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Valves: Solenoid & Pneumatic Valves, Control Valves & Positioners, Actuated Ball, Globe or Diaphragm Valves & Isolation Valves

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INSTRUCTIONS: OPERATION AND INSTALLATION
PRESSURE REDUCING VALVE MODEL **VD**

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1. LEYENDA ~~CD~~ MAPA DE CARACTERÍSTICAS

A) CE marked is required in accordance with PED2014/68/UE

B) CE marked is NOT required in accordance with PED2014/68/UE

| | |
|-----------|--|
| SERIAL N. | VALVE IDENTIFICATION NUMBER. ALFONTA WILL NEEDS THIS NUMBER FOR SPARE PARTS OR COMMENTS RESPECT OF THIS VALVE. |
| MOD. | VALVE MODEL |
| DN | VALVE NOMINAL DIAMETER |
| PN | VALVE NOMINAL PRESSURE |
| MEDIUM | FLUID |
| P.IN | INLET PRESSURE |
| P.OUT | OUTLET PRESSURE |
| BODY | BODY MATERIAL |
| KVS. | KV VALVE |

ATEX marked required according to DIRECTIVE 94/9/EC

| | |
|--|-------------------------|
| VALFONTA E 08915 € Badalona (ESPA•A) | |
| TYPE: PRESSURE REDUCING VALVES SELF - ACTUATED | |
| MANUFACTURING YEAR: | MANUFACTURING NUMBER: |
| II 2 G D | c IIC Tx c IIIC Tx,C |
| TECHNICAL FILE IN CUSTODY : LOM CERTIFICATION NUMBER: LOM 14.034 U | |

| Reference | Denomination |
|-----------|---|
| II 2 | ATEX category, zones 1 & 21 |
| G | Class I application (flammable liquids and gases) |
| D | Class II application (combustible dust) |
| c IIC | Safety construction protection mode for substances IIC |
| C IIIC | Safety construction protection mode for substances IIIC |
| Tx / Tx€C | Termal class according fluid temp. used |
| LOM | Number of certification from ExNB (LOM) |

SELF-OPERATED PRESSURE REGULATORS
PRESSURE REDUCING VALVE MODEL **VD**

INSTRUCTIONS: OPERATION AND INSTALLATION

2. MAIN FEATURES

Self-operated pressure reducing valve built with piston and specially designed to maintain constant outlet pressure. This is achieved by way of a regulation piston which levels itself out until a precise balance of pressure is obtained.

Piston guided through 3 points.

Easy and very low maintenance.

Extremely hard baked enamel

Pressure range from 1,5 to 16 barg
(Standard from 1,5 • 8 barg)

Maximum admitted pressure 40 barg

Maximum admitted temperature 80 °C (NBR collars)

Fluids

Liquids, compressed air, non-hazardous gases.

Connections

Flanged DIN PN16- PN40

Flanged ANSI Class 150 and 300 Lb.

Threaded, BSP and NPT female, up to 2,

Body material: Nodular Iron GGG40.3, Bronze, Carbon steel GSC25N and Stainless steel AISI 316 (CF8M).

Trim material: Stainless steel Aisi 316
(optionally Bronze).

Applications

Chemical laboratory installations, waters distribution systems, installation of waste water, industrial, compressed air, sprinkler systems, fuel-oil,

Characteristics

It is easy to adjust; it does not need any maintenance. Its internal design is conceived to provide an effective circulation of the fluid.

3. OPERATING

The „VALFONTA VD, pressure reduction valve work by means of the principal of direct action. The pressure of upward flowing water arrives at the valve and pushes the bush (3) upwards. Once closed, the valve must turn the regulation screw (13) in a clockwise direction. This causes the displacement of the spring (10) which itself acts upon the bush (3) and the gasket (2-3-4), opening up the valve until the desired downward pressure is reached. Any variation in pressure of the upward flowing water will be absorbed by the valve by the way of the compensation of the two sections of the bush, joined together by the compensation hole.

To increase outlet pressure, the regulating screw (13) should be turned clockwise.

Special ATEX instructions

- No limitation of use due to the ATEX substance.
- Limitations due to thermal class:

Class I (flammable liquids and gases)

| TEMPERATURE CLASS | MAX. SURFACE TEMPERATURE | APPROPRIATE FOR SUBSTANCES WITH IGNITION TEMPERATURE |
|-------------------|--------------------------|--|
| T1 | 450°C | Ti >450°C |
| T2 | 300°C | Ti >300°C |
| T3 | 200°C | Ti >200°C |
| T4 | 135°C | Ti >135°C |
| T5 | 100°C | Ti >100°C |
| T6 | 85°C | Ti >85°C |

- Class II (combustible dust)

$$T(x) \dots 2/3 MIT_{cloud}$$

$$T(x) \dots 5 \text{ mm } MIT_{layer} \bullet 75 \text{ K}$$

4.SCHEME

DN100

| | Descripci€n | Material | | Descripci€n | Material |
|----|-------------------------|--|----|-------------------------|---------------------------------------|
| 1 | Body | Stainless steel CF8M6 Bronze RG10 Carbon steel WCB Nodular Iron GGG40.3 | 18 | O-ring | NBR |
| 2 | Seat | 1.4404 SS316L | 19 | Lower bushing | 1.4404 SS316L |
| 3 | Stem | 1.4404 SS316L | 20 | O-ring | NBR |
| 4 | Washer | Stainless steel A2 | 21 | Flat Gasket | PTFE |
| 5 | Bolts | Stainless steel A2 | 22 | O-ring | NBR |
| 6 | Upper bushing | 1.4404 SS316L or 1.4308 SS304L | 26 | Balanced gasket | NBR Graphited PTFE + St. steel |
| 7 | Gasket | NBR | 27 | Lower bushing guide | 1.4404 SS316L |
| 8 | O-ring | NBR | 28 | Seal | NBR Graphited PTFE |
| 9 | Spring cover | Stainless steel CF8M6 | 29 | Screw | Stainless steel A2 |
| 10 | Spring | Steel spring | 30 | Guide seal | 1.4404 SS316L |
| 11 | Regulation nut | Steel 1.1191 | 31 | Support seal | 1.4404 SS316L |
| 12 | Ball bearing | 1.3505 (Bearing steel 100 Cr 6) | | | |
| 13 | Regulation stem | 1.4404 SS316L | 41 | Stem | Stainless steel Aisi 316L (DN100) |
| 14 | Safety reg. stem washer | Stainless steel A2 | 42 | O-ring | NBR (DN100) |
| 15 | Block Pin | Stainless steel A2 | 43 | Washer spring | Stainless steel Aisi 316L (DN100) |
| 16 | Bushing stem | 1.4404 SS316L | 44 | Screw | Stainless steel A2 (DN100) |
| 17 | Nut(s) | Stainless steel A2 | | | |
| | | | | Recommended spare parts | |

RECOMMENDED SPARE PARTS

| Reference | Description | Item |
|-----------|----------------|-------------------------|
| VD.SP1 | Gaskets + seal | 3, 6a, 15a, 17, 19 y 20 |
| VD.SP2 | Spring | 10 |
| | | |

This device must be installed by specialized personnel with knowledge and experience.

They must know about the current regulations in order to judge the risks that may involve this work.

Important: Be sure that the valve never exceeds the service temperature for which has been designed.

5 . A S E M B L Y

The pipe must be cleaned carefully before installing the valve, to prevent that any small element or impurity may affect the reducing valve work.

It is also very important to install a strainer in front of the valve in order to protect it.

Reducing valve must be installed in a horizontal pipe and the direction of the flow should be in the same direction that shows the valve body.

Assembly position

Standard position

Permitted position

This situation is not allowed because the valve could not work properly.

The supports holding the valve will be done in the pipe and as close as possible to the flanges but never fixed in the valve or the actuator, to eliminate unnecessary tensions.

Installation in by-pass

If you install a valve in bypass, which is highly recommended, it must spliced back to the main pipe after the control line, and with their check valves, according to the scheme:

(see drawing page 12)

Start -up

Open the check valves slowly (to prevent water hammer).

To adjust the set pressure (downstream pressure), turn the regulating screw.

Compressing the spring (clockwise) increases the outlet pressure.

Decompressing the spring (anticlockwise) decreases the outlet pressure.

Technical Data

| | | | |
|---|-------------------------------------|--------------|--------|
| Nominal pressure | PN16-PN25-PN40 o CLASE 150CLASE 300 | | |
| Nominal size | DN15 to DN50 | DN65 to DN80 | DN100 |
| Max. permissible differential pressure †p | 25 bar | 20 bar | 16 bar |
| Max. permissible temperature: body | See technical sheetHT-101 | | |
| Max. permissible temperature: body | NBR 80°C EPDM 125°C | | |

ATEX requirements

- **IMPORTANT!** The respective national regulations as well as general engineering rules governing the installation and operation of equipment in explosive atmospheres must be observed.
- The valves are ATEX category "II 2 GD" according to 100a ATEX Directive (94/9/EC).
- **IMPORTANT!** The device can only be used in potentially explosive locations Class I (gases, vapors or liquids) Zones 1 and 2 and Class II (combustible dusts) areas 21 and 22, according to the specifications in the Directive 1999/92/EC , as well as the Electro technical Regulations.

Electrostatic discharges

Under certain conditions, electrostatic discharges that are capable of ignite explosive atmospheres, can be produced. The most important measure of protection is equipotential bonding of all conductive parts and earthing.

In order to avoid electrostatics discharges, the installation of devices and control elements must be earthing.

- **IMPORTANT!** Connecting the valves to process: it should be ensured electrical continuity of 10^6.
- **IMPORTANT!** National regulations on maintenance, service, inspection and repair of apparatus and equipment for explosive atmospheres, as well as general engineering rules must be observed.

COMMISSIONING

IMPORTANT! User is the only responsible for a safe use of the devices.

In use, parts that affect the explosion protection of the valves must be checked and act accordingly, f.e.:

- Fixing Elements -screws, nuts, shafts, etc.- see technical documentation of the product supplied. It must be ensure its tightening, proper operation and / or change when necessary. After 2.500h of working or 6 natural months (whichever comes first).
- The seals will be replaced by original spare parts: every 25,000 hours or when periodic inspections result said (the lower range).
- Any other action arising from inspection and maintenance plan, set by the user
- **IMPORTANT!** If repainting the valves and / or spare parts, ensure there is no paint on moving parts, mounting flange and closure sealing.

INSPECTIONS

- **IMPORTANT!** National Regulations must be observed. It is user's responsibility to establish an inspection and maintenance plan for these devices in order to ensure their proper use.
- Inspections must be performed by "qualified staff,, because of the kind of equipment and / or installation.
- Purposes can be used to guide the requirements of the UNE-EN 60079-17, in order to establish the inspection plan.
- **IMPORTANT!** When inspections are "Detailed" or its degree is ...Close,, the devices will be completely shut out.

MAINTENANCE

Spare parts are subject to normal wear. They must be inspected and replaced when necessary.

The frequency of the inspections and maintenance depends on the severity of the service conditions. This section provides instructions about replacement, packing, stem, plug and seat.

All maintenance operations can be performed with the valve body installed.

Before any maintenance, ensure the valve is depressurised and clear of media, and isolate it both upstream and downstream. Be sure the temperature isn't dangerous.

IMPORTANT! Use only genuine parts or recommended by VALFONTA, SL

6. POSSIBLE TROUBLESHOOTING

| Trouble | Possible reasons | Recommended response |
|---|---|--|
| Pressure exceeds the adjusted set point | Seat and plug worn down | Disassemble the regulator and replace damaged parts |
| Pressure drops below the adjusted set point | Valve installed against the flow; see arrow on body | Check direction of flow. Install valve correctly |
| | Valve or KVS coefficient too small | Check valve sizing. Install larger valve, if necessary |
| | Foreign particles blocking the plug | Disassemble the regulator and replace damaged parts |
| Control disorders | Particles between seat and plug | Remove foreign particles. Replace damaged parts |
| Upstream pressure fluctuates | Valve too large | Check valve sizing. Select smaller KVS coefficient, if necessary |
| Loud noises | High flow velocity, cavitation | Check sizing. Install flow divider with gases |

7. INSTALLATION DRAWING

Installation is recommended according to the following drawing:

- 1, 1a y 1b ∅ Isolation globe valves
- 2 ∅ Filter
- 3 ∅ Inlet pressure
- 4 ∅ Pressure reducing valve VD
- 5 ∅ Safety valve
- 6 ∅ Outlet pressure

Dimensions, weight and Kv value

| DN | 15 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 |
|----------------------------|-----|-----|--------------|------|--------------|---------------|--------------|-----------------|-----------------|
| Kv (m ³ /h) | 3.5 | 5 | 9 | 13.5 | 22 | 32 | 57 | 82 | 115 |
| Cv (gpm) | 4 | 5.8 | 10.4 | 15.6 | 25 | 37 | 66 | 95 | 134 |
| A DIN (mm) | 130 | 150 | 160 | 180 | 200 | 230 | 290 | 310 | 350 |
| A ANSI150 (mm) (inches) | € | € | 184 7,25, | - | 222 8,75, | 254 10, | 276 10,9, | 298.5 11,75, | 352.5 13,88, |
| A ANSI300 (mm) (inches) | € | € | 197 7,76, | - | 235 9,25, | 267 10,51, | 292 11,5, | 317.5 12,50, | 368 14,49, |
| L (mm) | 240 | 240 | 250 | 250 | 300 | 300 | 415 | 430 | 490 |
| Weight (kg.) | 10 | 10 | 12 | 13 | 16 | 18 | 30 | 40 | 50 |

€ Available upon request

8. DISMANTLING AND ASSEMBLING

- a. Unscrew completely the adjusting screw (13) to loosen the spring.
- b. Ensure that there is no pressure in the pipe line and the temperature of valve and pipe is ambient.
- c. Dismount the valve from main line.
- d. Unscrew bolts (5).
- e. Remove spring cover carefully (9) and retire the spring (10).
- f. With a tool, fix the seal screw (29), and unscrew nuts (17).
- g. Remove the upper bushing (6) and replace the gaskets if necessary.
- h. Remove the lower bushing guide (27) and replace the gaskets if necessary.
- i. With a special tool (request a Valfonta for a drawing), unscrew the seat (2) and rest of the parts.
Replace gaskets if necessary.
- j. In a workbench replace seat (28) and compensating gasket (26) if necessary.
- k. Check the seal to assure is not damaged.
- l. Clean and reassembly

9. RECEIPT ON SITE

ATTENTION! Transport and storage of these devices should be in their original packaging.

RECEIPT ONSITE

When receiving the equipment on site, it should be unpacked to check that they agree with the request and delivery notes. At least, verification shall be performed:

- Visual,
- Mechanical

After these checks, if it will not be installed immediately, it will keep in dry and protected atmosphere.

Visual Inspection

Check that during transport, unloading and installation, the devices have not been damaged.

Mechanical Verification

Check all moving parts of the apparatus, as well as screws and other elements fulfill their mission.

IMPORTANT! If is observed abnormality during these guidelines reception, contact urgently VALFONTA to clarify responsibilities and put the devices in correct status.

The contents of that document are subject to change without notice.