

Operating instructions K-AIRplus 743, 744, 745.



Always on the safe side.



KaVo. Dental Excellence.

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K-AIRplus 743, 744, 745.

A 1	User information	2
	A 1.1 Meaning of the pictograms	2
	A 1.2 Important information	2
	A 1.3 Precautions	2
	A 1.4 Possible uses and applications	3
	A 1.5 Technical data	3
A 2	Scope of delivery - Accessories	4
	A 2.1 Scope of delivery	4
	A 2.2 Accessories	4
A 3	Compressed air supply	5
A 4	Location	5
A 5	Mounting and connection	5
A 6	Preparation for commencing operation	7
	A 6.1 Set the operating pressure	7
	A 6.2 Filling the spray water storage tank	7
A 7	Controls and functional elements	8
A 8	Operation	9
	A 8.1 Toolchange	9
	A 8.2 Commencing operation	10
	A 8.3 Adapter, milling turbine (accessory)	10
A 9	Maintenance	11
A 10	Malfunctions	12
A 11	Replacing the turbine rotor	14
	Guarantee conditions	15
	EC- Declaration of conformity	15
	Spare parts 745	16
	Spare parts 743, 744	17
	Spare parts food switch	18

K-AIRplus 743, 744, 745.

A 1 User information

A 1.1 Meaning of the pictograms

 *Situations where failure to follow the instructions may lead to danger, damage to material or operating faults.*

 *Important information for operator and engineer.*

 Automatic mode
Automatic sequence

 Close, screw in,
fasten, etc.

 Open, release, loosen

 more, higher

 less, lower

 Continuous operation

 Time, time sequence

 Disconnect mains plug

A 1.2 Important information

 *The instructions for use should be read by the user before starting up the unit for the first time, in order to avoid incorrect operation and other damage. If other language versions are required, please request these from your responsible KaVo agent. Duplication and distribution of the instructions for use (IU) require KaVo's prior consent.*

All technical data, information and properties of the product described in the IU correspond to the state on going to press.

Modifications and improvements to the product as a result of new technical developments are possible.

This does not imply any right to retrofitting of existing units.

KaVo assumes no responsibility for damage arising through:

- external influences (poor quality of the media or inadequate installation)
- use of incorrect information
- improper use
- improperly performed repairs.

Repair and maintenance work - apart from the activities described in these instructions for use - may be performed only by qualified technical personnel.

In the event of modifications by third parties, the approvals become null and void. KaVo recommends using only original spare parts for operation and for repair.

A 1.3 Precautions

Safe operation and protection of the unit are ensured only through proper use in accordance with the instructions for use and using the tools approved for the purpose. The following should also be observed:

- the tool manufacturer's instructions,
- the work safety regulations,
- the accident prevention regulations.



■ *Each time before switching on, check the set speed.*

■ *Observe the permissible maximum speed and maximum pressure of the tools (according to tool manufacturer's instructions).*

■ *Use safety screens when working with rotating tools.*

■ *To avoid danger through accidental switching on, place the handpiece on a suitable shelf or tool support.*

In the event of an unsatisfactory condition of the unit or improper use, e.g.:

- unsuitable tools
- tool shafts not manufactured according to DIN-ISO
- improper use or use not in accordance with the purpose
- unapproved speeds for tools used
- incorrect clamping of the tools in the chuck
- insufficient retaining force of the chuck (wear, soiling, failure to follow the product care instructions for the chuck system, etc.)
- different sizes of tool shaft and chuck
- lack of regular cleaning of the chuck
- failure to follow the maintenance instructions
- failure to comply with the accident prevention regulations (e.g. failure to use safety screens, safety devices, handpiece supports, etc.)
- failure to take into account signs of wear and damage
- tool shafts which have slipped out (potential danger = bending of the tool shafts)

there is a danger of injury and damage to material and unit, e.g. due to:

- Bending of the tool shafts
 - Accidental withdrawal of the tools from the chuck
 - Breaking or splintering of the tool.
 - Eccentric rotation or shattering of tools, or
 - Catching and tangling-up loose fabrics, fibres, hair etc.
 - Snagging and rolling up
 - Catapulting of small material-parts
- in order to prevent this, safety precautions must be incorporated into the unit.

 *Any liability shall be excluded if defects or the consequences thereof are due to manipulation or modification to the product by the customer or by any third parties not authorized by KaVo.*

K-AIRplus 743, 744, 745.

A 1.4 Possible uses and applications

K-AIRplus is licensed for precision milling work of dental prosthetic materials and products, by trained personnel using the necessary licensed tools, whilst observing the manufacturers instructions, as well as health and safety regulations.

K-AIRplus is not licensed for use on patients.

A 1.5 Technical data

Turbine Control Unit 745

Dimensions

Length:	256 mm
Height:	190 mm
Width:	126 mm

Weight:	5000 g
Air consumption:	41 l/min
Operating pressure:	3.7 bar
Amount of filling water tank:	125 ml

Turbine Handpiece 743, 744

Dimensions:

Length:	145 mm
Max. diameter:	24 mm
shaft diameter 743:	17,5 mm

Weight 744:	105 g
Weight 743:	124 g

Speed: approx. 270.000 rpm

Spray air pressure: 3.7 bar

Blown air pressure: 6 bar

Spray water flow rate: 1-10 ml/min

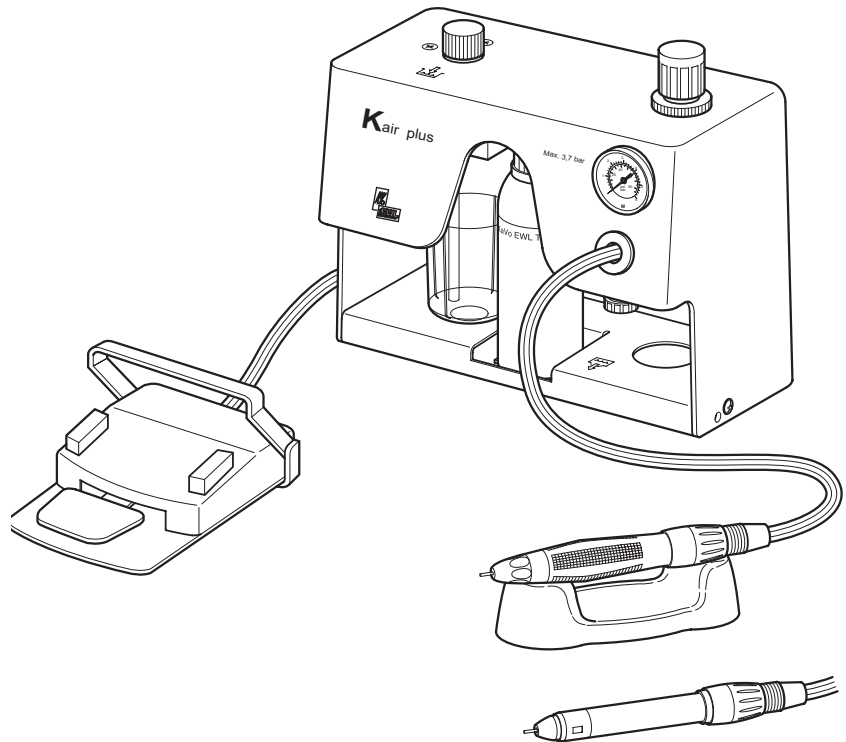
Ambient conditions:

Permitted in interior rooms

Permissible ambient

temperature range of 5° C - 40° C

Permitted to max. relative humidity 80%



A 1.6 Combination Controller - hand-piece

In the combination with K-AIRplus units of types 745 only the following handpiece can be operated:

K-AIRplus handpiece	743, 744
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The safety of the K-AIRplus control units with handpieces 744 can be guaranteed only with the handpiece/control unit combinations approved by KaVo.

K-AIRplus 743, 744, 745.

A 2 Scope of delivery - Accessories

A 2.1 Scope of delivery

Check that the system is complete.

1 Turbine control unit 745
(with connection set for compressed air supply line)

1 Turbine handpiece 744
or

1 Turbine handpiece 743

only for 744

1 Handpiece rest 4850

1 Turbine footswitch Mat. No. 0.734.1470

1 Can of turbine spray

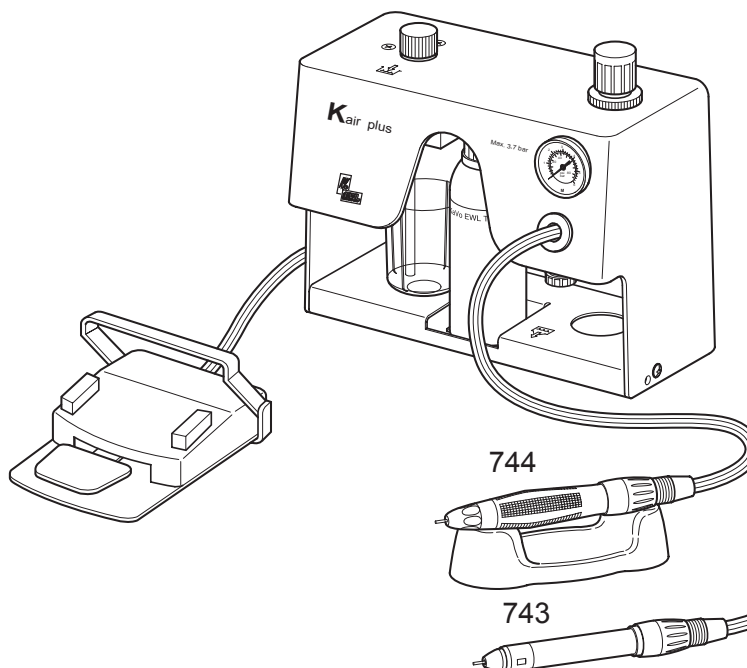
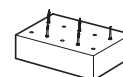
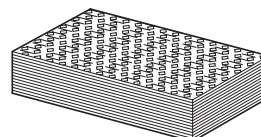
1 Packet of cleaning cloths

Mat. No. 0.489.3021

only for 744

1 FG tool set

Mat. No. 0.410.0000



A 2.2 Accessories

Accessories supplied on request.

Turbine care set consisting of:

2 cans of turbine spray with cleaning cloths
Mat. No. 0.620.1931

only for 743

Fork spanner 17

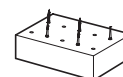
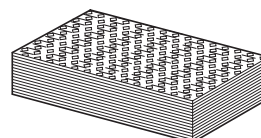
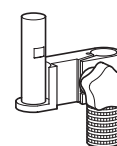
only for 744

Special key for turbine change

Mat. No. 0.510.0141

Milling turbine

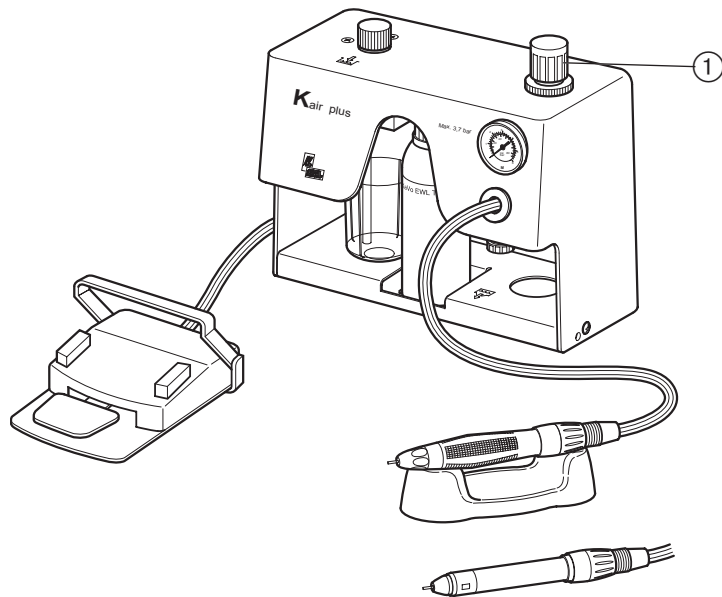
Mat. No. 1.003.5193



K-AIRplus 743, 744, 745.

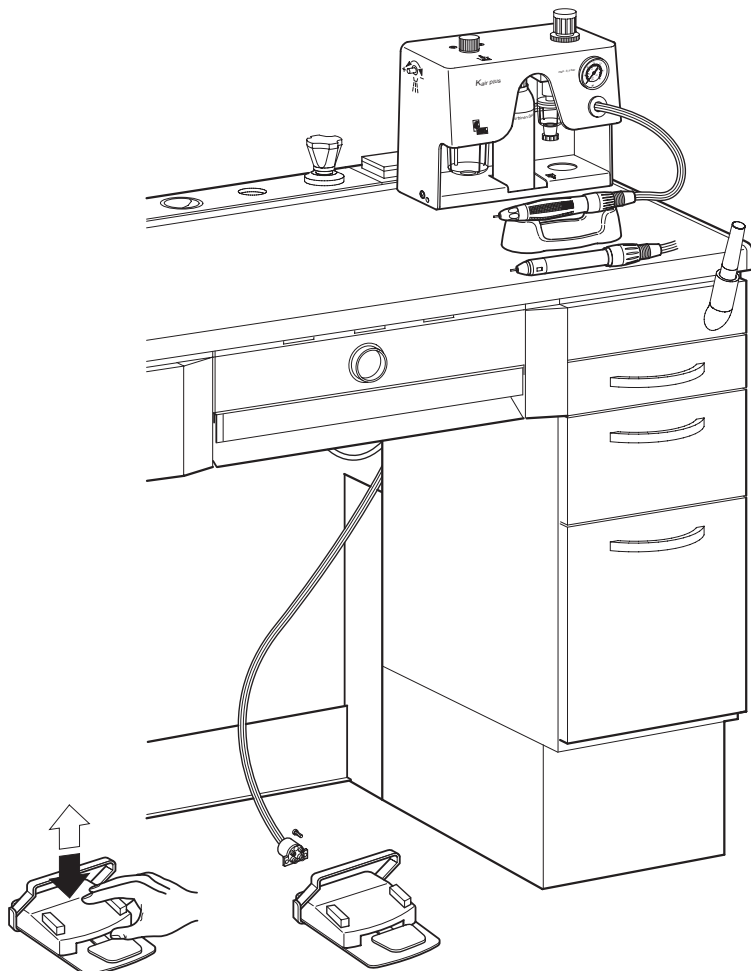
A 3 Compressed air supply

A compressed air supply is needed to operate the turbine system. The air pressure supply must be at least 3.7 bar. It must on no account exceed 6 bar. The operating pressure indicated on the manometer ① must not be set to over 3.7 bar (see A 6.1).



A 4 Location

The turbine control can either be placed on the table top or mounted under the table (see Section A 5).



K-AIRplus 743, 744, 745.

A 5 Mounting and connection

"Table-top" arrangement.

Place the turbine control unit 745 on the work top and the turbine footswitch under the table.

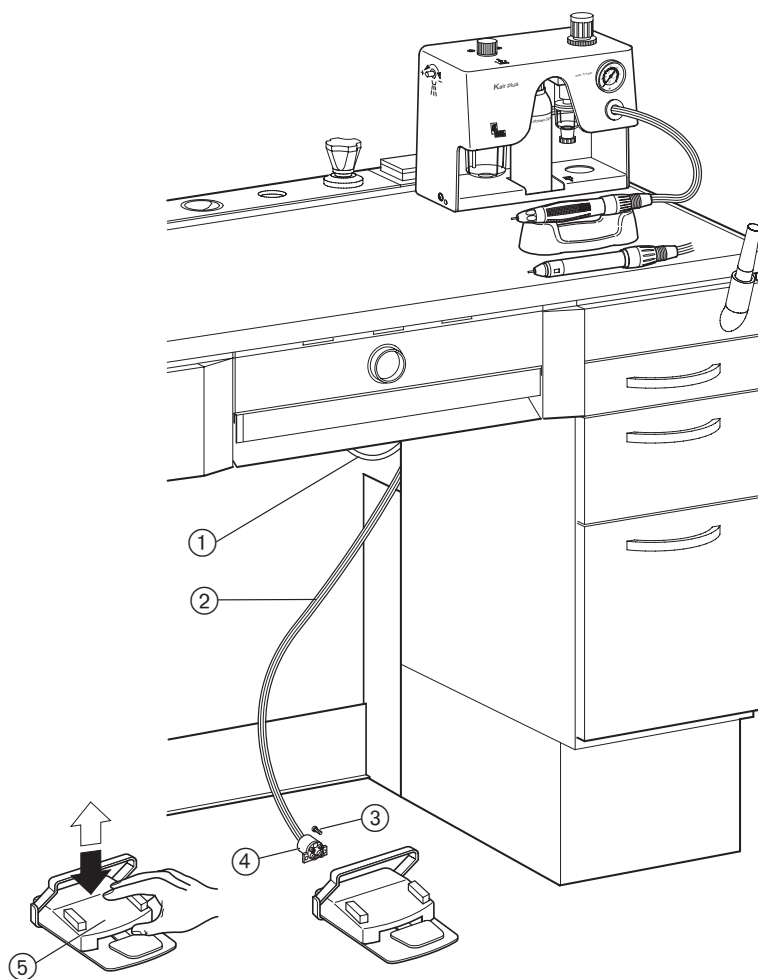
Lead connecting hose ② and compressed air supply line ① in the foot space.

