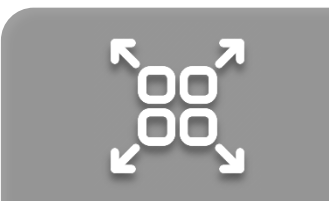
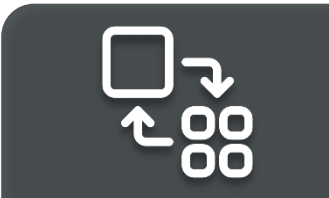
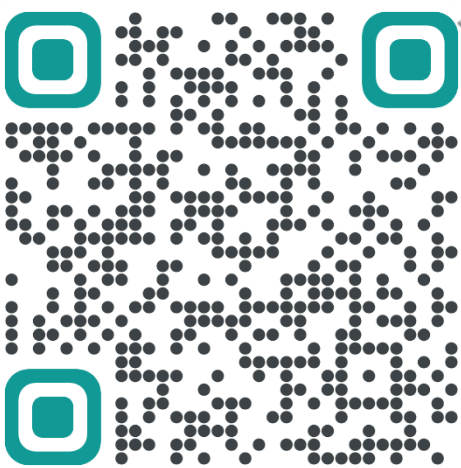




## POSITION INDICATOR USER MANUAL



## 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 the product's specification, design, and/or any components may not be printed immediately but until the following manual revision.
- 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 Position Indicator in a clean and dry environment. For optimal storage conditions, it is recommended to store the Position Indicator , safeguarding them 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 Position Indicator' functionality and reliability throughout their lifecycle.
- Handling the Position Indicator 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 valve monitor remains intact throughout the transportation process.

## SAFETY PRECAUTIONS

1. General Safety Guidelines : Always wear appropriate personal protective equipment (PPE) when working with the API 200 Position Indicator . Ensure that all power sources are disconnected before starting any installation or maintenance procedures. Do not attempt to modify or alter the switch box without manufacturer authorization.
2. Electrical Safety : The API 200 Position Indicator operates with electrical components. Make sure to adhere to standard electrical safety practices. When conducting electrical connections, verify that the power supply is turned off.
3. Mechanical Safety : Avoid placing excessive force on the switch box during installation or maintenance, as it may lead to damage. Only qualified personnel should conduct maintenance tasks involving mechanical components.

## PRE-INSTALLATION CHECKS

**Before installing the API 200 Position Indicator , verify the following:**

1. Compatibility with the valve and actuator it will be installed on.
2. Proper alignment of the mounting bracket and the valve/actuator.

## INSTALLATION INSTRUCTIONS

1. Before Installation :

Verify that the nameplate of the position indicator matches the required specifications, including the correct model number, voltage, and enclosure type for your application.

Ensure that the wiring connections adhere to the diagram provided inside the top casing cover.

Seal the two conduit cable entries properly until the cable work is finalized.

1. Sealing and Care :

Position indicators and switch box covers are sealed using O-rings. Take care not to damage the O-rings during disassembly or reassembly. Properly maintain the O-rings to ensure their integrity and effectiveness.

1. Limit Switch Adjustment :

The position of the limit switches/cams has not been adjusted at the factory. It is essential to perform a final adjustment before using the position indicator to ensure accurate operation.

4. Caution :

Do not use the position indicator in areas where explosion-proof equipment is required. These limit switches are designed as weatherproof types, not explosion-proof types.

**NOTE :** For any further assistance or technical queries related to the installation and use of the position indicator , refer to the manufacturer's documentation or contact their technical support team.

## POSITION INDICATOR MOUNTING

The Position Indicator can be quickly and easily mounted on your actuator according to the VDI/VDE 3845 standard using the supplied screws.

1. Move the actuator to the end position where the actuator shaft is parallel to the actuator housing.
2. We can adapt the desired actuator using the movements indicated by numbered sections 1 and 2 in the Figure 1
3. Attach the switch box to the actuator using the appropriate mounting bracket. (Figure 2)
4. Secure the mounting bracket to the actuator using the four supplied screws. (Figure 3)
5. Loosen the four cover screws slightly, but do not remove them completely.
6. Pass the system cable through the cable gland into the switch box housing and connect the individual leads to the terminal block.
7. Refer to the wiring diagram on the data sheet or on the switch box cover to ensure that the connections are correct. Connect the housing to the potential equalization.
8. Close the switch box cover and tighten the screws firmly.

### SAFETY PRECAUTIONS

1. Make sure that the actuator is properly secured before proceeding with the installation.
2. Do not overtighten the screws when securing the switch box.
3. Be careful not to damage the wiring when connecting the system cable.
4. Follow the wiring diagram carefully to ensure that the connections are correct.

### TROUBLESHOOTING

1. If the switch box does not function properly, check the wiring connections to make sure that they are correct.
2. If the switch box is still not functioning properly, contact the manufacturer for assistance

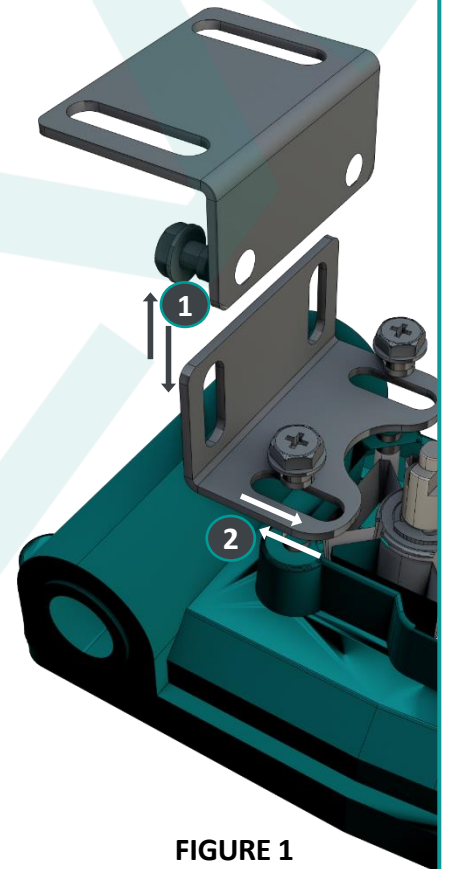


FIGURE 1

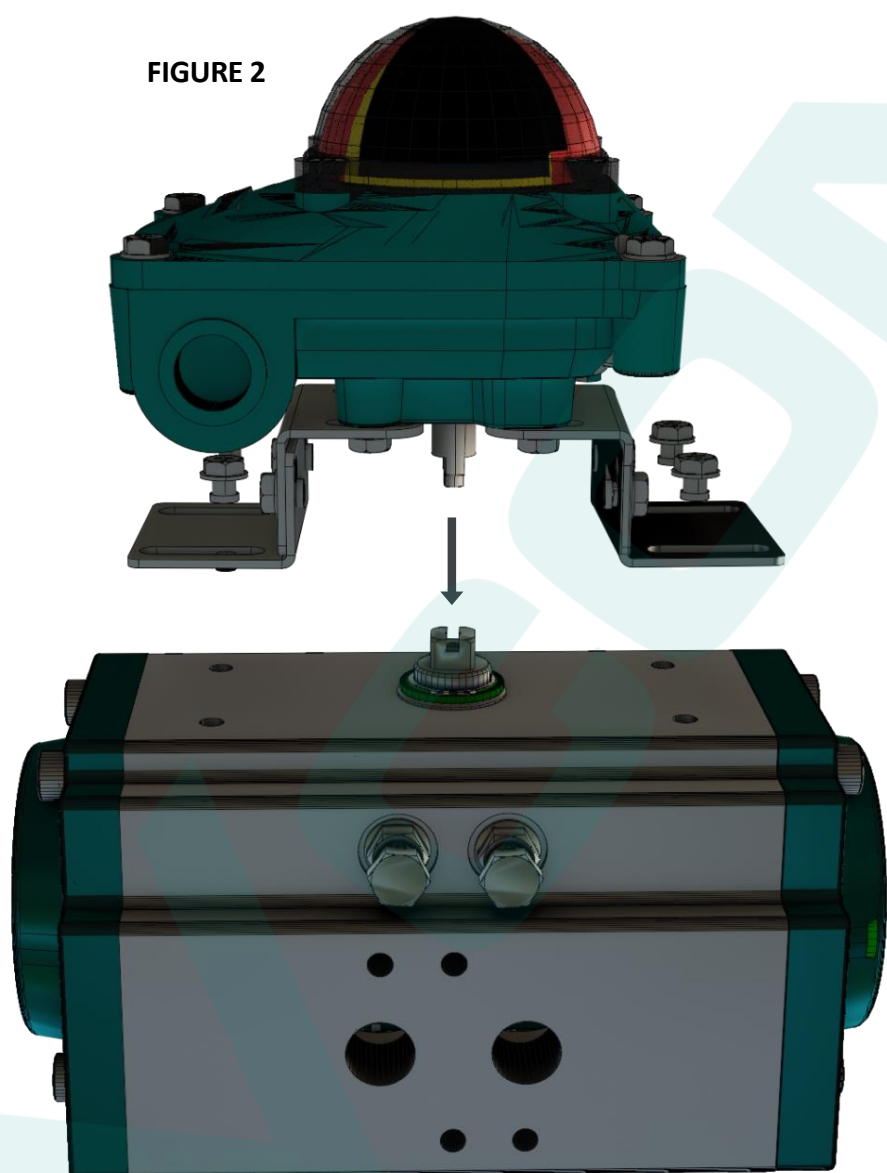


FIGURE 2

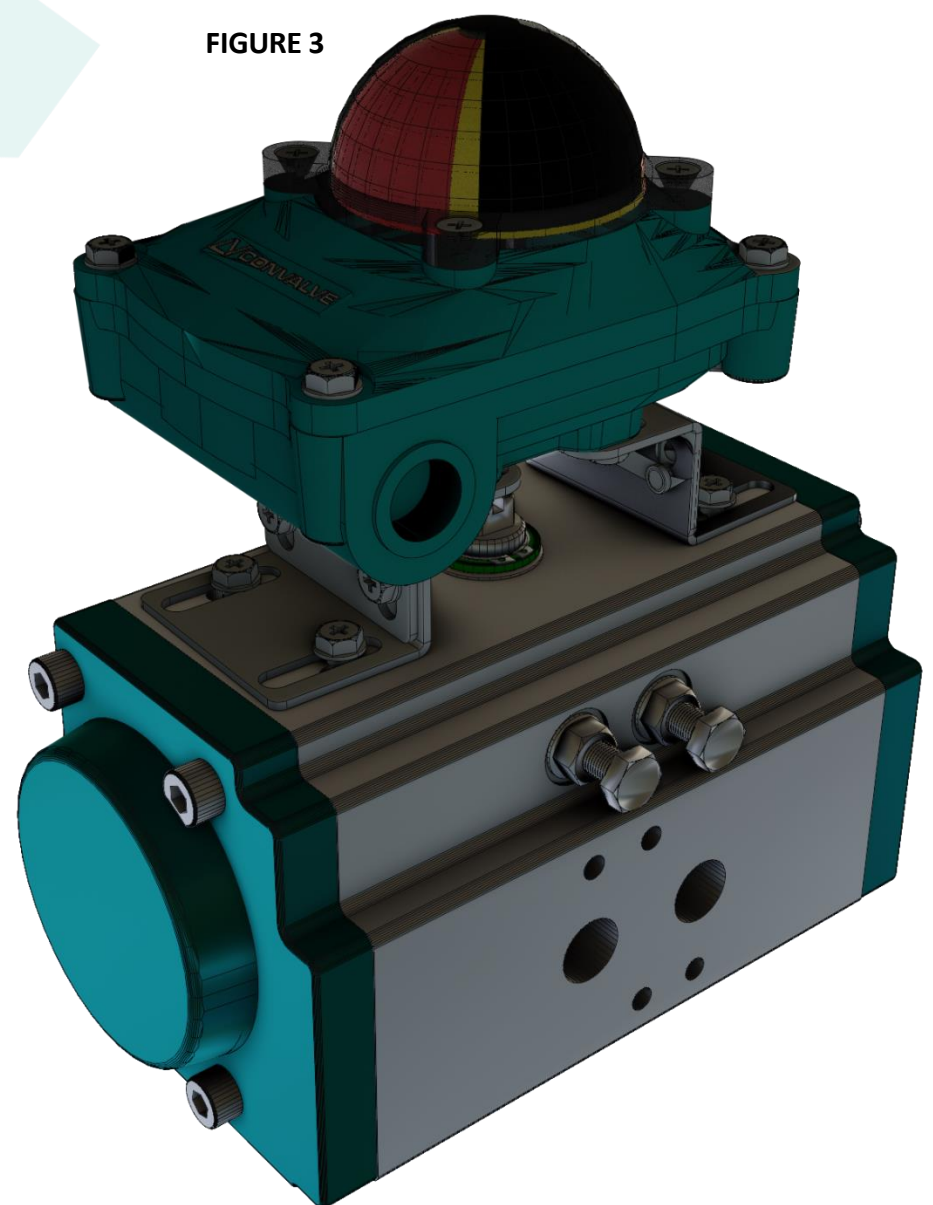


FIGURE 3

## FITTING THE MOUNTING BRACKET

### 1. Fixing the Mounting Bracket :

Position the mounting bracket onto the top of the actuator.

Use appropriately sized high tensile bolts and spring washers to securely fasten the bracket to the actuator.

### 2. Inserting the Position Indicator Shaft :

Align the shaft of the position indicator correctly with the drive slot on the top of the actuator's drive shaft.

