



Operation Manual

4 Bank Air/Nitrox Fill Panel



SKU PN-NITROX

www.nuvair.com

If you have any questions on this equipment, please contact Technical Support at:

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Hours: Monday through Friday
8:00 AM to 5:00 PM Pacific Time



WARNING

This Operation Manual contains important safety information and should always be available to those personnel operating this equipment. Read, understand, and retain all instructions before operating this equipment to prevent injury or equipment damage.

Every effort was made to ensure the accuracy of the information contained within. Nuvair, however, retains the right to modify its contents without notice.

Under Nuvair's system of continuous improvement, certain components may be updated or changed as higher quality or more efficient parts and assemblies become available.

Nuvair will make every effort to update manuals as parts and functional aspects change. However, the look or location of components on your product may differ from those in this manual if improvements have been made that do not affect functionality or operational procedures.

Equipment pictured may also be manufactured with different options than those on your product, or components may be positioned differently. In both these cases, the basic operational and maintenance guidelines will still apply.

If you have problems or questions after reading the manual, stop and call Nuvair at +1.805.815.4044 for information.

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1.0 Introduction





This manual will assist you in the proper set-up, operation, and maintenance of the **Nuvair 4 Bank Air/Nitrox Fill Panel**. Be sure to read the entire manual.

This Nuvair dive shop four (4) bank, five (5) whip air/nitrox fill panel with three-way switch valve is constructed of stainless steel and high quality fittings. It was built-to-order at our California production facility.

Based upon your customized order, the high-pressure air/nitrox input type may be 1/4" tube or JIC fittings. Fill whips can be International (INT/Yoke), DIN 232 (DIN 200), DIN 300 (Europe), or another customized fill whip valve.

1.1 Symbol Conventions

This manual uses certain words and symbols to call your attention to conditions, practices or techniques that may directly affect your safety. Pay particular attention to information introduced by the following symbols or words:

SYMBOL	MEANING	DESCRIPTION
	DANGER	Indicates an imminently hazardous situation, which if not avoided, will result in serious personal injury or death.
	CAUTION	Indicates a potentially hazardous situation, which if not avoided, could result in serious personal injury or death.
	WARNING	Indicates a potentially hazardous situation, which if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.
	NOTICE	Notifies people of installation, operation or maintenance information which is important but not hazard related.

1.2 System Description

Designed for use by dive shops with both air and nitrox banks, this four (4) bank, five (5) whip panel has a three-way valve that divides the panel into two (2) banks for air and two (2) banks for nitrox. The valve ensures the operator does not cross-contaminate banks. The panel includes:

- (2) Air storage control with valves and gauges
- (2) Nitrox storage control with valves and gauges
- (1) High pressure-high pressure (HP-HP) regulator for fill control
- (5) Fill outlet ports
- (5) Fill yokes of your choice (INT/Yoke, DIN 232*, DIN 300, or Custom)
- (5) Fill hoses - 4 ft long
- (1) 4 in fill pressure gauge
- (1) Nuvair Pro O₂ Analyzer with high pressure-low pressure (HP-LP) regulator and flow restrictor

1.3 Required Operator Training



NOTICE

This manual must be read carefully and in its entirety. Properly trained and certified personnel should be the only operators of high pressure equipment like compressors and fill panels.

- All fill panel operators / maintenance personnel must read this entire manual with due care and attention and observe the instructions/information contained herein.
- Company owners ensure that the operator has the required training for operation of the fill panel and that he/she has read the manual.

1.4 Important Information for the User

The information/instructions for fill panel use contained in this manual concern the **4 bank Air/Nitrox Fill Panel model** of high-pressure gas distribution panels.

The instruction manual must be read and used as follows:

- Read this manual carefully; treat it as an essential part of the fill panel.
- The instruction manual must be kept where it can readily be consulted by fill panel operators and maintenance staff.
- Keep the manual for the working life of the fill panel.
- Make sure updates are incorporated in the manual.
- Make sure the manual is given to other users or subsequent owners in the event of resale.
- Keep the manual in good condition and ensure its contents remain undamaged.
- Do not remove, tear or re-write any part of the manual for any reason.
- Keep the manual protected from damp and heat.
- If the manual is lost or partially damaged and its contents cannot be read it is advisable to request a copy from Nuvair. This manual is also available for download on our website.

1.5 Foreword

The regulations/instructions for use contained in this manual constitute an essential component of the supplied fill panel.

These regulations/instructions are intended for an operator who has already been trained to use high pressure compressed air equipment. The contained information is necessary and essential to efficient and proper use of the fill panel.

Hurried or careless preparation leads to improvisation, which is the cause of accidents.

Before beginning work, read the following suggestions carefully:

- 1) Before using the fill panel, gain familiarity with the tasks to be completed and the admissible working position.
- 2) The operator must always have the instruction manual to hand.
- 3) Plan all work with due care and attention.
- 4) You must have a detailed understanding of where and how the fill panel is to be used.

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- 5) Before starting work make sure that safety devices are working properly and that their use is understood; in the event of any doubts do not use the fill panel.
- 6) Observe the warnings given in this manual with due care and attention.
- 7) Constant and careful preventive maintenance will always ensure a high level of safety when using the fill panel. Never postpone repairs and have them carried out by specialized personnel only; use only original spare parts.

1.6 Assistance

Nuvair technicians are at your disposal for all routine/unscheduled maintenance work. Please forward your request for assistance to Nuvair by sending a fax or e-mail to:

Phone: +1.805.815.4044
Fax: +1.805.486.0900
Email: info@Nuvair.com



NOTICE

Fill panels are a gas management tool. Fill panels do not generate compressed air. A source of compressed air is required to fill tanks..

1.7 Responsibility

Nuvair considers itself exonerated from any responsibility or obligation regarding injury or damage caused by:

- Failure to observe the instructions contained in this manual that concern the running, use and maintenance of the fill panel.
- Violent actions or incorrect maneuvers during use or maintenance of the fill panel.
- Modifications made to the fill panel without prior written authorization from Nuvair.
- Incidents beyond the scope of routine, proper use of the fill panel.



WARNING

Maintenance and repairs must only be carried out using original spare parts and qualified technicians. Nuvair cannot be held liable for any damages caused by failure to observe this rule. The fill panel is guaranteed as per the contractual agreements made at the time of sale. Failure to observe the regulations and instructions for use contained in this manual shall render the warranty null and void.

2.0 Fill Panel Overview

In this section are representative images of the **4 Bank Air/Nitrox Fill Panel**. The layout of your **fill panel** may be customized with optional equipment and/or made-to-order configuration. Because of this, the appearance of your fill panel may differ from what is represented in this manual.

2.1 Component Identification

The **4 Bank Air/Nitrox Fill Panel** (Figure 1) is shown with standard components. Your fill panel may be customized and would appear differently, but the components operate in the same manner.

Air bank on/off valves (four in total) are adjacent to the bank pressure gauge (four in total) associated with that on/off valve and bank. If the air selector valve points left to the air placard, Banks 1 and 2 are selected. If the air selector valve points right to the nitrox placard, Banks 3 and 4 are selected.

Gas (air or nitrox) fill pressure is regulated by the output regulator. The regulated gas pressure of the output gas, leading to the five (5) fill whip connectors (Figure 3), is shown on the regulated fill pressure gauge.

The Nuvair Pro O₂ Analyzer indicates the percentage of oxygen (O₂) in the gas mix being fed to fill whip connections (Figure 3).

