

Charging System Voltage (Cummins ISX)  
 VN Models

**FSB 322-002, Charging System Voltage**

(November 2013)

On vehicles equipped with a Cummins ISX Engine built from January 1, 2010 to June 28, 2013 with the left front battery box location (not the stacked battery box or Dometic system equipped vehicles), the voltage drop on the charging circuit may be higher than is recommended when utilizing the voltage drop test with the Intellicheck tester. The voltage drop is acceptable to charge the batteries but the test using the Intellicheck tester may show failed or under specification.

Service personnel: Please circulate, read and initial

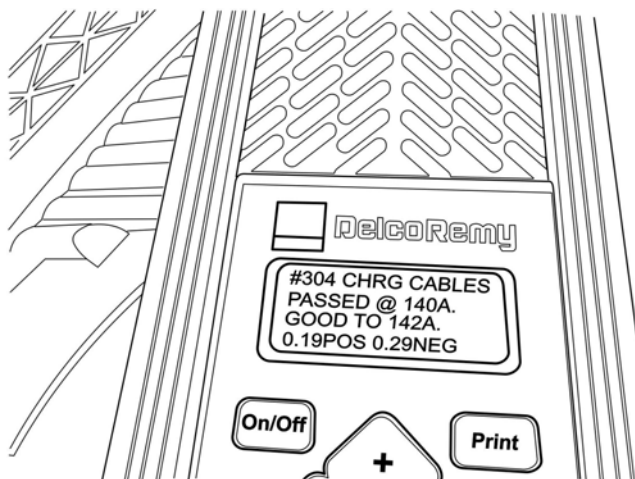
Service Manager	Warranty Administrator	Workshop Foreman	Service Technicians						

## Checking

On some vehicles, the Intellicheck tester can erroneously indicate excessive voltage drop in the charging system. If the Intellicheck tester indicates too high a voltage drop, perform these steps to determine if corrective action is needed:

- Clean and tighten all power connections on the alternator, batteries and cables.
- Repeat the test with the Intellicheck tester and record the voltage drop reading for positive and negative.
- Add the two readings: **If the total is 0.60 V or less then the voltage drop is acceptable** no further action is needed.

If the total is greater than 0.60 V then perform the following procedure:



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Sample calculation  $A + B = \leq 0.60 \text{ V}$

Example:  $0.19 + 0.29 = 0.48$  (**Passed**) No further action required.

## Required Parts

Quantity	Part Number	Description
24	980464	Cable Ties
2	983715	Nut (two may be required depending on vehicle build)
2	21650178	Buss Bar (two may be required depending on vehicle build)
1	22208970	Positive Cable
1	22218117	Ground Cable

## Repair Procedure

**Note:** Information is subject to change without notice. Illustrations are used for reference only, and may differ slightly from the actual engine version. However, key components addressed in this information are represented as accurately as possible.

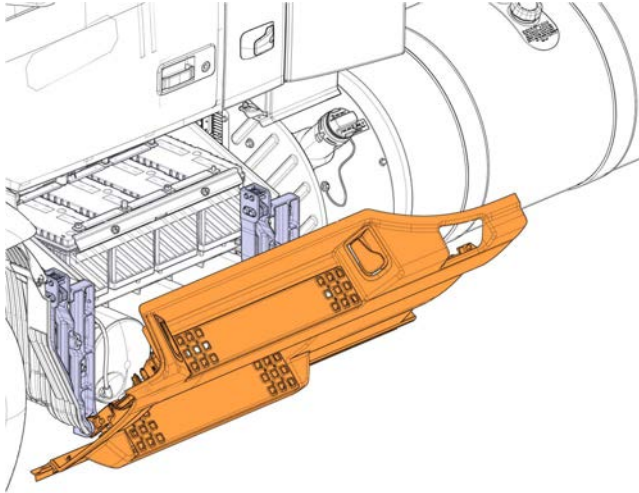
You must read and understand the precautions and guidelines in Service Information, group 30, "General Safety Practices, Electrical and Electronics" before performing this procedure. If you are not properly trained and certified in this procedure, ask your supervisor for training before you perform it.

- 1 Secure the vehicle for service by parking it on a flat level surface, applying the parking brake, chocking the rear wheel, and placing the transmission in neutral.
- 2 Raise the hood.



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- 3 Remove chassis side fairing/battery box lid.



