

# J2

## Model 20 BSR



Doc: J2-20BSR/02

Jan 2007

### J2 -20 BSR IP65 Failsafe Electric Actuator

The maintenance free **J2** electric actuator is very user friendly. It offers more standard features than any rivals in its class, and was first to the market with both multi-voltage capability with automatic voltage sensing, and an electronic torque limiter with auto-gearbox relaxing which frees the manual override when a valve is jammed. The manual override facility, with a safety power cut-out switch when operated, allows safe hand operation .

Time saving external DIN plugs allow installations to be pre-wired and eliminates the need to remove the cover to connect the actuator, which helps to reduce installation costs.

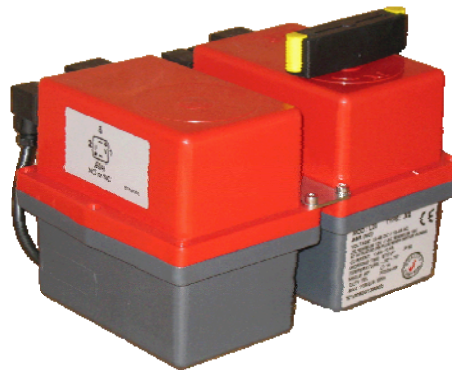
With a soft start system eliminating high motor start loads and a thermostatic anti-condensation heater that does not require a separate connection, the **J2** offers low power consumption.

The IP65 weatherproof plastic housing with stainless steel cover screws offers excellent corrosion resistance.

Local visual position indication and remote volt free end of travel confirmation are provided as standard.

The **J2** is quick and easy to install:

- ISO:5211 multi-flange F03/F04 or F05 mounting with a 14mm female double square (star) drive.
- Factory set open and closed positions at 0 and 90° (or as specified on your order).
- External electrical connections and external wiring diagram- no need to remove the cover to connect.



Always read the supplied installation & operating instructions before use.

### J2 - 20 BSR ~ Failsafe version

**Battery 'Spring Return' (BSR)** Note: This is not a mechanical spring return system

This version fails to a pre-set fail safe position if the mains power fails (normally closed, or normally open).

Under normal operation the actuator works as a power open, power closed actuator, and during this operation, internal industrial rechargeable batteries are trickle charged to maintain them at full capacity. In the event of a mains power failure, the BSR system immediately switches to battery power, disables the torque limiter to ensure maximum torque is available and sends the actuator to the fail safe position.

On resumption of mains power, providing the actuator control signal remained unchanged, the actuator will re-set to the original position immediately prior to the power failure.

#### Main Features:

*Multi-voltage capable with auto-voltage sensing:*

**J2-L20** 12-48V AC/DC

**J2-H20** 80-240V AC/DC

*Torque output:*

25Nm Break

20Nm Reset

*Electronic torque limiter ~ protects against valve jams. Disabled when battery works.*

*Anti-condensation heater*

*Manual override*

*All connections via external DIN plugs ~ no need to remove the cover to connect*

*Volt free end of travel confirmation switches*

*IP65 weatherproof housing*

*CE marked*

*Traceable sequential serial numbering system*

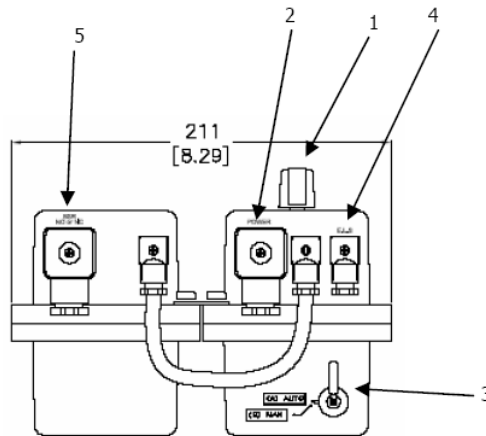
**Failsafe with Battery Back-up ~ actuator fails to safe position on mains power failure**

*Failsafe function can be changed from normally closed to normally open without removing the cover.*

