

# rotork®

## Controls



### ROMpak Series

#### Installation Manual



Valve Actuators

Keeping the World Flowing

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**This manual contains important safety information. Please ensure it is thoroughly read and understood before installing, operating or maintaining the equipment.**

**Due to wide variations in the terminal numbering of actuator products, actual wiring of this device should follow the print supplied with the unit.**

# Health and Safety

This manual is produced to enable a competent user to install, operate, adjust and inspect Rotork ROMpak valve actuators.

Only persons competent by virtue of their training or experience should install, maintain and repair Rotork actuators. Work undertaken must be carried out in accordance with the instructions in this and any other relevant manuals. The user and those persons working on this equipment should be familiar with their responsibilities under any statutory provisions relating to the health and safety of their workplace.

Due considerations of additional hazards should be taken when using the ROMpak actuators with other equipment. Should further information and guidance relating to the safe use of the ROMpak be required, it will be provided on request.

Electrical installation, maintenance and use of these actuators should be carried out in accordance with the National Legislation and Statutory Provisions to the safe use of this equipment, applicable to the site of installation.

*For the UK:* Electricity at Work Regulations 1989 and the guidance given in the applicable edition of the "IEE Wiring Regulations" should be applied. Also the user should be fully aware of his/her duties under the Health and Safety Act 1974.

*For the USA:* NFPA 70 National Electrical Code is applicable.

The mechanical installation should be carried out as outlined in this manual and also in accordance with relevant standards such as British Standard Codes of Practice.

**Actuator may start and operate without warning, depending on the remote control signal status and configuration.**

### Storage

If your actuator cannot be installed immediately, store it in a dry place until you are ready to connect the incoming cables.

If the actuator has to be installed but cannot be cabled the removable breakout discs must be left intact. Rotork cannot accept responsibility for deterioration caused on-site once the covers are removed.

Every Rotork actuator has been fully tested before leaving the factory to give years of trouble free operation providing it is correctly commissioned, installed and sealed.

### Important Notices

- Make sure the voltage is correct before wiring.
- Power off before distribution or for maintenance purposes.
- Seal the casing and conduit entries after wiring to prevent dust or water contamination.
- Do not install when hazardous or explosive gases may be present.
- When more than one electric actuator needs to operate simultaneously, please connect with the individual cables.
- The warranty period of our product is one year.

### Duty performance

ROMpak perform Class A for standard type as table shown according to EN 15714-2:2009(E).

BS EN 15714-2:2009

EN 15714-2:2009(E)

Rated Torque Ranges Nm	Class A On-Off (cycles per hour*)
Up to 125	15
126 - 1,000	10

\*One cycle consists of nominal 90° angular travel in both directions (i.e. 90° to open +90° to close) based on an average load of at least 30% of the rated torque, with the ability to transmit 100% of the rated torque for at least 5% at each end of travel, with a cumulative operating time not exceeding 15 minutes in one hour.

Table 6 Part-turn actuator duty performances

According to EN 15714-2:2009(E), duty performance for ROMpak is described as follows:

**For ROMpak A and ROMpak 1, 2:** 15 cycles/hour

**For ROMpak 3, 4, 5, 6, 7:** 10 cycles/hour

## Operating by Hand

### ROMpak 1/A

On the base of the gearbox a drive is provided for manual operation. A suitable tool can be located onto the Hex input drive (8 mm) and rotated in the appropriate direction to operate the actuator output drive. This tool is NOT provided.

**⚠ WARNING: The drive tool must be removed after manual operation.**

**⚠ WARNING: The red selector knob must be set to local or stop position during manual operation to prevent unexpected movement of the input shaft.**



### ROMpak 2, 3, 4, 5, 6, 7

The hand wheel is permanently engaged and rotation of the hand wheel will operate the valve. The mechanism will automatically disengage when the actuator is operated electrically.

**⚠ CAUTION: With respect to handwheel operation of Rotork electric actuators, under no circumstances should any additional lever device such as a wheel key or wrench be applied to develop more force when closing or opening the valve as this may cause damage to the valve and/or actuator to become stuck in the seated/backseated position.**

### Operating Electrically

Check that the power supply voltage is the same as that on the actuator nameplate.

### Selecting Local / Stop / Remote Operation

#### Operation

The red selector knob enables either local or remote control, and is lockable in each position using a padlock with a 6 mm hasp. When the selector is locked in the Local or Remote positions the stop facility is still available. The selector can also be locked in the stop position to prevent electrical operation by Local or Remote control.

**⚠ WARNING: During electrical operation the manual input drive on the ROMpak 1/A will rotate.**



## Electrical Operation

### Local Control

With the red selector positioned at Local (anti-clockwise) the adjacent black knob can be turned to select Open or Close. To stop, turn the red knob clockwise.



