



## ***Product Manual***

### ***GeN<sub>2</sub><sup>®</sup> Nitrogen Generator***



**Designed and Built by:**

**Chart Inc.**

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**Part Number 20966032 Rev. D**

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## Revision Log

Revision Level	Date	Description
A	05/05/2015	Original
B	07/16/2015	Add Maintenance section to manual
C	10/27/2015	Change part number of product manual
D	06/07/2016	Add Filter Kit PN to Maintenance section



## Preface

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### General

Dispensing draft beer with a mixed gas blend of Carbon Dioxide (CO<sub>2</sub>) and Nitrogen (N<sub>2</sub>) helps ensure the correct presentation and flavor. Quality draft beer requires a precise, consistent supply of Nitrogen and Carbon Dioxide. Chart's GeN<sub>2</sub> Nitrogen Generator coupled with a Carbo-Mizer® Bulk CO<sub>2</sub> System tank is the ideal system to provide the correct blended gas mix. This system provides a reliable, uninterrupted flow of individual or mixed gas and eliminates the need to change out smaller high pressure cylinders. The GeN<sub>2</sub> system brings industry leading technology to the nitrogen generator for dependable, accurate, and cost effective operation.

### Product Highlights

- Proven, continuous flow rate, rotary PSA system provides quick response to surge demands and eliminates the need for a large capacity N<sub>2</sub> storage tank
- Heavy duty compressor has a long life cycle and is easy to maintain
- Integrated, small five gallon surge tank reduces footprint and simplifies installation
- Double hinged doors allow easy access for maintenance
- Sleek, modern look blends with site decor
- Self-diagnostic system helps service technicians identify scheduled maintenance or repairs

### Product Manual

The GeN<sub>2</sub> Nitrogen Generator product manual is designed to be used in conjunction with all GeN<sub>2</sub> models provided by Chart. If there are any questions regarding the operation of the system, contact Chart's Technical Service division at 1-800-247-4446.

This manual contains information regarding the safe operation and handling of gaseous nitrogen, oxygen and carbon dioxide associated with this system. It should be thoroughly read and understood by anyone that operates the equipment.

The safety requirements for operating the system are shown in the Safety section. Use this safety section as a "Safety Checklist" each time the equipment is being used.

The Introduction section discusses the general features of the system and describes typical layout and performance characteristics of the system.

In the Installation section, detailed step-by-step information is available on properly installing the unit, connecting inlet and outlet gases, and the commissioning of the system.

For information on settings and operation of the system refer to the Operations section.

The Alarms and Troubleshooting section of this manual should aid in answering common questions about the system.

The Specifications section provides schematic drawings and part numbers for ease of ordering through [www.chartparts.com](http://www.chartparts.com).

## Terms

Throughout this manual safety precautions will be designated as follows:



**Warning!** *Description of a condition that can result in personal injury or death.*



**Caution!** *Description of a condition that can result in equipment or component damage.*



**Note:** *A statement that contains information that is important enough to emphasize or repeat.*

## Acronyms / Abbreviations

The following acronyms / abbreviations are used throughout this manual:

ASME	American Society of Mechanical Engineers
ATF <sup>®</sup>	Advanced Technology Fractionator
BAR	Pressure (Metric)
CGA	Compressed Gas Association
CO <sub>2</sub>	Carbon Dioxide
MPT	Male Pipe Threads
N <sub>2</sub>	Nitrogen
PLC	Programmable Logic Controller
PN	Part Number
PSA	Pressure Swing Adsorption
PSI	Pounds per Square Inch
PSIG	Pounds per Square Inch (Gauge)
SCFH	Standard Cubic Feet/Hour
SLPM	Standard Liters Per Minute



## Safety

### General

Thank you for your purchase of Chart Inc.'s (Chart) GeN<sub>2</sub> Nitrogen Generator. Chart has designed and fabricated your system with attention to detail utilizing leading technologies to ensure a highly efficient and reliable system.

**DO NOT** use this product in a manner not consistent with the instruction outlined in this manual.

**NEVER** alter the design, or perform service that is not consistent with the instructions outlined in this manual without prior written approval from Chart.



**Warning!** *If you are at all unsure of how to safely work on this system, STOP and contact Chart immediately at 1-800-247-4446.*

### Safety Bulletin

Portions of the following information are extracted from Safety Bulletin SB-2 from the Compressed Gas Association, Inc. at [www.cganet.com](http://www.cganet.com). Additional information on oxygen, nitrogen, and cryogenics is available in CGA Pamphlet P-9. Write to the Compressed Gas Association, Inc., 1235 Jefferson Davis Highway, Arlington, VA 22202.

### Oxygen Deficient Atmospheres



**Warning!** *Nitrogen vapors in air may dilute the concentration of oxygen necessary to support or sustain life.*

The normal oxygen content of air is approximately 21%. Depletion of oxygen content in air, either by combustion or by displacement with inert gas, is a potential hazard and users should exercise suitable precautions.

One aspect of this possible hazard is the response of humans when exposed to an atmosphere containing only 8 to 12% oxygen. In this environment, unconsciousness can be immediate with virtually no warning.

When the oxygen content of air is reduced to approximately 15 to 16%, the flame of ordinary combustible materials, including those commonly used as fuel for heat or light, may be extinguished. Somewhat below this concentration,

an individual breathing the air is mentally incapable of diagnosing the situation because the onset of symptoms such as sleepiness, fatigue, lassitude, loss of coordination, errors in judgment and confusion can be masked by a state of "euphoria," leaving the victim with a false sense of security and well being.

Human exposure to an atmosphere containing 12% or less oxygen leads to rapid unconsciousness. Unconsciousness can occur so rapidly that the user is rendered essentially helpless. This can occur if the condition is reached by an immediate change of environment, or through the gradual depletion of oxygen.

Most individuals working in or around oxygen deficient atmospheres rely on the "buddy system" for protection. Obviously the "buddy" is equally susceptible to asphyxiation if he or she enters the area to assist the unconscious partner unless equipped with a portable air supply. Best protection is obtainable by equipping all individuals with a portable supply of respirable air. Life lines are acceptable only if the area is essentially free of obstructions and individuals can assist one another without constraint.

If an oxygen deficient atmosphere is suspected or known to exist:

1. Use the "buddy system." Use more than one "buddy" if necessary to move a fellow worker in an emergency.
2. Both the worker and "buddy" should be equipped with self-contained or airline breathing equipment.

### Nitrogen (N<sub>2</sub>)

Nitrogen (an inert gas) is a simple asphyxiate. It will not support or sustain life and can produce immediate hazardous conditions through the displacement of oxygen. Under high pressure this gas may produce unconsciousness even though an adequate oxygen supply sufficient for life is present.

Nitrogen vapors in air dilute the concentration of oxygen necessary to support or sustain life. Inhalation of high concentrations of this gas can cause anoxia, resulting in dizziness, nausea, vomiting, or unconsciousness and possibly death. Individuals should be prohibited from entering areas where the oxygen content is below 19% unless equipped with a self-contained breathing apparatus. Unconsciousness and death may occur with virtually no warning if the oxygen concentration is below approximately 8%.

Persons suffering from lack of oxygen should be immediately moved to areas with normal atmospheres. SELF-CONTAINED BREATHING APPARATUS MAY BE REQUIRED TO PREVENT ASPHYXIATION OF RESCUE WORKERS. Assisted respiration and supplemental oxygen should be given if the victim is not breathing.

## Carbon Dioxide (CO<sub>2</sub>)

CO<sub>2</sub> gas is a colorless, odorless, tasteless gas that displaces oxygen and does not support life. The gas is difficult to detect without the assistance of special equipment. Avoid breathing or contacting CO<sub>2</sub> in gas, liquid or solid form.

Exposure to concentrations of less than 5% can cause physical symptoms including unconsciousness, injuries or death. Even low concentrations of CO<sub>2</sub> can cause:

- Dizziness, headaches, nausea or disorientation
- Increased respiration or heart rate
- Shortness of breath or rapid suffocation

CO<sub>2</sub> is heavier than air and can collect in low areas such as basements, stairwells, and confined spaces. Avoid entry into areas where CO<sub>2</sub> leaks or high concentrations of CO<sub>2</sub> are suspected. Enter those areas with caution only after they have been thoroughly ventilated.

## CO<sub>2</sub> Monitoring Systems

Chart recommends the installation of a CO<sub>2</sub> monitoring system near the area where the CO<sub>2</sub> connections terminate at the GeN<sub>2</sub> generator.

If the CO<sub>2</sub> bulk tank is installed indoors or in an enclosed space, CO<sub>2</sub> monitors should also be installed in the space containing the CO<sub>2</sub> bulk tank.

Follow local code requirements for correct placement and installation of CO<sub>2</sub> monitoring systems.





## Introduction

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### System Overview

Congratulations! You are now the owner of a Chart GeN<sub>2</sub> Nitrogen Generator gas delivery system for use with draught beer systems.

The GeN<sub>2</sub> system is the preferred solution for reliable and continuous beer gas delivery for draught beer systems. The system supports dispensing up to nine kegs per hour continuously in well-designed, leak-free draught beer systems. Utilizing a unique, patented implementation of the pressure swing adsorption (PSA) nitrogen generation process, the GeN<sub>2</sub> system is capable of delivering high continuous flow rates while maintaining high purity. The advanced control system of the GeN<sub>2</sub> system provides the up-to-date feedback you need to troubleshoot problems and identify costly leaks as they arise in your draught beer system. Like all of Chart's products, the GeN<sub>2</sub> Nitrogen Generator is backed by Chart's dedicated staff of professionals to ensure your continued satisfaction.

### ATF®

Chart's patented Advanced Technology Fractionator (ATF) is the most advanced nitrogen generation process in the beverage gas market today. Typical small footprint PSA generators produce high purity nitrogen at the expense of flow rate, while typical membrane generators produce high continuous flow rates at the expense of purity. Chart's ATF process produces a continuous flow of high purity nitrogen gas. By marrying the best attributes of membrane systems and typical PSA systems, Chart's ATF technology results in a system with no compromises. Originally developed for oxygen concentrators, Chart's ATF technology has years of proven field service under its belt. Now adapted to produce nitrogen, Chart's ATF process is at the heart of every GeN<sub>2</sub> nitrogen generator.

### Durr Technik Air Compressor

Your GeN<sub>2</sub> nitrogen generator has been carefully engineered to include a best-in-class oil-free Durr Technik compressor. GeN<sub>2</sub> system designers and engineers have worked closely with Durr Technik to ensure that the compressor will provide a trouble free service life. In the unlikely event you experience a compressor failure under normal operating conditions, the Durr Technik compressor in your GeN<sub>2</sub> system is warranted against failure for a period of three years or 5000 operational hours, whichever comes first. If you experience trouble outside of the warranty period, a low cost rebuild kit (able to be installed in the field in less than an hour) is available to refresh the compressor.

### McDantim Blender

Your GeN<sub>2</sub> system is equipped with the industry-leading McDantim gas blender. With the McDantim blender on board, you can be assured that the beer in your kegs will receive the intended gas mixture under all operating conditions. The McDantim blender incorporates a shutoff feature that prevents flow through the blender if one of the supply gases is no longer present, ensuring that you will not introduce an incorrect mix to your kegs if you experience a loss of supply.

### Small Stainless Steel Surge Tank

Due to the performance characteristics of the GeN<sub>2</sub> Nitrogen Generator, a large externally-mounted nitrogen storage tank is not required. The small on-board storage tank is all that is required for normal operation. Chart has selected stainless steel as the material of choice, so you can be assured that the storage tank will not introduce contaminants into your beer gas. Chart manufactures the GeN<sub>2</sub> surge tank in-house, and every tank is an ASME stamped pressure vessel.

### Industry Leading Controls and Diagnostics

The GeN<sub>2</sub> Nitrogen Generator is the first nitrogen generator that takes an active role in identifying and preventing beer gas system leaks. The GeN<sub>2</sub> system not only actively alerts you to potential leaks in your beer gas system daily, it also quantifies the amount of beer gas you are losing in terms of kegs per month. In addition to these breakthroughs, the GeN<sub>2</sub> system continuously monitors and self-diagnoses its operation. If the system should under perform or fail, an alarm is triggered and an error code is recorded to assist with troubleshooting and diagnosis. All historical operational data is written to removable media in real time to further aid in beer system troubleshooting and diagnosis, should the need arise. Another benefit of the advanced control system is that the GeN<sub>2</sub> system keeps track of its operational hours and lets you know when preventive maintenance is necessary.

## ***Ease of Installation, Maintenance and Service***

The GeN<sub>2</sub> system is designed with modularity in mind for ease of installation and maintenance with minimal tools; the ATF<sup>®</sup> unit, air compressor, and surge tank are all installed and removed without tools. This modular design concept facilitates easy maintenance, part replacement, and even future upgrades. Additionally, the hinged front doors on the GeN<sub>2</sub> system allow for easy access to maintenance items, without the need to disassemble the unit. In the unlikely event that you need more clearance to access components for service, simply open the doors and lift them off of their hinges.

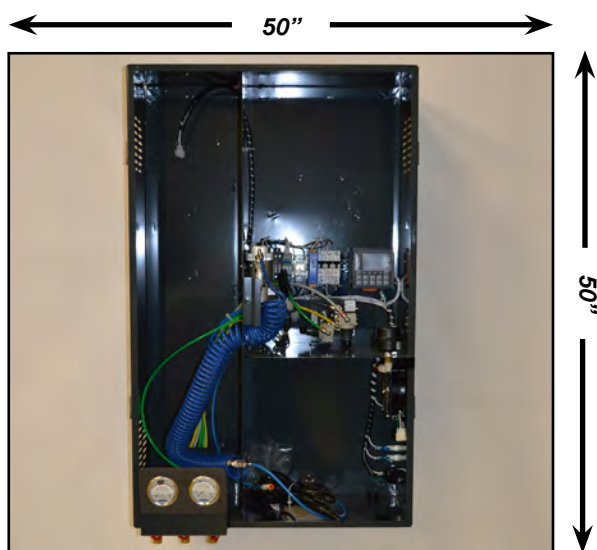


## Installation

### Installation Considerations

#### Required Clearances

The GeN<sub>2</sub> Nitrogen Generator is designed to mount on the wall. An area of empty wall space that is 50" x 50" is required to ensure proper mounting and airflow around the unit. The graphic below shows the required clearance dimensions.



