

Technician's instructions

GENTLEpower LUX Contra-angle 25 LP - REF
1.001.2849



KaVo. Dental Excellence.

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1 User instructions

1.1 User guide

1.1.1 Abbreviations

Abbreviation	Explanation
GA (IfU)	Instructions for use
PA (CI)	Care instructions
MA (AI)	Assembly instructions
TA (TI)	Technician's instructions
STK (SC)	Safety checks
IEC	International Electrotechnical Commission
RA (RI)	Repair instructions
EMV (EMC)	Electromagnetic compatibility

1.1.2 Symbols

	Important information for users and service technicians
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1.1.3 Target group



Note

Have any repair and maintenance work on the device performed by KaVo-trained technicians only.

1.1.4 Product name



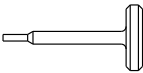
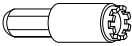


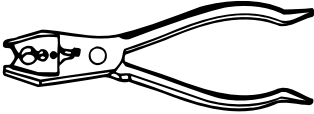
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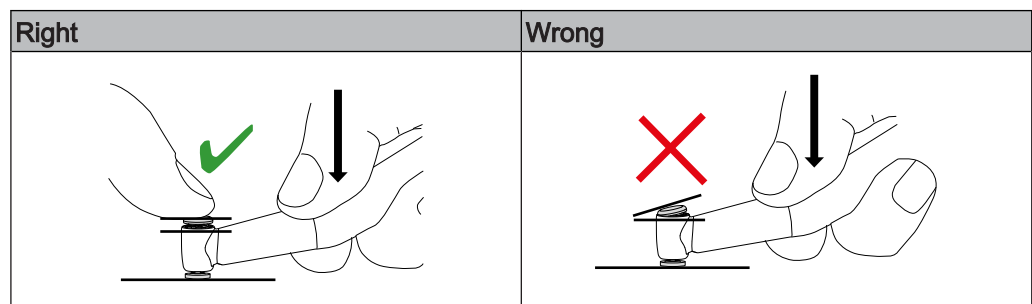
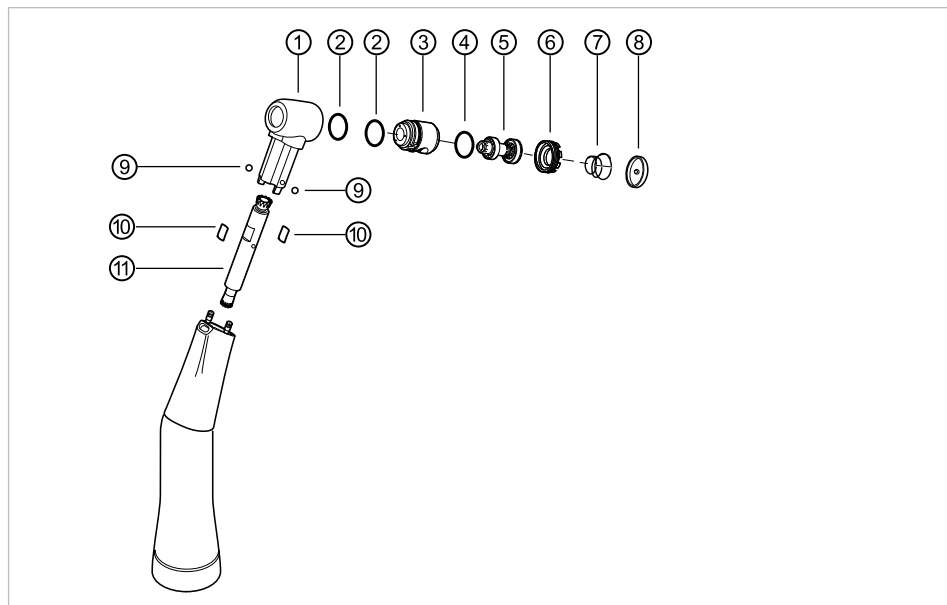
The present TI apply to the GENTLEpower LUX contra-angle handpiece 25 LP (Mat. no. 1.001.2849).

