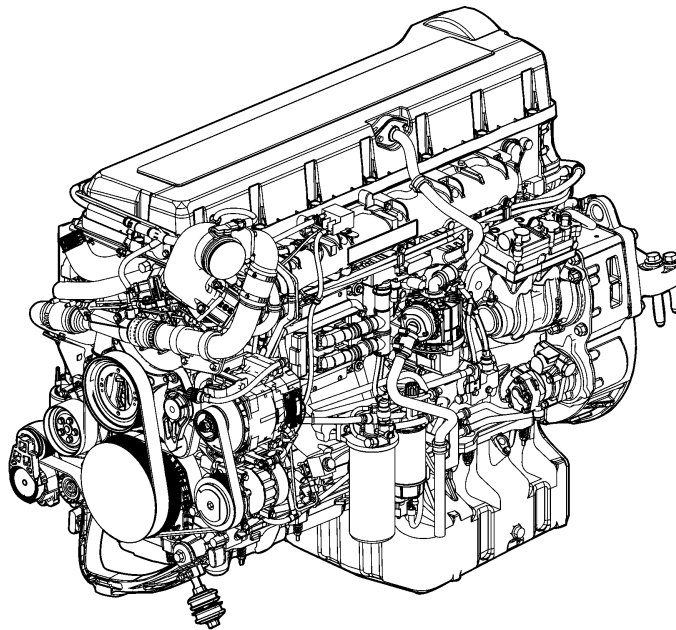


Date	Group	No.	Page
1.2008	<b>216</b>	<b>50</b>	1(17)

Sealant Crankshaft Cover,  
Replacement  
D16F

## Sealant Crankshaft Cover, Replacement



W2005773

This information covers procedures for replacing the sealant for the crankshaft cover on the Volvo D16F engine.

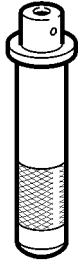
### Contents

- “Special Tools” page 2
- “Sealant Crankshaft Cover Assembly, Replacement (Front)” page 3

**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.

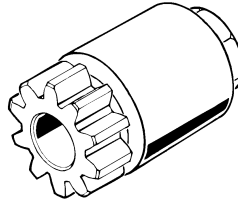
## Special Tools

For special tools ordering instructions, refer to Tool Information, group 08.



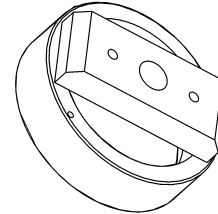
T0010682

**9992000**  
Standard Handle



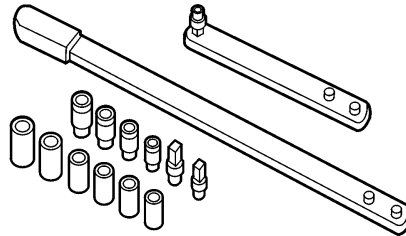
T0012612

**88800014**  
Flywheel Turning Tool



T0012654

**88800021**  
Front Main Seal Remover/Installer



W0001817

**J44392**  
Fan Belt Tensioner Tool

## 2167-03-02-03 Sealant Crankshaft Cover Assembly, Replacement (Front)

### Coolant Drained

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 it.

*Special tools: 9992000, 88800014, 88800021, J44392*

### Removal

**1**

Drain the engine oil. Reinstall the drain plug.

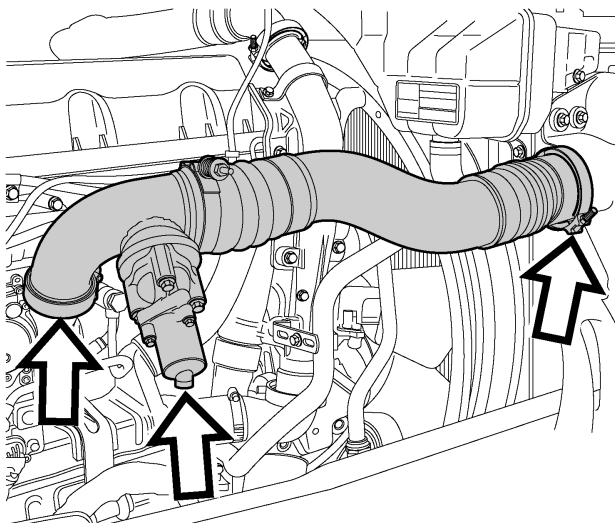
**2**

Remove the air intake hoses and the coolant pipe at the radiator. When removing the coolant pipe, place a container under the coolant pipe to collect remaining coolant.

