

Type T205B Balanced Tank Blanketing Regulator

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Figure 1. Type T205B Tank Blanketing Regulator



WARNING

Failure to follow these instructions or to properly install and maintain this equipment could result in an explosion, fire and/or chemical contamination causing property damage and personal injury or death.

Fisher® tank blanketing 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. (Regulator Technologies) instructions.

If the regulator discharges process fluid 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 qualified service person to service the unit. Installation, operation and maintenance procedures performed by unqualified person may result in improper adjustment and unsafe operation. Either condition may result in equipment damage

or personal injury. Only a qualified person must install or service the Type T205B tank blanketing regulator.

Introduction

Scope of the Manual

This Instruction Manual provides instruction for installation, startup, maintenance and parts ordering information for Type T205B tank blanketing regulator.

Product Description

Type T205B balanced tank blanketing regulator (Figure 1) is a direct-operated regulator with fully balanced plug design to reduce inlet pressure sensitivity and with large diaphragm to accurately control tank pressure at low pressure settings on tank blanketing systems. The regulator prevents a stored liquid from vaporizing into the atmosphere, reduces liquid combustibility and prevents oxidation or contamination of the liquid by reducing its exposure to air. Type T205B maintains a slightly positive pressure and thereby reduces the possibility of tank wall collapse during pump out operation.



Type T205B

Specifications

This section lists the specifications of the Type T205B Tank Blanketing Regulator. Factory specification, such as maximum temperature, maximum inlet and outlet pressures, spring range and seat or orifice size are stamped on the nameplate fastened on the regulator at the factory.

| | |
|---|--|
| <p>Body Sizes and End Connection Styles See Table 1</p> <p>Maximum Allowable Inlet Pressure⁽¹⁾ See Table 1</p> <p>Maximum Operating Inlet Pressure⁽¹⁾ Gray cast iron: 150 psig / 10.3 bar WCC Carbon steel or CF8M/CF3M Stainless steel: 200 psig / 13.8 bar</p> <p>Maximum Outlet (Casing) Pressure⁽¹⁾ Gray cast iron: 35 psig / 2.4 bar WCC Carbon steel or CF8M/CF3M Stainless steel: 75 psig / 5.2 bar</p> <p>Maximum Emergency Outlet Pressure to Avoid Internal Parts Damage⁽¹⁾ With Nitrile (NBR) or Fluorocarbon (FKM) diaphragm: 35 psig / 2.4 bar With Fluorinated Ethylene Propylene (FEP) diaphragm: 10 psig / 0.69 bar</p> <p>Outlet (Control) Pressure Range⁽¹⁾ See Table 2</p> <p>Shutoff Classification per ANSI/FCI 70-3-2004 Class VI (Soft Seat)</p> | <p>Pressure Registration External</p> <p>Material Temperature Capabilities⁽¹⁾⁽²⁾ Elastomer Parts <i>Nitrile (NBR):</i> -40 to 180°F / -40 to 82°C <i>Fluorinated Ethylene Propylene (FEP):</i> -20 to 180°F / -29 to 82°C <i>Fluorocarbon (FKM):</i> 40 to 300°F / 4 to 149°C <i>Ethylene Propylene Diene (EPDM):</i> -20 to 225°F / -29 to 107°C <i>Perfluoroelastomer (FFKM):</i> 0 to 300°F / -18 to 149°C</p> <p>Body Materials <i>Gray cast iron:</i> -20 to 300°F / -29 to 149°C <i>WCC Carbon steel:</i> -20 to 300°F / -29 to 149°C <i>CF8M/CF3M Stainless steel:</i> -40 to 300°F / -40 to 149°C</p> <p>Spring Case Vent Connection 1/4 NPT</p> <p>Diaphragm Case Control Line Connection 1/2 NPT</p> <p>Approximate Weight 17.7 pounds / 8 kg</p> |
|---|--|

1. The pressure/temperature limits in this Instruction Manual and any applicable standard or code limitation should not be exceeded.
2. See Table 4 for operating temperature ranges for available trim combinations.

Table 1. Body Sizes, End Connection Styles and Maximum Allowable Inlet Pressures

| BODY SIZE | | BODY MATERIAL | END CONNECTION STYLE ⁽¹⁾ | MAXIMUM ALLOWABLE INLET PRESSURE | |
|-----------|----------|--|---|----------------------------------|------|
| Inch | DN | | | psig | bar |
| 3/4 or 1 | 20 or 25 | Gray cast iron | NPT | 150 | 10.3 |
| | | WCC Carbon steel | NPT, CL150 RF, CL300 RF or PN 16/25/40 RF | 200 | 13.8 |
| | | CF8M/CF3M Stainless steel ⁽²⁾ | | | |

1. All flanges are welded. Weld-on flange dimension is 14 inches / 356 mm face-to-face.
2. Pipe nipples and flanges are 316 Stainless steel for flanged body assemblies.

