

CRYO

Variable Temperature Liquid Helium Research Dewars



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Cryo Industries Variable Temperature Liquid Helium Research Dewars (CN Series) provide solutions for an extensive variety of low temperature optical and non-optical requirements.

There are numerous designs available, including Sample in Flowing Vapor, Sample in Vacuum and Sample in Exchange Gas.

Our most popular models features Sample in Flowing Vapor (dynamic exchange gas), where the sample is cooled by insertion into flowing helium gas exiting from the vaporizer (also known as the diffuser or heat exchanger). The samples are top loading and can be quickly changed while operating.

The temperature of the sample can be varied from typically less than 1.4 K to room temperature. Liquid helium flows from the reservoir through the adjustable flow valve down to the vaporizer located at the bottom of the sample tube. Applying heat, vaporizes the liquid and raises the gas temperature. This gas enters the sample zone to cool the sample to your selected temperature.

Pumping on the sample zone will provide temperatures below 2 K with either sample in vapor or immersed in liquid. No inefficient liquid helium reservoir pumping is required.

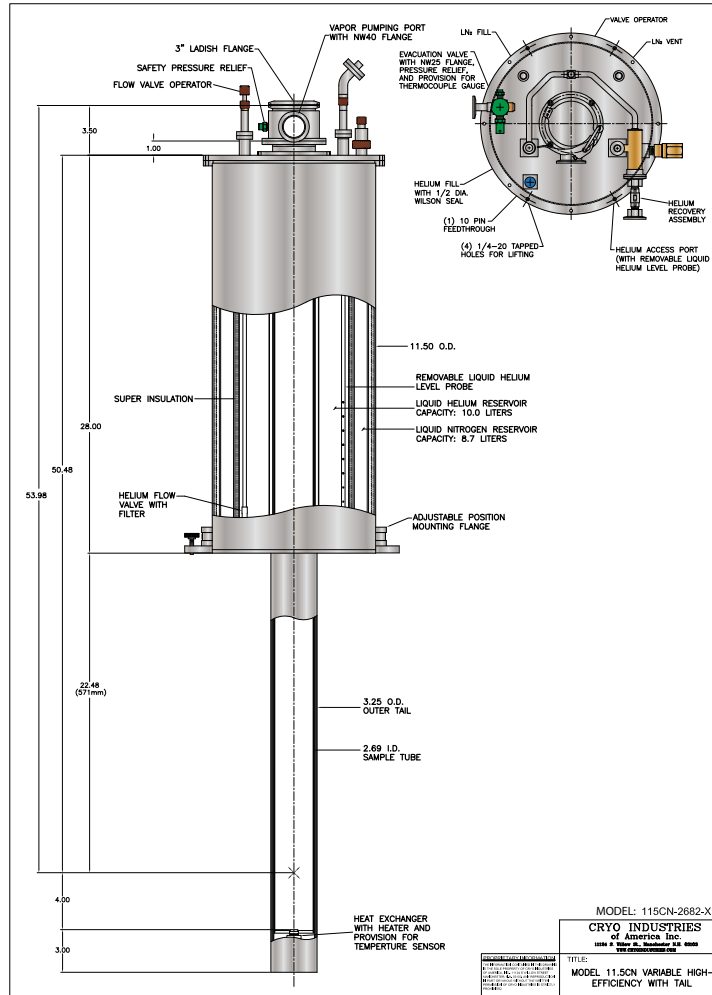
The system uses enthalpy (heat capacity) of the helium vapor which results in very high power handling, fast temperature change, ultra stable temperatures, ease of use an much more - Super Variable Temperature.

Optical 'cold' windows are normally epoxy sealed, strain relief mounted into indium sealed mounts or direct indium mounted. Window seals are reliable and fully guaranteed.

For experiments where flowing vapor may be undesirable (such as mossbauer or infrared detectors), static exchange gas cooling and sample in vacuum inserts are available.

