

Installation Guide
Flame Ionization Detector (FID)
Accessory 19231E



Agilent Technologies

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Part number 19231-90127

First Edition, DEC 2000

Replaces Part No. 19231-90120 Operating and Service Manual.

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Printed in USA

Safety Information

The Agilent Technologies Flame Ionization 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 19231 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 $L_p < 68 \text{ dB(A)}$

During normal operation

At the operator position

According to ISO 7779 (Type Test)

Schallemission

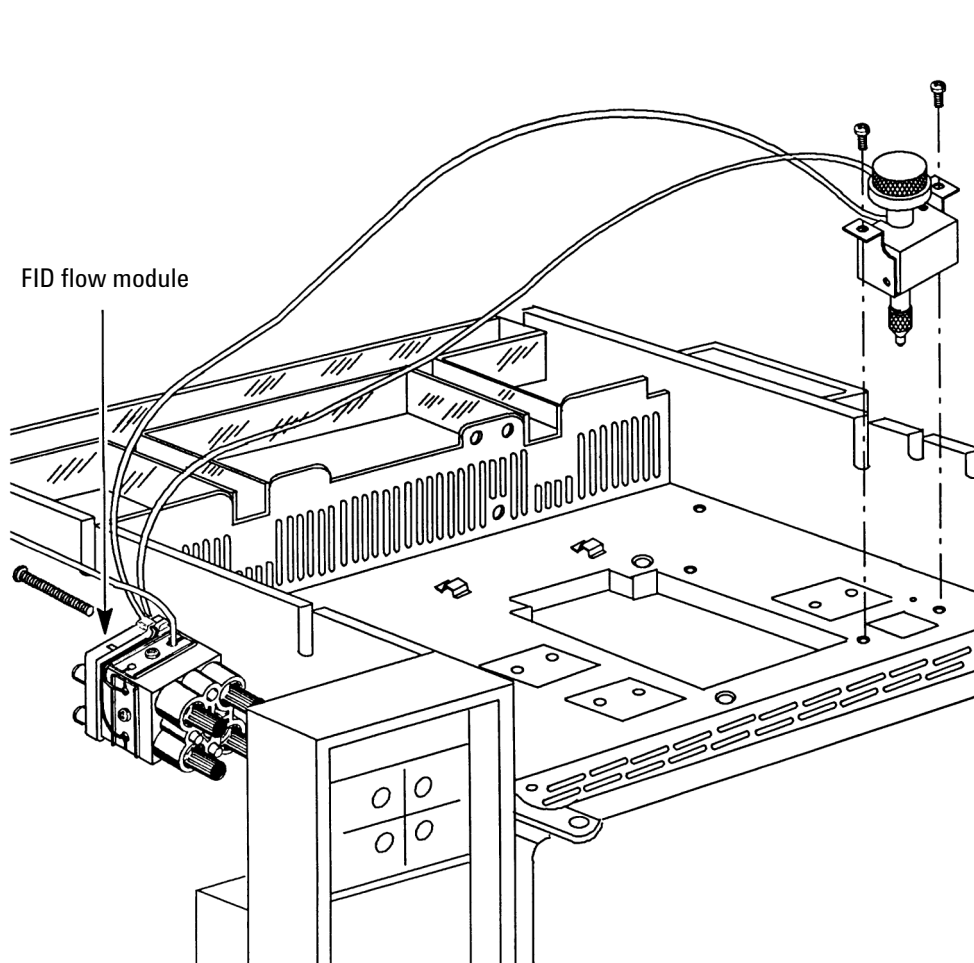
Schalldruckpegel $LP < 68 \text{ dB(A)}$

Am Arbeitsplatz

Normaler Betrieb

Nach DIN 45635 T. 19 (Typprüfung)

