

P700 Series Rotary Actuators

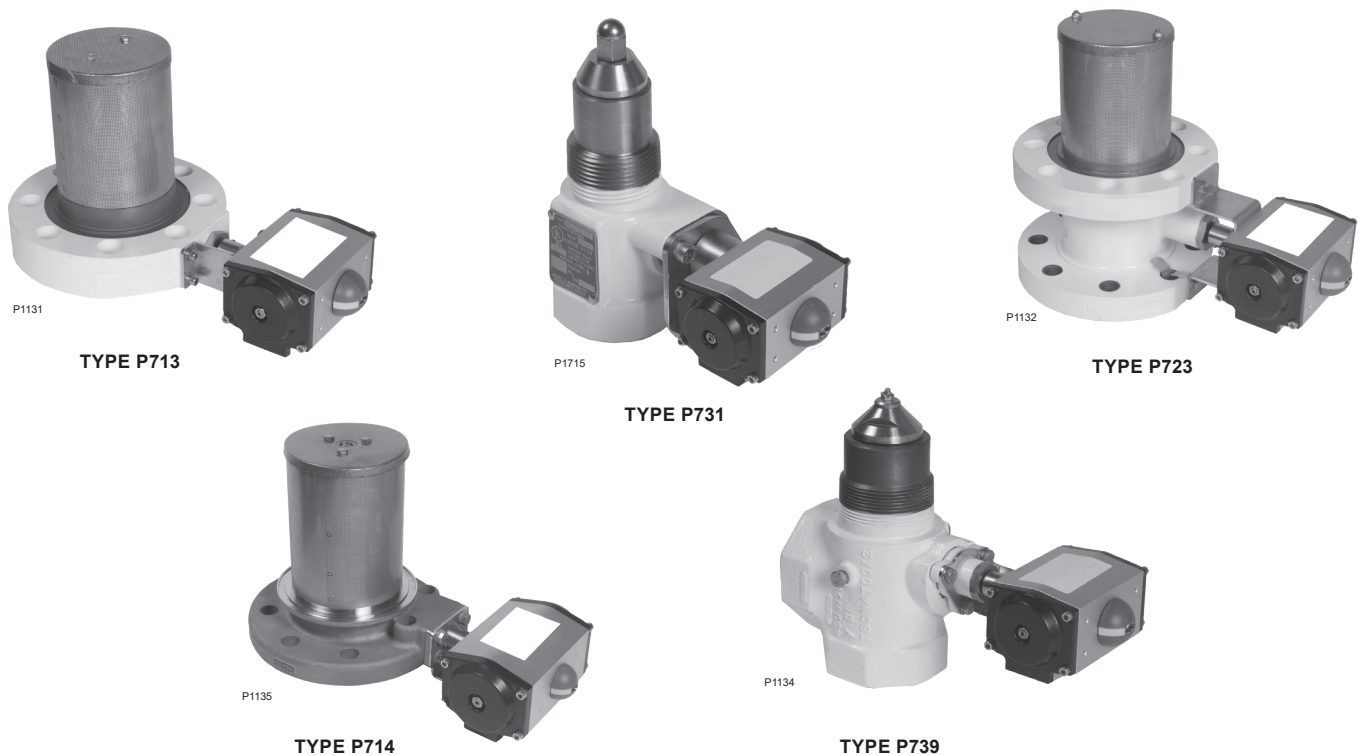


Figure 1. P700 Series Rotary Actuators



WARNING

Failure to follow these instructions or to properly install and maintain this equipment could result in an explosion, fire and/or fire causing property damage and personal injury or death.

Fisher™ equipment must be installed, operated and maintained in accordance with federal, state and local codes, rules and regulations and Emerson Process Management Regulator Technologies Inc. instructions. The installation in most states must also comply with NFPA No. 58, ANSI K61.1 and DOT standards.

Only personnel trained in the proper procedures, codes, standards and regulations of the LP-Gas or Anhydrous Ammonia (NH₃) industries should install and service this equipment.

WARRANTY NOTE

The use of non-Fisher actuators will void internal valve warranty and may result in leakage of the gland packing caused by premature wear. In addition to premature wear, the use of non-Fisher actuators may result in lower than expected flow rates and possible leakage across the valve seats.

P700 Series

Specifications

The Specifications section lists the specifications for the P700 Series. Factory specification is stamped on the nameplate fastened on the actuator at the factory.

Available Configuration See Figure 2	Maximum Actuator Pressure Limits⁽¹⁾ 125 psig / 8.6 barg
Pressure Source Air, Nitrogen, Carbon Dioxide or Propane Vapor	Temperature Capabilities⁽¹⁾ -20 to 150°F / -29 to 66°C
Minimum Actuator Pressure Limits⁽¹⁾ Types P713, P723 and P739: 25 psig / 1.7 barg Type P714: 40 psig / 2.8 barg Type P731: 50 psig / 3.4 barg	Return Mechanism Spring only—no air Thermal Release Fuse plug installed in the pressure supply line with release melt point of 212°F / 100°C. Approximate Weight 5.6 lbs / 2.54 kg

1. The pressure/temperature limits in this Instruction Manual and any applicable standard or code limitation should not be exceeded.

P	-	7	3	9
		7 = Internal Valves Rotary Actuator	1 = Single Flange 2 = Double Flange 3 = NPT	1 = 1-1/4 in. / DN 32 Valve 3 = 3 in. / DN 80 Valve 4 = 4 in. / DN 100 Valve 9 = Multiple Sizes

Figure 2. P700 Series Product Numbering

Table 1. Rotary Actuators Information

VALVE SIZE, IN. / DN	VALVE TYPE	ACTUATOR SIZE	ACTUATOR TYPE	DESCRIPTION	OPERATING PRESSURE	
					psig	bar
1-1/4 / 32	C407-10	G21K1	P731	1-1/4 NPT	50 to 125	3.4 to 8.6
2 / 50	C477-16	G31K1	P739	2 NPT	25 to 125	1.7 to 8.6
3 / 80	C477-24	G31K1	P739	3 NPT	25 to 125	1.7 to 8.6
3 / 80	C484-24	G31K1	P713	3 in. Single Flange	25 to 125	1.7 to 8.6
3 / 80	C483-24	G31K1	P723	3 in. Double Flange	25 to 125	1.7 to 8.6
4 / 100	C404-32	G74K1	P714	4 in. Single Flange	40 to 125	2.8 to 8.6

Introduction

Scope of the Manual

This manual provides specifications, installation, maintenance instructions and parts ordering information for the Types P731, P739, P713, P723 and P714 pneumatic rotary or quarter-turn actuators used to open and close Fisher™ Internal Valves.

Product Description

All Fisher internal valves can be fitted with a rotary actuator that can be used to open and close the internal valves from a remote location. These rotary actuators attach directly to the valve after removal of the cable-operating lever. Included in each assembly is a lever adaptor and mounting hardware.

Use of rotary actuators permits the opening and closing of the internal valve to be tied into the air brake of the transport or bobtail. Rotary actuators can also provide a convenient way to remotely operate a number of internal valves on stationary storage tanks at bulk plants

Principle of Operation

A pneumatic supply air valve or switching valve installed at a desired location allows air pressure to be applied to the actuator. The pressure supply rotates the coupler (Figures 9 to 13) and the internal valve's operating lever, opening the valve. Upon release of supply pressure, the valve's operating lever returns to the closed position. Supply pressure sources may include dry/filtered air, nitrogen, carbon dioxide or propane vapor.

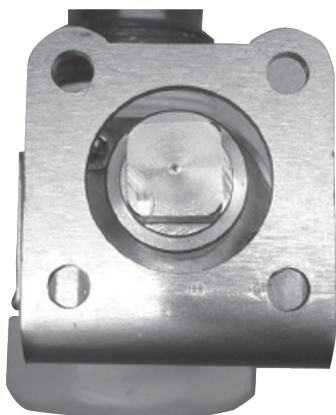


Figure 3. Coupler Installation For Size 1-1/4 in. Rotary Actuator

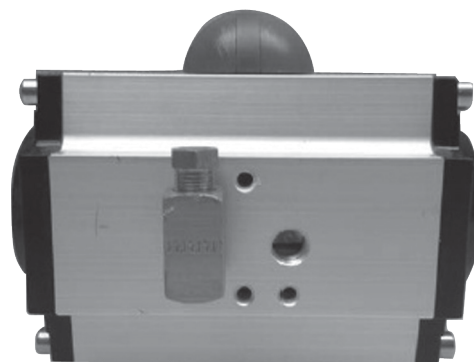


Figure 4. Air Fittings and Fusible Link Installation

Installation



WARNING

Identify the gland mounting hardware on your valve. Downstream pressure must be released before removing the screws holding the gland housing to the internal valve body. Failure to do so could result in personal injury.

