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Level: Level Transmitters & Switches

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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 **PRV45**

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1. IDENTIFICATION PLATE LEGEND

CE marked is NOT required in accordance with PED 2014/68/UE

SERIAL N.	VALVE IDENTIFICATION NUMBER. VALFONTA 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 (barg)
P.OUT	OUTLET PRESSURE (barg)
BODY	BODY MATERIAL

ATEX marked required according to DIRECTIVE 94/9/EC

VALFONTA E 08915 € Badalona (ESPA•A)	
TYPE:	PRESSURE REDUCING VALVES SELF - ACTUATED
MANUFACTURING YEAR: 2014	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	Thermal class according fluid temp. used
LOM	Number of certification from ExNB (LOM)

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)

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

$$T(x) \cdot 5 mm MIT_{layer}, 75 K$$

SELF-OPERATED PRESSURE REGULATORS PRESSURE REDUCING VALVE MODEL PRV45

INSTRUCTIONS: OPERATION AND INSTALLATION

2. MAIN FEATURES

Self-actuating pressure reducing valve balancing by diaphragm used to provide a constant downstream still there being oscillations in inlet pressure.

Easy to adjust and doesn't need any maintenance.

Maximum inlet pressure 16 bar.

Pressure range 0,01 a 8 barg.

Temperature range -20 to 80 °C (liquids and gases)
Temperature range up to 180 °C (for steam)

Fluids

Specially designed for gases at low outlet pressure.

Group 1 and 2 liquids and gases.

Steam, compressed air, nitrogen, fuel-oil, water, neutral gases, „

Body material ⓈStainless steel Aisi 316L

ⓈBronze RG10 (*)

Trim material ⓈStainless steel Aisi 316L

Cover material ⓈStainless steel Aisi 316L

Connections ⓈThreaded BSP/ NPT

ⓈFlanges DIN or ANSI

ⓈClamp(*)

(*) consult

More common applications

Chemical laboratory installations, sanitary plants, compressed air, sprinkler systems, „

Characteristics

It is easy to adjust; it does not need any maintenance.

It is possible to install it in any position; its internal design is conceived to provide an effective circulation of the fluid.

Special Kv available.

3. OPERATING

PRV concept is direct action. Inlet pressure comes into the valve and closes it because of the sections difference.

When we compress the spring (28) through the regulating screw (30), the stem-seal (11, 17 and 3) opens the valve and allows the regulation.

When any downstream valve is closed and flow=0, PRV will absorb the oscillations and keep the outlet pressure according to the regulation.

The valve closes when the downstream pressure exceeds the regulating set pressure.

It is recommended to leave a space (between 0,5 and 1 meter) until the check valve, for a better compensation.

To increase outlet pressure, the regulating screw (9) should be turned clockwise.

4. SCHEME



	Descrizione	Material		Descrizione	Material
1	Body	Stainless steel 1.4404 (SS 316L)	21	Lower Cover	1.4404 SS 316L or 1.4308 SS304L
2	Seal screw	1.4404 SS 316L	22	Gasket	NBR EPDM / Viton Graphited PTFE
3	Seal	NBR EPDM / Viton Graphited PTFE	23	Nut	Stainless steel A2
5	Seat	1.4404 SS 316L or 1.4308 SS304L	24	M8 Screw	Stainless steel A2
6	Gasket	PTFE	25	Nut KM6	Steel
7	Valve cover	Steel 1.1141	26	-	-
8	Gasket	PTFE	27	Support spring	1.0035 sheet steel galvanized
9	Upper Actuator	1.0035 sheet steel epoxy painted	28	Regulation spring	Spring steel 52SiCrNi5
10	Lower Actuator	1.0035 sheet steel epoxy painted	29	Spring cover	Steel 1.1191 Epoxy Painted
11	Stem	Stainless steel Aisi 316L	30	Regulation screw	Steel 8.8 Galvanized
12	Bushig Guide	1.4404 SS 316L or 1.4308 SS304L	31	Regulation nut	Steel 8.8 Galvanized
13	Guide Stem	1.4404 SS 316L or 1.4308 SS304L	32	Spring guide	Steel 1.1191
14	Allen screw	Stainless steel A2	33	Screw	Stainless steel A2
15	Gasket	NBR EPDM / Viton Graphited PTFE	34	Nut	Stainless steel A2
17	Stem	1.4404 SS 316L or 1.4308 SS304L	35	Lower support dia.	Stainless steel AISI 303
18	Guide seal	1.4404 SS 316L or 1.4308 SS304L	36	Diaphragm	NBR /EPDM / EPDM+PTFE
19	Seal spring	Stainlesssteel 302			
				Recommended spare parts	

5. RECOMMENDED SPARE PARTS

Reference	Description	Item
PRV45.SP1	Seal Kit and balancing system	2+3+ 11+12+15+ 17
PRV45.SP2	Gasket	6 + 22
PRV45.SP3	Springs	10 + 28
PRV45.SP4	Diaphragm EPDM + O-rings	26 + 36
PRV45.SP4	Diaphragm EPDM + Diaphragm PTFE + O-rings	26 + 36 + 36b

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.

