



INSTRUCTION TO SERVICE

ITS: 5713

SECTION:	282 Alternator & Regulator.
WRITTEN BY:	K. Baziuk
SUBJECT:	Replace Trojan Batteries with Odyssey Batteries.

ITS5713

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PROCEDURE:

1. Turn the main battery disconnect switch to the “OFF” position.
2. Gain access to the battery tray via the battery access door which is located behind the rear wheel on the curbside and allows access to the batteries, primary fuel filter, battery disconnect switch and fuses. It is held open by two gas cylinder assemblies. Refer to Figure 1.

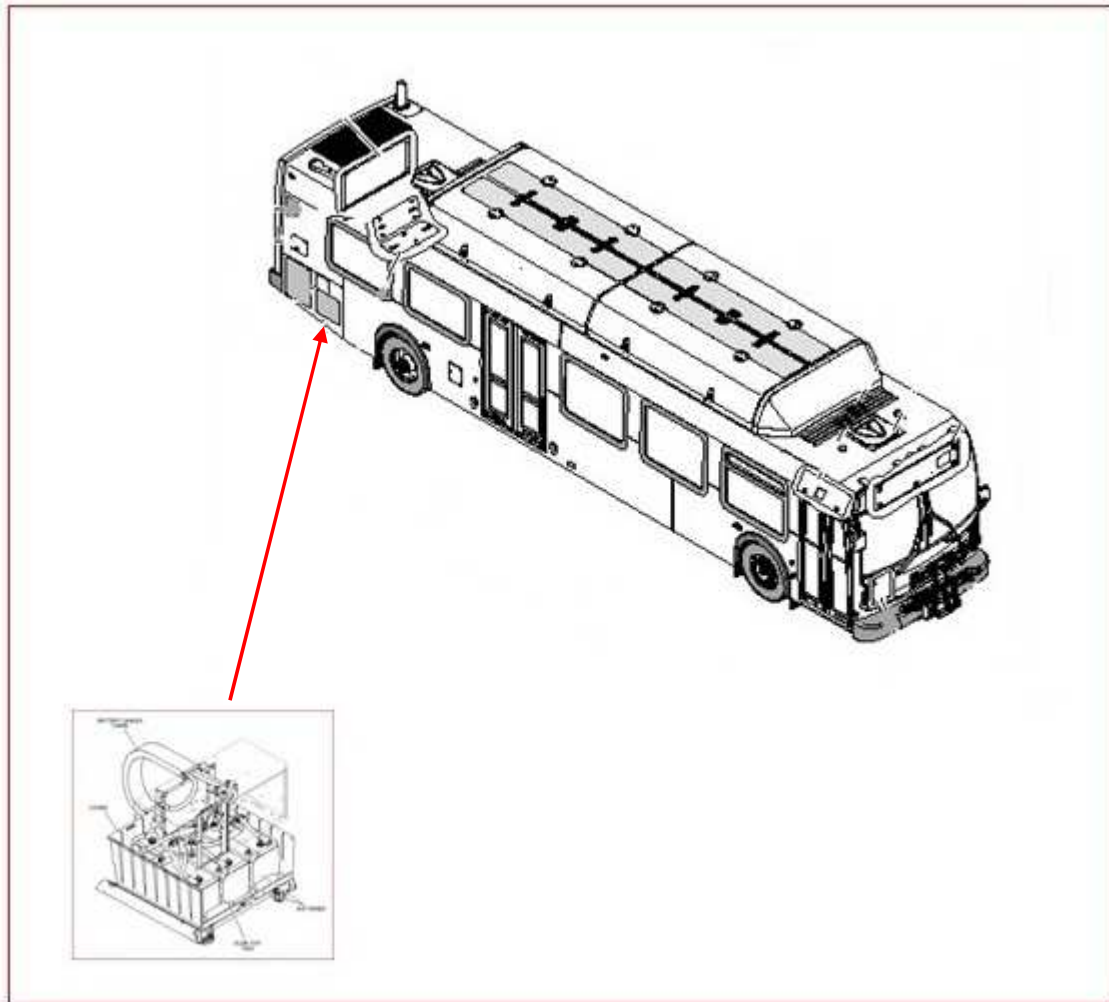


Figure 1: Battery Tray Location.

3. Remove the wing nut and washers and pivot the battery tray retainer bracket downward. Slide the battery tray out to the fully extended position.

BATTERY TEST:

4. Check outside of battery for a broken or cracked case.
5. If damage is evident, the battery should be replaced.



6. Check for loose battery terminals, cable connections and for evidence of corrosion.
7. Correct as required before proceeding with test.

⚠ WARNING: Wear safety goggles when working with batteries. Immediately flush any areas of skin which may have been in contact with battery acid. When disconnecting battery cables, **ALWAYS** disconnect the negative cable first.

👉 NOTE: Load testing should be performed with diagnostic test equipment suitable for AGM type batteries. Quick Cable PN: 303100 or equivalent approved test equipment.

8. Disconnect the cable connections from each battery.
9. Place Quick Cable tester/meter across each battery and follow directions showing on the Quick Cable tester display screen. The 303100 automatically identifies the appropriate voltage and displays the menu selection and instructions needed for that system.
10. By reading the display, check if the battery state of charge is greater than or equal to 95%, proceed to load test.
11. If any of the battery state of charge is less than 95%, follow the instruction given on the display screen of Quick Cable tester (this would include charging of the battery).
12. Ensure when performing load test the proper CCA/Cold Cranking Amps is entered onto the tester as per battery specification. After that follow step by step instruction given on display.
13. From the main menu select "Review/Print" and follow instruction given on the display screen.
14. If the state of charge of battery is below 95%, recharge and retest. If the state of charge is 95% or above, print the "State of Charge".

👉 NOTE: For accurate open circuit readings, batteries must have been off charge for a minimum of 6 hours, preferably 24 hours.

15. Replace battery if readings are below specifications. Clean battery and return to service if voltage is acceptable.

👉 NOTE: Replace batteries with NF PN: 327798, Odyssey. When changing out batteries, make sure Trojan and Odyssey stay with same type. Do not inter-mix Trojan and Odyssey batteries.

TROUBLESHOOTING:

Check for the following conditions if the batteries pass the functional test, yet do not perform well in service:

- a. Vehicle accessories left on for long periods of time.
- b. High resistance wiring.
- c. Vehicle loads exceeding alternator capacity.
- d. Shorted wiring.
- e. Extended slow speed driving with high electrical loads.
- f. Loose or corroded battery terminals.
- g. High resistance connections or defects in cranking system.
- h. Lengthy vehicle storage with batteries not disconnected.
- i. Discharged batteries can freeze and be difficult to recharge.
- j. Improper battery charging.
- k. Faulty vehicle charging system.

VOLTAGE REGULATOR ADJUSTMENT:

- 16. Turn the main battery disconnect switch to the “ON” position.

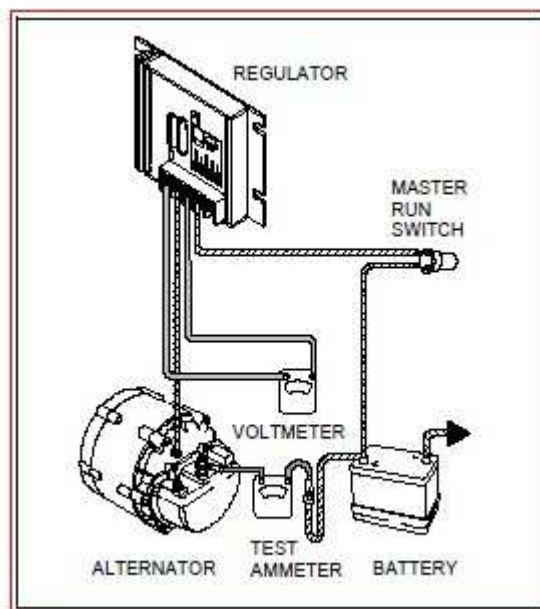


Figure 3: Voltage Regulator Adjustment Setup. (Delphi Voltage Regulator Shown)

(Note: an inline ammeter is depicted, use a clamp on type)

17. To check the voltage setting:

- a. Delphi Voltage Regulator: Connect a voltmeter across the battery and ground terminals on the regulator, and clamp an ammeter around the DC cable at the alternator. Refer to Figure 3.
- b. Niehoff Voltage Regulator: Connect a voltmeter across the battery and ground cables. Clamp an ammeter around the DC cable at the alternator. In addition there is a status LED on the voltage regulator. If the LED is ON steady, this indicates normal regulator operation and the alternator is producing output. If the LED is FLASHING, this indicates the voltage regulator is receiving the energise signal, the LED will flash until alternator provides output. If the LED is OFF, voltage regulator is not receiving energise signal or the over voltage cut off has tripped. The circuit can be reset by shutting down and restarting the engine. If the cutout still occurs, substitute a known good regulator or unplug the voltage regulator and test alternator field coil resistance.

