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Coding Information

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Title: Measuring Parasitic Battery Load

Applies To: All Vehicles

DESCRIPTION

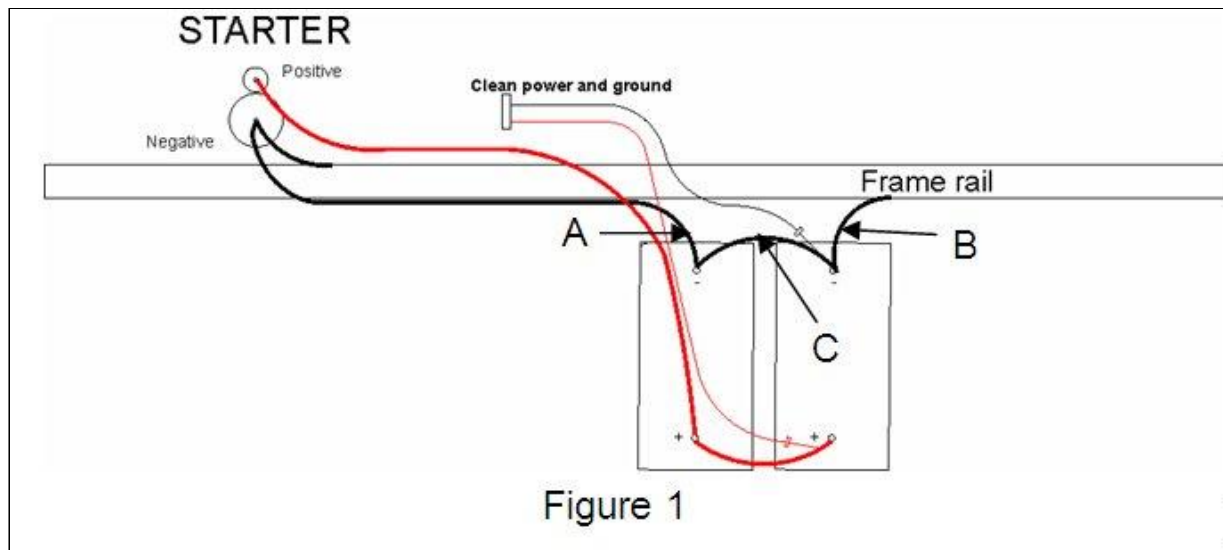
Measuring the current draw on truck batteries when everything is turned off is required to evaluate the parasitic battery load when the vehicle is not in use. This procedure will describe the steps required in order to measure this at rest current draw or parasitic load of the vehicles electrical system.

NOTE:

If the vehicle has an AWARE module on it, make sure that it is updated. It should have a Kernel number higher than 86. If the Kernel is lower than 86, the AWARE module could be causing a battery drain.

