

## INSTALLATION AND OPERATING MANUAL FLANGED GLOBE VALVES ICP

### INSTALLATION INSTRUCTIONS

#### GENERAL GUIDELINES :

- Ensure that the valves to be used are appropriate for the conditions of the installation (type of fluid, pressure and temperature).
- Be sure to have enough valves to be able to isolate the sections of piping as well as the appropriate equipment for maintenance and repair.
- Ensure that the valves to be installed are of correct strength to be able to support the capacity of their usage.
- **Installation of all circuits should ensure that their function can be automatically tested on a regular basis (at least two times a year).**

#### INSTALLATION INSTRUCTIONS :

- **Before installing the valves, clean and remove any objects from the pipes** (in particular bits of sealing and metal) which could obstruct and block the valves.
- **Ensure that both connecting pipes either side of the valve (upstream and downstream) are aligned (if they're not, the valves may not work correctly).**
- **Make sure that the two sections of the pipe (upstream and downstream) match, the valve unit will not absorb any gaps. Any distortions in the pipes may affect the tightness of the connection, the working of the valve and can even cause a rupture.** To be sure, place the kit in position to ensure the assembling will work.
- **If sections of piping do not have their final support in place, they should be temporarily fixed. This is to avoid unnecessary strain on the valve.**
- Tighten the bolts in cross.
- It's recommended to operate the valve ( open and close ) 1 to 2 times per year
- Tighten the gland packing at the first start of the installation ( with a moderate torque ) so that there's no leakage and the handwheel is easy to operate.
- Do not use tools to operate the handwheel
- Respect the flow direction indicated by the arrow



**For an installation in ATEX area, check the conductivity between the valve, the upstream pipe and the downstream pipe and make sure the pipe is connected to the earth.**



**OPERATING MANUAL FOR ICP GLOBE, BELLOWS GLOBE &  
CHECK VALVES**  
REF. DOC. MMMGV, BGV, CHV Rev.2 April 2017

# **OPERATING MANUAL FOR ICP GLOBE, BELLOWS GLOBE & CHECK VALVES**





## **REVIEW CONTROL**

### **PROCEDURE REF.DOC.MMM GV, BGV, CHV**

<b>REV.</b>	<b>DATE</b>	<b>CARRIED OUT BY</b>	<b>APPROVED BY</b>	<b>DESCRIPTION</b>
0	14-01-2010	J. Rubio	J.Tejedor	General adaptation to EC Directive
1	13-09-2011	E.Hidalgo	J.Tejedor	Modified CE category
2	24-04-2017	E.Hidalgo	J. Rubio	General update



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## 1.- SCOPE AND RESPONSIBILITY

This technical instruction defines the general characteristics of the ICP valves (see table) as well as the fluid type and limits of operation for which it has been designed. On the other hand, it informs the user of the actions to carry out (reception, installation, set-up and maintenance) to ensure a safe use during the expected lifetime of 10.000 cycles.

<b>ICP VALVES</b>		
Globe Valves Fig:	Bellows Globe Valves Fig:	Check Valves Fig:
GV-116, GV-340	BGV-116, BGV-216, BGV-225, BGV-340	CHV-116, CHV-340



**ICP VALVES** ensures the functioning of the valves only in the event that it has been installed, set-up, used and properly maintained by qualified staff following this document and following the general safety instructions in the construction of facilities, use of tools and safety equipment.

## 2 .- INTENTION OF USE

The requirements of the "European Directive on Pressure Equipment, PED 97/23/EC" have been satisfied and rigorously applied in the design and manufacture of this product, consequence of this is the CE fully compliance.

The **ICP valves** in all Figures (see table) belong to maximum to Category III and have been designed to be used with the fluids of Groups G2, L1 and L2, see point 7.

**ICP valves** have been designed to withstand service conditions result of the combination of the fluid type, pressure and temperature. This information appears on the nameplate that goes on each valve, or, in this procedure.

It is imperative that the user compares the information that appears in the valve plate with the required by the installation. Also, the user will have to follow point by point what is specified in this procedure before installing the product.



### **3 .- ADDITIONAL SAFETY INFORMATION**

#### **3.1 .- Access**

The user has to be provided with security access and if necessary a secure platform to perform the work on the product. Cranes must be provided for installation or removal if required.

#### **3.3.- Lighting**

Ensure proper lighting in the area where you the product will be installed.

#### **3.3.- Risk of liquids or gases remaining in the lines**

Consider, prior to the installation or maintenance, the possible existence of fluids in the line and drain them. Consider also the presence of flammable materials, toxic and harmful substances and substances with high temperatures.

#### **3.4 .- Risk of environmental impact**

Consider the risk of explosion, the lack of oxygen, dangerous gases, fire hazard (for e.g. during a supply of welding), excessive noise, movement of machinery.

#### **3.5 .- The system**

Consider the effects on the entire system. Any part of the system that represents a risk to the staff, should be isolated, for e.g. closing the isolation valves, electrically isolate.  
The analysis of the dangers in the system must include the isolation with the use of safety equipment, as well as the control of alarms.  
Ensure that the safety valves of the system where the assembly will be made have a manual opening, with the purpose to leave them operative to avoid the overpressure in the system.

#### **3.6.- Pressure in the system**

Ensure that the system remains at atmospheric pressure throughout the period of assembly and maintenance. Do not assume that the system has been depressurized even if the gauges or instruments do not indicate pressure.

#### **3.7.- Temperature**

Allow some time to normalize temperature after isolation in order to avoid injury from burns. Consider using protective equipment.

#### **3.8.- Tools**

Before the intervention ensure the availability of all necessary tools. Use only original **ICP Valves** spare parts.



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### **3.9 .- Safety Devices**

When necessary, provide safety clothing, both for people with direct contact with the product, such as those found in the vicinity, in order to protect against the following risks: chemicals, high / low temperatures, noise, falling objects, dangers to the eyes or face.

### **3.10.- Work Permit**

Any intervention should be carried out under supervision by competent staff.

Staff operating the installation and operation must be properly trained in the proper use of this document.

- Where a 'formal permission of work' is required, it must be completed. Where this permission is not required, a person should be responsible for security activities.
- Warning notices are required.

### **3.11 .- Handling and Storage**

Ensure that there is the necessary safety equipment for the mobility of products.

It is important to store these valves in a dry and protected place from weather inclemencies. Do not remove the valve from the pallet until its installation. The plastic protections of the flanges must remain on until the installation, but must be removed prior to installation.

### **3.12 Residual risks**

It must be taken into account that the outer surface of the valves can be very hot, it can reach 300°C. Also, excessive noise can be generated when depressurizing the system. If there are foreign objects introduced in the valves installed, this can lead to dangerous situations for the user.

### **3.13 .- Freezing point**

Provide protection for the drains and line discharges from freezing damage.

### **3.14 .- Environmental pollution**

ICP valves are environmentally friendly products and do not represent environmental risks or environmental impact.

### **3.15 .- Product Return**

We remind our customers that under Spanish law and Safety & Environmental protection of the European Economic Community, they are obliged, in case of material return they have to report ICP VALVES S.A. of any risks and precautions. Also, the customer is required to download the waste products and provide technical information of them if required.

Return of non defective goods without prior written permission is not accepted. Return of products after use is not accepted. In case of returned goods not covered by warranty, a deduction will be applied for refurbishing them, all costs associated with transport, insurance, etc. Will be charged to the sender.

### 3.16 .- Guarantee

The legal warranty period is 24 months.

ICP VALVES guarantees that the product is free of defects and manufactured in accordance with the present technology.

The warranty is not applicable in the following cases:

due to misuse, breach of technical instructions, lack of prevention of accidents, breach of the regulations PED 97/23/EC, EN, DIN, VDE or other applicable regulations.

***Claims are not accepted outside the warranty period.***

## 4 .- GENERAL SPECIFICATION

**ICP globe valves, with and without bellows** are designed to stop the passage of fluid in facilities and are operated by a steering wheel, rotating clockwise to close and anti-clockwise to open.

When they incorporate shutter with cone regulation, they also serve to regulate the flow of the fluid by hand.

**ICP check valves** are designed to open when they sense a pressure above 1 bar, allowing one direction of fluid flow, to prevent condensate return.

## 5.- GENERAL DESCRIPTION

**ICP globe valves** with flanged connections are characterized for being vertical yoke type and straight through connections according to EN 1092. They are operated by hand wheel with optional electric or pneumatic automation.

The closure is made by a disc with fan closure and could incorporate accessories like; regulation cone (type A), soft seat (type B) and the combination of both (type C) and disc retention (type D).

In large valves, DN 200, with and without bellows, a disc system with "by-pass" is incorporated to help reduce the high torque needed to close the valves.

The ICP check valves flanged connections are straight through connections according to EN 1092. Its operation is governed by a spring and have no possibility of regulation.

