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## Service Information Bulletin

SUBJECT	DATE
Camshaft Housing and Assembly	August 2015

### Additions, Revisions, or Updates

Publication Number / Title	Platform	Section Title	Change
DDC-SVC-MAN-0081 DDC-SVC-MAN-0181	DD Platform Euro IV DD Platform	Removal of the Camshaft Housing	Added note regarding usage on specific vehicles. Step 8 - Added step for windshield wiper linkage removal. Step 18 - Added step to discard seal. Step 19 - Added step to place camshaft housing on a clean and flat surface.
		Removal of the Camshaft Housing	Added note regarding usage on specific vehicles. Step 19 - Re-organized steps for finding TDC.



13400 Outer Drive, West, Detroit, Michigan 48239-4001  
Telephone: 313-592-5000  
[www.demanddetroit.com](http://www.demanddetroit.com)

## 2 Removal of the Camshaft Housing

Remove as follows:

**NOTE:** This procedure applies to vehicles with a Bumper-to-Back of Cab (BBC) measurement under 120 inches. The camshaft housing can be removed as an assembly on vehicles with over a 120-inch BBC. Refer to section "Removal of the Camshaft Housing Assembly" for those vehicles.

1. Shut off the engine, apply the parking brake, chock the wheels, and perform any other applicable safety steps.
2. Disconnect the battery power to the engine. Refer to OEM procedures.
3. Open the hood.



### **WARNING: FIRE HAZARD**

Do not power wash or steam clean the engine bay in the area of vehicle electrical components, unless specified by vehicle manuals or service literature. Power washing/steam cleaning can permanently damage these components, which could result in fire, personal injury, or property damage.

4. Steam clean the engine.
5. If necessary, remove the bumper. Refer to OEM procedures.
6. If necessary, remove the rain tray. Refer to OEM procedures.
7. If necessary, remove the windshield wiper linkage. Refer to the OEM procedure.
8. Remove the rocker shaft assemblies and both camshafts. Refer to section "Removal of Camshaft and Rocker Shaft/ Engine Brake Assembly".



### **WARNING: PERSONAL INJURY**

To prevent the escape of high pressure fuel that can penetrate skin, ensure the engine has been shut down for a minimum of 10 minutes before servicing any component within the high pressure circuit. Residual high fuel pressure may be present within the circuit.



### **WARNING: PERSONAL INJURY**

All parts provided within this kit must be installed in the proper locations, and **MUST** be fastened to the specified torque. Failure to properly torque hardware/components will result in failure of a high pressure fuel feed line, resulting in possible fire and/or personal injury.

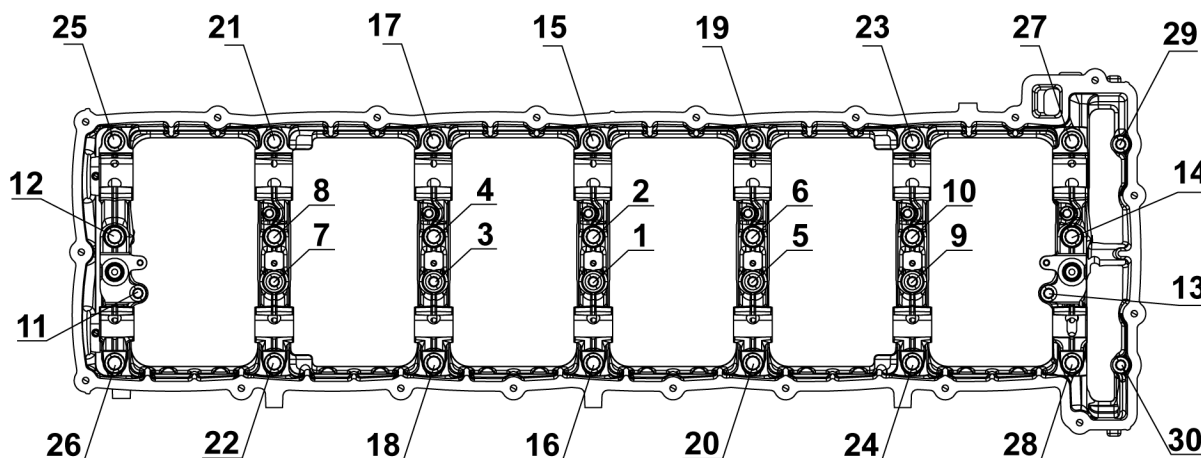
**NOTICE:** The high pressure fuel rail feed lines, P-clips, vibration dampers, mounting bracket and hardware are one-time-use components and **MUST** be replaced any time they are loosened or removed.

