

## Introduction

This installation guide provides instructions for installation, startup, and adjustment. For further information refer to:

Type EZR Instruction Manual, form 5468, D102600X012 or [www.FISHERregulators.com](http://www.FISHERregulators.com).

## P.E.D. Categories

This product may be used as a safety accessory with pressure equipment in the following Pressure Equipment Directive 97/23/EC categories. It may also be used outside of the Pressure Equipment Directive using sound engineering practice (SEP) per table below.

PRODUCT SIZE	CATEGORIES	FLUID TYPE
DN 8 (1/4-inch)	SEP	1

## Specifications

### Available Constructions

*Type 161EB:* High accuracy pilot with an outlet pressure range from 0,34 to 24,2 bar (5 to 350 psig). Pilot bleeds (exhausts) downstream through the sense (control) line.

*Type 161EBM:* The monitor version of the Type 161EB pilot. The pilot bleed (exhaust) is isolated from the sense (control) line. This pilot is used in monitoring systems requiring an isolated pilot bleed (exhaust).

*Type 161EBH:* The high-pressure version of the Type 161EB pilot with an outlet pressure range from 17,2 to 48,3 bar (250 to 700 psig).

*Type 161EBHM:* The high-pressure version of the Type 161EBM pilot with an outlet pressure range from 17,2 to 48,3 bar (250 to 700 psig).

### Body Size and End Connection Style

DN 6 (1/4-inch) NPT

### Maximum Inlet Pressure<sup>(1)</sup>

103 bar (1500 psig)

### Maximum Outlet Pressure<sup>(1)</sup>

52 bar (750 psig)

### Outlet Pressure Ranges<sup>(1)</sup>

*Types 161EB and 161EBM:* 0,34 to 1,0 bar (5 to 15 psig), 0,69 to 2,8 bar (10 to 40 psig), 2,1 to 5,2 bar (30 to 75 psig), 4,8 to 9,7 bar (70 to 140 psig), 9,0 to 13,8 bar (130 to 200 psig), 8,3 to 21 bar (120 to 300 psig), and 13,8 to 24,2 bar (200 to 350 psig)

*Types 161EBH and 161EBHM:* 17,2 to 31 bar (250 to 450 psig), and 27,6 to 48,3 bar (400 to 700 psig)

### Proof Test Pressure

All Pressure Retaining Components have been proof tested per Directive 97/23/EC - Annex 1, Section 7.4

### Temperature Capabilities<sup>(1)</sup>

*Nitrile/Neoprene:* -40 to 82°C (-40 to 180°F)

*Fluoroelastomer:* -18 to 149°C (0 to 300°F) hot water limited to 82°C (180°F)

1. The pressure/temperature limits in this installation guide and any applicable standard or code limitation should not be exceeded.

2. The maximum operating pressure for fluoroelastomer diaphragms is limited to 31 bar (450 psig)

## Installation



**WARNING**

**Only qualified personnel should install or service a regulator. Regulators should be installed, operated, and maintained in accordance with international and applicable codes and regulations, and Fisher instructions.**

**If the regulator vents fluid or a leak develops in the system, it indicates that service is required. Failure to take the regulator out of service immediately may create a hazardous condition.**

**Personal injury, equipment damage, or leakage due to escaping fluid or bursting of pressure-containing parts may result if this regulator is overpressured or is installed where service conditions could exceed the limits given in the Specifications section, or where conditions exceed any ratings of the adjacent piping or piping connections.**

**To avoid such injury or damage, provide pressure-relieving or pressure-limiting devices (as required by the appropriate code, regulation, or standard) to prevent service conditions from exceeding limits.**

**Additionally, physical damage to the regulator could result in personal injury and property damage due to escaping fluid. To avoid such injury and damage, install the regulator in a safe location.**

Clean out all pipelines before installation of the regulator and check to be sure the regulator has not been damaged or has collected foreign material during shipping. For NPT bodies, apply pipe compound to the male pipe threads. For flanged bodies, use suitable line gaskets and approved piping and bolting practices. Install the regulator in any position desired, unless otherwise specified, but be sure flow through the body is in the direction indicated by the arrow on the body.

### Note

It is important that the regulator be installed so that the vent hole in the spring case is unobstructed at all times. For outdoor installations, the regulator should be located away from vehicular traffic and positioned so that water, ice, and other foreign materials cannot enter the spring case through the vent. Avoid placing the regulator beneath eaves or downspouts, and be sure it is above the probable snow level.