Table 2. Outlet (Control) Pressure Ranges and Spring Information

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

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

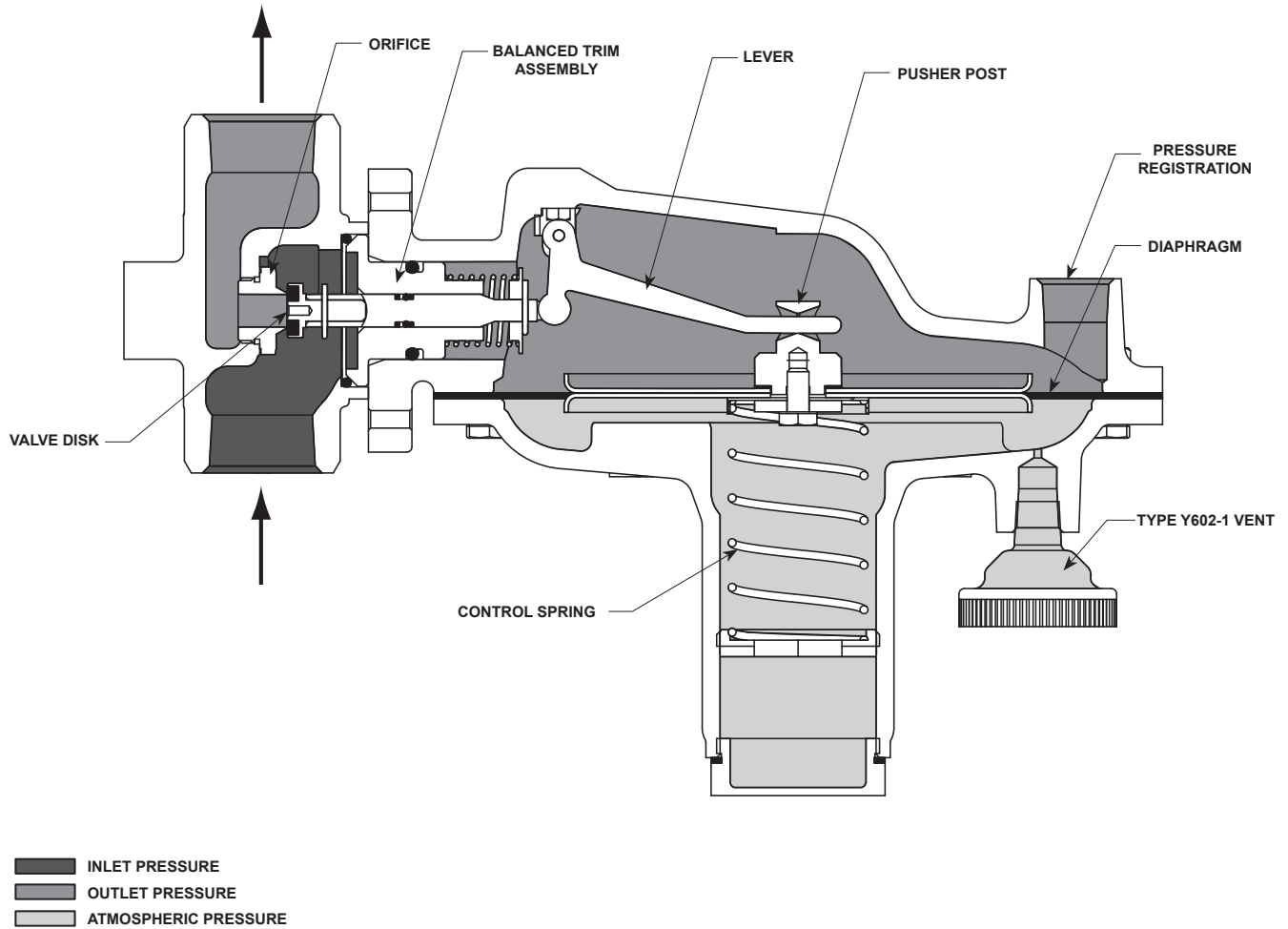


Figure 2. Type T205B Operational Schematic

Principle of Operation

Refer to Figure 2. Type T205B tank blanketing regulator controls the vapor space pressure over a stored liquid. When liquid is pumped out of the tank or vapors in the tank condense, the pressure in the tank decreases. Tank pressure is sensed by the actuator diaphragm. Spring force pushes the pusher post assembly, the valve disk moves away from the orifice, allowing the gas flow to increase.

When pressure in the tank increases, the actuator diaphragm is pushed. Through the action of the pusher post assembly, lever and valve stem, the valve disk moves closer to the orifice reducing gas flow.

The regulator plug is balanced (inlet pressure creates equal upward and downward forces on these components) see Figure 4, therefore, the outlet (control) pressure of the unit is not affected by inlet pressure variation.

