

DIAMOND DIESEL and TURBOCHARGER SERVICE, Inc.

Disassembly and Assembly
3054C Industrial Engine
Media Number -REN2433-01

Fuel Injection Pump - Remove - Delphi DP210

SMCS - 1251-011

Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Name	Qty
A	230-6284	Timing Pin (Camshaft)	1
B	230-6283	Timing Pin (Crankshaft)	1
B	230-6283	Timing Pin (Crankshaft)	1
C	9U-6198	Crankshaft Turning Tool	1
D	1P-2320	Combination Puller	1
ZZ	9U-7067	Cap	2
	9U-7069	Cap	2

Start By:

- A. Remove the fuel injection lines. Refer to Disassembly and Assembly, "Fuel Injection Lines - Remove and Install".
- B. Remove the crankshaft pulley. Refer to Disassembly and Assembly, "Crankshaft Pulley - Remove and Install".
- C. Remove the front cover. Refer to Disassembly and Assembly, "Front Cover - Remove and Install".
- D. Remove the air compressor, if equipped. Refer to Disassembly and Assembly, "Air Compressor - Remove and Install".

Note: SERVICE DATA: TOOLING (ZZ) WILL NOT BE IDENTIFIED IN PHOTOGRAPHS IN THE REMOVAL OR THE INSTALLATION. THIS TOOLING IS SHOWN IN ORDER TO ASSIST THE EXPERIENCED SERVICEMAN.

NOTICE

Keep all parts clean from contaminants.

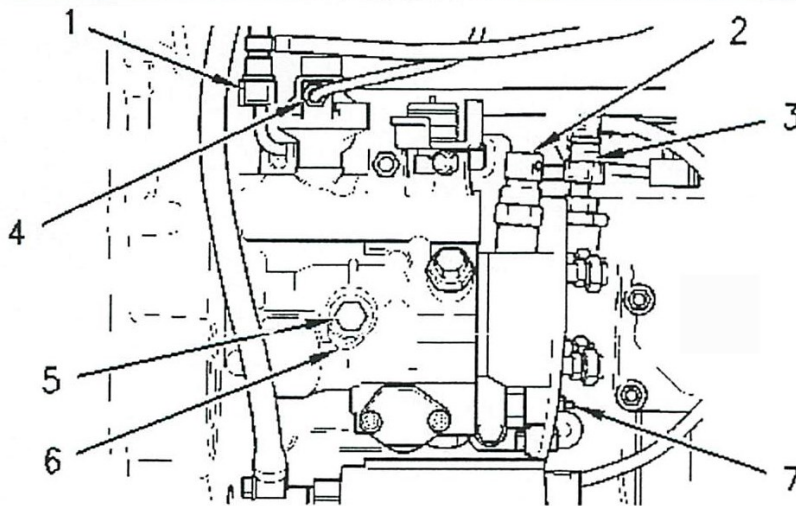
Contaminants may cause rapid wear and shortened component life.

1. Use Tooling (C) to ensure that the No. 1 cylinder is at the top center compression stroke. Refer to

DIAMOND DIESEL and TURBOCHARGER SERVICE, Inc.

Testing and Adjusting, "Finding Top Center Position for No. 1 Piston".

Note: Install Tooling (A) through the camshaft gear. Install Tooling (B) into the crankshaft web.



NOTICE

The locking bolt must not be loosened under any circumstances while the pump is off the engine. If the shaft is moved, dynamic timing of the pump will be lost. Reestablishing timing must be done by an authorized Delphi dealer, and is not a warrantable expense.

2. Loosen bolt (5). Move spacer (6) in order to allow bolt (5) to tighten against the shaft of the fuel injection pump. Rotate the fuel injection pump gear in a counterclockwise direction in order to remove the backlash. Tighten bolt (5) to a torque of 17 N·m (13 lb ft).

Note: Bolt (5) must be tightened in order to prevent the shaft of the fuel injection pump from rotating.

3. Disconnect fuel return line (1). Disconnect tube assembly (4) from the fuel injection pump.
4. Disconnect harness assembly (2). Disconnect fuel line (3).
5. Disconnect the harness assembly from timing advance solenoid (7).

