Instructions for use

Primus 1058 Life

KaVo. Dental Excellence.

Manufacturer:
Kaltenbach & Voigt GmbH
Bismarckring 39
D-88400 Biberach
www.kavo.com

Distributed by:
KaVo Dental GmbH
Bismarckring 39
D-88400 Biberach
Phone +49 (0) 7351 56-0
Fax +49 (0) 7351 56-1488

CE 0124

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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 hand-over 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 colour-fastness 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.
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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 on 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.

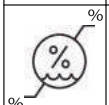
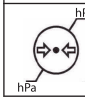
Note
If the recipient fails to comply with any of the above-mentioned obligations, the damage will be considered to have arisen following delivery
(in accordance with CMR law, Chapter 5, Art. 30).

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 safety instructions listed here, together with the three levels of danger will help avert property damage and injury.

⚠ CAUTION

CAUTION
indicates a hazardous situation that can cause damage to property or mild to moderate injuries.

⚠ WARNING

WARNING
indicates a hazardous situation that can lead to serious or fatal injury.

⚠ DANGER

DANGER
indicates a maximal hazard due to a situation that can directly cause death or fatal injury.

2.2 Purpose – Proper use

2.2.1 General

The user must ensure that the unit works properly and is in satisfactory condition before each use.
The KaVoPrimus 1058 Life equipment system is a dental treatment unit in accordance with ISO 7494 with 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 following all 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:

- only use equipment that is operating correctly,
- protect him or herself, the patient and third parties from danger, and
- avoid 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!

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.

See also:

10 Data on electromagnetic compatibility according to EN 60601-1-2, Page 114

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 used electrical and electronic devices, 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.

2.2.2 Product-specific

Designated use and target group

KaVoPrimus 1058 Life is designed for dental treatment of children and adults.
The KaVo Primus 1058 Life 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 multifunction 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 1440/5x5 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 19“	KaVo Screen HD	1.011.0302
	Monitor 22“	KaVo Screen One	1.011.0300
Cameras	Intraoral camera	ERGOcam One 130 ERGOcam One 160	1.011.2130 1.011.2129
Cables between unit, accessories and PC	USB extension cord - 5 meters	USB extension cord 5m with 1:1 hub	1.004.6953
	USB extension cord - 10 meters	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.

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

Premature wear and malfunctions from improper servicing and care.

Reduced product life.

- Perform regular proper care and servicing!

⚠ 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.

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 underarm 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

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

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 freely usable USB interfaces of the device (if any).

- 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

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.
- Option: perform intensive germ reduction (if assembly kit is available).
- Actuate the tumbler filler several times.

⚠ 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

Long stay in the patient chair.

Decubitus formation.

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

⚠ 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 moving the patient or patient chair.

The patient or treatment personnel can be pinched or crushed.

- Position all moving parts, such as dentist element, assistant element, operating light, screens, etc., outside the collision range when you move the patient or patient chair.

⚠ CAUTION

Damage to the handpiece hoses from stickers.

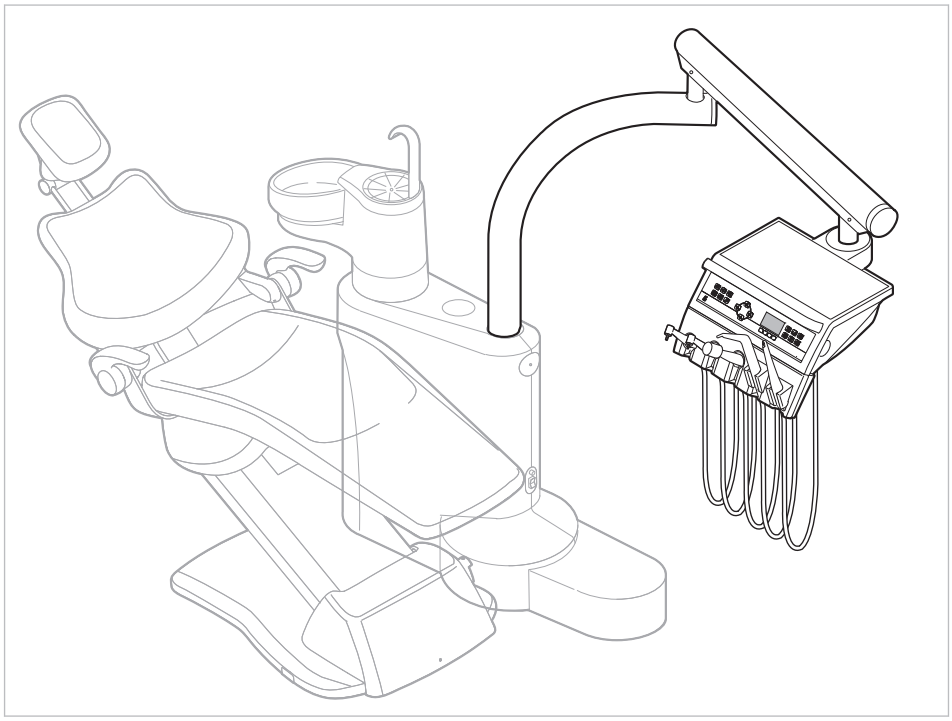
Handpiece hoses can burst.

- Do not affix stickers or adhesive tape.

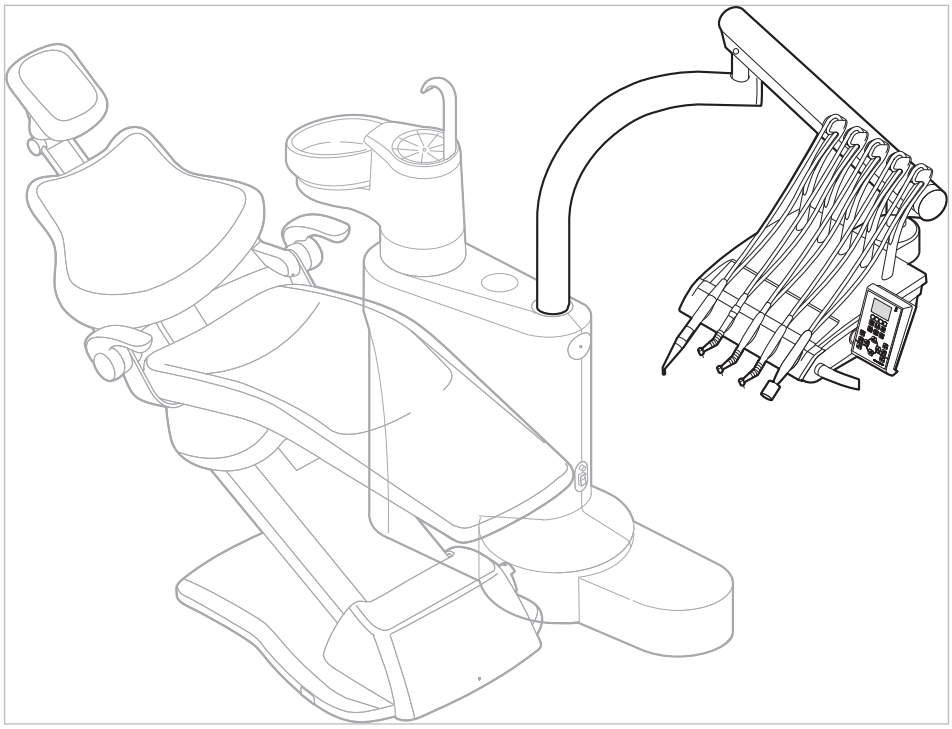
3 Product description

3.1 Treatment unit versions

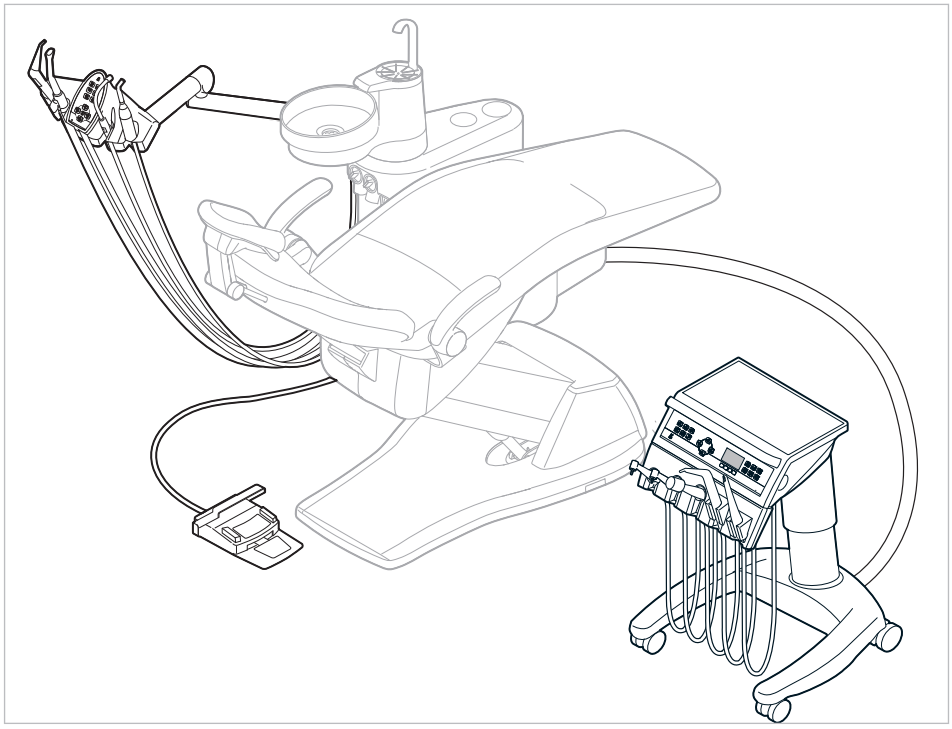
3.1.1 KaVo Primus 1058 Life TM



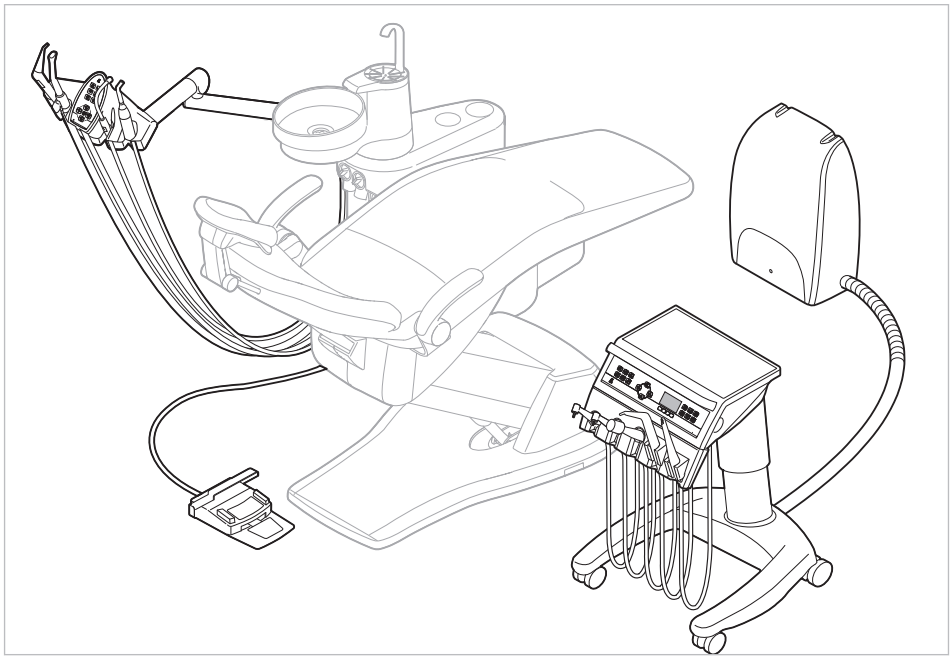
3.1.2 KaVo Primus 1058 Life S



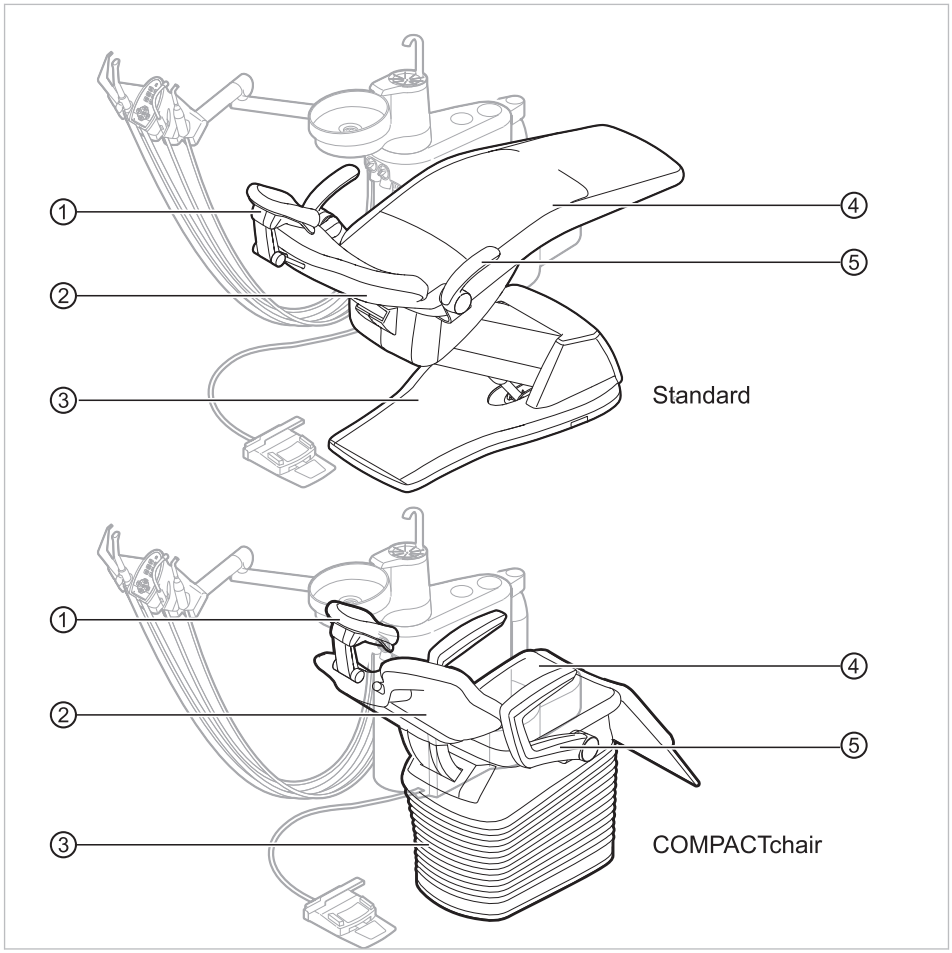
3.1.3 KaVo Primus 1058 Life C



3.1.4 KaVo Primus 1058 Life C with right-side set-up kit

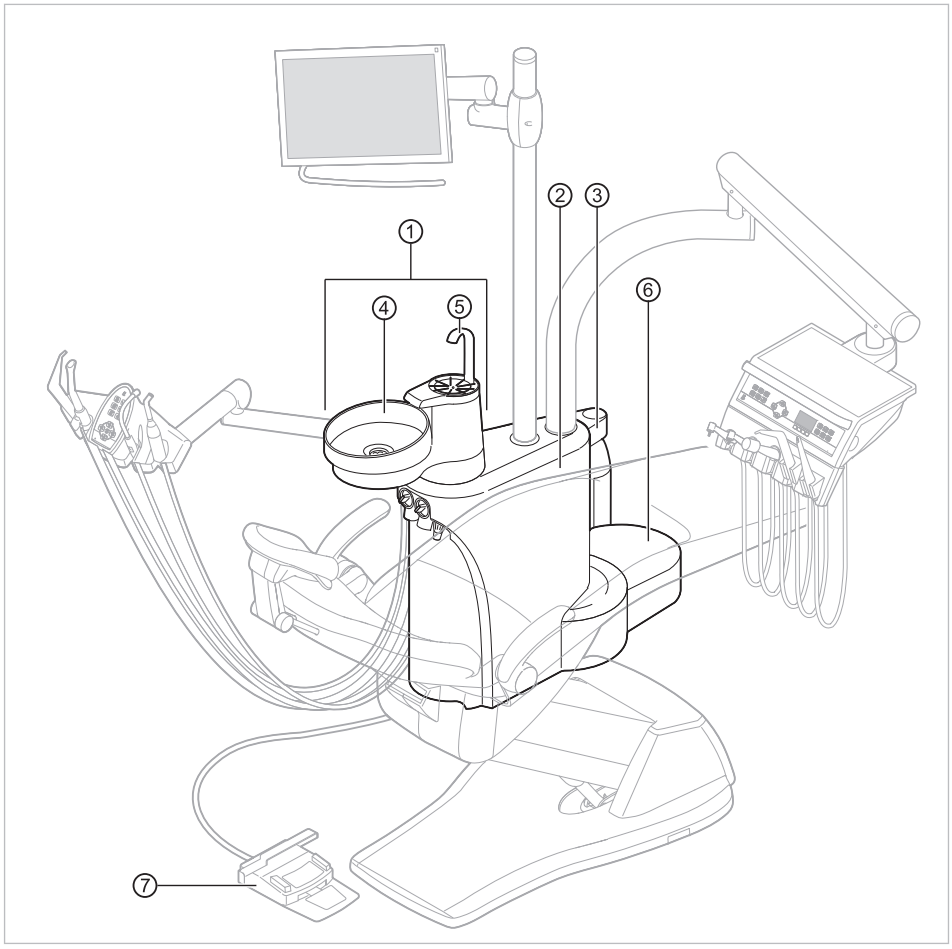


3.2 Patient chair Standard and COMPACTchair



① Headrest
② Backrest
③ Chair base
④ Seat
⑤ Arm rest (optional)

3.3 Device body with patient unit



① Patient element

② Unit body
The central control is housed in the unit body.

③ Pressurised water bottle (supplementary equipment)

④ Spittoon bowl

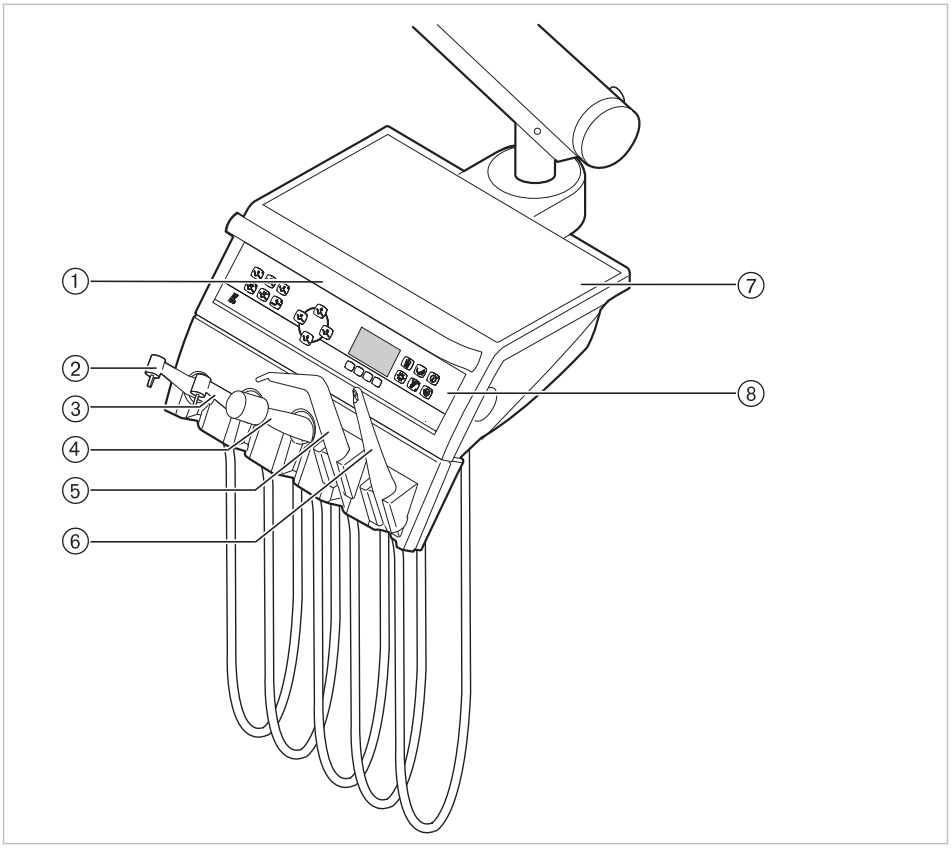
⑤ Tumbler filler

⑥ Supply element
Customer connection of power, water, compressed air, wastewater, and suction air

⑦ Foot control

3.4 Dentist unit versions

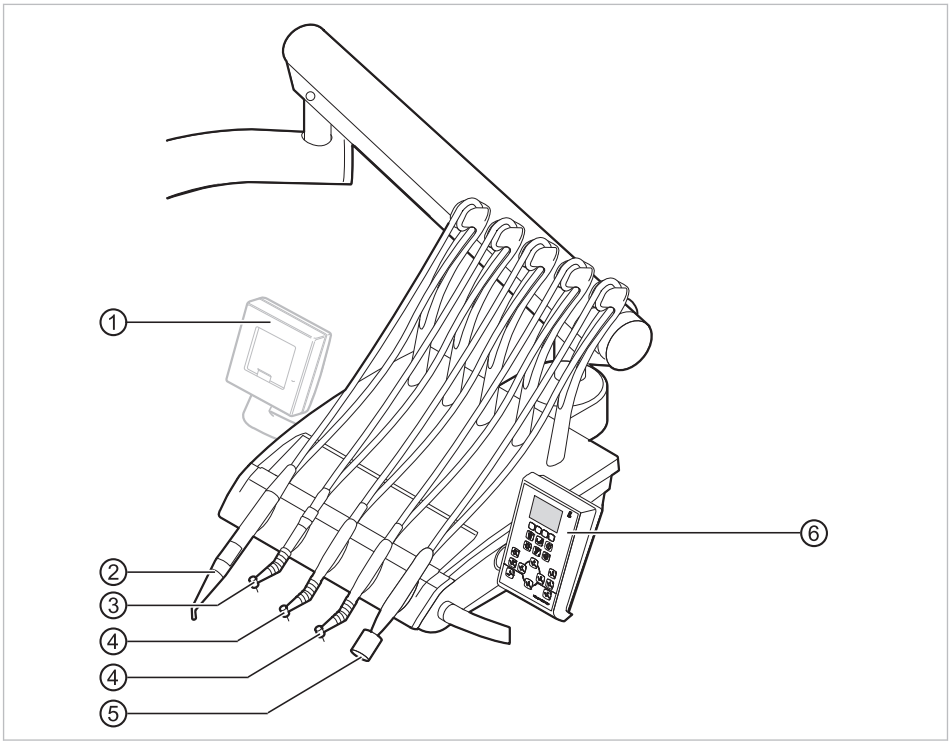
3.4.1 TM/C table



① Handle	② Turbine (multiflex coupling)
③ INTRA LUX motor KL 703 or INTRA LUX motor KL 701	④ Ultrasonic scaler
⑤ Three-function handpiece or multi-functional handpiece	⑥ ERGOcam One
⑦ Tray support	⑧ Control element

3.4.2 S table

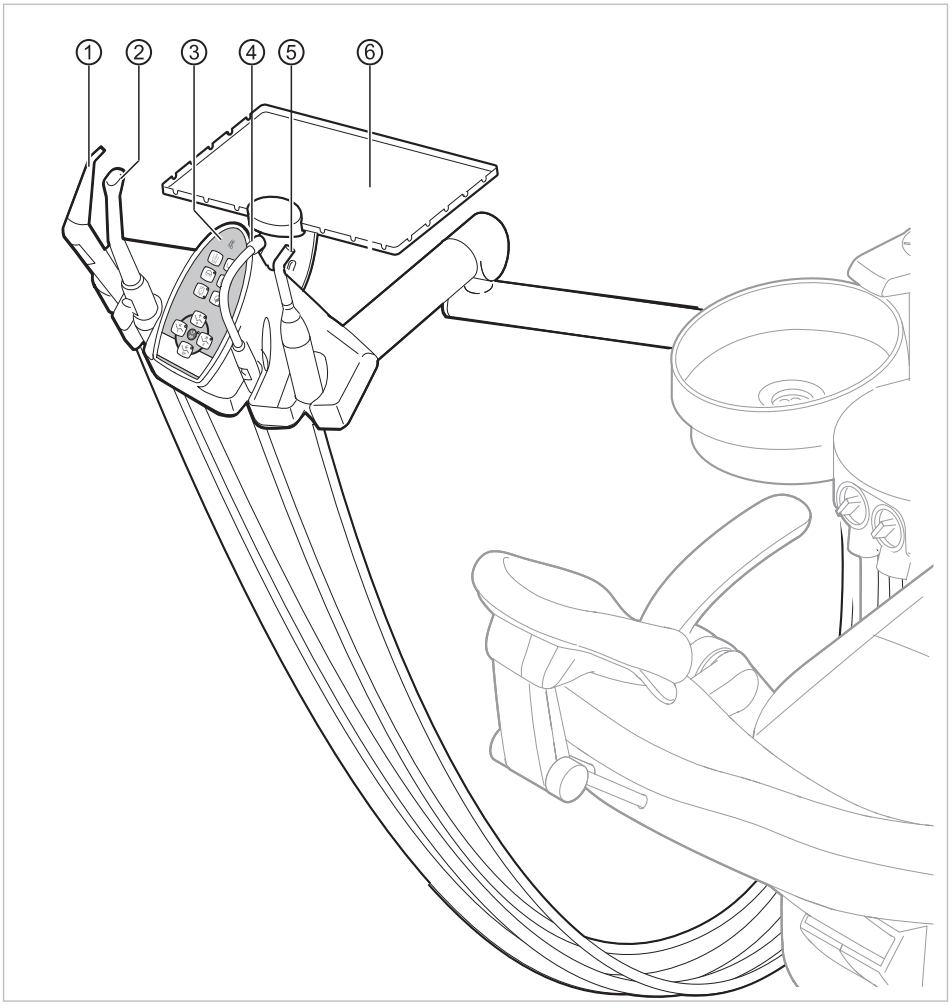
Note
The holder assignment and arrangement of the instruments can be changed as needed and does not have to follow the picture.



① Small X-ray image viewer
② Three-function handpiece or multi-functional handpiece
③ Turbine (multiflex coupling)
④ INTRAlux motor KL 703 LED or INTRA LUX motor KL 701
⑤ Ultrasonic scaler
⑥ Control element

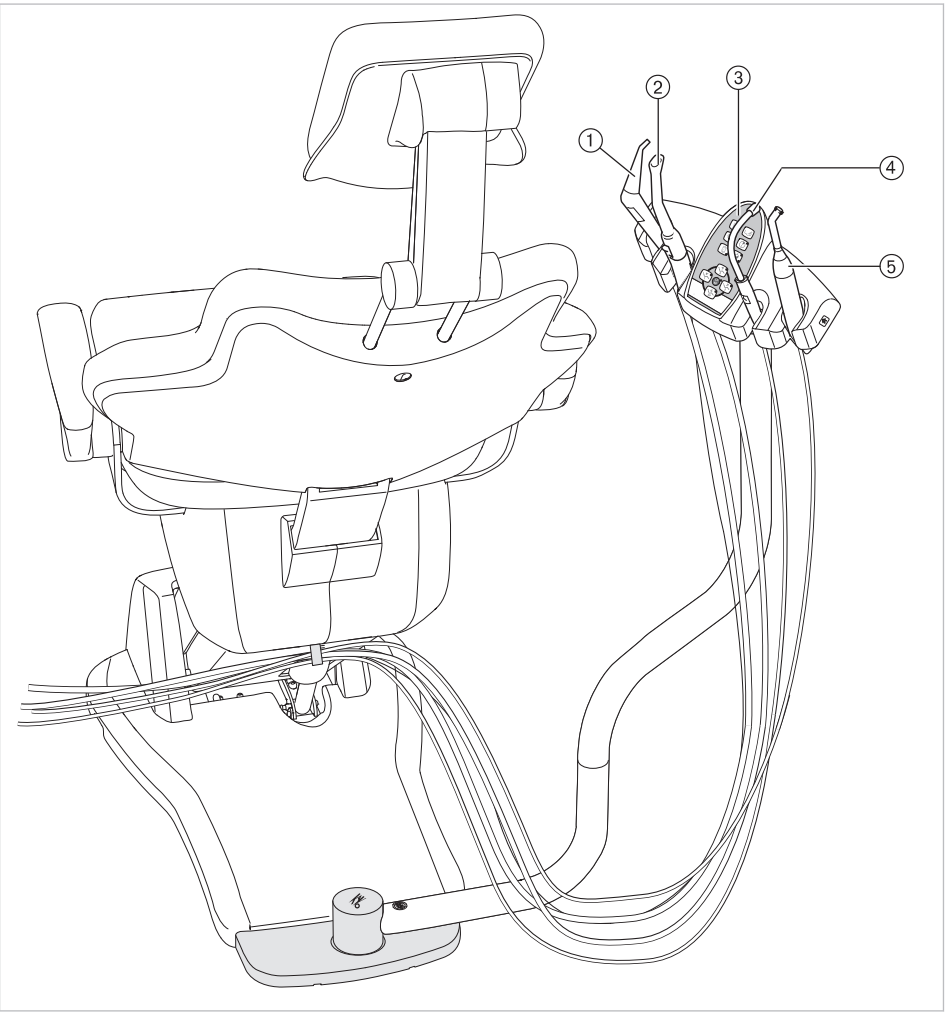
3.5 Assistant element – Versions

3.5.1 Standard assistant unit



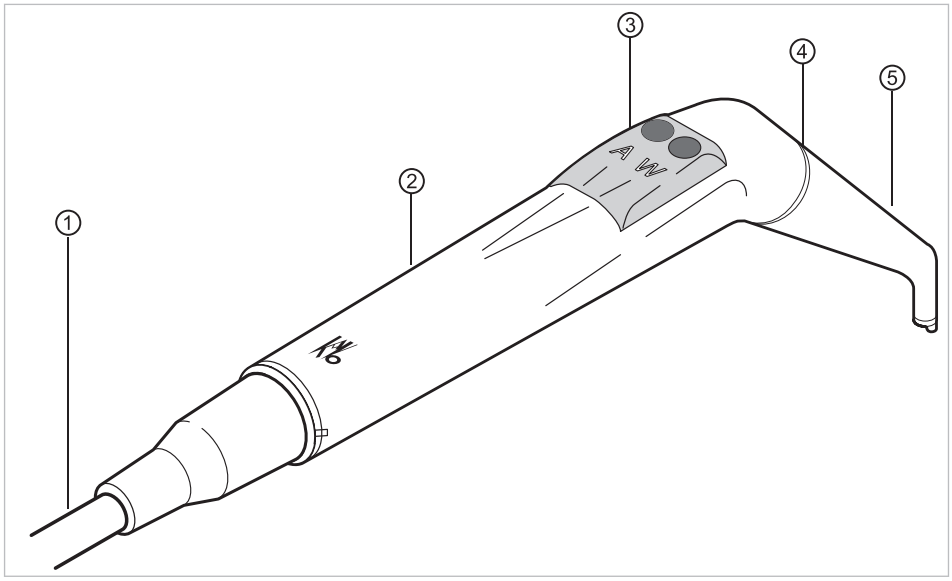
① Three-function or multifunctional handpiece
② Spray mist suction
③ Control element
④ Saliva ejector
⑤ Satelec Mini LED (polymerisation handpiece)
⑥ Tray holder for dental assistant

3.5.2 Assistant element right, left (optional, only in conjunction with patient chair Standard)



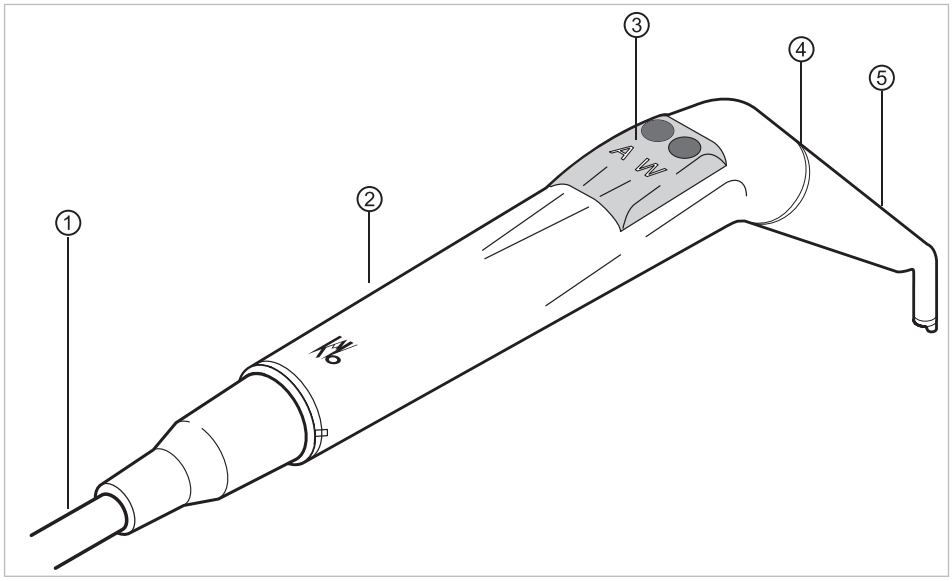
① Triple function handpiece
② Spray mist suction
③ Control element
④ Saliva ejector
⑤ Satelec Mini LED (polymerisation handpiece)

3.6 Three function handpiece (3F handpiece)



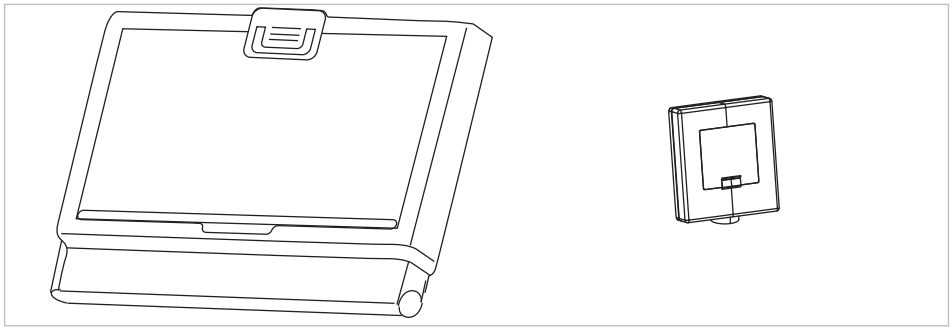
① MF handpiece hose
② Gripping sleeve
③ Media buttons (air/water)
④ Labelled blue: Three-function handpiece (3F handpiece)
⑤ Cannula

3.7 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

3.8 X-ray viewer 1440 and 5x5



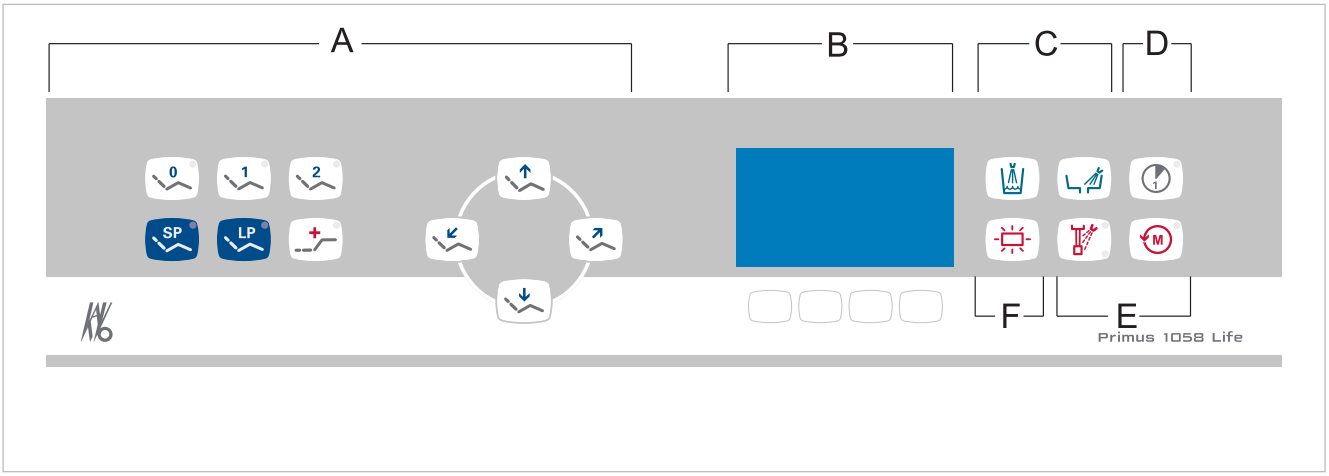
X-ray viewer 1440 and 5x5

Note

The KaVo X-ray viewers 1440 und 5x5 are type 1 radiological viewing devices in accordance with the definition of DIN 6856-3.

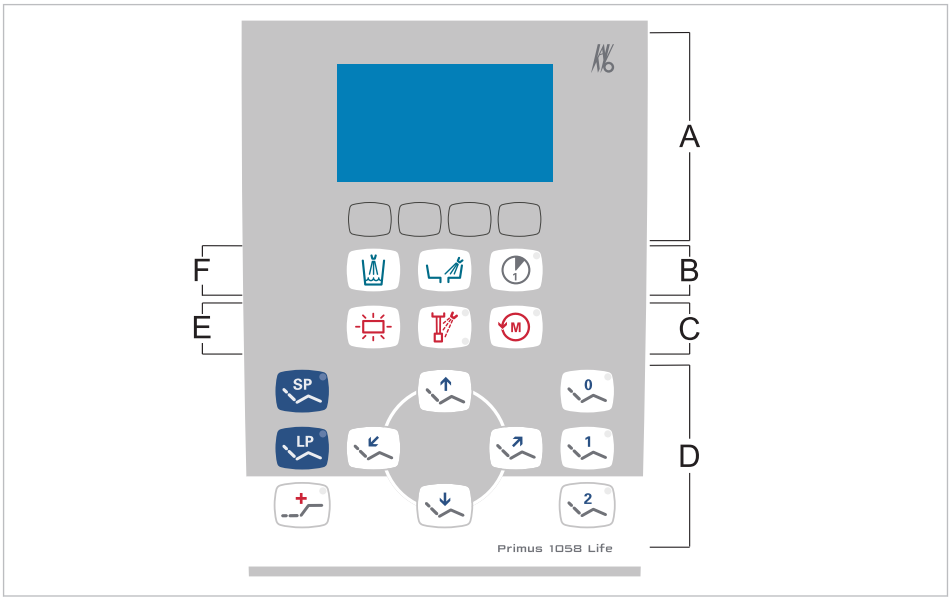
3.9 Controls

3.9.1 Dentist elements



Dentist element TM/C table

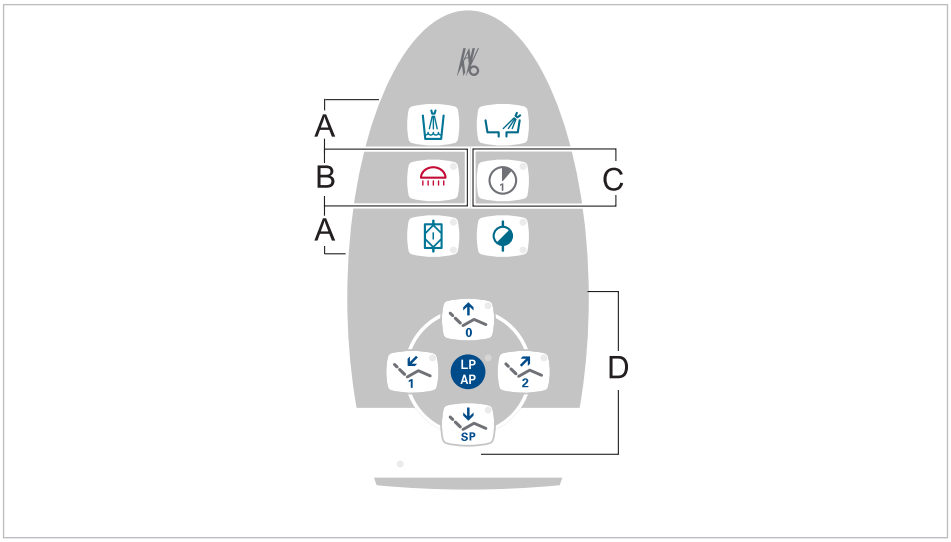
A	Group of keys for the dental chair	B	Group of keys for menu selection (MEMOspeed optional)
C	Group of keys for hygiene	D	Group of keys for the timer
E	Group of keys for the handpieces	F	Group of keys for illumination



Dentist element S-table

A	Group of keys for menu selection (MEMOspeed optional)	B	Group of keys for the timer
C	Group of keys for the handpieces	D	Group of keys for the dental chair
E	Group of keys for illumination	F	Group of keys for hygiene

3.9.2 Assistant unit

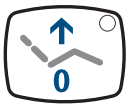
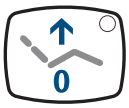
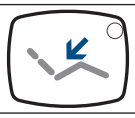
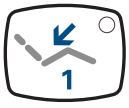
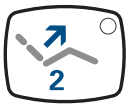
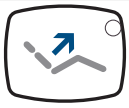
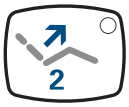


A	Group of keys for hygiene	B	Group of keys for illumination
C	Group of keys for the timer	D	Group of keys for the dental chair

3.9.3 Groups of keys

Group of keys for the dental chair

The keys of the assistant unit each have two functions and show two symbols.

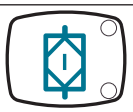
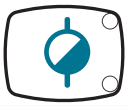
Assistant element key	Dentist element key	Name
		"Chair up" key
		"AP 0" key (automatic position 0)
		"Chair down" key
		"SP" key (rinsing position)
		"LP" key (last position)
		"AP" key (activate automatic posi-tion)
		"Backrest down" key
		"AP 1" key (automatic position 1)
		"Backrest up" key
		"AP 2" key (automatic position 2)
		"Collapsed position" key

Group of keys for illumination

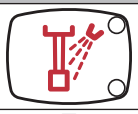
Key	Name	Control element
	"Operating light" key	Assistant element
	"X-ray image viewer" key	Dentist element

Group of keys for hygiene

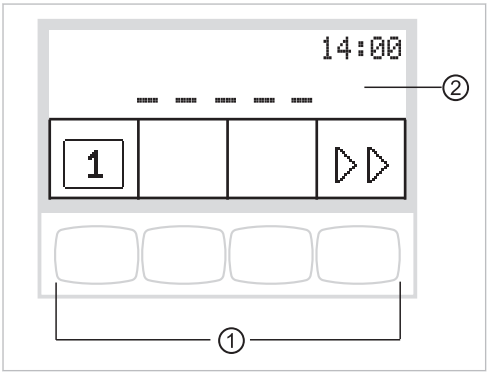
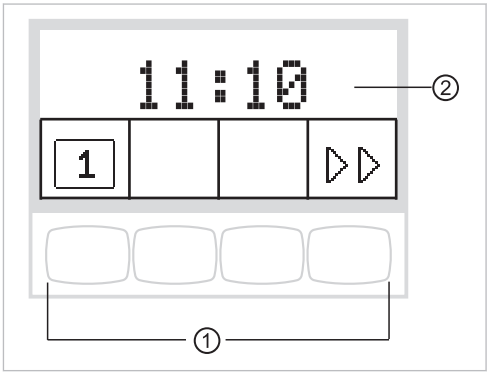
Key	Name	Control element
	"Tumbler filler" key	Dentist element and assistant element

Key	Name	Control element
	"Bowl rinsing" key	Dentist element and assistant element
	"Intensive germ reduction" key	Assistant element (optional)
	"HYDROclean" key	Assistant element

Group of keys for the handpieces/timer

Key	Name	Control element
	"Preselected spray" button	Dentist element
	"Direction of motor rotation" button	Dentist element
	"Timer" key	Dentist element and assistant element

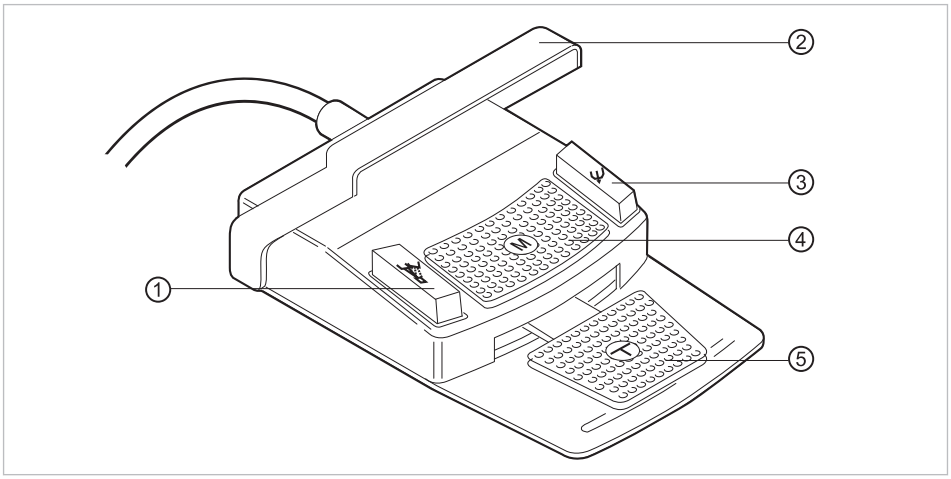
Group of keys for the menu

Standby menu with MEMOspeed	Standby menu without MEMOspeed
	

① Menu function selection keys
② Display

3.9.4 Foot control

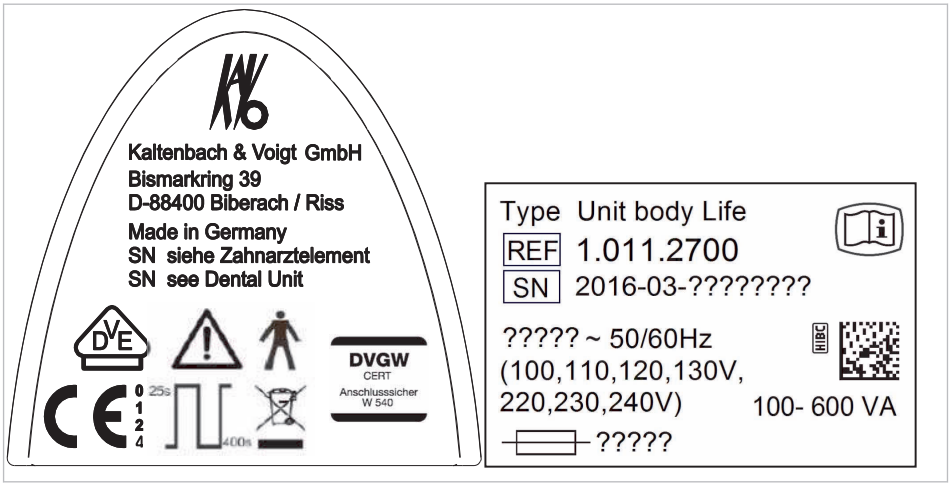
The footswitches of the foot control have two functions. The functions of the foot-switches depend on if an instrument is mounted or removed.



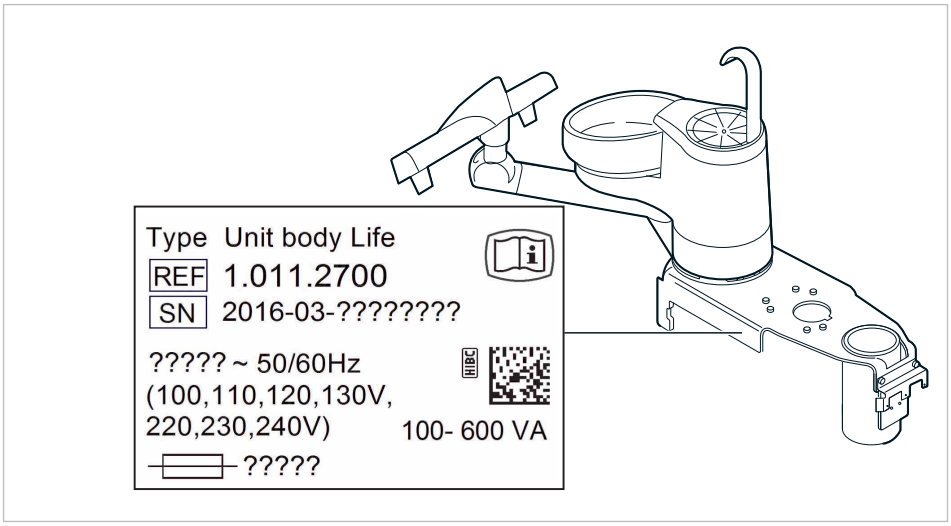
Item	Name	Function with handpiece mounted	Function with handpiece removed
①	"Spray pre-selection/AP" footswitch	Moves the dental chair into automatic position.	Sets the spray pre-selection.
②	U-shaped switch	Turns the safety shutoff On.	Switches the footswitches to the "Chair motion" function.
③	"Blown air/AP" footswitch	Moves the dental chair into automatic position.	Sets the preset blown air (chip blower).
④	Cross-switch: "Counterclockwise motor rotation"	Changes the position of the dental chair.	Selects the direction of motor rotation (for INTRA LUX motor KL 701/703 or COMFORTdrive 200XD).
⑤	"Handpieces" foot-pedal	Generates a video/ freeze frame if CONEXIOcom is installed.	Starts the motor and controls the speed/ intensity of the handpieces.