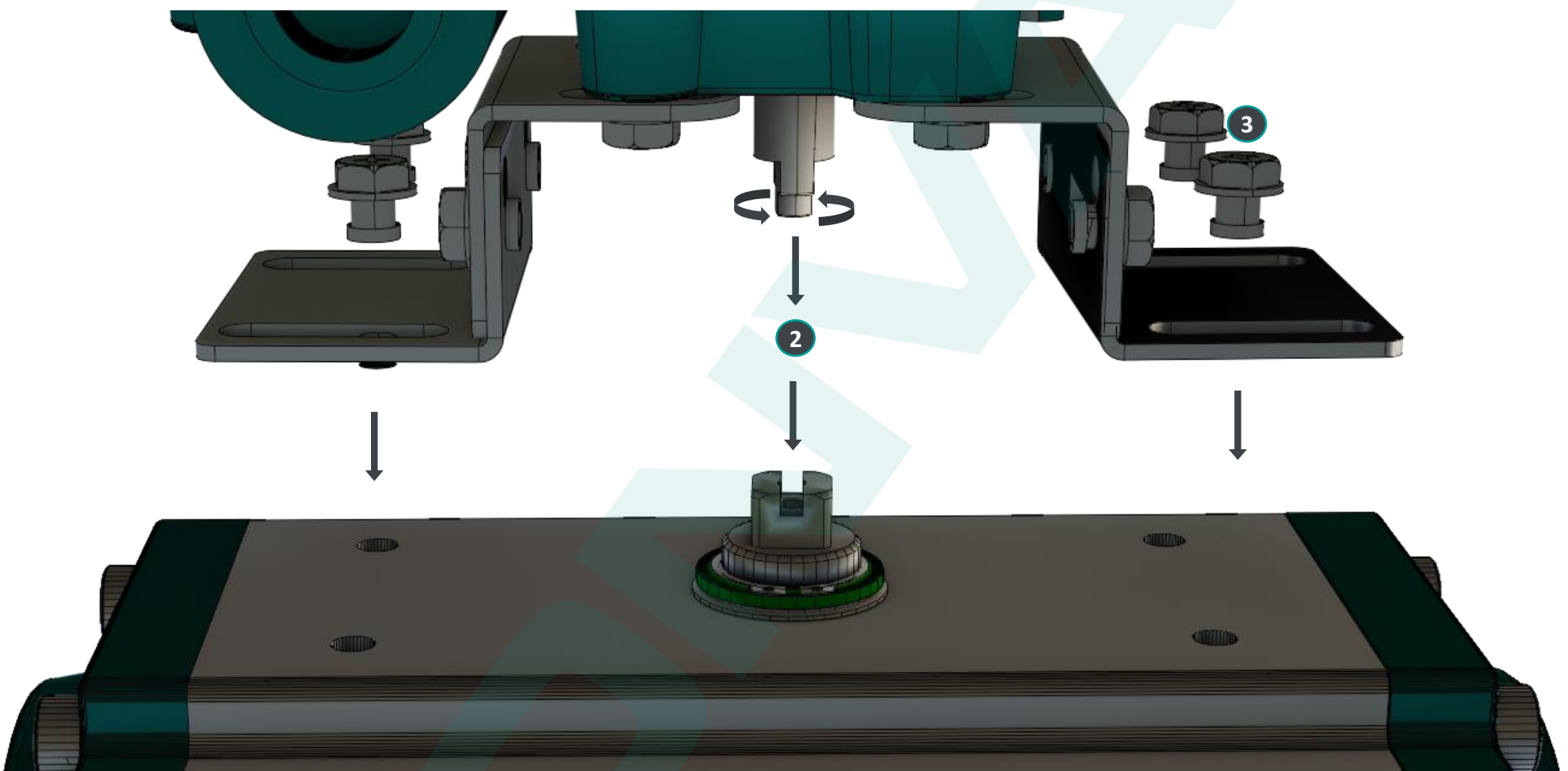
Insert the position indicator shaft into the drive slot.

### 3. Fastening the Box to the Bracket :

Use correctly sized high tensile bolts and spring washers to firmly attach the position indicator to the mounting bracket.

Ensure that all fastenings are tightened to the specified torque values for a reliable and secure mounting of the position indicator onto the actuator.

Additionally, refer to the manufacturer's guidelines for any specific instructions related to your particular actuator and position indicator model.



## ADJUSTMENT OF THE POSITION INDICATOR

### 1. Loosen the Captive Bolt :

Use a screwdriver to loosen the captive bolt located on the cover of the position indicator .

Once the captive bolt is loosened, lift off the top cover to expose the switches and cam arrangements.

### 2. Independent Cam Arrangement : Note that each switch has its own independent cam arrangement for adjustment.

### 3. Adjustment Procedure :

Identify the switch to adjust based on your application requirements.

Carefully rotate or position the cam associated with the selected switch.

Adjust the cam to the desired position that corresponds to the required actuator or valve position.

Verify that the switch responds correctly to the actuator or valve positions.

Repeat for other switches (if applicable).

### 4. Secure the Top Cover :

Once adjustments are completed, position the top cover back onto the position indicator .

Secure the cover in place by tightening the captive bolt securely with a screwdriver.

## OPEN CAM SETTING

### 1. Lift the Bottom Cam

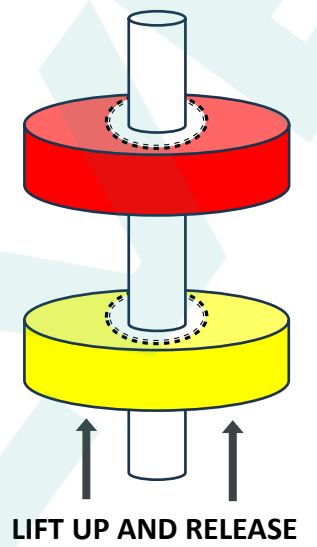
- Gently lift the bottom cam upward to disengage it from the splines on the shaft.

