Content

1 General informations for disassembling the modulate pilot valve (piston)

2 Purpose

The documentation describes the disassembly of the modulate action pilot valve with piston. The description contains every single working step, supplies, tools and appliances.

3 Competences

The generation, maintenance and distribution of the documentation takes place in the organisation department. The defaults will be generated by the technical department in consultation with the final assembly department and production planning department.

4 Scope

This document must be applied to the dismantling of a Pilot Operated Safety Valve in agencies and subsidiaries of LESER GmbH & Co. KG, customers and independent service center.

5 Disclaimer

LESER puts in a great deal of effort into making up-to-date and correct documentation available. Nevertheless, LESER GmbH & Co. KG gives no guarantee that the recommended actions presented here are entirely correct and error free.
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6 Qualified fitting personnel

LESER safety valves may only be dismantled by trained or qualified fitters. The qualifications must be obtained through the appropriate training measures.

7 Remarks

Gloves must be worn during the entire dismantling process.

8 Basic safety guidelines

Dangerous media

Poisoning, caustic burns, burns, injuries
• Use suitable protective devices
• Use suitable collecting tanks.
• Wear suitable protective equipment.

Foreign bodies in the safety valve

Danger from failure of safety valve or leaks
• Flush the system before installation of a safety valve.
• Check the safety valve for foreign objects.
• Remove foreign objects

Bug screen is damaged or missing *(B or option)*

Dirt, objects or insects get into the safety valve. Danger from malfunction of the safety valve.
• Install the bug screen correctly.
• Check the bug screen regularly.

Ambient temperature is too high

Material expansion. Danger from malfunction of the safety valve.

Ambient temperature is too low

Icing, freezing vapours, reduced flow rate due to congealing media. Danger from functional disruption of the safety valve.

Abrasive or corrosive media

Moving parts jam or become stuck. Danger from functional disruption of the safety valve.
• Service the safety valve after each time it opens.

Media with high proportion of particles

(only B)

Deposits and clogging. Danger from malfunction of the safety valve.
• Use a filter with the correct mesh size.
• Use additional filters to increase the filter capacity.

Residual media in the safety valve

Poisoning, caustic burns, burns, injuries
• Wear suitable protective equipment.
• Remove residual media

WARNING

Leaky safety valve
Danger from leaking media due to damaged
gaskets and sealing surfaces.
• Protect the safety valve against vibrations and blows especially during transport and installation.
• Check safety valve regularly for leaks.

Open bonnet or spindle guides

Danger from leaking media
• Make sure that no danger can arise from leaking media.
• Keep a safe distance.
• Wear suitable protective equipment.

CAUTION

Hot medium

Burns or scalding.
• Wear suitable protective equipment.

Hot surfaces
Burns.
• Wear suitable protective equipment.

Aggressive medium

Caustic burns.
• Wear suitable protective equipment.

Open bonnet or spindle guides

Pinching danger from moving parts.
• Install suitable safeguards.

Sharp edges and burrs

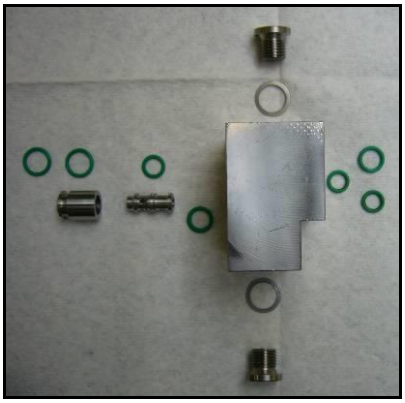
Danger of injury.
• Wear safety gloves.
• Handle the safety valve carefully

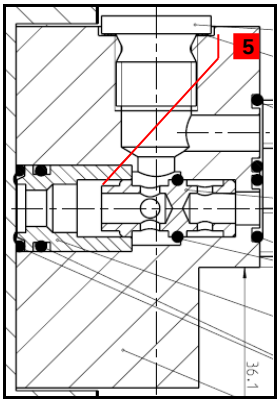
High noise emission

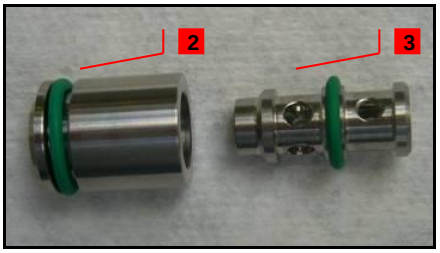
Hearing damage.
Wear ear protection.