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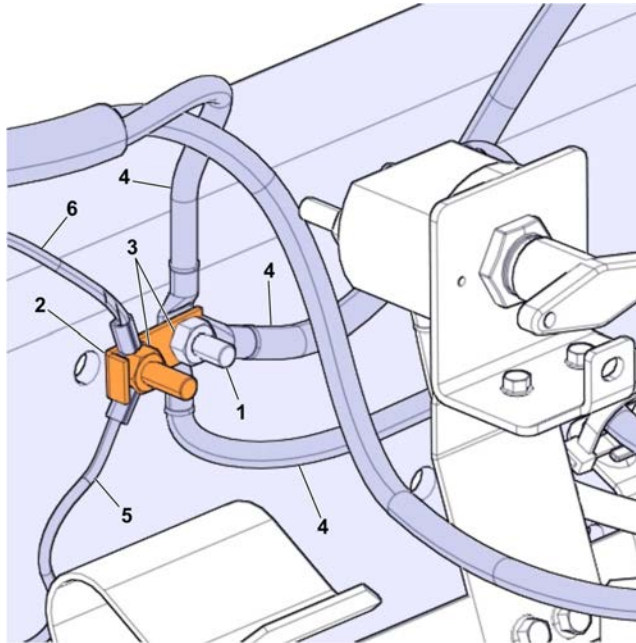
- 4 Disconnect all cables from the negative battery terminals to prevent personal injury from electrical shock and prevent damage to electrical components.
- 5 Remove the inner fender.
- 6 Overlay the new ground cable 22218117 in place over top of the existing chassis harness and loosely cable tie in place. This cable should route from the engine ground stud to the frame rail ground stud. Do not tighten at this time.

- 7 Secure the cable at the frame rail ground stud.

**Note:** If more than 3 cables are located on this grounding point, use the 21650178 buss bar to re-allocate the other cables for a more even distribution.

**Note:** Install the buss bar if needed over the largest cables and secure. Tighten to  $40 \pm 6$  Nm ( $29.5 \pm 4.5$  ft lb).

**Note:** Install the smaller cables on the buss bar stud and secure. Tighten to 12 Nm (9 ft lb).



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1. Ground Stud
2. Buss Bar
3. Nut
4. Battery Cables
5. Fusible Link
6. Chassis Ground

- 8 Secure the cable onto the existing engine ground stud.

**Note:** If more than 3 cables are located on this grounding point, use the 21650178 buss bar to re-allocate the other cables for a more even distribution.

**Note:** Install the buss bar if needed under the 2 largest cables and secure.  
Tighten to  $19 \pm 1$  Nm ( $14 \pm 0.7$  ft lb).

**Note:** Install the smaller cables on the buss bar stud and secure.  
Tighten to 12 Nm (9 ft lb).

- 9 Tighten cable ties and secure.

- 10 Lay the new alternator cable 22208970 onto the engine harness and route from the starter to the alternator.

- 11 Loosely cable tie in place.

**Note:** Do not tighten at this time.

- 12 Remove the old positive cable from the alternator and cut the end off some distance back from the alternator.

- 13 Install the new cable to the alternator and secure.  
Tighten to  $7.1 \pm 0.8$  Nm ( $5.2 \pm 0.6$  ft lb).

- 14 Remove the alternator power cable from the starter solenoid and cut the end off some distance back from the starter.

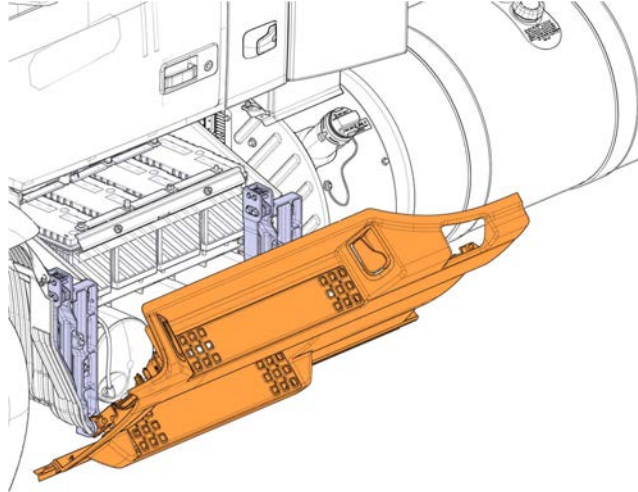
- 15 Install the new cable to the starter and secure.  
Tighten to  $25 \pm 0.8$  Nm ( $18 \pm 0.6$  ft lb).

- 16 Tighten the cable ties and secure alternator power cable.

- 17 Install the inner fender.

- 18 Install all previously removed cables to the negative battery terminals.

- 19 Coat all connections with corrosion inhibitor or similar product.
- 20 Install the chassis side fairing/battery box lid.



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- 21 Lower the hood.

**Reimbursement**

<b>This repair may be eligible for reimbursement if a product failure was experienced within time and mileage limits of the applicable Warranty coverage. Reimbursement is obtained via the normal claim handling process.</b>	
<b>Claim Type (used only when uploading from the Dealer Bus. Sys.)</b>	W
<b>Labor Code</b>	
Checking Time Only	32202-0-01 0.3 hrs.
Primary Labor Code includes Checking Time	32202-0-02 1.1 hrs.
<b>Causal Part</b>	983715

Volvo Trucks North America engages in a comprehensive program of testing and evaluating to provide the best possible product. Volvo Trucks North America however, is not committed to, or liable for updating existing vehicles.