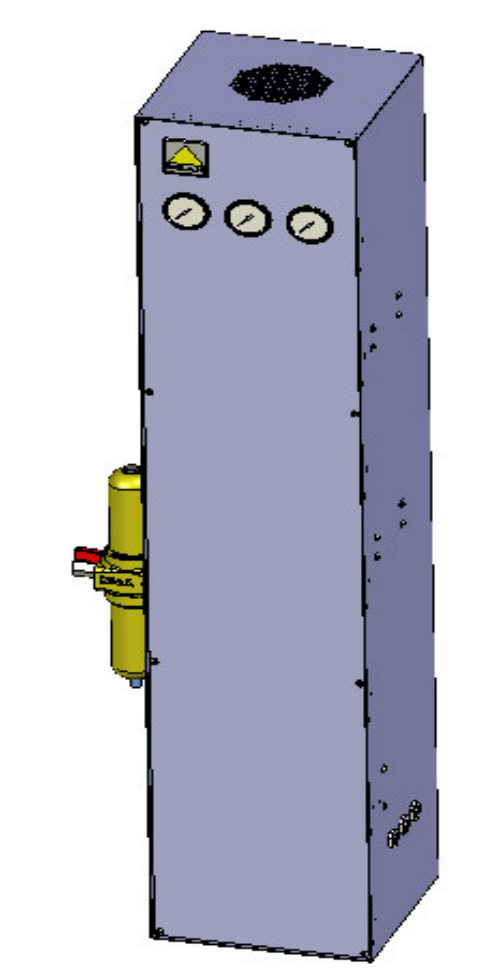
NM80Z GAS GENERATOR

USER MANUAL
UM-NM80Z



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History

Rev. No.	Changed	Initials	Date
1	Document Created	S. Khan	27/08/08

Warranties & Liabilities

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.

⚠ Caution

SAFETY NOTICE TO USERS

These instructions must be read thoroughly and understood before installation and operation of your Peak Scientific NM80Z. Use of the Generator in a manner not specified by Peak Scientific 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.

Declaration of Conformity

RoHS Statement of Compliance

The European RoHS (Restriction of Hazardous Substances) Directive 2002/95/EC aims to reduce the use of hazardous materials within a certain scope of products – mostly electrical and electronic.

Peak Scientific Instruments Ltd has developed all reasonable 'due diligence' controls, to ensure that our products comply with the principles, and requirements, of this directive. Similar directives in the United States and China, for example, have also been captured within this programme.

Where a specific certificate of compliance is required, this can be requested, on a product serial number basis, from Peak Scientific Instruments Ltd, by contacting us though info@peakscientific.com.

WEEE Statement of Compliance (WEE/FJ0116XU)

The WEEE (Waste of Electrical & Electronic Equipment) Directive 2002/96/EC, issued by the European Union, aims to reduce the impact, upon the environment, from disposal of certain types of equipment. It requires producers to implement controls, to ensure that equipment that they produce, is correctly disposed of, following the end of its useful life.

Peak Scientific Instruments Ltd fully complies with it's obligations towards this important legislation. These obligations refer to all electrical equipment that has been dispatched by us from 1st July, 2007, within the United Kingdom. As part of our compliance towards this, we have placed the management of this disposal with the B2B Compliance scheme. They can be contacted directly on 01691-676124, or by visiting their website on www.b2bcompliance.org.uk.

Ken Brown
Quality Assurance Manager

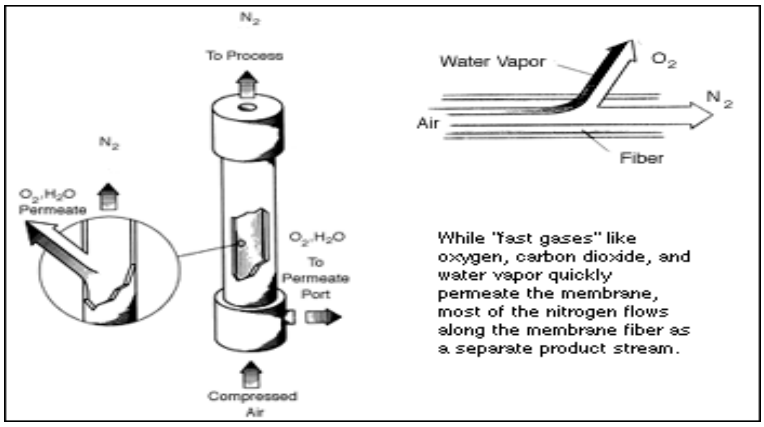
AIR CONNECTION

Note:- A fittings kit is not provided with this Generator.

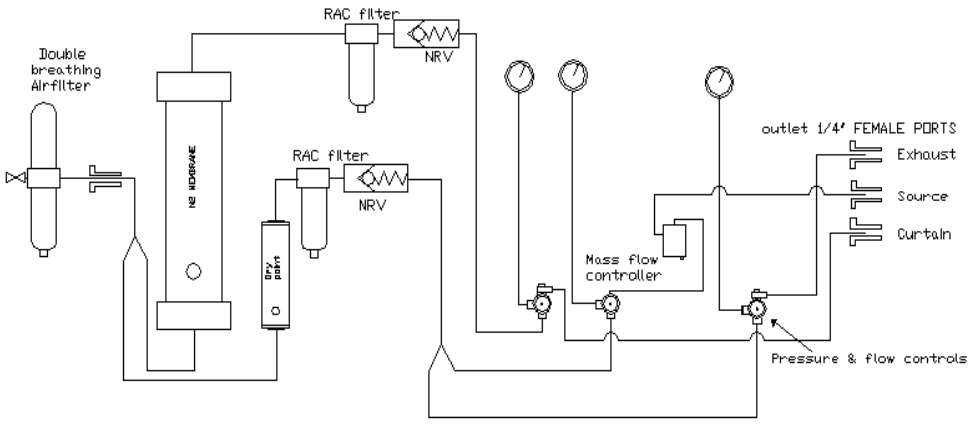
The Nitrogen Generator should be connected to a **clean, dry, OIL - FREE** source of compressed air. A regulated minimum pressure of 120 psig is required. Any doubts as to the suitability of your compressed air supply should be referred to the factory for advice.
The generator has a *Breathing Air Filter* with ¼" BSPT connection to the left side of the unit. The Compressed Air supply should be connected here. This filter will drain moisture and is equipped with an automatic drain. The drain should be led to a convenient place. There are 3-off ¼" BSPT Female bulkhead connections to the right of the unit.
To balance each EXHAUST flow only for each Mass spectrometer 4 off ¼" inline flow controller have been provided (if required) with User Manual.

Principle of Operation

Peak Scientific Instruments NM80Z Generators utilize two different types of air preparation membranes to produce the required Gas outputs. The Nitrogen side of the generator employs "*Hollow Fibre Membrane"* Technology to efficiently separate Nitrogen from other gases present in ambient air. An overview of this process can be seen below.



The Zero Air side of the generator uses the latest technology in membrane dryers to produce a clean dry supply of Zero grade air. The pneumatic diagram for the system can be seen below.

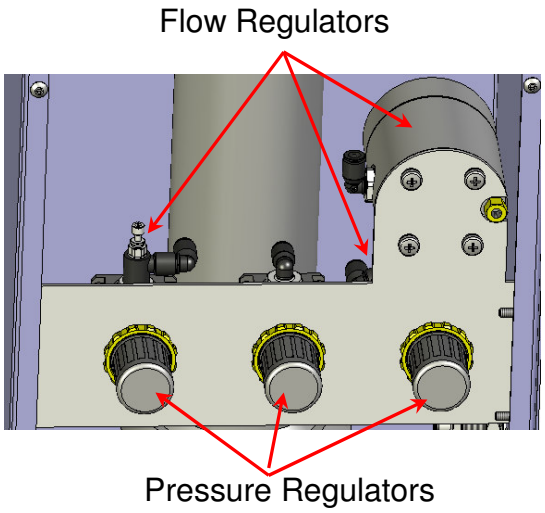


Air passes into the system through the **Inlet BA Filter** which removes bulk moisture and harmful particles. The air is now divided into 2 streams. The first stream is passed through the **Nitrogen Membranes** to generate a flow of **High Purity Nitrogen** for the **Curtain Gas** output. The **Nitrogen** is then filtered through the **RAC Filter** to remove any remaining contaminants. The second stream is passed through a **Dry point Membranes** where moisture and other contaminants are removed from the air before final cleaning by the **RAC Filter.** This provides **Zero Grade Air** for **Source Gas** and **Exhaust Gas** requirements.

Commissioning

With the Generator installed (as described earlier), connect compressed air to the unit and turn it ON. Disconnect the Outlet connections 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. Once the Membranes reach the design pressures the Generator will stabilise and produce Nitrogen. Maximum purity will be achieved after approximately 1 hour. The generator can then be re-connected to the application.
The design of the generator is such that it can deliver up to 104 Litres / min of Zero Grade Air at up to 110 psig with an additional 48 Litres / min of High Purity Nitrogen at 80 psig. Should the demand for gases be less than the rated output flow, or indeed should the demand stop the generator will continue to operate without any problems.

Pressure & Flow Settings
Output pressures and flow rates are controlled by pressure regulators located behind the front panel as shown below. The Factory settings for the 3 outputs are as follows: -



PORT	Usage / Connection	Flow/ Pressure
CURTAIN	Curtain Gas	48 Ltr/min - 80 psig
SOURCE	Ion Source / Nebuliser	104 Ltr/min - 110 psig
EXHAUST	Exhaust Gas	32 Ltr/min - 60 psig

The above settings should allow the NM80Z to be operated with all standard configurations for the Applied Bio-systems API range of LC/MS/MS instruments. Should the above settings not provide sufficient flow or pressure for your application please contact Peak Scientific for assistance.

Maintenance Schedule

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

Due to the simplicity of the design and the small number of moving parts the NM Series Nitrogen Generator will have a long and trouble free life. However as with all scientific and technical equipment it should be regularly inspected and serviced as below

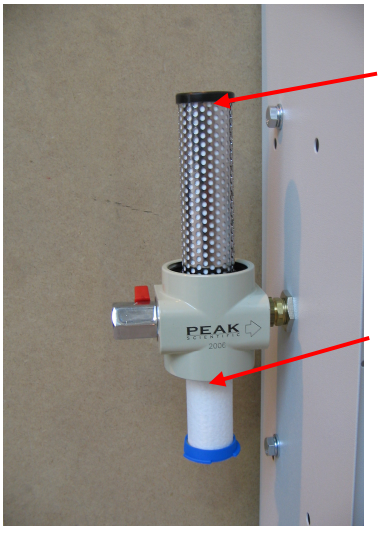
BA Inlet Filters	**Every 12 – months**
RAC Filter Elements	**Every 12 - months**

BA Inlet Filter Elements

These should be changed at 12 months intervals. In addition filter bowls should be cleaned and, the operation of the auto-drains should be checked, if auto-drain requires replacing. Part # is (02-4485).

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

The Air supply to the Generator MUST be turned OFF and the Generator MUST be de-pressurised prior to attempting to remove ANY filter bowl. Failure to do this may cause injury.



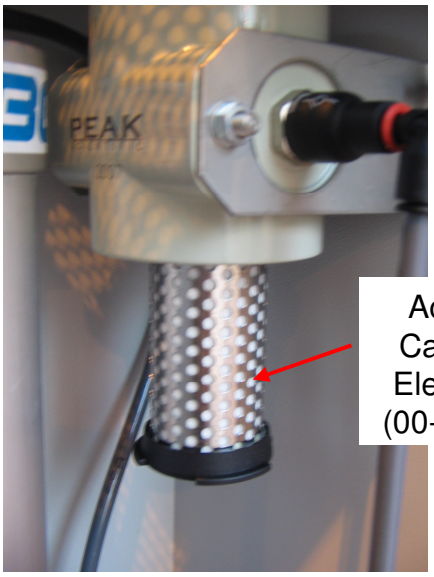
The filter housing is removed by un-screwing in a counter clockwise direction.

Maintenance

RAC Filter

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

The Air supply to the Generator MUST be turned OFF and the Generator MUST be de-pressurised prior to attempting to remove ANY filter bowl. Failure to do this may cause injury.



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

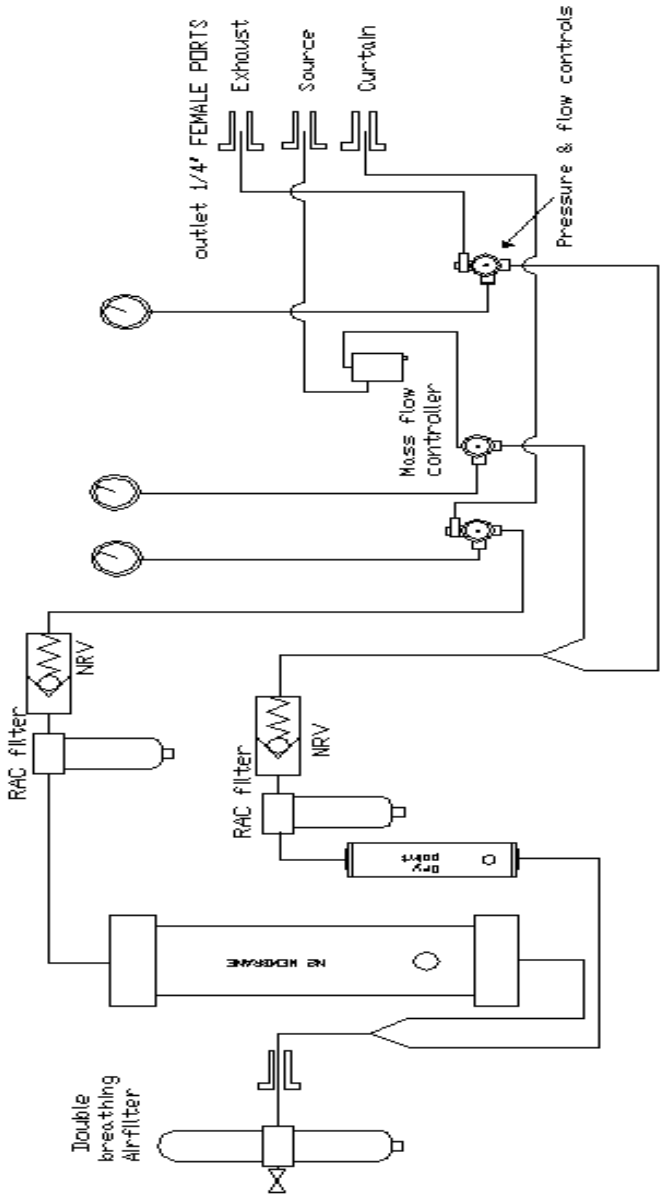
Technical Data

General Details

Minimum Operating Ambient Temperature	5 ºC (41 ºF)
Maximum Operating Ambient Conditions	30 ºC (86 ºF) 70% RH(max)
Inlet Conditions (Free of oil and bulk moisture)	
Minimum Air Inlet Pressure	120 psig (8.27 Barg)
Maximum Air Inlet Pressure	145 psig (10.0 Barg)
Minimum Air Inlet Flow Rate	380 l/min (ATP)
Outlet Gas	
Maximum Pressure Drop (Outlet-Inlet) δP	8 psig
Maximum Gas Outlet Pressure	110 psig
Maximum Source Gas Outlet Flow (Zero Grade Air)	104 Litres/min (ATP)
Maximum Exhaust Gas Outlet Flow (Zero Grade Air)	32 Litres/min (ATP)
Maximum Curtain Gas Outlet Flow (High Purity Nitrogen)	48 Litres/min (ATP)
Start up time for Purity	60 minutes
Particles	0.01um
Serviceable Parts List	**(Service Kit Part # 08-4631)**
Breathing Air Inlet Filter Elements	00-4426 00-4427
Active Carbon Filter Element	00-4425 (x2)
General	
Dimensions W x D x H cm (inches)	25 x 25 x 120 (10 x 10 x 44)
Shipping Weight Kg (lbs)	27 (60)

Pneumatic

Pneumatic Diagram



Maintenance Log

Maintenance log

Model- NM80Z **Serial number**

Work Done	Remarks	Date	Name

Notes