

RigMaster cold weather performance

When the temperature drops, a number of components in the APU system are affected. Here's some information that might help your RigMaster perform better in cold weather.

Before you work on a RigMaster, make note of these points to avoid damaging RigMaster components:

- When performing maintenance or repairs to the RigMaster APU or to the batteries of your Truck, be sure to unplug the "J1 Connector" at the power module (under the bunk) to prevent power surges that can damage it. This includes "jump starting" your truck or disconnecting battery cables.
- Never use a Starting Fluid such as Ether or "Quick Start" to aid starting your RigMaster. Severe engine damage and personal injury **WILL** result. The use of such products will void warranty.

Starting

Batteries

Good batteries will read 12.8 volts or higher but a Battery's effectiveness decreases about 15% for every 0.1 volt and this effect is more serious in cold weather.

Checking battery cables and terminal connections is important; their condition greatly affects the performance of all electrical components in your truck, including the APU. Check the Alternator charging wire and the connector on the back (exciter wire) of the Alternator.

A load test is the only accurate indicator of battery condition and is easily performed.

Glow Plugs

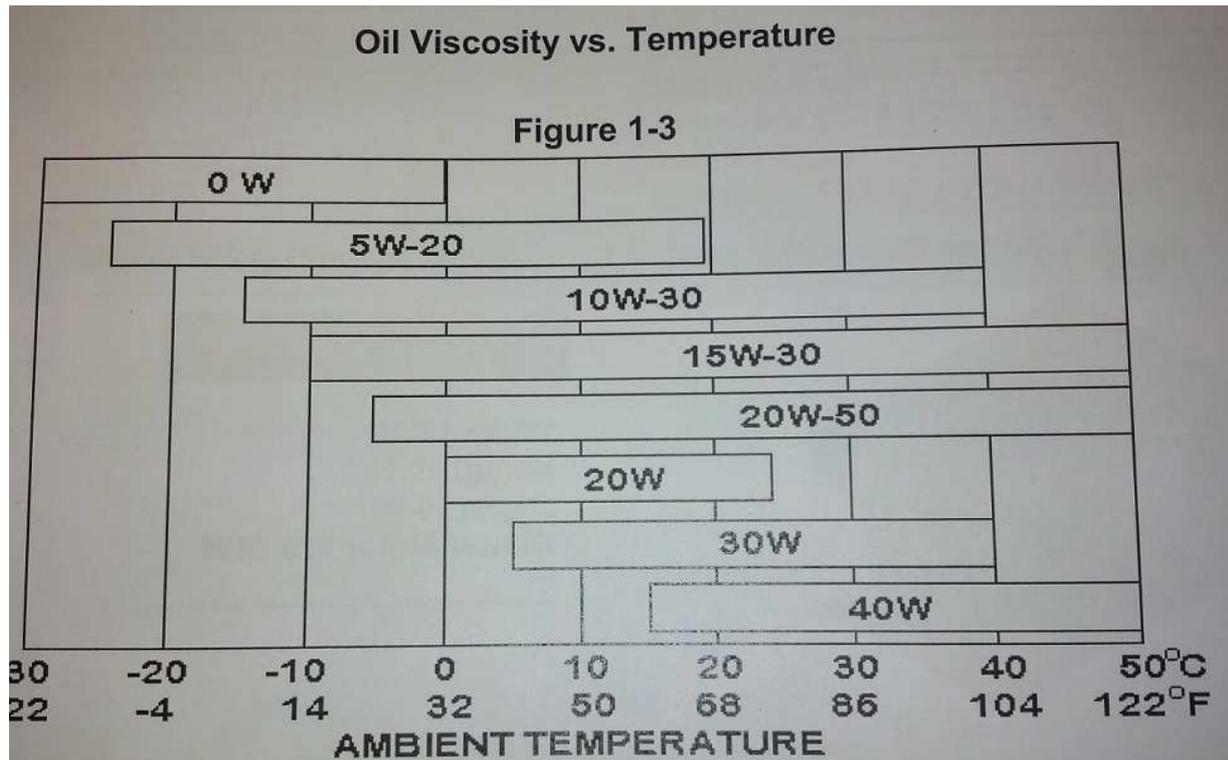
It's easy to forget about the RigMaster Glow Plugs for months at a time because their operation isn't critical for most of the year. When it gets cold though, their performance is very important in the starting process. Glow Plugs should be replaced every few thousand hours to avoid problems such as sluggish starts that produce excess smoke (possibly for extended periods) or Error Codes on the Cabin Controller Display about Start or Run failures.

"3 Pins Ext. Temp" Sensor

Plugged into the Power Module (bolted to the HVAC box under the bunk) is a sensor labelled "3 Pins Ext. Temp". Its wire senses the outside temperature so the computer can tell how long to heat the engine's Glow Plugs. During installation of a RigMaster, drilling the hole through the floor of the cabin can be overlooked. Similarly, if the wire is hanging through the floor near a hot component of the truck or warmed area (such as coolant hoses), the sensor can give false temperature readings, similar to a failing External Temp Sensor. To help diagnose this possibility the Temp Sensor can be unplugged, which will cause the Glow Plugs to heat for the long period of 16 seconds, which should produce good starting. Do not leave the sensor unplugged permanently or glow plug wear will be greatly accelerated.

Oil

We recommend that you use the same oil in your RigMaster as you do in your Truck engine, which keeps things simple but if you are in very cold climates on a regular basis, a switch to lighter viscosity oil will be a big help for cold start-ups. Synthetic oil is ideal in extremely hot and cold climates, but in engines that are very new or have extremely high hours, excess oil consumption and smoking can occur. You should consult the manufacturer of your engine or a dealer for that engine for their advice.



Heating the Engine Coolant and your cabin area

Cabin Heating (HVAC box under your bed)

A number of RigMaster models deliver their hot engine coolant to a heater core under your bed where a blower fan blows the heat to your cabin.

To help the RigMaster engine heat its coolant to a better temperature (to heat the cabin better), it helps to give the engine a bit more work to do. Plug the truck engine electric block heater into the outlet that connects to the RigMaster Generator. This gives the RigMaster's engine a bit more load which helps heat its coolant better.

RigMaster Engine Cabinet Heating

The RigMaster APU engine cabinet has fans that move outside air through the cabinet from one side to the other. In severely cold weather, too much cold air can be moved through the radiator and engine cabinet, limiting the RigMaster engine coolant temperature. To limit airflow (and protect components from slush), a "Winter Cover" is available that is installed on the side of the engine cabinet over the electric fan using existing bolt holes. They are available for all models back to about 2004 (RMP 104, RMP 14-6's and current T4-6 models). Contact your RigMaster dealer to order one.

Perkins Engine Coolant Heating

Note: Our website hosts a document that illustrates the "Thermostat Update kit and installation procedure". It refers to the use of a Black Steel 90 degree pipe extension shown in the kit in place of the Aluminum extension shown in that document.

The Thermostat in the cooling system on some engines can be influenced by heat from the nearby exhaust manifold. Depending on the configuration of the Thermostat assembly, your RigMaster may or may not have this issue. A spacer kit can be installed that has a 90 degree steel elbow which relocates the Thermostat away from exhaust heat (RP5-1006k kit and instructions are hosted in this part of the website). If your engine has an Aluminum Thermostat housing, be aware that it can easily absorb and conduct exhaust heat to the Thermostat. Even though the Aluminum spacer housing relocates the Thermostat, it may need to be replaced by the steel elbow instead.

RP5-1006K – Thermostat extension kit



Electronic Coolant Control Valve (ECC valve or water valve)

Many models of RigMasters pump the RigMaster engine coolant to the HVAC box under the bunk and a blower moves heated air into the cabin. When "HEATING" is selected on the Cabin Controller Display, the power module (RigMaster computer) rotates the Electronic Coolant Control Valve (ECC valve) to allow heated coolant to flow into the HVAC box under the bed. If this ECC valve or the Power Module doesn't operate properly the system will not provide adequate heating. The heated coolant travels through hoses that enter through the floor of the cabin and are connected to the ECC valve (water valve) mounted to the HVAC box itself. To observe the movement of the ECC valve, the plastic flange on a small shaft on the back of the valve has to be marked (magic marker or dot of paint) so that its movement can be seen. A small mirror is helpful for viewing the flange if access to this area is difficult. The time to watch for this movement is when the RigMaster computer power is turned "ON", this is when the valve will be cycled by the computer to check its position.

Air in Heater core in HVAC box

If a RigMaster engine cooling system runs low on coolant a number of times, it will draw air into the cooling system. This air will rise and become trapped in the HVAC box under your bed which is the highest part of the cooling system. To remove the air from the system it must be "bled" out of the hoses that attach to the ECC valve where the hot coolant hoses come through the floor of the cabin. While the RigMaster engine is running, move the clamps off the plastic spigots that the hoses connect to and insert a thin screwdriver inside each of the hoses to allow air to come out. Be careful not to allow coolant to contact the nearby Power Module.

AC clutch not engaged

Be sure that your Air Conditioning Compressor clutch is not being activated when HEATING is selected. Though not common, this problem could occur with a failing Power Module, causing cooling of the Heating system.