

Service Instructions for Fisher™ 1068 Rotary Vane Actuator

This instruction manual was prepared by Kinetrol.

Do not install, operate or maintain this product without being fully trained and qualified in valve, actuator and accessory installation, operation and maintenance.

To avoid personal injury or property damage it is important to carefully read, understand, and follow all of the contents of this manual, including all safety cautions and warnings.

If you have any questions about these instructions, contact your [Emerson sales office](#) before proceeding.

Fisher 1068 Rotary Vane Actuator



X1591



X1590

Installation

⚠ WARNING

Always wear protective gloves, clothing, and eyewear when performing any installation operations. Check with your process or safety engineer for any other hazards that may be present from exposure to process media.

CAUTION

To avoid parts damage, do not apply pressure that exceeds the Maximum Diaphragm Casing Pressure in table 1. Use pressure-limiting or pressure-relieving devices to prevent the Operating Pressure from exceeding the values in table 3.

Actuator Mounting

⚠ WARNING

Avoid personal injury or property damage from sudden release of process pressure or bursting of parts. Before performing any maintenance operations:

- Do not remove the actuator from the valve while the valve is still pressurized.
- Always wear protective gloves, clothing, and eyewear when performing any maintenance operations.
- Disconnect any operating lines providing air pressure, electric power, or a control signal to the actuator. Be sure the actuator cannot suddenly open or close the valve.
- Use bypass valves or completely shut off the process to isolate the valve from process pressure. Relieve process pressure from both sides of the valve. Drain the process media from both sides of the valve.
- Safely vent the power actuator loading pressure.
- Use lock-out procedures to be sure the above measures stay in effect with you work on the equipment.
- The valve packing box may contain process fluids that are pressurized, even with the valve has been removed from the pipeline. Process fluids may spray out under pressure when removing the packing hardware or packing rings.
- Check with your process or safety engineer for any other hazards that may be present from exposure to process media.

CAUTION

When adjusting the travel stop for the closed position of the valve ball or disk, refer to the appropriate valve instruction manual for detailed procedures. Undertravel or overtravel at the closed position may result in poor valve performance and/or damage to the equipment.

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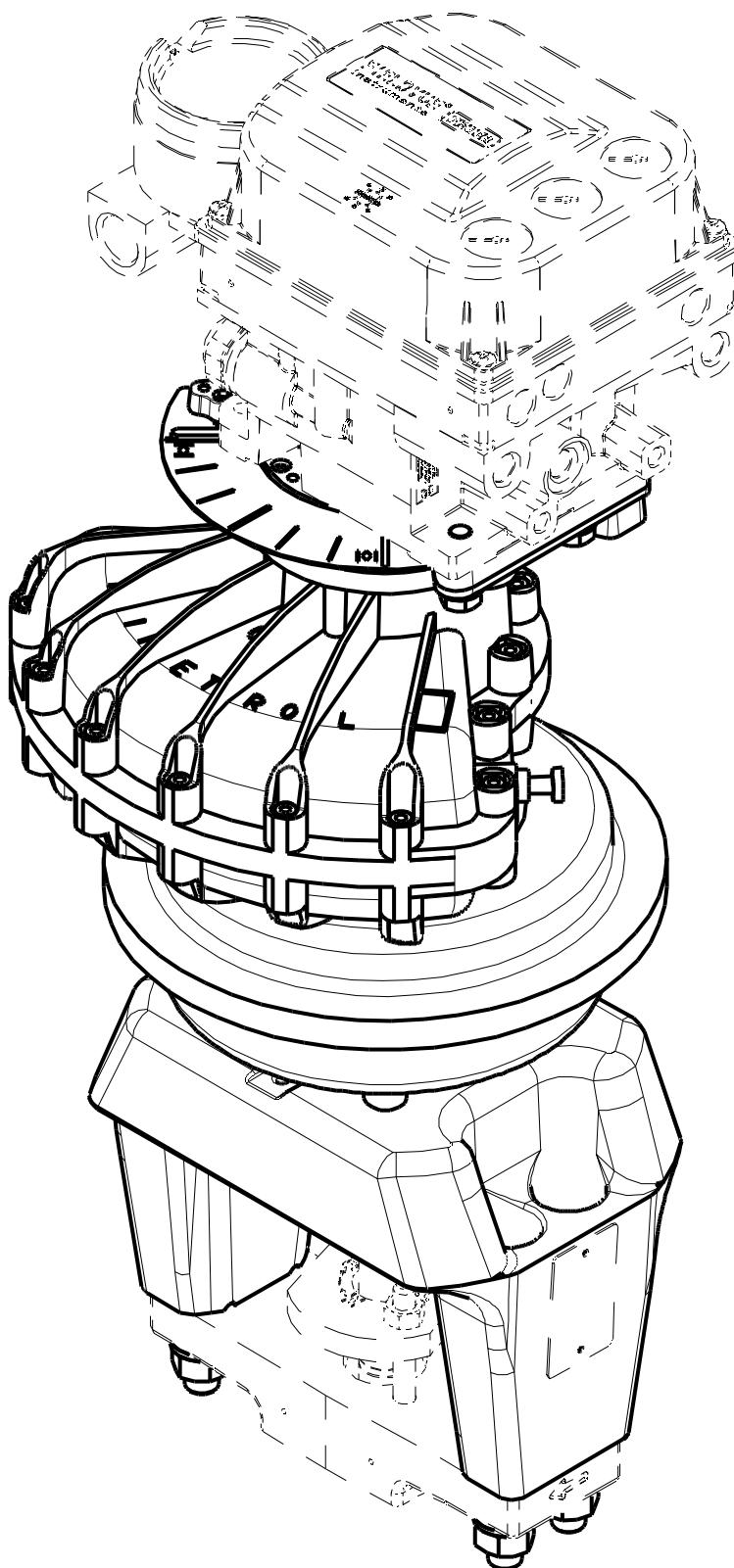
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Installation, Operation & Maintenance Instructions Fisher 1068 series (Models 05i-15i)
ROTARY 1/4 TURN PNEUMATIC ACTUATORS
Suitable for use in safe area and hazardous gas/dust atmospheres (ATEX)



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Section 1: Rotary 1/4 turn actuator / double acting & spring return models.