2 Disassembly

2.1 Disassembly of the GENTLEpower LUX Angle Piece 25 LP

2.1.1 Disassembling the head

Tool	Description
	Ejector (Mat. no. 1.001.3286)
	Wrench (Mat. no. 1.001.3288)
	Universal bit holder (Mat. no. 1.002.4577)
	Torque handle (Mat. no. 1.002.4578) with 100 Ncm
	Circlip pliers (Mat. no. 0.411.2421)


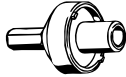

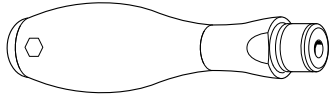



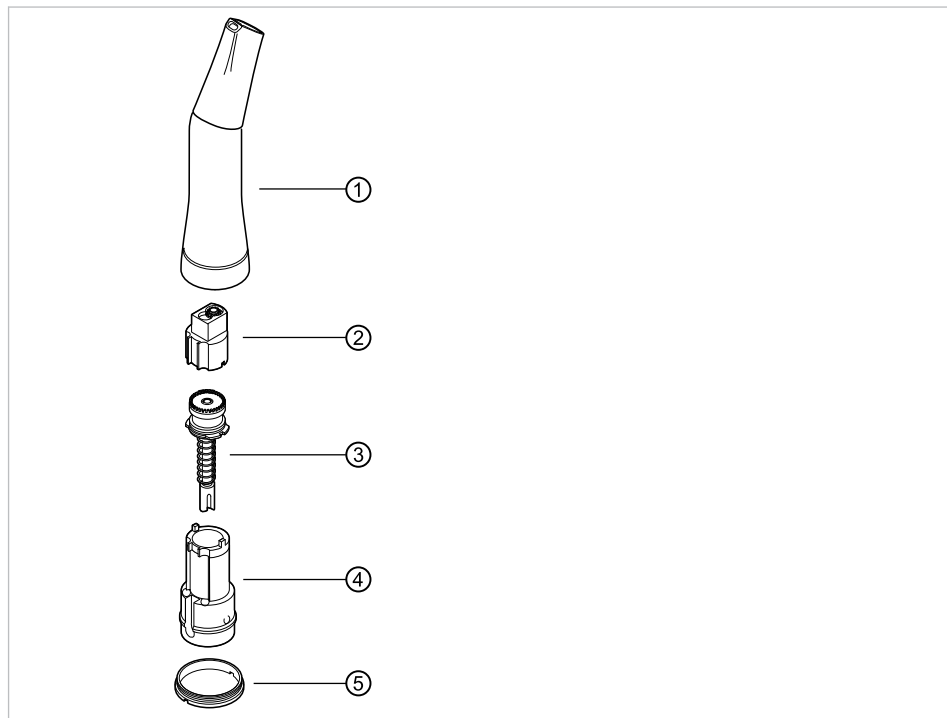
- ▶ Place the ejector on a level support and hold the pushbutton ⑨ with your thumb and press it off.
- ▶ Remove the conical spring ⑦.
- ▶ Unscrew the cover ⑥ in counterclockwise direction using the wrench, the universal bit holder and the torque handle.

2 Disassembly | 2.1 Disassembly of the GENTLEpower LUX Angle Piece 25 LP

- ▶ Pull the head casing ① and the adapter ⑩ forward and out and remove the two balls ⑨.
- ▶ Use the circlip pliers to twist the adapter ⑩ slightly and remove it from the head casing ①, then remove the two springs ⑩.
- ▶ Slide the spray insert ③ out of the head casing ①.
- ▶ Remove the drive axle ⑤ and spring washer ④ from the spray insert ③.
- ▶ Remove two O-rings ②.


2.1.2 Removing the insert and gear from the elbow sleeve

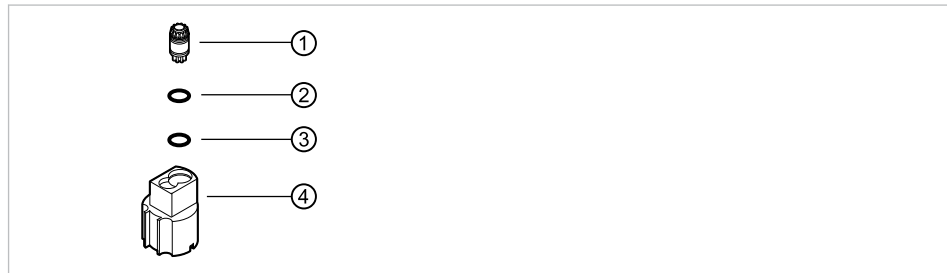
Tool	Name
	Assembly pliers (Mat. no. 0.411.3921)
	Wrench (Mat. no. 0.411.1881)
	Universal bit holder (Mat. no. 1.002.4577)
	Torque handle (Mat. no. 1.003.1524) 180 Ncm
	Clamping sleeve (Mat. no. 0.411.4451)



- ▶ Take hold of the elbow sleeve ① with the circlip pliers and turn the wrench, universal bit holder and torque handle anticlockwise to unscrew the threaded ring ⑤.
- ▶ Slide the adapter sleeve into the insert ④ and push the spring pin into place.
- ▶ Pull the insert ④ out of the elbow sleeve ① and remove the adapter sleeve.
- ▶ Push the bearing cartridge ② and axle ③ right back and out.
- ▶ Remove the axle ③ from the bearing insert ②.



