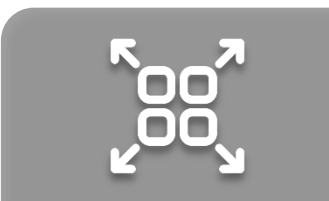
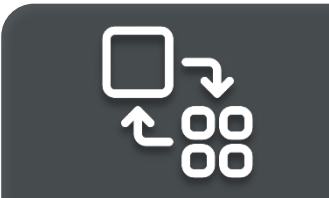
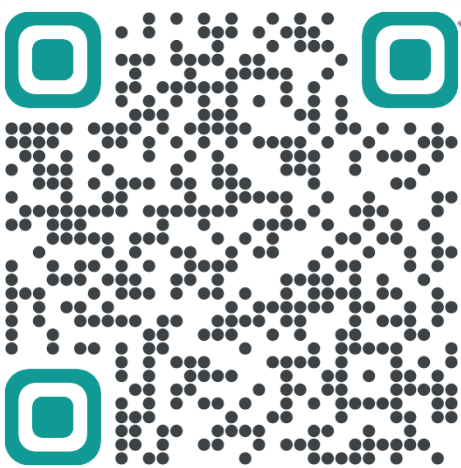




ELECTRIC ACTUATOR USER MANUAL



INTRODUCTION

Thank you for purchasing Convalve products. Each product has been thoroughly inspected after its production to offer you the highest quality and reliable performance. Please read the product manual carefully prior to installing and commissioning the product.

- Installation, commissioning, and maintenance of the product may only be performed by trained specialist personnel who have been authorized by the plant operator accordingly.
- The manual should be provided to the end-user.
- The manual can be altered or revised without any prior notice. Any changes in product's specification, design, and/or any components may not be printed immediately but until the following revision of the manual.
- The manual should not be duplicated or reproduced for any purpose without prior approval from Convalve.
- In case of any other problems that are not stated in this manual, please make immediate contact with Convalve for assistance.

TRANSPORTATION AND STORAGE

- Convalve recommends storing electric actuators in a clean and dry environment. For optimal storage conditions, it is recommended to store the electric actuator indoors, safeguarding it against adverse weather conditions and other potentially harmful elements. At Convalve, we prioritize the longevity and performance of our products, and these storage guidelines are meant to preserve the electric actuator's functionality and reliability throughout their lifecycle.
- Handling the electric actuator with care is of utmost importance to prevent any scratches, damage, or harm to the environment during transportation. Adequate protection should be provided to ensure the electric actuator remains intact throughout the transportation process.

PRODUCT DESCRIPTION

EAC1 Series Electric Actuator is expertly crafted for controlling 0°~270° rotations of various valve types, including but not limited to butterfly, ball, damper, flapper, and cock valves. Such specialization finds its utility across a broad range of industries, encompassing petroleum, chemical, water treatment, shipping, paper production, power plants, heating, and light industries. With a versatile drive system, it operates on multiple voltage inputs like 380V/220V/110V AC or 24V/110V DC, responding to 4-20mA or 0-10V DC control signals. Driving the valve to its intended position facilitates seamless automatic control, boasting a formidable maximum output torque of 2000 Nm.

The EAC1's design speaks of sophistication and efficiency - lightweight yet capable of producing significant output torque. The device ensures durability and protection against wear and tear with its hard oxygen treatment on both inner and outer closures. Additionally, it benefits from an epoxy resin and powder spraying external treatment, enhancing its resistance to corrosion. This product upholds an impressive protection standard, rated at IP67. Notably, the output end adheres to the National Standard ISO5211, allowing for replaceable connection shaft sleeves that simplify processing and installation. The actuator employs a worm wheel structure, notable for its self-locking capability, paired with externally adjustable mechanical limits. Incorporated within is a thermal protector, safeguarding the electrical machinery. A large viewing window continuously signifies the valve's position, while the device offers diverse field control units, optimized for user requirements.

