



*Lázaro Ituarte Internacional, S.A.*

**OPERATION AND MAINTENANCE MANUAL FOR BUTTERFLY VALVES**

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# Operation and Maintenance Manual - Butterfly Valve

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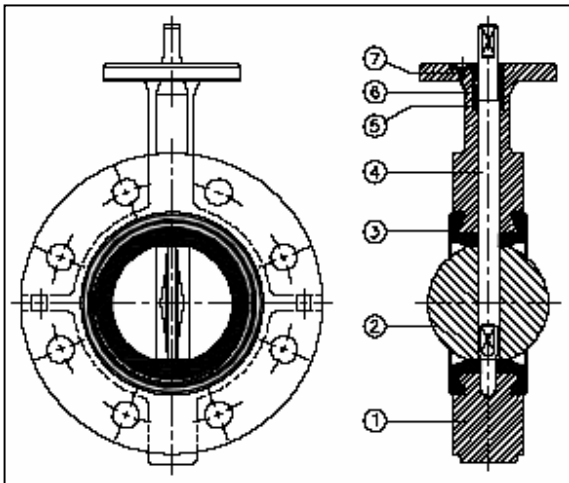


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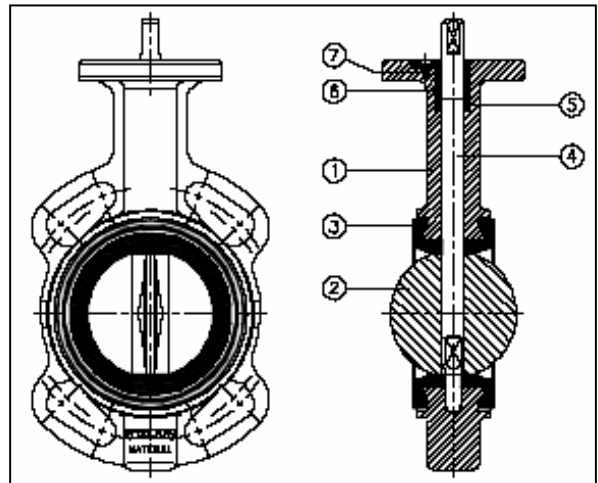
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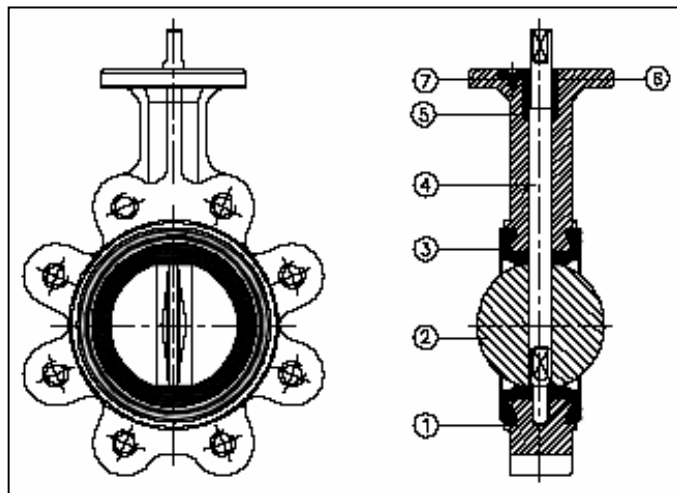
**1.1.- BUTTERFLY VALVES**



