MANUAL
Butterfly valve AL 42-A / AL 43-A

Index

1. Instructions

These instructions are intended for professional installation and maintenance of AL 42-A / AL 43-A valves as well as for trouble-free operation. Only the valves included in the package supplied by the manufacturer can be used for installation.

Valves should be stored in a dry, dust-free area, away from light.

No preservation is necessary with proper storage.

Installation, removal and maintenance may only be performed by professionally trained staff.

Prior to the beginning of the removal work, the fluid must be discharged from the piping and the piping pressure supply must be shut-off and securely locked. Valve actuators must be properly disconnected and locked.

The valves are designed for specific applications and can only be used for specific purposes according to the order.

2. Operation

Prior to the installation it is necessary to make sure that the supplied valve meets the specifications in terms of resistance of the material of the seat and the disc to the transported medium, as well as other parameters – pressure, temperature etc.

AL 42-A / AL 43-A valves may serve to regulate or to constrict the flow; however, cavitation must be avoided.

Permitted flow rates:

- Fluids: up to 4 m/s
- Gases: up to 20 m/s

The control of the valves must be smooth and slow to avoid hydraulic shock.

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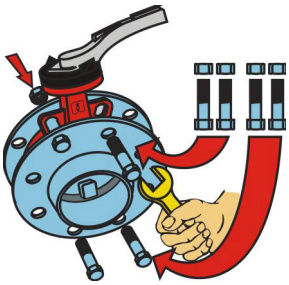
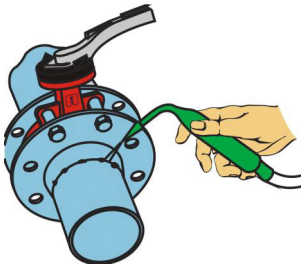
3. Installation

AL 42-A / AL 43-A valves may only be installed between flanges with gasket surfaces e.g. B shape according to EN 1092. The direction of the flow of the medium and the valve position are optional. There is no need for additional sealing between the valve and the flange. Flanges must not be welded to the pipe with the valve installed; otherwise, the seat would be burnt.

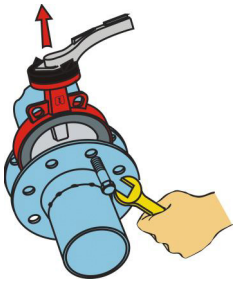
1. Place the valve with a slightly open disc between the flanges. The distance between the flanges is to be sufficient in order to prevent a damage to the seat.



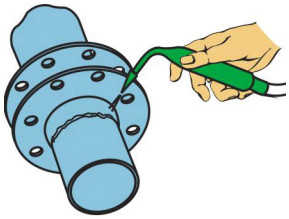
2. Lightly tighten the flanges with four bolts and align the position of the valve.



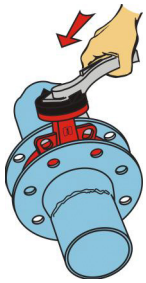
3. Attach the flanges at several points to the piping using a welding electrode.



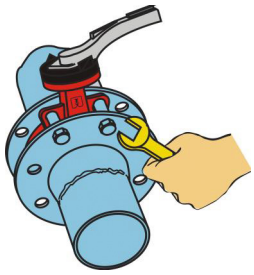
4. Remove the valve.



5. Weld the flanges to the piping.

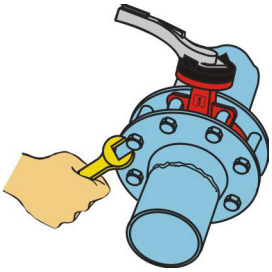


6. After the flanges have cooled down, insert the valve, and ensure sufficient clearance (see Fig. 1).

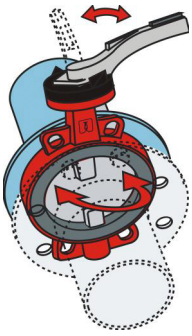


7. Align the valve and lightly tighten the valve using four bolts.

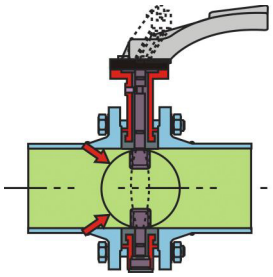
8. Open the valve and ensure that the disc is easy to move.



