PREVOST

MAINTENANCE INFORMATION

MI18-16A

DATE :	April 2018	SECTION : 06 ELECTRICAL
SUBJECT :	**BOSCH HD10 ALTERNATOR DIAGNOSTIC GUIDE**	

Revision: A — Exclusion of vehicles added to the Application table — May 2018

APPLICATION

Model	VIN 
All models	Vehicles equipped with Bosch HD10 **24V-120A** or **24V-150A** alternators **excluding** the vehicles equipped with the **Electric Fan Drive cooling system**

DESCRIPTION

To avoid replacement of alternators that are in fact in good working order, perform the steps which follow to help you perform a more precise diagnosis.

NOTE: do not replace an alternator presumed to be defective without undertaking a diagnosis according to the instructions which follow.

CONTENT

REQUIRED TOOLS

CARBON PILE LOAD TESTER	CURRENT METER
	

PROCEDURE

DANGER

Park vehicle safely, apply parking brake, stop the engine. Prior to working on the vehicle, set the ignition switch to the OFF position and trip the main circuit breakers equipped with a trip button. On Commuter type vehicles, set the battery master switch (master cut-out) to the OFF position.

PART 1: VISUAL INSPECTION

1. If the vehicle is fitted with Bosch 150A alternators, make sure that there is a flat washer between the pulley and the flange nut. This washer is absolutely required. Add a washer if missing.

☐ correct ☐ incorrect

Note : flat washer not required on the Bosch 120A alternator

2. Make sure that the alternator pulleys do not slip. Make sure that the nuts are tight. **Correct if needed.**

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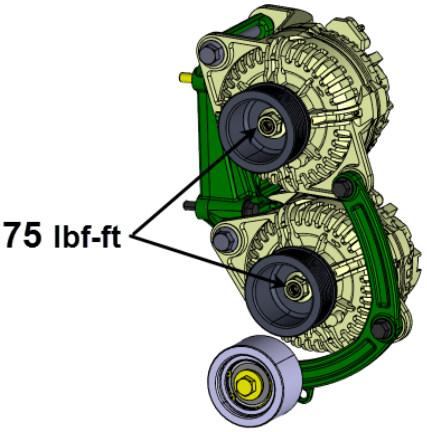

3. Remove the belt. Check if the bearings are in good condition. Turn the pulleys by hand. Check if there is a play in the bearings and if the rotation of the pulley seems normal.

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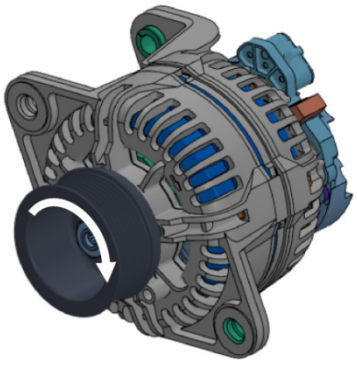

4. Check for proper connection of the « power » & « ground » cables. Make sure that the cable lugs are tight, free of rust and discoloration. Tighten if necessary (consult maintenance information MI16-17 for prescribed values). A bad connection between the lugs and the alternator studs may be the cause of the problem. **Tighten the nuts and clean the lugs if applicable.**

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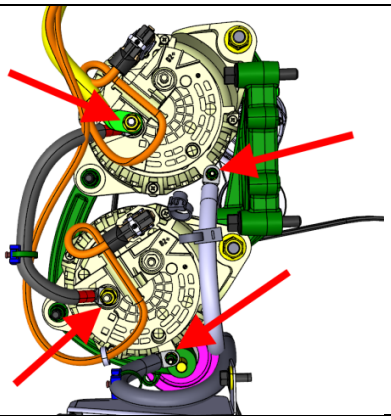
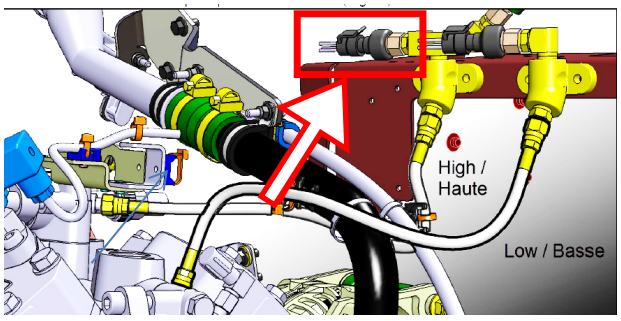


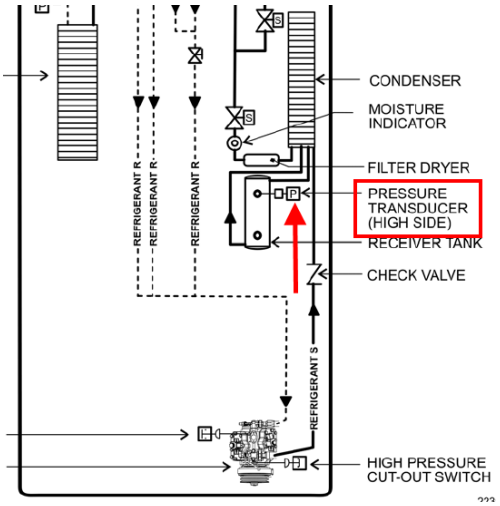
Note: If fixes were made at the previous steps, the alternator problem might have been corrected as a result.

PART 2: LOAD TEST – POWER CABLE

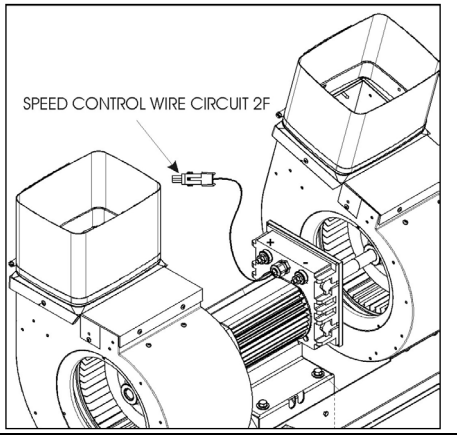
To perform the alternator load test, it is necessary to create a sufficiently high load (power demand). For this reason, the air-conditioning system will be turned on at full power.

1. Disconnect the A/C system high-side pressure transducer. This transducer can be located near the A/C compressor (top image) or fixed to the refrigerant receiver tank (lower picture).

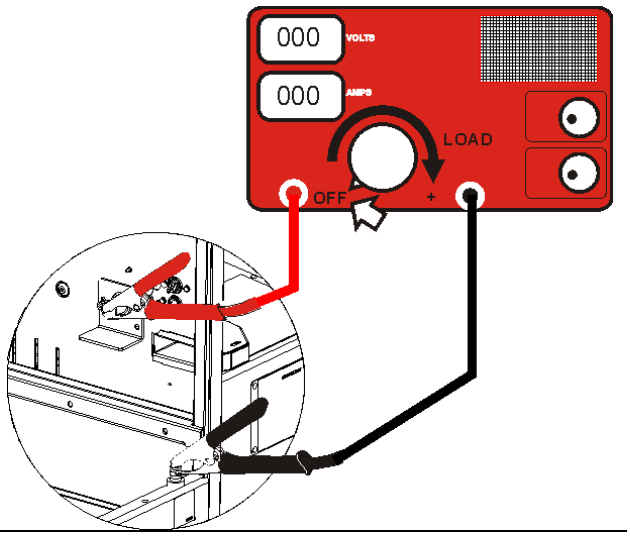




2. In the evaporator compartment, disconnect the white speed control wire connected to the central stud terminal (identified circuit 2F on the image at right) of the blowers motor. Doing this will keep the blowers in high speed.

