



# **GREEN APU**

## **AUXILIARY POWER UNIT**

**User Manual**

**&**

**Warranty Information**

For Green APU – Auxiliary Power Unit

Your comfort powered by GREEN APU



## Trademarks

Green APU

## Exclusion for documentation:

Unless specifically agreed to in writing, Green APU LLC makes no warranty as to accuracy, sufficiency or suitability of any technical or other information provided in its manuals or other documentation; assumes no responsibility or liability for injury, losses, damages, costs or expenses, whether special, direct, indirect, consequential or incidental, which might arise out of the use of such information. The use of any such information will be entirely at the user's risk.

## Revision information

## Contact information

411 W. Factory Road

Addison, IL 60101

Toll Free: 877-751-0686

[www.greenapu.com](http://www.greenapu.com)

Congratulations on your purchase of your new Green APU! The Green APU consists of a powerful yet efficient Perkins/Caterpillar diesel engine along with a revolutionary HVAC system to maintain comfort. With over 15 years in the transportation industry we designed it especially to save you money, keep you warm, and keep you cool. Fuel usage is reduced significantly while allowing the driver to enjoy all of the comforts that are usually associated with idling the engine, by eliminating the need for the truck's engine to idle. You can avoid up to \$25,000 in fines because of idling regulations in multiple States.

#### Warranty and registration

All components of Green APU carry a 12 month warranty accompanied by a two year 2,000 hour warranty on the Caterpillar/Perkins diesel engine. At the time of purchase your dealer will have completed the warranty registration card. A copy of that card has been submitted to us while the original is yours. This is completed register you into our warranty system. The warranty begins on the date of purchase. Please retain a signed copy of your warranty registration card in order to verify your warranty. If you did not receive a copy, or if your copy has been destroyed or misplaced, you should contact your dealer to obtain a new one.

**IMPORTANT!** Without registration, your Green APU is not covered under warranty. It is important that you have a copy of your registration card.

GREEN APU SERVICE WARRANTY CARD AUXILIARY POWER UNIT	
NO.	Owner's Name
Date of purchase:	Manufacturer: Green APU LLC Toll Free: 877-751-0686
Dealer's Name:	
Buyer Signature	Seller Signature

## Safety

This safety tip alone cannot eliminate all hazards that can occur. Pay close attention to instructions and use common knowledge during maintenance procedures to prevent unnecessary accidents and/or injuries.

### **Warning!**

**Hazards or unsafe practices could result in injury and/or death.**

## Exhaust

It is responsibility of the user to make sure unit is turned completely off while parked in enclosed space (garage car port etc.)

Persistent inhalation of exhaust fumes may cause serious injury and/or death. Anyone suffering from carbon monoxide inhalation should be removed from the area and given immediate medical attention.

## Fuel/Batteries

Exercise extreme caution when working near fuel or fuel filled equipment. Do not operate equipment during fueling operations. Always use eye protection at all times. Remove contaminated clothing immediately and wash contaminated skin. Do not inhale vapors.

## Toxic substances

Fuel, oil, coolant and refrigerant are toxic and in some cases carcinogenic. Wear eye and hand protection at all times. Remove contaminated clothing immediately and wash contaminated skin. Do not inhale vapors.

## Hot and moving parts

Moving parts can cause severe injury and/or death. Before working on any unit, shut it off and then ensure that the power is disconnected from the truck batteries.

### **Important**

If the power is not disconnected the unit could automatically start up. This could cause serious injury

The Green APU is designed to provide electricity and climate control for vehicles in normal on-road conditions. Never use the APU to provide power for sensitive electrical or medical equipment without written consent from Green APU

The manufacturer warrants each new Green APU unit heater, air conditioner or part to be free from defects in materials and workmanship under conditions of normal use and service for a period of 1 year from date originally put into service.

The manufacturers' obligation under this warranty shall be limited to repairing or replacing, at its option, any part or parts of said unit found to the manufacturers' satisfaction to be defective.

#### I. GENERAL CONDITIONS

A) No unit is guaranteed to maintain a specific temperature output or cab temperature since many variables in installation and geographical location affect this output.

