

# **Installation Guide**

**Auxiliary Pressure Control Manifold on 6890 GC  
Accessory G1570A**



**Agilent Technologies**

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### Safety Information

The Agilent Technologies 6890 Gas Chromatograph meets the following IEC (International Electrotechnical Commission) classifications: Safety Class 1, Transient Overvoltage Category II, and Pollution Degree 2.

This unit has been designed and tested in accordance with recognized safety standards and designed for use indoors. If the instrument is used in a manner not specified by the manufacturer, the protection provided by the instrument may be impaired. Whenever the safety protection of the Agilent 6890 has been compromised, disconnect the unit from all power sources and secure the unit against unintended operation.

Refer servicing to qualified service personnel. Substituting parts or performing any unauthorized modification to the instrument may result in a safety hazard. Disconnect the AC power cord before removing covers. The customer should not attempt to replace the battery or fuses in this instrument. The battery contained in this instrument is recyclable.

### Safety Symbols

Warnings in the manual or on the instrument must be observed during all phases of operation, service, and repair of this instrument. Failure to comply with these precautions violates safety standards of design and the intended use of the instrument. Agilent Technologies assumes no liability for the customer's failure to comply with these requirements.

### WARNING

A warning calls attention to a condition or possible situation that could cause injury to the user.

### CAUTION

A caution calls attention to a condition or possible situation that could damage or destroy the product or the user's work.



Indicates a hot surface



Indicates earth (ground) terminal

### Sound Emission Certification for Federal Republic of Germany

Sound pressure  $L_p < 68$  dB(A)

During normal operation

At the operator position

According to ISO 7779 (Type Test)

### Schallemission

Schalldruckpegel  $LP < 68$  dB(A)

Am Arbeitsplatz

Normaler Betrieb

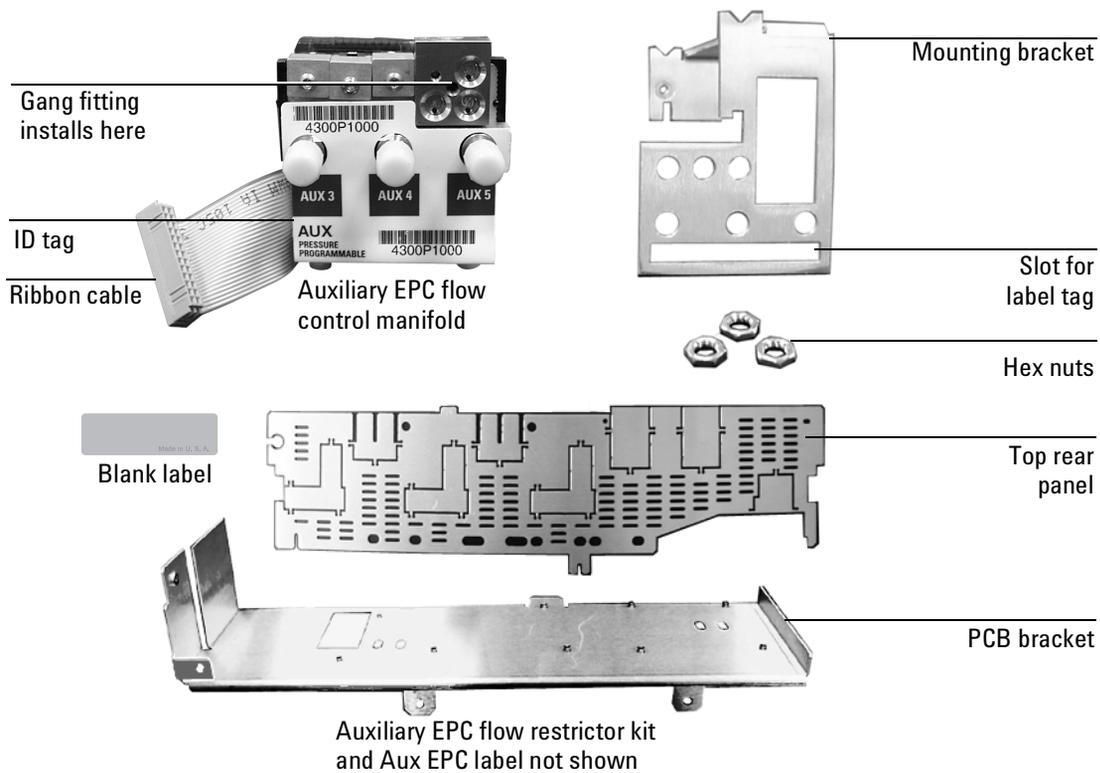
Nach DIN 45635 T. 19 (Typprüfung)

# Installing an Auxiliary Pressure Control Manifold Accessory G1570A

The Auxiliary Pressure Control Manifold adds three electronically-controlled gas streams to an Agilent 6890 Series Gas Chromatograph (GC). This kit can be used to replace an existing Auxiliary Pressure Control Manifold or to install a new one.

