

INSTALLATION AND MAINTENANCE INSTRUCTIONS DIAPHRAGM ACTUATORS

➤ GENERAL

PNEUCON PDO Actuators (see Fig.1) extend the actuator stem with increasing operating air pressure and retract the stem with decreasing pressure.

PNEUCON PDC Actuators (see Fig.2) retract the actuator stem with increasing operating air pressure and extend the stem with decreasing pressure.

PNEUCON PDR Actuators (see Fig.3) extend the actuator stem with increasing operating air pressure and retract the stem with decreasing pressure.

➤ TO REPLACE DIAPHRAGM AND `O' RINGS (FOR PDC ACTUATORS)

1. Remove the actuator from the valve in the following steps
 - (a) Ensure plug face is not in contact with the seat –(apply air pressure to reverse action actuator.)
 - (b) Remove the stem coupling.
 - (c) Unscrew the locking ring.
 - (d) Lift actuator off valve.
2. Remove the spring cover.
3. Relieve all spring compression by inserting a ½”diameter bar in the spring adjuster holes and rotating it counterclockwise.
4. Remove the diaphragm case screws and nuts and separate the diaphragm cases.(In the PDC Actuators care must be taken to lift the top diaphragm case assembly perfectly straight with a slight rotary movement until the slide is clear of the stem).
5. Unlock the travel stop nuts and screw them off the actuator stem.
6. Lift the diaphragm assembly and the actuator stem clear of the actuator taking care to withdraw the stem perfectly straight to avoid damaging the threads and the `O' rings in the PDC Actuators.
7. To replace the `O' rings, remove the yoke screws and separates the yoke from the diaphragm case or spring assembly.
8. Remove the old `O' rings from the seal-box and replace with new ones.
9. To replace diaphragm – unscrew and remove the diaphragm collar nut.
10. Slide the diaphragm button and the old diaphragm off actuator stem.
11. Slide the new diaphragm (dusted with French Chalk or Talc) over the actuator stem into position on the diaphragm collar.
12. Replace the diaphragm button and lock the assembly together with the collar nut.

➤ ASSEMBLY OF ACTUATOR

1. To reassemble for PDO Actuators (Fig.1) secure the spring tube assembly to the yoke by means of the yoke screws and place the spring in position on the spring carrier. To reassemble for the PDC Actuators (Fig.2) secure the diaphragm case assembly to the yoke by means of the yoke screws, ensuring the air connection is facing in the right direction.
2. Replace the travel tube in its correct position on the actuator stem (see Fig.1 and 2). Slide the actuator stem into position taking care to keep it straight. In the PDC Actuators take care not to damage the 'O' rings – a rotary action whilst sliding the stem into position is helpful – place the spring over the stem on the diaphragm button.
3. In the PDO Actuator bolt the diaphragm case assembly to the spring tube assembly ensuring the air connection faces in the right direction. In the PDC Actuator slide the stem guide in the spring tube assembly over the actuator stem and bolt the two diaphragm cases together.
4. Replace the two travel stop nuts on the actuator stem with pointer disc between them.
5. By rotating the spring adjuster clockwise – apply compression to the spring until the actuator stem starts to move at the required air pressure.
6. With the diaphragm assembly in its lowest position (apply air pressure for the PDO actuators) adjust the travel stop nuts so that the distance between the top nut and the base of the lower travel stop is the rated travel of the actuator or valve (see Fig.1 nameplate) +1/32". Lock the nuts together.
 - (a) Pass the yoke base over the gland bonnet to sit squarely on the bonnet shoulder. Rotate the yoke until the windows face in the required direction and then tighten the locking ring securely.
 - (b) With the plug face in contact with the seat and with the actuator stem in its lowest position (apply air pressure to PDO actuator), press the half of the stem coupling screw against the actuator stem and valve plug stem so that:
 - (I). The ends of the stems are equidistant from the tapped coupling screw hole, and
 - (II). The tapped coupling screw hole is on the same side of the actuator as positioner or other accessories which may require attachment to the coupling screw

NOTE :- It may be necessary to move the plug off its seat by a slight amount in order to mesh the plug stem threads with the lower coupling threads.

