



# CO<sub>2</sub> GENERATOR

## 4 BURNERS

### IMPORTANT:

Read and understand this entire instruction manual before attempting to install and operate this unit. Failure to do so could result in personal injury and/or property damage.

### TECHNICAL SPECIFICATIONS

Power Requirements	400 ma @ 24V DC
Number of Burners	4
Burner Material	Brass
BTU Rating	Propane: 9,052 Natural Gas: 10,908
Cubit Ft CO <sub>2</sub> per Hour	11
Pressure	Propane: 11" WC/2.8 kpa Natural Gas: 4.5" WC/1.15 kpa

Note: High Altitude Generators have a reduced BTU Rating and CO<sub>2</sub> Output of approximately 15%.

### PROPANE OR NATURAL GAS:

There are 2 types of LTL Controls 4 Burner CO<sub>2</sub> Generators available, those for Propane and those for Natural Gas. Both generators come with the correct regulator and hose, along with pre-installed, clean-burning brass burners. Both units are equipped with features like a safety tip-over switch, which automatically turns off the unit if it tips over or falls, and an electronic ignition, which eliminates the open pilot flame.

### Liquid Propane

Liquid Propane (LP) is stored in various sized pressurized tanks. The supplied LP regulator is designed to connect directly to portable LP tanks and MUST be used. The propane gas supply to the generator must be regulated to a very low pressure of 11" WC or ½ PSI. Large outdoor propane tanks may be used, as long as the gas pressure is 11" WC.

### Natural Gas

Natural Gas (NG) is provided from a major pipeline directly into homes or businesses. The NG supply to the generator must be regulated to a very low pressure of 4.5" WC or ¼ PSI. Because the incoming gas pressure from these pipelines can vary from less than ¼ PSI to more than 5 PSI, the provided regulator MUST be used to ensure proper pressure regulation.

Please Note: WC = inches of water column, a standard measuring unit for low pressures.

**WARNING: Installation and connection of gas lines must be in compliance with local and national building codes. Consult your local authorities for detailed requirements.**

### INSTALLATION:

Determine the best location for the generator. It must be hung level, in an area that is adequately ventilated.

**WARNING: In spaces without proper ventilation CO<sub>2</sub> levels can accumulate and become toxic (levels above 5,000 PPM). Plants benefit from levels up to 1,500 PPM. Levels above 2,000 PPM can cause headaches and/or feelings of being ill.**

The generator requires an unrestricted flow of air through the bottom, and therefore must be hung. DO NOT set the generator on top of anything such as a table, stand, etc. Select an overhead support, such as a ceiling joist, to hang the generator from. The unit must have a minimum of 20" of space between it and any other obstructions. Use the included hardware (20" chain, screw hooks, and S hooks) to securely hang the generator.

## INSTALLATION CONT'D:

1. Install the screw hooks into the overhead support. Use the S hooks to secure the chain to the unit and the screw hooks. Bend the S hooks so that they are secure.
2. Verify that the generator is hanging level. The generator has a safety feature (the tip over switch) that will turn off the burners if the unit tips over or falls. The switch is like a pendulum and will turn off the unit if it is not level.
3. Verify that the gas supply and the regulator being used match the type of generator you are using (LP or NG).
4. Securely tighten the gas connection with 2 wrenches using the included 12' hose. Connect one end to the flare fitting and the other end to the provided gas regulator. Verify the connection is secured safely.
5. Pressurize the gas line after connections are verified. Use soapy water and a spray bottle to check for leaks by spraying it onto the gas connection fittings and watch for bubbles. If bubbles appear, re-secure the connection and repeat the process.
6. Using the included power supply, connect the unit to a controller or timer that will determine the amount of time and how frequently the generator will operate.

**Note:** This generator requires 24V DC power. It should only be operated with compatible controllers or timers.

7. The ignition module and firing sequence are activated by the main power switch located on the side of the generator. The generator has power and is in operation if the green Power On indicator light is on.

**Note:** DO NOT TURN ON THE GENERATOR. After the unit has been successfully installed, read the Start Up Procedure to ensure safe and proper use of the generator.

