

# Masoneilan\*

# 10900 Series Actuators

Spring Diaphragm and Differential Pressure  
for use with

525, 526, 535H and 536H Regulators





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## Features

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

The following chart indicates the combinations available to provide the desired function.

Function	Actuator	Regulator
Reducing	Spring Diaphragm	525, 535H
Back Pressure	Spring Diaphragm	526, 536H
Differential, Reducing	Differential	525-50, 535H-50
Differential, Back Pressure	Differential	526-50, 526H-50

For temperatures over the rating of the diaphragm material, the regulator must be mounted with the actuator below the centerline of the regulator body. The diaphragm will be protected from the high temperature by a condensate barrier in the sensing line and actuator diaphragm case. If installed otherwise, an

adequate condensate barrier must be incorporated. Consult factory for more information. Teflon diaphragm protectors are available for applications where the process fluid and standard diaphragm are not compatible.

# Materials of Construction

Actuator 10900 Standard Construction

Spring Diaphragm Actuators

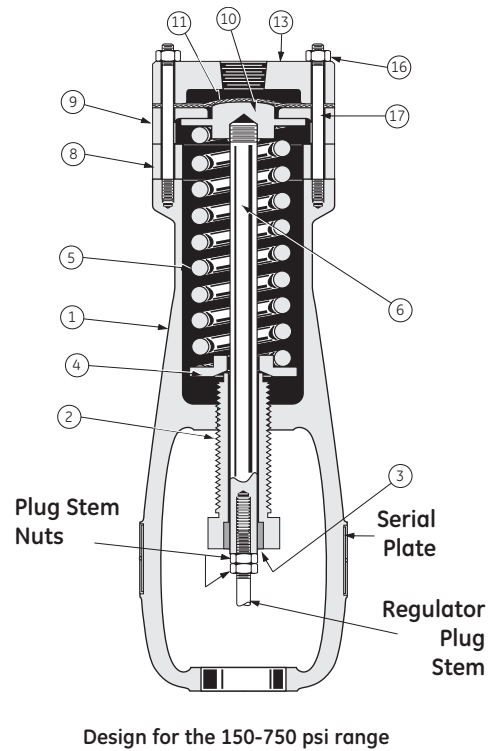
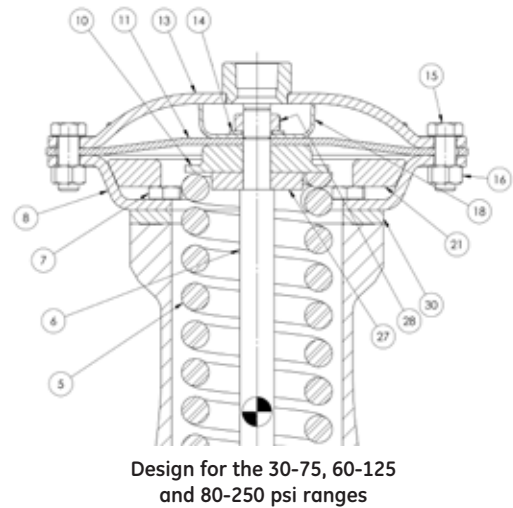
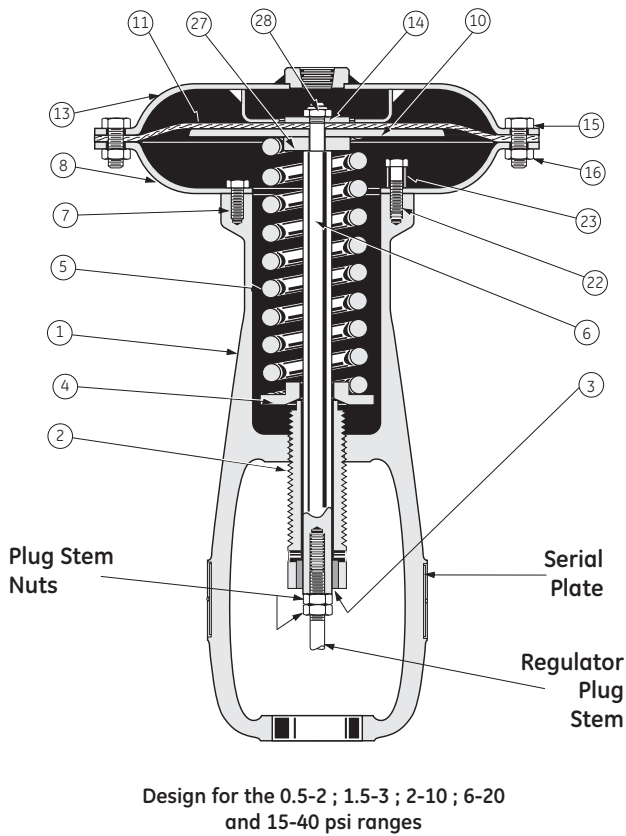


