FN.0.2 - FLOCONTROL SUPPLEMENTARY INSTRUCTIONS

TO BE READ IN CONJUNCTION WITH FLOWCON INSTALLATION & OPERATION INSTRUCTIONS

Description:

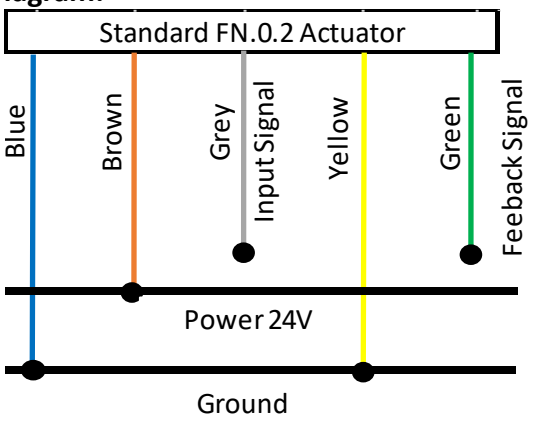
The FN.0.2 Electric Actuator is designed for 24V AC/DC ±10%, 50/60Hz supply with an Analog 0[2] -10V DC signal, self calibrating, complete with feedback position signal.

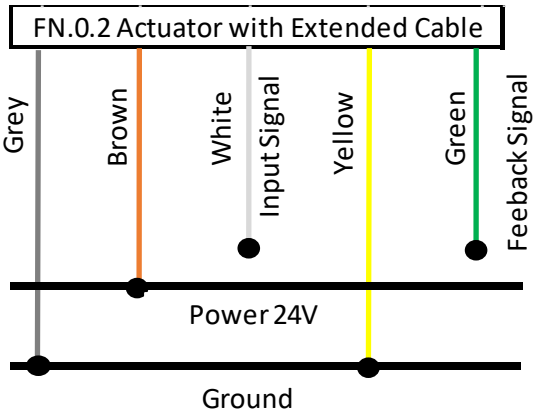
How to identify the FN.0.2 Actuator:

- The Actuator is Black & White, with a profile as shown above, black cable 1.5m long as standard, with 5 coloured connecting wires.

- On the underside of the Actuator, the model **FN.0.2** and the software version, in this instance **4.12** can also be found on this label
- The long number in front of the software version number is the actuator serial number

Wiring Diagram:





FloControl offer an extended cable service for cable lengths above 1.5m. The cable supplied will be cream coloured, also note the connecting wire colour change.

Setting up the FN.0.2 Actuator Dip Switches:

- The six Dip Switches can be found under the connection cover by unscrewing the setscrew [Torx T9] and lifting off the cover.

DIP switch	Function ON		Function OFF
#6	Electrical override ON		Electrical override OFF
#5	No function		No function
#4	Equal percentage		Linear
#3	Normally Open		Normally Closed
#2	2-10V Control signal 2-10V		0-10V Control signal 0-10V
#1	Auto cycle ON		Auto cycle OFF

- The default setting for all the Dip Switches is the off position, as shown above, which will satisfy majority of the applications for the Green PICV.
- Switching the Dip Switch to the ON position changes the function as shown above.

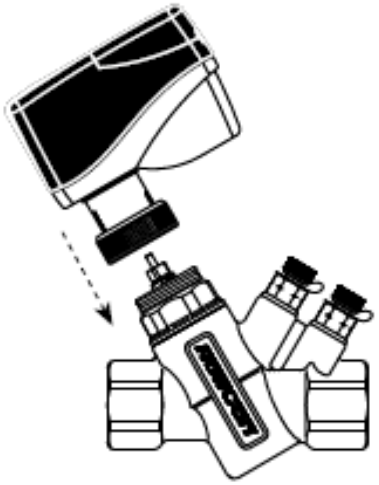
Actuator Mounting Instruction:

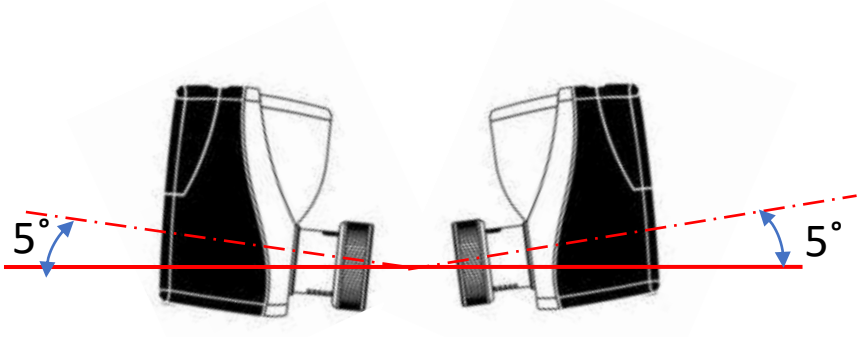
- The FN.0.2 actuator is designed to fit the following FlowCon PICV's
  - Green.EQ – 3.4mm stroke – closing time 75 sec
  - Green.0 – 3.4 mm stroke – closing time 75 sec
  - Green.1 – 3.4 mm stroke – closing time 75 sec
  - Green.1HF – 3.4 mm stroke – closing time 75 sec
  - Green.2 – 5.2 mm stroke – closing time 114.4 sec

- Ensure that the actuator is in the fully open position before mounting on the valve to avoid the risk of damaging the PICV, see below how to identify that the actuator is fully open:

The Stainless Steel drive pin should be fully up

No indicator pin should be visible in the window





- The actuator should be aligned to the PICV threaded insert, the locking ring should be rotated clockwise by hand until the locking ring is fully down, do not overtighten to avoid damage.

