

# RCEL005X/009X

## Electric Actuators Ex-proof

# Instruction



## CAUTION



**ELECTRICAL SHOCK HAZARD.** To avoid serious personal injury, property damage, turn off ALL power to the actuator before removing the cover.

Before installation, verify the nameplate information to insure the correct model number and voltage of the actuator.

Be sure to completely review the actuator manual prior to operation.

Final limit switch adjustment **MUST** be done after mounting the actuator to the valve. Incorrect adjustment may cause actuator failure.

The actuator must be properly grounded. Use the grounding lugs provided on the inside and outside of the actuator body.

To minimize the possible damage caused by condensation, be sure to energize the heater.



## CAUTION



Explosion-proof products must be used under the designed temperature range and environment appropriate for the product spec.

### Flameproof Enclosure Level and Environment of Actuator

Ex IIB T4 -20 °C ~ 55 °C

Explosion proof actuators and wiring must be properly sealed prior to operation. Improper installation may cause a hazardous condition and failure of the explosion proof enclosure. The manufacture is not responsible for any losses or damages caused by incorrect installation.

1. Certified cable entries must be used when installed. Use separately certified cable entries, conduit entries or stopping plugs so that the flameproof properties of the enclosure are maintained.
2. If conduit is used for cable entry, a seal fitting with setting compound must be installed as close as possible, within 450 mm to the actuator.

Special conditions for safe use:

For information about the flameproof joints, please contact Rotork Sweden AB.

Fasteners securing the top cover shall have the property class of A2-50 at least.

## Standard Specification

Enclosure	Weatherproof enclosure IP67 Nema 4 and 6 Ex d IIB T4
Ambient temperature	-20 °C to 55 °C
Power Supply	110 / 220 / 230 Vac 1 Ph 50/60 Hz 24 Vac 1 Ph 50/60 Hz, 12/24 Vdc
Limit Switches	2 (Open/Close) 2 Dry (Open/Close)
Manual Operation	By 6 mm hex key
Space Heater	5 W (110 / 230 VAC, 12 / 24 VDC)
Lubrication	Grease Moly (EP type)
Surface Treatment	Anodizing
Travel Angle	90° ± 5° (extension: upto 270°)
Self Locking	Provided by means of worm gearing
Entries	2 - M20
Materials	Steel, Aluminium alloy, Bronze
External Coating	Polyester (TGIC-free)

## Optional Specification

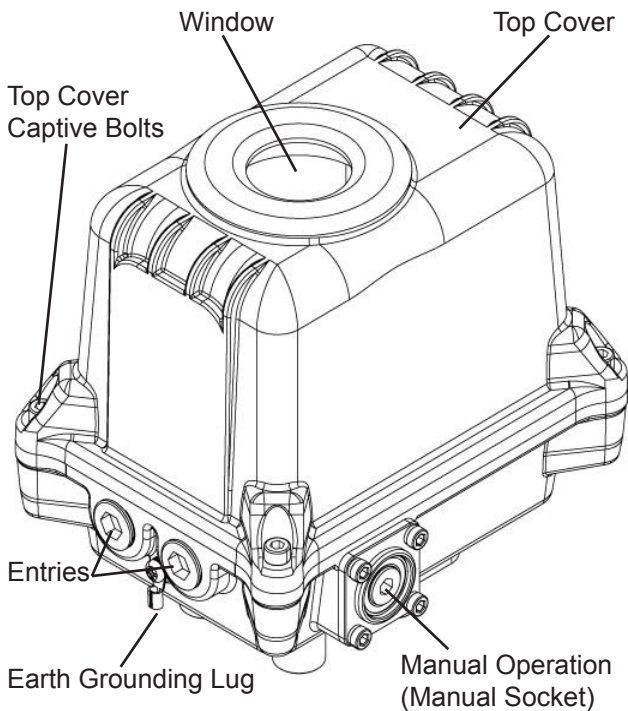
		005X	009X
<b>PIU</b>	Potentiometer Unit (1 K-Ohm)	X	X
<b>CPT</b>	Current Position Transmitter Output DC 4~20 mA	X	X
<b>PCU</b>	Proportional Control Unit Input: DC 4~20 mA, 2~10 V, 0~5 V, 0~10 V, 1~5 V Output: DC 4~20 mA	X	X
<b>LCU</b>	Local Control Unit	X	X
	Mod - Bus	X	X
	Profi - Bus	X	X
	Can - Bus	X	X