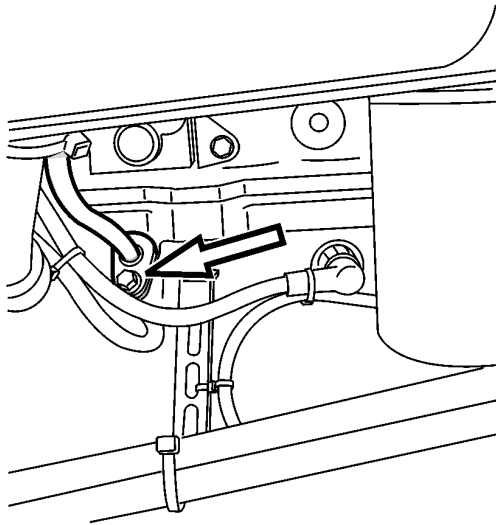
**3**

Remove the charge air pipe from between the turbocharger and the charge air cooler.

**Note:** Disconnect the Discharge Recirculation Valve (DRV) air supply line.

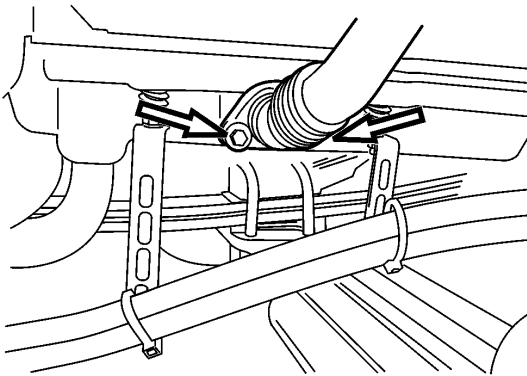


W2006107



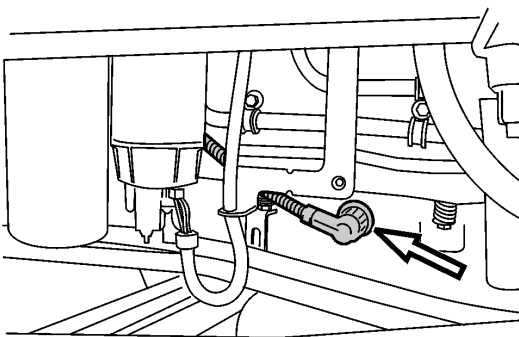
W2005086

- 4**  
Pull the dipstick partially out of the dipstick tube, then remove the dipstick tube fastener and tube from the oil pan. Remove and discard the O-ring.



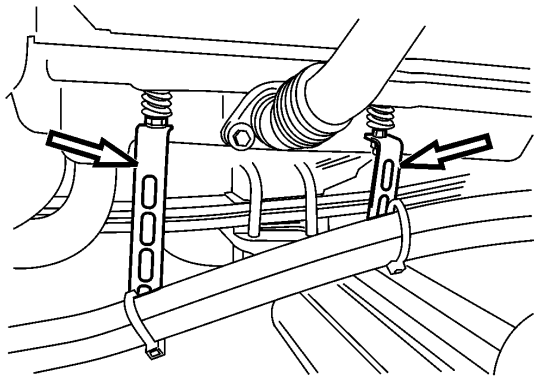
W2004884

- 5**  
Remove the oil fill tube fasteners and tube from the oil pan. Remove and discard the tube O-ring.



W2004876

- 6**  
Disconnect the electrical connector from the oil level/temperature sensor.



W2004874

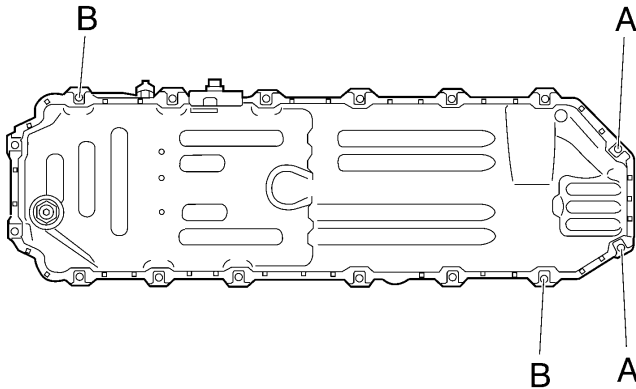
**7**

If the vehicle is equipped with a transmission oil cooler, remove the transmission cooler line bracket nuts and separate the brackets from the oil pan fasteners. Position the cooler lines and brackets to the side.

**Note:** Mark the transmission oil cooler bracket stud locations to aid in reassembly.

**8**

Remove the two bolts marked A. Loosen the two bolts marked B, but do not remove. Remove all other bolts.



