

# PRX/ and PRX-AP/ Pilots

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## INTRODUCTION

### Scope of Manual

This manual provides installation, startup, maintenance and spare parts for the pilot PRX series.

### Product Description

Designed for pressure regulators and slam-shut valves control, the following types are available:

- **PRX/120, PRX-AP/120**  
To control regulator or monitor
- **PRX/125, PRX-AP/125**  
To control operating monitor
- **PRX/181-PN, PRX/182-PN, PRXAP/181-PN, PRXAP/182-PN**  
To control OS/80X-PN slam-shut device
- **PRX/131, PRX-AP/131**  
Booster valve
- **PRX/182, PRX-AP/182**  
To control VSFL relief valve



Figure 1. Type PRX/120 and PRX-AP/120 Pilots

The full range of PRX pilots can be installed in the following equipment:

- FL Series - Cronos Series - EZH Series - 971 Model
- BM5 Series - BM6X 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.

## CHARACTERISTICS

Table 1. Technical Features

MODEL	ALLOWABLE PRESSURE PS (bar)	SET RANGE W <sub>d</sub> (bar)	BODY AND COVERS MATERIAL
PRX/120, PRX/125	100	1 – 40	Steel
PRX-AP/120, PRX-AP/125		30 – 80	
PRX/181-PN, PRX/182-PN, PRX/131, PRX/182,		0.5 – 40	
PRX-AP/181-PN, PRX-AP/182-PN, PRX-AP/131, PRX-AP/182,		30 – 80	

1/4-inch NPT female threaded connections.

The Type SA/2 stabilizer filter must be used with PRX series pilots, for further informations please see the Instruction Manual D103653X012.

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## LABELLING


		APPARECCHIO TIPO / DEVICE TYPE	
MATERICOLA		Note 1	
SERIAL Nr.		DN1	
ANNO	Note 2	DN2	
YEAR		Wa	bar
NORME ARMONIZ.	EN	Wao	bar
HARMONIZED STD.		Wau	bar
CLASSE DI PERDITA		Cg	
LEAKAGE CLASS		pmax	bar
CLASSE FUNZIONALE		pao	bar
FUNCTIONAL CLASS		PS covers	- bar PT= 1.5 x PS bar
FLUIDO GRUPPO	1	TS	Note 3 °C
FLUID GROUP		PS body	Note 4

Figure 2. Label for PRX Series Pilots

**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 WEIGHTS

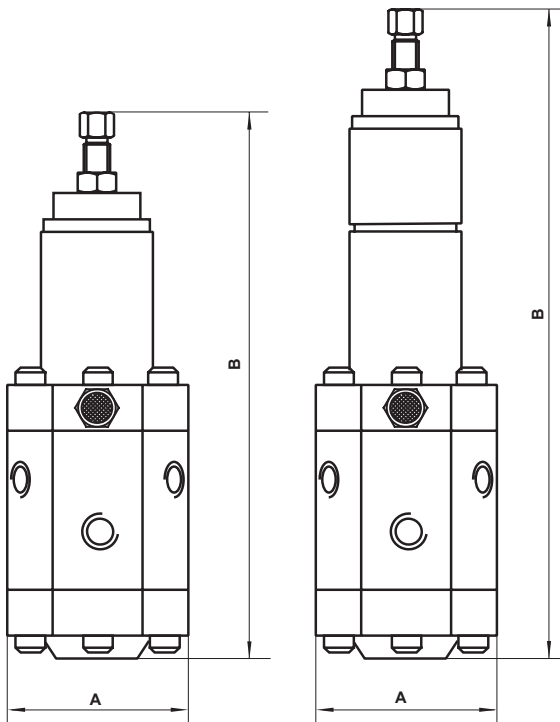


Figure 3. PRX Series Pilots Dimensions (mm)

Table 2. Dimensions (mm) and Weights (kg)

CODE	PRX FULL RANGE	PRX-AP FULL RANGE
A	65	65
B	215	257
Weight	3.2	3.5

## INSTALLATION

- Make sure that specifications on the pilot plate comply with the intended use.
- Make sure that all connections are correctly made.

