VOLVO
Volvo Trucks North America, Inc.
Greensboro, NC USA

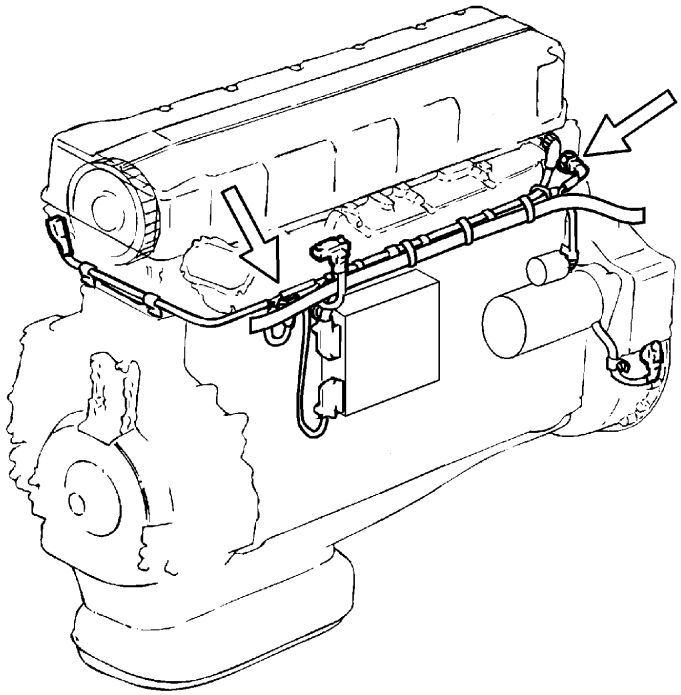
Service Bulletin Trucks

Date	Group	No.	Page
7.2003	**371**	**028**	1(9)

This bulletin contains important information which applies to vehicles built before January 1997 with Volvo VE D12A engines.

Adapting the Engine Harness to Engine Temp. Sensors VN with D12A

Adapting the Engine Cable Harness



W3001156

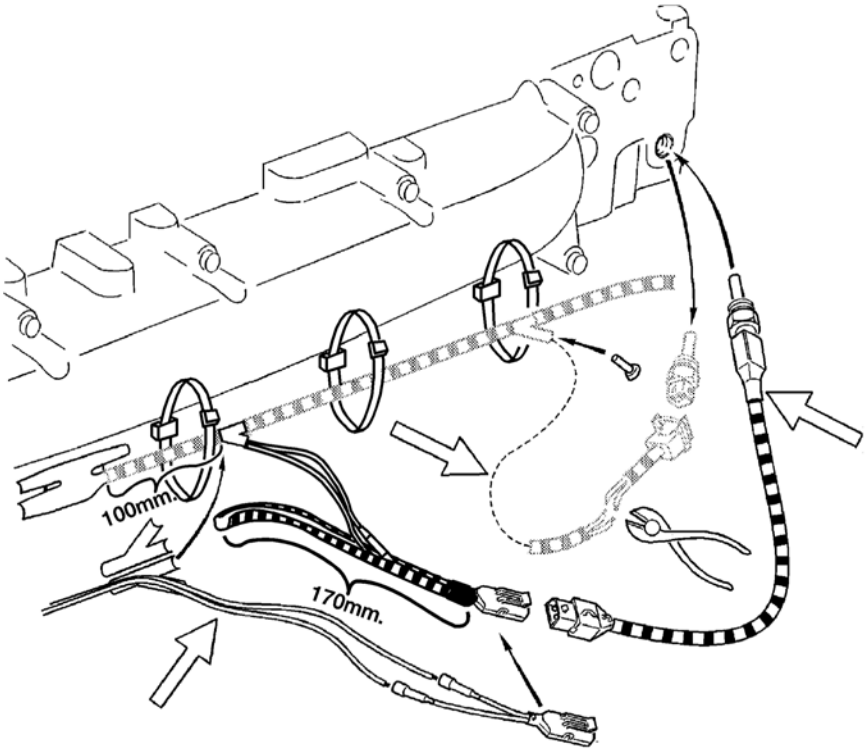
In order to reduce chafing and corrosion of electrical wiring due to vibrations, the temperature sensors for coolant and boost air have been provided with an improved type of connector and wiring.

