Maintenance of the Electronic (EPC) Pressure Controllers on SRI GCs

Gas flows in all SRI GCs are controlled by Electronic Pressure Controllers (EPC). There may be up to 7 EPCs mounted in one GC depending on which combination of injectors and detectors are installed.

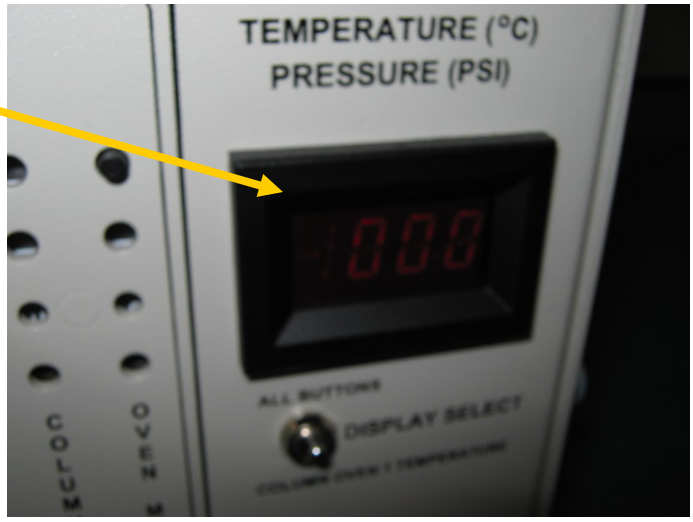
Each EPC has three buttons on the front panel on the GC. When a button is pushed the number is displayed on the front panel meter display.

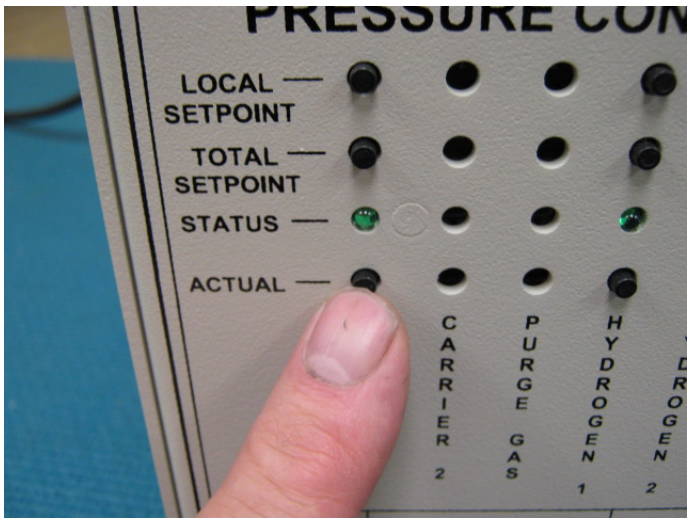
The Local Setpoint is the pressure the EPC is supposed to maintain and is set by screwdriver adjustment on the GC.

The Remote Setpoint is the pressure setting entered in the Peak-Simple Data System. This setpoint is not used unless specifically connected inside the GC.

The Total Setpoint is the sum of the Local and the Remote Setpoint.

The Actual Pressure is the real pressure output of the EPC. Normally the Actual will be equal to the Total Setpoint. If the Actual is NOT equal to the Total Setpoint then there is a problem.





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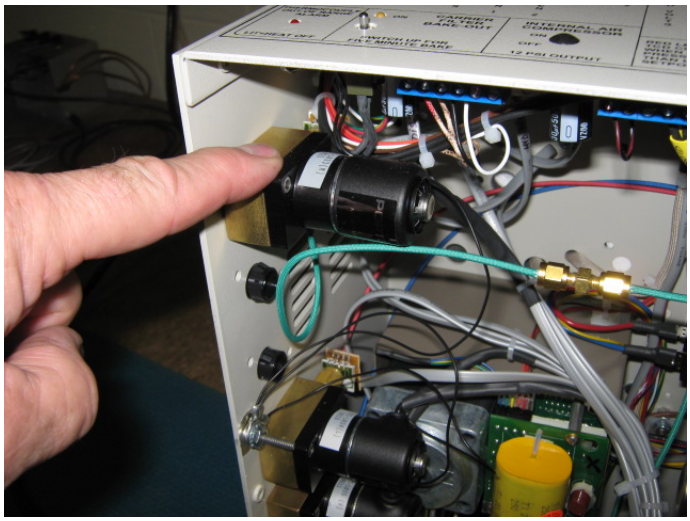
The EPC solenoid is mounted on the left side of the GC. A 1/8" Swagelok bulkhead fitting projects through the left side of the chassis where the gas is connected.



The Actual Pressure might read 0.00 if the gas cylinder is not turned on at all.

Verify that gas is arriving at the EPC bulkhead fitting by loosening the nut so you can hear the gas hissing out. If you can not hear the gas escaping then there may be a blockage between the gas cylinder and the GC.

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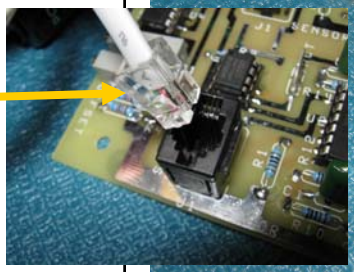
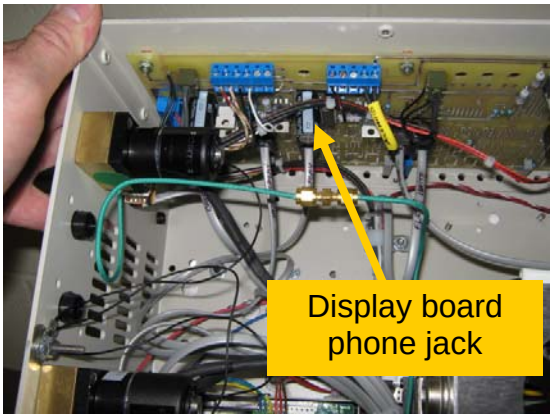
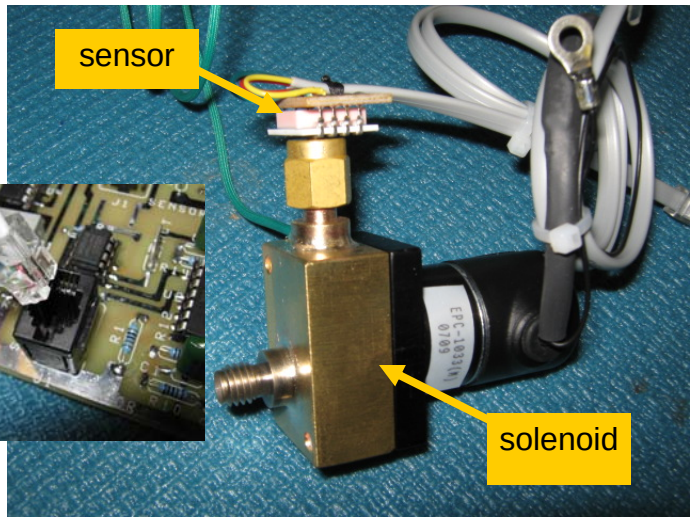
The EPC module is attached to the GC with two 5/64” hex head screws. Attached to the EPC solenoid is a pressure sensor. Both the sensor and the solenoid connect to the circuit board with 4 wire cables similar to those found on telephone handsets.

