

# INSTALLATION, SERVICE AND MAINTENANCE INSTRUCTIONS

## VEEVALV '09



**INOXPA, S.A.**  
c/Telers, 54 Apto. 174  
E-17820 Banyoles  
Girona (Spain)



Original Manual  
10.300.30.02EN\_RevA  
ED. 2011/01



## EC DECLARATION OF CONFORMITY

(In accordance with Directive 2006/42/EC, annex II, part A)

We, the manufacturer:

c/ Telers, 54  
17820 Banyoles (Girona) - Spain

Hereby declare that the products

**VALVE**

**VEEVALV**

Name

Type

are in conformity with the provisions of the Council Directives:

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

UNE-EN ISO 12100-1/2:2004  
UNE-EN 953:1997  
UNE-EN ISO 13732-1:2007

**Pressure equipment directive 97/23/EC**, the stated equipment has been designed and manufactured in accordance with the requirements of this Directive.

**Max working pressure:** DN 6 / 1/4" to DN 80 / 3" = 10 bar

**Diameter:** 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 should not have the EC marking.**

**Diameter:** DN 25 < X < or = DN 100

**Equipment category:** Category I, determined according to Article 3, Section 1.3<sup>a</sup>, first paragraph, annex II, table 6

**This material MUST have the CE marking.**

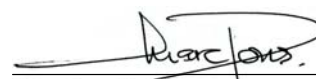
**Conformity Evaluation Module:** Module A

In conformity with **Regulation (EC) No. 1935/2004** on materials and objects intended to come into contact with foodstuffs (repealing 89/109/EEC), in accordance with which the materials in contact with the product do not transfer its constituents to the foodstuffs in quantities large enough to put human health at risk.

**Declaration of Incorporation** (Directive 2006/42/EC, annex II, part B):

**The aforementioned equipment shall not be commissioned until the machine in which they will be incorporated has been declared as being in conformity with the Machine Directive.**

Banyoles, 2010

  
Marc Pons Bague    Technical Manager

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# 1. Safety

## 1.1. INSTRUCTION MANUAL.

This instruction manual contains basic operations which should be fulfilled during the installation, starting and maintenance. 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. START-UP INSTRUCTIONS.

This instruction manual contains vital and useful information to correctly install and maintain your valve. Not only should the safety instructions indicated in this chapter be observed and fulfilled, but so should the special measures and recommendations included in the other chapters of this manual. These instructions should be kept in a safe location near the installation.

## 1.3. SAFETY.

### 1.3.1. Warning symbols.



Danger for persons in general



Danger of injury caused by rotating equipment parts.



Electrical danger



Danger! Caustic or corrosive agents.



Danger! Suspended loads



Danger to the correct operation of the equipment.



Commitment to safety at the workplace.



Protective goggles requirement.

## 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 the installation.



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

The installation and use of the valve should always be carried out in accordance with applicable regulations regarding health and safety.

Before starting up the valve, verify that the assembly is correct and that the shaft is aligned. An incorrect alignment and/or excessive force in securing the valve may cause serious mechanical problems in the valve. Check that the diaphragm has been assembled correctly. If it has been located incorrectly this may seriously damage the valve.

### 1.4.2. During operation.



The *Technical Specifications* of Chapter 8 should always be observed. The specified maximum parameters must **NEVER** be exceeded.



**NEVER** touch the valve and/or pipes that are in contact with the liquid during operation. If working with hot fluids there is a risk of burns.



The valve contains components which have linear movement. Do not place hands or fingers in the valve closure area as this may cause serious injury.

#### 1.4.3. During maintenance



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

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

Do not leave parts loose on the floor.



All electrical work should be carried out by authorized personnel.

#### 1.4.4. Compliance with the instructions.

Any non-compliance with the instructions may result in a risk for the operators, the environment and the machine, and may lead to a loss of your right to claim damages.

This non-compliance may result in the following risks:

- Failure of important functions of the machine/plant.
- Failure of specific maintenance and repair procedures.
- Possibility of electric, mechanical and chemical risks.
- Will place the environment in danger due to the release of substances.

#### 1.5. GUARANTEE.

Any guarantee will be cancelled immediately and as a matter of law and, in addition, we will require compensation for any claims of civil liability presented by third parties, in case:

- The installation and maintenance work has not been carried out according to the instructions of this manual.
- The repairs are not carried out by our personnel or have been carried out without our written authorization.
- The parts used are not INOXPA genuine parts.
- Modifications have been carried out on our materials without written authorization.
- The material 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 already in your possession are also applicable.



**No change can be made to the equipment without prior discussion with the manufacturer. For your safety, please use original spare parts and accessories.**  
**The use of other parts will exempt the manufacturer from any liability.**

**The service terms can only be changed with prior written authorization from INOXPA.**

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

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# 2. Table of Contents

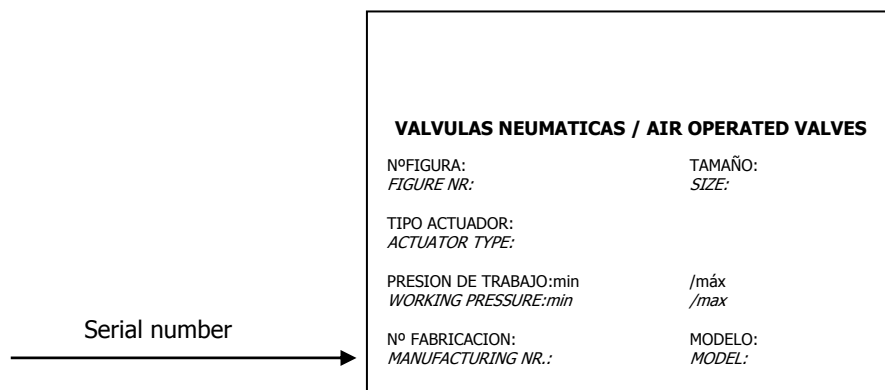
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# 3. Receipt and Installation

## 3.1. CHECKING THE SHIPMENT

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

The valve and any other components should be checked and if found to be damaged and/or not complete the carrier should be informed and a report submitted as soon as possible. Each valve is identified with an engraved manufacturing/serial number and this must be included in all documents and correspondence.



## 3.2. DELIVERY AND UNPACKING



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

### 3.2.1. Delivery:

Check that all the parts indicated on the delivery note are correct

- Complete valve.
- Its components (if supplied).
- Delivery note.
- Instruction manual.

### 3.2.2. Unpacking:

- Remove all traces of packing materials from the valve or parts.
- Inspect the valve or its constituent parts for possible damage caused during transport.
- Avoid any possible damage to the valve and its components.

