

Quick Start SRI GC Installation Guide

I. Gas Installation & Connection

1. To connect your GC to a gas supply, we recommend the following:

- A 50 foot length of copper tubing
- A stainless steel gas line filter
- At least 2 sets of stainless steel Swagelok nuts and brass ferrules (it is a good idea to keep a few extras on hand)
- A cylinder pressure regulator with 0-100psi output

NOTE: each type of cylinder has a different CGA connection to the regulator (CGA = Compressed Gas Association). Air is typically CGA 590 or 346. Helium and nitrogen are CGA 580. Hydrogen and argon-methane are CGA 350.

Gas line installation kits that include everything you need are available from SRI:

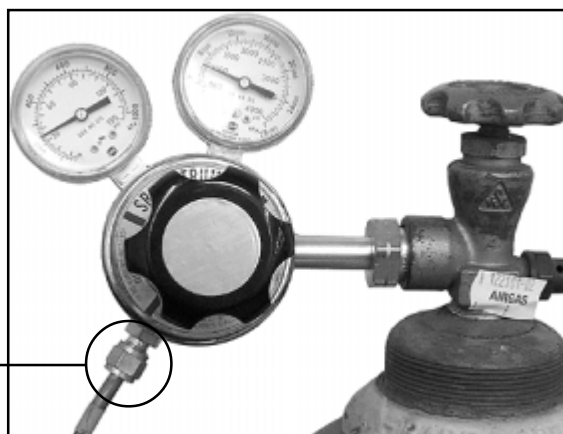
- | | |
|-----------|---|
| 8600-C590 | Air gas line kit (with both CGA 590 and 346 inlet fittings) |
| 8600-C580 | Helium/nitrogen gas line kit |
| 8600-C350 | Hydrogen/argon-methane gas line kit (the hydrogen CGA is equipped with a flow restrictor to limit the escape of gas in the event of a leak) |

These kits include everything in the list of recommended supplies above, plus a tubing cutter. Each regulator is supplied with a 1/8" Swagelok fitting for easy connection to the copper tubing.

2. Using the appropriate CGA connection as described above, attach the regulator securely to the gas cylinder.

3. Secure one end of the 1/8" copper tubing to the regulator with a Swagelok nut and ferrule. Cut the tubing to the desired length before connecting it to the GC. Make sure to leave it long enough to allow you to move your GC around your work area.

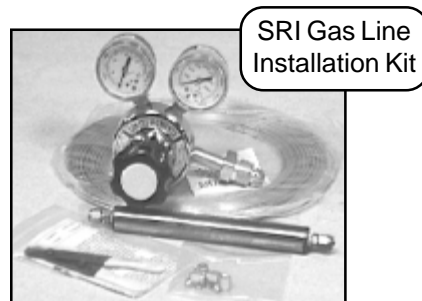
1/8"
Swagelok
fitting



4. If you don't already filter your gas, install gas line filter(s) in the gas line(s) where it is convenient to replace when needed.



cylinder air, a jumper tube is secured to the air inlet and outlet. If you ordered your GC with an air compressor, it is shipped with the jumper tube in place as shown.



5. Connect the gas or gases to the inlets on the left-hand side of the GC as labeled.

NOTE: the GC shown here is equipped with a built-in air compressor. When using the internal air compressor instead of

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("Gas Installation & Connection" *continued*)

GAS FLOW RATES					
CARRIER 1:		:	7	PSI =	10 ml/min
CARRIER 2:		:		PSI =	ml/min
P&T PURGE:		:		PSI =	ml/min
HYDROGEN 1:	FID	:	21	PSI =	25 ml/min
HYDROGEN 2:		:		PSI =	ml/min
AIR 1:	FID	:	9	PSI =	250 ml/min

6. The pressure that correlates with the flow rate for the column, make-up gases, and detector supplies is labeled on the right-hand side of the GC. For best EPC performance, set the incoming gas pressure(s) 15-20psi higher than the operating pressure listed on the right-hand side of the GC.

