OPERATING AND TECHNICAL INSTRUCTIONS

UnicLine S
by heka dental

CE
2460

KEEP THIS MANUAL WITH DENTAL DELIVERY SYSTEM AT ALL TIMES
Manuals for OEM equipment are included in the shipping boxes.
Installation, Service, and Maintenance by authorized Heka Dental dealers only.

Table of Contents

Note: With reservation of technical changes and colour changes. Images may be displayed with optional equipment. Images may be displayed without safety labels.

Preface

A functionally beautiful and simple Nordic design.

Our goal with the UnicLine S has been to develop a functionally beautiful Nordic design in solid materials like aluminium and glass - while at the same time creating a pleasant and relaxed environment for both the patient and dentist.

The lighting has also been a major focus area in the development of the UnicLine S. For example, it allows the dentist and assistant to see the settings for the active instrument from the corners of their eyes at any time, which helps them maintain focus on the patient's oral cavity rather than shifting their attention back and forth.

It's what we call ergonomic lighting, which simply means working with the appropriate lighting.

Yours sincerely

Asbjørn Helwiig Nielsen

Heka Dental A/S are ISO 13485 certified.

Introduction

Device Description

The UnicLine S is an electrically powered Dental Delivery System consisting of a patient chair, cuspidor, instrument console arm and surgical lamp. It contains a foot control that allows the dentist to engage the features using only the foot. Instrument status is viewable in a single place using a multi-display feature. The accessories are spring balanced for ease of use and the extra-long silicone connection hoses have been designed for use in any position. The new UnicLine S is designed to ensure patient comfort and safety in any of the chair positions. The handles, instrument support, and upholstery are easy to remove and clean.
The UnicLine S is intended for dental treatment performed by dental professionals.

This operating instruction describes how to use the UnicLine S Dental Delivery system.

UnicLine S is intended for dental treatment in dentist clinics placed near home facilities or in hospitals.

Please read this manual carefully before using the Dental Delivery system.

This manual is the primary source of information in the event of faults or malfunctions.

Please refer to OEM documentation for information about OEM products.

Intended Purpose

Heka Family systems are dental units. The system is intended for use in dental care treatments. The system is to be used by authorized professionals within the scope of his/her education, training, and experience. The system provides the dental practitioner a motorized patient chair, dental instruments, and suction system for removal of bodily fluids.

Indications for use

Dental care medical operations include evaluation, diagnosis, prevention and/or treatment of diseases, disorders and/or conditions of the oral cavity, maxillofacial area and/or the adjacent and associated structures and their impact on the human body.

Contraindications

There are no known contraindications for the use of this equipment.

Warnings & Precautions

Heka Dental assumes no responsibility for direct or indirect consequential damage resulting from improper use or arising through inadequate compliance with the operating instructions, or incorrect use and maintenance.

⚠	Use only as intended. Inadequate compliance with the operating instructions could result in serious injury to the patient or user or irreparable damage to the equipment. Before using this product, please ensure that you have read and understood the operating instructions.
⚠	Must be used by qualified and trained dental personnel only.
⚠	Do not install the equipment in areas where there is a risk of explosion. UnicLine S is not intended for operation in oxygen rich environments or in the presence of flammable anesthetics or gases.
⚠	Clean, disinfect, and sterilize new or repaired handpieces and instruments before first use and between each patient use. Only use sterilized handpieces and instruments during treatment. Non-sterilized handpieces and instruments may cause bacterial or viral infections. Always sterilize handpieces and instruments after operation
⚠	Please see the section on approved cleaning agents and methods for a detailed description of cleaning methods and maintenance for the UnicLine S. See enclosed OEM instructions for cleaning and maintenance of any OEM equipment and instruments.
⚠	Always operate high-speed handpieces with water coolant. Operating a high-speed handpiece without water coolant can cause thermal injury to the patient.
⚠	Do not use this equipment for the treatment of implants.
⚠	The water used by the UnicLine S device's instruments and water glass filler is exclusively intended for rinsing.
⚠	The main tap for water and air must be turned off when the device is not in use.
⚠	Electromagnetic Compatibility (EMC) Changes or modifications to this product not expressly approved by Heka Dental A/S may result in increased emissions or decreased immunity performance of the product and could cause EMC issues with other equipment. This product is designed and tested to comply with applicable regulation regarding EMC and shall be installed and put into service according to the EMC information stated below:

⚠	Use of portable phones or other portable or mobile radio frequency (RF) emitting equipment near the product may cause unexpected or adverse operation such as patient lamp flickering or shut off.
⚠	In the event of high-voltage emission ESD (8-15KV), the display on the handle for the suction tube holder can be turned off. The function keys will continue to work. The display will work again by turning the device off and on again.
⚠	Portable RF communication equipment must be used only at a minimum distance of 40 cm (15 inches) from any part of the [ME EQUIPMENT or ME SYSTEM], including cables, as specified by manufacture.
⚠	The use of accessories, transducers and cables and items other than those supplied with the equipment may result in increased emission and reduced immunity or performance of the product. UnicLine S must not be used next to or stacked with other equipment. If such use is necessary, the user will be responsible for testing that the configuration is safe for use during normal treatment. Detailed information about electromagnetic interference in relation to the UnicLine S starts in EMC Information in these instructions. See EMC Information for recommended distances between the UnicLine S and other electronic devices.
⚠	Don’t let suction or handpieces, - including magnets, come near patients with implanted pacemakers.
⚠	Don’t touch the patient while you are handling the equipment in the service compartment or other internal parts of the dental unit.

Cautions

CAUTION	This equipment is only to be sold by or on the order of a dentist and only used in accordance with these operating instructions and exclusively by trained professional dental operators.
CAUTION	Position the equipment with sufficient area from walls or obstructions to easily operate and disconnect the device. See the UnicLine S Installation Manual for the dimensions and space requirements of the equipment
CAUTION	Do not position or stack other equipment on the dental unit. See the UnicLine S Installation Manual for the dimensions and space requirements of the equipment
CAUTION	Always inspect the equipment components for damage before performing treatment. Damaged components must not be used and must be replaced before further use of the equipment.
CAUTION	Thoroughly read the documentation for the OEM products that are supplied with UnicLine S before they are connected and used.
CAUTION	Prior to use this equipment, instruments, suction tubes and water supply hoses must be flushed and cleaned in accordance with the operating instructions.
CAUTION	Ensure compliance with local requirements concerning the removal of Amalgam waste.
CAUTION	Do not use saline solutions in the water system, as saline causes the formation of rust in the filters.
CAUTION	Ultrasound cleaning is not suitable for this equipment.
CAUTION	Micro Motor should be removed from the tubing and cleaned every day to avoid corrosion.
CAUTION	The user is responsible for ensuring that the equipment is subjected to annual maintenance and must ensure that the functions of the equipment do not change over time.
CAUTION	The UnicLine S device must be used only under the supervision of trained professional dental operators.
CAUTION	According to international standard: IEC 80601-2-60 Clause 201.4.3 Essential Performance: Dental equipment and hereby Heka Dentals dental equipment, does not have Essential Performance.

Additional Safety Information
The use of accessories that do not comply with the safety regulations for this type of equipment may compromise the safety of the entire system. Therefore, the following must be taken into consideration:

Use of instruments
Documentation of the safety certificates for accessories must be in accordance with the applicable international IEC 60601-1 and the current ISO 7494.

A complete list of standards that the UnicLine S treatment device complies with can be seen in the section “Compliance with regulatory standards” later in this instruction.

The UnicLine S device complies with all requirements set down in Directive 93/42/EEC.

CE 2460

IMPORTANT!
To ensure the safety, reliability, and functionality of this Equipment:

Use only qualified and authorized technicians for installation, calibration, modification, and repair of the UnicLine S
Compliance with IEC 60364 for all electrical installations
Use of only authorized OEM instruments
Use this Equipment only in accordance with instructions provided in this manual
The USB port are only for charging.
The monitors signal cables should only be connected to equipment certified according to IEC 60601-1, IEC 60950-1 or IEC 62368-1.

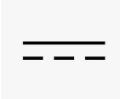
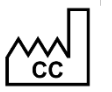
DO NOT:
- Attempt to modify this equipment without authorization by Heka Dental A/S
- If modification is made, the equipment must be fully tested and inspected by a Certified Heka Dental technician prior to use, to ensure safety

Regulatory Classification
- Class I
- Type B Applied Parts
- Ordinary Protection

Not suitable for use in the presence of a flammable anesthetic mixture with air, oxygen, or nitrous oxide.

Symbols

Symbols	Description
	Type B Equipment
	Alternating Current
	General CAUTION! (Standard ISO 7010) See enclosed documents and/or catalogues
	Protective earth
	Follow the operating instructions
	Electrical hazard
	Foot control
	Separate collection of electrical and electronic equipment in accordance with Directive 2002/96/EEC (WEEE).
	Temperature Limitations
	Keep dry
	This side up
	Do not use hand hooks
	Fragile

	No rotation
	Stacking limitations
	Limitations on Relative Humidity
	Limitations on Pressure
	Fuse
	Direct Current
	Do not open
	Operating Instructions
	In house use
	Class II equipment
	Manufacture
	Country of manufacturer
	Medical device
	Unique device identifier

UnicLine S Labelled Diagram

1	Lamp pipe	6	Instruments	11	Suction filters
2	Screen	7	Console top keyboard	12	Patient chair
3	Operation lamp	8	Cup filler	13	Telescope arm
4	Arm system w. instrument table	9	Instrument table keyboard	14	Emergency stop
5	Instrument table display	10	Spittoon		

Components

The following components of the UnicLine S Dental Delivery System are manufactured by Heka Dental:

Patient Chair
Console
Instrument Arm, Table, Tray, and Hoses
Instrument Display
Telescoping Suction Arm and Hoses
Foot Control
Bottle Water

Installation, operation, maintenance, and cleaning information can be found in this manual for the items listed above.

Optional Equipment and Instruments

Optional equipment and instruments for use with the Heka Dental UnicLine S can be purchased separately.

If you purchased any of the optional equipment and instruments for use with your Heka Dental UnicLine S Dental Delivery System, please refer to the OEM documentation included with your shipment for information on installation, operation, maintenance, and cleaning of those Dental Delivery Systems.

Diagram of the Display

Display information ⟶
See Instrument table display

Accessories
Monitor
Single tray
Double tray
Suction Cannula 11 mm
Suction Cannula 15 mm

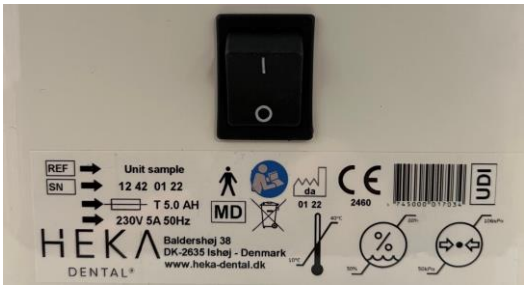
Operating introductions

If the equipment does not start as described below
- contact an authorized Heka Dental dealer immediately.

Starting UnicLine S

WARNING: Clean, disinfect, and sterilize new or repaired handpieces and instruments before first use and between each patient use. Only use sterilized handpieces and instruments during treatment. Non-sterilized handpieces and instruments may cause bacterial or viral infections. Always sterilize handpieces and instruments after operation.

Please see the section on Cleaning and Disinfection for a detailed description of cleaning methods for the UnicLine S device. See enclosed OEM instructions for cleaning, disinfection, sterilization, and maintenance of any OEM equipment and instruments.



1. Press the switch on outside of console

2. The UnicLine S will display the clock in the instrument display

UnicLine S is now ready for use.

The main tap relays for water and air are automatically switches On/Off together with the unit

Online user registration for dentists

Register as a user of a Heka unit

Access special product information
Scan the QR code for online registration.

You can e.g. access special software, user guides, quick guides, user guides videos,
tips & tricks, product news, etc. We are constantly expanding the possibilities for
registered users of Heka units.

Foot control

If the equipment does not start as described below
- contact an authorized Heka Dental dealer immediately.

To avoid unintentional activation of the Dental Delivery System, the foot control can only activate the instrument lifted from the instrument table, all other instruments is inactive and can't be activated.

The operating instructions are based on a standard round foot control. Therefore, there may be some sentences elsewhere in the manual which do not comply with the instructions on this page. If in any doubt, please refer to this page.

Standard foot control

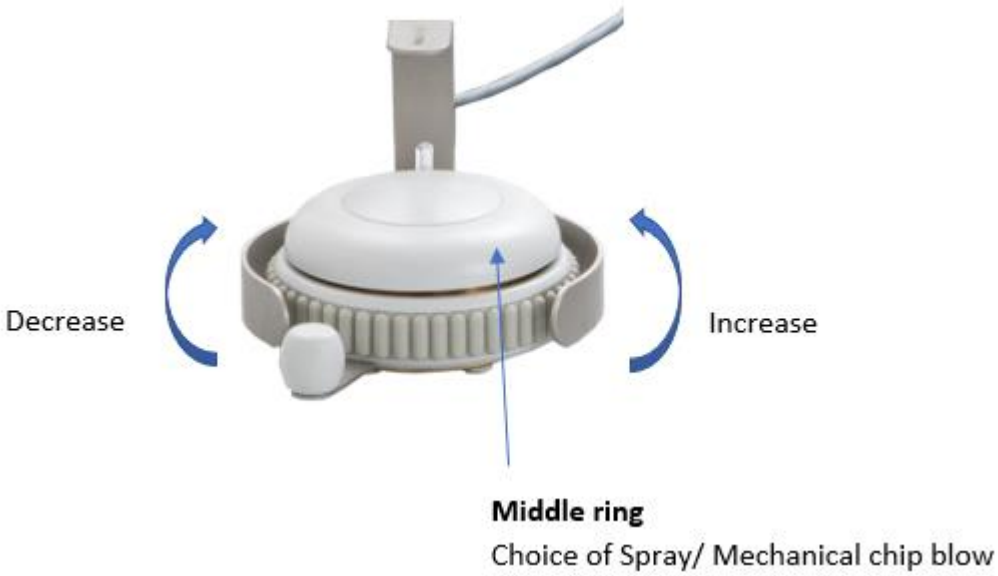
UnicLine S is delivered standard with the round, patented foot control which is used to control the selected instrument.

Operation of the Foot Control:

Operation:	Location:	Action:
Activate OP lamp	Top of Foot Control	Press
Change spray on activated instrument	Middle Ring	Quick Press (<1 second)
Activate mechanical chip blow (stays on for duration of press)	Middle Ring	Continuous Press (>1 second)
Change the rotational direction of the instrument	Activation ring & Middle Ring	Tap the Activation ring and then tap the middle ring

Standard variable foot control

Optional the UnicLine S can be delivered with a standard variable foot control.



Operation of the Foot Control:

Operation:	**Location:**	**Action:**
Activate OP lamp	Top of Foot Control	Press
Change spray on activated instrument	Middle Ring	Quick Press (<1 second)
Activate mechanical chip blow (stays on for duration of press)	Middle Ring	Continuous Press (>1 second)
Increase the intensity of the instrument	Pedal Arm	Push counter clockwise
Decrease the intensity of the instrument	Pedal Arm	Push clockwise
Change the rotational direction of the instrument	Pedal Arm & Middle Ring	Push pedal arm to right and tap the middle ring

The standard foot control has three pre-programmed speeds. The variable foot control does not have pre-programmed speeds.

Universal variable foot control

UnicLine S can be supplied with universal variable foot control available both as wired and wireless versions.

If UnicLine S has been supplied with variable foot control, there are up to nine pre-selected speeds. However, it can be linearly or logarithmically programmed. - See section: Set-up Universal variable foot control.