9 Assembly instructions

9.1 Assembly of the manifold block







1. Steps – Descriptions

1 Screw in lock screw [24.7] with gasket [24.8] into manifold block [24.1]

2 Complete bushing [24.2] with O-ring [24.5] (O-ring is 10,82 x 1,78)

3 Complete piston [24.3] with O- ring [24.4] (O-ring is 7,65 x 1,78).

Without soapy water!

4 Complete manifold block [24.1] with piston [24.3], bushing [24.2] and O-rings
2 x 7,65 x 1,78;
2 x 9,25 x 1,78;
1 x 10,82 x 1,78;

5 Consider correct alignment of piston

Check the ease of movement of piston by rotating manifold block

2. Supplies

Soapy water [24.5]
Lubricate components acc. to LID

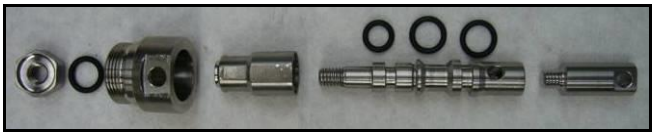
3. Tools

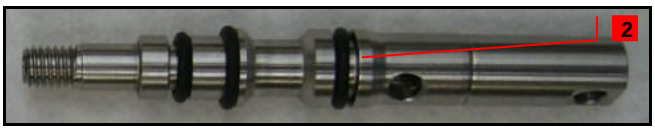
Allen key acc. to LID
Hook tool for O-rings
Torque wrench (Tightening torques acc. to LID)

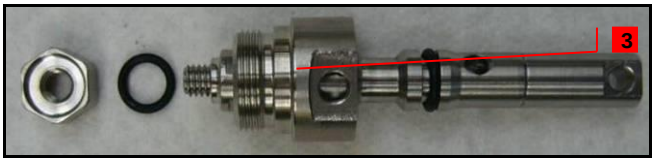
4. Appliance

Parallel vice with aluminium jaws
Test bench

Assembly of the seat unit







1. Steps – Descriptions

1 Screw (lower) disc, exhaust [11] together with (lower) disc exhaust, extension [45]

Cover O-ring (30 below + 34) with soapy water

2 Pull O-rings (30 below, 31, 34) on (lower) disc exhaust [11]

Caution: Do not mix up O-rings (31) with PTFE-coating with O-rings (30 lower)!
Make sure that O-rings are twist free

3 Stick (lower) disc, feeding [8] and seat feeding [5] on (lower) disc exhaust [11), put the O-ring [30 upper] on (lower) disc, feeding [8] screw together with (upper) disc feeding [7]
4 After assembly there has to be a gap between (lower) disc, feeding [8] and (upper) disc feeding [7].
Make sure that O-rings are twist free

2. Supplies

Soapy water
Lubricate components acc. to LID

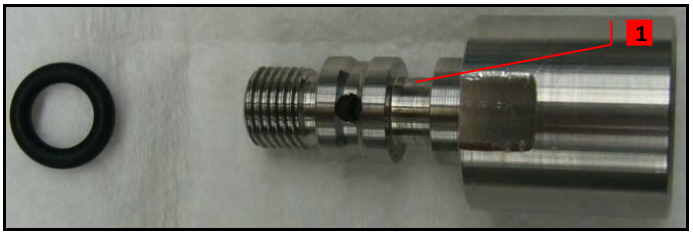
3. Tools

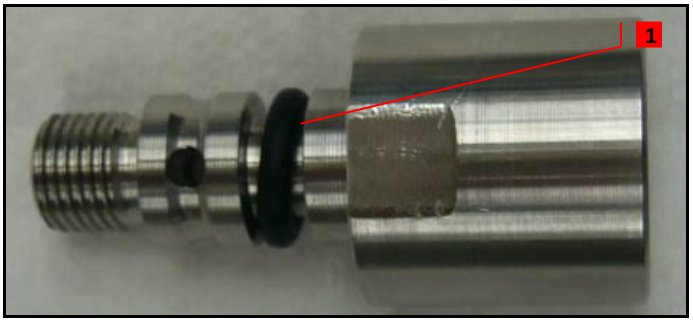
Helpful: O-ring-mounting aid (30 + 34)
Hook tool for O-rings
Drift pin
Open-end wrench acc. to LID
Torque wrench (Tightening torques acc. to LID)

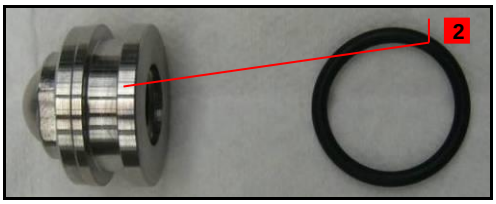
4. Appliance

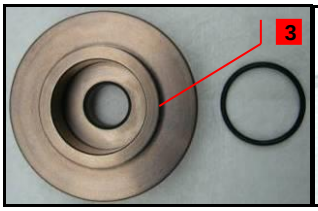
None

9.2 Assembly of the O-ring 32 + 33 + 46









1. Steps – Descriptions

As from 100 bar, mount additional back up rings (81 + 82)!

1 Cover O-ring [32] (O-ring is 7,59 x 2,62) with soapy water pull O-ring on piston [41]

2 Cover O-ring [33] (O-ring is 20,29 x 2,62) with soapy water and pull O-ring on piston, upper [47]

3 Cover O-ring [46] (O-ring is 21,95 x 1,78) with soapy water and pull O-ring on guide bush [2]

Make sure that O-rings are twist free

2. Supplies

Soapy water
Lubricate components acc. to LID

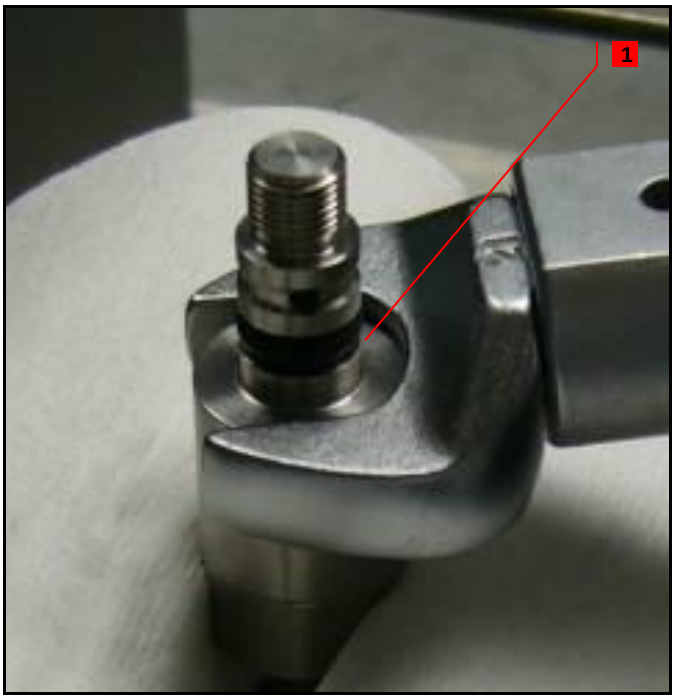
3. Tools

Helpful: O-ring mounting aid [32]
Hook tool for O-rings
Torque wrench (Tightening torques acc. to LID)