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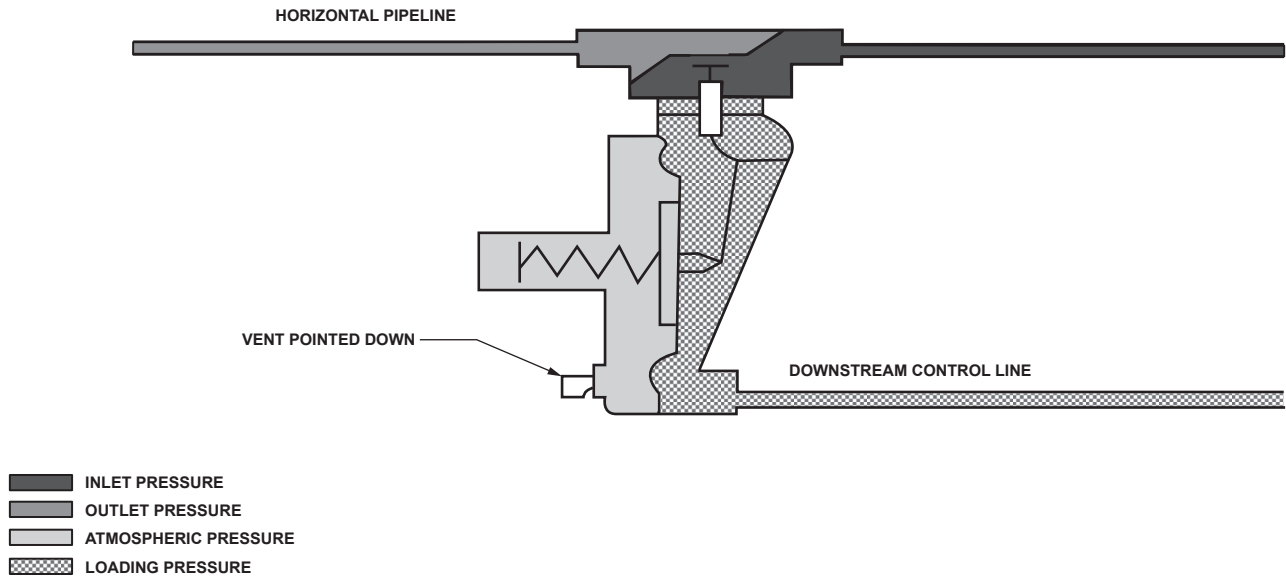


Figure 3. Type T205B Actuator Casing Drainage

Installation



WARNING

Personal injury, property damage, equipment damage or leakage due to escaping gas or bursting of pressure-containing parts may result if this regulator is overpressured or 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. Refer to Overpressure Protection section for recommendations on how to prevent service conditions from exceeding those limits.

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 cause personal injury or property damage due to escaping gas. To avoid such injury or damage, install the regulator in a safe location.

Note

If the regulator is shipped mounted on another unit, install that unit according to the appropriate instruction manual.

1. Only personnel qualified through training and experience shall install, operate and maintain a regulator. For a regulator that is shipped separately, make sure there is no damage to or debris in the regulator. Also ensure that all tubing and piping are clean and unobstructed.
2. The regulator may be installed in any position as long as the flow through the body is in the direction indicated by the arrow on the body. For proper operation to achieve the published capacities at low setpoint, the spring case barrel should be installed pointing downward as shown in Figure 1. For complete actuator drainage, the regulator should be installed as shown in Figure 3. If continuous operation of the system is required during inspection or maintenance, install a three-valve bypass around the regulator.

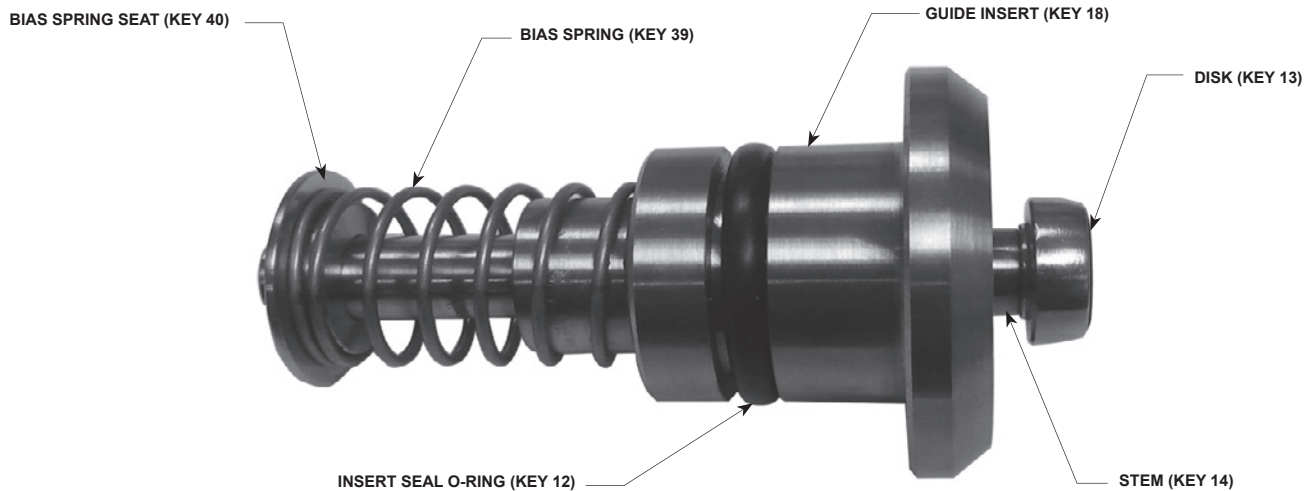


Figure 4. Balanced Trim Assembly



WARNING

A regulator may vent some gas to the atmosphere. In hazardous or flammable gas service, vented gas may accumulate and cause personal injury, death or property damage due to fire or explosion. Vent a regulator in hazardous gas service to a remote, safe location away from air intakes or any hazardous area. The vent line or stack opening must be protected against condensation or clogging.