3.10 Rating plate and identification plate

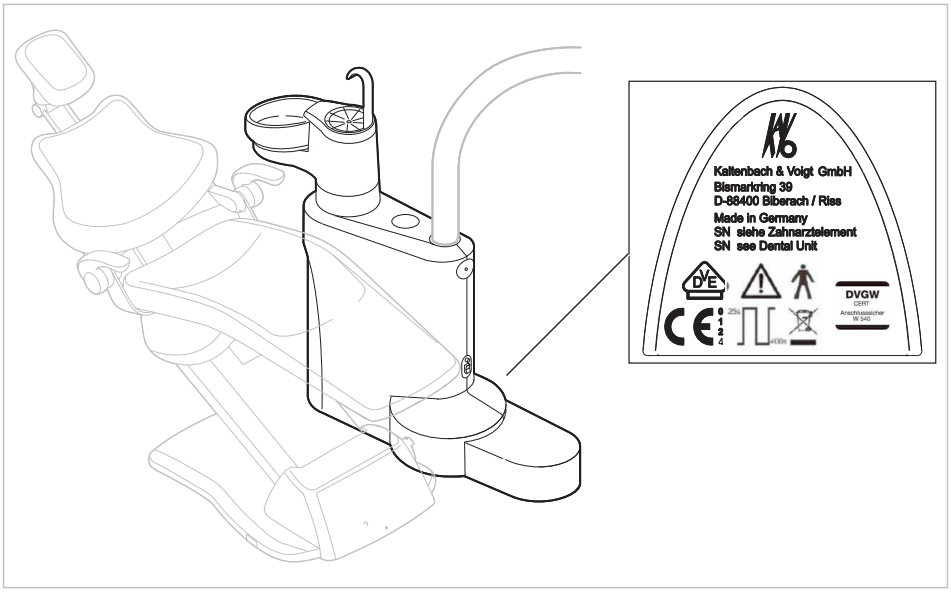
Rating plate



Rating plates inside and outside



Internal attachment site for rating plate

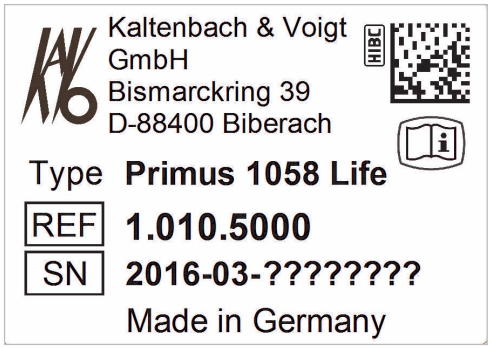


Outside attachment site for rating plate

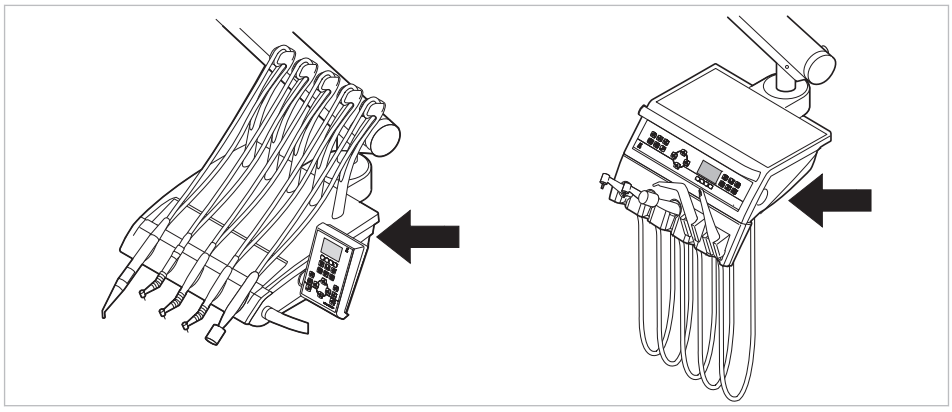
SN	Serial number
	Read and take note of the content of accompanying documents
	Please note the instructions for use
	Follow the instructions for use!
	Type B applied part
	Type BF applied part
	Operating mode: Operating time of the patient chair: 25 seconds Pause time of the patient chair: 400 seconds (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 V~ ,110 V~, 120 V~, 130 V~ = T10H 220 V~ , 230 V~, 240 V~ = T6.3H
	For disposal information, see also: Purpose - Intended use
CE 0124	CE mark according to Medical Devices Directive EC 93/42
VDE	VDE mark
DVGW CERT Anschlussicher W 540	DVGW certification DVGW CERT registration number AS-0630BT0111
	HIBC Code
	eLabeling ID

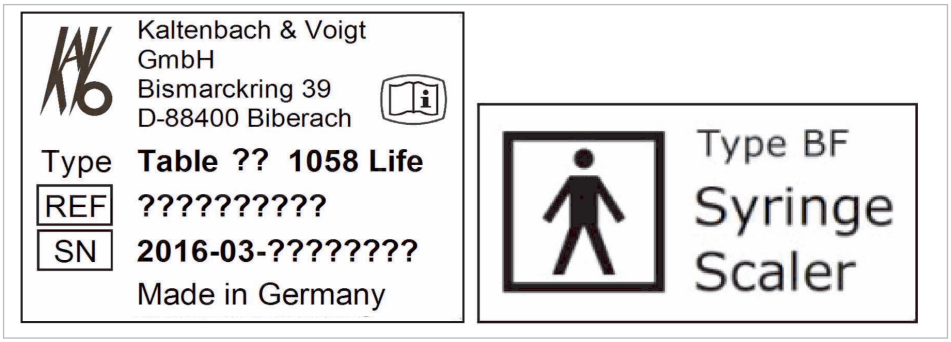
Identification plates



Rating plate and dentist element ID



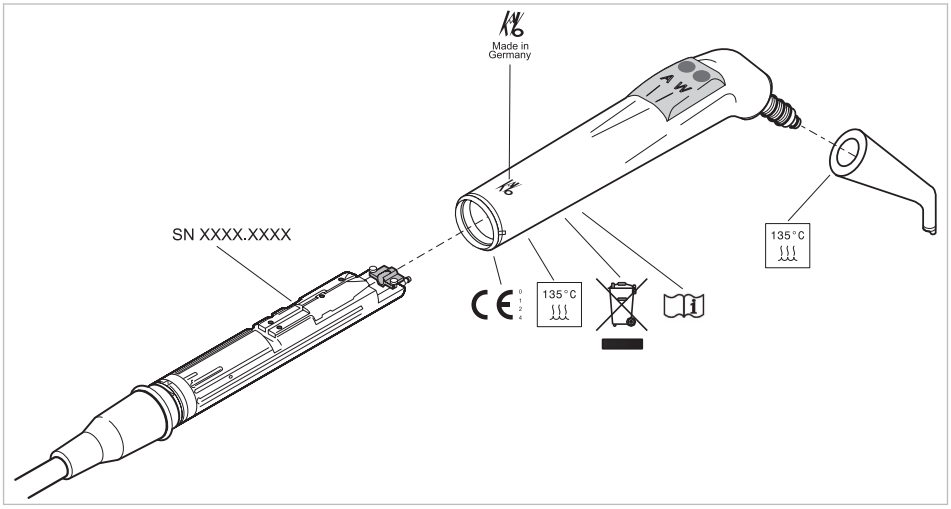
Site of attachment of rating plate and type BF applied parts ID on dentist element



Nameplate dentist element (e.g. table TM) / marking of the applied parts of type BF

Type	Device type
SN	Year of manufacture - serial number
REF	Material number

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

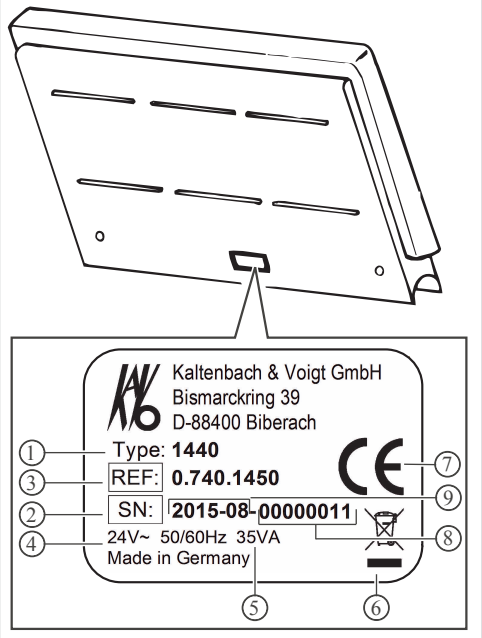


Made in Germany	Company logo of the manufacturer
SN	Serial number
CE 0124	CE mark according to 93/42/EEC medical devices
135 °C	Sterilisable up to 135 °C
	Disposal instructions according to Directive WEEE 2002/96/EG Annex N
	Follow instructions for use

Rating plate Service table 1568

① Device type
② Serial number
③ Material code

3.10.1 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

3.11 Technical data

Drilling template and setup plan

Installation plan (**Mat. no. 3.002.4533**)	2 sheets each right-handed and 2 sheets left-handed
Installation plan with COMPACTchair (**Mat. no. 1.003.6767**)	2 sheets each right-handed and 2 sheets left-handed

Electrical system

Electrical lead	3 x 2.5 mm^2
Free end above the floor	1 000 mm
Input voltages	100/110/120/130/220/230/240 V AC
Frequency	50/60 Hz
Input voltage set by the manufacturer	See rating plate
Power consumption at 100 to 240 V	100 to 600 VA – with appropriate device configuration, deviations in this range are possible!
Customer-provided fuse protection	Automat C 16 or screw-plug fuse 10 A
Protective conductor above floor	See DIN VDE 0100-710, 1000 mm
Heat emission	360 to 3,240 kJ/h
Heat emission	Ø 900 kJ/h
Mark of approval	CE / DVGW / VDE
Foot control	IPX1: Protection against water drips

Triple-function handpiece and multifunctional handpiece

Flush the water and air passages for 20 to 30 seconds before working at the beginning of the day.

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. dynamic 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

The "water inlet block" assembly kit does not include a separation between the treatment water and water supplied by the local water supply. The operator must observe and adhere to relevant national directives concerning the prevention of backflow. If these rules are not adhered to, the manufacturer can assume no liability for the quality of the treatment water and the microbial re-contamination of the public drinking water network.

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 in 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 for the treatment centres. Supplementary measures such as the rinsing of water conducting lines and intensive germ reduction must be carried out according to the instructions of the manufacturer.

⚠ WARNING

Danger of infection if the national guidelines are not observed.

Contamination of the treatment water or the drinking water network.

- Observe and adhere to the national guidelines concerning the quality of water for human consumption (potable water) – if available.
- Observe and adhere to the national guidelines concerning the prevent of reflux (flow of water from the treatment unit to the public water network) – if relevant.

⚠ WARNING

Risk of infection if the "Water block, compact" is used without additional safeguards.

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

- With regard to the "Water block, compact" assembly kit, please note that no disinfection facility is installed in the unit, and take appropriate safeguards. KaVo recommends to use the "Water block DVGW with integrated water disinfection facility in combination with KaVo OXYGENAL 6 (**Mat. no. 0.489.3451**).
- If the Water bottle kit is used with the enclosed dosing attachment (**Mat. no. 1.002.0287**), add the proper amount of KaVo OXYGENAL 6 (**Mat. no. 0.489.3451**) with each filling. For the correct amount, please refer to the instructions of the dosing attachment for water germ reduction.

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. (The DVGW water bottle kit is certified; see the following list.)
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	Water block DVGW, water bottle DVGW, 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 water filtering	80 µm
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
Water inlet pressure	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 on the quality of the dental air.

Infection hazard.

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

Air inlet pressure	5.2 to 7 bar
Air consumption	max. 80 Nl/min.
Pressure dew point	< -30 ºC (compressor with dry air system)
Oil content	< 0.1 mg/m^3 (oil-free compressor)
Contamination	< 100 particle/cm^3 with particle sizes of 1 to 5 µm
Customer air filtration	50 µm
Air connection	Shut-off valve with brass cone compression screw connection 3/8" to Ø 10 mm provided
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**
minimal 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
Above-floor suction connection	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
Relative humidity	30 to 75%
Air pressure	700 hPa - 1,060 hPa
Max. elevation for operation	up to 3,000 m

Maximum loads

Max. patient weight load on patient chair Standard	185 kg
Max. patient weight load COMPACTchair	135 kg
Tray holder of the dentist element - loadable up to	2 kg
Assistant unit tray holder - loadable up to	1 kg
Dentist element - loadable up to	2 kg

Transportation and storage conditions

Ambient temperature	-20 to +55°C
Relative humidity	5% to 95% non-condensing
Air pressure	700 to 1,060 hPa

Weight

Treatment unit with patient chair Standard	279 kg gross, 224 kg net
Includes steel setup plate and patient communication	344 kg gross, 289 kg net
Treatment unit with COMPACTchair	255 kg gross, 200 kg net
With steel set-up plate and patient communication	320 kg gross, 265 kg net

For more information about the packages, please refer to Assembly Instructions

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

X-ray viewer 5x5

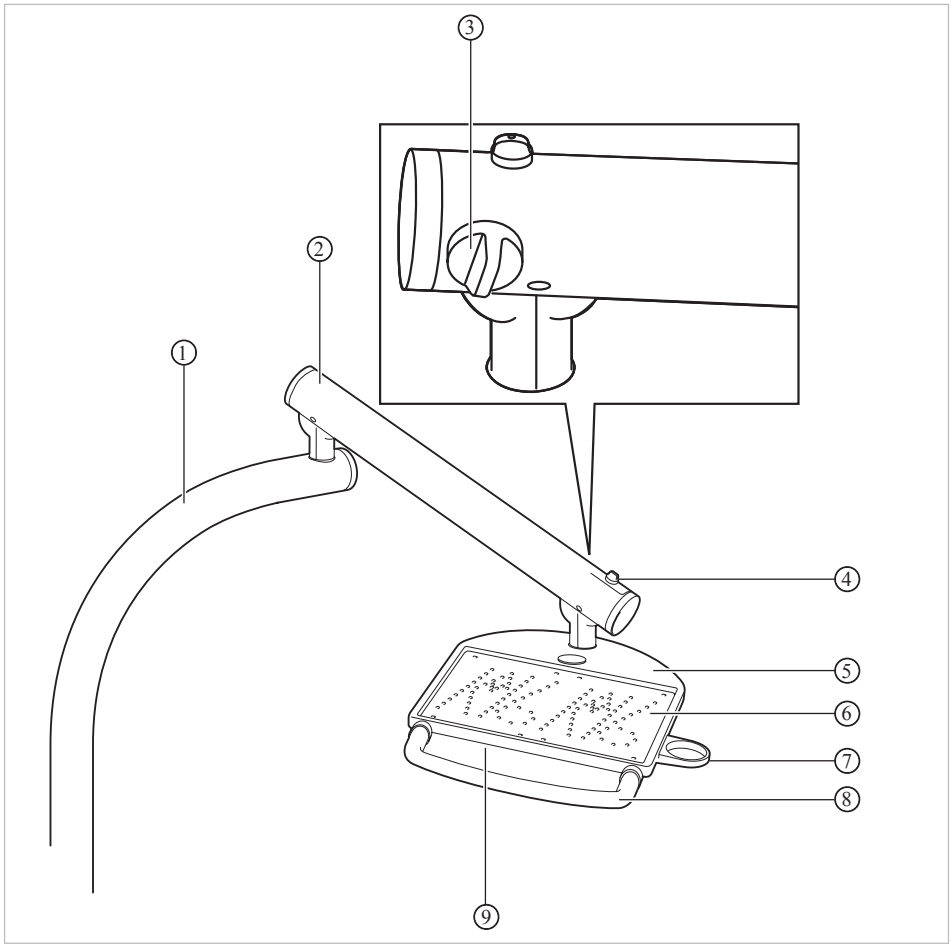
Input voltage	24 V AC
Frequency	50/60 Hertz
Power consumption	max. 10 VA
ON-time	100 %
Light field dimensions	50 mm x 50 mm in accordance with DIN 6856-3
Case dimensions	102x114x38 in accordance with DIN 6856-3

Operating light KaVoLUX 540 LED

See also:

Instructions for Use KaVoLUX 540 LED

3.12 KaVo Service table 1568 (optional accessory)

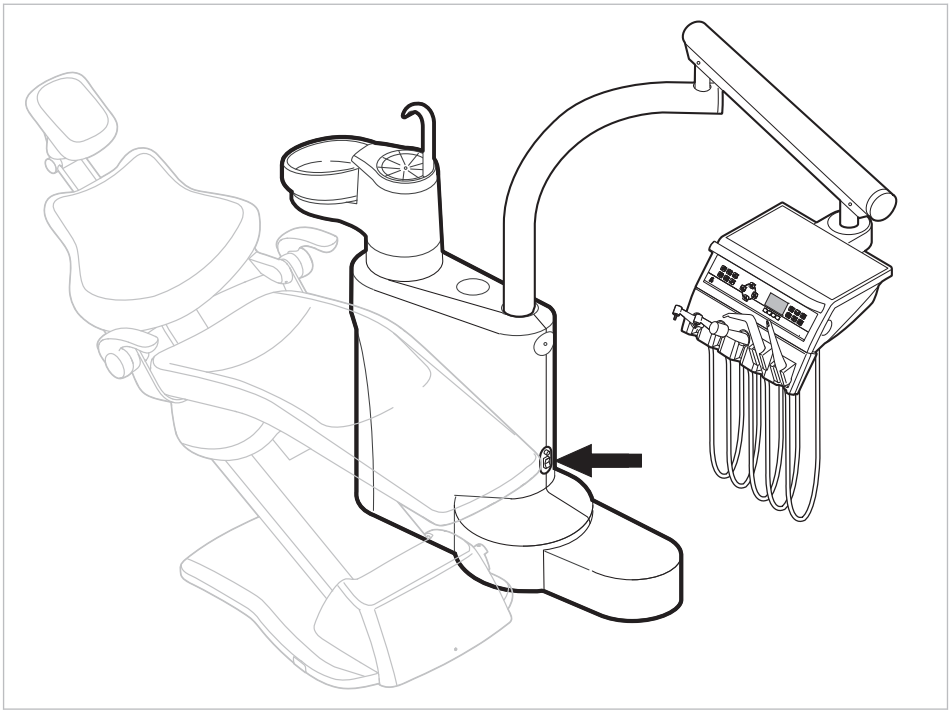


① Swivel arm
② Spring arm
③ Rotary knob (brake)
④ Rotary knob (lockable)
⑤ Service table
⑥ Non-slip mat
⑦ Cup holder
⑧ Handle
⑨ Rating plate

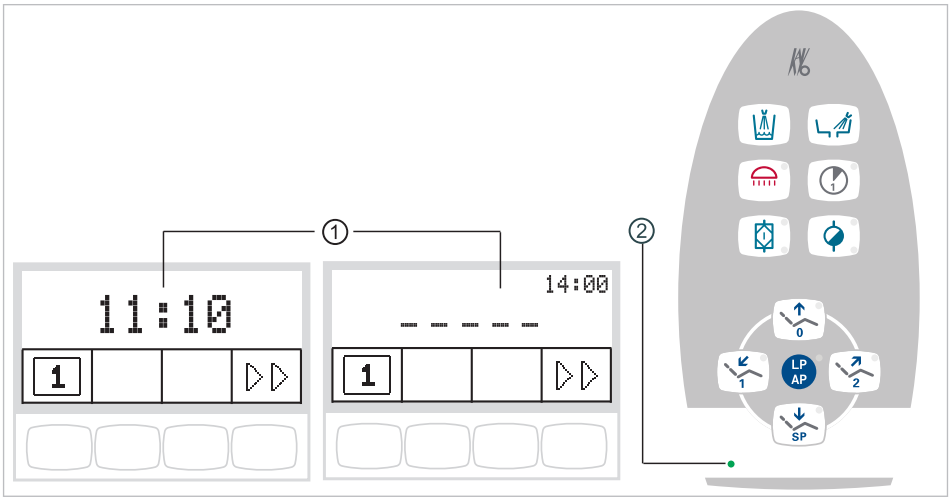
4 Operation

4.1 Switching the device on and off

Note
Always switch the machine off before leaving the office.



- ▸ Switch on the device using the main switch.
- ⇨ The display of the dentist unit ① shows the preselected basic menu.
- ⇨ The green LED "Device turned on" lights up on the assistant unit ②.



Basic menu without MEMOspeed / basic menu with MEMOspeed / assistant element

Note
Activate the KaVoLUX 540 LED operating light using the "Operating light" key on the assistant element. Only then the operating light can be operated by means of the sensor and the control panel of the operating light.

4.2 Adjusting the dental chair

4.2.1 Adjusting the arm rest (optional)

Armrest for the standard dental chair

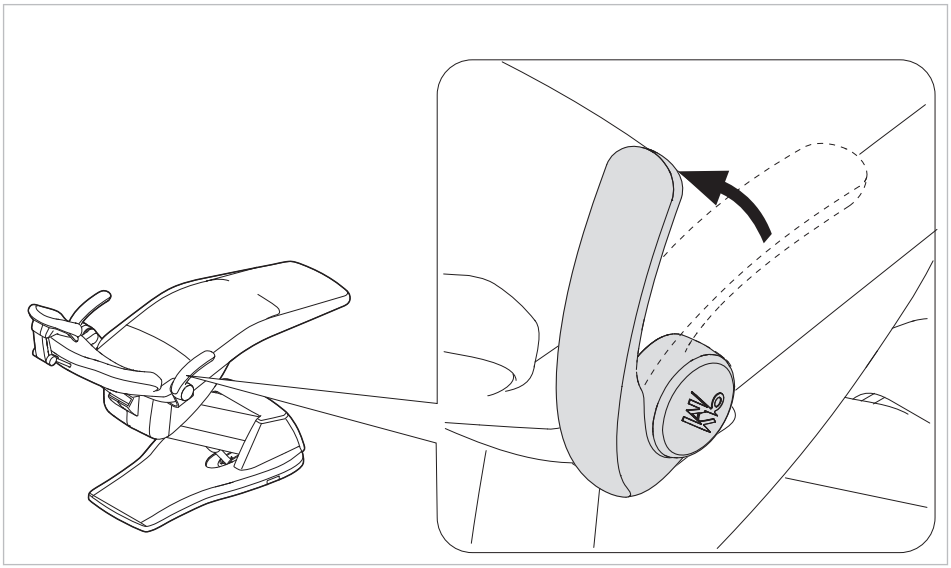
To make it easier for the patient to sit in the chair, the armrest can be swung up.

⚠ CAUTION

The patient's hands are in a bad position when the chair is rising

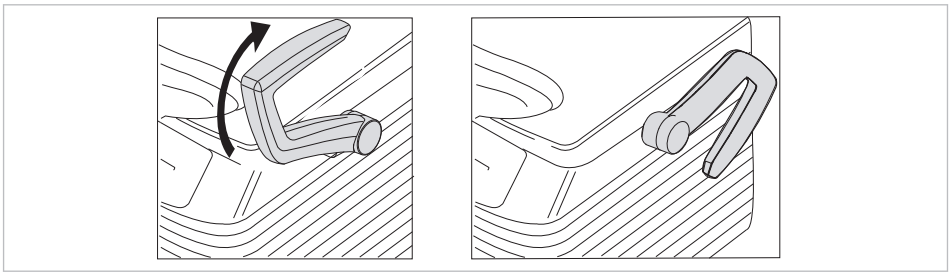
Danger of crushing fingers between the backrest and armrest.

- Make sure that the patient is sitting in the right position (especially children).



Arm rest for patient chair COMPACTchair

To make it easier for the patient to sit in the chair, the arm rest of the patient chair can be swiveled forward.



- Swivel the arm rest forward
- Then swivel the arm rest back into place.

4.2.2 Adjust head rest

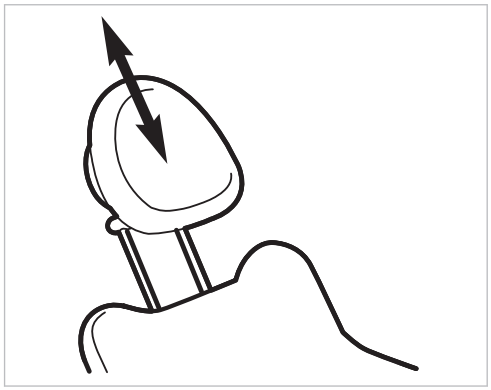
Adjust double-jointed knob headrest with knob

⚠ CAUTION

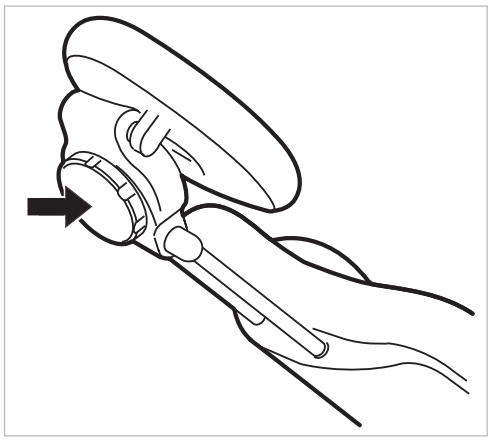
Adjusting the headrest.

Injury of neck muscles.

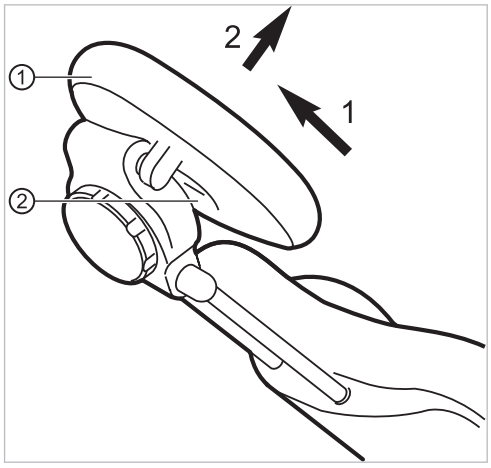
- Make sure that the patient is aware of the headrest setting.
- Patients need to raise their head slightly during adjustment.



- Push in or pull out the headrest depending on the patient's size.



- To swing the headrest, turn the locking dial to the left, move the headrest into position, and turn the dial to the right to lock it.



- To remove the headrest cushion, remove the screw ②, pull the cushion ① up slightly, and remove it to the front.

Setting the push button of 2-joint headrest (optional)

⚠ CAUTION

Adjusting the headrest.

Injury of neck muscles.

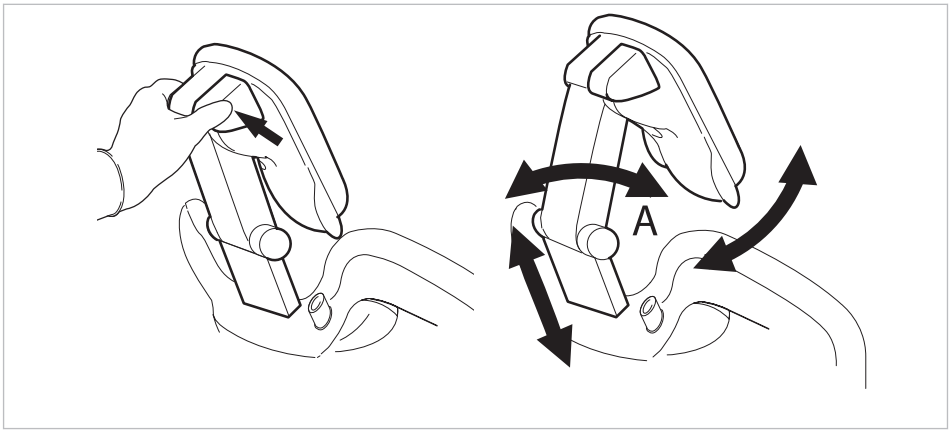
- Make sure that the patient is aware of the headrest setting.
- Patients need to raise their head slightly during adjustment.

