Operation and Maintenance Manual for the NF500 and NF1000 Nitrogen Farm

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TITLE **PAGE**

CAUTION

READ THE SAFETY AND APPLICATIONS INFORMATION SECTION IN THE OPERATION AND MAINTENANCE MANUAL THOROUGHLY BEFORE INSTALLING AND USING YOUR NITROGEN FARM SYSTEM.

General Information

Introduction

This manual will provide the user with the basic information to properly operate and maintain the PACE NF1000 & NF500 Nitrogen Farms. If you encounter any difficulty operating your system, or have any questions, call your local authorised PACE dealer or contact PACE Applications Engineering directly at the United Kingdom Office on Tel: (44) 01908 277666, Fax: (44) 01908 277777, or PACE Technical Support at the US Office on Tel: (301) 490-9860, Fax: (301) 490-0193.

The PACE NF1000 & NF500 Nitrogen Farms represent the latest technology in affordable Nitrogen Generation. These farms allow the production of nitrogen-enriched air for use in soldering applications.

WARNING

FAILURE TO COMPLY WITH THE APPLICATION AND MAINTENANCE GUIDELINES, FILTER REPLACEMENT SCHEDULES, MONITORING RECOMMENDATIONS AND SAFETY GUIDELINES CONTAINED HEREIN AND IN OTHER RELEVANT PRODUCT SAFETY LITERATURE (I.E., MATERIALS SAFETY DATA SHEETS) PROVIDED WITH THE SUBSTANCES AND EQUIPMENT COULD RESULT IN RISK OF SERIOUS INJURY, FIRE OR EXPLOSION.

Specifications

Environmental Specifications

Ambient Operating Temperature:	0°C to 50°C
Storage Temperature:	-40°C to 125°C
Ambient Operating Humidity:	90% relative humidity maximum non-condensing
Storage Humidity:	90% relative humidity maximum non-condensing

Specifications for the NF1000 and NF500

Model Number	NF1000	NF500
Max N2 Flow Rate	*69 L/min	*13 L/min
No of soldering irons @ 99% N^2	*12	*2
Max Input Air pressure	8.5 bar 123 psi	8.5 bar 123 psi
Power source	**No Electrical power required**	
Outline Dimensions	720x270x300mm 28.3"x10.6"x11.8"	420x180x220mm 16.5"x7.0"x8.66"
Weight	18kg/39.69 lbs	8.5kg/18.75 lbs

*These figures are based on 99 % nitrogen enriched airflow at 7-bar/101.5 psi, temp 25 °C

Performance (based on new membrane performance)

Model	% of nitrogen	Flow Rate of output L/min
NF1000	99.9	8.8
	99	24.1
	98	37
	97	47
	96	58
	95	69
NF500	99.9	2
	99	5
	98	7
	97	9
	96	11
	95	13

Figures based on dry, clean air pressure of 7 bar/101.5 psi, temp 25 °C

Parts Identification

NF 1000

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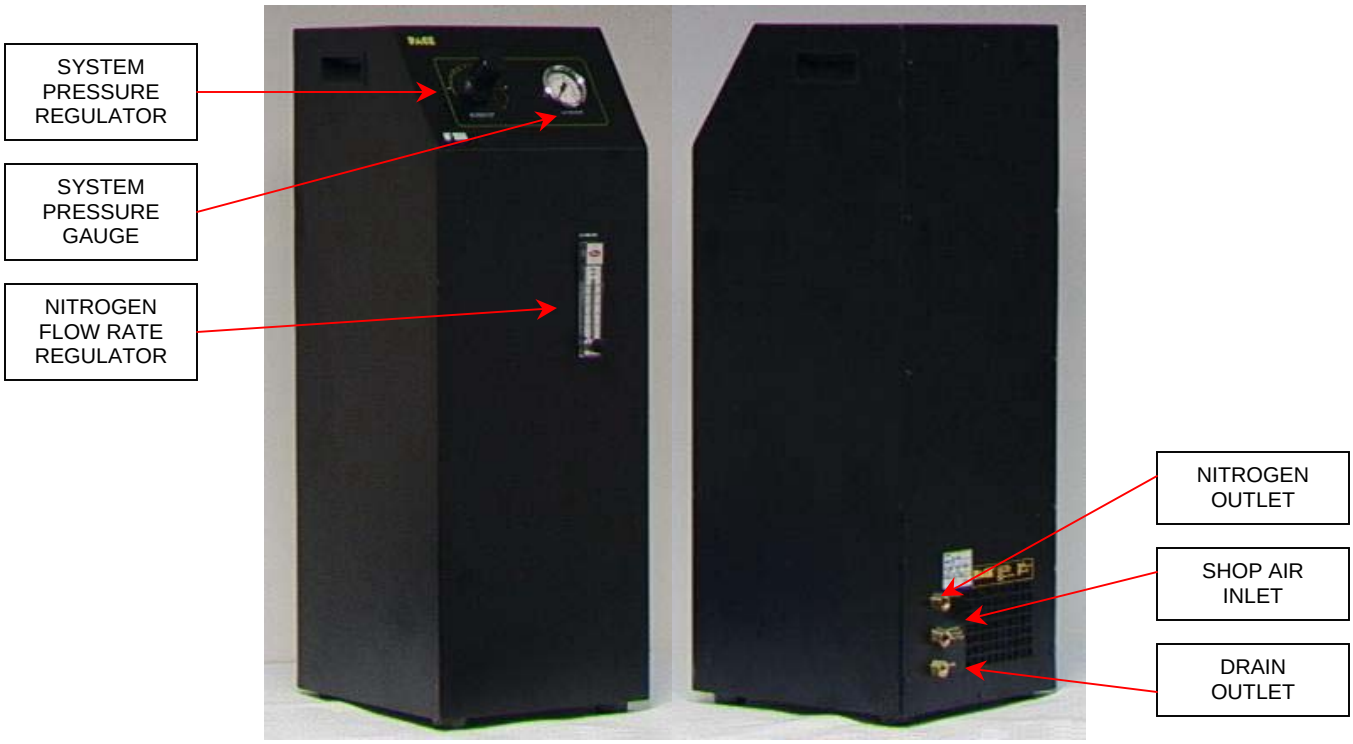

NF 500

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Safety

Safety Guidelines

PACE Nitrogen Farms are designed to utilise the latest polyimide hollow fibre membrane technology to allow the generation of nitrogen from compressed air. The input compressed air pressure must not exceed 8.5 bar/123 psi, it is important to ensure all compressed air hoses and fittings are maintained and in good working order.

Disclaimer

PACE hereby disclaims all responsibility for any personal injury, property damage, fine, citation or penalty imposed by any government or private entity which results from any use, misuse or mis-application of this product, failure of the user to regularly maintain the product according to the recommended guidelines, or failure to adequately monitor input and/or output air and the ambient workplace environment for the presence of harmful levels of gases, fumes and particulates.

Compliance with all applicable environmental and personnel safety regulations is the sole responsibility of the user and adequate self-monitoring of exhaust gases released into the atmosphere or the workplace as well as monitoring of the ambient workplace air is strongly recommended.

To ensure continued effective performance, the following guidelines must be followed.

The basic principle of these products are that as compressed air flows through the hollow fibres contained within the membrane body, oxygen is selectively allowed to permeate through the fibre wall to atmosphere.
This results in a nitrogen rich gas being obtained at the output of the hollow fibre membrane.

There are three main factors determining the removal of oxygen from the nitrogen rich air.

a) Temperature - if this is maintained at close to 25°C then it can be ruled out of further calculations of oxygen.
b) Flow rate - increasing the flow rate through the unit increases the level of oxygen present in the output.
c) Pressure **-** increasing the pressure reduces the level of oxygen present in the output.

Features

- The NF1000 and NF500 are able to achieve Nitrogen purities of up to 99.9% on demand as stand alone units.
- Extremely quick set-up times, because the system can be connected into an existing compressed airline it can be positioned in minutes and is very portable.
- Low running costs: the NF1000 and NF500 require no power source other than compressed air.
- Using conventional bottled nitrogen can result in a nitrogen imbalance in the workplace. This system recycles oxygen maintaining the correct balance of oxygen and nitrogen in the workplace.

The NF1000 and NF 500 contain no moving parts so do not give rise to noise or dust. No internal calibration required.

WARNING

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System Set-Up

Connection and Operation:
The unit is connected to a compressed airline max pressure 8.5 bar/123 psi. Ensure that the compressor is switched off whilst installing.

Compressed Air Supply:
Supply pressures should be regulated to the nitrogen farm at a lower value than the compressors hysteresis to ensure constant operating pressure. The air supply should have no chemical, lubricant or particulate matter added to the airline. It is however acceptable to use both dry and lubricated compressors. Connection to the airline is made via ¼ BSP female fitting on the NF1000 and 1/8 BSP on the NF500. Output of nitrogen rich air is also via the same size fittings.

*PACE recommends that you add internally to the system, a membrane dryer to be in line with incoming compressed air supply, (see optional items list in manual).

Start-up:
1. Ensure the system pressure regulator is closed
2. Close off the flow regulator
3. Turn-on the compressed air to the unit
4. Open the system pressure regulator until gauge reads a nominal 7-bar/101.5 psi
5. Open flow rate regulator until desired rate is achieved (6 SLPM is the recommended starting pressure)
6. Run for 20-60 mins to allow system to stabilise before use.

Shut Down:
1. Close compressed air feed to unit
2. Leave open flow regulator
3. When nitrogen has stopped flowing from outlet, close system regulator flow regulator

Once running, both the flow rate regulator and the pressure regulator can control the level of nitrogen.

Maintenance
The units require no maintenance other than the replacement of the internal compressed air filters on a once yearly basis, or sooner depending on the quality of the input compressed air. The filters are essential to maintain the integrity of the membrane. The membrane will also need to be replaced from time to time; this will depend on quality of the input compressed air, product usage and purity of nitrogen required (approx membrane life based on average use 18-24 months).

