

Introduction

This installation guide provides instructions for installation, startup and adjustment. To receive a copy of the instruction manual, contact your local Sales Office or view a copy at www.fisher.com. For further information, refer to: Type T205B Balanced Tank Blanketing Regulator Instruction Manual, D103750X012.

PED/PE(S)R Categories

This product may be used as a safety accessory with pressure equipment in the following categories. It may also be used outside of these Directives using Sound Engineering Practice (SEP) per table below. For information on the current PED/PE(S)R revision, see Bulletin: [D103053X012](#).

PRODUCT SIZE	CATEGORY	FLUID TYPE
DN 20 and 25 / 3/4 and 1 in.	SEP	1

Specifications

Body Sizes and End Connection Styles

See Table 1

Maximum Allowable and Operating Inlet Pressure⁽¹⁾

See Table 1

Maximum Outlet (Casing) Pressure⁽¹⁾

See Table 1

Maximum Emergency Outlet Pressure to Avoid Internal Parts Damage⁽¹⁾

With Nitrile (NBR) or Fluorocarbon (FKM)

diaphragm: 2.4 bar / 35 psig

With Fluorinated Ethylene Propylene (FEP)

diaphragm: 0.69 bar / 10 psig

Outlet (Control) Pressure Ranges⁽¹⁾

See Table 3

Shutoff Classification per ANSI/FCI 70-3-2004

Class VI (Soft Seat)

Material Temperature Capabilities⁽¹⁾⁽²⁾

Elastomer Parts

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

Fluorinated Ethylene Propylene (FEP):

-29 to 82°C / -20 to 180°F

Fluorocarbon (FKM): 4 to 149°C / 40 to 300°F

Ethylene Propylene Diene (EPDM): -29 to 107°C / -20 to 225°F

Perfluoroelastomer (FFKM): -18 to 149°C / 0 to 300°F

Body Materials

Gray Cast Iron⁽³⁾: -29 to 149°C / -20 to 300°F

WCC Carbon Steel: -29 to 149°C / -20 to 300°F

LCC Carbon Steel: -40 to 149°C / -40 to 300°F

CF8M/CF3M Stainless Steel: -40 to 149°C / -40 to 300°F

Installation



Only qualified personnel shall install or service a regulator. Regulators should be installed, operated and maintained in accordance with international and applicable codes and regulations and Emerson Process Management Regulator Technologies, Inc. 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 external pipe threads. For flanged bodies, use suitable line gaskets and approved piping and bolting practices. Install the regulator in any position desired⁽³⁾, unless otherwise specified, but be sure flow through the body is in the direction indicated by the arrow on the body.

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

2. See Table 2 for operating temperature ranges for available trim combinations.

3. For proper operation to achieve the published capacities at low setpoint, the spring case barrel should be installed pointed down as shown in Figure 1.

Type T205B

Table 1. Body Sizes, End Connection Styles, Maximum Allowable and Operating Inlet Pressures and Maximum Outlet (Casing) Pressure

BODY SIZE		BODY MATERIAL	END CONNECTION STYLES ⁽¹⁾	MAXIMUM ALLOWABLE AND OPERATING INLET PRESSURE		MAXIMUM OUTLET (CASING) PRESSURE	
DN	In.			bar	psig	bar	psig
20 or 25	3/4 or 1	Gray Cast Iron	NPT	10.3	150	2.4	35
		WCC/LCC Carbon Steel or CF8M/CF3M Stainless Steel ⁽²⁾	NPT	13.8	200	5.2	75
20 or 20 x 25 ⁽³⁾	3/4 or 3/4 x 1 ⁽³⁾	WCC/LCC Carbon Steel or CF8M/CF3M Stainless Steel ⁽²⁾	CL150 RF, CL300 RF or PN 16/25/40 RF	13.8	200	5.2	75

1. All flanges are welded. Weld-on flange dimension is 356 mm / 14 in. face-to-face.
 2. Pipe nipples and flanges are 316 Stainless steel for flanged body assemblies.
 3. DN 20 x 25 / 3/4 x 1 in. flanged construction uses DN 20 / 3/4 in. 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

Type T205B Regulator has an outlet pressure rating lower than the inlet pressure rating. The recommended pressure limitations are stamped on the regulator nameplate. Some type of overpressure protection is needed if the actual inlet pressure can exceed the maximum operating outlet pressure rating. Common methods of external overpressure protection includes relief valves, monitoring regulators, shut-off devices and series regulation. Overpressuring any portion of the regulators beyond the limits in the Specifications section may cause leakage, damage to regulator parts or personal injury due to bursting of pressure-containing parts.