### Local Control Knob

When Local is selected on the Red selector the black knob can be turned to open and close the actuator. Clockwise rotation will close the actuator. Anti-clockwise rotation will open the actuator. When the knob is released it will return to the central position.



### Remote Control

Rotate the red selector to the Remote control position (clockwise), this gives remote control only for Open and Close but local Stop can still be used by turning the red knob anti-clockwise.



### Stop Position

With stop selected there is no electrical operation in local or remote control.



## Indication

### Local Indicator

On the top cover a continuous position indicator will rotate and change colour to indicate valve position. In the standard configuration green is closed and red is open.



Located on the side face of the control Pak, three LED's also indicate valve position and status. The standard configuration is as follows:

<b>Red</b>	Valve open
<b>Amber</b>	Mid position / flashing when travelling
<b>Green</b>	Valve closed

The settings can be changed to Green Open / Red Closed by changing the DIP switch setting on the main PCB.



## Mounting the Actuator

The ROMpak actuator is suitable for quarter turn non thrust applications. Ensure the valve is secure before fitting the actuator, as the combination may be top heavy and therefore unstable.

A suitable mounting flange conforming to ISO 5211 or USA Standard MSS SP101 must be fitted to the valve. Refer to label for conformation of output flange details.

**ROMpak can be supplied with adaptors to reduce the size of the output drive square. The square insert is fitted into the output drive. All ROMpak actuators can be supplied with blank drive bush. This is machined to suit the valve stem as shown in the picture.**

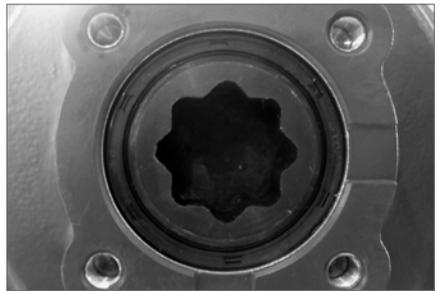
Actuator to valve fixing must conform to:  
Material Specification ISO Class 8.8, yield strength 628 N/sq mm.

**⚠ WARNING: Do not lift the actuator and valve combination via the Actuator. Always lift the valve/actuator assembly via the valve.**

Before engagement, ensure that the actuator and valve are in the same position (e.g. closed) and the drive spline matches the stem position. Actuator position can be determined using the local indicator and if necessary can be moved using the manual input drive. Secure the actuator with appropriate fixing bolts. It may be necessary to adjust the stop bolts to enable sufficient travel. Ensure the base bolts are tight.

**⚠ WARNING: Never lift the actuator via the electrical pak.**

The actuator should be fully supported until full valve shaft engagement is achieved and the actuator is secured to the valve flange.



## Setting the Actuator Stop Bolts

### Stop Bolts

Adjusting the stop bolts in and out will increase or decrease the valve travel. It is recommended that stop bolt adjustment be carried out by the valve maker/supplier before the valve is fitted into the pipe work. Once installed, the valve maker/supplier should be consulted before stop bolt re-adjustment is carried out. After resetting the stop bolts the limit switches must be reset. The stop bolts are factory set to give a nominal 90° travel. If fitted the stop bolts are located near the gearbox base. Stop bolt adjustment allows variation at each end position. Screwing the bolt in reduces movement, out increases movement.

### There are no stop bolts fitted in the ROMpak 1/A

For clockwise closing valves the right hand stop bolt is the closed stop. The left is the open stop as shown in the picture.

### Adjustment for non seating valve types

For closed and open stop position adjustments. Undo stop bolt lock-nut. Move actuator and valve to the required stopping position (it may be necessary to unscrew stop bolt to allow more travel). Screw stop bolt in until a stop is felt. Tighten stop bolt lock nut.

### Adjustment for seating valve types

For closed and open stop position adjustments. Undo stop bolt lock-nut. Move actuator and valve to the required seating position of the valve (it may be necessary to unscrew stop bolt to allow more travel). Screw stop bolt in until a stop is felt then back off by two turns. Tighten stop bolt lock nut.



*Setting clockwise to close stop bolt*



*Setting anti-clock to close stop bolt*

## Cable Connections

**⚠ WARNING: Ensure all power supplies are isolated before removing actuator covers.**

Check that the supply voltage is the same as that stamped on actuator nameplate. A switch or circuit breaker must be included in the wiring installation of the actuator. The switch or circuit breaker must be installed as close as possible to the actuator and shall be marked that it is the disconnecting device for that particular actuator. The actuator must be protected with overcurrent protection devices rated in accordance with Rotork publication PUB008-001.

### Removing the electrical control Pak cover

Using a 5 mm Allen (hex.) key loosen the 6 captive fixings securing the cover and remove.

