Assembly of the Modulate Action Pilot Valve Piston. Series 820

Objectives of the presentation. Increase special knowledge.

Aim of this presentation is to explain **the Assembly of the Modulate Action Pilot Valve Piston**.

1. Steps – Descriptions

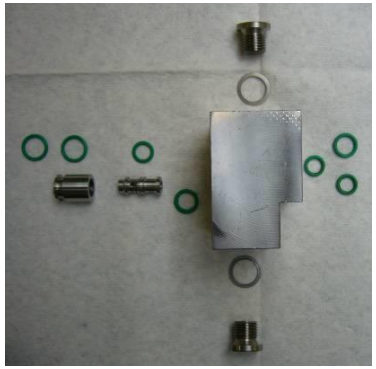
1 Screw in lock screw [24.7] with gasket [24.8] into manifold block [24.1]

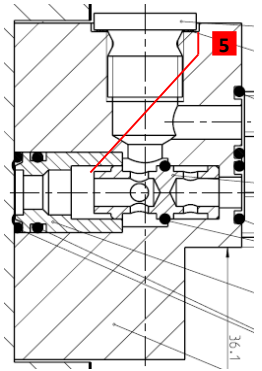
2 Complete bushing [24.2] with O-ring [24.5] (O-ring is 10,82 x 1,78)

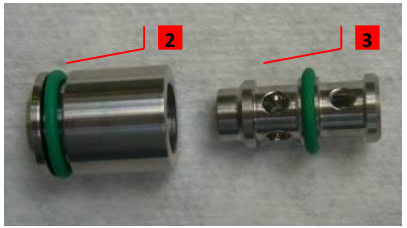
3 Complete piston [24.3] with O- ring [24.4] (O-ring is 7,65 x 1,78).

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;







Assembly Instructions. Assembly of the manifold block.

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 aluminum jaws
- Test bench

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

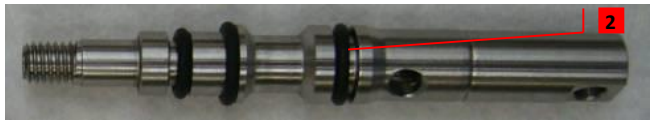
2 Pull O-rings (30 below, 31, 34) on (lower) disc exhaust [11]

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]

Make sure that O-rings are twist free



Assembly Instructions. Assembly of the seat unit.

2. Supplies

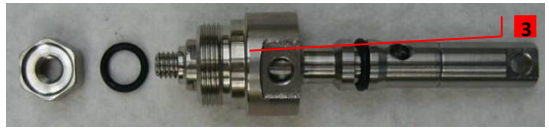
- Soapy water
- Lubricate components acc. to LID

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



Assembly Instructions. Assembly of the O-ring 32 + 33 + 46.

1. Steps – Descriptions

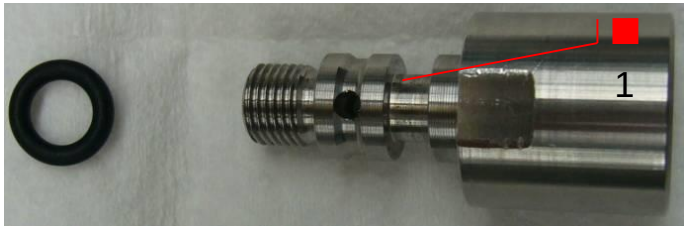
As from 100 bar, mount additional back up rings (81 + 82)!

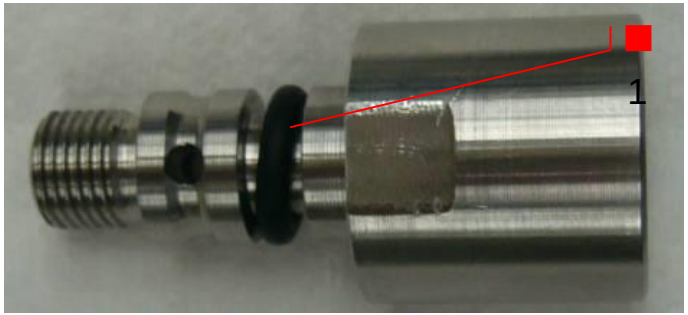
1 Cover O-ring [32] (O-ring is 7,59 x 2,62) with soapy water pull O-ring on piston [41]

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





Assembly Instructions. Assembly of the O-ring 32 + 33 + 46

2. Supplies

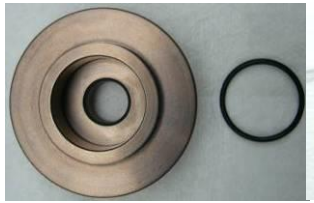
- Soapy water
- Lubricate components acc. to LID

3. Tools

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

4. Appliance

- None



Assembly Instructions. Assembly of the piston and seat unit.

1. Steps – Descriptions

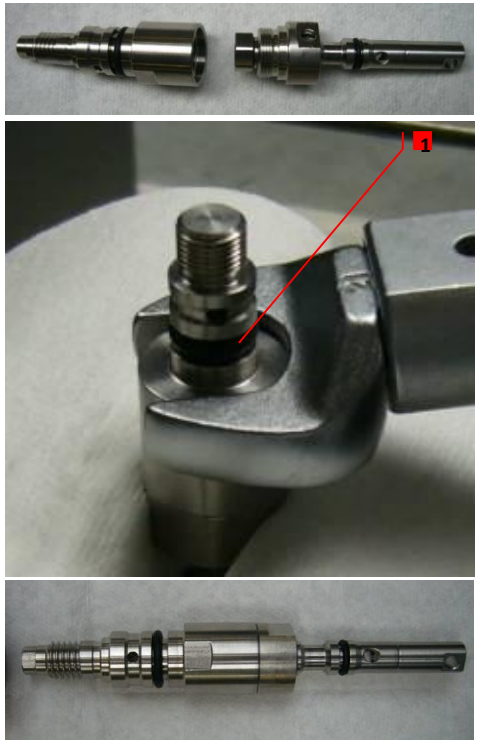
Remove protection cap of piston [41] – if necessary

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

- Halocarbon 56S
- Lubricate components acc. to LID

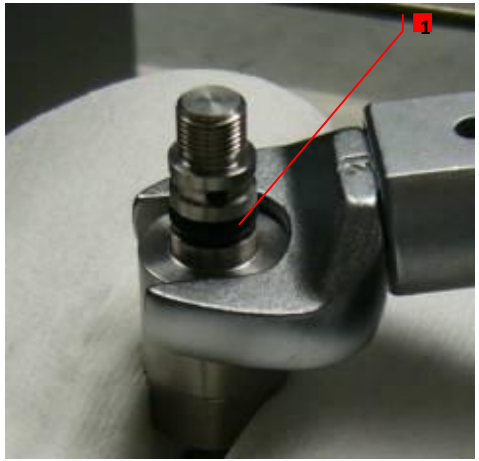


3. Tools

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

4. Appliance

- Parallel vice with aluminium jaws



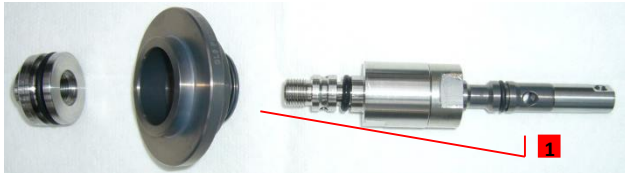
Assembly Instructions. Seat/disc unit, guide bush and piston, upper.

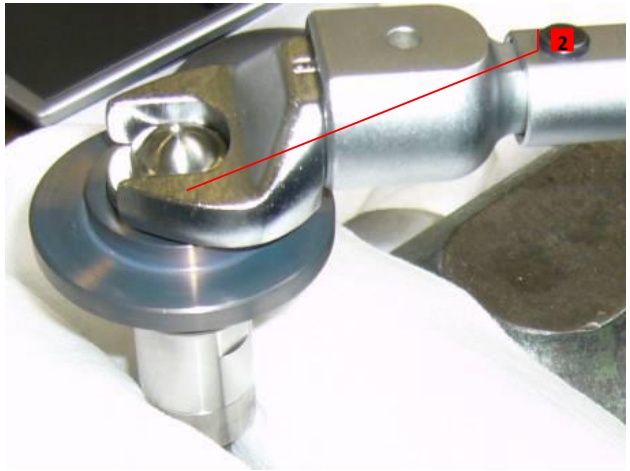
1. Steps – Descriptions

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

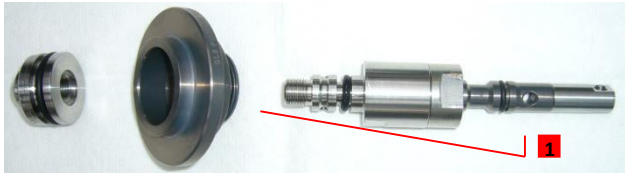
Assembly Instructions. Seat/disc unit, guide bush and piston, upper.

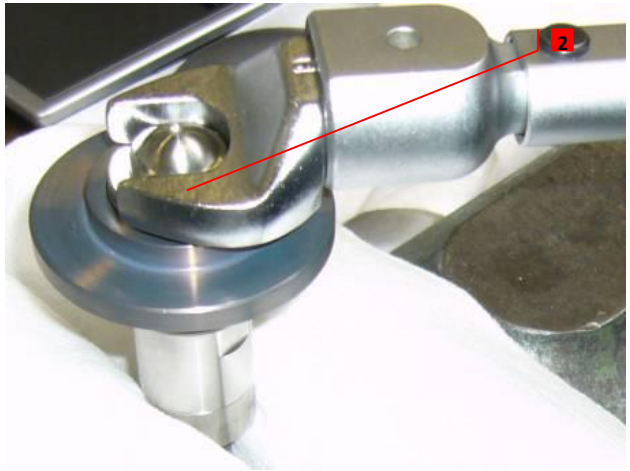
3. Tools

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

4. Appliance

- Parallel vice with aluminium jaws
- Assembling aid





Assembly Instructions. 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

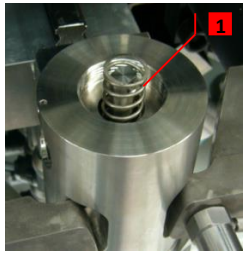
- Test bench

Assembly Instructions. 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]



Assembly Instructions. Closing the body's bottom side.

5 Lubricate thread of plug [20]

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

2. Supplies

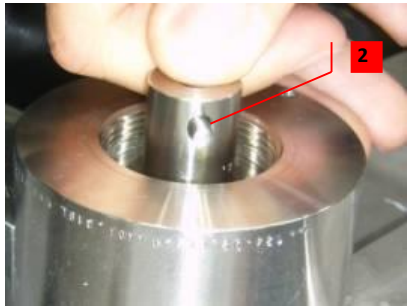
- Molykote D Paste
- Lubricate components acc. to LID

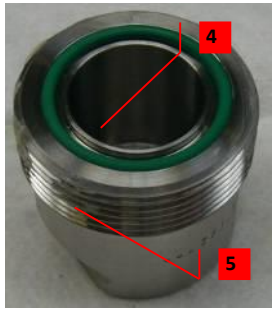
3. Tools

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

4. Appliance

- Test bench





Assembly Instructions. 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

Assembly Instructions. Assembly of the spindle unit.

1. Steps – Descriptions

1 Cover thread of spindle [12] with screw locking liquid Delo ML 5449

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]

Assembly Instructions. Assembly of the spindle unit.

2. Supplies

- Screw locking liquid Delo ML 5449
- Molykote D Paste
- Lubricate components acc. to LID

3. Tools

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

4. Appliance

- None

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**

Assembly Instructions. Assembly of the bonnet and body.

