



HP2000 XTRME



Installation and Operator's Manual

Keeps you cool, warm and powered up!

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About Parks Industries LLC

Parks Industries L.L.C. has been in the business of designing and manufacturing auxiliary power units since 2004. We provide our APU technology to airports, military applications, emergency vehicles, trucking companies, as well as construction equipment. Our goal is to provide a quality and efficient auxiliary power unit for all of these industries.

Trademarks

HP2000

Exclusion for Documentation

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INTRODUCTION

Congratulations on your purchase of your new HP2000 / HP2000-3 *Xtreme* Series Auxiliary Power Unit! Your fuel and maintenance savings begin today! As you may already know, the HP2000 consists of a powerful yet lean Perkins diesel engine along with a revolutionary HVAC system to keep you warm, cool and powered up. With over a decade in development and on-road testing and usage, the HP2000 Auxiliary Power Unit is designed specifically for the transportation industry. It is designed and built to handle the extreme temperatures drivers' battle every day. By eliminating the need for the truck's engine to idle, fuel usage is reduced significantly while allowing the driver to enjoy all of the comforts that are usually associated with an idling engine.

WARRANTY AND REGISTRATION (REFER TO BACK PAGE WARRANTY CARD)

ENGINE WARRANTY EACH HP2000 APU PURCHASED COMES WITH TWO (2) YEAR / 2000 HOUR LIMITED EXPRESS WARRANTY.

PERKINS ENGINE WARRANTY

PERKINS GIVES A TWO (2) YEAR / 2000 HOUR LIMITED EXPRESS WARRANTY (WHICHEVER COMES FIRST) ON THE ENGINE, EXCLUDING THE STARTER AND ALTERNATOR WHICH HAS A ONE (1) YEAR/2000 HOUR LIMITED EXPRESS WARRANTY (WHICHEVER COMES FIRST). ALL PERKINS WARRANTY MUST GO THROUGH A PERKINS AUTHORIZED DEALER FOR WARRANTY REPLACEMENT. TO FIND THE NEAREST PERKINS AUTHORIZED WARRANTY REPAIR CENTER, GO TO THE FOLLOWING WEB PAGE AND FOLLOW THE INSTRUCTIONS: [HTTP://WWW.PERKINS.COM/DISTRIBUTOR](http://www.perkins.com/distributor)

EVEN THOUGH PARKS INDUSTRIES OFFERS THESE ITEMS FOR SALE, THEY CAN'T BE USED FOR PERKINS WARRANTY PURPOSES AND WILL NOT BE REIMBURSED BY PARKS INDUSTRIES, LLC. THE COMPONENTS THAT WE OFFER ARE FOR OUT OF WARRANTY REPLACEMENT ONLY AND ARE STRICTLY CUSTOMER PAY.

Even though Parks Industries offers engine components for sale, they can't be used for Perkins Warranty purposes and will not be reimbursed by Parks Industries, LLC. The components that we offer are for out of warranty replacement only and are strictly customer pay. To find the nearest Perkins Authorized Warranty repair center, go to the following web page and follow the instructions: www.perkins.com and click on "Service and Dealer Locator".

PARKS INDUSTRIES, LLC: PARKS INDUSTRIES LLC, PROVIDES A MANUFACTURE DEFECT TWO YEAR, 2,000 HOUR LIMITED EXPRESS WARRANTY (WHICHEVER COMES FIRST) ON THE FOLLOWING COMPONENTS: **A/C COMPRESSOR, CONDENSER, EVAPORATOR CHECK VALVE ASSEMBLY, AUTO CONTROLLER, CONDENSER FAN ASSY, EVAPORATOR CORE, 12V EVAPORATOR BLOWER, REVERSING VALVE ASSEMBLY, HOSES & TUBES MANUFACTURES DEFECT ONLY** . WARRANTY DOES NOT COVER: OIL, SHOP SUPPLIES, MISCELLANEOUS MATERIALS, ETC. REFRIGERANT IS ONLY COVERED IF A COVERED COMPONENT FAILS AND THE REFRIGERANT IS LOST. REFRIGERANT IS REIMBURSED AS OUTLINED IN THE SRT GUIDE. PARKS INDUSTRIES DOES NOT PAY MISCELLANEOUS SUPPLIES AND /OR HAZARDOUS MATERIAL CHARGES. MAKE YOURSELF AWARE OF THE MAINTENANCE AND CUSTOMER RESPONSIBILITY PORTION OF THE MANUAL, LACK OF MAINTENANCE AND NEGLECT ARE NOT COVERED UNDER THE WARRANTY. FOR MORE INFORMATION PLEASE SEE THE POLICY AND PROCEDURES MANUAL. FREON IS COVERED@ .69 OUNCE (29.6 OUNCES=1.85#OR \$20.42 FOR A COMPLETE FILL) ONLY IF LEAK WAS CAUSED BY MANUFACTURE DEFECT. FREON IS NOT COVERED IF LEAK IS CAUSED BY NORMAL WEAR AND TEAR. THIS IS THE ONLY WARRANTY ON THIS PRODUCT, AND PARKS HEREBY EXPRESSLY EXCLUDES ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTY OF MERCHANTABILITY AND/OR THE IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE. PARKS EXPRESSLY EXCLUDES ANY CLAIMS FOR INCIDENTAL AND/OR CONSEQUENTIAL DAMAGES.

IN ORDER FOR YOUR WARRANTY TO APPLY:

1. YOU MUST COMPLETE, SIGN, AND SUBMIT THE ATTACHED LIMITED EXPRESS WARRANTY REGISTRATION AND INSTALLATION, SERVICE AND OPERATOR'S MANUAL SIGN OFF PAGE.
2. Your Warranty Starts on the Date of Purchase.
3. You Must Promptly notify Parks of All Warranty Claims.
4. You Must Perform the Scheduled Maintenance on your APU and the Perkins Engine as Listed in this Manual.
5. You Must Bring the APU to Parks or to One of Parks' Authorized Service Centers for Warranty Work.
6. Parks Will Not Pay for Downtime or Any Consequential Damages.
7. APU(s) Must Be Installed by an Authorized and Trained Installer.
8. Warranty is non Transferrable.

IMPORTANT! Without limited express warranty registration and installation, service and operator's manual owner sign off sheet, your HP2000 is not covered under warranty. It is important that you register your APU within 14 days of purchasing and have a copy of your registration card with the unit.

MANUAL OVERVIEW

This manual covers the topics of installation, operation, general maintenance and troubleshooting for the HP2000 Xtreme and the HP2000-3 Xtreme Series APU by Parks Industries. The patented design of the HP2000 and the HP2000-3 makes it the leader in the auxiliary power unit industry. Its unique features set it apart from any other unit currently available on the market today. It provides solutions to many of the problems faced by the transportation industry on a daily basis, yet actually reduces overall costs. You will immediately notice the fuel savings produced by the HP2000. In addition, the HP2000 saves wear and tear on major truck components, cuts down on costly oil changes and increases battery life.

By following the proper installation, service and warranty procedures, your new HP2000 will provide years of comfort and service.



SAFETY

Tips and safety warnings are listed throughout this manual. These tips and safety warnings 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 injuries.



NOTICE:

- Hazards or unsafe practices could result in injury or death.
- Persistent inhalation of exhaust fumes may cause serious injury and/or death. Anyone suspected of suffering from carbon monoxide inhalation should be removed from the hazardous area and given immediate medical attention.
- Exercise extreme caution when working near fuel.
- Moving parts can cause severe injury and/or death. Before working on any unit, shut it off, and make sure that the power supply is disconnected.
- If the power is not disconnected the unit could automatically start up without warning. This could cause serious injury.
- Never use the APU to provide power for sensitive electrical or medical equipment.

SYSTEM COMPONENTS POWER UNIT

POWER UNIT

The power unit consists of the diesel engine, A/C Components and electrical controls. This unit is typically mounted on the frame rail of the truck. A/C lines, water lines, power and routed to the APU in order to provide heating, cooling and charging.

In the next section we will discuss the proper installation procedure for the power unit. Proper installation is critical in guaranteeing proper operation of the APU system. Installation will vary slightly depending on the make and model of the truck used.



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procedure for the

EVAPORATOR ASSEMBLY

The evaporator is mounted somewhere inside of your cab and provides hot or cold air depending on your needs. Typically the evaporator is mounted underneath the bunk. A/C lines and a power supply will need to be routed from the evaporator to the APU to supply heating and cooling and evaporator



control.

APU CONTROLLER (NEW AND PRIOR MODELS)

The APU controller is the brain of the APU. It is responsible for triggering the relays which power and control the APU. The commander features automatic climate control in which the user sets the temperature and the APU will heat or cool to maintain it. It will also track and manage the charging cycle for onboard truck batteries.

Please see the “Controllers” section for more detail and instruction for each control system. Controller Operation



“APU COMMANDER”

The new, touch screen APU Commander* provides all previous APU features plus several new ones.



Calendar start, storage mode, new error screens, error log, firmware updates, comprehensive fan speeds, time and date and Telematics support are just a few of the new features.

APU COMMANDER

GETTING STARTED

The APU Commander has three basic functions, Climate Control, Battery Monitor Mode and Storage Mode. To access these modes, press “Start” and select the desired mode. More details on each mode as well as other settings can be found in this section.

STOP, BACK, MORE AND SETTINGS BUTTONS

A button labeled “MORE” and “STOP” will be displayed at all times during APU operation. “SETTINGS” however, will only be displayed when the APU is in the “OFF” mode.

STOP BUTTON

At any point during APU operation, press the “Stop” button in the bottom left corner to stop the APU and return to the off screen.



BACK BUTTON

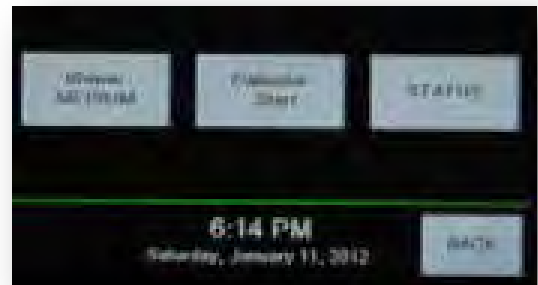
At any point during controller operation, press the “Back” button in the bottom right corner to return to the previous screen.



MORE BUTTON

Press “MORE” at any time to access Fan Speed, Fan Mode, Calendar Start or APU Status.

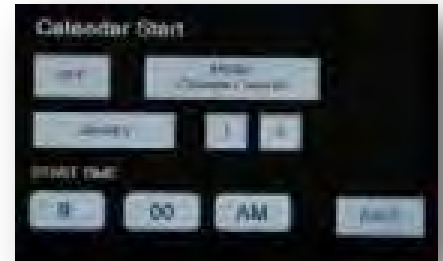
- By pressing the blower button, the blower fan settings will rotate through Low, Medium, High, Always Low, Always Medium and Always High. “Always” indicates the evaporator fan will run continuously during climate control mode, similar to a “fan on” setting in your home thermostat.
- Pressing “Calendar Start” will enter the calendar start setup screens. See the “Calendar Start” section for complete instructions.
- Press “Status” to display APU status details and access the error log. See the “Status” section for complete instructions.



CALENDAR START

Calendar start is designed to allow for the APU to start in a specific mode at a set time on any day of the year. This is a useful feature if you plan to store your truck and return to it on a specific day. Using this feature will preheat your engine, charge your batteries and, if you wish, cool or heat your cab in advance.

- Access Calendar Start settings through the “MODE” button.
- By pressing the “ON/OFF” button, you can toggle this feature on and off. Once ON the button will be green.
- Press the “MODE” button to cycle through the mode you wish to resume. Whenever activated, the setting that was last used for this feature is what will be recalled. For example, if you select “Climate Control” as the calendar start mode, and you last had climate control set to hold at 70°F, when the calendar start is initiated the temperature will again be at 70°F. This holds true for settings in the battery monitor as well as the storage modes.
- To adjust the start time and date, press each value to advance it.

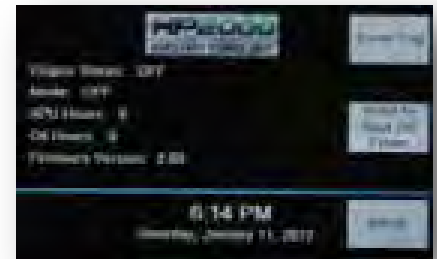


Once the calendar start operation has been performed, the calendar start feature will return to off. This prevents any unintentional starting for the next calendar year.

STATUS

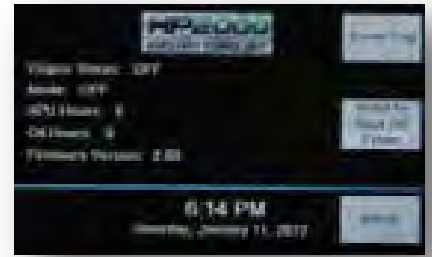
The status screen displays useful information about the current operating parameters of the APU.

- Access the status screen through the “MORE” button.
- “Engine Status” will display heating, cooling, running, or charging depending on the current function.
- “Mode” displays the function currently in use.
- “APU hours” displays the total engine hours on the APU.
- “Oil Hours” displays the number of hours since the timer has been reset and the oil has been changed.
- “Firmware Version” is displayed here. To update the firmware version see the “Firmware Update” section.



OIL TIMER RESET

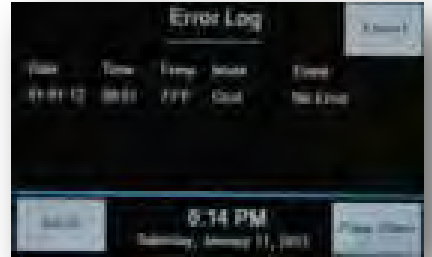
You can access the oil timer reset button through the “Status” screen. To reset the oil timer, hold the “Hold to Reset Oil Timer” button until “APU Oil Hours” goes to 0.



ERROR LOG

The error log keeps track of any error events as well as some of the external conditions when the event occurred.

The error log can be exported to a USB drive in order to have a diagnosis performed at a remote location. To do so, insert a USB memory drive into the USB slot on the right side of the controller and select “Export”. The APU will read “Done” in the top right hand corner once this is complete. Press page up and page down to navigate through multiple entries.

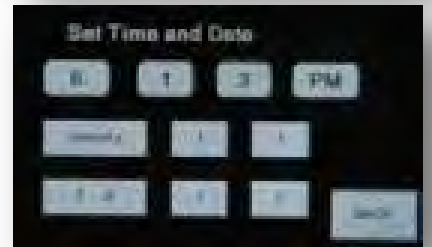
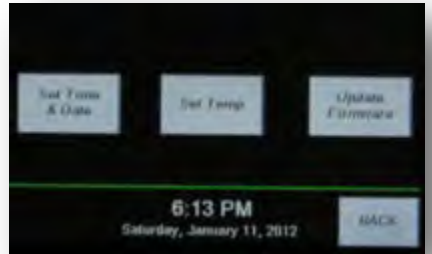


SETTINGS

The settings button is only available from the OFF mode screen. Use this page to set the time and date, set temperature units and update the firmware.

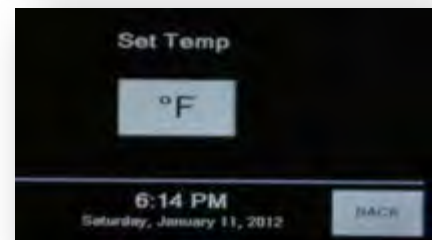
SET TIME AND DATE

To adjust the time and date, depress each value to advance it. Once you have reached the correct time and date, press “Back” to save your settings and return to the previous screen.



SET TEMP

To select between Celsius and Fahrenheit, tap the symbol to alternate it.



From time to time a firmware update may be available to add new features or offer solutions to software issues. Performing this update is simple; however it is a very sensitive process. Failure to follow these instructions carefully can cause permanent damage to the controller. Please refer to the notice supplied with the firmware release for detailed instructions on how to update the firmware. The outline below is a general outline and may not provide enough detail to complete the specific update.

Instructions to update the HP2000 Commander Firmware

1. From the Commander home screen, click on the "Settings" button in the bottom left hand corner.
2. This screen shows three buttons; click the far right button "Update Firmware".
3. It will instruct you to Insert the thumb drive and click the button on the screen to update. Insert the thumb drive into the USB slot on the right side of the controller and click the update button on the screen.

Note: When saving the files to your thumb drive, make sure you have saved them to the root directory of the thumb drive. DO NOT SAVE THEM TO A FOLDER ON THE THUMB DRIVE. If you save them to a folder, it will not update.

4. There will be an "Update Display" button and an "Update Controller" button on the screen, you must update the display first and THEN update the controller. Click the update display button.
5. Once the display has been updated, repeat this process and update the controller.
6. Once the controller has been updated, you will need to verify that the new version was properly installed. To do this, go back to the home screen (the green start button should be in the middle of the screen). From the home screen, click on the "More" button in the bottom right corner of the screen.
7. Click on the "Status" button. On the status screen, there will see a "Firmware Version" line. Contact Parks Industries for the current version of the firmware.

If you have any additional questions or need help with updating your firmware, contact:

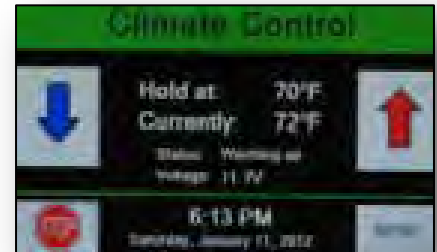
Parks Industries, LLC

618-997-9608

CLIMATE CONTROL

Climate Control mode is designed to provide heating or cooling as needed to maintain a certain set temperature. During climate control the APU is constantly monitoring the battery bank charge. The APU will run continuously to maintain a full battery charge.

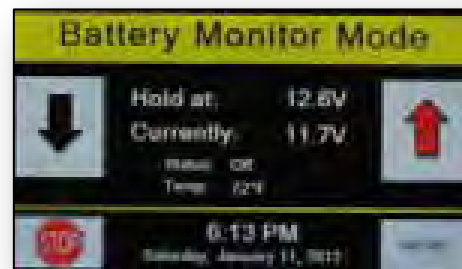
- Use the up and down arrows to select the desired temperature.
- The current temperature will be displayed at all times next to “Currently” (2014 and older units only).
- Press “Stop” at any time to stop the APU
- Press “More” to access more settings. See the “More” section for complete instructions.



BATTERY MONITOR

Battery monitor mode is used in situations where battery charging is needed but A/C or heating is not. Using this mode, the APU will maintain the battery voltage above a set point. If the voltage drops below this point the APU will provide a charge for a period of 30 minutes. At the end of the cycle the APU will begin monitoring again and provide additional charging if necessary.

- To specify the desired battery voltage, use the up and down arrow to raise or lower the voltage set point.



COLD STORAGE

Cold Storage mode is designed to keep the batteries charged and the main engine block and coolant from getting too cold in times of truck storage. With this mode, the controller allows you to set a voltage set point different from battery monitor mode and a coolant temperature separate from climate control that the APU will maintain. Both set values represent low limits and the APU will run in order to keep the two parameters above these set points.

- To adjust the low temperature limit, set the “Keep Coolant Temp Above” using the up and down arrows.
- To set the low voltage limit, set the “Keep Voltage Above” using the up and down arrows.



10-STEP INSTALLATION

INSTALLATION OVERVIEW:

Before beginning installation of your HP2000, take time to inspect the unit and the desired area of installation. If you believe you are missing a part, please consult the included checklist. Before you begin, perform an inspection of the truck and installation area. Be sure that all batteries are fully charged and in good condition. We recommend that you load test your battery bank prior to installation. Take your time to look over the area where you plan to install the HP2000 and make necessary measurements to ensure proper installation. Make sure that you have at least 21" of free frame rail space for power unit installation. Also, make sure you have the necessary space available under the bunk for the evaporator unit and cable pass through.

Before you get started, un-package your new system and all components. Inspect all components to make sure they were not damaged during shipping. Examine your truck thoroughly, both inside and out, to locate the best place to mount the APU. The diesel engine, A/C components and electrical controls are all contained in the frame-mounted power unit enclosure, which measures 23.5 inches in height, by 19.5 inches in width, by 23 inches in depth. It is important to remember that the APU location should not interfere with the driver's access to other vital areas. Also, the location you choose should not crowd any wires, air or fuel lines that may be nearby.

REQUIRED TOOLS CHECKLIST

IMPORTANT! IT IS IMPERATIVE THAT ALL TOOLS ARE AT THE TRUCK SIDE AND NOT IN YOUR TOOL BOX ACROSS THE SHOP. TO KEEP YOUR INSTALL TIME TO 6-8 HOURS, YOU MUST HAVE TOOLS AT THE TRUCK.

½" drive ratchet with 15/16" socket	Tubing cutter
15/16" wrench	3" hole saw
Hose cutter	3 ½" hole saw
4 hose clamps	Battery cable end crimper
7/16" wrench	Teflon tape
9/16" wrench	Refrigerant leak lock
Crescent wrench	Lift cart or fork truck
Channel locks	Torque wrench to tighten mounts on truck
¼" nut driver	System to vacuum and charge the A/C unit
5/16" nut driver	Shop vac
3/8" drive ratchet with 7/16" and ½" socket	1 5/8" hole saw to install controller cable
Wire ties	Cut-off wheel
Drill	R134-A Refrigerant

ADDITIONAL TOOLS MAY BE REQUIRED!

STEP 1: MOUNTING THE APU

You are now ready to install the APU. Begin by mounting the APU to the frame rail. On most installations, the HP2000 does not require any drilling into the frame rail. However, some trucks (such as certain models of Volvo trucks) do not feature a frame that allows for a simple locking device. For these installations, some drilling may be required.

- Using a lift cart or fork truck, position the APU against the frame rail in the desired location. Make sure that the APU is perfectly level with the frame rail. Check the back of the APU to insure the bolt holes align with the top and bottom of the frame rail.
- Slide the patented low-pro mounting blocks onto the top frame rail, the two blocks will mount to the bottom of the frame.
- Apply red lock tight to the thread of the mounting bolts then insert the mounting bolts and hand tighten. Install the nuts and washers from the inside of the APU.



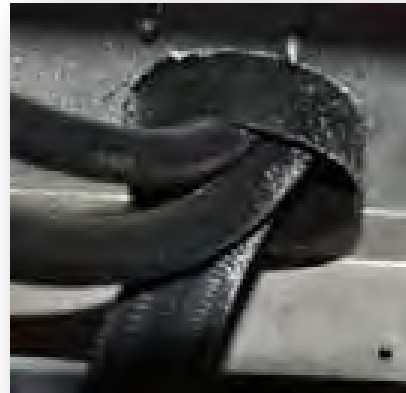
MAKE SURE THAT THE MOUNTING BLOCKS DO NOT INTERFERE WITH AIR LINES OR WIRING INSIDE THE FRAME RAIL.

After confirming that the APU is level, tighten the mounting bolts to 80 ft-lbs in an X pattern. Do not tighten one bolt all the way to 80 lbs and then go to the next. Tighten each bolt equally in 10 ft-lb increments, using the X pattern, until all bolts have the required 80 ft-lbs. If you tighten the bolts completely to 80 ft-lbs the first time, the unit will become unlevel and internal components will be damaged.

STEP 2: EVAPORATOR SYSTEM AND DUCT HOSES

The evaporator system is designed to be mounted under the bunk in the storage area. The evaporator system measures 18 inches in length by 9 inches in height by 8 inches in depth. For the A/C hoses and power supply cable, you will need a 3-inch hole in the floor directly beneath the hose connection side of the evaporator.

Once the install location has been determined, check underneath the cab to be sure that there are no supports, wires, hoses, cables or beams where the three inch hole must be cut. This hole will serve as a pass through for cables and hoses, and also as a drain for evaporator condensation.



The steps below represent our STANDARD evaporator installation. Additional parts are available to facilitate an install which ties into the existing duct work of the truck. For most dealers, this setup is additional. These parts are available as accessories and can be purchased from your local HP2000 dealer.

