

ECON ELECTRIC ACTUATOR

Fig. 7907, type ELA40

- Small & Compact quarter turn actuator**
- Mechanical & LED lamp position indicator**
- Multi-voltage power supply**
- Multi-mounting base**
- High output torque**
- Manual override**



Operating and Instruction Manual for actuator : ELA40

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1. Introduction

1.1 Purpose

This Installation and operating manual explains how to install, operate and maintain ELA40 electric actuators.

1.2 Safety Notices

Safety notices in this manual detail precautions the user must take to reduce the risk of personal injury and damage to the equipment. User must read these instructions before installation, operating, or maintenance.



DANGER : Refers to personal safety. Alerts the user to danger or harm. The hazard or unsafe practice will result in severe injury or death.



WARNING : Refers to personal safety. Alerts the user to potential danger. Failure to follow warning notices could result in personal injury or death.

CAUTION : Directs the user's attention to general precautions that, if not followed, could result in personal injury and/or equipment damage.

Note : Highlights information critical to help the users understand how to install and operate actuators.

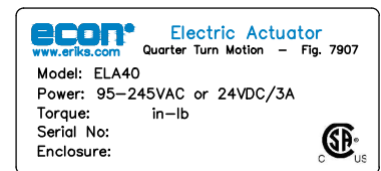
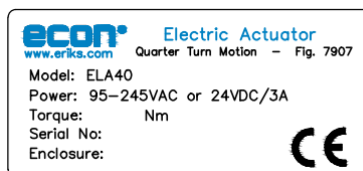
2. Product Identification

2.1 Product Identification

The actuator name plate is located on the side of the opposite the conduit entry. The name plate contains the following

2.1.1 Marking

- ECON logo (trade mark)
- TORQUE
- Electrical power supply
- Type
- Operating time
- Rated current
- Serial No.
- Option



Only applicable for North-American markets



2.2 Initial inspection

Before installing the actuator, the condition of the product must be inspected and also the actuator name plate must be compared with your ordering information.

- Remove the packing material carefully. Inspect the product for any visual damage that may have occurred during transport/delivery.
- Check the product specification with your ordering information. If there are any discrepancies between ordering information and the specification of the actuator, contact your supplier immediately.

2.3 Storage

Actuators must be stored in a clean, cool and dry area.

The unit shall be stored with the cover installed and the cable openings sealed. Storage must be off the floor, covered with a sealed dust protector.

When actuators are stored outdoor, suitable protection against weather influences must be made. Actuator must be well protected against dust, moisture and freezing conditions.

3. General Information and Features

3.1 General

The ELA40 electric actuator is designed for small size quarter turn valve operation like ball, butterfly and damper valves.

3.1.1 Performance

Power Supply 95 - 245VAC

Fig. 7907	Maximum torque in	Operating time in s/90°	Duty cycle according to IEC 60034-1 S4	Valve top flange connection according to ISO 5211	115VAC Rated current in A	115VAC Max. torque current in A	115VAC Stall current in A	230VAC Rated current in A	230VAC Max. torque current in A	230VAC Stall current in A	Power in W	Weight in kg (lbs)
Type	Nm (lb-in)	50 /60Hz			50/60Hz	50/60Hz	50/60Hz	50/60Hz	50/60Hz	50/60Hz	115/230VAC	
ELA40	39 (347)	12	50%	F03-F04-F05, V11	0,15	0,20	1,30	0,15	0,10	1,30	22/23	1,2 (2,7)

*ELA40 is a multi-voltage actuator and can be connected to a power supply of 24VDC or 95-245VAC. The actuator has a 24VDC motor.

Power Supply 24VDC

Fig. 7907	Maximum torque in	Operating time in s/90° at maximum torque*	Duty cycle according to IEC 60034-1 S4	Valve top flange connection according to ISO 5211	Rated current in A	Max. torque current in A	Stall current in A	Power in W	Weight in kg (lbs)
Type	Nm (lb-in)								
ELA40	39 (347)	14	50%	F03-F04-F05, V11	0,15	0,85	1,30	21	1,2 (2,7)

*The exact operating time for 24VDC actuators depends on the effective load.