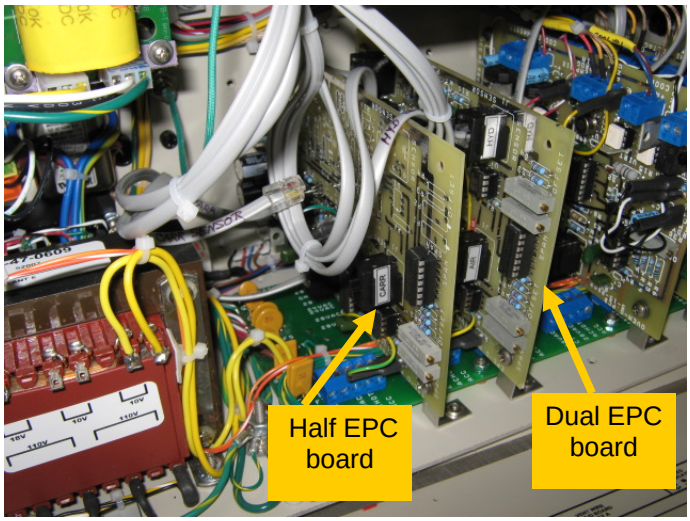


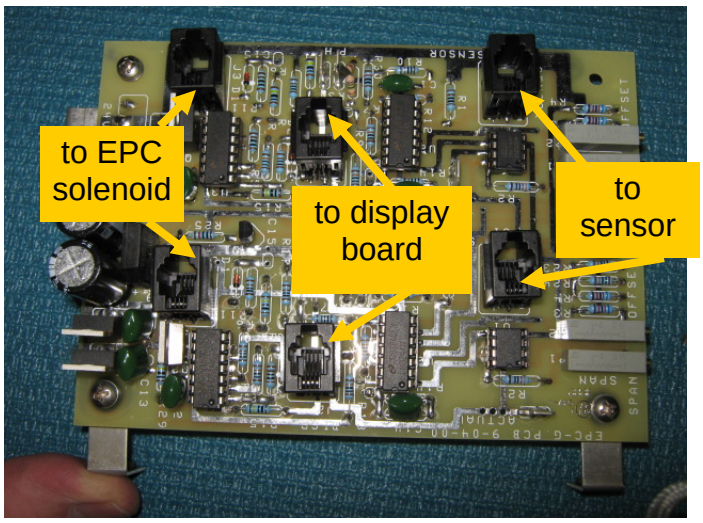
The circuit board which controls the EPC is mounted inside the GC chassis. Several circuit boards may be mounted since each circuit board can control two EPC modules. The EPC circuit boards are all identical and each half of the circuit board is identical to the other half so any EPC module can be connected to any of the boards for troubleshooting purposes. **Some EPC boards may only have one half of the board populated with parts.**

Each half of a EPC circuit board has three phone jacks.
<u>One jack for the sensor.</u>
<u>One jack for the buttons on the display board on the inside front panel of the GC</u>
<u>One jack for the solenoid.</u>







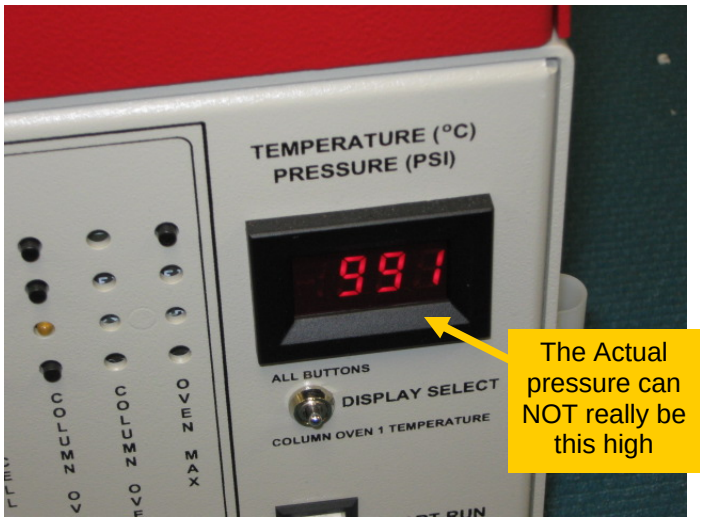


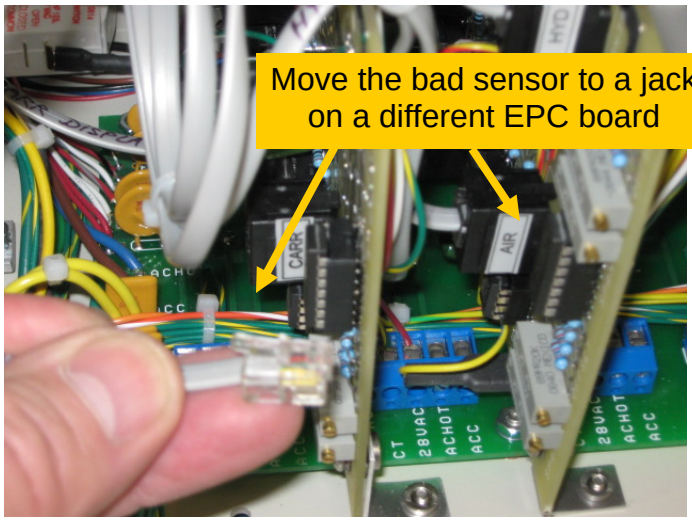
Maintenance of the Electronic (EPC) Pressure Controllers on SRI GCs

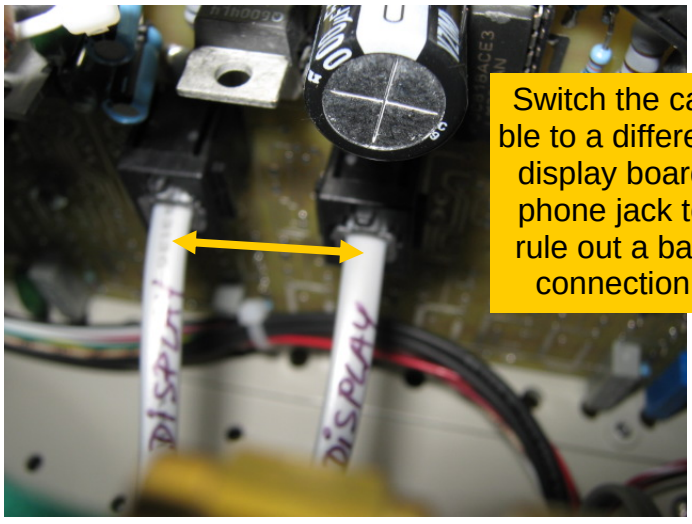
If the EPC Actual reading is very high (higher than the gas cylinder pressure for instance), then the pressure sensor may be broken or contaminated (frequently with water from old gas line tubing).

You can move the bad sensor from the jack on one EPC board to the corresponding jack on another EPC board to determine if the sensor reading is the same on both boards. For example, if the carrier gas Actual reading is 991, you can move the carrier gas sensor to the Air sensor jack on another EPC board. The Air Actual reading will now show the Carrier gas sensor. If the Air Actual now reads 991 then it means the sensor itself is probably the problem, not the rest of the circuit. If the Carrier gas sensor reads normally when connected to the jack on the Air EPC board then this means the Carrier EPC board may be the problem.

It is also possible that the phone cable going from the EPC board to the jack on the display board is loose or disconnected. It would make sense to return the bad Carrier gas sensor to the carrier EPC board, verify the reading was still 991 and then switch the cable from the carrier gas EPC board to the display board with the Air jack on the display board. If the bad reading of 991 moved to the Air Actual when the cable was moved then it mean the display board is OK.



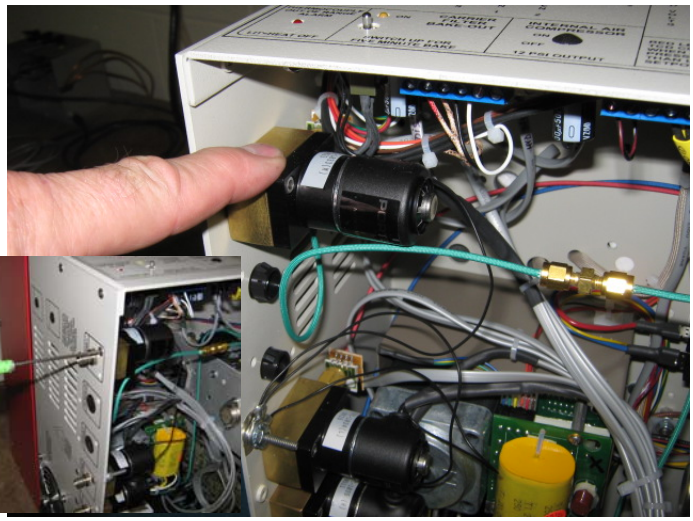




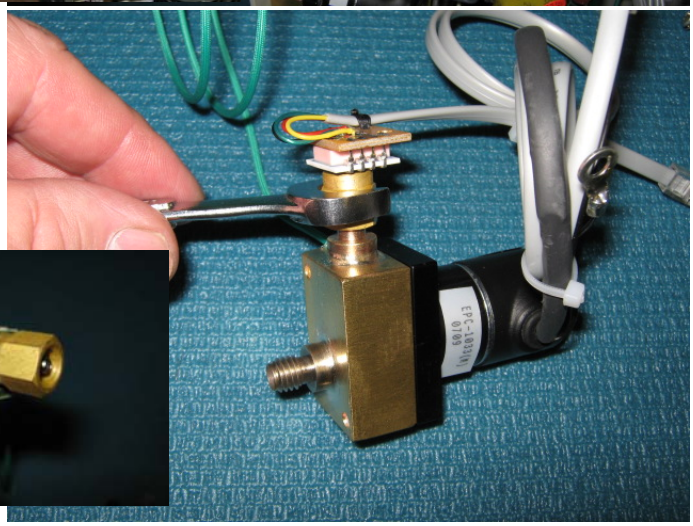
Maintenance of the Electronic (EPC) Pressure Controllers on SRI GCs

If it appears that the sensor is really bad, then obtain a replacement from SRI SRI part# 8670-6020 $150.

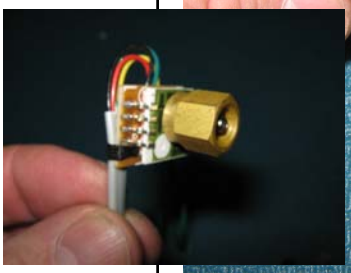
It is best to remove the EPC module from the chassis You will need a 5/64" hex wrench to remove the two screws which hold the EPC module to the chassis.

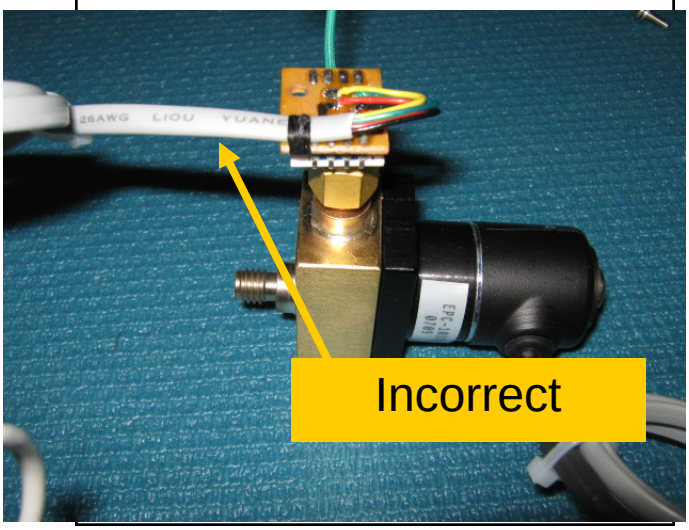


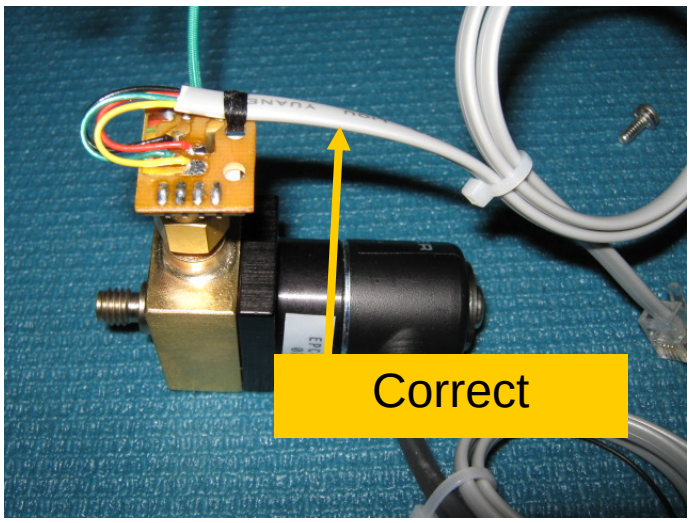
Use a 7/16" wrench to replace the sensor. The sensor is secured ot the EPC module using a swagelok nut and ferrules.



