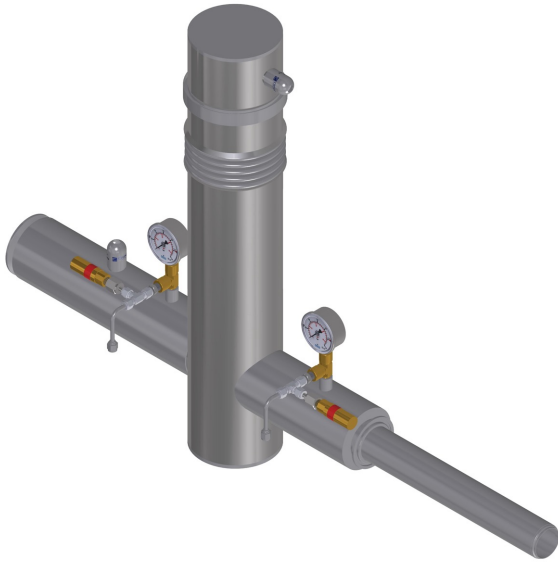


Modular T-Filter[®]



Pre-engineered Modular T-filter, to filter incoming liquid nitrogen for pure liquid supply. Vacuum insulated with lowest heat leak and lower liquid nitrogen losses compared to traditional non-vacuum insulated Y-filter. Also, it has high safety feature to prevent operator from cold burns.

How it Works

Modular T-filter is available with bayonet connection and is easily integrated into existing vacuum jacketed piping system effortlessly.

T-filter is also available in a switch-over station (S.O.S) for uninterrupted liquid nitrogen supply during filter maintenance or element change-out. The S.O.S consist of two T-filter, one active and one standby. When the filter in active use is due for service, the operator can manually switch over the liquid flow to the standby filter.

This T-filter station is available in automatic switch-over function using pressure differential instruments to monitor the filter element working condition. A differential pressure more than 1.5 bar indicates a filter element blockage and needs cleaning or replacement. The fully vacuum insulated design guarantees low heat leak compared to foam-insulated type with 30 times lesser liquid boil-off. Besides ensuring better liquid flow and quality, it also helps to save LN₂ losses, equivalent to less than 3 months of capital payback.

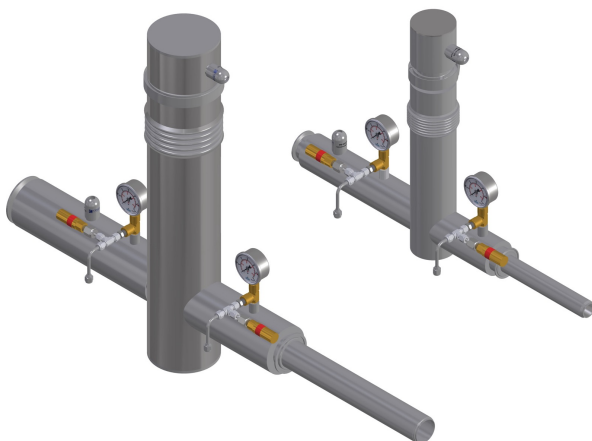
All Cryogenic T-Filter come with CSM renowned customer service, from conceptual design to implementation, and are backed by a one year warranty

Typical Applications

- To remove particle or debris from liquid stream that may pose problems to downstream piping, valves, instrumentation and production process.
- Suitable for of LIN, LAR or LOX

Features and Benefits

- Easy to replace filter element. There is no foam insulation to break & re-foam
- Installation is quick and easy. No costly on-site foam insulation work is needed
- Saving of liquid nitrogen usage between 300kg to 500kg per day, thanks to its vacuum jacketed feature compared to traditional non-vacuum insulated Y-filter
- Frost-free and condensation free operation, suitable for cleanroom & HACCP work area
- Requires less footprint due to top entry filter element design



Cryogenic T-Filter - Available Connection Types

Modular T-Filter® Specifications

Model	TF10	TF20
Pipe size	½", 1"	1.5", 2"
Filter Element Pore size, micrometre (µm)	Sintered Element 30µm, 100µm; Wire Mesh 70µm, 280µm	
Filter Element Material Grade	Sintered Element SS316L, Wire Mesh SS304L	
Max Flow Capacity	1600LPH	4500LPH
Connection size	Bayonet C5, C10	Bayonet B20, W20
Steady State Heat Loss	2 btu/hr/ft (1.8 watts)	8 btu/hr/ft (7.2 watts)
Vacuum Insulation Type	Static Vacuum with MLI, Absorbent and Getters; Dynamic Vacuum as option	
Maximum Operating Pressure	150 psig (10 bar)	
Housing Material	Stainless Steel Series 300	
Switch Over	Manual or Automatic Control	
Monitoring System	Analog Gauge (Manual System) or Alarm Switch (Automatic System)	
Standard Testing	Dimensional Check He leak checked 1 x 10 ⁻⁹ cc/s	
Optional	Pneumatic pressure test, Vacuum retention testing, LN2 cold shock, pre-material certs., X-ray, ASME B31.3 certification, CFOS cleaning for O2 services	

Typical Cryogenic Switch-Over Filter Station® for LN2 Supply