MODEL	MAX OUTPUT TORQUE (NM)	OPERATING TIME 90° (SEC)	DRIVE SHAFT (MM)		MOTOR (W)	RATED CURRENT (A) 220VAC/1PH	WEIGHT (KG)	
			SQUARE	DEPTH				
EAC1-003	30	10	11 x 11	15	6	0.25	2.1	
EAC1-005	50	30	14 x 14	18	10	0.25	3.5	
EAC1-008	80	30	14 x 14	18	15	0.25	3.5	
EAC1-010	100	30	17 x 17	22	25	0.35	5	
EAC1-015	150	30	17 x 17	22	30	0.35	5	
EAC1-020	200	30	22 x 22	26	40	0.48	12	
EAC1-040	400	30	22 x 22	26	60	0.92	12	
EAC1-060	600	30	22 x 22	32	90	0.92	14	
EAC1-080	800	40	27 x 27	32	130	1	14.3	
EAC1-100	1000	40	27 x 27	32	130	1	14.5	
EAC1-200	2000	ON REQUEST						

INSTALLATION OF ELECTRIC ACTUATORS

1. Ambient Temperature:

- Operates effectively between -20°C to +70°C.
- If the ambient temperature falls below zero, a space heater should be installed to ensure optimal performance.

2. Outdoor Installation Notes:

- Protective measures such as a cover or an IP68-rated enclosure are recommended to shield the machine from direct elements like rain and sunlight.
- Ensure adequate space is reserved for cable repairs and manual operation.

3. Indoor Installation Notes:

- Installation in environments with explosive gases is strictly forbidden for non-explosion-proof products.
- If the intended installation is in submerged conditions or outdoors, please notify the manufacturer in advance.
- As with outdoor setups, ensure space is available for cable repairs and manual operation.

4. Fluid Temperature Considerations:

- The temperature of the fluid can influence the body of the actuator, potentially causing its temperature to rise.
- **Bracket Recommendations Based on Fluid Temperature:**
 - **Standard Bracket:** Suitable when fluid temperature is below +65°C.
 - **Intermediate Temperature Bracket:** Required when the fluid temperature exceeds -65°C but remains below 180°C.
 - **High-Temperature Bracket:** Mandatory for fluid temperatures surpassing 180°C.

For the effective and safe use of the EAC1 Series Electric Actuator, adhering to these guidelines is crucial. Always consult with professionals or the manufacturer when in doubt

MOUNTING WITH VALVE

1. Initial Manual Valve Testing:

- Rotate the valve manually.
- If no abnormal situations are detected, turn the valve to the full-closed position.

2. Bracket Attachment:

- Securely affix the bracket onto the valve.

3. Actuator Placement:

- Position the electric actuator onto the bracket.
- Fasten the bolts and nuts, but only tighten them lightly at this stage.

4. Actuator Alignment:

- Turn the electric actuator to its closed position.
- Align the valve mandrel and the electric actuator.
- Secure them together using a coupling and appropriate bolts.

5. Final Attachment:

- Tighten the screws connecting the electric actuator to the bracket, ensuring a solid connection.

6. Testing the Assembly:

- Manually rotate the electric actuator using its handle.
- Ensure the movement is smooth without any eccentricities or curved ramps.
- Pay close attention to the movement, ensuring the valve operates without hitches.

ENSURING PROPER FUNCTIONING OF THE ELECTRIC ACTUATOR ON THE VALVE

1. Over-Travel Precaution:

- Be vigilant to avoid over-travel. Ensure the electric actuator doesn't go beyond its designated rotational limits.

2. Coupling Hysteresis Minimization:

- Aim to reduce the hysteresis of the coupling as much as possible. A lower hysteresis ensures more accurate and consistent valve operation.

3. Alignment of Switches:

- When mounting, it's vital to align the switch of the electric actuator with the switch of the valve. This synchronization ensures optimal functionality and coordinated operations.

