

# Fisher™ 3025 Sizes P462, P460-200, and P900 Diaphragm Actuator

Fisher 3025 Size P460-200, P462 and P900 spring opposed diaphragm actuators position the valve plug in the valve body in response to varying controller or valve positioner pneumatic output signals applied to the actuator diaphragm. They can be specified as either direct, e.g. air-to-close, or reverse acting e.g. air-to-open (see figure 1). These actuators are designed to provide dependable on-off or throttling operation of automatic control valves.

The size P462 is available for travels up to 120 mm, 4.75 inches with air-to-open and air-to-close action.

The size P460-200 is available for travels up to 200 mm, 8 inches with air-to-open and air-to-close action.

The size P900 is available for travels up to 120 mm, 4.75 inches with air-to-open and air-to-close action.

## Features

- **Long Travel Capability**—Suitable for valves with valve plug travels of up to 200 mm (8 inches).
- **Application Versatility**—Yoke boss mountings, travel stops, and manual operators are available for nearly any control valve requiring longer valve plug travels.
- **Positive Connections**—Split block stem connection provides for a solid transfer of motion while allowing easy mounting, and it includes no linkages to create lost motion and inaccurate valve positioning.



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Fisher 3025 Actuator Air-to-Open Action

- **Reversible Construction**—Actuator action can be easily changed on site without need of additional parts.
- **Long Service Life**—Rugged steel construction provides stability and corrosion protection.

## Specifications

### Operating Pressure Range

See tables 3 and 4

### Maximum Travel

Sizes P462 and P900: 120 mm (4.75 inches)  
 Size P460-200: 200 mm (8 inches)

### Output Indication

Stainless steel disc or pointer and graduated scale

### Stroking Speed

Dependent on actuator size, travel, spring rate, initial spring compression, and supply pressure. If stroking speed is critical, consult your [Emerson sales office](#) or Local Business Partner

### Operating Temperature Range

-30 to 80°C

### Volumetric Displacement

See table 2

### Signal Connection

1/2 NPT internal

### Effective Diaphragm Area

See table 4

### Maximum Pressure

4 barg

### Construction Materials

Diaphragm Casing: Steel  
 Diaphragm: Nitrile on nylon  
 Diaphragm Plate: Steel  
 Actuator Spring: Steel alloy  
 Actuator Stem: Steel alloy  
 Travel Indicator: Stainless steel  
 Yoke: Steel

### Stem and Yoke Boss Diameters

ACTUATOR SIZE	YOKE BOSS DIAMETER (Inches)	STEM DIAMETER	
		mm	Inches
P462 and P460-200	3-9/16	19.1	3/4
	5	25.4	1
	5H <sup>(1)</sup>	31.8	1-1/4
P900	5	25.4	1
	5H <sup>(1)</sup>	31.8	1-1/4

1. H = Heavy actuator to valve bolting.

### Dimensions and Weights

See tables 5, 6, and 7 and figures 3, 4, and 5

### Options

■ Side-mounted gear handwheel, ■ Oversize signal connections

## Available Configurations

The 3025 actuator can be supplied in either direct or reverse action.

### Direct Action

In direct action, applying air pressure to the upper diaphragm casing forces the actuator stem downward. When this pressure is reduced, the opposing spring force moves the actuator stem upward. Should the loading pressure fail, the spring forces the stem to the extreme upward position. This provides fail-open

action for push-down-to-close valves and fail-closed action for push-down-to-open valves.

### Reverse Action

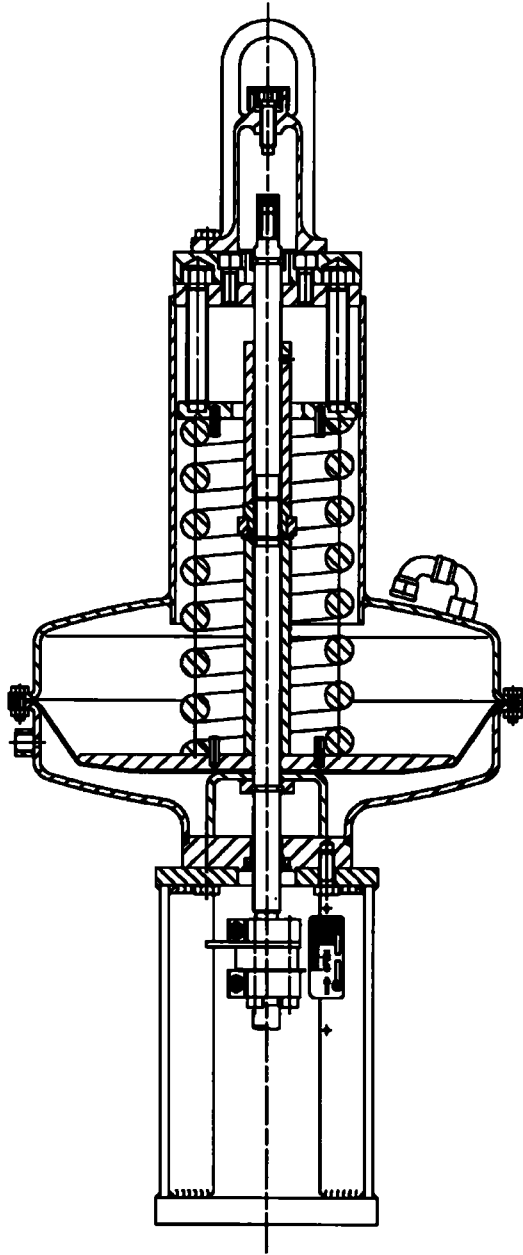
In reverse action, applying air pressure to the lower diaphragm casing forces the actuator stem upward against the opposing spring force. When this loading pressure is reduced, the spring moves the actuator stem to the extreme downward position. Should the loading pressure fail, the spring forces the stem to the extreme downward position. Reverse acting actuators provide fail-closed action for push-down-to-close valves and fail-open action for push-down-to-open valves.

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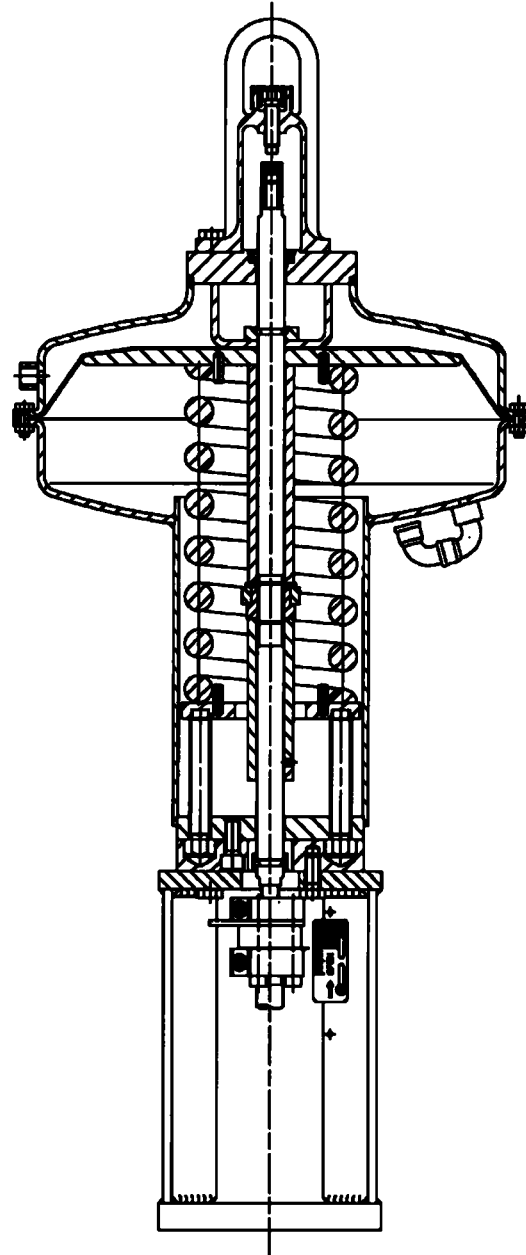
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Figure 1. Typical Actuators



FISHER 3025 SIZE P462  
AIR-TO-OPEN



FISHER 3025 SIZE P462  
AIR-TO-CLOSE

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## 3025 Actuator

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## Accessories

### Instruments

Mounting parts exist for the following instruments (see table 1):

Table 1. Instruments Used with Fisher 3025 Actuators

Actuator Size	Travel	Instruments
P462 and P900	Up to 102 mm (4 inches)	<ul style="list-style-type: none"> <li>■ FIELDVUE™ DVC6200 digital valve controller, ■ 3582 pneumatic positioner and</li> <li>■ 3582i electropneumatic positioner</li> </ul>
	Over 102 mm (4 inches)	<ul style="list-style-type: none"> <li>■ DVC6200 digital valve controller and ■ 3610/3620 Series positioners</li> </ul>
P460-200	All	

### Handwheels

A geared handwheel is available for all sizes of the 3025 Actuator to manually position the valve plug. The valve is opened by turning the handwheel to the left and closed by turning to the right. See figure 2.

### Other

Accessories such as transducers, position transmitters, air relays, volume boosters, switching valves, lockable valves, limit switches and solenoid valves are also available for actuator mounting. They are described in separate publications. Contact your [Emerson sales office](#) or Local Business Partner for details.

Table 2. Volumetric Casing Displacement

ACTUATOR SIZE	CLEARANCE VOLUME <sup>(1)</sup>	TRAVEL, mm								
		51	76	102	120	127	152	165	178	203
	cm <sup>3</sup>	Casing Volume, cm <sup>3</sup>								
P462	8600	17900	22500	27100	30500	---	---	---	---	---
P460-200	17400	---	---	---	---	46000	51700	54500	57400	63100
P900	17200	35800	45100	54400	61200	---	---	---	---	---
	Inch <sup>3</sup>	TRAVEL, inches								
		2	3	4	4.75	5	6	6.5	7	8
		Casing Volume, inch <sup>3</sup>								
P462	522	1089	1373	1657	1862	---	---	---	---	---
P460-200	1062	---	---	---	---	2806	3154	3329	3503	3852
P900	1050	2186	2755	3323	3735	---	---	---	---	---

1. Clearance volume indicates casing volume at zero travel.

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**Table 3. Fisher 3025 Air-to-Open Action (Spring Closes) Actuator Thrust Capabilities for Push-Down-to-Close Valves**

ACTUATOR SIZE	VALVE TRAVEL		SPRING RANGE		TOTAL THRUST WHEN VALVE CLOSED		EFFECTIVE DIAPHRAGM AREA			
							Valve Closed		Valve Open	
	mm	Inches	Bar	Psig	N	lbs	cm <sup>2</sup>	Inch <sup>2</sup>	cm <sup>2</sup>	Inch <sup>2</sup>
P462	51	2	0.5-0.8	7-12	8140	1830	1800	279	1724	267
			1.1-1.8	16-26	19240	4325				
			1.6-2.5	23-36	26740	6010				
	76	3	0.5-0.9	7-13	8140	1830	1800	279	1686	261
			1.1-2.2	16-32	19240	4625				
			1.5-2.4	22-35	26180	5885				
	102	4	0.5-1.1	7-16	8140	1830	1800	279	1648	255
			1.3-2.5	19-36	22780	5120				
	120	4.75	0.5-1.2	7-17	8140	1830	1800	279	1620	251
			1.2-2.6	17-38	20230	4550				
P460-200	127	5	0.6-1.2	9-17	10460	2350	1800	279	1603	248
			0.8-1.9	12-28	16000	3595				
			1.5-2.8	22-41	27070	6085				
	152	6	0.6-1.3	9-19	10460	2350	1800	279	1564	242
				0.8-2.1	12-30	16000	3595			
			1.5-3	22-44	27070	6085				
	165	6.5	0.6-1.4	9-20	10460	2350	1800	279	1544	239
			0.8-2.2	13-32	16000	3595				
			1.5-3.1	22-45	27070	6085				
	178	7	0.6-1.5	9-22	10460	2350	1800	279	1524	236
			0.8-2.3	12-33	16000	3595				
			1.5-3.3	22-48	27070	6085				
	203	8	0.6-1.6	9-23	10460	2350	1800	279	1485	230
			0.8-2.5	12-36	16000	3595				
			1.5-3.5	22-51	27070	6085				
P900	51	2	1.1-1.9	16-28	34670	7795	3600	558	3378	524
	76	3	1.1-2.3	16-33	34670	7795	3600	558	3192	495
			1.7-2.8	25-41	61150	13750				
	102	4	1.2-2.4	17-35	38360	8625	3600	558	3108	482
			1.7-3.1	25-45	55970	12580				
	120	4.75	1.2-2.6	17-38	38360	8625	3600	558	3085	478
			1.7-3.3	25-48	55970	12580				

**Table 4. Fisher 3025 Air-to-Close Action (Spring Opens) Actuator Thrust Capabilities for Push-Down-to-Close Valves**

ACTUATOR SIZE	VALVE TRAVEL		SPRING RANGE		TOTAL THRUST WHEN VALVE CLOSED					
					Supply Pressure, bar			Supply Pressure, psig		
					2	3	4	29	44	58
	Force, N			Force, lbs						
P462	51	2	0.5-0.8	7-12	21620	38860	56100	4860	8735	12610
	76	3	0.5-0.9	7-13	18500	35360	52220	4160	7950	11740
	102	4	0.5-1.1	7-16	15370	31850	48330	3455	7160	10865
	120	4.75	0.5-1.2	7-17	13100	29300	45500	2945	6585	10230
P460-200	127	5	0.6-1.2	9-17	12700	28730	44760	2855	6460	10065
	152	6	0.6-1.3	9-19	10150	25790	41430	2280	5795	9315
	165	6.5	0.6-1.4	9-20	9750	25190	40630	2190	5660	9135
	178	7	0.6-1.5	9-22	7570	22810	38050	1700	5125	8555
	203	8	0.6-1.6	9-23	5010	19860	34710	1125	4465	7805
P900	51	2	1.1-1.9	16-28	---	42530	76310	---	9560	17155
	76	3	1.1-2.3	16-33	---	24890	56810	---	5595	12770
	102	4	1.2-2.4	17-35	---	22680	53760	---	5100	12085
	120	4.75	1.2-2.6	17-38	---	16150	47000	---	3630	10565

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Figure 2. Typical Geared Handwheel



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Table 5. Fisher 3025 Dimensions and Weights - Size P462 Actuator

YOKE BOSS DIAMETER	TRAVEL	SPRING RANGE	DIMENSION REFERENCE				WEIGHT	
			D	E (w/o handwheel)	E (with handwheel)	M	w/o handwheel	with handwheel
			mm	bar	mm			kg
3-9/16	51	All	90	1305	1670	495	180	215
	76	0.5 - 0.9 1.1 - 2.2 1.5 - 2.4	90	1370	1750	550	180	215
				1370	1750		180	215
				1600	1980		200	235
102	0.5 - 1.1 1.3 - 2.5	90	1405	1970	550	180	225	
			1635	2200		200	245	
5 and 5H <sup>(1)</sup>	51	All	127	1360	1725	550	180	215
	76	0.5 - 0.9 1.1 - 2.2 1.5 - 2.4	127	1370	1750	550	180	215
				1370	1750		180	215
				1600	1980		200	235
102	0.5 - 1.1 1.3 - 2.5	127	1405	1970	550	180	225	
			1635	2200		200	245	
120	0.5 - 1.2 1.2 - 2.6	127	1405	1970	550	180	225	
			1635	2200		200	245	
Inches		psig	Inches			lbs		
3-9/16	2	All	3.6	51.4	65.7	19.5	395	475
	3	7 - 13 16 - 32 25 - 35	3.6	54	69	21.7	395	475
				54	69		395	475
				63	76		440	515
4	7 - 16 19 - 36	3.6	55.3	77.6	21.7	395	495	
			64.4	86.6		440	540	
5 and 5H <sup>(1)</sup>	2	All	5	53.5	68	21.7	395	475
	3	7 - 13 16 - 32 25 - 35	5	54	69	21.7	395	475
				54	69		395	475
				63	78		440	515
4	7 - 16 19 - 36	5	55.3	77.6	21.7	395	495	
			64.4	86.6		440	540	
4.75	7 - 17 17 - 38	5	55.3	77.6	21.7	395	495	
			64.4	86.6		440	540	

1. H = Heavy actuator to valve bolting.

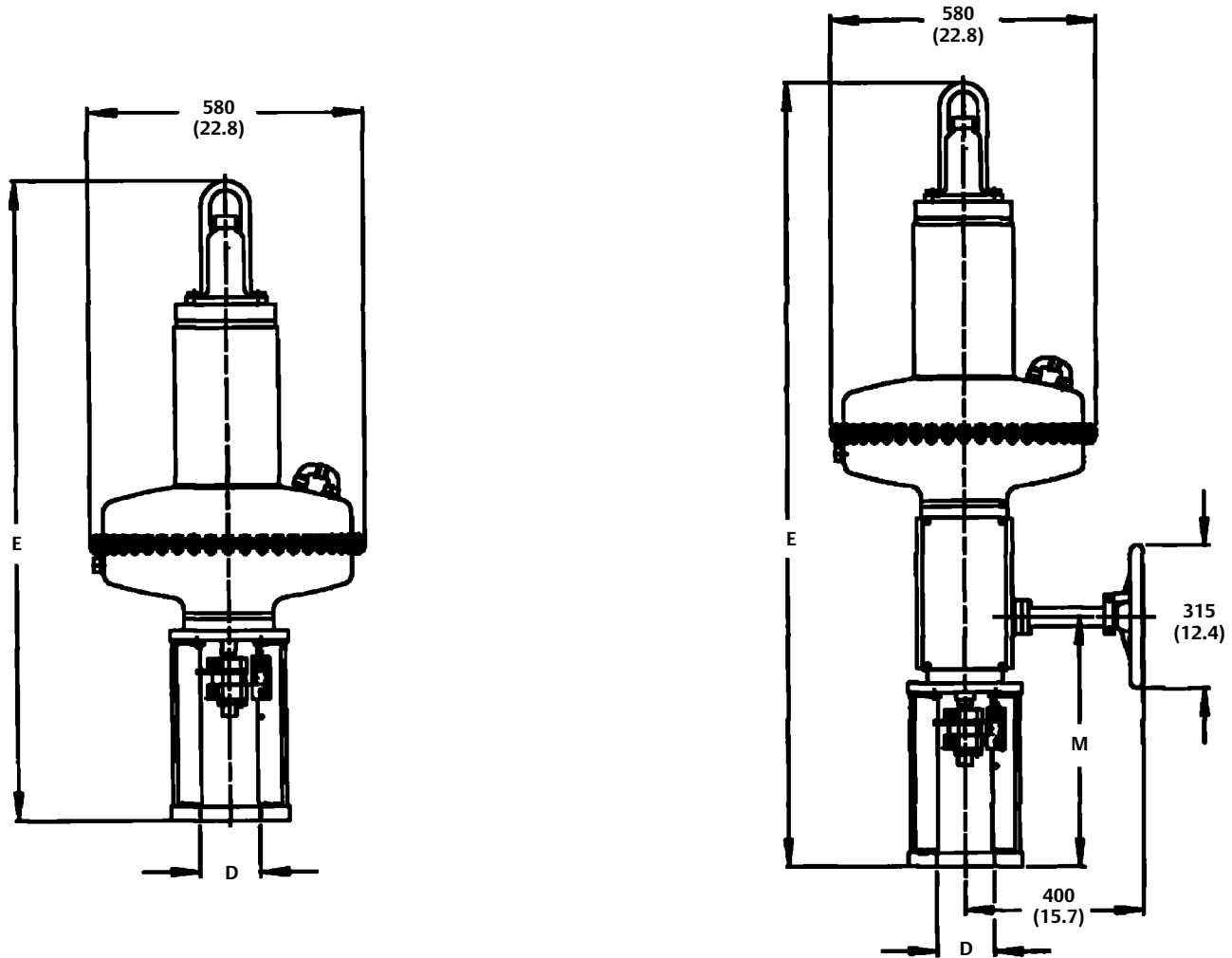
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Figure 3. Fisher 3025 Dimensions and Weights - Size P462 Actuator (see table 5)



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Table 6. Fisher 3025 Dimensions and Weights - Size P460-200 Actuator

YOKE BOSS DIAMETER	TRAVEL	SPRING RANGE	DIMENSION REFERENCE		WEIGHT	
			E (w/o handwheel)	E (with handwheel)	w/o handwheel	with handwheel
	mm	bar	mm		kg	
3-9/16, 5, and 5H <sup>(1)</sup>	127	0.6 - 1.2	1690	2510	220	320
		0.8 - 1.9	1690	2510	235	335
		1.5 - 2.8	1900	2720	280	380
	152	0.6 - 1.3	1690	2510	220	320
		0.8 - 2.1	1690	2510	235	335
1.5 - 3.0		1900	2720	280	380	
165	0.6 - 1.4	1690	2510	220	320	
	0.8 - 2.2	1690	2510	235	335	
	1.5 - 3.1	1900	2720	280	380	
178	0.6 - 1.5	1690	2510	220	320	
	0.8 - 2.3	1690	2510	235	335	
	1.5 - 3.3	1900	2720	280	380	
203	0.6 - 1.6	1690	2510	220	320	
	0.8 - 2.5	1690	2510	235	335	
	1.5 - 2.5	1900	2720	280	380	
<b>Inches</b>		<b>psig</b>	<b>Inches</b>		<b>lbs</b>	
3-9/16, 5, and 5H <sup>(1)</sup>	5	9 - 17	66.5	98.8	485	705
		12 - 28	66.5	98.8	515	735
		22 - 41	74.8	107	615	835
	6	9 - 19	66.5	98.8	485	705
		12 - 30	66.5	98.8	515	735
22 - 44		74.8	107	615	835	
6.5	9 - 20	66.5	98.8	485	705	
	13 - 32	66.5	98.8	515	735	
	22 - 45	74.8	107	615	835	
7	9 - 22	66.5	98.8	485	705	
	12 - 33	66.5	98.8	515	735	
	22 - 48	74.8	107	615	835	
8	9 - 23	66.5	98.8	485	705	
	12 - 36	66.5	98.8	515	735	
	22 - 51	74.8	107	615	835	

1. H = Heavy actuator to valve bolting.

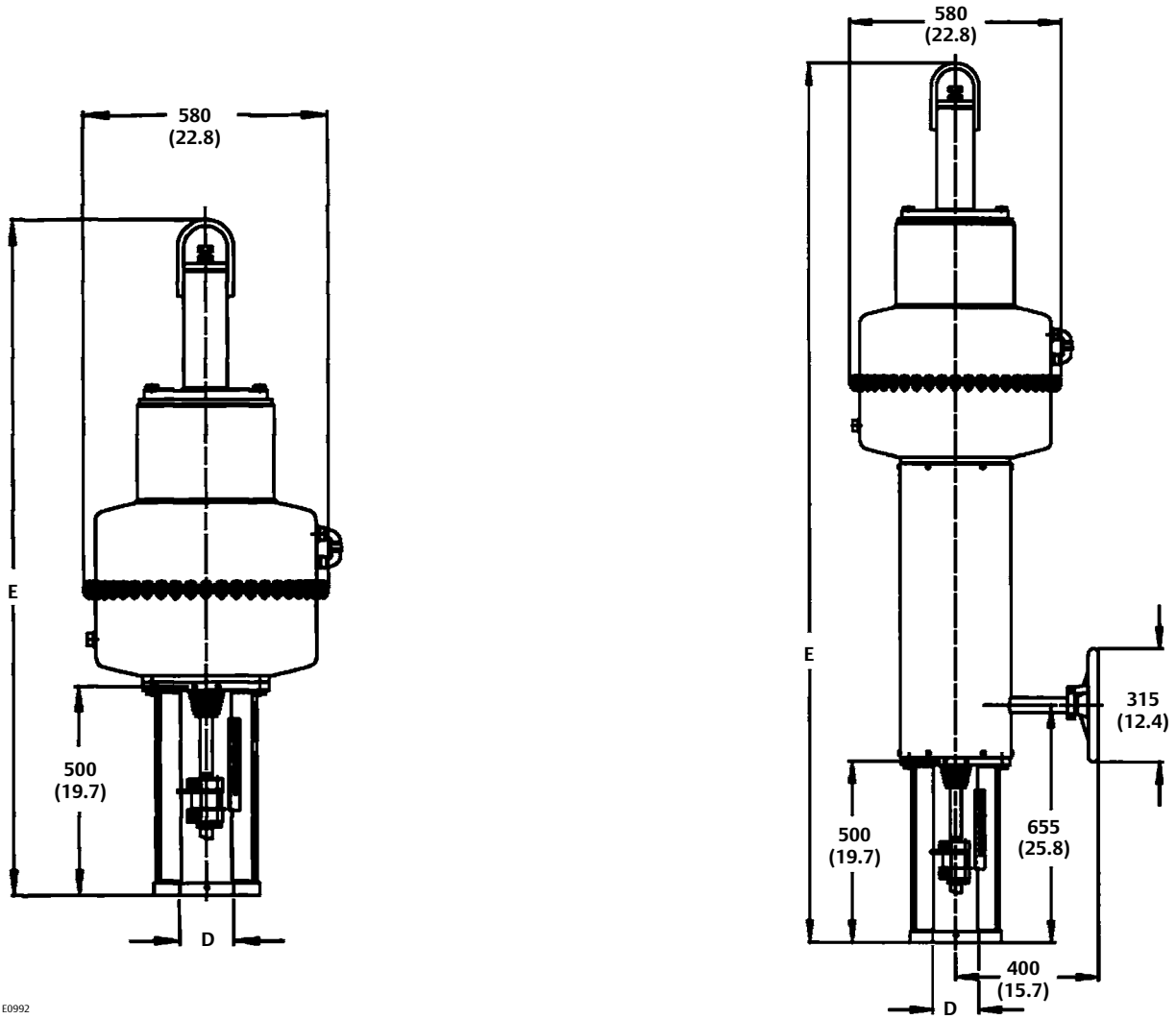
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Figure 4. Fisher 3025 Dimensions and Weights - Size P460-200 Actuator (see table 6)



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Table 7. Fisher 3025 Dimensions and Weights - Size P900 Actuator

YOKE BOSS DIAMETER	TRAVEL	SPRING RANGE	DIMENSION REFERENCE			WEIGHT	
			D	E (w/o handwheel)	E (with handwheel)	w/o handwheel	with handwheel
	mm	bar	mm			kg	
5 and 5H <sup>(1)</sup>	51	1.1 - 1.9	127	1845	2290	380	440
	76	1.1 - 2.3	127	1845	2290	380	440
		1.7 - 2.8		2020	2470	430	490
	102	1.2 - 2.4	127	2060	2630	430	490
1.7 - 3.1		2280		2845	480	550	
120	1.2 - 2.6	127	2060	2630	430	490	
	1.7 - 3.3		2280	2845	480	550	
Inches		psig	Inches			lbs	
5 and 5H <sup>(1)</sup>	2	16 - 26	5	72.6	90.2	835	970
	3	16 - 33	5	72.6	90.2	835	970
		25 - 41		79.5	97.2	945	1080
	4	17 - 35	5	81.1	103.5	945	1080
25 - 45		89.8		112	1055	1210	
4.75	17 - 38	5	79.5	103.5	945	1080	
	25 - 48		89.8	112	1055	1210	