Connect compressed air supply line
(if required, use compressed air connection set).

Fix connecting hose ① from the turbine control to the turbine footswitch.

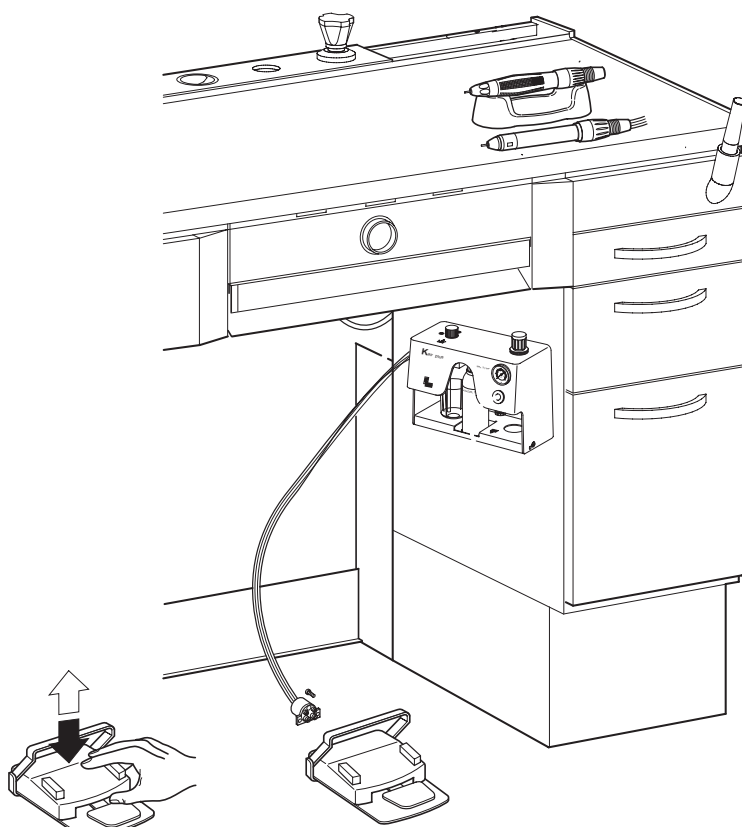
Remove the cover ⑤ of the footswitch in the direction indicated by the arrow (the cover is only pushed on).

Insert connector ④ of the connecting hose ① into the footswitch coupling and fix with two screws ③. Replace the cover ⑤ and press down.



"Under-table" arrangement.

Mount the turbine control unit 745 on the side of the store cabinet at the required position using the mounting set. Place the turbine footswitch under the table.



K-AIRplus 743, 744, 745.

A 6 Preparation for commencing operation

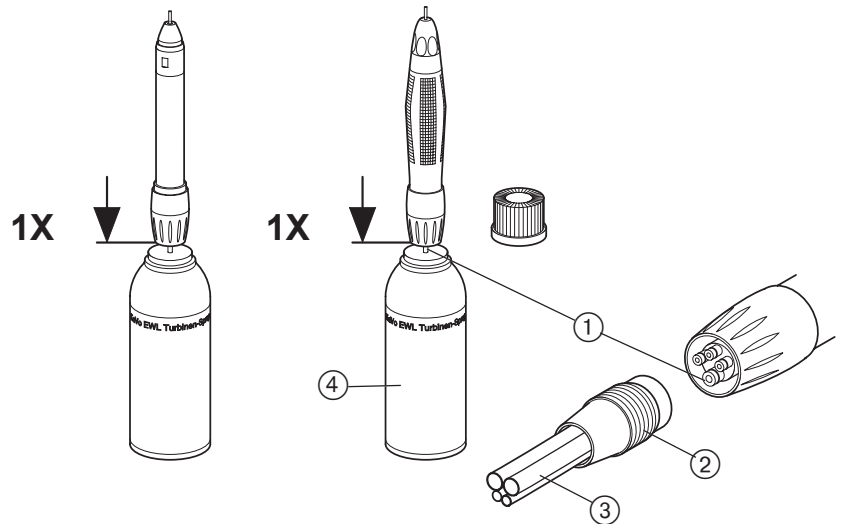
Connect the connecting hose ③ to the compressed air line of the compressor feed (if required, use the compressed air connection set).



The input air pressure must not exceed 6 bar.

For initial lubrication of the turbine rotor fit the turbine handpiece with nipple ① onto the nozzle of the turbine spray can ④ and press down once (approx. 0,5 sec).

Connect 4-channel turbine hose ③ to fast-action coupling ② on nipple ① of the turbine handpiece. Pull back fast-action coupling ② with the fingers.



A 6.1 Set the operating pressure

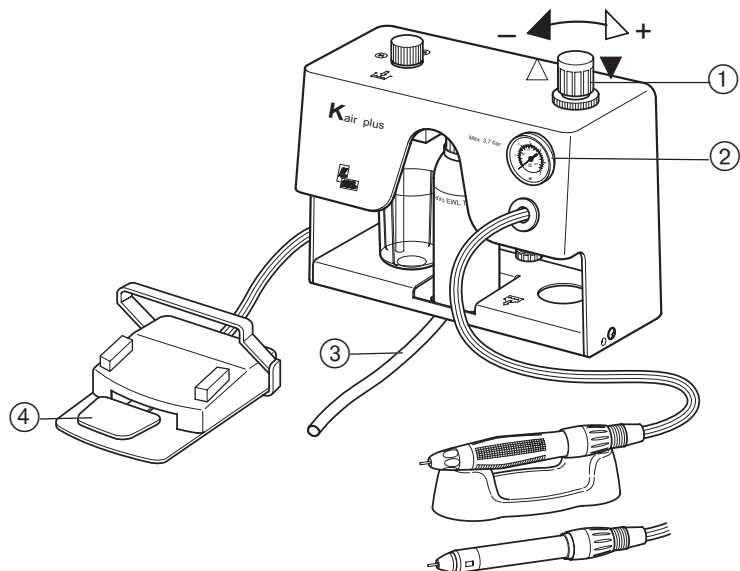
Raise the knob ① of the filter pressure reducer in the direction of the arrow ↗.

Start up the turbine system by pressing down the foot switch ④. With the turbine running, turn the knob ① in the direction of the arrow →+; -← until the reading on manometer ② is set to 3.7 bar.

Reset the knob ① of pressure reducer in the direction of the arrow ↘. This will prevent accidental maladjustment of the pressure reducer.



For safety reasons, never set the operating pressure above 3.7 bar.

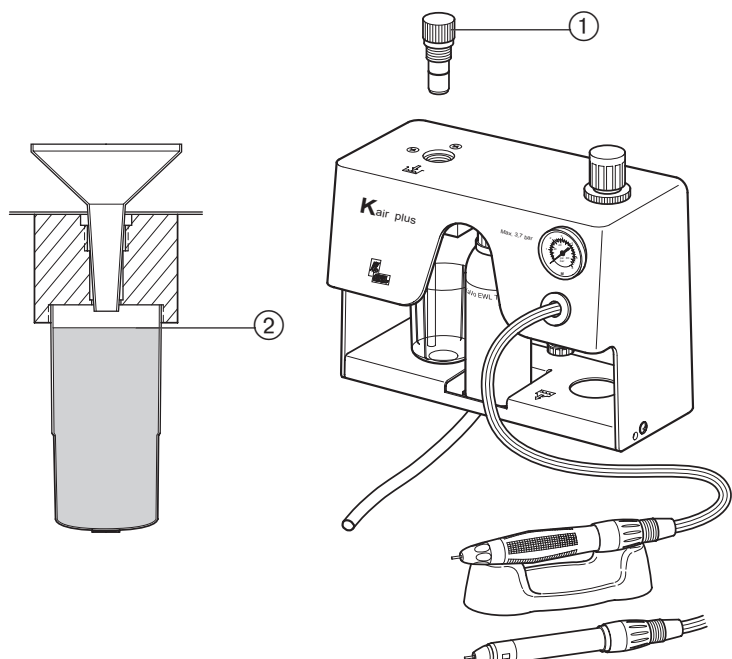


A 6.2 Filling the spray water storage tank



To prevent clogging of the narrow spray water channels, soft water, i.e. without lime, must be used. KaVo recommendation: "BRITTA water softener".

