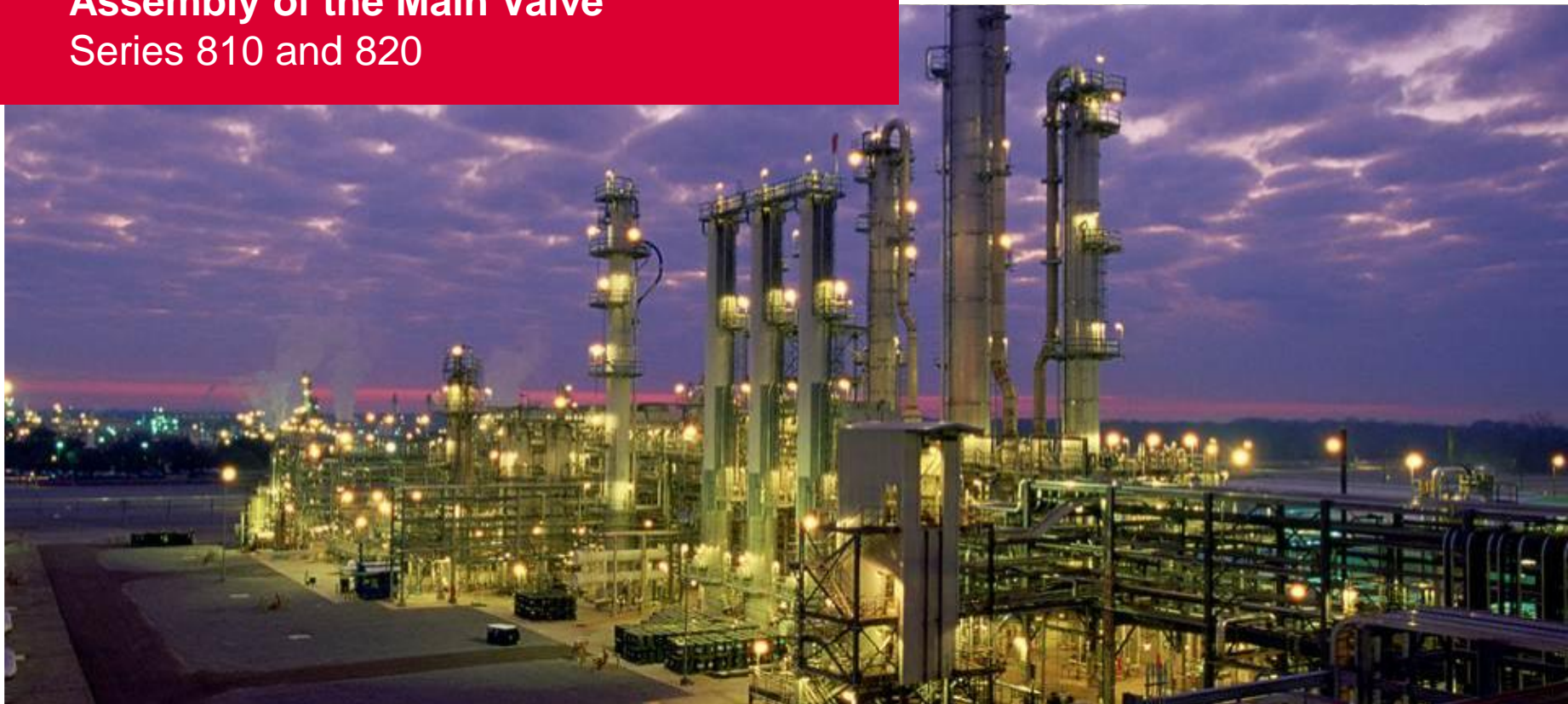


Assembly of the Main Valve Series 810 and 820



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Objectives of the presentation. Increase special knowledge.

1. [Objectives](#) | 2. [Pitot tube](#) | 3. [Nozzle](#) | 4. [O-Ring disc / stainless steel](#) | 5. [Piston and back up ring](#) | 6. [Iuproseal OC R20](#) | 7. [Piston with disc, liner and body](#) | 8. [Top plate](#)

Aim of this presentation is to **explain** the **assembly of the Main Valve**.