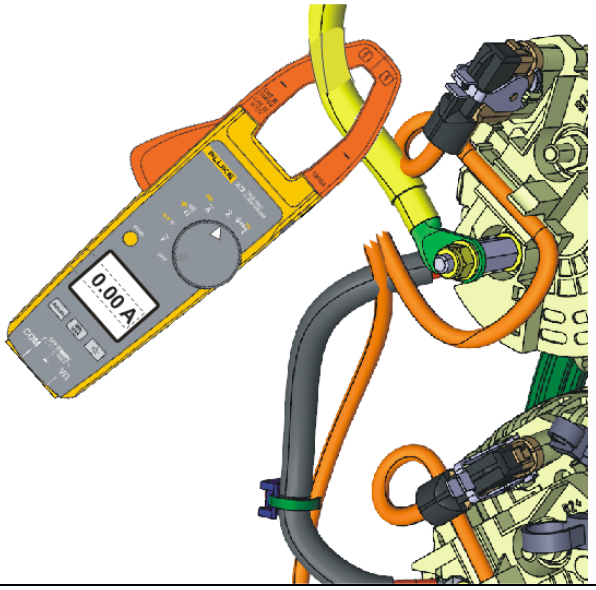


3. Connect a carbon pile load tester to the booster block terminals but do not activate the load circuit on the load tester (keep the load knob at OFF).



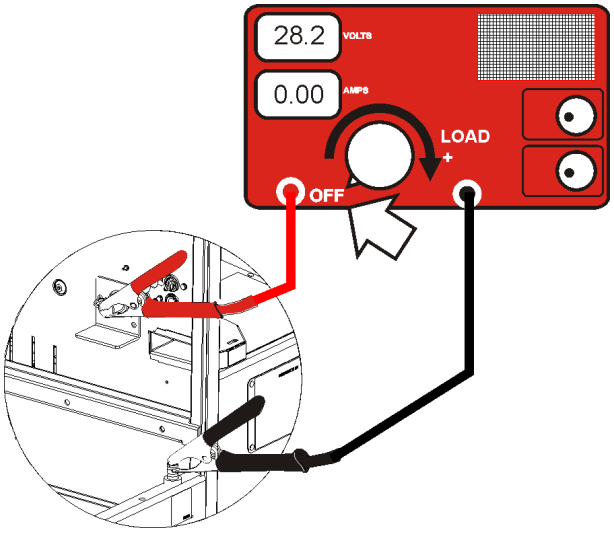
4. Place a current meter in order to read the current in the "power" cable (circuit 102-2/0) connected to the top alternator.

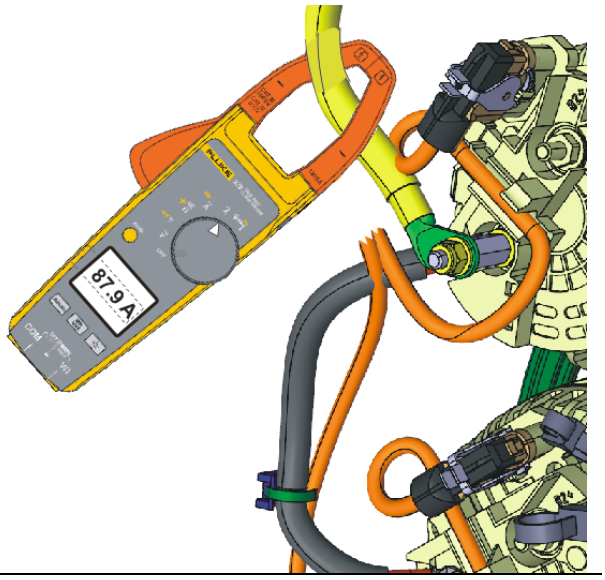
   Important, there must be no other cable or wire into the current meter clamp.



5. Make sure that the vehicle battery charger is **not** powered or in use.
6. Start the engine.
7. Using the dashboard switch put the engine in fast idle speed.
8. Turn on the high beams.
9. Turn on all the interior lighting (lighting in the passenger section, light above the driver).
10. Turn on the air conditioning.

11. Turn on the load tester but do not activate the load circuit (keep the load knob at OFF).
12. The voltage reading on the load tester **should be greater than 28V**.
13. Reading of the current flowing in the power cable should be greater than 80A (the load tester “load circuit” must not be activated, keep the load knob at OFF).





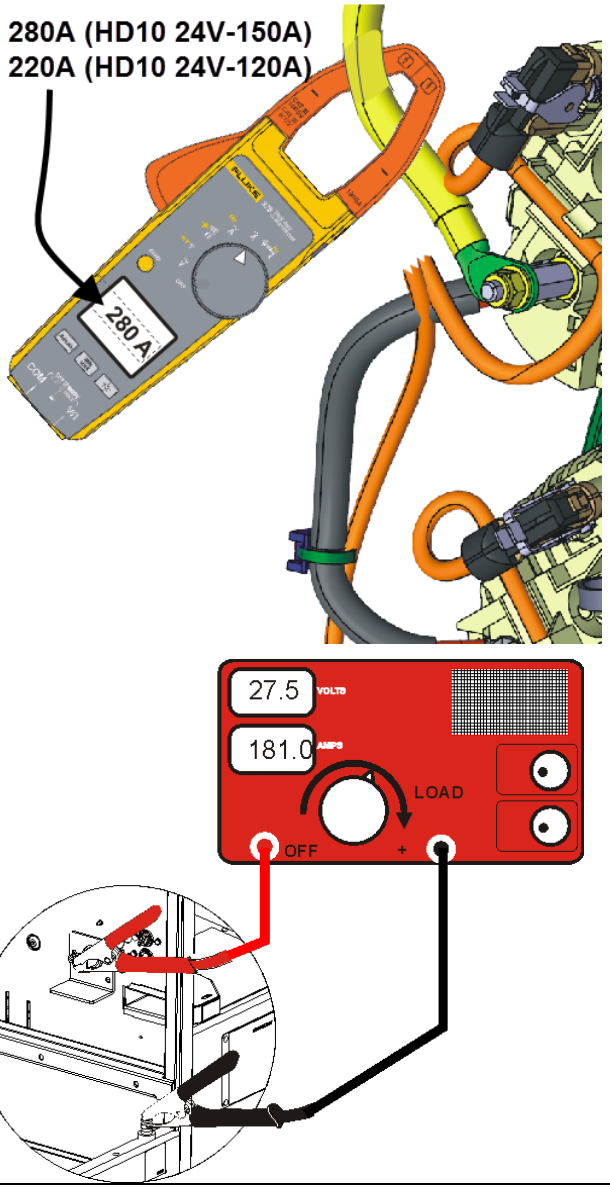
14. Turn the load knob (not more than 5 to 10 seconds) in order to get the following reading on the current meter:

    - *280 amps (Bosch HD10 24V-150A)*
    - *220 amps (Bosch HD10 24V-120A)*

    If the alternators are able to deliver 280 amps (or 220 amps depending on the type of alternator) and the voltage remains above 27V, then the alternators are in good condition. No replacement is necessary.