This kit contains:

<b>Kit G1570-64000</b>	<b>Qty.</b>
Auxiliary EPC flow control manifold	1
Mounting bracket, Agilent 6890	1
Top rear panel	1
Installation sheet (this document)	1
Blank label	1
Mounting bracket	1
Screw, M4 x 0.7 x 10 mm	1
Hex nut, 5/16-inch – 20 thread	3
Auxiliary EPC flow restrictor kit	1
Aux EPC label	1



**Figure 1. Auxiliary EPC flow control manifold replacement kit**

### **Tools required**

- 7/16-inch open-ended wrench
- T-20 Torx driver
- Needle-nosed pliers

### **Safety information**

Before continuing, read the safety information in your *GC Operating Manual*.

## Removing the covers

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### WARNING

Hydrogen gas is flammable and potentially explosive. Before replacing the manifold, turn off the hydrogen gas at the source.

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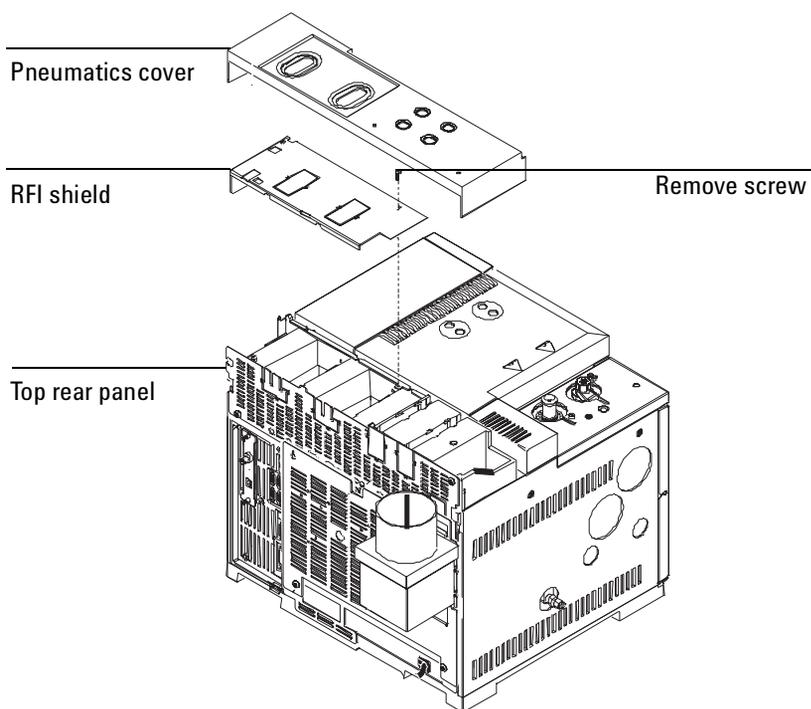
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### WARNING

Before proceeding, turn off the oven and any heated zones and let them cool down. Turn off all detector gases at their supply, then turn off the main power switch and unplug the power cord.

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1. Remove the pneumatics cover, the RFI shield under it, and the top rear panel.



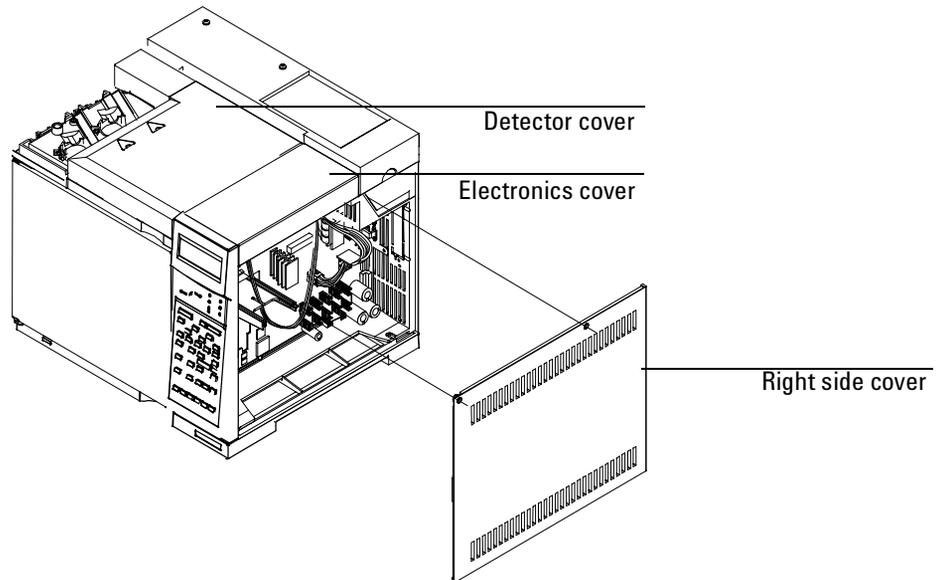
2. Raise the gray plastic top cover (with the holes and ventilation slots) to the vertical position. Examine the hinge in the right rear corner.
  - **Early 6890 models.** The hinge is a metal bracket attached to the oven top. Pull the clip at its top toward you to release the hinge pin.