There are four sealed M20 cable entries. One entry will be fitted with a red transit plug. The remaining three entries require the removable disc to be broken out so that cable can reach the electrical control Pak. Rotork advise using the transit plug entry first for wiring connections. If this entry is not used, a steel or brass blanking plug must be installed to maintain sealing of the ROMPak enclosure. Make cable entries appropriate to the cable type and size. Ensure that threaded adaptors or cable glands are tight and fitted to manufacturers recommendations to ensure waterproof seal.

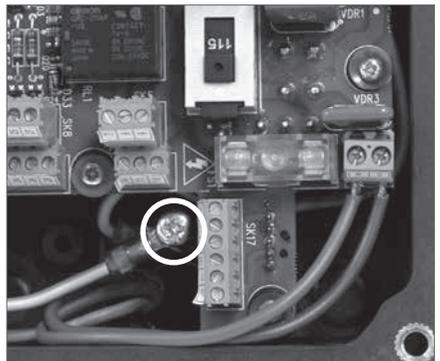
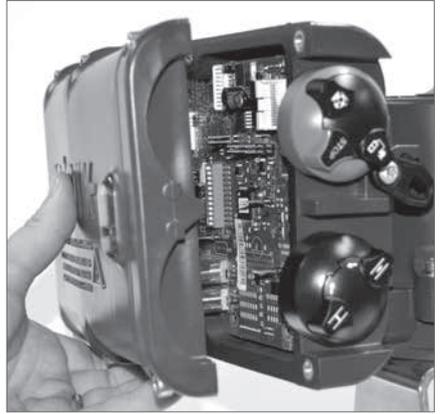
### Do not over tighten.

Unused cable entries must be left intact.

### Earth / Ground Connections

**⚠ WARNING: Ensure that all cables to be terminated are electrically isolated.**

A terminal post with a 4 mm screw is mounted adjacent to the power connections to provide an internal safety earth.



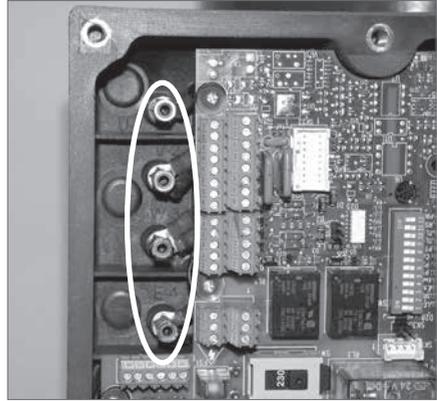
## Cable Connections

### Connecting to the power terminals

Refer to the wiring diagram supplied.

### Three-Phase Connection

Three power and an earth termination posts are available using the 4 mm screws and washers provided. The terminal identification is moulded into the housing adjacent to the termination posts. The cable connections must be secured using an appropriate sized ring tag connector. Ensure the terminations are tight and all connections secure.

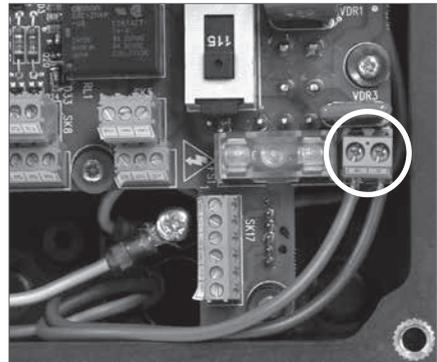


### Single-Phase and DC Connections

On the end of the main PCB there is a terminal rail for power connections. The terminals are rated for 24-12 AWG, cross section up to 2.5 mm.

### Connecting the Control Terminals

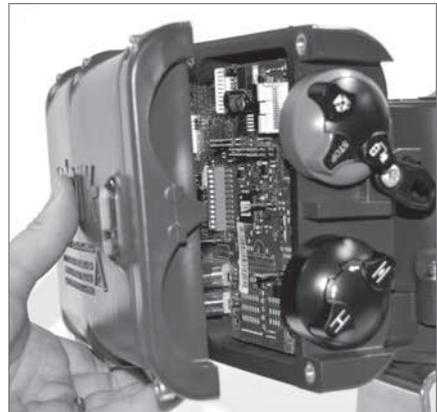
Refer to the wiring diagram supplied to identify functions of the terminals. Check that the supply voltage is the same as marked on the actuator nameplate. The terminals are rated for 28-14 AWG, cross section up to 1.5 mm.



### Replacing Electrical Control Pak Cover

Ensure cover seal is in good condition, loosely fit cover then tighten screws finger tight. Then tighten screws in sequence starting from the middle. Maximum torque 5 Nm.

