

v1.0

JEM Fluid Sensor Issues

21-Jun-22

Question:

My smoke machine is showing FLUID OUT even though it has fluid...why?

Answer:

Older smoke machines (ie JEM Glaciator X-Stream) have an analogue fluid sensor (physical sensor wire that goes inside the fluid bottle).

The analogue sensor wire has a small PCB mounted on the end that is 'waterproof sealed' using a white 'wax' and then covered in black heatshrink.

If the wax has cracked or broken off completely (exposing the 'head' of the black PCB component) then fluid will be allowed to touch the sensor pcb and will cause a short circuit/corrosion rendering the fluid sensor faulty.

This will cause the voltage reported to rise and the machine will report 'Fluid Out' regardless of the amount of fluid in the bottle..

Replacement of the sensor is the only option.

Good:



Bad:



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If your sensor looks good then you can check the calibration of the sensor.

Sometimes it will tell you that it has no fluid when you have half a bottle left...other times it will not tell you until you are completely empty (or not at all).

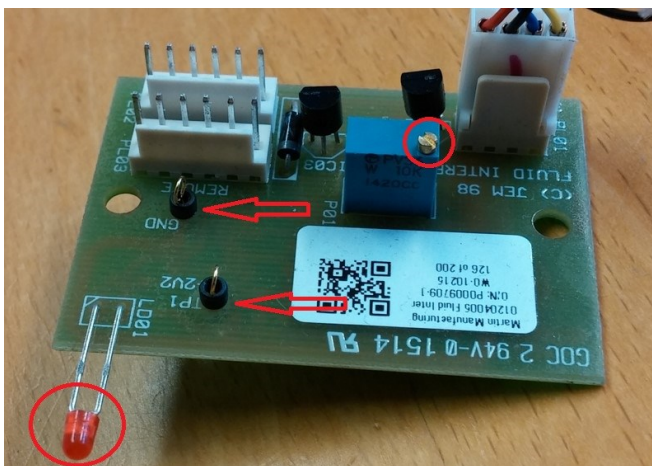
You can check the operation of the sensor by monitoring the voltages present on the Fluid Interface PCB mounted inside the main machine.

Using a digital volt meter set to DCV, probe the two test points GND (- probe) and TPI (+ probe).

With the fluid sensor IN fluid (leave there for at least 30 seconds) you should see approximately 2.2V DC.

When you take the sensor OUT of the fluid you should see the voltage rise slowly.

When the voltage reaches 2.5V it will indicate FLUID OUT (red LED on the interface PCB—and FLU OUT on the display if it has a display).



Put the sensor back IN the fluid and the voltage should drop again..once under 2.5V it should allow control of the machine again.

If the 'resting voltage' of the sensor (when IN fluid) is higher (or lower) than the recommended 2.2V you can make adjustments using the multi-turn potentiometer.

Adjustments in the 2.1V to 2.3V range can fine tune the sensitivity of the sensor operation.

If the sensor shows fluid out too soon...try dropping the voltage to 2.1V and test...

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DIGITAL SENSING:

Some newer model smoke machines (ie Glaciator Dynamic) use a physical pressure switch for fluid 'sensing'.

If fluid is passing through, it will register the pressure in the switch and signal fluid presence to the firmware.

If pressure is not registered for a short period of time then the firmware will flag a Fluid Out message.

This may be an indication that your fluid pump is not moving fluid correctly.

When neither a physical sensor wire or a pressure switch are present in the machine (ie JEM ZR25/ZR35/ZR45, JEM Hazer Pro) the machine uses a firmware system that monitors heater temperature and fluid pump operation to see if the fluid is cooling the heater as expected (as it passes through it rapidly cools the heater).

If the fluid pump is operating...but the heater is not cooling as expected...then it will flag FLUID OUT.

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