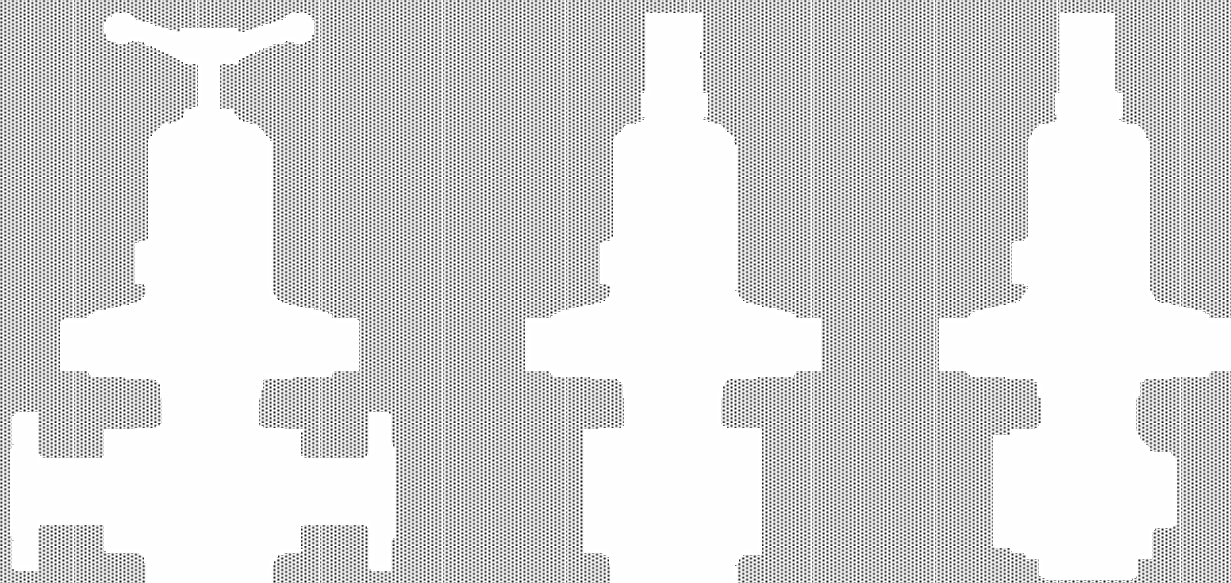




# I N S T R U C T I O N S

For installing and servicing self-operating pressure regulators UBA and UBAN



**CARRARO**<sup>®</sup>  
VALVOLE E STRUMENTAZIONE

20090 SEGRATE (MI)- via E.Fermi  
E-MAIL: [info@carrarovalvole.it](mailto:info@carrarovalvole.it)  
TEL.(02) 269912.1 - FAX.(02) 2692.2452

IMI0009E.doc  
Rev.9 31/05/10  
Page 1 of 19



# I N S T R U C T I O N S

## For installing and servicing self-operating pressure regulators UBA and UBAN

### MAIN INDEX

	<i>Page</i>
1. General information .....	3
2. Guarantee .....	3
3. Validity of instructions .....	3
4. Product safety indications and tag system.....	4
5. Safety warnings .....	5
6. Safety precautions .....	6
7. Transport, storage and handling .....	7
<b>8. Installation and assembly instructions UBAN - UBAN/V - UBA - UBA/V</b>	
8.1. Cross-section drawing.....	8
8.2. Installation .....	9
8.3. Start-up and calibration.....	11
8.4. Maintenance .....	12
8.5. Versions.....	13
<b>9. Installation and assembly instructions UBAN/D1–UBAN/V/D1 – UBAN/D2–UBAN/V/D2</b>	
9.1. Cross-section drawing UBAN/D1 UBAN/V/D1.....	14
9.2. Cross-section drawing UBAN/D2 UBAN/V/D2.....	15
9.3. Installation.....	16
9.4. Installation diagrams.....	16
9.5. Start-up and calibration.....	17
9.6. Maintenance.....	17
10. Repairs .....	19





# I N S T R U C T I O N S

## For installing and servicing self-operating pressure regulators UBA and UBAN

### 1. GENERAL INFORMATION:

#### 1.1 RIGHT TO MAKE MODIFICATIONS AND "COPYRIGHT"

The regulations, standards, etc. mentioned in these operating instructions are based on the knowledge that was available when they were drawn up and are not subject to modification. Users are responsible for applying the latest versions of these.

The supplier reserves the right to make modifications and technical improvements to data and information whenever it sees fit. Under no circumstances may users require modifications or improvements to be made to valves that have already been delivered.

### 2. GUARANTEE

The scope and duration of the guarantee are indicated in the manufacturer's "General Conditions of Sale". The applicable conditions are those that were in force at the moment of delivery.

Amongst other things, the guarantee does not cover damage to valves deriving from the following:

- Ignorance or non-observance of these operating instructions;
- Insufficiently trained staff: fitting, operators or maintenance men;
- Normal wear and tear;
- Incorrect or negligent use of the valves.

The manufacturer declines all liability for the following which are not covered by the guarantee:

- Non-observance of accident prevention regulations and/or safety legislation;
- Incorrect assembly, start-up or use;
- Improper or incorrect use, inappropriate use or different working conditions from those agreed;

Users are solely liable for physical injury and/or damage to property if the above is not observed.

### 3. VALIDITY OF INSTRUCTIONS

**These instructions refer to self-operated single-seat pressure regulators featuring spring-loaded diaphragm servomotors:**

**UBAN – UBAN/V**

**SEE PARAGRAPH 8)** (Figs.1-2)

**UBA – UBA/V**

**UBAN/D1 – UBAN/V/D1**

**SEE PARAGRAPH 9)** (Figs. 9–10)

**UBAN/D2 – UBAN/V/D2**





# I N S T R U C T I O N S

## For installing and servicing self-operating pressure regulators UBA and UBAN

### 4. PRODUCT SAFETY INDICATIONS AND TAG SYSTEM

If and where appropriate, safety indications have been put inside tags on the sides of the pages of this manual.

These rectangular tags are placed vertically (as shown in the following examples) and refer to four different warning messages:

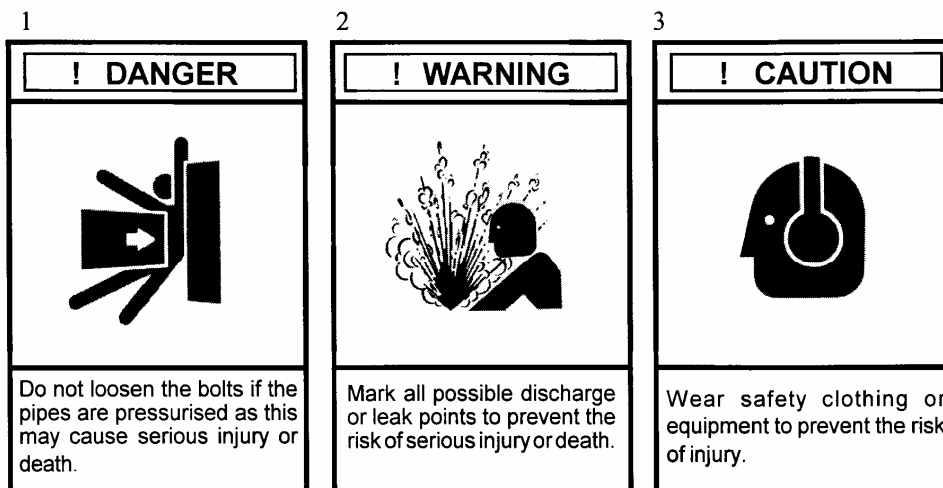
- The level of risk
- The nature of the risk
- The effects of the risk on people or products
- Instructions, if necessary, on how to avoid the risk

The box at the top contains a warning tip (DANGER – WARNING – CAUTION – ATTENTION) which indicates the level of risk.