1.1 General Actuators & Spring Returns

1.1.1 Mounting Holes sizes

Table 1: Actuator (ANSI Threads)

| Model | Number of Holes | ANSI Thread | Depth of Thread | PCD |
|-------|-----------------|-------------|-----------------|-------|
| 07i | 4 | 5/16-18 UNC | 0.63" | 2.00" |
| 08i | 4 | 5/16-18 UNC | 0.63" | 2.76" |
| 09i | 4 | 3/8-16 UNC | 0.79" | 2.56" |
| 10i | 4 | 3/8-16 UNC | 0.63" | 4.02" |
| 12i | 4 | 1/2-13 UNC | 0.94" | 3.06" |
| 14i | 4 | 5/8-11 UNC | 1.12" | 3.89" |
| 15i | 4 | 5/8-11 UNC | 1.12" | 5.51" |

Table 2: Spring Return (ANSI Threads)

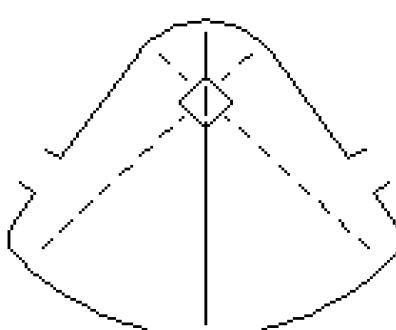
| Model | Number of Holes | ANSI Thread | Depth of Thread | PCD |
|-------|-----------------|-------------|-----------------|-------|
| 05i | 4 | 5/16-18 UNC | 0.51" | 2.76" |
| 07i | 4 | 5/16-18 UNC | 0.51" | 2.76" |
| 08i | 4 | 5/16-18 UNC | 0.51" | 2.76" |
| 09i | 4 | 3/8-16 UNC | 0.63" | 4.02" |
| 10i | 4 | 3/8-16 UNC | 0.63" | 4.02" |
| 12i | 4 | 3/8-16 UNC | 0.63" | 4.02" |
| 14i | 4 | 1/2-13 UNC | 0.94" | 4.92" |
| 15i | 4 | 5/8-11 UNC | 1.12" | 5.51" |

1.1.2 Mounting

Actuator / spring and driven unit must be correctly aligned, i.e. actuator vane / spring coupling and driven unit must be able to move in same direction from end stop when coupled together.

Figure 1.

Vane shown in mid-travel position.
Identifying groove in top of output drive
square shows position of vane.



Note: Position of output shaft when vane at mid-travel position.

- 1) Take particular care in aligning model 05i actuator, 6-hole mounting means 30° misalignment possible if flange has 60° error and coupling 90° error.
- 2) There must be no end load on actuator drive shaft.
- 3) Check clearance between actuator and driven unit drive shaft, allowing for coupling to be used.
- 4) Care must be taken to ensure concentricity between actuator or spring return drive shaft and driven unit shaft.
- 5) Actuator can be mounted in any plane.
- 6) When side loading of actuator shaft is unavoidable, ensure load does not exceed guide lines given in Kinetrol Technical data sheet TD28.

1.1.3 Drive Coupling

- 1) Square hole drive coupling supplied for double acting actuators and anti-backlash drive coupling supplied with spring return actuators both in stainless steel.
- 2) In order to prevent rubbing and wear on the actuator / spring mount face, the actuator square should engage as deeply as reasonably practical into the coupling. However, a minimum gap of 0.5mm (0.02") between the coupling face and actuator / spring mount face should be maintained.

1.1.4 Air/Gas Supply

- 1) Operating air pressure should not exceed 7 bar (100 psi).
- 2) Supply medium must be clean, dry, oil-free, and non-corrosive and meet the requirements of ISA standard 7.0.01 or ISO 8573-1. Severe personal injury or property damage may occur from an uncontrolled process if the instrument supply medium is not clean, dry, oil-free, and non-corrosive. While use and regular maintenance of a filter that removes particles larger than 40 micrometers in diameter will suffice in most applications, further filtration down to 5 micrometer particle size is recommended. Lubricant content is not to exceed 1 ppm weight (w/w) or volume (v/v) basis. Condensation in the air supply should be minimised.
- 3) Plastic or other non-conductive tubing should not be used if unit is ATEX.
- 4) The actuator can be driven by a hazardous gas as long as the gas is not corrosive (e.g. natural gas "sweet" and not "sour" gas is used).
- 5) The actuator shall not be operated with flammable gas/air mixtures.
- 6) Air can be passed to the actuator from three different sets of air ports:
 - a) Through the side holes.
 - b) Through the two holes at the rear of the actuator by fitting a Namur adaptor.
 - c) Through the two holes in the top flange of the actuator.

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1.1.5 Operation

- 1) External stops are strongly recommended when actuator is operating a mechanism with cantilevered load. However, Kinetrol technical data sheet, TD37, can be used to ensure load inertia and travel speed remain within allowable limits.
- 2) Positioner end of drive shaft may be used for visual position indication, when indicator arrow fitted.
- 3) Spring units can only be fitted to the driven (square) end of the actuator.
- 4) Ambient operating temperature range of actuator and spring is -20°C to 80°C. Special care should be taken to ensure that heat conducted from, for example, a hot valve, does not increase the temperature above these limits. Refer to Kinetrol for guidance.
- 5) Ensure environmental conditions, such as corrosive environments, are compatible with the materials of construction and protective finishes (Kinetrol technical data sheet TD14 refers). If unsure, contact Kinetrol. Excessive corrosion of the actuator and spring may cause it to fail in service.
- 6) The maximum rubbing speed of any component within the actuator and spring return unit must not exceed 4m/s for Cat 2. See table below for minimum operating travel times:
- 7) Do not allow dust layers to build up on the apparatus.