An optional floor mounted stand is available in the event wall space is unavailable.

#### Power

A dedicated 110 VAC, 15 amp grounded (three-prong) circuit is required to be located within ten feet of the unit.

#### Drainage

A water drain on the bottom of the GeN<sub>2</sub> unit must be piped to a suitable drain location. The GeN<sub>2</sub> system only emits a small amount of water at infrequent intervals, but this water should be appropriately routed to a drain to prevent a potential slipping hazard or potential damage to nearby items.

### Environment

The GeN<sub>2</sub> unit is designed for use indoors only, at room temperatures between 40°F and 95°F. The unit should be installed in a well-ventilated area with a minimum of six air changes per hour. Noxious chemical or other non-atmospheric fumes should not be present within a 20' radius of the GeN<sub>2</sub> unit.



**Warning!** *The GeN<sub>2</sub> system releases small amounts of oxygen and carbon dioxide gases as part of its normal operation. It is critical to ensure that the GeN<sub>2</sub> unit is installed in a location that is well ventilated so these gases do not accumulate at higher than normal concentrations. A concentration of oxygen can enhance and accelerate the combustion properties of combustible materials, while concentrated carbon dioxide can cause asphyxiation. Refer to the Safety section of this manual for additional information.*



**Warning!** *The GeN<sub>2</sub> system stores nitrogen gas and mixes it with carbon dioxide gas. Both gases are asphyxiates and do not support life. If an obvious leak develops in any of the GeN<sub>2</sub> or other beer system components, fittings, or piping, these gases may accumulate to dangerous levels. If this occurs, first ensure that the area where the leak occurred is well ventilated and safe to enter, next turn off the GeN<sub>2</sub> system and all other gas sources. Call your beverage service provider to assess and correct the leak. Refer to the Safety section of this manual for additional information.*

## Tools and Additional Parts Required

- Two adjustable wrenches and/or a full set of combination wrenches
- Drill
- Drill bits
- Reinforced beverage hose (3/8")
- Hose clamps (3/8")
- Hose clamp crimpers
- Ball valve(s) with 3/8" hose barbs and/or tee(s) (to isolate the GeN<sub>2</sub> system from the rest of the system to facilitate future system maintenance or leak diagnosis)
- #2 Phillips screwdriver
- Bubble level
- 7/16" nut driver or socket

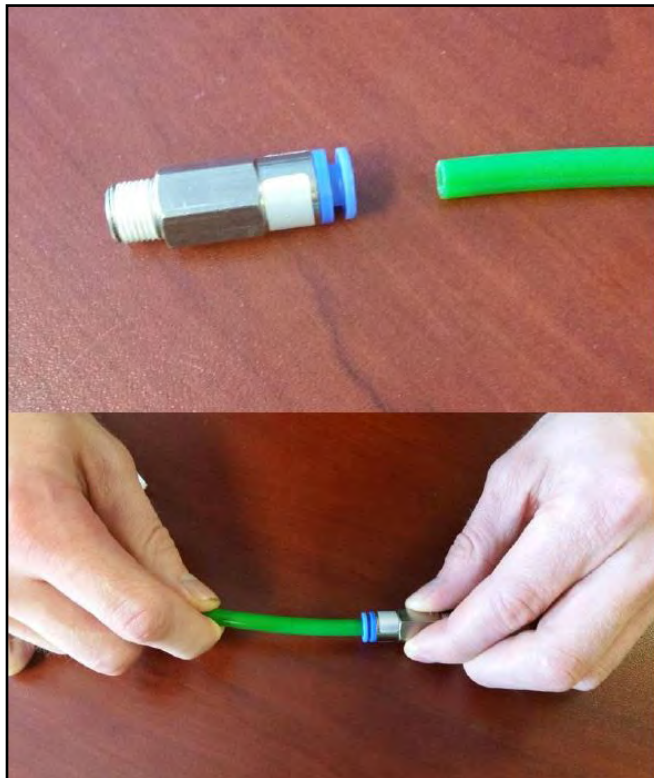
## Overview

The installation of the GeN<sub>2</sub> Nitrogen Generator should be performed in the following order:

1. Unpack the GeN<sub>2</sub> system
2. Install the mounting bracket
3. Mount the cabinet to the mounting bracket
4. Install components into the cabinet
5. Connect inlet gases to the GeN<sub>2</sub> unit
6. Connect outlet gases to the GeN<sub>2</sub> unit
7. Connect a drain line
8. Affix the pressure gauge cluster
9. Hang the doors on the cabinet
10. Connect to a power source
11. Commission the GeN<sub>2</sub> system

## Push-to-Connect Fittings and Molex® type Connectors

Push-to-connect fittings are used throughout the cabinet. To install, insert one end of the nylon tubing into the open end of the push connect fitting. Push firmly to ensure a proper connection (see photo 1). When properly seated, the tube will insert approximately 1/4" into the fitting. To check the connection tug gently on the tube while holding the fitting in place, the tube should not come out of the fitting. To release a tube from a fitting, push the tube toward the fitting, push in and hold the end of the fitting, and then pull the tube away.



**Photo 1 - Nylon tubing and push-to-connect fitting**

All electrical connections in the GeN<sub>2</sub> system are made using Molex type connectors (photo 2). To make the electrical connections, simply insert the male fitting into the female fitting. The connection should snap together. To disconnect, squeeze the two tabs on the side of the connector and gently pull the connectors apart.



**Photo 2 - Molex type connection**

## Step-by-Step Installation Instructions

### Step 1 - Unpack the GeN<sub>2</sub> System

Carefully remove the components from the shipping crate and unpack them.



**Caution!** Be sure to keep the ATF® unit in an upright (vertical) position at all times. To prevent potential damage, do not lay the ATF unit horizontally at any time.



**Caution!** Set the case on its sides or top. Do not set the case on its bottom, or the inlet and outlet connections could be damaged.

After unpacking, take inventory of the contents. The crate should contain:

- Box 1: (1) cabinet, (1) mounting bracket, (1) power cord, (1) small bag of parts containing the following: (1) long safety lock screw, (1) short door screw, and (5) 3/8" hose barbs.
- Box 2: (1) left door and (1) right door
- Box 3: (1) Advanced Technology Fractionator® ATF
- Box 4: (1) air compressor assembly
- Box 5: (1) stainless steel N<sub>2</sub> tank

### Step 2 - Install the Mounting Bracket

The mounting bracket is designed to attach to wall studs that are spaced between 11" and 19" apart. A rectangular section of wall surface that is at least 24" wide and 40" tall must be available to mount the GeN<sub>2</sub> unit. This surface can be drywall, plywood, or similar, but the entire backside of the GeN<sub>2</sub> cabinet must rest against the surface and the cabinet must be solidly mounted into studs.

Each of the four slots on the mounting bracket is designed to accept a 1/4" or 5/16" lag bolt with a flat washer (see photo 3). The selected bolts should be long enough to sufficiently penetrate through drywall or other wall coverings, and into the wall stud. When mounting the bracket, allow for 20" of clear wall space above the center of the top slots in the bracket, and 30" below the center of the top slots, according to the following diagram.

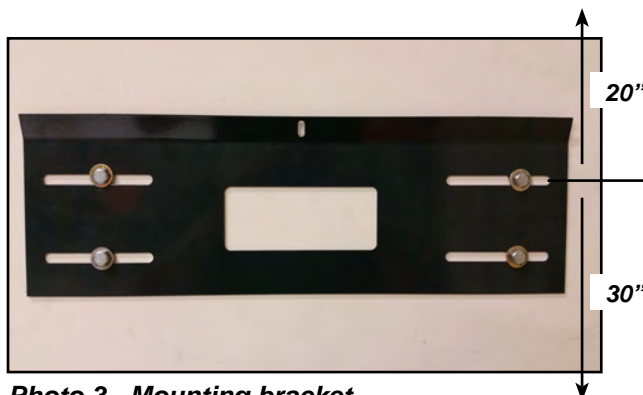


Photo 3 - Mounting bracket



**Warning!** When assembled, the GeN<sub>2</sub> unit weighs approximately 160 lbs. Ensure that the mounting bracket is firmly attached to a suitable wall structure, capable of safely supporting the unit's full weight.

To mount the bracket to the wall, mark the location of the wall studs and make sure that the bracket is level. Drill four pilot holes into the wall studs with an appropriately sized drill bit for the selected lag bolt. As a guide, the typical pilot drill sizes for medium wood species are a 5/32" hole for a 1/4" lag bolt and a 3/16" hole for a 5/16" lag bolt. If you are unsure of the wood species you are mounting into, or have any concerns about the suitability of the wall structure to support the load, please consult with a licensed building contractor prior to mounting the GeN<sub>2</sub> unit.

If you are using the optional floor mounting stand, mount the bracket to the mounting holes in the stand, using the screws, washers and split-lock washers provided. Then affix the floor stand to the floor using four fasteners suitable for the floor composition (e.g., concrete anchors for concrete floors, lag screws and washers for wood floors, etc.). If you are unsure of the proper way to secure the optional floor mounting stand to the floor, please consult with a licensed building contractor prior to mounting the GeN<sub>2</sub> unit.



**Warning!** If you are using the optional floor mounting stand, ensure that it is properly attached to the floor.



### Step 3 - Mount the Cabinet to the Mounting Bracket



**Caution!** Be sure the cabinet has at least one foot of clearance on the left and right sides. This will ensure proper air flow to and from the vents on the sides of the cabinet. **THIS IS CRITICAL TO ENSURE EXPECTED SERVICE LIFE!**

Once the mounting bracket is appropriately attached to the wall, the cabinet may be mounted to it. The cabinet is designed to slide onto the mounting bracket as shown in photo 4 below.



**Photo 4 - Sliding the cabinet onto the mounting bracket**



**Warning!** The cabinet weighs 75 lbs. Use caution and enlist the help of another person when mounting the cabinet to the bracket to avoid personal injury.

Once the cabinet is mounted and centered on the mounting bracket, install the safety lock screw into the cabinet (see photo 5). If the cabinet is properly centered on the mounting bracket, the screw will easily seat all the way to the cabinet without excess effort. If the safety lock screw does not easily screw all the way to the cabinet, ensure that the cabinet is properly centered on the mounting bracket and try again. Do not force the screw; if the cabinet is properly aligned with the bracket, the screw will seat easily.



**Photo 5 - Installing the safety lock screw into the cabinet.**



**Warning!** Ensure the safety lock screw easily and fully seats against the cabinet. This will ensure that the cabinet is properly affixed to the mounting bracket, and the cabinet cannot be removed from the mounting bracket.



**Note:** If the need ever arises to remove the case from the mounting bracket, be sure to completely remove the safety lock screw before lifting the cabinet from the mounting bracket.

### Step 4 - Install Components into the Cabinet

#### a.) Install the Stainless Steel N<sub>2</sub> Tank

The tank mounts into the cabinet with a keyhole mount, for ease of installation and service. To install, hold the front of the tank so that the mounting bracket is parallel to the back of the cabinet. **DO NOT HOLD THE TANK BY THE PRESSURE TRANSDUCER OR THE RELIEF VALVE; ONLY GRASP THE TANK ITSELF** (see photo 6). Insert the tank into the cabinet and engage the bracket with the mounting studs. When you feel the bracket engage the studs, slowly move the tank downward until the weight of the tank is supported by the keyhole studs (photo 7).



**Photo 6 - Proper handling of the stainless steel N<sub>2</sub> tank.**



**Photo 7 - Installing the stainless steel N<sub>2</sub> tank**

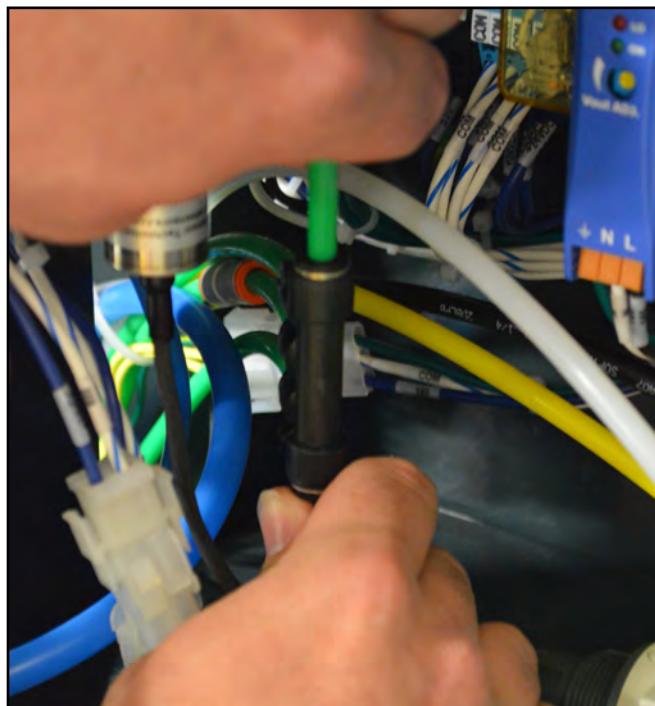
To connect the tank to the system, one electrical connector and one push-to-connect fitting must be connected. If you are unfamiliar with push-to-connect fittings or Molex® type electrical connectors, please see the Push-to-Connect section in this chapter.

To connect the electrical connector, find the two-conductor connectors lying on the shelf in the cabinet. Connect one of the connectors to the connector on the tank (photo 8). The connectors are oriented so that only the appropriate connector will fit with its mate. If the first connector you choose does not fit, the other connector will.



**Photo 8 - Connecting electrical connector**

To connect the push-to-connect fitting, insert the free end of the 1/4" GREEN tube firmly into the push-to-connect fitting on the tank (photo 9). When properly installed, you will feel the tube will insert approximately 1/4" into the fitting. If you do not feel the tube seat to that depth, continue to carefully push until it does.