<u>It is important to orient the cable as shown to avoid breaking the sensor (the space is tight) when the EPC module is reconnected to the chassis.</u>





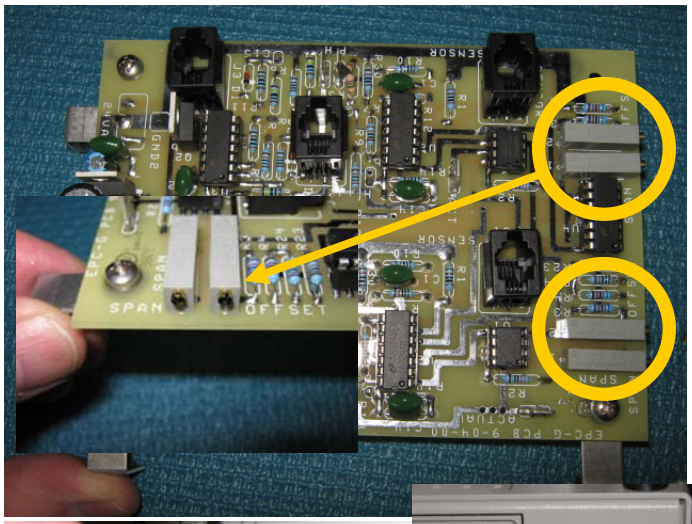


Maintenance of the Electronic (EPC) Pressure Controllers on SRI GCs

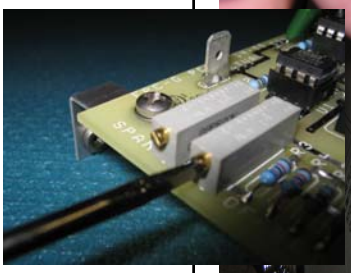
After you plug the new sensor into the EPC board it may need to be calibrated since each sensor is slightly different.

Each half of the EPC board has two adjustable potentiometers (trimpots) labeled offset and span. The offset trimpot is used to adjust the display so it reads 0.00 when there is no gas pressure connected to the EPC.

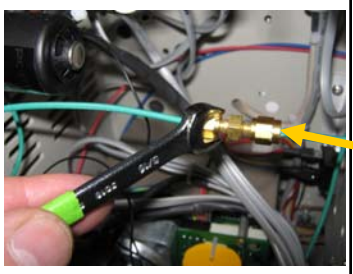
Remove the gas from the EPC inlet so there can not be any pressure. If the Actual does not read exactly 000 then adjust the offset trimpot on the EPC board half (the half you plugged the sensor into) se the display on the front panel of the GC reads 000.

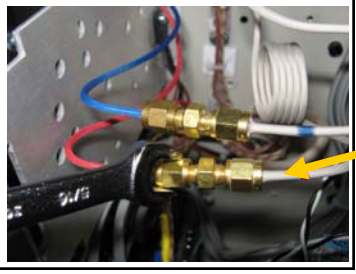


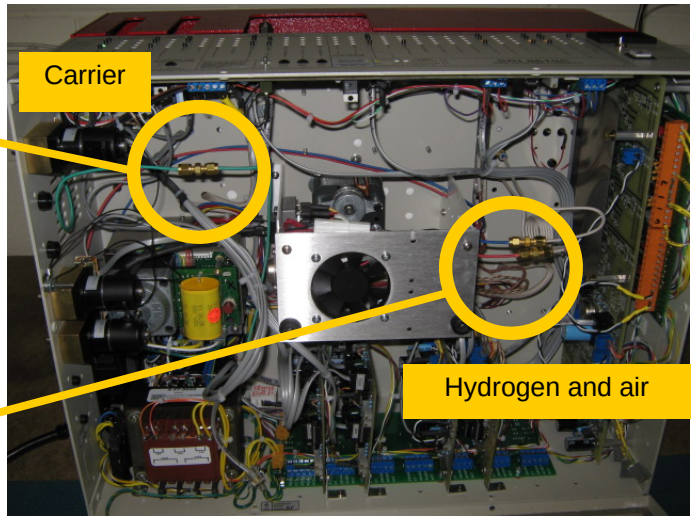
Adjust so display read 000



Reconnect the gas and find a pressure gauge to connect to the EPC output tube. The carrier EPC (green) has a convenient connection point on the left inside of the chassis. The hydrogen (red) and air (blue) EPCs have good connection points on the right inside of the chassis.



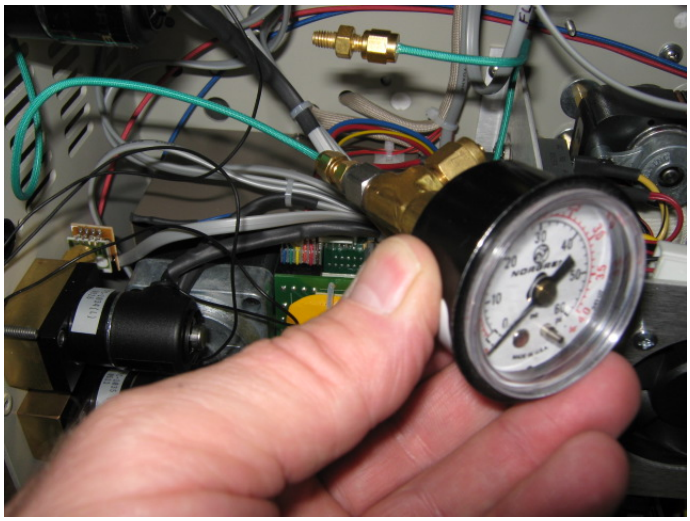




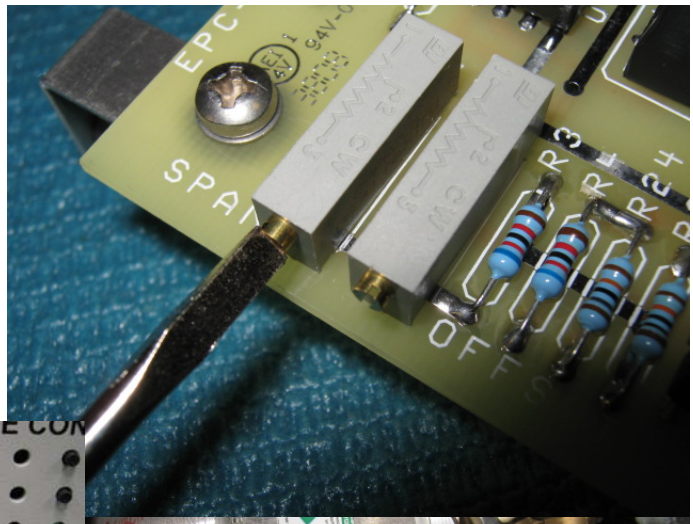
Maintenance of the Electronic (EPC) Pressure Controllers on SRI GCs

Connect the mechanical pressure gauge to the outlet of the EPC.

Adjust the span trimpot so the Actual pressure reading on the GC front panel display agrees with the pressure gauge.



If a gauge is not available, you can calibrate the pressure using the gauge on the gas cylinder. Adjust the pressure on the gas cylinder so it is lower than the Total Setpoint. Or raise the Local/Total setpoint with the screwdriver so it is greater than the pressure on the gas cylinder. The EPC can not deliver a pressure which is higher than what is supplied by the gas cylinder so the Actual pressure reading (in this case) will be the same as the pressure delivered by the cylinder. Adjust the span trimpot so the Actual pressure reading on the GC agrees with the outlet pressure on the gas cylinder.



Maintenance of the Electronic (EPC) Pressure Controllers on SRI GCs

Remove the gas pressure again to make sure the Actual still reads 000 with the EPC depressurized. If necessary adjust the offset trimpot again.

The sensor is now calibrated.

It is a good idea to perform a leak check on the entire GC at this point. See the publication on the SRI website called " Checking your GC for Leaks".