

Repair Instructions

for AZ Plug Valves, Type ISO-STANDARD
DN 15 - 250 / NPS ½" - 10"
with STD sealing

These instructions should assist the user when repairing AZ plug valves. We reserve the right to make technical modifications within the scope of further improvements. The text and graphs shown are not necessarily in accordance with the scope of delivery or spare part delivery. Drawings and graphs are not to scale. Customized special designs will not be carried out. These instructions may not be given to a third party without the written consent of AZ-Armaturen.

Safety instructions



NOTE: This operating manual does not replace any national accident prevention regulations or local safety regulations; it is invariably subordinate to these.

Generally, the power supply must be interrupted before repair and maintenance work on automated valves. In order to avoid injuries and crushing with automated valves, a safety distance is to be maintained from all open mounted and moving parts.

DANGER: If the valve is under pressure, never loosen the cover screws or adjusting screws/nuts or loosen the cover or components.

DANGER: Maintenance/corrective maintenance may never be performed on valves which are under pressure. Note that valves can retain the medium (e.g. in or underneath the plug). The valve may only be removed from a depressurised piping system, the residual pressure must be released.

DANGER due to material residue in the valve. Before working on the valves, information regarding the danger classes of the medium must be obtained and necessary measures to avoid dangers must be taken.

If a valve must be dismantled from a pipeline, medium can leak out of the pipe or out of the valve. With mediums which are harmful to health or are dangerous, the pipeline must be completely emptied. If necessary flush the system and in doing so, ensure that the valve is open before it is dismantled. Allow hot valves to cool off if necessary.

To ensure the safety of the operating personnel, protective clothing or protective equipment is to be used as prescribed for the handling of the corresponding medium.

1.0 Repairing Kit

Before beginning with repair work, the repair kit is to be prepared and checked for completeness.

Repair kit components:

- 1x conical preformed PTFE sleeve fixed with filament tape (to be loosened just before installation)
- 1x PTFE cover seal
- 1x PTFE delta ring
- 1x PTFE V-diaphragm
- 1x Stainless diaphragm
- 1x O-ring
- 1x Spring ring
- 1x AZ tool kit, consisting of 2-3 different sized mandrels
- 1x Replacement plug (optional)

Adjusting screws

Cover with ISO 5211 reception flange

O-ring

Spring ring

Antistatic element

Thrust collar

Stainless steel diaphragm

PTFE V diaphragm

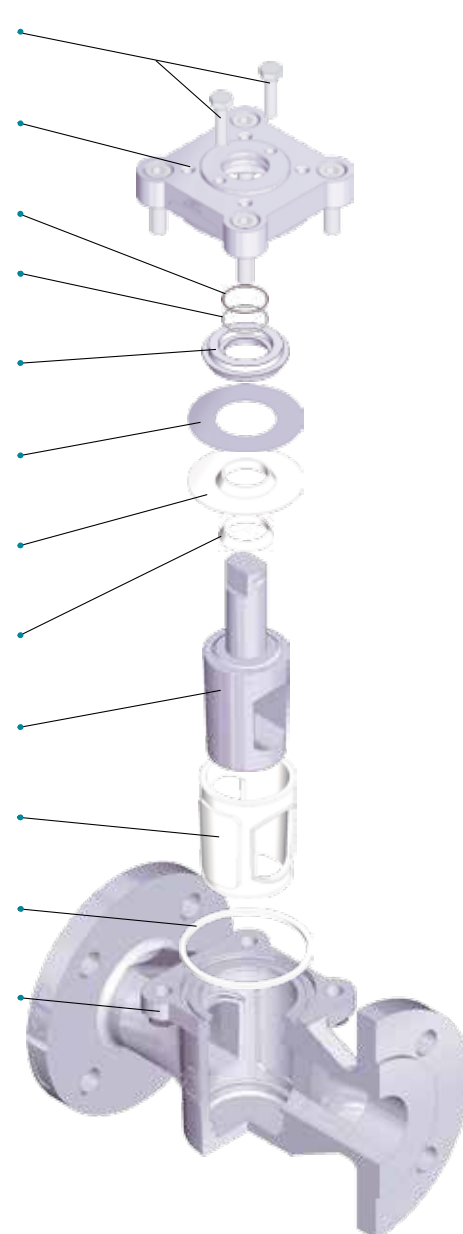
PTFE delta ring

Plug

PTFE sealing sleeve

PTFE cover seal

Body



2.0 Reparation

2.1 Dismantling from the pipeline

Remove the valve from the pipeline and clean it carefully. With dangerous media make sure that the interior is cleaned, also see safety instructions.

2.2 Dismantling

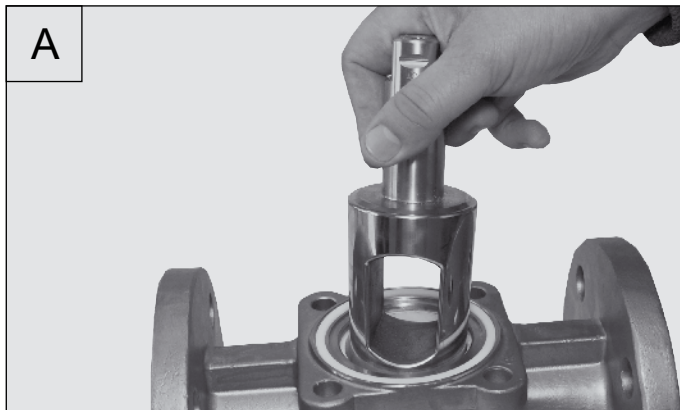
- Dismantle hand lever, gear unit or actuator
- Loosen adjusting screws
- Unscrew cover screws and remove cover
- Carefully remove the plug. When doing so, turn the plug and at the same time, pull it upwards. Plug surface is polished. Do not knock against anything! Fig. A

2.3 Dismantling the PTFE sleeve

- Cut PTFE sleeve above and beneath the passage opening with a knife or similar tool, Fig. B
- Remove sleeve from wall of body (screw driver or similar tool)
- Pull sleeve out of valve body using pliers, Fig. C

2.4 Cleaning and Inspection

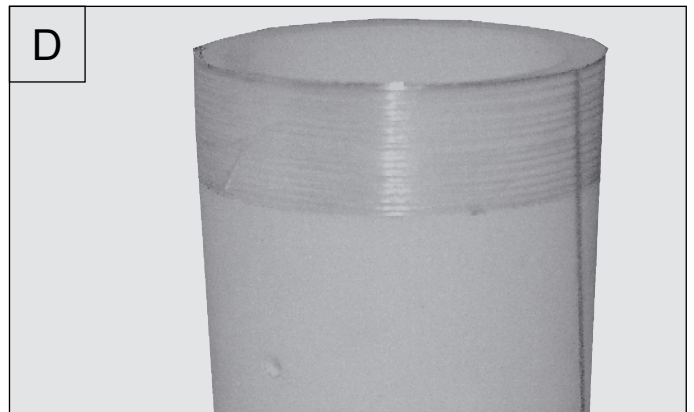
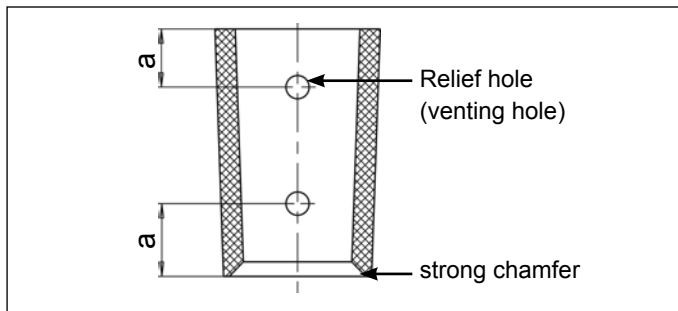
- Carefully clean inside of body, if necessary by lightly sand blasting.
- Check interior of body for possible damage due to corrosion, erosion or similar damage.
- Clean cover and adjustment ring, if necessary by lightly sand blasting
- Clean plug
- Check plug for damage due to corrosion, erosion or cavitation and have it polished again if necessary.
- **Mechanically damaged plugs must be replaced!**