Within the ICP valves we have the following range of valves:

□ **Figure GV-116 & GV-340:** They are valves of rotary spindle and upstream, without bellows and they are manufactured in two basic materials for the body and bonnet, EN-GJL250, 1.0619. The DIN range of sizes and pressure ratings are defined in the following table:

	Material	Diameter	Flanges	PN
<b>Fig. GV-116</b>	EN-GJL250	DN 15 a DN 200	EN 1092-2	16
<b>Fig. GV-340</b>	1.0619	DN 15 a DN 200	EN 1092-1	40

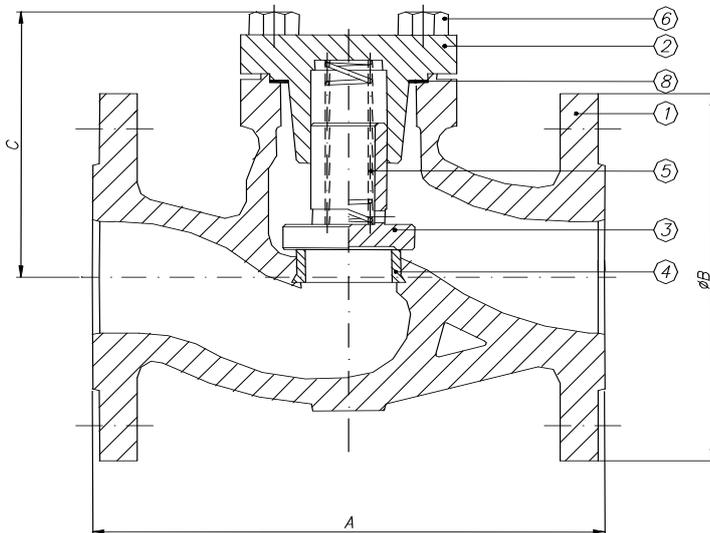
□ **Figure BGV-116, BGV-216, BGV-225 & BGV-340:** They are valves with bellows, non-rotary spindle and upstream and they are manufactured in three basic materials for the body and bonnet, EN-GJL250, EN-GJS400, 1.0619. The DIN range of sizes and pressure ratings are defined in the following table:

	<b>Material</b>	<b>Diameter</b>	<b>Flanges</b>	<b>PN</b>
<b>Fig.BGV-116</b>	EN-GJL250	DN 15 to DN 200	EN 1092-2	16
<b>Fig.BGV-216</b> <b>Fig.BGV-225</b>	EN-GJL400	DN 65 to DN 200	EN 1092-2	16
		DN 15 to DN 200		25
<b>Fig.BGV-340</b>	1.0619	DN 15 to DN 200	EN 1092-1	40

□ **Figure CHV-116 & CHV-340:** They are check valves without spring, without spindle and they are manufactured in two basic materials for the body and bonnet, EN-GJL250 & 1.0619. The DIN range of sizes and pressure ratings are defined in the following table:

	<b>Material</b>	<b>Diameter</b>	<b>Flanges</b>	<b>PN</b>
<b>Fig.CHV-116</b>	EN-GJL250	DN 15 a DN 250	EN 1092-2	16
<b>Fig.CHV-340</b>	1.0619	DN 15 a DN 250	EN 1092-1	40

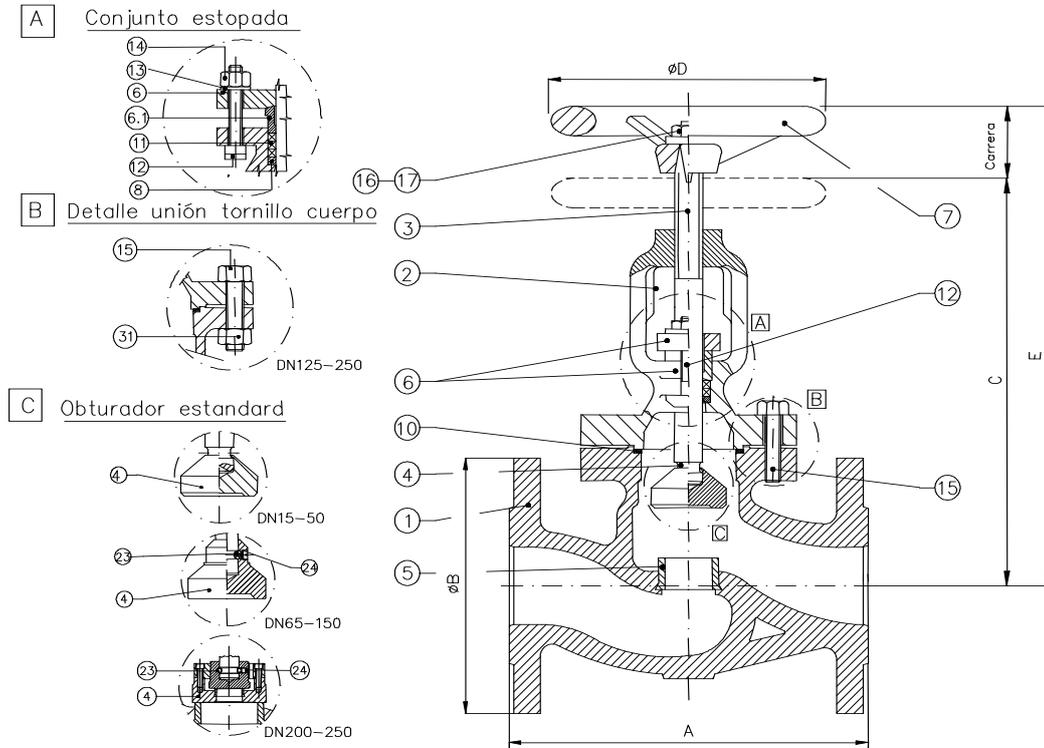
**6.- DIMENSIONS & MATERIALS OF THE ICP VALVES**  
**6.1.- Check Valve FIG. CHV-116 & CHV-340**