Speed is configured using the pedal arm, but the speed range is configured using up to nine programs.

Configuring the pedal springs:

Under the foot control, the pedal spring can be turned on or off by holding the pedal arm at the max. position while either inserting or removing the screw. (Screw the screw in only so far that it is not touching the base plate).

Mode of operation for universal foot controls:

Operation:		**Location:**	**Action:**
Activate OP lamp	1	Left support arm	Press
Call assistant	4	Right support arm	Press
Activation of lifted instrument	2	Pedal arm	Move arm
Switching between programs *	3	Spray selection (right or left ear)	Two short presses
Changes the spray selection of the activated instrument	3	Spray selection	Short press (<1 second)
Activates the mechanical chip-blower. The chip-blower will remain active for as long as pressure is maintained.	3	Spray selection	Long press (>1 second)
Greater intensity in the instrument	2	Pedal Arm	Press/move towards the right
Less intensity in the instrument	2	Pedal Arm	Press/move towards the left
Joystick for controlling the chair.	5	See instructions for the chair.	

Wireless Standard foot control

UnicLine S can be delivered with a Wireless Standard foot control, which is used to control the selected instrument.

Top	Can be used for activation of OP-lamp (Additional equipment)
Middle ring	A short press on the middle ring (less than1 second) changes the spray on the activated instrument. A long press on the middle ring (greater than 1 second) activates the mechanical chip blow. The chip blow will remain activated as long as the press is maintained.
Activation ring	A constant press on the Activation ring activates the chosen instrument. Turning the activation ring in the direction indicated by the arrows increases or decreases the intensity of the instrument. By pressing the activation ring twice, you can switch between 3 pre-programmed speed/spray settings. To reverse the rotation of the motor, press shortly on the activation ring and then press shortly on the middle ring of the foot control.

The foot control can be delivered with a brace to make it easier to move. A variable version of the foot control is also available (see following page).

In case of “low battery” or disturbances in the wireless connection, please connect the foot control to the Dental Delivery System using the foot control cable.

For Technical instruction, specification and Spare parts see Technical Chapter.

Pairing of the foot control
Before connecting the foot control, you have to choose the right type of foot control via the telescope display. In this case choose “switch”.

Read this instruction before pairing the foot control.

1. Connect the foot control to the console using the cable. The Dental Delivery System must be turned ON.

2. Press and hold the TOP and the middle ring down simultaneously until you hear three beeps

3. Within 5 seconds:
   a. Activate the TOP shortly. You hear one beep.

The encryption code is now transferred from the foot control to the receiver.

   b. Within 5 seconds:
   c. Activate the TOP shortly. You hear one beep.
   d. Activate the TOP again. You hear five beeps. The foot control is now paired with the unit and goes back to normal work mode

If you do not press within 5 seconds or press something other than expected, you will hear 10 rapid beeps and foot control goes back to normal operating mode without having changed anything.

The Top, Middle ring and Activation ring can be activated from all sides.

Wireless standard variable foot control

UnicLine S can be delivered with a Wireless Standard variable foot control, which is used to control the selected instrument.

Top	Can be used for activation of OP-lamp (Additional equipment)
Middle ring	A short press on the middle ring (less than1 second) changes the spray on the activated instrument. A long press on the middle ring (greater than 1 second) activates the mechanical chip blow. The chip blow will remain activated as long as the press is maintained.
Pedal arm	By turning the pedal arm in the directions indicated with arrows, the intensity of the instrument can be increased or decreased. To reverse the rotation of the motor, turn the pedal arm quickly to the right and then press shortly on the middle ring of the foot control.

If your UnicLine S is equipped with a variable foot control, the Dental Delivery System does not have 3 pre-programmed speeds. The foot control can be delivered with a brace to make it easier to move the foot control.

In case of “low battery” or disturbances in the wireless connection, please connect the foot control to the Dental Delivery System using the foot control cable.

For Technical instruction, specification and Spare parts see Technical Chapter.

Programming and pairing of the foot control
Before connecting the foot control, you have to choose the right type of foot control via the telescope display. In this case choose “var ->”.

Read this instruction before programming the foot control.

1. Connect the foot control to the console using the cable. The Dental Delivery System must be turned ON.

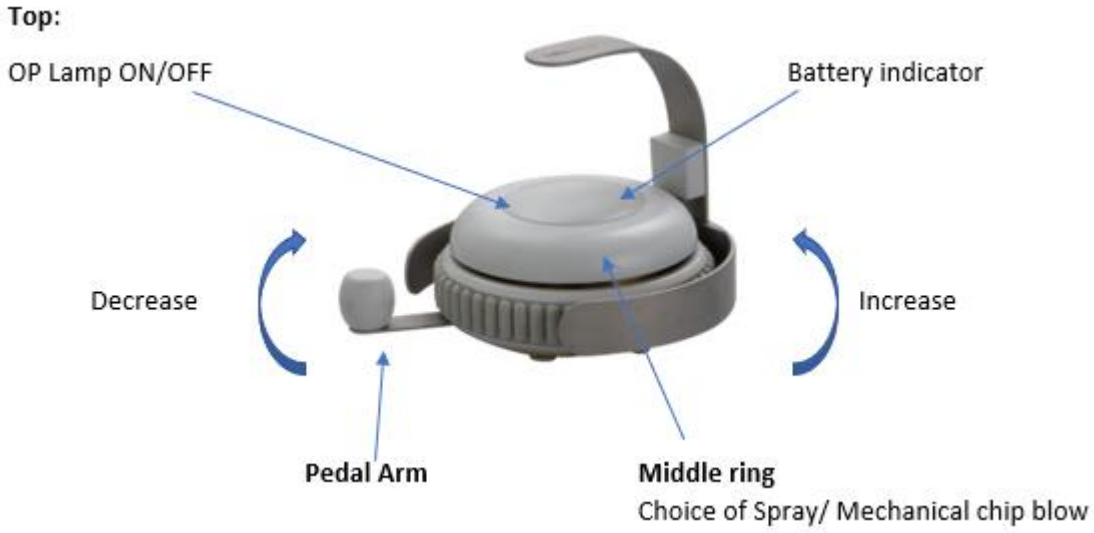
2. Press and hold the TOP and the middle ring down simultaneously until you hear three beeps.

3. Within 5 seconds activate one of the following:
   a. Choose linear pedal arm function: Activate the TOP until you hear two beeps.
   b. Choose logarithmic pedal arm function: Activate the MIDDLERING until you hear one beep.

The encryption code is now transferred from the foot control to the receiver.

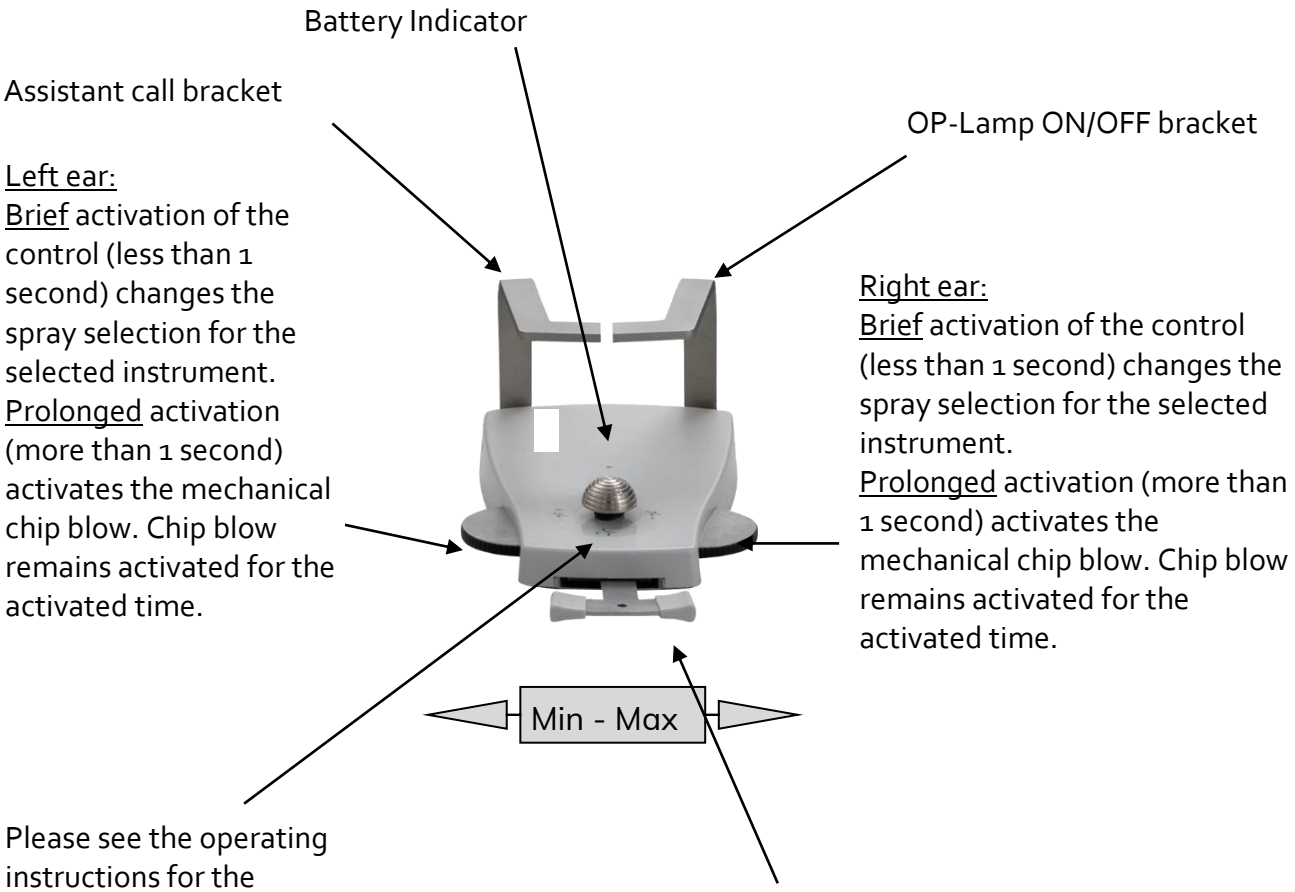
   c. Within 5 seconds:
   d. Without activating the pedal arm (arm to the left)
   e. Activate the TOP shortly. You hear one beep.
   f. Move the pedal arm to max. at a steady speed (hold arm to the right)
   g. Activate the TOP again. You hear five beeps. The foot control is now paired with the unit and goes back to normal work mode.

If you do not press within 5 seconds or press something illegal, you will hear ten rapid beeps and foot control goes back to normal operating mode without having changed anything.



Wireless Variable universal foot control,

UnicLine S can be delivered with a Wireless Variable Universal foot control, which is used to control the selected instrument.



If your UnicLine S is equipped with a variable foot control, the Dental Delivery System does not have 3 pre-programmed speeds.

Activation of pedal arm spring:

At the bottom of the foot control, you can activate/de-activate the pedal arm spring by holding the arm at max. while you turn the screw in or out. (Do not turn the screw further in at to the surface of the bottom plate).
If the spring option in the bottom is changed, remember to change the settings in the program menu on the telescopic head.

In case of “low battery” or disturbances in the wireless connection, please connect the foot control to the Dental Delivery System using the foot control cable.

For Technical instruction, specification and Spare parts see Technical Chapter.

Programming and pairing of the foot control

Before connecting the foot control, you have to choose the right type of foot control via the telescope display. In this case choose “var ->” with pedal arm spring or “var !” without pedal arm spring.

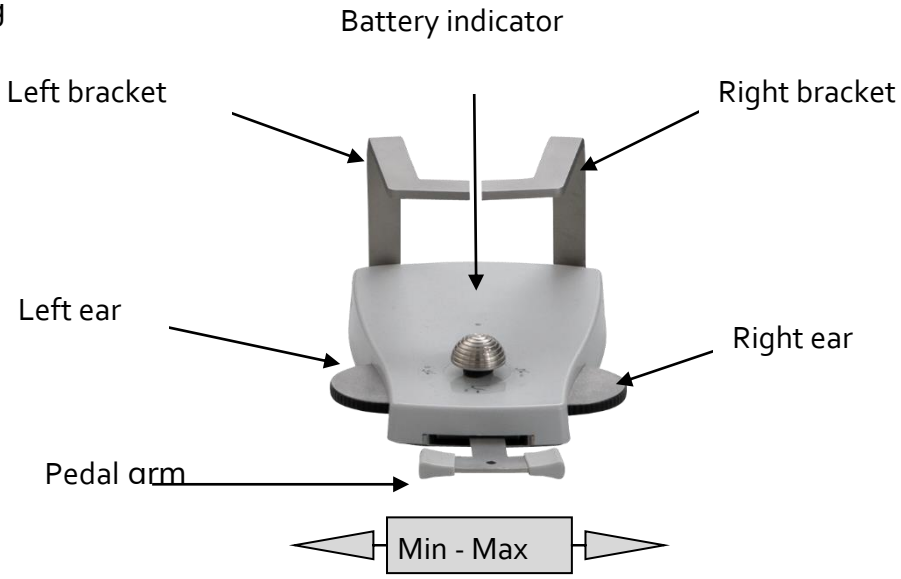
Read this instruction before programming the foot control.

1. Connect the foot control to the console using the cable. The Dental Delivery System must be turned ON.
2. Press and hold both ears down simultaneously until you hear three beeps (about 5 sec.).
3. Within 5 seconds activate one of the following:
   a. Choose with spring and linear pedal arm function: Activate the LEFT EAR shortly and you hear one beep.
   b. Choose with spring and logarithmic pedal arm function: Activate the RIGHT EAR shortly and you hear two beeps.
   c. Choose without spring and linear pedal arm function: Activate the LEFT BRACKET shortly and you hear three beeps.
   d. Choose without spring and logarithmic pedal arm function: Activate the RIGHT BRACKET shortly and you hear four beeps.

The encryption code is now transferred to the Receiver PCB.

4. Within 5 seconds:
   a. Place the pedal arm at min. (to the left).
   b. Activate LEFT bracket shortly to select minimum position and you hear one beep.
   c. Place the pedal arm at max. (to the far right).
   d. Activate RIGHT bracket shortly to select maximum position and you hear 5 beeps. The foot control is now paired with the unit and goes back to normal work mode

If you do not press within 5 seconds or press something illegal, you will hear 10 rapid beeps and foot control goes back to normal operating mode without having changed anything



Instrument table display

Normal display – no instruments activated

11 : 17	Time is shown
	Automatic spittoon function. (touch function)
	Assistant call. (touch function)
	Chair control. (only in connection with the UnicLine S patient's chair

Display when an instrument is activated

23500	The timer changes to show speed, intensity or time.
	Icon is illuminated (blue) if there is spray air on the activated instrument.
	Icon is illuminated (green) if there is spray water on the activated instrument.
	Automatic spittoon function. (touch function)
	Assistant call. (touch function)

The patient's chair is locked and positions cannot be changed when an instrument is removed from its holder. This function can be disconnected, see programming "Menu Structure"

Console top keyboard

Normal display – no instruments activated

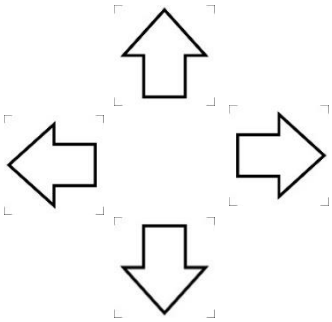
	Chair control (only in conjunction with UnicLine S patient chair).
	Manual cup fill. The cup is filled as long as the symbol is activated.
	Manual bowl flush. The bowl is flushed as long as the symbol is activated.