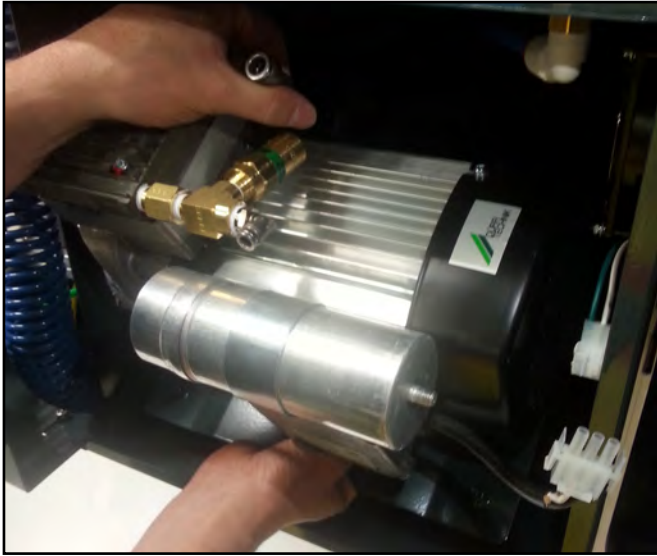


**Photo 9 - Green tube firmly installed into the push-to-connect fitting.**



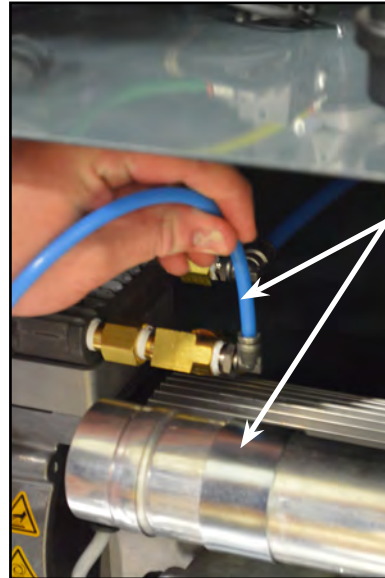
**b.) Install the Air Compressor**

The air compressor is mounted on an isolation plate with four springs on the underside. These springs are designed to fit into the four black spring cups in the lower right side of the cabinet. To insert the compressor assembly into the cabinet, grasp the assembly as shown in photo 10, insert the assembly into the cabinet, align the springs into the spring cups, and allow the compressor's weight to compress the springs.

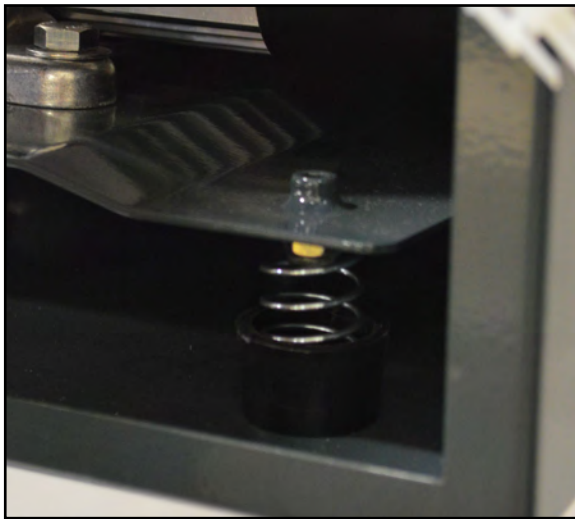


**Photo 10 - Proper handling of the compressor.**

To connect the air compressor to the system, the two blue tubes need to be connected to push-to-connect fittings. Insert the two tubes into their corresponding fittings and make sure the tubes fully seat approximately 1/4" into the fittings. If you do not feel the tube seat to that depth, continue to carefully push until it does. Ensure that the smaller of the tubes is routed upward as it leaves the compressor fitting so it does not touch the capacitor on the side of the compressor (see photo 12).



**Photo 12 - Correct routing of the blue tubes.**

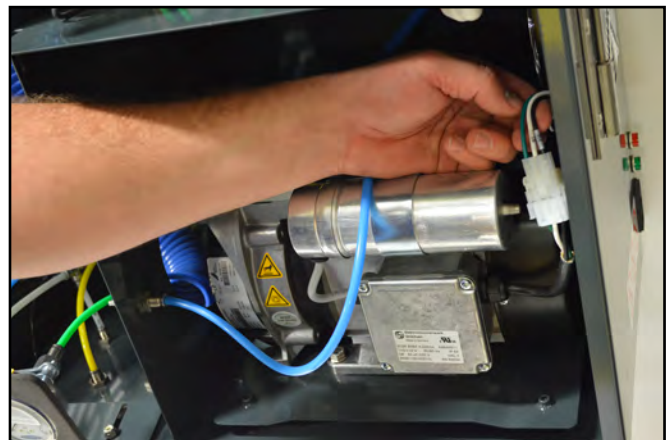


**Photo 11 - Compressor springs properly seated.**



**Caution!** Be sure that the two rear springs are properly seated in the two rear spring cups (refer to photo 11). If they are not, raise and release the back of the compressor assembly until the rear springs are properly seated.

The last step is to connect the air compressor's electrical connector to the system. Insert and fully seat the connector into the harness, then route the cable to the right of the compressor as shown in photo 13 below.



**Photo 13 - Air compressor electrical connector.**



**c.) Install the ATF® unit**

Like the stainless steel tank, the ATF unit mounts on keyhole slots. Prior to installing the ATF unit, ensure that the tubes and electrical connectors are clear of the mounting area. First, remove the blue coil hose from its two push-to-connect fittings and set it aside during ATF unit installation. Then, temporarily route the loose electrical harness at the top of the case into the right side of the case, on top of the stainless steel tank. Once the ATF cavity is clear, you are ready to install the ATF unit.

To install the ATF unit, grasp it opposite its mounting bracket with one hand supporting the ATF unit from beneath, and the other hand on top in the position shown in photo 14. Insert the bottom of the ATF unit into the cabinet at a slight downward angle. Once the bottom of the ATF unit clears the pressure gauges, insert the top into the cabinet. Align the keyhole slots in the bracket to the mounting studs in the cabinet and fully insert the ATF unit into the cabinet, engaging the studs into the keyhole slots of the ATF bracket. Slowly lower the ATF unit until its weight is supported by the stud (see photo 15).



**Photo 14 - Proper handling for installing the ATF unit.**



**Photo 15 - Lowering the ATF unit onto the bracket.**



**Caution!** Make sure that the ATF bracket properly engages with the mounting studs in the cabinet. It is possible to simply sit the bottom of the ATF bracket entirely on top of the mounting studs in the cabinet. Ensure that the slots in the bracket are engaged with the studs to prevent damage to the unit.

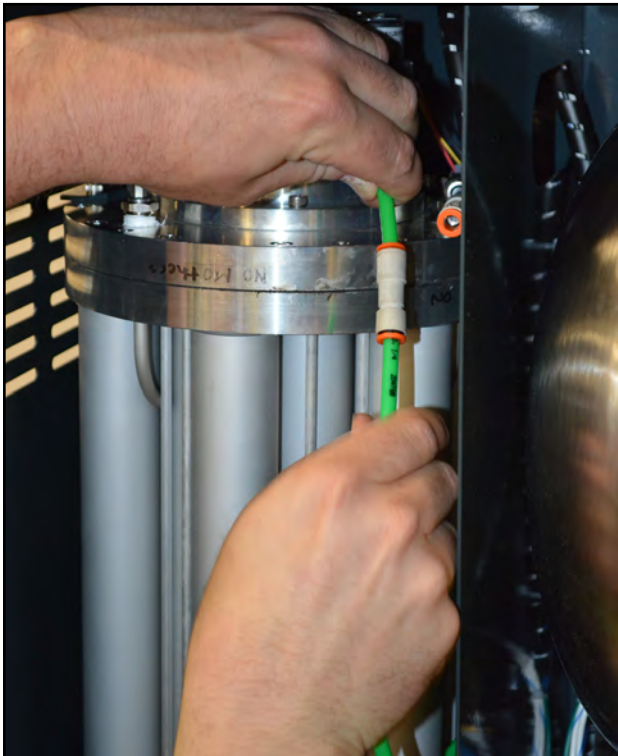
To connect the ATF unit to the system, one electrical connector (photo 16) and two push-to-connect fittings (photos 17 & 18) must be connected. If you are unfamiliar with push-to-connect fittings or Molex® type electrical connectors, please see the Push-to-Connect Fittings section in this chapter.

To connect the electrical connector, route the loose electrical harness back through the center wall in the cabinet to the left side. Firmly attach the harness connector to the drive motor connector on the ATF unit.

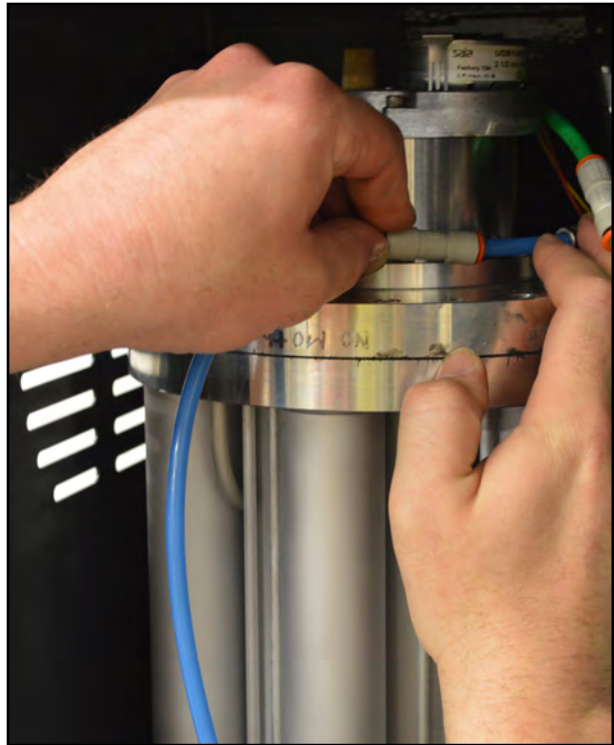


**Photo 16 - Electrical connector**

The two gray and orange push-to-connect check valves on the ATF unit accept a GREEN and a BLUE tube. The green tube connects to the check valve that is already connected to a green tube, and the blue tube connects to the check valve that is already connected to a blue tube. Connect both tubes to the ATF assembly. To connect the push-to-connect fitting, insert the free end of the tubes firmly into the push-to-connect fittings on the check valves. When properly installed, you will feel the tube will insert approximately 1/4" into the fitting. If you do not feel the tube seat to that depth, continue to carefully push until it does.



**Photo 17 - Green push-to-connect fittings**



**Photo 18 - Blue push-to-connect fittings**

Once the ATF® unit is in position and all connections have been made, replace the blue coil hose as shown (photos 19 & 20).



**Photo 19 - Blue coil hose**





**Photo 20 - Blue coil hose**

### Step 5 - Connect Inlet Gases to the GeN<sub>2</sub> Unit

On the outside bottom left of the cabinet are five 1/4" MPT threaded gas connections, each with a red-handled isolation ball valve. First, ensure that all red handles are in the closed position (with the red handle in a left-to-right orientation as shown in photo 21).



**Photo 21 - All red handles closed.**

Two of the five connections are in a row by themselves and are for inlet gases as shown and labeled. The left connector is for CO<sub>2</sub> and is connected to white tubing inside the GeN<sub>2</sub> unit. The connector on the right is for a backup source of N<sub>2</sub> and is connected to green tubing inside the GeN<sub>2</sub> unit. Both connectors are designed to accept 1/4" MPT threaded hose barbs or similar tubing connections.



**Note:** The hose barbs provided with the GeN<sub>2</sub> system accommodate 3/8" tubing, but 1/4" tubing and hose barbs may be used with the system if desired. If 1/4" hose barbs are used, make sure that they have 1/4" MPT threads. If hoses are not the desired method of plumbing, other fittings may be used, provided that they have 1/4" MPT threads.

#### a.) Connect the Carbon Dioxide Source



**Warning!** If connecting the GeN<sub>2</sub> unit to an existing system, be sure to take proper precautions when disconnecting any plumbing as the system may be under pressure.

Thread a hose barb into the left side inlet connector and tighten securely. Be sure to use a backup wrench on the brass valve body to prevent the valve from turning while tightening (refer to photo 22).



**Photo 22 - Proper use of backup wrench**

Route a line from the CO<sub>2</sub> source (typically a cryogenic bulk tank or a high pressure cylinder) to the GeN<sub>2</sub> unit. Install the line onto the hose barb and secure with a clamp. Be sure that you use appropriate reinforced beverage tubing and clamps when connecting to the GeN<sub>2</sub> unit. **Do not turn on the source of CO<sub>2</sub> at this time.**

#### b.) Optional: Connect a Nitrogen Backup

It is advisable but not necessary to install a small high pressure cylinder as a backup source of nitrogen to the GeN<sub>2</sub> system. The benefit of the backup source is uninterrupted draught beer service in the unlikely event that the GeN<sub>2</sub> unit requires an unscheduled service. While you are waiting for a service technician to arrive, you can simply switch to your backup cylinder to supply nitrogen to the gas blender inside the GeN<sub>2</sub> unit.



**Caution!** If installing a backup cylinder of nitrogen, ensure that the pressure of the supplied nitrogen is regulated within the range of 70-90 psig.

If connecting a backup nitrogen source, the process is similar to connecting the carbon dioxide source. Thread a pre-taped hose barb into the right side inlet connector and tighten securely. Be sure to use a backup wrench on the brass valve body to prevent the valve from turning while tightening.

Install the backup nitrogen cylinder in a safe location and route a line from the cylinder to the GeN<sub>2</sub> unit. Install the line onto the hose barb and secure with a clamp. Be sure that you use appropriate reinforced beverage tubing and clamps when connecting to the GeN<sub>2</sub> unit. **Do not turn on the source of backup nitrogen at this time.**

## Step 6 - Connect Outlet Gases to the Beer System



**Warning!** If connecting the GeN<sub>2</sub> unit to an existing system, be sure to take proper precautions when disconnecting any plumbing as the system may be under pressure.



