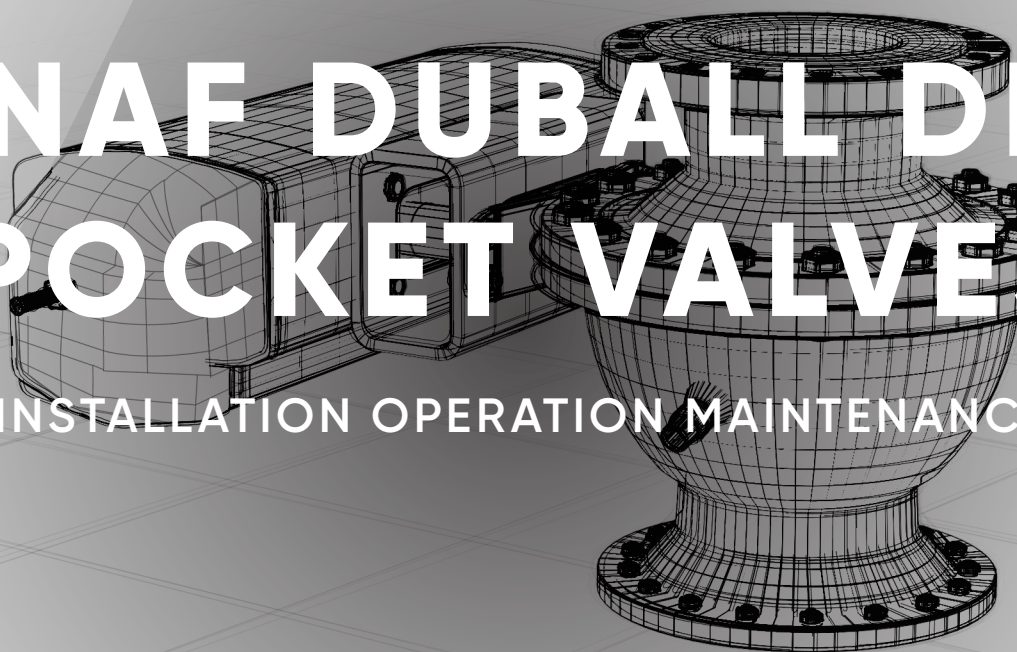




AUTOMATION AND DIGITALIZATION

NAF DUBALL DL POCKET VALVES

INSTALLATION OPERATION MAINTENANCE



ANDRITZ

ENGINEERED SUCCESS

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Safety

- Assess all risks to eliminate the possibility of personal injury and material damage. Read these instructions thoroughly.
- The valve should only be installed, operated and maintained by qualified personnel. Qualified personnel are people who on account of their education, experience, training and knowledge of relevant standards, specifications, accident prevention and operating conditions have been authorized by those responsible for the safety of the plant to perform the necessary work, and recognize and avoid possible dangers.
- Always use the necessary protective equipment and comply with applicable safety directives when working with hazardous or hot/cold media.
- Never operate a valve without first ensuring there is no risk of crush injuries. The risk is highest with automated valves. Take necessary safety precautions to avoid unintentional stroking of the actuator/valve.
- Never dismantle a valve or part of a valve without ensuring the line is free of pressure and media.
- Always check that the valve type and material are suitable for their intended use. This applies especially to highly oxidizing and corrosive media. Observe also the risk of erosion or explosion, as well as decaying medium. If in doubt, always request a written recommendation from ANDRITZ.

1 General

This instruction provides necessary information for the correct handling of the NAF Duball DL ball valve. For additional equipment used together with the valve, please refer to their corresponding instructions.

Although this instruction is made to cover a broad range of varieties of the NAF Duball DL, there will inevitably be versions not covered in detail. If you have any doubt about the correct use and handling of a specific version of NAF Duball DL, please contact your ANDRITZ representative.

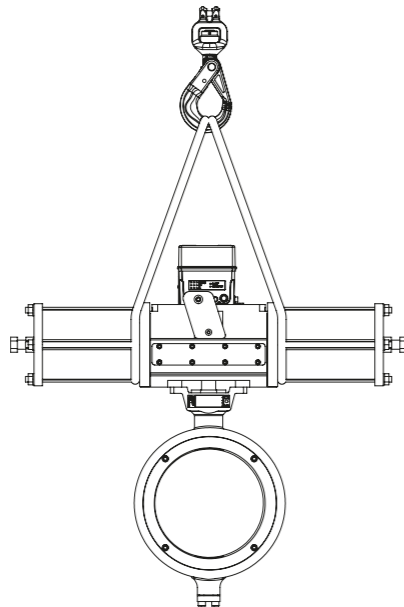
 Valves intended for use on highly oxidizing media are often delivered in a degreased version. Any valve marked with "Degreased for oxygen service" must be handled with the greatest care and be protected from being contaminated with grease, dust or anything else that can jeopardize its safe use.