Cleaning

For easy cleaning the touch panel of the instrument table and the keyboard on the telescopic head can be locked.

Press the chair symbol: 

These arrows are shown:



Press simultaneously on the "up" and the "right" arrow. Only these arrows will be illuminated and this function will lock the table and the keyboard.

Depending of the setup, it can stay locked,
Or automatically be unlocked after 2 minutes.

This function can be aborted at any time by pressing the same arrows once more (5 sec.)

Instruments

Turbine

If the equipment does not work as described below,
contact an authorized Heka Dental dealer immediately.

The following descriptions apply to the UnicLine S standard foot control. For instructions on the UnicLine S variable foot control please see the instructions specific to this.

Activation of the turbine
When the turbine is lifted from the instrument holder, the fibre optic is automatically turned on. A constant press on the activation ring of the foot control starts the turbine.

Modification of the spray function
In order to change the spray combination of the turbine, the instrument must be lifted from the instrument holder. The spray combination is shown on the display. It is indicated by spray symbol and the combination can be changed by briefly pressing

 Indicates **spray air** ON **blue**

 Indicates **spray water** ON **green**

If air/water spray is chosen, there will be an automatic chip blow for 2 seconds (with the standard program).
For a powerful continuous mechanical chip blow, press and hold the middle ring. The mechanical chip blow will continue as long as the press is maintained.

Adjustment of water and air
Regulators are installed under the turbine module:

Regulator	Regulation of:	Clockwise	Anticlockwise
Blue	Spray air	Decrease	Increase
Green	Spray water	Decrease	Increase
Neutral	Operating air	Decrease	Increase

The driving air is adjusted during installation of the Dental Delivery System and should not be readjusted.

There is a maintenance-free return air evacuation box in the console.

For more detailed information on the use of the turbine, please refer to the attached instructions from the manufacturer.

Micro Motor with fiber optics

If the equipment does not work as described below,contact an authorized Heka Dental dealer immediately.

The following descriptions apply to the UnicLine S standard foot control. For instructions on the UnicLine S variable foot control please see the instructions specific to this.

Activation of motor

When the motor is lifted from the instrument table, the fibre optics is automatically turned on.

Adjust speed of motor

To **increase** the speed, turn the activation switch **counter clockwise** and to **reduce** the speed turn it **clockwise**.

If you hold down the activation ring of the foot control, the motor will start at the programmed speed and with the chosen spray combination. The programmed speed (1.000-40.000) and spray combination (water/air) can be seen on the instrument display for the motor.

The motor is equipped with three pre-programmed speeds and spray combinations. In order to change the speed, press the activation ring briefly twice (this does not apply to units with a variable foot control). (Please refer to the section on menu structure for information on changing programs).

Torque

The motor is equipped with a built-in torque function that automatically increases power to maintain the speed when the drill is loaded.

Reverse rotation

Brief activation of the activation ring, followed by brief activation of the middle ring, changes the direction of rotation of the motor (REVERSE). The change is indicated by three beeps and a flashing display. (If you have a variable foot control, please see chapter 3.2 Variable foot control).

To return to the original direction of rotation either replace the instrument in its holder or press briefly on the activation ring and then briefly on the middle ring.

Modification of the spray function
In order to change the spray combination on the motor, the instrument must be lifted from the instrument table. The display show the spray combination which can be changed by pressing the middle ring of the foot control briefly.

 Indicates **spray air** ON **blue**

 Indicates **spray water** ON **green**

If the air/water spray is selected, there will be an automatic chip blow for 2 seconds (with the standard program).

A Mechanical chip blow can be selected by holding down the middle ring. It will be activated for as long as the ring is held down.

Adjustment of water and air
Regulators are installed under the motor module:

Regulator	**Regulation of:**	**Clockwise**	**Anticlockwise**
Blue	Spray air	Decrease	Increase
Green	Spray water	Decrease	Increase
Neutral	Cooling air	Decrease	Increase

The cooling air is adjusted during installation of the Dental Delivery System and should not be readjusted.

For more detailed information on the use of the motor, please refer to the attached instructions from the manufacturer.

Ultrasonic Scaler

If the equipment does not work as described below, contact an authorized Heka Dental dealer immediately.

The following descriptions apply to the UnicLine S standard foot control. For instructions on the UnicLine S variable foot control please see the instructions specific to this.

Activation of the scaler

When the scaler is lifted from the instrument table, constant pressure on the activation ring of the foot control will start the instrument and the water spray.

The intensity of the scaler (10 – 100 %) and spray combination (water) are shown on the instrument display.

The instrument can be used with three different intensity categories – for three different working procedures, ENDO (E), PERIO (P) and SCALING (S). When the hand piece is lifted from the instrument holder it is possible to change the intensity category using the arrows to the left and right, and the intensity can be changed with the arrows up and down.
The scaler is equipped with three pre-programmed intensities and 2 spray combinations in ENDO (E), PERIO (P) and SCALING (S). Briefly activate the activation ring twice to change between the intensities. (Please refer to the section on menu structure for information on changing programs).

IMPORTANT

The intensity categories are defined different, depending on the Scaler manufacturer:

W&H:	Perio is 2.5% to 25% of the max. intensity. Endo is 5% to 50% of the max. intensity. Scaler is 10% to 100% of the max. intensity.
Satelec/Vario:	Perio is 0% to 22% of max. intensity. Endo is 24% to 60% of max. intensity. Scaler is 62% to 100% of max. intensity
EMS:	Perio is 10% to 100% of the max. intensity. Endo is 5% to 50% of the max. intensity. Scaler is 5% to 100% of the max. intensity.

The display always shows the percentage of the intensity categories chosen – not the percentage of the max. intensity!!!

Modification of the spray function

To change the spray combination of the scaler, lift the instrument from the instrument table to activate it.
Combination of spraytype is shown on the display of the instrument table.

The **green** light indicates **spray water** ON

Adjustment of water
A regulator is installed under the scaler module:

Regulator	Regulation of:	Clockwise	Anticlockwise
Green	Spray water	Decrease	Increase

Please refer to the manufacturer's instructions enclosed with the Dental Delivery System for more information about the use of the ultrasonic scaler.

Light polymerization instrument

If the equipment does not work as described below, contact an authorized Heka Dental dealer immediately.

The following descriptions apply to the UnicLine S standard foot control. For instructions on the UnicLine S variable foot control please see the instructions specific to this.

Activation of the light polymerization instrument
To activate the polymerization instrument, lift it from the instrument table. The display for the light polymerization instrument indicates the pre-programmed polymerization time. If you are using the FARO EDI light, the light intensity will automatically be reduced and will not return to full intensity until either the motor or the turbine is lifted from the instrument holder. This function can be disconnected, see programming/menu structure. Press the activation ring of the foot control. When the press is stopped, the light polymerization starts with the programmed time. To interrupt the polymerization, put the instrument back on the instrument table.

Modification of the light polymerization time
When the instrument is lifted from the instrument table, the display indicates the pre-programmed light polymerization time. This time can be modified by pressing "arrow up" on the instrument display to increase or "arrow down" to reduce the polymerization time. (Please see the section on menu structure for information on changing the pre-programmed polymerisation time).

Disinfection of the instrument
The optical fibre light guide and the optical protection device can be autoclaved a limited number of times.

Warning: NONE of the above light polymerization lamps must be wiped with a strong alcohol solution, as this would dry out the plastic and cause it to crack.

3, 6 & 7 – function Syringes

If the equipment does not work as described below,
contact an authorized Heka Dental dealer immediately.

The UnicLine S Dental Delivery System can be delivered with different types of 3-function syringes. This section describes the Unic syringe only. For further information about other types of syringes, please refer to the OEM instructions enclosed with the Dental Delivery System.

Activation of the syringe
Air is activated by pressing the left valve.
Water is activated by pressing the right valve.
The spray function is achieved by pressing both valves at the same time.

Adjustment of water and air
Regulators are installed under the syringe module:

Regulator	Regulation of:	Clockwise	Anticlockwise
Blue	Spray air	Decrease	Increase
Green	Spray water	Decrease	Increase

Removing the syringe tip
To remove the syringe tip, loosen the nut and pull out the tip. To ensure that the syringe tip does not unintentionally work loose during use, the nut must always be tightened before use.

6-function syringe
UnicLine S can be delivered with two types of 6-way syringes from Luzzani.

Luzzani: To turn the syringe heating on/off, turn the rear section either to the left or to the right. The green dot indicates that the heating is turned on.

7- function syringe
Luzzani: This is the same as the 6-way syringe but a light indicates when activated.

Warning: Always check that the tip is mounted correctly and secured.

Airflow air polisher instrument

If the equipment does not work as described below,
contact an authorized Heka Dental dealer immediately.

The following descriptions apply to the UnicLine S standard foot control. For instructions on the UnicLine S variable foot control please see the instructions specific to this.

The air spray  does not have any function when using this instrument.

Preparing for the treatment/refilling the powder container
Ensure the connection is dry before connecting the handpiece
Remove the pressure from the container by selecting the instrument, de-selecting the water spray and activate the instrument.
Unscrew the lid from the container and fill the container with powder.
Screw the lid back on and ensure it is tight.
Enable water spray and the instrument is ready for treatment.

Activation of the airflow air polisher
When the instrument is selected, the instrument table display will change to the instrument program. If the instrument is equipped with a fiberoptic light, this will be turned on automatically.
Water spray must be enabled for the instrument to operate as intended.
The instrument is subsequently activated using the foot control.

 Indicates **spray water** ON

After the treatment
Once the treatment has been completed, the system must be purged of powder to prevent clogging.
De-select the water spray and activate the instrument to depressurize the system.
Remove the handpiece and blow compressed air from the syringe through the interior of the handpiece.
Clean the handpiece with the enclosed needles as recommended by the manufacturer.

The button on the container bracket can be used to blow compressed air through the instrument hose to remove any blockage caused by residual powder.

Adjustment of water and air
Regulators are installed under the instrument module:

Regulator	Regulation of:	Clockwise	Anticlockwise
Blue	Air pressure	Decrease	Increase
Green	Water flow	Decrease	Increase

Increasing the air pressure increases the cleaning effect and reduces the polishing effect. Increasing the water flow rate increases the polishing effect and reduces the cleaning effect.

Regarding use and operating times, please refer to the regulations issued by the instrument manufacturer.

Intraoral camera

If the equipment does not work as described below,
contact an authorized Heka Dental dealer immediately.

The following descriptions apply to the UnicLine S standard foot control. For instructions on the UnicLine S variable foot control please see the instructions specific to this.

Activation of the intraoral camera
To activate the intraoral camera, lift it from the instrument table. The light will automatically turn on. The picture appears on the screen.

To freeze the picture, quickly press on the activation ring of the foot control; Press again to bring the camera back to the standard position.

To divide the screen into four views, press the activation ring on the foot control for at least 3 seconds; another 3 second press will bring the camera back to the standard position.

Please refer to the manufacturer's instructions enclosed with the Dental Delivery System for more information about the use of the intraoral camera.

Sterile water system

If the equipment does not work as described below,
contact an authorized Heka Dental dealer immediately.

The sterile water system supplies sterile salt water when the motor or the scaler is activated. Use of the sterile salt water disconnects the normal spray function.

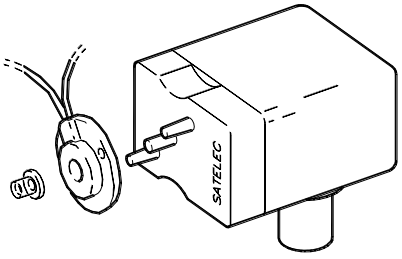
Installing the sterile water system

1. Mount the sterile water pump onto the tray adapter.
2. Place the bag holder in the adapter hole on the pump.
3. Remove the black protection cap from the pump motor.
4. Check that the bag in the sterile water kit has no defects.
5. Mount the pump wheel on the pump motor.
   Then put the white rubber stopper on the motor axle.
6. Attach the hose to the sterile bag. The blue flow control must be completely open.
7. Mount the surgical instrument on the motor and attach the sterile hose to the instrument's external water canal.
8. Connect the hose clips to the motor hose.
9. Insert the jack plug from the pump motor into the corresponding socket on the rear of the instrument table.
10. The sterile water system is now ready for use.

Activation of sterile water system

To activate the sterile water system, press and hold the activation ring on the foot control. The normal supply of spray water has been disconnected and the pump automatically feeds the sterile liquid into the hand piece.

When the pump is connected, the instrument table display will automatically switch to "sterile water mode". Remove the instrument for which this function is required (motor or scaler). Switch on arrow up and arrow down. If you activate both arrows simultaneously, sterile water will be selected for the instrument in question.
The spray water and air valves to the instruments will be blocked and arrow up and arrow down can be used to increase or reduce the speed of the pump.
(Start at medium speed.) The speed you select will be remembered.
The spray air symbol will switch off.
Water/pump can be connected and disconnected via the spray ring on the foot control (switch the water symbol off and on simultaneously).
The instrument selection can be changed.



Normal water supply

When the pump is disconnected the Dental Delivery System will return to its normal state.

Spittoon

If the equipment does not work as described below,
contact an authorized Heka Dental dealer immediately.

How to operate the spittoon

By activating automatic fountain, the glass will be filled in the programmed time followed by the bowl flush.

Activating the rinsing position function.
Activating the rinsing position, the chair will go to rinsing position, the glass will be filled in the pre-programmed length of time and the bowl be rinsed.
The rinsing position can be activated by pres (F2) on the telescopic arm, by pressing on the table keyboard or by a short press down on the joystick (short press up if reverse function chosen).