3.0 PTFE Sleeve

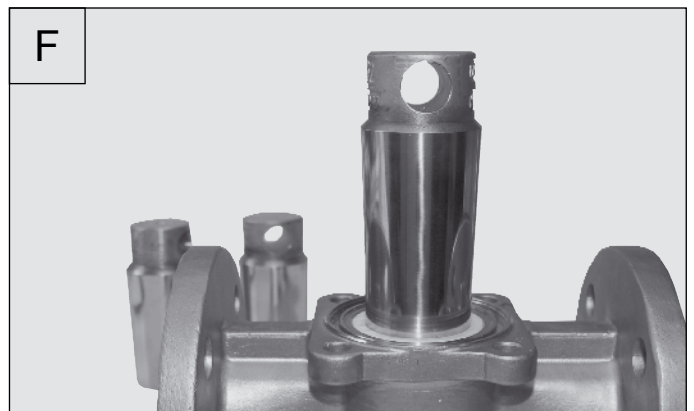
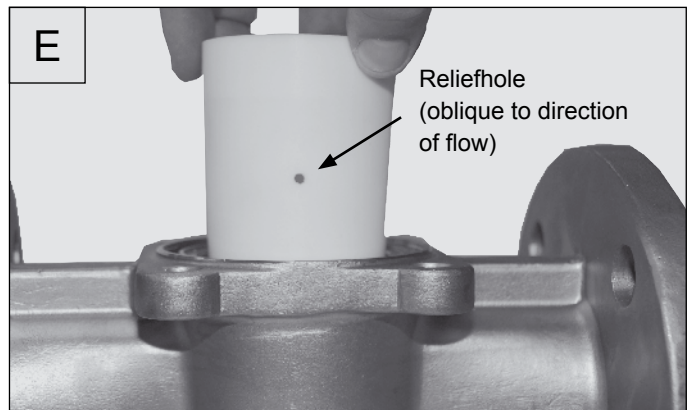
3.0 Preparing the new PTFE sealing sleeve

- Drill one or two relief holes, on each of two opposite sides, of the sleeve, Fig. D.
 - up to DN 50 \varnothing 4 mm
 - from DN 80 \varnothing 6 mm
- Take distance from edge "a" from old sleeve. Omit relief holes if old sleeve is not drilled
- Degrease sleeve if "free from oil and grease" is required.



3.1 Inserting the new sleeve

- Remove filament tape and insert sleeve immediately into body. NOTE: Relief holes must lie oblique to direction of flow! Fig. E
 - Gently hammer in sleeve, with a soft-head hammer, until sleeve rests on the lower collar
 - Slightly grease mandrels and sleeve (not however when "free from oil and grease" is required)
 - Ideally, preheat mandrel and sleeve/body to about 80°C - 100°C
-
- Press in sleeve using original AZ tools kit , observe correct sequence 1-2-(3)! Fig. F





3.2 Cutting out the sleeve

The sleeve expands when being pressed in. The frames of the passages are clearly visible. Surplus sleeve material forms a swelling at the top and at the bottom. Fig. G