II. Column Installation

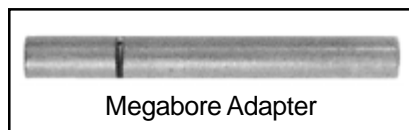
1. If you ordered a column with your GC, it is shipped installed in the column oven and you can skip this section. Otherwise, open the GC lid and the column oven lid.

2. These instructions will cover the installation of a 0.53mm capillary column into an on-column injector. The SRI on-column injector is designed for a 26 gauge syringe needle; a 10µL liquid injection syringe with a 26 gauge needle is included in the Accessories Kit shipped with your GC.



Spare Parts Kit

A megabore adapter for syringe injection onto 0.53mm capillary columns is included in the Spare Parts Kit affixed to the inside of the GC lid on the right-hand rear corner.



Megabore Adapter



Accessories Kit

-OR-

Accessories Kit contents:

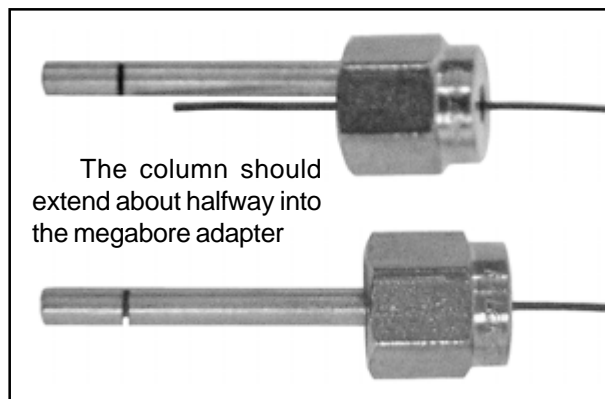
- 6' Serial **or** USB cable
- Tubing cutter
- 10µL liquid injection syringe
- 1mL gas injection syringe & needle
- 3mL leak check syringe

3. The megabore adapter is a 1" x 1/8"OD stainless steel tube with a perpendicular gash cut into it, and a conical entry to guide the syringe needle into the column. A 0.53mm capillary column connects to the SRI on-column injector with a graphite reducing ferrule and a 1/8" Swagelok nut. Insert one end of the column through the nut, then through the graphite ferrule. It is a good idea to trim off about one inch of the column to avoid possible peak tailing from any graphite shavings left behind after inserting the column through the ferrule; make sure the cut is clean, with no jagged edges.

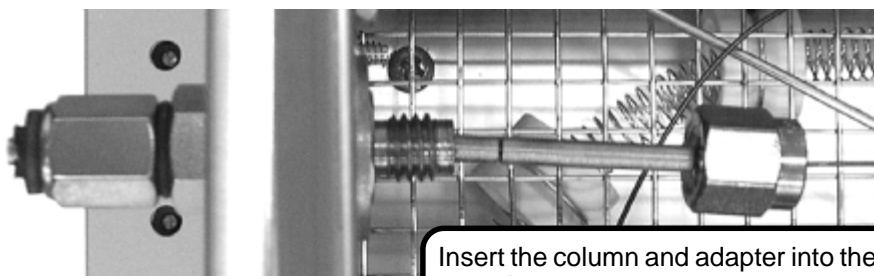
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("Column Installation" *continued*)

4. Insert the column end with the graphite ferrule and Swagelok nut about halfway into the megabore adapter and tighten it with the nut and ferrule.