In rinsing position:

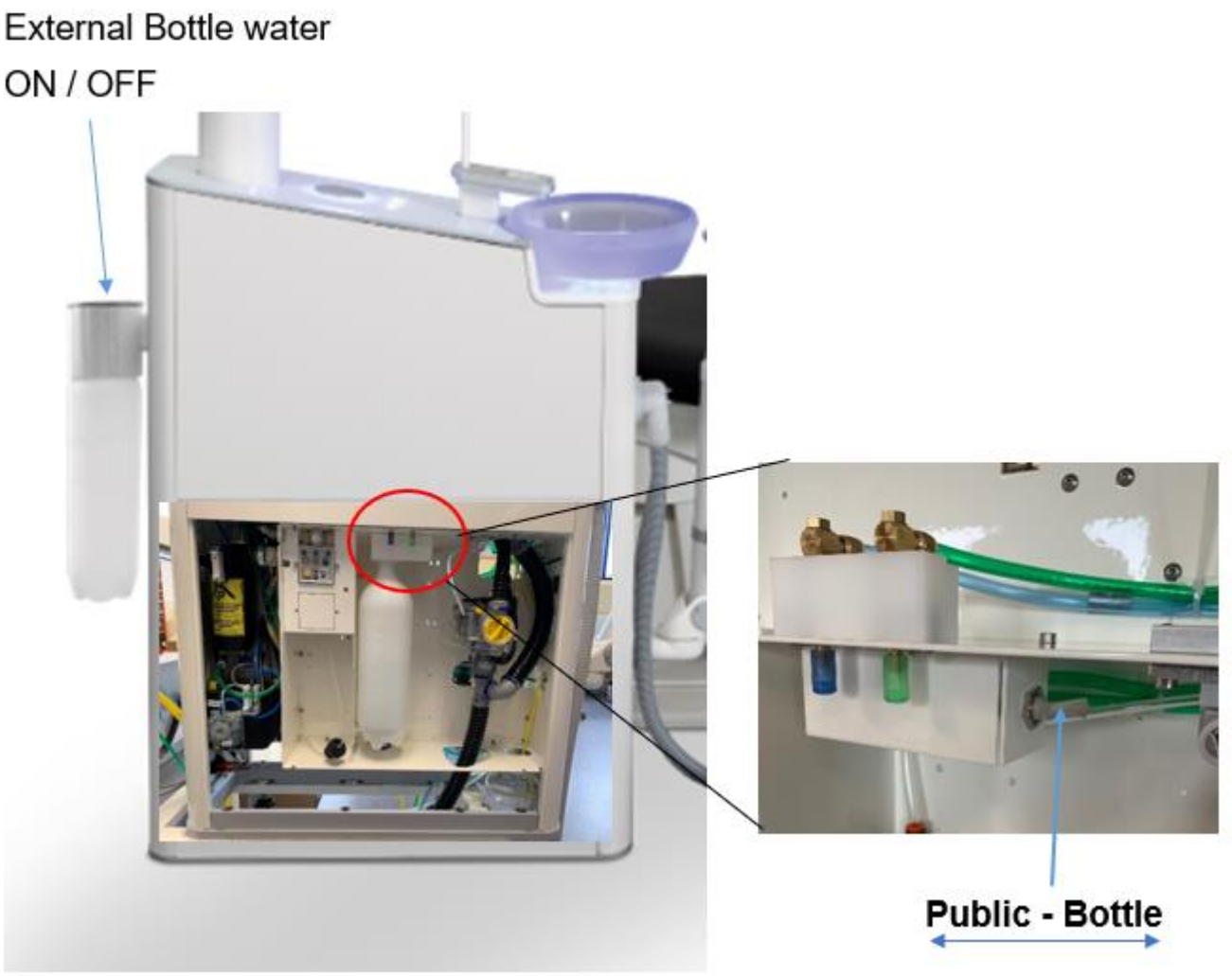
- You can choose last position to continue treatment by pressing ⇧on the table keyboard or press up on the joystick (press down if reverse function chosen), then the chair will go to Last Position, the joystick function and the table keyboard will return to normal.
- If the treatment has finished and the patient are to leave the chair, you press ⇦ on the table keyboard, < on the telescopic arm or press left on the joystick (> if left hand function chosen), then the chair will stay in rinsing position, the joystick function and the table keyboard will return to normal.

Activating the glass-filling function
If you press the glass-filling button (F3) on the telescopic arm the glass will fill for the pre-programmed length of time.
Bowl rinse is activated automatically after activation of the glass-filling function.

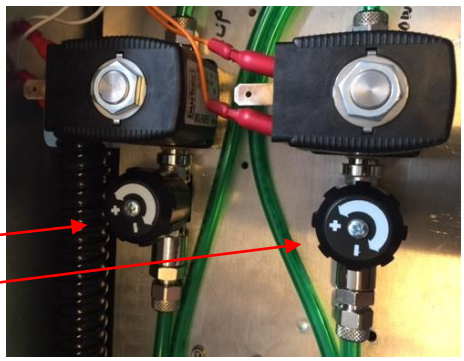
Activating the bowl rinse function
Bowl rinse can also be activated via the keyboard on the telescopic arm (F4). The bowl will rinse for the pre-programmed length of time.

For instructions on changing the rinsing position glass filling time (F2), the glass filling time (F3) or the bowl rinse time, please see the relevant section in the “Menu Structure”.

Activating the External Bottle water



Adjustment of water pressure to Cup and Bowl.
The water pressure can be adjusted on the adjustment screws (+) for more pressure (-) for less pressure.



Dismantling the glass bowl
The glass bowl can be removed for cleaning.
Remove mushroom from drain.

Unscrew the bowl by turn it counter clockwise.

Then lift it off.

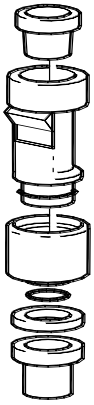
Mount the bowl again by following the instruction in the opposite way.

Do not exceed 65°C/149°F when cleaning the bowl.

When a turnable fountain is installed, the chair is automatically locked when the fountain is turned to the patient side

Suction tubing on the telescopic arm

Selective suction
In case of selective suction only the chosen suction hose will work.
The suction system is a medium volume suction system from 90 to 250 l/min.



Precautionary measures shall be taken during installation to ensure restriction of flow.

Removing the suction valve top
The top of the suction valves can be removed for cleaning and auto-claving. The suction valve's O-ring should be lubricated with silicon grease after daily cleaning.

Removing suction holders
Both open and closed versions of the suction holders are available.
They are easy to remove for cleaning purposes.

Removing the suction hose filter
There is a filter in each suction hose bwhich can easily be removed for cleaning.The filter is cleaned with a brush.

Adjustment of the telescopic arm
Adjusted the length of the telescopic arm by loosening the two screw caps X1 and X2 which act as friction brakes.
Draw it to the desired length and lock it by tightening the screw caps.

A 3 or 6-function syringe, a light curing lamp or an Intraoral camera can be mounted in the 4th holder on the telescopic arm.

General information about the telescopic arm's display
The display and button functions adapt to the selected options in the Dental Delivery System. For further information, see the section in the "Menu Structure".

Metasys automatic Separator

If the equipment does not work as described below, contact an authorized Heka Dental dealer immediately.

To ensure the correct function and to avoid malfunction of the Metasys automatic separator the following must be carried out:

Daily preventive maintenance
Rinse the suction hoses and the spittoon after every treatment. We recommend that the spittoon and the suction system are cleaned every day at midday and in the evening or refer to the manufacturer's instructions for preventive maintenance to keep the Dental Delivery System functioning properly.

We recommend the use of Metasys Green & Clean for cleaning (F-979).

Replacement of the collection tank

1. Switch off the unit.
2. Remove the cover plate furthest away from the patient chair.
3. Lift up the locking bracket and pull out the entire tank element horizontally.
4. Open the four clip locks. Lift the separator element up and down a couple of times. Afterwards, clean the outside of the pump as well as the pump filter at the bottom. Then, clean the three sensor electrodes (three black "sticks").
5. Place the separator element in the new tank, facing the "front" label on the tank.
6. Close all four clip locks.
7. Slide the tank element carefully along its rail and check that it is positioned correctly. Lower the locking bracket.
8. Switch on the Dental Delivery System and check that the green light-emitting diode on the Separator keyboard indicator switches on.

Metasys Amalgam Separator

If the equipment does not work as described below,
contact an authorized Heka Dental dealer immediately.

To ensure the correct function and to avoid malfunction of the Metasys amalgam separator the following must be carried out:

Daily Care
Rinse the suction hoses and the spittoon after every treatment. We recommend that the spittoon and the suction system are cleaned every day at midday and in the evening or refer to the manufacturer's instructions for preventive maintenance to keep the Dental Delivery System functioning properly.

We recommend the use of Metasys Green & Clean for cleaning (F-979).

Weekly Care
Turn off the Dental Delivery System. Remove the side cover plate furthest away from the patient chair. The filter drawer must be cleaned once a week. The filter drawer should be changed every 2 or 3 months. To assist you, all pieces that are to be maintained are yellow. Clean the sensors as required with a toothbrush or similar object.

Replacement of the amalgam collection tank

1. Switch off the Dental Delivery System.
2. Remove the cover plate furthest away from the patient chair.
3. Lift up the locking bracket and pull out the entire tank element horizontally.
4. Open the four clip locks. Lift the separator element up and down a couple of times. Afterwards, clean the outside of the pump as well as the pump filter at the bottom. Then clean the three sensor electrodes (three black "sticks"). You can use a toothbrush or similar object for cleaning purposes.
5. Place the separator element in the new tank, facing the "front" label on the tank.
6. Close all four clip locks.
7. Slide the tank element carefully along its rail and check that it is positioned correctly. Lower the locking bracket.
8. Switch on the Dental Delivery System and check that the green light-emitting diode on the display indicator switches on.

When the amalgam container in the separator is 90% full, there will be both a visual and an acoustic alarm on the Separator keyboard. The alarm can be deleted from the separator keyboard and the Dental Delivery System will work as normal.

We recommend changing/emptying the amalgam container as soon as possible.
If you neglect to change/empty the container, at some point you will reach a 100% alarm. The separator only checks the amount of amalgam on start-up, i.e. when the Dental Delivery System is switched on.

Cleaning & Disinfection

This section provides information on how to clean and disinfect the Heka Dental UnicLine S equipment. For detailed information on cleaning, disinfecting, and sterilizing OEM equipment and instruments purchased for use with the UnicLine S, refer to the OEM documentation.
The Centers for Disease Control and Prevention (CDC) recommends use of a chemical germicide registered with the EPA as a Hospital Disinfectant and labelled for tuberculocidal activity for surfaces that have been soiled with patient material. In compliance with this guideline, we recommend intermediate-level disinfection between patients using Sani-Cloth AF3/Dürr FD300 or as indicated below. It is important to follow the manufacturer instructions for use to ensure effective disinfection.

CAUTION: Ultrasonic cleaning is not suitable for this device.

Cleaning & Disinfection for external clinical contact surfaces

The following is a list of external clinical contact surfaces:

- Console
- Spittoon
- Foot Control
- Instrument Arm
- Instrument Table
- Instrument Tray
- Instrument Handles
- Instrument Support
- Instrument & Suction Hoses
- Instrument Display
- Telescoping Suction Arm
- Suction Tube Holder

External surfaces of the UnicLine S device should be cleaned and then disinfected. See Pictures in Cleaning & Disinfections for external surfaces for disassembly of Instrument Handles from the Instrument Table for cleaning and disinfection.

FIRST, CLEAN
Wipe using a soft cloth moistened with mild detergent or disinfecting solution at the beginning and end of each workday and if visibly soiled. Take Care to avoid running water and splashing during cleaning on the unit surfaces.

SECOND, DISINFECT
After cleaning, disinfect between patients using Sani-Cloth AF3/FD300. ALWAYS follow the manufacturer instructions for use.

Cleaning & Disinfection for the dental chair upholstery

FIRST, CLEAN

Wipe using a soft cloth moistened with mild detergent or disinfecting solution at the beginning and end of each workday. For stains, alcohol based cleaners such as Fantastik® and Formula 409® can be used. To sanitize, use a solution of 1:5 bleach to water. Rinse with clean water to remove cleaning solution residue. Allow to air dry. Avoid running water and splashing during the cleaning.

SECOND, DISINFECT

Disinfect between patients using Sani-Cloth AF3. Follow the manufacturer instructions for use.

Cleaning & Disinfection for external surfaces

CLEANING:

Wipe the external surface using a soft cloth moistened with mild detergent or disinfecting solution at the beginning and end of each workday. Avoid running water and splashing during the cleaning.

DISINFECTION:

Disinfect external surfaces between patients using Sani-Cloth AF3. Follow the manufacturer instructions for use.

PRECAUTIONS:

Do not use the cleaning agents listed below as they may cause permanent damage to Dental Delivery System parts:

- Wax polish
- Acetone
- Perchloroethylene
- Trichloroethylene
- Powder cleaning
- Disinfectants containing halogens
- Sulphuric detergents

Dismantle of handle:

Turn the handle counter clockwise and take it off for cleaning.

Mount the handle:

Turn the handle clockwise formounting the handle.

Lamp head and parabola:

Cleaning must be carried out using a soft cloth in cotton or absorbent cotton with ethyl alcohol or the specific PERFLEX detergent. Water-alcohol based disinfectants are suitable with 70% isopropyl alcohol or ethanol.

Automatic Suction-Cleaning System

If the equipment does not work as described below,
contact an authorized Heka Dental dealer immediately.

Display
You can switch to Suction cleaning by entering the sub-menu (blue button on the telescopic arm). Here you can choose between rinsing with water (F1 key) or with chemicals (F4 key). The suction cleaning system can be used with or without cleaning fluid. If you use the system without cleaning fluid, clean water will be flushed through the system.

The automatic cleaning function can always be stopped by lifting one of the suction syringes.

Filling liquid on
The cleaning system is set for using METASYS (Disinfection and Cleaning H1) cleaning fluid.
You should check that there is cleaning fluid in the chemicals bag on a regular basis and it should be replaced when necessary.

Manual/continuous cleaning of the suction system during treatment of the patients.
Instead of automatic cleaning of the whole suction system, you can select manual cleaning of one or more suction syringes during the treatment of a patient. Start the cleaning function by lifting one or more of the suction hoses from the holder, then select cleaning with cleaning fluid or water from the suction cleaning menu.
If you remove a suction hose from the holder while another suction hoses is being cleaned manually, both suction hoses will be cleaned.

Please note:
The manual cleaning facility uses less cleaning fluid than automatic cleaning.
Manual cleaning will stop as soon as all of the suction hoses have been replaced in the holder. The cleaning system is set for using METASYS (Disinfection and Cleaning H1) cleaning fluid (1 litre).

Instrument Flush

If the equipment does not work as described below,
contact an authorized Heka Dental dealer immediately.

In order to ensure a fresh water supply, the UnicLine S can be delivered with a facility which flushes the instruments automatically with water.

Dismantle hand and contra angle pieces and the turbine.

Place the rinsing bowl in the spittoon, remove the instruments and place them in the instrument holes.

If all instruments with a “water supply” are removed simultaneously, the telescopic arm will switch automatically to “Instrument flush” in the top line.

If you activate F1 (1-minute flush) or F4 (6-minute flush) the water will be switched on for all of the selected instruments and the instrument table display will count down from either 60 or 360 seconds. When the flush time is over, the water will stop and the Dental Delivery System will give a brief, acoustic signal. When the instruments have been replaced, the Dental Delivery System will return to “main menu”.

If you replace an instrument on the table before the end of the flush time, the water will stop for the instrument in question but will continue for the others (this ensures against “flooding” or incorrect use).

Remember! Flush the spittoon with clean water after every cleaning.

Bottled Water
You can switch between public and bottled water supply from the sub-menu (blue button on the telescopic arm). This selection will be remembered when the Dental Delivery System is switched off and back on again.

When the Dental Delivery System is on, there will be a P (public) F1 key or a B (bottle) F4 key in the top line after the main menu on the telescopic arm.

Maintenance

Removing the instrument support
The instrument support can easily be removed for cleaning by pulling the rest out from the instrument table.

See Cleaning and disinfection

Maintenance of the equipment should be an integral part of the routines of the clinic. Current daily maintenance should be continued.

Instruments
O-rings for instruments must be checked and replaced if necessary. O-rings should be lubricated with silicon grease.

Suction hoses
O-rings for the suction hoses must be checked and replaced, if necessary. O-rings should be lubricated with silicon grease.

Spittoon
The glass bowl of the spittoon can be washed in the dishwasher. (max 65°C)

Foot control
It is important that the foot control stands stably on the floor. In time, the rubber knobs under the foot control may become greasy from floor polish, soap etc, and the foot control will start to slide on the floor. The rubber knobs can be cleaned with gasoline or another degreaser.

Water Supply
There may be national or international requirements stipulating that instruments etc. must be flushed with water after each patient and/or after a period of inactivity.

Annual maintenance
Annual inspection by an authorized UnicLine S technician should be performed to ensure optimal function and to maintain the extended 2-year warranty.

The warranty is only valid if the Dental Delivery System is serviced annually with recommended service kit and the installation/service cards and service-kit serial-numbers are submitted to Heka Dental A/S.

Information about the PCB and electronics
Information is available for approved service technicians.
Please contact our technical department for further details.
Heka Dental A/S, Baldershøj 38, DK-2635 Ishøj.
Tel.: +45 43320990, Fax: +45 43320980
www.heka-dental.dk

Motorised instrument with fibre optics, including motor tubing

See the attached instructions for use (the section on "Maintenance") for cleaning instructions.

