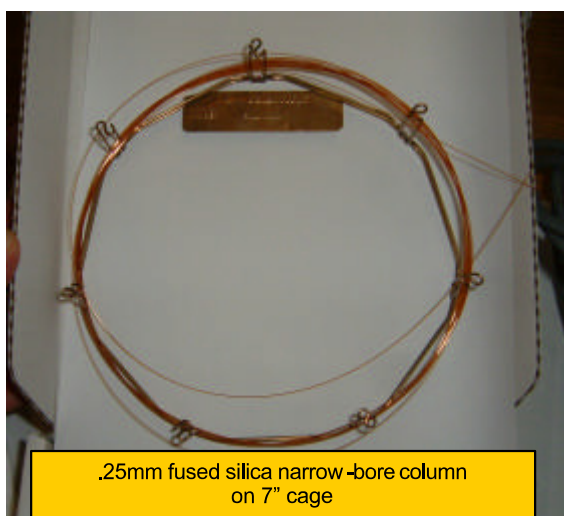
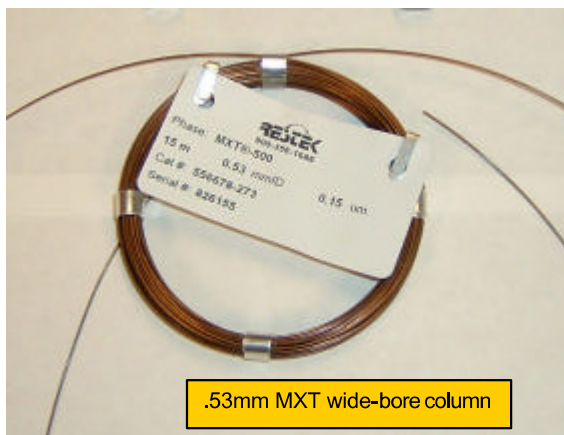
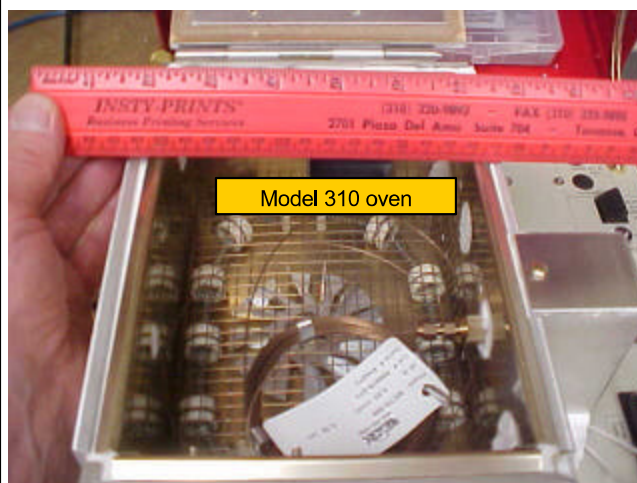
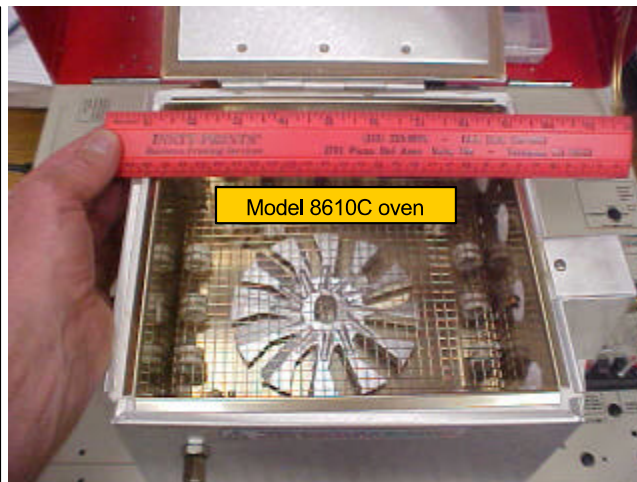


Column Installation in the SRI Model 8610 and Model 310 Gas Chromatographs equipped with the split/splitless injector

SRI Gas Chromatographs are designed to use both packed and capillary columns. The Model 8610 has an oven which allows for columns coiled on a 7" (17.5 cm) diameter or smaller, while the Model 310 GC (which has a smaller oven) can fit columns coiled on a 5" diameter or smaller. The column installation procedure is identical on either GC since both GCs use the same injector and detector hardware. Only the oven size is different. The split/splitless injector can be used with both wide-bore and narrow-bore capillary columns.



