



Pneumatic Actuator

Durastroke Series 1150 – 1499

Installation & Maintenance Instructions

INSTALLATION

Installation of Airtech Products Durastroke pneumatic actuator is a simple two-step process. Mounting of the actuator / attachment to load and connection of air line(s). Before starting installation, inspect the actuator and contents of the shipping carton to ensure all required parts are present. Check the following:

- Positioner (if ordered) is firmly secured to the top of the actuator?
- Clevis is present at the end of travel stem?
- The following hardware kit was included:
 1. Five (5) 3/8-16 x 1 1/2" long bolts
 2. Four (4) 3/8" lock washers
 3. One (1) 3/8-16 locking nut

A) Mounting The Actuator:

1. The actuator can be mounted in either a vertical or horizontal position.
2. The actuator is supplied with four (4) 3/8"-16 bolt-holes in the bottom plate for attachment to a mounting plate or bracket.
3. A hole at least 13/16" (but not larger than 1" diameter) must be provided in the center of the actuator mounting bolthole pattern for penetration of the actuator travel stem and clevis.
4. Attach the actuator to the mounting bracket with the four supplied 3/8"-16 x 1 1/2" bolts and lock washers. In a rotating pattern, tighten each to 16 Ft-Lbs torque.
5. **DO NOT ATTACH THE ACTUATOR TO THE TORQUE TUBE LEVER ARM YET.**

B) Air Line Connection(s):

Actuator with Positioner (Series 1150 – 1499):

1. Blow out all piping before connections are made to prevent dirt, chips, etc from entering the positioner. Ensure all air entering the positioner and actuator is clean, dry and oil free. Failure to do so increases the possibility of operational problems and/or deviation from specified performance.
2. Locate the two 1/4" NPT ports (120° apart) on the positioner. One port is labeled "Supply" and the other is labeled "Instrument".
3. Install a 1/4" threaded adapter in each of the positioner ports. Use Teflon thread tape or a non-hardening sealant (used sparingly) on threads of male connector.
4. Connect 1/4" or 3/8" air line to supply port. Air pressure in this line should be set to 50 psig. Do not exceed 60 psig inlet pressure to the actuator.
5. Connect 1/4" or 3/8" air line to instrument port. Total air pressure in this line must be regulated at 3-15 psig and would generally originate from an I/P transducer or other source capable of providing a proportional signal.

C) Connecting The Linkage:

1. In most cases**, the torque tube lever arm will be preset at the factory to drive the louver either “Fail Open” or “Fail Closed” upon loss of air and / or actuator retraction. As a result, connection of the linkage will be a simple matter of manually situating the louver blades and actuator stem to the correct position and then attaching the control link to the clevis (at the base of the actuator stem) and finally to the torque tube lever arm. To determine how the actuator and louver blades should be positioned, please note the following instructions:
 - a. **“Fail Open” Louvers**
 - Stroke actuator to fully extended and manually set louver to fully closed position before connecting louver lever arm & link to actuator clevis.
 - b. **“Fail Closed” Louvers**
 - Ensure actuator is completely retracted and manually set louvers to fully closed position before connecting louver lever arm & link to actuator clevis.
2. When all sections are installed and connected, stroke the actuator several times to ensure it moves the entire louver freely without binding or interference. On very large louvers with multiple sections, inspect to confirm all the sections are fully open and completely closing in unison. Some adjustment of end links or torque tube clamps may be required to ensure all louver blades open and shut consistently down the entire length or across the entire width of the louver.
3. Check all attachment fasteners to ensure all are properly tightened and completely engaged to the louver flange.
4. If applicable, check all end link connections and torque tube couplers to ensure they are properly tightened and fasteners are completely engaged.

****For new orders only when the actuator is purchased in conjunction w/louvers.** Please contact the factory for specific instructions on retrofit or other applications that did not see both the actuator and louver originate as simultaneous/concurrent Airtech orders

MAINTENANCE

Annual Inspection:

1. Inspect and verify all mechanical connections
 - Actuator bolting to mounting plate or bracket
 - Check mounting plate or bracket rigidity
 - Confirm actuator to mounting bracket bolt tightness
 - Clevis general condition
 - Visually inspect overall clevis condition
 - Confirm fastener between clevis and actuator link is sound
 - Link to torque tube lever arm
 - Visually inspect overall link condition
 - Confirm fastener between link and torque tube lever arm is sound
 - Positioner attachment to actuator body
 - Visually inspect positioner for visible cracks or damage
 - Confirm positioner is securely fastened to actuator body

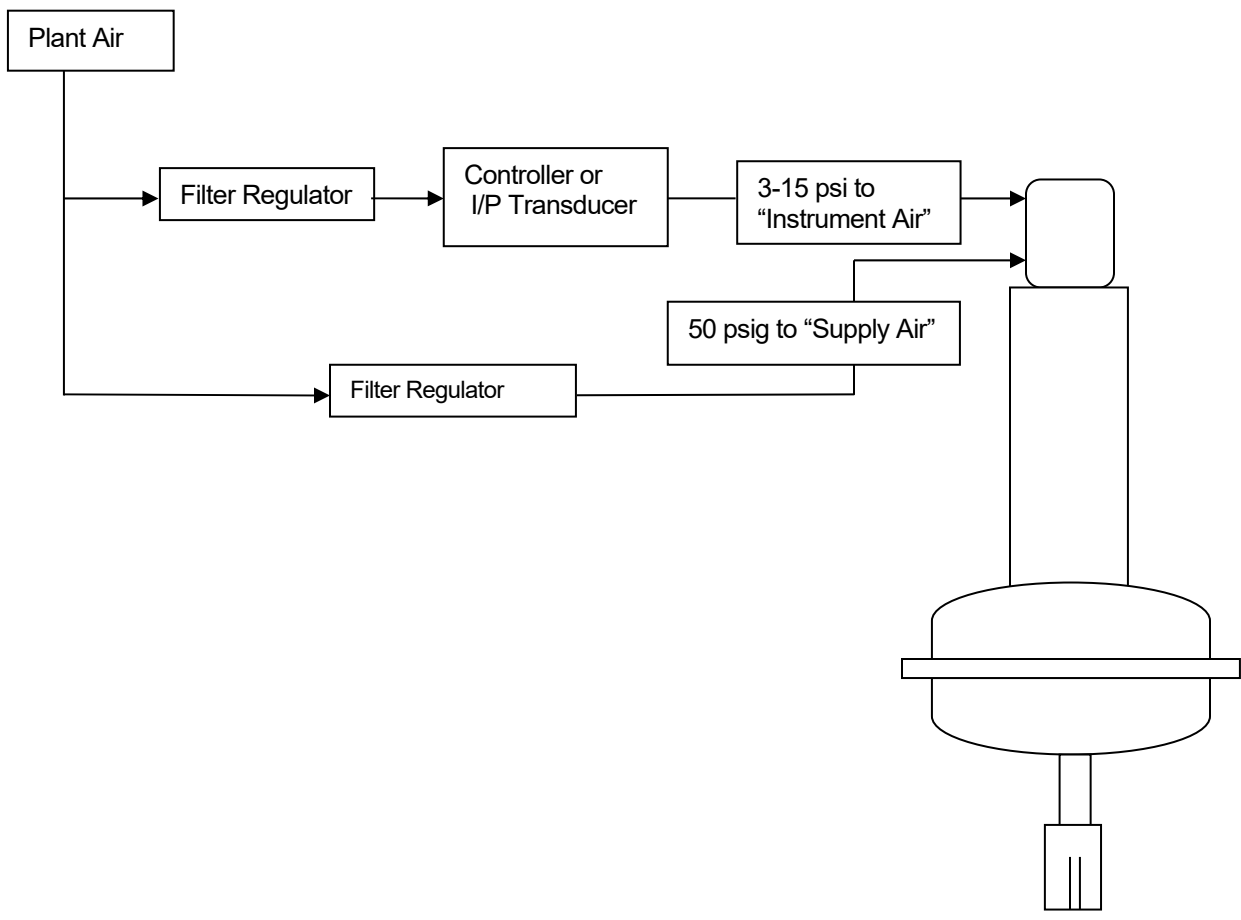
2. Inspect and verify all pneumatic connections
 - Instrument air
 - Supply line to threaded adapter
 - Adapter to positioner
 - Supply air
 - Supply line to threaded adapter
 - Adapter to positioner
 - Diaphragm
 - Confirm 50 psig air at Supply Port
 - Listen for leaks at stem
 - Positioner
 - Confirm 3 – 15 psig at instrument air port
 - Confirm louver operation in response to proportioned air