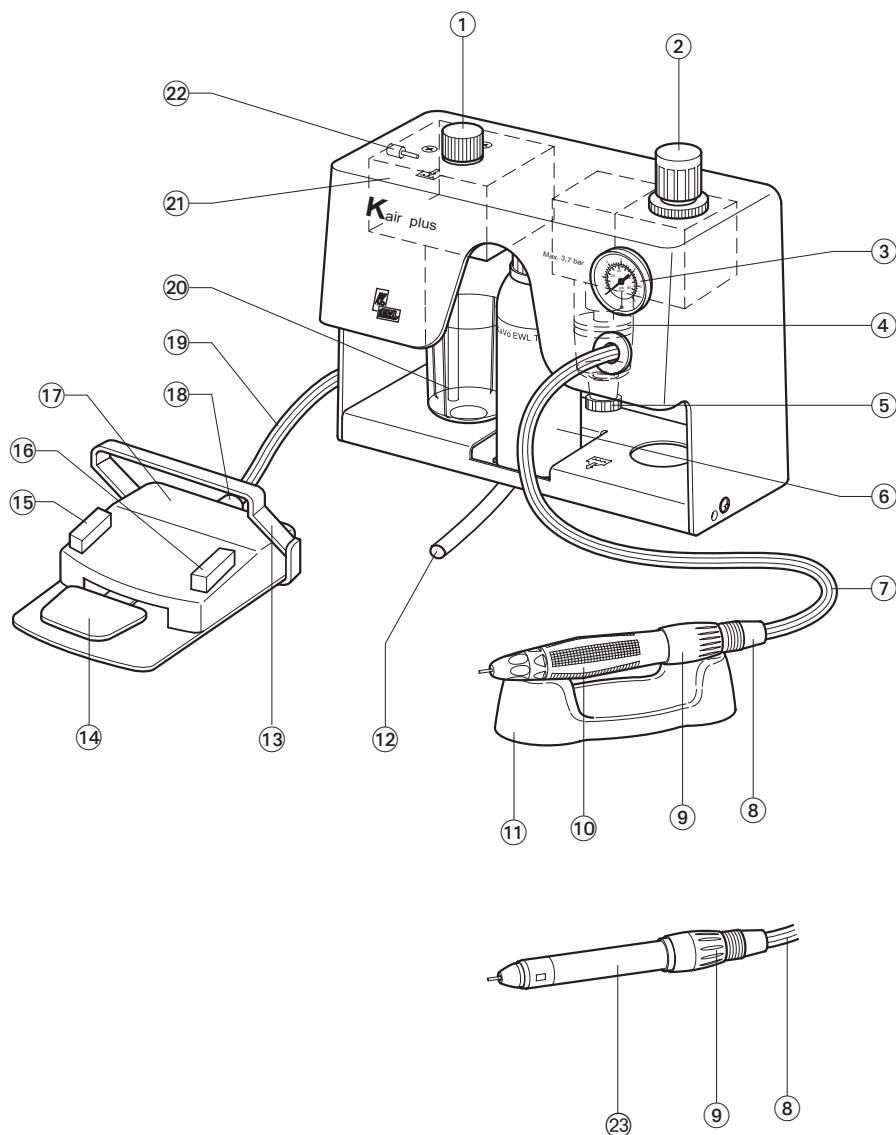
Open screw closure ① and fill softened water up to the upper edge of the inspection window ② (125 ml) through a small funnel. Screw in the screw closure ① again.



K-AIRplus 743, 744, 745.

A 7 Controls and functional elements

- ① Screw closure for spray water storage tank
- ② Rotary knob for pressure setting (drive pressure)
- ③ Manometer-drive pressure
- ④ Filter container
- ⑤ Condensate drain valve
- ⑥ Turbine spray
- ⑦ 4-Channel turbine hose
- ⑧ 4-hole fast-action coupling
- ⑨ Tool change sleeve
- ⑩ Handpiece handle sleeve (only 744)
- ⑪ Handpiece rest (only 744)
- ⑫ Compressed-air connecting tube
- ⑬ Carrying handle (footswitch)
- ⑭ Switch plate for drive air
- ⑮ Spray on/off switch
- ⑯ Blown air switch
- ⑰ Turbine footswitch
- ⑱ 4-Channel connector
- ⑲ Connecting hose for footswitch / control
- ⑳ Spray water storage tank
- ㉑ Multifunction control block
- ㉒ Setscrew for spray volume
- ㉓ Handpiece shaft (only 743)



K-AIRplus 743, 744, 745.

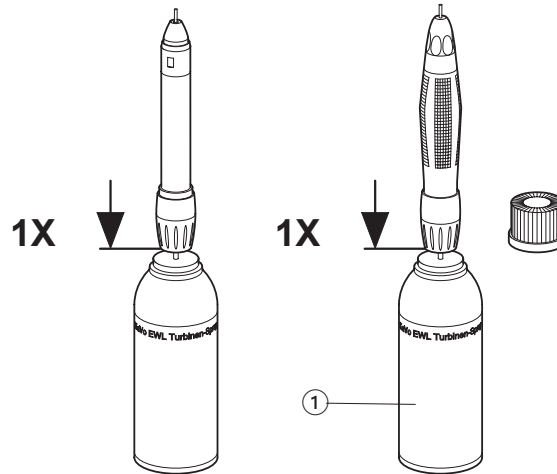
A 8 Operation

A 8.1 Toolchange

 *Change tools only with the turbine handpiece 743, 744, completely at a standstill.*

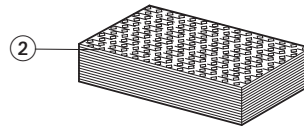
Cleaning and lubricating

Carry out maintenance with turbine spray ① (see also daily main-tenance) by cleaning and lubricating the turbine rotor twice daily (with frequent use up to 3 times a day). If necessary, wipe off any lubricant coming out of the handpiece tip with cleaning cloth ②.



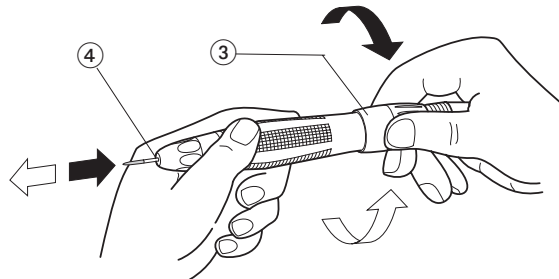
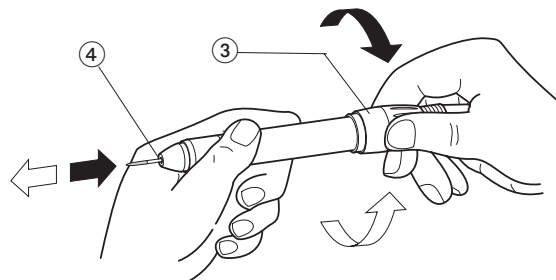
Tool mounting

Turn the tool change knob ③ to the right in order to open the chuck ④. Insert tool in the direction of the arrow ➡ and turn the tool change knob ③ back to the left (close chuck).



Tool removal

Turn the tool change sleeve ③ to the right and open the chuck ④. Remove tool in the direction of the arrow ⇐.



 *Only grinding tools with 1.6 mm diameter FG shank must be used. Never exceed the maximum permitted speed and pressure specified for an instrument by the manufacturer. Safety goggles must be worn and an effective dust extractor used while trimming and shaping with rotating tools.*

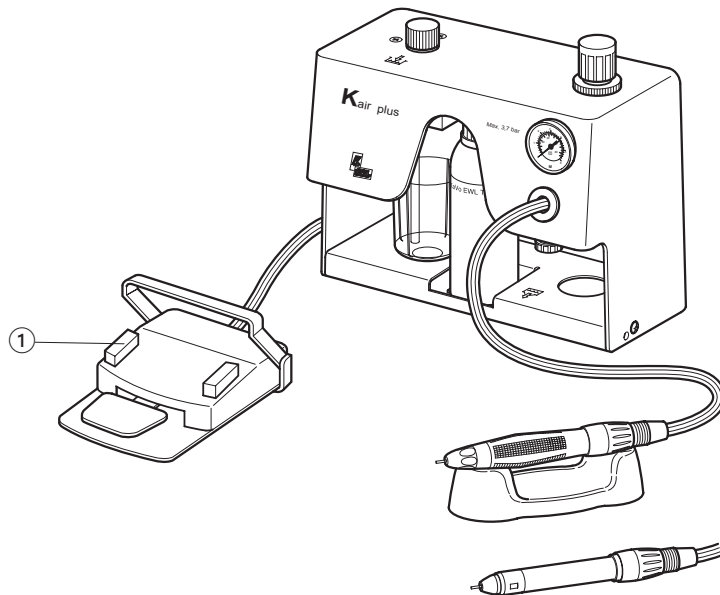


K-AIRplus 743, 744, 745.

