

# 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.



W9088-2 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 Process Management sales office

**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**

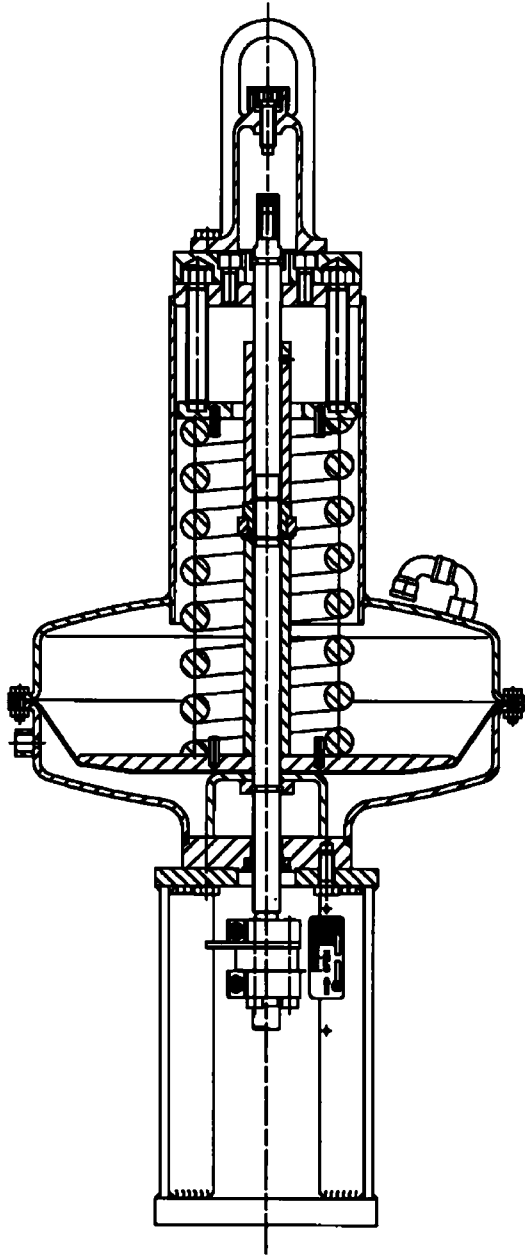
In direct action, applying air pressure to the upper diaphragm casing forces the actuator stem downward. When this pressure is reduced, the opposing spring force moves the actuator stem upward. Should the loading pressure fail, the spring forces the stem to the extreme upward position. This provides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

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

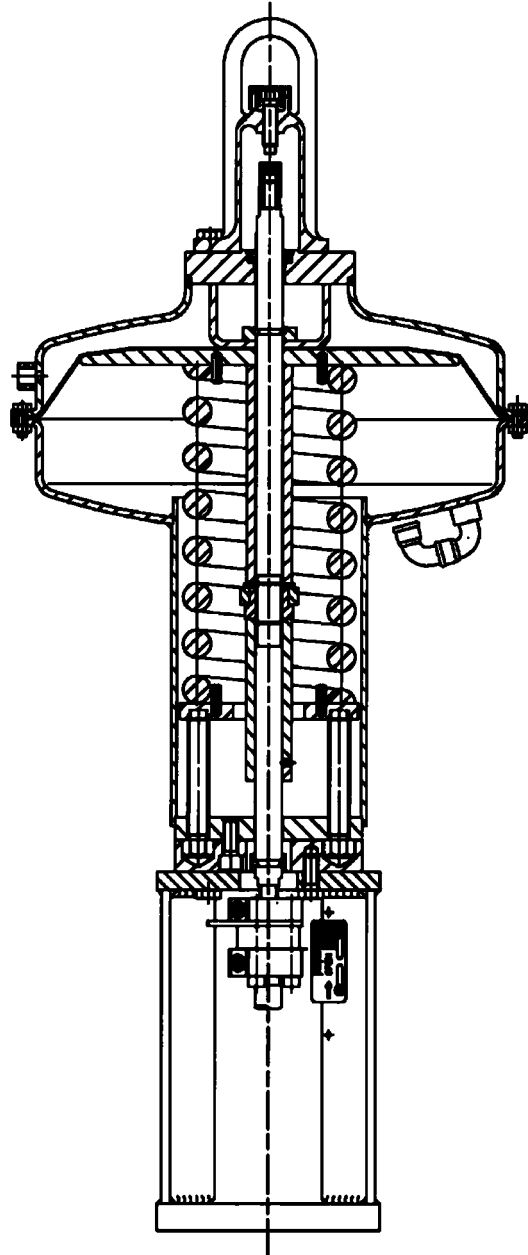
**Reverse Action**

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.

