

Installation / Operation Model 700



A) Caution

Electrical shock and/or explosion hazard. To avoid serious personal injury, death, or property damage due to electrical shock and/or ignition of hazardous atmospheres, **turn off all power to the actuator before removing the actuator cover.**

B) Inspection

Because many models look alike, verify the actuator's nameplate to ensure correct model number, torque, operating speed, voltage, and enclosure type before installation or use.

C) Storage

The actuator must be stored in a clean, dry, temperature controlled area. The unit shall be stored with the cover installed and with the conduit openings sealed. Storage must be off the floor, covered with an unsealed dust protector that will allow side and bottom ventilation. Care must be taken to guard the actuator from condensation in extreme temperature variations. If Actuators sit for an extended period of time it is recommended that the heaters be hooked up.

D) Moisture Warning

Series 41 actuators are rated NEMA 4. The only way moisture can enter the actuator is through the conduit entrance. Extra precaution should be used to stop moisture from entering the actuator. Seal tight fittings as well as drip legs should be installed to protect the actuator against condensation. If moisture migrates up through the conduit entrance and damages components, the parts are not covered under warranty.

E) Wiring Instructions

Caution: Operation of each actuator must be through an individual single pole switch to isolate the unused motor winding. Parallel power circuits will not isolate noise in the line and the actuators will operate sporadically even when they are in the "Off" position..

- Each actuator is provided with the latest revision wiring diagram. Should the diagram get separated from the valve assembly please call Valve Teck Inc. for another copy.
- Route all wiring through the actuator's conduit connections and wire to the provided diagram.
- All wiring, conduit connections, and materials should be made in accordance with local and national codes. securely tighten all screws and check all other connections.
- Modulating actuators using **Shielded Cable** can use **one** common conduit entrance.
- Modulating actuators using **Non-Shielded Cable** must use **two** separate conduit entrances, to separate power and signal.

F) Maintenance

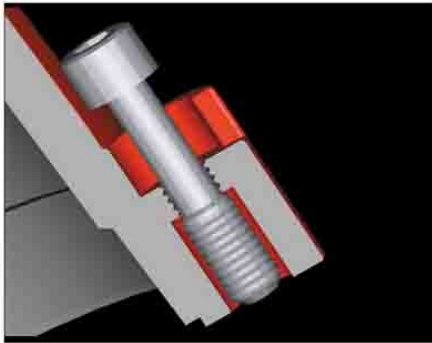
Each electric actuator is a totally enclosed unit with a permanently lubricated gear train. Once installed, formal maintenance should not be required. However, periodic preventative maintenance will extend the operating life of the actuator. Pm checks include:

- Ensure that alignment relative to the load on the actuator is proper. Mis-alignment is a major cause of premature actuator failure.
- Ensure all wiring is insulated, connected, and terminated properly.
- Ensure all screws are present and tight, including set screws for the cams.
- Ensure cleanliness of the internal electrical devices.
- Ensure conduit connections are installed properly and are dry. No signs of condensation or water infiltration should be present inside the conduit or conduit ports on the actuator.
- Check internal devices for condensation or corrosion.
- Upon installation of cover, insure proper seal and verify that o-ring is not pinched between the flange.
- Verify declutch mechanism and manual override operates properly.
- Inspect label to verify model number, serial number, and electrical ratings are readable.
- Verify operator is operating in the proper quadrant.
- During operation, perform a visual inspection during an open and close cycle. Also, listen for any abnormal noises or sounds, try and operate once a week.

Under normal conditions, this inspection is recommended at six month intervals. But where conditions are more severe, more frequent inspection may be advisable.

G) Grounding Instructions for Ring Terminal on Actuator Case to Earth Ground

- Loosen the screw (M6) and take out the ring terminal.
- Using a standard terminal crimping tool, put the wire into the hole terminal and crimp tightly.
- Acceptable wire gauge is AWG12-AWG14.
- Ground the wire to a ground stake according to local regulations for EARTH GROUNDING.



