Inlet and Exhaust Valve Springs - Remove and Install

SMCS - 1108-010

Removal Procedure

<table>
<thead>
<tr>
<th>Table 1</th>
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</thead>
<tbody>
<tr>
<td><strong>Required Tools</strong></td>
</tr>
<tr>
<td><strong>Tool</strong></td>
</tr>
<tr>
<td>A</td>
</tr>
<tr>
<td></td>
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<td></td>
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<tr>
<td></td>
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<tr>
<td></td>
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<tr>
<td></td>
</tr>
<tr>
<td>B</td>
</tr>
</tbody>
</table>

(1) Part of the 9U-7241 Valve Spring Compressor

**Start By:**

A. Remove the electronic unit injectors. Refer to Disassembly and Assembly, "Electronic Unit Injector - 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:** Place the piston at the top of the compression stroke (TC). Remove the valve springs for that cylinder. If the valves fall into the cylinder liner, then the cylinder head must be removed.

1. Position the piston at the top of the compression stroke (TC) of the cylinder.
Note: Secure Tooling (A) to the cylinder head with electronic unit injector clamp (1).

2. Install the compressor base (part of Tooling (A) ) in the electronic unit injector sleeve.
   a. Install the threaded stud in the electronic unit injector sleeve.
   b. Slide the compressor base over the threaded stud. Secure the compressor base with unit injector clamp and the bolt (part of Tooling (A) ) .
3. Install the compressor plate, the hard washer (A), and the full nut (A) (all part of Tooling (A)).

4. Tighten the full nut (part of Tooling (A)) until valve keepers (3) are loose on the valves (2).

5. Remove two valve keepers (3) from valve (2).
6. Carefully remove Tooling (A) from valves (2).

7. Remove valve rotators (4). Remove valve springs (5).

8. Use Tooling (B) to check the valve springs (spring force). Refer to Specifications, "Cylinder Head Valves" for additional information on the valve springs.

9. Repeat Steps 1 through 8 for the remaining valve spring assemblies.

### Installation Procedure

#### Table 2

<table>
<thead>
<tr>
<th>Tool</th>
<th>Part Number</th>
<th>Part Description</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1U-8826</td>
<td>Thrust Bearing</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>9U-7242</td>
<td>Compressor Plate</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>9U-7548</td>
<td>Compressor Base</td>
<td>1</td>
</tr>
</tbody>
</table>
1. Lubricate the valve stems with clean engine oil.

![View Image](https://sis.cat.com/sisweb/sisweb/techdoc/content.jsp?calledpage=/sisweb/sisweb/medias... 7.8.2003)

**Illustration 8**
g00517385

2. Install valve springs (5) on valves (2). Install valve rotators (4) on valves (2).

![View Image](https://sis.cat.com/sisweb/sisweb/techdoc/content.jsp?calledpage=/sisweb/sisweb/medias... 7.8.2003)

**Illustration 9**
g00517381

**NOTICE**

*Keep all parts clean from contaminants.*

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

<table>
<thead>
<tr>
<th>Part</th>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>2J-3506</td>
<td>Full Nut</td>
<td>1</td>
</tr>
<tr>
<td>5P-8248</td>
<td>Hard Washer</td>
<td>1</td>
</tr>
<tr>
<td>0L-1143</td>
<td>Bolt</td>
<td>1</td>
</tr>
</tbody>
</table>

(1) Part of the **9U-7241** Valve Spring Compressor
3. Use Tooling (A) to compress valve springs (5).

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View Image

![Image of valve keepers installation]

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Illustration 10  g00517383

4. Install two valve keepers (3) on each valve (2).

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**WARNING**

The valve keepers can be thrown from the valve when the valve spring compressor is released. Ensure that the valve keepers are properly installed on the valve stem. To help prevent personal injury, keep away from the front of the valve keepers and valve springs during the installation of the valves.

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5. Carefully remove Tooling (A). Strike the top of the valve with a soft faced hammer in order to ensure that the valve keepers are properly installed.

6. Repeat Steps 1 through 5 for the remaining valve springs.

**End By:** Install the Electronic Unit Injectors. Refer to Disassembly and Assembly, "Electronic Unit Injector - Install".