4. Appliance

None

9.3 Assembly of the piston and seat unit



1. Steps – Descriptions

Remove protection cap of piston [41] - if necessary

Place disc/seat unit –out of 9.2- in parallel vice with aluminium jams

1 Screw piston [41] on seat unit –out of 9.2

2. Supplies

Halocabon 56S
Lubricate components acc. to LID

3. Tools

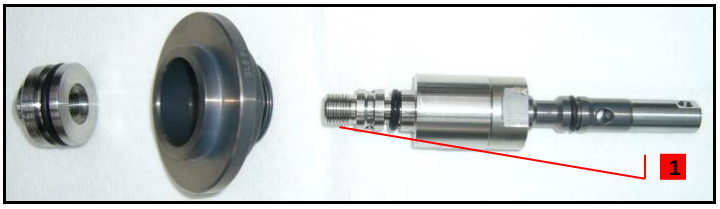
Open-end wrench acc. to LID
Torque wrench (Tightening torques acc. to LID)

4. Appliance

Parallel vice with aluminium jaws

9.4 Assembly of the seat/disc unit, guide bush and piston, upper

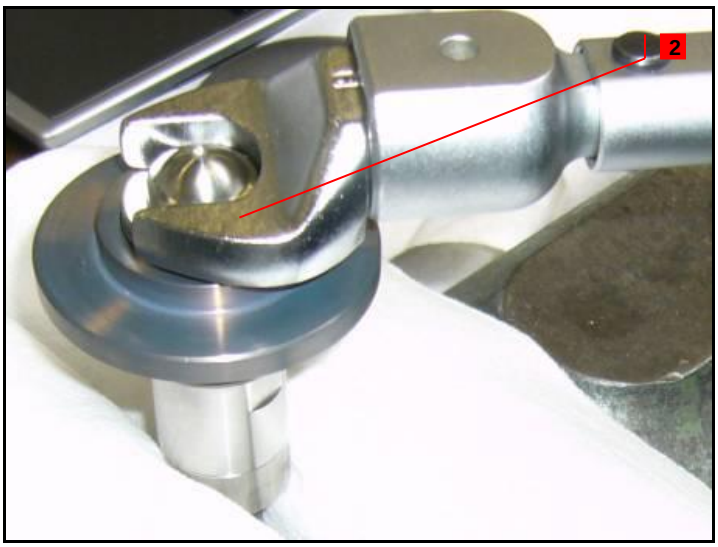
1. Steps – Descriptions



Cover O-ring [32] with soapy water

Place seat,piston unit in parallel vice with aluminium jams

1 Lubricate thread of piston [41]



Cover O-ring [33] with soapy water

2 Stick guide bush [2] on piston [41] and screw together with piston, upper [47]

2. Supplies

Soapy water
Molykote D Paste
Lubricate components acc. to LID

3. Tools

Open-end wrench acc. to LID
Torque wrench (Tightening torques acc. to LID)

