TERRA UNIVERSAL.COM
Critical Environment Solutions



Installation and Operating Guide *Document No. 1801-01*

Portable Nitrogen Generator; Self-Contained with Compressor and Tank

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Installation and Operating Guide

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Safety Notice

A thorough familiarity with all operating guidelines is essential to safe operation of the product. Failure to observe safety precautions could result in poor performance, damage to the system or other property, or serious bodily injury or death.

The following symbols are intended to call your attention to two levels of hazard involved in operation:

CAUTION

Cautions are used when failure to observe instructions could result in significant damage to equipment.

WARNING

Warnings are used when failure to observe instructions or precautions could result in injury or death.

The information presented here is subject to change without notice.

1.0 Introduction

This manual provides information on installing and operating your Terra portable nitrogen generator.

By studying this document carefully, you can be assured of a long, efficient service life from your system.

2.0 Description

The portable nitrogen generator comes with a built-in compressor rated at 100 PSI at 2 CFM and a built-in gas cylinder (250 cu.ft.) to increase the capacity of stored nitrogen. It uses efficient membrane separation technology to generate nitrogen from compressed air.

The portable nitrogen generator also comes with a built-in gas pressure regulator, gauge indicator, an inlet/outlet flowmeter, a 1-micron air-line coalescing pre-filter, a 0.01-micron air-line coalescing filter, a pressure booster, and the air separator membrane module. The pre-filter removes all solids 1 micron and larger, along with water droplets and most oil aerosols. The coalescing filters remove solids 0.01 microns and larger and 99.999+% of oil aerosols, thereby protecting the membrane module from oil and other impurities in the incoming airline and ensuring a long service life. Oil and moisture condensation from the pre-filter and coalescing filters exits the system through a 1/4" slip-fit connector that can be directed to an in-house drain.



PN# 2700-12D-P

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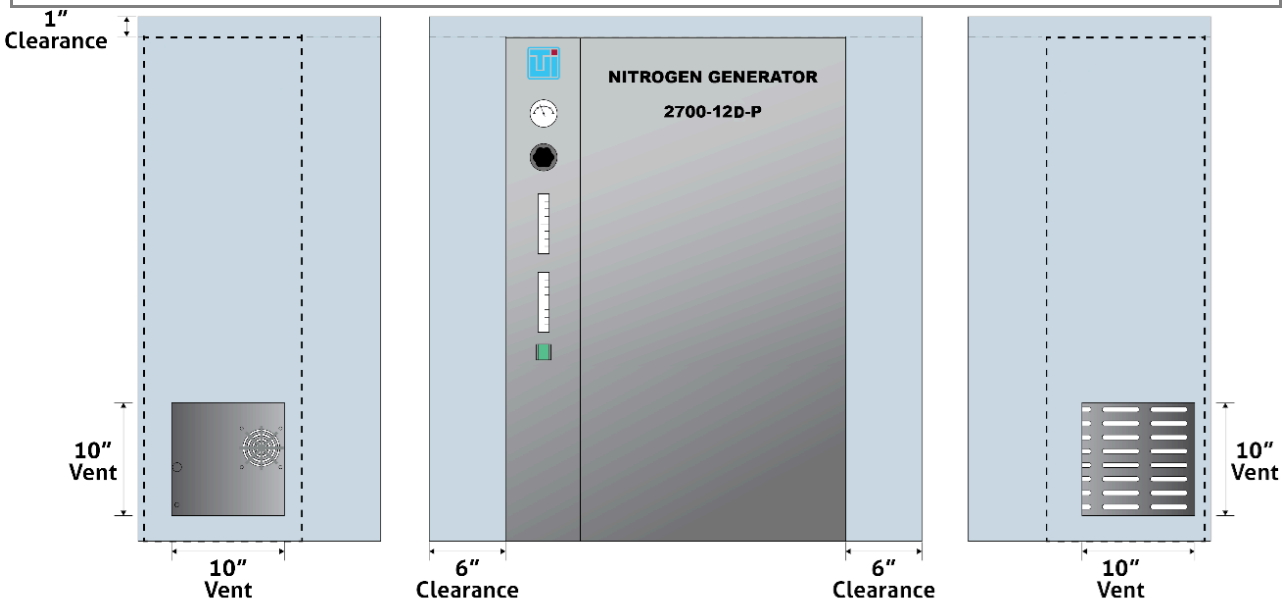
3.0 Set-Up and Operation

Before operation, carefully unpack and inspect the Nitrogen Generator. Any damage should be reported immediately to the shipping company.

