

# Camper Meter

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The Camper Meter provides a display of the amount of water in the camper water tank and the capacity (state of charge) of the camper batteries.

The water meter operates by timing how long the water pump has been running to a resolution of one fiftieth of a second. The water pump will deliver a constant amount of water for every second that it runs and the Camper Meter compares the running time with the amount of time that it takes to drain the tank. The result is displayed on an illuminated bar graph.

The battery meter function precisely measures the battery voltage and calculates the amount of remaining charge. The result is also displayed on the bar graph.



## Operation

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Normally the Camper Meter displays the amount of water in the water tank as a bar graph. A simple glance is all that is required to ascertain how much water is left.

Note that the display is always lit, however this will not affect battery capacity as the device consumes little power.

When the water tank has been filled the meter must be reset so that it can accurately calculate the water consumption. To reset the water meter hold down the red button for 4 seconds or more. The reset can be done at any time (for example if a partly empty tank is filled). Note that the tank must be filled to the brim when the reset button is held down as the meter has no other way of knowing the starting level of the water.

To display the battery capacity, press the black button. When the button is released it will revert to showing the water level. The battery reading will be higher if the battery is under charge, or lower if being drained, so a more reliable reading will be obtained if none of these are occurring and the battery has been allowed to settle for 20 minutes or more. Full scale is 12.9 volts and zero display is at 11.4 volts.

## Calibration

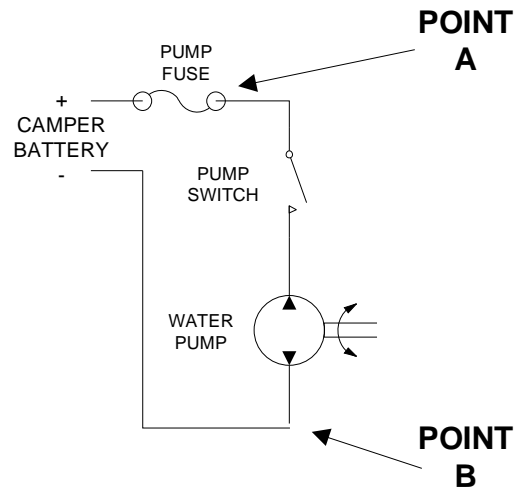
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The water meter has been calibrated on camper serial number 171 and should be reasonably accurate for other campers. It can be recalibrated by filling the tank and resetting the meter to full (as described above). Then the water should be used normally until the tank runs dry. Then, press the red reset button and, while holding it down, press the black battery button. Hold down both buttons for over 4 seconds. The meter will store the amount of time that it took to drain the tank as its new calibration constant. This calibration can be repeated as many times as necessary.

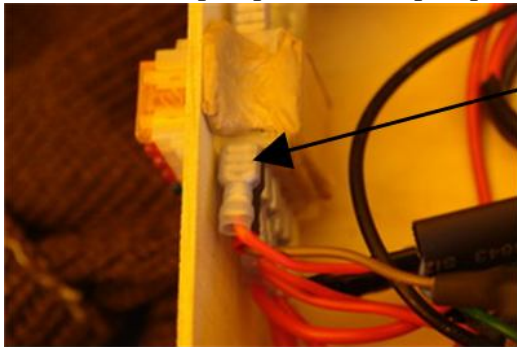
Turning off the camper's battery will not affect the meter as it stores the calibration value and the current water level in internal memory that can last for more than 50 years without power.

# Camper Wiring

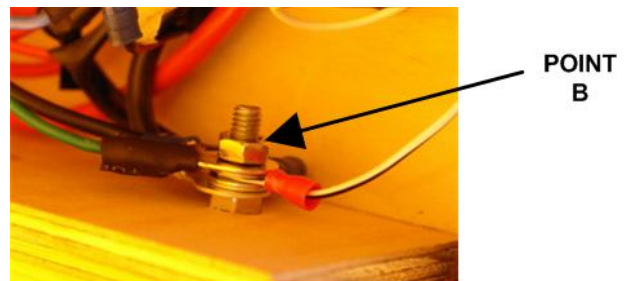
The water pump circuit in the camper consists of a fuse, the pump switch and the water pump, all in series.



