

Product: EXCAVATOR

Model: 311D LRR EXCAVATOR CLA

Configuration: 311D LRR Excavator CLA00001-UP (MACHINE) POWERED BY C4.2 Engine

## Disassembly and Assembly C4.2 Engine for Caterpillar Built Machines

Media Number -KENR8105-04

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i02767800

# Inlet and Exhaust Valves - Remove and Install

SMCS - 1105-010

## Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	8S-6691	Cylinder Head Repair Stand	1
B	9U-6195	Valve Spring Compressor Gp	1
C	5P-1720	Seal Pick	1

### Start By:

- A. Remove the cylinder head. Refer to Disassembly and Assembly, "Cylinder Head - Remove".

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### NOTICE

**Keep all parts clean from contaminants.**

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

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**Note:** Note the location and orientation of all components for assembly purposes.

1. Clean the bottom face of the cylinder head. Check the depth of the valves below the face of the cylinder head before the valve springs are removed. Refer to Specifications, "Cylinder Head Valves" for the correct dimensions.

2. Place a temporary identification mark on the heads of the valves in order to identify the correct position.

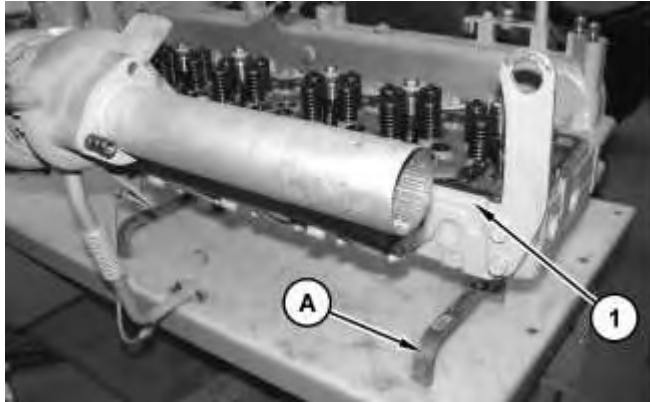


Illustration 1

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Typical Example

3. Use a suitable lifting device in order to position cylinder head (1) onto Tooling (A) with the valve springs upward. The weight of cylinder head (1) is approximately 70 kg (155 lb).

**Note:** Ensure that cylinder head (1) is kept on a clean, soft surface in order to prevent damage to the machined face.

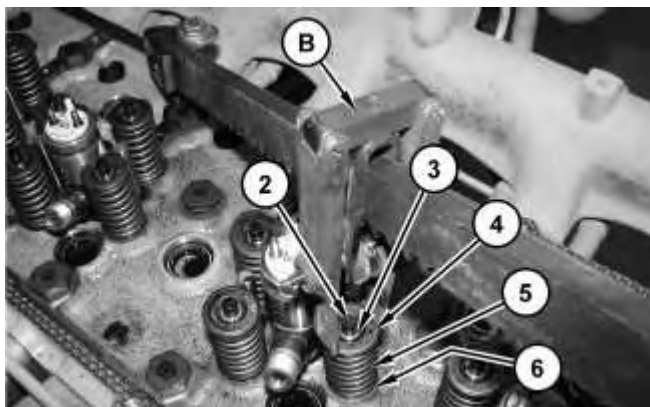


Illustration 2

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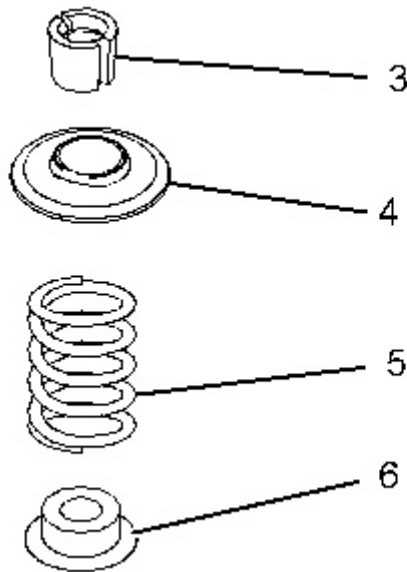


Illustration 3

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## **WARNING**

**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.**

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4. Install Tooling (B) on cylinder head (1) in order to compress valve spring (5) .

