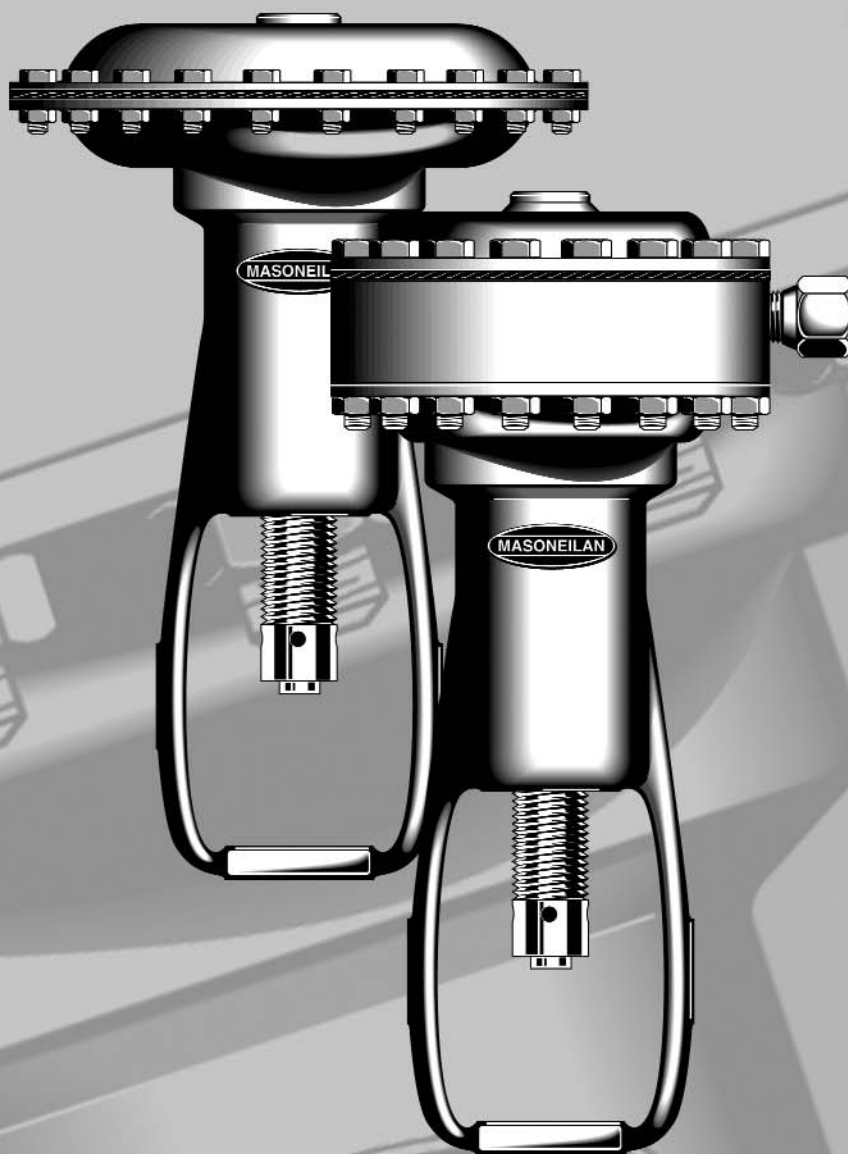


MASONEILAN[®]

10900 Series Actuators

for use with 500 Regulators

EY5010
Rev. B
08/97



INSTRUCTION MANUAL

General

These adjustment and maintenance instructions apply to the 10900 Series Actuators used with the Masoneilan 500 Series Pressure Regulators. They include a parts reference list including recommended spare parts (see pages 3 & 4).

For installation, operation, adjustment and maintenance of the 500 Series Regulators body S/A refer to instructions Nos indicated by the following table.

Regulator Model No	Body S/A Instruction No
525; 525-50 526; 526-50	EY 5200 E; EY 4550 E
535H; 535H-50 536H; 536H-50	176418E
535V; 535V-50	176419E

Spare parts

When performing maintenance always use Masoneilan replacement parts. Parts are obtainable through your local Masoneilan Representative or Spare Parts Department. When ordering parts, always include Model and Serial Numbers shown on serial plate.

Description-Operation

The 10900 Actuator is a simple powerful mechanical device. It is Air-to-Extend Stem type. The nominal range of an actuator is the pressure range in pounds per square inch (psi) in which the pressure setting can be obtained by adjustment.

