

CRYOGENIC Transfer Lines

For All Liquid Gases



Transfer Lines

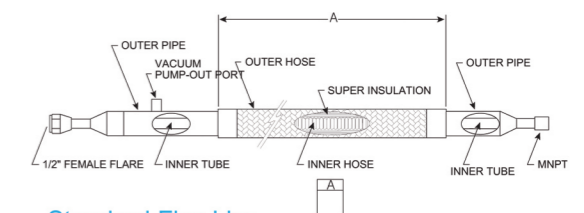
Cryofab offers a number of different types of transfer lines. This particular piece of equipment is an indispensable accessory for the safe and efficient transfer of liquid cryogenics. The product line ranges from the simplest non-jacketed flex line to the vacuum encased system necessary for transferring liquid helium. The materials of construction make these transfer systems useable in any type of work environment, whether it be a laboratory, industrial site or as an instrumentation accessory. Inside or outside, this product will perform optimally to deliver liquid cryogenics trouble free.

Why Cryofab?

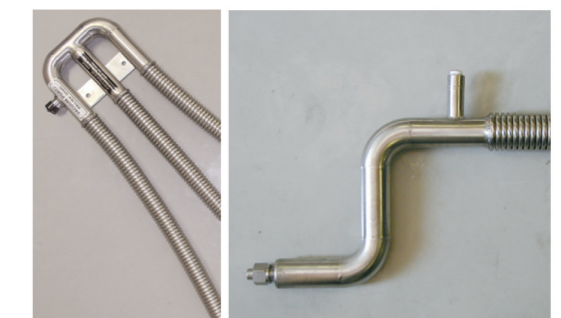
Founded in 1971, Cryofab, Inc has weathered the test of time and flourished by keeping up to date on product changes, industry advancements, fabricating and procedural improvements. Maintaining state of the art techniques in welding, super insulation, materials and vacuum technology has been a key factor in our longevity. Customer service and the ability to deliver products, parts and service that meet the customer's individual requirements and expectations has enabled us to build an excellent reputation as a company that people freely recommend.

CFCL Series

The combination of vacuum and super insulation make this product the optimal efficient flexible transfer line. Built to order, lines can be fabricated to fit a multitude of requirements. Inner lines range from 1/8" o.d. to 4" i.d. and lengths from 1' to 100'. Bayonets, custom fittings, or standard pipe threads make for easy transition to existing and new applications. Lines are available with non-braided, braided, and armored outer jackets. This allows the end user to choose a flex line suitable to their environment. Unbraided transfer lines are more suited for laboratory use where the level of care is such that added protection may not be necessary. Braided and double-braided flex would be appropriate in an industrial setting where care of the line might be an issue. Armor casing provides the ultimate protection for lines exposed to extreme elements and abuse. Rigid pipe sections can be added for manifolding and tight corners.



Standard Flex Line



3-Legged Line

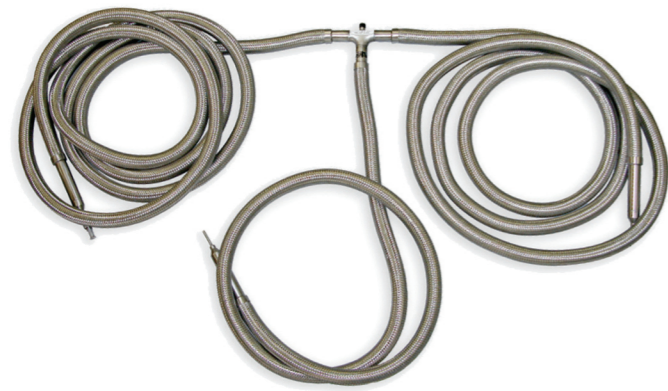
"S" Curve Line

| I.D. Inner | O.D. Outer | Non-braided M.A.W.P. ¹ | Braided M.A.W.P. ¹ | Heat Leak |
|------------|------------|--------------------------------------|----------------------------------|-------------------------|
| .250" | 1.15" | 75 PSI | 1750 PSI | .961 W/M 1.00 BTU/HR/FT |
| .375" | 1.50" | 120 PSI | 1400 PSI | .74 W/M .77 BTU/HR/FT |
| .5" | 1.85" | 90 PSI | 1350 PSI | .86 W/M .89 BTU/HR/FT |
| .75" | 2.25" | 15 PSI | 800 PSI | .81 W/M .84 BTU/HR/FT |
| 1.0" | 3.5" | 14 PSI | 550 PSI | 1.02 W/M 1.06 BTU/HR/FT |

CFHT Series

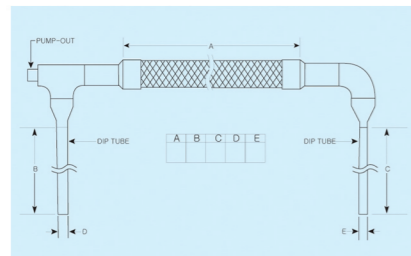


The CFHT Series is the ultimate flexible system for the efficient transfer of liquid helium, neon and hydrogen. This product line offers multiple configurations to fit any application from laboratory and research, to industrial transfill and distribution. All lines are built to order so we can fabricate to any dimensional requirement. The "U" tube configuration is by far the most popular choice with many options available for added convenience. Sample configurations are shown below and to the right. Customers are not limited to items shown. Custom configurations are available upon request. Inner diameters can be supplied from 1/8" to 2" i.d. and lengths to 100'.

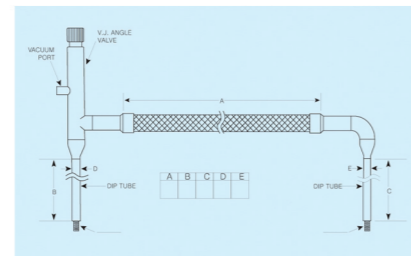


| I.D. Inner | O.D. Outer | Non-braided Inner Hose | | Braided Inner Hose | | Heat Leak |
|------------|------------|------------------------|-----------------------|-----------------------|-----------------------|-----------|
| | | M.A.W.P. ¹ | M.A.W.P. ¹ | M.A.W.P. ¹ | M.A.W.P. ¹ | |
| .25" ID | 1.5" OD | 75 PSI | 1750 PSI | .68 W/M | .71 BTU/HR/FT | |
| .375" ID | 1.8" OD | 120 PSI | 1450 PSI | .70 W/M | .73 BTU/HR/FT | |
| .5" ID | 2.25" OD | 90 PSI | 1350 PSI | .98 W/M | 1.02 BTU/HR/FT | |
| .75" ID | 2.7" OD | 15 PSI | 800 PSI | 1.07 W/M | 1.11 BTU/HR/FT | |
| 1.0" ID | 3.5" OD | 14 PSI | 550 PSI | 1.36 W/M | 1.41 BTU/HR/FT | |

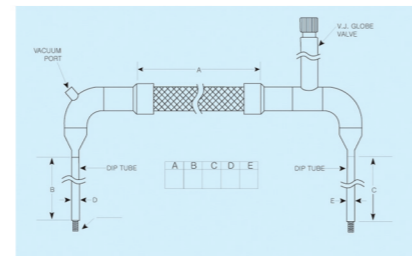
Note: Higher working pressure available with braided inner hose, consult factory



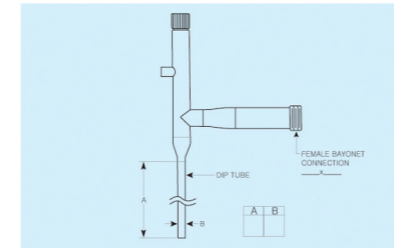
Flexible U Tube



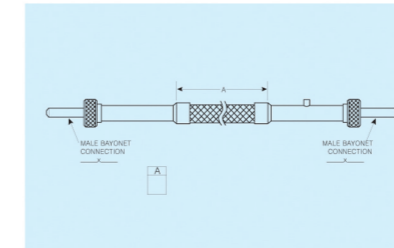
Flexible U Tube with Right Angle Shut Off Valve



