Refer to *Important Safety Precautions* on page 33.

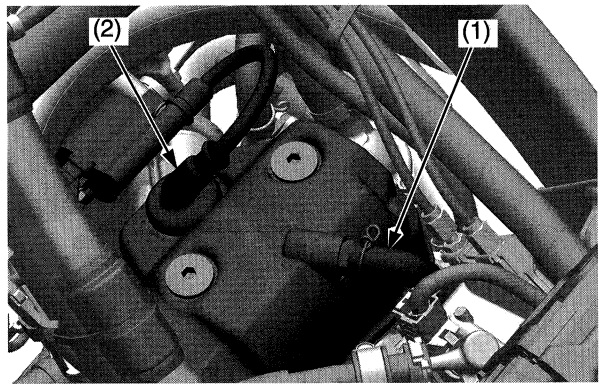
Excessive valve clearance will cause noise and eventual engine damage. Little or no clearance will prevent the valve from closing and cause valve damage and power loss. Check valve clearance when the engine is cold at the intervals specified in the Maintenance Schedule (pages 36, 37).

The checking or adjusting of the valve clearance should be performed while the engine is cold. The valve clearance will change as engine temperature rises.

Cylinder Head Cover Removal

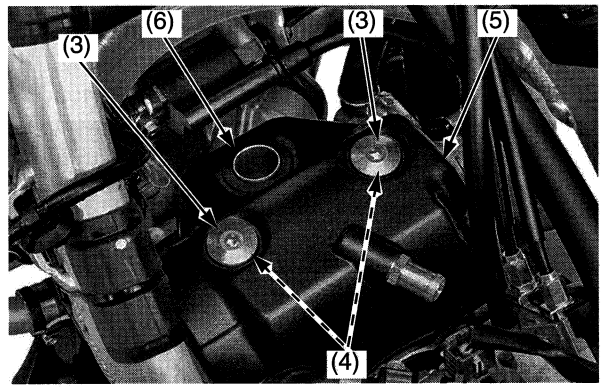
Before inspection, clean the engine thoroughly to keep dirt from entering the engine.

1. Remove the seat and fuel tank (pages 46, 48).
2. Disconnect the breather tube (1) and spark plug cap (2).



(1) breather tube (2) spark plug cap

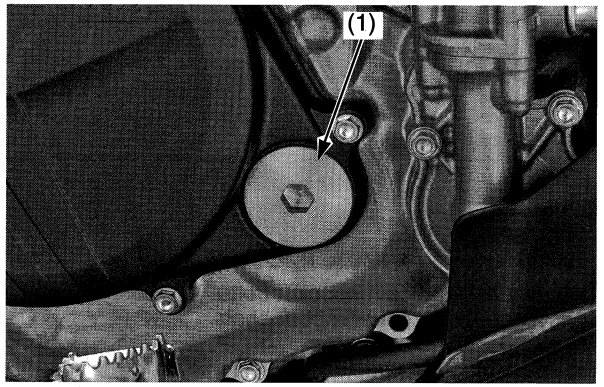
3. Remove the cylinder head cover socket bolts (3), rubber seals (4), cylinder head cover (5) and spark plug hole packing (6).



(3) cylinder head cover socket bolts
(4) cylinder head cover rubber seals
(5) cylinder head cover
(6) spark plug hole packing

Positioning At TDC On The Compression Stroke

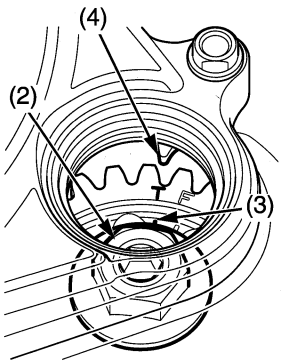
1. Remove the right crankcase over cover (page 83).
2. Remove the crankshaft hole cap (1).



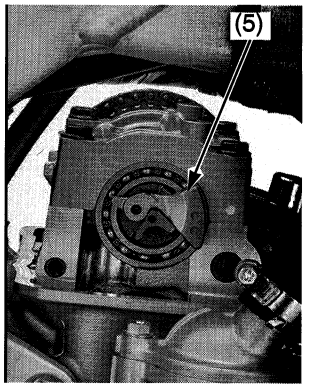
(1) crankshaft hole cap

3. Remove the spark plug (page 86).
4. Remove the cylinder head cover (page 87).
5. Rotate the crankshaft by turning the primary drive gear bolt (2) clockwise until "T" mark (3) on the primary drive gear aligns with the index mark (4) on the clutch cover. In this position, the piston may either be on the compression or exhaust stroke at TDC. If the primary drive gear passed the "T" mark, rotate the primary drive gear bolt clockwise again and align the "T" mark with the index mark.
   Make sure that the decompressor weight (5) is upper position.

crankshaft side:

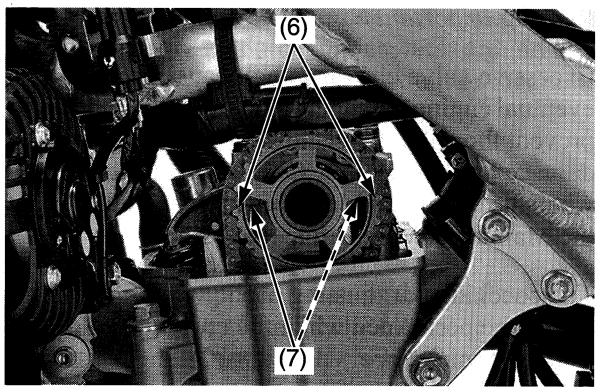


camshaft side:



