



**INSTALLATION, SERVICE AND  
MAINTENANCE INSTRUCTIONS**

**DOUBLE BUTTERFLY VALVE  
LBV**



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Original Manual  
10.006.30.00EN  
(C) 2013/05



## EC DECLARATION OF CONFORMITY

(in accordance with Directive 2006/42/EC, Annex II, Part A)

Manufacturer: INOXPA, S.A.  
c/ Telers, 54  
17820 Banyoles (Girona) - SPAIN

We hereby declare that the following products:

<b>VALVE</b>	<b>DOUBLE BUTTERFLY LBV</b>
Name	Type

conform with the provisions of the Council Directive:

**Machine Directive** 2006/42/EC, and comply with the essential requirements of said Directive and of the following harmonised Standards:

UNE-EN ISO 12100-1/2:2004  
UNE-EN 953:1997  
UNE-EN ISO13732-1:2007

**Pressure Equipment Directive** 97/23/EC: the abovementioned equipment has been designed and manufactured in accordance with the requirements of this Directive.

**Max. operating pressure:** DN-10 to DN-100/4" =10 bar / DN-125/5" to DN-150/6" =8 bar / DN-200/8" =5 bar

**Diameter:**  $X < \phi = \text{DN-25}$

**Equipment category:** SEP = Sound Engineering Practice, determined according to Article 3 Section 1.3.a, first paragraph Annex II, Table 6

**This material SHALL NOT carry CE marking.**

**Diameter:**  $\text{DN-25} < X < \phi = \text{DN-100}$

**Equipment category:** Category I, determined according to Article 3, Section 1.3.a, first paragraph Annex II, Table 6

**This material SHALL carry EC marking.**

**Conformity Assessment Module:** Module A

In compliance with **Regulation (EC) 1935/2004**, relating to materials and articles intended to come into contact with food (repealing Directive 89/109/EEC), the materials in contact with the product do not transfer their constituents to the product in quantities which could endanger human health.

**Declaration of Incorporation** (Directive 2006/42/EC, Annex II, Part B):

The abovementioned equipment must not be put into service until the machine into which it is to be incorporated has been found and declared to be in conformity with the provisions of the Machine Directive.

Banyoles, 2013

DAVID REYERO  
Technical manager

# 1. Safety

## 1.1. INSTRUCTION MANUAL

This instruction manual contains basic indications which should be fulfilled during the installation, start-up, and maintenance of this product.

The information published in the instruction manual is based on updated information.

INOXPA reserves the right to modify this instruction manual without prior notice.

## 1.2. INSTRUCTIONS FOR START-UP

This instruction manual contains essential and useful information for the correct handling and maintenance of the valve.

The safety instructions detailed in this chapter as well as all the special measures and recommendations included in the other chapters of this manual must be observed and fulfilled. These instructions should be kept in a safe location near the installation area.

## 1.3. SAFETY

### 1.3.1. Warning symbols



Danger for persons in general



Danger of injury caused by rotating equipment parts



Electric hazard



Danger! Caustic or corrosive agents.



Danger! Suspended loads



Danger for the correct operation of the equipment



Commitment to safety at the workplace



Protective goggles required

## 1.4. GENERAL SAFETY INSTRUCTIONS



Read the instruction manual carefully before installing and starting up the valve. Contact INOXPA in case of doubt.

### 1.4.1. During installation



The *Technical Specifications* of Chapter 8 should always be observed.

The installation and use of the valve / actuator must always be carried out in accordance with applicable health and safety regulations.

Before starting up the valve/ actuator, verify that it is correctly assembled and that the shaft is perfectly aligned. An incorrect alignment and/or excessive force in securing the valve / actuator may cause serious mechanical problems in the valve 7 actuator.



During the installation, all the electric work should be carried out by authorised personnel.

### 1.4.2. During operation



The *Technical Specifications* of chapter 8 should always be observed. The specified limit values shall NEVER be exceeded under any circumstance.



**NEVER touch the valve and/or the lines that are in contact with the liquid during operation. A burn hazard exists when working with hot products.**

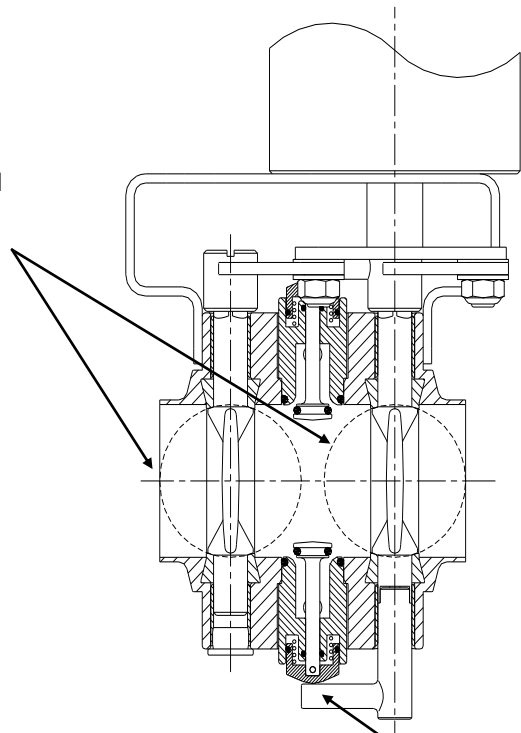
**Do not touch the actuator in case of failure since its springs are not protected.**



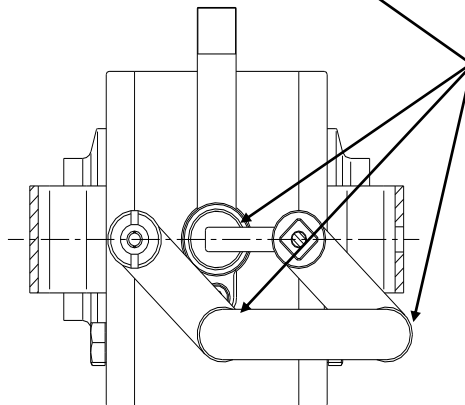
**The valve / actuator have rotating parts. Do not place hands or fingers in the coupling between the valve and the actuator when the compressed air is connected. This can cause serious injuries.**



**Entrapment hazard for fingers and hands.**



10.006.32.0019



**Entrapment hazard for fingers and hands.**



### 1.4.3. During maintenance.



The *Technical Specifications* of Chapter 8 should always be observed.

**NEVER** disassemble the valve until the lines have been emptied. Bear in mind that the liquid in the line may be dangerous or extremely hot. Consult the regulations in effect in each country for these cases.

**Do not leave loose parts on the floor.**



**All the electric work should be carried out by authorised personnel.**

### 1.4.4. Compliance with the instructions

Not following the instructions may impose a risk for the operators, the environment and the machine, and may result in the loss of the right to claim damages.

This non-compliance may impose the following risks:

- Failure of important machine/plant functions.
- Failure of specific maintenance and repair procedures.
- Possibility of creating electric, mechanical and chemical hazards.
- Would place the environment at risk due to the type of substances released.

### 1.5. WARRANTY

Any warranty will be void immediately and lawfully, and, in addition, we will request compensation for any claims of civil liability presented by third parties, in the following cases:

- The installation and maintenance work has not been carried out according to the instructions in this manual.
- The repairs are not carried out by our personnel or have been carried out without our written authorisation.
- The parts used are not INOXPA genuine parts.
- Modifications have been carried out on our material or equipment without written authorisation.
- The material or equipment has been badly used, incorrectly used, or used with negligence or has not been used according to the indications and intended use specified in this manual.

The general conditions of delivery that are already in your possession are also applicable.

Please do not hesitate to contact us in case of doubts or if further explanations are required regarding specific data (adjustments, assembly, disassembly, etc.).

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## 3. Receiving and installation

### 3.1. CHECKING THE SHIPMENT.

The first thing to do on receiving the valve is to verify that it matches the delivery note.

INOXPA will inspect all the equipment before packing, although it cannot guarantee that the merchandise will arrive intact to the user. For this reason, the valve received and any other article should be checked and, if it is found not to be in good condition and/or not all parts are included, the carrier should submit a report as soon as possible.

Each valve has a manufacturing number engraved. Indicate the manufacturing number in all documents and correspondence. If the valve is delivered with an actuator, it will include a label with the following information:

 SOURCE OF SOLUTIONS	
<b>VALVULAS NEUMATICAS / AIR OPERATED VALVES</b>	
Nº FIGURA: <i>FIGURE NR:</i>	TAMAÑO: <i>SIZE:</i>
TIPO ACTUADOR: <i>ACTUATOR TYPE:</i>	
PRESION DE TRABAJO: min <i>WORKING PRESSURE: min</i>	/ max <i>/ max</i>
Nº FABRICACION: <i>MANUFACTURING NO.:</i>	MODELO: <i>MODEL:</i>

Serial number →

### 3.2. ACCEPTANCE AND UNPACKING.



**INOXPA will not be responsible for the inappropriate unpacking of the valve, actuator and its components.**

#### 3.2.1. Acceptance:

Check that all the parts indicated in the delivery slip are present.

- Complete valve
- Actuator and its components (if supplied).
- Delivery note
- Instruction manual

#### 3.2.2. Unpacking:

- Remove all traces of packing materials from the valve or its parts. The manually or air operated valves and its components are delivered assembled.
- Inspect the valve or its constituent parts for possible damage caused during transport.
- Avoid any possible damage to the valve / actuator and its components.

### 3.3. IDENTIFICATION.

Family

Code

**V482 5**

**00 06 52 050**

NOMINAL DIAMETER

**025** - DN 25 (DN 1")  
**040** - DN 40 (DN 1 1/2")  
**050** - DN 50 (DN 2")  
**063** - DN 2 1/2"  
**065** - DN 65  
**076** - DN 3"  
**080** - DN 80  
**100** - DN 100 (DN 4")

SEAL MATERIAL

**52** - EPDM  
**43** - NBR  
**61** - VMQ  
**80** - FPM

MATERIAL

**04** - AISI 304L  
**06** - AISI 316L

CONNECTIONS

**00** - S/S  
**11** - M/M  
**77** - CL/CL

TYPE OF CONNECTION

**5** - DIN 11851  
**6** - OD ASME  
**7** - SMS FRANCE

DOUBLE BUTTERFLY VALVE LBV



**The buyer or user will be responsible for the assembly, installation, starting and operation of the valve with or without pneumatic operation.**

### 3.4. PLACEMENT.

The double butterfly valves LVB are adequate for being in contact with food products.

Place the valve / actuator in such a way as to facilitate inspections and checks. Leave sufficient space around the valve for appropriate inspection, separation and maintenance (See Section 3.7.3). It is very important to be able to access the actuator's air connection device for maintenance.



**Its location must NOT be accessible during the operation of the valve. Otherwise, the user must establish the necessary protection measures to prevent the entrapment hazards indicated in section 1.4.2. Also, install the necessary hazard signs.**



**When the valve is operated and there is liquid in the line, the liquid is expelled through the leak detector. The amount always depends on the pressure in the line. If the liquid is hot, corrosive, dangerous, etc., the product must be directed to properly exit through the leak detector and thus avoid imposing a hazard for the operators.**

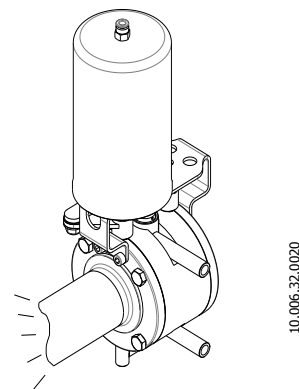


### 3.5. INSTALLATION.

Once the valve has been installed at the desired location it can be connected to the line by welding the valve body or by using accessories (connectors).

Excessive stress should be avoided during the assembly of the valves and special attention should be given to the following:

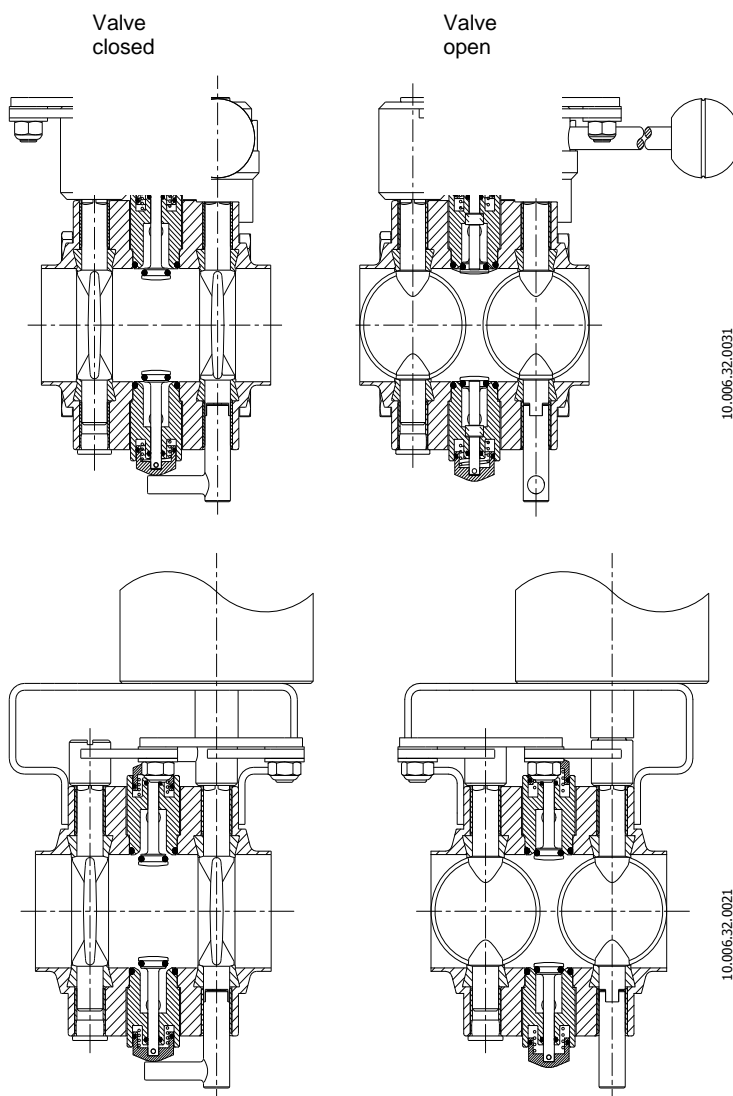
- Vibrations which may be produced during the installation.
- The expansion of the lines during the circulation of hot liquids.
- The weight that the lines can withstand.
- Excessive welding current.



### 3.6. INSPECTIONS AND CHECKS

Check the following before use:

- Open and close the valve several times to ensure it operates properly and check that both butterflies softly press up against the seal.
- In the case it incorporates a pneumatic actuation, apply compressed air three or four times checking that opens and closes easily.



### 3.7. WELDING.

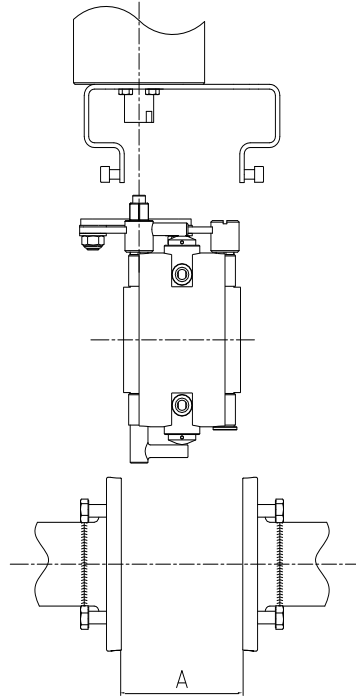


**Any welding work may only be carried out by qualified personnel that has been suitably trained and equipped with the necessary means to carry out this work. Disassemble the valve before starting the welding work.**

### 3.7.1. Double butterfly valve LVB weld/weld.

- Remove the valve as indicated in the *Disassembling* section.
- Weld the valve body to the lines.
- When welding both sides of the valve, check that they can be axially separated (see dimension A) in order to remove the internal parts of the valve (butterfly and seal).

DN	A
25-1"	81
40-1 1/2"	82
50-2"	82
65-2 1/2"	83
80-3"	86
100-4"	87

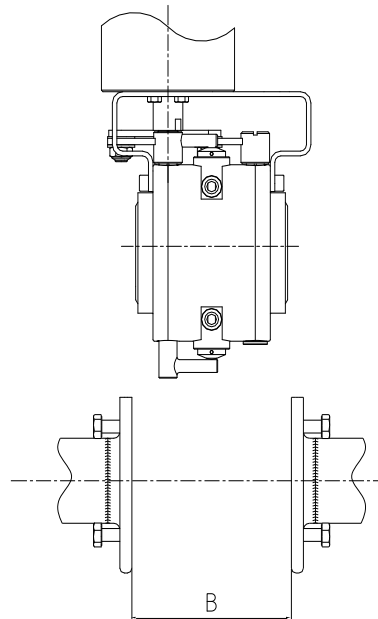


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### 3.7.2. Double butterfly valve LVB sandwich.

- Weld the flanges to the lines.
- It is very important to maintain the proper distance (see dimension B) to allow for axial movement and facilitate the installation and removal of the valve.
- Once the flanges are welded to the line, install the valve in accordance with the procedures listed in chapter 7.

DN	B
25-1"	106
40-1 1/2"	106
50-2"	106
65-2 1/2"	106
80-3"	106
100-4"	106

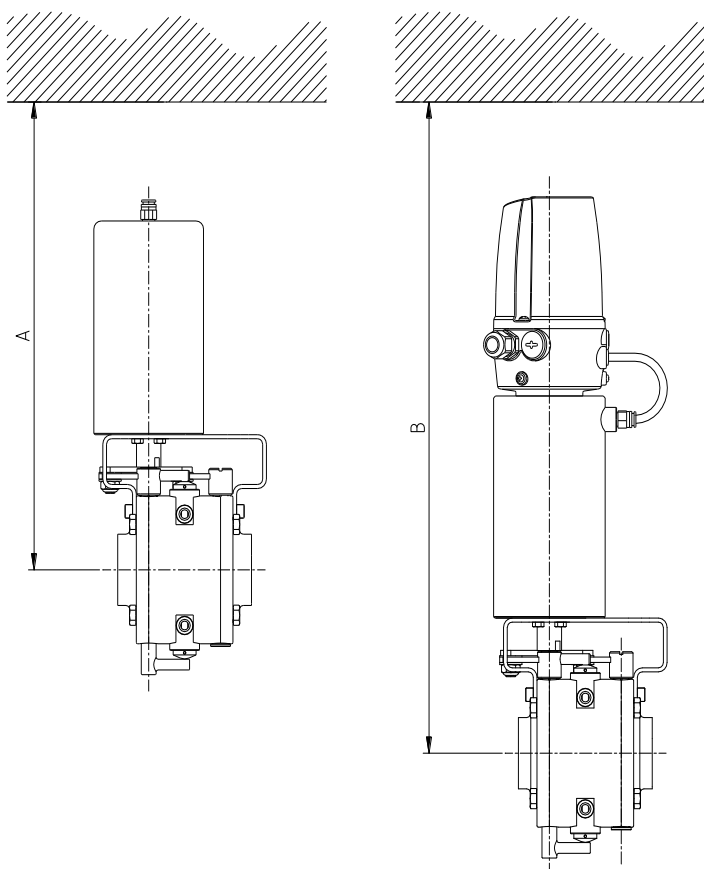


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### 3.7.3. Pneumatically operated valve.

- In the case of a pneumatically operated valve, it is very important to maintain the minimum distance (dimension A) that will allow removing the actuator. In this case, we must differentiate when the actuator includes a control head (dimension B).

DN	A	B
	With Pneumatic Op.	With pneumatic Op. and control head
25-1"	283	454
40-1 1/2"	314	466
50-2"	320	472
65	329	481
2 1/2"	324	476
80	385	538
3"	380	533
100-4"	396	549

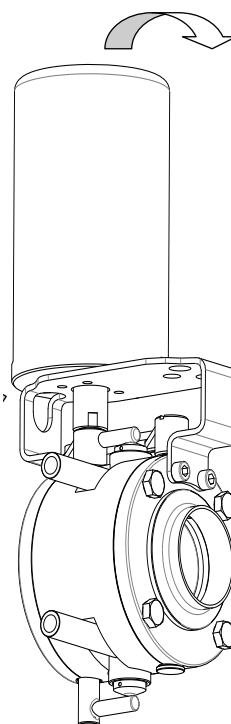


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### 3.8. AIR CONNECTION TO THE ACTUATOR.

- Connect and check the air connections (1/8" BSP thread) as required; dual effect or single effect.
- Properly face the actuator and butterfly depending on if a NO/NC actuator is desired. Turning the butterfly 90° you can obtain one or another type of solution.
- Ensure that the quality of the compressed air is in accordance with the specifications described in Chapter 8 *Technical Specifications*.

Air connection threaded BSP 1/8".  
DE operation



AIR CONNECTION  
THREADED BSP  
1/8".  
SE/DE operation

## 4. Start-up

The valve (with or without an actuator) is ready for operation provided the instructions indicated in Chapter 3 – *Receiving and Installation* have been followed.

### 4.1. START-UP.



**Before operating the valve / actuator, the persons responsible should be duly informed about the operation of the valve / actuator and the safety instructions to be followed. This instruction manual should be available to personnel at all times.**

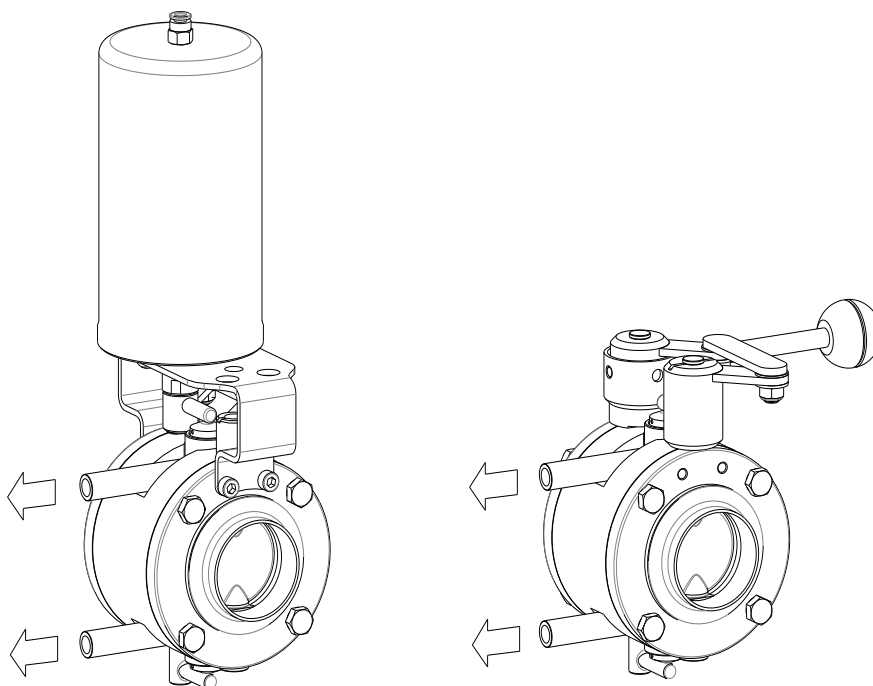
The following should be taken into consideration before starting up the valve/actuator:

- Check that the line and valve are completely free from any traces of welding or other foreign matter. Carry out the cleaning of the system if required.
- Verify the smooth operation of the valve. If necessary, lubricate with special grease or soapy water.
- If the valve is supplied with actuator, ensure that the alignment of the valve shaft with the actuator shaft allows for a smooth operation.
- Check that the compressed air pressure at the intake to the actuator is that indicated in the *Technical Specifications* of chapter 8.
- Ensure that the quality of the compressed air is in accordance with the specifications described in Chapter 8 *Technical Specifications*.
- Check for possible leaks and check that all the lines and connections are watertight and free from leaks.
- Operate the valve.



**When the valve is operated and there is liquid in the line, the liquid is expelled through the leak detector. The amount always depends on the pressure in the line. If the liquid is hot, corrosive, dangerous, etc., the product must be directed to properly exit through the leak detector and thus avoid imposing a hazard for the operators.**

**Two detectors are available; it is important to check that there are no caps installed at the outlet prior to starting the valve.**



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## 4.2. OPERATION.