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 regulator properly adjusted, slowly open the upstream and downstream shutoff valves.

Adjustment

To change the outlet pressure, perform the following procedure.

For internal flat circular adjusting screw:

1. Remove the closing cap (key 22).
2. Use a 25 mm / 1 in. hex rod or flat screwdriver to turn the adjusting screw (key 35) either clockwise to increase outlet pressure or counterclockwise to decrease outlet pressure. The regulator will go into immediate operation. To ensure correct operation, always use a pressure gauge to monitor the tank blanketing pressure when making adjustments.
3. After making the adjustment, replace the closing cap gasket (key 25) and install the closing cap (key 22).

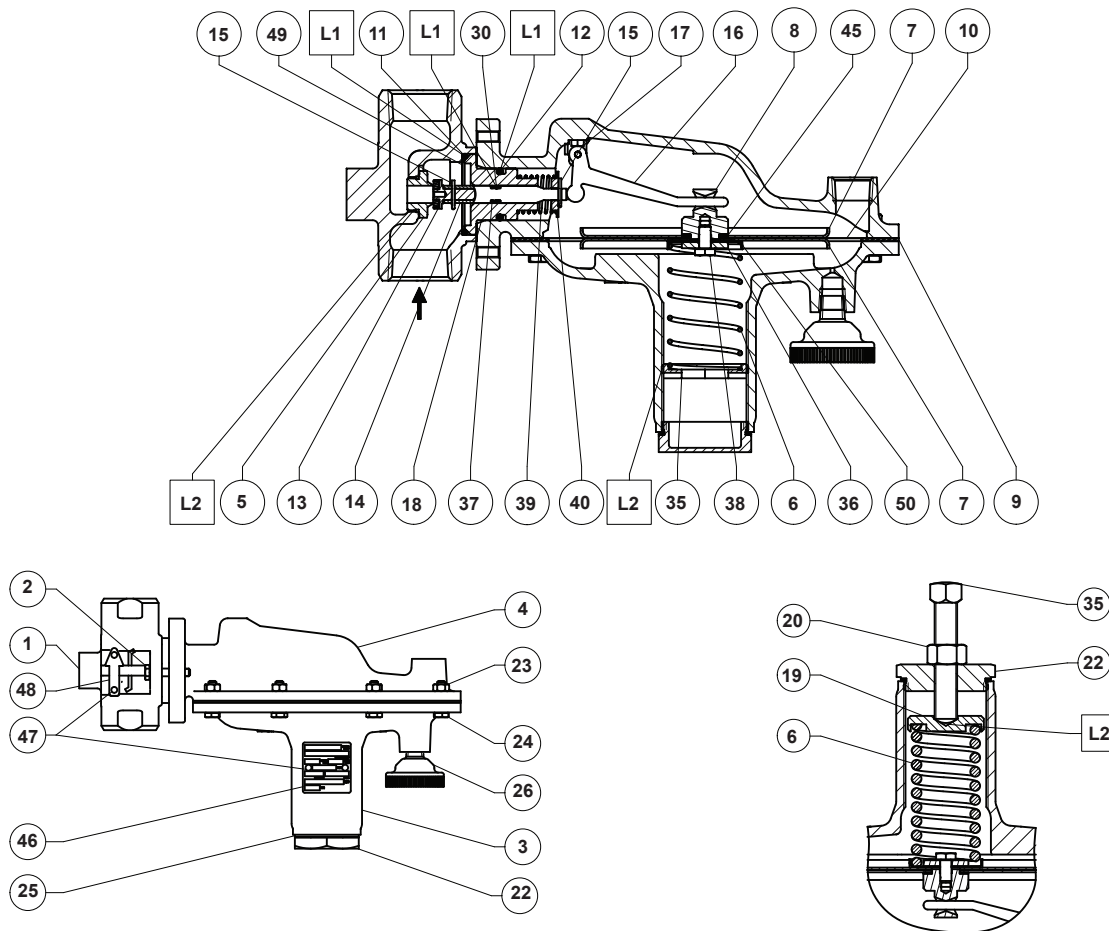
For external square head adjusting screw:

1. Loosen the locknut (key 20).
2. Turn the adjusting screw (key 35) either clockwise to increase outlet pressure or counterclockwise to decrease outlet pressure. Always use pressure gauge to monitor the tank blanketing gas pressure when making adjustments.
3. After making the adjustment, tighten the locknut (key 20).