Installing the Flame Ionization Detector Accessory 19231E

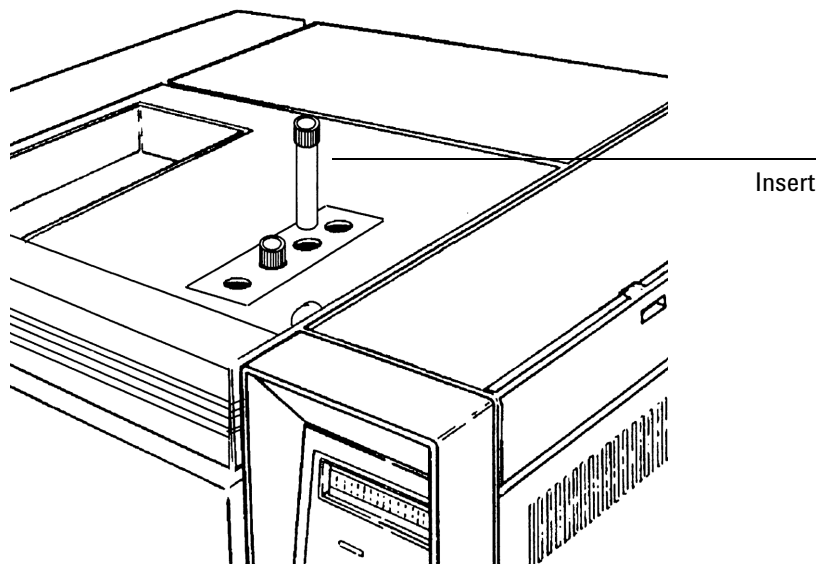


Installing the Optional FID Chimney Insert

The following figure shows an FID chimney insert that is useful under certain sample conditions. Large volumes of aromatic and hydrocarbon solvents can result in carbon formations that may cause shorting in the detector.

To be effective, the insert must be fully inserted into the detector cover (vent). This must be done after the hinged cover is lowered and flame ignited.

The use of higher air flows (550 to 600mL/min) can improve the performance and burning characteristics. It is recommended that the detector block temperature be set at 300°C or greater when hard-to-combust solvents are being used.

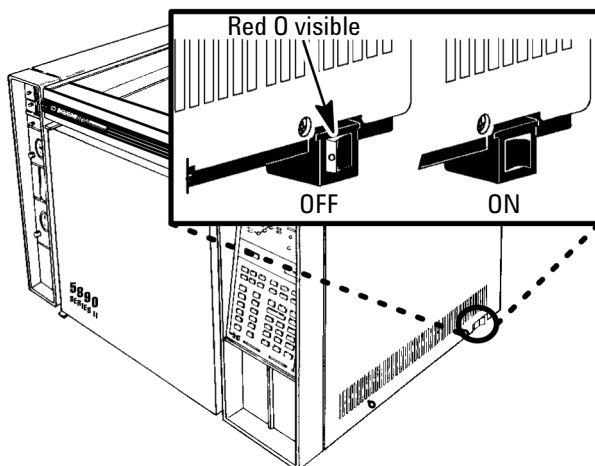


Preparing the Instrument

WARNING

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.

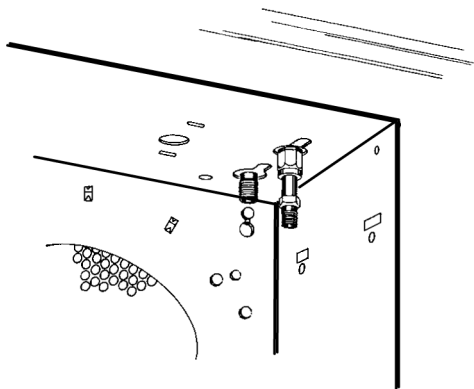
1. Set the main power line switch to the off position.



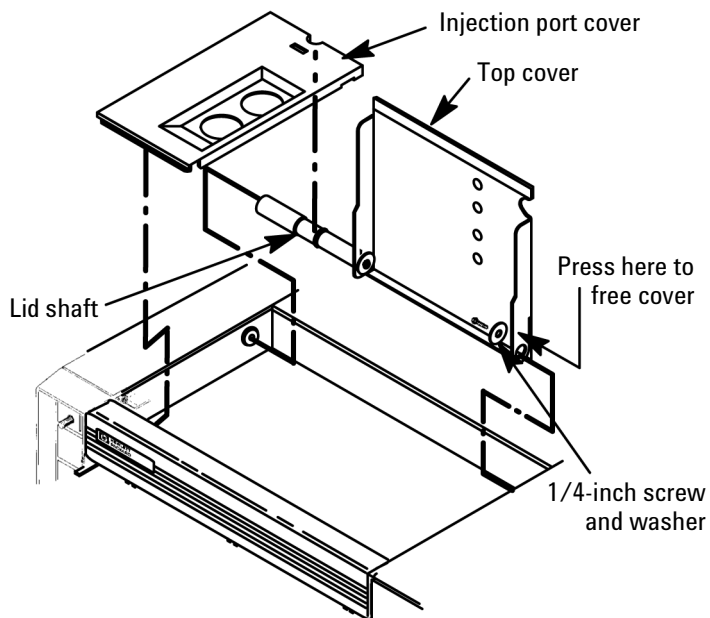
2. Disconnect the power cable from its receptacle.
3. Allow time for the oven and heated zones to cool.
4. When the heated zones are cool, turn off all gas supplies at the source.

