

# Type V/31-2 Booster Valve

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Figure 1. Type V/31-2 Booster Valve

## INTRODUCTION

### Scope of Manual

This manual provides installation, startup, maintenance, troubleshooting, and spare parts for the booster valve type V/31-2.

### Product Description

In monitor-regulator systems the booster valve V/31-2 is installed on the motorization pressure circuit, in order to obtain a more rapid action in monitor closing.

This product has been designed to be used with fuel gases of 1st and 2nd family according to EN 437, and with other non aggressive and non fuel gases. For any other gases, other than natural gas, please contact your local sales agent.

Tightness cover version V/31-2-D available on request.

The booster valve type V/31-2 can be installed in the following pressure regulators:

- FL Series
- Cronos Series

## CHARACTERISTICS

Table 1. Technical Features

MODEL	ALLOWABLE PRESSURE PS (bar)	SET RANGE $W_d$ (bar)	BODY AND COVERS MATERIAL
V/31-2	19	0.015 - 0.55	Aluminum

1/4-inch NPT female threaded connections.

# Type V/31-2

## LABELLING



 BOLOGNA ITALY <b>TARTARINI</b>		 Notified body XXXX	APPARECCHIO TIPO / DEVICE TYPE Note 1
MATRICOLA SERIAL Nr.		DN1	
ANNO YEAR	Note 2	DN2	
NORME ARMONIZ. HARMONIZED STD.	EN	W <sub>a</sub>	bar
CLASSE DI PERDITA LEAKAGE CLASS		W <sub>ao</sub>	bar
CLASSE FUNZIONALE FUNCTIONAL CLASS	Cg	W <sub>au</sub>	bar
FLUIDO GRUPPO FLUID GROUP	1	p <sub>max</sub>	bar
TS	Note 3	p <sub>ao</sub>	bar
	°C	PS body	Note 4
		PS covers	- bar
		PT=	1.5 x PS bar

Figure 2. Label for V/31-2 Booster Valve

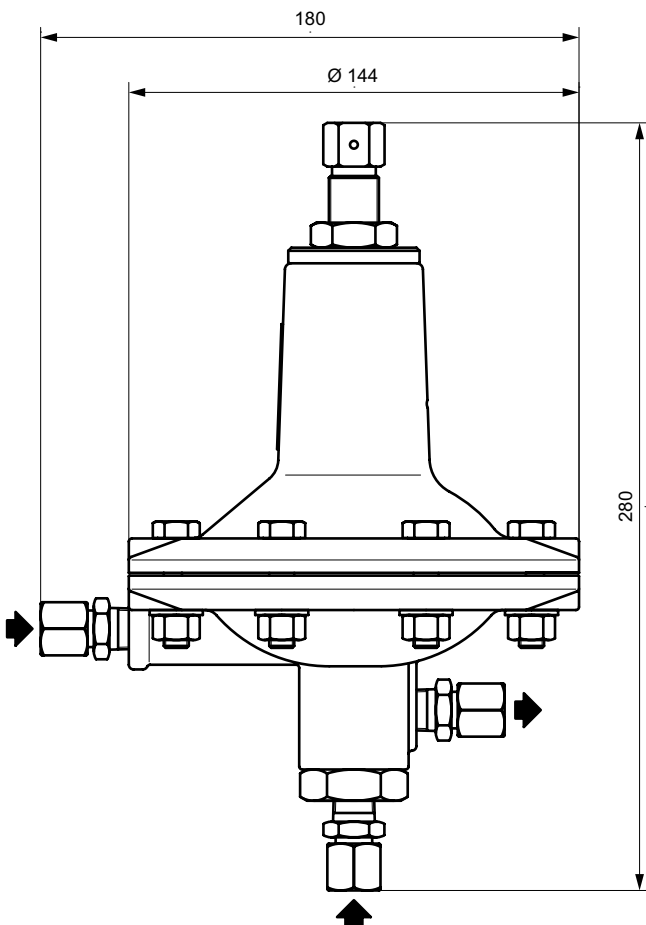
**Note 1:** See “Characteristics”

**Note 2:** Year of Manufacture

**Note 3:** Class 1: -10° to 60°C  
Class 2: -20° to 60°C

**Note 4:** See “Characteristics”

## DIMENSIONS AND WEIGHT



TYPE V/31-2 WEIGHT: 2.5 kg

Figure 3. Dimensions (mm) Type V/31-2 Booster Valve



**CAUTION**

The management of surveillance activities should be carried out by qualified, skilled personnel only.

For further information, please contact our Technical Support Representatives or our authorized dealers.

