



Owner's Manual
Model MTS T4-6



Congratulations on your purchase of the RigMaster Auxiliary Power Unit.

RigMaster is a totally self contained, stand-alone AC generator, Air Conditioner and Heater System. The only items that are shared with your Truck Systems are fuel and battery supply. The RigMaster unit also trickle charges the Truck batteries while in operation.

Superior design and performance have been incorporated into this product to give you trouble-free, economical operation. We are confident you will be satisfied with your new RigMaster Auxiliary Power Unit.

The following pages contain design features, principles of operation, preventative maintenance procedures and troubleshooting guides. Please review it carefully prior to starting and operating your RigMaster Unit. For safety's sake, please also heed all safety warnings and advisories found within your owner's manual.

Should you have any questions or concerns please contact your nearest authorized RigMaster Power Dealer, or RigMaster Power Corporation Product Support Group at:

1-888-208-3101
(For technical support only)

TABLE OF CONTENTS

Principles of Operation

Safety	4
Heater	6
Air Conditioner	7
120 Volt Generator	8
Pre-Start Inspection	9
Cabin Controller Description and Operating Instructions	10
Error Message Listings	16
Fuel System Description and Bleeding Procedures	18
Preventative Maintenance Schedules	23
Normal Maintenance and Adjustment Instructions	
Oil Change Instructions	25
Serpentine Belt Removal	26
Fan Belt Removal and Adjustment	27
Breaker Reset Instructions	28
Cleaning Instructions	29
Trouble Shooting Guide	32
Warranty	
RigMaster APU Limited Warranty	43
Maintenance Record	44
Notes	47

1. Zero Energy State

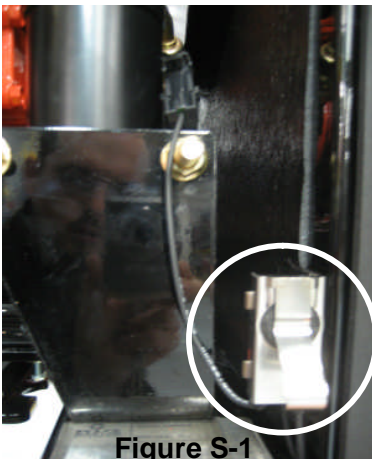
ATTENTION: ZERO ENERGY STATE

To perform service, maintenance and repairs you ***must*** disconnect the RigMaster from its battery source. In the recommended installation configuration the RigMaster shares the battery bank with the vehicles main engine. After disconnecting the battery cables, check the battery posts inside the RigMaster engine cabinet to confirm there is no voltage to the auxiliary power unit (APU).

2. Safety Cover Switch

ATTENTION: SAFETY COVER SWITCH

It is critical that this safety cover switch is never deactivated or bypassed; failure to comply may result in serious injury.



The safety cover switch (figure S-1) is designed to prevent the RigMaster Power APU from starting when the engine cover is loose or has been removed. When the switch is in the closed position the cover is down. When the switch is open position the cover has been removed or is loose. The switch is located at the front of the engines enclosure in the lower right hand corner.

3. AutoStart Automatic Start/Stop Feature

ATTENTION: AUTOSTART FEATURE

Remember that a properly functioning RigMaster is capable of starting independently of its operator. If the AutoStart feature is enabled, battery voltage, temperature, and time of day can all cause the RigMaster's engine to start. Please see the cabin controllers operating instructions for further information on the AutoStart feature. ***You must deactivate this feature prior to refueling.***

4. Engine Hoist Points

ATTENTION: ENGINE HOIST POINTS

The Perkins and CAT engines have hoist points that are useful for removal and reinstallation of the engine. ***Under no circumstances*** should the entire RigMaster APU assembly be lifted by the engine hoist points as they are not intended to hold the increased weight of the engine with fluids, frame and other on-board equipment.

5. Starting Aids

WARNING

Do not use any type of starting aids such as ether or “Quick Start” Such use could result in an explosion and personal injury, and will render the APU warranty null and void.

6. Starting with the Cover Off

ATTENTION

Some installation or repair/diagnostic procedures require that the APU is started with the engine cover off. ***Do not deactivate or bypass the safety cover switch.*** Instead, have another individual assist by manually holding the safety cover switch down in the closed position for the duration of the procedure.

7. Inspection of the Safety Systems

The safety systems on the RigMaster APU should be examined and tested at prior to performing any service work and at 50 hour intervals to ensure that they are in good condition and proper working order.

8. Safe Working Practices

Safe working practices are your responsibility. The use of protective safety equipment is mandatory when performing inspections, service, diagnostics and repairs on the RigMaster APU. Follow your local regulations and guidelines regarding occupational health and safety.

9. Contact Us

If you do not fully understand this safety information contact RigMaster’s Technical Support Department toll free at (888) 208 – 3101 before proceeding with the operation or service of this APU.

HEATER, AIR CONDITIONER, 120V GENERATOR

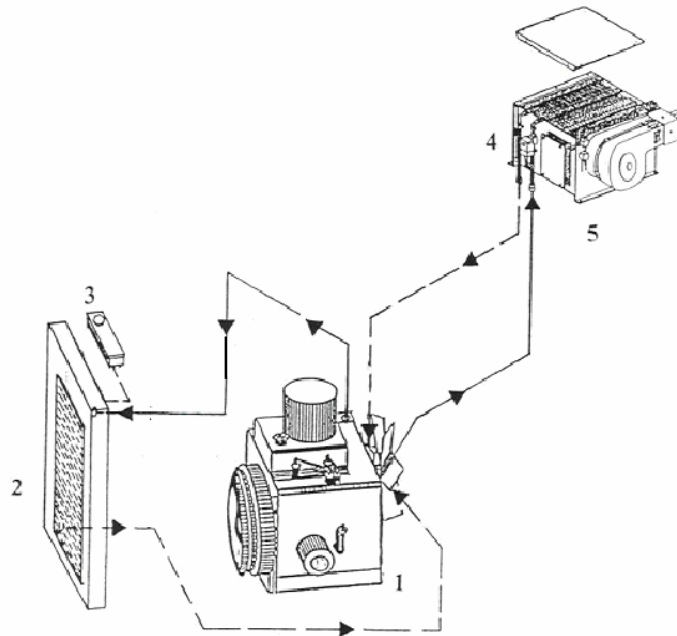
HEATER

The RigMaster heating system is fully automatic. A constant comfort zone is maintained with the temperature selector (see Cabin Controller Operation - Page 10). The bunk heating system a complete stand alone system that is not integrated into the vehicle's cooling system. When heat is selected, and the RigMaster is in operation, the hot coolant flows through the heater core (installed under the bunk see Figure 1).

The heater/air conditioner blower motor (fan) circulates the cab air through the heater core pushing warm air into the bunk area. The coolant is then re-circulated back to the RigMaster Unit.

NOTE: PLUGGING IN THE BLOCK HEATER PLACES A LOAD OF APPROXIMATELY 1,500 WATTS ON THE ENGINE, THIS LOAD ENABLES THE ENGINE TO HEAT THE COOLANT.

This system is designed to maximize the bunk heating efficiency.



HEATER - FIGURE 1

Hot Coolant Supply

Cold Coolant System

- 1) Engine
- 2) Radiator
- 3) Fill/Expansion Reservoir
- 4) Flow Control Valve
- 5) Heater/Air Conditioner Unit

AIR CONDITIONER

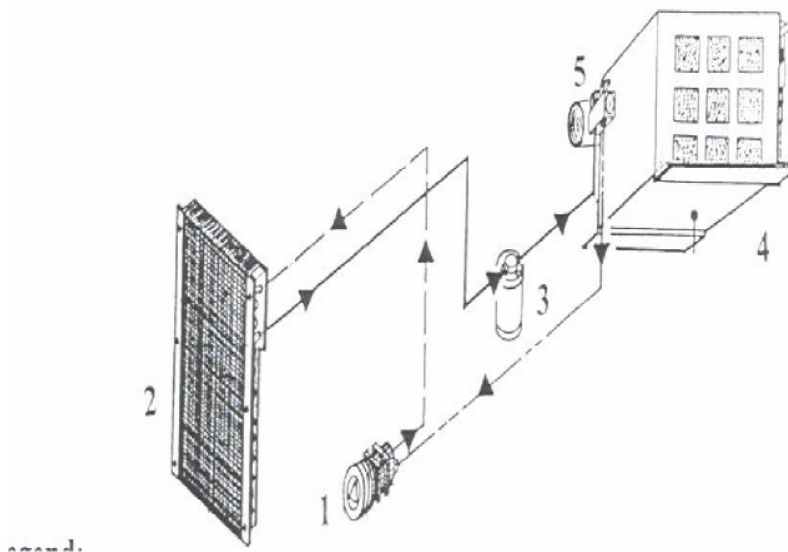
The RigMaster air conditioner is also fully automatic. A constant comfort zone is maintained with the temperature selector setting (see Cabin Controller Operation - Page 10). The RigMaster air conditioner is an R134A system that is not integrated into the vehicle's existing air conditioning system.

R134a Refrigerant capacity for serpentine belt driven compressor (since 2008); 2.2Lbs

AC System total oil capacity; 5.0oz

WARNING: ONLY CERTIFIED AIR CONDITIONING TECHNICIANS SHOULD SERVICE THE AIR CONDITIONER

The compressor within the RigMaster unit pumps the refrigerant gas through the condenser that dissipates the heat and changes the refrigerant from a gas to a liquid. The liquid refrigerant passes through a filter (receiver dryer), and then through the evaporator core located in the bunk heater/air conditioner unit. The heater/air conditioner blower motor (fan) then activates, and cool dry air is forced into the bunk area.



AIR CONDITIONER - FIGURE 2

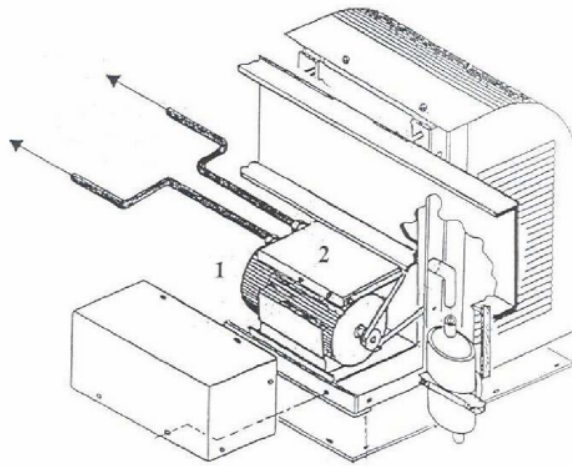
Legend

- High Pressure Gas
- High Pressure Liquid
- Low Pressure Gas

- 1) Refrigerant Compressor
- 2) Condenser
- 3) Receiver Dryer
- 4) Heater / Air Conditioner Unit
- 5) Expansion Valve

120-VOLT GENERATOR

The 6kW heavy-duty generator is located at the rear of the RigMaster unit and is belt driven at 3600 RPM. The generator has two (2) factory supplied cords. One (1) block heater cord (complete with a plug), allows the vehicle's block heater to be plugged into the generator. This ensures that the vehicle's main engine will be warm when starting in cold weather. This provides a load on the RigMaster engine that allows the unit to run more efficiently and prolong the RigMaster's service life. The block heater connection uses one (1) 20 AMP breaker. **It is recommended that the RigMaster remain plugged into the vehicle's block heater throughout the winter months and unplugged for the spring and summer months.** A second 20 AMP supply of 120V power is supplied for the driver's convenience. A multiple outlet cord is supplied and can be installed in the bunk area of the vehicle to provide power for 120V appliances.