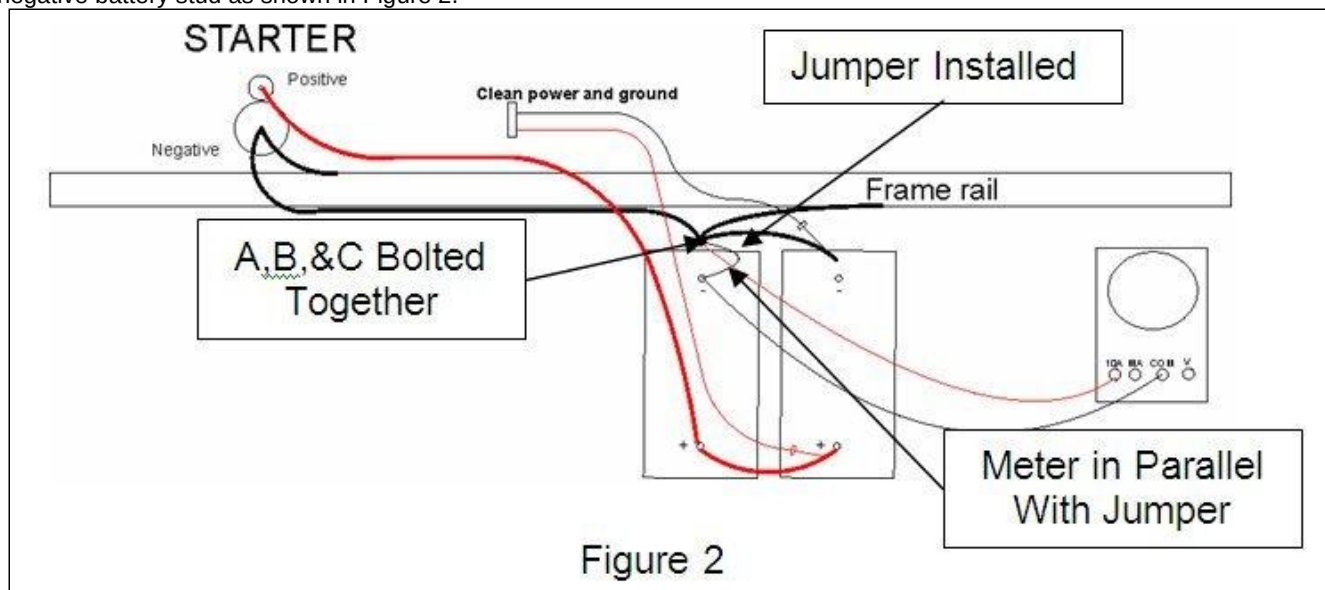
PROCEDURE

1. Switch off all electrical loads such as lights, radio equipment, auxiliary equipment and make sure the vehicle ignition system is turned off.
2. Identify the ground paths from the negative battery terminals to the frame, engine starter, or other electronic devices such as the TCM, ECM, and ESC.
3. Remove all ground paths from the negative battery terminals. In the example shown in Figure 1, the main battery ground feed goes from the forward battery negative stud (A) to the starter motor, the frame ground (B) from the rail to the rear battery negative stud, and the clean power and ground feed (negative side) which attaches to the negative jumper cable (C) leading from the forward battery negative stud to the rear battery negative stud. This jumper must be disconnected from **both batteries**.



4. Connect the two ground cables (main starter feed (A), frame ground feed (B), and the jumper with clean power ground (C)) together. This can be done by simply bolting the three cable eyelets together as shown in Figure 2

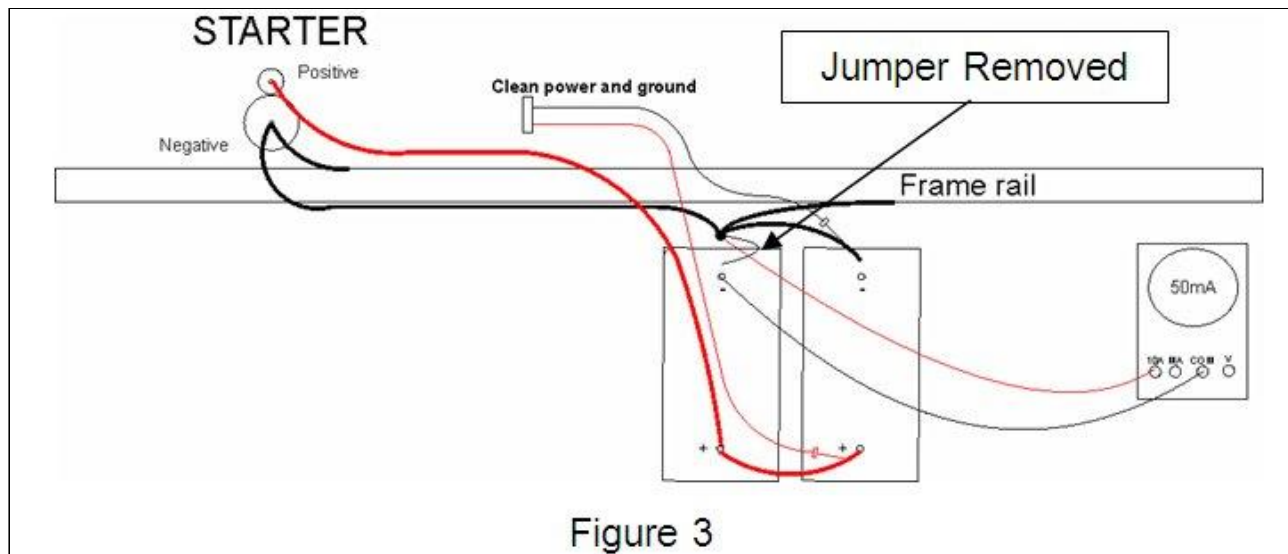
5. ;Make sure they will stay together and that you can place a jumper lead onto the connected eyelets or bolt and the negative battery stud as shown in Figure 2.



