

Source: Leece-Neville Heavy Duty Systems Division - Arcade, NY USA
Date: September 7, 2007
Bulletin No: TSB-1019
Models: All 12 Volt Alternators
Subject: On Vehicle Alternator Troubleshooting

- **Step 1: Visual Inspection.** See Procedure 1.1. of TSB-1021
- **Step 2: Battery State of charge: (Engine OFF)** always remove surface charge from batteries. To do this either, attach a carbon pile and load the batteries at 25% of the total CCA rating for 15 seconds or switch the headlamps on; select high beam for 2 to 3 minutes per battery, then switch off head lamps. Allow the batteries to recover for 30 seconds, then test the batteries true state of charge with a volt meter. When surface charge has been removed and battery voltage is found to be below 12.40 volts, charge or replace batteries before proceeding (see box 1 on page 2).
- **Step 3: Battery voltage verification at alternator terminals.** Ensure that battery voltage is present when measured at the alternator **positive (+)** and **negative (-)** output terminals and between the negative (-) and "S" Remote Sense Terminal. This should be inspected with the engine off and all electrical accessories in the off position. This voltage should be the same as battery voltage measured in the above step. If the volt meter indication is .50 volt less than battery voltage, complete individual cable voltage drop test on the positive and negative cables. Correct voltage drop before proceeding. Refer to Prestolite training manual Section 3:2 on the web or on the training CD (see box 2 on page 2).
- **Step 4: Alternator voltage test.** Connect the test leads of a volt meter to the alternator output terminals. **Note: Most Leece Neville alternators have isolated ground rectification. Always connect tester / volt meter directly to the negative output terminal of alternator or your test will be inaccurate.**
 - **Start engine, increase to high idle (1500 RPM):** The volt meter should now indicate that the alternator output voltage has increased to a range from 13.8 volts to 14.2 volts. (Ensure that all electrical accessories of the vehicle are in the off position.) If voltage increases but is out of range, inspect to see if alternator has an adjustable regulator. If so, reduce engine speed to idle and adjust voltage to a setting of 14.0 volts. If voltage is higher than 14.7 volts and cannot be adjusted below 14.25 volts, or if voltage is lower than 13.8 volts and cannot be adjusted into range then replace alternator.
 - **Inspect if voltage does not increase: If the alternator incorporates an ignition (IGN) terminal this terminal must have battery voltage present above 12.4 volts. If not; inspect circuit for open and repair.** If all is verified and alternator voltage has not increased or is out of range replace alternator. If within range go to **Step 5** (enter voltage into box 3 on page 2).

Important: The information contained in this bulletin is intended for use by trained, professional technicians who have the proper tools, equipment, and training to perform the required maintenance described above. This information is NOT intended for 'do-it-yourselfers', and you should not assume that this information applies to your equipment. If you have any questions regarding this information please visit our website at www.prestolite.com, or contact our technical service department at:

Date: September 7, 2007

Bulletin No: TSB-1019

○ **Step 5: Performance Test. Set engine speed to 1500 RPM.**

- With either a carbon pile or with truck accessories apply a current load equal to 75% of rated output capacity of the alternator and maintain load for 5 to 10 seconds (see box 4 below). Test voltage after 10 seconds with a volt meter at the alternator output terminals (enter voltage into box 5 below) *If truck accessories are utilized for current loading this must be monitored with an inductive current device on the positive output cable of the alternator. (Note applying a load greater than 80% of rated output capacity of alternator will cause the test to be inaccurate.)*
- Properly functioning alternators will have a voltage drop of no more than .50 volts from no load to loaded states (see value from box 6 below). If the voltage drops more than .50 volts the alternator is considered to be defective.

<p style="text-align: center;">(1) Voltage at battery Engine OFF Load OFF</p> <p>Less than 12.4 volts? STOP Charge or replace batteries</p>	<p style="text-align: center;">(2) Voltage at alternator Engine OFF Load OFF</p> <p>Same as voltage at battery. If more than .50 volt less than voltage at battery refer to section 3:2 of Training Manual</p>	<p style="text-align: center;">(3) Voltage at alternator Engine ON Load OFF</p> <p>Voltage must be between 13.8 and 14.2 volts. Enter voltage <input style="width: 50px;" type="text"/></p>										
<p style="text-align: center;">(4) Amperage Load Table</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Rating (amps)</th> <th style="text-align: center;">Use load of</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">65-90</td> <td style="text-align: center;">40 Amp</td> </tr> <tr> <td style="text-align: center;">100-140</td> <td style="text-align: center;">80 Amp</td> </tr> <tr> <td style="text-align: center;">160-175</td> <td style="text-align: center;">120 Amp</td> </tr> <tr> <td style="text-align: center;">200-360</td> <td style="text-align: center;">140 Amp</td> </tr> </tbody> </table>		Rating (amps)	Use load of	65-90	40 Amp	100-140	80 Amp	160-175	120 Amp	200-360	140 Amp	<p style="text-align: center;">(5) Voltage at alternator Engine ON Load ON</p> <p>Voltage with 75% load applied Enter voltage <input style="width: 50px;" type="text"/></p>
Rating (amps)	Use load of											
65-90	40 Amp											
100-140	80 Amp											
160-175	120 Amp											
200-360	140 Amp											
		<p style="text-align: center;">(6) Voltage check</p> <table style="width: 100%;"> <tr> <td>No-load voltage (from box 3)</td> <td style="text-align: center;">-</td> <td><input style="width: 50px;" type="text"/></td> </tr> <tr> <td>Load voltage (from box 5)</td> <td style="text-align: center;">=</td> <td><input style="width: 50px;" type="text"/></td> </tr> <tr> <td colspan="2">Must be less that</td> <td><input style="width: 50px;" type="text"/></td> </tr> </table> <p style="text-align: right;">.50 volt</p>	No-load voltage (from box 3)	-	<input style="width: 50px;" type="text"/>	Load voltage (from box 5)	=	<input style="width: 50px;" type="text"/>	Must be less that		<input style="width: 50px;" type="text"/>	
No-load voltage (from box 3)	-	<input style="width: 50px;" type="text"/>										
Load voltage (from box 5)	=	<input style="width: 50px;" type="text"/>										
Must be less that		<input style="width: 50px;" type="text"/>										

Important: The information contained in this bulletin is intended for use by trained, professional technicians who have the proper tools, equipment, and training to perform the required maintenance described above. This information is NOT intended for 'do-it-yourselfers', and you should not assume that this information applies to your equipment. If you have any questions regarding this information please visit our website at www.prestolite.com, or contact our technical service department at: