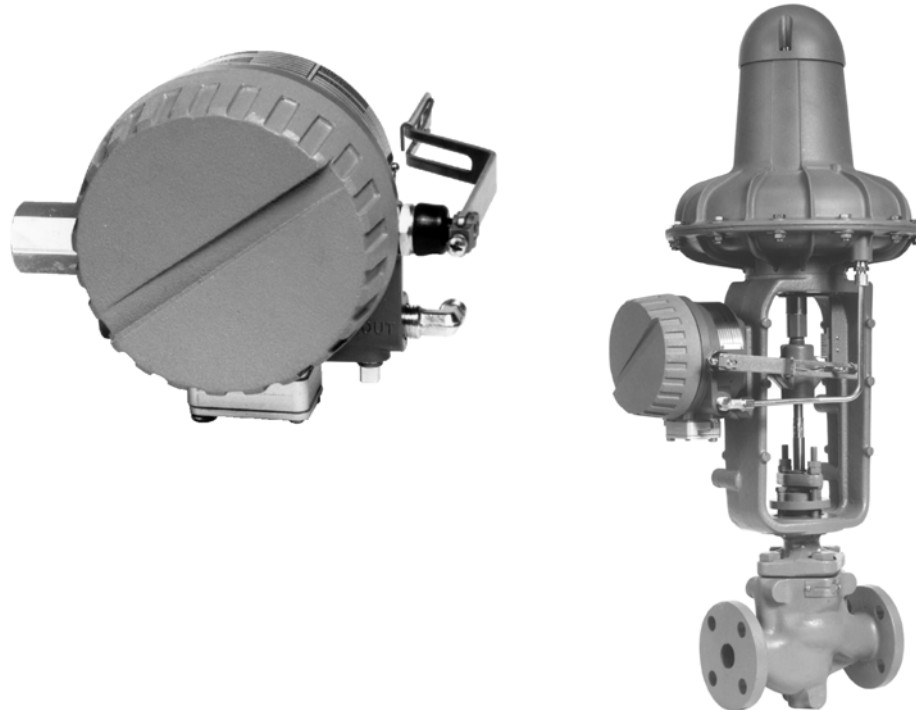


**Model E69P Current-to-Pneumatic Valve Positioner  
Valve-Mounted**



*The Foxboro<sup>®</sup> brand E69P Valve Positioner, mounted directly on a pneumatic valve yoke, converts a standard direct current input signal to a proportional valve stem position. It eliminates the need for a separate converter plus a separate positioner. As symbolized by the “CE” Logo marking on the product, these valve positioners conform to the applicable European Union directives.*

**COMPACT POSITIONER EASILY MOUNTED  
ON VALVE YOKE**

Because of its small size, compact design, and simple connection mechanism, the Model E69P Valve Positioner can be quickly and conveniently mounted on a wide variety of valve or other types of pneumatic actuators.

**VIBRATION AND INCLINATION EFFECTS  
MINIMIZED**

Pipe line vibration normally encountered has minimal effect upon the E69P. Also, the effects of

inclination are minimal, allowing the valve to be mounted without regard for the attitude of the positioner. Low mass components, along with a statically balanced and well-supported coil in the galvanometric motor of the E69P, make these important benefits possible.

**MULTIPLE APPLICATIONS**

With choice of input, choice of direct or reverse action, split input ranges, and availability of standard or explosionproof covers, this positioner can be easily adapted for a wide range of applications.

### MINIMAL EFFECTS FROM AMBIENT ATMOSPHERIC CONDITIONS

The design of the unique galvanometric motor in the E69P provides for generous clearances between coil and housing. Normal atmospheric changes,

which may cause corrosion and dust particles, do not hinder operation of the mechanism, as sometimes happens with voice coil type instruments.

### PERFORMANCE SPECIFICATIONS

*(All values are for normal input ranges)*

#### Linearity

±1% of span

#### Repeatability

0.1%

#### Dead Band

0.1% input, relative to output pressure response.

#### Open Loop Gain

Nominally 80

#### Supply Pressure Effect

A change in supply pressure causes a zero shift of less than 0.04% of span per kPa or ±0.25% per psi.

