

ROM Pak

Installation and maintenance
instructions



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

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Health and Safety

This manual is produced to enable a competent user to install, operate, adjust and inspect Rotork ROM Pak 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 ROM Pak actuators with other equipment. Should further information and guidance relating to the safe use of the ROM Pak 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.

Do not install when hazardous or explosive gases may be present.

Actuator may start and operate when remote control is selected, 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.

Operating by hand

Rompak 1

On the base of the gearbox a drive is provided for manual operation. A suitable tool can be located onto the square input drive (8mm) and rotated in the appropriate direction to operate the actuator output drive.

Note. This tool is NOT provided.

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

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 agrees with 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 6mm 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 Rom Pak 1 will rotate.



Local control

With the red selector positioned at Local (anticlockwise) 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.

Clock-wise 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.



Local indicator

On the top cover a continuous position indicator will rotate and change colour to indicate valve position. Yellow is Open. Red is closed.



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

Red	Valve Open
Amber	Mid position / flashing when travelling
Green	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.

Note

Rompak 1 can be supplied with adaptors to reduce the size of the output drive square. The square insert is fitted into the output drive.

All Rompaks 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

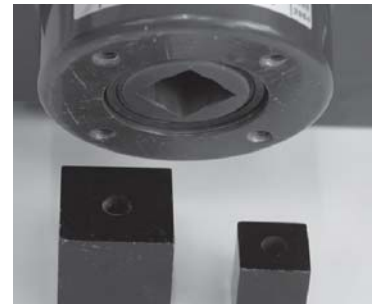
Do not lift the actuator and valve combination via the Actuator. Always lift the valve/actuator assembly via the valve.

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.

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



Stop Bolts

Note there are no stop bolts fitted in the Rompak 1

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 deg 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.

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



Setting clockwise to close stop bolt

Stop Bolt Sizes

Locking nut 15mm AF. Adjusting screw 5mm Hex.

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 anti-clock to close stop bolt

Cable connections

Warning

Ensure all power supplies are isolated before removing actuator covers.

Check that the supply voltage agrees with 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.

Removing the electrical control Pak cover

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

There are four sealed 20mm cable entries. It will be necessary to break out the removable disc that will allow the cable to pass into the electrical control Pak. 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.

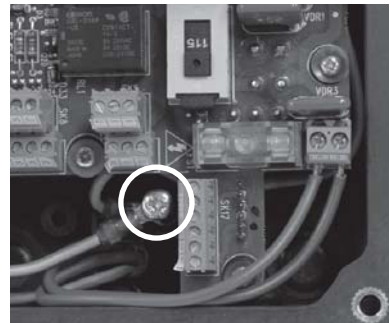
Unused cable entries must be left intact.

Earth / Ground Connections

Warning

Ensure that all cables to be terminated are electrically isolated.

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



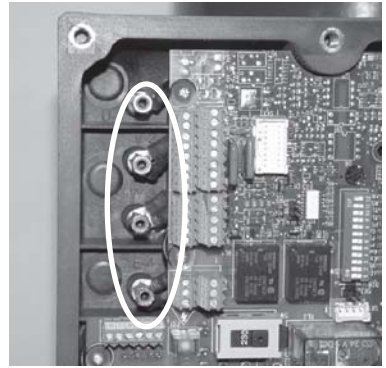
Connecting to the power terminals

Refer to the wiring diagram supplied.

Three phase connection

Three power and an earth termination posts are available using the 4mm 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

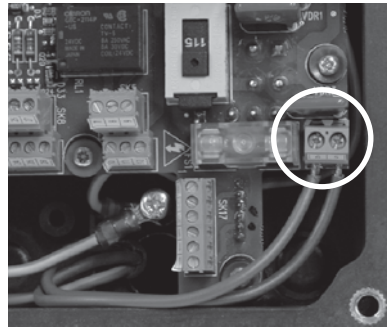
On the end of the main PCB there is a terminal rail for power connections.

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 1.5mm.

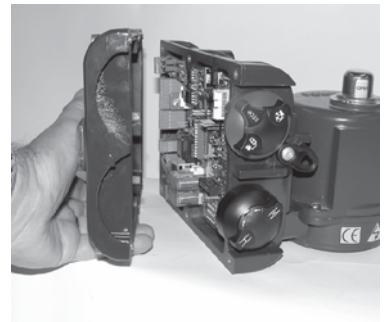


Replacing electrical control Pak cover

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 ROM Pak is factory set to operate 90 degrees 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.

Optional extra torque switches can be provided for all sizes except ROM Pak 1.

Note

Torque switches are factory set and should require no adjustment.

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.

The cams can be adjusted by using a 2.5mm Hex key.