1. H = Heavy actuator to valve bolting.

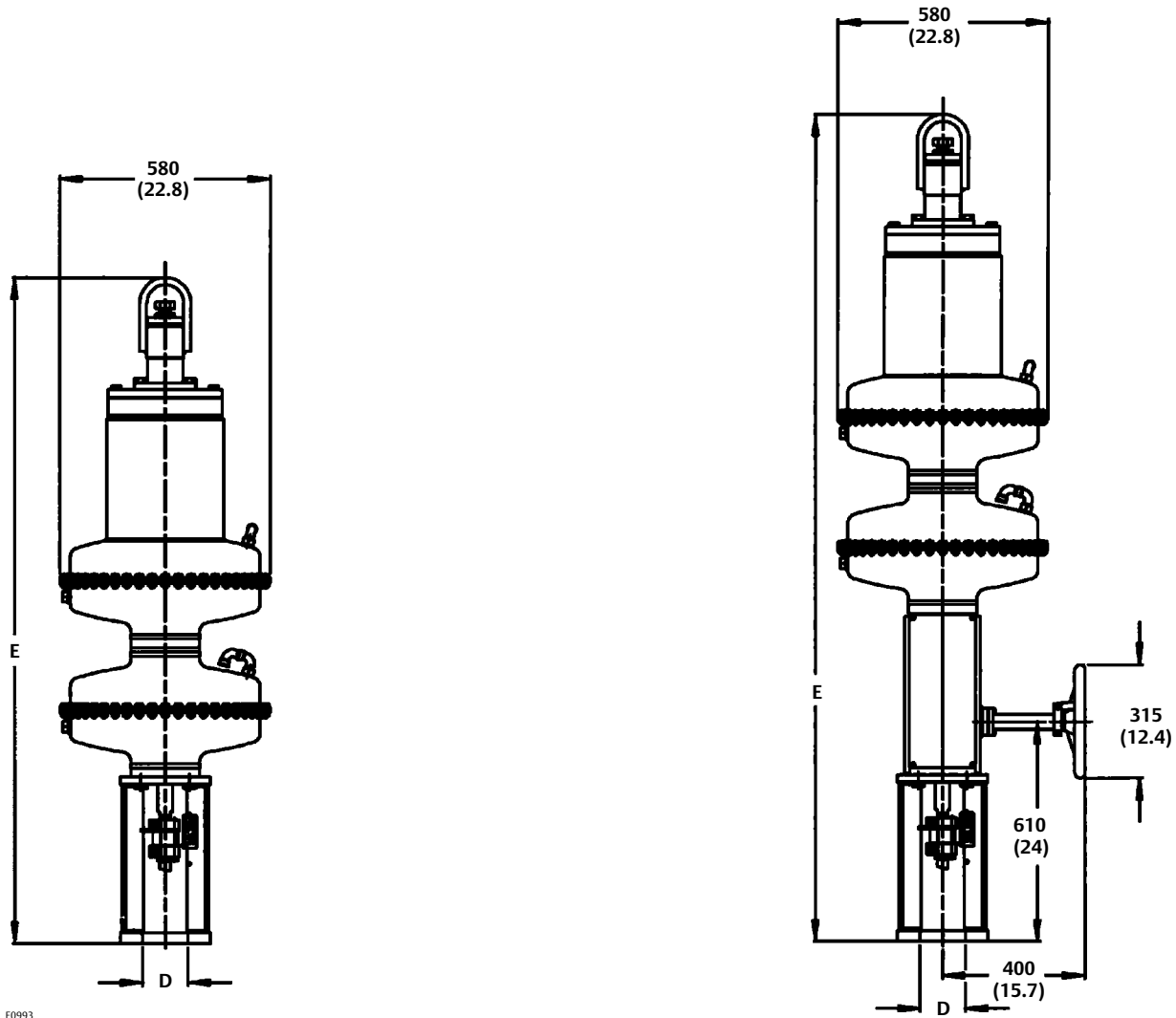
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Figure 5. Fisher 3025 Dimensions and Weights - Size P900 Actuator (see table 7)



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