- (c) Apply the other half of coupling carefully engaging the threads, then insert the coupling screw tighten it by hand.
- (d) With the actuator stem at its lowest position of the travel slacken of the coupling screw slightly and preventing the coupling from rotating. Unscrew the valve stem from the coupling until the plug is firmly seated.
- (e) Move the plug of the seat by changing the air pressure on the diaphragm then unscrew the plug stem an additional turn out of the coupling to ensure positive seating.
- (f) Tighten the coupling screw securely.
- (g) Seat the valve plug firmly by means of the actuator.
- (h) Adjust the travel indicator scale so that the shut mark is opposite the travel indicator ring.
- (i) Disconnect the air line used for assembly procedure then apply the check nut or attachments (if any) to the coupling screw.

➤ **PDR ACTUATOR MOUNTED ON VARIOUS TYPES OF VALVES, LOURES, DAMPERS, Etc.**

The above instructions have been complied for actuators on control valves of the rising stem type with plugs seating downwards. It will be found that these instructions do also generally apply to actuators mounted on other types Rotary valve. (See Fig .3)

1. DIAPHRAGM REPLACEMENT

- Remove travel indicator and indicator screw. (Part No:-16 & 42)
- Unscrew allenkey bolt of rotary box cover. (Part No:-33)
- Pull off pinion assembly (Pinion + Pinion shaft)
- Unscrew the assembly bolts of rack guide.
- Remove rack from the actuator shaft by rotating the rack anti clock wise.
- Remove the diaphragm case nuts and bolts equally in an alternating pattern. Ensure that all “short” bolting is removed first to separate the casings.
- Remove the diaphragm, diaphragm collar, stem and stem lock nut assembly form the actuator.
- Unscrew the stem lock nut and remove the diaphragm.
- Clean all the internal parts and examine for any damage. Any significantly damaged parts should be replaced.
- Fit the new diaphragm on to the diaphragm collar, stem and stem lock nut assembly and secure the stem lock nut.
- Fit the diaphragm, diaphragm collar, stem and stem lock nut assembly into the actuator.
- Bolt together the diaphragm casings ensuring the bolting is tightened evenly to ensure correct sealing and also prevent damage to casings.

