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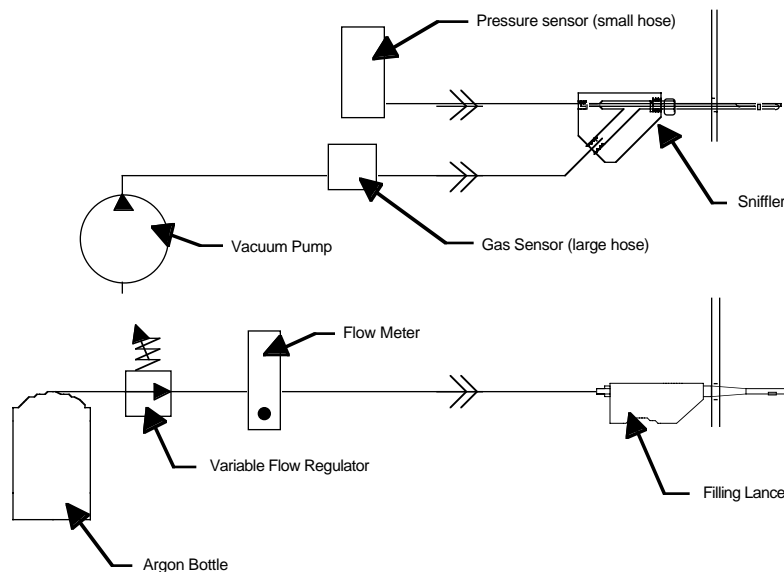
RSGz Pressure Sensor

Before we calibrate the pressure sensor let's first review how the RSGz normally fills an insulating glass cavity through two access holes.

Three hoses connect at the face of the RSGz, 1/8" — 1/4" — 3/8"

(Note: The z90 has two suction lines and the z175 has both two suction lines and two output lines but the principle remains the same.)

The 1/4" hose goes to the filling lance and brings argon to the unit. The other two hoses connect to the sniffer. The large 3/8" hose is the suction line and brings the exhaust gas to the vacuum pump passing over the gas sensor. The small 1/8" hose is connected to a pressure sensor.



At the start of a filling cycle the RSGz turns on the vacuum and gas flow simultaneously. Then it watches the pressure sensor for positive or negative pressure in the IG cavity. If it detects negative pressure the flow is increased, if it detects positive pressure the flow is decreased. Similar to cruise control on a car holding a fixed speed by increasing and decreasing throttle position.

The objective is to hold the IG cavity pressure slightly positive during the filling process. As the thicker heavier filling gas reaches the exhaust two things happen:

- 1) The gas sensor in the exhaust line detects the less conductive fill gas.
- 2) A smaller amount of the thicker fill gas and cavity air mixture can be pulled through the exhaust hose and sniffer.

Because less gas can travel out of the cavity the pressure in the cavity will start to increase. The RSGz senses this pressure increase using the pressure sensor and decreases the incoming gas flow rate to match the new exhaust rate using the variable flow regulator.

With 100% argon in the IG cavity the flow rate will drop to about 85% of what it was with air in the IG cavity.

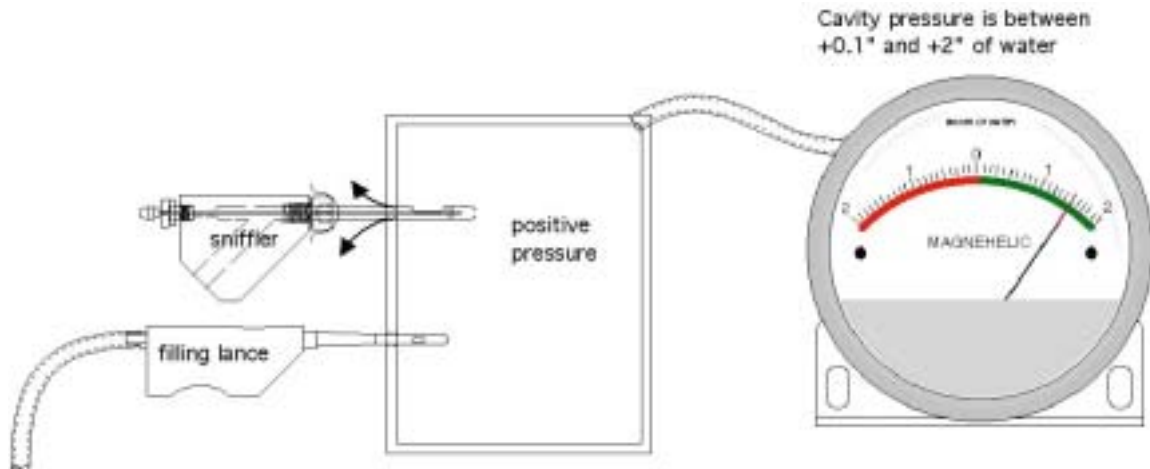
So what happens if the pressure sensor is out of calibration?