3. To keep the vent assembly (key 26, Figure 6) from being plugged or the spring case (key 3) from collecting moisture, corrosive chemicals or other foreign material, point the vent down or otherwise protect it. The diaphragm casing (key 4) may be rotated in order to obtain desired positioning.
4. To remotely vent the regulator, remove the vent (key 26, Figure 6) and install obstruction-free tubing or piping into the 1/4 NPT vent tapping. Provide protection on a remote vent by installing a screened vent cap into the remote end of the vent pipe.
5. The Type T205B requires a downstream control line. Be sure to install the control line before putting the regulator into operation. Make the control line as short and straight as possible and do not install it in a location where flow may be turbulent. Restrictions in the control line can prevent proper pressure registration. When using a hand valve, it should be a full flow valve, such as a full port ball valve. Install the control line sloping downward toward the tank to prevent condensation buildup and avoid low points (or traps) that could catch liquid. The sensing line must enter the tank above the liquid level at a point that senses the vapor space pressure and is free from turbulence associated with tank nozzles or vents. The control line pipe should be at least 1/2-inch / 13 mm in diameter and increase 1 pipe size for every 10 feet / 3.05 m of control line, with setpoints less than 5-inches w.c. / 12 mbar.
6. An upstream shutoff valve is recommended to simplify maintenance to the regulator. It is advisable to install a pressure gauge between the upstream shutoff valve and the blanketing valve.

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Overpressure Protection



Personal injury, equipment damage or leakage due to escaping accumulated gas or bursting of pressure-containing parts may result if this regulator is:

- Overpressured
- Used with incompatible process fluid
- Installed where service conditions could exceed the limits given in the Specifications section and on the appropriate nameplate
- Where conditions exceed any ratings of 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.

Type T205B regulators have 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 include 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.

If the regulator is exposed to an overpressure condition, it should be inspected for any damage that may have occurred. Regulator operation below the limits specified in the Specifications section and regulator nameplate does not preclude the possibility of damage from external sources or from debris in the pipeline.

Startup, Adjustment and Shutdown

Note

The Specifications section and Table 1 provide the maximum pressure capabilities for each regulator construction. Use pressure gauges to monitor inlet pressure and outlet pressure during startup and adjustment procedures.

Startup

1. Open shutoff valves between the tank blanketing regulator and the tank (both sensing and outlet).
2. Slowly open the supply line shutoff valve (to the blanketing valve) and leave it fully open.
3. Monitor the tank vapor space pressure.

Adjustment



To avoid personal injury, property damage or equipment damage caused by bursting of pressure containing parts or explosion of accumulated gas, never adjust the control spring to produce an outlet pressure higher than the upper limit of the outlet pressure range (see Table 2) for that particular spring. If the desired outlet pressure is not within the range of the control spring, install a spring of the proper range according to the Diaphragm and Spring Case Area section of the maintenance procedure.

Adjust the regulator outlet (control) pressure setting to meet the requirements of the specific application. With a spring-loaded regulator, the pressure setting may be adjusted to a value within the spring range shown in Table 2. To adjust the pressure setting, perform the following steps (key numbers are referenced in Figure 6):

For internal flat circular adjusting screw

1. Remove the closing cap (key 22).
2. Use a 1-inch / 25 mm hex rod or flat screwdriver to 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, 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).

Shutdown

1. Close the nearest upstream shutoff valve and then close the nearest downstream shutoff valve to vent the pressure in the regulator properly.
2. Close the valve in the control line and vent the pressure in the lower casing.
3. Open the vent valve between the regulator and the downstream shutoff valve nearest to it. All pressure between these shutoff valves is released through the open vent valve, since a Type T205B remains open in response to the decreasing downstream pressure.

Maintenance

Due to normal wear or damage that may occur from external sources, inspect and maintain the regulator periodically. The frequency of inspection and replacement depends on the severity of service conditions, test results found during the annual test and on applicable codes and regulations. In accordance with applicable National or Industry codes, standards and regulations/recommendations, all hazards covered by specific tests after final assembling before applying the CE marking, shall also be covered after every subsequent reassembly at installation site, in order to ensure that the equipment will be safe throughout its intended life.



WARNING

To avoid personal injury, property damage or equipment damage caused by sudden release of pressure or explosion of accumulated gas, do not attempt any maintenance or disassembly without first isolating the regulator from system pressure and relieving all internal pressure from the regulator.

Regulators that have been disassembled for repair must be tested for proper operation before being returned to service. Only parts manufactured by Regulator Technologies should be used for repairing Fisher® regulators. Restart gas utilization equipment according to normal startup procedures.

General Maintenance

1. Visually inspect the regulator and its parts for any damage.
2. Ensure tight connections, tight seals and safe operation. If there is an evidence of leakage or unstable internal motion, a rebuild with seal replacement and relubrication may be necessary.
3. Observe the blanketing pressure.
4. Inspect the inlet pressure for the proper pressure (stamped on the regulator nameplate).

Body Area

Perform the following procedure to gain access to orifice and body O-ring. Release all pressure from the diaphragm casing and open the disk assembly before performing the following steps. Key numbers are referenced in Figure 6.