## INSTALLATION

- Check that data on the pilot's plate are compatible with actual working conditions.
- Install in accordance with regulator instruction manual.

## STARTUP

See the set-up and pilot adjustment instructions applying to the equipment where the booster valve is fitted.

## SEP STATEMENT

Emerson Process declares this product conforms to Pressure Equipment Directive (PED) 97/23/EC.

Article 3 section 3 and was designed and manufactured in accordance with sound engineering practice (SEP).

Per Article 3 section 3, this “SEP” product must not bear the CE marking.

## ATEX REQUIREMENTS



**WARNING**

If the provisions of EN 12186 & EN 12279, national regulations, if any, and specific manufacturer recommendations are not put into practice before installation and if purge by inert gas is not carried out before equipment's start-up and shut-down operations, a potential external and internal explosive atmosphere can be present in equipment & gas pressure regulating/measuring stations/installations.

If a presence of foreign material in the pipelines is foreseen and purge by inert gas is not carried out, the following procedure is recommended to avoid any possible external ignition source inside the equipment due to mechanical generated sparks:

- drainage to safe area via drain lines of foreign materials, if any, by inflow of fuel gas with low velocity in the pipe-work (5m/sec)

In any case,

- provisions of Directive 1999/92/EC and 89/655/EC shall be enforced by gas pressure regulating/measuring station/installation's end user
- with a view to preventing and providing protection against explosions, technical and/or organizational measures appropriate to the nature of the operation shall be taken (e.g. : filling/exhausting of fuel gas of internal volume of the isolated part/entire installation with vent lines to safe area - 7.5.2 of EN 12186 & 7.4 of EN 12279 ; monitoring of settings with further exhaust of fuel gas to safe area ; connection of isolated part/entire installation to downstream pipeline; ....)
- provision in 9.3 of EN 12186 & 12279 shall be enforced by pressure regulating/measuring station/installation's end user
- external tightness test shall be carried out after each reassembly at installation site using testing pressure in accordance with national rules
- periodical check/maintenance for surveillance shall be carried out complying with national regulations, if any, and specific manufacturer recommendations.

## FIELD INSPECTION AND MAINTENANCE

The valve parts are subject to normal wear and must be inspected periodically and replaced if necessary.

The frequency of inspection/checks and replacement depends upon the severity of service conditions and according to applicable National or Industry codes, standards and regulations/recommendations.

In accordance with applicable National or Industry codes, standards and regulations/recommendations, all hazards covered by specific tests after final assembling before applying the CE marking, shall be covered also after every subsequent reassembly at installation site, in order to ensure that the equipment will be functional throughout its intended life.

Before proceeding with any maintenance work, shutoff the gas upstream and downstream from the regulator, also ensure that there is no gas pressure inside the body by loosening the upstream and downstream connections.

Upon completion, check for leaks using an appropriate leak detection solution.

### Replacing Seal Pad

- a. Disconnect all fittings, remove valve from the line and unscrew nuts (key 13) then remove cover (key 4), spring holder (key 5) and spring (key 6).

- b. Hold stem (key 19) using a wrench inserted into the notch.
- c. Unscrew seat (key 16).
- d. Using a tube wrench disassemble pad holder (key 18) and replace pad (key 17).

### General Maintenance

- a. Disconnect all fittings, remove valve from the line and unscrew nuts (key 13) then remove cover (key 4), spring holder (key 5) and spring (key 6).
- b. Replace gasket (key 26).
- c. Hold stem (key 19) using a wrench inserted into the notch and unscrew nut (key 7).
- d. Disassemble parts and replace diaphragm (key 10) and O-ring (key 22).
- e. Unscrew seat (key 16) and replace O-ring (key 15).
- f. Using a tube wrench disassemble pad holder (key 18) and replace pad (key 17).
- g. Remove stem unit (key 19), unscrew stem guide (key 20), replace O-ring (key 15) and lip seals (key 21).

### Reassembly

Lubricate static O-rings and lip seals with a grease thin layer, be very careful not to damage it when reassembling.

No other valve parts are to be lubricated. Reassemble parts by reversing the above steps. As you proceed, make sure that parts move freely and without friction.



