

Series 10 Actuator



Installation, Operation and Maintenance Manual



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Series 10 Electric Actuator Introduction

Description

The Series 10 electric actuators feature a reversing, capacitor run squirrel caged induction motor, with a permanently lubricated gear train, and hardened gears. These actuators are equipped with integral thermal overload protection (AC models) with automatic reset, independently adjustable travel limit switches, auxiliary switches (synchronized with travel limit switches), torque switches, heater, lockable declutchable manual override, visual position indication, fully anodized enclosure with thermally bonded powder coat finish, stainless steel trim, ISO bolt circle, and 2 (two) 3/4" NPT conduit entries.

Standard models are offered in 115 VAC, feature a combination enclosure of Nema-4X & 6, and provide up to 10,440 in-lbs. of output torque.

Various options are available such as operating voltages, positioners, transmitters, feedback potentiometers, etc.

CAUTION: Actuator MUST NOT be lifted or carried by the handwheel.

Electrical Requirement

CAUTION: Proper voltage must be supplied to actuator or damage will result.



CAUTION: If 115vac & 220vac models are PLC driven, output contacts of PLC should be rated at a minimum of 1.5 times required input voltage of actuator

NOTE: To conform to various electrical codes, a **green grounding lug** is a standard feature and located on the terminal strip inside of the enclosure.

Terminal Strip Wiring: 75° C Copper Supply Wires up to #14 AWG, wired as per the attached diagrams or the wiring diagram located inside of actuator cover. Control Wiring shall be insulated with conductors rated 105° C, 300V minimum.

Model	Torque (in/lbs)	120/1 Vac		230/1 Vac		380/3 Vac		460/3 Vac		24 Vdc		Cycle time Per 90 degrees (Seconds)	Weight
		Amp Draw	Duty Cycle	Amp Draw	Duty Cycle	Amp Draw	Duty Cycle	Amp Draw	Duty Cycle	Amp Draw	Duty Cycle		
10-015	1320	1.65	70	0.88	70	0.31	70	0.3	70	2.2	70	21	37
10-020	1740	1.67	70	0.89	70	0.31	70	0.3	70	2.5	70	21	37
10-030	2580	1.85	70	0.92	70	0.35	70	0.34	70	2.9	70	26	49
10-050	4320	3.6	70	1.55	70	0.59	70	0.58	70	N/A	N/A	26	51
10-060	5220	3.65	70	1.6	70	0.6	70	0.59	70	N/A	N/A	26	51
10-080	6960	4.1	70	2.15	70	0.85	70	0.79	70	N/A	N/A	31	64
10-120	10,440	4.2	70	2.35	70	0.87	70	0.81	70	N/A	N/A	31	64
10-200	17,400	4.1	70	2.15	70	0.85	70	0.79	70	N/A	N/A	93	166
10-300	26,040	4.2	70	2.35	70	0.87	70	0.81	70	N/A	N/A	93	166

Running current shown

Installation

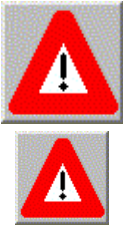
Electrical

1. To gain access to terminal strip it is necessary to remove the actuator cover by loosening the four screws with a hex key, and lifting off cover.
2. Make electrical connections to terminal strip as shown on wiring schematic provided with actuator (per various electrical codes there is a green grounding lug on the actuator exterior). Terminals are suitable for up to #14 AWG wire. All units are completely calibrated prior to shipment, and no internal adjustments should be required.
3. Install 3/4" NPT conduit fitting(s) to actuator base.

