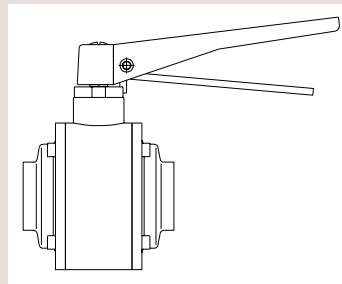
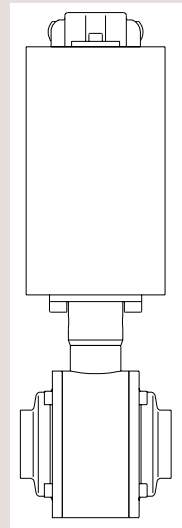
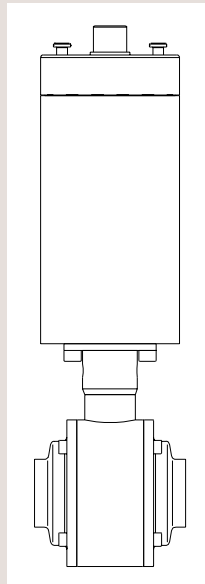




# Operating Manual

## SBV Sanitary Ball Valve



# Declaration of Conformity

## The designating company

**Alfa Laval**

Company Name

**6000 Kolding**

Address

**+45 79 32 22 00**

Phone No.

hereby declare that

**Sanitary Ball Valve**

Denomination

**SBV**

Type

Year

Was manufactured in conformity with the provisions in the COUNCIL DIRECTIVE of 14 June 1989 on mutual approximation of the laws of the Member States on the safety of machines (89/392/EEC as amended by directives 91/368/EEC and 93/44/EEC) with special reference to Annex 1 of the directive on essential safety and health requirements in relation to the construction and manufacture of machines.

**Bjarne Søndergaard**

Name

**Vice President, R & D**

Title

**Alfa Laval**

Company

*B. Søndergaard*

Signature

**Designation**



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*This manual is divided into main sections below.*

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Spare parts

# Safety

Unsafe practices and other important information are emphasized in this manual.

Warnings are emphasized by means of special signs.

## 1. Important information

Always read the manual before using the valve!

2

### WARNING!

: Indicates that special procedures **must** be followed to avoid severe personal injury.

### CAUTION!

: Indicates that special procedures **must** be followed to avoid damage to the valve.

### NOTE!

: Indicates important information to simplify or clarify practices.

---

## 2. Warning signs



: General warning.



: Caustic agents.

All warnings in the manual are summarized on this page.

Pay special attention to the instructions below so that severe personal injury or damage to the valve are avoided.

## 3. Safety precautions

### Installation:



- : - **Always** observe the technical data (see page 15).
- **Always** release compressed air after use.

### Operation



- : **Always** observe the technical data (see page 15).



- : **Never** touch the valve or the pipelines when processing hot liquids or when sterilizing.



- : **Always** handle lye and acid with great care.

### Maintenance:



- : - **Always** observe the technical data (see page 15)
- **Always** release compressed air after use.



- : - The valve must **never** be hot when servicing it.
- The valve/actuator and the pipelines must **never** be pressurised when servicing the valve/actuator.



- : **Never** stick your fingers through the valve ports if the valve is supplied with compressed air.

# Installation

The instruction manual is part of the delivery.  
Study the instructions carefully.  
The items refer to the drawings and parts list on  
pages 16-17.

## 1. Unpacking/Delivery /General installation

---

1

### NOTE!

Alfa Laval cannot be held responsible for incorrect  
unpacking.

### Check the delivery:

1. Complete valve.
  2. Delivery note.
- 

3



- **Always** observe the technical data  
(see page 15).
- **Always** release compressed air after  
use.

### NOTE!

Alfa Laval cannot be held responsible for incorrect  
installation.

---

2

1. Clean the valve for possible packing  
materials.
  2. Inspect the valve for visible transport  
damage.
  3. Avoid damaging air and pipe connections
- 

4

Avoid stressing the valve.