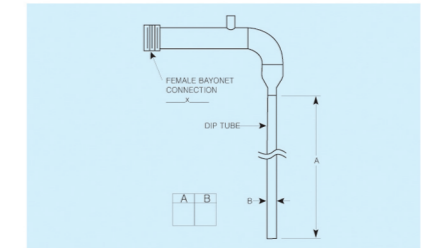
Flexible U Tube with Globe Shut Off Valve²



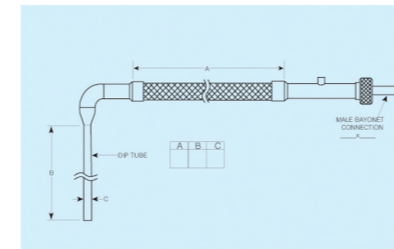
Withdrawal Lance with Right Angle Shut Off Valve



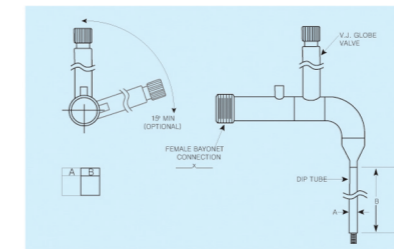
Extension Hose



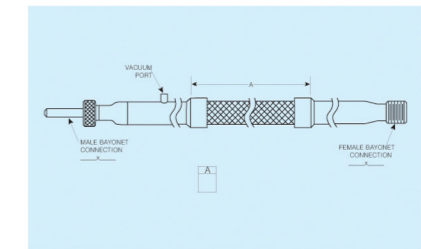
Fill Lance



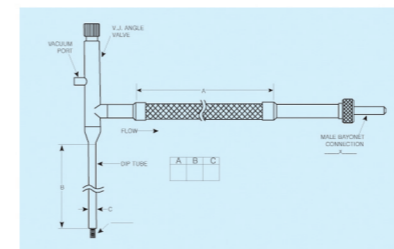
Fill Hose



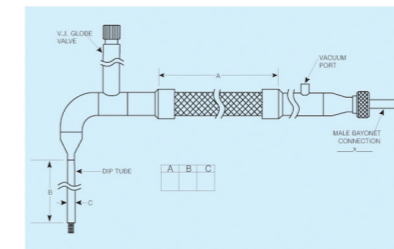
Fill/Withdrawal Lance with Globe Shut Off Valve²



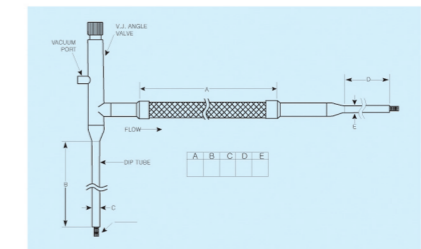
Extension Hose



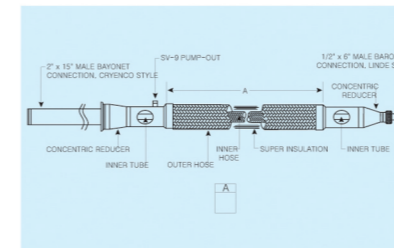
Withdrawal Hose with Right Angle Shut Off Valve



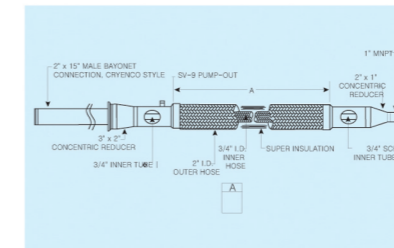
Withdrawal Hose with Globe Shut Off Valve²



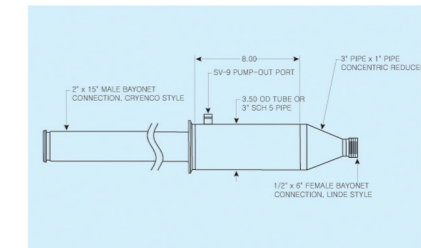
Fill Hose with Right Angle Shut Off Valve



