

Illustration 1

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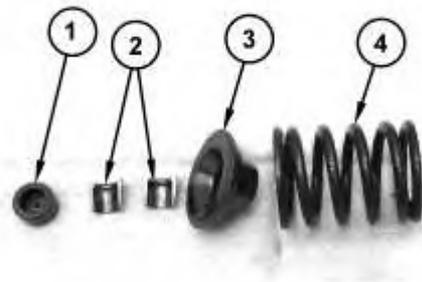


Illustration 2

g02725099

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.

NOTICE

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

1. Follow Step 1.a through Step 1.d in order to position the appropriate piston at top dead center.

a. Install Tooling (A) in position on the cylinder head in order to compress a valve spring (4) for the appropriate piston.

b. Use Tooling (A) in order to compress valve spring (4) and open the valve slightly.

Note: Do not compress the spring so that valve spring retainer (3) touches the valve stem seal.

c. Rotate the crankshaft carefully, until the piston touches the valve.

Note: Do not use excessive force to turn the crankshaft. The use of force can result in bent valve stems.

d. Continue to rotate the crankshaft and gradually release the pressure on Tooling (A) until the piston is at the top dead center position. The valve is now held in a position that allows the valve spring to be safely removed.

Note: If all valve springs require replacement, the procedure can be carried out on two cylinders at the same time. The procedure can be carried out on the following pairs of cylinders. 1 with 4 and 2 with 3. Ensure that all of the valve springs are installed before changing from one pair of cylinders to another pair of cylinders.

NOTICE

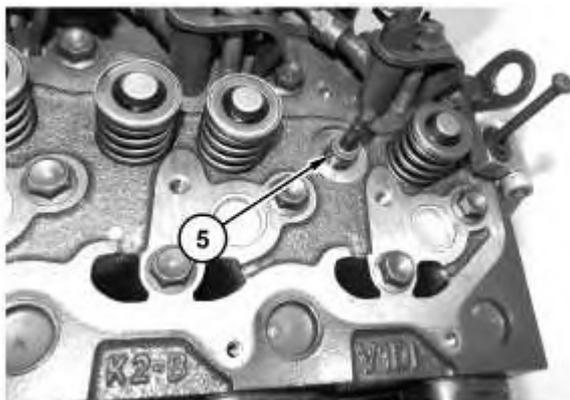
Do not turn the crankshaft while the valve springs are removed.

2. Remove valve cap (1). Apply sufficient pressure to Tooling (A) in order to allow removal of valve keepers (2).

Note: Do not compress the spring so that valve spring retainer (3) touches the valve stem seal.

3. Slowly release pressure on Tooling (A).

4. Remove valve spring retainer (3) and remove valve spring (4).



5. Remove Tooling (A).
6. Remove valve stem seals (5).
7. Repeat Step 2 through Step 5 in order to remove the remaining valve springs from the appropriate cylinder.

Installation Procedure

1. Install the inlet and exhaust valve springs (4) in the reverse order of removal.

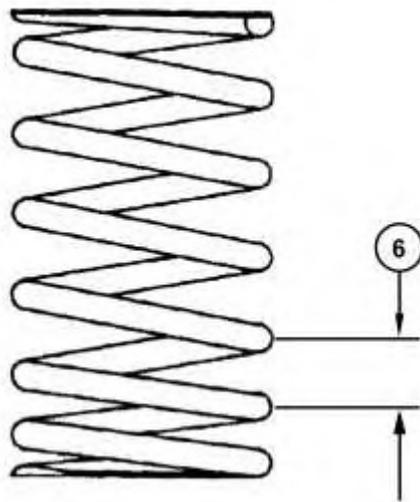


Illustration 4

- a. Install valve springs with the smaller pitch end (6) downward on cylinder head side.
 - b. Inspect valve springs (4) for damage and for the correct length. Refer to Specifications, "Cylinder Head Valves " for further information.
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Inlet and Exhaust Valves - Remove and Install

SMCS - 1105-010

Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	5S-1330	Valve Spring Compressor	1

Start By:

- a. Remove cylinder head.

Note: Refer to Specification UENR0995 "Engine Design" for non-specified engine Torque Values.

1. Clean the bottom mating surface 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.
 3. Use a suitable lifting device to position the cylinder head with the valve springs upward. The weight of the cylinder head is approximately 23 kg (51 lb).
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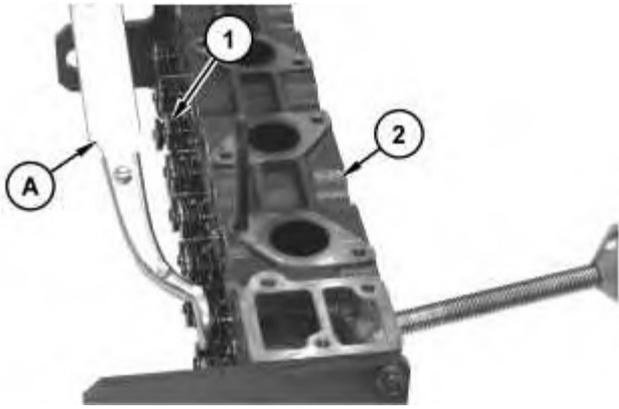


Illustration 1

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4. Install Tooling (A) in position on cylinder head (2) and compress the valve spring in order to remove inlet and exhaust valves (1).

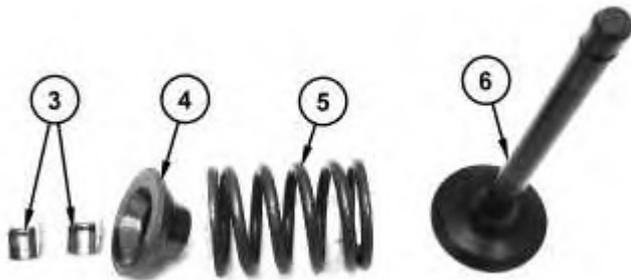


Illustration 2

g02788459

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.

NOTICE

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

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