A 8.2 Commencing operation

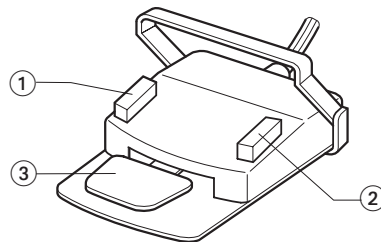
Insert grinding tool in accordance with and start up the turbine system by depressing the footswitch ①.

All grinding work with turbine handpiece 733, 744 must be carried out using only slight pressure.



A 8.3 Turbine foot switch

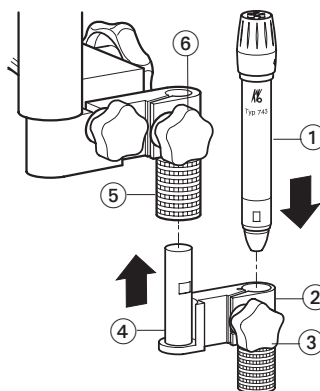
When the switch plate ③ is pressed down, the driving air for the turbine handpiece is switched on. With “blown air” switch ②, the workpiece can be blown off without releasing it from the hand. The “spray” on/off switch ① is activated by pressing it once. Spray water remains “on” until the “spray switch” ① is pressed again. In the case of faults with blown air or spray, see Malfunctions, Section A 10.



A 8.3 Adapter, milling turbine (accessory)

(not included in initial delivery)

Insert milling turbine ① into the adapter ②, and secure with the knurled-head screw ③. Push the adapter-guide ④ onto the milling arm ⑤, and secure with the knurled-head screw ⑥.



K-AIRplus 743, 744, 745.

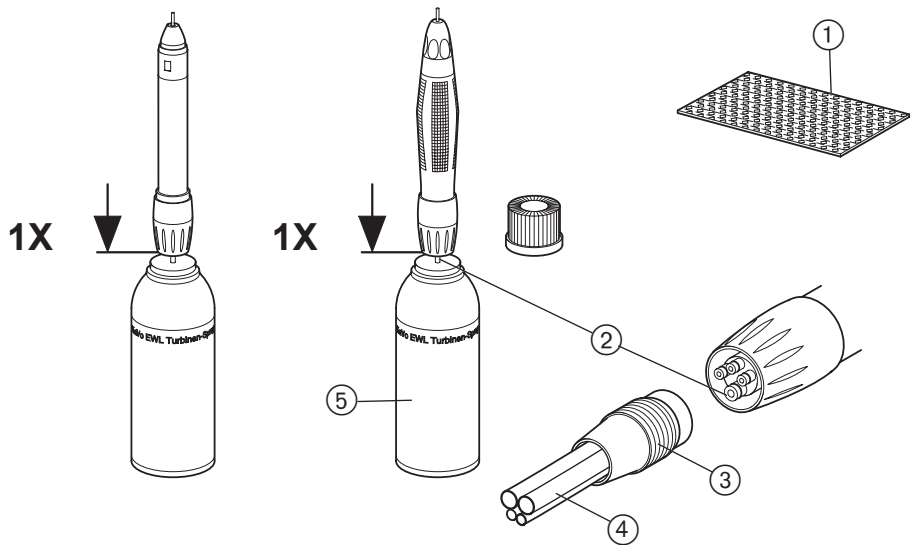
A 9 Maintenance

Daily

Under normal operating conditions, carry out maintenance twice daily on the turbine handpiece (3 times only in the case of long periods of daily use).

Remove the turbine handpiece from the rapid-action coupling (3), fit it onto the nozzle of the turbine spray can (5) with nipple (2) and press down once (approx. 0.5 sec.). In the event of accidental over-dosage, the turbine will only reach top speed again after several seconds of operation.

If necessary, wipe off any lubricant coming out of the handpiece tip with cleaning cloth (1).



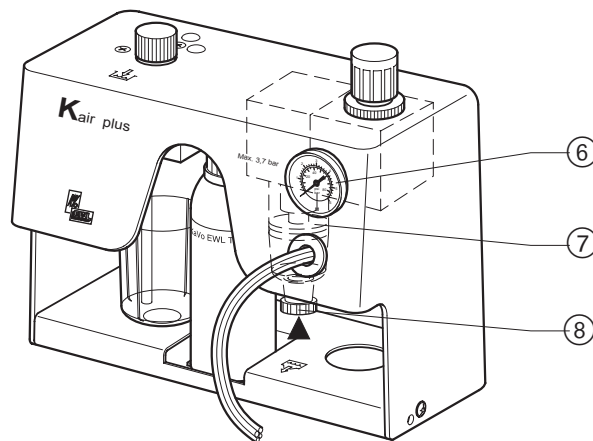
Checking the spray water storage tank.

Spray water storage tank is filled from above, see section A 6.2.

Weekly

Empty the water collected in the filter container (7) by opening the condensate drain valve (8) in the direction of the arrow.

Check the operating pressure on the manometer (5) with the turbine running and, if necessary, set to 3.7 bar (see A 6.1).



i If the unit is out of operation for a long time, it is essential to empty the spray water tank and to refill it (soft water).

K-AIRplus 743, 744, 745.

A 10 Malfunctions

i Test functions with and without the handpiece so that it is possible to determine whether the malfunction is due to the handpiece or the control.

10.1 No water jet present

Cause:

- a) No water in tank ⑬.
- b) Setscrew ① closed.
- c) Nozzle ⑨ blocked or encrusted with limescale.
- d) Adjusting screw ("water" valve) ④ closed.

Remedy:

- a) Fill tank ⑬ with water (see 6.2).
- b) Turn setscrew ① to fully open.
- c) See 11. Clear nozzle ⑨ using a needle etc.
- d) Remove cap. Turn adjusting screw to the right stop with screwdriver ③ through the opening ("water" valve) ④. Preselect "water spray" by means of switch ⑪. By pressing down the switch plate ⑩, start the turbine handpiece. Turn adjusting screw ④ to the left until the required amount of water emerges.

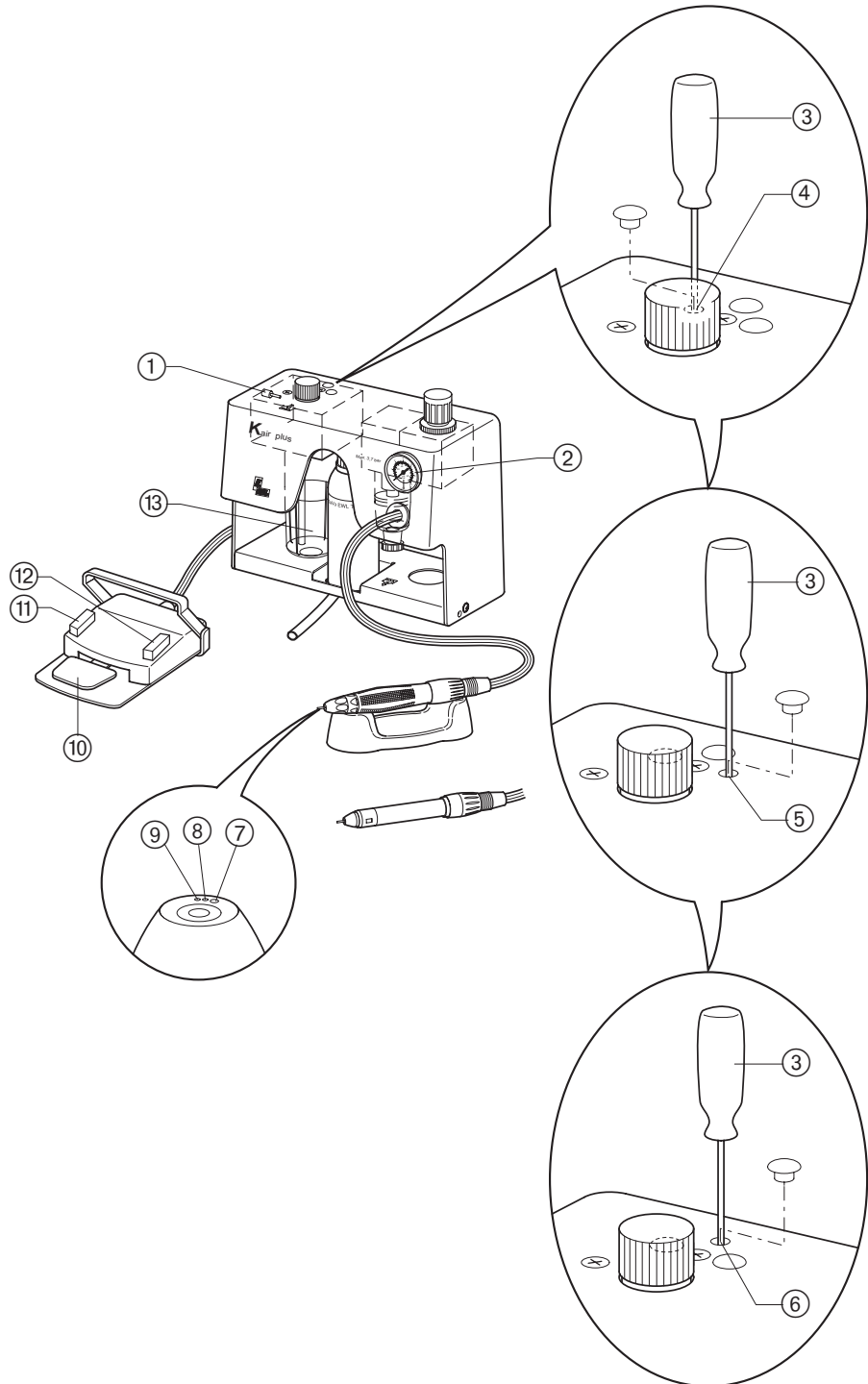
10.2 No atomization of the water jet

Cause:

- a) Nozzle ⑧ blocked or encrusted with limescale.
- b) Adjusting screw ("air spray" valve) ⑤ closed.