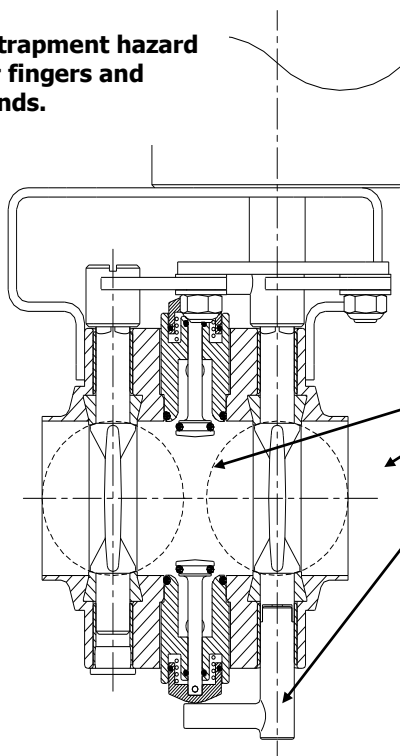


**Do not modify the operating parameters for which the valve / actuator has been designed without written prior authorisation from INOXPA.**

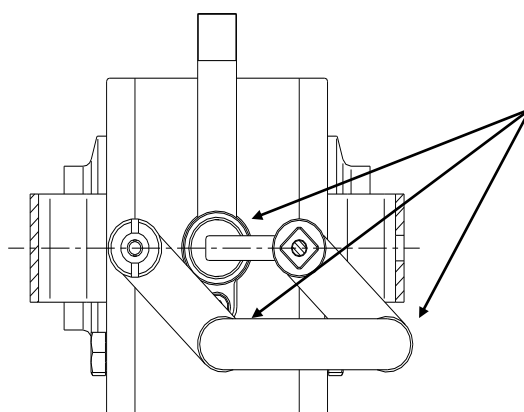
**Do not touch the moving parts of the coupling between the actuator and the valve when the actuator is connected to the compressed air supply.**

**Its location must NOT be accessible during the operation of the valve. Otherwise, the user must establish the necessary protective measures to prevent entrapment hazards.**

**Entrapment hazard  
for fingers and  
hands.**



**Entrapment hazard  
for fingers and  
hands.**



**Danger of burns! Do not touch the valve or pipes when hot liquids are circulating or when cleaning and/or sterilisation are being carried out.**

**Visually check that no leaks are present in the sealed area.**

# 5. Operating problems: causes and solutions

PROBLEM	CAUSE / EFFECT		SOLUTION
<b>EXTERNAL LEAKS. PRODUCTS LEAKS THROUGH THE SHAFT</b>	The main seal is worn or deteriorated.		<ul style="list-style-type: none"> <li>• Replace the seals.</li> <li>• Replace the seals with others of different material and better suited for the product</li> </ul>
<b>PRODUCT LEAKS THROUGH THE GAS DETECTOR (VALVE OPEN)</b>	Leak detector seals worn or ruptured		<ul style="list-style-type: none"> <li>• Replace the seals</li> </ul>
<b>PRODUCT LEAKS THROUGH THE GAS DETECTOR (CLOSED VALVE)</b>	Normal wear of the seals.		<ul style="list-style-type: none"> <li>• Replace the seals.</li> </ul>
	Premature wearing of the seals	Watertight seal worn or affected by the product. Excessive pressure in the line. Working temperature excessively high (assembling nuts and bolts). Loss of watertightness (vibrations). High manoeuvre periodicity (No. of actuations / hour).	<ul style="list-style-type: none"> <li>• Replace the seals with others of different material and better suited for the product.</li> <li>• Tighten any loose components.</li> <li>• Clean frequently.</li> <li>• Decrease the frequency in which the valve is opened / closed.</li> </ul>
<b>THE VALVE IS JERKING</b>	The seals are obstructed.		<ul style="list-style-type: none"> <li>• Lubricate with soapy water or lubricant compatible with the material of the seal and with the product.</li> </ul>
	The actuator does not operate the valve efficiently.		<ul style="list-style-type: none"> <li>• Check the compressed air supply pressure.</li> <li>• Replace with a larger sized pneumatic actuator.</li> </ul>
	Excessive pressure in the line.		<ul style="list-style-type: none"> <li>• Verify the pressure of the installation and regulate it if required.</li> </ul>
<b>VALVE DOES NOT OPEN/CLOSE</b>	The seal is deformed. Improper operation of the actuator. Actuator components worn. Dirt inside the actuator.		<ul style="list-style-type: none"> <li>• Replace the seals with others of different quality, if prematurely deteriorated.</li> <li>• Change form NC to NO.</li> <li>• Check the actuator.</li> <li>• Check the compressed air pressure.</li> </ul>
<b>SURGE</b>	The valve closes very fast.		<ul style="list-style-type: none"> <li>• Set the actuator's closing speed (using a flow regulator).</li> </ul>

# 6. Maintenance

## 6.1. OVERVIEW.

This valve, just like any other machine, requires maintenance. The instructions contained in this manual cover the identification and replacement of spare parts. The instructions have been prepared for maintenance personnel and for those responsible for the supply of spare parts.



Carefully read Chapter 8. *Technical specifications*.

**All replaced material should be duly eliminated/recycled according to the directives in effect in the area.**

**The installation or removal of the valves (pneumatically operated or not) must only be carried out by qualified personnel.**

**Before starting any maintenance work, ensure that the compressed air is disconnected and the lines are not pressurised.**

## 6.2. MAINTENANCE.

The following is recommended for correct maintenance:

- Regular inspection of the valve, the actuator and its components
- Keep a record of the operation of each valve, noting any incidents
- Always have spare seals in stock

During maintenance, pay particular attention to the danger warnings indicated in this manual.



**Do not touch the moving parts when the actuator is connected to the compressed air.**

**The valve and lines should never be pressurised during maintenance.**



**The valve should never be hot during maintenance. Burn Hazard!**

**When removing the actuator for maintenance/repair, the springs are not protected.**

### 6.2.1. Maintenance of the seals.

#### SEAL REPLACEMENT

<b>Preventive maintenance</b>	Replace after twelve (12) months.
<b>Maintenance after a leak</b>	Replace at the end of the process.
<b>Scheduled maintenance</b>	Regularly check that there are no leaks and that the valve is operating smoothly. Keep a record of the valve. Use statistics to plan inspections.
<b>Lubrication</b>	During assembly, apply lubricants compatible with the seal material.

The time interval between each preventive maintenance operation may vary according to the working conditions to which the valve is subjected: Temperature, pressure, number of actuations per day, type of cleaning solutions used, etc.

### 6.2.2. Storage.

The valves should be stored in a closed area, under the following conditions:

- Temperature 15°C to 30°C
- Air humidity <60%

Open-air storage of the equipment is **NOT** permitted.

### 6.2.3. Spare parts.

To request spare parts, it is necessary to indicate the type of valve, the position and the description of the part which can be found in the Technical specifications chapter. In the case of pneumatic actuators, indicate the type and manufacturer's number that are printed on the characteristics plate and etched on the valve's body.

## 6.3. CLEANING.



**The use of aggressive cleaning products such as caustic soda and nitric acid may burn the skin.**

**Use rubber gloves during the cleaning process.**



**Always use protective goggles.**

### 6.3.1. CIP (Clean-in-Place) cleaning.

If the valve is installed in a system with a CIP process, its removal will not be required.

#### Cleaning solutions for CIP processes.

Only use clear water (chlorine-free) to mix with the cleaning agents:

**a) Alkaline solution:** 1% by weight of caustic soda (NaOH) at 70°C (150°F)

1 kg NaOH + 100 litres of water = cleaning solution  
or  
2.2 litres of 33% NaOH + 100 litres of water = cleaning solution

**b) Acid solution:** 0.5% by weight of nitric acid (HNO<sub>3</sub>) at 70°C (150°F)

0.7 litres of 53% HNO<sub>3</sub> + 100 litres of water = cleaning solution



**Check the concentration of the cleaning solutions; incorrect concentrations may lead to the deterioration of the valve seals.**

To remove any remains of cleaning products, ALWAYS perform a final rinse with clean water upon completion of the cleaning process.



**Before beginning with the disassembly and assembly tasks, clean both the interior and exterior of the valve. Disconnect the air from the actuator.**

### 6.3.2. Automatic SIP (Sterilization-in-Place).

Sterilization with steam is applied to all equipment including pigging.



