

ARB *Tech Bench*

Proper ARB Fridge Power Supply

With the introduction of the new ARB Freezer Fridge that utilizes a highly sophisticated power supply with low voltage cut-off and fault code diagnostic system we've found these units are very sensitive to poor performing power sockets and the associated circuits of the vehicles they are used in. Typically the problem plugs are at the rear of a vehicle and the problem is low voltage at the socket. The result is a fridge that reads an incorrect dead battery and shuts off flashing a low voltage code.

Symptoms: Fridge runs normally on 110AC and on 12V in a running vehicle, but with the engine off the fridge shuts down and flashes a code (1 flash every 5 seconds) on the display indicating a problem. In this case the code is "low voltage battery protection." Once the vehicle is restarted the fridge turns back on and operates normally.

Cause: Voltage under load (fridge running) has dropped below the specified setting on the fridge power supply (low 10.1V, med 11.4V, high 11.8V) resulting in fridge shut down.

Testing: Important: All tests to be performed with the engine not running.

First confirm with a digital volt meter (DVM) that the battery has sufficient charge (voltage) and is simply not old and weak causing the problem. Under no load the battery should be about 12.5 volts during this test confirming a good charge.

After confirming the battery is good check the output of the power socket being used for the fridge with the DVM and compare the voltage with no load on the circuit. The voltage should be very close to battery voltage with no more than .2 volts drop at the socket.

Now the circuit needs to be tested loaded. This can be done a couple of different ways, either piercing the insulation on the fridge cord itself with the fridge on and running or by using a 55 watt bulb mocked up (an old fog lamp works well for this) to create the needed load. With the load on the circuit (fridge running or bulb lit) recheck the voltage. If the drop exceeds .7 volts the circuit is insufficient to keep the fridge running during extended periods of engine off time. In some vehicles we have found the loss to be as great as 3 volts at rear mounted sockets.

The Fix: ARB now offers a kit with 18 feet of appropriately sized wire, needed terminals, fuse, and female socket to wire a full time permanently hot fridge plug into the vehicle. This is a cost effective solution to add the needed power capacity for the fridge and gain an additional outlet in the rear cargo area of the truck ensuring the fridge functions as it was designed. The kit part number is **10900011** (see new "ARB Product" for more info).

Alternatively, a do it yourself solution should use a minimum of 10 gauge wire directly from the battery for a run of 18 feet or less. Marine grade wire and connectors are recommended to avoid corrosion problems in harsh off-road conditions. For distances greater than 18 feet wire diameter should be upsized as required.

Conclusion: The most common problem by far for an ARB fridge to have is a poor power source. Even without all the above tests if the fridge shows a low voltage code and your battery simply isn't low then it can be assumed that the circuit supplying power is suspect at best and should probably be upgraded to avoid the inevitable possibility of spoiled food or warm drinks in the future.