3.1.2 Standard Technical Data

Enclosure	Weatherproof IP67, NEMA 4, 4x and 6
Body and cover	High grade Aluminium alloy, corrosion coated
Power Supply	95~245VAC/1Ph, 50/60Hz, 24VDC
Duty cycle ¹⁾	S2, 30 min. / S4, 50% according to IEC 60034-1
Motor	DC motor
Limit Switches	2 x open/close SPDT, 250 VAC 5A
Auxiliary Limit Switches	2 x open/close SPDT, 250 VAC 5A
Torque Switches	Electronic Sensor (max. 2A)
Indicator	Continuous position indicator & Full Position LED lamp
Manual	Manual push button & Manual lever
Space Heater	0,5W
Conduit Entries	1 x PG11 with 1,2m cable
Lubrication	Grease moly EP
Ambient Temperature	-20°C (14°F) up to + 80°C (176°F)
External Coating	Dry powder polyester

3.1.3 Technical Data (optional)

WTA	Watertight enclosure IP68 (10m/24hr) / Nema 6P
PIU	Potentiometer unit (0~1KΩ)
PCU	Proportional control unit (input, output 0~10 VDC, 4~20mA DC)
CPT	Current position transmitter (output 4~20mA DC)

3.1.4 Duty Cycle *1

Duty cycle rated IEC 60034-1 S2, 30 min. / S4, 50%

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

Note *1

Type of duty according to VDE 0530 / IEC 60034-1

Short time duty S2
Operation at a load for a time not sufficient to reach thermal equilibrium, followed by enough time for the motor to cool down.

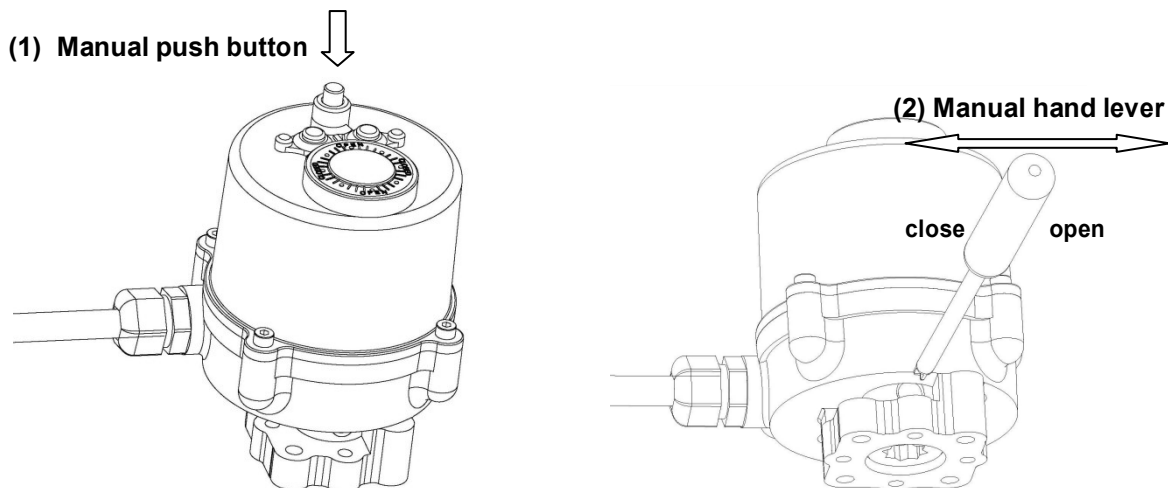
Intermittent duty S4
The duty is a sequence of identical cycles which consist of starting time, operation time with constant load and rest period. The rest period allows the machine to cool down so that thermal equilibrium is not reached. The relative on-time at S4-25% or S4-50% is limited to 25% and 50% respectively

3.1.5 Heater

Condensation in the actuator is possible due to fluctuation of the ambient temperature. The heater integrated in the control unit, will prevent condensation in most cases.

