stomdevice

Instructions for use

DSEplus 5192 / 5193 / 5192 TLC



Always be on the safe side.

KaVo. Dental Excellence.

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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 EC Directive 93/42 for medical devices
▶	Action required

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 Warranty terms and conditions

Within the scope of the applicable KaVo delivery and payment conditions, KaVo guarantees proper function, absence of defects in material and workmanship for a period of 12 months from the date of purchase as confirmed by the salesperson.

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In case of justified complaints, KaVo will honour its warranty with a free replacement or repair.
The warranty does not cover defects and their consequences that arose or may have arisen due to natural wear, improper handling, cleaning or maintenance, non-compliance with operating, maintenance or connection instructions, corrosion, contaminated media supply or chemical or electrical influences deemed abnormal or impermissible in accordance with factory specifications.
The warranty does not usually cover lamps, light conductors made of glass and glass fibres, glassware, rubber parts and the colourfastness of plastic parts.
The warranty expires if defects or their consequences could possibly have arisen because the product has been modified or changed. Warranty claims can only be asserted when they are immediately reported to KaVo in writing.
This notification must be accompanied by a copy of the invoice or delivery note on which the manufacturing number is clearly visible. In addition to the guaranty, the statutory warranty claims of the purchaser also apply with a warranty period of 12 months.

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 upon 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.

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Note
If the recipient fails to comply with any of the above-mentioned obligations, the damage will be considered to have arisen after delivery
(in accordance with the General German Freight Forwarders´ Terms and Conditions, Art. 28)
.

Outside Germany

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

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

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

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

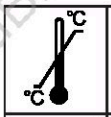
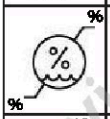
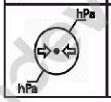
1.4.3 Information on the packaging: Storage and transportation

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

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

	Transport upright with the arrows pointing upwards!
	Fragile - protect against impact!
	Protect from moisture!
	Permissible stacking load

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	Temperature range
	Humidity
	Air pressure

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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

Safety instructions distinguishing between three hazard levels are used in this document to prevent personal and property damage.



⚠ 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.

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2.2 Safety instructions

2.2.1 General information



DANGER

Explosion hazard.

Risk of fatal injury.

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



DANGER

Electricity

Electrical shock

- Before opening the unit covers, pull the plug from the mains or disconnect the unit from the voltage source.



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!



CAUTION

Injuries or damage caused by use not compliant with intended purpose.

Safety devices provided may be put out of action if the product is not used in accordance with the instructions for use.

Risk of injury and danger to material and unit.

- Use the unit only in line with the manufacturer's instructions for use!



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

Risks from electromagnetic fields.

The functions of implanted systems (such as pacemakers) can be influenced by electromagnetic fields.

- Clarify with the user before starting work!

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2.2.2 Product-specific



⚠ CAUTION

Danger if unit not in proper working order or not being used properly.

Risk of injury and danger to material and unit.

- Use only suitable tools.
- Use the unit properly and in accordance with its intended purpose.
- Operate tools only at the permitted speeds.
- Comply with the servicing regulations.
- Comply with the accident prevention regulations (eye goggles, protective equipment, handpiece holder etc.).
- Remove any traces of wear and tear and damage.



⚠ CAUTION

The pressurised water unit must not be empty.

Device damage.

- Before turning on device, ensure that the pressurised water bottle is filled.



⚠ CAUTION

The wastewater tank of the suction unit may not be full.

No suction is possible when the container is full.

- Before turning on device, ensure that the container is empty.



⚠ CAUTION

Rotating tools.

Injury hazard.

- Use goggles when working with rotating tools.



⚠ CAUTION

Injury from the swivel arms.

Crushing or shearing from the swivel arm for the dentist element, assistant element and dental patient simulator.

- Move the swivel arms carefully.



⚠ CAUTION

Blinding hazard from infrared, visible or ultraviolet light.

Damage to sight, eye injury.

- Do not look directly into the light.



Note

Instructions for use for the Satelec Mini LED and Waldmann type light: Observe HX 20 U.

2.3 Disposal of electronic and electrical devices



Note

According to EC directive 2002/96 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.

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For final disposal, please contact:

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.

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3 Product description

3.1 Purpose – Intended use

3.1.1 General

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

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.

The overarching guidelines and/or national laws, national regulations and the rules of technology applicable to the startup and use of the KaVo product for the intended purpose are to be applied and complied with.



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.

The use of this KaVo product is not permitted in areas subject to an explosion hazard.

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.

3.1.2 Product-specific

The KaVo DSEplus 5192 / 5193 is used for training and vocational training of dentistry students at universities and for advanced dentist training at advanced training institutes, clinics and universities.



⚠ WARNING

Injuries or damage caused by use not compliant with intended purpose.
Risk of injury and danger to material and unit.

- ▸ Do not treat patients using the dental simulation unit!

Operating the dental simulation unit in accordance with its intended purpose is possible if the prerequisites of IEC 61010-1 are met.
This product is licensed for indoor use only.

3.2 Scope of delivery

Basic device DSEplus (depending on model)

Name	Material number
BS basic device	Mat. no. 1.000.5005

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Name	Material number
BS swivel arm DPS	Mat. no. 1.000.5006
BS Pressurised water system	Mat. no. 1.000.2713
DPS Torso	Mat. no. 1.000.1527
DPS neurocranium	Mat. no. 1.000.2616
BS Venturi internal dust extraction	Mat. no. 1.000.2504
Handpiece arm	Mat. no. 1.000.2503
Handpiece holder	Mat. no. 1.003.1565
Membrane keypad DSEplus	Mat. no. 1.000.2602
BS Halogen lamp 5192 / 5193	Mat. no. 1.000.4991
BS ELECTROtorque TLC 4893	Mat. no. 1.008.6676
Instructions for use ELECTROtorque TLC	

Spray mist extractor

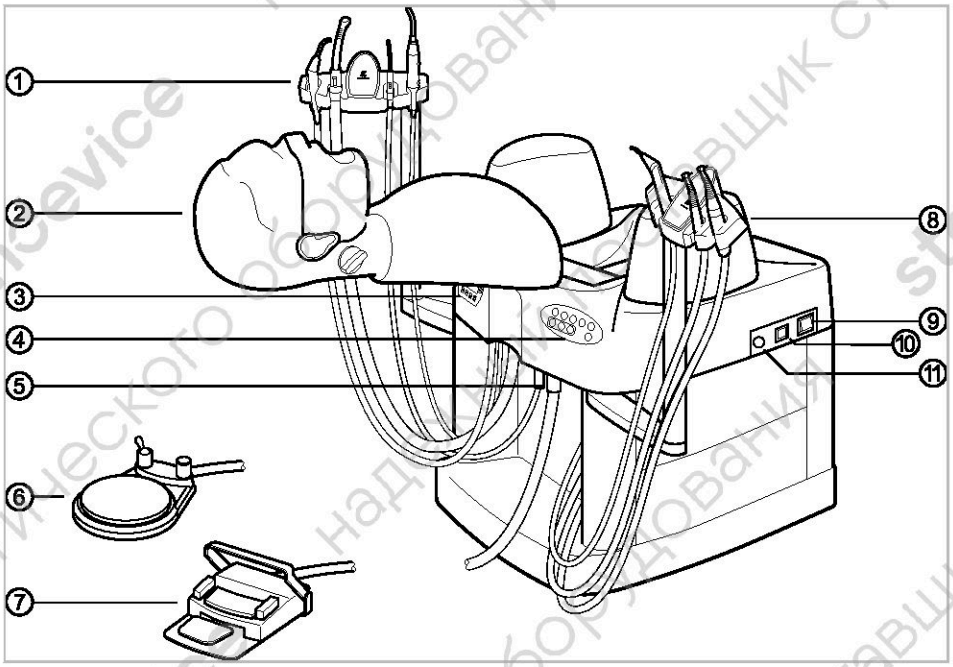
Description	Material number
Extraction hose	Mat. no. 0.065.7163
Suction connection, large	Mat. no. 0.211.1761
Suction cannula	Mat. no. 0.236.2127

Saliva ejector

Designation	Material number
Extraction hose	Mat. no. 0.065.6589
Suction connection, small	Mat. no. 0.211.1751
Saliva ejector, flexible	Mat. no. 0.236.2128

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3.3 Overview DSEplus 5192 / 5193 / 5192 TLC



① Assistant element (if available)

② Dental patient simulator

③ Control panel speed control for INTRA LUX motor KL 701/702/703 - (only DSEplus 5192 TLC)

④ Control panel

⑤ Terminals

⑥ Foot control C (only DSEplus 5192 / 5192 TLC)

⑦ Foot control A (only DSEplus 5193)

⑧ Dentist element

⑨ Main switch

⑩ Main fuse
DSEplus 5192 / 5192 TLC:
1 fuse
DSEplus 5193: 2 fuses

⑪ Socket K4plus handpiece 4914 / K5 plus handpiece 4911
(only DSEplus 5193 optional)

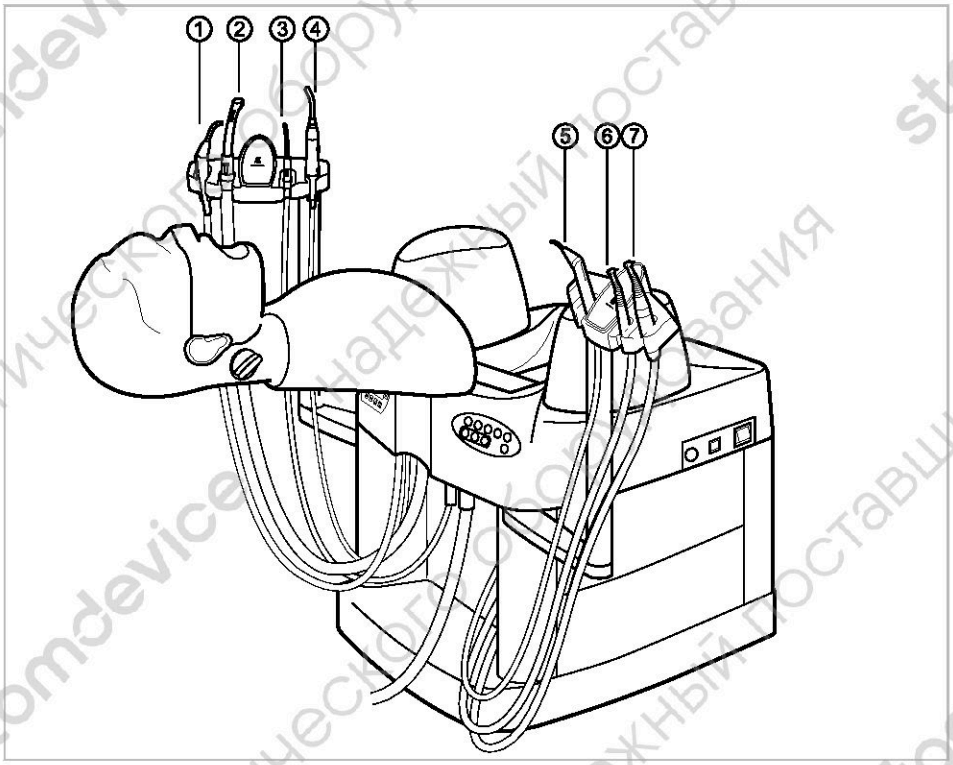
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3.4 Dentist and assistant unit

The allocation of the dentist and assistant element can vary according to design.