Figure 1 — Spring-Diaphragm Actuators for 500, 500H and 500V Model Regulators

## PARTS REFERENCE

Ref.	Part Name	Ref.	Part Name	Ref.	Part Name
1	Yoke	9 <sup>(2)</sup>	Diaphragm Chamber	18	Stop Cup
2	Spring Adjuster	10	Diaphragm Plate	21 <sup>(4)</sup>	Reducing Ring
3	Bushing (Incl. Ref. 2)	11	Diaphragm •	22 <sup>(5)</sup>	Stop Screw
4	Lower Spring Seat	13	Diaphragm Case (Upper)	23 <sup>(5)</sup>	Stop Spacer
5	Actuator Spring	14 <sup>(1)</sup>	Diaphragm Washer	27 <sup>(1)</sup>	Upper Spring Washer
6	Actuator Stem	15	Cap Screw (Diaph.case)	28 <sup>(1)</sup>	Locknut (Actuator stem)
7	Cap Screw (L. case to yoke)	16	Nut (Diaph.case)	30	Spacer Ring (size 3.5 only)
8	Diaphragm Case (Lower)	17 <sup>(2)</sup>	Stud (Diaph. case)		

• Recommended spare parts

<sup>(1)</sup> Only on 0.5-2 ; 1.5-3 ; 2-10 ; 6-20 and 15-40 psi ranges

<sup>(2)</sup> Only on 150-750 psi range

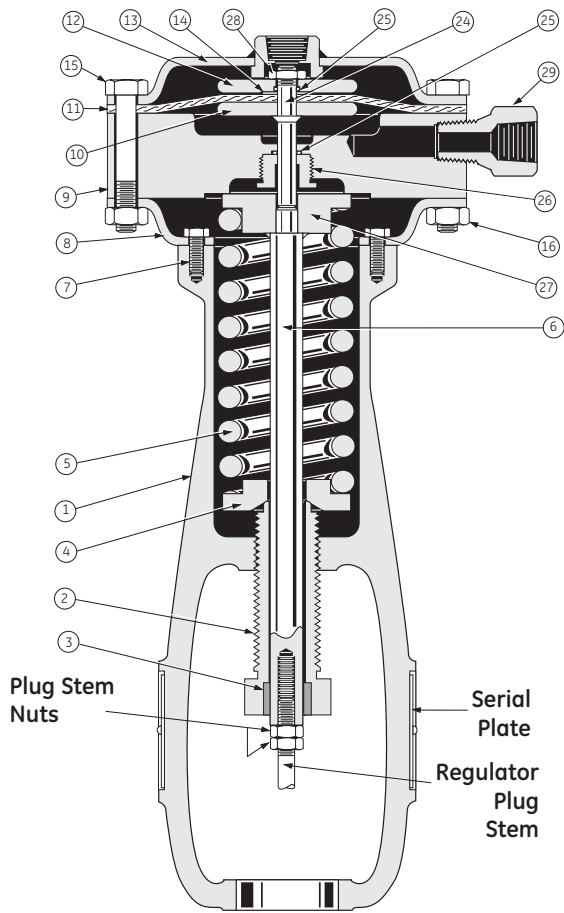
<sup>(4)</sup> Only on 60-125 and 80-250 psi ranges