Only the improved design of the sensor is kept as a spare part. This means that when replacing a temperature sensor on vehicles built before January 1997, the engine harness needs to be reworked with special adapters. These can be ordered as follows:

Component	Part no.	Adapter
Temperature sensor, coolant	1079338	3963696
Temperature sensor, boost air	1079339	3963696

Service Procedures

Coolant Temperature Sensor, Replacement



W3001143

CAUTION

If there are other ground cables connected to the battery (such as engine ECU, satellite system, etc.), disconnect those grounds first, then remove the battery ground cable. Electronic modules may be damaged when additional grounds are connected/disconnected without the main battery ground connected. Always disconnect the main battery ground ***last***.

1

WARNING

Engine may be HOT. Risk of burns or other serious personal injury. Allow the engine to cool before servicing.

WARNING

Contents under pressure. Coolant may be hot and blow off cap, causing eye or other serious injury. Open fill cap only when engine and radiator are cool.

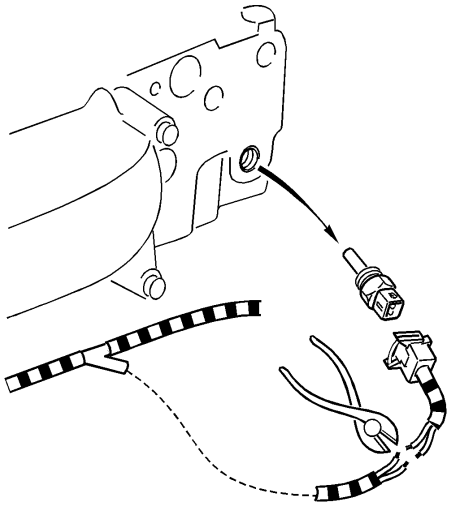
DANGER

Risk of poisoning. Coolant is toxic. Do not drink coolant. Use proper eye and hand protection when handling. Keep coolant out of reach of children and animals.

Drain the coolant from the radiator into a suitable container.

2
Cut the tie straps from the coolant temp. sensor back to the “H” break-out in the engine wiring harness.

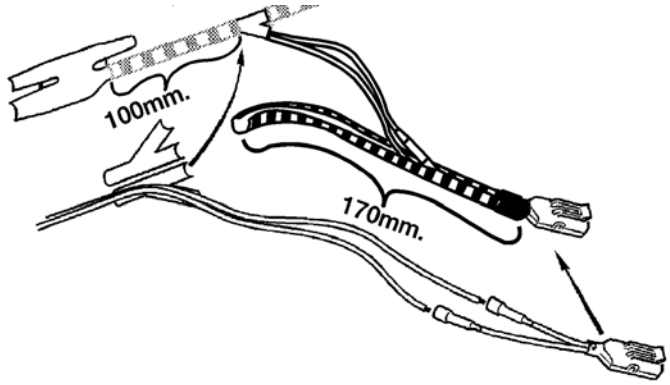
3
Disconnect the connector from the coolant temp. sensor. Remove the sensor. Remove the sensor connector by cutting the corrugated hose and wires. Remove the existing corrugated hose from the branch.



T3008741

4
Cut open the corrugated hose (cut around it, not lengthwise) 100 mm (4 in.) from the “H” breakout. **NOTE!** Cut carefully so that the wires in the hose are not damaged. Pull out the sensor wires at the 100 mm (4 in.) opening and install the new breakout junction, 4803727.