DIAMOND DIESEL and TURBOCHARGER SERVICE, Inc.

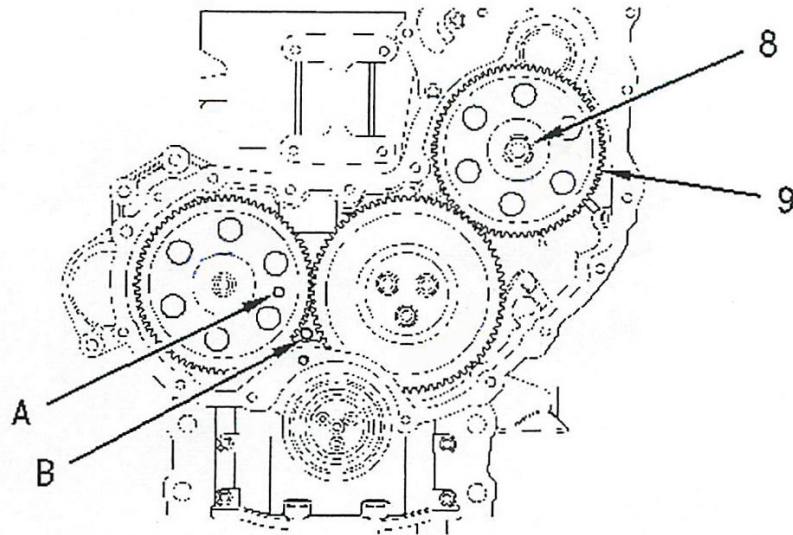


Illustration 2

6. Remove nut (8) and the washer from the shaft of the fuel injection pump.
7. Install Tooling (D) and remove fuel injection pump gear (9) .

Note: Do Not pry the fuel injection pump gear from the shaft of the fuel injection pump.

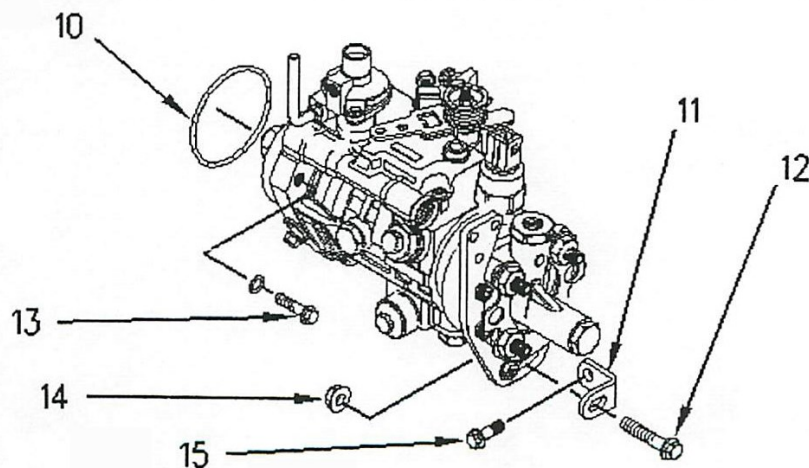


Illustration 3

8. Remove nut (14). Remove bolt (12) .
9. If necessary, remove bolt (15) and bracket (11) from the cylinder block.



**DIAMOND DIESEL and
TURBOCHARGER SERVICE, Inc.**

10. Remove bolts (13) in order to remove the fuel injection pump.
 11. Remove the fuel injection pump from the front housing. Remove O-ring seal (10) from the fuel injection pump.
-

DIAMOND DIESEL and TURBOCHARGER SERVICE, Inc.

