Installing the 6850 Direct Valve–Column Connector Kit

Agilent 6850 Gas Chromotograph

Part Number G2630-61710

Use this kit to bypass the inlet and connect your 6850 gas or liquid sampling valve directly to a column. To use this kit, your 6850 GC must have a purged packed inlet.

This kit contains:

Description	Part Number	Quantity
Direct tube assembly	G2630-61700	1
SS ZDV* union, 1/16-inch to 530 µm column	0100-1515	1
SS ZDV* union, 1/16-inch to 320 µm column	0100-1527	1
SS ZDV* union, 1/16-inch to 1/8-inch column	0100-1542	1
Ferrule, Vespel/graphite, 1/16-inch	0100-1512	4
Liner, polyimide, for 530 µm columns	0100-1513	1
Liner, polyimide, for 320 µm columns	0100-1514	1
SS nut, 1/16-inch, counterbored	0100-1511	2
Liner tool	18900-20850	1

* Zero Dead Volume

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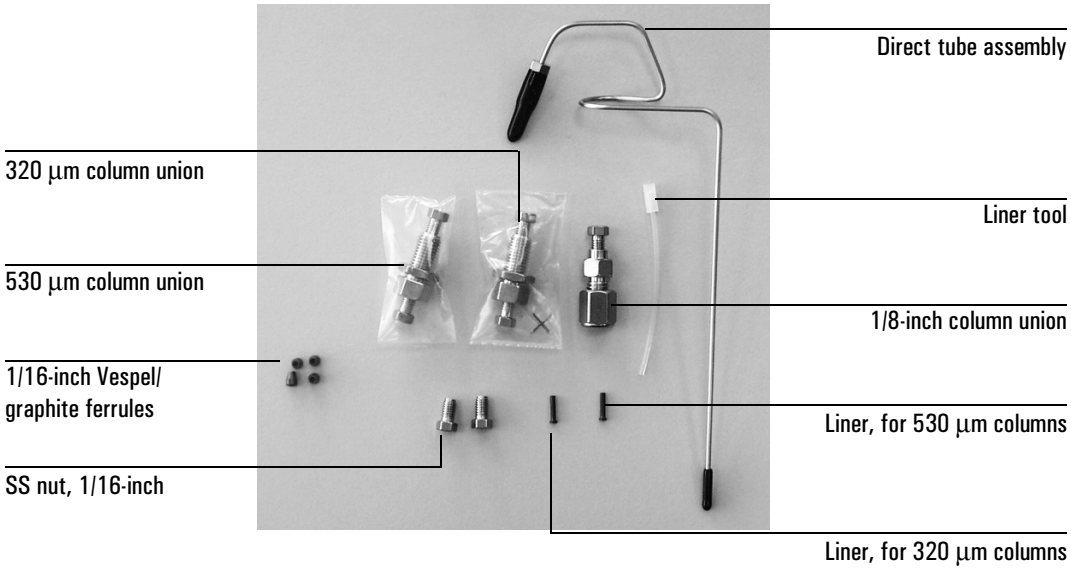


Figure 1. 6850 Direct valve–column connector kit

Tools required

T-10 Torx® driver

1/4-inch wrench

5/16-inch wrench

7/16-inch wrench

Disconnect the existing inject line

WARNING The oven, detector, and inlet heated zones may be very hot. Column fittings and other hardware may remain hot after the oven has cooled.

1. Turn off the GC oven, inlet, and detector heated zones and allow them to cool.
2. Turn off the GC and unplug the power cord.
3. Remove the top cover from the valve box.
4. Remove the screw and washer that hold the inject line onto the valve heated block.