## 3.3. STORAGE

If the valve and/or diaphragm is not going to be assembled for immediate use, and are stored for later installation, they must be stored in a closed area according to the following conditions:

Temperature	from 15°C to 30°C
Relative humidity	<60%
No sunlight	store in opaque bags

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



**For valves that have to be stored for a long time, the body must be disassembled as the diaphragm may become excessively deformed and/or damaged. In order to disassemble the body, see sections 7.1 and 7.2 of the chapter [Assembly and disassembly](#)**

In order to achieve optimum behaviour of the diaphragms, do not keep them stored for more than 3 years. After this time, they may degrade and lose their properties.

### 3.4. IDENTIFICATION

**V1 D 0 0 - 00 06 52 025 MM**

#### SURFACE FINISH

Exterior / Interior

**MM** - MIRROR / MIRROR  $Ra > 0.5$  (standard)

**SM** - SATIN / MIRROR  $Ra > 0.8 / Ra > 0.5$

#### NOMINAL DIAMETER

**003** - DN 1/8"

**004** - DN 4

**006** - DN 6 (DN 1/4")

**008** - DN 8

**010** - DN 10 (DN 3/8")

**015** - DN 15 (DN 1/2")

**020** - DN 20 (DN 3/4")

**032** - DN 32 (DN 1 1/4")

**038** - DN 1 1/2"

**040** - DN 40

**050** - DN 50 (DN 2")

**063** - DN 2 1/2"

**065** - DN 65

**076** - DN 3"

#### DIAPHRAGM MATERIAL

**52** - EPDM

**61** - VMO

**78** - FPM

**98** - EPDM / PTFE separate

#### CASING MATERIAL

**06** - AISI 316L

#### CONNECTION TYPE

**0** - WELD

**1** - MALE

**2** - MANDREL

**3** - BUT

**6** - BRIDA PN-6A - DIN 11851 SERIE 1

**7** - CLAMP

**8** - FLANGE PN-10C - DIN 11851 SERIES 3

#### CASING DESIGN

**0** - DIN 11851

**1** - OD ASME

**2** - SMS FRANCE

**3** - GAS DIN 259

**4** - RJT UK

**I** - ISO 1127

**B** - ASME BPE 2007

#### ACTUATION TYPE

*MANUAL ( V1 )*

**0** - ST. STEEL BONNET AND HANDLE

**1** - PLASTIC HANDLE ST. STEEL BONNET

**2** - PLASTIC BONNET AND HANDLE

*AUTOMATIC ( V2 )*

**0** - NC ST. STEEL ACT.

**1** - NO ST. STEEL ACT.

**2** - A/A ST. STEEL ACT.

**3** - NC PLASTIC ACT.

**4** - NO PLASTIC ACT.

**5** - A/A PLASTIC ACT.

#### VALVE TYPE

**D** - STANDARD

**N** - ND L IN T

**F** - TANK BOTTOM

**T** - TANDEM

**M** - SAMPLING

#### DIAPHRAGM VALVE

**V1** - MANUAL

**V2** - AUTOMATIC



**The buyer or user will be responsible for the assembly, installation, starting and operation of the valve.**

### 3.5. LOCATION.

Place the valve in such a way as to facilitate inspection and checks. Leave sufficient space around the valve for appropriate inspection, separation and maintenance (See Section 3.7.1).

### 3.6. ASSEMBLY

Install the valve in process pipework according to good trade practice.

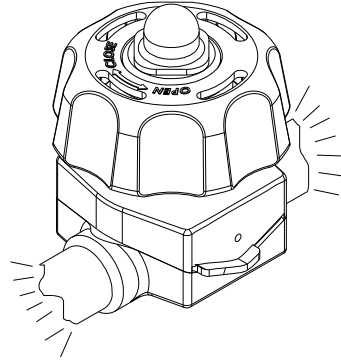
Once the location of the valve has been established, the pipes can be connected by either welding to the body of the valve or by means of hygienic unions. In the latter case ensure that seals are fitted and the joints fully tightened.



**Before welding the bodies to the pipework, disassemble the valve to prevent damage to the diaphragm.**

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

- Vibration which may be produced in the installation.
- Expansion of the pipes during circulation of hot liquids.
- The weight that the pipes can withstand.
- Excessive intensity of welding.

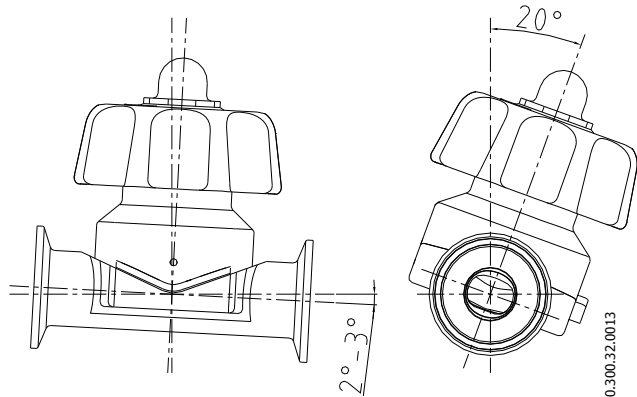


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For the valve to be completely drainable, it must be placed at an angle of  $2^{\circ}$  to  $3^{\circ}$  in the line of the tube, and  $20^{\circ}$  on a perpendicular plane to the tube, as shown in the figure.



**The designer and/or user is/are ultimately responsible for drainage of the process.**

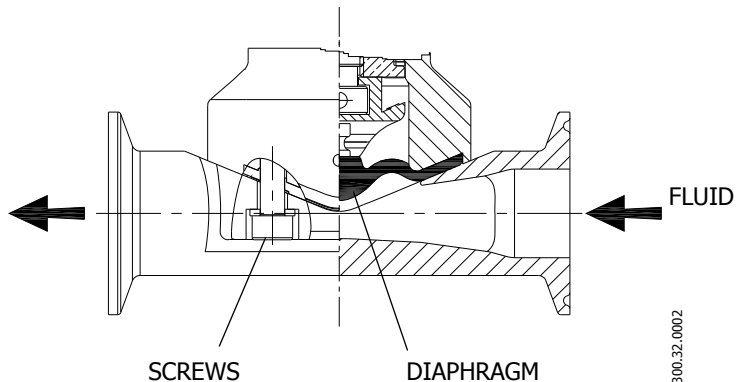


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### 3.7. INSPECTING AND CHECKING

Check the following before use:

- Check that the screws are very tight. See tightening torque in chapter 8. *Technical Specifications*.
- Open and close the valve (applying compressed air to the actuator or moving manually if a handle is available) several times to ensure that it operates correctly. Check that the diaphragm closes completely.



