

Building Connections That Last™



Series B

Electric Actuator Manual



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1. Caution

Electrical Shock Hazard

To avoid serious personal injury, property damage or death, turn off all power to the actuator before removing the cover.

Before installation or use, verify the nameplate information to insure the correct model number, torque, voltage and enclosure type.

Be sure to completely review the actuator manual prior to operation.

Final limit switch adjustment must be done after mounting the actuator to the valve. Incorrect adjustment may cause actuator or valve failure.

Over torque switches are factory set. Tampering with the over torque switch settings may damage the actuator and will void the warranty.

Actuator MUST be properly grounded. Use the grounding lugs provided on the inside or outside of the actuator body.

To minimize the possible damage caused by condensation, be sure to energize the heater and seal the inside of the conduit entries after wires are run.

Care should be taken when wiring 3-phase actuators. Confirm proper rotation and limit switch shutoff function during the initial operation. If the actuator rotates in the reverse direction, then the phasing needs to be corrected by switching two of the 3-phase wires on the terminal block.

Explosion-proof products must be used when the actuator installation is located in a hazardous area.

2. Storage

The actuator must be stored in a clean, dry, temperature controlled location, off the floor and covered.

The actuator shall be stored with the cover installed and all conduit openings sealed.

Care must be taken to protect the actuator from condensation in extreme temperature variations.

Heaters should be energized as soon as actuators are installed.

Improper storage of the actuator will VOID WARRANTY.

Storage Location	Indoor
Storage Temperature	13°C ~ 18°C (55°F ~ 65°F)

3. Actuator Specification

Note: Types B, X and W

3-1 The Series B Actuator has been designed for the automation of 90° rotating equipment. The actuator is well suited for ball valves and butterfly valves as well as dampers.

3-2 Environment and Temperature

Temperature	20°C ~70°C
	4°F to 158°F (B,W) and 131°F (X)
Enclosure	B and X -Type 4/4x - IP67
	W -Type 4/4x/6 - IP68

The Series B enclosure is manufactured using an anodized aluminum alloy material and is coated with a dry powder epoxy paint to protect from oxidation.

3-3 Manual Override

Motor priority type allowing operation when actuator is de-energized. The hand/auto lever is used to engage the manual override feature. When the motor is energized, the lever will reset back the auto mode.

3-4 Self Locking

The self-locking worm gear prevents the valve from drifting and back driving the actuator gears.

3-5 Heater

The 20 watt internal heater helps to minimize condensation due to temperature and humidity changes.

3-6 Limit Switch

The mechanical, cam actuated limit switches are included to accurately calibrate the valve position.

3-7 Torque Switch

The torque switches are cam actuated and factory set to provide over torque protection for the valve as well as the actuator, torque switches are not available in the E-006 and E-009.

3-8 Motor

The actuator motor is protected with an embedded 150°C (300°F) thermal protector designed to protect the motor from overheating.

3-9 Indicator

The visual indicator is directly connected to the actuator output shaft and is designed for visual indication from a distance.

3-10 Mechanical Limit Stops

Mechanical limit stops are designed to protect against the over-travel of quarter turn applications while using the manual override or in the event of a limit switch failure.

3-11 Adaptation

Mounting is standardized to the ABZ inch based mounting specification as well as ISO5211 and the removable drive bushing can be machined to match the valve stem.

4. Performance

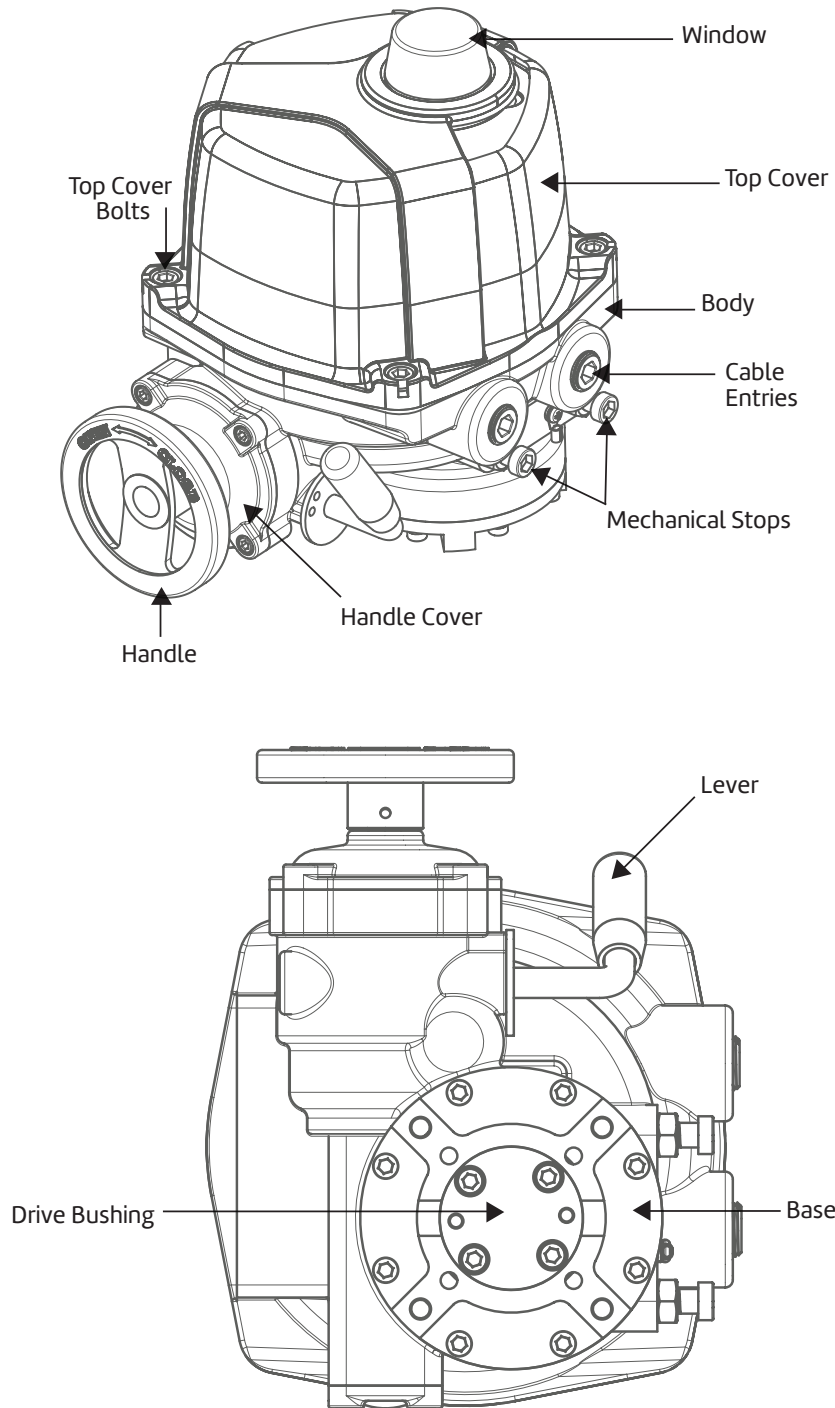
Model and Type (B, X or W)		E-006	E-009	E-015	E-019	E-028	E-038	E-050	E-060	E-080	E-100	E-150	E-200	E-250	E-300	E-350
Max Output Torque	in-lbs	520	780	1301	1649	2430	3298	4340	5208	6944	8680	13020	17360	21700	26040	30300
	Nm	60	90	150	190	280	380	500	600	800	1000	1500	2000	2500	3000	3500
Operating Time (90 / sec)	50Hz	17	17	20	20	24	24	24	29	29	29	87	87	87	116	116
	60Hz	14	14	17	17	20	20	20	24	24	24	72	72	72	96	96
Standard Enclosure	STD	IP67	IP67	IP67	IP67	IP67	IP67	IP67	IP67	IP67	IP67	IP67	IP67	IP67	IP67	IP67
Motor	W	15	25	40	40	40	60	90	90	180	180	90	180	180	180	180
	Class	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
Duty Cycle	S4	50	50	50	50	50	30	25	25	25	25	25	25	25	25	25
Max Stem Dia (mm)	Bore	22	22	22	22	32	32	32	42	42	42	75	75	75	75	75
	Square	20	20	20	20	26	26	26	34	34	34	65	65	65	65	65
Mounting Base	ISO 5211	F07	F07	F07 / F10	F07 / F10	F10 / F12	F10 / F12	F10 / F12	F12 / F14	F10 / F12	F10 / F12	F14 / F16	F14 / F16	F14 / F16	F14 / F16	F14 / F16
	ABZ STD	3.25"	3.25"	3.25" / 5.00"	3.25" / 5.00"	5.00"	5.00"	5.00"	5.00"	5.00"	5.00"	5.00" / 6.50"	5.00" / 6.50"	5.00" / 6.50"	5.00" / 6.50"	5.00" / 6.50"
Handle Turns	STD	8.5	8.5	10	10	12.5	12.5	12.5	14.5	14.5	14.5	43.5	43.5	43.5	58	58
Weight	kg	11	11	14	14	17	17	17	24	25	25	64	65	65	65	65
	lbs	25	25	31	31	38	38	38	53	55	55	141	143	143	143	143

