



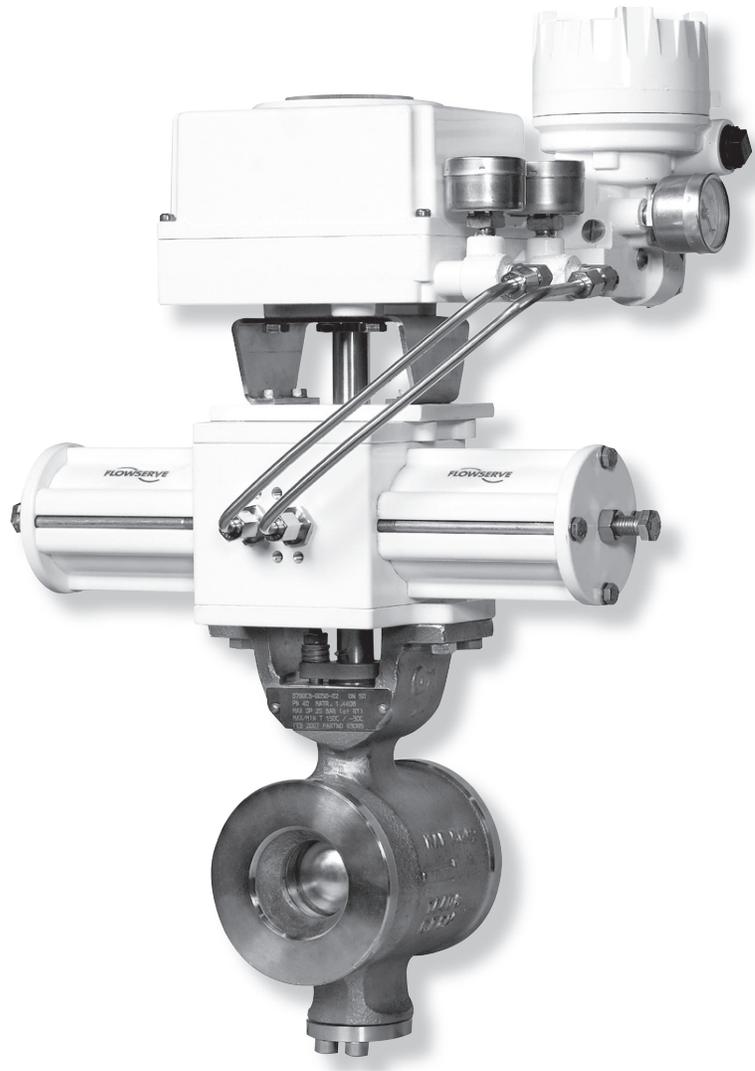
USER INSTRUCTIONS

Valtek ShearStream SB Control Valves

Segmented V-port Ball Valves

FCD VLENIM4152-01 07.09

*Installation
Operation
Maintenance*



Experience In Motion

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1. General

The instructions and list of spare parts are applicable to ShearStream SB ball sector valves in accordance with catalogue sheet FCD NFEETB4152-01.

2. Lifting

All lifting must be carried out on the valve itself and not on the actuator. The joint between the valve and the actuator is designed for carrying the operating torque and the weight of the actuator - see Fig. 1.

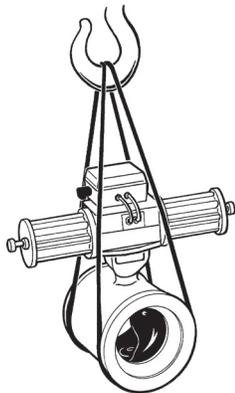


Fig.1 Lifting of the valve

3. Receiving Inspection

All valves leaving our plant are inspected and tested in accordance with the relevant requirements or in accordance with the requirements specified by the purchaser. Valves equipped with actuators are subject to functional testing and are adjusted in such a manner that every unit is completely ready for direct installation in the pipework. However, in view of damage that may have occurred during transport, it is advisable that receiving inspection is performed.

We would 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 **regarding possible damages.**

4. Installation

Before installing the valve, ensure that **the pipework is free from impurities**, that the pipe ends between which the valve is to be installed are parallel and are correctly aligned, and that the distance between the pipe ends corresponds to the valve length, including gaskets. **The valve could not be used for forcing together or aligning incorrectly pipes** as this will cause loads on the valve and pipe which may lead to difficult damages during operation. See Fig. 3.

