



Service Repair Manual

Models

**903C2 COMPACT
WHEEL LOADER**

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Product: COMPACT WHEEL LOADER

Model: 903C2 COMPACT WHEEL LOADER YKL

Configuration: 903C2 Compact Wheel Loader YKL00001-UP (MACHINE) POWERED BY C2.4 Engine

Disassembly and Assembly

C2.4 Tier 4 Final Engines for Caterpillar Built Machines

Media Number -UENR7319-02

Publication Date -01/07/2018

Date Updated -01/08/2018

i06545873

Fuel Manifold (Rail) - Remove and Install

SMCS - 1702-010

Removal Procedure



Contact with high pressure fuel may cause fluid penetration and burn hazards. High pressure fuel spray may cause a fire hazard. Failure to follow these inspection, maintenance and service instructions may cause personal injury or death.

NOTICE

Care must be taken to ensure that fluids are contained during performance of inspection, maintenance, testing, adjusting and repair of the product. Be prepared to collect the fluid with suitable containers before opening any compartment or disassembling any component containing fluids.

Dispose of all fluids according to local regulations and mandates.

Start By:

- a. Remove fuel injection lines.
-

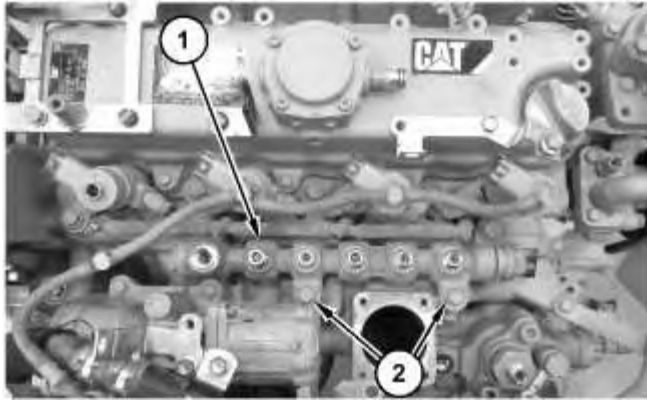


Illustration 1

g06008153

1. Remove bolts (2) and fuel manifold (1).

Note: Do not remove the pressure limiter and the rail pressure sensor from fuel manifold (1).

Note: When removing fuel manifold (1) do not hold it by the pressure limiter and the rail pressure sensor.

Installation Procedure

1. Install fuel manifold (1) in the reverse order of removal.
 - a. Tighten bolts (2) to a torque of 24 N·m to 27 N·m (212 lb in to 239 lb in).

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Media Number -UENR7319-02

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Date Updated -01/08/2018

i06521813

Fuel Injection Lines - Remove and Install

SMCS - 1252-010

Removal Procedure



Contact with high pressure fuel may cause fluid penetration and burn hazards. High pressure fuel spray may cause a fire hazard. Failure to follow these inspection, maintenance and service instructions may cause personal injury or death.

NOTICE

Care must be taken to ensure that fluids are contained during performance of inspection, maintenance, testing, adjusting and repair of the product. Be prepared to collect the fluid with suitable containers before opening any compartment or disassembling any component containing fluids.

Dispose of all fluids according to local regulations and mandates.