GENERATOR - FIGURE 3

NOTE: Each 20 Amp Breaker has a capacity of 2400 Watts

PRE-START INSPECTION

WITH THE RIGMASTER TURNED OFF

- 1) Remove the cover.
- 2) Visually inspect the unit for evidence of oil or coolant leakage.
- 3) Check the oil and add oil if necessary.
- 4) Check the tension and wear of all belts.
- 5) Check the mounting bolts and tighten if necessary.
- 6) Check for broken, corroded, or loose connectors and/or wires.
- 7) Check the physical condition and tightness of all hoses and hose clamps.
- 8) Replace and secure the cover.

CABIN CONTROLLER OPERATING INSTRUCTIONS

Before beginning the start-up procedure it is necessary to know how to operate the cabin controller.



Cabin Controller – Figure 4

Controls

The Cabin Controller consists of two sections:

1. LCD (Liquid Crystal Display) with basic control buttons.
2. Advanced control buttons

The LCD and basic control buttons are always visible to the user. The advanced control buttons are concealed behind semi-circular cover.

The controller also contains a LED indicator. When the LED is green, the system is active, if it glows red then the system is detecting a problem and an error message will scroll across the bottom of the LCD screen. The LED is turned off in low power mode.

1. Basic Controls and Functions

Basic controls contain the following buttons:

1. Start system
2. Stop system
3. Up arrow (Red triangular button)
4. Down arrow (Blue triangular button) If the unit is in advanced mode, pressing any of the basic control buttons will return the unit to basic mode. Alternately, the control panel will return to basic mode after two minutes of inactivity.



If the unit shows the current temperature, pressing either the up or down button will show the set point temperature without changing it. Once the set point is indicated, pressing up or down buttons will adjust the set point. The new set point takes effect only when display is returned to show internal temperature.

2. Advanced Controls and Functions

The advanced controls are as follows:

1. **Power** button controls whether the module is active. In inactive mode all system functions including engine start, climate control and AutoStart are disabled. You can still see the temperature reading, current time and use the alarm clock function.
2. **Fan** button is used to change fan setting. Pressing the button cycles between auto, high, med, low

and off settings.

3. **Clear** button will take you back to the main screen without saving any information.
4. **Clock** button is used to set the time/date/day menu features.
5. **Alarm** button is used to set the alarm menu features.
6. **AutoStart** button is used to access and set AutoStart menu features.
7. **Mode** button is used to activate the different operational modes. Pressing the mode button will back you out of a menu mode, but does not save the information just entered.
8. **Ext. Temp** button will display the external temperature on the LCD when pressed.
9. **Oprtg. Hours** button will display the total hours of use.
10. **Select** button enters the data and advances the program to the next menu step. Pressing the select button will save the information when entering operational data.
11. Left scroll button (with )
12. Right scroll button (with )

The left and right arrow buttons are used to locate the desired data and/or adjust those values.

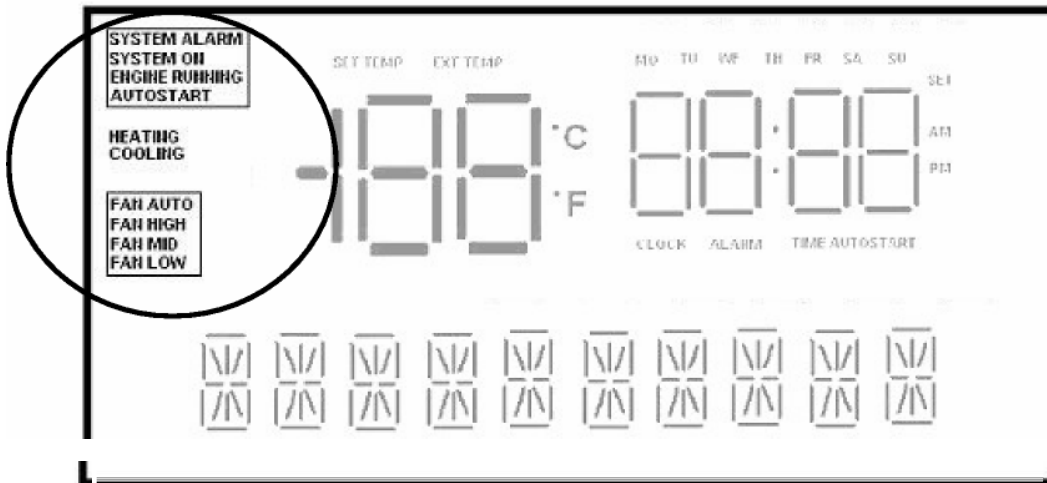
Cabin Controller LCD Display

The Cabin Controller LCD has a white backlight that turns on each time a user presses a button and will remain on for 2 minutes after the last button that has been pushed. The backlight will turn red when there is an alarm condition. A fault code will be displayed if the unit shuts down or fails to start.

The LCD displays 4 groups of information:

1. System information
2. Temperature information
3. Clock, day and alarm information
4. Alphanumeric display for additional information

1. System Information:



SYSTEM ALARM symbol will flash if an alarm condition has occurred. The alphanumeric display along the bottom of the display screen will show more information about the alarm. Red status LED will be on.

SYSTEM ON symbol will display if the unit is in ON mode. (Green status LED will be on.)

ENGINE RUNNING symbol will display when the engine is running.

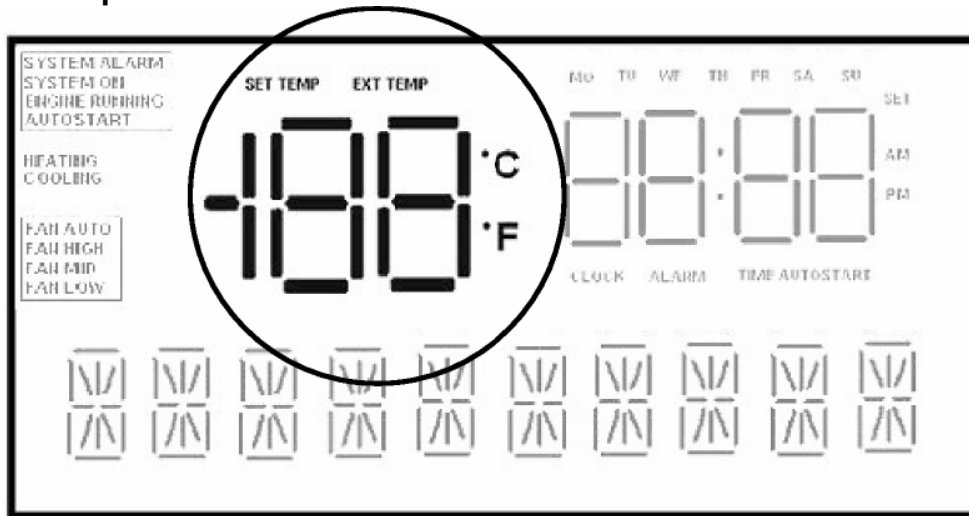
AUTOSTART symbol will display and flash if temperature AutoStart is enabled (when engine is off). If the engine has been started through AutoStart, this symbol is constantly on while the engine is running.

HEATING symbol will display when the system is in heating mode.

COOLING symbol will display when the system is in cooling mode.

FAN AUTO, FAN HIGH, FAN MED, or FAN LOW symbol will display depending on which setting has been selected. Nothing will display in this area if the fan is set to off.

2. Temperature Information:



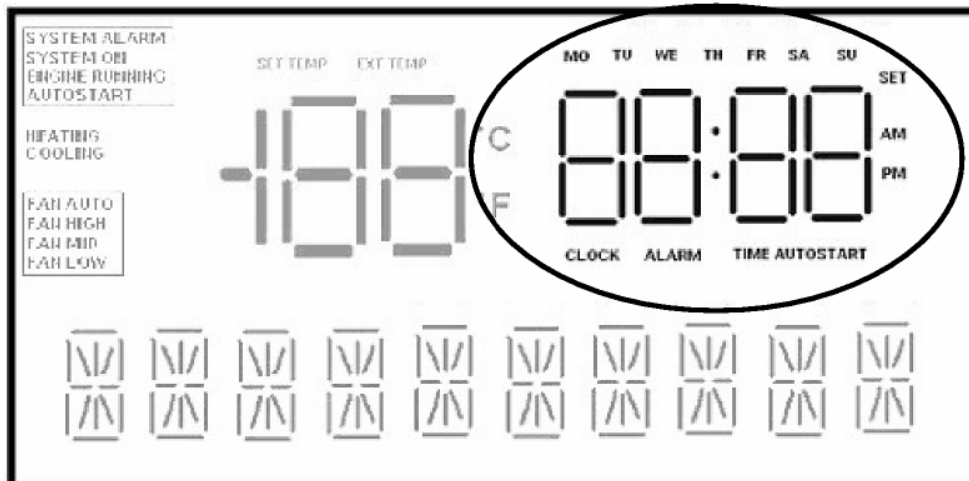
This area indicates the internal (or external) temperature and can be programmed to display in either “Celsius” or “Fahrenheit”

Internal temperature is shown if **EXT TEMP** and **SET TEMP** symbols are not illuminated. Pressing the **Ext. Temp** button will momentarily display the outside temperature. After 5 seconds, the display will default back to showing the internal temperature.

EXT TEMP symbol will flash when showing external temperature. After a few seconds the display returns to show internal temperature.

SET TEMP symbol appears (and the numeric temperature value will flash) whenever adjusting temperature set point. A few seconds after adjusting the temperature, the display returns to show internal temperature.