4. Performance – Rated / Starting Current

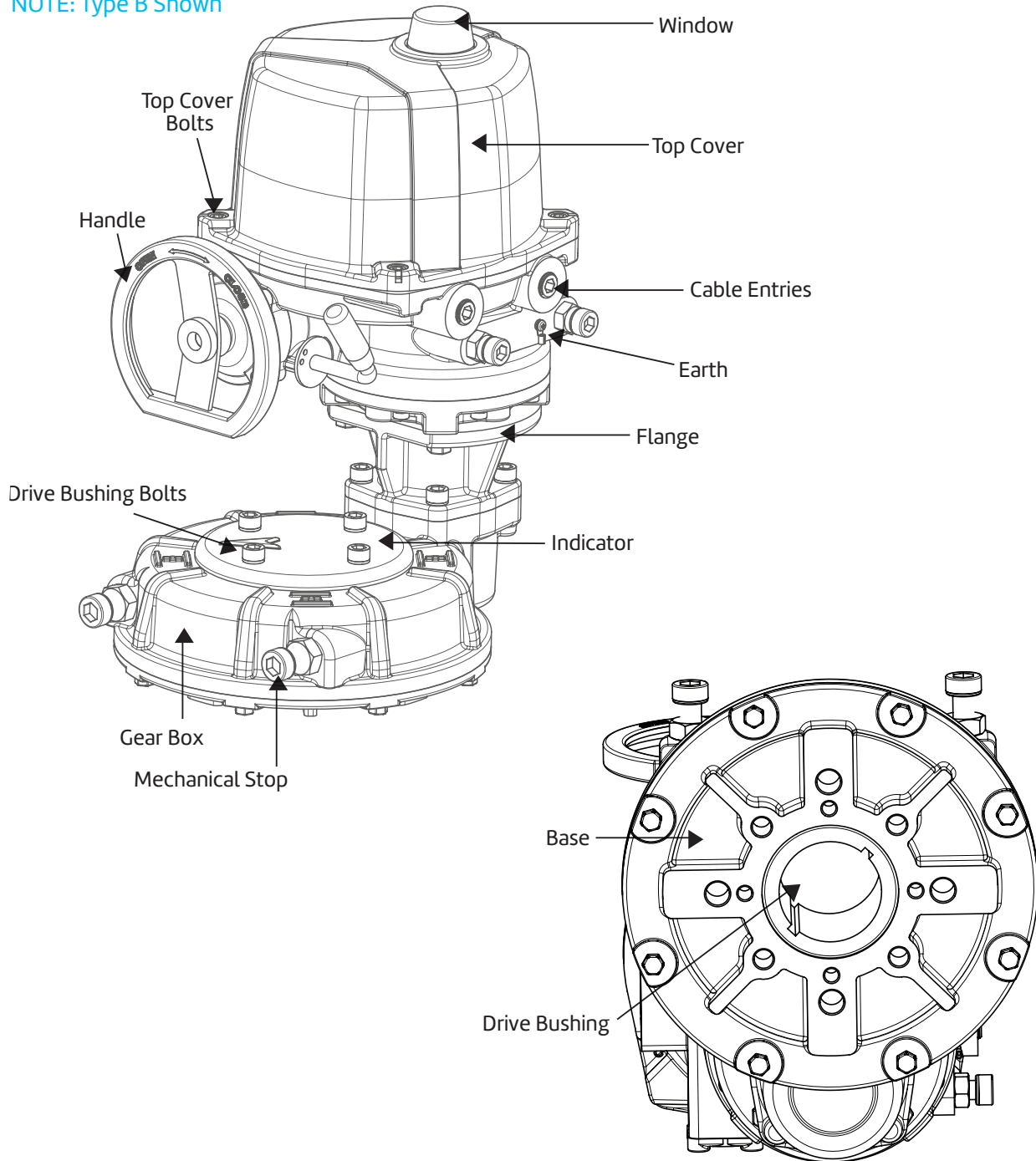
Model and Type (B, X or W)		E-006	E-009	E-015	E-019	E-028	E-038	E-050	E-060	E-080	E-100	E-150	E-200	E-250	E-300	E-350
110V 50Hz	Rated Current (A)	0.7	1.1	1.6	1.6	1.6	2.3	3.5	3.5	3.8	4.0	3.5	3.8	4.0	4.0	4.0
	Starting Current (A)	1.35	2.1	2.1	2.1	2.9	3.7	4.9	4.9	7.45	7.45	4.9	7.45	7.45	7.45	7.45
120V 60Hz	Rated Current (A)	0.7	1.1	1.7	1.7	1.8	2.8	3.7	3.7	4.7	4.7	3.7	4.7	4.7	4.7	4.7
	Starting Current (A)	1.36	2.1	2.13	2.13	2.96	3.72	4.9	4.9	7.5	7.5	4.9	7.5	7.5	7.5	7.5
220V 50Hz	Rated Current (A)	0.38	0.51	0.75	0.75	0.75	1.1	1.2	1.2	1.8	2.0	1.2	1.8	2.0	2.0	2.0
	Starting Current (A)	0.63	0.89	1.12	1.12	1.37	1.85	2.34	2.34	3.4	3.4	2.34	3.4	3.4	3.4	3.4
220V 60Hz	Rated Current (A)	0.42	0.52	0.9	0.9	0.9	1.2	1.5	1.5	1.8	2.0	1.5	1.8	2.0	2.0	2.0
	Starting Current (A)	0.63	0.89	1.12	1.12	1.37	1.85	2.34	2.34	3.4	3.4	2.34	3.4	3.4	3.4	3.4
230V 50Hz	Rated Current (A)	0.38	0.56	0.75	0.75	0.75	1.06	1.2	1.2	1.8	2.0	1.2	1.8	2.0	2.0	2.0
	Starting Current (A)	0.6	0.8	1.05	1.05	1.3	1.8	2.3	2.3	3.3	3.3	2.25	3.3	3.3	3.3	3.3
380V 50Hz	Rated Current (A)	0.15	0.18	0.3	0.3	0.32	0.34	0.47	0.47	0.75	0.85	0.47	0.75	0.85	0.85	0.85
	Starting Current (A)	0.32	0.36	0.59	0.59	0.74	0.78	1.23	1.23	1.68	1.68	0.78	1.68	1.68	1.68	1.68
380V 60Hz	Rated Current (A)	0.15	0.18	0.3	0.3	0.32	0.37	0.56	0.56	0.85	0.9	0.56	0.85	0.9	0.9	0.9
	Starting Current (A)	0.32	0.36	0.59	0.59	0.74	0.78	1.24	1.24	1.68	1.68	0.78	1.68	1.68	1.68	1.68
440V 50Hz	Rated Current (A)	0.15	0.18	0.3	0.3	0.32	0.34	0.47	0.47	0.75	0.85	0.47	0.75	0.85	0.85	0.85
	Starting Current (A)	0.32	0.36	0.59	0.59	0.74	0.78	1.24	1.24	1.68	1.68	0.78	1.68	1.68	1.68	1.68
440V 60Hz	Rated Current (A)	0.15	0.18	0.3	0.3	0.3	0.32	0.46	0.46	0.75	0.9	0.46	0.75	0.9	0.9	0.9
	Starting Current (A)	0.32	0.46	0.59	0.59	0.74	0.78	1.24	1.24	1.68	1.68	0.78	1.68	1.68	1.68	1.68
DC 24V	Rated Current (A)	2.5	3.5	5.0	5.0	6.5	-	-	-	-	-	-	-	-	-	-
	Starting Current (A)	8.00	9.00	13.00	13.00	15.00	-	-	-	-	-	-	-	-	-	-

