

Type 114PL High-Pressure Reducing and Low-Flow System

Table of Contents

Introduction.....	1
Specifications	2
Principle of Operation.....	2
Installation	2
Startup	4
Maintenance.....	4
Parts Ordering	4

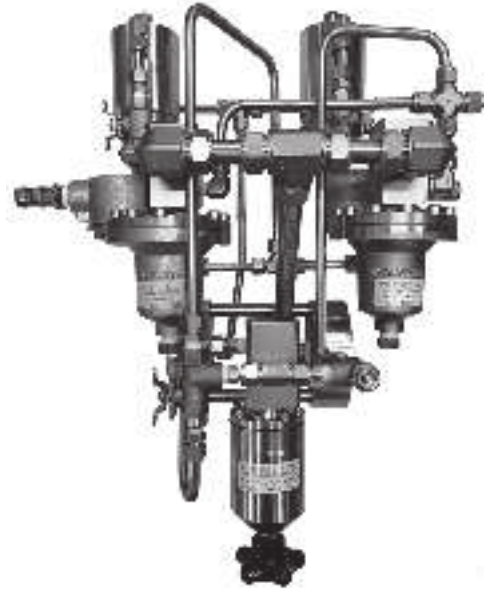


Figure 1. Type 114PL

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.

Fisher™ regulators 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 regulator 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 regulator.

Introduction

Scope of the Manual

This manual provides instructions for installation, startup, adjustment and maintenance for Type 114PL Pressure Reducing System. For pilots maintenance, instructions and parts list, see Type BSL85 Instruction Manual, D103711X012.

Product Description

Type 114PL

Type 114PL High-pressure Reducing and Low-flow System is a battery of three Type BSL85 Pilots (see Instruction Manual, D103711X012) where two of them are pneumatically loaded and the third one is spring-loaded. It is designed for high-pressure reduction with low-flow conditions.

Type RPE (Electric Heater)

Type RPE can be used together with the Type 114PL. Type RPE is used for reheating gas supplying pressure reducing regulator pilots. Type RPE avoids the inconveniences caused by freezing which occur during large pressure drops. (See Instruction Manual, D103694X012).

Europe, Middle East and Africa Only

Type 114PL

Specifications

The Specifications section lists the specifications for Type 114PL Pressure Reducing System. Factory specification are stamped on the nameplate fastened on the regulator at the factory.

<p>Body Sizes and End Connection Styles DN 25 / 1 NPS - CL600 Flanged</p> <p>Outlet Pressure Range (P_d)⁽¹⁾ 1.0 to 18 bar / 14.5 to 261 psig See Table 1</p> <p>Maximum Allowable Operating Pressure (P_s)⁽¹⁾ 100 bar / 1450 psig</p> <p>Maximum Obtainable Operating Pressure (P_u)⁽¹⁾⁽²⁾ 85 bar / 1233 psig</p>	<p>Construction Materials Pilot Body: Steel Pilot Manometric Box BMP (spring case): Steel Pilot Manometric Box BMP (cover): Steel Flange and spacer: Steel</p> <p>Option RPE (Electric Heater)</p>
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1. The pressure/temperature limits in this Instruction Manual or any applicable standard limitation should not be exceeded.
 2. In extreme conditions (isopropanol, methanol)

Table 1. Outlet Pressure Ranges

PNEUMATIC-LOADED PILOT TYPE	SPRING-LOADED PILOT TYPE	NOZZLE Ø		OUTLET PRESSURE RANGE (P_d)	
		mm	In.	bar	psig
114	114E	4	0.16	1 to 4.8	14.5 to 69.6
	071E	4	0.16	4.8 to 18	69.6 to 261

Principle of Operation

Type 114PL High-pressure Reducing and Low-flow System uses inlet pressure as the operating medium, which is reduced through the spring-loaded pilot to load the pneumatic-loaded pilots' cases.

When the outlet pressure (P_d) drops, the motorization pressure (P_m) opens more the nozzles in the pneumatic-loaded pilots supplying the required flow to the downstream system.

Any excess motorization pressure on the actuator diaphragm escapes downstream through the bleed restriction in the pilot.

When the gas demand in the downstream system has been satisfied, the outlet pressure (P_d) increases. In this case, the outlet pressure closes the nozzles in the pneumatic-loaded pilots until reach the setting value.