## STARTUP

Refer to the regulator or slam-shut valve startup instructions.

## ADJUSTMENT

### Only for PRX/120, PRX/125, PRX-AP/120 and PRX-AP/125 Pilots:

Adjusting response stability and rapidity is achieved by means of the appropriate adjusting screws, R (restrictor) and D (damper).

The register D is normally completely unscrewed; by screwing the register, the response of the regulator can be slowed down.

The register R is normally completely screwed; in case of hunting of the set pressure, we suggest unscrewing slowly the register until pressure steadiness is reached.

By unscrewing the register, the set pressure decreases; intervene on register screw (key 1) in order to re-establish the correct pressure.



**CAUTION**

If register R is completely unscrewed, the regulator can not deliver the maximum requested capacity.

In order to better assess the effects of adjustments, it is advisable to turn the adjusting screws only one fourth of a turn at a time and to verify the new conditions before carrying out the further rotation.

## PERIODICAL CHECKS

### Only for PRX/120, PRX/125, PRX-AP/120 and PRX-AP/125 Pilots:

#### Gas-tightness Test

When starting up the regulator, and at regular intervals, check gas tightness as follows:

- Slowly close downstream cut-off valve.
- In order to avoid excessive lock-up pressures, close the

valve and simultaneously open the outlet vent tap. In case of safety slam-shut device being fitted, keep this valve manually open in order to prevent it from tripping.

- c. Slowly close the vent tap and read the lock-up pressure value. An increase in outlet pressure will initially be detected, after which pressure will stabilize. If, on the contrary, outlet pressure continues increasing, then the seal is defective. Check if leak is ascribable to pilot or regulator.

## Checking Pilot Gas Tightness

- a. Link up together connection A, connection B, a vent tap and a pressure gauge with appropriate scale.
- b. Close connection L.
- c. Slightly open vent tap, feed either gas or compressed air to the pilot through connection S. Pressure gauge will show the pilot set pressure.
- d. Close vent tap and read the lock-up pressure value, which should be less than 0.4 bar. If this value is higher than 0.4 bar, pilot pad or seal seat are worn out or damaged.
- e. Use soapy water to check there are no gas leaks.

## Only for PRX/182 Pilots and PRX/131 Booster Valves:

Pilot tightness should be tested regularly by referring to the following procedure:

- a. Supply fitting A with normal operating pressure.
- b. Make sure there is no gas outflow from fitting B.

## 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.

## MAINTENANCE



### CAUTION

**Maintenance should be carried out by skilled personnel to ensure good servicing results. Contact our technical support representatives or our authorized dealers for any information. Let gas under pressure flow out of the relevant part of the system before servicing.**

## General Maintenance

- a. Disconnect and remove the pilot from the line.
- b. Fully unscrew the adjusting screw (key 1).
- c. Unscrew the cap (key 3), remove the spring holder (key 6) and the spring (key 7). Replace the O-rings (key 4 and 5).
- d. Loosen screws (key 10), remove the upper cover (key 8) and the lower cover (key 21). Replace the O-ring (key 18).

# PRX Series

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- e. Lock the stem (key 23) by inserting a key into the notches and unscrew nuts (key 20 and 26).
- f. Disassemble the parts and replace the diaphragm (key 14) and the pad (key 22).
- g. Unscrew the seat (key 19) and replace the O-ring (key 17).
- h. Use petrol to cleanse the pilot body and all metal parts. Blow them thoroughly with compressed air and check for clear holes along the gas conduits. Replace any worn parts.

