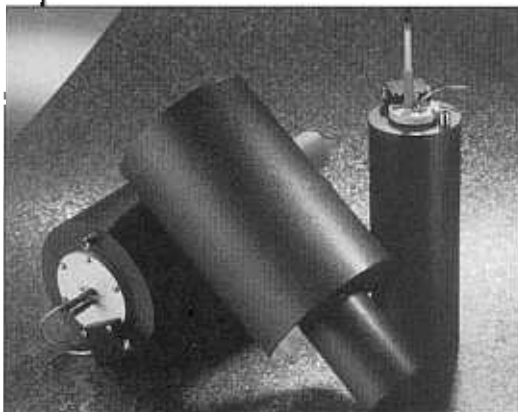


## FEATURES

- **Low Boil-Off**
- **Close Tail Spacing**
- **Standard and Custom Designs**
- **Complete Factory Testing**
- **Metallic or Non-Metallic Construction**

**Tristan offers both liquid helium and liquid nitrogen dewars for use in SQUID magnetometry and other applications that require magnetically transparent dewars. Tristan dewars are built in a variety of sizes and materials for both general and special purpose applications.**

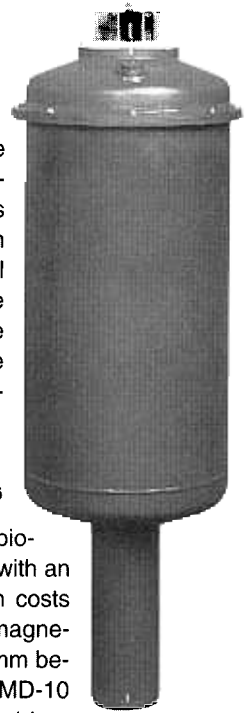


# DEWARS

**Tristan** takes special pride in the innovative design and construction techniques it has developed. The use of SQUID magnetometers for biomagnetic or non-destructive testing and evaluation (NDE) measurements requires that magnetic signals from a subject at room temperature be coupled to a superconducting pickup coil in the liquid reservoir of the dewar. It is essential to use nonmagnetic materials and to have the smallest possible spacing between the cryogenic reservoir and the outside of the dewar. Tristan's development of adjustable tail dewars have allowed tail gaps to be less than 2 mm.

## BMD Series Liquid Helium Dewars

Tristan's BMD-10 is a fiberglass dewar designed for biomagnetism and NDE. The BMD-10M variant is supplied with an upper aluminum housing to reduce weight, construction costs and increase reliability. Intended for use with Tristan magnetometer probes, they provide a spacing of less than 10 mm between room temperature and the liquid helium. The BMD-10 typically uses 2 liter/day of liquid helium. The larger BMD-14 series offers longer hold times and room for multi-channel detection coils. Custom dewars with different size necks, tails, helium reservoirs or in-vacuum detection coils are available.



## NLD Series Liquid Nitrogen Dewars

Specifically designed for use with HTS SQUID sensors, Tristan offers a wide assortment of standard dewar designs. These include tailed dewars with close access to the sensors, multi-channel dewars, hand-held dewars that operate in any orientation and larger dewars with more than 30-day hold times. Cryogenic inserts are available to mount the SQUID sensors rigidly in the dewar and provide any performance features required of the application. Custom dewars with different size necks, tails, or cryogen reservoirs can be special ordered.

## CONSTRUCTION TECHNIQUES AND MATERIALS

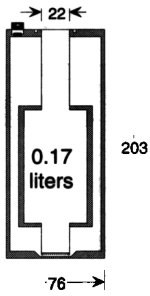
All Tristan dewars incorporate fully tested design concepts and are assembled with the highest standards of workmanship. They are leak tested after each phase of their construction and are cycled between room temperature and liquid nitrogen temperature to assure long-term reliability. A complete series of tests is made at operating temperature including measurements of the equilibrium boil-off rate. A factory test report is supplied with each dewar.

The use of super-insulation and one or more vapor-cooled shields totally eliminates the need for liquid nitrogen in the BMD series. Tristan's own computer analysis is used to calculate the optimum layer density of super-insulation in each temperature region and the insulation is carefully applied by hand to maintain this density, even in those difficult regions such as corners, close-spaced tails, or regions where overlap occurs. Also computed are the number and position of the required vapor-cooled shields and, for custom dewars, the predicted cryogen boil-off rate.