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### 3.8. WELDING





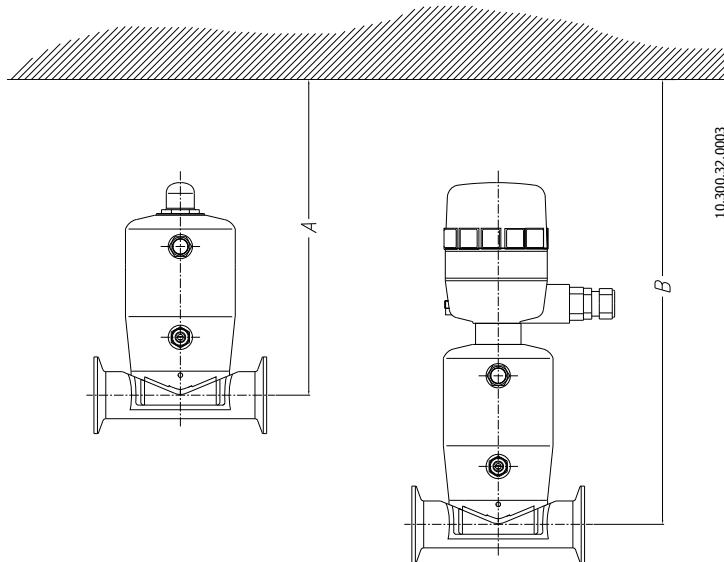
The welding work should only be undertaken by persons qualified, trained and equipped with the necessary means to carry out this work.

Disassemble the valve before starting the welding work.

### 3.8.1. Weld/weld diaphragm valve.

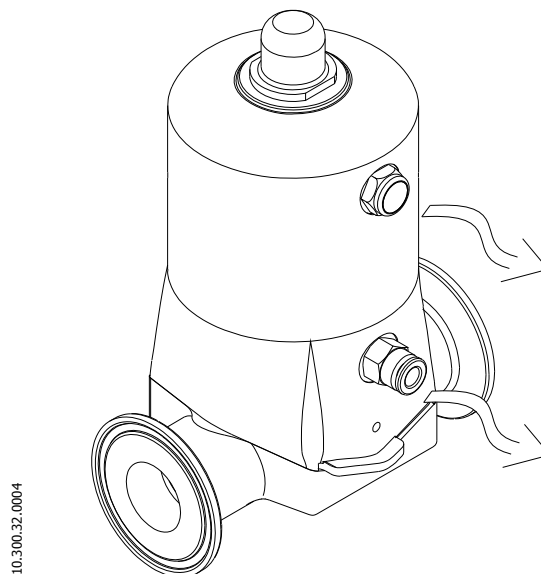
- Disassemble the valve as indicated in section 7. *Assembly and disassembly*
- Weld the valve body to the pipework.
- When welding the valve body, it is very important to maintain the minimum distance (dimension A) enabling disassembly of the valve for later checks and replacement of valve parts (e.g. diaphragm or actuator). It is important to note the additional clearance required when the valve has a control top. (dimension B)

DN	A	B
10 - 1/2"	211	278
25 - 1"	240	301
40 - 1 1/2"	308	371
50 - 2"	381	442
65 - 2 1/2"	436	496



### 3.9. AIR CONNECTION TO ACTUATOR

- Connect and check the air connections as required. Single Acting Spring Return or Double Acting.
- INOXPA valves are supplied with Ø6 tube connections and a silencer in Single Acting actuators.
- Bear in mind the quality of the compressed air in accordance with the specifications described in chapter 8 *Technical Specifications*.



Pneumatic connections  
Thread G 1/8" (BSP) for sizes from DN 1/2" to DN 1-1/2"  
and thread G 1/4" (BSP) for sizes from DN 2" to DN 2 1/2".



The compressed-air pressure for the NO and A/A actuators (normally open and double acting) is less than in type NC (normally closed). See chapter 8. *Technical Specifications*.  
Excess pressure may seriously damage the diaphragm and actuator.

# 4. Start-up

The start-up of the valve can be carried out provided the instructions indicated in Chapter 3 – Receipt and Installation have been followed.

## 4.1. START-UP



**Before start-up, the responsible persons should be aware of the operation of the valve and the safety instructions to be followed. This instruction manual should be available to personnel at all times.**

This valve is suitable for use in food processes, cosmetics and pharmaceutical industry.

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

- Check that the pipe and valve are completely free from any traces of weld 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 (see Chapter 6 *Maintenance*) or soapy water.
- Check for possible leaks and check that all the pipes and connections are watertight and leak free.
- If the valve is supplied with an actuator, ensure that the actuator gives smooth operation.
- Check that the air pressure at the inlet to the actuator is as specified in Chapter 8. *Technical Specifications*
- Ensure the quality of the compressed air in accordance with the specifications described in Chapter 8 *Technical Specifications*.
- Operate the valve.

## 4.2. OPERATION



**Do not touch the moving parts of the valve when the actuator is connected to the compressed air. Never place fingers inside the body when you have assembled a pneumatic actuator.**

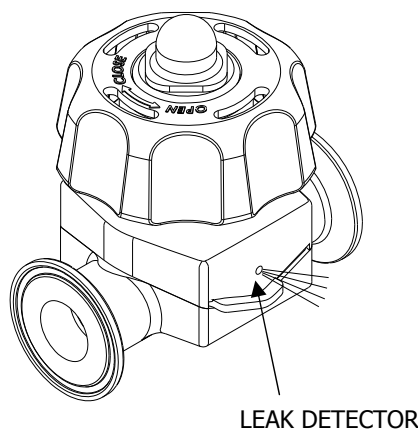
**Danger of burns! Do not touch the valve or pipes when hot liquids are circulating or when cleaning and/or sterilization are being carried out.**



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

**Visually check that the sealed area has no leaks. The valves are provided with a leak detector. The valve must be oriented so that the leak detector is visible to the plant personnel. In the case of a leak, replace the diaphragm with a new one and clean the seal area of the actuator of any fluid residue that may have remained.**

**Place the valve so that, if leakage occurs through the detector, the fluid cannot come into contact with personnel. This is particularly relevant in the case when hot liquids are circulating or cleaning and/or sterilisation is being carried out.**



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# 5. Operating Problems: Causes and Solutions