**Do NOT start the equipment during the sterilization with steam.**

**The parts/materials will suffer no damage if the indications specified in this manual are observed.**

**No cold liquid can enter the equipment until the temperature of the equipment is lower than 60°C (140°F).**

Maximum conditions during the SIP process with steam or overheated water

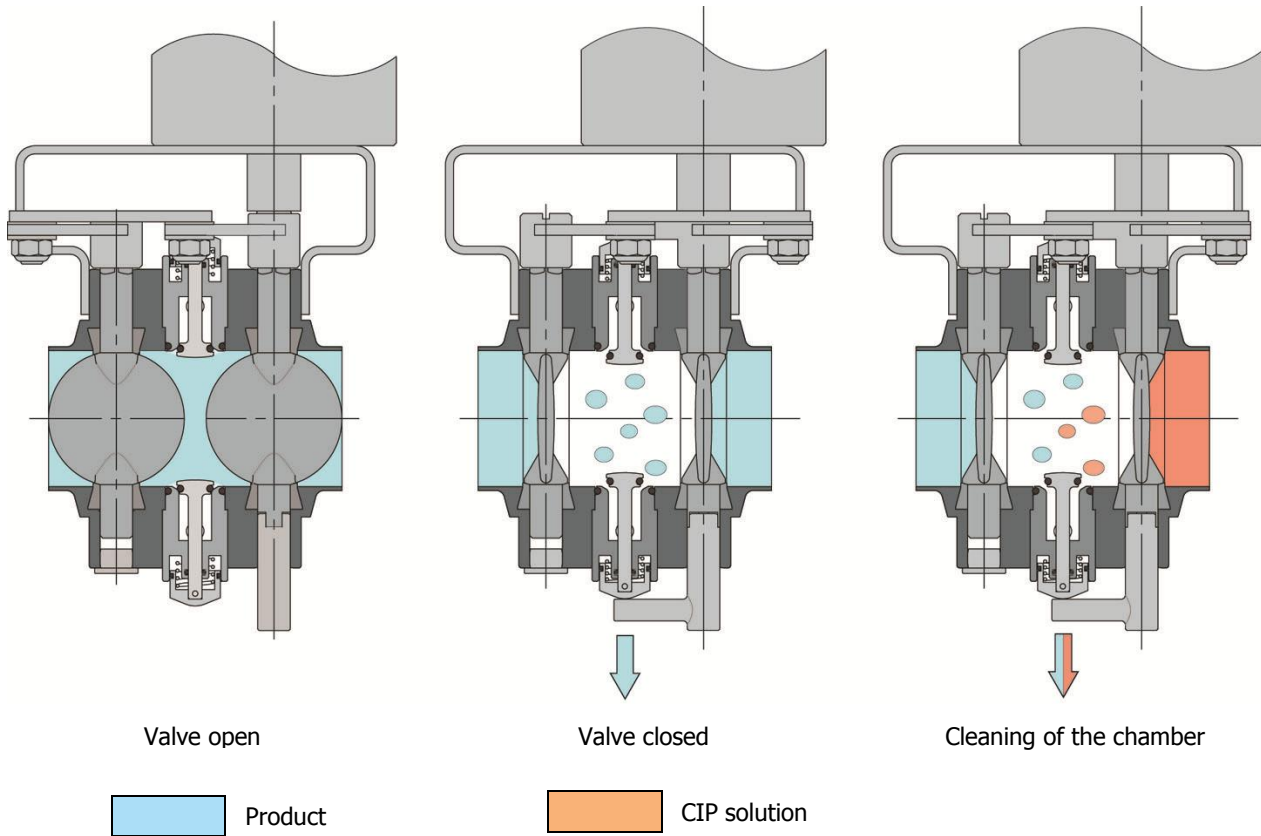
- a) **Max. temperature:** 140°C / 284°F
- b) **Max. time:** 30 min.
- c) **Cooling:** Sterile air or inert gas
- d) **Materials:** EPDM  
FPM / NBR / VMQ (not recommended)



### 6.3.3. Cleaning of the intermediate chamber.

The double butterfly valve LBV also allows for CIP or SIP cleaning of the intermediate chamber to prevent against any type of contamination.

To accomplish this and with the valve closed, upper detector (858) must be used as the cleaning product or steam inlet and the lower detector will be used as the drain.



# 7. Assembly and disassembly



**Proceed with caution. There is danger of personal injury.**

**The installation or removal of the valves (pneumatically operated or not) must only be carried out by qualified personnel.**



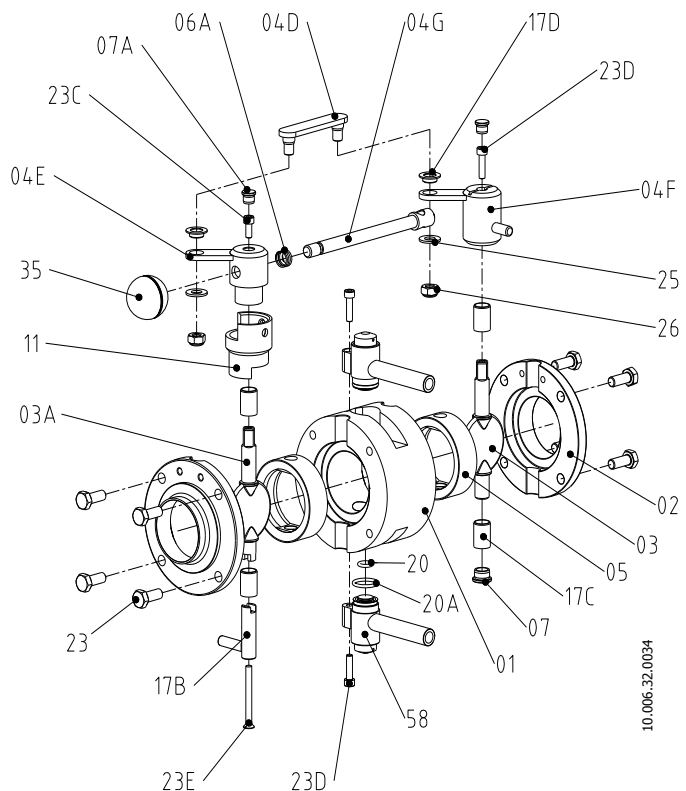
**The following tools are required to remove the valve:**

- 4mm Allen wrench (DN-25 to DN-100)
- 5mm Allen wrench (DN-25 to DN-100)
- 13mm spanner wrench (DN-25 to DN-100)
- 7mm flat head screwdriver (DN-25 to DN-50)

## 7.1. REMOVAL / INSTALLATION OF THE MANUAL VALVE.

### Removal.

1. Remove nuts (26).
2. Remove arm (04D), washers (25) and bushings (17D).
3. Remove the caps (07A) from connecting rods (04E) and (04F)
4. Loosen screws (23C) and (23D) and remove connecting rods (04E) and (04F) along with the entire lever assembly.
5. Remove the guide from the lever (11).
6. Unscrew ball (35) and remove the bar from lever (04G) and spring (06A).
7. Remove cap (07) that is located on the bottom of the butterfly shaft.
8. Remove screw (23E) and remove the lower actuation (17B).
9. Remove screws (23) that join the two sides (02) with the body (01).
10. Separate the sides (02) and remove the bushings (17C).
11. Remove the butterflies along with seals (03, 03A and 05).
12. Remove the seal (05) from the butterfly (03 and 03A).  
Refer to [section 7.2](#)
13. Remove screws (23D) from the leak detectors (58).
14. Remove leak detectors (58) and seals (20 and 20A).



10.006.32.0034

### Installation.

1. Lubricate the butterfly shafts and the seals using soapy water.  
Install butterflies (03 and 03A) in the seals (05). See [section 7.2 CAUTION!](#) Once the seals are installed, leave the butterfly in the open position to facilitate installing the valve.
2. Install bushings (17C) into butterfly shafts (03 and 03A).
3. Install the butterfly assemblies and seal between the sides (02) and the body (01).
4. Install screws (23) and cross tighten (using the tightening torque indicated in [Section 8.1](#)), being careful that the seals (05) and the bushings (17C) are properly installed.
5. Install seals (20 and 20A) and leak detectors (58), and tighten the screws (23D).
6. Install spring (06A) and lever arm (04G) on connecting rod (04E).
7. Screw ball (35) on to lever arm (04G).
8. Install the entire lever rod assembly on to the lever guide (11).
9. Install connecting rods (04E and 04F) on to butterfly shafts (03 and 03A) and install bushings (17D), arm (04D) and tighten screws (23C) and (23D).
10. Install washers (25) on to the pivots and install nuts (26).
11. Install caps (07A) on to connecting rods (04E and 04F)
12. Install lower actuation (17B) and tighten screw (23E).
13. Install cap (07) on the bottom of the butterfly shaft (03).