2.1.3 Disassembling the bearing cartridge

Tool	Name
	Tweezers (Mat. no. 0.308.1410)



- ▶ Pull the intermediate drive ① out of the bearing cartridge ④.
- ▶ Use tweezers to remove O-ring ② and O-ring ③.

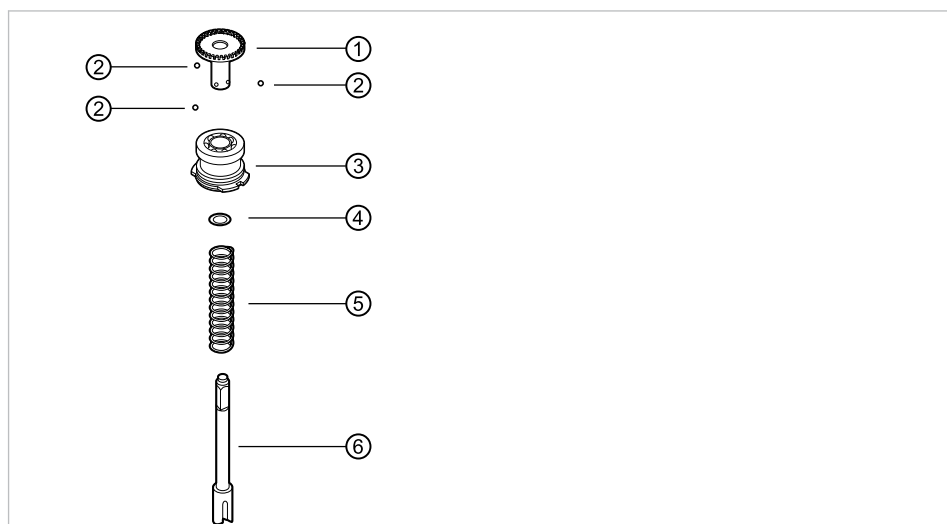
2.1.4 Disassembling the axle

Tool	Description
	Insert for spur gear assembly tool
	Mount for spur gear assembly tool



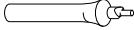
Note

The spur gear assembly tool (Mat. no. 1.002.3898) comprises the insert, the mount and the reducing shank.



- ▶ Push the driver axle ⑥ into the insert, slide the mount over it and screw to the insert.
- ▶ Carefully pull the spur gear ① out of the system bearing ③ and take out the three balls ②.
- ▶ Unscrew the mount from the insert and remove the system bearing ③, washer ④ and spring ⑤ from the driver axle ⑥.

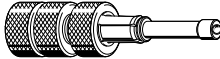
2.1.5 Disassembling the insert

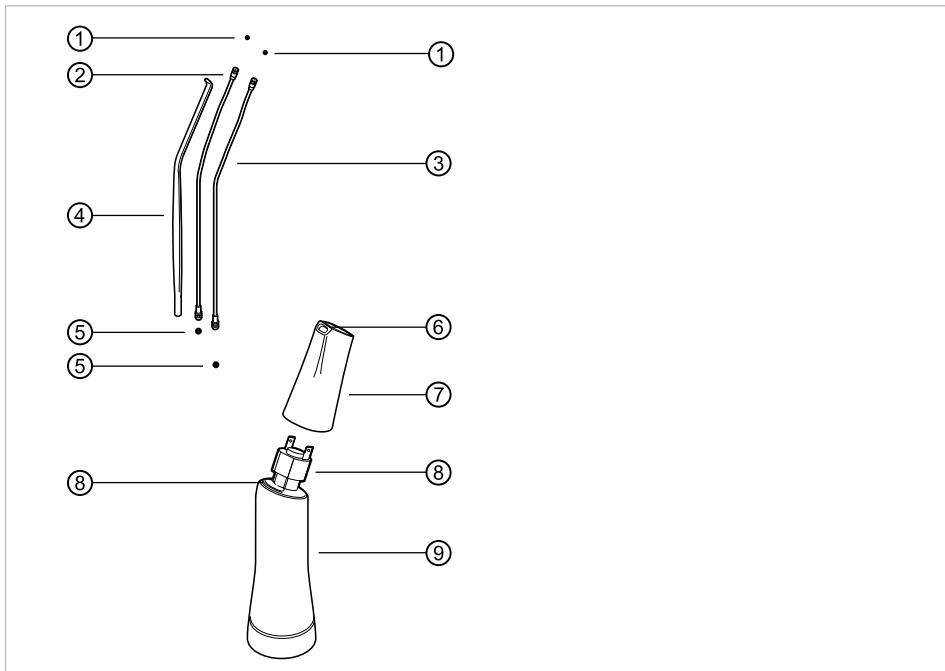
Tool	Name
	Wrench (Mat. no. 1.002.0321)