Remedy:

- a) See 11. Clear nozzle ⑧ with a needle etc.
- b) Remove cap. Turn adjusting screw to the right stop with screwdriver ③ through the opening ("air spray" valve) ⑤. Preselect "water spray" by means of switch ⑪. By pressing down the switch plate ⑩, start the handpiece. Turn adjusting screw ⑤ to the left until the required air-water atomization is present. (An exact adjustment is made using setscrew ①).



K-AIRplus 743, 744, 745.

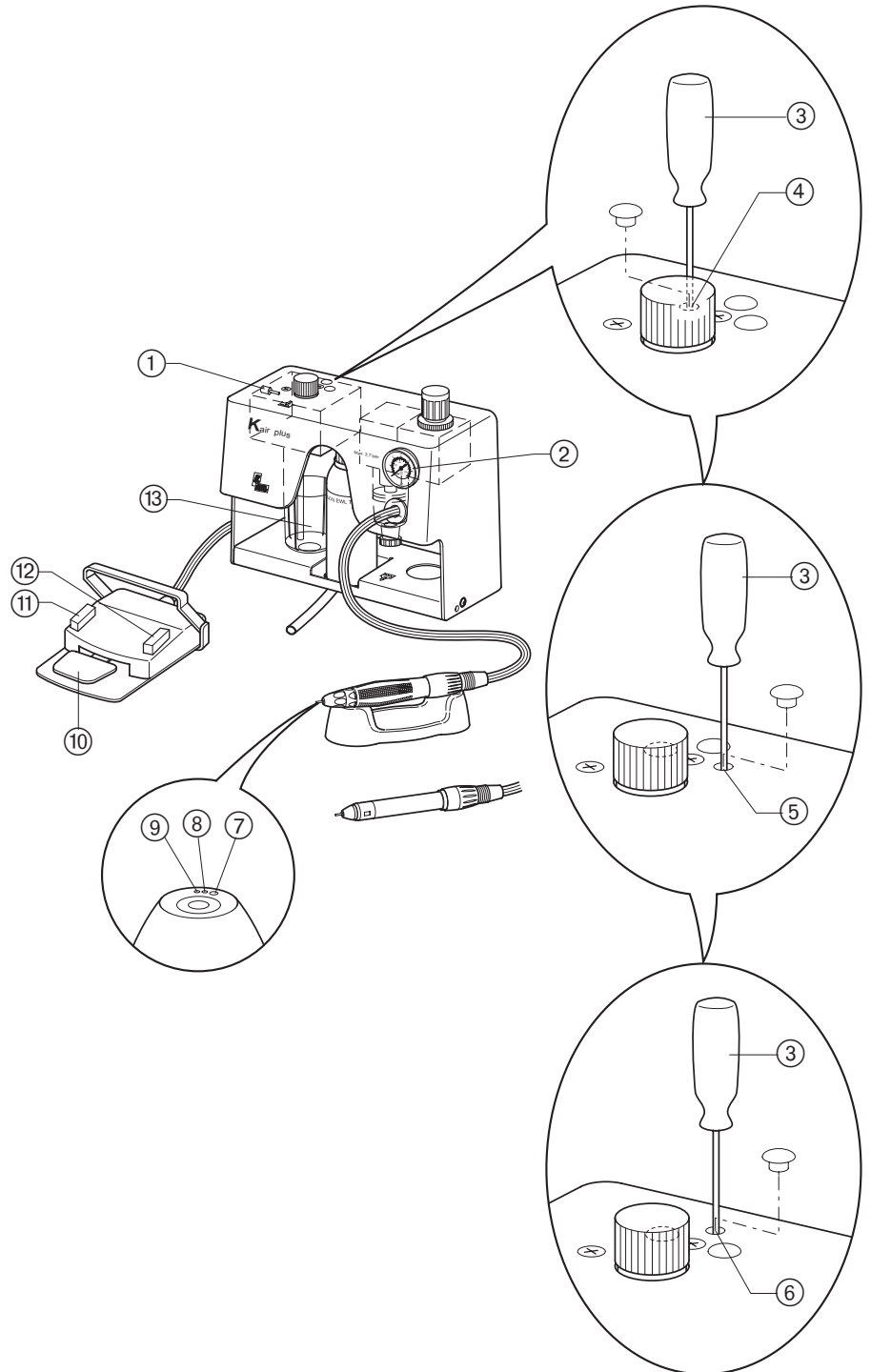
10.3 No blown air present

Cause:

- a) Pressure ② set too low.
- b) Nozzle ⑦ blocked or encrusted with limescale.
- c) Adjusting screw ("blown air" valve) ⑥ closed.

Remedy:

- a) Adjust pressure ② (see A 6.2).
- b) See 11. Clear nozzle ⑦ with a needle, etc.
- c) Remove cap. Turn adjusting screw to the right stop with screwdriver ③ through the opening ("blown air" valve) ⑥. Press down the "blown air" switch ⑪ and then turn adjusting screw ⑥ to the left until the required amount of blown air emerges.



K-AIRplus 743, 744, 745.

A 11 Replacing the turbine rotor

Unscrew handpiece ③ and lock nut ④ from handle sleeve using special wrench ① for 744 and with a fork spanner 17 ① for 743.

Remove the rubber O-Ring ② from the handpiece tip ③. Remove the turbine rotor ⑤ and rubber O-Ring ⑧ from the handle sleeve ⑩.

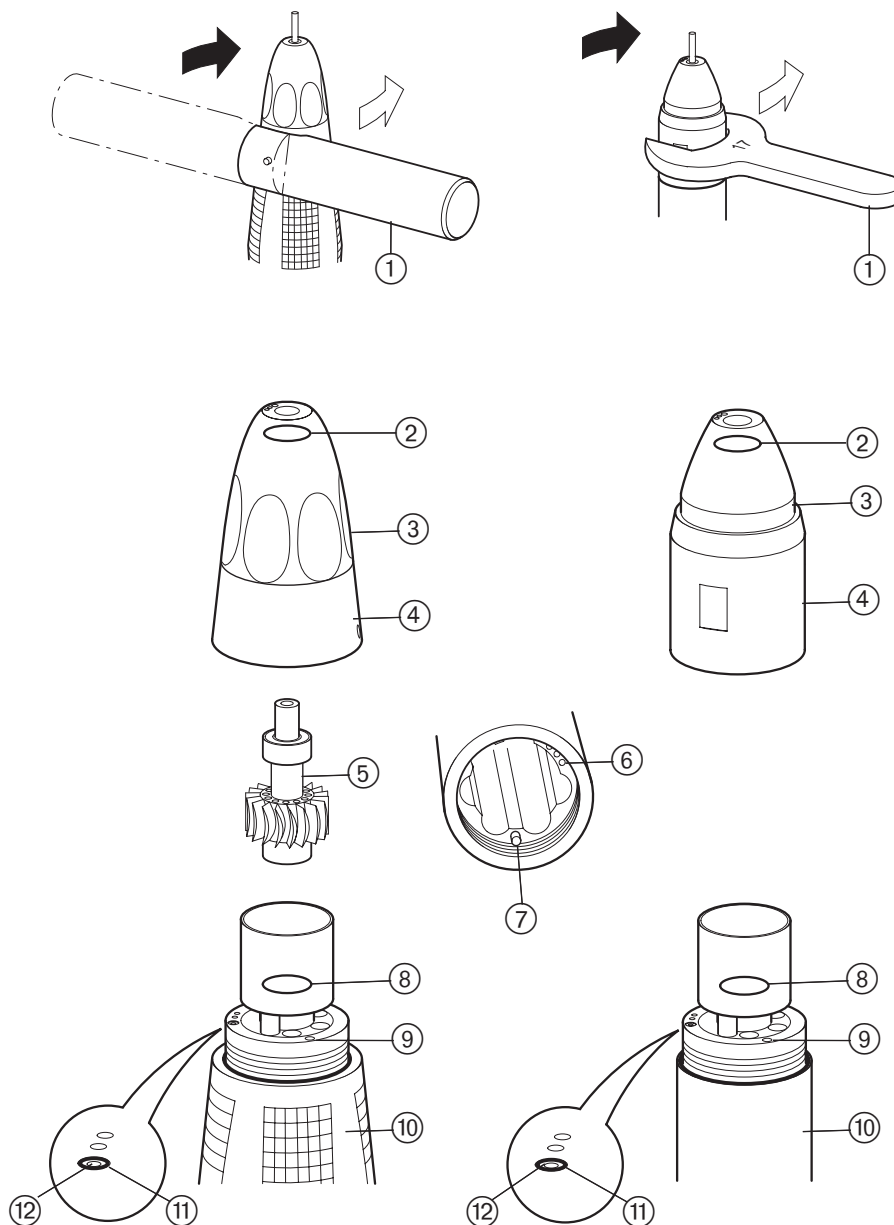
Clean the inside of the handpiece tip ③ and handle sleeve ⑩ (with cotton buds or similar).