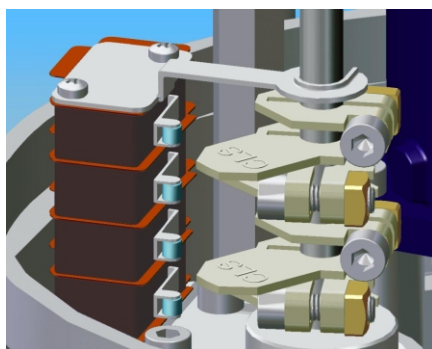
1.0 Cover Removal

- Shut off all power to the actuator.
- Loosen the captive bolts on the cover.
- Carefully lift the cover up and off.



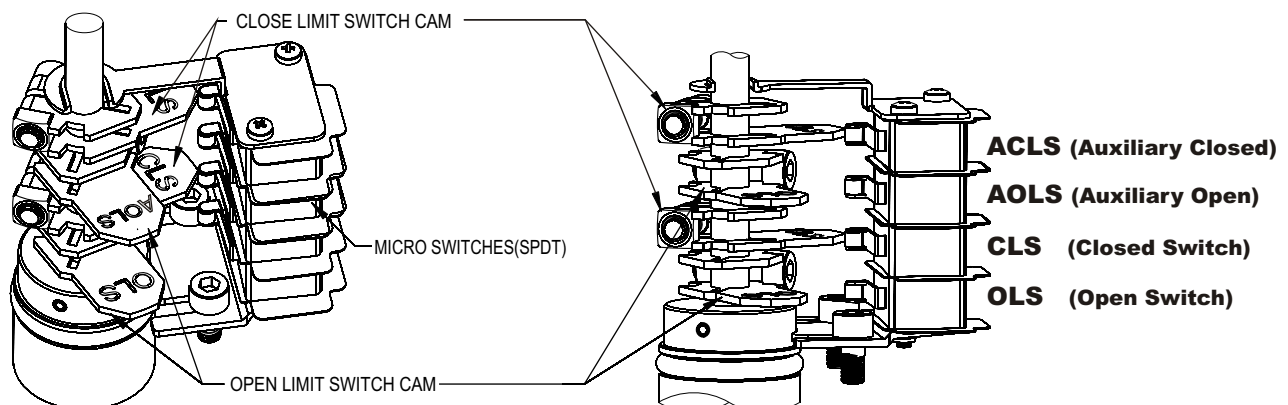
2.0 Electrical Connection

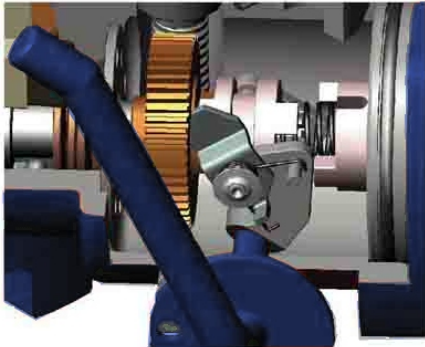
- Check electrical specifications like power and wiring ensuring they are correct.
- Make sure one relay operates one actuator only, relays can not operate two or more actuators simultaneously.
- Make all connections in accordance with the wiring diagram that is supplied inside of each actuator.
- Please make sure to seal the entries by using rubber or metallic packing after wiring, so that water may not come in.
- **On/Off**
Land all connections directly to the actuator terminal strip. Make sure to supply electric power to the heater and thermostat to ensure protection against moisture.
- **Modulating**
Land all wires directly to the servo board on the J2 side. The heater has been internally jumpered so it will function properly when power is applied. (See pages 19-22 for modulating instructions)



3.0 Limit Switch Setting

- Pull the lever over to manual operation, (Marked Hand) Turn the handwheel to move the actuator to the closed or open position.
- Loosen the bolts on the cam with an L-Wrench, adjust the CLS or OLS cam clockwise or counterclockwise to set the open or closed limit switch.
- Rotate the proper cam to the position which toggles the limit switch.
- Tighten the set screw on the cam.
- Operate the actuator to verify proper cam setting.
- Please see diagram below.