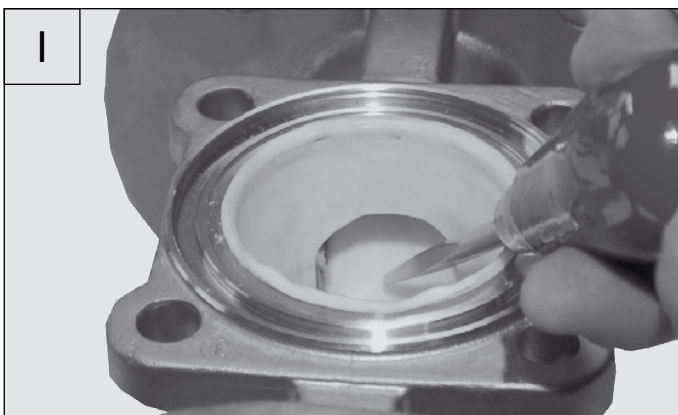
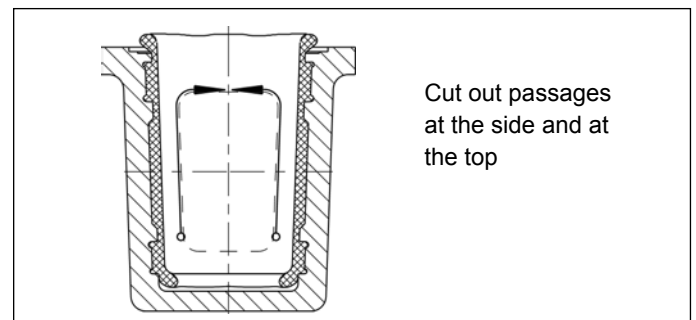
Work especially carefully when cutting out. With exception of the passages, the sleeve must in no way be damaged by the knife. If however this occurs, the sleeve must be replaced.

ATTENTION! Danger of injury!
Always cut away from yourself



3.3 Workflow

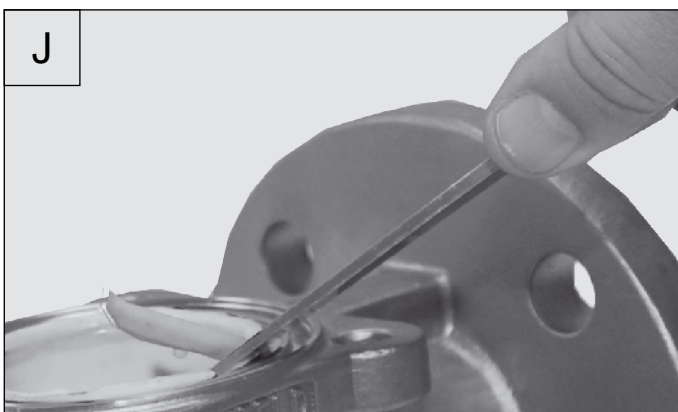
Cut out the sleeve along the outer edge of the visible frames with a sharp knife (sideways and oblique on top!) Cut from bottom to top. Use upper swelling as support. Fig. H



Use suitable tools (e.g. hammer and punch) to break out the plates in front of the passage openings. Fig. I

Cleanly cut the rims along the outside edges.

Insert knife through the opposite passage and cut off bottom swelling. Cut off top swelling under $45^\circ - 60^\circ$. Guide knife on the edge of cast-in collar. Fig. J



Remove all waste from the body, if necessary by blowing out. Check sleeve for any damages.

4.0 Mounting

Slightly grease plug (not however when "free from oil and grease" is required).

Insert plug into body in an open position. If the plug projects by more than the width of the top ring surface press in mandrel 3 once again (see step 3).