Item	Name	Part N°	Material
1	Body	1	EN-GJL250 / 1,0619
2	Bonnet	1	EN-GJL250 / 1,0619
3	Disc	1	1,4057
4	Seat	1	1,4057
5	Spring	1	1,4300
6	Screw	--	5,6 / 8,8
8	Gasket	1	Synthetic Fiber. / Graphite

DN	A mm	ØB mm	C mm	Weight	
				CHV-116	CHV-340
15	130	95	65	3	4
20	150	105	70	4	5
25	160	115	80	4	6,5
32	180	140	85	6	7,5
40	200	150	120	11	13
50	230	165	130	13	15,5
65	290	185	160	21,5	23,5
80	310	200	165	27	28,5
100	350	220	185	40	43
125	400	250	210	54	68
150	480	285	250	81	100
200	600	340	360	150	201

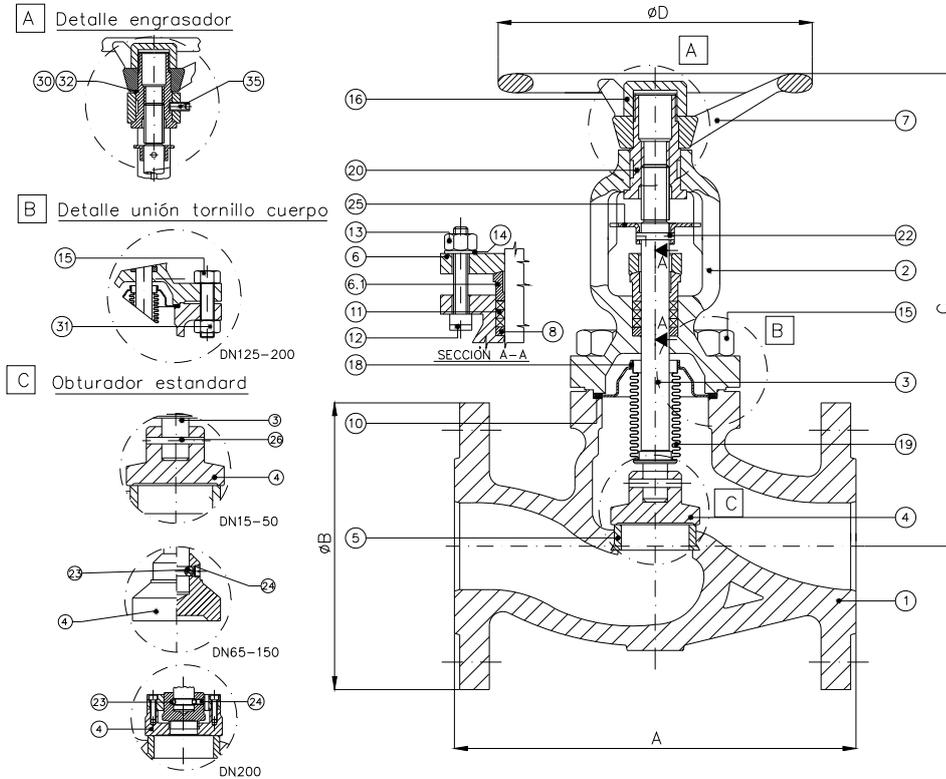
**6.2.- Globe Valve FIG GV-116, GV-340**



Item	Name	Qty	Material
1	Body	1	See point 5
2	Bonnet	1	See point 5
3	Spindle	1	X12 CrNisl 18-8
4	Disc	1	X22 CrNi17
5	Seat	1	X22 CrNi17
6	Gland	1	Carbon Steel
6.1	Gland retainer	1	Carbon Steel
7	Handwheel	1	EN-GJL 400
8	Sp. Washer	1	Carbon Steel
10	Gasket	1	Graphite
11	Packing	--	Graphite
12	Gland bolt	2	Carbon Steel
13	Gland nut	2	Carbon Steel
14	Washer	2	Carbon Steel
15	Bonnet bolt	--	5,6 / B7M
16	Handwheel nut	1	Carbon Steel
17	Handwheel washer	1	Carbon Steel
23	Ball	--	X40 Cr13
24	Pin Bil	1	Stainless Steel
31	Nut	--	8.8 Pav.

DN	A mm	C mm	$\varnothing D$ mm	Figura		Carrera mm	Peso	
				GV-116 PN 16 $\varnothing B$	GV-340 PN 40 $\varnothing B$		GV-116 Kg	GV-340 Kg
15	130	191	140	95	95	13	3	4
20	150	191	140	105	105	15	4	5
25	160	209	140	115	115	17	4	6,5
32	180	206	140	140	140	20	6	7,5
40	200	282	180	150	150	28	11	13
50	230	276	180	165	165	32	13	15,5
65	290	335	200	185	185	26	21,5	23,5
80	310	370	200	200	200	30	27	28,5
100	350	395	250	220	235	40	40	43
125	400	525	330	250	270	43	54	68
150	480	525	330	285	300	45	81	100
200	600	675	400	340	375	70	150	201

**6.3.- Bellows Globe Valve Fig.: BGV-116, BGV-216, BGV-225, BGV-340**

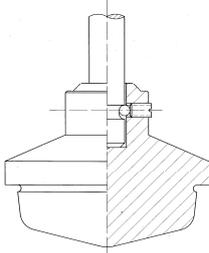


Item	Name	Qty	Material
1	Body	1	See point 5
2	Bonnet	1	See point 5
3	Spindle	1	X12 CrNiSl 18-8
4	Disc	1	X22 CrNi17
5	Seat	1	X22 CrNi17
6	Gland	1	Carbon Steel
6.1	Gland retainer	1	Carbon Steel
7	Handwheel	1	EN-GJL 400
8	Sp. Washer	1	Carbon Steel
10	Gasket	1	Graphite
11	Packing	--	Graphite
12	Gland bolt	2	Carbon Steel
13	Gland nut	2	Carbon Steel
14	Washer	2	Carbon Steel
15	Bonnet bolt	--	5,6 / B7M
16	Handwheel nut	1	Carbon Steel
18	Hood	1	X5 CrNi 18-9
19	Bellows	1	1,4571
20	Threaded bushing	1	Carbon Steel
22	Pin	1	Carbon Steel
25	Anti-tour device	--	8.8 Pav.
26	Pin	1	Stainless Steel
30	Inferior Washer	1	Carbon Steel
31	Nut	--	8.8 Pav.
32	Superior Washer	1	Carbon Steel
35	Greaser	1	Carbon Steel

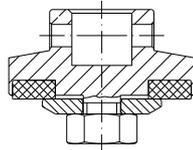
DN	A mm	C mm	ØD mm	Figura			Carrera mm	Peso			
				BGV-116 BGV-216 PN 16 ØB	BGV-225 PN 25 ØB	BGV-340 PN 16 ØB		BGV-116 Kg	BGV-216 Kg	BGV-225 Kg	BGV-340 Kg
15	130	200	140	95	95	95	7	4	4	4	4
20	150	210	140	105	105	105	8	5	5	4	5
25	160	220	140	115	115	115	9	5,5	5,5	5,5	7
32	180	230	140	140	140	140	9,5	7	7	8	9
40	200	250	180	150	150	150	12,5	12	12	13	14
50	230	260	180	165	165	165	15	14	14	15	16
65	290	340	200	185	185	185	16	21	21	22	23
80	310	350	200	200	200	200	20	27	27	28	29
100	350	370	250	220	235	235	25	40	40	41	43
125	400	510	330	250	270	270	35	56	56	57	71
150	480	545	330	285	300	300	37	82	82	86	101
200	600	630	400	340	360	375	50	156	156	164	204

“...“ The number depends on the size of the Bellows Globe Valves

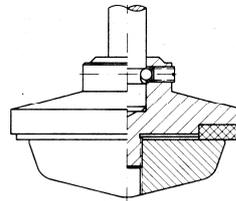
The following diagrams show the various optional accessories for globe valves:



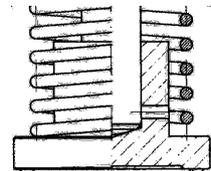
**DISC TYPE A**  
 - Metal Seat - Conical



**DISC TYPE B**  
 - Soft Seat – Drawing



**DISC TYPE C**  
 - Soft Seat - Conical



**DISC TYPE D**  
 - Metal Seat – Globe drawing

Comments on the different discs:

**Disc Type A** → Is applied to give a progressive adjustment of flow when opening the valve.

**Disc Type B** → Is applied to obtain a better closing and sealing of the globe valve in case of small particles in the fluid suspension.