## Overpressure Protection

The recommended pressure limitations are stamped on the regulator nameplate. Some type of overpressure protection is needed if the actual inlet pressure exceeds the maximum operating outlet pressure rating. Overpressure protection should also be provided if the regulator inlet pressure is greater than the safe working pressure of the downstream equipment.



# Type 161EB

Regulator operation below the maximum pressure limitations does not preclude the possibility of damage from external sources or debris in the line. The regulator should be inspected for damage after any overpressure condition.

## Startup

The regulator is factory set at approximately the midpoint of the spring range or the pressure requested, so an initial adjustment may be required to give the desired results. With proper installation completed and relief valves properly adjusted, slowly open the upstream and downstream shutoff valves.

## Adjustment

To change the outlet pressure, remove the closing cap or loosen the locknut and turn the adjusting screw clockwise to increase outlet pressure or counterclockwise to decrease pressure. Monitor the outlet pressure with a test gauge during the adjustment. Replace the closing cap or tighten the locknut to maintain the desired setting.

## Taking Out of Service (Shutdown)

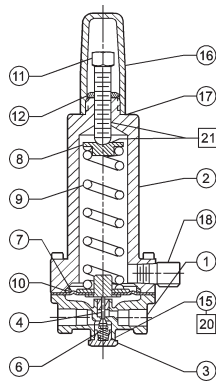


**WARNING**

To avoid personal injury resulting from sudden release of pressure, isolate the regulator from all pressure before attempting disassembly.

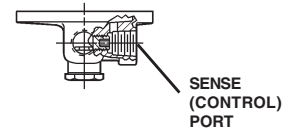
## Parts List

Key	Description
1	Body Assembly
2	Spring Case
3	Body Plug
4	Valve Plug
6	Plug Spring
7	Diaphragm Assembly
8	Control Spring Seat
9	Control Spring
10	Diaphragm Limiter
11	Adjusting Screw
12	Locknut
13	Machine Screw
14	Pipe Plug
15	Body Plug O-Ring
16	Closing Cap
17	Closing Cap Gasket
18	Type Y602-12 Vent Assembly
19	Stem Guide Seal Assembly



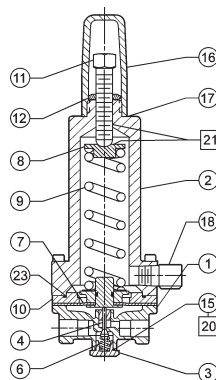
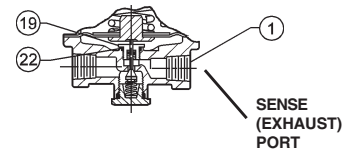
30B4395-E

**TYPE 161EB PILOT**



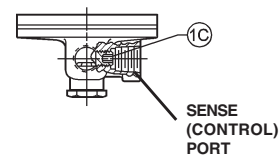
31B5012-A

**TYPE 161EBM PILOT**



32B0707-B

**TYPE 161EBH PILOT**



32B0708-B

**TYPE 161EBHM PILOT**

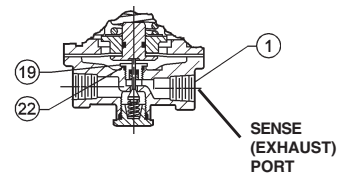


Figure 1. 161EB Series Pilots

©Fisher Controls International, Inc., 2002; All Rights Reserved

Fisher and Fisher Regulators are marks owned by Fisher Controls International, Inc. The Emerson logo is a trade mark and service mark of Emerson Electric Co. All other marks are the property of their respective owners.

The contents of this publication are presented for informational purposes only, and while every effort has been made to ensure their accuracy, they are not to be construed as warranties or guarantees, express or implied, regarding the products or services described herein or their use or applicability. We reserve the right to modify or improve the designs or specifications of such products at any time without notice.

For information, contact Fisher Controls, International:

Within USA (800) 588-5853 – Outside USA (972) 542-0132

France – (33) 23-733-4700

Singapore – (65) 770-8320

Mexico – (52) 57-28-0888

Printed in U.S.A.

[www.FISHERregulators.com](http://www.FISHERregulators.com)

