



# Service Repair Manual

## **Models**

# 160G MOTOR GRADER

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Product: MOTOR GRADER

Model: 160G MOTOR GRADER 4JD

Configuration: 160G MOTOR GRADER 4JD00001-00140 (MACHINE) POWERED BY 3306DI ENGINE

## **Disassembly and Assembly 3304B and 3306B Engines for Caterpillar Built Machines**

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# **Fuel Injection Lines - Remove and Install**

SMCS - 1252-010

## **Removal Procedure**

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### **NOTICE**

**Keep all parts clean from contaminants.**

**Contaminants may cause rapid wear and shortened component life.**

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### **NOTICE**

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

**Refer to Special Publication, NENG2500, "Caterpillar Tools and Shop Products Guide", for tools and supplies suitable to collect and contain fluids in Caterpillar machines.**

**Dispose of all fluids according to local regulations and mandates.**

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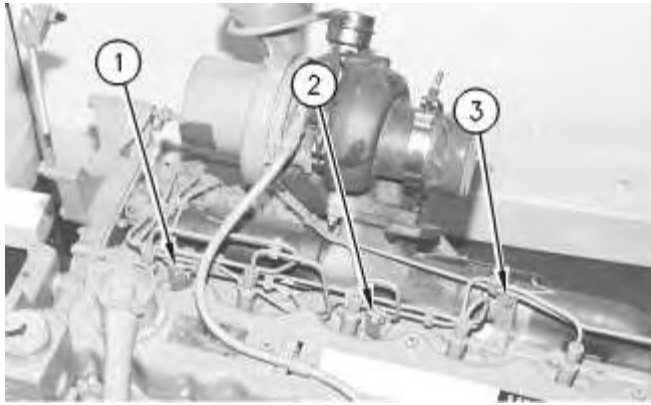


Illustration 1

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1. Remove three bolts (1), (2) and (3) and the brackets from the fuel injection lines.

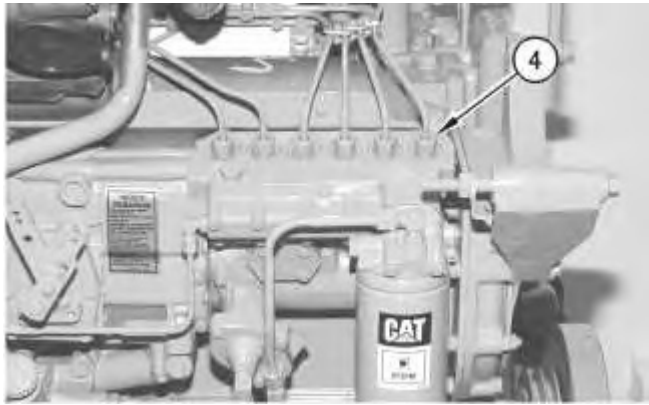


Illustration 2

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2. Disconnect six fuel injection line nuts (4) from the fuel injection pumps.

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## NOTICE

**Do not allow the tops of the nozzles to turn while the fuel lines are loosened. The nozzles will be damaged if the top of the nozzle turns in the body. Defective fuel nozzles will damage the engine due to incorrect spray patterns.**

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Illustration 3

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3. Hold the tops of fuel injector nozzles (5) with a wrench, as shown. Loosen the six fuel injection line nuts at fuel injector nozzles (4) .
4. Disconnect the fuel injection line nuts at the fuel injector nozzles and remove the fuel injection lines. Put caps and plugs on all openings immediately in order to prevent dirt from contaminating the fuel system.

## Installation Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	5P-0144	Fuel Line Socket	1

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### NOTICE

**Do not allow the tops of the nozzles to turn while the fuel lines are loosened. The nozzles will be damaged if the top of the nozzle turns in the body. Defective fuel nozzles will damage the engine due to incorrect spray patterns.**

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1. Remove the protective covers from the fuel line connections. Place the fuel injection lines in position on the engine. Tighten the fuel injection line nuts on the fuel injection pump and the fuel injector nozzles finger tight.

**Note:** The nozzle assembly must be supported with a wrench.

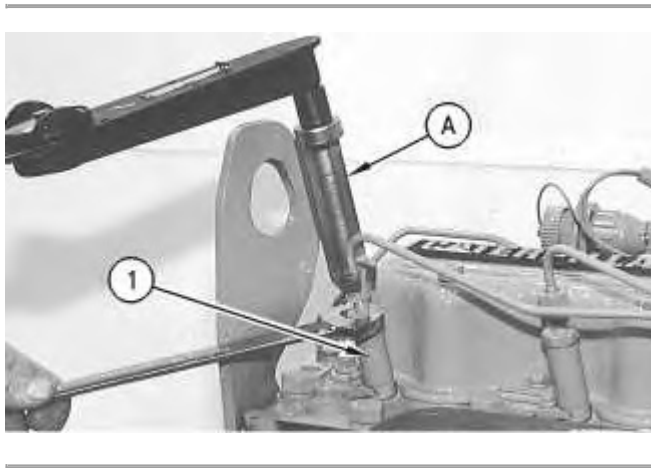


Illustration 4

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2. Hold the tops of fuel injector nozzles (1) and use Tool (A) in order to tighten the fuel injection line nuts to a torque of  $40 \pm 7 \text{ N}\cdot\text{m}$  ( $30 \pm 5 \text{ lb ft}$ ).

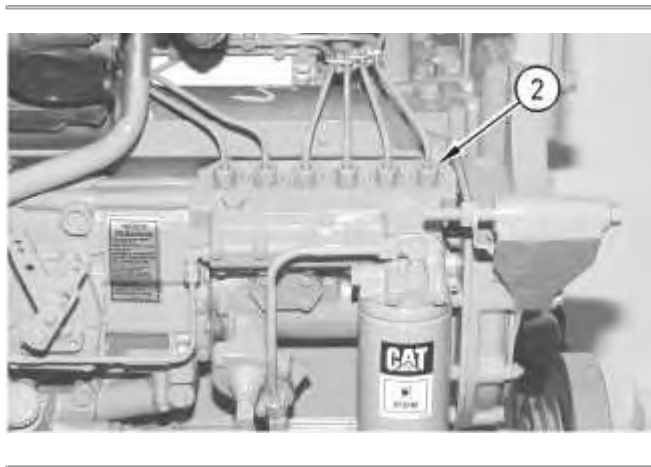


Illustration 5

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3. Tighten six fuel injection line nuts (2) at the fuel injection pumps to a torque of  $40 \pm 7 \text{ N}\cdot\text{m}$  ( $30 \pm 5 \text{ lb ft}$ ).
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