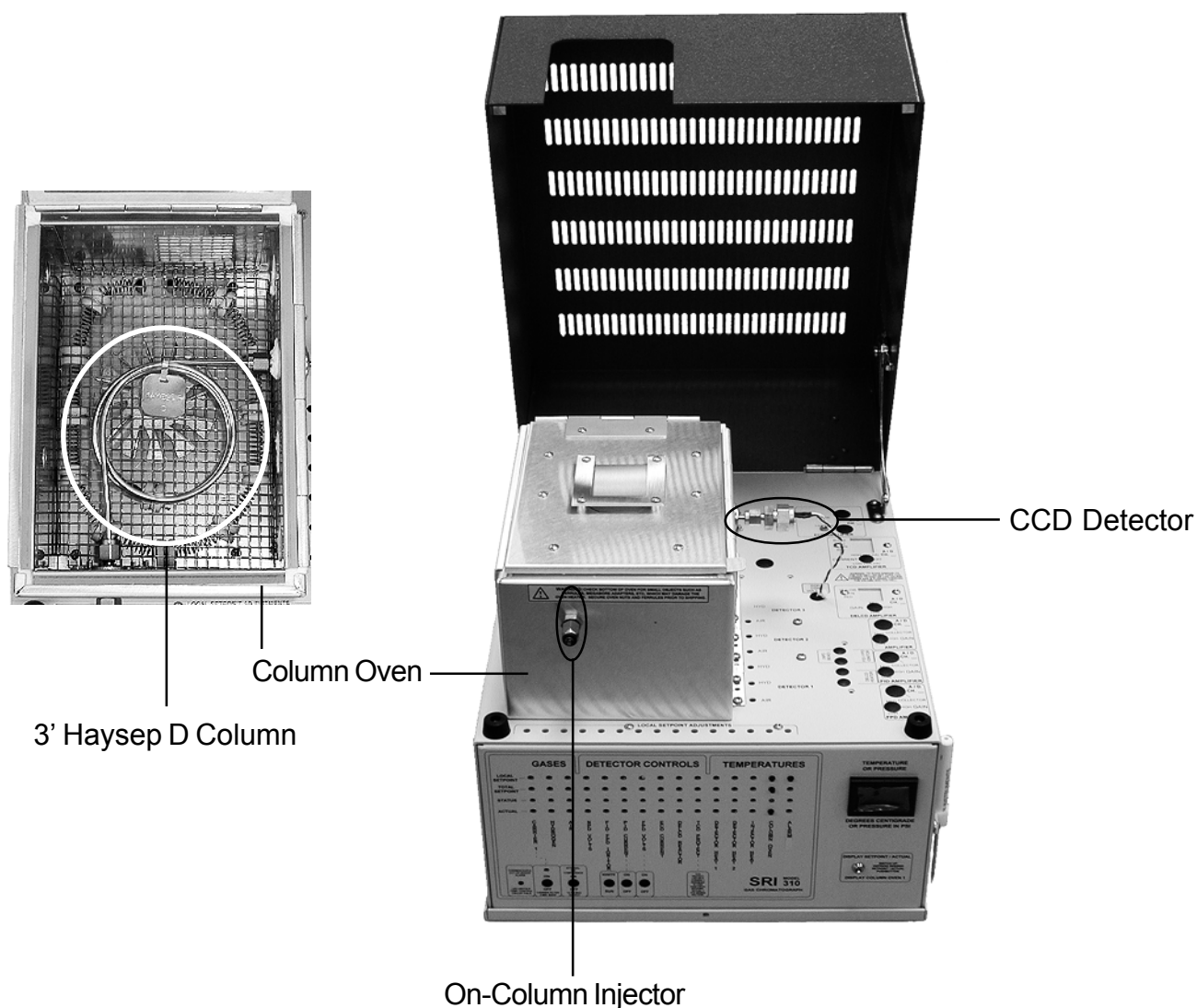


POPULAR CONFIGURATION GCs

Gas-less™ Educational

System Overview

Your SRI Gas-less™ Educational GC is equipped with a Catalytic Combustion Detector (CCD), built-in Air Compressor, temperature programmable Column Oven, Haysep D packed column, On-Column Injector and built-in, single channel PeakSimple Data System, and optionally, Fast Cool-down fans. It is designed to teach the principles of Gas Chromatography without the expense and safety hazards of compressed gas cylinders.