1. Remove the cap screws (key 2) and separate the diaphragm casing (key 4) from the body (key 1).
2. Remove and inspect the body seal O-ring (key 11) and the backup ring (key 49).
3. Inspect and replace the orifice (key 5) if necessary. Protect the orifice seating surface during disassembly and assembly. Lubricate the threads of the replacement orifice with a good grade of light grease and install with 340 to 470 inch-pounds / 38.5 to 53.1 N•m of torque.
4. Place back-up ring (key 49) into the body (key 1). Then place the body seal O-ring (key 11) into the body.
5. Place the diaphragm casing (key 4) on the body (key 1). Secure the diaphragm casing to the body with the cap screws (key 2) using 90 to 126 inch-pounds / 10.2 to 14.2 N•m of torque.

Diaphragm and Spring Case Area

Perform the following procedure to gain access to the spring, diaphragm, lever assembly, stem and disk assembly. Release all pressure from the diaphragm casing before performing the following steps. Key numbers are referenced in Figure 6.

1. **For internal flat circular adjusting screw** - remove the closing cap (key 22) and closing cap gasket (key 25).
For external square head adjusting screw - loosen the locknut (key 20).

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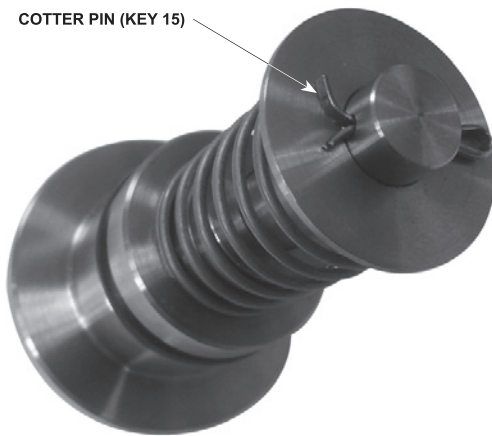