**FLANGE Valve – FIG. 1**



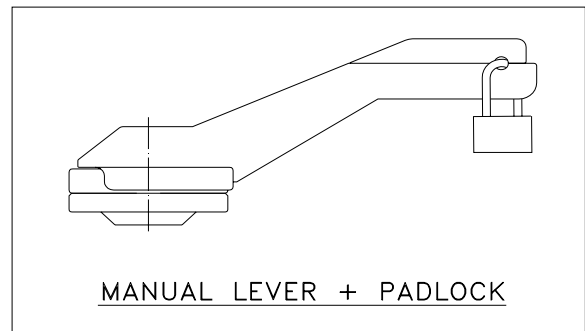
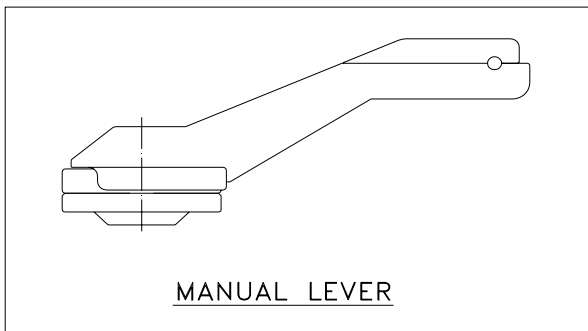
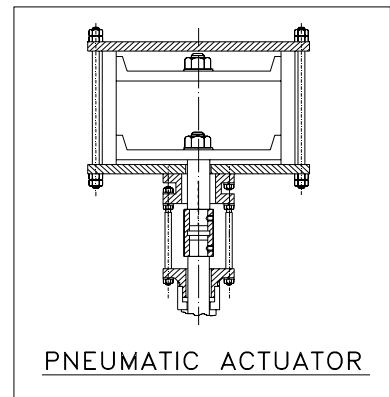
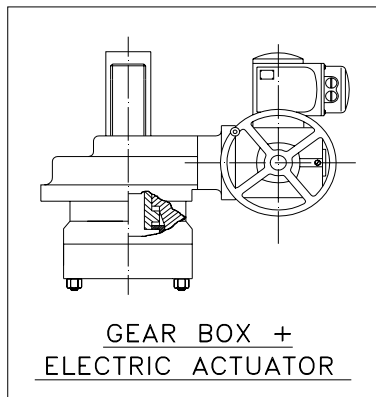
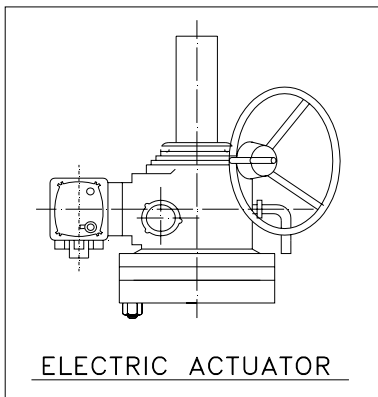
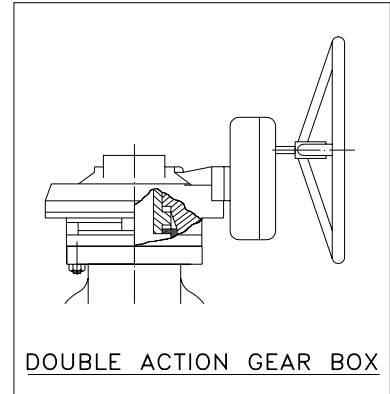
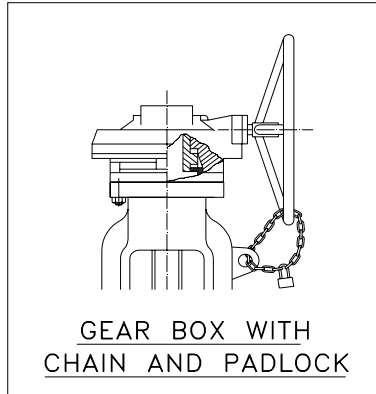
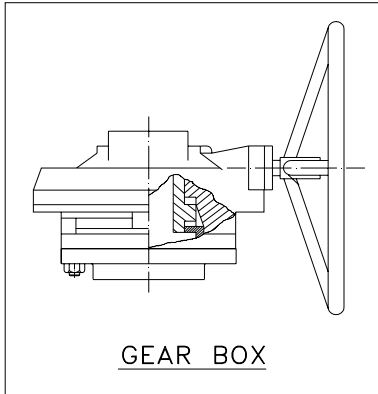
**WAFER Valve - FIG.2**



**LUG Valve – FIG.3**



**1.2.- OPCIONAL ACTUATORS**





## **2.- INTRODUCTION**

### ***2.1.- GENERAL NOTES***

This Instructions Manual has been prepared by the Engineering Department of *Lázaro Ituarte Internacional, S.A* in order to give to the user the storage, maintenance, handling and installation instructions for the supplied valves.

In case the user may require any scope of manipulation in the valve, it is required to contact firstly and beforehand the manufacturer in order to avoid defects resulting from wrong manipulation of the valve.