Figure 1. Typical Actuators



FISHER 3025 SIZE P462  
AIR-TO-OPEN



FISHER 3025 SIZE P462  
AIR-TO-CLOSE

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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 Process Management sales office 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.

**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
102	4	1.1 - 2.2	16 - 32	19240	4625					
		1.5 - 2.4	22 - 35	26180	5885					
120	4.75	0.5 - 1.1	7 - 16	8140	1830	1800	279	1648	255	
		1.3 - 2.5	19 - 36	22780	5120					
				0.5 - 1.2	7 - 17	8140	1830	1800	279	1620
				1.2 - 2.6	17 - 38	20230	4550			
		P460-200	127	5	0.6 - 1.2	9 - 17	10460	2350	1800	279
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
165	6.5		0.8 - 2.1	12 - 30	16000	3595				
		1.5 - 3	22 - 44	27070	6085					
178	7	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
203	8			0.6 - 1.5	9 - 22	10460	2350	1800	279	1485
		0.8 - 2.3	12 - 33	16000	3595					
				1.5 - 3.3	22 - 48	27070	6085			
P900	51			2	1.1 - 1.9	16 - 28	34670	7795	3600	558
		76	3		1.1 - 2.3	16 - 33	34670	7795		
					1.7 - 2.8	25 - 41	61150	13750		
					1.2 - 2.4	17 - 35	38360	8625	3600	558
				1.7 - 3.1	25 - 45	55970	12580			
				1.2 - 2.6	17 - 38	38360	8625	3600	558	3085
				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

Figure 2. Typical Geared Handwheel



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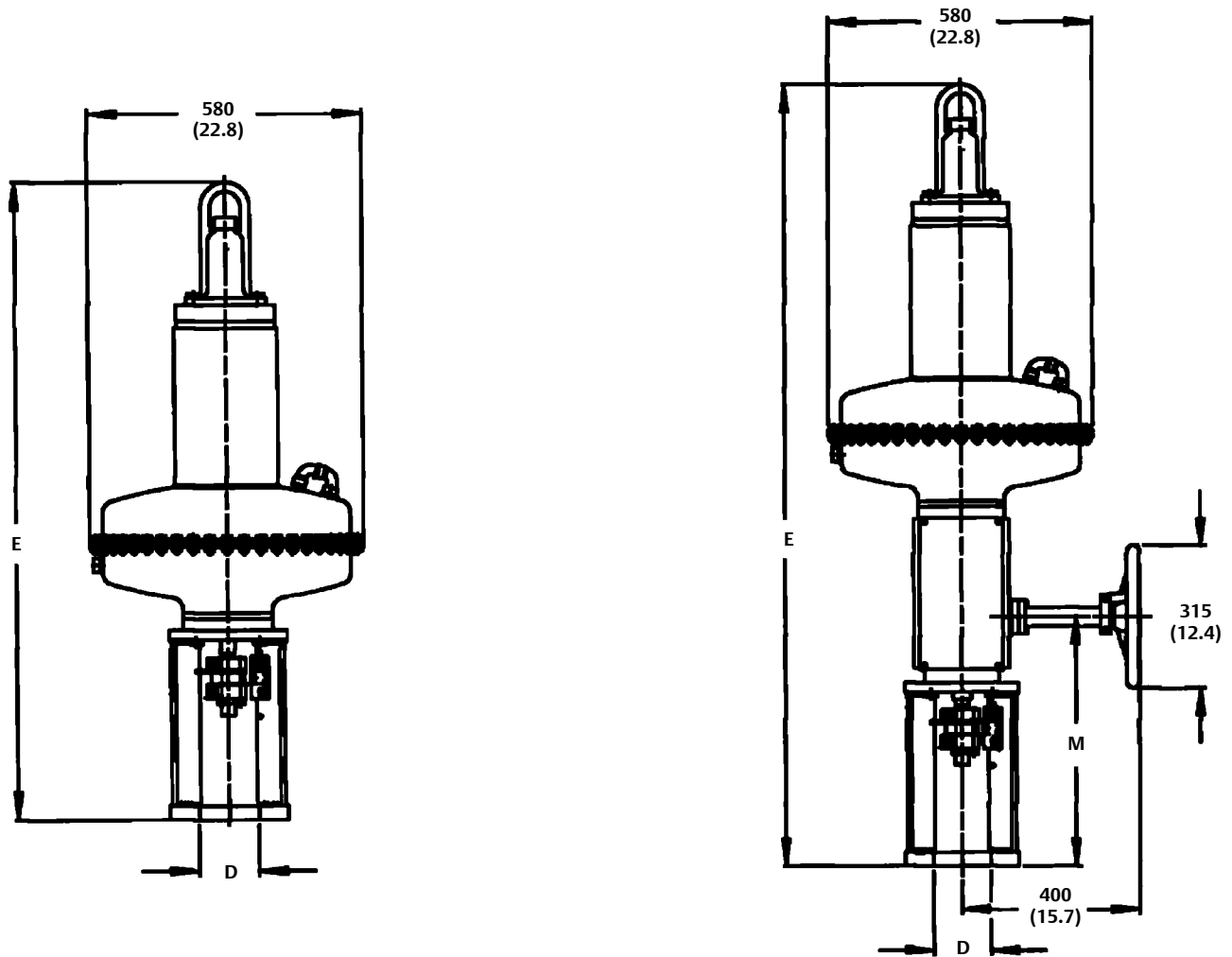
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**Table 5. Fisher 3025 Dimensions and Weights - Size P462 Actuator**