6. Connect a jumper lead from the three connected ground cables to the negative battery terminal as shown in Figure 2. You are now feeding the electrical current requirements of the entire vehicle through the jumper lead. Do not activate any other electrical equipment while the jumper lead is supplying the vehicle current. Wait five minutes to allow all electrical devices to shut down and go to standby mode.

7. While waiting for the vehicle electronics to go to sleep, set up a digital ammeter, such as the Fluke 88 shown in Figures 2 & 3 to read amps (automatic scale) and make sure the test leads are plugged in to the correct connectors to read amps (COM and A).

8. Connect the COM ammeter lead to the negative battery stud and the positive lead to the three connected ground cables. Your batteries should now be configured like Figure 2.



9. After five minutes with the jumper and the ammeter connected in parallel, remove the jumper lead from the three connected cables to the negative battery stud as shown in Figure 3. The vehicles entire current requirements (parasitic load) will now be going through the ammeter. Read the current flow in milliamps. Remember that 1000 milliamps is equal to 1 amp. If the readout has ma after the reading youre measuring milliamps, if the readout has A after the reading youre measuring amps. If at any time during this process the current flow is interrupted (a connector falls off) you must begin again with the jumper connected for five minutes before attempting to remove it leaving the ammeter passing all current and measuring the parasitic load,

CAUTION: If the digital ammeter by itself is used to complete the circuit (without the jumper) it is very likely that the instantaneous current surge will blow the fuse in the ammeter. **Always connect the jumper first and after five minutes connect the ammeter in parallel, lastly disconnect the jumper** to read milliamps flowing through the ammeter.

