



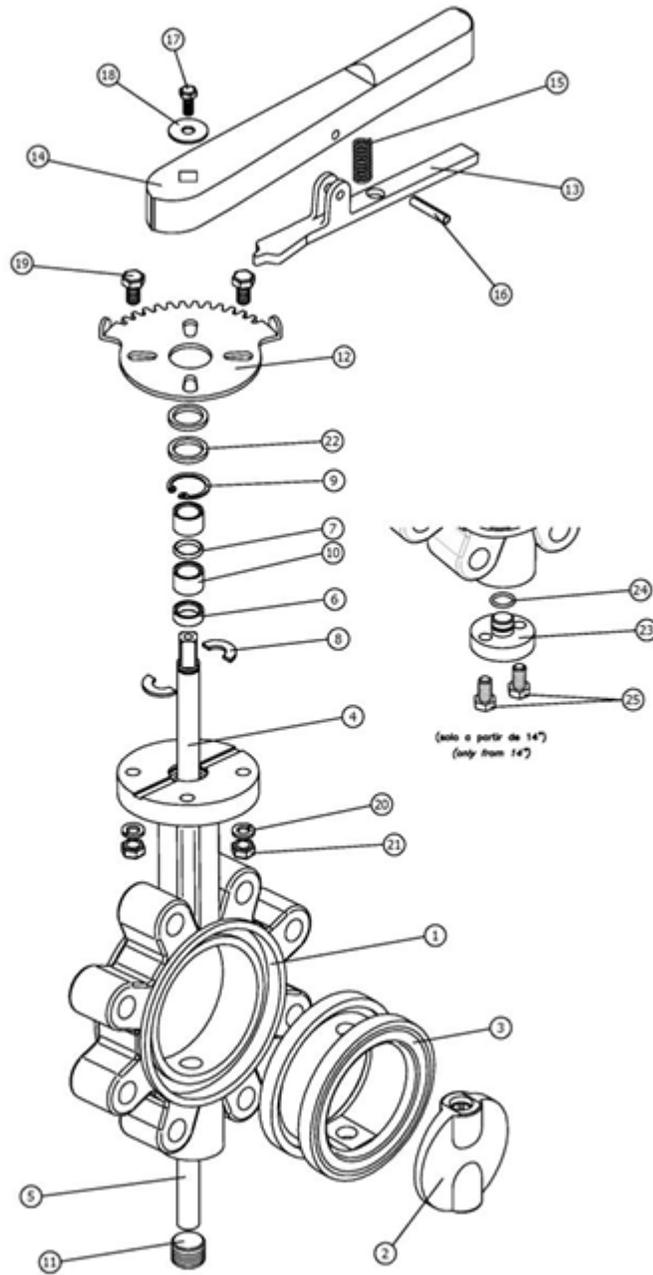
Installation, operation & maintenance manual

Butterfly valve

AT2303



## 1) Exploded drawing





## 2) Storage

Manual valves are provided by default in a half-open position whereas automated valves usually are in a close position due to the standard error position NC (normally closed). During storage it is recommended to keep them in this same position, with the included protective wrapping to avoid damages or dirt accumulation. The wrap must not be removed until valve is to be installed. As far as possible, valves must be stored in a dry and clean environment.

### 3) Installation instructions

#### 3.1) Preparation

Remove any material remains of the valve wrapping.

Serious problems may arise with the installation of a valve in a dirty pipe.

Make sure the pipe is not dirty and doesn't have welding particles, for example, before installing it. This may cause irreparable damages in the valve when the equipment is started

→ prepare a clean working area.

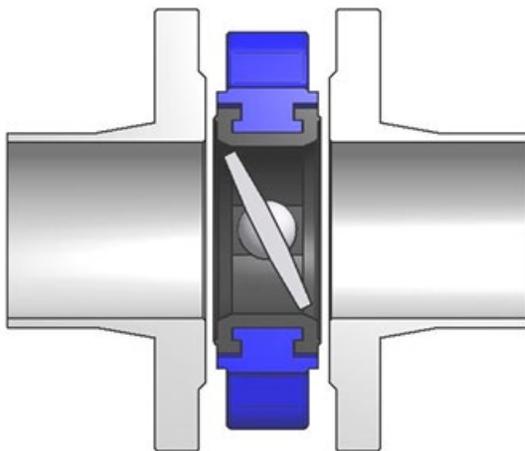
Plan beforehand enough space for future maintenance operations.