4. Flange Compatibility and Debugging:

- The flange at the base of the electric actuator adheres to the ISO5211 standard.
- If the valve's flange matches this standard, the setup and debugging process becomes straightforward.
- However, if there's a discrepancy in flange standards, an additional bracket should be utilized to bridge the difference and secure the actuator to the valve properly.

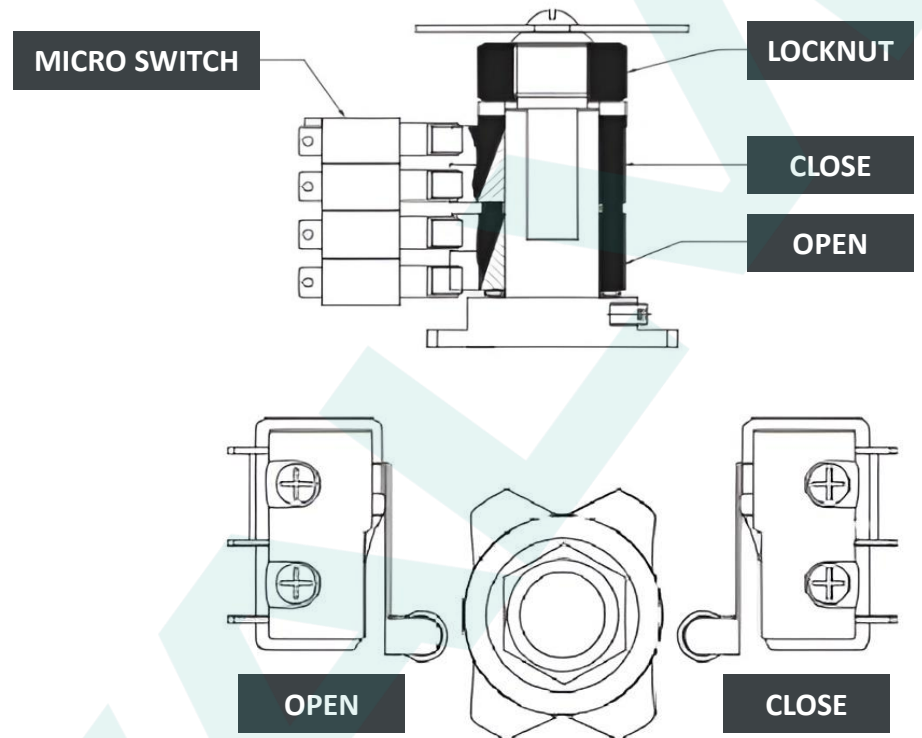
SETTING FULL-CLOSED AND FULL-OPEN POSITIONS FOR THE ELECTRIC ACTUATOR:

1. Full-Closed Position:

- Manually operate the electric actuator, turning it to the fully closed position.
- Using a lever, loosen the nuts located on the limit cam.
- Rotate the limit cam. (Look for color indicators: yellow signifies open and red signifies closed).
- Turn the cam until the limit switch (CLS) is depressed or activated.
- Once properly aligned, securely tighten the cam nut.
- This process sets the full-closed position of the electric actuator.

2. Full-Open Position:

- This procedure mirrors the steps taken for the full-closed position.
- Manually adjust the electric actuator to its fully open position.
- Loosen the nuts on the limit cam using a lever.
- Rotate the limit cam until the corresponding limit switch is activated.
- Ensure everything is aligned and then tighten the cam nut.
- You've now set the full-open position of the electric actuator.



SETTING MECHANICAL POSITIONS FOR THE ELECTRIC ACTUATOR:

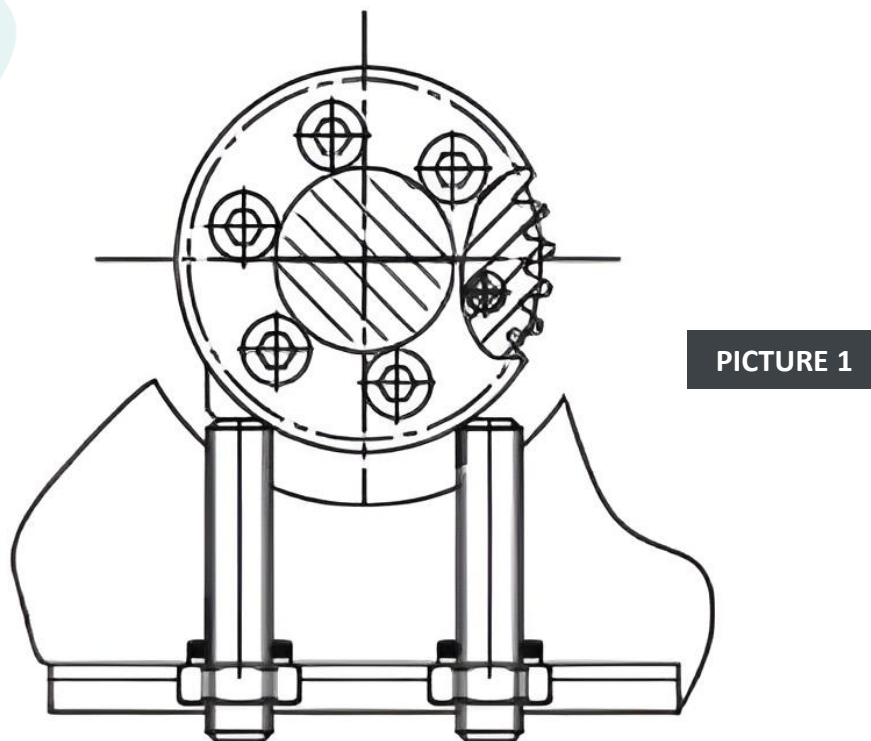
1. Full-Closed Mechanical Position:

- Begin by loosening the nuts of the mechanical limit.
- Manually operate the electric actuator, moving it to the full-closed position.
- Rotate the limit nuts and continue this rotation until they align with the fan-shaped gear inside.
- Once aligned, rotate the nuts two full circles (or as indicated).
- Finally, tighten the nuts to secure the setting.
- This procedure establishes the full-closed mechanical position for the electric actuator.

1. Full-Open Mechanical Position:

- The method is identical to the full-closed position setting.
- Start by loosening the nuts of the mechanical limit.
- Manually adjust the electric actuator to the full-open position.
- As before, rotate the limit nuts until they are aligned with the internal fan-shaped gear.
- Rotate the nuts by two full circles (or according to the specific instruction).
- Secure the setting by tightening the nuts.
- You have now set the full-open mechanical position of the electric actuator.

To ensure accuracy, always refer to any accompanying diagrams, such as "Picture 1", which might provide a visual representation of the process. After completing these steps, it's advisable to test the electric actuator's function to confirm that the positions have been set correctly and the device operates smoothly.



PICTURE 1

RUNNING TEST

MOUNTING AND SETUP OF THE ELECTRIC ACTUATOR:

1. Alignment of Switches:

- Ensure that the switch of the electric actuator is perfectly aligned with the switch of the valve during installation.

2. Flange Compatibility:

- The electric actuator's bottom flange adheres to the ISO5211 standard.
- If the valve's flange matches this standard, setup and debugging will be straightforward.
- If there is a mismatch, you'll need to use an additional bracket to facilitate proper installation.

3. Limiting Rotations:

- Once in the full-open or full-close position, be cautious to rotate only a half circle after the limit switch is activated.
- Avoid excessive rotation as it can damage components; never use excessive force.