**Note:** The GeN<sub>2</sub> unit is equipped with a two-outlet McDantim Trumix® gas blender, and a dedicated N<sub>2</sub> outlet. These outputs should be sufficient to support most beer and wine systems. As a guide, the 70% CO<sub>2</sub> / 30% N<sub>2</sub> blend (or 60% CO<sub>2</sub> / 40% N<sub>2</sub> on some models) is typically used for high vol/vol CO<sub>2</sub> beers, like Ales and Lagers. The 25% CO<sub>2</sub> / 75% N<sub>2</sub> blend is typically used for low vol/vol CO<sub>2</sub> beers, like Stouts and some other specialty craft beers. The 100% N<sub>2</sub> outlet is intended for use with kegged wine, a separate blender, or a nitrogen-based wine bottle preservation system. If you have any questions regarding which outlet(s) to use with your system, contact your service provider.

The row of three connectors on the bottom of the cabinet are for connecting outlet gases. The middle connector outputs a blend of 70% CO<sub>2</sub> / 30% N<sub>2</sub> (or 60% CO<sub>2</sub> / 40% N<sub>2</sub> on some models) and is connected to yellow tubing inside the GeN<sub>2</sub> unit. The left connector outputs a blend of 25% CO<sub>2</sub> / 75% N<sub>2</sub> and is connected to black tubing inside the GeN<sub>2</sub> unit. The connector on the right outputs 100% N<sub>2</sub> and is connected to green tubing inside the GeN<sub>2</sub> unit. All three connectors are designed to accept 1/4" MPT threaded hose barbs or similar tubing connections.



**Note:** The hose barbs provided with the GeN<sub>2</sub> system accommodate 3/8" tubing, but 1/4" tubing and hose barbs may be used with the system if desired. If 1/4" hose barbs are used, make sure that they have 1/4" MPT threads. If hoses are not the desired method of plumbing, other fittings may be used, provided that they have 1/4" MPT threads.

Connecting to the three outlet ports uses the same process as connecting to the inlet ports in the previous step. Thread a hose barb into the appropriate connector and tighten securely. Be sure to use a backup wrench on the brass valve body to prevent the valve from turning while tightening. Any or all of the outlet ports may be utilized. If you do not have a need for one or more of the outlet ports, simply leave the valve closed and do not attach to that port.

Route the line(s) from the beer or wine system to the GeN<sub>2</sub> unit. Install the line(s) onto the appropriate hose barb and secure with a clamp. Be sure that you use appropriate reinforced beverage tubing and clamps when connecting to the GeN<sub>2</sub> unit. **Do not open the outlet valves on the GeN<sub>2</sub> at this time.**



**Note:** If you are utilizing the 100% N<sub>2</sub> port, **DO NOT** connect the tube to the hose barb on that port yet. You may install the hose barb into the 100% N<sub>2</sub> port, but the barb must remain open to properly complete Step 11 prior to installing the hose onto the barb.

## Step 7 - Connect a Drain Line

The GeN<sub>2</sub> system generates a very small amount of water when the air compressor is running. Every ten minutes when running and every time the compressor turns off, a small burst of mist is emitted from the drain port on the bottom left of the cabinet. Ideally, this water should be piped to an appropriate drain or drainage location. To route a drain pipe, connect a 3/8" outside diameter tube to the water outlet. The water outlet is the push-to-connect fitting located behind the gas inlets and outlets (see photo 23).



**Photo 23 - Drainage tube.**

Alternatively, if the mounting location safely allows it, the drain port may be left open. If this is the case, ensure that the occasional burst of water mist will not cause a safety hazard or damage anything located below the drain port.

### Step 8 - Affix the Pressure Gauge Cluster

When shipped, the pressure gauge cluster is not secured to the cabinet. The cluster frame has two slots which allow it to slide in one direction.

The gauge cluster should be positioned such that the hoses going into the gauges themselves are fully extended and not bent. This should put the gauges in a position where, when the doors are closed, the gauges sit flush with the two openings in the left door.

Once the correct position has been determined, the cluster can be secured by tightening the two 7/16" bolts around the slots using a socket (photo 24).



**Photo 24 - Tightening the bolts**

### Step 9 - Hang the Doors on the Cabinet

The doors on the GeN<sub>2</sub> unit are designed with lift-off hinges that easily install without tools. To hang the doors, simply line up the receivers on the doors with the pins on the cabinet as shown in photo 25, make sure the receivers fully seat onto the pins.



**Photo 25 - Line up the receivers on the doors with the pins on the cabinet**

When closing the doors, close the left door first. The tab on the left door will align with a tab on the cabinet with a threaded hole. Use the included small screw to secure the left door closed (see photo 26). After the left door is closed, the right door may then be closed and latched by turning the latch 90° clockwise.



**Photo 26 - Secure the left door with the small screw**



**Note:** For typical operations and maintenance service, only the right door should need to be opened.



## Step 10 - Connect to a Power Source

Plug the included power cord into the receptacle on the lower right side of the cabinet (photo 27). Plug the other end into a dedicated 110V/15A grounded (3-prong) circuit.



**Photo 27 - Connect power cord to receptacle in cabinet**



**Warning!** The power cord must be plugged into a 3-prong grounded outlet with the provided cord.

## Step 11 - Commission the GeN<sub>2</sub> System

To ensure the initial nitrogen purity is within beer specification, the system must be primed before connecting to the beer system. Prior to installation, the system is exposed to atmospheric conditions and must be purged with nitrogen to eliminate oxygen from the system.

Turn on the GeN<sub>2</sub> system for the first time by moving the power switch on the right side of the cabinet to the “On” position. On the control screen (below the stainless steel N<sub>2</sub> tank) you will see a self-test message and then the GeN<sub>2</sub> home screen. Nothing will happen for approximately 20 seconds; this is normal. After about 20 seconds, the air compressor and the ATF will turn on. In order to prime the system, perform the following steps:

1. Open the 100% N<sub>2</sub> outlet port by turning the red handle to the vertical position (photo 28). This will allow the GeN<sub>2</sub> system to vent to atmosphere instead of filling the tank, which will purge the internal piping in the GeN<sub>2</sub> system.



**Photo 28 - Open the N<sub>2</sub> outlet port**

2. Let the system run for 10 minutes.
3. Close the 100% N<sub>2</sub> outlet port by turning the red handle to the horizontal position. The GeN<sub>2</sub> system will then begin to fill the stainless steel tank.
4. While the tank is charging, check the “Pressures” screen on the control screen. Access the “Pressures” screen by pressing the soft key to the left of the “Status” on the control screen (photo 29), and then by pressing the soft key to the right of “Pressures” on the next screen (photo 30). On this screen you should see the tank pressure slowly rising (Photo 31). You should also see the compressor pressure fluctuate between a low of 88-93 psi and a high of 100-105 psi on a regular cycle. This is normal operation for the system.



**Photo 29 - Soft key left of “Status”**



**Photo 30 - Soft key to the right of "Pressures"**



**Photo 31 - Watch this screen for pressures**

5. After about 15-20 minutes the system will turn off because the tank has reached the shut-off pressure. After the system turns off, open the valve again until the N<sub>2</sub> gauge reads 0 psi, as shown in photo 32, to fully drain the tank. As the tank drains, the compressor will turn on. Close the valve once the N<sub>2</sub> pressure reads 0 psi. The system will completely recharge the tank again.



**Photo 32 - Nitrogen gauge reading 0 psi**

6. At this point, the tank is refilling with high-purity nitrogen. Once the tank is recharged and the compressor shuts off, the system is primed and ready to use.



**Note:** The fan will continue to run for a period of time after the compressor turns off. This is normal system operation.

If you are utilizing the 100% N<sub>2</sub> outlet port, you may now connect and clamp the appropriate hose to that port.

Open the CO<sub>2</sub> inlet valve completely and turn on the source of CO<sub>2</sub>. Make sure that the analog CO<sub>2</sub> gauge (marked "CO<sub>2</sub>") on the bottom left of the cabinet reads in the shaded area. If the pressure is higher or lower than the shaded region on the gauge, regulate the CO<sub>2</sub> supply accordingly until the CO<sub>2</sub> pressure is within the shaded region of the gauge.

At this time, open the outlet valves that your system is utilizing, and leave the unused valves closed.



**Note:** If you have optionally connected a backup source of nitrogen, leave the backup valve and the nitrogen cylinder's valve closed.

When you open the outlet valves, the GeN<sub>2</sub> system will initially fill and pressurize the draught beer system. Depending on the size of the system and the length of the hoses in the system, the pressure in the GeN<sub>2</sub> tank may draw down significantly. If so, the compressor will turn on to refill the system. This first "system-wide" charge may take up to 30 minutes to complete.

Once the draught beer system is charged and the compressor shuts off, you must perform a leak check.

## Leak Check Procedure

It is important to ensure a leak free beer system before putting the GeN<sub>2</sub> system into service.

First check the GeN<sub>2</sub> unit for internal leaks. Close the three outlet valves on the left underside of the GeN<sub>2</sub> unit. Wait at least ten minutes after the system has stopped charging and then take note of the tank pressure on the PLC screen. Wait another five minutes and observe the pressure again. If the pressure has dropped more than 0.3 psi on the PLC screen, there is a leak inside the GeN<sub>2</sub> system. Check all green lines between the Advanced Technology Fractionator® and the storage tank for leaks. If a soapy water solution is used, first turn off and unplug the unit, and be sure not to get water on any electrical components.

Next, check the beer system for leaks. One at a time, re-open each of the three outlet valves on the left underside of the GeN<sub>2</sub> unit (only open those that are connected to the beer system). Open the valves one at a time, monitoring the tank pressure for five minutes as described above. If the pressure drops in that time, there is a leak in that outlet branch. If the pressure does not drop, proceed to open the next outlet valve and repeat. If a pressure drop is found in one of the outlet branches, check to see if a gas line is disconnected from a keg coupler or other beer system component. Is there a puncture in a beer gas line, etc.? If the leak is not easily found, contact your service technician.

## ***Initial Setup***

The final step in commissioning the GeN<sub>2</sub> system is to set certain parameters to suit your installation. This involves setting the time and date, and setting the leak detection interval.





## Operations

The GeN<sub>2</sub> system operates by separating nitrogen from the atmosphere and storing it in the on-board stainless steel tank. When the beer system requires it, the nitrogen is combined with carbon dioxide and the properly mixed gas blend is delivered to your kegs. As the on-board tank is depleted, the system will separate more nitrogen from the atmosphere and refill the tank. During periods of high usage, nitrogen will bypass the on-board tank and directly supply the beer system.

When the GeN<sub>2</sub> system is producing nitrogen, the air compressor will run. When the system no longer requires nitrogen, or the tank is full, the air compressor will turn off and a short burst of air will be heard. Under light to moderate usage, the compressor in the GeN<sub>2</sub> unit might only run for a few minutes every few hours. Under heavy usage, the compressor may run several times an hour, or it may run continuously for an hour or more without stopping. All of these scenarios are normal. The amount of time that the compressor runs is directly related to the amount of beer that your establishment is pouring. If a lot of beer is being poured, the compressor will be running frequently or continuously. If no beer is being poured, the compressor should not run at all. If the compressor is running frequently when little or no beer is being poured, this indicates a leak in the beer gas system.

Once per day, the GeN<sub>2</sub> system automatically checks for downstream leaks in your beer gas system. The system runs a leak detection algorithm when your establishment is closed to determine if there is gas usage when no beer is being poured, and lets you know if it suspects a leak. More details on the leak detection feature can be found later in this manual.

### Indicator Lights

In addition to active daily leak detection, the GeN<sub>2</sub> system actively monitors itself for proper operation. If the GeN<sub>2</sub> system encounters a malfunction, it will let you know with its indicator lights.

During normal operation, the green light on the lower right side of the cabinet will be illuminated. The blue light inside the upper left of the cabinet will also be illuminated.

If the GeN<sub>2</sub> controller detects a gas leak or encounters a system issue, the red light on the lower side of the cabinet will illuminate, the blue light inside the upper left of the cabinet will be blinking, and the green light will be off. In order to prevent possible damage, the GeN<sub>2</sub> system will enter an idle state (not producing nitrogen) until the problem is addressed. If a backup source of nitrogen is connected to the system, it may be used to drive the beer system until

the issue can be addressed. See the section on Alarms and Troubleshooting for more information.



**Warning!** Do not use the backup source of nitrogen if a leak is the reason for the alarm. The backup source may leak also.

Every six months the GeN<sub>2</sub> system requires preventive maintenance. When the system is due for maintenance service, it will alert you by blinking the red light on the lower right side of the cabinet. The green and blue lights will still be illuminated when the maintenance reminder light is blinking, and the system will continue to operate normally. The blinking red light will not stop until the maintenance reminder is reset.

### PLC Interface

The GeN<sub>2</sub> system is controlled by a PLC with a push-button interface. The PLC is located beneath the stainless steel tank in the right side of the cabinet. The following is a guide navigating the PLC's operating screens.

### Home Screen

The home screen displays the date, time and the version of the software currently running on your GeN<sub>2</sub> system. Also on the home screen you'll find the status and maintenance options.

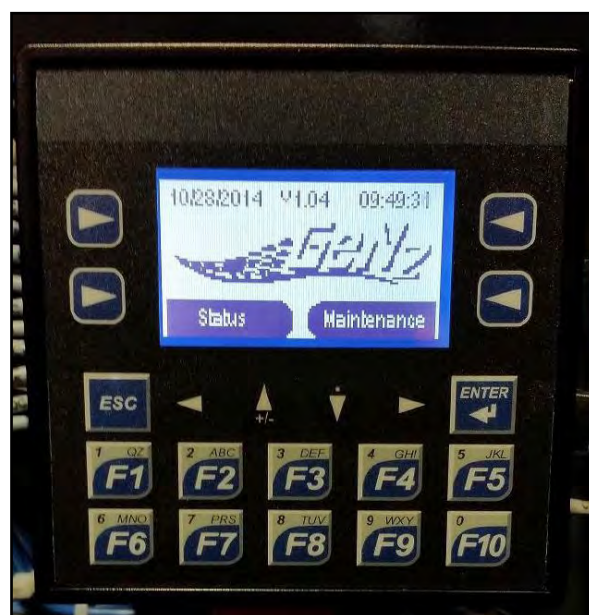


Figure 1 - Home screen

## Status Screen

To select “Status” press the soft key to the left of the display screen. You will see a new screen with four options. By pressing the soft key to the left of the “Back” option, you will be directed back to the home screen.