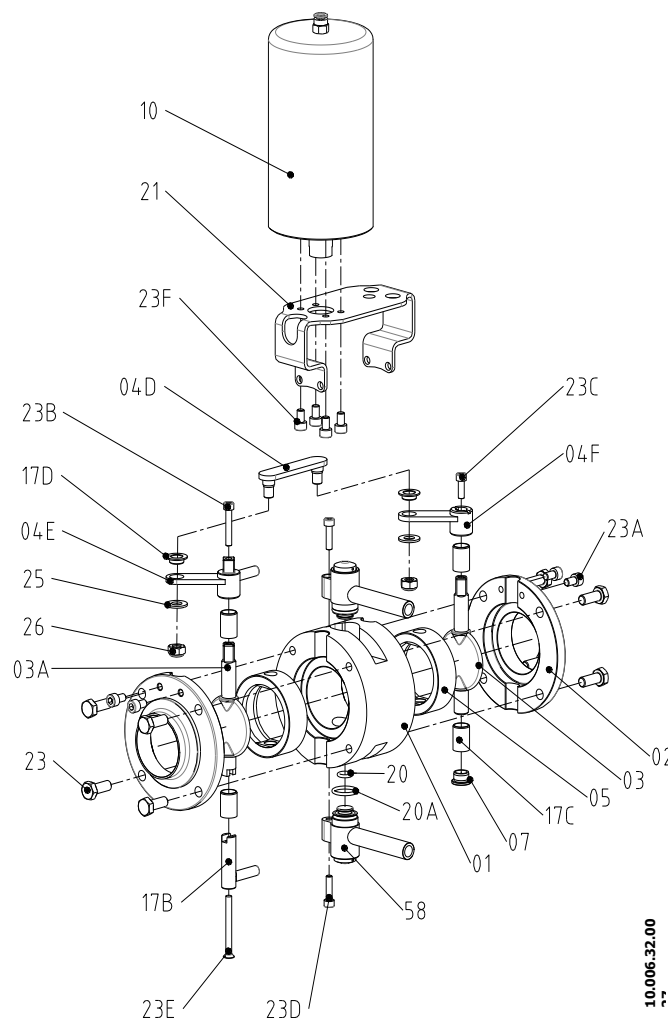


**Prior to placing the valve into operation, open and close it several times to ensure that the butterfly gently couples to the seal.**

## 7.2. REMOVAL / INSTALLATION OF THE PNEUMATICALLY OPERATED VALVE.

### Removal.

1. Disconnect the compressed air from the actuator.
2. Remove both screws (23A) that attach the actuator support (21) to the sides (02).
3. Separate the support/actuator assembly from the rest of the valve.
4. Remove screws (23F) and separate support (21) from the actuator (10).
5. Remove the nuts (26).
6. Remove the arm (04D), washers (25) and bushings (17D).
7. Unscrew screws (23B) and (23C) and remove connecting rods (04E) and (04F).
8. Remove cap (07) that is located on the bottom of the butterfly shaft.
9. Remove screw (23E) and remove the lower actuation (17B).
10. Remove screws (23) that join the two sides (02) with the body (01).
11. Separate the sides (02) and remove the bushings (17C).
12. Remove the butterflies along with seals (03, 03A and 05).
13. Remove the seal (05) from butterflies (03 and 03A). Refer to [section 7.2](#)
14. Remove screws (23D) from the leak detectors (58).
15. Remove the leak detectors (58) and seals (20 and 20A).



### Installation.

14. Lubricate the butterfly shafts and the seals using soapy water.  
Install the butterflies (03 and 03A) in the seals (05).  
See [section 7.2 CAUTION!](#) Once the seals are installed, leave the butterfly in the open position in order to facilitate installing the valve.
15. Install bushings (17C) into the butterfly shafts.
16. Install the butterfly assemblies and seal between the sides (02) and the body (01).
17. Install screws (23) and cross tighten (using the tightening torque indicated in [Section 8.1](#)), being careful that the seals (05) and the bushings (17C) are properly installed.
18. Install seals (20 and 20A) and leak detectors (58) and tighten screws (23D).
19. Install connecting rods (04E and 04F) on to butterfly shafts (03 and 03A) and install bushings (17D), arm (04D) and tighten screws (23B) and (23C).
20. Install washers (25) on to the arms and install nuts (26).
21. Install lower actuation (17B) and tighten screw (23E).
22. Install cap (07) that is located on the bottom of butterfly shaft (03).
23. Attach actuator (10) to support (21) using screws (23F).
24. Attach support (21) to sides (02) using screws (23A).



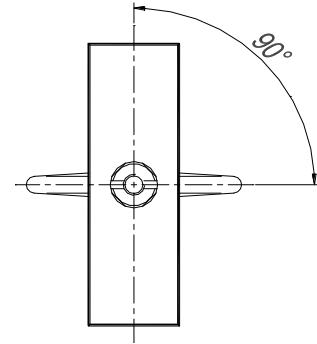
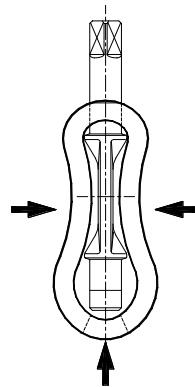
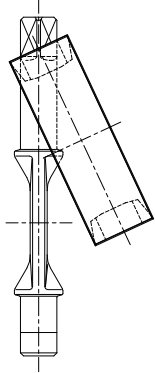
**Prior to placing the valve into operation, open and close it several times to ensure that the butterfly gently couples to the seal.**

### 7.3. INSTALLING THE SEAL.



Carry out the installation being careful not to damage the seal.

Ensure the parts are in perfect material condition and clean.



**1** Insert the butterfly's long rod into one of the seal orifices.

**2** Stretch the seal as indicated in the drawing so that the short rod can be inserted into the free hole on the seal.

**3** Turn the butterfly until it is perpendicular to the seal. This position facilitates the installation of the valve body.

### 7.4. OPTIONS FOR INSTALLING THE ACTUATOR.

#### Single effect NC (Normally Closed).

The butterfly (03) and the position indicator (58) must be in the closed position (refer to figure 1).

#### Single effect NO (Normally Open).

The butterfly (03) and the position indicator (58) must be in the open position (refer to figure 2).

#### Double effect A/A

The butterfly (03) and the position indicator (58) must be in the open position (refer to figure 3). Prior to installing, supply compressed air to the lower actuator.

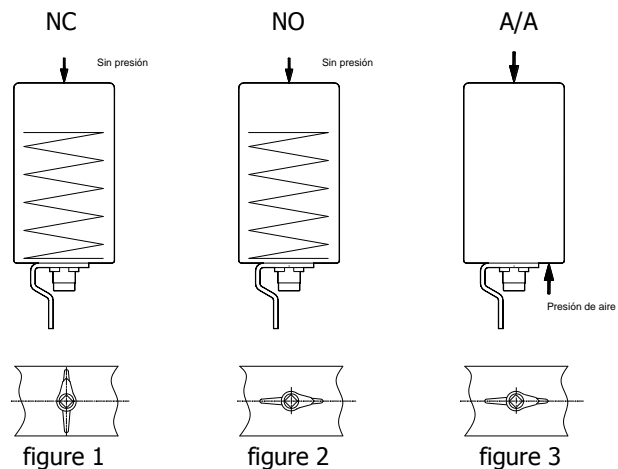


figure 1

figure 2

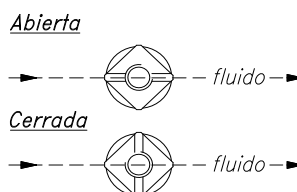
figure 3

### 7.5. VALVE POSITION

To check if the valve is open or closed, during the installation-removal or when replacing the lever-actuator, the shaft positions of butterflies (03) and (03A) must be verified.

A notch can be seen on the top part of the shaft. This notch indicates the position of the valve:

- Open; when the notch is in line with the fluid flow.
- Closed; when the notch obstructs the fluid flow in an imaginary fashion.



# 8. Technical specifications

## 8.1. TECHNICAL SPECIFICATIONS.

GENERAL DATA FOR THE VALVE	
<i>Maximum working pressure</i>	DN-25 to 100 / DN-1" to 4"
	10 bar
<i>Maximum working temperature</i>	121°C (250 °F) Standard EPDM seals (other seal materials supplied for higher temperatures)
<i>Opening angle</i>	90° for DN-25 to 50 / DN-1" to 2" 77° for DN-65 a 100 / DN-2 ½" a 4"

VALVE MATERIALS	
<i>Parts in contact with the product</i>	AISI 316L (1.4404)    AISI 304L (1.4306)
<i>Other steel parts</i>	AISI 304 (1.4301)
<i>Seals in contact with the product</i>	EPDM (Standard) - NBR – VITON - SILICON
<i>Surface finish</i>	Parts in contact with the product. Ra. 0.8µm
<i>Type of connections</i>	DIN 11851 (standard) Weld, FIL-IDF, BS-RJT, SMS, clamp, flanges, Macon.