**WARNING: A spark is produced from a pair of electrodes near the tip of the brass burners to ignite the gas. Keep foreign objects away from the electrodes.**

## START UP PROCEDURE:

After successfully completing the installation, follow these steps...

1. Verify the power switch is OFF and the unit is NOT plugged in.
2. Verify there are no foreign objects or loose packaging materials on the inside of the unit.
3. Make sure nothing appears to be damaged or out of place.
4. Check and confirm the gas connections are properly connected.
5. Pressurize the gas lines by opening any of the shut off valves on the gas supply. Test for gas leaks and verify that there are none.

6. Make sure there are no objects within 20" of the surface of the unit.
7. Plug the 24V DC power supply into a 120V power source. Then connect the small power cable to the power inlet jack on the generator.
8. Turn the power switch ON. The green LED light should illuminate.
9. The ignition module will attempt to ignite the burners. The yellow Pilot Valve On LED indicator light should illuminate.
10. If the burners fire, continue to the next step. If this is the first time using this unit or the LP tank has been replaced recently, the burners may not fire on the first attempt. After a 30 second pause, the generator will attempt to re-fire the burners again for 15 seconds. This cycle will repeat a maximum of 5 times.

**Note:** The generator should fire before the 5th attempt, however if it does not the generator will activate the Lock Out procedure and the Lock Out Error LED will illuminate. If this happens, turn off the generator and wait for 5 minutes for the gas to dissipate. After the gas has dissipated, turn the generator back on to try again.

**Note:** If starting the generator for the first time or after recently replacing the LP tank, make sure to "purge" the gas line of any air to ensure gas is flowing to the burners.

11. Once the burners fire, look under the unit and confirm the flame is blue and consistent, and resembles a flower or a 6 point star.

**WARNING: Power the unit off IMMEDIATELY if the flame appears yellow, excessively large, or blue but small.**

If the flame appears yellow or too large, verify the correct gas supply is being used and that the supplied gas regulator is being used. High pressure or incorrect gas type may increase flames to dangerous heights.

If the flame is blue but appears small, verify the correct gas supply is being used (if LP, verify the tank level is not low) and that the supplied gas regulator is being used. Low pressure or low LP tank may cause small or "lazy" blue flames.

12. After the generator has been tested at full capacity, connect it to a compatible controller or timer.

**WARNING: The 4 Burner Generator produces almost 11,000 BTUs of heat at full capacity. Verify the area around the generator is not getting too hot for the surroundings.**

## HIGH ALTITUDE MODELS:

Both the Propane and Natural Gas generators are available in High Altitude and Low Altitude models. The Low Altitude brass burners have been designed to operate correctly at an altitude between sea level and 4,500 Ft of elevation. If you are at an altitude higher than 4,500 feet, do not use the Low Altitude model if yellow flames are visible.

If you are using the High Altitude model, the burners are designed to run leaner so that the lower oxygen level will not affect the proper and complete combustion of the fuel. As a result of the leaner burner calibration, the High Altitude models produce a 15% lower BTU Rating and CO<sub>2</sub> output than the Low Altitude models.

The High Altitude models can be used at lower elevations (as low as 2,500 ft) as long as the burners are igniting properly. If you plan to use the High Altitude model at lower elevations, first ensure that all burners are lighting correctly and consistently before use.

**WARNING: Always verify that the burners are operating correctly.** Burners burning very yellow indicate a rich condition, or possibly low oxygen levels. Burners that do not consistently ignite could be clogged or may not be receiving enough gas pressure. A burner that burns almost invisibly with a clean blue-white flame is operating correctly.

## ELECTRONIC IGNITION CONTROL MODULE:

For safer operation, this generator has an Electronic Ignition Control Module which eliminates the "open" pilot flame. The module creates a spark that lights the burners, providing consistent and controlled starts. The dual redundant solenoid valves are controlled by the ignition controller. This makes the LTL Controls Generators twice as safe as a single solenoid generators.

## LED INDICATORS:

There are 3 LED indicator lights located on the side of the generator near the power switch.

**Main Power On** - When lit, this LED indicates the 24V power supply is connected and the generator is powered on.

**Lock Out Error** - When flashing, this LED indicates that the ignition controller shut off the solenoid valve and the generator is locked out and will not operate until power has been shut off and then turned back on. For more information on why this occurs, review the Start Up Procedure.

