

# Fisher™ Baumann™ 24000S Stainless Steel Control Valve



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# Section 1: Introduction

The Fisher Baumann 24000S line of stainless steel pneumatic control valves (Figure 1) may be used for the control of pressure, temperature, level and flow. NPS 1/2 through 2 valves are available with NPT end connections. NPS 3 is available as wafer style only. The 316 stainless steel valve body will withstand mildly corrosive fluids, yet is economical enough to use in applications where carbon steel is normally specified.

## 1.1 Scope of the Manual

This instruction manual includes installation, maintenance and parts information for the Fisher Baumann 24000S stainless steel control valve.

### WARNING



**Do not install, operate or maintain Fisher Baumann 24000S control valves without being fully trained and qualified in valve, actuator and accessory installation, operation and maintenance. To avoid personal injury or property damage, it is important to carefully read, understand and follow all the contents of this manual, including all safety cautions and warnings. If you have any questions about these instructions, contact your [Emerson sales office](#) before proceeding.**

**Figure 1. Fisher Baumann 24000S NPT Control Valve**



W9759

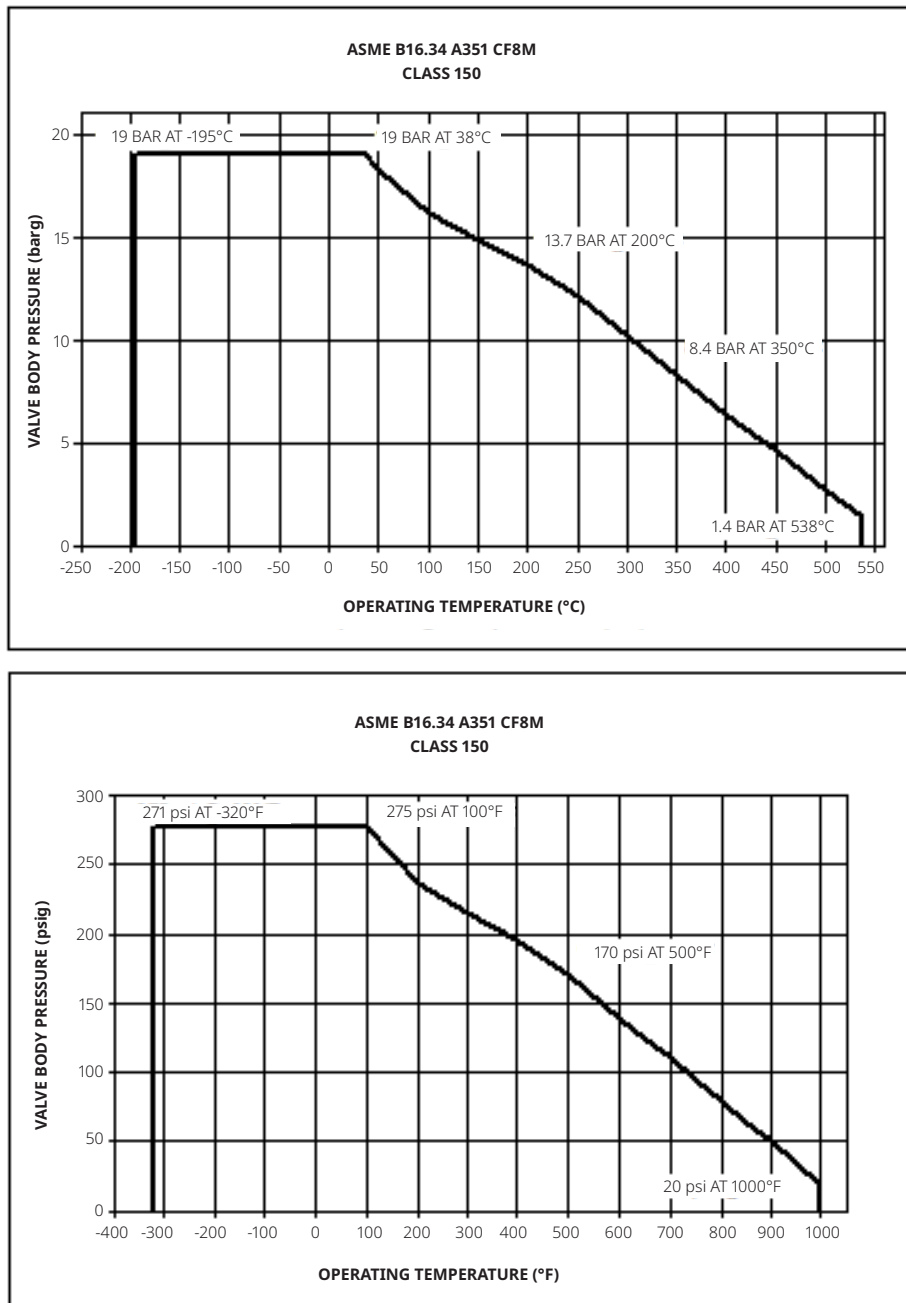
## 1.2 Education Services

Emerson's Education Services  
Phone: +1-800-338-8158  
E-mail: [education@emerson.com](mailto:education@emerson.com)  
[emerson.com/en/final-control/services/valve-training](http://emerson.com/en/final-control/services/valve-training)