- According to the manufacturers installation instruction the actuator is suitable for mounting in the upside down position, but it is FloControl recommend mounting the actuator above the horizontal as shown.

- Note, it is good practice to mount with the actuator body facing upwards as shown.

Start Up calibration sequence:

- The actuator has a stroke length of 9mm and will self calibrate to the Green insert closed position when the power is turned onto the actuator.
- During the calibration process the LED will flash Green.
- Once the actuator locates the closed position it will calibrate to the PICV and the LED will stay Green permanently. No further action is required. The calibrated position will be retained in the actuator memory.
- The stainless steel pin, located on the actuator neck, will indicate when the actuator is fully closed.
- The closed position on the indicator scale and is different for the GreEQ, 0, 1 and 1HF compared to the Green.2, see below.

The closed position for the GreEQ, 0, 1 and 1HF

The closed position for the Green.2

- FlowCon has a policy of continuous product development which has progressively simplified the calibration procedure.
    - For actuators with a software version 4.05 and lower. It is important, when the actuator is first powered up it should be fitted to the actuator. Failure to do this will result in the actuator calibrating to the actuator fully open position which will result in the actuator failing to open and close correctly in accordance to the control signal. The Actuator will need to be recalibrated using DIP switch 6, see later section.
    - For actuators with a software version above 4.05 the actuator firm ware is programmed to identify the closed position. If the actuator is powered up off the valve it will ignore the fully extended position and will only calibrate when fitted to the valve.
    - For actuators with the software version 4.12 and above there is an additional feature programmed into the actuator allowing all actuators installed in the system to be recalibrated without having to visit the actuator and remove the cover. To force a full calibration of the actuator population within a system the following signal sequence, via the BMS, 10V-2V-10V-2V-10V-2V within 60 should be carried out. After recalibration all actuators will resort to normal control.

Electrical override & Recalibrating the actuator using DIP switch 6:

- To drive the actuator fully open, flip Dip Switch 6 from the OFF position to the ON position and back to the OFF position, the LED will now flash between Red and Green.

- As well as driving the actuator open this routine prepares the actuator for recalibration.
- The actuator will close with the LED flashing Green.
- Once closed the actuator will be recalibrated and the LED will be solid Green.

Removing & Remounting the Actuator:

- The actuator should be removed from the valve in the fully open position only. This can be achieved by driving the actuator open with the control signal or by flipping DIP switch 6 to the ON position
- The DIP switch 6 should be reset to the OFF position and should remain in this position whilst the actuator is not fitted to the PICV.
- The actuator should only be remounted onto the PICV in the fully open position

Feedback signal:

- The feedback signal reflects the actuator's actual position as an electrical signal.
- The feedback signal will only equal the control signal when a steady state condition has been reached and the actuator has moved to the required position

Fault Finding Tips:

- If the PICV appears to be passing, remove the actuator and confirm that the PICV insert is not damaged by confirming the pin is up and exhibits a spring resistance. If the insert is damaged replace with new one set at the same setting as the one removed to obtain the correct flow rate.
- If the actuator fails to fully open or close the PICV recalibrate the actuator to the valve by flipping DIP switch 6 from the OFF to the ONF position and back to OFF whilst still mounted to the valve and allow to recalibrate.
- If the actuator still fails to fully open or close confirm that the control signal is actually 0V or 10V as required to close and open the valve.

- A very useful technique to confirm that the actuator is performing correctly is to remove from the PICV and attach the actuator to a free standing insert as below to confirm that the actuator opens & closes the valve

Green.0 insert fully open

Green.0 insert fully closed

Green.2 insert fully open

Green.2 insert fully closed

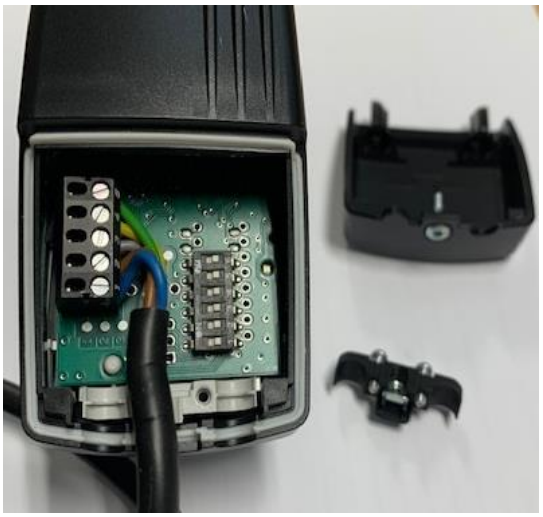
- If the actuator fails to open or close the insert replace the actuator with a new one and return for investigation

Exchanging the Actuator:

- Should it be necessary to exchange/replace the actuator.
- This can be carried out without rewiring the actuator.
- Ensure the power is turned off

Remove the cable retaining clip using a Torx T7 driver

Pull the cable bayonet connection off the pins



Fit the cable bayonet fitting to the new actuator pins ensure that all 5 pins are captured within the bayonet.

Ensure the retaining clip securing faces out as this is needed to retain the cover, reassemble

- Fit the new actuator to the PICV and turn on the power, the actuator will self calibrate to the PICV