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Assembly Instructions. Assembly of the pilot tube.

1. Objectives | 2. Pitot tube | 3. Nozzle | 4. O-Ring disc / stainless steel | 5. Piston and back up ring | 6. Iuproseal OC R20 | 7. Piston with disc, liner and body | 8. Top plate

1. Steps – Descriptions

- Span body [1] with outlet on test bench
- Insert pitot tube [2] in body [1]
- Complete with tube [3] (depends on nominal size)
- 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

- Screw fitting [4] in body [1]
- 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. $\pm 5^\circ$



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Assembly Instructions Assembly of the pilot tube.

1. Objectives | 2. Pitot tube | 3. Nozzle | 4. O-Ring disc / stainless steel | 5. Piston and back up ring | 6. Iuproseal OC R20 | 7. Piston with disc, liner and body | 8. Top plate

2. Supplies

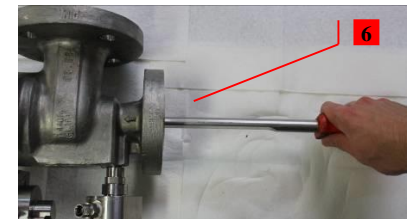
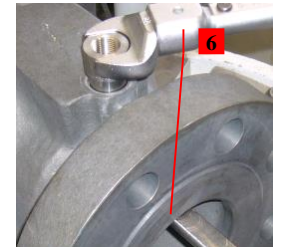
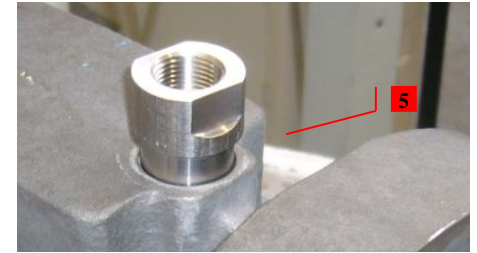
- Soapy water
- Molycote D paste
- Lubricate components acc. to LID

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



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Assembly Instructions. Assembly of the nozzle.

1. Objectives | 2. Pitot tube | 3. Nozzle | 4. O-Ring disc / stainless steel | 5. Piston and back up ring | 6. Iuproseal OC R20 | 7. Piston with disc, liner and body | 8. Top plate

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

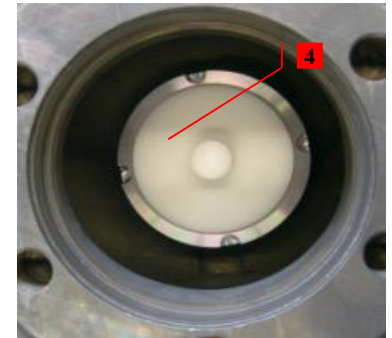
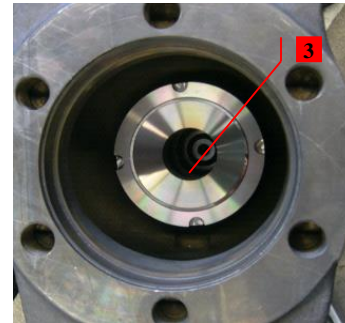
3 Screw nozzle [5] into body [1] by hand

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



Assembly Instructions. Assembly of the nozzle.

1. Objectives | 2. Pitot tube | 3. Nozzle | 4. O-Ring disc / stainless steel | 5. Piston and back up ring | 6. Iuproseal OC R20 | 7. Piston with disc, liner and body | 8. Top plate