**Disc Type C** → Is applied to give a progressive adjustment of flow when opening the valve and at the same time a better closing and sealing in case of small particles in the fluid suspension.

**Disc Type D** → Is applied as globe and check valve.

## 7.- DEFINITION OF FLUIDS USED AND THE LIMITS OF USE

The accepted fluids as well as the pressure and temperature limits have been described following the European Directive Pressure Equipment 97/23/EC.

The following table shows the fluids that can be used in this product without prior consultation with ICP VALVES S.A. (always following the criteria defined in this procedure):

	<i>Group 1</i>	<i>Group 2</i>
Group of fluids applicable according PED	<b>-HOT OILS</b>	- <b>STEAM,</b> - <b>WATER (NON SALINE)</b> - <b>AIR</b> - <b>N2</b>

These products have been technically designed to be used with the fluids listed in the table above. The use with other fluids may be possible only if the customer obtains the approval of ICP VALVES S.A.

The following table summarizes the phase (gas, liquid) of the fluids that can be used depending on the material as well as the temperature and pressure limits.

Reference Globe Valve	Material	TEMPERATURE OF USE**		FLUIDS*			PRESSURE OF USE
				Gases	Liquids		
		Minimum	Maximum	G2	G1	G2	
<b>BGV-116, GV-116</b>	EN-GJL250	-10°C	300°C	yes	yes	yes	See tables
<b>BGV-216, BGV-225</b>	EN-GJS400	-10°C	350°C	yes	yes	yes	See tables
<b>BGV-340, GV-340</b>	1.0619	-20°C	400°C	yes	yes	yes	See tables

\* Depends on the temperature, pressure used and the chemical compatibility between the product material and fluid. In case of doubt the user should always consult with **ICP VALVES SA**.

\*\*The maximum temperature of use depends on the fluid and the working pressure used. In case of doubt consult with **ICP VALVES S.A.** In case of option of soft seat, the temperature limit will be 250°C.

## 8.- INSPECTION AT RECEPTION AND STORAGE

### 8.1 Inspection at reception

All ICP valves should be inspected visually at reception, to verify that they have not been damaged during transport. Any evidence of damage observed should be communicated immediately to **ICP VALVES S.A.**

Also, verify that the characteristics of the facility where the valve will be located match with the specifications of the product delivered. Ensure that the maximum limit of temperature, pressure and fluid are correct (see valve plate or this procedure). In any case do not hesitate to contact **ICP VALVES SA**.

### 8.2 Storage

All ICP valves must be stored in a covered and dry place, properly protected from the weather, dirt and any foreign substance that might affect them.

The valves must remain packed and protected until final installation. The protections of the flanges should not be removed until the valves are to be connected at the facility.

## 9.- REQUIREMENTS PRIOR TO THE INSTALLATION. PRODUCT VERIFICATION

Proceed to unpack the valve and remove the protections of the flanges, careful not to introduce dirt in the inside of the valve. Visually verify again if there is any damage to the valve, if so, do not install the valve.

Once again, ensure that the values of pressure, temperature and fluid are suitable to use with the unpacked product (see valve plate or this procedure).

The user must ensure that the safety devices against excessive pressure are operating in other parts of the installation, to prevent exceeding the allowable limits.



## 10 – INSTALLATION

Ensure there is no pressure in the line and that it is free of foreign particles or dirt, these could cause bad closing of the valves seats and cause irreversible damage. If necessary, discharge fluid, if possible, to the atmosphere or container, in order to sweep all types of particles attached to the inside of the pipe, to ensure their complete elimination. The damage caused by these particles or dirt are exempt from the warranty.

In case of installations with potential risk of contamination by dirt or particles, it is advisable to install a suitable filter upstream of the valve. **Consult ICP VALVES S.A.**

ICP valves can be installed horizontally, vertically or diagonally but always respecting the flow direction indicated in the body (arrow engraved). Ensure that the inlet and outlet pipes are properly supported and aligned and, taking into account the gaskets, they do not pressure the valve once installed (no stress should be transmitted to the valve once installed, the ICP valve is not designed to support stress).

Clean the flanges both from the valve and installation to remove all dirt. Once done, we will put the gaskets on the flanges and centre the valve in the installation. Be careful that the gaskets do not obstruct the passage of fluid. Ensure a safe access to operate the handwheel.

Put the bolts or studs and proceed to tighten the nuts following a proper sequence to achieve a uniform tightening around the circle of holes. Do not tighten the flanges if there is separation, lack of parallelism or axial displacement between the flanges of the valve and the pipe connections.

