Instructions for use

ESTETICA E70 Vision / E80 Vision

KaVo. Dental Excellence.

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CE 0124

Table of contents

1 User instructions

1.1 User guide

Requirement
Read these instructions prior to first use to avoid misuse and prevent damage.

1.1.1 Abbreviations

Abbre-viation	Explanation
IfU	Instructions for use
CI	Care instructions
AI	Assembly instructions
TI	Technician's instructions
SC	Safety checks
IEC	International Electrotechnical Commission
RI	Repair instructions
RK	Retrofitting kit
AS	Assembly set
EP	Enclosed parts
EMC	Electromagnetic compatibility
PI	Processing instructions

1.1.2 Symbols

	See the Safety/Warning Symbols section
	Important information for users and technicians
	CE mark according to Medical Devices Directive EC 93/42
▶	Action required
	eLabeling ID

1.1.3 Target group

This document is for dentists and dental office staff.

1.2 Service

KaVo Customer Service:
+49 (0) 7351 56-1000
Service.Einrichtungen@kavo.com
Please refer to the serial number of the product in all inquiries!
For further information, please visit: www.kavo.com

1.3 Terms and conditions of warranty

KaVo provides the final customer with a warranty that the product cited in the handover certificate will function properly and guarantees zero defects in the material or processing for a period of 12 months from data of purchase, subject to the following conditions:
Upon justified complaints of flaws or a short delivery, KaVo will make good its warranty by replacing the product free of cost or repairing it according to the customer's wishes. Other claims of any nature whatsoever, in particular with respect to compensation, are excluded. In the event of default and gross negligence or intent, this shall only apply in the absence of mandatory legal regulations to the contrary.
KaVo cannot be held liable for defects and their consequences due to natural wear, improper cleaning or servicing, non-compliance with operating, servicing or connection instructions, calcification or corrosion, contaminated air or water supplies or chemical or electrical factors deemed abnormal or impermissible in accordance with factory specifications.
The warranty does not usually cover bulbs, glassware, rubber parts and the colourfastness of plastics.
Defects or their consequences that can be attributed to interventions on or changes made to the product by the customer or a third party are excluded from the warranty.
Claims from this warranty can only be asserted when the transfer form (copy) belonging to the product has been sent to KaVo, and the original can be presented by the operator or user.

1.4 Transportation and storage

1.4.1 Currently valid packaging regulations

Note
Only valid for the Federal Republic of Germany.

Dispose of and recycle the sales packaging appropriately in accordance with current packaging regulations, employing waste management or recycling companies. Comply with the comprehensive return system. KaVo has had its sales packaging licensed for this purpose. Please comply with the regional public waste-disposal system.

1.4.2 Damage in transit

In Germany

If the packaging is visibly damaged on delivery, please proceed as follows:

1. The recipient of the package must record the loss or damage on the delivery receipt. The recipient and the representative of the shipping company must sign this delivery receipt.
2. Leave the product and packaging in the condition in which you received it.
3. Do not use the product.
4. Report the damage to the shipping company.
5. Report the damage to KaVo.
6. Consult with KaVo first, before returning a damaged product.
7. Send the signed delivery receipt to KaVo.

If the product is damaged but there was no discernable damage to the packaging on delivery, proceed as follows:
1. Report the damage to the shipping company immediately and no later than 7 days after delivery.
2. Report the damage to KaVo.
3. Leave the product and packaging in the condition in which you received it.
4. Do not use a damaged product.

Note

Failure on the part of the recipient to comply with any of the above-mentioned obligations will mean that the damage will be considered to have arisen following delivery (in accordance with the General German Freight Forwarders´ Terms and Conditions, Art. 28).

Outside Germany

Note

KaVo shall not be held liable for damage arising from transportation.
The shipment must be checked on arrival.

If the packaging is visibly damaged on delivery, please proceed as follows:
1. The recipient of the package must record the loss or damage on the delivery receipt. The recipient and the representative of the shipping company must sign this delivery receipt.
   Without this evidence, the recipient will not be able to assert a claim for damages against the shipping company.
2. Leave the product and packaging in the condition in which you received it.
3. Do not use the product.

If the product is damaged but there was no discernable damage to the packaging upon delivery, proceed as follows:
1. Report any damage to the shipping company either immediately or no later than 7 days after delivery.
2. Leave the product and packaging in the condition in which you received it.
3. Do not use a damaged product.

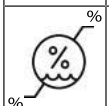
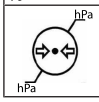
Note

If the recipient fails to comply with any of the above-mentioned obligations, the damage will be considered to have arisen after delivery
(in accordance with CMR law, Chapter 5, Art. 30).

1.4.3 Information on the packaging: Storage and transportation

Note
Please keep the packaging in case you need to return the product for servicing or repair.

The symbols printed on the outside are for transportation and storage, and have the following meaning:

	Transport upright with the arrows pointing upwards!
	Fragile - protect against impact!
	Protect from moisture!
	Permissible stacking load
	Temperature range
	Humidity
	Air pressure

2 Safety

2.1 Description of safety instructions

2.1.1 Warning symbol

	Warning symbol

2.1.2 Structure

⚠ DANGER

The introduction describes the type and source of the hazard.

This section describes potential consequences of non-compliance.

- The optional step includes necessary measures for hazard prevention.

2.1.3 Description of hazard levels

The warning and safety notes in this document must be observed to prevent personal injury and material damage. The warning notes are designated as shown below:

⚠ DANGER

In cases which – if not prevented – directly lead to death or severe injury.

⚠ WARNING

In cases which – if not prevented – could lead to death or severe injury.

⚠ CAUTION

In cases which – if not prevented – could lead to minor or moderate injury.

NOTICE

In cases which – if not prevented – could lead to material damage.

2.2 Intended use

2.2.1 Indications for use

Designated use and target group

KaVo is designed for dental treatment of children and adults.
The KaVo equipment system is a dental treatment centre in accordance with ISO 7494 equipped with a patient chair in accordance with ISO 6875. KaVo three-way and multifunctional handpieces are dental handpieces in accordance with EN 1639. They support the dental application in the mouth of the patient by supplying air, water or spray. In addition, the multifunctional handpiece supplies light and heated media. The

KaVo X-ray viewers 1440 are designed for radiograph viewing in dentistry and comply with the requirements of DIN 6856-3. These KaVo products are designed for use in dentistry only and must be used by trained medical personnel only.

Connecting devices

KaVo-approved accessories for patient communication. These accessories must be used exclusively.

Accessories	Use	Name	Material number
Monitors	Monitor 22“	KaVo Screen HD	1.011.0302
	Monitor 19“	KaVo Screen One	1.011.0300
Cameras	Intraoral camera	ERGOcam One 130 ERGOcam One 160	1.011.2130 1.011.2129
	Caries diagnostic device	DIAGNOcam 2170 U	1.011.0400
Cables between unit, accessories and PC	USB extension cord - 5 metres	USB extension cord 5m with 1:1 hub	1.004.6953
	USB extension cord - 10 metres	USB extension cord 2x5m with 1:1 hub	1.011.3745
	Display port cable - 5 metres	LTG Display port 5m Standard	1.011.3583
	Display port cable - 10 metres	LTG Display port 10m Standard	1.011.0298

Note
The USB interfaces of the system may only be connected to IT devices approved by KaVo.

Note
When connecting IT equipment to the the medial electrical system, observe EN 60601-1.

Note
Charge the wireless foot control with the charger supplied by KaVo only.

Note
The wireless foot control charger may only be used indoors and must be protected from moisture.

2.2.2 General

The user must ensure that the unit works properly and is in satisfactory condition before each use.

The ESTETICA E70 Vision / E80 Vision equipment system is a dental treatment centre in accordance with ISO 7494 featuring a dental chair in accordance with ISO 6875. This KaVo product is designed for use in dentistry only and may only be used by trained medical personnel. Any other type of use is not permitted.
"Proper use" includes compliance with all information in the Instructions for Use and ensuring that all inspections and service tasks are performed.

The overarching guidelines and/or national laws, national regulations and the rules of technology applicable to medical devices for start-up and use of the KaVo product for the intended purpose must be applied and followed.

KaVo accepts liability for the safety, reliability, and performance of components supplied by KaVo, provided:

- installation, instructions, expansions, adjustments, changes or repairs were carried out by technicians trained by KaVo or third parties authorised by KaVo, or by the personnel of authorised distributors.
- the unit was operated in accordance with the instructions for use, care and installation.
- the IT components supplied by the operator meet the technical requirements in these instruction for use for hardware and software, and they are installed and set up according to the descriptions of these components.
- in the case of repairs, the requirements of IEC 62353 (DIN VDE 0751-1) "Repeat tests and tests before start-up of electrical items of medical equipment and systems - general regulations" are met in full.

It is a responsibility of the user:

- to only use equipment that is operating correctly,
- to protect him or herself, the patient and third parties from hazards, and
- to prevent contamination from the product

The applicable national legal regulations must be observed during the use of the device, in particular the following:

- Applicable regulations governing the connection and start-up of medical devices.
- Current occupational safety regulations.
- Current accident prevention regulations.

Regular performance of maintenance and safety checks is essential for the permanent assurance of the operating and functional safety of the KaVo product and for the prevention of damage and hazards.
Testing and maintenance intervals: Maintenance must be performed once a year, the safety check (STK) at intervals of 2 years. Shorter intervals for the safety check may be specified by the tester if necessary.

The following persons are authorised to repair and service the KaVo product:

- Technicians of KaVo branch offices after appropriate product training.
- Specifically KaVo-trained technicians of KaVo franchised dealers.

In Germany, operators, equipment managers and users are obliged to operate their equipment in accordance with the MPG regulations.
The services encompass all the test tasks required in accordance with § 6 of the medical devices operator ordinance (Medizinprodukte-Betreiberverordnung, MPBetreibV).

Note
The product must be cleaned and serviced according to instructions if it is not to be used for an extended period of time.

Note
The MULTIflex couplings, the current K/KL motors, and the ultrasonic scaler hoses of KaVo are equipped as standard with a protective device to prevent treatment water from being drawn back into the treatment centre via the handpieces. If products from other manufacturers are used at the standardised interfaces, it must be ensured that they are equipped with an appropriate protective device! If this is not the case, they may not be used!

The product includes open source licences to a certain extent. The exact licensing conditions, liability disclaimers, concessions and instructions will be provided to you in the device software. KaVo offers to provide the source code on a CD ROM; efforts and costs incurred (e. g. costs for auxiliaries, transport and processing) will be invoiced in terms of an expense allowance. You can address a corresponding inquiry to KaVo Dental GmbH in written form.

Information about electromagnetic compatibility

Note
Based on IEC 60601-1-2 (DIN EN 60601-1-2) concerning the electromagnetic compatibility of electrical medical devices, we must draw your attention to the following points:
• Medical electrical devices are subject to special precautions concerning the electromagnetic compatibility and must be installed and operated in accordance with the KaVo assembly instructions.
• High-frequency communications devices may interfere with electrical medical devices.

Note
KaVo cannot guarantee the compliance of accessories, cables, and other components not supplied by KaVo with the EMC requirements of IEC 60601-1-2 (DIN EN 60601-1-2).

Disposal

Note
Any waste which is generated must be recycled or disposed of in strict compliance with all applicable national regulations in a manner which is safe both for people and the environment.
If you have any questions regarding proper disposal of the KaVo product, please contact the KaVo branch.

Disposal of electronic and electrical devices

Note
According to EC directive 2012/19 concerning waste electrical and electronic equipment, this product is subject to the cited directive and must be disposed of accordingly within Europe.
For more information, please visit www.kavo.com or contact your specialised dental supplier.

For final disposal:

In Germany

To return an electrical device, you need to proceed as follows:

1. On the homepage www.enretec.de of enretec GmbH, you can download a form for a disposal order under the menu item eom. Download the disposal order or complete it as an online order.
2. Enter the corresponding information to complete the order, and submit it as an online order or by fax +49 (0)3304 3919 590 to enretec GmbH.
   The following contact options are also available for questions and for initiating a disposal order:
   Phone: +49 (0) 3304 3919-500
   Email: eom@enretec.de and
   Postal address: enretec GmbH, Geschäftsbereich eomRECYCLING®
   Kanalstraße 17
   D-16727 Velten
3. A unit that is not permanently installed will be picked up at the office.
   A permanently installed unit will be picked up at the curb at your address on the agreed date.
   The owner or user of the device will have to bear the cost of disassembly, transportation and packaging.

International

For country-specific information on disposal, contact your dental supplier.

2.3 Safety instructions

2.3.1 General information

Note

The safety and reliability of the system can only be ensured when the described procedure is followed.

⚠ DANGER

Explosion hazard.

Risk of fatal injury.

- Do not use KaVo product in areas subject an explosion hazard.

⚠ WARNING

Inappropriate operating conditions.

Impairment of the electrical safety of the device.

- It is essential to comply with the operating conditions specified in the "Technical Specifications" chapter.

⚠ WARNING

Use of un-authorised accessories or un-authorised modifications of the product.

Accessories that have not been approved and/or inadmissible modifications of the product could lead to hazards and/or personal injury or material damage.

- Only use accessories that have been approved for the combination with the product by the manufacturer or are equipped with standardised interfaces (e. g. MULTIflex couplings, INTRAmatic).
- Do not make any modifications to the device unless these have been approved by the manufacturer of the product.

⚠ WARNING

Injury or damage from damaged functional parts.

Damage to functional parts can cause further damage or personal injury.

- Check the device, electrical cables and any accessories for possible damage to the insulation and replace if necessary.
- If functional parts are damaged: discontinue your work and repair the damage or notify a service technician!

⚠ WARNING

Dispose of the product in appropriate manner.

Infection hazard.

- Before disposal, reprocess and sterilise the product and accessories appropriately.

⚠ CAUTION

Health hazard and property damage due to non-compliance with servicing schedule.

Infection hazard to users and patients.

Product damage.

- Comply with servicing schedule.

⚠ CAUTION

Risks from electromagnetic fields.

Electromagnetic fields might interfere with the functions of implanted systems (such as pacemakers).

- Ask patients if they have a cardiac pacemaker or other system implanted before you start the treatment!

⚠ CAUTION

Malfunctions due to electromagnetic fields.

The product meets the applicable requirements regarding electromagnetic fields. Given the complex interactions between equipment and cell phones, the product may be influenced by a cell phone that is in use.

- Do not use cell phones in medical offices, hospitals or laboratories!
- Put electronic devices such as e.g. computer storage media, hearing aids etc. down during operation!

⚠ CAUTION

Damage from liquids.

Residual liquids of any type can cause stains on or damage to cushions and parts of the housing.

- Remove any residual liquids without delay.

⚠ CAUTION

Premature wear and malfunctions from improper servicing and care.

Reduced product life.

- Perform regular proper care and servicing!

Note

The operator may only carry out repair work if the device is switched off and no patient is being treated.

2.3.2 Product-specific

⚠ WARNING

Injury or infection hazard from laid down instruments.

Given the arrangement of the instruments, injury or infections in the hand and under-arm can arise when reaching for the tray holder or operating device. Increased risk of infection from diseased patients.

- Be aware of the arrangement of the instruments when accessing the tray holder or operating device.

⚠ WARNING

Health impairment due to reverse suction via the instruments.

Infection hazard.

Products from other manufacturers, which are not equipped with a protective device to prevent the drawing of treatment water into the treatment unit via the instruments, may be used at standard interfaces

- If you are using products from other manufacturers at the standardised interfaces, ensure that the products are equipped with the corresponding protective devices.
- Do not use products without a protective device.

⚠ CAUTION

Electrical power.

Electrical shock from incorrectly connecting a non-medical system to the USB interfaces of the device.

- Connect any IT device to the medical system in accordance with IEC 60601-1.
- Use USB devices with no additional power supply (USB-powered) only.
- Applied parts connected to the USB interface of the dentist element must comply with the requisite insulation.
- USB-powered devices failing to meet the requisite insulation for applied parts must be placed appropriately such that direct contact of the USB device and the patient is excluded.
- It is not permissible to touch USB-powered devices failing to meet the requisite insulation for applied parts and the patient at the same time.

⚠ CAUTION

Sitting down on a dental chair that is in horizontal orientation is associated with a risk of injury.

- Do not sit on the head or foot end of the patient chair when it is in a horizontal position.

⚠ CAUTION

The swinging arm may fall and cause injury.

If the swinging arm is overloaded, it can become damaged and injure the patient or user.

- Never load the swinging arm, spring arm or dentist's unit by using it as a support.

⚠ CAUTION

Risk of injury by suspended instruments (S table).

Patients may get injured by sharp instrument tips.

- When you move the dentist's unit, make sure that nobody is injured.
- Alert patients and care providers to the risk of injury.

⚠ CAUTION

Risk of injury during cleaning of the treatment unit.

Lack of instructions to the cleaning staff and lack of preparation of the treatment unit can lead to the cleaning personnel sustaining injuries.

- Only trained professionals and instructed cleaning personnel may be present in the treatment rooms.
- Position the chair for cleaning and turn the device off.

⚠ CAUTION

Third party device connection kit (optional): Hazard of reinfection from standing water.

Infections.

When a water-using unit is connected to the third-party connection kit, always perform the following tasks on the device:

- Before starting, rinse all the water drain lines without instruments (if applicable).
- Before startup and after the device has not been used for a while (weekends, holidays, vacations, etc.), rinse or purge the air and water lines.
- Make sure that the water-using unit is resistant to H_2O_2 since the water is sterilised with OXYGENAL 6 (at a concentration up to 0.02%).

⚠ CAUTION

Health damage due to germ formation.

Infection hazard.

- Before starting, rinse all the water drain lines without instruments.
- Before start-up and after the device has not been used for a while (weekends, holidays, vacations, etc.), rinse or purge with air the air and water lines.
- Carry out an intensive germ reduction.
- Actuate the tumbler filler repeatedly.

⚠ CAUTION

Risk of injury and material damage from incorrect use of the charger for the wireless foot control.

Personal injuries, damage to the wireless foot control or the charger.

- Do not use the treatment unit during the charging process!
- Do not use the wireless foot control charger supplied to charge non-rechargeable batteries.
- Charge the wireless foot control with the charger supplied only.

⚠ CAUTION

Long stay in the patient chair.

Decubitus formation.

- Take precautions against the formation of decubitus in long treatments.

⚠ CAUTION

Danger of injury from tipping the treatment unit.

Injury to the patient and user.

- Do not support yourself on the swinging arm.
- Do not sit on the head or foot end of the patient chair when it is in a horizontal position.

⚠ CAUTION

Danger of injury from overload or dynamic load.

The patient chair might collapse.

- Do not subject the patient chair to a load exceeding its limit (180 kg).
- Do not subject the patient chair to dynamic loads.

⚠ CAUTION

Risk of injury when the dental chair or headrest is moved.

Hair of the patient or practice personnel may get caught when the headrest of the dental chair is moved.

- Mind the hair of the patient or practice personnel when moving the dental chair or the headrest.

⚠ CAUTION

Risk of injury when the dentist or assistant element is moved.

The patient or office staff may be injured or bruised.

- Monitor the patient and office staff when moving the dentist or assistant element.

⚠ CAUTION

Danger of crushing during automatic chair movement.

The patient or treatment personnel can be clamped.

- Monitor the patient and treatment personnel when changing the chair position.

⚠ CAUTION

Damage to the handpiece hoses from stickers.

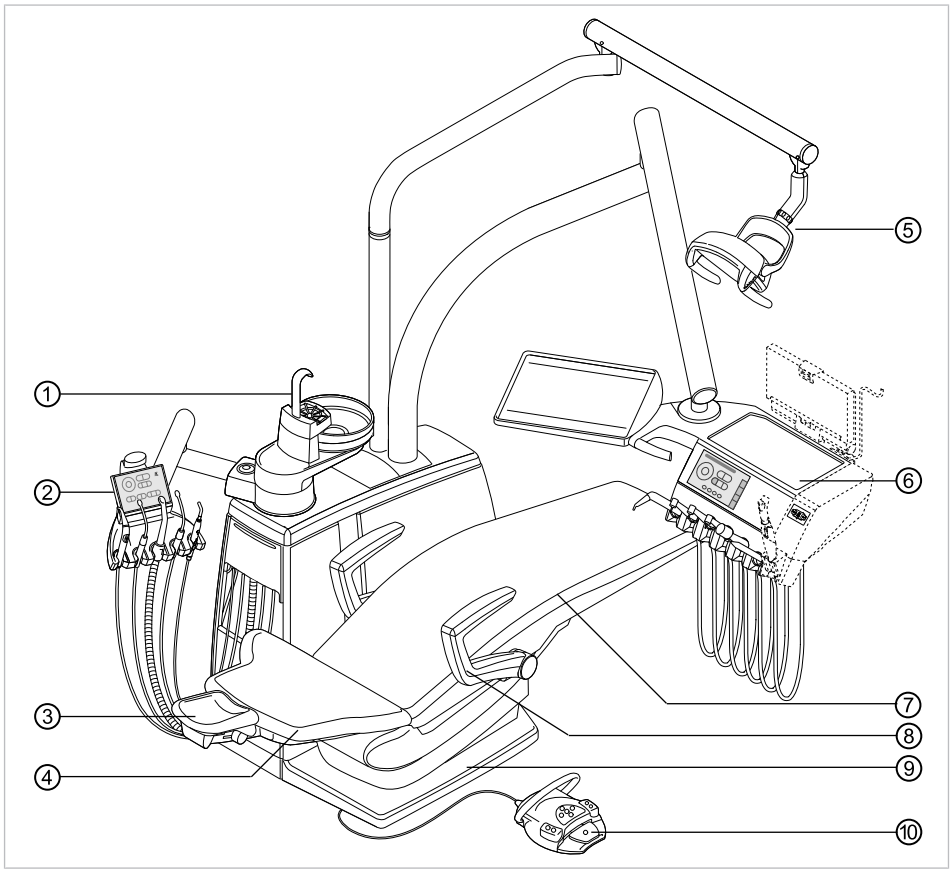
Handpiece hoses can burst.

- Do not affix stickers or adhesive tape.

3 Product description

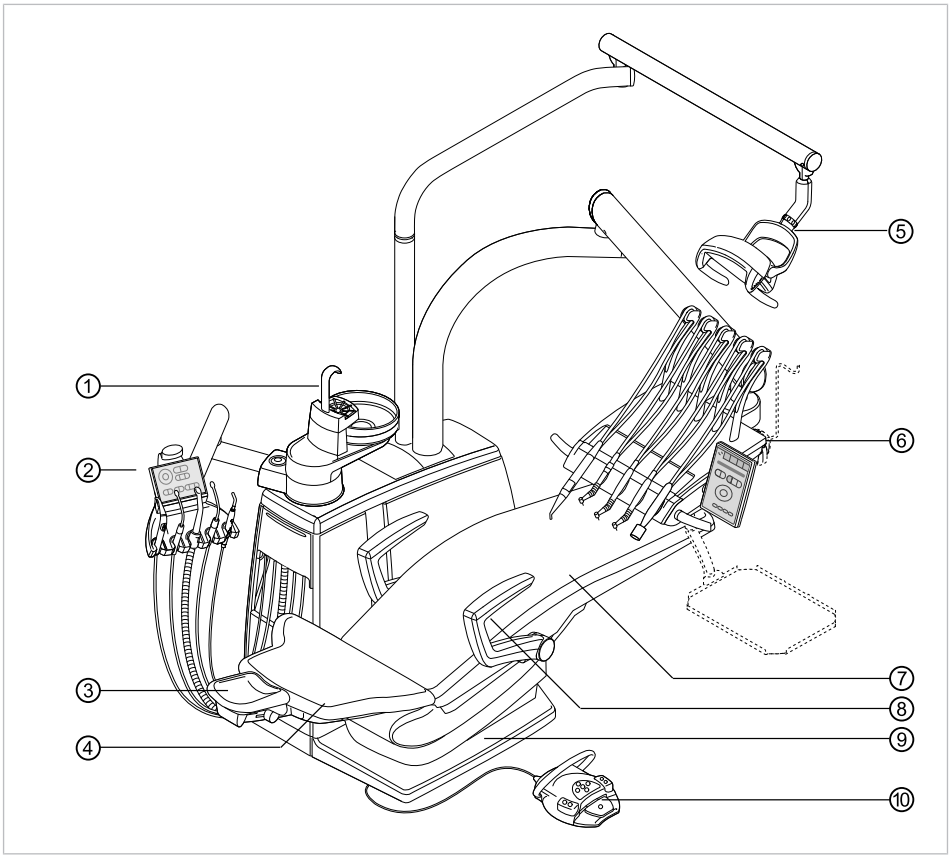
3.1 Treatment centre

3.1.1 KaVo ESTETICA E70 Vision / E80 Vision T



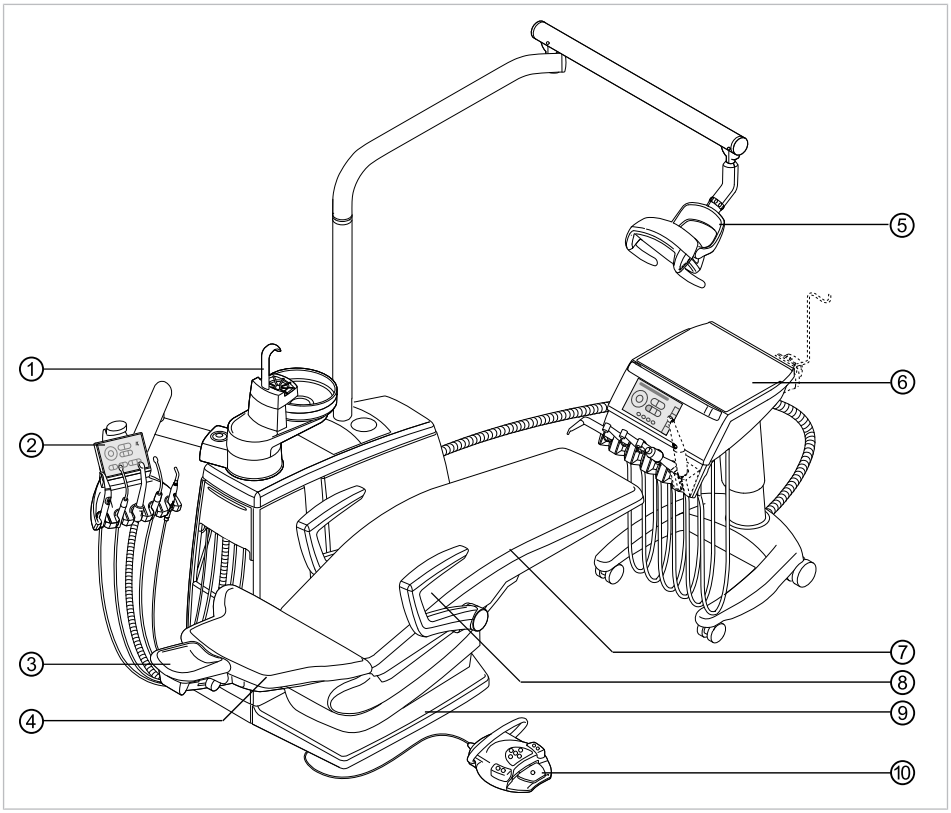
① Patient element
② Assistant element
③ Headrest
④ Backrest
⑤ Operating light
⑥ Dentist element
⑦ Seat
⑧ Arm rest
⑨ Kick plate
⑩ Foot control

3.1.2 KaVo ESTETICA E70 Vision S



① Patient element
② Assistant element
③ Headrest
④ Backrest
⑤ Operating light
⑥ Dentist element
⑦ Seat
⑧ Arm rest
⑨ Kick plate
⑩ Foot control

3.1.3 KaVo ESTETICA E70 Vision / E80 Vision Cart

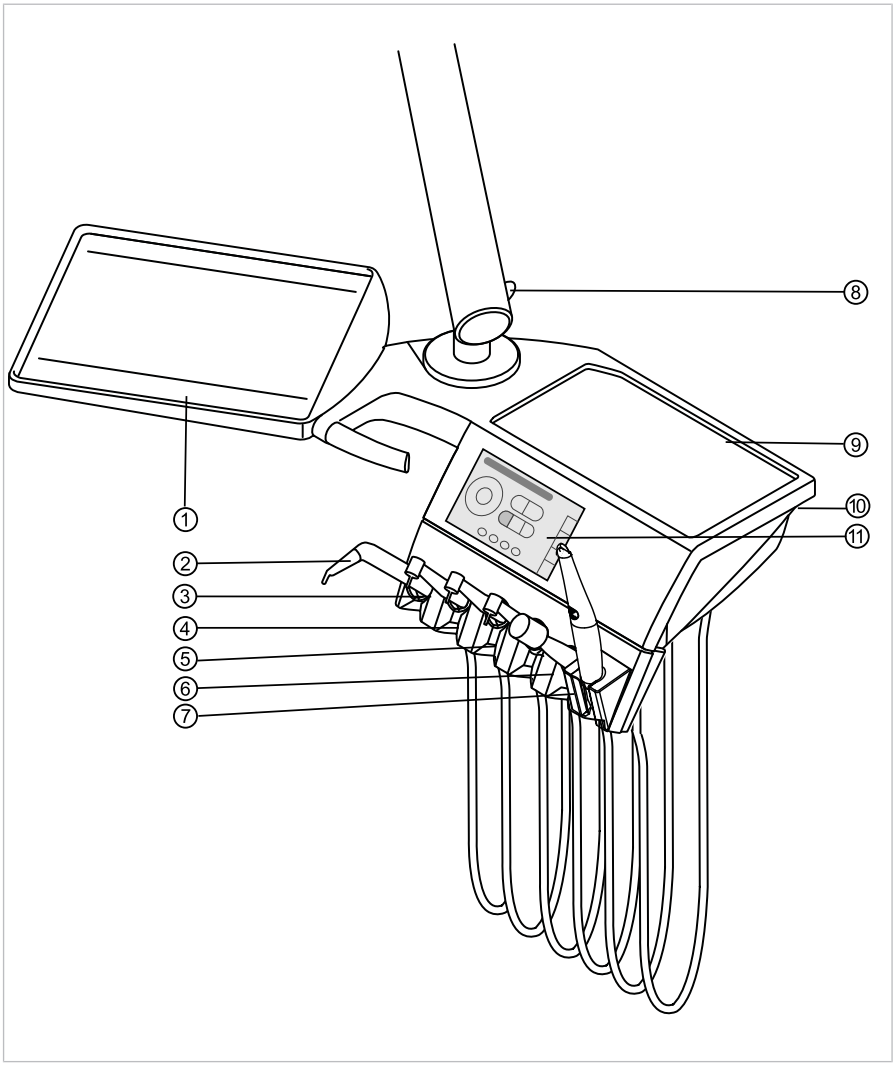


① Patient element
② Assistant element
③ Headrest
④ Backrest
⑤ Operating light
⑥ Dentist element
⑦ Seat
⑧ Arm rest
⑨ Kick plate
⑩ Foot control

3.2 Versions of the dentist element

3.2.1 T table

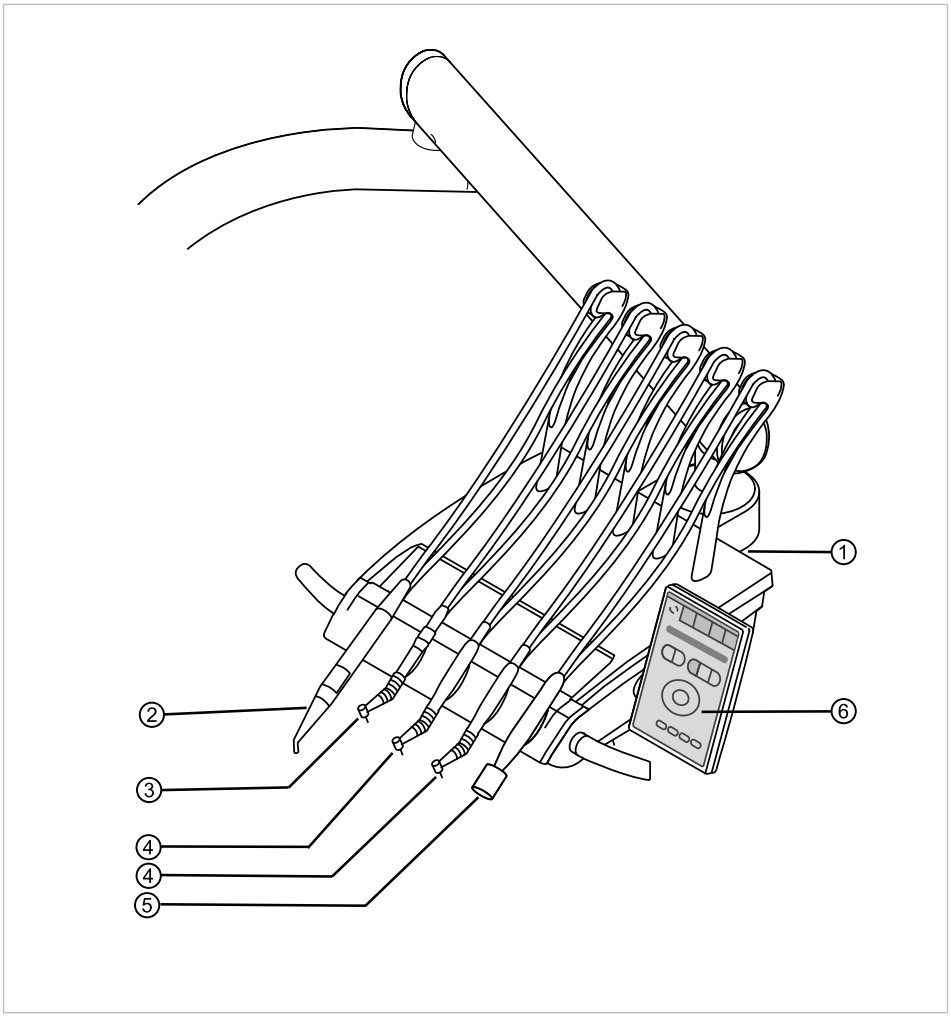
Note
The holder assignment and arrangement of the instruments can be changed as needed and does not have to follow the picture.



① Tray holder
② Handle
③ Three-function handpiece or multifunctional handpiece
④ Air-driven handpiece (multiflex coupling)
⑤ INTRAlux Motor KL 703 LED
⑥ Ultrasonic Scaler PiezoLED
⑦ ERGOcam One
⑧ Locking brake
⑨ Tray holder
⑩ USB port (E80 Vision standard, E70 Vision optional accessory)
⑪ Touchscreen for display and operation

3.2.2 S-Table (ESTETICA E70 Vision only)

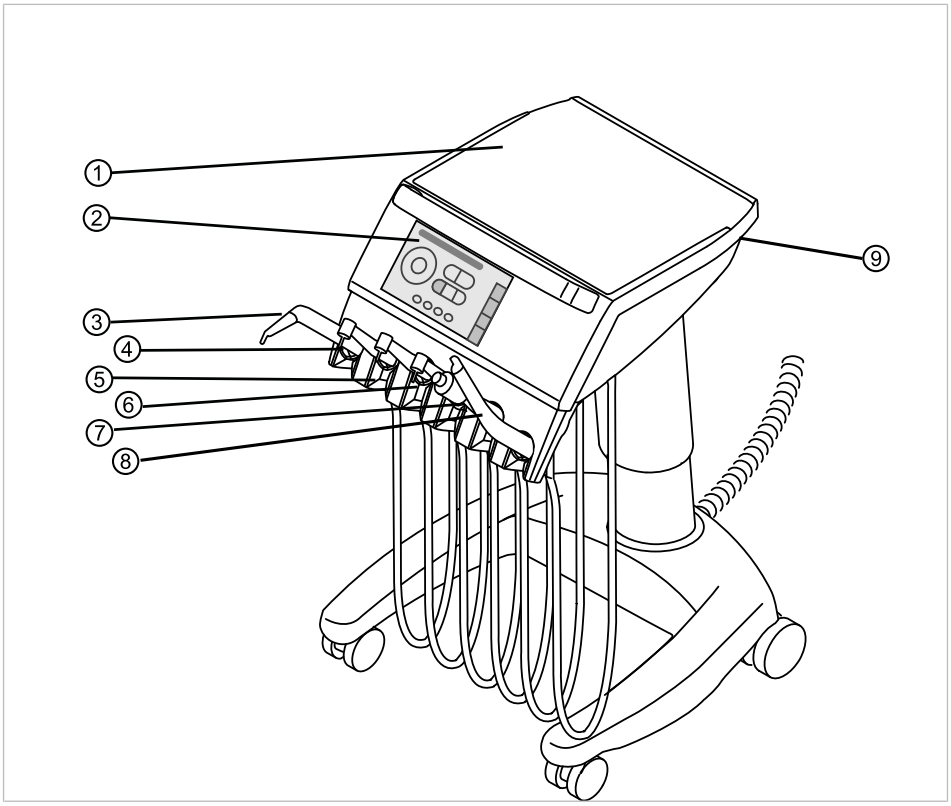
Note
The holder assignment and arrangement of the instruments can be changed as needed and does not have to follow the picture.



① USB port (optional accessory)
② Triple function handpiece or multifunctional handpiece
③ Air-driven handpiece (multiflex coupling)
④ INTRAlux Motor KL 703 LED
⑤ KaVo PiezoLED Ultrasonic Scaler
⑥ Touch screen for display and operation

3.2.3 Cart

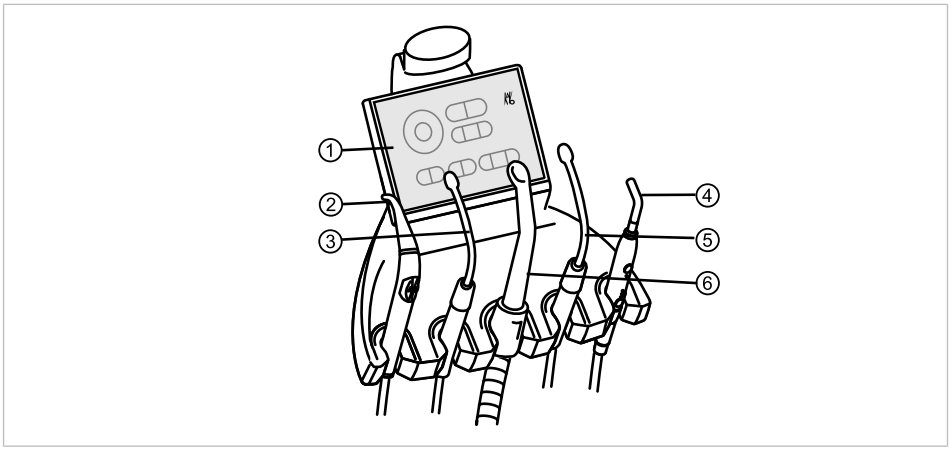
Note
The holder assignment and arrangement of the instruments can be changed as needed and does not have to follow the picture.



① Tray holder
② Touchscreen for display and operation
③ Three-function handpiece or multifunctional handpiece
④ Air-driven handpiece (multiflex coupling)
⑤ INTRAlux Motor KL 703 LED
⑥ INTRAlux Motor KL 703 LED
⑦ Ultrasonic Scaler PiezoLED
⑧ ERGOcam One
⑨ USB port (E80 Vision standard, E70 Vision optional accessory)

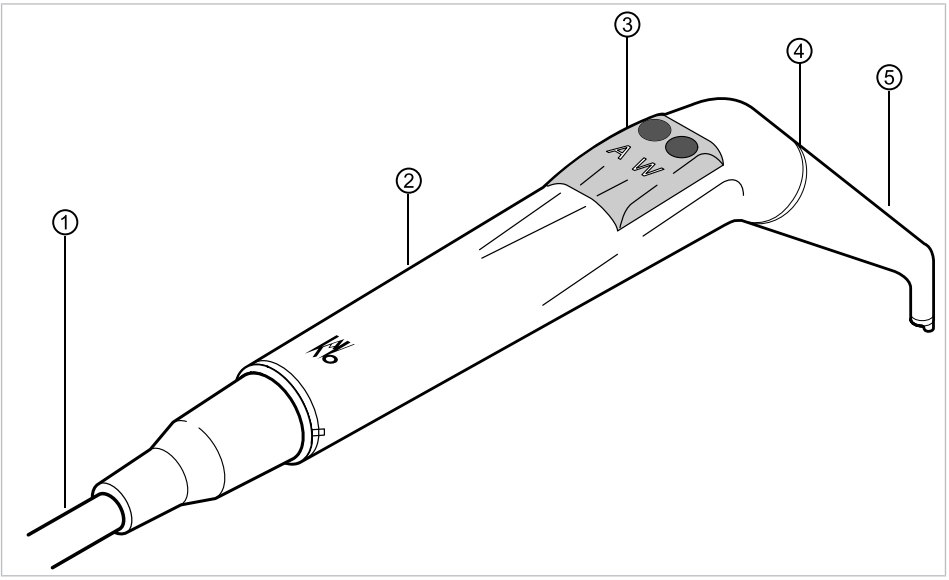
3.3 Assistant unit

Note
The holder assignment and arrangement of the instruments can be changed as needed and does not have to follow the picture.