## 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:

- a. O-rings and diaphragms should be lubricated by applying a thin layer of 'Molykote 55 M' grease.  
Pay attention not to damage them during reassembly. All other pilot parts require no lubrication.
- b. The cover clamping screws (key 10) should be tightened evenly to ensure proper tightness.
- c. Pilot operation, calibration and tightness should be tested as described in the Gas-tightness test section.
- d. Previously disassembled fittings must be connected. Check for leaks by using suds.

## 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 parts.

## PARTS LISTS

### Type PRX/120, PRX/125, PRX-AP/120 and PRX-AP/125 Pilots (See Figure 4)

Item	Description
1	Adjusting screw
2	Nut
3	Cap
4*	O-ring
5*	O-ring
6	Spring carrier plate
7	Spring
8	Upper cover
9	Spring carrier plate
10	Screw
11	Washer
12	Filter
13	Plate
14*	Diaphragm
15	Plate
16	Body
17*	O-ring
18*	O-ring
19	Seat
20	Nut
21	Lower cover
22*	Pad holder unit
23	Stem
24	Plate
25*	O-ring
26	Nut
27	Adjusting screw
28*	O-ring
29	Plate
30	Ring nut
31	Screw
32	Adjusting screw with hole
33	Plug
34	Plug
35	Spring barrel extension for AP version

Item	Description
22*	Pad holder unit
23	Stem
24	Plate
25*	O-ring
26	Nut
28*	O-ring
29	Plate
31	Screw
33	Plug
34	Plug

### Type PRX/181-PN and PRX/182-PN Pilots (See Figure 6)

Item	Description
36	Lower cover
37*	O-ring
38	Special connection

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

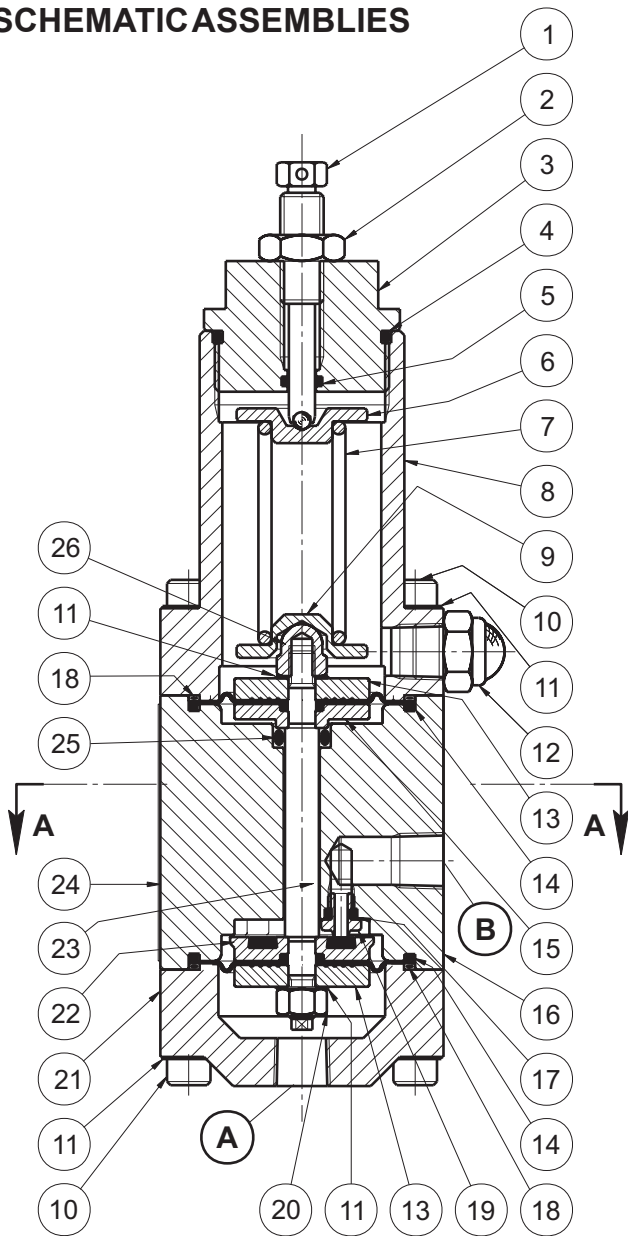
To order the kit it is necessary to communicate to us the type of the pilot and its serial number.

