

J3

Failsafe Conversion Kit No:2

To convert **J3** on-off actuator to failsafe function.
Contains BSR (Battery ' Spring Return ' System)



Installation, Operation & Maintenance Instructions

SUITS MODELS **J3** - 20 to **J3** - 85

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Damage **WILL BE CAUSED** by non-compliance to these instructions and will not be covered by our warranty. Read these instructions BEFORE installing or connecting the BSR conversion kit.



SAFETY INSTRUCTIONS

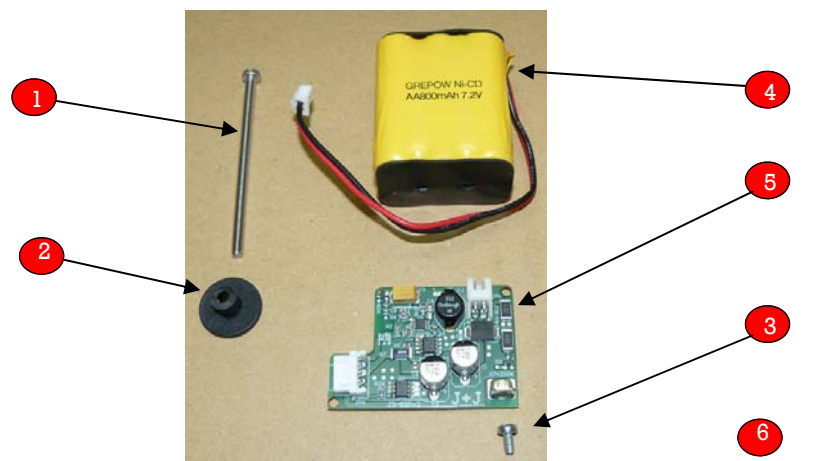
J3 Electric actuators operate with the use of live electricity. It is recommended that only qualified electricians or people instructed in accordance with electrical engineering, and familiar with local health and safety directives, be involved in the installation of this conversion kit.

OVERVIEW

This Battery 'Spring Return' (BSR) conversion kit contains all the parts required to change the function of a J3 on-off electric actuator to a failsafe actuator. Specify the function you require as there are separate BSR kits, one for fail close on mains failure (normally closed) and another for fail open on mains failure (normally open). After installation, should the mains power fail, this kit will provide an alternative power source to send the actuator to its pre-set failsafe position.

PARTS LIST

This photo shows all the parts supplied in the kit, which corresponds to the list below. Please check the parts you have received against the list below and in the unlikely event that any of the parts be missing, contact your reseller and do not attempt to fit the kit until you have received the missing part.





BSR FITTED
FUNCTION: NC
Normally Closed

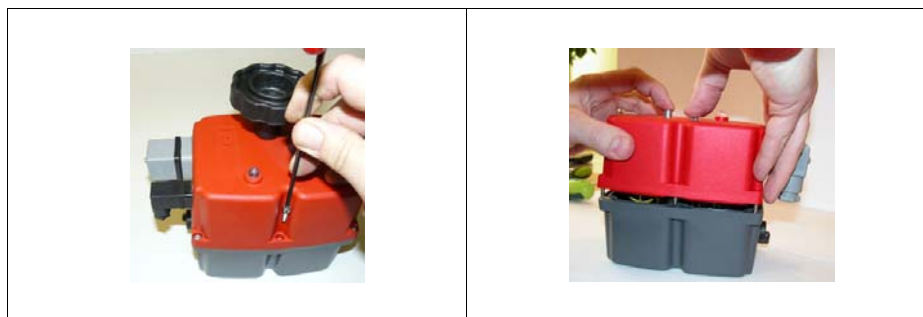
Item	Part description	Qty
1	Battery securing screw	1
2	Battery securing screw support	1
3	Circuit board securing screw	1
4	Battery	1
5	Circuit board	1
6	Self adhesive label	1



REMOVE THE EXISTING COVER

Model J3-20	Models J3-35 ~ J3-85
<p>The long flat plastic position indicator push fits over a pin through the shaft. Lift the plastic indicator off the pinned shaft and remove the pin. Retain all these parts as they are re-used.</p>	<p>The manual override hand wheel is secured to the shaft with a socket head cap screw. Remove this cap screw and pull the hand wheel off the shaft. The local visual position indicator is a push fit over the output shaft and can be simply pulled up and off the shaft. Retain all these parts as they are re-used.</p>
	

The rest of the instructions are common to all models from J3-20 to J3-85
Remove the 6 cover socket head cap screws, and lift the cover clear of the shafts.