PROBLEM	CAUSE/EFFECT	SOLUTION
<b>AIR LEAKING THROUGH LEAK DETECTOR</b>	The O-ring on the shaft is worn or damaged.	<ul style="list-style-type: none"> <li>Replace the O-ring.</li> </ul>
<b>AIR LEAKING THROUGH EXIT</b>	The O-ring of the piston is worn or damaged.	<ul style="list-style-type: none"> <li>Plastic actuator: replace the O-ring</li> <li>St. Steel actuator: replace the actuator</li> </ul>
<b>FLUID LEAKING THROUGH LEAK DETECTOR</b>	Diaphragm is damaged	<ul style="list-style-type: none"> <li>Replace diaphragm</li> </ul>
<b>EXTERNAL FLUID LEAK (BETWEEN ACTUATOR AND BODY)</b>	<p>Diaphragm not properly attached</p> <p>Screws between body and actuator are loose</p> <p>Diaphragm is damaged</p>	<ul style="list-style-type: none"> <li>Disassemble the valve and attach correctly.</li> <li>Tighten the screws</li> <li>Replace diaphragm</li> </ul>
<b>INTERNAL FLUID LEAK (VALVE CLOSED)</b>	Normal wear of the diaphragm.	<ul style="list-style-type: none"> <li>Replace the diaphragm.</li> </ul>
	<p>Premature wearing of the diaphragms</p> <p>Diaphragm worn or affected by the fluid.</p> <p>Excessive pressure in the line.</p> <p>Working temperature too high</p> <p>Loss of watertightness (vibration).</p> <p>Tight too much the valve with the manual handle.</p>	<ul style="list-style-type: none"> <li>Replace the diaphragm with another of different material and more appropriate to the fluid.</li> <li>Tighten any loose components.</li> <li>Clean frequently.</li> <li>In NO and A/A actuators, reduce air pressure.</li> <li>Turn the handle only for closing the valve.</li> </ul>
	Overpressure	<ul style="list-style-type: none"> <li>Increase the compressed air pressure.</li> <li>Replace the actuator with a dual-effect one.</li> </ul>
<b>VALVE DOES NOT OPEN/CLOSE</b>	<p>Diaphragm deformed.</p> <p>Diaphragm not properly attached.</p> <p>Actuator bush in poor condition and/or jammed (dirtiness)</p> <p>Excessive pressure on plug</p>	<ul style="list-style-type: none"> <li>Replace the diaphragm with another of different quality, if prematurely deteriorated.</li> <li>Attach diaphragm correctly.</li> <li>Replace bush (clean)/ replace actuator</li> <li>Reduce pipework pressure.</li> </ul>
<b>SURGE</b>	The valve closes too fast.	<ul style="list-style-type: none"> <li>Adjust the closing speed of the actuator (with a flow regulator).</li> </ul>

# 6. Maintenance

## 6.1. GENERAL

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.



Please carefully read Chapter 8. *Technical Specifications*.

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

Assembly and disassembly of the valves must only be carried out by qualified staff.

Before starting on maintenance work, ensure that the pipework is not pressurised.

## 6.2. MAINTENANCE

The following is recommended for appropriate maintenance:

- Regular inspection of the valve 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 signs indicated in this manual.



The valve and pipes should not be pressurised during maintenance.

The valve should not be hot during maintenance. Danger of burns!

### 6.2.1. Diaphragm maintenance.

REPLACEMENT OF DIAPHRAGMS	
Preventive maintenance	<ul style="list-style-type: none"> <li>• Media at temperatures &lt; 60°C replace after twelve (12) months.</li> <li>• Media at temperatures of 60°C to 120°C replace after three (3) months.</li> <li>• Exposure to steam &gt; 100° C, but maximum 140° C The diaphragm should be inspected after approx. 50 hours exposure, e.g. after 100 sterilisation of 30 minutes.</li> <li>• The service life to the valve diaphragm depends on its working conditions. Decisive factors with regard to the service life are temperature and the type of process fluid. Therefore maintenance intervals can only be determined by the plant user, since they depend on the operating conditions.</li> </ul>
Maintenance after a leak	<ul style="list-style-type: none"> <li>• Replace at the end of the process.</li> </ul>
Scheduled maintenance	<ul style="list-style-type: none"> <li>• Regularly check that there are no leaks and that the valve is operating smoothly.</li> <li>• Keep a record of the valve.</li> <li>• Use statistics to plan inspections.</li> </ul>
Lubrication	<ul style="list-style-type: none"> <li>• During assembly, apply lubricants compatible with the diaphragm material. See the following table.</li> </ul>

SEAL COMPONENT	LUBRICANT	Class NLGI DIN 51818
VMQ/ FPM	Klübersynth UH 1 64-2403	3
EPDM/ FPM	PARALIQ GTE 703	3

### 6.2.2. Storage

Storage conditions as per point 3.3 of the *Receipt and Installation* section.

### 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 8.

## 6.3. CLEANING



**The use of aggressive cleaning products such as caustic soda and nitric acid may cause burns to 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 provided with the CIP process, its disassembly 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 l. of water = cleaning solution  
or  
2.2 l. 33% NaOH + 100 l. of water = cleaning solution

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

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



**Check the concentration of cleaning solutions; this may cause the deterioration of the seals within the valve.**

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



**Before beginning the disassembly and assembly work, clean the valve inside as well as outside.**

### 6.3.2. Automatic SIP (sterilization-in-place)

The steam-sterilisation process is applied to all equipment.



*DO NOT operate the equipment during the steam-sterilization process.  
The parts/materials will not suffer damage provided the instructions set out in this manual are followed.*

*Cold liquid cannot be introduced until the equipment temperature is below 60°C (140°F).*

Maximum conditions during the steam or superheated-water SIP process

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

# 7. Assembly and Disassembly



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

**Never disassemble the valve screws without reading the instructions thoroughly.**



**Assembly and disassembly of the valves / actuator must only be carried out by qualified staff.**



**When assembling the diaphragm it is very important to comply with the sequence of steps, as otherwise, the diaphragm may be damaged. In particular, do not fully tighten the body until the diaphragm is in the closed position. Otherwise, the diaphragm may deform and be damaged when the valve is closed.**