2. Supplies

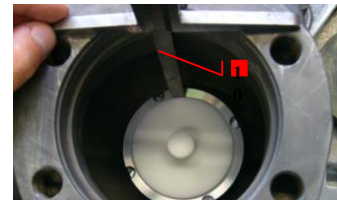
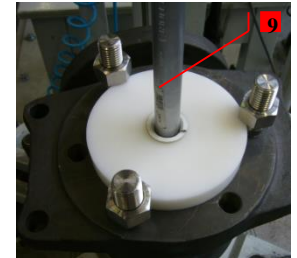
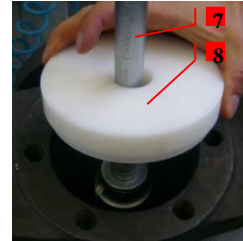
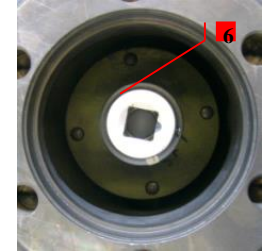
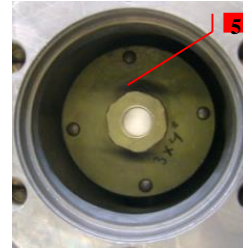
- Molykote D Paste
- Soapy water
- Lubricate components acc. to LID

3. Tools

- Nozzle-assembly tool acc nominal size
- Depth caliper
- Torque wrench with square drive $\frac{3}{4}$ "
(Tightening torques acc. to LID)

4. Appliance

- Test bench



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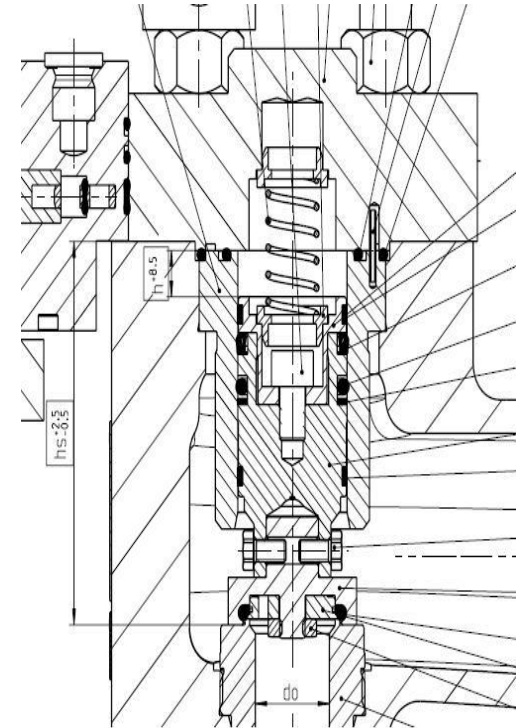
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Assembly Instructions. Assembly of the nozzle.

1. Objectives | 2. Pitot tube | 3. **Nozzle** | 4. O-Ring disc / stainless steel | 5. Piston and back up ring | 6. Iuproseal OC R20 | 7. Piston with disc, liner and body | 8. Top plate

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

10 Check nozzle projection hs



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Assembly Instructions. Assembly of the O-Ring disc / stainless steel disc.

1. Objectives | 2. Pitot tube | 3. Nozzle | 4. O-Ring disc / stainless steel | 5. Piston and back up ring | 6. Iuproseal OC R20 | 7. Piston with disc, liner and body | 8. Top plate

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



Assembly Instructions. Assembly of the O-Ring disc / stainless steel disc.

1. Objectives | 2. Pitot tube | 3. Nozzle | 4. O-Ring disc / stainless steel | 5. Piston and back up ring | 6. Iuproseal OC R20 | 7. Piston with disc, liner and body | 8. Top plate

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



Assembly Instructions. Assembly of the piston and back up ring.

1. Objectives | 2. Pitot tube | 3. Nozzle | 4. O-Ring disc / stainless steel | 5. **Piston and back up ring** | 6. Iuproseal OC R20 | 7. Piston with disc, liner and body | 8. Top plate

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



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Assembly Instructions. Assembly of the luproseal OC R20 (optional only).

1. Objectives | 2. Pitot tube | 3. Nozzle | 4. O-Ring disc / stainless steel | 5. Piston and back up ring | 6. luproseal OC R20 | 7. Piston with disc, liner and body | 8. Top plate

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 aluminum jaws



Assembly Instructions. Assembly of the piston and disc.

1. Objectives | 2. Pitot tube | 3. Nozzle | 4. O-Ring disc / stainless steel | 5. Piston and back up ring | 6. Iuproseal OC R20 | 7. Piston with disc, liner and body | 8. Top plate

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

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Assembly Instructions. Assembly of the piston and liner.

1. Objectives | 2. Pitot tube | 3. Nozzle | 4. O-Ring disc / stainless steel | 5. Piston and back up ring | 6. Iuproseal OC R20 | 7. Piston with disc, liner and body | 8. Top plate

1. Steps – Descriptions

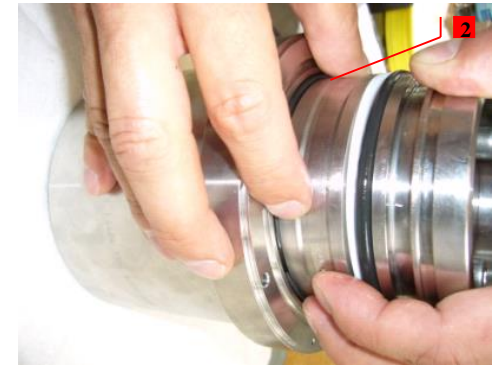
Moisten cylinder of liner [8] with Halocarbon 56 S

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]

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!



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Assembly Instructions. Assembly of the piston and liner.

1. Objectives | 2. Pitot tube | 3. Nozzle | 4. O-Ring disc / stainless steel | 5. Piston and back up ring | 6. Iuproseal OC R20 | 7. Piston with disc, liner and body | 8. Top plate

2. Supplies

- Halocarbon 56 S
- Lubricate components acc. to LID

3. Tools

- None

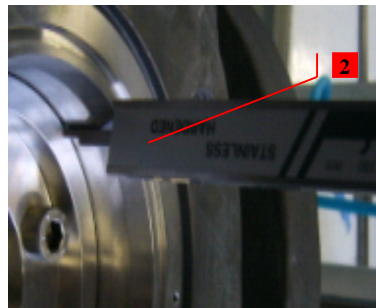
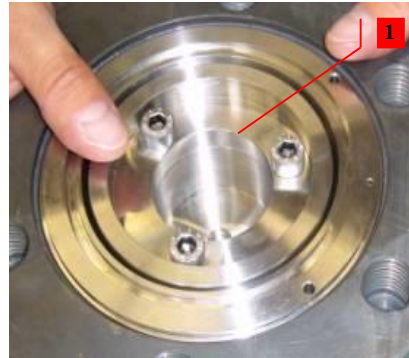
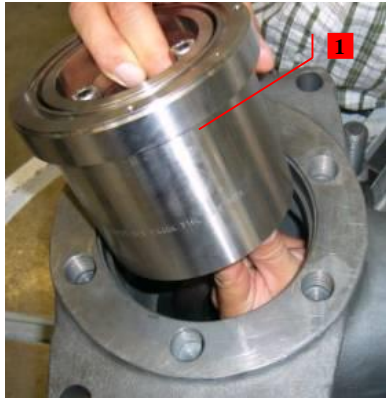
4. Appliance

- None



Assembly Instructions. Assembly of the piston with liner and body.

1. Objectives | 2. Pitot tube | 3. Nozzle | 4. O-Ring disc / stainless steel | 5. Piston and back up ring | 6. Iuproseal OC R20 | 7. Piston with disc, liner and body | 8. Top plate



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	H+	40,0	1,575
4 x 6	L	20,0	0,787
4 x 6	M	20,0	0,787
4 x 6	H	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

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Assembly Instructions. Assembly of the piston with liner and body.

1. Objectives | 2. Pitot tube | 3. Nozzle | 4. O-Ring disc / stainless steel | 5. Piston and back up ring | 6. Iuproseal OC R20 | 7. Piston with disc, liner and body | 8. Top plate

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** Make sure that minimum lift h of the main valve is reached.
In case of a under run to minimum lift – contact nearest LESER contract office/ service center