If windows are bowing out too far during the filling process, the sensor may be out of calibration. More common is for the machine to not shut off or to try and draw the unit down to a pressure lower than the atmosphere.

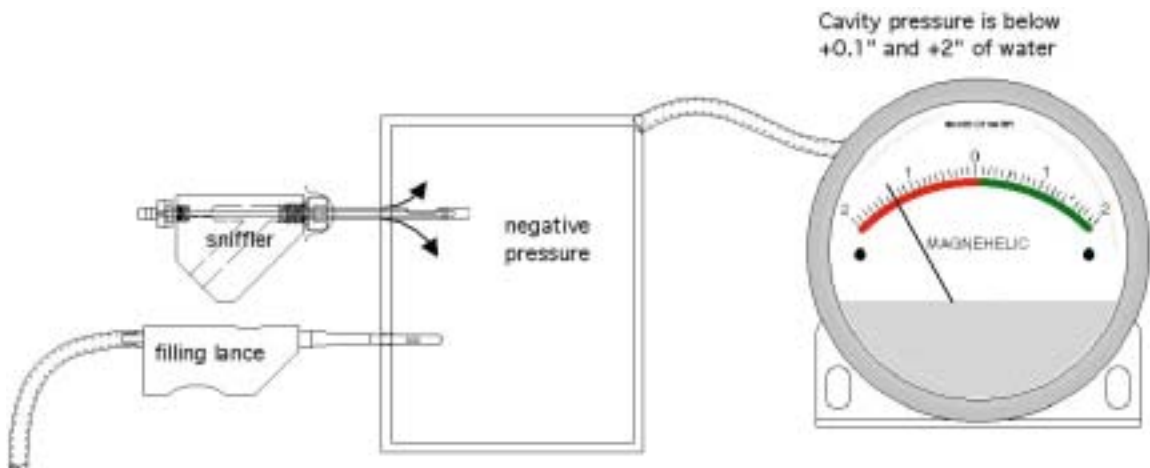
As with the gas sensor 98% of the problems that we think are pressure board sensor problems are really due to sniffer condition.



If the pressure sensor is out of calibration, it is possible for air to enter the cavity through the access hole and dilute the exhaust gas being drawn over the gas sensor. With negative pressure in the IG the gas filler may not shut off.



Positive pressure ensures that outside air will not enter the window.



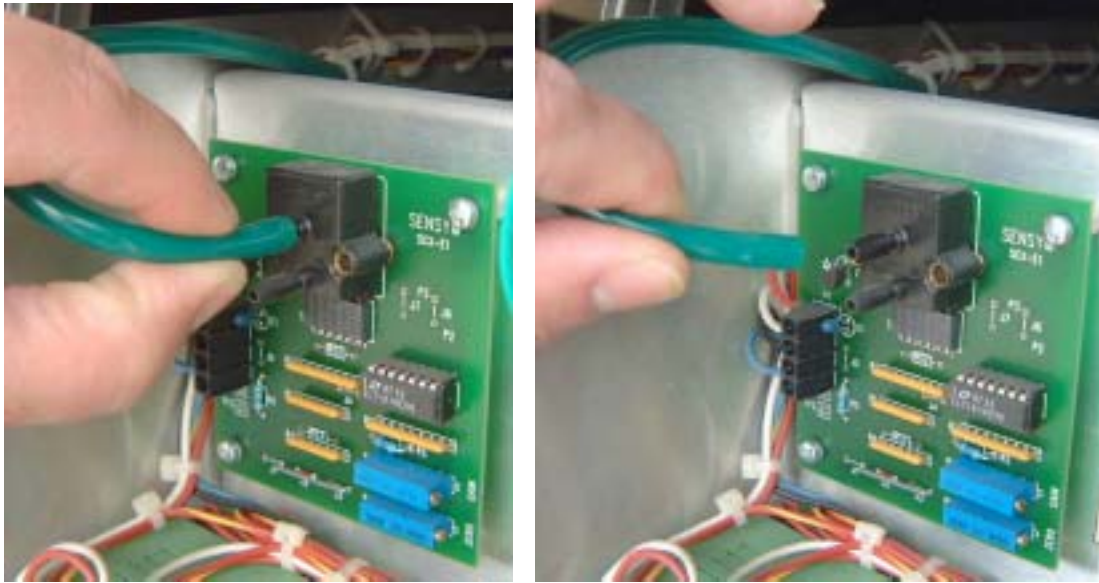
Negative pressure allows outside air into the window and may cause the gas filler to not shut off.



Here she be, the pressure board. Remember that it has a very delicate sensitive sensor. Be careful when you pull the lines off and be extra careful when you apply slight pressure to set the sensor.