Air Filter Replacement Procedure:
1. Remove screws from rear panel
2. Locate 3-stage filter module on left hand side of case
3. Unscrew each polycarbonate bowl in an anti-clockwise direction and remove
4. Remove filter element by undoing locking screw from underside
5. Replace new element by following notes 1-4 in reverse.

Membrane Replacement Procedure:
1. ENSURE UNIT IS DISCONNECTED FROM AIR SUPPLY!
2. Remove screws from rear panel
3. Locate 2 x nitrogen separator modules on right hand side
4. Remove retaining brackets to free nitrogen separators
5. Disconnect pipes from both nitrogen separators at top and bottom. This is done by pushing in surrounding flange of fitting and pulling out pipe.
6. Remove nitrogen separators from case.
7. Fit new separators by following points 2-6 in reverse. Ensure that when fitting pipes into connectors they are securely located.

CAUTION
The system must be connected to a clean, dry, and filtered air supply regulated To 7.0 Bar (101.5 psi) see "Specifications". Connection to a contaminated air Supply or one with pressure in excess of 8.5 Bar (123 psi) may cause damage to this system.

Parts Lists

NF 1000 Replacement Parts List

Description	Part Number	Note
Nitrogen Separator	8115-0002	
Membrane Dryer	8115-0047	Optional for Areas of high humidity
Gauge	8115-0005	
1 Stage filter	8115-0035	
Element for 8115-0035	8115-0039	
2 stage filter	8115-0006	
Element for 8115-0006	8115-0046	
3 Stage filter	8115-0007	
Element for 8115-0007	8115-0049	
Pressure Regulator	8115-0008	
N2 Flow Regulator	8115-0011	
Carbon Bed Filter	8115-0036	Optional for very low odor applications
Bracket for 8115-0036	8115-0037	
Element for 8115-0036	8115-0038	

NF 500 Replacements Parts List

Description	Part Number	Note
Nitrogen Separator	8115-0001	
Membrane Dryer	8115-0048	Optional for Areas of high humidity
Gauge	8115-0004	
1 Stage filter	8115-0035	
Element for 8115-0035	8115-0039	
2 stage filter	8115-0006	
Element for 8115-0006	8115-0046	
3 Stage filter	8115-0007	
Element for 8115-0007	8115-0049	
Pressure Regulator	8115-0008	
N2 Flow Regulator	8115-0010	
Carbon Bed Filter	8115-0036	Optional for very low odor applications
Bracket for 8115-0036	8115-0037	
Element for 8115-0036	8115-0038	

Service

Please contact PACE or your local distributor for service and repair.

PACE LIMITED WARRANTY STATEMENT

Limited Warranty

Seller warrants to the first user that products manufactured by it and supplied hereunder are free of defects in materials and workmanship for a period of one (1) from the date of receipt by such user. This Warranty as applied to blowers and motor pumps is limited to a period of six (6) months. Other brand equipment supplied but not manufactured by PACE are covered under their respective manufacturer's warranty in lieu of this Warranty.

This warranty does not cover wear and tear under normal use, repair or replacement required as a result of misuse, improper application, mishandling or improper storage. Consumable items such as tips, heaters, filters, etc. which wear out under normal use are excluded. Failure to perform recommended routine maintenance, alterations or repairs made other than in accordance with Seller's directions, or removal or alteration of identification markings in any way will void this warranty. This warranty is available only to the first user, but the exclusions and limitations herein apply to all persons and entities. SELLER MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, AND MAKES NO WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

Seller will, at its option, repair or replace any defective products at its facility or other location approved by it at no charge to user, or provide parts without charge for installation by the user in the field at user's expense and risk. User will be responsible for all costs of shipping equipment to Seller or other location for warranty service.

EXCEPT FOR THE REMEDY ABOVE DESCRIBED, UNLESS OTHERWISE REQUIRED BY APPLICABLE LAW, SELLER WILL HAVE NO OTHER OBLIGATION WITH REGARD TO ANY BREACH OF WARRANTY OR OTHER CLAIM WITH RESPECT TO THE PRODUCTS, OR LIABILITY FOR ANY DIRECT, INDIRECT, CONSEQUENTIAL, OR INCIDENTAL LOSS OR DAMAGE CAUSED BY OR OCCURRING IN CONNECTION WITH ANY OF THE PRODUCTS.

Warranty service may be obtained by contacting the appropriate PACE Company or local Authorized PACE distributor as set forth below to determine if return of any item is required, or if repairs can be made by the user in the field. Any warranty or other claim with respect to the products must be made with sufficient evidence of purchase and date of receipt, otherwise user's rights under this warranty shall be deemed waived.

For PACE USA Customers:

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Annapolis Junction, Maryland 20701
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FAX. 301-498-3252

For PACE EUROPE Customers:

PACE EUROPE LIMITED
13 Tanners Drive, Blakelands
Milton Keynes
MK1 45BU
United Kingdom
Tel. (44) 1908 277666
WARRANTY SERVICE FAX: (44) 1908 277 777

All other Customers:

Local Authorized PACE Distributor

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PACE products meet or exceed all applicable military and civilian EOS/ESD, temperature stability and other specifications including MIL STD 2000, ANSI/JSTD 001, IPC7711, and IPC A-610.

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