6. ASSEMBLY

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

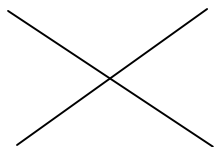
It is also very important to install a strainer in front of the valve in order to protect it.

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 for liquids, compressed air and neutral gases.

Position permited

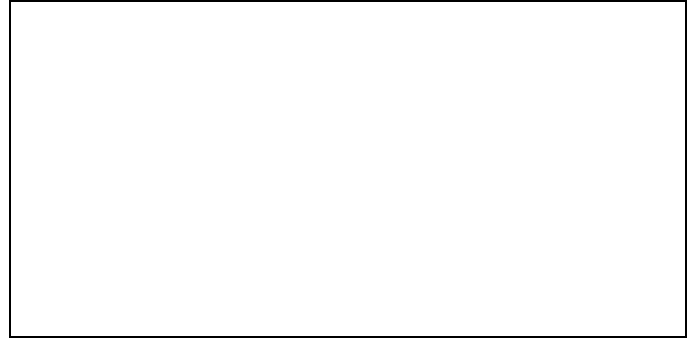


This situation is not allowed because the valve will not work properly.

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

Installation in bypass

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:



- 1 @Isolation valves
- 2 @Filter
- 3 @Inlet pressure Manometer
- 4 @Outlet pressure Manometer
- 5 @Pressure reducing valve PRV45
- 6 @Safety valve

Start -up

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

To adjust the set pressure (downstream pressure), turn the regulating screw (item 30).

Compressing the spring (clockwise) increases the outlet pressure

Decompressing the spring (anti clockwise) decreases the outlet pressure

Control line

The control line must be connected to the main pipeline in downstream pressure, at least 1 meter from the valve, through a tube (10 x 1 mm). However, if after the valve, there is a distributor, the connection of the control line must be connected to the distributor , although there are several meters between them.

If the reducing valve oscillates, it is recommended to install a needle valve in the control line.

Pressure reducing valves could be supplied with the internal control line, when necessary.

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 $<10^6 \Omega$.
- **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 *f*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.

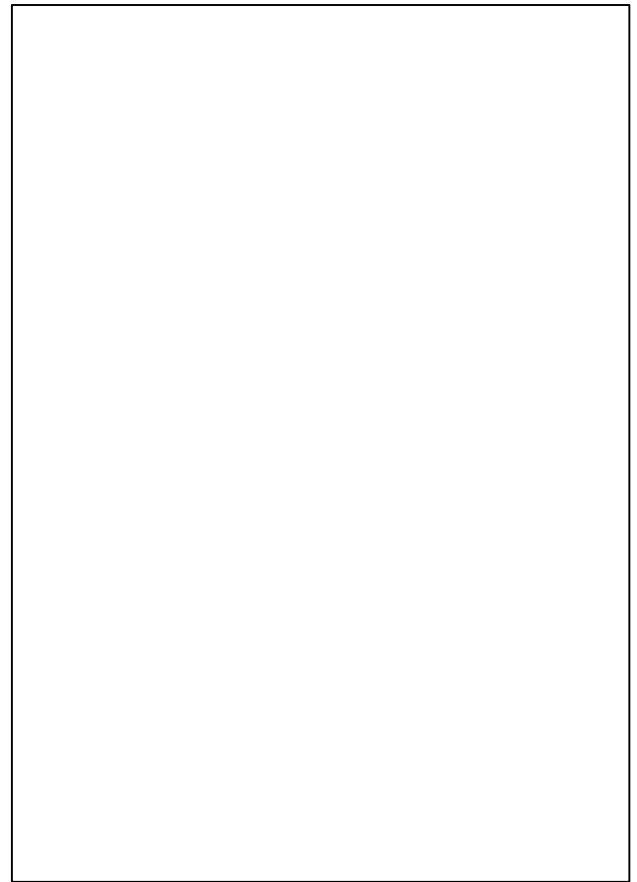
Before any maintenance, ensure the valve is depressurised and clear of media, and isolate it both upstream and downstream. Be sure the temperature isn't dangerous.

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

7. DIMENSIONS

Pressure Range and actuator size

D (mm)	Range	unit
350	consult	mbar
295	10 , 200	mbar
230	100 , 1000	mbar
230	0,5 , 2	bar
175	1 , 8	bar



DN	f _n	... _n	1 _n	15	20	25	15	20	25
Connection	Threaded			Flanged EN PN16			Flanged ANSI CL150		
Kv value	2	2.5	3.5	2	2.5	3.5	2	2.5	3.5
A or AA	108	108	108	150	150	160	184	184	184
H1	258								
H2	320								
D1	-	-	-	95	105	115	89	98	108
D2	-	-	-	65	75	85	60.5	70	79.5
D3	-	-	-	45	58	68	35	43	51
B	-	-	-	16	16	16	12	12	12
C	-	-	-	2	2	2	2	2	2
D	175 , 195 , 230 , 295 , 350 (Depends outlet pressure)								
N, holes	-	-	-	4	4	4	4	4	4
† hole	-	-	-	14	14	14	16	16	16
Weight (Kg)	2.5	2.5	2.5	5	5	5	5	5	5

8. 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.