Ultrasonic scaler

See the attached instructions for use (the section on "Disinfection, cleaning and sterilisation") for cleaning instructions.

Light curing instrument
Clean the light guide in an autoclave at a temperature of 135°C. (Only the light guide.)

See the attached instructions for use (the section on "Maintenance, disinfection and cleaning of equipment") for cleaning instructions.

3-7 way syringe

See the attached instructions for use (the section on "Cleaning and sterilisation") for cleaning instructions.

Annual maintenance (checklist)

Unit		Tested	Adustered/Programmed	Replaced	Product nr.	Rep.
Software control	Base power board					
	Consol controller board					
	Display til glas inst. bord				db-0030-11	
	Instrument controller board					
	Chair controller board (option)					
	Unic footcontrol board (option)					
	Telescope display board					
Console	Grounding of Unit					
	Water adjustment/regulation kit				* 907	
	Water Filter Insert				* 900	
	Air Filter Insert				* 901	
	Main Water Valve Seat Gasket				* ft-2141-15	
	Main Water Valve, Flat Ring Gasket.				* ft-0032-15	
	Water Pressue: 2 bar					
	Air Pressure: 4.5 bar					
	Main Magnet Closes Test				f-043	
	Surface Damange to Unit				Lak. A-499 A-499-1	
Suction, suction cleaning + telescope arm	Suction Hose 11mm gray ribbed				** 2m/ ***3m f-527	
	Suction Hose 16mm gray ribbed				** 2m/ ***3m f-528	
	Return air Hose red				** 4,3m/ ***6,3m a-118	
	Cleaning spigots				**/*** 2 x f-548	
	Suction angles w/pipe long				**/*** 2 x f-522	
	Upper Part Big Suction 17mm new				* f-688-1	
	Upper Part small suction new				* f-686-1	
	Middle piece small Asp				**/*** fc-0684-01	
	Bottom small aspiration				**/*** fc-0682-01	
	Middle piece big aspiration				**/*** fc-0685-01	
	Bottom big aspiration				**/*** fc-0683-01	
	O-ring 14 x 1 (for middle piece suction)				**/*** 2 x f-681	
	O-ring filter				**/*** 2 x f-518	
	Top big suctionniddle (11mm)				* ft-2267	
	O-ring filter				* 4 x f-518	
	Suctionfilters long				* 2 x f-523-1	
	Clean Suction Manifold					
	Dürr membran for selective valve				* 2 x 7560-500-22	
	Dürr selective valve				2 x 7560-500-77	
	Suction holder aktivation					
	Adjust Telescopic Arm					
	O-Ring, 3.15 x 1.80 (Suction Holder)				* 8 x ft-0020-15	
	Keys on Telescope Function + Light					
	Display on Telescope					
	Valve seatgasket (suction cleaning valves)				**/*** 2 x ft-2140-15	
	O-ring 12,5 x 1,1 FKM (suction cleaning valves)				**/*** 2 x ft-0033-15	
	Returnvalve (inside suction cleaning block)				**/*** 2 x ft-2174-15	
	Metasys/Dürr Amalgam Separator MST1,		**see manufacturer's instructions**			
	Metasys WEK/WEK light		**see manufacturer's instructions Remember Annual service!!**			
	Spittoon Valve					
Spittoon	O-ringe 21X4,5 (under spitoon)				**** ft-0027-15	
	Mushroom filter				**** ft-0078-06	
	Valve seatgasket (cup and spitoon valve)				**** 2 x ft-2141-15	
	Flat-ring-gasket (cup and spitoon valve)				**** 2 x ft-0032-15	
	cup and spitoon valve close tight				a-279	
	Flow time on cup and bowl valve					
	Flow streght på cup and bowl valve					
	Arm					
	Brake Screws for Arm					
	Springs in Arm					

	Unit	Tested	Adustered/Programmed	Replaced	Product nr.	Rep.
	Glas top table					
	Display.					
	Ajust time by telescopehead					
	Key function + light					
	Fodkontrol					
	Functionality					
	Light-Setting Lamp					
	Function					
	Exposure Time					
Micromotor	Water Valve Gasket (watervalve)				* ft-2140-15	
	O-ring 12,5 x 1,1 FKM (watervalve)				* ft-0033-15	
	O-ring 2,35 x 1 (adjust needle Water)				* ft-2153-15	
	All 3 Valves Close Tight					
	Speed and Spray Selection					
	Cooling Air: min 10 l/minute					
	Spray Water and Air Quantities					
	Fibre Optic Light					
	Reversing (Start – Spray)					
	O-Rings (Bien Air)				* 6 x 011.35.28	
	Clean Spray Piping					
Turbine	Water Valve Gasket (watervalve)				* ft-2140-15	
	O-ring 12,5 x 1,1 FKM (watervalve)				* ft-0033-15	
	O-ring 2,35 x 1 (adjust needle Water)				* ft-2153-15	
	All 3 Valves Close Tight					
	Spray Selection					
	Turbine Driving Pressure,-			according to manufacturer's instructions		
	Spray Water and Air Quantities					
	Return Air Pressure: max 0.3 bar					
	O-Rings					
	Clean Spray Piping					
	Fibre Optic Light					
	Suction in Return Air Holder (Console)					
Scaler	Water Valve Gasket (watervalve)				* ft-2140-15	
	O-ring 12,5 x 1,1 FKM (watervalve)				* ft-0033-15	
	O-ring 2,35 x 1 (adjust needle Water)				* ft-2153-15	
	Spray Water Valve Close Tight					
	Strength and Spray Selection					
	Spray Water Quantities					
	Fibre Optic Light (optional)					
	Clean Spray Piping					
	O-Ring					
Syringe	O-ring 2,35 x 1 (adjust needle water)				* ft-2153-15	
	Functionality of Water + Air Valves					
	Valves Close Tight					
	Spray Water and Air Quantities					
	Warm Water + Air (optional)					
	Fibre Optic Light (optional)					
	Clean Spray Nozzles					
Add. Equipment	Quick Coupler, Water					
	Quick Coupler, Air					
	Quick Coupler, Suction					
	Water Heater					
	230V Plug					
	Bottle Water					
	Sterile Water					
	Instrument flush					
Chai	Manual Operating				** 50g. ft-2013-15	
	Program Operating					

	Check tightening of axle to the back				Ft-1303-15	
	Grease spindle for motors and other moveable parts					
	Check/adjust lateral slippage with washers					
	Lamp					

Technical Sections, - only for authorised technicians

Technical data

Voltage	230V ~/115V ~
Frequency	50Hz/60Hz
Power consumption	5 A/10 A
Protective degree	Type B applied parts
Classification	Class I

Fuses

Bases controller board

F1 (**230V**-secondary fuse) : **T4.0A L250VAC 5x20mm**
F2 (**230V**-secondary fuse) : **T4.0A L250VAC 5x20mm**
F3 (**230V**-secondary fuse) : **T4.0A L250VAC 5x20mm**

F4 (**230V**-primary fuse) : **T5.0A H500VAC 5x20mm**

F5 (**230V**-primary fuse) : **T2.5A H500VAC 5x20mm**

F4 (**115V**-primary fuse) : **T10.0A H500VAC 5x20mm**

F5 (**115V**-primary fuse) : **T4.0A H500VAC 5x20mm**

Service and maintenance

No parts of the Dental unit should be service or maintained while in use with a PATIENT!

Installation Requirements

For positioning of the UnicLine S, please refer to the ground plan in the installation manual.

1. 230 Volt/115 Volt +/- 10%, 50/60 Hz, with earth. Branch fuse 10A/20A.
2. Water, supply pressure 2-6 bar (30-90 psi). Ball valve with R 3/8" internal thread. Flow rate <-4 l/min. (max. consumption in the entire range).
   Water quality: <- 8 dH (1 dH = 20 mg Ca/3 l water)
   Top 5 cm above the floor.
3. Air, supply pressure 4.5 - 6 bar (65-88 psi). Ball valve with R 3/8" internal thread. Flow rate <- 55 l/min. (max. consumption in the entire range).
   Air humidity > 20 C at atp.
   The air must be dry and free of oil. Max. 0.5 mg/m3
   Particulate contamination limit must not exceed 100 ppm/m3 for 1 um to 5 um particle size.
   Top 5 cm above the floor
4. Outlet, Ø 32 mm exterior, PVC pipe. Top 5 cm above the floor.
   Capacity: min. 10 l/min.
5. Suction, Ø 32 mm exterior, PVC pipe. Top 5 cm above the floor. (DN40)
   Vacuum: >- 150 mbar, Flow rate >- 550 l/min.
6. Control cable for suction motor, 2 x 1.5 mm2. Free end 50 cm above the floor.
7. Control cable for assistant call, 2 x 1.5 mm2. Free end 50 cm above the floor.
8. Any cables for x-ray equipment. Cable type/quantity depends on the make. Free end 50 cm (minimum) above the floor.
9. Place for installation of the console should be concrete, ceramic tile or other nonflammable material.
10. Temperature and humidity:
    During operation: +10° C to +35° C, non-condensing air humidity from 20-75%, pressure 800 hPa - 1060 hPa.
    Storage/transport condition: 10° C to +40° C, non-condensing air humidity from 50-80%, pressure 500 hPa - 1060 hPa.

230V/115V output for chair, lamp and extra equipment. They are all parallel connected and the total load must not exceed 5A/1150 W/10A/2300 W. All outputs have a T5.0A/T10.0A fuse.

Warning! To avoid electric shock, the UnicLine S must only be connected to a mains supply with protective earth.

Classification of Equipment

Please refer to the enclosed OEM documentation for more information about OEM Equipment Classification

Dental Delivery System Method of operation Protection against water	Class IIA All type B applied parts patient parts comply with IEC/EN60601-1. Continuous operation with intermittent load. IP20
UnicLine Chair	Class I, type B Applied parts for chair: Upholstery Armrests Footrest
Multifunctional syringe Intermittent use Protection against water	type B applied parts 10sec. ON / 20sec. OFF. IP20
Light polymerization lamp Intermittent use Protection against water	type BF. 10sec. ON / 40sec. OFF. IP20
Ultrasonic scaler Operation with water Operation without water Protection against water	type B applied parts 6 sec. ON / 3 sec. OFF for a maximum of 4 min. with normal water supply from the unit. (1-5 bar) Intermittent use; 2 sec. ON / 18 sec. OFF for a maximum of 10 min. IP20
Micromotor Function in compliance with CEI 34-1 type S Air cooling flowrate Protection against water	Class IIA, type S3 type B applied parts 3A for 60 sec. / 5A for 10 sec. Must be cooled down for 3 min. in the event of operation with air or for 20 min. in the event of operation without air. 10 l/min. IP20
Operating lamp Continuous operation Protection against water	Class I No requirements for operating/inactive time. IP20
Foot control Continuous operation: Protection against water	Class 1, accessible by screw connector No requirements for operating/inactive time. IP21

Regulatory Standards Compliance

Standard:	Title:
IEC 60601-1:2005 IEC 60601-1/ corr.1:2006 IEC 60601-1/corr.2: 2007 IEC 60601-1/A1:2012	Medical electrical equipment General safety w. corrections A1
EN 55011	Industrial, scientific and medical equipment – Radio frequency disturbance characteristic.
DS/EN 1041:2009 +A1:2013 DS/EN ISO 20417:2021	Information supplied by the manufacturer of medical devices
EN 1640	Dentistry – Medical device for dentistry - equipment
EN ISO 14971:2019	Medical device – application of risk management to medical devices
EN ISO 7494-1	Dentistry Dental units and Patient Chairs Part 1: General requirements.
EN ISO 7494-2	Dentistry Dental units Part 2: Air, Water, Suction and waste system
EN ISO 1942	Dentistry - Terms
DS/EN ISO 9687:2015 + A1:2018	Dentistry Graphical symbols
EN ISO 10993-1	Biological evaluation of medical devices - Part 1: Evaluation and testing within a risk management process.
EN ISO 10993-5	Biological evaluation of medical devices - Part 5: Test for in vitro cytotoxicity
EN ISO 10993-10	Biological evaluation of medical devices - Part 10: Tests for irritation and skin sensitization
DS/EN 60601-1-2: 2015 + A1:2021	Medical electrical equipment- Part 1-2: EMC
EN 62304 EN 62304_2006_A1_2015	Medical device software – software life-cycle + A1
EN ISO 15223-1:2021	Medical equipment, Symbols to be used with medical device labels
IEC 60601-1-6:2010 +A1:2015 +A2:2021	Medical electrical equipment – Part 1-6: General Requirements for basic safety and essential performance – Collateral standard: Usability
IEC 62366 IEC 62366-1 +AC 2016	Application of usability engineering to medical device
EN ISO 21530:2004	Dentistry – Materials used for dental equipment surfaces – Determination of resistance to chemical disinfectants

Wireless foot control, technical specifications

Specification

Radio frequency:	433MHz
Encryption:	16 bit
Batteries:	3 pieces AAA NiMH rechargeable batteries (700-1100mAh)
Operating time:	Up to 5 days with fully charged new batteries

Radio Part

The wireless foot control consists of the foot control it selves with a radio section and a receiver PCB db-0064-11, which is located on P 103 on Power Base PCB.
Radio communication is at 433MHz and range up to 3 meters. The range of the wireless connection depends of where the antenna is placed. Avoid placing the antenna close to cabinet parts or cables.
The communication is encrypted to ensure that other equipment cannot start / stop instruments, as well as more wireless foot controllers can be used in the same clinic. To avoid food control can disturb each other, the foot controls use different channels in the 433MHz band. The last digit of the encryption code determines the channel used for communication. There must be more that 6 meters between foot controls using the same channels.
The foot control sends the encryption key to the receiver during the setup programming of the foot control.
If for some reason, radio communications should be out of function, you can connect the foot control to the Dental Delivery System via the foot control cable and the foot control will act like a non-wireless foot control.

The foot control can be in 3 modes:

- Activated: when you press the foot control, the foot control transmit radio signal and the power consumption is high (average 26mA).
- Idle: when the foot control is not pressed (idle), the power consumption drops to low (average 7mA).
- Sleep: when the foot control has been idle for 5 minutes, the foot control will go into sleep mode and the power consumption drops to very low (average 3.2mA). In sleep mode detection of the first press on the foot control will be a little delayed.

The foot control is designed to be used 8 hours a day in 5 days without charging and be charges in the weekend.

The intelligent charging circuit adjusts the charging current according to the charging level of the batteries.

Batteries
The foot control is designed and powered by three AAA 750mAh NiMH rechargeable batteries, which are located at the bottom at the foot control. To access the batteries, remove the battery cover on the bottom of the foot control. New batteries should always be charged at least 24 hours prior to the foot control is used.

The battery charging level is indicated briefly on the LED on top of the foot control when you activate the foot control or press an ear / intermediate ring.

Green	Battery is fully charged
Yellow	Battery is partly charged
Red	Battery is empty. Start charging the battery immediately.