5. After inserting the column into the adapter, insert the column and adapter together into the injection port.



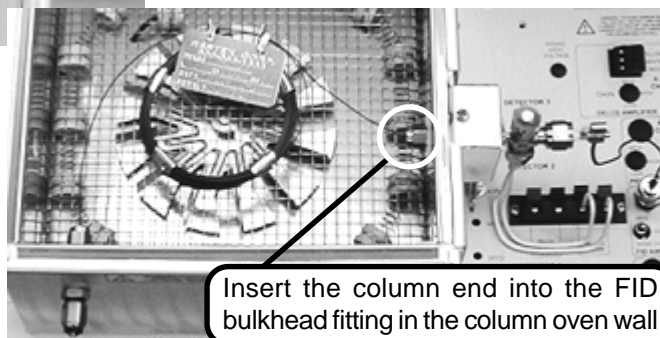
Tighten the Swagelok nut with a 7/16" wrench. You should feel a little give from the ferrule, but do not overtighten it. You want it tight enough to prevent leakage, but do not smash the ferrule.



6. Slide another 1/8" Swagelok nut and graphite ferrule over the other end of the column. For a TCD detector, connect the nut to the fitting labeled "TCD IN" in the column oven.

For an FID detector, leave about 1" of the column protruding through the nut and ferrule. Insert the column into the FID bulkhead fitting in the column oven wall and tighten the Swagelok nut.

Please see "Analytical Column Installation" in the INSTALLATION section of your manual for more detailed information on column installation.



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III. Software Installation

NOTE: There are tutorials in the manual and online at www.srigc.com (click on the “Download Our Documents” button) that will acquaint you with the basic functions of the PeakSimple chromatography software included with your GC.

1. Connect the serial or USB cable to your computer and the GC. The serial port connection is on the left-hand side of the GC, and the USB connection is on the right-hand side.
2. Locate your copy of the PeakSimple software just inside the front cover of your SRI manual. Insert the CD or floppy disks into your computer's appropriate drive.



SRI Manual



3. Double click on “My Computer,” then on the appropriate drive to open it. Double click on the “setup.exe” icon, and follow the instructions.



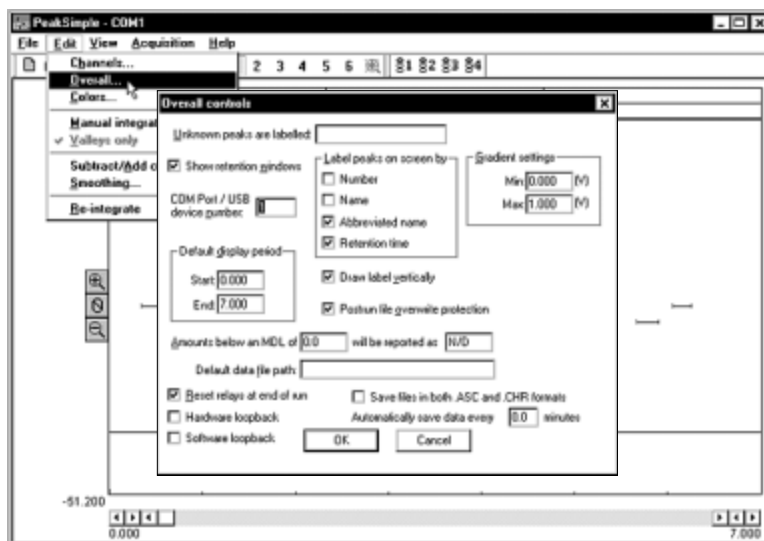
Setup

4. For USB, refer to “Installing the USB Drivers for Model 302 USB PeakSimple Data System” which you will find immediately behind these instructions in your manual, or online at www.srigc.com. Return to step #5 below when you are finished installing the USB drivers. For serial port, proceed to the next step.



5. Double-click on the PeakSimple icon to launch the program. Verify that communication has been established between the computer and the GC. An error message will appear if communication is not established.

6. Open the Edit menu and choose Overall. In the dialog box that pops up, enter the number of the COM port to which you have connected the GC. For USB, enter the unique USB device number that is printed on your PeakSimple disk(s), and on the back of the GC. It is a 4-digit number that always begins with “5” (5093, 5276, etc.).