- Place the evaporator in the desired location.
- Draw a mark on the floor indicating where the hole should be cut.
- Remove the evaporator and drill a pilot hole.
- Using the pilot hole as center, trace a three inch hole, then cut a circle in the carpet and foam to prevent the material from getting caught in the hole saw.
- Once material is removed to expose the metal floor, use a hole saw to cut the 3" hole.
- Insert the included hose pass through and secure it using the self-tapping screws.
- Reposition the evaporator so that it is slanted and so that the drain is positioned just above the pass through.
- Secure the evaporator to the floor using four self-tapping screws.
- Some trucks may not have a return air supply. If this is the case, return air holes will need to be cut to allow air back to the evaporator.

Most trucks allow for the ducting from the evaporator box to be tied into the existing ductwork of the truck. Every truck is different but should allow for this to be incorporated. Note that ideally there will be one duct discharging low in the cab and the other either discharging high or tying directing into the existing ductwork to get air circulating in the cab. **DO NOT DISCHARGE BOTH DUCTS ON THE FLOOR.**

STEP 3: A/C LINE INSTALLATION

Two A/C lines must be run from the APU to the evaporator in order to supply Freon to the evaporator unit.

- Begin by routing the two 8' A/C lines through the 3" hole near the evaporator unit as shown in the figure to the right.
- Make sure both hoses are clean and clear of debris and that all connections contain one O-ring of the appropriate size.
- Apply a small dab of leak lock to the threads of the A/C fittings to prevent corrosion and leakage.
- Connect the ends of each hose to the corresponding fitting on the APU.
- Connect the supplied check valve to the bottom fitting on the evaporator and connect the A/C lines from the APU to the corresponding fittings on the evaporator and check valve.
- Once connected, tighten the fittings. Be sure not to over-tighten fittings as this will damage the O-Rings.
- Cable tie all hoses and wires to the frame up and out of the way.

IMPORTANT! DO NOT OVER-TIGHTEN THE A/C LINES, AS DAMAGE TO O-RINGS MAY OCCUR.

IMPORTANT! BE CAREFUL NOT TO BEND THE CHECK VALVE DURING INSTALLATION.

IMPORTANT! IT IS SUGGESTED THAT YOU INSTALL THE CONTROL CABLE AT THIS STEP. INSERT THE ROUND, APU PLUG THROUGH THE HOLE AND ALLOW THE REMAINDER OF THE CONTROL CABLE TO REMAIN INSIDE THE TRUCK.

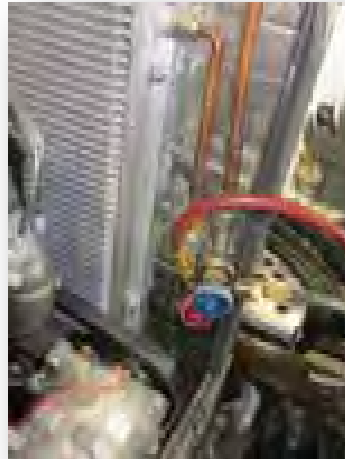
STEP 4: A/C SYSTEM VACUUM AND CHARGE

Now you are ready to charge the A/C system. Before charging, check to make sure there are no leaks or system contaminates by pulling a vacuum on the system. We recommend that a 30-minute vacuum duration be performed to make sure that there are no leaks or moisture in the system.

IMPORTANT! IT IS IMPORTANT TO PULL THE VACUUM AT THIS POINT IN THE INSTALLTION AS IT ALLOWS YOU TO CONTINUE WITH THE INSTALL WHILE THE SYSTEM CHECKS FOR LEAKS. THIS IS IMPERITIVE IN KEEPING TO YOUR 6-8 HOUR INSTALL TIME.

Once this step is complete, you are ready to charge this unit.

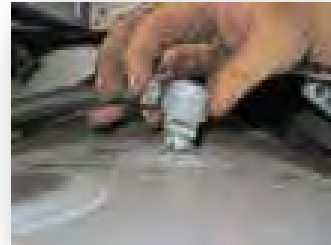
- Once the system has passed the leak test, it is time to charge the A/C system.
- Be sure to use R-134a refrigerant.
- Charge the system by adding 1.85 lbs of R-134a. Do not inject oil into the system on a new install.
- **Do not inject Dye into system under any circumstance or at any time.**
- **Doing this will void warranty.**



STEP 5: FUEL DRAW TUBE INSTALLATION

The fuel block must now be installed in order to provide fuel supply return and tank venting to the APU. It is important that you **DO NOT** tie into existing truck fuel lines.

- Locate the existing truck's fuel tank vent cap. Remove the cap from the tank.



- Use Teflon thread tape, install and screw in the fuel block assembly.



The fuel draw tube is designed to vent the fuel tank as well as supply and return fuel to the APU.

When looking down on the top of the fuel block, the right brass fitting is the return (remember R and R, right is return) and the left fitting is the supply.

Once installed, route two fuel hoses from the APU to the fuel draw tube.

Tighten the fuel hoses onto the barbs of the fuel draw tube using the worm gear clamps or oetiker clamp supplied.

Connect the fuel supply and return to the correct barbs on the APU. The top fitting is the supply and the bottom fitting is the return. Reversing the two fuel lines will not allow fuel to reach the APU. Tighten all hose connections using a worm gear clamp or oetiker clamp.

IMPORTANT! When installing the fuel block that is located in close proximity to the trucks fuel gauge sensor, be sure that the fuel draw tube is not installed where it will interfere with the fuel gauge sensor.

STEP 6: CONNECTING BATTERY CABLES

You are now ready to connect the battery cables. Make sure the truck battery posts are clean, as improper connections could cause the APU to fail. Always be careful not to reverse polarity of the battery cables or touch the positive cable to ground. Doing so will cause detrimental damage to APU, and possibly the truck, and is also a fire hazard.

- Route both positive and negative battery cable to the truck's battery bank. Cable tie all slack during this process.
- Be extra careful to not let the cables rest on or come in contact with any moving parts. This could cause a short in the future.
- Once inside the battery compartment, connect the ground (black) wire to the negative battery post. Do not connect this to a frame or any other metal for ground.
- Prior to connecting the cables to the batteries to the APU, install the included MRBF fuse onto one of the positive posts on the battery. This will be the APU power supply and truck charge supply. This fuse is necessary to protect against any potential electrical hazards.
- Once the MRBF fuse is installed, connect the positive (red) lead to the top of the post and tighten the lead against the fuse. Place the rubber cap over the connection. Tape if necessary.



Heavy sparking indicates a system short. Do not continue if either post sparks. Instead, check the integrity of the cable and whether or not reverse polarity has occurred.

IMPORTANT

Before connecting the battery cables, make sure that the APU commander is not plugged in. The Commander should be the last thing that is connected before the unit is to be started.

STEP 7: WATER CONNECTIONS

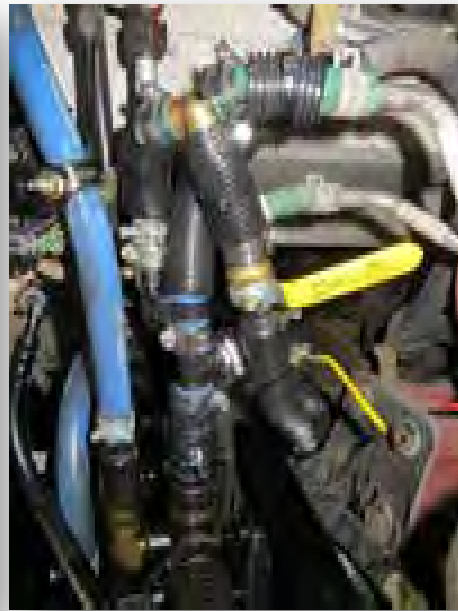
The APU is liquid cooled and requires coolant in order to operate at a safe temperature. If your APU does not have a radiator, it is necessary to continue with the step below. If your APU does have a radiator, the water ports will already be blocked, so proceed to Step 8. If you are unsure, consult your dealer. Before beginning this step, be sure you have the proper size water T for integrating into the existing cooling system. NOTICE: Coolant temperatures can exceed 150°F, so be cautious when working with coolant lines to avoid burns.

- Lift the truck hood; take note of the current truck coolant level. In connecting this APU you will need to add approximately two gallons of coolant to make up for the additional coolant line volume.
- Locate the coolant supply and coolant return lines at the main truck engine. If unsure, check the temperature. The return line will usually be hotter than the supply line.
- Using four water line clamps, crimp both lines four inches apart. You will be cutting in-between these crimps to install the coolant T's.

IMPORTANT! When installing the coolant Ts, be sure and install them on the coolant lines at the engine and NOT the coolant lines running to the bunk heater. Tying into the bunk heater lines can cause an unsafe loop in circulation through the bunk heater core causing the APU to overheat.



- Lay out the supply and return water lines (both at the same time), being careful not to cross them.
 - We recommend marking one of the lines on both ends prior to installation to prevent accidental crossing. Crossing the lines will cause the APU to overheat.
- Connect the supply water line to the bottom fitting on the APU and tighten it to the water barb using the included $\frac{3}{4}$ " worm gear hose clamps. Remember which line you selected for supply and which for return.
- Connect the return water line to the top fitting on the APU and tighten it to the water barb using the included $\frac{3}{4}$ " worm gear hose clamps.
- Route the hoses to the front of the truck where they will tie in to the water Y's. Be sure that the hoses are securely cable tied and out of the way.
- Once the hoses are secured and pulled into the engine compartment of the truck, determine the required length to reach the water Y's.
- Mark and then trim excess hose.
- For one water Y at a time:
 - Cut the coolant hose between the hose crimpers.
 - Install the water Y with a hose clamp on each side.
 - Tighten the two hose clamps.
 - Install a worm gear hose clamp and connect the APU coolant hose to the clamp.
 - Tighten the worm gear hose clamp.
- Once this has been completed for both Y's, check that the hoses and clamps are tight, and then remove the hose crimpers.



STEP 8: CONTROLLER AND DUCTWORK INSTALLATION

The APU controller is responsible for all functions of the APU. It is important that the controller is mounted upright, in an area with adequate air flow. Failure to do so will lead to inaccurate temperature readings and poor performance.

Make sure that the location selected for the controller:

1. Has a clear path to route the control cable.
2. Provides a flat surface for mounting.
3. Has decent air-flow.

Secure the APU controller to the flat surface using the short self-tapping screws. Be careful not to drill into any other wires or obstacles.

Once the controller is secured, it is time to route the control cable from the controller to the APU.

- Connect the square end into the controller.
- Using the Adel clamps, secure the cable to the wall.
- Route the cable out of sight, if possible.
- Track the cable back to the evaporator box.
- Push the round APU-end of the controller through the floor collar.
- From the outside of the truck, pull enough slack to reach the APU.
- Cable tie the control cable up and out of the way, being sure to leave enough length to reach the APU without leaving too much additional slack.
- Connect the power supply to the evaporator as shown in the figure to the right.



Select a location for the air two ducts and louvered vents. It is recommended to position one vent high and one vent low for optimal heating and cooling. Select a location in which the 3" duct hose will be easy to conceal. A flat surface is required for through-mounting the louvered vents. Once two locations have been selected:

1. Use the 3" hole saw to cut the holes where the vents will be located. Do not cut this hole larger than 3"; the vents will not fit correctly.
2. Use a 3 ½" hole saw to cut the holes that the ducting will pass through. Holes must be 3 ½", 3" is not large enough for duct hose to pass through.
3. Connect each of the duct hoses to the evaporator and tighten all the hose connections using the included 3" worm gear clamps.

Route the hoses to the vents and tighten all of the hose connections using the included 3" worm gear clamps.

STEP 9: SYSTEM PRIME AND SAFETY CHECK

You are almost ready to start your engine. It is now time to prepare the unit for the initial startup. Be sure that all tools are clear of the APU and that all connections are tight.

CONNECT THE CONTROL CABLE

Check once again to be sure all tools are removed from the APU and that all connections are tight.

Now that the system has been primed and all connections have been made, you may connect the APU control cable by twisting it until it locks into place.

PRIMING THE WATER PUMP

It is necessary to run the truck engine for a period of at least five minutes in order to prime the APU water pump. Not doing so could cause the APU to overheat, causing serious and permanent damage.

