

INSTALLATION AND MAINTENANCE INSTRUCTIONS PRV - PRESSURE REDUCING VALVES PRV47

GENERAL

- These instructions must be carefully read before any work involving products supplied by VALSTEAM ADCA ENGINEERING S.A. is undertaken.
- The installation procedure is a critical stage in a life of a valve and care should be taken to avoid damage to the valve or equipment.
- Reducing valves are designed to give accurate control of down-stream pressures. They give their maximum performance only when the equipment associated with them is correctly sized and installed in accordance with our recommendations.

Warning!

- If malfunction of any other equipment or system operation failure may result in a dangerous overpressure, over temperature or even vacuum condition, a safety device must be included in the system to prevent such situations.
- At start up, the presence of small particles in the fluid (dirt, scale, weld splatters, etc) may cause an imperfect closure of the seat. If this occurs, proceed to an accurate cleaning.
- Do not touch the equipment without appropriate protection during working operation because it may conduct heat if the used fluid is at high temperature.
- Before starting maintenance be sure that the equipment is not pressurized or hot.
- The equipments must be used within the working temperature and pressure limits laid down for them, otherwise they may fail (refer to nameplate and/or IS- Information Sheet).
- Do not remove the nameplate attached to the equipment. Serial number and other useful information is stamped on it.
- The valve is not suitable for oxygen service.

INSTALLATION



- Prior to install check that the product is suitable for the intended application: materials and pressure/temperature ratings.
- Before to install remove plastic covers placed on flanges or connection ends. The equipment has an arrow or Inlet/Outlet designations. Be sure that it will be installed on the appropriate direction.
- Take care with jointing material to ensure that none may be permitted to block or enter the valve.
- Reducing valves are recommended to be fitted with the centre line of the valve in a vertical position to ensure that the best results are obtained.
- An ADCA pipeline strainer should be installed upstream of the valve to protect from dirt which could damage the valve or cause mal-functioning.
- The reducing valve pipework should be properly supported and free from strain and it should not be subjected to undue surges of pressure.

For steam installations we strongly recommend that the reducing valve is positioned where condensation is unable to collect or that, alternatively, separators and steam traps are fitted so that the pipework drains correctly. The start up condition should be considered.

- A balance pipe must be connected downstream at least 1 metre from valve. See AS.PR47.02.

Installation area requirements:

- The installation area should have easy access and provide enough space for maintenance and removing operations.
- The installation area should have the necessary firing system to prevent damage of the equipment due to over temperature/pressure cause by fire.

VERSIONS

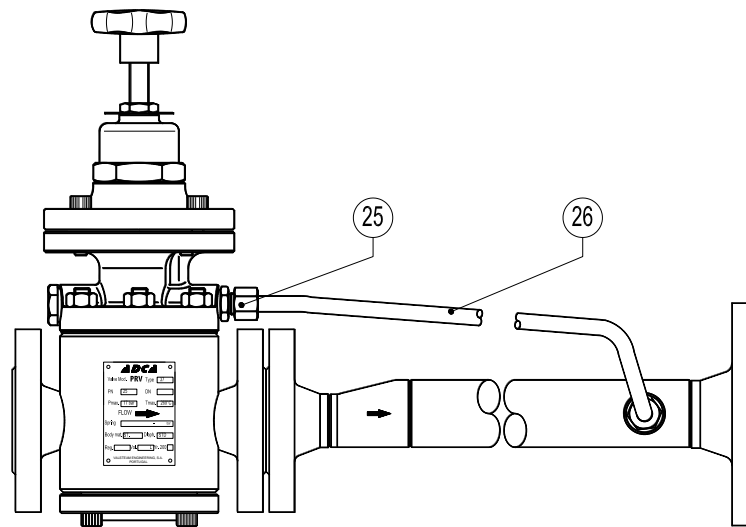


Fig.1

PRV47 DN15-50 standard, for steam, compressed air or gases (Fig.1)

Description of operation: the high pressure upstream fluid is admitted to the valve and pilot valve. By compressing the regulating spring over the diaphragm, the pilot valve opens admitting regulated pressure on the top of the piston, which opens the main valve, allowing the flow. The downstream pressure is then transmitted through the balance pipe, acting below the diaphragm. Any downstream pressure increase deflects the diaphragm, and the pilot valve closes, thus shutting off regulated gas to the piston which in turn closes the main valve. When the correct downstream pressure is achieved, the valve opens again, repeating the process.