**Table 1. Technical Specifications**

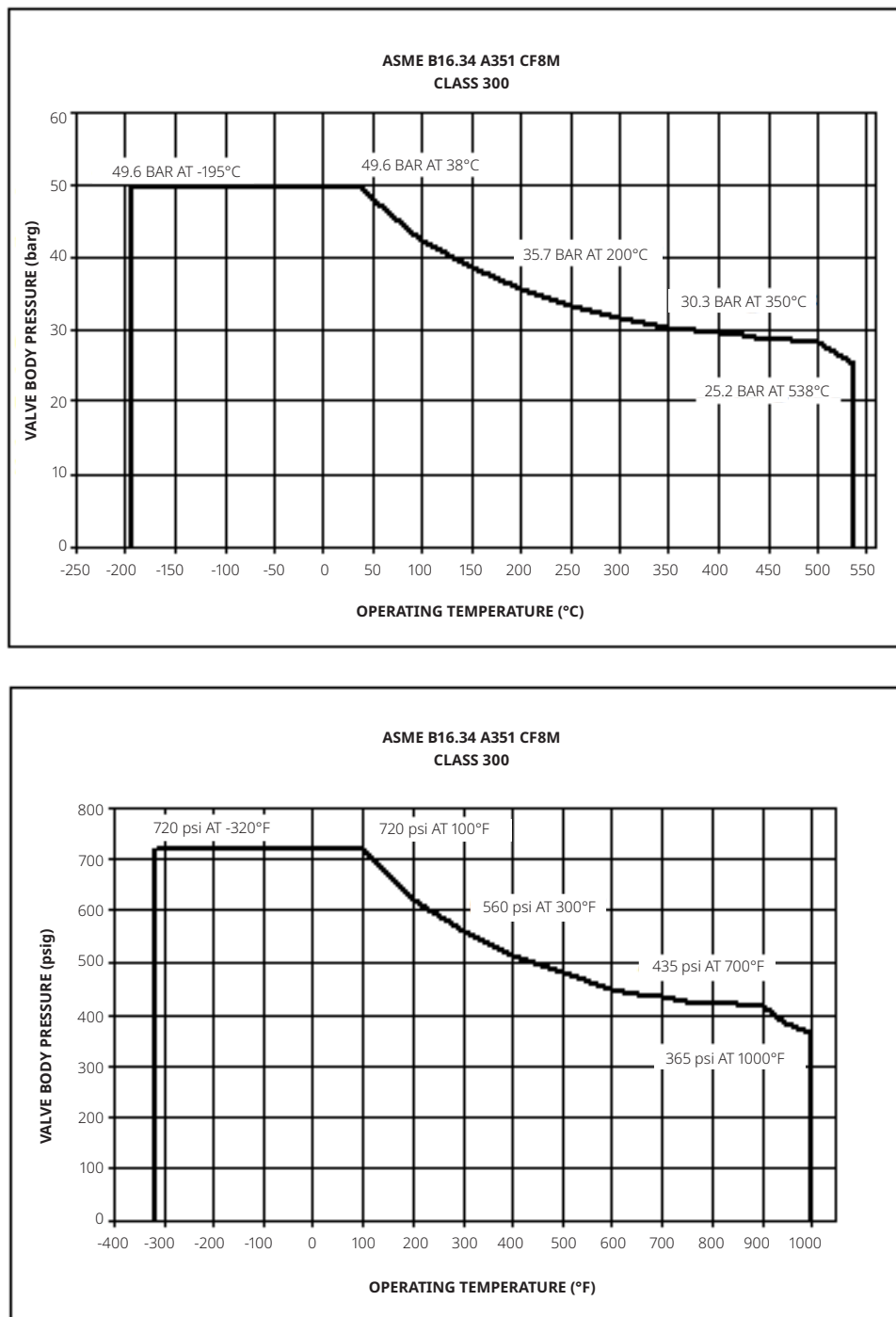
|                            |                                                                   |                            |
|----------------------------|-------------------------------------------------------------------|----------------------------|
| <b>NOMINAL PIPE SIZE</b>   | DN 15, 25, 40, 50 and 80                                          | NPS 1/2, 1, 1-1/2, 2 and 3 |
| <b>END CONNECTIONS</b>     | Screwed NPT (except for NPS 3, wafer style only) Wafer / Buttweld |                            |
| <b>PRESSURE RATING</b>     | CL300 (CL150 for NPS 3 per ASME B16.34)                           |                            |
| <b>VALVE BODY MATERIAL</b> | CF8M ASTM A351                                                    |                            |
| <b>CHARACTERISTIC</b>      | Equal Percentage or Linear                                        |                            |

**Figure 2. Valve Body Pressure / Temperature Ratings ASME CL150 Valves**  
(Source: ASME B16.34)



E1426

**Figure 3. Valve Body Pressure / Temperature Ratings ASME CL300 Valves**  
(Source: ASME B16.34) (Does Not Apply to 24000S NPS 3 Valves)



E1427

## Section 2: Installation

### WARNING

Always wear protective gloves, clothing and eyewear when performing any installation operations to avoid personal injury.

Personal injury or property damage caused by sudden release of pressure or bursting of pressure retaining parts may result if service conditions exceed those for which the product was intended. To avoid injury or damage, provide a relief valve for over pressure protection as required by government or accepted industry codes and good engineering practices.

Check with your process or safety engineer for any additional measures that must be taken to protect against process media.

If installing into an existing application, also refer to the WARNING at the beginning of the Maintenance section in this instruction manual.

### WARNING

When ordered, the valve configuration and construction materials were selected to meet particular pressure, temperature, pressure drop and controlled fluid conditions. Responsibility for the safety of process media and compatibility of valve materials with process media rests solely with the purchaser and end user. Because some valve body/trim material combinations are limited in their pressure drop and temperature range capabilities, do not apply any other conditions to the valve without first contacting your [Emerson sales office](#).

### NOTE

The acronym of CWP may appear on the nameplate. CWP (Cold Working Pressure) denotes the pressure rating at normal ambient temperature. A normal ambient temperature range being -4 to +100°F / -20 to +38°C.

### WARNING

If you move or work on an actuator installed on a valve with loading pressure applied, keep your hands and tools away from the stem travel path to avoid personal injury. Be especially careful when removing the stem connector to release all loading on the actuator stem whether it be from air pressure on the diaphragm or compression in the actuator springs.

Likewise take similar care when adjusting or removing any optional travel stop. Refer to the relevant actuator Maintenance Instructions.

If hoisting the valve, take care to prevent people from being injured in case the hoist or rigging slips. Be sure to use adequate sized hoists and chains or slings to handle the valve.

**⚠ WARNING**

**Personal injury could result from packing leakage. Valve packing is tightened before shipment; however, the packing might require some readjustment to meet specific service conditions.**

**NOTICE**

**To avoid damaging valve seating surfaces, make sure the adjacent piping is free of pipe scale, welding slag and any other potentially damaging material.**

1. Before installing the valve in the pipeline, inspect the valve body to be certain it is free of foreign material and thoroughly clean the line of all dirt, welding chips, scale, oil or grease and other foreign material.
2. Install the valve so the controlled fluid will flow through the valve body in the direction indicated by the arrow cast on the valve body.
3. A three-valve bypass must be used to permit removal of the control valve from the line without shutting down the system.
4. In case of a heat-insulated installation, insulate the valve body only, not the bonnet.

## 2.1 Air Piping

1. For an air-to-extend actuator (air-to-close action), connect the actuating air pressure line to the 1/4 NPT opening in the upper diaphragm case. For an air-to-retract actuator (air-to-open action) connect the actuating air pressure line to the 1/4 NPT in the lower diaphragm case.
2. Use 6.4 mm / 1/4 in. O.D. tubing or equivalent for all air lines. If air line exceeds 8 m / 25 ft in length, 9.5 mm / 3/8 in. tubing is preferred. Air lines must not leak. Air pressure not to exceed 2.5 bar / 35 psig.

## Section 3: Maintenance

### WARNING

Avoid personal injury and property damage from sudden release of process pressure or bursting of parts. Before performing any maintenance operations:

- Do not remove the actuator from the valve while the valve is still pressurized.
- Always wear protective gloves, clothing and eyewear when performing any maintenance operations.
- Disconnect any operating lines providing air pressure, electric power or a control signal to the actuator. Be sure the actuator cannot suddenly open or close the valve.
- Use bypass valves or completely shut off the process to isolate the valve from process pressure. Relieve process pressure on both sides of the valve. Drain the process media from both sides of the valve.
- Depending on the actuator construction, it will be necessary to manage the pneumatic actuator spring pre-compression. It is essential to refer to the relevant actuator instructions in this manual to perform safe removal of the actuator from the valve.
- Use lock-out procedures to be sure the above measures stay in effect while you work on the equipment.
- The valve packing box may contain process fluids that are pressurized, even when the valve has been removed from the pipeline. Process fluids may spray out under pressure when removing the packing hardware or packing rings or when loosening the packing box pipe plug.
- Check with your process or safety engineer for any additional measures that must be taken to protect against process media.

### NOTE

Whenever a gasket seal is disturbed by removing or shifting gasketed parts, install a new gasket during reassembly. This provides a good gasket seal because the used gasket may not seal properly.