IMPORTANT! TO SPEED THE PRIMING PROCESS, YOU MAY REMOVE THE SUPPLY LINE (TOP HOSE) FROM THE APU UNTIL YOU SEE ENGINE COOLANT START TO FLOW FROM IT. IF YOU USE THIS METHOD TO PRIME THE APU, BE SURE THAT THE CONTROL CABLE IS FULLY PLUGGED IN OR THAT THE RED, SAFETY CAP IS INSTALLED. THIS IS TO PREVENT ENGINE COOLANT OR OTHER LIQUID FROM INTERING THE POWER CABLE CONNECTOR. NOT FOLLOWING THIS IMPORTANT STEP CAN CAUSE THE CONTROL CABLE TO SHORT OUT CAUSING SERIOUS DAMAGE TO THE APU.

The APU is now ready to start.

STEP 10: INITIAL START

At this point you can use the controller to start APU. Press “Start” on the controller (press “Mode” on the old controller) and select “Climate Control”. Set your desired temperature. At no more than 30 seconds, you will hear the APU attempt to start. The APU may fail to start on the first try due to air in the fuel lines. If this is the case, unplug the controller and bleed any air out of the fuel filter by unscrewing the top screw and allowing air to escape.

Allow the APU to run for 30 minutes to guarantee that the system is working properly. Check thoroughly for any water leaks or cable wear. If any other issues are encountered during the initial startup, check the troubleshooting guide for a solution. If no solution is available, contact your nearest dealer.

Congratulations, your new HP2000 is now fully installed!



MAINTENANCE

By following service and warranty procedures, your new HP2000 will provide years of comfort and service. Please pay close attention to the directions for each procedure listed below.

WALK-AROUND INSPECTION

This inspection should only take a few minutes. A walk around should be performed during your daily pre-trip inspection. Perform this inspection to ensure maximum service life of your HP2000. Keep an eye out for things such as leaks, loose bolts and worn belts and service your APU accordingly. As they are not covered under warranty.

TYPICAL INSPECTION

After the initial break in period it is important to check all A/C connections. Although the unit is leak tested at the factory, heat and vibration can loosen certain components over time. Most A/C leaks are the result of loosened components. In addition, all fluid levels, coolant and oil should be checked. Electrical connections, cables, hoses and hoses clamps should also be checked before operating the APU.

Failure to provide proper scheduled maintenance as set forth below will void any and all warranties.

MAINTENANCE SCHEDULE

Interval Between Maintenance	Initial 50hrs	Every 100hrs	Every 600hrs
Change oil and oil filter.	X		X
Check all coolant hoses, A/C fittings, pipes, clamps. Look for unusual wear, loose fittings, loose connections or signs of fuel, coolant or A/C system leaks.	X		X
Check power cable connections at the battery bank, APU starter and alternator. Look for excessive corrosion or loose connections at both power and ground connections.	X		X
Check alternator and compressor belt tensions, adjust or replace as necessary.	X		X
Check muffler clamps and frame mounts for tight fit.	X		X
Check air filter, clean or replace as needed.*			X
Check/tighten isolator, compressor and cabinet bolts.		X	X
Inspect or replace fuel filter.*	X		X
Using a low pressure water hose, clean debris from APU cabinet			X
Clean condenser fins from both directions. (Use only low pressure water)			X

*Extreme conditions may require more frequent filter element change and check intervals, check regularly and replace if necessary. Engine component failure due to lack of maintenance on these items will void warranty.

A/C SYSTEM MAINTENANCE

It is recommended that you check your A/C system REGULARLY. The system holds 1.85 lbs of R-134a refrigerant. If your APU has lost refrigerant, it has also lost oil. Only use pag-46 oil when servicing this unit. Evaporator and condenser coils must be inspected and cleaned regularly.

Recommended operating pressures

A/C mode:

Low side* = 18-21psi (Depending on Ambient Conditions)

High side* = 225-260 (Depending on Ambient Conditions)

Heat mode:

Low side* = 30-31

High* = 250-275

*Doors and windows need to be closed and readings should be taken 20 minutes after the start of the APU to get accurate readings.

OWNER'S RESPONSIBILITY

1. **In addition to any other Owner's responsibility stated in this manual, the following are the Owner's responsibility:**
2. As the HP2000 / HP2000-3 Xtreme APU owner, you are responsible for the performance of the required maintenance listed in your Owner's Manual. We require that you retain the original purchase documentation and all receipts covering maintenance on your APU.
3. Please be aware that we will deny warranty coverage if your APU or a part has failed due to neglect, abuse, improper maintenance, improper installation, and or unapproved modifications.
4. 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 and following the SRT Guide (Suggested Repair Time).
5. When ordering Warranty Parts you will need to have a credit card on file, once the part is returned and tested bad we will issue a credit to your card. Labor will be handled in the same manner.
6. 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.
7. Inspecting your equipment daily will help keep your APU working for a long time. **Daily inspections should include items such as: belts, hoses, oil, bolts, mounts, etc. Dirt and debris in the evaporator or condenser coil will cause unsatisfactory heating and cooling. Please keep these cleaned at all times.**
8. **WHEN FILING A WARRANTY CLAIM OR ORDERING PARTS, YOU MUST HAVE THE FOLLOWING:**
 - a. **CUSTOMER AND OR COMPANY NAME**
 - b. **SERIAL NUMBER AND HOURS ON APU**
 - c. **PART NUMBER AND/OR PART DESCRIPTION and PICTURE OF PART**
 - d. **COMPERSOR SERIAL NUMBER (FAILED AND NEW)**
 - e. **AUTO-CONTROLLER SERIAL NUMBER (FAILED AND NEW)**
 - f. **ALL INFORMATION ABOVE IS REQUIRED TO BE ON WARRANTY INVOICE BEFORE IT WILL BE SUBMITTED FOR PAYMENT.**
 - g. **ALL WARRANTY IS MANUFACTURED DEFECT ONLY.**
 - h. **WARRANTY DOES NOT COVER SHIPPING CHARGES**

8. In order for any warranty claim to be honored, the attached Warranty sheet must be filled out completely and sent to Parks Industries with fifteen (15) days of Purchase. Send completed warranty sheet to: PARKS INDUSTRIES L.L.C. 15460 CRABTREE SCHOOL RD. MARION, IL 62959

