the safety of operators and patients may be compromised,* • *the service life of the unit expires and* • *XO CARE A/S has no responsibility for the product's correct functioning and safety.*

Table 4 – Cleaning, disinfection and sterilization definitions

Procedure	Symbol	Purpose	Method(s)
Manual cleaning	N.A.	Removal of visible blemishes spots, stains etc.	• Physical/chemical use of a mild detergent (e.g. liquid dish soap) will not significantly reduce the number of pathogens.
Chemical disinfection	N.A.	Significantly reduce the number of pathogenic microorganisms	• Application of chemical disinfectants to surfaces.
Machine cleaning and disinfection		Significantly reduce the number of pathogenic microorganisms	• Thermal disinfection at 90°C/194°F, 5 minutes – or 93°C/199°F, 3 minutes • XO CARE recommends thermal disinfection in a washer-disinfector according to ISO 15883-1.
Sterilization		Elimination/destruction of all living pathogenic microorganisms	• Steam sterilization in an autoclave at 134°C/273°F, 3 minutes. • The sterilization process shall be validated and routinely controlled according to EN ISO 17665. • XO CARE recommends sterilization in a steam sterilizer (autoclave) according to EN 13060, Type B.

31. INFECTION CONTROL WORKFLOWS

Infection control workflows shall be performed:

- At startup
- Before each patient
- After each patient
- At shutdown
- Before shutdown every week

See the video instructions on a smart phone by tapping the Menu button followed by the Help button / using the Help app.

Table 5 – Infection control workflows and maintenance schedule

When	What	Details
At startup	***1. Finalize the automatic disinfection procedure*** • Switch the unit on whereafter, the disinfection procedure finishes automatically. • See the remaining time to startup on the Dashboard. • When the disinfection procedure is completed reposition the suction hoses. ***2. Fit clean items*** • Fit a clean instrument holder cover. • Place the instruments on the instrument bridge. • Remove the instrument disinfection holder. • Fit suction nozzle covers, handles, syringe cover, micromotors, and other instruments. ***3. Fit clean cuspidor and/or patient tray*** • Fit a clean patient tray, cup holder, protection disk and cuspidor bowl. • *Units without cuspidor:* Fit a clean patient tray.	Section 32
Before each patient	• Fit a clean cup, suction cannulas, contra-angles, syringe tip, scaler tip and curing light protection sleeve.	
After each patient	***1. Remove detachable instruments etc.*** • Remove suction cannulas, syringe tip, contra-angles, scaler tip and curing light protection sleeve.	

When	What	Details
	2. If necessary, clean and then disinfect instruments and instrument bridge • Lock Dashboard (and Navigator). • *Only use XO Gentle disinfection for disinfection of all surfaces of the XO unit and patient chair.* • Disinfect all instruments and hoses. • Disinfect the suction, the instrument holder, the handles and the instrument bridge. • Unlock the Dashboard (and Navigator) using the foot control. ***3. If necessary, clean and then disinfect cuspidor and unit stand*** • Disinfect the patient tray, unit stand, and the cuspidor. ***4. If necessary, clean and then disinfect the patient chair*** • Disinfect all surfaces of the patient chair.	
At shutdown	***1. Remove detachable instruments etc.*** • Remove all suction cannulas, suction nozzle covers and handles. • Remove the syringe cover, micromotors, handpieces, instruments etc. ***2. Clean the unit and patient chair*** • Lock the Dashboard (and Navigator). • Use a mild detergent. • Clean instruments and hoses and position the instruments hanging on the rear side of the instrument bridge. • Detach the instrument holder, clean the instrument bridge, and remove the cover. • Clean (the Navigator,) arms and the operating light. • Clean the chair and the suction. ***3. Remove the cuspidor and/or patient tray and clean the unit stand*** • Remove the cuspidor bowl, protection disk, cup filler and patient tray. • *Units without cuspidor:* Remove the patient tray. • Clean the unit stand. ***4. Disinfect the unit and patient chair*** • *Only use XO Gentle disinfection for disinfection of all surfaces of the XO unit and patient chair.* • Disinfect the instrument holder, instrument bridge, hoses, instruments and thereafter arms, operating light and (the Navigator). • Disinfect the patient chair, the suction and the unit stand. ***5. Start the automatic disinfection procedure*** • Place a clean instrument disinfection holder. • Attach the hose to the cup filler and attach water-connected instruments to the holder. • *Units without cuspidor:* Attach the hose to the quick connection on the unit stand. • Remove the suction filters. • Fit clean filters. • Connect the suction hoses to the disinfection connectors. • Unlock Dashboard (and Navigator) using the foot control. • Position the chair in the floor washing position and hang the foot control on the chair making it easy to wash the floor. *Remember to place a cloth under the hanger to avoid scratching the chair paint.*	Section 32

When	What	Details
	• Tap the shutdown button whereafter the disinfection procedure starts. • Finally, the unit automatically shuts down.	
Before shutdown every week	***1. Degrease the foot control "feet"*** • Use *petroleum benzine* to degrease the "feet" of the foot control so that it stands firmly on the floor. ***2. Clean the patient chair cushions*** • Apply XO Fabric makeup on a lint-free wipe, not directly to the fabric and clean the fabric thoroughly. • Wait for 10 minutes and wipe the chair cushions thoroughly with a dry lint-free cloth. ***3. Clean the coarse filter in units with a cuspidor valve*** • Empty water from the filter casing. • Remove the filter and clean it. • Fit the clean filter.	
Every week	• Clean the cuspidor valve – if fitted.	Section 51
	• Clean the suction system.	Section 53
Every month	• Measure the curing depth of XO ODONTOCURE.	Section 17.6
	• Replace the air instrument return air oil separator sponge.	Section 43
	• Apply silicon grease to O-rings on suction filters.	Section 50.1
Every 12 months	• Replace the suction hoses and filters.	Section 56
Every 24 months	• Preventive service and safety inspection.	Section 59

Special infection control kits are available to help rationalize the infection control procedures. Please see the details at xo-care.com.

32. INFECTION CONTROL WORKFLOWS AT SHUTDOWN AND START-UP

Please follow the instructions in Table 5 at start-up and after the end of each workday.

⚠	*Make sure that water and compressed air supply to the unit is turned on while the shutdown procedure is active.*

⚠	*After the shutdown leave all instruments and the suction hoses as shown in Figure 55 after the unit's shut down procedure has been completed!*

The dosage of XO Water disinfection depends on the time elapsed since the previous successful disinfection. The longer the period since the last successful disinfection, the more intensive the disinfection will be.

