

# Valve Positioners

## Series 760P/E Valve Positioners

### Introduction

#### Features & Benefits

- ▶ Universal design and choice of interchangeable NAMUR IEC 534-6 rectilinear or VDI/VDE 3845 rotary mountings provide wide application flexibility
- ▶ Double-acting or single-acting service and split ranging afford application versatility in a single unit
- ▶ Non-interaction of the zero and span adjustments and positive cam locking mechanism significantly reduce calibration and setup time
- ▶ Modular design reduces inventory because it allows interchangeable spare parts
- ▶ Comes standard with 3 cams, linear, quick opening and equal % for application versatility

#### Description

The Series 760 Valve Positioners provide a cost effective universal approach to your valve control. Their modular concept allows all models to be built on the base pneumatic unit (Model 760P). The electro-pneumatic model (Model 760E) is created by adding an I/P Transducer to the base pneumatic unit, and a wide range of accessories easily installs inside the unit.

The 760 base pneumatic unit provides cam characterization, split ranging, direct or reverse action, and single or double acting without requiring additional parts. Key design features include non-interaction of the zero and span adjustments.

Series 760 Valve Positioners include provisions for internal limit switch mounting and position feedback devices without requiring additional housings. Thus, the need to stack housings that impede access to the main enclosure are eliminated.



A spool valve is used to load the actuator for positioning in response to an input signal. A characterized cam provides mechanical feedback. There are linear, equal percentage and quick opening operation cam profiles, and a blank profile cam is available for custom applications. Rectilinear action length can range from 1/2" to 6".

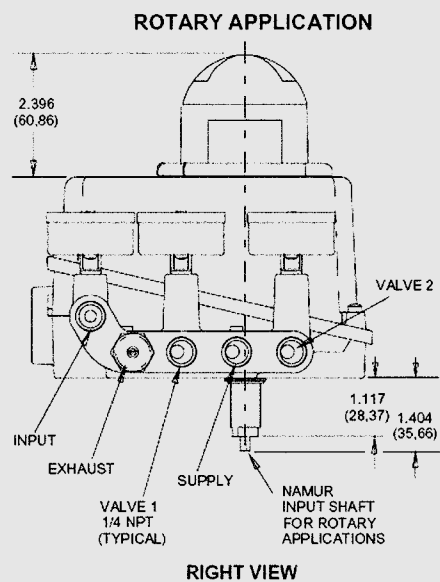
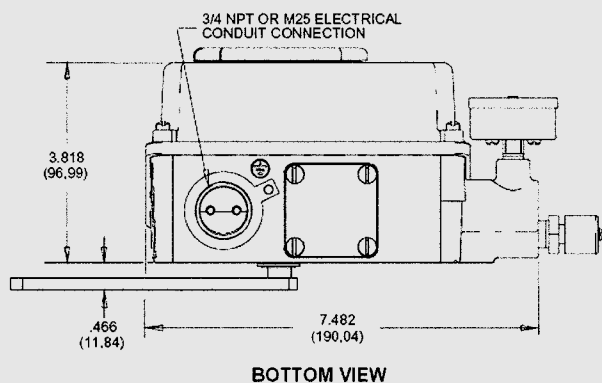
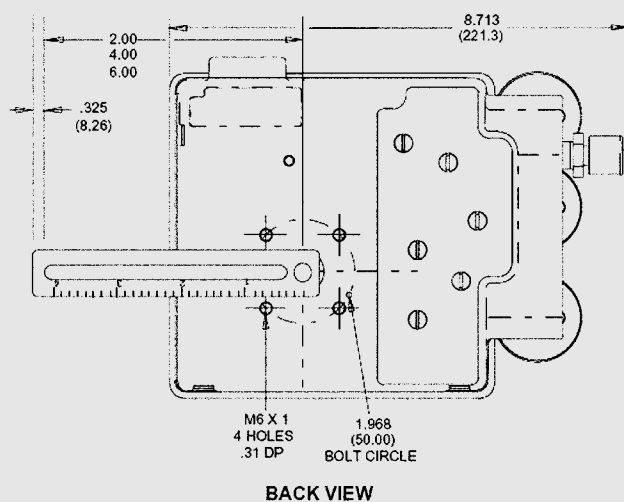
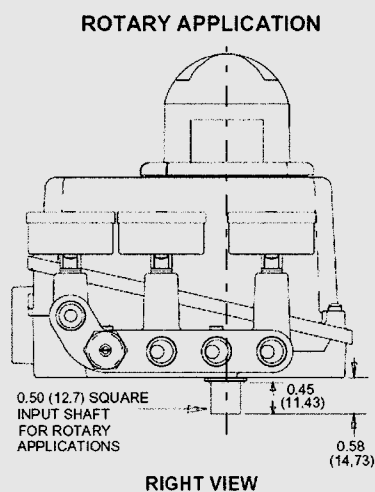
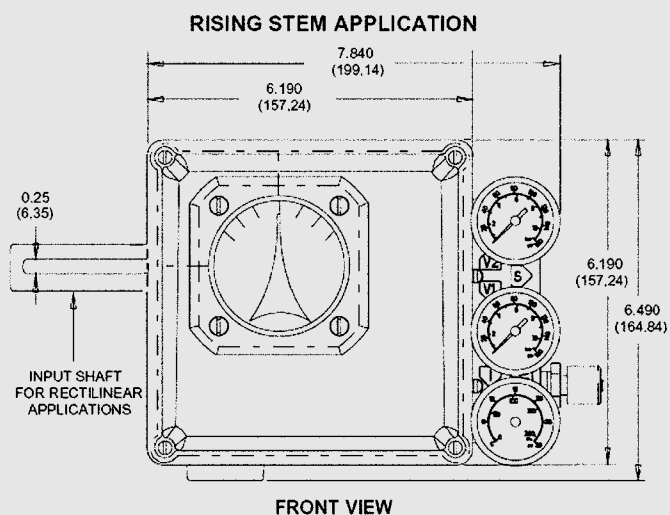
The feedback shaft and characterized cam can be replaced in the field to configure the positioner for use with either a rectilinear or rotary actuator. No additional parts are necessary to change between single or double acting actuators or direct or reverse action.

# Valve Positioners

## Series 760P/E Valve Positioners

### Technical data

### Mounting Dimensions



760DIMG.DS4

# Valve Positioners

## Series 760P/E Valve Positioners

### Technical data

#### Specifications

##### Functional Specifications

##### Temperature Range

-40 to 185°F (-40 to 85°C) Std. Temp.  
-20 to +300½°F (-29 to +149°C) High Temp.  
-14 to 185°F (-25 to 85°C) proximity switches installed

##### Ingress

NEMA 4X, IP 65

##### Connections

Pneumatic – 1/4" NPT  
Gauge – 1/8" NPT  
Electrical – 3/4" NPT/M25 opt.  
Exhaust – 1/4" NPT

##### Finish

Epoxy/Polyester Powder Coat

##### Output Configuration

Single or Double Acting

##### Action

Direct or Reverse

##### Supply Pressure

150 psig max.

##### Air Consumption

Standard Flow Capacity Spool: 0.5 scfm typical  
High Flow Capacity Spool: 1.0 scfm typical

##### Flow Capacity (at 60 psi with 25% drop)

9.0 scfm (Cv = 0.3) Standard Spool  
18.0 scfm (Cv = 0.6) High Flow Spool

##### Input Signal

760P: 3-15 psig, 3-27 psig, 50% split range  
760E: 4-20 mA, 50% split range

##### Mechanical Feedback

90°, rotary std.  
1/2" to 6" rectilinear optional

##### Characterization

Equal %; Quick Opening; Linear

##### Pressure Gain

160:1@ 60 psig standard

##### Span

Adjustable –60% to +25% of normal span

##### Zero

Adjustable –10% to +60% of normal span

#### Performance Specifications

##### Linearity (Independent)

760P: 0.5% of normal span (typical)  
760E: 0.75% of normal span (typical)

##### Hysteresis

760P: 0.75% of normal span (typical)  
760E: 1.0% of normal span (typical)

##### Deadband

Less than 0.25% of span

##### Repeatability

Within 0.5% of valve travel

##### Supply Pressure Effect

Less than 0.2% of span for a 5 psig change in supply pressure

##### Hazardous Area Class Approval

##### Series 760 Approvals & Certifications

##### FM Approvals:

##### Intrinsically Safe:

Class I, Division 1, Groups A, B, C, D  
Class II, Division 1, Groups E, F and G  
Class III, Division 1

When installed in accordance with Siemens drawing 15032-7602

##### Non-incendive:

Class I, Division 2, Groups A, B, C, D

##### Suitable for:

Class II, Division 2, Groups F and G  
Class III, Division 2

##### CSA Certification

##### Intrinsically Safe:

Class I, Division 1, Groups A, B, C, D  
Class II, Division 1, Groups E, F, G  
Class III, Division 1

When installed in accordance with Siemens drawing 15032-7620

##### Suitable for:

Class I, Division 2, Groups A, B, C, D  
Class II, Division 2, Groups E, F, G  
Class III, Division 2

##### CE

EN50081-1 and EN50081-2 Emission  
EN50082-1 and EN50082-2 Immunity

##### Enclosure:

Type 4X, in accordance with NEMA Std. 250  
Type IP65, in accordance with IEC Std. 529

##### ATEX Certified:

II 1G EEx ia IIC T6, T5 or T4

II 2G EEx ia IIC T6, T5 or T4

II 3G EEx nAL IIC T4

See ATEX Certificates for Service Restrictions

LCIE 03 ATEX 6032 X

LCIE 03 ATEX 6033 X

# Valve Positioners

## Series 760P/E Valve Positioners

### Ordering data

#### Model Number

Series 760 Valve PAC™ Valve Controller

##### Basic Model Code No.

- 76 Valve Controller (Positioner)
- 0 Standard Product - No Private Label
- A to Z Reserved for OEM Private Label Products PP 760 OEM (Consult Factory)

##### Input signal

- 4 to 20 mAdc (Not available with High Temp. Option)
- 3 to 15 psig
- 3-27/6-30 psig
- 20 to 100 kPa
- 0.2 to 1.0 Bar
- 0.2 to 1.0 kg/cm<sup>2</sup>

##### Action (Rising Stem/Linear or Rotary)

- 1/2 to 4 inch stroke lever with set of (3) 60½ cams
- 2 to 6 inch stroke lever with set of (3) 60½ cams
- 1/4 turn - 1/2 inch square shaft with set of (3) 90½ cams
- 1/2 to 2 inch stroke lever with set of (3) 60½ cams
- 1/4 turn NAMUR style shaft end with set of (3) 90½ cams
- 1/4 turn - 1/2 inch square shaft with set of (3) 60½ cams
- 1/2 to 4 inch stroke lever with (1) 90½ linear cam (Increased non-linearity error, See Note #1. page 5.5)
- 2 to 6 inch stroke lever with (1) 90½ linear cam (Increased non-linearity error, See Note #1. page 5.5)
- 1/4 turn NAMUR shaft with set of (3) 60½ cams (Increased non-linearity error, See Note #1. page 5.5)

##### Enclosure Type 4X/IP65 (with 3/4 inch NPT Conduit Connection)

- Standard
- With 90½ Beacon Indicator (Not available with High Temp. Option)
- With Stroking Speed Adjusters
- With Stroking Speed Adjusters & 90½ Beacon Indicator (Not avail. with High Temp. Opt.)
- With 60½ Flat Indicator (Not available with High Temp. Option)
- With 90½ Flat Indicator (Not available with High Temp. Option)
- With Stroking Speed Adjusters & 60½ Flat Indicator (Not avail. with High Temp. Option)
- With Stroking Speed Adjusters & 90½ Flat Indicator (Not avail. with High Temp. Option)

##### Enclosure Type 4X/IP65 (with M25 Conduit Connection)

- Standard
- With 90½ Beacon Indicator (Not available with High Temp. Option)
- With Stroking Speed Adjusters
- With Stroking Speed Adjusters & 90½ Beacon Indicator (Not avail. with High Temp. Opt.)
- With 60½ Flat Indicator (Not available with High Temp. Option)
- With 90½ Flat Indicator (Not available with High Temp. Option)
- With Stroking Speed Adjusters & 60½ Flat Indicator (Not avail. with High Temp. Option)
- With Stroking Speed Adjusters & 90½ Flat Indicator (Not avail. with High Temp. Option)

##### Flow Capacity

- Standard Capacity Spool Valve Ass'y (Cv = 0.3)
- High Flow Capacity Spool Valve Ass'y (Cv = 0.6)
- Low Flow Gain Spool Valve Ass'y (Used on small volume actuators, See Note #2. page 5.5)

#### Order No.

76-				(cont'd p. 3.5)
0				
E1				
P1				
P2				
P4				
P5				
P6				
1				
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4				
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# Valve Positioners

## Series 760P/E Valve Positioners

### Ordering data

#### Model Number

Series 760 Valve PAC™ Valve Controller (cont'd)

#### Environmental Construction Options

- Standard Temperature (-40½°F to +185½°F) (-40½°C to +85½°C)
- High Temp. (-20½°F to +300½°F) (-29½°C to +149½°C) only avail. on 760P with no electrical options
- Ozone Resistant with Viton dynamic elastomers and iso-elastomeric spring
- Ozone Resistant with Viton dynamic elastomers and stand spring

#### Gauges (Not available with Hi Temp. Environmental Construction "C")

- Not Required
- Gauges (set of three gauges)

#### Limit Switches (Not avail. with Hi Temp Environmental Construction "C")

- Not Required
- Mechanical Switches, (2) SPDT
- Proximity Switches (2) NAMUR type

#### Feedback Devices (Not avail. with Hi Temp Environmental Construction "C")

- Not Required
- Potentiometer - 1K
- 4 to 20 mAdc Feedback
- Potentiometer - 1K w/SS feedback gear
- 4 to 20 mAdc Feedback w/SS feedback gear

#### Design Level

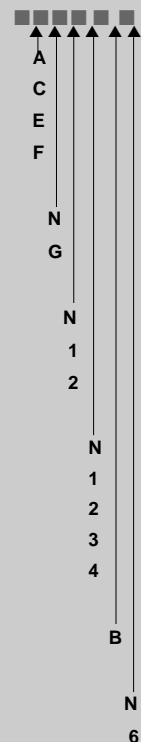
- Revision

#### Electrical Approval

- None
- FM / CSA / ATEX / CE

Order No.

76-



#### Series 760 Approvals & Certifications

##### FM (Factory Mutual) Approvals:

- Intrinsically Safe:
  - Class I, Division 1, Groups A, B, C, D;
  - Class II, Division 1, Groups E, F, G;
  - Class III, Division 1;
- Non-Incendive:
  - Class I, Division 2, Groups A, B, C, D
- Suitable for:
  - Class II, Division 2, Groups E, F, G
  - Class III, Division 2

##### CSA (Canadian Standards Association) Certification

- Intrinsically Safe:
  - Class I, Division 1, Groups A, B, C, D;
  - Class II, Division 1, Groups E, F, G;
  - Class III, Division 1;
- Suitable for:
  - Class I, Division 2, Groups A, B, C, D;
  - Class II, Division 2, Groups E, F, G
  - Class III, Division 2

##### Enclosure:

- Type 4X, in accordance with NEMA Std. 250
- Type IP65, in accordance with IEC Std. 529

#### NOTES:

1. Fix feedback pin in lever to hold non-linearity error to 3% max. Consult factory for more details.
2. The Low Flow Gain Spool Valve Ass'y option can provide more stable operation when the positioner is installed on small volume actuators, i.e. piston diameters less than 4"(10mm). Consult factory for more details.

# Valve Positioners

## Series 760P/E Valve Positioners

### Ordering data

Series 760 Valve PAC™ Valve Controller (cont'd)

Order No.

#### Conversions

- Add I/P Module Kit (Converts 760P to 760E)
- 3-15 PSI Input Spring (Std. Temp.)
- (3) Pressure Gauge Kit
- Add 90° Beacon Indicator Kit (for 1/4 Turn Actuators)
- Add 60° Flat Indicator Kit (for Lever Action Actuators)
- Add 90° Flat Indicator Kit (for 1/4 Turn Actuators)
- 3-15 PSI Conversion Kit (Hi Temp)
- 3-27/6-30 psi Conversion Kit (Std. Temp)
- Hi-temps 3/27 PSI

16300-1355  
16300-331  
16300-442  
16300-488  
16300-486  
16300-487  
16300-640  
16300-771  
16300-772

#### Options

- Add Mechanical Limit Switches Kit (2) SPDT
- Add Proximity Limit Switches Kit (2) NAMUR type
- Add 1K Feedback Potentiometer Kit
- Add 4 to 20 mAdc Feedback Kit
- Add Mechanical Limit Switches & 1K Feedback Potentiometer Kit
- Add Mechanical Limit Switches & 4 to 20 mAdc Feedback Kit
- Add Proximity Limit Switches & 1K Feedback Potentiometer Kit
- Add Proximity Limit Switches & 4 to 20 mAdc Feedback Kit
- Add 1K Feedback Potentiometer Kit w/SS feedback gear
- Add 4 to 20 mAdc Feedback Kit w/SS feedback gear
- Add Mechanical Limit Switches & 1K Feedback Potentiometer Kit w/SS feedback gear
- Add Mechanical Limit Switches & 4 to 20 mAdc Feedback Kit w/SS feedback gear
- Add Proximity Limit Switches & 1K Feedback Potentiometer Kit w/SS feedback gear
- Add Proximity Limit Switches & 4 to 20 mAdc Feedback Kit w/SS feedback gear

16300-500  
16300-501  
16300-503  
16300-502  
16300-505  
16300-504  
16300-507  
16300-506  
16300-580  
16300-577  
16300-581  
16300-578  
16300-582  
16300-579

*Note: Above listed options are limited to standard upper temperature limit of +185° F.*

- Standard Flow Spool Valve Kit
- High Flow Spool Valve Kit
- Low Gain Spool Valve Kit
- Sealing Plate Kit (converts 760E to 760P)

16300-468  
16300-469  
16300-470  
16300-641

#### Cams

- 760 P/E Cam Kit, rotary 90° Action (3 cams: Linear, QO, =%)
- 760 P/E Cam Kit, linear 60° Action (3 cams: Linear, QO, =%)
- 75° Rectilinear-Linear
- Cam, 180° - CW, Rotary -Linear
- Cam, 30° - Rectilinear - Linea
- Blank Cam Kit
- Cam, 180° - CCW, Rotary-Linear

16300-783  
16300-784  
16300-805  
16300-807  
16300-816  
16300-267  
A6X30005613

#### Spare Parts Kits

- Spare Parts Kit includes all recommended rebuild parts as shown in SD760, Issue 2

16300-686

#### Accessories

- Wired On Stainless Steel Tag
- Manual
- User Manual CD (included with each instrument)

SD760