



# Model **J3** - L85 Electric Actuator



Doc: J3-L85/07 KW  
Aug 2010

## Feature rich **J+J** multi-voltage electric actuator with LED status light and plug & play accessories.

New in 2008, the **J3** range of electric actuators takes its highly successful predecessor, the J2 range, to the next level.

With an all new, rugged weatherproof and anti-corrosive Polyamide housing, the **J3** valve actuator offers more user-friendly features than the J2, and introduces a highly visible LED status light.

This visual indicator shows whether the actuator is operating correctly, or has tripped out either by its electronic torque limiter, or has been left in 'manual' mode.

Site operators are no longer left with the 'valve or actuator?' question when an actuator doesn't respond to a signal.

The **J3** electric rotary actuator's quick and easy to install, with ISO:5211 multi-flange mounting and a double square drive, allowing fast mounting to

ISO:5211 valves.

There is no need to remove the cover to connect the **J3** electrically, saving installation time.

Using the external DIN plugs and external wiring diagrams supplied with the actuator, installations can be pre-wired.



Protection against valve jams is provided by an electronic torque limiter, which auto-relaxes the gearbox when activated, allowing the manual override to be selected to assist

in clearing the jam.

The effect of condensation is eliminated in the **J3** electric actuator by an internal thermostatic anti-condensation heater that does not require a separate independent power supply.

Standard function for the **J3**-L85 electric valve actuator is power open, power close, stays put on power failure.

New to the **J3** electrical actuators are plug and play accessories –the function can be changed to either failsafe or modulating by fitting the new plug and play conversion kits.

The modulating kit has the new digital positioner that offers auto-calibrating and self resetting functionality. These conversion kits are available as optional extras.

The **J3** is a very smart red box!

### Quick guide to the **J3** Electric actuator: Standard features

*Multi-voltage electric actuator with auto-voltage sensing. 12 ~ 24V AC or DC .*

*LED Status light to indicate operational status of actuator*

*Electronic over-torque protection against valve jams*

*Thermostatic anti-condensation heater*

*Manual override for emergency hand operation*

*2 Volt free end of travel confirmation switches*

*IP65 weatherproof anti-corrosive and UV protected Polyamide housing*

*Local visual position indicator*

*ISO5211 multi-flange mounting with double square drive*

*All external electrical connections via supplied DIN plugs*

*CE marked*

*ISO 9000 manufacturer*

*Failsafe and digital positioner plug & play kits available.*

## **J3** Status light functions:

Constantly lit LED

If the electric actuator is operating correctly with no faults, the LED shows a constantly lit light.



The LED flashes with 2 blinks

If the actuator has been left in 'manual' mode, the actuator's motor runs but doesn't drive the output shaft. After a pre-set time, the actuator knows that as the torque limiter has not activated and that the motor is running, it must be in manual.



The LED flashes on/ off

When the valve actuator senses an impending valve jam, the electronic torque limiter is activated and on activation, repeatedly flashes the LED on and off.





The **J3** - L85 electric rotary actuator

*Visual indication of the actuator's operating status is constantly shown by a highly visible LED light.*

## Specifications: **J3** – L85

Voltage range - automatically sensed by actuator	12-24 AC (Iph) or DC
Operating time (0-90° no load)	35 seconds
Maximum break torque	93.5 Nm / 827 lb.ins
Maximum operating torque (run/ reseat)	85 Nm / 752 lb.ins
Duty rating	75%
IP Rating (IEC 60529)	IP65
Working angle Standard (on request)	90° (180° or 270° options)
Mounting ISO:5211 x DIN 3337	F05 & F07 x 17
Motor switches	2 x SPDT micro switches
End of travel confirmation (volt free)	2 x SPDT micro switches
Heater	4 W
Ambient temperature range	-20° to +70°C -4 to +158°F
Electrical connecting plugs	DIN 43650/ ISO4400 & C192
Consumption:	
24V/Iph At maximum torque	1.20A
24V DC At maximum torque	1.40A
12V/ Iph At maximum torque	2.98A
12V DC At maximum torque	3.08A
Weight	3.0 kg

## Materials of construction:

Housing	Anti-corrosive Polyamide
Fasteners	Stainless steel
Gears	Polyamide (speed reducing) & steel
Shaft	Stainless steel
Output drive	Zammac
Position indicator	Glass filled Polyamide

## Method of operation:

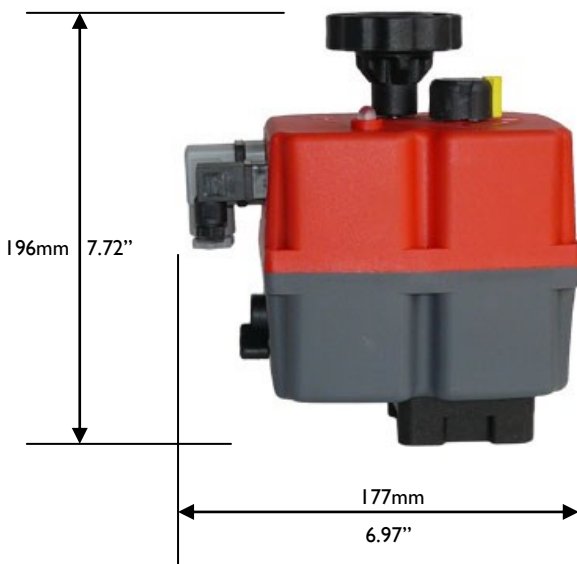
On receipt of a continuous power signal within the voltage range shown above, the motor in the J3 electric actuator runs and, via a flat gear system, rotates the output shaft. The motor is stopped by internal cams striking signal switches. On receipt of a reversing continuous signal, the motor turns in the opposite direction reversing the output drive.

Note: The power signal needs to remain on at all times to activate the thermostatic anti-condensation heater. The volt free end of travel confirmation switches must NOT be used to cut the power. As they are set ahead of the final motor stop position, cutting the power on receipt of the end of travel signal will result in the J3 electric actuator stopping short of the full open or full closed position determined by the motor switch settings.

**Dimensions: J3 - L85**



Mounting	F05	F07
ISO: 521 I	50mm	70mm
Drive	17mm	
Optional	14mm	



The standard on-off version can have plug and play failsafe or modulating kits retro-fitted to convert the function.

The modulating kit contains a self calibrating digital positioner.

**Change of function retro-fit kits:**

**Failsafe option**

This kit converts the electric valve actuator to a failsafe unit using a BSR (Battery 'Spring Return') system that provides an alternative (battery) power supply to set the actuator in the failsafe position should the main power supply fail.

It can be configured normally open, or normally closed.



**Modulating option**

Using the new self calibrating and self adjusting digital positioning system, this kit converts the actuator to a modulating electric actuator using either a 4-20mA or 0-10VDC control signal.



**LED status light**



**Failsafe modulating option**

Install both kits

**J3** Electric rotary actuator



# Failsafe version 'BSR' Battery 'Spring Return'



Doc: J3/BSR/03/KW

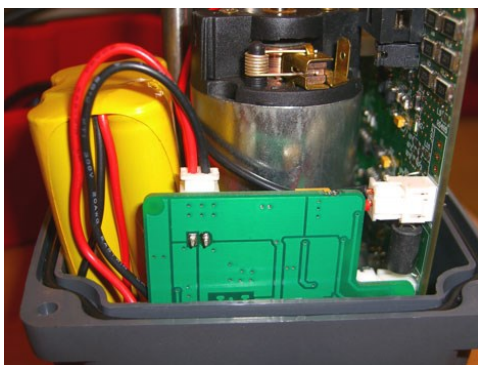
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## What it does and how it works

**J+J's** BSR system simply provides an alternative power supply to drive the electric actuator to a pre-set failsafe position in the event of a mains power failure. It has no mechanical springs, it uses internal battery power.



During normal operation the **J3**-BSR operates as a power open - power closed electric actuator, simultaneously maintaining the industrial re-chargeable battery



at full strength from an internal trickle charging system.

The main advantage of **J+J's** BSR system is that it is more competitively priced compared to mechanical spring return electric actuators, as the **J+J** failsafe actuator has no mechanical springs to compress, or solenoids to release them - the actuator is the same size as that for an on-off version. This offers massive savings compared to true mechanical spring return electric actuators.

The industrial battery is deliberately oversized and whilst not necessary, can provide many cycles at full load. This offers a degree of protection in the unlikely event that the battery degrades and loses some charge.

In the event of a mains failure, if not already in that position, an internal switch changes to immediately draw battery power to drive the actuator to the failsafe position.



Following a battery driven cycle the actuator will need to charge for a short period to replace the energy used in the battery cycle. This is particularly relevant if you intend to use the **J3** -BSR like a solenoid, eg: energise open, fail close.

The BSR fits inside the **J3** electric actuator housing eliminating extra piggy-backed housings, making the **J3** failsafe actuator very compact and lightweight. It can be supplied as a retro-fittable kit containing all the parts needed to convert a standard on-off electric actuator.



### Quick guide to the **J3** electric actuator standard features :

*Highly visible LED light gives continuous actuator status indication.*

**J3 L** - 12-24V AC/DC

**J3 H** - 80-240V AC/DC

*Multi-voltage electric actuator with auto-voltage sensing:*

*Torque output: range:  
25~95Nm Break  
20~80Nm Reset*

*Electronic torque limiter  
Protects against valve jams*

*Anti-condensation heater*

*Manual override*

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

*Volt free end of travel confirmation switches*

*IP65 weatherproof housing*

*CE marked*

*Traceable sequential serial numbering system*

*Optional failsafe kit (Battery Back-up) - actuator fails to safe position on power failure*

*Optional modulating kit with digital positioning system, either 0-10V or 4-20mA*



# Failsafe version 'BSR' Battery 'Spring Return'



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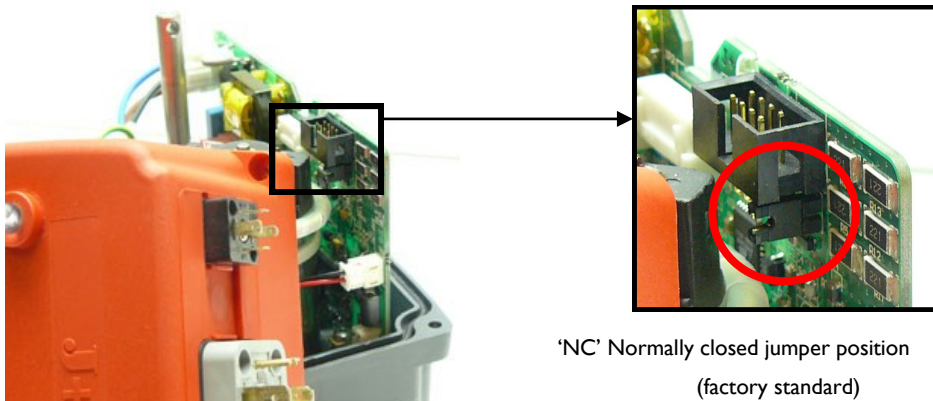
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## Configuration

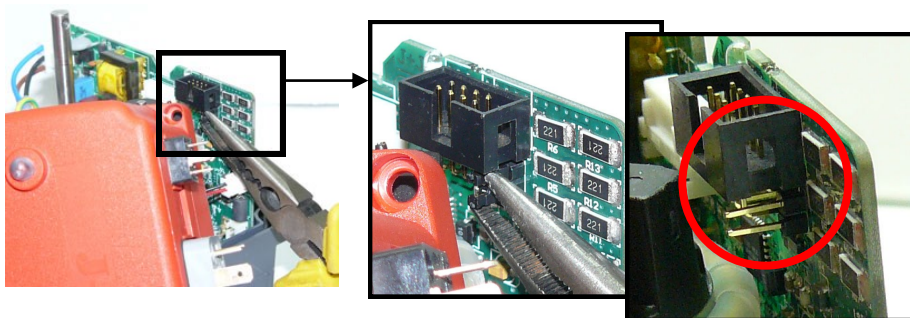
The **J3**-BSR is factory supplied to fail closed on mains failure (normally closed) but can be configured to fail open (normally open) simply by removing a jumper from the actuator PCB - see below.

A few seconds after a power cut, the **J3**'s LED will slowly flash and the actuator will be driven to the fail safe position, the LED will continue to flash on-off for 3 minutes - during this time the battery provides power to the **J3**'s internal circuitry and anti-condensation heater. At the end of these 3 minutes, if mains power has not been restored, the **J3** completely shuts down and the LED goes out.

On resumption of mains power, conditional that the control signal has not changed during the power outage, the actuator will reset to the position it saw at the moment of the power failure.



'NC' Normally closed jumper position  
(factory standard)



'NO' Normally open jumper position  
(jumper removed)

## Charging data

	J3-20	J3-35	J3-55	J3-85	J3-140	J3-300
Initial minimum charge time BEFORE being put into service	36 hrs	36 hrs	36 hrs	36 hrs	Not in production	Not in production
Nominal capacity $\pm$ 5%	800mA	800mA	800mA	800mA		
Battery consumption per Movement (W)	0.1	0.18	0.23			
Minimum recharge time after movement by battery	26 mins	26 mins	50 mins	65 mins		

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