

Liquid Nitrogen Research Dewars

CRYO



CRYO Industries of America
www.cryoindustries.com

Cryo Industries Liquid Nitrogen Research Dewars are available in various styles that are sure to meet your experimental need. You select the style; exchange gas, flowing vapor or cold finger! In addition to our three styles of variable temperature liquid nitrogen research dewars, we also offer non-variable temperature dewar designs. Following are the three styles of variable temperature liquid nitrogen dewars available.

Model NVT Sample in Exchange Gas

The liquid nitrogen reservoir surrounds the central sample tube. Load your samples into this tube; adjust the amount of exchange gas and samples will immediately begin to cool. The exchange gas thermally couples the sample to the liquid nitrogen. The amount of thermal coupling depends on the exchange gas pressure.

The Model 5NVT research dewar is variable temperature in the range of <77 K to 325 K (500 K optional). Temperature is controlled by the exchange gas pressure and the power dissipated in the heater that is wound on the sample mount. Temperatures below 77 K can be reached by pumping on the nitrogen bath.

- Highly polished stainless steel
- Top-loading samples
- Exchange gas cooling
- Variable Temperature
- Reconfigurable to future experimental requirements
- Charcoal cryopump
- Easy to fill and operate
- Long hold time

Model NSVT Sample in Vapor

Liquid nitrogen flows from the reservoir through the adjustable flow valve to the vaporizer 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. Load your samples into this flowing nitrogen gas that exits from the vaporizer (also known as the diffuser or heat exchanger). Samples can be quickly changed while operating.

The temperature of the sample can be varied from typically 77 to 325 K by adjusting the electrical current supplied to the heater on heat exchanger. This heater is located inside the sample tube - not in vacuum; this eliminates problems due to the high latent heat of vaporization of liquid nitrogen. Other systems with the heater in vacuum usually fail to vaporize the liquid nitrogen which results in mediocre performance with eventual heater destruction, caused by trying to vaporize the liquid nitrogen that collects (instead of vaporizing).

