

## Introduction

This installation guide provides instructions for installation, startup, and adjustment. To receive a copy of the instruction manual, contact your local Fisher Sales Office or Sales Representative or view a copy at [www.emersonprocess.com/regulators](http://www.emersonprocess.com/regulators). For further information refer to:

Type 98H Instruction Manual, form 1570, D100258X012, or the Type 98HD Instruction Manual, form 1571, D100259X012.

## P.E.D. Category

This product may be used as a pressure 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
1/4-inch to 1-inch (DN 6 to 25)	SEP	1
1-1/2-inches to 2-inches (DN 40 to 50)	I, II	

## Installation



### WARNING

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

If using a backpressure regulator on a hazardous or flammable fluid service, personal injury and property damage could occur due to fire or explosion of vented fluid that may have accumulated. To prevent such injury or damage, provide piping or tubing to vent the fluid to a safe, well-ventilated area or containment vessel. Also, when venting a hazardous fluid, the piping or tubing should be located far enough away from any buildings or windows so to not create a further hazard, and the

vent opening should be protected against anything that could clog it.

**Personal injury, equipment damage, or leakage due to escaping fluid or bursting of pressure-containing parts may result if this backpressure 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 backpressure regulator could result in personal injury and property damage due to escaping fluid. To avoid such injury and damage, install the backpressure regulator in a safe location.**

Clean out all pipelines before installation of the backpressure regulator and check to be sure the backpressure 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 backpressure 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 backpressure regulator be installed so that the vent hole in the spring case is unobstructed at all times. For outdoor installations, the backpressure 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 backpressure regulator beneath eaves or downspouts, and be sure it is above the probable snow level.



# Types 98H and 98HD

## Specifications

### Available Constructions

**Type 98H:** Direct-operated backpressure regulator with standard adjusting screw.

**Type 98HD:** Pressure-loaded backpressure regulator with handwheel adjusting screw.

### End Connection Style

NPT, socket weld, or ANSI flanged 14-inches face-to-face (DIN flanged 356 mm face-to-face)

### Body Sizes

1/4, 1/2, 3/4, 1, 1-1/2, or 2-inches (DN 6, 15, 20, 25, 40, or 50)

### Maximum Inlet Pressures<sup>(1)(2)</sup>

See Table 1

### Proof Test Pressure

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

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

**1/4-inch (DN 6):** 15 to 35 psi (1,03 to 2,41 bar), 25 to 75 psi (1,72 to 5,17 bar), 70 to 140 psi (4,83 to 9,65 bar), and 130 to 200 psi (8,96 to 13,8 bar)

**1/2-inch (DN 15):** 15 to 35 psi (1,03 to 2,41 bar), 25 to 75 psi (1,72 to 5,17 bar), 70 to 140 psi (4,83 to 9,65 bar), and 130 to 200 psi (8,96 to 13,8 bar)

**3/4 and 1-inch (DN 20 and 25):** 15 to 35 psi (1,03 to 2,41 bar), 25 to 75 psi (1,72 to 5,17 bar), 70 to 140 psi (4,83 to 9,65 bar), and 130 to 200 psi (8,96 to 13,8 bar)

**1-1/2 and 2-inches (DN 40 and 50):** 5 to 35 psi (0,34 to 2,41 bar), 20 to 65 psi (1,38 to 4,48 bar), 50 to 100 psi (3,45 to 6,90 bar), and 80 to 170 psi (5,52 to 11,7 bar)

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

**Nitrile Parts:** -20 to 200°F (-29 to 93°C)

**Neoprene Parts:** -40 to 150°F (-40 to 66°C)

**Fluoroelastomer Parts:** 0 to 300°F (-18 to 149°C)

### Metal Diaphragm and Seat

**Cast Iron Body and Spring Case:**

-40 to 150°F (-40 to 66°C)

**Steel Body and Spring Case:**

-20 to 450°F (-29 to 232°C)

**Stainless Steel Body and Spring Case:**

-40 to 450°F (-40 to 232°C)

### Maximum Spring Case Loading Pressures<sup>(1)(3)</sup>

See Table 2

1. The pressure/temperature limits in this installation guide and any applicable standard or code limitation should not be exceeded.
2. Pressure setting plus maximum allowable buildup over setting.
3. Loading pressure plus spring setting should not exceed maximum inlet pressure.