The box in the middle contains a drawing indicating the nature of the risk and its possible effects on people and property. In some cases, the drawing may suggest what preventive measures can be taken (e.g., safety clothes fitness...).

The box at the bottom may contain a message with instructions on how to avoid the risk. In the event of risks for people, the message may also contain a more precise definition of the risk and its effects on people.

- 1) **DANGER** – Immediate risk involving necessarily serious injury or death.
- 2) **WARNING** – Risk or hazardous behaviour causing serious injury or even death.
- 3) **CAUTION** – Risk or hazardous behaviour causing minor injury.





# I N S T R U C T I O N S

## For installing and servicing self-operating pressure regulators UBA and UBAN

### 5. SAFETY WARNINGS

Thorough maintenance operations and overhauls are important for the safe and reliable operation of all valves.

The service procedures recommended by CARRARO and described in this manual are effective methods for carrying out maintenance operations. Please note that this service manual contains various warning and caution notices which should be read carefully in order to minimise the risk of injury to people or the possibility of using incorrect work methods which may damage the valves or make them unsafe. It is important to realise, however, that these warnings cannot be exhaustive.

CARRARO is unable to know, assess and inform customers or users of all the conceivable methods of performing maintenance operations and all the risks deriving from the use of such methods.

Consequently, CARRARO has not even attempted to start such a task. Therefore, whoever uses a service method or piece of equipment which is not recommended by CARRARO must make sure that neither his own or other people's safety, nor valve safety and performance are jeopardised by the chosen method.

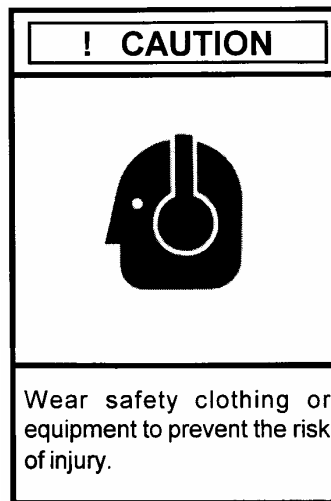
In case of doubt about the method used, please contact CARRARO.

Testing, installing or dismantling the valves or accessories may cause you to come into contact with fluids at very high pressures or temperatures and/or corrosive or erosive, capable of generating potentially explosive atmospheres.

Therefore, take all safety precautions while testing, installing or dismantling the product; these include, wearing ear plugs, goggles and safety clothing, such as gloves, both in or near the work area.

Users of CARRARO products are responsible for training the staff that will use the product.

It is most important for these people to acquire a thorough knowledge of the instructions relative to the product, especially the ones contained in this manual.





# I N S T R U C T I O N S

## For installing and servicing self-operating pressure regulators UBA and UBAN


### 6. SAFETY PRECAUTIONS

**! DANGER**



Decrease pressure and keep away from the discharge side when operating a valve in order to prevent serious injury or death.

**! CAUTION**



Wear suitable protection equipment in order to prevent injury.

**! WARNING**



Mark all possible discharge or leak points in order to prevent serious injury or death.

Always observe the current plant safety regulations together with the following indications:

- Wear safety clothing. Hot water can scald you and overheated steam is invisible.
- When dismantling a valve, wear safety clothing to prevent being sprayed by any process fluid that may have accumulated inside.  
**Remember that this fluid may generate a potentially explosive mixture.**  
Make sure the valve is isolated from any pressure source in the system before starting to dismantle it.
- Inspect/service the valves at least once a year.
- **The outer surfaces of the valves reach the same temperature as that of the fluid flowing inside them. For this reason, when installing a valve in a potentially explosive atmosphere, make sure that the flashover temperature of the mixture surrounding the valve is enough above that of the fluid flowing inside the valve and do not allow inflammable powders to deposit on the outer surface of the valve.**
- **The system must be equipotential at the connection between the valve and the piping in order to prevent the accumulation of electrostatic electricity on the outer surfaces of the system that can act as an efficient flashover trigger in a potentially explosive atmosphere.**
- Please consult CARRARO before working on valve parts.



# I N S T R U C T I O N S

## For installing and servicing self-operating pressure regulators UBA and UBAN

### 7. TRANSPORT, STORAGE AND HANDLING



#### Transport

Depending on their size, valves can be transported loose, packed in cardboard boxes or in wooden crates.

All the valve ends are fitted with covers to prevent dirt from entering. Packs can be placed on pallets if required. Follow all and any indications written on the packaging.



#### Storage

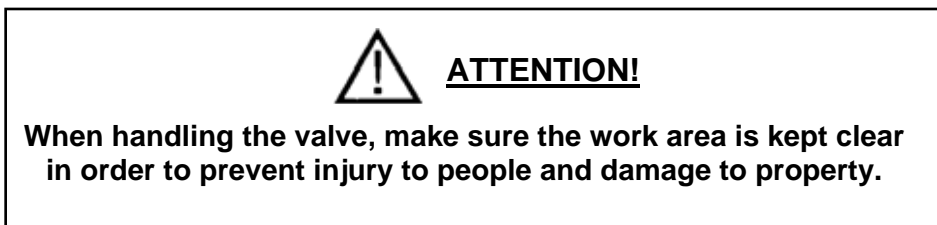
Valves must be kept in a dry place to protect them from atmospheric conditions. They may only be removed from their crates or packing immediately prior to installation.

The end protections and covers must be kept on until the last moment. Valves, whether packed or not, must not be subject to violent knocks.

Valves, whether packed or not, must always be kept upright, that is, never lying on one side, in order to prevent distortion and damage to internal parts.

#### Handling

When unpacking the valves and removing the end protectors immediately prior to installation, take great care to make sure that foreign bodies do not enter the valve inlet and outlet holes while it is being connected.





