

Once the installation of the Engine Start Module (ESM) is completed and the unit is fully charged, it is critical to ensure the ESM S+ terminal is isolated from the vehicle's electrical system, specifically the cable connecting the starter motor to the S+ terminal (see Figure 1). For the purpose of this technical bulletin, we will refer this cable as the **“Starter Cable”**.

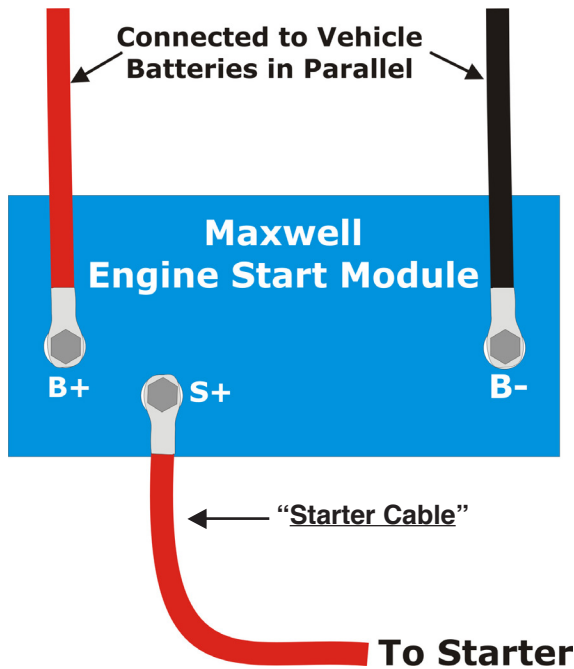


Figure 1

*Note: Failure to perform this final test could result in an incorrect installation that will cause the ESM to discharge prematurely.*

**WARNING**

**DANGER – HIGH CURRENT HAZARD!**  
Power terminals pose an extreme arcing hazard when ESM is charged. Make sure to properly insulate exposed terminals while conducting these tests.

**Test Equipment Requirements:**

A multimeter set on DC Volts will be used to confirm isolation of the “Starter Cable” from the rest of the vehicle electrical system (see Figure 2).

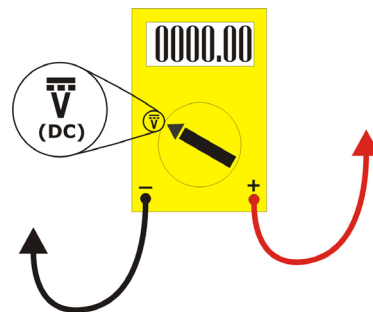


Figure 2

**TEST #1**

1. With the ESM fully charged, remove the Starter Cable connected to the S+ terminal on the ESM (see Figure 3).
2. Connect the multimeter's red (+) lead to the free end of the cable coming from the Starter motor, and clip the multimeter's black (-) lead to the B+ terminal on the ESM (see Figure 4). The voltage should read less than 0.1 volts DC.
3. Perform the same test with the multimeter's black (-) lead connected to the B- terminal on the ESM. The voltage should read less than 0.1 volts DC (see Figure 5).
4. If a reading greater than 0.1 volts DC was found in either test then there is another electrical load connected to the Starter Cable, or it could be an indication of starter motor failure. Diagnose and correct the issues before continuing.
5. At the completion of this test reconnect the Starter Cable to the ESM S+ Terminal.

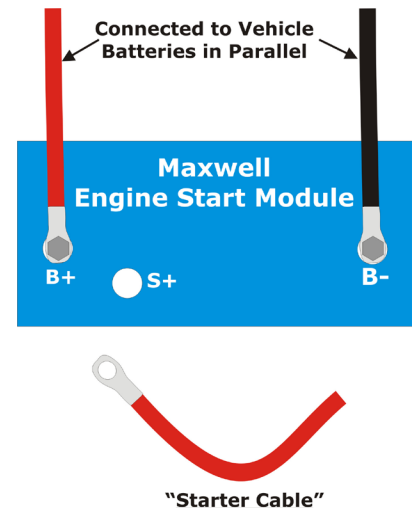


Figure 3

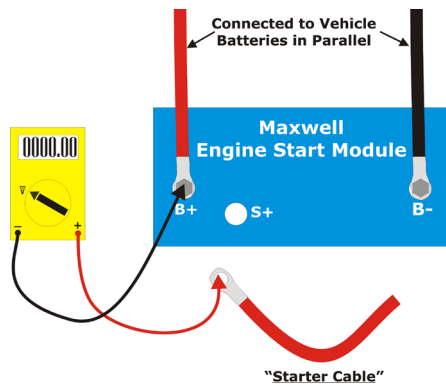


Figure 4

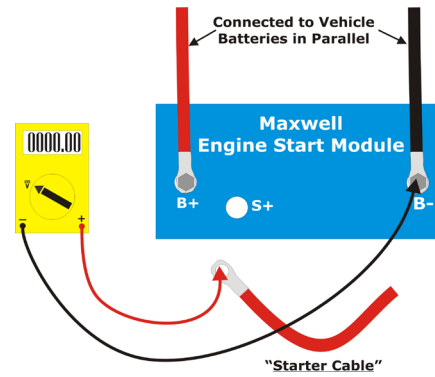


Figure 5

TEST #2

1. Once the ESM is fully charged, remove the B+ cable from the ESM. Please use caution not to short this cable to any ground or the vehicle frame (see Figure 6).
2. Turn the vehicle lights on (low beam is sufficient).
3. Connect the multimeter red (+) lead to the ESM S+ terminal, and black (-) lead to the ESM B- terminal (see Figure 6). Monitor the voltage reading for about two minutes. The reading should remain relatively steady indicating that the Starter Cable is properly isolated from the vehicle electrical system.
4. If you see an immediate drop in voltage (i.e. 14.8V... 14.6V... 14.3V, etc.), this indicates another electrical load is connected to the Starter Cable, or it could be an indication of starter motor failure. Diagnose and correct the issues before continuing.
5. At the completion of this test reconnect the positive battery cable to the ESM B+ Terminal.

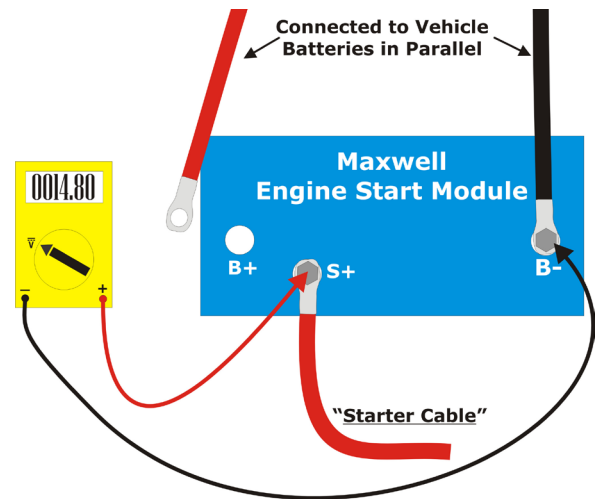


Figure 6

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