The CCD is about as sensitive as a TCD, but has the hydrocarbon selectivity of an FID. It operates on air alone, which is supplied by the built-in Air Compressor at around 12psi. If you chose optional fast cool-down fans, they will automatically reduce the Column Oven temperature at the end of an analysis to the initial temperature in less than five minutes. Most isothermal applications don't require fast cool-down fans; in these cases, the oven lid is simply manually raised for cooling.

POPULAR CONFIGURATION GCs

Gas-less™ Educational CCD

General Operating Procedure

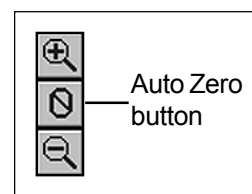
1. Connect your GC to your Windows PC with PeakSimple installed. Plug in your GC and turn its power on.
2. Set the Column Oven temperature to 130°C in PeakSimple as follows:

Initial Temp	Hold	Ramp	Final Temp
130.00	10.00	0.00	130.00

In an isothermal operation like this, the Hold period determines the length of the analytical run.

NOTE: The Haysep D packed column is standard for this GC system because of its separation qualities and durability. To avoid possible damage to the packing, do not program your Column Oven to heat above 150°C.

3. Let the system stabilize for at least 10 minutes, allowing the CCD detector to adjust to the increase in temperature.
4. Click on the Zero button to the left of the chromatogram window in PeakSimple to zero out the Data System signal. Otherwise, the signal starts out at 1000 millivolts. Press the RUN button on your GC or the spacebar on your computer keyboard to begin the run.



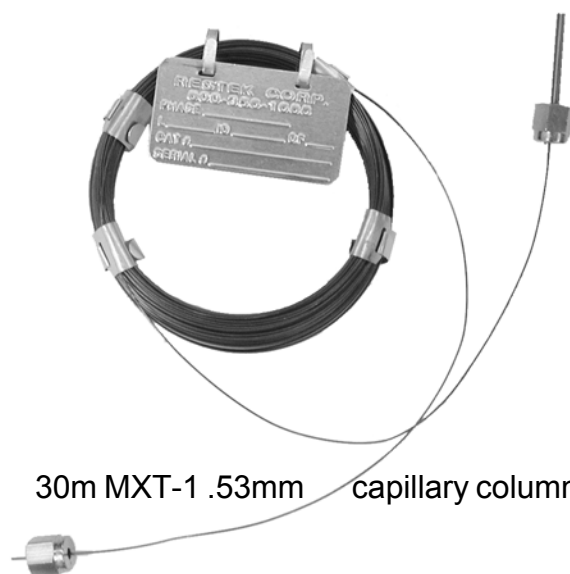
5. Inject sample into the On-Column Injector. A 1µL 1000ppm methanol/acetone sample is the factory test standard for this configuration.

Column Notes



1m Haysep D packed column

Haysep D packed columns are useful for analyzing gases and low molecular weight compounds such as alcohols, aldehydes, and ketones. For heavier molecular weight liquids, use a 30m or 60m MXT-1 capillary column.



