Electric-To-Pneumatic Transducers

The E/P Transducer converts a DC milliampere input signal to a pneumatic output signal that is directly proportional to the input. Standard input/output ranges are listed under model selection. Among the outstanding features inherent to all EPTRANS transducers are:

High signal sensitivity

Rugged construction

Simplicity of design and operation

Weatherproof (IP-65)

Insensitivity to shock and vibration

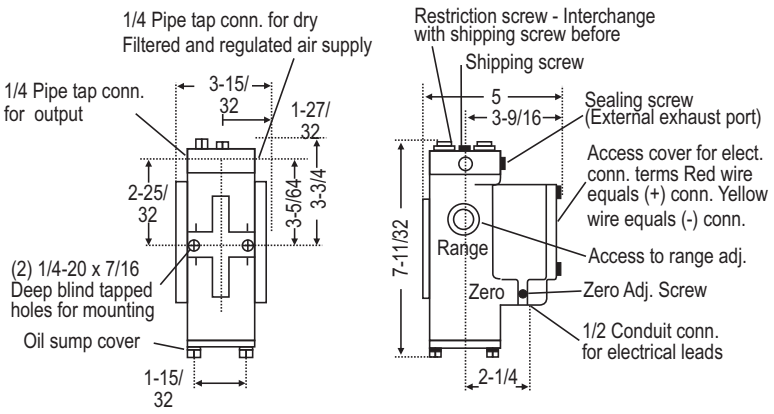
Insensitivity to supply pressure variation

For Measuring Circuits

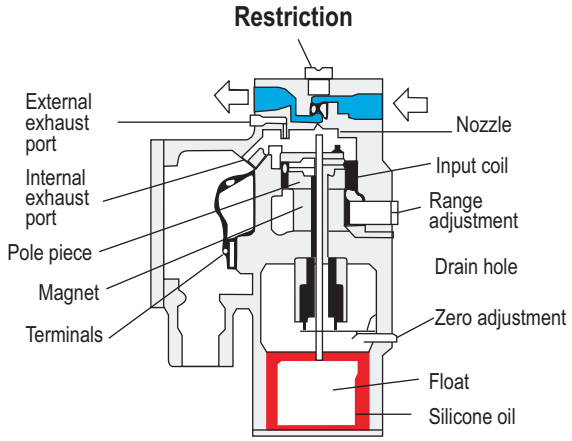
Output of an electronic measuring device. (e.g. process variable transmitter) to a pneumatic signal for indication, recording, computation or control.

For Control Circuits

Operate a final control element usually a valve. The EPTRANS transducers are especially suitable for control valve circuits, requiring a high degree of accuracy



• All connections are 1/4 NPT except as shown • Must be mounted vertically (±10°) as shown
• Flat adaptor plate (P/N 12330-100) available to mount transducer on a blind wall



Typically the transducer is used to signal a valve positioner. If it is used for direct-loading of valve actuations or other large volumes, a volume booster relay is required to minimize time lags and the effects of leakage. The weatherproof design of the transducer and its insensitivity to shock and vibration permit it to be installed at almost any location; it can be located near or on a valve actuator whichever is more convenient.

Positive Purging : The Transducers exhaust can be used to provide a light purge of the terminal enclosure. This is achieved by plugging the drain hole. The purge makes the transducer suitable for use in corrosive atmosphere.

Model Selection

EPTRANS - **12** **F** **A**

I/P Transducer - series 77 with input current of 4-20 mA DC

Output Range

11 : 3-15 psig
12 : 0.2 to 1.0 kg/cm2
13 : 0.2 to 1 bar
14 : 3-27 psi
15 : Reverse action (15 to 3psi)
16 : Reverse action (1 to 0.2 kg/cm2)

Mounting Arrangement

F - Field Mounting with 2" pipe or wall mounting bracket
N - No mounting bracket required

Intrinsic Safety Classification

N - Not intrinsically safe
A - Intrinsically safe for exia IIA/IIB/IIC, T4 as per IS:5780-1980

General Specifications

Supply pressure	: 20 psig ± 2 psi 30 psig for 3 to 27 psig output
Input / output data	: See model selection
Zero offset adjustment	: +40% and -20% of span
Output capacity	: 0.16scfm
Response level	: 0.025% of span
Reproducibility	: 0.2% of span
Callibration accuracy	: ± 0.25% of span
Supply pressure effect	: Less than 1% of span (Change of output for supply change from 18 to 22 psig)
Ambient	: -40° to +180°F

Principle of Operation

The input coil and the float are rigidly fastened to a common center shaft and make up the moving coil assembly, this assembly is free to move vertically. The float is submerged in silicone fluid and is sized so that the resultant buoyant force equals the weight of the moving coil assembly. This creates a state of neutral buoyancy for the moving coil assembly. This together with the viscous damping of the silicone fluid makes the transducer insensitive to shock and vibration.

An Alnico, V. Permanent magnet provides the magnetic field which surrounds and passes through the input coil. Input current flowing through the coil reacts with the magnetic field to force the moving coil assembly closer to the nozzle. the amount of force is proportional to the input. The top end of the common center shaft serves as a nozzle seat which restrict the flow of air exhausting from the nozzle. Air is supplied to the nozzle through a restriction Pressure in the nozzle (back pressure) varies according to the restrictive effect imposed by the nozzle seat.

Nozzle back pressure (i.e. transducer output) acts on an area of the nozzle seat and exerts a downward force to rebalance the force produced by the coil. Thus, the force produced by the coil is continuously balanced by the nozzle back pressure so that the transducer output pressure is at all times, directly proportional to the coil current. Zero Adjustment is accomplished by varying the spring force on the moving coil assembly.

Range adjustment is accomplished by changing the gap between the permanent magnet and the end of the range screw adjustment. This screw shunts a portion of the magnetic field. Varying the gap changes the amount of shunting which, in turn, changes the flux density through the coil.

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