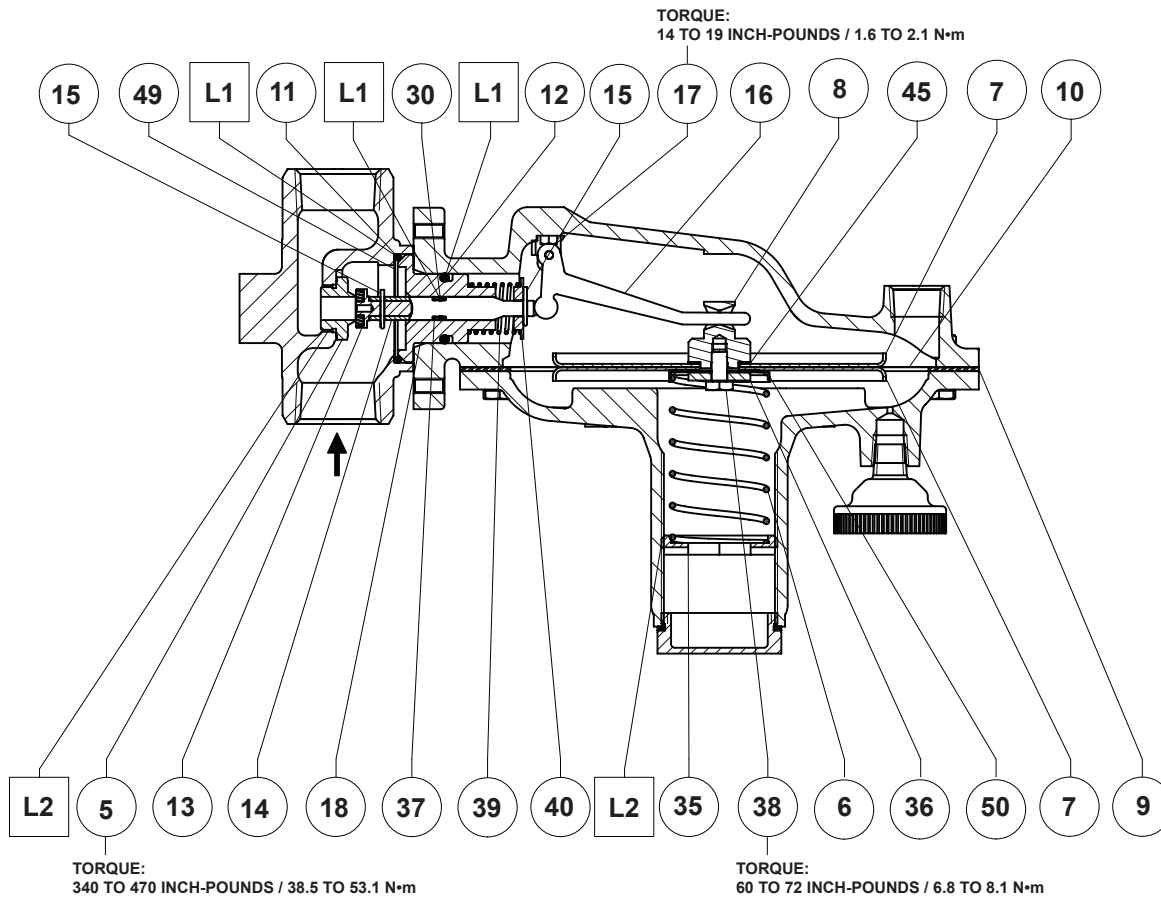
Figure 5. Proper Bending of Cotter Pin

2. Turn the adjusting screw (key 35) counterclockwise to remove all the compression from the control spring (key 6).
3. If the only maintenance procedure to be performed is the changing of the control spring (key 6):
For internal flat circular adjusting screw
 - a. Remove the adjusting screw (key 35).
 - b. Take out the control spring and replace with the desired spring.
 - c. Reinstall the adjusting screw.
 - d. Adjust the outlet pressure to the desired control pressure setting, refer to steps 2 and 3 of Adjustment section.
 - e. Change the stamped spring range on the nameplate. Skip to step 16.**For external square head adjusting screw**
 - a. Remove the adjusting screw (key 35) and locknut (key 20).
 - b. Remove the closing cap (key 22), closing cap gasket (key 25) and upper spring seat (key 19).
 - c. Take out the control spring and replace with the desired spring.
 - d. Reinstall the upper spring seat, closing cap gasket, closing cap, locknut and adjusting screw.
 - e. Adjust the outlet pressure to the desired control pressure setting, refer to steps 2 and 3 of Adjustment section.
 - f. Change the stamped spring range on the nameplate. Skip to step 16.
4. If the further maintenance to the internal diaphragm casing (key 4) parts is required, remove the hex nuts (key 23) and spring case cap screws (key 24). Remove the diaphragm (key 10) plus attached parts by tilting them so that the pusher post (key 8) slips off the lever assembly

(key 16). To separate the diaphragm from the attached parts, unscrew the diaphragm head cap screw (key 38) from the pusher post. If the only maintenance procedure to be performed is the replacement of the diaphragm components, skip to step 11.

5. To replace the lever assembly (key 16), remove the machine screws (key 17). If the only future maintenance procedure to be performed is the replacement of the lever assembly, skip to step 10.
6. Remove the guide insert (key 18) and stem (key 14) assembly carefully from the lower casing (key 4). Remove the cotter pin (key 15), bias spring seat (key 40) and bias spring (key 39) then pull the stem out of the guide insert. Apply a moderate coating of lubricant to the stem, install the stem seal O-ring (key 30) and the two back-up rings (key 37) onto the valve stem.
7. Remove the cotter pin (key 15) to replace the disk assembly (key 13).
8. Install the disk assembly (key 13) to stem (key 14) and secure with cotter pin (key 15). Insert the stem into guide insert (key 18), put on bias spring (key 39) and bias spring seat (key 40), secure with another cotter pin. Use plier or equivalent tool to bend the cotter pin ends after insertion (see Figure 5).
9. Install the stem (key 14) and guide insert (key 18) assembly into the lower casing (key 4) and perform Body Area Maintenance procedure steps 4 through 5 as necessary.
10. Install the lever assembly (key 16) into the stem (key 14) and secure the lever assembly with the machine screws (key 17) using 14 to 19 inch-pounds / 1.6 to 2.1 N•m of torque.
11. Always use a new diaphragm head gasket (key 45). Install the parts on the pusher post (key 8) in the following order:
 - Diaphragm head gasket
 - Diaphragm head (key 7)
 - Diaphragm (key 10)
 - Diaphragm head
 - Lower spring seat (key 50)
 - Washer (key 36)

Secure the parts with diaphragm head cap screw (key 38) using 60 to 72 inch-pounds / 6.8 to 8.1 N•m of torque.



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

1. Lubricants must be selected such that they meet the temperature requirements.

Figure 6. Type T205B Regulator Assembly

12. Install the pusher post (key 8) and attached parts onto the lever assembly (key 16).
 - c. Closing cap gasket (key 25)
 - d. Closing cap (key 22)
 - e. Locknut (key 20)
 - f. Adjusting screw (key 35)
13. Install the spring case (key 3) on the lower casing (key 4) so that the vent assembly (key 26) is correctly oriented and secure them with the spring case cap screws (key 24) and hex nuts (key 23) to finger tightness only.
14. Install the parts into the spring case (key 3). Follow the order below:

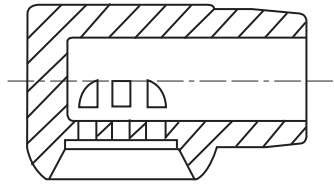
For internal flat circular adjusting screw

 - a. Control spring (key 6)
 - b. Adjusting screw (key 35)

For external square head adjusting screw

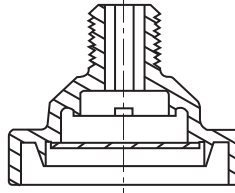
 - a. Control spring (key 6)
 - b. Upper spring seat (key 19)
15. Turn the adjusting screw (key 35) clockwise until there is enough control spring force to provide proper slack to diaphragm (key 10). Using a crisscross pattern, finish tightening the spring case cap screws (key 24) and hex nuts (key 23) to 90 to 126 inch-pounds / 10.2 to 14.2 N·m of torque. Adjust the outlet pressure to the desired control pressure setting, refer to the Adjustment section.
16. Connect the downstream control line and refer to the Startup section before putting the regulator back in operation.