2. Supplies

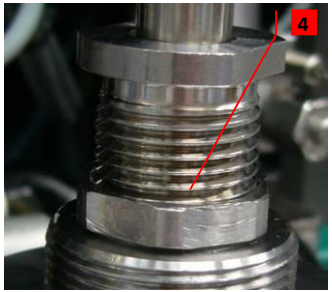
- Molykote D Paste
- Lubricate components acc. to LID

3. Tools

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

4. Appliance

- Test bench



Assembly Instructions. 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

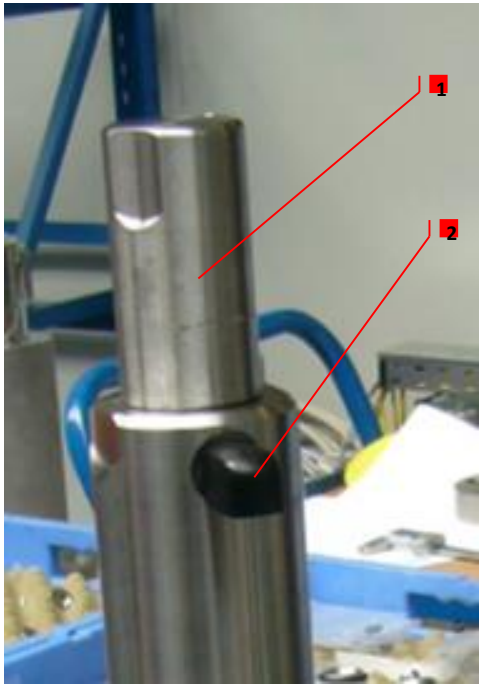
- None

3. Tools

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

4. Appliance

- Test bench



1. Steps – Descriptions

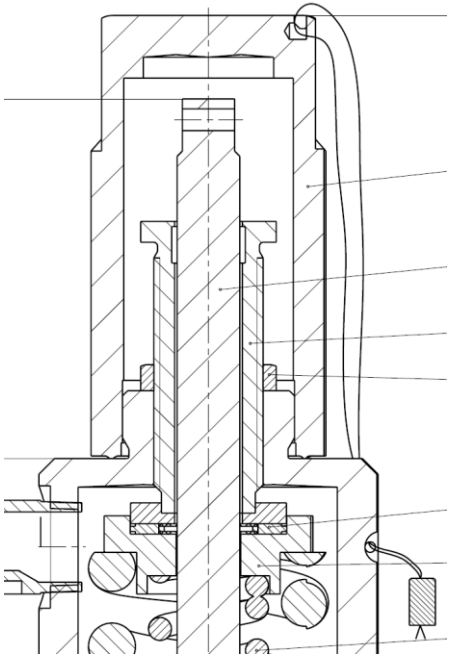
Sealing after assembly and test with main valve!

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



Assembly Instructions. Sealing the valve.

2. Supplies

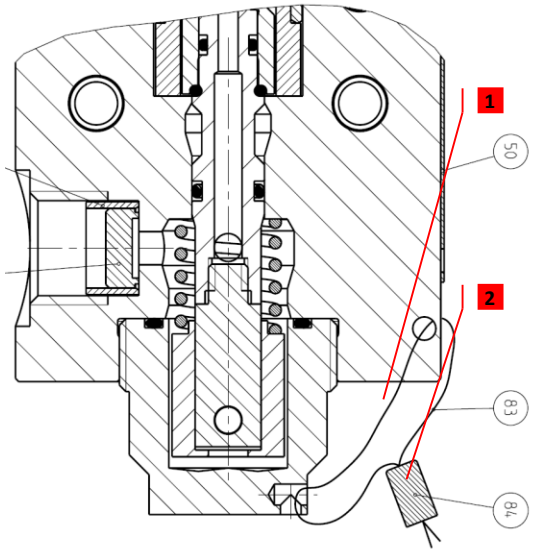
- None

3. Tools

- Sealing pliers

4. Appliance

- None



Assembly of the Modulate Action Pilot

Thank you for your attention.