#### **WARNING**

This instructions manual describes the most suitable procedures for a correct handling, installation and maintenance for the valves manufactured by Lazaro Ituarte. These procedures must be followed step by step and thoughtfully to prevent damage caused by any misuse or manipulation.

***The valves as all the equipment subject to pressure can be dangerous if not correctly handled.***

***Do not dismantle any valve device unless prior approval from the manufacturer.***



## **2.2.- DESCRIPTION IN DETAILS OPTIONAL ACCESORIES:**

- *Figure 1* ► It represents a butterfly valve type FLANGES with requirement actuation customer, depending them sizes, work pressure and connexion to the piping with bolted flanges.
- *Figure 2* ► It represents a butterfly valve type WAFER with requirement actuation customer, depending them sizes, work pressure and connexion between the flanges pipe.
- *Figure 3* ► It represents a butterfly valve type LUG with requirement actuation customer, depending them sizes, work pressure and connexion to the piping with bolted flanges.

The accessories are selection with customer and he can request in function him requirements.

- It represents a gear box.
- It represents a gear box and its block with chain and padlock.
- It represents a gear box of double action.
- It represents an electric actuator.
- It represents an electric actuator more gear box.
- It represents a pneumatic actuator.
- It represents a lever hand, within or without regulation.
- It represents a lever hand, within or without regulation and padlock.



### **3. - SERVICE REQUIREMENT AND USE**

#### **3.1.- SERVICE REQUIREMENT**

The butterfly valve is operating to control the flow, and it is actuated by hand wheel, with or without gear box. Other type of actuation by means of direct hydraulic, pneumatic or motor actuators, the butterfly valves shall work in full open/full close position.

Butterfly valve with shaft in middle position is bidirectional and the butterfly valves with shaft it is not in centre position can be bidirectional or unidirectional.

#### **3.2.- USER INDICATIONS**

- The user will have to select the adequate material to avoid corrosion risks.
- The user will have to select the valve's "class" according to pressure and temperature data in accordance to standards (ASME B16.34 or any applicable standard) in order not to produce efforts above the acceptable limits.
- The user will have to select between standard or special class (according to ASME B 16.34 standard) in order to avoid efforts above the acceptable limits.
- When the valve works at a temperature higher than 454°C or lower than -24°C, the user will have to select the adequate material for the bolting.
- In order to avoid an overpressure in the valve body's, caused by fluids, which subsequently have suffer of temperature increase, the user must hold in account these recommendations.
- In the safety valve or shear disc, the pressure must not reach 10% more than that of the pressure indicated in standards (ASME B16.34 or any applicable standard) for the temperature given.
- The valve should not be subjected to pressures and temperatures higher than those indicated by standards (ASME B16.34 or any applicable standard).
- The butterfly valve should not be used for throttling purpose, in order to prevent seat damages.
- It should not cause short closing which can cause water hammers.
- In case of balanced water pre-heating, pressure is necessary. The valves will have to function with a by-pass.
- In case of actuator pneumatic, electric or hydraulic actuators with high speed of closing, is recommended coupling of a damper at the end of the course to avoid impacts which can cause damages in the valve.



#### **4. HANDLING AND STORAGE**

Unless otherwise specified and agreed the valve is packed in 90% closed position for order to prevent seat damages and standard pallets.

##### ***4.1.- HANDLING***

The valves with weight lower than 55 kg can be handled manually through the wheel.

For valves with weight upper 55 kg. and above correct handling do not attempt to handle the valve from the hand wheel, the gear box or the actuator. The valves have areas for your correct handling.

In order to avoid damage in any part of the valve, we recommend the use of a polyester lifting lug.

Using a steel lifting lug, you must especially pay attention to steel in contact with the important parts of the valves, especially the stem. The choice of the lifting lug must be adequate with the weight of the valve.

For stainless steel valves never handle, brush or manipulate with material other than stainless steel. The use of dissolvent halogen ad is not permitted.

For valves with wheel, those should not be actuated with bars, key of nut, or others similar.

##### ***4.2.- STORAGE BEFORE INSTALLATION***

Valve shall be closed to 90% and both ends calked with plastic or wood protections attached to the valve's body, these protections must be only withdrawn at the time of the installation.

Steam surface shall be well lubricated and protected with adhesive tape and packing paper.

When the valve is going to be stored for a long period of time, the valves will be kept in the same packages delivered from the workshop, kept dry, stored in covered or enclosed premises. It's recommended to protect the valves introducing in the packages non-humidity bags.



## **5. INSTALLATION**

A wrong valve installation can bring serious consequences, a bad handling can require expensive services to repair it.

When receiving the valve, verify that no external damages exist which could have caused damages in the valve.

### ***5.1.- CHEKING BEFORE INSTALLATION***

- Check on the valve's plate: size, class and trim and make sure that those are adequate for the installation.
- Valve with wheel or level: open and close fully to test the ease of opening.
- All the precautions necessary must be taken to avoid the introduction of external elements into the valve which can cause serious damage on the seat surface before and after installation.
- The end's protections must be withdrawn in order to clean the inner surface by fluxing. At this time the wheel should not be operated.
- It's very important to clean the piping before the installation: small pieces of metal, deposits of welding in the piping can produce damage on the seat surface of the valve.
- When the valve works with high or low temperature, the valve should not be manipulated before it would be technically equilibrated it could create a loss of seal and in case of galling on stem and the seats.
- It must be remembered that during the installation the thermal stress piping and the fluid's weight produce considerable mechanical stress to the valve. Therefore, it can produce distortions in the body of the valve causing backlash in the seats and consequently the leaks.
- During the procedure of valve's ends welding to the pipe take attention that metal does not fall on the seat surface. It is also necessary to take into account the high temperature which can deform the seat of the valve.

***Once checking made of all those different points, the valve is ready to being installed.***



### **5.2.- ENDS CONNECTIONS**

- For unidirectional butterfly valves, make sure the flow direction according to the valve design.
- The valve's ends will be aligned parallel to the ends of the piping to avoid strong force.
- Once placed you will proceed with a partial tightening of all bolting, per pair opposed diametrically around the support.
- You will proceed with the same manner for the total tightening.
- The final tightening will be corresponding to the size and material of the bolting.

### **5.3.- CONSIDERATIONS AFTER INSTALLATION**

- Once the valve is installed, the seat surfaces are still vulnerable to foreign particles like sand, deposit of welding in the system of piping. For that it is recommended to carry out cleaning of the system with all the valves open (the back seat must be completely closed) before the plant functions.
- The valve should be operated (open/close) until the same temperature is uniform in the entire valve.
- The selection of the actuator should be done according to the service conditions of the valve.
- The setting of the actuator at the factory will be by torque for close operating and by limit for open operating.
- During fluxing process for pipe cleaning, the valve has to be fully open. It means that:
  - For manually operated valves (gearbox/hand wheel/lever), the valve must be manually open.
  - For motor operated valves, the valve must be open until de actuator permits.
- Check final tightening the bonnet bolting after the installation to avoid problems in the equipment working.



## **6. MAINTENANCE**

By programming a periodic maintenance of the valve, potential problems can be detected and therefore it is possible to extend the life of the valve. The periodic maintenance program must be prepared by the engineering department. The frequency of these revisions must be based on the user's experience who installs the equipment. Lazaro Ituarte International recommends the revision and lubrication of the following parts:

### ***HANDLING:***

The design in these valve type of packing areas, advised make handled open/close two time year, for avoid than o-ring and seal gum can join to stem and avoid its rupture.

### ***BOLTING:***

The systems of piping are subject to certain vibrations which can loosen and disassemble the bolting, therefore, all bolting will have to be checked and inspected regularly.

### ***LEVEL ACCIONATION:***

The systems of valve should be lubricated regularly to avoid mechanical friction and damage.

### ***AUXILIARY EQUIPMENTS:***

When the valve is equipped with a gear actuator or electric actuator, this equipment should also be lubricated regularly according to manufacturer's recommendations.

### ***LUBRICATION:***

Always than pipe condition permitted, is advisable to lubricated seat areas with silicon grass.



## **7. RECOMMENDED SPARE PARTS**

The o ring and the gasket are the recommended spare parts by Lázaro Ituarte Internacional, S.A.

When ordering spares or requesting any information about the butterfly valve ensures that the following information is quoted:

- Type, size and rating butterfly valve.
- Valve serial number

Above information is stamped on valve nameplate.