

INSTALLATION, OPERATION AND MAINTENANCE MANUAL

Wafer butterfly valve

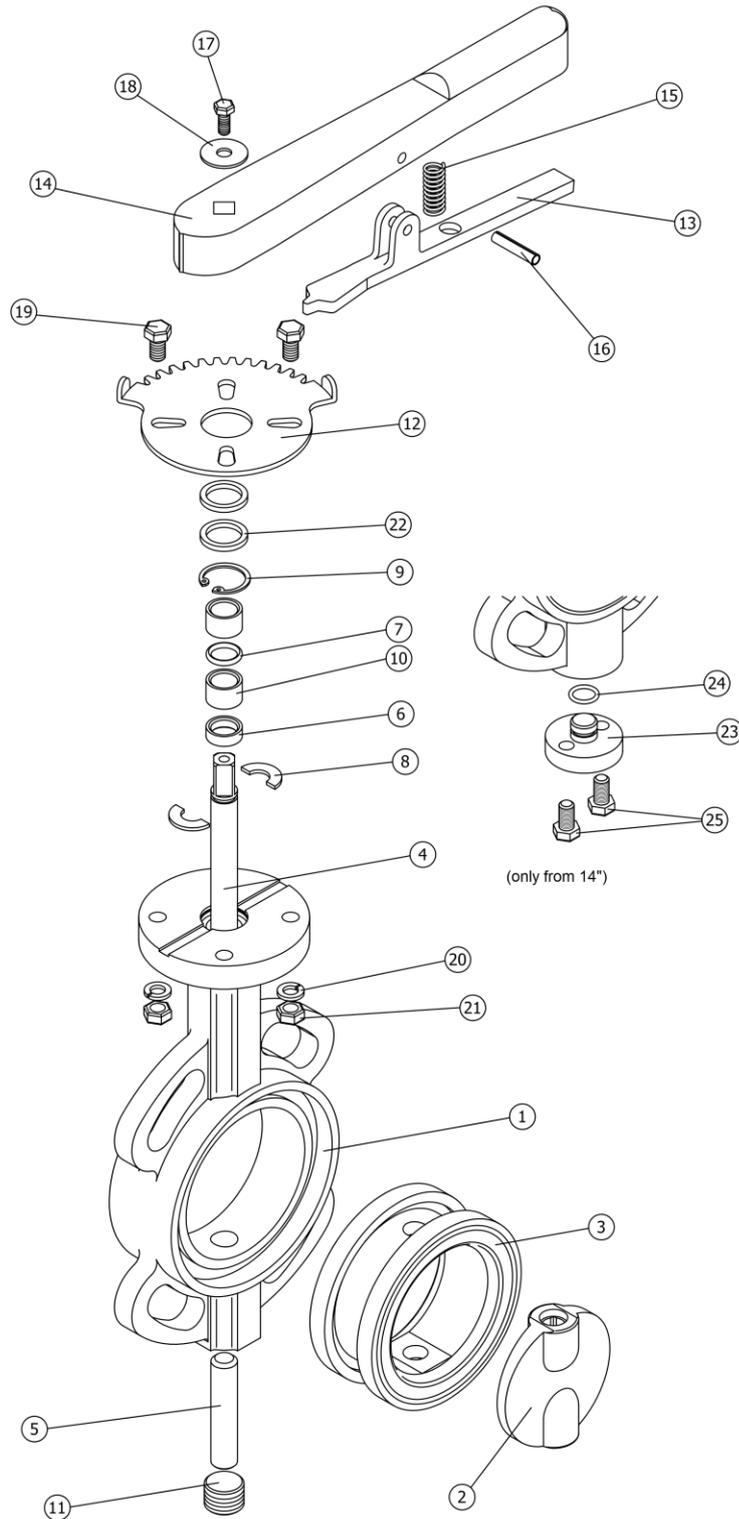


GENEBRE Ref.: 2109B

Installation, operation and maintenance instructions

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1) Exploded drawing



1.1) Parts list

N.	Denominación / Name	Material	Acabado Superficial / Surface Treatment	Cód. Recambio Spare Part Code
1	Cuerpo / <i>Body</i>	Fundición / <i>Cast Iron</i> EN-GJL-200	Pintado Epoxi / <i>Epoxy Painted</i>	-----
2	Disco / <i>Disc</i>	Fundición / <i>Ductil Iron</i> EN-GJL-400 (Art. 2103) Acero Inox. / <i>Stainless Steel</i> 1.4408 (Art. 2109)	Cincado / <i>Zn plated</i> Granallado / <i>Shot blasting</i>	-----
3	Elastómero / <i>Seat</i>	NBR	-----	EB2109
4	Eje sup. / <i>Upper stem</i>	Acero Inox. / <i>Stainless Steel</i> AISI 416	-----	-----
5	Eje inf. / <i>Lower stem</i>	Acero Inox. / <i>Stainless Steel</i> AISI 416 ($\leq 12''$)	-----	-----
6	Casquillo / <i>Bush</i>	PTFE + Grafito / <i>Graphite</i>	-----	-----
7	Tórica / <i>O' ring</i>	NBR	-----	-----
8	Media arandela / <i>Half washer</i>	Bronce / <i>Bronze</i>	-----	-----
9	Anillo Seeger / <i>Seeger ring</i>	Acero Carbono / <i>Carbon Steel</i>	Cincado / <i>Zinc Plated</i>	-----
10	Casquillo / <i>Bush</i>	PTFE + Grafito / <i>Graphite</i>	-----	-----
11	Tapón / <i>Plug</i>	Acero Carbono / <i>Carbon Steel</i> ($\leq 12''$)	Cincado / <i>Zinc Plated</i>	-----
12	Placa dentada / <i>Plate</i>	Acero Carbono / <i>Carbon Steel</i>	Cincado / <i>Zinc Plated</i>	-----
13	Palanca / <i>Handle</i>	Aluminio o Fundición EN-GJL-200 / <i>Aluminium or Cast iron</i> EN-GJL-200	Pintado Epoxi / <i>Epoxy Painted</i>	-----
19	Tornillo / <i>Screw</i>	Acero Carbono / <i>Carbon Steel</i>	Cincado / <i>Zinc Plated</i>	-----
20	Arandela / <i>Washer</i>	Acero Carbono / <i>Carbon Steel</i>	Cincado / <i>Zinc Plated</i>	-----
21	Tuerca / <i>Nut</i>	Acero Carbono / <i>Carbon Steel</i>	Cincado / <i>Zinc Plated</i>	-----
22	Arandela / <i>Washer</i>	Acero Carbono / <i>Carbon Steel</i>	Cincado / <i>Zinc Plated</i>	-----
23	Tapón / <i>Plug</i>	Fundición / <i>Cast Iron</i> EN-GJL-200 ($\geq 14''$)	Pintado Epoxi / <i>Epoxy Painted</i>	-----
24	Tórica / <i>O'ring</i>	NBR ($\geq 14''$)	-----	-----
25	Tornillo / <i>Bolt</i>	Acero Carbono / <i>Carbon Steel</i> ($\geq 14''$)	Cincado / <i>Zinc Plated</i>	-----

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.

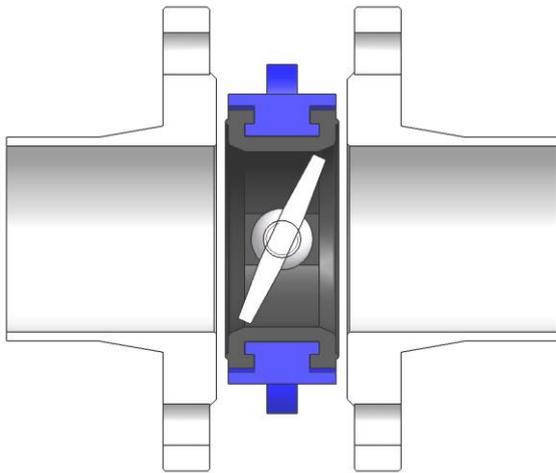
Make sure the pipe is not dirty and doesn't have welding particles, for example, before installing it. This may cause irreparable damages in the valve when the equipment is started
→ *prepare a clean working area.*

Plan beforehand enough space for future maintenance operations.