## 3.1 Disassembly

### NOTICE

- When assembling or disassembling the valve, do not turn the valve stem while the plug is touching the valve seat. This will damage the valve's seating surfaces.
- When adjusting the valve stem, do not grip the stem directly with pliers or a wrench. This will damage the surface of the stem and cause damage to the packing in the valve. Instead, counter-tighten the two locknuts (key 27) on the stem (key 5). This will allow you to turn the stem by turning the locknuts (key 27) with a wrench.
- When placing the valve in a vise, do not clamp the rounded sides of the valve. This will distort the shape of the casting, and will ruin the valve.

## Actuator Removal

Access to the internal components of the valve body can be accomplished with the actuator removed. For actuator maintenance, see the Fisher Baumann Actuator Instruction Manual (D103352X012).

### Air-to-Close Actuators

1. Disconnect the air supply to the actuator and remove the air tubing.
2. Loosen the drive nut (key 9) and then remove the plug and stem (keys 4 and 5) assembly by holding the actuator stem still while unthreading the plug and stem assembly counterclockwise.
3. Remove the stem locknuts (key 27), travel indicator (key 58) and yoke drive nut (key 9).
4. Remove the actuator from the valve.

### Air-to-Open Actuators

1. Using flexible tubing, apply sufficient air pressure to the actuator to lift the plug off the seat.
2. Loosen the drive nut (key 9) and then remove the plug and stem (keys 4 and 5) assembly by holding the actuator stem still while unthreading the plug and stem assembly counterclockwise.
3. Remove the stem locknuts (key 27), travel indicator (key 58) and yoke drive nut (key 9).
4. Remove the actuator from the valve.
5. Disconnect the air supply to the actuator and remove the air tubing.

## Valve Body Disassembly

1. After removing the actuator, unscrew the bonnet (key 8) and plug and stem (keys 4 and 5) from valve body (key 1). A new body gasket (key 49) should be installed each time the valve is disassembled.

2. Loosen the packing spring load by removing the packing follower (key 10).

Remove the plug and stem assembly by pulling it out through the bottom of the bonnet (key 8) while rotating the stem (key 5). This will help prevent damage to the packing components.

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#### NOTE

Handle the parts carefully to avoid damaging the seating and guiding surfaces. Wipe the parts with a clean soft cloth and examine for signs of wear or damage.

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3. To remove the seat ring (key 2), use a 5/8 in. socket wrench. Clean the seat ring thoroughly and examine for signs of wear or damage.
4. Low Flow Trims:
  - a. For Fisher Baumann 151 trim (Figure 6), unscrew the seat sub-assembly (key 51) with a 5/8 in. socket wrench. When reassembling, hand tighten the sub-assembly (key 51) and then rotate 1/8 of a turn with the 5/8 in. socket to lock in place.

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**NOTE**

If changing to Fisher Baumann 151 trim, for correct flow characteristics, be sure the valve is reversed in the pipeline so that flow direction is flow-to-close.

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- b. For Fisher Baumann 177 trim (Figure 7), unscrew the retainer nut (key 24) using a 3/4 in. socket wrench. Remove the gland (key 23) and insert (key 25). Replace the insert (key 25), making sure that the tapered portion faces up. If replacement of the housing (key 26) is required, use a 5/8 inch socket wrench.
- c. For NOLEEK bellows trim (Figure 8), hold the bellows bonnet and push down on the stem to expose the plug retaining pin (key 21). Using a small punch, tap the pin (key 21) out. To replace the new plug retaining pin (key 21), be sure the plug and stem is aligned to expose the hole (refer to Figure 6) and with needle nose pliers slide the pin (key 21) into the hole.

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**NOTICE**

**Be sure the plug retaining pin (key 21) is flush inside the hole and not exposed on either side of the plug or damage could happen to the bonnet interior.**

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## 3.2 Lapping the Valve Seat

If valve seat leakage becomes excessive, it may be necessary to lap the valve seat.

Lapping is the process of mating the valve plug to the seat ring, with an abrasive to produce a close fit. When valve seat leakage becomes excessive, lapping becomes necessary. The plug and seat ring seating surfaces should be free of large scratches or dents and the contact surface of the seats should be as narrow as possible.

1. Use a good quality lapping compound with a mixture that contains 280 to 600 grit. Apply at several spots around the plug seating surface. Replace the plug and stem carefully in the bonnet.
2. Install the bonnet (key 8) into the valve body, without gasket and hand tighten. The bonnet will serve as a guide during the lapping operation.
3. Lap the valve by applying a slight pressure on the stem and rotate the stem in short oscillating strokes approximately 8 to 10 times or until you see an even and complete lap line. The plug should be intermittently lifted and turned 90 degrees while lapping to keep the plug and seat ring concentric.
4. Clean the valve seat and plug (key 4) thoroughly when lapping is complete, removing all traces of lapping compound.
5. For the NPS 1 through 3 integral seat valve body, inspect the internal seating surface for wear or damage and replace if necessary.

### 3.3 Replacing Packing

Refer to Figure 4 and the standard and optional packing constructions (Figure 9) to determine the packing that has been preinstalled in your valve.

1. Disassemble the valve as directed earlier. Remove the locknuts (key 27) and indicator disk (key 58) and turn the plug and stem (keys 4 and 5) out through the packing box. Remove the packing follower (key 10). Push out the old packing (key 14) by working from the underside of the bonnet (key 8).
2. Standard Spring Loaded PTFE V-Ring Packing (Figures 4 and 9): Carefully insert each piece in exact order shown in Figure 9. Tighten the packing follower (key 10) until it shoulders on the bonnet (key 8). This will compress the packing spring (key 7) to enable constant stem sealing throughout packing life.
3. Molded Graphite Ribbon Packing (Figure 9): Carefully insert each piece in exact order shown in Figure 9. Hand tighten the packing follower (key 10). Use a wrench to increase tightness by turning the follower an additional 60 degrees.
4. Fisher enhanced ENVIRO-SEAL Packing (Figure 9): Carefully insert each piece in exact order as shown in Figure 9. Tighten the packing follower (key 10) until the Belleville springs are compressed. This will be signaled by a significant increase in resistance. Back off the follower 1/8 to 1/4 turn. A gap of approximately 1.5 mm / 1/16 in. between the packing follower and the bonnet will ensure the packing is seated properly.
5. For Optional NOLEEK Bellows Seal Packing (Figure 8): Insert each piece in the exact order shown in the illustration. Tighten the packing follower (key 10) until it shoulders on the bonnet (key 8). This will compress the packing springs (key 7) to provide constant stem sealing throughout packing life.

### 3.4 Actuator and Valve Body Reassembly

1. Insert a new valve body gasket (key 49) and install the bonnet assembly (key 8). For NPS 1/2 to 1 valves, tighten the nuts (key 12) to a torque of 9.5 to 17.6 N•m / 7 to 13 lbf•ft; NPS 1-1/2 to 2 valves, tighten nuts (key 12) to a torque of 21.7 to 42.0 N•m / 16 to 31 lbf•ft.
2. Place the actuator yoke over the stem (key 5). While tilting the actuator back, drop the yoke drive nut (key 9) over the stem (key 5). Run the locknuts (key 27) and the travel indicator (key 58), down as far as possible and counter tighten the locknuts (key 27) to lock.

See the Fisher Baumann Actuator Instruction Manual ([D103352X012](#)) for reassembly and bench range adjustment.