5. Exterior Parts Identification

5-1 E-006B though E-100B
NOTE: Type B Shown

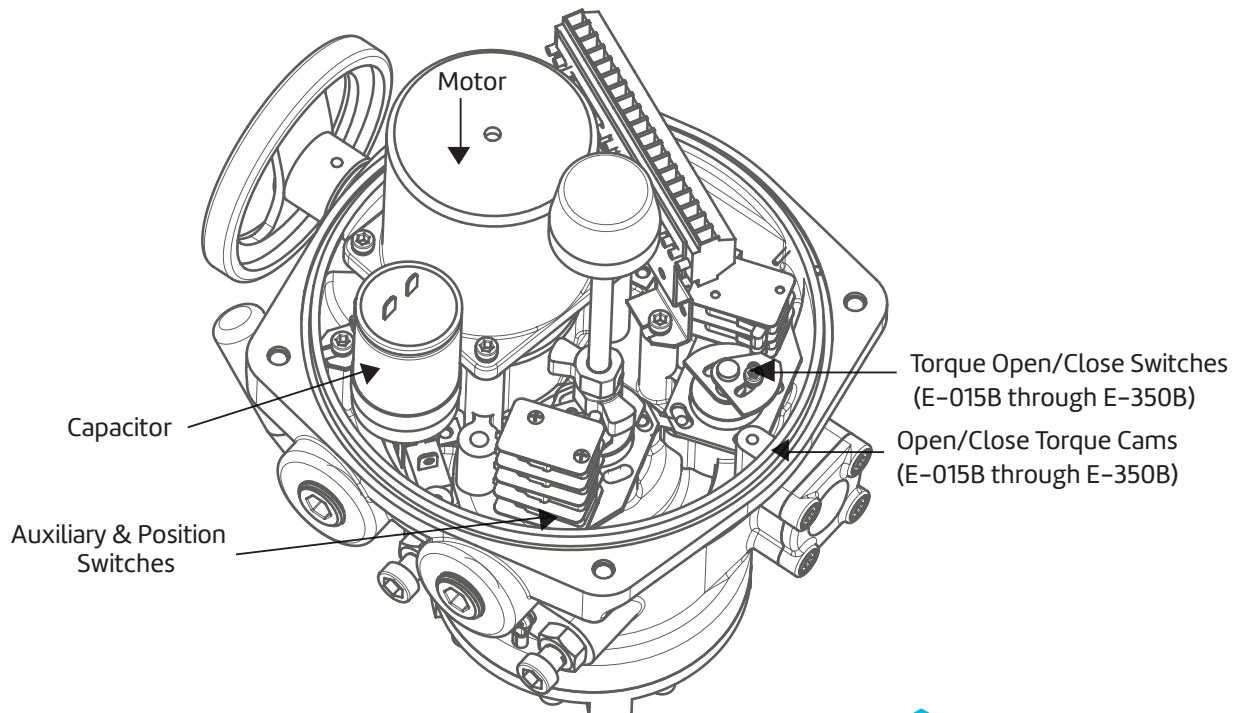
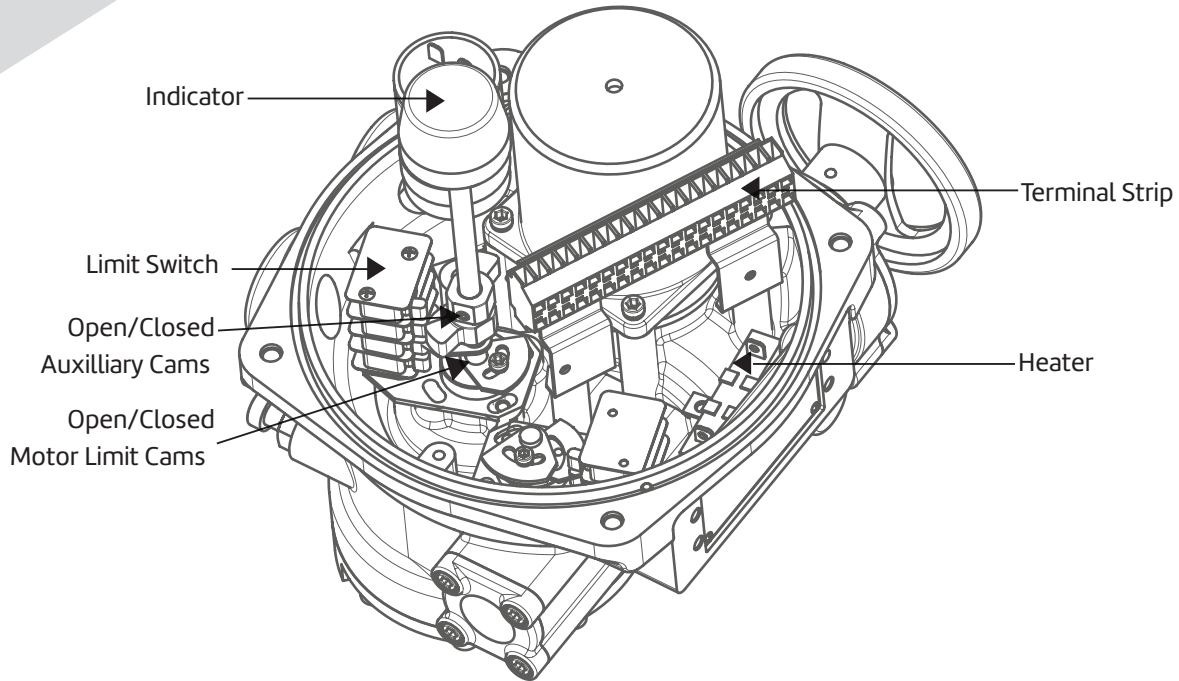


5-2 E-150B though E-350B
NOTE: Type B Shown



6. Interior Parts Identification

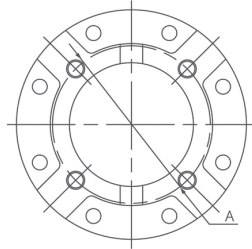
6-1 E-006B through E-350B
NOTE: Type B Shown



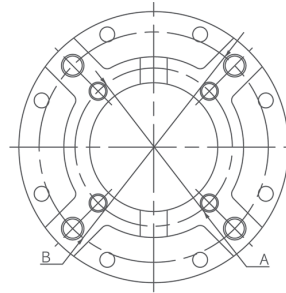
7. Actuator Mounting Flange

The Series B mounting flange is manufactured to both ABZ and ISO5211 standards.
If the actuator does not mount directly to the valve, then a mounting kit will need to be manufactured.

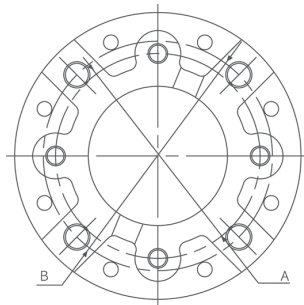
NOTE: Types B, X and W.



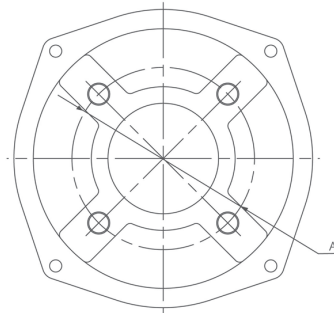
Model E-006 ~ E-009



Model E-015 ~ E-050



Model E-060 ~ E-100



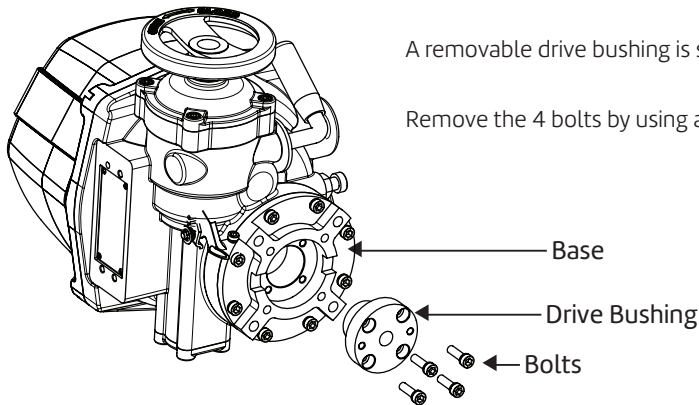
Model E-150 ~ E-350

Model	E-006 ~ E-009	E-015 ~ E-019	E-028 ~ E-050	E-060 ~ E-100	E-150 ~ E-350
ABZ FLANGE	3.25"	3.25" 5.00"	5.00"	5.00"	5.00" 6.50"
ABZ TAP	$\frac{3}{8}$ "-16 (.47 dp)	$\frac{3}{8}$ "-16 (.47 dp) $\frac{1}{2}$ "-13 (.59 dp)	$\frac{1}{2}$ "-13 (.59 dp)	$\frac{1}{2}$ "-13 (.59 dp)	$\frac{1}{2}$ "-13 / 0.98 deep $\frac{3}{4}$ "-10 / 1.18 deep
ISO FLANGE	F07 / 2.76"	F07 / 2.76" F10 / 4.02"	F10 / 4.02" F12 / 4.92"	F10 / 4.02" F14 / 5.51"	F14 / 5.51" F16 / 6.50"
ISO TAP Metric	M8-1.25 (12 dp)	M8-1.25 (12 dp) M10-1.50 (15 dp)	M10-1.50 (15 dp) M12-1.75 (22 dp)	M10-1.50 (15 dp) M16-2.00 (22 dp)	M16-2.00 (30 dp) $\frac{3}{4}$ "-10 1.18 deep

8. Actuator Drive Bushing

NOTE: Types B, X and W

8-1 Drive Bushings



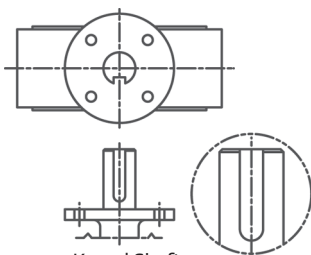
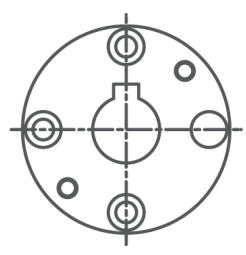
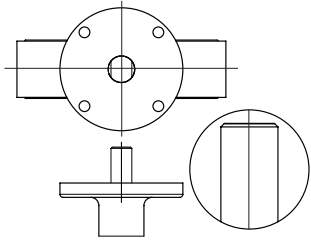
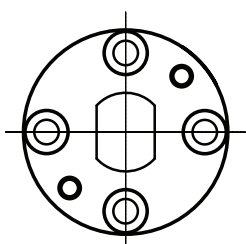
A removable drive bushing is supplied with each actuator that is machined to match the valve stem.

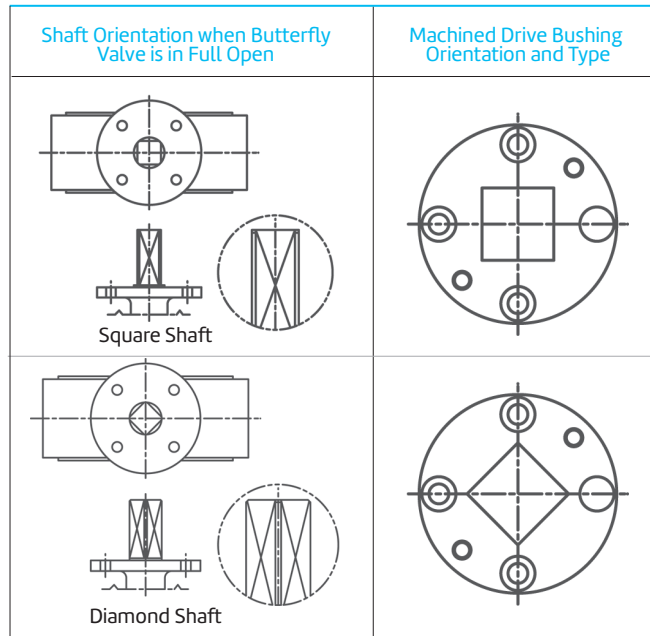
Remove the 4 bolts by using a metric allen-wrench and separate the drive bushing from the actuator.

