COMPONENTS

ILLUSTRATION

N\textsuperscript{m} (kgf\cdot cm, ft\textsuperscript{.}lbf): Specified torque

Non-reusable part

c

ILLUSTRATION
REMOVAL

1. REMOVE CAMSHAFT HOUSING SUB-ASSEMBLY

(a) Remove the camshaft housing sub-assembly.

2. REMOVE NO. 1 EXHAUST MANIFOLD HEAT INSULATOR

3. REMOVE MANIFOLD STAY

4. REMOVE EXHAUST MANIFOLD

5. REMOVE NO. 1 VALVE ROCKER ARM SUB-ASSEMBLY

6. REMOVE VALVE LASH ADJUSTER ASSEMBLY

7. REMOVE VALVE STEM CAP

8. REMOVE CYLINDER HEAD SUB-ASSEMBLY

(a) Using a 10 mm bi-hexagon wrench, uniformly loosen and remove the 10 cylinder head bolts and 10 plate washers in several steps in the sequence shown in the illustration.

- Be careful not to drop washers into the cylinder head.
- Head warpage or cracking could result from removing the bolts in the wrong order.

(b) Using a screwdriver with its tip wrapped with tape, pry between the cylinder head and cylinder block, and remove the cylinder head.

NOTICE:

Be careful not to damage the contact surfaces of the cylinder head and cylinder block.

9. REMOVE CYLINDER HEAD GASKET

(a) Remove the cylinder head gasket.
INSTALLATION

1. INSPECT NO. 1 VALVE ROCKER ARM SUB-ASSEMBLY

2. INSPECT VALVE LASH ADJUSTER ASSEMBLY

3. INSPECT CYLINDER HEAD SET BOLT

4. INSPECT CYLINDER HEAD

5. INSTALL CYLINDER HEAD GASKET

(a) Apply seal packing (Diameter 4.0 mm (0.157 in.)) to the cylinder block as shown in the illustration.

Text in Illustration

<table>
<thead>
<tr>
<th>*1</th>
<th>Cylinder Block</th>
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<tbody>
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<td></td>
<td>Engine Front</td>
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</table>

Seal packing:

Toyota Genuine Seal Packing Black, Three Bond 1207B or equivalent

NOTICE:

Remove any oil from the cylinder block.

(b) Place a new cylinder head gasket on the cylinder block with the Lot No. stamp facing upward.
NOTICE:

Install the cylinder head gasket within 3 minutes after applying seal packing.

(c) Apply seal packing (Diameter 4.0 mm (0.157 in.)) to the new cylinder head gasket as shown in the illustration.

Seal packing:

Toyota Genuine Seal Packing Black, Three Bond 1207B or equivalent
NOTICE:

- Remove any oil from the cylinder head gasket and cylinder head.
- Install the cylinder head gasket within 3 minutes and tighten the bolts within 15 minutes of applying seal packing.

(d) After tightening the cylinder head bolts, wipe off the seal packing material seeped out from the contact surfaces between the cylinder head and cylinder block.

Text in Illustration

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<thead>
<tr>
<th></th>
<th>Before wiping off:</th>
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<tbody>
<tr>
<td>*a</td>
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<table>
<thead>
<tr>
<th></th>
<th>After wiping off:</th>
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<tbody>
<tr>
<td>*b</td>
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</table>

6. INSTALL CYLINDER HEAD SUB-ASSEMBLY

HINT:

The cylinder head bolts are tightened in 3 progressive steps.

(a) Place the cylinder head on the cylinder block.

NOTICE:

- Make sure that no oil is on the mounting surface of the cylinder head.
- Place the cylinder head on the cylinder block gently in order not to damage the gasket with the bottom part of the head.

(b) Install the plate washers to the cylinder head bolts.

(c) Apply a light coat of engine oil to the threads and under the heads of the cylinder head bolts.

(d) Step 1:

(1) Using a 10 mm bi-hexagon wrench, install and uniformly tighten the 10 cylinder head bolts in several steps, in the sequence shown in the illustration.

Torque: **49 N·m (500 kgf·cm, 36ft·lbf)**

NOTICE:

Do not drop the plate washers into the cylinder head.
(e) Step 2:

![Illustration](image.png)

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(1) Mark each cylinder head bolt head with paint as shown in the illustration.

(2) Tighten the cylinder head bolts 90° in the sequence shown in step 1.

(f) Step 3:

(1) Tighten the cylinder head bolts another 45° in the sequence shown in step 1.

(g) Check that the paint mark is now at a 135° angle to the front.

7. INSTALL VALVE STEM CAP

8. INSTALL VALVE LASH ADJUSTER ASSEMBLY

9. INSTALL NO. 1 VALVE ROCKER ARM SUB-ASSEMBLY

10. INSTALL EXHAUST MANIFOLD

11. INSTALL MANIFOLD STAY

12. INSTALL NO. 1 EXHAUST MANIFOLD HEAT INSULATOR

13. INSTALL CAMSHAFT HOUSING SUB-ASSEMBLY

(a) Install the camshaft housing sub-assembly.