

N₂GEN[®]

Arc Suppression System
TL-450
TL-1050

Operation and
Installation Manual

Version 5; 06/19/2020
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The Leader in Nitrogen Generation Technology

VERSION HISTORY

Revision #	Implemented By	Revision Date	Approved By	Approval Date	Reason
1	J. Nguyen	05/31/16	A. Norman	5/31/16	
2	K. Mellott	08/11/17	J. Nguyen	8/14/17	MiniPSAv7 Release
3			J. Nguyen	10/27/17	Added TL-1050 Low Pressure Alarm
4	M. Thomas	06/05/18	A. Norman	06/05/18	Made LP alarm standard product
5	N.Alrosan	06/19/20			New PLC Twix Release

-----Notes-----

TABLE OF CONTENTS

1.1	Purpose.....	4
1.2	Audience	4
1.3	Important Information	4
2.1	General.....	4
3.1	Key Features.....	5
3.2	Specifications	6
3.3	System Operations	7
4.1	Unpacking and Preparation	10
4.2	Electrical Requirements	10
4.3	Installation	10
4.3.1	Installation (For TL-450)	10
4.3.2	Installation (For TL-1050).....	12
4.4	Panel Layout and Gas Connections	12
4.5	Start-up Procedures	16
4.6	Checking for Leaks.....	16
4.7	Access Controls	17
4.8	Starting the System	17
4.9	Stopping the System	18
5.1	Instructions.....	18
5.2	Alarm Notification.....	19
5.3	Low Pressure Alarm	19
8.1	Power Issues	22
8.2	Pressure Issues	22
8.3	Gas Leaks	22
8.4	<i>BlastOffTM</i> - Leak Detection System	22

1 INTRODUCTION

1.1 PURPOSE

The N₂-GEN[®] provides an infinite supply of 98%+ pure Nitrogen, ensuring a constant -40° to -70° F dew point within the transmission line. By freeing the environment of oxygen, moisture and contaminants, the N₂-GEN[®] maintains the integrity of the transmission line and prevents voltage arcing.

The N₂-GEN[®] was designed with minimal circuitry and moving parts, limiting failure points and maximizing life expectancy. Unlike a dehydrator, there is no need to constantly monitor, recharge, or replace desiccant material. With Pressure Swing Adsorption (PSA) technology, the N₂-GEN[®] requires only one quick and inexpensive filter change-out per year

The two models discussed in this manual are be the N₂-Gen[®] Arc Suppression System TL-450 and the N₂-Gen[®] Arc Suppression System TL-1050.

**The installer and the user should read this manual in its entirety.

1.2 AUDIENCE

This manual is intended for Installer/Supervisory Staff and should be read in its entirety prior to operation. Please contact your local installer with any operation and maintenance questions prior to contacting the manufacturer.

1.3 IMPORTANT INFORMATION

All personnel (and their supervisors) installing, operating, and maintaining the N₂-Gen[®] Arc Suppression System must read and fully understand this manual prior to installing, operating or performing maintenance on the system.

2 SAFETY GUIDELINES

2.1 GENERAL

Correct use of the N₂-Gen[®] Arc Suppression System TL-650 and TL-1050 is important for your personal safety and for trouble-free functioning of the equipment. Incorrect use can cause damage to the nitrogen generator or can lead to incorrect gas supply.

The N₂-Gen[®] Arc Suppression System produces nitrogen (N₂) at a low flow rate, which quickly dissipates into the air. N₂ gas is not poisonous but it should not be directly inhaled, since in high concentrations, it can cause asphyxiation. **Ensure that the unit is installed within a well-ventilated room, one that is not sealed off from normal living space air changes.**

All personnel involved with installation, operations, and maintenance of the N₂-Gen[®] Arc Suppression System TL-650 and TL-1050 must follow safe working practices, OSHA, and local health/safety code regulations.

Warning:

- This manual must be read in its entirety prior to installing and operating the N₂-Gen[®] Arc Suppression System to prevent accidents and damage to the system.
- Contact your supplier if you detect a problem that you cannot solve with this manual.
- Only use the N₂-Gen[®] Arc Suppression System in accordance with its designed purpose.

- Only service-engineers that are qualified to work on electric and pneumatic equipment are allowed to do the installation, maintenance and repairs. Unqualified people are not allowed to repair the equipment.
- Do not tamper or experiment with the equipment or exceed the technical specifications

3 SYSTEM DESCRIPTION

3.1 KEY FEATURES

The N₂-Gen[®] Arc Suppression System's key features include the following:

- Air compressor
- Air Filters
- Programmable Logic Controller (PLC)
- Pressure Swing Adsorption Beds
- Safety Relief Valves
- N₂ Storage Tank
- Automatic Pressure Cut-in/Cut-out
- Low pressure regulator
- Low pressure alarm (field wired)
- Patented BlastOff – Leak Detection System

Air Compressor:

The air compressor is designed internally to the cabinet and features engineered dampening system to reduce vibration and noise throughout the cabinet. It is an oil-less compressor with a pre-filter attached to the air input. The recommended replacement on the pre-filter is 1,000 run hours or 1 year (whichever comes first). In dirty environments the filter may need to be changed out more frequently.

Air Filters:

The generator has two filters after the air compressor, the particulate and coalescing. The Particulate has a 5 micron filter that traps large particles. The Coalescing has a 0.1 micron filter that will catch the remaining smaller particles. Both filters feature an auto-drain that will drain the water captured after the air compressor. The drain is plumbed to the outside of the cabinet so the end-user can connect ¼" tubing and drain to a safe location.

Programmable Logic Controller (PLC):

There is an integrated PLC within the cabinet. It features smart and efficient coding to maximize the performance of the generator. It controls the timing and sequencing of the valves to effectively move compressed gas throughout the system. It also has a smart feature to automatically go into different "modes" based on the current run stages. It comes with a visual screen that will display run hours and alarms.

Pressure Swing Adsorption (PSA) Beds:

Each system contains 2 pressure vessels tightly packed with carbon molecular sieve. The oxygen molecules are adsorbed to the material when compressed air flows through and allows nitrogen molecules to pass through. The PSA beds swing back and forth, where one generates nitrogen to the storage tank, while the other is being cleaned.

Safety Relief Valves:

Safety Relief Valves have been placed throughout the system for maximum safety. They are designed and put in place to minimize failure of other components. They all come with an ASME stamp.

N₂ Storage Tank:

Revision 5

Revision Date: 06/19/20

The N₂ Storage Tank is either housed inside the cabinet (TL-1050) or located external of the N₂ Generator (TL-450).

Automatic Cut-In/Out:

The generator comes with a built in pressure switch that is tied into the PLC. This will provide a low voltage signal back to the PLC to put the system in a “Standby Mode” when the tank is full of nitrogen.

Low Pressure Regulator

The generator comes with a built in adjustable pressure regulator. It adjusts higher nitrogen storage pressure or back up nitrogen pressure down to your site pressure.

Low Pressure Alarm (field wired)

The generator comes standard with a low pressure switch that can be utilized as a low pressure alarm. The switch is internal to the generator cabinet and can be field wired utilizing the supplied flying leads. The switch comes preset at 1 psig. It can be adjusted if desired.

Patented BlastOff – Leak Detection System:

The BlastOff Leak Detection System will provide the end-user with an alarm when it detects characteristics of a leak somewhere on the system. It will trigger an audible alarm, display it on the screen, and the end-user can tie into the dry contact so that the alarm can be relayed back to the Building Management System.