#### Inclination Effect

Maximum zero shift is 0.25% of span for a 5 degree angular change in inclination from the vertical. This error can be eliminated by calibrating instrument at its intended mounting position.

### FUNCTIONAL SPECIFICATIONS

#### Input Signal Ranges

| Normal Range | Split Ranges            | Input Impedance |
|--------------|-------------------------|-----------------|
| 4 to 20 mA   | 4 to 12 or 12 to 20 mA  | 170 Ω           |
| 10 to 50 mA  | 10 to 30 or 30 to 50 mA | 27 Ω            |

#### Nominal Output Signal<sup>(1)</sup>

Full operating supply pressure delivered to actuator on small changes of input signal. Mechanical feedback ensures that the actuator stem is always moved to the position corresponding to the input signal value. Table below lists output signal ranges.

| kPa      | psi     | bar or kg/cm <sup>2</sup> |
|----------|---------|---------------------------|
| 0 to 240 | 0 to 35 | 0 to 2.4                  |
| 0 to 420 | 0 to 60 | 0 to 4.2                  |

#### Instrument Adjustments

##### Zero

Provided by externally located screwdriver adjustment.

##### Range

Provided by internally located screwdriver adjustment.

#### Ambient Temperature Limits

-40 and +80°C (-40 and 180°F).

#### Relative Humidity Operative Limits

0 and 100% RH; no condensate

1. Supply Pressure must be at least 20 kPa, 3 psi, or 0.2 bar greater than output signal.

**Positioner Action (as specified)**

**Direct**

Increased input increases the output

**Reverse**

Increased input decreases the output

**Air Handling Capacity (at standard conditions)**

| Output Signal Code | Supply            |      | Exhaust           |      |
|--------------------|-------------------|------|-------------------|------|
|                    | m <sup>3</sup> /h | scfm | m <sup>3</sup> /h | scfm |
| 1                  | 1.9               | 1.1  | 1.5               | 0.90 |
| 9                  | 6.8               | 4.0  | 2.2               | 1.3  |

**Air Consumption (at standard conditions)**

| Supply Pressure   | Air Consumption   |      |
|---|-------------------|------|
|   | m <sup>2</sup> /h | scfm |
| 240 or 415 kPa, or<br>35 or 60 psi, or<br>2.4 or 4.1 bar or kg/cm | 1.7               | 1.0  |
| 140 kPa, 20 psi, or<br>1.4 bar or kg/cm <sup>2</sup>              | 1.3               | 0.75 |

**Supply Pressure (a)**

| Nominal |     |                           | Operative Limits |           |                           |
|---------|-----|---------------------------|------------------|-----------|---------------------------|
| kPa     | psi | bar or kg/cm <sup>2</sup> | kPa              | psi       | bar or kg/cm <sup>2</sup> |
| 140     | 20  | 1.4                       | 130 and 260      | 19 and 38 | 1.3 and 1.6               |
| 240     | 35  | 2.4                       | 225 and 260      | 33 and 38 | 2.3 and 2.6               |
| 415     | 60  | 4.1                       | 400 and 435      | 58 and 63 | 4.0 and 4.3               |

a. Supply pressure must not be less than 20 kPa, 3 psi, 0.2 bar, or 0.2 kg/cm<sup>2</sup> above the maximum output signal pressure.

**PHYSICAL SPECIFICATIONS**

**Data Plate**

Aluminum data label fastened to housing with pressure sensitive adhesive. Includes space for customer tag data up to a maximum of 86 characters and spaces. For additional space, see optional Customer Tag.

**Enclosure**

Diecast low copper aluminum alloy body and cover, with an epoxy powder finish. The enclosure meets the weatherproof rating of IEC IP65 as defined by IEC 60529 and provides the environmental protection rating of NEMA 4.

**Mounting**

Vertical on valve yoke. See “Lever Assembly Kit” on page 4.

**Input/Output Connections**

**Electrical**

Tapped for 1/2 inch conduit fitting. Provided with a pair of 0.5 m (18 in) long, 18 AWG twisted leads.

**Pneumatic**

1/4 NPT for air supply and output signal.

