

EIM HQ Series Quarter-Turn Electric Actuator

Models HQ-008/015/020/030/050/060/080/120/200/300/
Manual HQ-400-1005



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Section 1: General

HQ Series electric actuators are design to provide reliable and efficient operation of 90° quarter-turn valves, dampers, etc.

WARNING

Use caution when working in, with, or around valves and actuators. High pressures, forces, voltages and flammable media can be present.

WARNING

Failure to follow instructions for proper electrical wiring, storage, set-up and maintenance may cause serious injury, damage equipment, or void warranty.

1.1 Pre-Installation Inspection

Verify the actuator nameplate to insure correct model number, torque, operating speed, voltage and enclosure type before installation or use. It is important to verify that the output torque of the actuator is appropriate for the torque requirements of the valve and that the actuator duty cycle is appropriate of the intended application.

Section 2: Actuator Mounting

Do not lift the actuator by the handwheel.

The actuator may be mounted in any position. The HQ-Series actuators are supplied with a female drive output, ISO5211. Bolt patterns are provided for actuator mounting. The actuator drive bush is removable for ease of machining.

It is mandatory that the actuator be firmly secured to a sturdy mounting bracket or directly mounted to the valve's ISO mounting pad. High tensile bolts or studs with spring locking washers must be used. The valve output shaft must be in line with the actuator output drive to avoid side-loading the shaft. To prevent backlash, no flexibility in the mounting bracket or mounting should be allowed.

Section 3: External Construction

Figure 1 HQ-008 – HQ-120

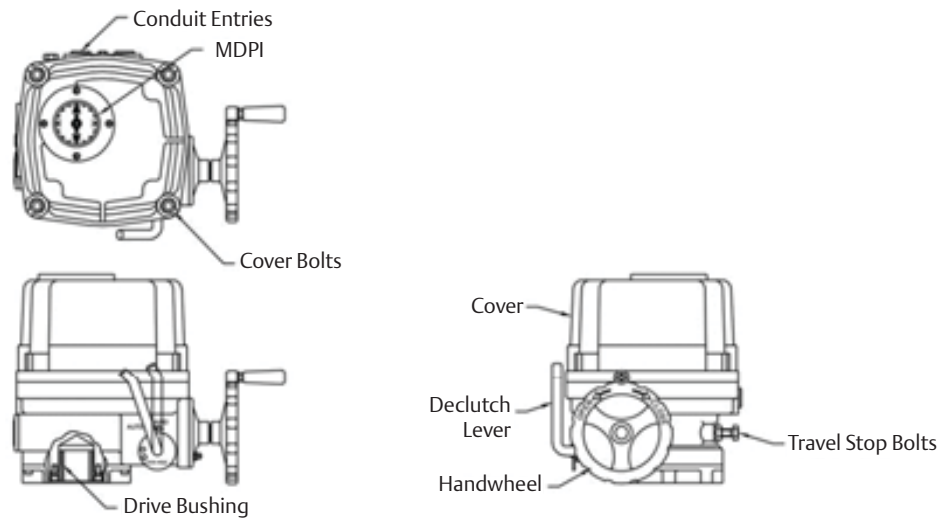
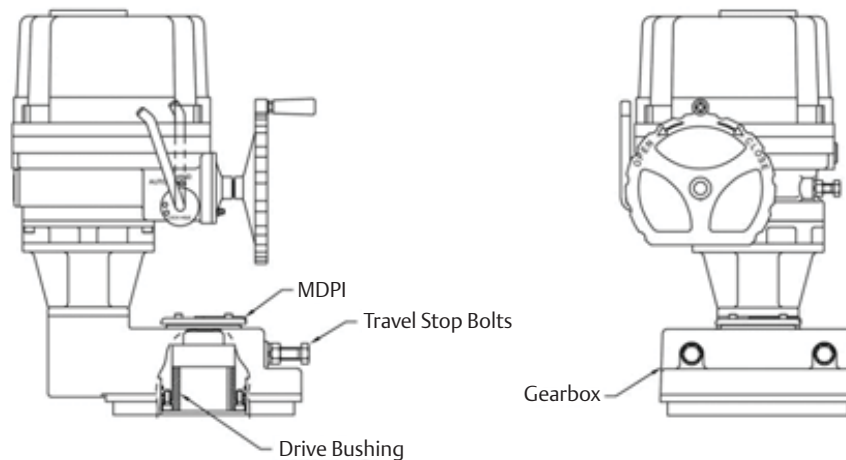