3.2 SPECIFICATIONS

Table 1: Specification Data

N ₂ -Gen [®] Arc Suppression System – Specifications	
Nitrogen Purity	98.0+%
Installation	Wall Mount (TL-450) / Floor Standing (TL-1050)
Display	Hours / Run / Standby / Filter Alarm / BlastOff™
N ₂ Storage Pressure	60-75 PSIG
Cabinet Port Connections	1/2" NPT Female
Electrical	110V or 220V / 50-60Hz / 1Phase; 20 Amp Breaker
Compressor	Integral / Oil-Free
Ambient Temperature	40° to 90°F
Noise Level (dbA)	< 80 dbA
Size	12.68" W x 10" D x 29.5" H (TL-450 Cabinet Dimensions) 26" W x 18" D x 59" H (TL-1050 Cabinet Dimensions) 15.1" OD x 50" H (Separate 100# Tank for TL-450)
Weight	84 lbs (TL-450 without tank), 265 lbs (TL-1050), 75 lbs (Separate 100# Tank for TL-450)

3.3 SYSTEM OPERATIONS

The system has two standard run modes – Run and Standby. When the power switch is turned on, the controller will automatically determine which mode to enter and will display the current mode on the screen – “**RUNNING**” or “**STANDBY**”. The layout of the controller can be seen below.



Figure 1: Controller Display

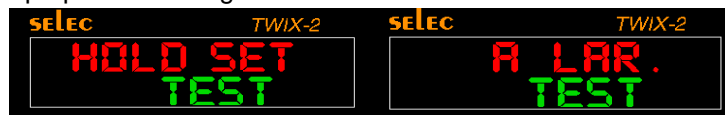
System Status

“Run” mode is when the N2-Gen® Arc Suppression System is producing nitrogen and feeding it to the storage tank. The system will automatically enter “Standby” mode when the tank is fully pressurized (65-75 psig). It will remain in “Standby” mode until the tank pressure falls 7-10 psig.

System Mode

- **BlastOff® Simulation (5)** – Hold the (Set Button) for 7 seconds Passcode Screen will pop up,
 1. Press the (Set Button) one time to activate data entry, Enter (6557) using the (Up and Down Buttons)
 2. Press the (ENT Button) to confirm the entry.

It will bring (HOLD SET) Screen, to simulate the Blastoff, press and hold the Set Button for 5 seconds this will simulate the Blastoff and trip the alarm dry contact in the unit (if installed) for 2 seconds so that proper functioning can be confirmed.



- **Filter Change Reset (0)** – When a new FRP (Filter Replacement Kit) is installed, the 1000-hour filter change time must be reset. After replacing the filter elements, press and hold the Filter Change Reset Button (Down Button) for 7 seconds. An audible beep and a display of “**FILTER RESET**” will confirm that the time is reset and filter alarm will be reset. (Note: resetting this will also trigger the Customer Alarm Relay for one second if it’s available).

- **Communication**

(1) (Modbus RTU)

Modbus (RTU) is optional feature our generator offers to our customer to monitor the unit from BMS (Building Management System).

MODBUS communication can be set up to retrieve real time data. The nitrogen generator

MODBUS Communication settings are as follows:

- Protocol: RTU
- Slave ID: 1
- PLC Controller: Slave
- Bud rate: 119200
- Data Bits: 8
- Parity: none
- Stop Bits: 2

See MODBUS addressing table below:

Function	Data Type	Modbus RTU Address	Units/Status	Read/Write
Running / Standby	BOOL	00012	0=Standby, 1=Running	R
BlastOff Alarm	BOOL	00015	0=Good, 1=Alarm	R
Filter Alarm	BOOL	00029	0=Good, 1=Alarm	R
Filter Reset Confirm	BOOL	00031	0=Good, 1=Alarm	R
Filter Hours	Register	40019	xxxxx.x / hours	R

(2) Analog output (4-20 OUT)

Another useful and optional feature of (FPS) Reliable System units an analog signal output (4-20 mA) for current readings of different data points as follow:

- (i) Ambient temperature "4-20 out dEGr.F"
- (ii) Oxygen content (percent) "4-20 out p.CEnt"
- (iii) Oxygen content (ppm) "4-20 out trACE"
- (iv) Supply Pressure "4-20 out prEss"

To setup the analog out:

- 1) Hold the (Set Button) for 5 seconds Passcode Screen will pop up
- 2) Press the (Set Button) one time to activate data entry, Enter (6557) using the (Up and Down buttons)
- 3) Press the (ENT Button) to confirm the entry.

It will bring (Hold Set) Screen, press (NEXT) button to get to the analog output screen "4-20 out", Using the (up and down buttons) buttons to change type of sensor, to confirm press (Set button). To exits menu press (Next button) to get back to main screen "running or standby".

Note: For analog output standard units (without advanced options) only will offer ambient temperature signal, check appendix A.

4 PRODUCT INSTALLATION

4.1 UNPACKING AND PREPARATION

The N₂-Gen[®] Arc Suppression System TL-450 system's cardboard carton should be carefully opened and all parts should be inspected for damage upon receipt. For the N₂-Gen[®] Arc Suppression System TL-1050 system, a wooden crate is used for shipping and should be opened on the side noted on the crate. Identify and verify that all parts listed on the packing list are present and undamaged. South-Tek Systems (STS) is not responsible for damages that have occurred during the shipping and handling of the N₂-Gen[®] equipment. Any visual damages should be immediately documented and reported to the shipping company responsible. Then, contact STS at (888) 526-6284 to assess the damages only after the shipping company has been notified.

Until Installation:

- Store the N₂-Gen[®] TL Generator in dry and climate controlled (60-80°F) room.
- Always keep the N₂-Gen[®] TL Generator in an upright position or in box as shipped.
- Do not connect the power cable until this manual has been read completely and all connections are made as stated within.
- Keep all gas lines dry so moisture does not enter generator upon hookup.
- Never place or stack objects on top of the N₂-Gen[®] TL Generator.

To remove N₂-Gen[®] TL-1050 from crate, unbolt cabinet from the crate. Carefully, lift unit from the crate and set it on the floor. Use a floor jack to move it to the final location. Once in place, unbolt the 4 colored bolts at the bottom of the cabinet.

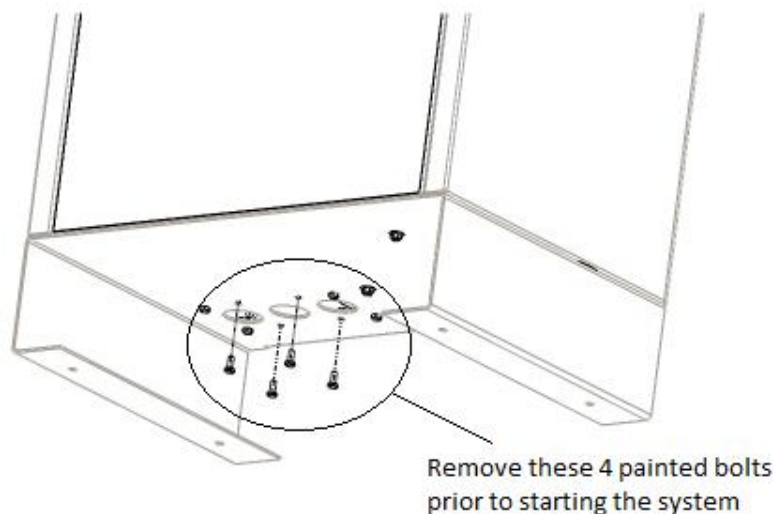


Figure 2: Shipping Lock Bolts

Carefully break down the crate and store in a safe location in the case that the generator may need to be sent back to the factory for service.