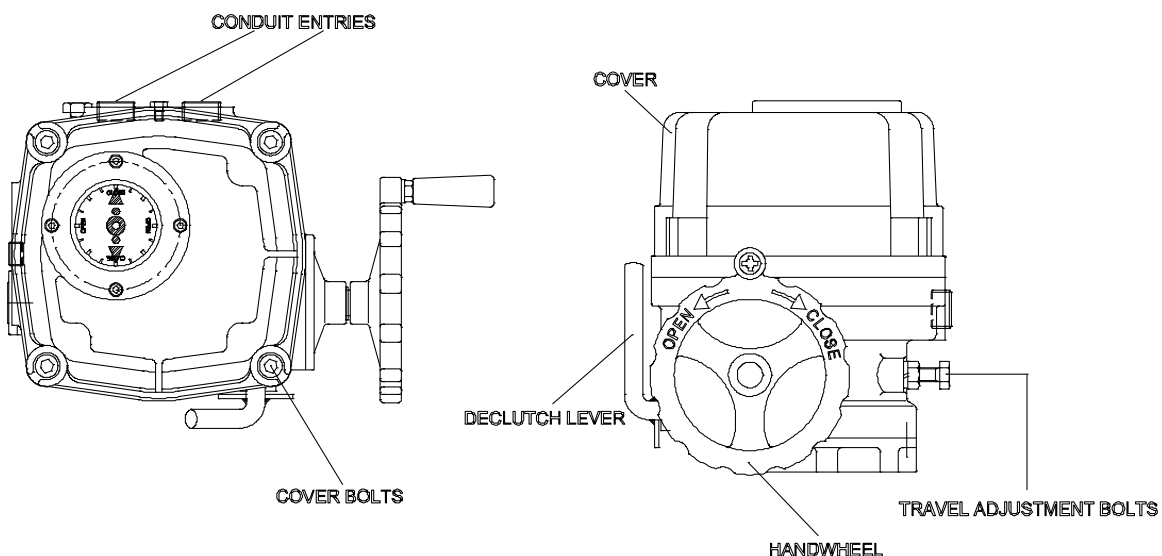
Note: Proper conduit fitting must be used to maintain enclosure rating

NOTE: We recommend sealing conduit openings on units installed outdoors or exposed to large temperature swings (15°F or more).

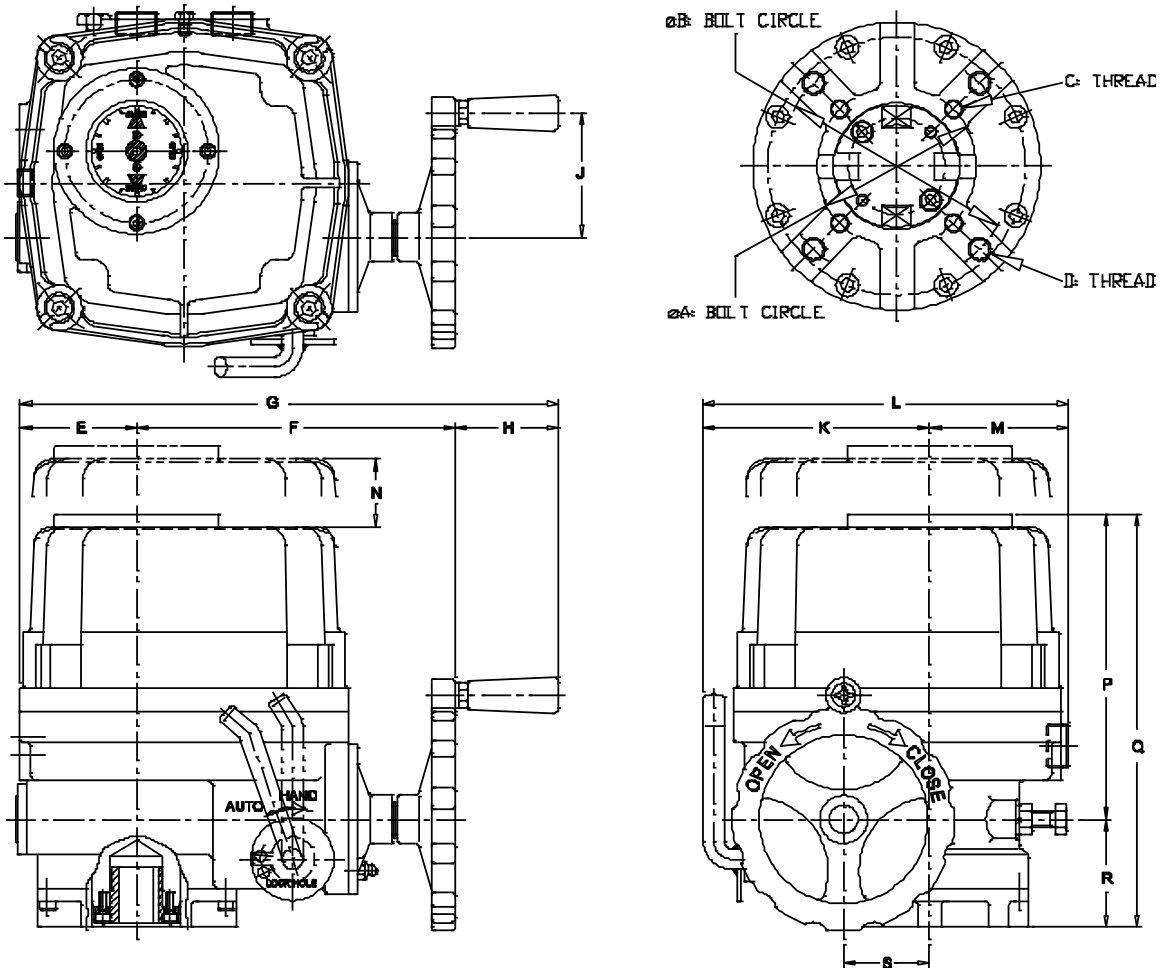
4. Replace actuator cover, and install 4 screws and tighten securely using a hex key. Unit is now ready for operation.