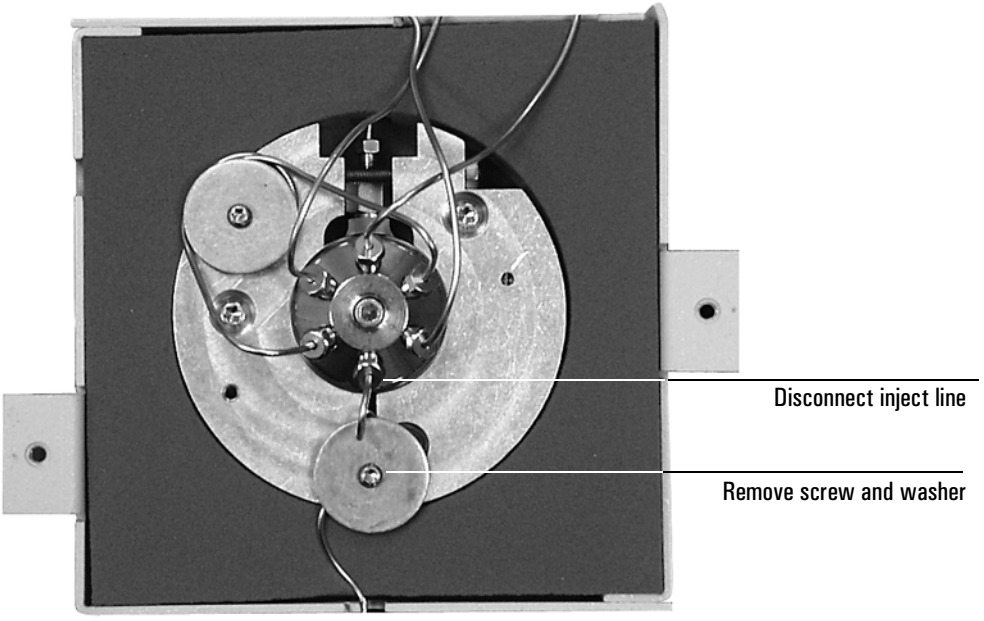


Figure 2. Disconnect the inject line from the valve

5. Disconnect the inject line from the sampling valve.

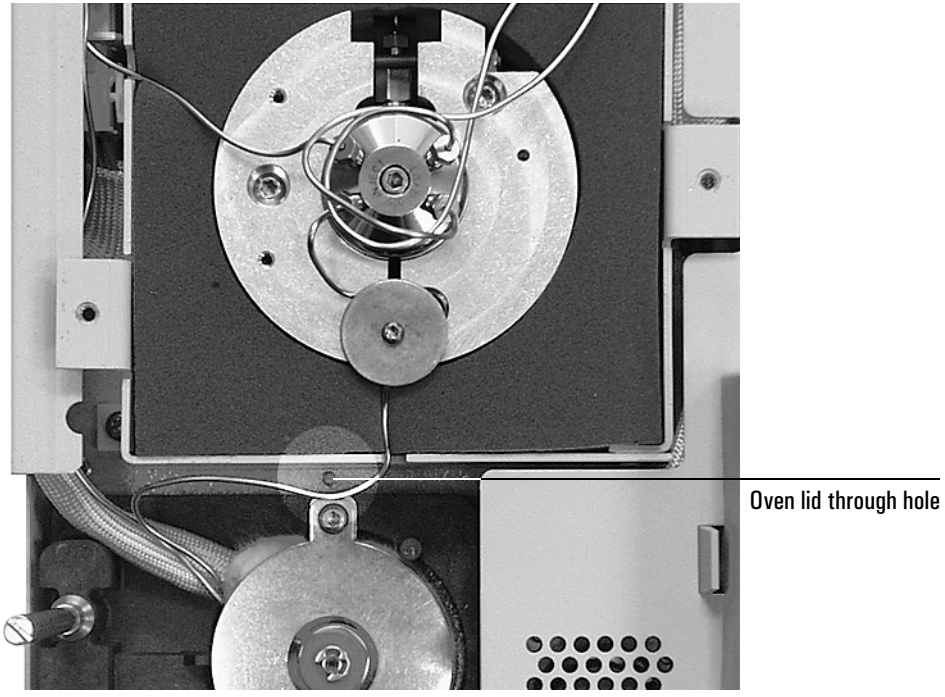
Install the direct tube assembly

1. Open the lid and disconnect the column from the inlet. Plug the inlet column fitting with a no-hole ferrule and column nut.

Caution

In the next step, *do not* use the direct tube assembly supplied in this kit to punch the hole through the insulation. Insulation may be trapped in the tubing.

2. Locate the small through hole in the oven lid between the purged packed inlet and the valve box. There is a corresponding hole in the bottom of the oven lid, behind the inlet. Use a spare 1/16-inch tube, a wire or a thin screwdriver to clear the insulation from this hole. See Figure 3.



(Liquid sampling valve shown)

Figure 3. Location of oven lid through hole

Caution When pushing the direct tube assembly into the hole, leave the protective cap in place to prevent insulation from clogging the tubing.

3. Push the long end of the direct tube assembly, with the cap in place, through the hole into the oven.
4. Transfer the protective cap from the short (top) end of the direct tube assembly to the open end of the inject line that you disconnected earlier.
5. Connect the short end of the direct tube assembly to the sampling valve at the port where you removed the inject line. Tighten 1/4 turn past finger tight. Install the screw and washer (removed under *"Disconnect the existing inject line"* above) through the direct tube assembly coil and secure it to the valve heated block.
6. Inside the oven, clean off any insulation stuck to the tubing or protective cap. Remove the cap from the end of the tube.