3.1.6 Manual Hand Lever

- Switch off the power supply before manual operation.
- Press button 1 and keep it pushed before operating the hand lever.

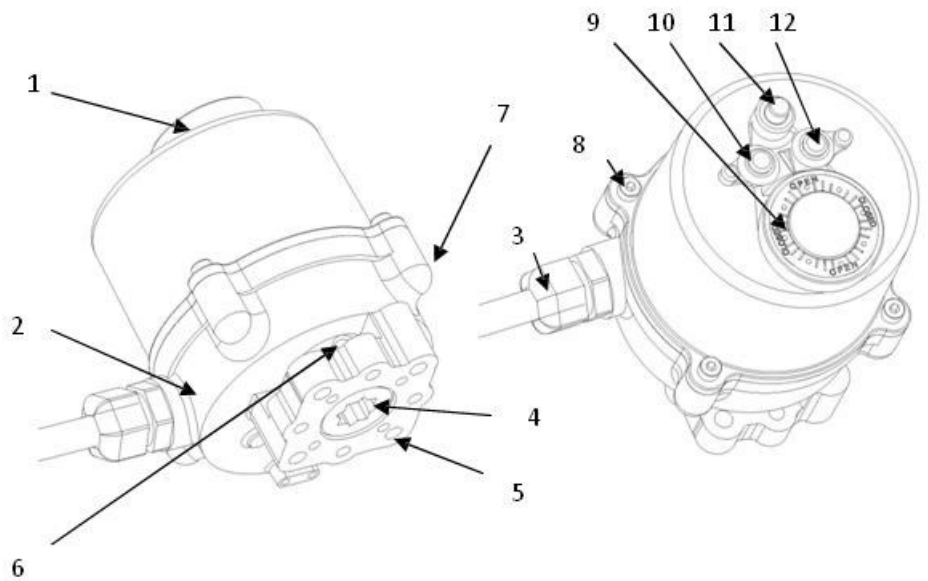


3.1.7 Lubrication

The ELA40 actuator is a totally enclosed unit with a permanently lubricated gear (Moly EP Grease) lubrication should not be required. However, periodic preventative maintenance will extend the operating life of the actuator.

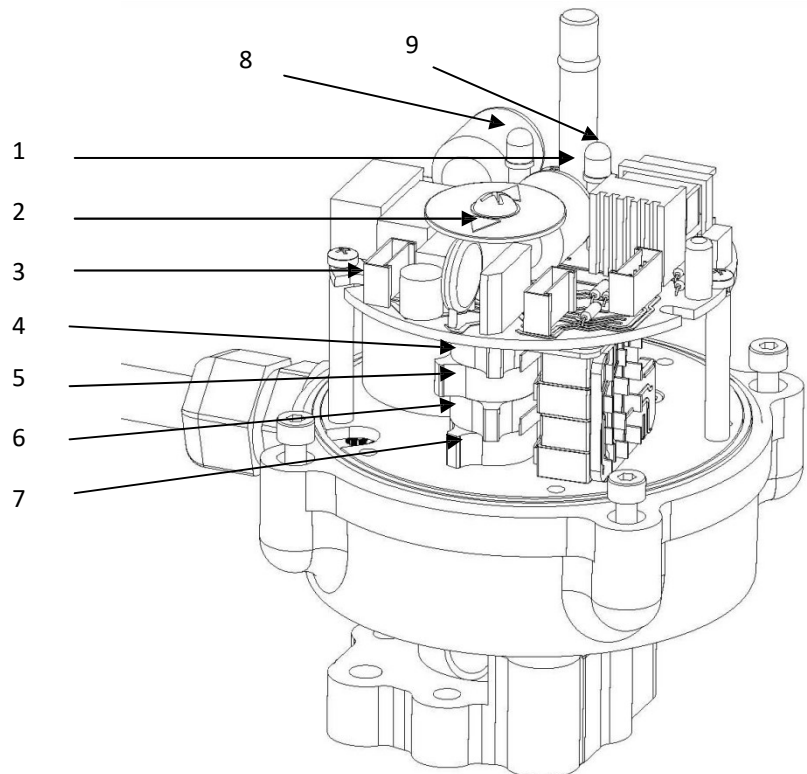
3.2 External Parts for Standard Models

External Parts	
1	Top Cover
2	Body
3	Cable entry 1x PG11 and 1.2M cable
4	Drive shaft (star11mm)
5	Mounting base (F03,F04,F05)
6	Manual lever hole
7	Name plate
8	Cover bolt (captive design)
9	Indicator
10	Full Close LED lamp (Green)
11	Manual push button
12	Full Open LED lamp (Red)



