

J4C 20 TO 300 INSTALLATION INSTRUCTIONS

J4CV02

**READ THESE INSTRUCTIONS BEFORE CONNECTING THE ACTUATOR. DAMAGE CAUSED BY NON COMPLIANCE OF THESE INSTRUCTIONS IS NOT COVERED BY OUR WARRANTY.**

**J4C** Electric actuators operate with the use of live electricity. It is recommended that only qualified electrical engineers be allowed to connect or adjust these actuators.

**1.- VOLTAGE**

All our actuators model S20 to S300 are ready to work from 24-240VDC/VAC.  
All our actuators model B20 to B300 are ready to work at 12 VDC/VAC ONLY.

**2.- ELECTRICAL CONNECTORS:**

**Warning:** Before connecting ensure that the voltage to be applied to the actuator is within the range shown on the identification label. The supplied electrical connectors, used to connect to the actuator are DIN plugs. Ensure the diameter of cable to be used conforms to the maximum and minimum requirements of the DIN plugs to maintain water tightness (Fig.1).

**Warning:** Ensure that the square rubber seal is in place when fixing each DIN plug to the actuator. Failure to do so could allow water ingress and damage caused by this installation error will invalidate any warranty. The DIN plugs are fixed to their respective bases on the actuator housing with a screw. Do not over tight the screw when assembling (Max. 0.5 Nm).

CONNECTOR	SMALL BLACK		BIG GREY or BLACK	
	DN#3650/C		EN175301-803 FORM A	
MODEL	min Ø	max. Ø	min Ø	max. Ø
J4C 20 a 300	5mm	6mm	8mm	10.5mm

FIGURE 1

**Electrical connection: All models.**

ON/OFF VAC	The power supply is connected to the grey "A" DIN plug (Fig.3). Neutral PIN 1 + Phase PIN 2 = Close actuator Neutral PIN 1 + Phase PIN 3= Open actuator Earth/ground connection - Flat PIN ⊕ on top.
	The volt free connection (conf. of position) black "C" DIN plug (Fig.3) Common PIN 1 + PIN 2 = Close confirmation of position Common PIN 1 + PIN 3 = Open confirmation of position
ON/OFF VDC	The power supply is connected to the grey "A" DIN plug (Fig.4). Negative PIN 3 + Positive PIN 2= Close actuator Negative PIN 2 + Positive PIN 3= Open actuator Earth/ground connection - Flat PIN ⊕ on top.
	The volt free connection (conf. of position) black "C" DIN plug (Fig.4) Common PIN 1 + PIN 2 = Close confirmation of position
POSITIONER VAC VDC	The power supply is connected to the grey "A" DIN plug (Fig.5). Neutral/negative PIN 1 + Phase/positive PIN 2 - Power supply Earth/ground connection - Flat PIN ⊕ on top.
	Input/output signal is connected to the black "B" DIN plug (Fig.5). Negative PIN 1 + positive PIN 2 = Input signal Negative PIN 1 + positive PIN 3 = Output signal
	The volt free connection - black "C" DIN plug (Fig.5). Common PIN 1 + PIN 2 = Close position confirmation Common PIN 1 + PIN 3 = Open position confirmation

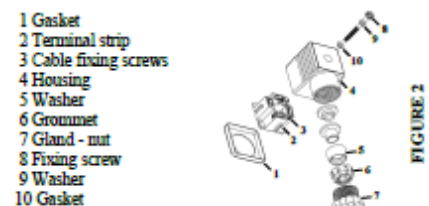


FIGURE 2

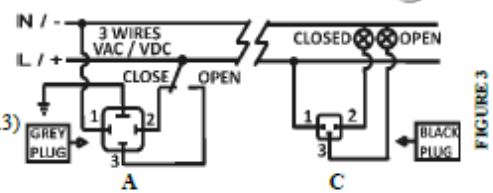


FIGURE 3

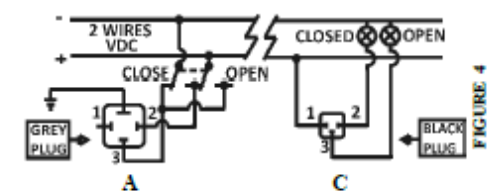


FIGURE 4

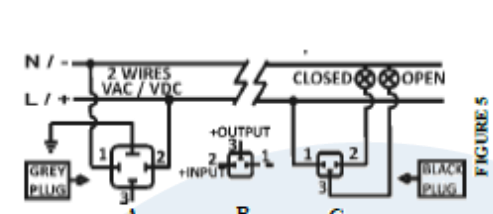


FIGURE 5

\* For other connection options please contact the vendor.