Pay special attention to:

- Vibrations.
- Thermal expansion of the tubes.
- Excessive welding.
- Overloading of the pipelines.

### Fittings:

Ensure that the connections are tight.

### Air connection of actuator:

Connect compressed air correctly.

**Pay special attention to warnings!**

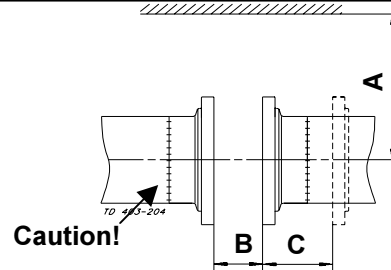
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Study the instructions carefully.

## 3. Welding

1

1. Dismantle the flanges in accordance with the instructions on pages 12-13. Remove seal rings and O-rings.
2. Weld the flanges into the pipe lines. Keep distance B between flanges.
3. If welding both flanges, ensure that the flanges can be moved axially minimum C mm to allow for valve maintenance.
4. Maintain the minimum clearance A so that the actuator or handle can be removed.
5. Assemble the valve in accordance with the instructions on page 14 after the welding.



Size	A (mm)		B (mm)	C (mm)
	Manual	Actuated		
DN/OD 25 DN 25	317	507	34	30
DN/OD 38 DN 40	325	515	40	30
DN/OD 51 DN 50	335	524	50	30
DN/OD 63,5 DN 65	345	535	56	40
DN/OD 76,1 DN 80	356	546	70	40
DN/OD 101,6 DN 100	406	595	100	40

**NOTE:** Valves with adapter and *ThinkTop*: add 200 mm to dimension A

2

### Pre-use check:

Open and close the valve several times to ensure that the ball moves smoothly against the seal rings.

**Pay special attention to the warnings!**

# Installation

Study the instructions carefully.

## 4. Indication and control equipment (optional extras)

1

### CAUTION!

The indication and control equipment must be electrically installed by authorized personnel only.

- Inductive proximity switches:  
(See the instructions on the unit).
- **ThinkTop®**:  
(See the separate instruction manual).

2

### Manual valves:

Manual valves with optional handle for inductive proximity switches are designed for the mounting of one or two M12 feedback sensors for open and/or closed position detection. Feedback sensors should be installed and adjusted according to the specification on the unit.

3

### Valves with standard actuator:

Valves with standard actuator are prepared for the mounting of one or two M12 feedback sensors on the position indicator.

Mounting:

1. Remove the red plastic cap for the desired valve position.
2. Tighten the sensor unit gently.
3. Install the unit according to product specification.

4

### Valves with ThinkTop® adapter:

Follow the instructions in the manual.




Study the instructions carefully and pay special attention to the warnings!

The valve is automatically or manually operated by means of an actuator or a handle.

## 1. Operation

1

 **Always** observe the technical data (see page 15).

### NOTE!

Alfa Laval cannot be held responsible for incorrect operation.

3

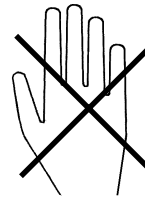
### Operation by means of actuator:

Automatic on/off operation by means of compressed air.

The position indicator on the actuator reflects the ball bore position.

2

**Burning danger!**



**Never** touch the valve or the pipelines when processing hot liquids or when sterilizing.

4

### Operation by means of handle:

1. Manual on/off operation.
2. Press handle arms together while rotating it.

The position of the handle reflects the position of the ball bore.

Pay attention to possible break-down.  
Study the instructions carefully.

NC = Normally closed.  
NO = Normally open.

## 2. Fault finding

8

### NOTE!

Study the maintenance instructions carefully  
before replacing worn parts. - See page 10!

Problem	Cause/result	Repair
Internal leakage (normal wear)	Worn valve seat Worn flange O-rings	Replace the product wetted seals
Internal leakage (too early)	Worn valve seat Worn flange O-rings Many activations High pressure and/or temperature Aggressive media	Replace the product wetted seals Consider selecting another elastomer sealing material Change operating conditions
External leakage (normal wear)	Worn flange O-rings Worn stem sealing unit	Replace all seals
External leakage (too early)	Damaged or worn flange O-rings Damaged or worn stem sealing unit Many activations High pressure and/or temperature Aggressive media	Replace all seals Select another elastomer sealing material grade Change operating conditions
Valve cannot be activated or is difficult to operate	Too low air pressure. Incorrect elastomer material (swelling)	Check and correct air pressure Select another elastomer sealing material grade
Valve is NO (normally open), should be NC (normally closed)	90° displacement of the actuator	Remove actuator, turn valve into desired pressureless position and remount actuator

The valve is designed for cleaning in place (CIP).  
CIP = Cleaning In Place.

Study the instructions carefully and pay special attention to the warnings!  
NaOH = Caustic Soda.  
HNO<sub>3</sub> = Nitric acid.

### 3. Recommended cleaning

#### 1 Caustic danger!



**Always** use rubber gloves!



**Always** use protective goggles!



**Always** handle lye and acid with great care.

#### 3

#### Examples of cleaning agents:

Use clean water, free from chlorides.

1. 1% by weight NaOH at 70°C.

1 kg NaOH	+	100 l water	= Cleaning agent.
--------------	---	----------------	-------------------

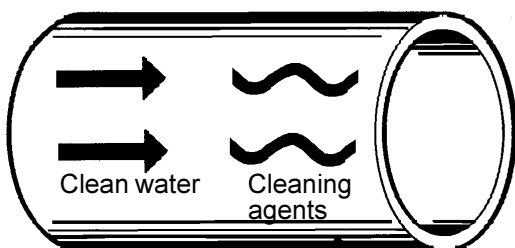
2.2 l 33% NaOH	+	100 l water	= Cleaning agent.
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2. 0.5% by weight HNO<sub>3</sub> at 70°C.

0.7 l 53% HNO <sub>3</sub>	+	100 l water	= Cleaning agent.
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#### 5

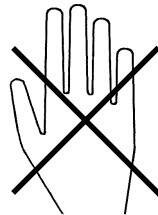
**Always!**



**Always** rinse well with clean water after the cleaning.

#### 2

**Burning danger!**



**Never** touch the valve or the pipelines when sterilizing.

#### 4

1. Avoid excessive concentration of the cleaning agent

⇒ **Dose gradually!**

2. Adjust the cleaning flow to the process

⇒ **Sterilization of milk/viscous liquids**

⇒ **Increase the cleaning flow!**

#### 6

#### NOTE!

The cleaning agents must be stored/discharged in accordance with current rules/directives.

# Maintenance

10

Maintain the valve and the actuator carefully.  
Study the instructions carefully and pay special attention to the warnings!

Always keep service kits in stock.

## 1. General maintenance

1



- **Always** observe the technical data (see page 15).
- **Always** release compressed air after use.

### NOTE!

All scrap must be stored/discharged in accordance with current rules/directives.

2

**Atmospheric pressure required!**

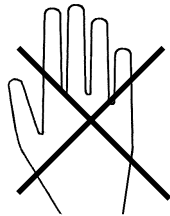
**Burning danger!**



- The valve must **never** be hot when servicing it.
- The valve/actuator and the pipelines must **never** be pressurised when servicing the valve/actuator.

3

**Cutting danger!**



**Never** stick your fingers through the valve ports if compressed air is supplied to the actuator.

Maintain the valve and the actuator carefully.  
Study the instructions carefully.

Always keep service kits in stock.

## 1. General maintenance

---

### Ordering spare parts

- Contact the Sales Department.
- Order from the Spare Parts List.