W2005226

**9**

With the aid of an assistant, support the oil pan and remove the two bolts marked B. Carefully lower the pan to avoid contact with the oil pickup tube and the oil pump gear.

**10**

Remove all hoses which lead to and from the expansion tank and remove the tank.

**Note:** Do not forget to remove the electrical connection from the level sensor.

**11**

Remove the screws behind the coolant pump and the coolant pipe bracket screws.

**12**

Remove the upper coolant hose.

**13**

Remove the upper charge air hose between the intake manifold and the intercooler.

**14**

Remove the fan shroud screws. Push the fan ring rubber seal to one side. Carefully remove the fan shroud so as not to damage the fan ring or radiator.

**15**

Remove the screws from the fan ring bottom and upper brackets.

**16**

If equipped with a thermostat fan, remove the fan ring by turning it so that the bottom bracket is freed from the thermostat fan.

**17**

Remove the fan speed sensor bracket.

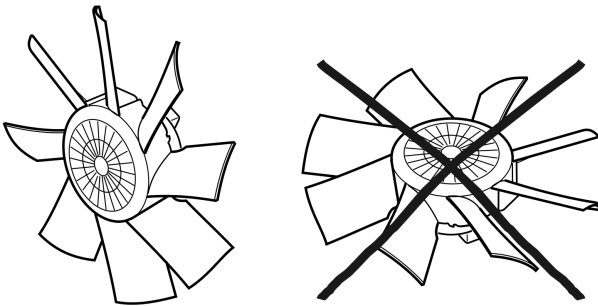
**18**

Remove the fan speed sensor wiring from the connector.  
Remove the tie strap.

**19**

Remove the thermostat fan from the fan hub.

**Note:** The thermostat fan must **not** be laid down, but must be kept and handled upright.

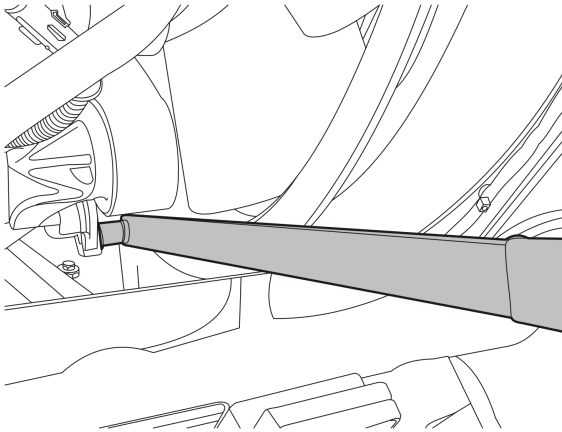


T2022496

**20**

Using tool J44392, pry the belt tensioner away from the fan and water pump drive belt and remove the belt.

J44392

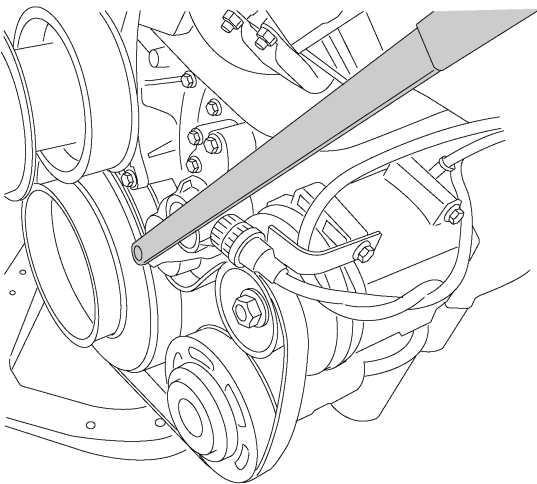


W2006031

**21**

Pry the belt tensioner away from the A/C compressor and alternator drive belt and remove the belt from the pulleys.