3.3 Internal Parts for Standard Models

Internal Parts	
ELA40 SERIES	
1	Manual push shaft
2	Indicator
3	On/off PCB & Heater
4	Additional Close limit switch set
5	Additional Open limit switch set
6	Close limit switch set
7	Open limit switch set
8	Full Close Led lamp (Green)
9	Full Open Led lamp (Red)



4. Installation Instruction

4.1 Pre-Installation for use in general service

Verify the information on the actuator name plate, before installation or use. (model number, output torque, operating speed, voltage and enclosure type).

It is important to verify that the output torque of the actuator meets the required valve torque requirements and that the actuator duty cycle is appropriate for the intended application.



WARNING : Read this installation and maintenance manual carefully and completely before installation, operation, or servicing this actuator.

4.2 Actuator Mounting

Note :

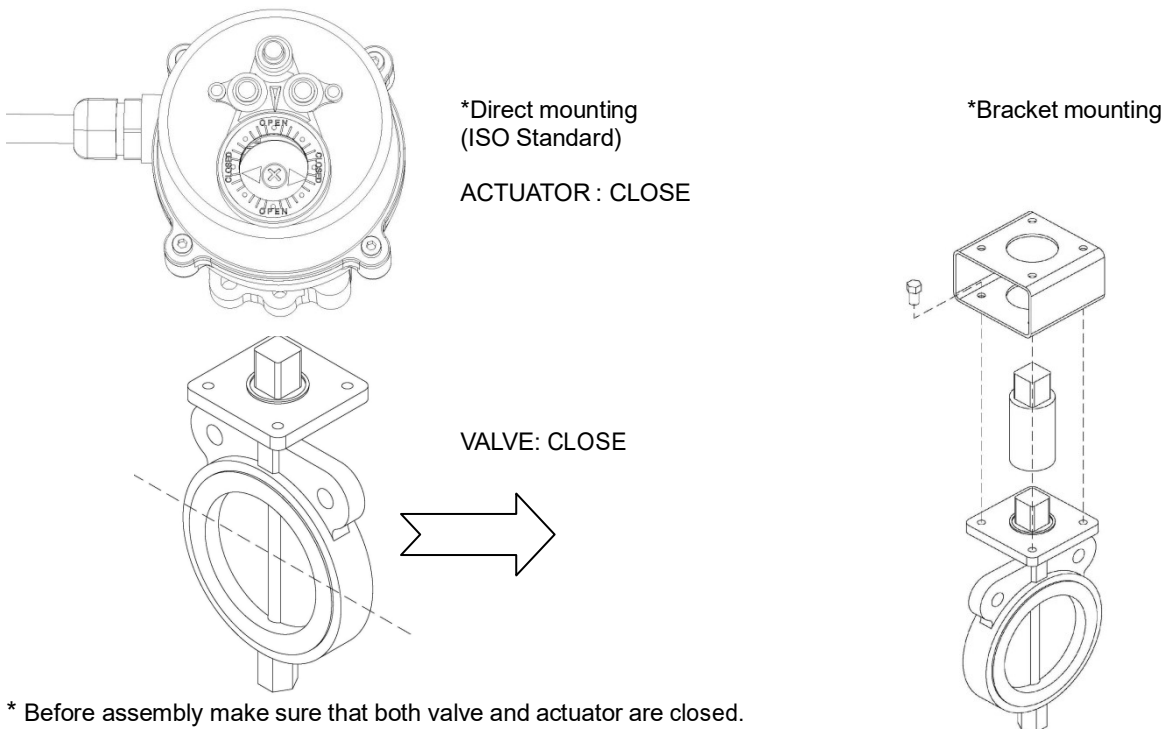
- Prior to mounting, the part-turn actuator must be checked for any damage.
- Damaged parts must be replaced by original spare parts.

Mounting of actuator is possible in any position, but most easily done with valve shaft in upright position. The ELA40- series actuators are supplied with a driving bush. This bush can be removed in order to machine or adjust the required stem connection.

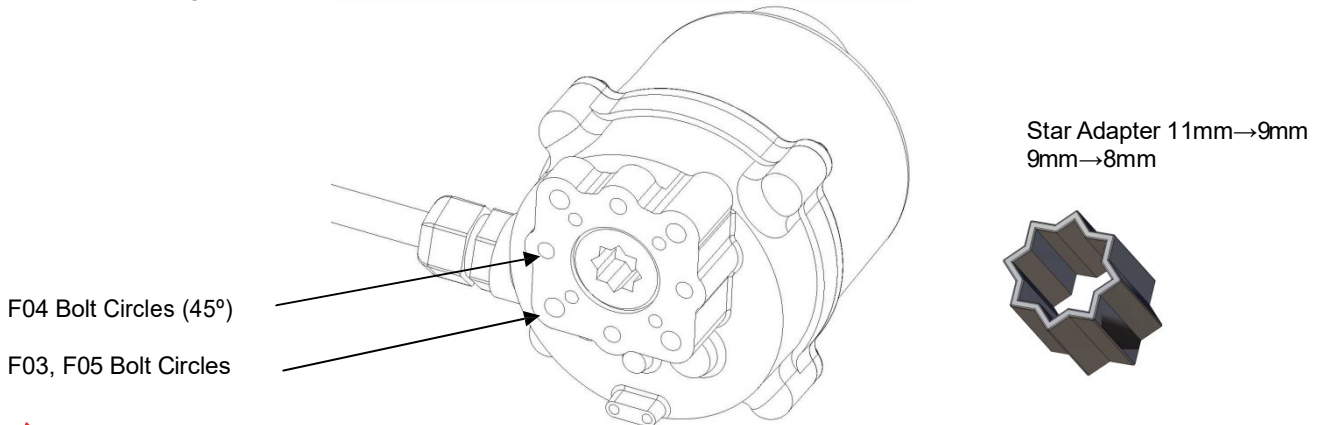
Caution:

- Do not attempt to work on your ECON actuator without first shutting off the power supply.
- Do not attach ropes or hooks to the hand wheel for lifting purposes.

4.2.1 Actuator Mounting Details



Actuator mounting base : F03/F05 and F04



DANGER : HAZARDOUS VOLTAGE. Make sure all power is disconnected before assembly!