Fig:-1 ASSEMBLY OF DIRECT ACTION

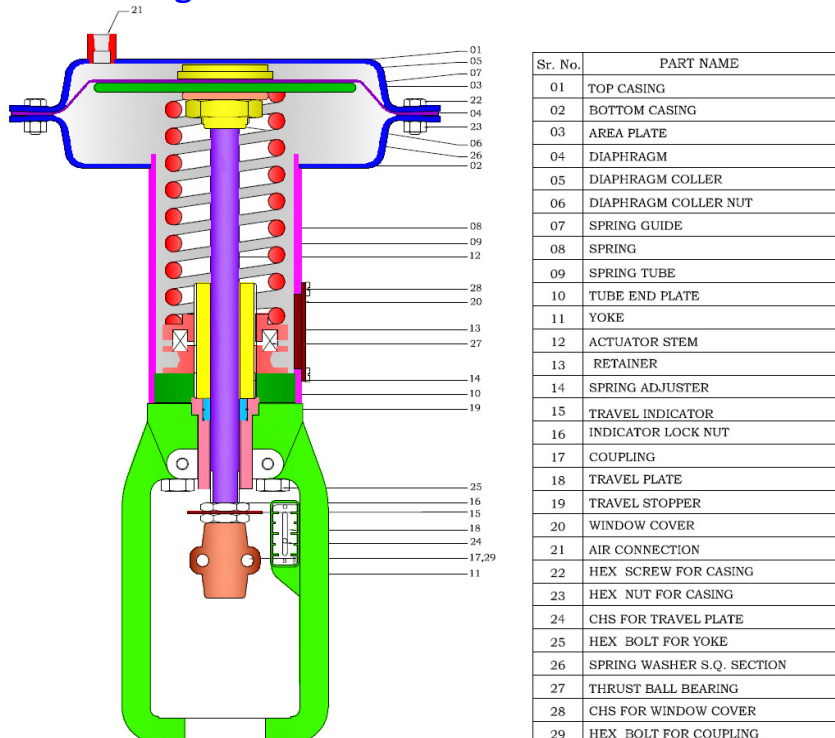
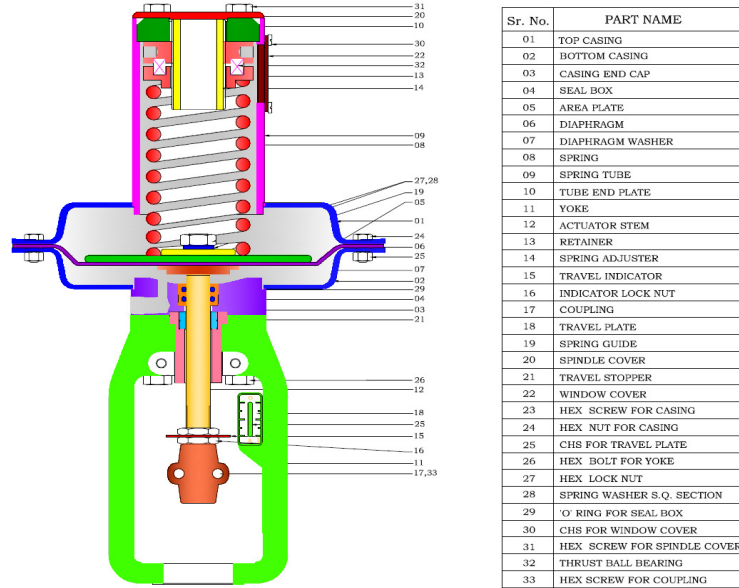
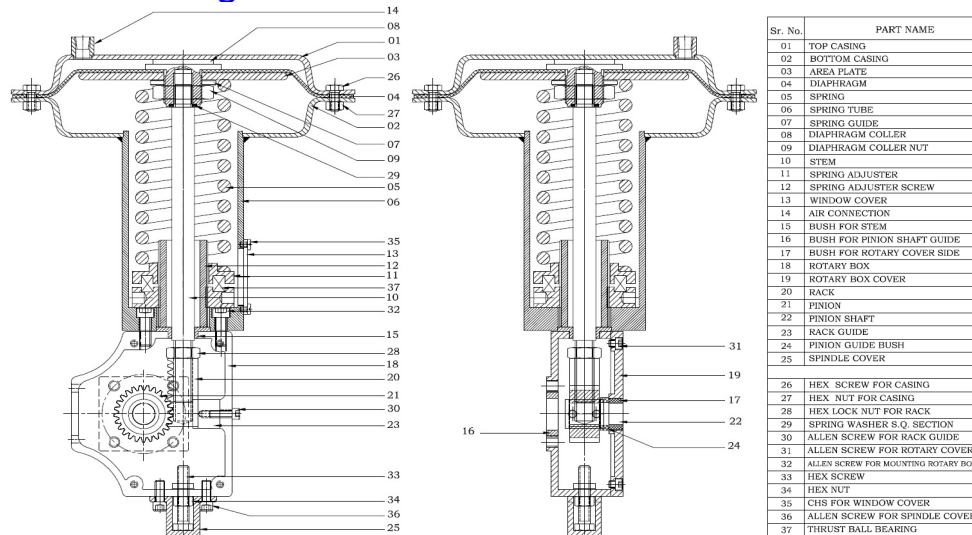


Fig:-2 ASSEMBLY OF REVERSE ACTION

Fig:-3 ASSEMBLY OF SCOTCH ACTUATOR


NOTE :- If you experience difficulty with the installation or operation of the control valve please feel free to contact our customer service representative.

In order to avoid possible injury to personnel or damage to valve parts, INSTRUCTIONS given must be strictly adhered to. Modifying this product, substitution non- factory or inferior parts, or using maintenance procedure other than outlined could drastically affect performance, void product warranties and be hazardous to personnel and equipment.

While ordering spares, please indicate ' Valve Serial No.' appearing on 'Name Plate' fixed on the Actuator. The company's policy is one of the continuous product improvement and the right is reserved to modify the specifications contained herein without notice.


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