Content

1 General information for assembling of main valve

2 Purpose

The documentation describes the assembly of the main valve series 810/820. The description contains every single working step, aids, 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, 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 assembly procedure

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

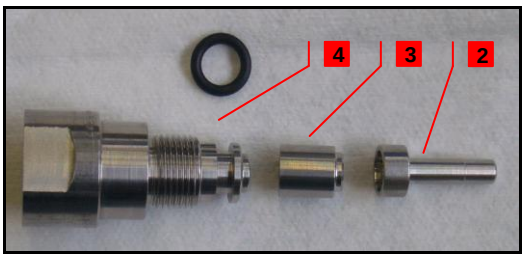
Danger of injury.
• Wear safety gloves.
• Handle the safety valve carefully

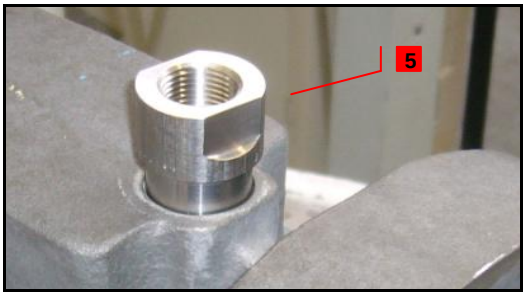
High noise emission

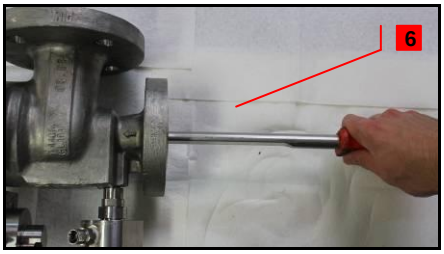
Hearing damage.
Wear ear protection.

9 Assembly instructions

9.1 Assembly of the pitot tube







1. Steps – Descriptions

1 Span body [1] with outlet on test bench

2 Insert pitot tube [2] in body [1]

3 Complete with tube [3] (depends on nominal size)

4 Cover O-ring [63] (O-ring is 9,19x2,62) with soapy water and pull on fitting [4]

Make sure that O-rings are twist free

5 Screw fitting [4] in body [1]

6 While tightening fitting [4], align pitot tube [2] in direction of inlet with pitot tube assembly tool

Make sure that inlet of pitot tube is aligned within approx. ± 5°

2. Supplies

Soapy water
Molycote D paste
Lubricate components acc. to LID

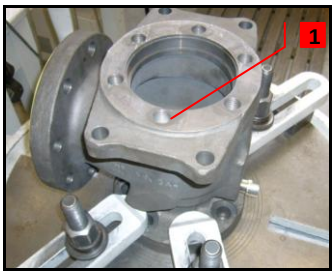
3. Tools

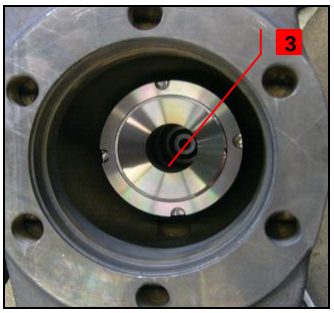
Hook tool for O-rings
Helpful: Pitot tube-assembly tool
Open-end wrench acc. to LID
Torque wrench (Tightening torques acc. to LID)

