

September 2018

# V/31-2-AP-E Series Switch for Flow Partition System

## SUMMARY

Introduction.....	1
Characteristics.....	2
Labelling.....	2
Dimensions and Weight.....	2
Installation.....	2
Startup.....	5
SEP Statement.....	5
Field Inspection and Maintenance.....	5
Waste Disposal Requirements.....	6
Spare Parts.....	6
Troubleshooting.....	6
Parts List.....	6
Schematic Assemblies.....	7



Figure 1. Types V/31-2-AP-E and V/31-2-AP-EF Switch for Flow Partition System



### WARNING

**Failure to follow these instructions or to properly install and maintain this equipment could result in an explosion and/or fire causing property damage and personal injury or death.**

**Tartarini™ device must be installed, operated and maintained in accordance with federal, state and local codes, rules and regulations and Emerson Process Management Regulator Technologies, Inc. instructions.**

**If the device vents gas or a leak develops in the system, service to the unit may be required. Failure to correct trouble could result in a hazardous condition.**

**Call a gas service person to service the unit. Only a qualified person must install or service the device.**

## INTRODUCTION

### Scope of the Manual

This manual provides installation, startup, maintenance, troubleshooting, and spare parts for the switch for flow partition system V/31-2-AP-E Series.

### Product Description

In monitor-regulator systems the pneumatic switch Type V/31-2-AP-E is installed on the motorization pressure circuit, in order to obtain the capacity flow partition between the pressure reducing lines.

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 Office.

For special applications Types V/31-2 -AP-EF, V/31-2-AP-EM and V/31-2-AP-EMF versions are available on request (see Table 1).

# V/31-2-AP-E Series

## CHARACTERISTICS

Table 1. Technical Features

TYPE	ALLOWABLE PRESSURE PS, bar	SETPPOINT TYPE	SET RANGE W <sub>d</sub> , bar	BODY AND COVERS MATERIAL
V/31-2-AP-E	100	Adjustable	0.5 - 2	Steel
V/31-2-AP-EM				
V/31-2-AP-EF		Fixed	2	
V/31-2-AP-EMF				

¼ NPT female threaded connections.

## LABELLING

**BIOLOGNA ITALY TARTARINI** APPARECCHIO TIPO / DEVICE TYPE

Note 1

MATRICOLO SERIAL Nr.  DN1

ANNO YEAR Note 2  DN2

NORME ARMONIZ. HARMONIZED STD. EN  Wa  bar

CLASSE DI PERDITA LEAKAGE CLASS  Wao  bar

CLASSE FUNZIONALE FUNCTIONAL CLASS  Cg  Wau  bar

FLUIDO GRUPPO FLUID GROUP 1  pmax  bar pao  bar

TS Note 3  °C PS body Note 4  bar PS covers -  bar PT= 1.5 x PS bar

Figure 2. Label for V/31-2-AP-E Series Pneumatic Switch

**Note 1:** See “Characteristics”

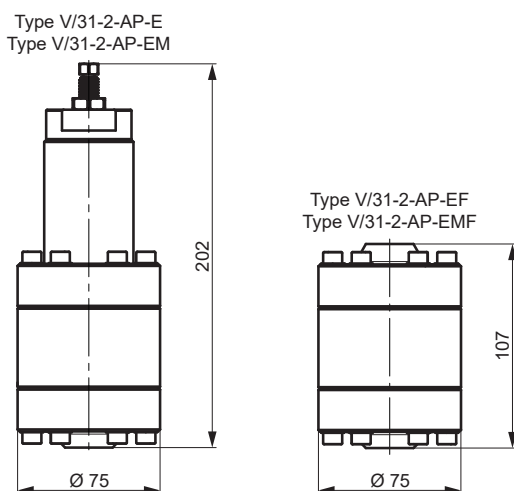
**Nota 2:** Year of Manufacture

**Nota 3:** Class 1: -10/60°C

Class 2: -20/60°C

**Note 4:** See “Characteristics”

## DIMENSIONS AND WEIGHT



TYPES V/31-2-AP-E and V/31-2-AP-EM WEIGHT: 3.5 kg  
 TYPES V/31-2-AP-EF and V/31-2-AP-EMF WEIGHT: 2.9 kg

Figure 3. Dimensions (mm) V/31-2-AP-E Series Pneumatic Switch

## CAUTION

All interventions on the equipment should only be performed by qualified and trained personnel.