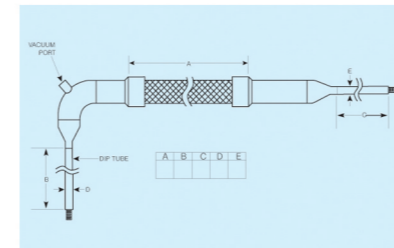
Trailer Liquid Hose



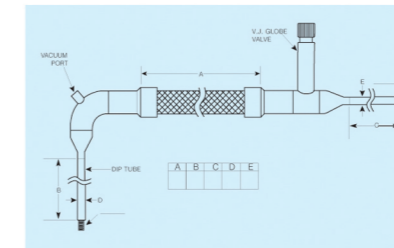
Trailer Gas Hose



Cryenco to Linde Bayonet Adapter



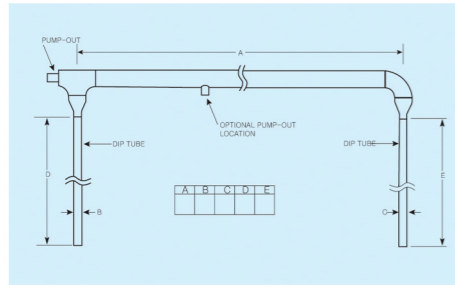
Fill Hose



Fill Hose with Globe Shut Off Valve²

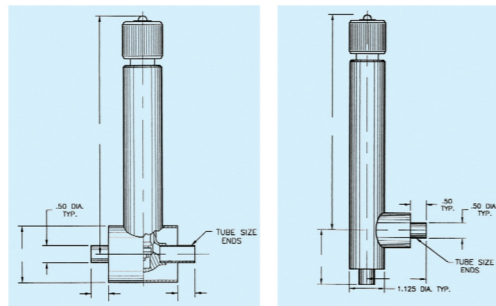
- In most cases terminal fittings or interface feed throughs will limit the working pressure of an assembly to 150 PSI or less.
- Globe valve can be tilted to reduce height.

CFRT Series

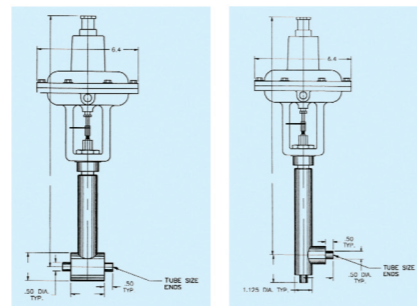


An old time liquid helium transfer staple, this line is completely rigid from tip to tip. The vacuum and super insulation make it an extremely efficient means of transfer. The most common configuration is the "U" Tube for transfers from a storage dewar to an experiment. The horizontal section has two legs that turn 90 degrees downward, upward, or straight for the withdrawal and filling process. Built to order, all dimensions can be supplied to fit requirements exactly. Options such as threaded tips, un-insulated extension tubes, VJ Shut Off Valves, and bayonet connections can be added for convenience.

Optional CFHT Accessories



VJ Shut Off Valves

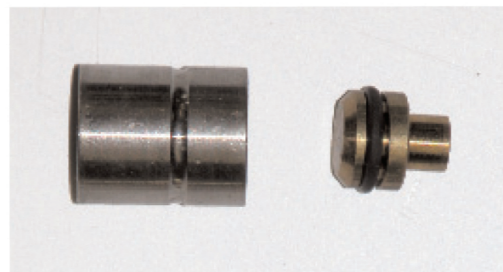


Actuated Valves

VJ Shut Off Valves are offered in laboratory style or industrial grade. Valves supply a means to interrupt or terminate the flow of liquid cryogenics and maintain a minimal heat leak. **Actuated Valves** allow for remote and unattended filling of cryostats when incorporated with a controller.