NOTICE

Minimum air consumption and maximum internal valve life are obtained by using an actuator operating pressure as indicated in Table 1. A 67C Series Regulator can be used to supply pressure to the actuator if desired.

Size 1-1/4 NPT Rotary Actuator

Bracket Installation

1. Remove the two socket head cap screws from the valve gland.
2. Align the actuator bracket to the mounting holes.
3. Reinstall socket head cap screws and split lock washers to secure.

Coupler Installation

4. Using the hand actuation lever, turn the internal valve stub clockwise by hand until the valve cam is touching the valve stem (see Figure 14).
5. Slide the rotary actuator coupling over the valve stub so that the holes of the valve stub shaft and the coupling are aligned. Press the supplied roll pin into the aligned through holes.
6. With the coupler and stub shaft pinned together and the valve cam touching the valve stem turn the coupling counter clockwise 1/8 of a turn or until the flat of the coupling is square with the valve (see Figure 3).

Actuator Installation

7. Place four actuator mounting studs through the bracket holes.
8. Install the four supplied split lock washers and nuts.

Air Fittings and Fuse Plug Installation

9. Place the brass NPT Tee into the actuator inlet port, see Figure 4.
10. Install Fuse plug into unused port on brass NPT tee.

Size 2 and 3 NPT Rotary Actuator

Coupler Installation

1. Using the hand actuation lever, turn the internal valve stub clockwise by hand until the valve cam is touching the valve stem (see Figure 14).
2. Slide the rotary actuator coupling over the valve stub so that the holes of the valve stub and the coupling are aligned. Press the supplied roll pin into the aligned through holes.
3. With the coupler and stub pinned together and the valve cam touching the valve stem turn the coupling counter clockwise 1/8 of a turn or until the flat of the coupling is square with the valve (see Figure 5).

Bracket Installation

Note

For valves with the gland restrained with cap screws continue to step 4, for valves with easy mount studs skip to step 6.

For Valves with Cap Screws

4. Remove the three cap screws and split lock washers from the valve gland. Align the actuator bracket to the mounting holes.
5. Reinstall cap screws and split lock washers.



Figure 5. *Coupler Installation for Sizes 2 and 3 in. Rotary Actuator*

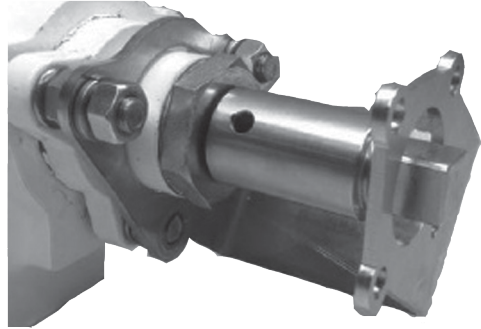


Figure 6. *Bracket Installation for Valves with Short Stud*

For Valves with Easy Mount Studs

6. Align the actuator bracket to the gland studs.
7. Install lock washers and nuts on the two long studs.

Note

The short stud does not require an installed nut, see Figure 6.

Actuator Installation

8. Place four actuator mounting studs through the bracket holes.
9. Install the four supplied split lock washers and nuts.

Air Fittings and Fuse Plug Installation

10. Place the brass NPT Tee into the actuator inlet port, see Figure 4.
11. Install Fuse plug into unused port on brass NPT tee.

Size 3 in. Single and Double Flange Rotary Actuators

Coupler Installation

1. Using the hand actuation lever, turn the internal valve stub clockwise by hand until the valve cam is touching the valve stem (see Figure 14).
2. Slide the rotary actuator coupling over the valve stub so that the holes of the valve stub and the coupling are aligned. Press the supplied roll pin into the aligned through holes.
3. With the coupler and stub pinned together and the valve cam touching the valve stem turn the coupling counter clockwise 1/8 of a turn or until the flat of the coupling is square with the valve (see Figure 7).