CAUTION: If mounted unit is installed other than straight up, the actuator should be supported independently to prevent side loading and loosening up of fasteners.



Actuator Mounting Dimensions



Model	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S
10-15	2.76	4.02	M8 X 12 DEEP	M10 X 15 DEEP	2.87	7.87	13.31	2.56	3.07	5.59	9.02	3.43	6.3	7.56	10.24	2.68	2.13
10-20	2.76	4.02	M8 X 12 DEEP	M10 X 15 DEEP	2.87	7.87	13.31	2.56	3.07	5.59	9.02	3.43	6.3	7.56	10.24	2.68	2.13
10-30	4.02	4.92	M10 X 15 DEEP	M12 X 18 DEEP	3.23	7.87	14.46	2.56	3.07	6.3	10.2	3.9	7.09	8.7	11.42	2.72	2.56
10-50	4.02	4.92	M10 X 15 DEEP	M12 X 18 DEEP	3.23	8.7	14.49	2.56	3.07	6.3	10.2	3.9	7.09	8.7	11.42	2.72	2.56
10-60	4.02	4.92	M10 X 15 DEEP	M12 X 18 DEEP	3.23	8.7	14.49	2.56	3.07	6.3	10.2	3.9	7.09	8.7	11.42	2.72	2.56
10-80	4.92	5.51	M12 X 18 DEEP	M16 X 25 DEEP	4.06	9.53	16.14	2.56	4.33	7.32	11.69	4.37	8.27	9.49	12.4	2.91	3.07
10-120	4.92	5.51	M12 X 18 DEEP	M16 X 25 DEEP	4.06	9.53	16.14	2.56	4.33	7.32	11.69	4.37	8.27	9.49	12.4	2.91	3.07

Operation

Manual Override Operation

Pull the manual declutch lever towards the handwheel until it remains in position. Rotate the handwheel either clockwise (to close) or counter-clockwise (to open), until the desired position is reached. Manual declutch lever has a lockout provision.

CAUTION: The manual override should only be used when there is no power applied to actuator. When power is restored the actuator will automatically resume normal operation.

Mechanical Travel Stop

Mechanical travel stops are to prevent over travel when using the declutchable manual override.

Loosen both lock nuts, and back out both adjustment bolts. Cycle actuator to full close position, then screw in adjustment bolt until it seats. Back adjustment bolt out ½ turn, and tighten lock nut. Same procedure is used for open position.