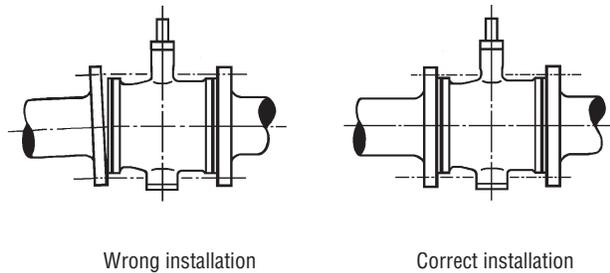


Fig. 3. Ensure that the pipe ends align and have the correct distance

ShearStream SB valves can be installed in any position.

However, we recommend the direction of flow which is shown by an arrow on the valve body. The sealing performance of the valve is limited if the flow is in the opposite direction.

We also recommend that the valve is mounted with the stem pointing vertically upwards when the valve is installed in a horizontal run of pipe.

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

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

5. Flange Gaskets

Gaskets with sizes according to ANSI B16.5, Table E1 Figure E2, SS 359 or DIN 2690 are recommended.

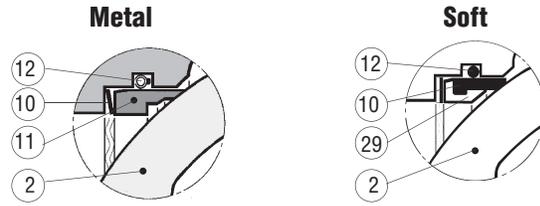
6. Starting up

Before starting up, flush the pipework - with all valves in the open position - so that any impurities that may damage the sealing surfaces of the valve and impede its operation will be flushed away.

7. List of Materials and Spare Parts

Item	Qty	Part	Material
1	1	Body	EN1.4408/CF8M
1	1	Body	EN1.0619/WCB
2	1	Ball sector	EN1.4408/CF8M HCP
2	1	Ball sector	EN1.4408/CF8M
3	1	Stem, upper	EN1.4460
4	1	Stem, lower	EN1.4460
5	1	Gland cover	EN1.4408/CF8M
6	1	Bottom cover	EN1.4408/CF8M
7	1	Gasket	Graphite
8	1	Locking segment	EN1.4436
9	1	Bearing seat	EN1.4460
10	1	Wave spring	EN1.4436
11	1	Seat ring	Alloy 6
12	1	Seat seal	PTFE
13	1	O-ring	FPM
14	1	Backing ring	PTFE
17	2	Screw	A4
18	2	Nut	A4
19A	1	Boxpacking Safeguard	V-ring PTFE liveloaded
19B	1	Boxpacking Zebra-CL	V-ring PTFE
20	4	Bolt	A4
21	1	Cap spring	EN1.4310
22	1	Key	Steel
23	1	Indicating pin	SS
26	1	Washer	A4
27	1	Thread insert	Stainless
28	1	Bolt	A4
29	1	Seat ring/Back-up ring	PTFE/SS
30	1	Stem bearing	Metaloplast
31	1	Stem bearing	Metaloplast
32	1	Washer	A4
33	1	Cylindrical pin	EN1.4460
34	1	Washer	Metaloplast