Bayonet Couplings are available as a set or individually as male and female. This option allows for easy disassembly of transfer equipment without removal of a section from an experiment or storage dewar. Bayonets transform single construction transfer lines into multiple parts for ease of use and flexibility in tight locations.

| Description | Approximate Steady State Heat Leak | |
|-------------|------------------------------------|--------------|
| | LN2 (BTU/hr) | LHe (BTU/hr) |
| 1/4" x 3" | 7.38 | 8.12 |
| 1/4" x 6" | 3.45 | 3.79 |
| 1/4" x 9" | 2.30 | 2.53 |
| 1/2" x 3" | 7.38 | 8.12 |
| 1/2" x 6" | 3.45 | 3.79 |
| 1/2" x 9" | 2.30 | 2.53 |
| 1/2" x 15" | 1.20 | 1.52 |
| 3/4" x 9" | 3.60 | 3.96 |



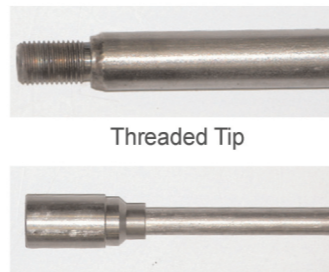
Standard Pump Out



Pump Out Operator



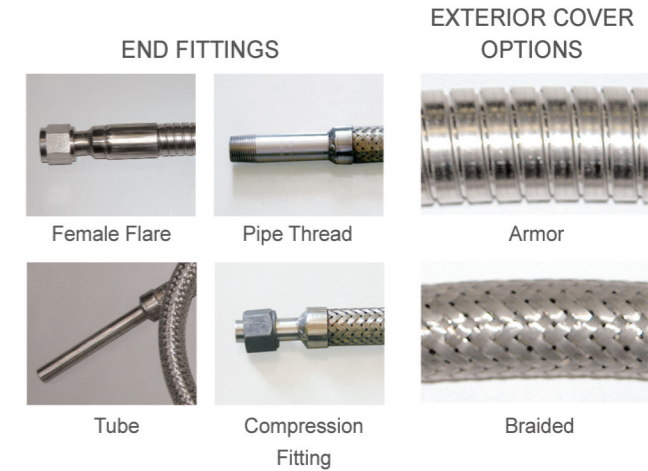
Bellows Valve



Extension Tube

Pump Out Operator gives end user the ability to re-evacuate on site with our standard pump out configuration. **Bellows Valve Evacuation Port** allows the end user to re-evacuate a line without the use of an operator. Valves are supplied with 1/8" or 1/4" NPT ends for adaptation. **Threaded Tips & Extension Tubes** allow for added length on transfer line fill and withdrawal legs. This adds flexibility in use of storage dewars & experiments. This option helps alleviate the problem of low ceiling heights and different dewar depths.

CFUL Series

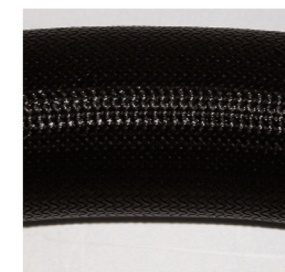


This is the simplest non-jacketed transfer line. Constructed of all stainless steel with a braided outer cover for protection, it can also withstand medium pressure applications. This product is most commonly used with LN2, LOX and LARG when dispensing from portable liquid storage cylinders. Available in any length with different combinations of end fittings, it can be ordered to meet a customer's exact requirement. Because the line is un-insulated, frost and condensation will appear along the outer cover when a transfer is being done. CFUL can be purchased with standard braided outer or a S.S. armored casing for added protection. Inner diameters are available ranging from 1/4" i.d. to 2" i.d. The most common lengths are 4' and 6' but lines can be supplied to meet any requirement.

The most common end terminations are: female flares, pipe thread, tube or compression fitting.

CFFL Series

This assembly is for applications that require an upgrade from an un-insulated transfer line. The line has a neoprene foam insulation encasing the outer flex. End caps on each end keep the foam in place along with a mesh cover for added protection. For small, intermittent transfers, this line will deliver a frost-free and slightly improved efficient delivery of liquid. Liquid nitrogen is the most common cryogen used with this configuration. Because the line has ambient end connections, frost will appear at the inlets and outlets. Long transfers will freeze the foam to the point where it is no longer flexible. It becomes brittle and can crack. This line is designed for lower pressures up to 90PSI depending on the inner diameter. Inner diameters available are 1/4", 3/8" and 1/2". All lines are built to order and can be made to a specified length.



CFFL Exterior Cover