Table 3: Minimum Actuator operating travel times

| Model | Category 2 operating time for 90° travel (sec) |
|-------|------------------------------------------------|
| 05i | 0.027 |
| 07i | 0.036 |
| 08i | 0.042 |
| 09i | 0.046 |
| 10i | 0.047 |
| 12i | 0.060 |
| 14i | 0.081 |
| 15i | 0.091 |

1.1.6 Maintenance

- 1) Actuator maintenance is limited to replacement of seals when wear affects actuator performance.
- 2) Seal life will vary according to application, conditions of cycle frequency, temperature, condition of air supply, etc.
- 3) Detailed seal replacement instructions in next section.
- 4) Spring return units are not user serviceable and therefore no spare parts are available other than complete units, baseplate gasket / O-ring seals and keeper plates for safe spring removal.

1.1.7 Recommended Spare Parts

- 1) Standard seal kits, available for each actuator model, consist of the following:
 - 2 off vane seal
 - 2 off expander
 - 2 off shaft seal
 - Plus all necessary O-rings, screws, nuts and grease for all sizes.
 In addition, a tube of sealant will be required to seal case halves.

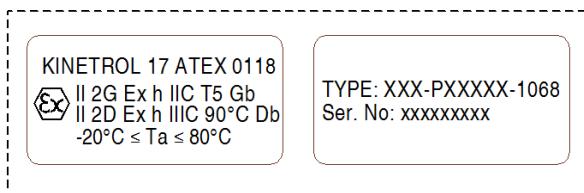
Table 4: Standard seal kit spare part ordering codes

| Model | Act Seal Kit P/N | Vane P/N | Baseplate Seal P/N |
|-------|------------------|-------------|--------------------|
| 05i | R1068KTX012 | R1068KTX132 | R1068KTX262 |
| 07i | R1068KTX022 | R1068KTX142 | R1068KTX272 |
| 08i | R1068KTX032 | R1068KTX152 | R1068KTX282 |
| 09i | R1068KTX042 | R1068KTX162 | R1068KTX292 |
| 10i | R1068KTX052 | R1068KTX172 | R1068KTX302 |
| 12i | R1068KTX062 | R1068KTX182 | R1068KTX312 |
| 14i | R1068KTX072 | R1068KTX192 | R1068KTX322 |
| 15i | R1068KTX082 | R1068KTX202 | R1068KTX332 |

1.1.8 Labelling

- 1) All Kinetrol actuators and spring return units that are approved for use in areas where explosives, dust and gases are present, are marked with the following labels:

Figure 2. ATEX label



- 2) Ensure that the details on the label such as the ambient temperature range is suitable for the application. Also ensure that any other equipment fitted to the actuator and spring return unit (e.g. valve or positioner) does not restrict the use within the parameters shown on the above labels.

1.1.9 Adjustment

1) Kinetrol Actuators come as standard with adjustable end stops.

Table 5: Standard stroke adjustments available

| Models | Adjustment range available |
|-----------------|----------------------------|
| 07i/08i/09i/15i | 10° |
| 05i/14i | 8° |
| 10i/12i | 11° |

2) Greater adjustment range possible with non-standard stops.

Contact Kinetrol for details.

1.2 Actuator Seal Replacement Instructions

1.2.1 Dismantling Actuator

1) DISMANTLING ACTUATOR (see exploded view Figure 3)

CAUTION: Before dismantling, check there are no burrs on square drive shafts. If there are, remove to avoid damage to bearings and shaft seals during removal of case halves. In the case of spring return actuators, remove spring unit (according to section 1.3.1) before opening actuator case.

Ancillary equipment such as DVC mount plate / Yoke / coupling etc, will also need to be removed before dismantling actuator.

2) All models: loosen, but do not remove, all case screws.

3) Separate case halves by connecting air to inlet port and apply pressure to drive them apart. Procedure is safe although the separation is audible, ear defenders are recommended.

Pull off one case half.

CAUTION: Do NOT hammer diecast castings or shaft end. It will damage internal sealing surfaces.

4) Clean both case halves removing silicone rubber sealant.

Clean joint surfaces of case flange with surgical spirit.

5) Replace and lubricate shaft seals.

6) Undo vane nuts and bolts and remove old expanders and seals from vane. Take care not to damage side plates.

7) Clean vane.

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1.2.2 Re-assembling vane

- 1) Check vane for any obvious defects and make sure it is free of burrs, then place vane face down on a bench or hold in a vice.
- 2) Fit Side plate Infill Insert into Side plates (07i only) Push hex headed bolts with plain washer through side plate, expander (teeth facing towards head of bolt) and seal (base of seal away from bolt head).
- 3) After checking that expander and seal are right way round - expander has vane shaped hole, seal has shaft centre line marked.
- 4) While holding up side plate, expander and seal, apply a low strength anaerobic adhesive to bolt thread such as Loctite 222.
- 5) Thread first few threads of each bolt into vane.
- 6) Screw bolts down and tighten to torques given in table 6.
- 7) Turn vane over then fit seal, expander and side plate over end of bolts. Check orientation as before.
- 8) Screw nuts down thread.
- 9) Hold head of bolt with a spanner, torque up nuts to torque specified in table 6.

Table 6: Vane bolt and nut Tightening Torques

| Model | Tightening Torque | |
|-------|-------------------|---------|
| 05i | 8lbf.ins | 0.90 Nm |
| 07i | 8lbf.ins | 0.90 Nm |
| 08i | 20lbf.ins | 2.26 Nm |
| 09i | 20lbf.ins | 2.26 Nm |
| 10i | 15lbf.ins | 1.70 Nm |
| 12i | 30lbf.ins | 3.39 Nm |
| 14i | 30lbf.ins | 3.39 Nm |
| 15i | 30lbf.ins | 3.39 Nm |

1.2.3 Re-assembling Actuator

- 1) Coat bearing bushes and inside both case halves with molybdenum disulphide grease or grease supplied by Kinetrol (usually as part of seal kit).
- 2) Lightly and evenly coat joint face on each case half with instant gasket sealant available from Kinetrol or Silastic 732 RTV sealant obtainable from ironmongers, etc. may be used as a substitute.
CAUTION: EXCESS SEALANT, if extruded inside case, WILL IMPAIR OPERATION OF SEALS.
Remove all excess sealant especially from inside edge.
- 3) Insert vane into one case half, turning it to ease square on drive shaft through shaft seal. Watch that lip seals at ends of vane easily work down into case without damage.
- 4) Fit remaining case half on top of the other, turning it to ease positioner shaft through shaft seal.
- 5) **CAUTION: Check that lip seals are not trapped at case joint face. Ensure minimal time delay to closing of case once sealant has been applied.**
- 6) Tighten case bolts to torques given in table 7.

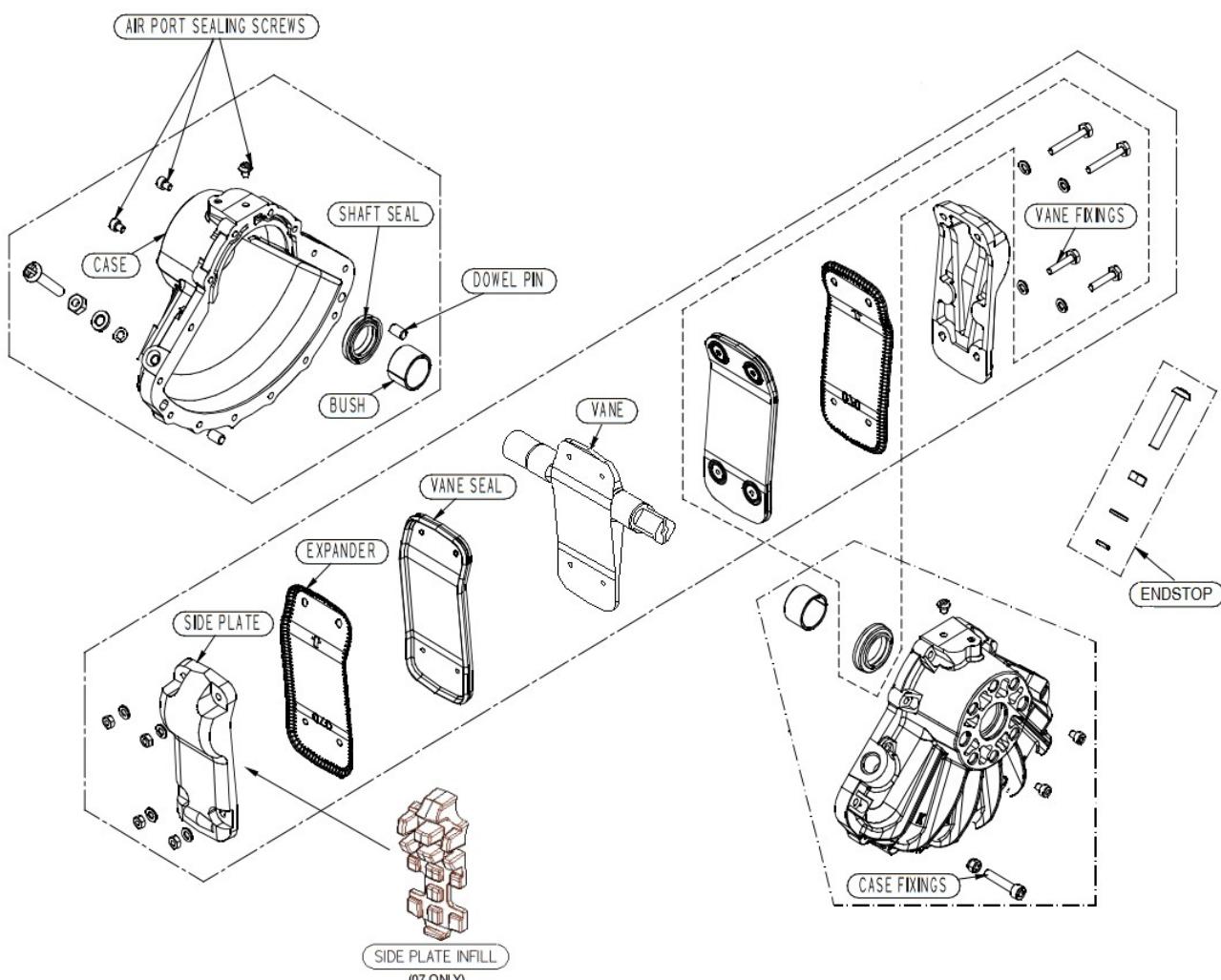
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Table 7: Case bolt Tightening Torques

| Model | Tightening Torque | |
|-------|-------------------|---------|
| 05i | 20lbf.ins | 2.26 Nm |
| 07i | 20lbf.ins | 2.26 Nm |
| 08i | 60lbf.ins | 6.78 Nm |
| 09i | 60lbf.ins | 6.78 Nm |
| 10i | 80lbf.ins | 8.96 Nm |
| 12i | 100lbf.ins | 11.3 Nm |
| 14i | 120lbf.ins | 13.6 Nm |
| 15i | 225lbf.ins | 25.4 Nm |

- 7) Rotate vane manually to check movement and wipe away sealant extruded internally.
- 8) Allow setting time for sealant before applying test air pressure.

