

Type PS/80-1 Pilots

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INTRODUCTION

Scope of Manual

This manual provides installation, startup, maintenance, troubleshooting and spare parts for the pilot Type PS/80-1.



Figure 1. Type PS/80-1

Product Description

Designed for pressure regulators control. The Type PS/80-1 pilot can be installed in the following pressure regulators:

FL Series - Cronos Series

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.

Type PS/80-1

CHARACTERISTICS

Table 1. Technical Features

APPLICATION	ALLOWABLE PRESSURE P _s , bar	SET RANGE W _d , bar	BODY AND COVERS MATERIAL
Regulator or Monitor	25	0.01 - 0.5	Aluminum

1/4 in. NPT female threaded connections.

The pilots Type PS/80-1 series pilots are supplied with a filter (5μ filtering degree) and built-in pressure stabilizer.

LABELLING



			Notified Body XXXX	APPARECCHIO TIPO / DEVICE TYPE Note 1
MATRICOLA / ANNO SERIAL Nr. / YEAR _____ / Note 2		DN1 _____		
REAZIONE FAIL SAFE MODE FAIL OPEN <input type="checkbox"/> FAIL CLOSE <input type="checkbox"/>		DN2 _____		
NORME ARMONIZ. HARMONIZED STD. EN _____		Wds _____ bar		
CLASSE DI PERDITA LEAKAGE CLASS _____ TIPO TYPE _____		Wdso _____ bar		
CLASSE FUNZIONALE FUNCTIONAL CLASS _____ Cg _____		Wdsu _____ bar		
FLUIDO GRUPPO FLUID GROUP 1		DN seat _____ pdo _____ bar DN sede _____		
TS Note 3 °C PS Note 4 bar		PSD _____ Bar PT= 1.5 x PS bar		

Figure 2. Label for PS/80-1

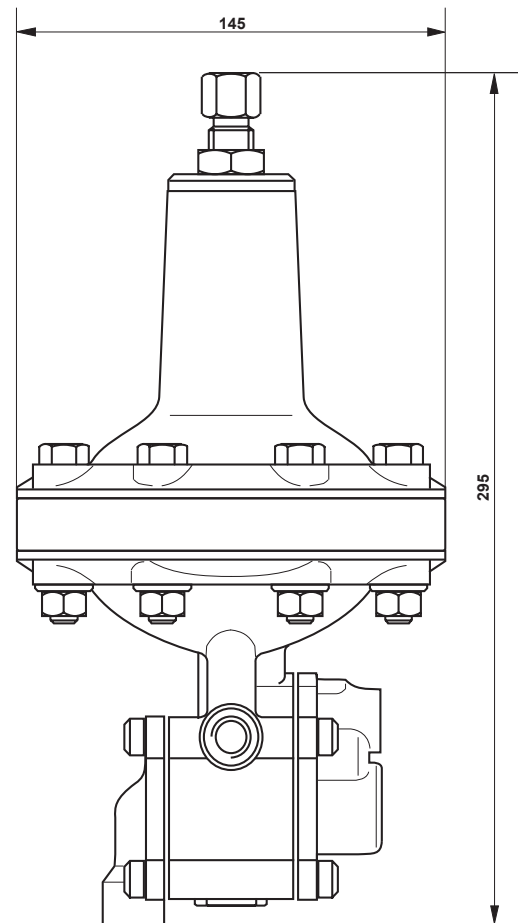
Note 1: See “Characteristics”

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 PS/80-1 WEIGHT: 3.8 kg

Figure 3. Type PS/80-1 Pilots Dimensions (mm)

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 pilot is fitted.

PERIODIC CHECKS

Slowly close the outlet slam-shut and check line pressure between it and regulator. A slight increase in pressure should be detected: this results from overload due to closing, and is followed by pressure stabilization. If, however, outlet pressure continues to rise, then seal is defective. Check if leak is coming from regulator or pilot, and service.

SEP STATEMENT

Emerson Process declares this product conforms to Pressure Equipment Directive PED 2014/68/UE.

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 and 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 ignition inside the equipment due to mechanically generated sparks caused by foreign material.

- Use drain lines that vent to a safe area and low velocity (5m/sec) fuel gas to blow out or drain foreign material from the piping.

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
- to prevent and provide 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 - 8.6.2 of EN 12186 and 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 10.2.3 of EN 12186 and in 9.3 EN 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.

MAINTENANCE

CAUTION

Servicing should be carried out by qualified, skilled personnel only.

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

Before servicing, cut off regulator inlet and outlet and release any trapped pressurized gas. Use suds to check that there are no leaks.

Replacing Filter

- Remove screws (key 54), cover (key 58), and replace felt (key 41). Reassemble by reversing the above sequence.

