

## Series 6100 Pneumatically Operated Spring Opposed Diaphragm Actuators

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Specification

## Series 6100 Pneumatically Operated Spring Opposed Diaphragm Actuators

### Series 6100 Features

#### Performance:

- Reliability
- High Power
- Full Response
- Low Hysteresis
- Field Reversible

#### Design Flexibility:

- Reversible fail action without extra parts in the field
- Wide selection of optional accessories available.
- Compact and simple design
- Inviolable rolling diaphragm simplifies actuator design
- Variable stroke up to 5"

#### Design Integrity:

- Multi spring construction.
- One Piece spindle on top and bottom dry bushing guide.
- Low stressed alloy steel springs.

#### Quality Manufacturing:

- High quality material with trace ability throughout manufacture.
- Quality Assurance system in accordance with ISO9001.
- Comprehensively tested to ensure specified preference on site.



Figure 1.  
Series 6100 Spring Opposed Diaphragm Actuator

## Diaphragm Actuator Specifications

Actuator Type	Multispring Diahragm Actuator							
Actuator Model	Series 6100							
Actuator Size (Model)	T-1	T-2	T-3	T-3	T-4	T-4	T-5	T-5
Stroke (mm)	20	25	38	50	50	100	100	130
Supply Pressure Range	Standard: 4.0kgf/cm <sup>2</sup> (G), Range: 3.5 ~ 5.0kgf/cm <sup>2</sup>							
Spring Range	1.0 ~ 3.0kgf/cm <sup>2</sup> (G)							
Body materials	AL2024 / AC2B							
Diaphragm Materials	EPDM/NBR							
Guiding	Bushing							
Movement	Reciprocate, Rotary (with rotary box)							

### General

The Series 6100 Diaphragm actuators has been designed to control accurately the flow and pressure of fluid in response to demand of fine process control as well as various plant systems. These actuators have been developed for powerful and high performance pneumatic actuating of linear motion valves as well as rotating valves. It consists of four springs which are produced for high stiffness that is defined as the ability of the actuator to with stand suddenly changing dynamic force of fluids acting on the valve stem. The action of valves can be changed by removing of the cap and four mounting bolts, turning the actuator over, and replacing the cap.

- Simple cost effective design
- Long stroke and wide application.
- Strong seating force.
- Compact and light weight.

**Table 1. Standard Materials of Construction**

Part Description	Material
Yoke	Cast Iron
Diaphragm Cover	Die-cast Aluminum
Spring Case	Die-cast Aluminum
Diaphragm	EPDM / NBR
Seals	NBR
Spring Case	Oil Temper Steel(SUPQ)
Spindle	Stainless Steel

Alternately material combinations suitable for offshore and extremely corrosive duties are available. Consult factory for details.

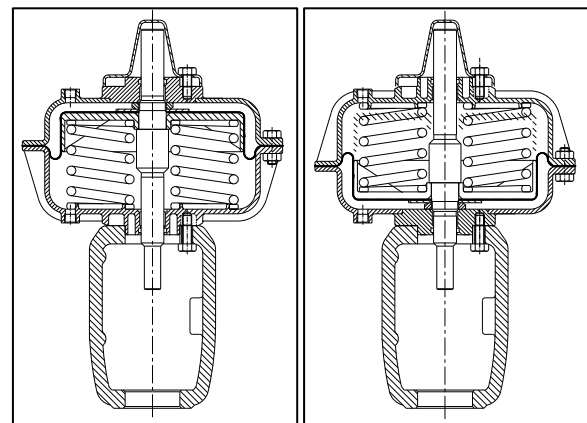


Figure 2. Cross Sectional Drawing Series 6100 Diaphragm Actuator (Direct Acting)

Figure 3. Cross Sectional Drawing Series 6100 Diaphragm Actuator (Reverse Acting)

**Table 2. Actuator Working conditions.**

Max. working pressure 5.0kgf/cm <sup>2</sup> G
Max. working temp. 90degC
Minimum working temp. -40degC
Minimum storage temp. -55degC

Standard actuators are suitable of air operation. Actuators for low temperature or high temperature applications are available on request.

## Globe valve Pressure drop ( $\Delta P$ ) Limitation

6100 SERIES (Spring range 1~3kgf/cm<sup>2</sup>G)Unit: Kg/cm<sup>2</sup>G

		UNBALANCED							BALANCED				
MAX Stroke (mm)		20	25	38/50	50/100	100/130	MAX Stroke (mm)		20	25	38/50	50/100	100/130
Size		T-1	T-2	T-3	T-4	T-5	Size		T-1	T-2	T-3	T-4	T-5
Eff Area (cm <sup>2</sup> )		270	350	515	725	1210	Eff Area (cm <sup>2</sup> )		270	350	515	725	1210
Thrust (kgf)		256	332	489	688	1149	Thrust (kgf)		256	332	489	688	1149
3/4"	15	55.9	72.5	106.7			3/4"	15	223.8	290.1			
1"	15	37.2	48.2	71.0	99.9		1"	20	197.8	256.4			
1.1/2"	20	18.2	23.5	34.6	48.8		1.1/2"	20	141.9	183.9	270.6		
2"	25		13.9	20.5	28.8		2"	30			214.8		
2.1/2"	25			13.5	19.0	31.8	2.1/2"	38			183.9	240.2	
3"	38			9.6	13.5	22.5	3"	38			146.0	199.3	
4"	38			5.5	7.8	13.0	4"	50			113.3	159.4	266.1
5"	38			3.5	4.9	8.2	5"	50				114.1	190.4
6"							6"	50				53.2	88.8
8"							8"	100				52.7	87.9
10"							10"	100				50.1	83.7
12"							12"	130				48.1	82.0
14"							14"	130				15.9	26.5
16"							16"	130				12.9	21.5

Note 1. Actuator is selected by inlet pressure.

Note 2. Actuator can be selected by pressure drop after discussion with user.

Note 3. Gray point is standard matching.

## Guide to Accessory Options

### Top Mounted Handwheel (Fig. 4 and 5)

The top mounted handwheel is of the continuously connected design. It is available for T-1 actuators and may be fitted retrospectively without any modification of the standard unit. The handwheel is capable of providing operating forces in either direction and does not rely on the actuator spring to provide return motion. The handwheel can also act as a limit stop to limit either the amount of valve opening or closing. For the T-2, T-3, T-4 and T-5 actuators, the top mounted handwheel are continuously connected by permanently lubricated bevel gear or worm gear box. The gearing has been selected to ensure easy operation even with the maximum actuator power.

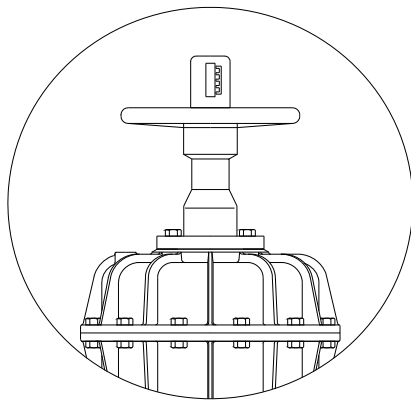


Figure 4. Top Mounted Manual Handwheel Unit (T-1)

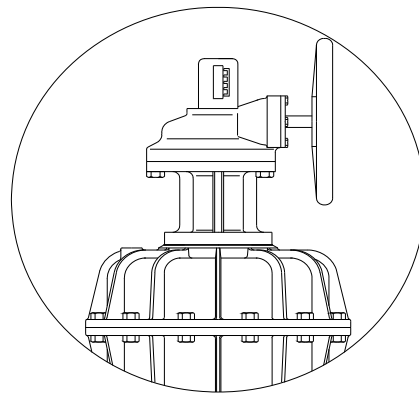
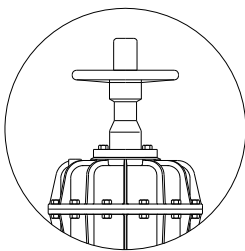
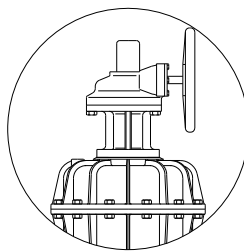


Figure 5. Top side Mounted Manual Handwheel Unit (T-1, T-2, T-3)

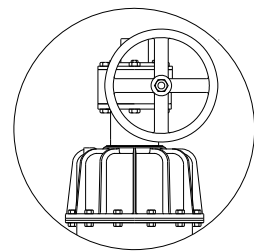
### Manual Handwheel



T-1



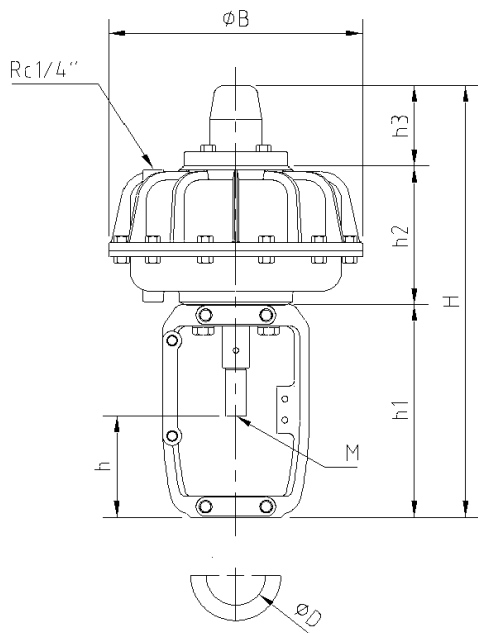
T-1, T-2



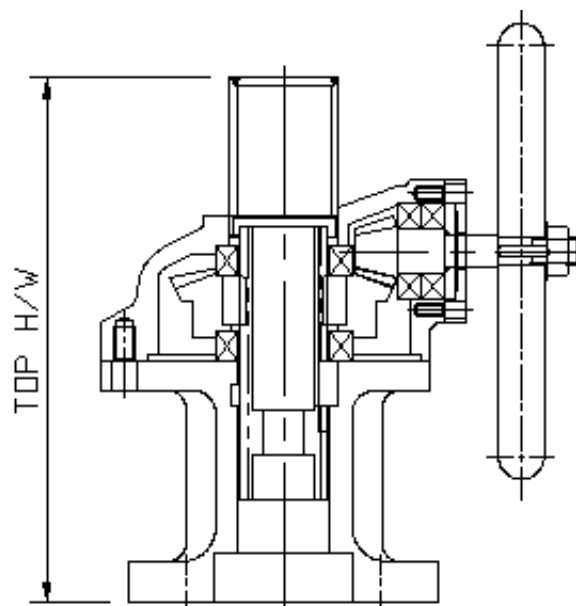
T-3, T-4, T-5

### Series 6100 Dimension Table (Linear)

Standard Diaphragm Actuator from T-1 to T-3



Standard Handwheel



### Series 6100 Dimension

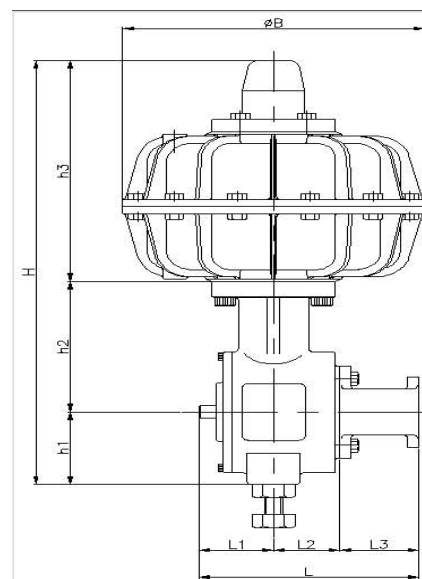
(Unit: mm)

SIZE	ØB	ØD	h[R]	h[D]	h1	h2	h3	H	H/W	Stroke	H/W+H	M
T-1	245	60	95	130	200	144	83	427	230	20	574	M12 X 1.5P
T-2	285	60	86	130	200	157	83	440	230	25	587	M12 X 1.5P
T-3	335	60	141	198	270	196	94	560	368	38	834	M12 X 1.5P
T-4	400	100	140	197	335	248	114	697	368	50	951	M18 X 1.5P
			145	245		300	181	816		100	635	M18 X 1.5P
T-5	500	100	170	283	350	335	236	921	368	100	1053	UNF7/8-9THD

### Series 6100 Dimension Table (Rotary)

(Unit: mm)

SIZE	B	h1	h2	h3	H	L1	L2	L3	L
T-2	285	85	179	257	521	73	68	65	206
T-3	335	220	196	323	739	85	75	90	250
T-4	400	285	248	300	833	105	95	110	310
T-5	500	300	335	335	970	105	95	110	310