8-2 Drive Bushing Adaptations

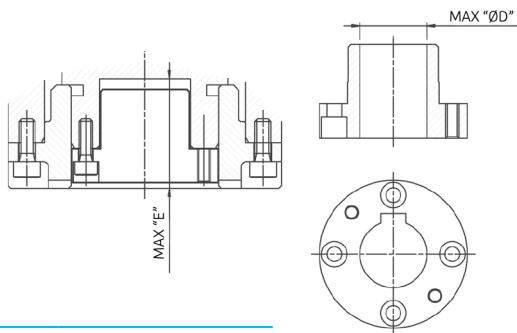


The drive bushing should be machined to match the valve stem dimensions when the valve is in the full open or full closed position.

Shaft Orientation when Butterfly Valve is in Full Open	Machined Drive Bushing Orientation and Type
 <p>Keyed Shaft</p>	
 <p>Double "D" Shaft</p>	

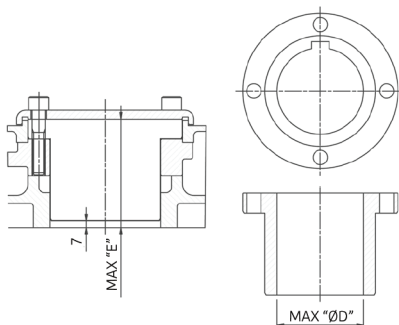


8-3 Drive Bushing Information



Model E-006 ~ E-100

Model	Max "ØD" mm	Max Square mm	Max Depth "E" mm	Standard Bore* in
E-006 ~ E-009	Ø22	20	43	3/4" x 1/2" Double D
E-015 ~ E-019	Ø22	20	43	3/4" x 1/2" Double D
E-028 ~ E-050	Ø32	26	52	1 1/8" with 1/4" key
E-060 ~ E-100	Ø42	34	59	1 1/8" with 1/4" key



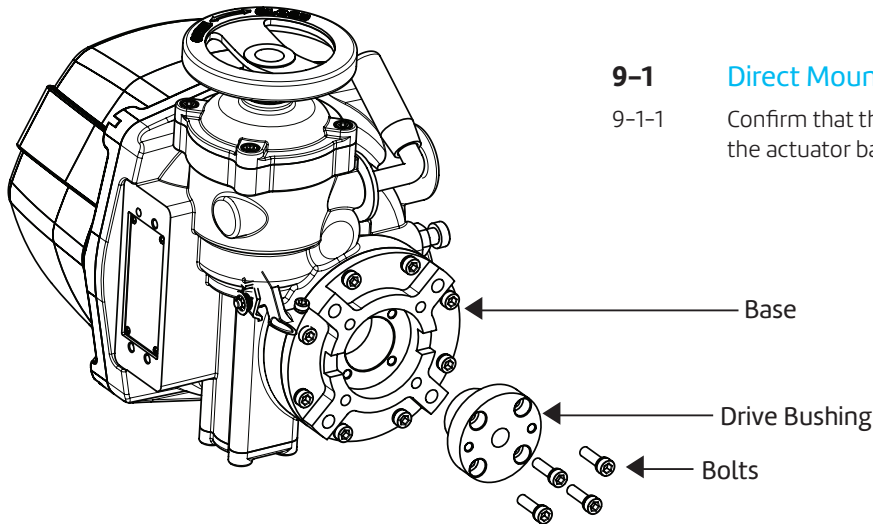
Model E-150 ~ E-350

Model	Max "ØD" mm	Max "Square" mm	Max Depth "E" mm
E-150 ~ E-350	Ø75	75	100

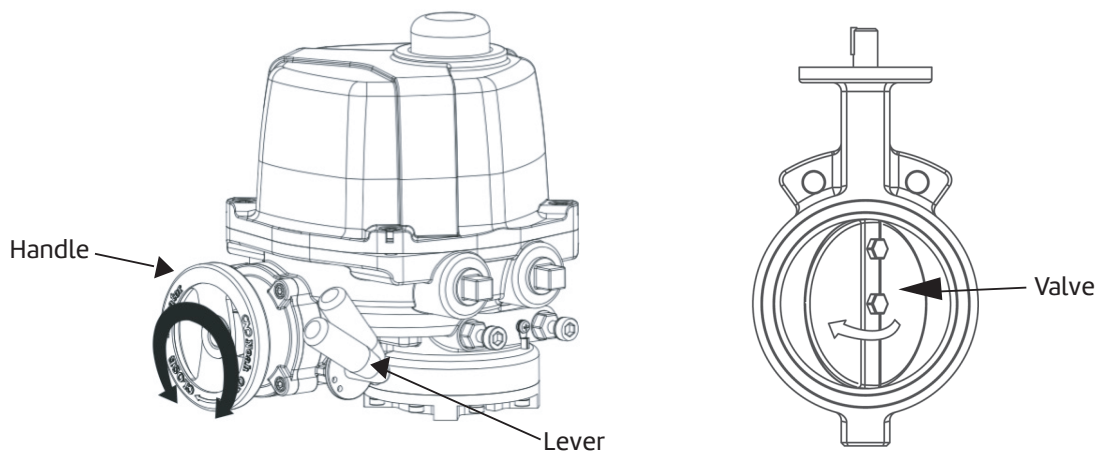
* Standard actuator bore is supplied with unmounted actuators. If an alternate bore is required, please contact customer service.

9. Actuator and Valve Assembly

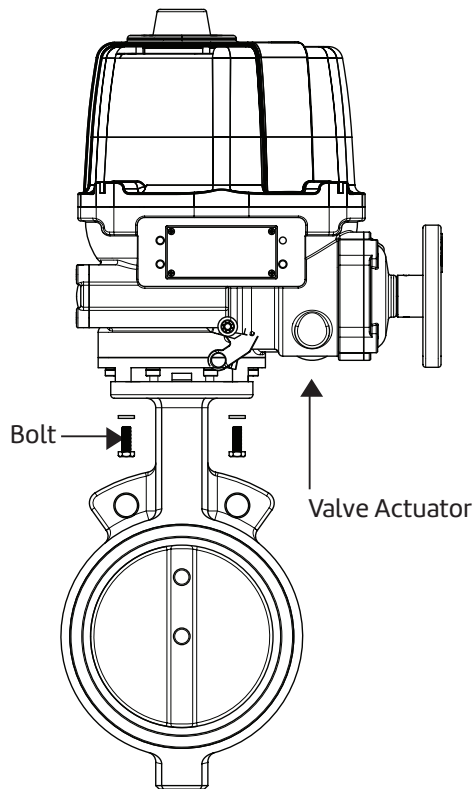
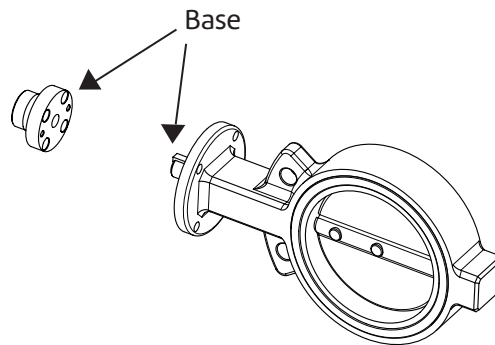
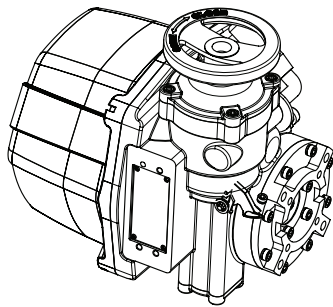
All valve and actuator assemblies are mounted and calibrated from the factory when requested.



- 9-1-2 Confirm that the power is off, then pull lever to engage the handwheel, then rotate the actuator to the full clockwise / closed position and turn the valve shaft to the full closed position.

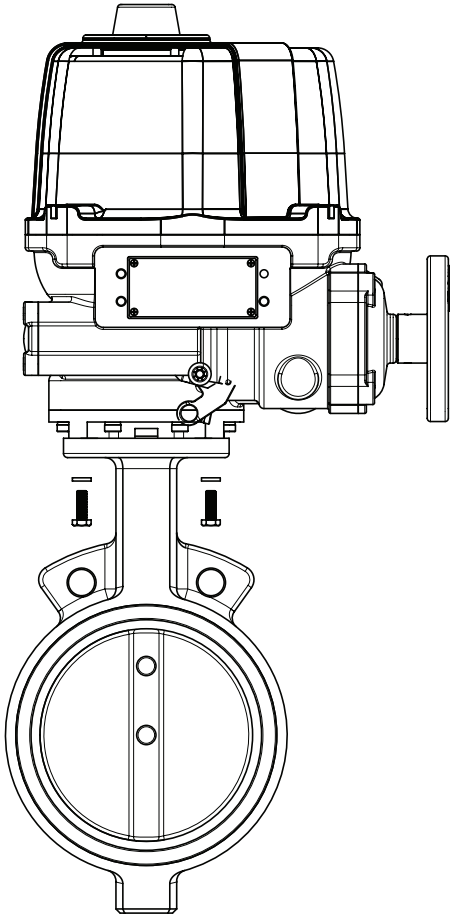


- 9-1-3 Apply a thin coat of grease to the drive bushing and secure it into the actuator using the the (4) socket head bolts. Apply a thin coat of grease to the valve stem and insert it into the machined drive bushing.