4803727

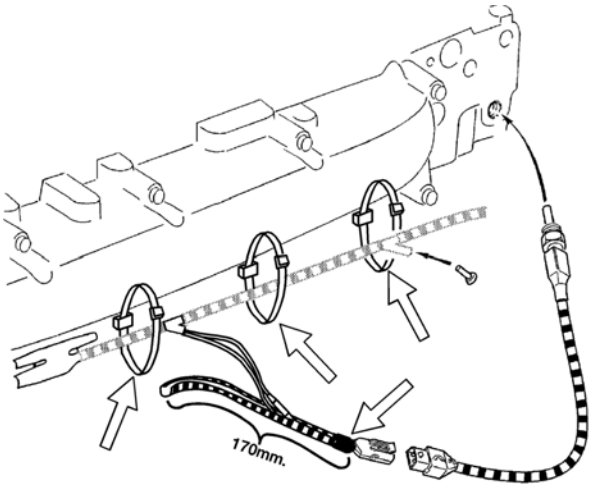


W3001145

5

Cut the wires different lengths to match the new connector wires as shown in the diagram. Polarity does not matter. The total length between the breakout and the sensor connector should be approximately 170 mm (7 in.).
Attach the new connector adapter, 3963696. Crimp the splice connections on the connector to the engine harness. Use crimpers 3947557 (Anvil 16–14) from the Volvo Engine Terminal Kit. Heat the splice connection with a heat gun until the plastic shrinks and at the same time melts the adhesive.
Install the 170 mm (7 in.) split corrugated hose (8397611) and tape at the connector and breakout.

3963696
3947557
, 8397611



W3001144

6

Install the new sensor. Torque to 28 ±2 Nm (250 ± 17 in-lb.).

Note: See special instructions for using a torque wrench extension in Group 08, *Special Tool, Torque Wrench Extension*.
Connect the sensor. Route and tie strap the harness to the original clip points. Install the plug 8150460 in the original breakout.

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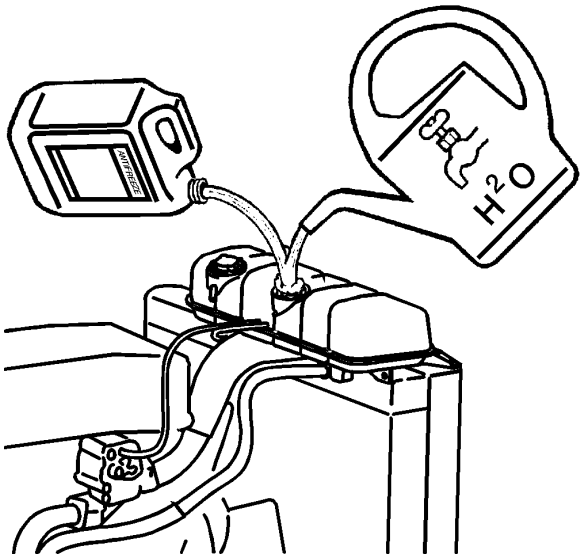
28 ±2 Nm
(250 ±17 in-lb.)



W2002058

7

Install the drained coolant. Maximum fill rate of 9.5 liter per minute (2.5 gallons per minute).

Note: Refer to service information in Group 26, ***Coolant Requirements, Volvo VE D12*** for proper coolant concentration.