Column Installation in the SRI Model 8610 and Model 310 Gas Chromatographs equipped with the split/splitless injector

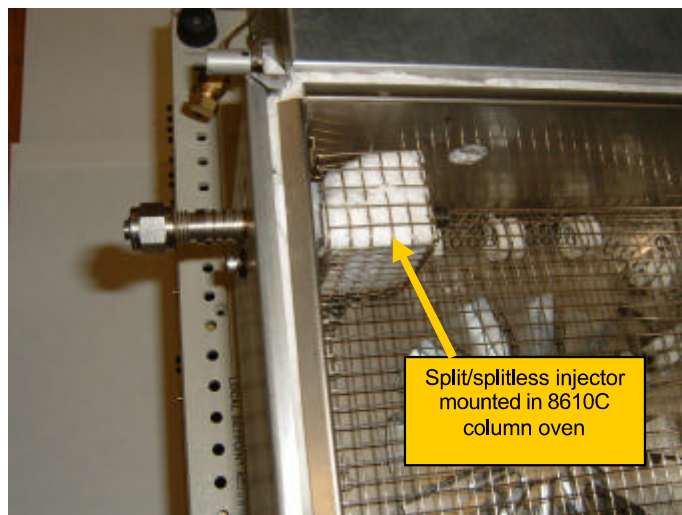
The split/splitless injector can be used for on-column injections onto .53mm capillary columns, split injections onto any column, or splitless injections.

The injector has its own temperature control which is set from the front panel using the screwdriver provided with the GC. Set the temperature depending on the needs of the analysis.

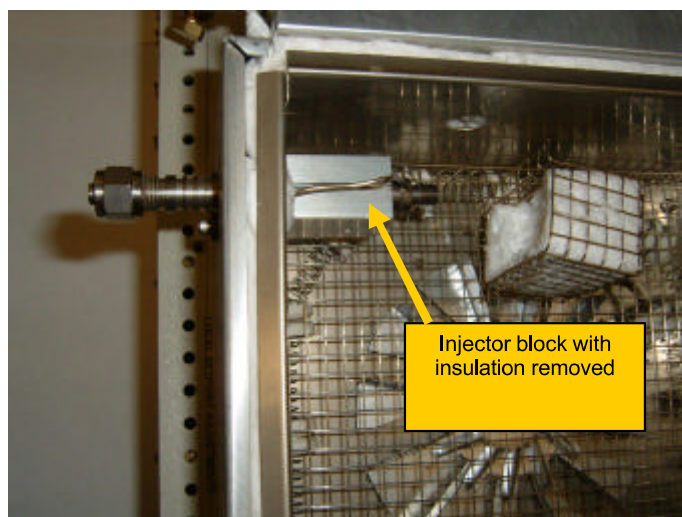


The injector is supplied with both stainless steel and SilcoSleeve liners. The stainless steel liner supports the wide-bore adapter for use with .53mm column and on-column injections.

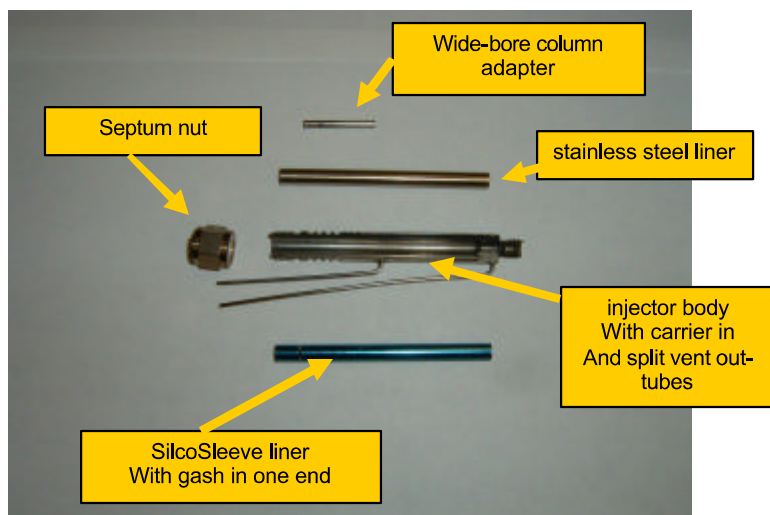
The SilcoSleeve liner is more inert (since it is lined with fused silica) and is used with narrow-bore columns in the split or splitless modes.