E-MAIL: akelley@hp2000apu.com

TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTIONS
<p>Engine turns over but will not start.</p> <p>Error displays on screen: "Low Oil Pressure"</p>	<p>Fuel Supply clogged</p> <p>Fuel filter dirty</p> <p>Blown Fuse</p> <p>Oil Level Low</p>	<p>Check that the fuel lines are clear and that the filter is not clogged.</p> <p>Check the fuse panel for any blown fuses.</p> <p>Make sure the engine has proper amount of oil.</p>
<p>APU engine shut down.</p> <p>Error displays on screen: "High Engine Temp"</p>	<p>The engine is overheated</p>	<p>Check the truck's coolant line.</p> <p>Check for crimps in the coolant line.</p> <p>If coolant is sufficient, remove the coolant cap and allow the truck engine to run for at least ten minutes. This will clear any residual air bubbles from the coolant system.</p>
<p>Error displays on screen: "Charging system failure"</p>	<p>The charging system has failed</p> <p>More power is being used than the APU is generating.</p>	<p>Make sure all battery cables are tight and corrosion free.</p> <p>Make sure all electrical components are securely plugged in.</p> <p>Check the alternator belt and replace if necessary.</p> <p>Check the fuse panel for any blown fuses</p> <p>Make sure battery charge set point is not set too low. 12.4V is a good starting point</p> <p>Ensure an inverter or other device is not drawing more than 1000W continuous.</p>
<p>Error displays on screen: "High A/C Pressure Fault"</p>	<p>High head pressure</p> <p>Fan is turning wrong direction or not working.</p>	<p>Check condenser and evaporator for air restriction.</p> <p>Make sure the condenser fan is running. If not, check or replace the fuse.</p> <p>If the fan is not functioning, contact a service center near you.</p> <p>Make sure the operating pressures are correct (A/C System Maintenance).</p>
<p>Error displays on screen: "Low A/C Pressure Fault"</p>	<p>Low refrigerant</p>	<p>Make sure the condenser fan is running. If not, check or replace the fuse.</p> <p>Check all hoses and fittings for refrigerant leaks.</p> <p>Make sure the operating pressures are correct (A/C System Maintenance).</p>
<p>Problem not Listed</p>	<p>Cause Not Listed</p>	<p>Contact the nearest HP2000apu dealer.</p>

Refer to dealer policy and procedures manual for warranty details.

SPECIFICATIONS

DO NOT USE SYNTHETIC OIL

APU Engine	KOHLER KDW702 16.8 hp PERKINS T400 13.9 hp
Engine Oil	KOHLER 1.7 US Quarts (1.6L) PERKINS 2.9 US Quarts KOHLER 15W-40 PERKINS 15W-40
Alternator	KOHLER 65 Amps PERKINS 65 Amp
Weight	345 lbs
Dimensions	19.5" x 23.5" x 23"
BTU's	20,000 BTU/hr Cool, 20,000 BTU/hr Heat
Refrigerant	1.85 lbs. of R-134 A
AC System oil capacity	5 oz. of PAG 46
Ideal Operating range	Heat: Ambient temp of 70° to -15° Cool: Ambient temp of 70° to 115°

OTHER PROVISIONS

- A. Arbitration. Any claim, dispute, or other matter arising out of or related to the terms, conditions, warranty and information contained in this installation, Service and Operator's Manual shall be resolved by binding arbitration, administered by the America Arbitration Association in Illinois. **Binding arbitration shall be the sole and exclusive remedy of Parks Industries Owner/Purchaser.** The decision of arbitrator shall be binding.
- B. Attorneys' Fees. Should either Parks or the Owner/Purchaser file for arbitration to enforce the terms of this Installation, Service and Operator's Manual, then the prevailing party in that arbitration shall be entitled to reasonable attorneys' fees and costs from the non-prevailing party.
- C. Entire Agreement. This Installation, Service and Operator's manual sets forth the entire agreement between Parks and the Owner/Purchaser and supersedes any other agreement by the parties, whether written or oral. This Agreement may not be modified except in writing signed by Parks and the Owner/Purchaser.

INSTALLATION, SERVICE, AND OPERATOR'S MANUAL OWNER SIGN OFF SHEET:

Parks Industries L.L.C.

www.hp2000apu.com

**Installation, Service and
Operator's Manual**

For HP2000
Auxiliary Power Unit

Keeps you cool, warm and powered up!

Your signature below confirms that you have read and understand the terms, conditions, warranty and information contained in this manual, and that you agree to be bound by the terms, conditions, warranty and information contained herein:

OWNER/PURCHASER

By: _____

Its Duly Authorized Representative

[Print Name and Title]

Date: _____

STANDARD HP2000 APU WARRANTY COVERAGE

A/C COMPRESSOR	1 HOUR LABOR	A/C CONDENSER	1 HOUR LABOR
EVAPORATOR CHECK VALVE	.5 HOUR LABOR	CONDENSER FAN ASSY	.5 HOUR LABOR
AUTO CONTROLLER	.2 HOUR LABOR	12 V EVAP. BLOWER	1 HOUR LABOR
REVERSING VALVE ASSY	.5 HOUR LABOR	EVAPORATOR CORE	1 HOUR LABOR
A/C ADJ. REPLACEMENT	.5 HOUR LABOR	HOSE (MANUFACTURE DEFECT)	.5 HOUR LABOR
TUBE (MANUFACTURE DEFECT)	.5 HOUR LABOR	DIAGNOSTIC LABOR	.5 HOUR LABOR
VAC & CHARGE LABOR	.5 HOUR LABOR		

**FREON IS COVERED @ .69 PER OUNCE (29.6 OUNCES = 1.85 # OR \$20.42 FOR A COMPLETE FILL) ONLY ON MANUFACTURE DEFECT OF PART.
FREON IS NOT COVERED FOR NORMAL WEAR AND TEAR OF PART.**

For Perkins engine coverage you must contact a Perkins Dealer.

www.perkinsengine.com/warranty.com

ALL WARRANTY WORK MUST BE DONE AT PARKS INDUSTRIES OR AT A CERTIFIED PARKS INDUSTRIES SERVICE CENTER.

IF IT IS NOT LISTED ABOVE IT IS NOT COVERED

WEAR & TEAR IS NOT A COVERED EXPENSE AT ANY TIME