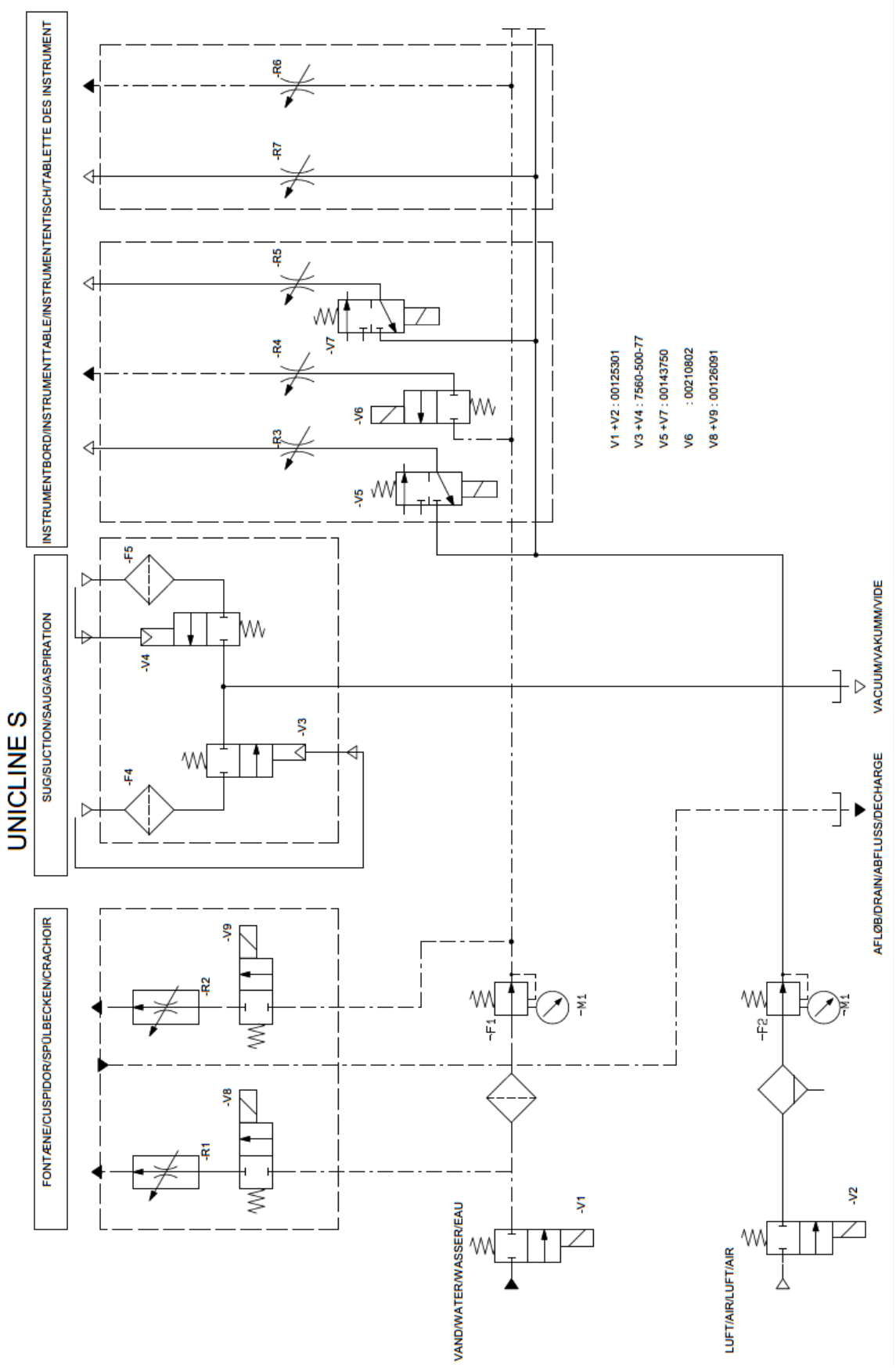
When charging, the charging lamp will light steadily red after a short foot control activation. The charging lamp will not light green until the batteries are fully charged.

The battery in the foot control shall be charged with the supplied network adapter or via the supplied foot control cable to the unit. (requires that the Dental Delivery System is turned on).

Charger
Brand: Emerson Network Power/Astec DCH3-050EU-006
Specification: 100-240 VAC 120 mA, 5V=500 mA

Caution: When shipping or if the foot control is not used for a long time, for example during holidays, the batteries must be removed from the foot control, as they can be permanently damage from being discharged completely.
Caution: Be sure to inset the batteries as marked in the battery compartment.
Caution: The batteries are a part of an Medical Equipment and approved for the foot control. No other batteries are allowed. Heka Dental A/S can supply for spare batteries.

Hydraulic diagram



Menu Structure

Press the menu symbol ☰ repeatedly to change between the menus.

Main Menu

F1 SV (Spittoon Valve.)
Vacuum in the fountain. (Option)

F2 Rinse Position.
The chair runs in the rinse position, the cup fills and the bowl is rinsed. (These functions depend on the settings in the Setup menus)

F3 Cup fill
Short press the cup fills and the bowl is rinsed. (The flow depend on the settings in the Setup menus)
Long press the cup will be filled as long the key is pressed.

F4 Bowl Rinse.
The basin is rinsed. (The flow depend on the settings in the Setup menus)

Suction Cleaning (Option)

F1 Water
Activates the cleaning system with clean water.
F4 Chemicals
Activates the cleaning system with a chemical mixture.

Water Supply. (Option)

F1 Public.
Public water supply, supplies the instrument panel. (Shown by P in the Main menu).

F4 Bottle.
Bottled water, supplies the instrument panel. (Shown by B in the Main menu).

Time/Clock.

Adjust the clock in the display.

F1 Hour 0-2

F2 Hour 0-9

F3 Min. 0-5

F4 Min. 0-9

Must be confirmed by pressing OK for the change to take effect.

Parameters.

F1 Save. (Saves the current instrument setting).
Instrument's speed, power, time and spray choice.

F4 Default.
Factory settings for Instruments.

Restart the system (switch on/off) for the change to take effect.

Sterile Pump, Flow rate 0-100 % (Option).

Spray volume of sterile water.

(÷) Reduces volume.
(+) Increases volume.

Must be confirmed by pressing OK for the change to take effect.

Setup Code.

The code, 1-2-3-4 must be keyed in to enter the technician menu.

F1 1

F2 2

F3 3

F4 4

Confirm by pressing OK

Aspirator program.
Programming the sensor in the telescope head.

F1 Full.
Sampling (programming) with all aspirator and active instruments in the container.
F4 Empty
Sampling (programming) with all aspirator and active instruments removed from the container.

Instruments.
Defines instruments at various Positions.

F1 Prev. (Back)
Choice of instrument position.
F4 Next. (Forward)
Choice of instrument position.

Positions 1-5 (6*) in the Instrument Table
Positions 9-12 in the Telescope Head

(÷) Prev. (Back)
Choice of instrument.

(+) Next. (Forward)
Choice of instrument.

Must be confirmed by pressing OK for the change to take effect.

*Non controllable.

Airrotor.
If the unit is delivered with a proportional valve, this menu is used to setup a standard turbine as a variable turbine.

F1 You can switch between the following submenus:

Control: F4 Var. used for variable airrotors
Const used for not variable airrotors

Valve1 min: F3 Decrease the minimum valve1 voltage
F4 Increase the minimum valve1 voltage

Valve1 max: F3 Decrease the maximum valve1 voltage
F4 Increase the maximum valve1 voltage

Valve2 min: F3 Decrease the minimum valve2 voltage
F4 Increase the minimum valve2 voltage

Valve2 max: F3 Decrease the maximum valve2 voltage
F4 Increase the maximum valve2 voltage

Valve3 min: F3 Decrease the minimum valve3 voltage
F4 Increase the minimum valve3 voltage

Valve3 max: F3 Decrease the maximum valve3 voltage
F4 Increase the maximum valve3 voltage

Scaler.

Control: F4 Var. used for variable scalers
Const used for not variable scalers

Spittoon Levels.

Setting the programmed Flow time on the Main menu.

F2 Cup fill (Rinse Position)

F3 Cup fill (Cup fill)

F4 Bowl Rinse.

The key is activated for the desired flow time.

The flow time is automatically remembered.

Glass flow.

MUST BE AT 100% ON UNICLINE S
If not at 100%, adjustments can be made with the following:

◀ Reduced Flow volume.
▶ Increased Flow volume.

Must be confirmed by pressing OK for the change to take effect.

Start deg. Stop

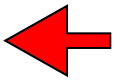
Must be set to 0 0 in UnicLine S

Setup Chair.

Press F1 repeatedly to change between the options **Auto/None**.

Auto: The chair runs automatically in the
rinse position upon activation of Rinse Position. In the Rinse Position you have these functions on instrument table and joystick:

Up: Last position



Left: Stop

None: The chair does not run upon activation of Rinse position

Choices in this menu must be confirmed by pressing OK for the change to take effect.

Setup Foot ctrl.

Var! / Var→ / Pulse / Switch

Repeatedly press F1 to change between the options Var! / Var→ / Pulse / Switch.

Name
Var! Variable foot controller without pullback spring. Activate instrument by pressing the pedal arm.
Var→ Variable foot controller with pullback spring . Activate instrument by horizontal pressure on the pedal arm.
Pulse Round variable foot controller (not wireless).
Switch Standard foot controller and standard wireless foot controller.

Lin/Log:

Press F4 repeatedly to change between the options Lin / Log.

Name
Lin (Linear control)
Log (Logarithmic control)

F3 Min / Max.
Sets the pedal movement.

Restart the system (switch on/off) for the change to take effect.

Setup Timing.

F1 Chip blow. / Steri-pump

Second setting for Chip blow.

F3 **(+)** Increased number of seconds.

F4 **(÷)** Reduced number of seconds.

Must be confirmed by pressing OK for the change to take effect.

Volume setting for Steri-pump and hose cleaning chemicals.

F3 **(+)** Increase volume of Steri-pump and hose cleaning chemicals.

F4 **(÷)** Reduced volume of Steri-pump and hose cleaning chemicals.

Must be confirmed by pressing OK for the change to take effect.

Setup Installed.

In this menu the options shown on the dentist's user interface can be switched on/off. At the same time, the relevant symbols on the telescope head will light or turn off. In other words, the dentist / assistant will only be shown the menus and symbols that he or she can use.

Press F1 repeatedly to change between the options.

The following can be switched On / Off by pressing F4.

Name	ON/OFF
Spitt. Valve (Key F1 to activate the vacuum in the fountain when using the Dürr fountain valve)	F4
Water supply (Bottled water)	F4
Suct. Clean (Suction hose)	F4
Fountain (Dental Delivery System with / without fountain)	F4
Steri-pump (Sterile water)	F4

All choices in this menu must be confirmed by pressing OK for the change to take effect.

Setup Features.

Individual setup features can be set in this menu. Press F1 repeatedly to change between the options. Switch On/Off by pressing F4.

Name	ON/OFF
Clock: On: (default): Clock displayed in the instrument table Off: Clock not displayed in the instrument table	F4
Bowl auto: (not used)	F4
Bowl flush: On: Automatic rinsing of the bowl after cup filling	F4
Bowl instr: (Not used)	F4
Lamp dimming: ON: Automatic dimming of the OP lamp when the LC lamp is removed. This option depend of the type of OP lamp used.	F4
Chair active: You can choose to lock the chair when the active instrument is lifted (Off) or when an active instrument is lifted and activated via the foot control (On).	F4
Key click: On: Click sound by activating keys on the instrument table and telescope head	F4
Motor Block: On (default): in case of overload, the motor stop and indicate this with 3 bips. Off: No overload check.	F4
Disp. MX/MCX: On (default): Show speed on the instrument table Off: Don't show speed on the instrument table	F4
Disp. 100MX: Off (default): Lowest speed 1000 On: Lowest speed 100	F4
Lamp Auto: On(default): The OP lamp will automatically be turned off in Rinse Position (About 5% from seat down endstop activated and back up endstop activated), or when the chair is moving.	F4
Rinse pos. up: Off (Default): A short press down on joystick makes the system go to Rinse Position. On: A short press up on joystick makes the system go to Rinse Position.	F4
Rinse pos. JS: (Rinse position using the joystick) On: Short press "up/down" on the joystick (depending on the setup of "Rinse pos up") will always get the chair to go to the "Last position". Off (default): The chair can only go in the "last position" using the joystick, if the system is in rinse position (sideways arrow turns rinsing position off) and Rinse pos JS is On.	F4
Last pos. JS: ("Last position" using the joystick) On: Short press "up / down" on the joystick (depending on the setup of "Rinse pos up") will always get the chair to go to the "Last position". Off (default): The chair can only go in the "last position" using the joystick, if the system is in rinse position (sideways arrow turns rinsing position off) and **Rinse pos. JS** is On.	F4

Last pos. KB: ("Last position" using the touch KeyBoards) On: Short press "up / down" arrows (depending on setup "Rinse pos up") will always get the chair to go to the "Last position". Off (default): The chair can only go in the "last position" using the arrows on the instrument display keyboard, if the system is in rinse position (sideways arrow turns rinsing position off).	F4
Unlock auto On: the Dental Delivery System automatically unlock after 2 minutes when locked Off: the Dental Delivery System stays locked until unlocked or until it is turned off/on	F4

All choices in this menu must be confirmed by pressing OK for the change to take effect.

Time/Date

Setup the pressent date

F1 Date F3 Month F4 Year

Service/date

Setup the date for next service indication. Typical 1 year from present date.

F1 Date F3 Month F4 Year

Setup light (option)

Individual light colours can be set in this menu. Press F1 repeatedly to change between the options. Switch On/Off by pressing F4.

Name	ON/OFF
Setup RGB Off (default): you can choose between 8 predefined colours (marked with * in the table below) or off in the next menu On: Red, Green and Blue are set in next menu	F4
Pulsating On:(default): The bowl light will pulsate in rinse position Off: The light will not pulsate	F4

Light (if Setup RGB is off)

Individual setup of light colours can be set in this menu. Press F1 repeatedly to change between Console, Bowl and Rinse. Choose between 8 predefined colours and off by pressing F4. Save by pressing OK. If nothing is pressed within 2 seconds, the color returns to the original color.

Light RGB (if Setup RGB is on)

In this menu, by changing the composition of red, green and blue light, you can setup any color. Press F1 repeatedly to change between Console, Bowl and Rinse. Choose colour to adjust by pressing F4 repeatedly. Adjust the chosen colour using ◀ and ▶ keys. Save by pressing OK. If nothing is pressed within 2 seconds, the color returns to the original color.