    ☐ correct ☐ incorrect

    If it's not the case, go to Part 3



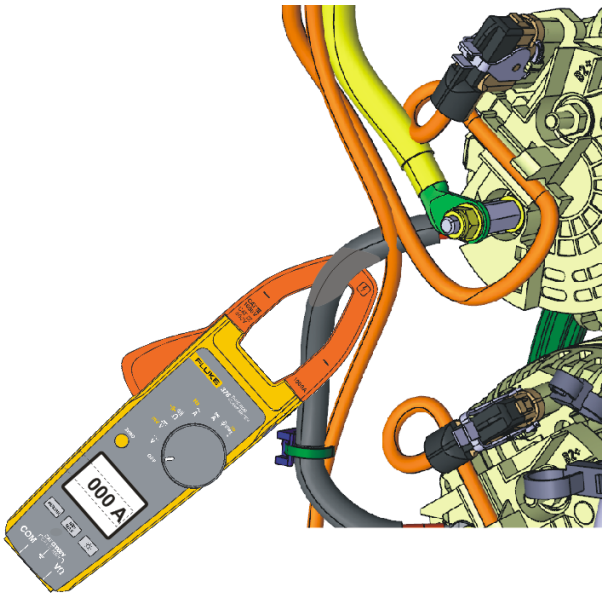
PART 3: LOAD TEST – JUMPER CABLE

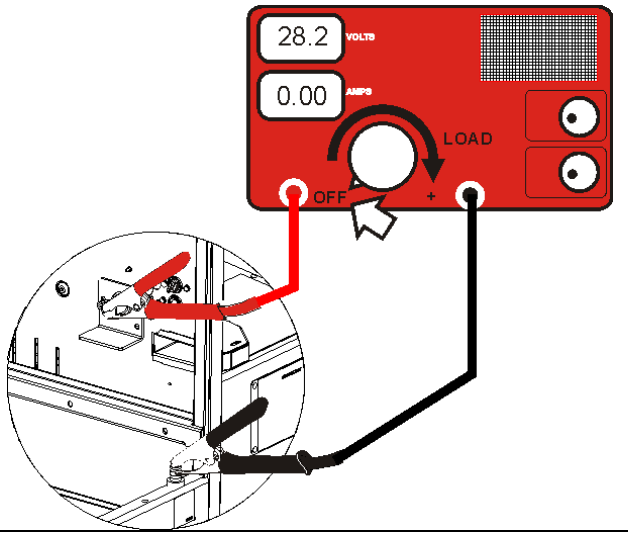
1. Place an ammeter in order to read the current in the jumper" cable (circuit 102A) connecting both alternators together.

   Important, there must be no other cable or wire into the clamp of the ammeter.

2. Make sure that the load knob is at OFF.

   Without any additional load on the load tester, it is normal to have a reading of 0 amp on the current meter, but the voltage reading should be greater than 28V.



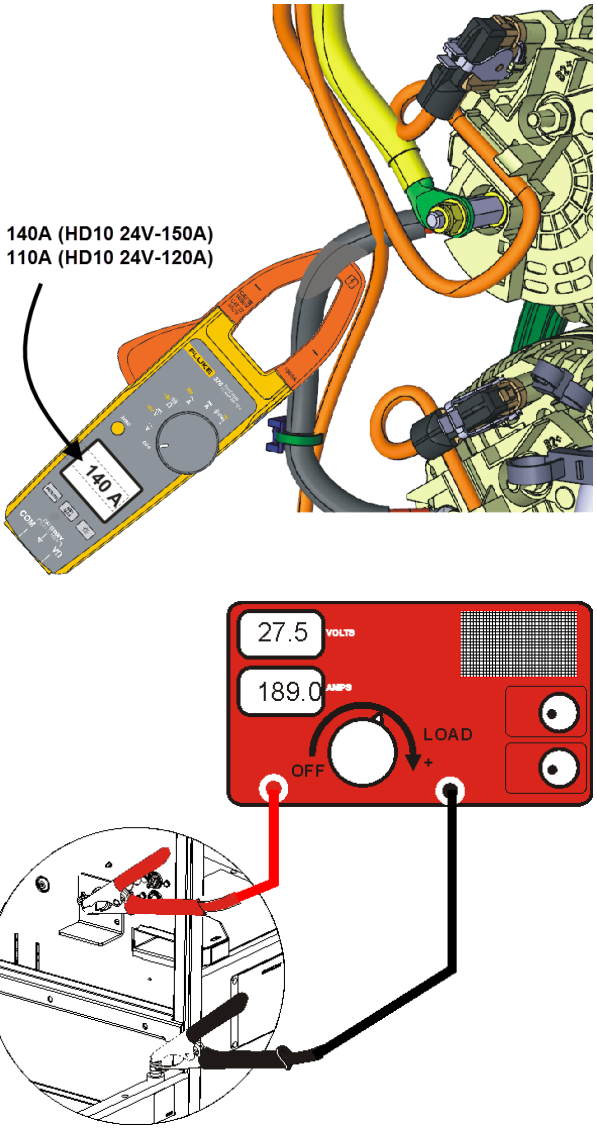


3. Turn the load knob (not more than 5 to 10 seconds) on the load tester in order to get the following reading:

   - 140 amps (HD10 24V-150A) on the current meter.
   - 110 amps (HD10 24V-120A) on the current meter.