Bracket Installation

4. Remove the two cap screws and split lock washers from the valve flange. Align the actuator bracket to the mounting holes.
5. Reinstall cap screws and split lock washers.

Actuator Installation

6. Place four actuator mounting studs through the bracket holes.
7. Install the four supplied split lock washers and nuts.

Install Air Fittings and Fuse Plug

8. Place the brass NPT Tee into the actuator inlet port, see Figure 4.
9. Install Fuse plug into unused port on brass NPT tee.

Size 4 in. Single Flange Rotary Actuator

Bracket Installation

1. Remove the four cap screws from the valve gland. Align the actuator bracket to the gland retaining flange and the mounting holes.
2. Reinstall cap screws and split lock washers. Confirm washer is flattened.

Coupler Installation

3. Using the hand actuation lever, turn the internal valve stub clockwise by hand until the valve cam is touching the valve stem (see Figure 14).
4. Slide the rotary actuator coupling over the valve stub so that the holes of the valve stub and the coupling are aligned. Press the supplied roll pin into the aligned through holes.
5. With the coupler and stub pinned together and the valve cam touching the valve stem turn the coupling counter clockwise 1/8 of a turn or until the flat of the coupling is square with the valve (see Figure 8).

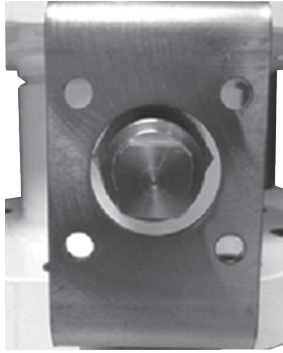


Figure 7. Coupler Installation for Size 3 in. Single and Double Flange Rotary Actuators

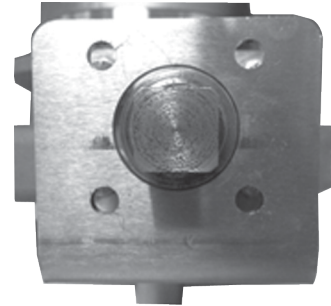


Figure 8. Coupler Installation for Size 4 NPT Single Flange Rotary Actuator

Actuator Installation

6. Place four actuator mounting studs through the bracket holes.
7. Install the four supplied split lock washers and nuts.

Install Air Fittings and Fuse Plug

8. Place the brass NPT Tee into the actuator inlet port, see Figure 4.
9. Install Fuse plug into unused port on brass NPT tee.

The installation of fuse plugs in the actuator piping will allow the pneumatic pressure to vent, closing the valve if the plug is exposed to temperature above 208 to 220°F / 98 to 104°C.

After installing the unit, operate the actuator with pressure to see that it smoothly opens and closes the internal valve without sticking or jamming.

Maintenance

Regulator Technologies recommends these steps be conducted once a month:

1. Regularly inspect the coupling to see that it operates freely and that there is no leakage around the stub shaft. If there is leakage or sticking, the packing should be replaced.

2. Check for tight closure of the Internal Valve seat disks regularly. Any leakage indicates damage to the seat caused from wear or from dirt or scale lodging and embedding in the seat. To check for leakage, close the internal valve and exhaust downstream pressure. Close the first valve downstream from the internal valve and note any pressure build-up by means of a pressure gauge. If leakage is indicated, the seat disks should be replaced.

Parts Ordering

When corresponding about this equipment, always reference the equipment type number found on the nameplate.

When ordering replacement parts reference the complete 11-character part number of each part.

Parts List

Description	Part Number
Actuator Kit	
Type P731	ERAA04251A0
Type P739	ERAA04252A0
Type P713	ERAA04254A0
Type P723	ERAA04255A0
Type P714	ERAA04262A0