Figure 2 - Status screen

## Daily Stats Screen

By pressing the soft key to the left of the “Daily Stats” option, a screen displaying the total N<sub>2</sub> charge time and average standby time today will appear. On this screen, you will be able to determine how frequently your GeN<sub>2</sub> system is running vs. sitting idle. The total N<sub>2</sub> charge time represents the total number of hours the GeN<sub>2</sub> system has been producing nitrogen during the current calendar day. The average standby time is the average amount of idle time between nitrogen production cycles. This screen is useful for diagnosing potential system leaks at a glance. By pressing the soft key to the left of the back option you will be directed back to the status display screen.

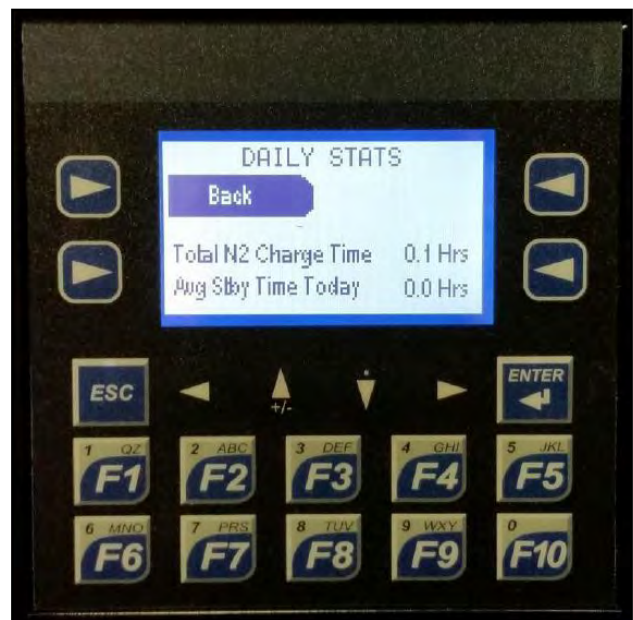


Figure 3 - Daily stats screen

## Pressure Screen

By pressing the soft key to the right of the “Pressure” option, a screen displaying the “Air compr pressure” and the “N<sub>2</sub> tank pressure” will appear. The air compressor pressure reading should cycle within the range of 90-105 psi when producing nitrogen, and should read 0 psi when the GeN<sub>2</sub> system is idle. N<sub>2</sub> tank pressure should correspond to the analog N<sub>2</sub> gauge on the front of the GeN<sub>2</sub> unit. This represents the gauge pressure of available nitrogen. During normal operation, the tank pressure should read between 65 and 85 psi, but may read lower during periods of heavy usage. By pressing the soft key to the left of the “Back” option you will be directed back to the status display screen.



Figure 4 - Pressure screen



## Hour Meter Screen

By pressing the soft key to the right of the “Hour Meter” option, a screen displaying the “Total Pwr On”, “Comp On Hours”, and “HrsSinceMaint” will appear. The total power on time represents the number of hours that the system has been powered on during its lifetime. The compressor on hours represents the total number of hours that the air compressor has run during its lifetime. The hours since maintenance represents the hours elapsed since the last maintenance service was performed. By pressing the soft key to the left of the “Back” option you will be directed back to the status display screen.



Figure 5 - Hour meter screen

## Maintenance Mode

In the password protected maintenance screens, you will be able to access functions that are not needed during normal operation. Here you will be able to set the leak check parameters, set the time and date, reset the maintenance hour counter, change the password, and manually toggle relays in the system for troubleshooting purposes.

To select “Maintenance” from the home screen press the soft key to the right of the “Maintenance” option. You will see a screen displaying “Press ENTER, type password, press ENTER again.” Follow these instructions using the numbers on the function keys to type the password. The default password is 1300. After typing in the password, you will return to the home screen where you will need to press the soft key to the right of “Maintenance” again.



Figure 6 - Maintenance mode password screen

You will then see the main maintenance screen with multiple drop-down options. You can navigate through these options by pressing the up and down soft keys beneath the display and then press the soft key labeled “ENTER” under the display screen while an item is highlighted to select it. By selecting “Exit” you will be routed back to the home screen.



Figure 7 - Maintenance screen - Exit

## Date and Time



**Figure 8 - Maintenance screen - Set Date and Time**

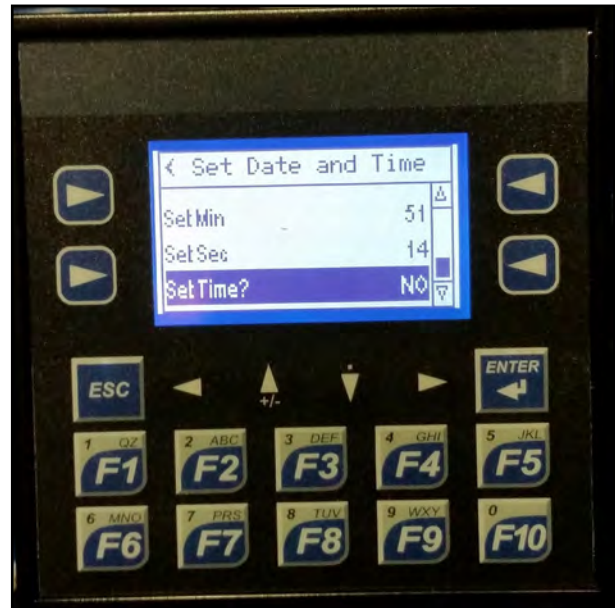
By selecting “Set Date and Time” you will be taken to a new scroll down menu. On this menu you will see the “System Date” and “System Time”. Below these you will see the options to “Set Month”, “Set Day”, “Set Year”, “Set Minute”, and “Set Second”.



**Figure 9 - Maintenance screen - SetMonth example**

The bottom option is “Set Time?” You can alter these numbers by pressing enter while the desired option is highlighted, use the numbers on the associated function keys to insert new numbers, and press enter to make the change. The function keys are located under the display (F1 - F10) and on the top left of each key is a corresponding number. If you alter the numbers in any of the previous options and want them to change, select the “Set Time?” option, press the right arrow soft key to change “No” to “Yes” and press Enter.

If you do not want to update any changes you have made, press the “ESC” key.



**Figure 10 - Maintenance screen - Set Time?**

Press the “ESC” button near the bottom left of the display screen to return to the Maintenance Menu.

## Leak Detection Set Points



**Figure 11 - Maintenance screen - Leak Detection SPs**

By selecting “Leak Detection SPs” you will be taken to a new scroll down menu. On this menu you will see “Set Time of Day (Hr)”, “Start Time of Day (Min)”, “Stop Time of Day (Hr)”, and “Stop Time of Day (Min)”.



These options are used to set up a daily leak detection time interval. The GeN<sub>2</sub> system actively checks your beer system for gas leaks once every day. A leak free system saves money in wasted beer gas and electricity, allows the GeN<sub>2</sub> system to work its potential, and prevents the compressor from needlessly running (and reducing warranty hours). The leak detection algorithm is designed to run during periods of downtime, when there should be no beer gas being used. The best time for this is typically during the early morning, after your establishment closes and before it opens again. By default, the leak detection algorithm runs for a five hour period from 3:00 a.m. until 8:00 a.m. every day. If the default time period of 3:00-8:00 a.m. is not acceptable for your installation, you may change it by entering new start and stop times.



**Figure 12 - Maintenance screen - Leak Detection SPs StartTime of Day(Hr)**

To enter a new start time, select “Start Time of Day (Hr)” and enter a number in 24-hour format using the number numeric soft keys below the display (e.g. for 6 a.m., enter “6” or for 3 p.m., enter “15”). You may narrow down the start time further by setting the minute with “Start Time of Day (Min)”. If you want to start at 20 minutes past the hour, for example, enter “20”. As an example, if Start Time of Day (hr) is set to “14” and Start Time of Day (Min) is set to “47” then the leak detection algorithm beings running at 2:47 p.m. To set a stop time, follow these same steps but select the “Stop Time of Day (Hr)” and “Stop Time of Day (Min)” values. The leak detection algorithm adapts automatically to different time periods, but it is recommended that you allow at least one hour between the start and stop times.

Press the “ESC” button near the bottom left of the display screen to return to the Maintenance Menu.



**Note:** It is important to select a time when there will be no beer gas usage, typically during hours when no one is in the establishment. If beer is poured while the leak detection algorithm is running, the GeN<sub>2</sub> system will interpret it as a leak.

## Maintenance Interval Hour Counter



**Figure 13 - Maintenance screen - Maintenance Interval**

By selecting “Maintenance Interval” a screen displaying “Actual Time”, “Time Set Point” and “Reset Timer?” will appear.

This screen is used to reset the hour counter after preventive maintenance is performed on the system. The GeN<sub>2</sub> system will let you know when it is time to perform scheduled maintenance by flashing the red indicator light on the right side of the cabinet. After performing scheduled maintenance, you should reset the maintenance counter.



**Figure 14 - Maintenance screen - Maintenance Interval Reset Timer?**

To reset the counter, scroll down to “Reset Timer?” and press “ENTER”, then arrow right. This will change “No” to “Yes”. Press “ENTER” to reset the timer or “ESC” to escape. When you are finished, press the “ESC” button to return to the Maintenance Menu.

### Manual Toggles



**Figure 15 - Maintenance screen - Manual Toggles**

By selecting “Manual Toggles” a menu with six options will appear. This menu is useful to diagnose problems with the GeN<sub>2</sub> system should they develop.



**Figure 16 - Maintenance screen - Manual Toggles six options**

The menu allows you to manually turn on/off certain components including the fan, green, red and blue lamps, relief valve and compressor motor. In order to toggle a component on and off, press the function key associated with them as shown. When a component is on, the corresponding radio button on the display will become dark. If a component is off, its radio button will be light colored. Press the soft key to the left of the “Back” indicator or “ESC” to return to the Maintenance Menu.



**Figure 17 - Maintenance screen - Manual Toggles Components Highlighted**



## Changing the Password



**Figure 18 - Maintenance screen - Maintenance Password**

By selecting “Maintenance Password” a screen displaying the password will appear. This is the password required before entering the Maintenance screens. In order to change this password, use the numbers located above the function keys. Press “ENTER” first, type a new password, and press “ENTER” again. Press the “ESC” soft key near the bottom left of the display screen to return to the Maintenance Menu.



**Figure 19 - Maintenance screen - Password change screen**

Below the “Maintenance Password” option is another “Exit” option. Press “ENTER” while “Exit” is highlighted in order to return to the Home Screen.



**Figure 20 - Maintenance screen - Exit**





## Alarms and Troubleshooting

### Alarms

If the GeN<sub>2</sub> controller detects a gas leak or encounters a system issue, the red light on the lower right side of the cabinet will illuminate, the blue light inside the upper left of the cabinet will be blinking, and the green light will be off. In order to prevent possible damage, the GeN<sub>2</sub> system will enter an idle state (not producing nitrogen) until the problem is addressed. If a backup source of nitrogen is connected to the GeN<sub>2</sub> system, it may be used to drive the beer system until the issue can be addressed.



**Warning!** Do not use the backup source of nitrogen if a leak is the reason for the alarm. The backup source may leak also.

The proper procedure to return the GeN<sub>2</sub> system to normal operation is as follows:

1. Determine why the alarm was triggered
2. Address the problem
3. Reset the GeN<sub>2</sub> system to normal operation

If an alarm is triggered, the PLC inside the cabinet will instruct you how to proceed. The screen will flash the message, “Please Press F7 to Reset Alarms” regardless of the currently active screen. Pressing the F7 button will present an alarm status screen. Any active alarms will be listed at the

bottom of the screen. A list of possible alarms is in the table below.



Use the alarm description to determine how to address the problem. The troubleshooting section of this manual provides additional assistance.

Once the problem is identified and properly addressed, the GeN<sub>2</sub> system may be returned to normal operation. To do so, simply follow the instructions on the alarm screen of the PLC. The screen should read: “Please Press F8 to Reset Any Active Alarms”. Pressing the F8 button will immediately return the GeN<sub>2</sub> system to normal operation, provided that the problem has been resolved.

Alarm	Description
Filter Pressure High	The pressure transducer located at the coalescing filter measured a pressure greater than 110 psig.
Nitrogen Tank Overpressure	The pressure transducer located at the nitrogen storage tank measured a pressure greater than 110 psig.
Compressor Over Cycle	The compressor has run continuously for a period longer than 6 hours.
Unloader Valve Failure	The solenoid valve in the bottom left of the cabinet failed to properly relieve back pressure against the compressor.
ATF® Cycle Failure	The ATF unit is not cycling correctly
Potential Leak	There was a significant loss of pressure during the designated daily leak check period.
Filter Pressure Transmitter Failure	The pressure transducer located at the coalescing filter is not connected or has failed.
Tank Pressure Transmitter Failure	The pressure transducer located at the nitrogen storage tank is not connected or has failed.
Maintenance Interval Reminder	Filters need to be replaced and maintenance timer needs to be reset.

## Troubleshooting

In this section, each alarm will be discussed as well as the potential causes and remedies for each alarm. If you cannot successfully troubleshoot your GeN<sub>2</sub> system by following this guide, please call your local service technician or Chart's customer service line at (800) 247-4446.

### Filter Pressure High

This alarm occurs when the back pressure on the compressor reaches a level that is above the intended range of operation. This alarm is necessary to protect the compressor and other system components from damage.