Colour		R	G	B
223 soft	Console top	32	48	28
	Bowl	32	48	30
222 soft	Console top	32	48	50
	Bowl	32	48	50
221 soft	Console top	41	43	50
	Bowl	45	43	50
184 soft (red)*	Console top	50	15	5
	Bowl	50	11	5
478 soft (orange)*	Console top	50	25	5
	Bowl	55	20	5
327 soft (yellow)*	Console top	50	37	5
	Bowl	55	33	5
180 soft (green)*	Console top	50	60	5
	Bowl	55	60	5
Turquois*	Console top	0	50	50
	Bowl	0	50	50
Blue*	Console top	0	0	75
	Bowl	0	0	75
Purple*	Console top	50	0	50
	Bowl	50	0	50
Warm white*	Console top	55	58	28
	Bowl	60	58	28
Off*	Console top	0	0	0
	Bowl	0	0	0

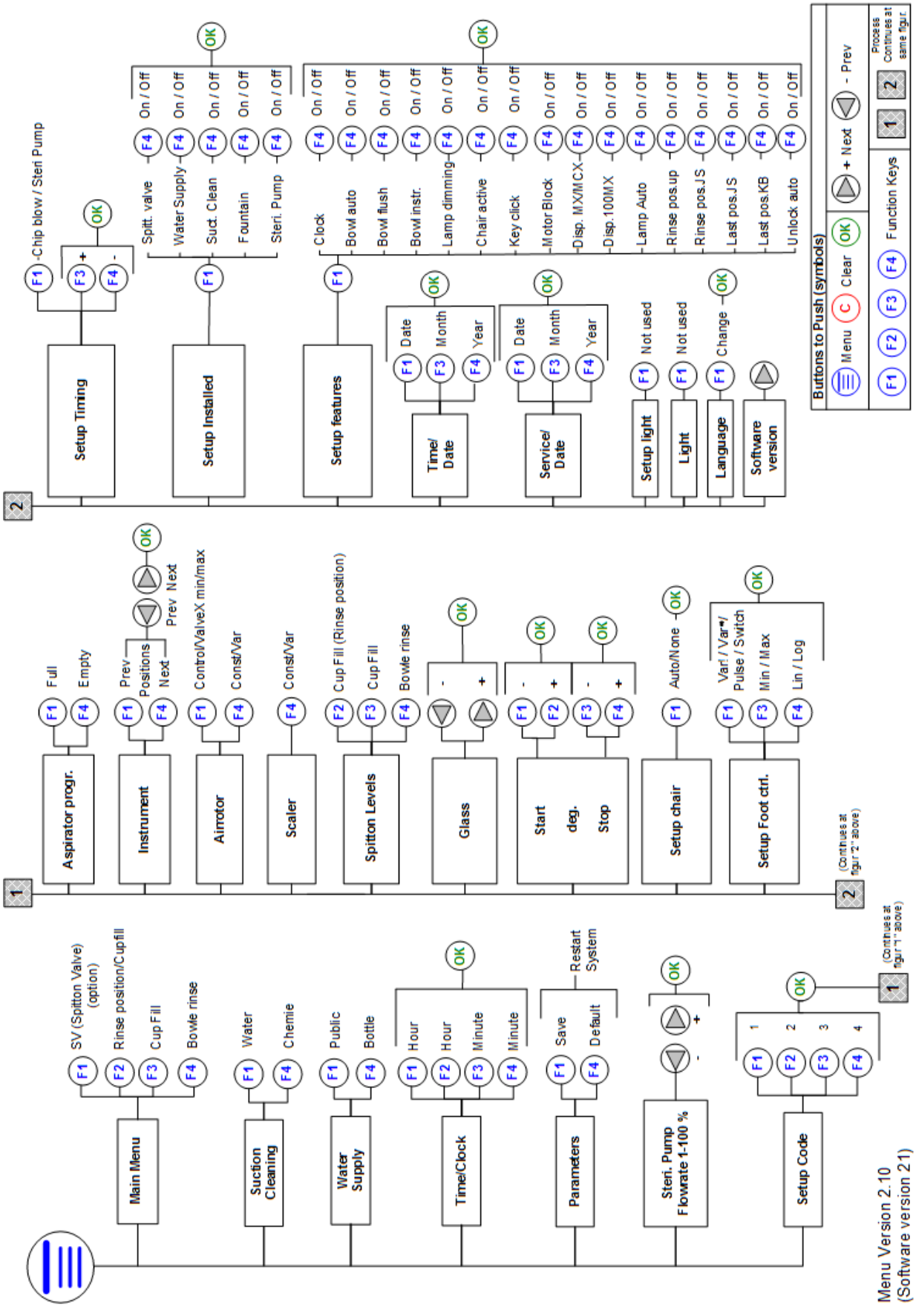
Language

F1 Choose language. All choices in this menu must be confirmed by pressing OK for the change to take effect.

Versions.

Press ▷ to show the software version in the various PCB
The top line indicates the PCB and the second line describe the version and edition number of this PCB.

Menu overview



Brief Description of error diagnostics

This is a brief description of ways in which to locate errors if there are communications problems between the PCBs in the Dental Delivery System.
If data communication between the PCB's in the Dental Delivery System is blocked, the "version menu" on the telescopic arm can be used to help to localise the problem.

- If you can read out all of the software versions from all of the PCBs on the telescopic arm, the communication between the PCBs is working satisfactorily.
- If data communication between the PCBs is blocked, you will only be able to read the software version on the telescopic arm as it will not be able to communicate with the other PCBs and, thus, will not be able to retrieve the software versions from the other PCBs.
- If this is the case, you can attempt to disconnect the main cable that connects the console controller board to the instrument controller board (detach it from the plug on the console controller board).
- If communication works, and you can read the versions for the telescopic arm (but not the PCBs that were disconnected when the cable was disconnected), you can attempt to reconnect the cable to the console controller board and disconnect it at the other end on the instrument controller board.
- You can then disconnect the cable that connects the instrument controller board or instrument table display board and observe when communication problems occur (readout of the software version). This will indicate which component is causing the problems.

WARNING: The Dental Delivery System MUST be switched off before you disconnect and reconnect plugs and cables.

Error codes shown in telescope display

In case the unit detects an error, it will beep twice and display an error code on the telescope display.

The top line is the error number and name. In this example "E11 Footc.NoData" means that data communication to the foot control has been lost.
Bottom line gives an idea of what you can do to solve the problem. If you in this example use a wireless foot control, you should install the foot control cable. The reason could be low battery or jamming of the wireless signal.

You remove the error display by pressing the red C bottom.

Not all Error codes are actual errors. Some Error codes are more warnings or information. If you for example block a MC3 motor, the display will show "E31 MotorBlocked - Reactivate motor". An error message will not affect the function of the unit.

Special conditions for the connection Chair to UnicLine S

Conditions that affect the chair and unit:

- When an instrument is activated (lifted), the chair locks into position and the position cannot be changed before all of the instruments have been returned into their rest position. (As an alternative the Dental Delivery System can be programmed so the chair only locks when an instrument is activated by the foot-control).

- When it is time for the patient to rinse, press the “rinse position” symbol on the table display or press F2 on the telescope head. The glass will be filled and the chair will automatically move into the rinsing position. (Program - joystick DOWN). - Two ARROWS are shown on the instrument table.

- To continue treatment, press the ARROW (up). The chair will return to the most recently selected position (“last position”) so that treatment can be continued.

- When treatment is finished, press the ARROW (to the left). The chair will remain in upright position so that the patient can leave the chair.

Caution: New positions must be entered into the chair’s 4 program locations for fixed positions. To do this, move the chair manually (by applying prolonged pressure in one of the joystick directions) to the desired position, press the programming button (under the seat) and push the joystick in the direction in which you wish to save the position.

Caution: The program entered into the DOWN joystick position (or UP if this is choosen in manu) MUST be the rinsing position (the chair should be in its lowest position and the back plate to its most upright position). When you activate “rinse position”, the chair will always move to this position, saved under the DOWN (or UP) position on the joystick.

Blocking of chair when using manual turnable fountain

The chair will be blocked when manual turnable fountain is turned to patient side.

Summary of Communications

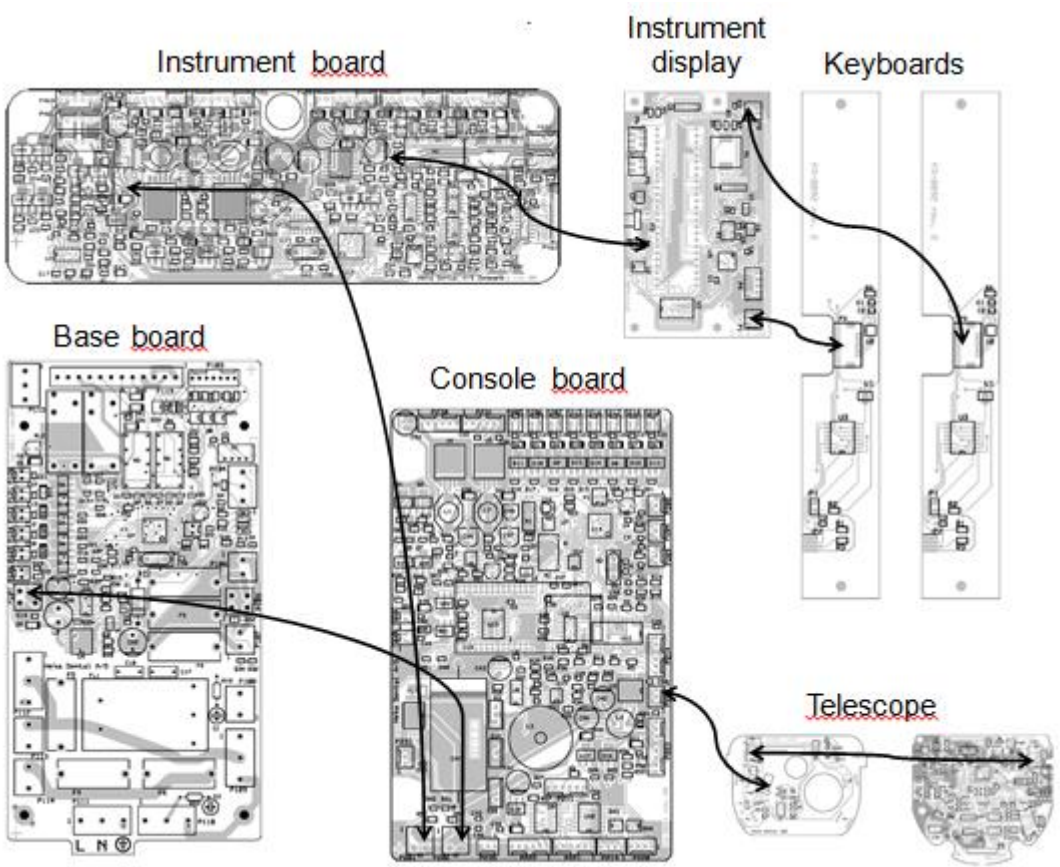
This section describes overall functionality of the electronic PCBs in the UnicLine S.

The aim is to provide a summary that will enable the authorized technician to identify and localise any operating problems quickly.

The large number of indicators (light diodes and glow discharge lamps) provides the authorized technician with a quick visual status of the system.

Block Diagram

The block diagram only shows general connections for the unit's basic modules. Accessories and extra components are shown in the specific diagrams for each individual module.



General information

Most of the connections on the PCBs can be broken down into standard connection types:

1. Fixed outputs
2. Relay outputs
3. On/Off outputs (fixed + Public Utilities and transistor for chassis)
4. PWM outputs (fixed + Public Utilities and pulse width modulated transistor for chassis)
5. Data communication connection
6. Analogue inputs with supply voltage
7. Entry points with pull-up resistance
8. Special inputs
9. Special outputs
10. 230VAC/115VAC input/output

These standard connections will not be described in more detail in the following summaries. The type is merely indicated.

Base controller

The base controller handles the following:

1. 230VAC/115VAC filtration and distribution
2. 24V AC/DC RAW
3. Control of the operating light
4. Connection of the foot control
5. Connection of the patient chair
6. Connection of the assistant call button
7. Control of miscellaneous valves and functions

The base controller also contains a wide range of indicators which show the status of the Dental Delivery System and indicate whether the Dental Delivery System is working correctly.

Console Controller

The console controller handles the following:

1. 24VDC stabilised power supply
2. Central storage for instrument settings etc.
3. Clock function
4. Control of spittoon
5. Control of suction valves
6. Interface to telescope
7. Connection of up to 2 active instruments
8. Analogue measurement inputs for, e.g., measurement of level or pressure
9. Add-on connections
10. Control of miscellaneous valves and functions
11. Connection of external PC for the monitoring of data communication

The console controller also contains a wide range of indicators which show the status of the Dental Delivery System and indicate whether the Dental Delivery System is working correctly.

Telescope

The telescopic arm consists of two PCBs: The telescope sensor and the telescope display. The PCBs contain the following system functions:

Telescope Sensor

1. Detector circuit for tubes
2. Loudspeaker
3. Connection to the rest of the system

Telescope Display

1. 16 characters * 2 lines, display PLED
2. Touch-sensitive keyboard
3. LED for illumination of keyboard
4. Computer
5. Flash memory for texts and local parameters

The telescope sensor contains cable couplers and preamplifiers for the optical sensors for detection of instruments or tubes in the instrument rests.
The sensors are processed logically on the right or left side, seen from the front. However, the sensors are read and interpreted individually. The detection levels for the tubes are stored locally in the telescope display controller's flash memory.
The telescope sensor and display have no LED indicators that can be used for service purposes.

Instrument Controller

The instrument controller handles the following functions:

1. Connection of ganged valves and instrument switches
2. Connection of the instrument table display
3. Motor control
4. Instrument control
5. Pump control
6. Control of optical instrument detectors

The instrument controller also contains a wide range of indicators which show the status of the Dental Delivery System and indicate whether the Dental Delivery System is working correctly.

Instrument table Display

The Instrument table display contains the following functions:

1. Two Non-touch keyboard
2. LED indicators and keyboard back light
3. Display readout (7 segment)

The Instrument table display has no LED indicators that can be used for service purposes.

Components & Performance Specification

Dental Delivery System:

Components:	Five PCBs (Base power, Instrument Controller board, Console board and Telescope board) Torodial Transformers Air/Water Valves & Tubing Amalgam Separator Water Container Instrument Arm & Table Instrument Tray and Table Handles Display Screen and Keypad
Materials:	Aluminum (Instrument Arm, Console, Table, Tray, & Handles) Trays: – max. load 0,4 kg Molded Thermoplast (Instrument Rest) Acrylic Glass (Display) Polybutylene Terephthalate PBT (Amalgam Separator) Polyether-PUR Elastollan 1198A (Internal Air/Water Tubing)
Dimensions: Length Width Height	24,0”/610 mm 7.9”/200 mm 33.5”/850 mm
Performance Specifications: Power Supply Frequency Air Pressure Water Pressure Suction Flow	 115V/230V 50/60Hz Mains: 50/60Hz 65 – 88psi (110psi – maximum) .15 liters/minute 67.0 – 80.0 liters/minute

Foot Control:

Components:	Top Ring Middle Ring Activation Ring Pedal Arm Power Connection to Cart
Materials:	ABS Plastic
Dimensions: Diameter Height	5.51”/140mm 2.76”/ 70mm
Performance Specifications: Top Button Middle Ring Activation Ring Pedal Arm Power Connection to Console	 Operating Lamp On/Off Air/Water Spray & Chip Blow Start Motor/Change Motor Rotation (standard control) Increase/Decrease Instrument Intensity (variable control) Increase/Decrease Instrument Intensity (standard foot control). Connection to console for power to foot control

Dental Chair:

Components:	Junction PCB Seat Motors (Back, Main, Seat) Safety Stop (Chair Lowering) Safety Stop (Backrest) Capacitors Chair Base Headrest Backrest Footrest with Stirrup Armrest
Materials:	Aluminum DKL or UltraLeather™ Upholstery
Dimensions: Chair Length Chair Height Base Length Base Width	 71.7” – 78”/1820mm – 1980mm 18.1” – 34.3”/460mm – 870mm 28.3”/720mm 17.7”/450mm
Performance Specifications: Weight Load Range of Motion: Backrest to Seat Seat Angle Headrest Tilt Footrest to Seat Programming Capabilities Safety Stops	 179 Kg/398 lbs Minimum 85°/Maximum 185° Minimum 0°/Maximum 5° 6.3”/160mm Minimum 180°/Maximum 270° Four preprogrammed positions Backrest: Upon touching obstruction Chair Height: Upon touching obstruction Foot Rest: Upon touching obstruction Emergency Stop: Button on back of chair below backrest

Probability of Occurrence & duration of contact for parts.

Part	Time	Comment.
Instrument table	T < 1 s	Table 23, Is touched by the operator for moving the table in position, max 74°C
Turbine	10 s =< t < 1 min	Table 23, Handpice handled during treatment by the operator, max 51°C
Micromotor	10 s =< t < 1 min	Table 23, Handpice handled during treatment by the operator, max 51°C
Syringe	1 s =< t < 10 s	Table 23, Handpice handled during treatment by the operator, max 56°C
Lamp	1 s =< t < 10 s	Table 23, Handpice handled during treatment by the operator, max 56°C
Operating Lamp	T < 1 s	Table 23, Is touched by the operator for moving the lamp in position, , max 74°C
Suction tubes	10 s =< t < 1 min	Table 23, Handpice handled during treatment by the operator, max 60°C
Maximum Temperature	t < 1min.	Table 24, Applied part max 60°C

Warranty Terms & Conditions

Warranty applicable to Heka UnicLine S, Heka S+, Heka G+ and Patient Chair+,.