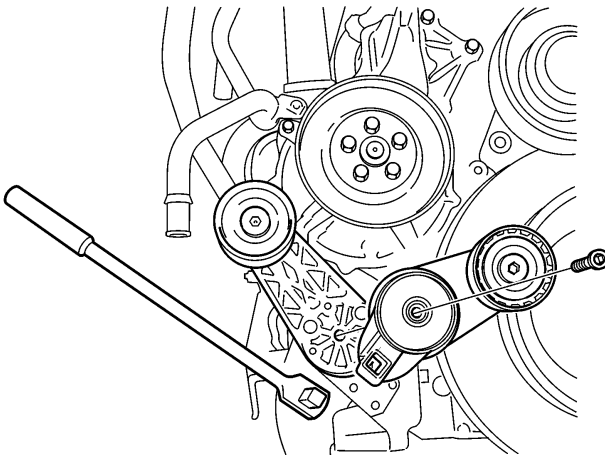
J44392



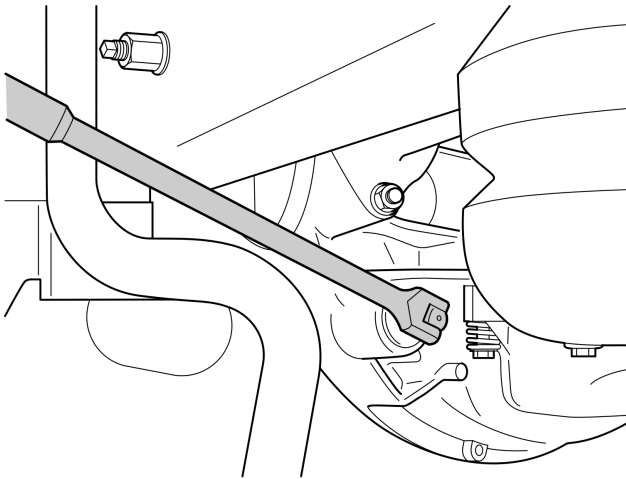
W2006093

**22**

Remove the bolt and take out the belt tensioner.



T2022146



T2022500

**23**

Install flywheel turning tool 88800014 and a pull handle or wrench to lock the flywheel.

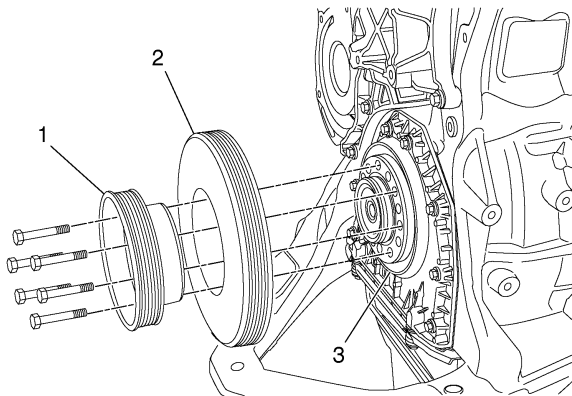
**Note:** Locking the flywheel will aid in loosening the vibration damper fasteners.

88800014

**24**

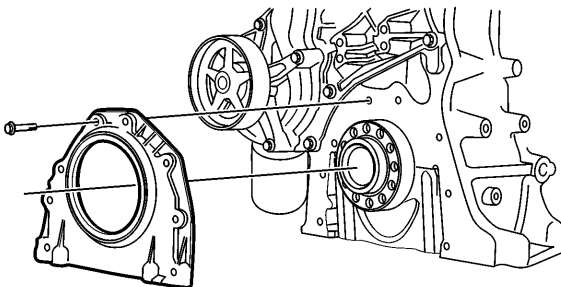
Remove the fasteners securing the belt pulley and vibration damper. Remove both the belt pulley and vibration damper from the crankshaft hub.

**Note:** Do **not** strike the vibration damper with a hammer or similar, as this will damage it. This could cause imbalance and vibration in the engine.



W2006388

- 1 Pulley, Fan Drive and Coolant Pump
- 2 Vibration Damper/Pulley
- 3 Crankshaft Hub



T2020207

**25**

Remove the crankshaft seal cover and clean the mating surfaces on the engine block.

**26**

Check that the crankshaft journal is not damaged.



**27**

Remove the crankshaft seal from the crankshaft housing.

## Installation

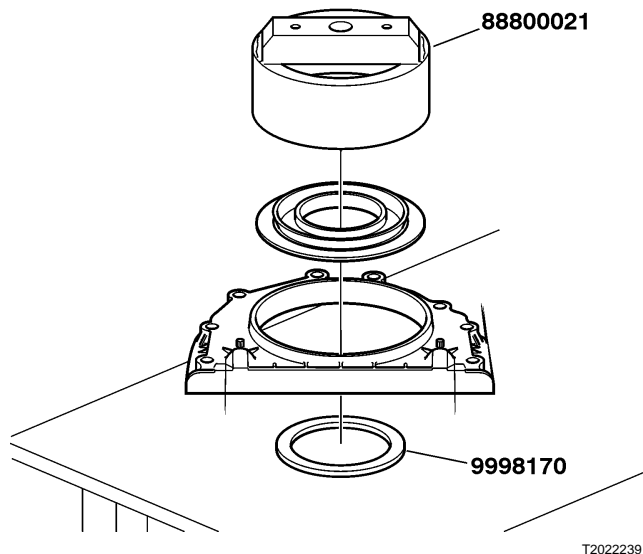
**1**

Check that the plastic ring, which functions as both transport protection and installation tool, is in place on the new sealing ring. If the plastic ring is not in place, the sealing ring can be damaged and will not be usable.