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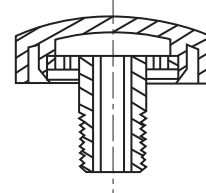
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**SPRING CASE SIDWAYS
TYPE Y602-12 VENT**



17A6570-B

**SPRING CASE DOWNWARD
TYPE Y602-1 VENT**

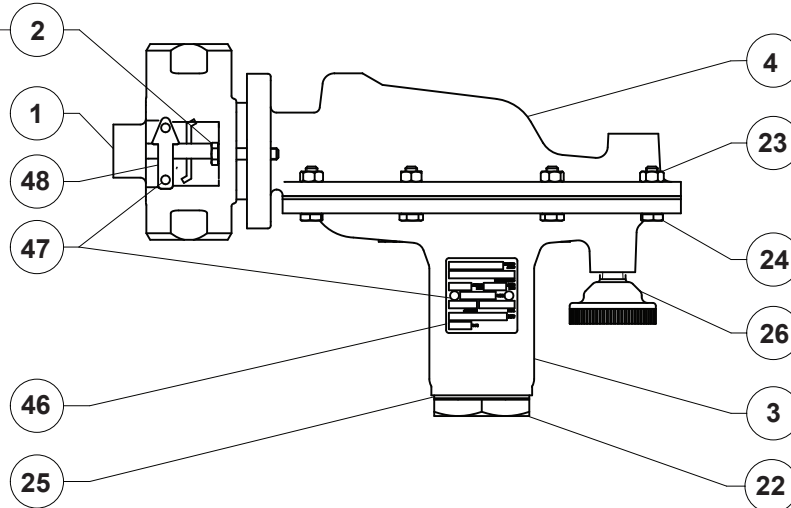


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**SPRING CASE UPWARD
TYPE Y602-11 VENT**

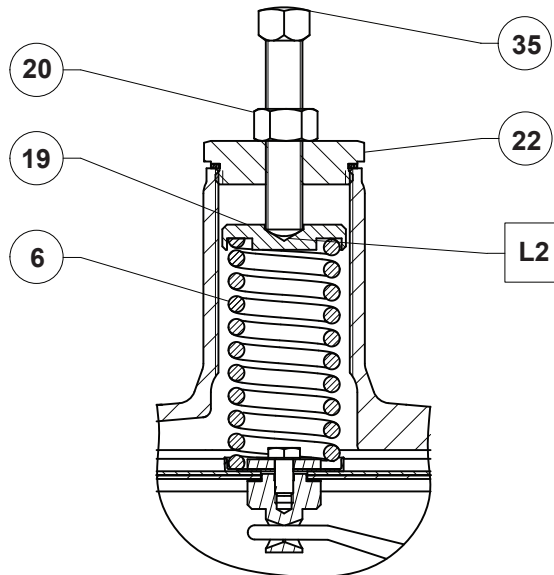
TORQUE:

90 TO 126 INCH-POUNDS /
10.2 TO 14.2 N·m



TORQUE:

90 TO 126 INCH-POUNDS /
10.2 TO 14.2 N·m



EXTERNAL SQUARE HEAD ADJUSTING SCREW ASSEMBLY OPTION⁽¹⁾

ERSA00627

APPLY LUBRICANT (L)⁽²⁾
L2 = ANTI-SEIZE COMPOUND

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

Figure 6. Type T205B Regulator Assembly (continued)

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 eleven-character part number when ordering new parts from the following parts list.