Split/splitless injector mounted in 8610C column oven



Injector block with insulation removed

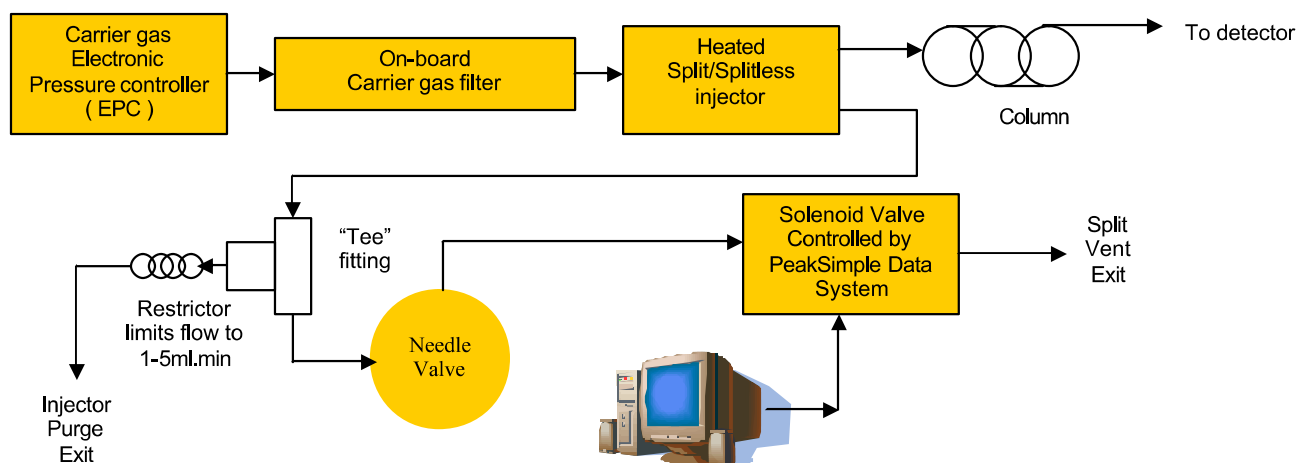
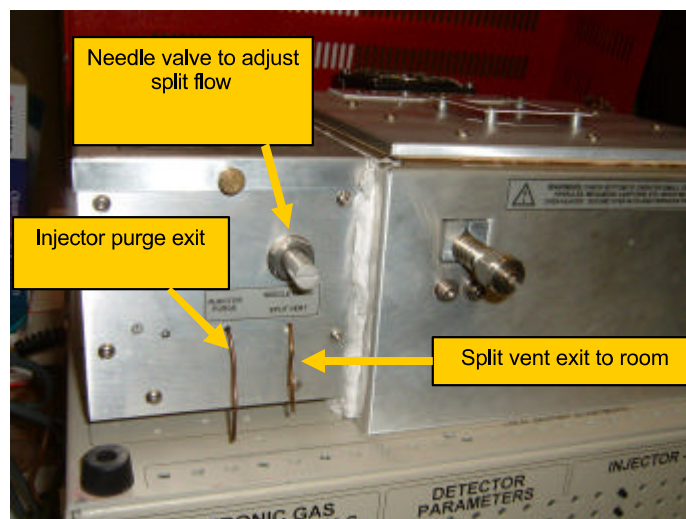
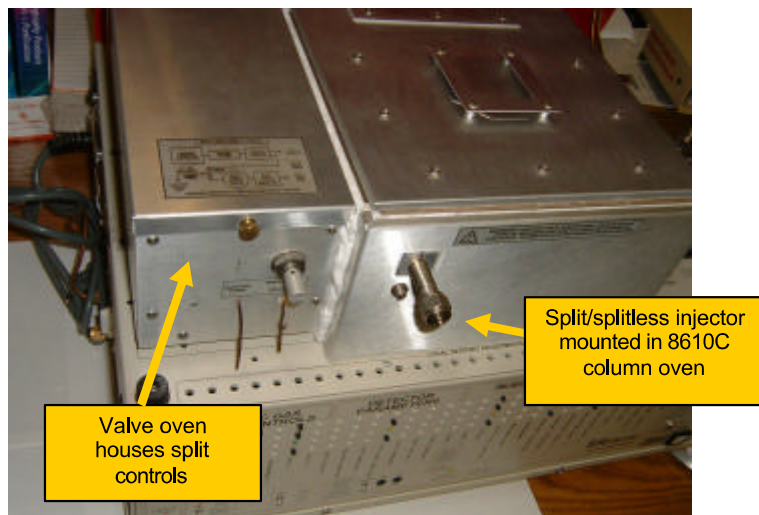


Column Installation in the SRI Model 8610 and Model 310 Gas Chromatographs equipped with the split/splitless injector

On the Model 8610C GC, the needle valve, restrictor and “tee” fitting are mounted in the valve oven to the left of the column oven. The needle valve is temperature controlled to avoid solvent condensation.