High Efficiency Variable Temperature Nitrogen Shielded Helium Cryostat

Fits NMR dewars with 3.25 inch clear RTB

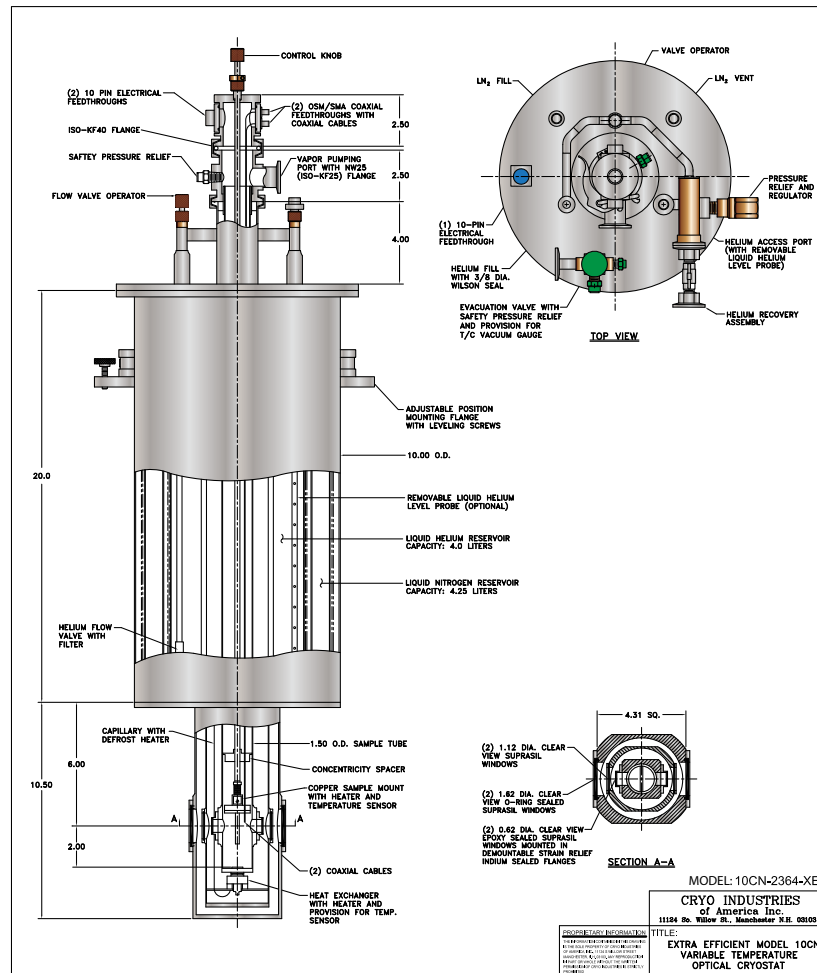


System Features:

Reference Cryo Drawing: 11.5CN-2682-XE

- <1.5K to 325K operating temperature range
- Full nitrogen shield around sample tube
- 10 liters liquid helium reservoir capacity
- <70 ml/hr nominal liquid helium static loss rate
- 8.7 liters liquid nitrogen reservoir capacity
- Full nitrogen shield around sample tube
- 2.75 inch OD (68 mm ID) sample tube
- 3.00 inch OD intermediate radiation shield
- 3.25 inch OD x 29.48 inch long tail section
- 3" Ladish sample interface
(NO sample positioner probe/holder supplied)
- 53.98 inch total height from top to sample center
- 50 ohm heater installed on heat exchanger
- Calfit (1.4 to 325K) Cernox sensor installed on heat exchanger
- 10-pin hermetic electrical vacuum feedthrough
- Nitrogen fill/vent ports with 3/8 inch quick connect adapters
- Helium fill port with 1/2 inch quick connect, Helium vent port with 3/8 inch quick connect
- Sample helium flow control valve
- De-icing heaters installed on capillary/flow valve
- Sample and dewar safety pressure relief
- Internal charcoal cryopump
- Adjustable mounting flange

High Efficiency Variable Temperature Optical Nitrogen Shielded Helium Cryostat

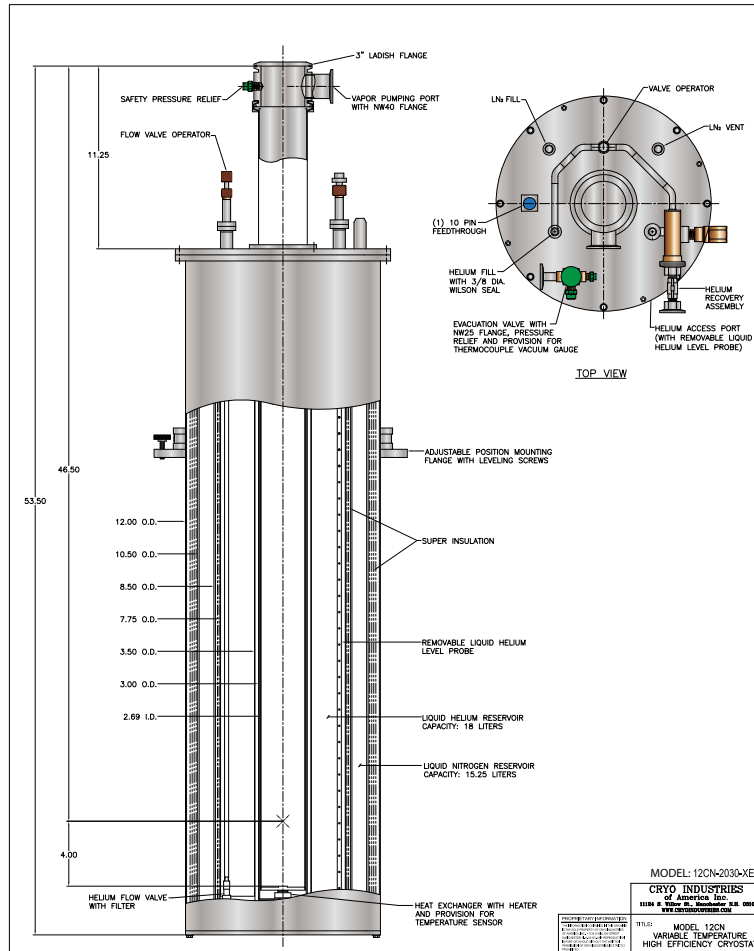


System Features

Reference Cryo Drawing.: 10CN-2364-XE

- <1.5K to 325K operating temperature range
- Sample in vapor (Dynamic exchange gas)
- 4.0 liters liquid helium reservoir capacity
- 4.25 liters liquid nitrogen reservoir capacity
- <50 cc/hr nominal liquid helium static loss rate
- Full length nitrogen shield around sample tube for efficient higher temperature operation
- 10.0 inch diameter, 20.0 inch main dewar body length
- 6.0 inch from main body flange joint to optical center
- Sample positioner with rotational and linear adjustment of copper sample mount
- (2) 10-pin electrical vacuum feedthroughs
- Sample vapor pumping port with NW25 flange
- Sample and dewar safety pressure relief
- 1.5 inch O.D. sample tube
- 50 ohm heater installed on heat exchanger and sample mount
- Nitrogen fill/vent ports with 3/8" Wilson fitting
- Helium fill/access ports with 3/8 inch Wilson fitting
- Sample helium flow needle valve
- De-icing heaters installed on capillary/flow valve
- Evacuation valve with safety pressure relief
- Internal charcoal cryopump
- (2) optical ports at 0 and 180 degrees, (2) suprasil quartz windows
- Inner cold windows epoxy sealed in demountable indium sealed strain relief flanges

High Efficiency Variable Temperature Non-Optical No Tail Nitrogen Shielded Helium Cryostat



System Features

Reference Cryo Drawing No.: 12CN-2030-XE

- <1.5K to 325K operating temperature range
- 18 liters liquid helium reservoir capacity
- <90 ml/hr nominal liquid helium static loss rate
- 200 hrs static liquid helium hold time
- Full nitrogen shield around sample tube
- 15.25 liters liquid nitrogen reservoir capacity
- 60 hours nominal liquid nitrogen hold-time
- 2.75 inch OD (68 mm ID) sample tube
- 3.00 inch OD intermediate radiation shield
- 3.25 inch OD x 27.0 inch long tail section
- 12 inch OD dewar body
- 3" Ladish sample interface
- 46.5 inch total height from top to sample center
- 50 ohm heater installed on heat exchanger
- Silicon Diode sensor installed on heat exchanger
- 10-pin hermetic electrical vacuum feedthrough
- Nitrogen fill/vent ports with 3/8" quick connects
- Helium fill port with 1/2" quick connect
- Helium vent port with 3/8" quick connect
- Sample helium flow control valve
- De-icing heaters installed on capillary & flow valve
- Sample vapor pumping port with safety pressure relief
- Evacuation valve with safety pressure relief
- Internal charcoal cryopump
- Adjustable mounting flange

LHe Variable Temperature Research Dewars Custom Designs

Cryo Industries is able to **custom design** a system that will meet all of your experimental needs. Following are examples of custom Liquid Helium Variable Temperature Systems that we have designed and manufactured over the past 26 years.

You supply us with you experimental specifications and we will provide you with a system that is guaranteed to meet those needs!



Special Variable Temperature X-Band
EPR Continuous Flow Cryostat



Custom Model 10CN
Variable Temperature
Cryostat with Ultra High
Vacuum (UHV) Dewar



Special Model 10CN Dual
Sample Configuration:
Sample in Vacuum or
Sample in Vapor



Special Model 20CN With
Superconducting Magnet
with Beryllium Windows
for X-ray Diffraction