



Model **J3** L20 Electric Actuator



Doc: J3-L20/07 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 is 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 in the **J3** electric actuator is eliminated by an internal thermostatic anti-condensation heater that does not require a separate independent power supply.

Standard function for the **J3**-L20 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!

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.



Quick guide to the **J3** Electric actuator: Standard Features

*Multi-voltage 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



The **J3** - L20 electric rotary actuator

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

Specifications: **J3** -L20

Voltage range - automatically sensed by actuator	12-24 AC (1ph) or DC
Operating time (0-90° no load)	12 seconds
Maximum break torque	25 Nm 221 in.lbs
Maximum operating torque (run/ reseat)	20 Nm 177 in.lbs
Duty rating	75%
IP Rating (IEC 60529)	IP65
Working angle Standard (on request)	90° (180° or 270° options)
Mounting ISO:5211 x DIN 3337	F03, F04 & F05 x 14
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/1ph At maximum torque	0.85A
24V DC At maximum torque	1.00A
12V/ 1ph At maximum torque	1.80A
12V DC At maximum torque	2.05A
Weight	1.8 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:

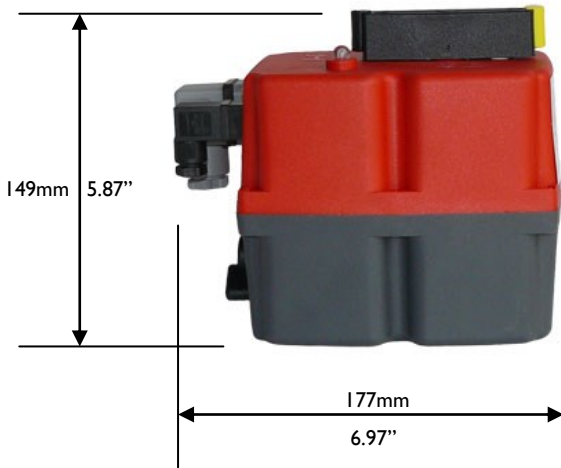
On receipt of a continuous power signal within the voltage range shown above, the motor in the J3 electric actuator runs and, via a flat gear system, rotates the output shaft. The motor is stopped by internal cams striking micro switches. On receipt of a reversing continuous signal, the motor turns in 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 - L20



Mounting	F03	F04	F05
ISO: 521 I	36mm	42mm	50mm
Drive	14mm		
Optional	9mm	11mm	



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 actuator to a failsafe electric actuator 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.

An output signal is provided as standard.



LED status light



Failsafe modulating

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 Reseat*

*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'



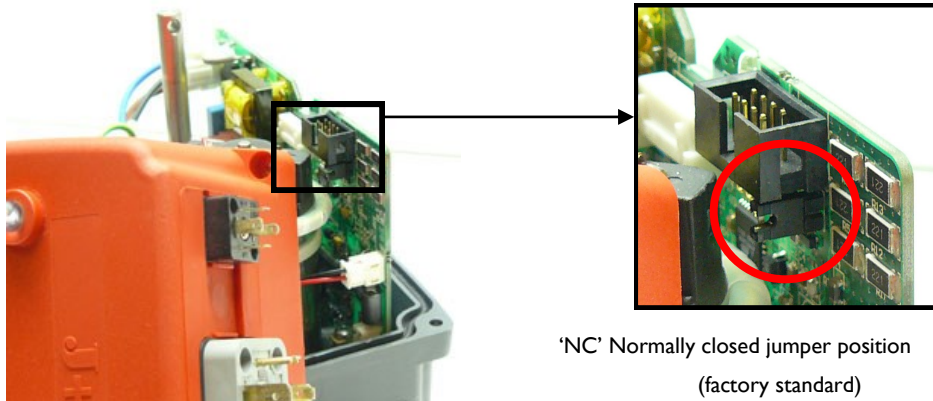
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Configuration

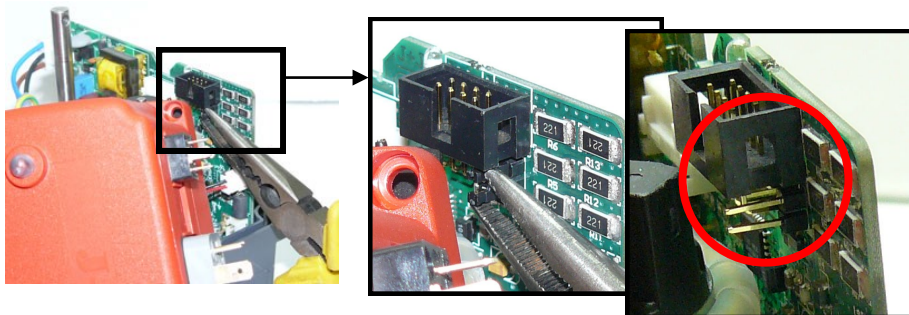
The **J3**-BSR is factory supplied to fail closed on mains failure (normally closed) but can be configured to fail open (normally open) simply by removing a jumper from the actuator PCB - see below.

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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