2. Supplies

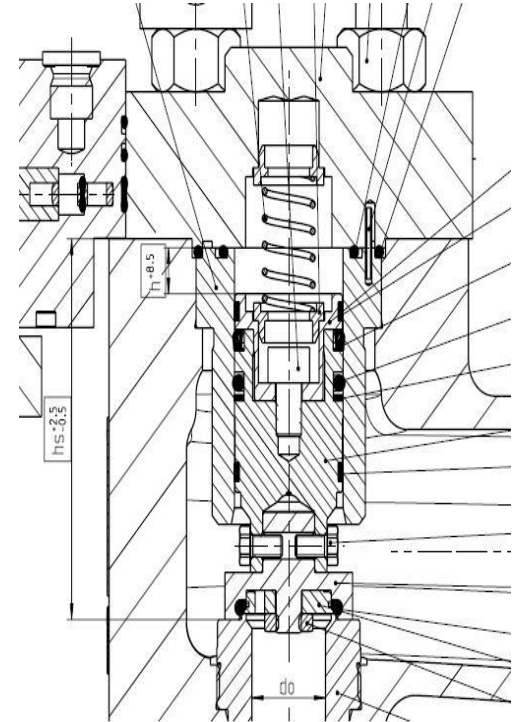
- None

3. Tools

- Piston disassembly tool
- Depth caliper
- Tightening torques acc. to LID

4. Appliance

- Test bench



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Assembly Instructions. Assembly of the top plate.

1. Objectives | 2. Pitot tube | 3. Nozzle | 4. O-Ring disc / stainless steel | 5. Piston and back up ring | 6. Iuproseal OC R20 | 7. Piston with disc, liner and body | 8. Top plate

1. Steps – Descriptions

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

Make sure that roll pin is orientated to outlet flange

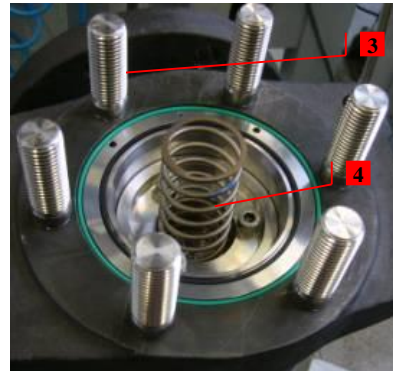
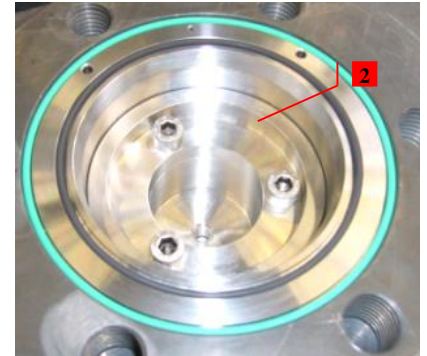
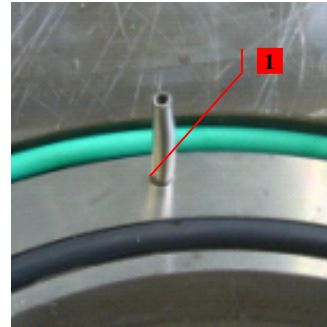
- 2 Put O-rings [60, 67] into groove of liner [8] carefully

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



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Assembly Instructions. Assembly of the top plate.

1. Objectives | 2. Pitot tube | 3. Nozzle | 4. O-Ring disc / stainless steel | 5. Piston and back up ring | 6. Iuproseal OC R20 | 7. Piston with disc, liner and body | 8. **Top plate**

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

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

2. Supplies

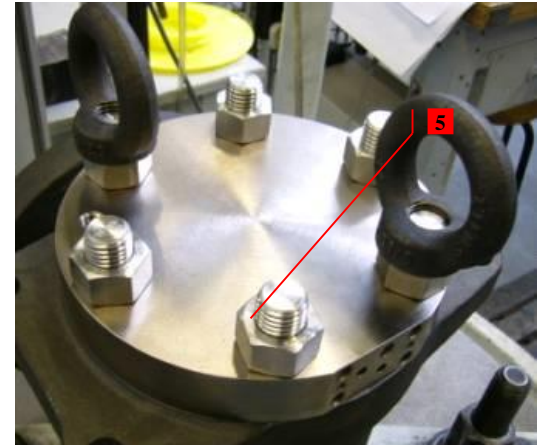
- Molycote D paste
- Lubricate components LID

3. Tools

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

4. Appliance

- Test bench



Assembly of the Main Valve
Thank you for your attention.



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