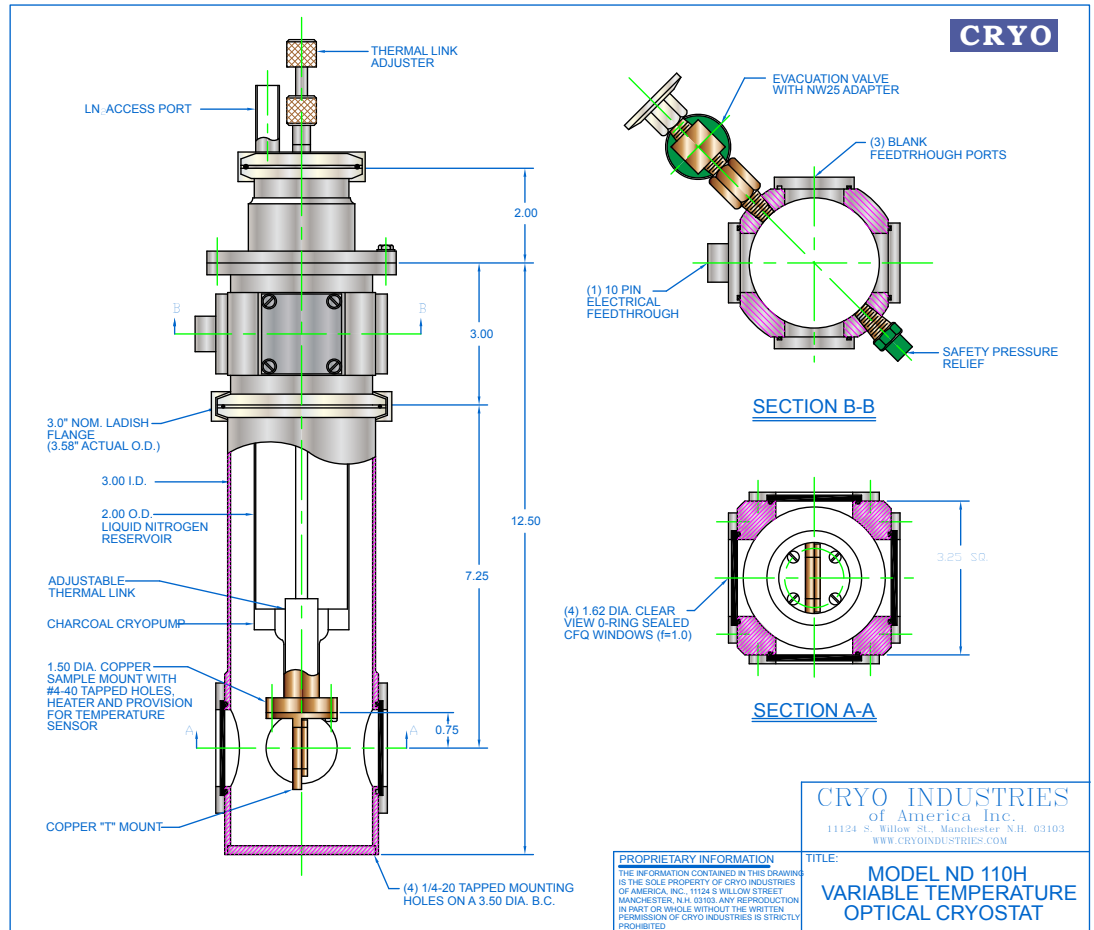
Thermal Link Sample in Vacuum

Many standard cryostats are available with an adjustable thermal link built into the liquid nitrogen reservoir. This link isolates the sample from the liquid nitrogen and allows super variable temperature operation from 77K to 325K (up to 800K optional). Temperatures below 77K can be reached by pumping on the nitrogen bath.

Cryo Industries includes as standard an exclusive thermal link design which allows variable cooling power, and re-filling of the cryostat reservoir without removing the thermal link or disturbing the temperature of your experiment. Virtually unlimited run time! Features of this design include:

- Cold finger (Sample in Vacuum)