4.2 ELECTRICAL REQUIREMENTS

The N₂-Gen[®] Arc Suppression System requires 110 or 220V / 50-60 hz / 1ph connection. Voltage was selected at time of PO. Refer to serial number and UL info label for your voltage. It has a built in 20A circuit breaker and a standard 3-prong US power cord is provided for the electrical connection. The system is UL 508A ICP approved. Electrical schematic available upon request.

4.3 INSTALLATION

It is necessary to use caution when working with pressurized gas, making sure that all fittings and gas lines are installed correctly. Always leak check (see **Checking for Leaks** section) every line before using the system.

Note: Line leaks will cause the N₂-Gen[®] Arc Suppression System to run excessively, shortening its life and putting excess wear on the compressor.

The installation layout drawings are provided with your system in the documentation package of the system. For electronic copies, please contact your local distributor. Review and make sure the setup installation is followed per the installation layout drawings. Ensure that you follow the correction installation drawing per your system's design.

If your system requirements are more complex, please consult your sales representative or equipment installer for more detailed installation instructions.

4.3.1 Installation (For TL-450)

The N₂-Gen[®] Arc Suppression System TL-450 can be mounted to a wall or placed on a floor. It is recommended that the N₂-Gen[®] Arc Suppression System TL-450 be mounted to a weight-bearing wall that can support its weight as specified in 3.2 Specifications. If placed on the floor, it should be fastened in place so that it cannot move due to vibration or become damaged from falling over. The N₂-Gen[®] Arc Suppression System should always be installed indoors in an environment between 40° and 90° F in the upright position where it will not be damaged by water or moving equipment. Leave at least 6" on the left side of the cabinet for ventilation, but 36" is recommended for access to the control panel, tube/pipe connections, and the front cover. There is a ¼" OD tube drain port on the bottom right of the cabinet. This can be plumbed to the nearest site drain.

There is an optional mounting bracket kit (STS Part #: A05-TYP1-RD), that allows you to mount the system on a standard 16" wall stud width. Otherwise, use the mounting holes on the cabinet for mounting the N₂-Gen[®] Arc Suppression System directly to the wall.

Optional Mounting Bracket Kit Procedures

1. All N₂-Gen[®] Arc Suppression System mounting holes and optional mounting bracket holes are for ¼" screws/anchors.
2. All brackets must be installed in orientation as shown in **Figure 3** to work correctly.
3. Install the cabinet-mounting brackets on the N₂-Gen[®] Arc Suppression System first with the bolts/lock nuts that are provided.
4. Locate the wall-mounting bracket. It is an 18" bracket without the rectangular cutouts and will need to be installed on the wall at the desired height and level. The bracket has 16" center to center holes so

the unit can be mounted directly to studs (if studs are not 16" see step 5 before proceeding). This bracket will need to be mounted per the diagram below as appropriate for your type of wall material (wood, sheet metal, masonry, etc....). See diagram as to how the angles are to be oriented on the back of the cabinet versus the wall.

- a. Use the supplied nuts and bolts to attach the upper 12" bracket onto the top flange per the diagram.
 - b. Use the supplied carriage bolts and nuts to attach the 18" lower bracket to the bottom flange, but do not overtighten the nuts. After installing the system, you may want to offset the bracket slightly, hence the rectangular slots.
5. Optional: if wall studs are not 16" center to center or you have the need to reinforce mounting area, a 1/2" or thicker plywood is recommended to be installed prior to hanging the system. Use best general practices to ensure that the wood and system will be secure at its full weight and remember that it will be vibrating from compressor running.
 6. Once the mounting brackets are all in place, hang the N₂-Gen cabinet from the top bracket making sure it is centered.
 - a. The cabinet should have at least 4" on either side for breathing/cooling purposes.
 - b. Do not install near heat source or where steam or water is present. Damage to system or bodily harm may result as well as voiding warranty.

Warning: Secure the N₂-Gen[®] Arc Suppression System to the wall at the top and bottom flanges. Failure to do so could cause damage or bodily injury.

Item #	STS Part #	Description	Qty
1	TL-450	N ₂ -Gen TL-450 Nitrogen Generator	1
2	800-133	S-100/200 12" Mounting Bracket	1
3	800-134-B	S-100/200/400 18" Mounting Bracket	1
4	800-129	Type 1 Lower Wall Mount Bracket	1
5	Misc	0.250" -20 x 0.750" Carriage Bolt	2
6	Misc	0.250" -20 x 0.750" Hex Cap Screw	2
7	Misc	0.250" Nylock Nut	4
8	Misc	0.250" Flat Washer	2

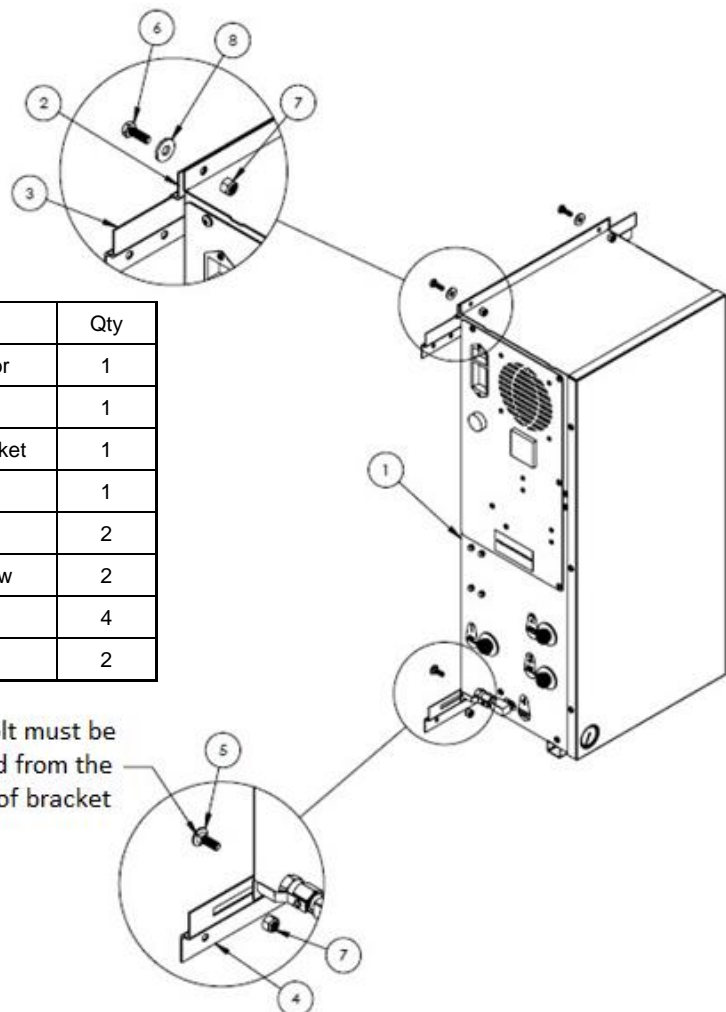


Figure 3: TL-450 Wall Mounting Diagram

Revision Date: 06/19/20

4.3.2 Installation (For TL-1050)

The N₂-Gen[®] Arc Suppression System TL-1050 must be installed on a flat level hard surface as there are no wall mount options available. Anchoring to the floor is not required (unless by local code). Make sure there is clearance room on the top for N₂ gas connection, clearance room on the left side for access to the panel, and clearance room on the front for maintenance access.

See **Figure 6** for dimensions and overall connections to the system.