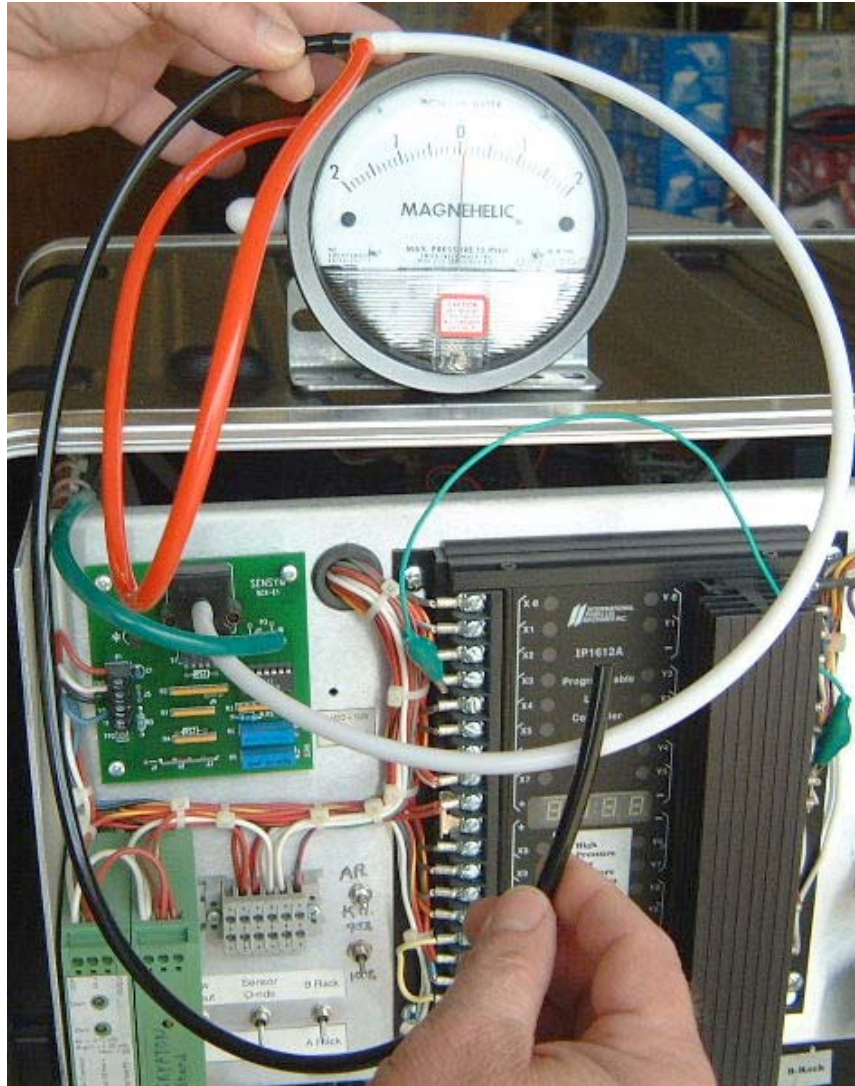


To calibrate the board you will need a "MAGNEHELIC" with a "tee"



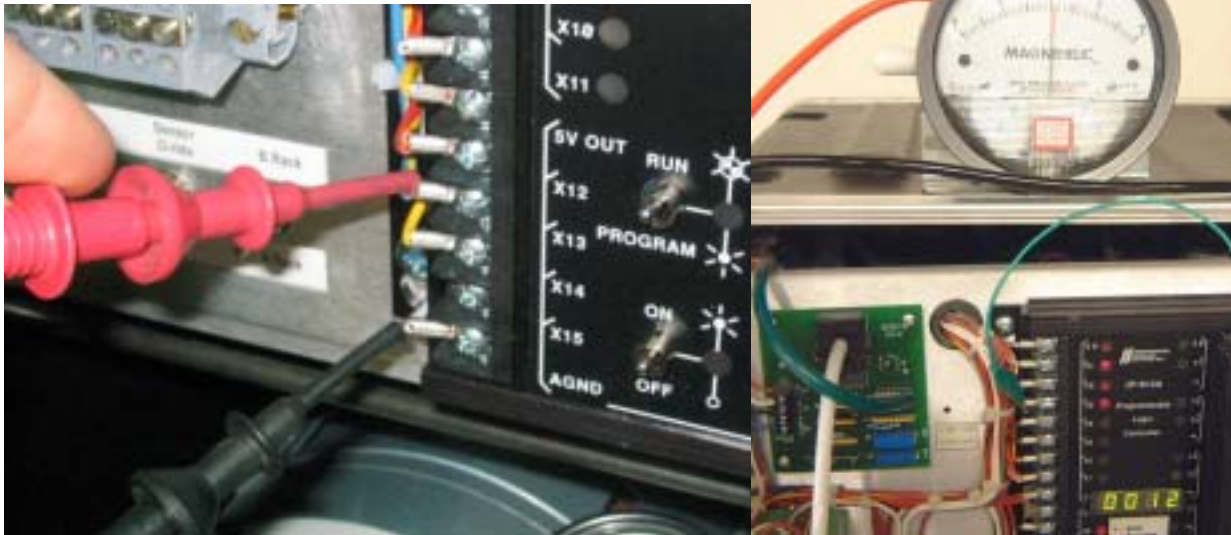
Remove line from "B" port connect "MAGNEHELIC"



