SERVICE NEWSLETTER 061

DATE: OCTOBER 17, 2001
TO: UD DEALER SERVICE MANAGER
FROM: NDA SERVICE OPERATIONS DEPARTMENT
FILE IN THE POLICY SECTION OF THE TECHNICAL BULLETIN BINDER

CHARGING SYSTEM DIAGNOSTIC PROCEDURES

PURPOSE

To provide proper diagnostic procedures for testing the charging systems in UD Trucks. The procedures shown apply to all vehicle year models and all alternator models used in UD Trucks.

Failure analysis of replaced alternator units indicates that a high number of alternators are being replaced un-necessarily.

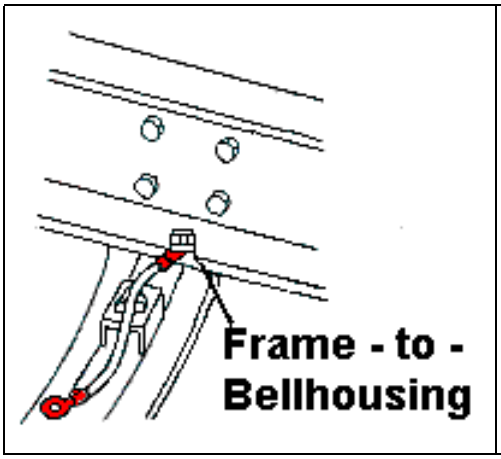
PRELIMINARY INSPECTION

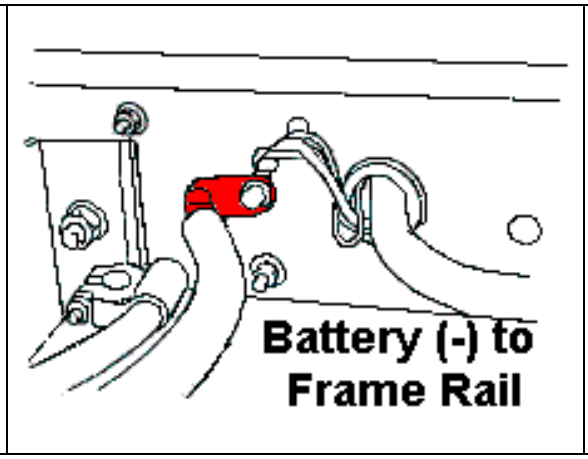
1. Charge the batteries completely. Never release a vehicle with discharged, or partially charged batteries, after completing charging system repairs. To do so may cause overheating of the alternator or contribute to overheated alternator wiring and subsequent failures in those areas.

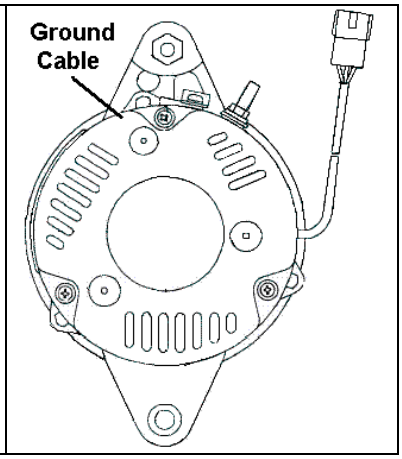
2. Load test the fully charged batteries to verify the integrity of the batteries. Load test batteries individually.

3. Check the alternator and battery system grounds for clean and tight connections before proceeding.

4. Check the positive battery cable connections at the batteries and at the alternator battery lug for clean and tight connections.



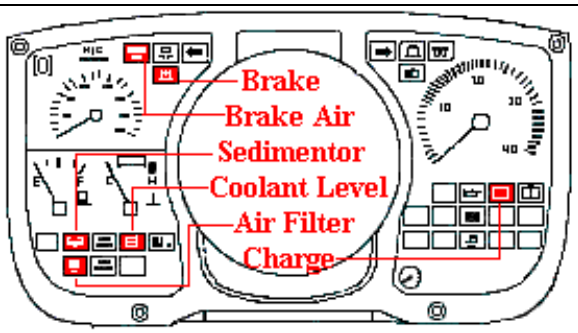




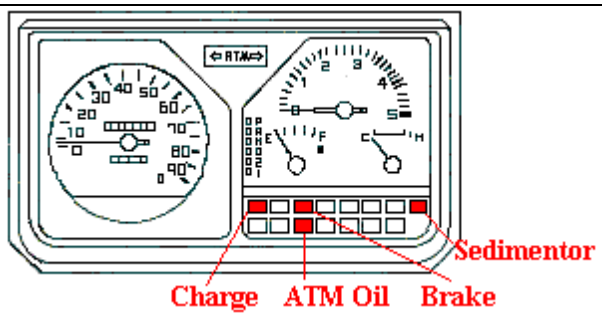
BULB CHECK FUNCTION / WARNING LIGHTS

The charging system warning light, along with several other vehicle warning lights, ground through the alternator regulator to provide Bulb Check Function when the ignition switch is ON and the engine is not running. This verifies the operation of the warning lights.