Parts List

| Key | Description | Part Number | Key | Description | Part Number |
|-----|--|--------------|-----|--|-------------|
| | Spare Parts Kit (included are keys 9, 10, 11, 12, 15, 25, 30, 37 and 45) (see Table 4 for Trim Option Codes) | | | | |
| | Standard Trim | RT205BXDD12 | | | |
| | NN Trim | RT205BXNN12 | | | |
| | VV Trim | RT205BXVV12 | | | |
| | TV Trim | RT205BXTV12 | | | |
| | TK Trim | RT205BXTK12 | | | |
| | TE Trim | RT205BXTE12 | | | |
| 1 | Body | See Table 3 | 13* | Disk Assembly (continued) | |
| 2 | Cap Screw (2 required) | | | Stainless steel with | |
| | For WCC Carbon steel or gray cast iron casing | 1C856228992 | | Perfluoroelastomer (FFKM) | ERSA01112A2 |
| | For CF8M/CF3M Stainless steel casing | 18B3456X012 | | Ethylene Propylene Diene (EPDM) | ERSA01112A3 |
| 3 | Spring Case | | 14 | Stem | ERSA00240A0 |
| | Gray cast iron | ERSA002558A0 | | Stainless steel | |
| | WCC Carbon steel | ERSA00195A1 | 15* | Cotter Pin (2 required) | |
| | CF8M/CF3M Stainless steel | ERSA00195A0 | | Stainless steel | 1A866537022 |
| 4 | Lower Casing | | 16 | Lever Assembly | |
| | Gray cast iron | 47B2271X012 | | Stainless steel | 1B5375000B2 |
| | WCC Carbon steel | ERSA00196A1 | 17 | Machine Screw (2 required) | |
| | CF8M/CF3M Stainless steel | ERSA00196A0 | | Stainless steel | 19A7151X022 |
| 5* | Orifice 3/8-inch / 9.5 mm | | 18 | Guide Insert | |
| | 303 Stainless steel (standard) | 0B042235032 | | Stainless steel | ERSA00239A0 |
| | 316 Stainless steel | 0B0422X0012 | 19 | Upper Spring seat ⁽¹⁾ , Zinc-plated steel | 1J618124092 |
| | | See Table 2 | 20 | Lock Nut ⁽¹⁾ , Steel | 1A413224122 |
| 6 | Spring | | 22 | Closing Cap | |
| 7 | Diaphragm Head (2 required) | | | Plastic (standard) | T11069X0012 |
| | Stainless steel | 17B9723X032 | | Steel | 1E422724092 |
| 8 | Pusher Post | | | Stainless steel | 1E422735072 |
| | For Fluorinated Ethylene | | | Zinc-plated steel ⁽¹⁾ | ERSA01809A0 |
| | Propylene (FEP) diaphragm | | 23 | Hex Nut (8 required) | |
| | 316 Stainless steel | ERSA00876A0 | | For WCC Carbon steel or gray cast iron casing | 1A345724122 |
| | For Nitrile (NBR) or | | | For CF8M/CF3M Stainless steel casing | 1A3457K0012 |
| | Fluorocarbon (FKM) diaphragm | | 24 | Spring Case Cap Screw (8 required) | |
| | 303 Stainless steel (standard) | 18B3462X032 | | For WCC Carbon steel or gray cast iron casing | 1A579724052 |
| | 316 Stainless steel | 18B3462X012 | | For CF8M/CF3M Stainless steel casing | 1A5797T0012 |
| 9 | Diaphragm Gasket (for FEP diaphragm) | | 25* | Closing Cap Gasket, Neoprene (CR) | 1P753306992 |
| | Nitrile (NBR) | ERSA00713A0 | 26 | Vent Assembly | |
| 10* | Diaphragm | | | Spring Case Sideways (standard) | |
| | Fluorinated Ethylene | | | (Type Y602-12) | 27A5516X012 |
| | Propylene (FEP) (standard) | ERSA00193A0 | | Spring Case Down (Type Y602-1) | 17A6570X012 |
| | Nitrile (NBR) | 17B9726X012 | | Spring Case Up (Type Y602-11) | 17A5515X012 |
| | Fluorocarbon (FKM) | 23B0101X052 | 30* | Stem Seal O-ring | |
| 11* | Body Seal O-ring | | | Nitrile (NBR) | 1D687506992 |
| | Nitrile (NBR) | 1H993806992 | | Fluorocarbon (FKM) | 1N430406382 |
| | Fluorocarbon (FKM) | 1H9938X0012 | | Perfluoroelastomer (FFKM) | 1D6875X0082 |
| | Perfluoroelastomer (FFKM) | 1H9938X0042 | | Ethylene Propylene Diene (EPDM) | 1D6875X0032 |
| | Ethylene Propylene Diene (EPDM) | 1H9938X0022 | 35 | Adjusting Screw | |
| 12* | Insert Seal O-ring | | | Internal Flat Circular, (standard) | 1B537944012 |
| | Nitrile (NBR) | 1B885506992 | | External Square Head | |
| | Fluorocarbon (FKM) | 1B8855X0012 | | For green or light blue spring | 10B3080X012 |
| | Perfluoroelastomer (FFKM) | 1B8855X0062 | | For black spring | 1D995448702 |
| | Ethylene Propylene Diene (EPDM) | 1B8855X0022 | 36 | Washer, Plated steel | 18B3440X012 |
| 13* | Disk Assembly | | 37* | Backup Ring, PTFE (2 required) | 1K786806992 |
| | Stainless steel with | | 38 | Diaphragm Head Cap Screw, Zinc-plated steel | 1B290524052 |
| | Nitrile (NBR) | ERSA01112A0 | 39 | Bias spring, Stainless steel | GE30193X012 |
| | Fluorocarbon (FKM) | ERSA01112A1 | 40 | Bias spring seat, Stainless steel | ERSA00202A0 |
| | | | 45* | Diaphragm Head Gasket, Composition | 18B3450X012 |
| | | | 46 | Nameplate | ----- |
| | | | 47 | Drive Screw (2 required), Stainless steel | 1A368228982 |
| | | | 48 | Flow Arrow | ----- |
| | | | 49 | Backup Ring, Stainless steel | 18B3446X012 |
| | | | 50 | Lower Spring Seat, Zinc-plated steel | 1B636325062 |

* Recommended spare part

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

Type T205B

Table 3. Body Materials and Part Numbers (Body, key 1)

| BODY MATERIAL | END CONNECTION STYLE ⁽¹⁾ | PART NUMBER | |
|--|-------------------------------------|-----------------------|---------------------|
| | | 3/4-Inch / DN 20 Body | 1-Inch / DN 25 Body |
| Gray Cast Iron | NPT | ERSA01588A0 | ERSA01755A0 |
| WCC Carbon steel | NPT | ERSA00230A1 | ERSA00194A1 |
| | CL150 RF | ERSA01469A0 | ERSA01469A1 |
| | CL300 RF | ERSA01469A2 | ERSA01469A3 |
| | PN 16/25/40 RF | ERSA01469A4 | ERSA01469A5 |
| CF8M/CF3M Stainless steel ⁽²⁾ | NPT | ERSA00230A0 | ERSA00194A0 |
| | CL150 RF | ERSA01469A6 | ERSA01469A7 |
| | CL300 RF | ERSA01469A8 | ERSA01469A9 |
| | PN 16/25/40 RF | ERSA01469B0 | ERSA01469B1 |

1. All flanges are welded. Weld-on flange dimension is 14 inches / 356 mm face-to-face.
 2. Pipe nipples and flanges are 316 Stainless steel for flanged body assemblies.

Table 4. Type T205B Trim Option Code

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

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