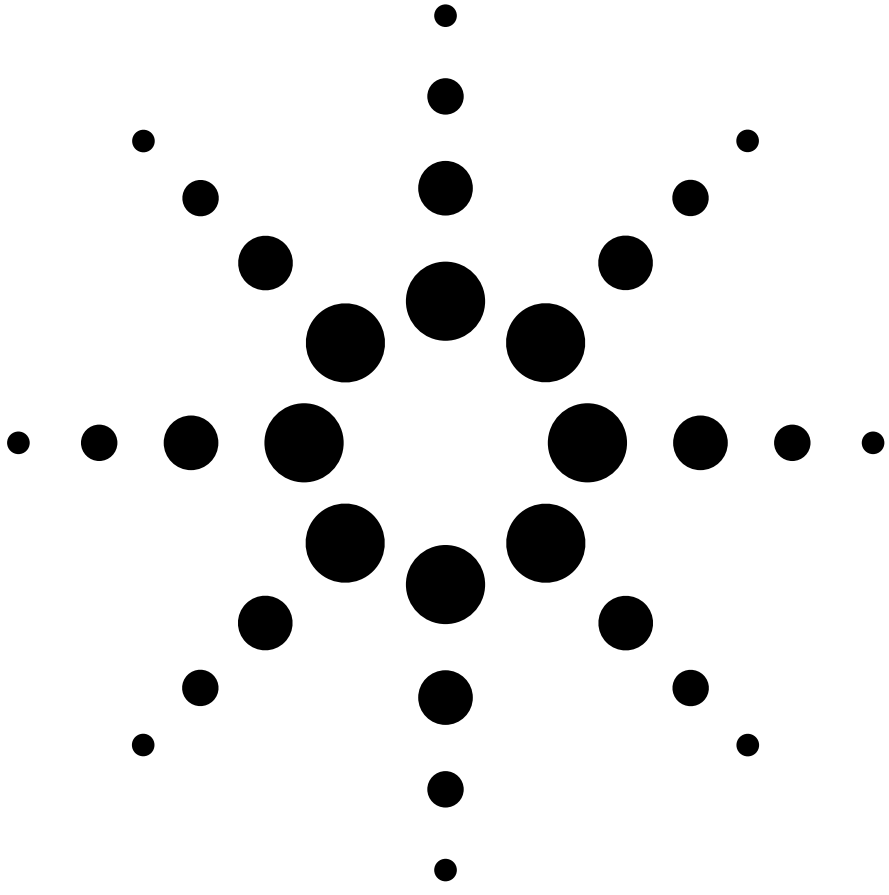


Installation Guide

Pneumatics Control Module for the Agilent 6890 GC
Accessory G2317A



Agilent Technologies

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Printed in USA

Safety Information

The 6890 Gas Chromatograph (GC) 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 6890 GC 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

Electromagnetic compatibility

This device complies with the requirements of CISPRII. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try one or more of the following measures:

1. Relocate the radio or television antenna.
2. Move the device away from the radio or television.
3. Plug the device into a different electrical outlet, so that the device and the radio or television are on separate electrical circuits.
4. Make sure that all peripheral devices are also certified.
5. Make sure that appropriate cables are used to connect the device to peripheral equipment.
6. Consult your equipment dealer, Agilent Technologies, or an experienced technician for assistance.
7. Changes or modifications not expressly approved by Agilent Technologies could void the user's authority to operate the equipment.

Recycling the Product

For recycling, send the product to:

Agilent Technologies, Inc.
2850 Centreville Road
Wilmington, DE 19808-1610

or

Agilent Technologies Deutschland GmbH
Hewlett-Packard Strasse 8
76337 Waldbronn
Germany

Sound Emission Certification for Federal Republic of Germany

Sound Pressure

Sound pressure Lp < 65 dB(A)

During normal operation
At the operator position
According to ISO 7779 (Type Test)

Schalldruckpegel

Schalldruckpegel LP < 65 dB(A)
Am Arbeitsplatz
Normaler Betrieb
Nach DIN 45635 T. 19 (Typprüfung)

Agilent Technologies, Inc.
2850 Centerville Road
Wilmington, DE 19808-1610
USA

Installation

Before you begin

The Pneumatics Control Module (PCM) provides one channel of flow or pressure control, replacing the standard electronic flow control module (ECM) for that channel. It does not need to be connected to any particular type of inlet.