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

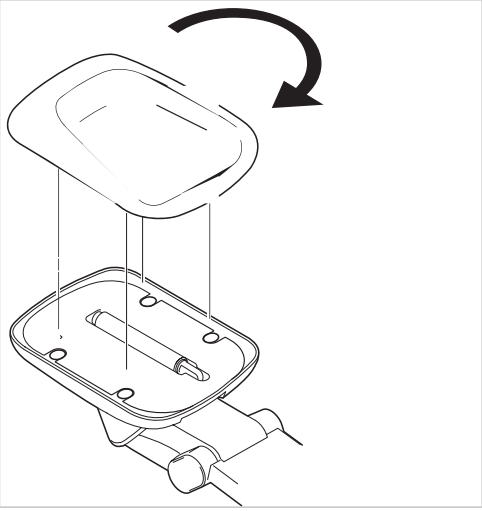
The service technician can adjust the braking force.



- 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 mount and push the head cushion back on.

4.2.3 Positioning the dental chair manually

⚠ CAUTION

Danger of injury from overload or dynamic load.

Patient chair may be damaged by overloading it.

- Do not subject the patient chair to a load exceeding its limit (Standard patient chair 185 kg/ COMPACTchair patient chair 135 kg).
- Do not subject the patient chair to dynamic loads.

⚠ 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.

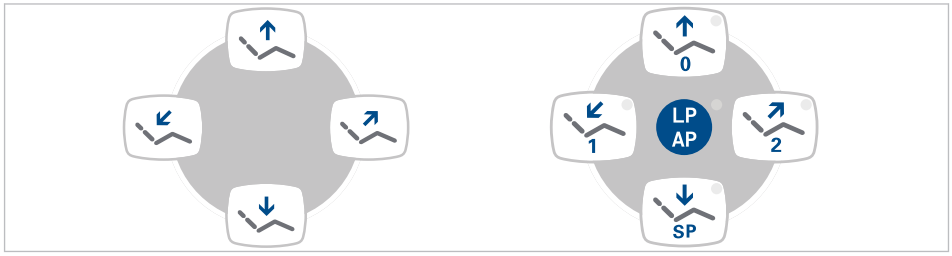
⚠ CAUTION

Risk of injury when moving the patient or patient chair.

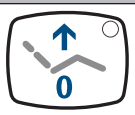
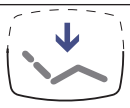
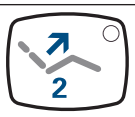
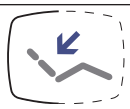
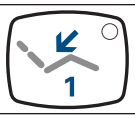
The patient or treatment personnel can be pinched or crushed.

- Position all moving parts, such as dentist element, assistant element, operating light, screens, etc., outside the collision range when you move the patient or patient chair.

Positioning the chair and backrest manually using the dentist or assistant unit



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

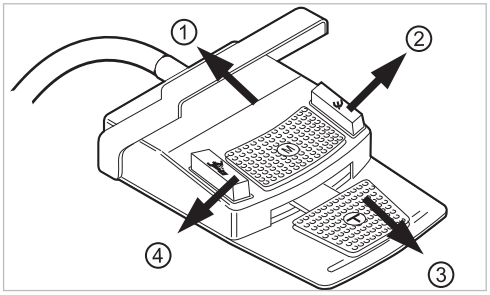
Key Dentist element	Key Assistant element	Feature
		The chair moves up.
		The chair moves down.
		The backrest moves upward.
		The backrest moves downward.

- Press the related key.

⇨ The chair or backrest moves in the desired direction.

Positioning the chair and backrest manually using the foot control

The cross switch of the foot control assumes the function of the button wheel on the dentist element during manual positioning of the patient chair.



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.

4.2.4 Automatic positioning of dental chair

⚠ CAUTION

Danger of injury from overload or dynamic load.
Patient chair may be damaged by overloading it.
- Do not subject the patient chair to a load exceeding its limit (Standard patient chair 185 kg/ COMPACTchair patient chair 135 kg).
- Do not subject the patient chair to dynamic loads.

⚠ 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

Risk of injury when moving the patient or patient chair.
The patient or treatment personnel can be pinched or crushed.
- Position all moving parts, such as dentist element, assistant element, operating light, screens, etc., outside the collision range when you move the patient or patient chair.

Gradually adjust the chair position

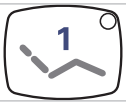
Save chair positions

The chair positions can be saved and retrieved at any time by the press of a button. Win the position is retrieved, the chair automatically moves to the saved position (the so-called "automatic position," or "AP" for short).
The four chair positions can be saved on the control panels. Two of these four positions can be saved with the foot control.

It is for example recommendable to save the sitting down and getting up position using the "AP 0" key and the rinsing position with the "SP" key.

Recalling automatic positions with the dentist unit

The following keys can be used to recall saved chair positions.

Key	Operation
	Move to the rinsing position.
	The last position before actuating the SP is assumed.
	Move to automatic position 0.
	Move to automatic position 1.
	Move to automatic position 2.
	Move to the collapsed position.

- Briefly press the desired button.

⇨ Chair automatically moves to the stored position.

⇨ Upon arrival at the stored position, the display diode on the button is turned on.

Saving automatic positions with the dentist unit

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, press "AP 0", "AP 1", "AP 2", "SP" or "Collapsed position" button until you hear a signal.

⇨ The display diode of the pressed button is turned on. The chair position is saved.

Last position

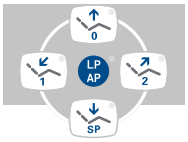
After the "LP" button is pressed, the chair moves into its position before the "SP" button was pressed.

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.

Recalling automatic positions with the assistant unit

- Briefly press the "AP" key.

⇨ The LEDs of the "AP 0", " AP 1", " AP 2", "SP", and "LP" keys flash for approximately four seconds.



- During these four seconds, briefly press the "AP 0", " AP 1", " AP 2", "SP" or "LP" key.

⇨ The chair moves into the selected automatic position.

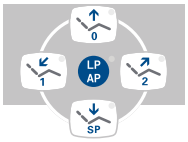
Saving automatic positions with the assistant unit

Note
The automatic position "Last position" is saved on the "LP" button. Press the "LP" button for the chair to automatically move to the last position before the rinsing position. The "LP" button cannot be assigned to another automatic position.

- Move the chair to the desired position.

- Briefly press the "AP" key.

⇨ The LEDs of the "AP 0", " AP 1", " AP 2", "SP", and "LP" keys flash for approximately four seconds.

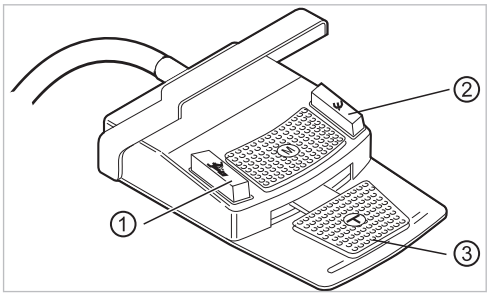


- During these four seconds, press the "AP 0", "AP 1", "AP 2", "SP" or "LP" button, until a signal sound is transmitted.

⇨ LED of the pressed button lights up. The chair position is saved.

Recalling automatic positions with the foot control

Note
If an instrument is removed, the chair functions of the foot control are blocked. The blocking can be removed by briefly pressing the stirrup switch. The functions are then available.



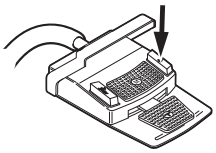
① Spray preselection/AP footswitch
② Blown air/AP footswitch
③ Foot pedal

The chair positions can be recalled with two foot switches; the standard setting is as follows:

- "Spray selection" foot switch: automatic position "LP" (last position)

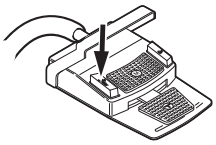
- "Blown air" foot switch: automatic position "SP" (rinsing position)

Move the chair when the instrument is mounted



▸ Press the "SP" foot-operated button.

or

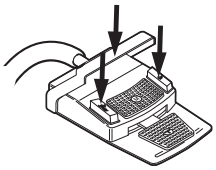


▸ Press the "LP" foot-operated button.

⇨ The chair moves into the selected automatic position.

Move the chair when the instrument is removed

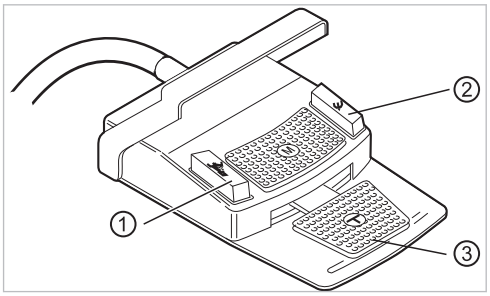
Note
If an instrument is removed, the chair functions of the foot control are blocked. The blocking can be removed by briefly pressing the stirrup switch. The functions are then available.



▸ Press the stirrup switch and then the "Preselected spray" or "Blown air" foot switch.

⇨ The chair moves into the selected automatic position.

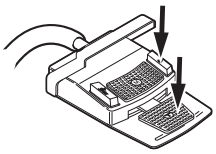
Saving an automatic position with the foot control



① Spray preselection/AP footswitch
② Blown air/AP footswitch
③ Foot pedal

The chair positions can be saved on two footswitches; the standard setting is as follows:

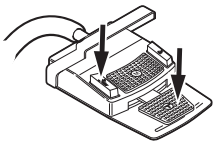
- "Spray default" footswitch: "LP" automatic position (last position)
- "Blown air" footswitch: "SP" automatic position (rinsing position)



- Hold down the foot pedal and foot-operated button "SP", and simultaneously press any button for an automatic position ("AP 0", "AP 1", "AP 2" or "SP") on the dentist or assistant unit until you hear a beep.

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

or



- Hold down the foot pedal and foot-operated button "LP", and simultaneously press any button for an automatic position ("AP 0", "AP 1", "AP 2" or "SP") on the dentist or assistant unit until you hear a beep.

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

4.2.5 Safety shut-off

To prevent collisions arising from the movement of the patient chair, safety shutoff switches are installed to protect the patient and practice personnel from injury and the treatment unit from damage.

⚠ CAUTION

Damage to the assistant element and dental chair.

Despite some safety shut-downs being present, certain positions of the assistant unit may collide with the dental chair.

- Keep the assistant unit out of the range of motion of the patient chair.
- Always monitor the chair movement.

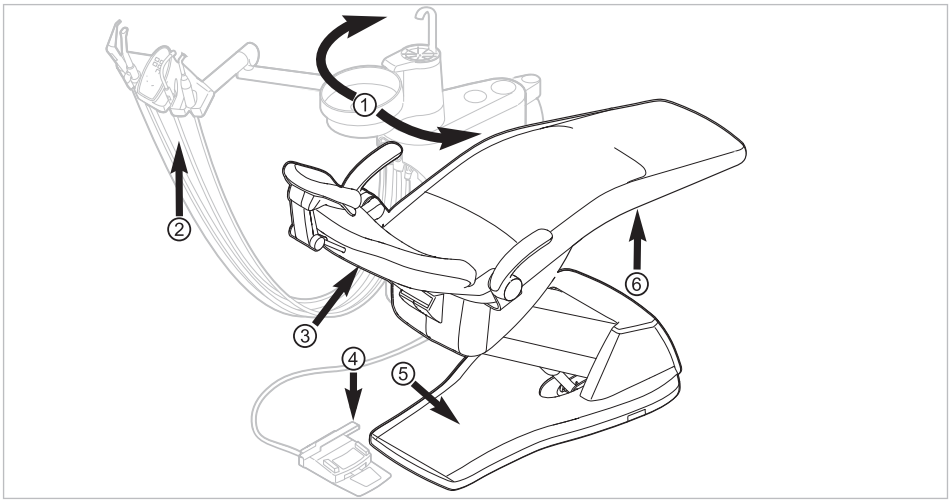
⚠ CAUTION

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.

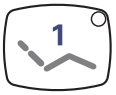
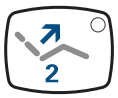
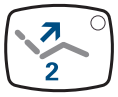
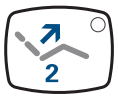
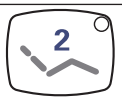
- The treatment personnel must move outside of the chair's swinging range whenever the chair moves.

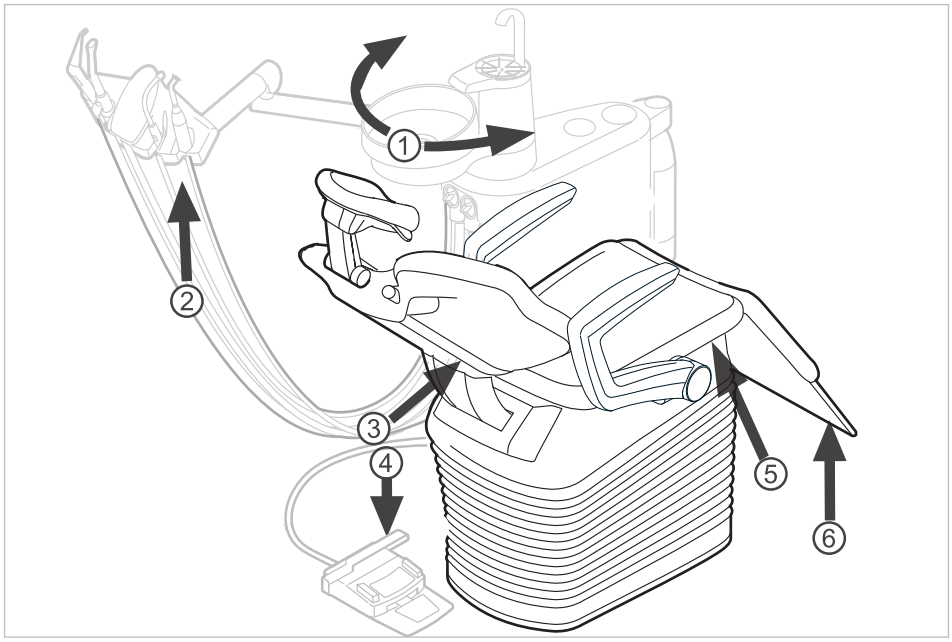
The safety cut-offs can be found at the following places on the treatment unit.



Safety shutoff for the standard patient chair

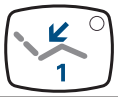
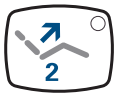
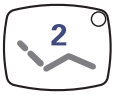
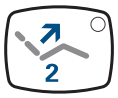
① Patient unit pivoted over the patient chair
② Assistant element
③ Backrest
④ Bracket on the foot control
⑤ Kick plate
⑥ Seat

Item No.	Safety switch-off actuated	LED on assistant element	LED on dentist element
①	Patient unit swung over the patient chair		
②	Assistant element		
③	Backrest		
④	Bracket on the foot control		
⑤	Kick plate		
⑥	Seat		



Safety shutoff for the COMPACTchair patient chair

① Patient element pivoted over dental chair
② Assistant element
③ Backrest
④ Bracket on the foot control
⑤ Bench support / seat cushion
⑥ Foldable part of the seat

Item No.	Safety switch-off actuated	LED on assistant element	LED on dentist element
①	Patient unit swung over the patient chair		
②	Assistant element		
③	Backrest		
④	Bracket on the foot control		
⑤	Bench support / seat cushion		
⑥	Foldable part of the seat		

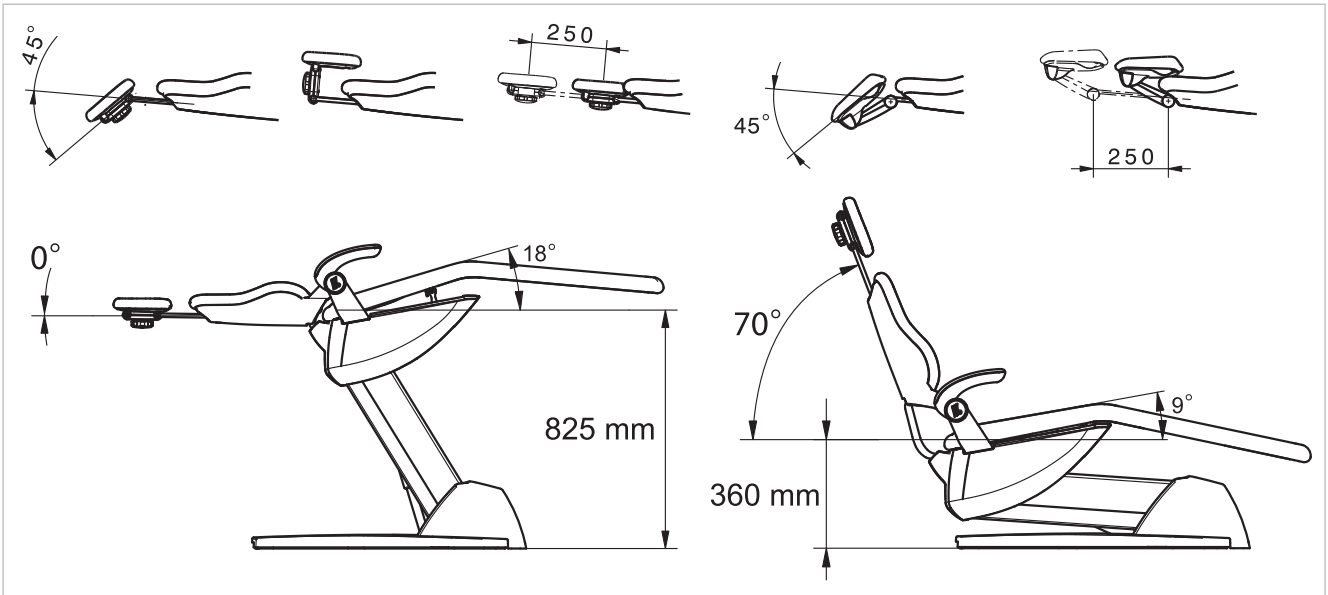
The safety shutoff occurs went a movement angle has been exceeded, or part of the treatment unit collides with an object.
If a person or object actuates a safety shutoff, the chair immediately stops moving. The fact that the safety shutoff has been activated is displayed by the corresponding display flashing on the dentist or assistant unit.

Note

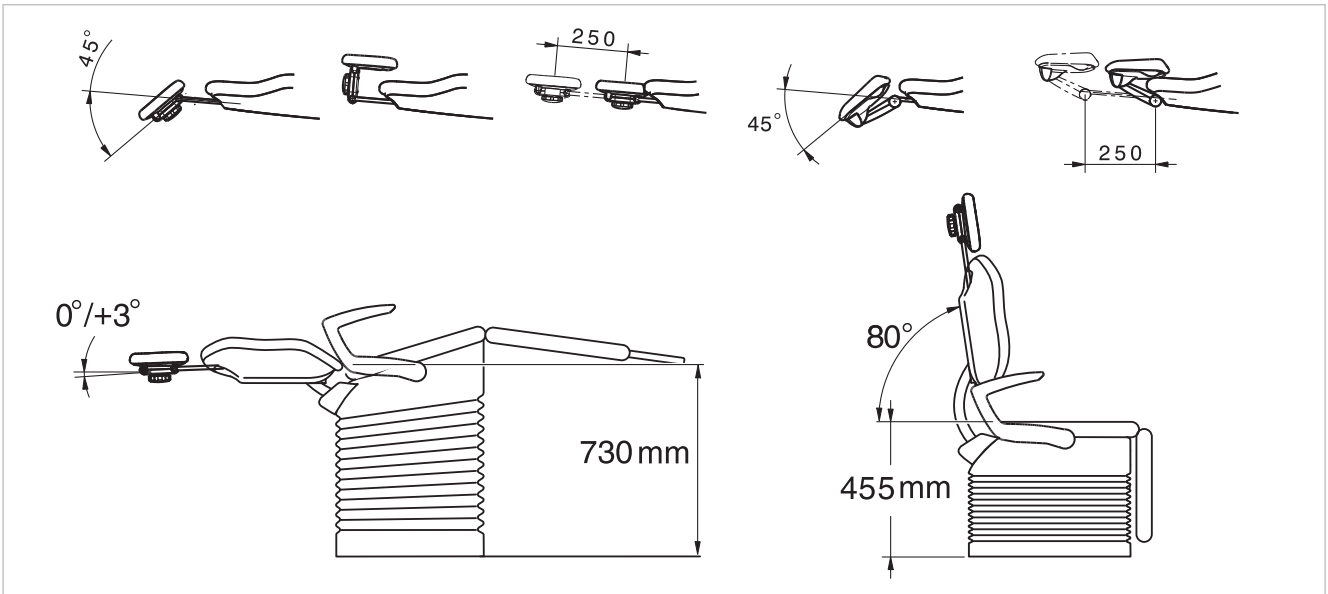
The chair's position cannot be changed with the key wheels when a safety shutoff is activated.

Exception: The patient unit safety switch only stops the upward and downward movement of the patient chair. The backrest can be moved up and down.

4.3 Moving the patient chair



Patient chair Standard



Patient chair COMPACTchair

4.4 Move the dentist's unit

⚠ 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

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

The patient or office staff may be injured or bruised.

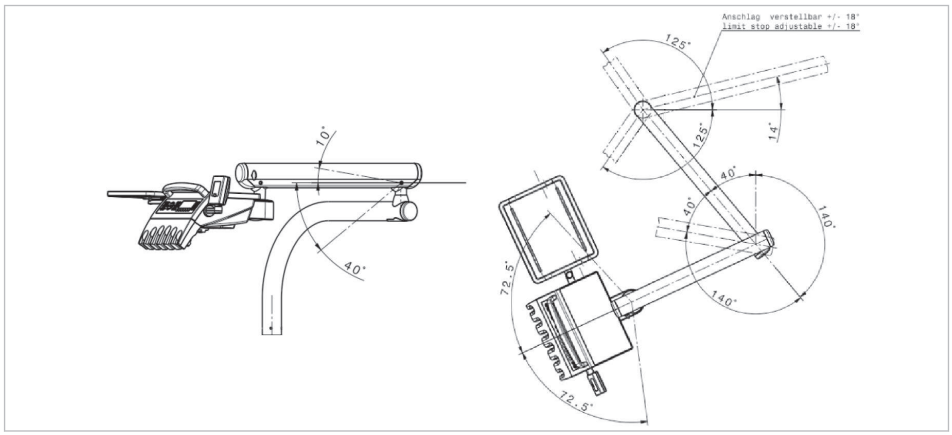
- Monitor the patient and office staff when moving the dentist or assistant element.

The swinging range of the dentist unit is limited by stops.

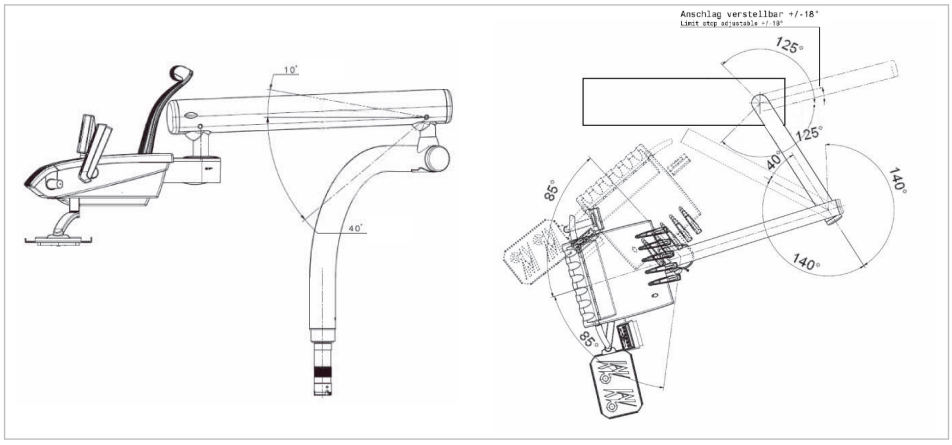
Note

Do not pull the dentist unit by the instrument hose.

- To adjust the dentist unit height, release the brake, adjust the height, and reset the brake.



Dentist unit TM



Dentist element S

4.4.1 Move the cart

⚠ CAUTION

Moving and overloading the cart.

Danger of tipping and damaging the cart.

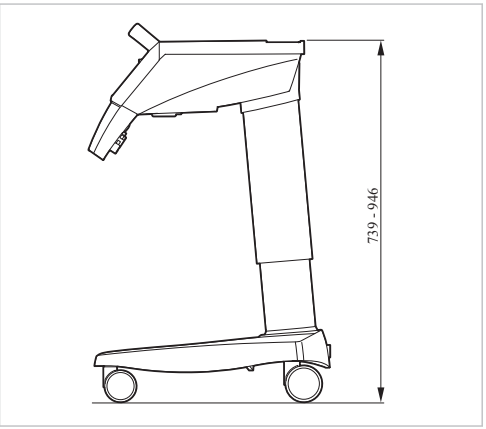
- Only use the card on a continuously smooth floor.
- Do not overextend the supply hose for the cart.
- Make sure that there are no obstructions on the floor.
- Do not sit on the dentist element or step on the castor.

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.

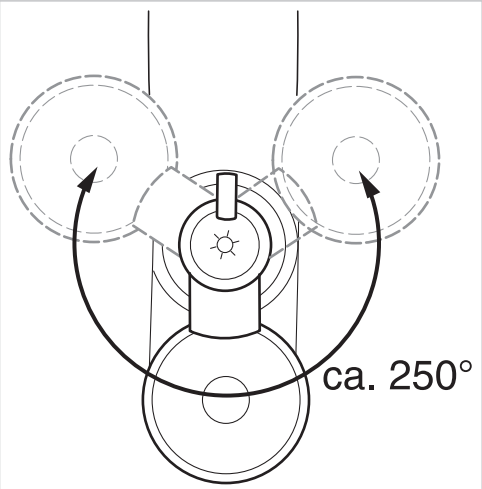
Note
Do not lift the dentist's unit using the handle. The handle is only for horizontally positioning the dentist unit.



- 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.

4.5 Move the patient unit

4.5.1 Swing the patient unit by hand



The swinging range is about 250°.

⚠ 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.

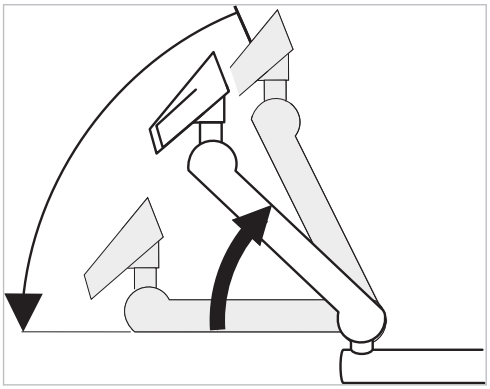
Note

When the patient unit is swung over the patient chair, the safety shutoff is activated.

4.6 Moving the assistant element

4.6.1 Adjusting the height of the Standard assistant element

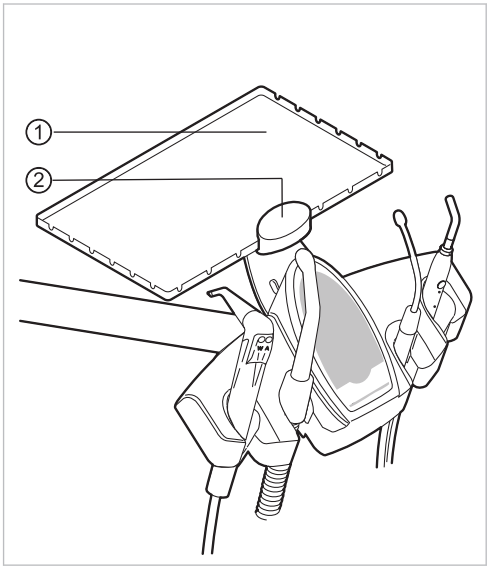
The assistant unit can be vertically positioned in four levels.



- To set a higher level, pull the assistant unit upward gently until it audibly locks in place.
- To set a lower level, pull the assistant unit all the way up until the lock releases, and then lower the assistant unit.

Mounting the tray holder

- Mount the tray holder on the assistant element.



① Tray support

② Air nozzle holder

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

4.6.2 Moving the assistant element right, left (optional)

⚠ CAUTION

Pinching from the treatment chair.

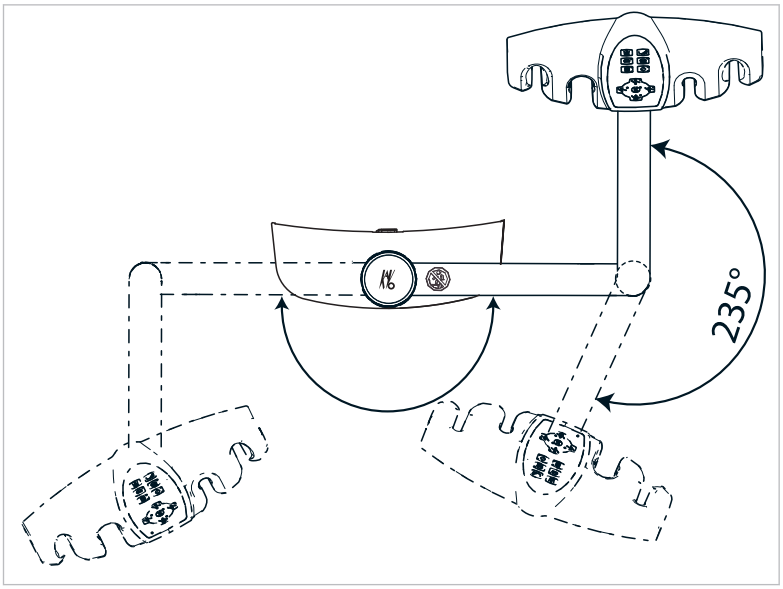
The treatment staff can get pinched or crushed.

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

⚠ CAUTION

Material damage caused by overloading.

- Do not rest your foot near the pivot point and/or transverse arm of the assistant element.



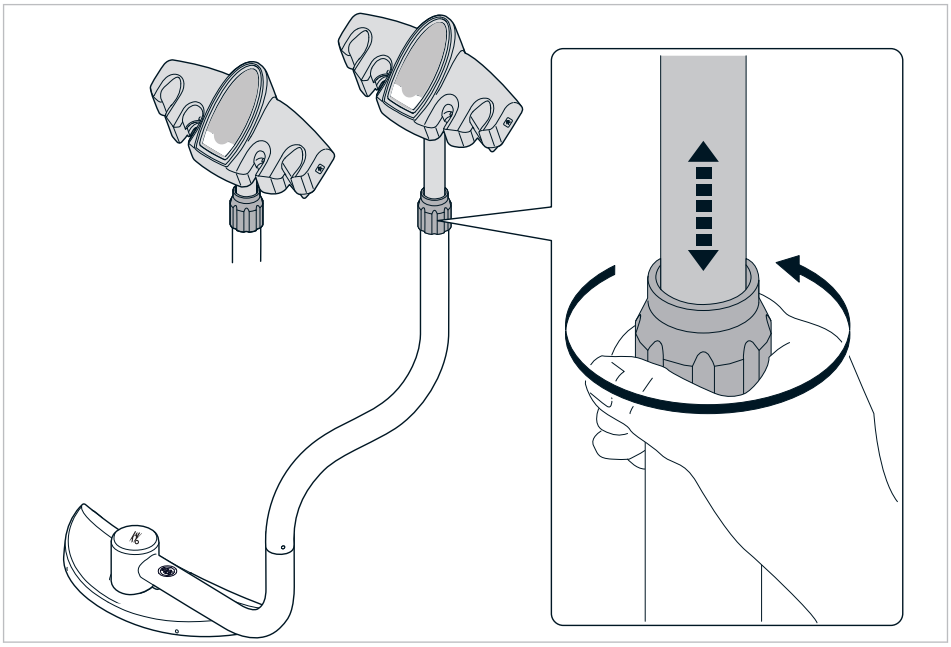
Pivoting range of assistant element r, l (optional)

- Move the backrest up before swinging the assistant element.
- Move the assistant element to the desired position in its swinging range.

Adjusting the height of the assistant element right, left (optional)

Note

Handpieces may drop out of the holders while the assistant element is being moved, especially during adjustment of the height. In order to prevent handpieces from being damaged, make sure that no handpiece drops down while you move the assistant element.



- Undo the clamping screw and push the assistant element into the desired position.
- Re-tighten the clamping screw.

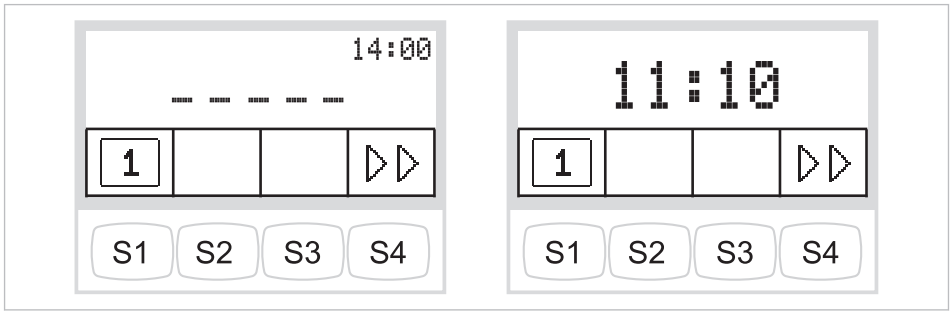
4.7 Using functions through the menu

4.7.1 Using the user menu

The following options can be opened in the user menu:

Option	Feature	Description
1	Firmware	Display current firmware version.
2	Time of day	Set time of day.
3	Date	Set date.
4	Time display mode	Setting the time of day display mode: ▪ Time of day only ▪ Time of day without seconds
5	Language	Set menu language: ▪ Deutsch ▪ English ▪ Italiano ▪ Français
6	LCD	Set contrast of LCD display.
7	Licenses	Display of activated licenses

The functions in the menu are used through the selections keys (S1 to S4) on the display



User menu with MEMOspeed / without MEMOspeed

- Press the "Next" key (S4) to start-up the user menu.

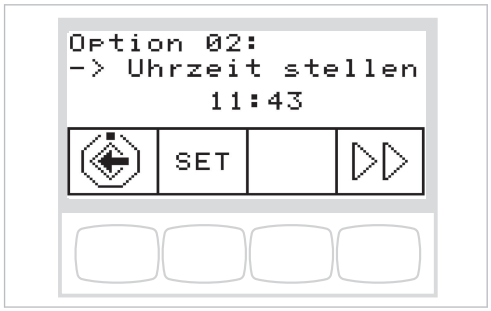
⇨ The user menu displays options and parameters that can be set and changed by the user.

- Press the "Next" key (S4) to switch to the next option.

Option 1: Displaying the firmware version

The firmware version is displayed

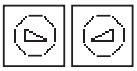
Option 2: Setting the time of day



- Press the "SET" (S2) key to change the values of minutes and hours.

⇨ The value to be changed flashes.

- Press the "Save" (S4) key to save the selection made.

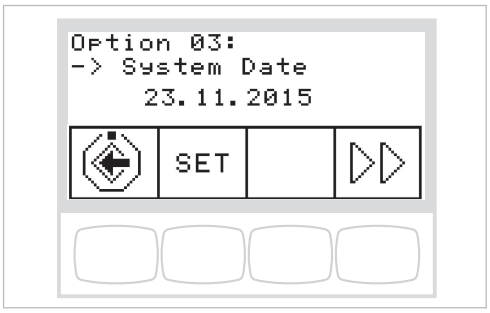


- Press the "reduce value" or "increase value" key to set the marked time of day.

- Press the "SS:MM" (S1) key to switch between hours and minutes.

- Press the "Save" (S4) key to save the values and switch to the SET display.

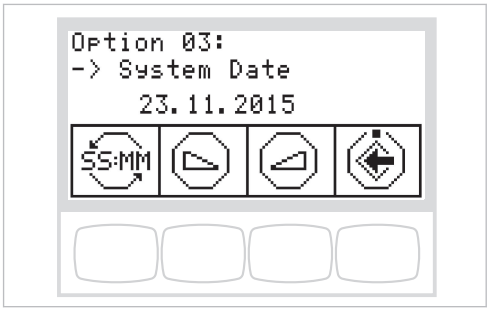
Option 3: Set the date

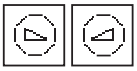


- Press the "SET" (S2) key to change the values of day, month, and year.

⇨ The value to be changed flashes.

- Press the "Save" (S1) key to save the selection made.



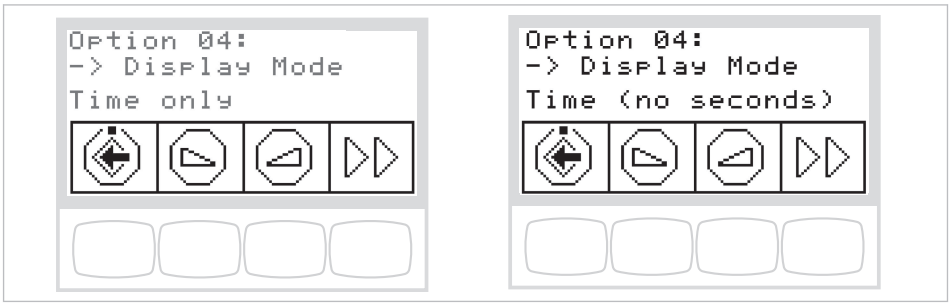


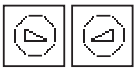
- Press the "Decrease value" or "Increase value" key to set the marked value.

- Press the "SS:MM" (S1) key to switch between day, month, and year.

- Press the "Save" (S4) key to save the values and switch to the SET display.

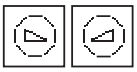
Option 4: Setting the display mode for time of day





- Press the "Decrease value" or "Increase value" keys to set the time of day display mode.
- The following views can be selected:
  - Time of day only
  - Time of day (without seconds)

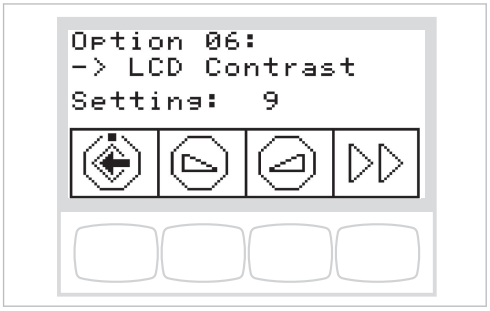
Option 5: Setting the language

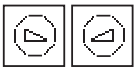


- Press the "Decrease value" or "Increase value" key to select the menu language. The following languages can be selected: Deutsch, English, Italiano, Francais.

- Press the "Save" (S1) key to save the values.

Option 6: Setting the display contrast

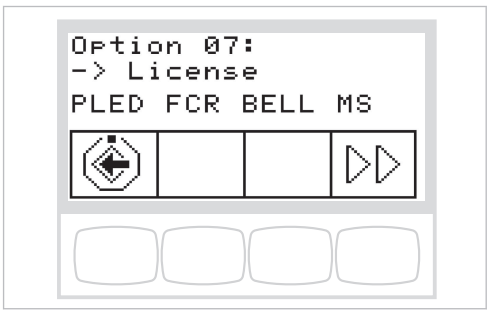




- Press the "reduce value" or "increase value" key to set the contrast of the LCD display.

- Press the "Save" (S1) key to save the values.

Option 7: Displaying the licenses



Displays the activated licenses:

- PLED: PiezoLED
- FCR: Foot control

- BELL: Bell
- MS: MEMOspeed

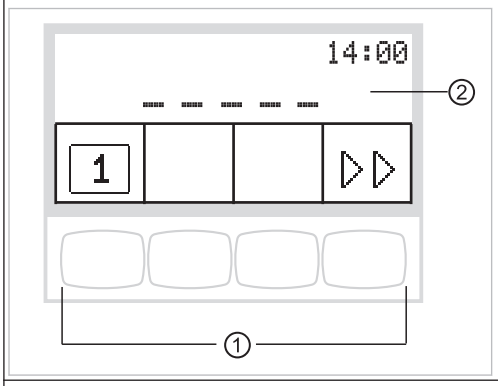
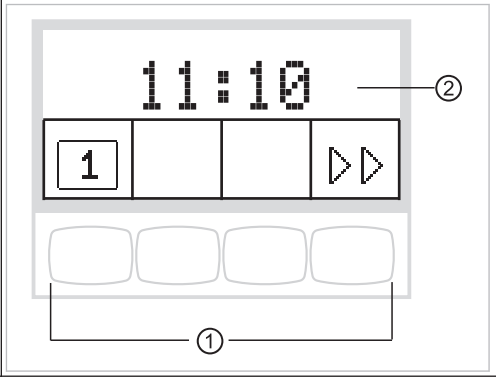
4.7.2 Standby menu

Standby menu as default setting

The unit starts in the standby menu.
Available with MEMOspeed licence only:
The device automatically switches to its standby menu when you close the handpiece menu and the patient communication menu.

Select function

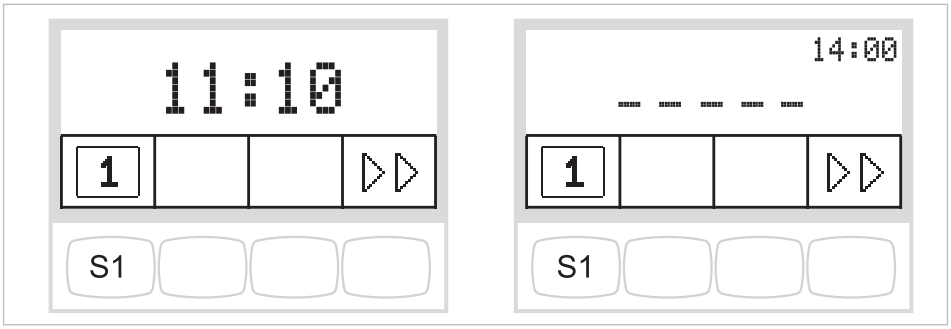
The display shows display fields with symbols for the operating functions.
Below each display field, there is a key for selecting the displayed operating function.

Standby menu with MEMOspeed	Standby menu without MEMOspeed
	

① Menu function selection keys
② Display

Select dentist

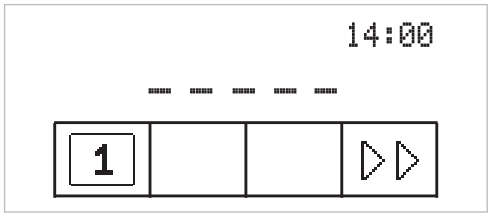
The first symbol in the stand-by menu displays the current user.



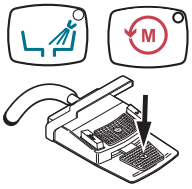
- Press the "S1" key to select dentist 1 or dentist 2.

Permitting level switching (available with MEMOspeed only)

Level switching is deactivated in the basic state.
The level switching symbol displays the current dentist.

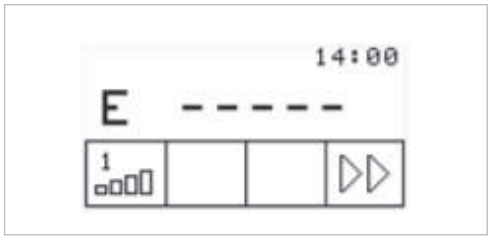


Note
The device acts like on level E when level switching is deactivated.



- To switch between levels, keep the "Direction of motor rotation" and the "Bowl flushing" keys and the foot pedal depressed, until a beep can be heard.

After activating level switching, the level switching symbol shows the level (E, 1 2 or 3 - level E is selected in the example shown). The pre-selected dentist is only displayed very small in the level switching symbol.



Note
The device automatically saves the activation of level switching for the current dentist.

Note
Level switching is deactivated using the same key combination as activation.

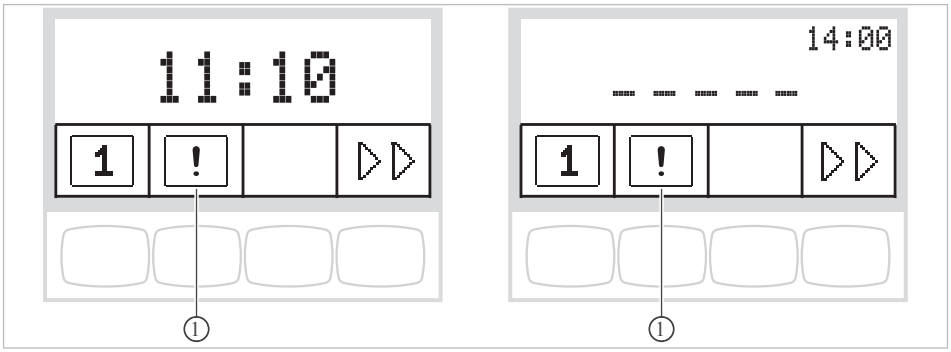
- To select a level, briefly press the selection button for "Preselect level".

Selection of dentist with level switching activated

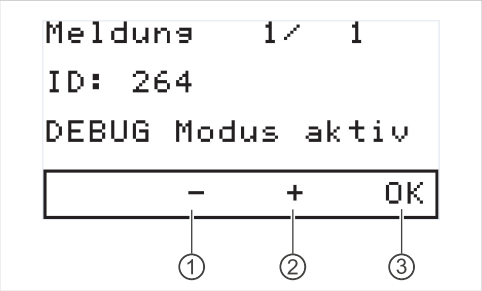
- Press the "Pre-select level" key long to select dentist 1 or dentist 2.

Status display in the Standby menu

If a status message is available, the standby menu shows an exclamation mark on selection key "S2" ①.



- Press the "S2" selection key ① to display status messages.



- Press the selection keys "+" ② and "-" ① to switch between multiple status messages.
- Press the "OK" selection key ③ to exit from the display of status messages.

Error messages in the status display

See also:

9 Troubleshooting, Page 110

4.7.3 Operating the MEMOspeed menu (optional)

The MEMOspeed menu is used to display and set handpiece-specific values.
The display depends on which instrument was withdrawn.
To save the handpiece-specific values, there are 3 memory levels (1, 2, 3) each available for two dentists (dentist 1 and dentist 2).

Save instrument-specific settings

The following settings can be individually:saved for the instruments:

Handpiece	Setting
Turbine	Speed range (available with level switching only) Preselected spray
Motor INTRA LUX KL 701/703, COMFORTdrive	Speed range (available with level switching only) Direction of motor rotation Preselected spray
Ultrasonic scaler	Spray on/off* Intensity (with level switching only)
Multifunctional handpiece	Heating on/off

* only with a corresponding setting in service mode

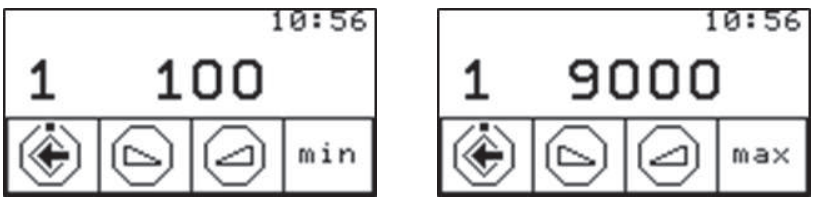
Changing turbine settings in the menu

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

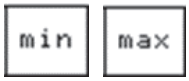
Note
The speed can be set at level E only with the foot pedal.
The speed cannot be saved in level E.

- ▸ Remove the turbine from the holder.
- ▸ Briefly press the "Preselect level" (S1) key to select the level.
- ▸ Press the "Preselect level" (S1) key for 4 seconds to change settings.

⇨ The display switches to the turbine settings menu.



Settings menu for minimal/maximal speed



- ▸ Press the "min/max" (S4) keyed to toggle between the settings menus for minimal and maximal speed.

- ▸ Press the "Decrease value" key to decrease the speed.

or

- ▸ Press the "Increase value" key to increase the speed.

⇨ The intensity is shown on the display.

▸ Press the "Save" key to save the values. You can save after setting each value, or after setting all values.

⇨ Saving is acknowledged by a beep.

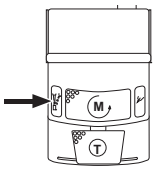
⇨ This closes the "Settings" menu.

Setting the cooling level

Requirement
Settings menu for turbine is selected.

▸ Press the "Preselected spray" button.

or



▸ Press the "Preselected spray" footswitch. (with level switching only)

⇨ The set values are saved each for the set memory level and the set dentist level.

Key	Feature
	No LED is on: No cooling
	One LED is on: Spray air cooling status
	Both LEDs are on: Spray cooling status

Changing motor settings in the menu

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

Note
The motor mode is equivalent to 2 minutes operating time and 5 minutes pause.
This represents the possible maximum load 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.

▸ Remove the motor from the holder.

▸ Briefly press the "Preselect level" (S1) key to select the level.

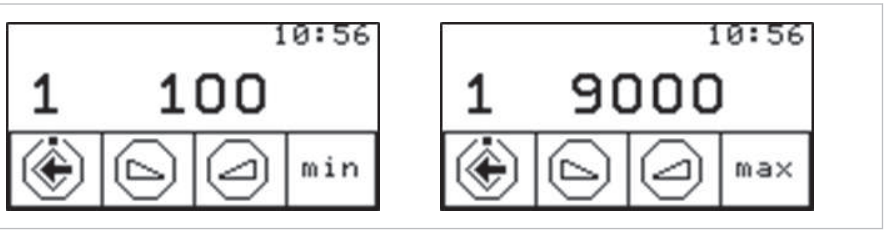
▸ Press the "Preselect level" (S1) key for 4 seconds to change settings.

⇨ The display switches to the motor settings menu.

Setting the speed

Note
The speed can be set at level E only with the foot pedal.
The speed cannot be saved in level E.

	Motor KL 701/KL 703	COMFORTdrive 200XD
Minimum	100 rpm	30,000 rpm
Maximum	40,000 rpm	200,000 rpm



Settings menu for minimal/maximal speed

- Press the "min/max" (S4) keyed to toggle between the settings menus for minimal and maximal speed.

- Press the key for "Decrease value" to decrease the speed.

or

- Press the "Increase value" key to increase the speed.

⇨ The speed is shown in the display.

- Press the "Save" key to save the values. You can save after setting each value, or after setting all values.

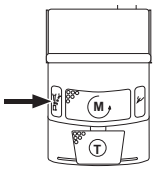
⇨ Saving is acknowledged by a beep.
⇨ This closes the "Settings" menu.

Setting the cooling level

Requirement
Settings menu for motor is selected.

- Press the "Preselected spray" button.

or



- Press the "Preselected spray" footswitch.

⇨ The set values are saved each for the set memory level and the set dentist level.

Key	Feature
	No LED is on: No cooling
	One LED is on: Spray air cooling status

Key	Feature
	Both LEDs are on: Spray cooling status

- Press the "Save" key to save the values. You can save after setting each value, or after setting all values.

⇨ Saving is acknowledged by a beep.

⇨ This closes the "Settings" menu.

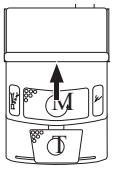
Setting the direction of motor rotation

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

Requirement
Settings menu for motor is selected.

- Press the "Direction of motor rotation" key.

or



- Press the "Direction of motor rotation" foot pedal.

⇨ The direction of motor rotation is reversed each time the cross-switch and/or the "Direction of motor rotation" key is actuated: counterclockwise rotation - clockwise rotation.

⇨ The LED is on when CCW motor rotation is set.

- Press the "Save" key to save the values. You can save after setting each value, or after setting all values.

⇨ Saving is acknowledged by a beep.

⇨ This closes the "Settings" menu.

Changing the ultrasonic Scaler PiezoLED in the menu

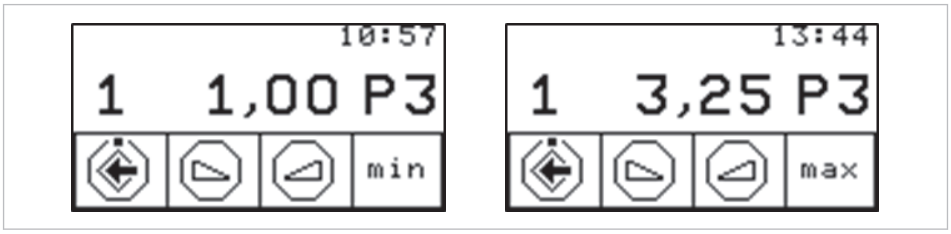
Note
Please comply with the enclosed "PiezoLED" Instructions for Use.

- Take the PiezoLED off the holder.
- Briefly press the "Preselect level" (S1) key to select the level.
- Press the "Preselect level" (S1) key for 4 seconds to change settings.

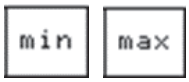
⇨ The display switches to the settings menu of the PiezoLED.

Setting the intensity

The intensity is set in steps of 0.25; the minimum intensity is 1.0, and the maximum is 10.0.



Settings menu for minimal/maximal intensity



- Press the "min/max" (S4) keyed to toggle between the settings menus for minimal and maximal intensity in the set operating mode.

- Press the "Decrease value" key to decrease the intensity.

or

- Press the "Increase value" key to increase the intensity.

⇨ The intensity is shown on the display.

Define operating mode (PiezoLED only)

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 E" section of the "PiezoLED Instructions for Use".

- Take the PiezoLED off the holder.

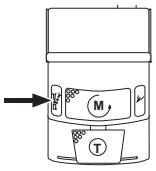
- Press the "Mode" key to select the operating mode.
  Modes P1 / P2 / P3 / E are available for selection.

Setting the cooling status

Requirement
Settings menu for PiezoLED is selected.

- Press the "Preselected spray" button.

or



- Press the "Preselected spray" footswitch.

Key	Feature
	No LED is on: No cooling

Key	Feature
	Both LEDs are on: Spray cooling status

- Press the "Save" key to save the values. You can save after setting each value, or after setting all values.

⇨ Saving is acknowledged by a beep.

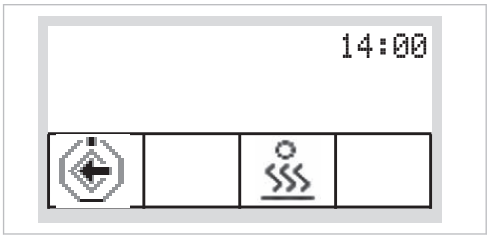
⇨ This closes the "Settings" menu.

Changing the settings of the multifunctional handpiece in the menu

- Briefly press "Preselect level" key to select the level.
- Take the multifunctional handpiece off the holder.
- Press "Preselect level" button for 4 seconds in order to change settings.

⇨ The display changes to the multifunctional handpiece settings menu.

Adjusting the air/water heating



Settings menu for multifunctional handpiece

- Adjust the heating using the "Air/water heating" button.

Symbol	Function
	Air/water heating "on"
	Air/water heating "off"

- Press the "Save" key to save the values. You can save after setting each value, or after setting all values.

⇨ Saving is acknowledged by a beep.

⇨ This closes the "Settings" menu.

4.7.4 Using the CONEXIOcom (optional)

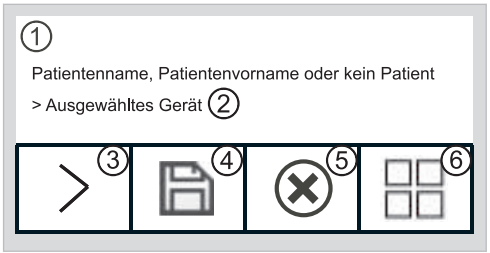
Note
To start the CONEXIOcom menu, no handpiece may be removed.

Note
For all CONEXIOcom functions, the dental unit must be connected to an installation of the KaVo "CONEXIO" software.

The function of the CONEXIOcom menu is to control the display of previously recorded and saved images and videos. In order to use the function, the unit must have access to the data of the KaVo Software "CONEXIO" software. For details on the configuration, please refer to the "CONEXIO" installation instructions.

Opening the CONEXIOcom menu

To display existing images, take the camera off the holder. Select the proper patient on the corresponding PC for this purpose. It is also feasible to automatically transfer the patient from your invoicing programme to CONEXIO. For details on the configuration, please refer to the "CONEXIO" installation instructions.
If no patient is selected, images from the clipboard are displayed. If the clipboard is empty, no image is displayed. The clipboard is deleted automatically when the patient is logged off the corresponding PC.
The CONEXIOcom menu is opened automatically for recording of images or videos as soon as a device (DIAGNOcam U, ERGOcam One) is taken out.
To close CONEXIOcom: Replace the active device.



Display CONEXIOcom

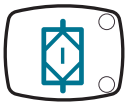
No	Icon	Setting
1	-	Info line This line displays the active patient name (if selected in CONEXIO) under which the data obtained are stored. If no patient is selected, images and videos are stored in the clipboard under "unassigned patient".
2	-	If a device is active, the device type is shown. The following is implemented at this time: DIAGNOcam U ERGOcam One
3	>	Next image/video To be able to communicate efficiently with the patient, individual images can be selected and displayed directly. This uses a rolling system that advances from left to right and from top to bottom.

No	Icon	Setting
4		Save image/video Press briefly - saves the selected image/video. Press long - all images/videos are saved in the swap tray. If no patient is selected, the images stay in the clipboard and cannot be saved permanently. As soon as a patient is selected, these temporary data in the clipboard are deleted. When an active patient is logged off (or a new patient is logged on) in CONEXIO, a query is shown asking whether the images in the shall be deleted or saved. Data deleted at this point cannot be restored subsequently.
5		Discard image/video Press briefly - deletes the selected image/video Press long - all images/videos in the clipboard are deleted
6	   	Screen display: This button changes the display on the monitor. The following settings can be made: 1/2/4/6 – number of images displayed. The live image is always shown as the last image in split view.

4.8 Using function through the dentist or assistant unit

4.8.1 Using the hygiene functions

The following buttons are available for the hygiene functions:

Key	Name	Feature	Control element
	"Tumbler filler" key	The tumbler is being filled. Filling time can be set	Dentist element and assistant element/
	"Bowl rinsing" key	The bowl is being rinsed. Rinsing time can be set. Leaving the rinsing position (SP), the bowl is rinsed for the full rinsing time (function can be activated by service technician).	Dentist element and assistant element/
	"Intensive germ reduction" key	Intensive germ reduction/rinsing function **See also:** Servicing instructions	Assistant element/

Key	Name	Feature	Control element
	"HYDROclean" key	HYDROclean function **See also:** Servicing instructions	Assistant element/

The following applies to the hygiene functions, "Tumbler filling" and "Bowl rinsing":

- ▸ Press key to activate the function.
- ▸ Press key again to discontinue the function.

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

The following settings can be changed:

- Tumbler filling time
- Bowl rinsing time

Using the tumbler filling

- ▸ Press the "Tumbler" button briefly to start filling the tumbler.

⇨ Tumbler filling is started and then stopped after the saved period of time.

⇨ Default = 5 s.

⇨ An on/off operation is not supported.

- ▸ Press the "Tumbler filling" key for more than 4 seconds to start the programming mode.
  Set the period of time in 200 ms increments. Minimum: 0.4 s.

⇨ If the key stays depressed, the elapsed time is counted in 200 ms steps and an acoustical signal is issued each second.

⇨ Once the key is released, the current value is saved.

Using the bowl flush

- ▸ Press the "Bowl flush" key briefly to start the bowl flush.

⇨ The bowl flush is started and then stopped after the saved period of time.

⇨ Default = 7 s. An on/off operation is not supported.

- ▸ Press the "Bowl flush" key for more than 4 seconds to start the programming mode.
  Set the period of time in 200 ms increments. Minimum: 0.4 s.

⇨ If the key stays depressed, the elapsed time is counted in 200 ms steps and an acoustical signal is issued each second.

⇨ Once the key is released, the current value is saved.

4.8.2 Using lamp and X-ray image viewer

The following buttons are available for the light functions:

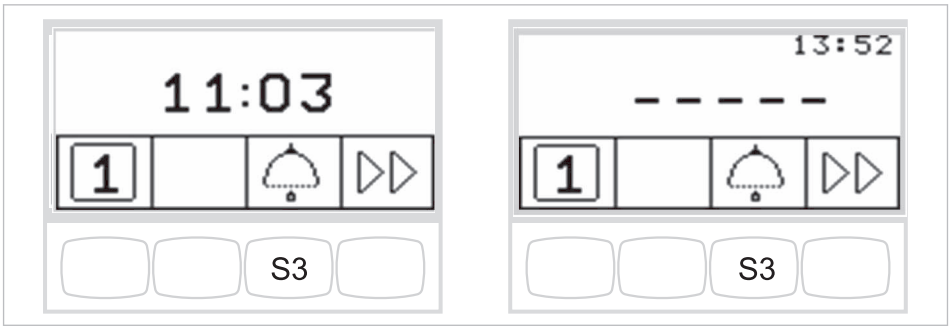
Key	Feature	Control element
	Turning the operating light On / Off.	Assistant element
	Turning the X-ray image viewer (accessory equipment) On / Off.	Dentist element

Note
Activate the KaVoLUX 540 LED operating light using the "Operating light" key on the assistant element. Only then the operating light can be operated by means of the sensor and the control panel of the operating light.

4.8.3 Using the bell (optional)

- ▸ Press the "S3" key ("Bell" function key) to activate the bell relay.

⇨ The bell relay is activated for as long as the key is being pressed.



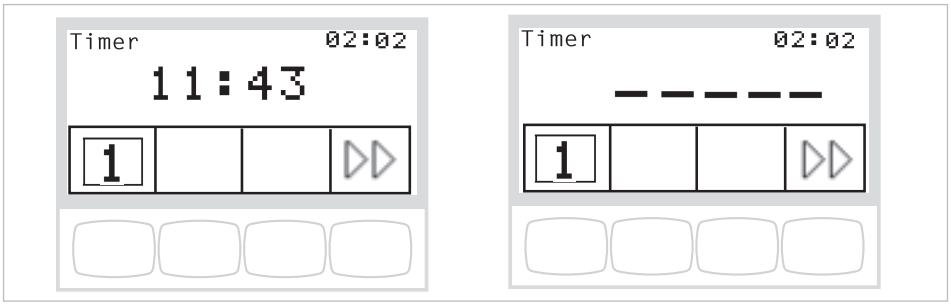
"Bell" function key without MEMOspeed /with MEMOspeed

4.8.4 Using the timer

- ▸ Press the "Timer" key briefly to start or stop the timer.

⇨ LED flashes while the timer counts down.

The elapsed time is shown in the display on the top right.
A beep is issued after the timer time is elapsed.



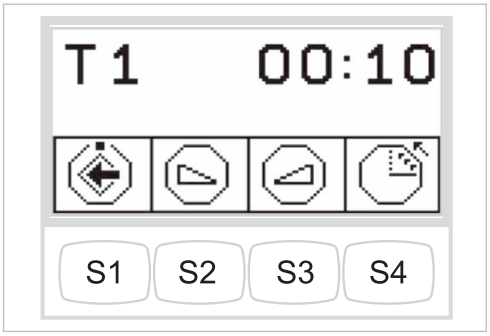
Timer elapsing without MEMOspeed / with MEMOspeed

Setting the timer

Requirement
Standby menu is selected.

- To set a timer time (e.g. Timer 1), press the "Timer" key until you hear a beep.

⇨ The display switches to the settings menu for the timer time.



Key	Settings
S1	Saves the parameters. Quits the programming mode.
S2	Decreases the value.
S3	Increases the value.
S4	Switches counter/timer function. (Direction of counting)

4.8.5 Saving handpiece settings (without MEMOspeed)

The following settings can be individually:saved for the instruments:

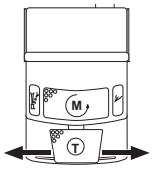
Handpiece	Setting
Turbine	Speed Preselected spray
Motor INTRA LUX KL 701/703, COMFORTdrive	Speed Direction of motor rotation Preselected spray
Ultrasonic scaler	Spray on/off* Intensity
Multi-functional piece	Heating on/off

* only with a corresponding setting in service mode

Setting the turbine

Setting the speed

- Remove the turbine from the holder.



- To reduce or increase the speed, move the foot pedal to the left or right.

Note

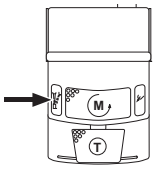
The speed is not shown in the display cannot be saved.
The minimum and maximum speed depends upon the type of turbine that is used.

Setting the cooling status

- Remove the turbine from the holder.

- Press the "Preselected spray" button.

or



- Press the "Preselected spray" footswitch.

Key	Feature
	No LED is on: No cooling
	One LED is on: Spray air cooling status
	Both LEDs are on: Spray cooling status

Save the cooling status

- Press the "Save" (S1) key until you hear a beep.

Setting the motor

Note
The speed is not shown in the display cannot be saved.
The minimum and maximum speed depends on the motor that is used and the attached straight or contra-angle handpiece.

The speed, spray preselection are set and the values are saved in the same manner as with the turbine.

See also:
4.8.5.1 Setting the turbine, Page 78

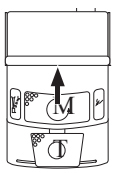
Setting the direction of motor rotation

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

- Take motor off the holder.

- Press the "Direction of motor rotation" key.

or



- Press the "Direction of motor rotation" foot pedal.

⇨ The direction of motor rotation is reversed each time the cross-switch and/or the "Direction of motor rotation" key is actuated: counterclockwise rotation - clockwise rotation.

⇨ The LED is on when CCW motor rotation is set.

Save the direction of motor rotation

1

▸ Press the "Save" (S1) key until you hear a beep.

Setting the ultrasonic scalers, PiezoLED and PIEZOsoft

Set the intensity the same way you set the speed of the turbine.

See also:
4.8.5.1 Setting the turbine, Page 78

Selecting the operating mode (PiezoLED only)

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 E" section of the "PiezoLED Instructions for Use".

▸ Take the PiezoLED off the holder.

P1

▸ Press the "Mode" key to select the operating mode.
Modes P1 / P2 / P3 / E are available for selection.

Setting the multifunctional handpiece

▸ Take the multifunctional handpiece off the holder.

▸ Adjust the heating using the "Air/water heating" button.

Symbol	Function
	Air/water heating "on"
	Air/water heating "off"

Save the heating status

1

▸ Press the "Save" (S1) key until you hear a beep.

4.9 Operating the foot switch

4.9.1 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.

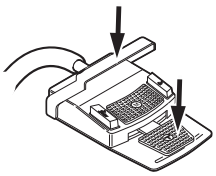
See also:
- Foot control

4.9.2 Positioning the patient chair with the foot control

See also:
- Automatic positioning of patient chair
- Position the dental chair using the button cross or 4-way switch

4.9.3 Preselect dentist

Requirement
All instruments are in their holder.



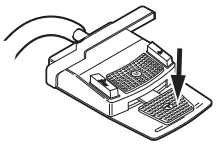
- ▸ Hold down the foot pedal and press the stirrup switch.

⇨ Each time the stirrup switch is pressed, the selection advances to the next dentist (dentist 1 to 2).

4.9.4 Start and regulate instruments

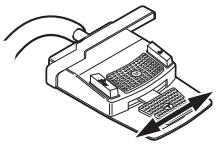
- ▸ Remove the handpiece (such as turbine, motor) from the holder.

⇨ The handpiece is active.



- ▸ Press the foot pedal.

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



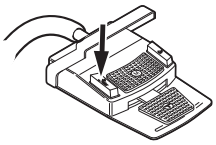
- ▸ Changing speed or intensity with the foot pedal.

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

4.9.5 Setting the cooling condition

- ▸ Remove the handpiece (e.g turbine, motor) from the holder.

⇨ The handpiece is active.



- Press the "Preselected spray" footswitch.

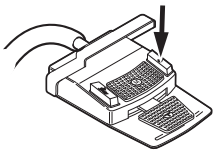
⇨ The cooling status is switched each time the foot switch is pressed: spray air - spray.

⇨ The cooling status is displayed on the dentist element.

4.9.6 Activate blown air

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

⇨ The handpiece is active.



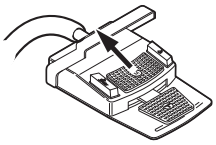
- Press the "Blown air" foot-operated button.

⇨ As long as the foot-operated button is pressed, blown air exits from the removed handpiece (does not apply to PiezoLED).

4.9.7 Preselect counterclockwise motor rotation

- Take motor off the holder.

⇨ The handpiece is active.

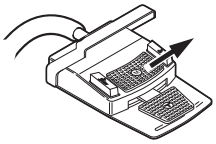


- Slide the cross switch upward.

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

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

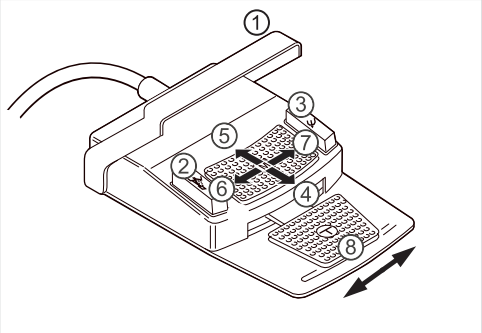
4.9.8 Adjusting the instrument light



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

⇨ Cold light "On".

4.9.9 Using CONEXIOcom (fee-based additional option)



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

If no patient is selected, the images stay in the "Swap Tray" and are not saved permanently. As soon as a patient is selected, these temporary data in the "Swap Drying" are deleted. When an active patient is logged off (or a new patient is logged on) in CONEXIO, a query is shown asking whether the images shall be deleted or saved. Data deleted at this point cannot be restored subsequently.

4.10 Service table 1568 (optional accessory)

⚠ CAUTION

Exceeding the load limits.

Damage to the service table.

- Comply with maximal load limits.

⚠ CAUTION

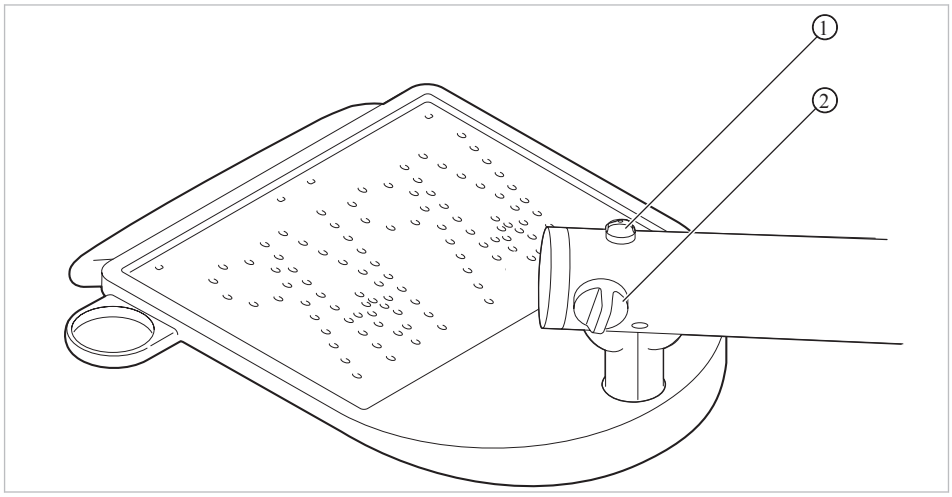
Over-travel beyond swivel range.

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 Accessories and kits

6.1 Device

Name	Description
Water block DVGW with integrated water germ reduction system	With a DVGW permit and electronic monitoring of the filling level of the disinfection container.
Water block compact	Without DVGW permit. With water filter and shutoff valve.
Water bottle DVGW with water block, compact	With DVGW permit. Features a tumbler and handpiece water supply that is independent of external water supply, includes Oxygenal dosing attachment for manual dosing of the germ reduction liquid into the water bottle.
Steel mounting plate	For installation on the left or right.
Connector for third-party equipment	To connect or supply third-party devices such as an airflow through the quick couplings.
Amalgam separator DÜRR CAS 1	Approved amalgam separation systems with a separation > 95 %.
Separation DÜRR CS1	Separation using a solids collector.
Solids collector kit	Wastewater solids collector for wet suctioning.
External suction	Wastewater and wet suction air are drawn from a central location.
Water jet pump	For saliva ejector.
Operating light EDI / KaVoLUX 540 LED T / MAIA LED	Operating light.
Tray support	For the small handpiece tray.
Warm water heater	Heats the tumbler water.
Low-pressure regulator	Regulator for suction air when the suction vacuum is too high.
Selective support kit	Turns on the saliva ejector and/or spray mist suction.
Intensive germ reduction	Only in combination with DVGW water block kit.
Monitor support arm	The monitor support arm is either affixed to the lamp mount 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
Radiograph viewer Röbi 1440	For installation on the light mounting pole.

6.2 Dental chair

Name	Description
Armrest	The patient chair can be fitted with one or two arm rests.
2-hinge head rest with rotary knob	Controlled by rotary knob
2-hinge headrest with push button	Controlled by push button

Name	Description
Backrest Progress	Correct working posture and optimum access for the dentist, especially during pediatric procedures

6.3 Assistant unit

Name	Description
Satelec Mini LED	LED curing light.
Triple function handpiece	Multifunctional handpiece featuring air, water, no heating, and no cold light.
Multifunctional handpiece	Multifunctional handpiece featuring air, water, heating, and cold light.
Saliva ejector, water-operated	With water jet pump.
Second saliva ejector	The second saliva ejector kit is mounted on the sieve housing that is included in the basic configuration.

6.4 Dentist unit

Name	Description
Multiflex LUX hose	For connection of turbine and SONICflex and all handpieces fitting on the multiflex coupling.
Motor hose, COMFORTbase 404L COMFORTbase 404S	For connection of INTRA LUX motor KL 701, motor KL 703 LED, COMFORTdrive 200XD.
Assembly kit INTRA LUX motor KL 703 LED	Brushless motor with light.
Assembly kit INTRA LUX motor KL 701	Brushless motor with light.
KaVo COMFORTdrive 200 XD	Dental handpiece for the high speed range up to 200,000 rpm. It can be attached only to the KaVo COMFORTbase coupling.
Triple function handpiece	Multifunctional handpiece featuring air, water, no heating, and no cold light. Also available as an "upright" version.
Multifunctional handpiece	Multifunctional handpiece featuring air, water, heating, and cold light. Also available as an "upright" version.
PiezoLED	Handpiece for the removal of dental calculus with the tip sets, Scaler / Paro / Endo / Prep.
PIEZOsoft	Handpiece for the removal of dental calculus with the Scaler tip sets.
X-ray image viewer 5x5	For image size of 5 x 5 cm (install on left or right side of dentist element).
Spray heater for instruments without handpieces	Heater for spray water heating.
Tray holder for a standard tray / US tray / 2x-standard tray	Standard tray, US tray, and/or 2x-standard trays (install on left or right side of dentist element).
ERGOcam One	Intraoral camera for documentation and patient communication.

7 Safety checks - testing 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 for 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 employ the necessary measuring parameters and measuring procedures defined 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 mains, or which can be connected to or separated from the power supply mains without the aid of a tool, must be checked individually. Moreover, the ME system must be checked as one unit to avoid the situation, in which the „aging“ of individual devices lead to unacceptable values in sum.

Note
An ME system that is connected to the power supply mains 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 power supply mains by means of an isolating 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 Essential parts of the safety check

Visual inspection

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

Measurements

- Measurement of the earth wire resistance in accordance with IEC 62353 (DIN VDE 0751-1)
- Measurement of the leakage current of the device EUL in accordance with IEC 62353 (DIN VDE 0751-1)
- 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 Testing intervals

- Testing interval every 2 years according to device type IIa (without HF surgery)

7.1.5 Notes on the test method 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 threshold is compatible with the value defined in IEC 60601 (DIN EN 60601), taking comment 2 from table 2 into consideration.

7.1.6 Notes on repeat testing

Note

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

Note

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

7.2 Instructions for safety checks

7.2.1 Preparatory measures to be undertaken on the device

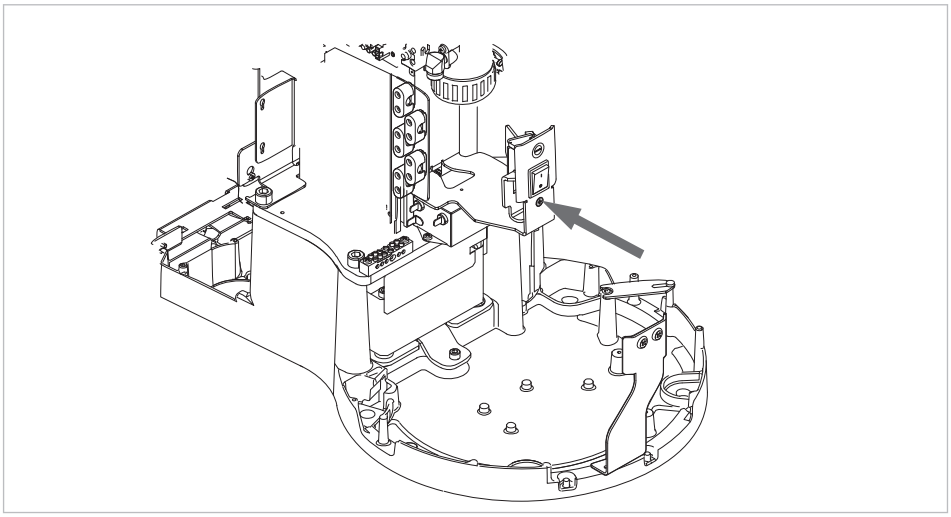
⚠ WARNING

Electrical power.