**Approximate Mass**

2.3 kg (5 lb)

### Lever Assembly Kit

Lever Assembly Kits are typically provided using a Model Code selection (see “Model Code” on page 7). They can also be ordered by part number when the positioners are ordered separate from the valve (Lever Assembly Codes S, T, U, Q, R, and V). See table below.

- a. Assembly Kit Model M is not listed since the Valve, Actuator, and Lever Kit are assembled by Foxboro.
- b. Hammer lug yokes.

### Dimensions

Refer to “Dimensions—Nominal” on page 8, and to Dimensional Print DP 018-430.

### Lever Assembly Kit Part Numbers

| Foxboro Valve Model                | Foxboro Actuator Model                  | Assembly Kit Model Code (a) | Assembly Kit Part No. |
|------------------------------------|---|-----------------------------|-----------------------|
| V1                                 | P25, P50                                | S                           | B0157YS               |
| V1                                 | P110                                    | T                           | B0157YT               |
| V9000, V9300                       | P50, P110                               | U                           | B0157YU               |
| Other than V1 or V9000 (b)         | P25, P50                                | Q                           | B0157YQ               |
| Other than V1, V9000, or V9300 (b) | P110                                    | R                           | B0157YR               |
| Universal Lever Assembly Kit       | P25, P50, P110, and all other Actuators | V                           | B0157YV               |

## ELECTRICAL SAFETY SPECIFICATIONS

| Input Signal (mA)  | Testing Laboratory | Types of Protection, Area Classification, and Application Conditions  | Available with Model | Electrical Classification Code |
|--|--------------------|---|----------------------|--------------------------------|
| 4 to 20 or 10 to 50  | FM                 | FM approved explosionproof for Class I, Groups C and D, Division 1; and dust-ignitionproof for Class II, Groups E and G, Division 1. Temperature Class T6.  | E69P -T only         | CS-E/FD-A (a)                  |
|  |                    | FM approved nonincendive for Class I, Groups A, B, C, and D, Division 2; and Class II, Group G, Division 2. Also suitable for use in ordinary locations. Temperature Class T6.  | E69P -B and -T       | CS-E/FN-A                      |
|  | CSA                | CSA certified for use in Class I, Groups A, B, C, and D, Division 2 hazardous locations. Temperature Class T6.  | E69P -B and -T       | CS-E/CN-A                      |
|  |                    | CSA certified explosionproof for use in Class I, Group D; Class II, Groups E, F, and G; and Class III, Division 1 hazardous locations. Temperature Class T6.  | E69P -T only         | CS-E/CD-A (a)                  |
|  | ATEX               | ATEX certified flameproof EEx d for Gas Group IIB, Zone 1. Ta from -40 to +80°C. Temperature Class T5.  | E69P -T only         | CS-E/LD-E (b)                  |
| 4 to 20  | FM                 | FM approved intrinsically safe for Class I, Groups A, B, C, and D, Division 1; and Class II, Groups E and G, Division 1; when connected to certified modules per TI 005-101. Temperature Class T6.                            | E69P -B and -T       | CS-E/FB-A                      |
|  |                    | FM approved intrinsically safe for Class I, Groups A, B, C, and D, Division 1; and Class II, Groups E and G, Division 1; when connected to Honeywell Class 38 Barrier 38454-0000-0110-113-F5B5. Temperature Class T6.         | E69P -B and -T       | CS-E/FB-H                      |
|  |                    | OR<br>FM approved intrinsically safe for Class I, Groups C and D, Division 1; and Class II, Groups E and G, Division 1; when connected to Honeywell Class 38 Barrier 38454-0000-0110-(111 or 112) F5B5. Temperature Class T6. |                      |                                |
|  | CSA                | Either 170 or 27 ohm coil CSA certified intrinsically safe for Class I, Groups B, C, and D, Division 1, when connected to CSA certified Foxboro I/O modules. Temperature Class T6.  | E69P -B and -T       | CS-E/CB-A                      |
|  | ATEX               | ATEX certified intrinsically safe EEx ia for Gas Group IIC, Zone 1 and Zone 0. Ta from -40 to +80°C. Temperature Class T4 - T6.   | E69P -B and -T       | CS-E/KA-E                      |
| ATEX certified nonincendive EEx nA for Group IIC, Zone 2. Ta from -40 to +80°C. Temperature Class T4-T6. |                    | E69P -B and -T  | CS-E/KN-A            |                                |

a. Use of the optional PG11 Cable Gland is not allowed. Use a flameproof cable gland instead.

b. Requires E69F Optional Selection -J; Integral Explosionproof Junction Box.