#### NOTICE

**When assembling or disassembling the valve, do not turn the valve stem while the plug is in contact with the valve seat. This can damage the seating surface very quickly.**

#### WARNING

**To avoid personal injury or equipment damage due to possible sudden shifting or falling of the valve assembly, do not lift the valve assembly by the handwheel.**

## Section 4: Parts

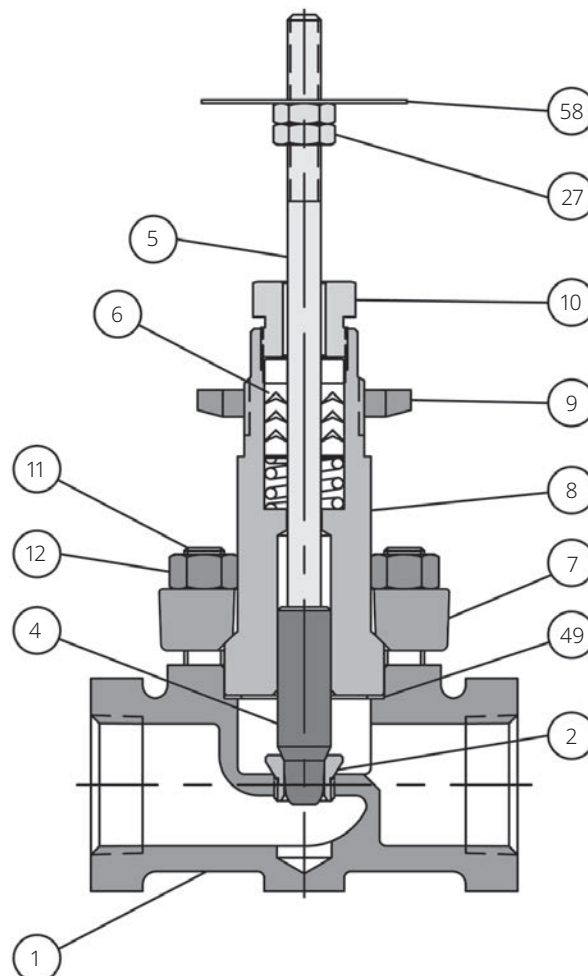
### 4.1 Parts Ordering

When corresponding with your [Emerson sales office](#) about this equipment, always mention the valve serial number. When ordering replacement parts, also specify the key number, part name and desired material using the following parts tables.

#### **⚠ WARNING**

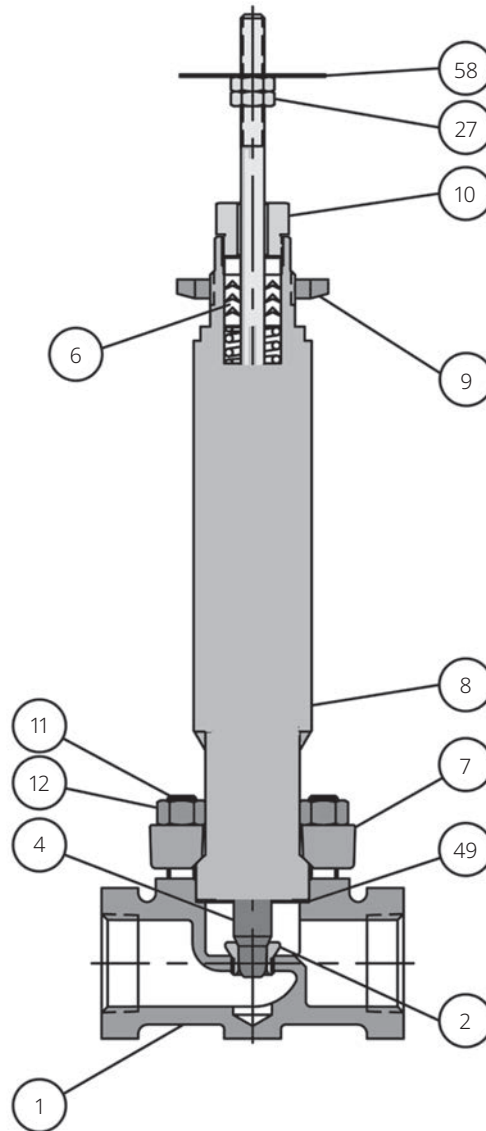
**Use only genuine Fisher replacement parts. Components that are not supplied by Emerson should not, under any circumstances, be used in any Fisher valve, because they may void your warranty, might adversely affect the performance of the valve and could cause personal injury and property damage.**

**Figure 4. Fisher Baumann Flangeless (NPT) Threaded Valve Body Assembly with Standard Bonnet**



E1266

**Figure 5. Fisher Baumann Flangeless (NPT) Threaded Valve Body Assembly with Single Extension Bonnet**



E1366

**Table 2. Fisher Baumann 24000S Common Parts<sup>(1)</sup>**

| KEY NO.                                                                                                                           | QTY | DESCRIPTION               | SEAT     |
|-----------------------------------------------------------------------------------------------------------------------------------|-----|---------------------------|----------|
| 1                                                                                                                                 | 1   | Valve body, NPT           | Threaded |
| 4*                                                                                                                                | 1   |                           | Integral |
| 6*                                                                                                                                | 1   | Plug                      |          |
| 7                                                                                                                                 | 1   | Packing kit               |          |
| 8                                                                                                                                 | 1   | Bonnet flange             |          |
|                                                                                                                                   |     | Bonnet, standard          |          |
|                                                                                                                                   |     | Bonnet, extension, single |          |
|                                                                                                                                   |     | Bonnet, extension, double |          |
|                                                                                                                                   |     | Bonnet, extension, triple |          |
|                                                                                                                                   |     | Bonnet, NOLEEK S/A        |          |
| 9                                                                                                                                 | 1   | Drive nut                 |          |
| 10                                                                                                                                | 1   | Packing follower          |          |
| 11                                                                                                                                | 4   | Stud                      |          |
| 12                                                                                                                                | 4   | Hex nut                   |          |
| 13                                                                                                                                | 4   | Hex head cap screws       |          |
| 27                                                                                                                                | 2   | Lock nut                  |          |
| 49*                                                                                                                               | 1   | Body gasket               |          |
| 58                                                                                                                                | 1   | Travel indicator          |          |
| 1. Please notify your <a href="#">Emerson sales office</a> if the valve is prior to 2005 so the appropriate parts can be ordered. |     |                           |          |

The guidelines below apply to Tables 3, 4, 6 and 8.

**For Extension  
Bonnet Construction**

Substitute -104 for -101  
-105 for -102

**Double Extension  
Bonnet Construction**

Substitute -107 for -101  
-108 for -102

**Triple Extension  
Bonnet Construction**

Substitute -110 for -101  
-111 for -102

**Table 3. Plug for NPS 1/2 and 1 Valves**

| KEY NO. | DESCRIPTION        | PLUG TYPE                       | PLUG NO. | ORIFICE DIAMETER<br>mm / in. | C <sub>v</sub>      | K <sub>v</sub>       |
|---------|--------------------|---------------------------------|----------|------------------------------|---------------------|----------------------|
| 4*      | Plug and stem assy | Low Flow                        | 151      | (See Table 6)                |                     |                      |
|         |                    |                                 | 177      | (See Table 8)                |                     |                      |
|         |                    | Metal Seat, Micro Trim (Linear) | 102      | 6.3 / 0.25                   | 0.02 <sup>(1)</sup> | 0.017 <sup>(1)</sup> |
|         |                    |                                 |          |                              | 0.05 <sup>(1)</sup> | 0.04 <sup>(1)</sup>  |
|         |                    |                                 |          |                              | 0.1 <sup>(1)</sup>  | 0.09 <sup>(1)</sup>  |
|         |                    |                                 |          |                              | 0.2 <sup>(1)</sup>  | 0.17 <sup>(1)</sup>  |
|         |                    | PTFE Seat (Equal %)             | 577      | 9.5 / 0.375                  | 1.0                 | 0.86                 |
|         |                    |                                 |          |                              | 1.5                 | 1.29                 |
|         |                    |                                 |          |                              | 2.5                 | 2.15                 |
|         |                    |                                 |          | 20.6 / 0.8125                | 4                   | 3.4                  |
|         |                    |                                 |          |                              | 8.5                 | 7.3                  |
|         |                    |                                 |          |                              |                     |                      |

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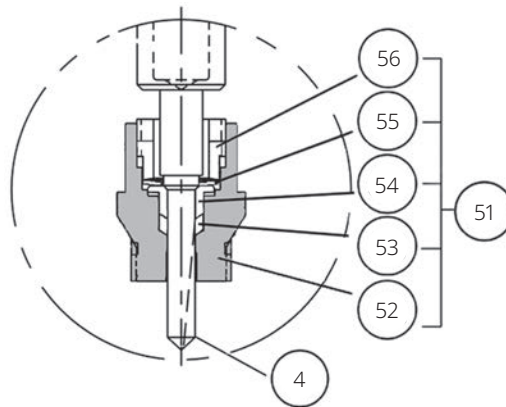
**Table 3. Plug for NPS 1/2 and 1 Valves (continued)**

| KEY NO.                                                                                                   | DESCRIPTION        | PLUG TYPE                 | PLUG NO.         | ORIFICE DIAMETER mm / in. | C <sub>V</sub>      | K <sub>V</sub>      |
|-----------------------------------------------------------------------------------------------------------|--------------------|---------------------------|------------------|---------------------------|---------------------|---------------------|
| 4*                                                                                                        | Plug and stem assy | Metal Seat (Equal %)      | 548<br>(416 SST) | 6.3 / 0.25                | 0.22 <sup>(1)</sup> | 0.19                |
|                                                                                                           |                    |                           |                  |                           | 0.61 <sup>(1)</sup> | 0.52 <sup>(1)</sup> |
|                                                                                                           |                    |                           |                  |                           | 1.0                 | 0.86 <sup>(1)</sup> |
|                                                                                                           |                    |                           |                  | 9.5 / 0.375               | 1.5                 | 1.29                |
|                                                                                                           |                    |                           |                  |                           | 2.5                 | 2.15                |
|                                                                                                           |                    |                           |                  |                           | 4.7                 | 4.0                 |
|                                                                                                           |                    |                           |                  | 20.6 / 0.8125             | 9.5                 | 8.2                 |
|                                                                                                           |                    | Metal Seat (Equal %)      | 588              |                           | 6.3 / 0.25          | 0.22 <sup>(1)</sup> |
|                                                                                                           |                    |                           |                  | 0.61 <sup>(1)</sup>       |                     | 0.52 <sup>(1)</sup> |
|                                                                                                           |                    |                           |                  | 1.0                       |                     | 0.86                |
|                                                                                                           |                    |                           |                  | 9.5 / 0.375               | 1.5                 | 1.29                |
|                                                                                                           |                    |                           |                  |                           | 2.5                 | 2.15                |
|                                                                                                           |                    |                           |                  |                           | 4.7                 | 4.0                 |
|                                                                                                           |                    |                           |                  | 20.6 / 0.8125             | 9.5                 | 8.2                 |
|                                                                                                           |                    | Metal Seat (Linear)       | 648<br>(416 SST) |                           | 6.3 / 0.25          | 0.5                 |
|                                                                                                           |                    |                           |                  | 1.0                       |                     | 0.86                |
|                                                                                                           |                    |                           |                  | 9.5 / 0.375               | 1.5                 | 1.29                |
|                                                                                                           |                    |                           |                  |                           | 2.5                 | 2.15                |
|                                                                                                           |                    |                           |                  | 20.6 / 0.8125             | 4                   | 3.4                 |
|                                                                                                           |                    |                           |                  |                           | 9.5                 | 8.2                 |
|                                                                                                           |                    | PTFE Seat (Linear)        | 677              | 9.5 / 0.375               | 0.1                 | 0.09                |
|                                                                                                           |                    |                           |                  |                           | 0.2                 | 0.17                |
|                                                                                                           |                    |                           |                  |                           | 0.5                 | 0.43                |
|                                                                                                           |                    |                           |                  |                           | 1.0                 | 0.86                |
|                                                                                                           |                    |                           |                  |                           | 2.5                 | 2.15                |
|                                                                                                           |                    |                           |                  | 20.6 / 0.8125             | 4                   | 3.4                 |
|                                                                                                           |                    |                           |                  | Metal Seat (Linear)       | 688                 | 6.3 / 0.25          |
|                                                                                                           |                    | 1.0                       | 0.86             |                           |                     |                     |
|                                                                                                           |                    | 9.5 / 0.375               | 1.5              |                           |                     | 1.29                |
|                                                                                                           |                    |                           | 2.5              |                           |                     | 2.15                |
|                                                                                                           |                    | 20.6 / 0.8125             | 4                |                           |                     | 3.4                 |
|                                                                                                           |                    |                           | 9.5              |                           |                     | 8.2                 |
| 2*                                                                                                        | Seat ring          | 3/8 in. threaded, 316 SST |                  |                           |                     |                     |
|                                                                                                           |                    | 3/8 in. threaded, 416 SST |                  |                           |                     |                     |
| 1. Matching seat ring (key 2) must be furnished with replacement plug orders.<br>*Recommended spare parts |                    |                           |                  |                           |                     |                     |

Table 4. Plug for NPS 1-1/2, 2 and 3 Valves

| KEY NO. | DESCRIPTION        | PLUG TYPE            | PLUG NO.      | ORIFICE DIAMETER mm / in. | C <sub>v</sub> | K <sub>v</sub> |
|---------|--------------------|----------------------|---------------|---------------------------|----------------|----------------|
| 4*      | Plug and stem assy | PTFE Seat (Equal %)  | 577           | 31.8 / 1.25               | 17.5           | 15.1           |
|         |                    |                      |               | 38.1 / 1.50               | 10             | 8.6            |
|         |                    |                      |               |                           | 18             | 15.5           |
|         |                    |                      |               |                           | 30.5           | 26.2           |
|         |                    |                      |               | 50.8 / 2.0                | 35             | 30.1           |
|         |                    | Metal Seat (Equal %) | 548 (416 SST) | 31.8 / 1.25               | 9.0            | 7.7            |
|         |                    |                      |               |                           | 17.5           | 15.1           |
|         |                    |                      |               | 38.1 / 1.50               | 10             | 8.6            |
|         |                    |                      |               |                           | 17.5           | 15.1           |
|         |                    |                      |               |                           | 30.5           | 26.2           |
|         |                    |                      |               | 50.8 / 2.0                | 35             | 30.1           |
|         |                    |                      |               |                           | 61             | 52.5           |
|         |                    | Metal Seat (Equal %) | 588           | 31.8 / 1.25               | 9.0            | 7.7            |
|         |                    |                      |               |                           | 17.5           | 15.1           |
|         |                    |                      |               | 38.1 / 1.50               | 10             | 8.6            |
|         |                    |                      |               |                           | 17.5           | 15.1           |
|         |                    |                      |               |                           | 30.5           | 26.2           |
|         |                    |                      |               | 50.8 / 2.0                | 35             | 30.1           |
|         |                    |                      |               |                           | 61             | 52.5           |
|         |                    | Metal Seat (Linear)  | 648 (416 SST) | 31.8 / 1.25               | 17.5           | 15.1           |
|         |                    |                      |               |                           | 10             | 8.6            |
|         |                    |                      |               | 38.1 / 1.50               | 17.5           | 15.1           |
|         |                    |                      |               |                           | 30.5           | 26.2           |
|         |                    |                      |               | 50.8 / 2.0                | 35             | 30.1           |
|         |                    |                      |               |                           | 61             | 52.5           |
|         |                    | PTFE Seat (Linear)   | 677           | 31.8 / 1.25               | 17.5           | 15.1           |
|         |                    |                      |               | 38.1 / 1.50               | 10             | 8.6            |
|         |                    |                      |               |                           | 17.5           | 15.1           |
|         |                    |                      |               | 50.8 / 2.0                | 35             | 30.1           |
|         |                    |                      |               |                           | 61             | 52.5           |
|         |                    | Metal Seat (Linear)  | 688           | 31.8 / 1.25               | 17.5           | 15.1           |
|         |                    |                      |               | 38.1 / 1.50               | 10             | 8.6            |
|         |                    |                      |               |                           | 17.5           | 15.1           |
|         |                    |                      |               |                           | 30.5           | 26.2           |
|         |                    |                      |               | 50.8 / 2.0                | 35             | 30.1           |
|         |                    |                      |               |                           | 61             | 52.5           |

**Figure 6. Optional 151 Low Flow Trim Assembly**



E1270

**Table 5. Fisher Baumann 151 Low Flow Trim**

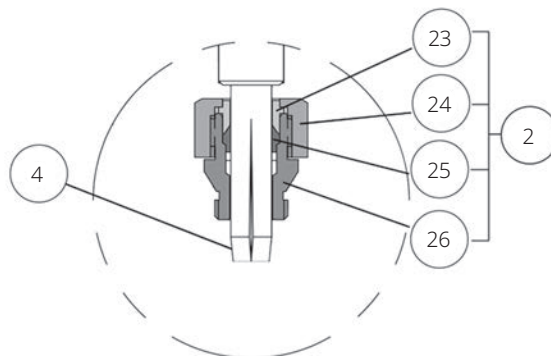
| KEY NO. |                   | DESCRIPTION | MATERIAL         |
|---------|-------------------|-------------|------------------|
| 4       |                   | Plug        | ASTM A479 S21800 |
| 51      | Seat sub-assembly |             |                  |
|         | 52                | Cage        | ASTM A276 S31600 |
|         | 53                | Seat        | PTFE             |
|         | 54                | Collar      | ASTM A276 S31600 |
|         | 55                | Washer      | ASTM A276 S31600 |
|         | 56                | Insert      | ASTM A276 S31600 |

**Table 6. Plug and Seat for Fisher Baumann 151 Trim**

| KEY NO.                  | DESCRIPTION        | PLUG TYPE                    | PLUG NO. | ORIFICE<br>DIAMETER mm<br>/ in. | C <sub>V</sub> | K <sub>V</sub> |
|--------------------------|--------------------|------------------------------|----------|---------------------------------|----------------|----------------|
| 4*                       | Plug and stem assy | Modified Equal %<br>Low Flow | 151      | 3.96 / 0.156                    | 0.00013        | 0.0001         |
|                          |                    |                              |          |                                 | 0.00025        | 0.0002         |
|                          |                    |                              |          |                                 | 0.0005         | 0.0004         |
|                          |                    |                              |          |                                 | 0.001          | 0.0009         |
|                          |                    |                              |          |                                 | 0.002          | 0.0017         |
|                          |                    |                              |          |                                 | 0.004          | 0.003          |
|                          |                    |                              |          |                                 | 0.008          | 0.007          |
|                          |                    |                              |          |                                 | 0.015          | 0.013          |
|                          |                    |                              |          |                                 | 0.03           | 0.026          |
|                          |                    |                              |          |                                 | 0.06           | 0.052          |
|                          |                    |                              |          |                                 | 0.1            | 0.86           |
|                          |                    |                              |          |                                 | 0.2            | 0.17           |
|                          |                    |                              |          |                                 | 0.45           | 0.39           |
| 51*                      | Seat sub-assembly  |                              |          |                                 |                |                |
| *Recommended spare parts |                    |                              |          |                                 |                |                |

\*Recommended spare parts

**Figure 7. Optional 177 Low Flow Trim Assembly**



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**Table 7. Fisher Baumann 177 Low Flow Trim**

| KEY NO.                  |       | DESCRIPTION        |                                   |
|--------------------------|-------|--------------------|-----------------------------------|
| 4*                       | - - - | Plug (see Table 8) |                                   |
| 2*                       | 23    | Gland              | Seat ring sub-assembly, P/N 24241 |
|                          | 24    | Retainer nut       |                                   |
|                          | 25    | Insert             |                                   |
|                          | 26    | Housing            |                                   |
| *Recommended spare parts |       |                    |                                   |

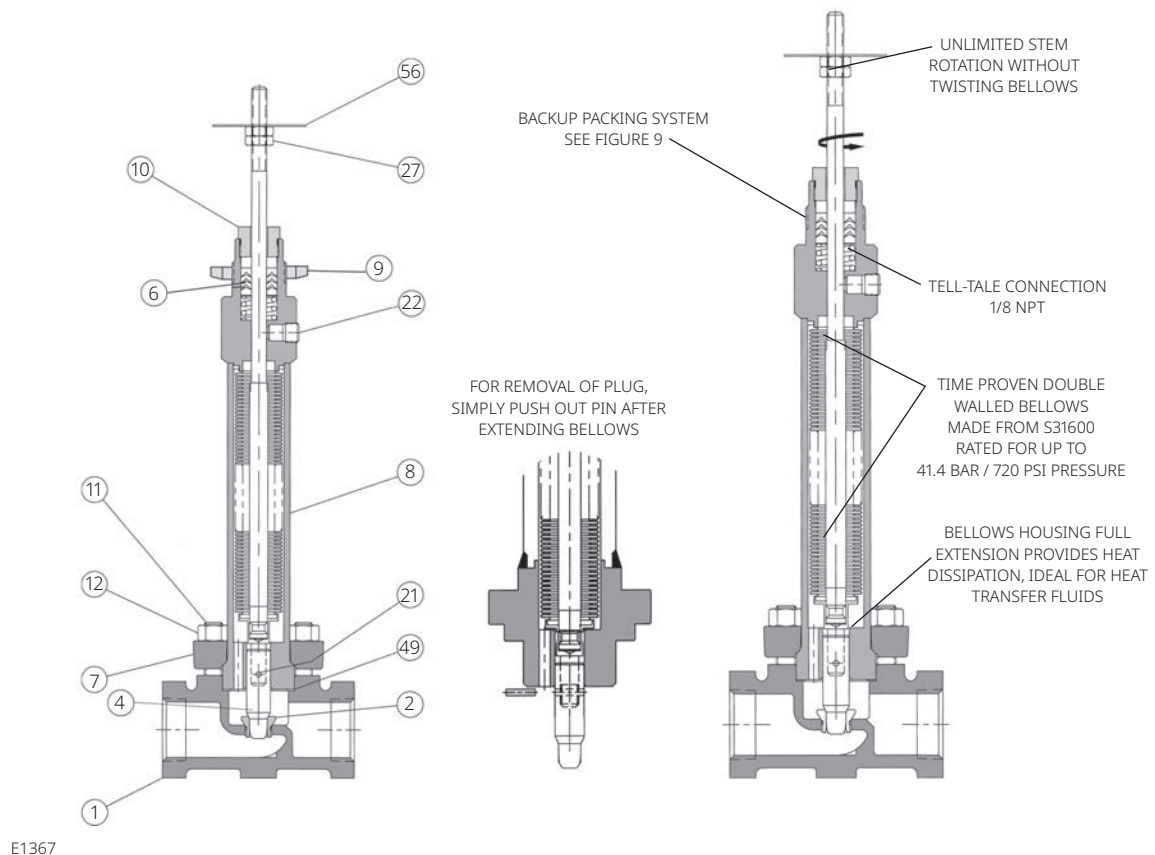
**Table 8. Plug and Seat for Fisher Baumann 177 Trim**

| KEY NO.                  | DESCRIPTION                     | PLUG TYPE | PLUG NO. | ORIFICE DIAMETER<br>mm / in. | C <sub>V</sub> | K <sub>V</sub> |
|--------------------------|---------------------------------|-----------|----------|------------------------------|----------------|----------------|
| 2*                       | Seat sub-assembly (see Table 7) |           |          |                              |                |                |
| 4*                       | Plug and stem assy              | Low Flow  | 177      | 7.9 / 0.3125                 | 0.0005         | 0.0004         |
|                          |                                 |           |          |                              | 0.001          | 0.0009         |
|                          |                                 |           |          |                              | 0.002          | 0.0017         |
|                          |                                 |           |          |                              | 0.005          | 0.004          |
|                          |                                 |           |          |                              | 0.01           | 0.009          |
|                          |                                 |           |          |                              | 0.02           | 0.017          |
|                          |                                 |           |          |                              | 0.05           | 0.04           |
| *Recommended spare parts |                                 |           |          |                              |                |                |

**⚠ WARNING**

The Fisher Baumann NOLEEK valve bonnet assembly is not intended for use in lethal service applications.

**Figure 8. Fisher Baumann NOLEEK Bellows Bonnet Assembly**

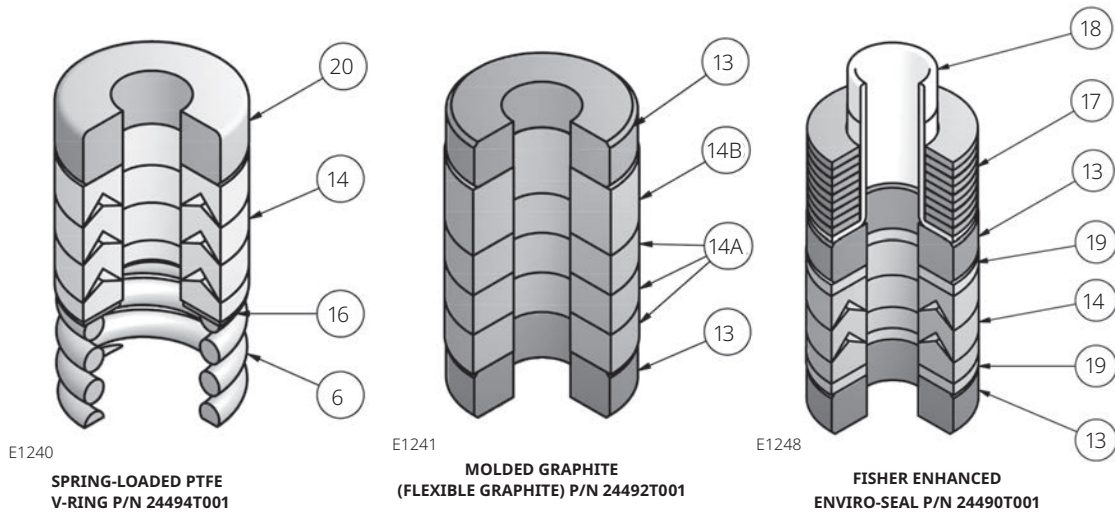


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**Table 9. Common Fisher Baumann NOLEEK Bellows Parts**

| KEY NO. | DESCRIPTION                                        | VALVE SIZE |          |
|---------|----------------------------------------------------|------------|----------|
|         |                                                    | DN         | NPS      |
| 4*      | Plug                                               | 15 to 80   | 1/2 to 3 |
| 6*      | V-ring packing kit (standard)                      | 15 to 80   | 1/2 to 3 |
|         | Fisher enhanced ENVIRO-SEAL packing kit (optional) |            |          |
| 8       | Complete bellows/Bonnet S/A                        | 15 to 25   | 1/2 to 1 |
|         |                                                    | 40         | 1-1/2    |
|         |                                                    | 50         | 2        |
|         |                                                    | 80         | 3        |
| 21*     | Plug retaining pin                                 | 15 to 80   | 1/2 to 3 |
| 22*     | Hex socket pipe plug, 1/8 NPT, stainless steel     |            |          |

\*Recommended spare parts

**Figure 9. Packing Kits****Table 10. Spring-Loaded PTFE V-Ring Packing Kit P/N 24494T001**

| KEY NO.                  | DESCRIPTION | MATERIAL                  |
|--------------------------|-------------|---------------------------|
| 6*                       | Spring      | ASTM A313 S30200          |
| 14                       | Packing set | PTFE / Carbon-filled PTFE |
| 16                       | Washer      | ASTM A240 S31600          |
| 20                       | Spacer      | J-2000 (filled PTFE)      |
| *Recommended spare parts |             |                           |

**Table 11. Molded Graphite (Flexible Graphite) Packing Kit P/N 24492T001**

| KEY NO. | DESCRIPTION          | MATERIAL          |
|---------|----------------------|-------------------|
| 13      | Bushing, qty 2       | Carbon - Graphite |
| 14A     | Packing rings, qty 3 | Graphite          |
| 14B     | Packing ring         | Graphite          |

**Table 12. Fisher enhanced ENVIRO-SEAL Packing Kit P/N 24490T001**

| KEY NO. | DESCRIPTION          | MATERIAL                  |
|---------|----------------------|---------------------------|
| 13      | Bushing, qty 2       | Carbon graphite           |
| 14      | Packing rings, qty 3 | PTFE / Carbon-filled PTFE |
| 17      | Belleville spring    | ASTM B637 N07718          |
| 18      | Bushing              | PEEK                      |
| 19      | Washer, qty 2        | Modified PTFE             |