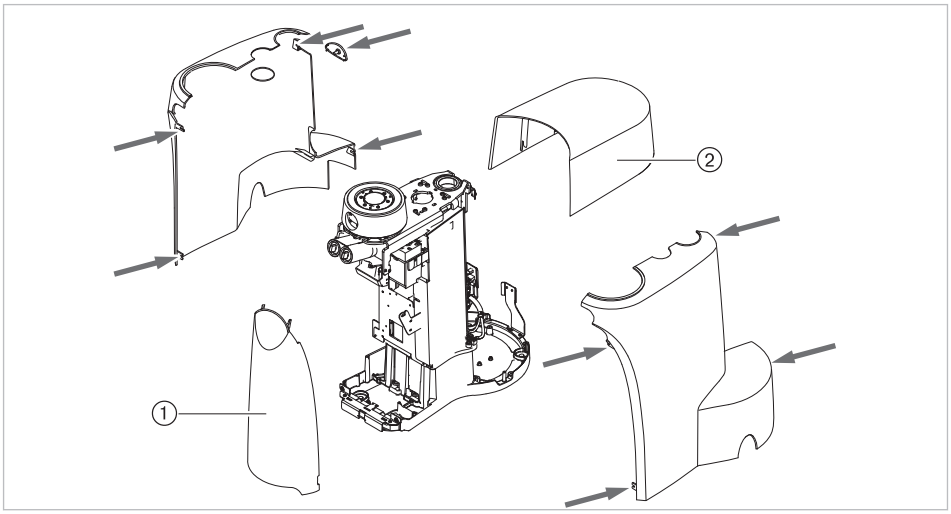
Death or injury from electric shock.

- 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 electrotechnical safety in accordance with IEC 62353 (DIN VDE 0751-1).

- Turn off the main switch before any servicing work.
- Loosen the fastening screw on the bracket master switch.



- Take off the cover ② in upward direction.
- Release the rear cover ① below and remove it.
- Unscrew the fastening screws (see: arrows) of the cladding and take off the covers.



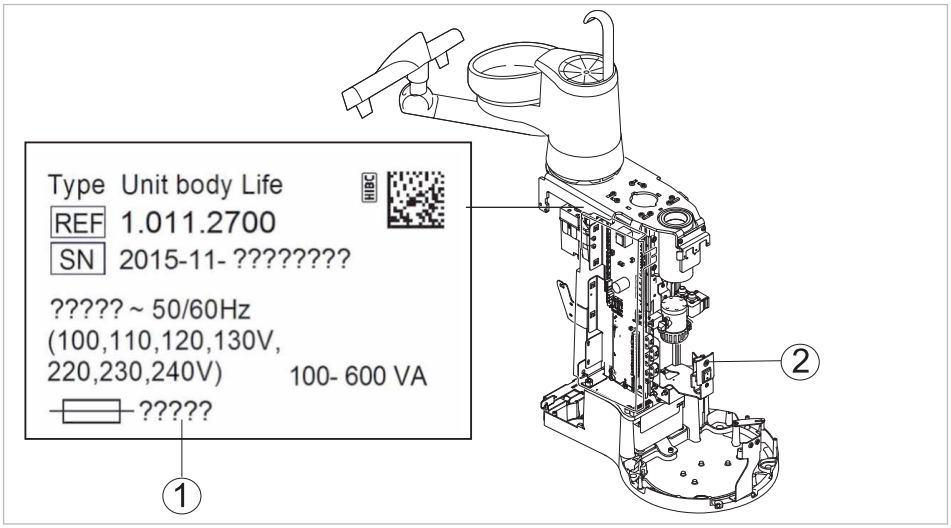
7.2.2 Visual inspection (inspection by examination)

Check the following points 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, STK)?
- Are there any indications of insufficient safety?

Check 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 appraisal of the medical device and accessories

The following list is an example and makes no claim of being complete.

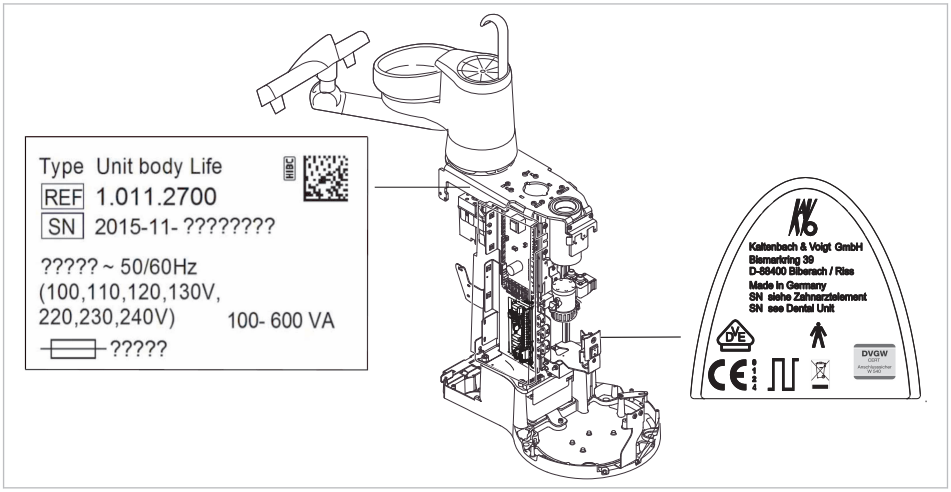
Check the following items:

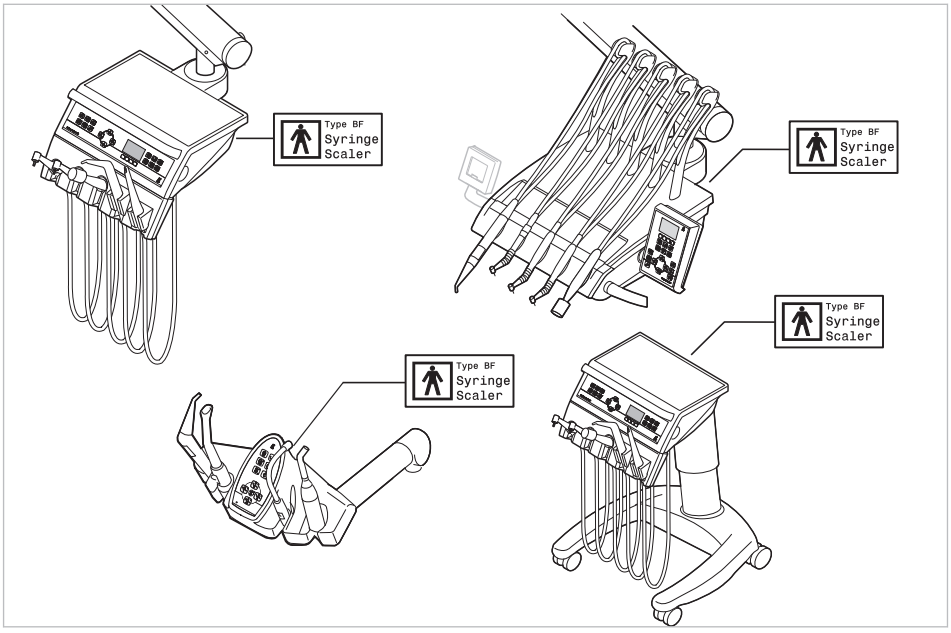
- Stability of the device
- No damage to the cladding or casing (cracks, breakage)
- Functioning of the carrier systems on dentist and assistant side, treatment lamp, and display (brakes, height adjustment, etc.)
- Condition of the handpiece and suction hoses

- 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 legibility and completeness of the safety-related labels

- ▸ 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.





Attachment locations: nameplate, markings BF and note "Comply with the instructions for use"

Control of the availability of the necessary documents

- ▸ Verify whether 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 safe operation is restored.

7.2.3 Safety measurement

⚠ 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 sight window, disconnect 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

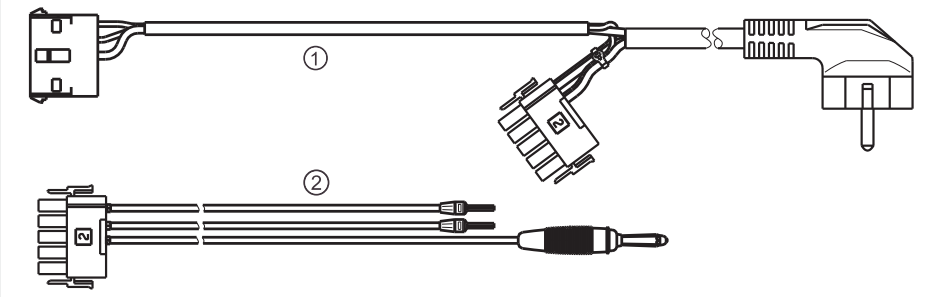
Connection cables such as data cables and cables for the functional earth could simulate protective conductor connections. These types of supplementary but unintentional protective earth connections could lead to erroneous measurements.

Note

Cables and wires e.g. power supply cords, measuring circuits and data lines must be arranged in such a manner that will ensure that their influence on measurements will be restricted to a minimum.

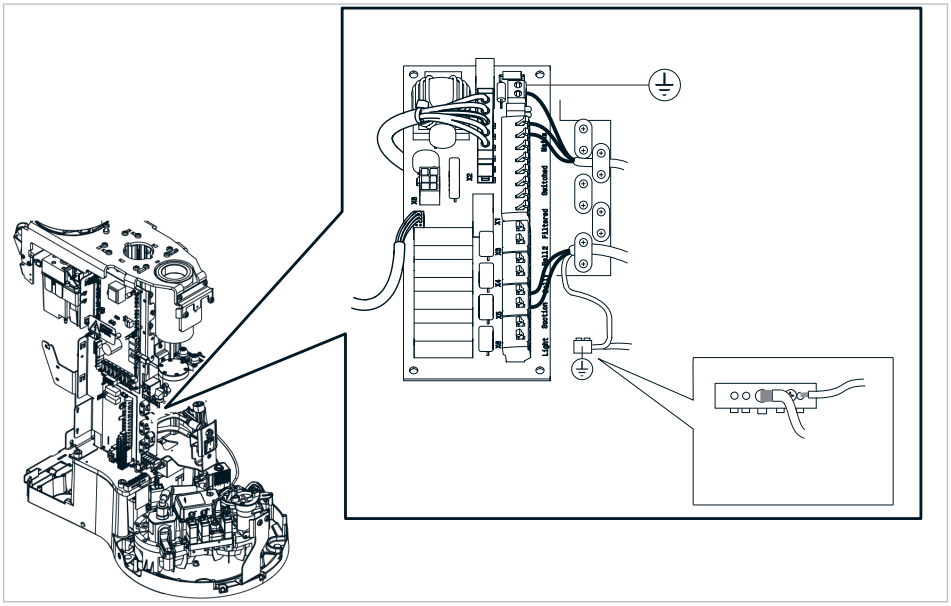
Note

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



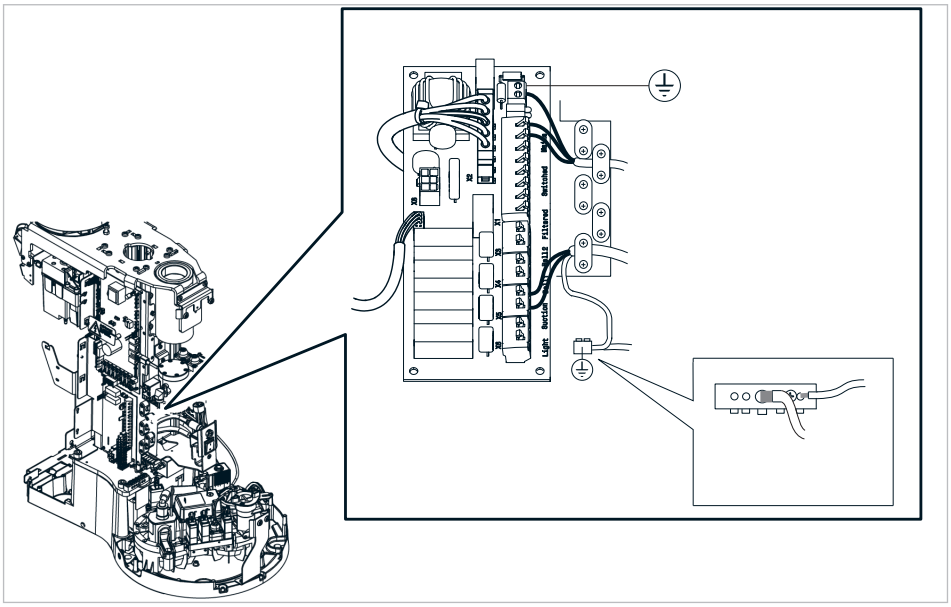
Using the measuring cable ① the unit is disconnected from the mains supply and connection of the treatment centre to the sight window is enabled. Hence, the customer-provided mains supply L & N on the power input board need not be disconnected. The adapter cable ② is included in the delivery of the KaVo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

Connecting the safety tester with KaVo measuring cables to the treatment centre



- Remove plug X2 from the power input board and plug 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 sight window.

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



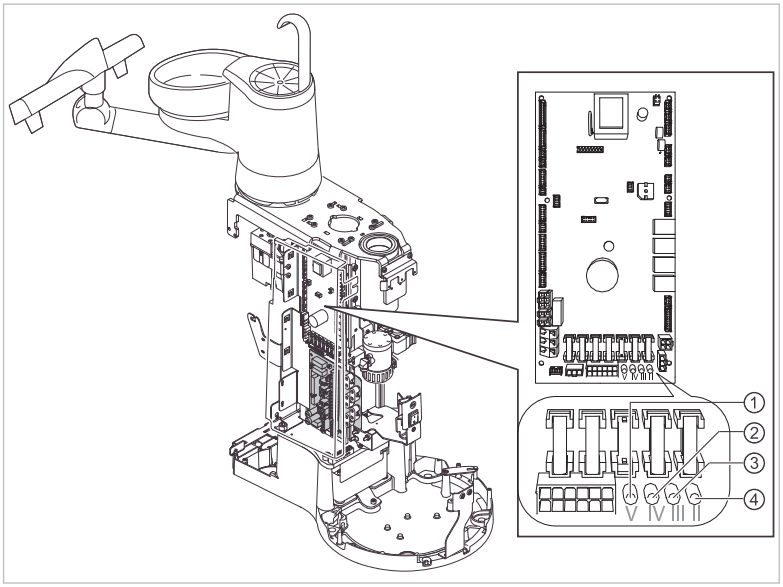
- Switch L + N of the on-site power supply cord to be voltage-free.

- Disconnect L + N on terminals X1.1 and X1.2.
- Connect the safety tester directly to terminals X1.1 (L) and X1.2 (N) and protective earth conductor terminal (PE).

Note

The main switch of the ME device / ME system must be turned on during measurement.

Connect the application parts [AP] to the safety tester:



- Connect ① to ④ with the safety tester.
- Connect the safety tester to meauring points AP X.

Note

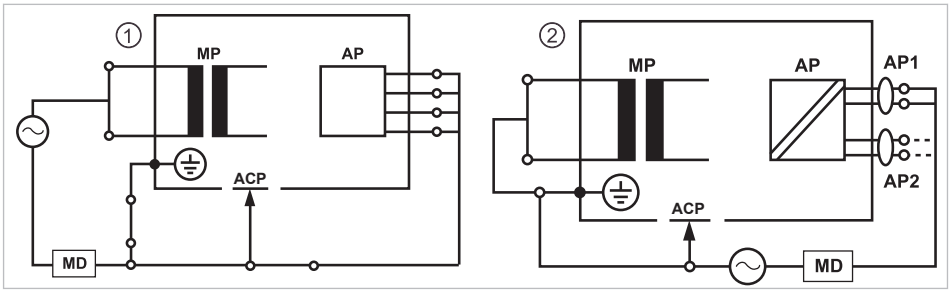
Additional measuring points AP X must be taken into consideration in the presence of accessories: e.g. accessories such as PIEZO ultrasonic scaler, etc.

See also:

8 Annex - Additional measuring points, Page 107

Connect accessible conductive parts [ACP] with PE

ACP = accessible conductive parts



Note

Additional measuring points ACP X must be taken into consideration in the presence of accessories.

See also:
8 Annex - Additional measuring points, Page 107

ACPs on the treatment centre

No ACPs need to be connected to the protective conductor (PE) during the measurement on the treatment unit Primus 1058 Life, as all relevant parts are connected to the PE and included in the test before they leave the factory.

ACPs on treatment lamps

No ACPs need to be connected to the treatment lights during the measurement with the protective conductor (PE) because all relevant parts have already been connected with the protective conductor (PE) in the factory and are included in the test.

Measure protective conductor resistance

Threshold:	< 0,3 Ω (maximum value!)

Note

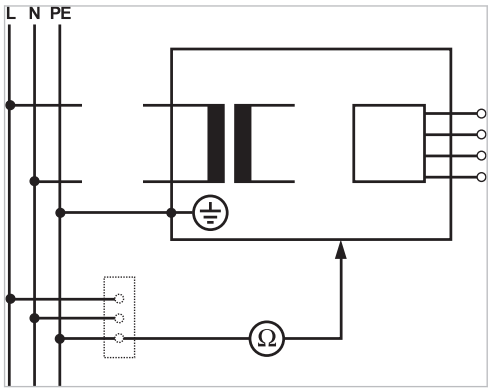
The integrity of the power supply cable, in particular the protective earth wire of the power cable must be ensured. As this is a fixed installation, the evaulation can be conducted by means of a visual inspection. If damage is determined, the further procedure to be taken is specified in the general 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 retained for 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

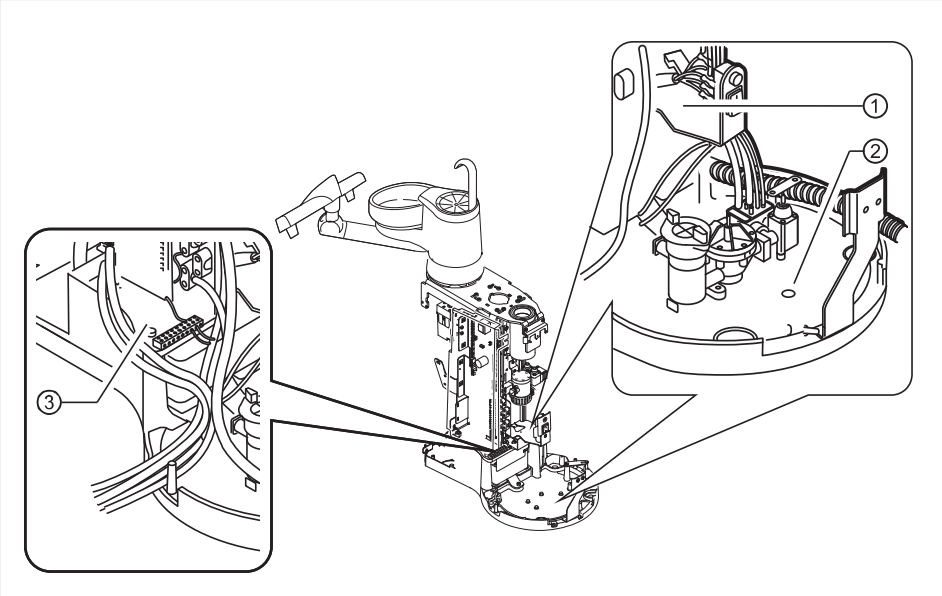
Note

Additional measuring points SL X need to be taken into consideration in the presence of accessories: e.g. additional devices, such as third-party connector, USB port of the intraoral camera, etc.

See also:

8 Annex - Additional measuring points, Page 107

Scan the treatment centre with the test tip



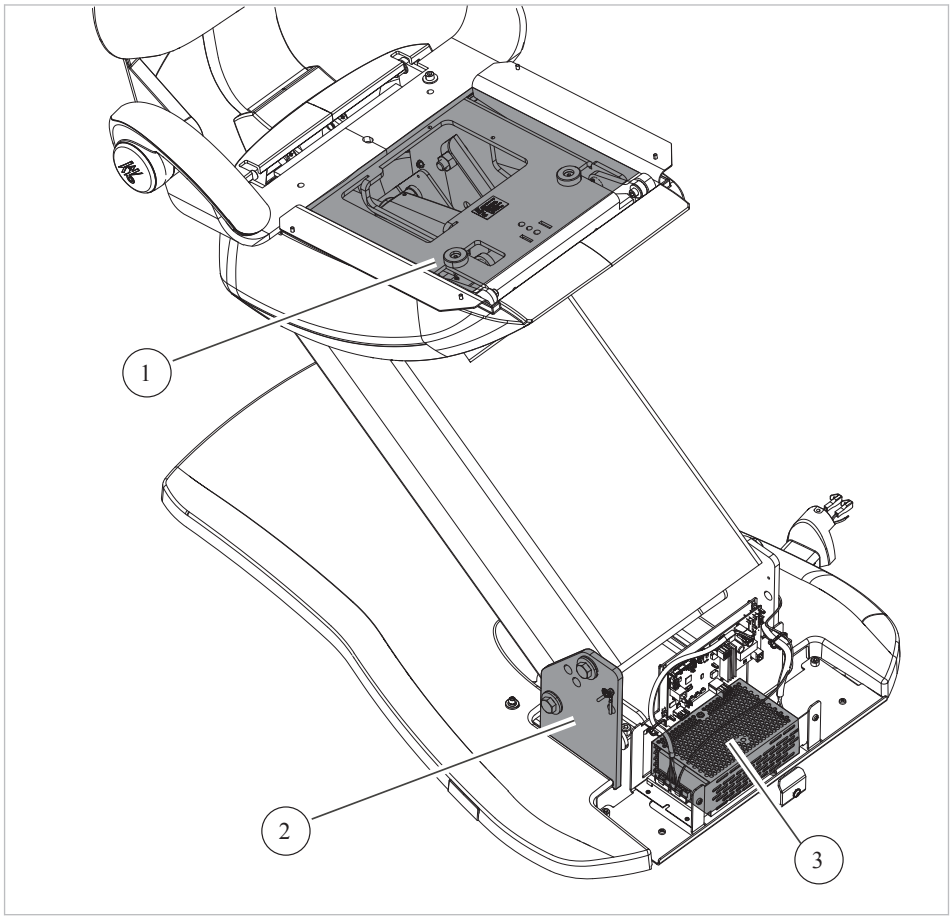
Measuring points on the device base

① Main switch holding plate

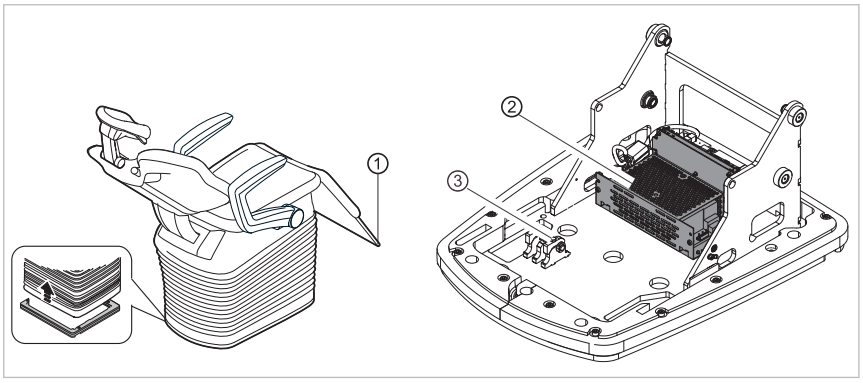
② Stand cover base plate

③ Surroundings of the protective conductor terminal

Scanning the patient chair with the test tip



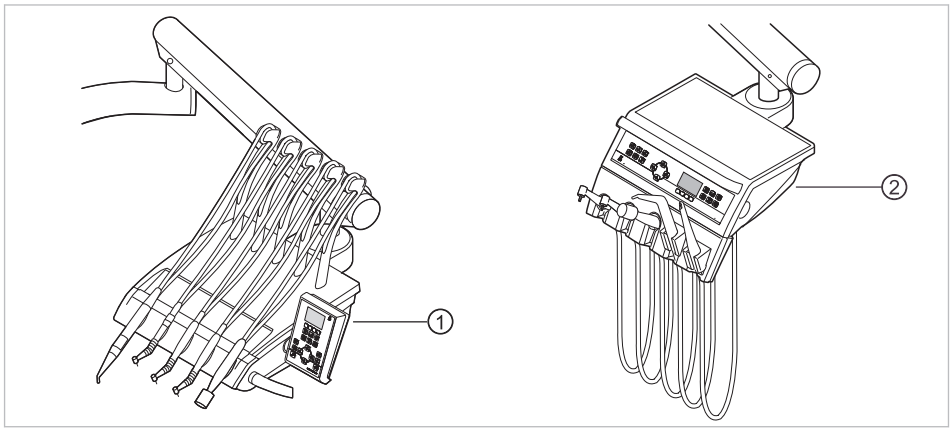
① Top part of the chair
② Base plate of chair base
③ Chair switched mode power supply