Replacing Stabilizer Diaphragm and Seal Pad

- Remove screws (key 54), cover (key 55), spring (key 52) and diaphragm assembly (keys 53, 51, 50, 49, 48 and 47). Replace diaphragm if necessary.
- Unscrew seat (key 44) and replace pad holder (key 45).
- Reassemble by reversing the above sequence.

Replacing Valve Seal Pads

- Remove plug (key 23) and seat (key 25). Slide out spring (key 27), pad holder unit (key 29) and forked stem (key 31).

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- f. Replace pad holder (key 29) and O-ring (key 32).
- g. Reassemble by reversing above sequence.

General Maintenance

- h. Proceed as directed in the replacement of filter, stabilizer diaphragm and seal pad, and valve seal pads.
- i. Completely release spring (key 5) by turning the adjusting screw (key 1) counterclockwise.
- j. Remove screws (key 10) and cover (key 6).
- k. Keep plate (key 8) blocked with a box wrench, unscrew nut (key 7).

CAUTION

This must be done exactly as described to prevent damage to or breaking of drilled needle valve (key 17).

- l. Remove plate (key 8) from stem (key 12), then remove first diaphragm (key 9), diaphragm spacer (key 81), second diaphragm (key 9), inlet plate (key 79) and then slide off split pin (key 35).
- m. Replace any worn seals.

Reassembly

Lubricate the static O-rings with a thin layer of Molykote 55 M, be very careful not to damage the O-rings when reassembling. No other pilot parts are to be lubricated.

Reassemble parts by reversing the above steps. As you proceed, make sure that parts move freely and without friction.

In addition:

- a. Once lever (key 36) and stem (key 12) have been mounted, check that, with stem (key 12) against body (key 19), clearance between forked stem (key 31) and register (A) of lever (key 36) is 0.2 to 0.3 mm. If not, use register to correct.

CAUTION

The above clearance can be checked by gently pulling the stem (key 12) upward. Use the proper tool to make sure that support of diaphragm (key 9) on the stem (key 12) is on the same plane as that supporting the diaphragm (key 9) in the body (key 19).

- b. Mount diaphragm (key 9) and screw on plate (key 8), first by hand then with box wrench, always keep diaphragm (key 9) firmly in place to avoid damage to stem (key 12) and underlying levers.
- c. Holding plate (key 8) firmly in place with box wrench, tighten nut (key 7).
- d. Before remounting cover (key 6), center diaphragm as follows: mark a reference point (with pencil) on the diaphragm; turn it to the right without forcing and mark another reference on body. Now turn diaphragm to the left and mark a further reference. Position the diaphragm mark midway between the two marks on the body.
- e. Tighten all screws uniformly to ensure proper sealing.

CAUTION

The pilot has a wide range of self-adjustment values. However, given actual operating conditions, it may be necessary to assist it at times by finding the best setting of pin screw/register (key 24) or the most suitable calibration orifice (key 18).

TROUBLESHOOTING

Table 2. Troubleshooting for Type PS/80-1 Pilots

SYMPTOMS	CAUSE	ACTIONS
Desired set point is not reached	Calibration spring (key 5) is too weak	Check the springs catalog and replace it with a stronger one
	Leaks from pilot connections	Check pilot feed connections and proper gas flow feeding
Outlet pressure drops well below set point	Filter (key 41) is clogged preventing proper through-flow of gas	Clean or replace filter
	Pad holder (key 45) is swollen preventing proper feed flow	Replace pad holder
	Pad holder (key 29) is swollen preventing proper feed flow	Replace pad holder
Outlet pressure increases over set point	Faulty sealing of pad holder (key 45)	Replace pad holder
	Faulty sealing of pad holder (key 29)	Replace pad holder
Slow response to changes in gas demand	Insufficient flow rate of valve seat (key 25)	Increase flow by means of register/pin screw (key 24)
	Over large calibration jet (key 18)	Replace calibration jet with a smaller one
Overly rapid response to changes in gas demand, i.e. Hunting	Excessive flow rate of valve seat (key 25)	Reduce flow by means of a pin screw (key 24)
	Calibration jet (key 18) is too small	Replace calibration jet with a larger one
	Incorrect internal parts assembly	Check clearance between lever (key 36) and valve seat (key 25)

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PARTS LISTS

Type PS/80-1 Pilot (See Figure 4)

Item	Description	Item	Description
1	Adjusting screw	33*	O-ring
2	Nut	34	Screw
3	Cap	35	Split pin
4	Spring holder	36	Lever unit
5	Spring	37	Data plate
6	Cover	38	Pin
7	Nut	39	Elastic ring
8	Plate	40*	O-ring
9*	Diaphragm	41*	Felt
10	Screw	42	Filter net
11*	Gasket	43	Spring
12	Stem	44	Seat
13	Washer	45*	Pad holder unit
14	Nut	46*	O-ring
15	Locking nut	47	Screw unit
16	Spring	48*	Diaphragm
17	Drilled needle valve	49	Plate
18	Jet	50	Washer
19	Body	51	Washer
20*	O-ring	52	Spring
21	Plug	53	Autolocking nut
22*	O-ring	54	Screw
23	Plug	55	Cover
24	Pin screw	56	Plug
25	Seat	57*	O-ring
26*	O-ring	58	Filter cover
27	Spring	78*	O-ring
29*	Pad holder unit	79	Inlet plate
30	Spacer	80	Body spacer
31	Forked stem	81	Diaphragm spacer
32*	O-ring		

1. Rubber parts marked with (*) are supplied in the "spare parts kit", recommended as stock.
2. To order the kit, it is necessary to communicate to us the type of the pilot and its serial number.