See also:

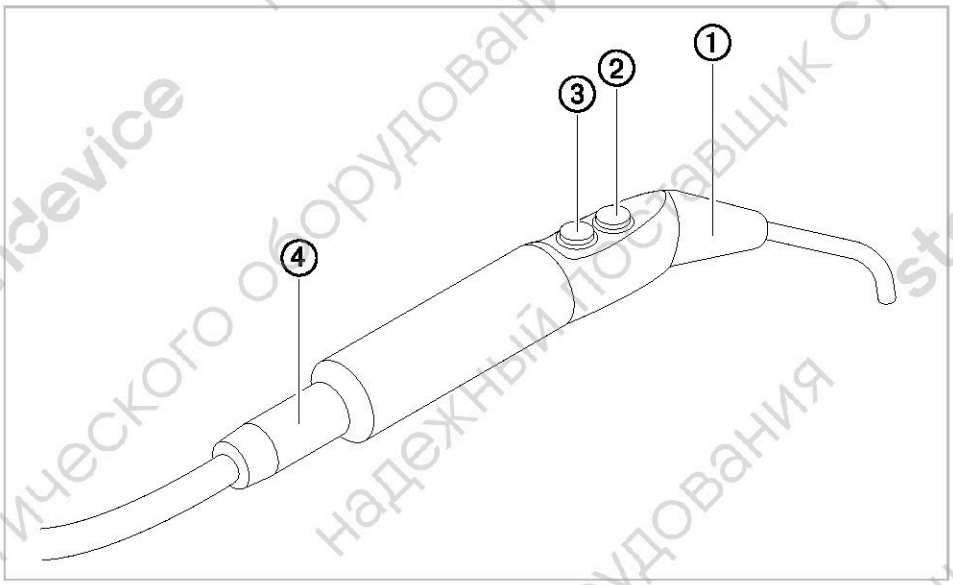
4.1.3 Connect the instruments, Page 29



Pos. no.	DSEplus 5192	DSEplus 5192 TLC	DSEplus 5193
①	Triple function handpiece (optional)	Triple function handpiece (optional)	Triple function handpiece (optional)
②	Spray mist sucker	Spray mist sucker	Spray mist sucker
③	Saliva ejector	Saliva ejector	Saliva ejector
④	Satelec Mini LED (optional)	Satelec Mini LED (optional)	Satelec Mini LED (optional)
⑤	Triple function handpiece	Triple function handpiece	Triple function handpiece
⑥	Turbine or pneumatic motor	Turbine or pneumatic motor	Turbine, air motor or INTRA LUX motor KL 701/702/703
⑦	Turbine or pneumatic motor	Turbine, air motor or INTRA LUX motor KL 702/703	Turbine, air motor, PIEZOlux or INTRA LUX motor KL 701/702/703

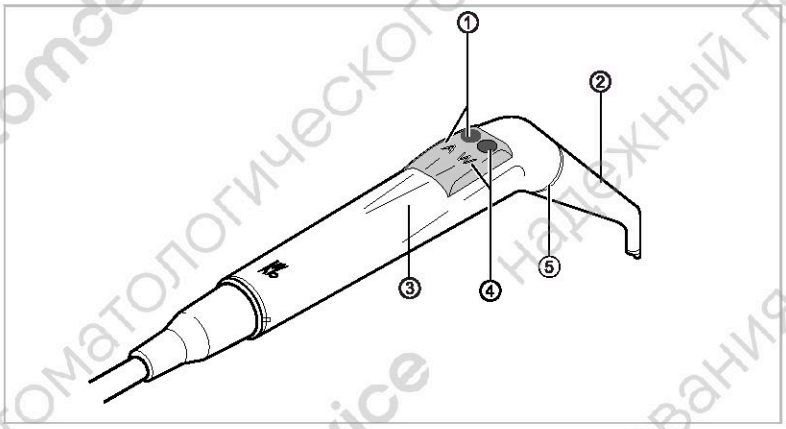
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3.5 Triple-function handpieces



Triple function handpiece One

① Cannula
② Water button (green ring)
③ Air button (blue ring)
④ Handpiece and hose

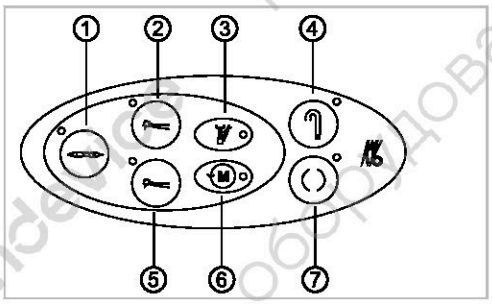


Triple-function handpiece

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

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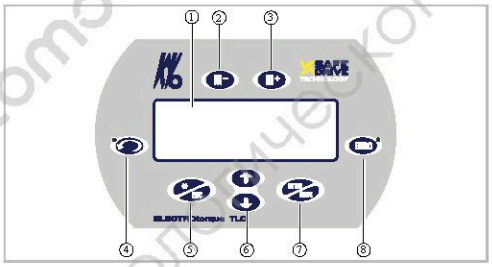
3.6 Control panel DSEplus



DSEplus 5192 / 5193 / 5192 TLC

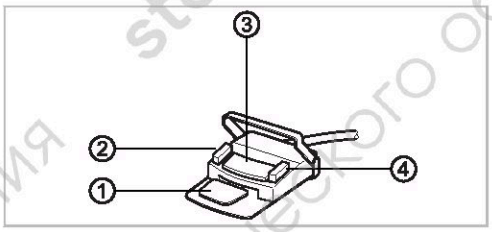
① Handpiece preselection button for laboratory handpiece
② Handpiece preselection button 1
③ Spray display
④ Dust extraction button
⑤ Handpiece preselection button 2
⑥ Counter-clockwise rotation display (only foot control A)
⑦ Chassis brake button

3.7 Control panel speed control for INTRA LUX motor KL 701/702/703 - DSEplus 5192 TLC



① Display
② "M-" key (Memory down)
③ "M+" key (Memory up)
④ "CCW rotation" key with LED
⑤ "*/ESC" key
⑥ "UP" key / "DOWN" key
⑦ "ENTER/SAVE" key
⑧ "Endo mode" key with LED

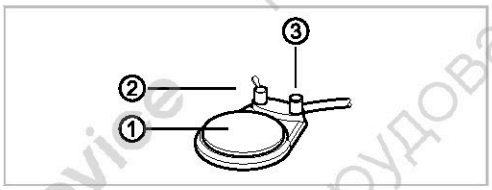
3.8 Foot control A - DSEplus 5193



① Footplate start/stop
② Spray button
③ Footplate clockwise/counter-clockwise
④ Brake button for patient positioning

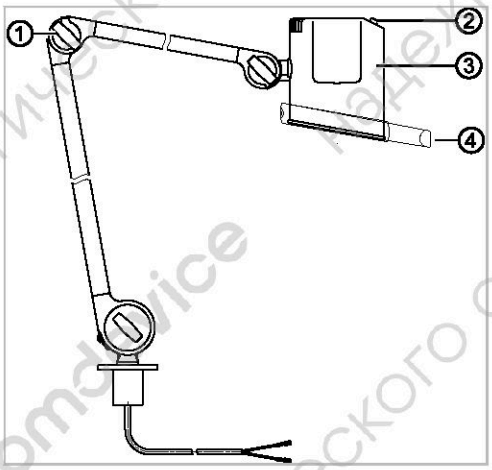
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3.9 Foot control C - DSEplus 5192 / 5192 TLC



① Footplate gradual speed control
② Spray button
③ Brake button for patient positioning

3.10 Halogen lamp - DSEplus 5192 / 5193



① Joint
② Changeover switch
③ Reflector housing
④ Handle

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3.11 Rating plates



Rating plate DSEplus 5192: 100V



Rating plate DSEplus 5192: 120V



Rating plate DSEplus 5192: 230V



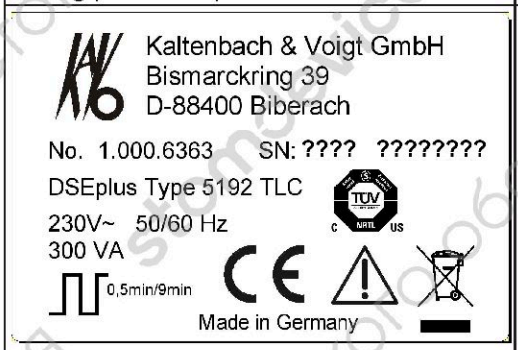
Rating plate DSEplus 5193: 100V



Rating plate DSEplus 5193: 120V



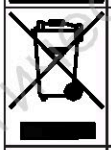
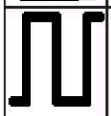
Rating plate DSEplus 5193: 230V



Rating plate DSEplus 5192 TLC 120 V / 230 V (indicated voltage depends on the design)

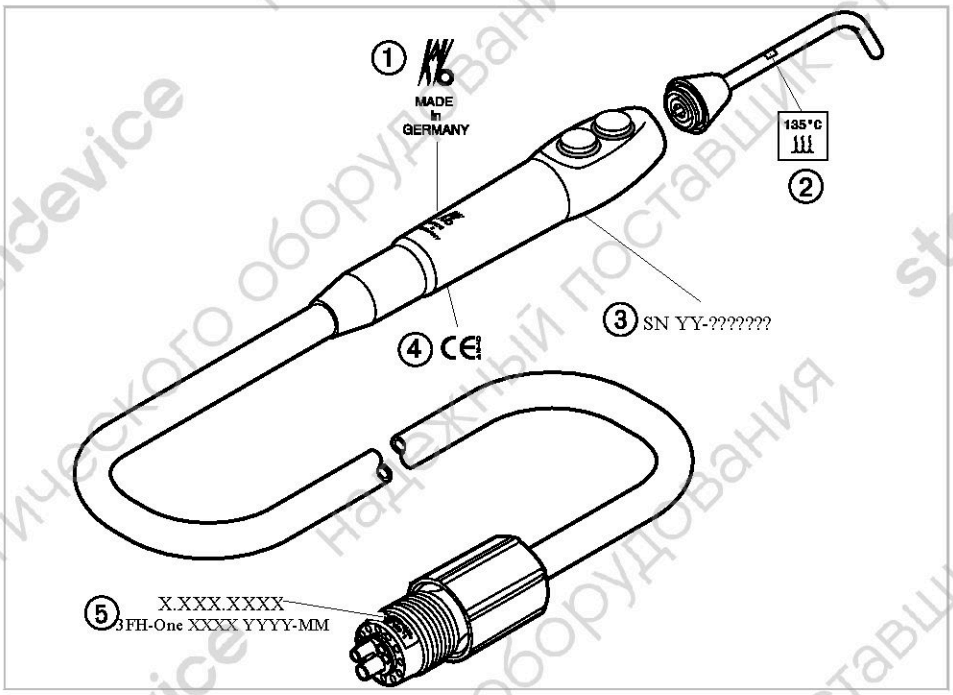
Type	Device type DSEplus 5192 / 5193
SN	Manufacturing date and serial number
REF	Material number
	HIBC Code

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	NRTL mark
	NRTL mark
	TÜV mark
	GS mark
	CE mark
	Follow the instructions for use!
	For disposal information, see Intended use
	Operating mode DSEplus 5192 / 5193: 2 minutes operation; 8 minute pause Operating mode DSEplus 5192 TLC: 0.5 minutes operation; 9 minute pause

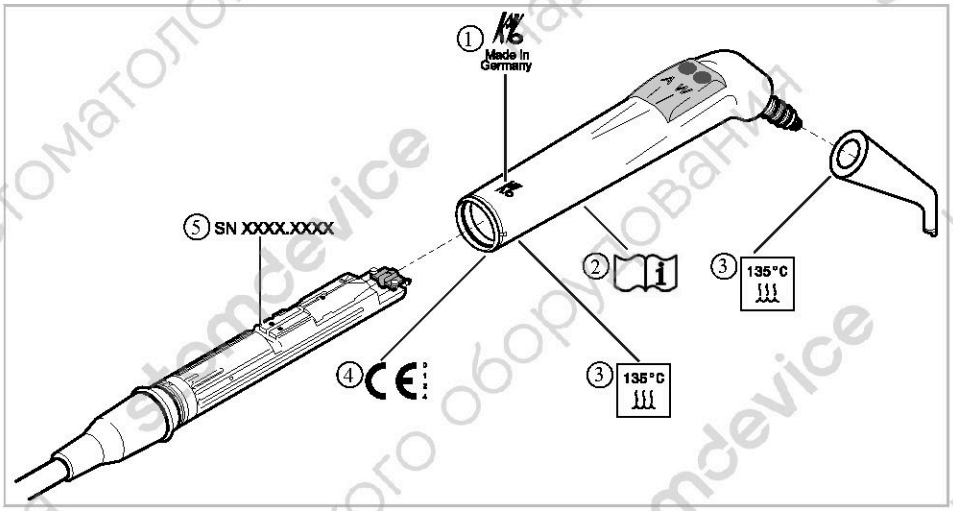
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Marks and labels of triple-function handpieces



Marks and labels of triple-function handpiece One

① Company logo of the manufacturer
② Can be sterilised at up to 135°C
③ Serial number
④ CE mark according to 93/42/EEC medical devices
⑤ Material number, name, production date



Marks and labels of the triple-function handpiece

① Company logo of the manufacturer
② Please note the instructions for use
③ Can be sterilised at up to 135°C
④ CE mark according to 93/42/EEC medical devices
⑤ Serial number

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3.12 Technical Data

Recommended space requirement for the DSEplus (individual place)

Width	1200 mm
Depth	1800 mm
Height including halogen lamp	1880 mm

Dimensions in park position

Height	750 mm
Width	460 mm
Depth	638 mm
Weight	60 kg

Nominal voltage

Nominal voltage (country-specific)	100 V / 50/60 Hz (not available for DSEplus 5192 TLC)
	120 V / 50/60 Hz
	230 V / 50/60 Hz
Permissible supply voltage fluctuations	Maximum ±10 % of the nominal voltage

Mains fuse

Type	T6,3 H / 250 V
Maximal permissible mains voltage fluctuations	± 10 % of nominal voltage
Overvoltage category	II

Triple-function handpiece One

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; probe tip (1.009.6634)
Water flow	90 ± 15 ml/min
Air pressure	1.5 ± 0.2 bar; flow pressure; probe tip (1.009.6634)
Air flow	15 ± 3 Nl/min

Triple function handpiece

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

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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	14 ± 2 Nl/min

Media

Water quality	Tap water
Water hardness	1.5 to 2.14 mmol/l ≈ 8.4 to 12 dH

Connected loads

Power consumption DESplus 5192 TLC	300 VA
Power consumption DESplus 5192 / 5193	200 VA
Minimum air pressure provided	5 to 7 bar (72.5 to 101.5 psi)
Minimum water pressure provided	2 to 3 bar (29 to 43.5 psi)
Max. water consumption	0.1 l/min
Maximal air consumption with internal suction	150 l/min
Maximal air consumption with external suction	60 l/min

Media supply for ELECTROtorque TLC

System pressure	1.8 to 5 bar / 26 to 72.5 psi
Spray air	1.0 to 2.5 bar / 14.5 to 36.2 psi
Spray water	0.8 to 2.0 bar / 11.6 to 29 psi
Cooling air exit at the motor coupling	6 to 10 Nl/min.
Air requirements according to DIN EN 7494-2	Dry, oil-free, dirt-free, non-contaminated
Air filter	50 µm
Water quality according to DIN EN 7494-2	Tap water
pH	7.2 - 7.8
Customer water filtering	80 µm

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Recommended settings

System pressure	3.0 bar / 43.5 psi
Spray air [1)]	1.0 bar / 14.5 psi
Spray water [1)]	0.8 bar / 11.6 psi

[1)] pressure measured at the motor coupling using a pressure gauge **Mat. no. 1.003.1050**.