Seat ring



Stem sealing

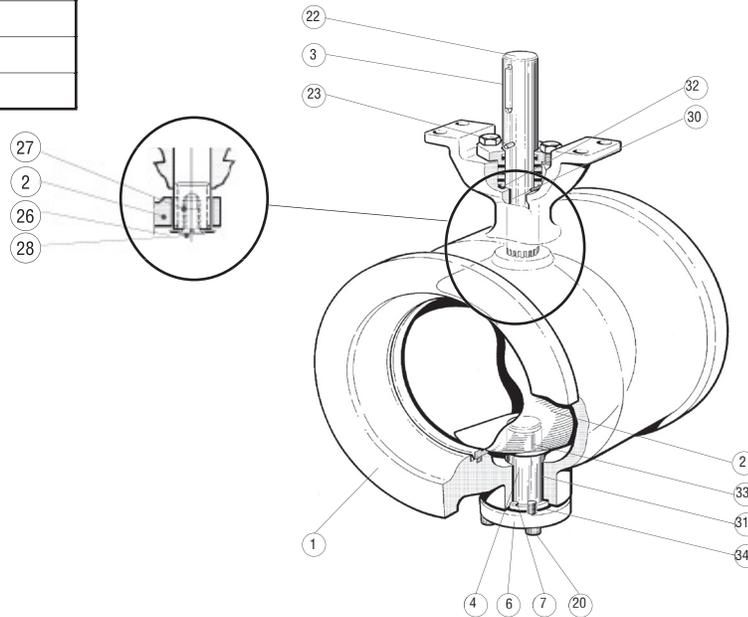
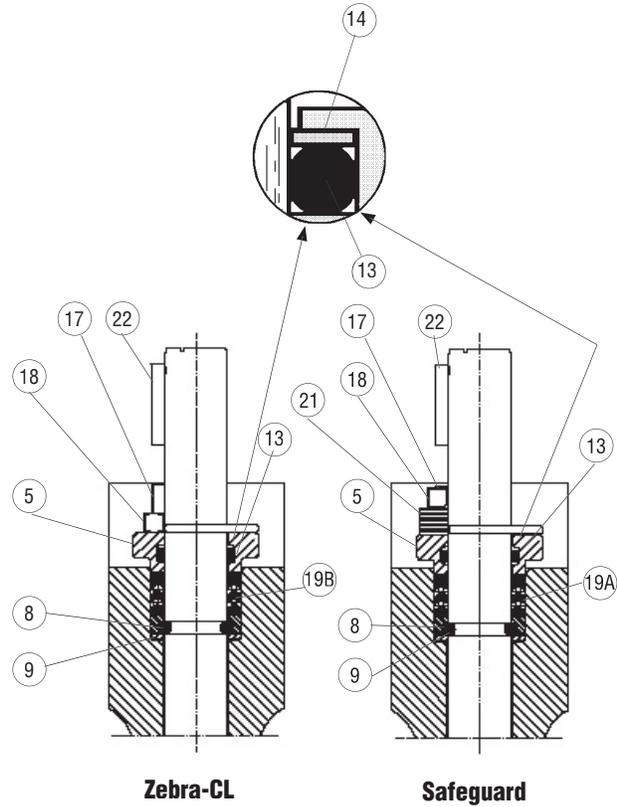


Fig. 4. ShearStream SB - spare parts, types of stem sealings and seat rings

8. Product code for important spare parts and spare parts sets

Set or detail						
Stem sealing set			Seat ring set		Other spare parts	
Type	Zebra CL™	Safeguard	Alloy 6	PTFE		
Item No	19A	19B	11, 12	12, 29	7	10
DN						
25	349 08 050	349 25 540	349 08 080	349 17 460	348 88 295	333 98 460
0040	349 08 050	349 25 540	349 08 081	349 17 461	348 88 295	333 98 461
0050	349 08 050	349 25 540	349 08 082	349 17 462	348 88 295	333 98 462
0065	349 08 050	349 25 540	349 06 089	349 17 469	348 88 295	333 98 469
0080	349 08 050	349 25 540	349 08 083	349 17 463	348 88 294	333 98 463
0100	349 08 050	349 25 540	349 08 084	349 17 464	348 88 294	333 98 464
0150	349 08 051	349 25 500	349 08 085	349 17 465	348 88 290	333 98 465
0200	349 08 052	349 25 720	349 08 086	349 17 466	348 88 291	333 98 466
0250	349 08 053	349 25 760	349 08 087	349 17 467	348 88 292	333 98 467
0300	349 08 054	349 25 140	349 08 088	349 17 468	348 88 293	333 98 468
0350	-	349 25 180	349 17 430	349 20 030	349 15 260	333 00 430
0400	-	349 25 180	349 17 431	349 20 031	349 15 260	333 00 431
0500	-	349 25 180	349 17 432	349 20 032	349 15 261	333 00 432

* Three rings are requested per valve for DN 25 - 100, four rings per valve for DN 150 - 300

8.1 Ordering of Spare Parts

When placing orders for spare parts, specify:

1. Product code of the valve - incl. DN, see part No. specified on the identification plate of the valve.
2. Description of the part, its item No. or spare parts set number, and the quantity required.

Ordering example

For ShearStream SB 8782EB-0200-AAAABA,
Part. No. 1234567

1 - Stem upper, item 3
or

For ShearStream SB 8782EB-0200-AAAABA,
Part. No. 1234567

1 - Stem sealing set, product code 349 08 052

9. Maintenance

If the ball segment or seat ring has sustained damage due to impurities in the pipework or for some other reason, or if the seat ring and stem seals need replacing after a long period of service, the valve must be overhauled.

Many valves are installed in such locations that their performance is of **decisive importance** to the entire process. Such valves should be **inspected regularly and any faults should immediately be corrected**.