## Removing the covers

Push the pin to the left to release the cover. Raise the right side of the cover and remove it. Discard the cover.

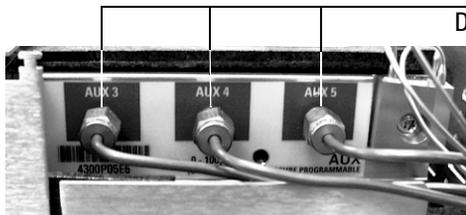
- **Current 6890 models.** Raise the right side of the cover and remove it. Discard the cover.

3. Remove the electronics cover and the right side cover.



## Removing the existing manifold, if present

1. Remove the gas supply tubing from the present manifold.

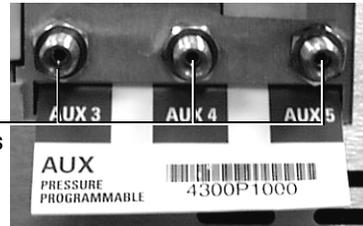


Manifold, before January 1999

Disconnect gas lines

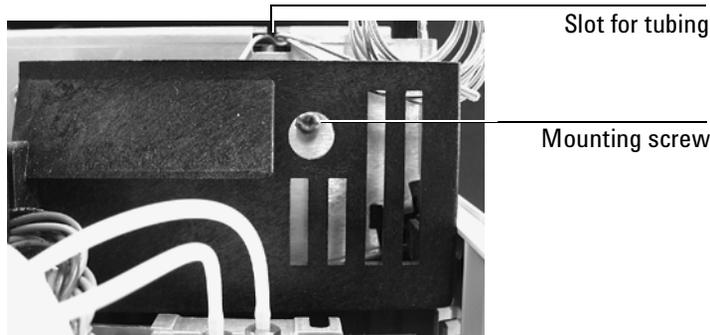
OR

Disconnect gas lines



Manifold, after January 1999

2. Remove the Torx T-20 mounting screw from the front of the manifold.



3. Disengage the tubing from the slots in the chassis so that the gang fitting on the manifold can be removed easily.

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### Caution

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Make sure you are properly grounded with an ESD strap before continuing.

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### Caution

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Always hold the manifold by its support bracket to avoid damaging board components.

4. Unlock the manifold's ribbon cable from the pneumatics control board and detach the connector. The adjacent ribbon cable may have to be removed as well.

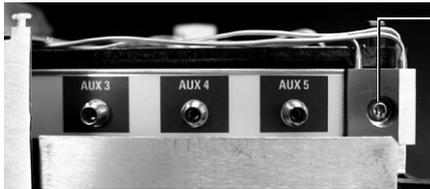
## Removing the existing manifold, if present

5. Remove the one Torx T-20 screw holding the gang fitting on the manifold.

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### Caution

Do not lose the O-rings when you remove the gang fitting.



Manifold, before January 1999

Remove screw  
and gang fitting



Manifold, after January 1999

## Replacing the PCB bracket

1. Compare the PCB bracket under the pneumatics PC board with the one included in the accessory kit. Check for the differences in the three mounting screw tabs. If they are the same, proceed to the next section. If they are different, the existing bracket must be replaced with the new one.

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**WARNING**

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The rest of this procedure must be performed only by Agilent service personnel. Before proceeding, confirm that the main power switch is turned off and that the power cord is disconnected from the power source.

2. Remove the GC lower back panel.

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**Caution**

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Make sure you are properly grounded with an ESD strap before continuing.

