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INSTALLATION, OPERATION AND MAINTENANCE MANUAL

Full bore ball valve with flanged ends

Ref. GENEBRE: 2526A – 2528A – 2529

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Installation, operation and maintenance instructions

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1. Product description.

Genebre, S.A. offers a wide range of ball valves (90º turn), designed and assembled to handle and drive fluids in industrial procedures.

The compatibility of materials used to build the valves (see technical specifications) and the application of valves to the different industrial processes is at user's risk. Valves will have an optimal behaviour when working conditions do not exceed pressure and temperature limits (pressure curve) for which they have been designed.

2. Transport and Storage conditions

Transport and storage of this type of products must be done in their original package

VISUAL INSPECTION

Check whether during transport, unloading and placement products have suffered any damage.

Manual valves are provided by default in an open position whereas automated valves are usually offered in a closed 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 in the ball. The wrap must not be removed until valve is to be installed.

When possible, valves must be stored in a dry and clean environment.

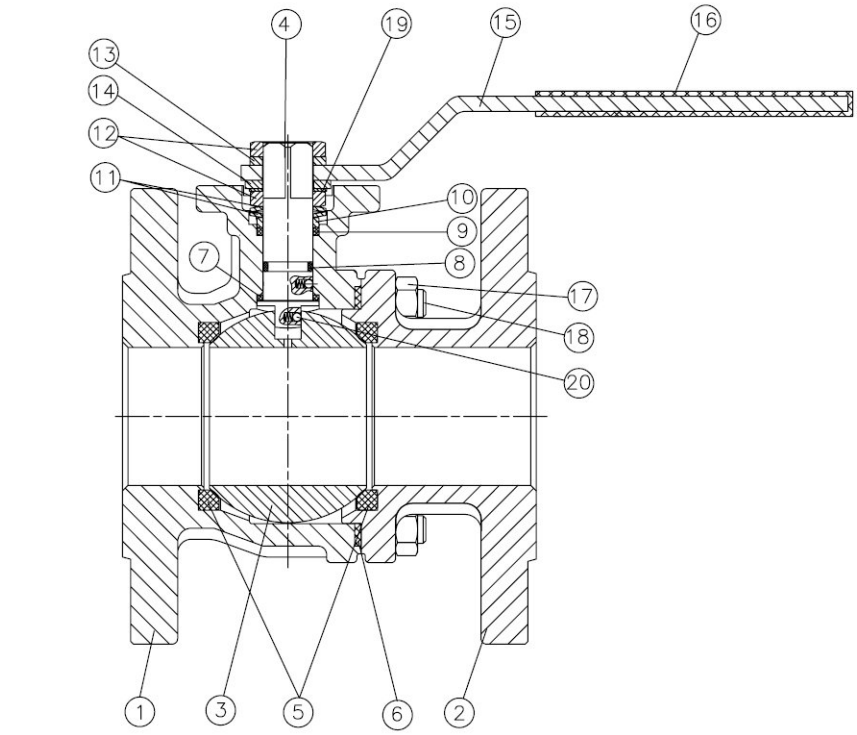
If you notice any kind of anomaly during reception of the goods, contact immediately with GENEBRE in order to determine the possible responsibilities on the issue.

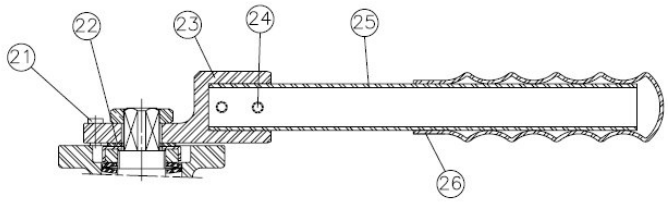
IMPORTANT NOTE:

Before installing and/or manipulating these elements READ CAREFULLY the enclosed instructions for use and OBSERVE all contained information. If any of the contents is not clear enough, please contact GENEBRE, S.A.

User is responsible for the safe use of these products, as established in present instructions for use and in the specific technical documentation of the supplied device.

3. Valve breakdown





DETALLE
(2½"–8")

Nº	Denominación/Name	Material
1	Cuerpo / Body	DIN 1.4408 (CF8M) / WCB
2	Tapa / Cap	DIN 1.4408 (CF8M) / WCB
3	Bola / Ball	Acero Inox AISI 316 / SS 316
4	Eje / Stem	Acero Inox AISI 316 / SS 316
5	Asiento / Seat ball	Teflón+15% FV / PTFE+15% GF.
6	Junta / Gasket	Espirometálica / SS+Graphite
7	Arandela de Fricción / Friction Washer	Teflón+grafito / PTFE+graphite
8	Tórica / O' ring	Viton
9	A. Prensa / Stem packing	Teflón / PTFE
10	Anillo Prensa / Stem Ring	Acero Inox AISI 316 / SS 316
11	Arandela / Spring Washer	Acero Inox AISI 301 / SS 301
12	Tuerca / Nut	Acero Inox AISI 316 / SS 316
13	Arandela / Washer	Acero Inox AISI 304 / SS 304
14	Tope / Stopper	Acero Inox AISI 304 / SS 304
15	Maneta / Handle	Acero Inox AISI 304 / SS 304
16	Funda / Handle Sleeve	Vynil
17	Tuerca / Nut	Acero Inox AISI 316 / SS 316
18	Perno / Stud Bolt	Acero Inox AISI 316 / SS 316
19	Antigiro / Lock Washer	Acero Inox AISI 304 / SS 304
20	Dispositivo Antiestático / Antiestatic Device	Acero Inox AISI 304 / SS 304