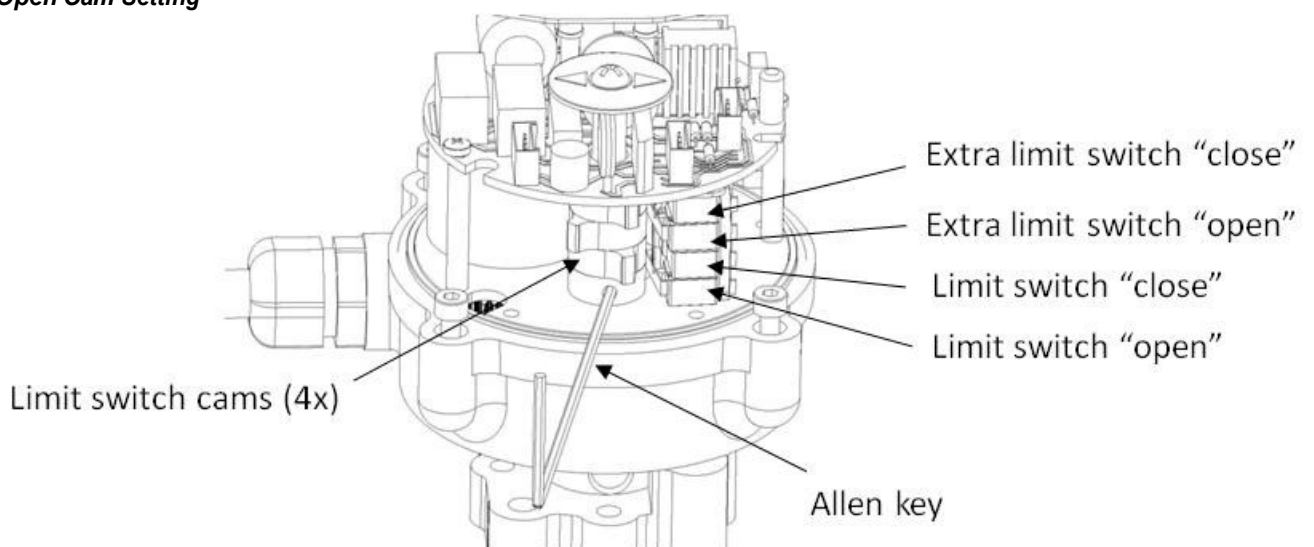
4.3 Limit Switch Setting

- Rotate the actuator manually to the closed position
- Using an Allen key, loosen the set screw of the CLOSE limit switch cam
- Rotate the CLOSE cam Clock Wise towards the limit switch lever until the switch ‘clicks’ (Fig 2)
- Tighten the set screw with the Allen key
- Rotate the actuator manually to the open position
- Using an Allen key, loosen the set screw of the OPEN limit switch cam
- Rotate the OPEN cam Counter Clock Wise towards the limit switch lever until the switch ‘clicks’ (Fig 2)
- Tighten set screw with the Allen key



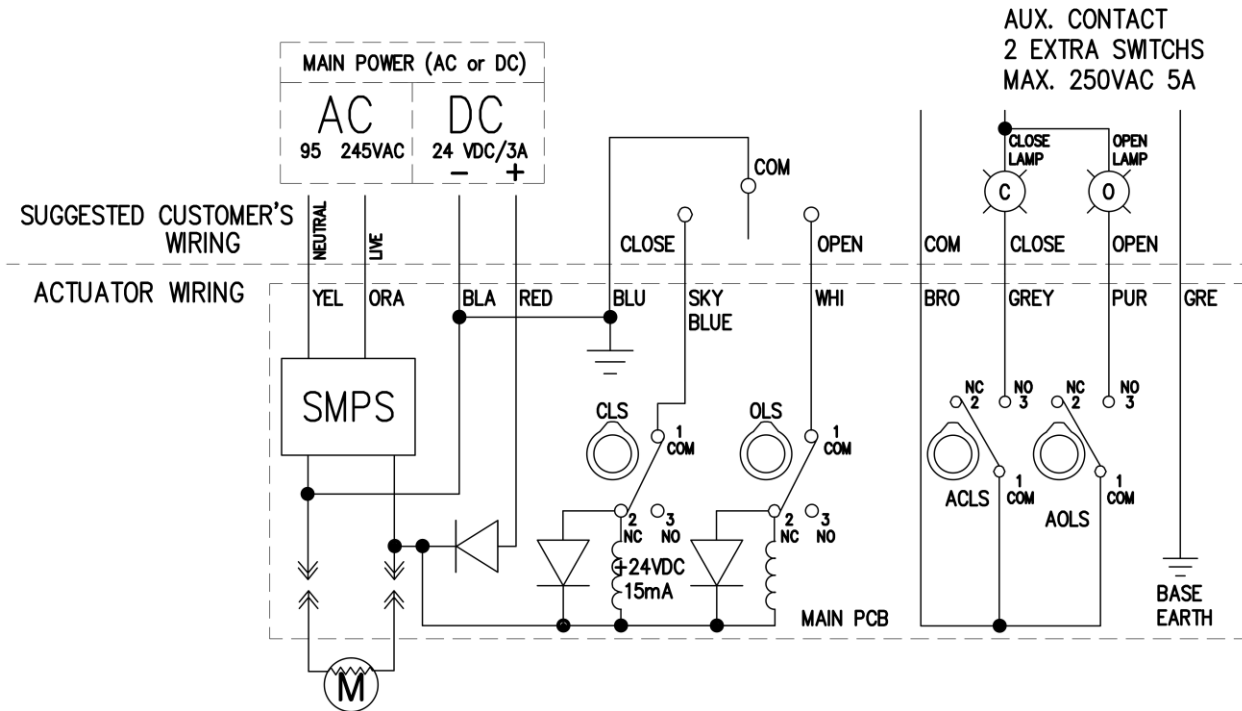
DANGER : HAZARDOUS VOLTAGE. Make sure all power is disconnected before adjusting any settings.

Fig. 2 Open Cam Setting



5. Wiring Diagram

ELA40 on/off, 95VAC up to 245VAC and 24VDC



SYMBOL	DESCRIPTION	RATING
CLS	CLOSE LIMIT SWITCH	250VAC 5A
OLS	OPEN LIMIT SWITCH	250VAC 5A
ACLS	AUX. CLOSE LIMIT SWITCH	250VAC 5A
AOLS	AUX. OPEN LIMIT SWITCH	250VAC 5A

EACH ACTUATOR SHOULD BE POWERED THROUGH IT'S OWN INDIVIDUAL SWITCH OR RELAY CONTACTS TO PREVENT CROSS FEED BETWEEN TWO OR MORE ACTUATORS.



DANGER :

- **HAZARDOUS VOLTAGE**
- *The actuator cover may not be removed before the power supply has been switched off*
- *No electrical power should be connected until all wiring and limit switch adjustments have been completed and the cover has been returned in place*

6. Maintenance

6.1 Maintenance

CAUTION :

- **Turn off all power supplies before performing service on the actuator.**
- **Before removing or disassembling your actuator, ensure that the valve is isolated and not pressurized.**

Maintenance, under normal conditions at six month intervals. But when conditions are more severe, more frequent inspections may be advisable.

- Insure valve actuator alignment
- Insure wiring is insulated, connected and fixed properly
- Insure all screws are present and tight
- Insure cleanliness of internal electrical devices
- Insure conduit connections are installed properly and are dry
- Check internal devices for condensation
- Check power to internal heater
- Check O-rings seals and verify that the O-ring is installed properly
- Verify declutch mechanism
- Visually inspect during open/close cycle



WARNING: Treat the cover with care. Sealing surfaces must not be damaged or polluted in any way. Do not apply any exceeding force to the cover during fitting.

6.2 Tools

- 1 Set Metric Allen Key
- 1 Set Screw Drivers
- 1 Set Metric Spanner
- 1 Wrench 200mm
- 1 Wrench 300mm
- 1 Wire Stripper long Nose
- 1 Multi Meter (AC, DC, Resistance)
- 1 DC Signal generator (4~-20mA) : PCU Board Option
- 1 mA Meter (0~25mA) : PCU & CPT Board Option

7. Trouble Shooting

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

SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
Motor will not Run	Open control circuit	Refer to appropriate wiring diagram and check for the proper wiring of the actuator
	Insulation resistance breakdown in motor	Perform Megger test
No power available to actuator	Tripped circuit breaker	Reset circuit breaker
Manual override Lever 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. Refer to valve maintenance
	Jammed valve	Refer to valve maintenance manual
Valve only opens or closes partially with motor	Limit switch improperly set	Check setting and reset if necessary
Manual override Lever will not operate valve	Broken transmission / gearing	Replace if necessary
	Broken hand wheel shaft	Replace if necessary
	Broken valve stem	Repair or replace if necessary
Motor runs but will not operate Valve	Broken transmission / gearing	Replace if necessary

Actuator does not respond

- Check the power supply
- Check if the voltage matches the rating on the actuator name plate
- Check internal wiring by using the actuator wiring diagram
- Check the position of the limit switch cams

Actuator is receiving power but does not operate

- Check the power supply
- Check the output torque. This torque must be bigger than the valve break torque
- Check the position of the limit switch cams
- Check if the torque switches are engaged
- Check mechanical travel stop adjustment
- Compare the rotation direction of the actuator with the rotation direction of the valve (anti-clockwise to open according to international standards)
- Check internal wiring
- Check for corrosion and condensation
- Check if coupler and/or bracket are correctly installed

Actuator runs erratically

- Check the ambient temperature
- Verify that the duty cycle has not been exceeded
- Check the position of manual override lever

Optional equipment

Potentiometer Current Position Transmitter

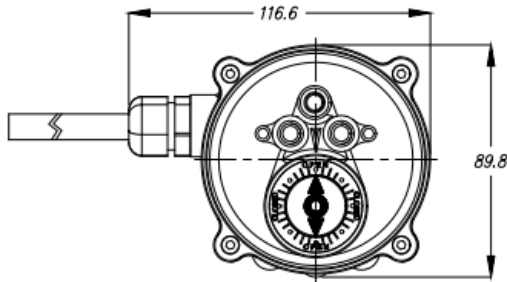
- Check the resistance value
- Check the potentiometer gear for jamming
- Check the zero and span calibration
- Check the circuit board for damage

Current Position Transmitter

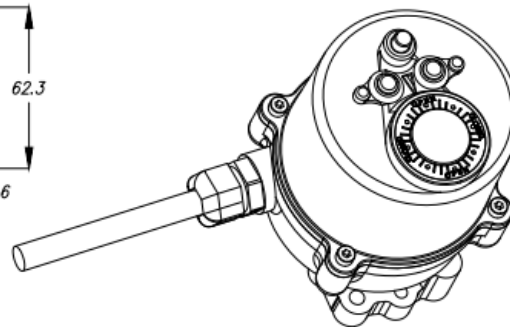
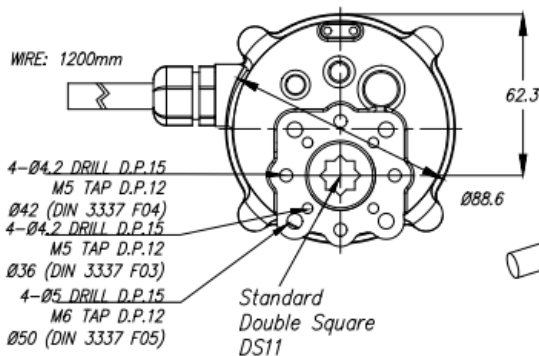
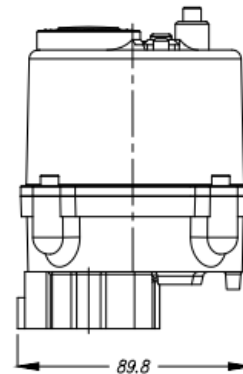
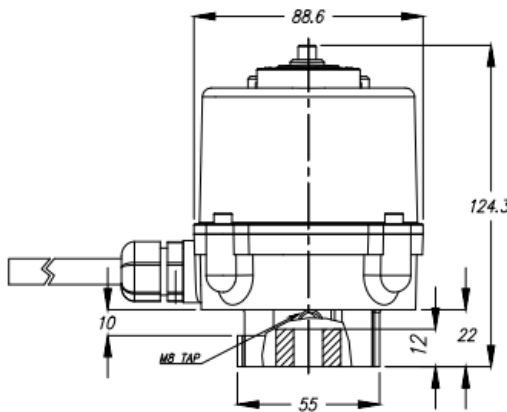
- Verify the input signal
- Check the dip switch configuration
- Check the circuit board for damage

8. Dimensions

ELECTRIC ACTUATOR ELA40 WITH DRIVE BUSHING DOUBLE SQUARE INSERT DS11



ENCLOSURE: IP67
 TORQUE: 3,9Kg.m/39Nm/347 lb-in
 OPERATION TIME: 12sec
 POSITION SWITCH: 4 SPDT SWITCH
 CABLE ENTRY: PG11
 MOUNTING FLANGE: F03/F04/F05
 acc. to DIN/ISO5211



If you have questions about this product,
 please contact your nearest supplier in
www.eriks.com