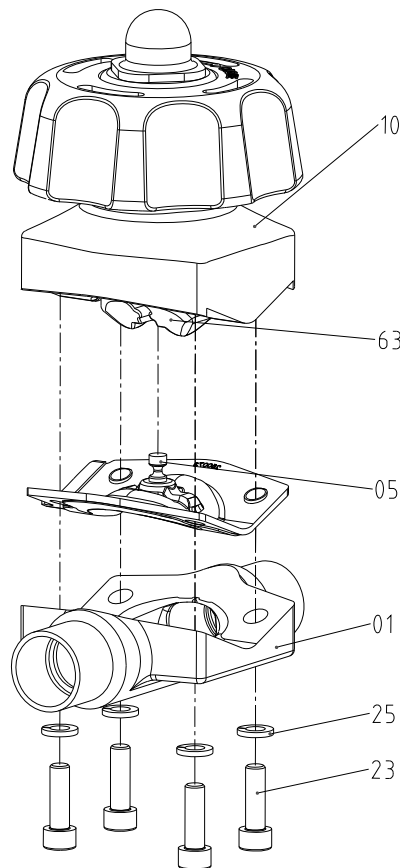
## 7.1. DISASSEMBLY / ASSEMBLY OF THE MANUALLY ACTUATED VALVE

### Disassembly

1. Turn the actuator handle (10) so that the valve is in the open position.
1. Unscrew the Allen screws (23) from the actuator (10).
2. Remove actuator (10) from the body (01).
3. Turn the actuator handle (10) so that the valve is in the closed position.
4. Remove the diaphragm (05) from the compressor (63).

### Assembly

1. Turn the actuator handle (10) so that the valve is in the closed position.
2. Attach the diaphragm (05) to the compressor (63) so that the metal pin of the diaphragm is inserted into the groove of the compressor.
3. Place the actuator (10) in the open-valve position.
4. Connect the body (01) to the actuator (10) by screwing in the Allen screws (23) and washers (25) without fully tightening the screws (use fingers to screw in). So that the body (01) remains fixed to the actuator (10), but not yet completely tight.
5. Almost fully close the valve to deflect the diaphragm and fully tighten the screws. Apply grease to the screws before tightening, see chapter 6 *Maintenance*.
6. See the tightening torque of the screws in chapter 8 *Technical Specifications*.



**The following tools are required to disassemble the valve.**

- Allen key 3mm (DN ½") 5mm (DN 1") 6mm (DN 1 ½") and 10mm (DN 2" and DN 2 ½")



Proceed with caution. There is danger of personal injury.



Never disassemble the valve screws without reading the instructions thoroughly.



When assembling the diaphragm it is very important to comply with the sequence of steps, as otherwise, the diaphragm may be damaged. In particular, do not fully tighten the body until the diaphragm is in the closed position. Otherwise, the diaphragm may deform and be damaged when the valve is closed.

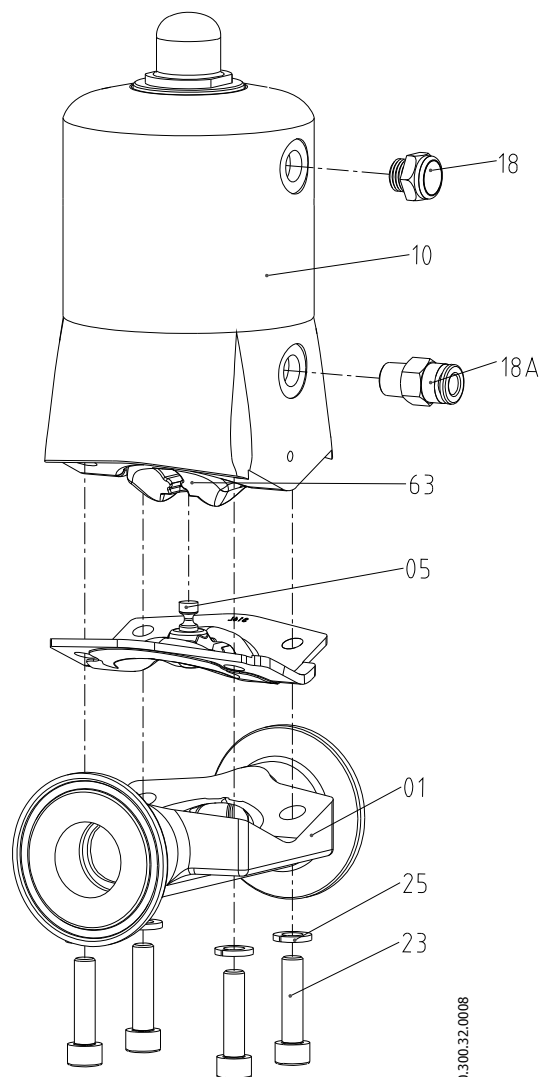
## 7.2. DISASSEMBLY / ASSEMBLY OF THE PNEUMATICALLY ACTUATED VALVE

### Disassembly

1. Apply compressed air to the actuator (10) in order to set the diaphragm (05) in the open position. (NC valve only)
2. Unscrew the Allen screws (23) of the actuator (10).
3. Remove actuator (10) from the body (01).
4. Disconnect the compressed air from the actuator (10) so that the diaphragm (05) can be detached.
5. Remove the diaphragm (05) from the compressor (63).

### Assembly

1. Turn the actuator (10) so that the valve is in the closed position. (NC valves only)
2. Attach the diaphragm (05) to the compressor (63) so that the metal pin of the diaphragm is inserted into the groove of the compressor.
3. Apply compressed air to the actuator (10) in order to set the diaphragm (05) in the open position. (NC valve only)
4. Connect the body (01) to the actuator (10) by screwing in the Allen screws (23) and washers (25) without fully tightening the screws (use fingers to screw in). So that the body (01) remains fixed to the actuator (10), but not yet completely tight.
5. Disconnect the compressed air from the actuator (10) so that the diaphragm (05) is placed in the **closed position**, and the compressor (63) tightens the diaphragm against the body (01).
6. **Tighten the screws up to the specified tightening torque.** See the tightening torque of the screws in chapter 8 *Technical Specifications*. Apply grease to the screws before tightening see chapter 6 *Maintenance*.



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The following tools are required to disassemble the valve.