- ▶ Take out the slide ② and pressure spring ①.
- ▶ Unscrew the filter ③ with the wrench and remove the O-ring ④.

2.1.6 Disassembling the elbow sleeve

Tool	Name
	Puller (Mat. no. 1.002.7470)



Note

Take care not to damage the fibre-optic conductor when disassembling the elbow sleeve.

- ▶ Use a hot-air blower to heat up the glued joint on the fibre-optic conductor ⑥ and the glued joints on the elbow sleeve ③.
- ▶ Insert the puller into the front of the spray sleeve ⑦, force the tension tabs apart with the swivel and slowly screw in the threaded spindle of the puller to loosen and extract the spray sleeve ⑦.
- ▶ Screw back the threaded spindle of the puller and remove the puller.

- ▶ Pull the fibre-optic conductor ④, spray pipe ② and spray pipe ③ forward and out of the elbow sleeve ⑨.
- ▶ Remove the two O-rings ① and the two O-rings ⑤.

3 Assembly

3.1 Assembly of the GENTLEpower LUX Angle Piece 25 LP

3.1.1 Assembly instructions

Material numbers for spare parts are listed in the separate spare parts sheet.

See also:



- ▣ Spare parts list for the GENTLEpower LUX Angle Piece 25 LP

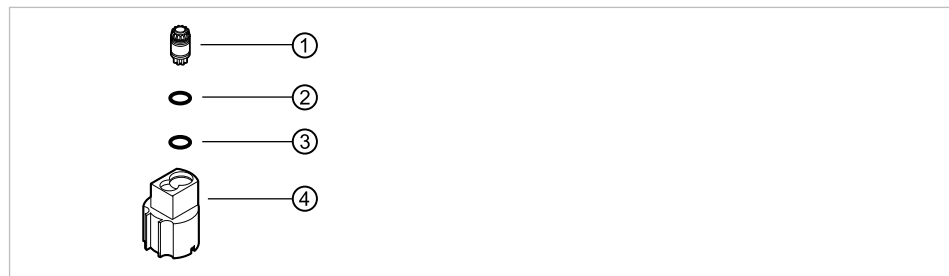
Requirement
 All parts must be cleaned thoroughly.
 Glued joints must be clean; there must be no traces of grease or adhesive residue.
 Check air and water hoses for free passage.



Note
 Once assembled, the contra-angle handpiece has to be sprayed thoroughly with KAVOspray.

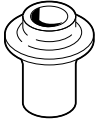

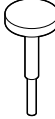
3.1.2 Assembling the bearing cartridge

Tool	Name
	Mounting device A (Mat. no. 1.002.3804)
	Mounting device B (Mat. no. 1.002.3802)



- ▶ Apply a thin layer of grease to the O-ring ③, insert into the groove on mounting device A, pull back the slide on mounting device A and hold in place.
- ▶ Insert mounting device A into the drilled hole on the bearing sleeve ④ and slide the O-ring ③ into the first groove on the bearing sleeve.
- ▶ Apply a thin layer of grease to the O-ring ②, insert into the groove on mounting device B, pull back the slide on mounting device B and hold in place.
- ▶ Insert mounting device B into the drilled hole on the bearing sleeve ④ and slide the O-ring ② into the second groove on the bearing sleeve.
- ▶ Push the intermediate drive ① into the bearing sleeve ④ as far as the stop.