**Recommended spare parts: Service kits (see Spare Parts List).**

	Product wetted seals	Valve stem seals
Preventive maintenance maintenance	<b>Replace after 12 months 12 months</b> (product wetted seals only)	<b>Replace all seals after 24 months</b>
Maintenance after leakage (leakage normally starts slowly)	<b>Replace by the end of the day</b>	<b>Replace by the end of the day</b>
Planned maintenance	<ul style="list-style-type: none"> <li>- Regular inspection for leakage and smooth operation</li> <li>- Keep a record of the valve</li> <li>- Use the statistics for planning of inspections</li> </ul>	<ul style="list-style-type: none"> <li>- Regular inspection for leakage and smooth operation</li> <li>- Keep a record of the valve</li> <li>- Use the statistics for planning of inspections</li> </ul>

**NOTE!** The actuator is maintenance-free.

# Maintenance

Study the instructions carefully.  
The items refer to the drawings and the parts list on  
pages 16-17.

Service kit:  
2 pcs. valve seat (5)  
2 pcs. O-ring (6)  
2. pcs. O-ring (7)

## 2. Replacement of product wetted seals

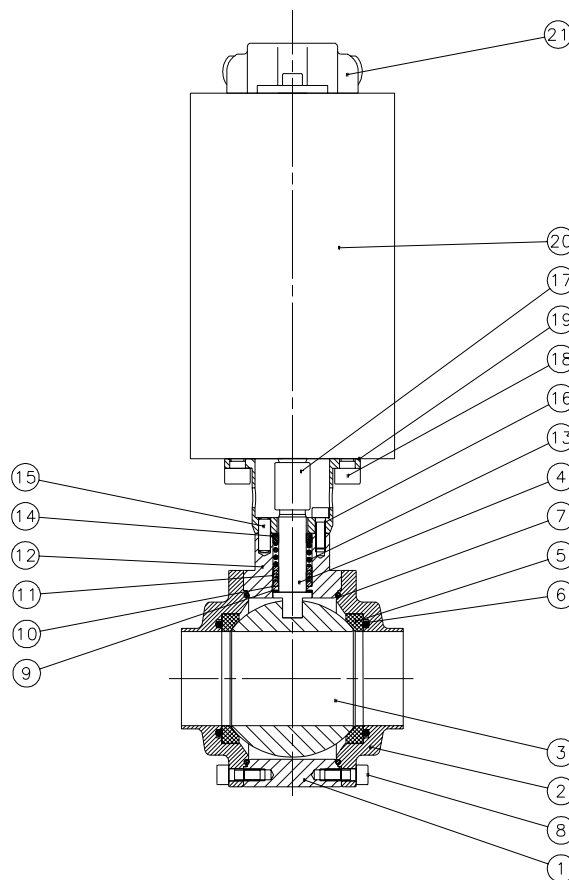
1

1. Release all compressed air (actuated valves only).
2. Loosen and remove flange screws (8) and remove valve from pipe line (be careful not to drop the ball if the valve is in closed position.)
3. Remove ball (3) and check for excessive wear or damage
4. Remove valve seat (5) and O-rings (6), (7) from flange (2).

2

1. Insert new O-rings (6), (7) and valve seat (5) in flange (2).
2. Fit ball  
**(CAUTION! NC valves:** Ball should be turned to "closed" position before fitting the actuator without compressed air (be careful not to drop the ball).  
**NO valves:** Ball should be turned to "open" position before fitting acuator.
3. Insert valve body (1) between flanges (2)
4. Tighten screws (8) until metallic stop.

12



Study the instructions carefully.  
The items refer to the drawings and the parts list on pages 16-17.

## 3. Replacement of all seals

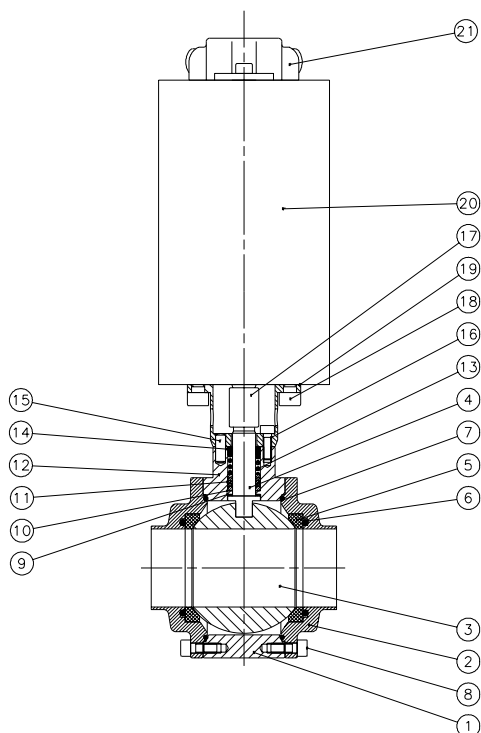
1

### Disassembly of valve:

Release all compressed air (actuated valves only).