9. With the valve still in an open position, add the remaining bolts and tighten them firmly (in a "criss-cross pattern").



10. Test the proper function of the valve (the disc must not strike the piping).



Note:

Flanges have to be parallel and aligned at all times. The contact surfaces must be smooth and clean, free of any scale and impurities.

Horizontal position of the valve shaft is recommended for valves of DN ≥ 350.

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4. Pipe pressure test

The actual valve is pressurized by the manufacturer. When fitted in the pipeline the entire pipe section with valves needs to be pressurized. The following must be observed:

• Newly installed section must be carefully rinsed (cleaned) to remove all mechanical impurities.

• Valves in open position: pressure at 1.5 times the PN.

• Valves in closed position: pressure at 1.1 times the PN.

5. Removal

Prior to the removal of the valve, the electric and pneumatic actuators must be disconnected by qualified staff. Loosen the bolts attaching the flanges with caution (the piping may still be under pressure). Remove the valve from the piping in a closed position. After removing, store the valve in a suitable place (e.g. on a wooden pallet).

6. Maintenance

AL 42-A / AL 43-A valves are maintenance-free. If the valve remains in the same position for a long time, it is recommended to close and open the valve repeatedly at least 4 times per year.

7. Repairs

Prior to the repair, remove the valve as described in the regulation above. The valve must be clamped so as to avoid damage to the seat. Remove the actuator according to the manufacturer's instructions.

Part replacement: After removing the shaft and the pivot, the disc must be secured to prevent falling out.

Removal procedure:

- Remove the shaft locking sleeve
- Pull the shaft out of the body
- Knock the pin out
- Pull the pivot out of the body
- Check, or replace the shaft and pivot "O" ring
- Push the disc out of the seat
- Remove the seat from the body (without using sharp tools)
- Check, or replace the seat
- Press the seat gradually into the body
- Check the correct position of the holes for the shaft and the pivot
- Lubricate the shaft and the pivot at the point of the "O" ring with appropriate agent
- Press the disc into the seat observing the correct hole position (square on the top, round holes at the bottom)
- Put on the pivot
- Insert the shaft observing the correct position of the upper square
- Screw in the shaft locking bolt
- Check the rotation of the shaft with the disc
- Install the valve control
- Check the correct position of the valve and the disc in the closed and open position
- Check the tightness by pressurizing after installation

8. Troubleshooting

The following table describes some of the potential problems and measures for their elimination.
Note: It is necessary to know all the installation procedures and safety regulations before making any repairs. This work may only be performed by trained staff.

Failure	Cause of failure	Failure elimination
Leakage between the valve and flanges	Insufficiently tightened flange bolts	Tighten the bolts
	Valve not centred	Reinstall the valve in the correct position
	Internal diameter of the flange too large	Replace flanges
	Burnt or damaged seat	Replace the seat
Valve does not close	Solid particles between the seat and the butterfly	Remove and clean the valve, or replace the damaged parts
	Hardened or porous seat	Replace the seat
	Pressure of the medium too high	Check the pressure of the medium
Valve leaking when closed	Worn seat	Replace the seat
	Worn disc (erosion)	Replace the disc
	Incorrect closed position	Check and adjust the position
Leakage around the shaft	Shaft seal damage	Replace the seal

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9. Safety instruction

1. All safety instructions should be read carefully; otherwise all manufacturer's warranties become null and void. All installation work and activities during the operation or removal of the valve must be performed by professionally trained staff. The manufacturer is available for any questions - see contact details.

2. The valve can only be used if the medium pressure and temperature parameters comply with the type specifications for the type of valve concerned.

3. It is necessary to ensure that the material of valve components that come into contact with the transported medium is suitable for the medium concerned.