## Performance

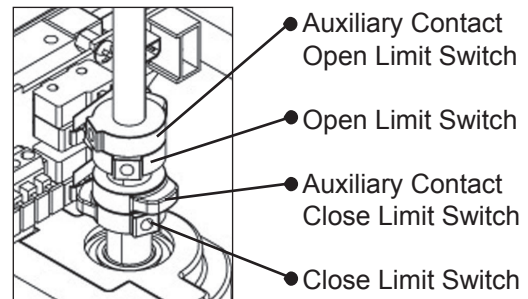
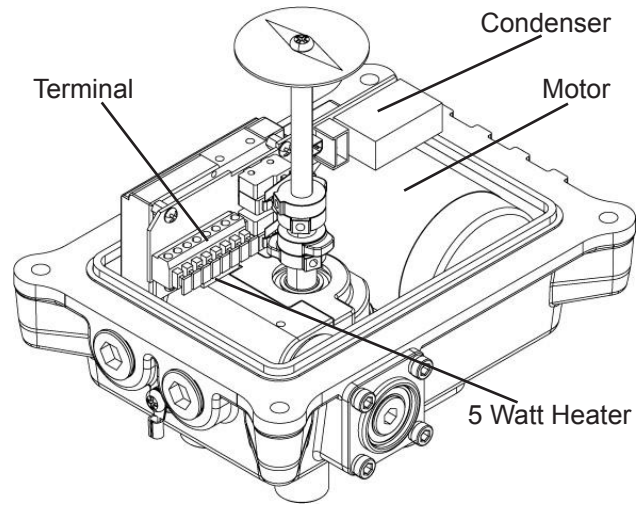
Model	Output Torque		Operation Time (90°)			Motor * Class (E)	Rated Current				Duty* Cycle S2 (min)	Number Of Handle Turns	Weight kg				
	Kg.m	Nm	60 Hz	50 Hz	DC24V		1 Phase (AC)			DC							
RCEL005X	5	50	14	17	10	6	24V	110V	220V	24V	1,8	0,35	0,23	1,8	15	6	5
RCEL009X	9	90	26	32	22	6	2,1	0,35	0,25	2,1	1,8	0,35	0,25	2,1	15	4,5	5

\*Valid for 1-ph 110V AC and 220V AC

## Exterior Parts

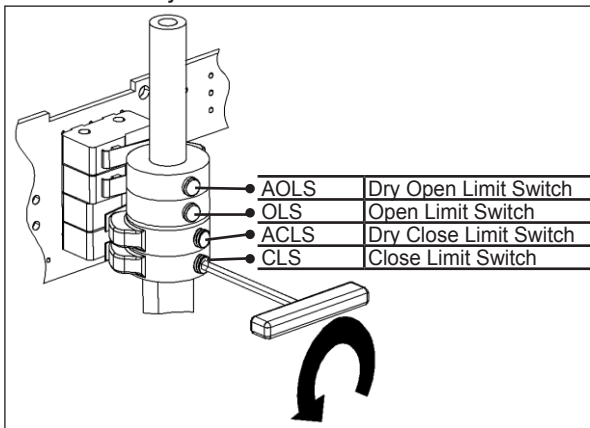


## Interior Parts



## Limit Switch Setting

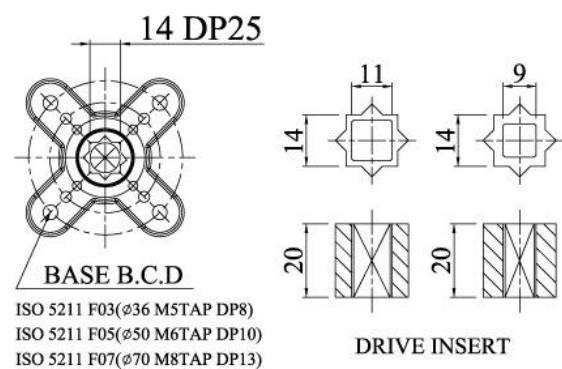
1. With the power off, remove the cover and manually rotate the Actuator to the closed, clockwise position.
2. Loosen the close cam set screw and rotate the cam in a clockwise direction to actuate the close limit switch. Also, the close auxiliary switch cam can be adjusted at this time too.



3. Firmly tighten the cam set screws
4. To set open cam switches, repeat the previous instruction except rotate the Actuator to the open, counter-clockwise position and rotate the open cams in the counter in the counterclockwise direction to actuate the open switches.

## Actuator Modulating Flange

RCEL005X/009X is manufactured to the ISO 5211 standard. If the Actuator does not fit directly to the valve, drive inserts are available or complete mounting kits can be manufactured.



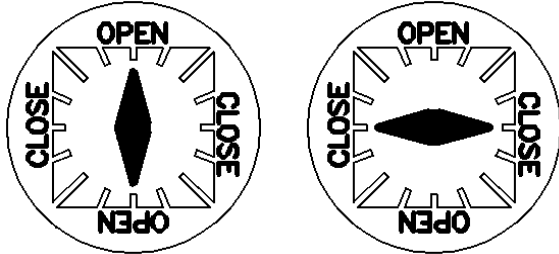
## Actuator Installation

When installing an Actuator, proper clearance around the Actuator is required to ensure that the cover can be removed to allow maintenance.