P700 Series

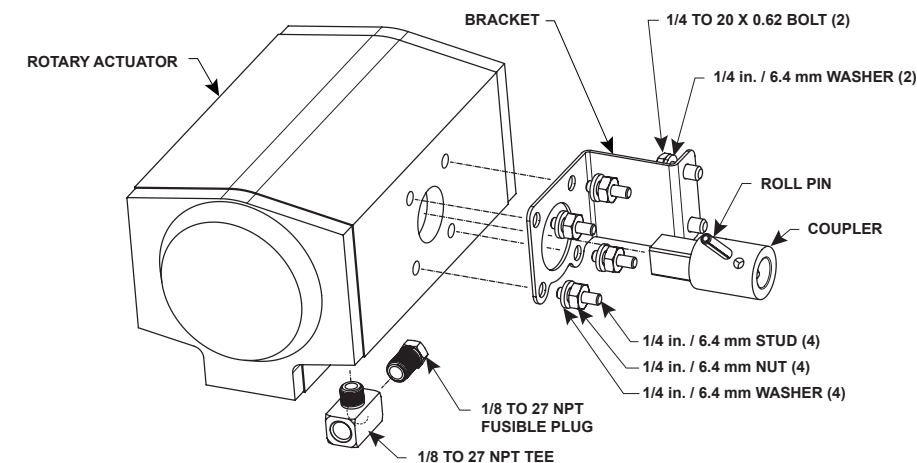


Figure 9. Type P713 for Type C484-24 Internal Valves (Single Flange)

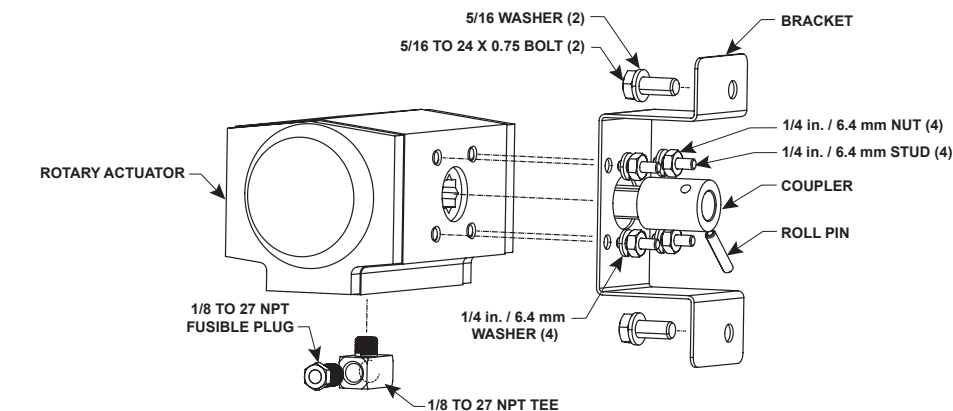


Figure 10. Type P723 for Type C484-24 Internal Valves (Double Flange)