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## **NOTICE**

**Ensure that the valve spring is compressed squarely or damage to the valve stem may occur.**

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5. Apply sufficient pressure to Tooling (B) in order to remove valve keepers (3). Do not compress the spring so that valve spring retainer (4) touches valve stem seal (6) .
6. Slowly release the pressure on Tooling (B) .
7. Remove valve spring retainer (4). Remove valve spring (5). Remove valve (2) .
8. Use Tooling (C) in order to remove valve stem seal (6) .

9. Repeat Steps 4 through 7 for the remaining valves.

## Installation Procedure

Table 2

Required Tools			
Tool	Part Number	Part Description	Qty
A	8S-6691	Cylinder Head Repair Stand	1
B	9U-6195	Valve Spring Compressor Gp	1
D	312-8755	Valve Stem Seal Installer	1

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### NOTICE

**Keep all parts clean from contaminants.**

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

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1. Clean all components of the cylinder head assembly. Ensure that all ports, all coolant passages and all lubrication passages in the cylinder head are free from debris. Follow Steps 1.a through 1.d in order to inspect the components of the cylinder head assembly. Replace any components that are worn or damaged.
    - a. Inspect the cylinder head for wear and for damage. Refer to Testing and Adjusting, "Cylinder Head Inspect".
    - b. Inspect the valve seats for wear and for damage. Refer to Specifications, "Cylinder Head Valves" for further information.
    - c. Inspect the valve guides for wear and for damage. Refer to Specifications, "Cylinder Head Valves" and Testing and Adjusting, "Valve Guide - Inspect" for further information.
    - d. Inspect the valves for wear and for damage. Refer to Specifications, "Cylinder Head Valves".
    - e. Inspect valve springs (5) for damage and for the correct length. Refer to Specifications, "Cylinder Head Valves".
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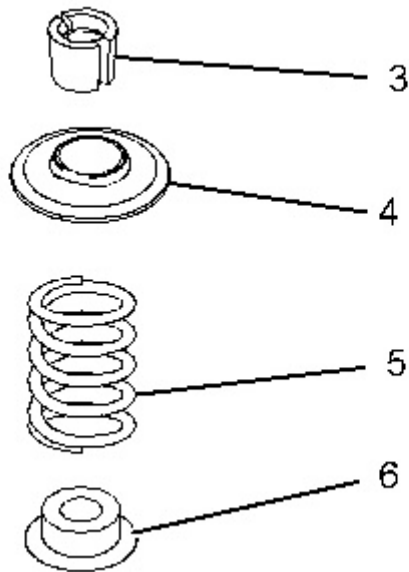


Illustration 4

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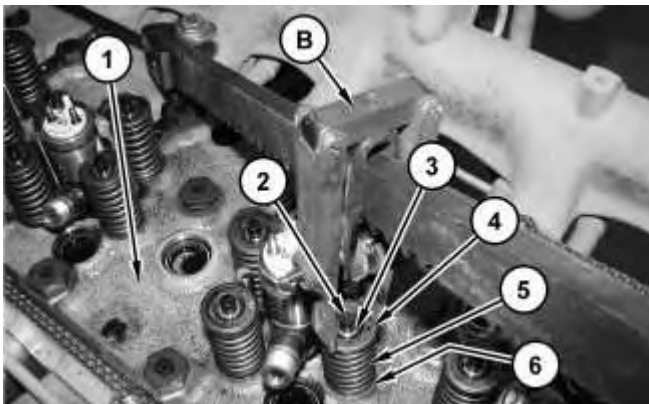


Illustration 5

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## **WARNING**

**Improper assembly of parts that are spring loaded can cause bodily injury.**

**To prevent possible injury, follow the established assembly procedure and wear protective equipment.**

2. Lubricate the stem of valve (2) with clean engine oil. Install valve (2) in the appropriate position in the cylinder head. Check the depth of valve (2) below the face of the cylinder head. Refer to Testing and Adjusting, "Valve Depth - Inspect" for more information.

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