COMPACTchair measuring points

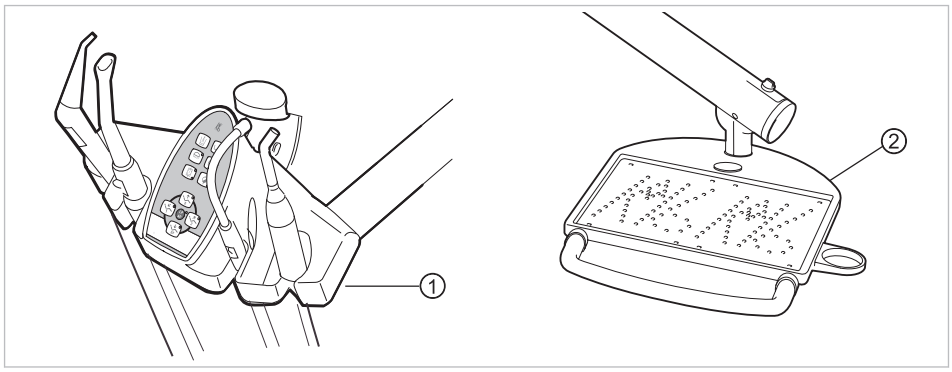
① Leg rest
② Chair switched mode power supply
③ Chair base plate

Scanning the operating elements with the test tip



① Dentist element S: table bottom

② Dentist element TM: table bottom

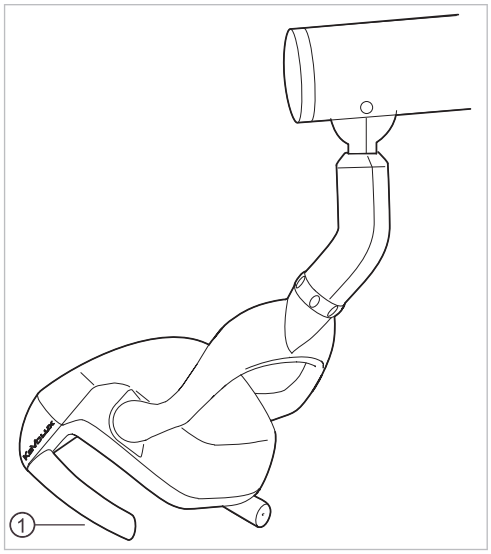


① Assistant element: Fastening screw on the bottom of the assistant element

② Assistant element: Fastening screw on the bottom of the service table

Scan the treatment lamp with the test tip

Operating light KaVoLUX 540 LED U

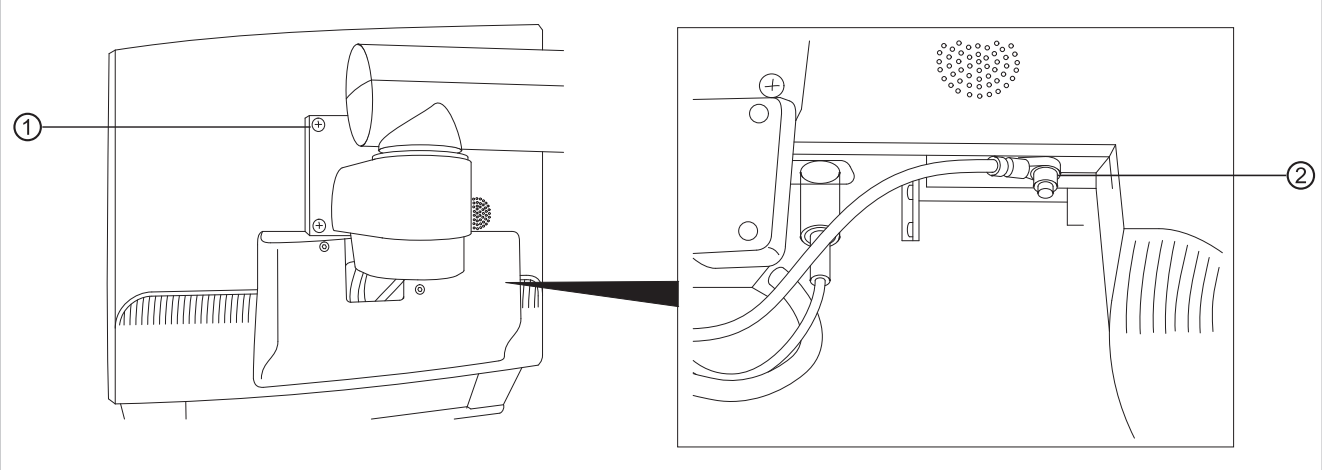


① Fastening screw of the handle support when the gripping sleeve has been removed

Operating light EDI/MAIA

No measuring points need to be scanned on the operating lights EDI and MAIA.

Touch monitor with test tip:



- Touch measuring point ① with the test tip.

or

- Sample the measuring point ② after removing the display cover.

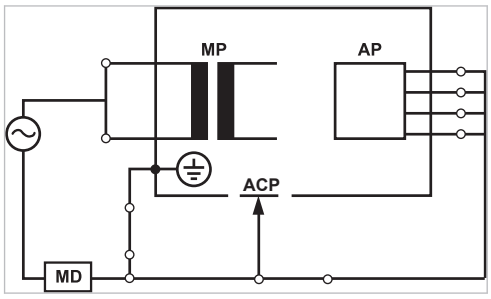
Measure protective conductor resistance of accessories

See also:

8 Annex - Additional measuring points, Page 107

Measure equivalent unit leakage current

Threshold:	< 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

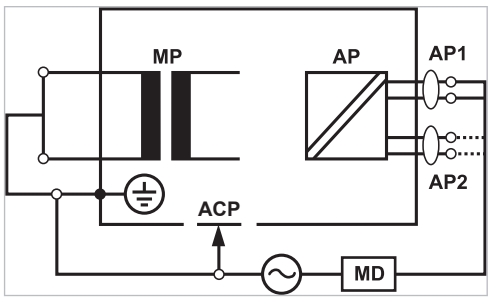
Electrical power.

Death or injury from electric shock.

- Prior to connecting the treatment centre to the sight window, disconnect the treatment unit from the mains supply network.

Measure equivalent patient leakage current

Threshold:	< 5 mA (maximum)



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 sight window, disconnect the treatment unit 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 application 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 application parts. The application parts are connected to the casing (see diagram) and included in the measurement of the leakage current of the casing, whereby the same reliable values are applicable.

7.2.4 Functional test

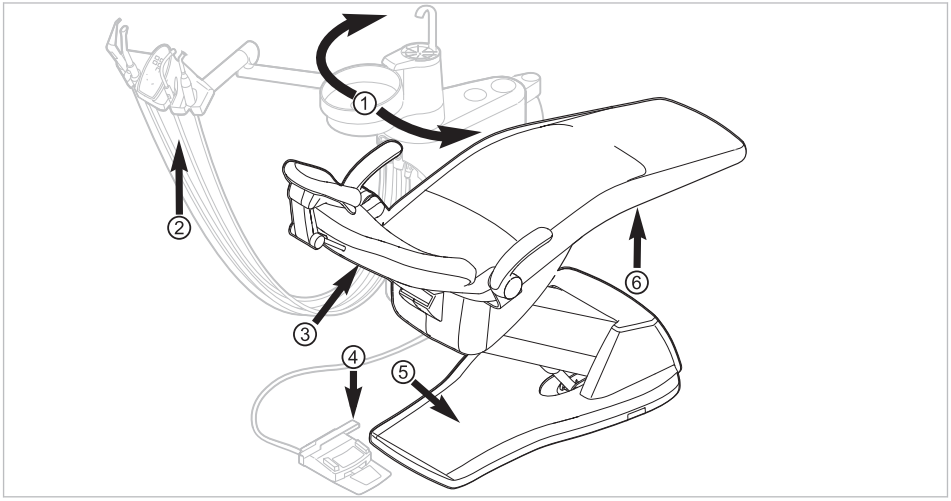
The following conditions must be fulfilled in all function tests:

- The basic function of the treatment centre must be guaranteed.
- The treatment centre must be fit for use.
- It must not exhibit any irregularities, noise or abrasion etc.

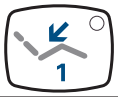
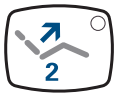
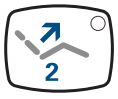
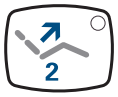
The following list is an example and makes no claim of being complete.

- Function test of the safety circuits (see diagram below)
- Functioning of the master switch of the device
- Functioning of the displays
- Function 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 operating light
- Function test of the suction hoses
- Function test of the foot control
- Function of the chair:
  - Travel on all axes
  - Testing of the limit switches
- Functional test ...

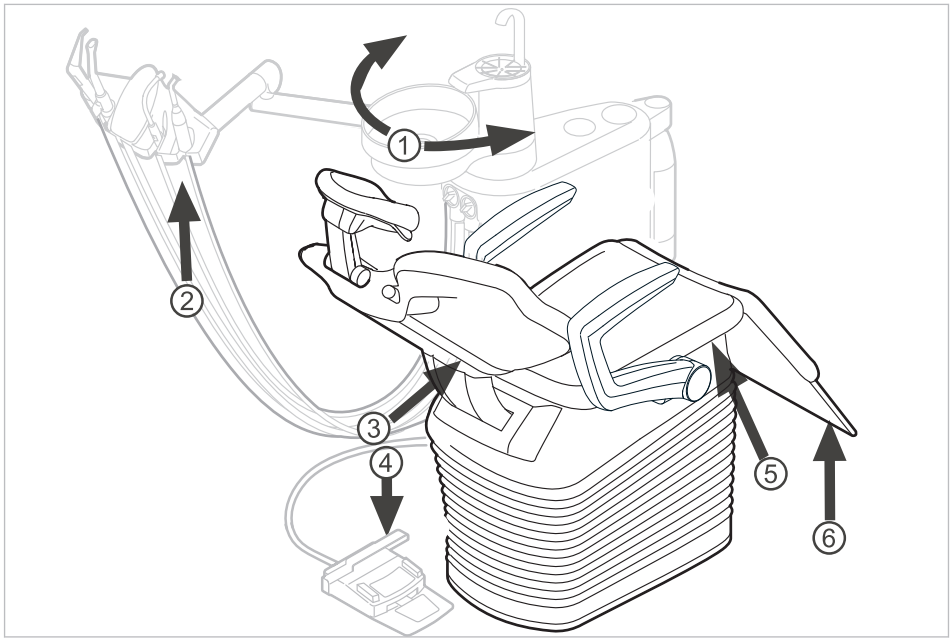
Patient chair Standard



Safety shutoff for the standard patient chair

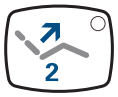
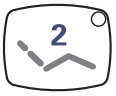
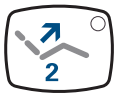
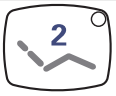
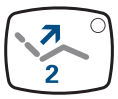
Item No.	Safety switch-off actuated	LED on assistant element	LED on dentist element
①	Patient unit swung over the patient chair		
②	Assistant element		
③	Backrest		
④	Bracket on the foot control		
⑤	Kick plate		
⑥	Seat		

Patient chair COMPACTchair



Safety shutoff for the COMPACTchair patient chair

If a person or object actuates a safety shutoff, the chair immediately stops moving. The fact that the safety shutoff has been activated is displayed by the corresponding display flashing on the dentist or assistant unit.

Item No.	Safety switch-off actuated	LED on assistant element	LED on dentist element
①	Patient unit swung over the patient chair		
②	Assistant element		
③	Backrest		
④	Bracket on the foot control		
⑤	Bench support / seat cushion		
⑥	Foldable part of the seat		

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
- Data, type and measuring results of function 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.

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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.

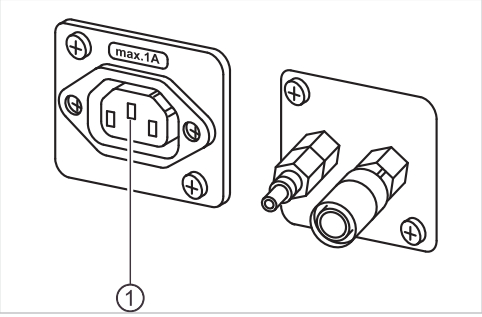
Date / Signature

8 Appendix - Additional measuring sites

Note
With reference to accessories not listed here, the specifications of the relevant instructions for use must be observed.

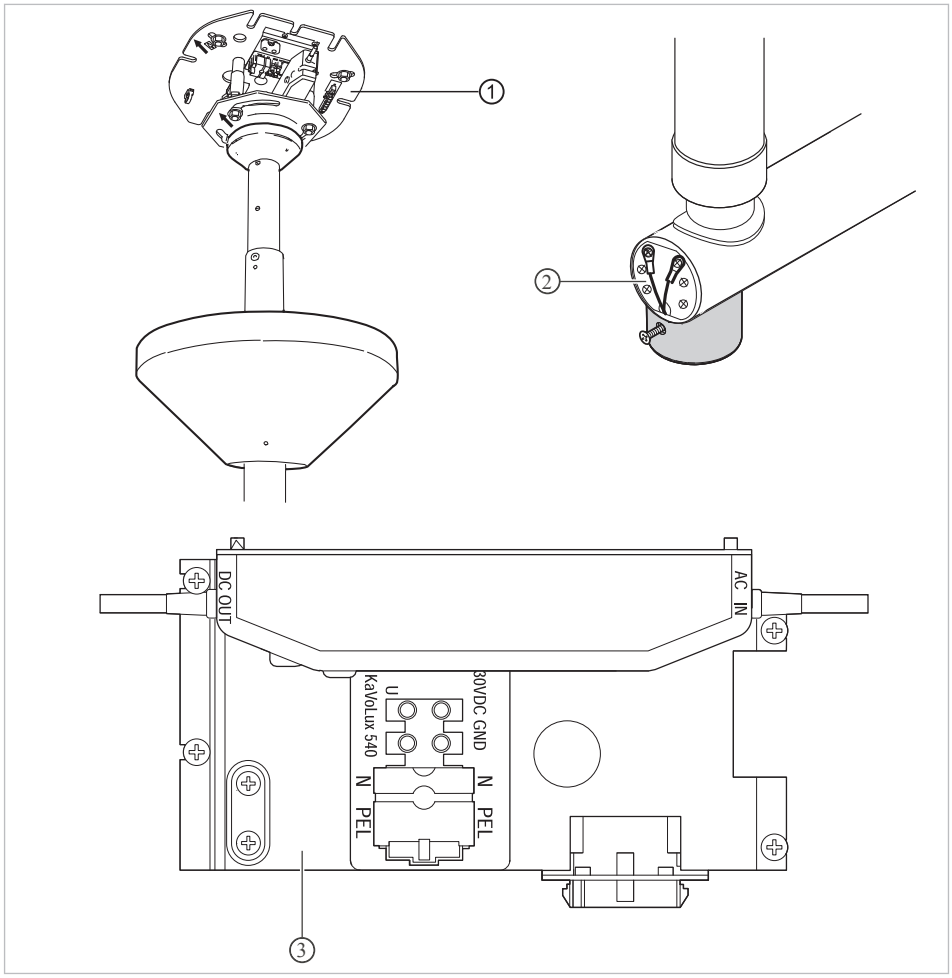
8.1 Additional scanning sites SL X in the protective conductor measurement

Connecting 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

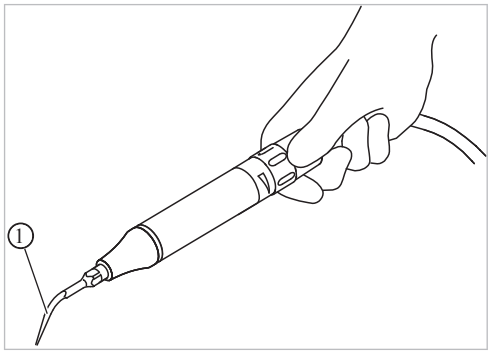
③ Surroundings of the protective earth conductor terminal

8.2 Additional measuring sites AP X for EUL/EPL measurement

Scan the PIEZO ultrasonic scaler with test probe

Note

Measuring points must be connected on the following ultrasonic scalers:
- PiezoLED ultrasonic scaler



Exemplary presentation of the measuring point on the PiezoLED ultrasonic scaler

① Test probe on ultrasonic scaler tip in ultrasonic scaler handpiece

Note

The switch on the handpiece must be activated during the EPA 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, cameral of the multimedia system, etc.

8.3 Additional connection sites ACP X (additional earth connections)

Note

A fixed connection from ACP to the PE terminal must be established for the EUL and EPL measurement. This can be accomplished with a measuring cable and connection terminals.

9 Troubleshooting

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.
	Main service fuse interrupted the electric circuit.	▸ 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. ▸ For this purpose, open the bayonet closure with a screwdriver and replace the fine-wire fuse. (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.
The patient chair does not move.	The safety shutoff is activated. (LED on the control panel flashes.)	▸ Check the safety shutoff and eliminate the reason for the shutoff.
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 LED on the "AP1" button flickers. (Dentist element)	The data connection to the assistant element is faulty.	▸ Call a service technician.
The LED on the "AP2" button flickers. (Assistant element)	The data connection to the chair control is faulty.	▸ Call a technician.
Turbine making loud running noises.	Turbine wheel faulty.	▸ Replace turbine wheels. Follow the operating instructions for the turbine.
The Satelec Mini LED does not work.	**Also refer to:** Instructions for use for the Satelec Mini LED	▸ **Also refer to:** Instructions for use for the Satelec Mini LED

Malfunction	Cause	Remedy
No cold light on the handpieces.	The high-pressure lamp or Multi LED on the handpiece is defective.	▸ Replace the high-pressure lamp or Multi LED. **See also:** Instructions for Use of the handpiece
No heating function on the multifunctional handpiece.	Spray heating not preselected.	▸ Pre-select spray heating.
No cold light on the multifunctional handpiece.	The heating function is preselected.	▸ Deselect the heating function (and select it again, if applicable).
No spray in the instruments.	No spray preselected.	▸ Preselect spray.
	Close the ring for controlling the spray on the instruments.	▸ Open the ring for controlling the spray on the instruments.
Spray at the instruments is insufficient.	The spray nozzles are dirty/clogged.	▸ Clean the spray nozzles according to the accompanying instrument operating instructions.
Leaks in instruments.	O-rings at MULTIflex or motor coupling, gripping sleeve or cannula of the triple-function handpiece are damaged.	▸ Replace O-rings.
PiezoLED or PIEZOsoft without function.	PiezoLED or PIEZOsoft not pivoting.	▸ **Also refer to:** Instructions for Use of the PIEZOsoft/ PiezoLED
The suction hoses do not have any suction.	Sliders on the conical sections are closed.	▸ Open the sliders.
	Sieves in suction connector are clogged.	▸ Replace sieves.
	Chair kick plate is being actuated.	▸ Release the chair kick plate.
Water in the return air filter.	O-rings of the MULTIflex coupling are damaged.	▸ Replace all O-rings of the MULTIflex coupling.
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.
Ten beeps are issued.	The Oxygenal container is too full.	▸ Stop filling the Oxygenal container.

Malfunction	Cause	Remedy
Beeps every 10 seconds. The LED on the "Intensive germ reduction" key flashes (green). (Assistant element) MEMOspeed/ men displays an error.	The Oxygenal container is empty.	▸ Refill the Oxygenal container. **See also:** Servicing instructions
LED on "HYDROclean" button (red) flashes.	Malfunction in the amalgam separator.	▸ Call a service technician. ▸ Note the amalgam separator warning notice. **Also refer to:** Operating instructions of the amalgam separator **See also:** Operating instructions of the amalgam separator
	Emergency shut off of the bowl valve (only when external suction is installed)	▸ Call a technician.
ERGOcam does not work.	PC is switched off.	▸ Turn on the computer.
	USB cable too long.	▸ Make sure that the cable length does not exceed 10 m (2 x 5 m passive with repeater).
No data transmission to the multimedia menu of the unit.	No or faulty ethernet connection between dental unit and office network.	▸ Notify network administrator.
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.

Malfunction	Cause	Remedy
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.

Malfunction	Cause	Remedy
Display shows: ID 33	No CAN node and/or internal communication is faulty.	▸ Call a service technician.
Display shows: ID 64	Water is shut off.	▸ Turn water on.
	Water works leaks strongly. Water works malfunction	▸ Call a technician.
Display shows: ID 65	Safety switch of bowl suction has been reached.	▸ Turn external suction on. ▸ Check and clean, if required, the bowl valve.
Display shows: ID 66	Amalgam separator malfunction	▸ Remedy the malfunction. **See also:** Instructions for Use of amalgam separator
Display shows: ID 67	The oxygenal container is empty.	▸ Refill the Oxygenal container. **See also:** Servicing instructions
Display shows: ID 68	Call for service	▸ Have a service performed. ▸ Call a technician.
Display shows: ID 69	Intensive germ reduction must be done.	▸ Carry out an intensive germ reduction. **See also:** Servicing instructions
Display shows: ID 70	Dekaseptol empty.	▸ Replenish Dekaseptol. **See also:** Servicing instructions
Display shows: ID 72	Dekaseptol bottle.	▸ Insert the DEKASEPTOL bottle. **See also:** Care instructions
Display shows: ID XX	This error is not described in this chapter.	▸ Call a technician.
Display shows: CAN fail	Internal communication error.	▸ Turn the unit off and on again, consult a service technician according to need.
Display shows: System State	Unit does not work.	▸ Call a service technician.

10 Data on electromagnetic compatibility according to EN 60601-1-2

10.1 Electromagnetic Transmissions

The treatment unitPrimus 1058 Life is designed for operation in an environment as specified below. The customer or user of the Primus 1058 Life should make sure 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	The Primus 1058 Life 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	The Primus 1058 Life device 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 EN 61000-3-2	Class A	The Primus 1058 Life device 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 EN 61000-3-3	Conforms	The Primus 1058 Life device 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

The treatment unitPrimus 1058 Life is designed for operation in an environment as specified below. The customer or user of the Primus 1058 Life should make sure that the device is used in an environment of the specified type.

Interference immunity tests	EN 60601 test level	Compliance level	Electromagnetic environment - Guidelines
Electrostatic discharge (ESD) according to EN 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 EN 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	EN 60601 test level	Compliance level	Electromagnetic environment - Guidelines
Surges according to EN 61000-4-5	± 1 kV push-pull voltage ± 2 kV common mode voltage	± 1 kV push-pull voltage ± 2 kV common mode voltage	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 EN 61000-4-11	< 5% U_T (> 95% interruption) for ½ 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 ½ 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. If the user needs the Primus 1058 Life to work even if the power supply is interrupted, we recommend supplying energy to the Primus 1058 Life from an uninterruptible power supply or battery.
Magnetic field at a supply frequency (50/60 Hz) according to EN 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 Recommended safe distance between portable and mobile HF telecommunications equipment and the treatment unit

The Primus 1058 Life is intended for use in an electromagnetic environment in which the HF interference parameters are controlled. The customer or user of the Primus 1058 Life can help prevent electromagnetic interference by maintaining the minimum clearance between portable and mobile HF telecommunication devices (transmitters) and the Primus 1058 Life depending on the output of the communication device as indicated below.

Safe distance depending on the transmission frequency:

Rated power P of the transmitter in W	Safe distance depending on the transmission frequency in m		
	150 kHz to 80 MHz $d=1.17\sqrt{P}$	80 MHz to 800 MHz $d=1.20\sqrt{P}$	800 MHz to 2.5 GHz $d=2.3\sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.37	0.38	0.73
1	1.17	1.20	2.3
10	3.69	3.79	7.27
100	11.7	12	23
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.

10.4 Immunity to electromagnetic interference

The treatment unitPrimus 1058 Life is designed for operation in an environment as specified below. The customer or user of the Primus 1058 Life should make sure that the device is used in an environment of the specified type.

Interference immunity tests	EN 60601 test level	Compliance level	Electromagnetic environment - Guidelines
Wire-based HF interference according to EN 61000-4-6 Wireless HF interference according to EN 61000-4-3	3 V_{eff} 150 kHz to 80 MHz outside the ISM bands[a] 3 V/m 80 MHz to 2.5 GHz	3 V_{eff} 3 V/m	Handheld and mobile wireless devices should not be used at a shorter distance from thePrimus 1058 Life including cables than the recommended safe clearance calculated using the appropriate equation for the emission frequency. Recommended safe distance: d = 1.17 $\sqrt{P}$ d= 1.17 $\sqrt{P}$for 80 MHz to 800 MHz d= 2.33 $\sqrt{P}$for 800 MHz to 2.5 GHz where P is the maximal nominal power of the transmitter in watts (W) as specified by the transmitter manufacturer and d is the recommended safe clearance in metres (m). [b]The field strength of stationary wireless radio transmitters as measured locally[c]should be lower than the conformance level at all frequencies. [d]Interference is possible in the vicinity of devices bearing the following icon.

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

NOTE 2: These guidelines may not 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 levels in the ISM frequency bands between 150 kHz and 80 MHz and in the frequency range from 80 MHz to 2.5 GHz are intended to reduce the probability of mobile/handheld communications facilities causing interference when they are inadvertently introduced into the patient area. For this reason, the additional factor of 10/3 is applied in the calculation of the recommended safe clearances in these ranges of frequencies.

[c]The field strength of stationary transmitters, such as, e.g. base stations of mobile phones and mobile terrestrial radio devices, amateur radio stations, AM and FM radio and television transmitters, cannot be determined exactly based on theoretical considerations. A site study should be considered to determine the electromagnetic environment in terms of stationary transmitters. If the measured field strength at the site, at which the Primus 1058 Life is used, exceeds the compliance levels shown above, the

Primus 1058 Life should be monitored to demonstrate proper function. If any uncommon performance characteristics are observed, additional measures may be required, such as, e.g., changing the orientation or using a different location for the Primus 1058 Life.

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

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