

NORHOF LN2 Injector model #301

Fully automatic injecting system for adding small quantities of LN2 in PET bottles, drinking cans, etc.



The #301 injector is a very small reservoir, to be directly mounted above the PET bottle (or similar)

- The controller to adjust the infrared sensor for detecting the bottles, and adjusting the delay and open time of the valve, is mounted close to the injector;
- Auto mode for production line, manual dosing for laboratory use or manual production;
- Adjusting amount of LN2 per dose is very easy;
- Dosing per 0,08 to 0,5 ml; (with 1,5 mm nozzle)
- #301 injector is continuously filled by a #611 pumping system, which comes with 50 or 100 liter dewar;
- Suitable for production lines up to 80 pcs/minute, or manual dosing for laboratory use;
- LN2 is not under pressure, so no excessive splashing during dosing

Norhof LN2 microdosing systems



Norhof manufactures LN2 microdosing systems. Liquid Nitrogen (LN2) is used as the cooling medium and is taken from a storage vessel (Dewar) with low pressure (max. 300 mBar) and delivered (pumped) through a fill line to the application in a micro dosing way.

The Norhof LN2 microdosing system is designed to overcome the drawbacks of LN2 under pressure in which a solenoid valve is used to switch the supply ON / OFF. You may compare the Norhof system with a water tap, but instead of giving water, it gently gives liquid nitrogen, with an adjustable flow, possible to regulate from some drops, up to 1 Liter/minute. Our pump can pump LN2 up to 5 meters above the pump itself

Norhof 611 pump, mounted on a 50 Liter Dewar

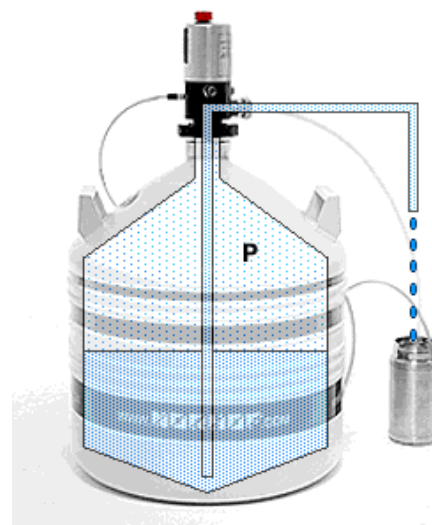
301 series Technical Specifications

Static evaporation rate	2 liters/day	
Dosing quantity per dose	0,08 to 0,5 mL. (with 1,5 mm nozzle)	
Working LN2 pressure	< 20 mBar	
Power connection	115V / 230V AC with supplied power supply or 12 Volt AC/DC	
Power consumption	average 10 Watts, during pumping max. 50 watts	
Storage container volume	50 Liter	100 Liter
Outside dimensions (diameter)	500 mm	500 mm
Height dimensions (incl. pump)	875 mm	1235 mm
Weight (empty, full)	17 / 57,5 kg	32 / 113 kg
System includes	Power supply, controller, all cables etc.	
Options	Dewar empty, Dewar 5 liters LN2 left, broken sensor(s), frozen alarm, mechanical overpressure protection valve.	

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.



301 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 detector just with a press on the start button;**
this means that the detector 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.