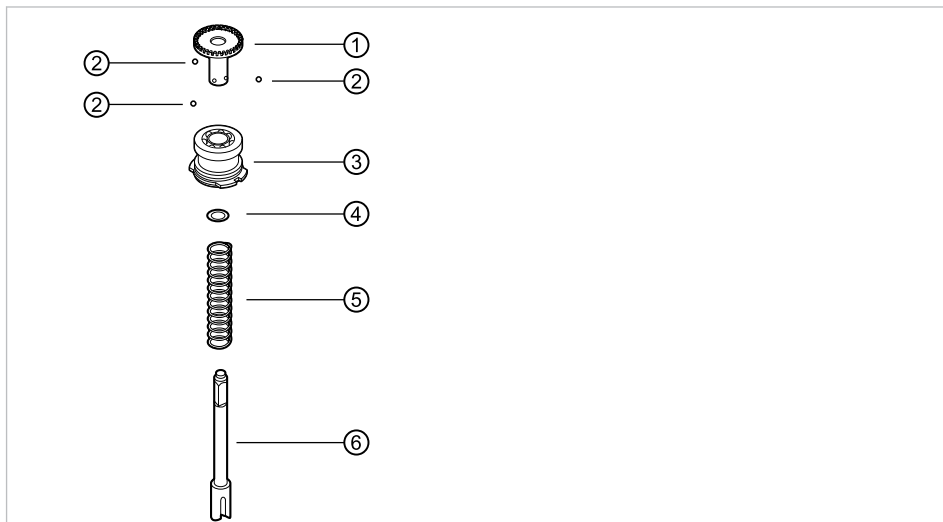
3.1.3 Assembling the axle

Tool	Description
	Insert for spur gear assembly tool
	Mount for spur gear assembly tool
	Spur gear assembly tool reducing shank



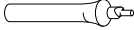
Note

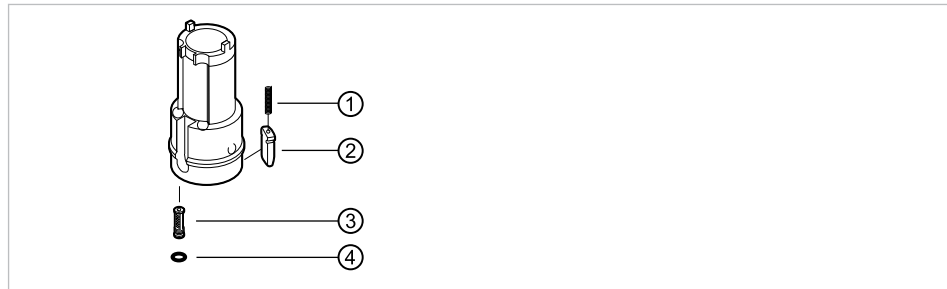
The spur gear assembly tool (**Mat. no. 1.002.3898**) comprises the insert, the mount and the reducing shank.



- ▶ Place the spring ⑤ on the driver axle ⑥ and push into the insert.
- ▶ Push the reducing shank through the mount and attach the system bearing ③ and washer ④ to the reducing shank.
- ▶ Screw the mount to the insert and take off the reducing shank.
- ▶ Place the spur gear ① on the driver axle ⑥ (make sure that the ball drilled holes and the surfaces line up).
- ▶ Grease the ball drilled holes and insert three balls ②.
- ▶ Push the spur gear ① into the system bearing ③.
- ▶ Unscrew the mount from the insert.




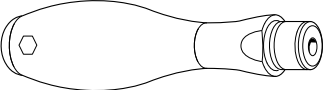
3.1.4 Assembling the insert


Tool	Name
	Wrench (Mat. no. 1.002.0321)

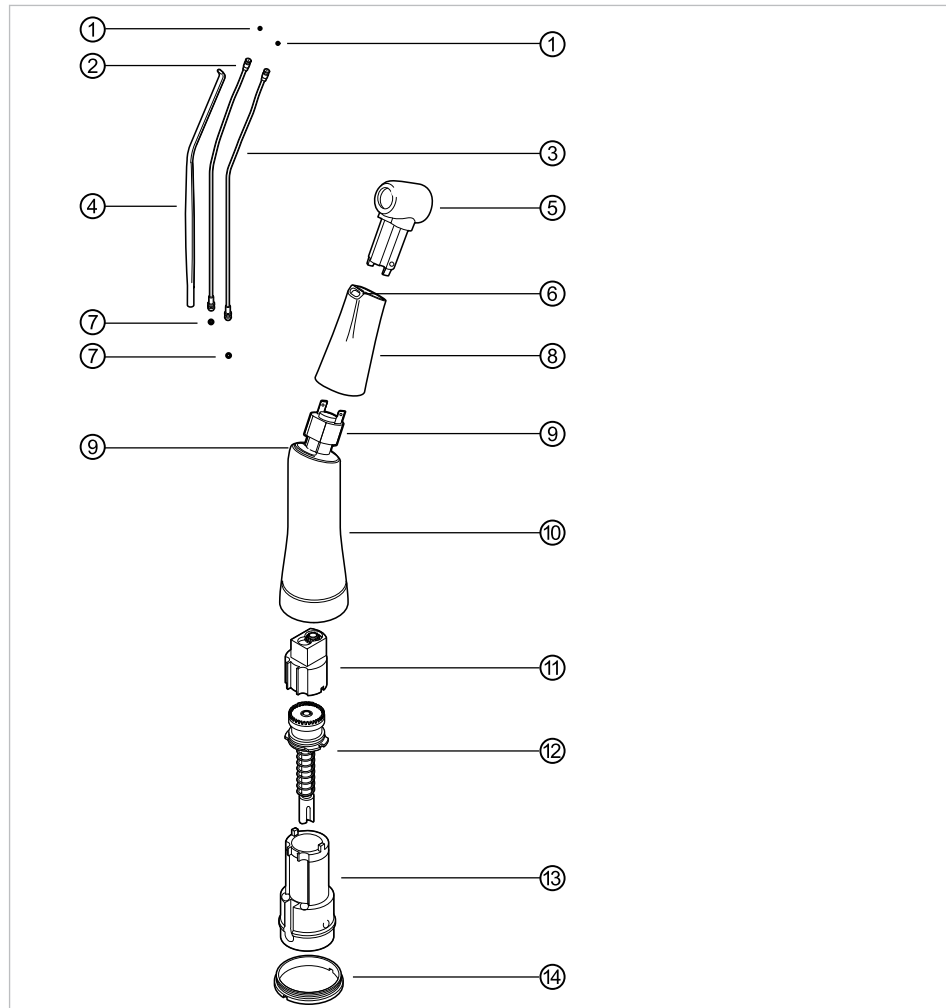


- ▶ Insert the slide ② and pressure spring ①.
- ▶ Place the O-ring ④ on the filter ③ and screw in all the way using the wrench.

3.1.5 Assembling the elbow sleeve

Tool	Description
	Loctite 648 adhesive (Mat. no. 0.359.2061)
	Wrench (Mat. no. 0.411.1881)
	Universal bit holder (Mat. no. 1.002.4577)
	Torque handle (Mat. no. 1.003.1524) with 180 Ncm

Tool	Description
	Loctite 306 adhesive (Mat. no. 0.359.2044)



Note

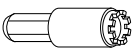


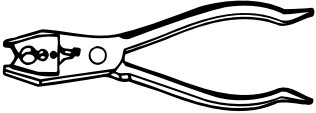
Do not glue spray pipes when gluing the fibre-optic conductor.

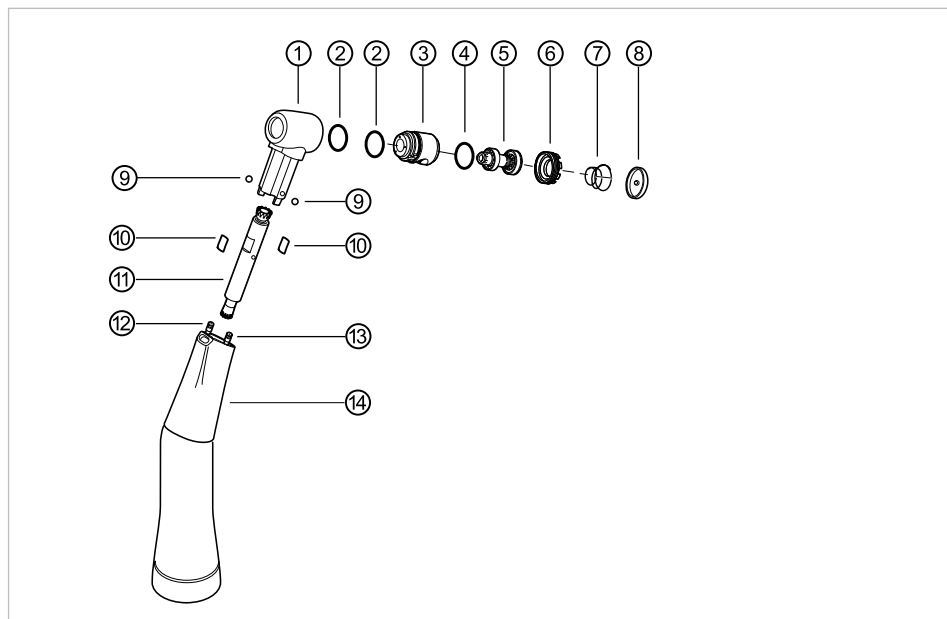
- ▶ Fit a new O-ring ① to the top of spray pipe ② and a new O-ring ① to the top of spray pipe ③.
- ▶ Fit a new O-ring ⑦ to the bottom of spray pipe ② and a new O-ring ⑦ to the bottom of spray pipe ③.
- ▶ Push the head casing ⑤ into the conical sleeve ⑥ to insert spray pipe ② and spray pipe ③ into the head casing ⑤.
- ▶ Insert the fibre-optic bundle ④ into the conical sleeve ⑥ and slide over spray pipe ②, spray pipe ③, and head casing ⑤.
- ▶ Apply a layer of Loctite 648 to the glued joints ⑨ on the elbow sleeve.
- ▶ Attach the conical sleeve ⑧ to the elbow sleeve ⑩ and wipe off any excess adhesive.
- ▶ Carefully push the axle ⑫, bearing cartridge ⑪ and insert ⑬ all the way into the elbow sleeve ⑩.
- ▶ Screw the threaded ring ⑭ into the elbow sleeve ⑩ and tighten to 180 Ncm with the wrench, the universal bit holder and the torque handle.

3 Assembly | 3.1 Assembly of the GENTLEpower LUX Angle Piece 25 LP

- ▶ Place the contra-angle handpiece in a hot-air furnace and allow the adhesive 30 minutes to set at 120 °C.
- ▶ Remove the head casing ⑤ from the sleeve ③ again.
- ▶ Use Loctite 306 adhesive to fix the inside of the spray sleeve ⑧ to position ⑥ and the fibre-optic bundle ④ making sure that the fibre-optic bundle is situated such as to be flush at the front. Remove any residual adhesive from the end of the fibre-optic bundle.
- ▶ Place the angle piece in a hot-air furnace and allow the adhesive to set for 30 minutes at 120 °C.

3.1.6 Assembling the head

Tool	Description
	Wrench (Mat. no. 1.001.3288)
	Universal bit holder (Mat. no. 1.002.4577)
	Torque handle (Mat. no. 1.002.4578) with 100 Ncm
	Circlip pliers (Mat. no. 0.411.2421)



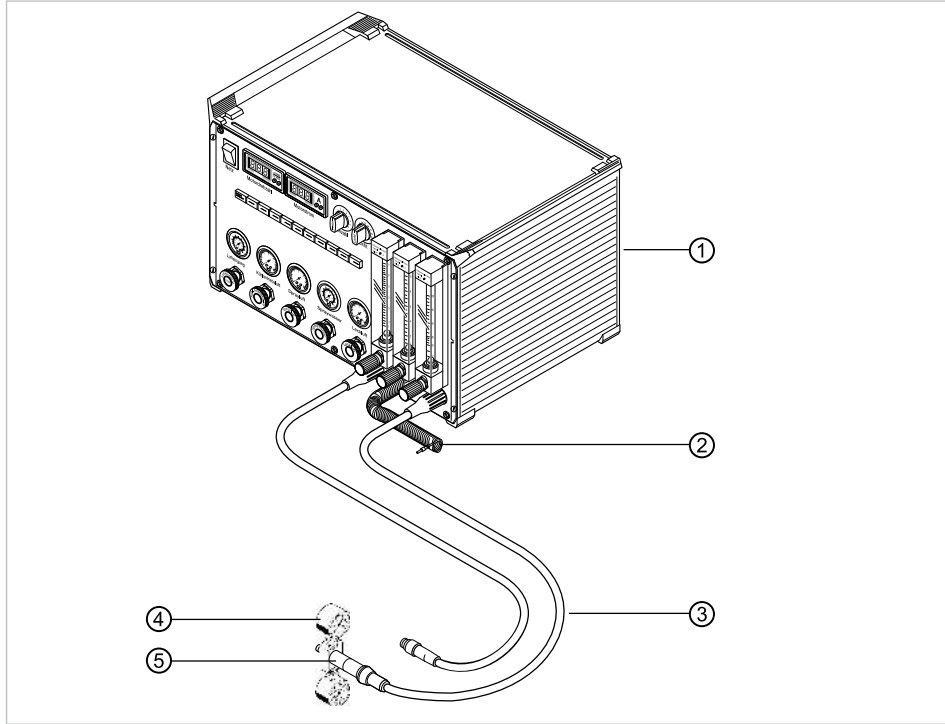
- ▶ Fit one O-ring ② in the groove on the spray insert ③ and one in the attachment of the spray insert ③.
- ▶ Insert the spring washer ④ and drive axle ⑤ into the spray insert ③.
- ▶ Insert the spray insert ③ into the head casing ①.
- ▶ Screw the cover ⑥ into the head casing ① and tighten with a torque of 100 Ncm with the wrench, the universal bit holder and the torque handle.

- ▶ Insert the conical spring ⑦ with the larger diameter in the direction of the pushbutton ⑧ in the head casing ⑤ and push the pushbutton ⑧ down perpendicularly up to the snap-in connection.
- ▶ Insert the two springs ⑩ with their curvature upwards into the milled edges on the adapter ⑪.
- ▶ Use the circlip pliers to slide the adapter ⑪ into the head casing ①, lining up the drilled holes for the balls at the same time.
- ▶ Insert the two balls ⑨ into the drilled holes for the balls in the head casing ①.
- ▶ Pull spray pipe ⑫ and spray pipe ⑬ out slightly and insert the head casing ① all the way. Make sure that spray pipe ⑫ and spray pipe ⑬ are inserted all the way into the head casing ①.
- ▶ Push the head casing ① into the sleeve ⑭ until it snaps into place.

4 Testing

4.1 Testing the GENTLEpower LUX Angle Piece 25 LP

4.1.1 Test set-up



- ① Test device 2182 KL (Mat. no. 0.411.8540)
- ② Leakage air hose
- ③ Motor hose
- ④ Pressure gauge (Mat. no. 1.003.1050)
- ⑤ Motor

4.1.2 Test instruction




Note

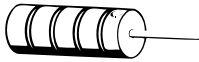


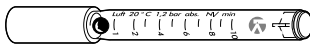
The following evidence must be documented:

- Customer's address and repair dates
- Material number or sales number of the product
- Serial number of the product
- Spare parts material numbers
- Name, date, signature or personnel number of repair/test engineer

Requirement

- Amount of cooling air: 28 ± 4 NI/min
 - Drive speed: max. 40,000 rpm
- The pressures are set on the test device.

Test equipment	Name
	Test drill (Mat. no. 0.410.1702)

Test equipment	Name
	Retention force gauge (Mat. no. 0.411.4601)
	Push-button tester (Mat. no. 1.003.3571)
	Spray test drill (Mat. no. 0.410.1933)
	Meter tube (Mat. no. 0.411.4441)

Testing	Test equipment	Procedure
Check repair documents and ID		Check product markings, type and serial number.
Carry out a visual inspection		Carry out a general visual inspection of external condition. There should be no visual evidence of damage. There should be no spots on the fibre-optic bundle.
Check instrumentation connection	<ul style="list-style-type: none"> Motor 	Connect the angle piece to the motor coupling and pull off. The connection should be made, lock and disconnect with ease.
Check chuck	<ul style="list-style-type: none"> Test drill 	Insert the test drill into the chuck and pull out. There are no obstructions to insertion and removal.
	<ul style="list-style-type: none"> Retention force gauge 	Use a retention force gauge to measure the axial retention force of the chuck. Axial retention force: at least 17 N
Check pushbutton	<ul style="list-style-type: none"> Pushbutton tester 	Insert the pushbutton tester into the chuck system and push it as far as the stop. The pushbutton must remain depressed.
Check running characteristics	<ul style="list-style-type: none"> Motor 	Run the angle piece under test conditions CW and CCW with radial and axial load. There should be no noticeable vibrations or running noise. Under axial load, the adapter does not graze the pushbutton and the pushbutton does not heat up.

4 Testing | 4.1 Testing the GENTLEpower LUX Angle Piece 25 LP

Testing	Test equipment	Procedure
Check concentricity	<ul style="list-style-type: none"> ▪ Test drill 	Run the angle piece with test drill off-load at 200,000 rpm. There should be no noticeable vibrations or running noise.
Check power consumption	<ul style="list-style-type: none"> ▪ Test drill 	Measure the power consumption under test conditions with head and test drill. Power consumption: max. 150 mA
Check seals	<ul style="list-style-type: none"> ▪ Leakage air hose 	Pressurize the media chamber with compressed air (2 bar) and pressure-test the spray drilled hole for 15 seconds. The compressed air must remain constant.
Run a spray test	<ul style="list-style-type: none"> ▪ Spray test drill 	Carry out a visual inspection of the spray mist. The spray jets should hit the ball of the spray test drill.
	<ul style="list-style-type: none"> ▪ Test device 	Measure air and water quantity under test conditions. Air quantity: at least 2.5 NI/min. Water quantity: at least 50 ml/min.