- Allen key 3mm (size 1) 5mm (size 2) 6mm (size 3) and 10mm (size 4 and 5)

# 8. Technical Specifications

VALVE GENERAL DATA								
<i>Maximum working pressure (bar / PSI)</i>								
DN	INOX Manual Operation		Plastic Manual Operation		SA Pneumatic Operation		DA Pneumatic Operation	
	EPDM FPM VMQ	PTFE	EPDM FPM VMQ	PTFE	EPDM FPM VMQ	PTFE	EPDM FPM VMQ	PTFE
DN 6 to 10 / DN ¼" to DN 5/8"	10 bar / 145 PSI	10 bar / 145 PSI	8 bar / 116 PSI	8 bar / 116 PSI	8 bar / 116 PSI	8 bar / 116 PSI	10 bar / 145 PSI	10 bar / 145 PSI
DN 15 to 25 / DN ¾" to 1"	10 bar / 145 PSI	10 bar / 145 PSI	8 bar / 116 PSI	8 bar / 116 PSI	6 bar / 87 PSI	6 bar / 87 PSI	10 bar / 145 PSI	10 bar / 145 PSI
DN 32 to 40 / DN 1 ½"	10 bar / 145 PSI	10 bar / 145 PSI	8 bar / 116 PSI	8 bar / 116 PSI	6 bar / 87 PSI	6 bar / 87 PSI	10 bar / 145 PSI	10 bar / 145 PSI
DN 50 / DN 2"	6 bar / 87 PSI	4 bar / 58 PSI	-	-	4 bar / 58 PSI	4 bar / 58 PSI	4 bar / 58 PSI	4 bar / 58 PSI
DN 65 / DN 2 ½" to 3"	6 bar / 87 PSI	4 bar / 58 PSI	-	-	4 bar / 58 PSI	4 bar / 58 PSI	4 bar / 58 PSI	4 bar / 58 PSI
- Working pressures determined from the hydrostatic pressure applied on one side of the closed valve. For working pressures applied on both sides, consult INOXPA.								
Minimum working pressure			Vacuum (may vary according to model; consult INOXPA)					
Pipework temperature for actuators <i>For autoclavable actuators consult INOXPA.</i>			Stainless-steel valve			Plastic valve		
			-20°C (-4°F) - +140°C (284°F)			+5°C (41°F) - +80°C (176°F) for actuation of PP+30 % GF		
Compressed air pressure			<ul style="list-style-type: none"> <li>- NC 5-7 bar (72 - 101 PSI) actuator – recommended pressure 6 bar (97 PSI)</li> <li>- NO and A/A max. 4 bar (58 PSI) actuator – recommended pressure 3 bar (43 PSI)</li> </ul>					
Compressed air quality			In accordance with DIN/ISO 8573.1 <ul style="list-style-type: none"> <li>o <u>Solid-particle content</u>: Class-3 quality / Max. particle size 5 microns / Max. particle density 5 mg/m<sup>3</sup></li> <li>o <u>Water content</u>: Class-4 quality / max. condensation point +2°C. If the valve is operating at high altitude or low ambient temperature, the condensation point must be adapted accordingly.</li> <li>o <u>Oil content</u>: Class-5 quality, preferably oil-free / max. 25 mg oil per 1 m<sup>3</sup> air.</li> </ul>					
Compressed air connection			G1/8" (BSP) for DN 6 to DN 40, and G1/4" (BSP) for larger sizes					
Compressed air consumption (litres of air /cycle).			SIZE:		NC (Single Effect)	A/A (Double effect)		
			DN 6 to 10 / DN ¼" to DN 5/8"		0,22	0.38		
			DN 15 to 25 / DN ¾" to 1"		0,73	1.54		
			DN 32 to 40 / DN 1 ½"		1,35	3.7		
			DN 50 / DN 2"		3.81	7.3		
			DN 65 / DN 2 ½" to 3"		9.63	18.9		



## VALVE MATERIALS

Parts in contact with the product	AISI 316L
Other steel parts	AISI 304
Plastic parts	PP+ 30% GF / PC
Gaskets in contact with the fluid	EPDM (Standard) - VMQ – FPM – EPDM/PTFE separate
Surface finish in steel parts	In contact with the fluid: Ra ≤ 0.5 µm (Standard) External surfaces: mirror finish (Standard), satin finish, shot-blasted.
Type of connections	Clamp, DIN 11851, Weld, BS-RJT, SMS, Flanges.

## DIAPHRAGM FEATURES

	EPDM	PTFE/EPDM	FPM	VMQ
Type	EAF 70	-	FBF 70	QPF 70
Colour	Black	White	Grey	Light grey
Hardness	70	-	70	70
Max. working temperature	90°C (194°F)	90°C (194°F)	120°C (248°F)	120°C (248°F)
Min. Working temperature	- 20°C (-4°F)	- 20°C (-4°F)	- 10°C (14°F)	- 20°C (-4°F)
Sterilization temperature (1)	140°C/30 min	140°C/30 min	No recomendado	140°C/30 min
Certificate	FDA / USP	FDA	FDA / USP	FDA / USP

(1) Temperature allowed without actuate the valve.

## Tools/assembly tightening torque

Valve size	DN 6 to 10 / DN ¼" to DN ⅝"	DN 15 to 25 / DN ⅜" to 1"	DN 32 to 40 / DN 1 ½"	DN 50 / DN 2"	DN 65 / DN 2 ½" to 3"
DIN 911 spanner	3	5	6	10	10
Max. tightening torque	2 Nm	6 Nm	11 Nm	34 Nm	34 Nm

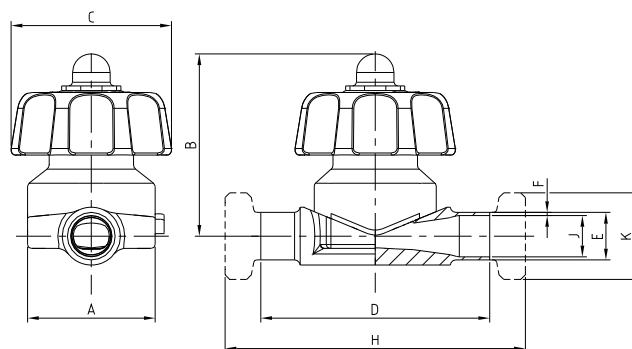


**Excessive tightening torque may damage the actuator. Use a torque wrench to control the torque. When tightening the screws, use grease to reduce friction. Use grease of the type specified in chapter 6 *Maintenance*.**

TAMAÑO	DN		PESO DE LAS VÁLVULA [kg]		
			MANUAL		NEUMÁTICA
			INOX	PLÁSTICO	INOX
Nº1	6	1/4"	0,6	0,3	1,2
	8	3/8"			
	10	1/2"			
	15	5/8"			
Nº2	20	3/4"	1,9	0,9	2,5
	25	1"			
Nº3	40	1 1/2"	3,2	1,8	6,7
Nº4	50	2"	6,9	-	14,9
Nº5	65	2 1/2"	12,5	-	31