The general disinfection procedure can be aborted at any time by tapping "Abort" on the Dashboard.

⚠	*If more than 24 hours have passed since a suction and/or water disinfection procedure has been successfully completed, the unit will issue a warning.*

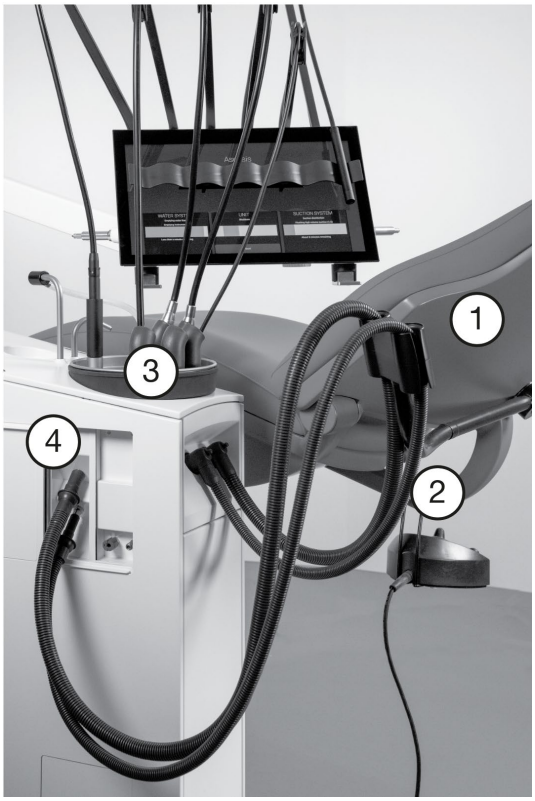


Figure 55 – Disinfection before shutdown: (1) Chair in "floor cleaning position"; (2) foot control in "floor cleaning position", (3) instruments that are connected to water positioned in instrument-disinfection-holder, (4) suction nozzles connected to disinfection connectors.

33. CLEANING AND DISINFECTION OF SURFACES

❗	*Use a mild soap solution (potable water) and a lint-free cloth to wash all surfaces of the unit and chair* *Then let the surfaces dry.*

❗	*Only use **XO Gentle disinfection** for disinfection of all surfaces of the unit and patient chair.* *Use undiluted.* *Soak a lint-free wipe and fully wet the surfaces. Then allow them to dry. The disinfection is effective after 1 minute.*

❗	***XO Fabric makeup** is for cleaning and care of XO Comfort fabric on XO patient chair and operator's seats.* *Use undiluted.* *Soak a dry, lint-free wipe to remove stains as soon as possible.* ***Shall be applied to the wipe – never directly to the fabric!*** *Wait for 10 minutes and wipe the fabric thoroughly with a dry lint-free cloth.*

34. DISINFECTION OF THE UNIT WATER LINES

Before the unit can be used after inactivity, the unit water lines must be flushed with a solution of water and XO Water disinfection (0,0235 % working solution of hydrogen peroxide that also contains a limescale inhibitor additive). This will usually be done (automatically) as part of the general cleaning and disinfection procedure as described in section 32.

If necessary, it is possible to disinfect the water system manually using the Infection control app.

	*The incoming water to the unit contains microorganisms that may be considered safe for drinking water but could potentially cause patient infections when used during dental procedures. Without proper cleaning and disinfection, waterborne microorganisms can collect in the unit waterline and form a biofilm, a layer of microorganisms or bacteria adhered to the surface of the dental unit waterline, that can become dislodged and enter the water stream. Contaminated dental unit waterlines pose a risk of infection to the patient.* *The unit includes backflow prevention in the form of an air gap. This is required by the authorities in most countries.* *Following the guidelines described to prevent creation of biofilm.* *The built-in water disinfection system is not a guarantee that the unit water is free of contaminants!* *Please familiarize yourself with and implement local guidelines/regulations regarding the topic.*

35. TESTING THE UNIT'S WATER QUALITY

	*The built-in water disinfection cannot be relied upon to guarantee contaminant-free water in all situations.* *To avoid the risk of contamination, the water in the unit must regularly be sampled and analyzed to determine the number of colony-forming units (CFU) of heterotrophic water bacteria in the water.* *If the CFU count exceeds 500 CFU/ml or any national requirements for drinking water, the unit must not be used, and the source of the contamination should be investigated and eliminated. Contact authorized service personnel.* *The water sample shall be collected from the syringe after finishing the daily infection control procedure at start-up.* *Send the water sample to a laboratory for testing.* *The frequency of testing must be decided by the professionally responsible for the dental practice.*

36. CHECKING THE WATER DISINFECTION SYSTEM

	*The water disinfection system can be checked as described below.* *The water sample shall be collected from the syringe after finishing the daily infection control procedure at start-up.*

1. Dip a peroxide test strip in the water sample for one second

2. Shake off excess liquid
3. Wait 45 seconds
4. Compare with the color scale below:

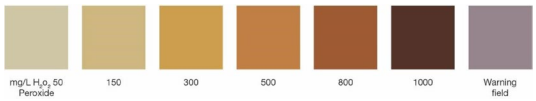


Figure 56 – Water quality color scale.

The test strip shall indicate a H_2O_2 value between 150 and 300 mg/l.

	If the value is outside of this range or if the test stripe turns blue, please apply for assistance by authorized service personnel.

37. REPLACEMENT OF THE DISINFECTION CARTRIDGES

Figure 57 – Disinfection cartridges: (1) XO Water disinfection (white), (2) XO Suction disinfection (yellow).

1. Lower the appropriate service panel – Figure 57
2. Pull the handle forward to get access to the cartridge
3. Pull the cartridge downwards to release it
4. Replace the cartridge, push the handle in and close the service panel

	When replacing the XO Suction disinfection cartridge pour the remaining liquid into the cuspidor bowl. This will help keep the cuspidor drain clean. *Be careful not to spill the fluid as the painted surfaces may become stained.* *Any spills must be wiped away immediately, followed by cleaning the surface with a damp cloth.*

	XO Suction disinfection is a corrosive liquid. Improper handling or use may result in a health hazard! *Make sure not to interchange XO Water disinfection cartridges (white) and XO Suction disinfection cartridges (yellow)! Exchanging the cartridges could result in a health hazard to the patient!*

	See the detailed instructions supplied with each XO Suction disinfection and XO Water disinfection cartridge. See technical specifications as well as safety data sheets at xo-care.com.