Warning

Failure to check / set travel switches could result in actuator failing to stop.

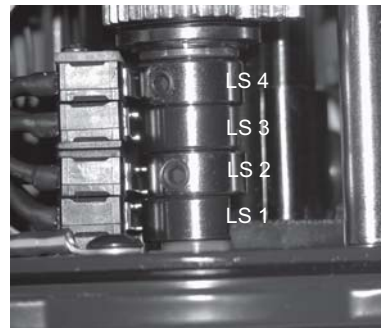
Travel cam adjustment - mounted on position indicator shaft

LS 4 Clockwise end of travel indication

LS 3 Anti clockwise end of travel indication.

LS 2 Clockwise end of travel switch

LS 1 Anti clockwise end of travel switch.



For Clockwise to close actuators

Closed switch setting

Move the valve to the fully clock wise closed position. Locate cam LS 2 and adjust until switch just operates then tighten the locking screw. Locate cam LS 4 and adjust so the cam operates the switch just before LS 2 to ensure the indication at end of travel then tighten the locking screw. The close limits are now set.

Open switch setting

Move the valve to the fully anti clockwise open position. Locate cam LS 1 and adjust until switch just operates then tighten the locking screw. Locate cam LS 3 and adjust so the cam operates the switch just before LS 1 to ensure the indication at end of travel then tighten the locking screw. The open limits are now set.

For Anti Clockwise to close actuators

The indicator flag can be rotated 90 deg 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 clock wise closed position. Locate cam LS 1 and adjust until switch just operates then tighten the locking screw. Locate cam LS 3 and adjust so the cam operates the switch just before LS 1 to ensure the indication at end of travel then tighten the locking screw. The close limits are now set.

Open switch setting

Move the valve to the fully clock wise open position. Locate cam LS 2 and adjust until switch just operates then tighten the locking screw. Locate cam LS 4 and adjust so the cam operates the switch just before LS 2 to ensure the indication at end of travel then tighten the locking screw. The open limits are now set.

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.

Set the 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.

Note

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

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	ESD ON	ESD OFF
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	Stop action Limit	Open Stop action Torque Open
10	TLC	Stop action Limit	Close Stop action Torque Close
11	RSC	Remote control hard wire only	Remote control hard wire 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

Relay S2 - Remote selected relay.

The relay will de-energise when remote is deselected.

Optional extras

Current position transmitter (CPT) 4 to 20 mA output

The CPT gives a continuous indication of valve position and is factory set requiring no customer adjustment. 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 requiring no customer adjustment. For normal Folomatic control connect the internal DC supply terminals 27 to 21 and 28 to 22. Refer to wiring diagram for all connections.

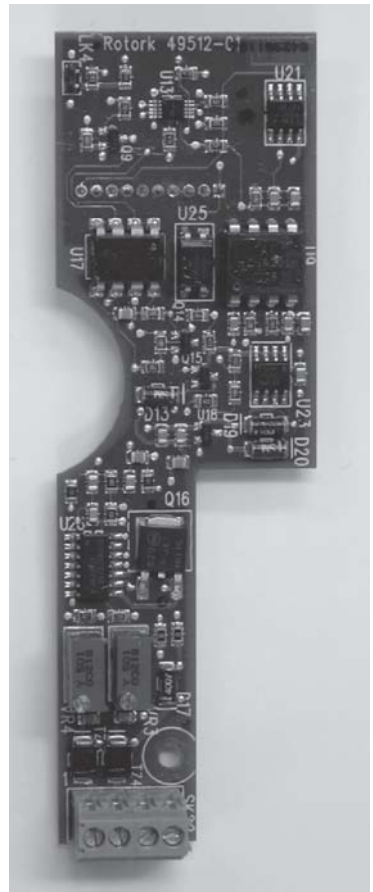
Note

For Folomatic or other option remote control 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) operation and Manual (Hard wired) 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 from the control room. For connections and details refer to wiring diagram R001-100 supplied with the actuator.



Current Position Transmitter (CPT) and Folomatic combined PCB

Maintenance

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.

A full listing of our worldwide sales and service network is available on our website at www.rotork.com

Note

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 ROM Pak actuator is enclosed, and it has already been lubricated with suitable grease.

Trouble Shooting

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 data plate. 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. If the actuator operates in local control the fault is likely to be in the control system.

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.

Weight of ROM Pak (Kg)

size	1ph & DC	3ph
1	4	N/A
2	12	17
3	12	17
4	23	28
6	23	28

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Controls

As we are continually developing our products, the design of Rotork actuators is subject to change without notice. The latest product and technical information is available at our website: www.rotork.com.

The name Rotork is a registered trade mark. Rotork recognises all registered trade marks.

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