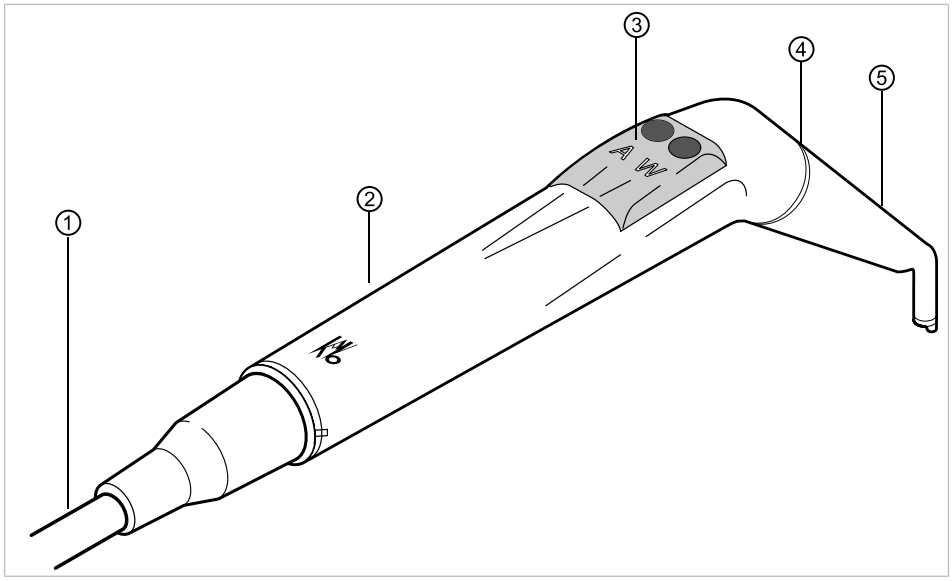
① Control element
② Three-function handpiece or multifunctional handpiece
③ 2nd Saliva ejector (optional accessory)
④ Satelec Mini LED
⑤ Saliva ejector
⑥ Spray mist suction

3.4 Three-function handpiece (3F handpiece)



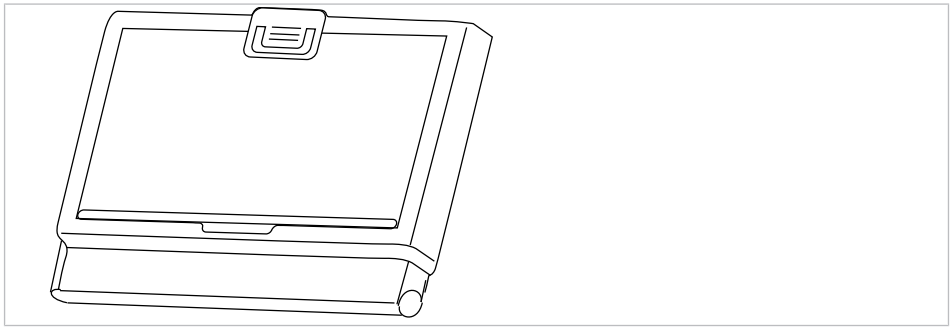
① MF handpiece hose
② Gripping sleeve
③ Media buttons (air/water)
④ Labelled blue: Three-function handpiece (3F handpiece)
⑤ Cannula

3.5 Multifunctional handpiece (MF handpiece)



① MF handpiece hose
② Gripping sleeve
③ Media buttons (air/water)
④ Labelled gold: Multifunctional handpiece (MF handpiece)
⑤ Cannula

3.6 X-ray viewer 1440



X-ray viewer 1440

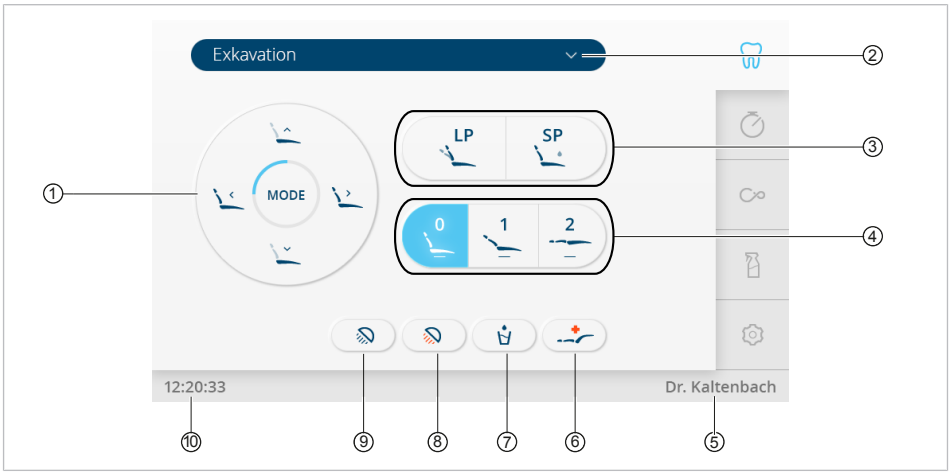
Note
The KaVo X-ray viewer 1440 is a type 1 radiological viewing device in accordance as defined in DIN 6856-3.

3.7 Control elements

3.7.1 Dentist element T-table and cart

Touchscreen E70 Vision / E80 Vision

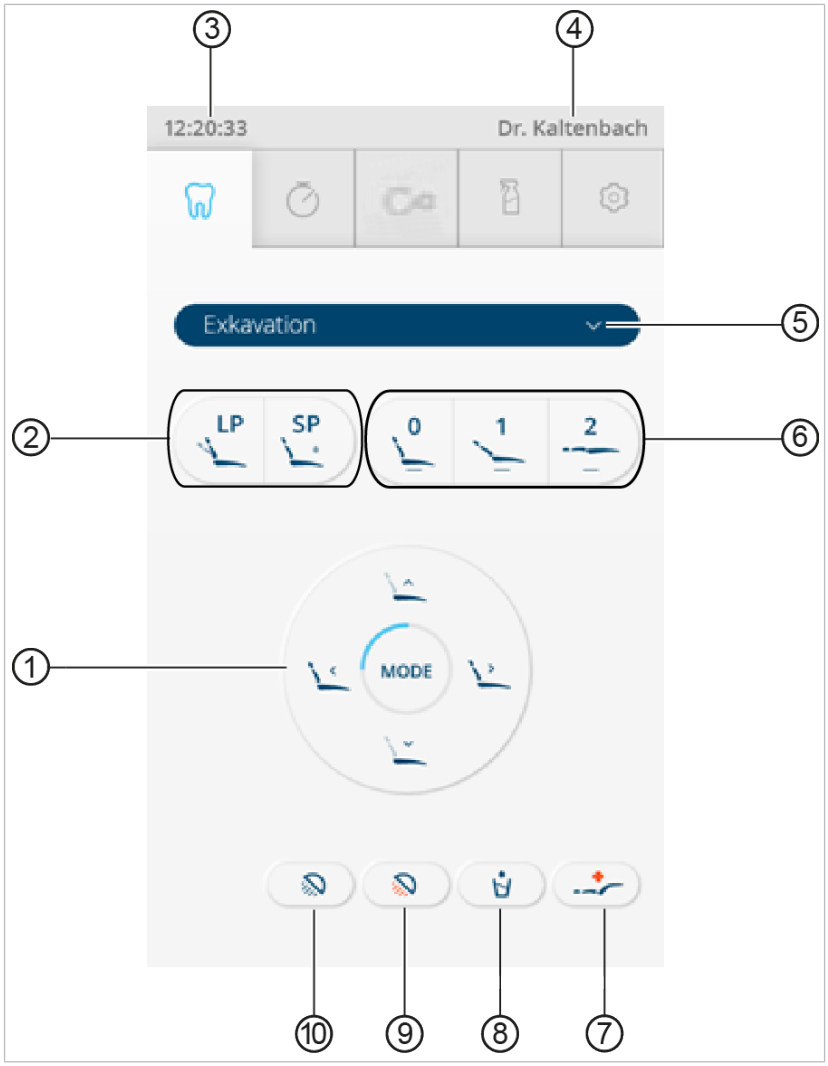
① Tab "Treatment"
② Tab "Timer"
③ Tab "CONEXIO" (optional)
④ Tab "Cleaning"
⑤ Tab "Settings"



Tab "Treatment"

① Direct keys "Chair functions"
② Selection of type of treatment
③ "Most recent position" und "Rinse position" keys
④ "Automatic positions" keys
⑤ Display "User"
⑥ "Collapsed position" key
⑦ "Tumbler filler" key
⑧ "Operating light dimming" key
⑨ "Operating light" key
⑩ Display "Time of day"

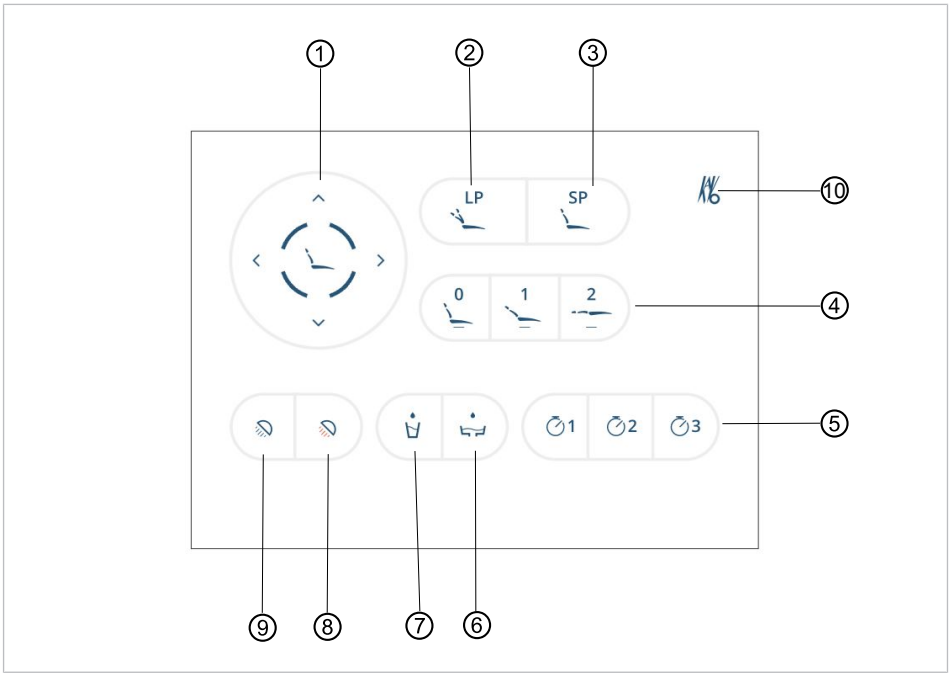
3.7.2 Dentist's unit S table



Tab "Treatment"

① Direct keys "Chair functions"
② "Most recent position" und "Rinse position" keys
③ Display "Time of day"
④ Display "User"
⑤ Selection of type of treatment
⑥ "Automatic positions" keys
⑦ "Collapsed position" key
⑧ "Tumbler filler" key
⑨ "Operating light dimming" key
⑩ "Operating light" key

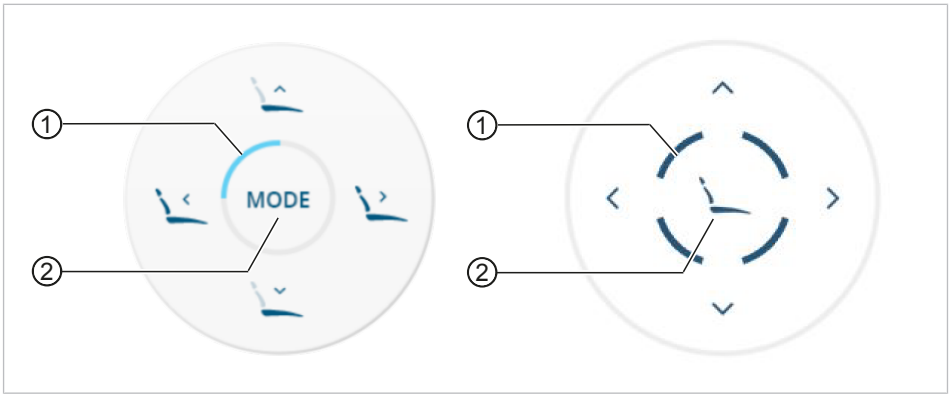
3.7.3 Assistant element



① Direct keys "Chair functions"
② "Last position" key
③ "Rinse position" key
④ "Automatic positions" keys
⑤ "Timer" keys
⑥ "Bowl rinsing" key
⑦ "Tumbler filler" key
⑧ "Operating light dimming" key
⑨ "Operating light" key
⑩ "Lock screen" key

3.7.4 Groups of keys

Direct keys for chair functions



① Illuminated segment indicating the function level
② "Mode" key

Key	Name
SP	"SP" key (rinsing position)

Key	Name
	"LP" key (last position)
	"AP 1" key (automatic position 1)
	"AP 0" key (automatic position 0)
	"AP 2" key (automatic position 2)
	"Collapsed position" key
	"Chair up" key
	"Backrest up" key
	"Chair down" key
	"Backrest down" key
	"Mode" key

Direct keys for operating lights (selectable in "Settings" tab)

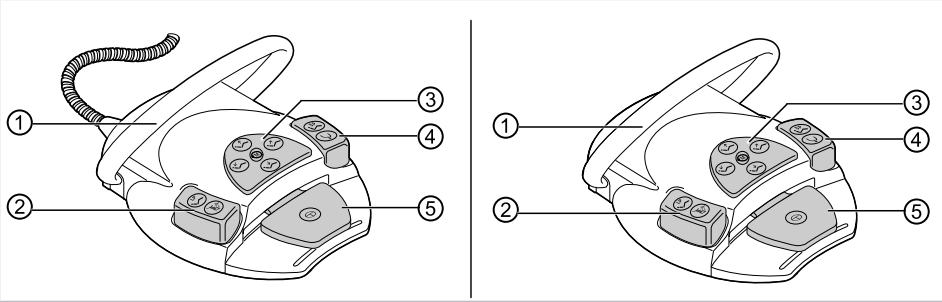
Key	Name	Control element
	"Operating light" key	Dentist element and assistant element
	"Operating light dimming" key	Dentist element and assistant element
	"Laser mode" key	dentist element only

Direct keys (selectable in "Settings" tab)

Key	Name	Control element
	"Tumbler filler" key	Dentist element and assistant element
	"Bowl rinsing" key	Dentist element and assistant element
	"Bell" key	dentist element only
	"X-ray image viewer" key	dentist element only

Active keys show blue background.

3.8 Foot control



Cable-connected foot control and wireless foot control

① Stirrup switch
② "LP/preselected spray" foot-operated button
③ "Chair position/motor rotational direction" cross switch
④ "SP/blown air" foot-operated button
⑤ "Preselected level/instruments" foot-operated button

3.9 Signs on the product

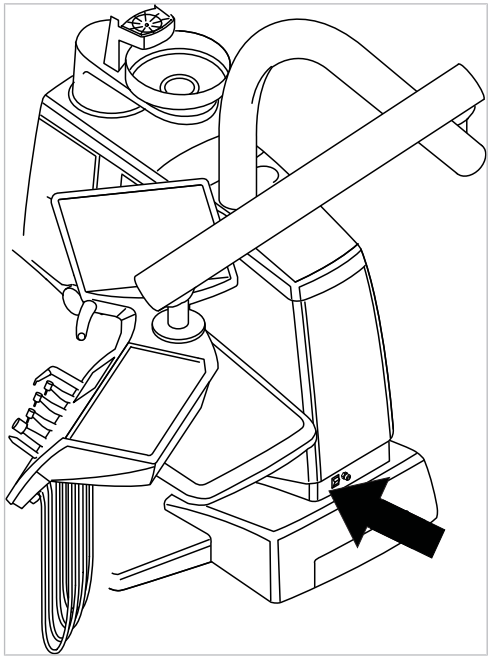
3.9.1 Warning signs and safety signs

	Follow the instructions for use.
	Do not step on the product.
	Do not sit on the product.

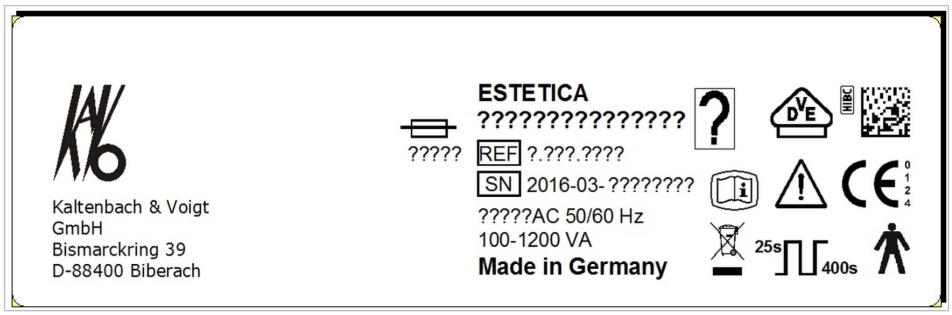
3.9.2 Rating plate and name plate

Note
The body base, the dental element and the chair always have the same serial number.

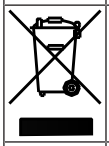
Rating plate on the base of the unit



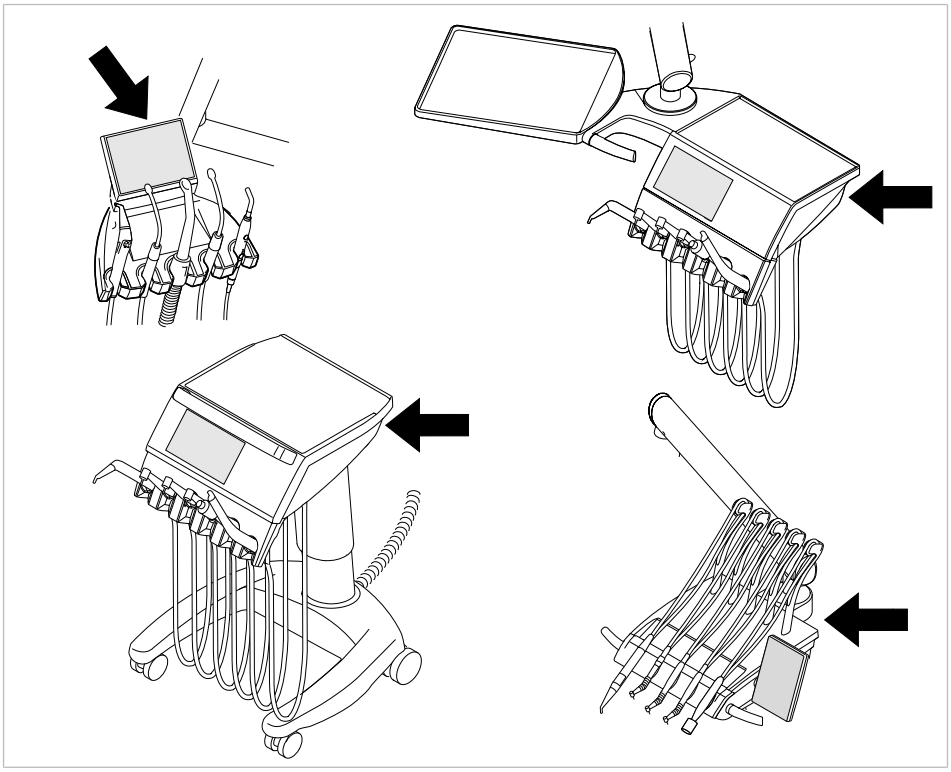
Mounting site for the rating pate on the device base



Type	Device type ESTETICA ??? ? The "???" is assigned to E70. The "?" depends on the type of the dentist element and is assigned to T or C.
SN	Year and month manufactured - Serial number
REF	Material number
	Read and take note of the content of accompanying documents
	Please note the instructions for use
	Type B applied part

	Type BF applied part
	Operating mode: Operating time of the patient chair: 25 seconds Pause time of the patient chair: 400 seconds (The permissible operating times correspond to common dental procedure.)
	Fuse ratings: The "?????" depend on the mains voltage and are either T10 H or T6.3H. 100, 110, 120, 130 V~ = T10H 220, 230, 240 V~ = T6.3H
	For disposal information, see also: Purpose - Intended use
	CE mark according to Medical Devices Directive EC 93/42
	VDE mark
	HIBC Code
	DVGW ID (Deutscher Verein des Gas- und Wasserfaches e.V.)
	eLabeling ID

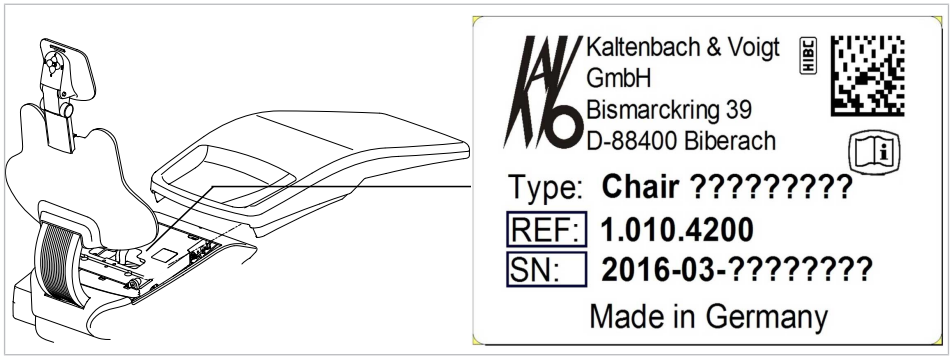
Rating plate and labelling on dentist and assistant elements



Mounting location of rating plate and type BF applied part mark on dentist and assistant elements

Type	Table T E70 Vision (exemplary)
SN	Year and month manufactured - Serial number
REF	Material number

Serial number plate chair

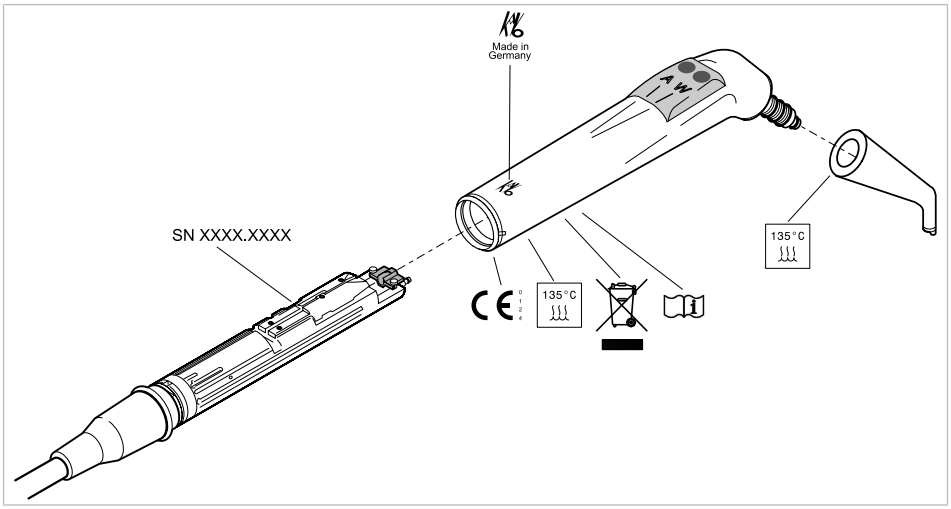


Nameplate: wireless foot control

Type	Type of device multifunctional radio foot control
SN	Year and month manufactured - Serial number
REF	Material number
	For disposal information, see also: Purpose - Intended use
	Follow the instructions for use
	Non-ionising radiation (radio system included)
IPX1	Moisture protection against spray

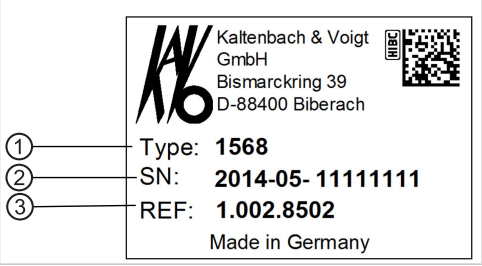
The wireless foot control nameplate

Labelling and marking of the three-function handpiece and multifunctional handpiece



Made in Germany	Company logo of the manufacturer
SN	Serial number
CE 0124	CE mark according to 93/42/EEC medical devices
135 °C	Sterilisable up to 135 °C
	Disposal instructions according to Directive WEEE 2002/96/EG Annex N
	Follow instructions for use

Rating plate Service table 1568

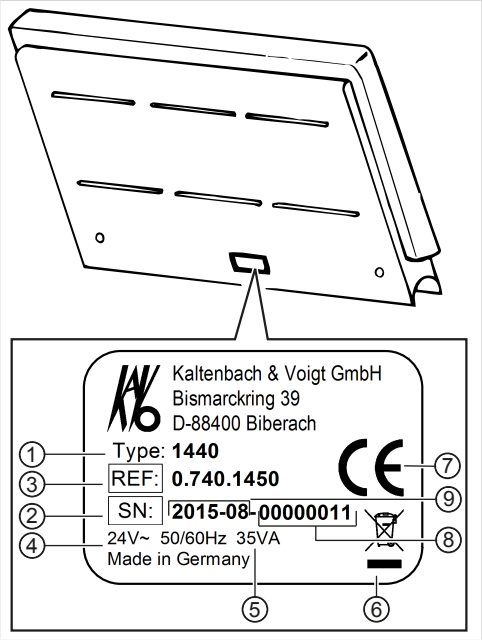


① Device type

② Year and month manufactured - Serial number

③ Material number

Rating plate 1440



Rating plate X-ray viewer 1440

① Device type
② SN: Year and month of manufacturing - serial number
③ Material number
④ Supply voltage, frequency
⑤ Power
⑥ Disposal instructions
⑦ CE mark
⑧ Serial number
⑨ Year and month manufactured

3.10 Technical data

Electrical system

Maximum power consumption (100 to 230 V)	100 to 1200 VA
Heat emission (100 to 230 V)	360 to 4320 kJ/h
Heat emission average	1000 KJ/h
USB unit connection (Dentist unit)	USB 1.0, 1.1 or 2.0, max. 500 mA

Wireless foot control

RF Technology	Proprietary 2,4 GHz ISM band System
Modulation	GFSK
Protocol	KaVo specific
RF Frequencies	2404MHz - 2478MHz (38 Channels)
RF Power	0dBm (1mW)
Range	Indoor < 20m
Supply	Battery
Type	Varta PoLiFlex PLF503759
Number of cells	1
Charging time	2 h
Rated capacity	1100 mAh, 1140 mAh typ
Type of charger	FW7574S 1.005.4229 (Euro), 1.007.3208 (UK), 1.007.3207 (USA/Japan)
Input voltage	100 - 240 V AC / 50 - 60 Hz / 0.15 A
Output voltage	4.2 V DC / 1 A
Operating time (charge cycle)	At least one month – The indicated operating time assumes normal handling of the treatment unit and wireless foot control. This may vary according to the treatment approach.

Triple-function handpiece and multifunctional handpiece

Water pressure	1.5 ± 0.3 bar; Flow pressure; 4 x manometer
Max. static pressure water	2.5 ± 0.3 bar
Water flow	80 ± 10 ml/min
Air pressure	3.3 ± 0.1 bar; Flow pressure; 4 x manometer
Max. static pressure air	4 + 0.5 bar
Air flow	at least 16 Nl/min
Operating time (multifunctional handpiece only)	1 minute
Interval (multifunctional handpiece only)	3 minutes

Electrical multifunctional handpiece

Safety extra-low voltage according to DIN EN 60601-1:	24 V AC ± 10% (non-grounded voltage)
Frequency	50/60 Hz
Type of use	BF
Heat output for water	approx. 90 W
Heat output for air	approx. 20 W
Lamp voltage	max. 3.2 V ± 0.15 V
High-pressure lamp power	max. 2.5 W

Water supply

Note
If the water is very hard (above 12 °dH), a water softening device must be fitted in the ion-exchange process.
Insufficient water hardness (below 8.4 °dH) can promote the formation of algae.

Note
In conjunction with the "DVGW water block with integrated water disinfection" a water disinfection unit is installed in dental units from KaVo. The disinfectant OXYGENAL 6 is continually added to the water at a concentration which is harmless for persons, but hygienically effective to maintain the quality of the treatment water. The handling is described in the care instructions of the treatment centres. Supplementary measures such as the rinsing of water conducting lines and intensive disinfection must be carried out according to the instructions of the manufacturer.

⚠ WARNING

There is a risk of infection if you fail to comply with national regulations.

Contamination of the treatment water and/or drinking water supply with germs.

- Note and comply with national regulations concerning the quality of water for human use (drinking water) - if applicable.
- Note and comply with national regulations concerning the prevention of backflow (flow from the treatment centre back to the public water supply) - if applicable.

According to DIN EN 1717, each unit that is not listed by DVGW must be provided with an upstream type AA, AB or AD safety device.
When establishing a water connection, prevent brackish water pools with standing water (also in the house plumbing).

For further information, please refer to www.dvgw.de

Free drainage according to DIN EN 1717 - DVGW certified	Register No.: AS-0630BT0111
Water quality	Tap water, cold water connection
Water hardness	1.5 to 2.14 mmol/l ≙ 8.4 to 12 °dH
pH	7.2 to 7.8
Customer-site water filtering	80 microns
Water connection	Shut-off valve with brass cone compression screw connection 3/8" to Ø 10 mm provided
Above-floor water connection	min. 50 mm, max. 105 mm with valve opened
Water inlet pressure	2.0 to 6.0 bar (0.2 to 0.6 MPa)
Water inflow	4 l/min
Diameter of the drain connection	40 mm
Above-floor drain connection	20 mm
Outflow quantity	max. 4 l/min
Slope of water drain pipe	downstream from device: at least 10 mm per metre

Air supply

⚠ WARNING

Non-adherence to national guidelines regarding the quality of the dental air.

Infection hazard.

- Observe and adhere to the national guidelines regarding the quality of the dental air - if any.
- Blow through the air line prior to commissioning.

Air inlet pressure	5.2 to 7 bar (0.52 to 0.7 MPa)
Air consumption	max. 80 Nl/min
Pressure dew point	< -30 °C (compressor with dry air system)
Oil content	< 0.1 mg/m^3 (oil-free compressor)
Contamination	< 100 particles/cm^3 at particle sizes of 1 to 5 µm
Air connection	R 1/2"
Air connection above floor level	min. 50 mm, max. 105 mm with valve opened

Suction

	Suction vacuum at device intake	
Suction air quantity at spray mist cannula	**with wet suction**	**with dry suction**
minimum V~250 Nl/min	> 60 mbar	> 85 mbar
recommended V~300 Nl/min	> 80 mbar	> 120 mbar
Suction vacuum static max.	< 180 mbar	< 180 mbar

Note
If the negative static pressure is > 180 mbar, the unit must be equipped with the negative pressure regulating valve assembly kit.

Diameter of the suction connection	40 mm
Suction connection above floor	20 mm

The values apply to the KaVo measuring set (**Mat. no. 0.411.8500**).

Operating environment

⚠ WARNING

Inappropriate operating conditions.
Impairment of the electrical safety of the device.
- It is essential to comply with the operating conditions specified in the "Technical Specifications" chapter.

Floor quality	The quality of the flooring must meet the load bearing ability for buildings DIN 1055 page 3 and have a pressure resistance in accordance with DIN 18560 T 1.
Ambient temperature	+10 to +40 °C
Optimum ambient temperature	15°C to 35°C
Relative humidity	30 to 75%
Air pressure	700 hPa - 1,060 hPa
Max. elevation for operation	up to 3000 m

Maximum loads

Maximum patient weight load	180 kg
Tray holder of the dentist element - loadable up to	2 kg
Assistant element standard tray - loadable up to	1 kg
Dentist element - loadable up to	2 kg

Transportation and storage conditions

Ambient temperature	-20 to +55 °C / -4 to +131°F
Relative Humidity	5% to 95% non-condensing
Air pressure	700 to 1060 hPa

Weight

ESTETICA E70 Vision

Table T E70 Vision	28 kg
Table S E70 Vision	28 kg
Table C E70 Vision	28 kg
Chair E70 Vision	70 kg
Unit E70 Vision	130 kg
E70 Vision T	228 kg
E70 Vision S	228 kg
E70 Vision C	228 kg

ESTETICA E80 Vision

Table T E80 Vision	28 kg
Table C E80 Vision	31 kg
Chair E80 Vision	80 kg
Unit E80 Vision	130 kg
E80 Vision T	238 kg
E80 Vision C	238 kg

X-ray viewer 1440

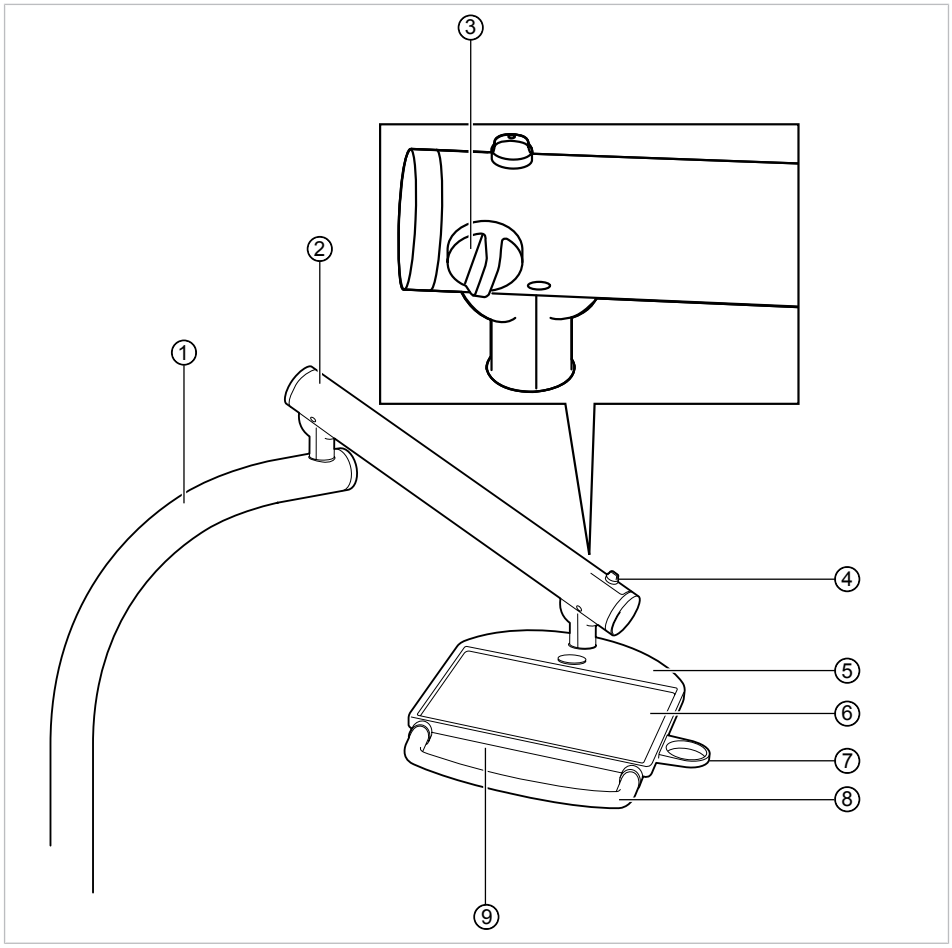
Input voltage	24 V AC
Frequency	50/60 Hertz
Power consumption	max. 35 VA
ON-time	100 %
Lights	2x Osram Lumilux de Luxe G5 Daylight L8W/954
Light field dimensions	300 mm x 150 mm in accordance with DIN 6856-3
Case dimensions	340x216x48 in accordance with DIN 6856-3

Operating light KaVoLUX 540 LED

See also:

Instructions for Use KaVoLUX 540 LED

3.11 KaVo Service table 1568 (optional accessory)



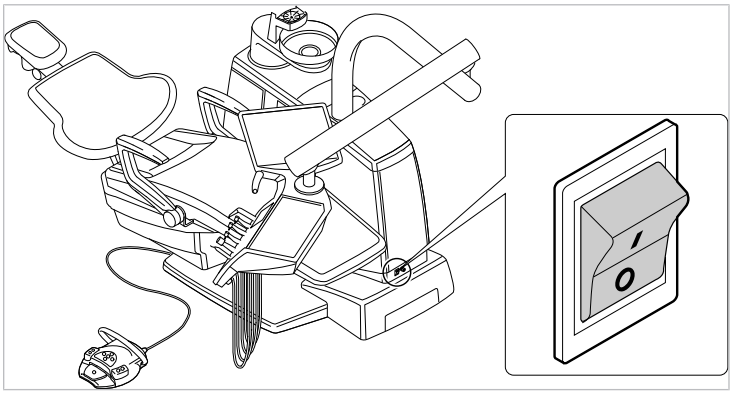
① Swivel arm
② Spring arm
③ Rotary knob (brake)
④ Rotary knob (lockable)
⑤ Service table
⑥ Non-slip mat
⑦ Cup holder
⑧ Handle
⑨ Rating plate

4 Operation

4.1 Switching on the device

Note
Always switch the machine off before leaving the office.

- Switch on the device using the main switch.



⇨ The KaVo log is illuminated on the display of the dentist element.

⇨ A melody is hears as soon as the unit has completely been started up.

4.2 Move the dentist's unit

⚠ CAUTION

Risk of injury when the dentist or assistant element is moved.
The patient or office staff may be injured or bruised.
- Monitor the patient and office staff when moving the dentist or assistant element.

4.2.1 Moving the T table

⚠ CAUTION

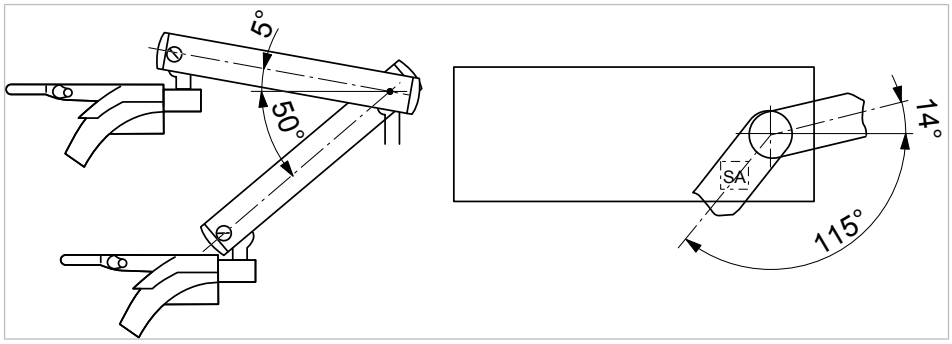
Excessive load on the support system
The patient or treatment personnel may be injured.
The support system may be damaged.
- Do not exceed the permissible maximum weight (generated e.g. by instruments and accessories).
- Do not use the swinging arm for a support!

⚠ CAUTION

Damage from overloading the dentist element.
Exceeding the maximum weight of more than 2 kg by adding handpieces, accessories, etc., can cause damage.
- Do not overload the dentist element!

The joints in the support arm have optional pneumatic brakes. The support arm is difficult to move when the device is turned off.
- When the device is turned on, grab the dentist's element by the handle and move it.

⇨ The brakes are released. The dentist element is easy to move.



- Release the handle.

⇨ The support arm automatically brakes. The dentist element is difficult to move.

4.2.2 Moving the S table

⚠ CAUTION

Risk of injury by suspended instruments (S table).

Patients may get injured by sharp instrument tips.

- When you move the dentist's unit, make sure that nobody is injured.
- Alert patients and care providers to the risk of injury.

⚠ CAUTION

Damage from overloading the dentist element.

Exceeding the maximum weight of more than 2 kg by adding handpieces, accessories, etc., can cause damage.

- Do not overload the dentist element!

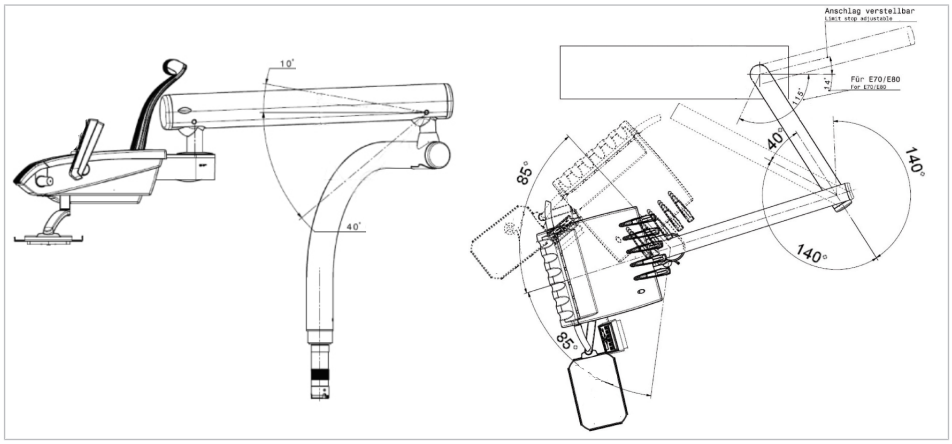
⚠ CAUTION

Excessive load on the support system

The patient or treatment personnel may be injured.