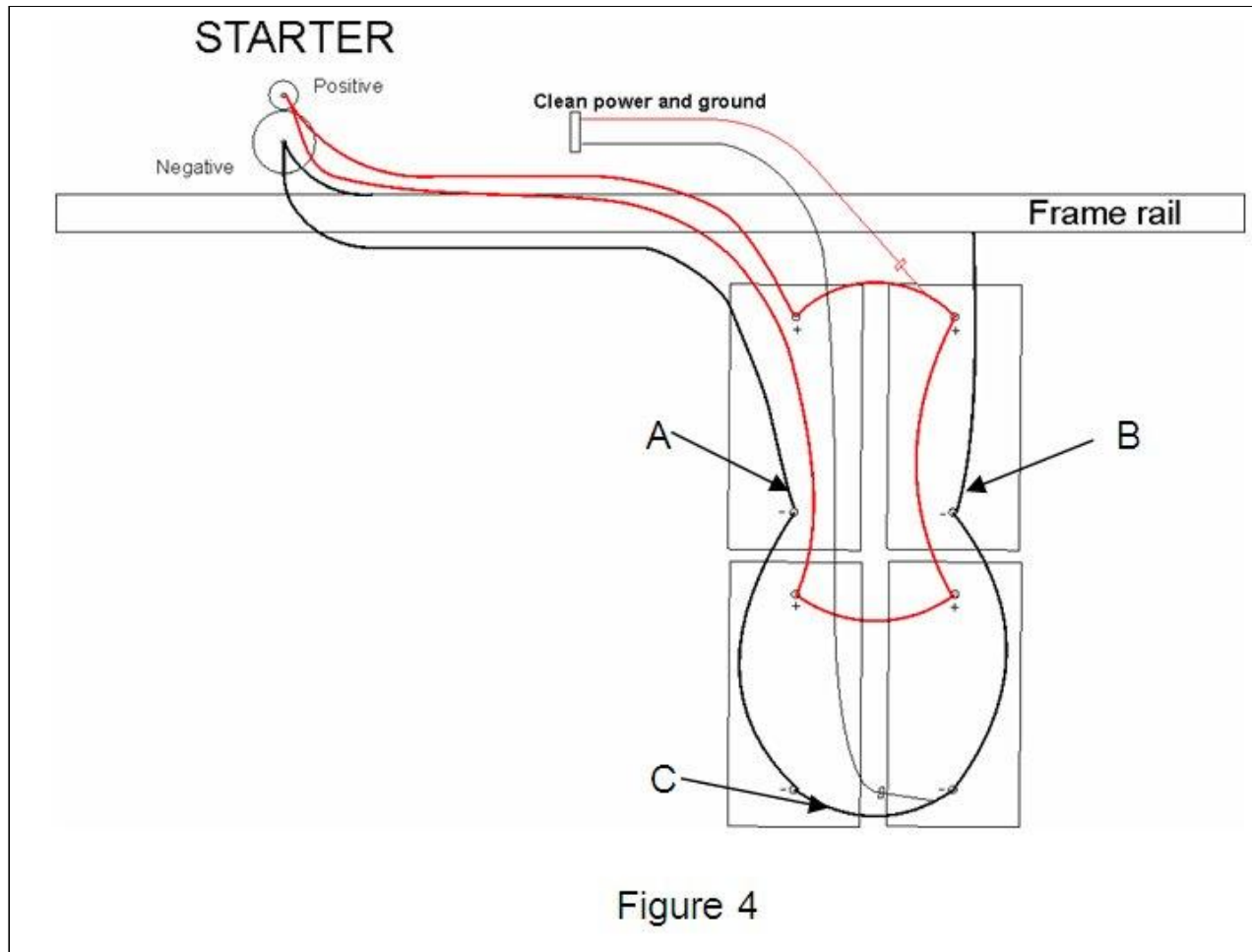
10. Under normal conditions, while parked, a vehicle equipped with a standard electronics package should be drawing less than 50 milliamps. If the parasitic load is more than this the vehicles battery storage life will be shortened.
11. If excessive current draw is observed, remove the fuses one at a time until a significant current drop is noted. Do not pull and reinstall the fuses as this may wake up some circuits and cause excessive surge current through the meter. Make note of fuse locations as they are pulled so they can be reinstalled in the proper fuse panel location when testing is complete. When high current draw devices are isolated consider relocating their power feed from a power source that is inactive when the ignition switch is turned to OFF.

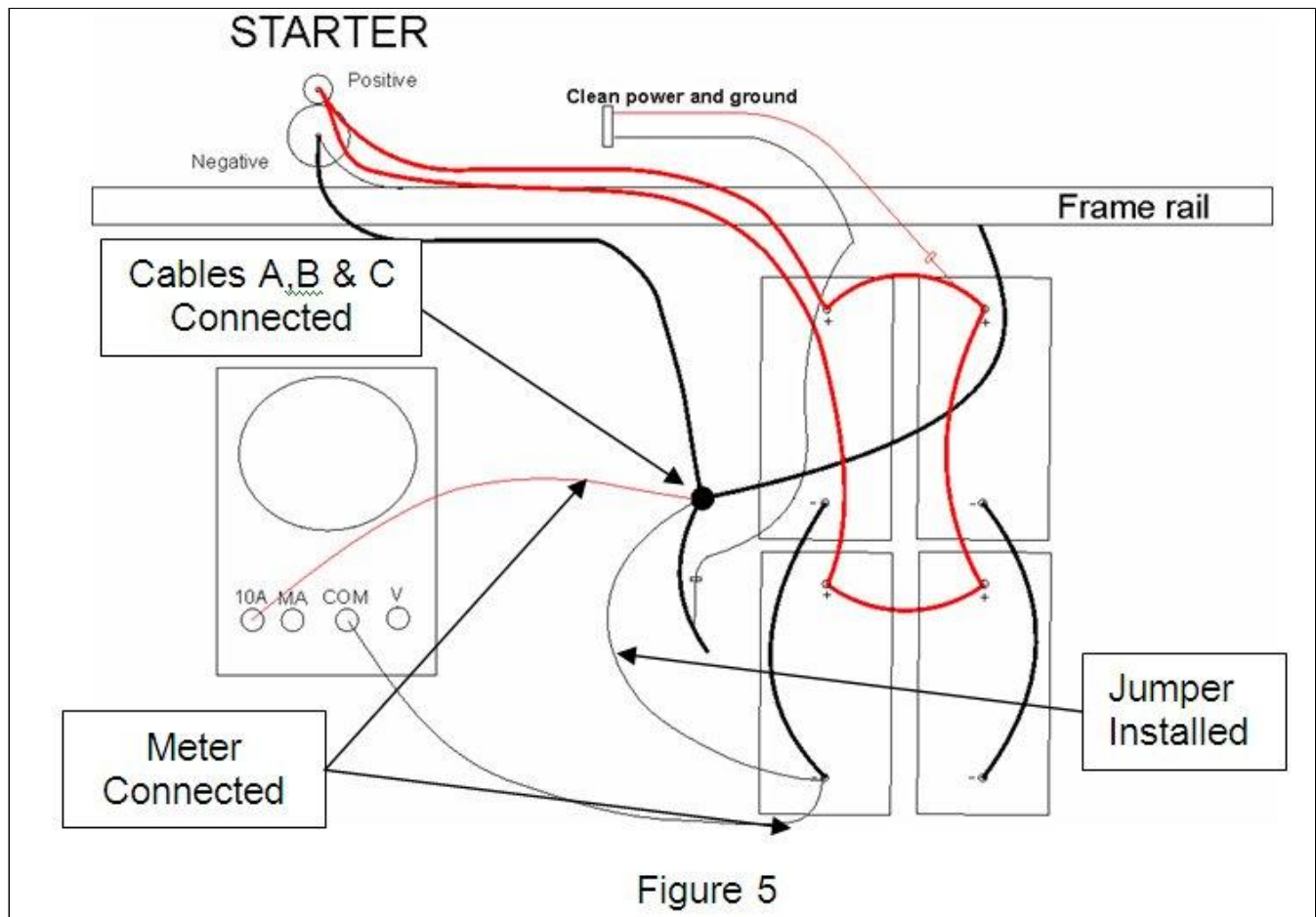
NOTE: In order to ensure all modules stay asleep and you get a clean accurate reading, you will have to keep the doors closed, with any door open, or opening a door while taking your readings will cause several modules to wake up and your reading will jump up. Recommend leaving windows rolled down so you can still have access to fuse panel if an excessive draw is noted.