Figure 2 HQ-200 – HQ-300



Section 4: Wiring Diagrams

Figure 3 AC Single Phase Power Model HQ 015 - 300

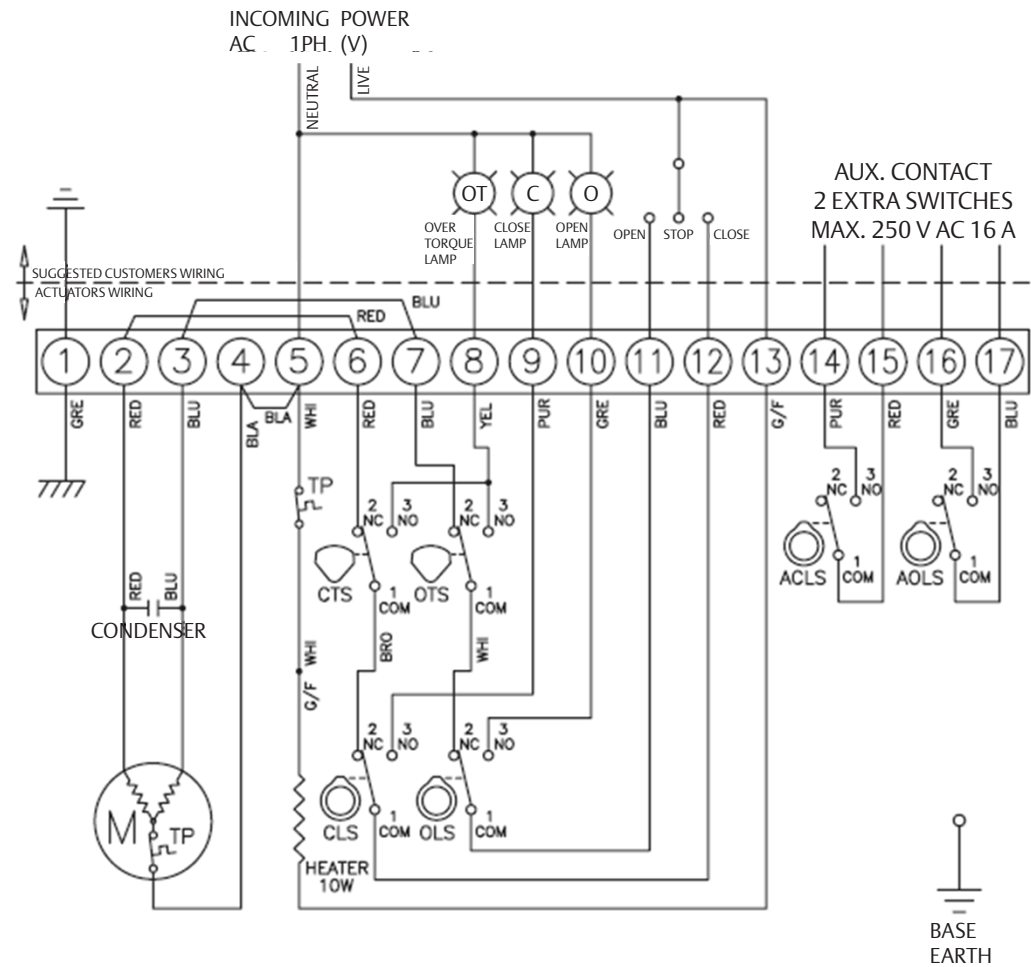
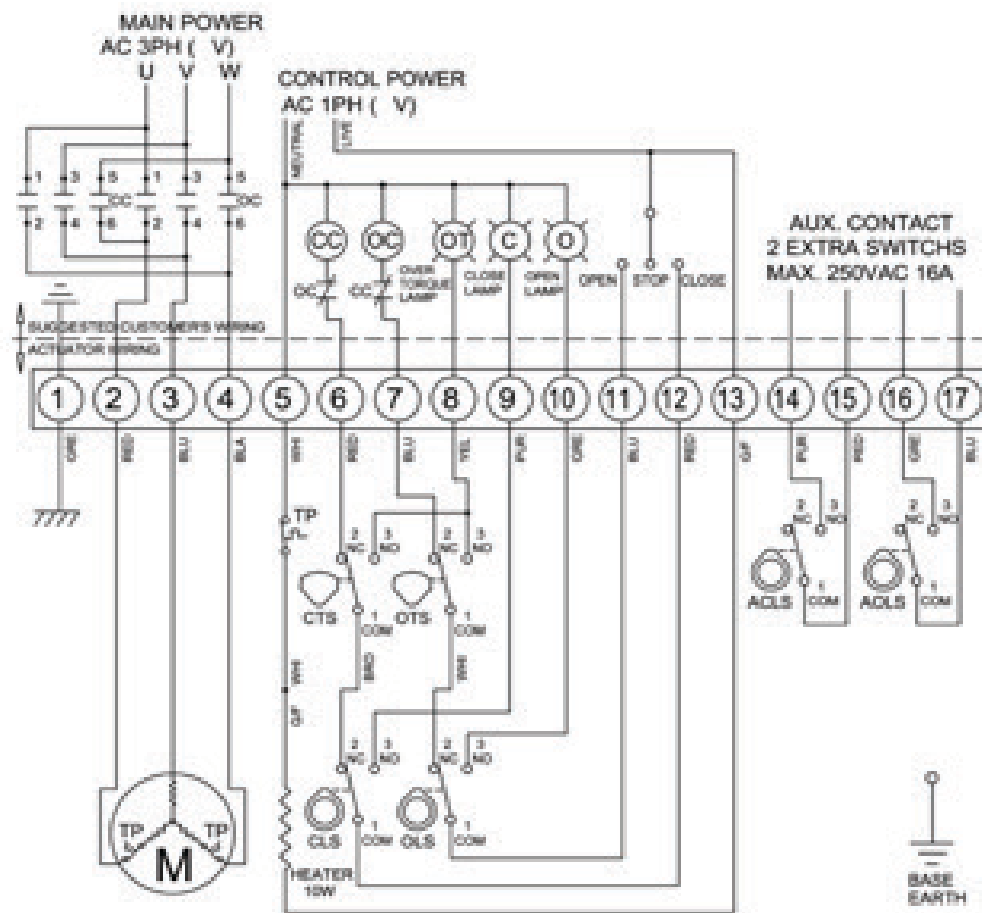


Figure 4 AC 3-Phase Power Model



Section 5: Power Requirements

Consult the nameplate of the actuator for duty cycle and current draw information.

Section 6: Duty Cycle

Duty cycle rated IEC34 – S2 (30%).

Exceeding the actuator's rated duty cycle may cause thermal overload.

Section 7: Handwheel Declutch / Manual Override

HQ actuators are provided with a declutchable manual override system.

- To manually operate the actuator, pull the manual declutch lever towards the handwheel until it remains in position.
- Turn the handwheel until the valve reaches the required position.
- Turn clockwise to close and counter -clockwise to open.

CAUTION

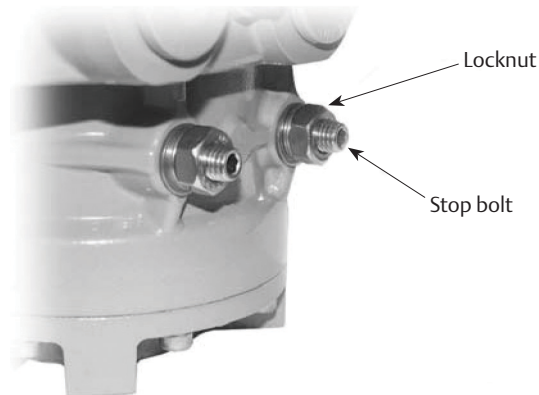
The manual declutch lever has motor preference, meaning that when the motor is energized, the lever will automatically shift to auto position.

Section 8: Mechanical Travel Stop Adjustment

Built-in mechanical stops are provided to prevent handwheel operation beyond total valve travel.

- Loosen both locknuts and back out the stop bolts.
- Run actuator electrically to fully closed position.
- Screw close stopbolt in until it it seats, then back. Off 1/2 turn, install washer and tighten locknut.
- Run actuator electrically to fully open position.
- Screw open stopbolt in until it it seats, then back. Off 1/2 turn, install washer and tighten locknut.

Figure 5 Travel Stop Adjustment



⚠ WARNING

Do not set the Actuator position limit switches to drive into the mechanical stops. Damage can occur if electric unit is allowed to repeatedly stall into the end stops.