3

**Actuated valves:** Loosen screws (18) and remove actuator (20) and coupling (17). Loosen screws (16) and remove bonnet (19)  
**Manual valves:** Loosen screw (26) and remove handle (25). Loosen screws (23) and remove top plate (24).



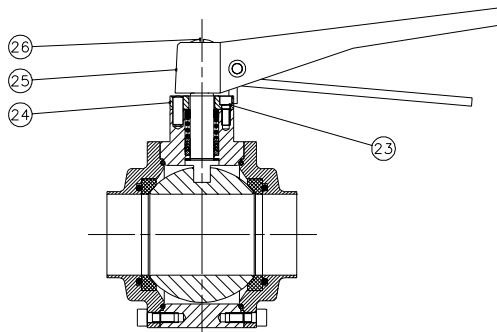
Service kit:  
1 pcs. sliding ring (9)  
1 pcs. support ring (10)  
3 pcs. V-ring (11)  
1 pcs. pressure ring (12)  
1 pcs. slide bearing (14)  
1 pcs. mounting tool for pos. (10), (11) and (12)  
Plus content of service kit for product wetted seals

2

1. Loosen and remove flange screws (8) and remove valve from pipe line (be careful not to drop the ball if the valve is in closed position.)
2. Remove ball (3) and check for excessive wear or damage
3. Remove valve seat (5) and O-rings (6), (7) from flange (2).

4

1. Remove slide bearing (14) and spring (13).
2. Remove stem (4) and sliding ring (9) through the valve body (1).
3. Remove stem gasket unit (10), (11) and (12).



# Maintenance

Study the instructions carefully.  
The items refer to the drawings and the parts list on pages 16-17.

1

**Reassembly of valve:**  
Place the new sliding ring (9) on stem (4) and mount stem unit in valve body (1).

3

1. Place spring (13) and new slide bearing (14) on stem (4).

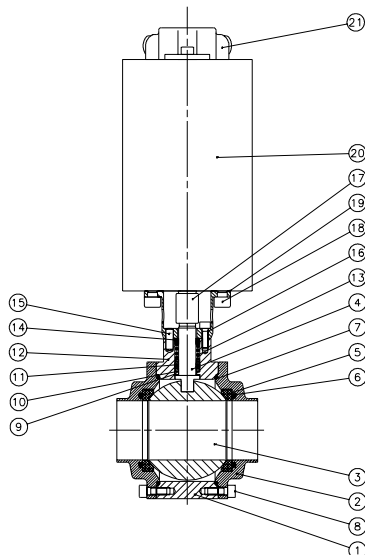
*Actuated valves:* Mount bonnet (19) on valve body (1) with screws (16) (align bonnet (19) with the two pins (15)).

*Manual valves:* Mount top plate (24) on valve body (1) with screws (23) (align top plate (24) with the two pins (15)).

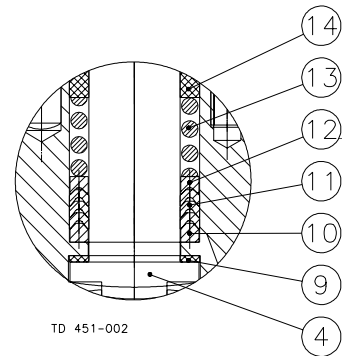
5

*Actuated valves:* Mount coupling (17) and actuator (20) on bonnet (19) with screws (18) (align position indicators on actuator and stem).

*Manual valves:* Mount handle (25) on stem (4) with screw (26) (align handle with position indicator on stem).



2



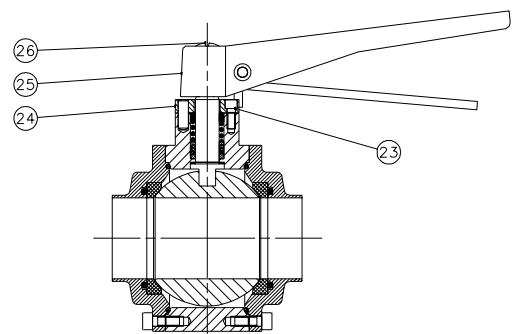
Insert new gasket unit (10), (11) and (12) in valve body. Use the mounting tool and be careful not to damage the stem gaskets

4

Fit ball  
**(CAUTION! NC valves:** Ball should be turned to "closed" position before fitting the actuator without compressed air (be careful not to drop the ball).  
**NO valves:** Ball should be turned to "open" position before fitting acuator.

6

1. Insert new O-rings (6), (7) and valve seat (5) in flange (2).
2. Insert valve body (1) between flanges (2).
3. Tighten screws (8) until metallic stop.
4. Open and close the valve several times to ensure proper operation.





*It is important to observe the technical data during installation, operation and maintenance.*

*Inform the personnel about the technical data.  
NC = Normally closed.  
NO = Normally open.*

## 1. Technical data

---

### Valve

---

Max. product pressure .....	1600 kPa (16 bar)
Min. product pressure .....	Full vacuum
Temperature range .....	-10 to +130° C (EPDM)
Max. sterilisation temperature, short time .....	+ 150° C

---

### Actuator

---

Operating pressure .....	600 - 1000 kPa (6 - 10 bar)
Temperature range .....	+4° C to +60° C

---

### Materials

---

Product wetted steel parts .....	AISI 316L
Other steel parts .....	AISI 304
Surface quality, product wetted parts .....	Ra < 0.8µm
External surface finish .....	Semi bright
External surface finish, actuator .....	Semi bright (brushed)
Product wetted seals .....	PTFE, EPDM
Other seals .....	PTFE, NBR

# Drawing/Parts list

The drawing and the parts list include all items.

The items are identical with the items in the Spare Parts List.

When ordering spare parts, please use the Spare Parts List!