**3.- LOCAL VISUAL POSITION INDICATOR:**

All J4C actuators are supplied with a local visual position indicator comprises a black base with a yellow insert that shows, both the position and direction of rotation. (Fig.6). The open and close positions have the following logos molded into the top cover OPEN 90 and CLOSE 0. Opening = ↺ Closing = ↻



FIGURE 6

**4.- EMERGENCY MANUAL OVERRIDE FACILITY:**

The J4C has 2 operating modes, automatic and manual, the required mode is selected by using a lever on the lower half of the actuator housing (Fig 7).

The 2 positions are marked:  
AUTO = Automatic operation  
MAN = Manual operation



FIGURE 7

**Warning:** Do not remove the selector lever securing screw, as this will allow its internal mechanism to become loose and will cause irreparable damage to the actuator's gearbox. Removing this screw will invalidate the warranty.

When "AUTO" position is selected:  
The hand wheel, of models 20,35,55, and 85 rotates automatically, it is very important not to block it, otherwise the actuator could suffer unreparable damages.



When "MAN" function is selected:

- 1-The electronic system cuts the power to the motor after a few seconds.
- 2-The mechanical connection between the motor and the output shaft is disconnected.
- 3-The desired position can be achieved by using the manual override lever or the hand wheel.
- 4-There are two ways to re-activate the motor after being isolated whilst in "MAN" position:
  - a) With the actuator in "MAN" function, turn the hand wheel to one of the end positions (open or close). If the end position switch is activated the motor stops. Now change the manual override from "MAN" to "AUTO", and the actuator is ready to operate automatically again.
  - b) Change from "MAN" mode to "AUTO". Deactivate the supply voltage for a few seconds which resets the actuator and it could operate automatically again.

ATC is in charge of the automatic control of inner temperature. It is ON while the actuator is connected to the power supply. Therefore, we strongly recommend to maintain the power supply connected to the actuator, otherwise the ATC system would remain disconnected.

**5.- EXTERNAL LED LIGHT STATUS:**

The LED status light provides visual communication between the actuator and the user.

The current operational status of the actuator is shown by either solid lit, or different flashing sequences of the LED light:

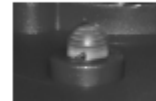


FIGURE 8

ACTUATOR OPERATIONAL STATUS	LED STATUS
Actuator without power being supplied	OFF
Actuator with power being supplied	OPEN=GREEN / CLOSE= RED
Actuator , moving from ..... to ..... (flashing led)	FROM OPEN TO CLOSE=RED, ORANGE/ FROM CLOSE TO OPEN=GREEN, ORANGE
Actuator w torque limit function on, moving from ..... To .....(flashing led)	FROM OPEN TO CLOSE=RED, OFF / FROM CLOSE TO OPEN=GREEN, OFF.
Actuator in MANUAL mode	(ORANGE, OFF) SYMMETRIC SEQUENCE
Actuator without power and working with the BSR system. MAX. 3 minutes	BSR NC = RED, OFF / BSR NO = GREEN, OFF
Battery protection. Danger - The battery needs recharging. BSR disabled.	(ORANGE, OFF) ASYMMETRIC SEQUENCE
Actuator with DPS	STOP=BLUE/ OPENDING=BLUE, GREEN / CLOSING=BLUE, RED

**6.- BSR - NC/NO set-up:**

In case of an electrical failure, the actuator which is fitted with the BSR plug-in failsafe system, will go to the predetermined position: NO (Normally Open) or NC (Normally Close). Set up by using the SELDIR Jumper (Fig.9): NC: jumper on / NO: jumper off.

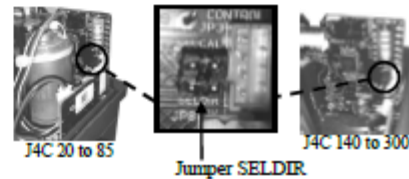


FIGURE 9

**7.- DPS :**

Use the configuration you need by moving the DIPs:  
In order to set the actuator up, use the DIPs shown in picture .