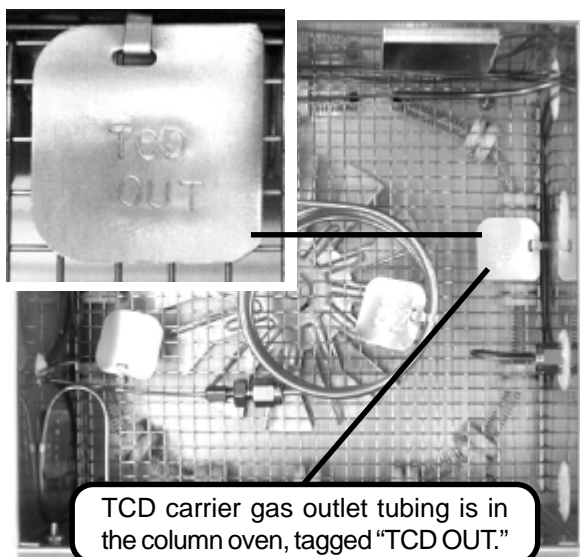
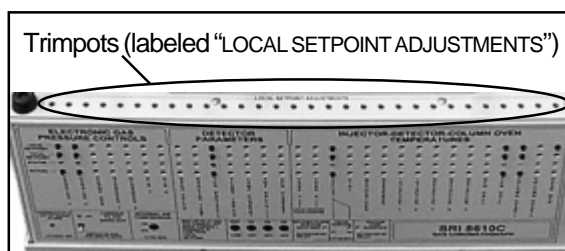
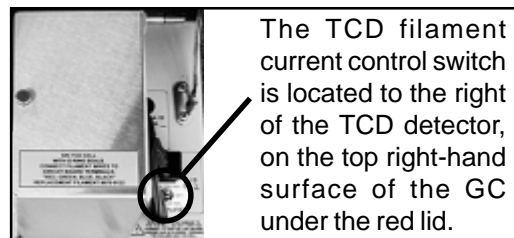
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IV. Detector Activation

IMPORTANT: If you have a pre-configured GC system, please see the manual section for instructions on operating procedures. The manual is organized into sections with labeled tabs. In addition to preconfigured GCs, there are sections on detectors, injectors, autosamplers, valves, and more.

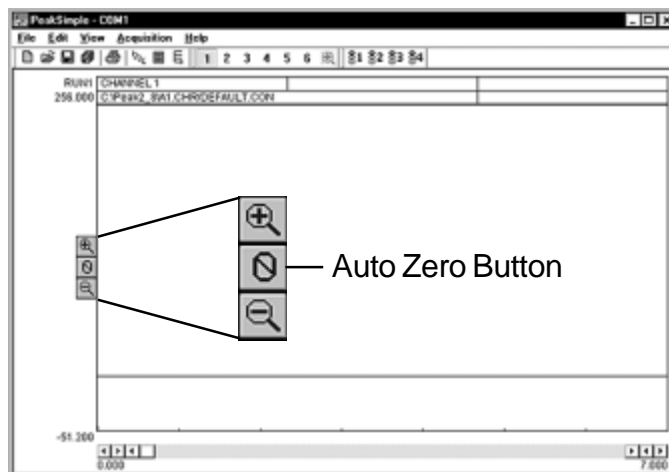
A. TCD Detector

1. Your GC power should still be ON, and the filaments should still be OFF. The TCD oven is set to 150°C at the factory. It is adjustable by turning the trimpot while observing the TCD CELL LOCAL SETPOINT temperature on the LED display. The trimpots are located on the top edge of the GC front control panel. Allow the TCD to reach desired operating temperature and stabilize.