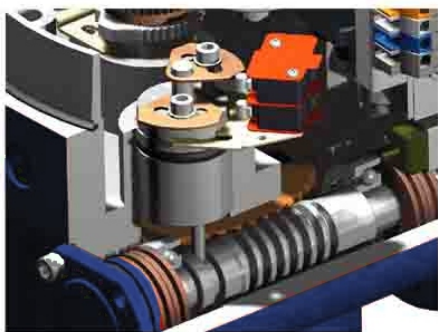


Actuator shown in Auto mode

4.0 Manual operation

Caution: Do not use a leverage device on this actuator as it could damage the actuator. Cover should always be installed when manually overriding the actuator.

- Pull over the lever towards hand wheel until lever stands perpendicular.
- If the lever does not stand perpendicular, pull it again while turning handwheel slowly.
- There is a casting mark to indicate rotating direction on handwheel.
- Clockwise is close direction and counter clockwise is open direction.
- There is no need to position the lever back to original position for electrical operation, once power is applied the lever automatically returns to its original position by an internal clutch mechanism.

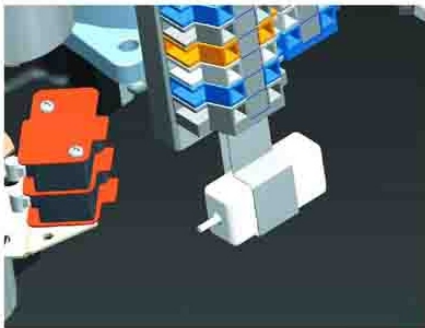


5.0 Torque Switches

The torque switches are set by the factory before delivery and therefore there is no need to set the switches again.

- To test the switch push the lever of the closed switch with a screw driver until it sounds "Clicks" then the actuator should stop immediately. If the actuator stops switches are functioning properly. The open switches can be checked the same as above.

Caution: Switches should not be re-set in the field!!!
Actuator warranty is void if switches are reset again.



6.0 Heater and Thermostat

The space heater is installed in every actuator to prevent damage caused by condensation inside the actuator. The heater is equipped with a thermostat to prevent overheating.

- **On/Off actuators** need to be wired to supply power to the heater and thermostat.
- **Modulating actuators** are pre-jumpered so when power is hooked up to the actuator the heater and thermostat will function properly.



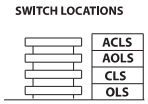
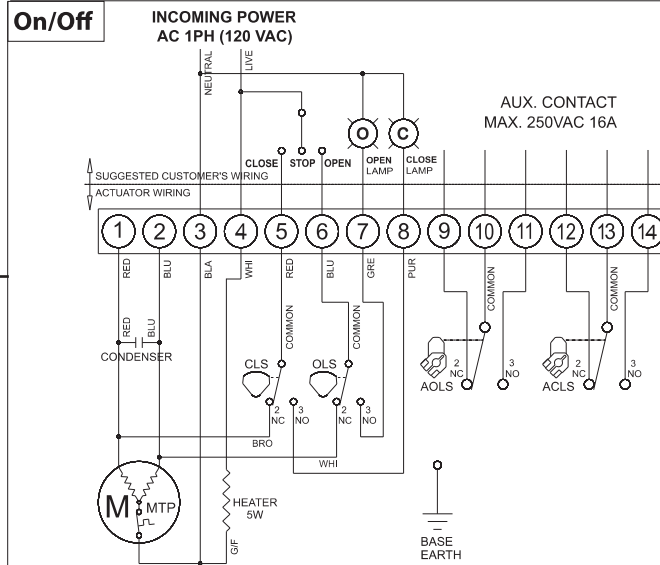
7.0 Indicator Setting

- Move the actuator to the full closed position, then un-tighten the screw that holds the indicator to the stem. Turn the indicator by hand until the orientation of the indicator is aligned to the figure of the window. Once the correct orientation is achieved then tighten down on the screw.
(Be careful not to be injured by the cutting edge of the indicator or the electricity if the power is on)

Model 700 Wiring Diagrams

TYPICAL 120 VAC WIRING DIAGRAM.