The support system may be damaged.

- Do not exceed the permissible maximum weight (generated e.g. by instruments and accessories).
- Do not use the swinging arm for a support!



4.2.3 Move the cart

⚠ CAUTION

Moving and overloading the cart.

Danger of tipping and damaging the cart.

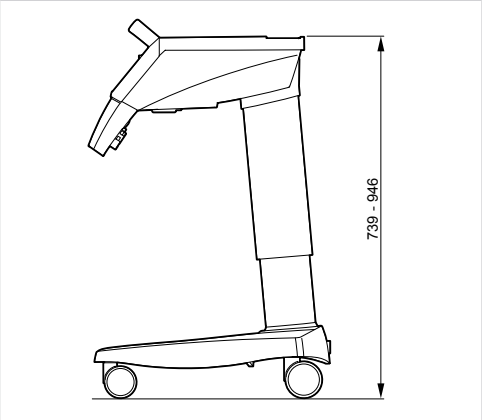
- Only use the card on a continuously smooth floor.
- Do not overextend the supply hose for the cart.
- Make sure that there are no obstructions on the floor.
- Do not sit on the dentist element or step on the castor.

Note

The area in which the cart can be move is restricted by the length of the lines and hoses that connect the cart to the base of the device. Only move the cart within this range.

- To change the position of the cart, hold the cart by the bow-type handle and move it to the desired position. Make sure that there are no obstructions on the floor.

The top part of the dentist's unit can be positioned in 9 levels.



Note

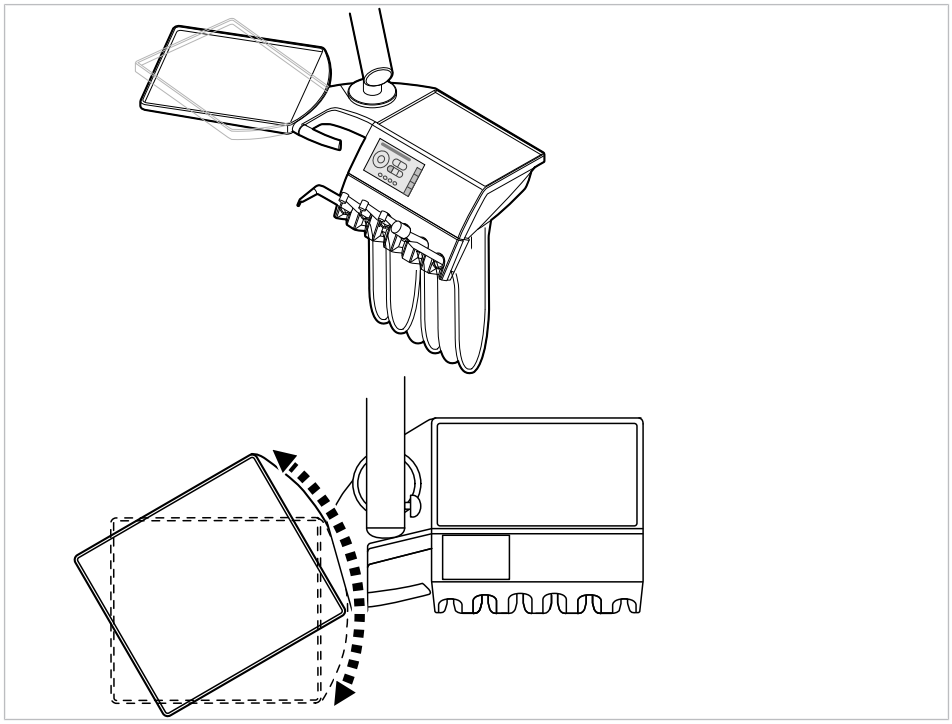
Do not lift the dentist's unit using the handle.

- Lift the top part of the dentist's unit until it locks into place.
- To release the lock, move the top part all the way up and then move it down.

4.2.4 Moving the tray

The tray can be swung.

- Push the tray into the desired position.



4.3 Moving the assistant element

⚠ CAUTION

Damage from overloading the assistant's unit

Exceeding the maximum load from mounting instruments, accessories, etc. can cause damage.

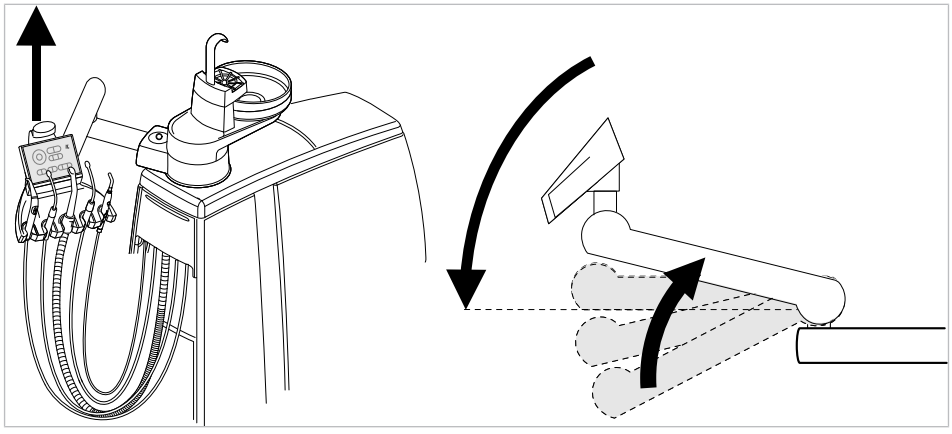
- Do not place more than 1 kg on the assistant's unit.

Note

Touching the touch panel can trigger functions unintentionally. Hold and position the assistant element on the instrument tray.

The assistant's unit can be moved vertically into four levels.

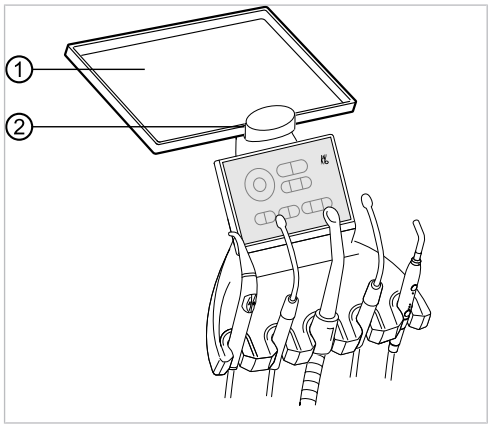
- Pull the assistant element slightly upwards until it locks into place.



To release the lock, the assistant's unit must be lifted all the way up.

4.3.1 Attaching the tray holder (optional assembly kit)

- Mount the tray holder on the assistant element.



① Tray support ② Tray holder

The support ② for the tray holder ①is an optional accessory.

4.4 Move patient chair

⚠ CAUTION

The left armrest can collide with the manually adjusted patient's unit when the chair moves.

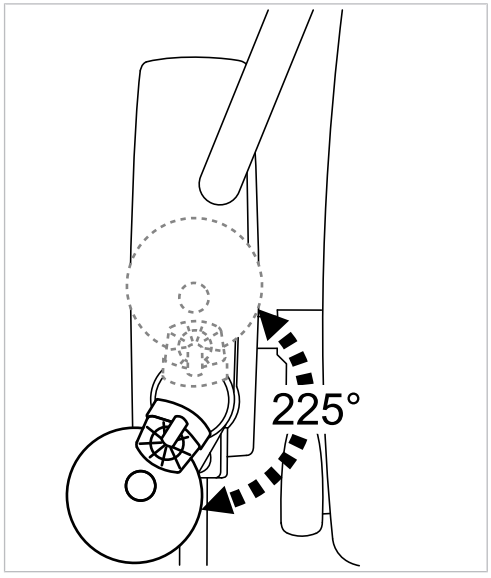
Injury hazard.

- Each time before the chair is adjusted (automatic and manual), swing the manually adjusted patient's unit into resting position.

Note

No liquids may be emptied into the mouth rising basin when the devices is turned off. Mechanical and electronic damage could occur as a result of overflowing liquid.

The patient part can be swivelled using a motor (additional equipment) or manually.
The swivelling range is 225°.



Motorised adjustment of the patient unit (E80 Vision standard, E70 Vision optional)

When automatic positions "AP 0", "AP 1", "AP 2" or rinsing position "SP" of the patient chair is saved, the position of the patient part is saved also.

There are two memory positions available:
1. Save by pressing the "SP" button:
   The patient part moves into the rinse position after the chair has stopped moving.
2. Save by pressing the buttons "AP 0", "AP 1" or "AP 2":
   The patient's unit swings back into resting position.

4.5 Adjusting the patient chair

⚠ CAUTION

Danger of injury from automatic chair adjustment

Injury can arise from the automatic adjustment of the chair position.

- Only use the automatic functions under the supervision of the user.

Note

The lift and backrest motors have thermal fuses. The motors shut down at an operating temperature of 105 °C. The cooling phase lasts approx. 15 minutes. After the cooling phase is over, the lift and backrest motors are operable. Such temperatures are not reached in normal practice. The shutoff temperature can be reached when the motors are frequently actuated in presentations and events (approximately 8 complete movement cycles).

⚠ CAUTION

The patient chair is overloaded

Damage to the support system or patient chair.

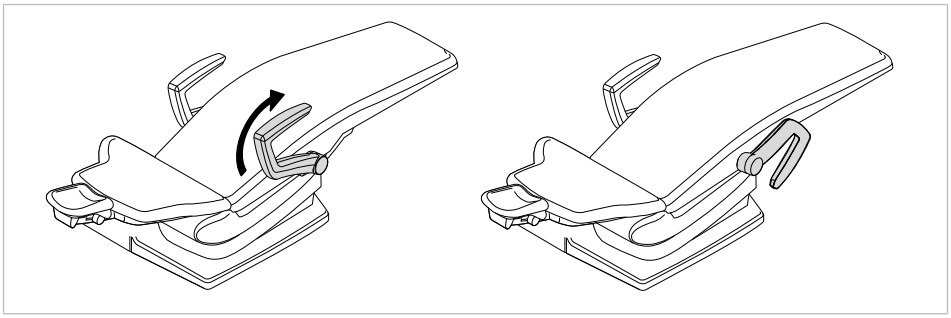
Injury to the patient or office staff.

- Do not exceed a maximum permissible weight of 180 kg.
- Do not sit on the head or foot end of the patient chair when it is horizontally aligned.
- Monitor the patient when changing the chair position.

4.5.1 Swivelling the arm rest

The right arm rest can be swivelled forward for the patient to get in and out.

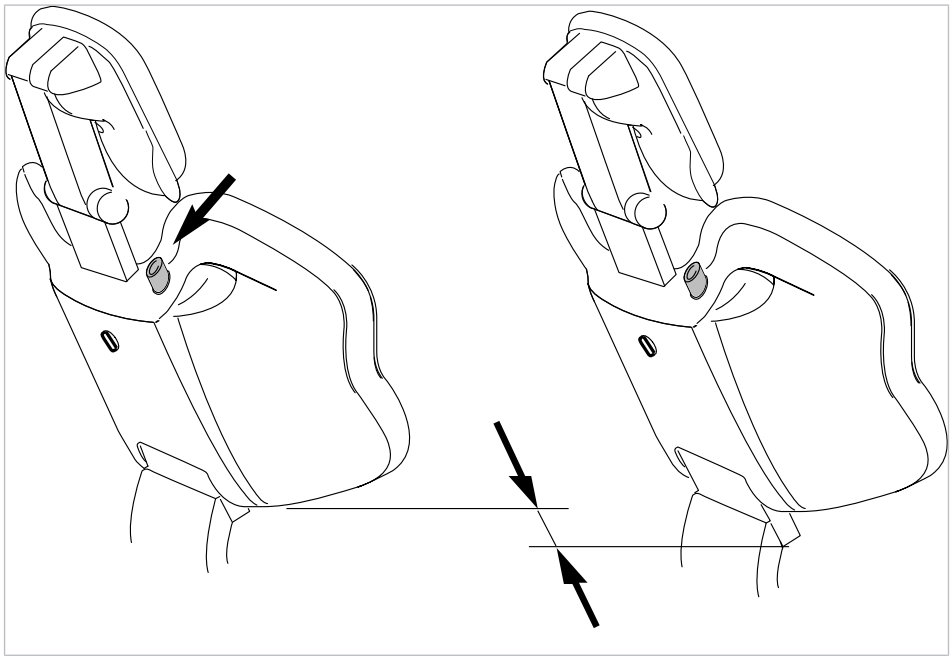
- Swivel arm rest forward.



- Then swivel the arm rest back into place.

4.5.2 Adjusting the Comfort backrest

- Press the button to adjust the backrest height.



4.5.3 Automatically positioning the patient chair

⚠ CAUTION

Motorised movement of the chair

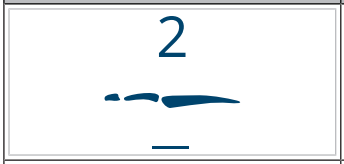
The patient or treatment personnel can be clamped or crushed.

- Monitor the patient and treatment personnel when changing the patient's position.

Selecting the automatic chair position

The chair can be automatically positioned using the following buttons:

Key	Function
SP	Move to the rinse position.
LP	Move to most recent position before actuation of the SP.
0	Move to automatic position 0.
1	Move to automatic position 1.

Key	Function
	Move to automatic position 2.
	Move to the collapsed position.

- Briefly press the desired button.

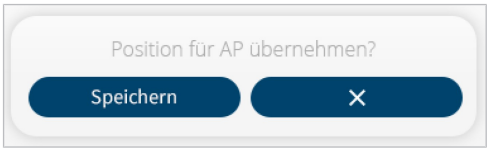
⇨ Chair automatically moves to the saved position.

⇨ The key is activated as soon as the saved position is reached.

Saving the automatic chair positions

Recommended assignment of buttons:
"SP" button: rinsing position
"AP 0" button: entry and exit position
"AP 1" button: treatment position, e.g. for lower jaw treatment
"AP 2" button: treatment position, e.g. for upper jaw treatment
"Collape position" button: collapse position

- Move the chair to the desired position.
- To save the chair position as desired, press the "AP 0", "AP 1", "AP 2", "SP" or "Collapsed position" key until the following window is displayed.



- Tap "Save" to store the chair position or "x" to quit without saving.

Note
When retrieving the rinsing position, the value for the chair height is calculated from the saved chair height and the position of the headrest. The rinse position is thereby adapted to the height of the patient.

Last position

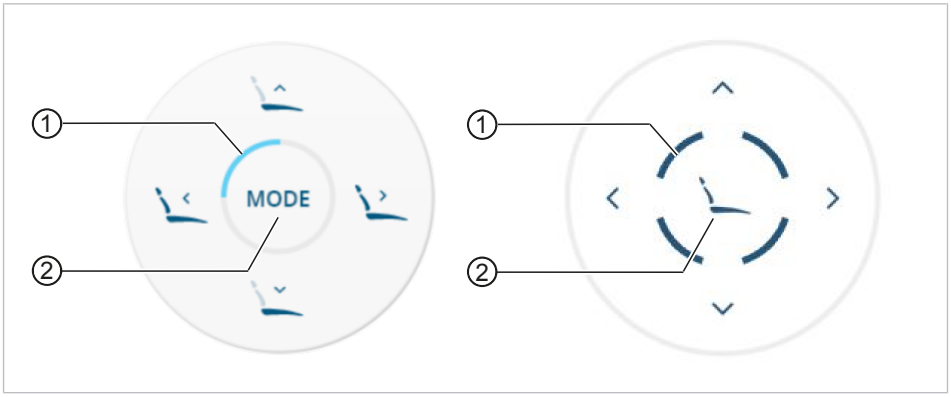
After the "LP" button is pressed, the chair moves into its position before the "SP" button was pressed.

Note
The memory is erased when you turn off the device. After turning on the device again (for example in the morning or after lunch), the chair does not execute a specific movement when you press the "LP" button.

4.5.4 Manually positioning the patient chair

Setting the function level

The keys of the button wheel have up to four functions. Therefore, when adjusting the chair position, always be aware of the active function level of the button wheel. The active function level is indicated by the lighted quadrants.



① Illuminated segment indicating the function level ② "Mode" key

- Press the "Ready" key to switch between the function levels.

Func-tion level	Key Dentist element	Key Assistant's element	Active quadrant	Function
1			Quadrant 4	Setting the chair height and backrest position
2			Quadrant 1	Setting the seat height and horizontal chair po-sition (E80 Vision only)
3			Quadrant 2	Adjusting the motorised headrest
4			Quadrant 3	Positioning the chair at shrunk drive speed

- Use the "Mode" key to select the desired function level.

Adjusting the chair height and position of the backrest

Requirement
Function level 1 is active. Quadrant 4 lights up.
If the desired function level is not activated, press the "Mode" key.
Please refer to: Setting the function level

Use the following buttons to adjust the chair height and position of the backrest:

Dentist unit key	Assistant unit key	Function
		The chair moves up.
		The chair moves down.
		The backrest moves upward.
		The backrest moves downward.

- ▸ Press the related key.

⇨ The chair or backrest moves in the desired direction.

Setting the seat height and horizontal chair position (E80 Vision only)

To treat small persons and children or to optimise the lumbar support, the seat can be lifted and lowered.

Requirement
Function level 2 is active. Quadrant 1 lights up.
If the desired function level is not activated, press the "Mode" key (possibly repeatedly, if needed).
Please refer to: Setting the function level

Use the following buttons to adjust the seat height and horizontally position the chair:

Dentist unit key	Assistant unit key	Function
		The seat moves upward.
		The seat moves down.
		The chair moves horizontally to the rear.
		The chair moves horizontally to the front.

- ▸ Press the corresponding button.

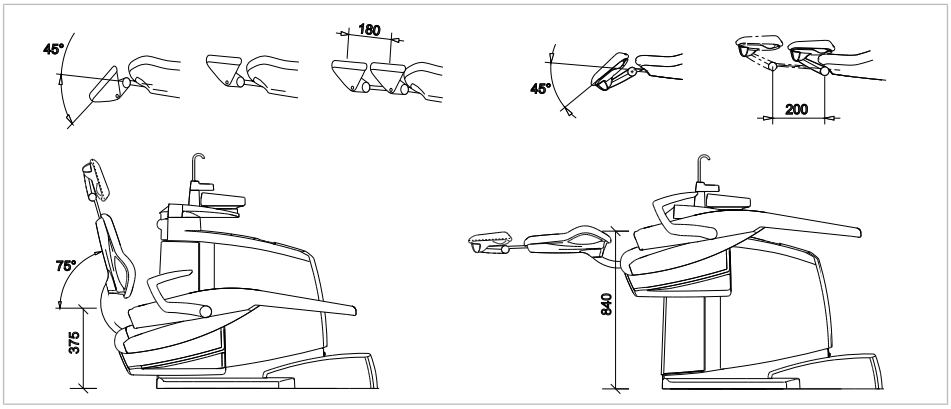
⇨ The chair or seat moves in the desired direction.

Positioning the chair with reduced speed

Requirement
Function level 4 is active. Quadrant 3 lights up.
If the desired function level is not activated, press the "Mode" key (possibly repeatedly, if needed).
Please refer to: Setting the function level

- ▸ Adjust the chair height and position of the backrest at reduced drive speed.

4.6 Moving the patient chair



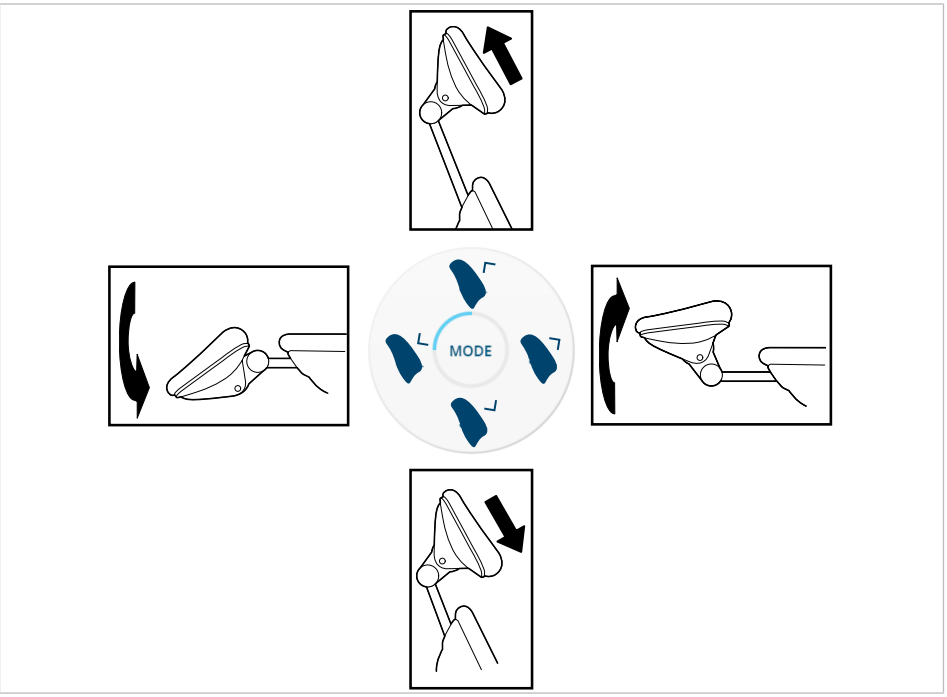
4.7 Adjust the motorised headrest

The motorised support for the headrest allows you to optimally situate the patient with easy manual manipulations. The compensated sequence of movements move the patient's head into an anatomically correct position.
The headrest can be adjusted manually using the joystick switch on the headrest, the dentist's or assistant's unit, or automatically by means of a preset automatic position.

Requirement
Function level 3 is active. Quadrant 2 lights up.
If the desired function level is not activated, press the "Mode" key (possibly repeatedly, if needed).
Please refer to: Setting the function level

The height and angle of the headrest can be set using the dentist control unit. The four-button wheel assumes the function of the joystick switch.

The following buttons can be used to adjust the motorised headrest:



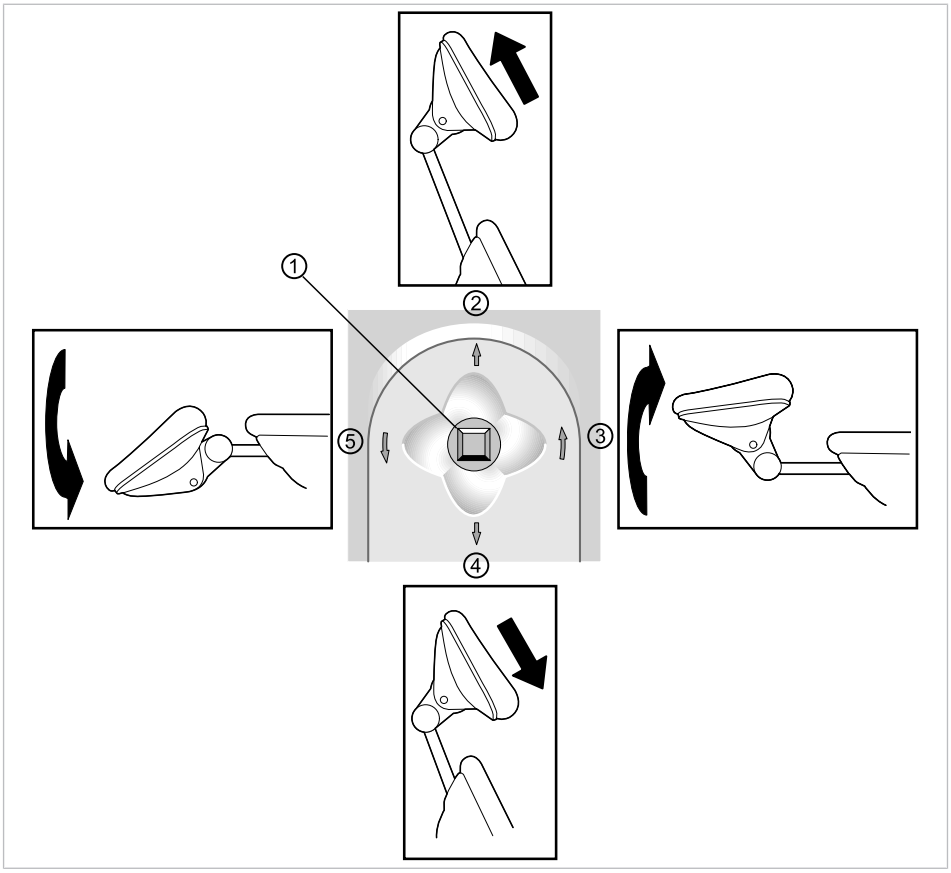
Dentist unit key	Assistant unit key	Function
		The bar is being extended.
		The bar is being compressed.
		The headrest tilts forward.
		The headrest tilts backward.

- Press the corresponding button.

⇨ The headrest moves in the desired direction.

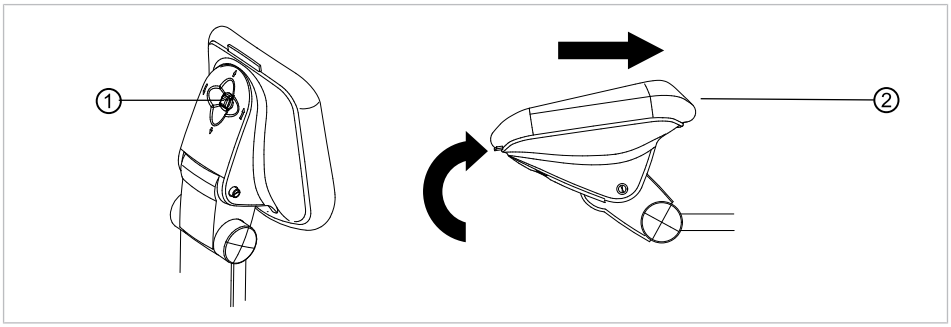
4.7.1 Adjusting the motorised headrest with the joystick.

The height and angle of the headrest can be adjusted with the soft silicone joystick switch ①.



- Press the joystick switch ① in direction ② to extend the bar length.
- Move the joystick switch ① in direction ④ to shorten the bar length.
- Press the joystick switch ① in direction ③ to incline the headrest forward, for example for treating the maxilla (compensated procedure).
- Press the joystick switch ① in direction ⑤ to incline the headrest backward, for example for treating the mandible (compensated procedure).

Special function 1 (small persons, round shoulders):



- Press joystick switch ①.

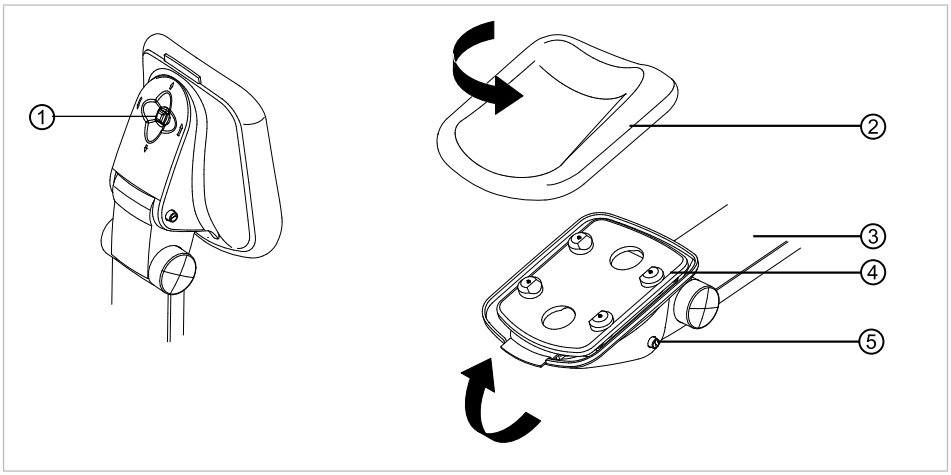
⇨ Signal sound is emitted. Compensation is turned off. Five display diodes of the "AP" keys are flashing. All axes can be independently operated using the joystick switch ①.

- Position the headrest ② with the joystick ①.

Press the joystick switch ① again to switch compensation back on. All functions are available.

Special function 2 (children's position, continuous plane):

For treating children, the head cushion can be adjusted so that it forms a single plane with the backrest cushion.



Note

While you press key ⑤, do not readjust the angle with the joystick switch①!

- Press joystick switch ① for an extended time.

⇨ Signal sound is emitted.

⇨ The programmed position for treating children is assumed (bar is completely inserted ③). The child's position is indicated by the running light of the five "AP" keys.

- Press button ⑤ to dislodge jammed headrest ④.
- Tip the headrest ④ until it is in line with the backrest and locks into place.
- If necessary, change the bar length ③.
- Turn the rotating cushion ② so that the flat part faces the backrest.

Press button ⑤ and manually swing the headrest back to automatically assume the standard starting position. All functions are available again.

4.7.2 Automatically position the motorised headrest

When you save the automatic chair positions, the angle of the headrest is also saved.

- After selecting the automatic position, you can manually adjust the headrest if desired.

4.8 Adjusting double-jointed headrests

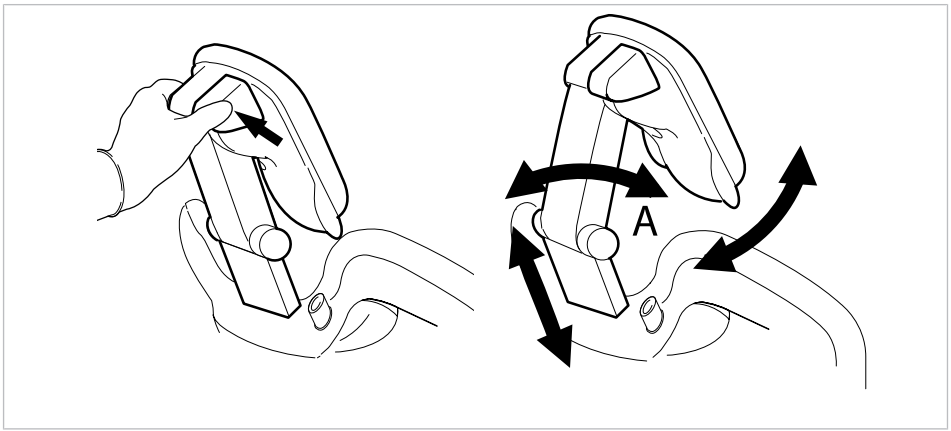
⚠ CAUTION

Adjusting the headrest.

Injury of neck muscles.

- Make sure that the patient is aware of the headrest setting.
- Patients need to raise their head slightly during adjustment.

The bar length and angle of the headrest can be adjusted.



- Press the lock button and push in or pull out the headrest depending on the patient's height.

Note

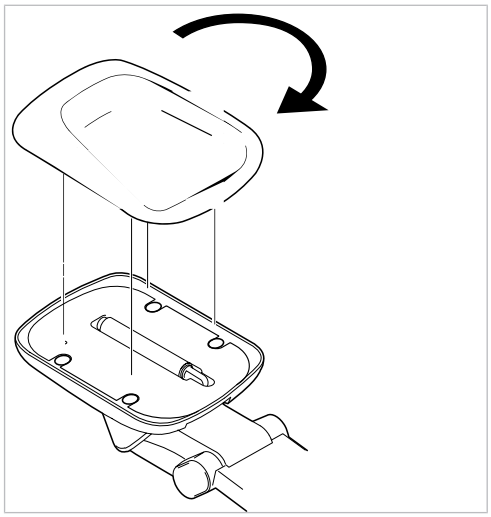
The service technician can adjust the braking force.

- Press the lock button and swing the headrest into the desired position.
  When swinging the headrest back into position, make sure that there is nothing between the area A and head cushion.

Turning the head cushion

The head rest cushion is a rotating cushion. It can be turned to offer better neck support, for example when treating children.

- Evenly pull the cushion up and rotate it 180°.

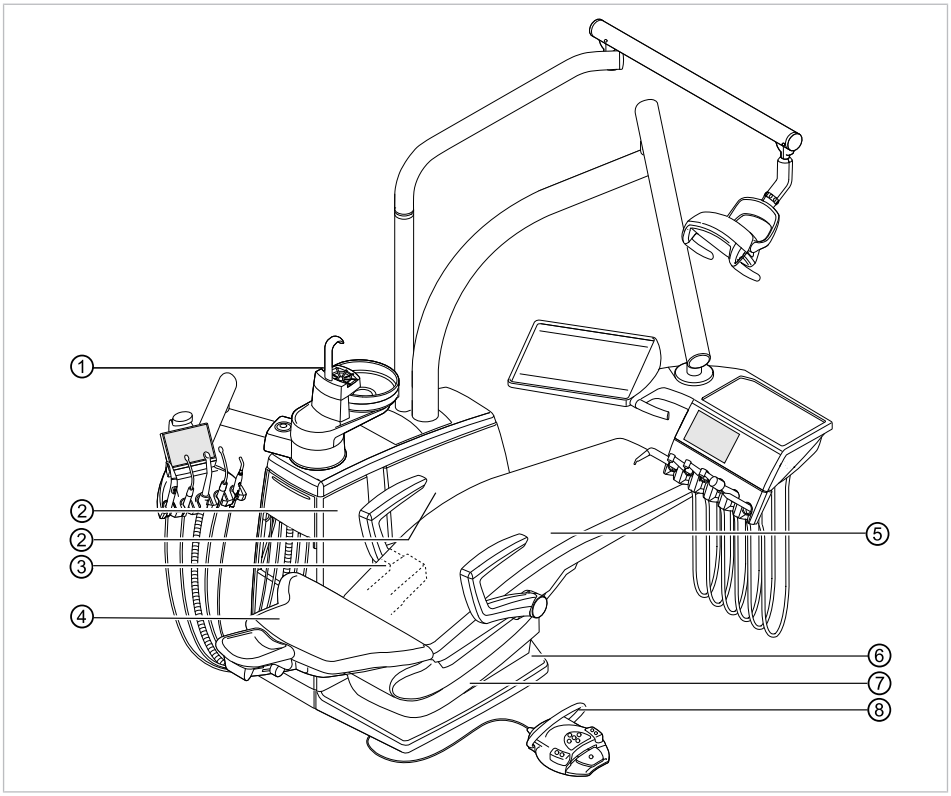


- Then snap the head cushion back on.

4.9 Safety shut-off

The safety shutoffs are provided to protect the patient and office staff from injury and the treatment unit from damage.

The safety cut-offs can be found at the following places on the treatment unit.



Safety shut-offs

① Patient element
② Inner side cover B
E70 Vision: Inner side cover A
③ E80 Vision: Support cover
④ Backrest
⑤ Seat
⑥ Kick plate
⑦ Seat base
⑧ Clip on (wireless) foot control

If a person or object triggers a safety shutoff, the chair immediately stops moving. An activated safety shutoff message is displayed if an active safety shutoff is triggered.

See also:
4.10.2 Status message, Page 64

In addition, the activated safety shutoff is displayed by the corresponding button flashing on the assistant element:

Pos. no.	Safety shutoff actuated	Display LED on the assistant element
①	Patient element	

Pos. no.	Safety shutoff actuated	Display LED on the assistant element
②	Inner side cover B E70 Vision: Inner side cover A	
③	E80 Vision: Support cover	
④	Backrest	
⑤	Seat	
⑥	Kick plate	
⑦	Seat base	
⑧	Clip on (wireless) foot control	

Note

The chair's position cannot be changed with the key wheels when a safety shutoff is activated.

- To deactivate an active safety shutoff, remove the trigger from the range of movement of the chair.

⚠ CAUTION

Changing the chair's position when the safety circuit is on.

Personal injury.

Damage to the device.

- Changing the chair position while a safety shutoff is active, do not move the chair against the active safety circuit.

⚠ CAUTION

Pinching from the treatment chair.

The safety shutoff of the treatment chair is activated by lifting the respective component. Depending on the patient's body weight and the leverage, more force can be exerted on the object to be triggered than is necessary to trigger the switching function.

- The treatment personnel must move outside of the chair's swivelling range whenever the chair moves.

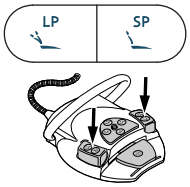
⚠ CAUTION

Danger of crushing when retracting the patient chair with activated safety shutoff.

The patient can be clamped in.

- ▸ Only retract the patient chair without the patient.

To allow the chair to move freely, it can also be moved when the safety circuit is on. Use this function for repair purposes only.



- ▸ Press and hold down the "SP" and "LP" keys simultaneously on the assistant element and the foot control.
- ▸ Move the chair using the button wheel buttons of the chair.

⚠ CAUTION

Safety shutoff disabled, move motors without monitoring.

Destruction of the motor.

- ▸ Monitor the path of travel of the motor.
- ▸ Do not move the motor to the block.
- ▸ For all chair movements, remove all restrictions from the swinging range of the chair.

4.10 Using functions through the touchscreen

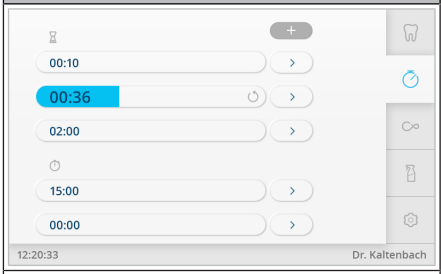
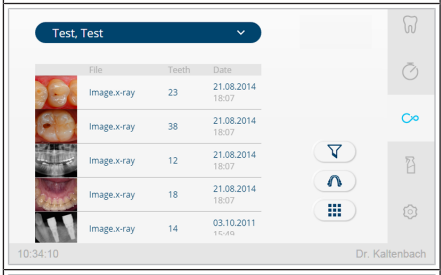
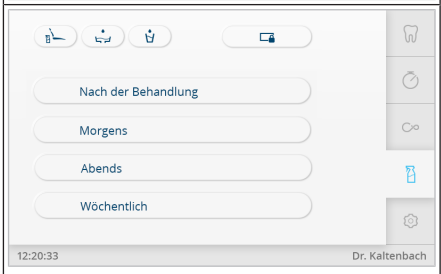
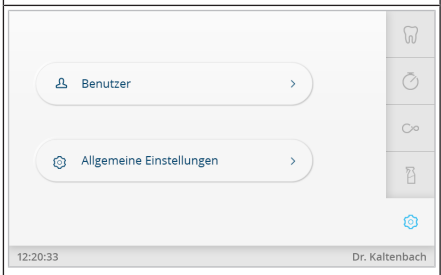
The use of the touchscreen is simple and always follows the same pattern.

The touchscreen is subdivided into five menus (tabs):

- Treatment menu
- Timer menu
- CONEXIO menu
- Cleaning menu
- Settings menu

- ▸ Tap a tab to display the corresponding menu.

Tab	Menu	Description
	Treatment	▪ Selection of type of treatment ▪ Speed / power ▪ Direction of motor rotation, if applicable ▪ Cooling status

Tab	Menu	Description
	Timer	▪ Open the timer ▪ Setting the timer
	CONEXIO (optional)	Data processing and communication with office software
	Cleaning	▪ After treatment ▪ Morning ▪ Evening ▪ Weekly
	Settings	▪ User ▪ Global settings

Navigation

Symbol	Function	Description
Key		Tap the key to open functions or make settings.
	Selection list	Click the "List" key to select an option from a list.
	"Back" key	Tap the "Back" key to navigate one step back or to exit from the menu.
	"Edit" key	Tap the "Edit" key to edit data.
	"Plus" key	Tap the "Plus" key to generate a new data set.
	Slider	Use the slider to increase or decrease a value.
	"Increase value" key	Press the "Increase value" key to increase a value.

Symbol	Function	Description
	"Decrease value" button	Press the "Decrease value" key to decrease a value.
	"Save" icon	Tap the "Save" key to save changes.
	"Save" key	Tap the "Save" key to save changes.
	"Cancel" key	Tap the "Cancel" key to quit without saving.

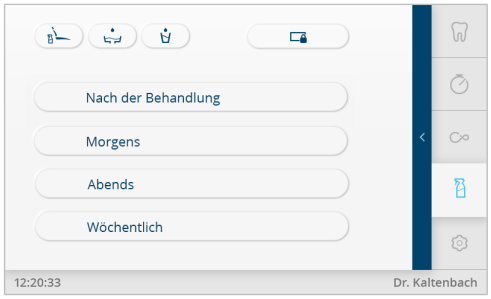
4.10.1 Selecting the dentist

- ▸ Tap the name of the user in the status bar until the list of created users is displayed.
- ▸ Tap a user to select a different user.

⇨ The status bar displays the active user.

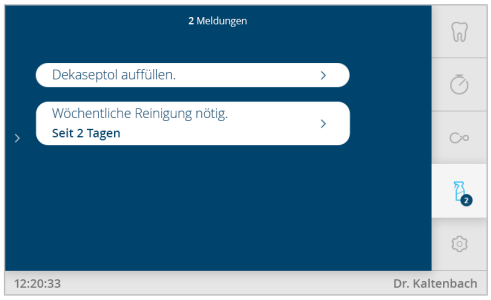
4.10.2 Status message

The respective tab shows a message if there is a status message available.



Status message in the Cleaning menu

- ▸ Tap the arrow to display status messages.



Status messages

- ▸ Tap the status message and follow the request.