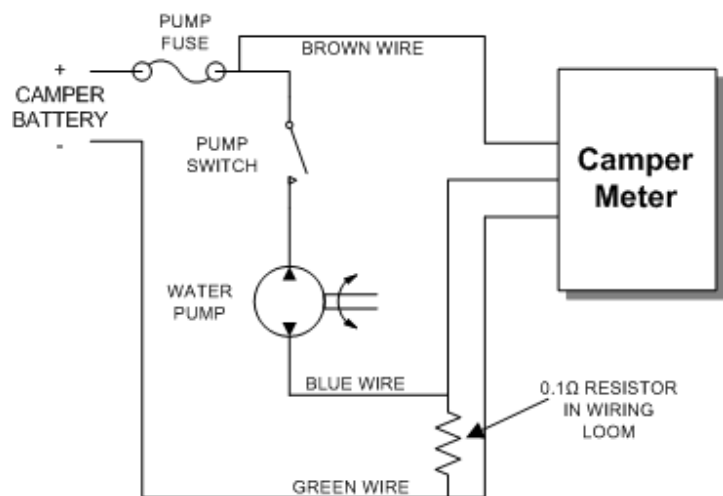
Point A is on the pump side of the pump fuse.



Point B is where the return lead from the water pump connects to the large “chassis” bolt (which joins all the negative leads together).



After the installation of the Camper Meter (see next page) the pump circuit will look like this...



# Installation

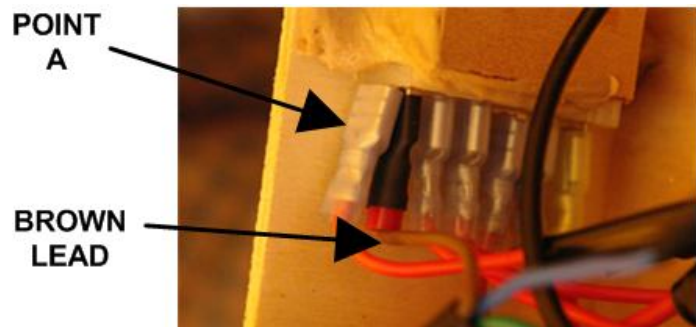
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1

Unscrew the camper fuse box from its position under the left hand seat. The wires leading to the fuse box should be long enough to pull the whole assembly out a little way.

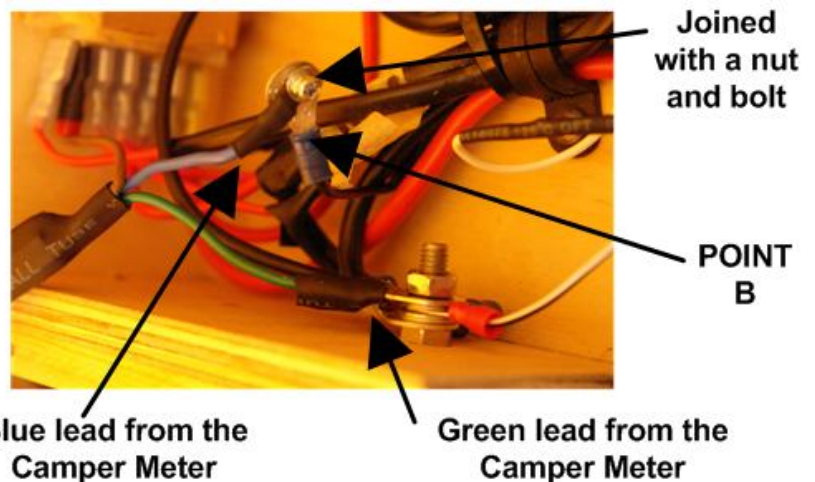
2

Remove the pump switch lead (point A) from the fuse holder. Plug in the brown lead from the Camper Meter. Plug the recently removed pump switch lead (point A) on to the piggy-back spade terminal on the brown lead.



3

Remove the pump lead (point B) from the "chassis" earth bolt. Attach the green lead from the Camper Meter to this bolt.



4

Join the pump lead (point B) which was removed from earth bolt to the blue lead from the Camper Meter using the nut, bolt and washers supplied. Cover with the heat shrink plastic (supplied) and shrink onto the joined leads using a hair dryer.

5

Attach the Camper Meter to the side of the fuse box using the screws supplied. Reattach the fuse box to its normal position.