Joints between valve and pipe flanges are not necessary, as the elastomer is designed to keep tightness amongst them.

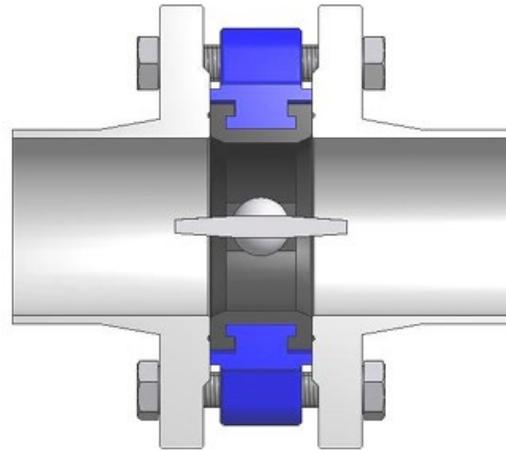
In case of vibrations in the pipe it is strongly recommended to mount anti-vibration elements

to absorb them. Otherwise, the life of the product could be drastically reduced.

#### 3.2) Assembly



Leave enough space between the flanges so that valve can be easily inserted or removed



Fully open the valve before tightening the screws of the flanges

#### REMARKS:

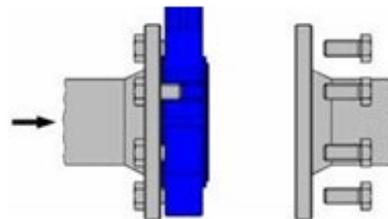
- AT2303 Lug butterfly valves are designed to be assembled between flanges EN 1092 PN16 at a maximum working pressure of 16 bar (until DN150), and between flanges EN 1092 PN10 at a maximum working pressure of 10 bar (from DN200 and bigger sizes).

- AT2303 Lug butterfly valves, are designed to be assembled between flanges ANSI 150 (all sizes) at a maximum working pressure of 235 psi (until 12") and 150 psi (from 14" and bigger sizes).



- Be extremely cautious when placing the valve in the center of the pipe axis to avoid interferences between disk and inside part of the pipe. The valve must not be assembled in any case if the internal diameter of the pipe is lower than the nominal diameter of the valve
- When assembling with a loose flange and a round pipe (or collar ) try to avoid the weld bead to stand out on the inside part of the pipe because this could damage the disk and even render the valve inoperative
- Verify good parallelism of the flanges
- Do not install the valve in a completely closed position
- Tighten the screws until the flanges make firm contact with the valve's body
- When applying it in mud fluid, place the valve in horizontal position (axis being parallel to the floor ) opening the bottom part of the disk in the direction of the flow to avoid sediment deposit s. This installation is strongly recommended for sizes bigger than DN350 for all kinds of fluid
- Valve must never be assembled adjacent to an elbow in order to avoid turbulenc es. Minimum distance recommended between elbow and valve is 3 to 5 times the pipe diameter
- ATTENTION! If the valve is going to be installed at the end of a pipe, maximum working pressures will be reduced as following:

DN50 to DN150 ...  $16 \text{ bar} \times 0.4 = 6,4 \text{ bar}$   
DN200 to DN600 ...  $10 \text{ bar} \times 0.4 = 4 \text{ bar}$   
2" to 12" ...  $235 \text{ psi} \times 0.4 = 94 \text{ psi}$   
14" to 24" ...  $150 \text{ psi} \times 0.4 = 60 \text{ psi}$





## 4) Operation instructions

### 4.1) Usage

Valves 2108 / 2108A / 2108B / 2108AB provide a leakproof seal when used adjusted to the pressure and temperature values for which they have been designed.

Seat material for the valve, joints, body, disk and axis has to be fully compatible with the fluid

circulating through the valve. Otherwise, valve could be seriously damaged.

### 4.2) Manual operation

When operating the valve you must avoid excessive lateral efforts with the handle.

To close it, you must turn the handle 90 degrees clockwise. When the handle is inline with the pipe, valve is open.

Torques required to operate valves are listed in the table Torque to activate the valves, on point 7.1.