Description	Possible Cause	Things to Check
The pressure transducer located at the coalescing filter measured a pressure greater than 110 psig.	The valve in the ATF® unit is not rotating.	Is the motor atop the ATF unit plugged in?
	A check valve is installed backwards.	Are the two grey and orange check valves near the top of the ATF unit installed in the proper direction?  An arrow on the check valve indicates flow direction.  In the blue line, the check valve should be oriented such that the arrow points toward the ATF unit (this is the line for air going into the ATF unit).  In the green line, the check valve should be oriented such that the arrow points away from the ATF unit (this is the line for nitrogen coming from the ATF unit).
	An airline is plugged, pinched, or clogged.	Check all of the blue lines running from the compressor to the ATF unit for restrictions.

### Nitrogen Tank Overpressure

This alarm occurs when the pressure in the nitrogen storage tank reaches a level that is above the intended range of operation. This alarm is necessary to protect system components from damage.

Description	Possible Cause	Things to Check
The pressure transducer located at the nitrogen storage tank measured a pressure greater than 110 psig.	The system is running on backup nitrogen, and the pressure is not regulated down to an acceptable level.	Is the system running on a backup nitrogen source? If so, the incoming nitrogen should be regulated within the range of 70-90 psig. If the backup source is regulated at a higher pressure, the system will not function properly.

### Compressor Over Cycle

When this alarm occurs, there is usually a gross leak present. The beer system should not be used until the leak is identified and corrected as the large volume of leaking N<sub>2</sub> and CO<sub>2</sub> could present an asphyxiation hazard.



**Warning!** The GeN<sub>2</sub> system stores nitrogen gas and mixes it with carbon dioxide gas. Both gases are asphyxiates and do not support life. If an obvious leak develops in any of the GeN<sub>2</sub> system or other beer system components, fittings, or piping, these gases may accumulate to dangerous levels. If this occurs, first ensure that the area where the leak occurred is well ventilated and safe to enter, next turn off the GeN<sub>2</sub> system and all gas sources. Call your beverage service provider to access and correct the leak. Refer to the Safety section of this manual for additional information.

This alarm occurs when the compressor has run for a long time without cycling off, when there has been a significant draw of beer gas for six hours. This alarm is necessary to protect the compressor from running excessively and needlessly “using up” warranty hours.

<i>Description</i>	<i>Possible Cause</i>	<i>Things to Check</i>
The compressor has run continuously for a period of longer than six hours.	There is a leak within the GeN <sub>2</sub> system.	Close the three outlet valves on the left underside of the GeN <sub>2</sub> unit. Wait five minutes and then take note of the tank pressure on the PLC screen. Wait another five minutes and observe the pressure again. If the pressure has dropped more than 0.3 psi on the PLC screen, there is a leak inside the GeN <sub>2</sub> unit. Check all green lines between the ATF® unit and the storage tank for leaks.
	There is a leak in the beer system.	One at a time, re-open each of the three outlet valves on the left underside of the GeN <sub>2</sub> unit (only open those that are connected to the beer system). Open the valves one at a time, monitoring the tank pressure for five minutes as described above. If the pressure drops in that time, there is a leak in that outlet branch. If the pressure does not drop, proceed to open the next outlet valve and repeat. If a pressure drop is found in one of the outlet branches, check to see if a gas line is disconnected from a keg coupler or other beer system component. Is there a puncture in a beer gas line, etc.? If the leak is not easily found, contact your service technician.
	The beer system is under extremely heavy use.	If your draught beer system has poured over 5000 pints in the last six hours, simply reset the alarm.

### Unloader Valve Failure

This alarm occurs when the solenoid valve (bottom left of the case, connected to the blue tube that runs from the bottom of the coalescing filter) fails to relieve pressure from the compressor outlet line. This alarm is necessary for proper operation of the compressor. The compressor is not designed to start against pressure.

<i>Description</i>	<i>Possible Cause</i>	<i>Things to Check</i>
The solenoid valve in the bottom left of the cabinet failed to properly relieve back pressure against the compressor.	The solenoid is disconnected.	Is the solenoid plugged in? The connector is a 3-pin Molex® type electrical connector located to the left of the gas blender, below the electrical rack.
	The nitrogen production cycle was unexpectedly interrupted due to a power cycle, or other unexpected error.	Enter the maintenance mode on the PLC, go to the manual toggles submenu and manually toggle the unloader/solenoid. Listen for a quick burst of air and/or the click of the solenoid. Exit maintenance mode and ensure the unit cycles properly.
	The solenoid has failed.	When you manually toggle the solenoid on and off (see above) can you hear it click? If not, check to see if it is plugged in. If it is plugged in and you cannot hear it click when toggled, replace the solenoid.

## ATF® Cycle Failure

This alarm occurs when the nitrogen production cycle is not operating as expected. The PLC monitors the cycle with the pressure transducer located at the coalescing filter. If the pressure cycle is not as expected during nitrogen production, the alarm is triggered. This alarm is necessary to ensure the maximum amount of nitrogen is produced at the required purity level.

Description	Possible Cause	Things to Check
The ATF unit is not cycling correctly.	The air inlet filter is clogged or dirty.	Ensure that the inlet path from the filter to the compressor is not clogged or restricted. Replace the filter if necessary.
	The coalescing filter is clogged or dirty.	Replace the filter if necessary.
	The compressor is not connected.	The connector is a 3-pin Molex® type electrical connector located to the right of the compressor, just beneath the cooling fan.
	The air inlet path to the ATF unit is leaking.	Check for leaks in all blue lines between the air compressor and the ATF unit, as well as the blue line that leads to the solenoid.
	The solenoid valve has failed or is leaking.	Check to ensure that the solenoid valve is not leaking air.
	The compressor's dedicated circuit breaker has been tripped.	Ensure that the 6A dual pole circuit breaker next to the PLC is not tripped. If the breaker is showing green, flip the breaker to show red.
	The compressor has failed.	If there are no leaks found in the blue air lines, the compressor may be faulty. Disconnect the ATF drive motor at the top of the ATF unit. Activate a charge cycle by placing the unit into normal operation. The compressor should build pressure and trigger the "Filter Pressure High" alarm. If it does not trigger the alarm within one minute, the compressor is faulty and needs to be rebuilt or replaced. Contact your service technician for a rebuild or replacement.
	The ATF unit has failed.	If there are no other leaks in the system and the compressor builds pressure properly, the ATF unit has failed and needs to be replaced. The ATF unit is not field-serviceable.

## Potential Leak

This alarm occurs when the automatic daily leak check determines that a significant loss of pressure has occurred. This alarm prevents wasted beer gas and electricity by actively identifying gas leaks in the beer system.

Description	Possible Cause	Things to Check
There was a significant loss of pressure during the designated daily leak check period.	There is a leak within the GeN <sub>2</sub> system.	Close the three outlet valves on the left underside of the GeN <sub>2</sub> unit. Take note of the tank pressure on the PLC screen. Wait five minutes and observe the pressure again. If the pressure has changed more than 0.3 psi on the PLC screen. There is a leak inside the GeN <sub>2</sub> system. Check all green lines between the ATF and the storage tank for leaks.
	There is a leak in the beer system.	Re-open each of the three outlet valves on the left underside of the GeN <sub>2</sub> unit (only open those that are connected to the beer system). Open the valves one at a time, monitoring the tank pressure for five minutes as described above. If the pressure drops, there is a leak in that outlet branch. If the pressure does not drop, proceed to open the next outlet valve and repeat. If a pressure drop is found on one of the outlet branches, check to see if a gas line is disconnected from a keg coupler or other beer system component. Is there a puncture in a beer gas line?
	Someone poured beer or otherwise used beer gas during the designated leak check period.	If someone used beer gas during the defined leak check period, the GeN <sub>2</sub> system will assume it is a leak in the system, since the defined leak check period should occur during off hours. If this is the reason the alarm has triggered, simply reset the alarm to return to normal operation.

### Filter Pressure Transmitter Failure

This alarm occurs when the pressure transducer located at the coalescing filter registers unexpected values. This alarm is necessary to prevent damage to system components.

<i>Description</i>	<i>Possible Cause</i>	<i>Things to Check</i>
The pressure transducer located at the coalescing filter is not connected or has failed.	The transducer is unplugged.	Ensure that the pressure transducer located at the coalescing filter is plugged into its mating 2-pin Molex® type connector.
	The transducer has failed.	If the transducer is plugged in and this alarm still occurs, the transducer has failed and must be replaced.

### Tank Pressure Transmitter Failure

This alarm occurs when the pressure transducer located at the nitrogen storage tank registers unexpected values. This alarm is necessary to prevent damage to system components.

<i>Description</i>	<i>Possible Cause</i>	<i>Things to Check</i>
The pressure transducer located at the nitrogen storage tank is not connected or has failed.	The transducer is unplugged.	Ensure that the pressure transducer located at the nitrogen storage tank is plugged into its mating 2-pin Molex® type connector.
	The transducer has failed.	If the transducer is plugged in and this alarm still occurs, the transducer has failed and must be replaced.

### Maintenance Interval Reminder

This alarm occurs every six months as a reminder that the filters need to be replaced to ensure proper performance of your GeN<sub>2</sub> system. The system will continue operating as normal, but the red light will flash on the side of the case and the blue LED will flash inside the case. Replace the filters and reset the maintenance monitor in the PLC.

<i>Description</i>	<i>Possible Cause</i>	<i>Things to Check</i>
Filters need to be replaced and maintenance timer needs to be reset.	The maintenance timer has elapsed.	Replace the air inlet filter and the coalescing filter, then reset the maintenance timer as described in the PLC Interface Maintenance Mode section of this manual.







## Maintenance

### General

This section contains maintenance information. Service and/or repairs are not difficult because parts are easily accessible and replaceable. The Filter Kit PN is 20928635 which includes a year supply of particulate filters as well as a condensate filter. Before performing any of the procedures in this section be sure you are familiar with the location and function of controls and indicators discussed in other sections. It is recommended that the Safety section of this manual be reviewed and understood fully.

### Particulate Filter

The particulate filter, located in the center of the cabinet on the right side, filters the incoming air into the compressor. The filter needs to be replaced every six months.

### Replacement Procedure

1. Using the Twist Lock feature turn the top housing of the filter clockwise to unlock the filter assembly.
2. Lift the top housing off the filter revealing the pleated filter element inside.



**Photo 33 - Pleated filter element inside housing**

3. Remove existing pleated filter element and insert new pleated filter element in the same orientation.

4. Align the tabs on the lower filter housing with the open slots on both sides of the top filter housing.



**Photo 34 - Aligning tabs**

5. Once the tabs are aligned push down on the top housing until seated and turn counterclockwise to lock the filter assembly as shown below.



**Photo 35 - Locking the filter assembly**

## Condensate Filter

The condensate filter, located under the nitrogen tank and next to the ATF® unit, removes water from the compressed air charge. This filter needs to be replaced every 12 months.

### Replacement Procedure

1. Detach push-to-connect airline connections from both sides of the condensate filter and the push-to-connect airline from the bottom of the condensate filter.



**Note:** Ensure that airline orientation is maintained upon reassembly of the filter.



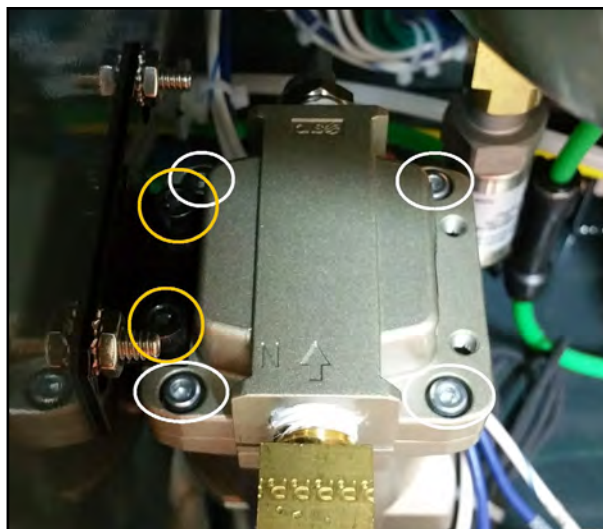
**Photo 36 - Detaching push-to-connect airline connections**

2. Using a 3/8" socket or crescent wrench remove the two nuts and star washers from the bracket holding the condensate filter to the case.



**Photo 37 - Shown in red are the nuts and star washers to remove from the bracket**

3. Using a 4mm allen wrench remove the four screws from the head of the condensate filter highlighted in white below. Leave the two black bolts highlighted in yellow securely fastened, removing these bolts is not necessary to remove the filter head from the filter body.



**Photo 38 - Remove the four screws highlighted in white.**

4. Remove the filter head from the filter body.



**Photo 39 - Filter head removed from filter body**



5. Remove the existing drop-in filter from the main housing and replace with a new filter.



**Note:** Ensure that the disc side (with the hole in the center) of the filter is facing up.

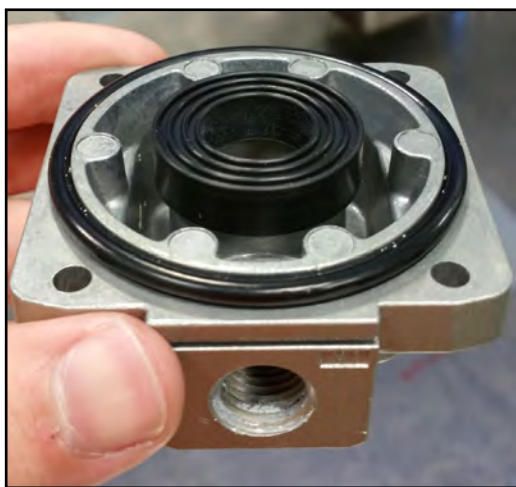


**Photo 40 - New filter shown with disc side up**

6. Replace the head of the condensate filter back on the main filter housing.



**Note:** Ensure that the O-ring is installed properly on the filter head as shown below. When reinstalling the filter head onto the filter body make sure the O-ring is properly seated.