<sup>(5)</sup> 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

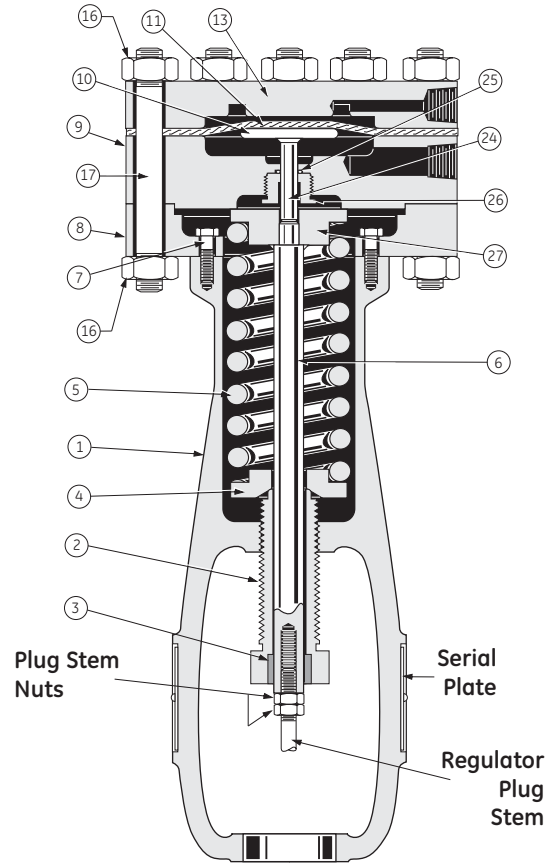
# Materials of Construction

Actuator 10900 Standard Construction

Differential Pressure Actuators



Low Pressure Case Design



High Pressure Case Design

## PARTS REFERENCE

Ref.	Part Name	Ref.	Part Name	Ref.	Part Name
1	Yoke	9	Diaphragm Chamber	17 <sup>(2)</sup>	Stud (Diaph. case)
2	Spring Adjuster	10	Diaphragm Plate (Incl. w. Ref. 24)	24	Plunger Sub-assembly
3	Bushing (Incl. Ref. 2)	11	Diaphragm •	25 <sup>(3)</sup>	O-Ring •
4	Lower Spring Seat	12 <sup>(1)</sup>	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	14 <sup>(1)</sup>	Diaphragm Washer	28 <sup>(1)</sup>	Locknut
7	Cap Screw (L. case to yoke)	15 <sup>(1)</sup>	Cap Screw (Diaph.case)	29 <sup>(1)</sup>	Connection Adapter
8	Diaphragm Case (Lower)	16	Nut (Diaph.case)		

• Recommended spare parts

<sup>(1)</sup> Only on Low Pressure Case Design

<sup>(2)</sup> Only on High Pressure Case Design

<sup>(3)</sup> Qty: 2 on Low Pressure Case Design

Qty: 1 on High Pressure Case Design

# Materials of Construction

## Actuator Material 10900 Series

Ref. No.	Description	Materials		
		-20°F	180°F	650°F
1	Yoke	ASTM A126, Class B, Gray Cast Iron		
2	Spring Adjuster	ASTM B16, Alloy 360, Cond. H02, Free Machining Brass		
3	Bushing (Inc. in Ref 2)	ASTM B438, Gr. 1, TY II, Sintered Copper Alloy		
4	Spring Seat (Lower)	ASTM A668, Cl. BH, Low Carbon Steel		
5	Actuator Spring	ASTM A229		
6	Actuator Stem <sup>(1)</sup>	USS Mach 5, Free Machining Carbon Steel		
7	Cap screw	ASTM A449, Carbon Steel		
8	Diaphragm Case (Lower)	ASTM A36, Low Carbon Steel		
9	Diaphragm Chamber <sup>(2)</sup>	ASTM A36, Low Carbon Steel		
10	Diaphragm Plate	ASTM A668, Cl. BH, Low Carbon Steel		
11	Diaphragm	Neoprene with Nylon Insert	Silicone Reinforced <sup>(2)</sup>	
12	Upper Diaphragm Plate (4 and 5 LP Differential)	ASTM A108, Grades 1211, 1212, 1213, 12L14, 1215 Free Machining Carbon Steel		
13	Upper Diaphragm Case	ASTM A36, Low Carbon Steel		
14	Diaphragm Washer	SAE J429h, Grade 5, Medium Carbon Steel		
15	Cap Screw	SAE J429h, Grade 5, Medium Carbon Steel		
16	Nut	SAE J429h, Grade 5, Medium Carbon Steel		
17	Stud (3½, 4, 5 High Pressure Differential)	ASTM A193, Gr. B7, Chrome-Moly Alloy Steel		
18	Stop Cup (3½, 4, 5)	ASTM A36, Low Carbon Steel		
19	Diaphragm Screw <sup>(3)</sup>	SAE J429h, Grade 5, Medium Carbon Steel		
20	Dynaseal Washer	Neoprene, Bonded to Metal		
21	Reducing Ring	ASTM A36, Low Carbon Steel		
22	Stop Screw (9 Spring Diaphragm)	ASTM A449, Carbon Steel		
23	Stop spacer (9 Spring Diaphragm)	USS Mach 5, Free Machining Carbon Steel		
24	Plunger Subassembly <sup>(4)</sup>	316 Stainless Steel Stem Welded to Carbon Steel Plate		
25	O-ring <sup>(4)</sup>	ASTM D1418, Class 1, NBR, Buna N Rubber		
26	O-Ring Retainer	Bronze		
27	Spring Seat (Upper) <sup>(5)</sup>	USS Mach 5, Free Machining Carbon Steel		
28	Locknut (4, 5 LP Differential)	SAE J429h, Grade 5, Medium Carbon Steel		
29	Adapter (4, 5 HP Differential)	USS Mach 5, Free Machining Carbon Steel		
Ref. No.	Temperature Range	-29°C	Δ 82°C	Δ 343°C