The PCM can control gas flows and pressures for a number of applications including:

- Non-Agilent standard inlets.
- Any valve application where no inlet is required. For example, the PCM can provide flow or pressure to a column connected to a gas sampling valve. Other valving applications may involve providing auxiliary gas flow, especially when using packed columns.
- Sample preparation devices. The Agilent Headspace Sampler and the Agilent Purge and Trap often require a controlled source of purge gas.
- Catalyst tubes or other conversion devices, such as the nickel catalyst tube. These devices often require a controlled source of makeup or reagent gas.

Safety

Before proceeding, refer to the safety information on the inside front cover.

Parts List

Parts	Quantity
T-20 Torx screw M4 x M5	1
Wrist strap, disposable 4-LG 1-W	1
ROM Set	1
Puematics Control Module assembly	1

Required Tools

T-20 Torx screwdriver

Installation Steps

- Preparing the GC
- Installing the PCM
- Replacing the ROMs (if necessary)
- Restoring the GC to operating condition
- Calibrating the PCM Interface

System Requirements

The Pneumatics Control Module has the following software requirement:

- The 6890 GC ChemStation (if used) revision code must be A.04.02 or later. To check the ChemStation software revision, select the About... item in the Help menu.

Customizing the PCM Dialog

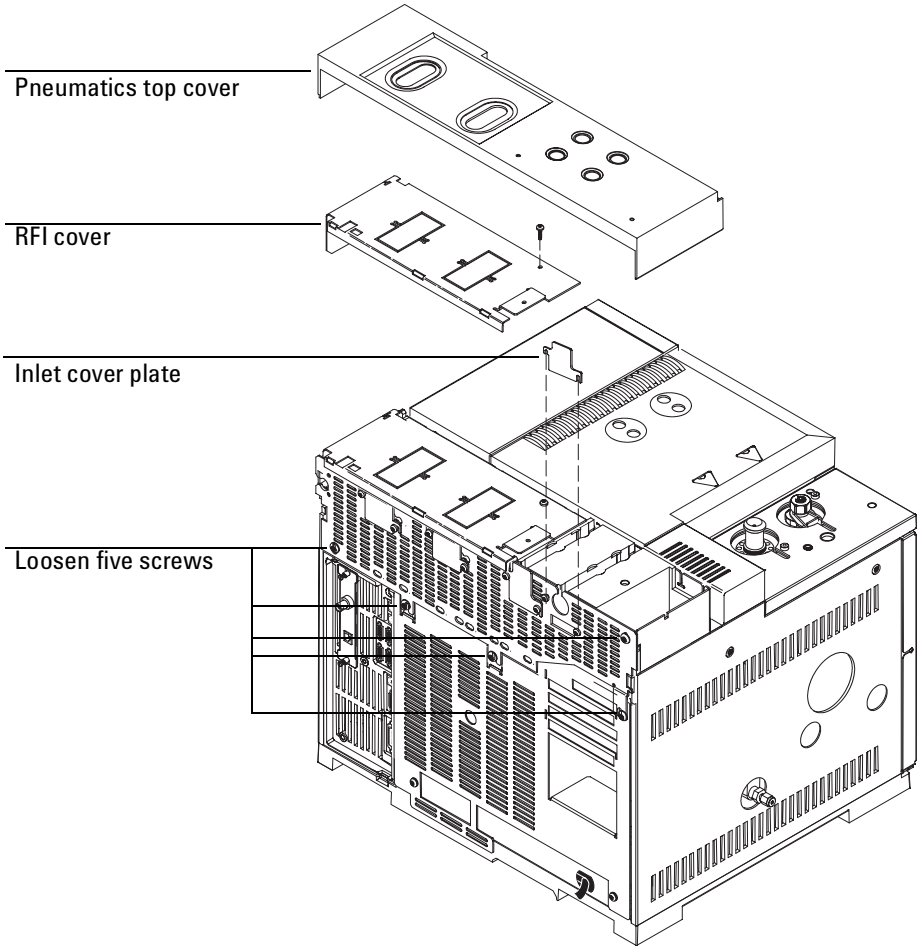
Agilent Technologies channel partners can customize the 6890 GC dialog for the PCM module for a specific application with the 6890 OIM Interface Program (G2316-65110).

Preparing the GC

WARNING Hazardous voltages are present in the mainframe when the GC power cord is plugged in. Avoid a potentially dangerous shock hazard by unplugging the power cord before removing the side panels.

Caution Prevent electrostatic voltages from damaging the GC by using precautions such as an ESD wrist strap.

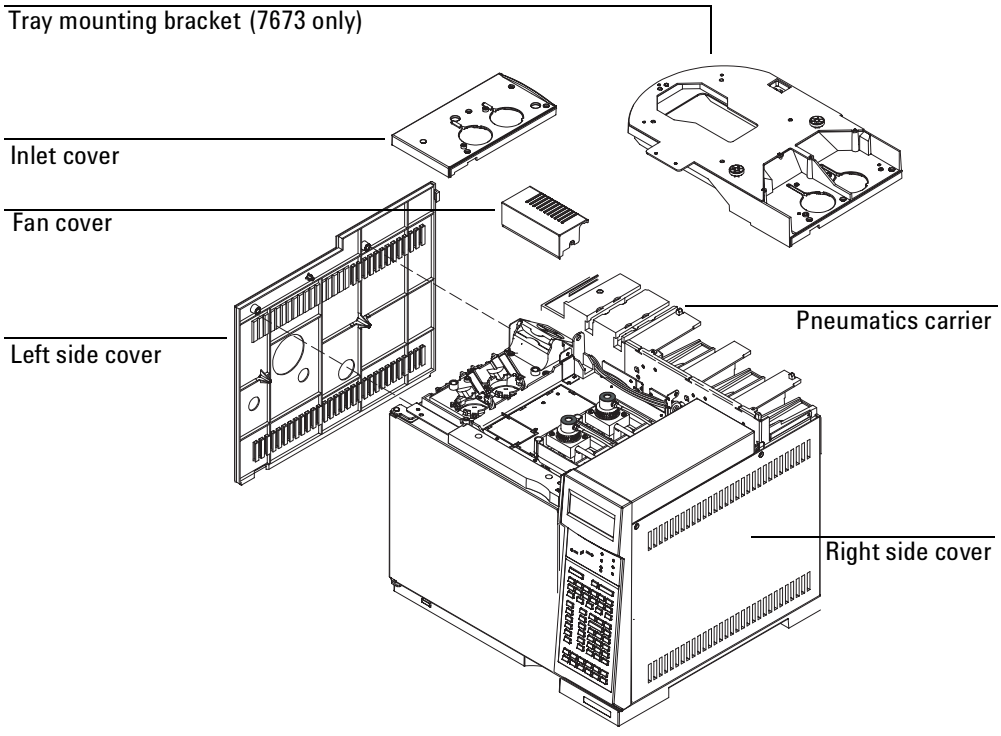
1. Turn off the GC and unplug the power cord. Allow time for all heated zones to cool and then turn off supply gases at their sources.
2. If present, remove the injector(s).
3. Remove columns and hardware from the column oven.


Pneumatics top cover
RFI cover
Inlet cover plate
Loosen five screws

4. Raise the detector cover (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. Push the pin to the left to release the cover. Raise the right side of the cover and remove it.
   - **Current 6890 models.** Tilt the cover to the left and remove it.
5. Remove the left side cover by loosening the two screws with a T-20 Torx screwdriver, sliding the cover to the rear of the GC, and lifting off. Repeat for the right side cover.
6. Remove the fan cover.
   a. Loosen the screw on the right side of the fan cover.
   b. Slide the cover to the right to disengage it from the left mounting post.
   c. Lift the cover up and off.
7. If installed, remove the G2614 tray by loosening the three retaining screws.
8. Remove the inlet cover. Loosen the five captive screws with a T-20 Torx screwdriver until you are able to lift off the cover.

   or

   Remove the tray mounting bracket by loosening the six screws at the top of the bracket and the two screws at the side of the GC and lifting it off.
9. If you will be installing an inlet, remove the inlet cover plate from the front or back position by loosening the two screws with a T-20 Torx screwdriver and sliding the plate up and off.


Tray mounting bracket (7673 only)
Inlet cover
Fan cover
Left side cover
Pneumatics carrier
Right side cover

Installing the PCM

Caution Board components can be damaged by static electricity; use a properly grounded static control wrist strap when installing the flow module.

1. From the back of the GC, locate the pneumatics carrier.
2. If you are installing a PCM in the back position and there is an inlet installed in the front position, unplug the ribbon cable from the installed PCM control board. Unlock the connector by pushing the tabs away from the center.

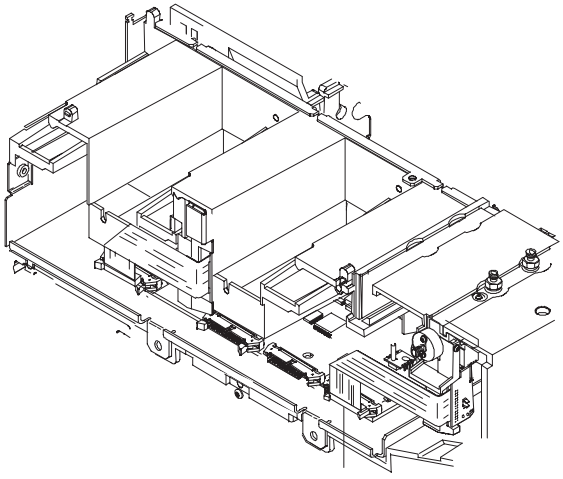
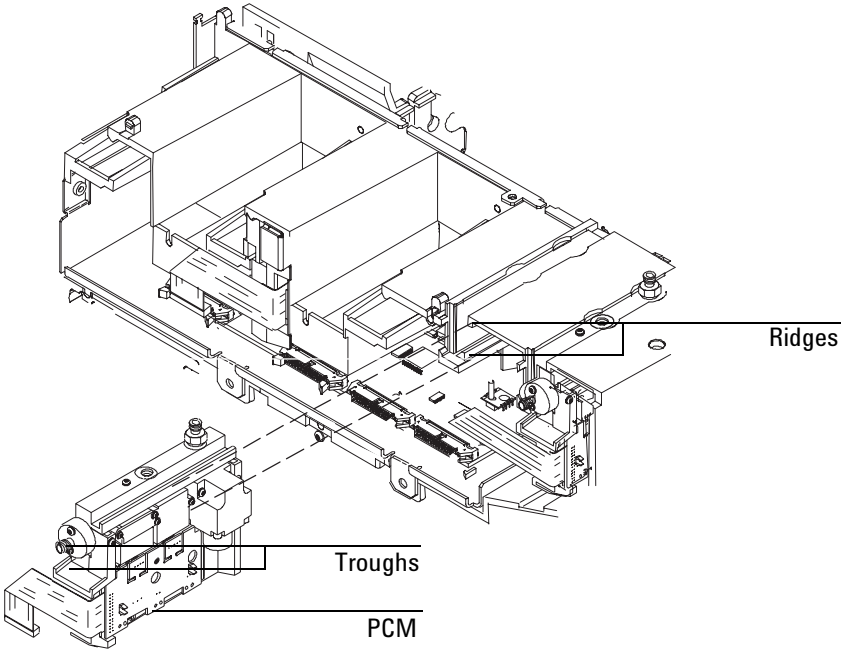
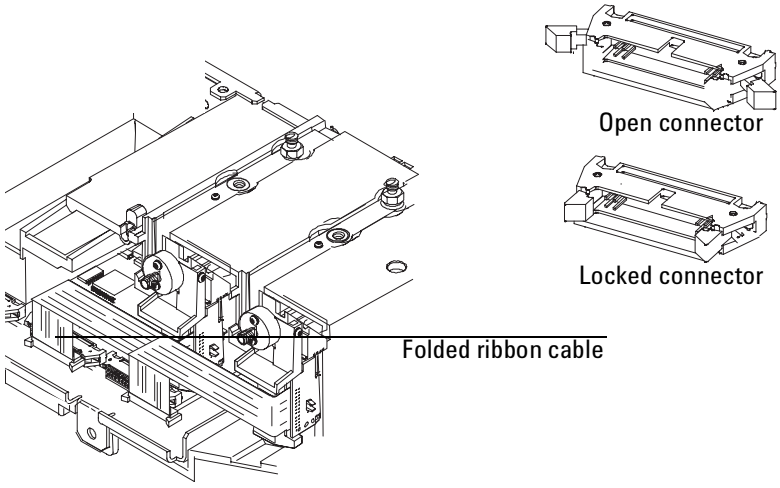


Figure 1. Removing the ribbon cable and mounting screw

3. Locate the ridges in the pneumatics carrier and the corresponding troughs in the Pressure Control Module. Slide the PCM into the carrier, lining up the ridges and troughs.



4. Fold the new PCM ribbon cable as shown and plug into the appropriate connector. Push until the plug is fimly in place. Lock the connector by moving the tabs to the center of the connector until they click into place. Replug the ribbon cable for the original module into the front connector, if necessary.



5. Install and tighten the screw at the top of the PCM as shown. Tighten with a T-20 Torx screwdriver until snug.

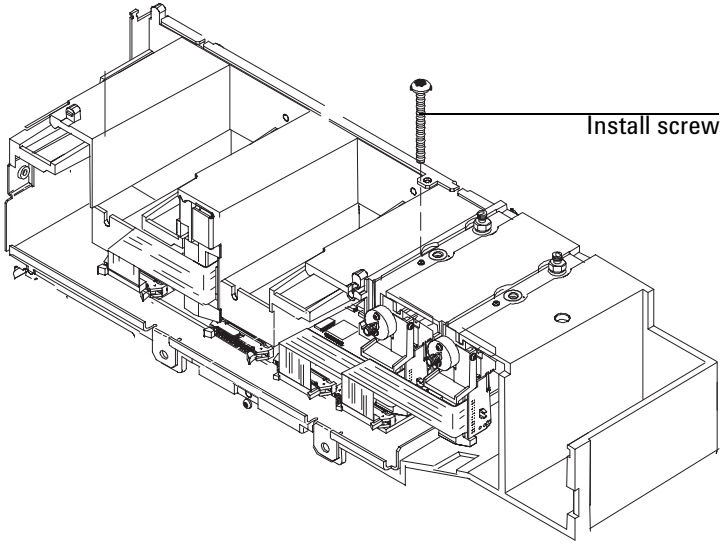
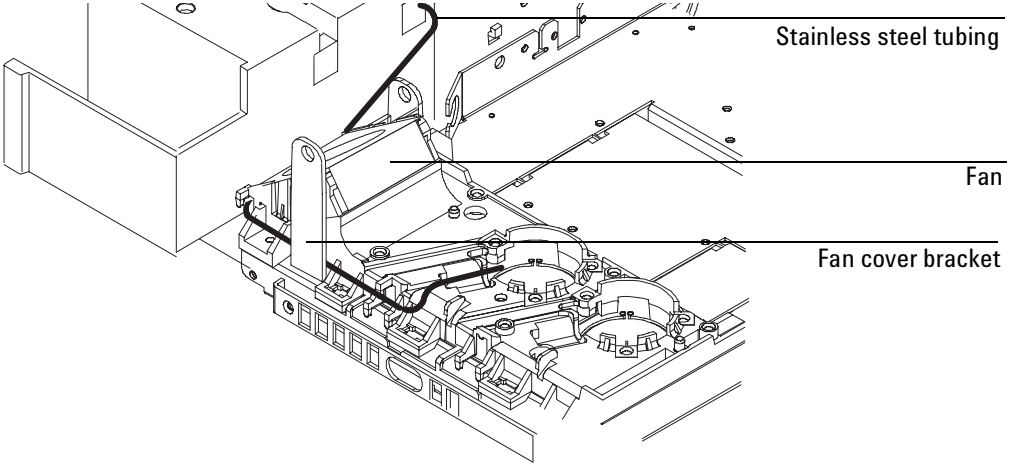


Figure 2. Installing the PCM

6. Route the stainless steel tubing from the inlet to the flow manifold as shown. Route the tubing along the side of the inlet chassis to the fan bracket. Route tubing from the front inlet outside the bracket and tubing from the back inlet inside the bracket. Route the tubing behind the fan to the flow manifold.



Replace the ROMs

This step depends on which 6890 model and which firmware you have.

- **6890A, serial number less than US00005700.** These instruments are firmware-incompatible with the Pneumatics Control Module, unless the ROMs have been replaced as part of some other upgrade.

  Determine the revision number of the ROMs on the main board as described below. If the ROMs in this kit are a later revision (higher number), replace the ROMs on the main board with those from the kit.

- **6890A, serial number US00005700 or greater.** These instruments are firmware-compatible with the Pneumatics Control Module.

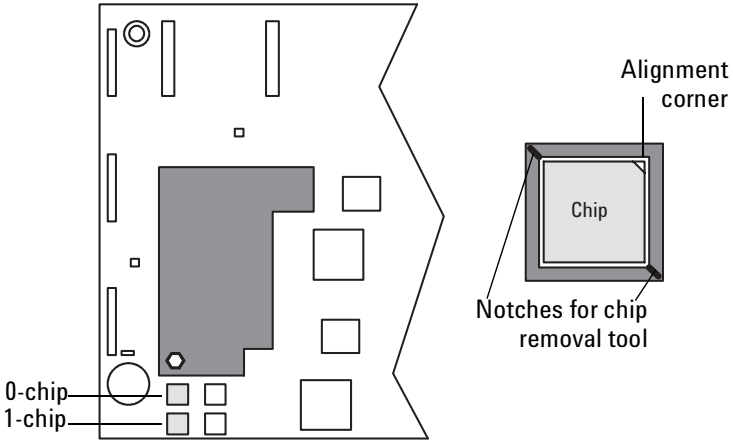
  Determine the revision number of the ROMs on the main board as described below. If the ROMs in this kit are a later revision (higher number), replace the ROMs on the main board with those from the kit.

- **6890N.** These instruments do not use ROMs. All firmware versions support the Pneumatics Control Module.

To determine the firmware revision number

On the 6890 keyboard, press [Status], then [Clear].

To change the ROMs, if necessary



Examine the right side of the instrument. On the main board, just below the large cutout on the left, are four chip sockets. The two on the left contain the operating programs (firmware) that run the GC.

These two chips must be replaced with new ones that include software for the Pneumatics Control Module.

Caution This procedure requires precautions against electrostatic discharge. Use the grounded wrist strap (part no. 9300-1408) and connect it to a bare metal surface of the GC. Failure to heed this caution may result in damage to the instrument or to the Pneumatics Control Module assembly.

1. Use a chip removal tool with a gentle rocking/pulling motion to remove the chip in the top left socket.
2. Repeat with the bottom left chip and socket.

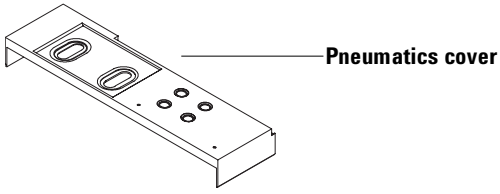
3. The new chips are identified by a part number, a version number, and a suffix of either ".0" or ".1". They are referred to as the 0-chip and the 1-chip respectively.

Caution Before inserting a ROM, make sure that all of the prongs are straight. Use a small flat-blade screwdriver or needle-nose pliers to straighten prongs.

4. Note that each chip has one diagonal corner. This corner must be at the top right when the chip is inserted in its socket.
5. Install the 0-chip in the top left socket with the diagonal corner at the top right. Check that all of the prongs are aligned with their slots, then push the chip into the socket until it is firmly seated and level.
6. Similarly, install the 1-chip in the bottom left socket.

Restoring the GC to operating condition

1. Reinstall the left side cover and tighten the two screws.
2. Replace the fan cover.
3. Reinstall the detector cover.
4. Reinstall the upper rear panel and tighten the screws.
5. Reinstall the RFI cover.



6. Replace the pneumatics cover.
7. Plug in the power cord.

Calibrating the PCM interface

The interface's flow module contains a pressure sensor that must be zeroed after it is installed on the GC. Calibration ensures an accurate interface pressure display.

Caution Do not connect the carrier gas to the flow module until you have zeroed the interface's pressure sensor.

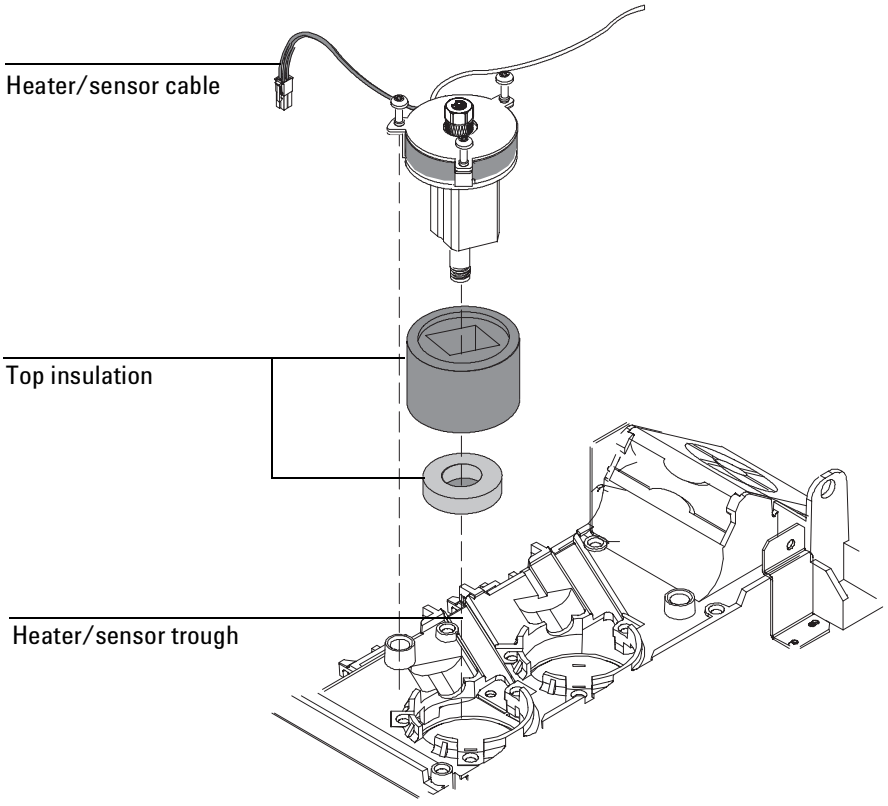
1. If the gas supply is connected to the GC, turn off the supply at the source, then disconnect the supply line from the PCM inlet fitting.
2. Turn on the GC and wait 15 minutes to allow it to reach thermal equilibrium.
3. When the GC has reached thermal equilibrium, press `[Options]`, scroll to Calibration and press `[Enter]`.
4. Scroll to Front inlet or Back inlet and press `[Enter]`.
5. Scroll to Pressure Zero.
6. Press `[On]` to zero the pressure sensor.
7. Turn off the GC.
8. Plumb the carrier gas to the flow module.
9. Turn on the GC.
10. Check for leaks at the fittings.
11. Configure your GC's column and carrier gas.

Installing a Heated Inlet with PCM Control

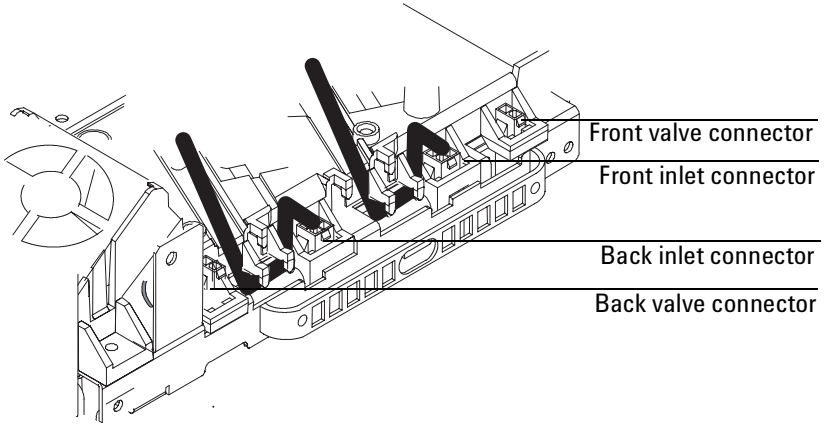
The inlet hardware in the illustration below is intended to illustrate the general installation procedure for a heated inlet. Your hardware and procedure may be different. Refer to your inlet's installation document for details.

1. Place the insulation in the inlet cavity in the front or back position.

2. Place the inlet in the insulated cavity so that the three screws line up with the holes in the oven top and the heater/sensor cable sits in the trough in the inlet chassis. Tighten each screw once with the T-20 Torx screwdriver until the inlet is properly aligned. Tighten each screw again until snug.

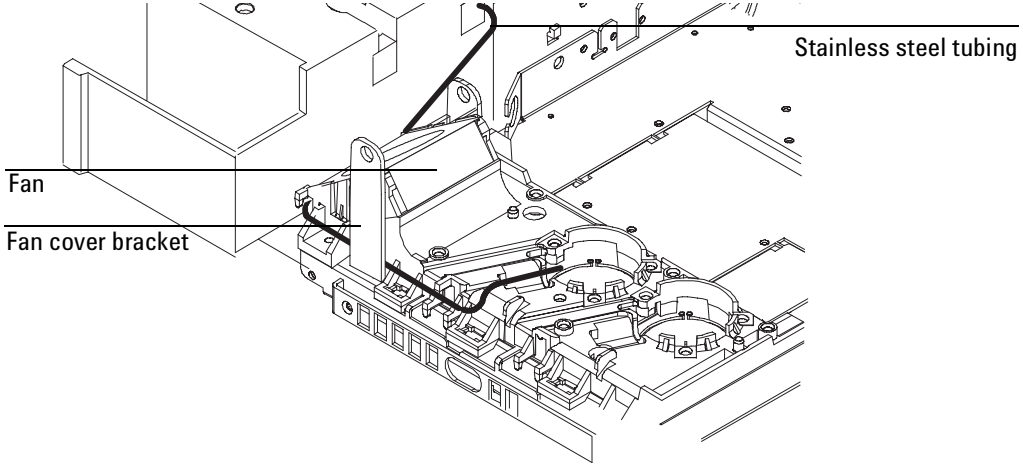


3. From the left side of the GC, locate the heater/sensor wire and its corresponding connector. Tuck the heater/sensor wire underneath the clip at the side of the GC and connect it to the nearest square connector. If the inlet uses compressed air cooling, connect the compressed air actuating valve to the appropriate valve driver connector.



= Heater/sensor cable routing

4. Route the stainless steel tubing from the inlet to the flow manifold as shown. Route the tubing along the side of the inlet chassis to the the fan bracket. Route tubing from the front inlet outside the bracket and tubing from the back inlet inside the bracket. Route the tubing behind the fan to the flow manifold.





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