**⚠ WARNING:** The control Pak cover must be replaced before the power supply is switched on.



## Commissioning

**⚠ WARNING: Ensure all power supplies are isolated before removing actuator cover. Caution is required when removing cover as motor and heater may be hot. On actuators with single-phase supplies the motor start capacitor may retain a hazardous residual charge.**

The ROMpak is factory set to operate 90° and is designed to stop on limit at each end of travel, the limits may be adjusted to suit the characteristics of the valve. It will be necessary to remove the top cover to expose the switch mechanism when adjusting cam.

Two travel cams LS1 and LS2 are set to control the open and close position of the valve.

Two travel cams LS3 and LS4 are set for end of travel indication.

**⚠ WARNING: Failure to check / set travel switches could result in actuator failing to stop.**

### For Clockwise to Close Actuators

#### PCB Function Switch 7 OFF.

The travel cams are preset at the factory, when additional adjustments are needed, follow items described below:

- For plastic cam (as shown in picture A), refer to **'Type 1 - Cam adjustment for plastic cam'** on page 12 to adjust Cam.
- For metal cam of ROMpak 1/A (as shown in picture B), refer to **'Type 2 - Cam adjustment for ROMpak 1/A'** on page 13 to adjust Cam.
- For metal cam (as shown in picture C), refer to **'Type 3-cam adjustment for metal cam'** on page 14 to adjust Cam.

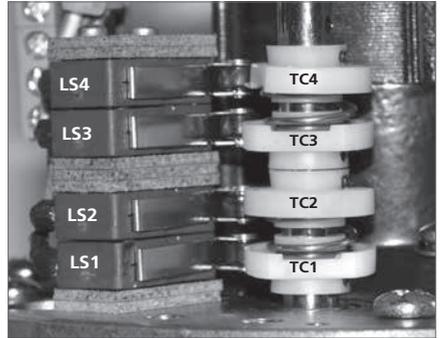
For ROMpak 1-7, the rotation direction of output shaft is identical with position indicator shaft.

- LS4:** Clockwise end of travel indication
- LS3:** Anti-clockwise end of travel indication
- LS2:** Clockwise end of travel
- LS1:** Anti-clockwise end of travel

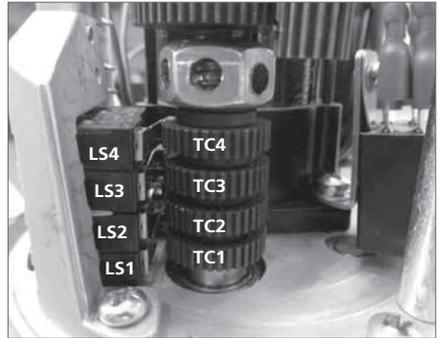
For ROMpak A, the rotation direction of output shaft is reverse with position indicator shaft. The rotation direction described below is the same as position indicator shaft.

- LS4:** Anti-clockwise end of travel indication
- LS3:** Clockwise end of travel indication
- LS2:** Anti-clockwise end of travel
- LS1:** Clockwise end of travel

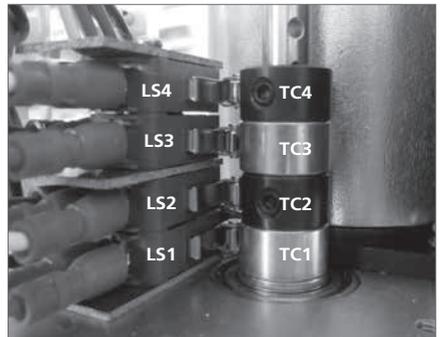
**⚠ CAUTION: Ensure all power supplies are isolated before removing actuator covers.**



Picture A



Picture B



Picture C

# Commissioning

## Type 1 - Cam adjustment for plastic cam

The following instruction is only applicable for clockwise to close valves.

### To set the open position:

- Turn power off.
- Use manual override to turn valve to the fully open position.
- Remove cover.
- Locate travel cam 1 (TC1). Lifting the cam against the spring will allow the cam to rotate.
- Rotate cam anti-clockwise\* until switch operates. It may be necessary to rotate cam clockwise\* first to release switch.
- When switch operates release cam.
- Open limit switch is now set.

\* Clockwise for ROMpak A

+ Anti-clockwise for ROMpak A

### To set the close position:

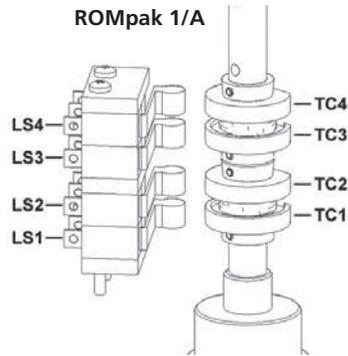
- Turn power off.
- Use manual override to turn valve to the fully closed position.
- Remove cover.
- Locate travel cam 2 (TC2). Depressing the cam against the spring will allow the cam to rotate.
- Rotate cam clockwise\* until switch operates. It may be necessary to rotate cam counter clockwise\* first to release switch.
- When switch operates release cam.
- Close limit switch is now set.

\* Anti-clockwise for ROMpak A

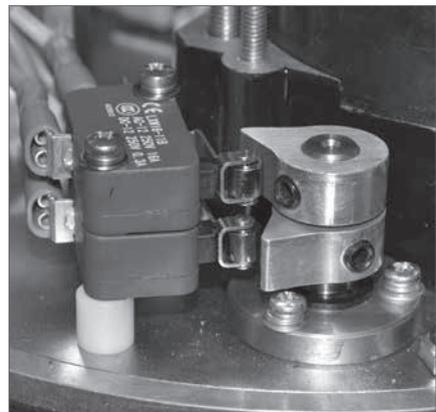
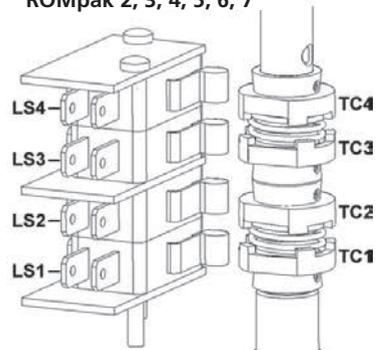
+ Clockwise for ROMpak A

### Torque Switches

Optional extra torque switches can be provided for all sizes except ROMpak 1/A. Torque switches are factory set and should not be adjusted.



### ROMpak 2, 3, 4, 5, 6, 7



# Commissioning

## Type 2 - Cam adjustment for ROMpak 1/A

The following instruction is only applicable to situation that the valve is clockwise for closing (from the top view).

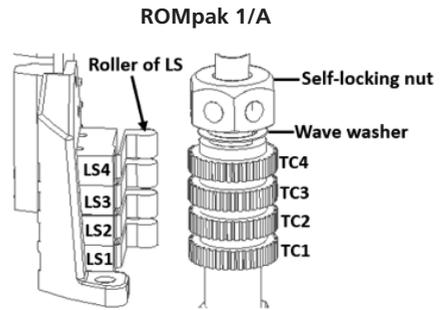
- a. Turn power off.
- b. Remove cover and unscrew the self-locking nut anticlockwise twice approximately 60 degree each time from position A to B as shown in picture D by inserting 4.0 mm Allen (hex.) key into the hole of self-locking nut.

**Note: the Allen (hex.) key should be flat head and longer than 100mm.**

- c. Set fully open position by following item 1, 2, 3 below.
  1. Use manual override to turn valve to the fully open position.
  2. Make sure the roller of LS1 is touching the cylindrical surface of TC1.
  3. **Case 1:** For ROMpak 1, rotate TC1 anti-clockwise slowly until a light click is heard.  
**Case 2:** For ROMpak A, rotate TC1 clockwise slowly until a light click is heard.
- d. Set fully closed position by following item 1, 2, 3 below:
  1. Use manual override to turn valve to the fully closed position.
  2. Make sure the roller of LS2 is touching the cylindrical surface of TC2.
  3. **Case 1:** For ROMpak 1, rotate TC2 clockwise slowly until a light click is heard.  
**Case 2:** For ROMpak A, rotate TC2 anti-clockwise slowly until a light click is heard.
- e. Screw the self-locking nut clockwise to original position (approximately twice 60 degree).
- f. Apply power to check the travelling position. If the position is not correct, please repeat steps a - f.



Picture D: Travel from position A to B is about 60 degree



**TC: Travel Cam**

**LS: Limit Switch**

**TC1: "OPEN"**

**Clockwise**

- ROMpak 1: Increase opening degree to fully open
- ROMpak A: Decrease opening degree

**Anti-clockwise**

- ROMpak 1: Decrease opening degree
- ROMpak A: Increase opening degree to fully open

**TC2: "CLOSE"**

**Clockwise**

- ROMpak 1: Decrease closing degree
- ROMpak A: Increase closing degree to fully closed

**Anti-clockwise**

- ROMpak 1: Increase closing degree to fully closed
- ROMpak A: Decrease closing degree

**TC3: Synchronous turn with TC1**

**TC4: Synchronous turn with TC2**

# Commissioning

## Type 3 - Cam adjustment for metal cam

The following instruction is only applicable to situation that the valve is clockwise for closing (from the top view).