**CAUTION**

**Keep particular attention to the tightening of the nut (key 7) to not cause stress on the diaphragm (key 10).**

**Also, be careful to the insertion of stem (key 19) into stem guide (key 20) so as not to pinch lip seal (key 21).**

# Type V/31-2

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## TROUBLESHOOTING

**Table 2. Troubleshooting for Type V/31-2 Booster Valve**

SYMPTOMS	CAUSE	ACTIONS
Desired setpoint is not reached	Calibration spring (key 6) is too weak	Check the springs catalogue and replace it with a stronger one
	Lack of gas from valve connections	Check valve connections
Slow monitor response	Pad (key 17) is swollen preventing proper relief flow	Replace pad
The booster valve does not work	Valve diaphragm is broken (Key 10)	Replace diaphragm
Gas continually escaping from relief (B)	Defective seal of pad (key 17)	Check and eventually replace pad

## PARTS LIST

### Type V/31-2 Booster Valve (See Figure 4)

Item	Description
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1	Adjusting screw
2	Nut
3	Cap
4	Cover
5	Spring holder
6	Spring
7	Nut
8	Washer
9	Plate
10*	Diaphragm
11	Screw
12	Washer
13	Nut
14	Fitting
15*	O-ring
16	Seat
17*	Pad
18	Pad holder
19	Stem
20	Stem guide
21*	Lip seal
22*	O-ring
23	Plate
24	Body
25	Screw
26*	Gasket
27	Label
28*	O-ring
29*	O-ring
30	Elastic ring
31	Fitting

Rubber parts marked with (\*) are supplied in the “spare parts kit”, recommended as stock.

To order the kit it is necessary to communicate to us the valve serial number.