⇨ As soon as the error is remedied, this is recognised and the status message disappears from the display.

4.10.3 Treatment menu

Note

The device saves the activation of the switch of the type of treatment for the current user.

Handpiece-specific settings

The various types of treatment and the handpiece-specific values can be displayed and set in the "Treatment" menu.

The display depends on which instrument was withdrawn.

The handpiece-specific values can be saved by dentist (up to 6 users) in the following types of treatment. The types of treatment can be renamed (see "User" settings):

- Excavation
- Preparation
- Prophylaxis
- Manual
- Endodontics (optional)
- Surgery (optional)

In "Manual" as the type of treatment, the centring of the foot control pedal is disabled, and no preferential speed can be programmed.

The following symbols are available for navigation/operation in the "Treatment" menu:

Symbol	Function
	Tap the "Spray water cooling status" key to set the cooling.
	Tape the "No cooling" key to switch the cooling off.
	Tap the "Spray air cooling status" key to set the spray air flow.
	Tap the "Counterclockwise motor rotation" key to set the motor to counterclockwise rotation.
	Tap the "Clockwise motor rotation" key to set the motor to clockwise rotation.
P1	Tap the "P1" key to set operating mode P1.
P2	Tap the "P2" key to set operating mode P2.
P3	Tap the "P3" key to set operating mode P3.
ENDO	Tap the "ENDO" key to set the ENDO operating mode.
	Tap the "Heating for air/water" key to set the heating.
	Tap the "Heating for air/water Off" key to switch the heating off.

- ▸ Tap the type of treatment to unfold a list.
- ▸ Select the type of treatment from the list as desired to display the values.

- ▸ Tap the "Edit" key to edit the parameter values.
  Editable parameters are marked by a dashed line.

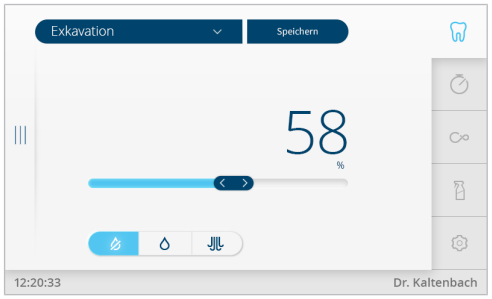
Settings for air-driven handpieces

Note
Following instructions for use, service instructions and installation instructions in the instrument packaging.

The following settings can be changed in the Treatment menu on the touchscreen:
- Type of treatment
- Speed / power
- Cooling status

- ▸ Take air-driven handpiece off the holder.

⇨ This causes the settings options for the air-driven handpiece to be displayed.



Setting power / speed

- ▸ The set power or speed is displayed in blue.
- ▸ Use the slider to set the value as desired. The value can be displayed in % or 1/min. Tap the unit (% or 1/min) to toggle the display (toggle function = switching function).

⇨ The new value is shown on the display and is effective immediately.

Setting the cooling level

Symbol	Function
	No cooling
	Spray air cooling
	Spray water cooling
NaCl	NaCl cooling (optional accessory) "Cooling status spray water" (short press) "Cooling status NaCl" (long press)

See also:

4.16 Use pump for physiological saline (optional accessory), Page 128

Speichern

- After you set a single value or all values, tap the "Save" key to save the values.

Settings for the INTRA LUX Motor KL 703 LED and the COMFORTdrive

Note

Following instructions for use, service instructions and installation instructions in the motor packaging.

The following settings can be changed in the Treatment menu on the touchscreen:

- Type of treatment
- Direction of motor rotation
- Speed
- Cooling status

The settings of speed and cooling status are made in the same manner as with the air-driven handpiece.

- Take motor off the holder.

⇨ The display switches to the motor settings menu.

Setting the rotational direction of the motor

Note

The direction of motor rotation can only be changed when the motor is at rest.

- Tap the "Direction of motor rotation" key to toggle between clockwise and counter-clockwise rotation.

  or

Symbol	Function
	Clockwise rotation
	CCW rotation

Speichern

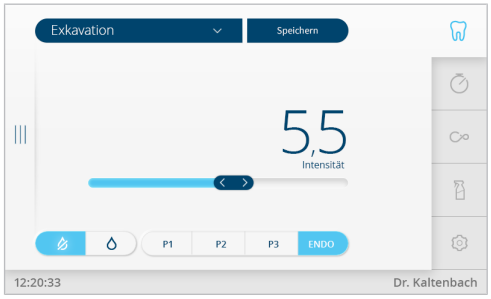
- After you set a single value or all values, tap the "Save" key to save the values.

Settings for the PiezoLED

Note
Please comply with the enclosed "PiezoLED" Instructions for Use.

The following settings can be changed in the Treatment menu on the touchscreen:
- Type of treatment
- Output intensity
- Operating mode (P1 / P2 / P3 / E)
- Cooling status (no cooling / spray water cooling)

▸ Take the PiezoLED off the holder.
⇨ The following is shown on the display.



Setting the intensity

▸ Use the slider to set the intensity.

⇨ The intensity is displayed.

Define operating mode

Note
The selection of the mode depends on the treatment method and the tip used. For information about the selection of an operating mode, please refer to the "Operating modes P1 / P2 / P3 and ENDO" section of the "PiezoLED" instructions for use.

▸ Tap the corresponding key to select the operating mode as desired.
Modes P1 / P2 / P3 / ENDO are available for selection.

Setting the cooling level

▸ Tap the corresponding key to set the cooling as desired.

Symbol	Function
	No cooling

Symbol	Function
	Spray water cooling

Dosing the amount of spray water

⚠ CAUTION

Lack of working tip cooling.

Heat damage to tooth or handpiece.

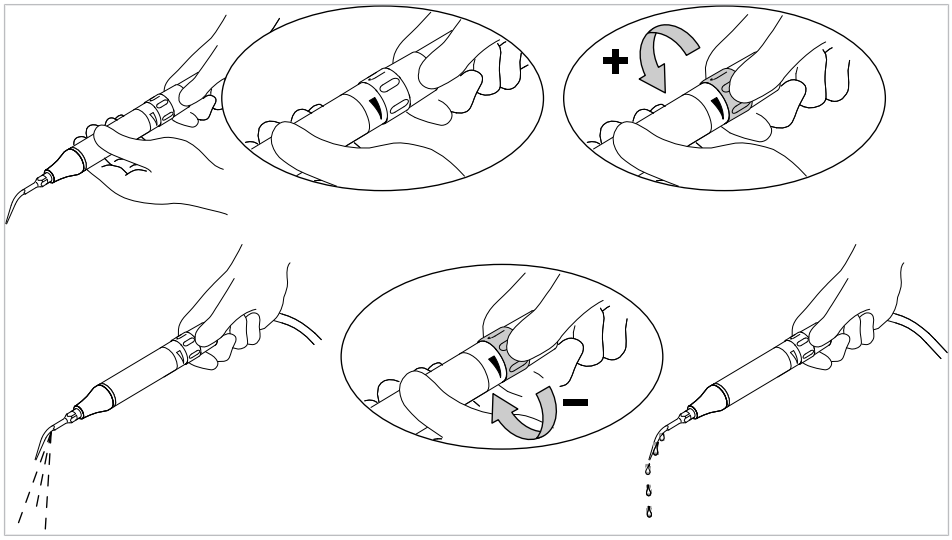
- Never work under dry conditions, except in case of tips designed for these conditions.
- Set a minimum flow rate of 6 ml/min. For this purpose, adjust the flow rate such the water is just between dripping and flowing during irrigation.

- For the amount of spray water for each tip, please refer to the PiezoLED Instructions for Use.

See also:

Instructions for Use PiezoLED

- Adjust the amount of spray water using the regulating ring.



Speichern

- After you set a single value or all values, tap the "Save" key to save the values.

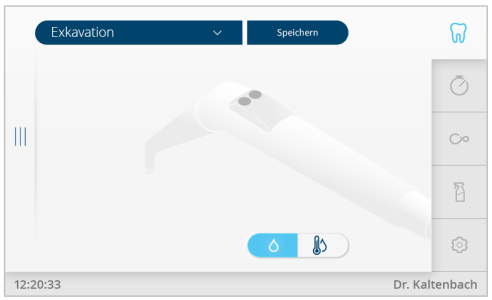
Settings for the multifunctional handpiece

The following settings can be changed in the Treatment menu on the touchscreen:

- Air/water heating

- Take the multifunctional handpiece off the holder.

⇨ This causes the settings menu of the multifunctional handpiece to be displayed.



Adjusting the air/water heating

- Tap the corresponding key to set "Heating air/water" as desired.

Symbol	Function
	Air/water heating "On"
	Air/water heating "Off"

- After you set a single value or all values, tap the "Save" key to save the values.

Operation of the treatment light KaVoLUX 540 LED U

⚠ WARNING

Unintentional activation of the KaVo KEY Laser III and KEY Laser 3+.

Simultaneous application of the operating light KaVoLUX 540 LED and the KaVo KEY Laser III or KEY Laser 3+ can lead to the unintentional activation of the KaVo KEY Laser III and KEY Laser 3+.

- When using the KaVo KEY Laser III or the KEY Laser 3+, switch the operating light to laser mode.
- Or switch off the operating light, do not use the KaVo KEY Laser III or KEY Laser 3+ and the KaVoLUX 540 LED operating light simultaneously.

⚠ WARNING

Wrong handling.

Reversible blinding (temporary sight impairment).

- Do not direct the light field at patients, users or/and third parties while you switch on the light.
- Do not direct the light field at the patient´s eyes when you move the light head.
- Maintain a clearance of ca. 700 mm between the light and the mouth of the patient.

⚠ CAUTION

Stroboscopic effect of the rotating instrument.

A stroboscopic effect could arise in instruments rotating at a certain speed during application of the KaVoLUX 540 LED. This is an optical illusion, where the instrument appears to be standing still or rotating extremely slowly.

Injury hazard.

- If the stroboscopic effect appears, change the speed fractionally and continue operating in the usual manner.

⚠ CAUTION

Faulty measurement in connection with KaVo DIAGNOdent.

Simultaneous application of the operating light KaVoLUX 540 LED and the KaVo DIAGNOdent can lead to faulty measurements.

- ▸ Switch the operating light to laser mode when using the KaVo DIAGNOdent.
- ▸ Or switch off the operating light, do not use KaVo DIAGNOdent and operating light KaVoLUX 540 LED simultaneously.

⚠ CAUTION

Premature hardening of composite fillings.

A light intensity that is too high can have a negative impact on the durability of the treatment.

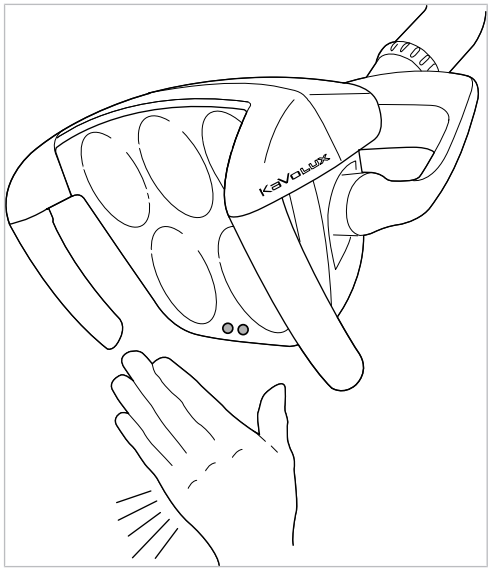
- ▸ Select the appropriate dimming level according to the processing time.

The KaVoLUX 540 LED operating light can be used in the following modes:

- Normal light: preset at 5,500 Kelvin and 30,000 Lux corresponding to daylight quality
- COMPOsave-Modus: enables longer processing periods for composites by filtering the blue components of the light
- Dimmed light: approx. 4,000 Kelvin; equivalent to the light of a halogen operating lamp
- Laser mode: Light mode, which has no negative influence on the KaVo KEY Laser III, the KEY Laser 3+ or the KaVo DIAGNOdent.

When operated In dimmed mode, the LED lamp functions according to a dimmed halogen lamp. The colour temperature is approx. 4,000 K and the composite can harden prematurely. This can have a negative impact on the durability of the treatment.
The COMPOsave modes prevents the composite from hardening prematurely. As opposed to the dimmed light, the blue components of the light are filtered in the process. Therefore the composite can be processed longer in COMPOsave mode.

Turning the operating light On and Off



Sensor KaVoLUX 540 LED

- Tap the "Operating light" key.

or

- Hold your hand just in front of the sensor.

⇨ Operating light is switched on with "Normal light", key is active (blue).

- Tap the "Operating light" key again.

or

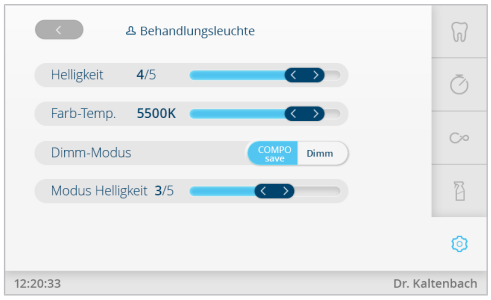
- Hold your hand just in front of the sensor.

⇨ Operating light is switched off, key is not active.

Setting the operating light

- Tap the "Operating light" key for long.

⇨ This causes the settings options of the operating light to be displayed.



Menu Settings | Operating light

Set brightness and colour temperature

- Use the "Brightness" slider to set the brightness to one of 5 levels.

- Set the colour temperature using the "Colour temp". einstellen.

Set the brightness and type of dimming

- Tape the "Dim mode" key to toggle between COMPOsave and Dim mode.

⇨ The active mode is indicated by the blue background.

⇨ Tapping the "Dim operating light" key causes the active mode to be executed.

⇨ The COMPOsave mode can be recognised by the yellow light.

Note

The "Set dimming mode for LED lamp" option is only indicated if an LED lamp is installed on the treatment centre and has been activated by the technician in service mode.

Note

Tapping the "Dim operating light" key switches on the COMPOsave mode. The light can be dimmed in COMPOsave mode.

COMPOsave is a dimmer mode. In the COMPOsave mode the hardening of the of the composite is greatly reduced by filtering the blue parts of the light spectrum.

Setting the brightness of the dimmer (COMPOsave mode)

- Use the slider to set the brightness mode to one of 5 levels.

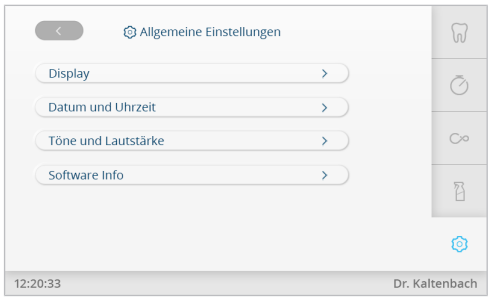
Note

The time it takes for composites to harden is dependent on the brightness or the effective radiation intensity of the light: The processing time is reduced with increasing brightness / effective radiation intensity. The processing time for composites is prolonged with reducing brightness / effective radiation intensity.

Note

The "Dim operating light" key can be added as a direct selection key to the "Home screen" in the Settings menu.

- Tap the "Back" key twice to get to "Global settings".



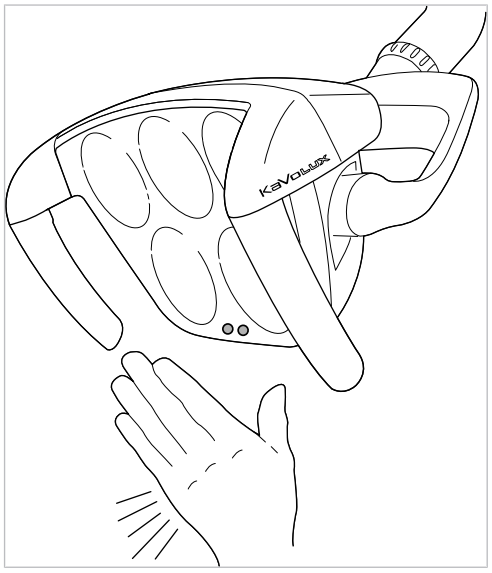
Switching COMPOsave mode ON/Off via the home screen or by sensor

Requirement

Use the Settings menu to activate the COMPOsave mode.

See also:

Set the brightness and type of dimming



Sensor KaVoLUX 540 LED

- Press the "Dim operating light" key.

or

- Put your hand in front of the sensor for 2 seconds.

⇨ This switches the COMPOsave mode on.

⇨ The COMPOsave mode can be recognised by the yellow light.

- Press the "Dim operating light" key.

or

- Put your hand in front of the sensor for 2 seconds.

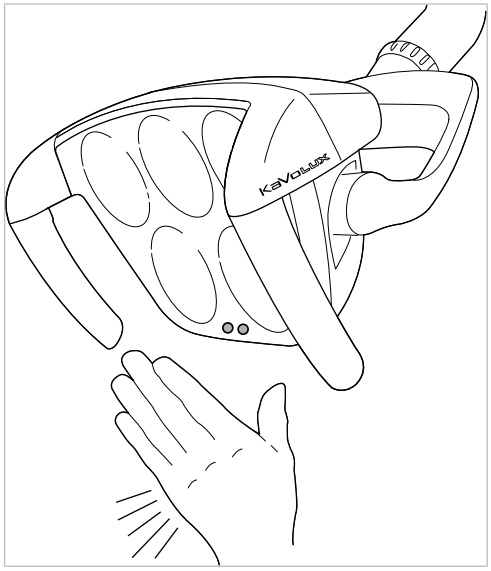
⇨ The operating light switches back to normal light mode.

Turning the laser mode On and Off

Note

Falsified colour reproduction: the laser mode only possesses a restricted spectrum output. Therefore a colour comparison should not be carried out in laser mode.

In laser mode, another light mode is generated, which has no negative influence on the KaVo KEY Laser III, the KEY Laser 3+ or the KaVo DIAGNOdent.



Sensor KaVoLUX 540 LED

- Tap the "Laser" key (can be added via Settings on home screen).

⇨ The laser mode switches on.

⇨ Laser mode is activated: the operating light is on for 1 second in green and then changes to a white light.

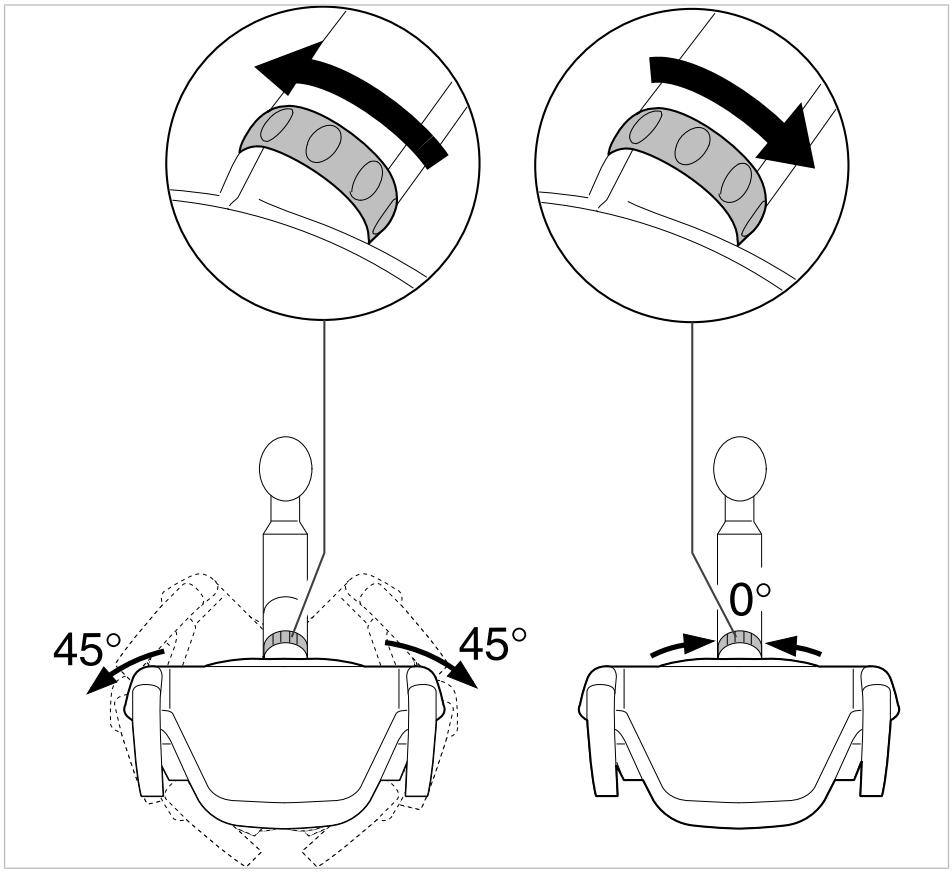
or

- Put your hand in front of the sensor for 3 sec.

⇨ The laser mode switches on.

⇨ Laser mode is activated: the operating light switches initially to COMPOsave mode and then is on for 1 second in green and then changes to white light.

Operation of the 3D joint



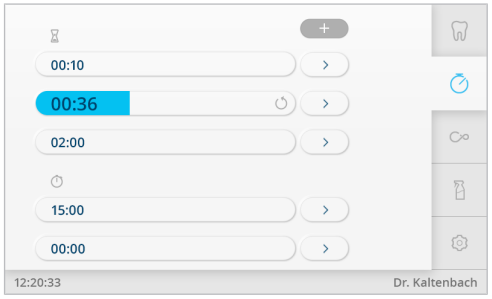
- ▸ Turn the switching ring to the left until it snaps into place.
- ⇨ Treatment light can be rotated 45° to the left or 45° to the right.
- ▸ Turn the switching ring to the right and it will spring back to its original position.
- ⇨ If the treatment light is turned to the centre position (zero position), it will automatically lock into place in the centre position.

4.10.4 Timer menu

Retrieving the timer

Up to five timers can be set in the "Timer" menu.

- ▸ Tap the "Timer" tab to display the "Timer" menu.



Timer menu

- ▸ Tap the "Timer" tab to retrieve the timer.
- ⇨ As soon as the timer is finished, an acoustic signal is issued.
- ▸ Tap the timer again to stop the timer.

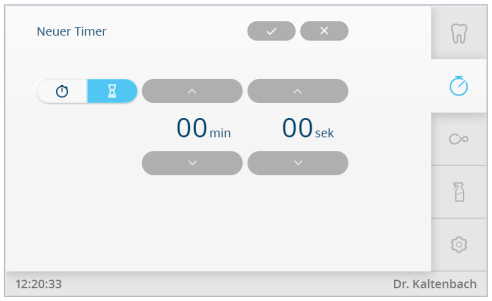
Note
The activated timer times are also displayed on the touchscreen.
If several timer times are running simultaneously, this is displayed in the sequence of when they elapse. A signal sound is issued whenever an activated timer time elapses.

Setting the timer

Up to 59:59 minutes of timer time can be set using the timer.

+

- ▸ Tap the "Plus" key to generate a new timer.



View "New timer"

Two timer functions can be selected:
- Hourglass (the set timer time counts down)
- Stopwatch (counts the time)

- ▸ Tap the arrow keys to set the timer time.

✓
- ▸ Tap the "Save" key to save the value.

✕
- ▸ Tap the "Cancel" key to quit without saving.

⇨ This causes the "Timer" menu to be displayed.

- ▸ Tap the › key next to Timer to edit a timer generated previously.

4.10.5 CONEXIO menu

The "CONEXIO" menu allows full access to all the critical data of a patient from a treatment unit.

The following functions can be called up in the "CONEXIO" menu:
- Searching and filtering patient data
- Different possibilities of displaying patient images
- Storage of the images for patient communication

Opening and ending the "CONEXIO" menu

Requirement
The CONEXIO must be installed on a workstation computer and connected to the practice network.
The computer must be switched on and connected to the treatment unit via a network (Ethernet).

See also:
CONEXIO installation instructions

Note
To be able to use the CONEXIO tab, CONEXIO must be installed on a workstation computer and connected to the practice network (CONEXIO unit). Moreover, the computer must be switched on and connected to the dental unit (via ethernet). If no connection can be established, an error message is displayed

- Ensure that the CONEXIO unit is switched on and connected to the treatment unit.

⇨ As soon as an imaging device is activated, the "CONEXIO" menu automatically opens in live image mode.

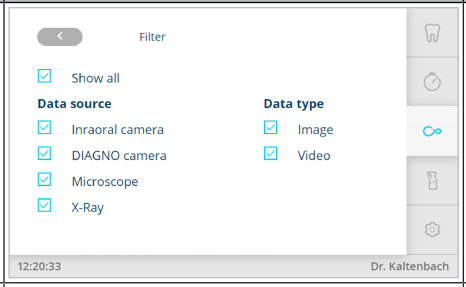
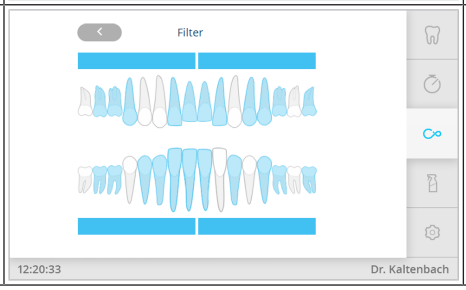
The "CONEXIO" menu can also be opened manually.

- Tap symbol "CONEXIO" to show the "CONEXIO" menu.
- Tap another menu symbol or place the imaging device in the holder to end the "CONEXIO" menu.

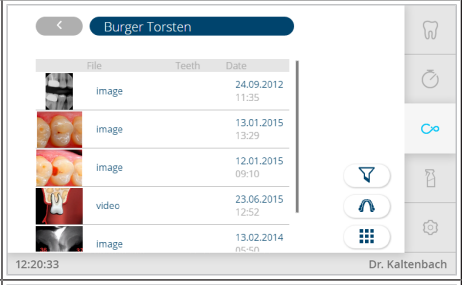
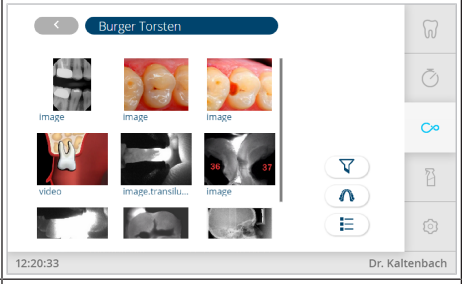
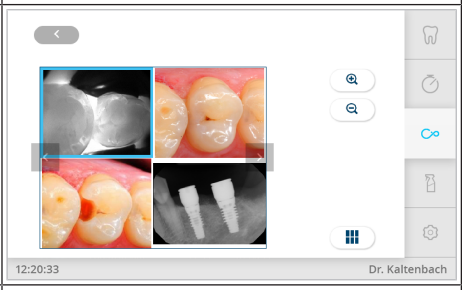
Operate menu "CONEXIO"

The following keys are available for navigation, display and operation of the"CONEXIO" menu:

Operations

Icon	Presentation	Feature
		Selection of the image types that should be displayed (x-ray, intraoral camera)
		Tap the "Dental chart" key to filter images according to teeth

Presentation

Icon	Presentation	Feature
		Presentation of the images in "list view"
		Presentation of the images in "tile view"
		Single image presentation
		Two image presentation
		Four image presentation
		Six image tile presentation

Navigation and operation

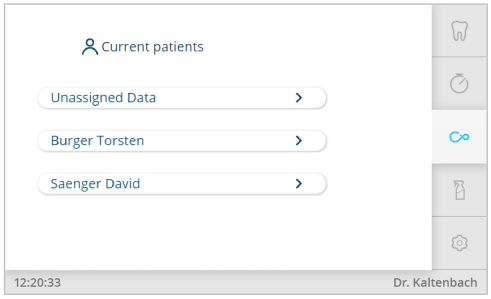
Icon	Feature
	Change to image viewing mode
	Return to image overview
	Confirm action
	Cancel action
	Switch to next or previous image
	Expand or shrink view

Note
CONEXIO can show only those patients who have been entered in the CONEXIO database.

Patient files can be transferred to the treatment centre by one of 3 ways:
1. Transfer patient via VDDS media or Slida interface to CONEXIO in the respective treatment room. The patient is now automatically activated on the treatment centre. This might be an option of your patient management system that is subject to a charge; please contact your IT specialist.
2. Opening the patient file of the patient on the PC workstation in the treatment room. The patient is now automatically activated on the treatment centre.
3. Selecting the patient on the treatment centre. For this to work, the patient must first be listed as the current patient. Refer to: Instructions for Use CONEXIO.

Note
In CONEXIO, options can be assigned to patients, e. g. the option "special hygiene requirements". If a red triangle appears in the top red edge of the "Data selection" menu of the patient, special hygiene requirements must be fulfilled.

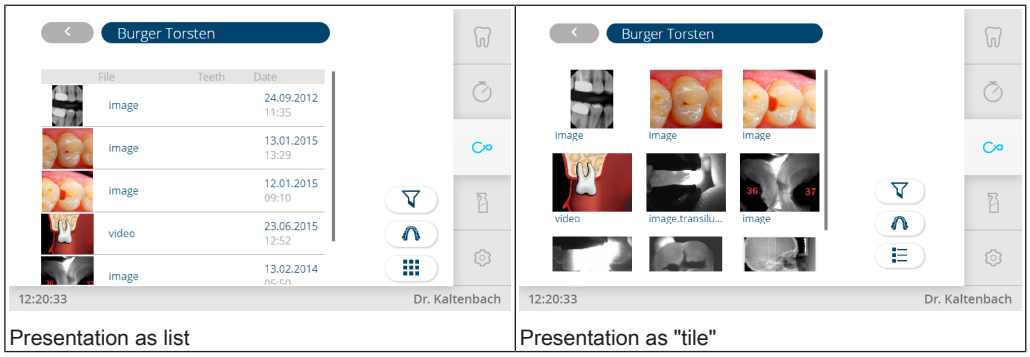
- Select patient from list.



Change view

- Tap list symbol or tile symbol to switch between list and tile view.

⇨ All data will be shown which are available on the selected patient in the CONEXIO.



Presentation as list | Presentation as "tile"

Note
Only a limited number of the available data is displayed if the data have been previously filtered.

- Tap an image or several images for selection.

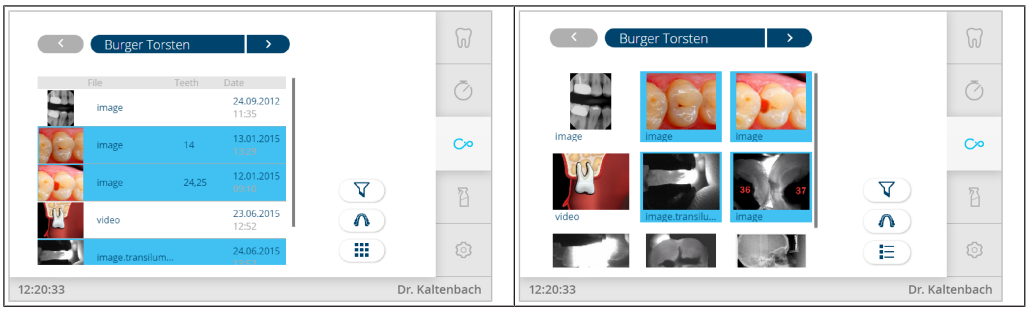
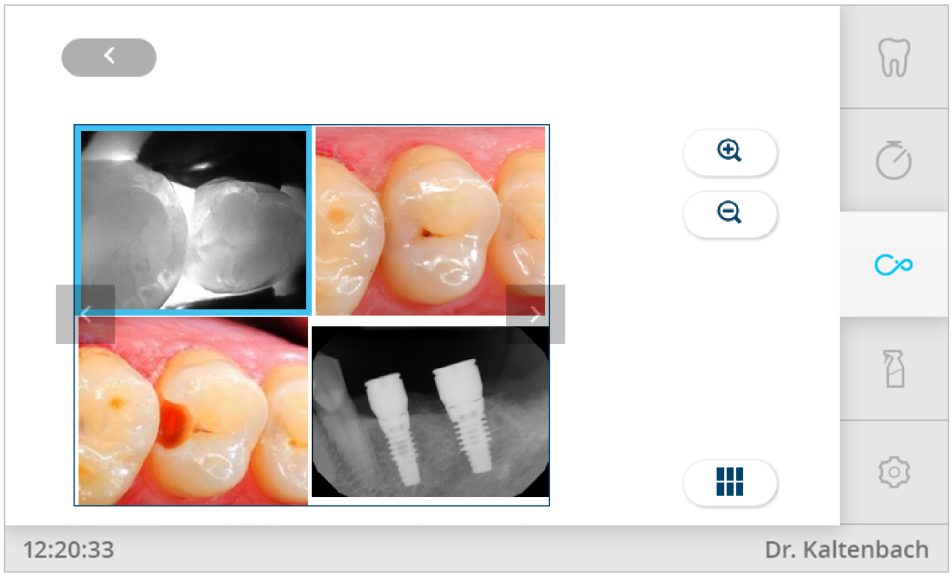


Image viewing mode

Requirement
Image or images are marked.

- Tap arrow key to switch to viewing mode.



A single or multiple image view (up to 6 images) is possible in the image viewing mode.

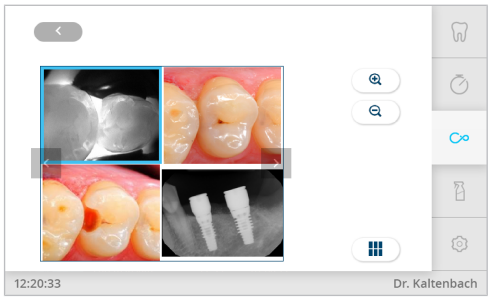
- Tap display symbol for single image, 2-image display, 4-image display or 6-image display to change the number of images.

- Tap "Back" key to exit image viewing mode and switch to "Patient data" view.
- Tap images for selection.

⇨ The selected images are displayed framed in blue.

⇨ Control commands only have an effect on the selected images.

- Tap image again to cancel the selection.

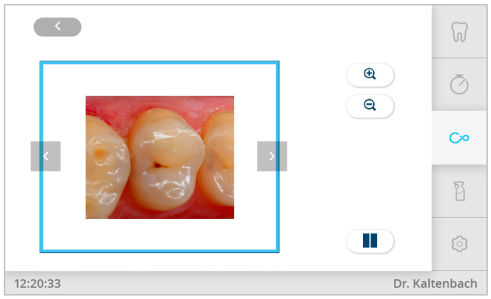


Note
In multiple image display, the selected image can be magnified or made smaller.

Requirement
Image viewing mode is activated.

- Tap the magnifier symbol to display the image magnified or smaller.

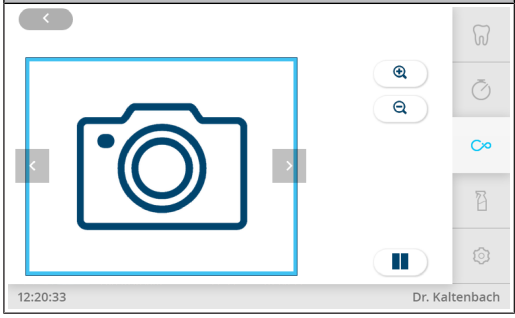
- Tap navigation arrow "left" or "right" to scroll through the images.



- Tap an image or several images for selection.

Menu "CONEXIO" in live image mode

As soon as an imaging device is activated, the "CONEXIO" menu automatically opens in live image mode. The live image mode closes automatically when the imaging device is no longer active.

Image mode	Video mode
	

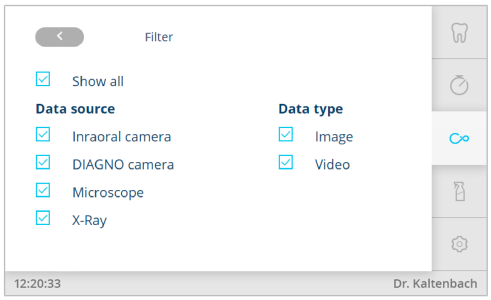
Note
In the image viewing mode, the images created in live view will be displayed in the most recent available windows. Automatically, a display is selected in which all selected images of the database and the "live" created image will be displayed.

Filter

Data can be searched for with the filter option. Filters can be set for the following data:

- Type of recording (filter icon)
- Tooth data (dental chart icon)

- Tap filter symbol to display the filter settings category.

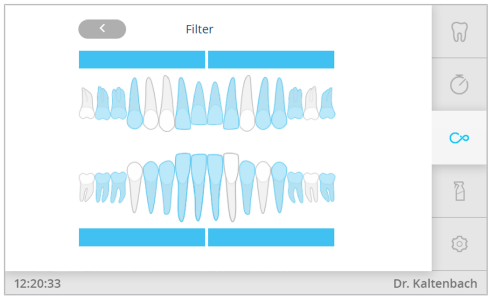


- Activate/deactivate checkbox to define or cancel the filter selection.

- Changes are accepted when you click on "Back".

⇨ The patient data are displayed with the selected filter criteria.

- Tap the "dental chart" icon to display the dental filter category.



Note
To use the "dental chart" filter function, the data must first be furnished with the "dental chart" information in CONEXIO.

- Tap the tooth or teeth individually to display the associated images.
- Tap on "blue bars" to select all teeth of a quadrant.

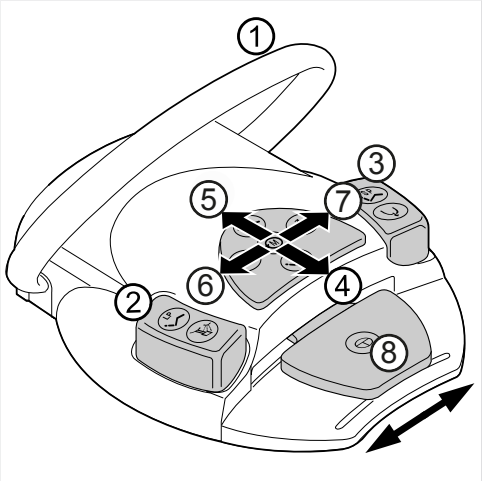
- Tap the "Back" key to confirm the inputs made and to quit the filter view.

⇨ Patient data view is displayed.

Menu "CONEXIO" operate with foot control (subject to charge)

The "CONEXIO" menu can also be controlled via the foot control.

Note
To be able to navigate in the "CONEXIO" menu with the foot control, the "CONEXIO" menu must be open or an imaging device activated. When you switch to the "CONEXIO" menu from another menu, the images of the selected patient are displayed until another patient is selected.



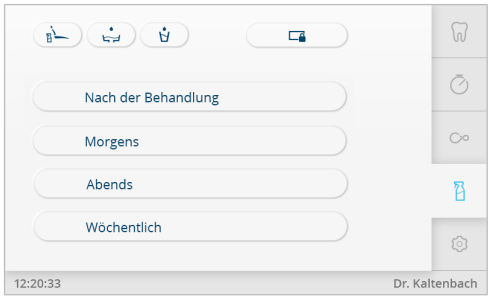
No	Setting
①	U-shaped switch Discard image/video Press briefly - deletes the selected image/video Press long - all images/videos in the clipboard are deleted
②	Previous image/video Select previous image/video
③	Next image/video Select next image/video
④	Screen display The number of displayed images (Split View) is reduced: The live image is always shown as the last image in split view.
⑤	Screen display The number of displayed images (Split View) is increased: The live image is always shown as the last image in split view
⑥	Capture Mode Toggles between the recording modes, video recording and image recording
⑦	Screen display Toggles between full screen and normal view
⑧	Save image/video Press briefly - freezes the live image Press long - saves the live image directly. If no patient is selected, the images are stored directly under "unassigned patient".

Note

The functions can only be used if an imaging device is switched on. Deleted images cannot be recovered. An images that has already been saved cannot be deleted with this function.

4.10.6 Hygiene functions

- Tap the "Cleaning" tab to open the "Cleaning" menu.



The following buttons are available for the hygiene functions:

Key	Function
	Tumbler filler The tumbler is being filled. The filling time can be changed. Automatic tumbler filling (optional accessory): The tumbler is automatically filled when the bowl is pivoted into place.
	Bowl flushing The bowl is being rinsed. The flushing time can be changed. When the rinsing position (SP) is reached, the bowl is rinsed for the complete rinsing time, i.e., the bowl is being wetted. Leaving the rinsing position (SP), the bowl is rinsed for the full rinsing time. Selectable for "Home screen" in "Settings" tab. The function can be disabled by a service technician.
	Lock screen Locks the screen to allow it to be disinfected by wiping it down. Selectable for "Home screen" in "Settings" tab.
	Chair position for cleaning: Bowl pivots into rinsing position (SP) and chair moves into highest position.

- ▸ To activate a function, press the key.
- ▸ For bowl rinsing and tumbler filling only: Press key again in order to discontinue the function.

Changing the settings of the hygiene functions

The following settings can be changed:

- Tumbler filling time
- Time for filling tumbler with the tumbler sensor (optional accessory)
- Bowl rinsing time

Set the bowl rinsing time and tumbler filling time

Set the tumbler filling time

- ▸ Actuate the "Tumbler filler" key for long until the following view is shown.

"Set the tumbler filling time" view

- Confirm tumbler filling time by saving once the desired filling level is reached.
- Tap "x" to quit without saving.