Suction with installed dust extraction

Spray mist suction hose	230 l/min
Saliva ejector	40 l/min

Operating mode

Interrupt mode for the dentist motor (DSEplus 5192 / 5193	2 minutes ON 8 minutes OFF
Interrupt mode for the dentist motor (DSEplus 5192 / 5193 TLC	0.5 minutes ON 9 minutes OFF

Speed DSEplus 5192 / 5193

Dental drives Handpieces depending on type of unit	up to 300 000 rpm^{-1}
KL motor	40 000 rpm
Dental drives K4plus handpiece 4912 / K5 plus handpiece 4911	30 000 rpm

Speed DSEplus 5192 TLC

Area	100 to 40 000 min^{1} (rcpm)
Max. clockwise speed	40 000 min^{1} (rpm)
Max. anticlockwise speed	40 000 min^{1} (rpm)

Motor torque

Max. torque:	2.7 Ncm

Operating environment

Ambient temperature	5 to 40 °C / 41 to 104 °F
Relative humidity	30 to 80 %
Degree of soiling	2
Setup site	Maximal 2000 m above sea level

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Transportation and storage conditions

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

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4 First use

4.1 Fitting and connecting

4.1.1 Connect power, air and water

Requirement
The air to be used for the dental simulation unit must be dry, oil-free, non-contaminated, and free of pollution. Use a compressor with a dry air system if required.

- Connecting the voltage supply and air connection.
- Depending on the model, connect the water connection and connection to the central suction unit.

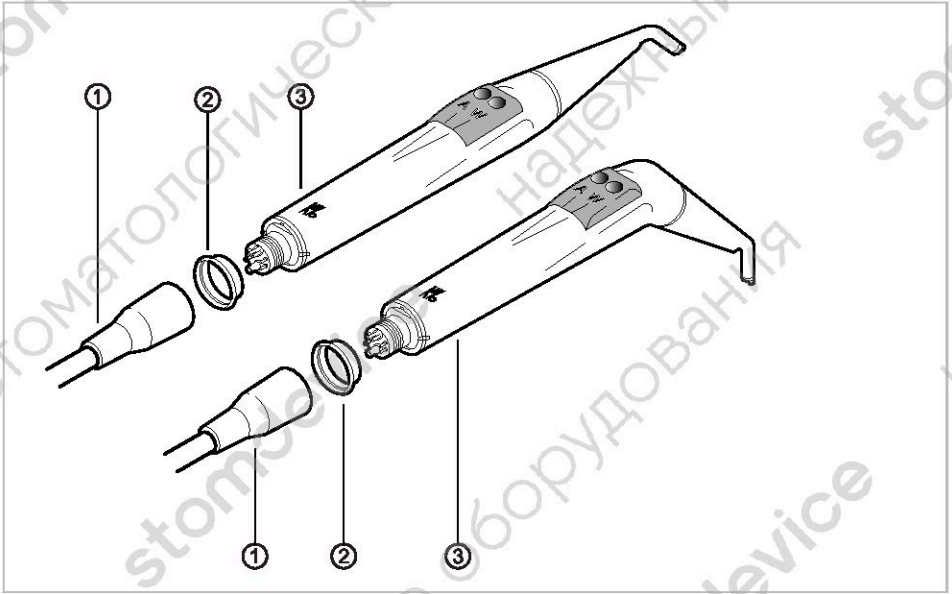
4.1.2 Mount motor and instruments

- Install motors and instruments as outlined in the instructions.

See also:
Instructions for Use of instrument or motor.

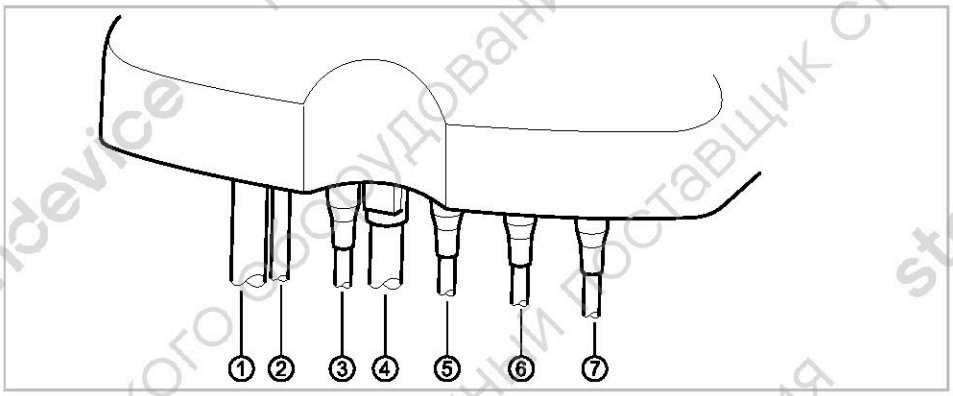
Install triple function handpiece

- Place the rubber pad ② and instrument hose ① onto the three-function handpiece ③ and screw them tight.



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4.1.3 Connect the instruments



① Large suction hose

② Small suction hose (if available)

③ Satelec Mini LED or second handpiece (if available)

④ Foot control

⑤ Triple function handpiece

⑥ Turbine hose, second motor hose or ultrasonic scaler hose (if available)

⑦ KL motor hose, turbine hose, ultrasonic scaler hose (if available) or hose connection for ELECTROtorque TLC (only DSEplus 5192 TLC)

Instrument allocation:

- DSEplus 5192: only pneumatically-operated instruments.
- DSEplus 5192 TLC: pneumatically operated instruments and electrical motor INTRA LUX motor KL 702/703
- DSEplus 5193: pneumatically operated instruments and electrical motor INTRA LUX motor KL 701/702/703 and laboratory handpiece K4/K5

A maximum of 2 rotating instruments can be connected to the unit. These can be selected via the DSEplus control element. The laboratory handpiece can be connected additionally in the DSEplus 5193.

See also:

3.6 Control panel DSEplus, Page 19

Note

The optional allocation of an instrument connection with PIEZOlux or INTRA LUX Motor KL 701/702/703 is not possible. If preparations for the PIEZOlux have been made, only an air handpiece can be connected to the corresponding connection as an alternative.

Note

A reprogramming of the preselction keys for the connected instrument is possible on the DSEplus 5193.

See also:

5.4.2 Reprogramming the instrument preselection keys - DSEplus 5193, Page 36

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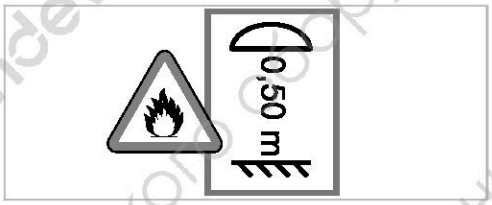
4.1.4 Installing the halogen light

⚠ DANGER

Explosion hazard

Life-threatening hazard

- Only operate the light in dry rooms not subject to an explosion hazard.



⚠ CAUTION

Too close to flammable parts.

Fire hazard

- Maintain a minimum distance of 0.5 m to flammable parts.

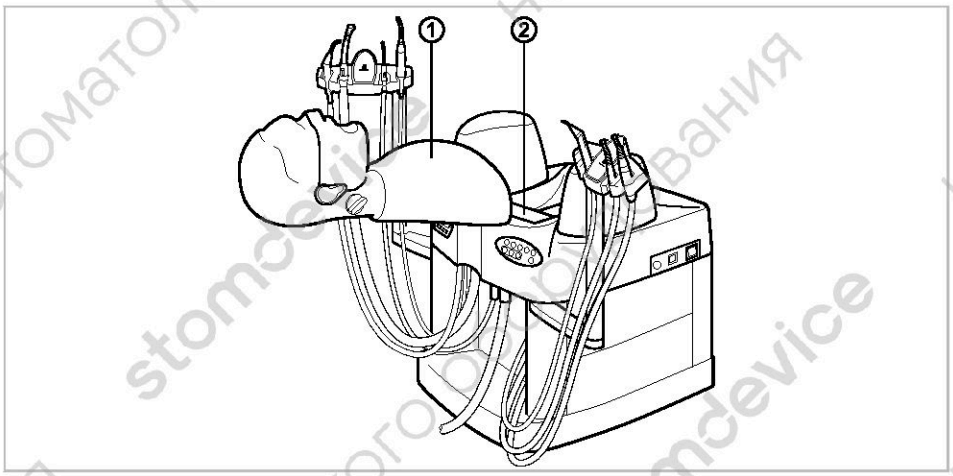
- Attach the light to the treatment centre using assembly kit (**Mat. no. 1.000.4991**).
- Before startup, check if the connecting voltage corresponds to the nominal voltage on the rating plate.

4.2 Position and convert the DSEplus

4.2.1 Position the DSEplus

Note

Do not push the patient simulator downwards with force. Device may tilt.



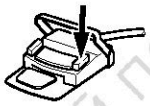
Position the chassis

- Turn on the simulation unit using the main switch.
- Move the dental simulation unit to the desired treatment position.
- Press the chassis brake button.

⇨ The chassis is braked.

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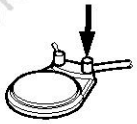
Set the height and inclination of the patient simulator



- Press the brake button for patient positioning on foot control A.

⇨ The swivel arm mechanism lock ② is released.

or



- Press the brake button for patient positioning on foot control C.

⇨ The swivel arm mechanism lock ② is released.

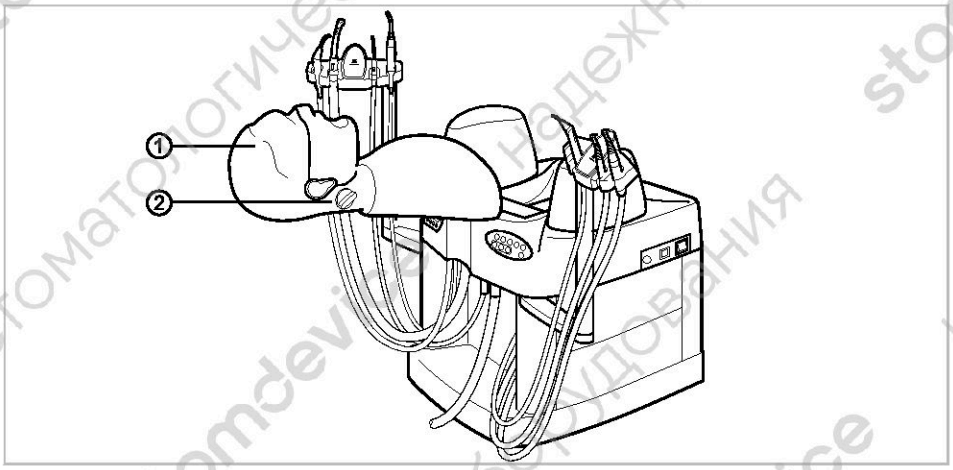
- Set the height and inclination of the patient simulator. For this purpose, guide the patient simulator on the upper body ① with both hands.
- Release the button once the desired position is reached.

⇨ The swivel arm mechanism ② is locked in position again.

4.2.2 Position the head of the patient simulator

The head of the dental patient simulator can perform the following movements:

- approx. 25° forward nodding movement
- approx. 40° backward nodding movement
- approx. 20° inclination to left and right



- Loosen the screw ② on the head ① of the dental patient simulator.
- Move the head to the desired position.
- After making the adjustments, tighten the screw ② on the head again.

Note

The braking effect of the screw ② can be preadjusted continuously such that the head can be positioned without further actuation of the screw.