### 4.3) Remote operation

When automation of valves is required, Armatec AS. can provide a great variety of pneumatic actuators, electric actuators, pneumatic positioners and electro pneumatic ones to cover a large range of operations.

## 5) Maintenance operations

It is recommended to operate the valve at least once a month.

Elastic -seat butterfly valves are designed so that they do not need any lubrication and/or periodical maintenance during their life cycle.

However, periodical checks explained below will be useful to extend the service life of the valve and reduce installation problems:

- Close the valve –from position completely open to completely closed.
- Verify all locks and threaded ends to check if they are loose or with rust. Tighten them if necessary.
- Inspect the valve and surrounding areas to verify if there is any leakage in the stem or in the flange connections.
- For an automated valve, verify pipe connections and/or electrical connections of actuators to check if they are loose due to operation or vibrations.



## 6) Repair instructions

In case the fluid continues to circulate through the line once the valve is completely closed, the leakage may be caused by damages in the seat and/or the locking surface, so it will be necessary to disassemble the valve so that it can be repaired.

### 6.1) Disassembling

You must remove the valve from installation to repair it.

Prepare a clean working area and adequate tools to perform mechanical tasks.

a.- Close the valve. Loosen and extract the screws or bolts from the flanges. Be careful not to drop the valve. Help yourself with a fastening element if necessary. Place the valve in a valid clamp.

b.- Remove the lever, the gear operator or the actuator.

c.- Remove the Seeger ring (part. 9) in the upper part with a specific tool and move the upper axis (part. 4) upwards until it is not in contact with the disk (part. 2) anymore. In this step it will be necessary to remove all the washers (part. 22) and both halves of the brass ring (part. 8).

d.- Repeat the same operation, but this time with the bottom stem (part. 5) moving it downwards, previously removing the stub screw (part. 11) located in the bottom part.

e.- Gently bang the disk (part. 2) on its central part with a rubber mallet or similar tool until it comes off the inside part of the seat (part. 3). Avoid banging the whole perimeter of the disk because even a small scratch could cause leakage.

f.- To remove the seat (part. 3) we will insert a flat rod between the rubber and the body acting as a lever.

### 6.2) Reassembling

Before proceeding to reassemble the valve, make sure that repair kit and/or pieces to be used are appropriate and original from the factory.

When it is armored again, cleaning is essential for a long life for the valve.

a.- To insert the new seat (part. 3) it is recommended –specially for large sizes – to twist it with a “8” shape to make the process easier. To spread ordinary grease inside the body will help. Naturally, both seat holes must fit the central axis of valve’s body.

b.- Place again the disk in its working position and check if it got any damage during disassembling process.



c.- Place both stems (upper and lower ) in their working position and complete the reassembling by placing the previously removed components in the top stem (part. 8, 9 and 22) and the bottom stem (part. 11).

d.- Finish off by placing the handle, the reducer gear or the actuator as appropriate, taking into account their opening or closing position.

e.- Reinstall again the valve between flanges. See Installation instructions on page 5.



## 7) Torques

### 7.1) Breakaway torques (N·m)

Dim	Max torque (Nm)	
	EPDM	NBR
DN50	12	15
DN65	20	22
DN80	27	30
DN100	40	45
DN125	60	66
DN150	90	100
DN200	130	134
DN250	180	220
DN300	270	270
DN350	610	-
DN400	805	-
DN450	1100	-
DN500	1500	-

NOTE: breakaway torque measured after 24h of closing the valve



## **8) Hygiene and Safety Instructions:**

8.1) Fluids that go through the valve can be corrosive, toxic, flammable or pollutant. They can also be found at very high or low temperature. When operating valves, you must follow the security instructions and it is recommended to use personal protection gadgets:

- 1) Protect your eyes.
- 2) Wear gloves and appropriate working clothes.
- 3) Wear safety footwear.
- 4) Wear a helmet.
- 5) Have running water at hand.
- 6) To operate flammable fluids, make sure you have an extinguisher at hand.

8.2) Before removing a valve from a pipe, check always if the line is completely drained and depressurized.

8.3) Any valve being used by toxic services department needs to obtain a cleanliness certificate before being operated.

8.4) Any type of repair or maintenance should be performed in ventilated places.