Installing the Flame Ionization Detector Accessory 19231E
Preparing the Instrument

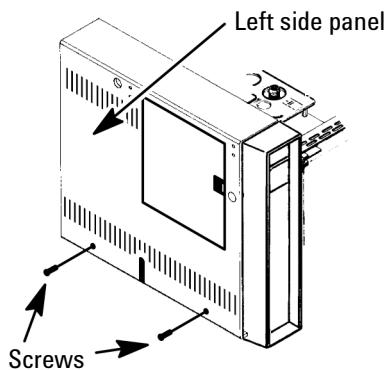
5. At the bottom of the inlet or detector to be removed, inside the column oven, remove the column and hardware associated with the inlet or detector (liner, column/liner nuts, ferrules, makeup gas adapter, etc.).



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.



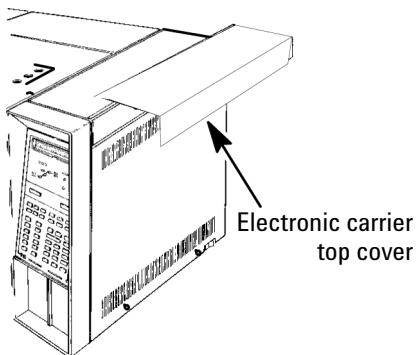
7. If an autosampler is installed on the instrument, it will be necessary to remove it and its mounting bracket to allow removal of the left side cover.
 - a. Remove the autosampler tray from its mounting bracket by simultaneously lifting and turning the two tray locks that hold it in position, then 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.



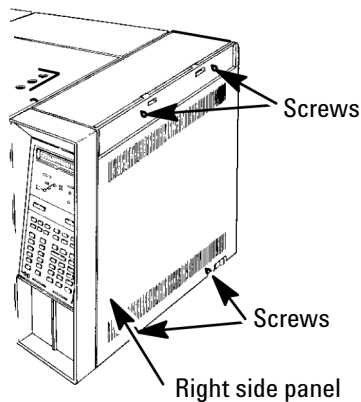
9. Slide the left side panel towards the rear of the instrument and lift.

Installing the Flame Ionization Detector Accessory 19231E
Preparing the Instrument

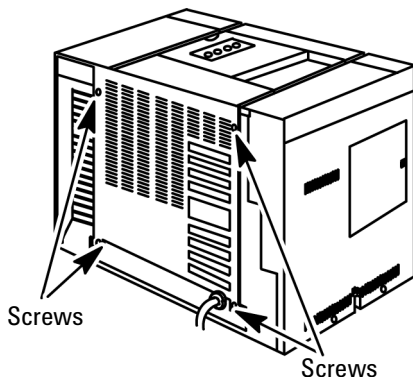
10. Remove the electronics carrier top cover by grasping it at the rear and lifting upwards until its catch releases, then pull it towards the rear of the instrument.



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



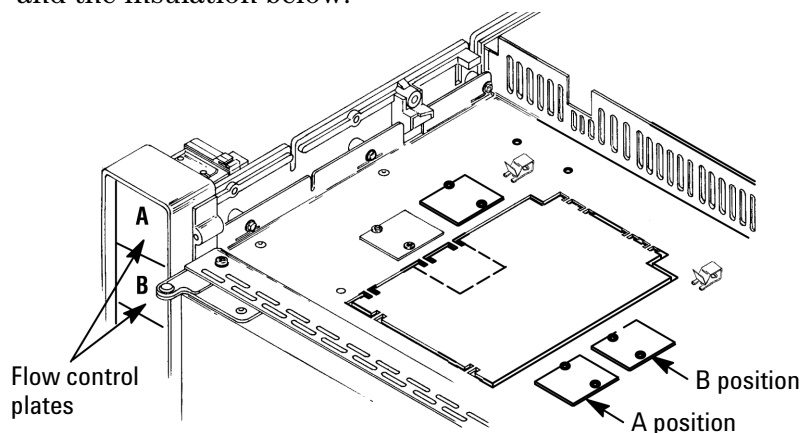
12. Remove the back cover of the instrument by removing four screws and sliding the cover off the rear of the instrument.