ELECTRIC OPERATION PROCEDURE:

1. Manual Verification:

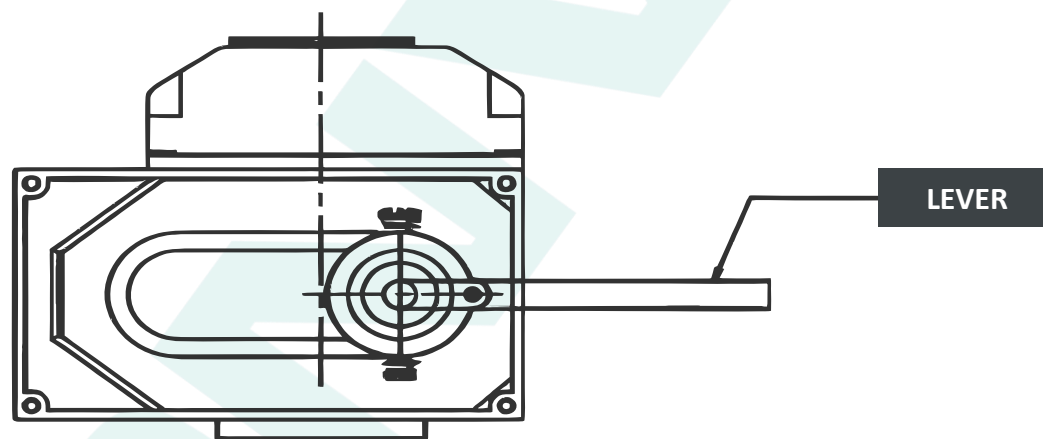
- Prior to initializing electric operation, manually verify that the opening meters align with the valve angles. This is done by manually moving the actuator to full-open and full-close positions.

2. Wiring and External Checks:

- Confirm that all wiring is correctly set up.
- Utilize an external switch to test and verify both the opening and closing movements of the actuator.

3. Initiate Electric Operation:

- Once all prior checks are completed and everything is in order, start the electric operation of the actuator.
- Always follow safety guidelines when working with electric actuators and regularly inspect for any abnormalities to ensure safe and optimal performance.



NOTE!

1. Wiring and Signals:

- Review the wiring diagram to ensure all connections are correct.
- Confirm the proper power supply and validate input/output signals.

2. Internal Wiring:

- ⚠ Do not alter or tamper with the internal wiring of the actuator.

3. 3-Phase Power Supply:

- If the actuator is powered by a 3-phase supply, it's crucial to verify the rotational direction.

4. Electric Actuator Direction Check:

- Set the electric actuator in a halfway (or mid) position.
- Power on and send an 'open' signal.
 - If the actuator moves to the 'open' position, the wiring is correct.
 - If the direction is reversed, you must swap two of the three wires to correct it.



MAINTENANCE TIPS FOR ELECTRIC ACTUATOR:

1. Lubrication:

- The actuator utilizes a specialized Mo-based grease known for its longevity and pressure resistance.
- ⓧ Refueling or additional lubrication is not necessary.

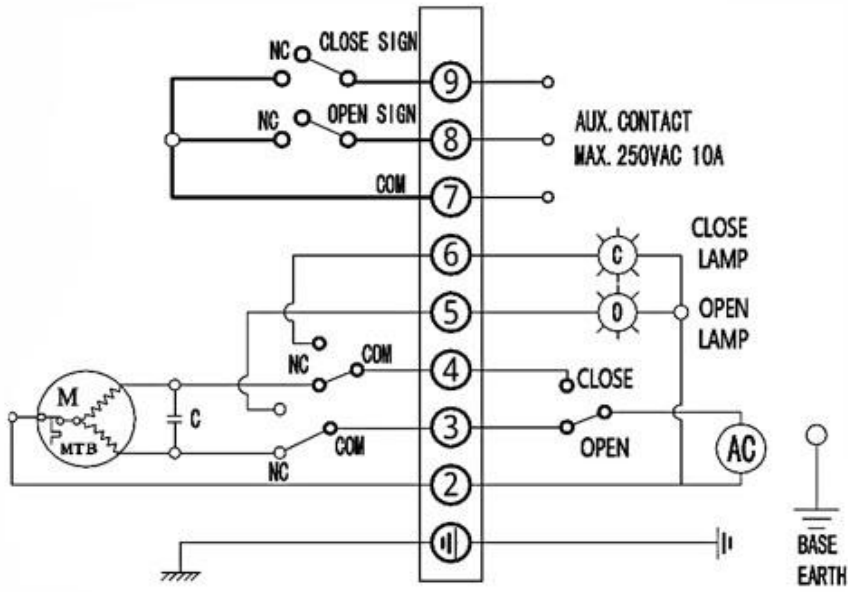
2. Regular Operation and Inspection:

- For valves that aren't operated frequently, it's recommended to run the actuator periodically.
- Perform regular checks to ensure optimal performance.

