

Troubleshooting Electric Rotary Valve Actuators

This document has been created to assist you with an understanding of the common causes of actuator failure. Most often the cause is a simple wiring oversight or voltage incompatibility. This troubleshooting guide reflects common Causes and Solutions for most valve actuators.

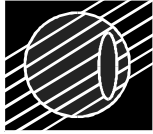
NOTES ON MAINTENANCE PROCEDURES: WARNING!!! In all cases, never operate an automated valve while under pressure or in a live process. Always disconnect supply air or voltage before any disassembly or maintenance is performed. Always be aware of the area classification for electrical service. Shut off and remove all electrical equipment from a hazardous area before performing any maintenance. If ever in doubt, choose safety first!

When contacting your manufacturer be prepared to provide:

Model Number	Usually located on the actuator enclosure
Your control voltage.	AC/DC, Single- or three-phase.
Valve type and size it is operating.	Ball, butterfly, etc. Line size.
Intended service	On/Off, modulating etc.
Installed options (if known)	Does the unit have; positioner, heater/thermostat, extra switches, etc.?

A-Problem: Actuator will not operate

Possible Cause	Solution
Thermal Overload protection is active.	Allow actuator to cool. Decrease operating frequency (Duty Cycle)
Capacitor is loose or connected incorrectly.	Check wiring and diagram to correct capacitor connection.
Wires, switches or other leads may be disconnected or loose.	Inspect and re-connect.
Wires at terminal block loose or disconnected.	Inspect and re-connect.
Motor is damaged or otherwise inoperable.	Confirm voltage. Apply power without switches in circuit. Replace motor assembly.
Ambient temperature is too low causing inoperability.	Install heater and thermostat.
Optional accessories, circuit boards incorrectly installed or wiring is loose.	Check installation. Refer to wiring diagram. Replace or re-install.



B-Problem: Motor seems stalled. It "hums" but will not operate

Possible Cause	Solution
Supply voltage (power) is applied to both sides of the motor simultaneously.	Check wiring. Make corrections.
System wiring has more than one actuator powered from same parallel source.	Apply isolating relays to control circuit.
Capacitor has failed.	Replace capacitor.
Valve requires too much operating torque.	Check valve torque. Look for obstructions to rotary motion (mechanical stops on valve, etc.)
Motor has failed.	Replace motor.
Failed circuit board accessory.	Inspect, re-wire or replace boards.

C-Problem: Motor operates but output shaft does not turn

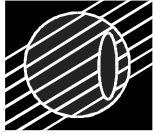
Possible Cause	Solution
Manual override (if supplied) is not properly engaged with gear train.	Manually engage override to the "automatic" position.
Damaged or stripped gears in drive train.	Replace gears or gearbox.

D-Problem: Actuator turns in one direction only.

Possible Cause	Solution
Wires at terminal block loose or disconnected.	Check wiring. Make corrections.
Wires at the motor connection are loose or disconnected.	Check wiring. Make corrections.
Limit switch for the reverse direction is engaged with the cam.	Inspect and adjust the cam.
Failed circuit board accessory.	Inspect, re-wire or replace boards.
DC Motor – Polarity is not switching.	Install external switching/relay. See manufacturers wiring diagram.

E-Problem: Actuator turns in the wrong direction.

Possible Cause	Solution
Motor leads or limit switches are wired incorrectly.	Inspect and re-connect.
Actuator may be wired for uni-directional operation. Or may be a uni-directional model.	Refer to manufacturers wiring diagram. Re-wire.



F-Problem: Actuator does not stop at the desired position.

Possible Cause	Solution
Actuator rotation is limited by the action of a cam on the limit switch. Cam needs adjustment/setting.	Adjust/set cam.
Cam may be loose. Set screw is loose.	Adjust/set cam.
Limit switch is not working/contacting.	Replace limit switch.
Limit switches may be wired in reverse operation.	Inspect. Re-set.
Cam may be loose. Set screw is loose.	Adjust/set cam.
Limit switch is not working/contacting.	Replace limit switch.
Limit switches may be wired in reverse operation.	Inspect. Re-set.

G-Problem: Actuator repeatedly "hunts" at the end of travel.

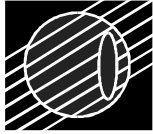
Possible Cause	Solution
Valve has reached "closed" position before the limit switch cuts off power.	Adjust/set cam.
Line pressure or seating torque is causing actuator to momentarily "reverse".	Install a motor brake (Especially for rubber seated butterfly valves). Adjust/set cam.

H-Problem: Moisture and/or corrosion is present inside enclosure.

Possible Cause	Solution
Gasket seal is missing or installed incorrectly.	Replace gasket seal. Dry unit.
Water is entering through the conduit entry.	Inspect/Re-seal.
Cover was removed or left off during high humidity or rain.	Add a desiccant packet to the enclosure. Dry unit.
Cover not attached tightly or with the use of all cover bolts.	Dry unit. Tighten cover.
Humid environment.	Add Heater/Thermostat.

I-Problem: Power supply fuse repeatedly fails

Possible Cause	Solution
Stalled motor draws excessive current.	See "B" above.
Incorrect power accessories (such as Heater/Thermostat).	Inspect. Correct.
Excessive cycling. High current draw.	Inspect operation of control system.
Optional accessories incorrectly installed or incorrectly grounded.	Check control loop. Re-install boards.



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J-Problem: Heater / Thermostat not working.

Possible Cause	Solution
Wired incorrectly.	See wiring diagram. Re-install.
Voltage is incorrect.	Check. Re-install.