8

CAUTION

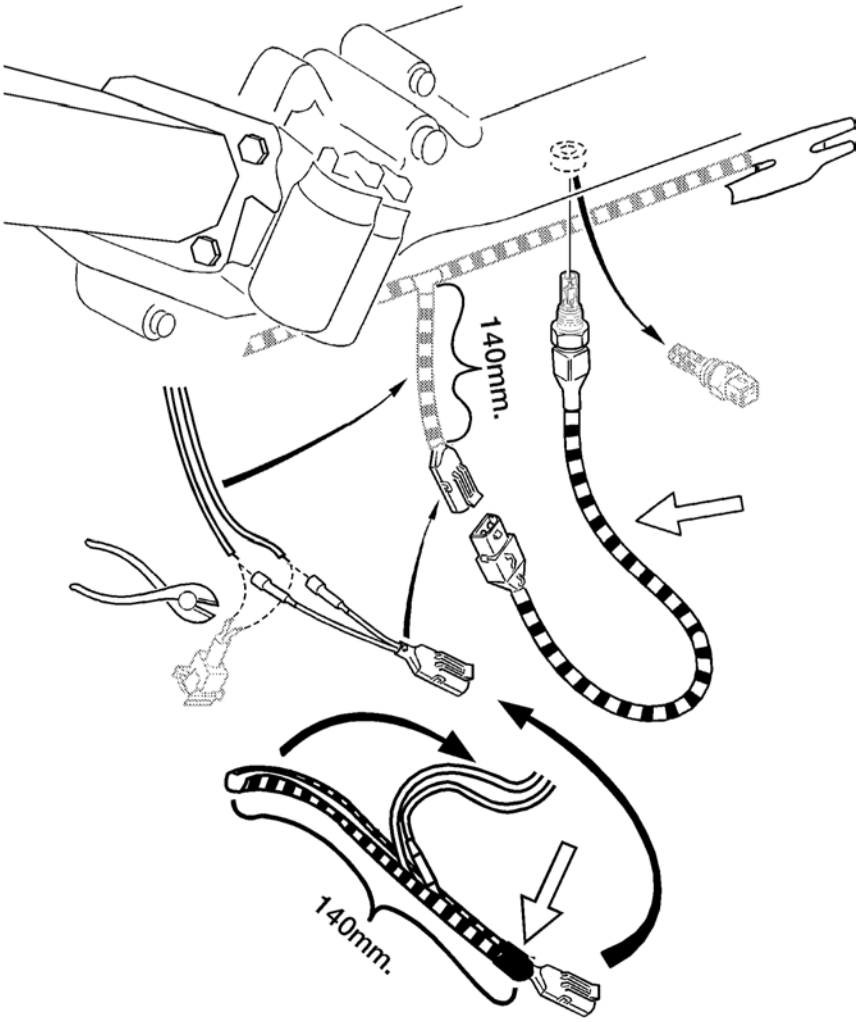
If there are other ground cables connected to the battery (such as engine ECU, satellite system, etc.), connect the battery ground cable first, then connect those grounds. Electronic modules may be damaged when additional grounds are connected/disconnected without the main battery ground connected.

Reconnect the battery cables.

9

Run the engine and check for any fault codes — active or inactive. Erase any inactive faults and repair any active faults.

Boost Air Temperature Sensor, Replacement

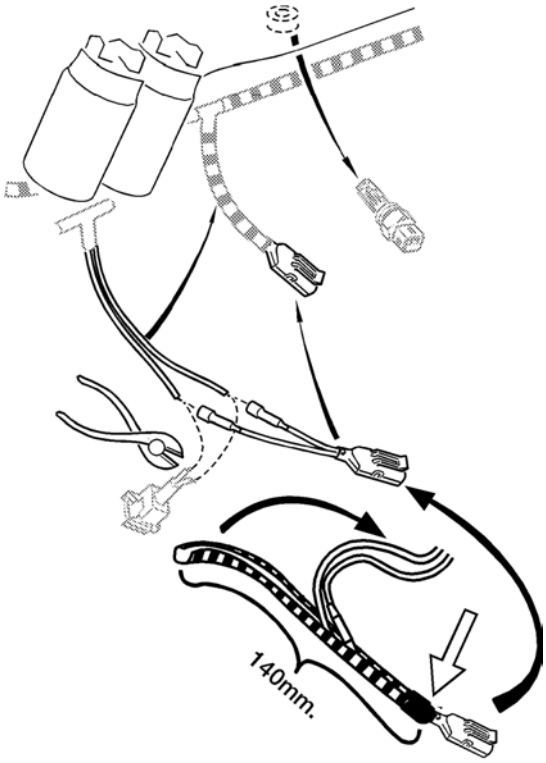


W3001152

CAUTION

If there are other ground cables connected to the battery (such as engine ECU, satellite system, etc.), disconnect those grounds first, then remove the battery ground cable. Electronic modules may be damaged when additional grounds are connected/disconnected without the main battery ground connected. Always disconnect the main battery ground ***last***.

1
Remove the alternator adjustment nut. Loosen the adjusting bolt and remove the alternator belt. Remove the adjuster bracket. Remove the ground, power and charge indicator wires from the alternator. Remove the alternator mounting bolt and nut.