2. TCD filaments will be damaged or destroyed if current is applied in the absence of flowing carrier gas. Therefore, always verify that carrier gas is exiting the TCD carrier gas outlet before energizing the TCD filaments. The TCD carrier gas outlet tubing is in the column oven, labeled "TCD OUT." Place the end of the tubing in some liquid; if no bubbles are exiting the tube, there is a flow problem. **DO NOT** turn the TCD current ON if you cannot detect carrier gas flow. A filament protection circuit prevents filament damage if carrier gas pressure is not detected at the GC, but it cannot prevent filament damage under all circumstances. Correct any lack of carrier gas flow before proceeding.

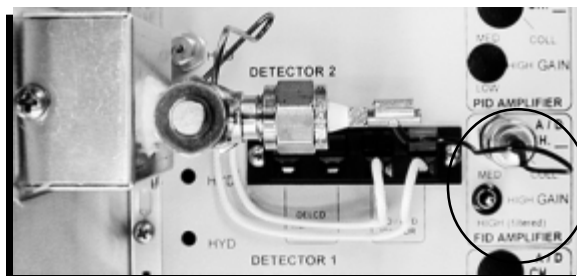
3. With the TCD filaments still OFF, zero the data system signal by clicking on the Auto Zero icon on the left side of the chromatogram. Switch the TCD current to LOW. The data system signal's deflection should not be more than 5-20mV for a brand-new TCD detector. There is also a HIGH current TCD filament setting, but to avoid filament damage, we recommend you use only the LOW setting until you are familiar with your GC and TCD detector.



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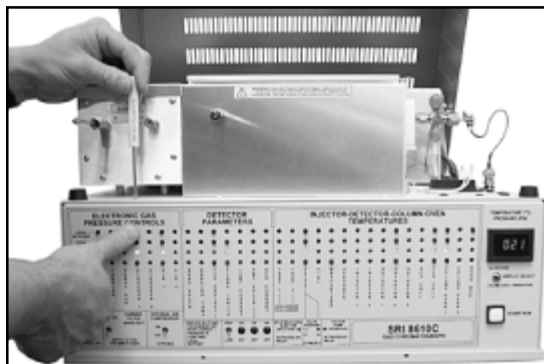
B. FID Detector

1. Set the FID amplifier gain switch to HIGH for most applications. If peaks of interest go off the scale (greater than 5000mV), set the gain to MEDIUM.

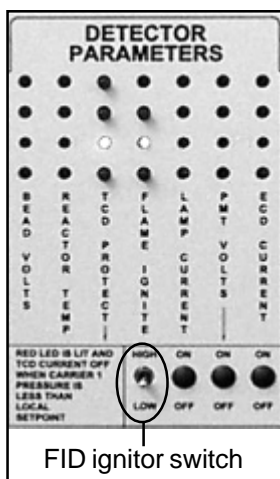
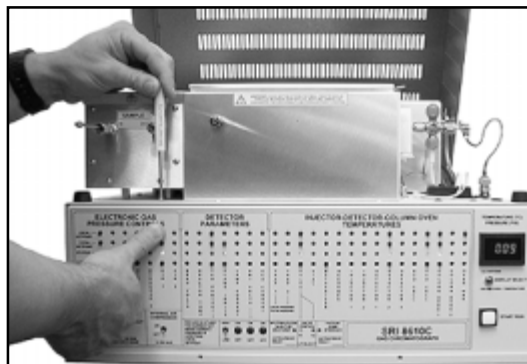


FID amplifier gain switch

2. Set the FID hydrogen flow to 25mL/minute, and the FID air to 250mL/minute. The approximate pressures required for this flow through your GC are labeled on the right-hand side of the GC chassis. In most cases, the pressure will have been set correctly at the factory. Check the hydrogen and air flow settings by pressing the LOCAL SETPOINT button while observing the LED display. The gas flow settings are adjusted using the trimpots on the top edge of the GC front control panel.