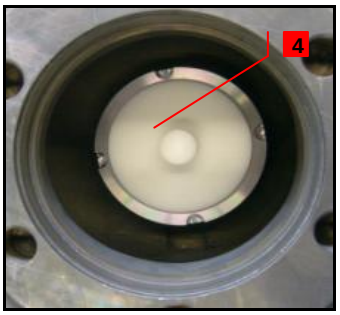
4. Appliance

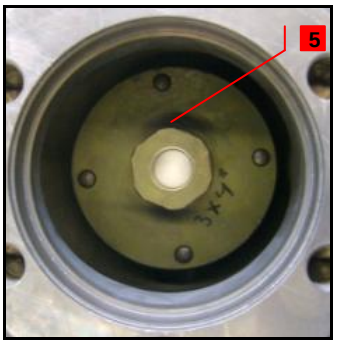
Test bench

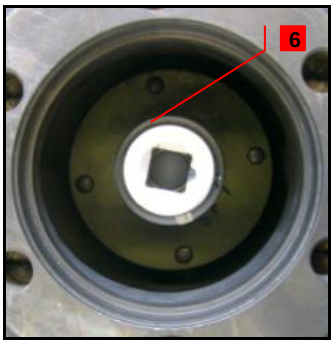
9.2 Assembly of the nozzle

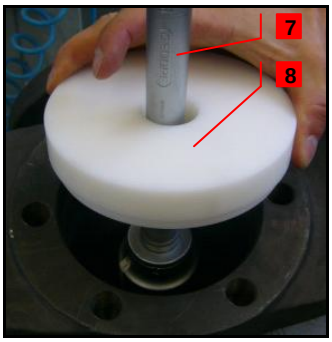


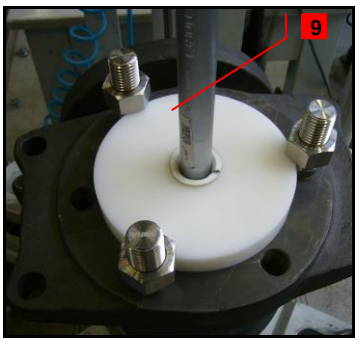












1. Steps – Descriptions

1 Mount the POSV with inlet

Pull O-ring [61] and back up ring [62] on nozzle [5]

Cover O-ring with soapy water

Make sure that O-rings are twist free

3 Screw nozzle [5] into body [1] by hand

Install nozzle assembly tool in that order: 4 protection cap; 5 adapter; 6 socket wrench; 7 socket extension; 8 guide; 9 fix guide with three nuts

Screw nozzle [5] in with torque wrench

2. Supplies

Molykote D Paste
Soapy water
Lubricate components acc. to LID

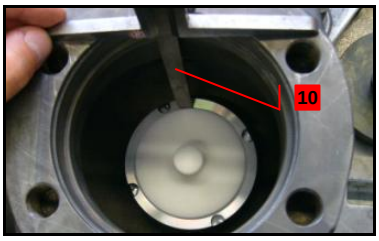
3. Tools

Nozzle-assembly tool acc nominal size
Depth caliper
Torque wrench with square drive ¾”
(Tightening torques acc. to LID)

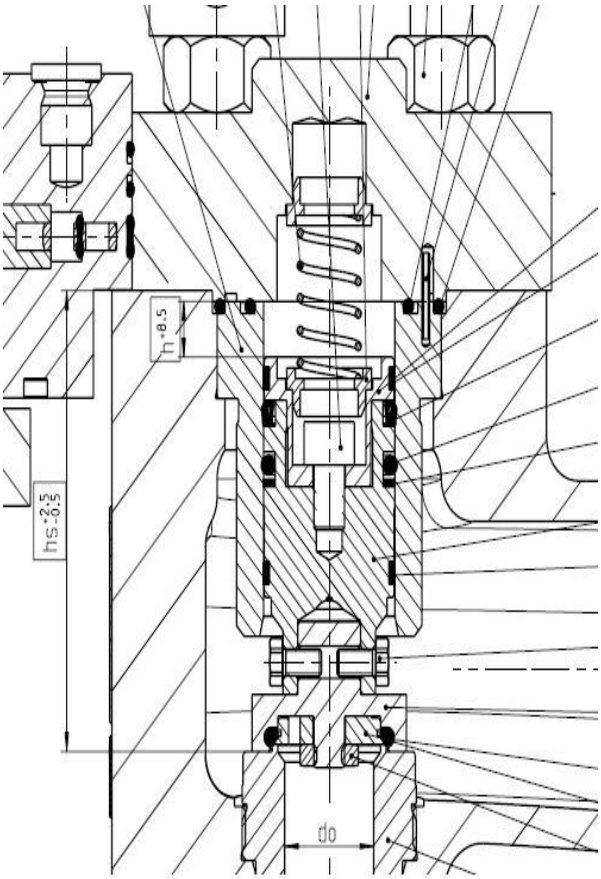
4. Appliance

Test bench

9.3 Assembly of the nozzle



1. Steps – Descriptions



10 Check nozzle projection h_s

Nominal size,Orifice	hs +2,5 / -0,5 [mm]
1x2“ D, E, F, G	85,3
1,5x2“ D, E, F, H	96,3
1,5x3“ G,H	106,8
1,5x3“ J	112,8
2x3“ G, H, J	115,8
2x3“ K+	120,8
3x4“ J, K, L	134,3
3x4“ N+	154,3
4x6“ L, M, N	167,3
4x6“ P	181,3
4x6“ P+	190,3
6x8“ Q, R	258,8
6x8“ R+	268,8
8x10“ T	324,3
8x10“ T+	334,3