SCHEMATIC ASSEMBLIES

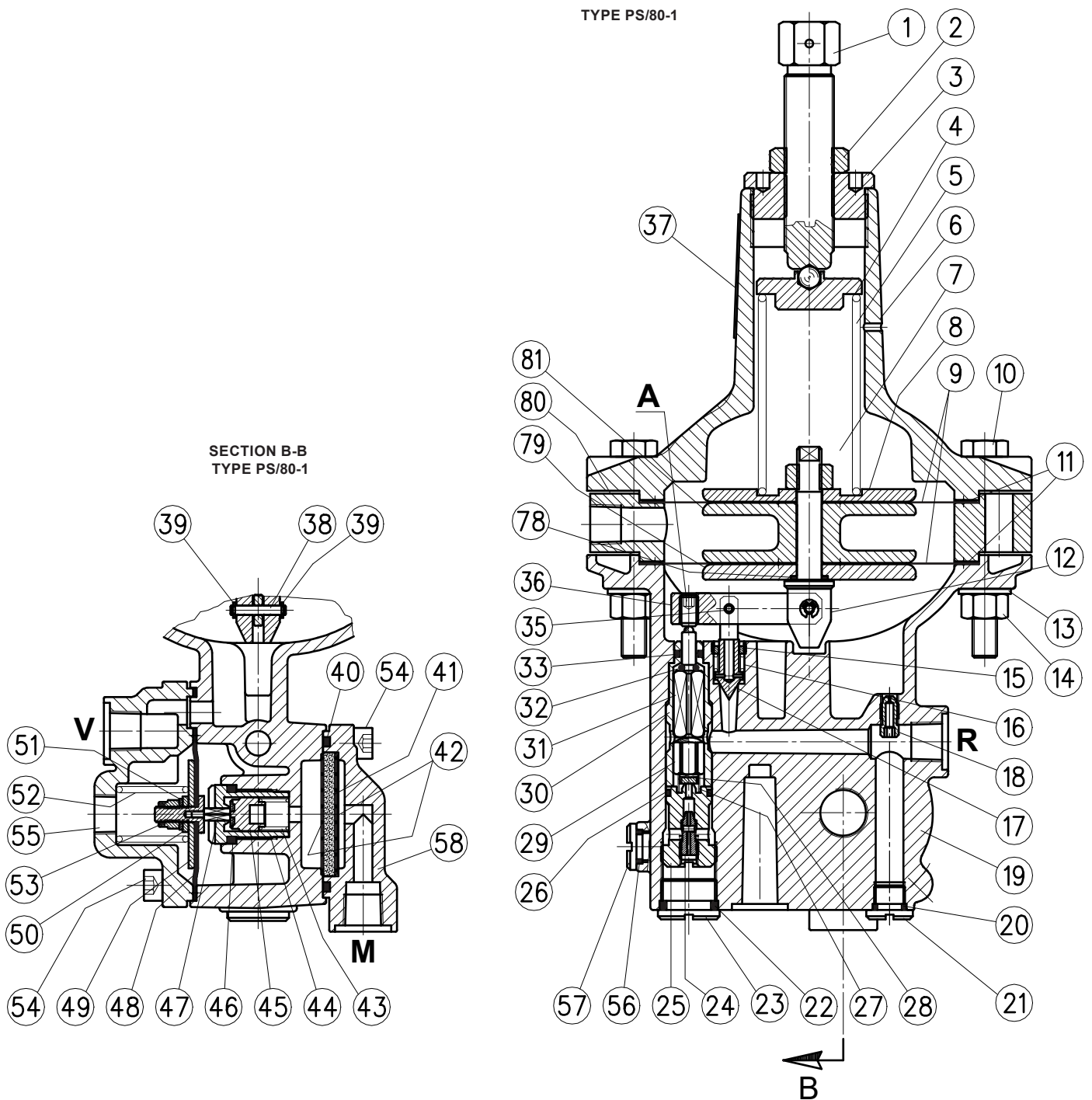


Figure 4. Type PS/80-1 Pilot Assembly

Table 3. Type PS/80-1 Pilot Connections

CODE	CONNECTIONS
M	Upstream of the regulator
R	To the regulator (loading pressure)
V	Downstream of the regulator

Type PS/80-1

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