The instructions and list of spare parts in this document are applicable to NAF Duball DL ball valves in accordance with our technical bulletin.

2 Lifting

All lifting must be carried out on the valve itself and not on the actuator. The mounting connection between the valve and the actuator is designed principally for carrying the operating torque and the deadweight of the actuator and is not designed to support the weight of the valve. See Figure 1.

Figure 1. Lifting of the valve



3 Receiving Inspection

All valves leaving our facility are inspected and tested in accordance with the relevant requirements or in accordance with the special provisions specified by the purchaser. Valves equipped with actuators are subjected to functional testing and are adjusted in such a manner that every unit is ready for direct installation in the pipework. However, because damage may have occurred during transport, it is advisable that receiving inspection be carried out.

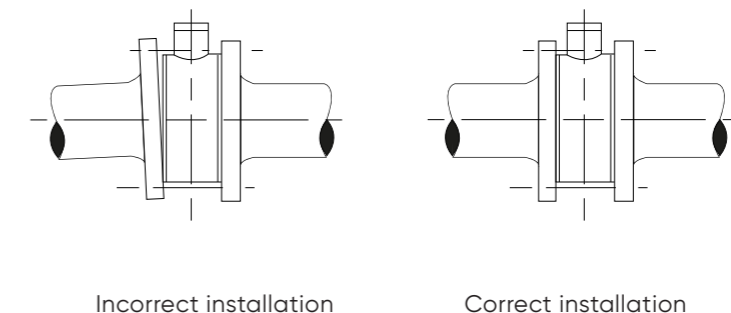
We suggest the following inspection procedure:

- Check that the valve delivered is correct in terms of type, size, equipment, etc.
- Examine the valve, actuator and valve positioner for possible damage.

4 Installation

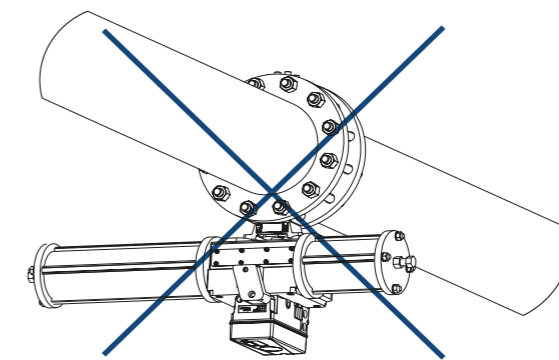
Before installing the valve, ensure the pipework is free from impurities, that the pipe end connectors between which the valve is to be installed are parallel and are correctly aligned, and that the distance between the pipe ends correspond to the valve length, including gaskets. The valve must not be used for drawing together or aligning incorrectly run pipes as this will cause improper loads on the valve and pipe which could lead to difficult problems during operation. See Figure 2.

Figure 2. Ensure that the pipe ends align and have the correct gap



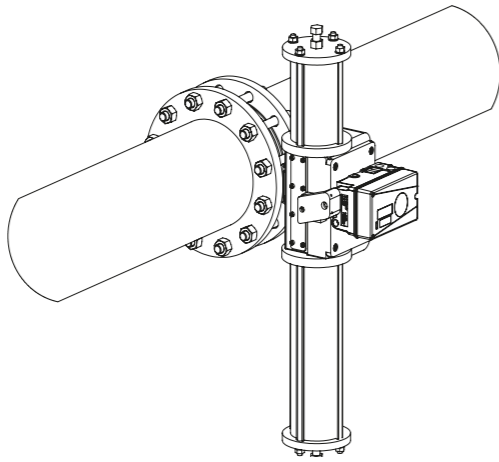
The valve may be installed in any position. The only position we do not recommend is to install the valve with the valve stem and actuator facing downward. In this position, dirt in the pipeline may end up in the stem seal arrangement and compromise the stem tightness over time. Any potential leakage, e.g., from the flange packings, may also damage the actuator. See Figure 3.

Figure 3. Mounting of the actuator in a position facing downward; should be avoided



Valves with an actuator in a spring-returned version are recommended to be mounted with the spring- return unit (longer cylinder) facing downward. This will prevent any condensing water to collect inside the cylinder and instead be released through the filter mounted in the cylinder end. See Figure 4.