18. Operate the engine at approximately 1000 RPM with an electrical load to produce a 30 amp output. The voltage reading should be 28.5 +/- 0.3 VDC.

19. The voltage should be steady. Adjust the setting on the voltage regulator as follows:

- a. Delphi Voltage Regulator: Turn the adjusting screw clockwise to increase the voltage and counter-clockwise to decrease the voltage. Figure 4A.
- b. Niehoff Voltage Regulator: If voltage reading is low, set Voltage Selection Switch to the next higher setting. If voltage reading is high, set Voltage Selection Switch to the next lower setting. Figure 4B.

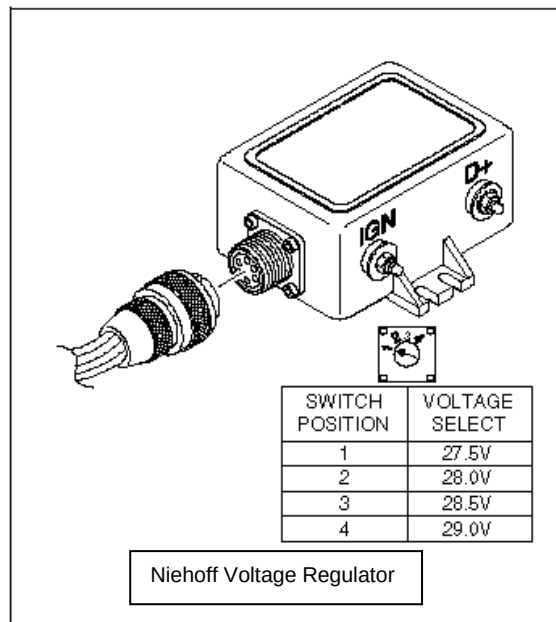
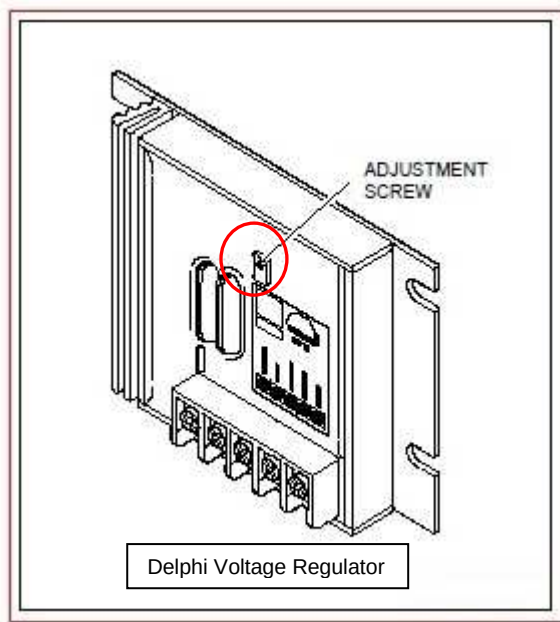




Figure 4A & 4B: Voltage Regulator Adjustment

20. Trouble in the electrical charging system is usually indicated by one of two conditions- an undercharged battery or an overcharged battery. Either condition can result from an improper voltage regulator setting. The ideal voltage setting is the one which will maintain the batteries in a fully charged state with a minimum use of water. Where maintenance-free batteries are used, the absence of gassing indicates the voltage setting is satisfactory.
21. **Undercharged Battery:** If the batteries are undercharged and the alternator is producing the correct output, raise the Delphi regulator setting by 0.3 volts or set the voltage selection switch to the next higher setting on Niehoff regulators and check for an improved battery condition over a 48 hour period. If the voltage cannot be adjusted, replace the regulator.
22. **Overcharged Battery:** If the batteries are overcharged and the alternator is producing the correct output, lower the Delphi regulator setting by 0.3 volts or set the voltage selection switch to the next lower setting on Niehoff regulators and check for an improved battery condition over a 48 hour period. If the voltage cannot be adjusted, replace the regulator.

LABOUR ESTIMATE

	Operation	Men	Hours	Labour Time M X HR
1	Test Charging System.	1	1.0	0.5

PARTS REQUIRED

Item	Part Number	Description	Qty. per Coach	Units	Notes
1	327798	BATTERY-31 AGM 1150 3/8-3/8	4	EA	AS REQUIRED

SPECIAL TOOLS

Item	Part Number	Description	Qty. per Coach	Units	Notes
1	VPN:303100	QUICK CABLE TESTER	1	EA	OR EQUIVALENT