Important: the balance pipe (n° 26) must always be connected, unless the valve was supplied with the balance connection inside the valve body. However, the fitting of the balance pipe is still highly recommended when:

- The reduced pressure is below 55% of the inlet pressure (mandatory for pressure reductions greater than 10:1);
- Instability of reduced pressure occurs;
- When a low pressure top assembly is fitted.
- When difficult outlet pipe work conditions occur.

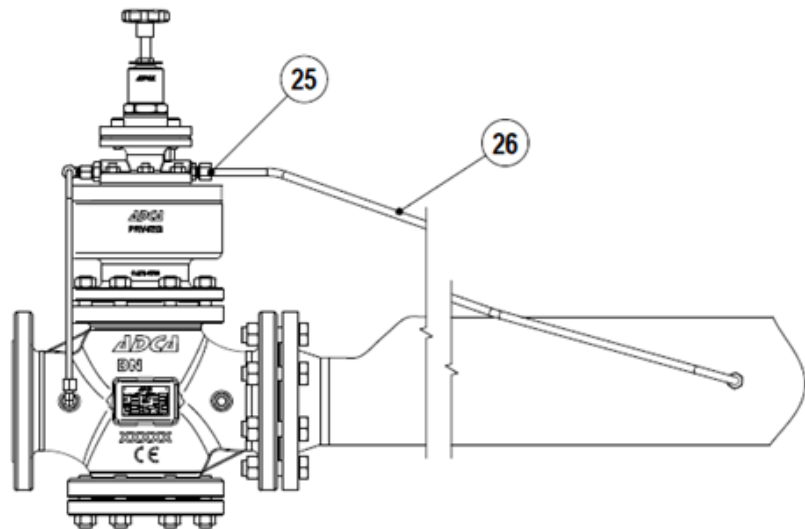


Fig.2

PRV47/2 Standard for steam, compressed air or gases (Fig.2)

Description of operation: the high pressure upstream fluid is admitted to the valve and pilot valve. By compressing the regulating spring over the diaphragm, the pilot valve opens, admitting regulated pressure on the top of the piston, which opens the main valve, allowing the flow. The downstream pressure is then transmitted through the balance pipe, acting below the diaphragm. Any downstream pressure increase deflects the diaphragm, and the pilot valve closes, thus shutting off regulated gas to the piston which in turn closes the main valve. When the correct downstream pressure is achieved, the valve opens again, repeating the process.

Important: the balance pipe (n° 26) must always be connected, unless the valve was supplied with the balance pipe connected to the valve body. However, the fitting of the balance pipe is still highly recommended when:

- The reduced pressure is below 55% of the inlet pressure (mandatory for pressure reductions greater than 10:1);
- Instability of reduced pressure occurs;
- When a low pressure top assembly is fitted.
- When difficult outlet pipe work conditions occur.

MAINTENANCE

- We recommend that the pressure reducing valves to be serviced as necessary. Pressure reducing valves should be checked periodically (at least yearly), to verify that they are operating correctly and to clean the internal parts and screen (if any).
- When reassembling make sure that all gasket faces are clean and always use a new gasket. Tighten cover bolts uniformly in a diagonal sequence.
- Valves in store for long periods should have their adjusting spring relaxed.
- For further information refer to the relevant PRV brochure or consult our Sales Office.