Model	A (mm)
RCEL005X	140
RCEL009X	140

## Indicator Setting

The valve position is easily confirmed from a distance by looking at the indicator flat located on the top of the actuator cover



Explosion proof

## Wire Connection

Standard conduit and conduit seal fittings may be used when installing and wiring the actuator. To prevent moisture and humidity from entering the actuator, it is highly recommended that a seal be installed in the actuator conduit entry. After the conduit and wiring has been completed, then the seal fitting can be sealed with packing or a potting material.



Cable Glands used in explosion proof applications must be certified for the proper explosion proof application class and properly sealed.

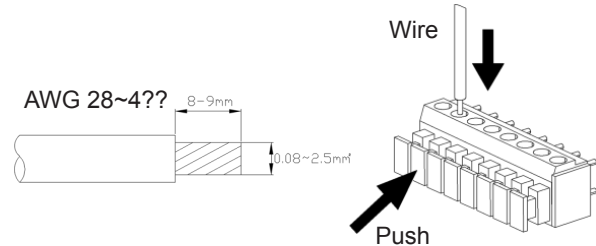
Failure to use the correct components may result in the failure of the actuator enclosure. Rotork Sweden AB is not responsible for the improper installation of these actuators.

Cable Glands shall be suitable for the environment and shall be certified as flameproof if used in Zone 1 application (Ex d IIB certified cable gland or entries at least). Cable Glands and conduit(s) of metric thread shall be so installed that at least 5 full threads are engaged and the engagement depth is not less than 8 mm. Cable Gland of NPT thread shall be installed with 5 threads provided at least.

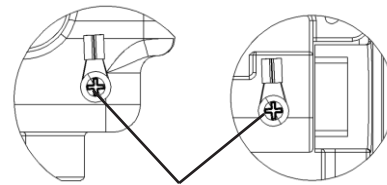
## Electric Wiring

1. Remove the actuator cover by loosening the four captive cover bolts.
2. Confirm that the wiring diagram located in the actuator and the wiring number on the nameplate match each other.
3. Confirm that the main power and supply described on the nameplate of the actuator match with each other.

4. Connect the wire to the terminal strip according to the wiring diagram provided. The RCEL005X/009X actuators use the push type WAGO brand terminal strip. The push type strip makes wiring connections easy and also helps to protect against pipeline vibration. Use the wire thickness within the standard size AWG 28~14.



5. Be sure to properly ground the actuator by using the grounding lugs provided on the inside and outside of the actuator body. The integral grounding wire size shall be 4.0 mm<sup>2</sup> and the external grounding wire size shall be 4.5~5.0 mm<sup>2</sup> at least.



Inside & Outside Earth Terminal

6. Be sure to wire and energize the heater as shown in the wiring diagram.
7. Each actuator must be powered by their own individual relays to prevent voltage feedback and actuator damage.
8. After the wiring is completed in the actuator, use wire ties to group the wires together up their appearance. Be certain that the wires are secure and away from any moving parts. Remove any loose debris before replacing the cover.
9. When all the work is completed, replace the top cover and secure it using the four cover screws.
10. Apply power and do a final check to confirm proper operation.



Main power must only be applied when the top cover is re-installed on the actuator body. If the main power is on while wiring the actuator, stop work immediately and turn the power off, only then it is safe to proceed.

## Maintenance

It is recommended that the actuator be cycled every two weeks after purchase. To minimize the effects of condensation in the actuator, it is recommended that the conduit entries be sealed at the actuator and that the heater is energized.

## Warranty Information

The warranty will be void under the following conditions:

1. Failure or damage caused by misuse or abuse.
2. Failure or damage caused by unauthorized modifications or repairs done to the actuator.
3. Failure caused by the unauthorized modification / change or the wiring.
4. Failure caused by water entering the actuator due to improper sealing of the conduit entries.
5. Failure caused by improperly set limit switches.
6. Failure caused by fire, flood damage or other natural catastrophes.
7. Failure occurring more than one year after shipment date.

## Troubleshooting

If the actuator fails to function correctly, first check for any mechanical / alignment problems, then check for any electrical problems. See chart below for more information.

Problem	Cause	Solution
Manual over ride not functioning	Gear Failure	Disassemble the actuator and replace gear
Manual operation of the motor behavior is normal when you do not ????	Main Power Failure	Main Power Check
	Motor / Condenser damage	Replace Motor / Condenser
	Motor over heated and Thermal Protector Disengaged	Check Frequency of Operation or jammed gears
	Wiring Failure	Confirm Unit is properly wired per wiring diagram
	Main Board Failure	Replace Main Board
Actuator continues to move even after the cam has tripped the limit switch	Main Board Failure	Replace Main Board

\* In addition to the above described mechanical / electrical failures, other causes may be the reason for failure based on the site conditions. For more information please contact Rotork Sweden AB for consultation. For faster service, please have all of the nameplate information available when calling the factory.