### 2. Turn the Cam until Activation

- While holding the bottom cam up, rotate it until the switch associated with the cam is activated and you hear a "click" sound. The "click" indicates that the switch has been triggered by the cam's position.

### 3. Release the Cam

- After achieving the desired switch activation point, release the bottom cam. The spring inside the position indicator will exert force on the cam, pushing it back into the splines on the shaft. This ensures that the cam is positioned correctly and securely in place.



## CLOSED CAM SETTING

### 1. Push the Top Cam Down :

Apply gentle pressure to push the top cam downward, disengaging it from the splines on the shaft.

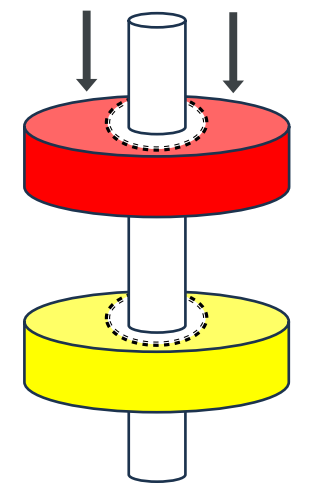
### 2. Turn the Cam until Activation :

While holding the top cam down, rotate it until the switch associated with the cam is activated, and you hear a "click" sound. The "click" indicates that the switch has been triggered by the cam's position.

### 3. Release the Cam :

After achieving the desired switch activation point, release the top cam. The spring inside the position indicator will exert force on the cam, pushing it back into the splines on the shaft. This ensures that the cam is positioned correctly and securely in place.

### PUSH DOWN TO RELEASE



**NOTE :** Incorrect cam position settings can lead to inaccurate signaling to external control systems. Therefore, ensure that you adjust the cam positions accurately according to your specific application requirements.

## CHECKING THE SWITCH CAM SETTING

### 1. Operate the Actuator :

Operate the actuator, moving it from the full open position to the full closed position in one direction. Then, move it from the full closed position back to the full open position in the opposite direction. Repeat this process several times to thoroughly check the switch cams.

### 2. Monitor Output Signal (if Possible) :

If possible, monitor the output signal from the limit switches during the actuator's operation. Verify that the output signals correspond accurately to the actuator's positions (full open and full closed).

### 3. Check Cam Operation :

While operating the actuator, observe the switch cams to ensure they are activating and deactivating correctly. Pay attention to any irregularities or discrepancies in the cam operation.

### 4. Verify Proper Functioning :

Make sure that the switch cams engage and disengage smoothly with the actuator's movement. Confirm that the limit switches provide accurate signals at the desired positions.

### 5. Adjust if Necessary :

If any issues or misalignments are detected during the operation, consider adjusting the switch cams to ensure correct activation and deactivation.

Repeat Verification

After any adjustments, repeat the full open to full closed operation and monitor the output signals to confirm that the switch cams are operating correctly.

**NOTE :** Regularly inspect the position indicator and perform maintenance checks to ensure reliable and accurate operation.

## WIRING

### 1. Wiring Diagram :

The correct wiring diagram is provided on the inside of the top casing cover. Please carefully follow the instructions provided in the diagram for proper wiring. If you have any doubts or questions, do not hesitate to contact Convalve for clarification.

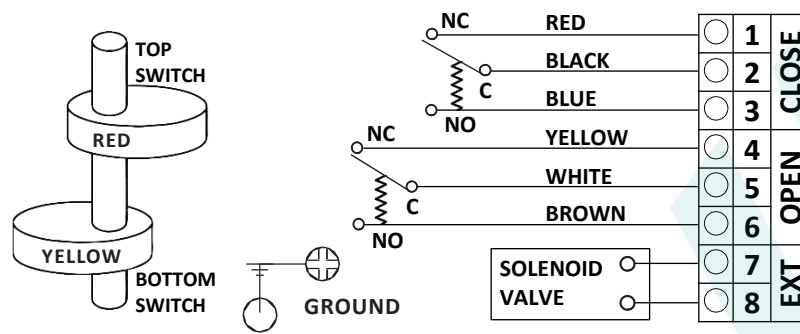
### 2. Actuator Operation and Switch Cams :

To ensure proper operation, repeatedly operate the actuator from full open to full closed position in both directions. Preferably, monitor the output signals from the limit switches during the actuator's movement to confirm their correct functioning.

### 3. Earth Wire Cable :

It is important to use an earth wire cable with a bicolor combination of green/yellow. Ensure the proper use of this cable for electrical safety.

**NOTE :** For any technical assistance or further guidance related to wiring, actuator operation, or limit switch functionality, refer to the provided wiring diagram and consult Convalve if needed.



## REASSEMBLY OF POSITION INDICATOR

### 1. O-ring Seal :

The O-ring seal is a critical component of the position indicator and plays a crucial role in providing a proper seal and preventing any leakage. It is important to handle the O-ring with care during assembly to avoid damaging it.

### 1. Mounting the Top Cover :

When mounting the top cover onto the bottom part of the casing, exercise caution to avoid damaging the O-ring. Make sure the top cover is aligned correctly and securely fastened to maintain the integrity of the sealing mechanism.

## OPERATION INSTRUCTIONS

### 1. Wiring :

**Wiring Diagram :** The correct wiring diagram is provided in the enclosed documentation. Please carefully follow the instructions provided in the diagram for proper wiring. If you have any doubts or questions, do not hesitate to contact us for clarification.

**Safety :** It is crucial to follow the provided wiring diagram diligently to ensure proper functioning and safety. Neglecting or deviating from the instructions in the enclosed diagram may void the warranty/guarantee for the equipment. To maintain the validity of the guarantee, it is essential to adhere to the specified guidelines and wiring configurations.

**Assistance :** If you have any questions or uncertainties regarding the wiring process, do not hesitate to reach out to us for assistance. We are here to help you with any queries and ensure a successful installation of the equipment.

### 2. Operation :

The limit switches are fully controlled and operated by the actuator shaft. This automated system ensures that the limit switches accurately monitor and control the actuator's movement without any manual intervention. It provides seamless and reliable operation, offering precise feedback and control over the actuator's positions.

### 1. Pre-Service :

Before servicing the position indicator , turn off all power to prevent any electrical hazards.  
Isolate the valve or actuated device and ensure it is not under pressure.  
Use genuine Convalve spare parts when replacing any parts to maintain optimal performance and safety.

### 2. Regular Maintenance Checks :

Perform regular maintenance checks at intervals of maximum six months under normal conditions.  
In severe service conditions, more frequent inspections are advisable.

### 3. Alignment and Wiring :

Verify proper alignment between the position indicator and actuator to prevent misalignment issues.  
Check the wiring insulation to ensure it is intact, properly connected, and terminated.

### 4. Secure Fastening and Cleanliness :

Verify that all screws are present and properly tightened for secure connections.  
Ensure internal electrical components are clean and free from dust or debris.

### 5. Conduit Connections :

Check that the conduits connections are installed correctly and are dry to prevent moisture ingress.

### 6. O-Ring Seals :

Inspect the enclosure's O-ring seals to ensure they are intact and not pinched between flanges, as this can cause leaks.

### 7. Visual Inspection During Open/Close Cycle :

Perform a visual inspection during the open/close cycle of the actuator to verify smooth operation and proper functioning of the position indicator .

### 8. Identification Labels :

Inspect identification labels for signs of wear and replace if necessary for clear identification and safety purposes.