**NOTICE:** Engine size/model year specific service kits, containing all of the necessary parts to replace the high pressure fuel rail feed lines have been released. Refer to TS letter 12 TS-9 for the high pressure fuel line kit numbers to repair these engines.

9. Remove and discard the high pressure fuel rail feed lines.  
For the three-filter fuel system, Refer to section "Removal of the High Pressure Fuel Rail Feed Lines - Three-Filter System".  
For the two-filter fuel system, Refer to section "Removal of the High Pressure Fuel Rail Feed Lines - Two-Filter System".
10. Remove the high pressure fuel injector lines.  
For the three-filter fuel system, Refer to section "Removal of the High Pressure Fuel Injector Lines - Three-Filter System".

For the two-filter fuel system, Refer to section "Removal of the High Pressure Fuel Injector Lines - Two-Filter System".

11. Remove the Pressure Limiting Valve (PLV) banjo bolt from the fuel rail. Discard the PLV banjo bolt sealing washers.
12. Disconnect the fuel rail pressure sensor, Intake Manifold Temperature (IMT) sensor and Camshaft Position (CMP) sensor.
13. Unclip all of the electrical wiring harness attaching points from the camshaft housing.
14. Unbolt the air compressor inlet pipe from the camshaft housing and the flywheel housing.
15. Remove the bolt and the P-clip securing the doser coolant line to the camshaft housing.
16. Remove the remaining two bolts (29) and (30), if equipped, securing the camshaft housing to the cylinder head. See illustration below.



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**WARNING: PERSONAL INJURY**

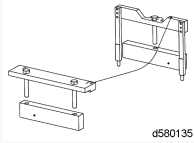
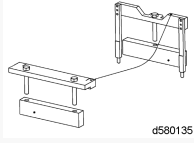
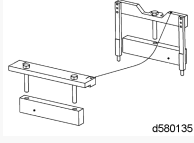
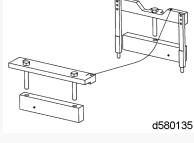
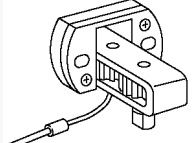
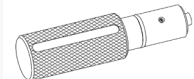
To avoid injury when removing or installing a heavy engine component, ensure the component is properly supported and securely attached to an adequate lifting device to prevent the component from falling.

17. Attach a suitable lifting device to the camshaft housing and lift the camshaft housing off the cylinder head.
18. Remove and discard the camshaft housing seal.
19. Place the camshaft housing on a clean and flat surface to avoid damage.

### 3 Removal of the Camshaft Housing Assembly

**NOTE:** This procedure applies to vehicles with a Bumper-to-Back of Cab (BBC) measurement over 120 inches. For vehicles with less than a 120-inch BBC, Refer to section "Removal of the Camshaft Housing".

**Table 1.**

Service Tools Used in the Procedure		
Tool Number	Tool Name and Engine	Tool Graphic
W470589034000	Camshaft Timing Tool - EPA07 DD13 Only	 d580135
W470589114000	Camshaft Timing Tool - EPA07/EPA10/GHG14 DD13	 d580135
W470589054000	Camshaft Timing Tool - EPA07 DD15/DD16 Only	 d580135
W470589104000	Camshaft Timing Tool - EPA07/EPA10/GHG14 DD15/16	 d580135
J-46392 or W904589046300	Engine Barring Tool - DD Platform	 d580077
W470589001500	Top Dead Center Locating Pin - DD Platform	 d580136

Remove as follows:

**WARNING: PERSONAL INJURY**

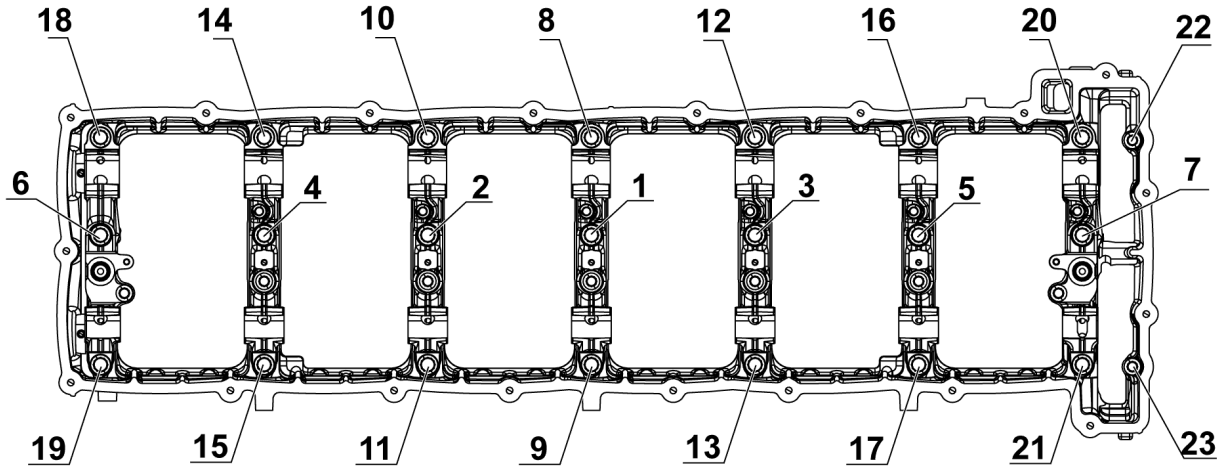
To avoid injury, never remove any engine component while the engine is running.

1. Shut off the engine, apply the parking brake, chock the wheels, and perform any other applicable safety steps.
2. Disconnect the batteries. Refer to OEM procedures.
3. Open the hood.

**WARNING: FIRE HAZARD**

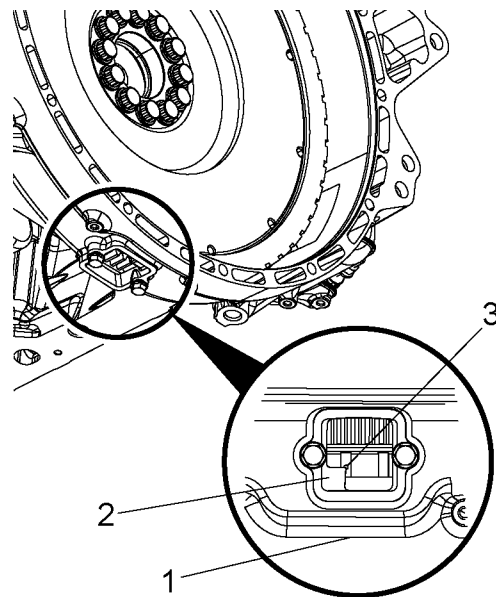
Do not power wash or steam clean the engine bay in the area of vehicle electrical components, unless specified by vehicle manuals or service literature. Power washing/steam cleaning can permanently damage these components, which could result in fire, personal injury, or property damage.

4. Steam clean the engine.
5. If necessary, remove the bumper. Refer to OEM procedures.
6. If necessary, remove the rain tray. Refer to OEM procedures.
7. Remove the air filter housing. Refer to OEM procedures.
8. Unbolt the doser coolant supply line P-clip from the camshaft housing.
9. Remove the high pressure fuel rail feed lines.  
Refer to section "Removal of the High Pressure Fuel Rail Feed Lines - Two-Filter System".  
Refer to section "Removal of the High Pressure Fuel Rail Feed Lines - Three-Filter System".
10. Remove the high pressure fuel injector lines.  
Refer to section "Removal of the High Pressure Fuel Injector Lines - Two-Filter System".  
Refer to section "Removal of the High Pressure Fuel Injector Lines - Three-Filter System".
11. Remove the Pressure Limiting Valve (PLV) banjo bolt and discard sealing washers.
12. Disconnect the two 14-pin fuel injector harness connectors from the camshaft housing.
13. Disconnect the fuel rail pressure sensor, Intake Manifold Temperature (IMT) sensor and Camshaft Position (CMP) sensor.
14. Unclip all of the electrical wiring harness attaching points on to the camshaft housing.
15. Remove the rocker cover. Refer to section "Removal of the Rocker Cover".
16. Unbolt the air compressor inlet pipe from the camshaft housing and the flywheel housing.
17. Remove the fuel injector wiring harness.  
Refer to section "Removal of the Two-Piece Fuel Injector Wiring Harness - Two-Filter System".  
Refer to section "Removal of the Two-Piece Fuel Injector Wiring Harness - Three-Filter System".
18. Remove the two rear bolts (22 and 23), if equipped, from the camshaft housing.