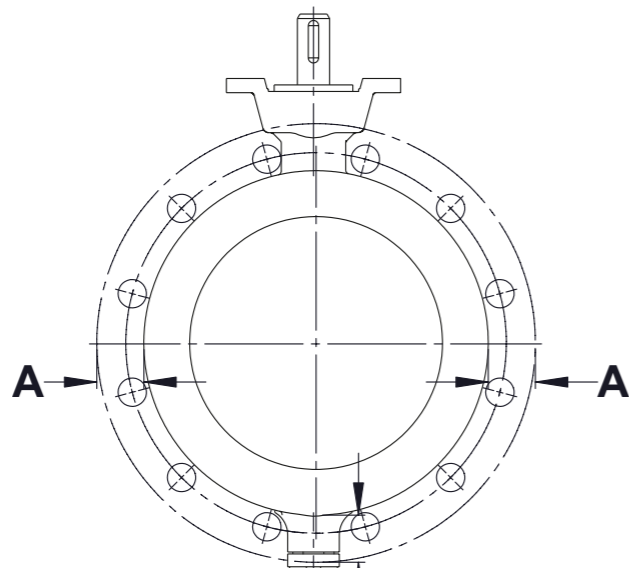
Figure 4. Recommended mounting direction of a spring-returned actuator, spring cylinder facing downward



4.1 FLANGE GASKET

Gaskets with an inside diameter according to or smaller than specified in standards ASME B16.21 Class 150 or EN 1514-1 PN 10-25 can be used.

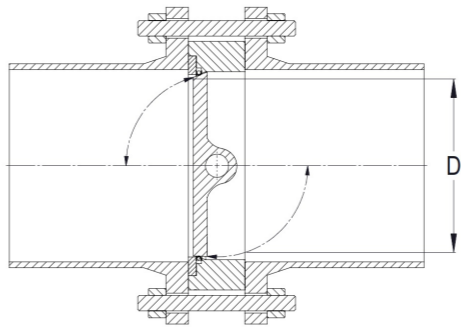
Figure 5. Centering of the valve



The valve must be centered between pipe flanges. In a horizontal pipeline, insert the two bottom through-bolts in the pipe flanges. Cradle the valve on these two bolts and use correctly dimensioned shims, or wedges, to center the valve. The valve is correctly centered when the distance A, shown in Figure 5, is the same all around the circumference. Make certain that the flange face gasket covers both the clamp ring (4) and body (1) surfaces. Ensure that the disc can turn to the open position after the flange bolts are first tightened.

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Figure 6. Disc diameter



Valve Size		D	
DN	NPS	mm	in.
80	3	68	2.7
100	4	89	3.5
125	5	110	4.3
150	6	138	5.4
200	8	192	7.6
250	10	241	9.5
300	12	289	11.4

The maximum allowed torque for the flange bolts can be found in the table below.

Bolt	Torque (Nm)	Bolt (in.)	Torque (Nm)
M12	50	UNC ½	50
M16	125	UNC ¾	85
M20	130	UNC ¾	155
M24	230	UNC ¾	271
M27	300	UNC 1	395
M30	800		



NAF Torex DL valves can be installed in both directions but the preferred direction of the flow is shown by the arrow on the valve body.

The pipes should be supported on each side of the valve in order to relieve the valve of unnecessary loads and avoid vibrations.

Locate the valve so it will be easily accessible for inspection and service, particularly if it is equipped with an actuator and a valve positioner.

5 Commissioning

Before commissioning, flush the pipeworks with all the valves in the open position so that any impurities which may damage the sealing surfaces of the valve, or impede its operation, will be flushed away.

6 Ordering of Spare Parts

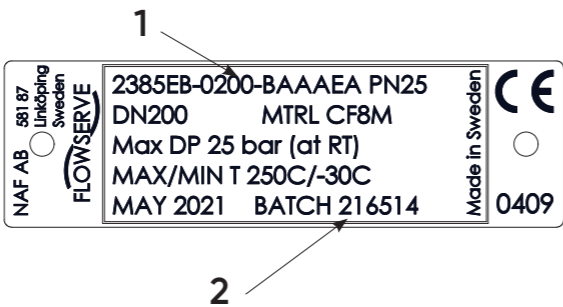
Before commissioning, flush the pipeworks with all the valves in the open position so that any impurities which may damage the sealing surfaces of the valve, or impede its operation, will be flushed away.

When placing an order for spare parts, specify:

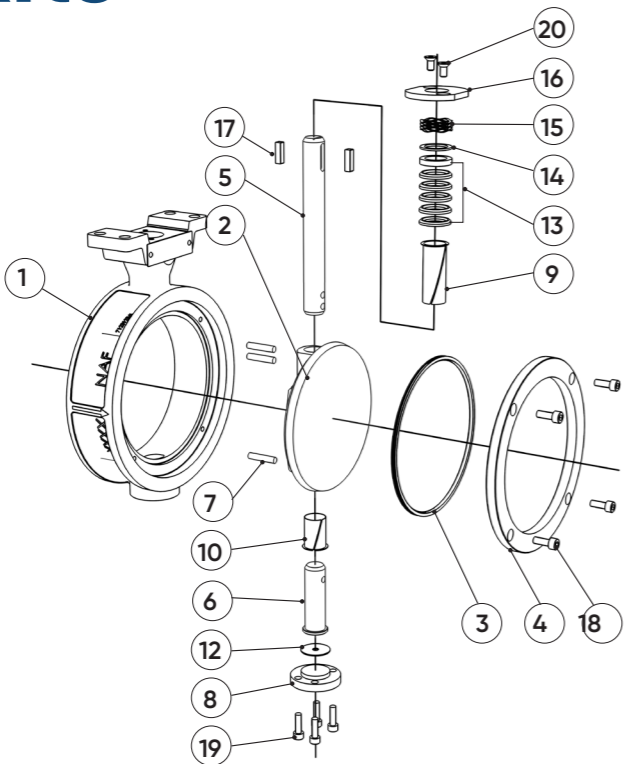
- NAF-No: specified on the identification plate of the valve
- Recommended spare part kit according to Section 7
- Quantity required

Ordering example:

NAF-No: 8985KF-0200-BABAEA
Spare part kit: A
Quantity: 1pc



7 Recommended Spare Parts Kits



Item	Quantity	Part	Kit A (Stem Sealing Kit)	Kit B (Seal Ring Kit)
1	1	Body		
2	1	Disc		
3	1	Seat ring		X
4	1	Clamp ring		
5	1	Stem, upper		
6	1	Stem, lower		
7	2	Pin		
8	1	Bottom cover		
9	1	Bushing, upper		
10	1	Bushing, lower		
12	1	Gasket	X	
13	1	Stem packing	X	
14	1	Washer		
15	1	Spring	X	
16	1	Top cover		
17	2	Key		
18	4	Screw		
19	4	Screw		
20	2	Screw		

8 Maintenance

Many valves are installed in locations where their performance is of critical importance to the entire process. Such valves should be inspected regularly and any issues should immediately be corrected.

Valves intended for use on highly oxidizing media require special handling, such as cleanliness and use of special grease, to avoid safety hazards. Applicable regulations must be followed and the following maintenance instructions can therefore only serve as general guidance.

8.1 REMOVING THE VALVE FROM THE PIPEWORK

The procedure for inspection and maintenance requires no special tools

Ensure the process line is shut off, free of pressure and drained of media.

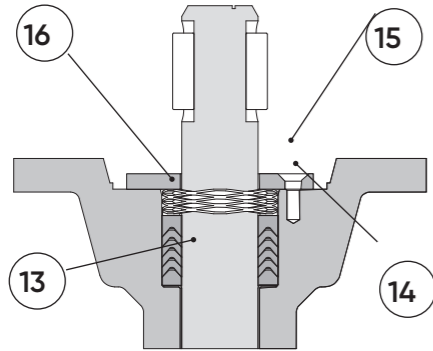
- 1 Ensure that the recommended spare parts and gaskets for the pipe flanges are available.
- 2 Before removing the valve from the pipeline, operate it several times between the open and closed position to ensure that any trapped media / pressure is released.

- 3 Close the valve.
- 4 Shut off all compressed air connections and isolate all electrical connections to the actuator.
- 5 Disconnect all compressed air lines and electric cables connected to the actuator.
- 6 Release the flanged joint between the valve and the pipework. Then lift out the valve. Don't use the actuator for lifting. Apply all lifting forces to the valve itself and not to the actuator. See Figure 1.

Caution. Liquid in the valve may be harmful.

8.2 REPLACING THE STEM PACKING

If the stem seal is leaking, the stem packing must be replaced. Even if the stem seal does not leak, we always recommend replacing the stem packing every time the valve is taken out of service. Replacing the stem packing will reduce unnecessary extra work and downtime caused by a stem leakage in the future. We always recommend the use of a stem sealing kit, spare part kit A according to Section 7.



! Make sure that the valve is not under pressure.

- 1 Remove any actuator.
- 2 The two keys (17), two screws (20) and gland cover (16) can now be removed. See Figures 3 and 4.
- 3 Remove the spring (15) and the washer (14).
- 4 Remove the stem packing (13).
- 5 Check the stem (5) for any sharp edges, particularly around the key way. If necessary, gently grind off such sharp edges to make sure the stem packing (13) isn't damaged when put onto the stem (5).
- 6 Clean the stem seal area of the body (1) and put the stem packing rings (13) onto the stem using a suitable silicon grease, both on the stem and into the stem seal area.
- 7 Use the cover (16) to gently push the stem packing into the body (1).
- 8 Add the washer (14) and the spring (15) to the stem and use the cover (16) to gently push the stem packing (13), washers and spring into the valve body (1).
- 9 Tighten the two screws (20) alternately in several stages until the spring (15) is completely compressed. Now tighten the two screws (20) firmly.
- 10 Put back the keys (17).
- 11 ANDRITZ recommends that the valve is tested for leakage after it has been re-assembled. All testing should follow applicable standards and be carried out under safe procedures. See section 8.6.

8.3 REPLACING THE SEAT RING

After an extended service period, it will eventually be necessary to replace the seat ring (3) in order for the valve to maintain good tightness. The parts needed to replace the seat are included in the spare part kit B according to Section 6.

- !** Make sure that the valve is not under pressure.
- !** If an actuator is fitted to the valve, it does not need to be removed for inspection and replacement of the seat ring.

- 1 Remove the screws (18), clamp ring (4) and seat ring (3).
- 2 Clean the seat area of the valve body and disc.
- 3 Center the seat ring and turn the disc to maintain a light contact with the seat.
- 4 Fit the clamp ring (4) into the valve body and tighten the clamp ring screws (18) lightly.
- 5 Turn the disc to open slightly and pull it back to the closed position with a distinct motion so the seat finds its place, then tighten the clamp ring screws (18).

8.4 TESTING THE VALVE

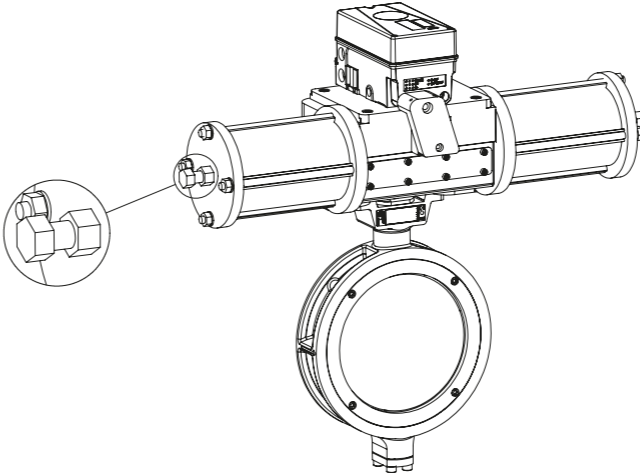
ANDRITZ recommends that the valve be tested for leakage after it has been re-assembled. All testing should follow applicable standards and be carried out under safe procedures using equipment suitable for the pressure class.

- !** If an actuator is fitted to the valve, it does not need to be removed for inspection and replacement of the seat ring.
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9 Fitting an Actuator to the Valve

- 1 Fit the actuator to the valve. Ensure that both the valve and the actuator are in the closed position before fitting the actuator. The valve is in the closed position when the keys (17) in the stem (5) face in the direction of flow. (An actuator which uses compressed air to close the valve and a return spring to open the valve should be fitted with the actuator and valve in the open position.)

Figure 6. Highlighted stop screw (left side) adjusts closed position of the actuator.

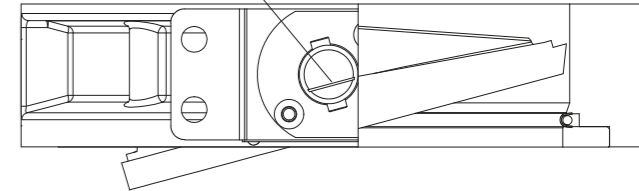


- 3 Open the valve and use the stop screw on the left side of the actuator to adjust the fully open position of the valve/actuator. We recommend the fully open position is at 90° for on-off applications and be reduced to 70° for control applications.

! The direction of closure must always be clockwise, as viewed from the actuator.

Figure 7. Indication groove at stem end represents

Indication groove



- 2 Apply a closing torque according to the following table so the valve goes to its closed position. Adjust the right stop screw to that position.

Valve Size		Maximum Closing Torque (Nm)
DN	NPS	
80	3	30
100	4	50
125	5	65
150	6	100
200	8	210
250	10	370
300	12	550



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