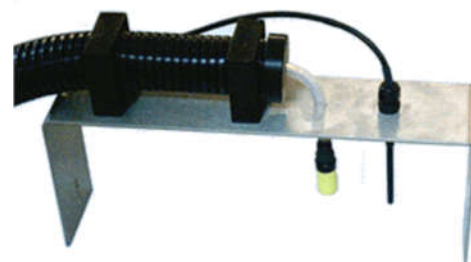


NORHOF LN2 Microdosing System #606

Fully automatic slow filling system for Differential Scanning Calorimeters.

Are you still pouring LN2 into your DSC by hand, several times per measurement?

- Universal automatic filling system for DSC systems
- Safe auto filling of DSC
- No direct contact with LN2 for the operator
- System fills up to 4 cm level in the DSC reservoir, and then very slowly keeps filling while measurement runs
- Controlled by the DSC, filling stops when cold is not any longer needed
- Pressure-less flowing LN2, without spilling, noise, vibrations etc.



Norhof LN2 microdosing systems



Norhof Liquid Nitrogen taken from a (max. 300 mBar) the application in

The Norhof LN2 the drawbacks of is used to switch Norhof system gently gives liquid regulate from can pump LN2 up

manufactures LN2 microdosing systems. (LN2) is used as the cooling medium and is storage vessel (Dewar) with low pressure and delivered (pumped) through a fill line to a micro dosing way.

microdosing system is designed to overcome LN2 under pressure in which a solenoid valve the supply ON / OFF. You may compare the with a water tap, but instead of giving water, it nitrogen, with an adjustable flow, possible to some drops, up to 0,5 liter/minute. Our pump to 5 meters above the pump itself

Norhof #606 pump, mounted on a 35 Liter Dewar

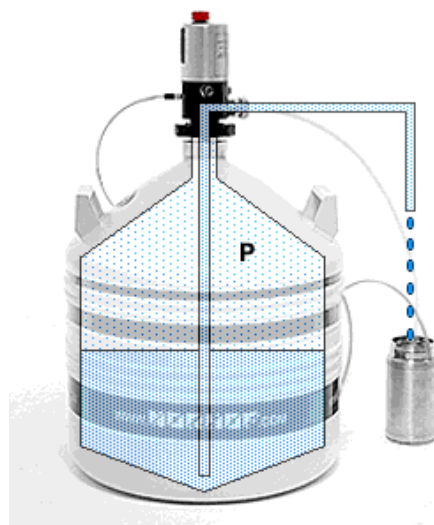
Working principle

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 rise 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..

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.



The reservoir Dewar can safely stand next to your working place, ready for use. The #606 pump when switched ON, starts building a small over-pressure, forcing the liquid gently to rise into the fill line and fall into your dry DSC reservoir. The sensor, placed also in the reservoir, makes the filling slower when for example 4 cm level is reached. If the level becomes lower, filling is increased. If the level becomes too high, filling is slower, thus keeping the level continuous on 4 cm.

#606 series Technical Specifications

Flow rate	Dripping up to 0,1 liter/minute, depending on application level		
Maximum working pressure	300 mBar		
Power connection	115V / 230V AC with supplied power supply or 12-24 Volt AC/DC		
Power consumption	average 10 watt, during pumping 50 watt		
Model	606-100-035	606-100-050	606-100-100
Storage container volume	35 liter	50 liter	100 liter
Outside dimensions (diameter)	460 mm	460 mm	500 mm
Height dimensions	802 mm	917 mm	1235 mm
Weight (empty, full)	15 / 42 kg	17 / 59 kg	34 / 115 kg
Static holding time (days)	112 days	122 days	164 days
Standard fill line	1,6 m line length, 6.25 mm OD, 4 mm ID, Teflon FEB tube, with 32mm OD Armaflex foam insulation		
System includes	Dewar, pump, fill line 1.6 m, phase separator, power supply, cables, level sensor, PC software.		
Working modes	1-point level flow control (1 sensor)		
External control	5 volt signals for ON, OFF and RS232 signals for ON, OFF		
PC software	Monitor software, to monitor pump and data logging		
Alarms/warning acoustical/ visual / mechanical	Dewar empty, Dewar 4 liter LN2 left, broken sensor(s), frozen alarm, mechanical overpressure protection valve.		
Options	Tailor-made Adaptor with sensor for all brands of detectors Custom built adaptor to fixate sensor(s) on application Transport trolley 5 wheels (10 cm height) Stand for pump (when Dewar is refilled)		
Dewar Trolley option	900-400-000	900-400-000	900-400-000
Floor Stand option	900-400-100	900-400-100	900-400-100
Custom made adapter	600-400-000	600-400-000	600-400-000

#606 recommended options:



Norhof Dewar Trolley
for safe and easy transport of the LN2 Dewar



Norhof Floor Stand
for storing the pump in vertical position during refill of the LN2 Dewar

#606 Series DSC Adaptors

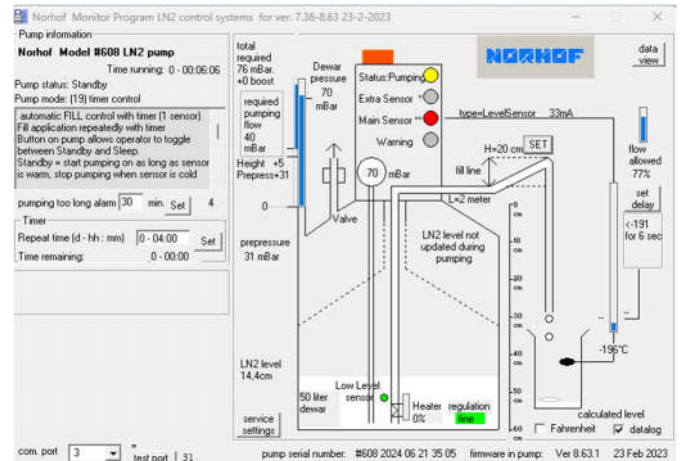
Standard we have adaptors to fit on the different DCS systems like the Shimadzu DSC60. Custom adaptors are possible.

The majority of this system finds use in the field of laboratories, research centers where DSC measurements are made and where a safe and unattended refill of LN2 is required.

Software

To display sensor temperatures, vessel pressure, status of LED's on the pump etc. our Norhof Monitoring software is included with any #606 series pump. This software works under Windows '98 - 2000 - ME - NT - Vista - W7 – Windows 10 – Windows 11

With each #606 system a software Datalogger function is included. This recorder allows you to document any parameter value over time and to preset the time interval for your detector.



#606 series advantages:

- **the system is extremely safe**
the operator is not coming in direct contact with LN2
- **the system is time saving**
the operator does not need to pour in LN2 several times
- **the system can cool the DSC system just with a press on the start button**
this means that the DSC is cold 24 hours a day
- **there is no LN2 valve required**
that implies no unnecessary heat input
- **there is no additional control unit required**
which adds to a clean and elegant setup
- **there is a very low thermal connection to the ambient temperature**
This means that the system is extremely economic in stand-by.
Typical usage less than 0,5 Liter / day
- **the system can deliver LN2 liquid with a flow optimized for the application**
without noise, vibration, excessive waste, etc.
- **the system is prepared to be connected to a PC**
perfect for monitoring and data logging
- **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 is allowed to be used inside the lab, near your working place, without danger.