THE INSTALLATION *SEQUENCE* MUST BE FOLLOWED OTHERWISE IRREPARABLE DAMAGE WILL BE CAUSED TO THE ACTUATOR AND DAMAGE SO CAUSED WILL NOT BE COVERED BY OUR WARRANTY

INSTALL THE BSR CIRCUIT BOARD

The BSR circuit board (5) locates in the right hand side of the actuator (see photos below) and connects to the existing vertical actuator circuit board via a white plug and socket, and is then secured in place with a small screw (3) provided in the kit. This procedure is the same for models 20, 35, 55 & 85.



The BSR circuit board supplied in the kit fits here



Carefully push the plug on the BSR circuit board into the corresponding socket on the actuator 's existing circuit board



Using the supplied screw, secure the BSR circuit board to the actuator in the pre-tapped hole in the actuator 's upper gear plate.

INSTALL THE BATTERY

Models J3-H20, J3-H35 & J3-H55:

The battery (4) supplied in the kit has 2 holes running from top to bottom. One hole fits over a locating pin moulded into the actuator's upper gearbox plate, the other fits over a pre-tapped hole to accept the battery securing screw. Remove & discard the factory fitted screw to provide access to this fixing point. Assemble the battery and screw as shown, then locate the battery, push in place and secure with the screw (1).



Alternative battery location for models J3-L20, J3-L35 and J3-L55:

The covers for J3-L Series actuators have an RF absorbing ferrite shield ring fitted internally to the power cable - to simplify the refitting of the actuator's cover when a BSR is fitted, the battery can be located in the alternative position shown below. The earth spade needs rotating anti-clockwise by a few degrees to allow the battery to be installed - take care not to over-rotate the spade otherwise it can move the vertical PCB containing the actuator's micro-switches, which will cause a malfunction. In this position it has no locating lug and the battery can therefore swing around the locating screw a little, but this is unlikely to cause any operational problems. It is easier to install the battery if the power plug is removed. Re-connect on completion.

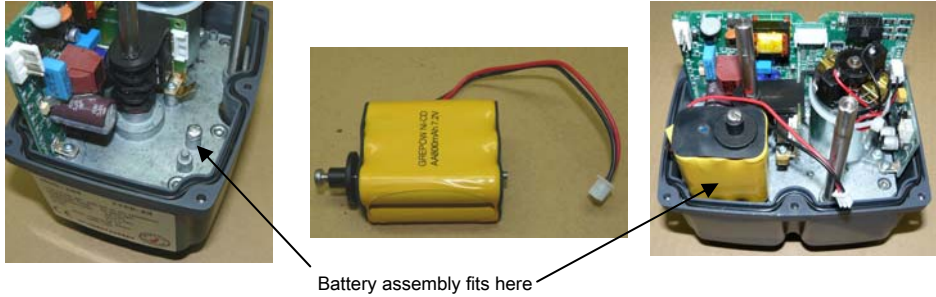


Photos showing the alternate location for the battery in the J3-L Series actuators, models 20, 35 & 55.

INSTALL THE BATTERY

Models J3-H85 & J3-L85

The battery (4) supplied in the kit has 2 holes running from top to bottom. One hole fits over a locating pin moulded into the actuator 's upper gearbox plate, the other fits over a pre-tapped hole to accept the battery securing screw. Remove & discard the factory fitted screw to provide access to this fixing point. Assemble the battery and screw as shown, then locate the battery, push in place and secure with the screw (1) .



FINALLY, PLUG IN THE BATTERY



Models 20, 35 &55

Model 85

CONFIGURATION

FAIL CLOSED Factory supplied configuration (also called ' Normally Closed ')
 Operation: Fails to the closed position on mains power failure

FAIL OPEN User configurable (also called ' Normally Open ') See following page.
 Operation: Fails to the open position on mains power failure

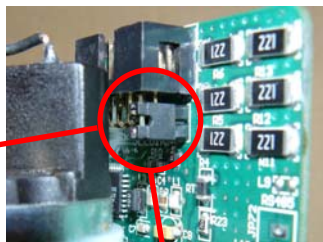
CONFIGURING ' NORMALLY OPEN '

Models J3-20, 35, 55 & 85

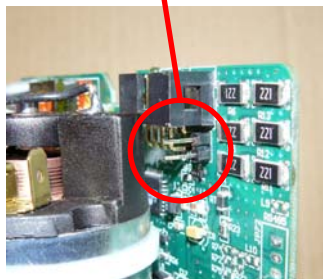
The J3 BSR kits are factory supplied to fail closed (normally closed). If you require the actuator to fail to the open position on power failure, this can be configured now by simply removing a ' jumper ' from the main J3 actuator vertical PCB. See below.



Location of jumper on main PCB



Jumper fitted, function is fail closed (normally closed)



Jumper removed, function is changed to fail open (normally open)

APPLY LABEL TO COVER:

It is important to stick the appropriate labels on the actuator ' s cover to show that (a) a BSR kit has been fitted and (b) the new function.

We suggest applying the label as shown (UK supplied kits).