- 9-1-4 Assemble the actuator and valve as shown using bolts and lock-washers. Confirm component alignment, then cross tighten the mounting bolts for a firm fit. Check that there no gaps between the mounting pads.

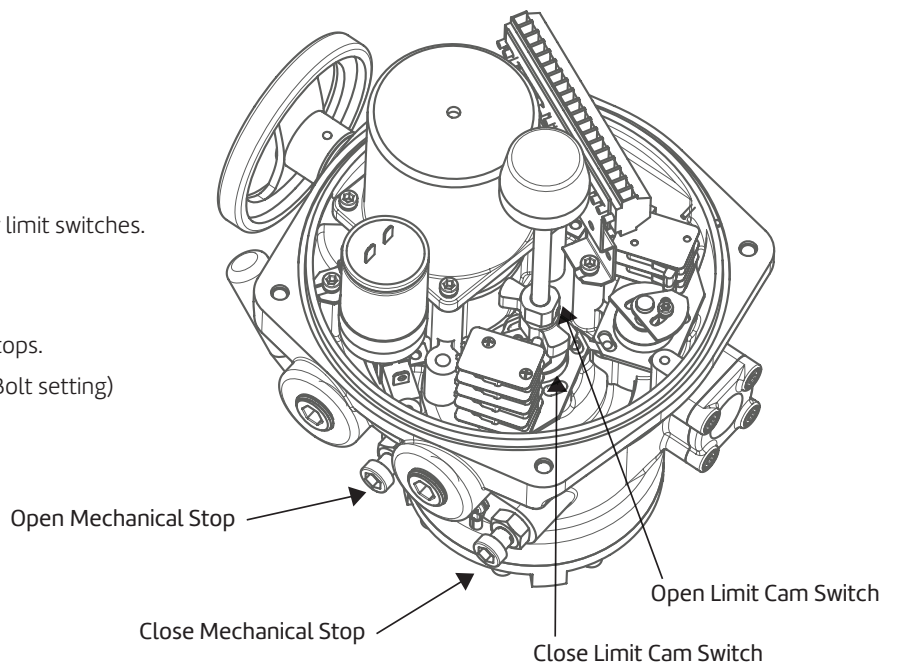
NOTE: Mounting the actuator is easiest with the valve shaft pointing vertically upwards and lowering the actuator on to the valve, however in cases where the valve shaft is horizontal, additional care must be taken to ensure that the actuator and valve shafts are properly aligned and supported. Misalignment between the actuator and valve shaft can cause increased wear or failure while also increasing the torque required to operate the valve.

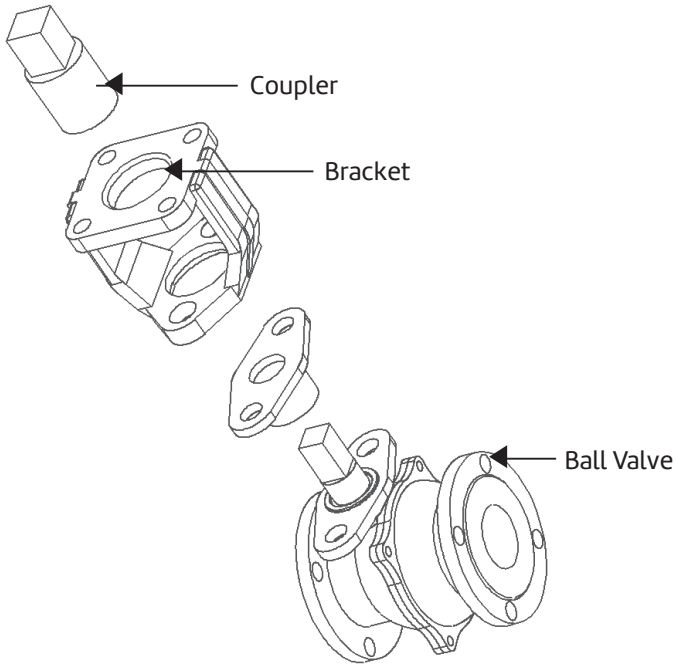


- 9-1-5 Confirm that the power is off, then pull lever to engage the handwheel and turn counter-clockwise to rotate the actuator to the full open position. Confirm the valve is opening.

- 9-1-6 Remove the top cover and set the actuator limit switches.
(Refer to section 10. Limit Switch Setting).

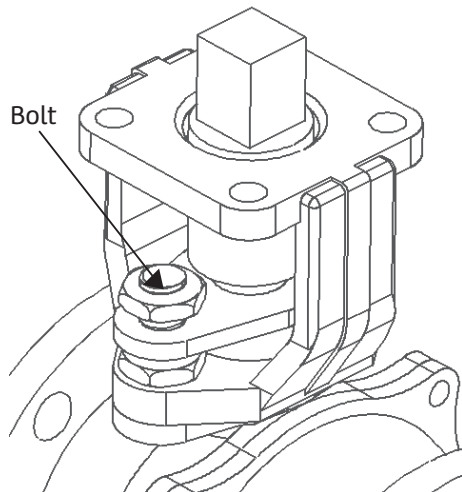
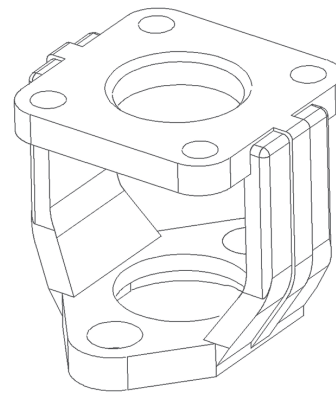
- 9-1-7 Adjust the length of the mechanical limit stops.
(Refer to section 12 Mechanical Limit stop Bolt setting)



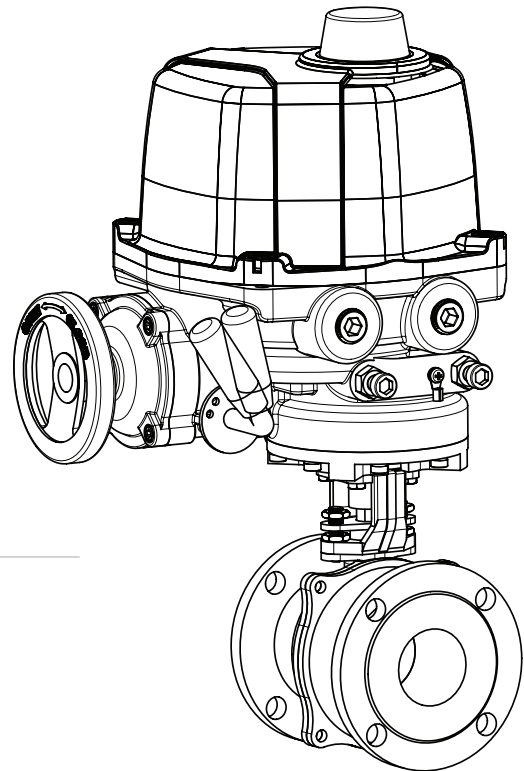
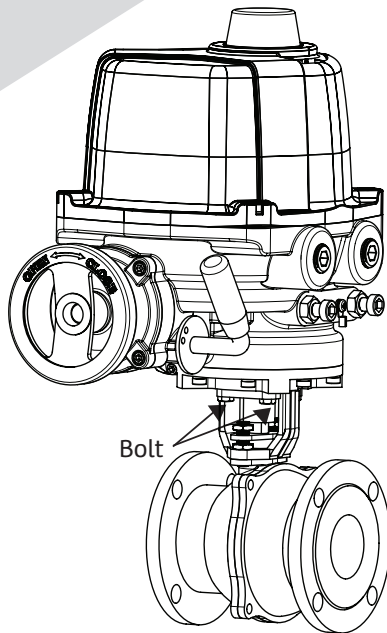


9-2 **Bracket/Coupler Assembly**

9-2-1 When a direct mount is not appropriate or possible, a bracket and coupler will need to be manufactured to join the actuator and valve together.



9-2-2 Extended bracket and coupler mounting may be necessary in cases where excessive heat transfer from the valve could effect the actuator function or when pipe insulation prevents direct mounting.



9-2-3 Apply a thin coat of grease to the drive bushing and secure it into the actuator using the (4) socket head bolts. Apply a thin coat of grease to the valve stem coupling and insert it into the machined drive bushing.

9-2-4 Assemble the actuator, valve and mounting kit as shown using bolts and lock-washers. Confirm component alignment, then cross tighten the mounting bolts for a firm fit. Check that there no gaps between the mounting pads.

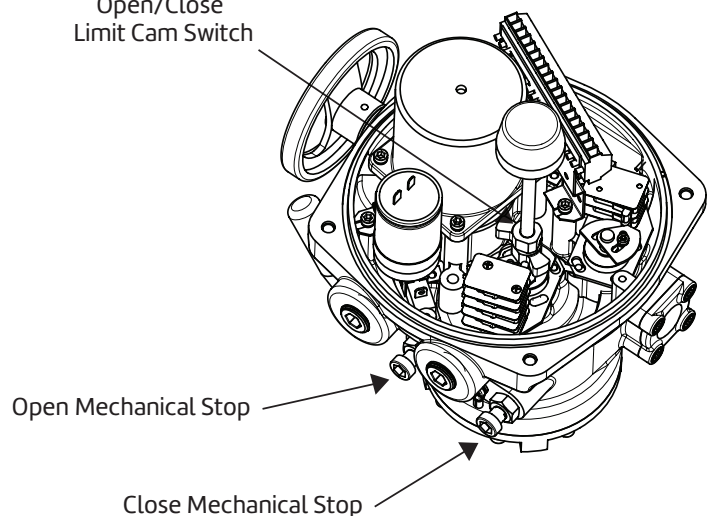
NOTE: Mounting the actuator is easiest with the valve shaft pointing vertically upwards and lowering the actuator on to the valve, however in cases where the valve shaft is horizontal, additional care must be taken to ensure that the actuator and valve shafts are properly aligned and supported. Misalignment between the actuator and valve shaft can cause increased wear or failure while also increasing the torque required to operate the valve.