### To set the Open position:

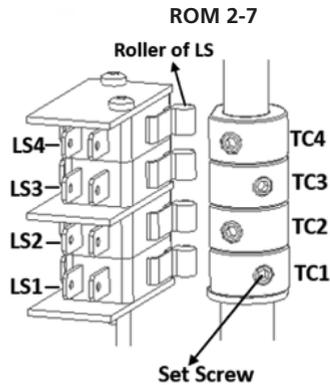
- Turn power off.
- Use manual override to turn valve to the fully open position.
- Remove cover and loosen the TC1 set screw using a 2.5 mm Allen (hex.) key.
- Case 1:** If the roller of LS1 is touching the cylindrical surface of TC1, rotate TC1 anti-clockwise\* slowly until a light click is heard.  
**Case 2:** If the roller of LS1 is touching the flat surface of TC1, firstly rotate TC1 clockwise+ slowly until the roller of LS1 is touching the cylindrical surface of TC1, then repeat Case 1.
- Securely tighten the M5 set screw and apply power to check the travelling position. If the position is not correct, please repeat steps a - e.
- Open position is now set.

- \* Clockwise for ROMpak A
- + Anti-clockwise for ROMpak A

### To set the close position:

- Turn power off.
- Use manual override to turn valve to the fully closed position.
- Remove cover and loosen the TC2 set screw using a 2.5 mm Allen (hex.) key.
- Case 1:** If the roller of LS2 is touching the cylindrical surface of TC2, rotate TC2 clockwise\* slowly until a light click is heard.  
**Case 2:** If the roller of LS2 is touching the flat surface of TC2, firstly rotate TC2 anti-clockwise+ slowly until the roller of LS2 is touching the cylindrical surface of TC2, then repeat Case 1.
- Securely tighten the TC2 set screw and apply power to check the travelling position. If the position is not correct, please repeat steps a - e.
- Close position is now set.

- \* Anti-clockwise for ROMpak A
- + Clockwise for ROMpak A



**TC:** Travel Cam

**LS:** Limit Switch

**TC1: "OPEN"**

**Clockwise**

- ROMpak 1-7: Increase opening degree to fully open
- ROMpak A: Decrease opening degree

**Anti-clockwise**

- ROMpak 1-7: Decrease opening degree
- ROMpak A: Increase opening degree to fully open

**TC2: "CLOSE"**

**Clockwise**

- ROMpak 1-7: Decrease closing degree
- ROMpak A: Increase closing degree to fully closed

**Anti-clockwise**

- ROMpak 1-7: Increase closing degree to fully closed
- ROMpak A: Decrease closing degree

**TC3: Synchronous turn with TC1**

**TC4: Synchronous turn with TC2**

# Commissioning

## For Anti-Clockwise to close actuators

PCB Function Switch 7 ON.

The indicator flag can be rotated 90° by removing the actuator cover and loosening the locking screw on the end of the indicator shaft.

## Closed Switch Setting

Move the valve to the fully anti clockwise closed position. Locate cam TC1 and adjust until switch LS1 just operates.

Locate cam TC3 and adjust so the cam operates the switch LS3 just before LS1 to ensure correct indication at end of travel. The close limits are now set.

## Open Switch Setting

Move the valve to the fully clock wise open position. Locate cam TC2 and adjust until switch LS2 just operates. Locate cam TC4 and adjust so the cam operates the switch LS4 just before LS2 to ensure correct indication at end of travel. The open limits are now set.

## Commissioning

### Initialisation - for actuators fitted with an option card and potentiometers.

Mounted above the position travel cams is a potentiometer used as a position reference for the electronics. The potentiometer is factory set and should require no customer adjustment. If the travel cams have been adjusted then it will be necessary to carry out the following procedure as the control board must learn the new settings. Remove the electrical control pak cover (as shown below) and locate the DIP switches. Set DIP switch No 12 (labelled FOLO on the main PCB) to ON. Select local control on the red local/remote control knob. Using the black local control knob operate the actuator fully OPEN, then fully CLOSED, then to a mid travel position. The actuator can be stopped mid travel by rotating the red control knob clock wise to the STOP position. During this procedure the 4 LED indicators will flash in sequence. Set DIP switch No 12 to OFF. The position calibration is now complete.

**If the travel cams have NOT been adjusted and remain factory set it will not be necessary to conduct the initialisation procedure.**

### Potentiometer adjustment (if fitted)

The potentiometer is factory set to operate over 90 degrees and should not require adjustment. It may be necessary to adjust the potentiometer if the stop bolts have been adjusted or the pot has slipped out of range.

Move the valve to the fully closed position and ensure the stop bolts are correctly set.

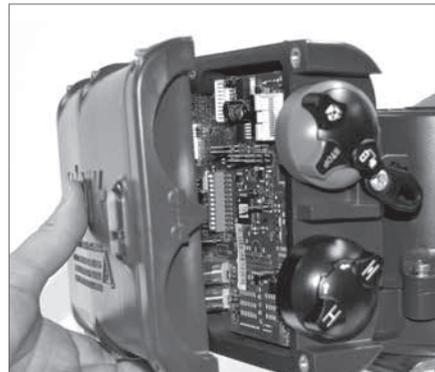
Note there are no stop bolts in ROMpak 1/A.

