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Solenoid Valve VCB, Replacement
D16F

Solenoid Valve VCB, Replacement, D16F

This information covers the procedures for replacing the VCB solenoid valve on the Volvo D16F engine.

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

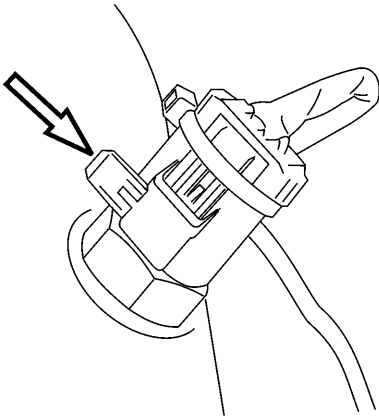
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Solenoid Valve, Compression Brake, Replacement

You must read and understand the precautions and guidelines in Service Information, group 20, "General Safety Practices, Engine" before performing this procedure. If you are not properly trained and certified in this procedure, ask your supervisor for training before you perform the procedure.

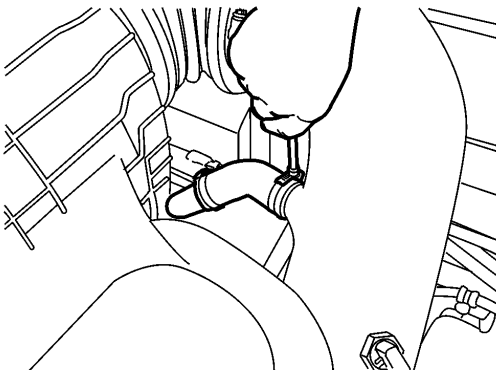
- 1**
Apply the parking brake and place the shift lever in neutral.
- 2**
Remove all cables from ground (negative) battery terminals to prevent personal injury from electrical shock.

- 3**
Disconnect the air temperature sensor wiring harness connector from the sensor. Cut the tie strap and disengage the lock tab. Remove the clamp securing the harness to the main fresh air pipe.



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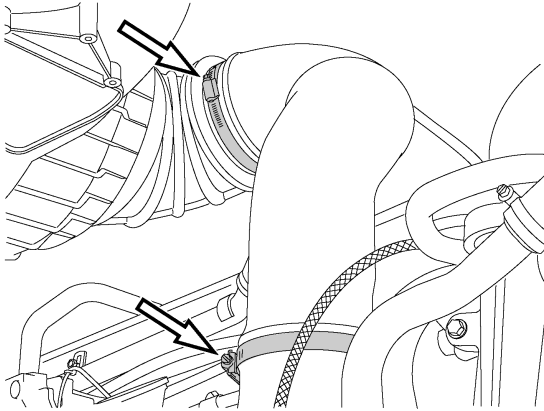
- 4**
Loosen the air compressor fresh air pipe coupling hose clamp at the main fresh air pipe. Separate the hose from the pipe.



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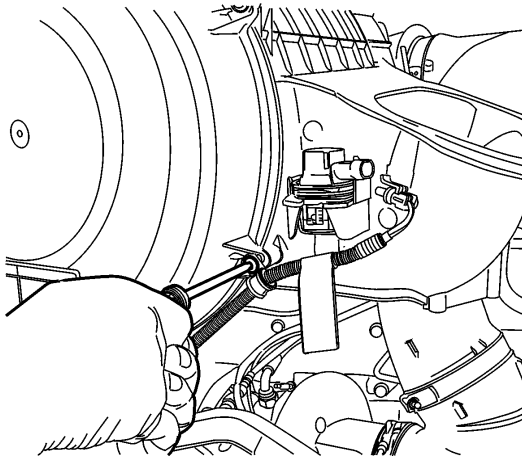
Loosen the clamps securing the main fresh air pipe to the air filter housing and to the turbocharger inlet elbow. Remove the main fresh air pipe.



