



2010 43QGP Allegro Bus

12/13/2012

66 – FYI – POWERGLIDE CHASSIS CUMMINS EPA 2010 ISL DEF HEATER HOSE CONNECTIONS.

Recently there has been a lot of controversy regarding the plumbing for the **DEF** tank's heater system. After several weeks of gathering information I finally had enough ~~CORRECT~~ information to make a decision on **IF** the **DEF** heater system was or was not plumbed correctly on our coach. During this process I was installing the heat shield for the Tiffin Recall 12V526. The heat shield is mounted over the transverse section of exhaust pipe between the engine access cover and the **DEF** heater hose "T" connections making a decision on the plumbing being correct before the heat shield installation was completed a highly desirable item.

Based on several pieces of information I decided the **DEF** heater hose plumbing was indeed reversed so I swapped the two hose connections. After completing that hose swap I went about completing the installation of the recall heat shield. I was just about ready to re-install the engine access cover when an e-mail reply to the reversed hose question was received from Gary Harris (Powerglide Chassis Manager). It turns out the **DEF** heater hose connections on my coach had been correct to begin with so after my hose swap the hoses are **NOW** plumbed backwards. The actual mounted location of the valve (Top "T" or Bottom "T") does not matter, to which hose the valve is connected is **CRITICAL**.

The **DEF** heater hose contains an electric control valve, that valve to operate correctly has to be installed in the **SUPPLY** hose connected to the rear of the engine. The electric valve is directional it has to be installed with the directional arrow pointing toward the **DEF** tank.

There are two major components making up the **DEF** heating system, the **DEF** tank and the **DEF** dosing valve. The **DEF** heater **SUPPLY** hose is connected to the rear of the engine, that hose has a 5/8" ID. The hose is connected to a "T" connector mounted on a frame cross member. The lower side of the "T" has a 1/2" ID hose attached which goes to the **DEF** dosing valve located near the muffler. The third leg of the "T" is connected with a short piece of 5/8" ID hose to the **DEF** electric control valve. This valve is turned ON or OFF by the Engine Control Module (ECM) based on the need to thaw the **DEF**. From the valve a 5/8" ID hose connects to the **DEF** tank. That completes the **SUPPLY** side of the **DEF** heater system.

The **RETURN** side of the heater system begins at the **DEF** tank where a 5/8" ID hose is connected with the opposite end connected to a second "T" mounted on the same frame cross member as the first "T". The lower side of the second "T" has a 1/2" ID hose attached it is connected to the second connection on the dosing valve completing that loop of the heating circuit. The third connection to the second "T" is again a 5/8" ID hose it is connected to the front of the engine on the suction side of the water pump.

On our coach Tiffin had installed a shut-off valve on the **SUPPLY** line near the rear of the engine however they did not install a similar shut-off valve on the **RETURN** end of the hose circuit.

Over the past several months there have been multiple versions on what work needs to be done to reverse the plumbing on the **DEF** heater hoses to have the system operate correctly, this is my attempt to set the record straight.

The electric control valve will **ALLOW** coolant to flow in the reverse direction even when the valve does not have an electrical command to open this makes the **DIRECTION OF THIS VALVE'S INSTALLATION CRITICAL**. When the valve is turned **OFF** there should be **NO** coolant flowing thru the valve.

The two 5/8" hoses connected to the **DEF** tank **ARE NOT DIRECTIONAL** either hose can be connected to either hose fitting on the **DEF** tank.

The two 1/2" hoses connected to the dosing valve **ARE NOT DIRECTIONAL** either hose can be connected to either hose fitting on the dosing valve.

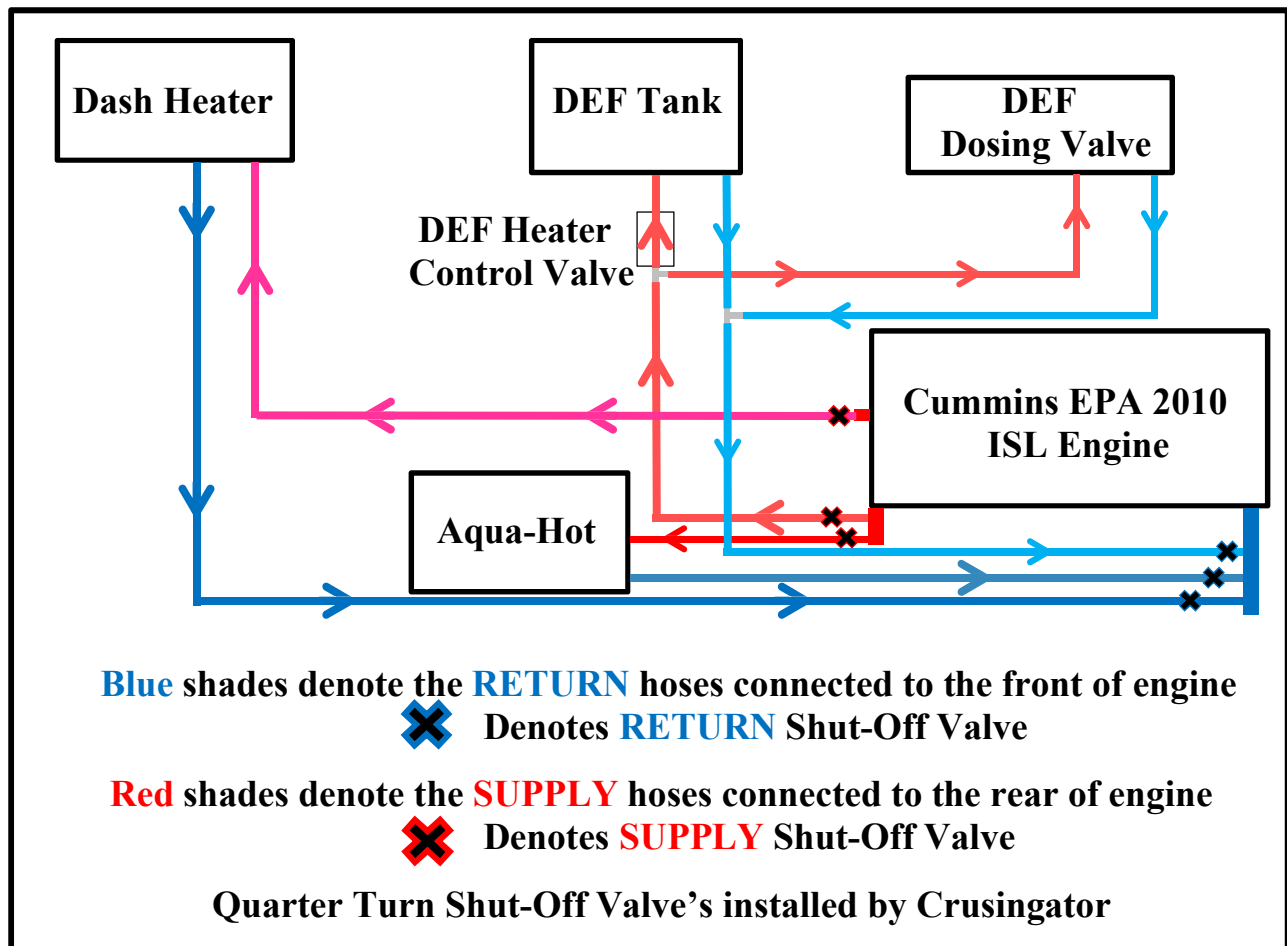
There for to have the DEF heating system operating correctly the following connections have to be made. The **SUPPLY** hose for the **DEF** heating circuit is connected at the **REAR** of the engine. From there the hose connects to a "T" from the "T" two additional hoses are connected. A 1/2" hose is connected and routed to the dosing valve and a second 5/8" hose is connected and routed to the electrical control valve. From the electric control valve another hose is connected and routed to the **DEF** tank. That is the **SUPPLY** side of the heater circuit.

IF the above heater hose connections are made from the **REAR** of the engine to the **DEF** tank the system should operate as designed.

The biggest problem in this heating system is when the electric control valve is either installed with the direction arrow pointed **AWAY** from the DEF tank (a problem which I have not heard as been reported) **OR** when the electric control valve is **INSTALLED** in the **RETURN** hose routed to the suction side of the water pump (this problem has been reported).

All of the above information can be seen in the plumbing schematic of our 2010 43QGP Allegro Buses Engine Coolant System below.

2010 43QGP Allegro Bus Heater Hose Connections



The **TWO CRITICAL ITEMS** make this system operate correctly are:

1. THE DEF HEATER CONTROL VALVE HAS TO BE CONNECTED WITH THE **ARROW** STAMPED ON THE VALVE POINTING **TOWARD** THE DEF TANK.
2. THE DEF HEATER CONTROL VALVE HAS TO BE CONNECTED TO THE **SUPPLY** HOSE CONNECTED TO THE REAR OF THE ENGINE.

This information contains multiple **COPIES** of the same message this is my effort to get the **CORRECT** information conveyed to other Powerglide chassis owners.