38. REPLACEMENT OF THE XO WATER SOFTENER CARTRIDGE

The water softener filter cartridge shall be replaced depending on the hardness of the incoming water or at least every 12 months.

When the cartridge needs to be replaced, a notification appears.

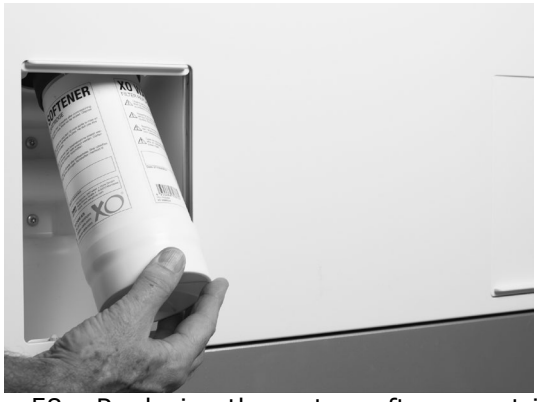


Figure 58 – Replacing the water softener cartridge.

The water softener cartridge is replaced as follows:

1. Lower the service panel.
2. Replace the water softener cartridge.
3. After replacement of the water softener cartridge tap the Menu button followed by the Unit settings button / the Administration app – to enter the water softener menu.
4. Reset the water softener counter.

⚠	*When exchanging the water softener cartridge check the O-ring to avoid flooding.*

39. INSTRUMENT BRIDGE (AND NAVIGATOR), INFECTION CONTROL

Tap on the Dashboard to lock the Dashboard (and the Navigator).

Place all instruments in the instrument-disinfection-holder as shown in Figure 55 or in the disinfection position hanging at the rear of the instrument bridge as shown in Figure 59.

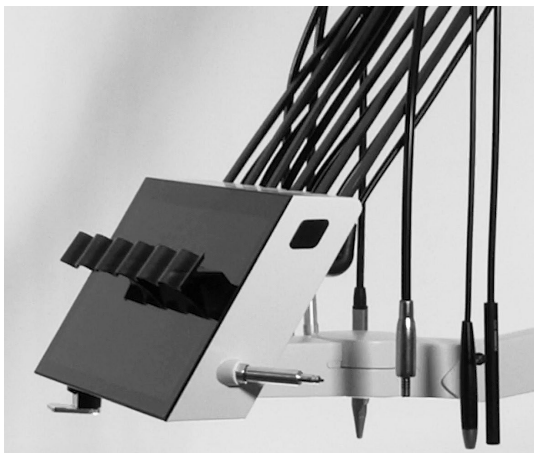


Figure 59 – Instruments hanging at the rear of the instrument bridge.

Figure 60 – Removal of instrument holder cover.

Detach the instrument holder (fitted with magnets) from the Dashboard and remove the cover.

Clean/disinfect/sterilize the instrument holder cover as listed in Table 6.

Place the instrument holder and instruments on the Dashboard.

Unlock the Dashboard (and the Navigator) by activating the foot control.

It is possible to cover the Dashboard (and the Navigator) with plastic wrap without jeopardizing the touch function.

40. DASHBOARD PROTECTION FOIL

The Dashboard is provided with a foil for protecting the glass front from sharp items like diamond burs and from stains.

The protection foil can be replaced when needed.

41. INSTRUMENT HOSES AND SUSPENSIONS, INFECTION CONTROL

Remove the instrument hoses by turning the release handle counterclockwise and pulling out the plug as shown below.

Figure 61 – Removing instrument hose.

⚠	*Do not wash instrument hoses in a thermal disinfector!* *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!*

When re-attaching the instrument hoses, the message "INCOMPATIBLE INSTRUMENT" will be displayed if the instrument and the module are incompatible.

Figure 62 – Removing instrument suspensions.

Remove the instrument suspensions simply by pulling them from the instrument roller.

⚠	*Please note that the instrument suspensions must be securely fastened in the instrument roll. The suspensions are in place when a click is heard.* *During use, the instrument bridge should be positioned as shown in Figure 9. If positioned too far away from – or too high above – the patient, the instrument suspensions may become loose during use.*

42. HANDLES, INFECTION CONTROL

The handles on the instrument bridge, (the Navigator) and operating light are removed by pressing the knob (1) at the end of the handle – see Figure 63.

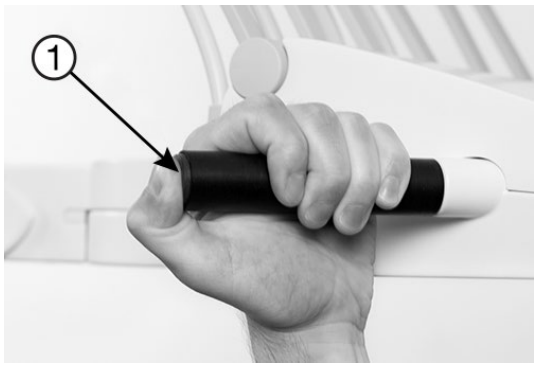


Figure 63 – Removing the handle.

Clean/disinfect the handles as listed in Table 6.

43. REPLACEMENT OF SPONGE IN AIR INSTRUMENT OIL SEPARATOR

Oil in the return air from turbines is separated from the return air by means of an oil separator placed in the lower part of the instrument bridge. The sponge inside the oil separator is replaced as shown in Figure 64.

Figure 64 – Accessing the oil separator sponge.

44. BIEN-AIR MICROMOTORS AND CONTRA-ANGLES, INFECTION CONTROL

See details concerning infection control and maintenance at bienair.com.

45. ULTRASONIC SCALER – XO ODONTOSCALER, INFECTION CONTROL

Clean, disinfect and sterilize the instrument as follows:

1. Operate the instrument with the tip inserted for at least 10 seconds to ensure that blood, saliva etc. is flushed out
2. Disinfect the entire instrument surface, the tip and the tip changer
3. Remove the tip – section 16.6
4. Remove the handpiece – Figure 65
5. Unscrew the handpiece cap and remove the optical fiber – Figure 66
6. Clean the instrument under running tap water (≤ 35°C) using a brush
7. Remove liquid residues using compressed air
8. Clean the irrigation outlet in the tip and in the handpiece carefully with the nozzle cleaner to remove dirt and deposits – Figure 67 (1) and (2)
9. Clean the irrigation pipe in the handpiece using compressed air (3)
10. Wash the optical fiber and the optical outlet using a moisturized soft lint-free cloth and dry it using compressed air or a dry soft cloth

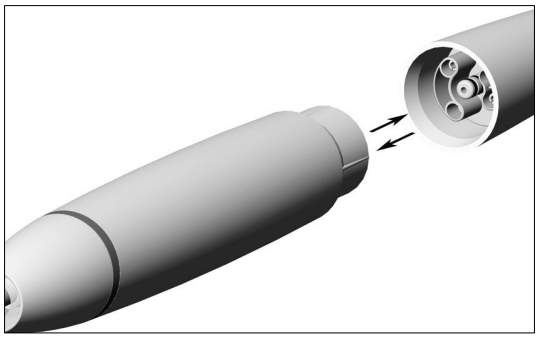


Figure 65 – Removal and fitting of handpiece.

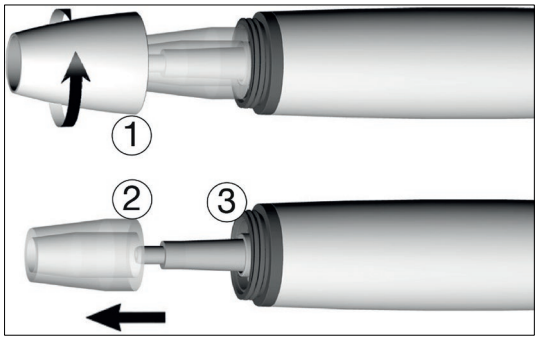


Figure 66 – Disassembling the handpiece: (1) Handpiece cap, (2) optical fiber, (3) optical outlet.

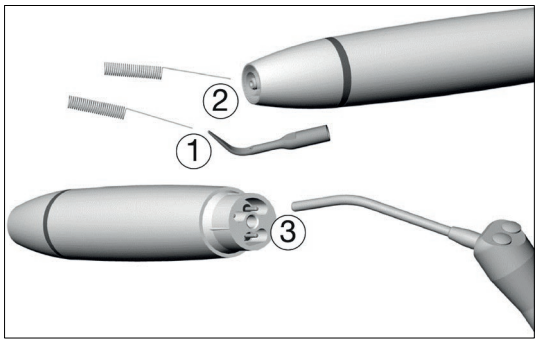


Figure 67 – Cleaning: (1) Irrigation outlet of the tip, (2) irrigation outlet of the handpiece, (3) irrigation pipe.

⚠	*Avoid scratching the optical outlet and the optical fiber!* *Clean and disinfect the handpiece, handpiece cap, optical fiber, tips and tip changers in a thermal disinfector.* *Remove liquid residues using compressed air.* *Ensure that the scaler parts, tip and tip changer are completely dry internally and externally after cleaning and disinfection.* *Check the scaler parts, tip and tip changer after cleaning and disinfection for damage, visible residual soiling and surface changes.* *Reprocess any scaler part, the tip and the tip changer that are still soiled.* *Reassemble the scaler following cleaning and disinfection.* *Sterilize the assembled scaler following cleaning and disinfection.* *Sterilize the tip inserted into the tip changer following cleaning and disinfection.* *Before starting operation again:* • *Wait until the scaler is completely dry* • *Moisture in the scaler can lead to a malfunction (risk of short circuit)!* • *Wait until the tip and the tip changer have cooled down completely (risk of burning)!* *Carry out a visual inspection after each cleaning, disinfection and sterilizing process.* *Do not use the scaler if the optic outlet or the optical fiber is damaged.* *Do not use the scaler in case of clogged up coolant outlets.* *Do not place the handpiece and the tip changer in liquid disinfectant or in an ultrasonic bath.*

46. CURING LIGHT – XO ODONTOCURE, INFECTION CONTROL

Use XO ODONTOCURE cross infection sleeves to reduce the risk of cross infection.

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.

Figure 68 – Removing the light rod from XO ODONTOCURE handpiece.

Clean, disinfect and sterilize XO ODONTOCURE as listed in Table 6.

47. THREE-WAY AND SIX-WAY SYRINGE – LUZZANI, INFECTION CONTROL

Clean, disinfect and sterilize the syringe as described at luzzani.it.

48. INTRAORAL CAMERA, INFECTION CONTROL

Before each patient, exchange the hygienic protective cover. See details at duerrdental.com.

49. XO BRIGHT LIGHT, INFECTION CONTROL

Be sure to switch off the unit before cleaning/disinfecting the operating light.

The protection screen (2) may be detached for cleaning by removing the two screws (1) – Figure 69.

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

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

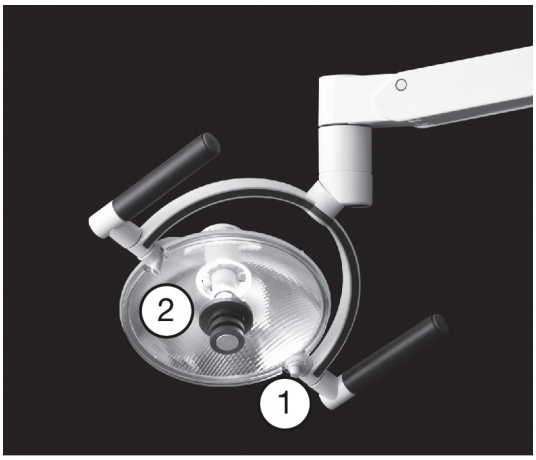


Figure 69 – XO Bright light: (1) screws, (2) protection screen, (3) reflector.

⚠	*Do **not** spray water, disinfectants or cleaning agents directly onto the protection screen and the reflector.*

The expected lifetime of the LED light source is approximately 10 years.

For replacement of the LED light source please contact authorized service personnel.

50. SUCTION DISINFECTION

The unit's suction system must be disinfected regularly.
This will usually be done (automatically) as part of the general cleaning and disinfection procedure as described in section 32.

If needed the suction system can be disinfected manually.

Connect the suction hoses to the disinfection connectors as shown below.

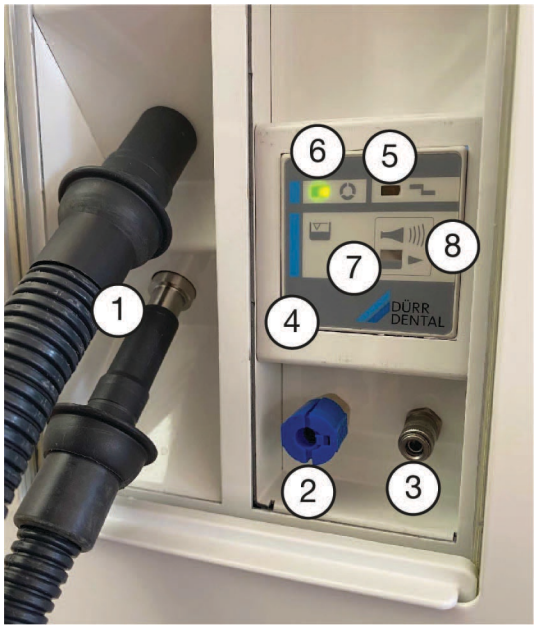


Figure 70 – Service panel open: (1) Suction hoses connected to disinfection connectors, (2) optional quick connection for compressed air (blue), (3) optional quick connection for water, (4) optional amalgam separator display panel, (5) red display, (6) green LED, (7) yellow LED, (8) audible signal switch.