### Type PRX/181, PRX/182 Pilots and PRX/131 Booster Valve (See Figure 5)

Item	Description
1	Adjusting screw
2	Nut
3	Cap
4*	O-ring
5*	O-ring
6	Spring carrier plate
7	Spring
8	Upper cover
9	Spring carrier plate
10	Screw
11	Washer
12	Filter
13	Plate
14*	Diaphragm
15	Plate
16	Body
17*	O-ring
18*	O-ring
19	Seat
20	Nut
21	Lower cover

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## SCHEMATIC ASSEMBLIES



TYPE PRX/120 AND PRX/125

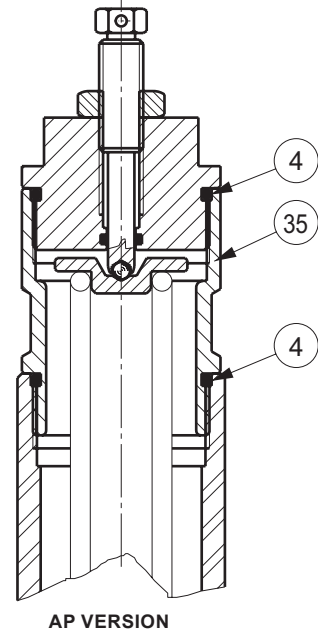
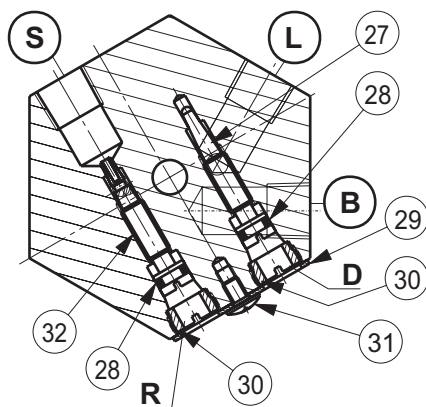
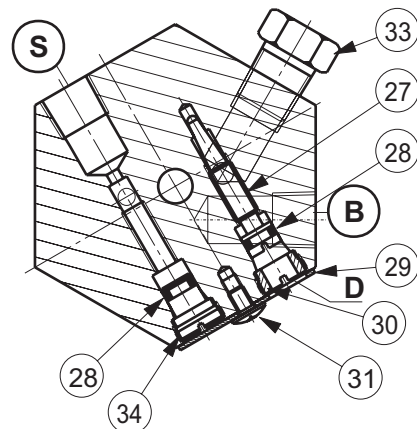


Table 3. Type PRX/120 Connections

CODE	BOOT TRIM	TUBE AND HARD TRIM
A	Downstream impulse	Downstream impulse
B	Outlet discharge	Pilot feed
S	Pilot feed	Outlet discharge
L	To regulator loading pressure chamber	To regulator loading pressure chamber