## 11.- SET-UP

Once the globe valve is installed, increase the pressure slowly, observing that there is any leakage between the pipe connections or any part of the valve, until the required pressure value is achieved. This process is dangerous and should be done carefully.

If leakage is observed in the connections, evacuate the pressure and proceed to install new gaskets. If leakage is observed in the valve, proceed as follows:

- **Leakage in the body:** Evacuate the pressure quickly, isolate the valve and proceed to its replacement.
- **Leakage in the packing:** Evacuate the pressure quickly, isolate the valve and tighten the "gland bolts" until the problem is solved, see paragraph 13.2.
- **Leakage between the body and the bonnet:** Evacuate pressure quickly, isolate the valve and proceed to the replacement of the gasket, see paragraph 13.2.

After the valve has been used for the first time, check that the bolts of the flange connections, the bolts of the union body-bonnet (see paragraph 13.2 for the correct tightening torques) and the gland bolts are correctly tightened. This must be done with the valve in open position, depressurized and at room temperature.

If a check valve is installed at the end of the line, a blind flange will have to be installed in the flange outlet of the valve to eliminate possible risks.

If any element has to be handled downstream of the check valve, a system of double isolation (blocking and diversion) will have to be installed.



## 12.- HYDROSTATIC TEST

If you want to perform a hydrostatic test in the installation, take care not to exceed, under no circumstances, the designed test pressure. If any doubt please consult **ICP VALVES SA**.

## 13.- MAINTENANCE

### 13.1 When to do a Maintenance

It is convenient to do a verification of the valve after a certain period of time in order to solve small problems that can be highly dangerous in the future. This period of time depends on the characteristics of the installation (type of fluid, temperature, pressure, etc.) and must be carefully defined by the head of maintenance of the facility. ICP VALVES SA recommends a period of time of maximum two months.

The handling of the valve for its maintenance must be carried out by competent personnel of the plant or **ICP VALVES S.A.**, staff.

### 13.2 Minimum checks

Verify at least the following points in order to ensure a safe and sustainable use of the installed product.

➤ **Visual Inspection of the body and bonnet:** Visually check if there is any irregularity or incident that has not been previously observed and resolved.

➤ **Greasing the spindle:** We recommend applying a small amount of grease with graphite or copper base to the threads of the screw to prevent galling.

#### ❑ Leakage:

❑ **Leakage between connections:** depressurize the system and put new gaskets. See the installation section.

❑ **Leakage from the inside of the valve:** there is possibly a leak between the seat and disc of the valve. The seat or disc may have been damaged by impacting foreign particles. The continuous use of the valve can be highly dangerous. It is necessary to contact **ICP VALVES SA** for valve repair.

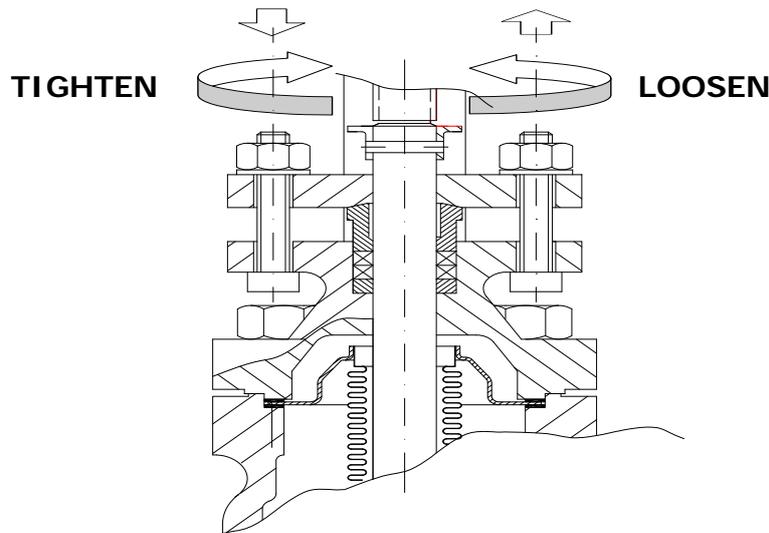
❑ **Leakage between the spindle and packing:** This is the point of most weariness of the valve, so the gasket needs to be tightened frequently, depending on the frequency of the working conditions. In the case of bellows valve, it will be necessary to contact **ICP VALVES SA** for the replacement of the valve, as the bellows has been damaged.

#### ❑ Tightening Procedure:

❑ Depressurize the line.

❑ Tighten the "gland bolts" alternately until the leak disappears. Note: the more tighten the packing is, the higher the torque will be.

❑ If the tightening does not eliminate the leakage, contact with **ICP VALVES S.A.** for the replacement of the packing.