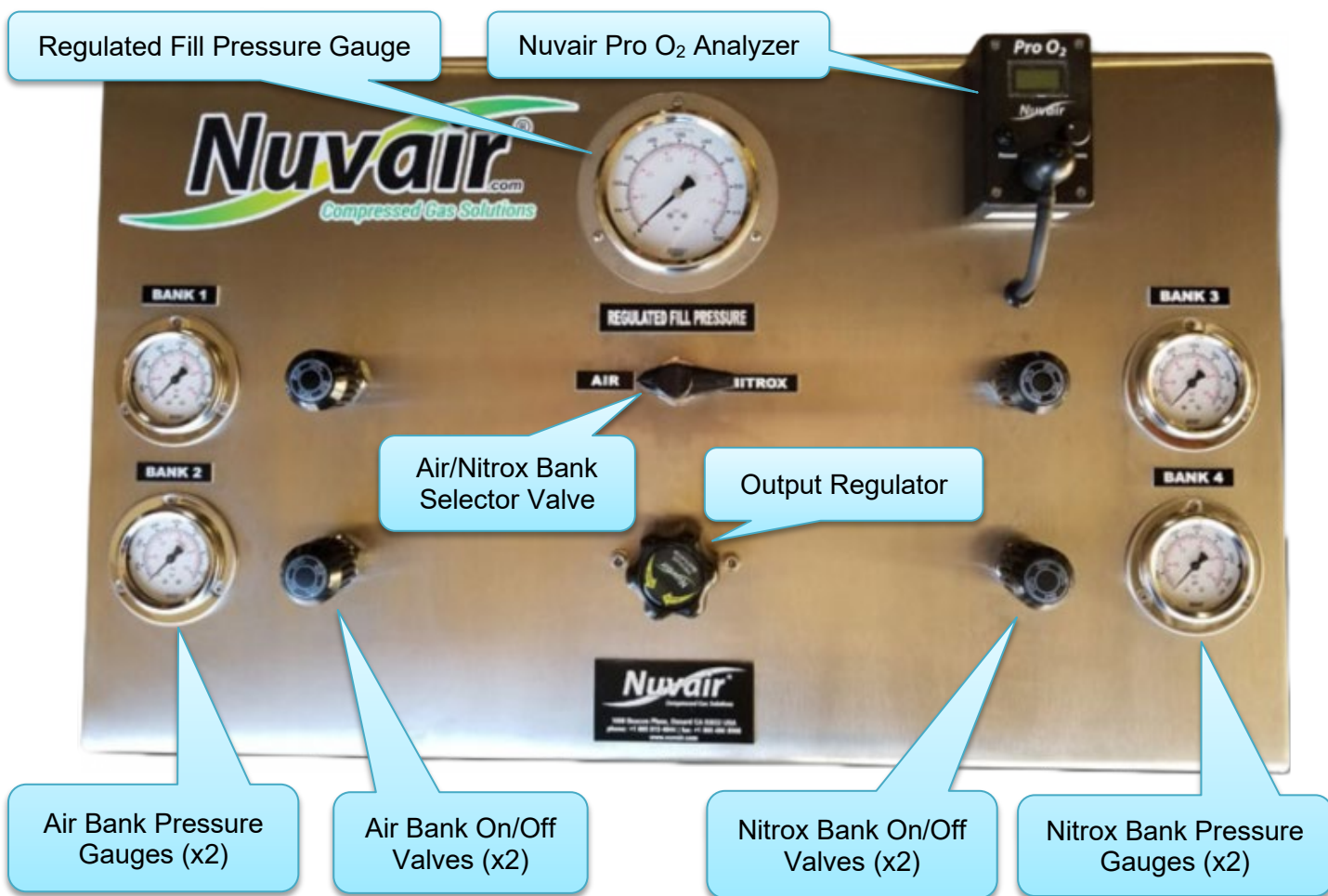


Figure 1. Fill panel components.



Figure 2. Fill panel high pressure inputs along the top edge of the fill panel.

High pressure inputs (1/4" tube or JIC connections) are labeled for easy identification (Figure 2). Bank numbers correspond to the bank as indicated by the numbered placards on the front of the fill panel. Bank 1 and Bank 2 are air. Bank 3 and Bank 4 are nitrox.

There are five (5) fill whip connections on the bottom edge of the fill panel (Figure 3). This is where the final output of gas from the fill panel is delivered.

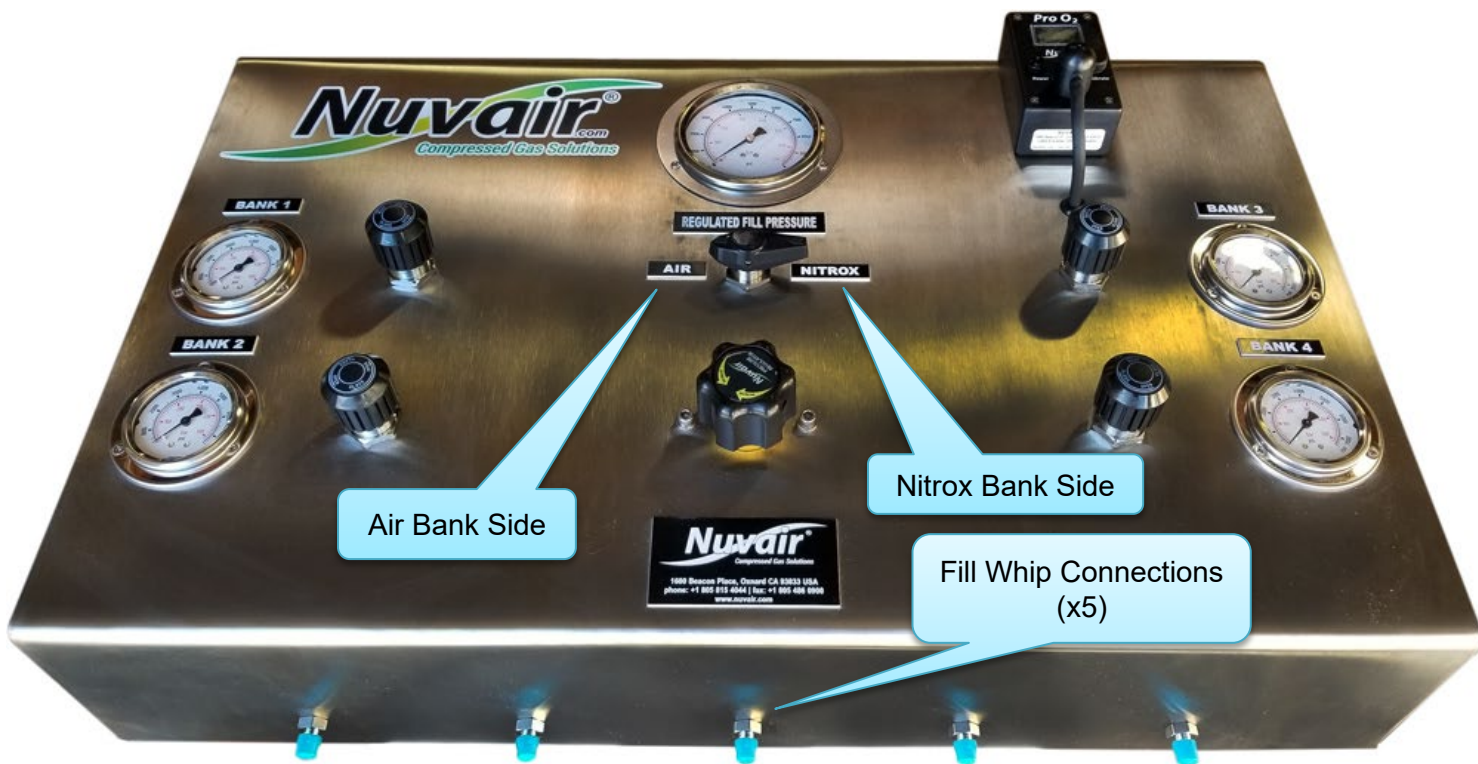


Figure 3. Fill panel outputs along the bottom edge of fill panel.

3.0 General Safety Rules

The fill panel must only be used by qualified personnel. Personnel must fully understand the arrangement and function of all the controls and instruments.

3.1 Protective Clothing

All operators may use accident prevention items such as gloves, hard hat, eye goggles, accident prevention shoes and ear defenders against noise from nearby compressor equipment (Figure 4).



Figure 4. Protective clothing examples.

3.2 Checks and Maintenance

When work is being performed on the fill panel or associated equipment, affix a “DO NOT START” signs on all sides of the affected equipment to prevent use while undergoing repair/maintenance (Figure 5).

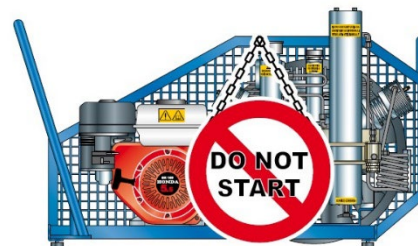


Figure 5. “Do Not Use” sign.