# Type V/31-2

## SCHEMATIC ASSEMBLIES

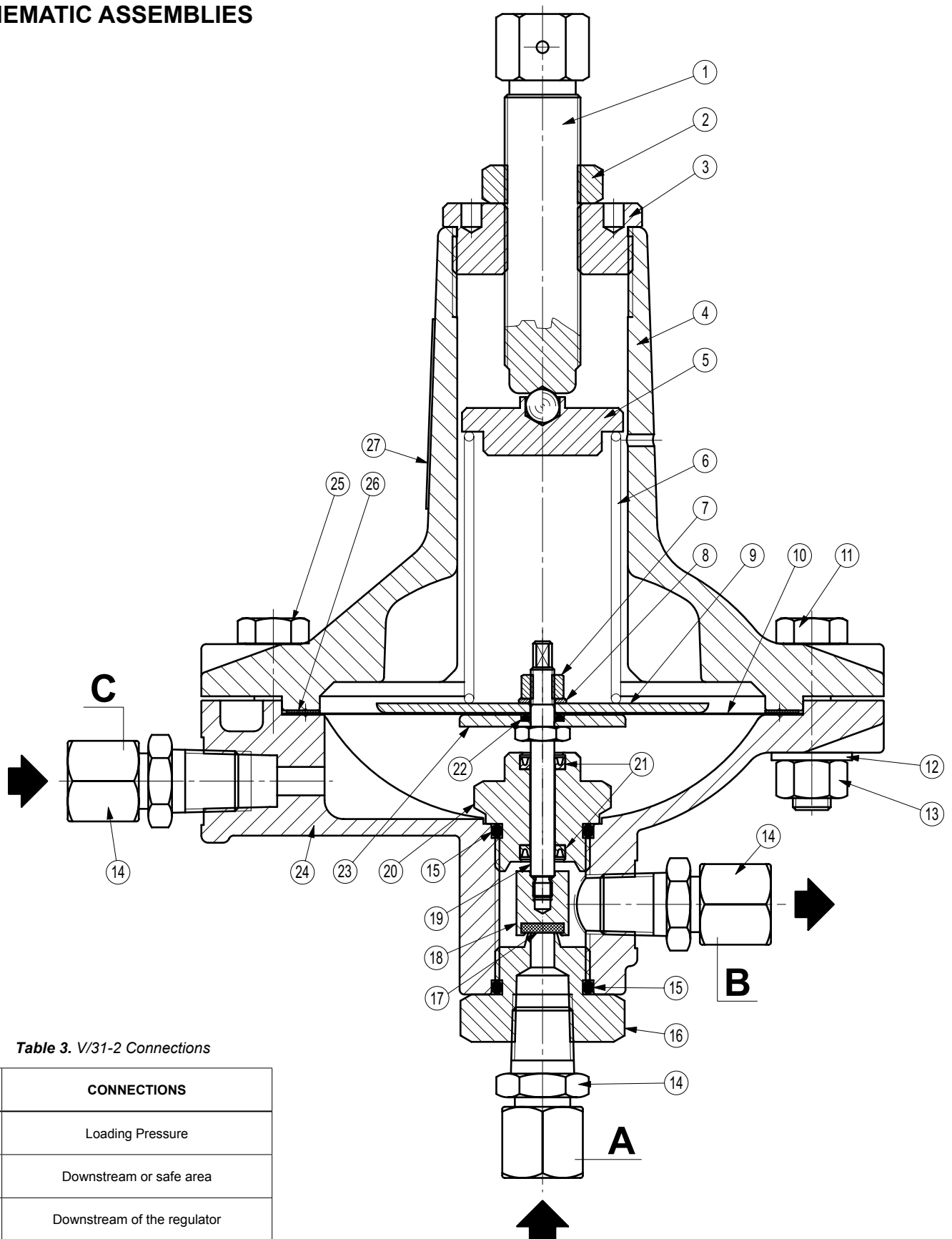


Figure 4. Type V/31-2 Booster Valve

V/31-2-D VERSION

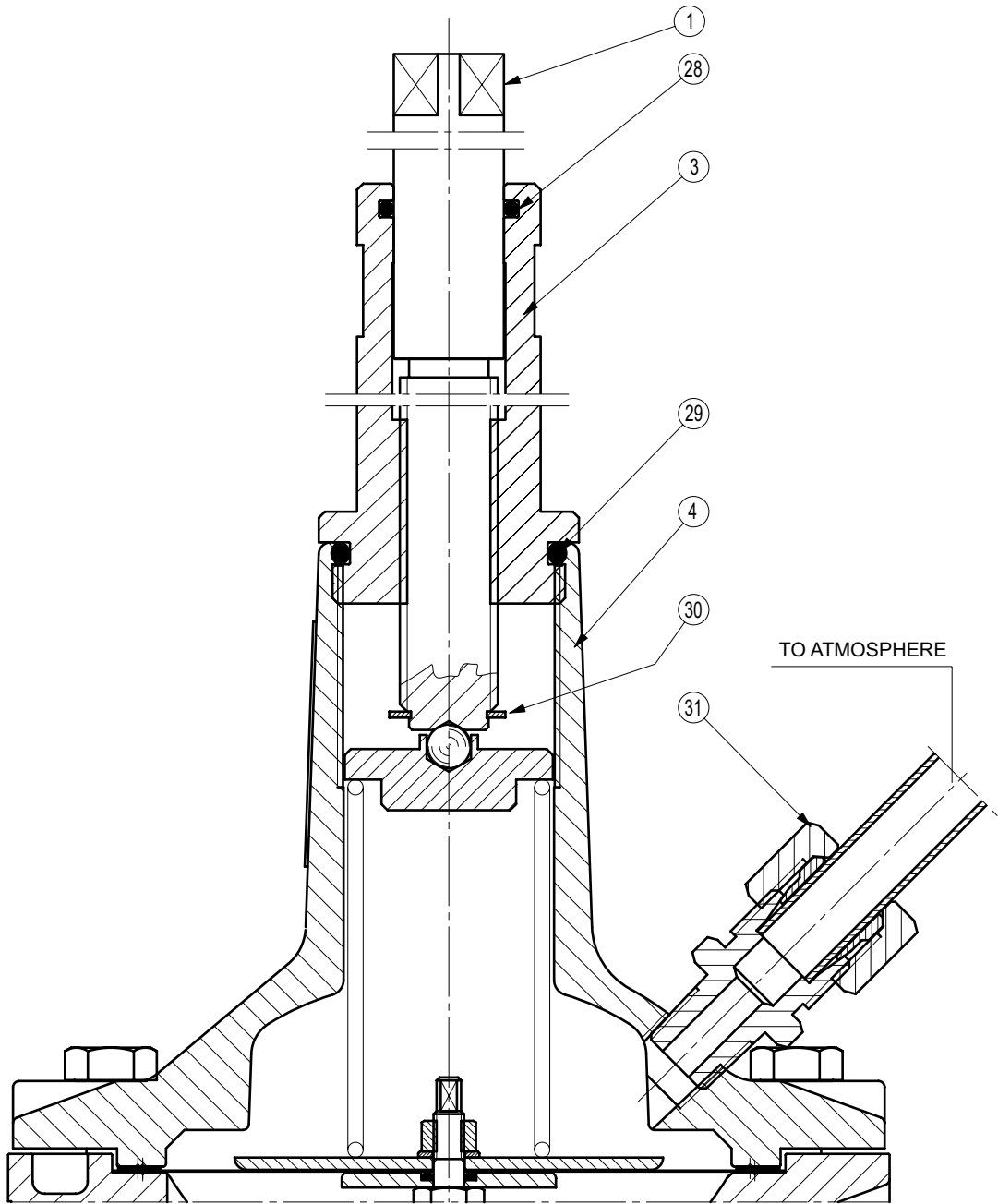


Figure 4. Type V/31-2 Booster Valve (continued)

# Type V/31-2

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