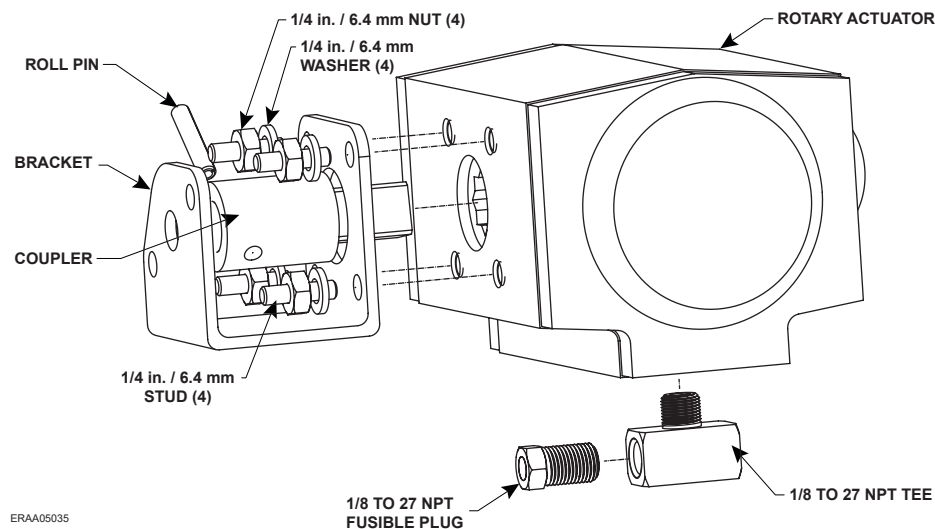
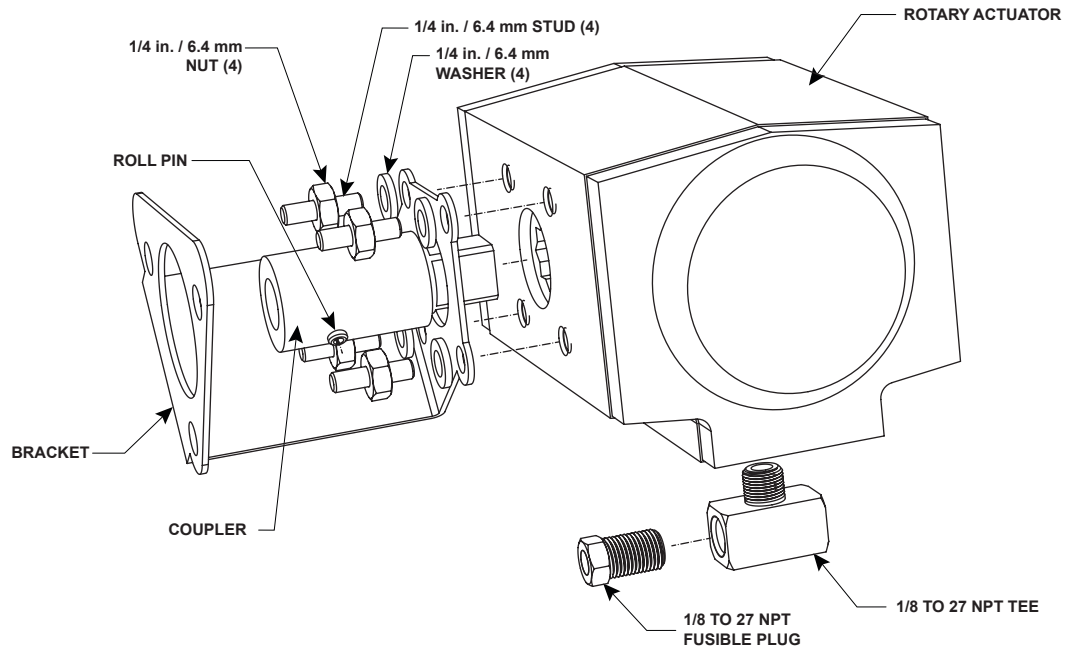
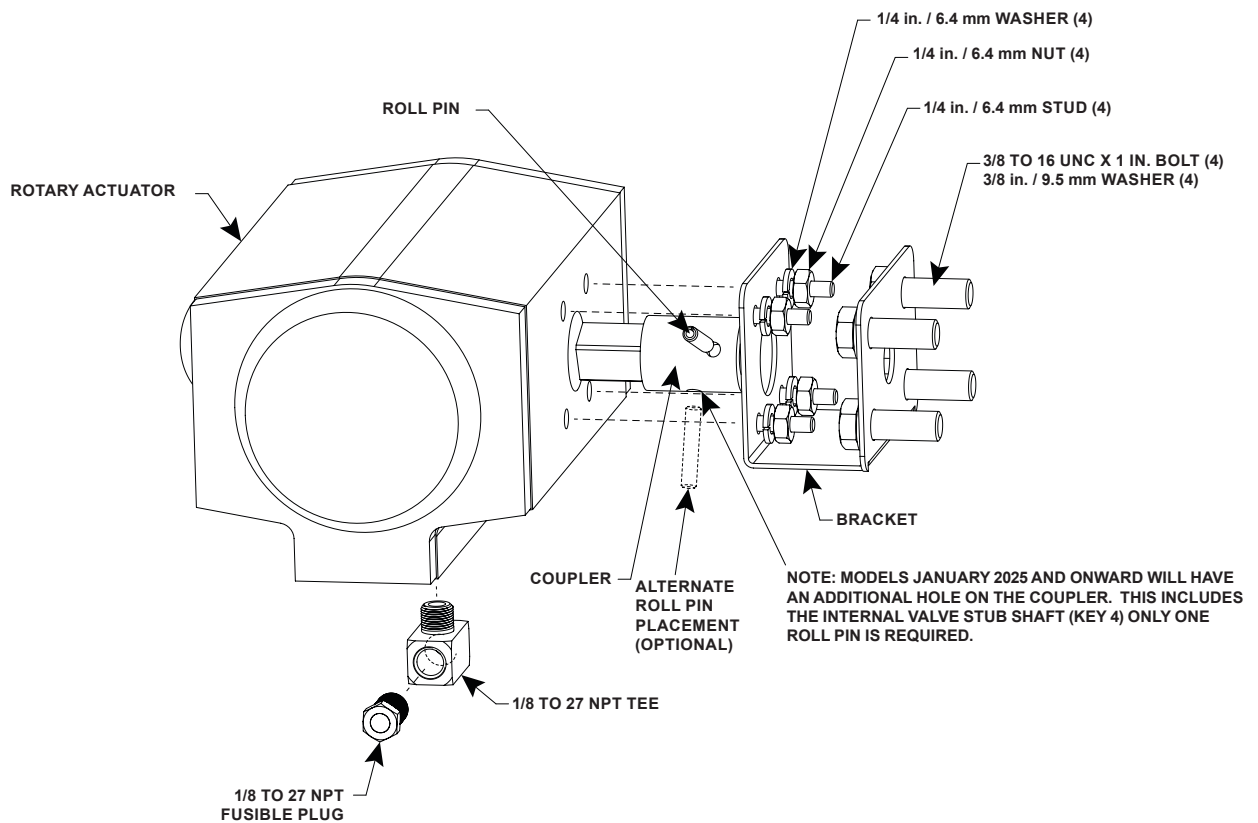


Figure 11. Type P731 for Type C483-24 Internal Valves



ERAA04775

Figure 12. Type P739 for Types C407, C471 and C477 (2 and 3 NPT) Internal Valves



ERAA05047

Figure 13. Type P714 for Type C404-32 Internal Valves

P700 Series

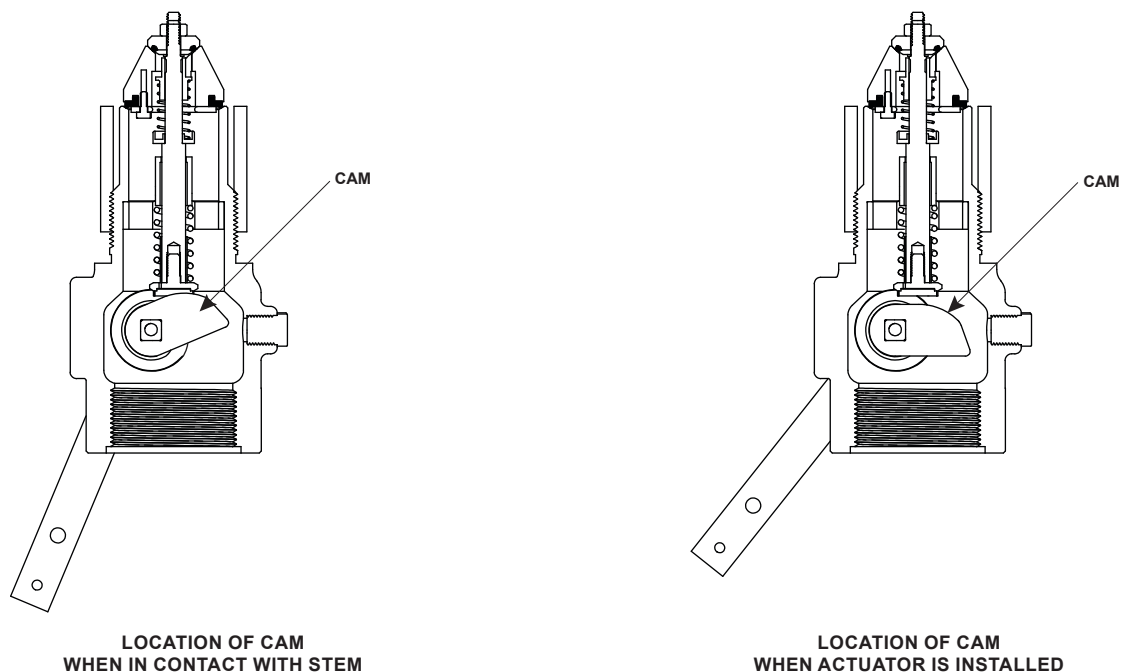


Figure 14. Cam Location

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