

COACH BATTERY VOLTAGE AND CURRENT METER MONITOR PANEL

As installed in a 2002 Born Free 26' RSB Motorcoach



Figure 1 - 10-15 VDC Voltmeter and 0-50 AMP Ammeter Installed in Stove Hood



Figure 2 - Expanded Scale 10-15 VDC Voltmeter



Figure 3 - 0-50 AMP Ammeter

As can be seen in Figure 1, two modified Simpson 2.25" square panel meters are mounted in the side of the monitor panel/stove hood facing towards the front of the coach.

VOLTMETER

The Simpson voltmeter shown in Figure 2 in more detail is a modified Simpson P/N 17445 0 - 5 VDC meter. It was internally modified with additional electronic circuitry to convert it into an expanded scale 10 - 15 VDC meter. The scale markings on the meter then were changed as shown in Figure 2 to 10, 11, 12, 13, 14, & 15 and term D.C. VOLTAGE was added above the brand name Simpson.

This modification is desirable so that it measures the actual voltage range of interest and it also permits improved reading accuracy of the meter to within + or - 0.1 vdc. This meter is connected to measure the actual voltage level from the coach batteries and this voltage connection is available from right at the front side of the monitor panel in the stove hood - so at least this connection is relatively simple.

AMMETER

The Simpson ammeter shown in Figure 3 in more detail is a modified Simpson P/N 17419 0 - 50 uamp DC meter. It was internally modified with a series resistor so that the internal resistance of the meter itself and the added series resistor totaled 1000 ohms within + or - 1%. This modification effectively converts it from a 0 - 50 uamp DC meter to a 0 - 50 millivolt DC meter. The meter scale has also been remarked D.C. AMPERES.

Then a Deltec Model MKA-50-50 current shunt was installed inside the chassis structure of the Magnetek/Parallax 7345 Converter/Charger system. A photo of this shunt is shown in Figure 4 below.



Figure 4 - Deltec Model MKA-50-50 Ammeter Shunt (50 AMPS = 50 Millivolts)

When a 50 AMP DC current is passed thru this shunt via its larger 0.25" stud terminals, it generates a 50 millivolt DC voltage drop across the smaller pair of screw terminals so that if those terminals are then connected to the modified Simpson ammeter shown in Figure 3, it will cause a full scale deflection indicating a current flow thru the shunt of 50 amps.

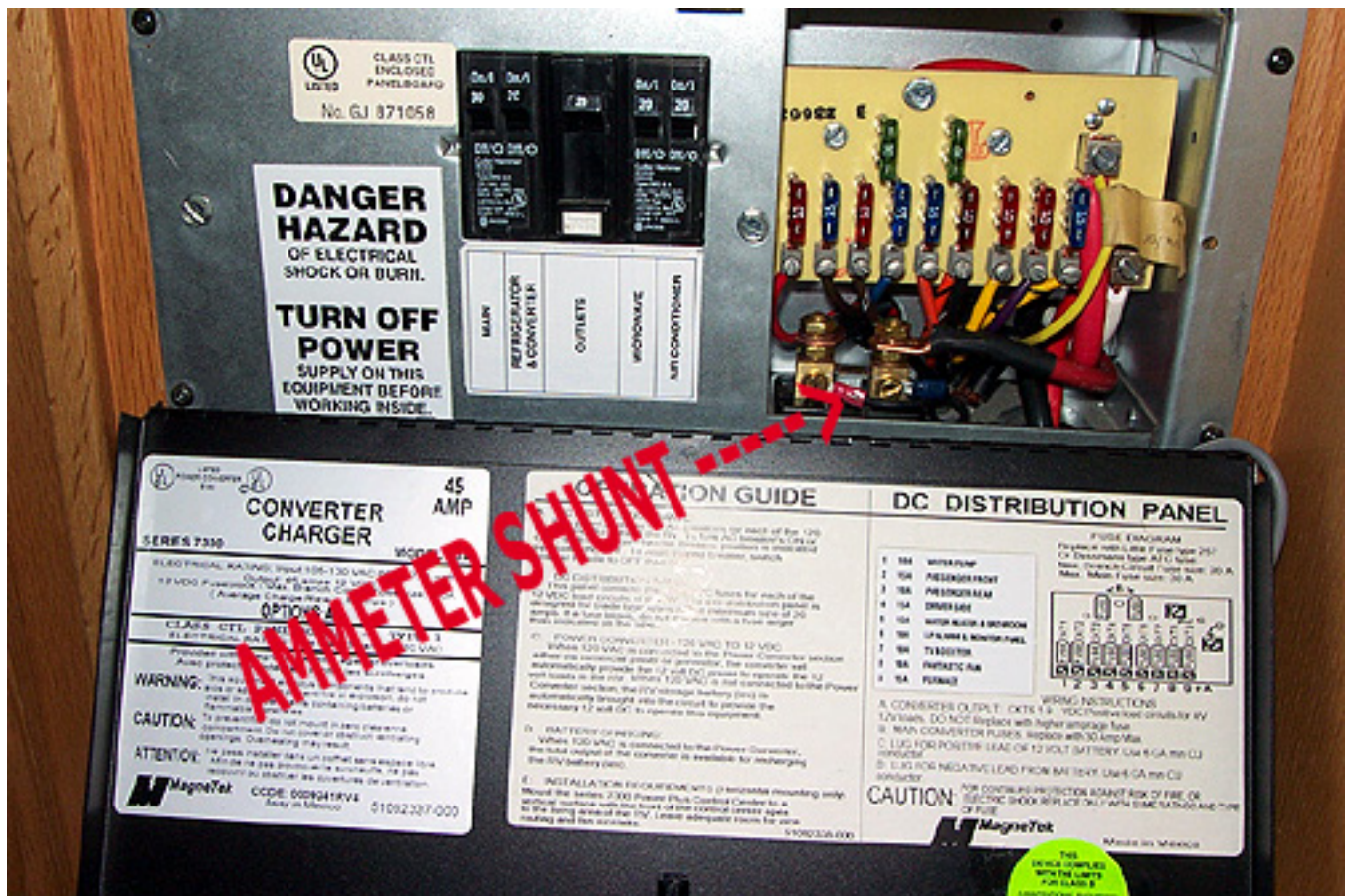


Figure 5 - Mounting Location of MKA-50-50 Current Shunt in 7345 Charger/Converter

The toggle switch located just to the right of the ammeter in Figure 1 above is a DPST toggle switch wired and labeled AMMETER - CHARGE/DISCHARGE. This switch permits polarity reversal of the voltage generated across the ammeter shunt so that both charging current to the coach battery(s) can be measured as well as discharging current from the coach battery(s).

In the 2002 Born Free 26' RSB Motorcoach, running the pair of AWG #20 wires necessary to hookup the modified Simpson ammeter to the output of the MKA-50-50 ammeter shunt involved some work. It was necessary to remove the microwave oven from its enclosure located above the stove hood and also a metal shield located inside the enclosure that covered the top and back of the microwave itself. This was necessary to be able to run the pair of wires from inside the stove hood to the ammeter toggle switch up and over the top of the right side wall of the adjacent wood cabinet structure and then down behind the cabinets to the rear side of the Magnetek/Parallax 7345 Charger/Converter assembly. The wires then passed thru a

rear hole in this assembly to be connected to the set of smaller screw terminals on the MKA-50-50 current shunt.

Also of course, the red #6 AWG coach battery(s) to charger/converter assembly cable wiring must be modified so that the current carried by this cable will be passed thru the ammeter shunt so that it can be measured on the Simpson ammeter.

To do this, the red AWG #6 cable coming from the coach batteries to the screw terminal on the front side of the fuse distribution panel shown in the upper right side of Figure 5 above must be disconnected and a crimp on copper terminal for a 0.25" stud installed on the end of this cable and then attached to the left side 0.25" stud terminal on the MKA-50-50 current shunt as also shown in Figure 5. Then a new 1' length of red AWG #6 battery cable must be purchased with a 2nd copper terminal of the same type as above installed on one end of this short cable. This cable is then connected between the left 0.25" stud terminal of the MKA-50-50 shunt in Figure 5 with the other stripped end connected to the previously vacated screw terminal on the front side of the fuse distribution panel shown in the upper right side of Figure 5.

NOTE: This is a relatively complex modification to install in a motorcoach and is not recommended for those without some degree of technical ability to attempt this sort of modification work. However, for those that feel they may want to attempt duplicating this kind of modification to their Born Free motorcoach, I will be happy to provide the additional technical details and schematics necessary to do the job.

You can contact me by clicking on the email button located at the bottom of this post or calling me at 712-262-1126.

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