**Specifications: J2 -20 BSR Electric actuator (Failsafe)**

Models	<b>J2</b> -H20-BSR 80-240V AC (1ph) or DC (Normally closed) <b>J2</b> -H20-BSR-NO 80-240V AC (1ph) or DC (Normally open) <b>J2</b> -L20-BSR 12-48V AC (1ph) or DC (Normally closed) <b>J2</b> -L20-BSR-NO 12-48V AC (1ph) or DC (Normally open)
Housing	IP65 Anti-corrosive Polyamide
Duty Rating	75%
Mounting	ISO5211 (F03/04/05) & DIN3337 (14mm Star)
Electrical Connection	External via DIN plugs
Torque Output	25Nm Break, 20Nm Run & re-seat
Temp Range	-20°C to +70°C
Working Time	8 Secs ± 10%, no load
Current 220VAC/ 110VAC	85 mA 20.9W / 180 mA 19.8W
Current 24VAC/ 24VDC	1900 mA 45.8W / 900 mA 21.6W
Weight	2.5 kg
Minimum recharge time	8 minutes

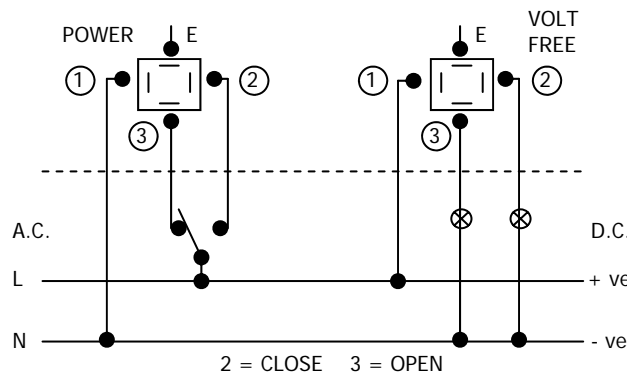
**Dimensions:**



**On/off, fails safe on power failure:**

- 1 Manual override & local position indicator
- 2 Power supply DIN plug
- 3 Manual override selector lever
- 4 Volt free limit switch DIN plug
- 5 NC to NO changeover plug  
(Do NOT connect cables to this plug)

**Wiring:**



**Wiring Diagram (AC or DC): 3 wire**

- Notes:
- DIN plugs supplied with actuator
  - Power change-over switch not supplied

# J2

## Installation, Operation & Maintenance Instructions (IOM's) Model **J2** BSR



Doc: IOM.J2.BSR/04

Nov 2006

### FUNCTION

The BSR (Battery 'Spring Return') module provides an alternative source of power to drive the **J2** 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.

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 **J2**'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.

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.

Note that the **J2**-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.

### INSTALLATION

All **J+J** electric actuators can be installed in any orientation, but the 'normal' position with the actuator vertical above the valve is preferred.

All electrical connections are made externally WITHOUT REMOVING THE ACTUATOR'S COVER. Removing the cover without our prior authorisation may invalidate the warranty. External wiring diagrams applied to the side of the actuator housing are provided. We recommend that only qualified electricians make the electrical connections as a matter of Health & Safety. Please note that irreparable damage caused by incorrect wiring invalidates the warranty.

The **J2**-BSR is configured to fail closed on mains failure (normally closed) as standard. It is possible to change this to fail open (normally open) - see separate instructions.

### OPERATING INSTRUCTIONS

Standard operation     3 Wire system, mains power open, mains power close, fails to safe position on mains power failure.  
Function as described above

Solenoid operation     2 Wire system, mains power energise, fails safe using battery power  
The **J2**-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. *Note that during the de-energised cycle, the **J2**'s anti-condensation heater will be disabled.*

### MANUAL OVERRIDE

All **J2** actuators have a manual override facility, operated by a selector lever which disengages the motor drive when moved from AUTO (Automatic operation) to MAN (Manual). The gearbox contains planetary gears and it may be necessary to 'wiggle' the selector lever whilst gently moving the manual override handle to ensure the gears disengage and re-engage. When resetting into AUTO – a positive 'click' will be felt when the gears have correctly re-engaged. A safety cut out switch activated by the manual override selector lever, cuts the power to the motor when in the MAN position. When MAN is selected, the actuator will not operate electrically.

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.

*The **J2**-BSR works by monitoring the position of the closed micro-switch (in normally closed configuration - it monitors the open micro-switch in normally open configuration) and should this switch contact be broken (not made) then the BSR will immediately call for battery power. In MAN function, as soon as the actuator is rotated by hand and this contact broken, the battery will run the motor—but can't drive the output shaft as the MAN selection disengages the output drive/ motor gear connection. For short use of the manual override this will not cause a problem, but should it be likely that the actuator will be in manual operation for some time, the BSR DIN plug should be removed to prevent total discharge of the batteries. Remember to re-connect when placing the actuator back in AUTO.*

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. 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 450 degrees until the cam resets in the correct position).