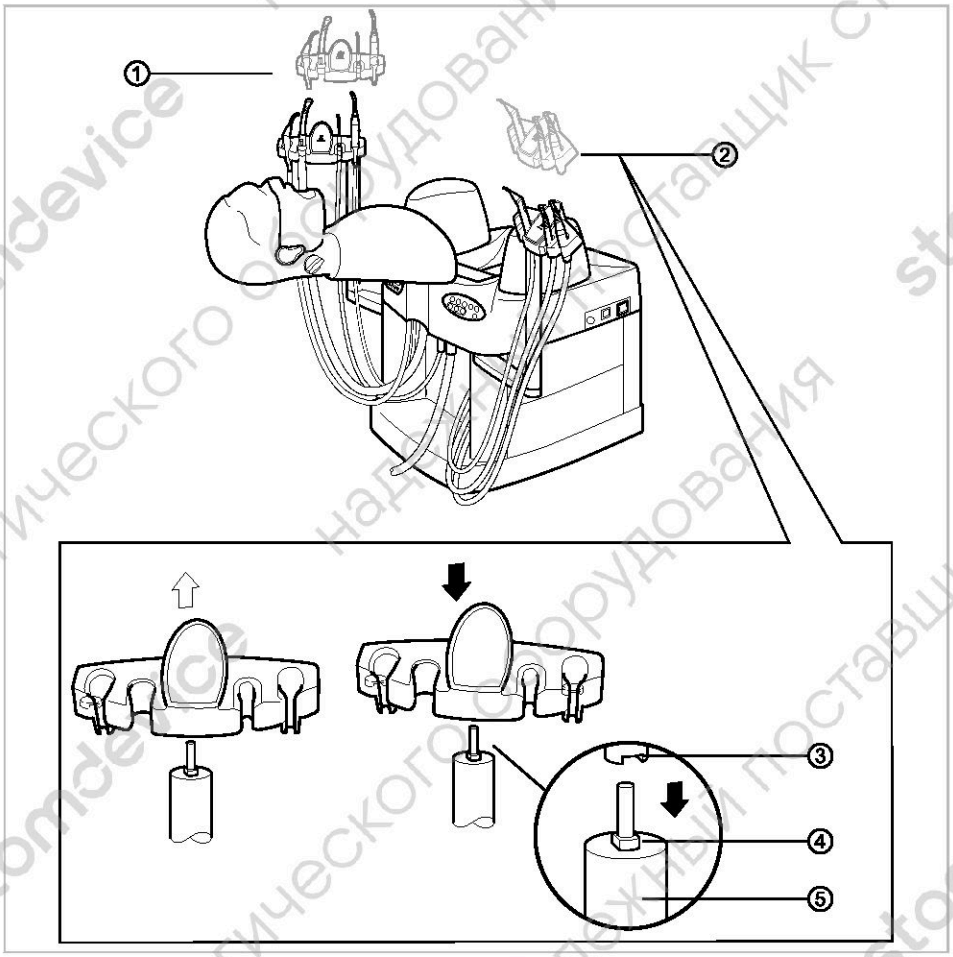
4.2.3 Insert the cranium denture

See also:

Instructions for use for inserting the cranium denture (**Mat. no. 0.488.5877**)

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4.2.4 Converting the DSEplus for rights/left-handers



- Lift up and pull off the dentist element ② or the assistant element ①.
- Change the dentist or assistant element from left to right or from right to left depending on the starting position.
- Remount the dentist or assistant element. Make that the guide surface ④ on the handpiece arm ⑤ mates with nut ③ of the element.
- If necessary, exchange the handpieces in the holders.

Note

Since the holders on the dentist's and assistant's side are identical, you can switch from right-handed to left-handed setup merely by exchanging the instruments.

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5 Operation

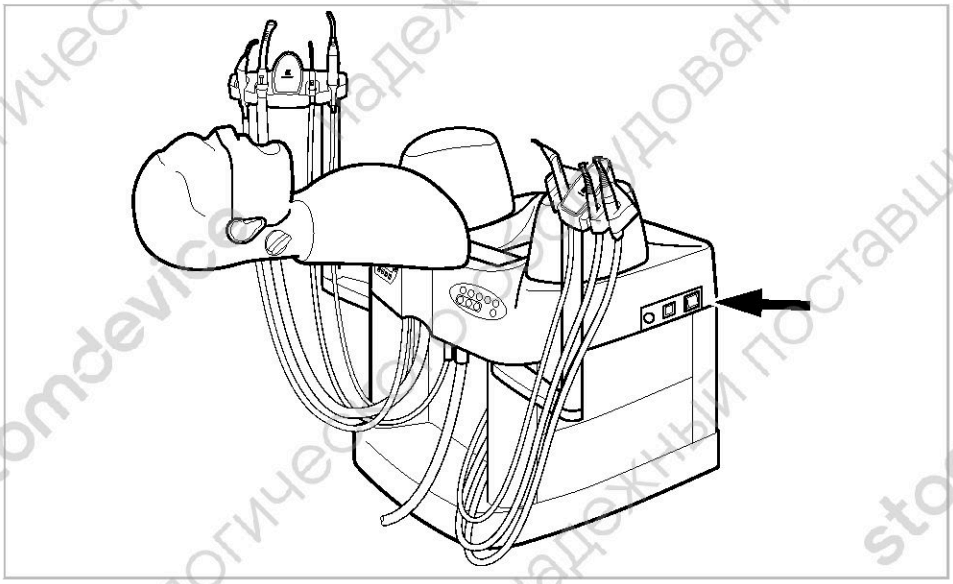
5.1 Operation in general

5.1.1 Filling the spray water bottle

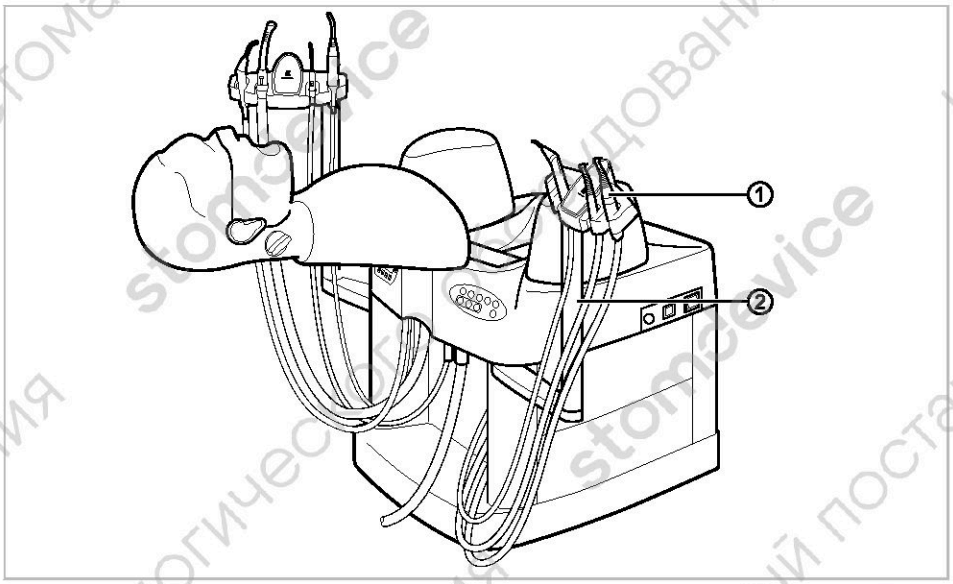
See also:
6.1.2 Fill the pressurised water system (if available), Page 61

5.1.2 Turn on the DSEplus

- Switch the DSEplus on with the main switch.



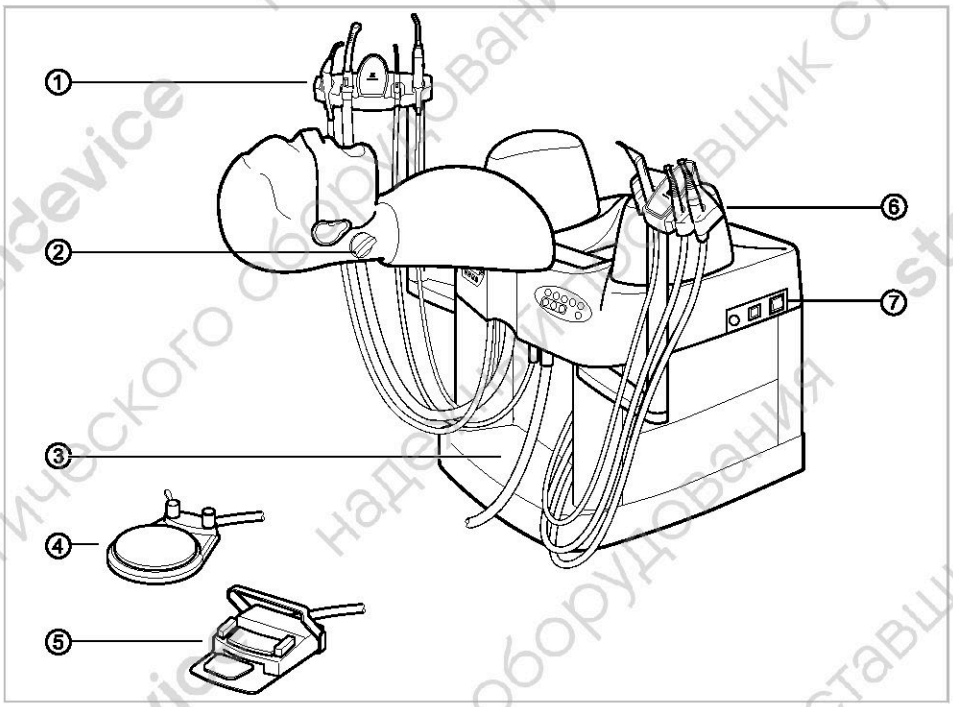
5.1.3 Place the dentist's and assistant's unit in treatment position



- Place the dentist's and assistant's ① unit in treatment position. Grasp the instrument arm by the tube ② or the dentist's or assistant's unit.

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5.1.4 Turn off the DSEplus and move it to park position



Requirement
The treatment/practice with the simulator is over.

- ▸ Fold up the patient simulator ②.
- ▸ Swing the assistant element ① and dentist element ⑥ into park position.
- ▸ When using a movable unit, move the entire unit into park position.
- ▸ Remove the foot control ④ or ⑤ out of the range of motion and place it in a suitable place (with rolling devices, this would be on the shelf ③ of the chassis).
- ▸ Switch unit off at main switch ⑦.

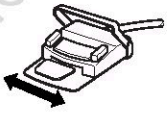
5.2 Foot control A - DSEplus 5193

Using the instrument



- ▸ Press and hold down the footplate.

⇨ The handpiece starts-up.



- ▸ Swing the footplate to the right.

⇨ The speed is increased continuously.

- ▸ Swing the footplate to the left.

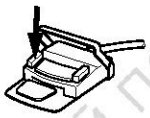
⇨ The speed is decreased continuously.

- ▸ Release the footplate.

⇨ The handpiece stops.

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Turn on the spray water



- Hold down the Spray button.

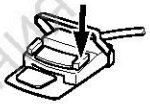
⇨ The spray water is turned on.
- Hold down the Spray button.

⇨ The spray water is turned off.



The status of the DSEplus 5193 is displayed by the LED on the membrane keyboard.

Actuate the patient positioning brake



- Press the foot-operated switch for patient positioning.

⇨ This unlocks the swivel arm mechanism.
- Release the foot-operated switch for patient positioning.

⇨ Swivel arm mechanism is locked in position again.

5.3 Foot control C - DSEplus 5192 / 5192 TLC

Using the instrument



- Press and hold down the footplate.

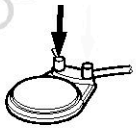
⇨ The handpiece starts-up.
- Increase the pressure.

⇨ The speed is increased continuously.
- Reduce the pressure.

⇨ The speed is decreased continuously.
- Release the footplate.

⇨ The handpiece stops.

Turn on the spray water



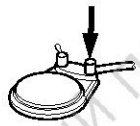
- Hold down the Spray button.

⇨ The spray water is turned on.
- Hold down the Spray button.

⇨ The spray water is turned off.

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Actuate the patient positioning brake



- ▸ Press the foot-operated switch for patient positioning.

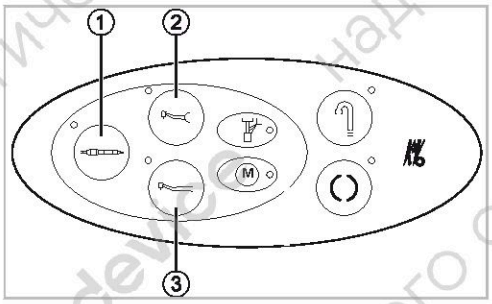
⇨ This unlocks the swivel arm mechanism.

- ▸ Release the foot-operated switch for patient positioning.

⇨ Swivel arm mechanism is locked in position again.

5.4 Control panel DSEplus

5.4.1 Allocation of the instrument preselection keys



① "Instrument preselection" key laboratory handpiece ② "Instrument preselection" key

③ "Instrument preselection" key

The keys "Instrument preselection" ②, "Instrument preselection" ③ and "Instrument preselection" laboratory handpiece" ① are programmed in the factory according to the equipment delivered.

DSE plus	Instrument preselection laboratory handpiece key①	Instrument preselection key②	Instrument preselection key③
5192	not assigned	Turbine or pneumatic motor	Turbine or pneumatic motor
5192 TLC	not assigned	Turbine or pneumatic motor	KL 702/703
5193	Laboratory handpiece K4/K5	Turbine, air motor, electrical motor KL 701/702/703 or PIEZOlux	Turbine, air motor, electrical motor KL 701/702/703 or PIEZOlux

5.4.2 Reprogramming the instrument preselection keys - DSEplus 5193

If needed, the "instrument preselection" keys for the DSEplus 5193 can be reprogrammed for a different instrumentation.

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Note

The optional allocation of an instrument connection with PIEZOlux or INTRA LUX Motor KL 701/702/703 is not possible. If preparations for the PIEZOlux have been made, only an air handpiece can be connected to the corresponding connection as an alternative.



▸ Press Instrument preselection key② or ③ for 5 seconds.

flashing	Allocation
2	Electrical motor (KL 701/702/703)
3	Ultrasonic scaler (PIEZOlux)
4	Turbine / pneumatic motor

5.4.3 Select and deselect laboratory handpiece - DSEplus 5193



▸ Press "Instrument preselection laboratory handpiece" ① for 5 seconds.

⇨ Laboratory handpiece is selected and deselected.