3. Clock and Alarm:



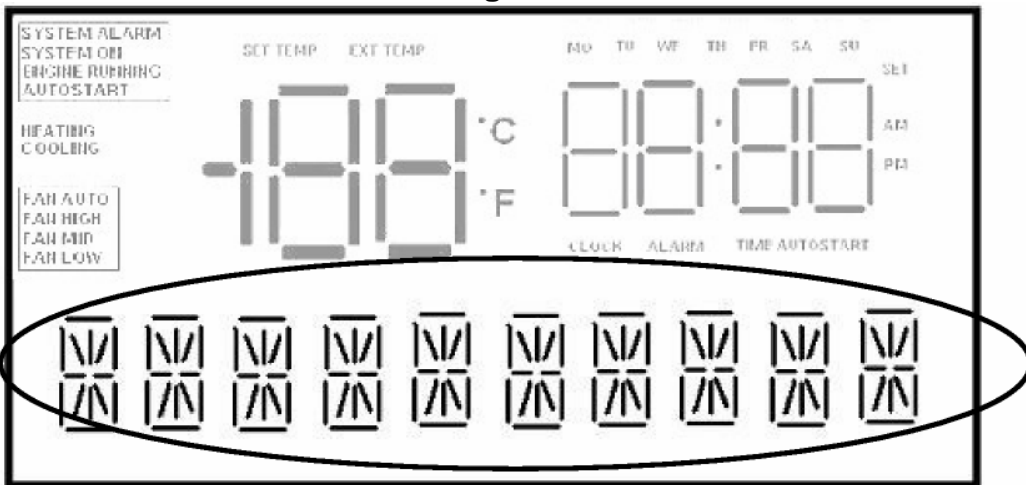
This is a 12:00 hour clock system with **AM/PM** symbols and 7 symbols indicating day of the week: **MO, TU, WE, TH, FR, SA, SU**.

CLOCK symbol appears when the current time is showing.

ALARM symbol appears to indicate that the alarm setting is showing. Pressing the alarm button allows you to set the alarm. The alarm symbol flashes when the alarm has been set.

TIME AUTOSTART symbol appears if the display shows time AutoStart setting. It flashes if time AutoStart is set.

4. Additional Information/Message Area:



This line is used to show extra information in the basic mode, error messages to provide interface when going through menus in advanced mode. Longer text lines are scrolled to the left on the display.

Operation of the Cabin Controller (Functions)

To Turn Power On

Press the **POWER** button to activate the system. When the power switch is activated the LCD display will light and **SYSTEM ON** symbol will turn on (active mode). Press **POWER** button again for 2 seconds to switch the unit back to low power mode.

Engine Start

Press **START** button.

The control panel will display the status of the operation as it occurs: *Glow Plug* and a countdown will display on the screen. Once the countdown is complete the display will read *Cranking* as the RigMaster starts up and the **ENGINE RUNNING** symbol will blink. Once started the control will display *Engine Running* for 5 seconds (and **ENGINE RUNNING** symbol will turn on).

Engine Stop

Press **STOP** button.

The screen will initially display *Stopping* and then change to *Stopped* once the operation is complete. The **Engine Running** symbol will turn off.

Temperature Control

Press UP or DOWN (red/blue) buttons to adjust temperature set point on the display. When editing the set point, the LCD display will show the set point instead of internal cabin temperature. The set point is stored without a need to press any other buttons.

Clock & Date Set Up

It is necessary to enter the time and date programming mode if the module has never been programmed or a different time zone is required. (**SET** symbol is flashing and **CLOCK** symbol is turned on during clock setup)

Press **CLOCK** button:

The display will read *Set Clock*. Press **SELECT** button to continue, **MODE** to exit.

Clock hour will start flashing.

Press LEFT or RIGHT scroll button to adjust *Clock hour*.

Press **SELECT** button: *Clock hour* will stop flashing and *Clock minutes* will start flashing.

Press LEFT or RIGHT scroll button to adjust *Clock minutes*.

Press **SELECT** button: *Clock minutes* will stop flashing and *am/pm* will start flashing.

Press LEFT or RIGHT scroll button to change.

Press **SELECT** button: *am/pm* will stop flashing and *day of week* will start flashing.

Press LEFT or RIGHT scroll button to change.

Press **SELECT** button: *day of week* stop flashing and *Month* will start flashing.

Press LEFT or RIGHT scroll button to change.

Press **SELECT** button: *Month* stop flashing and *Date* will start flashing.

Set Alarm Clock

Press **ALARM** button:

The display will read *Set Alarm*. Press **SELECT** button to continue, **MODE** to exit.

Alarm Clock hour will start flashing.

Press LEFT or RIGHT scroll button to adjust *Alarm Clock hour*.

Press **SELECT** button: *Alarm Clock hour* will stop flashing and *Alarm Clock minutes* will start flashing.

Press LEFT or RIGHT scroll button to adjust *Alarm Clock minutes*.

Press **SELECT** button: *Alarm Clock minutes* will stop flashing and *am/pm* will start flashing.

Press LEFT or RIGHT scroll button to change.

Press **SELECT** button

Press LEFT or RIGHT scroll button to turn Alarm clock on/off.

Press **SELECT** button to save settings and return to menu or press **MODE** to return to menu without saving.

When enabled, **ALARM** symbol is flashing.

Fan Speed Control

Press **FAN** button to adjust fan speed:

Press the **FAN** button to cycle through fan settings: *AUTO OFF*, *AUTO ON*, *FAN LOW*, *FAN MEDIUM*, *FAN HIGH*, *FAN OFF*. There is no need to press any other buttons to confirm. *AUTO OFF* is for heating efficiency during winter operation. *AUTO ON* is for air conditioning efficiency during summer operation.

NOTE

The air conditioning/heating system will only operate when the fan speed is in a setting other than *OFF*. To stop the operation of the air conditioning/heating system, the fan speed must be set to *OFF*. If the system was stopped by another method, the air conditioning/heating will start immediately when the RigMaster APU engine is started.

AutoStart Features and Operation

. **AutoStart Time/Day Programming** –allows you to program a day and time for the RigMaster for the start automatically up to 7 days in advance. This feature will run for three hours and shut down. At the end of the AutoStart program the cabin controller will display the error code #10, "Run Timeout"; this is normal.

Set AutoStart Timer

The user can adjust the time and day for the next timed AutoStart event. (**SET** symbol is flashing and **TIME AUTOSTART** symbol is turned on during alarm setup)

Press **AUTOSTART** button:

Time AutoStart will scroll across the screen.

Press **SELECT** button to continue, **MODE** to exit.

Press LEFT or RIGHT scroll button to adjust *AutoStart hour* as required.

Press **SELECT** button

Continue to set the *AutoStart Minutes* and *am/pm* as you would set the clock.

Press **SELECT** button after each entry.

Press LEFT or RIGHT scroll button to adjust *AutoStart Day* as required.

Press **SELECT** button

Press LEFT or RIGHT scroll button to locate *On/Off*.

Press **SELECT** button to save settings or press **MODE** button to return to menu without saving.

NOTE: When enabled, **Time AutoStart** symbol will be flashing.

- **Automatic Temperature Control Start Up/Shut Down** -will start and stop the RigMaster to regulate the temperature giving you further fuel savings on extended absences from the cab.

Set AutoStart Temperature Start-Up

Press **AUTOSTART** button twice: *Temp AutoStart* will scroll across the screen.

Press **SELECT** button to continue, **MODE** to exit.

Press LEFT or RIGHT scroll button to select mode of temperature control. Mode options include *OFF*, *AUTO*, *HEAT* or *COOL only*.

Press **SELECT** button to continue, **MODE** to exit.

Press LEFT or RIGHT scroll button to select AutoStart temperature setpoint if *HEAT* or *COOL* have been selected.

NOTE

The AutoStart temperature range is between 32°F (0°C) and 95°F (35°C).

Press **SELECT** button to save settings or press **MODE** to return to menu without saving.

When enabled, the **AutoStart** symbol will flash. AutoStart temperature start-up will engage when the inside temperature is more than 5°F (3°C) lower or more than 5°F (3°C) higher than the temperature control setting (in auto mode). It also engages at least 1 minute after enabling AutoStart temperature.

- **Low Battery Start Up** -automatically starts up the RigMaster to charge the truck battery if it gets low. This option is always enabled in active mode. The voltage sensitivity of the low battery AutoStart feature can be adjusted, however, this is a dealer programmable feature and must be performed at a RigMaster licensed facility.

Set AutoStart Low Battery Start-Up

Low Battery AutoStart does not require that it be set by the user in the same way as the time/date and temperature based AutoStart. All that is necessary to ensure that low battery AutoStart functions is to leave the RigMaster engine OFF and the cabin controller powered on (active mode).

Version Display

Press **MODE** button.

Current version of the Power Module software will appear on the screen

Press **MODE** or **SELECT** to return.

Fault Codes

The APU's electronic control will display fault codes on the LCD screen if the unit fails to start or shuts down. The following table contains fault codes and information on the cause and/or remedy. These fault codes will display one time only; if the code is cleared from the cabin controller, failure will have to reoccur for the code to be displayed again.

CODE	REMEDY/CAUSE	REMEDY/COMMENT
Error Code 1 Safety Cover Open	Engine cover of APU unit is open. APU will not start or run until the cover is closed	<ul style="list-style-type: none"> • Cover not seated • Damaged wiring • Failed cover switch • Switch out of adjustment
Error Code 2 Low Oil Pressure	Low oil pressure	<ul style="list-style-type: none"> • Low oil level • Wiring damaged • Faulty switch • Dirty Oil Filter
Error Code 3 Battery Low Voltage	Low battery voltage - Start system immediately	<ul style="list-style-type: none"> • Damaged or broken battery cables • Excessive load on batteries • Bad battery • Faulty charging system
Error Code 4 Engine Run Failure	Engine started but did not run properly. Manual start attempts can occur.	<ul style="list-style-type: none"> • Speed sensor adjustment • Damaged speed sensor wiring • Failed speed sensor
Error Code 5 Low Coolant/ Engine Overheated	Engine will not run until temperature becomes normal or coolant level is at full.	<ul style="list-style-type: none"> • Low coolant • High Engine Temperature • Failed Temperature or Coolant Level Switch • Damaged Wiring
Error Code 6 Module Failure	Power Module is not responding.	<ul style="list-style-type: none"> • Failed Power Module
Error Code 7 Engine Start Failure	Engine did not start. Automatic start is disabled until operator presses select button.	<ul style="list-style-type: none"> • Bad glow plug relay • Bad starter relay • Failed glow plug • Lack of fuel
Error Code 8 No Communication Error	Communication between control panel and power module is lost. Engine will not run until communication is re-established.	<ul style="list-style-type: none"> • Communication Cable Damaged • Poor Connectivity at the terminals
Error Code 9 Main Engine Running	Truck engine is running. APU will not run if the main engine is already running.	<ul style="list-style-type: none"> • Optional engine wire is connected to DC voltage supply at the power module

CODE	REMEDY/CAUSE	REMEDY/COMMENT
Error Code 10 Run Timeout	The APU has shut down as the maximum run time has been exceeded in the AutoStart Time/Day Setting	<ul style="list-style-type: none"> • Engine will only run 3 hours max when set on AutoStart Time/Day
Error Code 11 Check Power Module Fuse	Very low battery voltage detected at the power module	<ul style="list-style-type: none"> • Check 20 Amp fuse at the power module (Located under the bunk on the HVAC unit)
Error Code 12 Battery Charging Failure	Battery voltage still low two minutes after cranking. Auto and manual starts can occur	<ul style="list-style-type: none"> • Faulty charging system • Bad batteries • Engine harness ground wires disconnected at the HVAC
Error Code 13 Battery Discharge	Alarm, system will enter low power mode. Auto and manual starts can not occur	<ul style="list-style-type: none"> • Bad batteries
Error Code 14 Check External Temperature Sensor	External temperature sensor disconnected from the power module	<ul style="list-style-type: none"> • External Temperature Sensor Disconnected • Connection loose or damaged
Error Code 15 External Temp Disable Limit	Engine shut down since the external temperature is outside the programmed range. Set default to OFF from factory.	The APU has been programmed not to start when the external temperature is outside a preprogrammed range.
Error Code 16 Module Reset – Set Clock	Power to the cabin controller has been lost.	<ul style="list-style-type: none"> • Reset clock
Error Code 17	Service Exhaust Filter if unit is DPF equipped, if not DPF equipped then a Power Module failure likely	<ul style="list-style-type: none"> • See authorized Dealer for Exhaust filter Servicing or Power Module diagnosis/replacement
Error Code 18	Replace Exhaust Filter if unit is DPF equipped, if not DPF equipped then a Power Module failure likely	<ul style="list-style-type: none"> • See authorized Dealer for Exhaust filter replacement or Power Module diagnosis/replacement
Error Code 19 Please Register Unit	Unit will run for 4 hours after installation then the registration code must be entered into the Cabin Controller Display Keypad	Call unit Manufacturer and have your APU Serial # ready and the S/N # on back of cabin controller display - push in GREY plastic tab under bottom edge to release Display from plastic bracket on the wall (pry it outwards).

CODE	REMEDY/CAUSE	REMEDY/COMMENT
Error Code 20 Water Valve Overcurrent	Electronic Coolant Control Valve drawing excess Amperage	Unplug J2 connector, attempt again to see if Code doesn't display.
Error Code 21 GP Overcurrent	Glow Plug Relay drawing excess Amperage	Glow Plug relay operation is faulty or wire broken.
Error Code 22 RUN or GP Overcurrent	Run Solenoid or Glow Plug Relay drawing excess Amperage	Unplug Run Solenoid – power with jumper wire, attempt again. If code returns, Glow Plug relay problem.
Error Code 23 Run Overcurrent	Run Solenoid is drawing excess Amperage	Unplug Run Solenoid – power with jumper wire, attempt again, measure Amps. If code returns: broken wire.
Error Code 24 Start or Run Overcurrent	Starter Relay or Run Solenoid drawing excess current.	Unplug Run Solenoid – power with jumper wire, attempt again. If code returns, Starter Relay problem
Error Code 28 Output Overcurrent	A Power Module output Circuit is experiencing a rise in Amperage while trying to activate an electronic component. Output Circuit shuts off to protect itself.	Similar to the function of a Circuit Breaker. Power off Controller for a minute and function will return. Cause: "Stuck" or "Failed" Relay, Solenoid or other component. Test each power module output circuit for Amperage draw.
Error Code 20 Water Valve Overcurrent	Electronic Coolant Control Valve drawing excess Amperage	Unplug J2 connector, attempt again to see if Code doesn't display.

FUEL SYSTEM

WARNING

Do **not** use aerosol types of starting aids such as ether. Such use could result in an explosion and personal injury, and will render the warranty null and void.

The RigMaster incorporates a low/high pressure system. In order to prevent the vehicle engine from drawing the fuel from the RigMaster's fuel supply line, an in-line check valve is mounted at the point of connection on the vehicle's suction fitting.

The RigMaster fuel supply line is connected to the engine feed pump, which in turn supplies fuel to the filter/sediment bowl assembly and then in turn to the injection pump.

NOTE: THIS TYPE OF FUEL SYSTEM DOES NOT DE-AIRATE ITSELF.

All air must be bled from all of the hoses and components. There are air bleed screws located in the fuel filter head assembly.

BLEEDING PROCEDURES

Low Pressure System

TOOLS REQUIRED

Philips Screwdriver #3

NOTE: THE LOW PRESSURE SYSTEM MUST BE COMPLETELY FREE OF AIR BEFORE THE HIGH PRESSURE SYSTEM CAN BE BLED PROPERLY.

1. Position a container or shop wiper under the fuel sediment bowl in order to contain any spillage of fuel.
2. Using a Philips screwdriver, loosen the right hand bleed screw located in the fuel filter head (Location B).
3. Prime the fuel system using the manual primer pump lever located on the fuel feed pump (Location F).
4. Continue to pump until the sediment bowl is full and clear flow of fuel is present at the bleed screw.
5. Tighten the bleed screw in the fuel filter head (Location B).
6. Bleeding low pressure system is complete

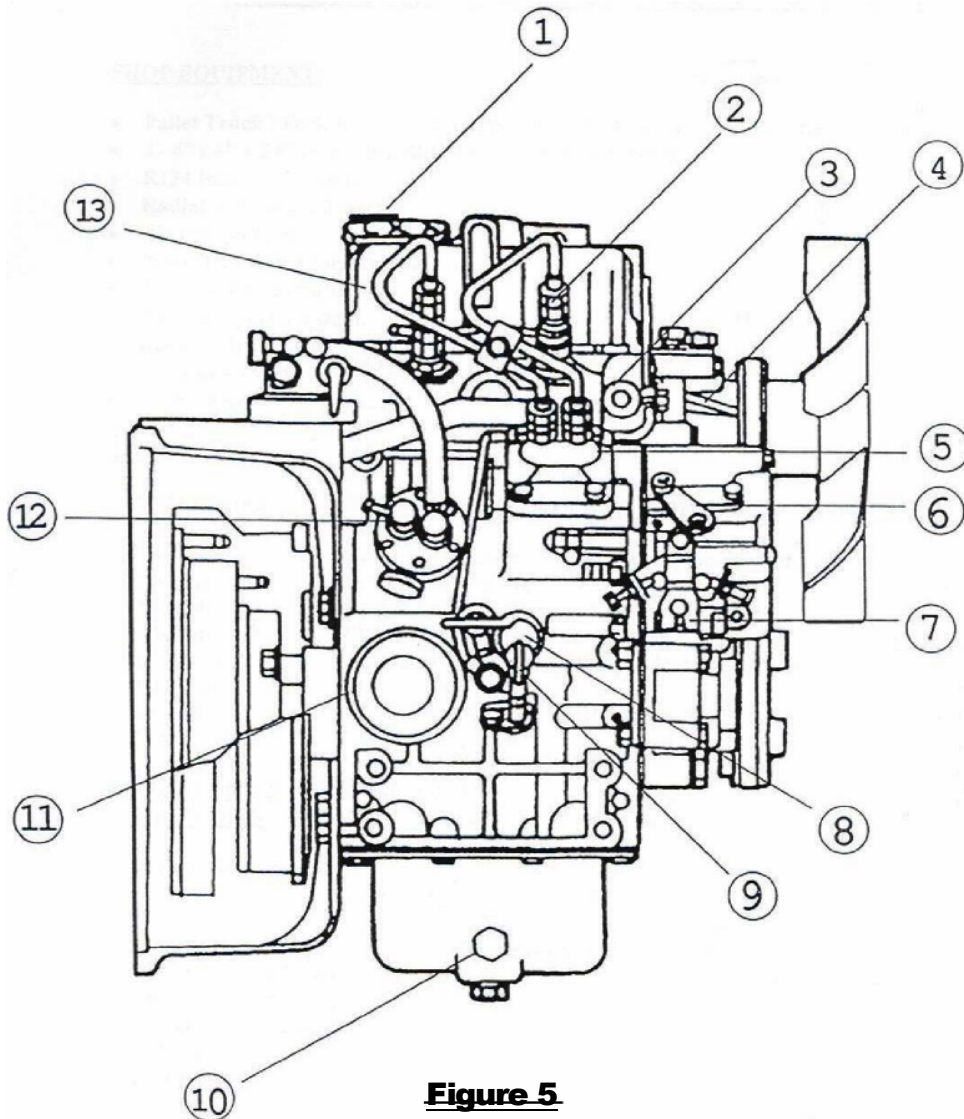
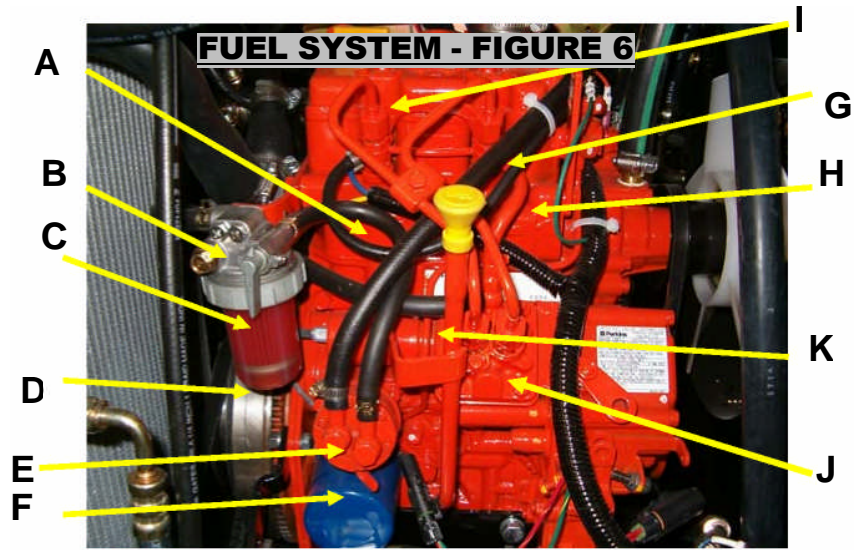


Figure 5

#	DESCRIPTION	#	DESCRIPTION
1	OIL FILLER CAP(not recommended to use)	7	THROTTLE LEVER C/W ADJUSTMENT SCREWS
2	ATOMIZER	8	COOLANT DRAIN TAP
3	OIL PRESSURE SWITCH	9	DIP STICK
4	AIR BLEED (FUEL SYSTEM)	10	OIL DRAIN PLUG (ALSO ON BOTTOM OF PAN)
5	FUEL INJECTION PUMP	11	OIL FILTER
6	OIL FILLER CAP located in this area	12	FUEL LIFT PUMP C/W HAND PRIMER LEVER



LEGEND	
A	Filter Feed Hose
B	Air Bleed Screw (Filter Housing)
C	Shut-Off Valve
D	Fuel Filter Element and Fuel Bowl
E	Fuel Supply Pump – Feed Pump
F	Manual Primer Pump Lever – (Fuel Supply Pump)
G	Fuel Supply Hose
H	Fuel Return Hose (Injector Bleed-Off)
I	Fuel Injector Nozzles
J	Fuel Injection Pump
K	Injector Pump Feed Line

BLEEDING PROCEDURES

High Pressure System-Injectors (see Figures 5 and 6)

TOOLS REQUIRED

17MM wrench

NOTE: THE LOW PRESSURE SYSTEM MUST BE COMPLETELY FREE OF AIR BEFORE THE HIGH PRESSURE SYSTEM CAN BE BLED PROPERLY.

NOTE: IT IS RECOMMENDED THAT A SECOND PERSON ASSIST IN THE PERFORMANCE OF STEPS #1, #2, #3, #6 AND #7. NEVER DISABLE OR BY-PASS THE SAFETY DEVICE.

1. Have a helper hold down the safety cover switch located on the unit.
2. Loosen both high-pressure line nuts located at the injectors using a 17mm wrench (Location I).
3. Start system using method described on Page 13.

NOTE: This procedure is only meant to remove air bubbles. Unit will not start with nuts loosened.

4. If the air bubbles are still present after 30 seconds of cranking, reactivate the starter with nuts loose.
5. Tighten the left injector line nut using a 17mm wrench (Location I).
6. If the unit fails to start, Repeat steps 1 - 5
7. As a final measure, it is recommended to bleed the fuel system with the engine running.
8. Slowly loosen one injector nut using a 17mm wrench (left nut first -Location I) at a time and retighten quickly when engine speed drops. This will remove any remaining air. Be sure to tighten the first injector nut (left nut) using a 17mm wrench before continuing to the next injector nut (right nut).

PREVENTATIVE MAINTENANCE

The first oil change must be performed at **50 hours** of service and at 1000 hour intervals there after. Please read the following chart for detailed information.

Maintenance schedules listed below are for **NORMAL** road conditions and the specific hour intervals must be adhered to. For **SEVERE** conditions perform the scheduled maintenance(s) earlier.

SCHEDULED INTERVALS IN HOURS				MAINTENANCE ITEMS
50	250	500	1000	
X				Check coolant level
X				Check engine lubrication oil level (first oil change)
	X			Check fan belt, adjust and inspect for wear*
	X			Check serpentine belt and inspect for wear*
		X		Check all fasteners for tightness
			X	Change engine lubricating oil See Page 24 for more information.
			X	Change oil filter
			X	Clean generator
			X	Check HVAC unit filter, clean if necessary
			X	Clean engine compartment, condenser, radiator. Use compressed air or liquid degreaser
			X	Check engine air filter, change if necessary
			X	Check fuel filter, change if necessary
			X	Change fan belt*
			X	Check coolant concentration, renew if necessary,
X				Check/Repair auxiliary power unit for any leaks or damage
		X		Valve clearance inspection. Intake and exhaust clearance are 0.0078"

***The use of conditioner may extend the service life of belts; consult the belt manufacturer for more information on belt maintenance.**

RIGMASTER POWER APPROVED CROSS REFERENCE PARTS LIST
OIL FILTER **AIR FILTER**

BRAND	PART No.	BRAND	PART No.
AC Delco	PF1233	RigMaster/Mann	00-C1140
Perkins	140516250	Baldwin	PA4758
Wix	51396		
K-Mart Motorvator	K014477		
Fram	PH4386	ASSEMBLY	
Baldwin	B37	RigMaster	103002

FUEL FILTER **FAN BELT**

BRAND	PART No.	BRAND	PART No.
Wix	33262	RigMaster	RP8-009
NAPA	3262	Bando	2310 9.5 X 790LA
Perkins	130366040	Perkins	080109049
Fram	C7516		
Baldwin	PF937		
AC Delco	GF771		

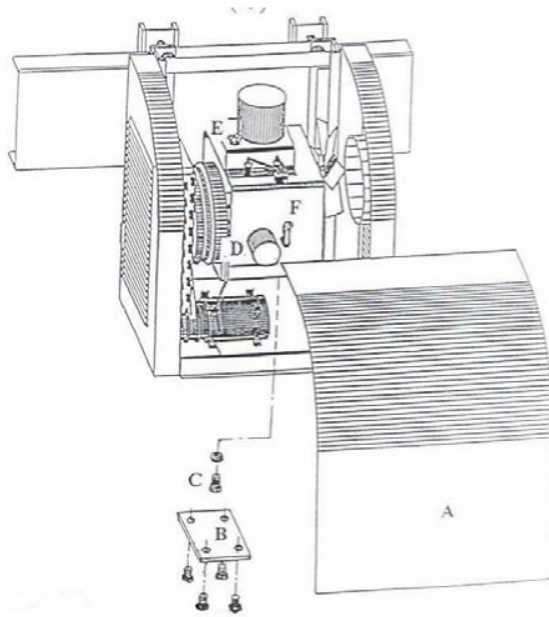
SERPENTINE DRIVE BELT **GLOW PLUGS**

BRAND	PART No.	BRAND	PART No.
RigMaster	RP8-108	NGK	YE01
Dayco	5060535		
Gates	K060535		

RECEIVER-DRIER

BRAND	PART No.
Rig Master	RP9-027B
Parker	085268-03

DO NOT USE UNAPPROVED CROSS REFERENCED PARTS



OIL CHANGE - FIGURE 7

TOOLS REQUIRED

3/8 Ratchet
17mm Socket
7/16 Socket

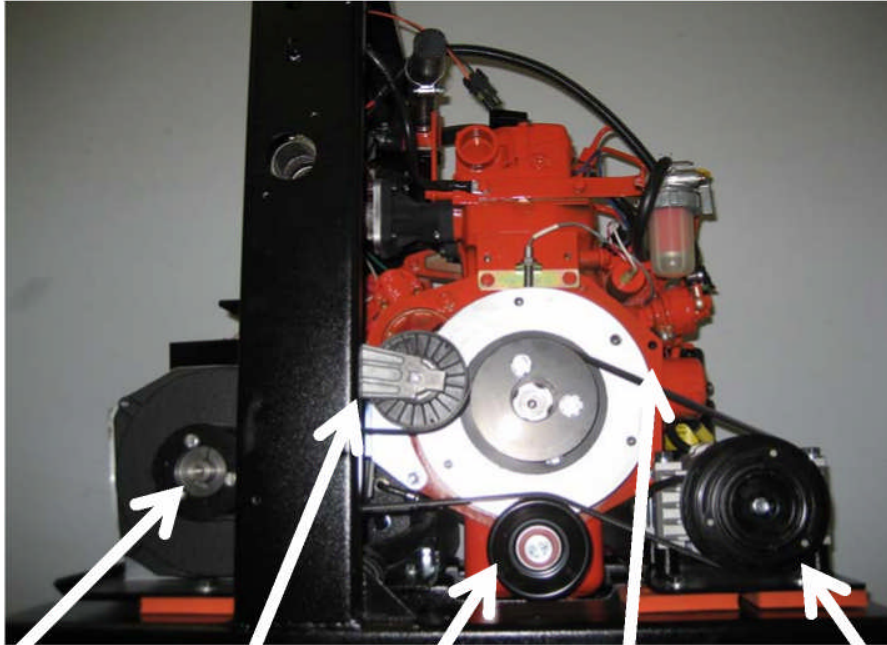
PROCEDURE:

1. Remove front cover (A). **NOTE- ensure proper operation of the cover safety switch or disconnect battery prior to this step for your safety.**
2. Remove drain plug access cover (B) using a 7/16 socket.
3. Remove drain plug (C) using a 17mm socket.
4. Remove oil filter (D).
5. Install new oil filter.
6. Inspect drain plug gasket and replace if needed
7. Install and tighten drain plug using a 17mm socket.
8. Refill engine with 3 liters / 3 US qt. of new engine oil (E)**
9. Check oil level with dipstick (F).
10. Run the RigMaster.
11. Recheck the oil Level and Add Oil if necessary. Note: make sure you don't overfill the oil, if over filled make sure the oil is drained to the proper level

****NOTE:** Use only good quality lubricating oil which meets (and not exceeds) any of the following specifications - API CJ-4 low sulfur oil.

Recommended Viscosity Grades: 10W30 & 15W40 are most commonly used.

SERPENTINE BELT REMOVAL - FIGURE 8



**Generator Auto Tensioner
Pulley**

Idler Wheel

**Serpentine Belt Compressor
Pulley**

TOOLS REQUIRED

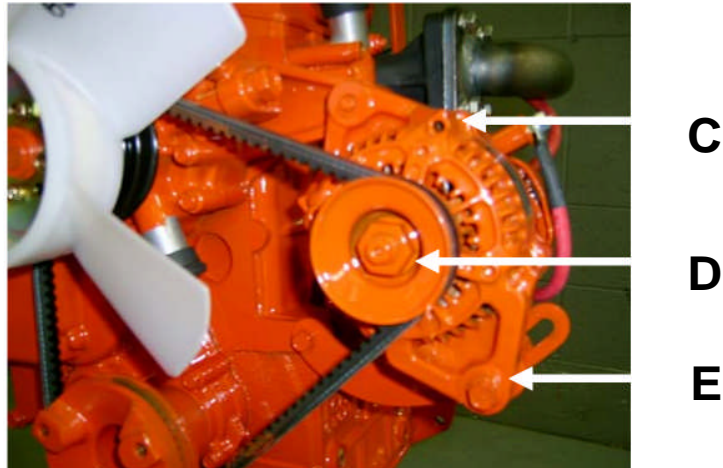
3/8 Ratchet

PROCEDURE:

1. Remove main cover from RigMaster. **NOTE- ensure proper operation of the cover safety switch or disconnect battery prior to this step for your safety.**
2. Using a 3/8 ratchet and insert into tensioner bracket.
3. Lift up on the tensioner bracket while sliding the belt off the main engine pulley. Note- exercise caution in this step to prevent possible damage to the radiator, or personal injury.
4. Remove the belt and inspect for wear and cracking.
5. If the belt looks good, clean and re-install the belt.
6. If the belt is worn replace with proper part number in consumable parts list.(pg 23).

Note

The 1 20v generator and the A/C compressor are fixed in place and the auto tensioner is self adjusting. The serpentine belt requires **NO** adjustments.



FAN BELT REMOVAL / ADJUSTMENT - FIGURE 9

TOOLS REQUIRED

12mm Wrench 3/8
Ratchet
12mm Socket
7/16 Socket
16 inch pry bar

PROCEDURE:

- 1) Remove the one piece fan side chamber using a 7/16 socket.
- 2) Loosen, but **DO NOT REMOVE**, the adjustment bolt (C) using a 12mm wrench & a 12mm socket. Then loosen the pivot bolt (D) using a 12mm socket.
- 3) To remove the fan belt, slide the alternator (E) down towards the back of the engine & remove the fan belt.
- 4) Install the new fan belt and slide the alternator (E) up towards the top of the engine using a 16 inch pry bar until the belt deflection is less than 6 mm. (1/4").
- 5) When the fan belt is tight, tighten the adjustment bolt (C) using a 12mm wrench & 12mm socket. Then tighten the pivot bolt (D) using a 12mm socket.
- 6) Reinstall the one piece fan side chamber using a 7/16 socket. Make sure the ring on the one piece side chamber does not touch the engine fan blade.

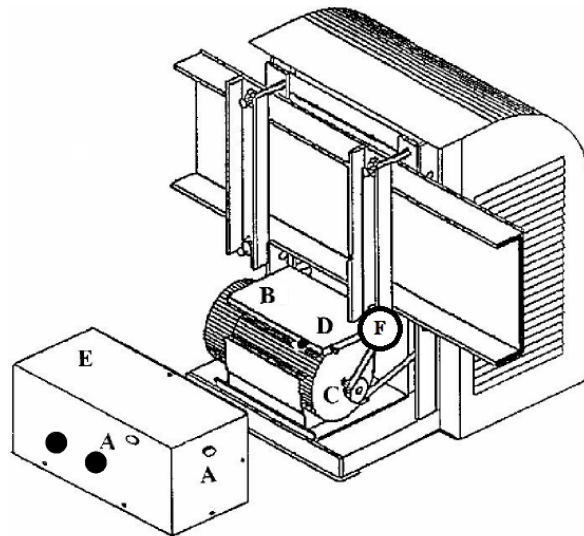
NOTE: Inspect the fan blade for broken blades or worn tips; if the blade is damaged check the engine mounts and bottom stiffeners. (loose bolts or worn engine mounts).

RESETTING THE 20 AMP BREAKERS

The RigMaster APU is equipped with a GFI breaker on the electrical outlet installed in your sleeper. Unplug all items from the electrical outlets before pressing the reset button. This will reset the breaker for the power going to these outlets.

If resetting this breaker does not restore power, the main Generator breakers (located at the Generator itself) may also need to be reset (see description of these locations below).

WARNING: CORRECT THE ELECTRICAL OVERLOAD PRIOR TO RESETTING EITHER BREAKER.



RESETTING THE 20 AMP BREAKERS - FIGURE 10

For illustration purposes, the Generator cover is shown removed

LOCATION OF 20Amp MAIN GENERATOR BREAKERS AND RESET PROCEDURE:

The 20 Amp Main Generator breakers are located at the Generator, in the back of the APU. One breaker protects the circuit supplying the sleeper, the other protects the circuit supplying the block heater. To ensure that you find the breakers on both "Older" and "Newer" RigMaster APU's both locations are shown in the diagram above.

Breaker Location D - (all RigMaster APU's built before Nov 2010)

1. Remove the rubber plugs (A) from either the back or the side of the Generator cover (E) using a flat-head screwdriver
2. The breakers (D) are located on the electrical connection box (B) mounted on top of the Generator
3. Using the screwdriver, depress the reset buttons.

Breaker Location F - (new location on RigMaster APU's built since Nov 2010)

1. With the RigMaster APU turned "OFF", remove the front cover of the RigMaster APU.
2. TO AVOID INJURY, CONFIRM THAT NONE OF THE RIGMASTER COMPONENTS ARE "HOT".
3. Look along the top of the serpentine belt towards the back of the unit with a flashlight. The breakers are located just above the belt at the Generator.
4. Depress the reset buttons

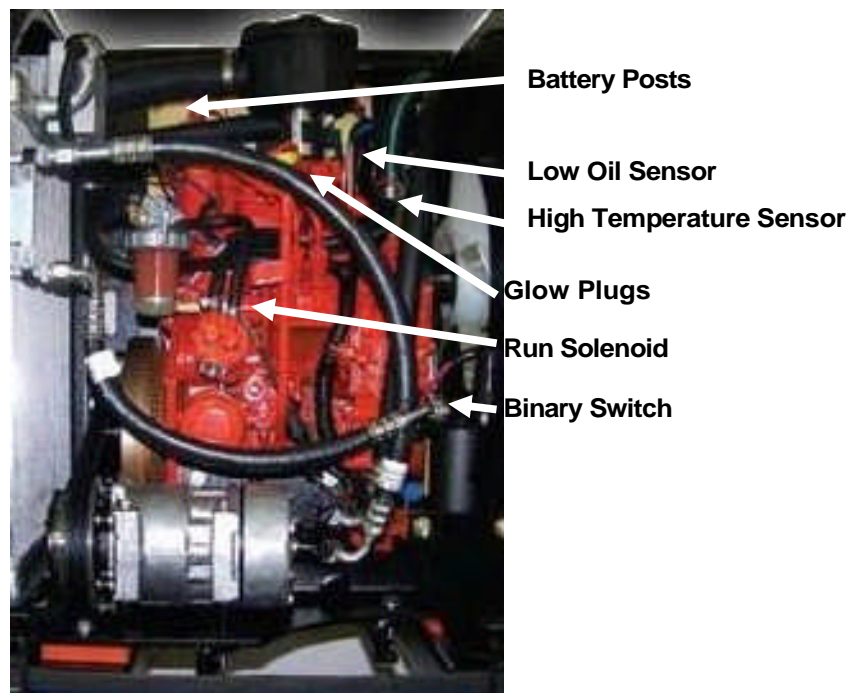
THESE BUTTONS ARE SPRING LOADED, THEY WILL NOT STAY "PUSHED IN"

CLEANING INSTRUCTIONS

The RigMaster Auxiliary Power Unit should be periodically inspected and any accumulation of road contaminants (such as: paper; plastic; dirt; oil; etc.) must be removed. Three main components, as outlined below, must be kept clean and free of contaminants and/or debris. Refer to Figure 12 for location of components.

MAIN UNIT GENERAL CLEANING

- a) Wash the exterior of the main unit making sure that all louvered areas are clear which is especially important so that air may easily enter and exit the APU.
- b) Before washing the interior of the RigMaster APU, it is mandatory to cover the Generator's vented areas. The Generator exhaust vents are rectangular holes in the casting of the Generator body. They are located on both sides of the Generator body near the pulley. The rear exhaust vent and the vented black plastic Generator end cap are accessed from behind the APU by removing the Generator cover. These vents must be covered so that water will not be forced into the Generator interior during washing. If there is a possibility of water being present inside of the Generator remove the black plastic vented end cap and dry the inside of the Generator before use. OPERATION OF THE GENERATOR UNIT WITH WATER INSIDE WILL CAUSE THE FAILURE OF THE GENERATOR UNIT THAT WILL NOT BE COVERED BY WARRANTY.
- c) Remove the front cover and gently wash the interior of the APU being careful to keep sprayer 2 feet (24 inches) from any component.
- d) Before replacing the front cover of the RigMaster unit, all electrical components and connections must be protected with a dielectric product (similar to silicone spray or grease) to prevent corrosion. When the engine compartment is dry, spray all electrical connectors and sensors with dielectric spray, including: the positive and negative posts, glow plugs and run solenoid. Be sure to spray the following components that are not shown in the picture below: the green wire to the starter solenoid and the positive posts on the alternator and starter. Apply dielectric grease directly to the terminals of the low oil sensor, high temperature sensor and the binary switch on the A/C Receiver dryer. Check that the boots are installed back on the sensors.



MAIN UNIT - FIGURE 11

GENERATOR CLEANING

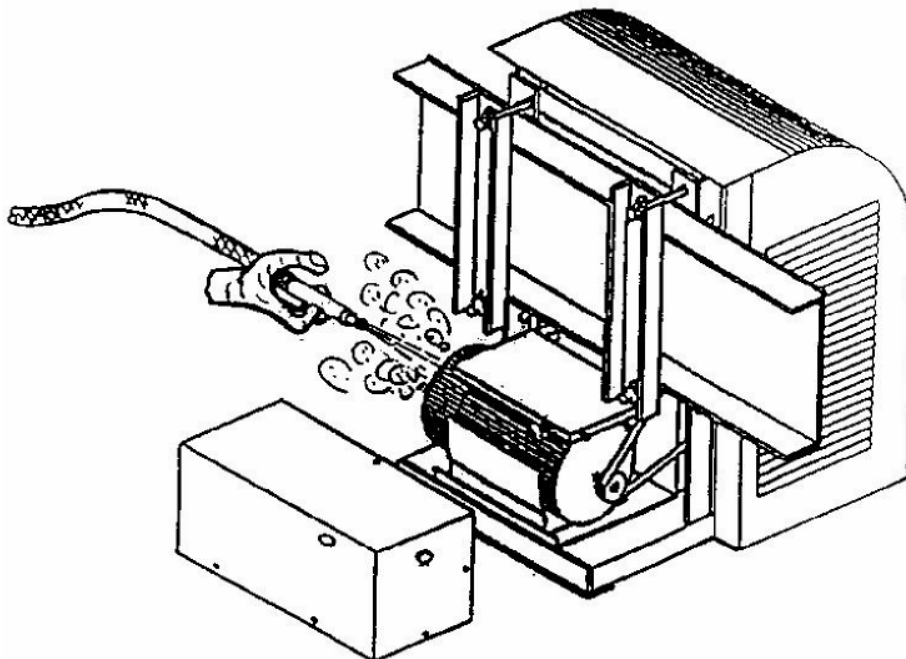
It is important to maintain the interior of the Generator in a clean and dry state. If there is any possibility that water or dirt has entered the interior of the Generator, from either washing or prolonged exposure to an extremely wet environment, it should not be operated without being cleaned and dried. OPERATION OF THE GENERATOR UNIT WITH DIRT OR WATER INSIDE WILL CAUSE FAILURE OF THE GENERATOR UNIT THAT WILL NOT BE COVERED BY WARRANTY.

TOOLS REQUIRED

7/16 Socket

PROCEDURE:

1. Remove the Generator Cover using a 7/16 socket and inspect for any accumulation of dirt or oil especially at the generator air inlet and outlet openings.
2. Using a compressed air line and nozzle, blow out the generator compartment.
3. Using a clean cloth, soak up any oil or other liquids.
4. Replace the Generator Cover and secure using a 7/16 socket.



GENERATOR - FIGURE 12

HEATER / AIR CONDITIONING UNIT

1. Unscrew the two thumb nuts (A) and remove the air filter out of the HVAC box.
2. Wash the air filter using soapy water and hang dry or blow clean with compressed air.
3. Insert the dry air filter into the filter cover and tighten down the two thumb nuts.



A

HEATER / AIR CONDITIONER UNIT - FIGURE 13

RigMaster Troubleshooting Guide

1. ENGINE

SYMPTOM	PROBABLE CAUSE	REMEDY/COMMENT
Engine does not Crank	<ol style="list-style-type: none"> 1. Low battery voltage. 2. Battery connections loose. 3. Starter relay. 4. Broken engine ground strap. 5. Starter motor faulty. 	<ol style="list-style-type: none"> 1. Check batteries. 2. Tighten connections. 3. Check for power at relay during starting sequence. 4. Replace strap. 5. Check for power at starter solenoid.
Engine Cranks but does not Start	<ol style="list-style-type: none"> 1. Clogged air filter. 2. Clogged fuel filter. 3. Run solenoid not operating. 4. Glow plug or glow plug relay. 5. Lift pump faulty. 6. Governor Assembly. 	<ol style="list-style-type: none"> 1. Check air filter. 2. Replace filter. 3. Check 12v at run solenoid. 4. Check for power at the glow plugs and relay. 5. See section 6 6. See section 5.13.
Engine Hard to Start	<ol style="list-style-type: none"> 1. Air filter clogged. 2. Fuel. 3. Glow plugs. 4. Injectors clogged. 	<ol style="list-style-type: none"> 1. Replace air filter 2. See section 6 3. Check for power at the glow plugs. 4. Replace fuel injectors.
Engine Cranks Slowly	<ol style="list-style-type: none"> 1. Weak or bad batteries 2. Damaged / corroded battery connections. 3. Faulty starter. 4. Faulty A/C Compressor. 5. Faulty generator. 	<ol style="list-style-type: none"> 1. Inspect batteries 2. Replace or clean the battery connections 3. Check starter connections. 4. Compressor seized. 5. Generator seized.
Engine Shuts Down	<ol style="list-style-type: none"> 1. Clogged air filter. 2. Clogged fuel filter. 3. Blown fuses. 4. Damaged or loose wiring. 	<ol style="list-style-type: none"> 1. Replace air filter. 2. Replace fuel filter. 3. Replace fuse. 4. Inspect condition of wiring and wiring connections.
Dark gray/black Smoke	<ol style="list-style-type: none"> 1. Engine over loading. 2. Clogged air filter. 	<ol style="list-style-type: none"> 1. Seized belt driven component. 2. Check and/or replace air filter.

SYMPTOM	PROBABLE CAUSE	REMEDY/COMMENT
Engine Starts and Stalls	<ol style="list-style-type: none"> 1. Speed sensor. 2. Clogged fuel filter. 3. Excessive load on the motor; generator, a/c compressor. 4. Damaged or loose wiring connections. 	<ol style="list-style-type: none"> 1. Check speed sensor resistance and gap. 2. Replace fuel filter. 3. Unplug the block heater when using the a/c compressor. 4. Inspect wiring connection & connectors.
White or Blue Smoke	<ol style="list-style-type: none"> 1. Excess engine oil. 2. Coolant in combustion chamber. 	<ol style="list-style-type: none"> 2. Inspect & correct oil level. 3. Check for blown head gasket.
Engine Runs Rough	<ol style="list-style-type: none"> 1. Air filter clogged. 2. Fuel filter clogged. 3. Fuel leak. 4. Worn/contaminated fuel injectors. 5. Engine in poor condition. 	<ol style="list-style-type: none"> 1. Check air filter assembly. 2. Replace fuel filter. 3. Inspect all fuel hoses and clamps. 4. Inspect Injectors. 5. Replace/rebuild the engine.
Loss of Engine Oil	<ol style="list-style-type: none"> 1. Oil seals leaking. 2. Leaking drain plug. 3. Pinched or clogged breather tube. 4. Engine worn or in poor condition. 	<ol style="list-style-type: none"> 1. Replace crankshaft seals. 2. Replace oil pan plug gasket. 3. Repair or replace the tube.. 4. Replace and/or rebuild the engine

2. CHARGING SYSTEM

SYMPTOM	PROBABLE CAUSE	REMEDY/COMMENT
Batteries not Charging	<ol style="list-style-type: none"> 1. Loose or broken belt. 2. Damaged or loose battery connection. 3. Poor battery condition. 4. Faulty alternator. 	<ol style="list-style-type: none"> 1. Tighten or replace belt. 2. Inspect and/or replace battery connections. 3. Test batteries. 4. Check voltage at alternator field coil wire and truck batteries.
Batteries Overcharging	<ol style="list-style-type: none"> 1. Faulty alternator. 	<ol style="list-style-type: none"> 1. Check alternator output. (.2 V above Battery voltage)

3. FUEL SYSTEM

SYMPTOM	PROBABLE CAUSE	REMEDY/COMMENT
Fuel Odor or Leak	<ol style="list-style-type: none"> 1. Loose fuel fittings. 2. Damaged fuel line. 3. Damaged fuel filter bowl. 4. Fuel lift pump leak. 	<ol style="list-style-type: none"> 1. Tighten clamps. 2. Replace fuel hose. 3. Replace fuel filter assembly. 4. Replace lift pump.
No Start Condition (fuel getting to cylinders)	<ol style="list-style-type: none"> 1. Dirty fuel. 2. Clogged fuel filter. 	<ol style="list-style-type: none"> 1. Clean fuel system. 2. Replace fuel filter. (15% bio-diesel only)
SYMPTOM	PROBABLE CAUSE	REMEDY/COMMENT
Air in Fuel System	<ol style="list-style-type: none"> 1. Worn or crack in fuel line. 2. Lose hose clamps. 3. Faulty fuel bowl gasket. 	<ol style="list-style-type: none"> 1. Replace fuel line. 2. Tighten clamps. 3. Replace fuel bowl gasket.

4. COOLING SYSTEM

SYMPTOM	PROBABLE CAUSE	REMEDY/COMMENT
Engine Overheating	<ol style="list-style-type: none"> 1. Coolant level low. 2. Engine fan belts loose. 3. Radiator fins blocked. 4. Electric fan. 5. Electrical fan temperature switch. (RMP-T4-6 only) 6. Faulty engine thermostat. 7. Engine overloading. 	<ol style="list-style-type: none"> 1. Add coolant and leak test system. (see S 11.3) 2. Tighten or replace fan belt. 3. Clean radiator fins. 4. Replace electric fan. 5. See S11.2. 6. See S5.12. 7. Seized belt driven component.
Engine Overcooling	<ol style="list-style-type: none"> 1. Check coolant mixture. 2. Faulty engine thermostat. 	<ol style="list-style-type: none"> 1. Replace coolant. 2. Replace engine thermostat.
Coolant Loss	<ol style="list-style-type: none"> 1. System over-filled. 2. External hose leak. 3. Internal hose leak. 4. Blown head gasket. 	<ol style="list-style-type: none"> 1. Check coolant level. 2. Check coolant hoses from main unit to the HVAC box. 3. Check coolant hoses inside the engine compartment. 4. Replace head gasket.
Poor Circulation	<ol style="list-style-type: none"> 1. Water pump not operating properly. 2. Cooling system restricted. 	<ol style="list-style-type: none"> 1. Check water pump and belt tension. 2. Check for weak or kinked hoses.

5. HVAC SYSTEM

SYMPTOM	PROBABLE CAUSE	REMEDY/COMMENT
Poor Air Flow	<ol style="list-style-type: none"> 1. HVAC filter clogged. 2. HVAC air intake obstructed. 3. Excessive duct hose. 4. Poor placement of vent. 5. Faulty blower motor. 6. Ducted through trucks ventilation system. 	<ol style="list-style-type: none"> 1. Clean filter. 2. Remove obstruction. 3. Reduce the hose length. 4. Relocate the vent. 5. Replace blower motor. 6. See installation manual for mounting methods.
Little or No Hot Air	<ol style="list-style-type: none"> 1. Insufficient engine load. 2. Low Electronic coolant control valve faulty. 3. Low coolant or air lock. 4. Cooling system blocked. 5. Engine overcooling. 	<ol style="list-style-type: none"> 1. Check if main engine block heater is plugged in 2. Check water valve operation. (see S9.6) 3. Bleed system of air and fill. 4. Flush cooling system 5. Faulty engine thermostat.
Little or No Cold Air	<ol style="list-style-type: none"> 1. Cabin Controller not set to A/C mode. 2. No Output power to Pin 2 on connector J1. 3. A/C system leak. 4. Condenser/radiator dirty. 5. Compressor not working. 6. Evaporator core frozen. 7. Electric fan not operating. 8. Electronic coolant control valve faulty. 	<ol style="list-style-type: none"> 1. Set Controller temperature 2. Check for 12V at A/C clutch control output. 3. Check system pressures. 4. Clean radiator/condenser. 5. Check the compressor and fuse. 6. Replace thermostatic switch. 7. Check fan relay and fuse. 8. Replace electronic coolant control valve.

6. 120 VOLT GENERATOR SYSTEM

SYMPTOM	PROBABLE CAUSE	REMEDY/COMMENT
No Power to Receptacles (Bunk and block heater)	<ol style="list-style-type: none"> 1. Breakers tripped. 2. Wiring connections. 3. Faulty capacitor. 4. Internal damage to generator. 	<ol style="list-style-type: none"> 1. Reset breakers. 2. Repair connections. 3. Replace capacitor. 4. Replace generator.
Breaker/Breakers Trip Continually	<ol style="list-style-type: none"> 1. Circuit overloaded. 2. Short circuit. 3. Faulty breaker. 	<ol style="list-style-type: none"> 1. Check rating of appliances. 2. Repair short. 3. Replace breaker.

7. SERPENTINE DRIVE BELT

SYMPTOM	PROBABLE CAUSE	REMEDY/COMMENT
Belt has Premature Wear	<ol style="list-style-type: none"> 1. Use of incorrect belt. 2. Damage to pulleys. 3. Misalignment of pulleys. 	<ol style="list-style-type: none"> 1. Use correct belt. 2. Replace damaged pulleys. 3. Realign pulleys.
Belt is Loose and/or comes off Repeatedly during Operation	<ol style="list-style-type: none"> 1. Use of incorrect belt. 2. Damage to pulleys. 3. Misalignment of pulleys. 	<ol style="list-style-type: none"> 1. Use correct belt. 2. Replace damaged pulleys. 3. Realign pulleys.
Auto tensioner does not Tension Belt Fully	<ol style="list-style-type: none"> 1. Use of incorrect belt. 2. Belt not seated on pulley properly. 3. Weak tensioner. 	<ol style="list-style-type: none"> 1. Use correct belt 2. Reinstall belt 3. Replace tensioner.

RigMaster Power Warranty Policy

The Limited Warranty

This limited warranty applies to the RigMaster® Auxiliary Power Unit (RigMaster APU) which consists of the following components:

1. The generator set
2. The generator set control panel
3. The combination heater/air conditioning system

Warranty Coverage

RigMaster Power by Mobile Thermo Systems Inc. (RigMaster Power) warrants that, under normal service and use, the RigMaster APU will be free from defects in material and workmanship for a term of 12 months/2000 hours or a term of 24 months/4000 hours, depending on the term of the warranty coverage purchased, for the APU components listed excluding the engine (Refer to the engine warranty coverage section of the policy). The RigMaster APU warranty coverage shall begin from the date of installation or from the time the owner takes possession of the RigMaster APU if the APU is installed with a new vehicle purchase, which ever comes first, and is subject to all terms and conditions, limitations and provisions of the limited warranty. This limited warranty is governed by the laws of the Province of Ontario, Canada, and any claims or disputes arising out of this limited warranty shall be governed by the laws of the Province of Ontario, Canada.

Warranty Obligation

During the warranty period, RigMaster Power will repair or replace, at its option, the RigMaster APU components, which consist of:

1. the generator
2. the electronic controls
3. the combination heater/air conditioning system components.

Repair or replacement will be completed at an authorized dealer, upon presentation of proof of purchase and determination by RigMaster Power or its authorized dealer that a component has failed under normal service and use, at **NO CHARGE** to the owner, within the established warranty period of 12 months/2000 hours or 24 months/4000 based on the warranty coverage purchased.

Engine Warranty Coverage

The RigMaster APU comes equipped with either a Perkins or Caterpillar engine. Both engines

come with a 24-month/2000 hours from the engine manufacturer that covers all engine components excluding alternator and starter. The alternator and starter are warranted for a period of 12 months/2000 hours by the engine manufacturers.

Disclaimer of Other Warranties

RIGMASTER POWER, INCLUDING ITS AGENTS AND AUTHORIZED DEALERS, MAKES NO OTHER WARRANTIES AND EXPRESSLY DISCLAIMS ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ALL WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. No person, firm or representative is authorized to assume any obligation or make any warranty on behalf of Rig Master Power other than the limited warranty as stated herein.

Maintenance

The RigMaster owner's manual lists all maintenance functions to validate this limited warranty. **PLEASE NOTE THAT FAILED COMPONENTS DUE TO POOR OR IMPROPER MAINTENANCE WILL NOT BE COVERED BY THIS LIMITED WARRANTY.** Where a dispute arises regarding proper maintenance, the manufacturer reserves the right to request proof in the form of receipts for maintenance and any other records of service to establish that proper maintenance has been performed, as per the maintenance manual and/or dealer communications.

Installation

It is the responsibility of the installer and the owner to ensure that **ALL** RigMaster APU components are in proper working order at the time of installation. The manufacturer is not responsible for failed components that are a result of improper installation. In the event the owner/fleet wishes to install the APU themselves, it is the dealer's responsibility to provide installation instructions to the owner/fleet with the sale of the APU. In order to validate your Rig Master warranty, the APU must be inspected and certified by an authorized RigMaster dealer within 30 days of purchase. The cost of inspecting and certifying any RigMaster APU is at the owner's expense, and if validated, warranty coverage begins from the date of **PURCHASE** and **NOT** the date of certification.

Warranty Voided or Terminated

Any modifications to the RigMaster without written authorization from the manufacturer will void this limited warranty. Repair, replacement, or maintenance, using other than approved parts, may be cause to terminate this limited warranty, as will use of starting aids such as "Quick Start" or "Ether".

Exclusions For Limited Warranty

The cost of normal maintenance, such as but not limited to, tune-ups, adjustments, inspections, tightening of clamps, fasteners, hoses, the replacement of belts, fuel, air and oil filters, unless damaged by cause of a warrantable failure, are excluded from this limited warranty.

Limitations of Remedies

The remedy of repair or replacement as set forth herein is the exclusive remedy available to the purchaser or user of the RigMaster. RigMaster Power by Mobile Thermo Systems Inc (MTS) disclaims and shall not be liable or responsible to the owner or user of the RigMaster APU or any other person for incidental, consequential, direct, indirect, special or general damages of any kind arising out of or in any way related to the use of the RigMaster APU. This includes, but is not limited to: towing charges, accident repairs, road calls, traveling expenses, loss of revenue profits, loss of truck use or damage to persons or property. No claim of any kind asserted against RigMaster Power by MTS, whether asserted under legal theories of negligence, strict liability, warranty, or any other common law or statutory basis, shall be greater in amount than the purchase price of the RigMaster APU with respect to which damages are claimed.

Indemnity

The user and owner of the RigMaster APU agree to indemnify and hold RigMaster Power harmless from any and all claims, expenses, suits or liability of any nature whatsoever asserted against RigMaster Power arising out of or in any way related to negligence on the part of the user or owner of the Rig Master APU.

Warranty Claims

Inspection and replacement of failed or defective parts must be performed by an authorized RigMaster dealer.

Transfer of Warranty

Where the vehicle with the RigMaster APU has been sold by the first owner to a second owner and the RigMaster has not been removed, this limited warranty is transferable from the original owner to a second owner with whatever portion of the limited warranty that remains from the date of sale. Where the RigMaster APU has been removed and sold by the first owner to a second owner, re-installation is to be completed by a RigMaster authorized dealer to validate the remaining portion of this limited warranty. Where the original owner transfers the RigMaster® APU to a new vehicle, the installation must be completed by an authorized dealer to validate any remaining portion of this limited warranty.

Warranty Policy

RigMaster Power warrants that under normal service and use, the RigMaster APU will be free from defects in materials and workmanship as stated.

During the warranty period Rig Master Power by Mobile Thermo Systems Inc. will provide the exclusive remedy of ensuring the repair or replacement of those **parts** which are demonstrated to be defective in material or workmanship. RigMaster Power will not, under any terms replace the entire APU as a means of repair.

The purpose of this warranty is to provide the owner of the RigMaster APU with **free** repair or replacement of defective parts in a manner outlined in the following policy. This remedy does not apply to normal wear and tear of service parts, improper installation, deterioration, modification or economic loss.

RigMaster Warranty Guidelines

Warranty Qualification

All RigMaster Power APUs are eligible for warranty repair for a period of 12 months /2000 hours or 24 months/4000 hours from the 'in-service date' as stated on the warranty registration form for all RigMaster APU components excluding the engine. RigMaster power maintains a complete list of registered RigMaster Power owners. Dealers are invited to contact RigMaster Power to obtain "in-service date", where available.

The Perkins/Caterpillar Engine

Both models of engines are warranted by the engine manufacturer for a period of 24 months/2000 hrs for all engine components excluding starter and alternator. The starter and alternator are warranted for 12 months/2000 hrs. Perkins engine warranty repairs must be performed by a registered Perkins dealer. Caterpillar engine warranty repairs must be performed by a registered Caterpillar dealer.

Note to dealer, any RigMaster APU sold with a Caterpillar engine must be registered with Caterpillar to activate the 24 month/2000 hour warranty on the engine. To do this, the dealer must go to www.cat.com, go to products, select engines and click on register engine warranty on the right side of the screen. Fill out the registration form to activate the Cat engine warranty.

Warranty Registration

It is the responsibility of the installing dealer to register the RigMaster APU installed by the dealer's trained technicians. The installing dealer must register the in-service date of the warranty from the time the owner takes possession of the Rig Master APU. In the event the owner/fleet have installed the RigMaster APU themselves, the APU must be inspected within 30 days of purchase to validate the warranty. **THE IN-SERVICE DATE BEGINS FROM THE DATE OF PURCHASE AND NOT FROM THE DATE OF CERTIFICATION.**

The dealer must fill out the warranty check list and fax the check list completed with all of the new owner's information to 416-293-5104 along with a copy of the original purchase invoice of the APU from RigMaster to validate the warranty period purchased with the APU. The dealer can also have the option to fill out the online form instead and attach a scanned copy of the purchase invoice from RigMaster to validate the warranty purchased with the APU.

It is the responsibility of the authorized dealer to inspect and certify that any RigMaster APU has been installed correctly. Costs of certification as well as the cost of any repairs to the APU for certification purposes are the responsibility of the owner. Failure to properly inspect the APU for certification, and any damages resulting from improper installation, shall render the warranty void. The installing dealer is responsible for all repairs resulting from improper installation.

It is the dealer's responsibility to check the warranty registration of any RigMaster APU prior to performing any warranty repairs. Any warranty claims filed for RigMaster APU's out of warranty shall be rejected by Rig Master Power.

When Failures Occur due to Improper Installation

When a RigMaster dealer determines a failure to have occurred due to an improper installation by their installing technician, it is the dealer's responsibility to repair the RigMaster APU and correct the installation error at no cost to the owner. At no time shall RigMaster Power warrant any repairs to the RigMaster APU due to improper installation by the installing dealer.

When a RigMaster dealer determines a failure to have occurred due to an improper installation from another installing dealer, it is the dealer's responsibility to offer the owner of the RigMaster APU one of two choices:

1. Have the owner return to the installing dealer to have the APU repaired by the installing dealer.

2. Where the owner cannot or is unwilling to return to the installing dealer, perform the repairs at the owner's expense. It would then be the owner's responsibility to obtain a refund for work performed from the installing dealer.

If the dealer is in doubt as to whether the repair is warrantable or not, it is the dealer's responsibility to contact RigMaster Power. RigMaster Power reserves the right to, and final determination of, whether a repair can be claimed as warranty.

Use of Aftermarket Components for Warranty Repairs

At no time shall a RigMaster dealer use aftermarket parts for warrantable repairs on a Rig Master APU. The use of aftermarket components for warranty repairs is strictly prohibited by RigMaster Power. At no time shall a dealer manufacture their own parts, including but not limited to, air conditioning hoses, brackets and fittings.

Transfer of Warranty

It is the dealer's responsibility to notify RigMaster Power of a change of ownership when a RigMaster APU has been sold by the first owner to a second owner. The dealer must inform RigMaster Power by means of a written notice with both original owner's information and new owner's information so all records can be updated for warranty purposes. When the APU has been removed and sold to a new owner with remaining warranty, the dealer must transfer and inspect the APU installation and notify RigMaster Power in writing of the transfer of warranty.

Customer Assistance Procedure

To obtain warranty repairs you must request the needed repairs within the warranty period from An authorized RigMaster dealer.

A reasonable time must be allowed to perform the warranty repair after taking the unit to an authorized dealer location. Repairs will be performed during normal business hours.

To ensure your complete satisfaction the following procedures must be followed in the event You have a problem.

- 1- Contact the nearest (most convenient) RigMaster dealer to schedule a warranty service appointment. Prior to contact have the following information available
 - Unit serial number
 - Hour meter reading
 - In service (Purchase) date
 - Nature of problem
- 2- Deliver unit to dealer for service. Upon completion of repairs review and sign the dealer work order, keeping a copy for reference.
- 3- Frequently, customer concerns are a result of a breakdown in communications and can be quickly resolved at the dealer level.
- 4- If you are still not satisfied, present the entire matter in writing to:

**RigMaster Warranty Administration
1320 Ellesmere Road, Unit #9
Toronto, Ontario
Canada, M1P 2X9
Fax: (416) 201-7532**

MAINTENANCE RECORD

DATE	Hour Meter Reading	MAINTENANCE PERFORMED						REMARKS
		200	400	600	800	1000	1600	
		hrs.	hrs.	hrs.	Hrs.	hrs.	hrs.	

MAINTENANCE RECORD

DATE	Hour Meter Reading	MAINTENANCE PERFORMED						REMARKS
		200	400	600	800	1000	1600	
		hrs.	hrs.	hrs.	hrs.	hrs.	hrs.	

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DATE	Hour Meter Reading	MAINTENANCE PERFORMED						REMARKS
		200	400	600	800	1000	1600	
		hrs.	hrs.	hrs.	hrs.	hrs.	hrs.	



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