Conformation of the diaphragm (11) to the diaphragm plate (10) serves as a flexible upper guide for the actuator stem (6). Nylon reinforced neoprene diaphragms permit smooth, sensitive operation. The lower guide is an oil impregnated bronze bushing (3) located in the spring adjuster (2).

Note: On request, for special services, the nylon reinforced neoprene diaphragm may be provided with a PTFE coating.

The 10900 Series Actuators are designed for use with the 500 Series Regulators for reducing, back pressure and differential pressure applications.

Function	Regulator Model No	Actuator Type
REDUCING	525 535H 535V	Spring Diaphragm
BACK PRESSURE	526 536H	
DIFFERENTIAL REDUCING	525-50 535H-50 535V-50	Differential
DIFFERENTIAL BACK PRESSURE	526-50 536H-50	

After sales Department

Masoneilan has a highly skilled After Sales Department available for start-up, maintenance and repair of our regulators and components parts. Contact the nearest Masoneilan Sales Office or Representative or, directly the After Sales Department of Condé-sur-Noireau Plant.

Training

MASONEILAN regularly holds training seminars for technicians in its factory of Condé-sur-Noireau. In order to participate in one of these training seminars you should get in touch with our local Masoneilan Representative or our Training Department.

The following instructions should be thoroughly reviewed and understood prior to installing operating or performing maintenance on this equipment. Only qualified personnel to service this equipment.

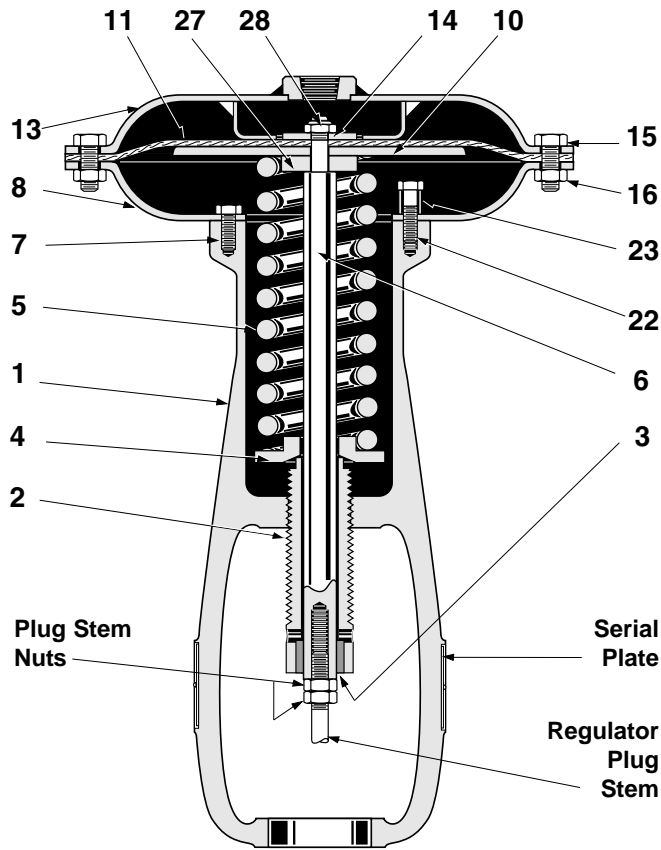
Non-compliance with safety rules and caution notes of this instruction may bring about malfunction of the device or damage it seriously. In addition, such negligence might expose personnel present on the field to grave hazards.

The opposite chart indicates the combinations available to provide the desired function. The 10900 Series Actuators are designated by the nominal range (psi). See the following chart.

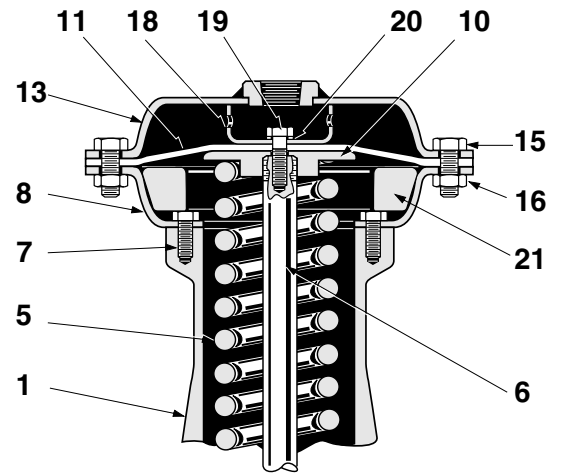
In Spring Diaphragm Actuators, three actuator cases are available: a case rated for 60 psi static pressure, a case rated for 250 psi static pressure and a case rated for 750 psi static pressure.