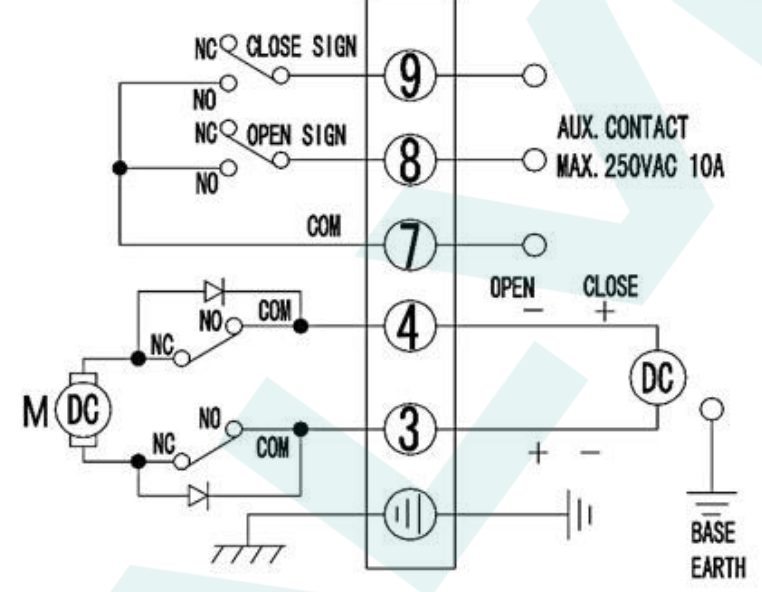
Always follow manufacturer guidelines and safety precautions when working with electric actuators to ensure efficient and safe operation.

WIRING DIAGRAM

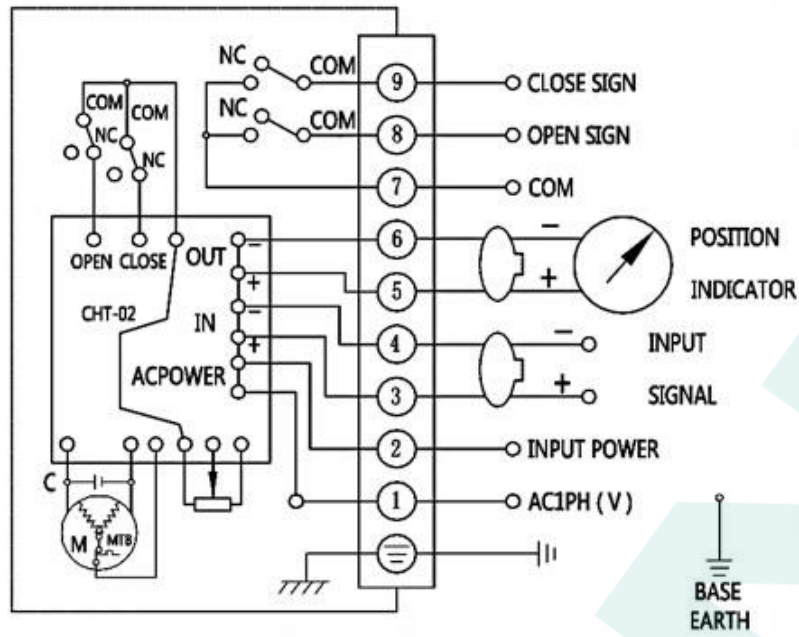
220V AC ON-OFF PASSIVE TYPE



24V DC ON-OFF PASSIVE TYPE



220V AC MODULATING TYPE



380V 50/60 HZ ON-OFF TYPE