(1) For Differential Pressure Cases Free Cutting Steel Stem & Plate Welded Stem Zinc Dichromate Plated

(2) Precaution for the regulator installation is necessary from 212°F (100°C) to 650°F (343°C) to avoid reaching using temperature limits of diaphragm (see Tech Spec of 525-526, 535H-536H regulators and instructions GEA31664A for 525-526 & GEA31597A for 535H-536H regulators).

Diaphragm limits:

Neoprene reinforced nylon: -25°F (-32°C) to 180°F (82°C)

Silicone reinforced: -100°F (-73°C) to 350°F (177°C)

Consult Engineering Department

(3) Spring Diaphragm Cases

(4) Differential Pressure Cases

(5) Included in Ref.6 Differential Pressure Cases.

# Pressure Ranges

Spring Diaphragm Actuators for Models 525 and 535H Reducing and Models 526 and 536H Back Pressure Regulators

Actuator Size (inches)	Travel		Bench Range		Maximum Static Allowable Pressure for Actuator	
	(inches)	(mm)	(psi)	(bar)	(psi)	(bar)
11	0.375	9.5	0.5-2	0.03-0.14	60	4.1
9	0.375	9.5	1.5-3	0.10-0.20	60	4.1
9	0.375	9.5	2-10	0.14-0.69	60	4.1
9	0.375	9.5	6-20	0.41-1.38	60	4.1
9	0.375	9.5	15-40	1.03-2.76	60	4.1
5	0.375	9.5	30-75	2.07-5.17	250	17.2
4	0.375	9.5	60-125	4.14-8.62	250	17.2
3.5	0.375	9.5	80-250	5.51-17.24	250	17.2
3.5	0.375	9.5	150-450 or 400-750 or 150-300	10.34-31.02 or 27.58-51.71 or 10.34-20.68	761	52.5

Differential Pressure Actuator for Models 525-50, 535H-50, 526-50 and 536H-50  
Differential Pressure Regulators

Low Pressure Application

Actuator Size (inches)	Bench Range		Maximum Static Allowable Pressure for Actuator	
	(psi)	(bar)	(psi)	(bar)
5	3-12	0.20-0.83	250	17.2
5	10-35	0.67-2.41	250	17.2
5	30-75	2.07-5.17	250	17.2
4	60-125	4.14-8.62	250	17.2

High Pressure Application

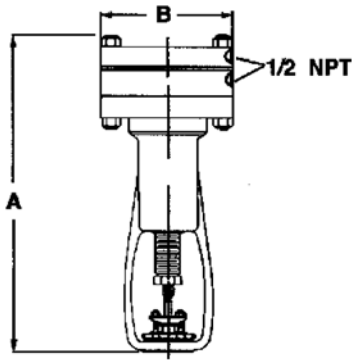
Actuator Size (inches)	Bench Range		Maximum Static Allowable Pressure for Actuator	
	(psi)	(bar)	(psi)	(bar)
5	3-15	0.20-1.03	600	41.4
4	5-30	0.34-2.07	1000	69
4	10-60	0.67-4.14	1000	69
5	30-85	2.07-5.86	600	41.4
3.5	75-185	5.15-12.75	1500	103.4
3.5	100-330	6.89-22.75	1500	103.4

High Pressure Application

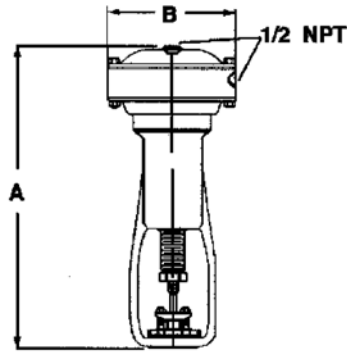
Material	Temperature Range
Neoprene with Nylon insert (Standard)	-25°F to + 180°F (-32°C to 82°C)
Silicone Reinforced (Optional)	-100°F to + 350°F (-73°C to 177°C)

# Dimensions and Weight

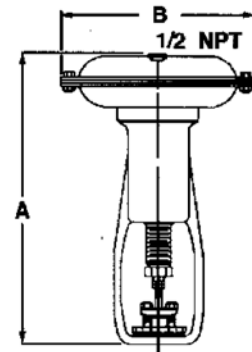
Actuator 10900 Standard Construction



High Pressure Differential



Low Pressure Differential



Spring Diaphragm

Case	A		B	
	(in)	(mm)	(in)	(mm)
3½ Spring Diaphragm	16.25	413	7.63	194
4 Spring Diaphragm				
5 Spring Diaphragm				
9 Spring Diaphragm	16.93	430	11.00	279
11 Spring Diaphragm	17.83	453	13.00	330
Low Pressure Differential	18.00	457	7.63	194
High Pressure Differential	18.75	476	7.75	197

10900 Actuator (K9)

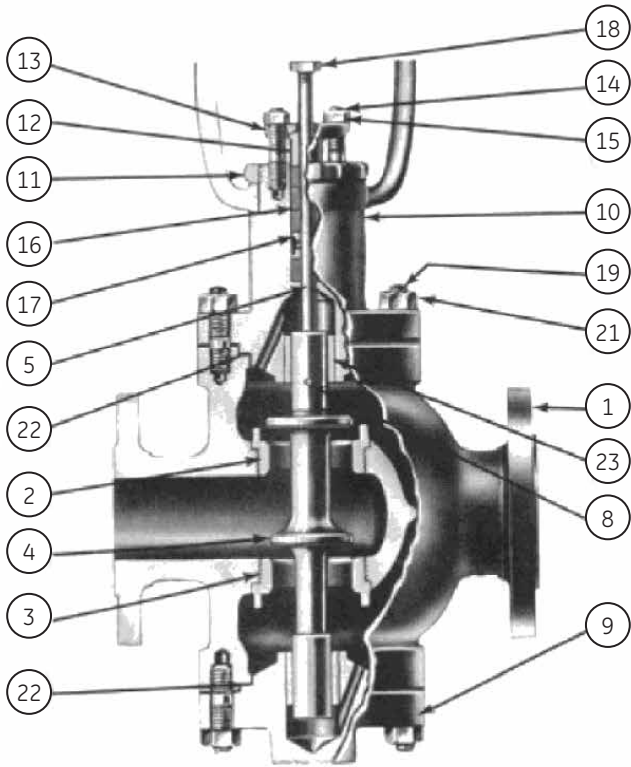
Spring Diaphragm				Low Pressure Differential				High Pressure Differential			
Range	Case	Weight		Range	Case	Weight		Range	Case	Weight	
		(lb)	(kg)			(lb)	(kg)			(lb)	(kg)
80-250	3½	29	13	-	-	-	-	-	-	-	-
60-125	4	27	12	60-125	4	47	21	75-185	3½	66	30
30-75	5	27	12	3-12	5	44	20	100-330	3½	60	31
15-40	9	35	16	10-35	5	44	20	5-30	4	64	29
6-20	9	34	15	30-75	5	47	21	10-60	4	64	29
2-10	9	34	15	½-3	9	40	18	3-15	5	62	28
½-3	9	34	15	-	-	-	-	30-85	5	62	28
½-2	11	20	9	-	-	-	-	-	-	-	-



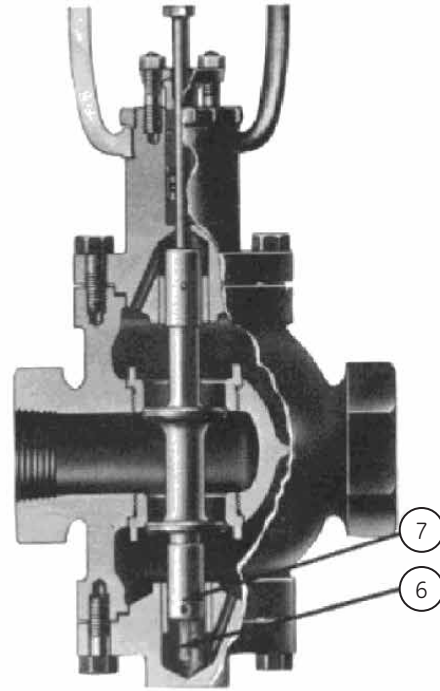
# Materials of Construction

Body Sub-Assembly Standard Construction Materials

## 525 / 526 Series Regulators Standard Construction



525 Series Regulator  
Reducing Service



526 Series Regulator  
Back Pressure

## Notes

## Notes

# DISTRIBUTOR

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