# **CATERPILLAR®**

# Service Repair Manual

## Model

216B3 Skid Steer Loader

Model: 216B3 SKID STEER LOADER HR2

Configuration: 216B3 Skid Steer Loader HR200001-UP (MACHINE) POWERED BY C2.2 Engine

## **Disassembly and Assembly**

## C1.1, C1.5 and C2.2 Engines for Caterpillar Built Machines

Media Number -KENR6948-06

Publication Date -01/06/2015

Date Updated -02/08/2018

i07360106

## **Exhaust Manifold - Remove and Install**

**SMCS -** 1059-010

## **Removal Procedure**

#### **Start By:**

a. If the engine is equipped with a turbocharger, remove the turbocharger. Refer to Disassembly and Assembly, "Turbocharger - Remove and Install".

#### **NOTICE**

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

**Note:** The three cylinder and the four cylinder engines have different exhaust manifolds. The removal procedure is similar for all models.

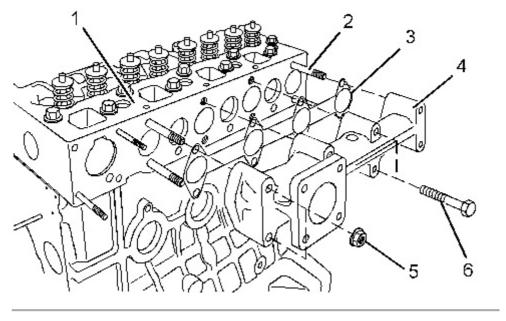


Illustration 1 g01326567

Typical example

1. Loosen nuts (5) and bolts (6).

**Note:** To prevent distortion of the exhaust manifold, loosen the outer fasteners first.

2. Remove nuts (5) and bolts (6).

**Note:** Identify bolts of different lengths so that the bolts can be installed in the correct positions.

- 3. Remove exhaust manifold (4) from cylinder head (1). Note the orientation of the exhaust manifold for installation.
- 4. Remove gasket (3) from cylinder head (1).
- 5. If necessary, remove exhaust manifold studs (2) from cylinder head (1).

## **Installation Procedure**

#### **NOTICE**

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

**Note:** The three cylinder and the four cylinder engines have different exhaust manifolds. The installation procedure is similar for all models.

1. Ensure that the mating surfaces of the cylinder head and the exhaust manifold are clean and free from damage.

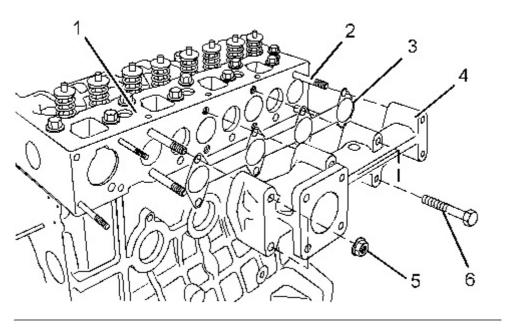


Illustration 2 g01326567

Typical example

- 2. If necessary, install exhaust manifold studs (2) to cylinder head (1).
- 3. Install a new exhaust manifold gasket (3) to cylinder head (1).
- 4. Align exhaust manifold (4) with studs (2) and install the exhaust manifold to cylinder head (1).

**Note:** Ensure that the exhaust manifold is installed in the correct orientation.

5. Install nuts (5) and bolts (6) finger tight.

**Note:** Ensure that bolts of different lengths are installed in the correct positions.

6. For the C1.1 and C1.5 engines, tighten nuts (5) and bolts (6) to a torque of 10 N·m (89 lb in).

For the C2.2 engine, tighten nuts (5) and bolts (6) to a torque of 25 N·m (18 lb ft).

Note: Tighten the inner bolts first.

### **End By:**

a. If the engine is equipped with a turbocharger, install the turbocharger. Refer to Disassembly and Assembly, "Turbocharger - Remove and Install".

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## **Disassembly and Assembly**

#### C1.1, C1.5 and C2.2 Engines for Caterpillar Built Machines

Media Number -KENR6948-06

Publication Date -01/06/2015

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## **Inlet and Exhaust Valve Springs - Remove and Install**

**SMCS - 1108-010** 

## **Removal Procedure**

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	9U-6195	Valve Spring Compressor	1
B <sup>(1)</sup>	268-1969	Adapter	1
$B^{(2)}$	9U-6194	Adapter	1

<sup>(1)</sup> C1.1 engine

### **Start By:**

a. Remove the rocker shaft assembly. Refer to Disassembly and Assembly, "Rocker Shaft and Pushrod - Remove".



Personal injury can result from being struck by parts propelled by a released spring force.

Make sure to wear all necessary protective equipment.

Follow the recommended procedure and use all recommended tooling to release the spring force.

<sup>(2)</sup> C1.5 and C2.2 engines

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