3. If an MIO card is present, remove it and the jumper card.
4. Disconnect all cables from the pneumatics PC board.
5. Trace the ribbon cable on the end of the board to the main board and disconnect it there. Feed the cable up through the PCB bracket to the top.
6. Remove the screws holding the PCB bracket and slide it and the board out of the GC.
7. Remove the eight screws that fasten the board to the PCB bracket. Transfer the board to the new bracket and secure it with the eight screws.
8. Slide the board and bracket assembly back into the GC. Use the 10 mm screw provided in the kit for the left-most position, on the side of the GC. Use the screws removed earlier for the other positions.
9. Pass the ribbon cable down through the slot in the PCB bracket and connect it to the main board. Reconnect all cables to the pneumatics board.
10. Re-install the MIO card and the jumper card.
11. Re-install the lower back panel.

## Installing the new manifold

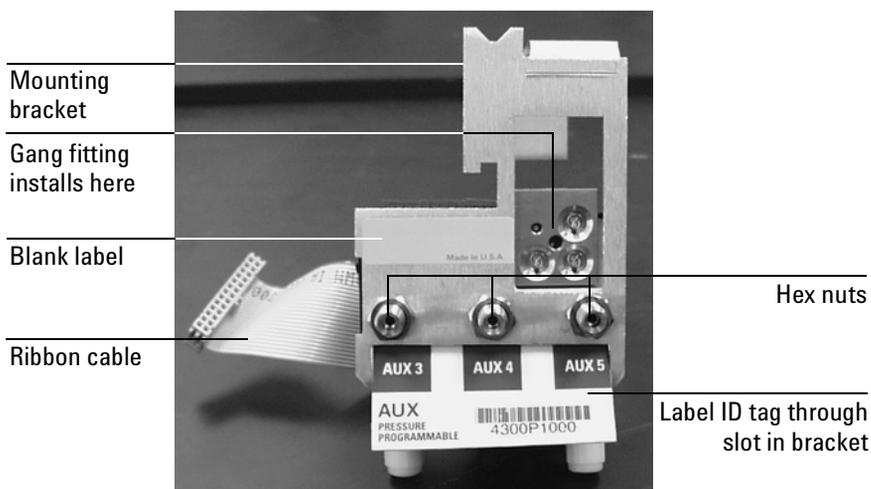
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**Caution**

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Always hold the manifold by its support bracket to avoid damaging board components.

1. Slip the ID tag on the new manifold through the slot in the mounting bracket, then align the bracket holes over the gas fittings. Secure the bracket with three 7/16-inch hex nuts.

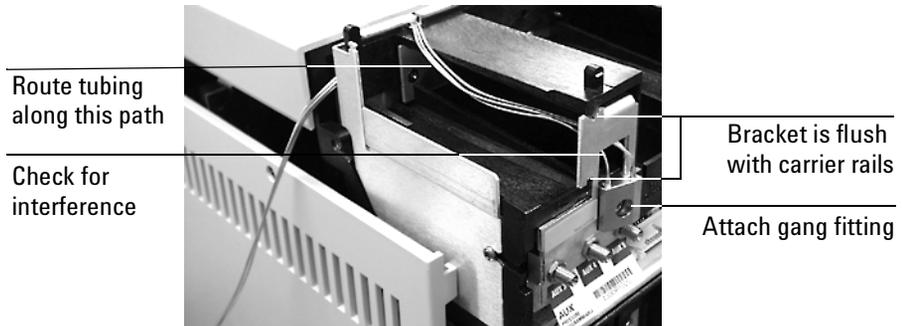


2. Peel the blank label from its backing and paste it on the mounting bracket over the screw heads.
3. If you need to change one or more auxiliary channel frits, do so now. See Changing the flow restrictors (optional) on page 13.
4. Insert the gang fitting through the cutout in the manifold bracket and install it onto the new manifold assembly so that the tubing runs back and away from the fitting.

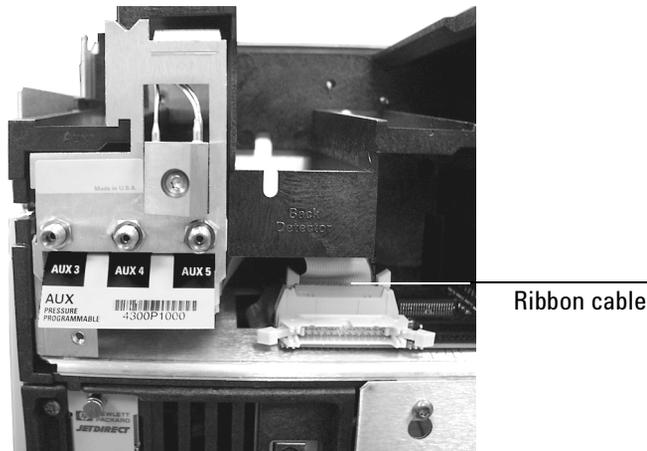
## Installing the new manifold

- Be sure that the three O-rings are in place.
- Be sure the left tube clears the inner edge of the bracket.