# I N S T R U C T I O N S

## For installing and servicing self-operating pressure regulators UBA and UBAN

### 8) UBAN – UBAN/V – UBA – UBA/V

#### 8.1 Cross-section drawing

Fig.1

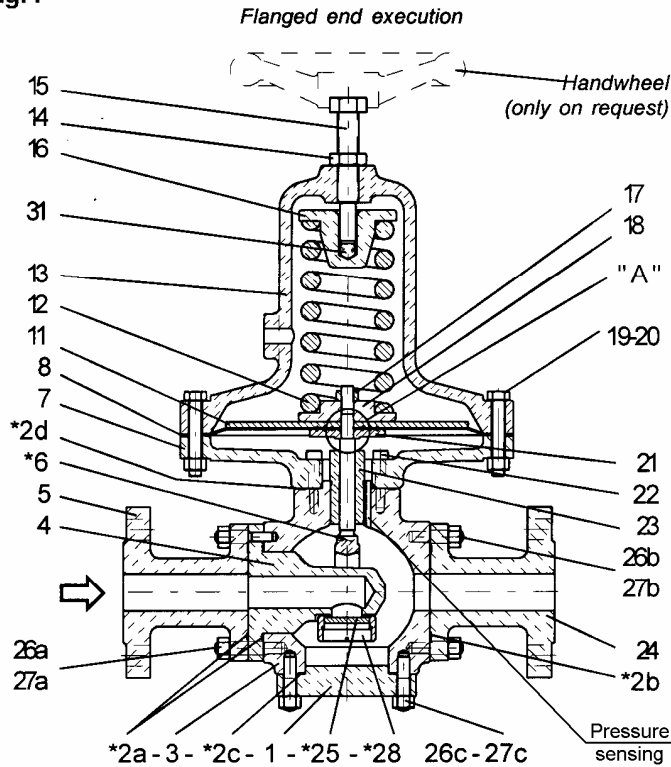
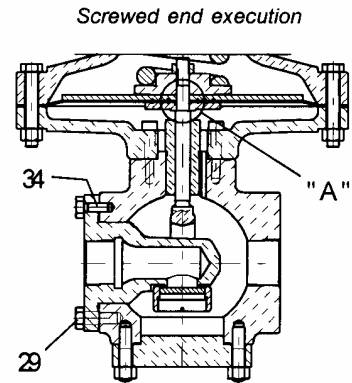
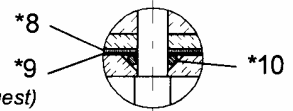


Fig.2



PART. "A"



(only on request)

- 1 - Cover
- \* 2 - (a-b-c-d-e-f) Gaskets set
- 3 - Lower Pressure body
- 4 - High Pressure body
- 5 - Inlet flange
- \* 6 - Plug
- 7 - Lower diaphragm case
- \* 8 - Diaphragm
- \* 9 - Protection ( if requested )
- \*10 - O-Ring gasket
- 11 - Upper diaphragm plate
- 12 - Spring
- 13 - Spring cover
- 14 - Lock nut
- 15 - Adjusting screw
- 16 - Spring loader
- 17 - Nut
- 18 - Spring guide
- 19 - Screws
- 20 - Nuts
- 21 - Lower diaphragm plate
- 22 - Screws
- 23 - Guide
- 24 - Outlet flange
- \*25 - Disc
- 26 - (a-b-c) Studs
- 27 - (a-b-c) Nuts
- \*28 - Disc holder
- 29 - Screws
- 30 - Cap
- 31 - Ball
- 32 - Ball seat
- 33 - Spring
- 34 - Pin

\* RECOMMENDED SPARE PARTS

Note: The servomotors with diameter 220 and 360 in carbon steel or stainless steel are provided with a decomposed spring cover.

Fig.5

Balancing system solution

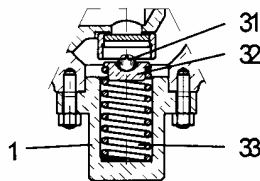


Fig.3

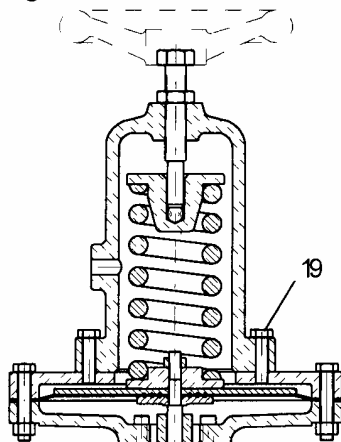
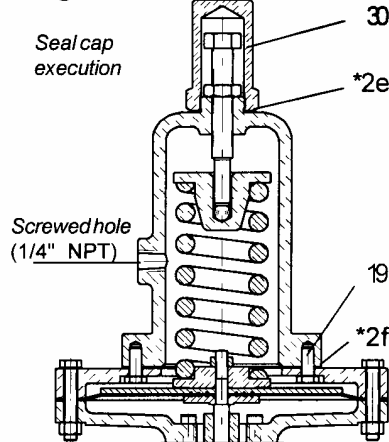


Fig.4



ATEX Construction Gr. II Cat. 2 (Fig.4)



**CARRARO**  
VALVOLE E STRUMENTAZIONE

20090 SEGRATE (MI) - via E.Fermi  
E-MAIL: [info@carrarovalvole.it](mailto:info@carrarovalvole.it)  
TEL.(02) 269912.1 - FAX.(02) 2692.2452

IMI0009E.doc  
Rev.9 31/05/10  
Page 8 of 19





# I N S T R U C T I O N S

## For installing and servicing self-operating pressure regulators UBA and UBAN

Figs.1-2-3-4-5 show the cross-sections of UBAN and UBAN/V valves together with part names and versions.

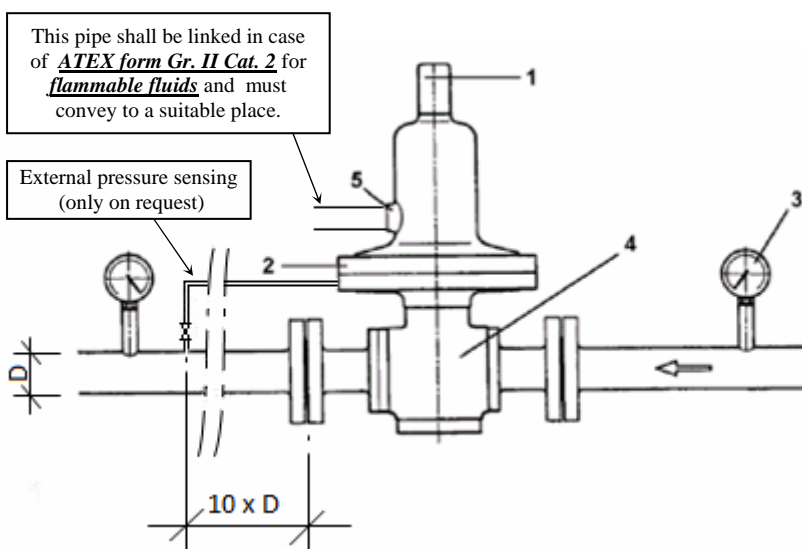
### 8.2 INSTALLATION

8.2.1 UBAN and UBAN/V valves must be installed with the servomotor (2)-Fig.6 facing upwards and the diaphragm perfectly horizontal, as shown in Fig.6.

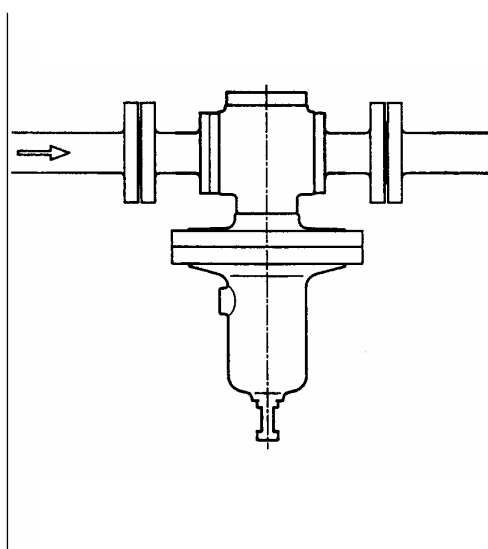
In pressure reducers regulating very low downstream pressures (normally lower than 100 mm water column), they must be mounted with the servomotor facing downwards (the rating plate is mounted upside down) and perfectly horizontal, as shown in Fig. 7; the weight of the mobile equipment is greater than the force of the pressure regulated on the diaphragm and must therefore be supported by the spring.

8.2.2 Before mounting the valve on the piping, make sure the insides of the pipes are scrupulously clean, especially the upstream section; blow down the piping if possible to eliminate any remaining dirt: small drops of solder may seriously damage the valve.

**Fig.6**



**Fig.7**



- 1) Adjustment screw (spring-loader)
- 2) Servomotor
- 3) Pressure gauge
- 4) Valve body
- 5) Drain hole

8.2.3 **WARNING ON ATEX FORM:** the spring cover is not airtight (ATEX form Gr. II Cat. 2 for non-flammable fluids - Fig.3) in case of harmless fluids (e.g., inert gases like nitrogen, carbon dioxide, noble gases). It's equipped with a hole (see fig. 6 and 7), whose chief function is that to drain the pressure whether the diaphragm cracked. Meanwhile in case of flammable fluids the spring cover is airtight (ATEX form Gr. II Cat. 2 for flammable fluids - Fig.4), made from carbon steel and stainless steel, the hole (5) in Fig.6 and 7 is always threaded 1/4" NPT and must be connected to pipe conveying the discharge to a suitable place (safely and constantly at atmospheric pressure).

This hole can be closed with a plug or a pressure gauge signalling the breakage of a diaphragm, as long as the downstream installation is protected by a safety valve.

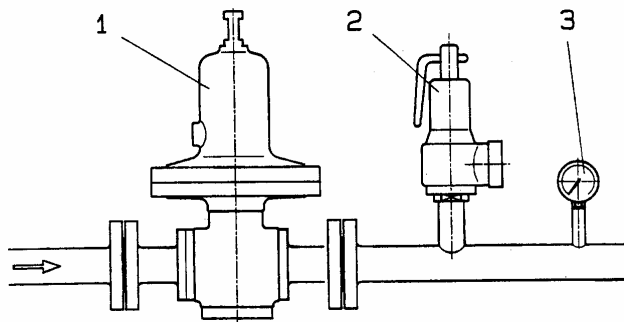


# I N S T R U C T I O N S

## For installing and servicing self-operating pressure regulators UBA and UBAN

8.2.4 If there is the slightest possibility of the pressure downstream from a reducer device exceeding the maximum system pressure, a safety valve must be installed, without an on-off valve in between, in order to protect the system.

The drain capacity of the safety valve must be equal to the maximum rate of flow in the protected plant without being otherwise drained.



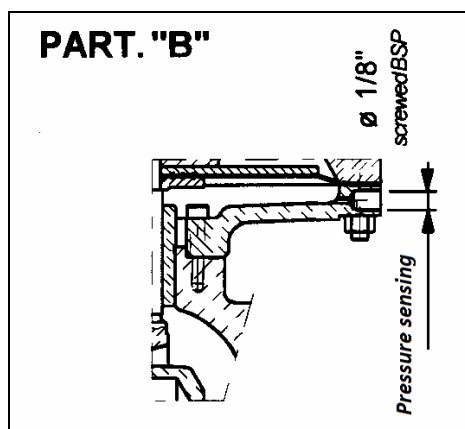
**Fig.8)** Pressure reducer assembly: 1) Reduction valve – 2) safety valve – 3) pressure gauge

8.2.5 Please bear in mind that the pressure sensing is located inside the valve, for which reason the pressure drops in the piping connecting the reducer to the point of use of the regulated fluid must be deducted from the regulated pressure value, creating pressure variations at the point of use according to variations in flow; this must be considered when calculating the size of the connection piping.

8.2.6 When it is essential to avoid pressure variations at the point of use, the valves are fitted with an external pressure sensing, as shown in Fig. 6. In that case connect the servomotor to the pressure sensing downstream at a distance of at least 10 times pipe diameter 'D'. The pressure sensing must always be connected to the side of the main pipe or on top of it, never underneath, otherwise solid substances may obstruct the pressure sensing.

To dismantle the valve, attach the joints in three pieces in the appropriate positions on the pressure sensing tubing.

The 1/8" female threaded connector is shown in Part "B".



*External pressure sensing (only on request)*

8.2.7 If you are not sure that the regulated fluid is clean, install a filter before the regulator.



# I N S T R U C T I O N S

## For installing and servicing self-operating pressure regulators UBA and UBAN

8.2.8 If in the plant there is the possibility that the pressure in contact with the diaphragm exceeds the maximum diaphragm rating, it is necessary to install the safety relief device shown in Fig. A. The device is mounted on the lower diaphragm case, through a 1/8" Gas female threaded hole and a threaded nipple 1/8" Gas male 3/8" Gas female (on the opposite side respect the pressure sensing in case of external pressure sensing construction). It consists (see Fig. A) in a plug, pressed by a spring properly calibrated depending on the maximum diaphragm rating, that can move inside a cylindrical body, due to the fluid action, gradually discovering a 1/4" NPT threaded female discharge hole. The discharge flow, discharged versus ground, can be released in atmosphere or properly collected, depending on working medium nature.

It's foreseen, if necessary, an ATEX version of the device: in this case, the discharge flow must be collected in inert atmosphere, through an appropriate tube with 1/4" NPT male threaded connection, to avoid potentially explosive mixtures generation.

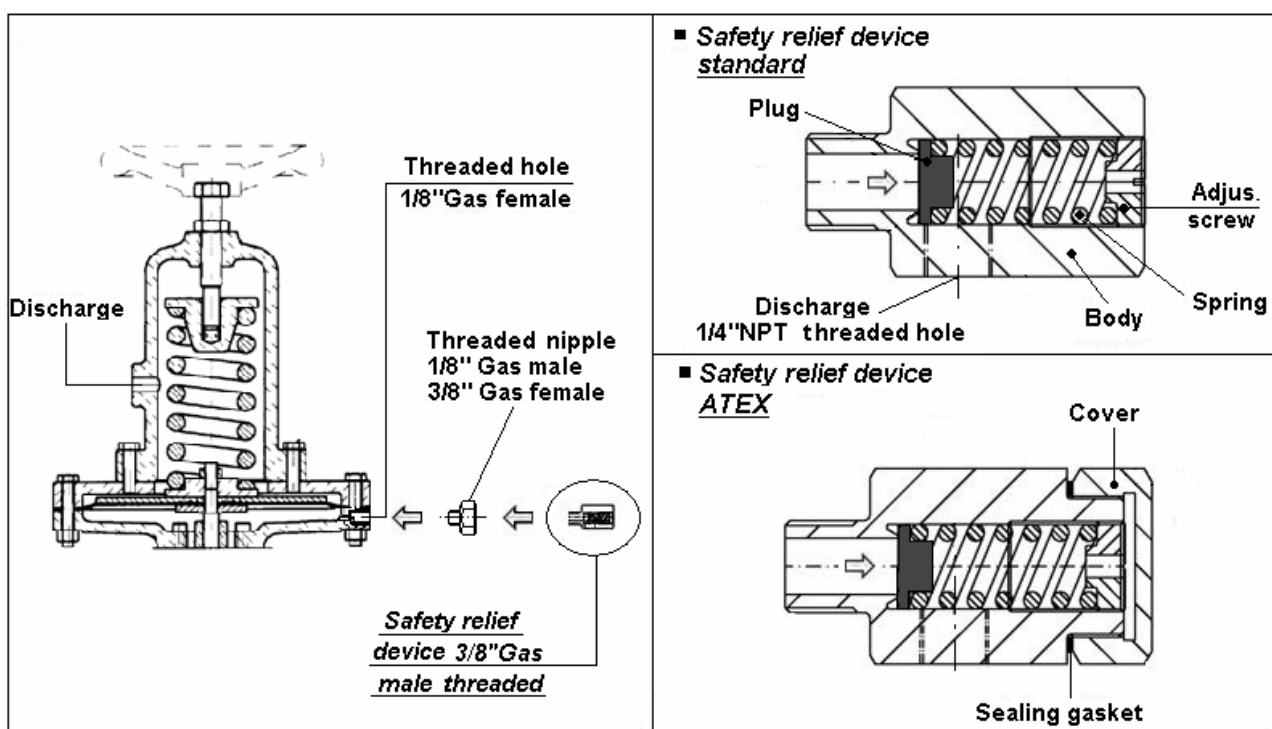


Fig.A

### 8.3 START-UP AND CALIBRATION (Fig.1÷5)

The regulators are factory calibrated at the set pressure indicated in the order. If necessary is possible to modify the set pressure at operating conditions on the plant as follow.

Loosen the lock nut (14), after having removed the cap (30) in case of ATEX Gr. II Cat. 2, and correct the position of the adjustment screw (15) reading the pressure indicated by the gauge; this must be done when the system is working at normal operating condition.

Then, tighten the lock nut (14); remount the cap (30) in case of ATEX Gr. II Cat. 2.



# I N S T R U C T I O N S

## For installing and servicing self-operating pressure regulators UBA and UBAN

### 8.4 MAINTENANCE

8.4.1 If the regulated fluid is clean and the plant is fitted with a filter, maintenance operations will be infrequent occurrences.

The user must check the seats at least once a year depending on the need for the valve to close airtight.

When performing this inspection, remove the valve on the piping and dismount all the components as shown follow. Firstly, make sure the recommended spare parts are available (Figs.1-2-3-4-5, parts list).

#### 8.4.2 Dismounting the components (see Figs.1-2-3-4-5)

##### 8.4.2.1 Dismounting the servomotor

Release the spring by unscrewing the adjustment screw (15) after loosening the lock nut (14), leaving it in position or noting down its position in order to restore calibration after reassembly. In case of valves with the cap (30) airtight (Fig.4), first remove the cap with relative gasket (2e).

Remove the spring cover (13) by loosening the nuts (20).

Do not disassemble the spring cover of the 220 and 360 servomotors, that foresee decomposed spring cover. Remove the spring (13). Unscrew the nut (17).

Remove the diaphragm (8), after having removed spring guide (18) and upper diaphragm plate (11).

##### 8.4.2.2 Dismounting the body

Unscrew the nuts (27c) and remove the cover (1). Unscrew the nuts (27a) Fig.1 (flanged valve) or the screws (29) Fig.2 (threaded valves). Remove the high pressure body (4) keeping the plug (6) in a suitable position; remove the plug.

##### 8.4.2.3 Parts inspection

All the components are now ready to be inspected. Replace any worn ones. Clean all the parts.

In particular, check the state of the disk (25), both elastic and metal, and the seat of the orifice.

If the seat is worn, true it by rubbing it with a metal disk and abrasive paste. If necessary, remount it on the body.

If no expert operators are available, send the whole valve back to our factory for revision.

Another important component to control is the diaphragm (8); replace it if the surface is in poor condition.

The same applies to Teflon protections (9).

Replace all the gaskets (2a-b-c-d-e-f, 10) at least once a year after cleaning the surfaces they lie on.

##### 8.4.2.4 Reassembly

Carry out the dismounting operations in reverse order.

Push the stem of the plug (6) into the guide (23) and put the high pressure body (4) into position, tightening the nuts or screws, after replacing the gaskets(2a). Mount the diaphragm (8). Replace the small retention ring (10) after thoroughly cleaning its seat. Mount the diaphragm towards the valve body, lying on the lower diaphragm plate (21). Remount the upper diaphragm plate (11) and spring guide (18), tighten the nut (17), positioning the diaphragm so that when the diaphragm-plug assembly is fully rotated to the right and left, each hole rotates by the same angle as the matching hole on the lower diaphragm case (7). This means that the bracket is at right-angles to the high pressure body. Match the holes of the diaphragm with the holes in the lower diaphragm case and remount the spring (12), spring loader (16) and spring cover (13). Remount the cover (1). Return the screw (15) to the position marked by the lock nut (14) or the position you noted down (see 8.4.2.1). Exact calibration must then be checked when the valve starts working again.

##### 8.4.3 Replacing the diaphragm only

If the diaphragm deteriorates or breaks during operation or requires replacement without having to perform any other maintenance operations and if the valve is easy to access, perform the operations listed in paragraph 8.4.2.1, leaving the valve on the piping, preventing the operating medium inflow to the valve itself and discharging the pressure on the main line. At the end of operations proceed to reassembly with inverse operations from those described in paragraph 8.4.2.1.

Check calibration once more when the valve starts working again and adjust if necessary.





# I N S T R U C T I O N S

## For installing and servicing self-operating pressure regulators UBA and UBAN

### 8.5 VERSIONS

#### 8.5.1 UBAN and UBAN/V versions with balancing device (Fig.5)

The UBAN and UBAN/V versions with balancing device are fitted with a balancing spring mounted on the cover (1) (Fig.1). The same applies to what was said about the other valves: remember the existence of this spring only during operations involving dismounting and remounting the cover (1) (see paragraph 8.4.2.2 - 8.4.2.4).



### **ATTENTION!**

**When welding piping, do not attach the earth connector to the valve as this may damage important sliding parts.**

#### 8.5.2 UBA and UBA/V valves with cast iron body

The UBA and UBA/V versions are identical to UBAN and UBAN/V in the versions with threaded ends (Fig.2), except for the following:

- The low pressure body is made from cast iron;
- The body is closed by means of a threaded disk screwed onto the body, instead of being fixed with screws and nuts. The inlet and outlet ends are always threaded. There are therefore no substantial differences from the functional point of view and as regards installation, start-up and calibration, and maintenance.

It should only be remembered that the cover is threaded and screwed to the body. The instructions for valves UBAN and UBAN/V in the previous chapters also apply to these versions. Remove the cover (1) with a 46 mm hex wrench.

N.B.: After each maintenance operation, replenish your stock of spare parts by reordering used items.



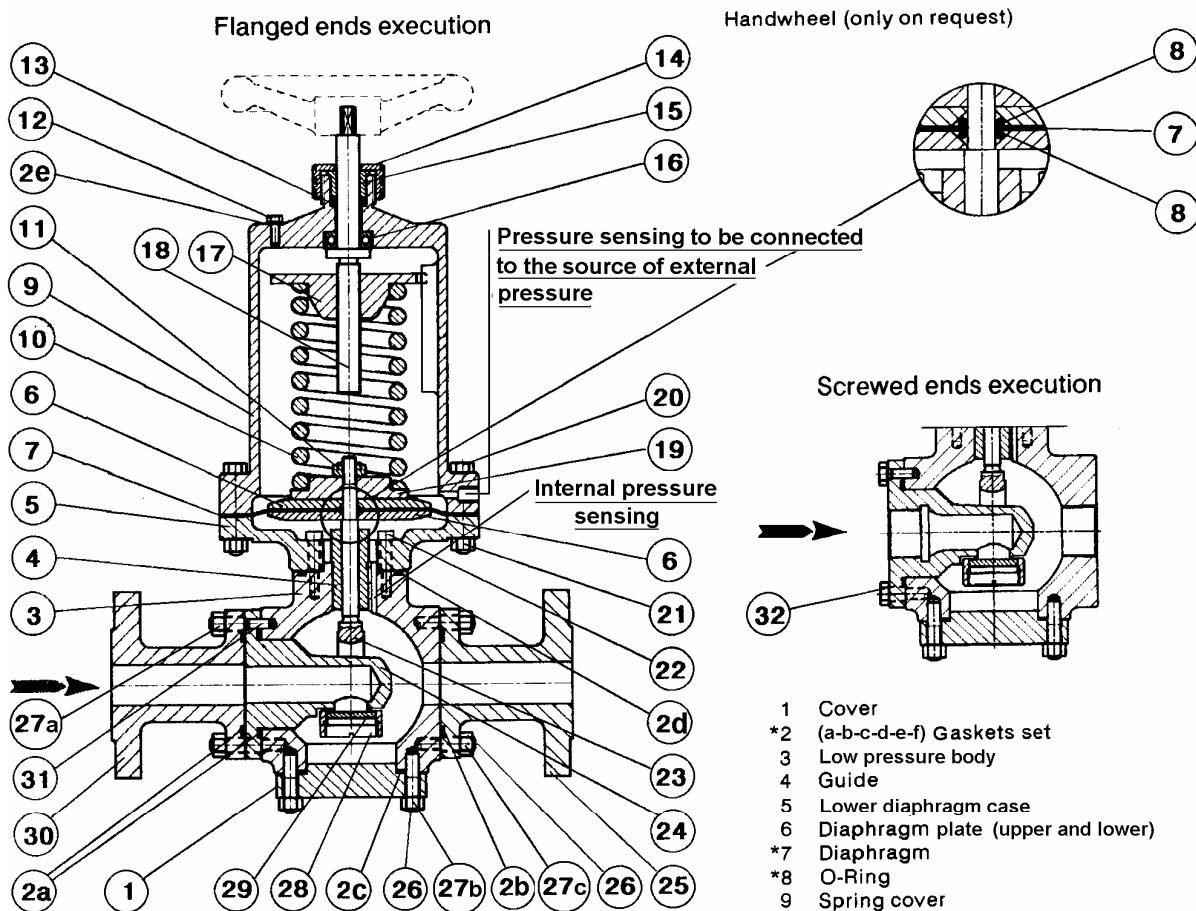


# I N S T R U C T I O N S

## For installing and servicing self-operating pressure regulators UBA and UBAN

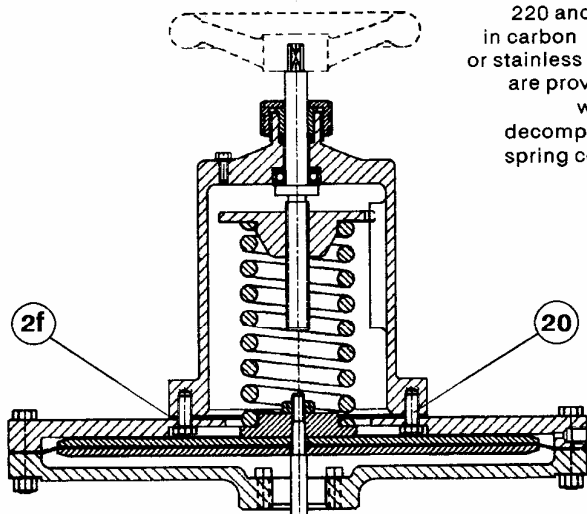
### 9 UBAN/D

#### 9.1 Cross-section drawing UBAN/D1 - UBAN/V/D1 (Fig. 9)



- 1 Cover
- \*2 (a-b-c-d-e-f) Gaskets set
- 3 Low pressure body
- 4 Guide
- 5 Lower diaphragm case
- 6 Diaphragm plate (upper and lower)
- \*7 Diaphragm
- \*8 O-Ring
- 9 Spring cover
- 10 Spring
- 11 Nut
- 12 Screw
- \*13 Gasket
- 14 Lock nut
- 15 Packing gland
- \*16 Bearing
- 17 Spring loader
- 18 Adjusting screw
- 19 Spring guide
- 20 Screws
- 21 Nuts
- 22 Screws
- \*23 Plug
- 24 High pressure body
- 25 Outlet flange
- 26 Studs
- 27 (a-b-c) Nuts
- \*28 Disc holder
- \*29 Disc
- 30 Inlet flange
- 31 Pin
- 32 Screws

**Note:**  
The servomotor with diameter 220 and 360 in carbon steel or stainless steel are provided with a decomposed spring cover.



\*Recommended spare parts

Note-Parts 7 and 8 are supplied in one set only.

CARRARO reserves the right to modify the characteristics of here described products at any time and without notice.



**CARRARO**  
VALVOLE E STRUMENTAZIONE

20090 SEGRATE (MI)- via E.Fermi  
E-MAIL: [info@carrarovalvole.it](mailto:info@carrarovalvole.it)  
TEL.(02) 269912.1 - FAX.(02) 2692.2452

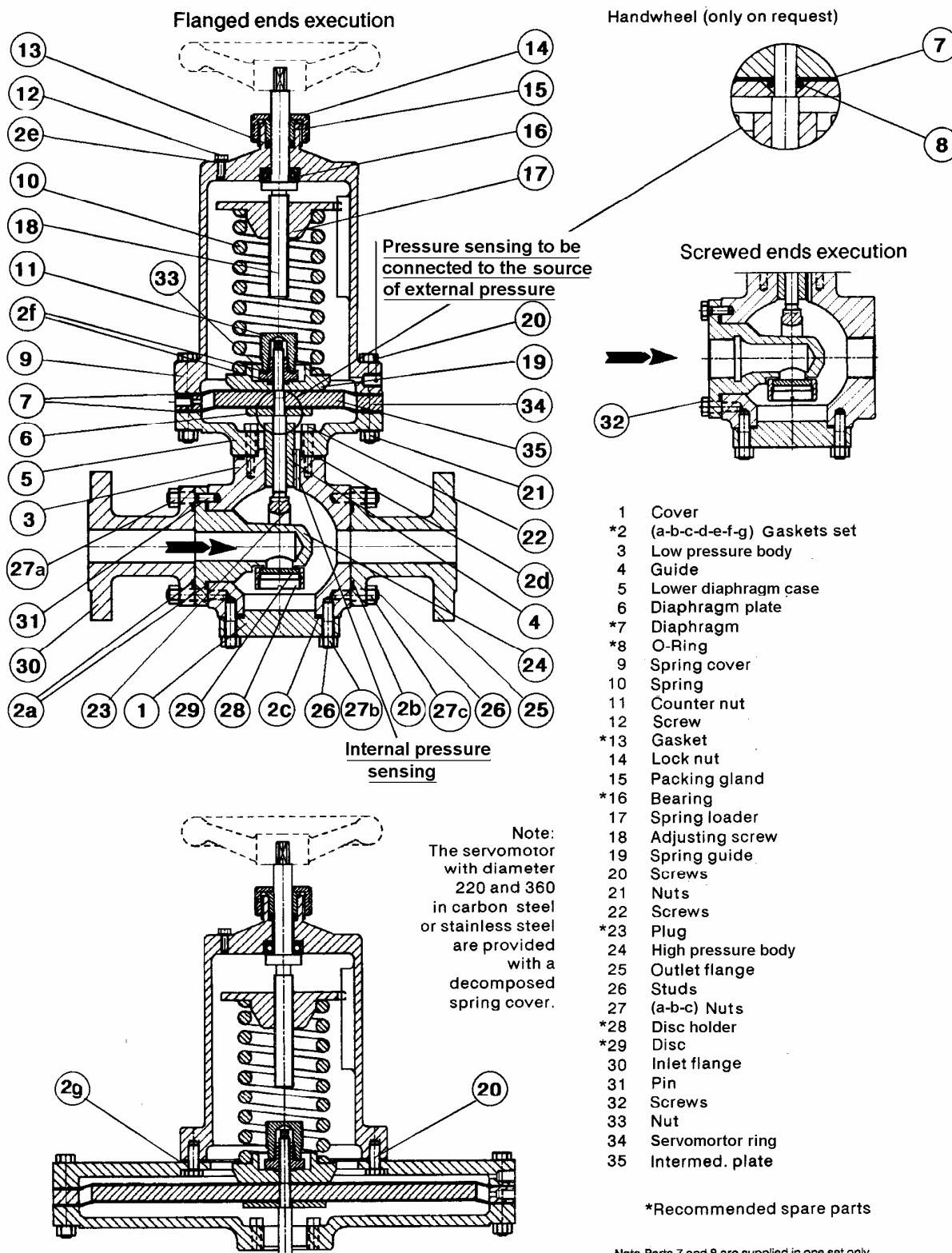
IMI0009E.doc  
Rev.9 31/05/10  
Page 14 of 19



# I N S T R U C T I O N S

## For installing and servicing self-operating pressure regulators UBA and UBAN

### 9.2 Cross-section drawing UBAN/D2 - UBAN/V/D2 (Fig. 10)



CARRARO reserves the right to modify the characteristics of here described products at any time and without notice.



# I N S T R U C T I O N S

## For installing and servicing self-operating pressure regulators UBA and UBAN

The UBAN/D valves comprise two groups of regulators:

### Group 1:

All the group 1 regulators have just one diaphragm; one of the controlled pressures acts under the diaphragm through the internal pressure sensing while the other acts over the diaphragm through a pressure sensing on the spring cover. The plug is kept open by the spring. The following types belong to this group:

**UBAN/D1 - UBAN/V/D1 (see Fig. 9);**

### Group 2:

All the group 2 regulators have two diaphragm separated by a chamber communicating with the outside; the controlled pressures act under the lower diaphragm (through the internal pressure sensing) and over the upper diaphragm (through the pressure sensing on the spring cover).

The plug is kept open by the spring. The following types belong to this group:

**UBAN/D2 - UBAN/V/D2 (see Fig. 10).**

## 9.3 INSTALLATION

All UBAN/D regulators must be installed with the servomotor facing upwards and the diaphragm horizontal.

## 9.4 INSTALLATION DIAGRAMS

In most cases the flow crosses the valve as shown by the arrow in Figs. 9-10. The installation diagrams are therefore as follows:

- Group 1 valves: Fig.11
- Group 2 valves: Fig.12

9.4.1 Install an on/off valve upline, downstream and on the sensing and discharge line, in order to service the valve (if necessary) while the plant is pressurised. Install one filter or pressure gauge downstream from the regulator and another one on the sensing line, as shown in the diagrams, in order to calibrate the differential pressure and keep it constantly under control.

9.4.2 Before mounting the valve on the piping, make sure the insides of the pipes are scrupulously clean, especially the upline section; blow down the piping if possible to eliminate any remaining dirt: small drops of solder may seriously damage the valve.

9.4.3 In group 2 valves, the chamber between the two diaphragms must be connected to piping taking the discharge to a suitable place, at atmospheric pressure. This hole can be closed with a plug or pressure gauge with an electrical contact for the remote signalling that the diaphragm has broken, as long as the downstream plant is protected as shown in the following point.

9.4.4 If there is the slightest possibility of the pressure downstream from the valve exceeding the maximum admissible pressure for the downstream installation, a safety valve must be installed, without an on-off valve in between, in order to discharge the entire flow travelling downstream in the above situation.

9.4.5 Please bear in mind that the regulated pressure sensing is inside the valve, for which reason the pressure drops in the piping connecting the regulator to the point of use of the regulated fluid must be deducted from the regulated pressure value, creating pressure variations at the point of use according to the variation in flow; this must be considered when calculating the size of the connection piping.

9.4.6 When it is essential to avoid pressure variations at the point of use, the regulator is fitted with an external pressure sensing, replacing the internal one and fitted to the lower flange of the servomotor (see Par. 8.2.6 and Fig.6).



**CARRARO**<sup>®</sup>  
VALVOLE E STRUMENTAZIONE

20090 SEGRATE (MI)- via E.Fermi  
E-MAIL: [info@carrarovalvole.it](mailto:info@carrarovalvole.it)  
TEL.(02) 269912.1 - FAX.(02) 2692.2452

IMI0009E.doc  
Rev.9 31/05/10  
Page 16 of 19





# I N S T R U C T I O N S

## For installing and servicing self-operating pressure regulators UBA and UBAN

### 9.5 START-UP AND CALIBRATION

The regulators are factory calibrated at the set pressure indicated in the order. If necessary is possible to modify the set pressure at operating conditions on the plant as follow.

Loosen the lock nut (14) and correct the position of the adjustment screw (18) reading the pressure indicated by the gauge; this must be done when the system is working at normal operating condition. Then, tighten the lock nut (14).

### 9.6 MAINTENANCE

9.6.1 If the regulated fluid is clean and the plant is fitted with a filter, maintenance operations will be infrequent occurrences. The user must check the seats at least once a year depending on the need for the valve to close airtight. When performing this inspection, remove the valve on the piping and dismount all the components as shown below.

Firstly, make sure the recommended spare parts are available (Figs. 9-10, parts list).

#### 9.6.2 Dismounting the components

Dismounting and remounting operations for all types of UBAN/D regulators as long as the diaphragms are considered. These are:

- 1 simple elastomer diaphragm for UBAN/D1 and UBAN/V/D1;
- 2 elastomer diaphragms (one per side) for UBAN/D2 and UBAN/V/D2.

Make sure the spares match the above and take great care when mounting the diaphragm assembly.

#### 9.6.3 Dismounting the servomotor

Loosen the lock nut (14) and release the spring (10) by turning the adjustment screw and count and note down the number of turns in order to restore calibration after reassembly. Remove the spring cover (9) by loosening the nuts (21).

Do not touch the spring cover of the 220 and 360 servomotors. Remove the spring (10).