Caution In the next step, do not use a stainless steel ferrule. Once installed, you will not be able to remove it and will have to cut the direct tube assembly to change to a different diameter column.

7. Install a zero dead volume (ZDV) union onto the end of the direct tube assembly using the 1/16-inch graphite/Vespel ferrule supplied in this kit.
   - For 320 µm columns, install part number 0100-1527
   - For 530 µm columns, install part number 0100-1515
   - For 1/8-inch packed columns, install part number 0100-1542

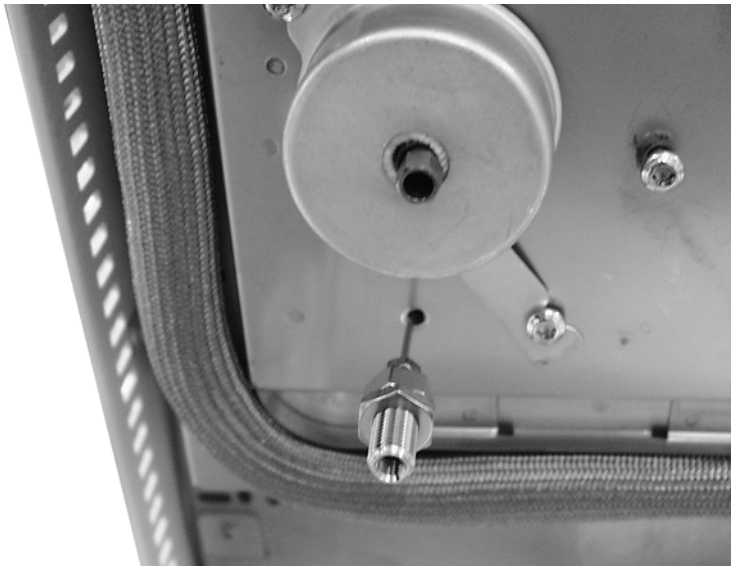


Figure 4. Union installed onto the direct tube assembly

8. For **capillary columns** only:
    a. Select the appropriate polyimide liner for the column diameter (320 or 530 µm). Slide the liner onto the column, large end first.
    b. Cut off a small amount of the column end to eliminate any particles that might have been scraped from the inside of the liner.
    c. Slide the column and liner into the counterbored nut. Push the installation tool into the counterbore to force the liner all the way to the bottom of the counterbore. Keep the tool in place until the nut has been tightened.
    d. Slide the ferrule over the liner. Be sure that the liner is as far into the counterbore as it will go. Pull the column back until the end is flush with the liner.
    e. Screw the nut into the ZDV union. With a wrench, tighten the nut 10 to 15° past finger tight.
9. For **1/8-inch packed columns** only. Connect the column to the ZDV union using the 1/8-inch nut and and appropriate ferrules.

10. Clean up any pieces of insulation in the oven.
11. Reinstall the valve box cover.
12. Restore power.

Leak test

Leak test the system using an electronic leak detector (if available and if helium is used as the carrier gas) or as described below.

1. If using hydrogen as a detector gas, turn it off.
2. Make sure the pressure at the carrier gas supply is at least 35 psi.
3. Disconnect the column at the detector fitting and plug the end.
   - Packed column: cap the end with a clean Swagelok cap.
   - Capillary column: insert the column end into the side of a clean septum.
4. Close the oven and turn on the GC.
5. Use the Control Module or data system to define a capillary column with length 0 m and any diameter. This puts the inlet into pressure control mode.
6. Set the inlet and oven to normal operating temperatures.
7. Set the inlet pressure to 25 psi.

   If pressure cannot be reached, there is a gross leak. (Check the column cap.)
8. Allow the pressure to stabilize for one minute, then turn the pressure off. Monitor the pressure for 10 minutes.
   - If the pressure drop is < 0.7 psi (≤ 0.07 psi/min.), the system is leak free.
   - If the pressure drop is much greater, check for leaks at the valve fittings and the column connection to the direct tube assembly.

Direct valve to column operation

Undefined column

If your column is undefined, the flow through the column is equal to the total flow.

Defined column

Pressure modes

Both modes will operate as expected but the readings for column flow will be low by 1 to 2 mL/min, the amount of the septum purge flow. The actual column flow is equal to the total flow.

Flow modes

The actual column flow will be lower than the setpoint value by 1 to 2 mL/min, the amount of the septum purge flow.

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