9.1 To remove the valve from the pipework

The procedure for inspection and maintenance, for which no special tools are necessary, is as follows:

1. Ensure that the recommended spare parts and also the gaskets - important - for the pipe flanges are available.
2. Close the valve.
3. Shut off all compressed air connections and isolate all electrical connections to the actuator.
4. Disconnect all compressed air lines and electric cables connected to the actuator.
5. 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 fig. 1.

Note the direction of flow which is shown by an arrow on the valve body.

9.2 To inspect the ball sector and seat ring

1. If an actuator is fitted to the valve, remove it. See section 9.3, items 1 and 2.
2. Remove the indicating pin (23 - fig. 4).
3. Turn the ball sector through more than 90°, until it is no longer in contact with the seat ring.
4. Push the seat ring out of its seat at the valve body inlet. Withdraw it past the ball sector - between the ball sector and the inside of the valve body - towards the outlet, and remove it from the body.

5. Remove the compression spring (10) in the same way.
6. Carefully wash all parts with warm water and then, if necessary, with a suitable solvent. Never scrape the sealing surfaces with hard tools.
7. Examine the surface of the ball sector (2). Remove any deposits and clean the ball sector as described in item 6 above.

N.B. Take care not to scratch the sealing surface of the ball sector.

8. Inspect the seat ring (11) and clean it as described in item 6 above.
9. Inspect the sealing ring (12) - it need not be removed from its groove in the body. Fit a new sealing ring if the original one is damaged.
10. Lubricate the ball segment with a suitable lubricant, such as Molykote Paste U, Gleitmo 700 or similar.
11. Lubricate the surface of the sealing ring (12) with a silicone-base grease, such as Silicone grease DC 111, Silicone grease TKM 1011 or similar.
12. Fit the compression spring (10) and seat ring (11). Turn the ball sector (2) until it is in contact with seat ring (11). Use a soft object to press the seat ring towards the compression spring (10) to enable the ball sector to move into its proper position. Continue turning the sector to the closed position.
13. Fit the indicating pin (23).

N.B. An additional function of the indicating pin is to restrict the travel of the ball segment to 95 - 100°, so that it will always remain in contact with the seat ring.

9.3 To inspect and replace the upper shaft seal of Safeguard type

The stuffing box usually requires inspection and adjustment after the valve has been taken into service. After a certain period of time in service, it may sometimes also be necessary to replace the packing.

Make sure that the valve is not under pressure.

1. If an actuator is fitted to the valve, remove it. Begin by removing the valve positioner. This can easily be done after the plastic cover of the valve positioner has been removed. Remove the four bolts securing the valve positioner to the actuator. Then remove the nuts securing the actuator to the valve mounting plate and dismantle the actuator.
2. Remove the key.
3. Remove the nuts (18). Remove the gland (5). Then remove the packing (19).

4. Clean the surfaces of the stem, gland (5) and packing area in the valve body.
5. Carefully examine the surface of the stem which must be completely free from marks and scratches.
6. Grease the stem with a suitable grease, such as Silicone grease.
7. Mount new packing (19). Then mount the gland (5) and the nuts (18).
8. Tighten the nuts (18) sufficiently to ensure that the packing is correctly seated.

Note: Check the tightness of the packing after the valve has been taken into service, retighten the nuts (18), if necessary.

9.4 To inspect and replace the upper shaft seal of Zebra CL™ type

The stuffing box usually requires inspection and adjustment after the valve has been taken into service. After a certain period of time in service, it may sometimes also be necessary to replace the packing.

1. Remove the actuator as described in section 9.3, items 1. Remove the keys (22) and the indicator pin (23).
2. Remove the nuts (18), spring cups and gland (5). Then remove the packing (19).
3. Clean the surfaces of the stem, gland (5) and packing area in the valve body.
4. Carefully examine the surface of the stem which must be completely free from marks and scratches.
5. Grease the stem with a suitable grease, such as Silicone grease.
6. Mount new packing (19) when mounting the gland (5) and the spring cups and then the nuts (18).
7. Tighten the nuts (18) sufficiently according to the torque table in catalogue sheet FCD NFEETB4152-01 to ensure that the packing is correctly seated.

Note: Check the tightness of the packing after the valve has been taken into service.

9.5 To change the gasket at the lower stem

1. The gasket (7) should be replaced in conjunction with the inspection of the seat ring (11).
2. Remove the bolts (20) and the cover (6).
3. Withdraw the stem (4) and remove the gasket (7).
4. Carefully clean the inside of the cover (6) and the stem (4).
5. Fit a new gasket (7) and lubricate the small end of the stem with a suitable lubricant, such as Molykote Paste U or Gleitmo 700.
6. Fit the stem (4) with the gasket (7).
7. Spray the bolt threads with locking compound, such as Loctite 641.
8. Fit the cover (6) and tighten the bolts (20).

