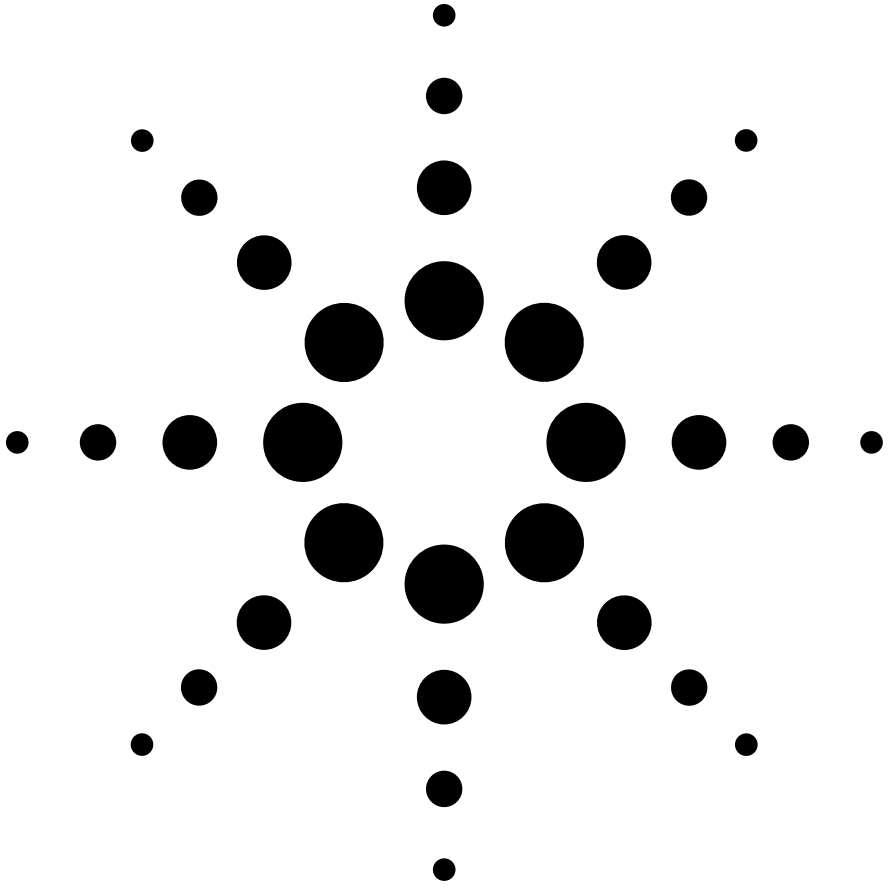

# Installation Guide

## Thermal Conductivity Detector on a 6850 GC
## Accessory G2623A

Agilent Technologies

Part number G2623-90108
Replaces G2623-90107

First Edition, JAN 2001
Second Edition, Feb 2007

Replaces Part No. G2623-90100 Operating and Service Manual.



Printed in USA

**Safety Information**

The Agilent Technologies Thermal Conductivity Detector 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 G2623 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.

**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.

**Sound Emission Certification for Federal Republic of Germany**

Sound pressure Lp < 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)

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

# Installing a Thermal Conductivity Detector on a 6850 Gas Chromatograph

These instructions are divided into two parts:

- **Part 1** to prepare the Electronic Pressure Control ("EPC") module for later installation into the Agilent 6850 Gas Chromatograph ("GC")
- **Part 2** to perform the actual Accessory installation into the GC

## Part 1: Preparation of the TCD EPC module

Locate the following item found in your Accessory kit:

| Covers Kit G2630-60080 consisting of: | Qty. |
|---|---|
| Front EPC cover | 1 |
| Back EPC cover | 1 |
| Hex nuts, 7/16-inch | 3 |
| Grommet, 7/16-inch | 1 |
| Screw, M4 x12 mm, pan head | 3 |


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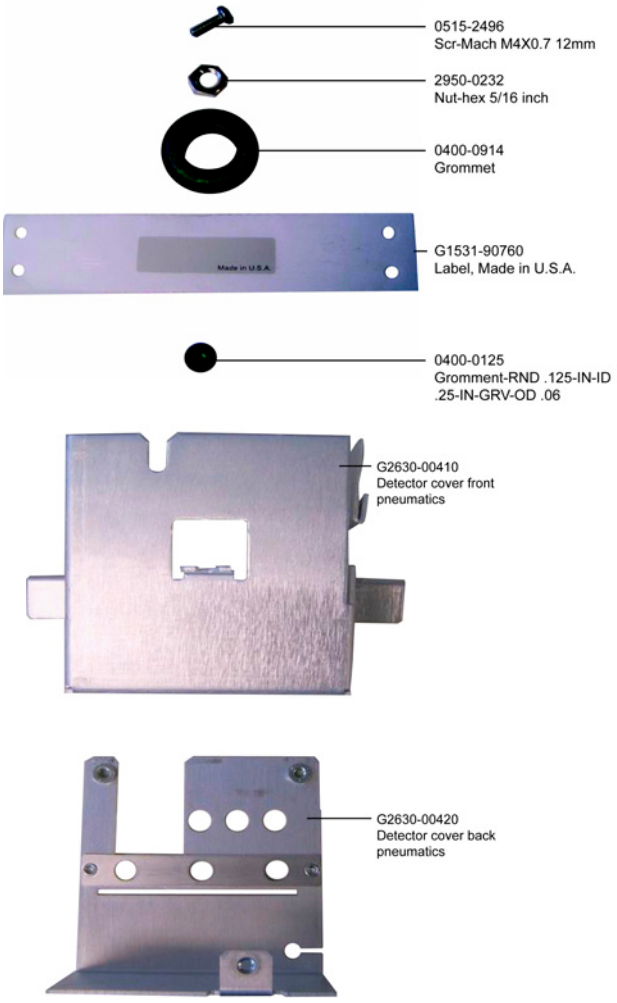
Agilent Part No. G2623-90108




**Caution** Some of these assemblies contain printed circuit boards so standard ESD precautions must be followed: use a static control wrist strap (supplied) connected to a suitable ground in handling the assemblies.

The following tools are required for this assembly:

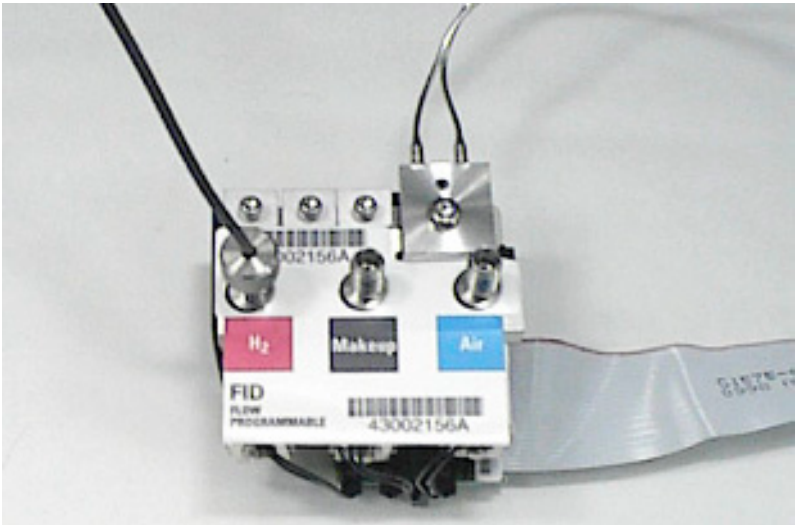
## Tools Required

Torx™ T-20 driver

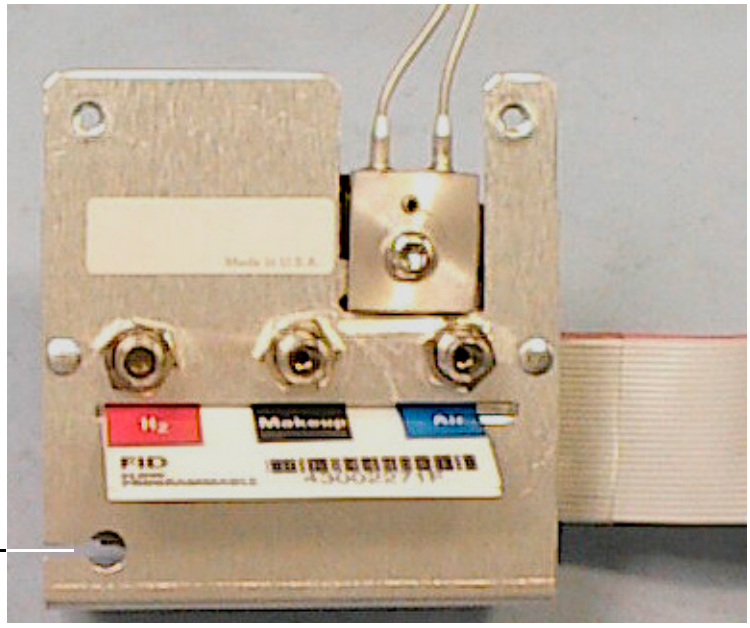
7/16-inch open end wrench or nut driver

## Procedure

1. Prepare a suitable clean, dry, static-free work area.
2. Place the detector system assembly such that its EPC module is centered in your work area with its tubes oriented away from you and its ribbon cable extending to the right.

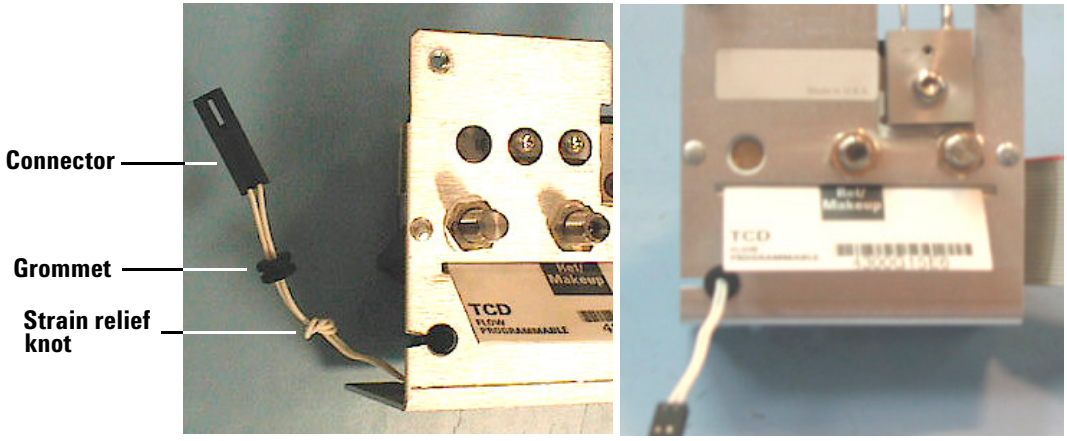



3. Remove dust caps from the gas connection fittings.
4. Install the back cover onto the three gas fittings making sure the label passes through slot provided. Loosely secure the cover using 7/16-inch hex nuts, one onto each fitting.



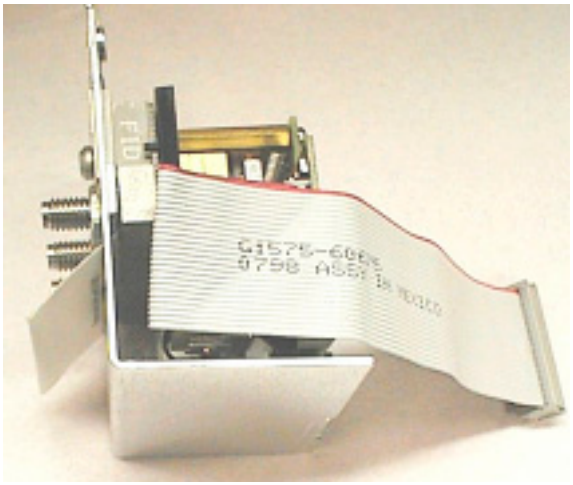

## Install the TCD Swiching Valve cable

1. Locate the TCD Switching Valve cable extending from the EPC module and tie a knot in it as a strain relief approximately 30 - 35 mm (1.2 - 1.4 in) from the connector.
2. Locate the supplied small black grommet, cut it vertically on one side, and fit it around the cable wires such that the grommet is located between the connector and your tied knot.
3. Install the grommet and cable into the hole provided in the cover. A small flat-blade screwdriver or similar tool may be useful in properly seating the grommet into its hole.




## Prepare the EPC module cable

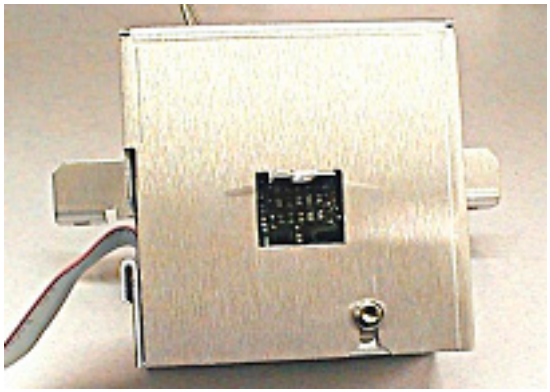
1. Reorient the module such that the ribbon cable is upwards and gas fittings are to the left.
2. Fold the cable first to the left and gently crease it at the PC board to maintain the direction. Then fold the cable back on itself to the right and make a gentle crease such that the second fold is just inside the just-installed back cover.

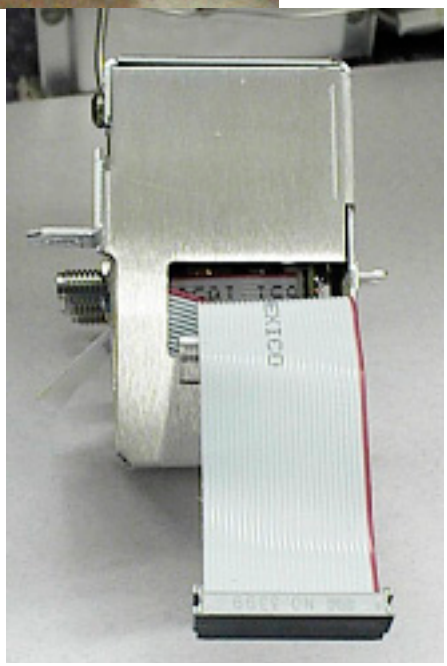


3. Next, fold and gently crease the cable back on itself again, but at an angle such that it now extends at 90-degrees away from you (in the direction of tubing from the module).

If correctly done, the cable and its folds will be entirely within the body of the module, and the free end of the cable and its connector will extend from the module in the direction of the tubing.

4. Fit the front cover onto the previously-installed back cover, securing it loosely using three screws provided, two in the gas fittings side and one in the PC board side. Make sure the ribbon cable and its connector exit through the slot provided.

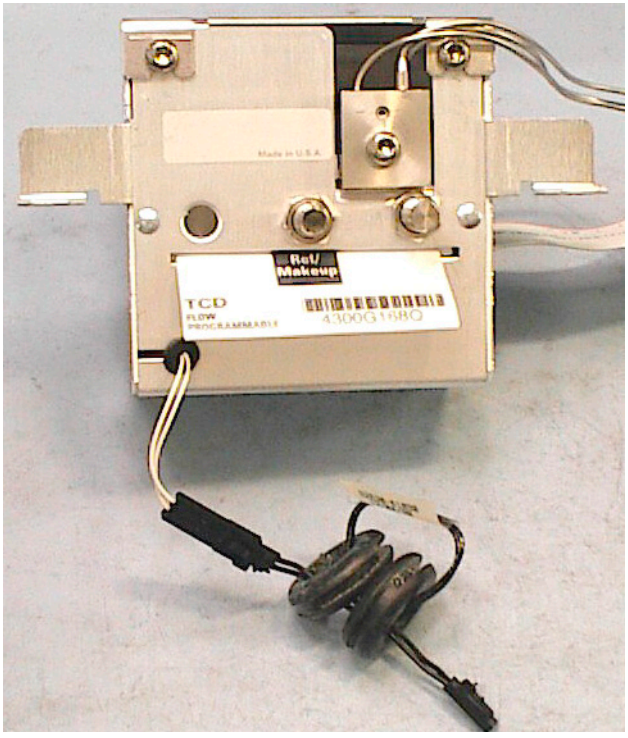




5. Finally, firmly secure all cover screws and hex nuts on the gas connection fittings. Then replace protective dust caps onto the gas connection fittings to maintain cleanliness.

## Add the TCD Switching Valve extender cable

1. Locate the TCD Switching Valve extender cable and two large grommets.
2. Connect the extender cable to the TCD Switching Valve cable from the assembled EPC module making sure connectors lock together.
3. Loop the free end of the combined cable through the grommets to hold them in place.



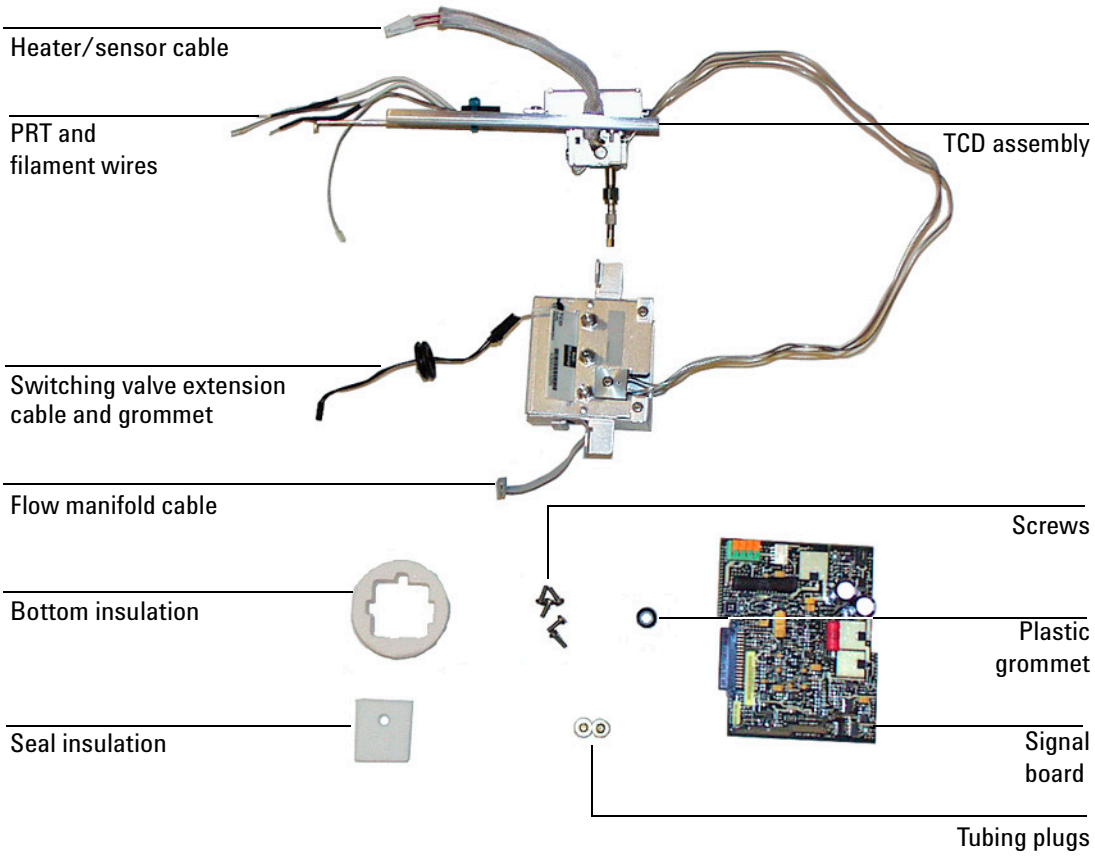

This completes EPC module preparation for this Accessory.

# Part 2: Installation of the TCD Accessory

This kit contains:

| Kit G2623-64000 | Qty. |
|---|---|
| Thermal conductivity detector system | 1 |
| Performance evaluation sample kit | 1 |
| Bottom insulation | 1 |
| Seal insulation | 1 |
| Plastic grommet | 1 |
| Screw, M4 x 12 mm, pan head | 5 |
| Wrist strap, disposable, large | 1 |
| Installation sheet (this document) | 1 |

The TCD assembly is a factory-assembled, tested, and calibrated unit. Disassembly of the unit is not required for installation.




## Tools Required

Torx™ T-20 driver

Flat blade screwdriver

Open end wrenches

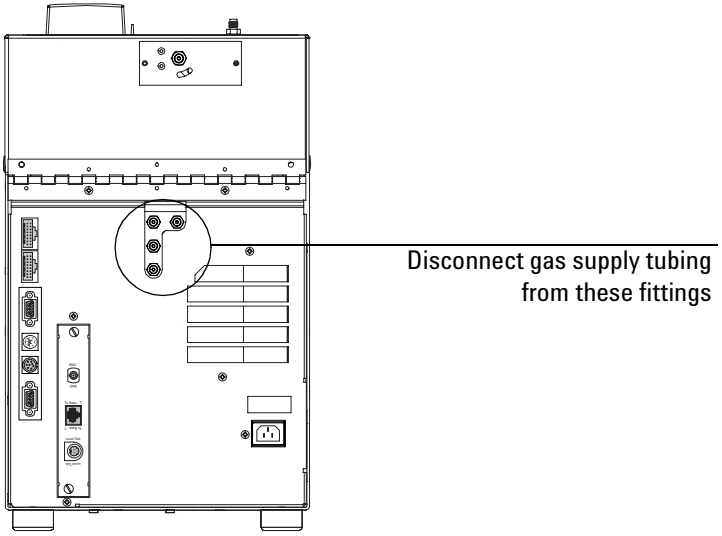
## Safety Information

Before continuing, read the safety information on your *Agilent 6850 Gas Chromatograph User Information* CD-ROM.

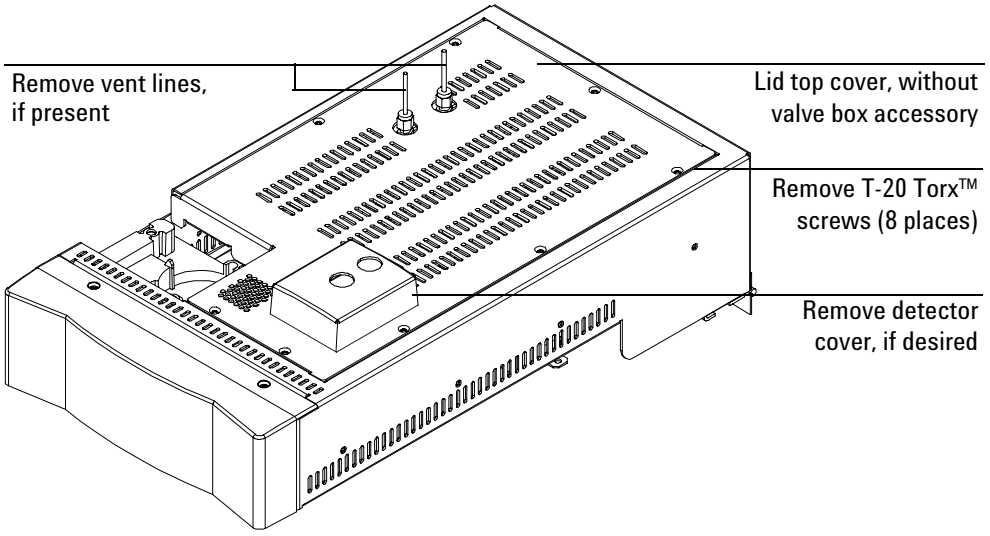
## Prepare for Installation

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

1. Open the lid. If a column is installed, disconnect it at the detector end. Remove the nut warmer, insulation, and capillary adapter, if present. Close the lid.
2. Turn all gases off at their sources. Disconnect the carrier and detector gas tubing from the back panel of the instrument.



## Remove the Lid Top Cover



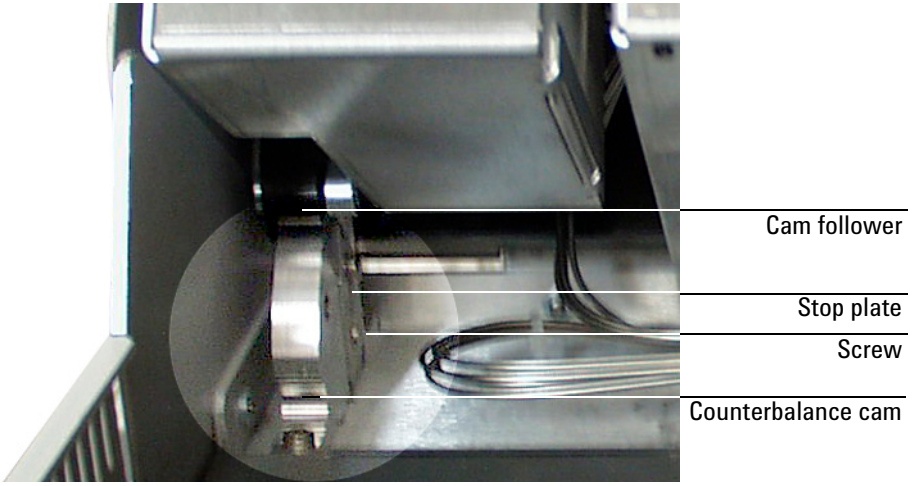

Remove the lid top cover.

## Disconnect the Heater/Sensor Cable

1. Trace the detector heater/sensor cable to the wiring harness near the injection port cooling fan.
2. Disconnect the cable.

## Raise the Lid to the Service Position

1. Open the lid. Locate the counterbalance cam in the left rear corner under the lid. Loosen the screw on the right side of the cam. This allows the stop plate to drop down.

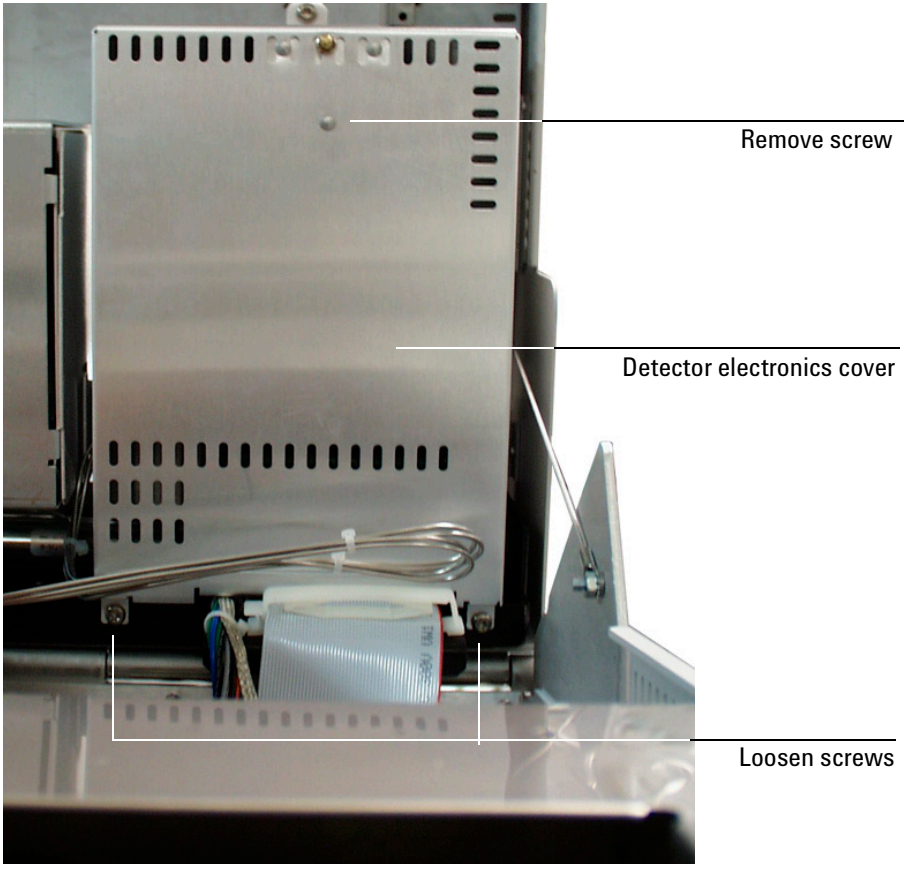



2. Raise the lid until it is stopped by the safety cable.
3. Raise the stop plate and tighten the screw to lock the lid in the upright service position.

**WARNING** The lid is heavy. Always lock the lid when it is in the service position.

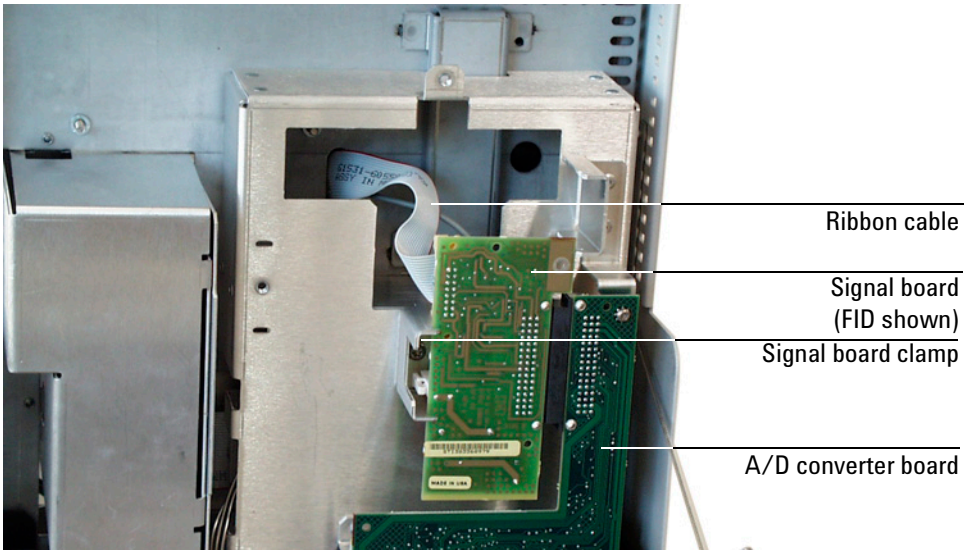
## Remove the Detector Electronics Cover

1. Loosen the two bottom screws on the detector electronics cover.




2. Remove the top screw on the cover.
3. Lift and remove the detector electronics cover.

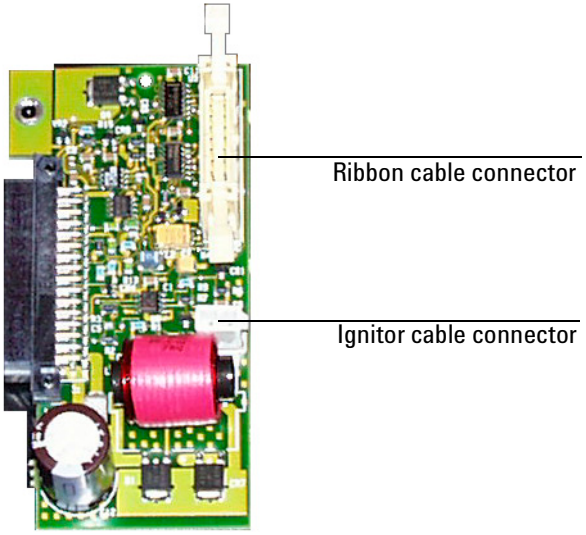
4. Loosen the signal board clamp.



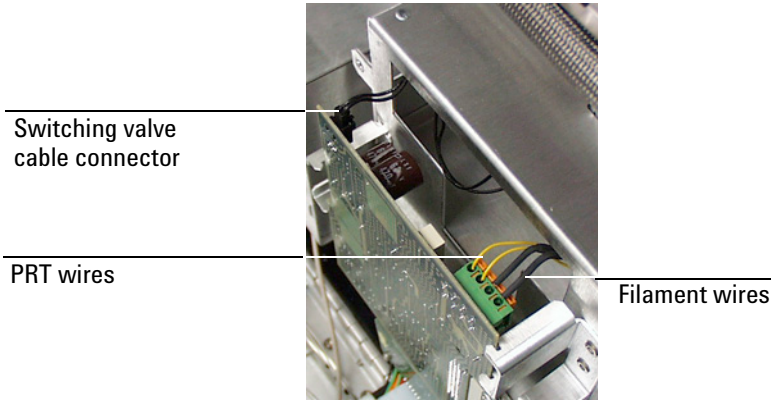

5. Unplug the signal board from the A/D converter board.
6. Disconnect the wiring from the signal board.

   **FID** – Disconnect the ribbon cable. Unplug the ignitor cable. Pass both cables through the hole to the top side of the lid.

   The ribbon cable connector will not pass through the rubber grommet in the hole. Use a small screwdriver to push the grommet to the top of the lid; the cables will now fit through the hole.



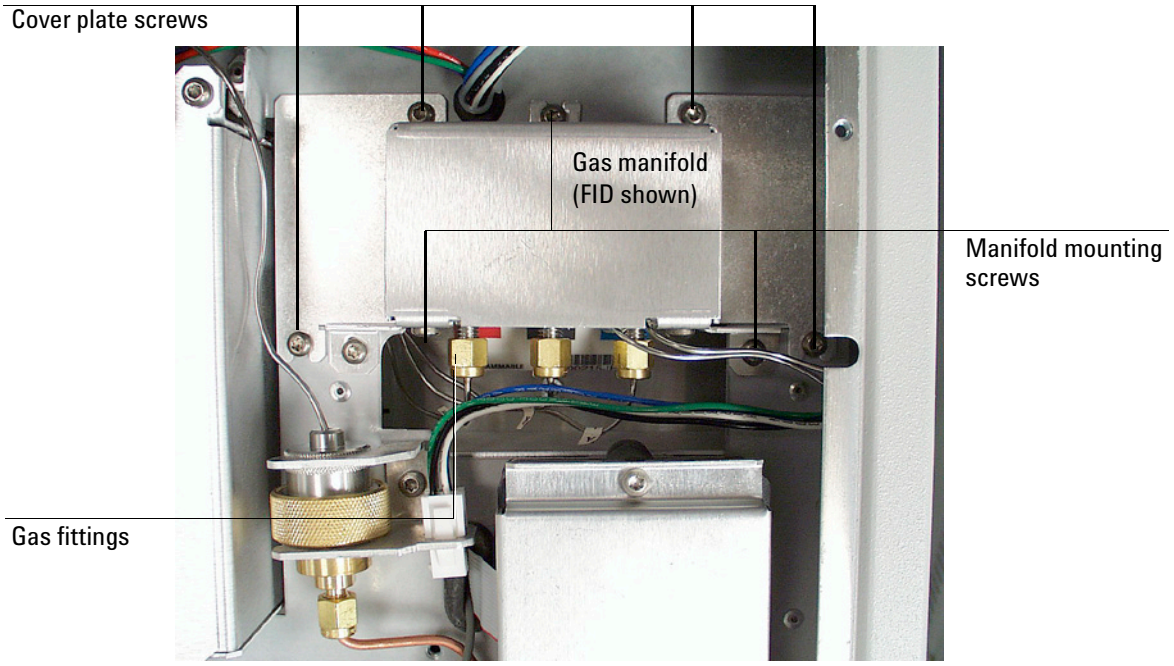

**TCD** – Unplug the two-wire switching valve cable at the connector. To release the PRT and filament wires, press on the orange tabs. Pass the disconnected cables/wires through the hole to the top side of the lid.




7. Lower the stop plate on the lid cam. Pull the lid forward until the cam follower rests on the curved surface of the cam. Leave the stop plate in the "down" position.
8. Close the lid.

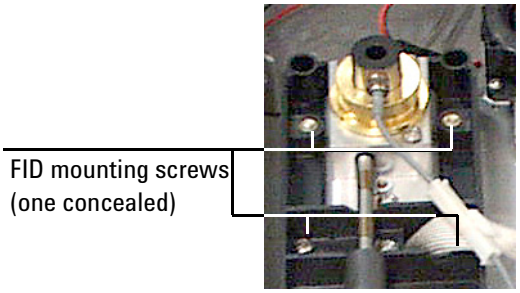
## Remove the Existing Detector and Flow Manifold

1. On the top of the lid, loosen the connector cover plate and remove the plates.

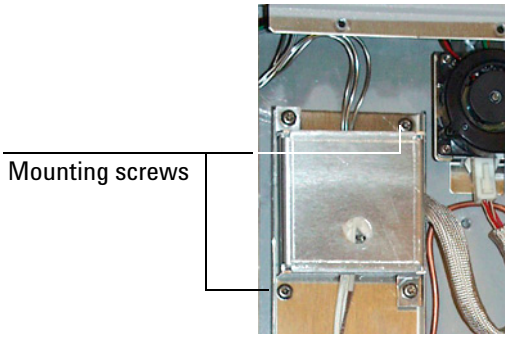



2. Disconnect the gas fittings. The figure above shows the FID manifold; the TCD manifold is similar but has only one gas connection.
3. Trace the ribbon cable from the flow manifold and disconnect it from the harness.
4. Remove the three manifold mounting screws.
5. Remove the screws holding the detector assembly in place.

**FID** – Remove four mounting screws.




**TCD** – Remove two mounting screws.




6. Lift the detector and flow manifold out of the lid as a unit.

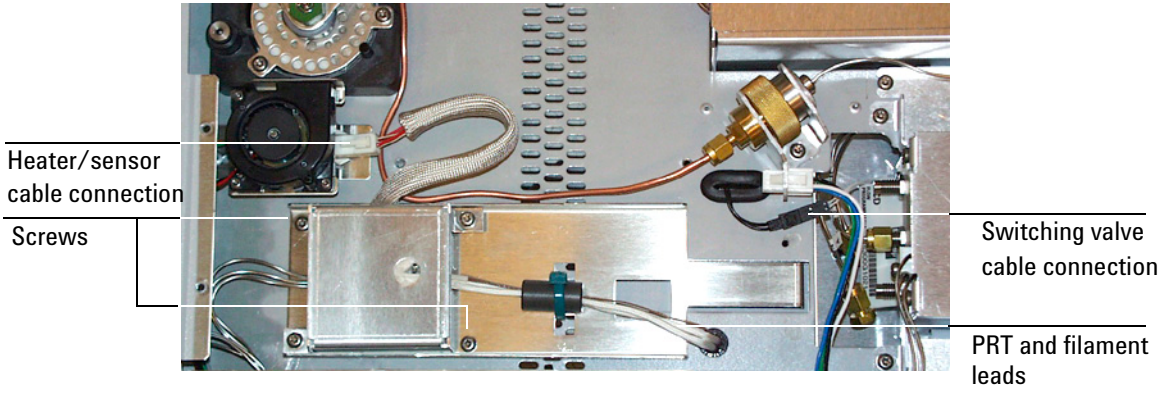
**WARNING** The fibrous insulation material used in the Agilent 6850 can cause irritation to the skin, eyes, and mucous membranes. Always wear gloves when working with the insulation. If the insulation is flaky/crumbly, wear protective eyewear and a respirator.

7. Remove any insulation that may be in the hole under the detector.

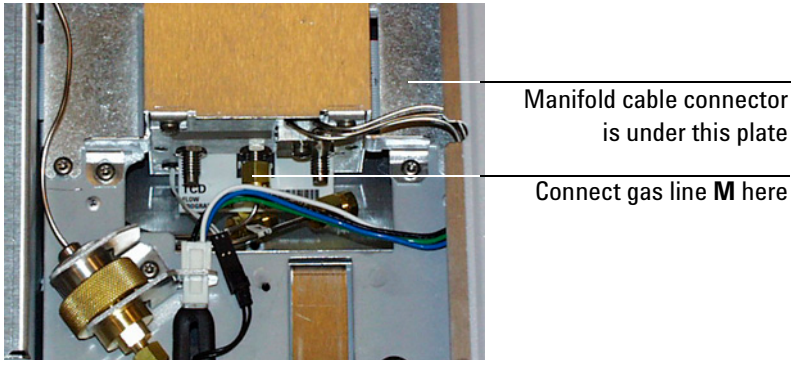
## Install the Thermal Conductivity Detector and Flow Manifold

1. Place the bottom insulation in the detector hole. Align the flat sides parallel to the sides of the lid.
2. Slide the seal insulation onto the bottom of the detector. Align it to cover the detector bottom.

3. Align the thermal conductivity detector as shown and lower it into place. Position the flow manifold. Check that no wiring or tubing is trapped under either assembly.




4. Secure the detector assembly to the lid with two screws.
5. Secure the manifold to the lid with three screws.




6. Plug the manifold ribbon cable into its connector under the connector cover plate.
7. Install the two connector cover plates.
8. Connect the gas supply line labeled **M** to the center fitting on the flow manifold.

**WARNING** The gas line labelled **H** is plumbed to the hydrogen supply. Be sure to plug this line to prevent accidental release of hydrogen gas into the instrument.

9. The **A** and **H** gas lines are not used with the TC detector. If they are not already plugged, plug them with the brass plugs and push them down into the space under the manifold fittings. Avoid kinking the tubing.

## Connect the Heater/Sensor Cable

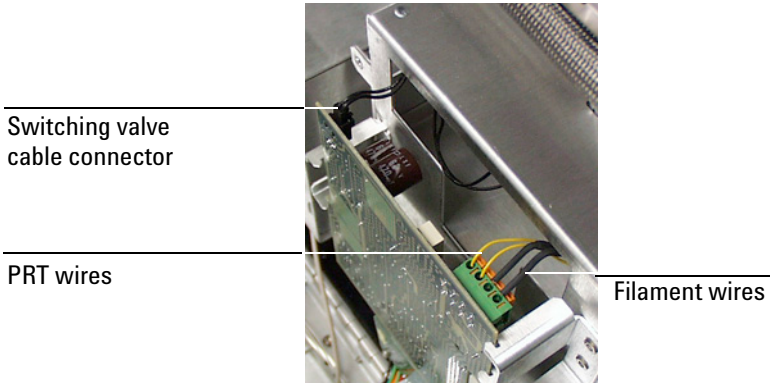
Connect the detector heater/sensor cable to the wiring harness near the injection port cooling fan.

## Install the Switching Valve Extension Cable and Grommet

1. Locate the oblong hole for the switching valve extension cable. If there is a grommet in the hole, remove it.
2. Pass the end of the extension cable through the oblong hole into the signal board space. Use a small flat blade screwdriver to install the grommet in the oblong hole.

## Connect the other Leads and the Signal Board

1. Raise the lid to the upright service position and lock it in place by raising the stop plate and tightening the screw.
2. Locate the round hole for the PRT and filament leads. If there is a grommet in the hole, remove it and install the one from the kit. Pass the two PRT leads and the two filament leads through the grommet into the signal board space.
3. Plug the signal board into the A/D converter board and secure it with the signal board clamp.
4. Connect the PRT and filament leads to the signal board by pressing the orange tabs and inserting the appropriate wires. Polarity does not matter, but the wires must go to the correct pair of connectors.
   - **PRT leads** have light-colored insulation
   - **Filament leads** have thick, black insulation




**Caution** Double check the PRT and filament connections before proceeding. An incorrect connection can damage the detector when power is restored.

5. Plug the switching valve extension cable into the signal board.
6. Install the detector electronics cover and tighten all three screws.
7. Lower the stop plate on the lid cam. Pull the lid forward until the cam follower rests on the curved surface of the cam. Raise the stop plate behind the cam follower and tighten the screw.
8. Close the lid.
9. Install the lid top cover.

## Finishing Up

1. If not already present, make an external T-connection between the carrier gas supply and the Reference/Makeup gas fitting on the back of the instrument.
2. Install the capillary adapter, if used.
3. Restore the column connection.
4. Restore carrier gas to the instrument.
5. Restore power.
6. Apply your normal operating pressures. Leak-check the manifold, back panel, and column fittings.

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