Fit new O-rings ② and ⑧ in the handpiece tip ③ and handle sleeve.

Insert new turbine rotor ⑤ in the handle sleeve.

i Pin ⑦ must be inserted into hole ⑨ for fixing the air and water openings ⑥. Attention must also be paid to O-ring ⑪; this must be present in the "water" hole ⑫.

Press on lock nut ④ firmly and first screw on by hand. Then tighten with special wrench ① for 744 and for 734 with a fork spanner 17 ①.



K-AIRplus 743, 744, 745.

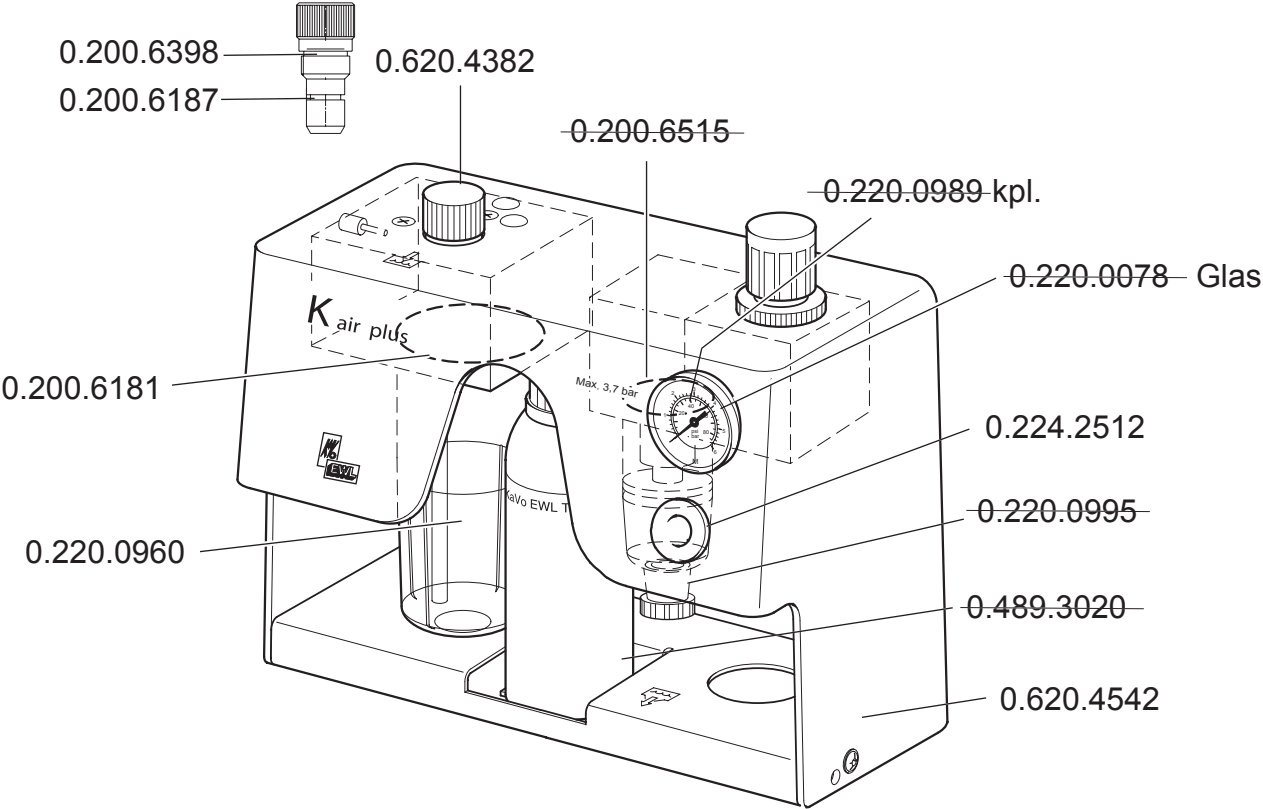
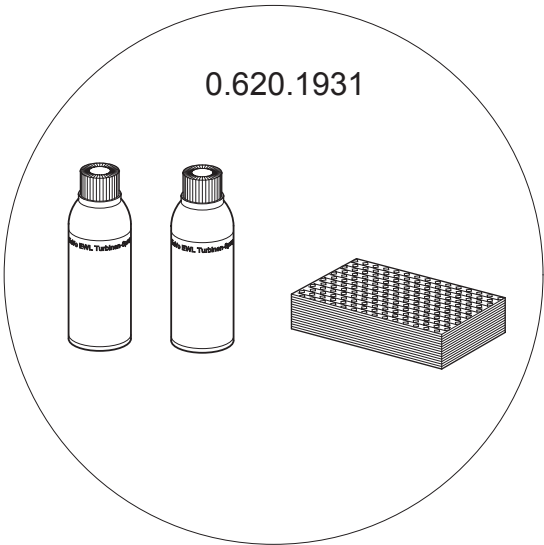
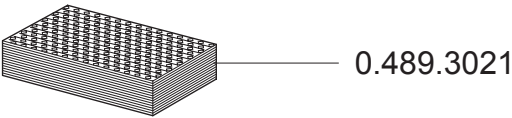
Guarantee conditions

Under valid KaVo EWL delivery and payment conditions, KaVo EWL gives a guarantee of satisfactory function and freedom from faults in material and manufacture for the duration of 6 months from the date of sale certified by the vendor. After expiry of the warranty, KaVo gives a guarantee of another 6 months for damage attributable to deficiencies in the material or in manufacture.

In the case of justifiable complaints, KaVo EWL shall supply spare parts or carry out repairs free of charge. KaVo EWL accepts no liability for defects and their consequences which have arisen or could have arisen as a result of natural wear, improper handling, cleaning or maintenance, noncompliance with the maintenance, operating and connecting instructions, corrosion, impurities in the air supply or chemical or electrical influences which are unusual or not admissible in accordance with KaVo's instructions. The guarantee shall become null and void if defects or their consequences can be attributed to interventions in or modifications to the product. Guarantee claims can only be validated if they are notified immediately in writing to KaVo EWL.

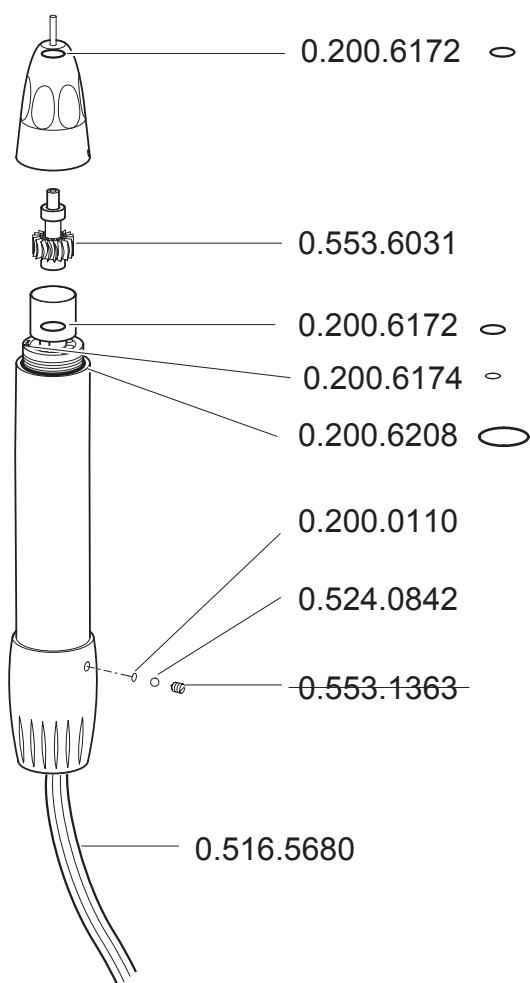
The CE-Declaration of conformity can be downloaded under www.kavo.com.