Figure 3. Exploded view of typical actuator



1.3 Spring Return Units

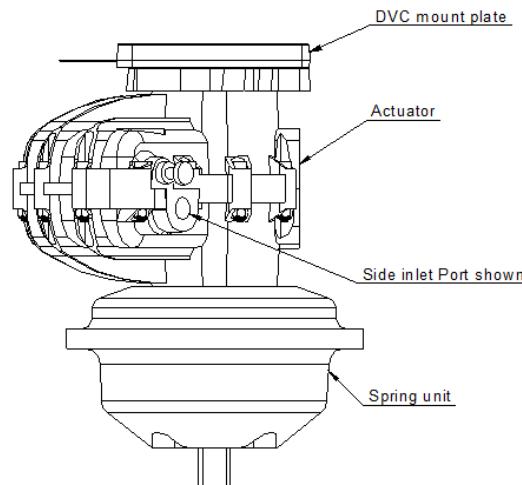
1.3.1 Removal of spring return unit

- 1) **WARNING** – the wound-up steel springs are storing a large amount of energy which, if suddenly released, can be dangerous.
- 2) A keeper plate strong enough to take full spring torque must be fitted in order to remove S/R unit without releasing spring tension.
- 3) Keeper plates and screws available from Kinetrol.
Refer to table 8 for spare part order Numbers.

Table 8: Keeper plate ordering codes

| Model | Part Number |
|-------|-------------|
| 05i | GE98028X012 |
| 07i | GE98028X022 |
| 08i | GE98028X032 |
| 09i | GE98028X042 |
| 10i | GE98028X052 |
| 12i | GE98028X062 |
| 14i | GE98028X072 |
| 15i | GE98028X082 |

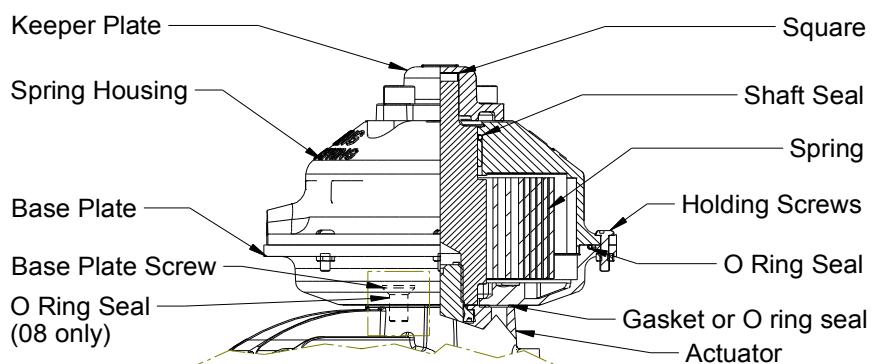
Figure 4. Typical spring return actuator



- 4) If the spring return actuator is installed as shown in figure 4, it will first be necessary to invert the assembly before removing or refitting the spring unit.
(as shown in figure 5)

- 5) Connect air line via pressure regulating valve to actuator air inlet. Note DVC connecting port to be plugged.
- 6) Place keeper plate over square shaft protruding from S/R unit.
- 7) Increase air pressure slowly until actuator vane turns to mid-travel position. (See Figure 1 of actuator section.)
- 8) Keeper plate holes will then line up with threaded holes in spring housing.
- 9) Insert all screws through keeper plate holes and tighten to lock keeper plate in position. Disconnect air supply.
- 10) Separate spring housing from base plate by removing holding screws. Then remove spring housing.
- 11) If necessary to gain access to actuator case fixing screws also remove base plate by removing base plate screws. Take care with gasket / O-ring between base plate and actuator. (Service actuator as required per Seal Replacement Instructions section 1.2).

Figure 5. Spring return unit section view



1.3.2 Re-fitting of Spring unit

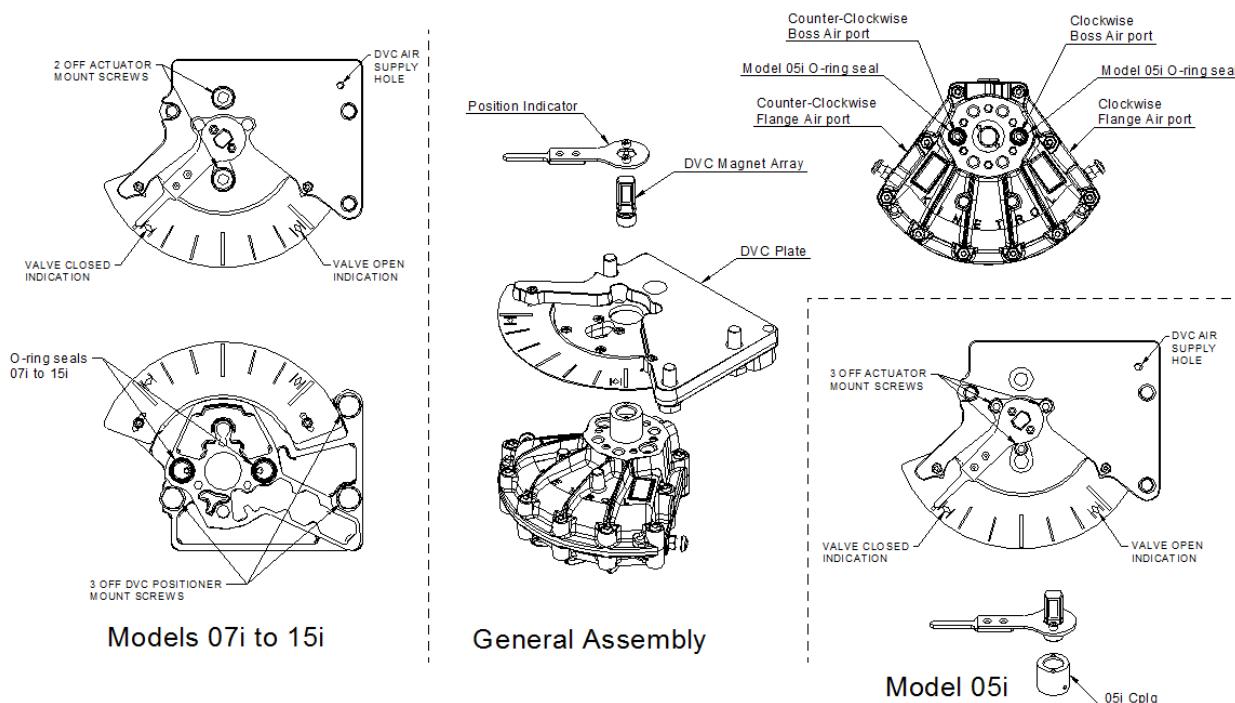
- 1) If necessary replace base plate after replacing gasket or O-ring as appropriate. Refer to table 4 for spare part order numbers. Ensure the 4 countersunk base plate fixing screws are all fitted with O-rings (08i models only).
- 2) Ensure actuator vane is in mid-travel position.
- 3) Locate spring housing on drive shaft, rotate it to line up holding screw holes with base plate and replace holding screws.
- 4) Connect air line via pressure regulating valve to actuator air inlet.
- 5) Adjust air pressure until it balances the spring tension.
- 6) Loosen keeper plate screws. If air pressure is correct balancing spring tension will not bind. If binding, adjust air pressure until balanced.
- 7) Remove keeper plate completely.
- 8) Disconnect air supply.

Section 2: Accessory mount for Fisher DVC6200 Positioner

2.1.1 Mount kit for Fisher DVC6200 Positioner

- a) The Fisher DVC6200 positioner can be direct mounted to actuator models 05i to 15i via a DVC mount kit.
- b) Two variants of the DVC mount kit are available one which fits to the model 05i actuator and another which fits to the 07i to 15i size actuators.
- c) Note, models 12i, 14i and 15i require an additional accessory mount plate (supplied with actuator as standard).

Figure 6. General arrangement of the DVC mount kit.



- d) Fitting DVC mount kit to Spring return actuator:

Note: model 05i (only) has a separate coupling fastened to the shorter output square (supplied with actuator as standard) for the DVC array to fit into.

- First remove one of the boss air port screws (according to the desired direction of travel).
- Fit O-ring seals as shown in figure 6, apply a small amount of grease to seals to hold in place while fitting DVC plate to actuator.
- Fit DVC magnet array into actuator round shaft.
- Fit position indicator over magnet array and secure onto actuator shaft using screws provided.
- Valve open/closed indication plate can be reversed.

- e) If fitting to a Double acting actuator first follow section 2.1.1d then remove the opposing flange air port blanking plug, this will need to be externally piped to the DVC positioner.

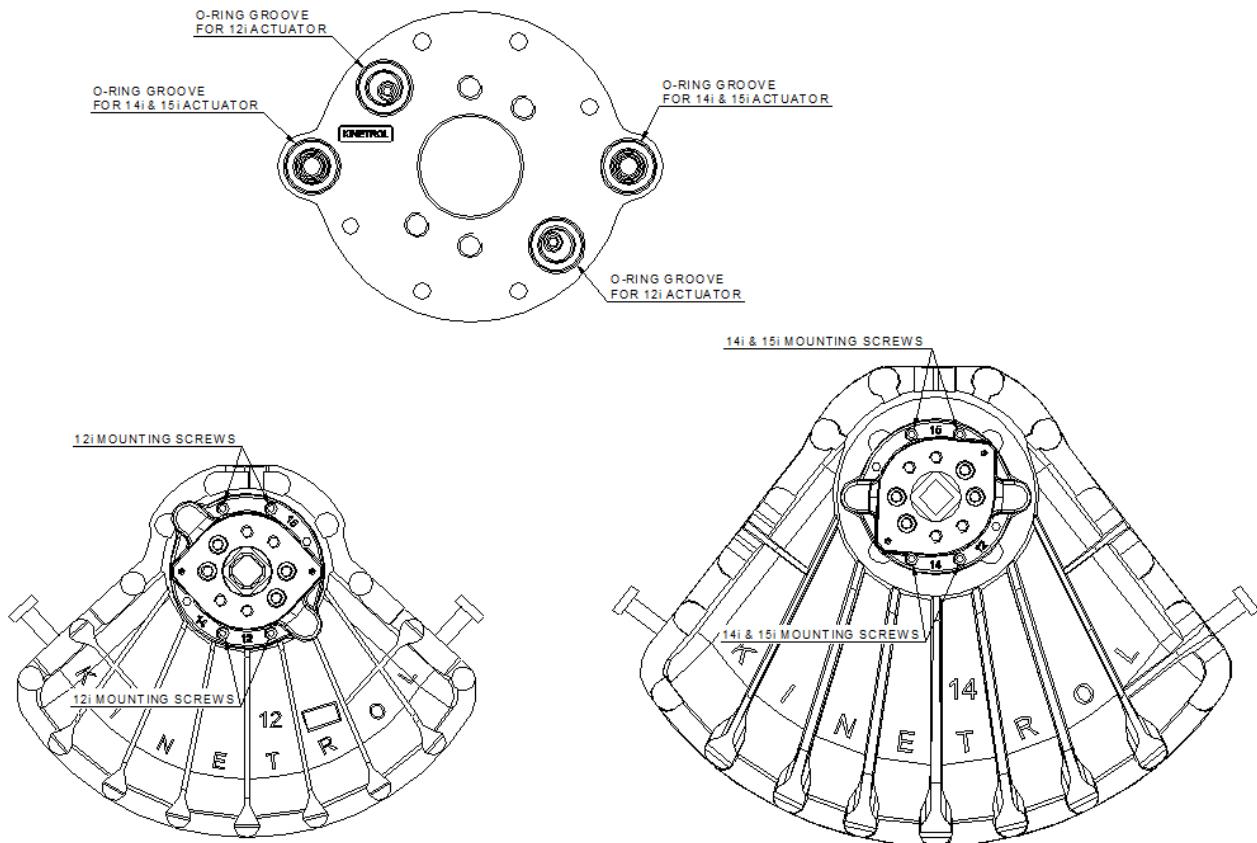
- f) Note all fasteners are to be chemically locked using Loctite 222 or equivalent.

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2.1.2 Accessory mount for size 12i, 14i & 15i actuators

- a) To mount the DVC mount kit to actuator models 12i to 15i an accessory plate first needs to be fitted to the actuator (supplied pre-fitted to spring return actuators and loose within coupling kit for double acting actuators).

Figure 7. Accessory plate for actuator models 12i to 15i



- b) O-rings seals are fitted in grooves as shown in figure 7.
 c) Plate fits to actuators in different orientations as shown in figure 7.
 d) DVC mount kit direct mounts to the accessory plate as per figure 6.

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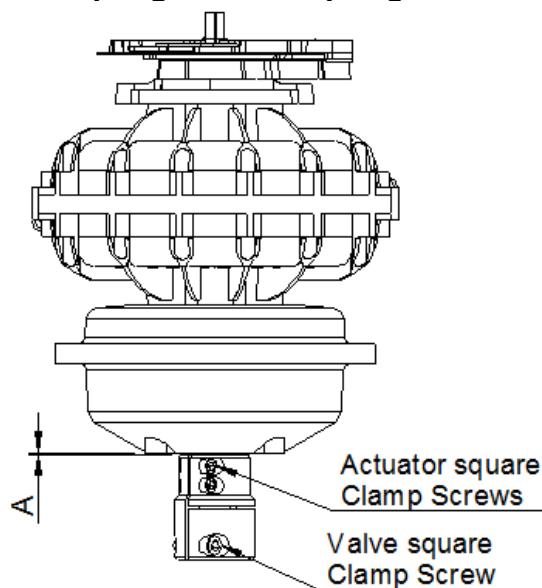
Section 3: Installation of Valve Yokes and anti-backlash couplings

3.1.1 Fitting anti-backlash couplings to Spring Return actuators

A range of anti-backlash couplings are available to direct couple to Fisher valves. A complete list of available options can be seen in table 10.

Note: Double acting actuators are fitted with solid couplings a complete list of available options can be seen in table 11.

Figure 8. Anti-backlash coupling fitted to Spring return actuator



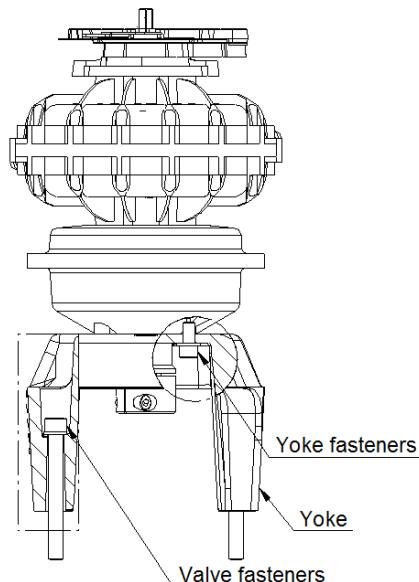
- Fit coupling to spring return actuator leaving approx 0.5mm (0.02") gap between coupling face and spring mount face as shown on figure 8 dimension "A".
- Apply a low strength anaerobic adhesive to actuator square clamp screw threads such as Loctite 222 and torque up screw / screws to value given in table 9.
- Double acting actuators do not use anti-backlash couplings due to clearance constraints a range of standard through square couplings are available.

Table 9. Anti-backlash coupling clamp screw tightening torques

| Screw size | Tightening Torque | |
|------------|-------------------|---------|
| M6 | 156 lbf.ins | 17.6 Nm |
| M8 | 372 lbf.ins | 42 Nm |
| M10 | 752 lbf.ins | 85 Nm |
| M12 | 1301 lbf.ins | 147 Nm |

3.1.2 Mounting Yokes to Actuators & Spring Returns

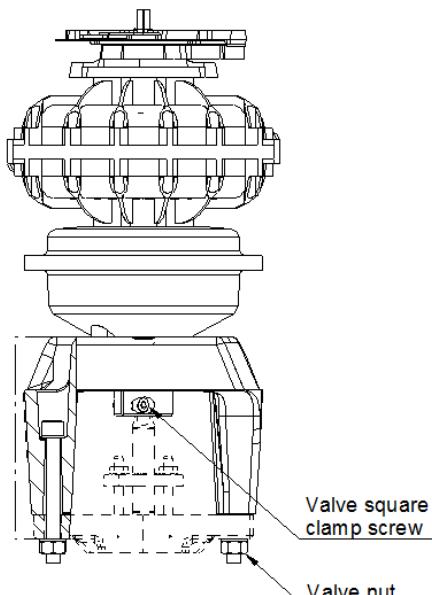
Figure 9. Yoke fitted to Spring return actuator



- First fit valve fasteners into yoke before fitting yoke to double acting / spring return actuator (some sizes lack the clearance to fit after).
- Apply a low strength anaerobic adhesive to yoke fastener screw threads such as Loctite 222 and torque up screws, consult TD111 for tightening torques.
- Note washers may not be supplied for some yoke and valve fasteners due to space constraints.

3.1.3 Mounting yokes to valves

Figure 10. Valve fitted to Spring return actuator



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- a) Ensure valve opening and closing direction matches the opening and closing direction of the double acting / spring return actuator.
- b) Do not apply any end loading to actuator output drive, and ensure the actuator output drive and valve square are concentric to each other.
- c) If possible for optimal setting and to reduce any misalignment between actuator drive and valve square, the unit should be assembled in mid position.
- d) The unit should be assembled in the vertical position as shown in figure 9 with the valve securely held in place.
- e) Apply a low strength anaerobic adhesive to valve fastener screw threads.
- f) Fit actuator assembly as shown in figure 10 to valve taking care to centrally locate ant-backlash coupling onto valve square and loosely tighten valve fasteners.
- g) Apply a low strength anaerobic adhesive to valve square clamp screw threads and torque up screw / screws to value given in table 9.
- h) Now torque up valves fasteners to bolt suppliers recommendations.
- i) Now operate assembly open and closed a few times to check correct function and look for any alignment issues.

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Suitable for use in safe area and hazardous gas/dust atmospheres (ATEX)

Table 10. Spring return actuator anti-backlash couplings

| Actuator Size | Part description | Shaft Diameter | Part Number |
|---------------|-------------------------------|----------------|-------------|
| 05i | Anti-Backlash Coupling (9mm) | 1/2" | GE97906X012 |
| | Anti-Backlash Coupling (11mm) | 5/8" | GE97906X022 |
| 07i | Anti-Backlash Coupling (9mm) | 1/2" | GE97906X032 |
| | Anti-Backlash Coupling (11mm) | 5/8" | GE97906X042 |
| | Anti-Backlash Coupling (14mm) | 3/4" | GE97906X052 |
| | Anti-Backlash Coupling (19mm) | 1" | GE97906X062 |
| 08i | Anti-Backlash Coupling (9mm) | 1/2" | GE97906X072 |
| | Anti-Backlash Coupling (11mm) | 5/8" | GE97906X082 |
| | Anti-Backlash Coupling (14mm) | 3/4" | GE97906X092 |
| | Anti-Backlash Coupling (19mm) | 1" | GE97906X102 |
| | Anti-Backlash Coupling (22mm) | 1-1/4" | GE97906X112 |
| | Anti-Backlash Coupling (27mm) | 1-1/2" | GE97906X122 |
| 09i | Anti-Backlash Coupling (9mm) | 1/2" | GE97906X132 |
| | Anti-Backlash Coupling (11mm) | 5/8" | GE97906X142 |
| | Anti-Backlash Coupling (14mm) | 3/4" | GE97906X152 |
| | Anti-Backlash Coupling (19mm) | 1" | GE97906X162 |
| | Anti-Backlash Coupling (22mm) | 1-1/4" | GE97906X172 |
| | Anti-Backlash Coupling (27mm) | 1-1/2" | GE97906X182 |
| 10i | Anti-Backlash Coupling (9mm) | 1/2" | GE97906X192 |
| | Anti-Backlash Coupling (11mm) | 5/8" | GE97906X202 |
| | Anti-Backlash Coupling (14mm) | 3/4" | GE97906X212 |
| | Anti-Backlash Coupling (19mm) | 1" | GE97906X222 |
| | Anti-Backlash Coupling (22mm) | 1-1/4" | GE97906X232 |
| | Anti-Backlash Coupling (27mm) | 1-1/2" | GE97906X242 |
| 12i | Anti-Backlash Coupling (14mm) | 3/4" | GE97906X252 |
| | Anti-Backlash Coupling (19mm) | 1" | GE97906X262 |
| | Anti-Backlash Coupling (22mm) | 1-1/4" | GE97906X272 |
| | Anti-Backlash Coupling (27mm) | 1-1/2" | GE97906X282 |
| 14i | Anti-Backlash Coupling (14mm) | 3/4" | GE97906X292 |
| | Anti-Backlash Coupling (19mm) | 1" | GE97906X302 |
| | Anti-Backlash Coupling (22mm) | 1-1/4" | GE97906X312 |
| | Anti-Backlash Coupling (27mm) | 1-1/2" | GE97906X322 |
| 15i | Anti-Backlash Coupling (22mm) | 1-1/4" | GE97906X332 |
| | Anti-Backlash Coupling (27mm) | 1-1/2" | GE97906X342 |

- a) Couplings designed to suit Fisher 8580, 8590, V150, V200, V300, V500 and CV500 valves.
b) Value in parentheses is the valve square size.

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Table 11. Double acting actuator solid couplings

| Actuator Size | Part description | Shaft Diameter | Part Number |
|---------------|-----------------------|----------------|-------------|
| 07i | Solid Coupling (9mm) | 1/2" | GE97906X352 |
| | Solid Coupling (11mm) | 5/8" | GE97906X362 |
| 08i | Solid Coupling (9mm) | 1/2" | GE97906X372 |
| | Solid Coupling (11mm) | 5/8" | GE97906X382 |
| | Solid Coupling (14mm) | 3/4" | GE97906X392 |
| | Solid Coupling (19mm) | 1" | GE97906X402 |
| | Solid Coupling (22mm) | 1-1/4" | GE97906X412 |
| 09i | Solid Coupling (14mm) | 3/4" | GE97906X422 |
| | Solid Coupling (19mm) | 1" | GE97906X432 |
| | Solid Coupling (22mm) | 1-1/4" | GE97906X442 |
| 10i | Solid Coupling (14mm) | 3/4" | GE97906X452 |
| | Solid Coupling (19mm) | 1" | GE97906X462 |
| | Solid Coupling (22mm) | 1-1/4" | GE97906X472 |
| | Solid Coupling (27mm) | 1-1/2" | GE97906X482 |
| 12i | Solid Coupling (19mm) | 1" | GE97906X492 |
| | Solid Coupling (22mm) | 1-1/4" | GE97906X502 |
| | Solid Coupling (27mm) | 1-1/2" | GE97906X512 |
| 14i | Solid Coupling (19mm) | 1" | GE97906X522 |
| | Solid Coupling (22mm) | 1-1/4" | GE97906X532 |
| | Solid Coupling (27mm) | 1-1/2" | GE97906X542 |
| 15i | Solid Coupling (22mm) | 1-1/4" | GE97906X552 |
| | Solid Coupling (27mm) | 1-1/2" | GE97906X562 |

- a) Couplings designed to suit Fisher 8580, 8590, V150, V200, V300, V500 and CV500 valves.
b) Value in parentheses is the valve square size.