Caution

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

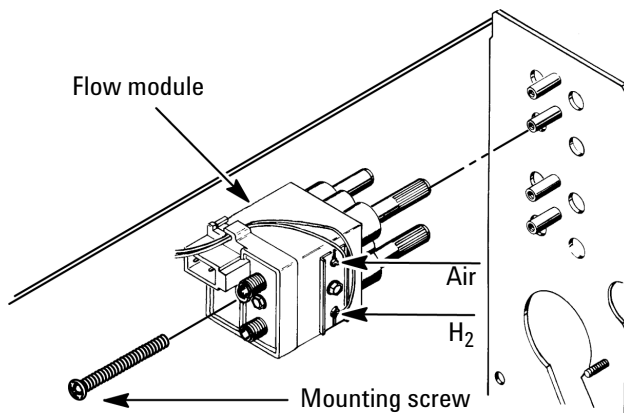
13. If present, remove the cover plate from the detector mounting location, and the insulation below.



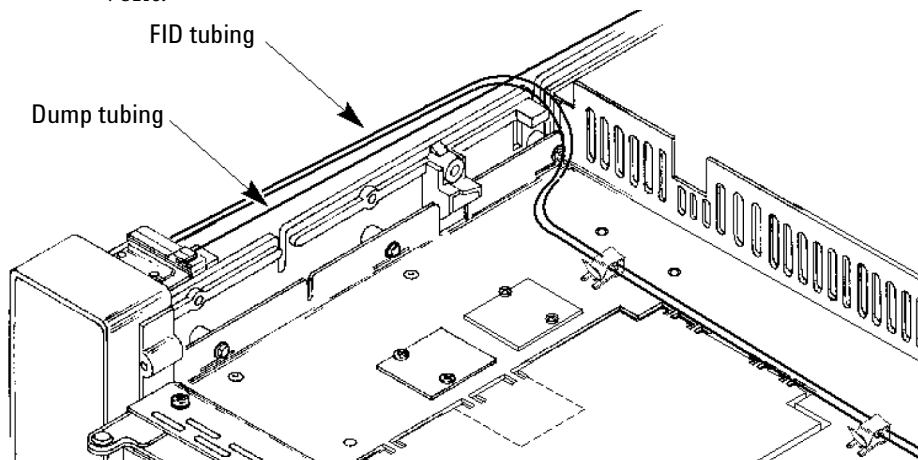
14. Remove the flow-control label plate in the detector A or B location. The plate is glued in place and is removed by pushing it firmly through openings in the back of the flow panel to loosen it, then pulling it free.
15. Place the provided self-adhesive FID flow plate in the space where flow-control components for the detector are to be installed.

Mounting the Flow Module

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

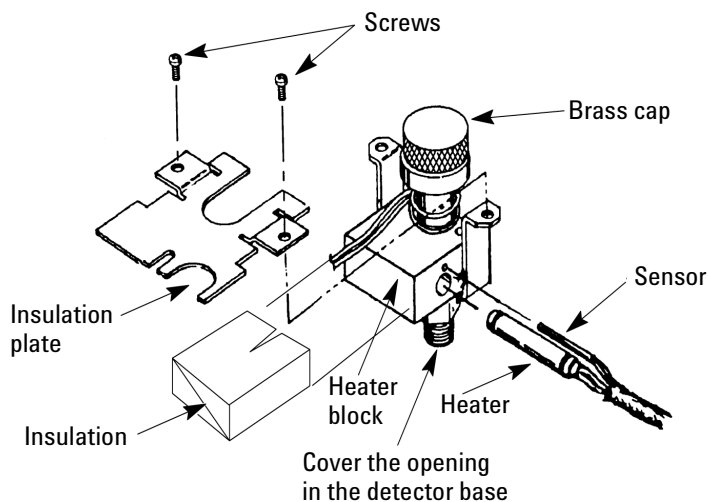


2. Route the FID tubing from the flow module across the top of the oven to the detector area. Use the metal tube retaining clips located near the rear of the oven to hold the tubing in place. The dump tube is used as a vent.



Mounting the Detector Module, Insulation Plate, Thermal Strap, and Side Shields

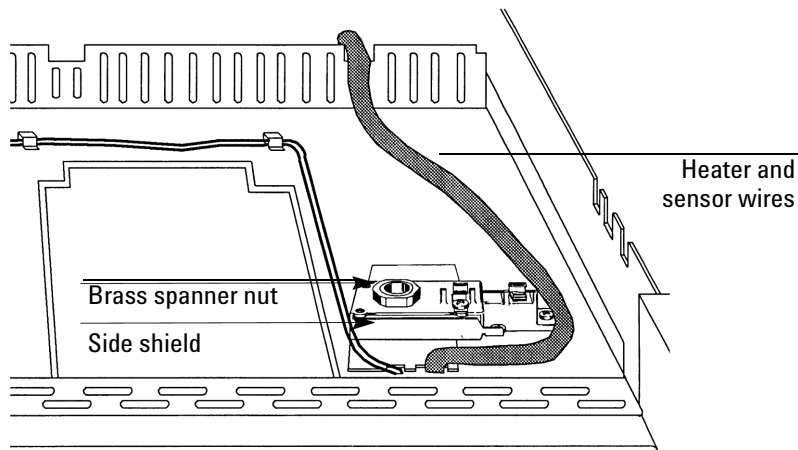
1. Remove the plastic covers from the sensors and insert the heater and sensor cartridges into the detector block.
2. Slide the detector base through the hole in the oven top. Make sure the detector has a brass cap or equivalent protection over the column fitting to prevent insulation from entering the base during installation.



3. Use the insulation removed (tear apart as needed) to fill in the area around the detector.
4. Place the top insulation on the detector and install the insulation plate with the filament leads through the cutouts in the plate. Secure the detector and insulation plate with two M4 x 8mm screws.

Mounting the Detector Module, Insulation Plate, Thermal Strap, and Side Shields

5. Remove the brass cap from the top of the detector base. Be careful not to touch or allow dust inside the detector. Align the thermal strap with the nuts welded to the top of the oven.



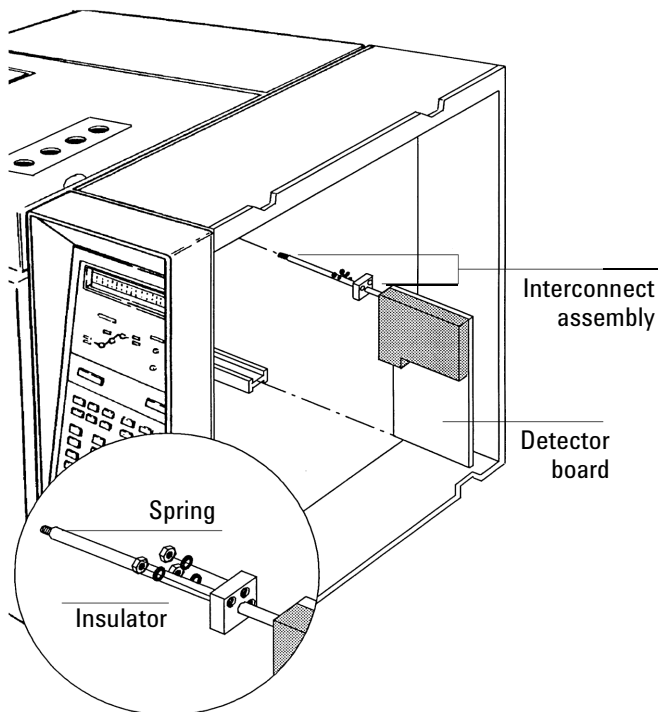
6. Place the FID side shields on the thermal strap and secure both of these items to the oven top. One side shield is mounted in front of detector A and one is mounted in back of detector B, unless one of the detectors is a Thermal Conductivity Detector. If this is the case, both side shields are mounted on the FID.
7. Start the brass spanner nut on the detector and tighten with a 1-1/4-inch socket and torque wrench to approximately 8.5 Nm (75 in.lbs.).
8. Route the heater and sensor wires to the right side of the detector toward the back of the gas chromatograph.

Mounting the Interconnect Assembly and Detector Board

Caution

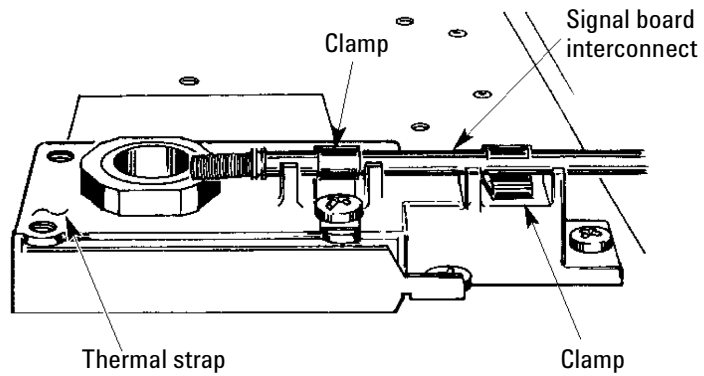
Board components can be damaged by static electricity. Use a properly grounded static control wrist strap when handling the FID board.

1. Mount the interconnect assembly to the detector board and install the board in the correct position in the electronics carrier. Be careful not to damage the spring and the insulator on the interconnect.



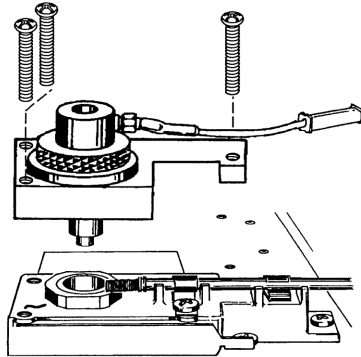
Installing the Flame Ionization Detector Accessory 19231E
Mounting the Interconnect Assembly and Detector Board

2. With the board fully inserted, clamp the interconnect to the thermal strap using two J-clamps and two screws.



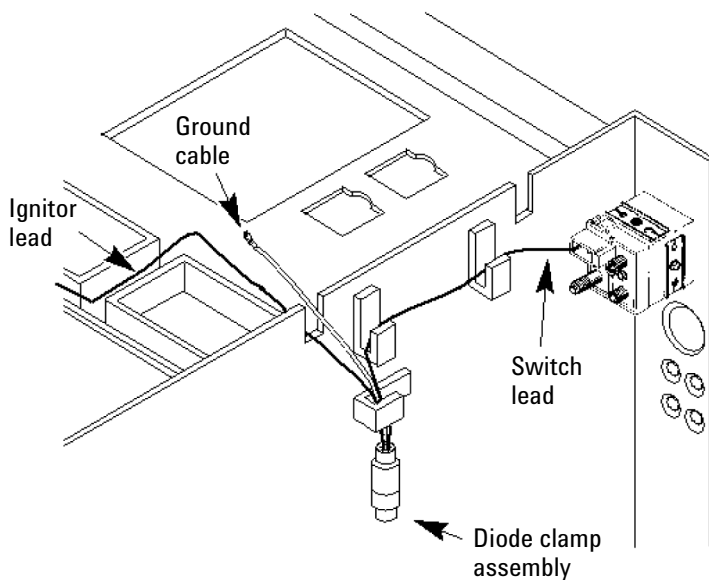
Mounting the Collector Assembly

1. Mount the collector assembly on the thermal strap using three M4 x 25mm screws.



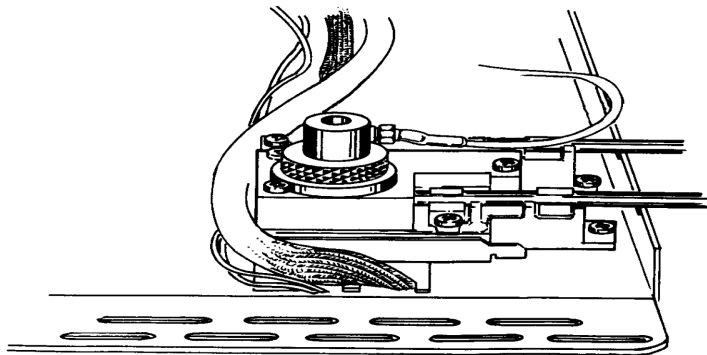
Routing the Wires and Tubing

1. Attach the diode clamp assembly under the clip at the rear of the flow carrier.
2. Route the second longest wire from the diode clamp assembly through two clips at the top of the carrier and connect it to the back of the flow module. Push the connector onto the connector pin next to the carrier. Route the longest wire (the one with the white connector) through the slot at the top of the carrier into the first slot of the cable tray and back out the second slot. Connect this wire to the white connector leading from the FID collector glow plug ignitor.



3. The last wire from the diode clamp is a short ground wire with a lug on the end. Route this wire just through the slot in the carrier and secure it

to the oven flange on the opposite side with one lockwasher and one screw.

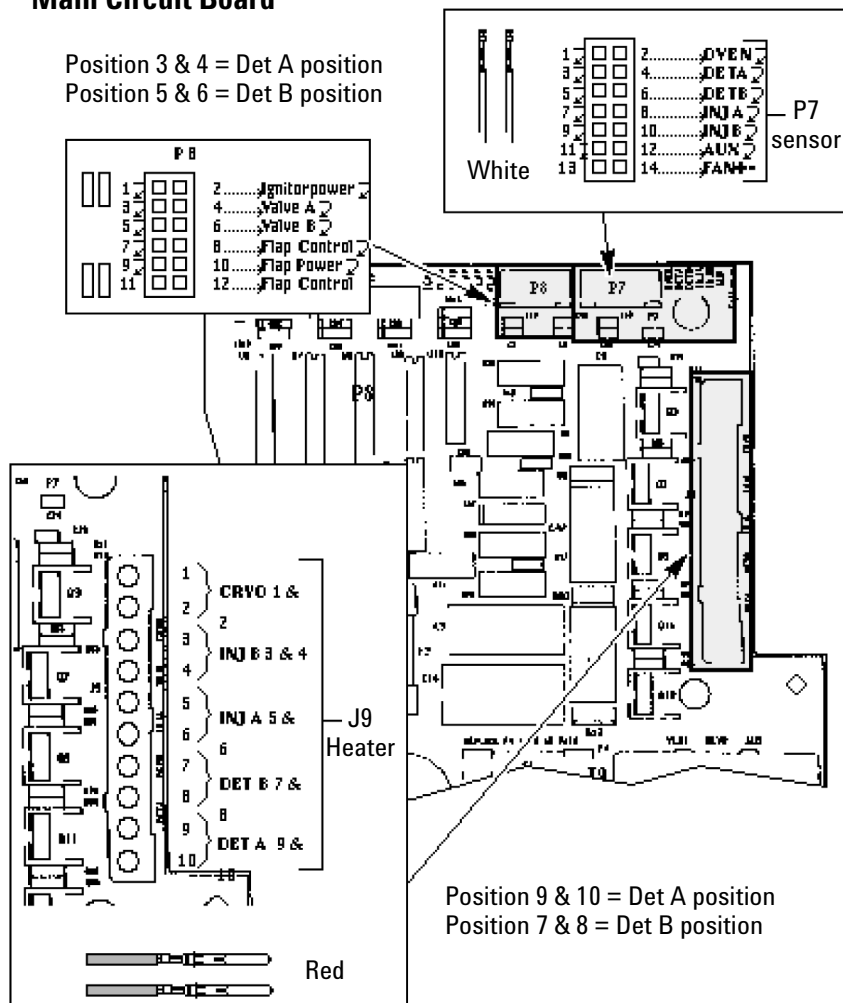


4. Locate the ignitor switch cable assembly and plug the lug end onto the other terminal of the switch on the flow module. Route the cable through the flow carrier clips and down the cable tray to the electronics carrier. Install the pin into the slots labeled FID IGN on connector P8

Installing the Flame Ionization Detector Accessory 19231E
Routing the Wires and Tubing

and plug onto the main electronics board. Refer to the main board labeling for the pin position.

Main Circuit Board



5. Route the heater/sensor cable through the cable tray and into the electronics carrier. Carefully install the pins of the heater and sensor leads into their respective connectors in connector J9 on the main board. Make sure that the connector position matches the detector location. The connector positions are labeled on the main board.

Restoring the Instrument to Operating Condition

1. Re-install panels and covers. Reconnect the instrument power cord and restore power.
2. Make gas connections to the back of the flow module per the *Getting Started Guide* (4890) or *Site Prep/Installation* (5890) manual.
3. Install a column in the detector makeup gas adapters as described in your *GC Operating Manual*.
4. Establish your gas flows and run a test chromatogram as described in your *GC Operating Manual*.

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Restoring the Instrument to Operating Condition



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Printed in USA Dec 2000



19231-90127