Directions For Use

High Purity Nitrogen Generator

NM18LA (230V 50/60Hz AC)

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Document Change History

Issue No	Changed	Initials	Date
1	Document Created	SGM	01/03/02
2	Updated	SGM	04/09/02
3	Jan 2003 Update (Inlet Filter Position)	SGM	13/01/03
4	System Diagram Update	MK	16/07/04
5	Technical support phone number updated	FAD	10/11/04
6	Weight updated	FAD	16/11/04
7	New Style Front Added	FAD	07/04/05

Contents

Warranties and Liabilities

1) The Company warrants that it has title to the Goods.

2) Subject to the provisions of this clause the Company warrants that the Goods shall comply in all material respects with any specification referred to in the Order Confirmation (as the same may be amended) and shall, subject thereto, be free from defects in material and workmanship for the lesser of a period of twelve months from the date of delivery or thirteen months from the date of dispatch from the factory.

3) Save as provided in this clause and except where the Goods are sold to a person dealing as a consumer (within the meaning of the Unfair Contract Terms Act 1977) all warranties, conditions or other terms implied by statute or common law are hereby expressly excluded save to the extent they may not be lawfully excluded. When the Goods are sold to a consumer within the meaning of the Unfair Contract Terms Act 1977 their statutory rights are not affected by the provisions of this clause.

4) In the event of the Customer making a claim in respect of any defect in terms of clause 2 hereof the Customer must:-

   4.1) Reasonably satisfy the Company that the Goods have been properly installed, commissioned, stored, serviced and used and without prejudice to the generality of the foregoing that any defect is not the direct or indirect result of lack of repair and/or servicing, incorrect repair and/or servicing, use of wrong materials and/or incorrect spare parts; and

   4.2) Allow the company to inspect the Goods and/or any installation and any relevant packaging as and when reasonably required by the Company.

5) Subject to the Company being notified of any defect as is referred to in sub-clause 2 hereof within a reasonable time of it becoming apparent and subject always to the terms of sub-clause 4 hereof, the Company shall, in its option, replace or repair the defective Goods or refund a proportionate part of the Price. The Company shall have no further liability to the Customer (save as mentioned in sub-clause 6 hereof).

6) The Company shall be liable to indemnify the Customer in respect of any claim for death or personal injury to any person in so far as such is attributable to the negligence or breach of duty of the Company or any failure by the Company to comply with the provisions of sub-clause 2 hereof.

7) Save as provided in sub-clause 2 hereof the Company shall not be liable in respect of any claim by the Customer for costs, damages, loss or expenses (whether direct, indirect, consequential or otherwise) or indemnity in any respect howsoever arising including, but not by way of limitation, liability arising in negligence (other than pursuant to clause 6 above) that may be suffered by the Customer or any third party,

SAFETY NOTICE TO USERS

These instructions must be read thoroughly and understood before installation and operation of your Peak Nitrogen Generator. Use of the Generator in a manner not specified by Peak Scientific Inst. MAY impair the SAFETY provided by the equipment.
When handling, operating or carrying out any maintenance, personnel must employ safe engineering practices and observe all relevant local health and safety requirements and regulations. The attention of UK users is drawn to the Health and Safety at Work Act 1974, and the Institute of Electrical Engineers regulations.

WARNING: Nitrogen is not a poisonous gas, but if the concentration in the inhaled air becomes too high there will be a risk of asphyxiation.

1 Introduction

The Peak Scientific Instruments Ltd NM18LA Gas Generator is designed specifically for use with Laboratory Analytical Instruments as a source of carrier gas.

2 Unpacking and Installation.

Although Peak Scientific takes every precaution with safe transit and packaging, it is advisable to fully inspect the unit for any sign of transit damage.

ANY DAMAGE SHOULD BE REPORTED IMMEDIATELY TO THE CARRIER AND PEAK SCIENTIFIC OR THE DISTRIBUTOR FROM WHERE THE UNIT WAS PURCHASED.