50.1. Suction filters

1. Disconnect the suction filters from the unit – Figure 71
2. Eject and dispose the filters pressing the button – Figure 72
3. Replace the filters and reconnect the suction hoses to the unit
4. Clean the used suction filters by first removing the filter cartridge from the filter holder – Figure 73 – whereafter the filters are emptied and cleaned
5. Disinfect the filter and the filter holder as described in Table 6.
6. Apply a thin layer of silicone grease to the filter holder O-rings covering the whole surface of the rings with the lubricant.

Figure 71 – Removal of suction filters.

Figure 72 – Press the button to eject the filter holder and cartridge.

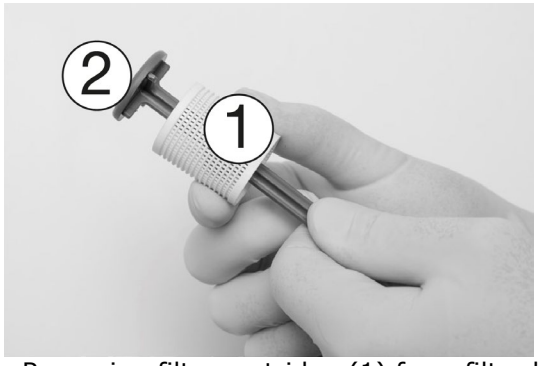


Figure 73 – Removing filter cartridge (1) from filter holder (2).

⚠	*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.*

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

50.2. Suction nozzles

Remove the covers from the suction nozzles.

Disinfect the covers as described in Table 6.

Figure 74 – Removal of covers for suction nozzles.

50.3. Suction hoses

Disinfect the outside of suction hoses as described in section 33.

⚠	*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.*

51. CLEANING OF THE CUSPIDOR VALVE

If the unit is equipped with a cuspidor valve, the coarse filter should be cleaned like this:

1. Lift the service panel
2. Empty the filter house by activating the button (1) for 5 seconds
3. Remove the filter
4. Clean the filter
5. Replace the filter

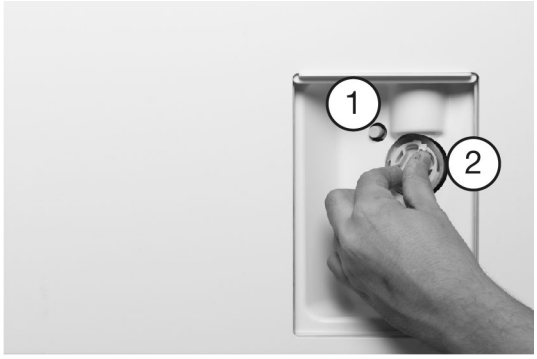


Figure 75 – Changing the cuspidor valve filter: (1) button, (2) coarse filter.

⚠	*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.*

52. REPLACEMENT OF THE AMALGAM SEPARATOR COLLECTOR VESSEL

If the unit is equipped with an amalgam separator, a display panel is installed under the top right service panel – see Figure 70 (4).

When the amalgam collector vessel is 95 % full the yellow LED (7) is on and an audible signal melody sounds. The signal melody can be switched off by activating the button (8).

When the amalgam collector vessel is 100 % full the yellow LED (7) is on, the red display (5) flashes and an audible signal melody sound. This alarm will be reset when the amalgam collector vessel is replaced.

To replace the amalgam collector vessel, lift the lower right service panel as shown in Figure 76.

Figure 76 – Replacing the amalgam collector vessel.

⚠	*Amalgam waste is considered hazardous to the environment and must therefore be disposed safely, and in accordance with regulatory requirements. Remember to use safety gloves.*

Visit duerrdental.com to see further details concerning the CAS 1 Combi-separator.

53. CLEANING OF THE SUCTION SYSTEM

The suction system shall be cleaned with "MD 555 cleaner – Special detergent for suction systems" at least one a week – see details at duerrdental.com.

54. CUSPIDOR BOWL AND CUP HOLDER, INFECTION CONTROL

Remove the cuspidor bowl as shown in Figure 77.

The cuspidor bowl, the gold trap with cover, the cuspidor protection disc, the cup holder and the patient tray can be cleaned and disinfected as described in Table 6.

⚠	*The gold trap may contain mercury and contaminated material.* *It must therefore be handled in accordance with national or local requirements!*

Figure 77 – Cuspidor and cup filler elements: (1) cuspidor bowl, (2) gold trap with cover, (3) cup filler spout, (4) protection disk, (5) cup holder.

⚠	*Make sure that all liquids have evaporated before fitting cuspidor, cuspidor protection disc and cup holder.*

55. DETACHABLE PARTS, THERMAL DISINFECTION AND STERILIZATION

Table 6 – List of detachable parts and how to thermal disinfect and sterilize these

Product / part	**REF**	**See section**	**Thermal disinfection[1]**	**Sterilization[2]**
Instrument holder	AR-193	39	N.A.	N.A.
Instrument holder cover	MN-621	39	250 cycles	250 cycles
Handles	AP-732	42	250 cycles	250 cycles
Instrument suspensions	AR-200	41	N.A.	N.A.
Tip for syringe	SD-214	47	250 cycles	250 cycles
Syringe tip retainer	SD-516	47	250 cycles	250 cycles
Cover for syringe	SD-510	47	250 cycles	250 cycles

[1] Please see details a section 30.
[2] Please see details in section 30.