- The equipment is covered by a 24-month warranty (from the installation date) on the conditions that the equipment has been installed by an authorized Heka Dental dealer/technician and an annual service check is performed 12 months after installation.
- Annual service checks must be performed by an authorized Heka Dental technician using an original Heka Service Kit
- The installation registration constitutes important documentation that the dentist has been properly instructed in the basics of the new equipment which decreases the risk of incorrect usage and unnecessary reporting of errors
- The installation registration must be submitted within 15 days of the installation date. This is done online or using the attached registration card.
- The warranty is cancelled if the installation registration or service registration are not submitted to Heka Dental in due time

Option to extend the warranty:

- Heka Dental offers the option to purchase a warranty extension covering according to the agreement the years 3-5 or 3-7 from installation
- A service agreement covering annual service checks by an authorized Heka Dental technician using original Heka Dental Service Kits is a prerequisite for the extension.
- The extension must be purchased no later than 24 months after the original installation date
- The extension is valid from registration of the 24 month service at Heka Dental
- All warranty repairs must be performed by an authorized Heka Dental technician
- The following years' service registrations must be received by Heka Dental within 15 days from the day the annual service check is performed

The following general terms apply to the warranty:

- Heka Dental does not cover the authorised dealer's labour, travel and lodging expenses on warranty repairs.
- Heka Dental cannot be held liable for defects and consequential damage in the event of failure to use the equipment correctly.
- Heka Dental cannot be held liable for defects and consequential damage caused by wear and tear, incorrect cleaning or maintenance, lack of compliance with operating, maintenance and connection manuals, calcium build-up, corrosion, contaminated air, water supply or chemical and/or electrical factors that are regarded as abnormal or do not accord with the manufacturer's specifications and instructions.
- This warranty does not cover electrical bulbs/LEDs, glass, rubber parts, instrument hoses, O-rings, chair upholstery or other wearing parts or discoloration of plastic parts.
- OEM products (instruments, instrument accessories, handpieces, suction systems (separator, separator drain pump, central suction, tubing system, etc.), amalgam separators, separators, water purification systems etc.) which are not proprietary

Heka Dental products are covered by the manufacturer's 12- or 24-month warranty – please see individual manufacturer websites for information on warranty terms.

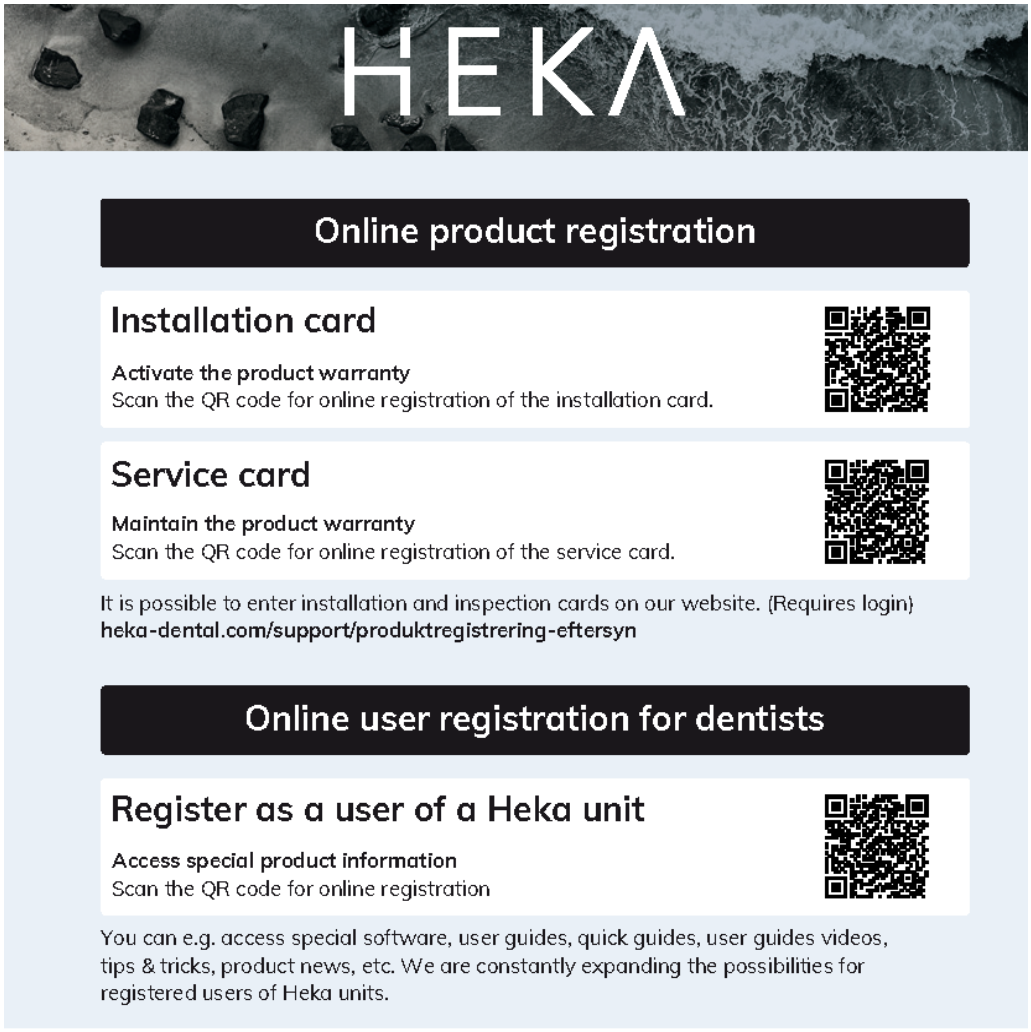
- Defects and consequential damage that can be attributed to the Heka Dental authorized dealer or modifications made to the product by third parties are not covered by this warranty.

Exchangeable parts

In order to provide our customers with a fast and efficient service after the end of the warranty period, Heka Dental offers a number of exchangeable parts at a fixed repair price outside the warranty. These only apply to equipment being serviced (standard service and annual service) by an authorized Heka Dental dealer. Original Heka Dental parts must be used for both standard services and annual services.

Installation/Service card

This installation/service card is located in a plastic folder on the inside of the cover plate for the console.



Attention

Warranty is only valid if the Dental Delivery System is serviced annually with recommended service kit and the installation/service cards and service-kit serial-numbers are submitted to Heka Dental A/S.

IFU's and label language requirements

Country	IFUs and Label Language Requirements	
	Used by trained professionals	Used by Non- Professionals
Austria	German	German
Belgium	Dutch German French	Dutch German French Note: All three must be used for patient instructions.
Bulgaria	English and Bulgarian	Bulgarian
Croatia	Croatian	Croatian
Cyprus	English and Greek	Greek
Czech Republic	Instructions for use must be in Czech language for public use; for the professional use information required for the safe use of the product must be in the Czech language, all other parts of the User Manuals can be in English (for all MD). User Interface can be in English, provided that the information required for the safe use of the product is included in Czech language into User Manual (or into another document available for the user.)	
Denmark	Danish	Danish
Estonia	Estonian	Estonian
Finland	English Finnish Swedish	Finnish Swedish
France	French	French
Germany	German	German
Greece	Greek	Greek
Hungary	Hungarian	Hungarian
Iceland	Icelandic Note: For the professional user other languages are accepted (e.g., Swedish, Danish, Norwegian, German, English).	Icelandic
Ireland	English	English
Italy	Italian	Italian
Netherlands	Dutch	Dutch
Norway	Norwegian	Norwegian
Poland	Polish	Polish

EMC Informations

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

Guidance and manufacturer's declaration – electromagnetic emissions
The Dental Delivery System is intended for use in the electromagnetic environment specified below. The customer or the user of the Dental Delivery System should assure that it is used in such an environment.

Immunity test	IEC 60601 Test level	Compliance level	Electromagnetic environment- guidance
Electrostatic Discharge (ESD) IEC 61000-4-2	±6 kV contact ±8 kV air	± 2/4/6 kV contact discharge ±2/4/8 kV air	Floor should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC 61000-4-4	±2 kV for power supply lines ±1 kV for input/output lines	±2 kV for power supply lines ±1 kV for input/output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge According to IEC 61000-4-5	± 1 kV push-pull voltage ± 2 kV common mode voltage	± 1 kV push-pull voltage ± 2 kV common mode voltage	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines. IEC 61000-4-11	<5 % U_T (>95 % dip in U_T) for 0,5 cycle 40 % U_T (60 % dip in U_T) for 5 cycles 70 % U_T (30 % dip in U_T) for 25 cycles <5 % U_T (>95 % dip in U_T) for 5 s (250 periods)	<5 % U_T (>95 % dip in U_T) for 0,5 cycle 40 % U_T (60 % dip in U_T) for 5 cycles 70 % U_T (30 % dip in U_T) for 25 cycles <5 % U_T (>95 % dip in U_T) for 5 s (250 periods)	Mains power quality should be that of a typical commercial or hospital environment. If the user of Dental Delivery System requires continued operation during power mains interruptions, it is recommended that the Dental Delivery System be powered from an uninterruptible power supply.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment. The power frequency magnetic field should be measured in the intended installation location to assure that it is sufficiently low.
NOTE: U_T is the a.c. mains voltage prior to application of the test level			

Guidance and manufacturer's declaration – electromagnetic emissions			
The Dental Delivery System is intended for use in the electromagnetic environment specified below. The customer or the user of the Dental Delivery System should assure that it is used in such an environment.			
Immunity test	**IEC 60601 Test level**	**Compliance level**	**Electromagnetic environment- guidance**
Wire-based HF inter-ference according to EN 61000-4-6 Wireless HF interfer- ence according to EN 61000-4-3	3 V_{eff} 150 kHz to 80 MHz outside the ISM bands[a] 3 V/m 80 MHz to 2.5 GHz	3 V_{eff} 3 V/m	Handheld and mobile wireless devices should not be used at a shorter distance from the Dental Delivery System including cables than the recommended safe clearance calculated using the appropriate equation for the emission frequency. Recommended safe distance: d = 1.17 $\sqrt{P}$ d= 1.17 $\sqrt{P}$ for 80 MHz to 800 MHz d= 2.33 $\sqrt{P}$ for 800 MHz to 2.5 GHz where P is the maximal nominal power of the transmitter in watts (W) as specified by the transmitter manufacturer and d is the recommended safe clearance in metres(m). [b]The field strength of stationary wireless radio transmitters as measured locally[c] should be lower than the conformance level at all frequencies. [d]Interference is possible in the vicinity of devices bearing the following icon. 
Note 1: At 80 MHz and 800 MHz, the higher frequency range applies. Note 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and refection from structures, objects and people.			

[a]The ISM frequency bands (for industrial, scientific, and medical applications) between 150 kHZ and 80 MHz are 6.765 MHz to 6.795 MHz; 13.553 MHz to13.567 MHz; 26.957 MHz to 27.283 MHz, and 40.66 MHz to 40.70 MHz.

[b]The compliance levels in the ISM frequency bands between 150 kHz and 80 MHz and in the frequency range from 80 MHz to 2.5 GHz are intended to reduce the probability of mobile/handheld communications facilities causing interference when they are inadvertently introduced into the patient area. For this reason, the additional factor of 10/3 is applied in the calculation of the recommended safe clearances in these ranges of frequencies.

[c]The field strength of stationary transmitters, such as, e.g. base stations of mobile phones and mobile terrestrial radio devices, amateur radio stations, AM and FM radio and television transmitters, cannot be determined exactly based on theoretical considerations. A site study should be considered to determine the electromagnetic environment in terms of stationary transmitters. If the measured field strength at the site, at which the Dental Delivery System is used, exceeds the compliance levels shown above, the Dental Delivery System should be monitored to demonstrate proper function. If any uncommon performance characteristics are observed, additional measures may be required, such as, e.g., changing the orientation or using a different location for the Dental Delivery System.

[d] In the frequency range of 150 kHz to 80 MHz, the field strength should be less than 3 V ff V/m.

Recommended separation distances between Portable and mobile HF communications equipment and UnicLine S Dental Delivery System			
The Dental Delivery System is intended for use in an electromagnetic environment in wich radiated HF disturbances are controlled. The customer or the user of Dental Delivery System can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile HF communications equipment (transmitters) and the Dental Delivery System as recommended below, according to the maximum output power of the communications equipment. Safe distance depending on the transmission frequency:			
Rated power P of the transmitter in W	**Safe distance depending on the transmission frequency in m**		
	150 kHz to 80 MHz **$d=1.17\sqrt{P}$**	**80 MHz to 800 MHz** **$d=1.20\sqrt{P}$**	**800 MHz to 2.5 GHz** **$d=2.3\sqrt{P}$**
0.01	0.12	0.12	0.23
0.1	0.37	0.38	0.73
1	1.17	1.20	2.3
10	3.69	3.79	7.27
100	11.7	12	23

Data on electromagnetic compatibility according to EN 60601-1-2 | 10.4 Immunity to electromagnetic interference.			
Rated power P of the transmitter in W	**Safe distance depending on the transmission frequency in m**		
	150 kHz to 80 MHz **$d=1.17\sqrt{P}$**	**80 MHz to 800 MHz** **$d=1.20\sqrt{P}$**	**800 MHz to 2.5 GHz** **$d=2.3\sqrt{P}$**
U1 = Compliance level according to 4-6: 3 Veff E1 = Compliance level according to 4-3: 3 V/m			
Factor	[3.5/U1]	$[12/E_1]$	$[23/E_1]$

For transmitters whose maximum rated power is not in the above table, the re- commended safe distance d in meters (m) can be calculated using the equation for the respective gap, where P is the maximum rated power of the transmitter in Watts (W) according to the manufacturer's information.

NOTE 1: At 80 MHz and 800 MHz, the higher frequency range applies.

NOTE 2: These guidelines may not be applicable in every case. The spread of electromagnetic waves is absorbed and reflected by buildings, objects and people.

Disposal of the Dental Delivery System

In order to reduce the environmental impact of the product throughout its lifetime, the UnicLine S is designed to be as safe as possible to manufacture, use and dispose of. Components suitable for recycling should always be sent to a recycling centre once all hazardous materials have been removed. Obsolete units are disposed of at the owner's own responsibility and risk. All components and parts containing hazardous materials must be disposed of in compliance with current legislation and the guidelines issued by the environmental authorities. Risks must be taken into account and the necessary precautionary measures must be taken when handling waste products.

Part	Primary materials for disposal	Recyclable materials	Environment controlled burning	Landfill waste disposal site	Hazardous waste (separate collection)
Frame and screening					
- Metal	Aluminium	X			
	Stainless steel AISI303/304/316	X			
	Steel	X			
	Galvanized steel	X			
- Plastic	ABS / ASA	X			
	PVC	X			
	PE (Powder coating)		X		
	PU (Powder coating)		X		
	TPE		X		
	PUR	X			
	PTFE				X
	Other plastic		X		
	Silicone				X
- Rubber				X	
- Glass		X			
- Porcelain				X	
Motor		(X)			
Component board		(X)			
Cables, transformers	Copper	X			
	Steel	X			
Amalgam separator*)					
Filters					X
Collection devices					X
Packaging	Wood	X			
	Cardboard	X			
	Paper	X			
Other parts				X	

UnicLine S
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