B) Many system failures are the result of poor installation practices (e.g. lack of proper hose routing). Failures resulting from installation are not covered.

C) Green APU LLC reserves the right to make design improvements without any obligation to change units or parts previously manufactured.

D) Green APU LLC retains the right to inspect faulty parts at its factory and determine whether such parts are defective. No materials should be returned to Green APU LLC without prior written permission.

E) In no event shall Green APU LLC be liable for consequential damage or contingent liabilities including, without limitation, such things as damage to vehicles contents or product cargo or expenses incurred arising from failure of any part of any unit or parts thereof to operate properly.

F) Alterations or modifications, in any form to a unit or parts thereof, shall nullify and void this warranty. The only exception is a modification with the express written approval of Green APU LLC.

#### II. COMPONENTS LIMITATIONS

A) Warranty coverage on receiver/driers is limited to leaking or desiccant breakdown only.

B) No warranty is offered for compressor mounting brackets or related parts used to attach the compressor to the drive belts lack of proper maintenance. The materials are used at the risk and option of the installer.

#### III. WARRANTY REPAIRS

A) Warranty repairs must be done by an approved technician by Green APU LLC adhering to all applicable regulations.

#### IV. WARRANTY CLAIMS

A) Warranty claims should be submitted through original installer.

B) For full warranty consideration, claims and parts (parts returned transportation prepaid) must be submitted within 60 days of date repaired.

C) Warranty claims will be paid based on the most current settlement schedule released by Green APU LLC. No allowance will be made for mileage, travel time, down time, or related expenses.

This warranty becomes invalid when a unit or component has been discontinued and has been out of production for a period of 12 months.

This warranty supersedes all previous warranty policies expressed or implied and frees the manufacturer of any other obligations or liability including consequential incidental damages. The manufacturer will not assume or allocate the assumption of any other liability in connection with the sale of units or components.

#### ALLEGED DEFECTS NOT "CONSIDERED" AS WARRANTY

##### BLOWER MOTORS/ RADIATOR

##### FAN MOTOR

- Bent or alter flange, bent shaft, brackets altered
- Dismantled, rusted, weather-beaten
- Burned out due to electrical problems
- Improper installation/ stripped threads
- Wires cut off at motor housing

##### COMPRESSORS

- Stripped threads/ Bent or cracked fittings
- Compressor contamination
- Bent/ cracked shaft
- Evidence of being dropped
- Altered, disassembled or missing parts
- Seized due to improper service installation
- Abuse or improper service install
- Fittings/ ports not capped before returning
- Wires cut off

##### CONDENSER

- Broken, stripped threads or bent fittings
- Damage to fins due to abuse
- Screw hole in line due to improper installation
- Leakage at seam/ joint due to bending fitting

##### CONTROL VALVES

- System contamination
- Stripped threads

##### ELECTRICAL COMPONENTS

- Burned up due to electrical problems
- Improper application installation
- Altering or changing parts to fit application
- Part broken due to abuse or force

##### EVAPORATOR CORES

- Broken, stripped threads or bent fittings
- Plugged orifice (CCOT) tubes
- System contamination
- Damage to fins

- Screw hole in line due to improper installation
- Bent fitting line causing leakage at seam/ joint

#### EXPANSION VALVE

- System contamination in part
- Broken off capillary line or pinched line
- Stripped threads
- Part tampered with on heat setting

#### HEATER CORES

- Broken or bent tubes
- Damaged fins
- Improper application installation

#### HOSE (Refrigerant, Duct, Tubing, Sleeve)

- Damage due to battery acid
- Damage due to excessive heat or low temperature
- Improper hose routing allowing cutting of hose
- Damaged by moving parts

#### FITTINGS

- Stripped threads
- Part altered or modified

#### RECEIVER/ DRIER/ ACCUMULATOR

- Bent or broken lines, stripped threads
- System contamination
- Improper application installation
- Damage due to abuse
- Part modified to fit application/ altered
- Brackets cut off
- Flushing through part
- Stripped threads

### **Owner's Responsibility**

As the engine owner, you are responsible for the required maintenance listed in your User Manual. We require that you retain the original purchase documents and all receipts covering maintenance of your engine.