**Pilot Valve On** - When power is applied, the electronic ignition module will begin to provide a spark for 15 seconds while the "pilot" solenoid is energized. The LED will remain lit while the solenoid is activated and should be lit during operation.

## FAQ:

### Should there be a gas smell in the area?

NO. Turn off the gas supply immediately. Do not turn on any electrical devices. Ventilate the area by opening vents, doors, or windows. Leave the area until the gas smell is no longer present. Once ventilated and the gas smell is gone, determine where the leak is by using soapy water. Spray the soapy solution on the gas connections and watch for bubbles. Bubbles will appear if the connection(s) are leaking. Seal the leaks. If this does not correct the problem, consult your retailer.

### The power is connected but the generator is not working and no indicator lights are on.

The "tip over" switch may have been activated. Tilt the unit to one side and listen for a clicking noise. The switch is like a pendulum and will turn off the unit if it is not level.

### The burners are not lighting but the unit is trying.

If the burners do not fire during the first attempt, the generator will try again. After a 30 second pause the unit will attempt to re-fire the burner(s) for 15 seconds. This cycle will repeat a maximum of 5 times. After 5 unsuccessful attempts, the module will lock itself. The LED light next to Lock Out Error will be illuminated. Verify that the spark is being generated and the position of the sparking electrodes is close enough to the burner to be lit. Review the Start Up Procedure for other possible explanations.

### One or more of the burners is not lighting.

Make sure the gas line is not kinked or twisted and the gas supply is adequate. Do not operate if yellow or large flames are present. If using propane, turn off the gas regulator for 30 seconds, and then try again.

### The CO<sub>2</sub> level is not increasing to my desired PPM level.

If all burners are operating, check for air leakage in the grow area and confirm that exhaust fans are not operating when CO<sub>2</sub> is being produced.

### Should the generator be buzzing and / or sparking?

Yes, when the unit is firing you will hear "sparking" sounds. It will attempt this up to 5 times, before going into lock out mode.

### The indicator light beside the "Lock Out Error" is flashing.

The unit may be out of propane or the gas supply may have been interrupted. The safety mode or Lock Out Error is an automatic built-in feature that will activate if the pilot does not fire after 5 attempts. Once the problem has been corrected, turning the power off for 30 seconds and then back on will reset this function. It will also reset itself after 20 minutes and attempt to ignite the burners.

# **If the information in this manual is not followed exactly, a fire or explosion may result causing property damage, personal injury, or loss of life.**

Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

Installation and service must be performed by a qualified installer, service agency, or the gas supplier.

## **WHAT TO DO IF YOU SMELL GAS**

- Do not try to light any appliances.
- Do not touch any electrical switches and do not use any phones within the building.
  - Open doors or windows to ventilate the area.
  - Immediately call your gas supplier outdoors.
- If you cannot reach your gas supplier, call the fire department.

### **Limited Warranty**

DL Wholesale Inc. doing business (collectively DL) warrants that for a period of three years from the date of purchase, this product will be free from defects in material and workmanship. DL, at its option, will repair or replace this product or any component of the product found to be defective during the warranty period. Replacement will be made with a new or remanufactured product or component. If the product is no longer available, replacement may be made with a similar product of equal or greater value. This is your exclusive warranty. DO NOT attempt to repair or adjust any electrical or mechanical malfunctions on this product. Doing so will void this warranty and may cause serious injury/death/damage.

This warranty is valid for the original retail purchaser from the date of the initial retail purchase and it not transferable. Keep the original sales receipt. Proof of purchase is required to obtain warranty performance. DL dealers, distributors, service centers and retail outlets selling DL products do not have any right to alter, modify or in any way change the terms and conditions of this warranty.

This warranty does not cover normal wear of parts or damage resulting from the following: negligent use or misuse of the product, use on improper voltage or current, use contrary to the operating instructions, use contrary to any and all applicable local, state, provincial or federal laws, disassembly, repair or alteration by anyone other than DL or an DL authorized service center. Future, the warranty does not cover: Acts of God, such as fire, flood, hurricanes, tornadoes, nor Acts of War or Acts of Terrorism.



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