- Very easy to operate
- No flow to control
- No capillary or flow line to plug
- No reservoir pressure regulation needed
- No exchange gas required
- Compact 'hand—held' dewars
- Variable temperature operation
- Cryo Exclusive variable cooling power thermal link design
- Stable temperatures
- Easy quick funnel filling
- Liquid nitrogen reservoir can be refilled without disturbing set point for a virtually unlimited hold time!
- Multiple cold fingers – operating simultaneously at different temperatures—can be installed in one cryostat
- Brings variable temperature to production work

Variable Temperature Pour Fill Liquid Nitrogen Cryostats: Sample in Vacuum Thermal Link Style



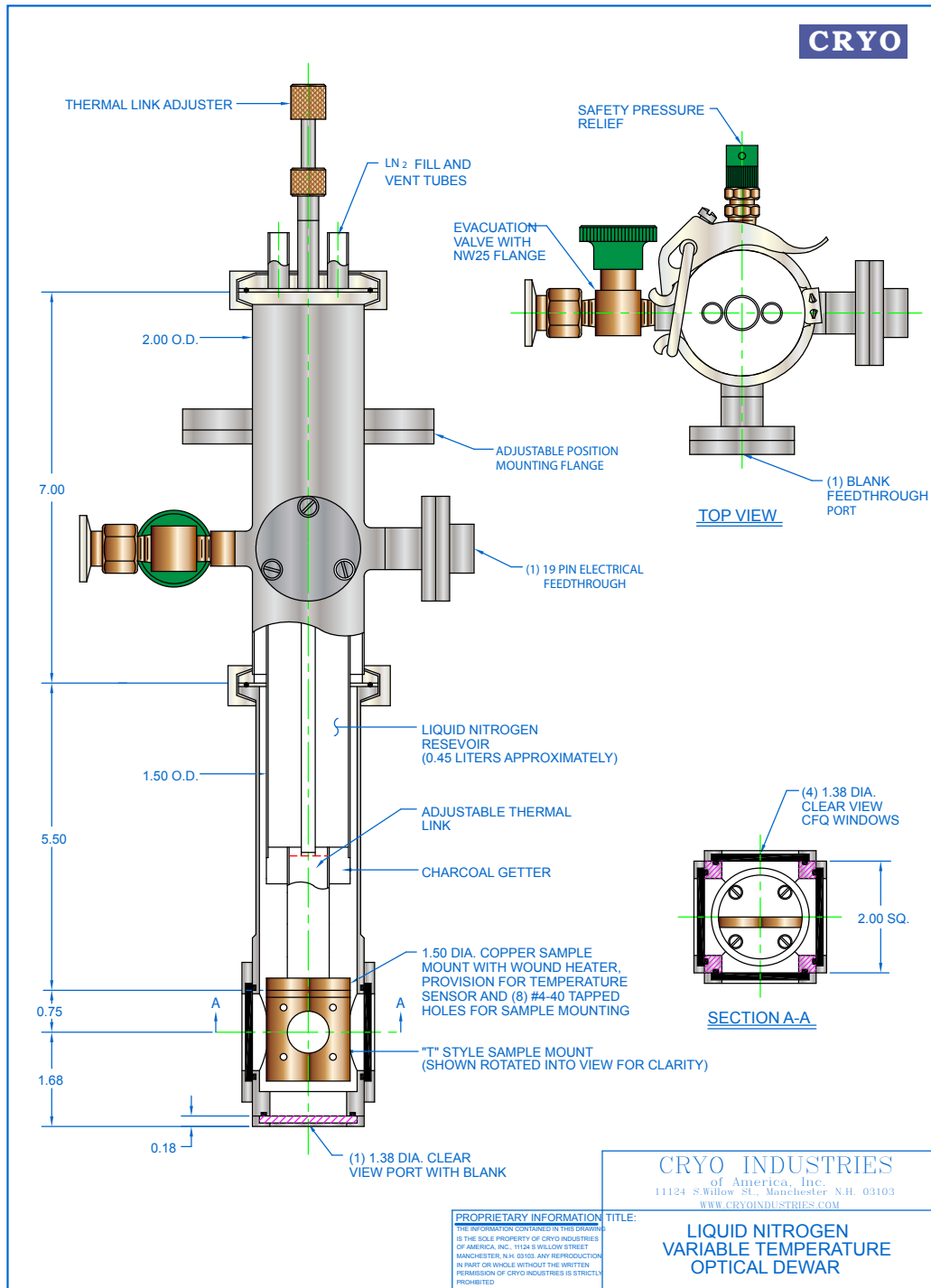
System Features:

- 77 K to 325 K operating temperature range
- 0.4 liter liquid nitrogen capacity
- Easy to use thermal link design
- Vari-Power (VP = adjustable cooling power) a CRYO exclusive feature
- Pour fill the LN2 reservoir while holding setpoint temperature - virtually unlimited runtime
- Compact hand-held style
- Vacuum shroud with 3.25" square bottom section with (4) optical 1.62 inch diameter clear view CFQ suprasil window ports

Instrumentation header with:

- (1) 10-pin electrical feedthroughs
- (3) Blank feedthrough ports
- Safety pressure relief
- Evacuation valve with NS25 (ISO-KF 25) interface
- Copper optical 'T' style holder with 5mm diameter hole
- 1.50" diameter sample mount with 50 ohm hi-power heater
- PT-100 Platinum temperature sensor installed in sample mount
- Complete system test
- One year warranty

Compact Variable Temperature Pour Fill Liquid Nitrogen Cryostats: Sample in Vacuum Thermal Link Style

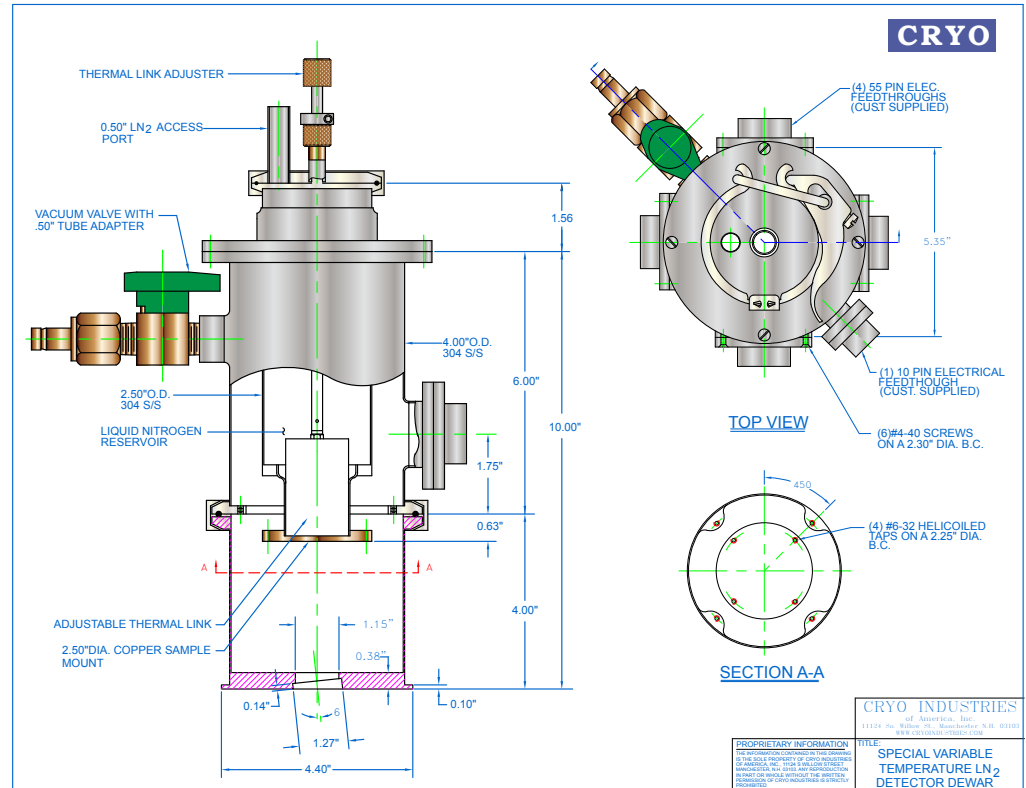


System Features:

- ~65K to 325K operating temperature range (Temperatures below 77K require optional pumping setup)
- Unique thermal link variable temperature- easiest-to-use, high temperature stability, fast thermal response
- 1/4 liter liquid nitrogen reservoir capacity
- 0.75 inch (19 mm) OD vacuum shroud tail section
- 50 ohm Hi-power control heater installed on sample mount cold finger
- 19-pin electrical feedthrough with mate
- Nitrogen fill and vent ports
- Thermal link adjuster
- Vari-Power (VP) Thermal link insert
- Re-fill LN2 while holding setpoint temperature -virtually unlimited runtime
- Evacuation valve with safety pressure relief
- Copper style optical sample holder with 5 mm dia. hole
- Platinum Temperature Sensor installed on copper sample mount and tested

This compact 'hand-held' cryostat is a smaller version of our most popular model!

Liquid Nitrogen Test Dewar with Variable Temperature Insert: 'Bottom Looker' Design

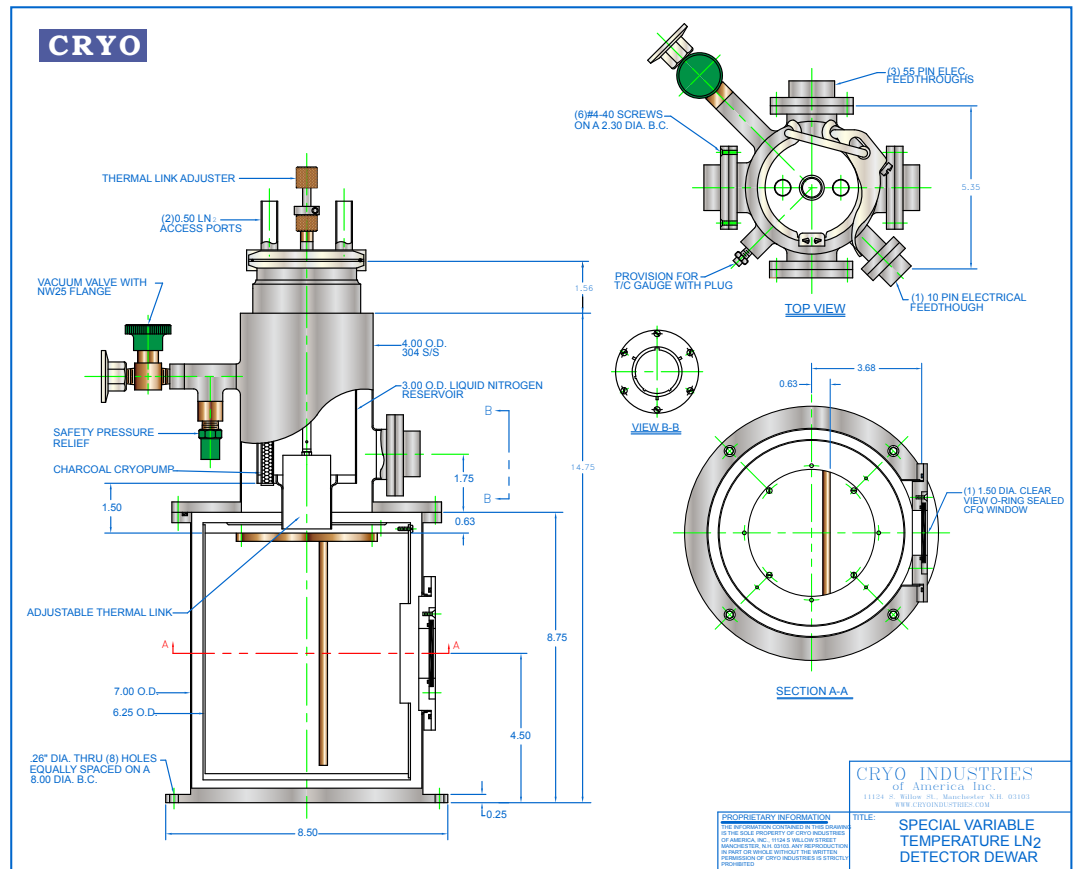


System Features:

- Phosphor bronze quad ribbon wires or micro-coax signal lines for lowest signal cross-talk
- Easy to Use - thermal link variable temperature
- Platinum temperature sensor and heater for automatic variable temperature
- Refill while holding temperature setpoint
- Fast 20 minute cooldown
- Internal black-body surfaces
- Polished stainless steel construction
- Solid thermal anchoring for chip
- Socket pin counts available from 14 through 128
- Zero insertion/extraction force socket
- Low capacitance coaxial cabling with shield and wired to printed circuit board or low heat load Phosphor bronze
- Quick single clamp interior access
- (4) high density electrical feedthroughs (1) feedthrough for sensor(s) and heater
- ZnSe or Suprasil window



Variable Temperature Liquid Nitrogen Optical Detector Cryostat: Sample in Vacuum Thermal Link Style 'Side Looker Design'

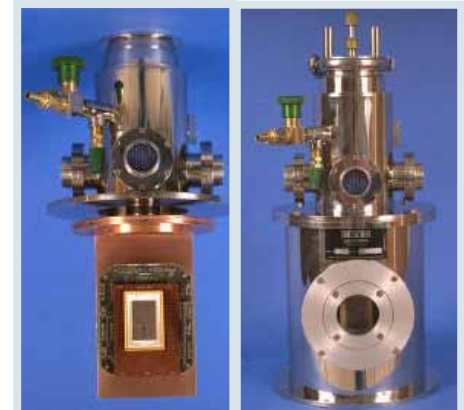


System Features:

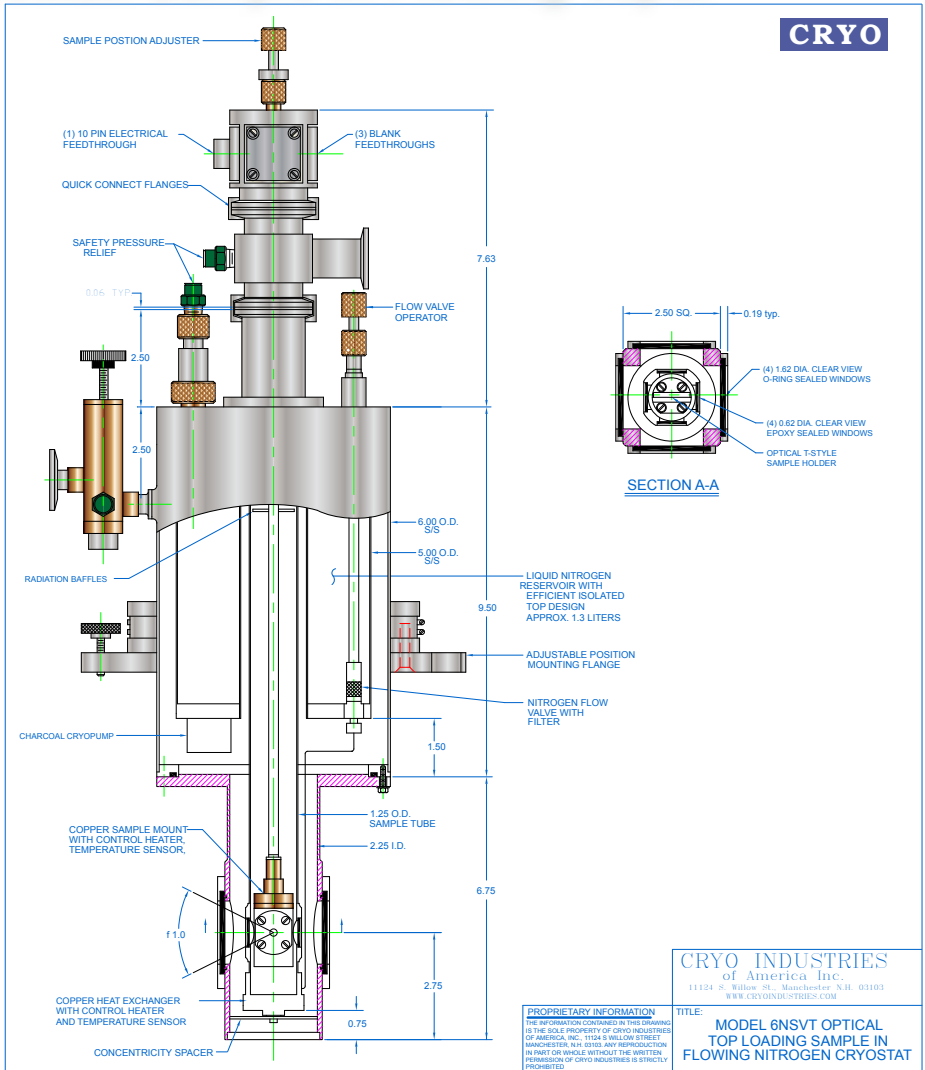
Model: MTD-S01

Drawing No.: DET-659-C2

- <70K to 325K operating temperature range
- Clear Fused Quartz "side looker" window
- All stainless steel construction
- 0.5 liters LN₂ reservoir capacity
- Nitrogen fill/exhaust port
- Thermal link adjuster - Allows refill without disturbing setpoint
- Fast cooldown
- Heater installed on sample mount
- 10-pin hermetic electrical feedthrough
- (3) 55-pin hermetic electrical feedthroughs with mates
- (1) Blank feedthrough ports for future use
- (1) 10-pin electrical connector (for sensor and heater)
- Evacuation valve with safety pressure relief
- Internal charcoal cryopump
- Hi power 50 ohm (50 watt heater) installed on sample mount
- (1) Platinum temperature sensors installed on sample mount
- Complete system test
- One year warranty (parts and labor)



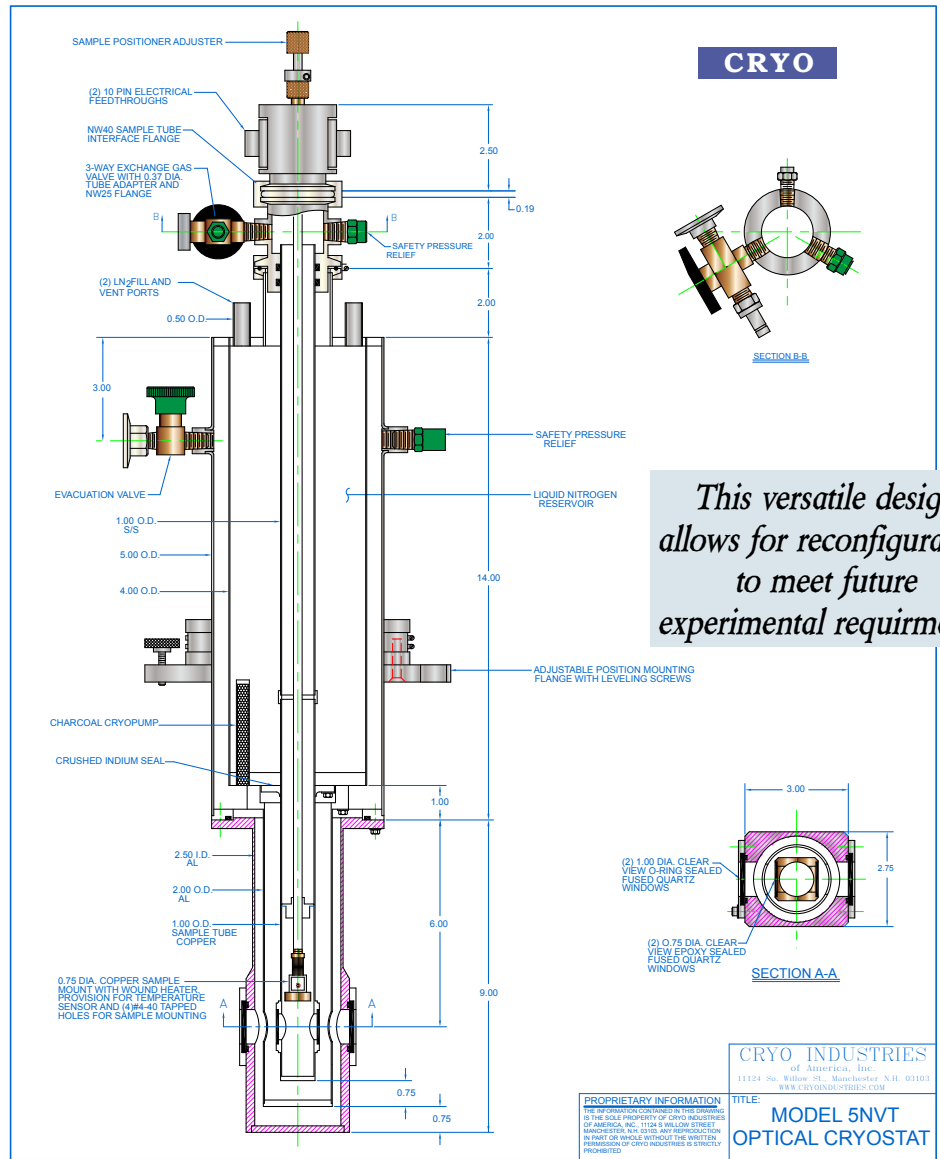
Variable Temperature Optical Top-Loading Nitrogen Cryostat: Sample in Flowing Vapor



System Features:

- <65 K to 325 K operating temperature range (<50K in N2 ice)
- Quick Refill with included 0.38 dia. fill funnel assembly
- Sample in flowing nitrogen vapor
- 1.3 liters nominal liquid nitrogen reservoir capacity
- Four way f = 1.0 optical access
- (4) 1.62 inch diameter clear view suprasil quartz outer window ports (O-ring sealed & removable)
- (4) 0.62 inch diameter epoxy sealed suprasil window ports
- 1.25 inch O.D. (1.21 inch/30.73mm I.D.) sample tube
- Top loading sample probe with rotational and linear adjustments for rapid sample changes
- Silicon diodes installed on sample mount and vaporizer
- 50 ohm high temp heater installed on sample mount and vaporizer
- (1) 10-pin electrical feedthrough and (3) blank feedthrough ports for sample region
- Nitrogen fill and vent ports with removable pressure relief and 3/8 inch wilson seal fill adapter
- NW25 Vapor pumpin port on sample region
- Evacuation valve with vacuum safety pressure relief, 10 pin electrical feedthrough and provision for T/C gauge
- Internal charcoal cryopump for vacuum maintenance
- Adjustable mounting flange with leveling knobs
- Gold plated T-style demountable optical sample holder

Variable Temperature Liquid Nitrogen Top Loading Optical Cryostat: Sample In Static Exchange Style



This versatile design allows for reconfiguration to meet future experimental requirements.

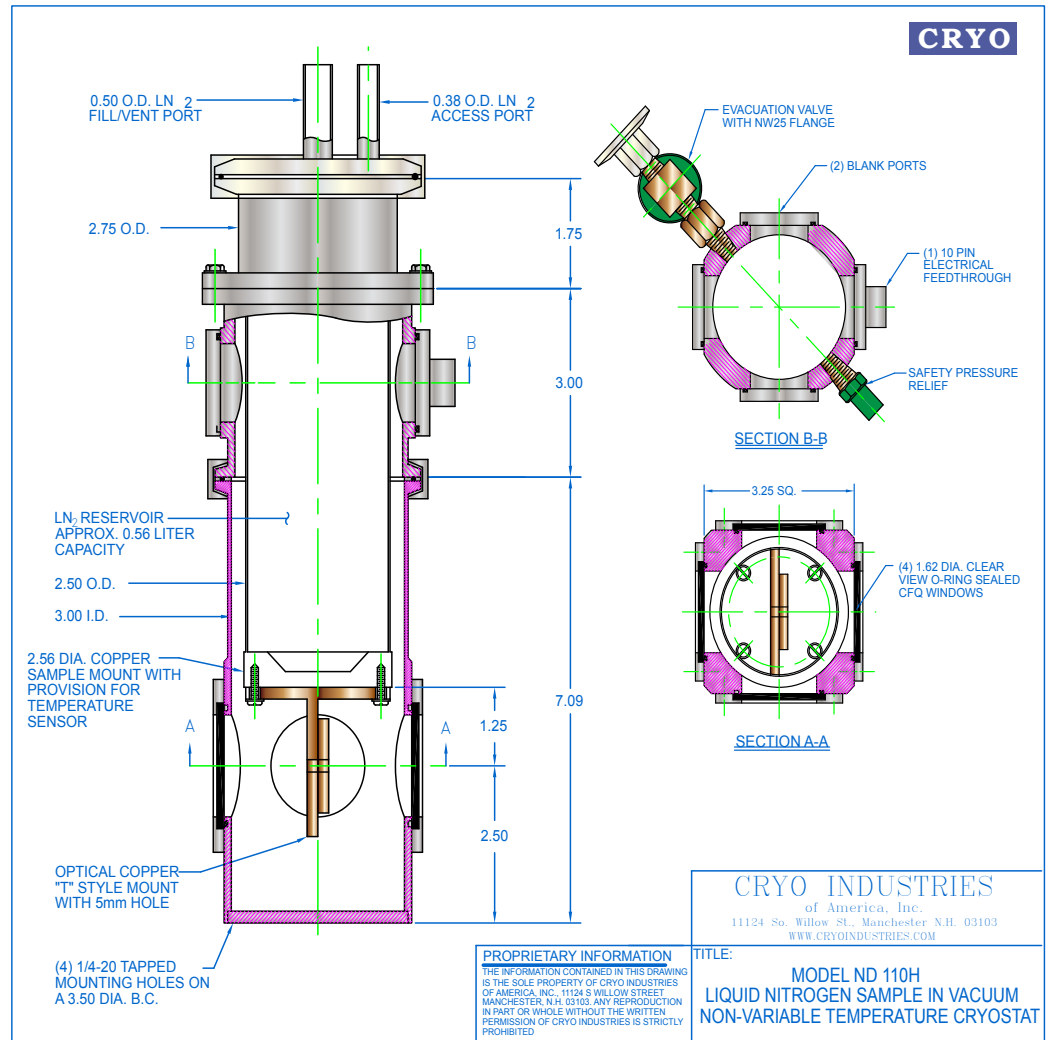
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TITLE: MODEL 5NVT OPTICAL CRYOSTAT

System Features:

- <77K to 325K operating temperature range
- 1.00 inch O.D. sample tube
- Top Loading Sample probe with external rotational and linear adjustments
- Copper sample mount with tapped holes for sample mounting, 50 ohm heater, and platinum temperature sensor installed on sample mount
- (2) 10-pin electrical feedthroughs for sample tube region
- Nitrogen fill and vent ports
- 3-Way Sample exchange gas valve with 0.37 dia. tube adapter and NW25 flange
- Compound Pressure gauge for sample tube zone
- Sample tube and vacuum space safety pressure reliefs
- Evacuation valve with NW25 flange
- Internal charcoal cryopump for vacuum space
- Adjustable position mounting flange with leveling screws

Non-Variable Temperature Optical Pour Fill Liquid Nitrogen Cryostat Sample in Vacuum



System Features:

- 77K base operating temperature
- 0.4 liter liquid nitrogen capacity
- Pour fill the LN₂ reservoir - virtually unlimited runtime
- Compact hand-held style
- Vacuum shroud with 3.25" square bottom section with (4) optical 1.62 inch diameter clear view CFQ suprasil window ports
- Instrumentation header with:
 - (1) 10-pin electrical feedthroughs
 - (3) Blank feedthrough ports
 - Safety pressure relief
 - Evacuation valve with NS25 (ISO-KF 25) interface
 - Copper optical 'T' style holder with 5mm diameter hole
 - 2.56" diameter sample mount with provision for temperature sensor
 - Complete system test
 - One year warranty

Cryo Industries has over 25 years experience in designing and manufacturing Liquid Nitrogen Test Dewars. Innovative design has led to the development of an industry unmatched thermal link design for sample in vacuum LN2 dewars.

Cryo is able to custom design a system that will meet all of your experimental needs. Following are examples of custom Liquid Nitrogen Dewars designed and manufactured over the years. You supply us with your experimental specifications and we provide you with a system that is guaranteed to meet those needs!

**Model 5NVT Top Loading
Sample in Static Exchange Gas
Optical Cryostat with special
windows for X-Ray Diffraction**

**Special LN2 SideLooking
Detector Dewar with dual
variable temperature laser
mount assemblies**

**Uni-Temperature
LN2 Laser Dewar
non-optical with
cap on & no tail**

**Custom Optical
LN2 Detector/
Laser Dewar**



ADD A MAGNETIC FIELD

**Variable Temperature Optical Liquid Nitrogen MTD Dewar
System with Horizontal Field Electromagnet**

- Hall effect, resistivity, materials, IC testing
- Thermal Link variable temperature
- Electromagnet with 4 inch (101mm) variable gap
- Horizontal (std.) or vertical field
- Compact size - convenient bench top mounting
- Exceptional magnetic field strength with superior field homogeneity