## OPTIONAL SELECTIONS

### Options -M and -P: Miniature Junction Box

The junction box, shown in Figure 1, has a front entry PG cable connection and attaches to the valve positioner. The enclosure size is approximately 64 x 58 x 33 mm (2.5 x 2.3 x 1.3 in), and designed to meet the weatherproof rating of IEC IP65 as defined by IEC 60529, and provides the environmental protection rating of NEMA 4. The miniature junction box is not available for explosionproof applications. Option -M provides a junction box with a 1/2 inch NPT front entry conduit connection, while Option -P provides a 1/2 NPT rear entry conduit connection. For other than 1/2 NPT conduit connections, an auxiliary Specification (AS) Code must be specified. See table below for AS Codes that provide PG11, PG13.5, or M20 connections with front or rear entry.

| AS Code | Connection Description         |
|---------|--------------------------------|
| MB-A    | PG11 Connection, Front Entry   |
| MB-B    | Pg13.5 Connection, Front Entry |
| MB-C    | M20 Connection, Front Entry    |
| MB-D    | Pg11 Connection, Rear Entry    |
| MB-E    | Pg13.5 Connection, Rear Entry  |
| MB-F    | M20 Connection, Rear Entry     |

### Options -I and -H: Split Range Input Signal

4 to 12, 12 to 20, 10 to 30, or 30 to 50 mA dc. Specify Option -I or -H, as applicable, and specify split range required (see "Model Code" on page 7).

### Option -J: Explosionproof Junction Box

Integrally mounted to valve positioner. Specify Option -J.

### Option -S: Supply (Input) and Output Pressure Gauges

Must be selected per output range requirements. Integrally mounted to valve positioner (refer to Figure 2). Specify Option -S.

Figure 1. Miniature Junction Box, with Front Entry PG Cable Gland, attached to Valve Positioner



Figure 2. Supply (Input) and Output Gauges attached to Valve Positioner



### PG11 Trumpet Type Cable Connection

For use with, and assembled to, explosionproof (-J) junction box. Available without (-J) junction box for non-explosionproof applications. Not offered with Electrical Certification Specifications CS-E/CD-A and CS-E/FD-A. Specify AS Code PG11.

**Adjustable Filter Regulator**

Provided without gauge. Specify Model Code Suffix -R.

**Customer Tag**

Stainless steel tag wired to positioner for customer tag data that doesn't fit on data plate. There can be a maximum of 10 lines of data with 40 characters and spaces per line. Specify AS Code MTS.