The needle valve in the Model 310 GC is mounted in the GC chassis but is not temperature controlled.

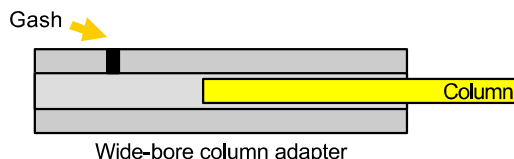
As shown in the schematic diagram below, the injector vent line goes to a “tee” fitting where it splits into a restrictor tube which limits the flow to a few milliliters per minute and to a PeakSimple controlled solenoid valve which turns the main split flow on and off. The main split flow is controlled by a needle valve. The flow through the restrictor ensures that high boiling molecules from previous injections can not diffuse back into the injector body.



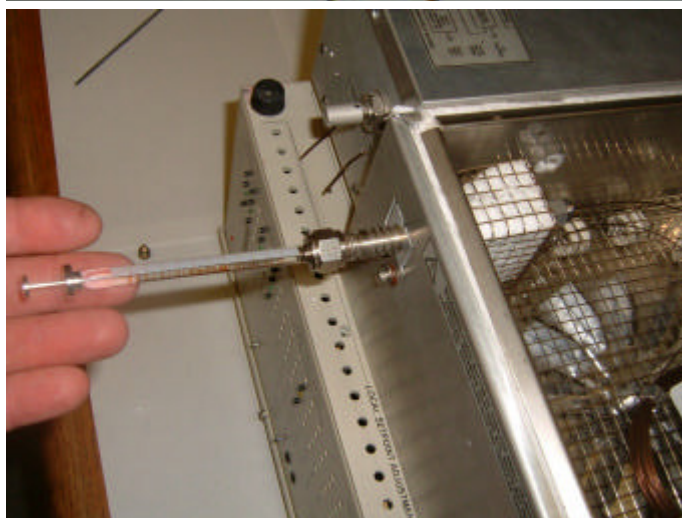
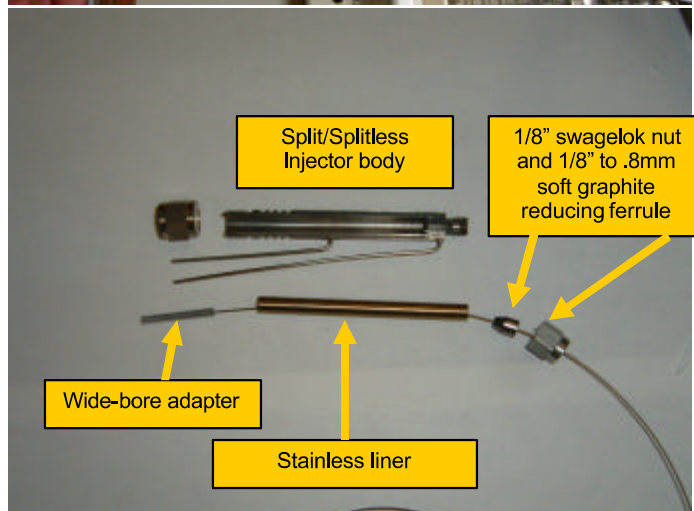
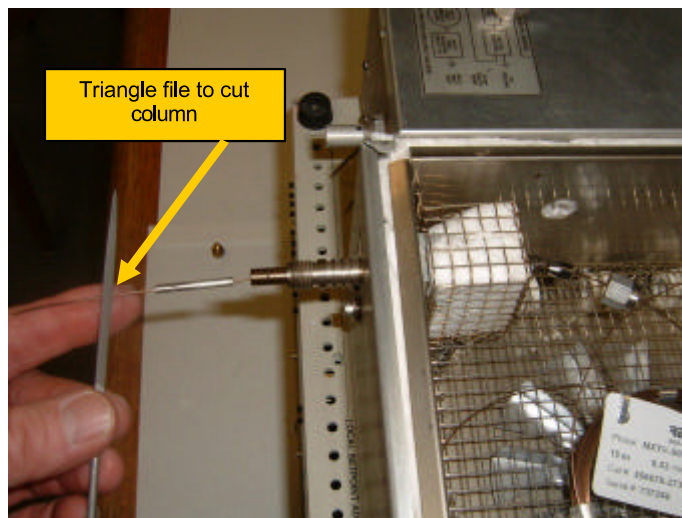
Column Installation in the SRI Model 8610 and Model 310 Gas Chromatographs equipped with the split/splitless injector