- ❑ **Leaks between the body and bonnet:** Possibly the gasket between these two elements (Figures GV-116 GV-340) or between the hood and the body (Figures BGV-116, BGV-216, BGV-225, BGV -340) has deteriorated. Proceed to its replacement.
  - ❑ **Procedure:**
    - ❑ Make sure that there is no pressure in the line, disassembly the valve.
    - ❑ Move to a clean place to start the maintenance operation fixing the valve in such a way that we can operate properly.
    - ❑ Loosen the bolts (15) that fix the body (1) to the bonnet (2), crosswise alternatively.
    - ❑ Remove the bonnet (2) pulling slowly the bridge set upwards and place it on a clean surface to work properly.
    - ❑ If the valve is with bellows, verify the bellows and the superior gasket of the hood of the bellows, as it could have been damaged. In case of damage, contact with **ICP VALVES S.A.** for its replacement.
    - ❑ **Verify that the interior of the body of the valve is in good condition. The seat and disc must be clean and with no signs of damage.**
    - ❑ Remove the old gasket and clean the housing of the gasket of the body (1) and the hood (18) if there is (Fig BGV-116, BGV-216, BGV-225, BGV-340)
    - ❑ Place a new gasket (10) in the housing of the body.
    - ❑ Place the set bonnet (2) over the body (1) trying to fit it together with the bolts.
    - ❑ Tighten the bolts (15) crosswise, alternatively and with the correct tightening torque according to the table below:

VALID FOR FIG. GV116 & BGV116		
BOLTING TORQUE		
BOLTING MATERIAL: 5,6		
SIZE	BOLTING THREAD	TORQUE (Nm)
15 & 20	M8	14
25 & 32	M10	28
40 & 50	M14	77
65 & 80	M16	121
100	M20	235

VALID FOR FIG. GV340 & BGV216, BGV225 & BGV340		
BOLTING TORQUE		
BOLTING MATERIAL: A 193 B7M		
SIZE	BOLTING THREAD	TORQUE (Nm)
15 & 20	M8	24,5
25 & 32	M10	49
40 & 50	M14	137
65 & 80	M16	218
100	M20	425

VALID FOR FIG. GV116 & BGV116		
BOLTING TORQUE		
BOLTING MATERIAL: B7		
SIZE	BOLTING THREAD	TORQUE (Nm)
125	M16	21
150	M16	21
200	M20	41

VALID FOR FIG. GV340 & BGV216, BGV225 & BGV340		
BOLTING TORQUE		
BOLTING MATERIAL: A 193 B7		
SIZE	BOLTING THREAD	TORQUE (Nm)
125	M16	21
150	M16	21
200	M20	41

- Install the valve in the line (see paragraph 10)
- **Procedure Figures CHV-116, CHV-340.** Loosen the bolts (6) that fix the body (1) with the bonnet (2), crosswise alternatively. Be careful as there is risk of impact due to the thrust of the spring inside.
  - Once the spring is in its free position, remove the bonnet (2). Place in a clean surface to work properly.
  - Remove the spring and disc slowly.
  - **Verify that the interior of the valve's body is in good condition. The seat and disc must be clean and without signs of damage.**
  - Remove the old gasket and clean the housing of the gasket of the body (1) and bonnet (2)
  - Place the new gasket (8) in the housing of the body.
  - Place the disc and spring in the hole of the disc being careful not to damage the seat.
  - Place the bonnet (2) over the spring and put the bolts, tightening them without pressing the body.
  - Tighten the bolts (6) crosswise, alternatively and with the correct tightening torque. (see paragraph 13.2).
  - Install the valve in the line (see paragraph 9)

## 14.- RECOMMENDED SPARE PARTS

The spare parts will be ordered indicating the figure to which they correspond, DN, pressure, working temperature and fluid used. **ICP VALVES S.A.** advises the following sets of spare parts:

### 14.1 Spare parts for basic maintenance

This type of maintenance can be performed by the staff of the facility as per this technical instruction. The recommended spare parts are the following:

- 1 x Set of gaskets (10), the amount and type depend on the material and figure.

### 14.2 Spare parts for advanced maintenance

This type of maintenance can be performed by staff of the facility if **ICP VALVES S.A.** has authorized this. For this, follow the assembly instructions. **Contact ICP VALVES S.A.**

The recommended spare parts are the following:

- 1 x set packing (11) (except FIG. CHV-116, CHV-340).
- Set bellows, hood, spindle, for Figures BGV-116, BGV-216, BGV-225, BGV-340)
- Spring, (Figures CHV-116, CHV-340)
- Disc, in its different versions (Metal, soft, cone regulation)



**OPERATING MANUAL FOR ICP GLOBE, BELLOWS GLOBE &  
CHECK VALVES**  
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