In Differential Pressure Actuators, two actuator cases are available: a low-pressure case rated for 250 psi static pressure, and a high-pressure case rated at 600, 1000 and 1500 psi static pressure.

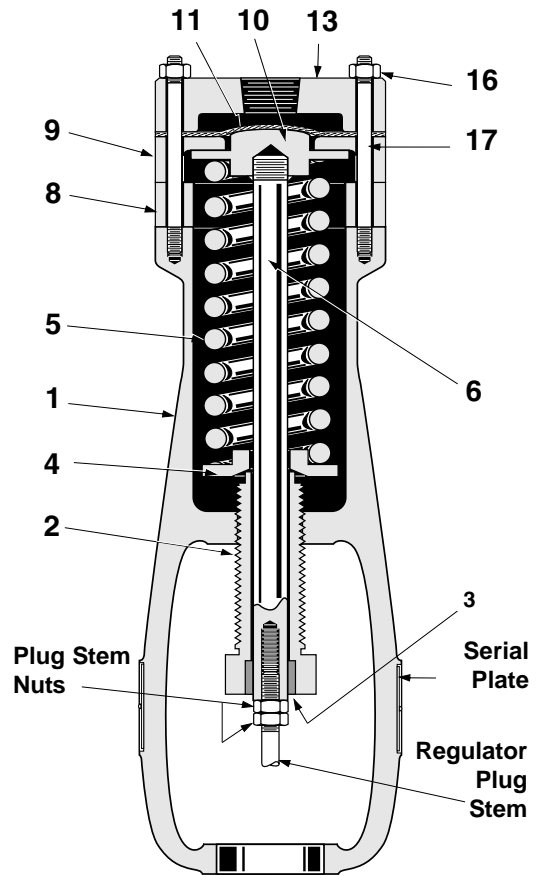
Actuator Type	Range (psi)	Max. Static Pressure (psi)	Case Size	
Spring Diaphragm	0,5 - 2	60	11	
	1,5 - 3 2 - 10 6 - 20 15 - 40		9	
	30 - 75 60 - 125 80 - 250 150 - 750		250	5 4 3 1/2 Special
	Differential	Low Pressure Case		
		3 - 12 10 - 35 30 - 75 60 - 125	250	5 4
		High Pressure Case		
		3 - 15 30 - 85	600	5
5 - 30 10 - 60		1000	4	
75 - 185 100 - 330		1500	3 1/2	



Design for the 0,5-2 ; 1,5-3 ; 2-10 ; 6-20
and 15-40 psi ranges



Design for the 30-75, 60-125
and 80-250 psi ranges



Design for the 150-750 psi range

Figure 1 — Spring-Diaphragm Actuators for
500, 500H and 500V Models Regulators

PARTS REFERENCE

Ref.	Part Name	Ref.	Part Name	Ref.	Part Name
1	Yoke	② 9	Diaphragm Chamber	③ 18	Stop Cup
2	Spring Adjuster	10	Diaphragm Plate	③ 19	Diaphragm Screw
3	Bushing (Incl. Ref. 2)	11	Diaphragm ●	③ 20	Dynaseal Washer ●
4	Lower Spring Seat	13	Diaphragm Case (Upper)	④ 21	Reducing Ring
5	Actuator Spring	① 14	Diaphragm Washer	⑤ 22	Stop Screw
6	Actuator Stem	15	Cap Screw (Diaph.case)	⑤ 23	Stop Spacer
7	Cap Screw (L. case to yoke)	16	Nut (Diaph.case)	① 27	Upper Spring Washer
8	Diaphragm Case (Lower)	② 17	Stud (Diaph. case)	① 28	Locknut (Actuator stem)

● Recommended spare parts

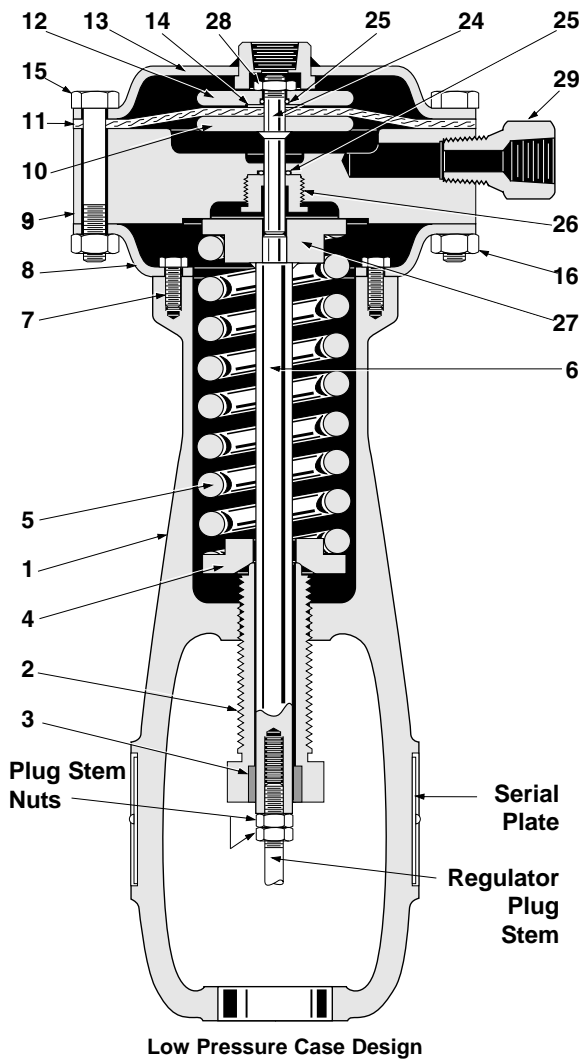
① Only on 0,5-2 ; 1,5-3 ; 2-10 ; 6-20 and 15-40 psi ranges

② Only on 150-750 psi range

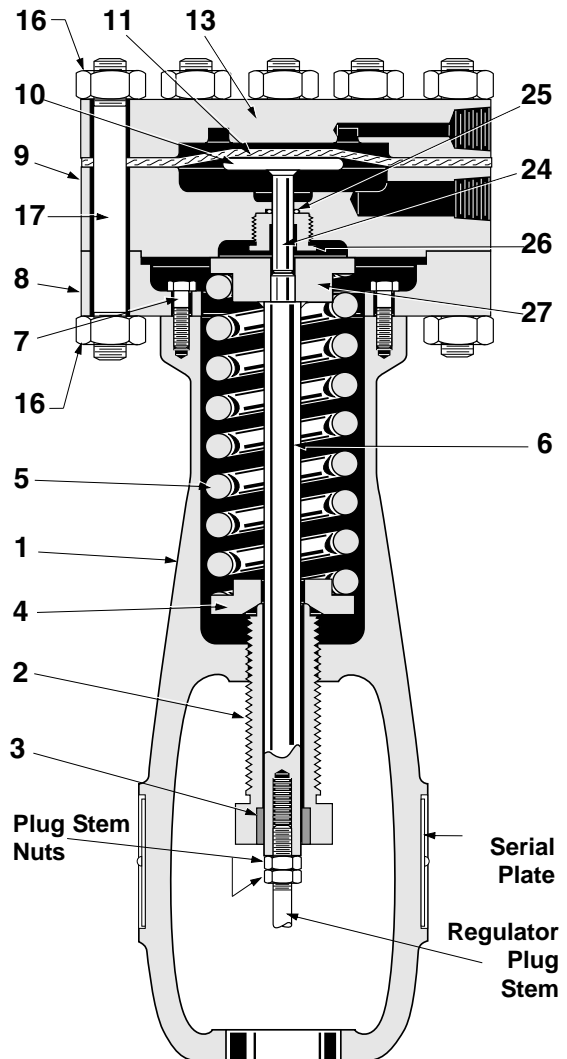
③ Only on 30-75; 60-125 and 80-250 psi ranges

④ Only on 60-125 and 80-250 psi ranges

⑤ Only on 0,5-2 ; 1,5-3 ; 2-10 ; 6-20 and 15-40 psi ranges actuators mounted on types 526 and 536H regulators



Low Pressure Case Design



High Pressure Case Design

Figure 2 — Differential Pressure Actuators for 500-50, 500H-50 and 500V-50 Models Regulators

PARTS REFERENCE

Ref.	Part Name	Ref.	Part Name	Ref.	Part Name
1	Yoke	9	Diaphragm Chamber	② 17	Stud (Diaph. case)
2	Spring Adjuster	10	Diaphragm Plate (Incl. w. Ref. 24)	24	Plunger Sub-assembly
3	Bushing (Incl. Ref. 2)	11	Diaphragm ●	③ 25	O-Ring ●
4	Lower Spring Seat	① 12	Upper Diaphragm Plate	26	O-Ring Retainer
5	Actuator Spring	13	Diaphragm Case (Upper)	27	Upper Spring Seat (Incl. w. Ref. 6)
6	Actuator Stem	① 14	Diaphragm Washer	① 28	Locknut
7	Cap Screw (L. case to yoke)	① 15	Cap Screw (Diaph.case)	① 29	Connection Adapter
8	Diaphragm Case (Lower)	16	Nut (Diaph.case)		

● Recommended spare parts

① Only on Low Pressure Case Design

② Only on High Pressure Case Design

③ Qty: 2 on Low Pressure Case Design

Qty: 1 on High Pressure Case Design

Installation

On steam service, the regulator should be installed with the actuator down so that the diaphragm will be protected by a condensate barrier. If installed otherwise, an adequate condensate barrier must be incorporated.

In the Spring Diaphragm Actuators, the 1/2" NPT pressure connection is located on the upper diaphragm case (13).

In the Differential Pressure Actuators, the 1/2" NPT high pressure connection is located on the upper diaphragm case (13) and the 1/2" NPT low pressure connection is located on the diaphragm chamber (9) or on the connection adapter (29).

Refer to Regulators Body S/A Instructions for installation according to the regulator function.

Adjustment

When pressure setting has been specified in order, the regulator is set accordingly at the factory for test. **Then, the spring compression is fully removed to avoid unnecessary stress to parts (diaphragm, spring) during the stocking.**

It is necessary to proceed with adjustment before servicing.

The regulator pressure range is engraved on the serial plate.

Proceed as follows :

- Open stop valve on the outlet side of the regulator and partially open stop valve on the inlet side, allowing pressure in the system to build up slowly.

Maintenance

CAUTION: Regulator must be isolated and pressure vented before disassembly.

Replacing diaphragm

On spring diaphragm actuators (500 series Regulators), (Figure 1)

- Remove the controlled pressure line from the diaphragm case (13) and relieve all spring compression by unscrewing spring adjuster (2).
- Remove upper diaphragm case (13), [nuts (16) and screws (15)], [not screws (15) on 150-750 psi range].
- **a) On 0,5-2 ; 1,5-3 ; 2-10 ; 6-20 and 15-40 psi ranges:**

Remove locknut (28), diaphragm washer (14) and diaphragm (11).

b) On 30-75, 60-125 and 80-250 psi ranges:

Remove diaphragm screw (19), seal washer (20), stop cup (18) and diaphragm (11).

c) On 150-750 psi range:

Remove diaphragm (11).

Note: By means of a wrench applied on the plug stem nuts, hold the actuator stem during this operation.

- Install new diaphragm and reassemble by reversing of the above description order.
- Readjust the spring compression (see above).

Replacing O-ring(s) (25)(low and high pressure case) On differential actuators, (Figure 2)

- Disassemble the actuator head as described on the paragraph : "Replacing diaphragm", (see page 5).
- Remove diaphragm chamber (9) with plunger S/A (24).
- With a wrench applied over O-Ring retainer (26), unscrew it out of diaphragm chamber (9).

- Open controlled pressure line valve(s) and check setting by means of the gauge(s). Set by means of the spring adjuster (2) of the actuator.

(To increase pressure setting (or pressure differential), turn adjusting screw clockwise to compress the spring. To decrease the setting, turn adjusting screw counterclockwise to relieve spring compression).

- Fully open stop valve on the inlet side of the regulator.

On differential actuators (500-50 series Regulators), (Figure 2)

a. On low pressure case design:

- Remove the high and low pressure lines from the diaphragm case (13) and the diaphragm chamber (9).
- Relieve all spring compression by unscrewing spring adjuster (2).
- Remove nuts (16) and cap screws (15). Remove upper diaphragm case (13).
- Remove locknut (28), upper diaphragm plate (12), upper O-Ring (25), washer (14) and diaphragm (11).
- Install new diaphragm and reassemble by reversing of the above description order. Replace upper O-Ring (25) if necessary.
- Readjust the spring compression (see above).

b. On high pressure case design:

- Remove the high and low pressure lines from the diaphragm case (13) and the diaphragm chamber (9).
- Relieve all spring compression by uncrewing spring adjuster (2).
- Remove nuts (16), upper diaphragm case (13) and diaphragm (11).
- Install new diaphragm and reassemble by reversing of the above description order.
- Readjust the spring compression (see above).

- Remove O-Ring (25), being careful not to damage plunger. Install new O-Ring, replace and tighten O-Ring retainer (26).
- Reassemble and readjust spring compression, (see page 5).

Caution: Uniformly tighten all diaphragm case nuts (16) when reassembling.

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