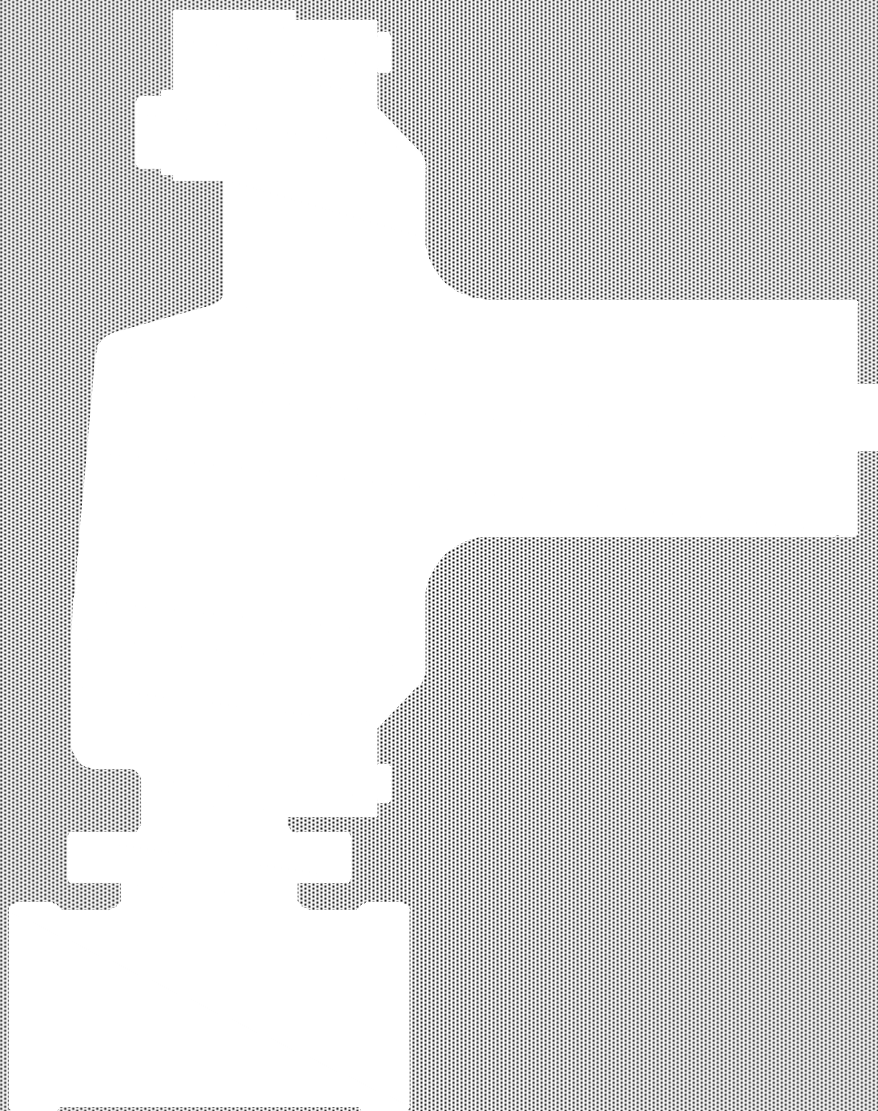




I N S T R U C T I O N S

For installing and servicing self-operating pressure regulators UBB





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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 fitters, 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 membrane servomotors: **UBB**



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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 contain four different messages communicating:

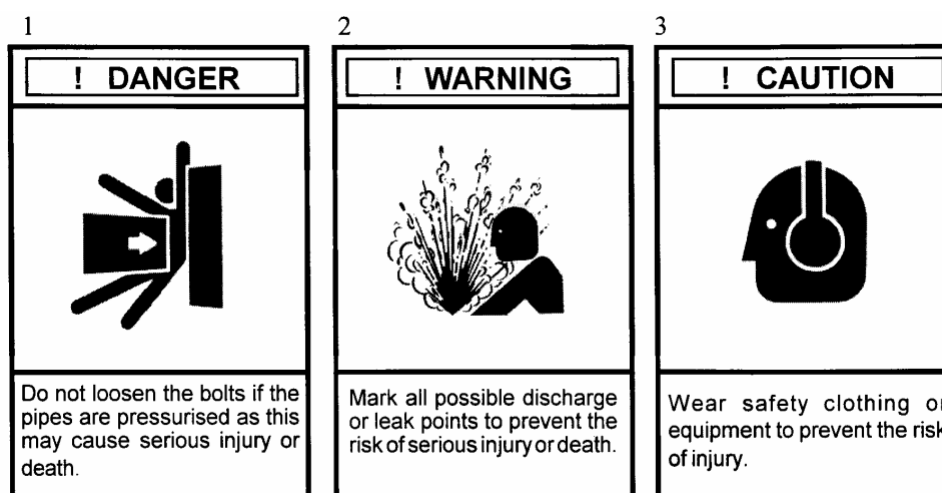
- The level of risk
- The nature of the risk
- The effects of the risk on people or products
- Instructions, if necessary, on how to avoid the risk

The box at the top contains a warning word (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, such as wearing safety clothing.

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 which will certainly cause serious injury or death.
- 2) **WARNING** – Risk or hazardous behaviour which may cause serious injury or death.
- 3) **CAUTION** – Risk or hazardous behaviour which may cause minor injury.





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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.

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.

Given the large number of conditions and circumstances that may arise while working on the products and the consequent risks deriving from the way this is done, CARRARO is not able to prevent all risks of injury to people and damage to property and can only help by asking you to take the utmost care and giving you the following safety suggestions.

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.





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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. 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.
- ° Please consult CARRARO before working on valve parts.




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7. TRANSPORT, STORAGE AND HANDLING

WARNING



Do not lift horizontally or attach to the lifting lever or the spring.

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.



ATTENTION!

Operators moving loads must take all necessary precautions to prevent accidents.

WARNING



Do not allow foreign bodies to entering the valve inlet and outlet.

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.

WARNING



Handle with care.
Do not drop or knock.



ATTENTION!

When handling the valve, make sure the work area is kept clear in order to prevent injury to people and damage to property.



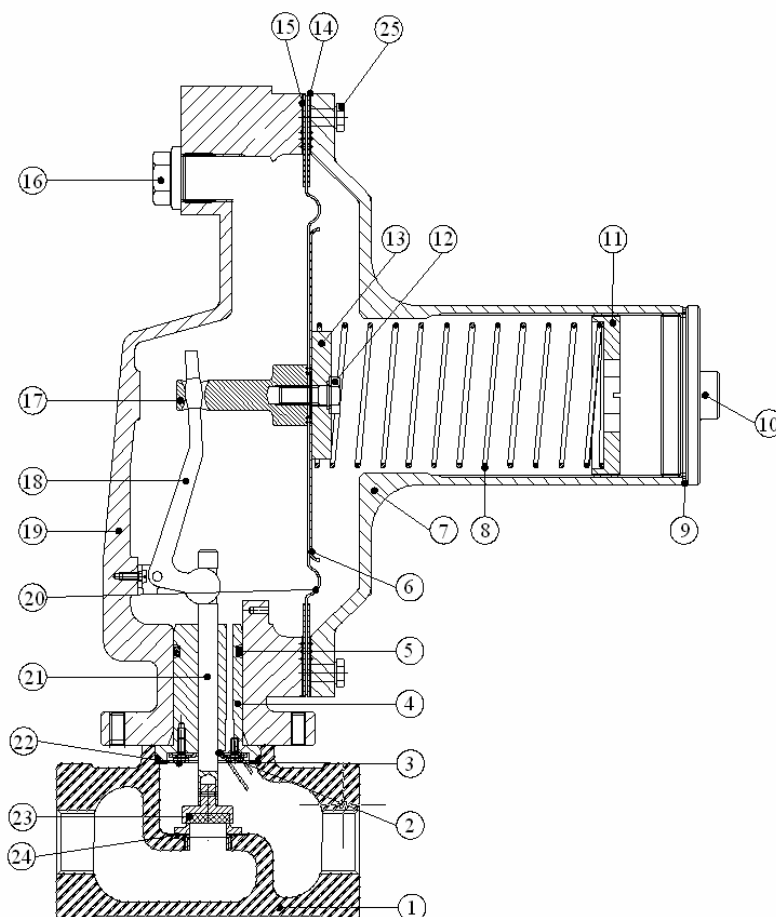
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8) Installation and assembly instructions UBB