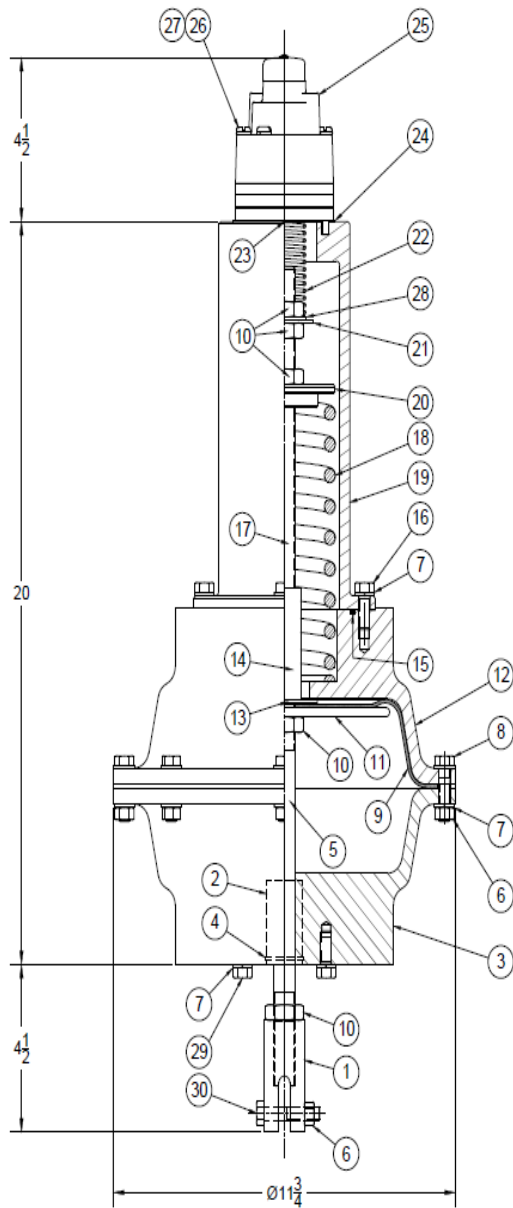
Repair Kit & Recommended Spare Parts List

The following items are recommended as a single actuator repair kit. It is suggested that one repair kit be kept on hand for each 3 actuators on site and in service. Please note a repair & maintenance kit is not offered for the positioner because of the complexity of that particular item. Best practice is simply to replace a non-operational positioner. Item numbers noted below refer to Airtech Products, Inc. drawing, "Durastroke 1100 – 1149 Actuator".

| <u>Item Number</u> | <u>Description</u> |
|---------------------------|---------------------------|
| 4 | Snap Ring |
| 9 (XT) | Diaphragm |
| 13 | Diaphragm Washer |
| 15 (XT) | O-Ring |
| 18 | Main Spring |
| 22 | Positioner Spring |
| 23/24/25 (XT) | Kit, Positioner, Extreme |

Schematic Diagram of Air Lines and Installation





| ITEM | QTY. | DESCRIPTION |
|------|------|--|
| 1 | 1 | CLEVIS |
| 2 | 1 | GUIDE BUSHING **SEE NOTE |
| 3 | 1 | LOWER HOUSING |
| 4 | 1 | SNAP RING **SEE NOTE |
| 5 | 1 | STEM |
| 6 | 9 | 3/8" NYLOCK NUT |
| 7 | 16 | LOCKWASHER |
| 8 | 12 | 3/8"-16 X 1-1/2" HOUSING SCREW |
| 9 | 1 | EPDM DIAPHRAGM (LOW TEMP) |
| 10 | 5 | 3/4"-16 JAMB NUT |
| 11 | 1 | DIAPHRAGM PLATE |
| 12 | 1 | UPPER HOUSING |
| 13 | 1 | DIAPHRAGM WASHER |
| 14 | 1 | CONNECTOR NUT |
| 15 | 1 | O-RING |
| 16 | 4 | 3/8"-16 X 1-1/4" SPRING COVER SCREW |
| 17 | 1 | SPRING ROD |
| 18 | 1 | MAIN SPRING |
| 19 | 1 | SPRING COVER |
| 20 | 1 | SPRING WASHER |
| 21 | 1 | WASHER |
| 22 | 1 | POSITIONER SPRING |
| 23 | 1 | POSITIONER WASHER |
| 24 | 1 | GASKET |
| 25 | 1 | SIEMENS 73N12F (M23) POSITIONER (-60F TO 160F) |
| 26 | 6 | 1/4"-20 X 3" POSITIONER SCREW |
| 27 | 6 | 1/4" LOCKWASHER |
| 28 | 1 | 3/4" SAE FLAT WASHER |
| 29 | 4 | 3/8"-16 X 1" MOUNTING SCREW |
| 30 | 1 | 3/8"-16 X 2" LINK BOLT |

** GUIDE BUSHING WAS ELIMINATED ON ALL UNITS PRODUCED AFTER 15 JULY 2017

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|---|------------------------|
| Airtech <small>PRODUCTS, INC. 1840 N. 81ST W. AVE., TULSA, OK 74127</small> | |
| Dwg. Name: DURASTROKE 1150 ACTUATOR | |
| Date: 3/27/20 | By: PR |
| Customer: STANDARDS | File #: D1150 PARTS |