4.4 PANEL LAYOUT AND GAS CONNECTIONS

See figures below for panel layout and gas connections. Double-check all connection locations before turning on the system or opening any valves. Note: All N₂-Gen[®] Arc Suppression System models are factory equipped with 1/2" NPT Female connections. For TL-450 Layout See **Figure 4**. For TL-1050-Layout, see **Figure 6**.

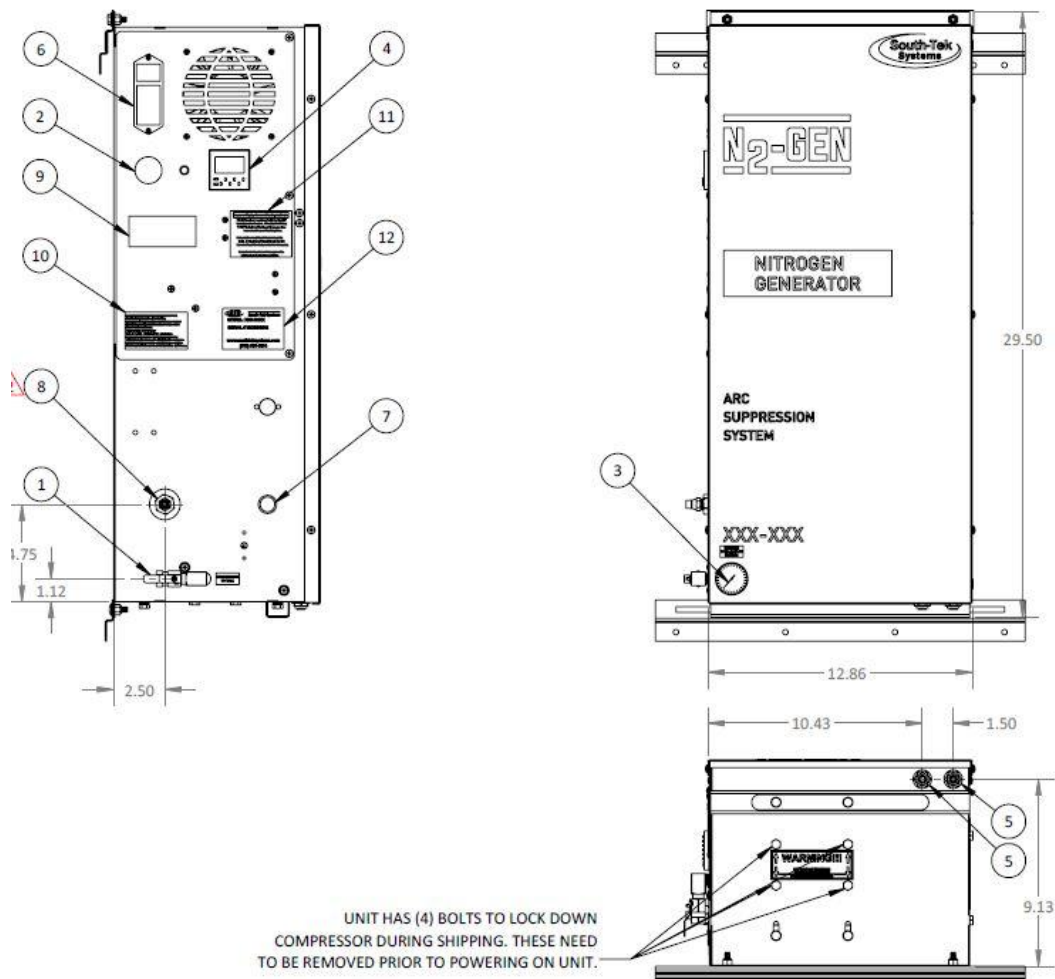
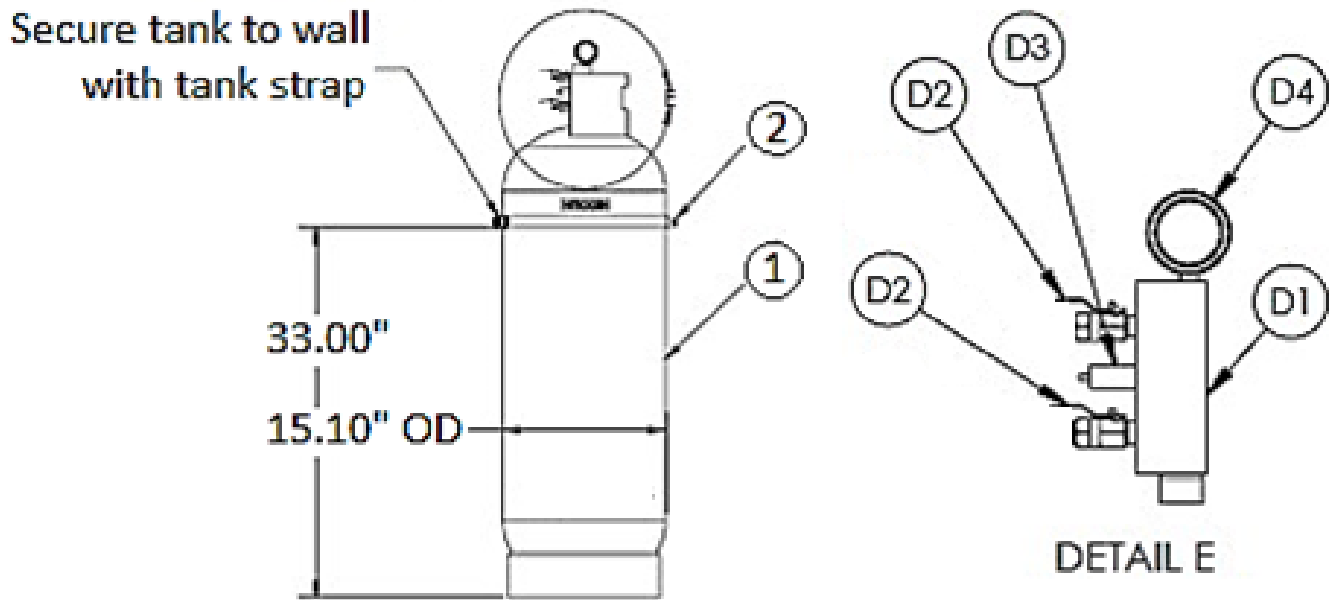


Figure 4: TL-450 Panel Layout

External Components		
Item #	Description	Service
1	1/4" NPT Ball Valve	N ₂ Out
2	Audible Buzzer	Audible Alarm
3	1/8" NPT x 1-1/2" 100 PSIG Gauge	N ₂ -Storage Pressure
4	PLC	System Controller
5	1/4" OD Through-Wall Coupling	1/4" OD Drain
6	Power Entry Module, 20 Amp	System Main Power Connection
7	Knockout for 3/8" Conduit	External Wiring Connections
8	1/4" OD PTC	Low Pressure Alarm



Item #	STS Part #	Description	Qty
1	800-111-FPS	100# White Tank w/ Label	1
2	A01-0100-A	100# Tank Strap Assembly	2
3	005-039	Tank Manifold w/ 0.250" Fittings	1

Item #	STS Part #	Description	Qty
D1	800-245-A	Tank Manifold	1
D2	124-308	0.250" NPT M x F Ball Valve, Brass	2
D3	124-335-A	0.250" Safety Relief, 115 PSIG	1
D4	124-125	0.250" NPT x 02.000" 1-160 PSIG Gauge	1

Figure 5: 100# N₂ Storage Tank Setup for TL-450

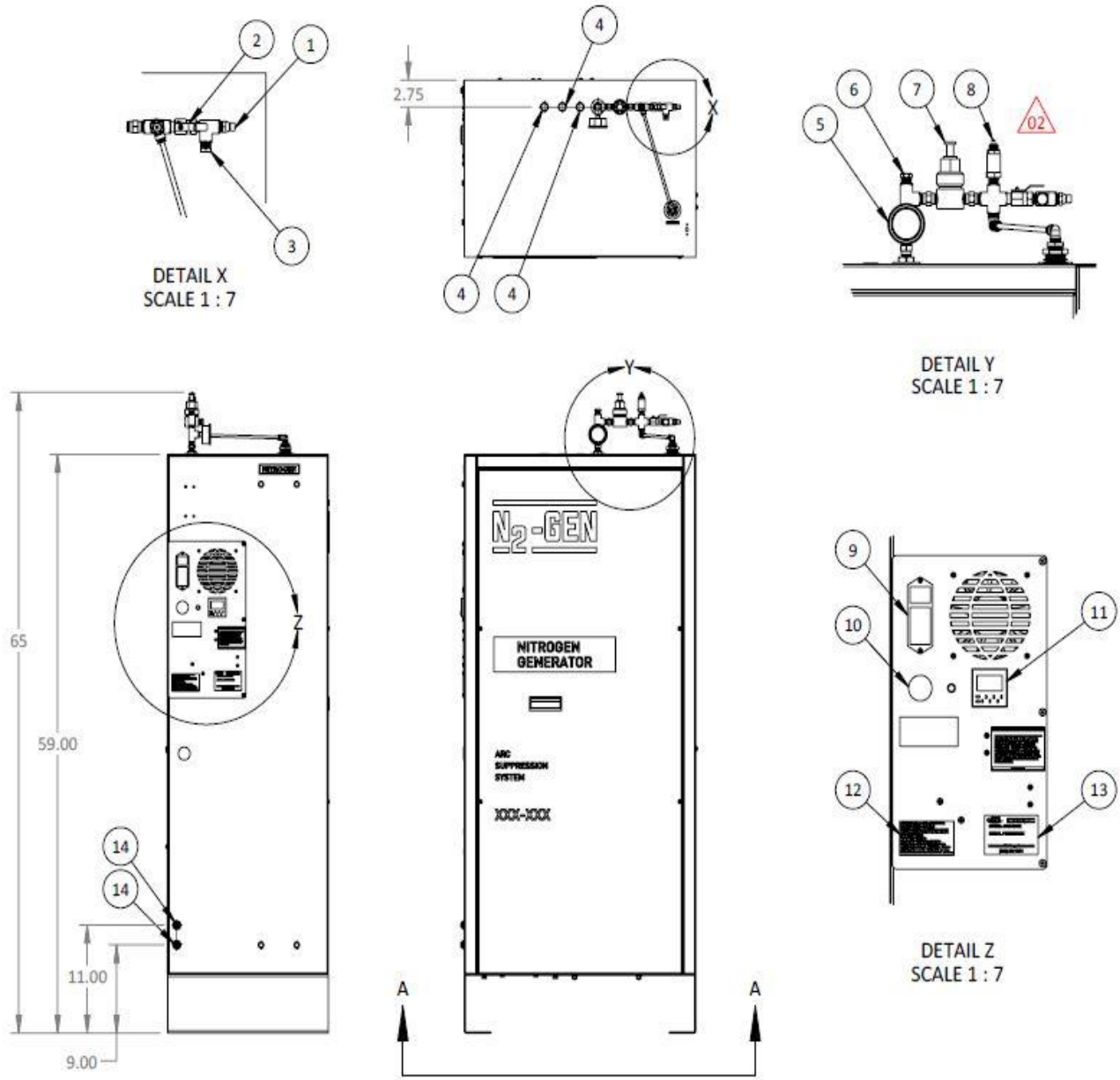


Figure 6: TL-1050 Dimensions and Connections

External Components		
Item #	Description	Service
1	¼" OD PTC Straight	Nitrogen Out
2	¼" NPT Ball Valve	Nitrogen Flow Shut Off
3	¼" NPT Plug	Option for Additional TL Lines
4	3/8" Conduit Knockout	External Wiring Options
5	0-160 PSIG Gauge	Internal Nitrogen Storage Tank Pressure
6	¼" NPT Plug	Inlet for High Pressure Backup Cylinder
7	¼" Regulator	Nitrogen Pressure Control
8	¼" 15 PSI Safety Relief Valve	Over Pressure Protection
9	15 AMP Power Entry Module	System Power Supply
10	24V Audible Alarm	BlastOff Alarm Component
11	PLC	System Controller
12	Electrical Panel Specifications Label	
13	Unit Serial Number Label	
14	¼" OD PTC Bulkhead	Internal Components Drain Lines

4.5 START-UP PROCEDURES

1. Once all connections are complete and leak checked, power on the nitrogen generator and open the nitrogen outlet ball valve to the storage tank. The air compressor will turn on and start to fill the nitrogen storage tank. The control panel will also display "Run" in green indicating the system is in run mode.
 - a. If you hear a leak or have a bad connection, turn the system off, isolate the leak, and fix it prior to turning the system back on.
 - b. If there is a leak within the unit, remove the cover and locate the issue. If replacement parts are needed, only use factory parts supplied from your distributor or South-Tek Systems. Consult the factory if there are any questions.
2. Once the N₂-Gen[®] Arc Suppression System fills the 100# storage tank to 70 PSIG, the system will enter standby – the system's controller will illuminate "Stdby" in amber indicating that the system is in standby. When in standby mode, the compressor will stop running and the production of nitrogen will stop.
3. When you draw N₂ off the system and the tank pressure falls below cut-in pressure (approximately 62 PSIG), the pressure switch will trigger the system back into run mode and start recharging the storage tank. The pressure switch is preset at the factory – no field adjustment is required.

4.6 CHECKING FOR LEAKS

When a leak is suspected, first try to listen for leaks and/or spray with soapy water around the connection ports. If a leak is found, isolate the area and relieve any pressure on it prior to working on it. Fix the leaking part and return the system back to operation. If no leak(s) is heard (or visually seen with the soapy water), turn off the unit and try isolating sections to see if there is a pressure loss. If the leak causes the N₂ generator to run for four consecutive hours the BlastOff system will alarm indicating that there is a leak in the line. Consult with your installer if you cannot locate the leakage area.

To determine if the leak is within the Generator to the N₂ Storage Tank:

1. With the unit powered on, close both ball valves on the N₂ storage tank. Note the storage tank pressure.
2. Keep the system running. Within 10 minutes or less, the system should reach the “Standby” mode.
3. Wait for 5 minutes and if the system remains in “standby” mode, then the leak is after the N₂ Generator. Read the N₂ storage tank pressure and if the pressure has changed, the leak is within the storage tank fittings. If the N₂ storage tank pressure did not change, check the pipe lines in the building for leaks.
4. If the unit goes back into “run” mode, the leak is within the cabinet. Check all the lines going to the blender and back to the tank.

To find the leak within the TL-1050 cabinet:

1. Open the front cabinet door and locate the N₂ storage tank.
2. Close 2 ball valve on the nitrogen storage tank (on the red manifold attached to the top of the tank).
3. Watch the exterior gauge above the cabinet and interior pressure gauge above the nitrogen storage tank for 60 seconds.
 - a. If the exterior pressure is falling, the leak is somewhere after the nitrogen storage tank.
 - b. If the interior tank pressure gauge is falling, the leak is somewhere before the tank.
 - c. Feel and/or listen for leaks and fix them once found. If the pressure is not dropping go to the next step.
4. With the unit still running, close off the input ball valve to the tank (lower ball valve on the red manifold).
5. Within 5 minutes, the system should go into “Standby” Mode. If it doesn't, contact your local provider/installer for further assistance.
6. Once in “Standby” mode, wait 60 seconds. After 60 seconds, the system should remain in “standby” mode. If it doesn't, the leak is somewhere between the check valve and the output ball valve on the tank.
7. If the system remains in standby, contact your local provider/installer for further assistance.

4.7 ACCESS CONTROLS

The built in controller is fully programmed to function without requiring the user to input any values. Do not attempt to modify the program or the warranty will be voided. In case of program failure, first attempt to cycle the power to the system. If that does not work, please contact your provider for further instructions.

4.8 STARTING THE SYSTEM

To start the system, turn on the power switch and make sure any valves to the gas lines are in the open position.

4.9 STOPPING THE SYSTEM

To stop the system, close off any valves on the gas lines. Powering down the system is not necessary. If emergency shut off is required, turn off the power switch located on the control panel on the side of the nitrogen generator.

5 SYSTEM USAGE

5.1 INSTRUCTIONS

The N₂-Gen[®] Arc Suppression System is intended to be used to generate nitrogen, and provide nitrogen for the transmission lines. Follow the installation instructions above and only use in an approved environment. The generator produces enough nitrogen to maintain zone pressure requirements. Please consult with your local provider for questions not answered in this manual.

The system is design for 24 hour operation, but routine maintenance on the filters must be performed. See section “System Maintenance” for detailed maintenance instructions.

5.2 ALARM NOTIFICATION

Filter Alarm:

All N₂-Gen[®] Arc Suppression Systems come standard with a “Filter Alarm” notification. The controller will display “F Alm” message in red when the filter change is overdue. It is recommended that the filters be changed once every year or every 1000 hours, whichever comes first. See section “System Maintenance” for detail maintenance instructions.

BlastOff™ - Leak Detection System Alarm

The BlastOff™ - Leak Detection System detects line leaks within the downstream gas lines from the N₂ Generator to the TL lines. Line leaks could be due to pin-hole leaks in the pipe lines, loose fittings, faulty connection, etc. These leaks are potential safety hazards, can cause the nitrogen to deplete quickly, and cause your N₂-Gen[®] Arc Suppression System to run in excess (decreasing the life of the unit).

Once a leak has been detected, the BlastOff™ is set to initiate a buzzer and displays “**BLAsstoff 9H.Run**” in red and green on the controller screen until the problem is corrected. To reset the BlastOff™, simply turn off the N₂-Gen[®] Arc Suppression System and turn it back on.

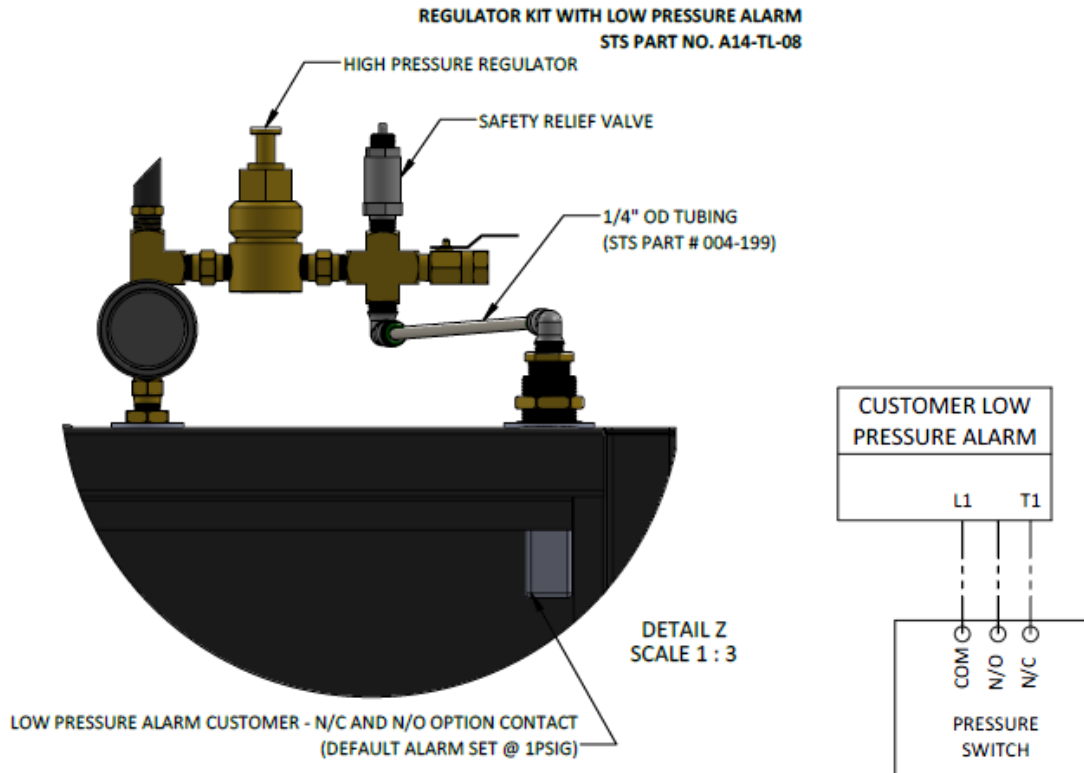
Never reset repeatedly; if the BlastOff™ goes off daily, there is a real potential issue. Consult your installer for a solution. The label below will be on the system if factory installed.

Buzzer and Red Light Warning

This unit is equipped with **The BlastOff™ Leak Detection System**. If the red light and buzzer are on, you may have a leak in one of the gas lines. Note: To reset alarm, turn power off and close the nitrogen tank valves. Turn the power back on. If the unit goes into “Standby” mode and shows an orange light, the generator is operating properly and you have a leak downstream. Correct the leaks and resume operation. Contact your distributor or the mfg. as necessary. This is a safety feature designed to provide a safer operating environment and to prevent equipment damages or failure

5.3 LOW PRESSURE ALARM

The TL Series comes equipped with a low pressure alarm that will provide an alarm contact for when the system is below a certain pressure (default factory setting = 1 PSIG). The alarm will reset when the pressure reaches 1 PSIG above the set point.



6 SYSTEM MAINTENANCE

Whenever doing any maintenance to the system, make sure to power down the system. Remove the front cover to gain access to the filters.

Annual Filter replacement kit part # [FRP-007](#)

Air Pre-Filter

The integrated Air Compressor has an air intake pre-filter. It is designed to prevent particles from entering into the compressor housing and damaging internal components. This filter needs to be replaced once per year or every 1,000 hours, whichever comes first. To do so, remove the pre-compressor filter cap by twisting it clockwise. Remove the old element and use a clean dry cloth to clean the filter bowl before installing the new element.



Figure 7: TL-450 Air Intake Filter Change

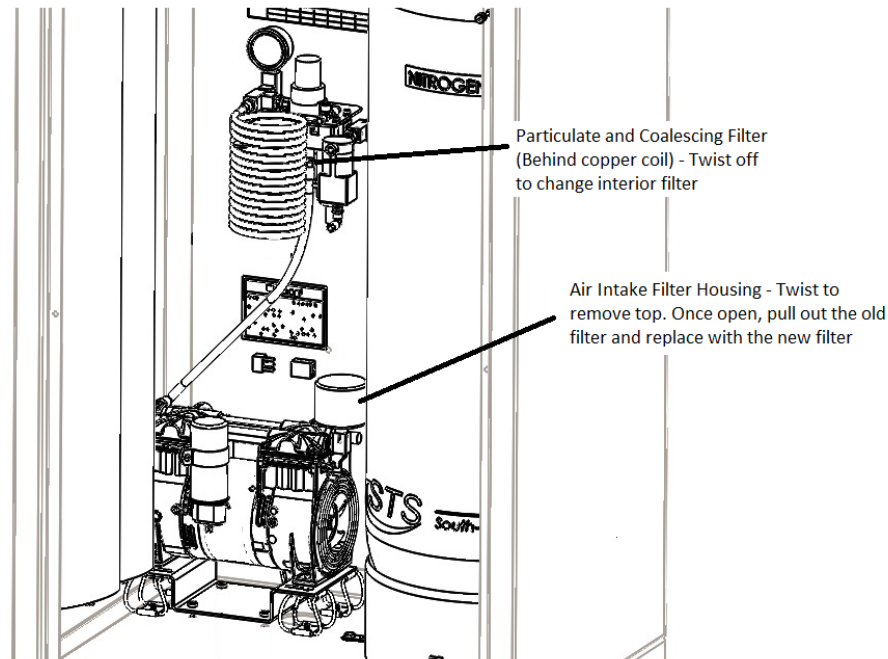


Figure 8: TL-1050 Filter Change

Particulate and Coalescing Filter

The particulate and coalescing filter after the air compressor is designed to capture particulate and moisture prior to entering the rest of the system. These filters need to be replaced once per year or every 1000 hours, whichever comes first. To do so,

1. Make sure there is no pressure on the filter bowls. The gauge after the filter bowl will read 0 PSIG to indicate that there is no pressure on the bowl.
2. Unscrew the filter bowls by turning them counter clockwise.
3. Once the filter bowls have been removed, rinse any debris out of the bowls with warm water.
4. Dry the bowls with a clean dry cloth and replace the old O-rings with the ones provided in the kit.
5. Using a Philips-Head screwdriver, remove the particulate element and replace.
6. The coalescing element can be removed by turning it counter-clockwise with your hand, then replaced with the new element in the reverse order.
7. Once both elements have been replaced, bowls have been cleaned and O-rings replaced, the bowls can be screwed back into their corresponding filter housings.

Once all the filters have been replaced, press and hold the Filter Change Reset Button (Arrow down Button) for 7 seconds. An audible beep and a display of "FILTER RESET" will confirm that the time is reset and filter alarm will be reset. (Note: resetting this will also trigger the Customer Alarm Relay for one second if it's available) (See: 0 System Operations)

7 KEY CONTACTS

Contact your local provider/installer with any questions pertaining to the performance and/or maintenance of the system.

8 FAQs

8.1 POWER ISSUES

If the N₂-Gen[®] Arc Suppression System does not have power, the lack of production and storage of nitrogen will become apparent once the storage pressure drops.

1. Check the power cord
2. Has the building's circuit breaker or GFCI tripped? Locate the breaker and reset. If breaker continues to trip, the circuit may be overloaded.

8.2 PRESSURE ISSUES

The N₂-Gen[®] Arc Suppression System will produce and store nitrogen at 70 (+/-3) psig. Once the storage tank reaches 70 (+/-3) psig, the system will go into Stand-By Mode. When the pressure drops by about 7-10 psig, the system should go into Operation Mode and begin to refill the storage tank. If the system is out of these specifications contact the manufacturer or factory trained technician to diagnose the issue.

Nitrogen Pressure Check:

Look at the pressure gauge on the top of the cabinet. It should be between 50 and 80 psig. If the pressure is low, a few things need to be checked.

- Check the power.
- Check leaks throughout system. Refer to section "Checking for Leaks".

8.3 GAS LEAKS

As with any gas system, only use a spray bottle on non-electrical equipment to find leaks. Fix or replace leaking fittings or old hoses. Push-to-connect fittings will show bubbles and typically have up to a 5ccm acceptable leakage rate. Contact your local provider/installer for help.

8.4 BLASTOFF™ - LEAK DETECTION SYSTEM

"There is an alarm sounding in the N₂-Gen[®] Arc Suppression System and the control panel has "BLAsstoff 9H.Run" illuminated on the side panel of the unit."

If you hear the alarm and the "BLAsstoff 9H.Run" is displayed on your unit, it means that it is equipped with "The BlastOff™ - Leak Detection" feature. If the buzzer is on, there may be a leak in one of the lines, regulators, or one of the fittings may not be properly seated, causing line leaks. **Note:** Turn off this unit's on/off power switch and check for leaks. If none are found, leave the unit turned off and contact your local technician. Once the leak has been fixed, turn the nitrogen generator back "On" to resume normal operation. By turning the system power off, then back on, this will reset the BlastOff™ automatically.

APPENDIX A: ADVANCED OPTIONS

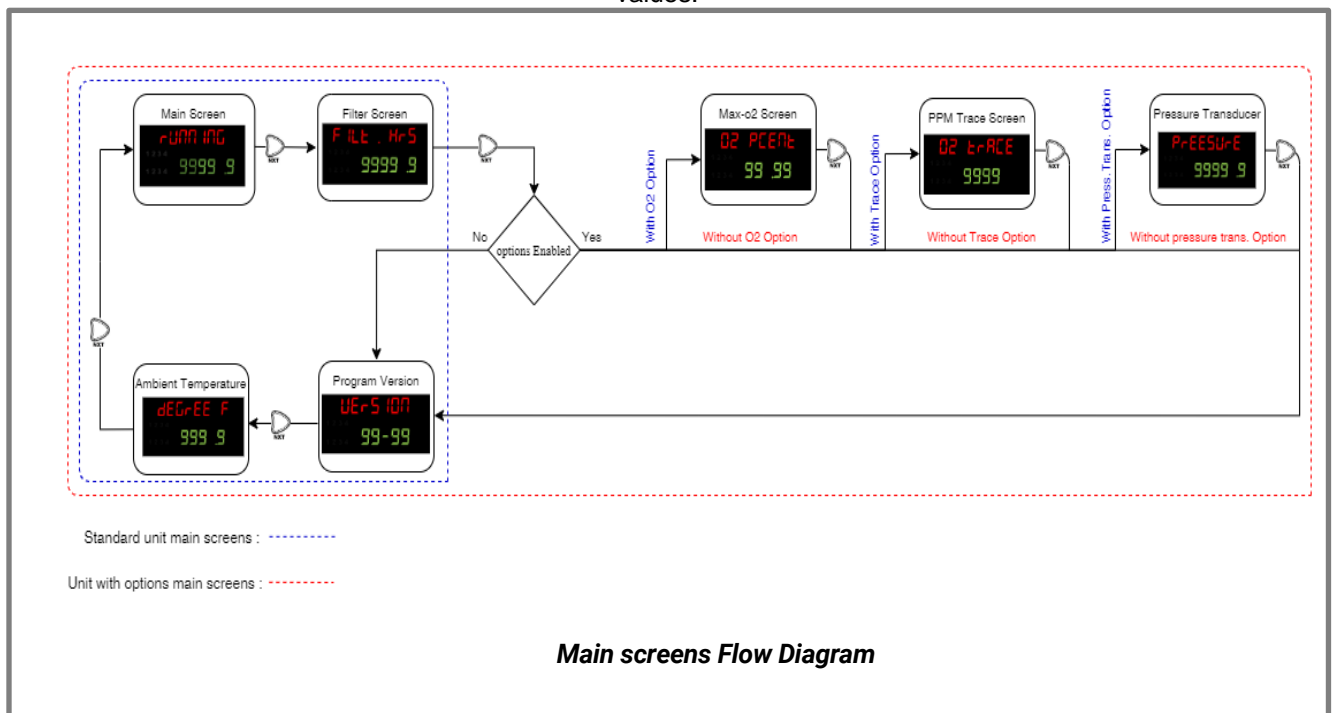
An advance options can be added to the TL systems upon the customer request, such as:

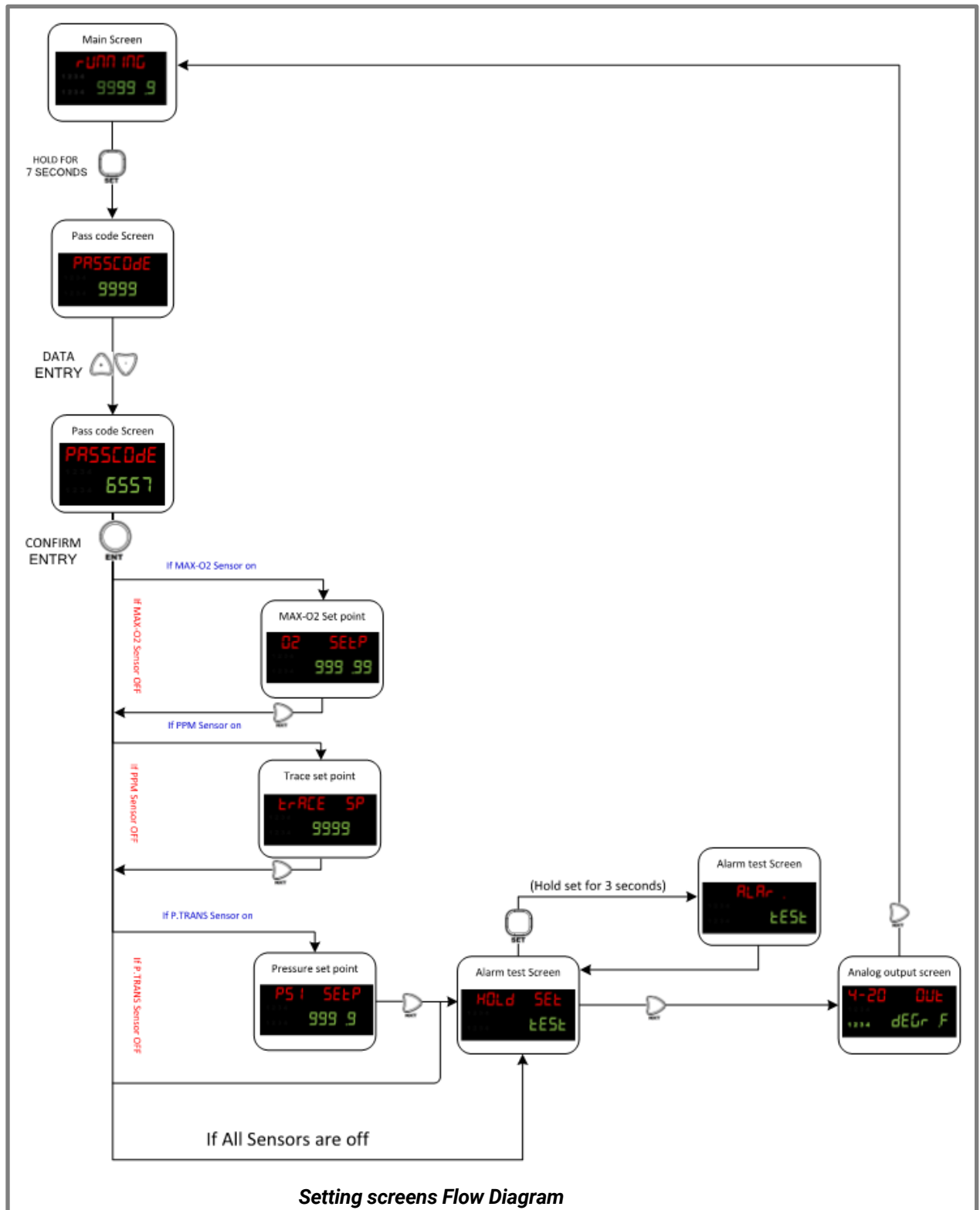
1. Oxygen analyzer - to monitor the oxygen content in the system, with the ability to add set points and alarms to trace the oxygen content in system and maintain the purity of the nitrogen gas.

There is two sensor options for this feature:

- Max O₂% (100% Range sensor) "O₂ PCENT"
 - PPM Trace (Parts per Million sensor) "O₂ TRACE"
2. Pressure transducer "PRESSURE" - to have more control of the unit cut-in and cut-out pressure, pressure set point and low pressure alarm.

An extra screens will be added automatically to main screens for each sensor, and show the current values.





If any of these sensor start alarming an alarm screen will start switches at intervals of 1 second to the current display and it will trigger the buzzer and common alarm contact.

Modbus (RTU) Table for optional sensors:

Function	Data Type	Modbus RTU Address	Units/Status	Read/Write
High oxygen Alarm (Percent)	BOOL	00108	0=Good, 1=Alarm	R
High oxygen Alarm (PPM)	BOOL	00117	0=Good, 1=Alarm	R
Low Pressure Alarm	BOOL	000165	0=Good, 1=Alarm	R
Pressure cut-in	Double integer	40144	<u>xxx.x</u>	R/W
Pressure cut-off	Double integer	40146	<u>xxx.x</u>	R/W
Current pressure	Double integer	30139	<u>xxx.x</u>	R
Current oxygen(percent)	Double integer	40294	<u>xxx.xx</u>	R
Current oxygen(PPM)	Double integer	30119	<u>xxxxx</u>	R

Note: all these options can be added all at once on same unit, for more information contact one of our sales team member.

APPENDIX A: WARRANTY

The N₂-Gen[®] Arc Suppression System is warranted against any defects in workmanship and materials for 12 months (or 1000 hours) from the date of shipment from South-Tek Systems, whichever comes first. The purchaser has the liability to ensure that the system is fully inspected upon delivery and shall contact the appropriate shipping company to make any claims on damaged goods due to transit within that shipping company's policies. If the system is received with defects that are not due to shipping, a written claim should be submitted to South-Tek Systems within 1 week of receiving the shipment. South-Tek Systems can deny all other claims at their discretion.

All warranty work shall be done at a South-Tek System facility or at a N₂-Gen[®] Arc Suppression System Authorized Service Center. Only factory trained and authorized personnel are covered under warranty. Any part that is returned / repaired / replaced under warranty may be remanufactured or changed to a different specification at the factory's option. Any work performed by an unauthorized person/company or usage of non-factory parts, may void all warranties to the product.

Any item not manufactured by South-Tek may carry its own warranty from its manufacturer and will be warranted by that manufacturer. All parts that need to be returned should be announced. Any item(s) that is returned to South-Tek Systems without a return material authorization (RMA) number may be denied and returned to the sender. Contact the factory for RMA numbers, prior to return shipment.

South-Tek Systems is not liable for damages caused by normal wear and tear, water, fire, erosion, corrosion, explosion, misuse, oil/gas vapors or unauthorized modifications. South-Tek Systems is also not liable for any losses (including CO₂), damages, or cost of delays, including incidental or consequential damages. There are no warranties or guarantees, expressed or implied, including the warranties of merchantability or fitness for a particular purpose or use, other than those warranties expressed herein.

For Claims, contact South-Tek Systems LLC at:

Tel: 1-(888)-526-6284

Email: service@southteksystems.com

Or write to:

South-Tek Systems, Warranty Claims, 3700 US HWY 421 N. Wilmington, NC 28405.

-----Last Page-----