Section 9: Electrical Connection

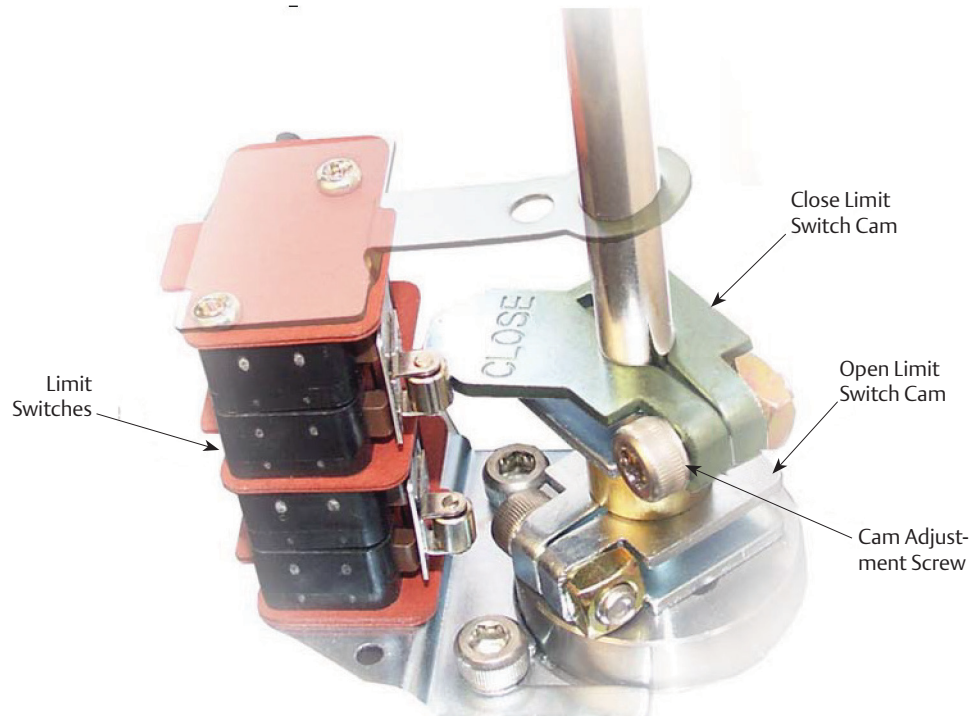
- Move valve to mid-position by handwheel. This will allow sufficient time to stop actuator in case of improper hook-up or reversed power phases.
- Identify means of removing power during hookup.
- Be sure no erroneous remote control signals can be received causing actuator to energize.
- Electrically operate the valve in the open direction. If the valve closes, actuator must be stopped and the power leads reversed to correct voltage phasing or improper field wiring.
- Set all field conduit entries in accordance with National Electric Code Requirements.

WARNING

Improper power voltage phasing eliminates protection of both the position limit switch and torque switches, risking valve damage.

Section 10: Limit Switch Setting Instructions

Figure 6



- Operate the actuator manually to closed position.
- Using a hex wrench, loosen the cam adjustment screw in the CLOSE limit switch cam.
- Rotate the CLS cam towards CW limit switch lever until the switch 'clicks'.
- Tighten set screw with hex wrench.
- Operated the actuator manually to open position.
- Using a hex wrench, loosen the cam adjustment screw in the OPEN limit switch cam.
- Rotate the OLS can towards CCW limit switch lever until the switch 'clicks'.
- Tighten set screw with hex wrench.

Section 11: Torque Switch Adjustment

The torque switches are adjusted at factory to protect actuator and valve against over torque. Should adjustment be necessary, please contact the factory, or your local EIM distributor for assistance.

Section 12: Reverse Acting (Counterclockwise to Close)

Standard factory actuators are normally set to clockwise rotation to close. However the rotation can be reverse to counter-clockwise to close by simply reconfiguring the wiring as follows:

- Exchange 9 and 10 in main actuator terminal block
- Exchange 11 and 12 in main actuator terminal block

If a PCU card is installed:

- Exchange Potentiometer input wires P1 (Orange wire) and P3 (Grey wire) on PCU
- Change the direction of the indicator (HQ-200 and 300 only)
- Recalibrate by using Auto Calibrate feature

Section 13: Lubrication

The HQ series actuators are totally enclosed units with a permanently lubricated gear trains (Moly EP Grease). Once installed lubrication should not be required. However, periodic preventative maintenance will extend the operating life of the actuator.

Section 14: MDPI (Mechanical Dial Position Indicator) Settings

- Manually rotate actuator to fully closed position
- Remove actuator cover
- Loosen indicator screw
- Adjust indicator to correct orientation
- Tighten indicator screw
- Replace cover
- Check indicator alignment

Section 15: Maintenance

At least once a year a check should be made of your EIM HQ Series Actuator.