**MODEL CODE**

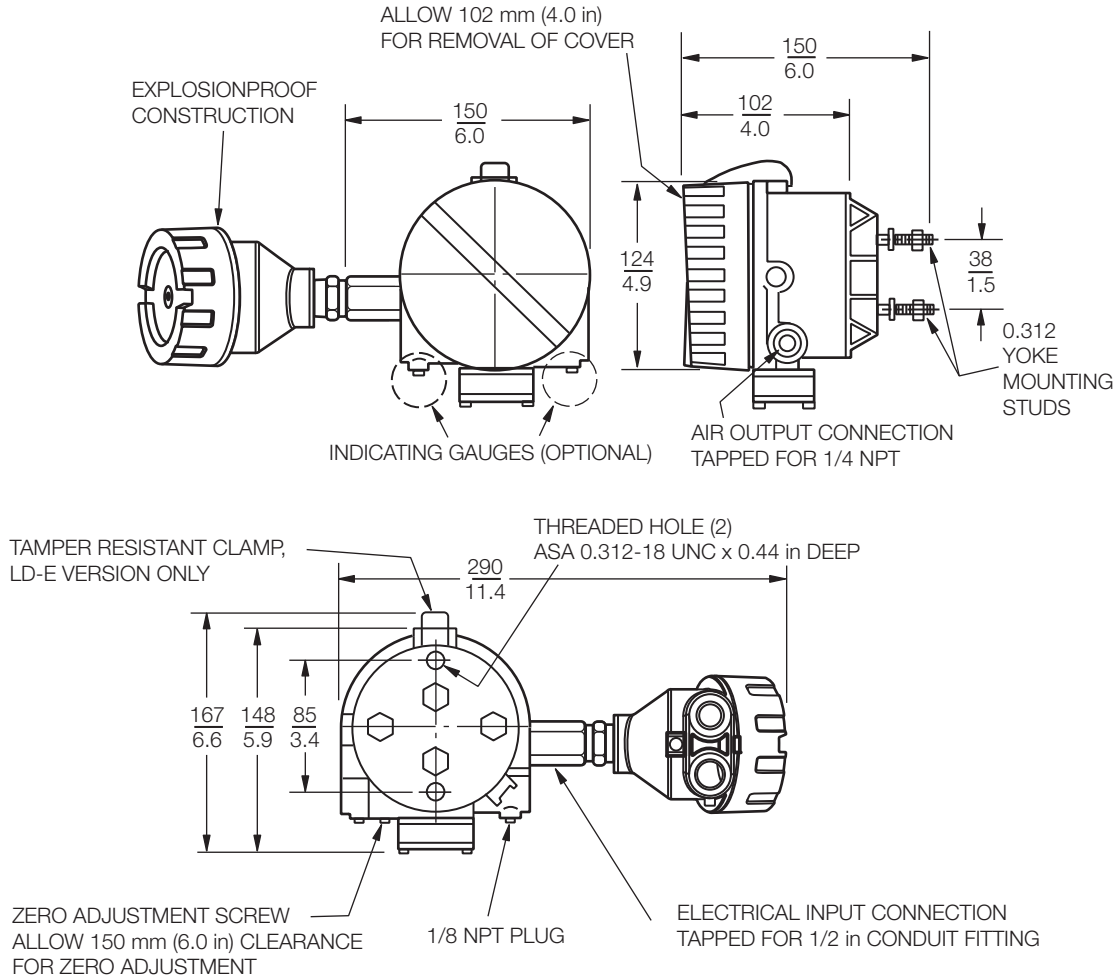
| <u>Description</u>   | <u>Model</u>          |
|--|-----------------------|
| Current-to-Pneumatic Valve Positioner  | E69P                  |
| <b>Enclosure</b>   |                       |
| Bolted Cover - weatherproof (for use in all non-explosionproof applications)                 | -B                    |
| Threaded Cover - explosionproof (must be used in all explosionproof applications) (a)        | -T                    |
| <b>Input Signal Range (b)</b>  |                       |
| 4 to 20, 4 to 12, or 12 to 20 mA dc, direct or reverse action                                | -I                    |
| 10 to 50, 10 to 30 or 30 to 50 mA dc, direct or reverse action                               | -H                    |
| <b>Output Signal (b)</b>   |                       |
| 140 or 240 kPa; 20 or 35 psi 1.4 or 2.4 bar or kg/cm <sup>2</sup>                            | 1                     |
| 415 kPa: 60 psi; 4.1 bar or kg/cm <sup>2</sup>   | 9                     |
| <b>Lever Assembly Kit</b>  |                       |
| <b>Valve Type</b>  | <b>Actuator Model</b> |
| Mounted by Foxboro   | P25A, P50A and P110A  |
| For V1 Valve Series (c)  | P25A and P50A         |
| For V1 Valve Series (c)  | P110A                 |
| For V9000 and V9300 Valve Series (c)   | P50A and P110A        |
| For other than V1 or V9000 Valve Series (c)  | P25A and P50A         |
| For other than V1, V9000, or V9300 Valve Series (c)  | P110A                 |
| For all other Valves (c)   | P25A, P50A, P110A     |
| <b>Optional Selections (Also refer to "Optional Selections" on page 6)</b>                   |                       |
| Integral Explosionproof Junction Box   | -J                    |
| Miniature Junction Box with Hole Tapped for 1/2 inch NPT Conduit Connection; Front Entry (d) | -M                    |
| Miniature Junction Box with Hole Tapped for 1/2 inch NPT Conduit Connection; Rear Entry (d)  | -P                    |
| Adjustable Filter Regulator without Gauge  | -R                    |
| Supply/output Gauges (select per Output Range Requirements)                                  | -S                    |
| Example: E69P-BI1S-R (4 to 20 mA dc input, direct action, 35 psi output)                     |                       |

- a. Refer to "Electrical Safety Specifications" on page 5.
- b. Specify input signal range, and whether direct action; also specify output signal.
- c. The Lever Assembly Kit may be ordered separately by part number. Refer to "Physical Specifications" on page 3.
- d. Not available with -T Housing.