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19. Rotate the engine to Top Dead Center (TDC) on cylinder No. 1. Rotate the engine using barring tool (J-46392 or W904589046300) until the TDC dot (3) is between two teeth on the flywheel and aligns with the edge of the pointer (2) on the flywheel housing (1).



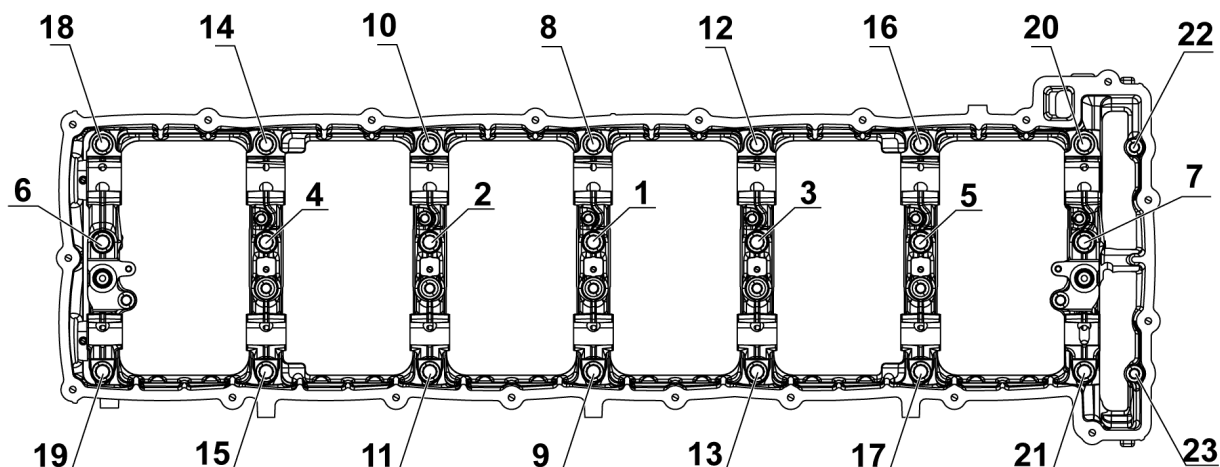
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20. Remove the Crankshaft Position (CKP) sensor from the left (driver) side of the flywheel housing. Install the flywheel housing crankshaft TDC locating pin (W470589001500) into the CKP sensor hole to verify TDC.
21. Install the proper camshaft timing tool onto the rear of the camshaft housing to verify TDC on cylinder No. 1. Do not remove the camshaft timing tool until instructed to do so.
22. Fully loosen the overhead lash adjusters for the intake and exhaust rocker arms.

**NOTICE:** Loosen the camshaft housing bolts in the correct sequence to prevent damage.

**NOTE:** Do not remove the camshaft mounting bolts completely from the assembly.

23. Loosen the camshaft housing mounting bolts using the following instructions. Fully loosen the center bolts from the camshaft housing (bolts 1 through 7).



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24. Fully loosen the bolts on the exhaust side, excluding bolts 14 and 16.
25. Fully loosen the bolts on the intake side, excluding bolts 15 and 17.
26. Loosen the four remaining bolts (14, 15, 16, and 17) a single turn at a time, using a crisscross pattern until fully loosened.
27. Install four lifting eyes into the rocker cover mounting holes.

**NOTICE:** Ensure that no debris falls into the oil galleries on the cylinder head when the camshaft housing assembly is removed or severe engine damage can occur.

28. Connect a suitable lifting device to the lifting eyes.

**NOTE:** Because of the pressure on cylinder No. 2 and No. 3 rocker arms, the housing may be stuck on the rear alignment dowel. If it is stuck, it can be broken free by rocking down on the front of the housing. If that does not help, a pry bar may be needed to help break it loose from the dowel.

29. Lift and remove the camshaft housing assembly.

**NOTICE:** No abrasive cleaning pads should be used on the gasket sealing surface.

30. Remove and discard the camshaft housing seal.

**NOTICE:** Do not rest the camshaft housing assembly on the camshaft gears or damage can occur.

31. Place the camshaft housing assembly on a suitable surface on its side.