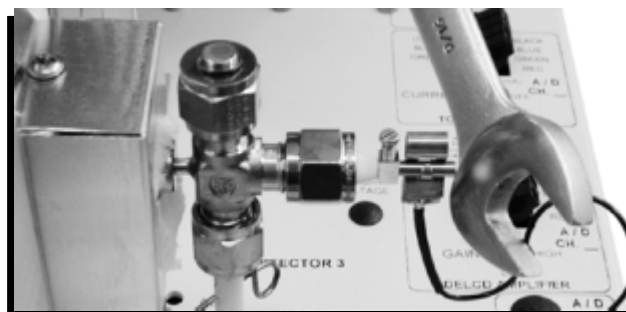


Turn the trimpot while holding down the "LOCAL SETPOINT" button until you read your desired setting in the LED display.



FID ignitor switch

3. Ignite the FID by holding the ignitor switch up for a couple of seconds, until you hear a small POP. The ignitor switch is located on the front panel of your GC under the "DETECTOR PARAMETERS" heading, with a vertical label reading "FLAME IGNITE." Verify that the flame is lit by holding the shiny side of a wrench directly in front of the collector outlet/FID exhaust vent. If water condensation becomes visible on the wrench surface, the flame is lit.



C. For all other detectors, and for more information on the TCD and FID, please see the corresponding manual sections.

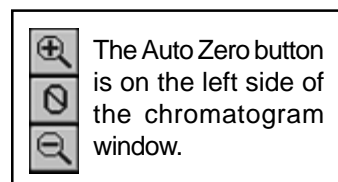
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V. Inject Your Sample

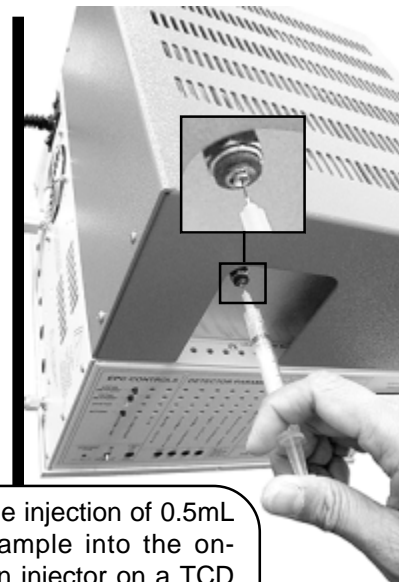
NOTE: If you are injecting with a Purge & Trap, TO-14, or Headspace concentrator, a thermal desorber, an autosampler, or any of the heated on-column injectors (PTV, Split/Splitless, etc.), please see the corresponding manual section for operating procedures.

A. Syringe Injection

1. Enter a temperature program for the column oven. The temperature program is determined by the sample and the goals of the analysis.
2. For gas samples, fill the 1mL gas syringe with 0.5-1mL. For liquid samples, fill the 10µL liquid syringe with 1µL, removing the bubbles before injecting.



3. Click on the Auto Zero button to zero the data system signal. Hit the computer keyboard spacebar.

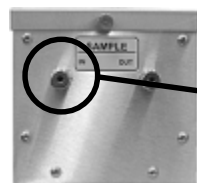
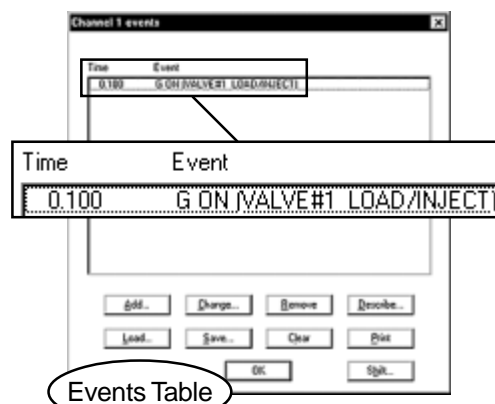


Syringe injection of 0.5mL gas sample into the on-column injector on a TCD equipped Model 310 GC

4. Pierce the septum in the on-column injector with the syringe needle. Insert the needle straight into the on-column injector port; avoid bending the needle. Depress the syringe plunger to inject the sample, then withdraw the syringe. For the best and most consistent results, use an easily reproducible injection technique with quick, smooth movements.

