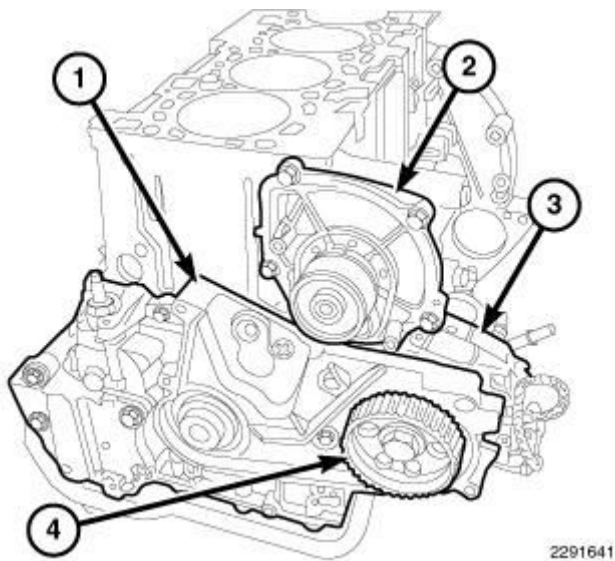


5. If the crankshaft was removed to install the bearings, install the crankshaft. Refer to **CRANKSHAFT, INSTALLATION**.
6. Install the balance shaft assembly. Refer to **MODULE, BALANCE SHAFT, INSTALLATION**.

## COVER, ENGINE, FRONT

### DESCRIPTION

### DESCRIPTION

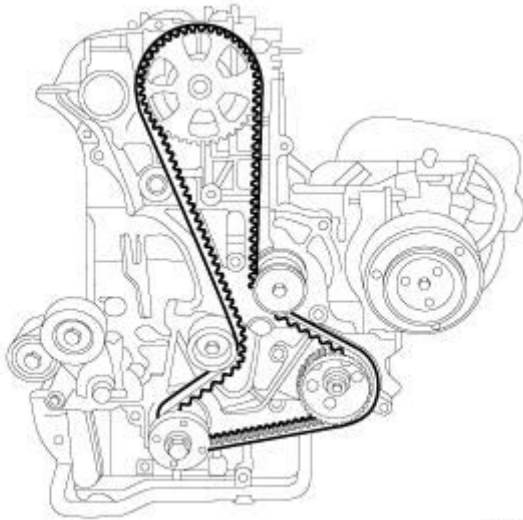


**Fig. 171: Oil Pump Cover Assembly**  
Courtesy of CHRYSLER GROUP, LLC

The front engine cover assembly on this engine is an aluminum cover that incorporates the oil pump and vacuum pump.

### REMOVAL

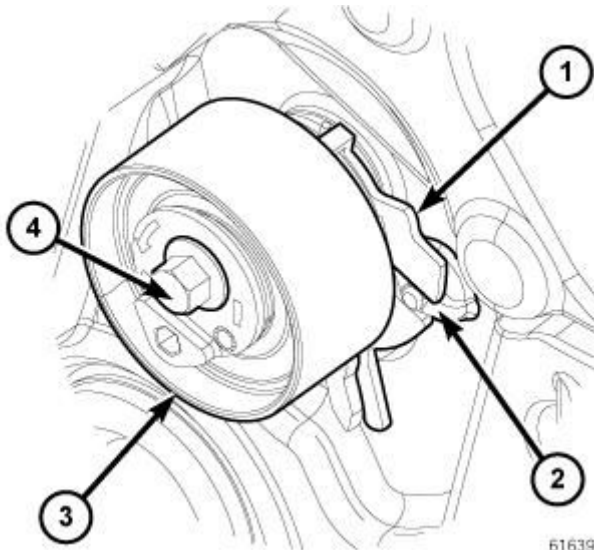
### REMOVAL



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**Fig. 172: Timing Belt Routing**  
Courtesy of CHRYSLER GROUP, LLC

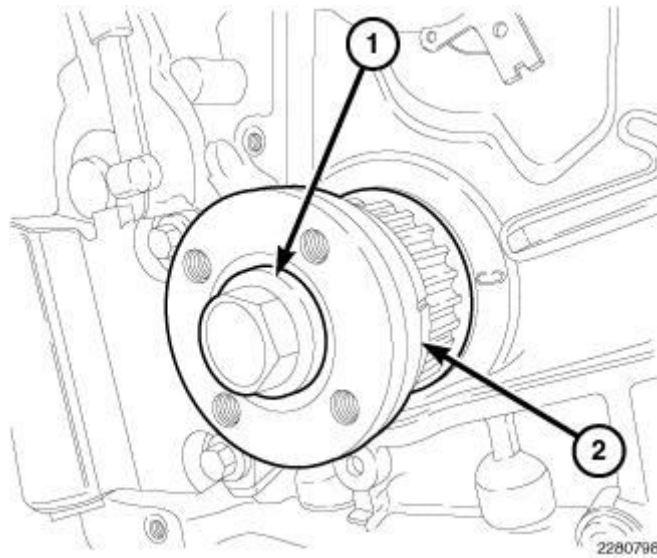
1. Disconnect the negative battery cable.
2. Remove the timing belt. Refer to **BELT, TIMING, REMOVAL**.



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**Fig. 173: Timing Belt Tensioner, Alignment Plate, Engine Cover Boss & Bolt**  
Courtesy of CHRYSLER GROUP, LLC

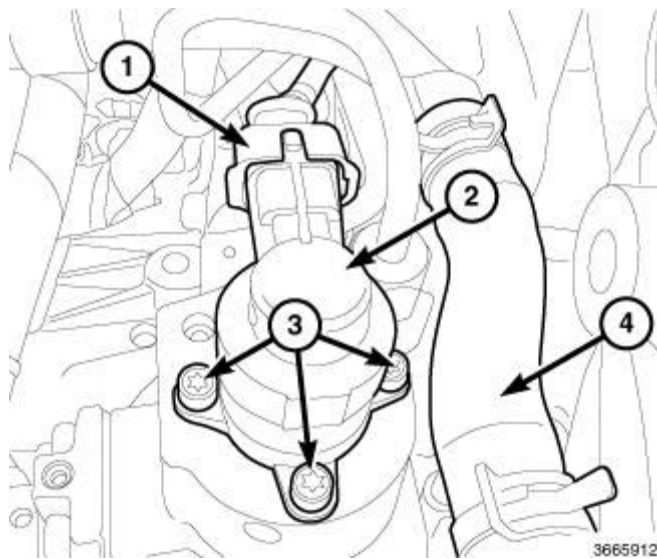
3. If necessary, remove bolt (4) and the timing belt tensioner (3).



**Fig. 174: Crankshaft Timing Belt Sprocket & Bolt**  
Courtesy of CHRYSLER GROUP, LLC

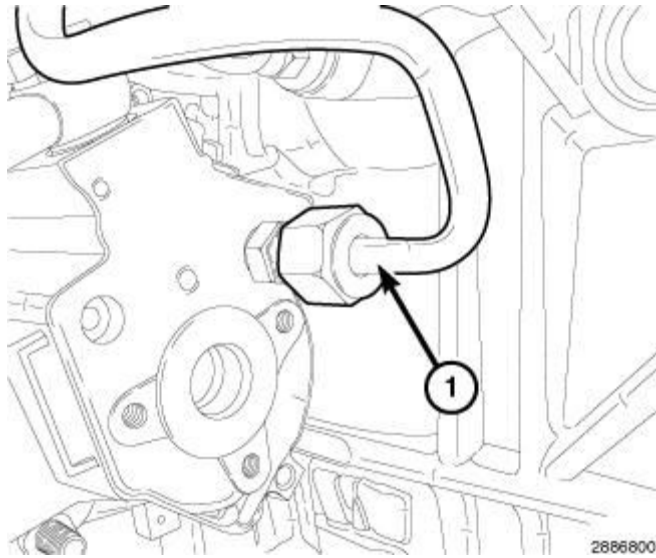
**NOTE:** The crankshaft sprocket bolt is a left handed thread.

4. Remove the bolt (1) and the crankshaft sprocket (2).



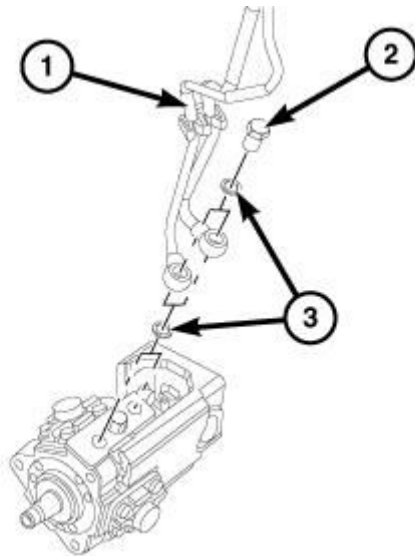
**Fig. 175: Fuel Quantity Solenoid, Connector, Bolts & Engine Coolant Hose**  
Courtesy of CHRYSLER GROUP, LLC