*(Weight valid only for welding connections and pneumatic actuators NC)*

## 8.1. MANUALLY ACTUATED VALVE DIMENSIONS

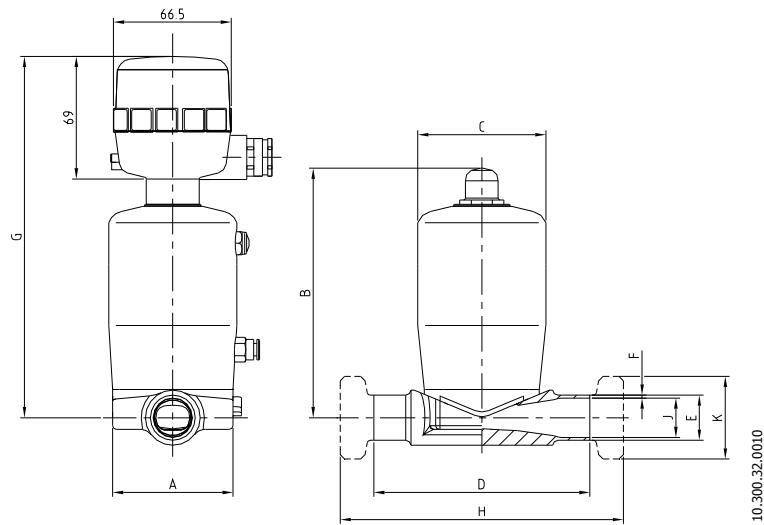


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SIZE	DN	A	B	C	Weld			OD Clamp			SMS male		
					D	E	F	H	J	K	H	J	K
Nº1	1/4"	38	63	59,6	86	6,4	1,65	86	3,1	25,4	---	---	---
	3/8"					9,5			6,2		---	---	---
	1/2"					12,7			9,4		---	---	---
	5/8"					15,9			12,6		---	---	---
Nº2	3/4"	68	115	88,9	122	19	1,65	114	15,8	25,4	---	---	---
	1"					25,4			22,1		50,5	160	22,5
Nº3	1 1/2"	95	120	88,9	160	38,1	1,65	140	34,8	50,5	206	35,5	60
Nº4	2"	130	187	134,1	191	50,8	1,65	159	47,5	64	237	48,5	70
Nº5	2 1/2"	164	204	159,1	222	63,5	1,65	222	60,2	77,5	276	60,5	85

SIZE	DN	A	B	C	Weld			DIN Clamp			DIN male		
					D	E	F	H	J	K	H	J	K
Nº1	6	38	63	59,6	86	8	1	86	6,2	25,4	---	---	---
	8					10			8		---	---	---
	10					12	1,5		10	34	120	10	28
Nº2	15	68	115	88,9	122	19	1,6	158	16	34	156	16	34
	20					23			20		160	20	44
	25					29	2		114	26	50,5	166	26
Nº3	32	95	120	88,9	160	35	1,5	140	32	50,5	204	32	58
	40					41		182	38			38	65
Nº4	50	130	187	134,1	191	53	1,5	159	50	64	237	50	78
Nº5	65	164	204	159,1	222	70	2	222	66	91	272	66	95

## 8.2. STAINLESS-STEEL PNEUMATICALLY ACTUATED VALVE DIMENSIONS



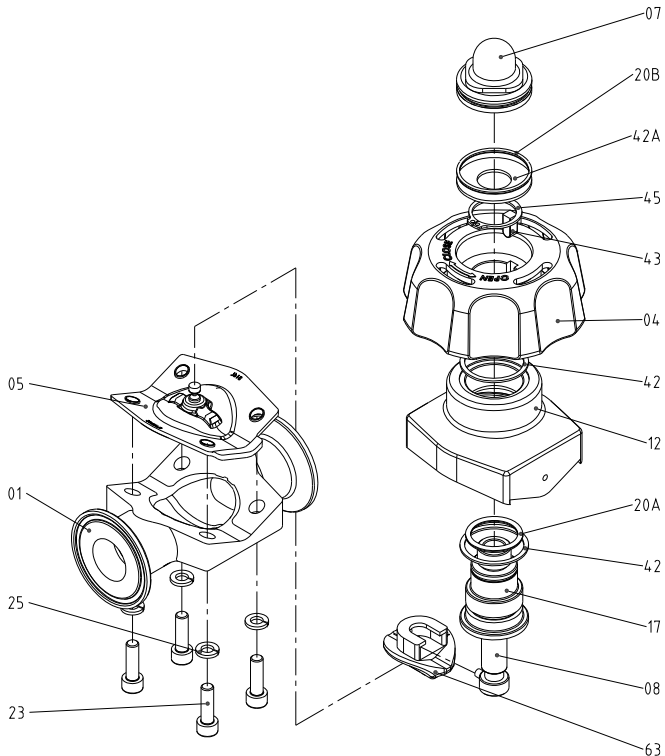
SIZE	DN	A	B	C	G	Weld			OD Clamp			SMS Male		
						D	E	F	H	J	K	H	J	K
№1	1/4"	38	111,3	57,2	180,5	86	6,4	1,65	86	3,1	25,4	---	---	---
	3/8"						9,5			6,2		---	---	---
	1/2"						12,7			9,4		---	---	---
	5/8"						15,9			12,6		---	---	---
№2	3/4"	68	143,1	72,4	201,7	122	19	1,65	114	15,8	25,4	---	---	---
	1"						25,4			22,1		50,5	160	22,5
№3	1 1/2"	95	211	108,2	269,5	160	38,1	1,65	140	34,8	50,5	206	35,5	60
№4	2"	130	286,7	135	326,7	191	50,8	1,65	159	47,5	64	237	48,5	70
№5	2 1/2"	164	336,4	200	381,5	222	63,5	1,65	222	60,2	77,5	276	60,5	85

SIZE	DN	A	B	C	G	Weld			DIN Clamp			DIN male		
						D	E	F	H	J	K	H	J	K
№1	6	38	111,3	57,2	180,5	86	8	1	86	6,2	25,4	---	---	---
	8						10			8		---	---	---
	10						12	1,5		10		34	120	10
№2	15	68	143,1	72,4	201,7	122	19	1,6	158	16	34	156	16	34
	20						23			20		160	20	44
	25						29	2		114	26	50,5	166	26
№3	32	95	211	108,2	269,5	160	35	1,5	140	32	50,5	204	32	58
	40						41			38			38	65
№4	50	130	286,7	135	326,7	191	53	1,5	159	50	64	237	50	78
№5	65	164	336,4	200	381,5	222	70	2	222	66	91	272	66	95