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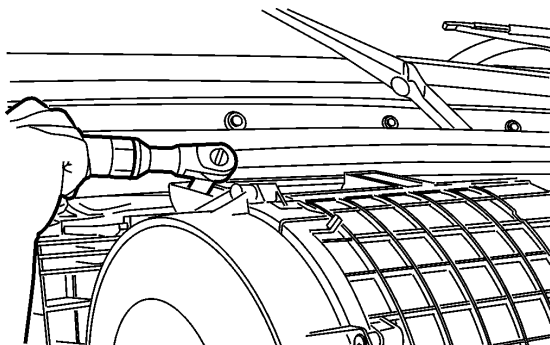
Disconnect the air filter restriction gauge harness connector and remove the clamps securing the wiring harness to the air filter housing.



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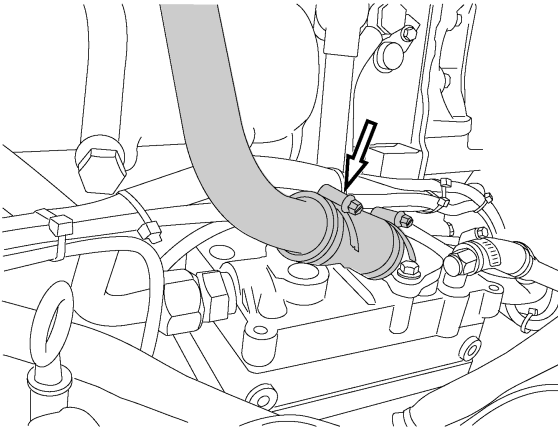
Remove the fasteners securing the air filter housing to the cab and remove the housing.



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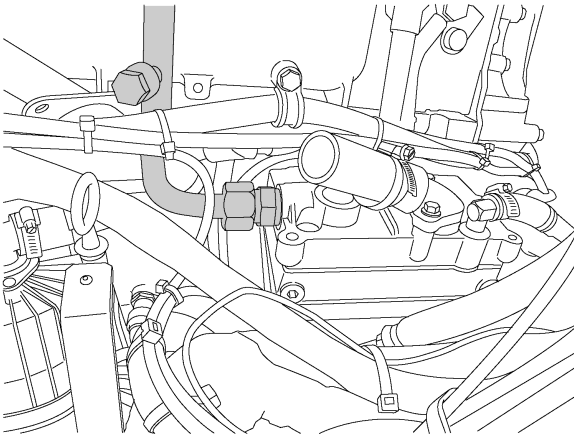
Loosen the coupling hose clamp securing the air compressor fresh air pipe at the air compressor. Remove the clamp bracket bolts at the cylinder head and remove the pipe.



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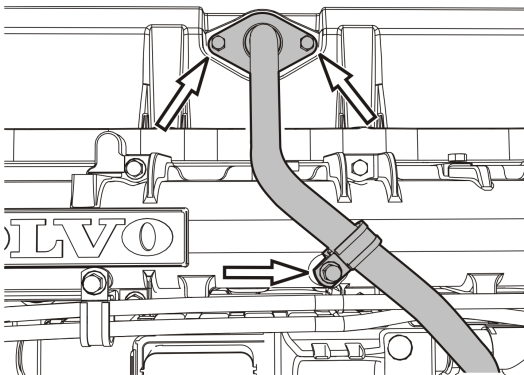
Disconnect the discharge pipe at the air compressor and remove the clamp brackets securing the pipe to the intake manifold. Position the pipe out of the way.



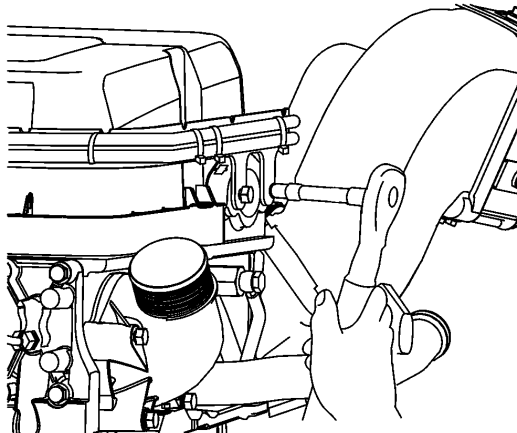
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Remove the crankcase ventilation tube from the valve cover and remove the clamp at the intake manifold.