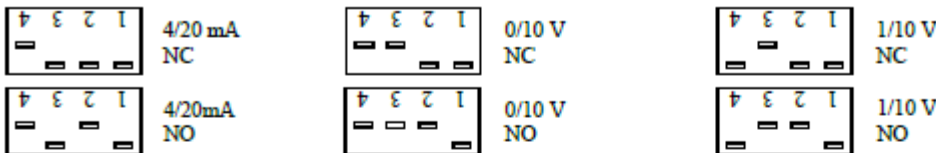


FIGURE 10

**External adjustment**

- B plug - Connect a cable between PIN 1 (on the right side) and PIN Earth (on the bottom) (Fig. 11).
  - A plug - Connect voltage to the actuator in the following way: VAC: PIN1 (neutral) and PIN2 (phase). VDC: PIN1 (negative) and PIN2 (positive).
- \*VERY IMPORTANT: BEFORE CONNECTING "A" PLUG TO THE ACTUATOR, CHECK THAT THE VOLTAGE IS THE SAME AS THE ONE SPECIFIED ON THE ID LABEL (CARTER).**
- B plug - Disconnect the cable between PIN 1 (on the left side) and PIN Earth (on the bottom). The actuator will make a complete maneuver. The actuator is ready to connect the (4/20mA or 0/10V) signal to the B plug.

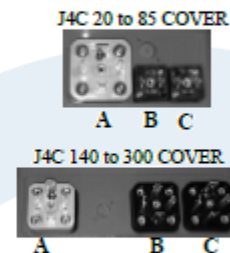


FIGURE 11

**8.- KITS BSR / KIT DPS**

To make the KITS assembly, follow the steps on the instruction manual enclosed inside each kit.

**9.- MOUNTING TO COMPONENT BEING ACTUATED (Ex:1/4 turn valve).**

It is vital that the mounting kit used to connect the electric actuator to the component (ex: valve) is correctly manufactured and assembled. The mounting bracket's holes must be drilled to ensure that the centerline of the actuator's drive is perfectly in line with the component's drive-centerline, and that the drive coupling/ adaptor rotates around this centerline. The mounting holes of the actuator conform to ISO 5211, and the female output drive conforms to DIN 3337.

We strongly recommend that valves/components to be actuated that have ISO 5211 compliant top works are used wherever possible as it greatly assists in ensuring the concentricity of mounting the actuator to the valve.

The male square end of the drive coupling MUST NOT be longer than the maximum depth of the actuator female output drive when the assembly is bolted together.

Failure to comply with these instructions will cause uneven wear and dramatically reduce the working life of the valve and actuator.

In case of a power supply failure, the actuator would stop in the position it were at this moment. When the power supply is reestablished, the actuator would keep on working following the prior direction.

**VERY IMPORTANT:** Check that any object are blocking the valve (damper, etc.). Connect the actuator, following the connection diagram on the label of the actuator. We recommend that the actuator has an independent system of fuses, which could protect the actuator against other electrical devices.



## LED Status Light:

The multi-colour LED status light gives users a continuous highly visible at-a-glance indication of the J4C-S actuator's current status, advising whether the actuator is open, closed, moving between open and closed, and if there is a fault. Feedback from users advises that this is the single most liked feature of the J4C-S actuators, as it not only gives them instant visual confirmation of the status of the actuator, but is also invaluable in supporting after-sales technical telephone support from their distributor.

Actuator Operational Status	LED Colour and Sequence - On-Off & Failsafe							
No external power being applied Actuator stationary								
External power applied, J4C-S fully OPEN Actuator stationary								
External power applied, J4C-S fully CLOSED Actuator stationary								
External power applied, J4C-S opening Actuator moving								
External power applied, J4C-S closing Actuator moving								
Power applied to both open AND close contacts Actuator stationary								
Actuator in 'MANUAL' mode								
Actuator in mid position.								
FAIL SAFE: BSR Activated (stops after 3 mins)								
FAIL SAFE: Low battery charge warning								

Actuator Operational Status	LED Colour and Sequence - Modulating Only							
No external power being applied Actuator stationary								
Actuator has reached the desired set-point Actuator stationary								
Actuator driving towards CLOSED position Actuator moving								
Actuator driving towards the OPEN position Actuator moving								
External power applied, J4C-S closing Actuator moving								
Torque limiter activated whilst CLOSING Actuator stationary								
Torque limiter activated whilst OPENING Actuator stationary								
Actuator in MANUAL mode								
No control signal detected Actuator stationary								
Positioner malfunction, requires re-setting Actuator stationary								