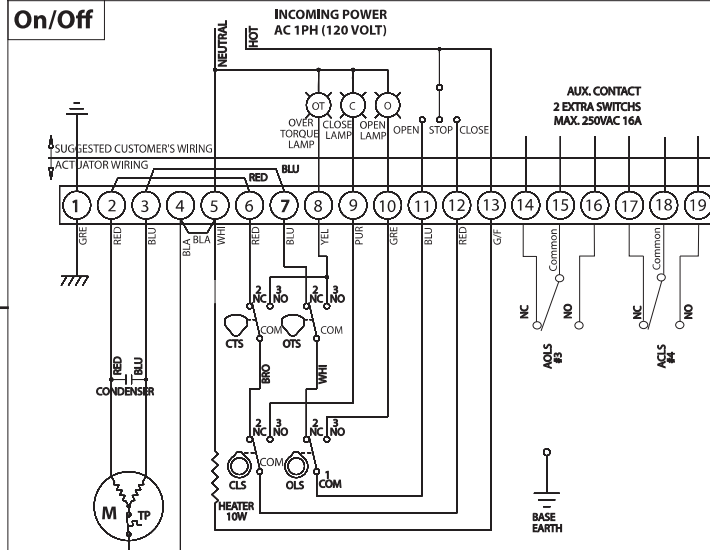
MODEL 700-00-04



- NOTES:**
1. Field wiring is shown for reference only and is not supplied with the actuator.
 2. Always verify specific actuator wiring to specification before installation.
 3. Rotation as viewed from above actuator.
 4. Wiring is shown with actuator in full counterclockwise (CCW) position.
 5. All grounds must be isolated from each other in the customers equipment.
 6. Each actuator must be powered through its own individual switch or relay contact to prevent back feed.

On/Off
DRAWING NO.
WD-700-00

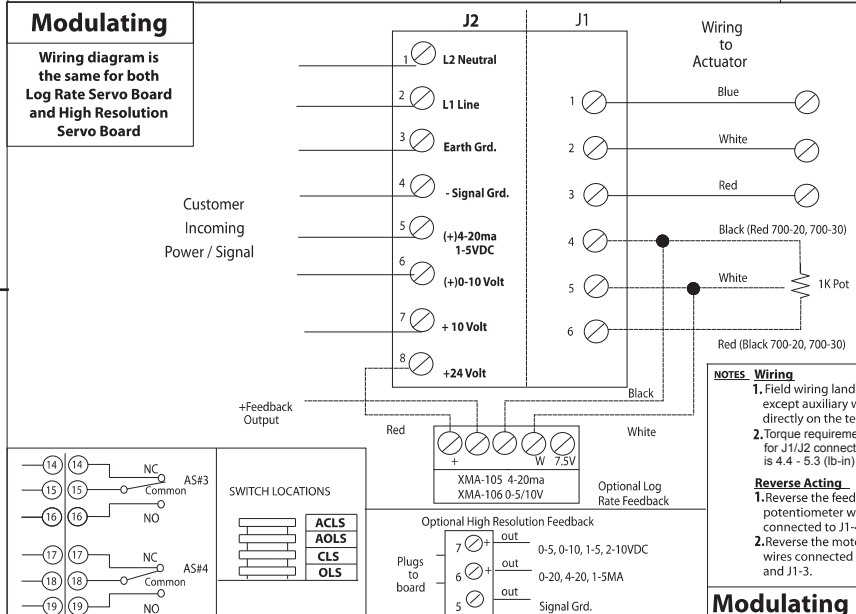
MODEL 700-01-04 through 700-30-04



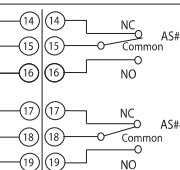
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On/Off
DRAWING NO.
WD-700-A

MODEL 700-01-04 through 700-30-04



Modulating
Wiring diagram is the same for both Log Rate Servo Board and High Resolution Servo Board



- NOTES: Wiring**
1. Field wiring lands on J2, except auxiliary wiring lands directly on the terminal strip.
 2. Torque requirements for J1/J2 connectors is 4.4 - 5.3 (lb-in)
- Reverse Acting**
1. Reverse the feedback potentiometer wires connected to J1-4 and J1-6.
 2. Reverse the motor output wires connected to J1-1 and J1-3.

Modulating
DRAWING NO.
WD-700-PK