

Product: MULTI TERRAIN LOADER

Model: 287D MULTI TERRAIN LOADER HMT

Configuration: 287D Multi Terrain Loader HMT00001-UP (MACHINE) POWERED BY C3.3B Engine

## Disassembly and Assembly

### C3.3B Tier 4 Final and EU Stage 3B Engines for Caterpillar Built Machines

Media Number -UENR3278-07

Publication Date -01/09/2014

Date Updated -11/07/2016

i06020083

## Fuel Injection Pump - Remove and Install

SMCS - 1251-010

### Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	278-4138	Fuel System Protection Gp <sup>(1)</sup>	1

<sup>(1)</sup> This tool can only be used one time.



**Do not open the high pressure fuel system without allowing the fuel system to purge. After the engine has shut down, allow the fuel system to purge for ten minutes. This operating fuel system contains high pressure. Exposure to high pressure fuel can result in personal injury.**

**Note:** Use Caterpillar Electronic Technician (ET) to verify that the fuel system pressure is at zero before opening the fuel system.

**Note:** Use Tooling (A) after any fuel line has been disconnected.

1. Ensure that number four piston is at the top center position on the compression stroke. Refer to Systems Operation, Testing and Adjusting, "Finding Top Center Position for No. 4 Piston".



Illustration 1

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2. Mark the alignment of the pump gear and the idler gear for installation purposes.

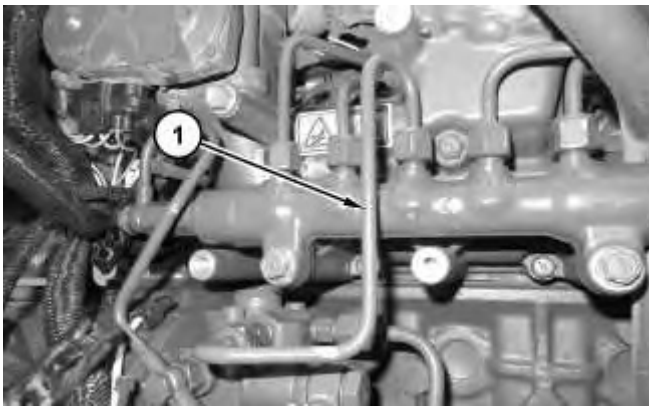


Illustration 2

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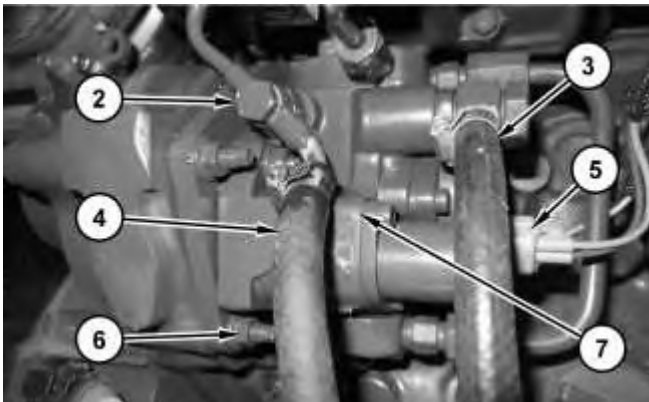


Illustration 3

g03337758

3. Remove tube assembly (1) . Remove banjo bolt (2) to disconnect hose assembly (4) . Disconnect hose assembly (3) and harness assemblies (5) . Remove nuts (6) to remove fuel injection pump (7) .

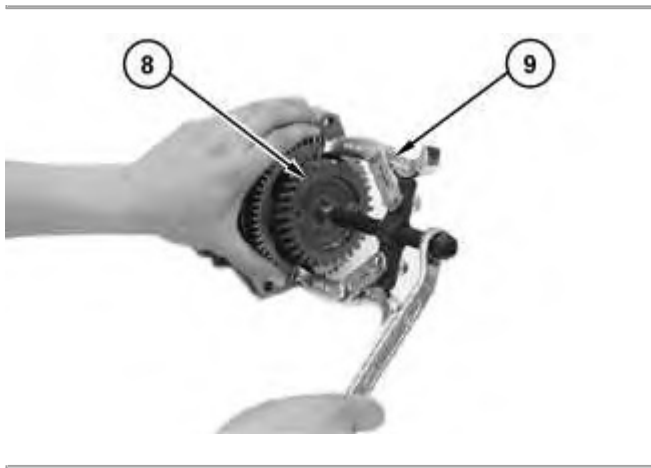


Illustration 4

g03338716

4. Remove gear mounting nut. Remove gear (8) with a suitable gear puller (9) . Remove gear (8) from fuel injection pump (7)

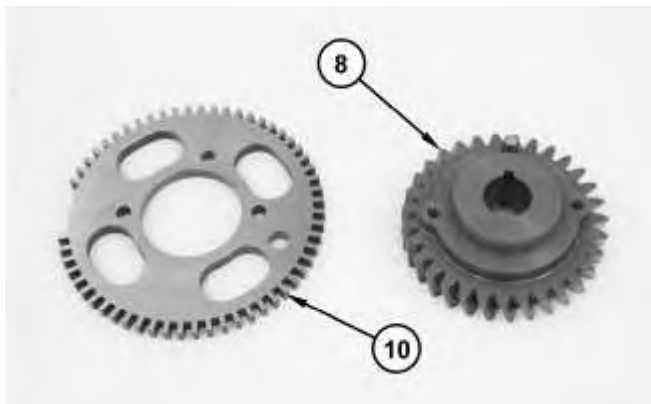


Illustration 5

g03366472

5. Remove the two bolts (not shown) to separate gear (10) from gear (8) .

## Installation Procedure

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Illustration 6

g03366484

1. Align gear (10) to gear (8) with pin (11) and the two bolts (not shown). Tighten the two bolts (not shown) to a torque of 10 to 11 N·m (89 to 97 lb in).

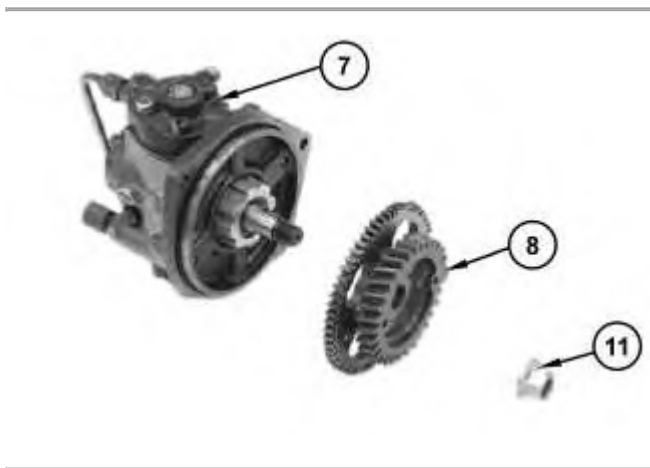


Illustration 7

g03366496

2. Install gear (8) and nut (11) on fuel injection pump (7). Tighten nut (11) to a torque of  $63.5 \pm 4.5$  N·m ( $47 \pm 3$  lb ft).

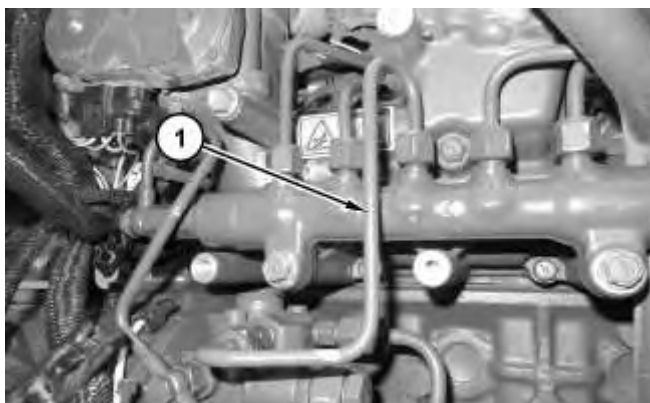


Illustration 8

g03337770

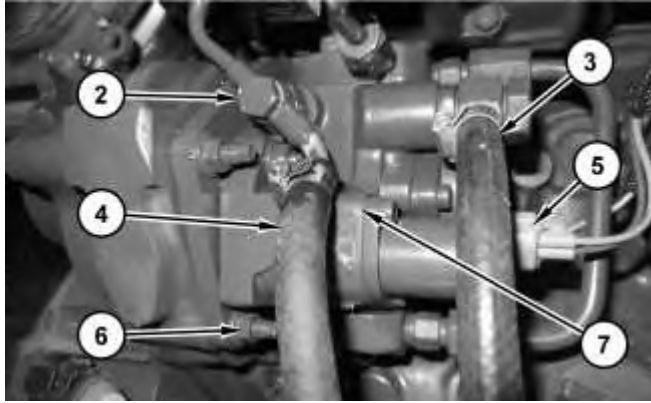


Illustration 9

g03337758

3. Install fuel injection pump (7) and nuts (6) . Connect harness assemblies (5) and hose assembly (3) . Install banjo bolt (2) to connect hose assembly (4) . Install tube assembly (1) . Tighten nuts (6) to a torque of  $25.5 \pm 1.5 \text{ N}\cdot\text{m}$  ( $226 \pm 13 \text{ lb in}$ ) . Tighten banjo bolt (2) to a torque of  $10 \pm 2 \text{ N}\cdot\text{m}$  ( $89 \pm 18 \text{ lb in}$ ) . Tighten tube assembly (1) to a torque of  $35 \pm 5 \text{ N}\cdot\text{m}$  ( $26 \pm 3 \text{ lb ft}$ ) .
  4. If a new supply pump is installed, then a fuel pump calibration is required. Use Caterpillar Electronic Technician (ET) version 2013A or newer version to perform the fuel pump calibration.
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Configuration: 287D Multi Terrain Loader HMT00001-UP (MACHINE) POWERED BY C3.3B Engine

## Disassembly and Assembly

### C3.3B Tier 4 Final and EU Stage 3B Engines for Caterpillar Built Machines

Media Number -UENR3278-07

Publication Date -01/09/2014

Date Updated -11/07/2016

i07542694

## Electronic Unit Injector - Remove and Install

SMCS - 1290-010

### Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	5F-4764	Pry Bar	1
B	278-4138	Fuel System Protection Gp <sup>(1)</sup>	1

<sup>(1)</sup> This tool can only be used one time.

#### Start By:

- a. Remove the valve mechanism cover.



**WARNING**

**Do not open the high pressure fuel system without allowing the fuel system to purge. After the engine has shut down, allow the fuel system to purge for ten minutes. This operating fuel system contains high pressure. Exposure to high pressure fuel can result in personal injury.**

**Note:** Use Cat<sup>®</sup> Electronic Technician (CatET) Service Tool to verify that the fuel system pressure is at zero before opening the fuel system.

**Note:** Use Tooling (B) after any fuel line has been disconnected.

**Note:** Place an identification mark on electronic unit injectors (4) for installation purposes. Each electronic unit injector (4) must be reinstalled in the original location in the cylinder head.

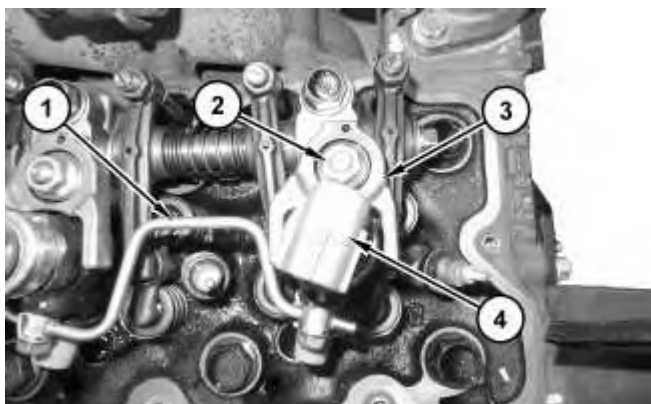


Illustration 1

g03335514

1. Remove tube assembly (1) and discard the gaskets (not shown) from electronic unit injector (4).
2. Remove nut (2) to remove injector clamp (3).
3. Use Tooling (A) to remove electronic unit injector (4).

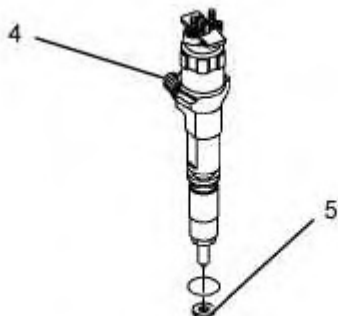


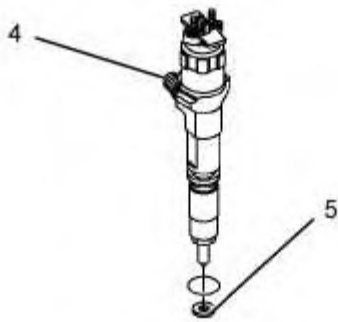
Illustration 2

g02891136

4. Remove seal (5) from electronic unit injector (4).
5. Repeat Steps 2 through 3 for the remaining electronic unit injectors.

## Installation Procedure

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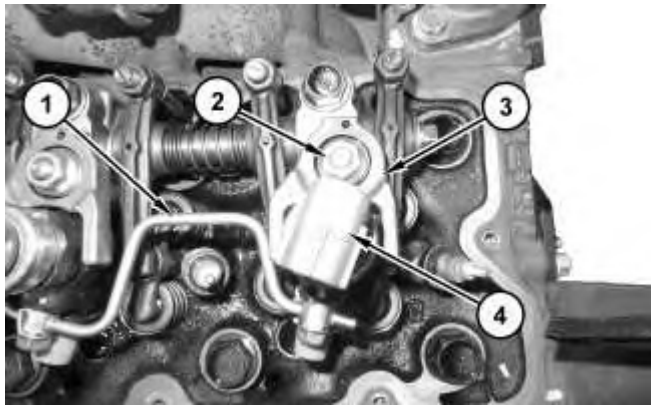


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Illustration 3

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Illustration 4

g03335514

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**Note:** If new electronic unit injectors (4) are installed, the QR codes on top of the injector must be documented in the engine ECM using Cat<sup>®</sup> Electronic Technician (CatET) Service Tool. Caterpillar recommends documenting the new injector codes on-line. Go to SISWeb and select "View More" under "Additional Service Information". Select the "C3.3B and C3.8 Downloads" link. The new injector trim codes can be entered through the "C3.3B and C3.8 ECU Trim Data Registration". For more information refer to Troubleshooting , "Injector Trim File- Install - Injector Trim Code- Install".

1. Install a new seal (5) onto electronic unit injector (4). Install electronic unit injector (4).
2. Install injector clamp (3). Install nut (2). Tighten nut (2) to a torque of  $25.5 \pm 1.5$  N·m ( $226 \pm 13$  lb in).
3. Install overflow pipe (1) with new gaskets (not shown). Tighten overflow pipe (1) to a torque of  $10.5 \pm 0.5$  N·m ( $93 \pm 4$  lb in).

**End By:**

- a. Install the valve mechanism cover.
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