9-2-5 Confirm that the power is off, then pull the lever to engage the handwheel and turn counter-clockwise to rotate the actuator to the full open position. Confirm the valve is opening.

9-2-6 Remove the top cover and set the actuator limit switches. (Refer to section 10. Limit Switch Setting).

9-2-7 Adjust the length of the mechanical limit stops. (Refer to section 12. Mechanical Limit Stop Bolt Setting).

Open/Close
Limit Cam Switch

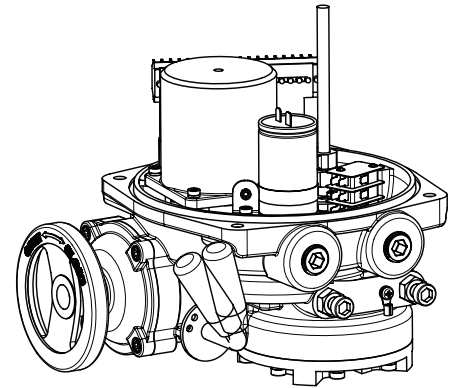


10. Limit Switch Setting

10-1 Close / Open Limit Switch Cam Setting

10-1-1 Confirm that the power is off. Pull lever located on the side of the actuator to engage the manual override handwheel. Rotate the handwheel clockwise to fully close the actuator / valve.

10-1-2 Loosen the closed limit switch cam set screw as shown. Rotate cam in the close / clockwise direction and engage the switch lever to actuate the switch. If auxiliary limit switches are included in the actuator, then set the corresponding auxiliary switch at this time.

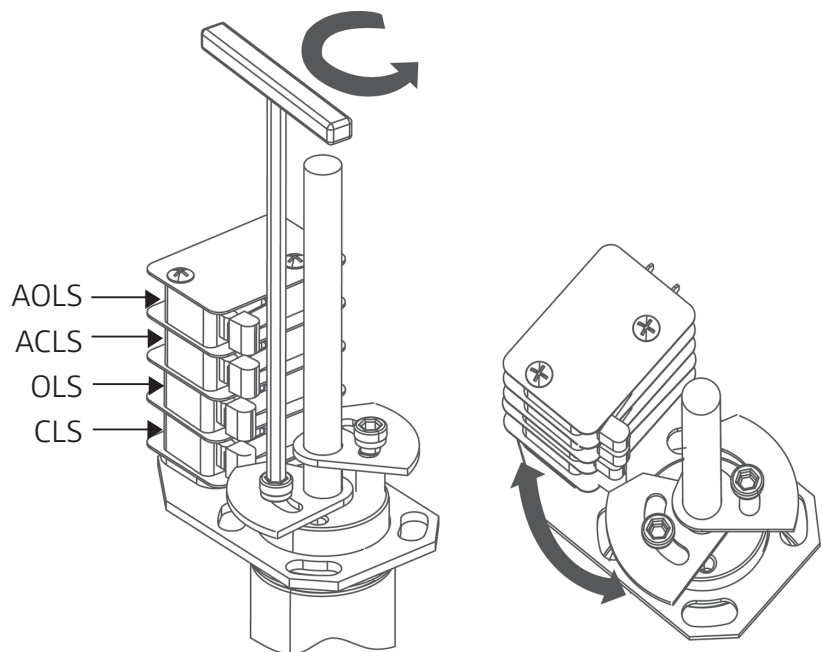


AOLS	Dry Contact Open Limit Switch
ACLS	Dry Contact Close Limit Switch
OLS	Open Limit Switch
CLS	Close Limit Switch



WARNING:

- Hazardous voltage. Turn off all power and lock out service panel before installing or modifying any electrical wiring. Use caution when energizing inputs.
- All work on the electrical system of equipment must be performed by qualified personnel under strict observation of all applicable codes, standards and safety regulations.
- The actuator generates a large mechanical force during normal operation.

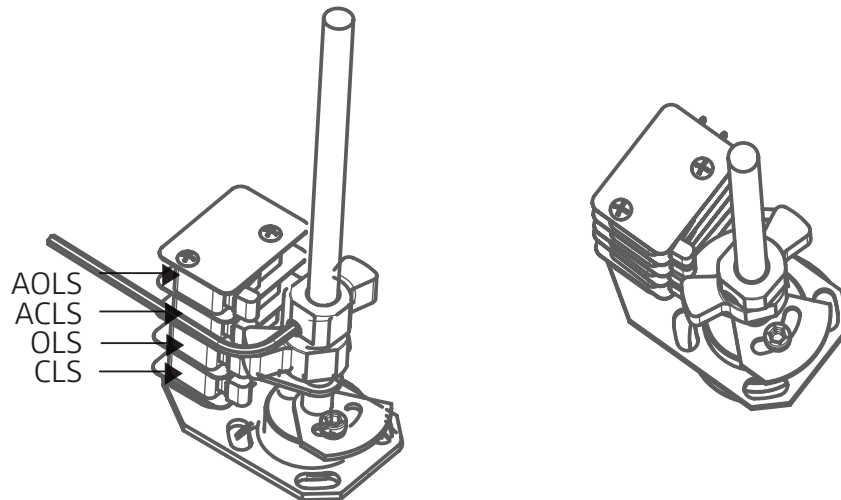


10-1-3 Firmly retighten the cam set screw.

10-1-4 To set the open limit switch, follow the same procedure as above except that the rotation will be counter clockwise using the open limit switch cam.

10-2 Dry Contact Close / Open Limit Switch Setting

10-2-1 Using the manual override, rotate actuator to the full clockwise position. Loosen the set screw in the ACLS cam and then rotate the cam in the clockwise rotation to engage the auxiliary switch.



10-2-2 Firmly retighten the cam set screw.

10-2-3 To set the open auxiliary limit switch, follow the same procedure as above except that the rotation will be counter clockwise using the open auxiliary limit switch cam.

AOLS	Dry Contact Open Limit Switch
ACLS	Dry Contact Close Limit Switch

11. Over Torque Switch Setting

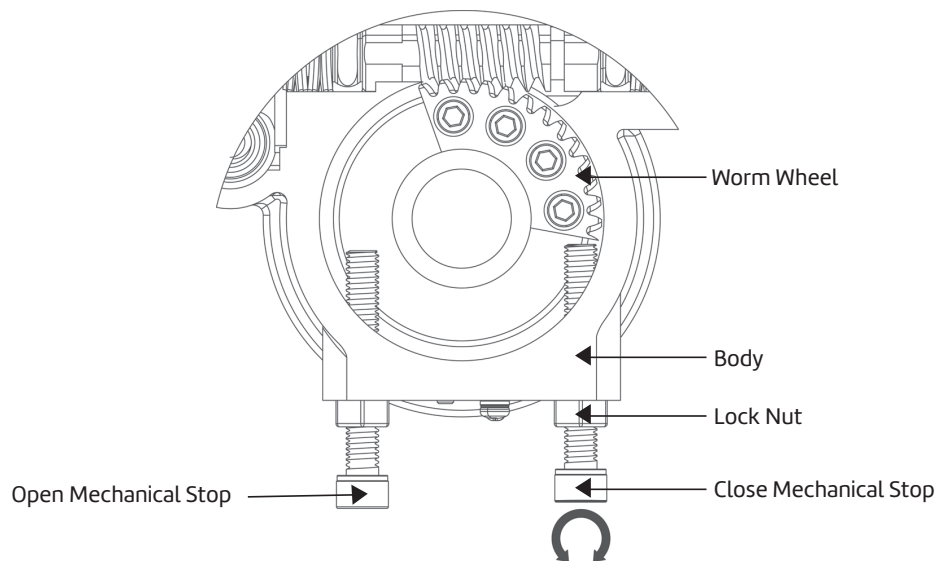


The over torque switches are factory set. Tampering with the over torque switch settings may damage the actuators and VOID the warranty. For more information contact ASC.

12. Mechanical Limit Stop Setting

When using the manual override, or in the event of a limit switch malfunction, the mechanical limit stops will prevent the actuator from over traveling and causing damage to the valve. The mechanical limit stops should be reset whenever an adjustment is made to the open and closed limit switches, this will protect the valve in the event of an electrical malfunction.

- 12-1 Turn the power off to the actuator. Engage the manual override and close the valve clockwise until the close limit switch has tripped.
- 12-2 As shown below, turn the mechanical limit stop into the body until contact is made between the limit stop and worm wheel. Once contact is made, rotate the close mechanical stop two-turns (CCW). Tighten the nut to the body to secure that the stop locks in place.



