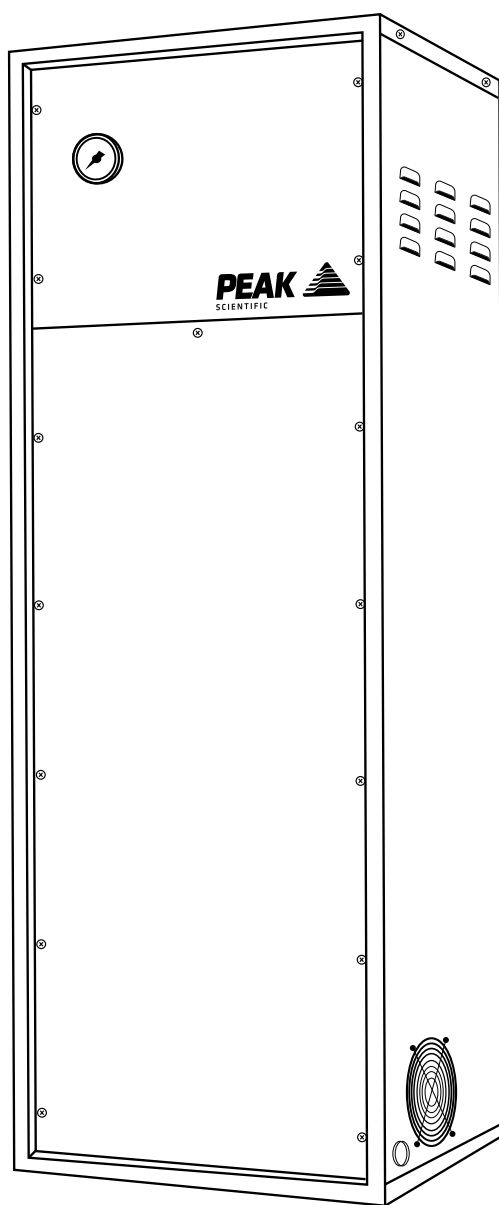


NG3000(A) & 5000(A)

User Manual



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Change History

Rev	Comment	Name	Date

How to use this Manual

This manual is intended for end users and has been written as a reference document where you can skip to the relevant information.

Users can refer to the contents page to find the relevant information.

Please review each of the following sections carefully.

Thank you for selecting Peak Scientific to meet your gas generation needs, and should you require any further assistance or support please do not hesitate to contact Peak Scientific or the Peak Partner from which you purchased your generator.

Introduction

The NG range of ultra high purity nitrogen generators have been designed primarily for GC applications and other applications requiring the highest purity nitrogen.

These models provide a source of Nitrogen gas with other features including:

- Available with or without an external compressor
- Contains self-regenerating Carbon Molecular Sieve purification
- The most convenient method of laboratory gas supply
- Gas is supplied on demand so generator works to your schedule
- Remove the hassle and safety concerns with ordering and replacing pressurized cylinder gas
- 12 month comprehensive on-site warranty

Delivering flow rates of 3000cc/min or 5000cc/min, these generators come in two variants, the standard model and the enhanced (A) models which feature an integrated compressor, removing the need for an external air supply to be present in the lab.

To reach their ultra high purity nitrogen output these generators use Pressure Swing Adsorption and Carbon Molecular Sieve. These separation technologies remove oxygen and other impurities in air, delivering hassle-free, ultra high purity nitrogen, on-demand for the lab.

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.
 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
 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 Notices

Peak Scientific Instruments cannot anticipate every possible circumstance which may represent a potential hazard. The warnings detailed within this manual refer to the most likely potential hazards, but by definition cannot be all inclusive. If the user employs an operating procedure, item of equipment or a method of working which is not specifically recommended by Peak Scientific, the user must ensure that the equipment will not be damaged or become hazardous to persons or property.

Symbols

This manual uses the following symbols to highlight specific areas important to the safe and proper use of the generator.

 WARNING	A WARNING notice denotes a hazard. It calls attention to an operating procedure, process or similar, which if not correctly performed or adhered to, could cause personal injury or in the worst case death. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood or met.
 CAUTION	A CAUTION notice denotes a hazard. It calls attention to an operating procedure, process or similar, which if not correctly performed or adhered to, could cause damage to the generator or the application. Do not proceed beyond a CAUTION notice until the indicated conditions are fully understood or met.
	Caution, risk of electric shock. Ensure power to the generator has been removed before proceeding.

Safety Notice to Users



These instructions must be read thoroughly and understood before installation and operation of your Peak Generator. 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.



If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment maybe impaired.

Declaration of Conformity

We Peak Scientific Instruments Ltd.
Of Fountain Crescent, Inchinnan, Renfrewshire, PA4 9RE

Declare that:


Equipment: Nitrogen Generator
Models: NG*000(A) Series * Denotes any numeric value.
(A) Denotes compressor based model.

To which this declaration relates, is in conformity with the applicable EC directives, harmonized standards, and other normative requirements.

- Low Voltage Directive 2014/35/EU
EN 61010-1: 2010 Electrical Equipment for measurement, control and laboratory use.
- Electromagnetic Compatibility Directive 2014/30/EU
EN 61326-1: 2013 Electrical Equipment for measurement, control and laboratory use.

All evaluation, testing and certification issued by:

York EMC Services Ltd
Donibristle Industrial Park
Dunfermline, Fife
KY11 9HZ

Signed:  Name: Chris Pugh
Date: 03/02/2014 Position: Engineering & Operations Director



Environmental Declaration

We Peak Scientific Instruments Ltd.
Of Fountain Crescent, Inchinnan, Renfrewshire, PA4 9RE

Declare that:

Equipment: Nitrogen Generator

Models: NG*000(A) Series * Denotes any numeric value.
(A) Denotes compressor based model.


Is fully compliant with the following Directives

- 2012/19/EU WEEE (Waste of Electrical and Electronic Equipment)
- 2011/65/EU RoHS 2 (Restriction of Hazardous Substance)

Peak Scientific Instruments Ltd fully complies with its obligations towards the European WEEE (Waste of Electrical and Electronic Equipment) Directive 2012/19/EU. These obligations are being met within the B2B compliance group.

Peak Scientific Instruments Ltd has developed all reasonable 'due diligence' controls to ensure that our products comply with the principles and requirements of the European recast RoHS (Restriction of Hazardous Substances) Directive 2011/65/EU. Similar directives in the United States and China, for example, have also been captured within this program.

Where a specific certificate of compliance is required, this can be requested, on a product serial number basis, directly from Peak Scientific Instruments Ltd, by contacting us through our website on www.peakscientific.com

Signed:  Name: Chris Pugh

Date: 03/02/2014 Position: Engineering & Operations Director



Technical Specification

NG3000

Environment

Minimum Operating Ambient Temperature	5°C (41°F)
Maximum Operating Ambient Temperature	25°C (75°F)
Maximum Altitude	2000 m
Maximum Relative Humidity	80% Non-Condensing
Minimum Storage Temperature*	10°C (50°F)
Maximum Storage Temperature*	25°C (75°F)

*NOTE - When taken out of storage the Generator should be allowed to acclimatize at room temperature for a minimum of 3 hours before operation.

Inlet Conditions

Minimum Air Pressure	8.2 bar (120 psi)
Maximum Air Pressure	8.8 bar (130 psi)

Generator Outlets

Maximum Gas Output Pressure	5.5 bar (80 psi)
Maximum Outlet Flow Rate	3000 cc/min (0.10 cfm)
Particles	<0.01µm
Phthalates	NONE
Suspended Liquids	NONE
Gas Outlets	1 x ¼" BSPP
Start-Up Time For Purity	8 hours

Electrical Requirements

Voltage	230v or 110v
Frequency	50/60 Hz
Current	0.5 (1.2) A
Pollution Degree	2
Insulation Category	II

General

Dimensions cm (inches) WxDxH	43 (16.9) x 41 (16.1) x 124 (48.8)
Generator Weight Kg (lbs)	77 (170)
Shipping Weight Kg (lbs)	107 (236)

Technical Specification

NG3000A

Environment

Minimum Operating Ambient Temperature	5°C (41°F)
Maximum Operating Ambient Temperature	35°C (95°F)
Maximum Altitude	2000 m
Maximum Relative Humidity	80% Non-Condensing
Minimum Storage Temperature*	10°C (50°F)
Maximum Storage Temperature*	25°C (75°F)

*NOTE - When taken out of storage the Generator should be allowed to acclimatize at room temperature for a minimum of 3 hours before operation.

Generator Outlets

Maximum Gas Output Pressure	5.5 bar (80 psi)
Maximum Outlet Flow Rate	3000 cc/min (0.10 cfm)
Particles	<0.01µm
Phthalates	NONE
Suspended Liquids	NONE
Gas Outlets	1 x ¼" BSPP
Start-Up Time For Purity	8 hours

Electrical Requirements

Voltage	230v or 110v
Frequency	50/60 Hz
Current	3.6 (8) A
Pollution Degree	2
Insulation Category	II

General

Dimensions cm (inches) WxDxH	43 (16.9) x 41 (16.1) x 124 (48.8)
Generator Weight Kg (lbs)	88 (194)
Shipping Weight Kg (lbs)	128 (282)

Technical Specification

NG5000

Environment

Minimum Operating Ambient Temperature	5°C (41°F)
Maximum Operating Ambient Temperature	25°C (75°F)
Maximum Altitude	2000 m
Maximum Relative Humidity	80% Non-Condensing
Minimum Storage Temperature*	10°C (50°F)
Maximum Storage Temperature*	25°C (75°F)

*NOTE - When taken out of storage the Generator should be allowed to acclimatize at room temperature for a minimum of 3 hours before operation.

Inlet Conditions

Minimum Air Pressure	8.2 bar (120 psi)
Maximum Air Pressure	8.8 bar (130 psi)

Generator Outlets

Maximum Gas Output Pressure	5.5 bar (80 psi)
Maximum Outlet Flow Rate	5000 cc/min (0.17 cfm)
Particles	<0.01µm
Phthalates	NONE
Suspended Liquids	NONE
Gas Outlets	1 x ¼" BSPP
Start-Up Time For Purity	8 hours

Electrical Requirements

Voltage	230v or 110v
Frequency	50/60 Hz
Current	0.5 (1.2) A
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General

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Technical Specification

NG5000A

Environment

Minimum Operating Ambient Temperature	5°C (41°F)
Maximum Operating Ambient Temperature	35°C (95°F)
Maximum Altitude	2000 m
Maximum Relative Humidity	80% Non-Condensing
Minimum Storage Temperature*	10°C (50°F)
Maximum Storage Temperature*	25°C (75°F)

*NOTE - When taken out of storage the Generator should be allowed to acclimatize at room temperature for a minimum of 3 hours before operation.

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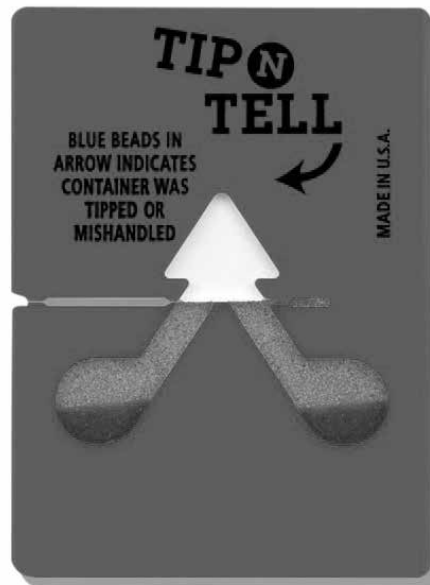
General

Dimensions cm (inches) WxDxH	43 (16.9) x 41 (16.1) x 124 (48.8)
Generator Weight Kg (lbs)	88 (194)
Shipping Weight Kg (lbs)	128 (282)

Unpacking

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.

Check 'SHOCKWATCH' and 'TIP-N-TELL' labels for signs of rough handling prior to unpacking.



Any damage should be reported immediately to the carrier and Peak Scientific or the Peak Partner from where the unit was purchased.

Follow the unpacking instructions posted on the side of the crate. It will require two people to remove the unit from the shipping crate and to manoeuvre the generator to the desired location.

Please save the product packaging for storage or future shipment of the generator.

Note: Included with the generator is a "Fittings Kit" containing mains power leads for UK, EU & US and also all the required fittings and warranty registration card. Be careful not to discard these with the packaging.

Installation

Generator Environment

The generator is designed for indoor use only. It should be installed adjacent to the application(s) it is supplying. If this is not convenient then the unit can be sited elsewhere, however, consideration should be made of the lengths of pipe runs as pressure drops can result from extended runs of pipe.

Performance of the generator (like all sophisticated equipment) is affected by ambient conditions. Note should also be taken to the proximity of Air Conditioning outlets. These can sometimes give rise to “pockets” of air with high relative humidity. Operation of the unit within such a pocket could adversely affect its performance. Consideration should also be given to the air flow around the unit. It is recommended that an air gap of 75mm (3”) should be maintained down both sides and at the rear of the unit. Please refer to the drawing below for the general dimensions of the unit.

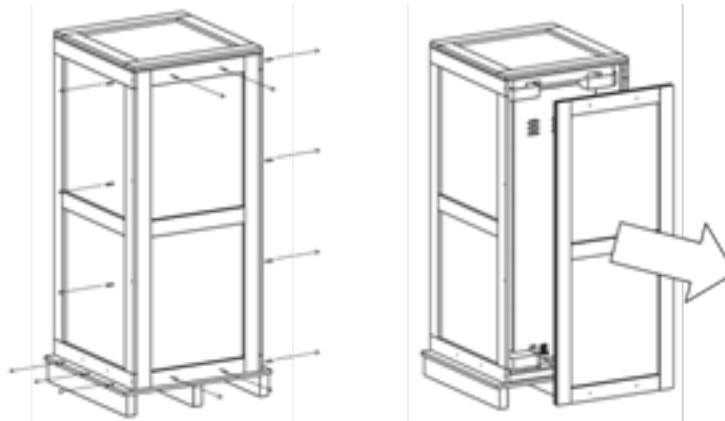
Minimum Operating Ambient Temperature: 5 °C (41 °F)

Maximum Operating Ambient Temperature: 35 °C (95 °F)

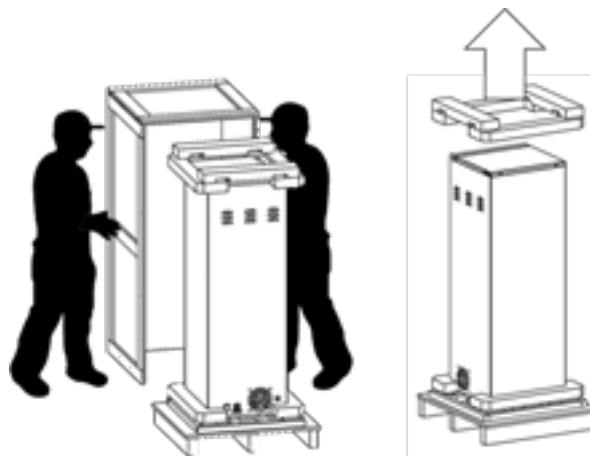
Removing the generator from the shipping crate

The generator weighs over 57kg and as such should be unpacked by two people using the following method.

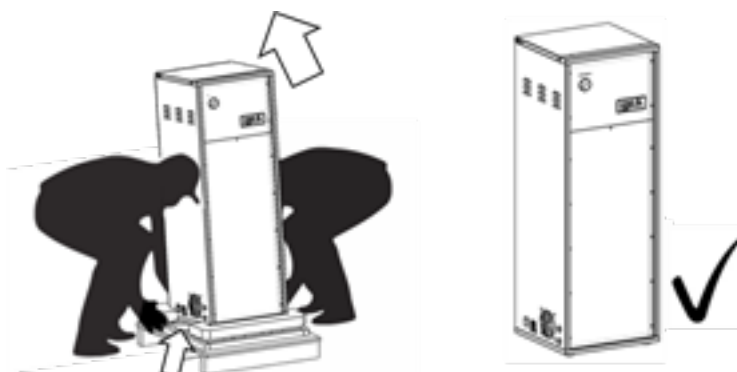
All the screws encircled in RED should first be removed from the shipping crate, there are approximately 16 screws, and the front door should then be removed.



Now, with someone positioned at either side of the shipping crate, the top half of the crate can be slid backwards and away from the rest of the crate. With the top of the crate removed the foam insert of top of the generator should also be taken off.

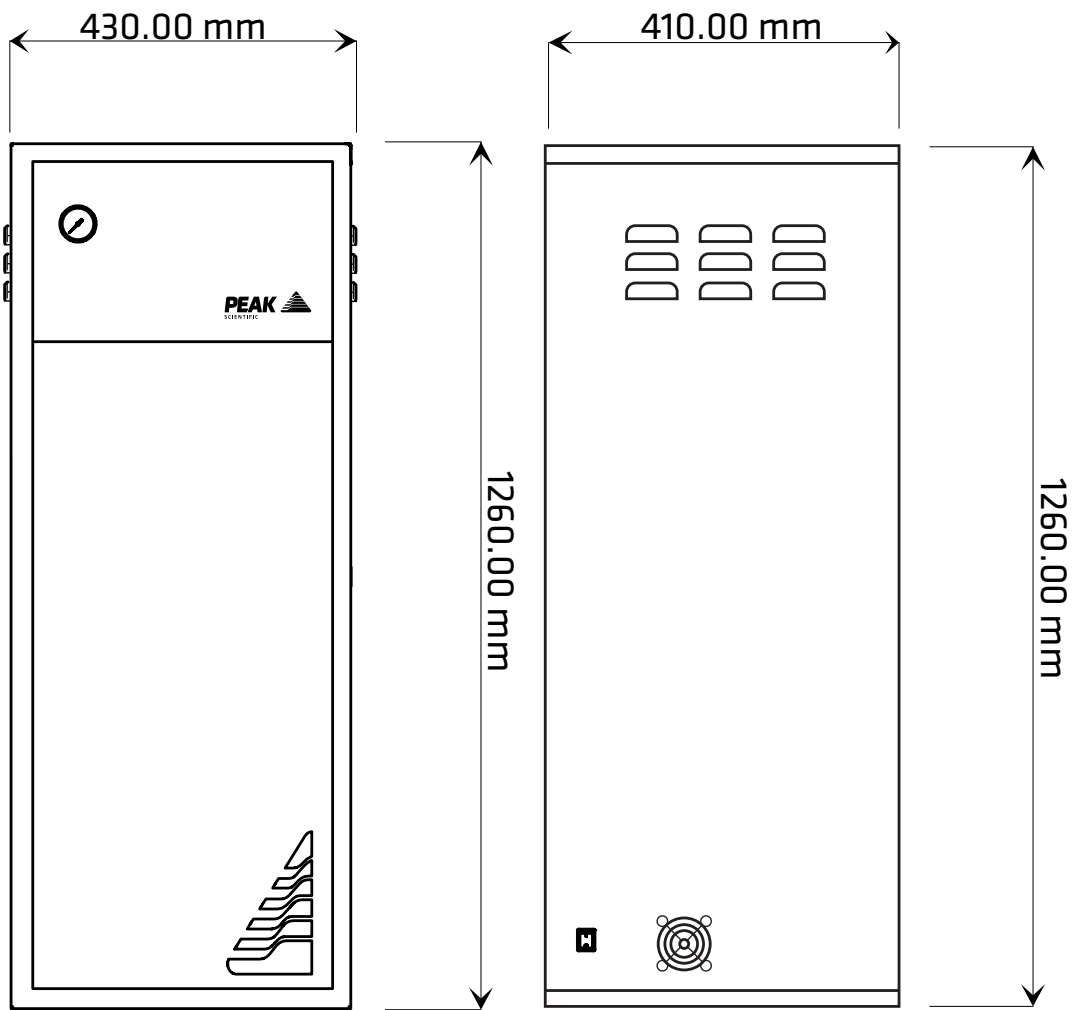


The generator can now be lifted out of the crate base and onto the floor. This should be done again with someone positioned at either side. There is a gap in the foam base for hand access, one hand should be positioned here underneath the generator and the other at the back supporting the weight. The generator should then be tilted back slightly and then up and out of the foam base and onto the floor.



Generator Overview

General Dimensions



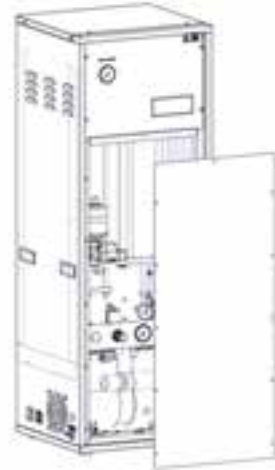
The generator must always be placed on a flat, level surface. Failure to do so will affect the performance of the generator.

Removal of Transit Brackets

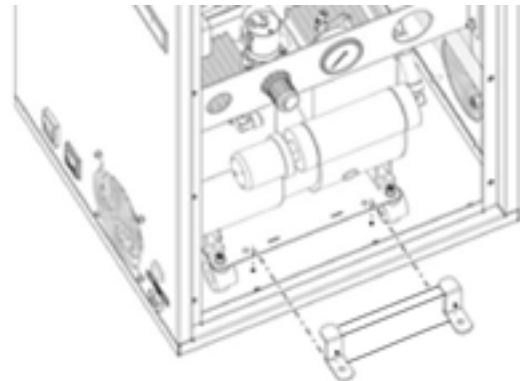
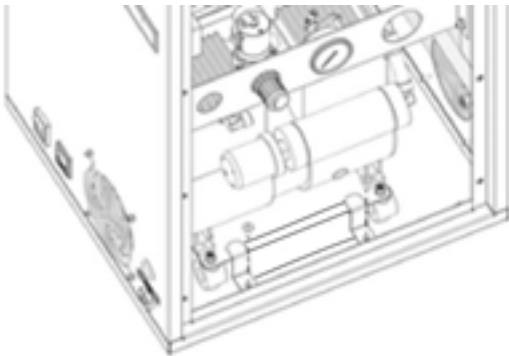


The transit brackets must be removed prior to switching the unit on. Failure to do so will result in damage to the equipment. This will void the warranty on the Generator and will result in a chargeable repair.

To remove the transit bracket first remove the 11 screws on the front panel as shown, then remove the front panel from the generator.



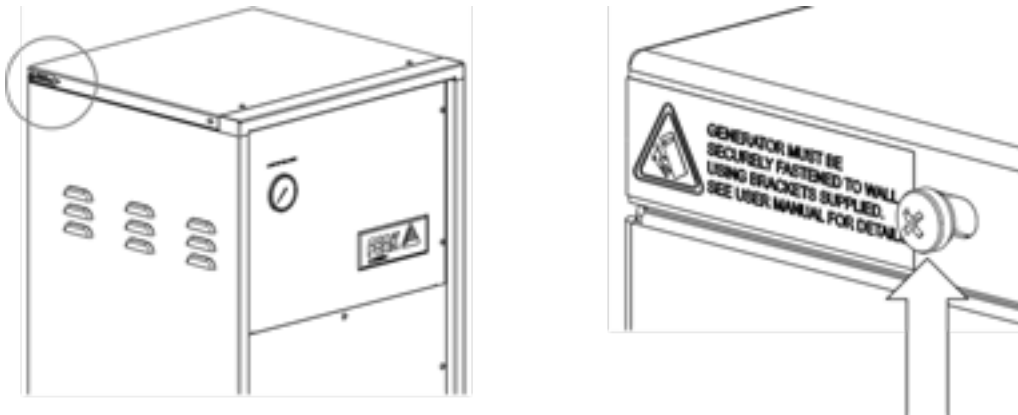
Now locate the red transit bracket attached to the compressor foot plate, and remove the two screws on the bracket. Next remove the transit bracket by first lifting up and then out of the generator.



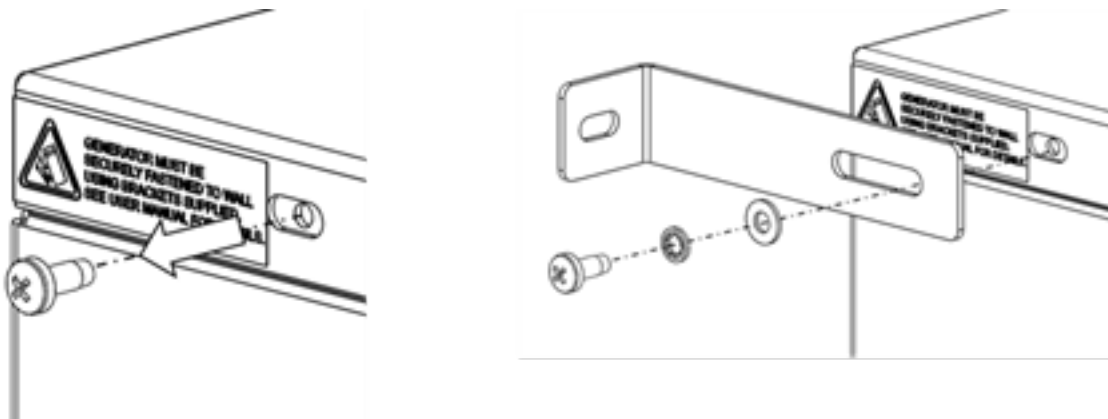
Replace the front panel and secure it to the generator using the 11 screws that were previously removed.

Wall Mounting

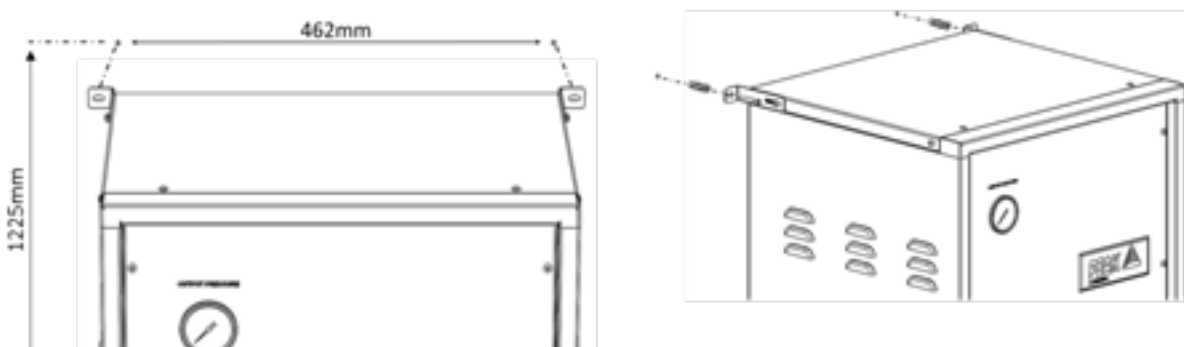
The NG range generator is designed to be mounted against a wall for safety reasons. Supplied in the generator fittings kit are all the fittings required to wall mount the generator. Detailed below are the necessary steps to mount the unit to a wall.



Locate the screw in the top rear corner of the unit, beside the yellow warning label. Remove the screw from the generator this should be repeated for the other side of the unit, and retain.



Next, using the screw which was removed, fit the bracket and washers provided to the generator. Again this should be repeated for the other side. The bracket is adjustable to accommodate varying kickboard widths.

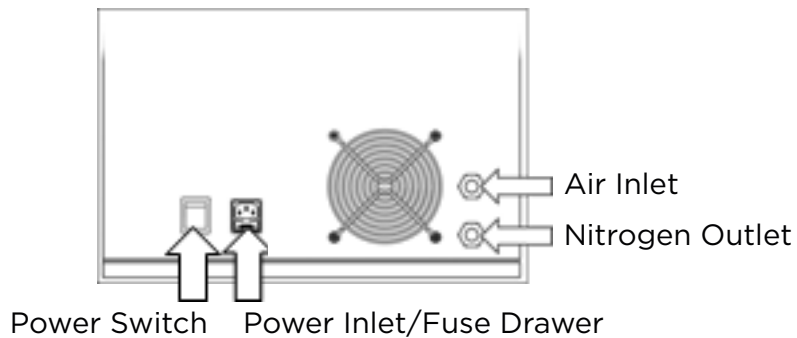


Finally, using the dimensions provided, fix the wall plugs to the wall, ensuring wall plug is suitable for the type of wall. If not, use the correct type. Secure the generator to the wall with the screws from the fittings kit.

Rear Connections

The Nitrogen Generator should be connected to a clean, dry source of compressed air. A minimum pressure of 120 psi is required. Any doubts as to the suitability of the compressed air supply should be referred to the factory for advice.

The generator has two ¼" BSPT bulkhead connections to the left side of the unit. The upper port is the Compressed Air inlet and the lower is the Nitrogen outlet. A ⅛" Swagelok fitting is supplied for connection to the application. There is no drain on this machine. Any moisture liberated by the filter separator is discharged through the high capacity exhaust system, where sudden reduction in pressure causes instant evaporation. The water vapour is safely removed from the unit by the ventilation system.



Electrical Connection

Connect the generator to an appropriate 110 or 230 volt single-phase supply, refer to the generator serial plate for input specification and ensure your supply matches the requirements.

If the appropriate power cord is not supplied; a new plug, rated to at least 12 amps, can be fitted by a qualified electrician.



This unit is classified as SAFETY CLASS 1. 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 of the stated AC voltage and frequency.

EARTH/GROUND (E):- Green & Yellow or Green

LIVE (L):- Brown or Black

Neutral (N):- Blue or White

Electrical requirements are 110 or 230VAC nominal +/- 10% depending on chosen model. However, running continuously at voltages outwith this is not recommended. Extended periods at extremes can have a detrimental effect on the operation and life of the generator.

Fuse

The generator protection fuse, in the pull out drawer of the mains inlet IEC connector located adjacent to the off/on switch. The replacement fuse must be rated T10AH250V

Start-Up Sequence



Before the Generator is connected to the application, the Generator should be operated in isolation (i.e. not connected to the application) for thirty minutes. This is to ensure any impurities present are purged from the system. Failure to do this may harm the application.

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. At Switch-on the exhaust valve will open and the generator will commence its venting cycle. This is to allow venting of any residual pressure in the system. The vent cycle may last up to 90 seconds. At the end of the vent cycle, the inlet valve will open and the normal operating cycle will begin. Pressure should begin to build on the gauge on the front panel, reaching 80 psi after approximately 10 minutes.

The generator has been pre-set in the factory to give the specified output flow rate and pressure. Once the pressure in the Nitrogen receiver exceeds that setting the generator will stabilise and produce pure Nitrogen. Maximum purity will be achieved after around 8 hours. After this time the generator can be reconnected to the application.

The design of the generator is such that it will deliver up to the rated output flow of Nitrogen at 80 psi. 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 its normal operating cycle ensures frequent venting.

Normal Operation

The High Purity Nitrogen Generator utilizes a 'Pressure Swing Adsorption' (PSA) method to extract pure Nitrogen from air. This is where un-wanted gasses can be selectively adsorbed from compressed air into a porous carbon molecular sieve material (CMS). The Peak Scientific Instruments LTD. Generator utilizes a unique single column system where the column is alternately pressurised and vented under a finely tuned timing cycle. The rates of pressurisation and venting are accurately set which guarantees high purity better than can be achieved with a similarly sized traditional 2-column system.

Unusual Operation

If at any time the generator begins to emit excessive noise or vibration, then it should be switched off and you should contact Peak Scientific or the Peak Partner from which the generator has been purchased.

Service Requirements

Service Schedule

Purchase Interval	Component	Part No.	Qty.
6 Months	Compressor Inlet Filter *	02-4187	1
12 Months	Separator Filter Element	02-4335	1
	Exhaust Silencer Element	02-4336	1
	Silencer Element	02-1016	1

*(A) Versions only

As an alternative to purchasing the 12 month service items individually an Annual Service Kit is available as one part number. This contains all the filters required for this Generator and offers a costs saving over buying the components separately.

Purchase Interval	Component	Part No.	Qty.
12 Months	Service Kit NG3000A-5000A	08-4704	1
	Service Kit NG3000-5000	08-4723	1


Peak Protected

With Peak Scientific you invest in not only a product but peace of mind. With a network of certified Peak engineers stationed throughout the globe, Peak's rapid response team are never far away and our commitment is to keep your generator running day in, day out, protecting your laboratory workflow.

[Peak Protected] can provide...



Installation
A dedicated Peak engineer will visit your lab to install and setup your generator



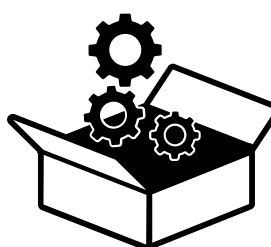
Complete plan
Swift response by a Peak Service Engineer within 72 hours & planned preventative maintenance



Premium Protected
Guaranteed rapid on-site response within 24 hours & planned preventative maintenance



IQ/OQ
Certified assurance for applications requiring documented qualification



Spares
Genuine Peak parts with express delivery, ensuring optimal performance and lifetime



Technical Support Hotline
Around the clock support by phone or online with our global technical helpdesk

To find out more about protecting your investment visit: www.peakscientific.com/protected

Cleaning

Clean the outside of the generator only using warm soapy water and a clean damp cloth. Ensure all excess fluid is thoroughly removed from the cloth prior to use.



Cleaning should only be undertaken with the power switched off and the power cord removed from the rear of the generator.



Under no circumstances should any solvents or abrasive cleaning solutions be used as these can contain fumes that could be harmful to the generator.



Care should be taken with Leak Detection Liquids.

Go Online or Complete and Return

We know that registering any of your recently purchased products is not the first thing on your mind- but it is very important to both of us. Not all warranties are alike and Peak Scientific stand out against other gas suppliers as we offer a comprehensive, quick response, on-site warranty. This means that in the very unlikely case that your gas generator develops a fault we have rapid support teams on-hand around the world who are able to come to your lab and get you back up and running in no time.

Register for your **comprehensive 12 month on-site warranty** with ease online at www.peakscientific.com/protected.

Alternatively, you can send the completed form to Peak Scientific by post or email at warranty@peakscientific.com.

Go Online or Complete and Return

You can register for your **FREE 12 month Warranty** with ease online at www.peakscientific.com/protected.

Alternatively, you can send the completed form to Peak Scientific by post or email at warranty@peakscientific.com.

Product Warranty Registration			
Contact name			
Email address			
Company			
Address			
City/town			
Postcode			
Country			
Telephone			
Generator serial #			
Model type			
Installation date			
Do you still use an alternative gas solution i.e. cylinders or bulk liquid?	Yes	No	
What gas requirements do you have in your lab?	Hydrogen	Nitrogen	Zero Air

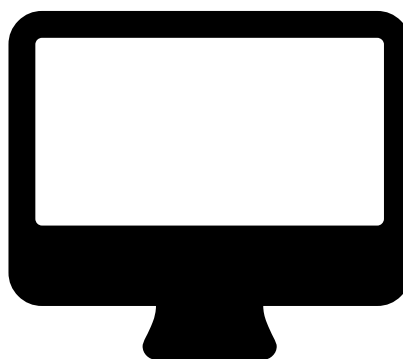
Extend your cover with

Peak Scientific offer comprehensive gas generator after sales support packages. Peak [Protected] aftercare support can guarantee an on-site response within 72 hours*, genuine parts from our ISO9001 approved factory and a 95% first-time fix rate. See our enclosed Peak [Protected] leaflet for further information.

Important!

You have 1 month to register your Peak Scientific product from the date of installation. Once registered the warranty will be honoured for a period of 12 months. If you wish to defer the installation of your generator, you must notify Peak Scientific immediately by emailing warranty@peakscientific.com. For generators that remain unregistered after 1 month from the shipment date, the warranty will be considered active from the date of factory dispatch.

* Complete Plan only



Important!

You have **1 month to register** your Peak Scientific product from the date of installation. Once registered the warranty will be honoured for a period of 12 months. If you wish to defer the installation of your generator, you must notify Peak Scientific immediately by emailing warranty@peakscientific.com. For generators that remain unregistered after 1 month from the shipment date, the warranty will be considered active from the date of factory dispatch.

[**PEAK Protected**]TM

Peak Scientific has highly trained, fully certified Field Service Engineers located in over 20 countries across every continent around the world. This allows us to provide an industry-leading rapid response service to our customers. With [**Peak Protected**], your laboratory's productivity becomes our top priority.

To discuss Peak Protected generator cover and payment options speak to your local Peak Representative or for further information contact: protected@peakscientific.com

Peak Scientific

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Fax: +44 141 812 8200

For further information on any of our generator products please contact marketing@peakscientific.com