**Table 1. Maximum Inlet Pressures, Psig (bar)**

TYPE NUMBER	STEEL (WCB) OR STAINLESS STEEL BODY/ALL TRIMS TO 150°F (66°C)	CAST IRON BODY		
		All Trims to 150°F (66°C)	Metal Trims	
			To 315°F (157°C)	To 406°F (208°C)
98H	300 (149)	300 (149)	300 (149)	250 (121)
98HD	400 (204)	300 (149)	300 (149)	250 (121)

**Table 2. Maximum Spring Case Loading Pressures**

TYPE NUMBER	STEEL (WCB) OR STAINLESS STEEL SPRING CASE		CAST IRON SPRING CASE			
			Elastomer Diaphragm		Metal Diaphragm	
	Psig	bar	Psig	bar	Psig	bar
98HD	300	20,7	250	17,2	250	17,2

## Overpressure

Maximum inlet pressures depend upon body materials and temperatures. Refer to the nameplate for the maximum inlet pressure of

the valve. The valve should be inspected for damage after any overpressure condition. **Fisher backpressure regulators are NOT ASME safety relief valves.**

# Types 98H and 98HD

## Startup

The backpressure 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 (if applicable).

## Adjustment

To change the outlet pressure, remove 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 closing cap or tighten the locknut to maintain the desired setting.

## Taking Out of Service (Shutdown)



### WARNING

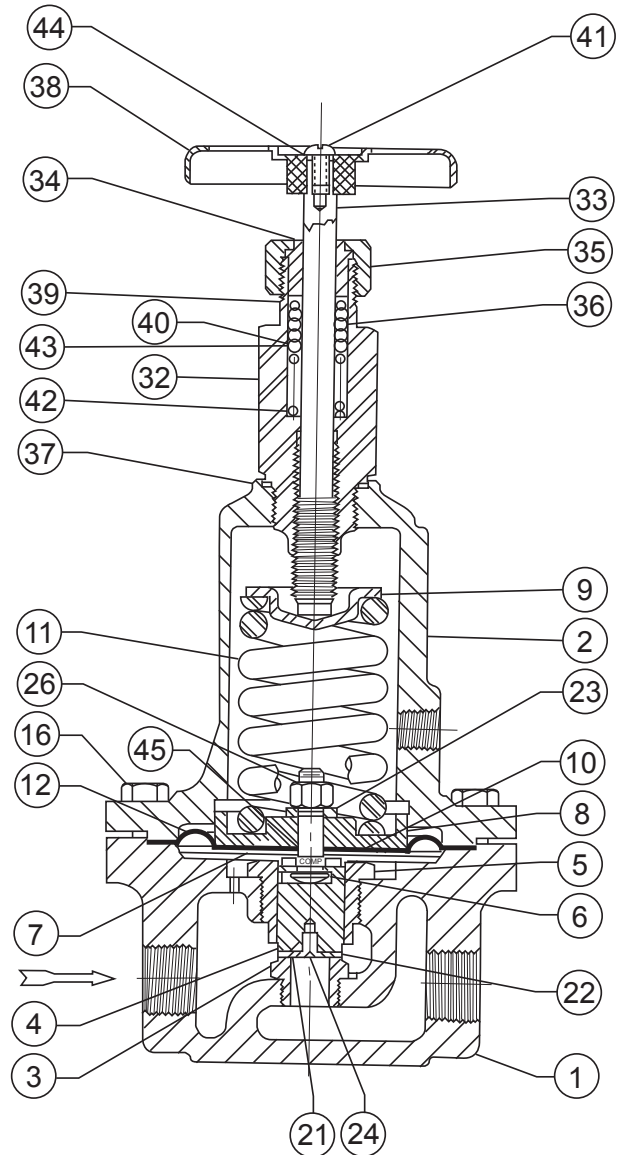
To avoid personal injury resulting from sudden release of pressure, isolate the backpressure regulator from all pressure before attempting disassembly.