4.0 Fill Panel Installation

Mount the panel in a secure location.

Utilize all mounting holes.

Mount to a load-bearing surface such as wood, metal, or concrete.

Attach the high pressure compressor input line and four (4) bank lines as indicated on the top edge of the panel.

Attach the five (5) fill whips to the panel outputs on the bottom edge of the panel.

Attach high pressure lines by hand tightening first, then tighten with a wrench.

5.0 Fill Storage Banks

Turn on the high pressure compressor and open the bank fill on/off valve corresponding to the storage bank you wish to fill. Multiple banks can be filled simultaneously.

If so equipped, you may set the automatic shutoff on your compressor to the desired bank final pressure. Once the desired pressure has been reached, close the open on/off bank valve/s.



Figure 6. Typical multibank system.

6.0 Tank Refill Procedure

**NOTICE**

During refill, the operator must be in the work area. During the tank refill phase, it is advisable to submerge tanks in cold water to reduce the drop in pressure that accompanies tank cooling.

**WARNING**

During tank refill, those not involved in the refill procedure must maintain a safety distance of at least 9 feet (3 meters). Also, it is forbidden to disconnect the hoses from the fittings or the high-pressure out connection while the machine is under pressure. If an emergency occurs during refill, shut down the compressor immediately.

**DANGER**

Should tanks show evident signs of internal or external corrosion, do not refill them even if they have been tested.

**WARNING**

Use only tested tanks (as proven by a test stamp and/or certificate). The working and tank refill pressures are stamped on the tanks themselves. It is forbidden to refill them at a pressure greater than that indicated.

Different fill valves are available at the time of purchase. Variations include INT (Yoke), DIN232, DIN300, and SCBA. To refill tanks, follow procedures described below and as illustrated in Figure 7:

- Check that the tanks to be refilled are in good condition.
 - Tanks must be inspected as required by local law and have evidence (stamped or label) attesting to said certification or inspection.
 - Conduct a visual inspection of the tank/s exterior.
- Check that fill whips and associated fittings are in good condition.
- Set the desired fill pressure using the output regulator.
- Fit the hose connector (a) to the fill valve (b).
- Screw in the fill valve knob (c) until it is tightened.
- Check that the bleed valve (f) is closed by rotating it clockwise.
- Open the valve (d) by rotating it counterclockwise.
- Open the desired fill bank valve.
- Open the tank valve (e) by rotating it counterclockwise.
- Once refilling has been completed close valves (d) and (e) by rotating them clockwise.
- Close the on/off fill bank valve.
- Open the bleed valve (f) by rotating it anticlockwise until all the residual air in the whip has been expelled.

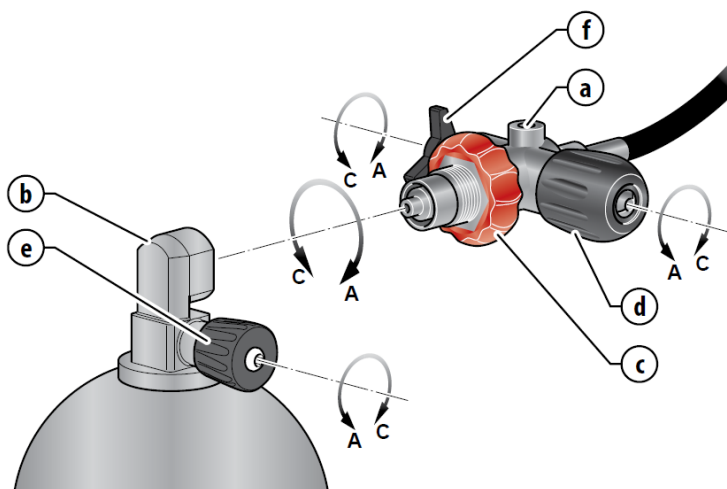


Figure 7. Tank refill illustration (DIN valve pictured).

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- Unscrew the fill valve knob (c) by rotating it counterclockwise.
- Disconnect the tank fill valve.

Never drain a tank completely, not even for seasonal storage or long periods of inactivity. Pressure prevents internal damage caused by moisture intrusion.

7.0 Spare Parts List

Component Name	Description	SKU
Nuvair Pro O2 Analyzer	9V Battery Operated Analyzer	9450
Oxygen Sensor for Pro O2 Analyzer	Replacement Sensor	9505
Pro Analyzer Single Port Flow Adapter Cap	Replacement Cap	BPM6
Coltri Thermoplastic Hose 4 ft (1.2m) 6090 psi (420 bar)	Replacement Fill Whip Hose	13-04-0238
Coltri INT/Yoke Fill Valve with Bleed Valve	Replacement SCUBA Valve	SC000450B
Coltri BC DIN 300 bar Valve	Replacement DIN 300 Valve	SC000460
Coltri DRV DIN 232 bar Fill Valve with Gauge Port	Replacement DIN 232 Valve	DRV232

8.0 Service Log

Date	Technician Name	Service Performed

9.0 Supply and Breathing Air Specifications

All supply and breathing air must meet the following requirements of CGA G-7.1-1997. Periodic air quality testing to assure compliance is recommended. All breathing air for diving produced by an upstream compressor must be purified to meet Grade E quality, and periodic air quality testing to assure compliance is mandatory.

Item	Grade D	Grade E
Oxygen	19.5-23.5%	20-22%
Carbon Dioxide (maximum)	1000 PPM	1000 PPM
Carbon Monoxide (maximum)	10 PPM	10 PPM
Hydrocarbons (maximum)	Not specified	25 PPM
Water Vapor (maximum)	Not specified	Not specified
Dew Point (maximum) ¹	Not specified	Not specified
Oil & Particles (maximum) ²	5 mg/m ³	5 mg/m ³
Odor	None	None

Notes: ¹ Dew point of supply air must be >10°F (6°C) colder than coldest ambient air expected.

² Supply air delivered to the membrane system must contain <0.003 PPM oil vapor.

10.0 Nuvair General Warranty

Unless otherwise specified, materials (parts and equipment) supplied by Nuvair are covered by a one (1) year warranty period from the date of delivery to customer. "Date of delivery" is determined by shipping or proof of receipt documentation.

Should the customer note any flaws and/or defects, it must be reported in writing to Nuvair within two (2) months of discovery or the warranty shall be rendered null and void.

Nuvair shall repair or replace materials it acknowledges to be faulty during the warranty period. In replacing faulty material, Nuvair shall not be liable for any other expenses sustained by the dealer or its customer, such as presumed damage (present or future), lost earnings or fines.

Warranty only covers flaws and faults that occur where materials are used properly in compliance with the instructions contained in the User Manual and where periodic maintenance is carried out. The warranty does not cover faults caused by improper use of materials, exposure to atmospheric conditions (rain, etc.) or damage during transport.

Materials subject to wear and those subject to periodic maintenance are not covered by warranty and are to be paid for by the customer in full. Routine and unscheduled maintenance must be carried out in compliance with User Manual instructions. If required work is not covered by the User Manual or if technical assistance is required, please contact Nuvair directly by email or phone. Nuvair cannot be held liable for any delays or failure to execute work.

Use of genuine OEM (original equipment manufacturer) parts and lubricants (if applicable) are recommended to maintain a product warranty. If a product failure is deemed a result of using non-OEM part and/or lubricant, the warranty will be considered null and void. Nuvair is not liable for any damage or malfunctions caused by work carried out on materials by unauthorized personnel.

Warranty is rendered null and void if materials are tampered with or if work (other than routine maintenance) is carried out by personnel who have not been authorized by Nuvair.

Faulty equipment due to flaws in design, workmanship, or materials used shall be repaired or replaced free of charge by Nuvair at its California production facility. Transportation costs, delivery of spare parts, and/or any materials subject to normal wear, are the responsibility of the customer.

Should on-site warranty work be required on the customer's premises, Nuvair repair personnel travel, accommodations, and per diem costs shall be the responsibility of the customer.

Warranties are nontransferable.

<https://nuvair.com/support/warranty>



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