W3001153

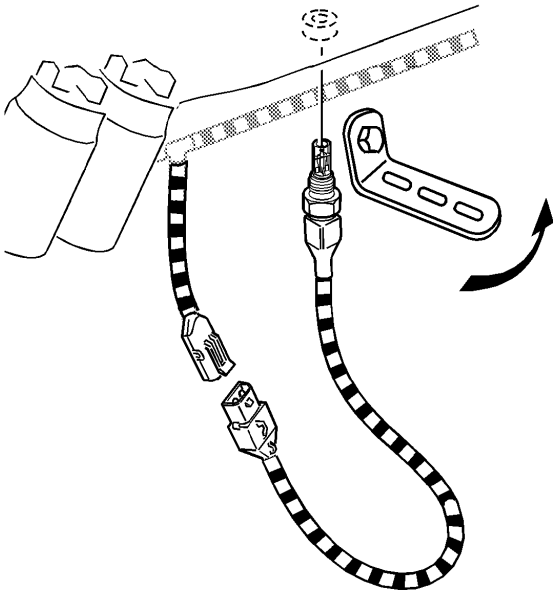
2
Disconnect the connector from the boost air temperature sensor, and remove the sensor. Cut off the old sensor connector. Cut close to the connector and remove the corrugated hose.

3
The total length between the breakout and the sensor connector should be approx. 140 mm (5.5 in). Cut the boost sensor wires to match the new connector length. Crimp the splice connections to the engine wiring harness using crimpers 3947557 from the Volvo Engine Terminal Kit. Heat the splice connections until the plastic shrinks and the adhesive is visible.

3947557

4
Install a piece of split corrugated hose (8397611) approximately 140 mm (5.5 in.) long over the new connector and T-breakout. Tape at both ends.

8397611



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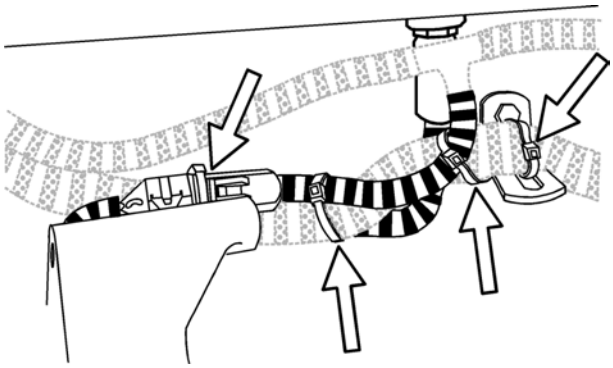
5
Loosen the wiring harness bracket at the boost air temperature sensor.



W3001155

6
Install the new sensor with the copper washer.

Note: See special instructions for using a torque wrench extension in Group 08, ***Special Tool, Torque Wrench Extension***.
Torque the sensor to 28 ± 2 Nm (250 ± 17 in-lb). Connect the sensor to the connector. Torque the wiring harness bracket to 24 ± 4 Nm (212 ± 35 in-lb). Route and secure to the existing cables as shown in the diagram. Use tie straps to secure to the engine harness and tuck behind the mounting ear.

7

Install the alternator onto the mounting bracket. Install the mounting bolt, but do not tighten. Install the alternator adjusting bracket. Insert the adjuster stud through the alternator's ear. Mount the adjusting bracket to the mounting bracket; torque the bolt to 60 ± 10 Nm (44 ± 7 ft-lb). Install the alternator belt. Tighten the adjusting bolt until the belt is tight. Torque the adjusting stud nut to 48 ± 8 Nm (35 ± 6 ft-lb). Torque the alternator mounting bolt to 85 ± 5 Nm (62 ± 4 ft-lb).

8

Connect the alternator ground wire. Torque to 7 ± 1 Nm (62 ± 9 in-lb). Connect the battery terminal and torque to 7 ± 1.5 Nm (62 ± 13 in-lb). Connect the indicator wire and torque to 5 ± 1 Nm (44 ± 9 in-lb).

9

CAUTION

If there are other ground cables connected to the battery (such as engine ECU, satellite system, etc.), connect the battery ground cable first, then connect those grounds. Electronic modules may be damaged when additional grounds are connected/disconnected without the main battery ground connected.

10

Run the engine and check for any fault codes — active or inactive. Erase any inactive faults and repair any active faults.