## Parts List

Key	Description
1	Body
2	Spring Case
3	Orifice
4	Valve Plug
5	Valve Plug Guide
6	Pusher Post
7	Washer
8	Lower Spring Seat
9	Upper Spring Seat
10	Gasket
11	Relief Valve Spring
12	Diaphragm
16	Cap Screw
19	Diaphragm Gasket
21	O-Ring Retainer
22	O-Ring
23	Lockwasher
24	Machine Screw
25	Diaphragm Head
26	Locknut

## Type 98H Only

Key	Description
14	O-Ring
15	Adjusting Screw
17	Jam Nut
22	L-Ring
29	Machine Screw
30	Lockwasher



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Figure 1. Type 98HD Backpressure Regulator Assembly

## Type 98HD Only

Key	Description
32	Packing Box
33	Adjusting Screw
34	Packing Follower
35	Packing Box Nut
36	Packing, TFE
37	Packing Box Gasket
38	Handwheel
39	Female Adaptor
40	Male Adaptor
41	Machine Screw
42	Spring
43	Washer
44	Washer
45	O-Ring

# Types 98H and 98HD

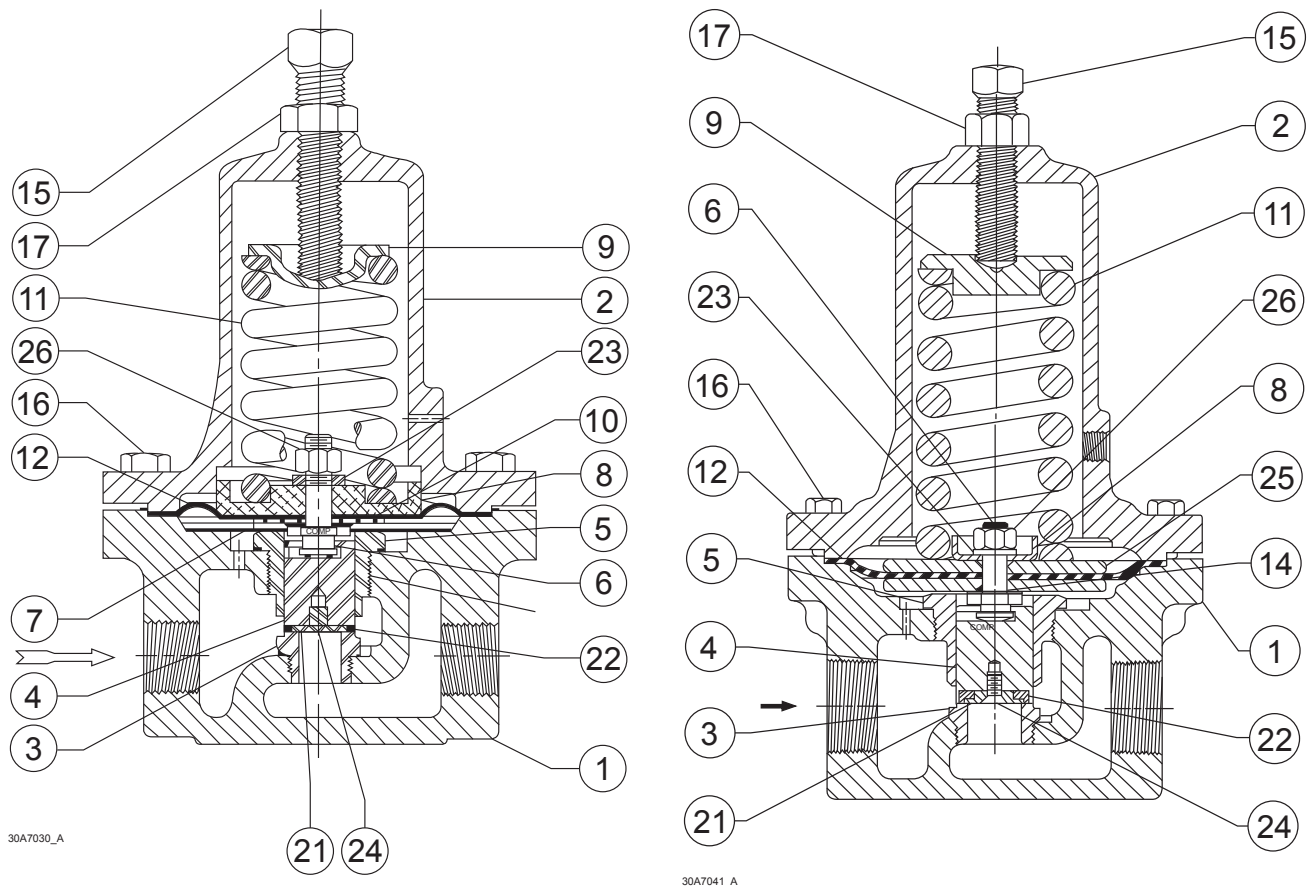


Figure 2. Type 98H Backpressure Regulator Assembly

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