Tighten the screw on the gang fitting until the gang fitting touches the manifold.



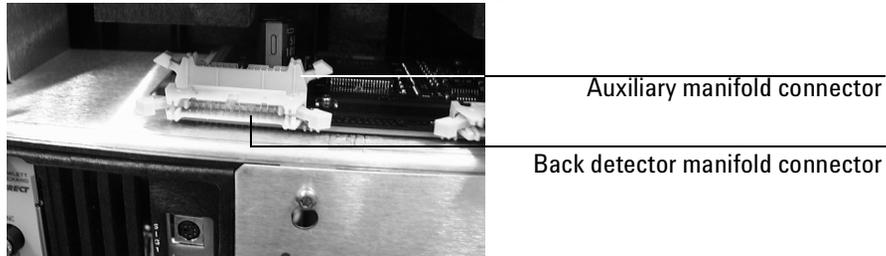
5. Route the ribbon cable to the right side of the manifold. Then slide the manifold and bracket assembly into the Aux slot until the bracket seats flush against the end of the rails.



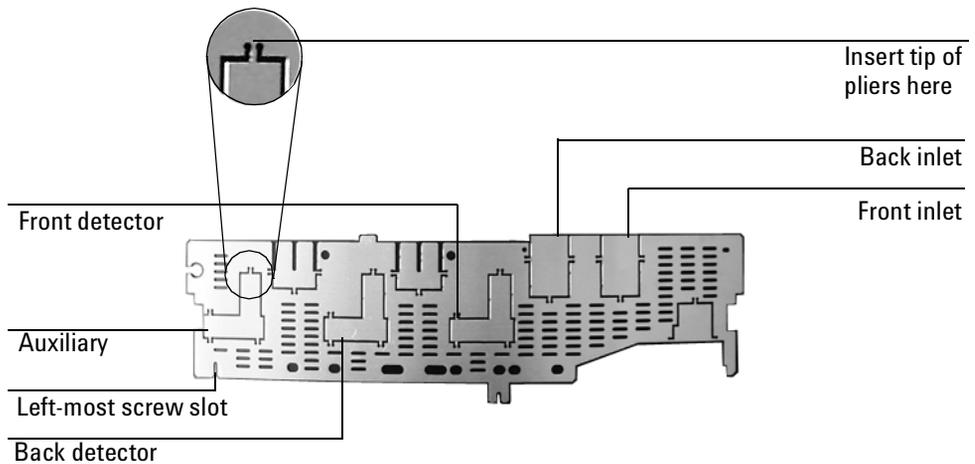
6. Route the gas tubing behind the manifold, over the top of the chassis, and through the slots.
7. Connect the ribbon cable to the mating connector on the pneumatics board. This is behind the connector for the back detector and faces up.
8. Secure the manifold in place using the Torx T-20 mounting screw.

## Installing the new manifold

9. If the detector cable is in the way, remove it temporarily while you connect the Aux cable. Arrange the cable to keep it away from the valves and keep it from being pinched against the manifold.



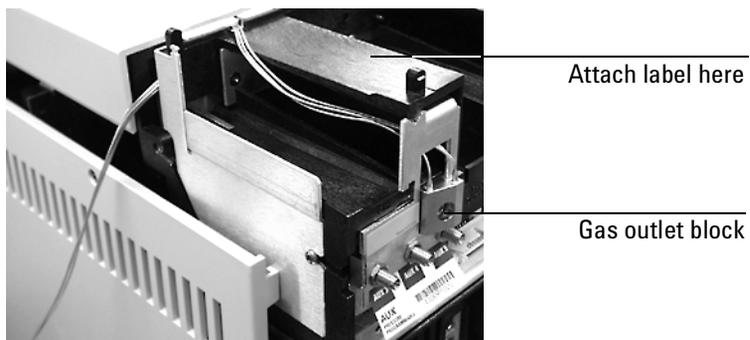
10. Using a pair of needle-nosed pliers, remove the top rear panel cutout for Auxiliary. Also remove any cutouts needed to access other manifolds or accessories installed in the GC.



11. Place the new top rear panel on its left-most mounting screw. Use the screw as a hinge and angle the panel while sliding each manifold ID tag through its cutout in the panel, working from left to right. When all the tags are through the panel, finish installing the panel on the GC.

## Installing the new manifold

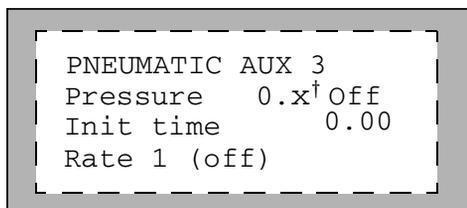
12. Attach the Aux EPC label to the top of the pneumatics chassis.



13. Install the RFI shield, the pneumatics cover, and the detector top cover.

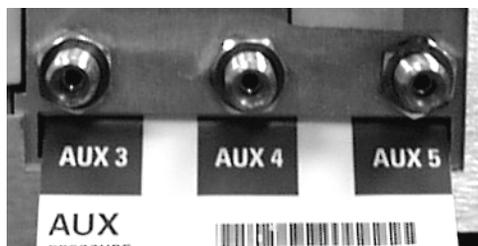
## Restore the GC to operating condition

1. Plug in the GC and turn it on.
2. Press [Aux #][3], [Aux #][4], or [Aux #][5] to access a channel. If your manifold is correctly installed, you will see this display:



<sup>†</sup> An actual flow value is displayed when the gases are off or not connected. This is not an error. After the gases are connected and the detector is operational, the actual flow values will be equal to the setpoint values.

3. If the display reads Aux not installed, recheck your cable connections.
4. Zero the pressure sensors:
  - a. Make certain that no gases are connected to your manifold.
  - b. Press [Options] and scroll to Calibration →Aux pressure.
  - c. Scroll to Aux 3 zero and press [On].
  - d. Scroll to Aux 4 zero and press [On].
  - e. Scroll to Aux 5 zero and press [On].
5. Connect the source gas lines to the manifold.



6. Restore gas pressures and leak check all fittings.

## Changing the flow restrictors (optional)

The auxiliary channels are controlled by a pressure setpoint. To work properly, there must be adequate flow resistance downstream of the pressure sensor. The auxiliary channel pneumatics manifold provides a frit-type restrictor for each channel.

Four frits are available:

Frit marking	Flow resistance	Agilent Part Number
Blue Dot	High	19234-60660
Red Dot	Medium	19231-60770
Brown Dot	Low	19231-60610
None (brass tube)	Zero	G1570-20547

The Red Dot frit is in all three channels when the instrument is shipped.

Figure 1 and Figure 2 show approximate pressure/flow relationships for the three Dot frits, assuming there is no significant additional resistance downstream of the frits.

If the Zero resistance frit is installed, the user must provide flow resistance downstream and generate the pressure/flow relationships.