Please be aware that we may deny warranty coverage if your engine or a part has failed due to neglect, abuse, improper maintenance, improper installation, and/or unapproved modifications.

As the owner, you are responsible for presenting your APU to an authorized service facility as soon as a problem occurs. The warranty repairs should be completed in a reasonable amount of time.

Keep all maintenance records, dates, receipts, and parts used for all warranty claims. You may be asked to provide all maintenance records and parts used for the warranty to be effective.

Inspecting your equipment daily will help keep your APU working for a long time. Dirt and debris in the heat and air conditioning bunk blower unit or condenser oil will cause unsatisfactory heating and cooling. Please keep these clean at all times. Never block access to bunk unit filter or air ducts.

When filing a warranty claim or ordering parts, you have to know:

- Serial number and hours on APU
- Part number and part description

### **Warranty procedure**

Obtain a work order number from Green APU LLC and report the unit serial number and hour meter reading, to determine warranty coverage.

Report failed parts and obtain a RMA number (return material authorization) please email [g.tom@greenapu.com](mailto:g.tom@greenapu.com) or contact Green APU LLC

Any part subject to warranty must be returned to **Green APU LLC at 411 W. Factory Road, Addison, IL 60101** for warranty inspection. Claim hours are as follows: Monday-Friday 8:00AM-4:00PM.

All returned parts must be accompanied with an RMA number, unit serial number and total hours. If the RMA number is not attached you will not be credited for any returned parts. A credit card is required to be on file for all part orders (to ensure failed parts are returned). All warranty ID non-transferable.

To maintain a positive relationship, we will make sure all warranty claims are handled in a timely manner.

Engine, APU parts, and Labor are warranted for 2 years or 2,000 hours, whichever comes first.

The following parts only carry a one-year warranty:

- A/C Compressor
- Condenser
- Expansion valve
- Condenser Fan
- Evaporator
- Heater core
- Water valve assembly
- Blower motor
- Engine Wiring Harness
- Green APU Controller

SRT time has been established on all replacement parts and will be paid accordingly.

This warranty only covers defective parts and labor, Green APU LLC is not responsible for hoses, wiring, and etc. that has been cut or has had holes rubbed in them due to lack of maintenance Green APU LLC will not be liable for state anti-idle citations.

Web Address: [www.greenapu.com](http://www.greenapu.com)

Green APU LLC  
411 W. Factory Rd.  
Addison, IL 60101  
Toll Free: 877-751-0686



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**For any service related questions call us 24 hours a day at (877) 751-0686**

## Welcome Screen

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-This is the Welcome screen. On here you will find the software version along with your Vin Code

-The Vin Code contains the following:

- First Letter: Chassis Version
- Second Letter: Engine Type
- 4 Numbers After: Green APU Unit #
- 8 Characters After: Engine Serial #
- 4 Numbers After- Week Of Year Built



-This is the Main Menu. From here you can access the Climate Control, Battery Charging, Maintenance Records, and Basic Diagnostic Tools



-To turn APU off, scroll to the bottom of the main menu and select OFF. The unit and display will turn off

## Climate Control



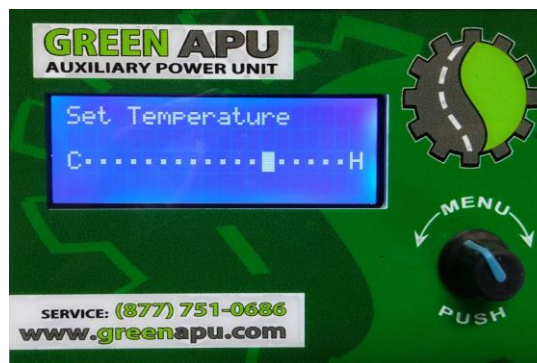
-Selecting Climate Control from the menu will start the APU. After the APU starts, the display will change to the one below.



-This display shows the current cabin temperature, set temperature, fan speed, and current battery voltage. Press the rotary knob to access the fan speed and temperature settings.



-The temperature and fan speed can be increased and decreased by the rotary knob. If H or C is selected, heating or cooling will stay on constantly. Otherwise if anything in between is selected, the APU will maintain the temperature selected. The fan can be set to one constant fan speed or to AUTO.





## Battery Charger



-When selecting the Battery Charger option from the menu, The APU will go into battery monitoring. If the battery is full, the APU will continue monitoring. If the battery is low, the APU will start and charge the battery. The APU will run for two hours, or until the battery reaches 14.6V. The APU will then automatically shut off



-To turn off the battery monitoring mode, simply press the rotary knob and select OFF



## Maintenance



-Selecting Maintenance from the main menu lets you access Service hours and lets you adjust the contrast



-The service hours displays information such as total run hours, hours on current oil, hours run on heat and A/C, and hours until oil change. When the hours to oil change (CHG) reaches 0, the APU will run for only 7 more hours. Then an error will appear and APU WILL NOT start.

-Selecting Adjust Contrast will allow you to change the contrast of the display according to preference.





## Service Timer Reset

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-To reset the oil timer, select it from the Maintenance Menu



-Enter the 2 2-Digit pin number

**-Green APU does not give individual drivers the reset pin. Either the company or Green APU will have the pin. This is to protect the APU from damage that may void the warranty**



-Once the correct pin has been entered, the oil timer can be reset

## Diagnostics



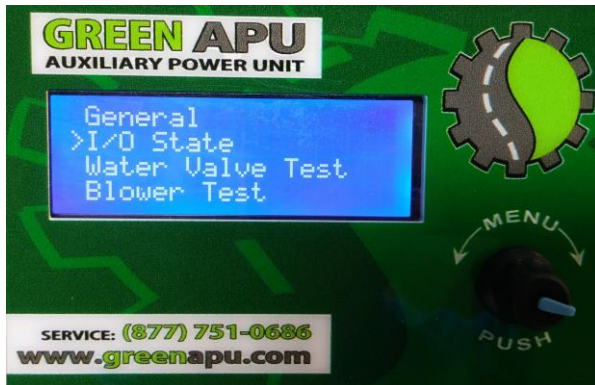
-Selecting the Diagnostic option from the menu will take you to the Basic Diagnostic Tools Menu. The Advanced Menu will be locked and only used by APU dealer mechanics



-In the General menu, you will find the current battery voltage, water temperature, and cabin temperature



## I/O State



-In the I/O State Menu you can get more detailed readings such as oil pressure, refrigerant levels, and alternator voltages. The readings are explained in greater detail below



ACHL: L – Refrigerant Pressure Normal  
ACHL: H – Refrigerant Pressure Out Of Range

OIL: 8.44V; Normal operating voltage while running  
OIL: 0.0V; Oil Pressure Low, APU will not run

ALT: 0.0V; Main engine off, APU will start  
ALT: 8.44V; Main engine on or alt sensing wire damaged/disconnected, APU will not start

OVH: 8.4V; Normal operating voltage  
OVH: 0.0V; APU overheated or faulty sensor



### Water Valve Test

-Can be used to determine if water valve is opening to allow for heating

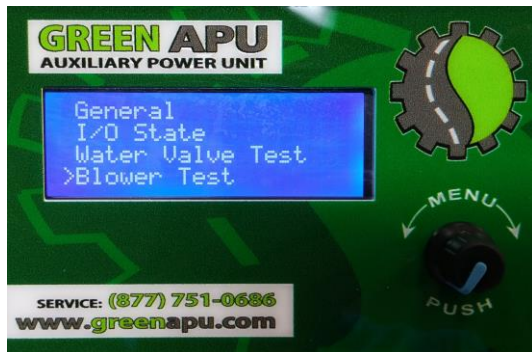


-When the Water Valve Test is selected, the water valve motor will open and close as displayed on the screen. Check to see the motor is operating at this time.