Insert sealing kit in correct sequence. Fig. K

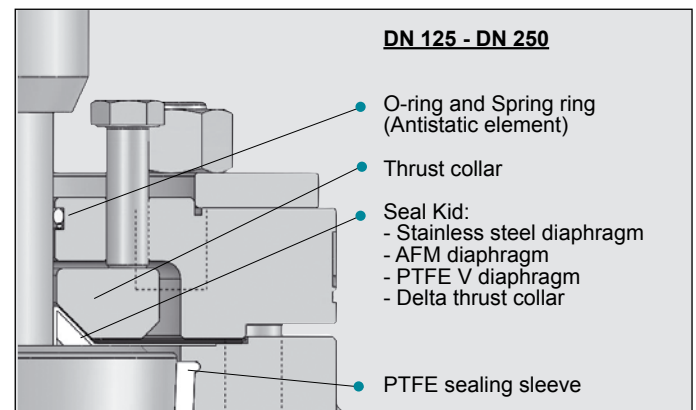
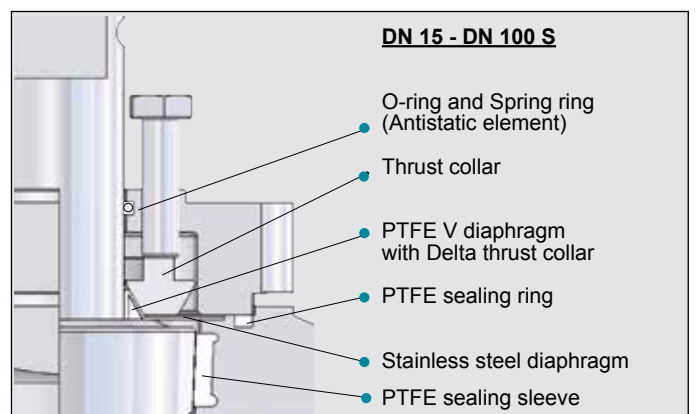
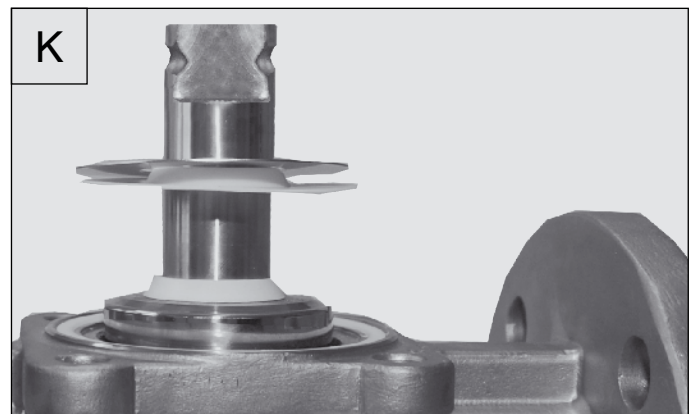
Screw plug adjusting screws into the cover until the screws protrude out 5 mm from the underside of the cover (for all valve sizes).

Press plug into body with a suitable tool, so that the cover screws can be screwed in. Press plug further in with these screws until the cover lies evenly. Then tightly fasten the cover screws crosswise. Observe tightening torques shown in table.

Valve	Screws	Tightening torque
DN 15 - 25	M8	30 Nm
DN 40	M8	35 Nm
DN 50	M10	45 Nm
DN 80	M12	60 Nm
DN 100	M12	60 Nm
DN 100 S	M16	90 Nm
DN 125	M12	80 Nm
DN 150	M12	80 Nm
DN 200	M16	150 Nm
DN 250	M16	150 Nm

Operate the valve several times

Check height of plug when valve is open. Passage of plug may be slightly higher than passage of body.



5.0 Tests

If you have any questions contact us by e-mail (info@az-armaturen.de) or phone (+49 (0) 7721 7504-0) or contact the AZ service office (see website), please state the following information:

- Type, nominal size and design of the valve
- Pressure and temperature of the flow medium
- Serial number (engraved on type plate)

The tightness tests, necessary after repair, are to be carried out advisably using compressed air or compressed gas (e.g. nitrogen). A test pressure of 6 bar is usually sufficient.

5.1 Tightness test - outward tightness

- Place valve in an open position on the testing bench or (in case no bench is available) close it with blind flanges.
- Set internal testing pressure
- Submerge valve in water - initially rising bubbles are of no significance (closed-in air)
- Observe valve for 1 - 2 minutes. If leakage occurs, slightly tighten the adjusting nuts (1/4 turn). Operate the valve several times and repeat test.

3.2 Tightness test - along the passage

- Place valve in an open position on the testing bench or close it with blind flanges and put under pressure
- Close valve and ventilate the upper passage
- Fill upper passage with water
- Observe valve for 1 - 2 minutes. If leakage occurs, slightly tighten the adjusting nuts (1/4 turn). Operate the valve several times and repeat test.
- After having finished the tests, switch valve into an open position.



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