Remove the mechanical ROM cover (as shown below) and remove the potentiometer mounting screws to release the drive gear. Rotate the gear so that a nominal 50 Ohms resistance pot value is measured across terminals 10 and 11 (within the ROM enclosure).

Refit the pot assembly ensuring the gears are engaged and mounting screws are tight.



*Mechanical ROM cover removed*

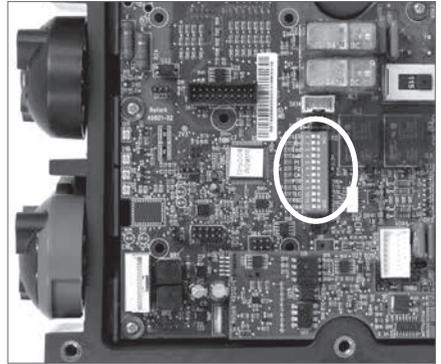


*Electrical control pak cover removed*

# Commissioning

## Setting of Control Function Switches

The 12 switch selector on the main PCB enables different control functions to be chosen



PCB Switch	Function	Switch OFF	Switch ON
1	LED	Close Green / Open	Red Close Red / Open Green
2	3PH	Single phase supply	Three phase supply
3	ESD	Normally Open	Normally Closed
4	ESD	ESD Close direction	ESD Open direction
5	P1	Close Priority	Open Priority
6	P2	Close Priority	Open Priority
7	CA	Clockwise to Close	Anti Clockwise to Close
8	PTR	Maintain local control	Push to run local control
9	TLO	Open stop action - position Limit	Open stop action - Torque
10	TLC	Close stop action - position Limit	Close stop action - Torque
11	RSC	Remote control hardwired only	Remote control hardwired and option
12	FOLO	Option setting mode off	Option setting mode

## Indication Relays

Two independent relays with volt free changeover contacts are available for additional status indication.

**Relay S1** - Monitor relay. The relay will de-energise under any of the following conditions.

- Loss of power
- Loss of control circuit supply
- Local control selected
- Local stop selected
- Phase Lost

**Relay S2** - Remote selected relay. The relay will energise when remote is selected.

# Commissioning

## Optional Extras

### Current position transmitter (CPT) and Folomatic combined PCB.

#### CPT

The CPT gives continuous indication of valve position and is factory set to give 4 mA Close 20 mA Open.

#### Folomatic Proportional Control

The Folomatic proportional control sets the valve position relating to an input signal. The Folomatic is also factory set to operate 4 mA Close 20 mA Open. For normal Folomatic control connect the internal DC supply terminals 27 to 21 and 28 to 22. Refer to wiring diagram for all connections.

**For Folomatic or other remote control options the main PCB control function switch 11 must be set to ON.**

#### Manual / Auto Selection

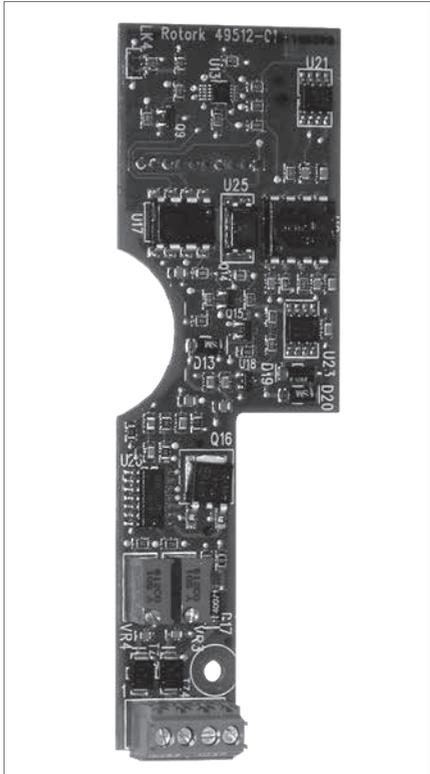
Using a switched input you can select between Folomatic (Auto) and hardwired (Manual) operation. This can be used in applications where it is necessary for the operation to override the Folomatic to allow full manual control of the actuator via hardwired inputs. Refer to wiring diagram for all connections.

#### CPT and Folomatic Adjustment

The CPT and Folomatic are factory set and usually need no adjustment. If the gearbox stop bolts have been adjusted conduct the Initialisation process as described on page 12.

#### CPT Adjustment

Connect multimeter measuring mA to terminals 46 (+) and 45 (-). Move the actuator to the Close position and adjust VR3 Zero potentiometer to measure 4 mA output. Move the actuator to Open and adjust VR4 Span potentiometer to measure 20 mA. The two adjustment potentiometers are located on the CPT/Folomatic PCB and are identified by text on the board. VR4 is mounted at the edge of the PCB.