4. Appliance

Parallel vice with aluminium jaws
Assembling aid

9.5 Insert disc, piston unit into the body

1. Steps – Descriptions

Blow out dust before assembly

Cover O-ring [31+46] with soapy water

1 Insert disc, piston unit carefully and completely into body [1]

Test the ease of movement

2. Supplies

Soapy water
Lubricate components acc. to LID

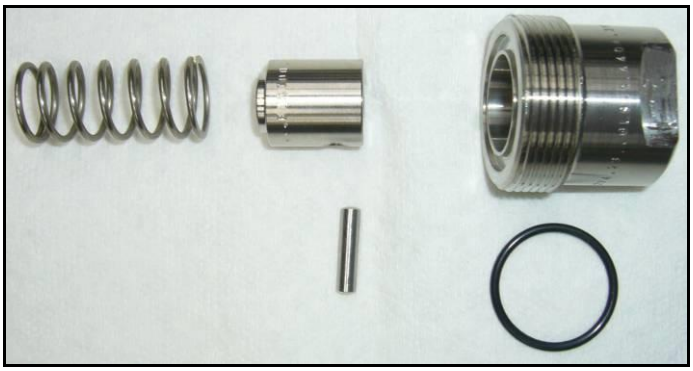
3. Tools

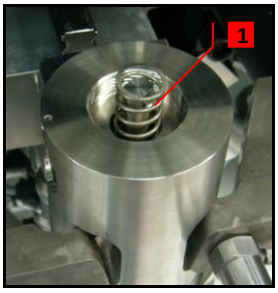
None

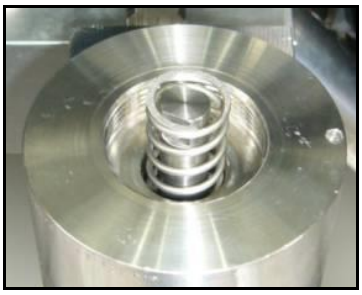
4. Appliance

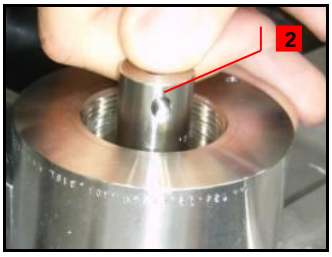
Test bench

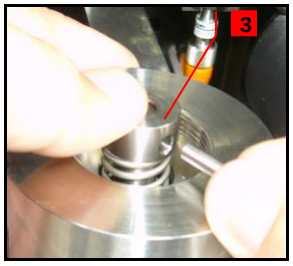
9.6 Closing the body´s bottom side

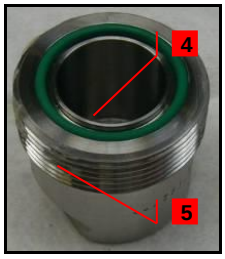


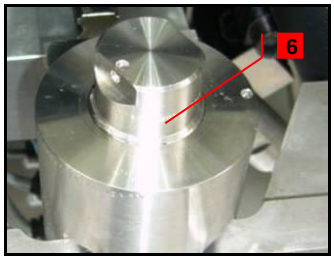












1. Steps – Descriptions

Spin body [1] by 180°

1 Insert return spring [42] into body [1]

2 Put coupling [43] on lower end of spring

3 Span return spring [42] with coupling [43] and save coupling by sticking parallel pin [44] into hole

4 Put O-ring [35] (O-ring is 21,95x1,78) into groove of plug [20]

5 Lubricate thread of plug [20]

6 Screw plug [20] and body [1] together

2. Supplies

Molykote D Paste
Lubricate components acc. to LID

3. Tools

Open-end wrench acc. to LID
Torque wrench (Tightening torques acc. to LID)

4. Appliance

Test bench

9.7 Assembly of the bonnet

1. Steps – Descriptions

1 Lubricate threat of adjusting screw [18]

2 Screw lock nut [19] on adjusting screw [18]

Check the ease of movement of adjusting screw [18]

3 Screw adjusting screw [18] approx. 15 mm into bonnet [9]

2. Supplies

Molykote D Paste
Lubricate components acc. to LID

3. Tools

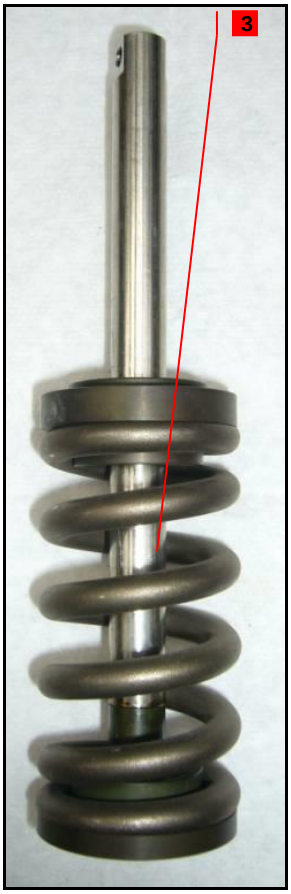
None

4. Appliance

None

9.8 Assembly of the spindle unit

1. Steps – Descriptions



1 Cover thread of spindle [12] with screw locking liquid Delo ML 5327

2 Screw spindle [12] and (lower) spring plate [17] together

3 Put on in that order: spring [54] (optional inner spring [53]), spring plate (upper) [16], needle bearing [69.2] (lubricate needle bearing) and washer [69.1]