4. Prior to the removal of the valve from the piping (or prior to the replacement of the shaft sealing in 2E5 series), the piping in front of and behind the valve must not be under pressure! (Risk of uncontrolled leakage).

5. If the valve is used as a terminal fitting, the open outlet of the valve must be fitted with a blind flange, or the valve in the closed position must be safely secured (lever locked, etc.).

6. If it is necessary to open the end valve of the pressure pipe, attention must be paid to the medium running out of the piping to avoid possible damage.

7. If it is necessary to remove the valve from the piping, the piping must not be under pressure; if containing fluids hazardous to health, the piping must be emptied completely.

8. When using valves in Ex environment in zones 1, 2, 21, 22 according to Atex, they must be fitted with grounding equipment (contact the manufacturer).

9. It must be ensured that valves without levers or without an actuator do not open during transportation and storage (risk of damage to the disc).

10. Installation between flanges – without an additional sealing between the valve and the flange. Flanges must have flat and smooth sealing surfaces e.g. B shape according to EN 1092.

11. The inner diameter of the flange must be of such size as to avoid damage to the disc while opening the valve (see the table).

DN	50	65	80	100	125	150	200	250	300	350	400	450	500	600
Ø d	45	55	70	90	116	146	192	245	290	340	390	440	490	575

12. Prior to the installation of the valve, the inner area has to be clean, free of any mechanical impurities (scales, slag, etc.).

13. Lever position indicates the position of the disc:
- Lever perpendicular to the pipe – valve is closed,
- Lever parallel to the pipe – valve is opened.

14. Opening and closing of the valve must be smooth, not abrupt, in order to prevent hydraulic shock and damage to the piping and potential danger to persons.

15. As the valves are not self-locking, the lever or actuator may not be removed with the piping under pressure.

16. Valves with actuators used for regulation must be designed to avoid cavitation (if necessary, consult with the manufacturer).

17. Valves with actuators must be adjusted before their installation in the piping; special attention must be paid to the adjustment of end positions.

18. If the temperature of the media in the pipe or ambient temperature exceeds 50° C or is below - 20° C, it is necessary to isolate (protect) the actuator according to the actuator manufacturer's instructions.

19. Single-acting pneumatic actuators, spring opening adjustment: the sealing edges of the disc must be protected during transportation and storage. The valve must be manually closed during installation.

20. There is a risk of denting (displacement) of the seat during opening and closing in valves that are not installed in the piping. The operation of the actuator may not be checked until the installation between the flanges. It is recommended to mount the end valve on the counter-flange.

21. Pneumatic (or hydraulic actuators must be adjusted so as to prevent quick closure (or opening) of the flow in the pipe. Unless stated otherwise, the recommended closing time t (sec) = DN (mm) / 50.

22. The electric actuator must be adjusted so that the actuator is switched off by the limit switch, not by the torque switch (see the instructions of the manufacturer of the electric actuator).

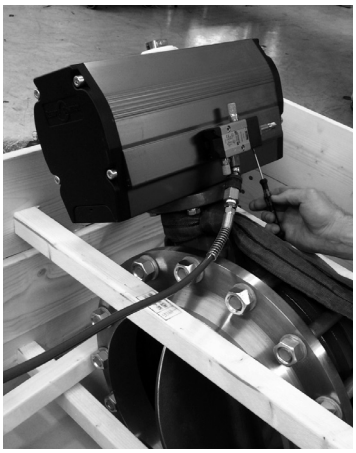
23. Horizontal position of the valve shaft is recommended for valves of DN ≥ 300. It is therefore recommended to install the actuator onto the valve so that the leakage around the shaft, if any, does not damage the actuator.

24. Double-acting pneumatic actuators are not self-locking, so they must be kept permanently under air pressure (or controlling medium).

Safety instructions concerning testing and adjustment

Only one person should perform the test run if the valve is removed from the pipe system. Otherwise there is a risk of serious injury, for example crush injuries.

To minimize the risk of injury, larger valves should be tested with the valve clamped. For larger valves we also recommend to build a safety shelter around the valve or place the valve in a a box



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Design and specifications subject to change without prior notice.