**DIMENSIONS—NOMINAL.**

$\frac{\text{mm}}{\text{in}}$

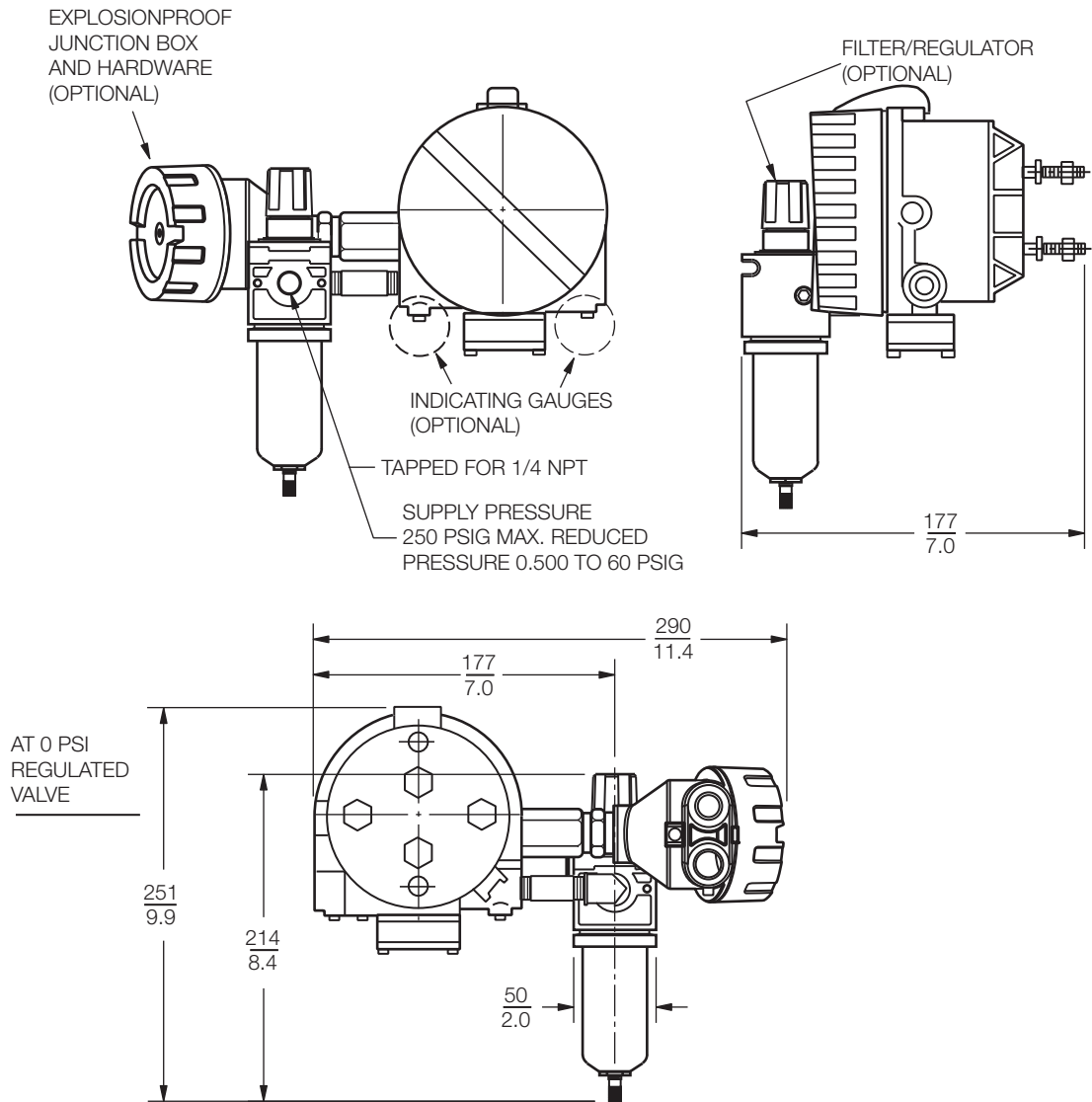
**E69P — EXPLOSIONPROOF CONSTRUCTION**





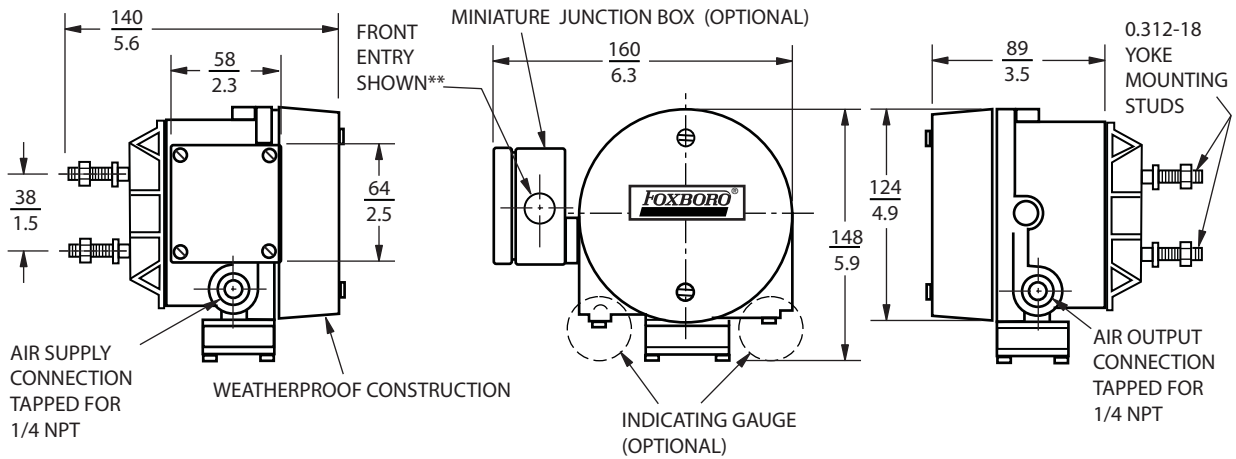
$\frac{\text{mm}}{\text{in}}$

**E69P — EXPLOSIONPROOF CONSTRUCTION; WITH OPTIONAL FILTER REGULATOR**



$\frac{\text{mm}}{\text{in}}$

**E69P — WEATHERPROOF CONSTRUCTION; WITH OPTIONAL MINIATURE JUNCTION BOX**



**\*\*CONNECTION OPTIONS**

- 1/2 NPT CONDUIT, FRONT ENTRY
- 1/2 NPT CONDUIT, REAR ENTRY

- PG11 CABLE, FRONT ENTRY
- PG11 CABLE, REAR ENTRY
- PG13.5 CABLE, FRONT ENTRY
- PG13.5 CABLE, REAR ENTRY
- M20 THREADED HOLE, FRONT ENTR
- M20 THREADED HOLE, REAR ENTRY

**MODEL CODE  
OPTIONAL SELECTION**

- M
- P

**AS REFERENCE  
OPTIONAL SELECTION**

- MB-A
- MB-B
- MB-E
- MB-C
- MB-D
- MB-F

NOTES

## ORDERING INSTRUCTIONS

1. Model Number
2. Specific Input Signal (for Code I and Code H)
3. Positioner Action (Direct or Reverse)
4. Electrical Classification Code
5. Lever Assembly Kit - from Model Code or Physical Specifications section
5. Optional Selections - from Model Number and Optional Selections section
6. Tag and Application

## OTHER FOXBORO PRODUCTS

The Foxboro product lines offer a broad range of measurement and instrument products, including solutions for pressure, flow, analytical, temperature, positioning, controlling, and recording.

For a list of these offerings, visit our web site at:

[www.fielddevices.foxboro.com](http://www.fielddevices.foxboro.com)