1. Turn the fuel supply to the OFF position.
 2. Turn the battery disconnect switch to the OFF position.
-

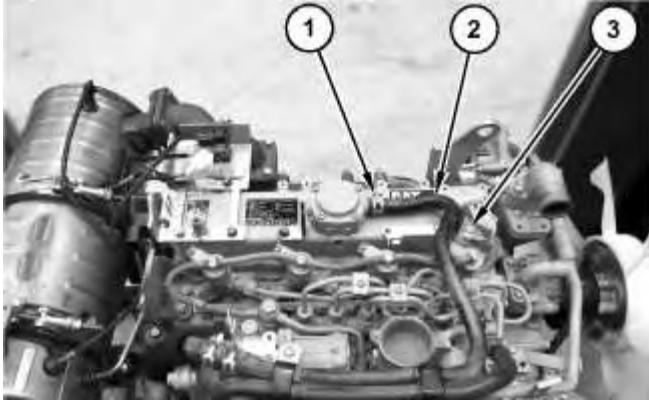


Illustration 1

g06007993

3. Remove bolt (3) and clamp (1). Disconnect hose assembly (2).

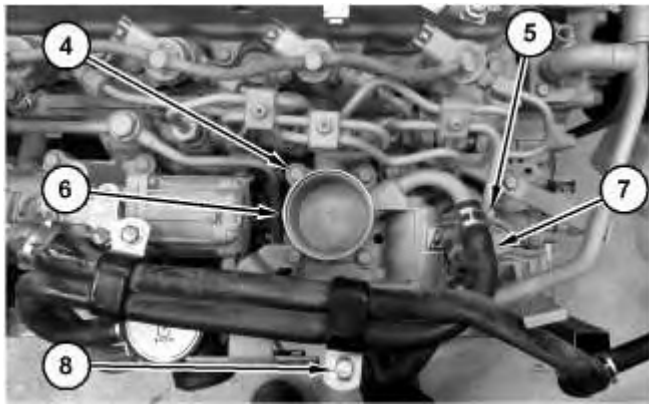


Illustration 2

g06008011

4. Remove bolt (8) and clamps (5). Disconnect hose assembly (7).
5. Remove bolts (4) and intake throttle valve (6).

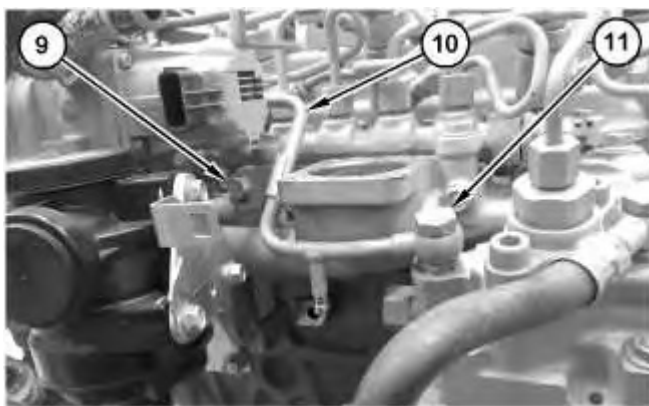


Illustration 3

g06008040

6. Remove bolt (9), bolt (11), and tube assembly (10).

Note: Cap and plug all fuel lines to prevent contaminating fuel system.

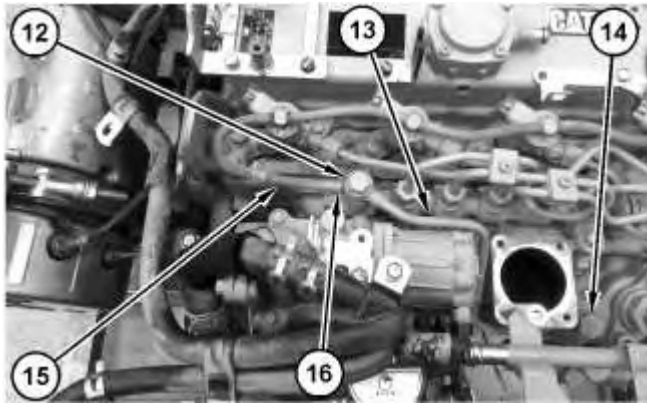


Illustration 4

g06008098

7. Remove clamp (16). Disconnect hose assembly (15).
8. Remove bolt (12), bolt (14), and tube assembly (13).

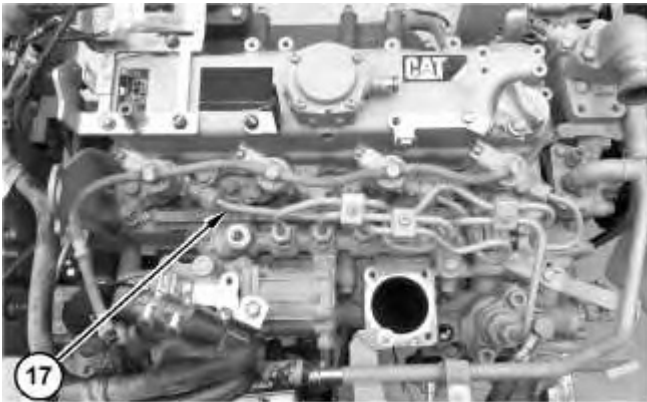


Illustration 5

g06008091

9. Remove fuel injection lines (17).

Note: Cap and plug all fuel lines to prevent contaminating fuel system.

Installation Procedure

1. Install fuel injection lines (17) in the reverse order of removal.
 - a. Tighten the retaining nuts of fuel injection lines (17) to a torque of 25 N·m to 29 N·m (221 lb in to 257 lb in).

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Configuration: 903C2 Compact Wheel Loader YKL00001-UP (MACHINE) POWERED BY C2.4 Engine

Disassembly and Assembly

C2.4 Tier 4 Final Engines for Caterpillar Built Machines

Media Number -UENR7319-02

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i06508651

Exhaust Gas Recirculation Cooler - Remove and Install

SMCS - 1087; 108C-010

Removal Procedure



Sulfuric Acid Burn Hazard may cause serious personal injury or death.

The exhaust gas cooler may contain a small amount of sulfuric acid. The use of fuel with sulfur levels greater than 15 ppm may increase the amount of sulfuric acid formed. The sulfuric acid may spill from the cooler during service of the engine. The sulfuric acid will burn the eyes, skin and clothing on contact. Always wear the appropriate personal protective equipment (PPE) that is noted on a material safety data sheet (MSDS) for sulfuric acid. Always follow the directions for first aid that are noted on a material safety data sheet (MSDS) for sulfuric acid.

Note: Plug or cap all open ports with new plugs or caps.

1. Drain the coolant. Refer to Operation and Maintenance Manual, "Cooling System Coolant - Change" for the correct draining and filling procedures.
-

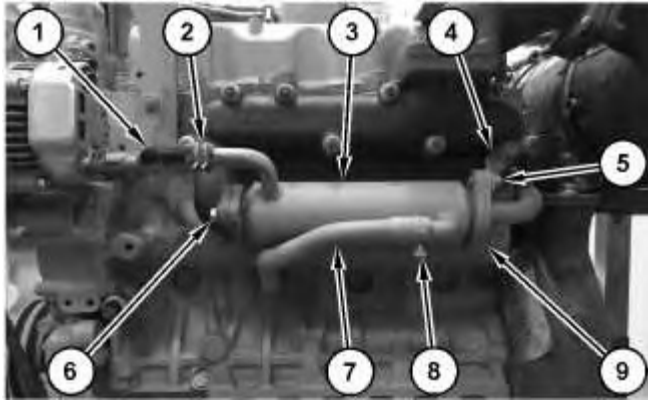


Illustration 1

g06002439

2. Remove clamp (2) and hose assembly (1).
3. Remove clamp (8) and hose assembly (7).
4. Remove bolt (5) and bracket (4).
5. Remove bolts (6), bolts (9), and exhaust gas recirculation cooler (3).

Installation Procedure

1. Install exhaust gas recirculation cooler (3) in the reverse order of removal.

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C2.4 Tier 4 Final Engines for Caterpillar Built Machines

Media Number -UENR7319-02

Publication Date -01/07/2018

Date Updated -01/08/2018

i06545892

Fuel Injection Pump - Remove and Install

SMCS - 1251-010

Removal Procedure

Start By:

- a. Remove inlet manifold.

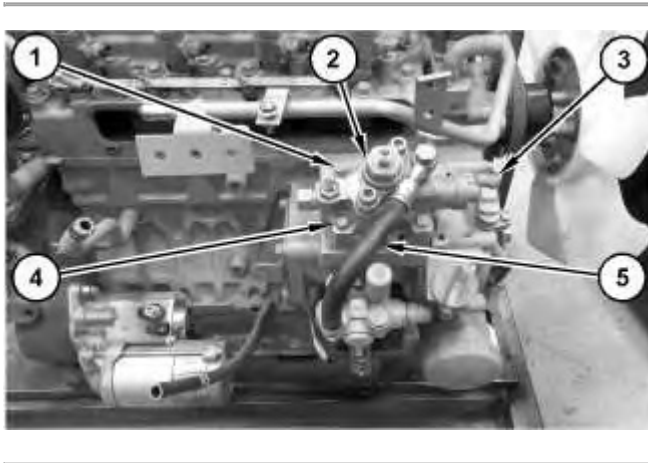


Illustration 1

g06008710

1. Disconnect harness assembly (3) (not shown).
2. Disconnect hose assembly (5).
3. Remove nuts (1), bolts (4), and fuel injection pump (2).

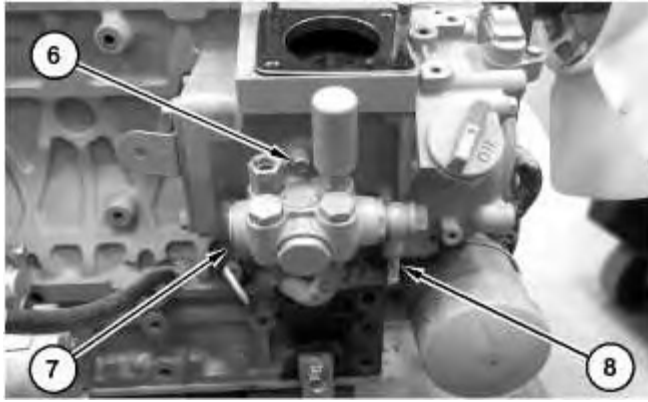


Illustration 2

g06008731

4. Disconnect hose assembly (8) (not shown).
5. Remove bolts (6) and fuel pump (7).

Installation Procedure

1. Install fuel injection pump (7) in the reverse order of removal.
 - a. Tighten nuts (1) to a torque of 24 N·m to 27 N·m (212 lb in to 239 lb in).

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Disassembly and Assembly

C2.4 Tier 4 Final Engines for Caterpillar Built Machines

Media Number -UENR7319-02

Publication Date -01/07/2018

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i06546013

Electronic Unit Injector - Remove and Install

SMCS - 1290-010

Removal Procedure



Contact with high pressure fuel may cause fluid penetration and burn hazards. High pressure fuel spray may cause a fire hazard. Failure to follow these inspection, maintenance and service instructions may cause personal injury or death.

NOTICE

Ensure that all adjustments and repairs that are carried out to the fuel system are performed by authorised personnel that have the correct training.

Before beginning ANY work on the fuel system, refer to Operation and Maintenance Manual, "General Hazard Information and High Pressure Fuel Lines" for safety information.

Refer to Systems Operation, Testing and Adjusting Manual, "Cleanliness of Fuel System Components" for detailed information on the standards of cleanliness that must be observed during ALL work on the fuel system.

NOTICE

Care must be taken to ensure that fluids are contained during performance of inspection, maintenance, testing, adjusting and repair of the product. Be prepared to collect the fluid with suitable containers before opening any compartment or disassembling any component containing fluids.

Dispose of all fluids according to local regulations and mandates.

Start By:

- a. Remove fuel injection lines.

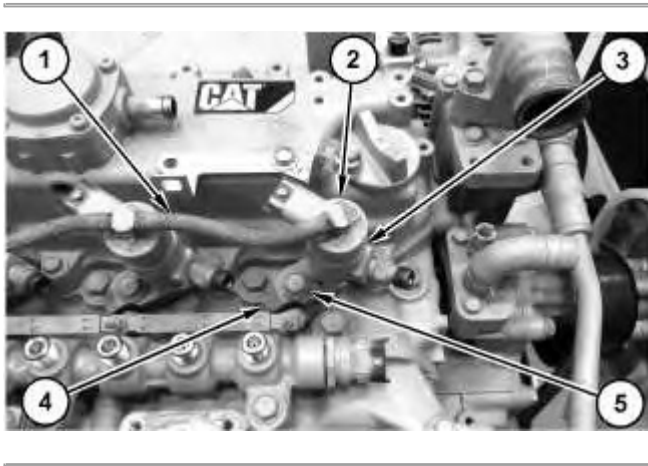


Illustration 1

g06008227

1. Remove clip (2). Disconnect hose assembly (1).
2. Remove bolt (5), clamp (4), and electronic unit injector (3).

Installation Procedure

1. Install electronic unit injector (3) in the reverse order of removal.
 - a. Tighten bolt (5) to a torque of 24 N·m to 27 N·m (212 lb in to 248 lb in).

Note: If new injectors are installed, refer to REHS9707 to install new injector trim codes in the Engine ECM and to register them on-line

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i06546042

Turbocharger - Remove and Install

SMCS - 1052-010

Removal Procedure

Drain the cooling system into a suitable container for storage or disposal. Refer to Operation and Maintenance Manual, "Cooling System Coolant (ELC) - Change".

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.



Illustration 1

g06044516

1. Remove intake hose (1).

2. Remove muffler flange (4).

3. Disconnect intake hose (3).



Illustration 2

g06044524

4. Remove screw (5).

5. Remove return pipe (crankcase side) (6).

6. Remove turbocharger (2).

Installation Procedure

1. Install turbocharger (2) in the reverse order of removal.

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C2.4 Tier 4 Final Engines for Caterpillar Built Machines

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Date Updated -01/08/2018

i06508754

Exhaust Gas Recirculation Valve - Remove and Install

SMCS - 108N-010

Removal Procedure



Personal injury can result from hot coolant, steam and alkali.

At operating temperature, engine coolant is hot and under pressure. The radiator and all lines to heaters or the engine contain hot coolant or steam. Any contact can cause severe burns.

Remove cooling system pressure cap slowly to relieve pressure only when engine is stopped and cooling system pressure cap is cool enough to touch with your bare hand.

Do not attempt to tighten hose connections when the coolant is hot, the hose can come off causing burns.

Cooling System Coolant Additive contains alkali. Avoid contact with skin and eyes.

NOTICE

Care must be taken to ensure that fluids are contained during performance of inspection, maintenance, testing, adjusting, and repair of the product. Be prepared to collect the fluid with suitable containers before opening any compartment or disassembling any component containing fluids.

Refer to Special Publication, NENG2500, "Dealer Service Tool Catalog" for tools and supplies suitable to collect and contain fluids on Cat[®] products.

Dispose of all fluids according to local regulations and mandates.

Note: Refer to Specifications, "Engine Design" for non-specified engine torque values.

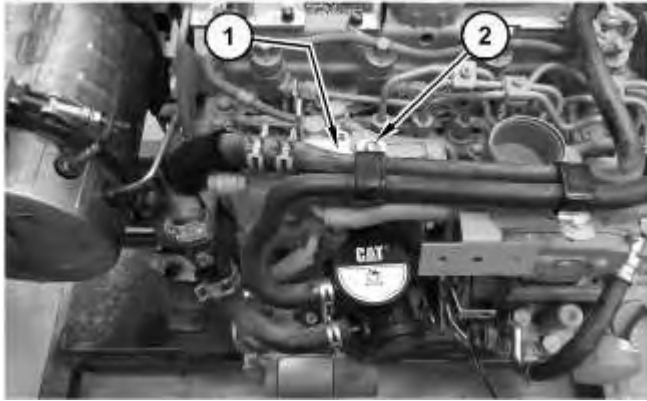


Illustration 1

g06002555

1. Remove bolt (1) and bolt (2).



Illustration 2

g06002560

2. Remove bolts (3).
-



Illustration 3

g06002566

3. Remove clamp (4). Disconnect hose assembly (5).

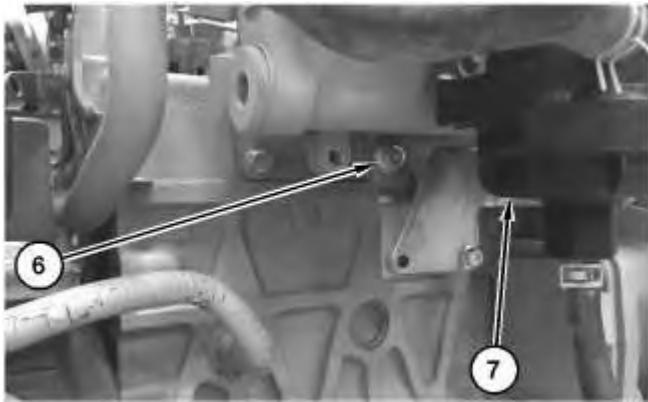


Illustration 4

g06002585

4. Remove bolt (6). Position breather assembly (7) out of the way.

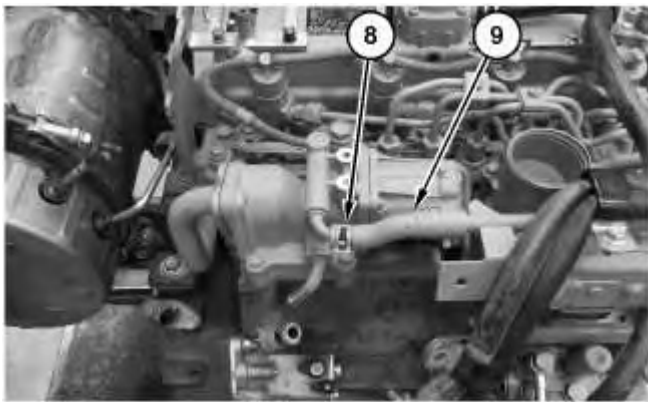


Illustration 5

g06002718

5. Remove clamp (8) . Disconnect hose assembly (9).

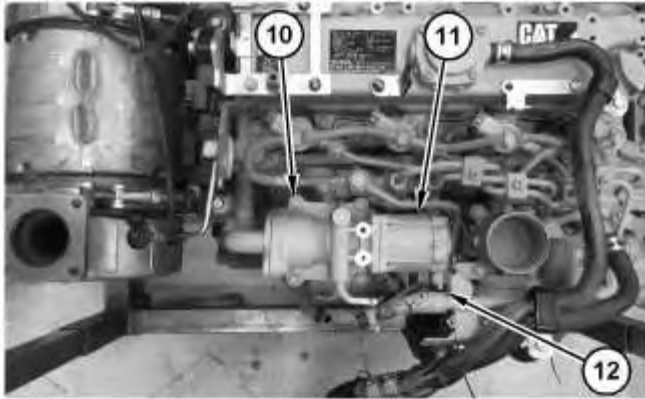


Illustration 6

g06002734

6. Disconnect harness assembly (12) (not shown).
7. Remove bolts (10) and exhaust gas recirculation valve (11).

Installation Procedure

1. Install exhaust gas recirculation valve (11) in the reverse order of removal.

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C2.4 Tier 4 Final Engines for Caterpillar Built Machines

Media Number -UENR7319-02

Publication Date -01/07/2018

Date Updated -01/08/2018

i06508499

Exhaust Manifold - Remove and Install

SMCS - 1059-010

Removal Procedure

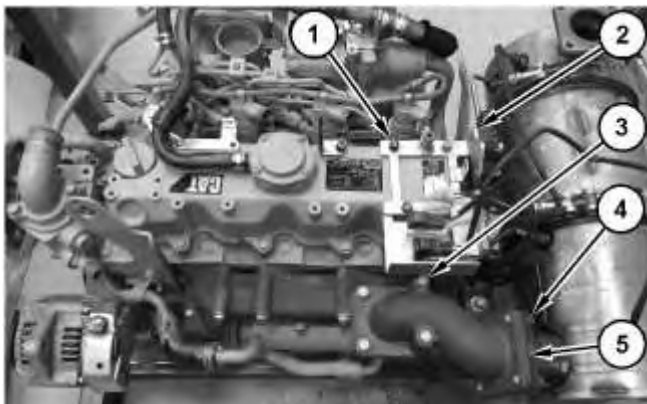


Illustration 1

g06002252

1. Remove bolts (1) and position bracket (2) out of the way.
2. Remove bolts (3), nuts (4), and elbow (5).

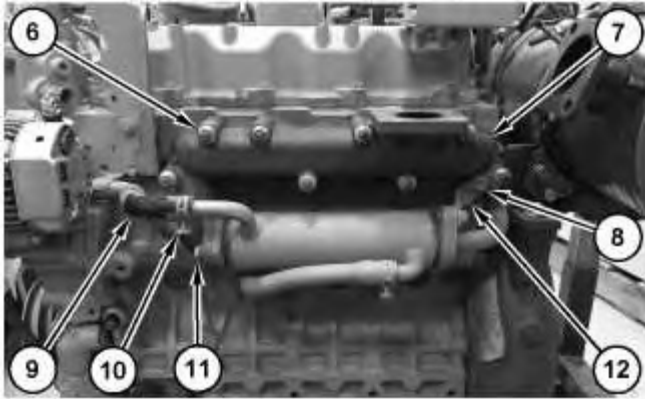


Illustration 2

g06002278

3. Remove clamp (10) and hose (9).
4. Remove bolt (8) and bracket (12).
5. Remove bolts (11), nuts (6), and exhaust manifold (7).

Installation Procedure

1. Install exhaust manifold (7) in the reverse order of removal.
 - a. Tighten bolts (3) to a torque of 24 N·m to 27 N·m (212 lb in to 239 lb in).

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C2.4 Tier 4 Final Engines for Caterpillar Built Machines

Media Number -UENR7319-02

Publication Date -01/07/2018

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i06506216

Diesel Particulate Filter - Disassemble

SMCS - 108F-015

Disassemble Procedure

 **WARNING**

Wear goggles, gloves, protective clothing, and a National Institute for Occupational Safety and Health (NIOSH) approved P95 or N95 half-face respirator when handling a used Diesel Particulate Filter or Catalytic Converter Muffler. Failure to do so could result in personal injury.

 **WARNING**

The muffler, catalytic converter/muffler, and diesel particulate filter will become extremely hot during engine operation. A hot muffler, catalytic converter/muffler and diesel particulate filter can cause serious burns. Allow adequate cooling time before working on or near the muffler, catalytic converter/muffler and diesel particulate filter.

NOTICE

Do not strike any part of the assembly of the Diesel Particulate Filter (DPF). Do not allow any object to contact the internal element of the

DPF. If the internal element of the DPF becomes damaged, the assembly must be replaced.

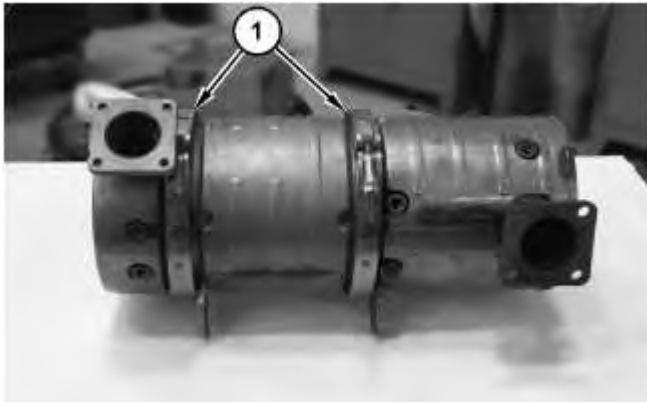


Illustration 1

g06001247

NOTICE

Before starting of disassembling the diesel particulate filter, put the alignment marks on each of the parts, the diesel particulate filter, the diesel oxidation catalyst, and the muffler.

1. Remove band clamps (1).

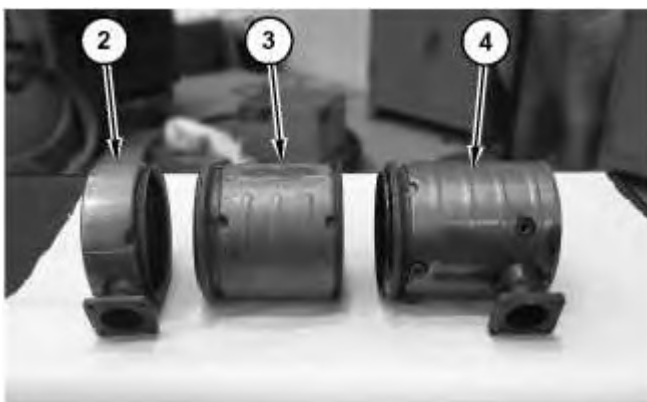


Illustration 2

g06001291

2. Separate muffler (2), diesel particulate filter (3), and diesel oxidation catalyst (4).
-

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C2.4 Tier 4 Final Engines for Caterpillar Built Machines

Media Number -UENR7319-02

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i06506718

Diesel Particulate Filter - Assemble

SMCS - 108F-016

Assemble Procedure



Wear goggles, gloves, protective clothing, and a National Institute for Occupational Safety and Health (NIOSH) approved P95 or N95 half-face respirator when handling a used Diesel Particulate Filter or Catalytic Converter Muffler. Failure to do so could result in personal injury.

NOTICE

Do not strike any part of the assembly of the Diesel Particulate Filter (DPF). Do not allow any object to contact the internal element of the DPF. If the internal element of the DPF becomes damaged, the assembly must be replaced.

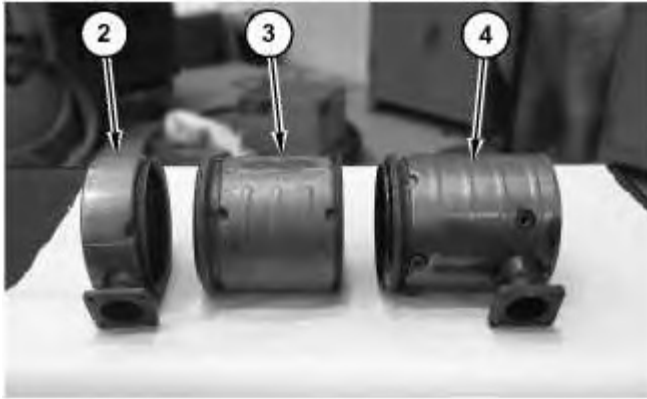


Illustration 1

g06001291

1. Align marks and assemble muffler (2), diesel particulate filter (3), and diesel oxidation catalyst (4).

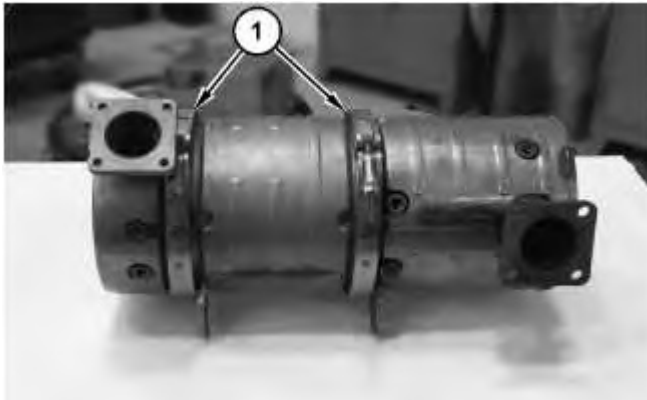


Illustration 2

g06001247

2. Install band clamps (1). Tighten band clamps (1) to a torque of 16 N to 20 N·m (142 lb into 177 lb in).

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i06502265

Diesel Particulate Filter - Remove and Install

SMCS - 108F-010

Table 1

Required Tooling			
Tool	Part Number	Part Description	Qty
A	-	Bostick Never-Seez Pure Nickel Special Grade Anti-seize	-

Removal Procedure



Wear goggles, gloves, protective clothing, and a National Institute for Occupational Safety and Health (NIOSH) approved P95 or N95 half-face respirator when handling a used Diesel Particulate Filter or Catalytic Converter Muffler. Failure to do so could result in personal injury.



The muffler, catalytic converter/muffler, and diesel particulate filter will become extremely hot during engine operation. A hot muffler, catalytic converter/muffler and diesel particulate filter can cause serious burns. Allow adequate cooling time before working on or near the muffler, catalytic converter/muffler and diesel particulate filter.

NOTICE

Do not strike any part of the assembly of the Diesel Particulate Filter (DPF). Do not allow any object to contact the internal element of the DPF. If the internal element of the DPF becomes damaged, the assembly must be replaced.



Illustration 1

g06000825

1. Disconnect DPF outlet temperature sensor (1) and differential pressure tube (2).

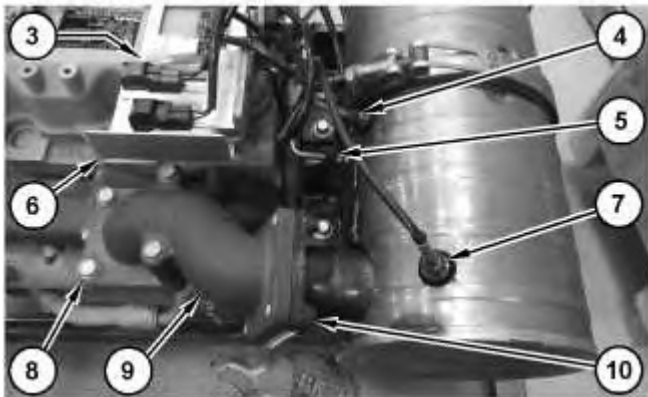


Illustration 2

g06000843

2. Remove bolts (3) and position bracket (6) out of the way.
 3. Disconnect DOC inlet temperature sensor (7), DPF inlet temperature sensor (4), and differential pressure tube (5).
 4. Remove bolts (8), nuts (10), and elbow (9).
-

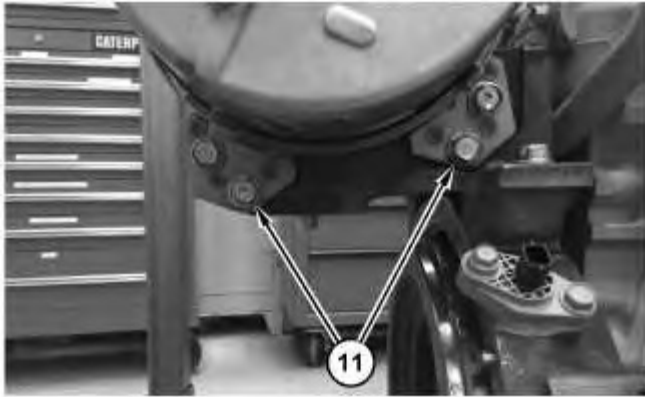


Illustration 3

g06000868

5. Remove bolts (11).

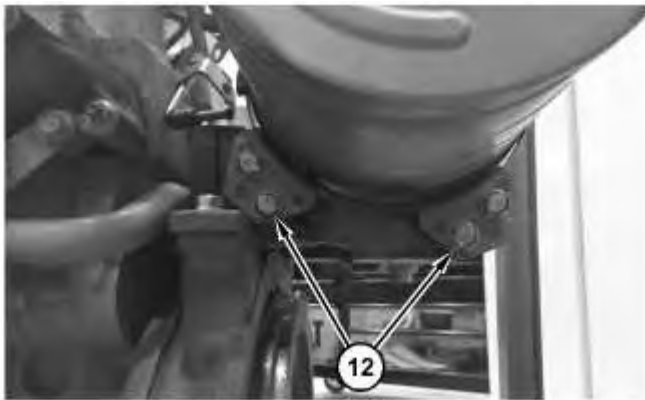


Illustration 4

g06000883

6. Remove bolts (12).

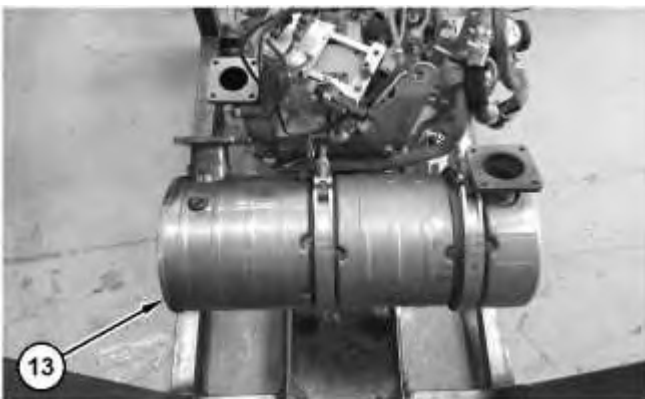


Illustration 5

g06000903

7. Remove diesel particulate filter (13).

Installation Procedure

1. Install diesel particulate filter (13) in the reverse order of removal.
 - a. Tighten bolts (12) and bolts (11) to a torque of 49 N·m to 55 N·m (36 lb ft to 41 lb ft).
 - b. Tighten bolts (8) to a torque of 24 N·m to 27 N·m (212 lb in to 239 lb in).
 - c. Apply Tooling (A) to the threads of DOC inlet temperature sensor (7), DPF inlet temperature sensor (4), and DOC outlet temperature sensor (1).
 - d. Apply Tooling (A) to the threads of differential pressure tube (5) and differential pressure tube (2).
 - e. Tighten DOC inlet temperature sensor (7), DPF inlet temperature sensor (4), and DPF outlet temperature sensor (1) to a torque of 25 N·m to 34 N·m (221 lb in to 301 lb in).
 - f. Tighten differential pressure tube (5) and differential pressure tube (2) to a torque of 16 N·m to 22 N·m (142 lb in to 195 lb in).



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C2.4 Tier 4 Final Engines for Caterpillar Built Machines

Media Number -UENR7319-02

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i06523433

Inlet Manifold - Remove and Install

SMCS - 1058-010

Removal Procedure

Start By:

- a. Remove exhaust gas recirculation valve.
- b. Remove fuel injection lines.
- c. Remove fuel manifold (rail).

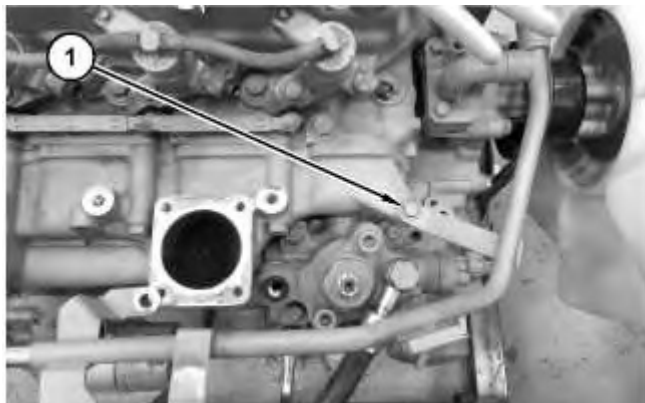


Illustration 1

g06008649

1. Remove bolt (1).

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