5.5 Control panel speed control for INTRA LUX motor KL 701/702/703 - DSEplus 5192 TLC

The following menu items can be opened in the USER MENU:
1. RESET FOOT CONTROL
2. UNIT AIR PRESSURE
3. ENDO Ratio
4. ENDO Chip Air
5. WARNING SIGNALS
6. FACTORY SETTINGS
7. LCD CONTRAST
8. LCD BRIGHTNESS
9. FIBER OPTIC VOLT
10. FIBER OPTIC DELAY
11. TORQUE UNIT
12. ENDO WARNING
13. LANGUAGE
14. SAFEdrive
15. ACTUAL SPEED

Keys	Function
Press keys simultaneously. 	Switch to USER MENU

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Keys	Function
	Select menu items / change parameter values
	Select / save parameters
	Exit from USER MENU

5.5.1 Call-up USER MENU



- Hold down the "CCW" button and press the "Endo" button for 3 seconds until the USER MENU appears in the display.

```
USER MENU
1. RESET FOOT CONTROL
                ESC to EXIT
```



- Press the „UP“ or „DOWN“ key to activate a menu option.



- Press the "ENTER / SAVE" key to select the menu item.



- Press the "*/ESC" button leave the USER MENU.

5.5.2 Calibrate foot control

- Select menu option 1. CAL FOOT CONTROL in the USER MENU.

```
USER MENU
1. RESET FOOT CONTROL
                ESC to EXIT
```



- Press the "ENTER/SAVE" key.

⇨ Calibration starts.

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CAL. FOOT CONTROL PRESS PEDAL TO 100% Continuously. Press SAVE KEY



- Press down the foot control all the way (maximum pressure), and press ENTER SAVE to save.

⇨ The instructions appear in the display.

CAL. FOOT CONTROL WAIT....

CAL. FOOT CONTROL SAVING DATA



- Release the foot control.

⇨ Calibration is completes and the values are saved.

Note
The default for the maximum pressure is 3 bar (44 psi).

Impermissible calibration pressure

If the maximum pressure is higher than 5.5 bar (80 psi), the following display appears. Calibration is permissible, however.

RESET FOOT CONTROL PRESSURE TO HIGH

If the minimum pressure is less than 1.8 bar (26 psi), the following displays appear and the values are not saved.

RESET FOOT CONTROL PRESSURE TO LOW



- Press the "ENTER/SAVE" key and repeat calibration.

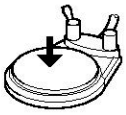
5.5.3 Check device connection pressure

- Select menu item 2. UNIT AIR PRESSURE in the USER MENU.

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The current device operating pressure is shown in bar in submenu 2. UNIT AIR PRESSURE.
The value depends on the utilized foot control and the system pressure.



- Press the foot pedal.

⇨ The current device pressure is shown.

5.5.4 Selecting the transmission ratio

Two transmission ratios are available:1:1 and 3:1.



- Select menu item 3. ENDO Ratio in the USER MENU.



- Press the "ENTER / SAVE" key to select the menu item.



- Press the "UP" or "DOWN" key to select the transmission ratio.



- Press the "ENTER/SAVE" key to confirm the selection.

5.5.5 Set the Chip Air for ENDO mode

- Select menu item 4. ENDO Chip Air in the USER MENU.





- Press the "ENTER / SAVE" key to select the menu item.



- Press the "UP" or "DOWN" button to set the Chip Air (ON / OFF).

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- Press the "ENTER/SAVE" key to confirm the selection.

5.5.6 Activate / deactivate the ENDO warning signal



Note
The ENDO warning signal is emitted once a level of 90% of the set torque is reached.

- Select menu item 5. WARNING SIGNALS in the USER MENU.

```
USER MENU
5. WARNING SIGNALS
                ENDO: ON
                ESC to EXIT
```



- Press the "ENTER / SAVE" key to select the menu item.



- Press the "UP" or "DOWN" key to activate or deactivate the ENDO warning signal (ON / OFF).



- Press the "ENTER/SAVE" key to confirm the selection.

5.5.7 Reset user settings to factory setting

The user can reset the changed values to the factory settings.

- Select menu item 6. FACTORY SIGNALS in the USER MENU.

```
USER MENU
6. FACTORY SETTINGS

                ESC to EXIT
```



- Press the "ENTER / SAVE" key to select the menu item.



- Press the "UP" or "DOWN" key to select "YES".



- Press the "ENTER/SAVE" key to confirm the selection.

⇨ The following user values are reset to the factory setting:

User values	Default (factory setting)
Starting pressure	1 bar / 14.5 psi
Calibration pressure	1.8 bar / 26 psi

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User values	Default (factory setting)
Lamp voltage	3.2 V
Lamp afterglow time	3 seconds
Speed setting OPERATIVE M1	40,000 rpm
Speed setting OPERATIVE M2	30,000 rpm
Speed setting OPERATIVE M3	20,000 rpm
Speed setting OPERATIVE M4	15,000 rpm
Speed setting OPERATIVE M5	10,000 rpm
Speed setting OPERATIVE M6	5,000 rpm
LCD contrast	80 %
LCD back-lighting	80 %
ENDO mode	Autoreverse
ENDO acoustic signals	ON
ENDO auto forward time	3 seconds
ENDO speed settings M1 – M6	300 rpm
ENDO torque settings M1 – M6	5 %
ENDO spray water valve	OFF
ENDO torque display	Ncm
Transmission factor	3:1
ENDO warning	ON
Language	English
SAFEdrive	Normal
ACTUAL SPEED	OFF

5.5.8 Set contrast for display (LCD)

- Select menu item 7. LCD CONTRAST in the USER MENU.





- Press the "ENTER / SAVE" key to select the menu item.





- Press the "UP" or "DOWN" button to set the desired value.



- Press the "ENTER/SAVE" key to confirm the selection.

5.5.9 Set the background lighting for the display (LCD)

- Select menu item 8. LCD BRIGHTNESS in the USER MENU.

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- Press the "ENTER / SAVE" key to select the menu item.



- Press the "UP" or "DOWN" button to set the desired value.



- Press the "ENTER/SAVE" key to confirm the selection.

5.5.10 Set fiber optic voltage

The lamp voltage can be changed within the range of 3.0 V to 3.6 V while the motor is turned off. The lamp is turned on while the setting is being made.



Note
KaVo recommends setting the lamp voltages as follows:
- High-pressure lamp: 3.2 V (INTRA LUX Motor KL 701/702)
- MULTI LED lamp: 3.4 V (INTRA LUX Motor KL 701/702)
- Mini LED lamp: 3.4 V (INTRA LUX Motor KL 703)

- Select menu item 9. FIBER OPTIC VOLT in the USER MENU.





- Press the "ENTER / SAVE" key to select the menu item.



- Press the "UP" or "DOWN" button to set the desired value.



- Press the "ENTER/SAVE" key to confirm the selection.

5.5.11 Set fiber optic delay

- Select Menu item 10. FIBER OPTIC DELAY in the USER MENU.

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- Press the "ENTER / SAVE" key to select the menu item.

The lamp afterglow can be set in increments of seconds from 0 to 10 seconds.
The factory setting is 3 seconds.





- Press the "UP" or "DOWN" key to change the value in one-second increments.



- Press the "ENTER/SAVE" key to confirm the selection.

5.5.12 Select torque display

The torque can then be displayed in Ncm or % in Endo mode.

- Transmission ratio 1:1: 100 % = 3 Ncm
- Transmission ratio 3:1: 100 % = 8 Ncm

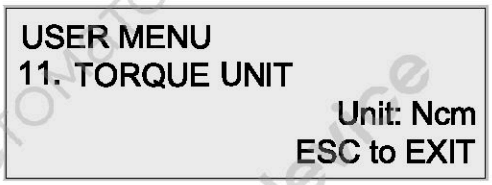


⚠ CAUTION

File breakage due to incorrectly entered value.
Destroyed files can cause personal injury.

- Check all the input values before use.

- Select Menu item 11. Select TORQUE UNIT in the USER MENU.





- Press the "ENTER / SAVE" key to select the menu item.





- Press the "UP" or "DOWN" key to select the unit (Ncm/%) .



- Press the "ENTER/SAVE" key to confirm the selection.

5.5.13 Deactivate ENDO warning

When you switch to ENDO mode, the ENDO warning appears on the display.
The ENDO warning can be deactivated.

- Select Menu item 12. ENDO WARNING in the USER MENU.

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- Press the "ENTER / SAVE" key to select the menu item.





- Press the "UP" or "DOWN" key to deactivate the ENDO warning.



- Press the "ENTER/SAVE" key to confirm the selection.



- Press the "*/ESC" key.

⇨ Return to OPERATIVE mode.

5.5.14 Set the language

The following menu languages can be selected:

- English
- Italian
- Spanish
- French
- Deutsch

- Menu item 13. Select LANGUAGE in USER MENU.





- Press the "ENTER/SAVE" key to select the menu item.





- Press the "UP" or "DOWN" key to select the desired language.

⇨ The selected languages begins to flash.



- Press the "ENTER/SAVE" key to confirm the selected language.

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5.5.15 Setting SAFEdrive function

⚠ WARNING

Use of incorrect straight and contra-angle handpieces.

Risk of burn injury or overheating.

- Use original straight and contra-angle handpieces of the KaVo 25LP/25LPA/ 25LPR/ 25LCA series only.

Note

The SAFEdrive function is a monitoring function for detection of defective straight and contra-angle handpieces. These can heat up strongly due to additional friction and possibly cause burn injuries. KaVo recommends to activate the SAFEdrive function during treatments inside the oral cavity in order to reduce the risk of burn injuries caused by defective straight and contra-angle handpieces.

SAFEdrive reduces the probability of and damage from overheating of defective or poorly serviced handpieces thus minimising the risk of burns to the patient. Possible defects can be detected by continuous monitoring of the idling properties of the handpiece during its use.

If the protective function is triggered, the SAFEdrive initially reduces the motor speed and then stops the motor altogether if the excessive load persists.

Note

SAFEdrive works only with KaVo straight and contra-angle handpieces of the 25LP/ 25LPA/25LPR/25LCA series. Inadvertent triggering of the SAFEdrive function cannot be excluded if handpieces made by other manufacturers are used.

SAFEdrive can be activated at two sensitivity levels and completely de-activated in the USER MENU.

The two sensitivity levels are NORMAL and SENSITIVE. SENSITIVE responds more sensitive than NORMAL.

Setting SAFEdrive

- Select Menu item 14. Select SAFEdrive in the USER MENU.





- Press the "ENTER / SAVE" key to select the menu item.





- Press the "UP" or "DOWN" key to select a sensitivity level or to de-activate SAFEdrive.



- Press the "ENTER/SAVE" key to confirm the selection.

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Using SAFEdrive

If SAFEdrive is activated and the handpiece head overheats, the message, "OVERHEAT WARNING", is displayed initially on the LCD display of the ELECTROtorque. In addition, a periodical warning sound is emitted. If the excessive load persists for more than 5 seconds, the message, "OVERHEAT ERROR", is displayed and the motor is stopped automatically and prevented from re-starting.

- If the message, "OVERHEAT WARNING", is displayed and a periodical warning sound is emitted, relieve the handpiece of load for at least 2 seconds.
- If the message disappears, continue your work as usual.
- If the message, "OVERHEAT ERROR", is displayed and the motor is stopped automatically, take the handpiece from the oral cavity and proceed as follows:
- Carefully check the handpiece head for:
  - Temperature
  - Damage
  - Ability to rotate the bur
- If no damage and no overheating are evident, confirm the "OVERHEAT ERROR" message by pressing the "ENTER" button.

⇨ The motor can now be re-started again.

- If damage or overheating is evident, replace the handpiece or have it repaired.

Shut-off SAFEdrive for short period of time

In OPERATIVE mode, SAFEdrive can be shut-off for short period of time.

Note

The SAFEdrive function is a monitoring function for detection of defective straight and contra-angle handpieces. These can heat up strongly due to additional friction and possibly cause burn injuries. KaVo recommends to activate the SAFEdrive function during treatments inside the oral cavity in order to reduce the risk of burn injuries caused by defective straight and contra-angle handpieces.



- In order to shut-off SAFEdrive for a short period of time, press ESC in OPERATIVE mode.

⇨ This de-activates SAFEdrive. SAFEdrive is turned on automatically 5 minutes after the most recent motor stop.

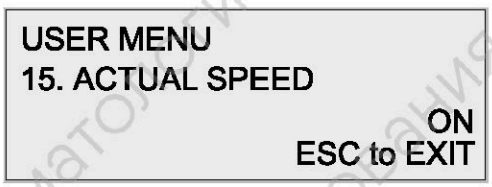


- In order to turn on SAFEdrive that has been turned off in OPERATIVE mode, press ESC again.

5.5.16 Turning the ACTUAL SPEED speed display on / off

With "ACTUAL SPEED" being active, the actual motor speed is displayed while the motor is running. This display can be turned on or off.

- Select Menu item 15. Select ACTUAL SPEED in the USER MENU.



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- Press the "ENTER / SAVE" key to select the menu item.



- Press the "UP" or "DOWN" key to activate (ON) or deactivate (OFF) the speed display.



- Press the "ENTER/SAVE" key to confirm the selection.

5.6 Instruments

5.6.1 Using the spray mist suction device and saliva ejector



Note

If the saliva ejector is used, the slide of the spray mist extraction device must be closed.
If the spray mist extraction device is used, the slide of the saliva ejector must be closed.