Product / part	REF	See section	Thermal disinfection[1]	Sterilization[2]
Instrument hose syringe, three-way syringe	AP-880	41	N.A.	N.A.
Instrument hose syringe, six-way syringe	AP-881	41	N.A.	N.A.
Micromotor, Bien-Air, MX2	HT-257	44	N.A.	1.000 cycles
Instrument hose micromotor, Bien-Air, MX2	AP-883	41	N.A.	N.A.
Micromotor, Bien-Air, MCX LED	HT-258	44	N.A.	1.000 cycles
Instrument hose, Bien-Air, MCX LED	AP-886	41	N.A.	N.A.
O-rings for Micromotor, Bien-Air, MX2 & MCX, 3 pcs	SA-024	44	N.A.	N.A.
Endo contra-angle, Bien-Air, CA ENDO	HT-261		300 cycles	500 cycles
Instrument hose air instrument	AP-882	41	N.A.	N.A.
XO ODONTOSCALER handpiece	▢ HT-259 ⬭ HT-260	16	N.A.	500 cycles
XO ODONTOSCALER tips (REF incl. tip changer)	▢ 1U, UH-402 3U, UH-403 1P, UH-404 ⬭ 1US, UH-405 3US, UH-406 1PS, UH-407	16	500 cycles	500 cycles
XO ODONTOSCALER tip changer	N.A.	16	250 cycles	250 cycles
XO ODONTOSCALER nozzle cleaner	UH-450	16	500 cycles	N.A.
XO ODONTOSCALER handpiece cap & 3 light guides	UH-452	16	500 cycles	500 cycles
O-ring for XO ODONTOSCALER hose	UH-454	16	N.A.	N.A.
Instrument hose XO ODONTOSCALER	AP-885	41	N.A.	N.A.
XO ODONTOCURE fiber glass rod	AP-915	46	250 cycles	250 cycles
XO ODONTOCURE handpiece and hose	AP-884	46	N.A.	N.A.
XO ODONTOCURE UV filter	AP-916	46	N.A.	N.A.
XO ODONTOCURE O-ring	UH-303	17	N.A.	N.A.
XO Operating light protection screen	AO-639	48	N.A.	N.A.
Cuspidor bowl	MG-395	54	250 cycles	N.A.
Protection disk for cuspidor bowl	AP-764	54	250 cycles	N.A.
Gold trap for cuspidor	AP-763	54	250 cycles	N.A.
Cover for gold trap	MG-894	54	250 cycles	N.A.
Cup holder	AP-762	54	250 cycles	N.A.
Suction hoses	AR-124/175 cm AR-127/260 cm	50.3	N.A.	N.A.
Velcro® tape for long suction hoses	UH-448		N.A.	N.A.
Cover for high-volume suction nozzle	AP-714	50.2	250 cycles	250 cycles
Cover for saliva suction nozzle	AP-715	50.2	250 cycles	250 cycles
Suction filter with holder	AP-963	50.1	250 cycles	N.A.
Patient tray – small (for unit with cuspidor)	AP-724	54	250 cycles	N.A.
Patient tray – large (for unit without cuspidor)	MN-976	25	250 cycles	N.A.
Instrument disinfection holder – unit with cuspidor	AR-263	34	250 cycles	N.A.
Instrument disinfection holder – unit without cuspidor	AR-267	34	250 cycles	N.A.
XO Tray in stainless steel	AR-429	20	250 cycles	N.A.

56. ACCESSORIES AND CONSUMABLES

The following accessories and consumables are available for XO FLOW.

Table 7 – List of accessories and consumables

REF	Description
	DISINFECTANTS ETC.
AN-354	XO Suction disinfection, 6 x 0,6 liter.
AO-980	XO Water disinfection, 6 x 0,6 liter.
AP-832	XO Gentle disinfection, 6 x 1 liter, 1 x dispenser.
AP-833	XO Fabric makeup, 1 x 0,5 liter, 1 x atomizer.
UH-238	Peroxide test strips, 100 pcs
UG-928	Silicone grease (for daily maintenance of O-rings), 25 ml
	VARIOUS
XO-483	Infection control kit XO FLOW, unit with cuspidor
XO-488	Infection control kit XO FLOW, unit without cuspidor
AP-983	Air instrument return air oil separator sponge, 10 pcs
UH-200	XO Water softener, filter cartridge
AR-124	High volume and saliva suction hoses complete (175 cm) for right-handed operator
AR-127	High volume and saliva suction hoses complete (260 cm) for right- and left-handed operator
AR-209	Suction filter with filter holder, 20 pcs
AR-299	Handle, 20 pcs
	XO ODONTOSCALER
AR-310	XO ODONTOSCALER handpiece, EMS compatible thread (as HT-259), 5 pcs
AR-311	XO ODONTOSCALER handpiece, ACTEON® compatible thread (as HT-260), 5 pcs
UH-454	O-ring for hose coupling, XO ODONTOSCALER
UH-402	Universal tip 1U with tip changer, W&H, EMS compatible thread, XO ODONTOSCALER
UH-403	Universal tip 3U with tip changer, fine scaling, W&H, EMS compatible thread, XO ODONTOSCALER
UH-404	Periodontology tip 1P with tip changer, W&H, EMS compatible thread, XO ODONTOSCALER
UH-405	Universal tip 1US with tip changer, W&H, ACTEON® compatible thread, XO ODONTOSCALER
UH-406	Universal tip 3US with tip changer, fine scaling, W&H, ACTEON® compatible thread, XO ODONTOSCALER
UH-407	Periodontology tip 1PS with tip changer, W&H, ACTEON® compatible thread, XO ODONTOSCALER
	XO ODONTOCURE
AP-917	Protecting caps, XO ODONTOCURE, 5 pcs.
AP-918	Curing light protection sleeves, XO ODONTOCURE, 100 pcs.
AP-920	Testing devices for measuring curing effectiveness, XO ODONTOCURE, 3 pcs.
AP-915	XO ODONTOCURE fiber glass rod
AP-916	UV filter for XO ODONTOCURE

57. INSTALLATION

The unit is intended to be permanently installed in a dental operatory.

The treatment room must be prepared as described in the Installation instruction available at xo-care.com.

	*The unit must be installed by authorized service personnel.* *No unauthorized modification of this equipment is allowed!* *The built-in water backflow prevention system is a legal requirement and must not be removed.*

	*To avoid the risk of electric shock, this equipment must be connected to a mains supply with protective earth.*

	*When external equipment is connected to the unit to create a medical electrical system the requirements of IEC 60601-1, 3rd edition must be complied with.* *The external equipment must also comply with the applicable standards, e.g.:* • *IEC 60950-1 (information technology equipment) or IEC 62368-1 (electronic equipment within the field of audio, video, information and communication technology), and* • *IEC 60601-1 (medical electrical equipment)* *It is the responsibility of the person/organization installing and/or modifying the equipment to ensure that the system conforms with applicable legislation, e.g. Regulation (EU) 2017/745 and the requirements of IEC 60601-1, 3rd edition.*

57.1. Installation follow up

	*The unit must be adjusted one month after the installation by authorized service personnel.*

58. TROUBLESHOOTING

If one or more system messages are pending an information ⓘ or a warning ⚠ symbol will be shown in the Dashboard information bar.
Get guidance by tapping the Menu button ▭ followed by tapping the Status button / by tapping the Status app.

