

## KE SERIES ELECTRIC ACTUATOR



### ATTENTION

For safe and proper operation, please read this manual carefully before using.

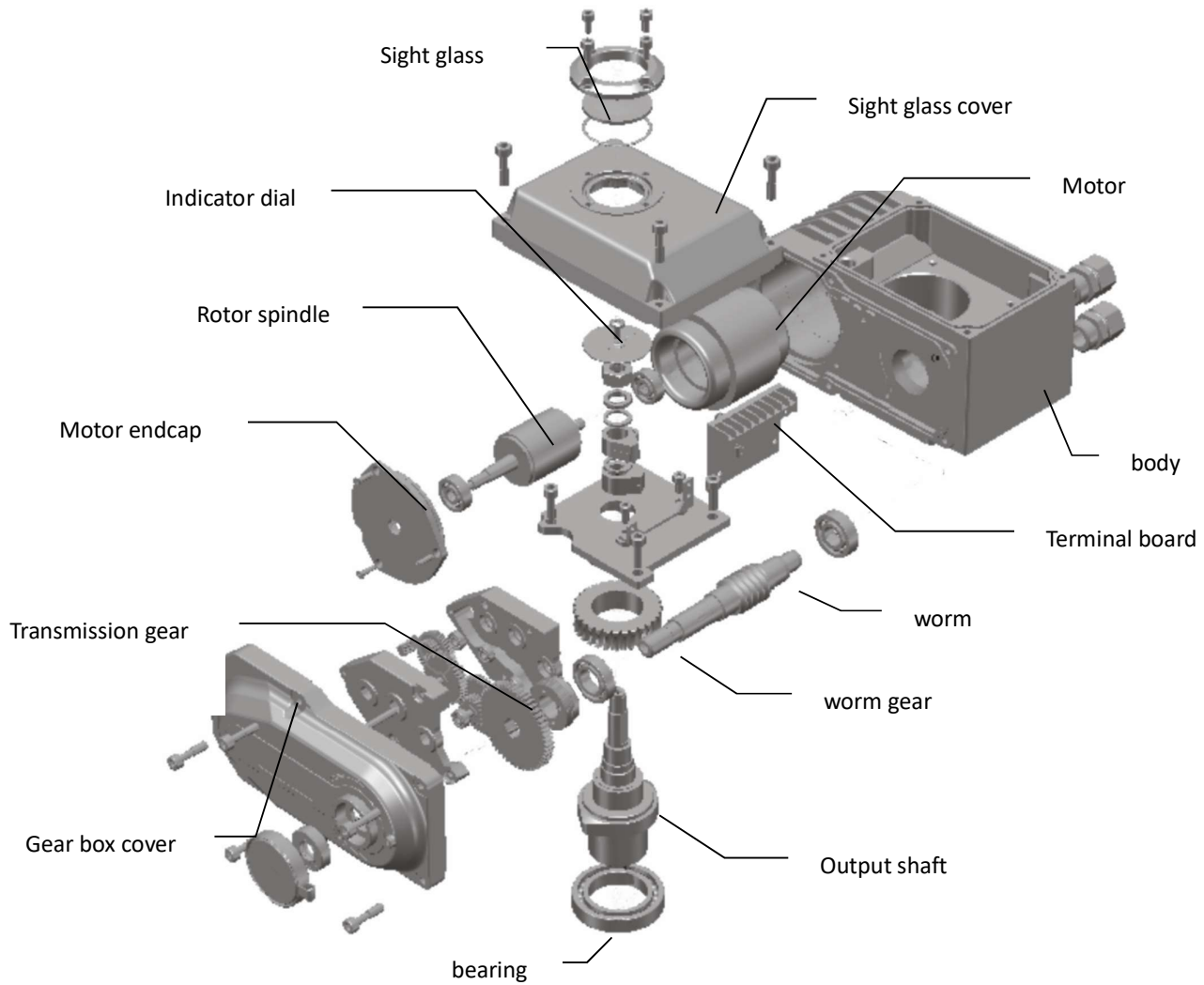
**Notice: The contents in this manual are subject to change without individual notice.**

### 1. Pre-caution

After receiving actuator, please check the following matters.

- a) Packing and documents ①product list ②wiring diagram
- b) Inspection report; Nameplate; Electrical wiring diagram is consistent with purchase
- c) Cable interface and seal method after completion of electrical wiring.

## 2. Part Name



## 3. Performance features

### 3.1 Housing

Aluminum alloy housing. Anodized and polyester powder coated for strong corrosion resistance. Protection class IP67.

### 3.2 Motor

Small size squirrel-cage motor with large torque and low inertia. Insulation class F and built-in overheat protection switch to prevent the motor from overheating.

### 3.3 Manual operation

Safe and reliable handle design for easy manual operation. Power must be "OFF" before manual operation. Clip on side of actuator housing to hold the handle when it is not being used.

### 3.4 Indicator

Indicator installed on the central axis to show valve position. The convex lens design makes it easier to observe without water collecting on the surface of the indicator.

### 3.5 Heater

Heater is used to control the temperature and avoid internal moisture condensation caused by temperature or weather changes. Keep electric elements dry.

### 3.6 Seal

Standard product protection grade is IP67.

### 3.7 Limit switch

Electronic open/close position limit switch controlled by easy to adjust cam with accurate and convenient position setting. Set screw prevents unintended movement of cam.

### 3.8 Self-locking

The high precision worm and gear mechanism has high efficiency and can output large torque. Its self-locking function prevents reverse travel. Transmission part is stable and reliable, no need for additional grease.

### 3.9 Cover bolt

Captive cover bolts stay attached to cover when removed.

### 3.10 Installation

Mounting base is according to ISO5211 / DIN3337. Can be installed in both vertical and horizontal installation.

### 3.11 Circuit

Control circuit conforms to single or three-phase power supply standard. Circuit layout is simple and with compact terminals. Can effectively satisfy a variety of additional functional requirements.

### 3.12 Mechanical Stop

Mechanical open/close travel stop screw is easily adjustable, safe and reliably secured by locking nut/washer.

## 4. Sizing

KE Series electric actuator output torque ranges from 440 in-lbs to 3500 in-lbs and can fit a variety of valves (ball valve, butterfly valve, etc.) and damper baffle, etc.

(model)	KE-440	KE-880	KE-1700	KE-3500
(Output Torque)	440 in-lbs	880 in-lbs	1700 in-lbs	3500 in-lbs
(Operating time)	30s	30s	40s	40s
(Rotary Angle)	0~90° (270° for option)			
(Motor Power)	20W	25W	40W	90W
Power Supply	DC24V AC110V/AC220V/AC380V			
Withstand Voltage	DC24V - 500VDC for 60S		AC110V/AC220V/AC380V - 1500VDC for 60S	
Protection Class	IP67			
Conduit Entry	(2) M18 x 1.5		(2) M18 x 1.5 CABLE GLAND	
Limit Switch	Electric: close/open limit switch Manual work: mechanical limit			
Installation Location	at any angle			
Ambient Temperature	-20°C~60°C			

Note:

- 1) Above table is for reference only.
- 2) Sizing should be done after carefully reviewing the valve, temperature, characteristics of fluid, etc.
- 3) For applications under abnormal conditions such as high and low temperature, seawater, severe corrosion and high vibration, please consult with factory before selecting actuator.
- 4) Decisions by user ignoring our recommendation, we are not responsible for it.

## 5. Mounting and adjusting

### 1. Installation

- 1) This product is not explosion-proof. Do not use it in an environment with flammable or corrosive gas.
- 2) Consult factory in advance if installing in area where actuator may be submerged.
- 3) Allow space for wiring, maintenance and for manual operation of actuator.
- 4) Use a protection cover to avoid rain and/or direct sunlight.
- 5) Typical installation direction; indicator window to the top.

## 2. Ambient temperature - Medium temperature

- 1) When the environment temperature is below freezing, add desiccant heater inside the actuator.
- 2) When fluid temperature is below freezing, the bracket connected with the valve shall special process.

## 3. Assembly with valve

Assembly procedure

- 1) Be sure that power is off before making manual operation.
- 2) Confirm that valve can turn smoothly by hand, then position it at full close.
- 3) Bolt bracket to valve if needed.
- 4) Mount actuator to the bracket. Keep bolts loose.
- 5) Position the actuator at 0° (close). Join the output shaft and the valve stem with couplings.
- 6) Tighten the bolts.
- 7) Check with the attached crank handle if the valve will turn.

Actuator mounting base is in accordance with ISO5211 standard. If the valve also conforms to the standard, direct mount may be possible. If valve does not conform to standard, an assembly bracket is needed.

## 4. Adjustment

- 1) Adjustment of Stroke limit (Figure 15,17)

Turn valve to the full closed position. Loosen set screw on cam and rotate cam to engage the limit Switch (CLS). Tighten set screw to secure cam in place. Repeat procedure to set the open position.

- 2) Adjustment of mechanical stop

Loosen nuts on mechanical stops and back out stop limit set screws several turns. Move actuator to the full-closed position. Tighten set screw on right until it stops. Reverse the set screw two full rotations then tighten the nut. Set the full-open position the same way. See Figure16

- 3) Adjustment of potentiometer

Potentiometer provides feedback signal in the actuators using three terminals. ② wiper arm of potentiometer. ① terminal which resistance between wiper arm decreases as actuator is open. ③ terminal which resistance between wiper arm decreases as actuator is closed. (Note: The resistance should not pass over 0Ω as this will cause position measurement error). Rotate valve to the full open position. Measure resistance between ② and ① . Rotate the potentiometer gear to adjust the resistance to between 35 Ω and 60 Ω. (Figure 17)

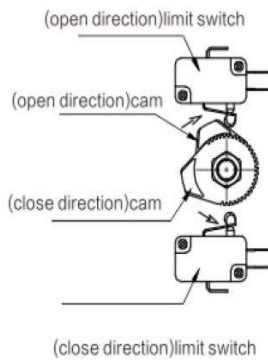


Fig15

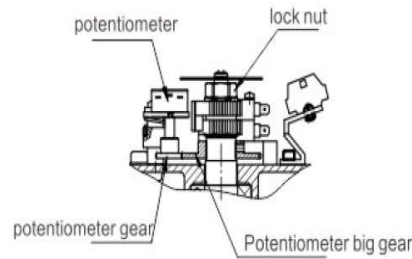


Fig17

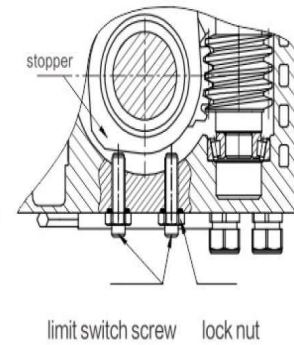


Fig16

## 5. Test Operation

### A. Manual Operation

Remove power off before making manual operation. Insert the manual handle into the hexagonal hole underneath the rubber cap.

Note: Continuing to turn the actuator once the full open or full closed mechanical stop is reached will result in damage to other parts. Avoid using excessive force when turning with manual handle.

### B. Power Operation

Before making power operation:

- \* Confirm that the indication on the position meter and the valve opening match each other.
- \* Confirm that the circuits are properly wired, also that the unit operates in correct direction with external switches.
  - 1) Check the wiring diagram, power supply, input/output signal correctly.
  - 2) Don't change the internal wiring
  - 3) Please check the rotating direction if the power supply is three-phase
    - 3.1) Make sure the actuator is in the on/off position, turn on the power and input the open signal
    - 3.2) If the actuator runs to the open direction, it means the wiring is correct.
    - 3.3) If not, switch 2 of the phase wires.
  - 4) Actuator must not continuously operate for more than 15 minutes

## 6. Maintenance & Lubrication

Major parts are lubricated with long life Molybdenum base grease before shipment. Lubrication is in principle not required.

When re-starting operation after a long period of rest, confirm the following.

- \* Cut power off, confirm by manual operation that valve moves smoothly.
- \* Open body cover and check that there is no condensation inside the unit, or that there are no problem with wiring.

Note: After checking, secure the cover to prevent water ingress.

**7. Other**

- 1) The actuator or the brochure shows the reference wiring diagram.
- 2) Please refer to the specification of Actuator module parts for modulating instructions.

**6. Trouble Shooting**

Trouble	Cause	Solution
Actuator doesn't work at all	Check if power is on	Power on
	Wiring is not correct or is loose	Wire correctly and make sure wires are tightly connected
	Voltage is too low or motor and supplied power are different	Check motor power and supplied power
	Coil of motor is damaged	Change the motor
	Capacitor is damaged	Change the capacitor
Open/close indicator light doesn't work	Indicator light is broken	Change the indicator light
	Micro switch bad action	Change Micro switch
The motor does not stop when it run to limit position	Micro switch bad action	Change Micro switch
	The mechanical stop is set before electrical limit	Adjust Mechanical Stop

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