**Photo 41 - Properly seated O-ring**

7. Screw in and tighten the four bolts removed from the head of the condensate filter from step 4.
8. Screw in and tighten the two bolts holding the mounting bracket to the head of the condensate filter from step 3.
9. Mount the bracket on the wall studs in the case ensuring that the washers are on before tightening the nuts from step 2.
10. Reattach the air lines from step 1 in the correct location on either side of the condensate filter.

## Compressor

The compressor installed in the GeN<sub>2</sub> Nitrogen Generator is a Durr Technik model.



**Note:** It is recommended that the compressor be rebuilt every 5000 running hours. Compressor rebuild can be accomplished on-site.

The rebuild kit part number is 20937006. Refer to Durr Technik's instruction manual included in the rebuild kit for proper rebuild procedure.

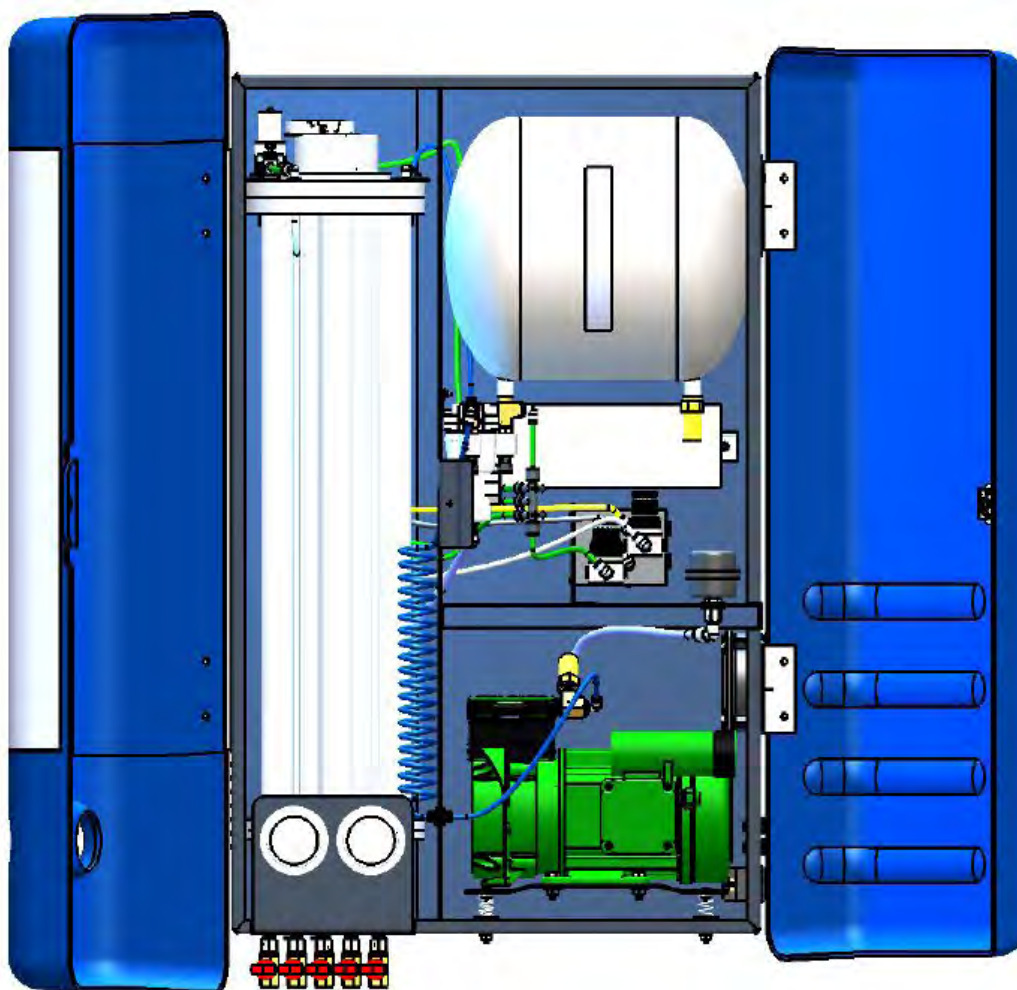
## ATF® unit

It is recommended to repack the sieve bed after 10,000 running hours of the ATF unit. Contact your local Chart representative for further instructions or questions.



## Specifications

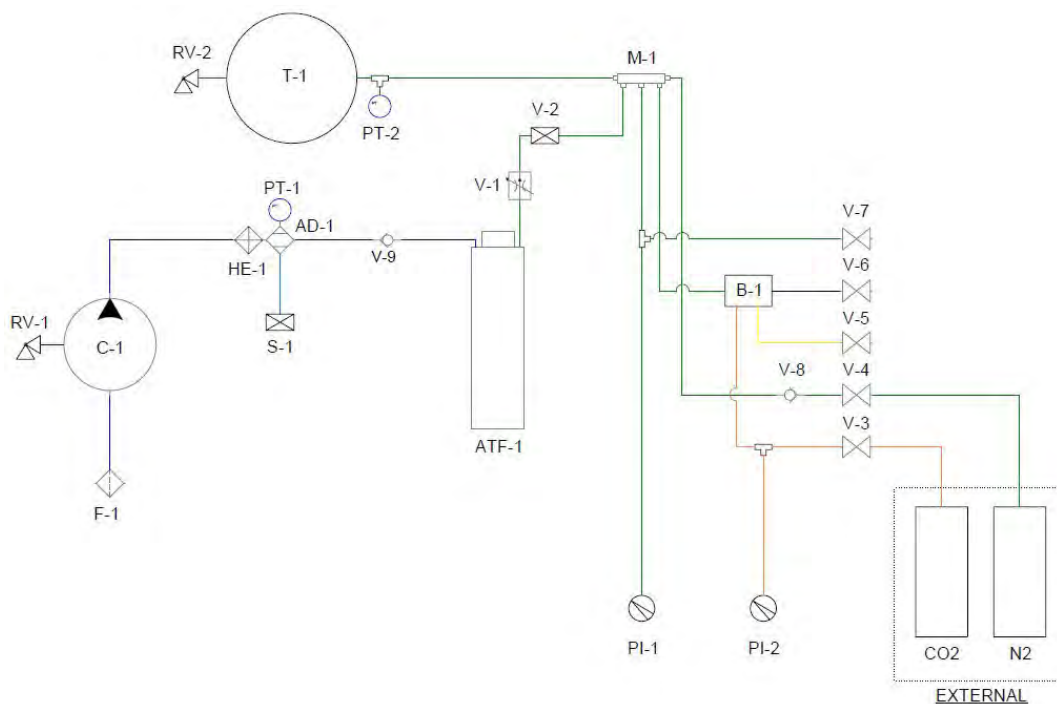
### GeN<sub>2</sub> Specifications



N <sub>2</sub> Purity	99.8% (<0.2% O <sub>2</sub> )
N <sub>2</sub> Output	> 7 slpm avg (14.8 scfh)
Kegs per hour	up to 9 (sustained)
External Tank Size	None
Internal Tank Size	5 gallon
pints/min	up to 19 (sustained)
N <sub>2</sub> outlet on unit	Yes
Maintenance Access	Service panel w/latch
Compressor	Durr Technik Oil-Free
Compressor Warranty	3 year / 5000 hour
Blender	McDantim
# of blends	2 (70% CO <sub>2</sub> & 25% CO <sub>2</sub> Standard)
Blend outlet pressure	~ 60 psig
Case Size	44"H x 26"W x 17"D
Case Weight	160 lbs
*Pints/min and kegs/hour assume 70% CO <sub>2</sub> blend, 25 psig keg pressure, and a leak-free beer system	

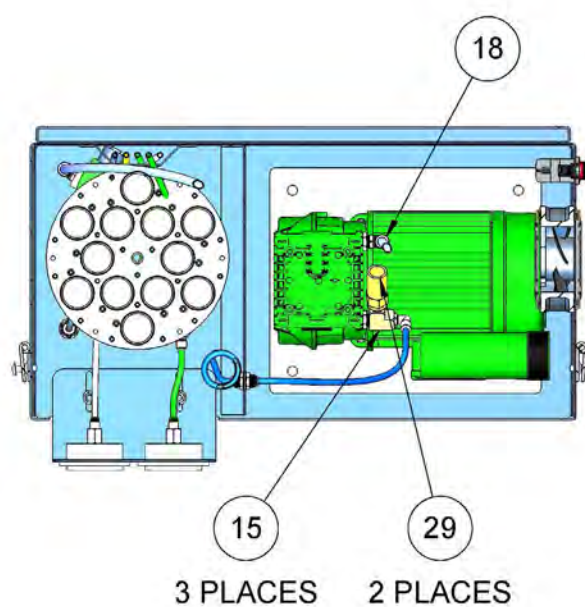
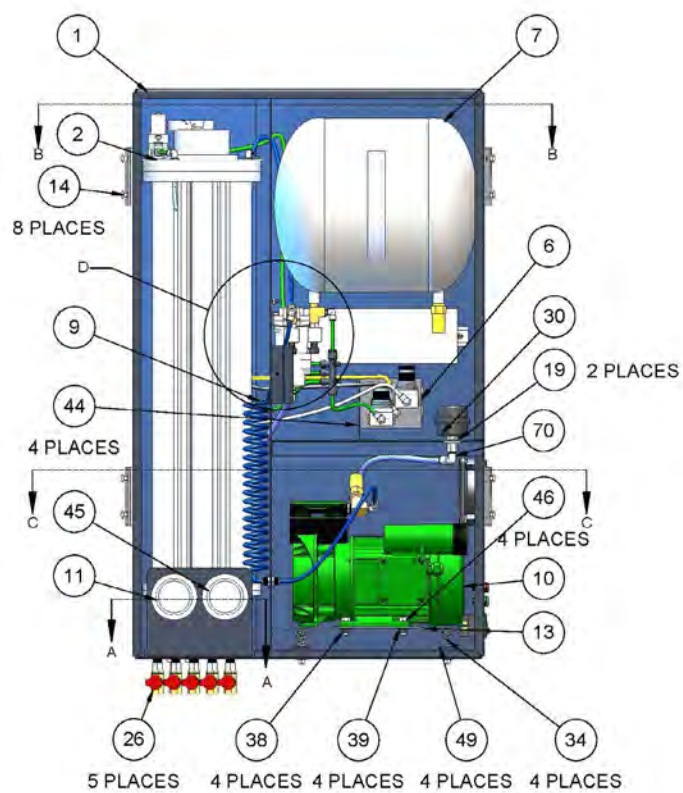


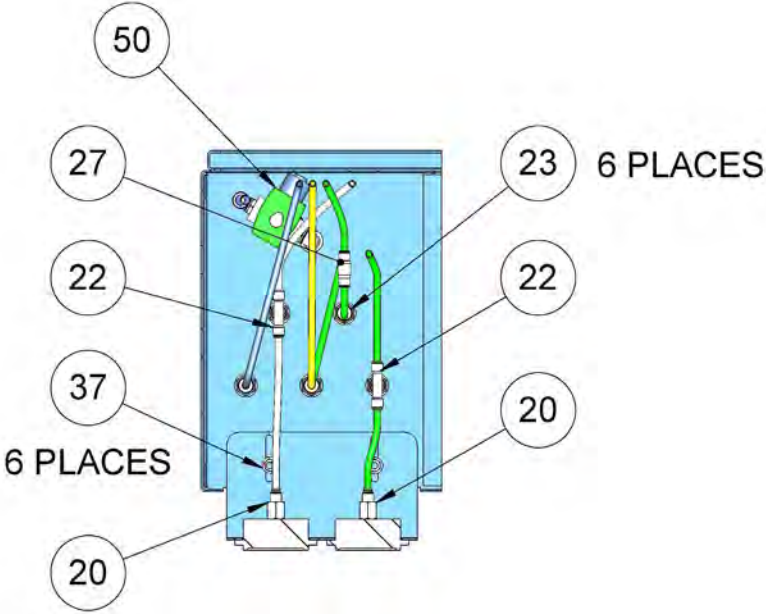
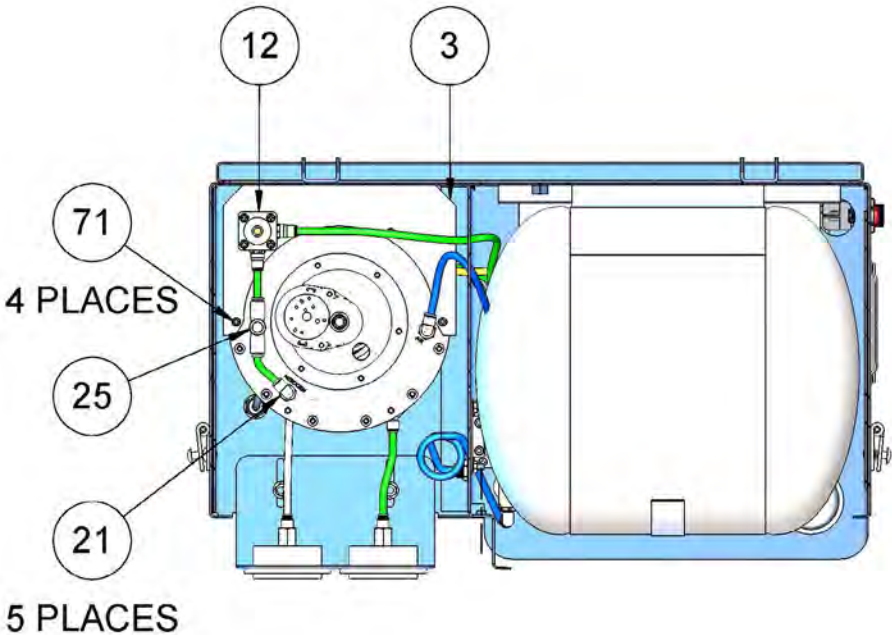
## GeN<sub>2</sub> Schematic