Taking Out of Service (Shutdown)



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



EXTERNAL SQUARE HEAD ADJUSTING SCREW ASSEMBLY OPTION⁽²⁾

ERSA00627

APPLY LUBRICANT⁽¹⁾:
L1 = MULTI-PURPOSE PTFE LUBRICANT
L2 = ANTI-SEIZE COMPOUND

1. Lubricants must be selected such that they meet the temperature requirements.
 2. For 83 to 172 mbar / 1.2 to 2.5 psig, 0.17 to 0.31 bar / 2.5 to 4.5 psig and 0.31 to 0.48 bar / 4.5 to 7 psig spring ranges only.

Figure 1. Type T205B Assembly

Parts List

Key Description

1	Body
2	Cap Screw (2 required)
3	Spring Case
4	Lower Casing
5*	Orifice
6	Spring
7	Diaphragm Head (2 required)
8	Pusher Post
9*	Diaphragm Gasket (for FEP diaphragm)
10*	Diaphragm
11*	Body Seal O-ring
12*	Insert Seal O-ring
13*	Disk Assembly
14	Stem
15*	Cotter Pin (2 required)
16	Lever Assembly
17	Machine Screw (2 required)
18	Guide Insert
19	Upper Spring seat ⁽¹⁾

Key Description

20	Lock Nut ⁽¹⁾
22	Closing Cap
23	Hex Nut (8 required)
24	Spring Case Cap Screw (8 required)
25*	Closing Cap Gasket
26	Vent Assembly
30*	Stem Seal O-ring
35	Adjusting Screw
36	Washer
37*	Backup Ring (2 required)
38	Diaphragm Head Cap Screw
39	Bias spring
40	Bias spring seat
45*	Diaphragm Head Gasket
46	Nameplate
47	Drive Screw (2 required)
48	Flow Arrow
49	Backup Ring
50	Lower Spring Seat

*Recommended spare part

1. Use for optional external square head adjusting screw assembly recommended for 83 to 172 mbar / 1.2 to 2.5 psig, 0.17 to 0.31 bar / 2.5 to 4.5 psig and 0.31 to 0.48 bar / 4.5 to 7 psig spring ranges only.

Type T205B

Table 2. Operating Temperature Ranges for Available Trim Combination

TRIM OPTION CODE	DIAPHRAGM MATERIAL	DISK AND O-RING MATERIAL	OPERATING TEMPERATURE RANGES
Standard	Fluorinated Ethylene Propylene (FEP)	Nitrile (NBR)	-29 to 82°C / -20 to 180°F
NN	Nitrile (NBR)	Nitrile (NBR)	-40 to 82°C / -40 to 180°F
VV	Fluorocarbon (FKM)	Fluorocarbon (FKM)	4 to 149°C / 40 to 300°F
TV	Fluorinated Ethylene Propylene (FEP)	Fluorocarbon (FKM)	4 to 82°C / 40 to 180°F
TK	Fluorinated Ethylene Propylene (FEP)	Perfluoroelastomer (FFKM)	-18 to 82°C / 0 to 180°F
TE	Fluorinated Ethylene Propylene (FEP)	Ethylene Propylene Diene (EPDM)	-29 to 82°C / -20 to 180°F

Table 3. Outlet (Control) Pressure Ranges and Spring Information

OUTLET (CONTROL) PRESSURE RANGE		SPRING PART NUMBER	SPRING COLOR	SPRING WIRE DIAMETER		SPRING FREE LENGTH	
mbar	In. w.c.			mm	In.	mm	In.
2.5 to 6.2 ⁽¹⁾⁽²⁾	1 to 2.5 ⁽¹⁾⁽²⁾	1B558527052	Orange	1.8	0.072	82.6	3.25
6.2 to 17 ⁽²⁾	2.5 to 7 ⁽²⁾	1B653827052	Red	2.2	0.085	92.2	3.63
17 to 40	7 to 16	1B653927022	Unpainted	2.7	0.105	95.2	3.75
34 to 83	0.5 to 1.2 psig	1B537027052	Yellow	2.9	0.114	109	4.31
83 to 172	1.2 to 2.5 psig	1B537127022	Green	4.0	0.156	103	4.06
0.17 to 0.31 bar	2.5 to 4.5 psig	1B537227022	Light Blue	4.8	0.187	100	3.94
0.31 to 0.48 bar	4.5 to 7 psig	1B537327052	Black	5.5	0.218	101	3.98

1. Do not use Fluorocarbon (FKM) diaphragm with this spring at diaphragm temperatures lower than 16°C / 60°F.
2. To achieve the published outlet pressure range, the spring case must be installed pointing down.

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For further information on the current PED/PE(S)R revision see Bulletin: [D103053X012](#) or scan the QR code.



The distinctive diamond shape cast into every spring case uniquely identifies the regulator as part of the Fisher™ brand and assures you of the highest-quality engineering, durability, performance, and support.

