REA 40 Electric Actuator Manual
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INTRODUCTION

This installation and operating manual explains how to install, operate and maintain REA40 electric actuators. 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 potential 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.

PRODUCT IDENTIFICATION

The actuator name plate is located on the top cover of the actuator.

The name plate contains the following:

- TORK logo (trade mark)
- Electrical power supply
- Model
- Type
- Rated current
- Operating time (seconds)
- Serial No.
Initial Inspection

Upon receipt of the actuator, inspect the condition of the product and ensure the name plate matches the order sheet or your requirements, also check for any damage that may have occurred during shipment. If the wrong product has been shipped immediately or is damaged report to the coordinator.

Storage

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

When actuators are stored outdoors, they must be stored off the ground, high enough to prevent being immersed in water or buried in snow.

GENERAL INFORMATION AND FEATURES

REA series electric actuators are designed to provide reliable and efficient operation of 90 degree quarter turn valves, dampers, etc.

Performance

<table>
<thead>
<tr>
<th>MODEL</th>
<th>Max Output Torque (Nm)</th>
<th>Operating Time (s) 50/60Hz</th>
<th>Duty Cycle S4(%)</th>
<th>Voltage (V) 1 PH</th>
<th>Nominal Current (A)</th>
<th>Weight Kg</th>
<th>Mounting Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>REA-40</td>
<td>40</td>
<td>~12</td>
<td>70</td>
<td>AC85V~265V, DC24V</td>
<td>0.12</td>
<td>0.06</td>
<td>0.46</td>
</tr>
</tbody>
</table>
Technical Data

Enclosure Rated  Weatherproof IP67
Enclosure  High grade aluminium alloy, corrosion coated
Power Supply  AC85V~265V 50/60 Hz, DC24V
Motor  DC motor
Limit Switches  2 x open/close SPDT, 250 VAC 10A rating
Auxiliary Limit Switches  2 x open/close SPDT, 250 VAC 10A rating
Indicator  Continuous position indicator
Manual  Manual Override Nut
Space Heater  1W
Conduit Entries  1 x PG11 & Long (1.2m) Wire Type
Lubrication  Grease moly EP
Ambient Temperature  -20°C to +70°C
External Coating  Dry powder polyester

Duty Cycle

Duty cycle is rated IEC60034 - S4 50% / S2 30 min

Exceeding the actuators rated duty cycle may cause thermal overload.

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

**Short - time duty S2**

The operation time at a constant load is short, so that thermal equilibrium is not reached. The pause is long enough for the machine to cool down to ambient temperature. The duration of the short-time operation is limited to 15 min (10 min, 30 min).

**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.
Heater

Condensation in the actuator is possible due to wide fluctuation of the ambient temperature. The heater integrated in the control unit prevents this in general.

Manual Hand Wheel and Lever

REA40 actuators are provided with a manual operation system.

⚠️ When nut becomes tight **DO NOT FORCE** further as this will cause serious damage to the gearing.

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(1) Manual push button

(2) Manual lever

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**Note:** The override engagement lever returns automatically to auto position when the actuator is operated electrically.
Lubrication

REA40 is a totally enclosed unit with a permanently lubricated gear train (Moly EP Grease). Once installed lubrication should not be required. However, periodic preventative maintenance will extend the operating life of the actuator.

External Parts

1. Top Cover
2. Body
3. Cable Entry (1 x PG11&Long(1.2m) Wire Type)
4. Drive Shaft
5. Mounting Base (F03, F05, F07)
6. Manual Override Hole
7. Name Plate
8. Cover Bolt (Captive Design)
9. Indicator
10. Full Close LED lamp
12. Full Open LED lamp
Internal Parts

1. Manual Push Shaft
2. Indicator
3. On/Off PCB & Heater
4. Additional open limit switch set
5. Additional close limit switch set
6. Close limit switch set
7. Open limit switch set
8. Full Close LED lamp
9. Full Open LED lamp
INSTALLATION INSTRUCTION

Pre-Installation (for use in General Services)

Verify the actuators name plate to ensure correct model number, force, operating speed, voltage and enclosure type before installation and use.

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

**WARNING:** Read this installation and maintenance manual carefully and completely before attempting to install, operate or trouble shoot the REA actuators.

Actuator Mounting

Note:

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

Mounting is most effectively carried out with the valve shafting pointing vertically upwards, however mounting is also possible in any other position.

The REA series actuators are supplied with a Union Joint and nut which is removable for ease of machining.

**CAUTION:**

- Do not attempt to work on your REA actuator without first shutting off Incoming power.
- Do not attach ropes or hooks to the hand wheel for the purpose of lifting by hoist.
ACTUATOR MOUNTING DETAILS

* Make sure that both valve and actuator are close.

Danger: HAZARDOUS VOLTAGE (Make sure all power is disconnected prior to mounting)
Limit Switch Setting

- Rotate the actuator hand wheel manually to closed position
- Using hex wrench, loosen the set screw on the CLOSE limit switch cam
- Rotate the CLOSE cam towards CW limit switch lever until the switch “clicks”. Tighten the set screw with hex wrench
- Rotate the actuator hand wheel manually to open position
- Using hex wrench, loosen the set screw in the “OPEN” limit switch cam
- Rotate to “OPEN” cam towards CCW limit switch lever until the switch “clicks”.
- Tighten set screw with hex wrench

⚠️ Danger: HAZARDOUS VOLTAGE (Make sure all power is disconnected prior to mounting)
OPERATION INSTRUCTION

Electrical Connections and Preliminary Test

- Loosen the screws on the actuator cover and lift it off
- Make sure that the power supply voltage is in accordance with the data on the actuator name plate
- Connect wires according to the enclosed wiring diagram
- Move the valve manually to a half-open position, operate and electrical opening and check that the motor rotates in the right direction
- Standard units are counter-clockwise to open set
- Test the actuator and check the limit switches work correctly
- Check all the cable glands are correctly tightened, applicable cable glands should be selected to be meet the applications condition. Over the grade IP67 of cable gland recommended in potentially explosive atmospheres.
- Mount cover and tighten cover bolts

Wiring Diagram
MAINTENANCE

Caution: Turn off all power services before attempting to perform a service on the actuator. POTENTIAL HIGH PRESSURE VESSEL. Before removing or disassembling the actuator ensure the valve or other actuated devices are isolated and not under pressure.

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

- Ensure valve actuator alignment
- Ensure wiring is insulated, connected and terminated properly
- Ensure all screws are present and tight
- Ensure cleanliness of internal electrical devices
- Ensure conduit connections are installed properly and are dry
- Check internal devices for condensation
- Check power to internal heater
- Check enclosure O-ring seals and verify the O-ring is not pinched between flange
- Verify declutch mechanism
- Visually inspect during open/close cycle
- Inspect identification labels for ware and replace if necessary

Warning: Treat cover with care. Gap surfaces must not be damaged or dirtied in any way. Do not jam cover during fitting.

Tools

- 1 Metric Allen Key (Hex Wrench)
- 1 Screw Driver
- 1 Metric Spanner
- 1 Wrench 200mm
- 1 Wrench 300mm
- 1 Wire Stripper Long Nose
- 1 Multi Meter (AC, DC, Resistance)
TROUBLE SHOOTING

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

<table>
<thead>
<tr>
<th>SYMPTOM</th>
<th>PROBABLE CAUSE</th>
<th>CORRECTIVE ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor not running</td>
<td>Open in control unit</td>
<td>Refer to appropriate wiring diagram and check for continuity</td>
</tr>
<tr>
<td>No power available to actuator</td>
<td>Tripped circuit breaker</td>
<td>Reset circuit breaker</td>
</tr>
<tr>
<td>Manual override nut hard to turn</td>
<td>Valve stem improperly lubricated</td>
<td>Lubricate with grease</td>
</tr>
<tr>
<td></td>
<td>Actuator lubricant has broken down</td>
<td>Clean out old grease and replace with recommended lubricant</td>
</tr>
<tr>
<td></td>
<td>Valve packing gland too tight</td>
<td>Loosen gland nuts as necessary</td>
</tr>
<tr>
<td></td>
<td>Jammed valve</td>
<td>Refer to valve maintenance</td>
</tr>
<tr>
<td>Valve only opens or closes partially with motor</td>
<td>Limit switch improperly set</td>
<td>Check setting and reset if necessary</td>
</tr>
<tr>
<td>Manual override nut will not operate valve</td>
<td>Stripped gearing</td>
<td>Replace as necessary</td>
</tr>
<tr>
<td></td>
<td>Broken hand wheel shaft</td>
<td>Replace as necessary</td>
</tr>
<tr>
<td></td>
<td>Broken valve stem</td>
<td>Repair or replace as necessary</td>
</tr>
<tr>
<td>Motor runs but will not operate valve</td>
<td>Stripped gearing</td>
<td>Replace as necessary</td>
</tr>
</tbody>
</table>

Actuator does not respond

- Verify the line voltage to the actuator
- Check that the voltage matches the rating on the actuator nameplate
- Check internal wiring against actuator wiring diagram
- Check limit switch cams

Actuator is receiving power but does not operate

- Verify the line voltage to the actuator
- Check actuator force to see if it’s greater than the valve force
- Check limit switches and cams
- Check that the force switches have not tripped
- Check mechanical travel stop adjustment
- Verify the actuator against valve rotation (standard units are anti-clockwise open)
- Check internal wiring
- Check for corrosion and condensation
- Verify coupler/bracket are correctly installed and is not causing binding

**Actuator runs erratically**

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

**DIMENSION FOR ACTUATOR**

**REA 40 On/Off Type**