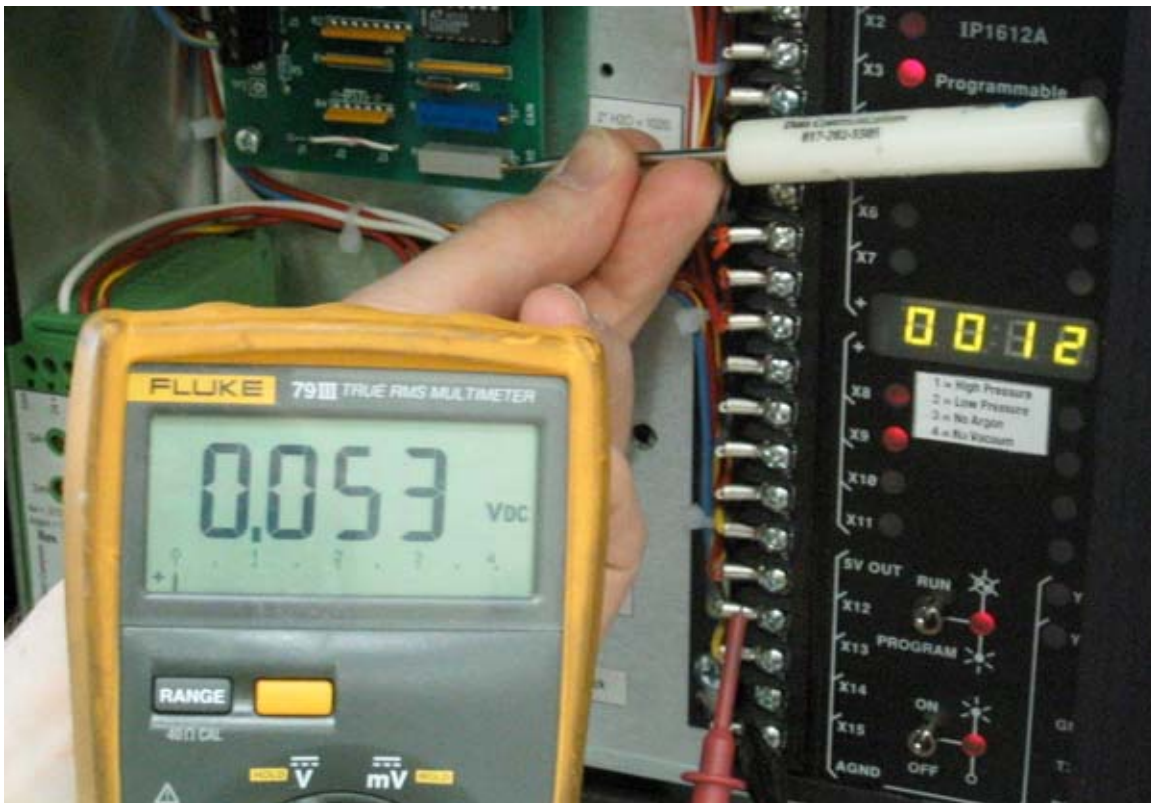


Flip the left switch down towards Pressure Sensor to display pressure information on PLC. Make sure the next switch (Flow Output) is in the middle position.





Hook up a digital multimeter to the common (shown here at the AGND terminal on the PLC, but any of the commons will work) and X13 (usually indicated with a blue/yellow wire that goes back to the pressure board). Set the meter to read DC voltage.



With the magnehelic showing 0" of water pressure, adjust the Zero pot on the pressure board until the volt meter reads about 50-60 mVDC. The PLC display should read about "0012."



Next, slowly and carefully blow into the “tee” and pinch off the hose when it reaches an even 2” of water pressure. With the magnehelic showing a steady 2” of water pressure, adjust the Gain pot on the pressure board until the volt meter reads 5.00 VDC. The PLC display should read about “1020.” Please be aware the the PLC display will only go as high as 1020 in Pressure Sensor mode, so readings that are higher than 2” or 5.00 VDC will still show 1020 on the PLC. For this reason it is recommended to always use a volt meter when calibrating the pressure board.

Then, release the pressure from the magnehelic and the voltage should return to the 50-80mVDC range. Now flip the left switch back to the center so you can see any fault messages on the PLC and reconnect the line to the “B” port.