8.1 Cross-section drawing

Fig.1



LEGENDA

- | | |
|----------------------|--------------------------------|
| 1 – Body | 13 – Upper plate |
| *2 – Screw | *14 – Gasket |
| 3 – Gasket | 15 – Diaphragm ring |
| 4 – Stem guide | 16 – Nut |
| 5 – O'Ring | 17 – Connection stem-diaphragm |
| 6 – Diaphragm plate | 18 – Stem |
| 7 – Spring cover | 19 – Actuator cover |
| 8 – Spring | *20 – Diaphragm |
| 9 – Gasket | 21 – Stem-piston |
| 10 – Cap | 22 – Pressure sensing |
| 11 – Adjusting screw | *23 – Piston |
| 12 – Screw. | 24 – Seat |
| | 25 – Nut |



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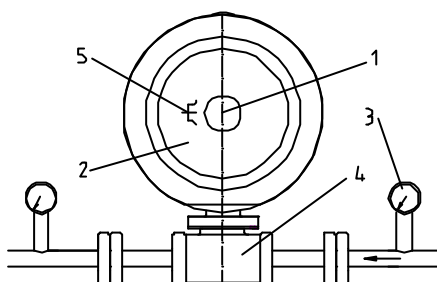
* Recommended spare parts

8.2 INSTALLATION

8.2.1 UBB valves can be installed in any position , as showed in Figs.6 - 7.

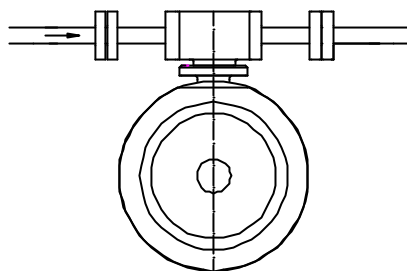
8.2.2 Before mounting the valve on the piping , make sure that the internals of the pipes are carefully cleaned, especially the upline; if possible, blow down the piping to eliminate any remaining dirt: small drops of solder may seriously damage the valve.

Fig.6



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

Fig.7



8.2.3 **ATEX note:** The valve is according to ATEX Directive - Gr II Cat.3 when the threaded 1/4"NPT (5) (Fig.6) drain hole is not connected to any pipe conveying the fluid to environment potentially explosive. The valve is according to ATEX Directive - Gr II Cat.2 when the threaded 1/4"NPT (5) (Fig.6) drain hole is connected to the pipe that conveys the fluid to environment not potentially explosive, in case of diaphragm breakage.

This hole can be closed with a plug or a pressure gauge signalling the breakage of a membrane, as long as the downline installation is protected by a safety valve (Fig.8).

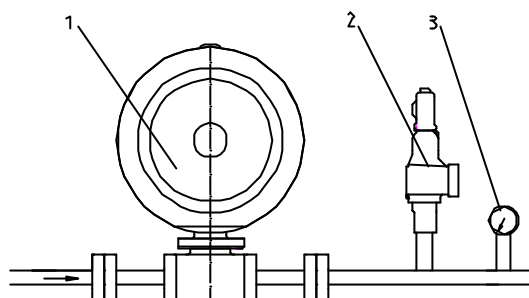
8.2.4 If there is the slightest possibility of the pressure downline from the reduction valve exceeding the maximum admissible pressure for the downline installation, a safety valve must be installed, without an on-off valve in between, in order to discharge the entire flow travelling downline in the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



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Fig.8



Pressure reducer assembly : 1) Reduction valve – 2) safety valve –3) pressure gauge

8.2.5 Please bear in mind that the regulated pressure impulse intake is located inside the valve; for this reason, the pressure drops in the conveying pipe between the reducer and the utilisation points must be deducted from the regulated pressure value, and they create pressure variations at the point of utilisation according to variations of flow ; this must be considered when calculating the size of the connection pipe.