Setting the rinsing time

- Actuate the "Bowl rinsing time" key until the desired rinsing time is achieved and the following view is shown.

- Confirm the bowl rinsing time by saving once the desired rinsing time is reached.
- Tap "x" to quit without saving.

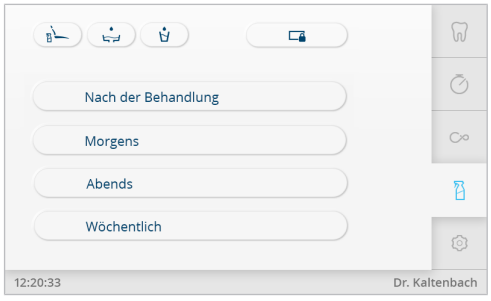
Note
A technician can block the setting of the time.

4.10.7 Cleaning menu

A selection from four different cleaning programmes can be made in the "Cleaning" menu:

- After treatment
- Morning
- Evening
- Weekly

- Tap the "Cleaning" tab to open the "Cleaning" menu.



See also:
Servicing instructions E70 Vision / E80 Vision

4.10.8 Using other functions.

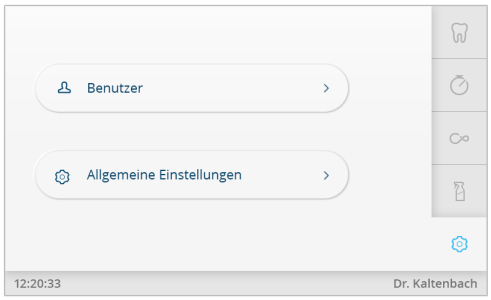
The following other keys are available for operation:

Key	Function
	X-ray viewer (supplementary accessory) is turned on/off. X-ray image viewer On: Key is active. X-ray image viewer Off: Key is inactive. Selectable for "Home screen" in "Settings" tab.

4.10.9 Settings menu

Changes to the following areas can be made in the "Settings" menu:

- User
- Global settings

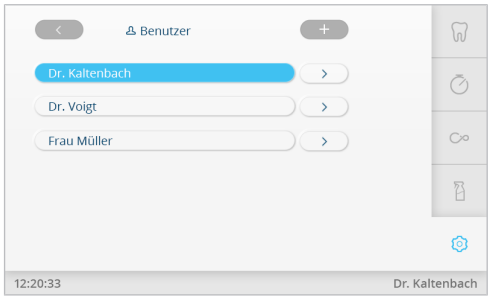


- ▸ Tap the "User" key to display or edit the user settings.
- ▸ Tap the "Global settings" key to display or edit the user settings.

User settings

The following items can be selected in the "User" menu:

- User
- Types of treatment
- Language
- Light
- Home screen



- ▸ Tap the "+" key to enter a new user.
- ▸ Tap the arrow key to the right of the user to make individual settings.
- ▸ Tap the user name to edit settings.

User settings

- Tap the "DELETE USER" key to delete a user.
- Tap the "Back" key to switch to user overview.
- Tape the "Type of treatment" key to edit the types of treatment.

Types of treatment

- Tap the key of the type of treatment to be changed, e.g. "Excavation", and rename the type of treatment.

Rename the type of treatment

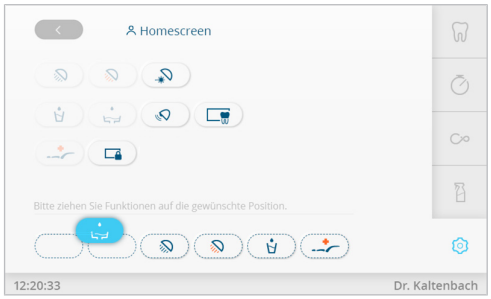
- Tape the "Language" key and select a language.

Select a language

- Tap the "Lamp" key to edit the lamp settings.

Lamp settings

- Tap the "Home screen" key to configure the home screen with up to six direct keys.
- Draw the respective key to where you want it.

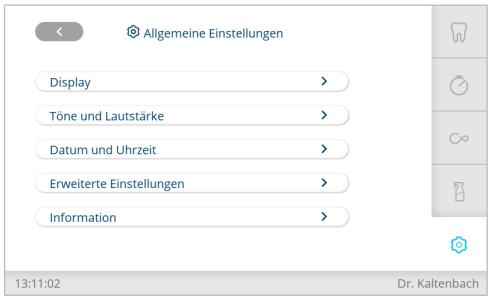


Select direct keys

Global settings

The following items can be selected in the "Global settings" menu:

- Display
- Sounds and volume
- Date and time
- Advanced settings
- Information



Global settings

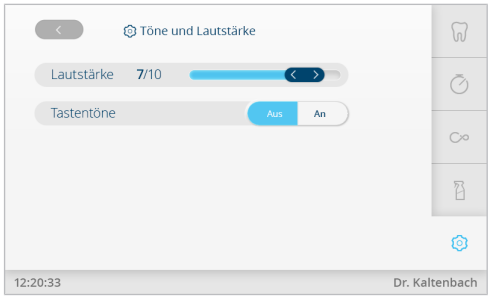
Display

- Tap the "Display" key to set the brightness and the time until activation of standby mode.

Global settings / Display

Sounds and volume

- ▸ Tap the "Sounds and volume" key to set the key sounds and the volume.



General settings / Sounds and volume

- ▸ Use the sliders or arrow keys to make settings.

Date and time

- ▸ Tap the "Date and time" key to set the date and the time of day.

or

- ▸ Tap the time in the status bar until the window for setting the time is displayed.

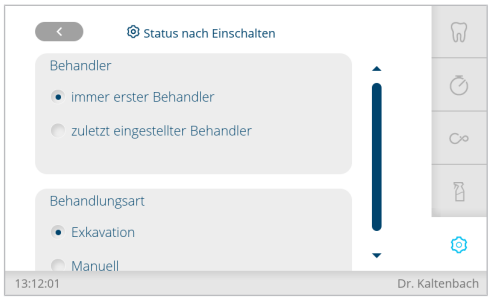
General settings / Date and time

Advanced settings

The following items can be set in the "Advanced settings" menu:

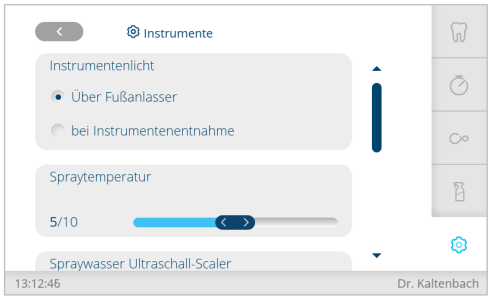
- Status after the unit is switched on
- Handpieces
- Tumbler and bowl
- Boiler temperature
- Foot control
- Operating light
- Weekly cleaning
- Suction system

- Tap the "Status after switch on" to define the "practitioner" and the "type of treatment" to be selected after the unit has been switched on.

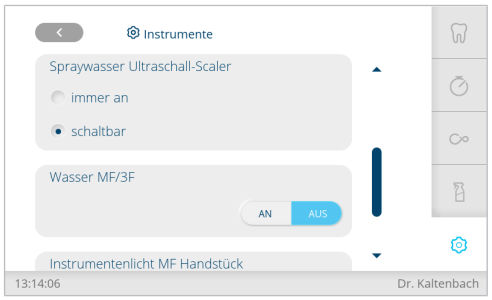


Advanced settings / status after the unit is switched on

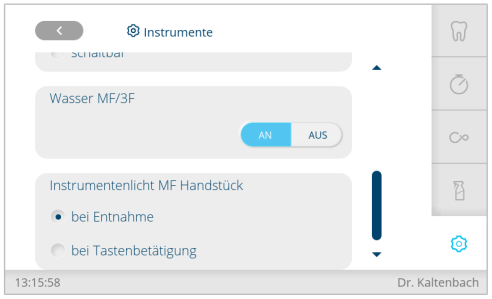
- Tap the "Handpiece" key to make the following settings:
  - Handpiece light and spray temperature
  - Spray water for ultrasonic scaler
  - Water for triple / multifunctional handpiece
  - Handpiece light of the multifunctional handpiece



Advanced settings / Handpieces

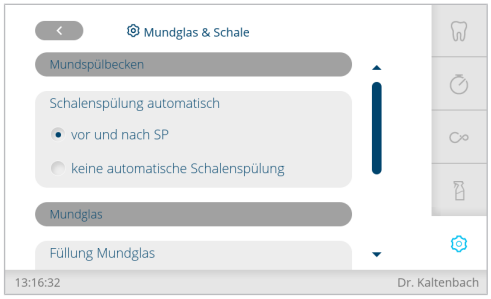


Advanced settings / Handpieces



Advanced settings / Handpieces

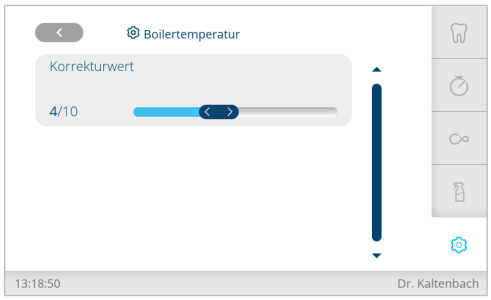
- Tap the " Tumbler & bowl" key to make the following settings:
  - Automatic bowl rinsing
  - Tumbler filling and tumbler sensor



Advanced settings / Tumbler and bowl

Advanced settings / Tumbler and bowl

- The "Boiler temperature" key to set the boiler temperature.

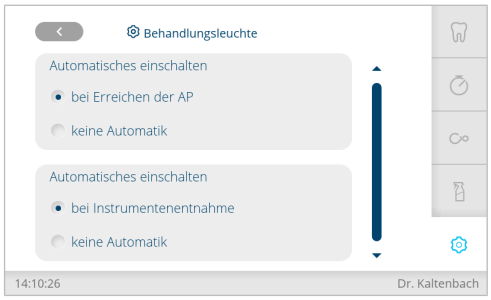


Advanced settings / Boiler temperature

- Tap the "Foot control" key to set the foot control mode.

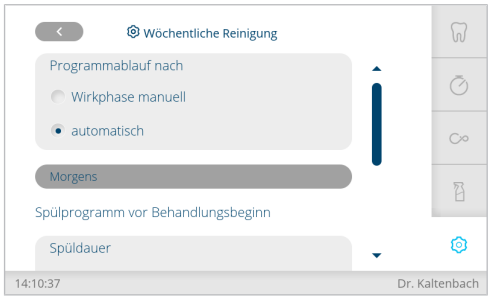
Advanced settings / foot control

- Tap the "Operating light" key to set the automatic activation of the operating light.

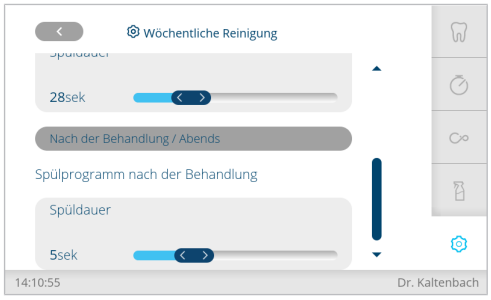


Advanced settings / Operating light

- Tap the "Weekly cleaning" key to make the following settings:
  - Weekly cleaning
  - Handpiece rinsing time in "Mornings" rinsing programme
  - Handpiece rinsing time in "After treatment / Evenings" rinsing programme

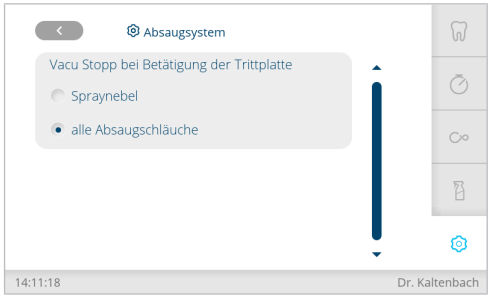


Advanced settings / Weekly cleaning



Advanced settings / Weekly cleaning

- Tap the "Suction system" key to set Vacu-Stopp.

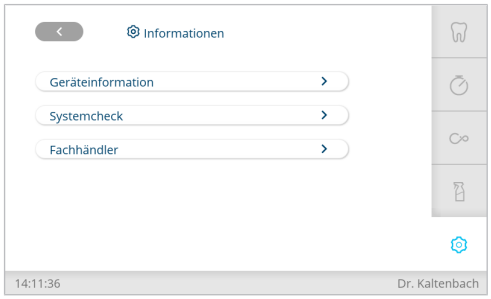


Advanced settings / Suction system

Information

The following items can be selected in the "Information" menu:

- Device information
- System check
- Specialised dealers

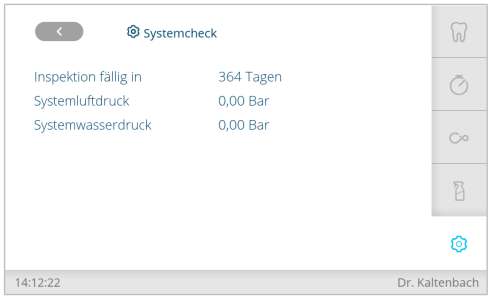


Global settings / Information

- Tap the "Device information" key to display information about the device.

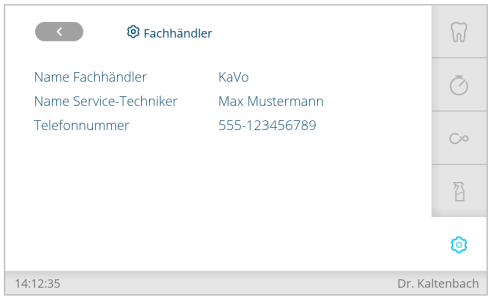
Information / Device information

- Tap the "system check" key to open the system check.



Information / System check

- Tap the "Specialised dealer" key to display specialised dealers.



Information / Specialised dealers

4.11 Using the functions through the assistant unit controls

4.11.1 Using the chair functions

⚠ CAUTION

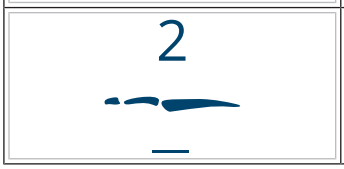
Motorised movement of the chair

The patient or treatment personnel can be clamped or crushed.

- Monitor the patient and treatment personnel when changing the patient's position.

Selecting the automatic chair position

The chair can be automatically positioned using the following buttons:

Key	Function
	Move to the rinse position.
	Move to most recent position before actuation of the SP.
	Move to automatic position 0.
	Move to automatic position 1.
	Move to automatic position 2.

- ▸ Briefly press the desired button.

⇨ Chair automatically moves to the saved position.

⇨ The key is activated as soon as the saved position is reached.

4.11.2 Using the hygiene functions

The following buttons are available for the hygiene functions:

Key	Function
	Tumbler filling key The tumbler is being filled. The filling time can be changed. Automatic tumbler filling (optional accessory): The tumbler is automatically filled when the bowl is pivoted into place.
	Bowl flushing The bowl is being rinsed. The flushing time can be changed. When the rinsing position (SP) is reached, the bowl is rinsed for the complete rinsing time, i.e., the bowl is being wetted. Leaving the rinsing position (SP), the bowl is rinsed for the full rinsing time. (The function can be deactivated by a service technician).

- ▸ To activate a function, press the button.
- ▸ Press the button again to terminate the function.

4.11.3 Using the light functions

The following keys are available for use of the light functions:

Key	Function
	press briefly: The operating light is turned on and off ▪ Operating light On: Key is active ▪ Operating light Off: Key is inactive
	press long until the Settings menu is displayed on the dentist element: The brightness of the operating light can be set to one of five levels.
	press briefly: COMPOsave mode (dimmed normal light) of the operating light switches on/off. ▪ COMPOsave mode On: Key is active ▪ COMPOsave mode Off: Key is inactive
	press long until the Settings menu is displayed on the dentist element: ▪ When the COMPOsave mode is set, the brightness for the COMPOsave mode can be set to one of five levels ▪ When Dim mode is set, the brightness for the Dim mode can be set to one of five levels
	Press down both keys together Switch laser mode on/off.

4.11.4 Using the timer

Three timers can be opened. The timers are set on the dentist controls.

See also:
Using the timer

Select the timer time

▸ To start a timer time, e.g. Timer 1, press the "Timer 1" key.

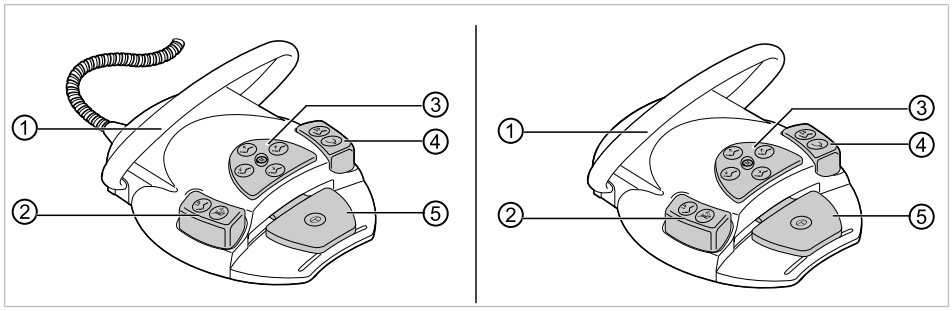
⇨ Time on the timer starts to run. A beep is issued after the timer time is elapsed.

▸ Press the selection button again to stop the timer time.

4.12 Using the foot control

4.12.1 General functions

The footswitches of the foot control have two functions. The function of the control depends on whether an instrument is in its holder or whether it has been removed.



Foot control (left)/wireless foot control (right)

Item	with a mounted instrument	with a removed instrument
①	U-shaped switch	
②	"LP" foot-operated button	„Preselected spray“ foot switch
③	Cross-switch: "Manual operation of patient chair"	Cross-switch: "Counterclockwise motor rotation"
④	"SP" foot-operated button	"Blower air" footswitch:
⑤	Foot control „Select type of treatment“	Foot control instruments: "On/Off and Intensity“

4.12.2 Special functions of the wireless foot control

⚠ CAUTION

Electrical power

Personal injury or damage to the wireless foot control.

- The user must never touch the charger connector and the patient at the same time!
- Do not touch the contacts of the charger connector!

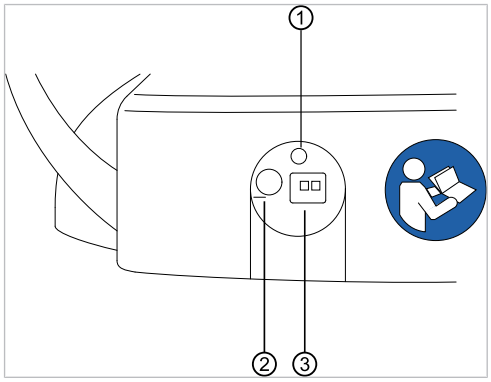
⚠ CAUTION

Damage or malfunction due to improper servicing.

Reduced product life.

- Comply with the information provided in the servicing instructions to ensure correct servicing!

The wireless foot control transmits the user activities to the treatment centre in a wireless manner.



Rear of the wireless foot control

Item No.	Labelling	Function
①	LED display	Status display / charge status display

Item No.	Labelling	Function
②	On/Off switch	On/off switch to prevent deep discharge during long periods of non-use. The wireless foot control can remain switched on at all times as a matter of principle. The device must be switched off for transport. The battery can also be charged when it is switched off.
③	Charge socket	Charge socket for the provided charger (**Mat. no. 1.005.4229**).

The battery charge of the wireless foot control is indicated by the LED display and is signaled by a tone.

Residual capacity	Foot control status	Status display / charge status display	Beep
< 100 %	Idle state Foot control is on	Flashes green (approx. 2 second intervals)	-
	Active actuation	Flashes green (approx. 200 millisecond intervals)	-
< 30 %	Idle state Foot control is on	Flashes yellow (approx. 2 second intervals)	A single brief beep when a button is pressed.
	Active actuation	Flashes yellow (approx. 200 millisecond intervals)	A single brief beep when a button is pressed.
< 10 %	Idle state Foot control is on	Flashes yellow (approx. 2 second intervals)	Two brief beeps when a button is pressed.
	Active actuation	Flashes yellow (approx. 200 millisecond intervals)	Two brief beeps when a button is pressed.

⚠ CAUTION

Critical battery level

If the battery reaches a critical charge status, a signal is sounded every time a function key is pressed.

- Always charge batteries when necessary.
- To ensure that the battery of the wireless foot control is always charged in a timely manner, note the visual and acoustic signals of the wireless foot control when starting the treatment unit.

4.12.3 Create a connection between the wireless foot control and treatment unit

⚠ CAUTION

Loss of functionality due to interruption of wireless connection

Other coexistent wireless devices, which are working in the same frequency band, could disturb the wireless connection of the foot control. Radio signals could be influenced by each other, if two or more wireless foot controllers or other wireless devices will be used in the same working environment.

- Separate channels must be selected in this case. A different channel has to be selected if there are interferences with other devices.

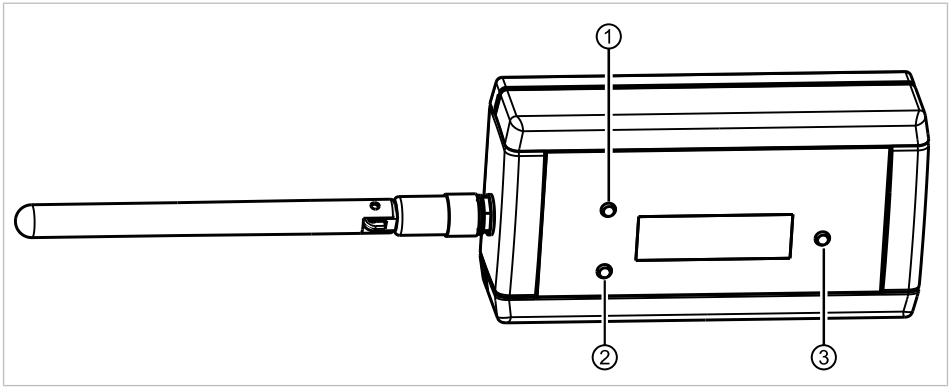
Note

Only one wireless foot control per treatment centre can be registered to a RF receiver. If another foot control was previously registered, the last foot control to be registered will be deleted with every new start of the synchronisation process.

Note

Every wireless foot control and every RF receiver has a unique address, which can be exchanged during the synchronisation procedure. This ensures unambiguous assignment.

The different wireless foot controls operate on different channels in order to prevent interference during the application of several wireless foot controls.



RF receiver

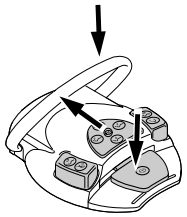
① "Up" key
② "Down" key
③ "Confirmation" key

To establish a connection between the wireless foot control and the treatment unit, the devices need to be synchronised. Synchronisation needs to be performed once by a service technician.

- Use the "Up" or "Down" keys to select the menu item "Login", and activate with the "Confirm" key.

⇨ Synchronisation starts. The currently set channel is displayed.

A combination of keys must be entered on the wireless foot control in the proper sequence during a countdown of 30 seconds.



- Press the foot pedal, then move the cross switch toward "Chair up", and then actuate and hold the stirrup switch until OK appears on the display.

⇨ If synchronisation is successful, the message "OK" appears on the display, and the status LED of the radio-operated foot control shines green for 5 seconds.

If the keys are not pressed within the 30 second countdown period or if the keys are in the incorrect sequence, synchronisation is terminated after the 30 second period is over.
The display indicates if synchronisation was successful.

Display	Meaning
– timeout –	A radio partner was not found.
– ok –	The radio partner was successfully trained. The connection is established.
– Invalid device –	An attempt was made to train a device that was not permitted for the terminal. The RF receiver can only be synchronised with the wireless foot control.

- If synchronisation is unsuccessful, repeat the process, make sure that the sequence is correct and observe the countdown time.
- After synchronisation on the RF receiver is successful, press the "Up" or "Down" keys to select the menu item "Exit", and end the service mode with "OK".

⇨ The set values will be accepted and saved.

Note

Since there is no cable connection, the foot control and treatment centre must be unambiguously assigned to each other. This assignment can be effected by identifying the wireless foot control through a self-selected designation (such as the number of the treatment room) on the rating plate of the wireless foot control.

Example of the identification of the wireless foot control

⚠ CAUTION

Improper use of the wireless foot control

Damage or malfunction

- In case of improper use (such as cleaning), turn off the wireless foot control or the treatment unit.

4.12.4 Position the patient chair with the foot control

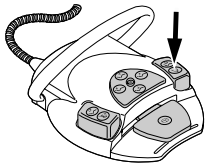
Automatically position the patient chair with the foot control

Note
The automatic chair positioning must be monitored by the treatment personnel.

Selecting the automatic chair position

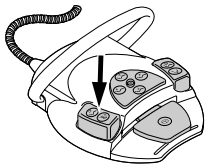
Note
The foot-operated buttons "SP" and "LP" can also be assigned any "AP" buttons.

Delivery status:
- Spray key: LP Automatic position
- Blown air key: SP Automatic position



▸ Press the "SP" foot-operated button.

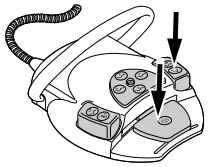
or



▸ Press the "LP" foot-operated button.

⇨ The chair moves into the saved position.

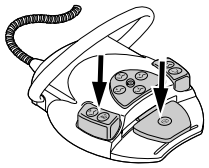
Reassign "SP" or "LP" foot buttons



▸ Hold down the foot control and foot-operated button "SP", and simultaneously press any button for an automatic position (SP, LP, AP 0 to AP 3 or collapsed position) on the dentist or assistant element until you hear a tone.

⇨ The automatic position is saved to the foot-operated button.

or



▸ Hold down the foot control and foot-operated button "LP", and simultaneously press any button for an automatic position (SP, LP, AP 0 to AP 3 or collapsed position) on the dentist or assistant element until you hear a tone.

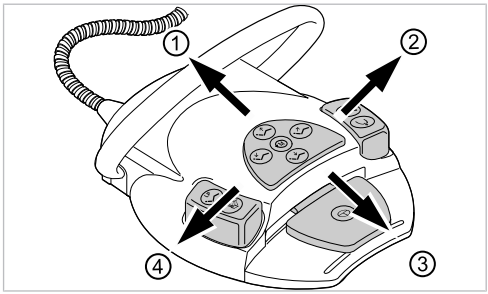
⇨ The automatic position is saved to the foot-operated button.

Manually position the patient chair with the foot control

The 4-way switch of the foot control assumes the function of the button wheel (function level 1) on the dentist element during manually positioning of the patient chair.

See also:

4.5.4 Positioning the dental chair manually, Page 53

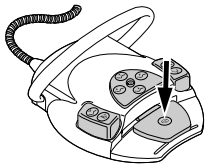


Requirement
All instruments are in their holder.

- Chair up: Move the cross switch on the foot control in direction ①.
- Chair down : Move the cross switch on the foot control in direction ③.
- Backrest up: Move the cross switch on the foot control in direction ②.
- Backrest down: Move the cross switch on the foot control in direction ④.

4.12.5 Pre-selecting the type of treatment

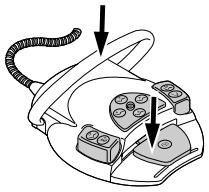
Requirement
"Next treatment mode" is activated in Advanced settings / Foot control.



- With the handpieces stored, press the foot pedal.

⇨ The type of treatment advances upon each actuation of the foot pedal.

4.12.6 Preselect dentist



- Hold down the foot pedal and press the stirrup switch (with handpieces stored).

⇨ Up to six users can be programmed. This can be set in "User" in the "Settings" tab.

4.12.7 Start and regulate instruments

Note
The footpedal is equipped with a middle centring function: The footpedal always returns to the middle position after being moved to the left or right in the operating modes, excavation, preparation and prophylaxis.

⚠ CAUTION

Centring in the middle is effected for the wireless foot control by a positioning motor.

If the positioning motor breaks down, switching from or into the middle position using the wireless foot control is no longer feasible. The type of treatment can still be selected, but the foot pedal does not leave the middle position and cannot switch into the middle position. The speed currently set on the wireless foot control is always shown on the display of the treatment unit.

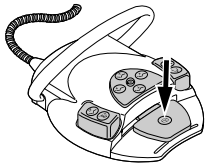
- Charge battery.
- If centring in the middle does not work despite the batteries being charged, the positioning motor is defective. Have the positioning motor checked!

Note

Delays can arise after a function has been triggered if the wireless connection of the wireless foot control is problematic.

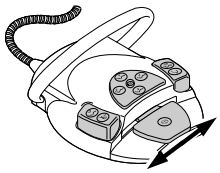
- Take the handpiece (e.g., turbine, motor, PiezoLED, etc.) from the holder.

⇨ The handpiece is active.



- Press the footpedal.

⇨ The removed instrument runs at the set speed or intensity.



- Changing speed or intensity with the foot pedal.

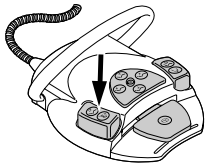
⇨ The left stop corresponds to the minimum speed/intensity.

⇨ The right stop corresponds to the maximum speed/intensity.

4.12.8 Setting the cooling condition

- Remove the handpiece (such as turbine, motor) from the holder

⇨ The handpiece is active.



- Press "Preselected spray" footswitch.

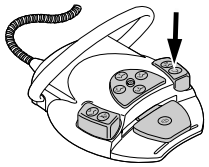
⇨ The cooling level is raised each time the footswitch is pressed: no cooling - air - spray.

⇨ The cooling level is displayed on the dentist's and assistant's element.

4.12.9 Actuate blown air

- Remove the handpiece (such as turbine, motor) from the holder

⇨ The handpiece is active.



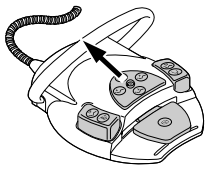
- Press the "Blown air" foot button.

⇨ As long as the footswitch is pressed, blown air exits the removed handpiece (not with the PiezoLED)

4.12.10 Preselect counterclockwise motor rotation

- Take motor off the holder.

⇨ The handpiece is active.



- Slide the cross switch upward.

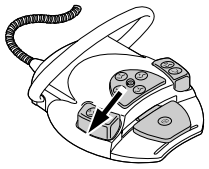
⇨ The direction of motor rotation is toggled each time the cross-switch is pushed: counterclockwise rotation - clockwise rotation.

⇨ The direction of motor rotation is displayed by the active symbol on the dentist element.

4.12.11 Adjusting the instrument light

- Slide the cross switch to the right. (spotlight function)

⇨ Cold light "On" (even when Cold light: "Off" is preselected).



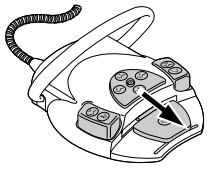
- Slide the cross switch to the left.

⇨ Change the cold light status: "On/Off"

4.12.12 Use physiological saline solution (optional accessory)

Requirement
Treatment centre is turned on. The handpiece is connected to the pump via the pressure line.

- Remove the handpiece.



- Press the cross-switch of the foot control for 4 seconds until you hear the signal.

- After activation, select the "NaCl" cooling on the dentist control unit.

4.12.13 Charge the wireless foot control

The wireless foot control is operated by means of an installed rechargeable battery.

⚠ CAUTION

Risk of injury and material damage from incorrect use of the charger for the wireless foot control.

Personal injuries, damage to the wireless foot control or the charger.

- Do not use the treatment unit during the charging process!
- Do not use the wireless foot control charger supplied to charge non-rechargeable batteries.
- Charge the wireless foot control with the charger supplied only.

Note

Charge the wireless foot control with the charger supplied by KaVo only.

Note

The wireless foot control charger may only be used indoors and must be protected from moisture.

- Connect the charger to the wireless foot control.

The charger display communicates the following:

Display	Meaning
shines green	The unit is ready
shines yellow	The battery is being charged
Shines weak green	Battery is charged
does not shine	The battery is dead, or there is a short-circuit
	The battery voltage is above the tolerance range
	Reversed poles

The transition from charging to full is indicated by the fluttering of the display.

4.13 Using instruments

Note

Consult the separate instructions for the installation, operation and maintenance of the individual handpieces (such as the turbine, COMFORTdrive, camera, Satelec Mini LED, PiezoLED etc.).

4.13.1 Holder logic

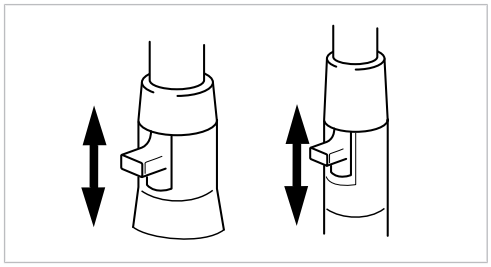
All handpieces on the dentist's side are secured against simultaneous use by holder logic. If an handpiece has been removed when the unit is switched on, the relevant holder will not be activated until the relevant handpiece has been replaced.
Only the withdrawn handpiece is active, i.e., any handpiece that is withdrawn afterward is not started. Exception: MF handpiece (parallel operation is possible here).

4.13.2 Using suction hoses

- Remove the spray mist suction device or saliva ejector from the holder.

⇨ The spray mist suction device or saliva ejector automatically turns on, and then when it is placed in the holder, it turns off.

The suction flow of the saliva ejector or spray mist suction device can be reduced or blocked with the slide valves integrated in the handpieces.



- Move the slide valve completely upward.

⇨ The slide valve is open: maximum suction.

- Move the slide valve down all the way.

⇨ The slide valve is closed: no suction.

Note

Connectors for the spray mist suction and the saliva ejector without slider as well as reducing pieces for the spray mistsuction are available as accessories.

- Short cannula holder for the spray mist suction (**Mat. no. 0.764.5783**)
- Long cannula holder for the spray mist suction (**Mat. no. 0.764.5853**)
- Short cannula holder for the slather extractor (**Mat. no. 0.764.5863**)
- Cannula adapter for the reducing handpiece at 7 mm (**Mat. no. 0.764.5873**)
- Cannula adapter for the reducing handpiece at 11 mm (**Mat. no. 0.764.5883**)

Vacuum stop

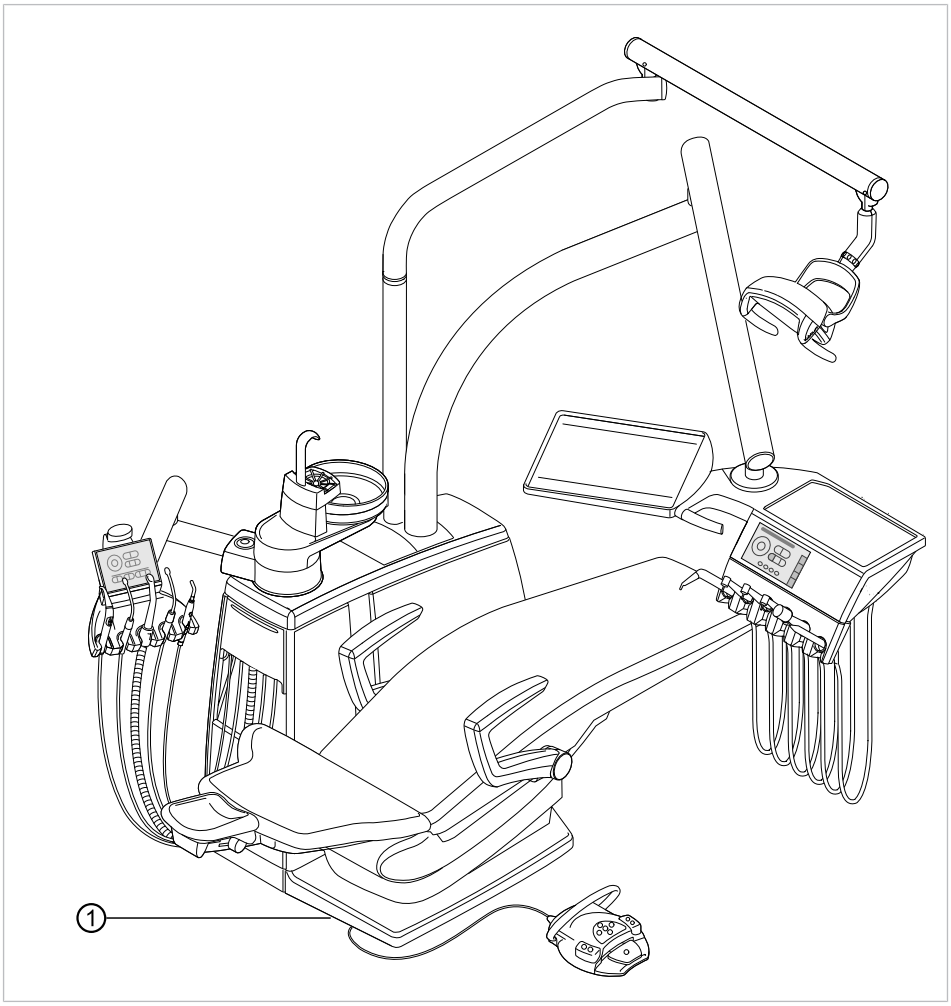
⚠ CAUTION

Danger of backflow

Swallowing or choking hazard for the patient

- Only actuate the vacuum stop when the suction cannula is not in the patient's mouth.

When the base switch is actuated, the suction of the removed hose is stopped.



① Chair kick plate

Note

For units with a BS selective holder, a service technician can set the vacuum stop function to either stop all suction hoses or only stop the spray mist suction when the saliva ejector is simultaneously activated.
This setting is not possible if a BS selective holder is not provided All sunction hoses are switched off in the case of Vacu-Stop

When delivered, the spray mist suction only stops when the vacuum stop function is used.

4.13.3 Using the three-function handpiece

⚠ CAUTION

Cannula that is worn or not locked into place.

Injury from swallowing the cannula.

- Before each treatment, ensure that the cannula is locked into place and firmly seated.
- Use original KaVo cannulas only.
- Only use reliable cannulas showing no damage.

⚠ CAUTION

Risk of injury from touching the cheek with the handpiece.

Irritation of the mucosa.

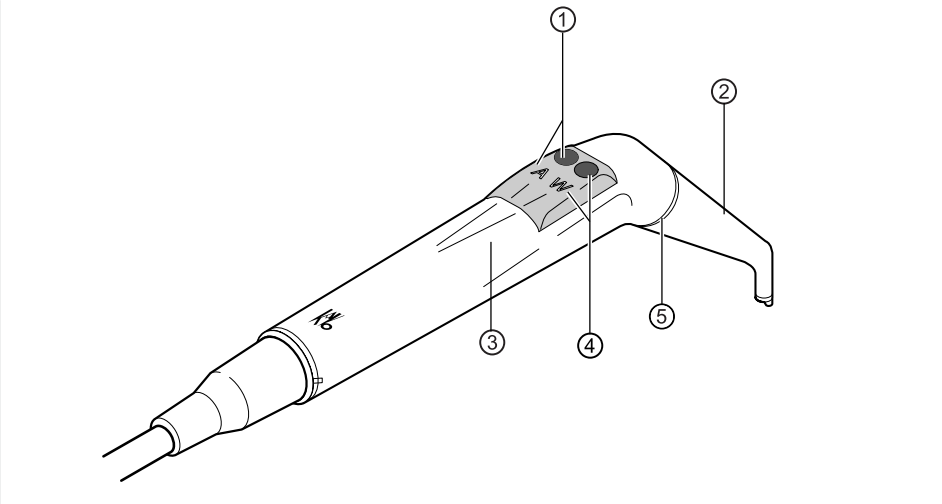
- Rotate the cannula of the handpiece into an operating position where there is no contact of the mucosa.

⚠ CAUTION

Insufficient clearance between cannula and surface of gums or gingiva.

Injury hazard.

- Adhere to a minimum clearance of 10 mm between cannula and surface of gums or gingiva.



① Air button (A)
② Cannula
③ Gripping sleeve
④ Water button (W)
⑤ Ring blue

Note

The cannulas can be rotated 360°..

- Remove the turbine from the holder.
- Press the air button ① and continuously increase or decrease the exiting air flow by applying more or less pressure on the air button ①.

or

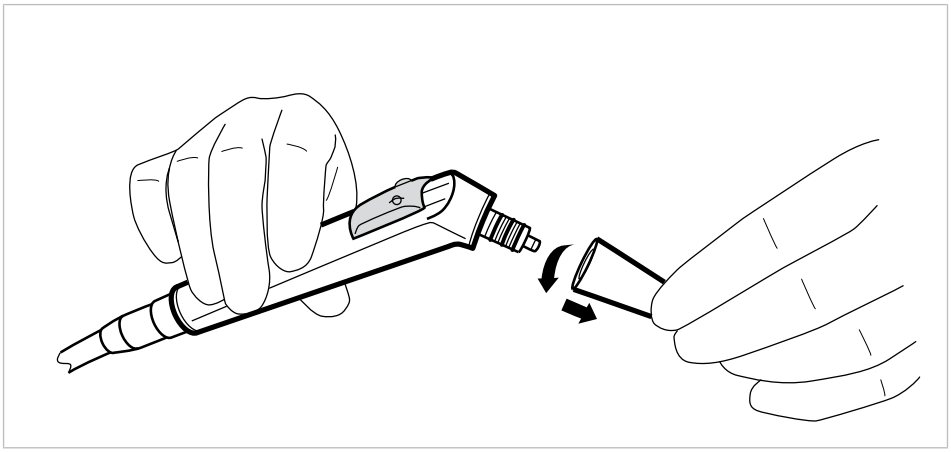
- Press the water button ④ and continuously increase or decrease the exiting water jet by applying more or less pressure on the water button ④.

or

- Simultaneously press the air button ① and water button ④ and continuously increase or decrease the exiting spray by applying more or less pressure on the two buttons.