### Blower Test

-Can be used to determine operation of blower motor



-When selecting the Blower Motor Test, a display will appear and you can control the blower speed with the rotary knob. The values range from 0 to 225. As the value increases, the speed will increase. You should feel the air blow through the vents at this time.



## Troubleshooting



-This is the most common error message to appear. It can appear before engine start, after the engine check process, if the engine turns over and does not start, and if the engine is running and shuts off. DO NOT ASSUME LOW OIL LEVEL. Do not overfill the crank case. Doing so can damage the engine and void your warranty.

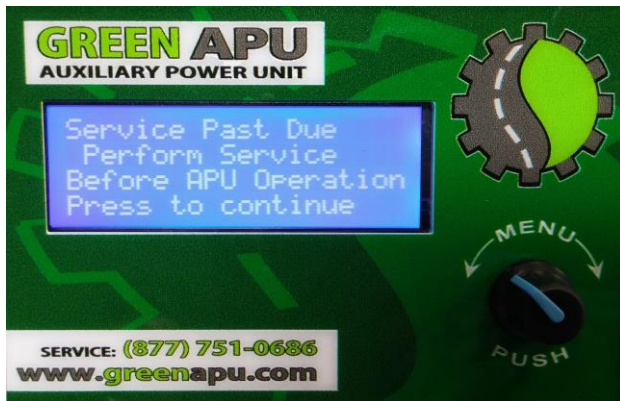
<u>Time</u>	<u>Probable Cause</u>	<u>Solution</u>
Appears Automatically	Problem With Oil Press. Switch Or Wiring	Check Wire Connections And Voltage Of Press. Sensor in I/O State Menu
Engine Starts, Shuts Off After Engine Check	Low Oil Pressure	Check Oil Level. Should Be Between Notches On Dipstick
	Faulty Press. Switch	Check Wiring And Connections And Switch Voltage
Engine Cranks, No Start	Problem With Fuel System	Check Fuel Level
		Check Fuel Pump Operation
		Check Fuel Solenoid Operation
		Check Wiring For Fuel Pump/Solenoid
Engine Runs After Check, Shuts Off	Problem With Fuel System	Check Fuel Level
		Check For Leaks/Kinks In Fuel Lines
		Check For Air Or Water In Fuel Lines
		Check Wiring For Fuel Pump/Solenoid
Engine Shuts Off After A/C Turns On	Idle Speed Low	Increase Idle Speed
	Faulty A/C Compressor	Check Clutch Operation. Take To Authorized Dealer For Service



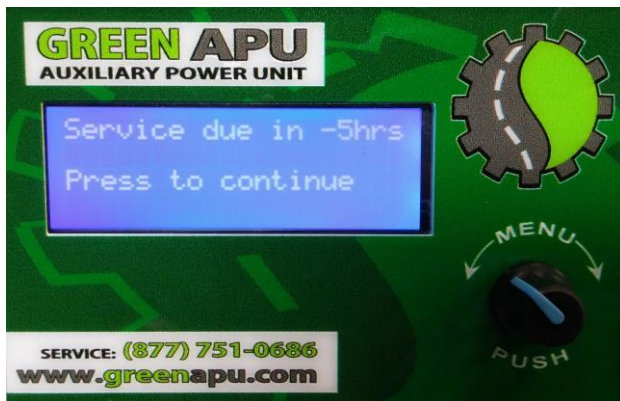
<u>Probable Cause</u>	<u>Solution</u>
Air In Cooling System	Make Sure All Air Is Evacuated From The System
Broken Alt/Water Pump Belt Leaking Or Kinked Lines	Inspect Belt And Replace If Necessary Inspect All Coolant Hoses For Kinks Or Leaks
Closed Valves (If Equipped) Faulty Temp. Sensor	Make Sure All Valves Are Open Check Water Temperature In I/O State Menu. If Temp is Under 230°F, Sensor Is Faulty
Radiator Cap Is Damaged	Check Main Radiator Cap For Leaks And Replace If Necessary
Coolant Is Contaminated	Check Condition Of Coolant And Look For Debris. Small Particles Can Clog Lines. Flush And Refill If Needed
Coolant Level Low	Check Coolant Level And Fill If Needed



<u>Probable Cause</u>	<u>Solution</u>
Alternator Sensor Wire Damaged	Check Wire Condition And Connection
Main Engine On	Turn Off Main Engine



-When this message appears, the APU unit will run for an additional 5 hours, after which it will not start to prevent damage to the unit that could void your warranty.



*Service Intervals*

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<b>Initial Service At 100 Hours</b>	<b>Oil Change</b>
	<b>Inspect For Loose Bolts</b>
	<b>Pass Blower And Water Valve Tests</b>
	<b>Inspect For Any Leaks</b>
	<b>Adjust RPM If Needed</b>
<b>Regular Service Every 600 Hours</b>	<b>Change Oil And Oil Filter</b>
	<b>Clean K&amp;N Air Filter with K&amp;N Filter Cleaner and Oil</b>
	<b>Clean APU Unit From Any Debris And Dirt</b>
	<b>Inspect All Belts</b>
	<b>Clean A/C Condenser</b>
	<b>Pass Blower and Water Valve Tests</b>



## Advanced Diagnostics

\*The Advanced Diagnostics menu cannot be accessed by individual drivers.



-In order for the Advanced Diagnostics to work correctly, the controller must be calibrated to exactly 12V



-In the Advanced Diagnostics menu, the technician is able to access necessary information and outputs of all systems in the Green APU. This makes it easy to diagnose and solve any problem that may arise with the Green APU unit.

This User Manual was made for you to better understand and help protect your investment in your brand new Green APU. Following the simple maintenance procedures outlined in this book you can rest easy knowing your unit is well taken care of so it can run at its best performance for you!

For any service related questions call us 24 hours a day at (877) 751-0686

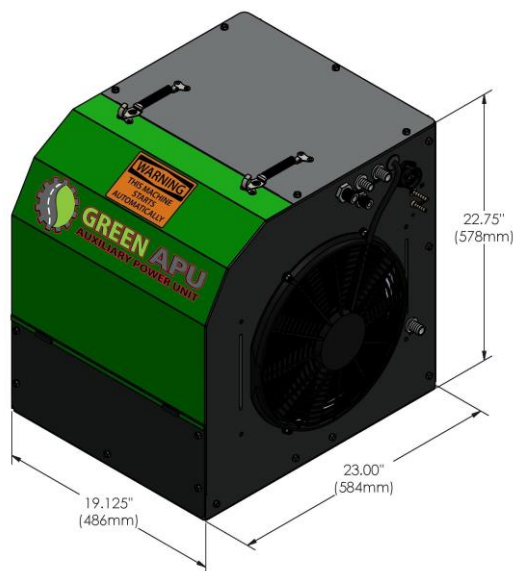
We Will Be Happy To Assist You As Best As We Can!



### *Dimensions*

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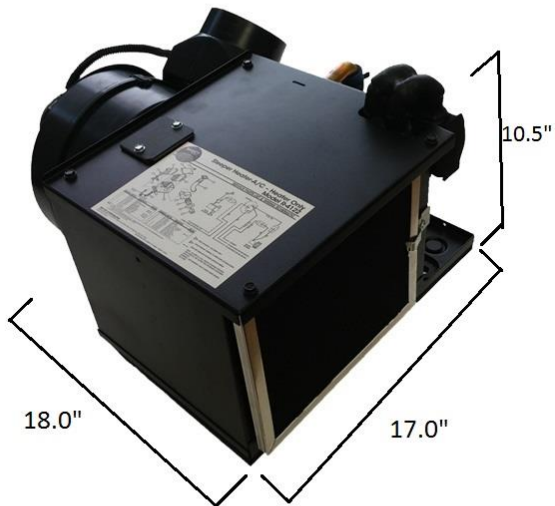
-Main Unit



-APU Controller



-Sleeper Heater-A/C



### *Heating/Cooling Diagram*

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- The Green APU uses the truck radiator as the radiator for the diesel engine in the APU. This allows the truck engine to stay warm to help engine starting.