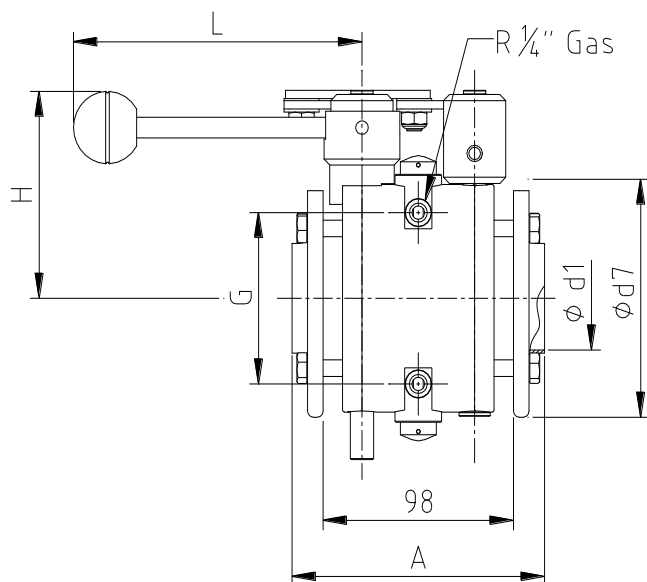
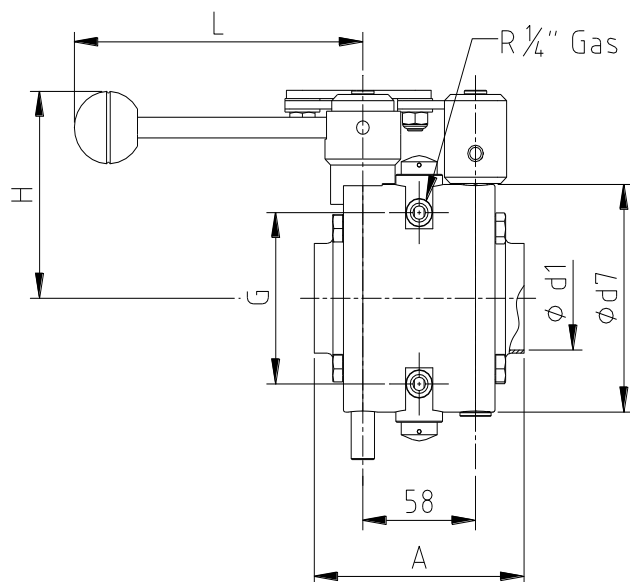
PNEUMATIC ACTUATOR GENERAL DATA	
<i>Compressed air/cycle consumption</i>	25 (1") Single effect: 0.15 litres
	40 (1 ½")– 65 (2 ½") Single effect: 0.25 litres
	80 (3") – 100 (4") Single effect: 0.85 litres
<i>Compressed air pressure (Actuator)</i>	6-8 bar (87-116 PSI) Single effect / 4-6 bar (58-87 PSI) Double effect

<i>Compressed air quality</i>	In accordance with DIN/ISO 8573.1 <ul style="list-style-type: none"> <li>- <u>Solid particle content</u>: Quality class 3 / max. particle dimension 5 microns / Max. particle density 5 mg/m<sup>3</sup></li> <li>- <u>Water content</u>: Class 4 quality / max. dew point +2°C. If the valve is used at higher altitudes or at low ambient temperatures, the dew point must be adapted accordingly</li> <li>- <u>Oil content</u>: Quality class 5, preferably oil free / max. 25 mg of oil per 1 m<sup>3</sup> of air</li> </ul>
<i>Rotation angle</i>	90°
<i>Rotating moment</i>	25 (1") 15Nm (single effect) 40 (1 ½")– 65 (2 ½") 35Nm (single effect) 80 (3") – 100 (4") 90Nm (single effect)
<i>Continuous operating temperature</i>	-20°C to +50°C
<i>Air connections</i>	R1/8" (BSP)

**Tools/ tightening torques for assembling the sides.**

<b>Valve size</b>	<b>DN-25 / 100 DN-1" / 4"</b>
Spanner wrench DIN 37110	13
Tightening torque	21 Nm

## 8.2. MANUAL VALVE DIMENSIONS.



10.006.32.0028

For metric pipe in accordance with DIN 11850

WELD

DN	$\phi d1$	$\phi d7$	A	G	H	L	Weight [kg]
25	26	87	98	60	90	150	4,2
40	38	97	108	70	95	150	4,7
50	50	110	108	83	100	150	5,5
65	66	127	108	100	110	180	6,7
80	81	142	118	115	117	180	8
100	100	162	118	136	128	180	9,8

WELD SANDWICH

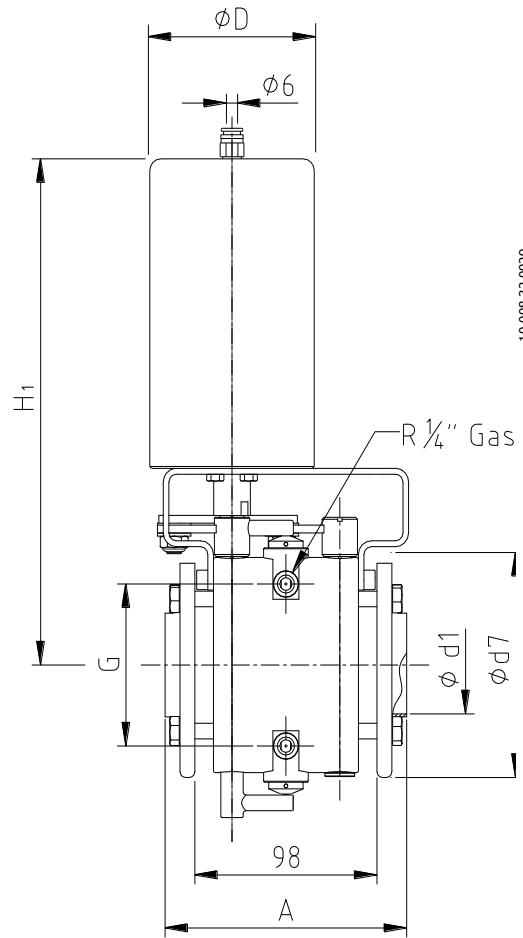
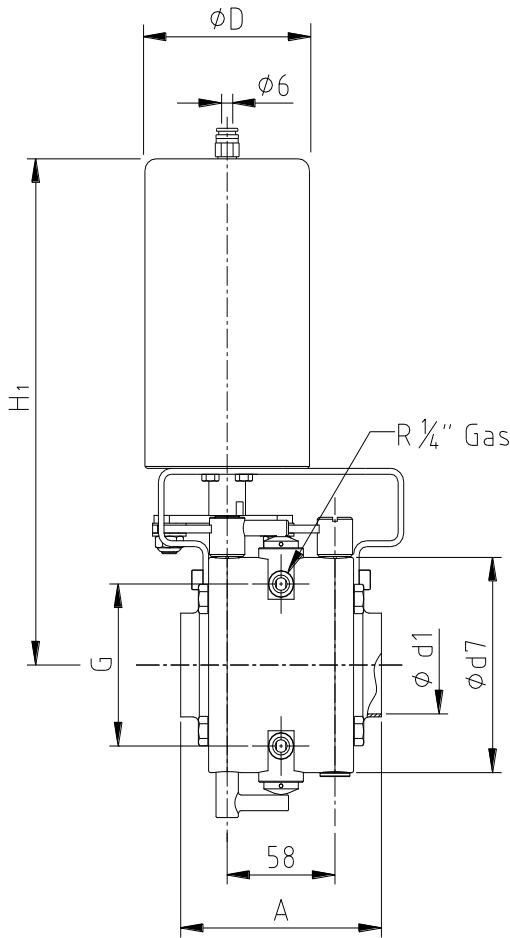
DN	$\phi d1$	$\phi d7$	A	G	H	L	Weight [kg]
25	26	93	126	60	90	150	4,9
40	38	103	126	70	95	150	5,6
50	50	115	130	83	100	150	6,7
65	66	132	130	100	110	180	8,1
80	81	145	138	115	117	180	9,8
100	100	165	138	136	128	180	11,9