Removing the cannulas

- Hold the 3-way or multifunctional handpiece at the gripping sleeve and take off the cannula with a slight twisting motion.



4.13.4 Using the multifunctional handpiece

⚠ CAUTION

Risk of injury from touching the cheek with the handpiece.

Irritation of the mucosa.

- Rotate the cannula of the handpiece into an operating position where there is no contact of the mucosa.

⚠ CAUTION

Cannulas that are worn or not locked into place.

Injury from swallowing the cannula.

- Before each treatment, ensure that the cannula is locked into place and firmly seated.
- Only use original KaVo cannulas.

⚠ CAUTION

Insufficient clearance between cannula and surface of gums or gingiva.

Injury hazard.

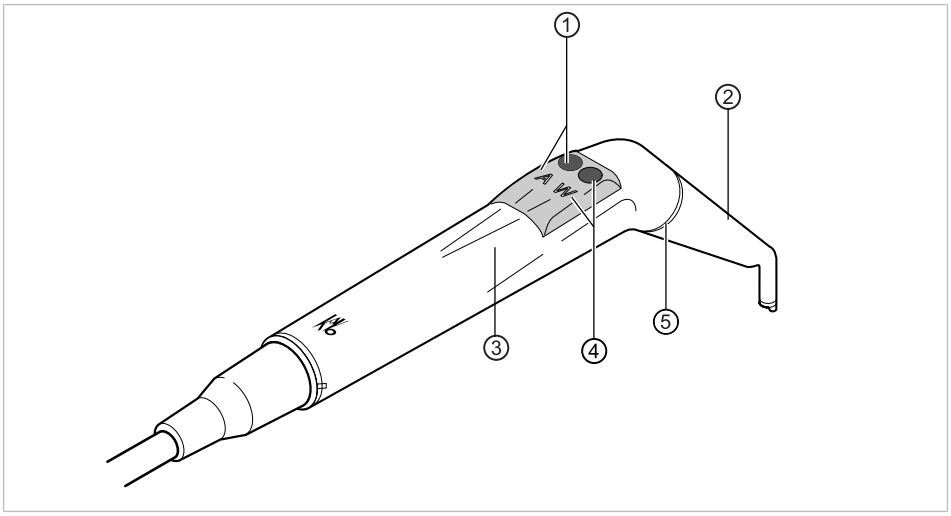
- Adhere to a minimum clearance of 10 mm between cannula and surface of gums or gingiva.

⚠ CAUTION

Damage due to missing media.

Air and water heating systems are destroyed.

- Check if the air and water are connected.
- Check the air and water supply!
- If possible, switch the heating off at the unit when putting into operation for the first time or after servicing! Press the buttons carefully several times until the media are available. Then activate heating and check its operation.



① Air button (A)
② Cannula
③ Grip sleeve
④ Water button (W)
⑤ Ring gold

Note

Cannulas can be rotated by 360°.
The "on" time for the handpiece with heating is 5 minutes with a resting time of 3 minutes.

Note

If only the cold light is preselected (heater: off), the multifunctional handpiece shines when it is removed from the holder.

- Remove the turbine from the holder.
- Adjusting the air/water heating.
- Check the passage for the media in the cannula ② each time before using it on a patient.
- Press the air button ① and continuously increase or decrease the exiting air flow by applying more or less pressure on the air button ①.

or

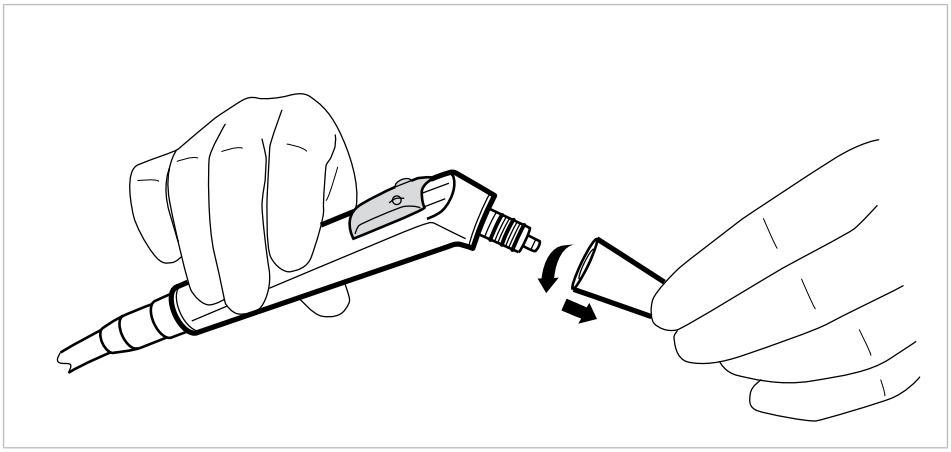
- Press the water button ④ and continuously increase or decrease the exiting water jet by applying more or less pressure on the water button ④.

or

- Simultaneously press the air button ① and water button ④ and continuously increase or decrease the exiting spray by applying more or less pressure on the two buttons.

Removing the cannulas

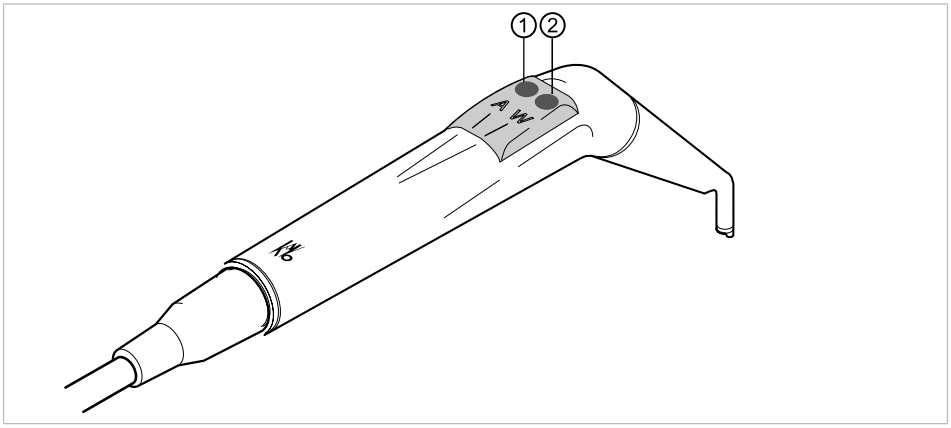
- Hold the handpiece at the taper sleeve and take off the cannula with a slight twisting motion.



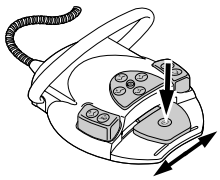
Using the cold light

Requirement
The light and heating are preselected.

- Setting the cold light intensity.
- Press the air button ① and/or the water button ②.



or



- Press the "Handpieces" foot pedal.

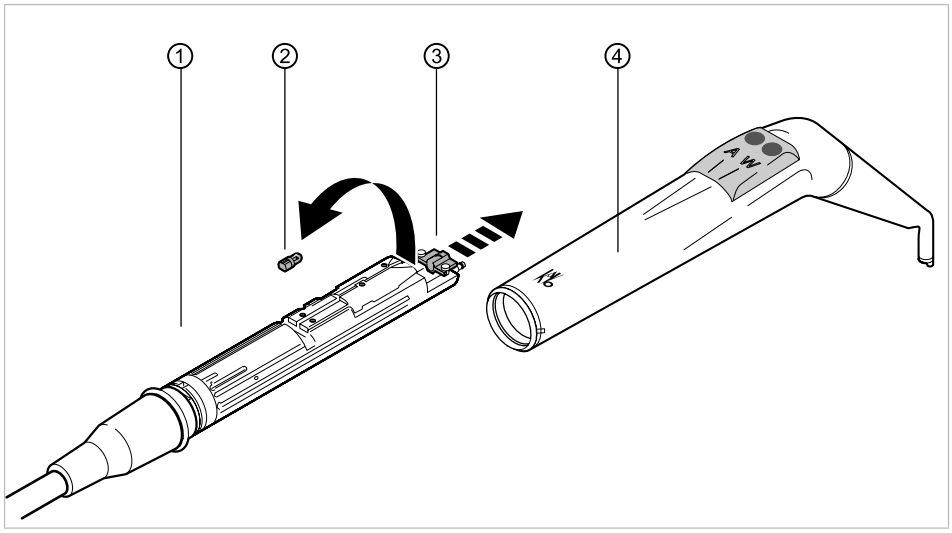
⇨ The light turns on.

Replacing the lamp

⚠ CAUTION

Danger of injury from a hot valve body.
Risk of burn injury.

- Switch main device switch off.
- Allow the instrument to cool down after extended use.



- Pull off the grip sleeve ④ together with the cannula from the valve body ①.

Replacing the high-pressure lamp

- Push the holder ③ towards the front and draw and remove the defective high pressure lamp ② from its holder.
- Install a new high pressure lamp (**Mat. no. 1.002.2928**).

Replacing the KaVo MULTI LED lamp

Note
The KaVo MULTI LED bulb is a semiconductor element and may only be operated with direct current. To ensure proper function, the poles need to be inserted correctly.

- Push the holder ③ forward and pull the defective KaVo MULTI LED lamp ② out of the socket.
- Insert new Kavo MULTI LED lamp (**Mat. no. 1.007.5372**).

The following may happen after you turn on the KaVo MULTI LED lamp:

- Case 1: KaVo MULTI LED lamp is on.
- Case 2: KaVo MULTI LED lamp is faint.
- - Increase the cold light intensity on the unit until the desired light intensity is reached.
- Case 3: KaVo MULTI LED lamp is red or off.
- - Take KaVo MULTI LED lamp out of its socket as described above and re-insert it after rotating it 180° about its axis.

4.13.5 Using the PiezoLED

⚠ CAUTION
Handpiece inserts can be damaged from long-term use, or when dropped or bent.
They cannot be guaranteed to function properly.
Injury from insert breakage.
- Check the handpiece inserts before each use.

⚠ CAUTION

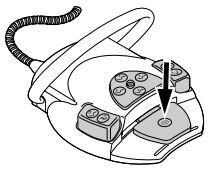
Sharp-edged tips.
Risk of injury.
- When not in use, always keep the supplied torque wrench attached to the tip!

Note
Please comply with the enclosed "PiezoLED" Instructions for Use.

Operation by means of the touchscreen

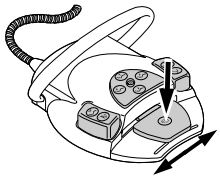
See also:
Changing settings for the PiezoLED

Operation with the foot control



- Press the "Instruments" foot pedal.

⇨ The PiezoLED works at the set intensity at levels 1 through 3.

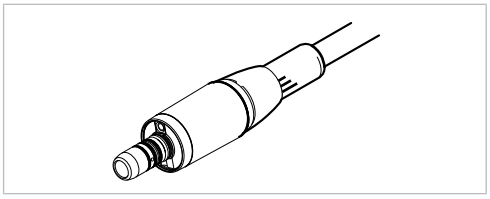


- To adjust the intensity, move the "Instruments" foot pedal to the side.

4.14 Using the KL 703 LED in ENDO mode (optional accessory)

4.14.1 General information

Note
The endo drive can only be operated with the INTRA LUX KL 703 LED.


INTRA LUX KL 703 LED

⚠ CAUTION

Use of impermissible filing systems.

Do not use impermissible filing systems which can damage the product or cause personal injury.

- Only use approved NiTi filing system with a conicity >2% that are suitable for rotary preparation.
- Only use files with shafts in conformance with DIN EN ISO 1797-1, DIN EN ISO 1797-2, DIN EN ISO 3630-1 and DIN EN ISO 3630-2 having a shaft diameter of 2.334 to 2.350 mm
- Follow manufacturer's instructions (mode of operation, speed, torque levels, torsion resistance, etc.), and use the files according to their intended use.

⚠ CAUTION

Use of damaged files.

Injury to the patient or damage to the medical device.

- Before preparing each root canal, insert a dental dam for safety reasons.
- Before each use, the files must be checked for possible signs of material fatigue, deformation or excessive stress and if such signs appear, they must be replaced.

⚠ CAUTION

Incorrect transmission ratio.

Damage from incorrect speed / incorrect torque.

- Only use KaVo 1:1 reducing shanks 20LH or 20LP or MASTERmatic LUX M20 L with 1:1 INTRA LUX head L68 B (**Mat. no. 1.008.1834**) or 3:1 INTRA head L66 B (**Mat. no. 1.008.1831**).

⚠ CAUTION

Excessive torque.

Injury or damage to instruments.

- Use root canal instruments in ENDO mode only.

Technical specifications for the KL 703 LED in ENDO mode

Note

The technical specifications apply to the KL 703 LED in ENDO mode.LED

Speed range	200 to 3,200 min^{-1}
Maximal torque	2.5 Ncm

Operating mode

Note

30 seconds operating time/9 minutes pause is the potential load threshold of the motor (full load at maximum speed).

In practice, pulse loads lasting seconds or pause times lasting seconds or minutes are realistic given that the maximum possible motor current is not normally reached. This equates to the dentist's normal way of working.

4.14.2 Setting the storage position of the endo-motor

- Tap the "Settings" tab.
- Tap the "User" key and call up the settings of the desired dentist. Select the "Endodontics" treatment mode.

⇨ This causes the settings of the "Endodontics" treatment mode to be displayed.

- Tap the "Set storage position" key.
  This opens a dialog field.
- Take the appropriate motor for the Endodontics treatment mode from the holder, and confirm.
- Switch the operating light on or off.
- Tap the "Back" key to return to the "Treatment" menu.

4.14.3 Open ENDO mode

- Take the INTRA LUX Motor KL 703 endomotor off the holder.
- Unfold the "Type of treatment" selection list and select "Endodontics".

⇨ The display switches to the type of treatment, "Endodontics".

Note
Before using the endomotor, always check the speed and transfer ratio.

The device exits from the "Endodontics" type of treatment as soon as the INTRA LUX KL 703 LED endomotor is returned to the holder. "Endodontics" as the type of treatment is activated automatically when the endomotor is taken out provided "Endodontics", as the type of treatment, was previously ended by returning the endomotor.

Note
The automatic start does not take place if the "Endodontics" treatment mode has never been activated since the last time the unit was turned on.

Type of treatment "Endodontics"

⚠ CAUTION

Incorrectly set parameters.
Injury or property damage from incorrect input values.
- Check all input values before use.

4.14.4 Set parameters

Six parameter memory locations (profile 1 to profile 10) are available.

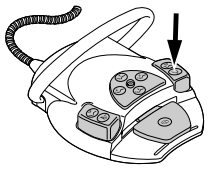
The following parameters can be changed:

- Speed
- Torque
- Torque mode
- Transmission ratio
- File selection (profile)
- Cooling status
- Direction of motor rotation

Selecting profile storage place

- ▸ Unfold the "Profile" list and select a profile as desired.

or



- ▸ Press the "SP/Blown air" foot-operated button.

⇨ Each time the key is pressed, the parameter memory location advances by one step (profile 1 to profile 10)

Change and save parameters

- ▸ Unfold the "Profile" list and select a profile as desired.
- ▸ Use the "slider" to set the speed and torque.
- ▸ Select the transmission ratio and torque mode from the respective list.
- ▸ Tap the "Save" key to save the parameter.

Speichern

- ▸ Tap the "Cancel" key to close the menu without saving.

⇨ The changed parameters are saved to the selected parameter memory location.

Note
You can save the parameters each time you set a new one, or after setting all the parameters.

Setting the speed

The speed can be varied in the range of 200 min^{-1} to 3,200 min^{-1}.

- ▸ Tap the current speed (value in rpm).

⇨ The font colour switches to blue.

- ▸ Use slider to set the speed.

⇨ The speed is shown on the display and is effective immediately.

Speichern

Save in profiles 1 to 10 using the "Save" key. You can save after setting each parameter individually or after setting all parameters.

Setting the torque

The torque is limited to the set value.

Transmission ratio 1:1 / 3:1
The torque can be set in 0.1 Ncm steps in the range from 0.2 Ncm to 5.0 Ncm.

Note
The ENDO warning signals are emitted once a certain percentage of the set torque value is reached.
75% slow signal tone
90% fast signal tone
100% continuous tone

- ▸ Tap Current torque (value in Ncm).

⇨ Font colour switches to blue.

- ▸ Use slider to set the torque.

⇨ The torque is shown on the display and is effective immediately.

Speichern

Save in profiles 1 to 10 using the "Save" key. You can save after setting each parameter individually or after setting all parameters.

Set torque mode

Three different torque modes are available:

- Autoreverse
- Torque Control only
- Autorev / Forward

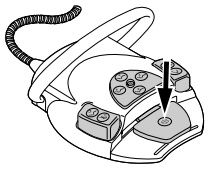
- ▸ Unfold the "Torque mode" list und select the torque mode as desired.

⇨ Torque mode is shown on the display and is effective immediately.

Speichern

Save in profiles 1 to 10 using the "Save" key. You can save after setting each parameter individually or after setting all parameters.

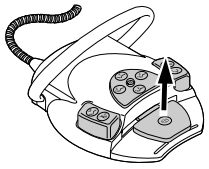
Set Autoreverse torque mode



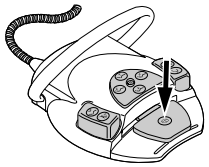
- ▸ Press the foot pedal.

⇨ The motor starts by rotating clockwise (if not selected otherwise).

When the set torque is reached, the motor switches to counterclockwise rotation.



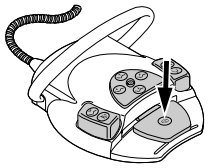
- ▸ To stop this, release the foot pedal.



- Press the foot pedal

⇨ The motor rotates to the right.

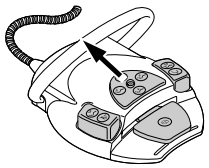
Torque mode Torque Control only



- Press the foot pedal.

⇨ The motor starts by rotating clockwise (if not selected otherwise).

The torque is limited to the set threshold. The speed reduces until it stops depending on the load.
The direction of rotation is always to the right.

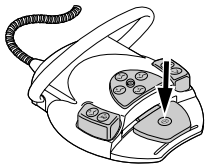


- Push 4-way button on the foot control upward in order to switch to counterclockwise rotation.

or

- Tap the "CCW direction of motor rotation" key.

Torque mode Autorev / Forward



- Press the foot pedal.

⇨ The motor starts by rotating clockwise (if not selected otherwise).

When the set torque is reached, the motor switches to counterclockwise rotation. After the pre-set time of 4 seconds, the motor automatically reverts to clockwise rotation.

Note
The motor's rotational direction can be reversed with the cross-switch on the foot-switch in all torque modes.

4.14.5 Exiting from the type of treatment "Endodontics"

- Tap the "Cancel" key to exit from "Endodontics" as the type of treatment.

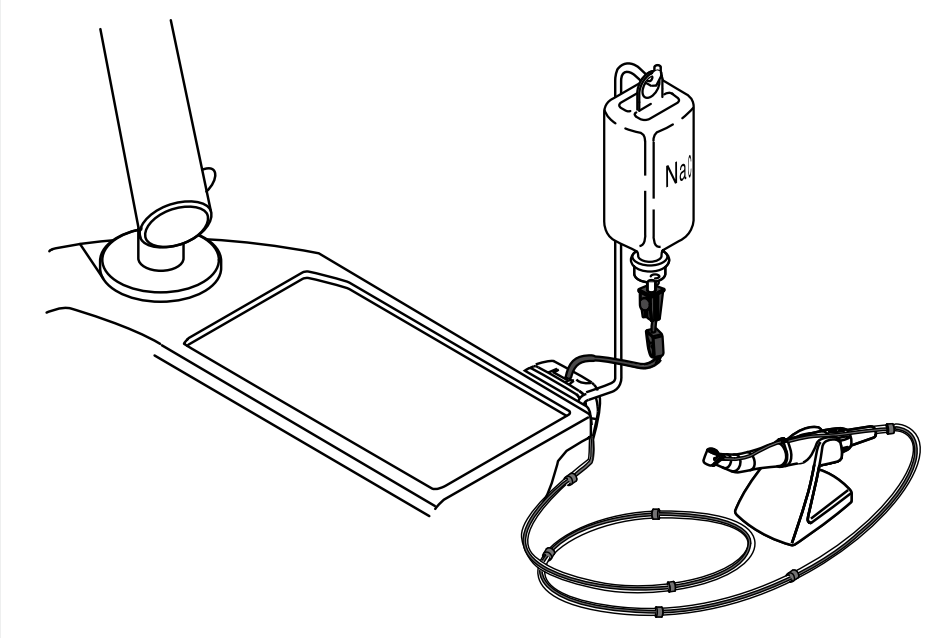
or

- Place the INTRA LUX KL 703 LED back in the holder.

Note
If the unit was switched to "Endodontics" mode, ENDO mode is only interrupted when the ENDO motor is placed in the holder, and it is continued when the ENDO motor is taken out.

4.15 Using the SL600 surgical motor (optional accessory)

4.15.1 General



Technical Specifications

Motor voltage	max. 22 V AC
Motor speed	max. 40,000 rpm
Motor torque	max. 5.5 Ncm

Mode

Note
30 seconds operating time/9 minutes pause is the potential load threshold of the motor (full load at maximum speed).

4.15.2 Connecting and operating the pump for physiological saline

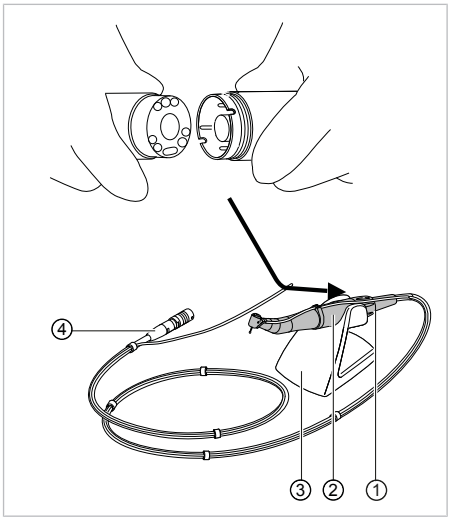
The surgical motor set comes with the kit "pump for physiological saline solution".

See also:
Assembly instructions for saline solution kit

4.15.3 Connecting the SL 600 surgery motor

Note
The surgical mode can only be accessed when the surgical motor is connected to the surgical connection of the dentist element.

Note
The delivered parts are not sterile (except for the coolant hose). Before the first treatment of a patient, the surgical motor, motor cable, and the handpiece tray need to be reprocessed.



① Motor coupling
② Surgical motor
③ Handpiece tray
④ Plug of motor cable

- Plug the surgical motor ② into the motor coupling ① and secure it with a union nut. Please note the separate instructions for use of the motor.
- Place the surgical motor on the handpiece tray ③.
- Insert the plug of the motor cable ④ into the connector on the device, align the marker points, and insert the plug until it snaps into place.

4.15.4 Calling-up the surgery mode

Requirement
The surgical motor is connected.
No handpiece has been taken off the holders.

- Unfold the "Treatment mode" selection list and select "Surgery".

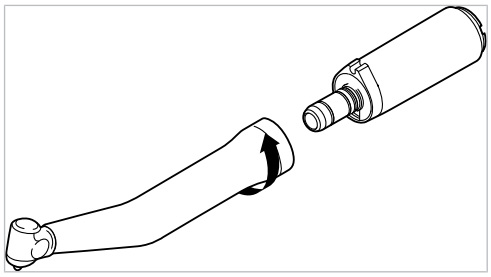
4.15.5 Mount or pull off the handpiece or contra-angle handpiece

Note
Follow the instructions for use, service instructions and installation instructions in the instrument packaging.

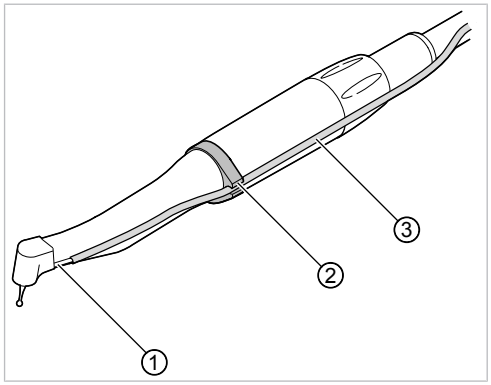
⚠ CAUTION

Damage from changing the straight and contra-angle handpieces during operation.
Wear to the catch on the straight and contra-angle handpiece and motor.
Unbalanced motor axis.
- Change the straight and contra-angle handpieces only when the motor is not running.

Attaching the straight or contra-angle handpiece



- Place the KaVo handpiece on the motor, lightly press it against the motor while turning it slightly in the direction of the arrow until the guide stud can be heard to lock into place.
- Pull on the KaVo handpiece to make sure that it is securely attached to the motor.



- Route the coolant hose ③ from the unit along the motor cable (clips) and connect it to the straight or contra-angle handpiece ①. Place the coolant hose ③ into the holding ring ② for this purpose.

Removing the straight or contra-angle handpiece

⚠ CAUTION

Damage from changing the straight and contra-angle handpieces during operation.
Wear to the catch on the straight and contra-angle handpiece and motor.
Unbalanced motor axis.
- Change the straight and contra-angle handpieces only when the motor is not running.

- Pull the coolant hose off the straight or contra-angle handpiece.
- Twist the straight or contra-angle handpiece slightly to pull it off.

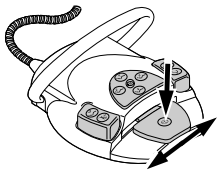
4.15.6 Start-up the motor

⚠ CAUTION

Incorrect input values.

Injury hazard.

- The input values must be checked before each use.



- Press the foot pedal and change the speed by moving it the side.
  Left stop: Minimum speed
  Right stop: Maximum speed

4.15.7 Using the surgical motor with programme steps

Note

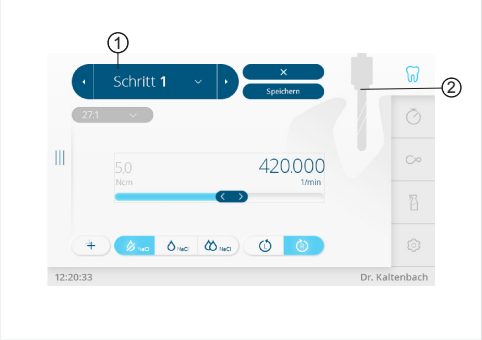
The user should always check if the displayed transfer ratio is correct before turning on the device.

Note

The torque values can deviate by max. ± 10 % with the KaVo contra-angle handpieces SURGmatic S201. Larger deviations are possible with other contra-angle handpieces.

- Unfold the "Treatment mode" selection list and select "Surgery".

⇨ Calls up programme step 1.



Type of treatment Surgery | Programme steps

① Current programme step

② Activity assigned to the programme step

The current programme step ① and the corresponding activity are shown as symbol ②. Each programme step can be assigned to any activity by selecting the corresponding symbol.
Visualising the activity is an easy means for checking if the activity set on the device is the same as the current treatment step. Maloperation can thus be largely prevented.

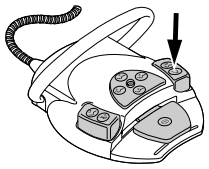
Default values have been set at the factory for the parameters, speeds, torques, transmission ratios and coolant flow rate for every activity according to application. The parameters can be changed only within a reasonable range for the specific activity. In the activity, "Free", all available values can be set.

A treatment sequence can consist of up 10 program steps and/or activities. The treatment sequence can be designed individually through any arrangement of the activities. Navigate with the foot control during the sequence such that the device does not have to be touched again during the intervention.

Select working step

- Press the "Next step" key to advance a step.

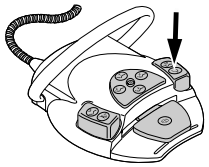
or



- Briefly press the "Blown air" foot-operated button.

- Press the "Previous step" key to go back a step.

or



- Hold down the "Blown air" foot-operated button for a while.

Setting and saving parameters

- Selecting the working step to be changed.

The following parameters can be changed:

- Maximum torque
- Programmed speed
- Coolant flow
- Transmission ratio
- Direction of motor rotation
- Activity

- Set the parameters as in the instrument settings.

The values shown for a programme step are default values that you can use to start work immediately. These can all be changed and thus adapted to your individual work technique.
Changed values can be saved and are then available for the next use.

⚠ CAUTION

Incorrect application

Injury hazard.

- Always check the values prior to application.

Recommended programming when placing multiple implants consecutively

Note

Default values for the respective transfer ratios can be selected with the sliders.

Activity	Step	Icon	Speed [rpm]	Torque [Ncm]	Transmission ratio
Pilot drilling	1		200 – 2,000 500 (D)	5 – 20 10 (D)	1:1 16:1 27:1 20:1 (D)
Form drilling	2		200 – 2,000 500 (D)	5 – 20 10 (D)	1:1 16:1 27:1 20:1 (D)
Tapping	3		15 – 50 20 (D)	5 – 80 25 (D)	1:1 16:1 27:1 20:1 (D)
Placing implant	4		15 – 50 20 (D)	5 – 80 25 (D)	1:1 16:1 27:1 20:1 (D)

Activity	Step	Icon	Speed [rpm]	Torque [Ncm]	Transmission ratio
Setting a closure cap	5		15 – 50 20 (D)	5 – 15 8 (D)	1:1 16:1 27:1 20:1 (D)
Marking	6		200 – 2,000 500 (D)	5 – 20 10 (D)	1:1 16:1 27:1 20:1 (D)
Free use	7		300 – 40,000 40,000 (D)	0.1 – 5.5 3 (D)	1:1
			300 – 2,500	0.7 – 5.5	16:1
			300 – 2,000	0.8 – 5.5	20:1
			300 – 1,500	1.1 – 5.5	27:1

Note
The listed indications are only examples. To prevent unnecessary risk, observe the guideline speeds given by the manufacturer of the rotating instruments.

4.15.8 Using the surgical motor with "Free application" activity

In the activity, "Free application", all available values can be set.

Note
The user should always check if the displayed transfer ratio is correct before turning on the device.

Setting the parameters

The following parameters can be changed:

- Maximum torque
- Programmed speed
- Coolant flow
- Transmission ratio
- Direction of motor rotation

- Activity

Changing and saving parameters

- ▸ Use the "slider" to set the speed and torque.
- ▸ Tap the "NaCl" key to select the coolant flow rate.
- ▸ Select the transmission ratio and torque mode from the respective list.
- ▸ Tap the "Direction of motor rotation" key to toggle between clockwise and counter-clockwise rotation.

- ▸ Tap the "Save" key to save the parameter.

- ▸ Tap the "Cancel" key to close the menu without saving.

⇨ The changed parameters are saved to the selected parameter memory location.

Setting the torque

Note
The torque values are only for KaVo handpieces and angle pieces that operate properly.

- ▸ Tap Current torque (value in Ncm).

⇨ Font colour switches to blue.

- ▸ Use slider to set the torque.

⇨ The torque is shown on the display and is effective immediately.

Setting the speed

- ▸ Tap the current speed (value in rpm).

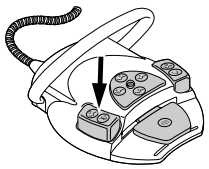
⇨ The font colour switches to blue.

- ▸ Use slider to set the speed.

⇨ The speed is shown on the display and is effective immediately.

Setting the coolant

- ▸ Tap the „NaCl“ key to select the coolant flow rate.



- ▸ Press the "Preselect spray" foot button to turn the coolant on or off and to adjust the coolant flow.

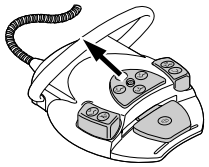
Setting the transmission factor

- ▸ Unfold the "Transmission ratio" list and select the transmission ratio as desired. The transmission ratio cannot be saved.

Setting the direction of motor rotation

- Tap the "Direction of motor rotation" key to toggle between clockwise and counter-clockwise rotation.

  or



- Slide the cross switch upward.

⇨ The rotational direction of the motor is switched back and forth each time the cross-switch is pushed: counterclockwise rotation - clockwise rotation.

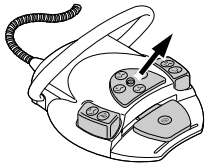
⇨ A signal tone sounds when the setting "Motor left rotation" is selected.

Setting activity

- Tap the activity symbol to change the activity of the respective step (toggle function).

4.15.9 Setting the operating light (LUX)

Spot light

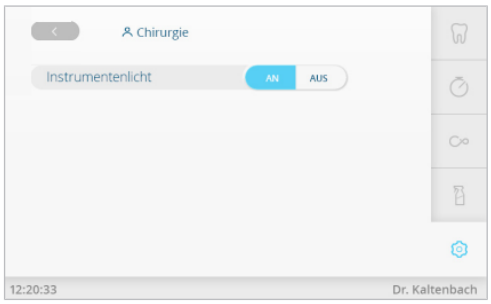


- Push the cross-switch to the right to activate the light (without the motor and pump running).

⇨ The light is on only while the 4-way button is being actuated (spotlight function).

Note
The handpiece light can be turned on as a spotlight even without a handpiece being attached. This function serves for control purposes.

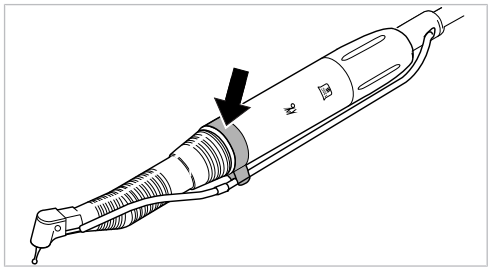
- Tap the "Settings" tab.
- Select "User" and desired dentist.
- Select "Surgery" as the "Treatment mode" from the corresponding list.



Operating light LUX

- Tap the "Operating light" selection key to switch the operating light on or off.

Note
The motor can only operate with the retention ring.



4.15.10 One-touch calibration

The one-touch calibration automatically compensates for torque deviations of the motor that may be caused, e.g., by aging processes. When the handpiece is attached, the unit detects if the handpiece runs sluggish or is defective. The one-touch calibration thus provides for a more accurate torque on the contra-angle handpiece.

Note

One-touch calibration should be carried out only with KaVo surgical handpieces with a transmission ratio of 16:1 or 20:1.
The one-touch calibration cannot be run with third-party handpieces or handpieces with different transmission ratios.

⚠ CAUTION

The motor starts at full speed.
Risk of injury.
- Hold the motor firmly or put it in a safe holder during the calibration.

- Press the foot control and hold it down until the display shows a message indicating that "Calibration was successful".
- If you release the foot control before the display shows that the calibration was successful, press the foot control again until the display shows a message indicating that the calibration was successful.
- Tap the "Cancel" key to terminate the calibration and to return to the selection of device settings.

If an unsuitable or defective handpiece was used in the calibration, the calibration is discontinued and the error message, "Measurement failed - Non-permissible current", is shown.

- Tap the "Cancel" key to terminate the failed calibration.

4.15.11 Exit surgery mode

- Tap the "Cancel" key to exit from "Surgery" as the type of treatment.

4.16 Use pump for physiological saline solution (optional accessory)

Note
A sterile saline solution can be used using the physiological saline solution pump instead of the treatment water from the unit. The application of the pump is designed for instruments with a suitable interface for the coolant.

4.16.1 General information

⚠ CAUTION

Running, open hose pump.
Risk of injury.
- Turn off the device before opening the hose pump.

⚠ CAUTION

Coolant container made of glass.
Danger of injury due to falling or shattering glass coolant container.
- Do not use glass bottles as coolant containers on the dentist part of the dental unit.

⚠ CAUTION

Danger of tipping due to the coolant containers being too heavy.
Malfunctions.
- Use coolant containers with a maximal volume of 1 litre only.
- Check the stability.

⚠ CAUTION

Use of non-sterile coolant hose with accessory.
Infection hazard.
- The sterile hose kit is only designed for single use, do not use again.
- Dispose of the sterile hose kit in the prescribed manner.
- Use a new, sterile packed coolant hose with accessory for every treatment.

Note
All liquid-conducting parts are not sterile. They must be sterilised before the first treatment. All parts conducting liquids must be kept sterile.

Note
The coolant must be selected to suit the planned application. The flow rate of the coolant is dependent on the instrument used. The user must set an adequate flow of coolant and check this.

Note
Check the integrity of the hose set before use. If product or packaging are damaged, the product needs to be discarded.

Note
The correct flow direction must be observed when the hose is inserted into the pump.
The physiological saline solution may only be used in conjunction with NaCl-resistant instruments.

The following symbols are displayed on the sterile hose kit S 600 (10 pcs) (**Mat. no. 1.009.8757**):

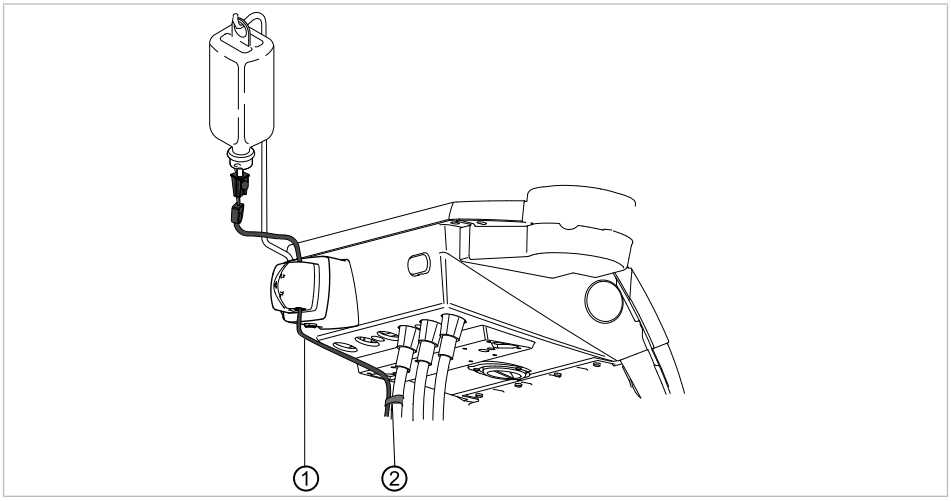
Symbol	Description
	Date of manufacture
	Expiry date
	Batch number
	Sterilisation method
	Single use

4.16.2 Connecting the coolant

Note
All liquid-conducting parts are not sterile. They must be sterilised before the first treatment. All parts conducting liquids must be kept sterile.

See also:
Servicing instructions

Connect the coolant with the standard instrument hose

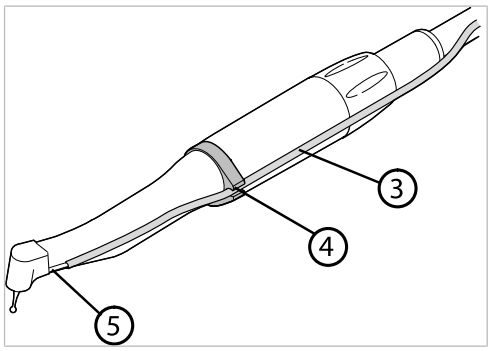


- Attach the pressure line ① to the motor hose with the enclosed hose clips ②.

Note
The distance from the motor to the first hose clip must be approx. 80 mm.

4.16.3 Connect coolant to instrument (general)

- Route the coolant hose ③ from the unit along the motor lead (clips) and connect it to the straight or contra-angle handpiece ⑤. Insert the hose into the retention ring ④.



See also:
Instructions for use of the respective instrument

4.16.4 Connecting the coolant container and hose set

⚠ CAUTION

Running, open hose pump.
Risk of injury.
- Turn off the device before opening the hose pump.

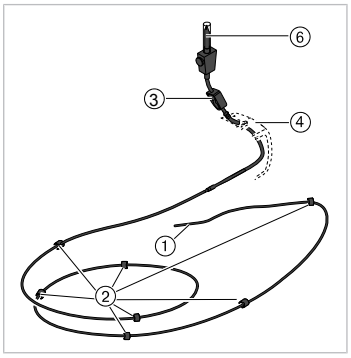
⚠ CAUTION

Danger of tipping due to the coolant containers being too heavy.
Malfunctions.
- Use coolant containers with a maximal volume of 1 litre only.
- Check the stability.

Note
The coolant must be selected to suit the planned application. The flow rate of the coolant is dependent on the instrument used. The user must set an adequate flow of coolant and check this.