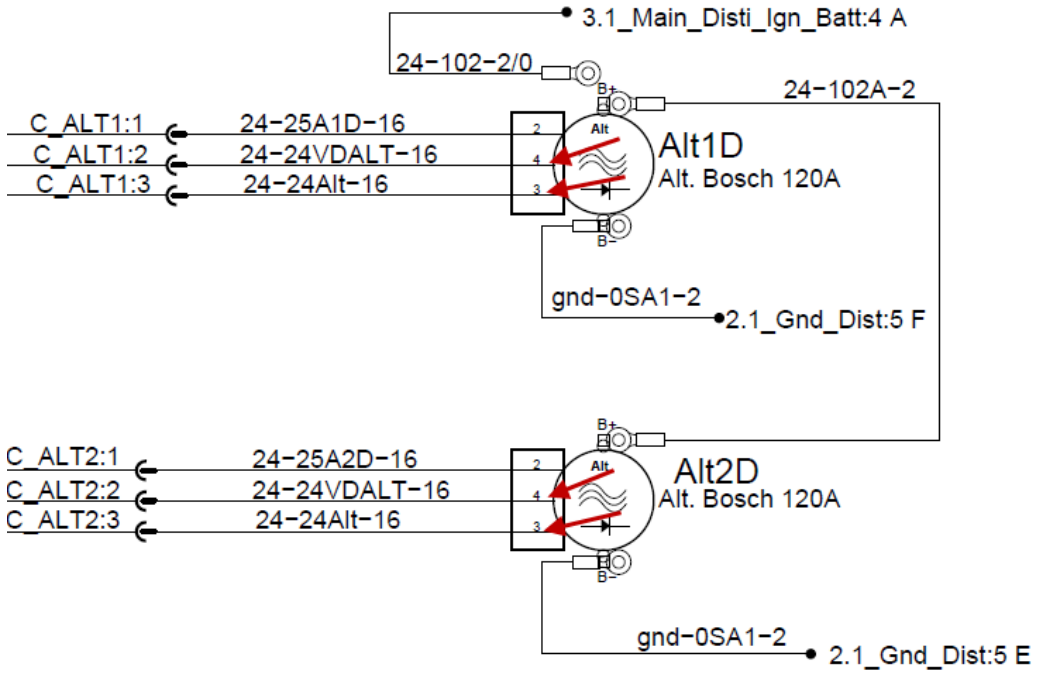
Diagnostic

1) ***if the voltage is below 27V before having increased the load with the load knob, check both alternators as described in part 4.***
2) ***If the lower alternator is able to deliver 140 amps (or 110 amps depending on the type of alternator), so the lower alternator is in good condition. Therefore, check the upper alternator as described in Part 4.***
3) ***If the lower alternator can't deliver 140 amps (or 110 amps depending on the type of alternator), check the lower alternator as described in Part 4.***

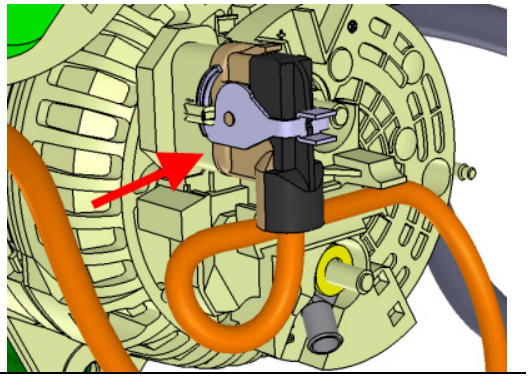


PART 4: CHECKING INPUT SIGNALS ON A PRESUMED DEFECTIVE ALTERNATOR

Prior to the replacement of a potentially defective alternator, it is important to confirm the input signals of the alternator (see the circuits identified on the following image) because the problem could simply be due to a broken signal wire, corroded, etc.