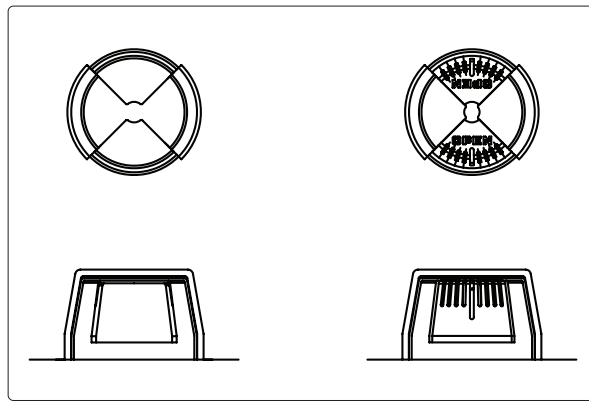
- 12-3 To set open limit stop, follow the above instructions except rotate the actuator in the counter clockwise rotation.



If the mechanical stops are improperly set, motor and gear damage may occur. After setting the limit stops, check for proper function by operating the actuator both manually and electrically. Confirm that the end of travel limit switches shut off power to the motor in both the open and closed positions, and that the motor is not stalled or in an over torque condition.

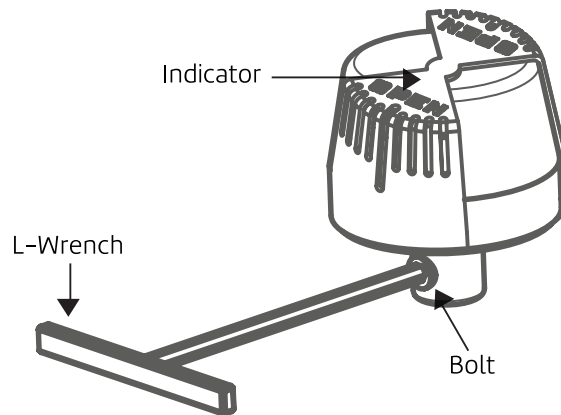
13. Visual Indicator Setting

The valve position is easily confirmed from a distance by looking at the indicator dome located on the top of the actuator cover.
Type-B Visual Indicator shown below.



Visual Indicator

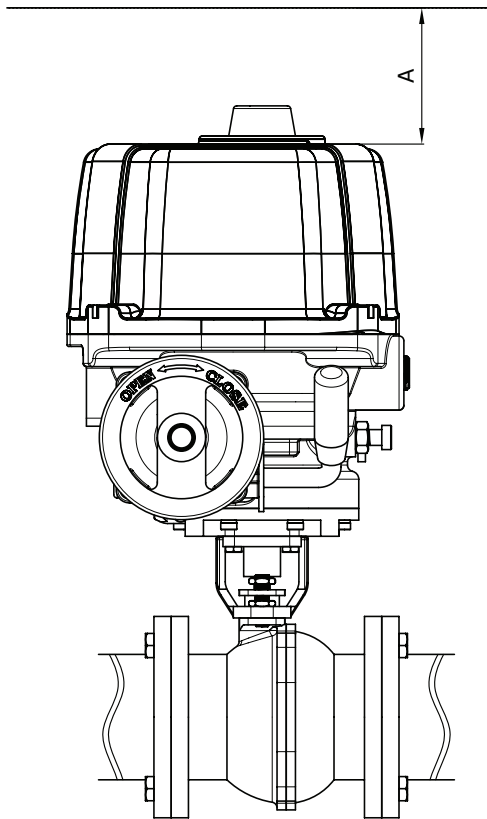
- 13-1 If the position shown on the indicator is incorrect, simply loosen the set screw and rotate the indicator to the correct position and retighten the set screw. Do not over tighten



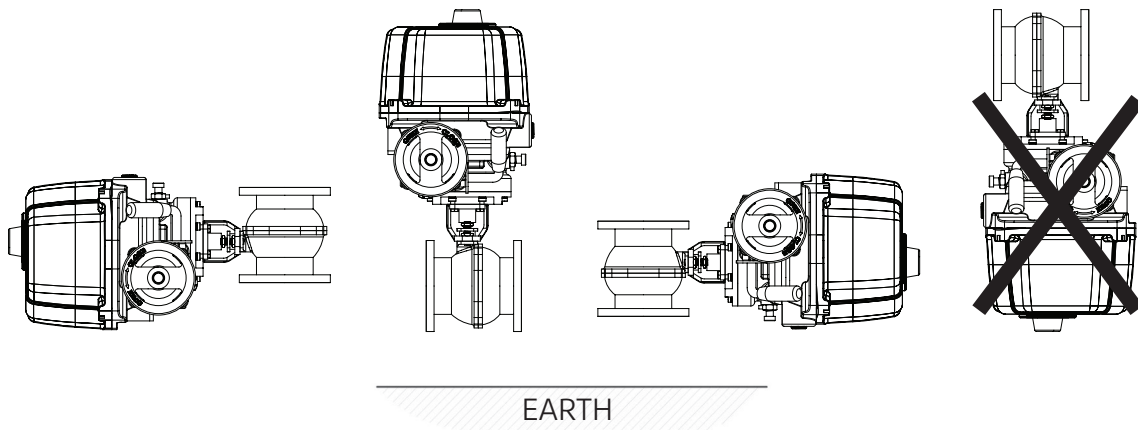
Indicator Adjustment

14. Actuator Installation

When installing an actuator, proper clearance around the actuator is required to ensure that the cover can be removed to allow for maintenance.



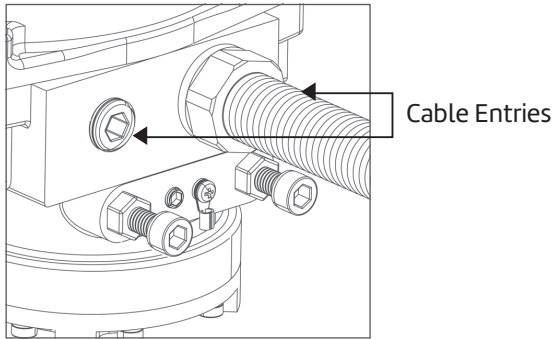
Model	A
E-006 ~ E-009	108 mm / 4.25 in
E-015 ~ E-019	108 mm / 4.25 in
E-028 ~ E-050	130 mm / 5.12 in
E-060 ~ E-100	178 mm / 7.01 in
E-150 ~ E-350	178 mm / 7.01 in



15. Conduit Connection

Standard location, Type 4,4X IP67. Type B shown.

- 15-1 Any unused conduit entry must remain plugged with the pipe plug supplied in the actuator. Do not remove as the unit is already sealed.
If pipe plugs are replaced, plug threads need to be sealed to prevent water from getting into the enclosure.



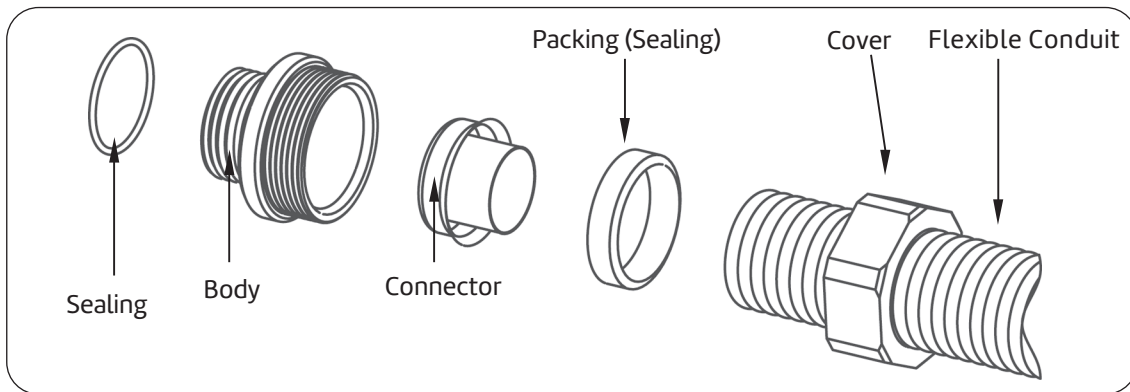
Cable Gland Spec.

(STD) 2-NPT 3/4"

2-PF 3/4"

2-M20

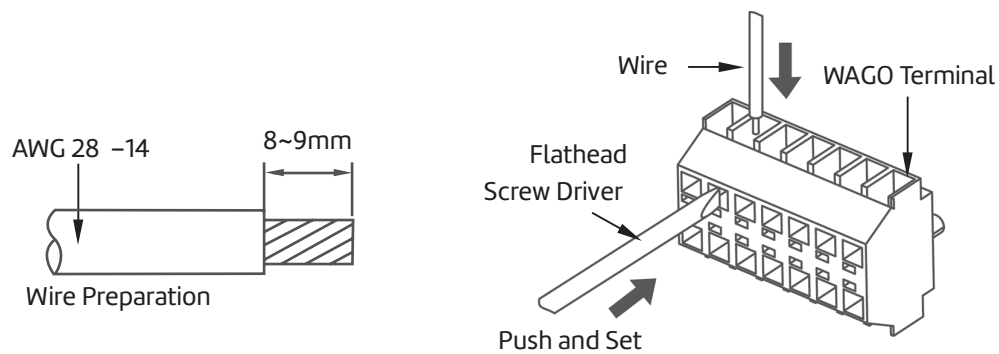
- 15-2 Standard conduit and conduit fittings may be used. It is recommended that a seal fitting be fitted to the actuator conduit entry and sealed internally with a resin compound after all wiring has been installed as this will help minimize humidity and water from entering the actuator enclosure through the conduit. Also, adding a desiccant bag and a VCI (volatile corrosion inhibitor) sponge under the cover is also recommended for additional protection.