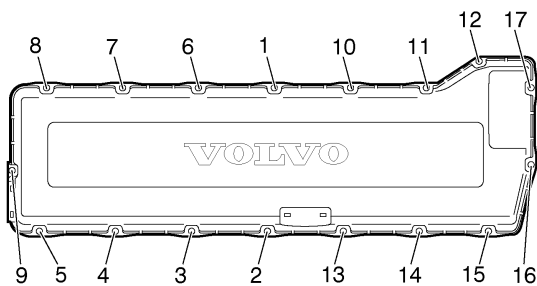
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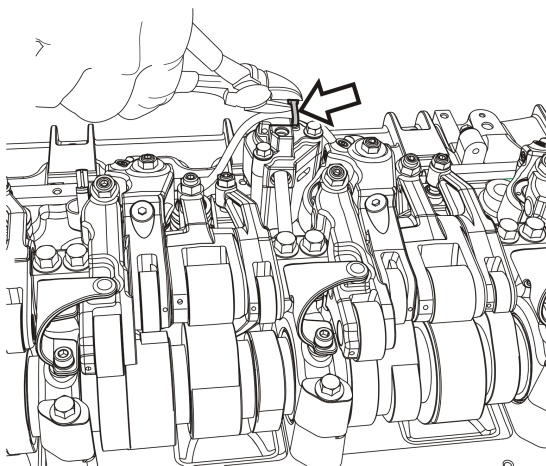
Remove the engine wiring harness support bracket from the front of the valve cover.



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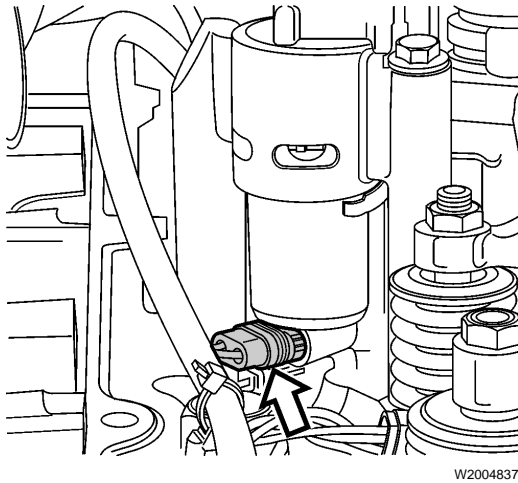
Remove the spring-loaded fasteners securing the valve cover and remove the cover.



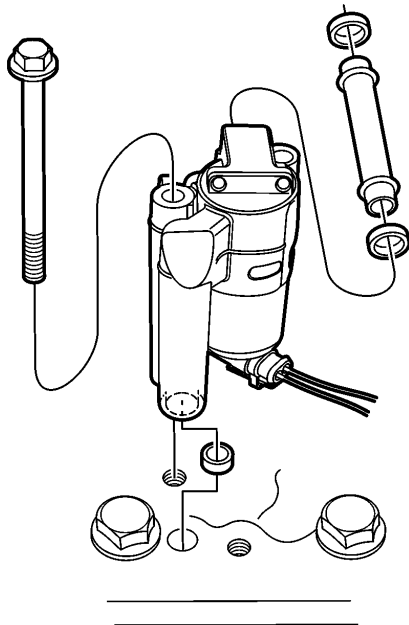
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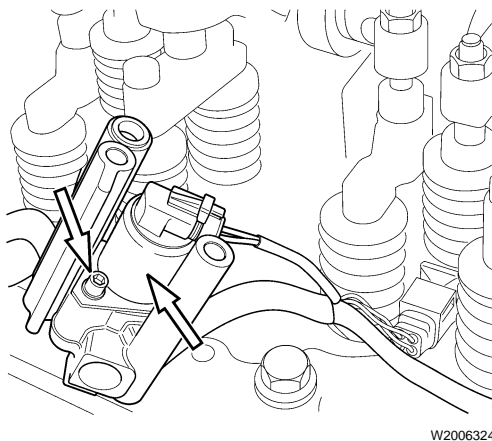
Cut the tie straps securing the electrical harness to the VCB control valve.



- 14**
Clean around the control valve and remove the valve electrical connector.



- 15**
Remove the control valve fasteners and remove the valve, oil pipe and valve seal spacer.



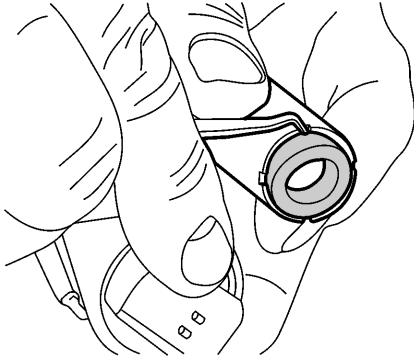
- 16**
Remove the solenoid valve.

17

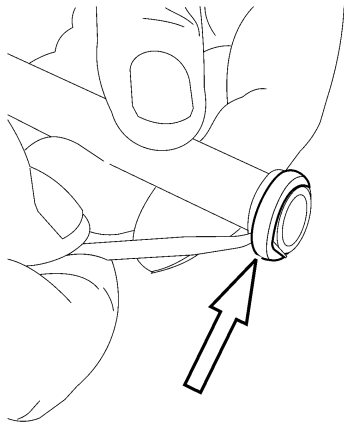
Install the new solenoid valve. Tighten the screws to specification.

18

Replace the O-ring at the bottom of the control valve.



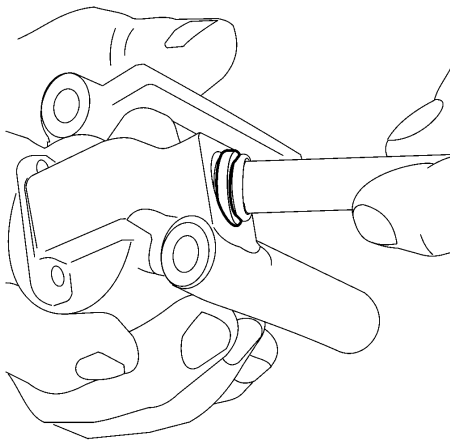
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Clean the control valve oil pipe and replace the O-rings. Lubricate the pipe hole in the rocker arm shaft and the O-rings on the pipe.

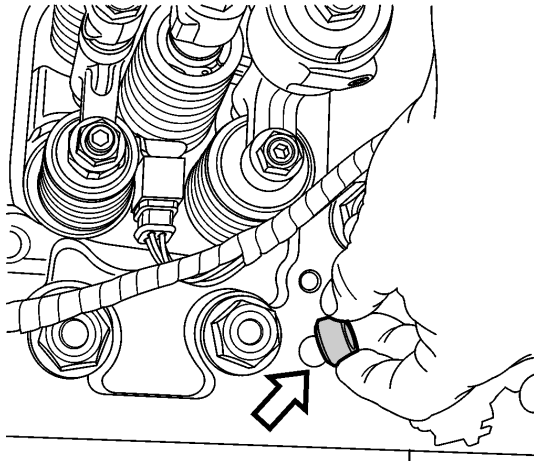


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Insert the oil pipe into the oil hole of the control valve.

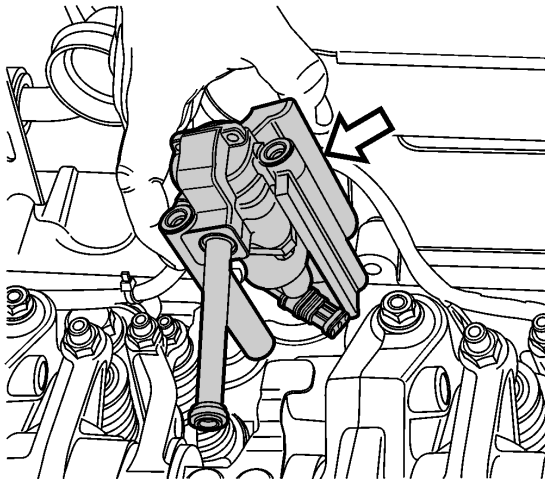
Note: Make sure that the O-ring is seated fully in the valve.



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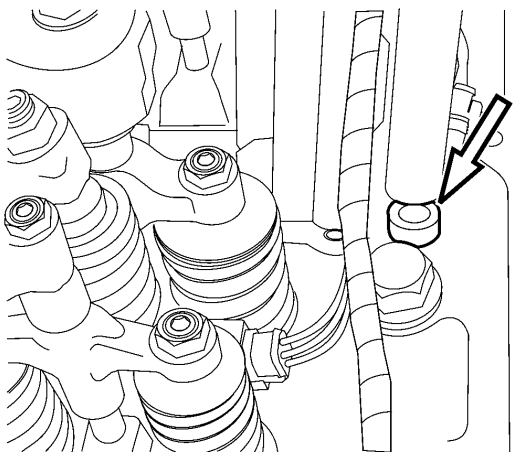
Install a new control valve seal spacer onto the cylinder head. Make sure that the seal spacer is correctly seated with the lip of the spacer against the cylinder head.



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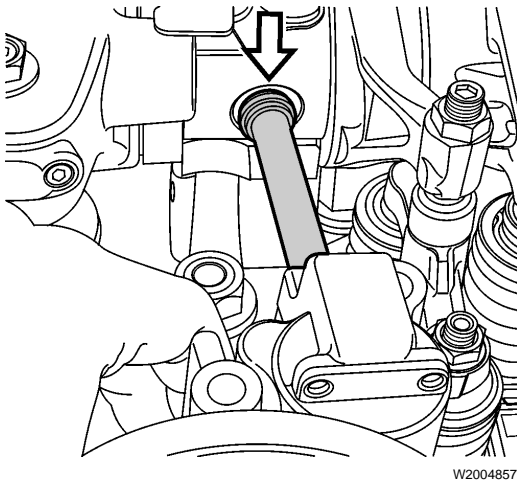
Position the control valve on the cylinder head.



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Align the control valve with the seal spacer.



- 24**
Align the oil pipe and O-ring with the hole in the rocker shaft.

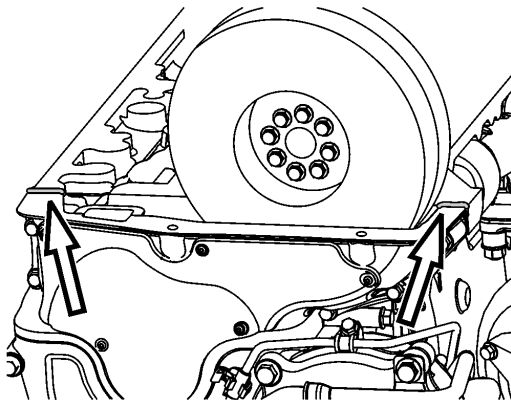


- 25**
Install the control valve bolts and tighten to specification.

- 26**
Plug-in the control valve harness connector.

- 27**
Position the fuel injector harness over the control valve and secure with tie straps.

- 28**
Clean and inspect the valve cover seal and sealing surface on the cylinder head. Replace the seal, if necessary.



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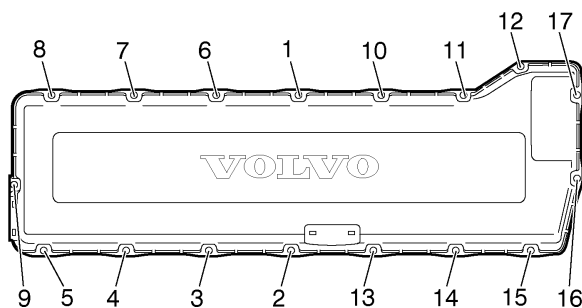
Apply a 2 mm (0.079 inch) bead of Volvo sealant to the area where the timing cover and the cylinder head meet. This parting line is on both sides of the cylinder head. Carefully position the valve cover on the cylinder head and make sure that the seal remains properly seated.

Note: This step is very critical to ensure no oil leaks occur.

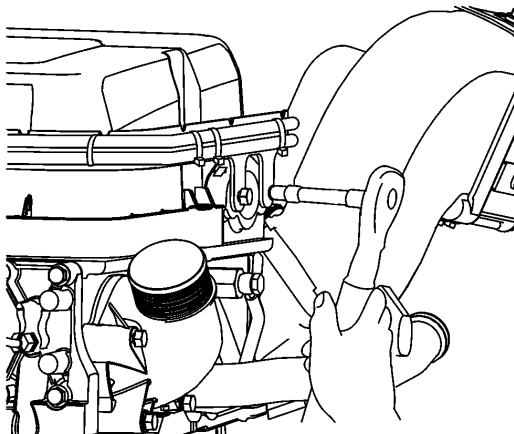
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Install the spring-loaded bolts in the valve cover. Tighten the valve cover bolts to specification in the sequence shown.

Note: The bolt springs provide even tension on the valve cover gasket.



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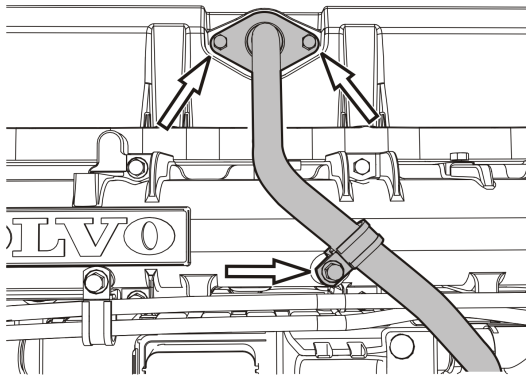
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Place the engine wiring harness and support bracket in position at the front of the valve cover. Install the mounting screws to secure the bracket.

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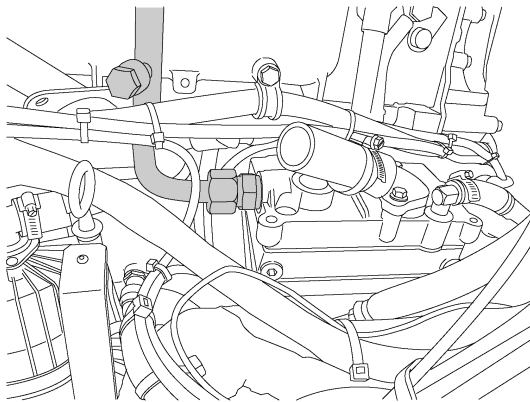
Inspect the crankcase ventilation tube O-ring and replace if necessary. Lubricate the O-ring.



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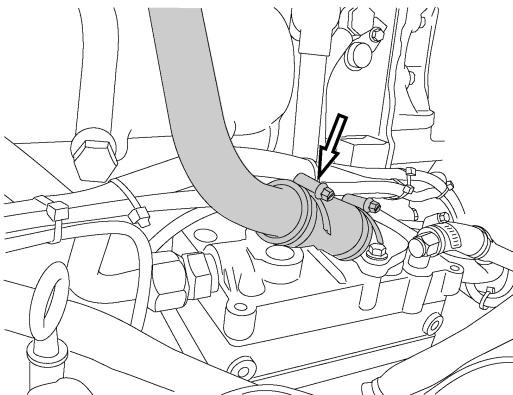
Position the crankcase ventilation tube to the valve cover, install the fasteners and tighten to specification. Install the clamp to secure the tube to the inlet manifold.



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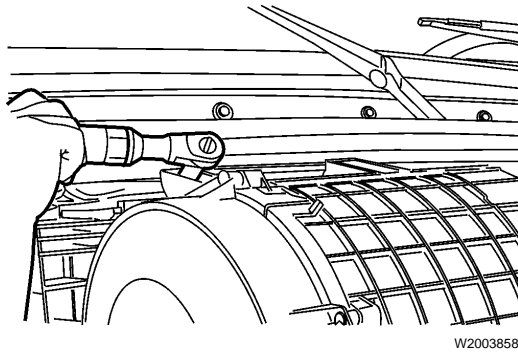
Connect the air compressor discharge line and tighten the fitting to specification. Install the clamp to secure the line to the bracket on the inlet manifold.



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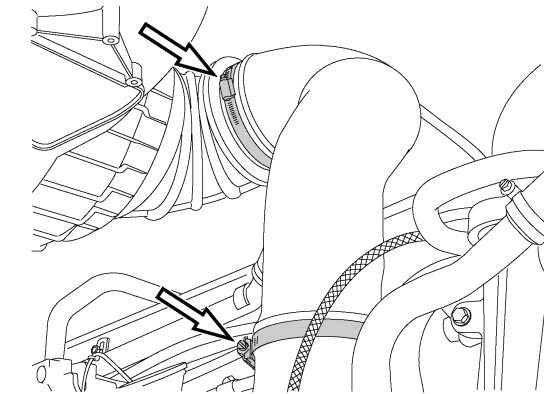
35

Position the air compressor fresh air pipe over the valve cover. Connect the pipe and the coupling hose, position the clamp and tighten to secure. Install the clamps to secure the pipe to the bracket.



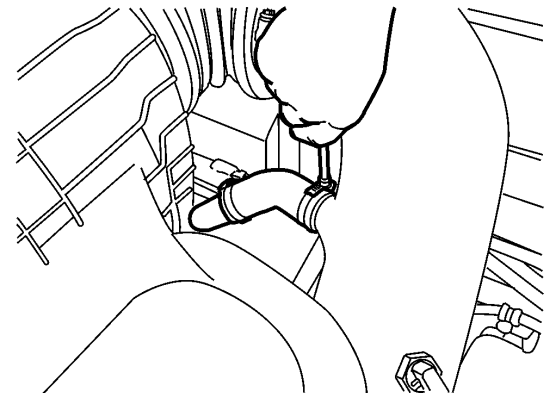
36

Position the air filter housing against the cab and install fasteners to secure.



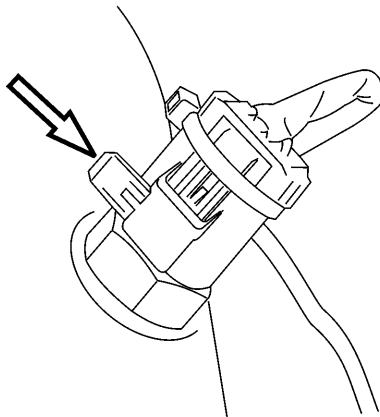
37

Install the main fresh air pipe between the air filter housing and the turbocharger inlet elbow. Position the clamps and tighten to secure.



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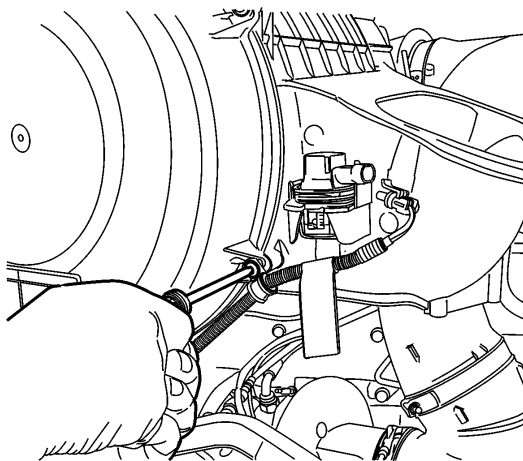
Install the air compressor fresh air coupling hose to the main fresh air pipe, position the clamp and tighten to secure.



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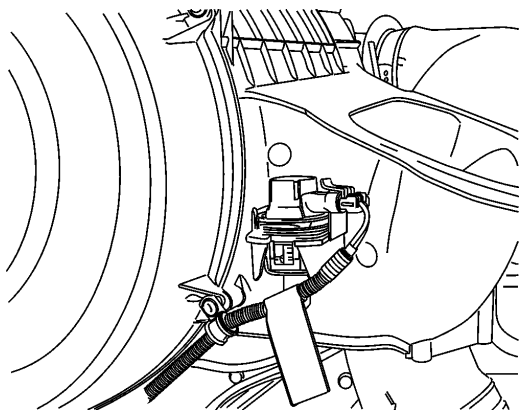
Install the air temperature sensor connector to the sensor. Push in the lock tab and secure the connector with a tie strap. Install the sensor harness clamp to the main fresh air pipe to secure the harness. Tighten the clamp screw to specification.



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Install the clamps to secure the air filter restriction gauge wiring harness to the air filter housing.



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Connect the wiring harness to the air restriction gauge.

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Install all previously removed cables to the ground (negative) battery terminals.

43

Start the engine. Check for oil leaks and proper operation.