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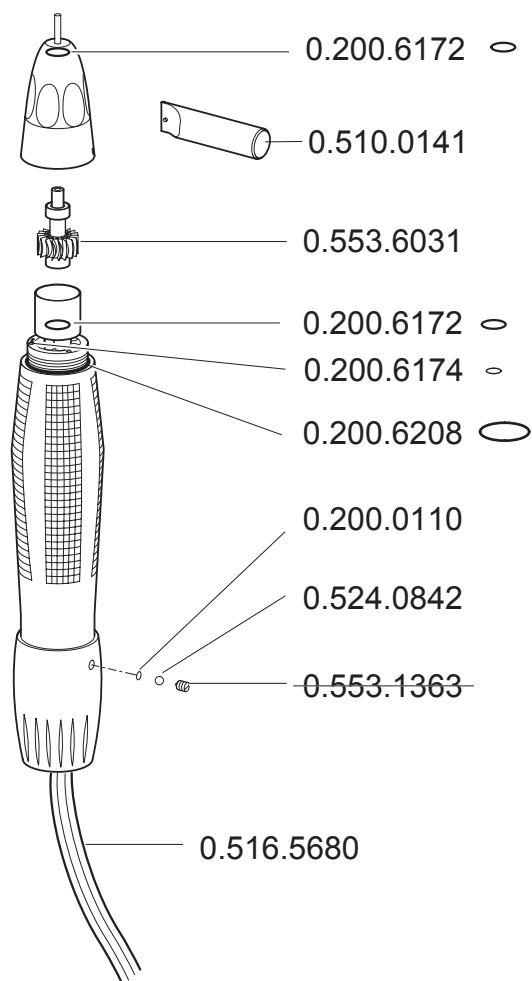


K-AIRplus 743, 744, 745.

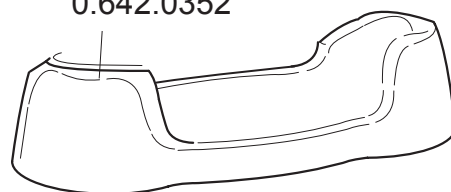
743



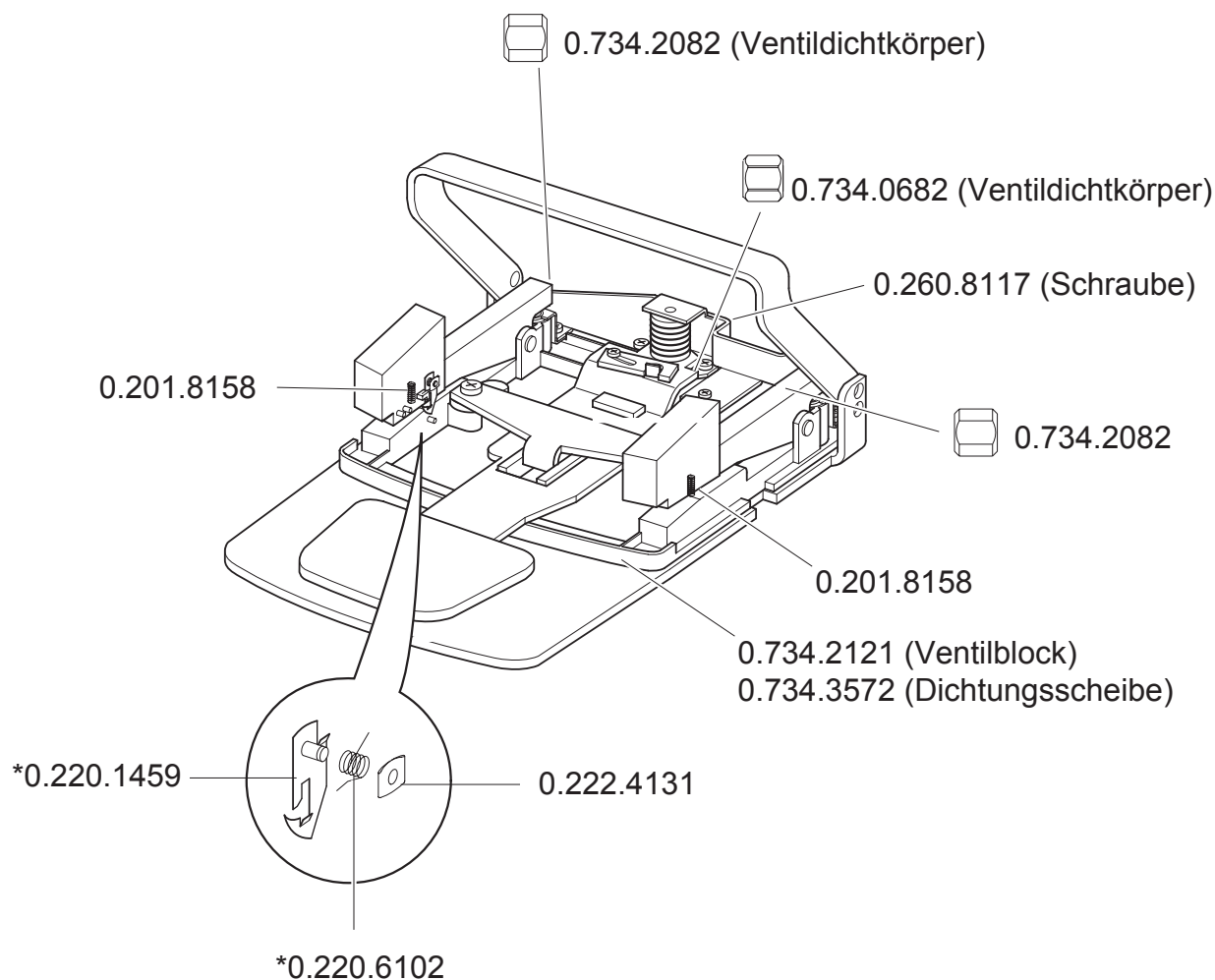
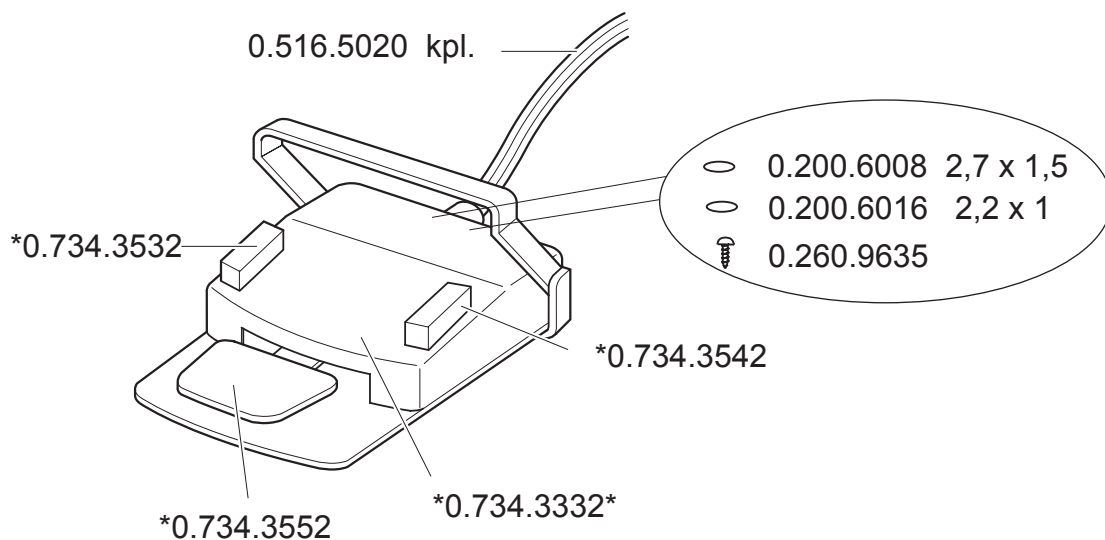
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0.642.0352



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*Inland: Ersatzteile bitte bei KaVo Biberach Fax: 0 73 51- 14 72 1 (e-Mail: siegel@kavo.de) bestellen

* Export: Order your spare parts in KaVo Biberach Fax: 0 73 51- 12 24 (e-Mail: HBenz@kavo.de)

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