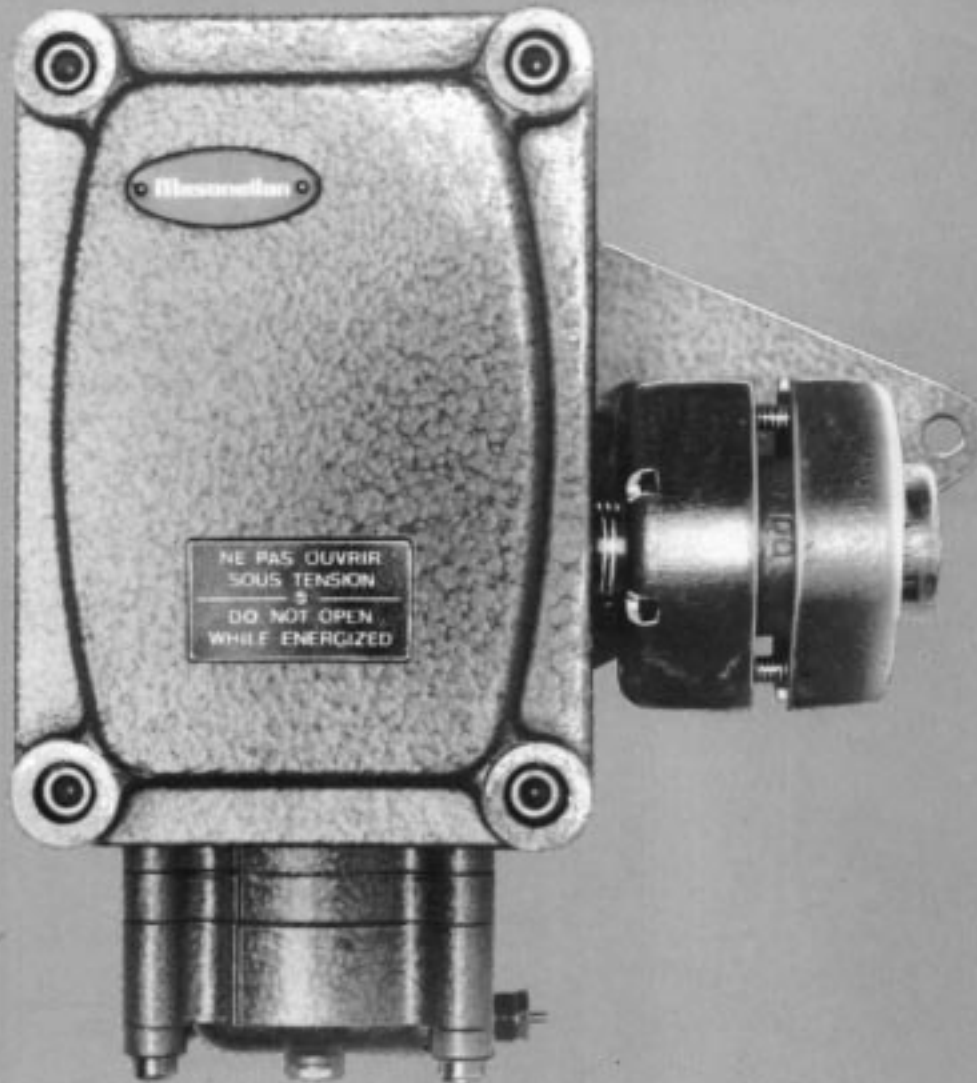


Model 8007 and 8008 Electropneumatic Transducers



Masoneilan

New Nozzle Design Minimises Effect of Vibration

Model 8007 and 8008 electropneumatic transducers convert a low-power DC signal into a proportional pneumatic signal in the 207 to 1035 mbar (3 to 15 psi), or 414 to 2070 mbar (6 to 30 psi) range, as appropriate. They are of the force balance type.

Generally speaking, a signal from the Model 8007 is utilised by a pneumatic positioner or a supply relay of the volume booster type.

Model 8008 is fitted with a relay, which allows the transducer output signal to control a valve pneumatic actuator direct.




These transducers are either direct or reverse action. All that is needed to change the direction of operation is to reverse the connections of the signal leads on the terminal board. These transducers can be installed in any position without affecting their operation, and they are not sensitive to radio waves.