To install a .53mm MXT type wide-bore capillary column in the "on-column" mode:

- 1) Slide a 1/8" swagelok nut and 1/8" to .8mm soft graphite reducing ferrule over the end of the column. Then slide the column through the split/splitless injector so the column projects out the front of the oven.
- 2) Slide the stainless liner and wide-bore adapter on the column, then cut 3 cm off the column using a triangle file. *Always trim the column after passing it through a graphite ferrule as the column's sharp edge may shave graphite particles into the bore of the column causing tailing peaks.*
- 3) Pull the column back into the injector so the end of the .53 column is positioned about midway in the adapter.

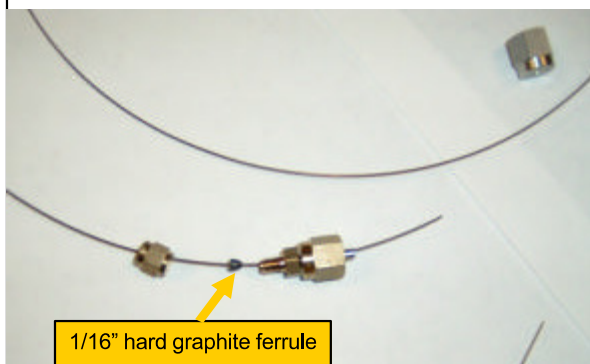


- 4) Tighten the nut and graphite ferrule to hold the column securely. The column should not move when you pull on the column tubing from the oven side
- 5) Test the installation by inserting a dry 26 gauge syringe with a 5 or 6cm long needle onto the column. The syringe should glide into the bore of the column itself without snagging or catching. If the syringe snags the lip of the column then re-position the column about 1 cm closer to the center of the oven. This will give the syringe a smoother entrance.



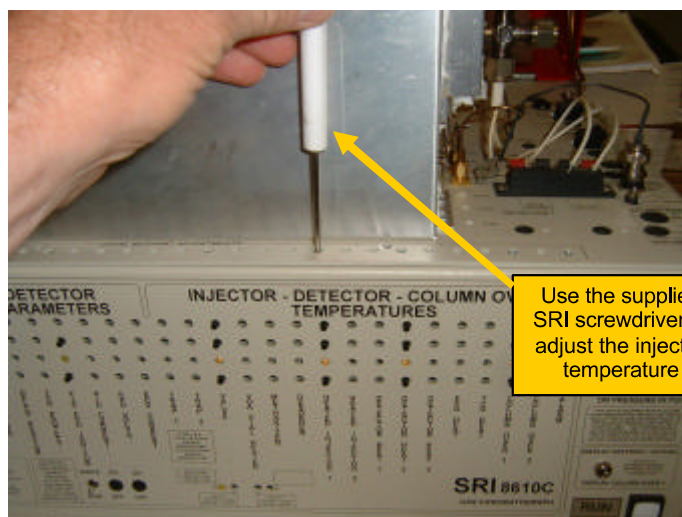
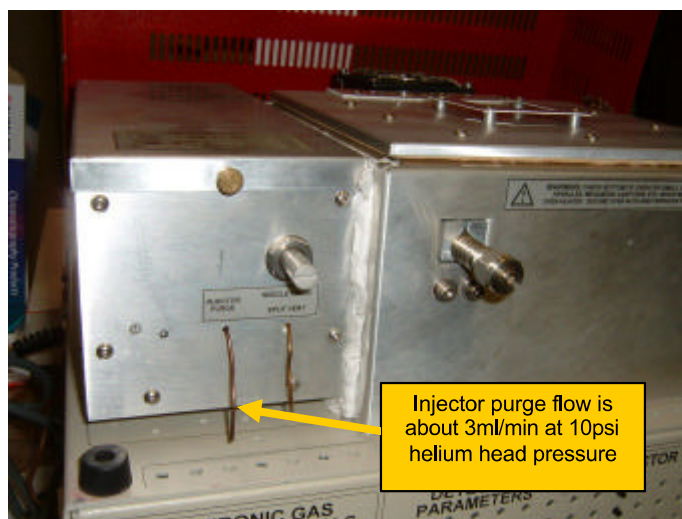
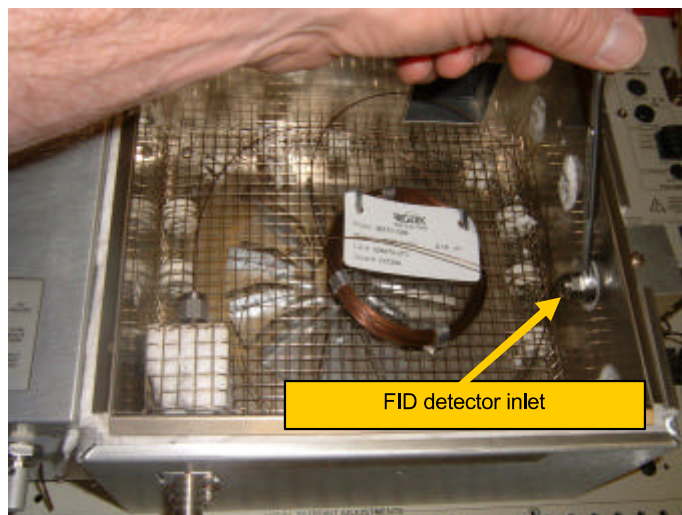
Column Installation in the SRI Model 8610 and Model 310 Gas Chromatographs equipped with the split/splitless injector