Do NOT set actuator position switches to drive into the mechanical stops!

Setting Limit Switches



Disconnect power!

Open Travel Limit Switch

Using declutchable manual override, move the valve into a full open position. Then loosen the cam adjustment screw on bottom cam and rotate cam (CCW) into limit switch arm until a click is heard, this designates the switch circuit has opened and defines a full open position. Tighten cam adjustment screw.

Close Travel Limit Switch (Bottom Switch Part #25):

Using declutchable manual override, move the valve to a full closed position. Then loosen cam adjustment screw on top cam and rotate cam (CW) into limit switch arm until a click is heard, this designates the switch circuit has opened and defines a full closed position. Tighten cam adjustment screw.

Torque Switch Adjustment

The torque switches are factory adjusted to protect valve and actuator from over torque. Adjustment is not necessary.

Series 10 Options Codes for Serial # Tags

M2	2 extra limit switches
P	Feedback potentiometer
HT	Heater and Thermostat
C1	4-20 mA Positioner
CO	Center off
CLC	Cycle length control
2WC	2-wire control
C3	4-20mA Output Transducer

Example 1: 10-15M2HTPWJ

Feedback potentiometer installed (M2 & HT are standard).

Example 2: 10-15M2HTC1WJ

4-20mA positioner installed (M2 & HT are standard).

Maintenance

Disconnect power!



NEVER REMOVE ACTUATOR COVER WHILE CIRCUITS ARE LIVE!

CAUTION: It is imperative for reducing the chance of electrical shock, and to prevent ignition of hazardous atmospheres that you

Disconnect power
before any maintenance or repairs are performed.

Series 10 actuators are virtually maintenance free. We do however, recommend that periodic checks are made to ensure that all fasteners are tight and properly torqued to extend the life of the actuator and valve.

Series 10 actuators are manufactured with factory lubricated grease in the gear case and gearbox. In most cases, this lubricant should never have to be replenished, however if deemed necessary, we recommend using a moly EP grease.

Troubleshooting

Q: *What if there is no output, but the motor runs?*

A: Manual override possibly engaged.

When the manual override is engaged, the motor will run, but no output will be observed until the manual override re-engages with the output shaft.

A: Valve stem broken. When the valve stem is broken, there will not be a change in fluid movement, making it seem as if the actuator has no output..

Q: *What if valve does not cycle?*

A: No power source to actuator. Check for power.

A: Power source disconnected. Check for broken wire, loose connection or no connection as per appropriate wiring diagram.

A: Low or incorrect power source. Check for proper voltage.

Q: *What if there is water and/or moisture inside of the unit?*

A: Conduit fitting installed improperly. Re-install correctly.

A: Cover/base seal damaged. Replace damaged seal(s).

Q: *What if thermal overload frequently cuts out motor?*

A: Frequency of operation exceeds duty cycle rating. Check cycling period.

Q: *What if motor hums and no output is observed?*

A: Unit wired incorrectly (simultaneously powering open and closed). Check wiring as per appropriate wiring diagram.

A: Capacitor worn. Replace.