5. Remove the fuel quantity solenoid (2). Refer to **SOLENOID, FUEL QUANTITY, REMOVAL** .



**Fig. 176: High-Pressure Fuel Line**  
Courtesy of CHRYSLER GROUP, LLC

6. Remove high-pressure fuel tube (1) at rear of fuel injection pump.

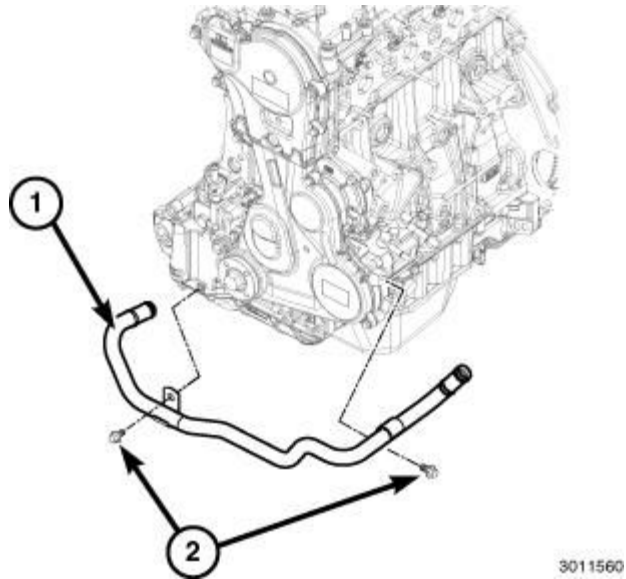


**Fig. 177: Low-Pressure Supply And Return Line, Banjo Bolts & Washers**  
Courtesy of CHRYSLER GROUP, LLC

7. Remove the banjo bolt (2) and the low pressure supply and return lines (1) from fuel injection pump.

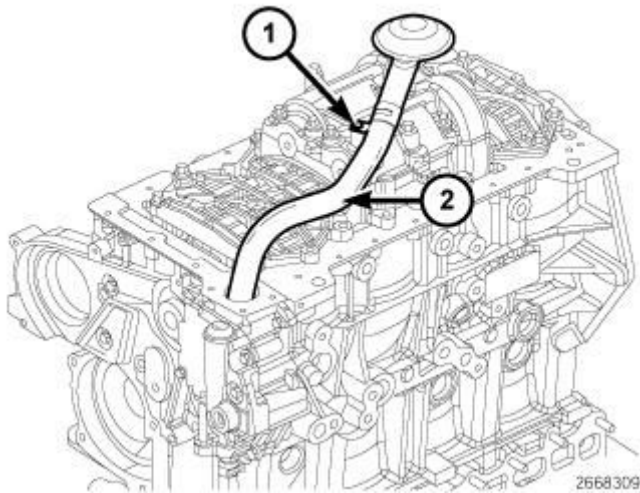
## 2014 Dodge Grand Caravan SE

2014 ENGINE 2.8L Diesel - Service Information - C/V Tradesman, Grand Caravan, Town & Country



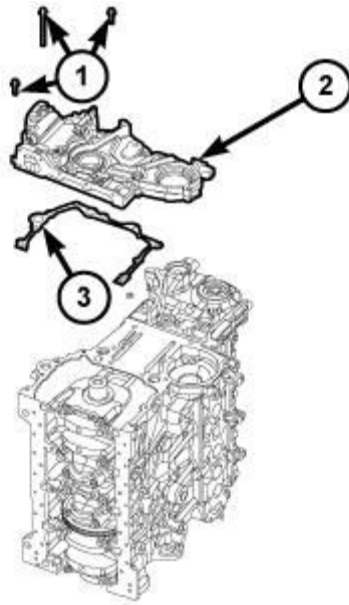
**Fig. 178: Coolant Tube & Bolts**  
Courtesy of CHRYSLER GROUP, LLC

8. Disconnect the coolant tube hose at oil cooler and by fuel injection pump.
9. Remove bolts (2), and the coolant tube (1).