FUNCTION

The BSR (Battery 'Spring Return') system provides an alternative source of power to drive the **J3** actuator to a pre-set failsafe position in the event of a mains power failure. This is achieved by the use of internal rechargeable batteries which are constantly trickle charged during normal mains power operation thereby ensuring that the batteries always have maximum stored power available in the event of a mains power failure. Internal circuitry senses the incoming mains power. When mains power is available it is used to both trickle charge the batteries and run the motor, the actuator therefore operates as a normal power open, power close whilst mains power is available. The LED status light is continuously lit.

In the event of mains failure, the battery power is used immediately to send the actuator to the pre-set failsafe position -usually closed (normally closed) but can be open (normally open), if the actuator is not already in that position. **The **J3**'s torque limiter is disabled when battery power is being called for to ensure that the maximum possible torque is available to send the actuator to the failsafe position, should the valve be jammed when the BSR is activated, irreparable damage may be caused to the actuator's gearbox.** The LED status light will flash once every 3 seconds for 3 minutes to advise the power has been cut. On resumption of mains power, conditional that the actuator control signal remained unchanged, the actuator will reset to the position it saw at the time of the mains power failure, and the LED status light will be continuously lit.

Note that the **J3**-BSR requires a 'rest' period following the operation under battery power to replace the charge in the batteries used for that operation. This re-charge time varies between actuator models and failure to observe these re-charge time will result in damage to the batteries and will affect future performance.

OPERATING INSTRUCTIONS

Standard operation	3 or 2 wire system , mains power open, mains power close, fails to safe position on mains power failure. Function as described above. LED status light flashes every few seconds for 3 minutes to advise the mains power has failed								
Solenoid style operation	<p>The J3-BSR was not designed for use as a solenoid but with care, can be: 2 Wire system, mains power energise (+ on pin 3, - on pin 2), de-energise fails safe using battery power The J3-BSR can be configured to operate like a solenoid (energise open, fail close or vice versa) by using 2 wires to connect to the neutral and open contacts. Mains power will then power the actuator open (energised) and when the mains power is switched off (de-energised) the batteries will close the actuator (this applies for normally closed configuration, for normally open configuration the actuator will energise closed, fail open). Utilising this method requires observation of the minimum re-charge times mentioned above –the energise time MUST exceed the minimum re-charge time to replace the energy used during battery operation. Failure to observe these re-charge times will damage the battery and damage so caused will invalidate the warranty.</p> <p><i>Note that during the de-energised cycle, the J3's anti-condensation heater will be disabled. Damage caused by condensation is not covered by our warranty as we provide an anti-condensation heater as standard.</i></p> <p>The LED status light will be continuously lit when energised, and flash every 3 seconds for the first 3 minutes when de-energised.</p>								
Re-charge times	<p>Initial charge before being put into operation: 36 hours After each battery operation, the following MINIMUM re-charge time MUST be observed:</p> <table> <tr> <td>J3 Model 20</td> <td>26 mins</td> <td>J3 Model 55</td> <td>50 mins</td> </tr> <tr> <td>J3 Model 35</td> <td>26 mins</td> <td>J3 Model 85</td> <td>65 mins</td> </tr> </table>	J3 Model 20	26 mins	J3 Model 55	50 mins	J3 Model 35	26 mins	J3 Model 85	65 mins
J3 Model 20	26 mins	J3 Model 55	50 mins						
J3 Model 35	26 mins	J3 Model 85	65 mins						

MANUAL OVERRIDE

All **J3** actuators have a selectable manual override facility, operated by a selector lever which disengages the motor drive when moved from AUTO (Automatic operation) to MAN (Manual). When MAN is selected, the actuator will not operate electrically. The motor will run until a time-out stops the motor and the LED status light will blink twice to indicate the actuator is in 'manual'.

NEVER remove the selector lever retaining screw as this will allow the operating mechanism to become free and will cause irreparable damage to the actuator's gearbox. Removing this screw will invalidate any warranty.

When in MAN mode, avoid rotating the actuator beyond the open and closed logos moulded on the top of the actuator. There are no mechanical stops fitted to the actuator (to allow rotations of 120 and 180 degrees) and it is therefore possible to over rotate the actuator whilst in 'MAN'. Over rotation will position the internal cams beyond their micro switches which will result in a first abnormal operation of the actuator when reset into AUTO mode (the actuator may rotate up to 540 degrees until the cam resets in the correct position). When in AUTO mode, the manual override operating handle rotates on models 20 to 85 – restricting this rotation may activate the ETL and cause the LED status light to flash on-off. In these circumstances, send a reversing signal – the ETL will automatically reset and the LED will be continuously lit.

FINAL RE-ASSEMBLY



Warning. Damage caused by incorrect re-assembly is not covered by our warranty.