2. Supplies

Molykote D Paste
Soapy water
Lubricate components acc. to LID

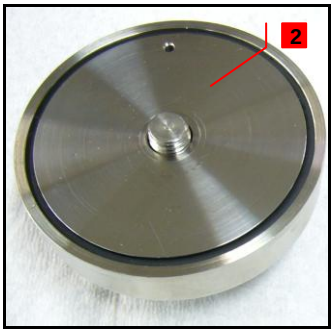
3. Tools

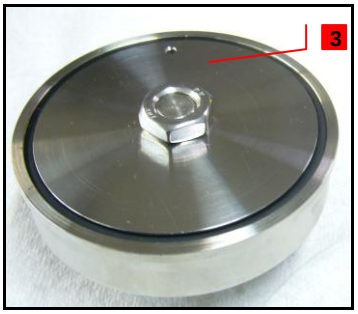
Nozzle-assembly tool acc nominal size
Depth caliper
Torque wrench with square drive ¾”
(Tightening torques acc. to LID)

4. Appliance

Test bench

9.4 Assembly of the O-Ring disc / stainless steel disc





1. Steps – Descriptions

Cover O-ring [7.3] with soapy water

1 Place O-ring [7.3] into disc [7.1]

Make sure that O-ring is twist free

2 Place disc retainer [7.2] into disc [7.1]

3 Screw on nut [7.4]

Secure nut by two prick punches

2. Supplies

Soapy water
Lubricate components acc. to LID

3. Tools

Ring wrench acc. to LID
Torque wrench (Tightening torques acc. to LID)

4. Appliance

None

9.5 Assembly of the piston and back up ring

1. Steps – Descriptions

1 Put piston top [6.2] and piston body [6.1] with O-ring [6.3] and back up ring [6.4] together

2 Lubricate O-ring and guide rings [6.5] with Halocarbon 56 S acc. to LID

3 Screw piston top [6.2] and piston body [6.1] together with allen head screws [6.6]

2. Supplies

Halocarbon 56 S
Lubricate components acc. to LID

3. Tools

Torque wrench with allen key acc. to LID
Torque wrench (Tightening torques acc. to LID)

4. Appliance

Parallel vice with aluminium jaws

9.6 Assembly of the luproseal OC R20

1. Steps – Descriptions

1 Put piston top [6.2] and piston body [6.1] with luproseal lip seal [6.3] together

3 Screw piston top [6.2] and piston body [6.1] together with allen screws [6.6]

2. Supplies

None

3. Tools

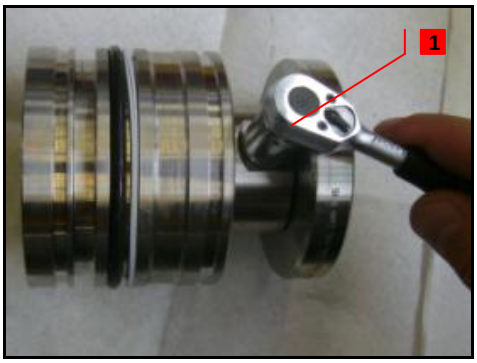
Ratchet with allen key acc. to LID

4. Appliance

Parallel vice with aluminium jaws

9.7 Assembly of the piston and disc

1. Steps – Descriptions



1 Screw piston compl. [6] and disc [7] unit - out of step 9.6 and 9.5 - together with hexagon screw [58]

2. Supplies

None

3. Tools

Socket wrench acc. to LID
Torque wrench (Tightening torques acc. to LID)

4. Appliance

None

9.8 Assembly of the piston and liner

1. Steps – Descriptions

Moisten cylinder of liner [8] with Halocarbon 56 S

1 Put guide rings [6.5] on unit
- out of 9.7 –

2 Insert piston complete [6] into liner [8] carefully for nominal size 1x2…2x3 from bottom and for 3x4…8x10 from top of liner [8]

3 Check visual whether there is a gap of approx. 2-10 mm at each guide ring

Make sure that piston [6] is free-moving in liner [8] over it's full length!

2. Supplies

Halocarbon 56 S
Lubricate components acc. to LID

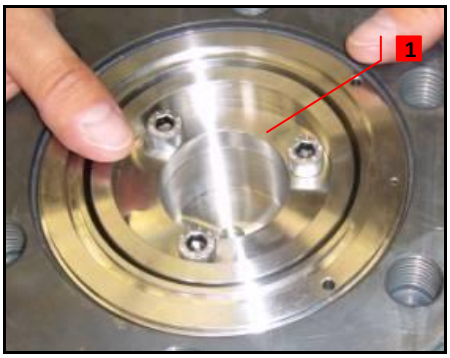
3. Tools

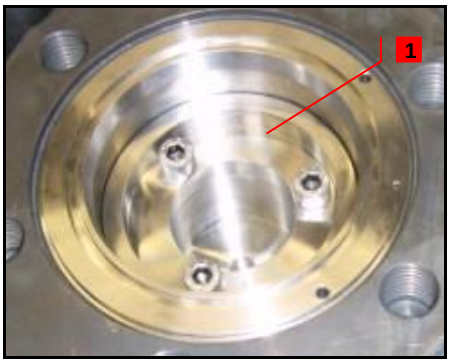
None

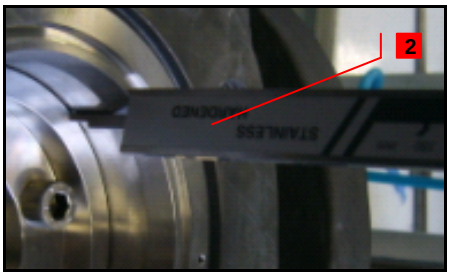
4. Appliance

None

9.9 Assembly of the piston with liner and body





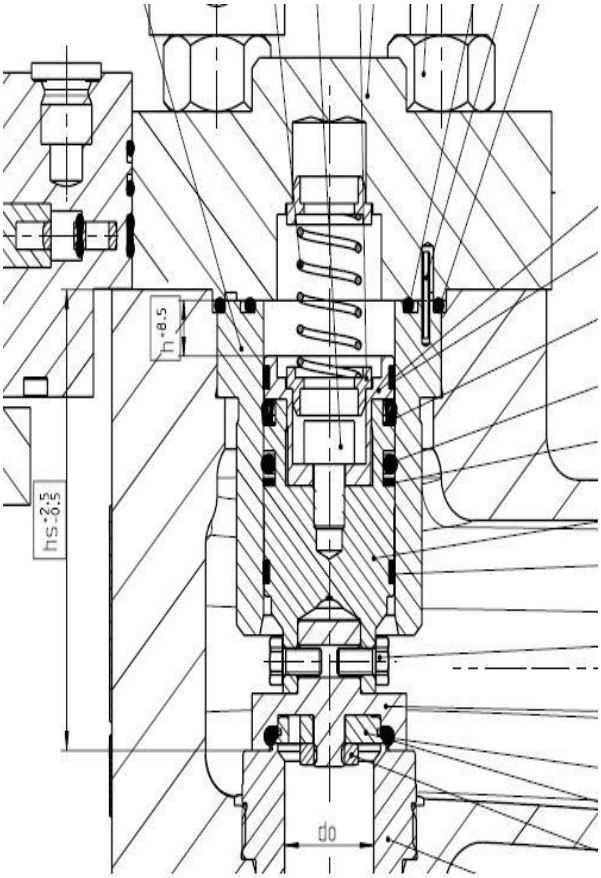


1. Steps – Descriptions

1 Place piston [6] and liner [8] into body [1] by using piston disassembly tool for nominal size above 3x4
Push piston [6] into lowest position.