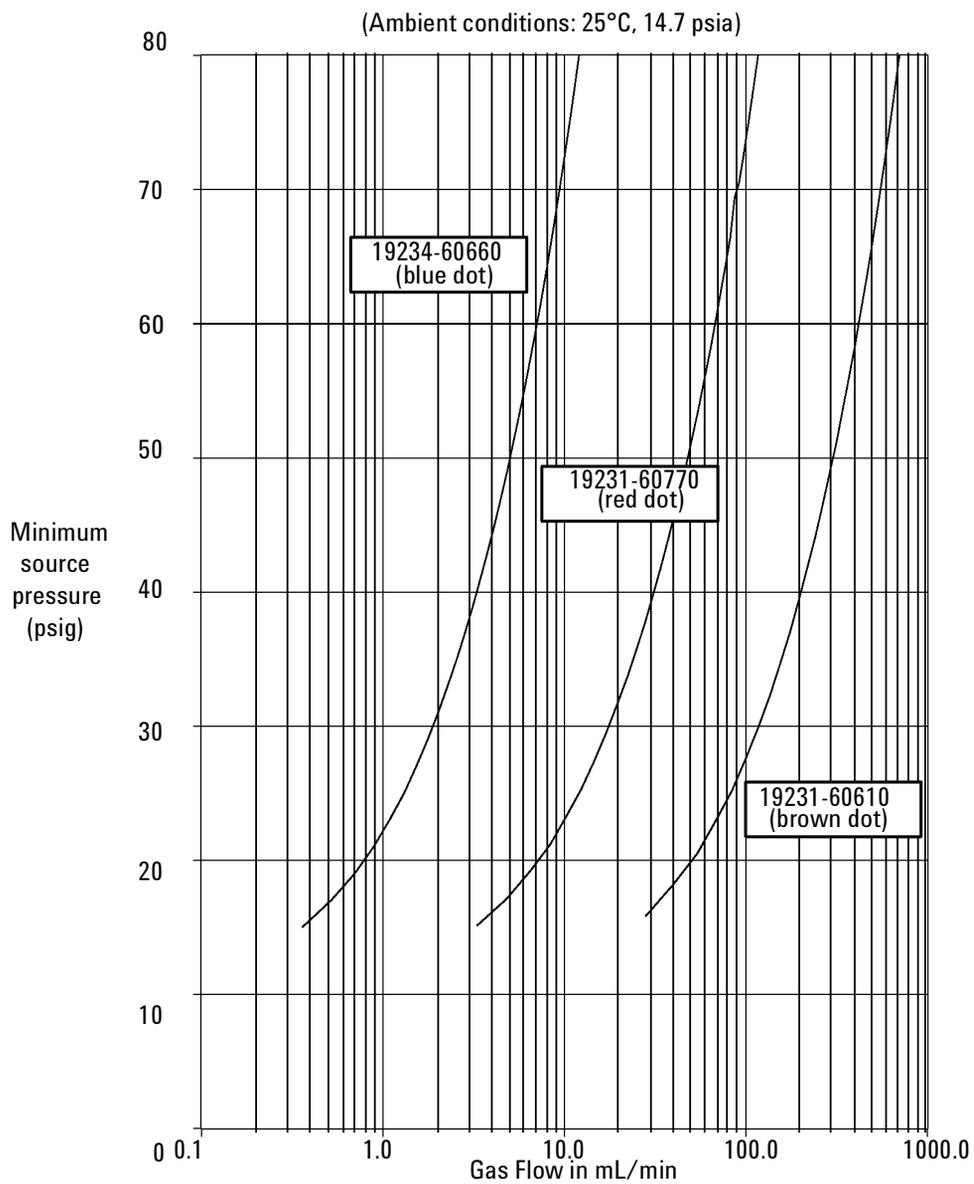
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### WARNING

When hydrogen is used, dangerously high flows are possible if insufficient flow resistance is provided downstream of the supply tube. Always use either the High (Blue Dot) or Medium (Red Dot) frit with hydrogen.

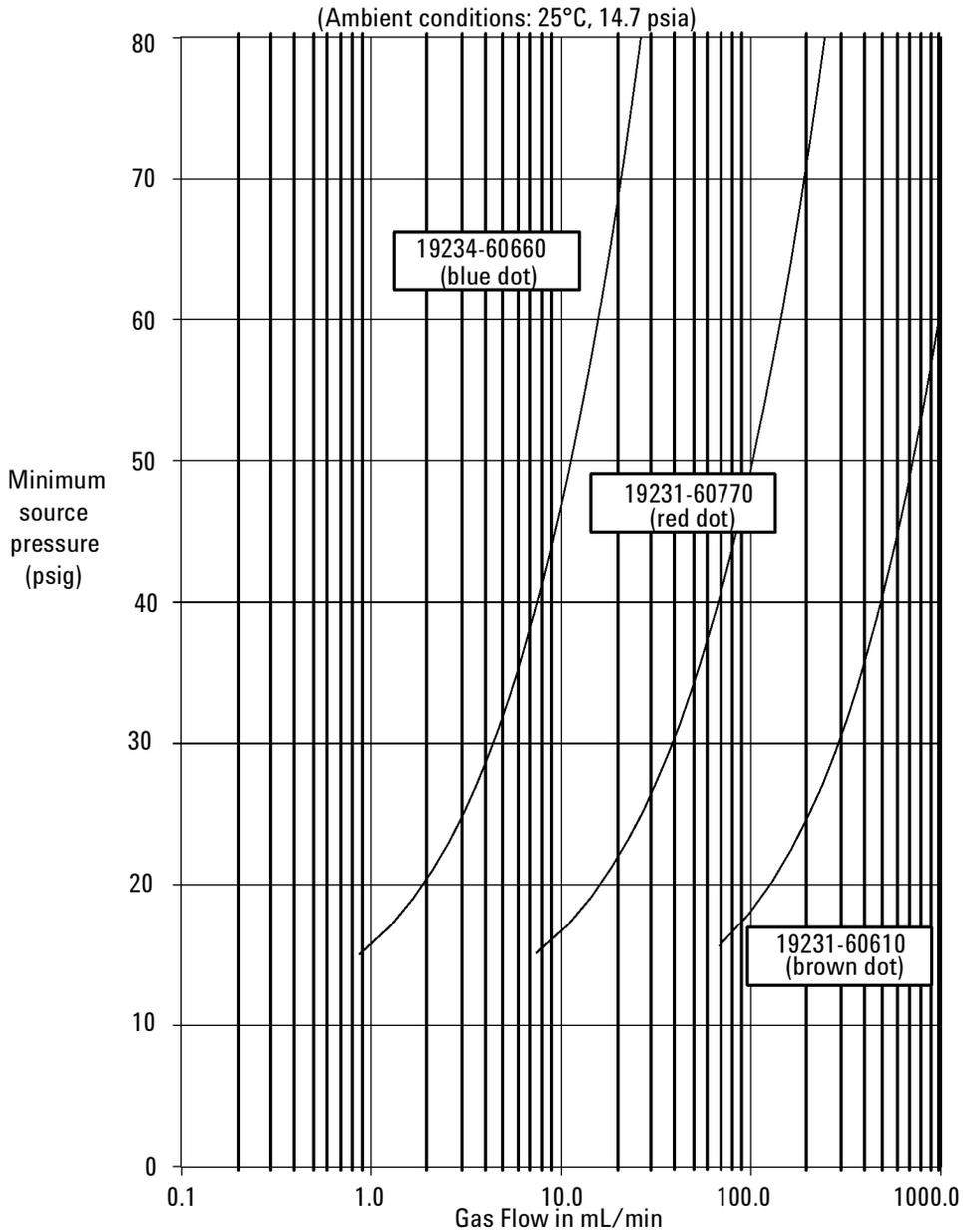
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## Changing the flow restrictors (optional)