2. Supplies

Screw locking liquid Delo ML 5327
Molykote D Paste
Lubricate components acc. to LID

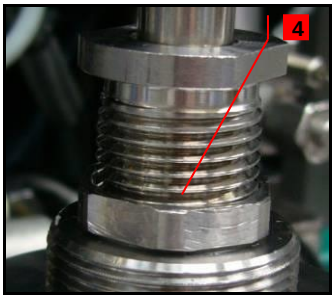
3. Tools

Drift pin
Torque wrench (Tightening torques acc. to LID)

4. Appliance

Parallel vice with aluminium jaws

9.9 Assembly of the bonnet and body



1. Steps – Descriptions

1 Lubricate thread of bonnet [9]

Put spindle unit on piston, upper unit and hold on

2 Put bonnet [9] over spindle unit and insert spindle into adjusting screw [18]

Screw on bonnet [9] - hand tight

3 Tighten bonnet

4 Screw lock nut (19) until 1 mm against bonnet

2. Supplies

Molykote D Paste
Lubricate components acc. to LID

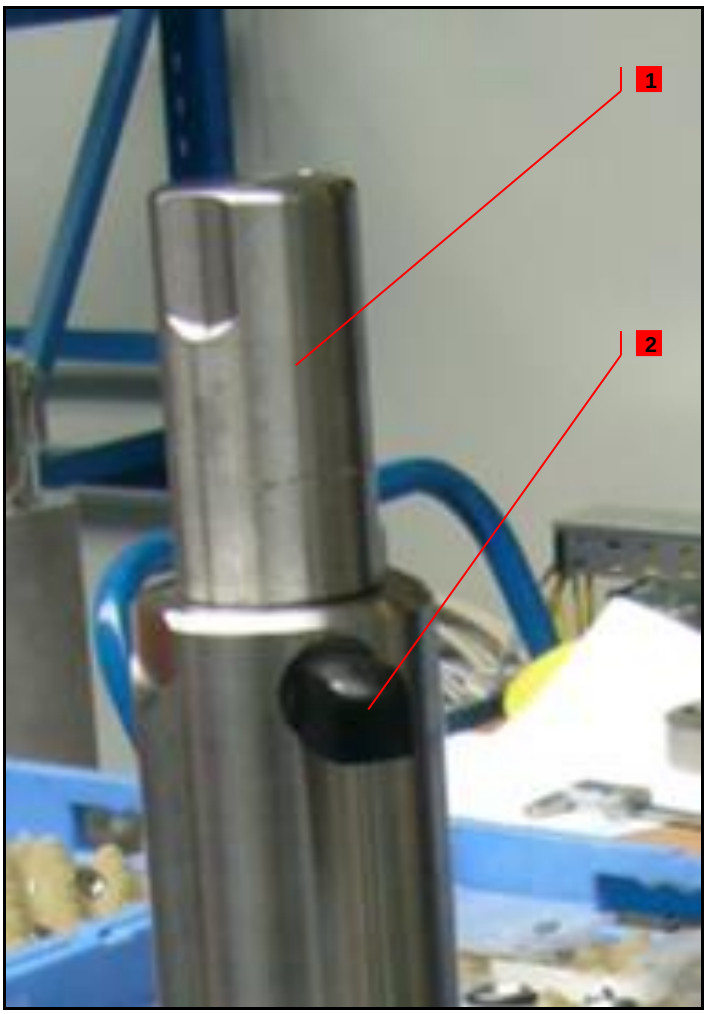
3. Tools

Open-end wrench acc. to LID
Torque wrench (Tightening torques acc. to LID)