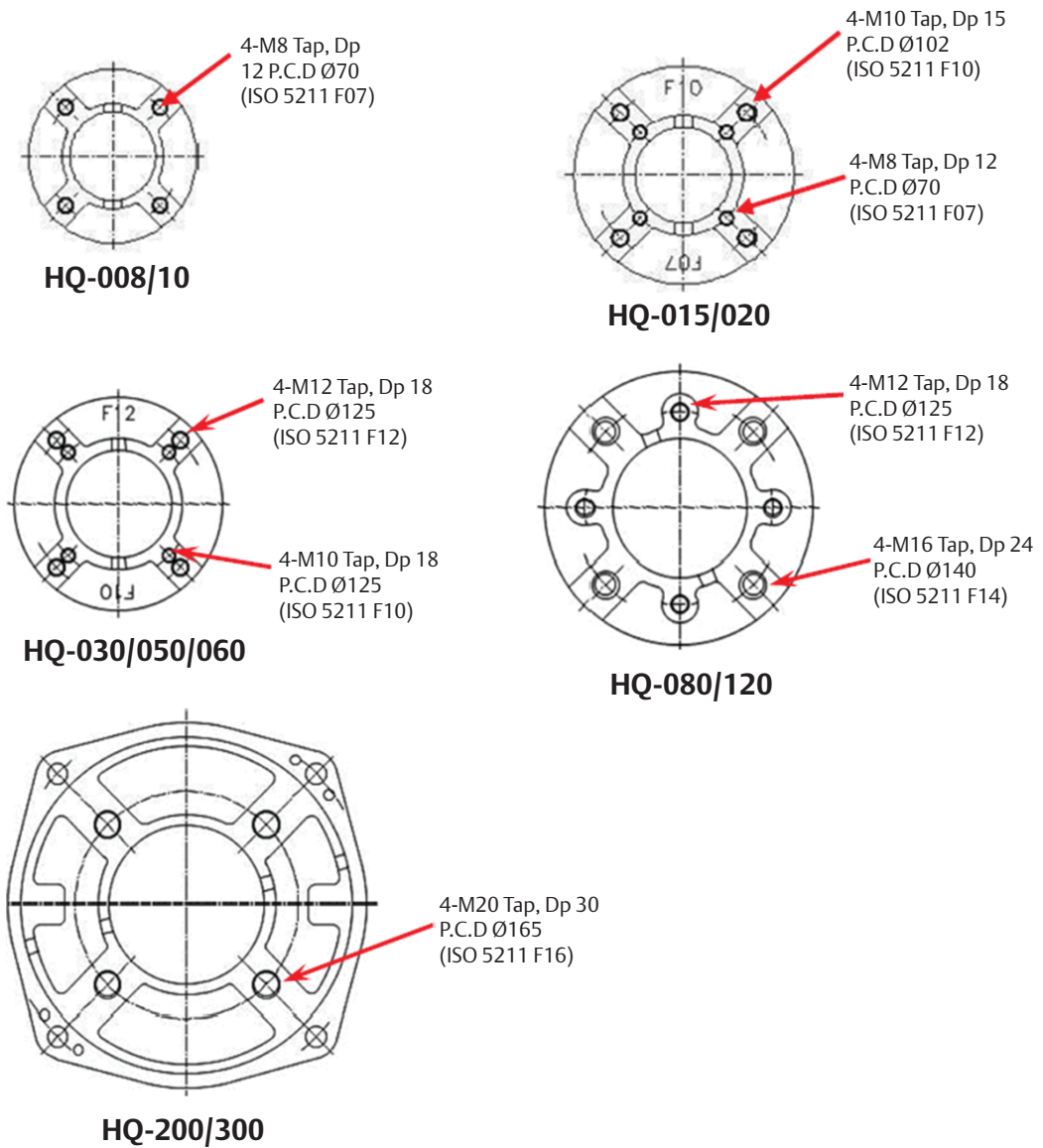
- Disconnect all power to actuator.
- Open Electrical Enclosure. Inspect and tighten all electrical connections
- Visually inspect for any electrical or mechanical damage. Replace worn or damaged components.
- Check lubrication consistency and levels. Fill or replace if required.

Section 16: Storage

Actuators must be stored in a clean, cool and dry area. The unit shall be stored with the cover installed and the conduit openings sealed. Storage must be off the floor, covered with a sealed dust protector.