10. Fitting the Actuator to the Valve

1. The actuator can be mounted directly on the valve. The mounting flange and the valve stem follow the NAF standard for securing the actuator.
2. Turn the valve to the closed position. The key should face towards the inlet.
3. Fit the actuator.
4. Connect the compressed air supply to the actuator - applies to pneumatic actuators. If the end position stop is correctly set, the ball segment will not move when compressed air pressure is applied.
5. If moving - adjust the end position stop until the actuator has turned the ball segment to the closed position.
6. **General**
The actuator may be fitted either in line with the connected pipes or transversely to them. An intermediate plate is necessary for mounting the actuator in line with the pipework.

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

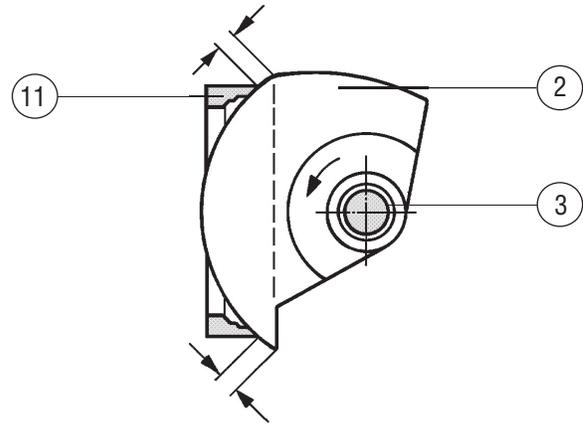


Fig. 5. Locating of the ball sector sphere when adjusting the actuator

Before fitting the actuator, it is important to ensure that the actuator fits the stem. First try without key to check that the drive slips onto the shaft. Also check that the key fits and matches the keyways in the shaft. Grease the actuator shaft entry. Push the actuator onto the stem.

The travel of the ball sector should be restricted to 90°, which is the travel necessary between fully open and fully closed. If the sector is turned beyond this range, the sealing surfaces of the sector and seat ring may be damaged when an attempt is made to turn the ball sector back to the correct position and the sector may jam against the seat ring. In practice, this is prevented by the indicating pin which will come into contact with the bolts retaining the top cover if an attempt is made to turn the ball sector outside the range between fully open and fully closed. When adjusting the actuator, make sure that, in the closed position, the sphere of the ball sector (2) is located opposite the seat ring (11), i.e. that the sphere projects beyond the seat ring by equal amounts on each side of the seat as shown in Fig. 5.

**Flowserve Corporation**

Flow Control
1350 N. Mt. Springs Parkway
Springville, UT 84663
USA
Phone: +1-801 489 8611
Fax: +1-801 489 3719

Flowserve Flow Control

5114 Railroad Street
Deer Park, TX 77536
USA
Phone: +1-281 479 9500
Fax: +1-281 479 8511

Flowserve Pte Ltd.

12 Tuas Avenue 20
Singapore 638824
Singapore
Phone: 65 6868 4628
Fax: 65 6862 4940

Flowserve India Controls Pvt. Ltd.

Plot # 4, 1A, E.P.I.P, Whitefield
Bangalore Kamataka
India 560 066
Phone: +91-80-28410289
Fax: +91-80-28410286

Flowserve Linköping

Gelbgjutaregatan 2
58187 Linköping
Sweden
Phone: +46 (0) 13 31 61 00
Fax: +46 (0) 13 13 60 54

Flowserve Essen GmbH

Manderscheidtstrasse 19
45141 Essen
Germany
Phone: +49 (0) 201 89 19 5
Fax: +49 (0) 201 89 19 662

Flowserve S.A.S.

12, avenue du Quebec
B.P. 645
91965 Courtaboeuf Cedex
France
Phone: 33 (0) 1 60 92 32 51
Fax: 33 (0) 1 60 92 32 99

Flowserve (Austria) GmbH

Control Valves - Villach Operations
Kasernengasse 6
9500 Villach
Austria
Phone: +43 (0) 42 42 41181-0
Fax: +43 (0) 42 42 4118150

To find your local Flowserve representative:

For more information about Flowserve Corporation, visit
www.flowserve.com or call USA 1 800 225 6989

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