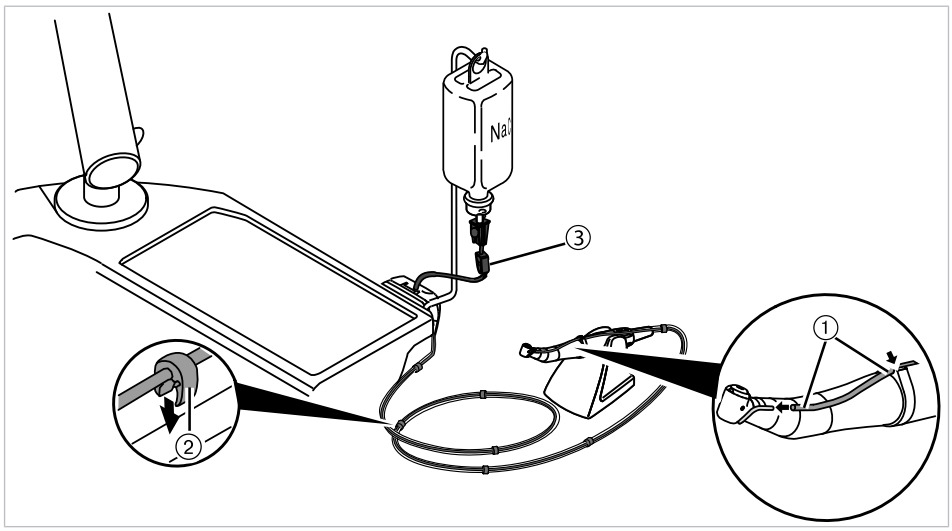
Note
The hose set sterile S 600 (10 pcs.) (**Mat. no. 1.009.8757**) must be changed after each application.

Note
Check the integrity of the hose set before use. If product or packaging are damaged, the product needs to be discarded.

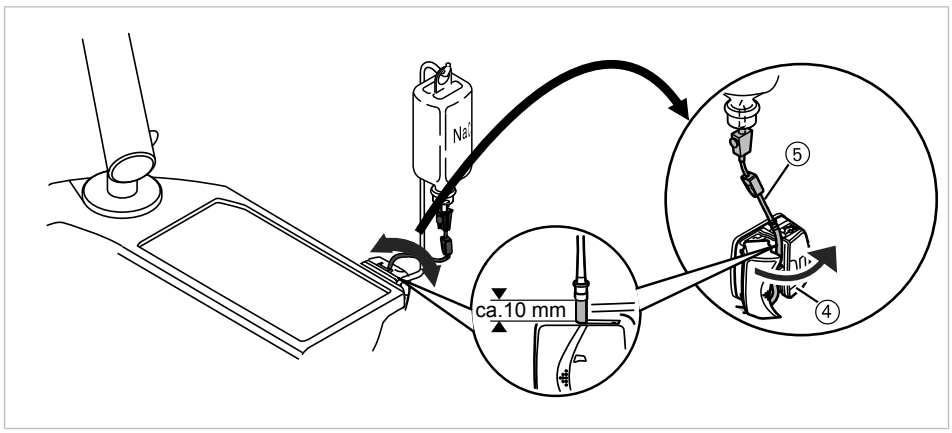


① Coolant hose
② Clip
③ Hose clamp
④ Lock
⑥ Insertion needle

- Close the hose clamp ③ of the hose set.
- Attach the coolant hose ① to the straight or contra-angle handpiece.
- Place the coolant hose ① tightly, without loops or kinks, against the outside of the motor cable and attach it in regular intervals using the enclosed clips ②.

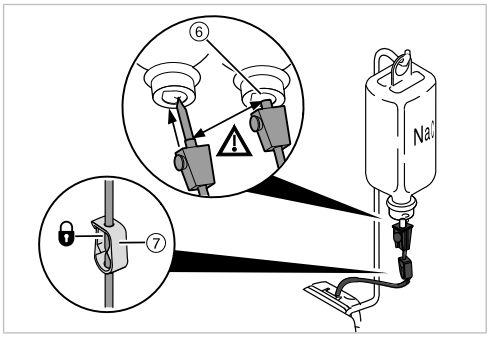


- Open the lock ④ and insert the pump hose ⑤.
- Close the lock ④.



Note
Make sure to place the pump hose in the pump appropriately such that the pump hose does not get clamped or pinched by the lock. Route all hoses relaxed and without tension.

- Stick the puncture needle ⑥ into the coolant container and hook-in the coolant container on the bottle holder.
- Check the sealing and firm seating of the puncture needle ⑥. Prevent fluid from leaking above the device.
- If you use a glass bottle, open the ventilation on the puncture needle ⑥.
- If you use a bag, keep the ventilation on the puncture needle ⑥ closed.
- Open the hose clamp ⑦ before start-up.



Note
Using a new hose, it may take up to approx. 10 seconds for the coolant to exit on the handpiece, depending on the feed rate.

4.16.5 Turn on pump and regulate

Requirement
Treatment centre is turned on. The handpiece is connected to the pump via the pressure line.

- Remove the handpiece.

- Push down the cross-switch of the foot control for 4 seconds until you hear the signal.

⇨ After activation, "NaCl" cooling can be selected.

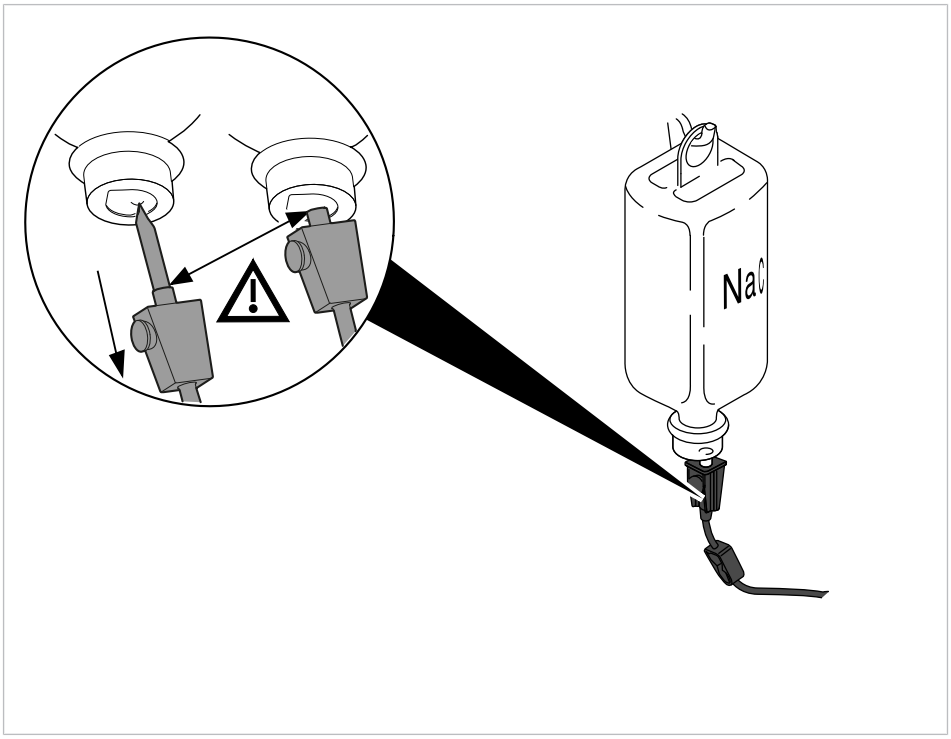
Note
The first time the pump is turned on, it takes approximately 10 seconds until saline solution exits from the handpiece.
The pump does not have any back suction.

- Push down the cross switch for 4 seconds until the signal sounds to turn off the saline pump.

4.16.6 Changing the coolant container

The coolant container can be changed as follows:

- Close the hose clamp.



- Pull the hose and puncture needle out of the empty coolant container.
- Replace the empty coolant container by a full coolant container.

See also:

Connecting the coolant container and hose set

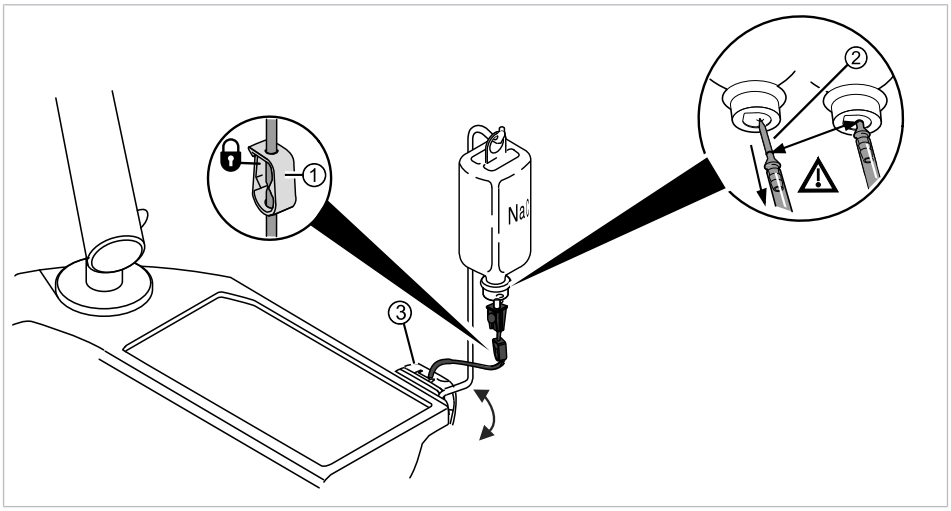
4.16.7 After treatment: disposal

⚠ CAUTION

Use of non-sterile coolant hose with accessory.

Infection hazard.

- The sterile hose kit is only designed for single use, do not use again.
- Dispose of the sterile hose kit in the prescribed manner.
- Use a new, sterile packed coolant hose with accessory for every treatment.



- Close the hose clamp ①.
- Pull the puncture needle ② out of the coolant container.

- Open the lock ③ and remove the hose.
- Remove the hose set from the unit and discard it.

4.17 Using the COMFORTdrive 200 XD/COMFORTbase (optional accessory)

4.17.1 General use

⚠ CAUTION

Failure to comply with the Instructions for Use of the COMFORTdrive 200 XD

Injury to persons or property damage

- The use of the COMFORTdrive 200 XD is described in separate Instructions for Use. Read these instructions before starting up the COMFORTdrive 200 XD and the COMFORTbase!

The KaVo COMFORTdrive 200 XD is a dental instrument for the high speed range up to 200,000 rpm. It can be attached only to the KaVo COMFORTbase coupling.

The hose of the KaVo COMFORTbase is part of the coupling and cannot be removed!

Operation and changing the settings via the control element is identical to the INTRA LUX motor KL 703.

Also refer to: Settings for the INTRA LUX Motor KL 703 LED and the COMFORTdrive

4.17.2 Fitting the motor hose on the dentist's element

- Connect the motor hose of the COMFORTbase to the connector for the motors and pneumatic instruments.

4.17.3 Replace O-rings

⚠ CAUTION

Missing or damaged O-rings.

Malfunction and premature failure.

- Make sure that all O-rings are on the coupling and are undamaged.

Number of available O-rings: 3

- Press the O-ring between your fingers to form a loop.
- Push the O-ring to the front, and remove it.
- Insert new O-rings (**Mat. no. 1.005.0327**) into the grooves.

Note

The O-ring on the COMFORTbase may only be lubricated with cotton ball wet with KAVOspray.

See also:

- Care instructions for the COMFORTbase

4.17.4 Replacing the high-pressure bulb of the COMFORTbase

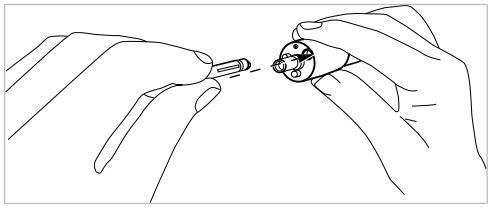
⚠ CAUTION

Danger of burns from hot high-pressure lamp.

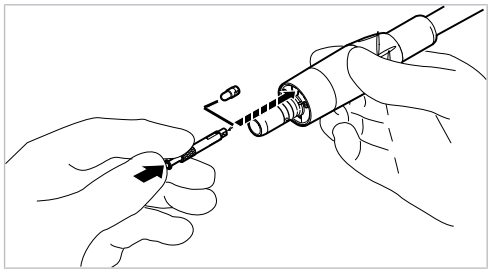
- Switch main device switch off.
- Let the COMFORTbase cool down after long use.

Requirement
The COMFORTdrive is pulled off from the COMFORTbase.

- Push the accompanying lamp changer on the high-pressure lamp and pull out the lamp axially.



- Insert the new lamp into the lamp changer, and introduce it into the hole in the face of the supply hose. Carefully slide the lamp into the mount.
- Carefully press out the lamp by activating the ejector.



4.17.5 Replacing the KaVo MULTI LED lamp

See also:
4.13.4.2.2 Replacing the KaVo MULTI LED lamp, Page 111

4.18 Use USB interface

⚠ CAUTION

Electrical power.
Electrical shock.

- Set up the external PC outside of the patient environment keeping a minimal distance of 1.5 m.
- Connect the PC and equipment connected to the PC in accordance with IEC 60601-1 / 60950.

⚠ CAUTION

Electrical power.

Electrical shock from incorrectly connecting a non-medical system to the USB interfaces of the device.

- Connect any IT device to the medical system in accordance with IEC 60601-1.
- Use USB devices with no additional power supply (USB-powered) only.
- Applied parts connected to the USB interface of the dentist element must comply with the requisite insulation.
- USB-powered devices failing to meet the requisite insulation for applied parts must be placed appropriately such that direct contact of the USB device and the patient is excluded.
- It is not permissible to touch USB-powered devices failing to meet the requisite insulation for applied parts and the patient at the same time.

The treatment unit may be fitted with up to three USB ports. Camera interfaces are situated on the underside of the dentist element (T-table) or in the dentist element (S-table). Only the cameras approved/enclosed in the delivery by KaVo may be connected to these interfaces.
The USB port in the back is connected directly to the back-of-the-head PC (in the presence of the corresponding wiring). USB devices meeting the specifications listed above can be connected to this interface. To use USB devices that have been connected, it may be necessary to install a suitable driver software on the back-of-the-head PC.

Getting the USB ports ready for use

- To run an USB device, connect the USB port in the terminal box of the treatment centre to an external back-of-the-head PC. Use one or maximally two USB extension cables 5 m (**Mat. no. 1.004.6953**) according to need.
- USB devices connected to the dentist element must meet the USB standards, USB 1.0, 1.1 or 2.0, and consume max. 500 mA of electrical power.

4.19 Using the camera

See also:

Instructions for Use ERGOcam One

See also:

Instructions for Use DIAGNOcam 2170 U

4.20 Service table 1568 (optional accessory)

⚠ CAUTION

Exceeding the load limits.

Damage to the service table.

- Comply with maximal load limits.

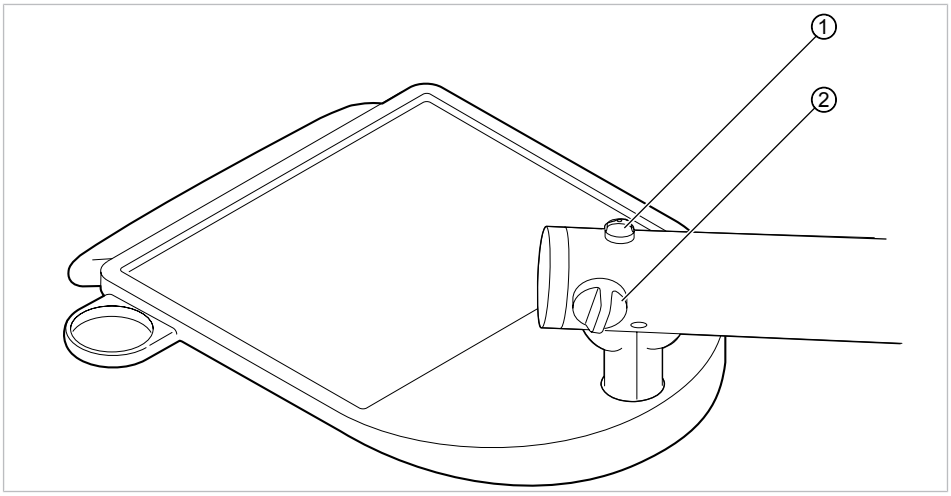
⚠ CAUTION

Over-travel beyond swivel range.

Property damage.

- Comply with rotary knob swivel range of 180°.

The service table 1568 can be locked in 4 snap-in positions using the rotary button ①. This locks only the downward movement to allow for higher loads.
In the absence of the locking mechanism, the maximum load of the service table is 2 kg. The presence of the locking mechanism increases the maximum load to 5 kg.



- Rotate the rotary knob ① in counterclockwise direction to lock the service table in place.
- Rotate the rotary knob ① in clockwise direction to unlock the service table.
- Use the rotary button ② to adjust the break for vertical motion.

5 Preparation methods DIN EN ISO 17664

Note
The preparation methods can be found in the care instructions.

6 Additional equipment and kits

Note
The USB interfaces of the system may only be connected to IT devices approved by KaVo.

Note
When connecting IT equipment to the the medial electrical system, observe EN 60601-1.

Note
Only accessories licensed for use with this machine may be used.

Note
The instructions fur use, servicing, and assembly for additional equipment and kits such as lights, the ERGOcom, etc. are included in the packaging.

6.1 Device

Name	Description
Monitor support arm	The monitor support arm is either affixed to the lamp mounting pole or a Centro 1540.
Monitor	KaVo Screen One and KaVo Screen HD
Service table 1568	It can be mounted on a device stand (cart version). Service table accessories: ▪ X-ray viewer 1440 ▪ Instrument tray ▪ Cup holder
CENTRO	Central organisation and support system directly on the treatment centre.
KaVoLUX 540 LED	Operating light.

6.2 Assistant unit

Name	Description
Triple function handpiece	The assistant element can equipped with a triple function handpiece.
Second saliva ejector	The second saliva ejector kit is mounted on the sieve housing that comes as basic equipment.
Satelec Mini LED	The assistant element can equipped with Satelec Mini LED.

6.3 Dentist unit

Name	Description
Triple function and multifunctional hand-piece	The dentist element can be equipped with the triple function and the multifunctional handpiece.
Radiograph viewer X-ray viewer 1440	The radiograph viewer can be attached to the dentist element.

Name	Description
Physiological saline solution	For aseptic bur cooling during surgical work, an assembly kit for physiological saline is available.
Surgical motor	For surgical work.
Sterile irrigation set S600	Accessories for the physiological saline solution and surgical motor.
Coupling for dental turbines	MULTIflex LED coupling 465 LED
Motors	INTRA LUX Motor KL 703 LED (brushless motor with light) INTRA LUX S600 LED
Light polymerisation device	The dentist element can be equipped with Satelec Mini LED.
KaVo COMFORTdrive 200 XD; KaVo COMFORTbase	The KaVo COMFORTdrive 200 XD is a dental instrument for the high speed range up to 200,000 rpm. It can be attached only to the KaVo COMFORTbase coupling.
Ultrasonic Scaler PiezoLED	Handpiece for the removal of dental calculus with the tip sets, Scaler / Paro / Endo / Prep.
Pneumatic brakes	The dentist element is easy to move (E80 Vision standard, E70 Vision optional).
6-outlet handpiece holder	E80 Vision standard, E70 Vision optional extension of the integrated handpiece tray.
Endodontics function	Drive for endodontic treatment.
ERGOcam One	Intraoral camera for documentation and patient communication
USB devices	Connection of USB devices to the dentist element
DIAGNOcam 2170 U	Camera for X-ray-free caries diagnosis.

7 Safety checks - Test instructions

7.1 Introduction

7.1.1 General instructions

Note
The safety checks may only be carried out by one or more electricians (as defined in IEC 61140) who have received appropriate training for the device to be inspected.

Note
The contents and specified tests in this document are based on the international standard, IEC 62353 (DIN VDE 0751-1). This standard applies to the testing and inspections of medical electrical equipment or medical electrical systems complying with IEC 60601-1 (DIN EN 60601-1).

Note
In order to evaluate the safety of medical devices, systems or components of medical devices or systems, the safety checks must be carried out at the times specified below:
- Prior to startup
- during maintenance
- during inspections and servicing
- following repair
- on the occasion of recurrent tests

Note
With regard to devices that have not been manufactured in accordance with IEC 60601-1 (DIN EN 60601-1), these requirements can be applied taking the mandatory safety standards for the production of these devices into consideration.

Note
If the unit comprises several electrical devices or electrical devices from several manufacturers that are connected to a system in connection with the KaVo dental unit, the manufacturer data contained in the instructions for use for all products subject to safety controls must also be observed.

Note
Accessories to ME devices that could have an impact on the safety of the device to be tested or the measured results must be included in the safety checks.

Note
All tests concerning the included safety checks of accessories must be documented.

Note
Furthermore, the manufacturer data contained in the instructions for use must be adhered to in all products to be tested and inspected.

Note

KaVo offers a medical device book for keeping an inventory and recording essential master data on the medical device. The medical device book is only available in German (**Mat. no. 0.789.0480**).

Note

The following tests and measurements must be documented, for example in the medical device book. We recommend using the templates at the end of the document.

Note

The tests must be performed in the order specified by the manufacturer!

7.1.2 Notes concerning medical electrical systems

Note

An ME System is the combination of individual devices (as defined by manufacturers) that must meet the following conditions:

- At least one of these devices must be a medical electrical device.
- The devices must be functionally connected or at least they should be connected by the application of a multiple socket outlet.

Note

With ME systems, the person responsible for putting the system together must define the necessary measuring parameters and measuring procedures as required in IEC 60601-1 (DIN EN 60601-1).

Note

Each individual device in an ME system, which has a separate connection to the power supply network or which can be connected to or separated from the power supply network without the aid of a tool, must be checked individually. Moreover, the ME system must be checked as one unit to avoid any "aging" of individual devices leading to unacceptable values in sum.

Note

An ME system that is connected to the supply network by means of a multiple socket outlet must be treated as one device during checks and testing.

Note

If the ME system or part of the system is connected to the supply network by means of an insulating transformer, the transformer must be included in the measurements.

Note

In ME systems, in which more than one ME device are interconnected via data lines or otherwise, e.g. via electrically conductive attachments or coolant tubes, the earth wire resistance of every single device must be checked.

Note

If it should be impossible to check single ME devices that are functionally connected to an ME system individually for technical reasons, the ME system must be checked as a whole.

7.1.3 Components of the safety checks

Visual inspection

Optical appraisal of the safe and usable condition of the medical device and its accessories.

Measurements

- Measurement of the protective earth resistance in accordance with IEC 62353 (DIN VDE 0751-1)
- Measurement of the leakage current of the device EUL in accordance with IEC 62353
- Measurement of the leakage current of the user part EPL in accordance with IEC 62353 (DIN VDE 0751-1)

Note

Measurement of the insulation resistance in accordance with IEC 62353 (DIN VDE 0751-1) is not required. This check is covered by the measurement of the leakage current provided a prescribed safety tester in accordance with IEC 62353 (DIN VDE 0751-1) Annex C is used!

Functional test

Medical device function test as well as testing of all safety shutdowns with reference to accompanying documentation/instructions for use.

7.1.4 Test intervals

- Check every 2 years in accordance with Type II

7.1.5 Notes on test procedure in accordance with IEC 62353

- Protection class 1
- Type BF
- The device is firmly connected / threshold: SL < 0,3 Ω
- Measurement according to EUL / threshold: < 10mA*
- Measurement according to EGA / threshold: < 5 mA*

*The EUL limit corresponds to the value defined in IEC 60601 (DIN EN 60601), taking comment 2 from table 2 into consideration.

7.1.6 Notes on repeat tests

Note

The value determined in these tests must be documented and evaluated together with the measuring process. The measured values must not exceed the specified values.

Note

Comparisons with previous measurements must be carried out if the measured values are lower than the threshold values by more than 10 %. The test intervals should be reduced if a deterioration in values is determined!

7.2 Safety check instructions

7.2.1 Preparatory measures on the device

⚠ WARNING

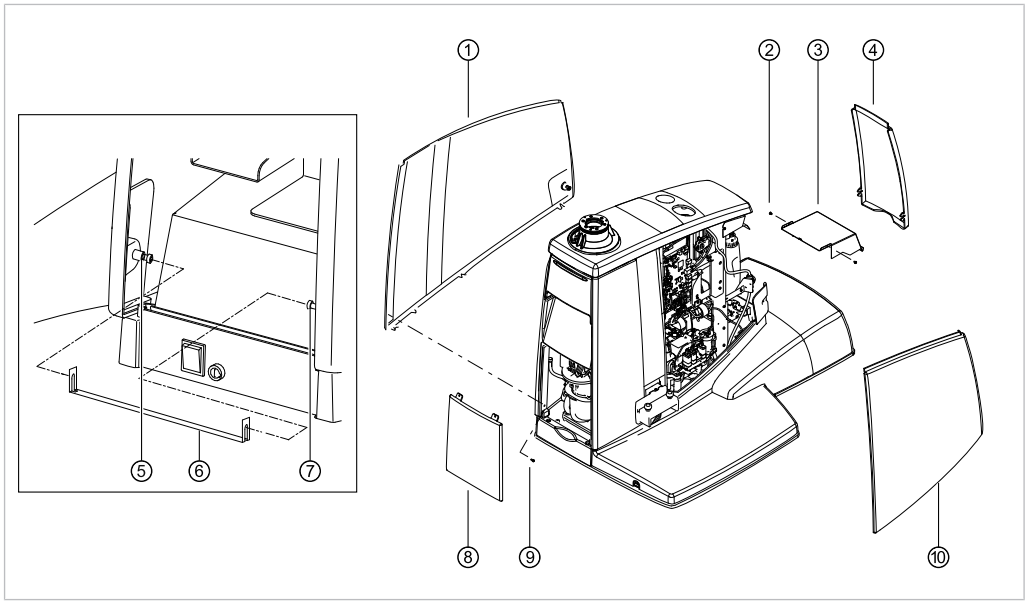
Electrical power.

Death or injury from electric shock.

- Before servicing, pull the mains plug out of the socket or completely disconnect the device from the power to de-energise it!
- After conversion, check the electrical safety in accordance with IEC 62353 (DIN VDE 0751-1).

- Turn off the main switch before any maintenance work.

The cladding parts defined below must be removed for the safety check:



- Release the front cover ④ below and remove.
- Loosen screws ⑤ and ⑦ and remove the bracket ⑥.

Note

For safety reasons, the two side covers are secured with the safety clip and the associated screws.
This corresponds to the regulation that states that the housing cladding may only be opened with tools.

- Release the service flap ⑧ below and remove.
- Remove screw ⑨.
- Release the left side cover ① below and remove.
- Release the right side cover ⑩ below and remove.
- On both sides, remove the fastening screws ② from the cover plate and remove the cover plate from the front.

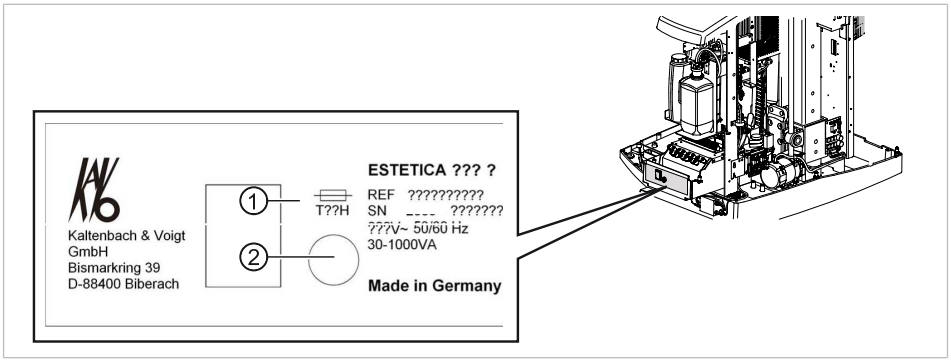
7.2.2 Visual inspection

Check the following items in advance:

- Has the equipment of the ME device or the ME system been changed since the last inspection?
- Was the change documented and approved (test protocol, safety check STK)?
- Are there any indications of insufficient safety?

Checking the ratings of fuses that are accessible from outside

- Verify whether the main fuse on the main switch ② of the unit complies with the specified nominal data ①.



Visual inspection and assessment of the medical device and accessories

The following list is for exemplary purposes and makes no claim of being complete.

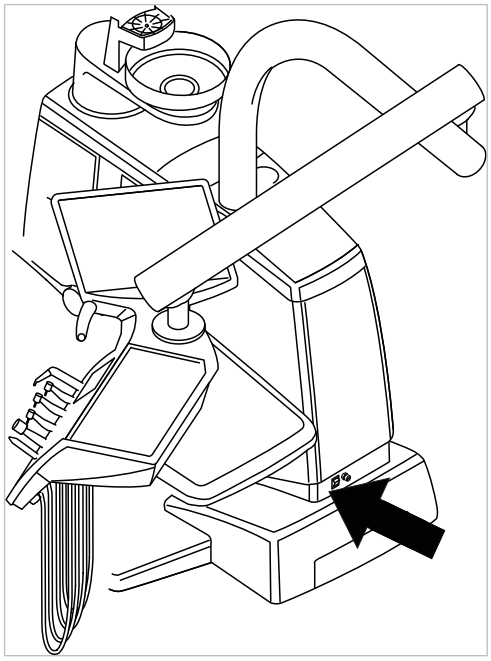
Check the following items:

- Stability of the device
- No damage to the cladding or casing (cracks, breakage)
- Functioning of the carrier systems on dentist and assistant side, treatment lamp, and display (brakes, height adjustment, etc.)
- Condition of the handpiece and suction hoses
- Condition of all installed application parts
- Condition of the control panels
- Condition of the threads for the fitting of tips to the ultrasound scaler handpiece

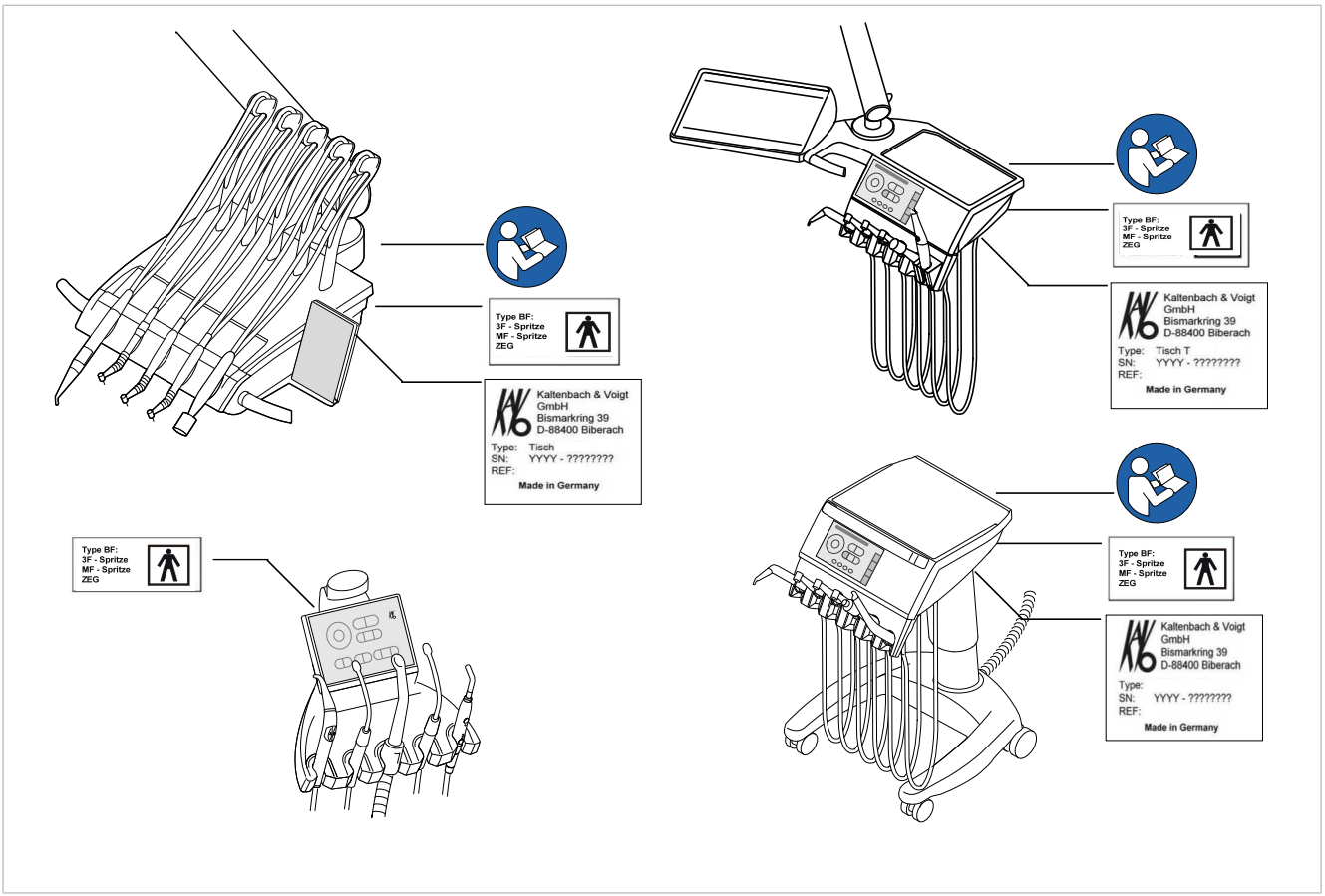
- Condition of the operating light
- Absence of leaks on the body of the device
- Condition of the power connection provided by the treatment centre
- Condition of air and water connections
- Any damage on the sight window and the casing of the camera ERGOcam
- Expiry date of the water bottle inserted in the BS water bottle not exceeded

Check of safety-related labels for legibility and completeness

- ▸ Check if all safety-related markings (plates and labels) are present and legible.
- ▸ Check if the rating plate and serial number plates are present and legible.



Mounting site for the rating pate on the device base



Check of availability of required documents

- Check if the required instructions for use and care instructions are available in the surgery.

Note

Any irregularities determined in the visual inspection must be recorded in the test protocol. It is essential to determine whether defects and deficiencies could have an adverse impact on the safe operation of the unit. If the determined irregularities present a safety hazard and cannot be rectified directly, the unit must be closed down until the safe operation is restored.

7.2.3 Measurements

⚠ WARNING

Danger to persons due to a lack of care exercised during the safety checks and testing.

- Prior to connecting the treatment centre to the safety tester, disconnect it from the mains supply network.
- Carry out all safety checks and tests in a manner that will ensure that there will be no danger to the testing personnel, patients or other persons.

Note

The safety tester must comply with the requirements defined in IEC 62353 (DIN VDE 0751-1), Annex C.

Note

If no other specifications have been made, all values relating to voltage and current are effective values of alternating voltage, direct voltage or pulsating voltage res. alternating current, direct current or pulsating current.

Note

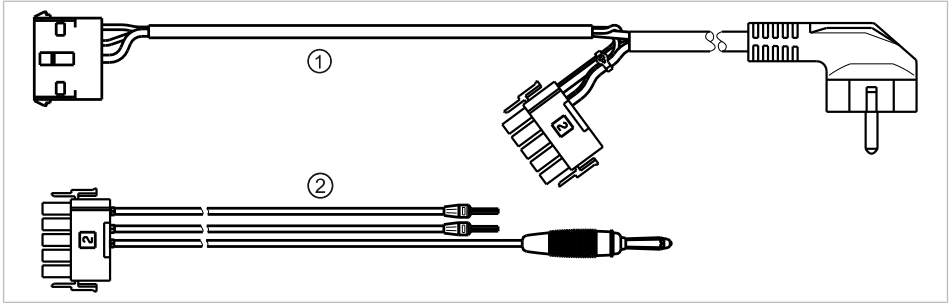
Cables and wires, e.g. power supply cords, measuring circuits and data lines, must be arranged appropriately such that their influence on measurements is minimised.

Note

Connection cables such as data cables and cables for the functional earth could simulate protective conductor connections. These types of supplementary but unintentional protective earth connections could lead to erroneous measurements.

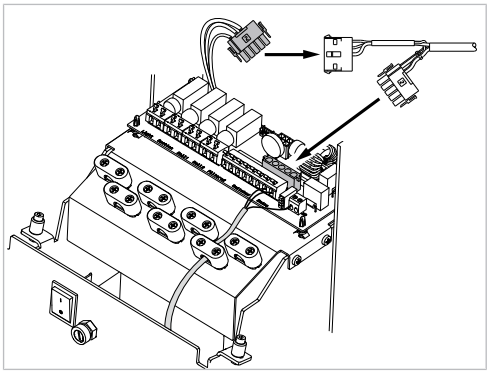
Note

The following measuring aids can be ordered: KaVo measuring cable (**Mat. no. 0.411.8811**)



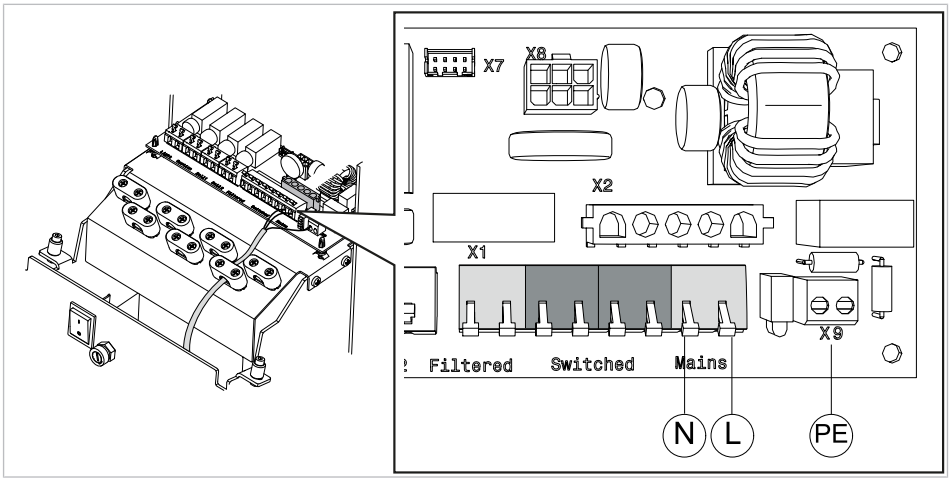
Using the measuring cable ① the unit is disconnected from the mains supply and connection of the treatment centre to the safety tester is enabled. Hence, the customer-provided mains supply L & N on the power input board need not be disconnected. The adapter cable ② is included in the delivery of the KaVo measuring cable and is required for older treatment centres that are not equipped with an X2 connector.

Connecting the safety tester to KaVo measuring cable on the treatment centre



- Remove plug X2 from the power input board and plug it into the matching connector X2 of the KaVo- measuring cable (**Mat. no. 0.411.8811**).
- Plug the second plug X2 of the KaVo measuring cable into the network card (X2).
- Insert the protective contact plug of the KaVo measuring cable into the safety tester.

Connecting the safety tester to the treatment centre without a KaVo measuring cable

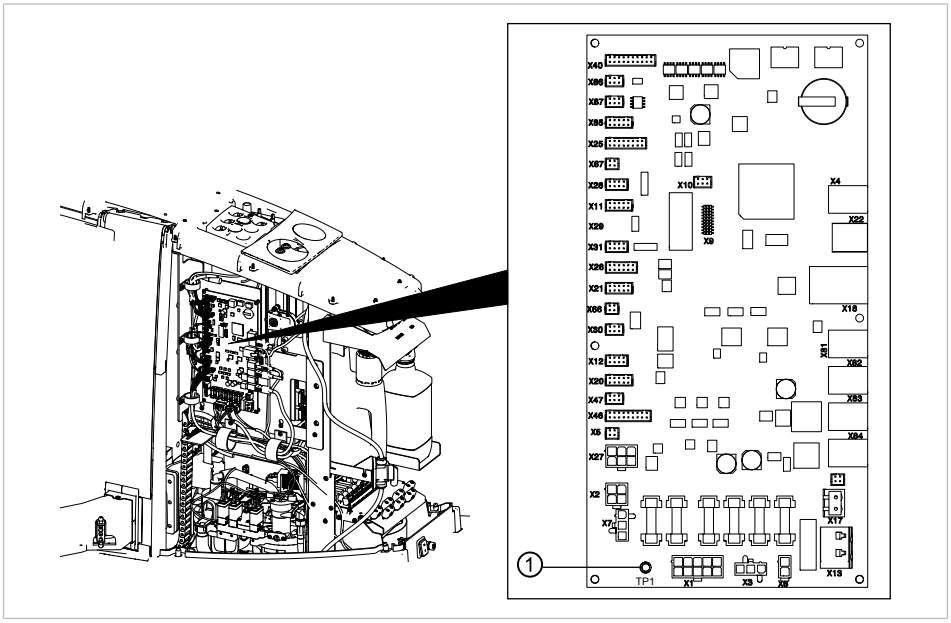


- Switch L + N of the on-site power supply cord to be voltage-free.
- Disconnect L + N on the mains terminals.
- Connect the safety tester directly to terminals mains and and protective earth conductor terminal X9.

Note

The main switch of the ME device / ME system must be turned on during the measurement.