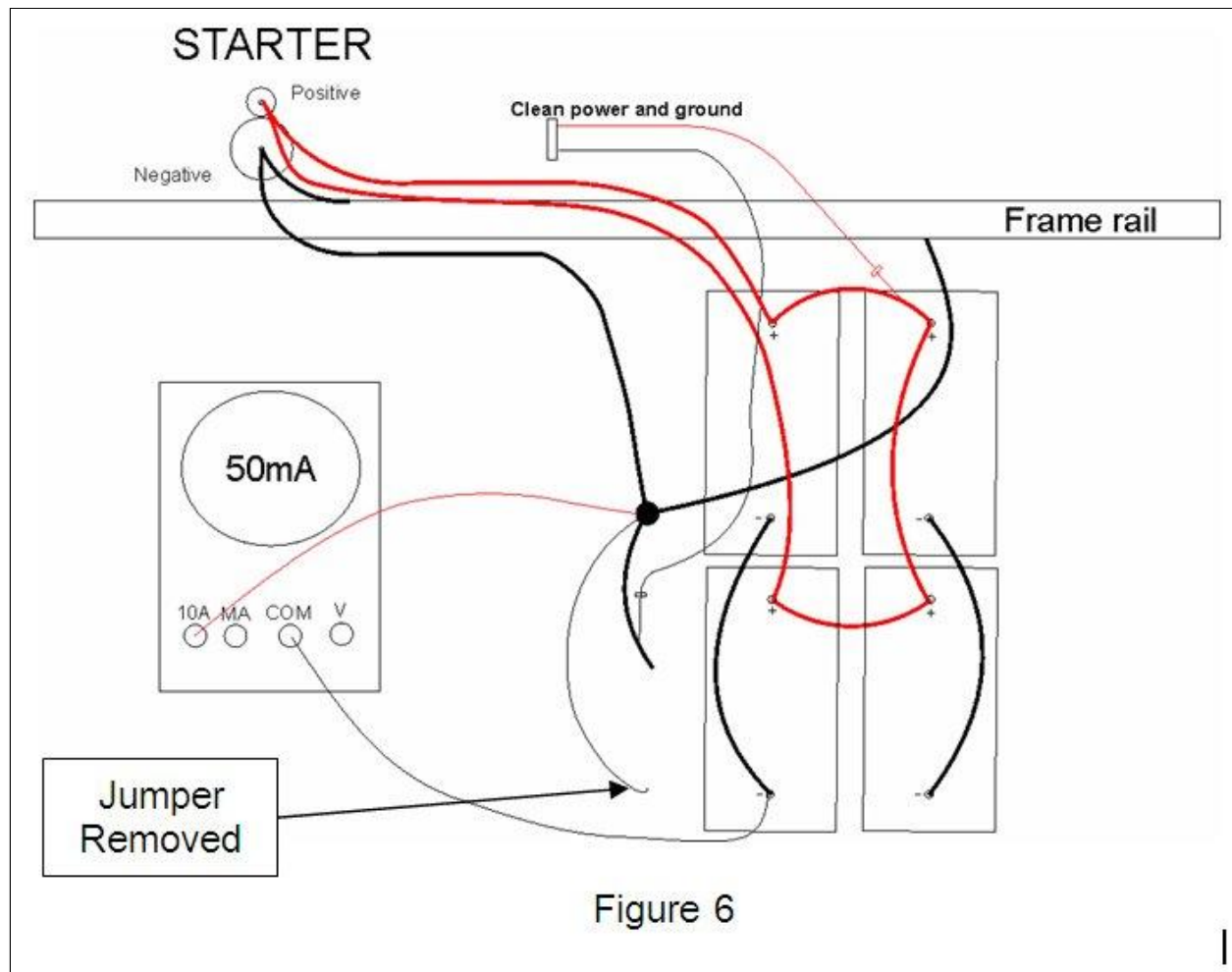
ADDITIONAL BATTERY CONNECTION EXAMPLE

In this example, there are four batteries with three ground cables that have to be disconnected from the negative battery posts. See Figure 4.

Disconnect the main ground cable that runs from the upper left battery's negative (A) terminal, the frame ground cable (B) that runs from the frame rail to the upper right battery's negative (-) terminal, and the cable (C) that connects the two lower battery negative terminals and the ground side of the clean power and ground cable. Once disconnected these three cable ends should be bolted together and jumpered from this bolted joint to one of the negative battery terminals as shown in Figure 5. After jumper is connected the ammeter should also be connected so it parallels the jumper like discussed in the previous example. Lastly the jumper is removed and the ammeter is read for parasitic current draw as shown in Figure 6. As with the previous example, **always wait five minutes after the jumper is connected before installing the ammeter leads and removing the jumper.**







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