Connect the column to the detector using a 1/8" swagelok nut and 1/8" soft graphite ferrule or optionally a swagelok reducing fitting and 1/16" hard graphite ferrule.



The needle valve is normally adjusted fully clockwise (off) since there is no split during an on-column injection, and the split solenoid is not actuated from PeakSimple. There will be some injector purge flow continuously from the injector purge exit tube (typically 3ml/min at 10psi head pressure), but this does not affect the on-column injection since the sample is deposited in the bore of the column oven by the syringe.

Set the injector temperature to about the boiling point of the analytes. Don't set the temperature higher than required since this shortens the septum life, and makes it harder for the column oven to cool down close to ambient temperatures.



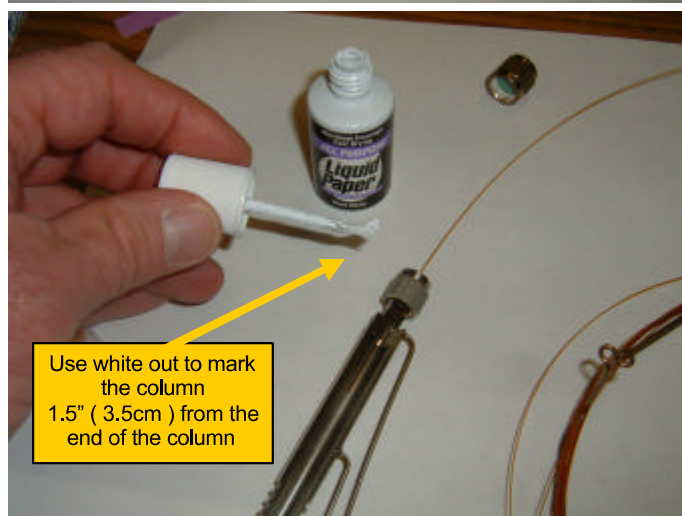
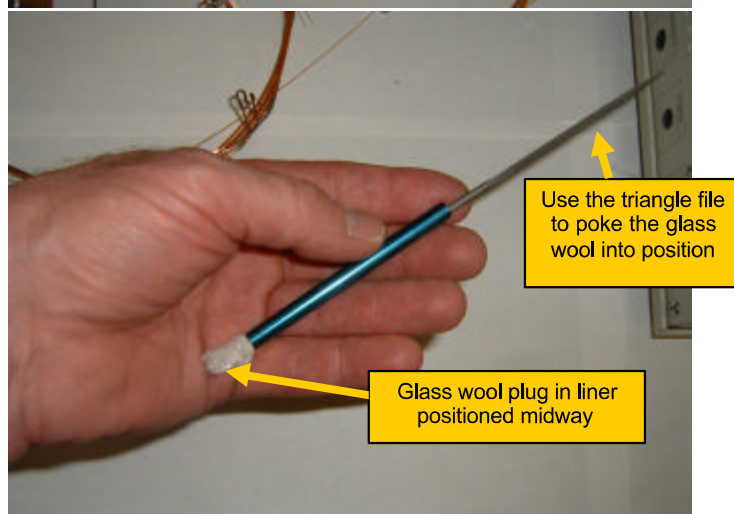
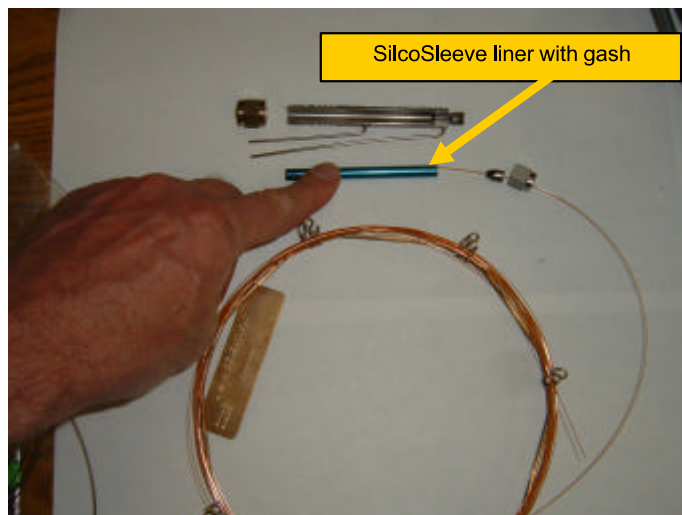
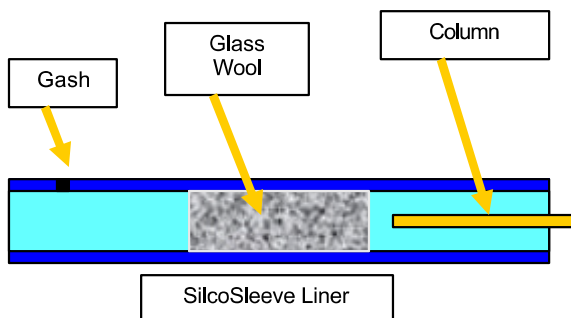
Column Installation in the SRI Model 8610 and Model 310 Gas Chromatographs equipped with the split/splitless injector