For optimal nitrogen purity, keep the generator in a controlled environment. Having the generator in a location of low humidity increases the likelihood that the membrane can produce more pure nitrogen. To increase nitrogen purity lower the inlet flowmeter to around 20 SCFH.

WARNING

Do not Install in a closed cabinet without proper ventilation. Example of proper placement is provided by image below.



CONFINED SPACE INSTALLATION WARNING

The system should be installed in a well ventilated area with a minimum clearance of 6 inches on vented sides of unit. A minimum clearance of 1 inch should be maintained from the top of the unit. If being installed inside a closed cabinet, the system must have proper ventilation. A vent no smaller than 10" x10" must be installed in the cabinet. The underside of unit must remain obstruction free.

DO

- Do verify minimum clearances around the vented sides of the system are met
- Do cut a ventilation hole at least 10" x 10" if installed inside a cabinet or other confined space

DON'T

- Install in a closed cabinet without proper ventilation

Connecting and Operating the System

CAUTION

Make sure system is not turned on and off during startup. Plug should not be under tension. Voltage must be around 125VAC.

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WARNING **To prevent dangerously low oxygen levels and risk of asphyxiation, nitrogen-purged systems should only be installed in a well-ventilated area.**

1. Connect the included 125V plug to power up the unit. The Terra Logo will light up and flash indicating it is ready for use.

WARNING **System must be placed in a temperature-controlled area to avoid compressor overheating. Pressure should not exceed 100psi.**

CAUTION **Make sure all internal tubing is not loose or damaged. No leaks should be within the unit.**

2. Make sure the outlet flowmeter is closed (rotated clockwise) and the inlet flowmeter is open (rotated counterclockwise).
3. Make sure the tank is open (if it is closed the pressure will hit its limit very fast).
4. Turn the unit on by flipping the switch. You should hear the compressor as well as the pressure boosted, which has a clicking sound when working properly.
5. You can adjust the purity for the Nitrogen by adjusting the inlet flowmeter. A lower flow means the higher purity of nitrogen. However, the higher the purity the longer the tank will take to fill up.
6. Once the tank reaches 100 PSI, the pressure switch in the system should turn off.
7. You can control the pressure and the SCFH of the outflow nitrogen by adjusting the regulator and the flow meter labeled outlet regulator and outlet flowmeter.
8. Once the tank falls below 50-60 PSI the switch will turn the compressor on until the tank reaches 100 PSI again.

Initial Calibration

The frequency at which to replace pre-filters will vary depending on your application and system set-up. To help determine the frequency for your system, check the pre-filter every three months until the color indicator on the pre-filter turns yellow, which signifies that it's time to replace it with a new pre-filter. Use the elapsed-time data from this procedure to set up a filter maintenance schedule that corresponds to your workflow. By doing this, the membrane filter will last indefinitely.

4.0 Maintenance

NOTE **The light-up TUI logo serves as status indicator for inlet pressure. The LED emits a solid-color glow under normal conditions and flashes if it detects that the compressed air feed falls below the set-point (normally at 20 PSI). This light is 120VAC powered and included as a convenience.**

Electricity is not required for the generator to extract nitrogen from compressed air.

Compressor

The compressor features oil-less operation with permanently lubricated bearings. It is rated for continuous duty and can be run 24 hours a day, 7 days a week. Although all users are different, the factory expectation is it will operate normally to 8,000 hours at 100 psig. It is also thermally protected with a switch that opens at 275°F (135°C).

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Membrane

The membrane module inside the Nitrogen Generator is designed to operate maintenance-free as long as the pre-filter and coalescing filters effectively remove impurities (particularly oil vapor) from the feed air.

A slide indicator on these filters changes color (from green, to yellow, and then to red) when the filter element inside either unit needs to be replaced (see Figure 1). This indicator should be monitored monthly. Under continuous use at 100 PSI, filters will operate for approximately two years (20,000 hours).

Replacing Filter Elements

1. Open the front housing panel of the Nitrogen Generator to expose the filters (see Figure 1).

2. Rotate the self-locking bayonet head 1/8 turn counterclockwise to release it from the bowl (see Figure 2).

3. Pull the filter element to release it from the head. Remove the bottom filter element cap

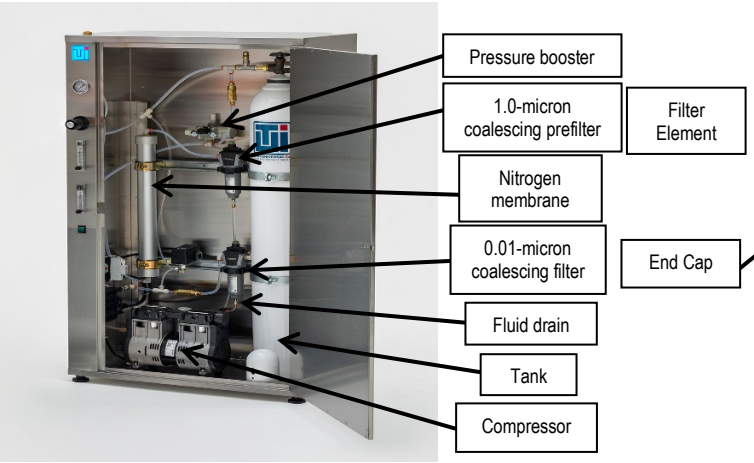
4. 

Figure 2: Filter Locations (Model shown: No. 2700-12D-P)



Figure 1: Removing Filter Head (Filter displayed is an example. Filter within unit could be different)

5. Attach the bottom cap to the replacement filter element and push it into the filter head until it locks in place.

6. Rotate the filter head 1/8 turn clockwise to reattach it to the filter bowl. Close the front panel.

Replacement Filter Elements

	Cat. #
1-micron Pre-filter	2701-11
0.01-micron Coalescing Filter	2701-12

Nitrogen Membrane

For Model 2700-12D-P	PA08104

Troubleshooting:

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Pressure Booster:

The pressure booster should have an audible clicking noise when the Nitrogen generator is on (Even when the flowrate is slow in the unit).

If the pressure booster does not have an audible clicking noise, do the flowing:

- Unscrew the exhausting air muffler
- Place your thumb on the exhaust air hole to increase the pressure of the booster
- Quickly release your thumb. You should now hear the booster clicking.



Figure 2. Pressure booster (see Appendix A)

Compressor:

If compressor is not turning on and is accompanied by a distinct humming noise the issue is due to back pressure build up.
To trouble shoot this:

- Quickly turn off the compressor (via the switch)
- Release the air pressure by releasing all the air in the tank (do this by opening the output flowmeter) or unplug one of the tubes from a fitting.

Generator:

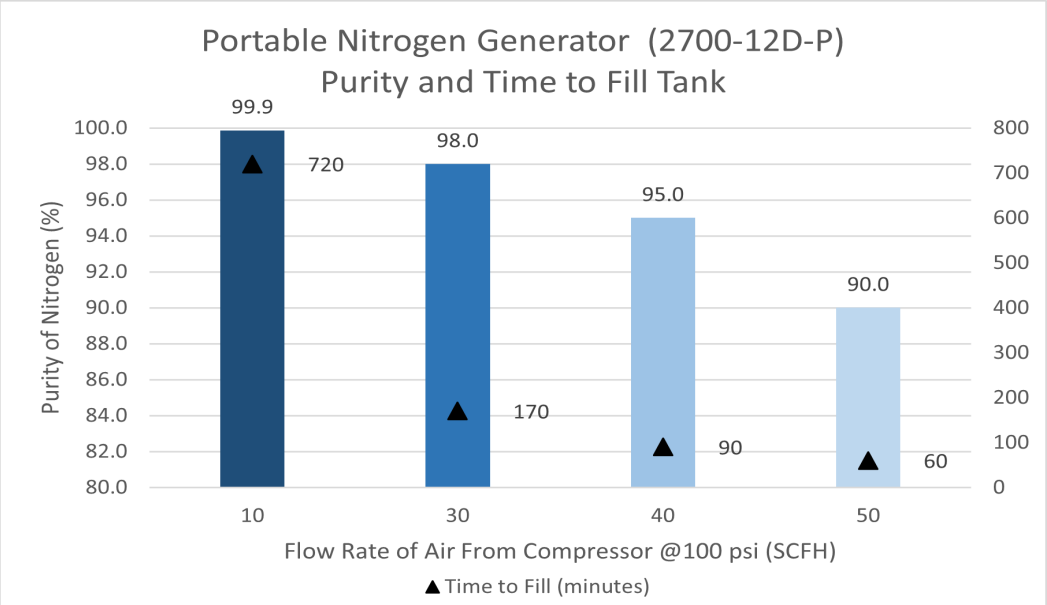
After initially turning off at 100 PSI if generator does not turn back on or start up sound is active but generator is not starting, the following steps must be taken.

- Shut the power immediately.
- Check the voltage of the compressor and make sure it is at least 110V.
- Restart generator.

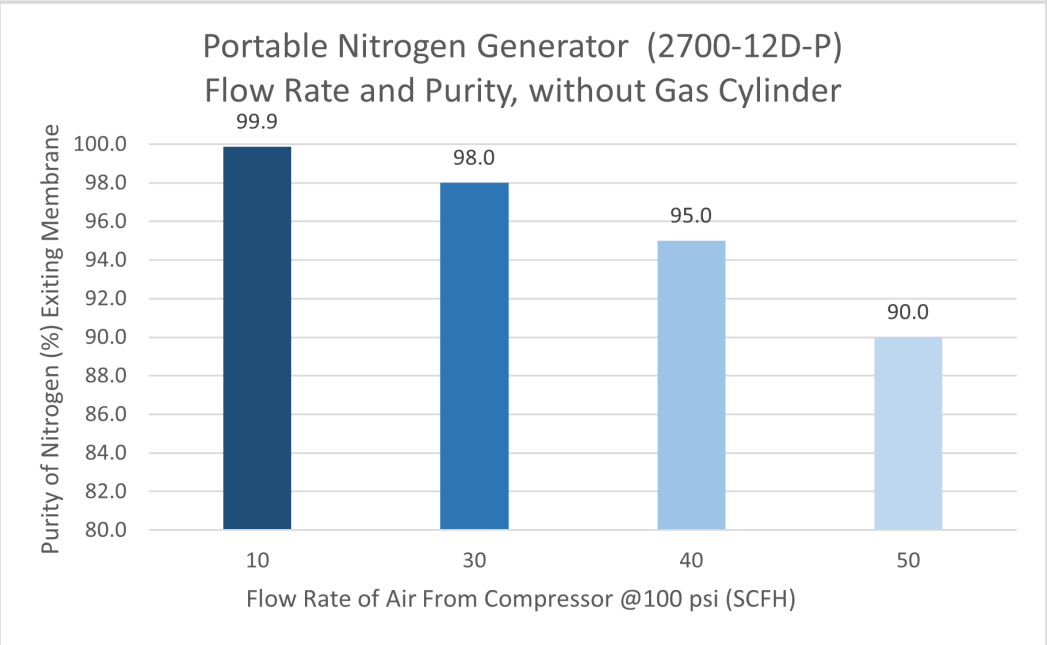
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Performance Data



NOTE: The use of gas cylinders may affect purity and possibly introduce contaminants. Unless the cylinder is properly cleaned/purged, purity of gas in the cylinder is affected by unused residual gas. For example "top filling" higher purity gas onto residual lower purity will affect overall purity of gas inside the cylinder.



(NOTE: All test values on graphs are nominal and for reference only.)

Specifications

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Part Number:	2700-12D-P (stainless steel housing)
Dimensions:	30”W x 17”D x 60”H
Weight:	261 lbs.
Housing:	Stainless Steel cabinet with polypropylene leveling feet
Operating Conditions:	50°F to 104°F Ambient Air Temperature
Pre-filter:	One-micron absolute filtration. Dual glass micro-fiber filter beds coalesce and remove water droplets. Remaining oil content: 1 ppm by weight. Includes slide indicator (to indicate need for filter change), liquid level indicator and internal drain. ISO 8573.1 Quality Class - Solids: Class 2, Oil Content: Class 4
Coalescing Filter:	Absolute filtration of 0.01µm particles; 99.999+% oil removal efficiency. Includes slide indicator (to indicate need for filter change), liquid level indicator and internal drain. ISO 8573.1 Quality Class - Solids: Class 1, Oil Content: Class 1
Membrane Module:	Semipermeable hollow fiber bundles.
Electrical:	Power not needed to generate nitrogen, but low-pressure indicator light requires 120VAC. User-supplied air compressor may require electricity.

5.0 Warranty

For more information about our warranty system, please visit our company's warranty website.

6.0 Appendix

For more information about the pressure booster please read the following manual.

Thank you for ordering from Terra Universal!