Functions of the "Suction" key - DSEplus 5192 / 5192 TLC

Key	Use	Suction system setting	Display
	Press 1x	Continuous operation	LED on
	Press 2x	Suction off	LED off

Functions of the "Suction" button - DSEplus 5193

Key	Use	Suction system setting	Display
	Press 1x	Automatic position	LED flashes
	Press 2x	Continuous operation	LED on
	Press 3x	Suction off	LED off

Automatic position - DSEplus 5193

- Remove the handpiece from the holder.

⇨ Suction extraction is started as soon as the handpiece is started via the foot control.

- Turn off handpiece.

⇨ Suction is turned off 0 to 0.5 second after turning off the instrument.
⇨ (The afterglow time of the suction extraction is identical to the afterglow time of the Lux lamp)

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5.6.2 Using triple-function handpieces

⚠ CAUTION

Cannulas that are worn, not screwed in or not locked into place.

Injury from swallowing the cannula.

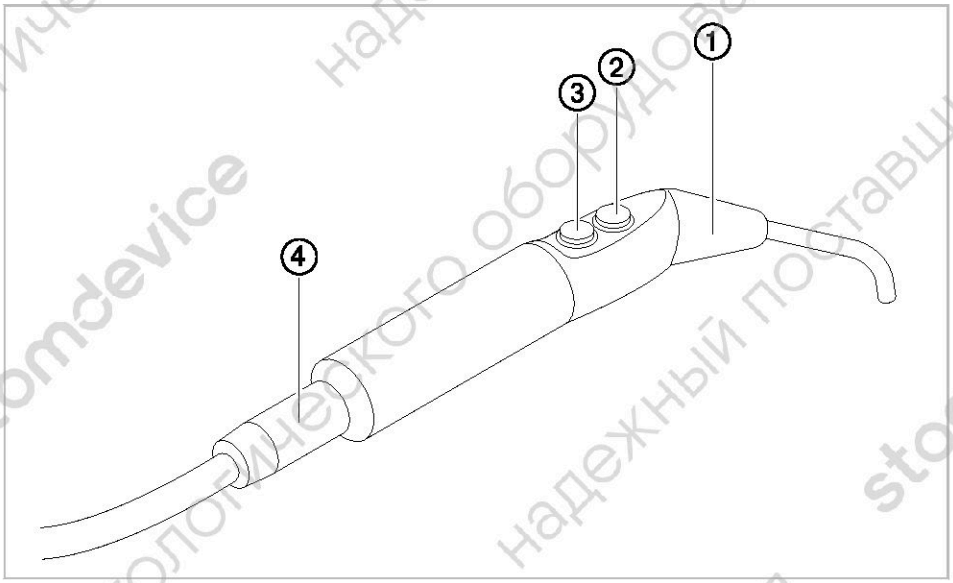
- Before each treatment, ensure that the cannula is properly locked or screwed into place and firmly seated.
- Use original KaVo cannulas only.

⚠ CAUTION

Risk of injury from touching the cheek with the handpiece.

Irritation of the mucosa.

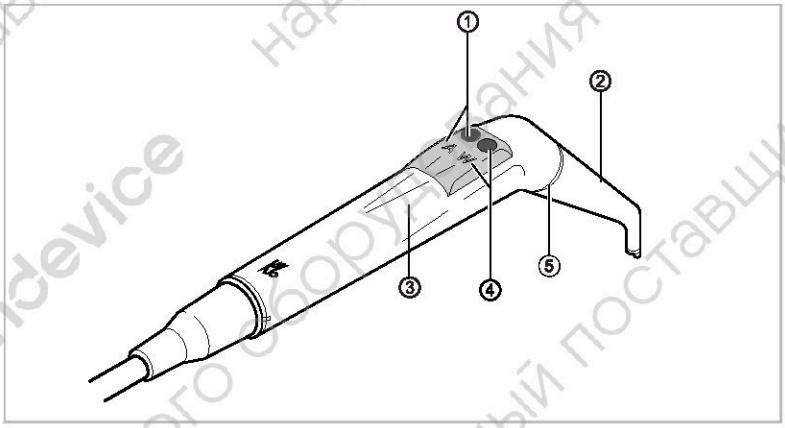
- Rotate the cannula of the handpiece into an operating position where there is no contact of the mucosa.



Triple function handpiece One

① Cannula
② Water button (green ring)
③ Air button (blue ring)
④ Handpiece and hose

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Triple-function handpiece

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

Note
The cannulas can be rotated 360°..

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

or

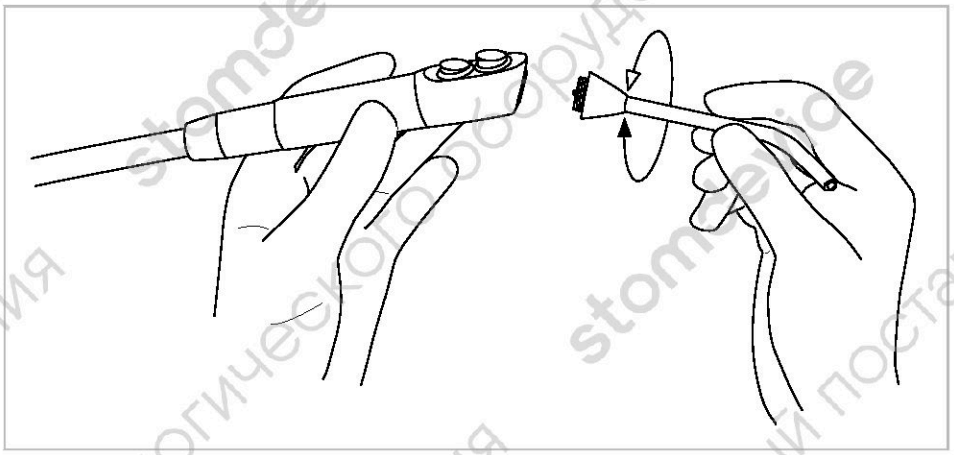
- Press the water button ④ and continuously increase or decrease the exiting water jet by applying more or less pressure on the water button ④.

or

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

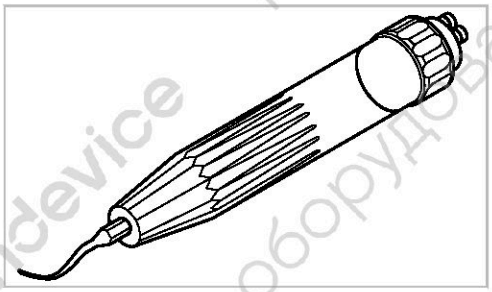
Removing the cannulas

- Hold the valve body of the triple-function handpiece and screw off the cannula.



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5.6.3 Using the PIEZOlux Ultrasonic scaler



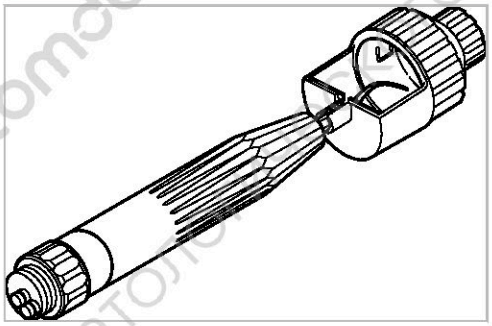
With the device being configured accordingly, the PIEZOlux Ultrasonic scaler can be used on the dental simulation unit.
Easily and gently remove calculus, plaque and excess cement from natural teeth with the PIEZOlux Ultrasonic scaler at an oscillating frequency of 30 kHz with gentle brushing motions along the tooth surface.

- Use the provided torque wrench to screw in clockwise the instrument inserts into the handpiece and tighten them slightly.

⚠ CAUTION

Sharp-edged tip.
Injury hazard.

- When not in use, leave the provided torque wrench on the PIEZOlux.

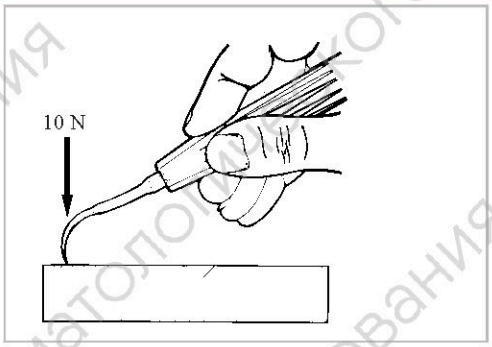


- Check if the condition of the instrument inserts is acceptable.

⚠ CAUTION

Instrument inserts can be damaged from long-term use, or when dropped or bent.
They cannot be guaranteed to function properly.
Potential injury from insert breakage.

- Check the instrument inserts before each use.
- In the case of frequent use, replace the instrument inserts every 9 - 12 months.
- Before each use, apply approx. 10 N of pressure to instrument inserts as an additional safety precaution. (10 N corresponds to weight of 1 kg).

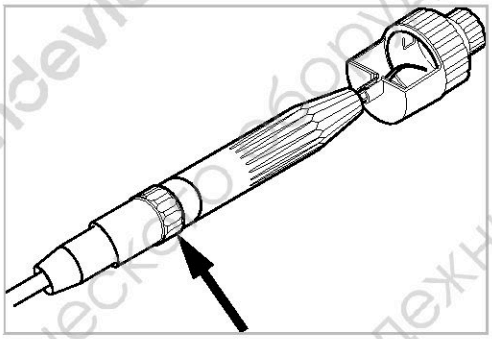


- Take the PIEZOlux Ultrasonic scaler from the holder.

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- Preselect spray.
- Press the footplate of the foot control to start the PIEZOlux Ultrasonic scaler.

The intensity can be controlled by moving the footplate to the side.
The exiting amount of water can be controlled on the handpiece.



Note

The water is supplied through the working tip and can be adjusted corresponding to the tip on the water control.
The water flow should be adjusted so that the instrument tip sprays the water with its vibration.

Changing the high-pressure lamp

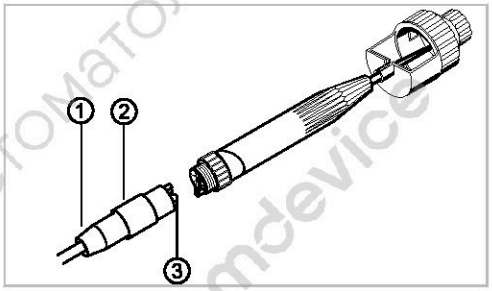
⚠ CAUTION

Danger of injury due to hot components

Risk of burn injury.

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

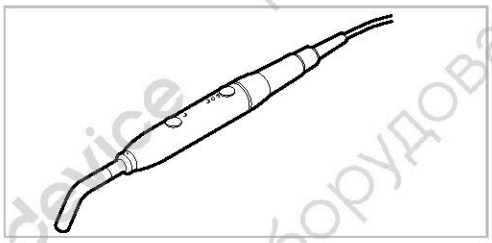
- Turn the unit off.



- Unscrew the hose sleeve ① from the handpiece and pull the handpiece off the hose coupling ②.
- Pull the high-pressure lamp ③ out of the socket.
- Insert the new high pressure lamp (**Mat. no. 1.002.2928**) into the socket, and make sure that the contacts are correctly positioned.

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5.6.4 Using Satelec mini LED



See also:
Satelec Mini LED Instructions for Use

Note

When the Satelec mini LED is in use, the KL motor or the K4 motor handpiece cannot be started.
Likewise, the Satelec mini LED cannot be used during operation of the electrical drives.

- When the treatment is completed, turn off the main switch of the DSEplus.

5.6.5 Using the turbine

Note

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

The following settings can be changed:
- Speed
- Cooling condition
- Use the footswitch to set the speed and cooling level.

5.6.6 Use INTRA LUX motors KL 701/702/703 with control panel speed control - DSEplus 5192 TLC

Keys	Function
	Changing parameter values and modes
	Select or save parameters (M1 – M6)
	Select parameter/mode
	Switch to OPERATIVE mode

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Note
When switching from OPERATIVE mode to ENDO mode, a small amount of spray water drains.

- Drain the residual water before ENDO treatment by briefly switching on the device when it is outside of the oral cavity.

Set ENDO mode of operation

Note
Check gearbox ratio on the screen before use!

Note
An accurate torque display is only ensured with the KaVo 1:1 reducing shanks 20LH or 20LP and the INTRA head L68 B (**Mat. no. 1.008.1834**) or 3:1 INTRA head L66 B (**Mat. no. 1.008.1831**).



- Press the "Endo" key.

⇨ The LED in the "Endo" key is turned on. The device is in ENDO mode.
The device is in ENDO mode when the LED in the "Endo" shines and the display shows ENDO.

```
ENDO   Caution
See Manual for
correct settings of
Ratio, Torque & Speed
```

The message is indicated for 3 seconds in the display, if the message has not been deactivated in the USER MENU.

```
ENDO                    3:1
  Speed :           300 rpm
  Torque:               5 %
* Autoreverse
```

Adjust the parameters

In ENDO mode, six different parameter settings (M1 - M6) can be selected.

Select parameters



- Briefly press the M- or M+ key to retrieve the parameters of parameter memories M1 - M6.

Change and save the parameters



- Briefly press the "M-" or "M+" key to select the desired parameter memory (M1 - M6).

⇨ The asterisk next to the parameter to be changed flashes.