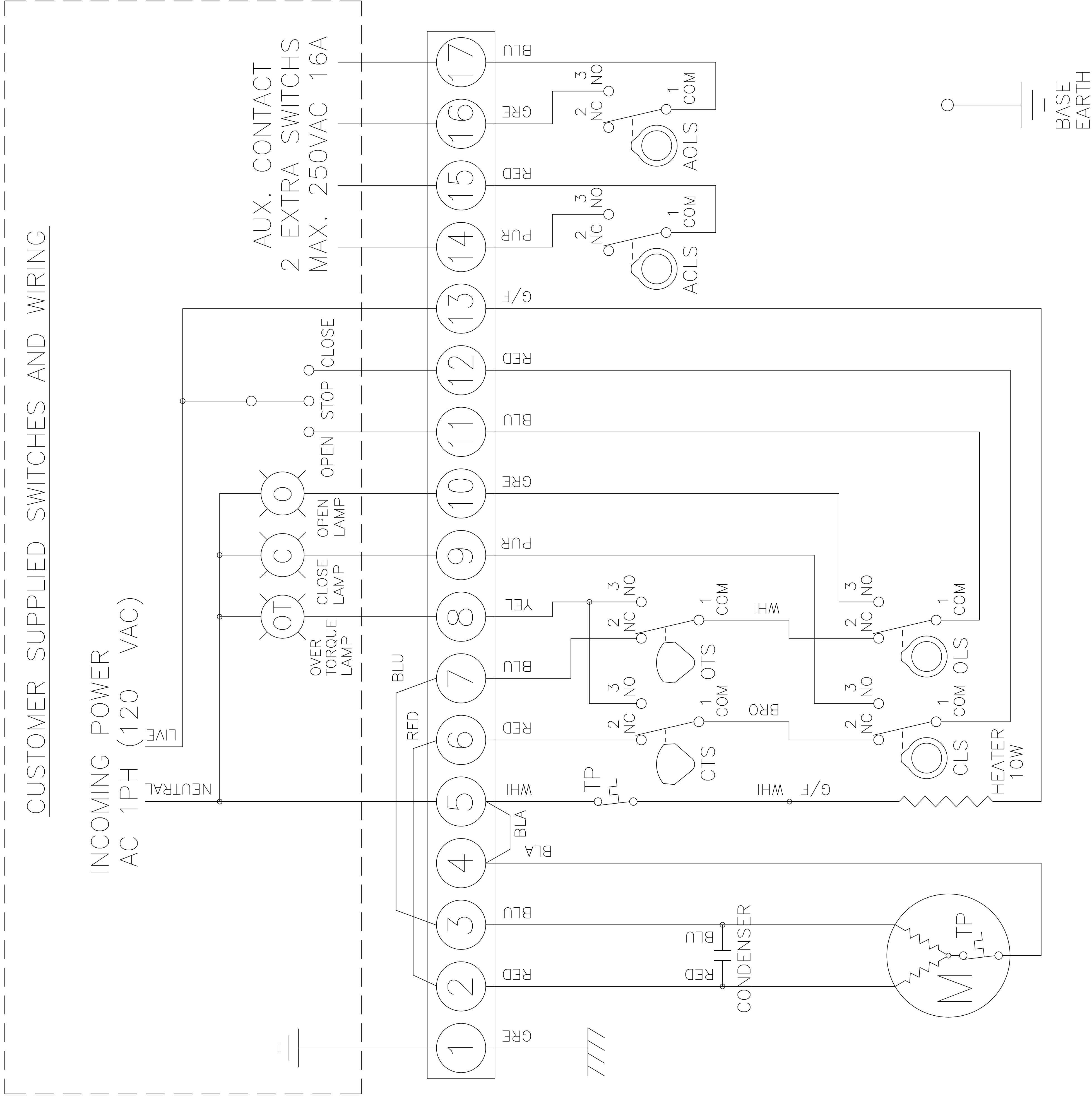
Q: *What if actuator “over-shoots” limit switches without stopping?*

A: Actuator wired in parallel with each other. Please note that each actuator requires its own set of switch contacts.

Attachments:

3 drawings: M00EL5059, M00EL5060, M00SS5238

REV	DATE	DESCRIPTION	BY	APP'D
A	10/17/11	FIRST ISSUE	JH	KB
B	3/15/13	ADJUST AUX SWITCH WIRING	JH	KB



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DIMENSIONS ARE IN INCHES					
MACHINING					
TOLERANCES:					
2 PL DECIMALS ± .01					
3 PL DECIMALS ± .005					
ANGULAR ± 1/2°					
FRACTIONAL ± 1/64					
FABRICATION					
TOLERANCES:					
1/2" - 8" ± 1/4					
10" AND UP ± 1/2					
ANGULAR ± 10°					
MATERIAL:		PRODUCT:		SCALE 1:8	
FINISH:		W/D#/C/O#		SHEET 1 OF 1	
125μ"					