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

1. H = Heavy actuator to valve bolting.

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



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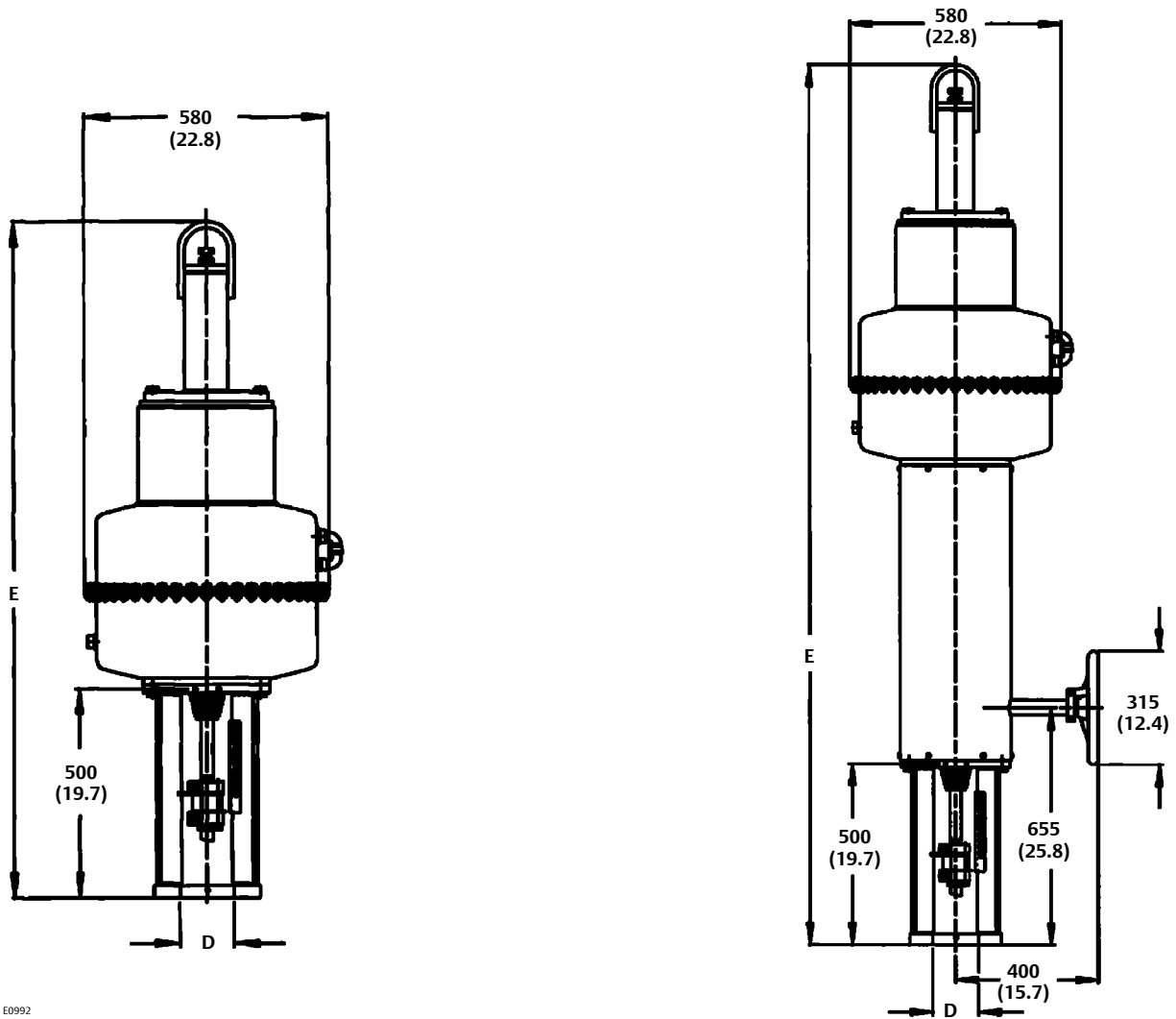


**Table 6. Fisher 3025 Dimensions and Weights - Size P460-200 Actuator**

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	
Inches		psig	Inches		lbs	
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.

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

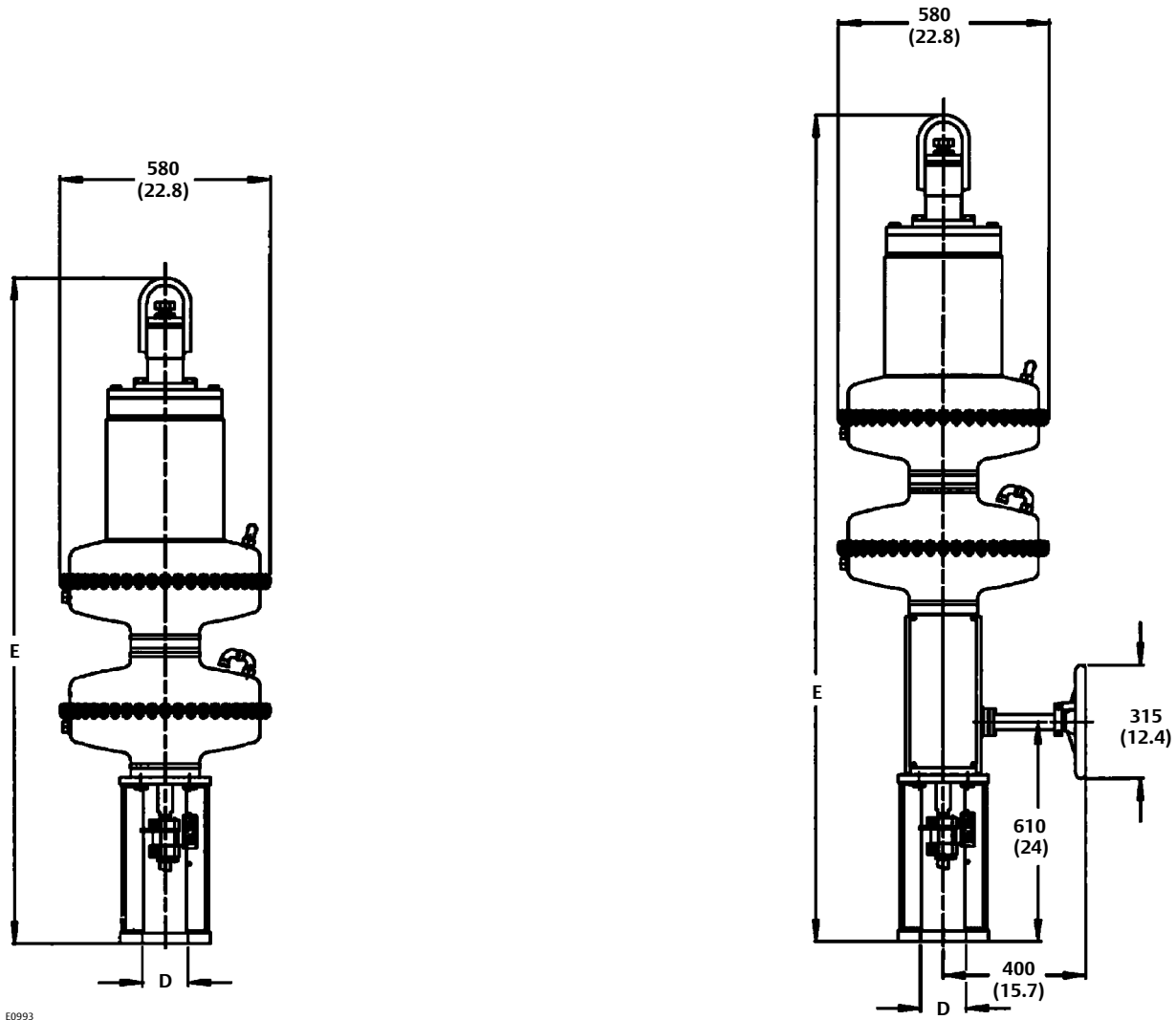


**Table 7. Fisher 3025 Dimensions and Weights - Size P900 Actuator**

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.

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



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