**2**

Place the crankshaft housing with the spacer 9998170 in the center on a flat surface. Install a new crankshaft seal with plastic ring in the crankshaft housing. The spacer ring prevents the plastic ring from sliding off. Carefully tap the crankshaft seal into the crankshaft housing with drift 88800021 and handle 9992000 until the crankshaft seal is level with the crankshaft housing.

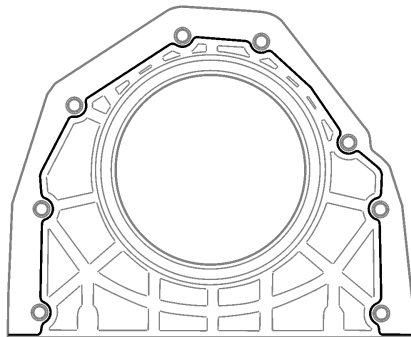
9992000, 9998170, 88800021



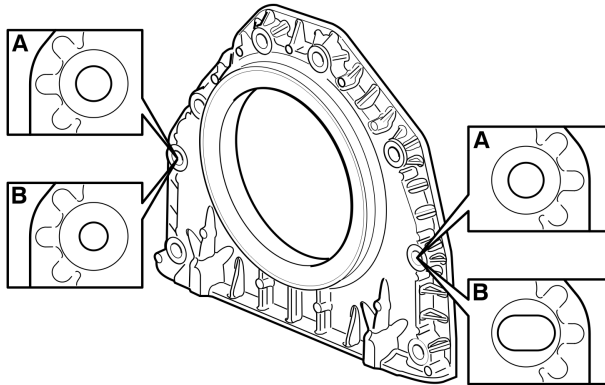
T2022239

**3**

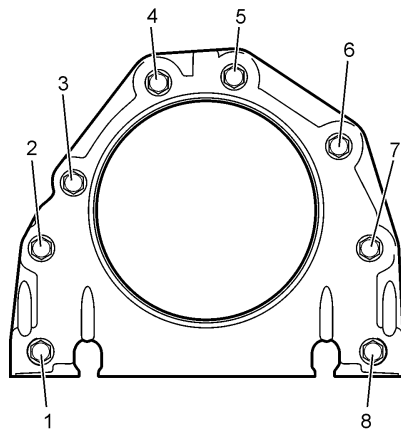
Apply a two mm (5/64 inch) bead of Volvo sealant to the crankshaft casing sealing surfaces.



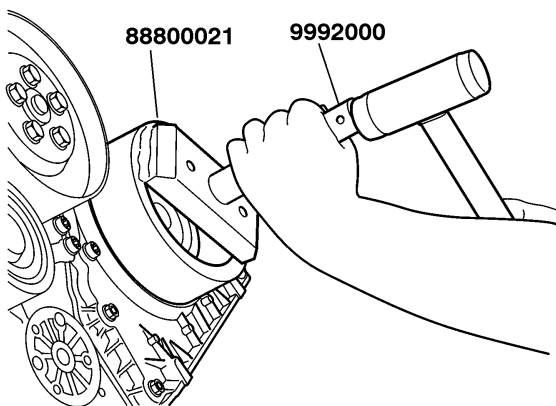
T2019437



T2022786



T2020547



T2022240

#### 4

Center the crankshaft housing against the crankshaft with the plastic ring. Install the crankshaft housing. Note that there are two different types of housing. In the later type (B in figure), the LH hole is smaller than earlier and the RH hole is oval. The holes permit a later type of housing to be correctly aligned.

##### **For the earlier type (A), the following applies:**

Install the bolts without tightening them. Using a straightedge rule, make sure the cover is flush with the lower edge of the engine block.

##### **For the later type (B), the following applies:**

Install screws in both screw holes that align the cover to the correct position. Tighten by hand so that the cover is fixed. Install the remaining screws.

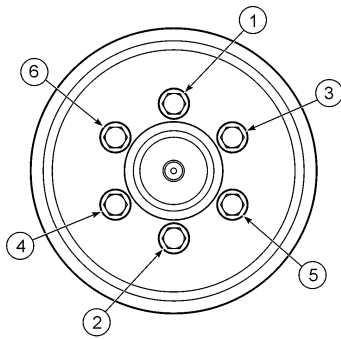
#### 5

Torque-tighten the screws in sequence shown to specification. Remove excess sealant.