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

8.3 START-UP AND CALIBRATION.

8.3.1

Reducing function

In order to set the pressure of the reducing valve it is necessary to establish the operating flow required within the plant and then turn the adjusting screw (11) (see fig.1) in clockwise or anticlockwise direction respectively if the regulated pressure is lower or higher than the set pressure requested (the value of the pressure will be read on a pressure gauge placed on the downstream pipeline).

After every regulation it is necessary to wait a few minutes before reading the pressure gauge in order to reach a stable flow on the line.

Relief or backpressure function

As described for the pressure reducing operation, to set the valve it is necessary to establish the operating flow within the plant and then turn the adjusting screw (11) (see fig.1) in clockwise or anticlockwise direction respectively if the regulated pressure is lower or higher than the set pressure requested (the value of the pressure will be read on a pressure gauge placed on the upstream pipeline).

After every regulation it is necessary to wait few minutes before reading the pressure gauge in order to reach a stable flow on the line.

8.3.2 If on the plant the situation is different from the above, adapt the above operations to the existing situation.



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8.4 MAINTENANCE.

8.4.1 If the regulated fluid is clean and the plant is fitted with a filter, maintenance operations would not occur frequently.

The user must check the the seal surfaces establish a suitable interval between one inspection of the seats and the next, also depending on the effective need for the valve to close airtight in some cases. 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.1).

8.4.2 Dismounting the components (see Figs.1).

8.4.2.1 Dismounting the servomotor.

Remove the cap (10), take notes about the position of the adjusting screw (11) from the top of the spring cover (7) and then release the spring (8) by unscrewing the adjusting screw (11) by unscrewing the lock nut (25).

Remove the diaphragm and the plates (11 - 13).

8.4.2.2 Dismounting the body.

Unscrew the nuts (24) and remove the body (25).

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 of the plug (2) , 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 the seat on the body to turn it.

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

Another important component to check is the diaphragm; replace it if the surface is in poor condition.

At least one time year from year, replace all the gaskets after cleaning the surfaces they lie on.

8.4.2.4 Reassembly.

Carry out the dismounting operations in reverse order.

Fasten again the valve body (1) up on the actuator's cover (19) with screw (2).

Riassembly the diaphragm (20) along with related gasket (14) and seal ring (15) paing attention that its holes match thoeae of servomotor cover (7); then insert the diaphragm plate (6) so that the bevels are turned to the diaphragm and insert the upper plate (13) and the relative screw (12).

Remount the spring (8), the spring cover (7). Retighten the adjusting screw (11) till the sign you can see the original position. Remount the cap (10). The right set must be checked as soon as the valve starts working again.

8.4.3 Replacing the membrane.

The diaphragm may be broken or require replacement without having to make other controls. If the valve is easy to access and isolate, the diaphragm can be replaced while leaving the valve on the piping. In this case, make sure that the valve is depressurised and that it can not be pressurised in any way during the operation. Dismount the servomotor by carrying out all the operations indicated in point 8.4.2.2

Replace the diaphragm and reassembly the servomotor as shown at point 8.4.2.1. Check calibration once more when the valve starts working again.



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ATTENTION!

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

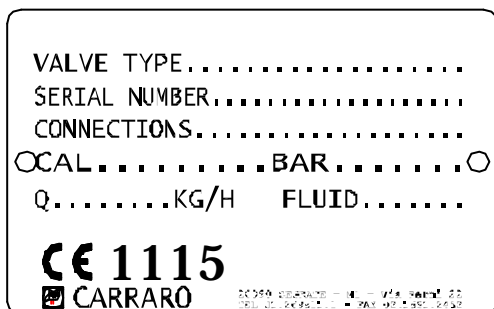
NOTE: After each maintenance operation, restore your stock of spare parts by reordering used items.

9. REPAIRS

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

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

9.3 Rating plate (example)



9.4 To guarantee the perfect functioning of the valves mentioned in this manual, it is necessary that the maintenance would be carried out by authorized Carraro staff or by Authorized Centers , using only original spare parts.



ATTENTION!

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