Alternator failures caused by internal alternator components will cause all the listed Bulb Check Function Warning Lights to illuminate and remain illuminated until the alternator operation is corrected.



MEDIUM DUTY



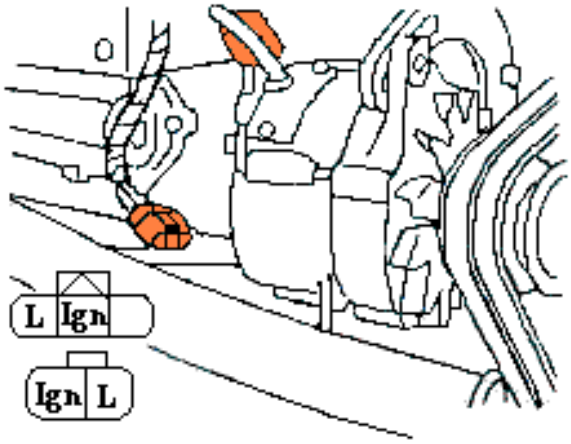
LIGHT DUTY

Vehicle wiring problems can also cause the Bulb Check Function Warning Lights to illuminate regardless of alternator operation.

To identify and separate wiring problems from alternator failure disconnect the alternator wiring connector from the alternator with the ignition switch ON and the engine running.

a. If the warning lights go off, the fault is in the alternator

b. If the warning lights do not go off, the fault is in the wiring. The "**L**" (lamp) wire is shorted to ground before it reaches the alternator connector.



ALTERNATOR TESTING ON THE VEHICLE

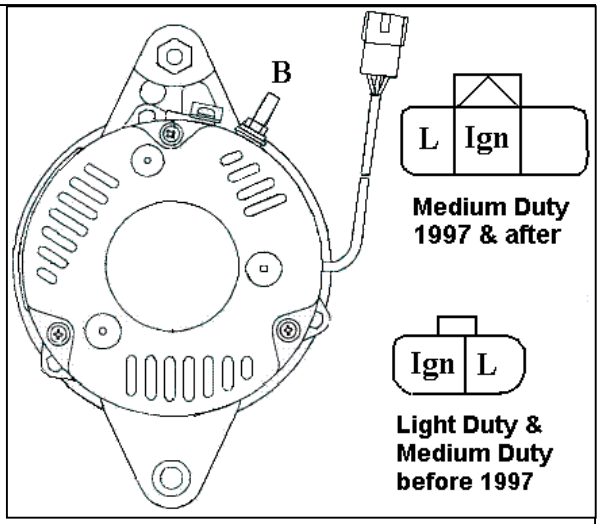
A malfunctioning alternator may be caused by an internal failure or by wiring problems. To determine if the alternator or the wiring is the cause of the problem perform the following check:

With the ignition switch ON and the engine not running check for voltage at all of the alternator terminals.

a. If voltage is present at the "**B**", "**L**" and "**Ign**" alternator terminals, the fault is the alternator.

Note: The voltage at the "**L**" (lamp) terminal is always less than full battery voltage.

Light and Medium Duty vehicles before 1997 use a two-wire connector as illustrated.



b. If voltage is missing at any one of the "**B**", "**L**" or "**Ign**" alternator terminals, a fault exists in the wiring for that circuit. This problem should be corrected before proceeding with alternator testing.

Complete alternator testing on the vehicle includes checking the voltage at the batteries and checking the output amperes at the alternator.

Voltage Specifications (with fully charged batteries):
Light Duty = 14.1 volts ~ 14.7 volts
Medium Duty = 14.0 volts ~ 14.6 volts

To properly check the alternator operation, the output amperes must be verified against the rated output of the alternator.

INDUCTION AMPERE METER (EXAMPLE)

BATTERY LOAD TESTER (EXAMPLE)

1. After completely charging the batteries in the vehicle connect a suitable ampere meter to the alternator as shown above.

2. Connect a suitable battery load tester or carbon pile to the batteries for the purpose of loading the batteries. An example of a suitable load tester is shown above.

3. Start the engine and accelerate the engine to approximately 1500 RPM to assure proper output testing of the alternator. Testing at idle engine speed will result in inaccurate readings.

4. Apply approximately 150 ~ 250 ampere load on the batteries using the battery load tester. This will force the alternator to charge the maximum amperes it is capable of producing. Do not apply battery load for more than 10 seconds continuous.

Compare the actual output amperes of the alternator with the rated ampere output of the alternator. Refer to the label on the alternator.

a. An alternator that is charging within 80% of it's rated ampere output is serviceable.
(Example: 90 ampere alternator = 72 ampere minimum)

b. An alternator that is charging below the 80% of it's rated ampere output is faulty. Repair or replace as needed.

c. No output indicates a failed alternator. Repair or replace the alternator as needed.

Also refer to the 1999 ~ 2001 UD Truck Service Manual CD, Engine Electrical System, for further details.