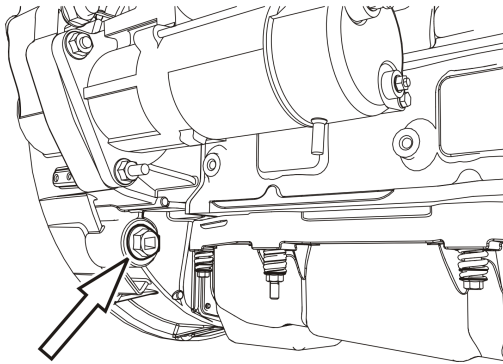
#### 6

Remove the plastic ring from the crankshaft. Drive in the crankshaft seal with drift 88800021 and handle 9992000 until the drift bottoms against the crankshaft.

9992000, 88800021



T2019436



W0002368

**7**

Attach the vibration damper and belt pulley. Torque-tighten in sequence as specified in "Specifications", see Group 20.

**Note:** The vibration damper fasteners are one-time use only and should not be reused.

**8**

Remove the engine turning tool and reinstall the plug in the flywheel housing.

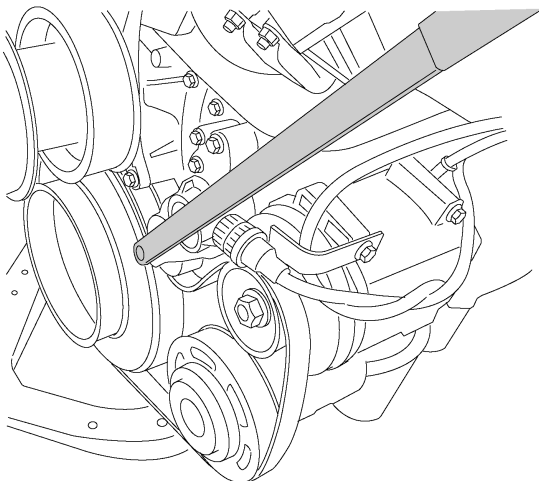
**9**

Install the belt tensioner. Make sure the belt tensioner pins install correctly. Torque-tighten as specified in "Specifications", see Group 20.

**10**

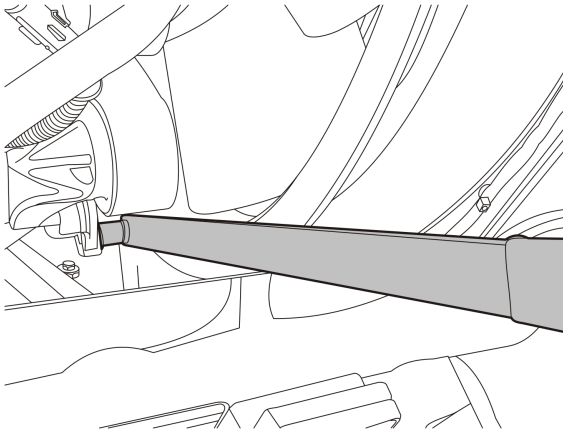
Install the A/C compressor/alternator drive belt over the pulleys and then around the auto-adjuster.

**Note:** Make sure that the drive belt is properly routed (see drive belt routing decal on the fan shroud) and aligned correctly in the pulley grooves.



W2006093

J44392



W2006031

**11**

Install the fan drive and coolant pump drive belt to the pulleys. Check that it lines up with the grooves.

J44392

**12**

Carefully lift the thermostat fan into place and put it onto the fan hub. Use new locking nuts and torque-tighten as per "Specifications", see Group 20.

**13**

Install the fan speed sensor bracket.

**14**

Reinstall the fan speed sensor wiring to the connector. Secure the harness with a tie strap.

**15**

Install the fan ring.

- 1 Turn the fan ring so that the lower bracket is in position, and insert the screws.
- 2 Using thread lock, install the screws for the upper bracket.
- 3 Center the fan ring.
- 4 Torque-tighten the screws as per "Specifications", see Group 20.

**16**

Install the fan shroud and move the fan ring rubber seal back into place.

**17**

Install the upper charge air pipe between the intake pipe and the intercooler.

**18**

Install the screws behind the coolant pump and the coolant pipe bracket screws.

**19**

Install the upper coolant hose. Replace hose clamps if necessary.

**20**

Install the expansion tank.

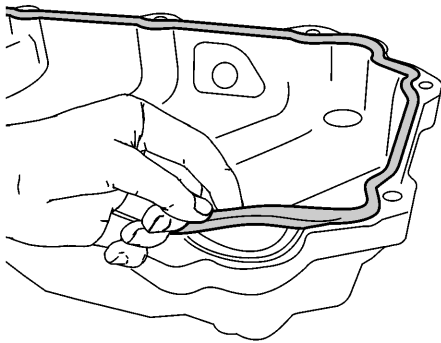
- Install all hoses. Replace hose clamps if necessary.

**21**

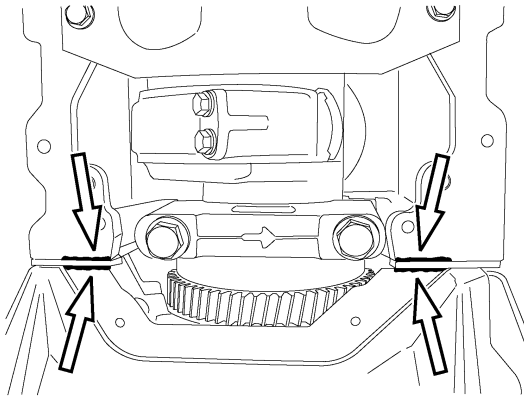
Clean the oil pan contact surface on the cylinder block, flywheel housing and front seal cover. All surfaces must be completely free of any grease or oil.

**22**

Inspect the oil pan seal and replace if necessary. Install the oil pan seal into the groove of the oil pan. Check that the seal locating tabs are properly aligned and seated in the locating holes on the mounting flange.



W2004878

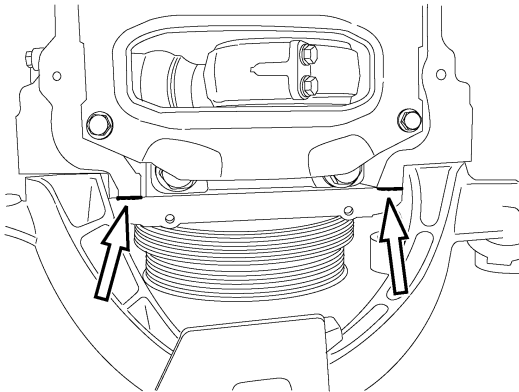


W2006078

**23**

Apply a two mm (0.079 inch) bead of Volvo sealant to the seam between the flywheel housing and the timing gear mounting plate and between the timing gear mounting plate and the engine block.

**Note:** The oil pan must be installed within 20 minutes after the sealant has been applied.

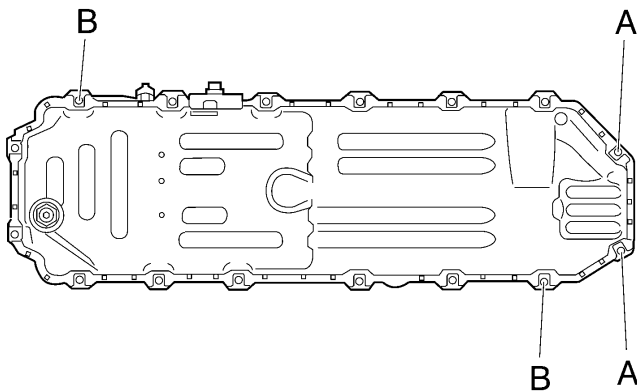


W2006079

**24**

Apply a two mm (0.079 inch) bead of Volvo sealant to the seam between the front seal cover and the engine block.

**Note:** The oil pan must be installed within 20 minutes after the sealant has been applied.



W2005226

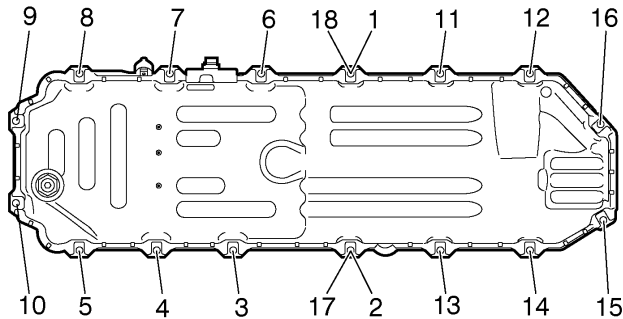
**25**

With assistance, position the oil pan to the engine block and install the bolts marked B. Install all other bolts, except those marked A, which should be installed last.

**Note:** Press the oil pan rearward as far as possible before tightening the bolts.

**Note:** Use care to prevent damage to the oil pickup.

**Note:** Install transmission oil cooler bracket studs in locations marked at disassembly



W2005985

**26**

Torque-tighten the bolts to  $24 \pm 4$  Nm ( $18 \pm 3$  ft-lb) following the numbered sequence.

**Note:** Before tightening, make sure the gasket is located in the groove on the pan and is laying flat.

$24 \pm 4$  Nm  
( $18 \pm 3$  ft-lb)

**27**

Torque-tighten the oil drain plug to specification.



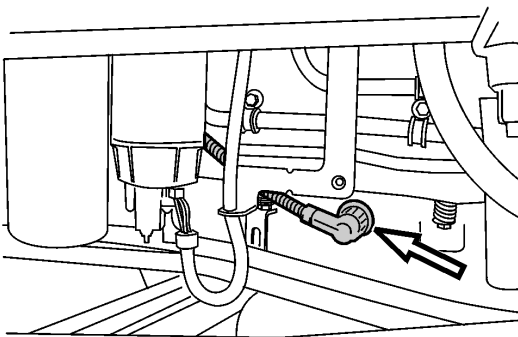
**CAUTION**

Do not use a copper washer with the hex-head oil drain plug. Always use the steel washer.

**Note:** Do not use air tools when installing the oil drain plug.

**28**

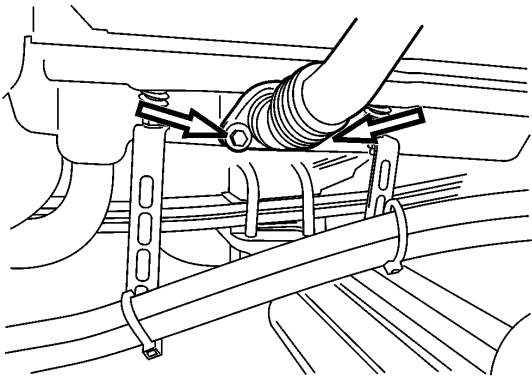
Reconnect the oil level/temperature sensor connector.



W2004876

**29**

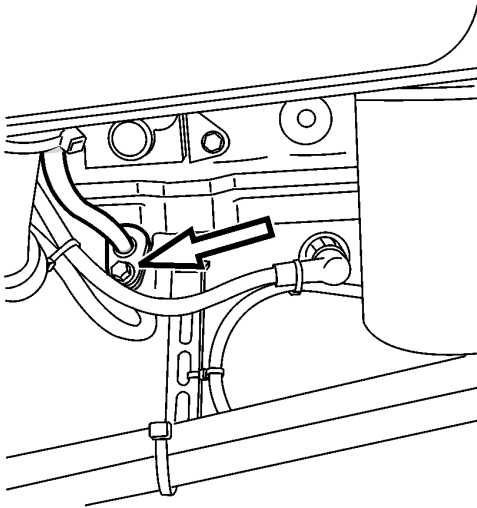
Install a new O-ring on the oil fill tube and install the tube to the side of the oil pan. Install the oil fill tube fasteners and tighten to secure.



W2004884

**30**

Install a new O-ring on the dipstick tube, then install the tube and secure with the fastener. Install the dipstick.



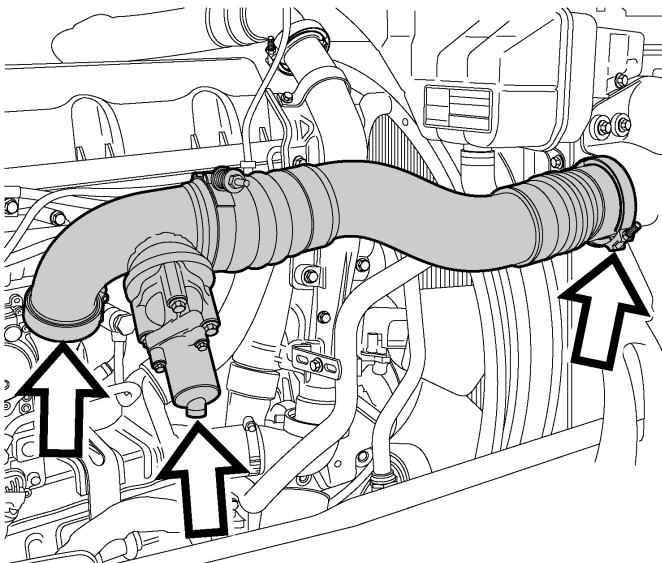
W2005086

**31**

Install new O-rings at the ends of the DRV and charge air cooler inlet pipe assembly. Inspect the V-band clamps and install the pipe assembly. Torque-tighten the clamps to  $7 \pm 1$  Nm ( $62 \pm 9$  in-lb).

**Note:** Connect the DRV air supply line.

$7 \pm 1$  Nm  
( $62 \pm 9$  in-lb)



W2006107



**32**

Install the DRV bypass hose and clamps and connect the air supply line to the DRV

**33**

Install the air intake hoses and the coolant pipe under the radiator.

**34**

Fill the engine with the specified amount of approved engine oil. Do not overfill.