**Figure 2. Pressure requirements for AUX EPC flow restrictors with air, nitrogen, or helium**

## Changing the flow restrictors (optional)

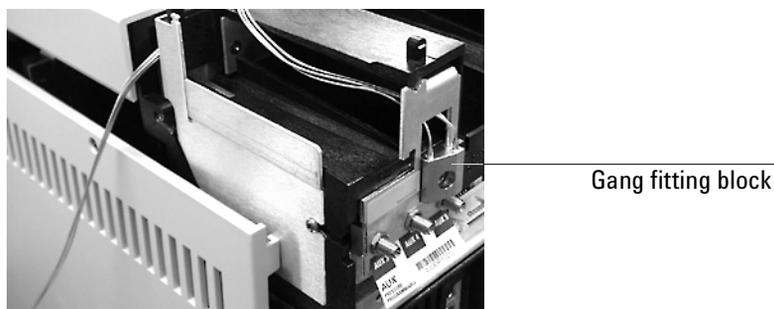


**Figure 3. Pressure requirements for AUX EPC flow restrictors with hydrogen**

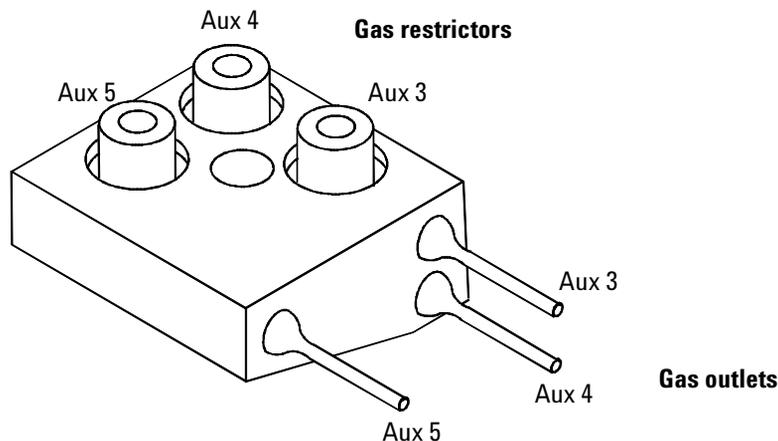
## Changing the flow restrictors (optional)

### Changing an auxiliary channel frit

1. Locate the block that connects the three gas outlet tubes for the auxiliary channels to the pneumatics module.



2. Remove the screw that holds the block to the pneumatics module. Pull the block free of the module and rotate it so that the frits are on top.



3. Pull the frit to be changed out of the block. Also remove the O-ring that seals it.
4. Place an O-ring on the new frit. Place the O-ring/frit combination in the block.
5. Reconnect the block to the pneumatics module. Tighten the screw firmly.





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