To connect a narrow bore column to the split/splitless injector:

1) Locate the SilcoSleeve liner with a gash at one end. The GC is shipped with the SilcoSleeve liner in the parts box under the red lid. The regular stainless liner can also be used, but it is not as inert as the fused silica lined SilcoSleeve.

2) Verify that the liner has a plug of glass wool positioned midway. The glass wool gives the sample a surface from which to evaporate, so the syringe tip should deposit the sample directly into the plug of glass wool.

3) Mark the column with White-Out about 3.5 cm (1.5") from the end to position it in the liner just downstream of the glass wool plug.



Column Installation in the SRI Model 8610 and Model 310 Gas Chromatographs equipped with the split/splitless injector

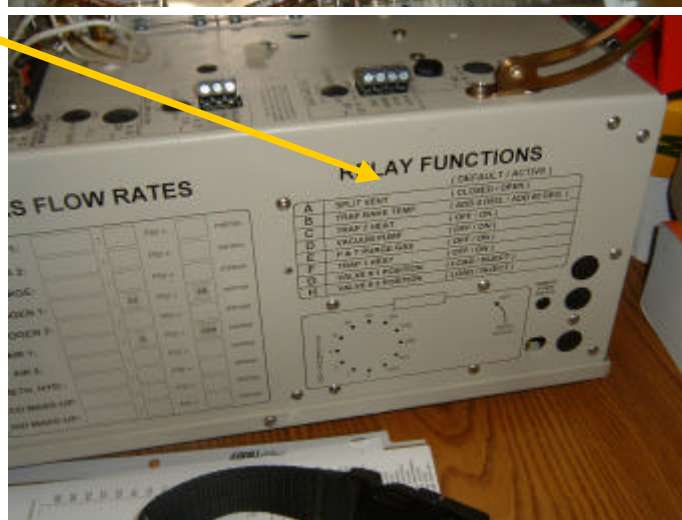
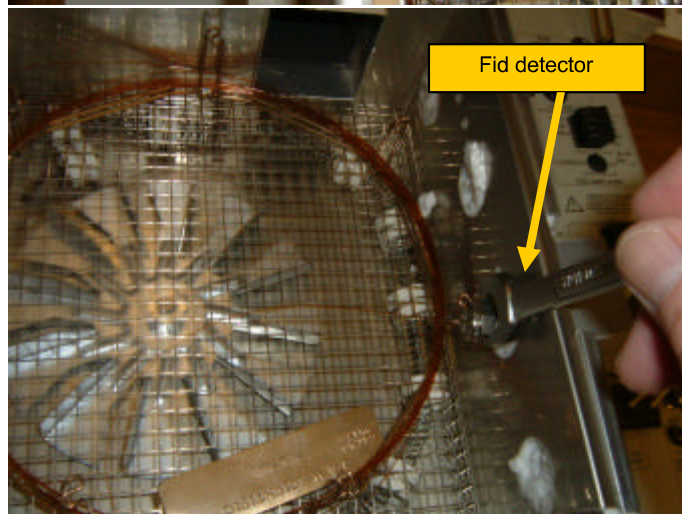
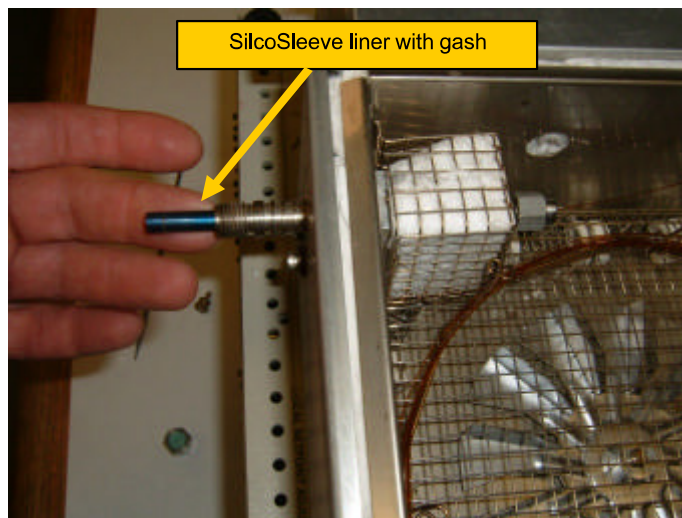
Place the liner in the injector with the gash side towards the operator. The gash allows carrier gas to flow through the liner. Without a gash, the carrier gas will flow around the liner instead of through it. Secure the column in place (so you can see the dab of White-Out just past the end of the 1/8" swagelok nut) using a swagelok nut and 1/8" to .4mm soft graphite reducing ferrule.

Connect the other end of the column to the detector using a 1/8" soft graphite ferrule or a fitting and a hard graphite 1/16" to .4mm reducing ferrule.