30m MXT-1 .53mm capillary column

POPULAR CONFIGURATION GCs Gas-less™ Educational CCD

Expected Performance

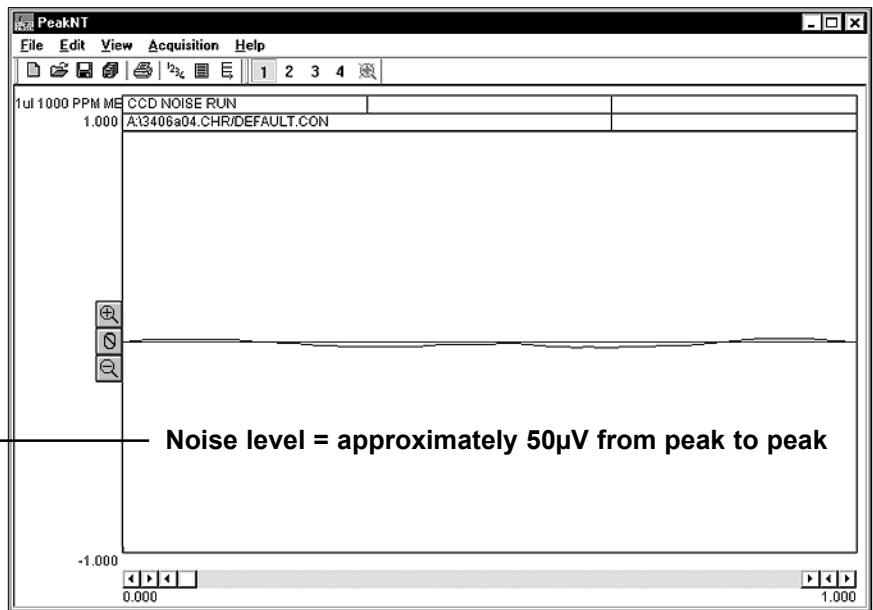
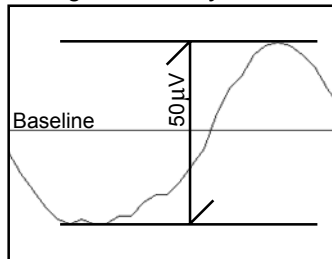
The CCD Detector in your Gas-less™ Educational GC is mounted on the wall of the Column Oven in a brass housing. It consists of a tiny coil of platinum wire embedded in a catalytic ceramic bead. This catalytic ceramic bead is housed in a plastic shell. A 150 milliamp current heats the bead to around 500°C. The CCD is maintained in an oxidative environment by the air being used as a carrier gas. When a hydrogen or hydrocarbon molecule impacts the hot bead, it combusts on the surface, raising the temperature and resistance of the platinum wire. This change in resistance causes the CCD Detector output to change, which produces a peak.

CCD Detector Noise Run

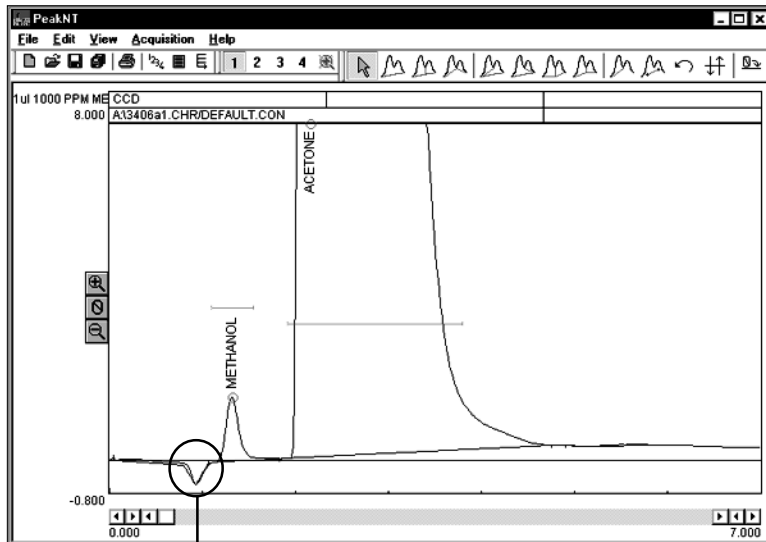
Column = 1m Hayesep D
Flow = 37mL/min

Isothermal Temperature Program:
Initial Hold Ramp Final
80°C 15.00 0.00 80°C

Enlarged for clarity



Factory Test Run of a Gas-less™ Educational GC System



Negative water peak

Column = 1m Hayesep D
Flow = 37mL/min
Sample = 1 μL 1000ppm Methanol/Acetone mix; direct injection

Isothermal Temperature Program:
Initial Temp Hold Ramp Final Temp
130°C 10.00 0.00 130°C

RESULTS:

Component	Retention	Area
Methanol	0.816	13.2030
Acetone	2.000	6945.3570
Total		6958.5600