Replace the cover carefully, ensuring that no internal cables are trapped when pushing the cover down.

Model J3-20

Ensure the cover seal O ring and clip are in place

Push the cover down, insert and tighten the 6 cover screws

Insert the pin through the shaft



Push fit the black position indicator over the pin. Ensure the yellow indicator travels between the open & closed logos

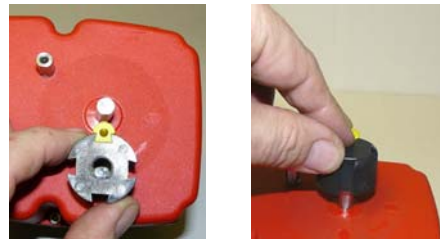


Models J3-35 to J3-85

Ensure the cover seal O rings and clips are in place

Push the cover down, insert and tighten the 6 cover screws

Push fit the black position indicator, lining up the flat on the shaft with the flat on the inside of the indicator.



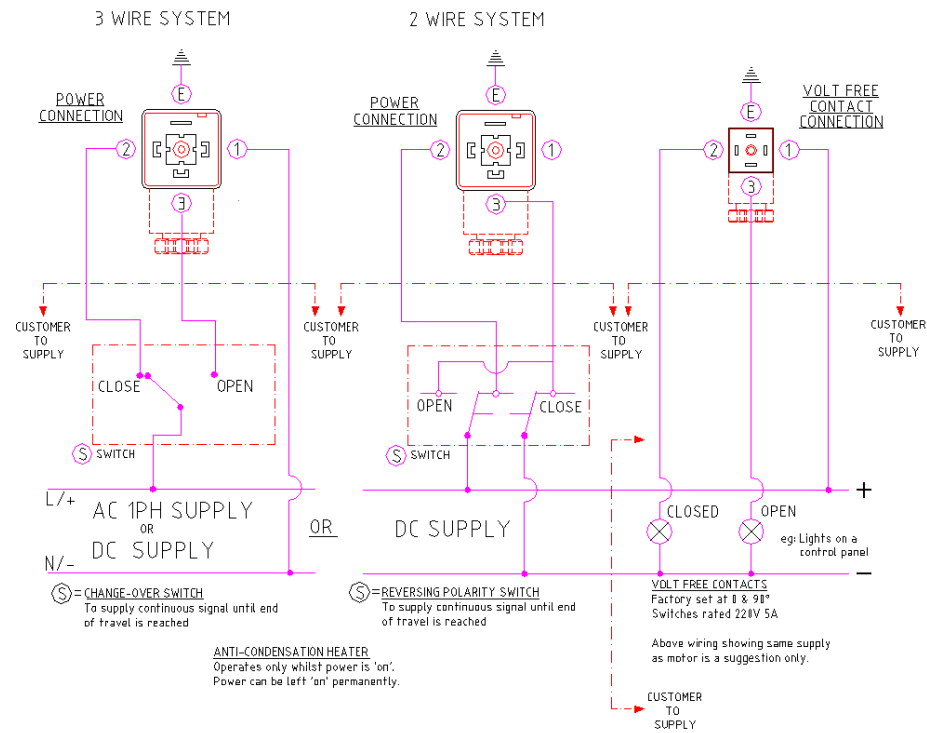
Push fit the manual override hand wheel, lining up the 3 flats on the shaft with the flats on the inside of the hand wheel. Insert the cap screw and tighten.



Finally, check the label (6) has been stuck to the housing to show that a BSR kit has been installed.

WIRING DIAGRAM

Please note that all electrical connections are made to the external DIN plugs.





OPERATIONAL WARNING

The purpose of a failsafe system is to send the actuator to a pre-determined 'safe' position should the mains power fail. This is a safety issue and it is imperative that nothing prevents the actuator attempting to send the actuator to the 'safe' position.

Therefore, when the actuator's BSR system is triggered, the **J3**'s electronic torque limiter is de-activated thereby enabling the actuator to produce its maximum torque to try and send the actuator to its 'safe' position.

Under these circumstances, if the valve is jammed when the BSR system is activated, irrevocable damage can be caused to the actuator's gearbox. Such damage is not covered by our warranty.

MAINTENANCE INSTRUCTIONS

The J3 actuators are generally maintenance free. There are no internal parts that require maintenance. The gearbox is lubricated for life when built at the factory. The housing may be cleaned with a cloth covered in warm soapy water to keep it clean. Do not use solvents.



DO NOT PRESSURE WASH. Pressure washing will invalidate any warranty



DISPOSAL AT END OF LIFE - RECYCLING

In the EU, this product is required by law to be recycled under the EU WEEE Directive No: 2002/96/EC. **J+J** actuators can be recycled by us, we are a government registered WEEE producer under the B2B scheme, Producer Registration No: WEEE/JC0052TQ.



NOTES: