

Electro Pneumatic Valve Positioners

MIL 8013

Foreword

MIL 8013 Electro-pneumatic positioners provide precise and reliable valve positioning and superior dynamic response. Key design characteristics of the MIL 8013 positioner are :



Dynamic Response and Positioning Accuracy

The MIL 8013 Positioners are force-balance electro pneumatic devices which, by directly comparing valve stem position with controller DC output signal, provide dynamic response and positioning accuracy not obtainable with transducer and pneumatic positioner combination.

Split-ranging Controller

In addition, the positioners provide an accurate means of split-ranging controller output signal for sequential operation of two or more control valves by a single controller.

Corrosion Resistance

This model electropneumatic valve positioners are suitable for most corrosive atmospheres due to its internal nozzle bleed. This provides constant purging.

Direct Action and Reverse Action

Positioners are available for either direct action (increase in electrical signal increases output pressure) or reverse action (increase in electrical signal decreases output pressure) on direct (air to close) or reverse (air to open) actuators, diaphragm or cylinder types.

Vibration Resistant

MIL's nozzle design provides a detection system which is not affected or damaged by valve vibration. Zero and span changes are essentially independent of vibration.

Model Description

Basic Model MIL 8013

The basic model MIL 8013 Positioners are used with reciprocating control valves. Its linkage is designed for actuators with a straight axial motion. Feed back linkage is connected directly to the actuator stem. The model MIL 8013 has a stroke and zero adjustment assembly and may be split ranged with various controller signals.

Construction

The die cast Aluminium housing provides outdoor weather resistance and a sealed conduit connection. Electrical circuit is easily adapted to a variety of input signals. It utilizes a powerful, Hyflux, Alnico V Magnet with high quality force coil with a high dielectric bobbin and mechanically protected windings.

Terminal board has a jack type terminal post to receive coil leads, and also serves as a mounting unit for components necessary to adapt the positioner to various electrical signals.

The case has a 1/2" / 3/4" NPT conduit for electrical connection by cable gland or other means.

Relay is high capacity type for fast stroking speeds. It may be mounted in any one of four positions to facilitate piping. A plunger provides for cleaning the sapphire orifice in the removable metering tube.

Balanced beam design permits installation in any position without shift in calibration. Beryllium copper flexure bearings provide friction-free fulcrum points for the beam. An adjustable beam stop prevents damage to coil.

Provision is made for the adjustment of valve travel.

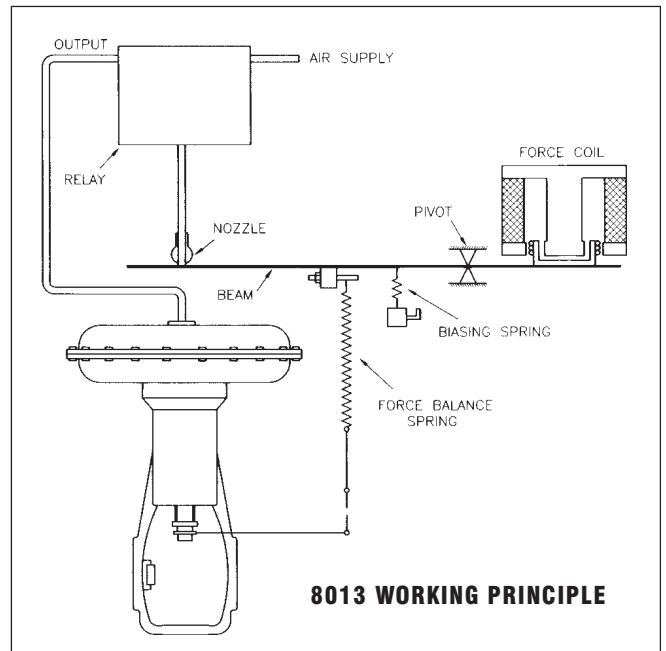
Zero adjustment is easily accomplished and provides 100% zero suppression or elevation for split ranging or reverse action.

Performance Characteristics

Conformity	: + 2% of span
Ambient Temp. range	: -40°C to + 80°C
Air consumption	: 0.21 scfm @ 20 psig 0.29 scfm @ 35 psig
Exhaust capacity	: 3.3 scfm @ 20 psig, approximately 5.4 scfm @ 35 psig
Orientation effect	: Insignificant
Maximum supply pressure*	: 75psi
Output	: Determined by supply pressure
Load sensitivity	: Output pressure change of 1.2 psi

*Limited by actuator rating

Special metering orifice available for supply pressure 55 psig to 75 psig.



Electrical Characteristics

Input	: 4-20 mA; 216 ohms
Open loop gain**	: approximately 100
Zero adjustment	: vernier screw
Span adjustment	: tension adjustment on force balance spring
Range selection	: indexed and calibrated stroke scale, model 8013 electropneumatic positioner

** Defined as $\frac{\% \text{ of full stroke}}{\% \text{ of full input range}}$

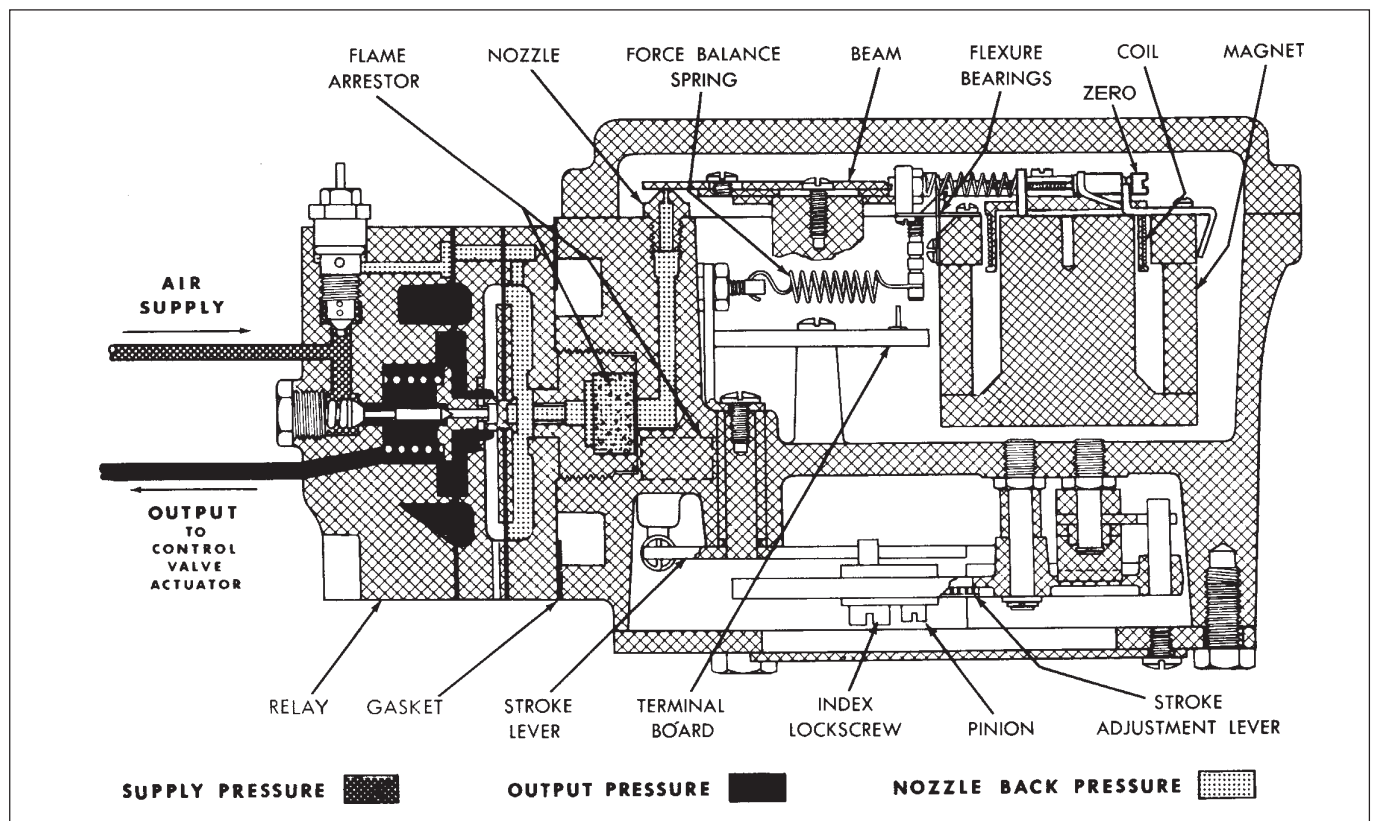
Electrical Safety And Enclosures

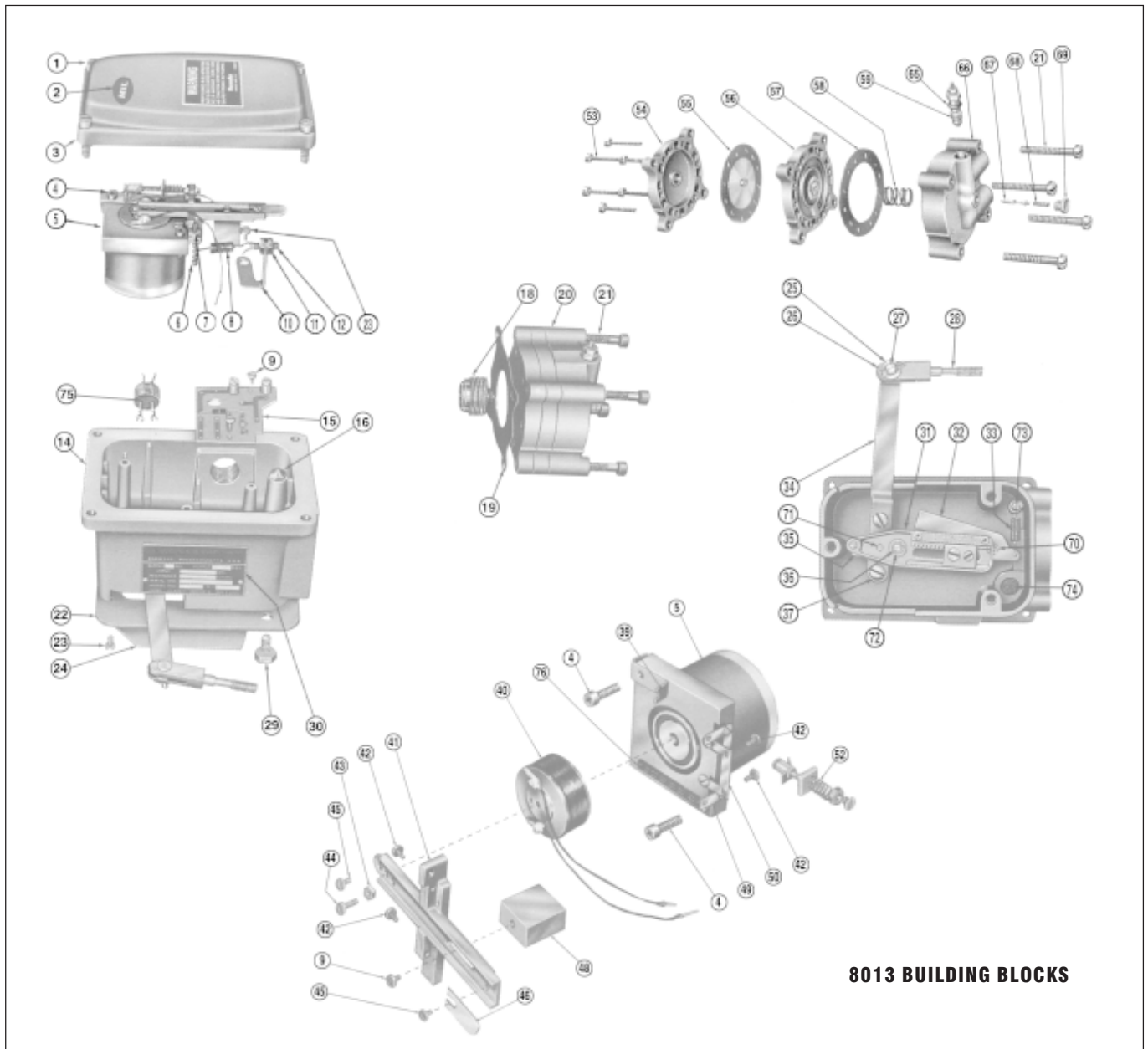
A. Enclosure

Weather proof IP 65 as per IS 2147

B. Hazardous area

Intrinsically safe : Ex ia IIC as per IS 5780
Flame proof : Ex d IIA & IIB as per IS 2148
(Weather proof IP 55)





8013 BUILDING BLOCKS

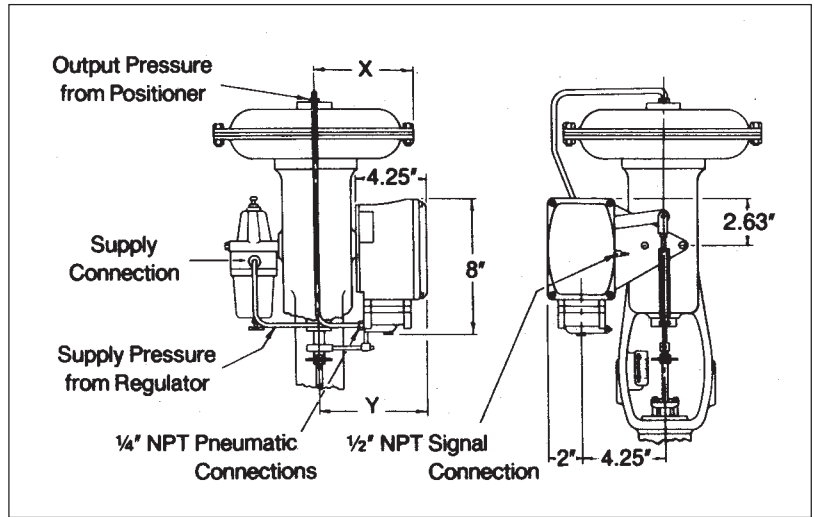
Parts List

No.	Description	No.	Description	No.	Description
1	COVER SCREW	26	RETAINING CLIP	52	BIASING SPRING
2	EMBLEM	27	CLEVIS PIN	53	MACHINE SCREW
3	COVER	28	CLEVIS	54	CAP
4	MOUNTING SCREW	29	CAP SCREW	55	DIAPHRAGM S/A
5	MAGNET S/A	30	SERIAL PLATE	56	BELLOFRAM PLATE S/A
6	ADJUSTING SCREW	31	LEVER (STROKE ADJ.)	57	GASKET
7	NUT	32	STROKE LEVER	58	SPRING
8	FORCE BALANCE SPRING	33	SPRING (STROKE LEVER)	59	METERING TUBE S/A
9	SCREW	34	BACK LEVER	65	O-RING
10	SPRING LEVER	35	BACK LEVER ADAPTER	66	RELAY BODY
11	LOCKING NUT	36	SNAP RING	67	RELAY PLUG
12	ADJUSTING SCREW	37	SCREW	68	SPRING
14	CASE	39	SPRING BRACKET	69	HOLDING SCREW
15	TERMINAL BOARD S/A	40	COIL S/A	70	SLEEVE BEARING
16	NOZZLE	41	BEAM	71	BEARING POST
18	ADAPTER (FLAME ARRESTER)	42	SCREW	72	BEARING POST
19	GASKET	43	LOCKNUT	73	GROOVE PIN
20	RELAY	44	MACHINE SCREW	74	FLAME ARRESTER
21	RELAY MOUNTING SCREW	45	MACHINE SCREW	75	NIPPLE
22	MOUNTING BRACKET	46	FLAPPER		
23	SCREW	48	WEIGHT		
24	COVER PLATE (STROKE ADJ.)	49	FLEXURE BEARING		
25	WASHER	50	FLEXURE BEARING		

Note:
 Due to continuous product improvement, the specification / values are subject to change.

Dimensions / Mounting Orientations

Actuator Size	X (inch)	Y (inch)
9	5.5	6.25
11	6.5	6.25
13	7.5	7.75
15	8.75	7.75
18	10.38	7.75
24	13.5	9.13



Stroking Times with 37/38 Actuator; Supply 20 psig

Actuator Size	Valve Stroke (inches)	Supply Pressure 20 psi
		Stroking time (seconds)
11	3/4	2.8
	1	3.3
13	1	4.9
	1 1/2	6.3
15	1 1/2	9.4
	2	11.4

Actuator Size	Valve Stroke (inches)	Supply Pressure 20 psi
		Stroking time (seconds)
18	2 1/2	21
	3 1/2	29
	4	32
24	4	57

* Figures refer to direct spring - diaphragm actuators and the time to extend shaft, based upon 3-15 psi signal, 20 psi supply. Increase stroking time by 15% for 6-30 psi spring range, Shorter times achieved with boosters

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