Description

Casing : A mounting plate allows the transducers to be fitted to the yoke of Type 37 and Type 38 actuators.

— **Sealed Models for Non-Explosive Atmospheres:** IP55, in accordance with French Standard NFC 20.010.

— Models for Explosive Atmospheres

EQUIPMENT WITH FLAMEPROOF ENCLOSURE	FRENCH STANDARDS NF C 23-514 ; NF C 23-518 EEx d II B + H ₂ T6 (amb. temp. ≤ 70°C) EEx d II B + H ₂ T5 (amb. temp. ≤ 80°C) L.C.I.E. No. 80.2094	May be supplied to order sealed to IP 55 Originally display a degree of sealing to IP 54
	CANADIAN STANDARDS  Class I Group D	
EQUIPMENT TO BE INCORPORATED IN AN INTRINSICALLY SAFE CIRCUIT	GERMAN STANDARDS (VDE) SCHUTZART  is G5	
	FRENCH STANDARDS NF C 23-514 ; NF C 23-520 EEx ia II C T6 (amb. temp. < 40°C) EEx ia II C T4 (amb. temp. < 80°C) L.C.I.E. No. 80.2148 X Signal 4-20 mA Impedance 216 Ω	
	BRITISH STANDARDS (BASEEFA)  ia II C T6 BASEEFA No. 75021/B SFA 3012	
	YUGOSLAV STANDARDS S Commission (Sia) II C T6 (amb. temp. ≤ 40°C) (Sia) II C T4 (amb. temp. ≤ 80°C) JUS No S 8.301 Type Test Certificate No. T 5257 Signal 4-20 mA Impedance 216 Ω	

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Tropicalisation : The purpose of this treatment is to protect the transducer from the effects of damp, i.e. fungus and micro-organisms.

Beam Support : The beam is supported on a friction free fulcrum provided by two beryllium copper flexure bearings.

Nozzle : This has been designed so that vibration will have no effect on transducer response.

Relay (Model 8008 only) : A diaphragm unit separates the output and nozzle circuits. A double-seated valve controls the flow of supply air to the output and from the output to the exhaust orifice. Supply air enters the nozzle circuit via a metering tube. If necessary, the orifice can be cleared by the manually operated plunger.

Fig. 1 : Nozzle Assembly

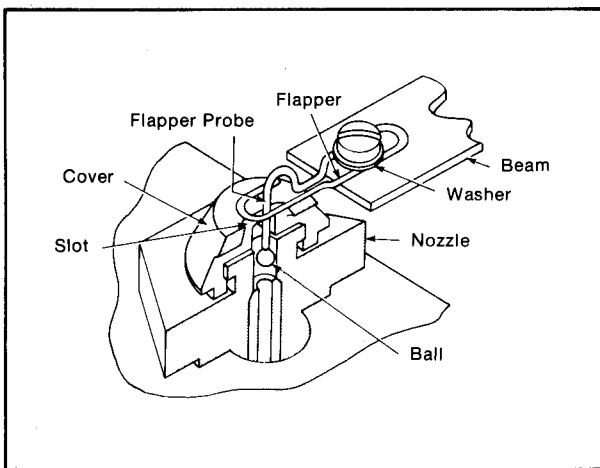
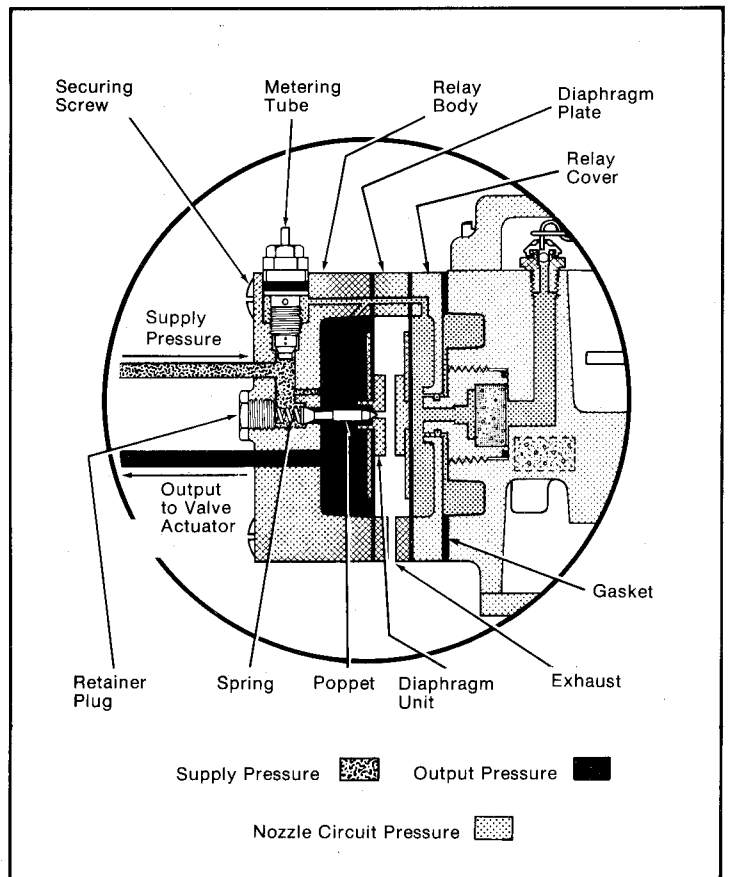


Fig. 2 : Relay



Electrical Circuit :

The input circuit of Model 8007 and 8008 transducers can be adapted to suit DC signals from most electrical controllers. Signal leads are taken into the casing through a 1/2" NPT tapped hole. This connection will accept a cable gland complying with the relevant protection standard.

Coil : Windings are epoxy resin impregnated.

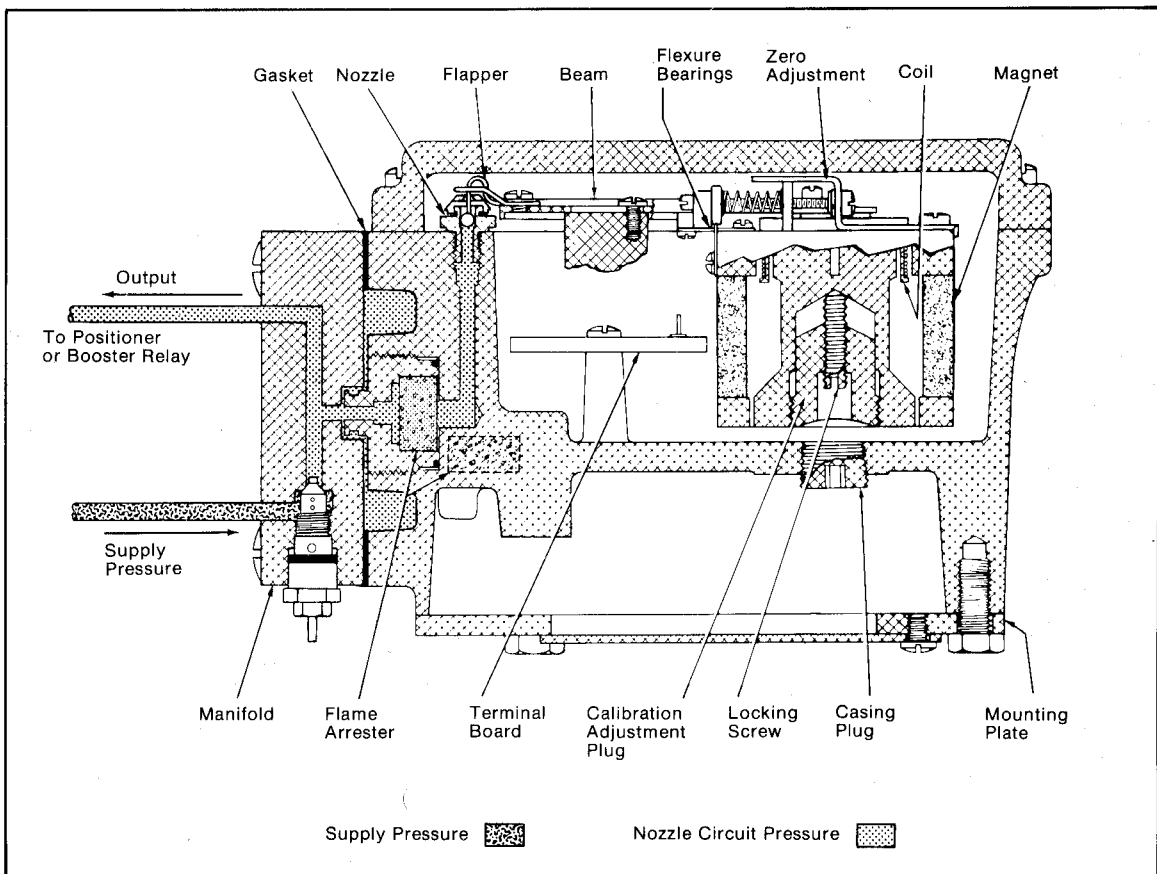
Pneumatic Circuit : The transducer supply and output connections are tapped 1/4" NPT. They are located on the manifold on Model 8007, and on the relay on Model 8008. To facilitate pneumatic circuit connection, manifold and relay can be fitted to the transducer in a choice of four different positions.

Operation

Any variation in the control input signal through the coil changes the gap between flapper and nozzle, causing a change in nozzle back pressure. This change in pressure works in counteracting beam movement until equilibrium is restored. Output pressure is the same as nozzle circuit pressure in Model 8007 transducers.

With direct action, any increase in the input signal brings about an increase in output air pressure. With reverse action, any increase in the input signal brings about a decrease in output air pressure.

Fig. 3 Sectional View of Transducer (Model 8007 illustrated)



Model 8008, with Relay : Supply air enters the circuit via a metering tube. When the flapper blocks off the nozzle, pressure in the nozzle circuit rises. The resulting force moves the diaphragm unit in the direction of the poppet, and this movement blocks off the vent to atmosphere and releases the supply orifice in the direction of the output. The action of the resulting increase in pressure is to move the diaphragm unit away from the poppet.

When forces generated by the nozzle and output circuits balance each other, the poppet no longer allows supply air into the output circuit. A small bleed between supply and output is in fact provided for, and this keeps the poppet slightly clear of its seat in order to speed up transducer response.

General Data

Electrical Circuit : Resistance of the standard circuit is 216 ohms for a 4 to 20 milliamp signal (direct current). Some models can be adapted to suit most signals in present use. Please see table opposite.

Control Input Signal	Transducer Input Resistance
mA	ohms
1-5	2753
4-20	216
10-50	105
Other Signals	To Order

Pressure Table :

Transducer	Supply Pressure		Output Signal Pressure	
	mbar	psi	mbar	psi
MODEL 8007	1586	23	207 to 1035	3 to 15
MODEL 8008	1586	23	207 to 1035	3 to 15
	2413	35	414 to 2070	6 to 30

Air Consumption:

Transducer	Output Signal	Max. Consumption (Steady State)	Max. Instantaneous Flow Rate
MODEL 8007	207 to 1035 mbar	0.30 std. m ³ /h	0.30 std. m ³ /h
MODEL 8008	207 to 1035 mbar	0.45 std. m ³ /h	4.3 std. m ³ /h
	414 to 2070 mbar	0.6 std. m ³ /h	9 std. m ³ /h

Working Temperature :

Model 8007 : -50°C to +80°C.
 Model 8008 (standard : Neoprene type polydiene cloth-reinforced membrane) : -20°C to +80°C.
 Model 8008 (low temperature instrument: silicon cloth-reinforced membrane) : -50°C to +60°C.

Air Connections : 1/4" NPT.

Effect of Supply Pressure : For a supply pressure of 1586 mbar (23 psi) : 0.75% of output span for a supply pressure variation of 100 mbar (0.5% per psi).

Performance Data :

Hysteresis : 0.8% of output span.
 Sensitivity : 0.5% of input span.
 Accuracy : ± 1%.
 Performance of a system comprising of valve, packing, actuator, transducer and fittings depends on the individual performance of each component. (Consult Masoneilan).

Breakdown Voltage Test : 500 VAC (one minute test).

Dimensions : See Figure 4.

Net Weight : 3.5 kg.

Fig. 4 : Dimensions (in mm)