*Current Position Transmitter (CPT) and Folomatic combined PCB*

#### Folomatic Adjustment

Position the red local control selector to Stop to prevent actuator from moving. Set the control function switch No.12 on the main PCB to **ON**. Apply a 4 mA control signal onto terminals 48 (+) and 47 (-) then rotate black control knob clockwise to the Close position. Apply a 20 mA control signal then rotate the control knob anti-clockwise to the Open position. Return switch 12 to the **OFF** position. For high demand to close apply 20 mA signal then rotate black control knob clockwise to Close position. Apply 4 mA signal then rotate anti-clockwise to Open position.

# Maintenance and Troubleshooting

Every Rotork actuator has been fully tested before dispatch to give years of trouble free operation providing it is installed, sealed and commissioned in accordance with the instructions given in this publication. Covers should not be removed for routine inspection as this may be detrimental to the future reliability of the actuator. Check the actuator to valve fixing bolts for tightness. If the motorized valve is rarely operated, a routine operating schedule should be set up. Check the actuator enclosures for damage, loose or missing fasteners. Ensure there is not an excessive build up of dust or contaminant on the actuator.

Should you require technical assistance or spares, Rotork guarantees the best service in the world. Contact your local Rotork representative or the factory direct at the address on the nameplate, quoting the actuator type and serial number.

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**The actuator gearbox and switch unit contain no serviceable parts.**

**⚠ WARNING: All electrical supplies to the actuator must be isolated before any maintenance is carried out.**

## Lubrication

The gearbox of the ROMpak actuator is fully enclosed, and it has already been lubricated with suitable grease.

## Troubleshooting

### Actuator Fails to Start on Local Control

Set the selector switch to local control and switch the power on. If the actuator fails to start check the supplied power and voltage is correct as indicated on the nameplate. If power supply is correct inspect cartridge fuse located on main PCB. If the motor is very hot, the thermostat may have tripped. Allow the motor to cool and the thermostat to auto-reset.

### Actuator Fails to Start in Remote Control

Set the selector switch to remote control and switch the power on. Check all field wiring connections are correct and attempt operation.

### Valve Not Seating Correctly

End of travel switch not set correctly. Adjust travel switch as necessary to characteristic of valve and then initialise control board.

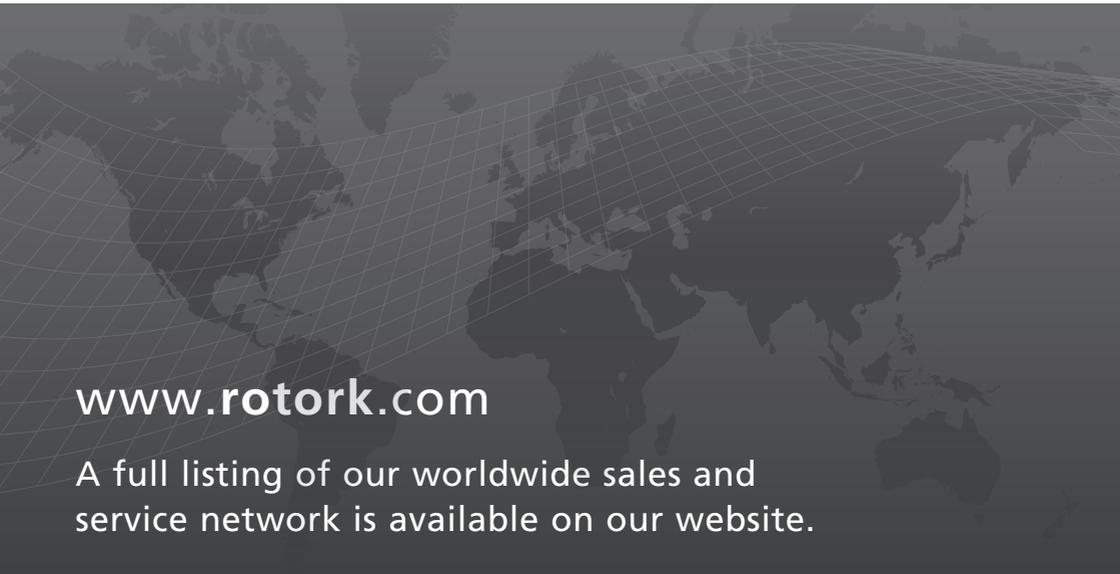
## Weights

### Weight of ROMpak (kg)

Size	1ph	DC	3ph
A	5	5	N/A
1	4	4	N/A
2	13	14	15
3	13	14	15
4	24	24	25
5	24	24	25
6	24	24	25
7	28	28	29

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