

**Installation Guide**  
**Thermal Conductivity Detector**  
**Accessory 19232E**



**Agilent Technologies**

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### **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 19232 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  $L_p < 68$  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 the Thermal Conductivity Detector Accessory 19232E

## Preparing the GC

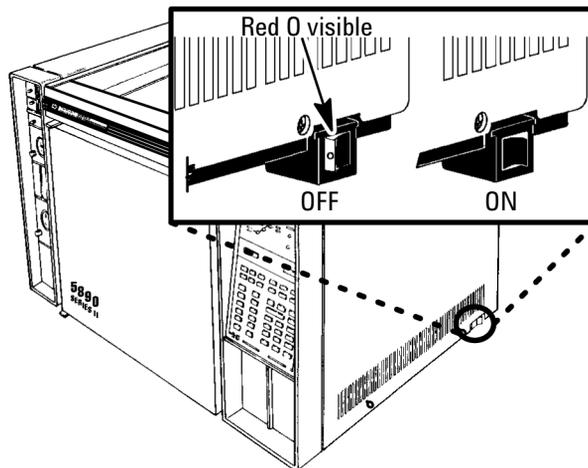
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### WARNING

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Hazardous voltages are present in the instrument whenever the power cord is connected. Avoid a potentially dangerous shock hazard by disconnecting the power cord before working on the instrument.

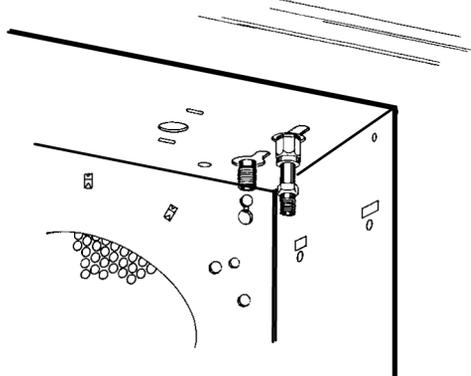
1. Set the main power line switch to the off position.



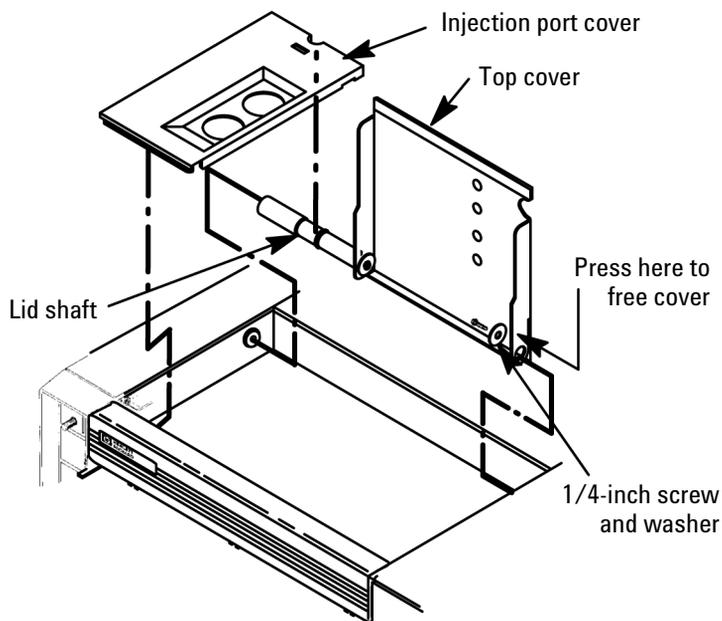
2. Disconnect the power cable from its receptacle.
3. Allow time for the oven and heated zones to cool.
4. When the heated zones are cool, turn off all gas supplies at the source.

Installing the Thermal Conductivity Detector Accessory 19232E  
**Preparing the GC**

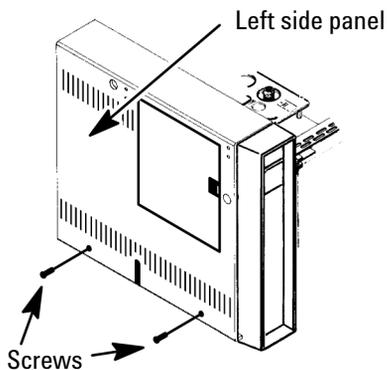
5. At the bottom of the inlet or detector to be removed, inside the column oven, remove the column and hardware associated with the inlet or detector (liner, column/liner nuts, ferrules, makeup gas adapter, etc.).



6. Remove the injection port cover by grasping its back edge and lifting it upward. If an autosampler is installed, the injection port cover will not be present.



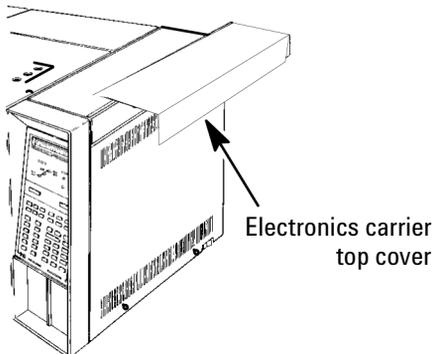
7. If an autosampler is installed on the instrument, it will be necessary to remove it and its mounting bracket to allow removal of the left side cover.
  - a. Remove the autosampler tray from its mounting bracket by simultaneously lifting and turning the two tray locks that hold it in position, then sliding the tray away from the instrument.
  - b. Lift the autosampler tray from its mounting bracket and set it aside.
  - c. Remove the autosampler bracket by removing the six screws securing it to the instrument.
8. Remove the two screws securing the left side panel along its bottom edge.



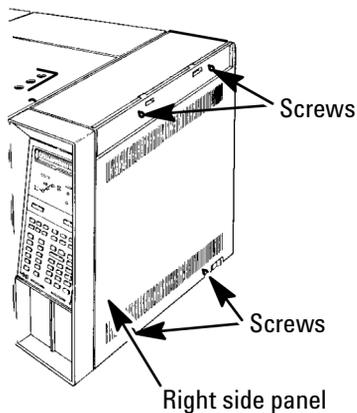
9. Slide the left side panel towards the rear of the instrument and lift.

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**Preparing the GC**

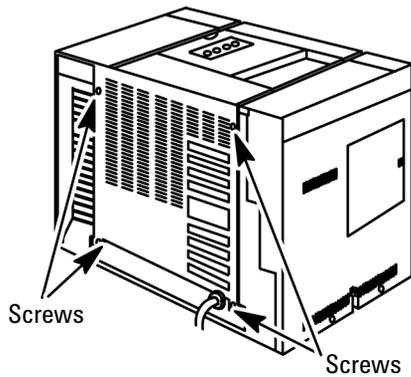
10. Remove the electronics carrier top cover by grasping it at the rear and lifting upwards until its catch releases, then pulling it towards the rear of the instrument.



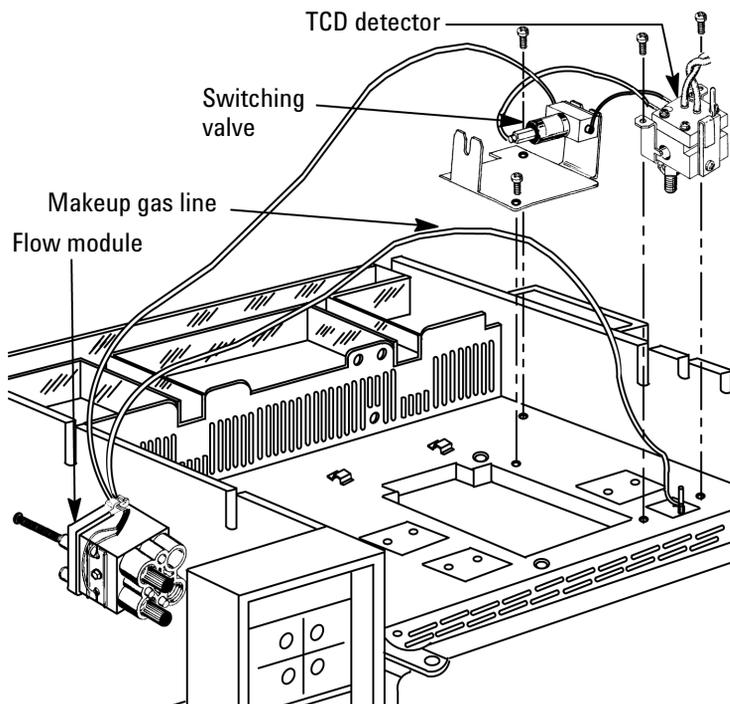
11. Remove the right side panel by removing four screws: two each along its top and bottom edges.



12. Remove the back cover of the instrument by removing four screws and sliding the cover off the rear of the instrument.



## Installing the Detector and Board



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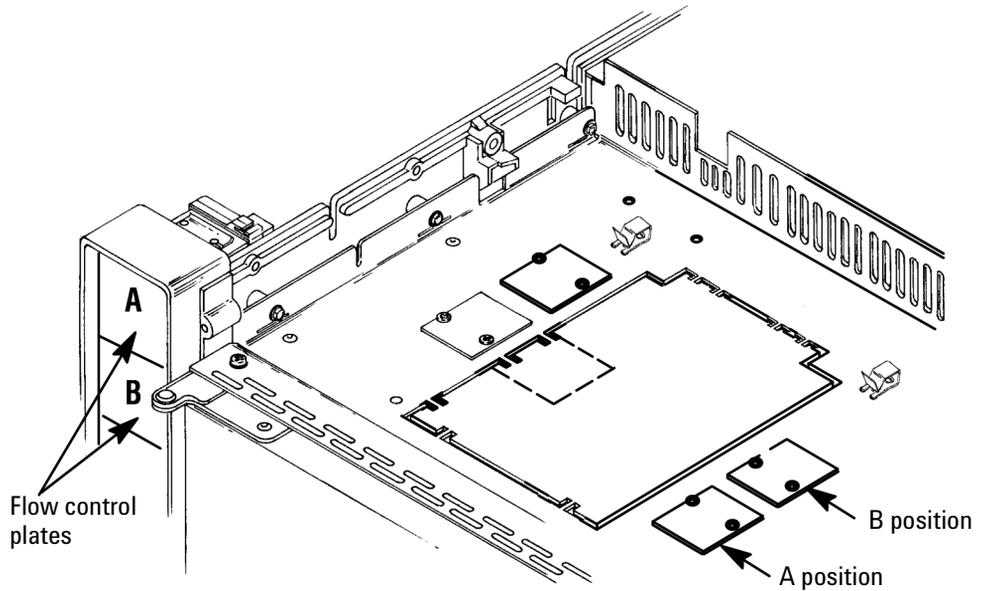
### Caution

The insulation on the GC is made of refractory ceramic fibers (RCF). Ventilate your work area. Wear long sleeves, gloves, safety glasses, and a disposable dust/mist respirator. Dispose of insulation in a sealed plastic bag.

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1. If present, remove the cover plate from the detector mounting location and the insulation below it.
2. Remove the flow-control label plate in the detector A or B location. The plate is glued in place and is removed by pushing it firmly through

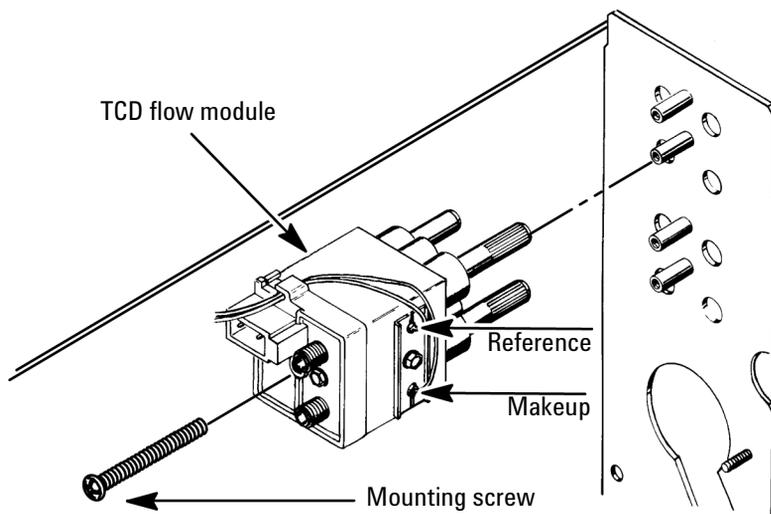
openings in the back of the flow panel to get it started, then pulling it free.



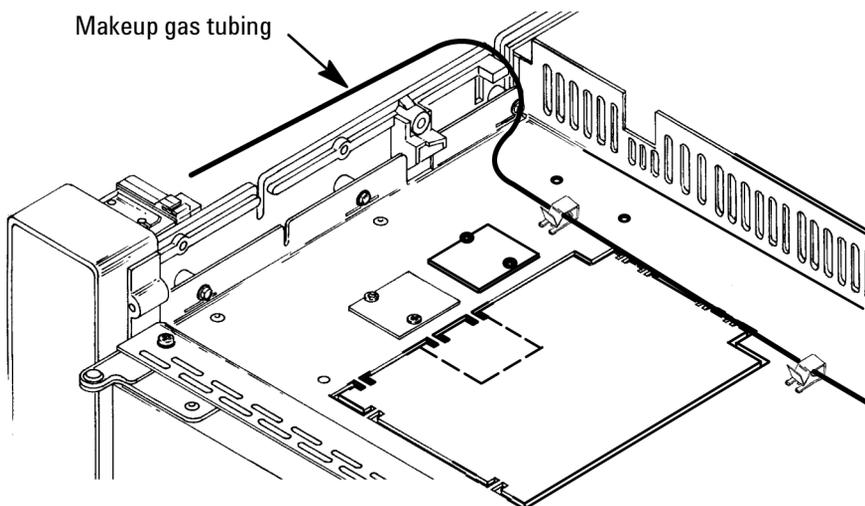
3. Place the provided self-adhesive TCD flow plate in the space where flow-control components for the detector are to be installed.
4. There are two mounting studs on the back of the main flow panel for installing the detector flow module. Place the flow module assembly on

Installing the Thermal Conductivity Detector Accessory 19232E  
**Installing the Detector and Board**

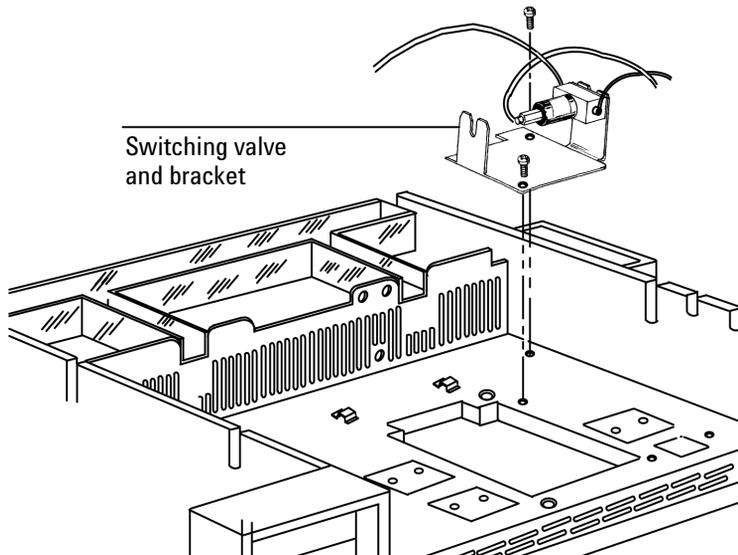
the studs. Secure it with an M4, 1-3/4 inch screw through the center hole of the flow module.



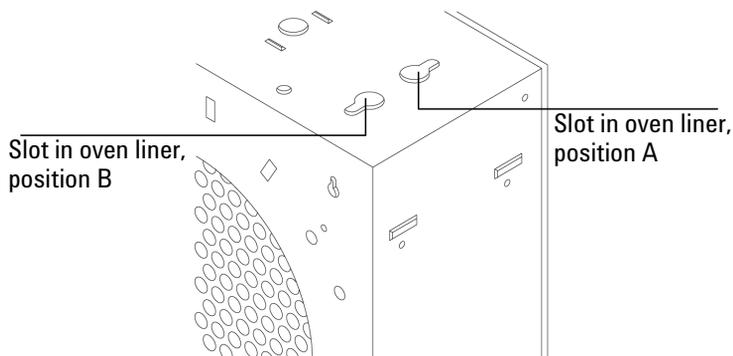
5. Route the makeup gas tubing from the flow module across the top of the oven to the detector area. Use the metal tube retaining clips located near the rear of the oven to hold the tubing in place.



6. Install the TCD switching valve and bracket immediately to the rear of the detector mounting area and secure with two M4 screws.

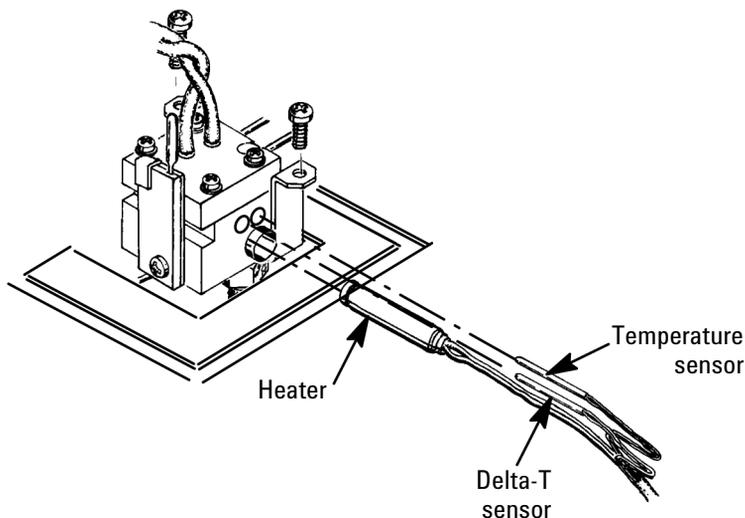


7. Insert the makeup gas tube through the hole where the detector is to be mounted and position the tubing in the slot located in the oven ceiling liner.



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**Installing the Detector and Board**

8. Remove the plastic covers from the sensors and insert the heater and sensor cartridges into the detector block. Install the second sensor (Delta-T) into the block.



9. Install the detector through the top of the oven and secure with two M4 screws.

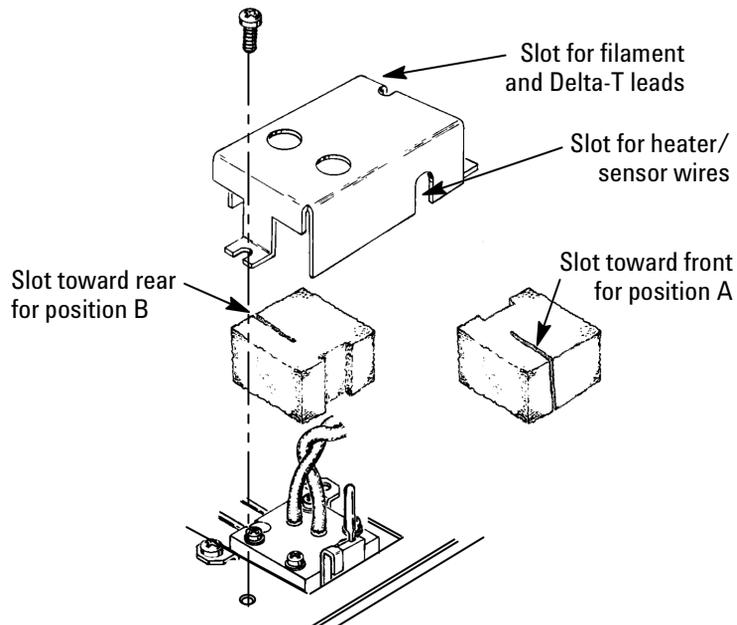
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**WARNING**

The insulation on the GC is made of refractory ceramic fibers (RCF). Ventilate your work area. Wear long sleeves, gloves, safety glasses, and a disposable dust/mist respirator. Dispose of insulation in a sealed plastic bag.

10. Use the insulation removed (tear apart as needed) to fill in the area around the detector.

11. Place the top insulation on the detector and align the slot in the insulation as shown below.



12. Install the thermal cover and route the filament leads, Delta-T sensor leads, and heater/sensor wires through the appropriate slots in the cover. Secure the cover with two M4 screws.

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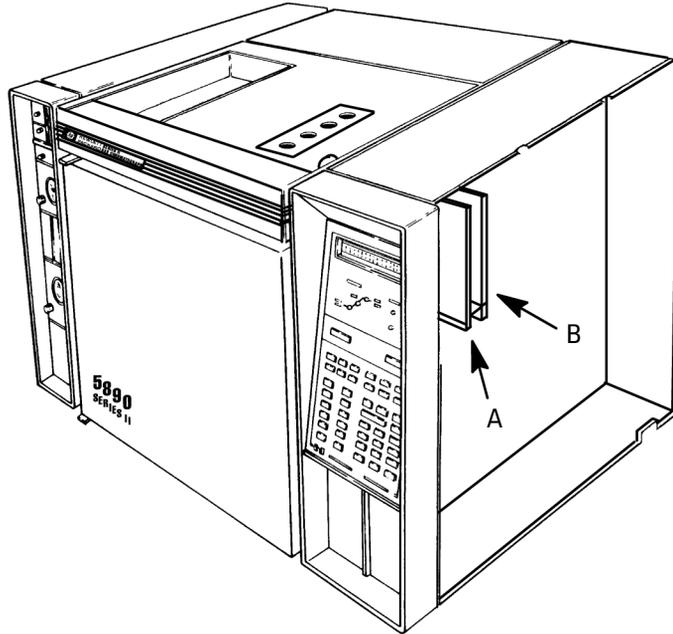
**Caution**

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Board components can be damaged by static electricity. Use a properly grounded static control wrist strap when handling the TCD board.

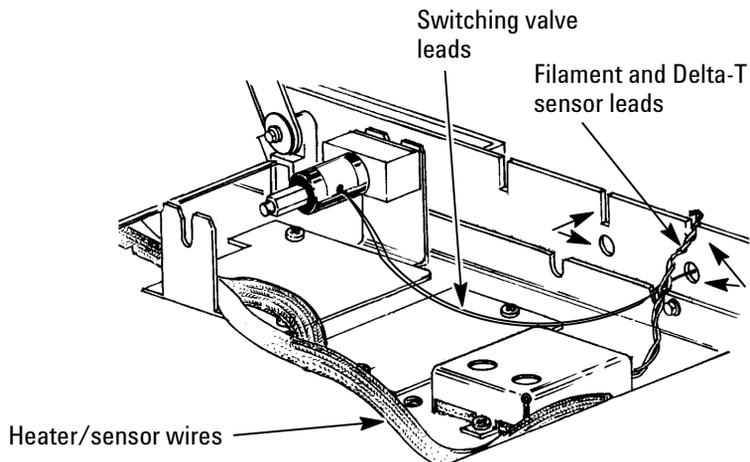
Installing the Thermal Conductivity Detector Accessory 19232E  
**Installing the Detector and Board**

13. Install the TCD signal board in the position (slot) on the main circuit board corresponding to the detector location.

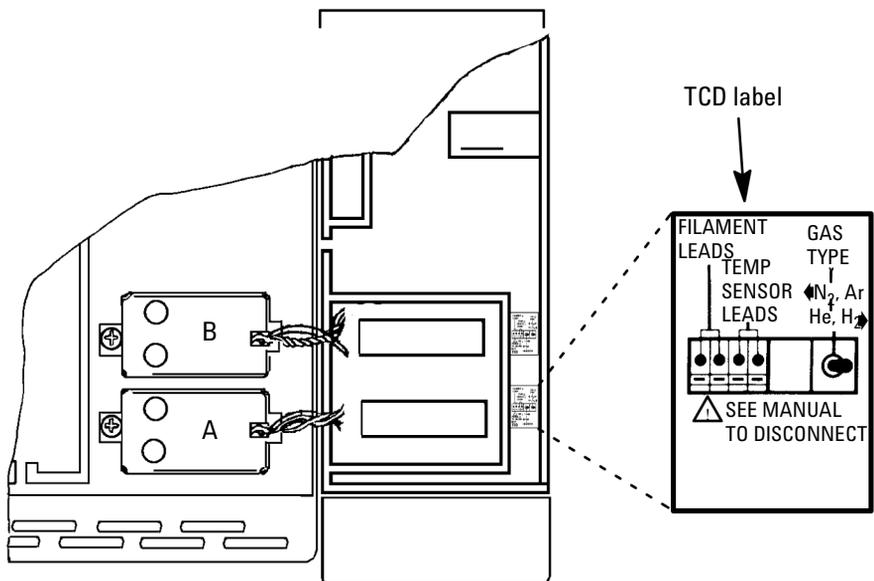


14. Gently twist the filament leads together. Route the filament and the Delta-T sensor leads through the notch in the mainframe to the TCD

circuit board. Then route the switching valve leads through the hole below the notch to the circuit board.



15. Apply the TCD label on the electronics carrier across from the detector.

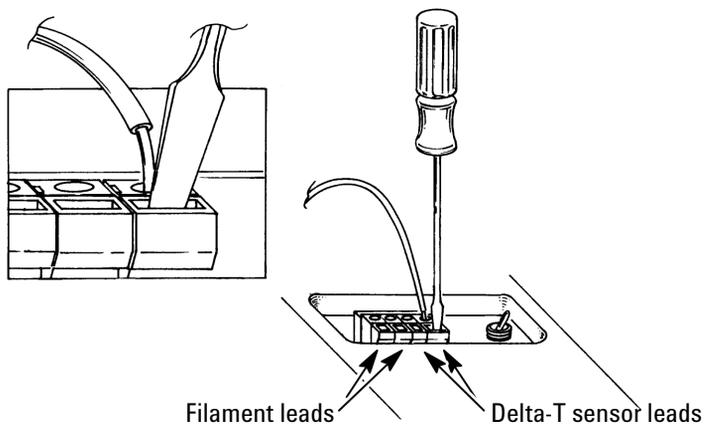


**Caution**

Board components can be damaged by static electricity. Use a properly grounded static control wrist strap when handling the TCD board.

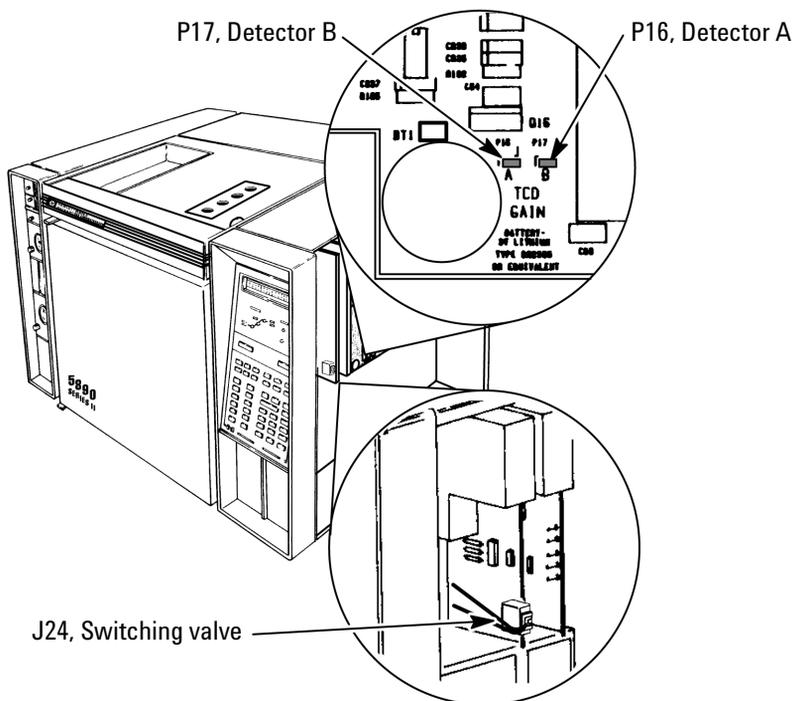
Installing the Thermal Conductivity Detector Accessory 19232E  
**Installing the Detector and Board**

16. Insert the TCD filament leads into the first two sockets in the green connector. To insert the lead, open the socket by inserting the blade of a small screwdriver into the slot adjacent to the socket being connected.
17. Insert the Delta-T sensor leads into the remaining two sockets on the board.



18. Connect the switching valve leads (yellow and black) to the J24 connector in the TCD signal board. Route the leads through the round hole in the mainframe.

19. Connect the sensitivity control lead from the TCD signal board to the corresponding detector position on the main circuit board (P16 = DET A, P17 = DET B).

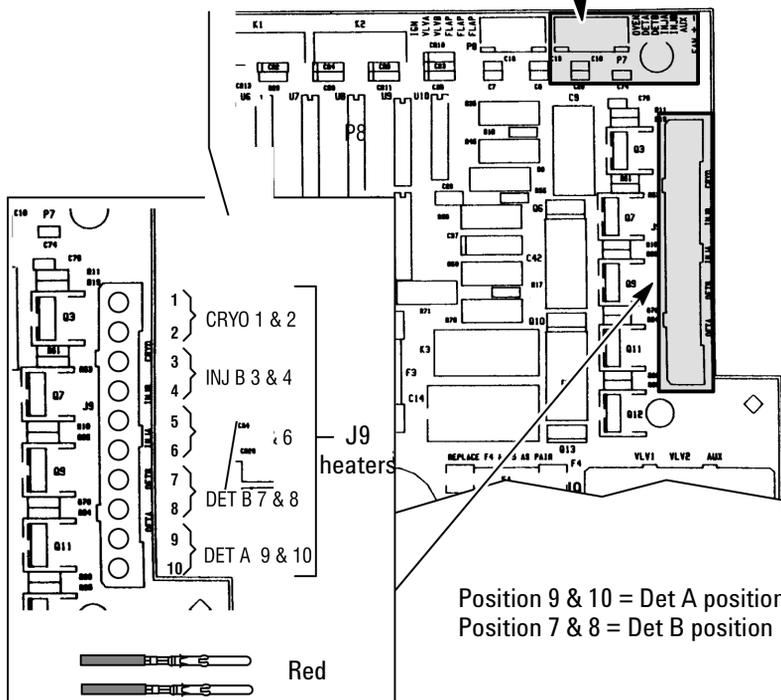
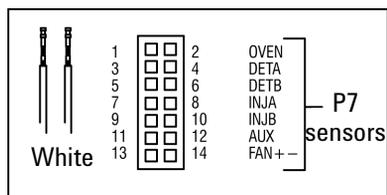


20. Route the detector heater/sensor leads over the switching valve bracket to the rear of the instrument, then through the plastic tray to the main circuit board. Heater and sensor wires must be connected to matching heated zones (DET A sensor on P7 and DET A heater on J9 or DET B sensor on P7 and DET B heater on J9). Connect the sensor leads (white) to P7. Connect the heater leads (red) to J9.

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**MAIN CIRCUIT BOARD**

Position 3 & 4 = Det A position  
 Position 5 & 6 = Det B position



21. Reinstall the panels and covers. Reconnect the instrument power cord and restore power.
22. Make gas connections to the back of the flow module per the *Getting Started Guide* (for the 4890) or the *Site Prep/Installation* (for the 5890) manual.
23. Install a column in the detector makeup gas adapter as described in your *GC Operating Manual*.
24. Establish your gas flows and run a test chromatogram as described in your *GC Operating Manual*.





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