4. Appliance

Test bench

9.10 Completion



1. Steps – Descriptions

1 Screw on cap [40] loosely

2 Screw in bug-screen [64]

Option Test Gag:
Screw short screw [TG.5] into cap [40] (finger tight)

2. Supplies

None

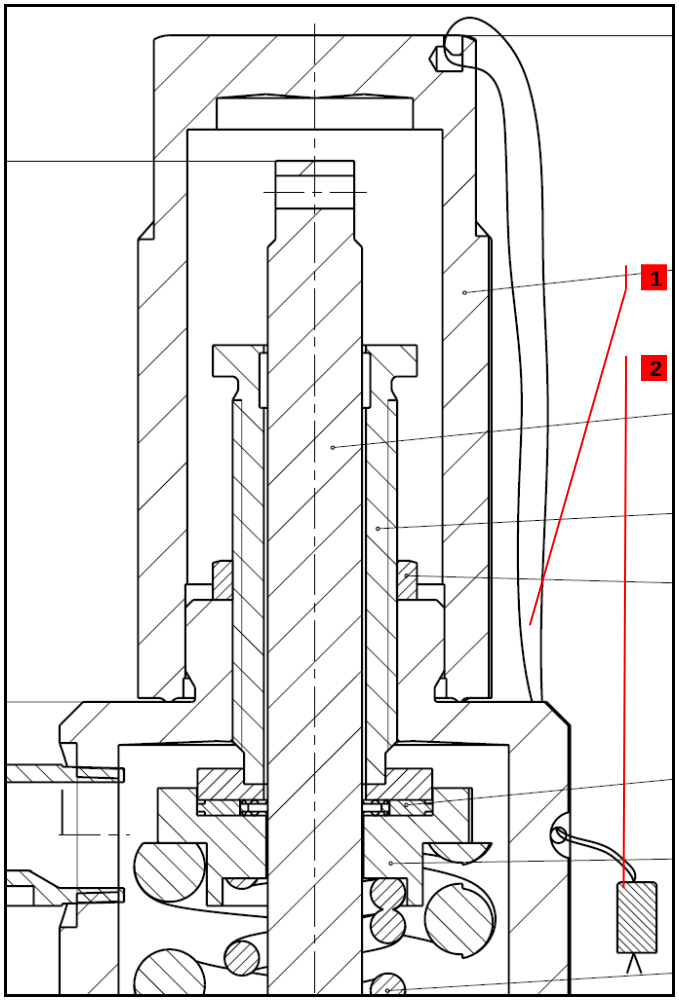
3. Tools

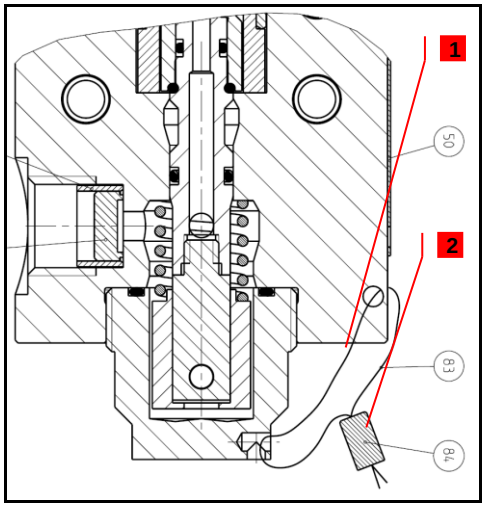
Open-end wrench acc. to LID
Torque wrench (Tightening torques acc. to LID)

4. Appliance

Test bench

9.11 Sealing the valve





1. Steps – Descriptions

Sealing after assembly and test with main valve!
Seal valve, if constructive possibility exists. Otherwise next workstation has to weld on sealing noses (cap; bonnet; body)

1 Connect sealing hole/ nose of cap and bonnet with wire tight and in clockwise

2 Close wire ends with seal

Note: In case of required certifications (TÜV etc.) sealing ensued after certification

2. Supplies

None

3. Tools

Sealing pliers

4. Appliance

None