Only in sizes from 2 ½" to 8"

Nº	Denominación/Name	Material
14	Cuerpo maneta / Body Handle	AISI 304
19	Tuerca / Nut	Acero Inox AISI 316
20	Perno tope / Stopper	Acero Inox AISI 304
21	Antigiro / Lock Washer	Acero Inox AISI 304

4. Installation instructions

4.1) 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.
Check correct performance of the valve by turning the handle clockwise and making sure the ball closes the fluid flow. If this is not the case, check if there are foreign particles inside the valve and repeat the whole operation.

4.2) Assembling

Do not disassemble the valves to install them.

Make sure the pipe's and edges flanges of the valve are clean.
Use the corresponding screws in all of the flanges drill holes.
Place an adequate joint in each end and align it in the center of the flanges.
Tighten screws evenly and cross-shaped to avoid deformations. To do so, you must not force in any case the pipe to center the valve; it should take its position smoothly. Last, verify that screws are tightened with the recommended torque for each type of screw.
Make sure the flanges joints are well placed.
After assembling, check the tightness and performance of the valve.

IMPORTANT INFORMATION:

Design of this type of ball bore valves allows us to install them in any position as they are bidirectional, so the direction of fluid flow does not matter.

If possible, it is recommended to install the valve in horizontal position and the Stem (handle) upwards.

Valves do not have to support pipe's efforts so it is advisable to anticipate a good alignment and parallelism of such pipe.

Once installed, it is recommended to open and close it a couple of times to verify its good performance and to check if there is any obstruction in the ball that prevents it from closing.

It is also recommended to use filters in the pipe to extend lifecycle of the valve.

5. Operational instructions

5.1) Usage

The ball valves provide a leak proof lock when used adjusted to the pressure and temperature values for which they have been designed.
Avoid by all means to leave the valves in partially open position if you are not aware of the pressure drop and flow rate in that position, as the service life of the seat can be reduced and/or it can be damaged due to the ball bore valve.

Any fluid that can be solidified, crystallized or polymerized should not remain in the ball cavity as it is harmful for performance, service life of the valve and it can even render it unusable.

Seats for the valve, joints, body, ball, Stem and ends have to be fully compatible with the fluid circulating through the valve. Otherwise, valve could be seriously damaged.

Torques required to operate valves are listed on the table in section 8.1.

5.2) 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.
In case you need to remove the handle to automate the valve, the *Stem* (part. 4) has a mechanized linear mark at the front part that allows us to know its current position (opened or closed).

5.3) Remote operation

When automation of ball valves is required, GENEBRE S.A. can provide a great variety of pneumatic actuators, electric actuators, electropneumatic and electronic positioners to cover a large range of operations.

6. Maintenance instructions

Frequency, location and process of maintenance will be determined by the user by taking into account usage of the product.
However, periodical checks explained below will be useful to extend the service life of the valve and reduce installation problems:

6.1) Stem leaks

Remove the handle or actuator, the locking nut washer (part. 19) and tighten the nut (part. 12) of the STEM packing. If the leak persists, valve should be disassembled to replace the STEM washers (part.7,8,9).

See reparation instructions.

6.2) Body joints/edges leaks

Check if the union nuts between body and cover (part. 17) are tightened. If they were loose, adjust them up until the recommended torques (IMPORTANT: adjustment of such screws will have to be done at room temperature). If leak continues, it is probably due to some damage in the body's joint or the locking surface and it will be necessary to disassemble the valve to repair it.

See reparation instructions.

6.3) Line leaks (through seats).

Check if the valve is in a completely closed position. If this is the case, leak is due to a seat or locking surface being damaged and it will be necessary to disassemble the valve to repair it.

See reparation instructions.

7. Reparation instructions

Before disassembling the pipe's valve to repair or replace it, make sure that line has been closed and depressurized because a bad operational procedure could cause a serious accident to you or to the installation syStem

7.1) Disassembling

You must remove the valve from its installation to repair it, **making sure the pipe has been previously depressurized.**

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

a. - Place the valve in closed position to impede the ball from damaging seats when disassembling.

