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THAMES CRYOGENICS LTD

Total Cryogenic Solutions



LN2 DISPENSING SYSTEM #455

This liquid nitrogen dispensing system allows a supply without any pressure where filling an application is like filling a teacup with a tea pot. The dispensing can be as slow as just a few drops up to 2L/minute. By switching on the pump-head, the system starts building a small over-pressure, forcing the liquid gently to rise into the fill line, and dispense into your dewar, or other small LN2 container. After you are done simply switch off the system which will stop the flow.

Key Features

- The system can deliver LN2 liquid just by clicking the pump on the flange. This means that the system is ready for use 24 hours a day.
- The system delivers LN2 without any pressure. This means without noise, vibration, excessive waste, etc.
- There is a very low thermal mass to cool down in the pump LN2 comes out within 10 to 40 seconds, depending on the level in the Dewar. Filling efficiency is better than 90%, due to minimal loss for cooling down pump parts.
- P.E.D. 99/36/EC (Pressure European Directive) for pressurized vessels does not apply for this system. The maximum possible pressure is lower than 300mBar. Therefore this system can be used inside the lab, near your working place, without danger.

Applications

Where small amounts of liquid nitrogen are needed every day for filling up a series of storage dewars in a gentle way, instead of handling larger pressurised tanks for just filling up with LN2 which evaporates daily. This system can also be used for experiments where it is handy to have your supply next to your working place, instead of walking all the way to a fill station and handling big pressurised tanks for filling a small container to pour into your experiment.

Use of this system is for example for:

- hand-controlled filling up of storage Dewars
- hand-controlled cooling of small objects
- hand-controlled freezing of small samples
- hand-controlled filling of Dry Shippers
- hand-controlled cooling of small chemical reactions

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Technical Specifications

Static evaporation rate	< 0,5 litres per day		
Flow rate	Dripping up to 2 Litres/minute (not adjustable)		
Maximum working pressure	< 200 mBar		
Protection	Overpressure valve 150 mBar		
Reaction time	10-40 seconds (depending on level in Dewar)		
Power connection	115V / 230V AC with supplied power supply or 12 Volt AC/DC		
Power consumption	average 10 Watts, during pumping 50 watts		
Storage container volume	25 Litre	35 Litre	50 Litre
Outside dimensions (round)	395	480	500 mm
Height dimensions	736	643	727 mm
Weight (empty/full)	10 / 31	13 / 41.5	17 / 51.5 kg
Options	Transport trolley 5 wheels (12 cm high)		

Working principle

The pressure above the liquid level inside the Dewar is built by heating a small amount of liquid in the bottom of the Dewar. With only up to 100 mBar of overpressure, the liquid will gently rise out of the pipe and fall into the fill hose. Because we evaporate some LN2 to build pressure, there is no adding of ice inside the Dewar, such as with manual systems which use air from the Environment. In these LN2 cooling systems Liquid Nitrogen is stored in pressure-less Dewars. When LN2 is required, a small overpressure is generated by a small heater element in the LN2, and liquid flows out of the system like water from a tap, without spilling, noise, vibrations etc.

*(#900 pump model shown on this picture)