LIMITING CONDITIONS	PRV 47	
	PN 16	PN 40
Maximum upstream pressure (steam)	13 bar	28 bar
Maximum upstream pressure (air)	13 bar	31 bar
Maximum downstream pressure	13 bar	17 bar
Minimum downstream pressure	0,35 bar*	0,35 bar*
Minimum operating temperature	-10 °C	-10 °C
Maximum operating temperature	260 ° C	260 °C
Maximum cold hydraulic test:	24 bar	60 bar

* 0,07 bar with low pressure top (limited at 7bar inlet).

PRESSURE RANGES IN bar				
SPRING COLOUR	GREEN W/1 Diaphragm	BLUE W/1 Diaphragm	RED W/2 Diaphragms	BLACK W/2 Diaphragms
Red. Pressure	0,07 to 0,5 bar *	1,5 to 5,5 bar **	3,5 to 8,5 bar **	7 to 17 bar **
Red. Pressure	0,35 to 2 bar **	/	/	/

* With low pressure top; **Standard diaphragm.

It is preferable to select a range spring where the desired reduced pressure is at upper end of range.

USEFUL NOTES ON VALVE AND PIPE SIZING

A special low pressure top assembly should be fitted for outlet pressures from 0,07 up to 0,5bar.

Two diaphragms must be fitted when reduced pressure range is 3.5 to 8.5bar and 7 to 17 bar.

Two regulators in parallel should be used on larger systems where minimum flow is less than 10% of maximum.

If the flow is unknown it's possible to estimate it based on pipe size or equipment heat requirement - please consult.

CE MARKING (PED - European Directive)		
PN 16	PN 40	Category
---	DN15 to DN 32	SEP
DN65 to DN100	DN40 to DN100	1 (CE Marked)

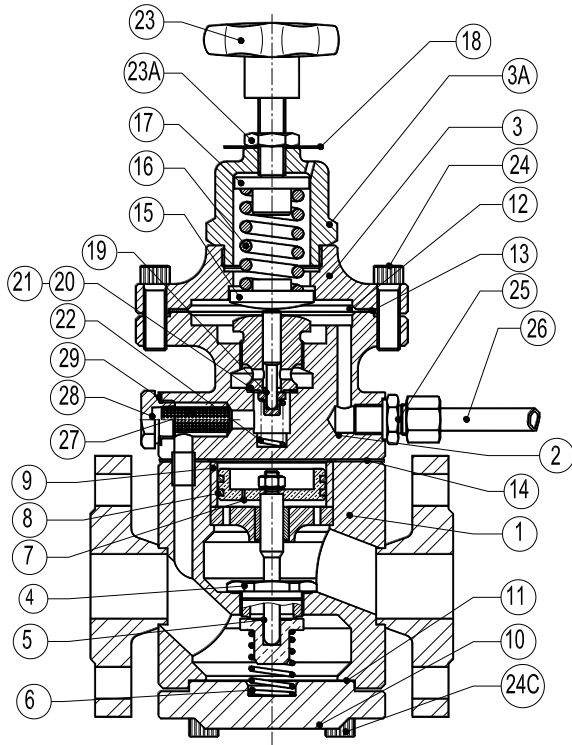
PARTS LIST FOR PRV47:

CODE	DESIGNATION	VALVE SIZE DN	POS.NR.	QTY.
VR.9570.002	Regulating spring 0,35 - 4 bar	All	16	1
VR.9570.005	Regulating spring 2 - 17 bar	All	16	1
VR.9571.001	Diaphragm & gasket	All	12, 13	1 set
VR.9574.001	Pilot valve, spring & gasket	All	19, 20, 21, 22	1 set
VR.9574.005	Strainer screen & gasket	All	27	1 set
VR.9575.015	Piston rings & gasket	15	8, 14	1 set
VR.9575.025	Piston rings & gasket	20-25	8, 14	1 set
VR.9575.032	Piston rings & gasket	32	8, 14	1 set
VR.9575.040	Piston rings & gasket	40	8, 14	1 set
VR.9575.050	Piston rings & gasket	50	8, 14, 14A	1 set
VR.9575.065	Piston rings & gasket	65	8, 14, 14A	1 set
VR.9575.080	Piston rings & gasket	80	8, 14, 14A	1 set
VR.9575.100	Piston rings & gasket	100	8, 14, 14A	1 set
VR.9576.015	Main valve, seat & gaskets	15	4, 5, 11	1 set
VR.9576.020	Main valve, seat & gaskets	20	4, 5, 11	1 set
VR.9576.025	Main valve, seat & gaskets	25	4, 5, 11	1 set
VR.9576.032	Main valve, seat & gaskets	32	4, 5, 11	1 set
VR.9576.040	Main valve, seat & gaskets	40	4, 5, 11	1 set
VR.9576.050	Main valve, seat & gaskets	50	4, 5, 11	1 set
VR.9576.065	Main valve, seat & gaskets	65	4, 5, 11	1 set
VR.9576.080	Main valve, seat & gaskets	80	4, 5, 11	1 set
VR.9576.100	Main valve, seat & gaskets	100	4, 5, 11	1 set

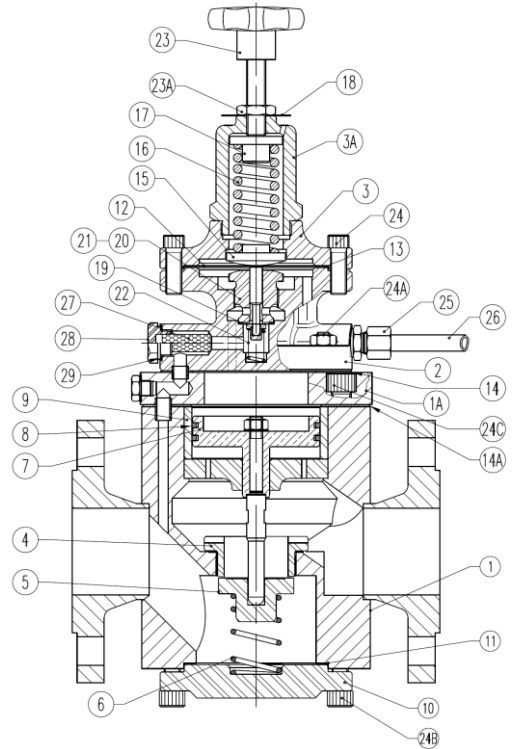
Recommended tightening torques:

POS.NR.	VALVE SIZE DN	Nm
19	ALL	250

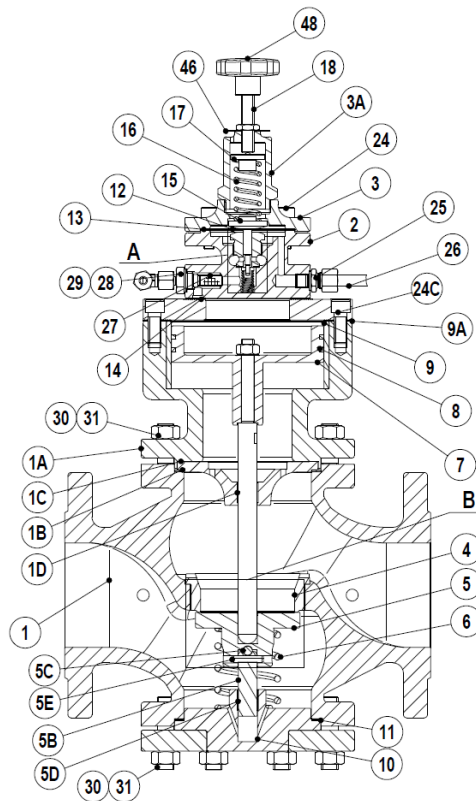
Remarks: tighten cover bolts uniformly



DN 15 – DN 40

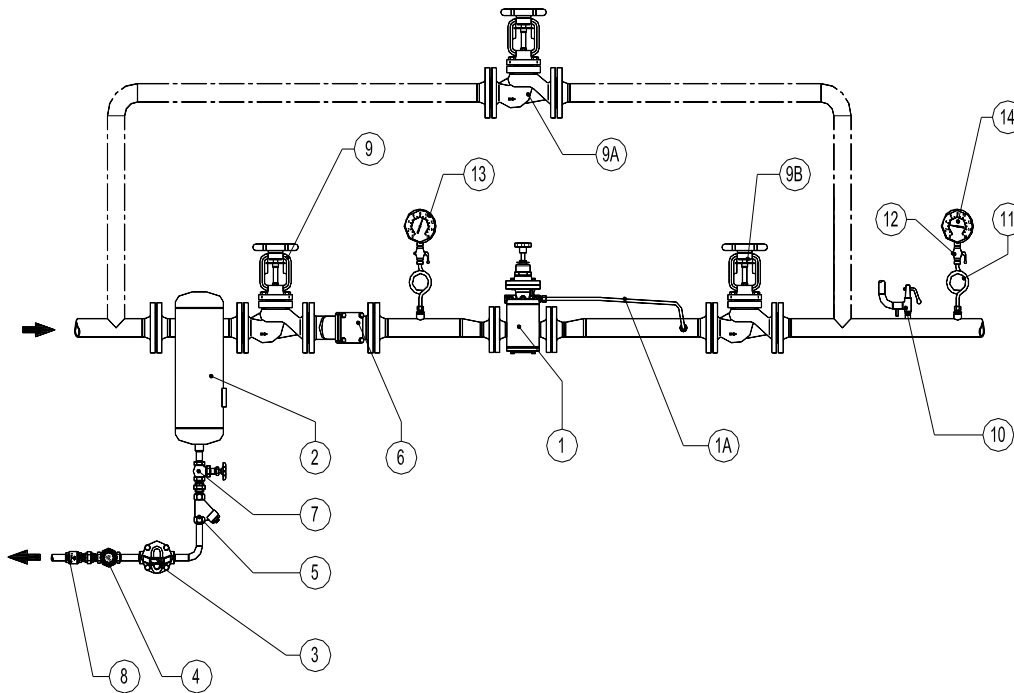


DN 50



DN 65 – DN 100

TYPICAL INSTALLATION



MATERIALS PRV 47		
POS.	DESIGNATION	MODEL
1	Pressure reducing valve	PRV 47
1A	Sensing pipe	COPPER
2	Humidity separator	S 25
3	Steam trap	FLT SERIES
4	Sigh glass	SW 12
5	Strainer	IS 16
6	Strainer	IS 16F
7	Stop valve	Globe Type
8	Check valve	Globe Type
9	Stop valve	Globe or Gate Type
9A*	By-pass valve	Globe Type
9B	Stop valve	Globe or Gate Type
10	Safety valve	---
11	Coil	GSC-40
12	Gauge cock	GC-400
13	Upstream pressure gauge	MAN-100
14	Downstream pressure gauge	MAN-100

Remarks:

* By-pass is optional. In case the by-pass is not allowed than stop valve 9B should be placed after pressure gauge 14 allowing the isolation of safety valve.

PN classes and materials according to the operating pressures.

The balance pipe connection is recommended to enter downstream pipe at a minimum of 1m from valve.

Installation instructions are available (IMI – PRV47) and typical assembling drawing. Special assembling designs may be produced on request.

PRODUCTS RETURNING



ATTENTION

- Information regarding any hazards and precautions to be considered because of contaminating fluids and residues or mechanical damage that may represent a health, safety or environmental risk, must be provided in writing by the distributors and costumers when returning products to Valsteam ADCA engineering.
- Health and safety data sheets regarding substances identified as hazardous or potentially hazardous must be provided with the information mention above.



ATTENTION

- **LOSS OF WARRANTY:** Total or partial disregard of above instructions involves loss of any right to warranty.