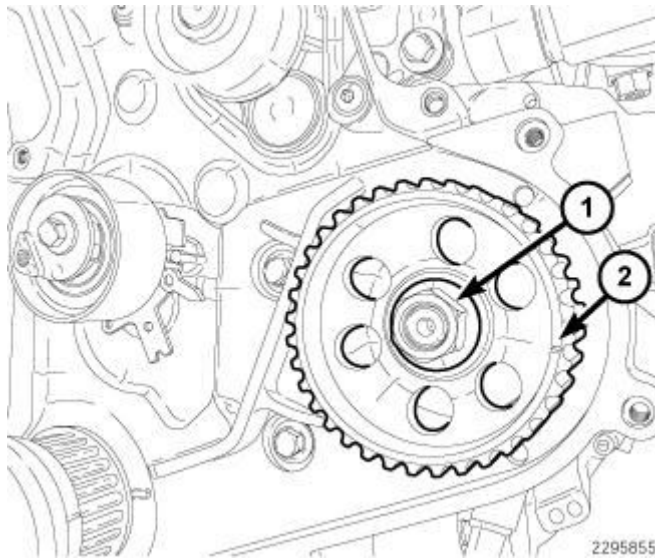
**Fig. 179: Oil Pump Pickup Tube & Bolt**  
Courtesy of CHRYSLER GROUP, LLC

10. Remove the oil pickup tube. Refer to **PICK-UP, OIL PUMP, REMOVAL** .



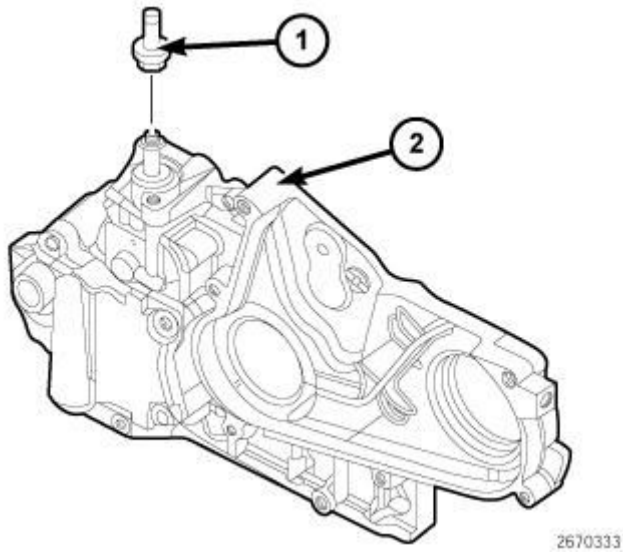
**Fig. 180: Front Cover, Gasket & Bolts**  
Courtesy of CHRYSLER GROUP, LLC

11. Disconnect the vacuum hose at vacuum pump.
12. Remove the eight bolts (1), and the front cover assembly (2).



**Fig. 181: Injection Pump Gear & Mounting Nut**  
Courtesy of CHRYSLER GROUP, LLC

13. If necessary, using Locking Tool (special tool #VM.1055, Locking Tool), remove the nut (1).
14. If necessary, attach a typical 3-jaw Gear/Sprocket Puller (special tool #1023, Puller) and remove sprocket from pump.
15. If necessary, remove nuts and the injection fuel pump.

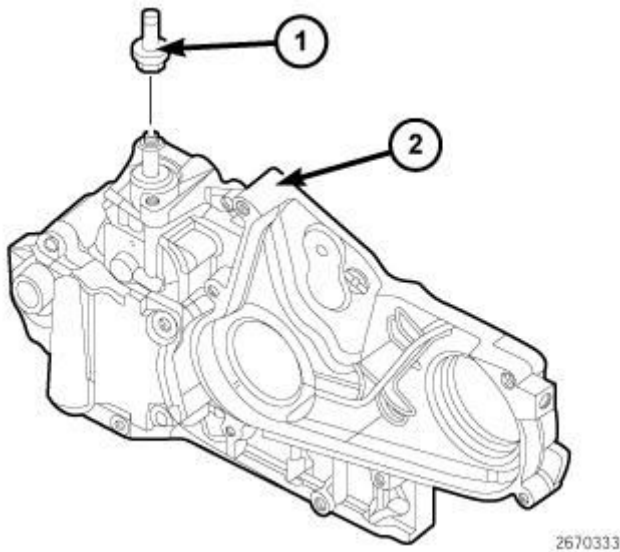


**Fig. 182: Vacuum Pump Check Valve & Front Engine Cover**  
Courtesy of CHRYSLER GROUP, LLC

16. If necessary, remove the vacuum pump check valve.

#### INSTALLATION

#### INSTALLATION



**Fig. 183: Vacuum Pump Check Valve & Front Engine Cover**  
Courtesy of CHRYSLER GROUP, LLC

1. Clean and inspect the gasket mating surfaces.
2. If necessary, install the front crankshaft oil seal. Refer to **SEAL, CRANKSHAFT OIL, FRONT, INSTALLATION**.