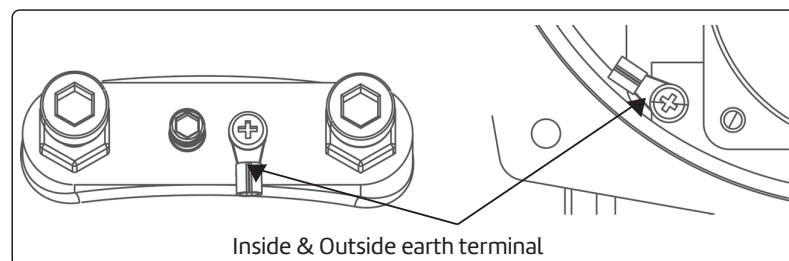
Example of Conduit and Fitting Assembly

16. Electrical Wiring

- 16-1 Separate the cover of the actuator by loosening the four cover bolts.
- 16-2 Confirm the proper wiring diagram number.
- 16-3 Confirm that the main power and power supply described on the name plate of actuator match with each other.
- 16-4 Series B uses a WAGO brand terminal strip to allow for easy wiring and to protect against vibration. Use the wire thickness within the standard size of AWG 28~14.

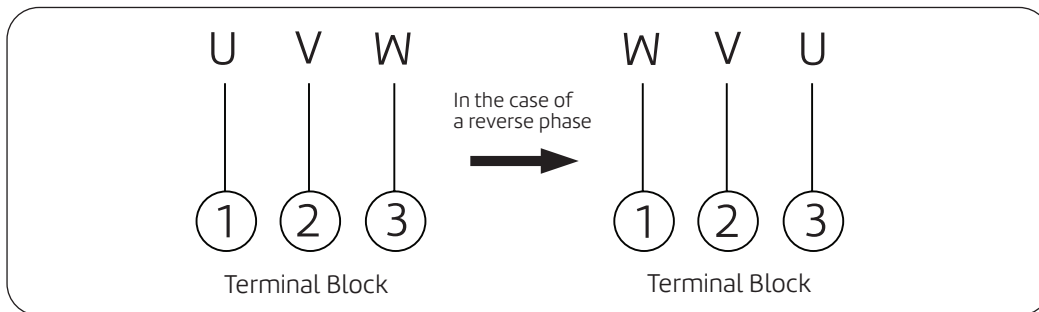


- 16-5 Insert a small flathead screwdriver as shown to open the terminal point, then insert the wire.
- 16-6 Be sure to properly ground the actuator wiring to the grounding terminals provided on the inside and outside of the actuator body.
The internal grounding wire gauge shall be at least the same as the conductor used.
The external grounding wire gauge shall be at least 14 gauge.



- 16-7 Be sure to wire and energize the heater that is provided per the wiring diagram.
- 16-8 Each actuator must be powered by their own individual relays to prevent voltage feedback and actuator damage.

- 16-9 When wiring a 3-phase powered actuator, care must be taken to confirm the proper motor rotation when the power and signal are applied. If the actuator rotates in the reverse direction than what is expected, the limit switches will not function correctly and a miswire has occurred.
- 16-9-1 With power disconnected, manually operate the actuator to a mid position.
- 16-9-2 Apply power / signal to rotate the actuator open or closed and confirm the rotation is correct.
- 16-9-3 If the rotation is incorrect, then shut off the actuator and rewire two of the three wires as shown.



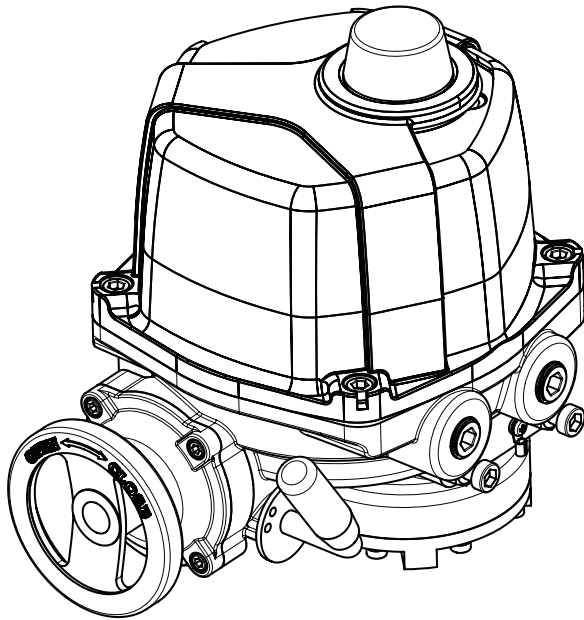
- 16-10 After the wiring is completed in the actuator use wire ties to clean up the actuator and group wires together, being certain that the wires are secured away from any moving parts, and remove any loose debris.
- 16-11 Once work is completed, replace the top cover and secure it using the four cover screws.
- 16-12 Apply the power and do a final check to confirm proper operation.



Main power must only be applied when the top cover is reinstalled on the actuator body. If the main power is on while wiring the actuator stop working immediately and turn the power off. Only then is it safe to proceed.

17. Manual Operation Upon Power Loss

- 17-1 Upon loss of power, pull the lever located on the side of the actuator toward the handwheel. The lever should "LOCK" in position. Turn the handwheel and the actuator output will rotate.
- 17-2 If the lever does not "LOCK" in the upright position, then turn the handwheel halfway and pull lever to the upright position.



Turn the handwheel clockwise for CLOSE
Turn the handwheel counter clockwise for OPEN

- 17-3 After the manual operation, leave the lever as is. When power is reapplied to the actuator, the lever will disengage and declutch the manual override. The actuator motor will then rotate the valve to the powered position.
- 17-4 If the lever does not "LOCK" in the manual position while trying to manually operate the actuator, then the actuator gearing may be jammed and needs to be checked.

18. Maintenance

18-1 Lubrication

Under normal conditions, no additional grease needs to be added to the actuator. However if the ambient temperature is greater than 40°C (104°F) or the humidity is less than 15%, periodic regreasing is recommended. The recommended grease used in the Series B actuator is SHELL Gadus S2 V220 2.

18-2 Regular Check Up

It is recommended that the actuator be cycled every two weeks after purchase. To minimize the effects of condensation in the actuator it is recommended that the conduit entries are sealed at the actuator and that the heater is energized.

19. Warrantee Information

The warranty will be void under the following conditions.

- 19-1 Failure or damage caused by misuse or abuse.
- 19-2 Failure or damage caused by unauthorized modifications or repairs done to the actuator.
- 19-3 Failure caused by the unauthorized modification / change of the wiring.
- 19-4 Failure caused by a reverse phase miswire when using three phase power.
- 19-5 Failure caused by water leakage due to the improper sealing of the actuator conduit entries or by failure to install the cover properly.
- 19-6 Failure caused by improperly set limit switches.
- 19-7 Failure caused by fire, flood damaged, or other "acts of God."
- 19-8 Failure occurring 1 year after the shipment date.

20. Troubleshooting

If the actuator fails to function correctly, first check for any mechanical / alignment problems, then check for any electrical problems. See chart below for more information.

Problem	Cause	Solution	
Manual override will not move	The worm wheel and mechanical limit stop is jammed	Loosen the mechanical limit stop and the valve mounting bolts. Correct the mechanical stop position and then secure the mounting bolts and limit stop. Confirm proper operation electrically and with manual override.	
Level will not hold position when pulled toward the handwheel			
The handwheel is engaged and rotated, but the output drive bushing will not move	Worm wheel and gear separation and failure	Disassemble the actuator and replace damaged gear	
In manual operations, the actuator will not cycle full open or full close	Mechanical limit stop is not set correctly	Reset the mechanical limit stop	
Actuator will not cycle to full open or full close	Limit switch or mechanical limit stop set incorrectly	Reset the limit switch cam and reset the mechanical limit stop	
Actuator suddenly stops during operation	The over torque switch has tripped	Valves torque has increased Valve needs to be checked / repaired or replaced, or the over torque switch has failed and needs to be reset	
	Main power failure	Main power check	
Normal Operation	Wire disconnect or short circuit	Replace defective wire	
	Motor or capacitor is damaged	Replace motor or capacitor	
	Actuator will not function from remote location	Motor has overheated	Do not over cycle the motor
	Wiring failure	Check the circuit diagram	
	Gears are jammed	Release jammed gears	
When 3-Phase units rotate in the opposite direction than what is expected.	Phase reversal	Switch two of the 3 wires	
When actuator continues to rotate even after the cam strikes the limit switch	Limit switch failure, disconnect or short circuit	Replace defective switch and reconnect loose wire	
	Phase reversal	Switch two of the 3 phase wires	

In addition to the above described mechanical / electric issues, other causes may be the reason for an actuator to fail, i.e... site conditions. For more information please contact ASC for consultation. For faster service, please have all of the nameplate and current wiring diagram information available when calling the factory.

About ASC Engineered Solutions

ASC Engineered Solutions connects high-quality products with advanced technology, service, and support. With nearly 2,000 employees, the company's extensive portfolio of precision-engineered piping support, valves and connections provides products to professionals across industries, such as commercial and residential construction, industrial, fire protection, and oil and gas. Its portfolio of leading brands includes ABZ Valve®, AFCON®, Anvil®, Anvil EPS, Basic-PSA, Beck®, Catawissa, Cooplet®, FlexHead®, FPPI®, Gruvlok®, J.B. Smith, Merit®, NAP®, Quadrant®, SCI®, Sharpe®, SPF®, SprinkFLEX®, Trenton Pipe, VEP, and WARDFlex®. With headquarters in Oak Brook, IL, ASC also has ISO 9001:2015 certified production facilities in PA, TN, IL, TX, AL, KS, and RI.



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