B. Valve Injection

1. Set the valve oven temperature between ambient and 175°C using the trimpot on the top edge of the front control panel. Enter a temperature program for the column oven.
2. Enter an event program to automatically inject the contents of the valve sample loop. The valve is usually in the LOAD position (default), during which Relay G is OFF. When relay G is activated, the valve is rotated to the INJECT position, in which the carrier gas stream sweeps the contents of the sample loop onto the column(s). Set the valve to INJECT (Relay G ON) 0.1 minutes into the run unless you have specific run parameters that require different timing.



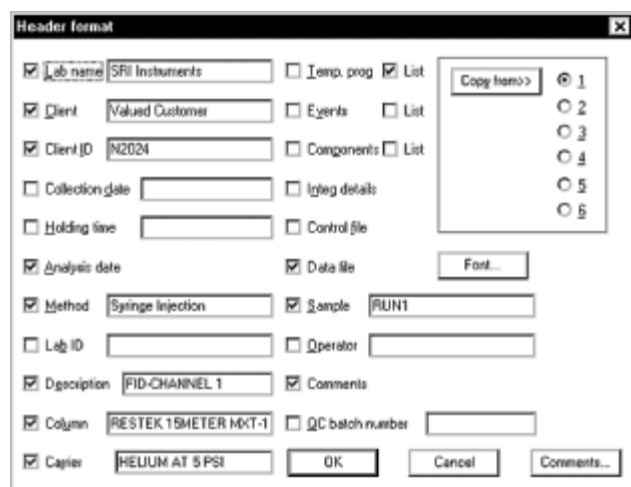
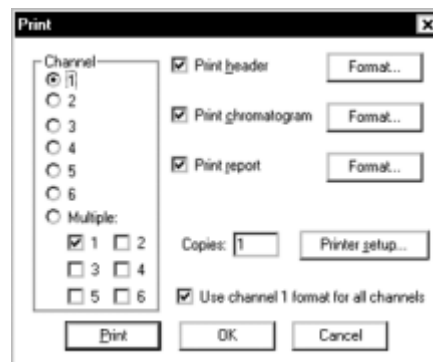
3. Sample is injected into the bulkhead fitting labeled "SAMPLE IN" on the front of the valve oven. The fitting is equipped with a 1/8" Swagelok nut for easy connection of sample streams.

4. Press the computer keyboard spacebar to initiate the run. The valve will automatically rotate to the INJECT position at 0.1 minutes (or whatever time you entered in the Events Table).

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VI. Print Your Chromatogram

1. Choose File / Print from the main menu bar.
2. In the Print screen, designate which channel(s) you want printed. Use the radio buttons to pick a single channel, or select "Multiple:" and click the checkboxes to select the channels you want to print.



3. Click the checkbox to select "Print header," then click on the "Format..." button to set up the Header. The Header is printed above the chromatogram on the page, and can contain such information as the analysis date, the sample and injection type, column and carrier gas used, client and lab names, and any special comments about the analysis that you want printed with the chromatogram. Click "OK" when finished formatting your header. The Print screen is still open.

4. In the Print screen, click the checkbox to select "Print chromatogram," then click on the "Format..." button. Choose "Use screen limits" to print the chromatogram as you see it onscreen. You can also choose the chart speed, which determines the number of inches per minute displayed in the chromatogram timeline. For example, if your chromatogram is 10 minutes long and you want it to occupy 5 inches on the paper, choose 0.5 inches/minute. Click "OK" when finished.



5. In the Print screen, click the checkbox to select "Print report," then click on the "Format..." button to choose the data that will be included in the report at the bottom, such as the component name, retention time, peak area and height, etc. Click "OK" when finished.

6. Now that your chromatogram is ready to print, click on the Print button in the Print screen.