Remember that the STEM has a line in the frontal part to indicate position of the valve: parallel to the pipe means open; perpendicular means closed.

b. - Loosen and remove the nuts (part. 17) on the studs (part. 18) that bring together the two different parts of the valve.
Be careful not to damage the edges surfaces.

c. - Remove the cover (part. 2) and the seat (part. 5) and joint (part. 6) located inside the body.

d. - Remove the ball (part. 3) from the body (part. 1). This operation has to be performed carefully, otherwise the ball could be marked against the body.

e. - Then, remove the other seat (part. 5) located inside the body. It should be removed with care, to avoid scratching or damaging the mechanized surfaces over which it is hermetically sealed.

f.-To disassemble the STEM (part. 4), remove the following elements:

- Handle nut (part. 12).
- Dividing washer (part, 13).
- Handle (part. 15).
- Stopper plate (part.14)
- Lock nut (part. 19).
- Nut (part. 12).
- Spring washers (part. 11).
- Stem Ring (part. 10)

Push the STEM to the inside part of the body and remove it. Then, remove the tow (part. 9) located inside the body.
Remove the o-ring (part. 8) from its location and also remove the friction washer (part. 7).

g. - Once the valve is completely disassembled, you must verify the state of each one of the pieces that compose it and the ones to be reused will have to be completely cleaned and stored in a safe and clean environment.

All locking surfaces in the ball, seats, joints and sides have to be checked for corrosion, erosion, metallic inlays in the seats and marks. If they were damaged or in case of doubt, they will need to be replaced.

h. - Cleaning of the valve's pieces must be done using an adequate degreasing agent. You must be careful with the locking surfaces, for example, of the ball, locking sides of the ends and joints, because if they were damaged this could cause a bad impact in the valve's performance.

7.2) Rebuilding (assembling of the valve)

Before proceeding to reassemble the valve, make sure that reparation kit and/or pieces to be used are appropriate and original from the factory.
When it is assembled again, cleaning is essential for a long life for the valve.

a. - Place a new friction washer (part. 7) on the STEM (part. 4) and also the o-ring (part. 8) in its corresponding location on the STEM. Lubricate the STEM with a thin layer of grease or silicon (for example, Dow Corning 200) and insert it in the valve's body (part.1), in the internal cavity, by pushing a bit to fix it.

b. - Place a new stuffing box (part. 9) in its location. In the upper cavity of the body (part.1), the stuffing box (part. 10) and the Belleville washers (part. 11) with external borders together (concave position). Place the nut (part. 12) and tighten it. Make the STEM turn a couple of times and readjust the nut observing the torque specified value *(See Torque table).*

If necessary, fasten with a wrench the internal body of the STEM to tighten the nut properly without making the STEM turn.
It is convenient to match one of the nut vertexes with one of the STEM vertexes to be able to place the lock nut (part.19) later on.

Note that if the nut is too tight, the rod torque will increase and service life of its elements will be reduced.

c. - Place the STEM in a closed valve position and insert the ball (part. 3) inside the body (part. 1) by matching the ball slot with STEM milling (part. 4).

d. - New seats (part. 5) and body's joint (part.6) can be placed on both sides of the valve, body (part. 1) and cover (part. 2) taking into account that the flat side of the seat must be facing downwards.

e.- Place the cover (part. 2) over the body (part. 1) matching the external flanges holes; place the nuts (part. 17) on the studs (part. 18) to bring together the two different parts of the valve.

f.- Then, tighten the nuts (part. 17) adjusting slowly and alternating diagonally and evenly until obtaining the recommended tightening torque *(see Torque table)*.

8.) Torque table:

8.1) Torques to activate the valves:

MEASURE	Activating torque Nm
1/2"	4 – 5
3/4"	7 – 8
1”	9 – 10
1 ¼”	12 – 14
1 ½”	18 – 20
2”	28 – 30
2 ½”	34 – 36
3”	58 – 60
4”	90 – 95
5”	130 - 150
6”	190 - 210
8”	380 - 410

8.2) Tightening torque for the STEM nut:

Following numerical data is provided as reference only. Specified torques are the ones used to activate the assembled STEM before ball and seats are assembled.

Valve size	Maximum torque (N.m.)
1/2" - 3/4" - 1”	8 - 12
1 ¼” - 1 ½” - 2”	13 - 18
2 ½” - 3” - 4”	19 - 24,5
5” - 6” - 8”	29 - 35

8.3) Tightening torque Screws/ Nuts for joining the valve's different parts:

It is required for all body screws to make contact of body metal against cover metal.

Screw / Nut	Maximum torque (N.m.)
M12	88
M16	210
M20	412

(These values are the recommended values by screws manufacturers, in our case we have considered using them in cal. 8.8)

9. Hygiene and Safety Instructions:

9.1) Fluids that go through a valve can be corrosive, toxic, flammable or pollutant.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.

9.2) Always operate the valve in open position to make sure there is no pressure in the internal cavity.

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