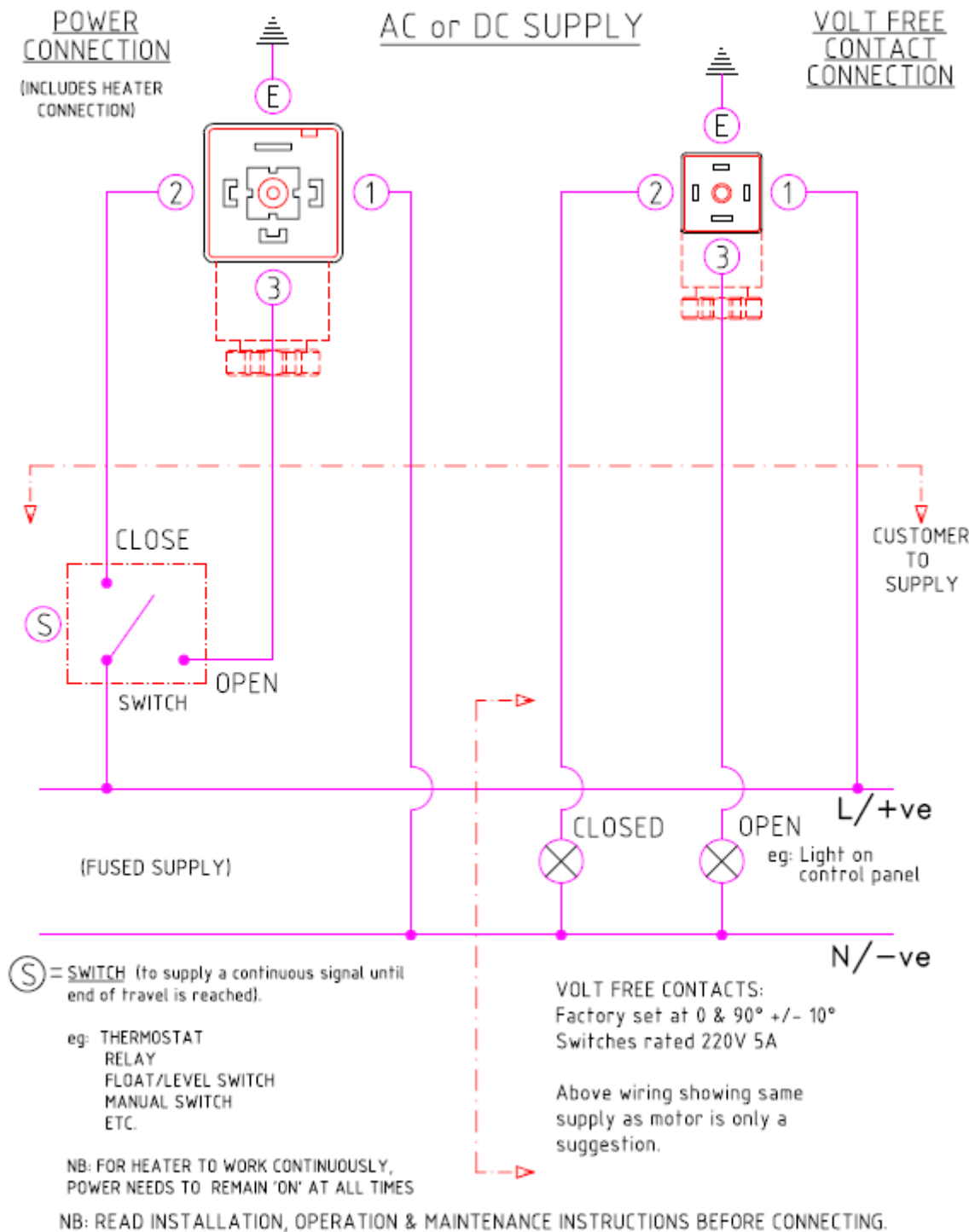
When in AUTO mode, the manual override operating handle rotates on models 20 & 55 – restricting this rotation may activate the torque limiter. In these circumstances, switch off the power, leave a few seconds and turn back on – the torque limiter will automatically reset

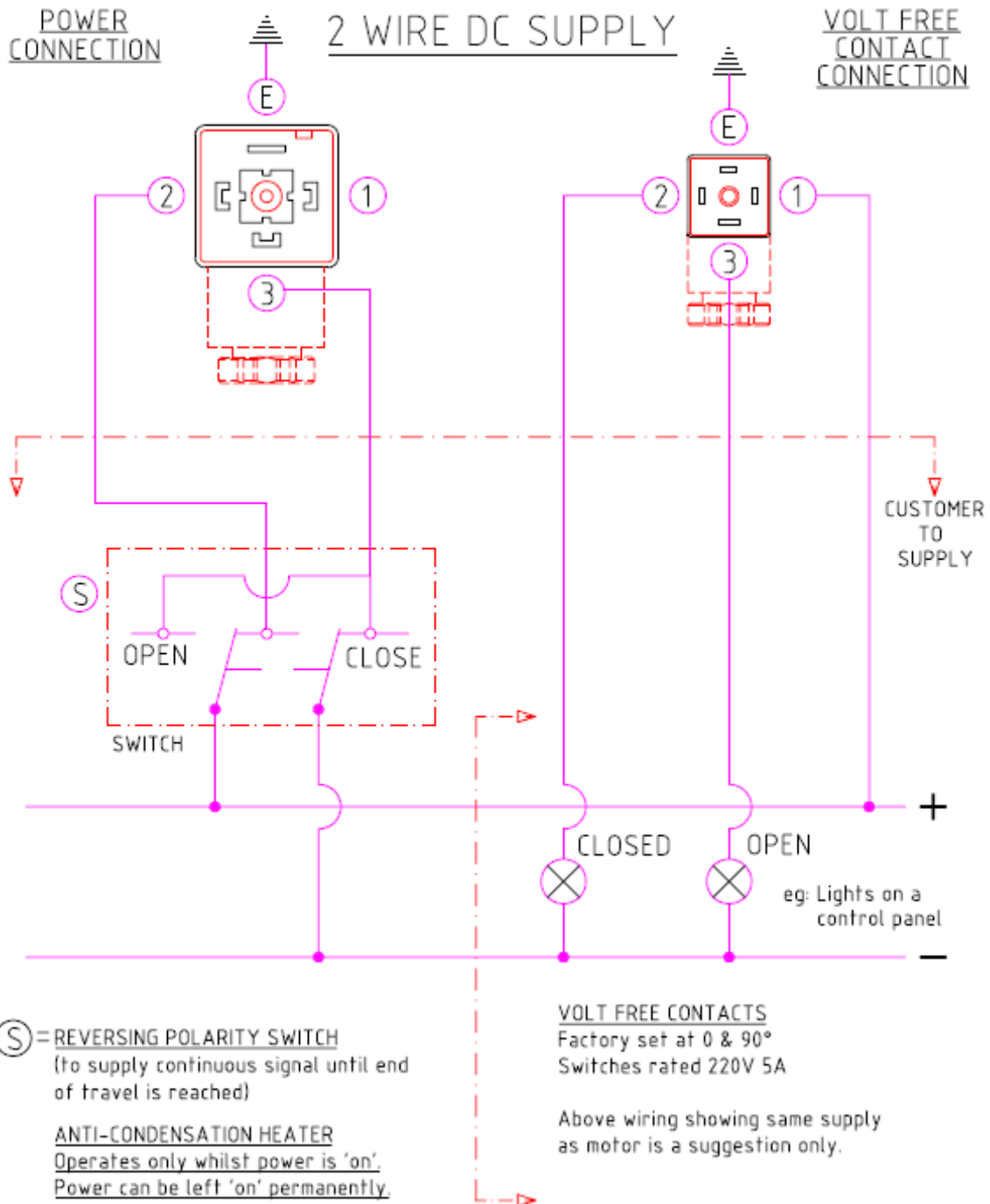
The open and closed logos moulded into the top cover look like this:



### MAINTENANCE

**J2** actuators are designed to be maintenance free, the gearbox is factory lubricated for life and there are no internal parts that require maintenance.





NB: READ INSTALLATION, OPERATION & MAINTENANCE INSTRUCTIONS BEFORE CONNECTING.