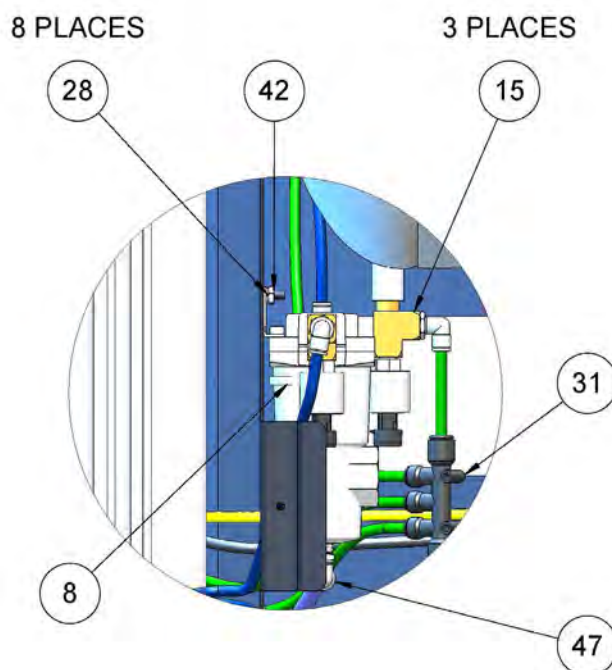


Nomenclature		
Item	Description	Part Number
V-1	NEEDLE VALVE	20807619
V-2	PRESSURE REGULATING VALVE	20856482
V-3	ISOLATION VALVE, CO <sub>2</sub> IN	20733158
V-4	ISOLATION VALVE, BACKUP N <sub>2</sub>	20733158
V-5	ISOLATION VALVE, 60% BLEND	20733158
V-6	ISOLATION VALVE, 25% BLEND	20733158
V-7	ISOLATION VALVE, 100% N <sub>2</sub>	20733158
V-8	CHECK VALVE, BACKUP N <sub>2</sub>	20807621
V-9	CHECK VALVE, ATF INLET	20807621
RV-1	RELIEF VALVE, COMPRESSOR	20807543
RV-2	RELIEF VALVE, TANK	20807543
PI-1	PRESSURE INDICATOR, N <sub>2</sub>	20839423
PI-2	PRESSURE INDICATOR, CO <sub>2</sub>	20806240
T-1	SURGE TANK	20783899
C-1	COMPRESSOR	20806217
B-1	BLENDER	20858641
ATF-1	ATF®	20752316
M-1	N <sub>2</sub> MANIFOLD	20839425
HE-1	HEAT EXCHANGER, COIL HOSE	20806216
AD-1	AIR DRYER	20806235
PT-1	PRESSURE TRANSDUCER COMPRESSOR	N/A
PT-2	PRESSURE TRANSDUCER, TANK	N/A
F-1	AIR FILTER, COMPRESSOR	20808765
S-1	SOLENOID VALVE	20856046

## Parts







Bubble Seq. No.	Item Number	Description	Function
1	20785326	GENERATOR NITROGEN CASE S/A	Generator Case
2	20752316	NITROGEN ATF 28'L	ATF® Unit
3	20786373	ATF MOUNT BRACKET	Bracket to mount the ATF unit to the cabinet
4	20782233	THERMOFORMED DOOR LEFT	Left Door
5	20782232	THERMOFORMED DOOR RIGHT	Right Door
6	20858641	BLENDER ASSY 70PSI 70% & 25%	Blends N <sub>2</sub> with outside source of CO <sub>2</sub>
7	20783899	N2 GENERATOR SURGE TANK	Storage tank for Nitrogen produced by ATF system
8	2080635	COALESCING FILTER OPEN DRAIN	Removes water from air going into the ATF system
9	20806216	COIL HOSE 1/4"	Cools the air coming out of the compressor
10	20806217	COMPRESSOR A-065 - C4010U	Compresses air going into the ATF system
11	20806240	PG 2.5" DIAL 0-200 PSI/BAR CO2	CO <sub>2</sub> Pressure Gauge
12	20856482	REGULATOR CALIBRATED ECON GEN2	Maintains ATF system pressure
13	20806241	COMPRESSOR ISOLATION PLATE	Minimizes vibrations in the cabinet
14	20856481	SCREW BINDING POST 1/8"L	Affixes doors to cabinet
15	1211702	TEE STREET BRS 1/4NPT	Tank inlet/outlet with pressure transducer
16	20786073	CASE MOUNTING BRACKET	Bracket to mount the cabinet to a wall
17	20807537	TUBING GREEN 1/4"X3-1/4"	Green tube delivering N <sub>2</sub> to the surge tank
18	20807538	PUSH TO CONN MALE 3/8"	Air inlet port for compressor
19	2914241	WASHER FLAT .083X9/16IDX1.25OD	
20	20812990	PUSH TO CONN 1/4" FNPT 1/4"	Inlet to N <sub>2</sub> pressure gauge
21	20807531	PUSH TO CONN SWIVEL ELBOW 1/4"	
22	20807540	PUSH TO CONN TEE 1/4"	



Bubble Seq. No.	Item Number	Description	Function
23	20807541	PUSH TO CONN 1/4" FNPT 1/4"	
24	1416-SEQ	Term, M 14-20 Split Pin	
25	20807619	VALVE NEEDLE INLINE	Adjusts outlet flow of Nitrogen from ATF® system
26	20733158	VALVE ISO BRS RED-HANDLED ABCO	Isolation valves for external attachments
27	20807621	VALVE IN-LINE CHECK	Allows flow in one direction only
28	2911071	WASHER SPLIT SS #10 18-8 B18	
29	1810652	RV BRS 1/4MPT 125 PSI	Pressure Relief Valve
30	20808765	FILTER AIR HOUS/ELEMENT ASSY	Filters air going into the compressor
31	20839425	PUSH TO CONN MANIFOLD 1/4"	Ties green N <sub>2</sub> lines together
32	1612162	HOSE BARB BRS 3/8IDTX1/4MPT	
33	20839426	PIN & SOCKET MOLEX CONN	
34	15063400	SPRING 1.7LGX.75MDX.063OD	Dampens vibrations caused by compressor
35	2910151	SHCS SS #10-32X3/8"LG 18-8	
36	2914071	LOCKNUT SS 1/4-20 W/NYL INSERT	
37	2910591	WASHER FLAT SS .250NOM	
38	2914251	LOCKNUT SS 5/16-18 W/NYL	
39	292767	WASHER FLAT SS .313 NOM 18-8	
40	20813580	KIT LABEL GEN2	
41	20856480	ADAPTER 1/4MALE BSPP TO 1/4FPT	Compressor inlet and outlet adapters
42	20812987	NUT HEX SS 10-24 18-8	
43	20894588	HHCS CS 1/4-20X1-1/4"LG FULL	
44	14884337	SHCS SS #10-32X.500 LG 18-8	
45	20839423	PG 2.5" DIAL 0-200PSI/BAR N2	N <sub>2</sub> Pressure Gauge
46	2910751	HHCS SS 5/16-18X1"LG	
48	20856478	BHCS 1/4-20X5/8	
49	20856477	RETAINING CUP SPRING	Holds the compressor springs in place
50	20856046	VALVE SOLENOID 1/4FNPT 24 VDC	Opens/Closes water drain
51	20856040	TUBING BLUE 1/4"X37"	Inlet to ATF unit
52	20856039	TUBING WHITE 1/4"X3"	CO <sub>2</sub> inlet
53	20856038	TUBING WHITE 1/4"X7"	Tube to CO <sub>2</sub> pressure gauge
54	20856037	TUBING GREEN 1/4"X5-1/4"	N <sub>2</sub> inlet to blender
55	20856036	TUBING GREEN 1/4"X28"	N <sub>2</sub> outlet from manifold
56	20856034	TUBING GREEN 1/4"X2-1/2"	N <sub>2</sub> outlet to use valve
57	20856033	TUBING GREEN 1/4"X4-3/4"	N <sub>2</sub> inlet to N <sub>2</sub> pressure gauge
58	20894587	TUBING GREEN 1/4"X34"	N <sub>2</sub> inlet to manifold
59	20856030	TUBING GREEN 1/4"X4"	ATF needle valve outlet
60	20856029	TUBING GREEN 1/4X2"	ATF outlet
61	20856027	TUBING GREEN 1/4"X4"	Backup N <sub>2</sub> line to manifold
62	20856020	TUBING GREEN 1/4"X23-1/2"	Backup N <sub>2</sub> line check valve inlet
63	20807630	TUBING YELLOW 1/4"X35"	Blender outlet 60%
64	20807631	TUBING WHITE 1/4"X33"	Blender inlet CO <sub>2</sub>
65	20807633	TUBING BLACK 1/4"X35"	Blender outlet 25%
66	20807661	TUBING BLUE 1/4"X16"	Compressor outlet

<i>Bubble Seq. No.</i>	<i>Item Number</i>	<i>Description</i>	<i>Function</i>
67	20807663	TUBING BLUE 3/8"X10"	Compressor inlet
68	20861864	TUBING BLUE 1/4"X2"	Coalescing filter outlet, air
69	20857585	PUSH TO CONN 3/8" SWIVEL	
70	20861869	SHCS SS #10-24X1-1/2" LG 18-8	
71	20861865	TUBING BLUE 3/8"X28"	Coalescing filter water drain
72	20861866	KIT FOAM STRIP	Foam gauge overlay and door strip





## Warranty

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### Warranty Policy

Chart Inc. ("Chart") warrants to the Purchaser that the GeN<sub>2</sub> Nitrogen Generator (the "Equipment") shall be free from any defects in workmanship and materials; provided, however, that this warranty shall be limited to Equipment found to be defective within a period of three (3) years from initial use on the compressor or two (2) years from the initial use on all other components. Parts sold as a spare or for replacement are warranted for ninety (90) days from the date of shipment. Chart warrants that its services will be performed in a professional and workmanlike manner. All Chart services are warranted for a period of ninety (90) days from the date of their completion.

Purchaser agrees that as a pre-condition to any Chart liability hereunder, Purchaser or its appointed agents shall fully inspect all Equipment immediately upon delivery and shall give Chart written notice of any claim or purported defect within ten (10) days after discovery of such defect.

As a further pre-condition to any Chart liability hereunder, an approved Chart service company must supply both parts replacement and labor and Purchaser must strictly adhere to the Warranty Claims Procedure set forth below. Chart's sole and exclusive liability under this limited warranty is to the original Purchaser only and is, at Chart's sole option: (1) repair or replacement of the defective Equipment or parts thereof; or (2) product credit for the net purchase price of the defective Equipment or parts thereof paid by the original Purchaser; or (3) in the case of nonconforming services, provide equivalent services or product credit for the net price paid by the original Purchaser for such services. Chart shall not be responsible for providing working access to the defect, including disassembly and reassembly of Equipment or for providing transportation to and from Chart's repair or factory facility, all of which shall be at Purchaser's risk and expense.

This limited warranty does not apply to Equipment that Chart determines to have been caused by the effects of normal wear and tear, erosion, corrosion, fire, flood, explosion or other excessive external forces, misuse, abuse, negligence or accident. Alterations or repairs by any party other than those designated and approved in writing by Chart, or installation, storage, maintenance or operation of such Equipment in a manner inconsistent with Chart accepted practices, normal operating instructions, specifications and drawings, or outside the specified design conditions, unless pre-authorized in writing by Chart, shall void this limited warranty. Modifications in any way to the Equipment without Chart's prior written approval shall render this warranty void. This limited warranty does not apply to Equipment comprised of materials provided or a design stipulated by Purchaser or to Equipment purchased used.

Repairs or replacements made pursuant to warranty shall not renew or extend the applicable original warranty period; provided however, that any such repairs or replacement of Equipment or parts thereof shall be warranted for the time remaining in the original warranty period or thirty days, whichever is longer.

Individual parts replacements under warranty and with a component list price less than \$50.00 will be replaced at no charge. Individual components costs exceeding \$50.00 that are replaced under warranty will be invoiced to the Purchaser and the Purchaser will be issued credit based on results of Chart's evaluation of the returned component(s). The Return Material Authorization (RMA) process must be initiated prior to shipment of any replacement parts.

Chart is not liable for component replacement labor exceeding two hours for actual replacement and two hours travel time (four hours @ 65.00/hour maximum).

Chart specifically makes no warranties or guarantees, expressed or implied, including the warranties of merchantability of fitness for a particular purpose or use, or warranties arising from course of dealing or usage of trade, which are all expressly disclaimed, other than limited warranties expressly specified herein.

In no event shall Chart be liable for any special, indirect, incidental or consequential damages, including but not limited to loss of profits, lost opportunity, loss of use of the equipment, CO<sub>2</sub> loss, cost of capital, cost of substitute equipment, downtime costs, costs of delays nor for any penalties, whether any such claim for the same is based on contract, warranty, tort, negligence, strict liability or otherwise, Chart's liability for any such claims whether in contract, warranty, negligence, tort, strict liability, or otherwise or for any loss or damage arising out of, connected with, or from any design, sale, installation, operation or use of the equipment or performance of any services rendered by Chart, shall in no event exceed the purchase price paid to Chart by purchaser for the specific equipment or part thereof or for the services giving rise to the claim. Purchaser agrees to defend, indemnify and hold Chart harmless from any third party claims arising out the use, sale, or lease of the equipment.

This warranty policy is not intended to replace or supersede the warranties, limitations, exclusive remedy and disclaimers set forth in Chart's Terms and Conditions of Sale. In the event of a conflict between Chart's Terms and Conditions of Sale and this Warranty Policy, this Warranty Policy shall control.



## **Warranty Claims Procedure**

1. All warranty claims must be previously authorized by Chart Inc. Telephone / electronic approval may be obtained by contacting Chart's Beverage Systems Technical / Customer Services at:  
  
1-800-247-4446  
  
1-800-253-1769  
  
Fax: 1-952-758-8275  
  
Or by writing to:  
  
Chart Inc.  
  
407 7th Street NW  
  
New Prague, MN 56071
2. Authorization must be obtained from Chart prior to shipping any Equipment to Chart facilities. In order to process the return of a tank its model and serial number must be provided. If approved, a Return Material Authorization (RMA) number will be provided. The RMA number must be prominently indicated on the packing slip and any packaging that accompanies the goods being returned. The customer returning the goods is responsible for all freight, proper packing, and any damage incurred during shipment of the goods back to Chart.