After unpacking and a visual inspection, the unit should be placed in a ventilated area away from direct sunlight. Care should be taken not to obstruct the ventilation holes on the sides of the unit nor the fan outlet at the rear.

The generator should be placed on a steady and level base. It has been designed to fit under most benches. The generator may be supplied with castors if this option has been requested. The front two castors are fitted with brakes. These should be applied when the unit is in use.

Performance of the generator (like all sophisticated equipment) is affected by ambient temperatures. Continuous operation in ambient temperatures exceeding 25°C will lead to a reduction in capacity and prolonged operation in temperatures exceeding 28°C will shorten the life of the unit. Note should also be taken of the proximity of Air Conditioning outlets. These can sometimes give rise to “pockets” of air with high relative humidity. Operation of the generator within such a pocket could adversely affect its performance.

3 Electrical Connection

Important Electrical Notice

This unit is classified as SAFETY CLASS 1 equipment. THIS UNIT MUST BE EARTHED. Before connecting the unit to the mains supply, please check the information on the serial plate. The mains supply must be

EARTH/GROUND (E): -	**Green & Yellow**
LIVE (L): -	**Brown**
Neutral (N): -	**Blue**

Fuse

The generator protection fuse is in the pull out drawer of the mains inlet IEC euro connector located on the bottom right hand side of the cabinet adjacent to the off/on switch. The fuse is rated at 10.0 A. The drawer also holds a spare.

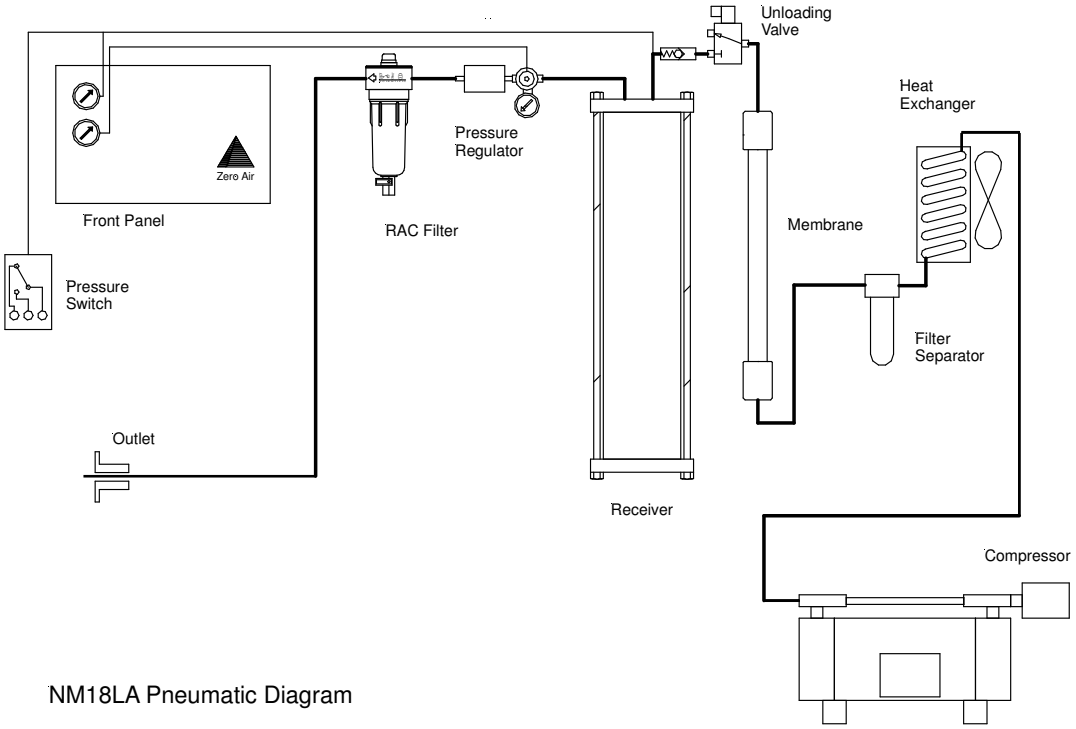
Connect the generator to a single-phase supply using the power cord provided.

4 Air Connection

The NM18LA Nitrogen Generator has its own in-built air compressor and therefore does not need an external source of compressed air. There is a single ¼" Female bulkhead connection on the left hand side of the unit. In addition this is a drain port to the rear of the unit. The generator may liberate a considerable amount of water through this drain, which should be led to a suitable drain connection or container.

5 Principle of Operation

Peak Scientific Instruments Membrane Generators utilize *Hollow Fibre Membrane* Technology to efficiently separate Nitrogen from other gases present in ambient air. The membrane operates on the principle of *selective permeation* in that so-called *"Fast"* gases such as H_2O, CO_2 & Oxygen will permeate through the membrane wall whilst so-called *"Slow"* gases will not and continue along the membrane tube and are thus available for collection and use.



NM18LA Pneumatic Diagram

Air is drawn into the system by the Compressor and passed via the Heat Exchanger and the Filter/Separator to the Membrane. After the Membrane the separated Nitrogen is passed into the Air Receiver. The Nitrogen is regulated and through an Activated Carbon Filter to remove any remaining impurities.

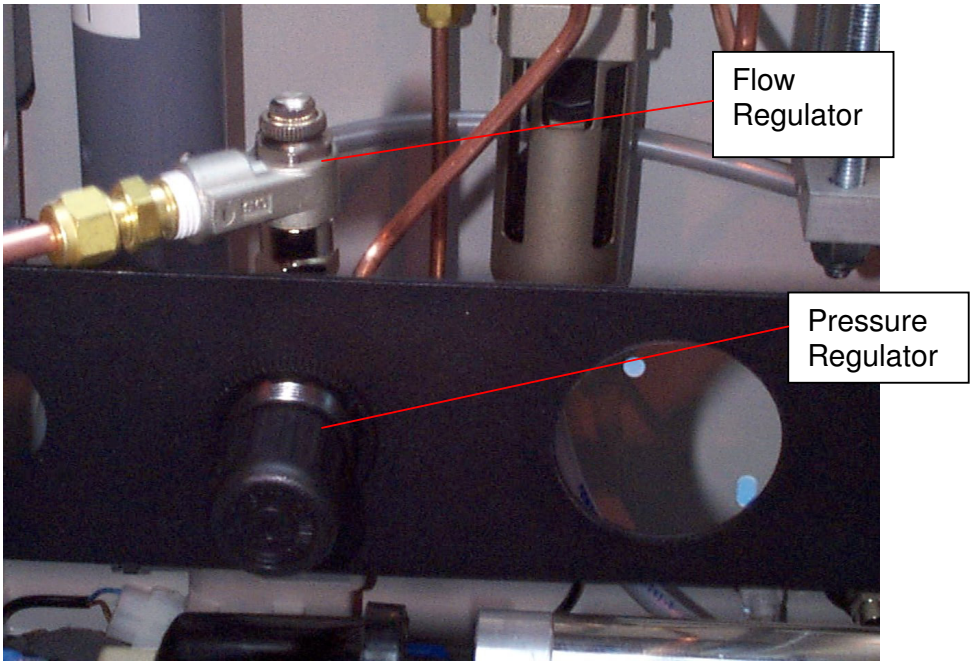
6 Commissioning

With the Generator installed as described earlier connect power to the unit and turn it ON. Disconnect the Nitrogen Outlet connection to allow the generator to vent to atmosphere until the unit is stabilised. The Generator has been pre-set in the factory to give the specified output flow-rate and pressure in line with known requirements; however some minor adjustment might be necessary. Once the Membrane reaches the design pressure the Generator will stabilise and produce pure Nitrogen. Maximum purity will be achieved after around 1 hour. After this time the generator can be re-connected to the application.

The design of the generator is that it can deliver up to 18 Litres / min of Nitrogen at up to 100 psig. Should the demand for Nitrogen be less than the rated output flow, or indeed should the demand stop the generator will continue to operate without any problems. The generator is protected from over-pressure and will un-load should demand be reduced. After a period of around 5 minutes with no load the generator will stop.

Pressure & Flow Settings

Output pressures and flow rates are controlled by pressure regulators located inside the front cover.



The regulators are pre-set at the factory and should not require adjustment.

7 Routine Inspection

WARNING: Servicing and/or repair of the Generator should only be undertaken by a TECHNICALLY COMPETENT PERSON with the Generator safely isolated.

Due to the simplicity of the design and the small number of moving parts the Nitrogen Generator will have a long and trouble free life. However the following components should be replaced as follows:

Compressor Inlet Filter	**Every 6- months**
Filter Separator & Silencer Element	**Every 12- months**
Compressor Units (the lesser of)	**Every 6000Hours or 18- months**

Service kits are available for all routine maintenance; please contact the factory for further details.

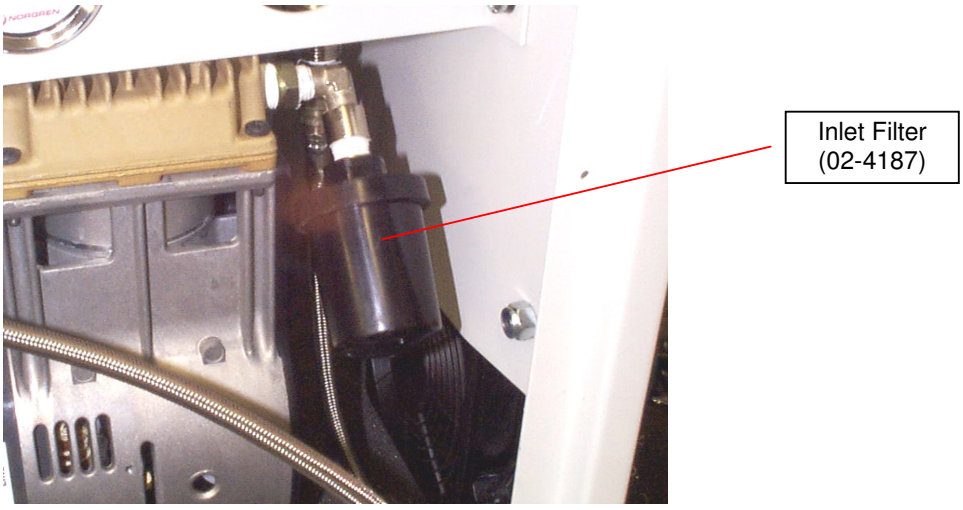
FAILURE TO FOLLOW THE PRESCRIBED MAINTENANCE PLAN WILL INVALIDATE THE PRODUCT WARRANTY

Inlet Filter / Separator Elements

These should be changed at intervals as indicated below. In addition filter bowls should be cleaned and the operation of the auto-drains should be checked.

Compressor Inlet Filter

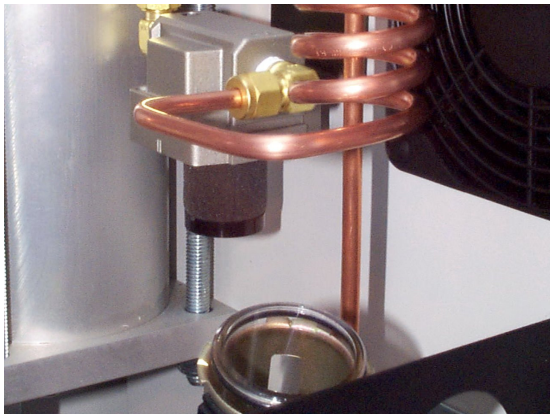
This should be changed at 6-month intervals. Part Number is 02-4187 and the filter is located as shown.



Remove the cover by rotating it anti-clockwise ¼ turn. The element can then be removed. Re-fitting is the reverse procedure.

Filter Separator Elements

The Coalescing Filter Element (02-4335) should be changed at 12-month intervals.

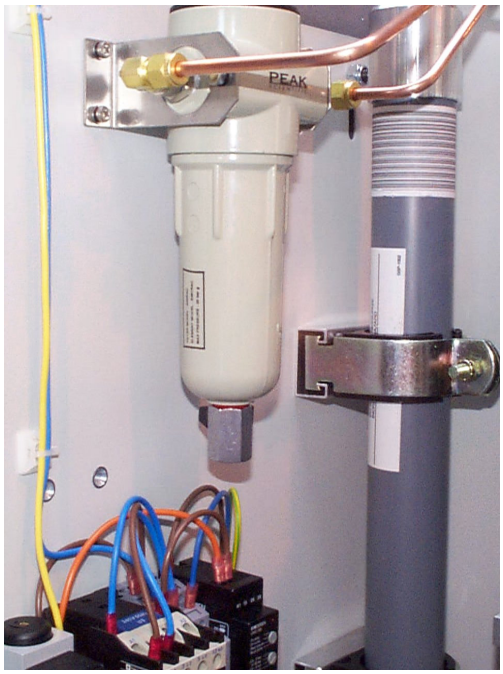


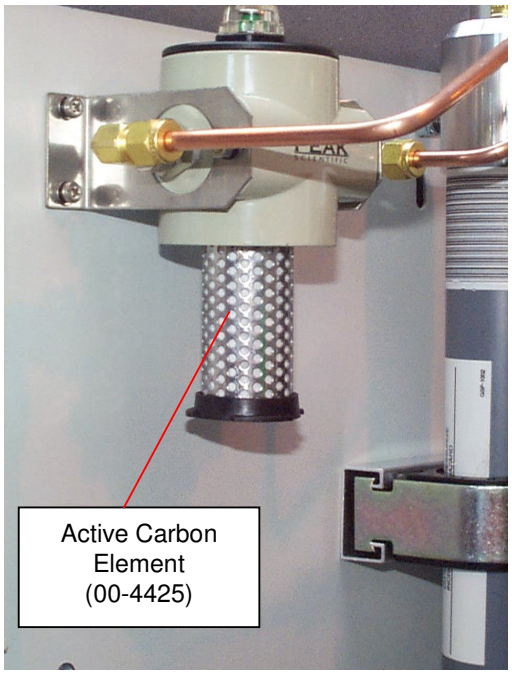
The filter housing is removed by depressing the black slide and twisting the bowl through a ¼ turn. The element then un-screws counter clockwise. Re-assembly is the reverse procedure.

IMPORTANT!!! Ensure that the system is NOT under pressure before attempting to remove the bowl and that the air supply is shut-off.

Active Carbon Filter

The Element is as shown, and should be changed at 12-month intervals. The part number is 00-4425





The filter housing is removed by un-screwing in a counter clockwise direction.

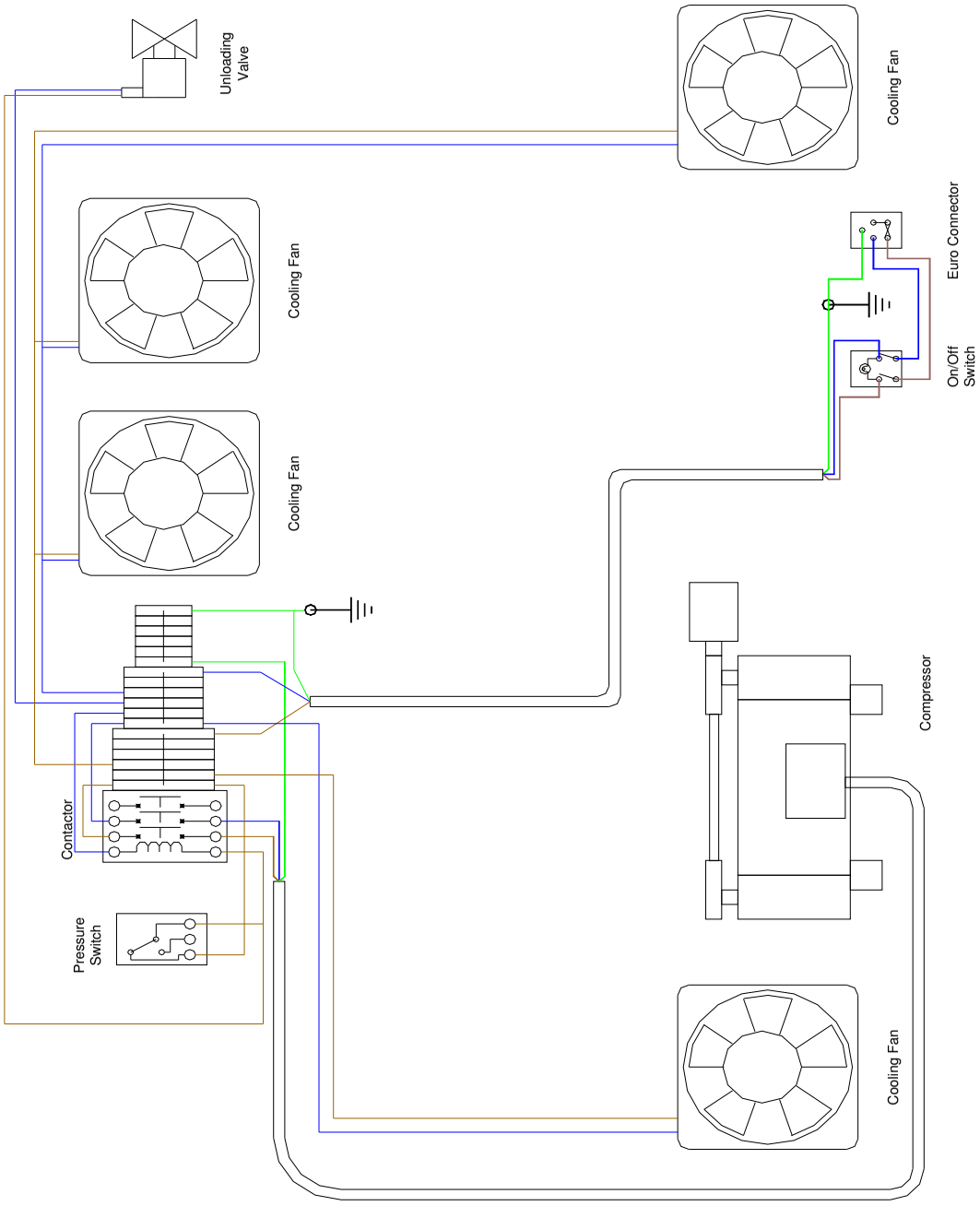
IMPORTANT!!! Ensure that the system is NOT under pressure before attempting to remove the bowl and that the air supply is shut-off.

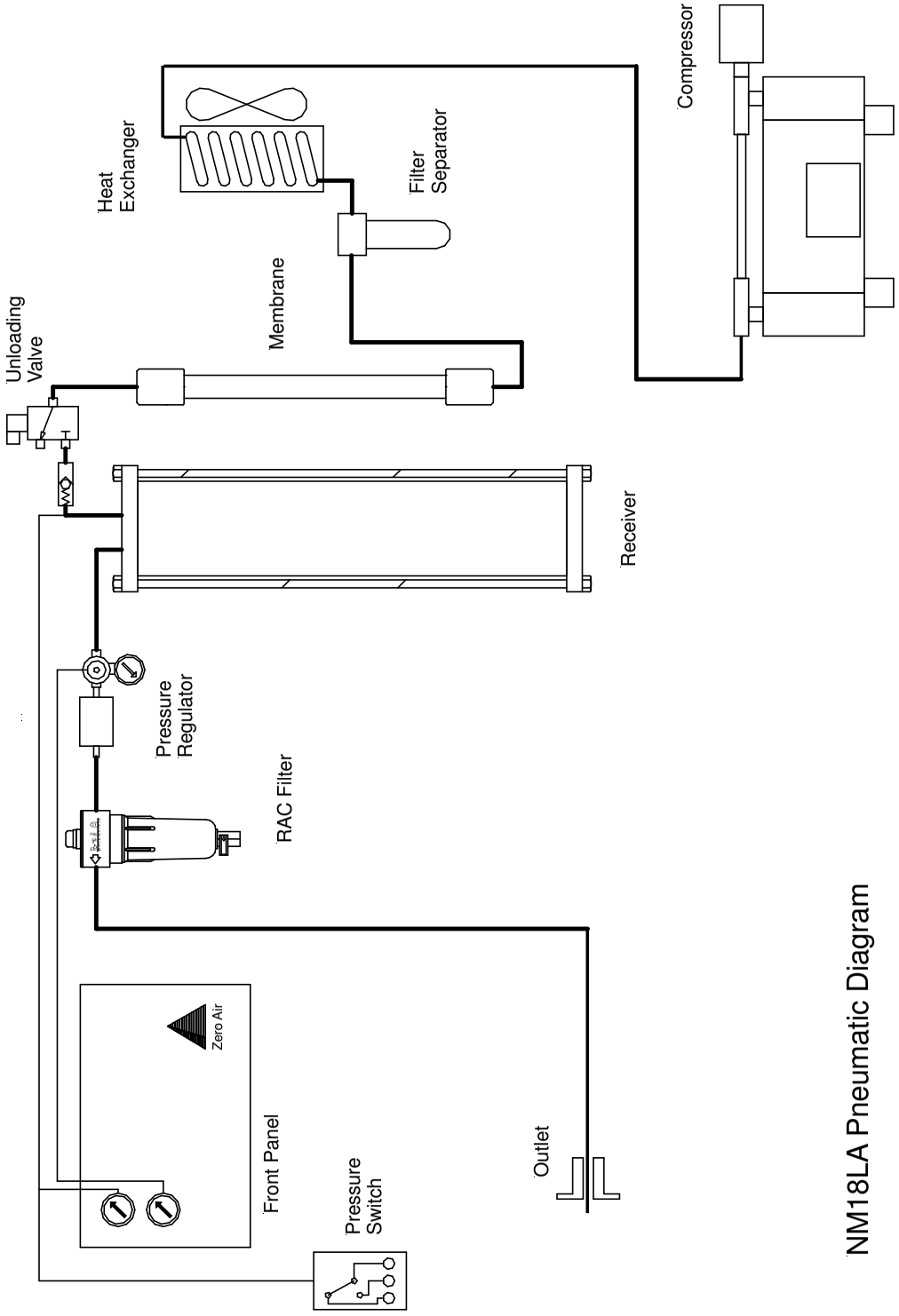
8 Technical Specifications

General Details

Minimum Operating Ambient Temperature	5 °C (41 °F)
Maximum Operating Ambient Temperature	35 °C (95 °F)
Inlet Conditions (Free of oil and bulk moisture)	
Minimum Air Inlet Pressure	N/A
Maximum Air Inlet Pressure	N/A
Minimum Air Inlet Flow Rate	N/A
Outlet Gas	
Maximum Pressure Drop (Outlet-Inlet) δP	N/A
Maximum Gas Outlet Pressure	100 psig
Maximum Gas Outlet Flow (Nitrogen)	18 Litres/min (ATP)
Start up time for Purity	30 minutes
Particles	0.01um
Electrical Requirements	
@230V ac (50/60Hz)	3.6 Amps
Fuse (230V 50Hz ac)	10 Amps
Electrical Connection	IEC-Euro connector
General	
Dimensions W x D x H cm (inches)	88 x 43 x 41 (34.6 x 17 x 16)
Weight Kg (lbs)	41 (90)
Shipping Weight Kg (lbs)	79 (173.8)

NM18LA Electrical Diagram





NM18LA Pneumatic Diagram

Maintenance Record Log

Model-_____. **Serial number____**

Work done	Remarks	Date	Name

Notes