Installation



WARNING

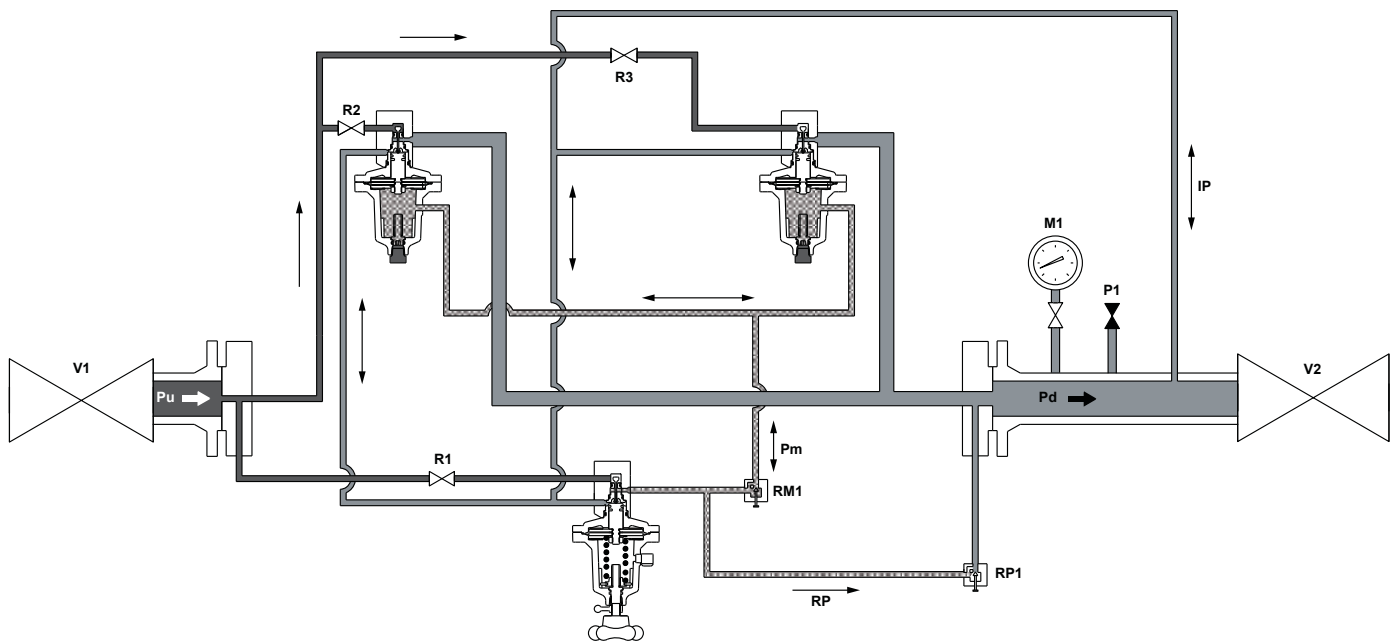
Personal injury or equipment damage, due to bursting of pressure-containing parts may result if this system is overpressured or is installed where

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 that installation is in compliance with all applicable code and regulations.

Physical damage to the system can break the pilot off the main valve, causing personal injury and property damage due to bursting of pressure-containing parts. To avoid such injury and damage, install the regulator in a safe location. Only personnel qualified through training and experience should install, operate and maintain a regulator.

Before installation, make sure that there is no damage to or debris in the system.



R1	PILOT SUPPLY VALVE	BPM2	PNEUMATIC BOX 2	V2	DOWNSTREAM ISOLATION VALVE
RM1	MOTORIZATION PRESSURE VALVE	M1	MANOMETER	P1	PILOT PULSE
RP1	PILOT REJECT VALVE	P1	PURGE	RP	PILOT REJECTION
PM	PILOT	V1	UPSTREAM ISOLATION VALVE	Pd	RELAXED PRESSURE
BPM1	PNEUMATIC BOX 1				

Figure 2. Type 114PL Operational Schematics

Make sure that all tubing and piping are clean and unobstructed.

The battery must be installed on horizontal pipeline. Installation according to EN 12186 is recommended.

When assembling with adjacent elements take care not to create pressure force on the body. The assembling elements (bolts, O-rings and flanges) should be compatible with the geometry and working conditions of the equipment.

Connect the impulse line keeping a minimum distance of 4 x D to a straight run of the outlet pipe.

No modification should be made to the structure of the equipment (drilling, grinding, soldering...). It is recommended to install a servicing valve on the outlet pipeline to facilitate adjustments and bleeding off to the atmosphere.

The equipment should not receive any type of shock, especially the release relay. The user should verify or carry out a protection adapted to the environment.

The action of fire, seismic and lightning are not taken into consideration in standard regulators. If required, a special product selection and/or specific calculations may be supplied according to specific requirements.

A regulator may vent some gas to the atmosphere.

In hazardous or flammable gas service, vented gas may accumulate, causing personal injury, death or property damage due to bursting of pressure retaining parts.

Vent a regulator in hazardous gas service to a remote, safe location away from air intakes or any hazardous location.

The vent line or stack opening must be protected against condensation or clogging.

Type 114PL

General Installation

1. Install the regulator so that the flange connected to the spring-loaded pilot's feeding is in the inlet side.
2. Use gaskets between pipeline and system flanges.
3. Connect the sensing line to the downstream.

Initial Verification

- PM unscrewed
- RM1 open
- RP1 open 3/4 turn
- R1, R2, R3, V1, V2 closed

Start up

1. Slowly open V1 (upstream valve).
2. Slowly open R1 and check the leakage of the pilot nozzle PM by the absence of pressure rise on the downstream pressure gauge.
3. Slowly open R2 and check the leakage of the nozzle of the BPM1 by the absence of pressure rise on the downstream pressure gauge.
4. Slowly open R3 and check the leakage of the BPM2 by the absence of pressure rise on the downstream pressure gauge.
5. Adjust PM to the required value Pd (read on M1 if necessary using valve P1).

Maintenance

Disassembly

Check the absence of pressure between inlet and outlet valves.

Recommended Frequency

Every year:

- Disassemble the manometric boxes and nozzles.
- Control O-rings, diaphragms, grease.

Parts Ordering

When corresponding with your local Sales Office about this regulator, include the type number and all other pertinent information stamped on the nameplate. Specify the 11-character part number when ordering new parts. See Type BSL85 Instruction Manual, D103711X012, for the parts list.

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