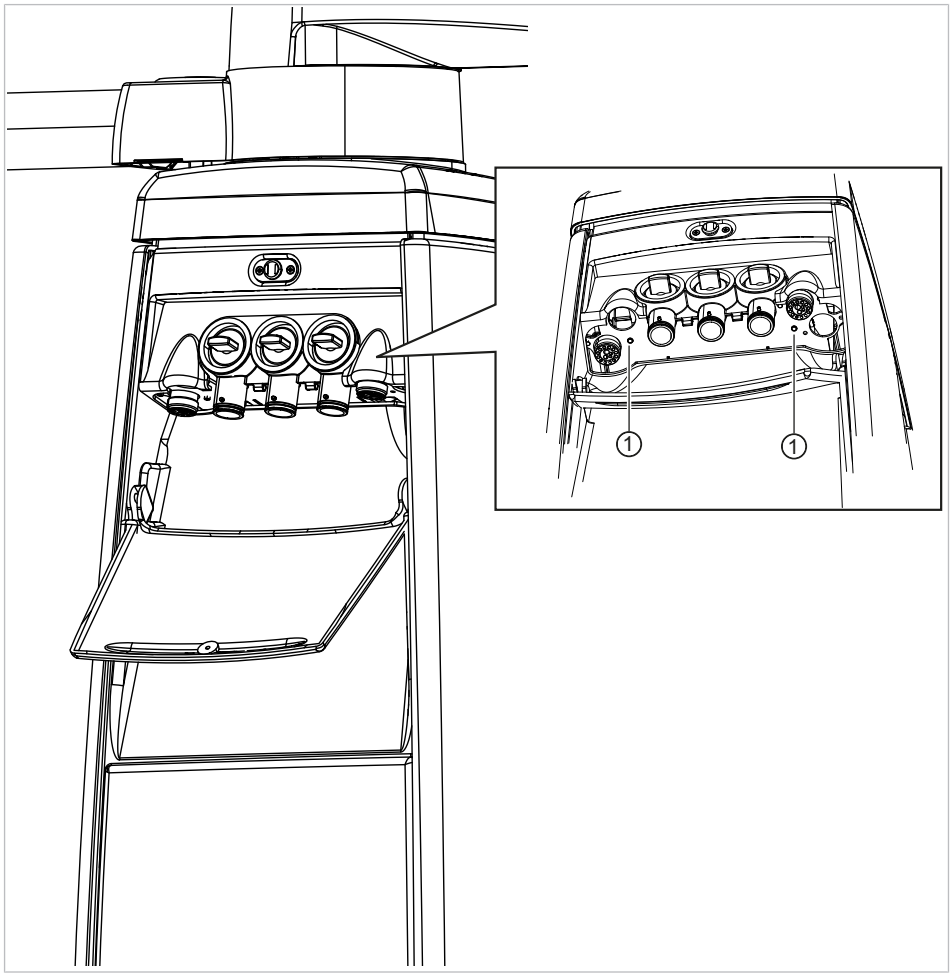
Connecting application parts [AP] to the safety tester:



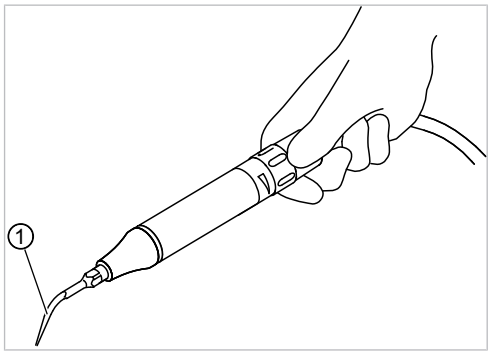
- Connect TP1 ① to the safety tester.

Note

If a curing light is installed on the assistant element, the curing light must be connected to the safety tester as an applied part. According to whether the hose coupling is installed on the left or the right, the safety tester must be connected to the left or right measuring socket.



- Connect TP2 measuring socket ① to the safety tester.



- Connect① ultrasonic scaler tip to the safety tester.

Note

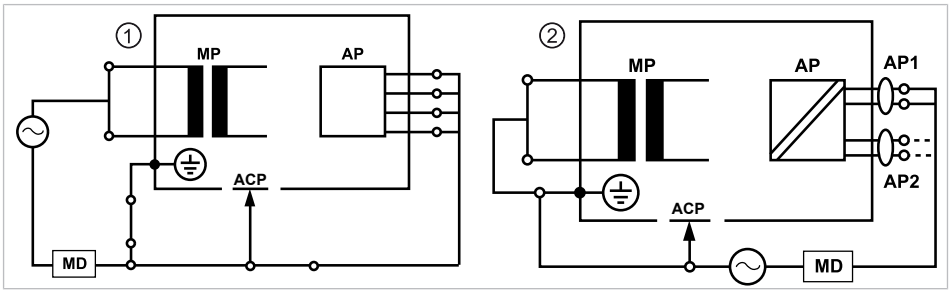
Additional measuring points AP X must be taken into consideration in the presence of accessories: e.g. accessories such as PIEZO ultrasound scaler.

See also:

8 Appendix - Additional protective conductor measuring sites, Page 161

Connecting accessible conductive parts [ACP] to PE

ACP = accessible conductive parts



Note

Additional measuring points ACP X must be taken into consideration in the presence of accessories: e.g. accessories such as saline pump, etc.

See also:

8 Appendix - Additional measuring sites, Page 161

ACPs on the treatment centre

No ACPs need to be connected to the E70 Vision and E80 Vision treatment centres during the measurement with PE because all relevant parts have already been connected with PE in the factory and are included in the test.

ACPs on treatment lamps

No ACPs need to be connected to the operating lights during the measurement with protective conductor (PE) because all relevant parts have already been connected to the protective conductor (PE) at the factory and are included in the test.

Measuring the protective conductor resistance

Limit	< 0,3 Ω (maximum value!)

Note

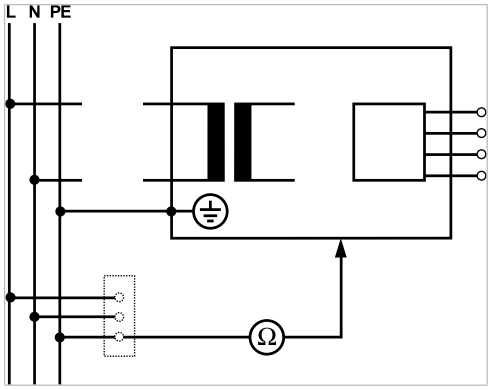
The integrity of the power supply cable, in particular the protective earth wire of the power cable must be ensured. As this is a fixed installation, the evaluation can be conducted by means of a visual inspection. If damage is determined, the further procedure to be taken is specified in the general instructions.

Note

In this measurement the resistance of the protective earth connection of the supply network can be taken into consideration.

Note

If applicable: all removable supply connection lines, which are kept handy for possible use, should be taken into consideration and the respective PE measured.



Protective earth measurement

The protective conductor resistance must be measured at the following parts of the device:

- Treatment centre
- Treatment lamp
- Accessories

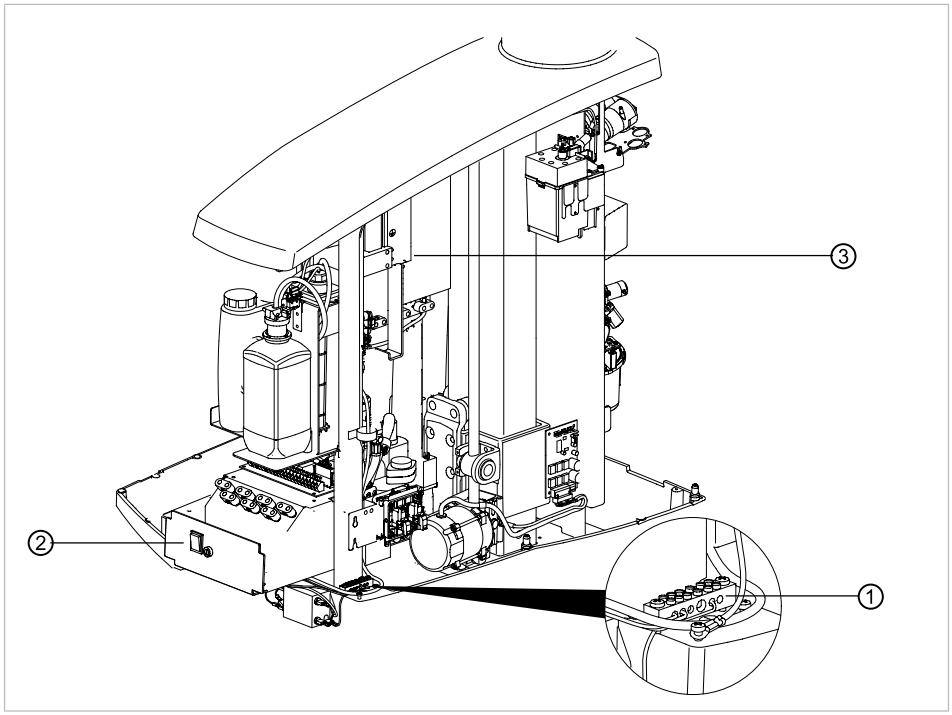
Note

Additional measuring points SL X need to be taken into consideration in the presence of accessories: e.g. accessories such as connection to external devices, camera module of the patient communication system, etc.

See also:

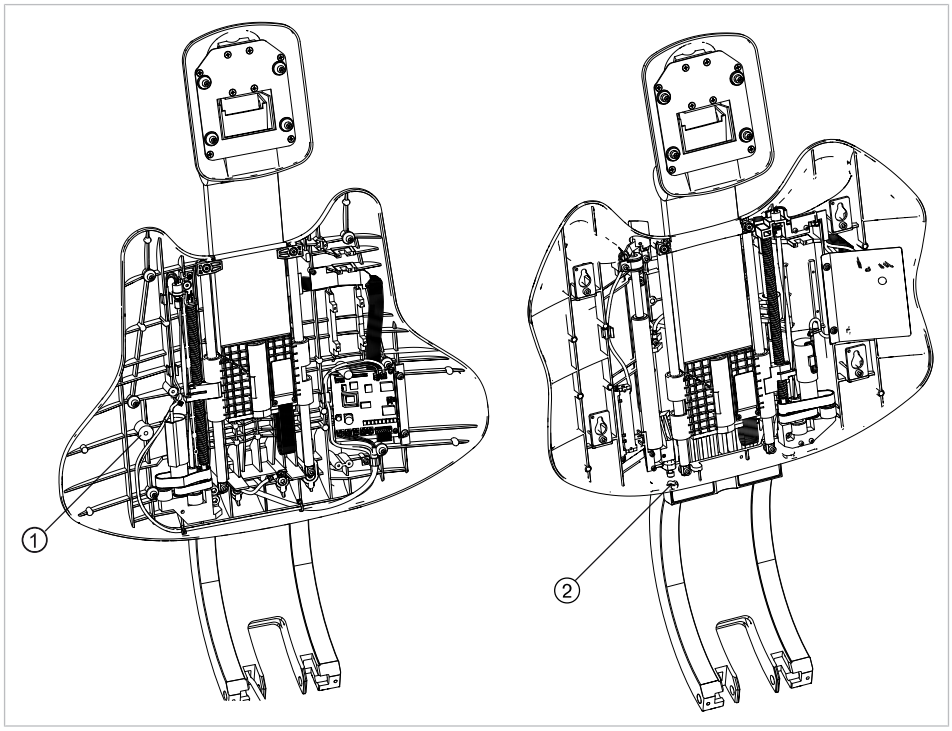
8 Appendix - Additional protective conductor measuring sites, Page 161

Scanning the treatment centre with the test tip



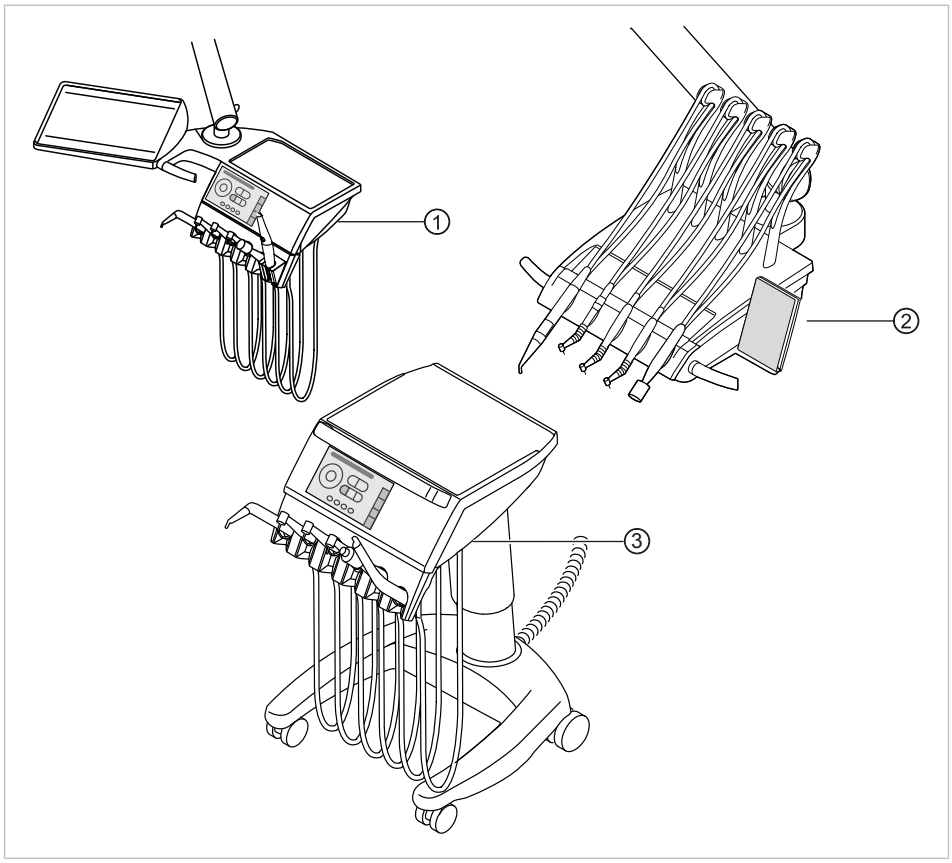
Body base

① Surroundings of the protective earth conductor terminal
② Main switch plate
③ Switching power supply



① Backrest progress: backrest with the upholstery removed

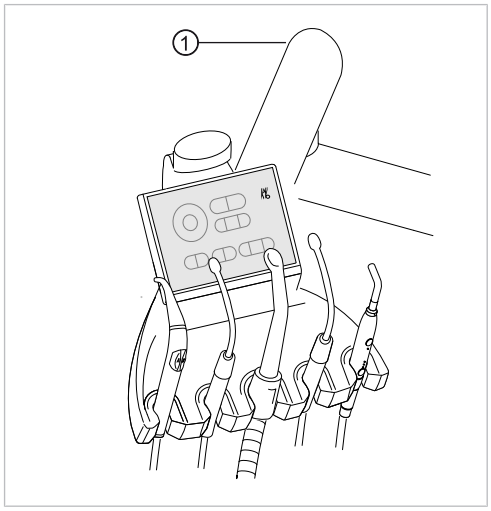
② Comfort backrest: fastening screw



① Dentist element T: table bottom

② Dentist element S: table bottom

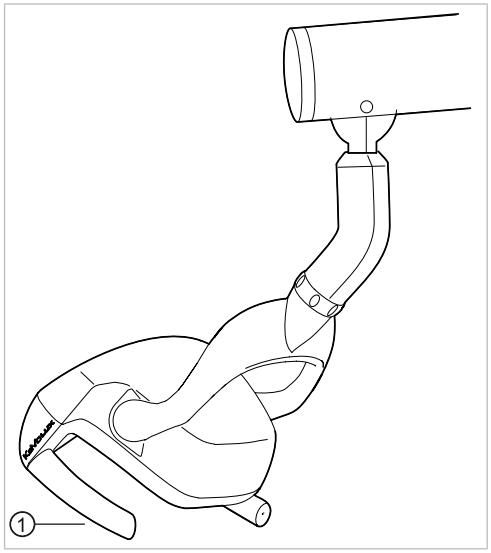
③ Dentist element Cart: table bottom



① Arm with cover removed

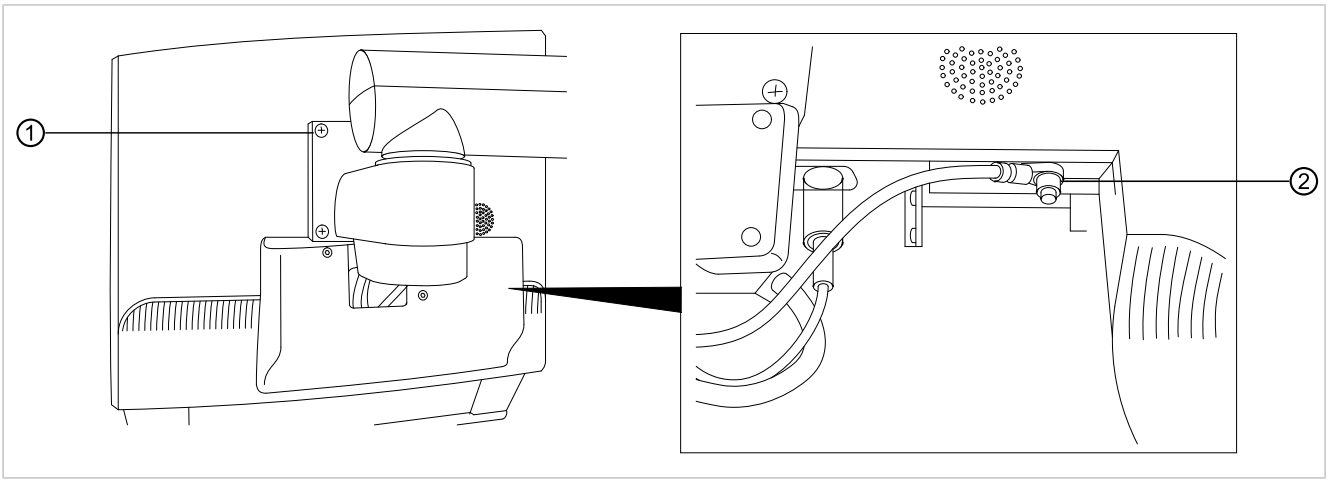
Scanning the treatment lamp with the test tip

KaVoLUX 540 LED U operating light



① Fastening screw of the handle support when the gripping sleeve has been removed

Touch monitor with test tip:



- Scan the measuring point ① with the test tip.

or

- Scan the measuring point ② after removing the display cover.

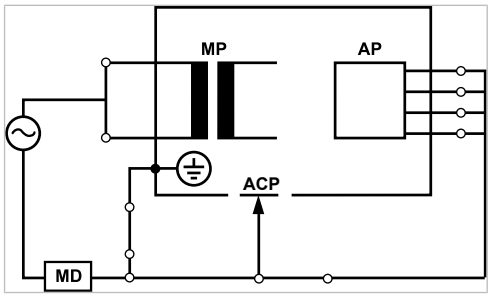
Measuring the protective conductor resistance of accessories

See also:

8 Appendix - Additional protective conductor measuring sites, Page 161

Measuring the equivalent unit leakage current

Limit	< 10 mA (maximum value!)



Protection class 1

⚠ WARNING

Electrical power.

Death or injury from electric shock.

- Conduct test for leakage current in devices of Protection Class 1 only after the protective earth test has been passed.

⚠ WARNING

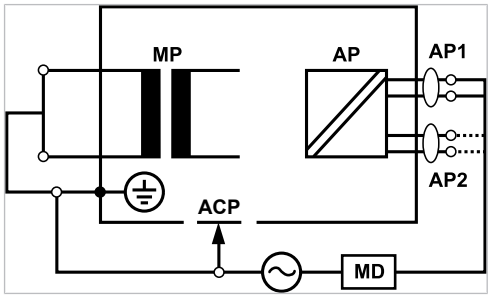
Electrical power.

Death or injury from electric shock.

- Prior to connecting the treatment centre to the safety tester, disconnect the treatment centre from the mains supply network.

Measuring the patient leakage current

Limit	< 5 mA (maximum value!)



Protection class 1

⚠ WARNING

Electrical power.

Death or injury from electric shock.

- Conduct test for leakage current in devices of Protection Class I only after the protective earth test has been passed.

⚠ WARNING

Electrical power.

Death or injury from electric shock.

- Prior to connecting the treatment centre to the safety tester, disconnect the treatment centre from the mains supply network.

Note

In the testing of ME devices with several application parts, the parts must be connected in succession. The measured results must be evaluated using the threshold values. Application parts, which are not included in the measurement, remain open.

Note

An additional measurement of the leakage current from type B applied parts need only be carried out if this is specified by the manufacturer (see accompanying documents).

Note

A separate measurement is not usually required for type B applied parts. The applied parts are connected to the casing (see diagram) and included in the measurement of the leakage current of the casing, whereby the same permissible values are applicable.

7.2.4 Functional tests

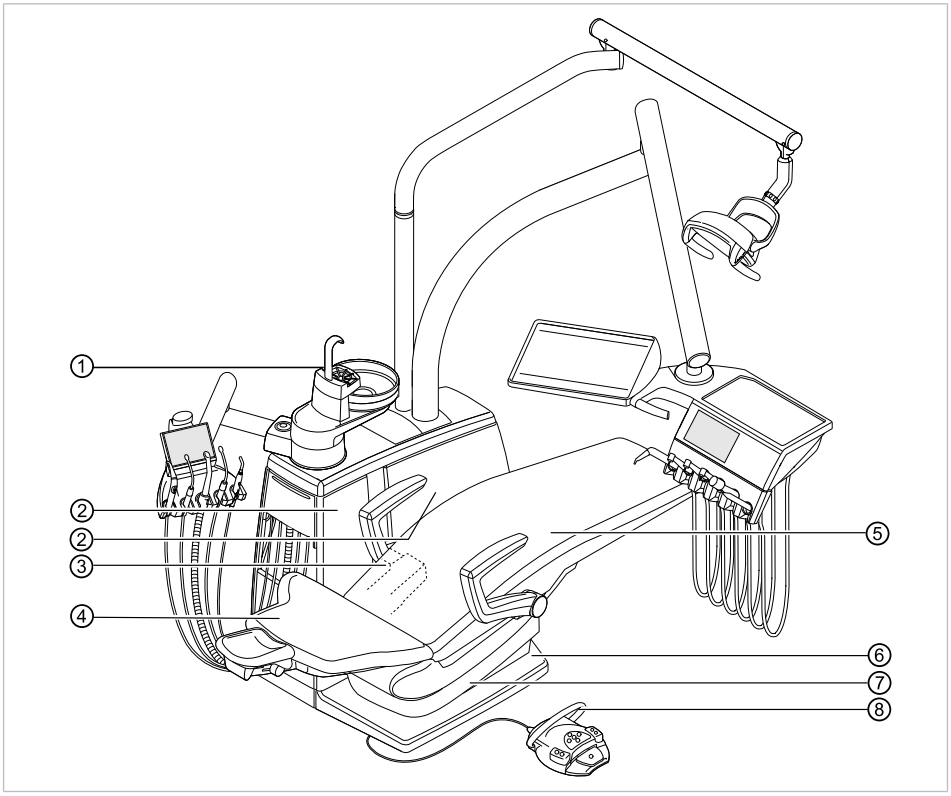
The following conditions must be met in all function tests:

- The basic function of the treatment centre must be guaranteed.
- The treatment centre must be fit for use.
- There must be no irregularities, noise or abrasion, etc., present.

The following list is for exemplary purposes and makes no claim of being complete.

- Functional test of the safety circuits (see diagram below)
- Functioning of the master switch of the device

- Functioning of the displays
- Functional test of the holder switch of the dentist and assistant element
- Functional test of the 3F/MF handpiece – seating of the cannula
- Functional test of the operating light
- Functional test of the suction hoses
- Functional test of the foot control
- Function of the chair:
  - Travel on all axes
  - Testing of the limit switches
- Functional test ...



Safety shut-offs

① Patient element

② Inner side cover B
E70 Vision: Inner side cover A

③ E80 Vision: Support cover

④ Backrest

⑤ Seat

⑥ Kick plate

⑦ Seat base

⑧ Clip on (wireless) foot control

7.2.5 Assessment and documentation

Note

All tests conducted must be documented comprehensively. The documents must contain at least the following particulars:

- Name of the test centre
- Name of the test engineer
- Name of the tested device (e. g. type, serial number)
- Tests and measurements
- Data, type and measuring results of the visual inspections
- Data, type and measuring results of the measurements
- Data, type and measuring results of functional tests
- Measuring/test equipment including SN/test equipment number and calibration period
- Final evaluation
- Name, date and signature of test engineer

There is a copy of a test report template at the end of chapter STK. KaVo recommends the use of this template.

Note

Following testing, repair or adjustment, it must be verified whether the ME equipment or ME system has been restored to the state that is required for the intended usage before it is employed once again.

Note

If the safety of the tested ME equipment or ME system has not been established, e.g. the tests have not been completed with positive results, the equipment or system must be marked accordingly and the potential hazard emanating from the equipment or system must be communicated in writing to the RESPONSIBLE ORGANISATION (to the operator, as a rule). This action is not required if the cause of the malfunction could be determined and rectified. The defect must be recorded in the protocol.

7.3 Safety Check [STK] Test Protocol

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Test protocol - Safety check [SC]

Operator	**Testing organisation** Name of the test engineer

❒ Test before start-up

❒ Recurrent test

❒ Test after repair

Date of testing:

Manufacturer:	
Device:	
Serial number:	
Ident. no.:	

next recurrent test required in

6	12	18	24	months

Test in accordance with:	**IEC 62353**	
Protection class.:	**I**	**II**
Power connection:	fixed connection	
Application part type:	**B**	**BF**

Measuring equipment used:

Make:

Type:

Test:

	passes test	
	yes	no
Visual inspection:	❒	❒

Measurements:	**Measured value**		
Protective conductor resistor		❒	❒
Equivalent unit leakage current EUL (according to figure 3)		❒	❒
Equivalent patient leakage current EPL (according to figure 6)		❒	❒
Insulation resistance		❒	❒
Functional test (according to manufacturer instructions)		❒	❒

Defect / Comment / Assessment

Overall assessment:

❒ No safety or functional defects detected

❒ No immediate risk, detected defects can be remedied in the short term.

❒ Device must be taken out of commission until defects are remedied!

❒ Device fails to meet requirements - Modification / replacement of of components / Withdrawal from service recommended.

Date / Signature

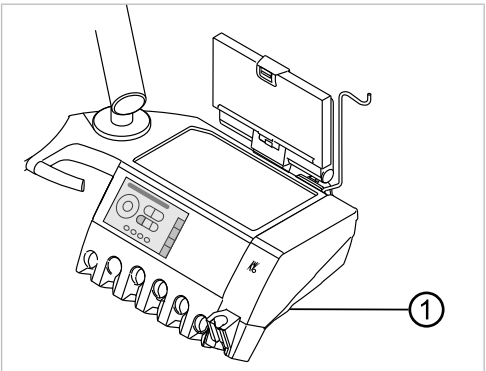
8 Appendix - Additional measuring sites

Note

With reference to accessories, which are not listed here, the specifications of the relevant instructions for use must be observed. Example: ERGOcam 5.

8.1 Additional scanning sites SL X in the protective conductor measurement

ERGOcam One module

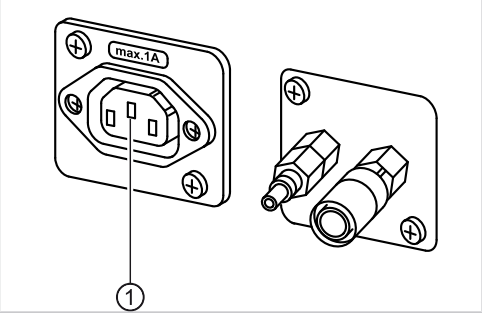


① Screw in bottom part of housing

Note

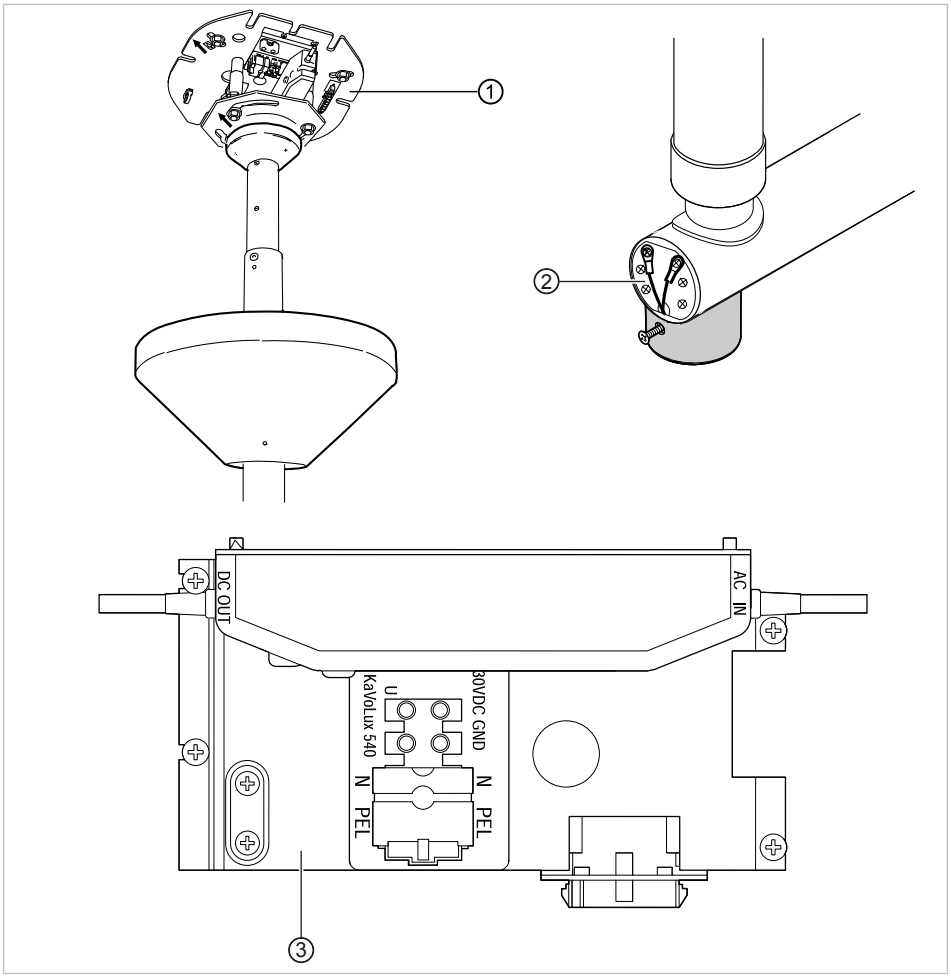
The modules are not earthed with a safety conductor. In the case of excessive PE resistance, the electrical connection between the module and the dentist element must be improved. This can be accomplished, for example, by means of a serrated lock washer on the fastening screw.

Connector for third-party equipment



- Position the test tip on the middle contact ①.

Ceiling adapter for operating light assembly kit



① Base plate for the ceiling adapter

② Surroundings of the protective conductor connector

③ Surroundings of the protective connector terminal

8.2 Additional measuring sites AP X for EUL/EPL measurement

Note

Additional measuring points AP X need to be taken into consideration in the presence of accessories: e.g. if third-party devices are connected, camera of the multimedia system, etc.

9 Eliminating disturbances

Note
In case of malfunctions, consult the separate instructions for the use and care of the individual instruments (such as the turbine, motor, camera, Satelec Mini LED, etc.).

Malfunction	Cause	Remedy
Nothing works.	Main switch is off.	▸ Turn on main switch.
Nothing works.	The main fuse is tripped.	▸ Unplug the unit from the mains. ▸ Check and replace, if required, the main service fuse. The main service fuse is situated next to the master switch. ▸ Use a screwdriver to open the bayonet lock, and change the microfuse. (220, 230, 240 V AC: T 6.3 H **Mat. no. 0.223.2783**); (100, 110, 120, 130 V AC: T 10 H **Mat. no. 1.007.2529**). ▸ The re-close the bayonet closure with the screwdriver.
No spray in the instruments.	No spray preselected.	▸ Preselect spray.
	Open the spray regulation in the instrument is closed.	▸ Open the spray regulation in the instrument.
	The main water valve in the office is closed.	▸ Open the main water valve in the office.
	The compressor is not turned on.	▸ Turn on the compressor.
Water in the return air filter.	The O-rings of the MULTIflex coupling are damaged.	▸ Replace all the O-rings on the MULTIflex coupling.
The suction hoses do not have any suction.	The suction machine is not turned on or is defective.	▸ Turn on the suction machine or eliminate the defect.
	The slide valves in the conical sections of the suction hoses are closed.	▸ Open the slide valve.
	The sieves in the selective valves are plugged.	▸ Exchange the sieve.
	The base switch is actuated.	▸ Stop actuating the base switch.
The patient chair does not move.	The safety shutoff is activated. Foot control is activated.	▸ Check the safety shutoffs and eliminate the reason for the shutoff.

Malfunction	Cause	Remedy
Display without indicator.	Bus / hardware error.	▸ Turn the device off and on. ▸ Call the service technician to look into the problem if it continues to exist.
Operating device no function.	Bus / hardware error.	▸ Turn the device off and on. ▸ Call the service technician to look into the problem if it continues to exist.
Several handpieces are simultaneously activated.	Hardware error.	▸ Stop working and call the service technician
The treatment unit is not connected to the wireless foot control. The treatment unit emits a tone.	The wireless foot control is turned off.	▸ Check the on/off switch on the foot control and turn it on if necessary.
	The wireless foot control is out of range.	▸ Move the wireless foot control into the range of the treatment unit.
	Malfunction or low battery	▸ Check the status display of the foot control. Yellow: low battery No display: malfunction ▸ Charge battery.
The wireless foot control does not return to centre position.		▸ Charge battery.

Malfunction	Cause	Remedy
Camera images shows images only as black/white images.	Electrical or electromagnetic interference by other equipment.	▸ Restart the CONEXIO PC.
Camera image freezes without the release button or foot control having been triggered. Camera image fails to return to live image mode.	Electrical or electromagnetic interference by other equipment.	▸ Replace the camera in the holder and then take it out again.
Camera image freezes without the release button or foot control having been triggered. Taking the camera out again did not solve the problem.	Electrical or electromagnetic interference by other equipment.	▸ Restart the software.
Camera image freezes without the release button or foot control having been triggered. The monitor turns itself off.	Electrical or electromagnetic interference by other equipment.	▸ Restart the treatment unit and the CONEXIO PC.

Additional warning messages

Malfunction	Cause	Remedy
A signal is emitted every 10 seconds and a status message is shown.	The oxygenal container is empty.	▸ Refill the Oxygenal container.
Ten beeps are issued.	The Oxygenal container is too full.	▸ Stop filling the Oxygenal container.
A melody sounds.	The amalgam separator CAS1 is almost full (95%).	▸ Exchange the amalgam container.
	The CAS1 amalgam separator is defective.	▸ **Also refer to:** Instructions for use for the CAS 1 or ▸ Call a Service technician.
An acoustic signal is issued every second.	Leaking water switch recognises leaking water.	▸ Remove water from the unit body. If necessary, have a technician fixed the leak.

Error messages on the touchscreen

Malfunction	Cause	Remedy
Status message ""Unit controller not recognised""	Cable or electronics issue.	▸ Call a service technician.
Status message: "Amalgam separator"	Malfunction in the amalgam separator.	▸ Call a service technician. ▸ Note the amalgam separator warning notice. **Also refer to:** Operating instructions of the amalgam separator
	Emergency shut off of the bowl valve (only when external suction is installed)	▸ Call a service technician.
MOSFET short circuit		▸ Turn the device off. ▸ Commission service technician to carry out repair.
Deactivation of the drive via the chair software		▸ Turn the device off. ▸ Commission service technician to carry out repair.
Spray heating is defective Boiler/heater no function		▸ Turn the device off. ▸ Commission service technician to carry out repair.

10 Information concerning the electromagnetic compatibility according to EN IEC 60601-1-2

10.1 Electromagnetic Transmissions

This product is designed for use in an environment like the one cited below. The customer or the user should ensure that the device is used in an environment of the specified type.

Measurements of emitted interference	Conformance	Electromagnetic environment - Guidelines
HF emissions according to CISPR 11	Group 1	This device uses HF energy for its internal functions exclusively. Therefore, the HF emission of the device is very low and interference with adjacent electronic devices is unlikely.
HF emissions according to CISPR 11	Class B	This product is suitable for use in all facilities including residential ones, and facilities that are directly connected to a public power supply that also supplies residential buildings.
Emission of harmonics according to IEC 61000-3-2	Class A	This product is suitable for use in all facilities including residential ones, and facilities that are directly connected to a public power supply that also supplies residential buildings.
Emission of voltage fluctuations/ flicker according to IEC 61000-3-3	Conforms	This product is suitable for use in all facilities including residential ones, and facilities that are directly connected to a public power supply that also supplies residential buildings.

10.2 Resistance to electromagnetic interference

This product is designed for use in an environment like the one cited below. The customer or the user should ensure that the device is used in an environment of the specified type.

Interference immunity tests	IEC 60601 test levels	Compliance level	Electromagnetic environment - Guidelines
Electrostatic discharge (ESD) according to IEC 61000-4-2	± 6 kV contact discharge ± 8 kV atmospheric discharge	± 2/4/6 kV contact discharge ± 2/4/8 kV atmospheric discharge	Floors should be made of wood or concrete or be fitted with ceramic tiles. If the floor is fitted with synthetic material, the relative humidity must be at least 30 %.
Fast transient electrical interference / bursts according to IEC 61000-4-4	± 2 kV for power lines ± 1 kV for input and output lines	± 2 kV for power lines	The quality of the supply voltage should correspond to that of a typical business or hospital environment.

Interference immunity tests	IEC 60601 test levels	Compliance level	Electromagnetic environment - Guidelines
Surges according to IEC 61000-4-5	± 1 kV voltage phase conductor - phase conductor ± 2 kV voltage phase conductor - earth	± 1 kV voltage phase conductor - phase conductor ± 2 kV voltage phase conductor - earth	The quality of the supply voltage should correspond to that of a typical business or hospital environment.
Voltage interruptions, short-term interruptions, and fluctuations of the supply voltage according to IEC 61000-4-11	< 5 % U_T (> 95 % interruption) for 1/2 period 40 % U_T (60 % interruption) for 5 periods 70 % U_T (30 % interruption) for 25 periods < 5 % U_T (> 95 % interruption) for 5 s (250 periods)	< 5 % U_T (> 95 % interruption) for 1/2 period 40 % U_T (60 % interruption) for 5 periods 70 % U_T (30 % interruption) for 25 periods < 5 % U_T (> 95 % interruption) for 5 s (250 periods)	The quality of the supply voltage should correspond to that of a typical business or hospital environment. When the user of this product needs continued operation even when the electrical power supply is interrupted, it is recommended to supply this product from an uninterrupted power supply or a battery.
Magnetic field at a supply frequency (50/60 Hz) according to IEC 61000-4-8	3 A/m	3 A/m	Magnetic fields at the mains frequency should correspond to typical values in a business and hospital environment.

NOTE: V_T is the alternating mains voltage before the test level is used.

10.3 Immunity to electromagnetic interference

This product is designed for use in an environment like the one cited below. The customer or the user should ensure that the device is used in an environment of the specified type.

Interference immunity tests	IEC 60601 test levels	Compliance level	Electromagnetic environment - Guidelines
Wire-based HF interference according to IEC 61000-4-6 Wireless HF interference according to IEC 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	Portable and mobile radio devices should not be used closer to this product including the wires, than the recommenced safe distance calculated using the equation for the transmission frequency. Recommended safe distance: $d = 1.17\sqrt{P}$ $d = 1.20\sqrt{P}$ for 80 MHz to 800 MHz $d = 2.30\sqrt{P}$ 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 [d] at all frequencies. Interference is possible in the vicinity of devices that bear the following symbol.

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.

[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 to 13.567 MHz; 26.957 MHz to 27.283 MHz, and 40.66 MHz to 40.70 MHz.

[b]The compliance level in frequency ranges between 150 kHz and 80 MHz and 80 MHz up to 2.5 GHz is determined to reduce the probability that a mobile/portable communication device can cause interference if it is introduced unintentionally into the patient area. For this reason, the additional factor of 10/3 is incorporated into the formula and taken into account for transmitters in these frequency ranges.

[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. To determine the electromagnetic environment resulting from stationary high frequency transmitters, the location should be investigated. When the determined field strength at the location where this product will be used exceeds the above cited conformance level, the product should be monitored to see if it is operating normally in every location. If unusual performance characteristics are observed, it may be necessary to undertake additional measures such as reorienting or moving the product.

[d] Within the frequency range of 150 kHz to 80 MHz, the field strength should be less than 1 V/m.

10.4 Recommended safe distances between portable and mobile HF telecommunications equipment and this product

This product is intended for use in an electromagnetic environment in which HF disturbances are controlled. The customer or user of the product can help prevent electromagnetic interference by maintaining minimum distances between portable and mobile high-frequency communication devices (transmitters) and the product as recommended below corresponding to the maximum output of the communication device.

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
U1 = Compliance level according to 4-6: 3 V_{eff} 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 recommended 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.

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