## Special Fisher enhanced ENVIRO-SEAL Packing Note

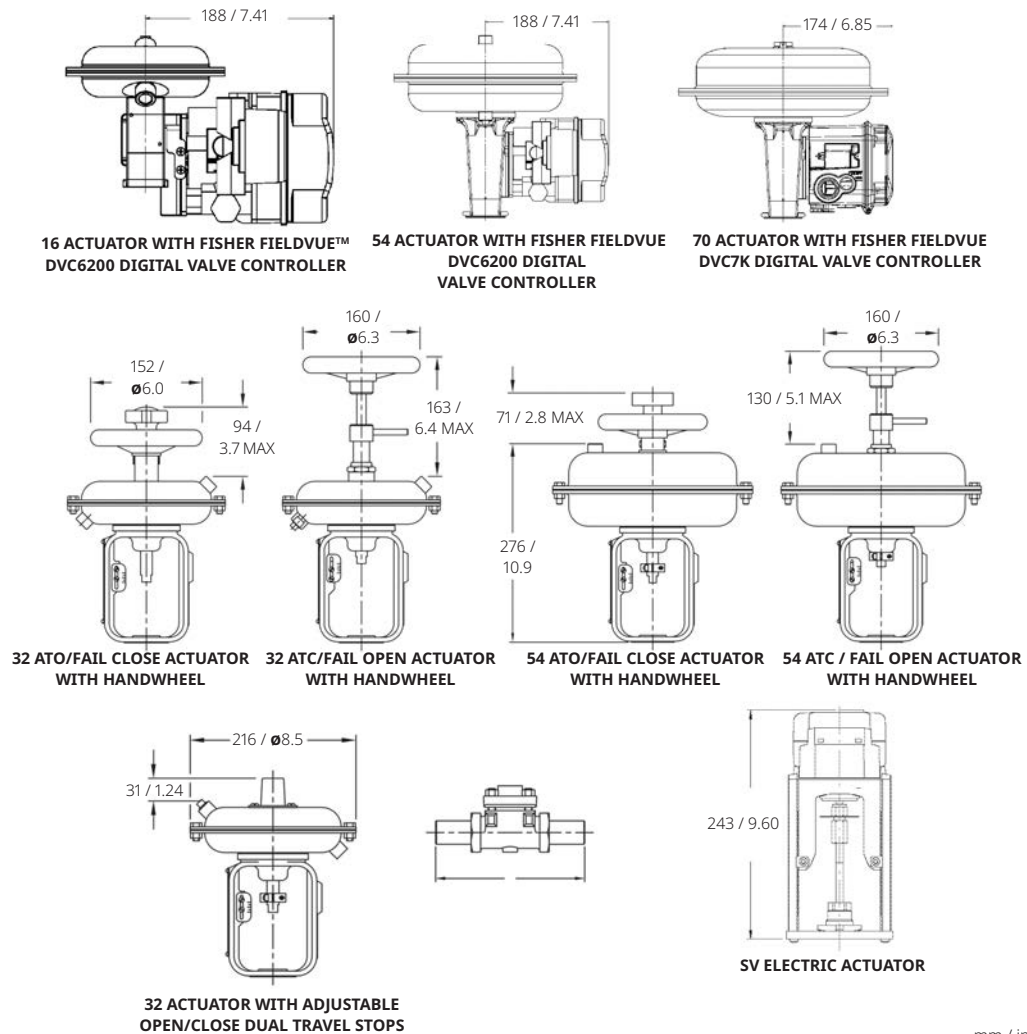
The Fisher enhanced ENVIRO-SEAL PTFE packing system is suitable for 100 ppm environmental applications on services up to 51.7 bar / 750 psig and process temperatures ranging from -46 to 232°C / -50 to 450°F.

For non-environmental applications, this packing system offers excellent performance at the same temperature range up to the maximum valve working pressure.

Temperature limits apply to packing arrangements only. Complete valve assembly temperature limits may differ. Refer to appropriate pressure/ temperature ratings.

Reference Packing Selection Guidelines for Fisher Sliding-Stem Valves Bulletin ([D101986X012](#)).

Figure 10. Dimensional Drawings



mm / in.

E1277

## NOTES:

ACTUATOR REMOVAL REQUIRES 115 mm / 4.5 in. VERTICAL CLEARANCE.

ELECTRIC ACTUATORS ARE AVAILABLE. CONTACT YOUR [EMERSON SALES OFFICE](#) FOR DETAILS.

**Table 13. Valve Dimensions**

| VALVE SIZE |       | ASME CLASS | A   |     |       |     | B        |     |                  |     |        |      |        |      |                |      |
|------------|-------|------------|-----|-----|-------|-----|----------|-----|------------------|-----|--------|------|--------|------|----------------|------|
|            |       |            | NPT |     | Wafer |     | Standard |     | Extension Bonnet |     |        |      |        |      | NOLEEK Bellows |      |
|            |       |            |     |     |       |     |          |     | Single           |     | Double |      | Triple |      |                |      |
| DN         | NPS   |            | mm  | in. | mm    | in. | mm       | in. | mm               | in. | mm     | in.  | mm     | in.  | mm             | in.  |
| 15         | 1/2   | 300        | 7.9 | 3.1 | N/A   | N/A | 78.7     | 3.1 | 213.4            | 8.4 | 351    | 13.8 | 488    | 19.2 | 227.8          | 8.97 |
| 25         | 1     | 300        | 102 | 4.0 | 102   | 4.0 | 78.7     | 3.1 | 215.9            | 8.5 | 351    | 13.8 | 488    | 19.2 | 227.8          | 8.97 |
| 40         | 1-1/2 | 300        | 114 | 4.5 | 114   | 4.5 | 88.9     | 3.5 | 226              | 8.9 | 363    | 14.3 | 498    | 19.6 | 235.7          | 9.28 |
| 50         | 2     | 300        | 124 | 4.9 | 124   | 4.9 | 83.8     | 3.3 | 221              | 8.7 | 356    | 14   | 493    | 19.4 | 234.4          | 9.23 |
| 80         | 3     | 150        | N/A | N/A | 165   | 6.5 | 96.5     | 3.8 | 234              | 9.2 | 371    | 14.6 | 508    | 20   | 235.7          | 9.28 |

**Table 14. Valve Assembly Weights**

| VALVE SIZE |       | WEIGHT |    |
|------------|-------|--------|----|
| DN         | NPS   | kg     | lb |
| 15         | 1/2   | 2.3    | 5  |
| 25         | 1     | 2.7    | 6  |
| 40         | 1-1/2 | 4.1    | 9  |
| 50         | 2     | 5.0    | 11 |
| 80         | 3     | 9.1    | 20 |

**Table 15. Actuator Weights**

| ACTUATOR TYPE                                          | WEIGHTS |     |
|--------------------------------------------------------|---------|-----|
|                                                        | kg      | lb  |
| 32                                                     | 4.5     | 10  |
| 54                                                     | 11.3    | 25  |
| 70                                                     | 15.4    | 34  |
| MV1020 <sup>(1)</sup>                                  | 10      | 22  |
| VA1020 <sup>(1)</sup>                                  | 14      | 30  |
| NV24-MFT (non spring return) <sup>(1)</sup>            | 1.5     | 3.3 |
| NVF24-MDT or NF24-MDT-E (spring return) <sup>(1)</sup> | 1.8     | 4   |

1. Electric actuators, reference Fisher Baumann SV Bulletin ([D104169X012](#)).

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