Disassembly and Assembly
3054C Industrial Engine
Media Number -REN2433-01

Publication Date -01/04/2004

Date Updated -13/04/2004

Fuel Injection Pump - Install - Delphi DP210

SMCS - 1251-012

Installation Procedure

Table 1

Required Tools			
Tool	Part Number	Part Name	Qty
A	230-6284	Timing Pin (Camshaft)	1
B	230-6283	Timing Pin (Crankshaft)	1
C	9U-6198	Crankshaft Turning Tool	1

17/64 Bit

25/64 Bit <--Bigger of 2

NOTICE

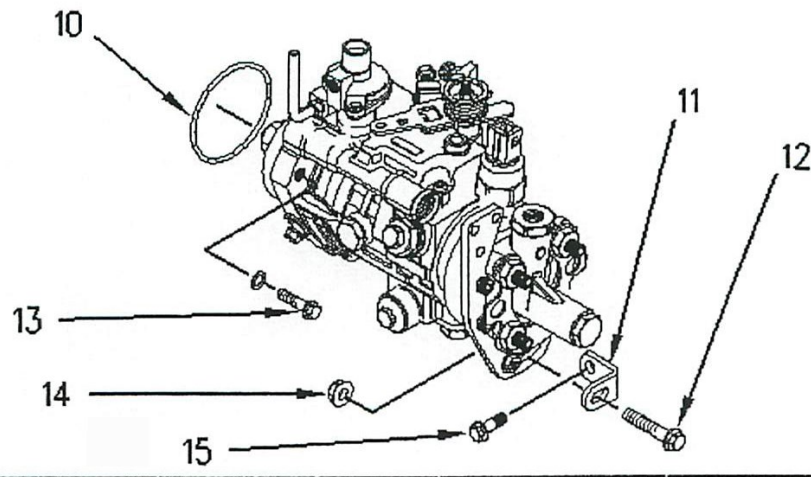
Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

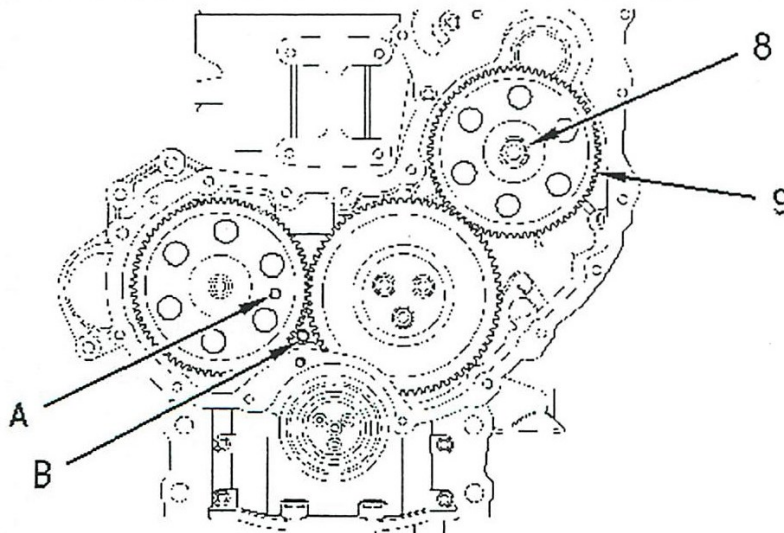
1. Use Tooling (C) to ensure that the No. 1 cylinder is at the top center compression stroke. Refer to Testing and Adjusting, "Fuel Injection Timing - Check".

Note: Install Tooling (A) through the camshaft gear. Install Tooling (B) through the crankshaft web.

DIAMOND DIESEL and TURBOCHARGER SERVICE, Inc.



2. Install O-ring seal (10) on the fuel injection pump. Position the fuel injection pump on the front housing. Install bolts (13). Tighten the bolts to a torque of 25 N·m (18 lb ft).
3. If necessary, install bolt (15) and bracket (11) on the cylinder block. Tighten the bolt to a torque of 44 N·m (32 lb ft).
4. Install bolt (12) and nut (14) .