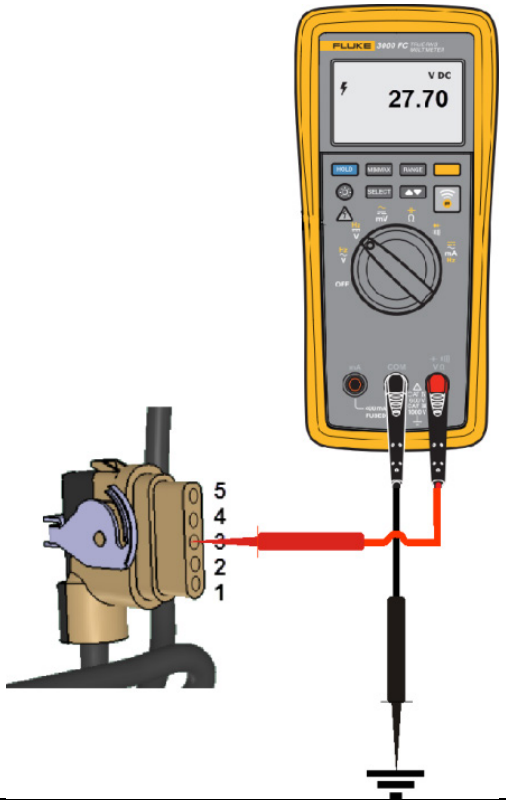
1. Shut the engine down. Unplug the connector of the presumed defective alternator.
2. Put the ignition switch to the ON position.



3. Measure the voltage on pin 3. If the voltage reading ±0.5V is equal to the voltage of the batteries, then there is no problem with this circuit.

   If the voltage reading ±0.5V is different from the voltage of the batteries then check condition of the circuit (broken wire, corrosion, etc.).

   Repair the circuit if applicable and check voltage once again.



4. Measure the voltage on pin 4. If the voltage reading ±0.5V is equal to the voltage of the batteries, then there is no problem with this circuit.

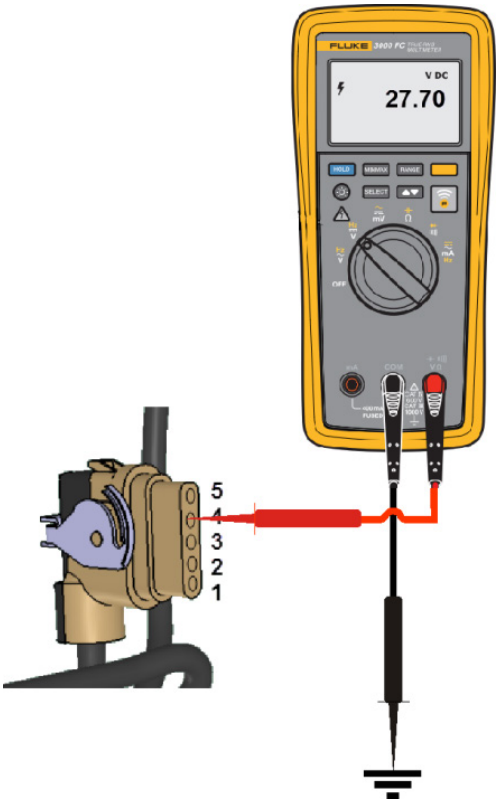
   If the voltage reading ±0.5V is different from the voltage of the batteries then check condition of the circuit (broken wire, corrosion, etc.)

   Repair the circuit if applicable and check voltage once again.

   If the voltage reading of the circuits (pin 3 & 4) is normal, then you can conclude that the alternator is defective. Replace the alternator.

   DO not replace both alternators if only one of the two is defective.

   You will find all the information necessary for the replacement of an alternator in maintenance information MI16-17.



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