In case of an urgent event, the normal function of the unit will be suspended, and a message will be shown on the Dashboard. Please follow the instructions given.

Table 8 – Trouble shooting

Event	**Action**
Dashboard (and Navigator) is not showing any screen image while the unit is switched on.	The unit is in stand-by mode. Exit stand-by mode by activation the foot control, touching the Dashboard, (touching the Navigator) or by lifting an instrument forward. If this does not remedy the problem, call authorized service personnel.
Dashboard (and Navigator) is not showing any screen image while the unit is switched on.	Switch the unit on as described in section 2. Make sure that both the on-switch and the mains switch are on.

Event	Action
	If this does not remedy the problem, check whether the mains voltage connection supplying the unit is switched on. If this does not remedy the problem, call authorized service personnel.
Dashboard touch function does not work.	Check if an instrument – e.g. an air instrument coupling – touches the Dashboard surface. Make sure that the Dashboard surface is dry. Use a dry cloth to wipe off.

59. SERVICE

59.1. General

	*All repair, adjustment and service activities shall be done by authorized service personnel.* *See a list of XO Certified Partners at xo-care.com.*

	*Unauthorized adjustment, repairs or service attempts could result in health hazard.* *There must be no patient in the patient chair while any maintenance, adjustment, repair, or service work is being carried out on the unit!* *If the unit is not serviced and maintained as prescribed by XO CARE A/S, the service life of the unit expires, and XO CARE A/S and the XO Certified Partner has no responsibility for the product's correct functioning and safety.*

	*Danger of electric shock!* *To avoid the risk of electric shock always switch off the mains switch (see section 2) before opening or touching the unit's internal components.*

	*Use only original XO accessories, spare parts and consumables provided by XO CARE A/S and an XO Certified Partner.*

59.2. TeamViewer

Service personnel can use TeamViewer to access the unit remotely.

To allow for a remote connection to be made, TeamViewer must be started by tapping the Menu button followed by tapping the Unit settings button / from the Administration app.

59.3. Preventive service and safety inspection

	*To ensure safe operation and high uptime, the unit must be inspected and serviced:* • *biannually from the date of installation* • *as described by XO CARE A/S* • *by authorized service personnel* • *using original parts provided by XO CARE A/S*

Notifications

Approximately 30 days before the next planned preventive service and safety inspection a notification ⓘ will be generated.

If the unit is not serviced at the planned time a warning ⚠ is generated.

In case service is overdue with 30 days or more another warning is generated and shown when the unit is switched on.

The unit will start functioning only after confirmation of this safety warning.

When the preventive service has been performed, the date for the next preventive service and safety inspection is set.

Instructions for service
"Instructions for service" are available at xo-care.com.

59.4. Software updates
The actual software version can be seen on the Dashboard in the area behind the instrument holder when the unit is starting up.

Alternatively, the software version can be seen by tapping from the Menu button ▭ followed by tapping the Status button / by tapping the Status app.

See details concerning software at xo-care.com.

59.5. Windows operating system updates
For security and performance reasons, the Windows computer inside the unit must be kept up to date with the latest security and performance updates.
Updates are automatically downloaded if the unit is connected to the internet.
When the unit is switched on, the operator will be prompted to install previously downloaded updates.
The installation will usually take a few minutes but in rare cases it may take up to an hour.

Note that the unit is not usable while installing the update.

	*Do not switch the unit off while installing Windows software updates.*

	*For security and performance reasons, it is important that operating system updates are installed.*

60. CYBER SECURITY NOTICE
Connecting the unit to the internet will allow apps to access web content via the http protocol along with connecting to other devices on the local network with a remote desktop connection using the RDP protocol.

	*There are inherent risks related to exposing IT equipment to the internet. Attackers might be able to interfere with the equipment's availability, function and data. Connection to IT networks including other equipment could result in previously unidentified risks to patients, operators or third parties. It is the responsibility of the owner to ensure that the unit and any other equipment present on the local network is adequately protected from such attacks by means of identification, analysis, evaluation and control of these risks. Changes made to the IT network, including network configuration, connection of additional items,*

	disconnection of items, update of equipment and upgrade of equipment, could introduce new risks that require additional analysis.

61. SYMBOLS

Table 9 – List of symbols

	*General safety warning*
	*Safety related mandatory action*
	*General caution*
	*Notification*
	*Safety warning: dangerous voltage*
	*Static electricity*
	HIBC Data Matrix containing UDI (Unique Device Identification), serial number and production date (example)
	*Data structure in accordance with Health Industry Bar Code*
	*Serial number*
	*Reference number (catalogue number)*
	Sterilizable in a steam sterilizer (autoclave) at temperature specified
	Thermal washer disinfectable
	*Medical device, according to Medical Device Regulation (EU) 2017/745*
	*Importer*

CH REP	*Swiss authorized representative*
	*Manufacturer*
	*Date of manufacture*
	*Dispose of in accordance with the Waste Electrical and Electronic Equipment Directive 2012/19/EU of the European Parliament and the Council of the European Union; Do not dispose of with domestic waste.*
	*Type B applied part (degree of protection against electrical shock)*
	*Type BF applied part (degree of protection against electrical shock)* *Intraoral camera*
	*Refer to instruction manual/booklet*

62. DIMENSIONS AND TECHNICAL DATA

See Technical specifications, dimensions and range of movement for XO FLOW at xo-care.com.

Technical specifications for XO ODONTOSCALER are available at xo-care.com.

63. LEGAL MATTERS

63.1. Serious incidents

	*If a serious incident should occur in relation to the use of the unit, this should be reported to XO CARE A/S and to the competent authority.*

63.2. Product updates

XO CARE A/S is not obliged to update this product if new versions or updates are introduced after the time of delivery.
Software updates are provided free of charge.

63.3. Liability for defects

	*XO CARE A/S' liability for defects is extended to 24 months from the date of installation. See details at xo-care.com.*

63.4. Expected service life

	XO CARE A/S guarantees delivery of spare parts and consumables as well as technical support for the XO unit until 20 years after the date of the invoice from XO CARE A/S. *See details at xo-care.com.*

63.5. Third Party instruments and accessories

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

63.6. Applicable standards

	The unit fulfills the requirements of relevant standards.

63.7. Electromagnetic emission

The unit is intended for operation in the electromagnetic environment specified below. Please make sure that the unit is used in such an environment.

Table 10 – EMC information

Emission measurement	**Conformity**	**Electromagnetic environment - guidelines**
RF emissions according to CISPR 11 36.201.1 Conducted emission, IEC 61000-4-6	Group 1	The unit uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment, and it is improbable that neighboring electronic devices will be disturbed.
RF emissions according to CISPR 11 36.201.1 Radiated emission, IEC 61000-4-3	Class B	The unit is intended for use in all facilities, including domestic areas and in any facilities connected directly to a public power supply providing electricity to buildings used for residential purposes.
Harmonics according to IEC 61000-3-2	Class A	
Voltage fluctuations / flicker according to IEC 61000-3-3	Coincides	

	WARNING: Use of accessories, transducers, and cables other than those specified or provided by XO CARE A/S could result in increased electromagnetic emissions or decreased electromagnetic immunity of the equipment and result in improper operation. *WARNING: Portable RF communications equipment (including peripherals such as antenna cables and external antennas) should be used no closer than 30 cm (12 inches) to any part of the unit, including cables specified by the manufacturer. Otherwise, degradation of the performance of this equipment could result.*

63.8. Interference Immunity

Table 11 – Interference immunity

Interference immunity tests	**IEC 60601-1-2 test level**	**Compliance level**	**Electromagnetic environment – guidelines**
Electrostatic discharge (ESD) according to IEC 61000-4-2	± 8kV contact ±2kV, ±4kV, ±8kV, ± 15kV air	± 8kV contact ±2kV, ± 4kV, ±8kV, ± 15kV air	Floors should be made of wood or concrete or finished with ceramic tiling. If the floor is covered with synthetic material, the relative humidity should be at least 30%.

Interference immunity tests	**IEC 60601-1-2 test level**	**Compliance level**		**Electromagnetic environment – guidelines**
Electrical fast transient/ burst according to IEC 61000-4-4	± 1 kV for input and output lines ± 2 kV for power supply lines	± 1 kV for input and output lines ± 2 kV for power supply lines		The quality of the line power supply should be that of a typical residential or hospital environment.
Surge voltages according to IEC 61000-4-5	± 1kV L-N, ±2kv L-PE, ±2kv N-PE	± 1kV L-N, ±2kv L-PE, ±2kv N-PE		The quality of the line power supply should be that of a typical residential or hospital environment.
Voltage dips, short interruptions and variations of the power supply according to IEC 61000-4-11	0%, 0.5 cycles @ 0; 45; 90; 135; 180; 225; 270; 315o 0%, 1 cycle 70%, 25/30 cycles Interruptions: 0%, 250/300 cycles	0%, 0.5 cycles @ 0; 45; 90; 135; 180; 225; 270; 315o 0%, 1 cycle 70%, 25 cycles Interruptions: 0%, 250 cycles		The quality of the supply voltage should correspond to that of a typical domestic or hospital environment. If the user of the unit needs continued operation even when the power supply is interrupted, it is recommended to supply the unit from an uninterruptible power supply or a battery.
Magnetic field of power frequencies (50 Hz) according to IEC 61000-4-8	30 A/m	30 A/m		Mains frequency magnetic fields should be at levels characteristic of a typical location in a typical residential or hospital environment.
Conducted RF disturbance IEC 61000-4-6	3 V_{eff} 150 kHz to 80 MHz (6V in ISM and amateur radio bands)	3 V_{eff} (6V in ISM and amateur radio bands)		Portable and mobile radio devices, including the wires, should not be used closer to the unit than the recommended safe distance, calculated using the equation for the transmission frequency. Recommended safe distance: d = 1.17 √P for 80 MHz to 800 MHz d = 2.33 √P for 800 MHz to 2.5 GHz with P as the maximum rated power of the transmitter in watts according to the transmitter manufacturer, and d as the recommended safe distance in meters. The field strength of stationary radio transmitters should be less than the conformance level at all frequencies in an on-site check. Disturbances are possible close to devices that have the following symbol
Radiated RF interference IEC 61000-4-3	10 V/m 80 MHz - 2700 MHz	Test freq. MHz 385 450 710 810 1,72 2,45 5,24	V/m 27 28 9 27 28 28 9	

63.9. Classification

Classification according to the European Union Medical Device Regulation (EU) 2017/745: Class IIa.
Classification according to EN 60601-1: Class I, TYPE B applied parts.
IP classification of the Foot Control: IP21 (Protected against solid foreign objects of 12,5 mm and greater, and protection against vertically falling water drops).

63.10. Applied parts

In relation to EN 60601-1 the following parts of the unit are applied parts – that the patient may get in contact with:

- Instrument bridge including instruments
- Suction hoses
- Patient chair

63.11. Marking plate

Please see the plate at the base of the unit stand at 6 o'clock.
The marking plate can be read at normal daylight (illuminance corresponding to 111.000 lux).

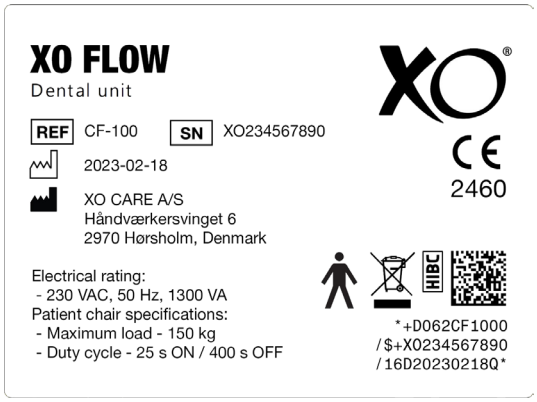


Figure 78 – XO FLOW marking plate.

63.12. Other labels

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

- **Unit**: Under rear panel
- **Patient chair:** Under the seat cushion
- **Patient chair cushions:** On the rear side of the cushions

63.13. Product disposal information

Within the European Union this product must not be disposed of with household waste. Instead, it is the responsibility of the owner to dispose of the waste equipment by handing it over to a designated collection point for the recycling of electrical and electronic equipment waste. The separate collection and recycling of 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 to drop off waste equipment for recycling, please contact the local city office, or your XO Certified Partner.

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

	*This product is to be disposed by authorized service personnel as required by local ordinances or regulations!*

XO CARE A/S

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Berlin

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