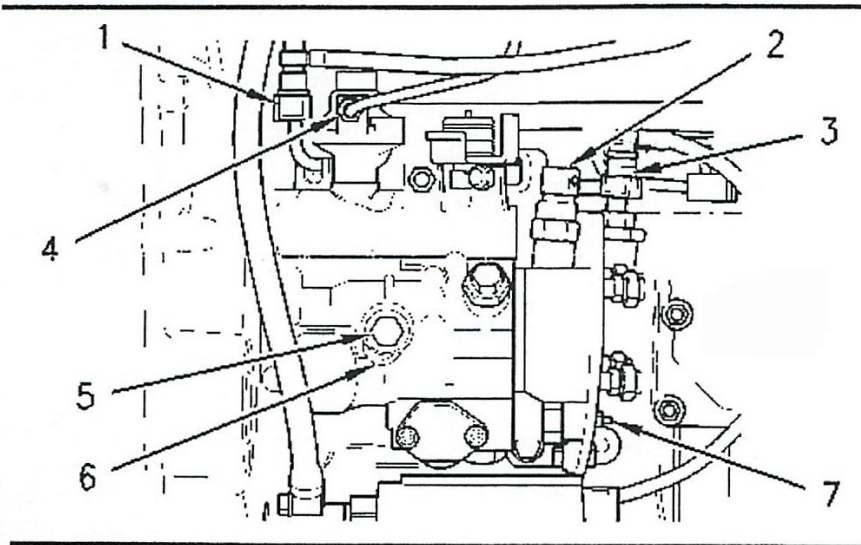


Note: Ensure that the mating surfaces of the fuel injection pump gear and the shaft of the fuel

DIAMOND DIESEL and TURBOCHARGER SERVICE, Inc.

injection pump are clean. Lubricate the threads of the shaft for the fuel injection pump. The nut must turn freely until contact is made with the fuel injection pump gear.

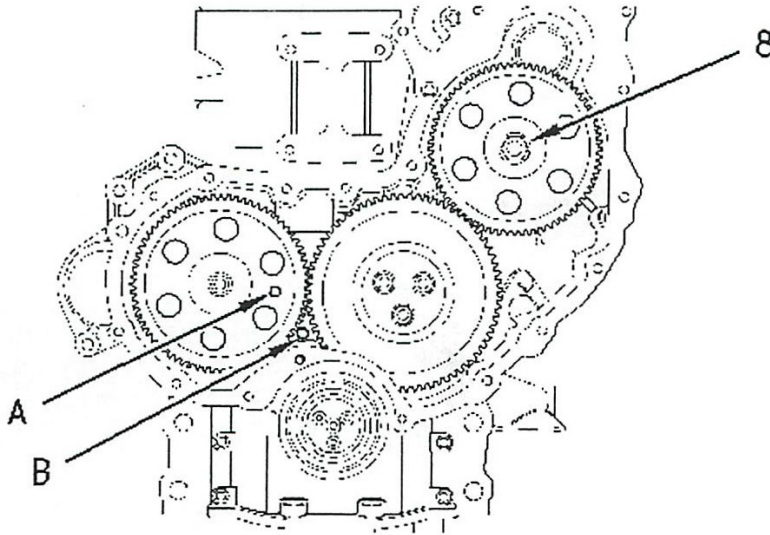
5. Position fuel injection pump gear (9) on the shaft of the fuel injection pump. Install the washer and nut (8). Rotate the fuel injection pump gear in a counterclockwise direction in order to remove the backlash. Tighten nut (8) to a torque of 24 N·m (17 lb ft).



6. Connect the harness assembly to timing advance solenoid (7) .
7. Connect harness assembly (2). Connect fuel line (3) .
8. Connect fuel return line (1). Connect tube assembly (4) to the fuel injection pump.
9. Loosen bolt (5). Move spacer (6) in order to prevent bolt (5) from tightening against the shaft of the fuel injection pump. Tighten bolt (5) to a torque of 12 N·m (106 lb in).

Note: Spacer (6) must be correctly positioned and bolt (5) must be tightened in order to prevent the bolt from contacting the shaft of the fuel injection pump.

DIAMOND DIESEL and TURBOCHARGER SERVICE, Inc.



-
10. Tighten nut (8) to a torque of 88 N·m (65 lb ft).
 11. Remove Tooling (A) and Tooling (B) .

End By:

- a. Install the front cover. Refer to Disassembly and Assembly, "Front Cover - Remove and Install".
 - b. Install the crankshaft pulley. Refer to Disassembly and Assembly, "Crankshaft Pulley - Remove and Install".
 - c. Install the fuel injection lines. Refer to Disassembly and Assembly, "Fuel Injection Lines - Remove and Install".
 - d. Install the air compressor, if equipped. Refer to Disassembly and Assembly, "Air Compressor - Remove and Install".
-