

## Installation Instructions

### Introduction

The WE-500 Series electric actuator is a rotary valve actuator with outputs of 500 in-lbs. It has been designed for NEMA 4, 4X and can come with an optional 4-20mA card for modulating service.

### Storage

1. Keep conduit entries plugged.
2. Store in a dry environment.
3. Periodically cycle the actuator if possible.

### Maintenance

WE-500 Series actuators contain a permanently lubricated precision cut, heat treated gear train for long, reliable cycle life. There is no need to change gear train grease.

Permanent split capacitor gearmotors have been equipped with thermal protectors. To guard the motor against overheating, the thermal protector opens the circuit to the motor and maintains this state until the temperature of the motor drops to a satisfactory level.

### Installation

1. This section of the instruction sheet applies to the on-off units. For instructions on modulating units, please see IOM5004 (TMC2)
2. Manually open and close valve to ensure freeness of operation. Make sure valve and Triac actuator rotate in the same direction and are in the same position (i.e. valve closed, actuator closed). If not sure, electrically operate the actuator to determine its operating range. The Triac electric actuators are factory set for 90 degree operation.

3. Mount Triac actuator to valve with Triac provided mounting hardware to ensure proper alignment. (Note: Some valves have manual stops; remove if appropriate or set actuator to operate within those travel stops.)
4. Care should be taken to align valve stem properly and Triac actuator output shaft. (Note: Misalignment will cause premature failure of assembly)
5. Connect power to terminal strip according to schematic diagram. The actuator should be wired and grounded in accordance with local and National Electrical Codes.
6. Before replacing cover, actuate valve and check to see if it opens and closes to preferred positions. If valve does not perform correctly, adjust cams to set actuator travel properly.
7. Drive actuator to desired open position. The cams are adjusted by simply loosening the set screw and rotating cam to desired position. When open position is set, tighten the set screw to maintain position.
8. To adjust closed position, repeat step 7 with actuator in desired closed position.
9. Operate the unit several times and recheck position.

**Note: Make sure the limit switches stop the actuator, not the mechanical stops.**

## Manual Override Operation

1. Manual override can be operated only when motor is de-energized  
Handwheel will turn as actuator operates.
2. No mechanical stops are available to stop the actuator at the full open and closed position during manual operation.
5. Reconnect the electric to actuator for automatic operation.
6. The manual override handwheel will turn during operation.

## Trouble Shooting Guide

### *Problem:*

- There is power to the unit, but it does not repond.

### *Solution:*

- Check the nameplate to see that the correct voltage has been applied.
- Check the wiring to see that it is per the wiring schematic.
- Check the limit switches to see if they are in the normal operating position.

### *Problem:*

- Power is getting to the motor, but it merely hums.

### *Solution:*

- Check to see that the proper voltage is applied.
- Make sure all the connections are tight.
- Check to see that CW and CCW power connections are not powered at the same time.
- Make sure the limit switches stop the actuator, not the mechanical stops.

### *Problem:*

- The actuator performs erratically.

### *Solution:*

- Check the ambient temperature rating. The permanet split capacitor units are equipped with thermal cut-outs. Excessive temperatures and cycle frequencies may heat the motor up and the thermal cut-out turns off the motor.

## Wiring Diagrams

- Caution: Electric operation of each actuator must be through an individual single pole control switch, in order to isolate the unused motor winding.
- Wiring diagrams show internal wiring connections and customer connections
- For additional voltages & control options please consult factory.

## Installation Instructions

### Introduction

The WE Series electric actuators have fan cooled class F induction motors, double reduction worm drives and lockable manual handwheels. The body is hard anodized aluminum with polyester powder coating for a NEMA 4, 4X and 6 rating. The WE series with worm drive is available from 690 in-lbs up to 25900 in-lbs and voltages from 24VDC thru 480VAC/3PH. The WE Series is available with an optional servo card for modulating service. Please see the TMC manual for instruction on the servo card.

### Storage

1. Keep conduit entries plugged.
2. Store in a dry environment.

### Manual Operation

Pull the lever towards the handwheel to engage the manual override. If the lever does not stay engaged, pull the lever again and rotate the handwheel at the same time. The direction of output is casted on the handwheel.

The manual override will automatically disengage when the electric power is turned on and the motor starts to turn.

***Please do not try to pull or force the lever to disengage the manual override, this can damage the lever shear pin.***

### Limit Switch Setting

The clockwise motor control limit switch and the clockwise auxiliary limit switch share the same cam, likewise of the counterclockwise limit switches.

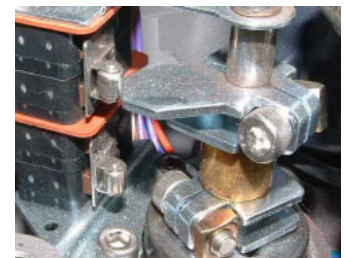
The limit switches can be set by rotating the actuator to the closed position with the manual handwheel and rotating the top cam clockwise until the switches just trips. The cams clamp to the cam shaft with a 4MM Allen head screw.

To adjust the open position, manually rotate the actuator to the desired open position and rotate the bottom cam counter clockwise until the switches just trips. Make sure you tighten the 4MM Allen head screw holding the cam after making adjustments.

### Torque Switches

The torque switches are set by the factory for rated torque output. Adjustments to the torque switches can cause damage to the motor and gears.

CW Switch Setting



CCW Switch Setting



### Mechanical Stops

The mechanical travel stops are for proper positioning during manual operation and for valve / damper protection.



Loosen jam nuts for both the CW and CCW travel stops.