For further information, please contact our local Sales Office or our Authorized Dealers.

## INSTALLATION

## WARNING

Personal injury or equipment damage, due to bursting of pressure-containing parts may result if this device is overpressured or is installed where service conditions could exceed the limits given in the Characteristics section and on the appropriate nameplate or where conditions exceed any rating of the adjacent piping or piping connections.

To avoid such injury or damage, provide pressure-relieving or pressure-limiting devices to prevent service conditions from exceeding those limits.

Also, be sure the installation is in compliance with all applicable codes and regulations.

Additionally, physical damage to the device can cause personal injury and property damage due to bursting of pressure-containing parts.

To avoid such injury and damage, install the device in a safe location.

## CAUTION

The device must be rated for the maximum allowable operating pressure of the flow partition system.

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

## STARTUP

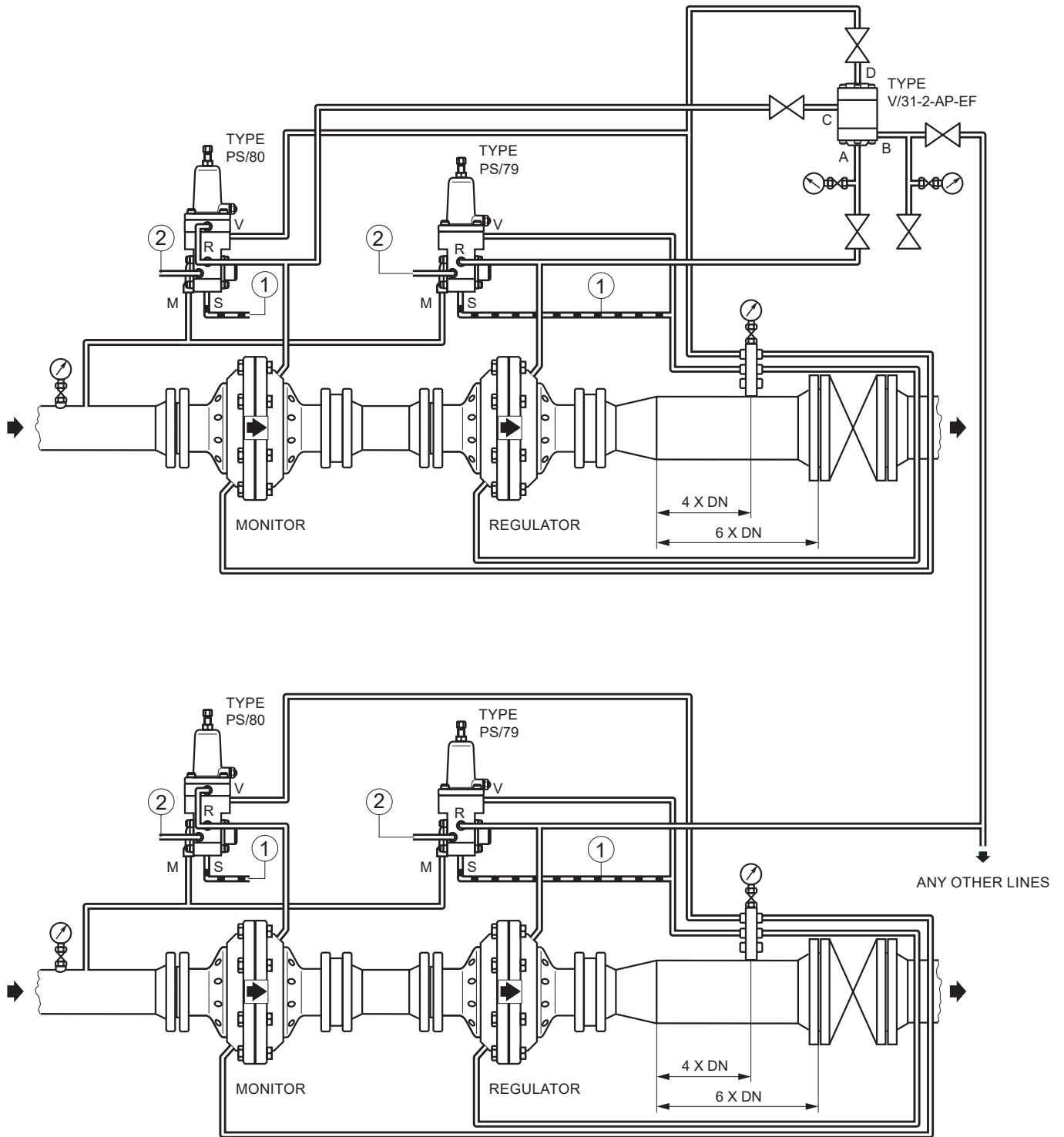
## CAUTION

Be sure to slowly introduce pressure into the system to prevent downstream overpressure due to potential rapid pressure increase.

Pressure gauges should always be used to monitor downstream pressure during Startup.

See the setup and pilot adjustment instructions applying to the equipment where the switch for flow partition system is fitted.

INSTALLATION (continued)



LEGEND:

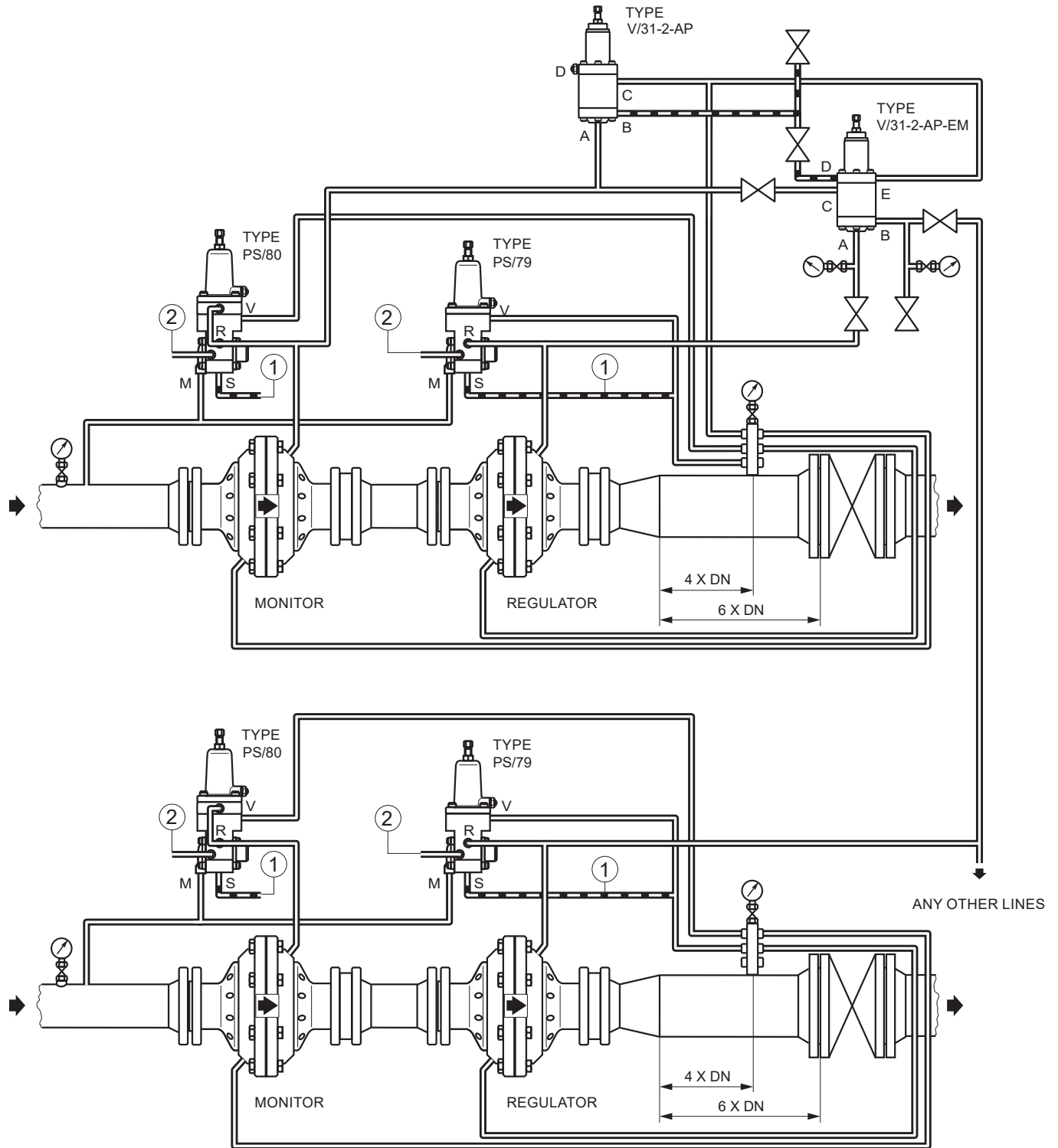
- ① VENT DOWNSTREAM OR TO A SAFE AREA
- ② TO THE HEATING

NOTE: RECOMMENDED PIPING IS STAINLESS STEEL WITH 10 mm DIAMETER.

Figure 4. Type V/31-2-AP-EF Switch for Flow Partition System Connection/Installation Schematic

# V/31-2-AP-E Series

## INSTALLATION (continued)



**LEGEND:**

- ① VENT DOWNSTREAM OR TO A SAFE AREA
- ② TO THE HEATING

NOTE: RECOMMENDED PIPING IS STAINLESS STEEL WITH 10 mm DIAMETER.

Figure 5. Type V/31-2-AP-EM Switch for Flow Partition System Connection/Installation Schematic

## SEP STATEMENT

Emerson declares this product conforms to Pressure Equipment Directive PED 2014/68/EU Article 4 section 3 and was designed and manufactured in accordance with Sound Engineering Practice (SEP).

Per Article 4 section 3, this “SEP” product must not bear the CE marking.

## ATEX REQUIREMENTS



### WARNING

**If the provisions of EN 12186 and 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 2009/104/CE 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 in accordance with EN 12186 and EN 12279; monitoring of settings with further exhaust of fuel gas to safe area; connection of isolated part/entire installation to downstream pipeline)
- provision related to tests indicated in EN 12186 and 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 pneumatic switch 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

- Disconnect all fittings, remove valve from the line and unscrew (key 4) in the lower part of the valve. Remove the lower cover (key 2) and replace pad (key 7).

## General Maintenance



### CAUTION

**Always remove spring (key 24) tension before performing maintenance on this unit.**

- Disconnect all fittings, remove valve from the line, loosen nut (key 19) and unscrew completely adjusting screw (key 18) to remove spring tension.
- Unscrew cap (key 20), remove spring holder (key 23) and spring (key 24). Replace O-ring (keys 21 and 22).
- Unscrew screws (key 4) and remove the lower cover (key 2). Replace O-ring (keys 13 and 8).
- Hold stem (key 9) using a wrench and unscrew nuts (key 16).
- Disassemble parts and replace diaphragm (key 12), pad (key 7) and lip seals (key 10).
- Unscrew seat (key 5) and replace O-ring (key 6).

## Reassembly

Reassemble all parts by following in reverse order the assembly as described above (see General Maintenance section).

As parts are assembled, make sure they move freely causing no friction.

Make sure to:

- O-rings and diaphragms should be lubricated by applying a thin layer of grease Molykote 55 M or equivalent. Pay attention not to damage them during reassembly. All other pilot parts don't require lubrication.
- The cover clamping screws (key 4) should be tightened evenly to ensure proper tightness.
- Previously disassembled fittings must be connected. Check for leaks by using suds.

# V/31-2-AP-E Series

## TROUBLESHOOTING

*Table 2. Troubleshooting for V/31-2-AP-E Series Switch for Flow Partition System*

SYMPTOMS	CAUSE	ACTIONS
The booster valve does not work	Valve diaphragm is broken (key 12)	Replace diaphragm

## WASTE DISPOSAL REQUIREMENTS

The disposal of waste and e-waste from packaging, spare parts, lubricants, whole equipment/systems and produced in occasion of on-site surveillance activities (during service life and/or at the end of their service life), shall be carried out in accordance with the requirements of applicable local regulation (laws and rules).

## SPARE PARTS

Spare parts storage shall be done by proper procedures according to national standard/rules to avoid over aging of rubber parts or any damage to critical part.