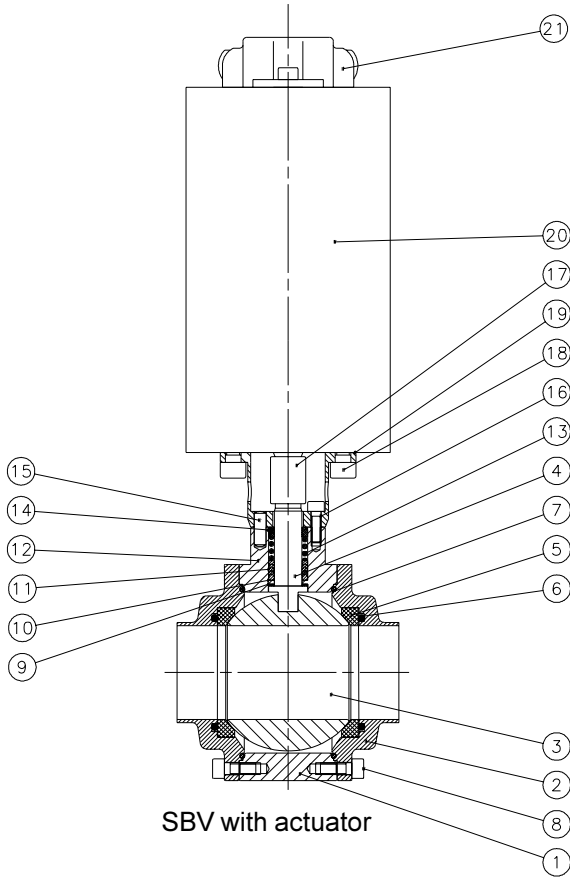
## Parts list SBV Sanitary Ball Valve

16

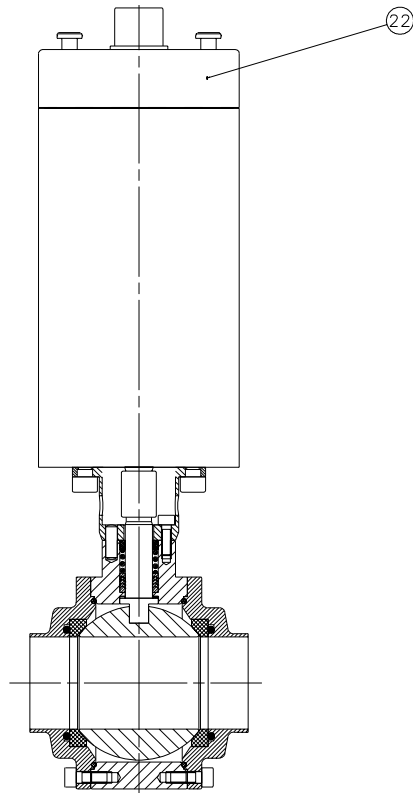
Pos.	Qty.	Denomination
1	1	Valve body
2	2	Flange
3	1	Ball
4	1	Stem
5	2	Valve seat
6	2	O-ring EPDM (std.) O-ring NBR O-ring Q O-ring FPM
7	2	O-ring EPDM (std.) O-ring NBR O-ring Q O-ring FPM
8	8	Flange screw (DN/OD 25-51, DN 25-50)
	12	Flange screw (DN/OD 63,5-76, 1, DN 65-80)
	16	Flange screw (DN/OD 101,6, DN 100)
9	1	Sliding ring
10	1	Support ring
11	3	V-rings
12	1	Pressure ring
13	1	Spring
14	1	Slide bearing
15	2	Pin
16	2	Screw (act.)
17	1	Coupling
18	2	Screw
19	1	Bonnet
20	1	Actuator
21	1	Position indicator complete
22	1	ThinkTop adapter complete
23	2	Screw (man.)
24	1	Top plate Top plate for position indication
25	1	Handle Handle for position indication
26	1	Screw

This page shows drawings of the SBV Sanitary Ball Valve.

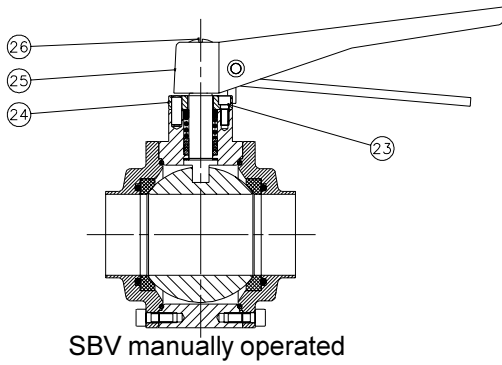
The drawings include all items of the valve. They are identical with the items in the Spare Parts List.



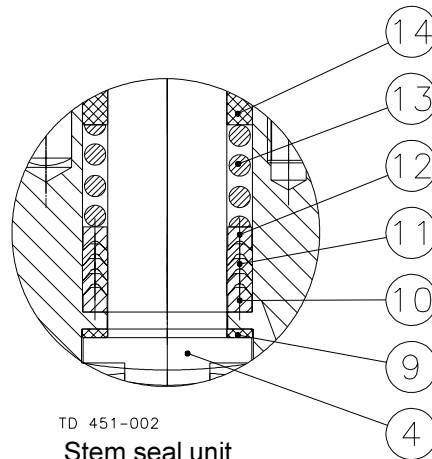
SBV with actuator



SBV with actuator - prepared for *ThinkTop*®



SBV manually operated



TD 451-002

Stem seal unit

**How to contact Alfa Laval**

Contact details for all countries are continually updated on our website. Please visit [www.alfalaval.com](http://www.alfalaval.com) to access the information direct.