See also:
5.5.12 Select the torque display, Page 44

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- Press the "*/ ESC" button to select the desired parameter.



- Press the "UP" or "DOWN" key to change the selected parameter.



Note
Hold down the "UP" and "DOWN" keys for the function to repeat automatically.



- Press the "M-" or "M+" key for more than 2 seconds until you hear a signal.

⇨ The selected parameter memory was changed.

Set speed

The speed can be adjusted in steps of 10 from 100 rpm to 500 rpm, in steps of 50 from 500 rpm to 1000 rpm, and in steps of 100 from 1000 rpm to 6000 rpm.



- Press the "UP" key to increase the speed.



- Press the "DOWN" key to reduce the speed.



- Press the "M-" or "M+" key for more than 2 seconds until you hear a signal.

⇨ The selected parameter memory was changed.

Set torque

The torque is limited to the set value.



Note
The ENDO warning signal is emitted once a level of 90% of the set torque is reached.

See also:
5.6.6.3 Select torque mode, Page 56
1:1 transmission ratio
The torque can be set in 0.05 Ncm steps in the range from 0.15 Ncm to 3.0 Ncm, or in 5% steps in the range from 5% to 100%.
.
3:1 transmission ratio
The torque can be set in 0.1 Ncm steps in the range from 0.4 Ncm to 8 Ncm, or in 5% steps in the range from 5% to 100%.

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See also:
5.5.12 Select the torque display, Page 44



- Press the "UP" key to increase the torque.



- Press the "DOWN" key to reduce the torque.



- Press the "M-" or "M+" key for more than 2 seconds until you hear a signal.

⇨ The selected parameter memory was changed.

Select the torque mode

There are three different torque modes in Endo mode:

- Autoreverse
- Torque Control only
- Autorev / Forward

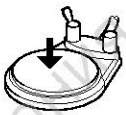


- In Endo mode, select the desired torque mode by pressing the "UP" or "DOWN" key.

- Press the "M-" or "M+" key for more than 2 seconds until you hear a signal.

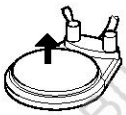
⇨ The selected parameter memory was changed.

Autoreverse



- Press the foot pedal.

⇨ The motor starts.
When the set torque is reached, a signal sounds, and the light flashes The motor rotates at a constant speed to the left.

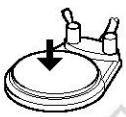


- To stop this, release the foot pedal.

- Press the foot pedal.

⇨ The motor rotates to the right.

Torque Control only



- Press the foot pedal.

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

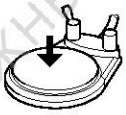
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When the set torque threshold is reached, a signal sounds, and the light flashes



- Press the "CCW" key to switch the direction of rotation to the left.

Autoreverse / Forward



- Press the foot pedal.

⇨ The motor starts.

When the set torque is reached, a signal sounds, and the light flashes The motor rotates at a constant speed to the left.

In Autorev/Forward mode, you can set a period of time (1 to 10 seconds) after which the motor automatically runs clockwise so that you do not have to stop it by using the foot pedal.



- Press the „ENTER / SAVE“ key in the torque mode Autorev / Forward to select the time.

⇨ The seconds value flashes.



- Press the "UP" or "DOWN" key to change the time.



- Press the "M-" or "M+" key for more than 2 seconds until you hear a signal.

⇨ The selected parameter memory was changed.

Setting and operating the SAFEdrive overheat protection function

See also:

5.5.15 Setting and operating the SAFEdrive overheating monitoring function, Page 46

5.6.7 Using INTRA LUX motors KL 701/702/703 with foot control - DSEplus 5193



Note

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

The following settings can be changed:

- Direction of motor rotation
- motor speed
- Cooling level

- Use the footswitch to set the rotational direction of the motor, the motor speed and cooling level.

Operating modes of the INTRA LUX motor KL 701 / KL 702, and technical motor K4 :

Operating time: 2 minutes

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Pause: 8 minutes

Note

The mode represents the possible maximum load of the INTRA LUX motor (full load at maximum speed). In practice, pulse loads lasting seconds or pause times lasting seconds or minutes are realistic, usually without reaching the maximal possible motor current. This corresponds to the common working procedure of a dentist. The minimum or maximum speed level depends on the motor used and on the straight handpiece or contra-angle handpiece that is attached.

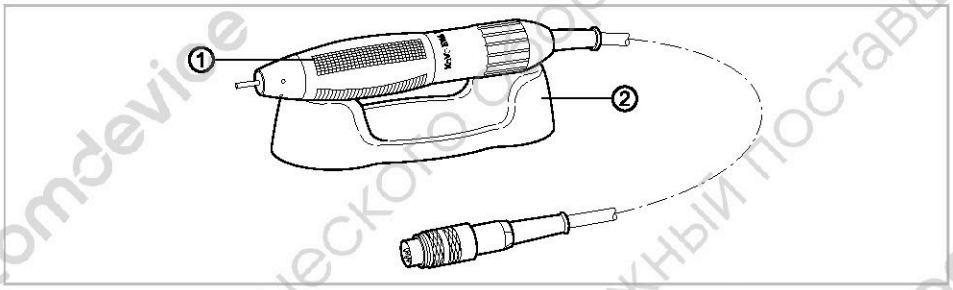
5.6.8 K4 handpiece 4914 / K5 plus handpiece 4911 - DSEplus 5193

See also:

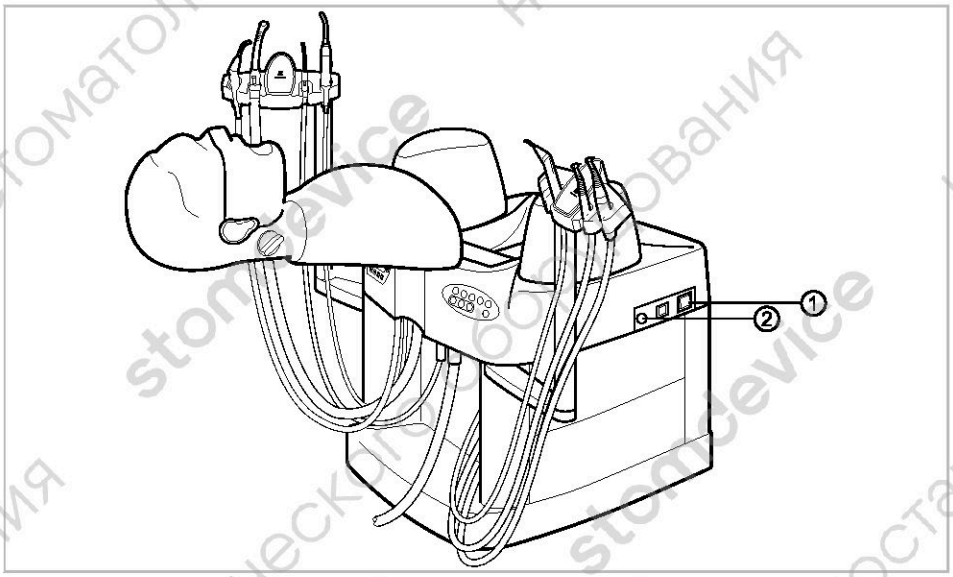
K4 Motor handpiece Instructions for Use **Mat. no. 1.000.2159**.

Note

The KaVo K4/K5 handpiece can be used without an additional controller depending on the design of the DSEplus simulation unit (elaborate Ford Motor preparation).



- Always place the handpiece ① on the handpiece holder ②. When running the cable to the handpiece holder, make sure that the cable does not run through the area of movement.



- Connect handpiece K4 via the K4 device socket ② of the simulation unit.
- Turn on main switch ① .
- Preselect the handpiece on the membrane keyboard.

⇨ The green LED shows the pre-selection.

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5.7 Halogen light



⚠ CAUTION

Touching the hot safety glass.
Risk of burn injury.
- When the light is on, do not touch the safety glass.

- Adjust the joint so that the halogen light is easily moveable and the joint remains in the desired position.
- Use the handle to position the lamp.



- Press the changeover switch to use the halogen light.

⇨ O: OFF
⇨ I: Flood (38°)
⇨ II: Spot (10°)

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6 Setup methods according to DIN EN ISO 17664

6.1 Servicing

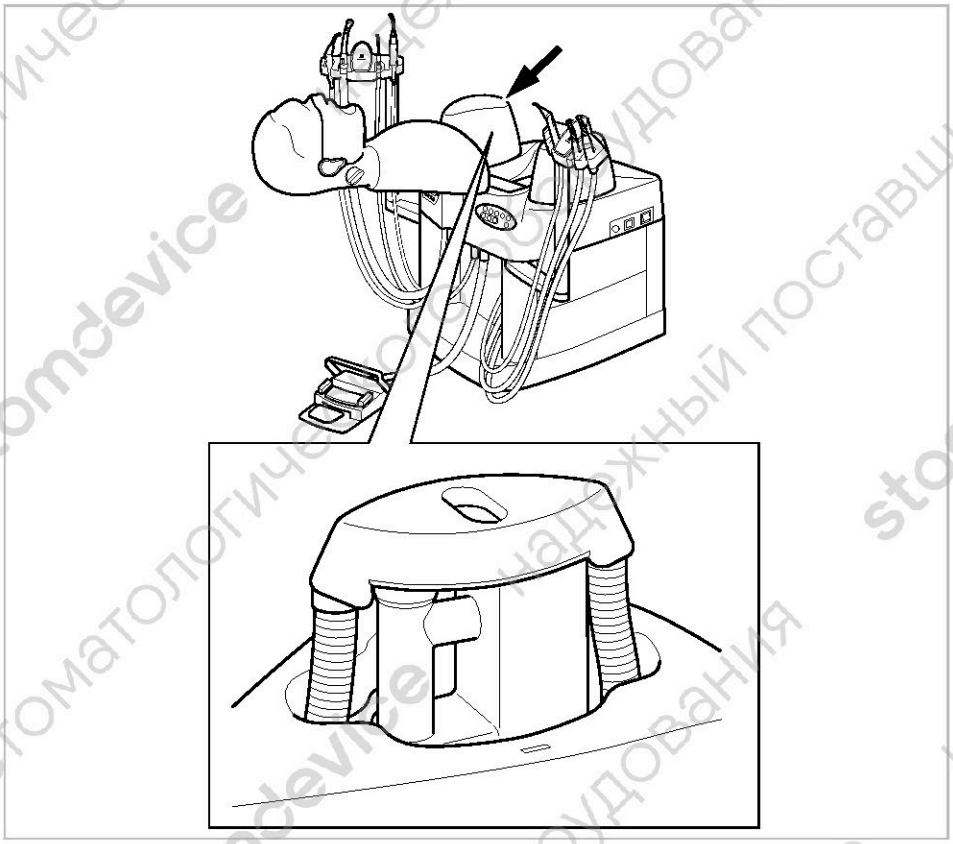
Note

Repair and servicing work on the electrical part of the unit may be done only by skilled staff or by staff trained in the factory.

During servicing work pull the mains plug out of the socket or disconnect the unit from the mains.

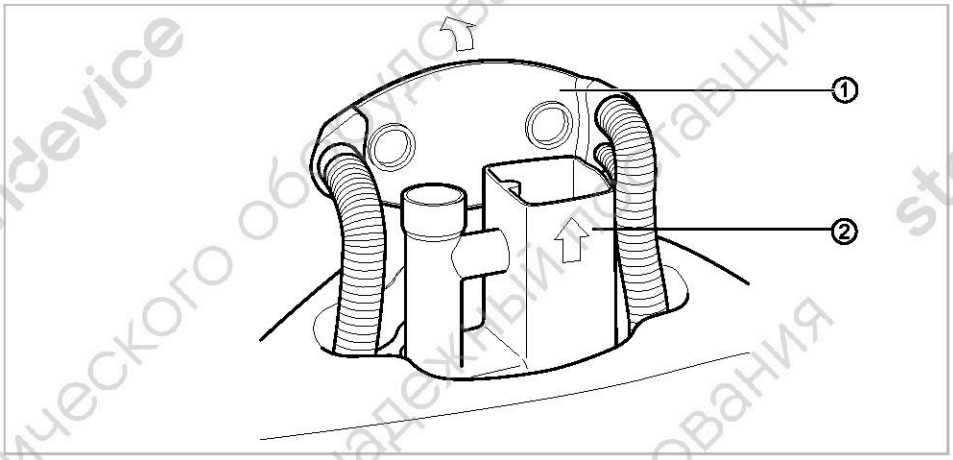
6.1.1 Drain the water tank and clean it (Venturi dust extraction)

- Compress and remove the cover.



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Note
Daily drain and clean the water tank in the suction unit.



- Slightly lift the cover ① of the water tank and swung it inward.
- Lift out the water tank ②, and properly dispose of its contents.
- Thoroughly rinse the water tank and insert it.

6.1.2 Fill the pressurised water system (if available)

⚠ CAUTION

The bottle is sensitive to heat.
Material fatigue.
- Do not rinse the bottle in the dish washer or with hot water (above 50 °C).



Description of the symbols on the bottle:

	Description
	Reference to instructions for use
	Reference to maximum period of use (Same as "Can be used until...")
REF	Reference to the material No. (REF)
50°C	Reference to the maximum permissible temperature

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⚠ CAUTION

Service life of the bottle.

The maximal service life is two years.

- Do not use the bottle after the expiration date (see label).



