

J+J FAILSAFE ELECTRIC ACTUATOR: BSR SYSTEM (Battery 'Spring-Return')

Extra instructions, to be read in conjunction with standard actuator instructions

FUNCTION:

To provide an alternative source of power to drive the actuator to the pre-determined failsafe position in the event of a mains power supply interruption. Please note that the BSR system contains NO SPRINGS, and is not a true 'spring return' electric actuator – the 'return' to a failsafe position is achieved with stored battery power driving a 24VDC motor.

METHOD:

The incoming mains supply voltage passes through a power sensing relay, a transformer and rectifier (if applicable) and an industrial strength trickle charger before being fed to the actuator's DC motor. Under normal operating conditions the actuator is opened and closed using mains power, and this mains power simultaneously trickle charges the industrial rechargeable batteries to maintain them at full charge.

After an initial minimum charge of 24 hours to fully charge the rechargeable battery pack, immediately the mains supply is interrupted (power fail mode) the power sensing relay switches to battery power and, if not already in the pre-set failsafe position, the stored battery power is drawn to move the actuator to the pre-set failsafe position – either closed if configured normally closed (NC), or open if configured normally open (NO). In the power fail mode, the batteries are not being charged, and any movement of the actuator will be drawn from the batteries.

Upon mains power resumption, the relay senses the incoming mains power and switches the system back to mains, and re-sets the actuator to the position it saw immediately prior to the mains supply interruption.

INSTALLATION:

Any J+J electric actuator can be fitted in any orientation, although the standard position with the drive vertical is preferred. Electrical connection is per the wiring diagram affixed to the side of the actuator (or as per our separate wiring diagrams which are available on request). Should there be ANY queries regarding electrical connection, CHECK before applying power as irreparable damage caused by incorrect electrical connection will invalidate any warranty.

OPERATION:

(a) Standard Operation: Power open, power close, fails safe on power failure

The 'BSR' unit is automatic in that it senses the loss of mains power and triggers the drawing of battery power without any human intervention. To achieve full power the industrial rechargeable batteries MUST be charged for a MINIMUM of 24 hours, BEFORE they are to be put into service. Failure to comply with this minimum charging period can dramatically reduce the storage capacity and performance of the batteries. After the 24 hour charge, there is sufficient charge in the batteries to provide around 8 operations – this provides a significant factor of safety against degradation of the battery pack, as in an emergency only one operation is needed.

(b) 2 Wire Operation: Energise open, fail close (solenoid type operation)

Although not designed for this purpose, it is possible to use the BSR system as a solenoid, ie: energise open, fail close. There are two main differences between this configuration and the 'standard operation' above;

- 1) The wiring is generally a 2 wire system, and a link needs to be fitted between pins 2 and 3 in the power din plug live supply (+ve in DC systems), and
- 2) In models R0 and R1, the MINIMUM energise open time is 8 minutes, in model R2 the minimum energise open time is 30 minutes, and in model R2+ the minimum energise open time is 60 minutes.

These energise open times are the absolute MINIMUM needed by the BSR system to 'boost' charge the industrial rechargeable batteries to replace the battery energy lost on one 'fail close' cycle. The batteries are only being trickle charged during the energise open cycle.

MANUAL OVERRIDE:

The Manual Override is provided for EMERGENCY hand operation only.

The BSR system operates around the position of the internal closed limit switch. In the closed position this switch is made and (in N/C applications) the actuator is in its failsafe position. No power is needed or called for by the BSR system. As soon as the actuator moves and the closed switch is broken;

If the power sensing relay senses mains power, the mains power will drive the actuator open.

If the relay does not sense mains power, it automatically switches to battery power to close the actuator.

Use of the manual override whilst there is power in the batteries will therefore result in the BSR system calling for battery power as soon as the closed switch is broken. It can't however drive the actuator closed as the gear train is disengaged whilst in manual, but will drive the disengaged gears to try and 'make' the closed switch. The batteries will continue to drive the disengaged gear train until the closed switch is made – and the operator will hear the disengaged gears running whilst operating the manual override.

MAINTENANCE:

All J+J electric actuators are designed to be maintenance free. Gearboxes are factory lubricated for life at time of manufacture. Simple cleaning using soapy water to ensure the local visual position indication logos remain visible is recommended. NEVER wash the J+J electric actuators with any pressure washing equipment as it will cause irreparable damage and invalidate any warranty.

PERFORMANCE:

The operating time is the same for either mains or battery power. The motors in all the BSR's are 24V DC (other supply voltages are transformed and rectified to 24VDC) to be compatible with the industrial batteries.

The rechargeable batteries are of industrial strength and have been sized to provide around 8 operations (open/close) at full charge, when in an emergency only one operation is needed, providing a significant safety factor against possible failure due to battery degradation. Should the batteries be fully drained, a short 'boost' charge will allow a single operation in a few minutes.

MANUFACTURER'S PRODUCT SUPPORT:

J+J actuators are fully supported in the UK and Ireland and manufacturer's representatives can attend site to assist with 'problems', however a call out charge is made and expenses are recovered if the fault is proven to be 'user generated' due to non adherence to these IOM's. An order number MUST be issued to cover these charges BEFORE they will attend. Should the fault be due to manufacturing or material defects, no charge will be made.

Thank you for ordering the J+J failsafe electric actuator. Correctly applied, installed, connected and operated in accordance with these instructions, your J+J failsafe electric actuator should give you reliable and trouble free performance.

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