

## MIL 37-38

Pneumatic Spring Diaphragm Actuators with optional hand wheels



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## Introduction

MIL 37- direct and MIL 38 - reverse pneumatic spring diaphragm actuators are designed to provide high performance with linear stem motion valves. They provide automatic operation of control valve with the given supply head. The actuator position the valve plug in response to varying pneumatic loading pressure on the actuator diaphragm.

High quality springs, fabric-reinforced diaphragm and sturdy design (no detectable hysteresis) are determining factors of the very reliable product.

Handwheel and limitstop shall be provided optionally.

## Features

### Heavy One-piece Yoke

Provides maximum strength and rigidity to handle high thrust requirements.



## Diaphragm Cases

Pressed steel upper and lower cases combine lightness, high mechanical strength and adequate protection in the event of severe over pressurization.

## Thrust Capability

Two actuator types and five sizes provide a wide range of application.

## Diaphragm

Molded elastomer with fabric insert for strength, long life and high sensitivity.

## Linearity

The molded diaphragm and deep cases minimize area change and produce a linear relationship between travel and air pressure.

## Typical Applications

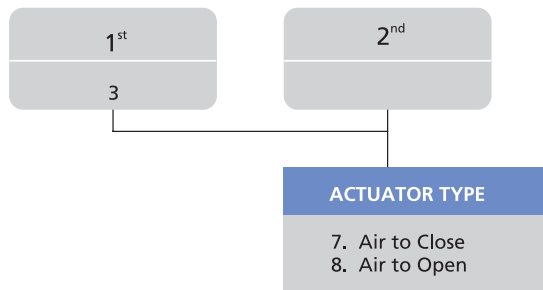
MIL pneumatic actuators are best suited with MIL control valve, where the stroke (travel) is in between 0.125 inch and 4 inch. MIL actuators fit on flow-to-open and flow-to-close type valves with thrust requirements in moderate range.

Control valves for critical applications like, boiler feed water control; boiler feed pump minimum recirculation, PRDS spray control etc and on-off valves with less stroking time requirements can be served with MIL pneumatic diaphragm actuators.

The pneumatic actuator is designed for operating medium as plant air, sweet natural gas and any such non-corrosive fluids as per plant availability.

## Technical Information

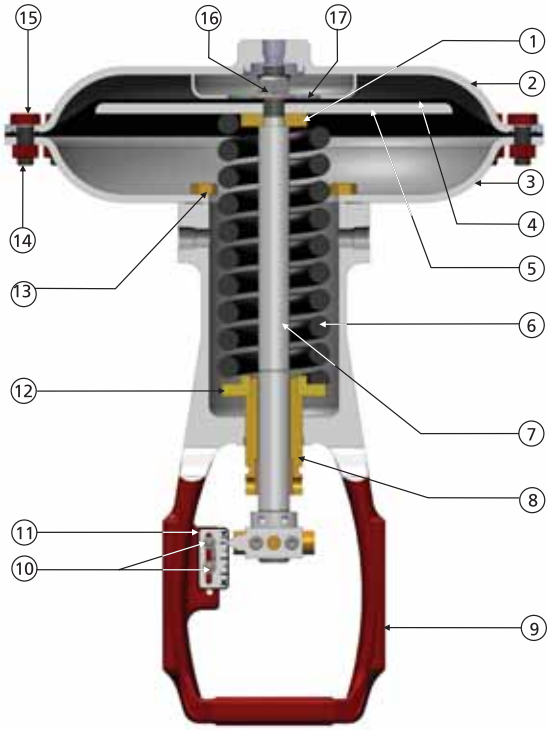
### Model Decodification



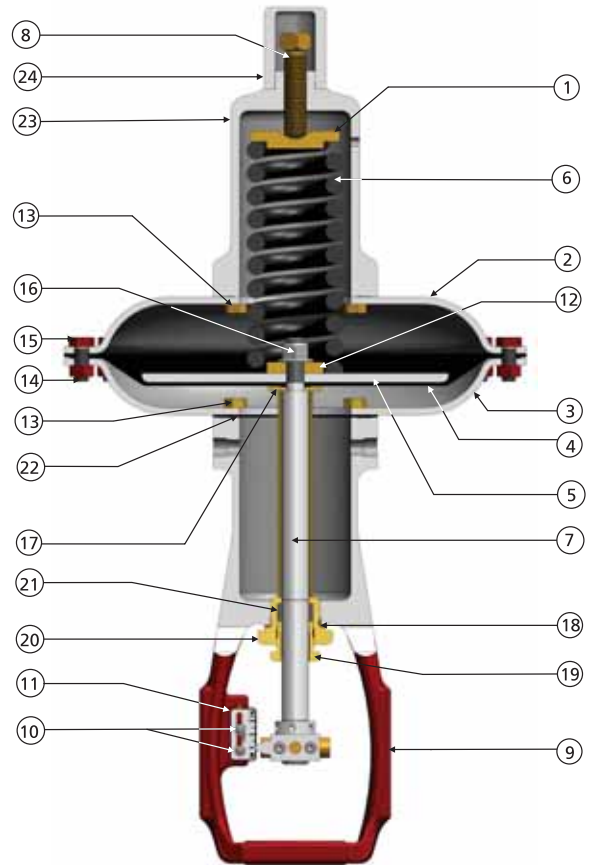
### Standard Sizes / Spring / Supply

ACTUATOR SIZE	INITIAL DIAPHRAGM EFFECTIVE AREA (sq.in.)	MAXIMUM STROKE (inch)	SPRING RANGE (psig)	MAXIMUM AIR SUPPLY (psig)
11	81.5	1	3-15	60
			6-30	
13	115.2	1.5	3-15	60
			6-30	
15	176	2	3-15	60
			6-30	
18	272	4	3-15	60
			6-30	
24	368	4	3-15	55
			6-30	

# Construction



Type 37 Actuator  
Direct : Air to Close



Type 38 Actuator  
Reverse : Air to Open



## Material of construction

REF. NO.	PART NAME	MATERIAL
1	Spring guide (upper spring seat)	Carbon steel
2	Diaphragm case (upper)	Carbon steel
3	Diaphragm case (lower)	Carbon steel
4	Diaphragm	Elastomer with Fabric insert
5	Diaphragm plate	Carbon steel
6	Actuator spring	Spring steel
7	Actuator stem	Stainless steel
8	Spring adjuster	Carbon steel
9	Yoke	Cast iron / Carbon steel
10	Screw	Carbon steel
11	Travel indicator Scale	Stainless steel
12	Spring button (lower spring seat)	Carbon steel
13	Cap screw	Carbon steel
14	Nut (Diaphragm case)	Carbon steel
15	Cap screw (Diaphragm case)	Carbon steel
16	Nut (Actuator stem)	Carbon steel
17	Diaphragm washer	Carbon steel
18	Gasket (Packing box)	Copper
19	Packing nut	Carbon steel
20	Packing box	Carbon steel
21	Yoke packing	PTFE
22	Gasket (Lower case to yoke)	Aramid Fibre
23	Spring barrel	Cast iron/ Carbon steel
24	Spring barrel cap	Carbon steel

## Handwheels

### General

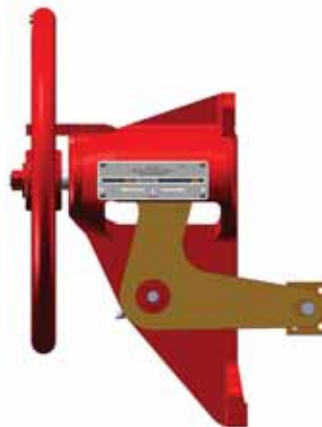
Hand wheels provide a means for normally operating control valves in emergency, during start-up and in event of air failure. Side mounted continuous connected hand wheels are operated without the use of clutches of any kind. Hand wheel position indicators, and latches to retain wheels when not in use, are provided. Five sizes are available, combining compactness with adequate power to operate the valve sizes for which it is designed.

HANDWHEEL MODEL	ACTUATOR SIZE	MAXIMUM STROKE (inch)	MAXIMUM AIR SUPPLY (psig)	UNPACKED WEIGHT (kg)
6A1	11	1.0	60	7
6A2	13	1.5	60	14
6A3	15	2.0	60	30
	18	2.5	35	
8A	18	4.0	60	18
7A	24	4.0	55	32



## 6A Series

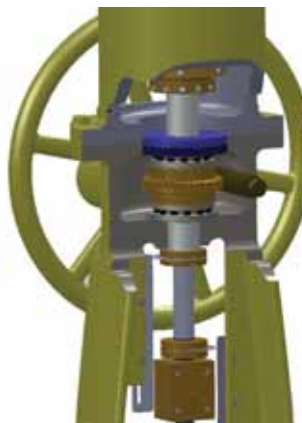
These bell crank lever types are externally mounted on the yoke. They provide adjustable stops to limit the extend of valve travel in either direction, but not both. A pad cast on the side of the hand wheel bracket provides for the attachment of an air supply valve. On valve with 6-30 psig spring range these hand wheels are recommended for setting limit stops or for occasional emergency manual operation.



6A Hand Wheel

## 7A Series

7A series hand wheels are designed with a worm gear drive to provide extra power required by large size valves. The gears are contained in a permanently lubricated gear box which is integral with the special long yoke. The high quality material and precise construction used in the manufacture of gears, power screw and the thrust bearings, assure trouble-free operation and minimum effort to operate. Clockwise rotation of the hand wheel normally moves the stem downward. However, hand wheel may be located so that clockwise rotation moves the stem upward. This change can be readily made in the field. Stops may be set in either or both directions.



7A Hand Wheel



## 8A Series

The 8A series handwheel units feature a transformation of motion by worm gears and worm, like the 7A Series handwheel units. They deliver the necessary power for operating large size valves. The permanently lubricated gears are located in a housing placed at top of the actuator. High grade materials, precise machining of gears, worm and power screw and use of ball bearings, makes it a sturdy and easy to operate unit. The actuator stem extends when the handwheel is rotated clockwise.

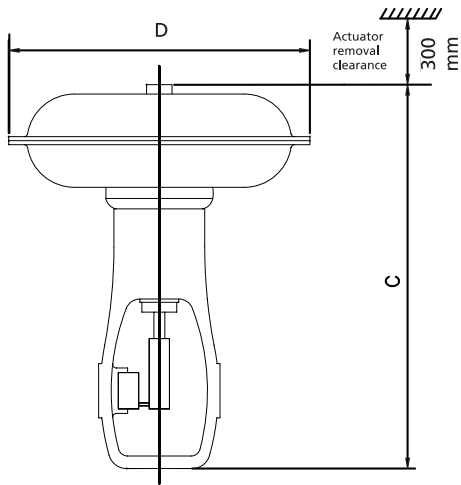


8A Handwheel

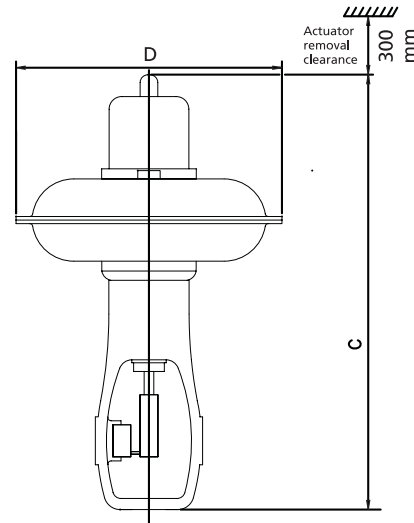




## Dimensions and Weights



**Actuator Type : 37**  
**Direct (Air to extend stem)**



**Actuator Type : 38**  
**Reverse (Air to retract stem)**

ACTUATOR SIZE	ACTUATOR TYPE : 37 DIRECT			ACTUATOR TYPE : 38 REVERSE		
	DIMENSIONS (mm)		UNPACKED WEIGHT (kg)	DIMENSIONS (mm)		UNPACKED WEIGHT (kg)
	C	D		C	D	
11	421	330	21	617	330	25
13	516	381	32	782	381	40
15	654	445	55	943	445	75
18	848*	527	82	1360*	527	178
24	870*	686	170	1505*	686	210

\*Actuator height varies with spring range/stroke. Maximum height is indicated. Contact MIL for exact height.

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