

**!!!Warning!!!**

**Read This Before  
Installation.**

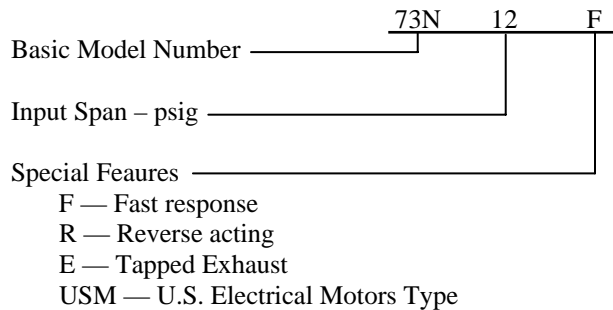
**Clean dry Air  
Required!!**

**SD73**  
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**MODEL 73N BUILT-IN VALVE POSITIONER**

The Model 73N is a Built-in Valve Positioner which is mounted directly on the topworks of a valve. It is capable of utilizing the full force of its air supply to drive the piston or diaphragm, in a pneumatic actuator, to a position called for by the control instrument. The positioner incorporates a single-axis force-balance principle of operation to insure accurate and stable positioning of a control valve.

**MODEL DESIGNATION**



**Fast Response:** The fast response positioner is used on actuators with large volume topworks requiring a fast response action. Due to increased pilot plunger travel and larger ports in the fast response positioner, greater filling and exhausting capacities result. This permits a quicker response to a change in control conditions, plus increased speed of valve operation.

**Tapped Exhaust:** The Model 73N Positioner can be supplied with a tapped exhaust port. This feature permits piping of the pilot exhaust to a safe atmosphere on applications where noxious gases are used as a control medium instead of air.

**USM:** On actuators with small topworks and a low volume, a special hi-response positioner may be used. This positioner is denoted by the letters USM in the model number. There is no bleed on this model due to the low volume. A special valve plunger is used to ensure fast response for close control.

**GENERAL SPECIFICATIONS**

Instrument Input Pressure Range.....3-15, 3-9, 9-15, and 3-27 psig

Supply Pressure

Minimum.....3 psi above required actuator pressure  
Maximum .....100 psi

Air Consumption .....0.25 SCFM (in balance condition with 20 psi supply and 9 psi dead ended output)

Valve Travel

Minimum.....1/4"  
Maximum .....4"

Ambient Temperature Limits .....-40°C to +82°C (-40°F to +180°F)

## INSTALLATION

### MOUNTING

Refer to Figure 1 for mounting dimensions and connections. A centering washer (customer provided) which fits the I.D. of the range spring should be used. This acts as a spring seat and keeps the spring from shifting.

Mounting hardware is included with the positioner in a plastic bag numbered 10448-88. It contains (6) mounting screws and washers, (1) range spring seat and (1) gasket.

#### CAUTION

Exceeding the specified ambient temperature limits can adversely affect performance and may cause the positioner to fail.

1. Place centering washer on the actuator's diaphragm or piston.
2. Place the positioner range spring on the center of the actuator diaphragm or piston.
3. Place the gasket on the mounting flange of the actuator top works. Substitute the P/N 10636-59 centering diaphragm for the gasket if the P/N 12388-6412 or 12395-6412 range spring is used.
4. Place the positioner range spring seat on the center nut of the positioner diaphragm assembly.
5. Hold the spring seat and guide the positioner and seat onto the range spring.
6. Orient the positioner for desired location of connections.
7. Insert mounting screws and washers and tighten screws.

### PNEUMATIC CONNECTIONS

1. All connections are 1/4" NPT.
2. The piping recommended for the positioner is 1/4" O.D. tubing for the INSTRUMENT (input) connection and 3/8" O.D. tubing for the supply connection. However, any scale-free piping may be used.
3. Blow out all piping before connections are made to prevent dirt, chips, etc., from entering the positioner.
4. Use pipe sealant sparingly and then only on the male threads. A non-hardening sealant is strongly recommended.
5. Connect the positioner to a source of clean, dry, oil-free instrument air supply (see INSTRUMENT AIR REQUIREMENTS).

#### CAUTION

Pressure in excess of 150 psig to any connection may cause damage.

### INSTRUMENT AIR REQUIREMENTS

Connect the positioner to a source of clean, dry, oil-free supply air. Failure to do so will increase the possibility of a malfunction or deviation from specified performance.

#### CAUTION

Synthetic compressor lubricants in the air stream at the instrument may cause the positioner to fail.

There are many types of synthetic lubricants. Some may not be compatible with the materials used in the construction of the positioner. Wetting of these materials by such an oil mist or oil vapor, etc., may cause them to deteriorate. This may ultimately result in failure of the positioner. The following materials are in contact with supply air: Aluminum, Brass, Stainless Steel, Neoprene and Buna-N.

The requirements for a quality air supply can be found in the Instrument Society of America's "Quality Standard for Instrument Air" (ISA-S7.3). Basically this standard calls for the following:

Particle Size — Maximum particle size in the air stream should be no larger than 3 microns.

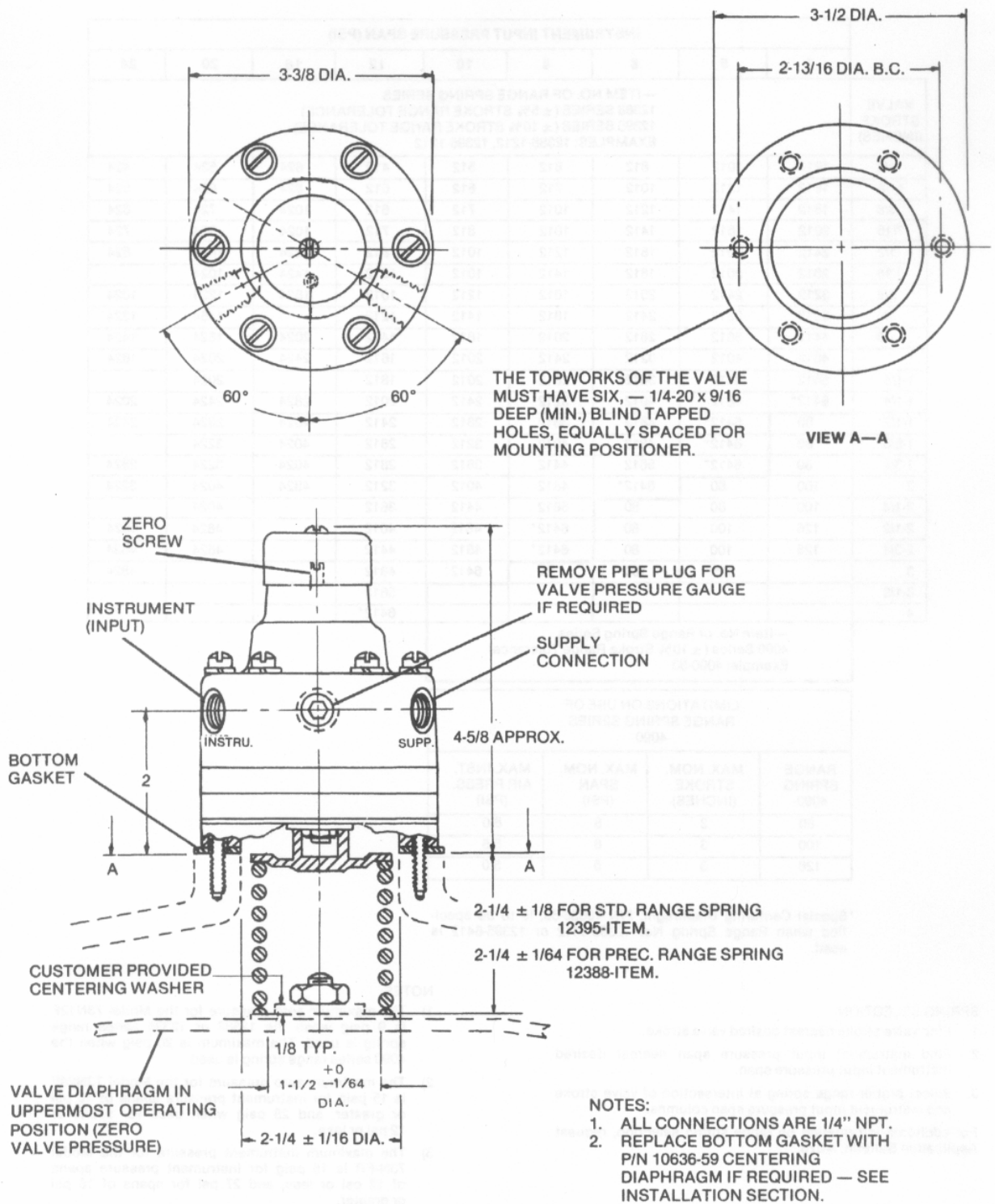


Figure 1 Installation Dimensions and Connections

**Dew Point** — Dew point at line pressure should be at least 10°C (18°F) below the minimum temperature to which any part of the instrument air system is exposed at any season of the year. Under no circumstances should the dew point at line pressure exceed 2°C (35.6°F).

**Oil Content** — Maximum total oil or hydrocarbon content, exclusive of noncondensibles, should not exceed 1 ppm under normal operating conditions.

### **CAUTION**

Exceeding the specified ambient temperature limits can adversely affect performance and may cause damage.

### **ADJUSTMENT**

The only adjustment that can be made on the positioner is a zero adjustment. The zero adjusting screw is located under the positioner top cover.

To adjust the zero, set the instrument pressure to the midpoint of its span, and turn the zero adjustment until the valve is at the mid-point of its stroke.

In some cases, valve shut-off or opening may be required at a specific instrument pressure. To zero the positioner at this point, set the instrument pressure at the specific pressure and turn the zero adjustment screw until the valve reaches the required position.

A slight change of the instrument pressure should start to move the valve.

The valve stroke for a given span may also be suppressed or shifted to the desired range by means of the zero adjusting screw.