For OD pipe in accordance with ASME BPE

OD	$\phi d1$	$\phi d7$	A	G	H	L	Weight [kg]
1"	22,1	87	98	60	90	150	4,2
1 1/2"	34,9	97	108	70	95	150	4,7
2"	47,6	110	108	83	100	150	5,5
2 1/2"	60,3	118	108	92	105	180	6
3"	72,9	131	108	104,6	110	180	6,8
4"	97,4	162	118	136	128	180	9,8

OD	$\phi d1$	$\phi d7$	A	G	H	L	Weight [kg]
1"	22,1	93	126	60	90	150	4,9
1 1/2"	34,9	103	126	70	95	150	5,6
2"	47,6	115	130	83	100	150	6,7
2 1/2"	60,3	123	130	92	105	180	7,2
3"	72,9	137	130	104,6	110	180	8,2
4"	97,4	165	138	136	128	180	11,9

### 8.3. PNEUMATICALLY OPERATED VALVE DIMENSIONS.



10.008.32.0029

For metric pipe in accordance with  
DIN 11850

WELD

DN	$\phi d1$	$\phi d7$	A	$\phi D$	G	H <sub>1</sub>	Weight [kg]	Act.
25	26	87	98	76	60	223	6	T1
40	38	97	108	90	70	254	7,4	T2
50	50	110	108	90	83	260	8,3	
65	66	127	108	90	100	269	9,5	
80	81	142	118	133	115	325	16,4	T3
100	100	162	118	133	136	336	18,2	

WELD SANDWICH

DN	$\phi d1$	$\phi d7$	A	$\phi D$	G	H <sub>1</sub>	Weight [kg]	Act.
25	26	93	126	76	60	223	6,7	T1
40	38	103	126	90	70	254	8,3	T2
50	50	115	130	90	83	260	9,5	
65	66	132	130	90	100	269	10,9	
80	81	145	138	133	115	325	18,2	T3
100	100	165	138	133	136	336	20,3	

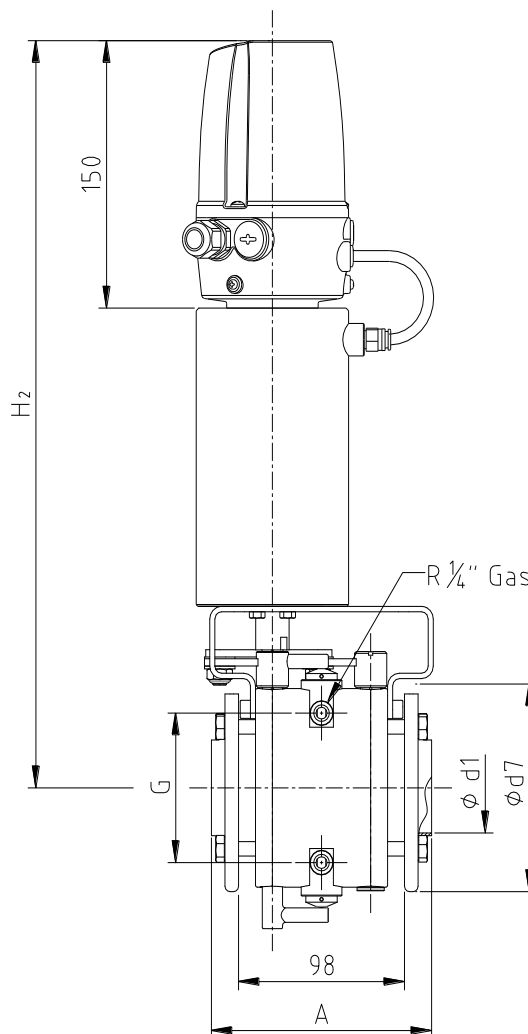
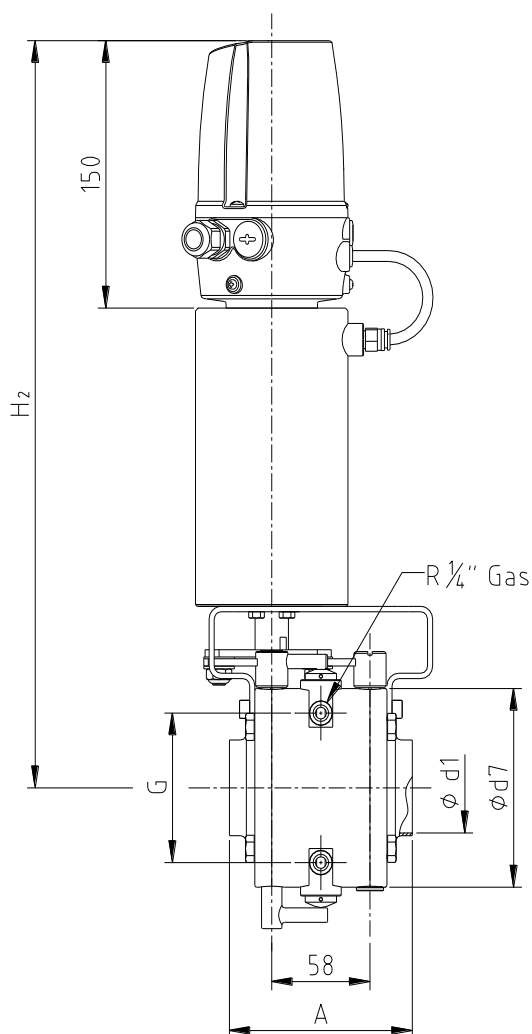
For OD pipe in accordance with ASME BPE

OD	$\phi d1$	$\phi d7$	A	$\phi D$	G	H <sub>1</sub>	Weight [kg]	Act.
1"	22,1	87	98	76	60	223	6	T1
1 1/2"	34,9	97	108	90	70	254	7,4	T2
2"	47,6	110	108	90	83	260	8,3	
2 1/2"	60,3	118	108	90	92	264	8,7	
3"	72,9	131	108	133	104,6	320	15,2	T3
4"	97,4	162	118	133	136	336	18,2	

OD	$\phi d1$	$\phi d7$	A	$\phi D$	G	H <sub>1</sub>	Weight [kg]	Act.
1"	22,1	93	126	76	60	223	6,7	T1
1 1/2"	34,9	103	126	90	70	254	8,3	T2
2"	47,6	115	130	90	83	260	9,5	
2 1/2"	60,3	123	130	90	92	264	9,9	
3"	72,9	137	130	133	104,6	320	16,6	T3
4"	97,4	165	138	133	136	336	20,3	



### 8.4. DIMENSIONS OF PNEUMATIC OPERATION VALVE AND C-TOP.



10.006.32.0030

For metric pipe in accordance with DIN 11850

WELD

DN	ød1	ød7	A	G	H <sub>2</sub>	Weig ht [kg]	Act.
25	26	87	98	60	399	6,5	T1
40	38	97	108	70	411	7,9	T2
50	50	110	108	83	417	8,8	
65	66	127	108	100	426	10	T3
80	81	142	118	115	483	16,9	
100	100	162	118	136	494	18,7	

WELD SANDWICH

DN	ød1	ød7	A	G	H <sub>2</sub>	Weig ht [kg]	Act.
25	26	93	126	60	399	7,2	T1
40	38	103	126	70	411	8,8	T2
50	50	115	130	83	417	10	
65	66	132	130	100	426	11,4	T3
80	81	145	138	115	483	18,7	
100	100	165	138	136	494	20,8	

For OD pipe in accordance with ASME BPE

OD	ød1	ød7	A	G	H <sub>2</sub>	Weig ht [kg]	Act.
1"	22,1	87	98	60	399	6,5	T1
1 1/2"	34,9	97	108	70	411	7,9	T2
2"	47,6	110	108	83	417	8,8	
2 1/2"	60,3	118	108	92	421	9,2	T3
3"	72,9	131	108	104,6	478	15,7	
4"	97,4	162	118	136	494	18,7	

OD	ød1	ød7	A	G	H <sub>2</sub>	Weig ht [kg]	Act.
1"	22,1	93	126	60	399	7,2	T1
1 1/2"	34,9	103	126	70	411	8,8	T2
2"	47,6	115	130	83	417	10	
2 1/2"	60,3	123	130	92	421	10,4	T3
3"	72,9	137	130	104,6	478	17,1	
4"	97,4	165	138	136	494	20,8	





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