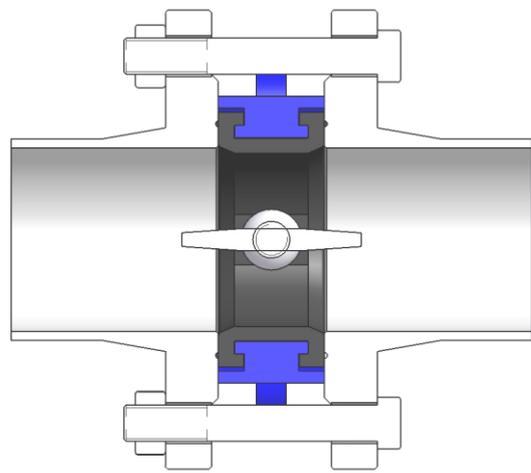
Joints between valve and pipe flanges are not necessary, as the elastomer is designed to keep tightness amongst them.

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) Assembling



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:

- Wafer butterfly valves by Genebre, S.A. are designed to be assembled between flanges DIN PN10, DIN PN16 and ANSI 150

- 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 deposits. 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 turbulences. Minimum distance recommended between elbow and valve is 3 to 5 times the pipe diameter

4) Operation instructions

4.1) Usage

Valves 2109B 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 page 9.

For the valves operated with gear box (or gear operator), the quantity of turns to be done for a complete operation cycle of the 90-degree valve will be conditioned by the transmission ratio of the gear box. See following table:

Ref. Gear Box	Trans. Ratio	Nº gear turns (90º)
5975	24:1	6
5976	30:1	7.5
5977	50:1	12.5

4.3) Remote operation

When automation of valves 2109B is required, GENE BRE S.A. can provide a great variety of pneumatic actuators, electric actuators, pneumatic positioners and electropneumatic 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. In this particular case, GENE BRE, S.A. have different replacement seats or elastomers (part. 3). However, it may be the case that (for example in an area difficult to access), due to financial reasons, it is not recommended to repair the valve but directly replace it.

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 stem* (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 *washer* (part. 8).

d.- Repeat the same operation, but this time with the *bottom stem* (part. 5) moving it downwards, previously removing the *plug* (part. 11) located in the bottom part.
REMARK: the only purpose of this *plug* is to avoid the *bottom stem* comes off.

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 upper stem (part. 8, 9 and 22) and the *plug* (part. 11) in the bottom stem.

CAUTION: be careful of not threading the *plug* (part. 11) up to the limit since it could move and block the *bottom stem* (part.5).

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* (Section 5).

7.) Torques

7.1) Breakaway torques (N.m)

Size	Max. torque (N·m)
2"	12
2 1/2"	20
3"	27
4"	39
5"	58
6"	100
8"	140
10"	240
12"	360
14"	750
16"	900
18"	1200
20"	1700
24"	2500

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.



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

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.