

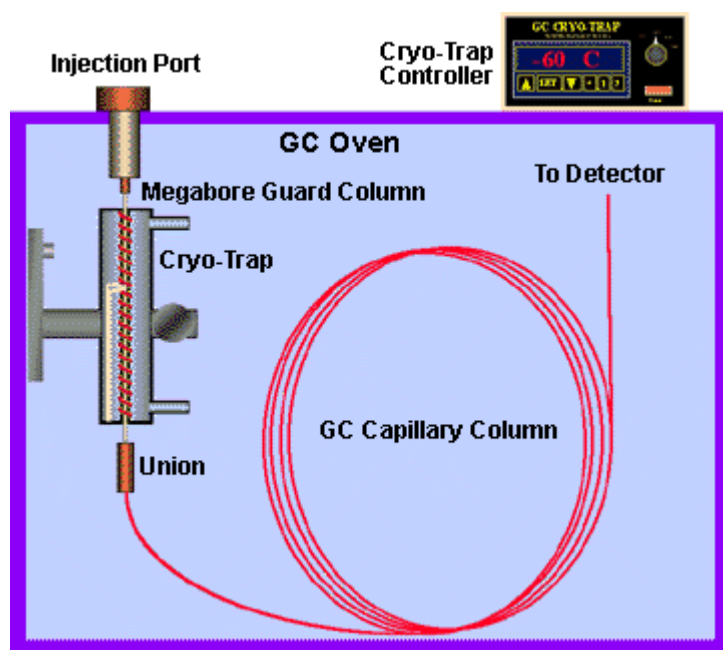
## Features:

- Only 1.0" Long - Uses minimum amount of cooling gas
- Reduction of CO<sub>2</sub> or LN<sub>2</sub> use by 97% as compared to cooling the entire oven.
- Improve Chromatographic resolution of early eluting peaks
- Dual programmable cryo-cooling and heating cycles
- Trap compounds in the GC oven at the head of the GC column.
- Remote input connector for switching between cryo-cooling and heating cycle switching via GC, Desorption system or manually.
- Rapid heating up to 400 degC at > 1000 deg C per minute.
- Remote start output signal for starting GC, MS or recorder.

## Applications

- Thermal Desorption Sample Trapping
- Purge and Trap Systems
- GC Headspace Sample Analysis
- Multi-dimensional GC applications

## Theory of Operation:



Cryo-trap in GC oven.

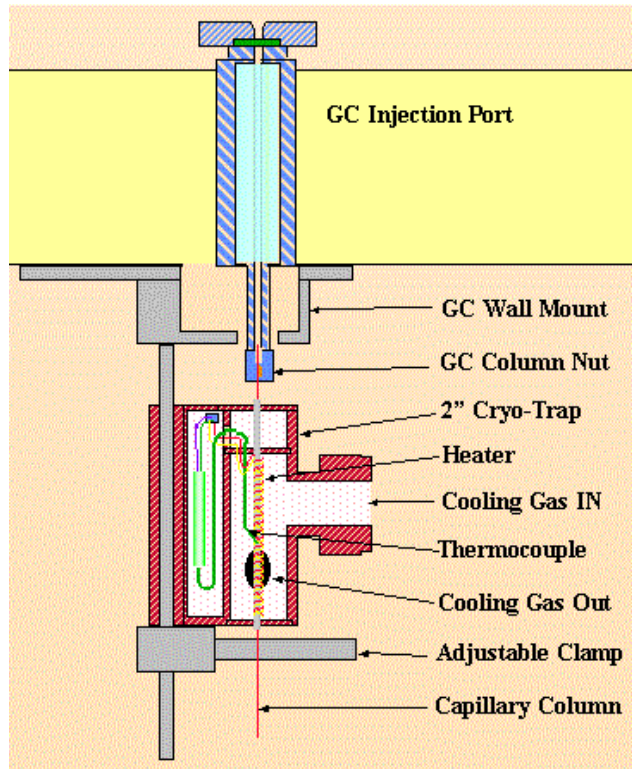
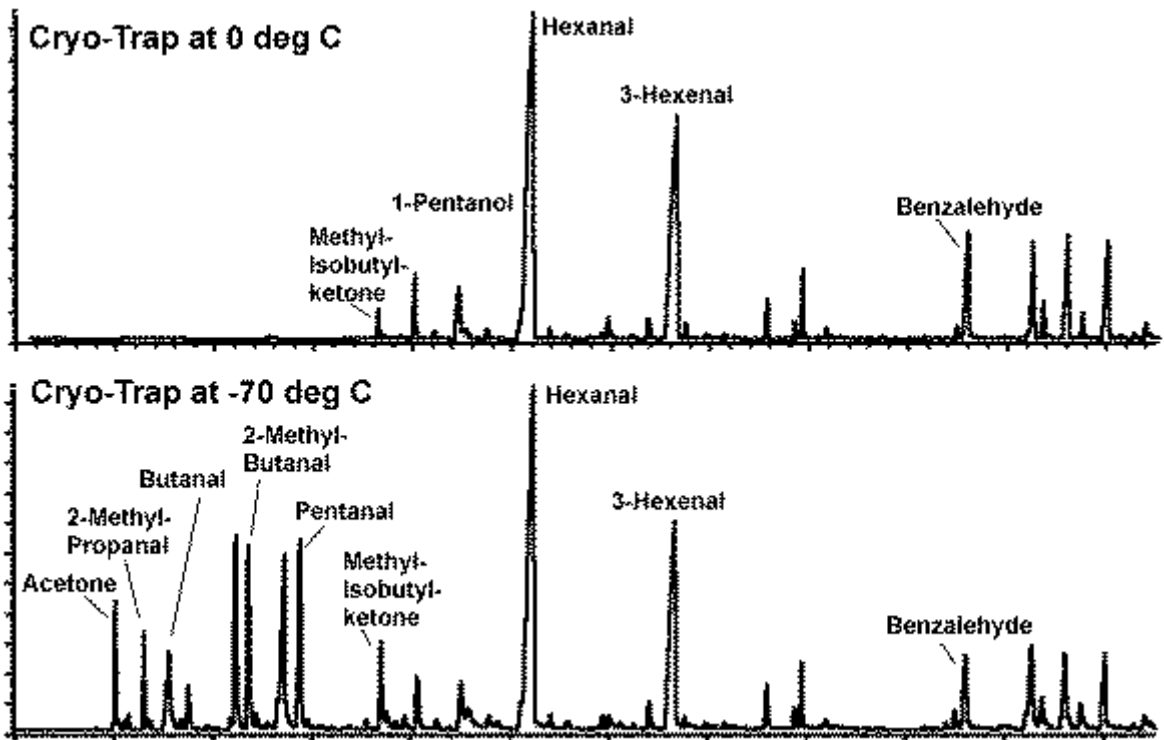
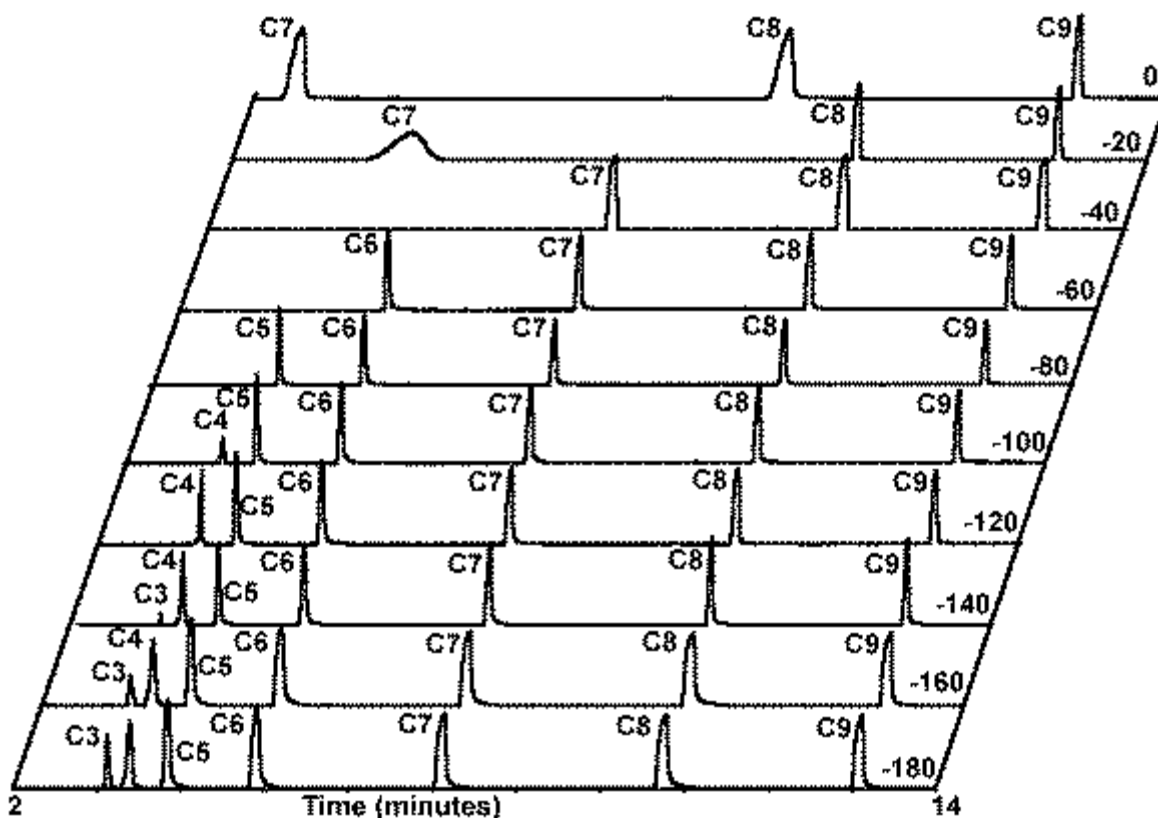


Diagram of cryo-trap



Purge & Trap of Black Tea, before and after cryo-trapping.



Trapping Efficiency of Hydrocarbons on 0.53 mm DB5 (1.5u film thickness) at various cryo-trapping temperatures 0 to -180 °C.

## CO<sub>2</sub>/LN<sub>2</sub>:

### *New Programmable Micro Cyro-cooling and heating trap for the Cryo-focusing of volatiles and semivolatiles at the head of GC capillary columns.*

Two models of the Micro Cryo-Trap are now available. The Model 971 is designed for liquid CO<sub>2</sub> use only for cryo-trapping temperatures down to -70 °C. The Model 981 is designed for Liquid Nitrogen use only for cryo-trapping temperatures down to -180 °C. Each model can maintain any cooling temperature within +/- 3 °C from its minimum temperature up to room temperature. In order to release the trapped volatiles from the GC Cryo-Traps, both models can heat the GC Cryo-Trap at temperatures up to 400 °C at a heating ramp rate in excess of 1200 deg/minute. Most users prefer to use the CO<sub>2</sub> version of the GC Cryo-Trap (Model 971) due to the ease of handling liquid CO<sub>2</sub> and for applications where -70 °C is an acceptable lower temperature limit.

If lower temperatures are required, then the liquid nitrogen version of the GC Cryo-Trap (Model 981) must be used. The liquid nitrogen delivery lines are larger than the CO<sub>2</sub> lines and the liquid nitrogen lines must be insulated. This makes installation somewhat more cumbersome. In addition the Liquid Nitrogen version uses more cooling gas and is slightly more audible.

### **Model 971 Micro Cryo-Trap for use with Liquid CO<sub>2</sub>**

The Model 971 Micro Cryo-Trap is designed for use with liquid CO<sub>2</sub> tanks with a DIP tube. The minimum temperature of cooling is -70 °C. This model comes with the Micro Cryo-

Trap, the dual temperature electronics controller, connecting cables and stainless steel connecting line. **\*Order installation kit below.**

### **Model 981 Micro Cryo-Trap for use with Liquid Nitrogen**

The Model 981 Micro Cryo-Trap is designed for use with liquid nitrogen tanks (low pressure). The minimum temperature of cooling is -180 deg. C. This model comes with the Micro Cryo Trap, the dual temperature electronics controller, connecting cables and copper connecting line. **\*Order installation kit below.**

### **Installation Kits:**

Depending on the make and model of your GC, an installation kit must be ordered separately as described below. First you must decide which model of Cryo-Trap is required for your application; the Model 971 for use with CO<sub>2</sub>, or the Model 981 for use with liquid Nitrogen. Although the Cryo-Trap can be used for both CO<sub>2</sub> and LN<sub>2</sub>, the electronics are not interchangeable for the two systems.

You must then select which installation kit is required based on the make and model of your gas chromatograph. Either of the two Micro Cryo-Trap(tm) models will fit the same installation kits listed.

### **Literature/Installation**

- [Micro Cryo-Trap Theory of Operation - Description](#)

### **References and Literature**

- [Micro Cryo-Trap Theory of Operation - Description](#)
- [Model 971 Operating Manual](#) (CO<sub>2</sub>)
- [Model 981 Operating Manual](#) (LN<sub>2</sub>)
- [Application Note # 38 - A New Micro Cryo-Trap for Trapping of Volatiles at the front of a GC Capillary Column](#)
- [Application Note # 19 - Design and Application of the SIS GC Cryo-Trap](#)
- [Application Note # 24 - Selection of GC Guard Columns for Use with the GC Cryo-Trap](#)
- [Application Note # 28 - Analysis of Volatile Organics in Latex Paints by Automated Headspace Sampling and GC Cryo-Focusing](#)
- [Application Note # 29 - Analysis of Volatile Organics in Oil Base Paints by Automated Headspace Sampling and GC Cryo-Focusing](#)
- [Application Note # 30 - Comparison of Cooking Oils by Direct Thermal Extraction and Purge and Trap GC/MS](#)
- [Application Note # 31 - Volatile Organic Composition in Several Cultivars of Peach by Thermal Desorption with Cryo-Trapping](#)
- [Application Note # 34 - Selection of Thermal Desorption and Cryo-Trap Parameters in the Analysis of Teas](#)
- [Application Note # 35 - Volatile Organic Composition of Cranberries by Thermal Desorption with Cryo-Trapping](#)
- [Application Note # 36 - Identification of Volatile Organic Compounds in a New Automobile by Thermal Desorption with Cryo-Trapping](#)