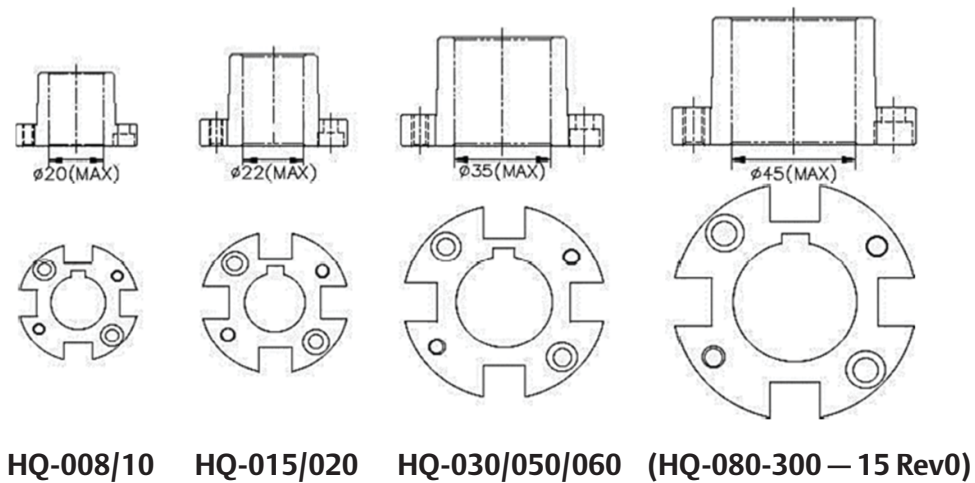
Section 17: Mounting Base Detail

Figure 7 Mounting Base Detail



Section 18: Drive Bushing Details

Figure 8 Drive Bushing Details



Section 19: Troubleshooting

The following instructions are offered for the most common difficulties encountered during installation and start-up.

Table 1.

SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
Motor will not run	Open in control circuit	Refer to appropriate wiring diagram and check for continuity
	Insulation resistance breakdown in motor	Perform Megger Test
No power available to actuator	Tripped circuit breaker	Reset circuit breaker
Handwheel hard to turn	Valve stem improperly lubricated	Lubricate with grease
	Actuator lubrication has broken down	Clean out old grease and replace with recommended lubricant
	Valve packing gland too tight	Loosen packing gland nuts as necessary
	Jammed valve	Refer to valve maintenance
Valve only opens or closes partially with motor	Torque switch setting too low	Check setting and reset if necessary
	Limit switch improperly set	Check setting and reset if necessary
Torque switch is properly set, but actuator torques out in mid-travel, open or closed direction	Damaged or bent valve stem	Refer to valve maintenance
	Valve packing too tight	Refer to valve maintenance
	Jammed valve (obstruction in line)	Refer to valve maintenance
Handwheel will not operate valve	Stripped gearing	Replace as necessary
	Clutch shifter position or malfunction	Move shifter, or replace as necessary
	Broken handwheel shaft	Replace as necessary
	Broken valve stem	Repair or replace as necessary
Motor runs but will not operate valve	Stripped gearing	Replace as necessary
	Clutch shifter position or malfunction	Move shifter, or replace as necessary
	Broken handwheel shaft	Replace as necessary

Section 20: Product Features and Specifications

Enclosure Rated	Weatherproof IP67, NEMA 4 and 6
Enclosure	High grade aluminum alloy, corrosion coated
Power Supply	110/220 V AC 1 PH 50/60 Hz, 440 V AC 3 PH 50/60 Hz
Duty Cycle	EC 34 S2 (25 - 30%)
Motor	Squirrel caged induction motor
Limit Switches	2 x open/close SPDT, 250 V AC 10 A rating
Auxiliary Limit Switches	2 x open/close SPDT, 250 V AC 10 A rating (except HQ008)
Torque Switches	Open/close SPDT, 250 V AC 10 A Rating (except HQ008)
Stall Protection	Built-in thermal protection
Travel Angle	90° +/- 10%
Indicator	Continuous position indicator
Manual Override	Declutchable manual override
Self-Locking	By means of worm gear
Mechanical Travel Stops	2 x external adjustable mechanical travel stops
Space Heater	7 - 10 W ceramic housed
Conduit Entries	2 x PF3/4"
Lubrication	Grease moly EP
Ambient Temperature	-20 °C – + 70 °C (except on CPT and PCU board)
External Coating	Dry powder polyester, Munsell No. 5R 3.5/12

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