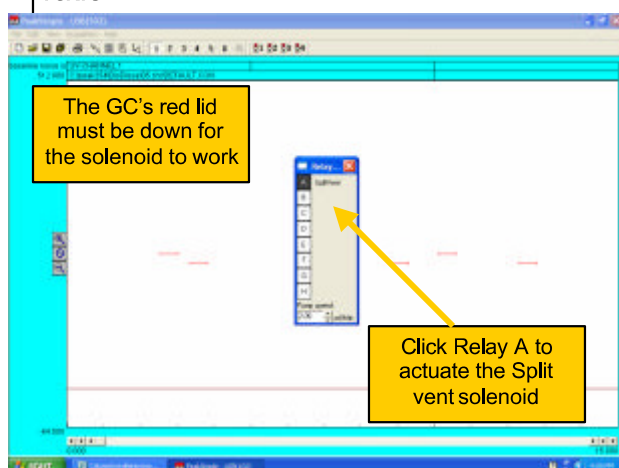
As shown on the right side of the GC, Relay A (typically) controls the split vent solenoid. *On some GCs, the split vent solenoid may be controlled by a different relay (B-H).*

In PeakSimple set the times you want the split vent to open and close. This will depend on whether you want a split or a splitless injection.



Column Installation in the SRI Model 8610 and Model 310 Gas Chromatographs equipped with the split/splitless injector

For a split injection, measure the column flow at the end of the column. For a .25mm narrow-bore column this will be about 1 ml/minute. Measure the flow exiting the split vent tube with the split vent solenoid activated. The column flow divided by the split vent flow is the split ratio.



If the split ratio must be very large (more than about 100 to 1), you may have to remove the polishing filter. The polishing filter is located behind the column oven. The molecular sieve filled tube may limit the maximum split flow because it acts like a flow restrictor. It can easily be removed and replaced with a blank tube for higher split ratios.

If you want the split vent to be open before the injection and to stay open, uncheck the box in the Edit/Overall screen labeled "reset relays at end of run". If you want the split to shut off during the run, actuate Relay A before injecting. Then close the solenoid during the run by entering Relay A off in PeakSimple's event table.