TYPE PRX/120 VERSION - SECTION A-A



TYPE PRX/125 VERSION - SECTION A-A

LM/1390

Figure 4. Type PRX/120 and PRX/125 Pilots

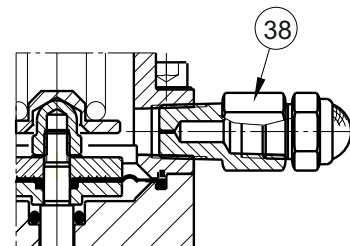
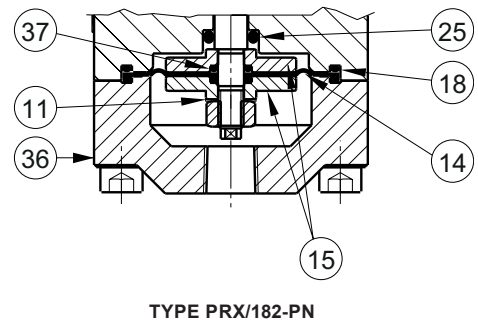
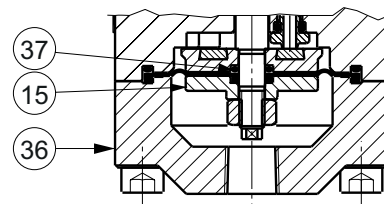
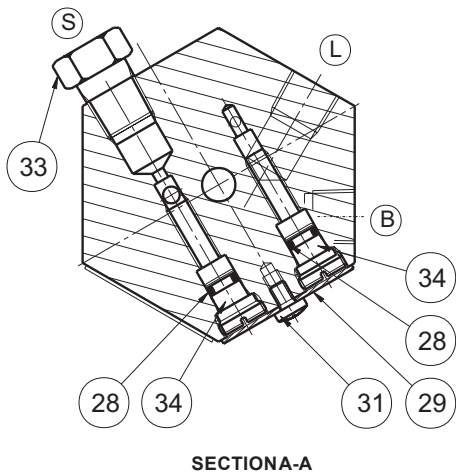
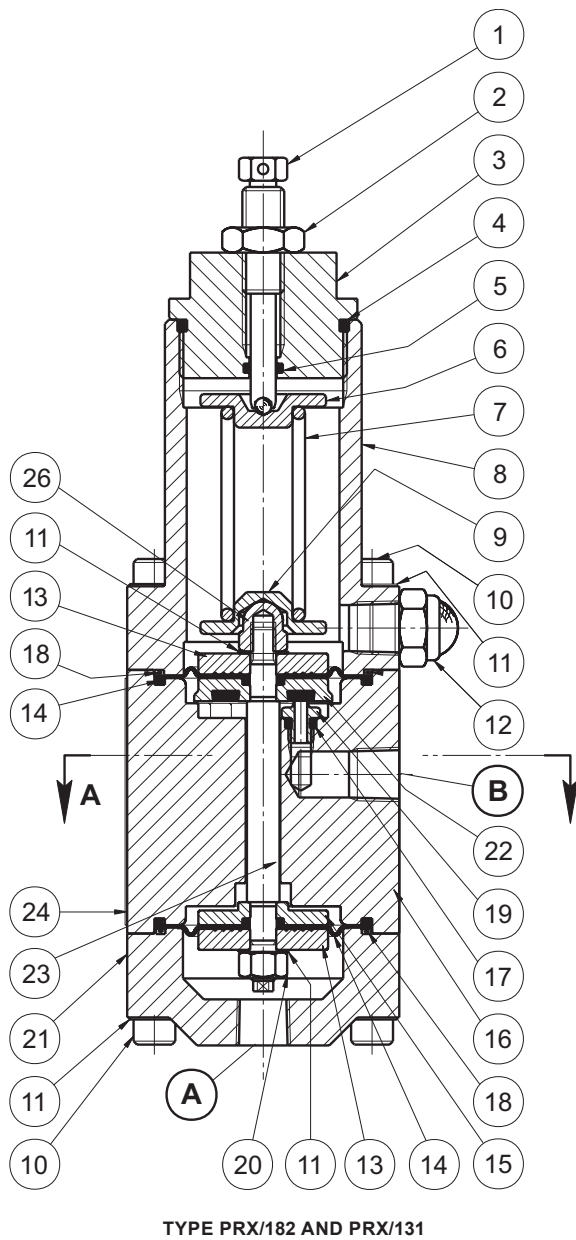


Figure 5. Type PRX/182 Pilot and Booster Valve Type PRX/131

Figure 6. Type PRX/181-PN and PRX/182-PN Pilots

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