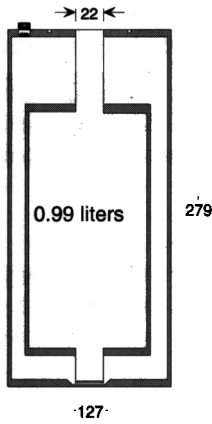
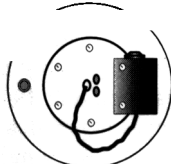
For dewar applications requiring unusual geometries, precise tolerances, or extra strength, Tristan uses its own fiber-epoxy laminate that is shaped in custom molds and cured at elevated temperature and pressure. When operation in magnetically noisy environments is anticipated, a nonmagnetic, eddy current shield can be built into the dewar to attenuate high frequency fields.

# DEWAR DIMENSIONS

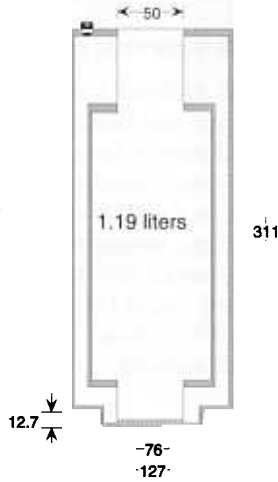
NLD-310



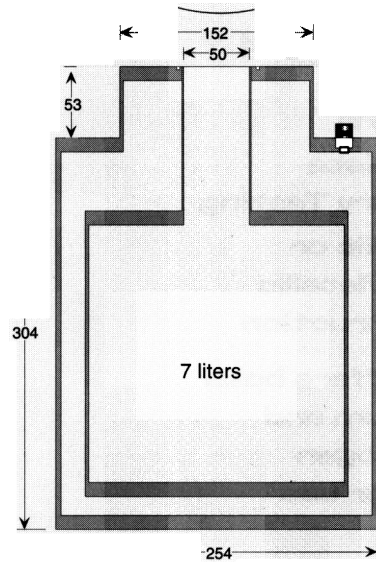
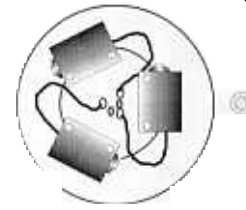
NLD-510



NLD-530

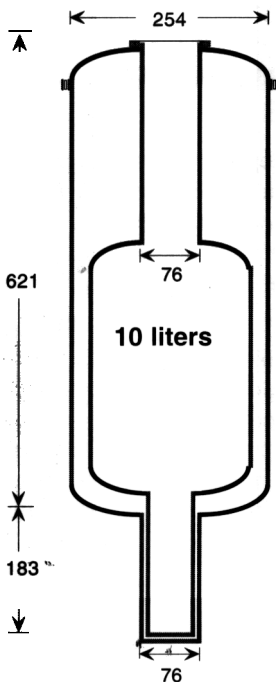


NGD-1030

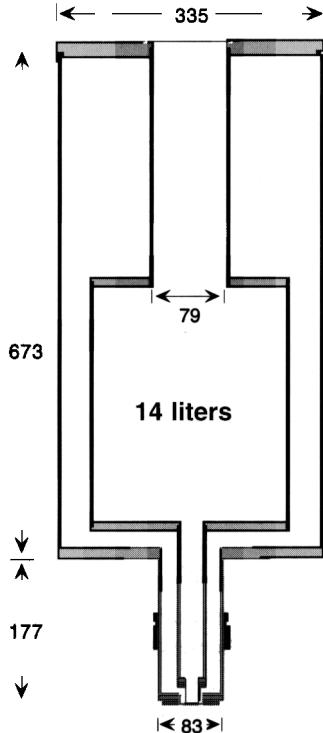


Dimensions in mm

BMD-10M



BMD-14/AT



## OPTIONS AND ACCESSORIES

- Insert for single or multiple SQUID sensors.
- Coil-in-Vacuum dewars
- Adjustable tail option for liquid helium and NLD-500 series dewars. This option can allow tail spacings less than 2 mm from liquid helium or nitrogen to room temperature.
- ±90° Tilt Option for NLD series 310 & 510 dewars.
- Custom designed low-pass (eddy current) filters and rfi shields.
- Mechanical anchoring of the helium reservoir to the outside dewar case is available for applications where mechanical vibrations and relative motion may introduce noise.
- Liquid helium or nitrogen level gauge.
- Flexible metal transfer tubes.



Specifications subject to change without notice.



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