Manually operate the actuator CW until the CW limit switch trips. Then turn the CW travel stop bolt (right ) clockwise until the bolt touches the worm gear. Turn the travel stop bolt counter clockwise three turns and tighten the jam nut.

Manually operate the actuator CCW until the CCW limit switch trips. Then turn the CCW travel stop bolt (left ) clockwise until the bolt touches the worm gear. Turn the travel stop bolt counter clockwise three turns and tighten the jam nut.

### Electrical Wiring

The wire terminations are per the wiring diagram included with each package. The actuator should be wired and grounded in accordance with local and national electrical codes. Conduit should be sealed at the actuator housing to keep water and moisture from entering the actuator. The compartment heater should be energized continuously to reduce moisture buildup.

### 3 Phase Wiring

Please see SICU or ICU manual for 3 phase operating manual.

### Commissioning

Manual operate the actuator to the mid position. Electrical operate the actuator and check the direction of rotation. Drive the actuator to end of travel making sure the limit switches stop the actuator and de-energize the motor. If the limit switches are incorrectly adjusted and the actuator is stopped by the mechanical travel stops the worm gear will jam, the motor will overheat and go into thermal overload.

### Jamming

If the actuator travels into a mechanical travel stop the worm gear will jam. The actuator can not be reversed electrically or manually until the mechanical travel stop bolt is loosened. Loosen the jam nut on the mechanical travel stop bolt, then turn the bolt counterclockwise three turns. The actuator now can be manually operated once the pressure is off the worm gear. The limit switches and mechanical travel stops should be recalibrated per the manual if jamming occurred.



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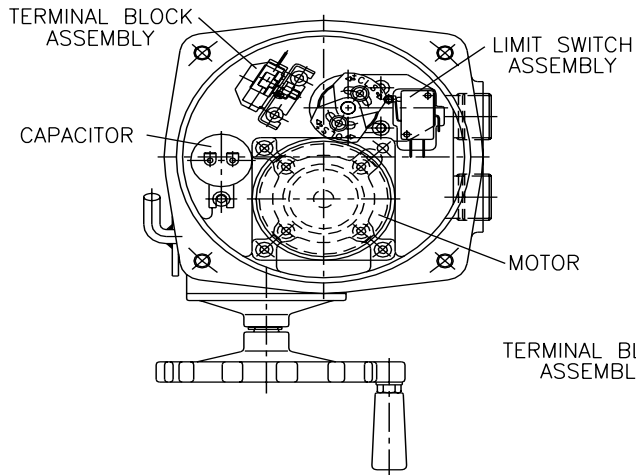
**INSTALLATION & MAINTENANCE MANUAL**

WE-690 thru WE-25900  
 On / Off Control

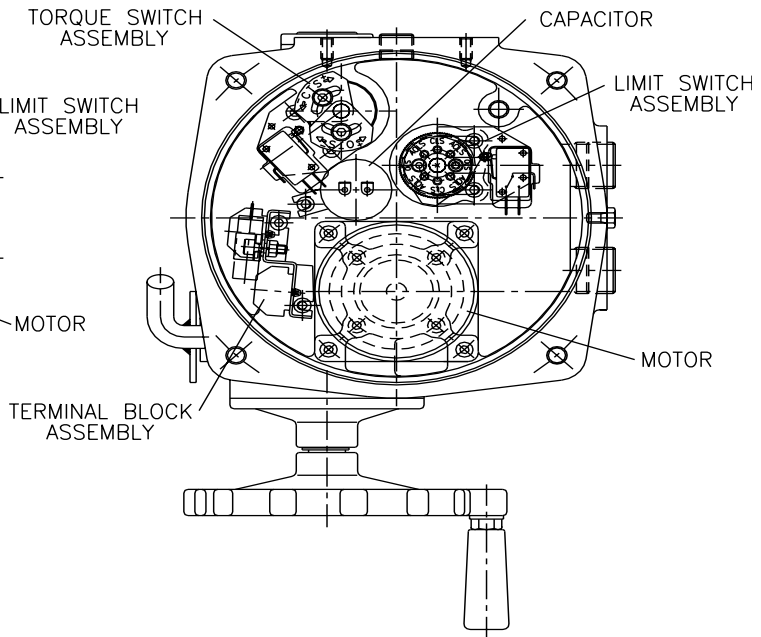
**Troubleshooting**

| Trouble                                       | Cause   | Solution                           |
|---|---|------------------------------------|
|   |   |                                    |
|   | No power to actuator                              | Turn power on                      |
|   | Low voltage to actuator                           | Check power supply and wire gage   |
| Actuator does not work at all                 | Motor and supplied voltage is different           | Check nameplate                    |
|   | Wires are loose                                   | Check connection to terminal strip |
|   | Limit switch or torque switches tripped           | Manually operate to mid position   |
|   | Worm gear is jammed                               | See section on jamming             |
|   |   |                                    |
|   |   |                                    |
| Torque switch open                            | Mechanical travel stop set prior to limit switch  | Reset travel stops                 |
|   | Foreign object between valve seat and ball / disc | Clear objects                      |
|   | Actuator is undersized                            | Check torques                      |
|   |   |                                    |
|   |   |                                    |
| Switching to manual operation is not possible | Lever is not fully engaged                        | Turn handle slowly, pull lever     |
|   | Worm gear is jammed                               | See section on jamming             |
|   | Power is still on                                 | Turn power off                     |
|   |   |                                    |
|   |   |                                    |
| Actuator performs erratically                 | Motor is over heating and thermal overloading     | Check duty cycle                   |
|   | Motor is over heating and thermal overloading     | Check ambient temperature          |

**WE-690**



**WE-1350 thru WE-10500**



**WE-17500 & WE-25900**