Then:

- Unscrew the nut (11), remove the spring-guide (19) and the diaphragm (7) with the relative diaphragm plate (6) and O-ring (8) for valves UBAN/D1 and UBAN/V/D1;
- Unscrew the counter nut (11), and remove the O-ring (2f), then unscrew the nut (33) and remove the relative O-ring (2f); remove the spring guide (19), the set of the two diaphragm (7), of the diaphragm plate (6), of the servomotor ring (34) and relative O-ring (8), and of the intermediate plate (35) for the valves UBAN/D2 and UBAN/V/D2.

#### 9.6.4 Dismounting the body

Unscrew the nuts (27b) and remove the cover (1).

Unscrew the nuts (27a) of the inlet flange (flanged valves), or the screws (32) of the valves with threaded ends; remove the high pressure body (24) keeping the plug in a suitable position. Remove the plug.

#### 9.6.5 Parts inspection

All the components are now ready to be inspected. Replace any worn ones. Clean all the parts.

In particular, check the state of the disk (29), both elastic and metal, and the seat of the orifice. If the seat is worn, true it by rubbing it with a metal disk and abrasive paste. If necessary, remount it on the body; if no expert operators are available, send the whole valve to our factory for revision.

Another important component to control is the diaphragm assembly. Check the surfaces and replace any damaged diaphragms. Replace all the gaskets at least once a year after cleaning the surfaces they lie on. Replace the O-rings (8).

#### 9.6.6 Reassembly

Carry out the dismounting operations in reverse order.

Push the stem of the plug (23) into the guide (4) and put the high pressure body into position with the pin (31). For valves with flanged ends, put the flange into position; tighten the nuts or screws uniformly. Mount





# I N S T R U C T I O N S

## For installing and servicing self-operating pressure regulators UBA and UBAN

the diaphragm/s (see 9.6.3.) taking care to properly arrange the Teflon protections. Make sure the seats of the O-rings are perfectly clean before mounting them. Assemble:

- for D1 valves, the group: plug (23), diaphragm plates (6) (with relative gaskets (8)), diaphragm (7), spring guide (19), and nut (11).
- for D2 valves, the group: plug (23), , diaphragm plate (6) (with relative gaskets (8)), lower diaphragm (7), intermediate plate (35) and servomotor ring (34), upper diaphragm (7), spring guide (19) (with relative gaskets (2f), nut (33) and counter-nut (11).

Before remounting the nut and tightening, position the diaphragm/s so that when the diaphragm-plug assembly is fully rotated to the right and left, each hole rotates by the same angle as the matching hole on the lower diaphragm case. This means that the plug is at right-angles to the high pressure body.

Tighten the nut ((11) Fig.9 – (33) Fig. 10) (and the lock nut (11) Fig.10 for D2). Match the holes of the diaphragm/s with the holes in the lower diaphragm case (5) and remount the spring (10), spring-loader (17) and spring cover (9).

Put back the cover (1). Turn the adjustment screw (18) the number of turns noted down during dismounting.

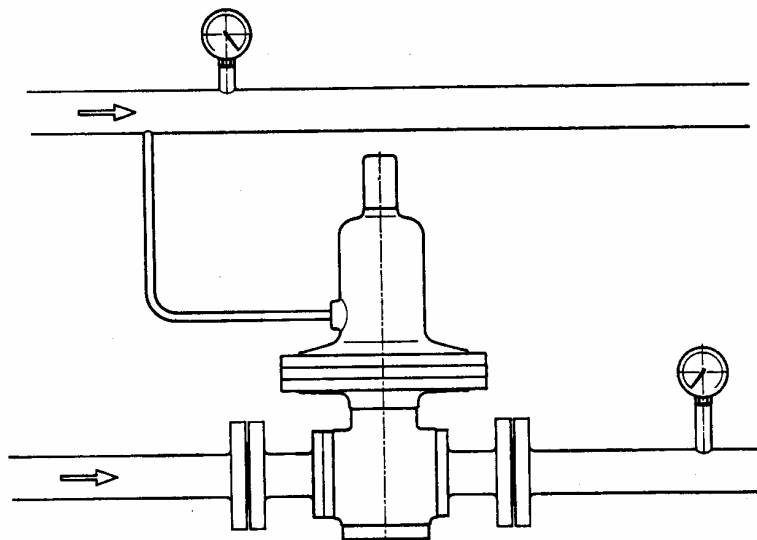
Exact calibration must then be checked when the valve starts working again.

### 9.6.7 Replacing the diaphragm only

If during the working condition the diaphragm breaks or requires replacement without having to make other controls and the valve is easy to access and isolate, you can proceed at the operation at the paragraph 9.6.3, leaving the valve on the piping, preventing the flow of operating fluid to itself and discharging pressure on the line where the valve is mounted. Then remount the servomotor in reverse order respect as described at paragraph 9.6.3.

When starting work again, check calibration and adjust if necessary.

**Fig. 11** Example of installation layout – Group 1 valves: “UBAN/D1 and UBAN/V/D1

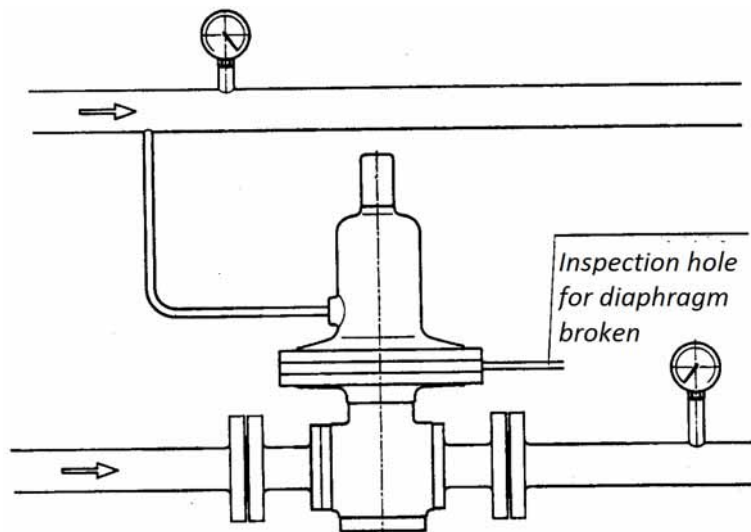




# I N S T R U C T I O N S

## For installing and servicing self-operating pressure regulators UBA and UBAN

Fig. 12 Example of installation layout – Group 2 valves: “UBAN/D2 and UBAN/V/D2

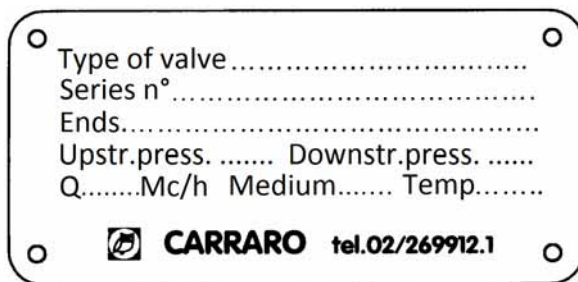


### 10 REPAIRS

10.1 If it is not possible to eliminate the problems, send faulty valves to the supplier/manufacturer, together with a description of the problem.

10.2 In order to receive spare parts or information, always quote the series number shown on the rating plate attached to the valve or punched on the outer surface of the flanges.

10.3 Rating plate (example)



10.4 To ensure the valves treated in this manual work correctly, they should be serviced by Carraro engineers or by Carraro-authorized Service Centres using original spare parts.



**ATTENTION!**

**The maker declines all liability for modifications to the product or operations that are not contemplated in this manual.**