### 8.3. SECTION AND PARTS LIST

#### 8.3.1. Section and parts list for STAINLESS-STEEL MANUALLY ACTUATED VALVE

- Stainless-Steel Manual Operation

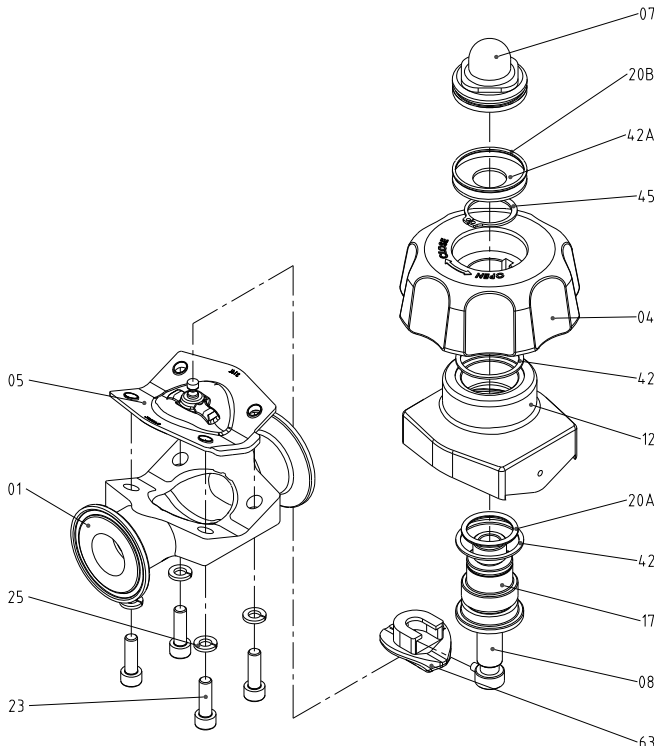


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POSITION	DESIGNATION	MATERIAL	QUANTITY
01	Casing	CF 3M	1
04	Handle	CF 8	1
05	Diaphragm	-	1
07	Indicator Glass	PC	1
08	Shaft	AISI 304	1
12	Bonnet	CF 3M	1
17	Bushing	Brass	1
20A	O-ring	NBR	1
20B	O-ring	NBR	1
23	DIN 912 Allen screw	A2	4
25	WASHER DIN 127	A2	4
42	Bottom washer	PTFE+GF	2
42A	Top washer	POM	1
43	Key	AISI 304	1
45	DIN 471 elastic ring	A2	1
63	Compressor	CF 3M	1

#### 8.3.2. Section and parts list PLASTIC MANUAL OPERATION

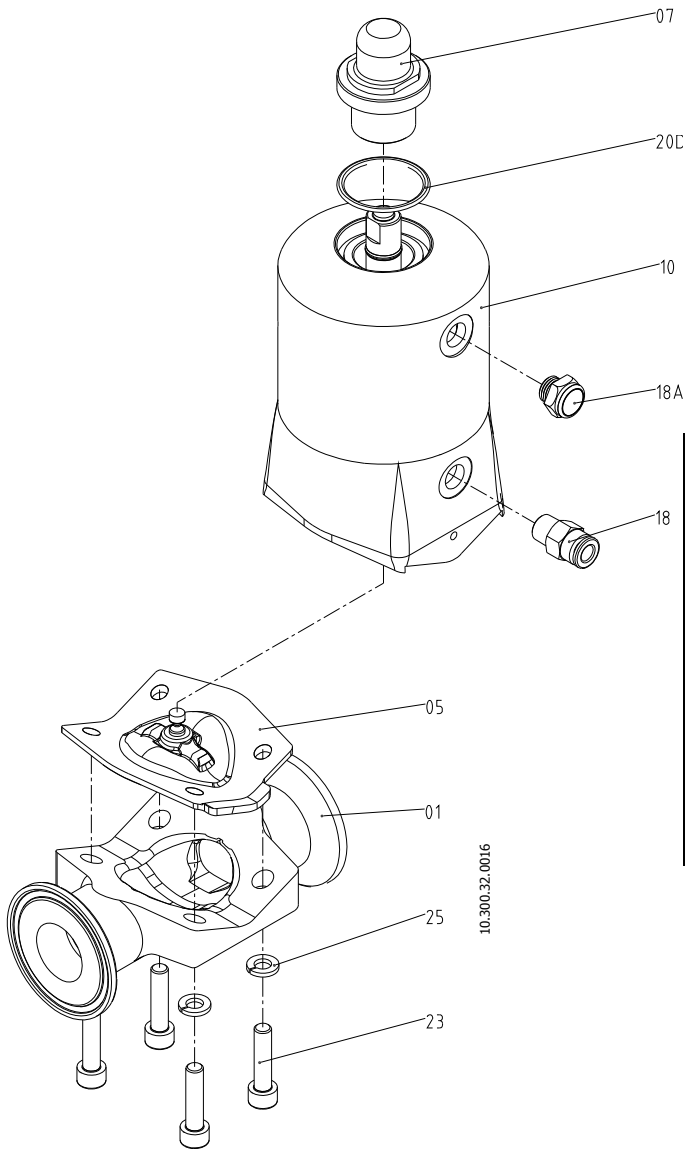
- Plastic Manual Operation



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POSITION	DESIGNATION	MATERIAL	QUANTITY
01	Casing	CF 3M	1
04	Handle	PP+30GF	1
05	Diaphragm	-	1
07	Indicator Glass	PC	1
08	Shaft	AISI 304	1
12	Bonnet	PP+30GF	1
17	Bushing	Brass	1
20A	O-ring	NBR	1
20B	O-ring	NBR	1
23	DIN 912 Allen screw	A2	4
25	WASHER DIN 127	A2	4
42	Bottom washer	PTFE+GF	1
42A	Top washer	POM	1
45	DIN 471 elastic ring	A2	1
63	Compressor	CF 3M	1

### 8.3.3. Section and parts list for STAINLESS-STEEL PNEUMATICALLY ACTUATED VALVE



- Stainless-steel pneumatic operation
- 

POSITION	DESIGNATION	MATERIAL	QUANTITY
01	Casing	CF 3M	1
05	Diaphragm	-	1
07	Indicator Glass	PC	1
10	Actuator	AISI 304	1
18	Straight connector R 1/8"	-	1
18A	Silencer R 1/8"	-	1
20D	O-ring	NBR	1
23	DIN 912 Allen screw	A2	4
25	WASHER DIN 127	A2	4

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## Клапаны пищевые — Диафрагменный клапан

<http://k-tep.com.ua/>

✉ [k-tep@ukr.net](mailto:k-tep@ukr.net)

■ Office +38 044 2091823

■ МТС +38 066 9076563

■ Киевстар +38 098 3676414

Skype: [k-teppumps](#)

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