**Series 6100 Actuator Power**

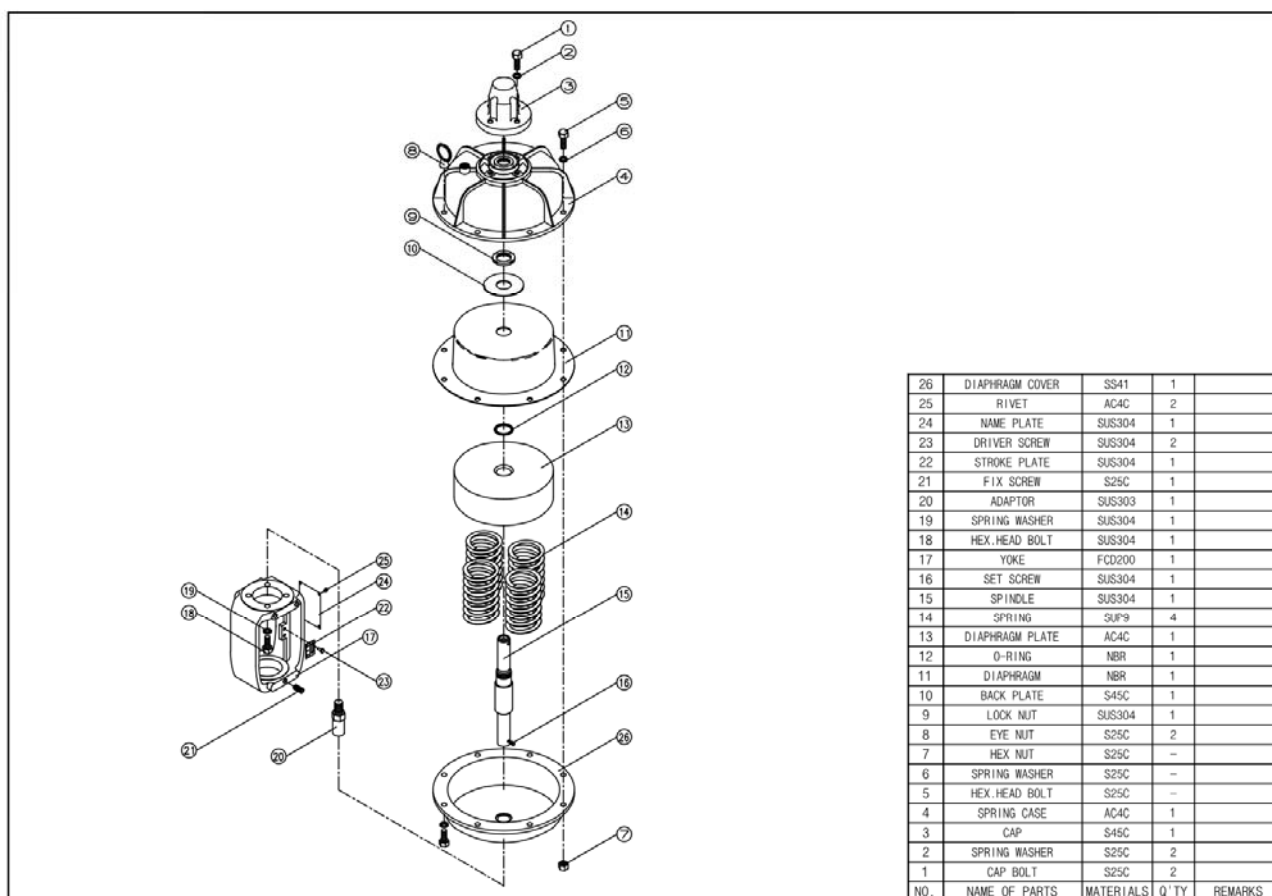
**Linear  
Spring Range 1 ~ 3kgf/cm<sup>2</sup>G**

Size	T-1	T-2	T-3	T-4	T-5
Max. Stroke (mm)	20	25	38/50	50/100	100/130
Eff. Area (cm <sup>2</sup> )	270	350	515	725	1210
Thrust (kgf)	256	332	489	688	1149

**Rotary**

Size		T-2	T-3	T-4	T-5
Max. Stroke (mm)		38	50	50/100	100/130
Eff. Area (cm <sup>2</sup> )		350	515	725	1210
Thrust (kgf)	Max.	20.0	38.1	107.2	178.9
	Non Air	6.7	12.7	35.7	59.6

## Series 6100 Actuator Assembly Drawing (Parts List)



### Warranty / Remedy

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Contact your local sales office for warranty information. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace without charge those items it finds defective. The foregoing is Buyer's sole remedy and is **in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose.**

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