## PARTS LIST

### V/31-2-AP-E Series Switch for Flow Partition System (See Figure 6)

**Item Description**

- 1 Body
- 2 Lower cover
- 3 Washer
- 4 Screw
- 5 Seat
- 6\* O-ring
- 7\* Pad
- 8\* O-ring

**Item Description**

- 9 Stem
- 10\* Lip seal
- 11 Lower plate
- 12\* Diaphragm
- 13\* O-ring
- 14 Upper plate
- 15 Washer
- 16 Nut
- 17 Spring holder
- 18 Adjusting screw
- 19 Nut
- 20 Cap
- 21\* O-ring
- 22\* O-ring
- 23 Spring holder
- 24 Spring
- 25 Upper cover
- 26 Restrictor
- 27 Label

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 pneumatic switch serial number.

**SCHEMATIC ASSEMBLIES**

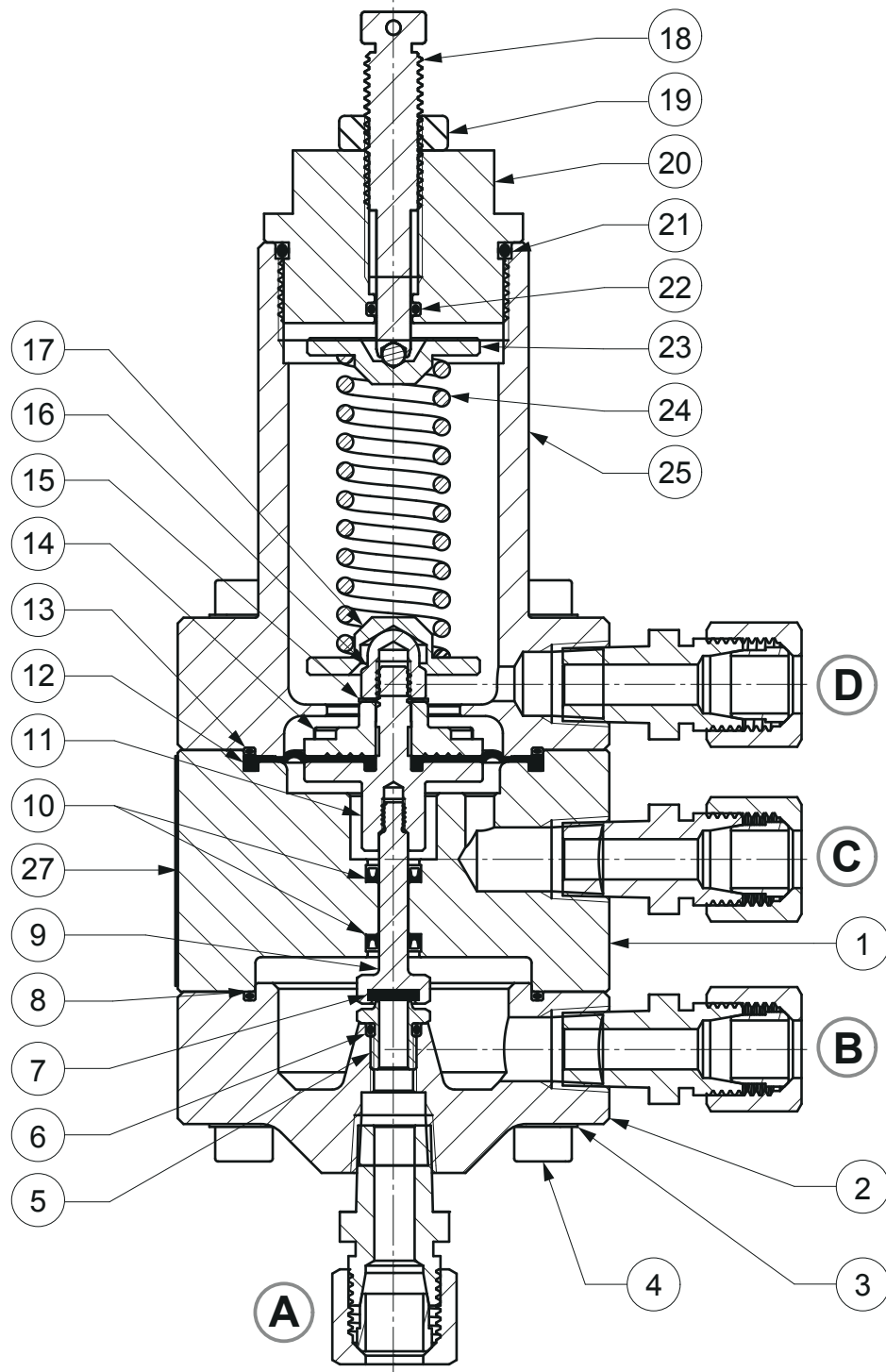


Figure 6. V/31-2-AP-E Series Switch for Flow Partition System

# V/31-2-AP-E Series

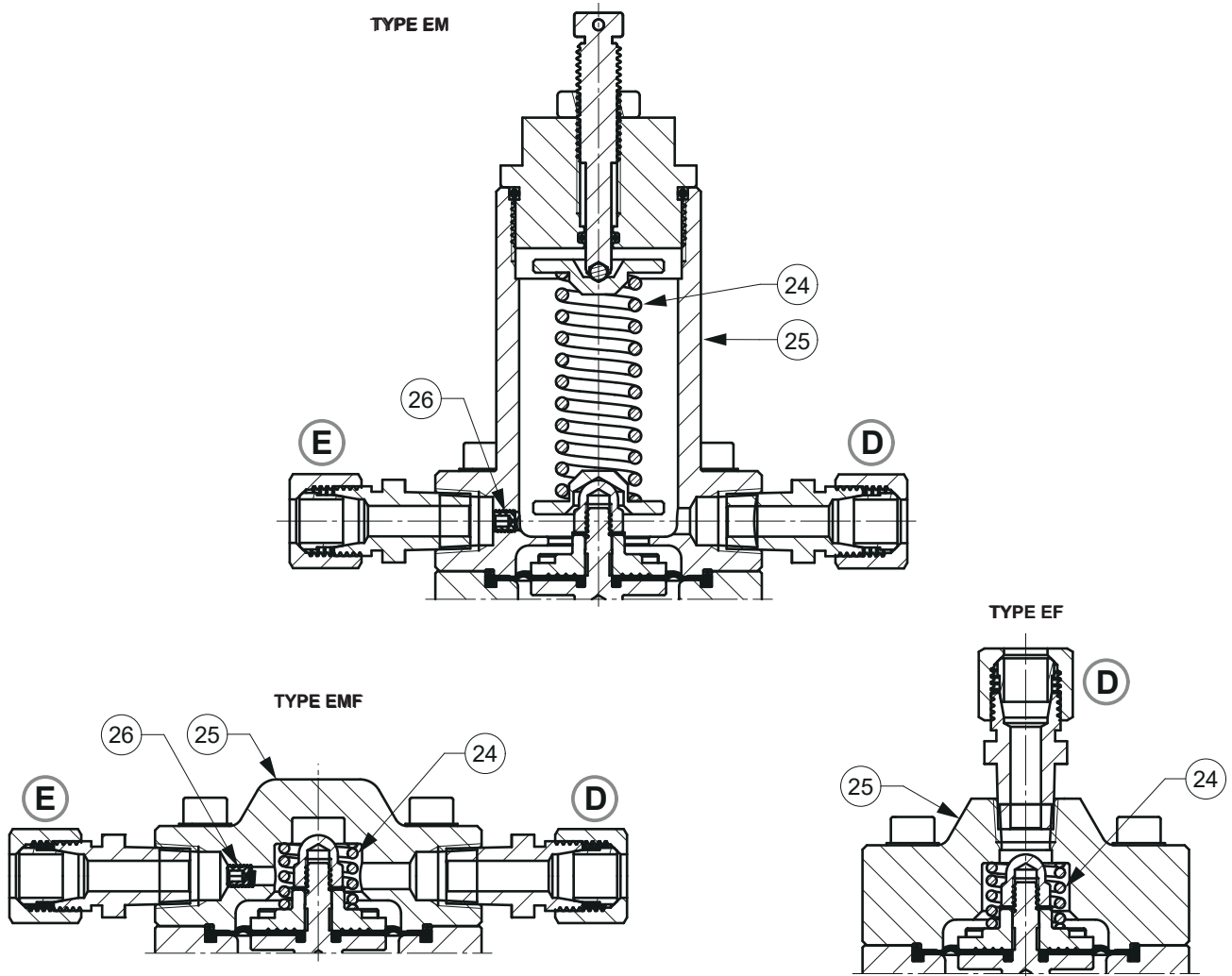


Figure 6. V/31-2-AP-E Series Switch for Flow Partition System (continued)

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