⚠ CAUTION

Wrong mixing ratio.

Too much or too little Oxygenal 6.

- The bottle must always be empty before adding Oxygenal 6.



Note

The maximum capacity of the bottle is one litre.

Requirement

The bottle is empty.

- Add Oxygenal 6.
- Add water.

Properties of water

It is permissible to use the following types of water.

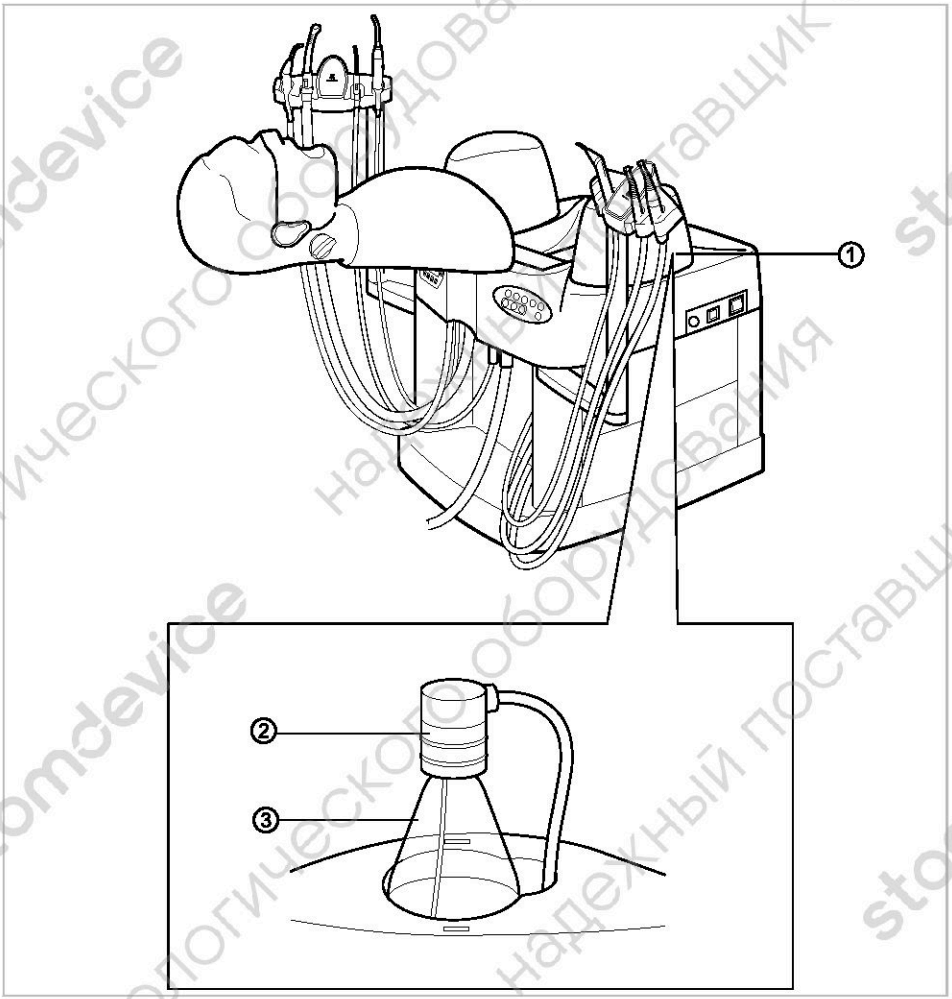
- Tap water, 8 - 12 dH
- Distilled or demineralised water
- Low-carbon-dioxide or carbon-dioxide-free mineral water

Oxygenal concentration

Property	Percentage fraction	Amount in ml per 1 L water
	max. 0.02 %	3.3 ml

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Property	Percentage fraction	Amount in ml per 1 L water
In manual cleaning module	max. 0.3 %	50 ml



Note
The unit must not be vented. The air pressure automatically decreases when the bottle is opened.

- Remove the cover ① by pressing on it slightly.
- Screw on the bottle. Hold the bottle connection ② tight, and turn the bottle ③ clockwise.
- Remove the bottle from the holder and fill it.
- Place the bottle back in the holder.
- Close the bottle ③. Hold the bottle connection ② tight, and turn counterclockwise.

⇨ Pressure automatically builds up.

6.1.3 Changing the lamps and safety glass of the halogen light

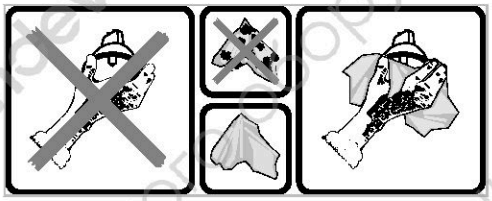
⚠ CAUTION

Touching the hot safety glass or hot bulbs.
Risk of burn injury.
- Before changing the bulbs, wait until the safety glass and bulbs have cooled down.

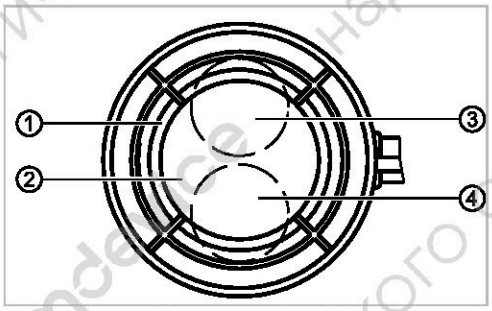
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Note
Only use lamps that are approved by the manufacturer.

Note
Defective halogen bulbs must be disposed as special waste.



Note
Bulbs may only be changed with a clean cloth.



- Remove the snap ring ①.
- Remove the safety glass ②.
- Remove bulb Flood ③ and bulb Spot ④ with a clean cloth.
- Use the reverse procedure to insert the bulbs and safety glass.

Note
Defective safety glass must be replaced.

6.2 Care

- If dirty, clean the unit on the outside with a soft cloth and water.
- Clean the dentured skull and face mask of the patient simulator.

See also:
Instructions for use of dentured skull
- Servicing the handpieces and motors

See also:
Instructions for Use of the respective handpiece or motor

Note
Regularly cleaning the transparent safety glass improves the lighting.

- Clean the lamp parts with a cloth dampened with normal household cleaner. When selecting the household cleaner, make sure that it is compatible with paints and plastics.

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7 Safety checks in accordance with IEC 62638 (VDE 0701 / 0702)

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

- the applicable occupational health and safety regulations.
- the applicable accident prevention regulations.

The overarching guidelines and/or national laws, national regulations and the rules of technology applicable to the startup and use of the KaVo product for the intended purpose are to be applied and complied with.
Compliance with the requirements of IEC 62638 (VDE 0701/0702) concerning product safety upon start-up, after changes and repair as well as in recurrent tests is required.
Caution: Electrical safety checks have to be carried out by electrically skilled persons or by individuals trained in electrical engineering and supervised by an electrically skilled person.
An electrically skilled person is defined to be anyone whose training, knowledge and experience as well as knowledge of the pertinent regulations allow him or her to assess and recognise possible hazards. The electrically skilled person in charge of testing has to make a decision whether nor not further individual tests are required in order to attain the safety target.
If safety deficiencies or damage is/are detected during the recurrent test, the testing process must be discontinued and the device must be labelled accordingly and banned from further use or submitted for repair of the defect.

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8 Troubleshooting

Malfunction	Cause	Remedy
Suction power of saliva extractor is insufficient.	Spray mist extractor is not closed.	▸ Close spray mist extractor.
	The cover of the water tank is not properly placed.	▸ Place the cover properly.
Triple function handpiece does not work properly.	Compressed air shut-off valve is closed.	▸ Open the shut-off valve.
	Water shut-off valve is closed.	▸ Open the shut-off valve.
No voltage supply.	Main switch is OFF.	▸ Turn on the main switch.
	Main fuse is blown.	▸ Unplug the units from the mains. ▸ Replace the microfuse T2.0 H. The main service fuse is situated next to the master switch.
K4, KL motor handpiece cannot be started.	The K4 button is not pressed.	▸ Hold down the K4 button.
	Mains switch not at "I" ON setting	▸ Push the mains switch to the "I" ON setting
	The clamping system of the K4 motor handpiece is not correctly closed.	▸ Correctly close the clamping system of the K4 motor handpiece.
	An integrated overload fuse shuts off the device if it runs too long or the load is too high.	▸ Move the power switch to "Off" position, and let it stay off for a while. ▸ Switch on the power switch and restart the handpiece.
	Faulty programming of the K4 / KL motor / turbine.	▸ Program the correct device.
Suction power decreases.	The suction unit is full.	▸ Empty the suction unit. ▸ Refill the pressurised water system.
Patient simulator/backrest cannot be moved/adjusted.	Air supply is interrupted.	▸ Examine air connection.
Turbine not running.	Air supply is interrupted.	▸ Examine air connection.

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Note

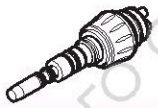
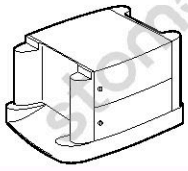
For DSEplus 5192 TLC, the malfunction notes of the IfU ELECTROtorque TLC 4893 **Mat. no. 1.006.5268** apply also

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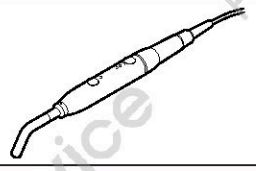
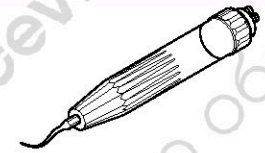
9 Accessories

Accessories - DSEplus 5192 / 5193 / 5192 TLC

The accessories listed below are optional and can be supplied depending on unit model.
BS = kit

Figure	Description	Material number
	465 LRN coupling	Mat. no. 0.553.1550
	BS Triple assistant element	Mat. no. 1.000.5003
	BS Saliva ejector hose	Mat. no. 0.065.6589
	BS Handpiece arm	Mat. no. 1.000.2503
	BS Handpiece holder HE	Mat. no. 1.000.1443
	BS Suction connection, small	Mat. no. 0.211.1751
	Saliva ejector, flexible	Mat. no. 0.236.2128
	Triple function handpiece One Handpiece featuring air, water, no heating, and no cold light.	Mat. no. 1.009.7774
	BS second three-function handpiece with one rotating handpiece	Mat. no. 1.000.4998
	BS second three-function handpiece with two rotating handpieces	Mat. no. 1.000.4999
	BS second multifunction handpiece with one rotating handpiece	Mat. no. 1.000.5000
	BS second multifunction handpiece with two rotating handpieces	Mat. no. 1.000.5001
	BS Body of DSEplus	Mat. no. 1.000.1928
	BS Body of DSEplus	Mat. no. 1.000.1928
	BS Chassis with pneum. brake	Mat. no. 1.000.1927
	BS Doors with locks	Mat. no. 1.000.1930
	BS Drawers with locks	Mat. no. 1.000.1929
	BS PIEZOlux (incl. PIEZOlux handpiece)	Mat. no. 1.006.8074
	BS Polylight Satelec	Mat. no. 1.006.9151

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Figure	Description	Material number
	Satelec Mini LED	Mat. no. 1.004.8844
	PIEZOlux	Mat. no. 1.006.8074

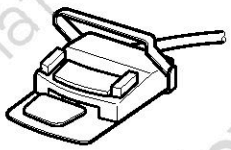
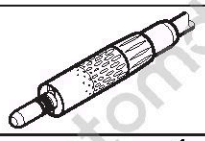
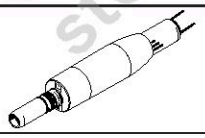
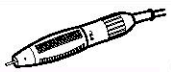
Dental patient simulator cranium denture

Figure	Description	Material number
	G 50	Mat. no. 0.622.0521
	G 50 J	Mat. no. 0.622.0581
	G 50 JM	Mat. no. 0.622.1631
	G 40	Mat. no. 0.622.1421
	G 40 J	Mat. no. 0.622.0591
	G 40 JM	Mat. no. 0.622.1731

Face mask

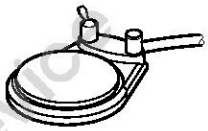
Picture	Description	Material number
	Standard	Mat. no. 0.622.3882
	Latex	Mat. no. 0.622.4872
	with drain	Mat. no. 0.622.0531
	with drain and adapter	Mat. no. 0.622.1431

Accessories - DSEplus 5193

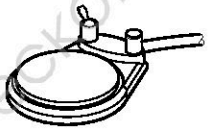
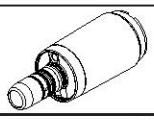
Figure	Description	Material number
	Foot control A 1060 WDE	Mat. no. 1.000.5004
	INTRA LUX motor KL 701	Mat. no. 1.001.8776
	INTRA LUX motor KL 702	Mat. no. 1.003.5622
	K4 motor handpiece 4914	Mat. no. 1.000.2159
	K5 motor handpiece 4911	Mat. no. 1.001.6733

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Accessories - DSEplus 5192

Figure	Description	Material number
	BS Foot control C disc type with ventilation (not in connection with KL 701 or K4)	**Mat. no. 1.000.4477**

Accessories - DSEplus 5192 TLC

Figure	Description	Material number
	BS Foot control C disc type with ventilation (not in connection with KL 701 or K4)	**Mat. no. 1.000.4477**
	INTRA LUX motor KL 703	**Mat. no. 1.007.0150**

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