2 Makesure that minimum lift h of the main valve is reached.

Inlet x Size	Orifice [Designator]	Min. Lift [mm]	Min. Lift [inch]
1 x 2	D	4,0	0,157
1 x 2	E	4,0	0,157
1 x 2	F	4,0	0,157
1 x 2	G	8,0	0,315
1,5 x 2	D	6,0	0,236
1,5 x 2	E	6,0	0,236
1,5 x 2	F	6,0	0,236
1,5 x 2	G	10,0	0,394
1,5 x 3	G	10,0	0,394
1,5 x 3	H	10,0	0,394
1,5 x 3	J	16,0	0,630
2 x 3	G	15,0	0,591
2 x 3	H	15,0	0,591
2 x 3	J	15,0	0,591
2 x 3	K+	20,0	0,787
3 x 4	J	20,0	0,787
3 x 4	K	20,0	0,787
3 x 4	L	20,0	0,787
3 x 4	N+	40,0	1,575
4 x 6	L	20,0	0,787
4 x 6	M	20,0	0,787
4 x 6	N	20,0	0,787
4 x 6	P	34,0	1,339
4 x 6	P+	43,0	1,693
6 x 8	Q	60,0	2,362
6 x 8	R	60,0	2,362
6 x 8	R+	70,0	2,756
8 x 10	T	80,0	3,150
8 x 10	T+	90,0	3,543



In case of a underrun to minimum Lift – contact nearest LESER contract office/ service center

2. Supplies

None

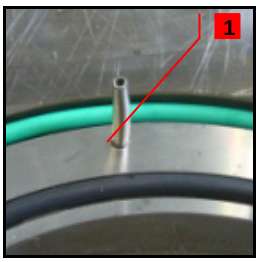
3. Tools

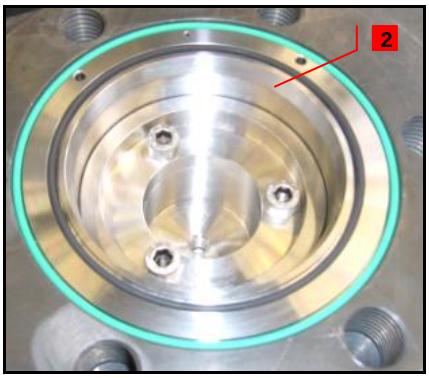
Piston disassembly tool
Depth caliper
Tightening torques acc. to LID

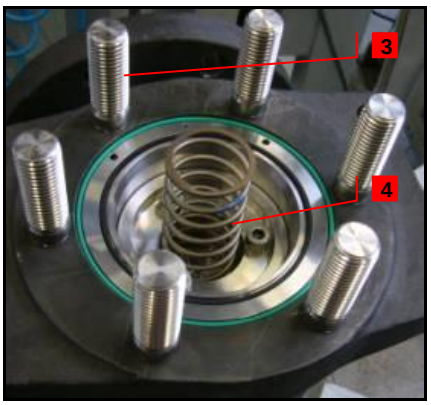
4. Appliance

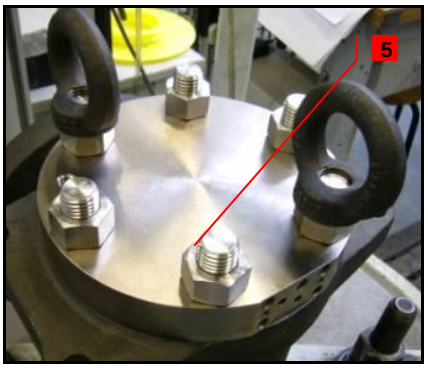
Test bench

9.10 Assembly of the top plate









1. Steps – Descriptions

1 Stick rollpin [10] into hole of liner [8]

Make sure that roll pin is orientated to outlet flange

2 Put O-rings [60, 67] into groove of liner [8] carefully

Lubricate studs with Molycote D paste acc. to LID

3 Screw studs [55] into threaded holes of body [1]

4 Place dome spring [52] in dome

Make sure that O-rings [60,67] do not pop out of open groove

5 Assembly top plate [9] on body [1] with nuts [56]

5 Screw ring nuts [57] on studs [55]

2. Supplies

Molycote D paste
Lubricate components LID

3. Tools

Helpful: Impact wrench acc. to LID
Ring wrench acc. to LID
Torque wrench (Tightening torques acc. to LID)

4. Appliance

Test bench