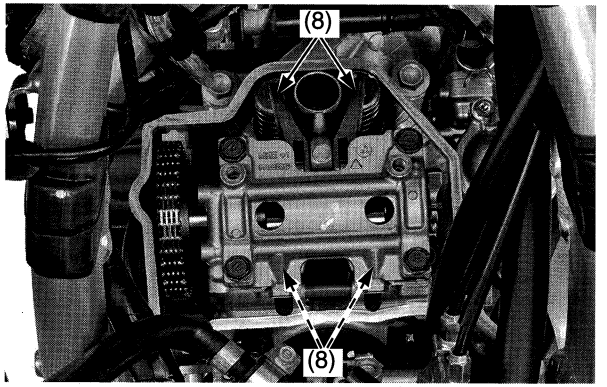
(2) primary drive gear bolt
(3) "T" mark
(4) index mark
(5) decompressor weight

6. Check the timing marks (6) on the cam sprocket aligns with the camshaft holder mating surface (7) of the cylinder head.



(6) timing marks
(7) camshaft holder mating surface

7. The inspection must be made when the piston is at the top of the compression stroke when both the intake and exhaust valves are closed. This condition can be determined by moving the rocker arms (8).



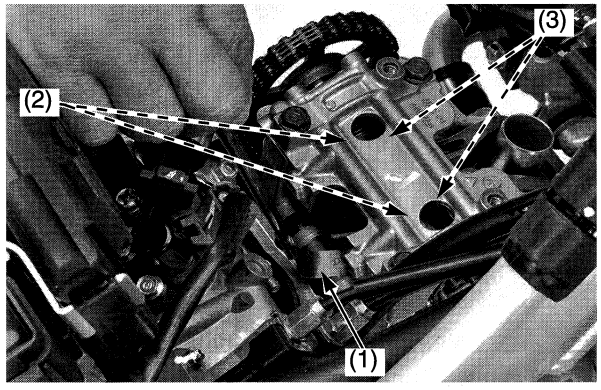
(8) rocker arms

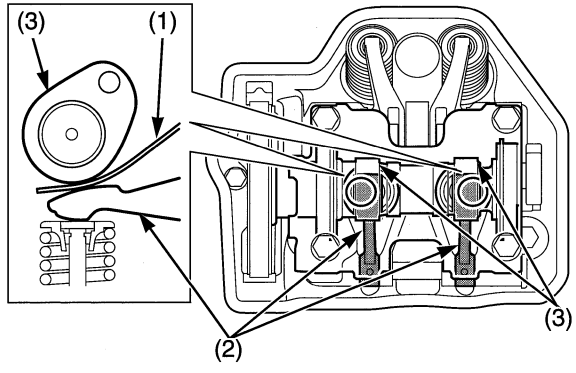
Valve Clearance Inspection

1. Set the piston at TDC on the compression stroke (page 88).
2. Measure the intake valve clearances by inserting a feeler gauge (1) between the intake rocker arms (2) and camshaft cam lobes (3).

NOTICE

Be careful not to damage the intake rocker arms.

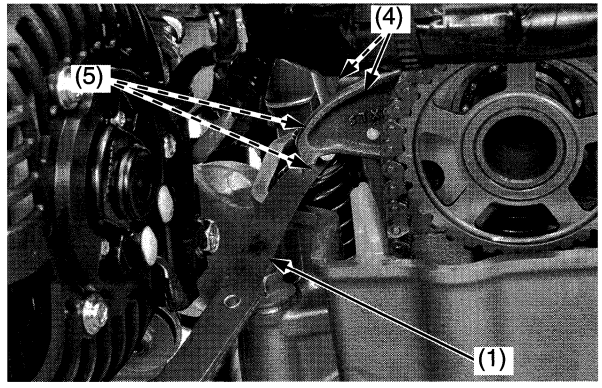


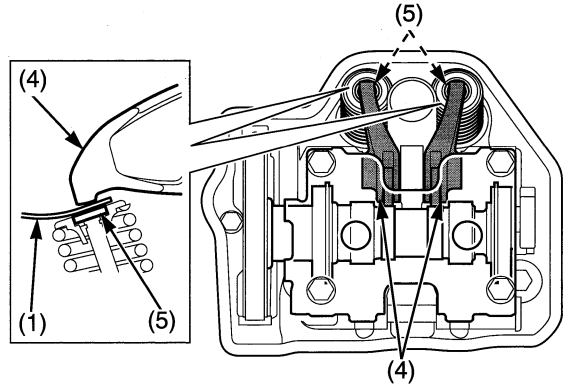


(1) feeler gauge
(2) intake rocker arms
(3) camshaft cam lobes

Valve Clearance:
IN: 0.004 ± 0.001 in (0.11 ± 0.03 mm)

3. Measure the exhaust valve clearances by inserting a feeler gauge (1) between the exhaust rocker arms (4) and shims (5).





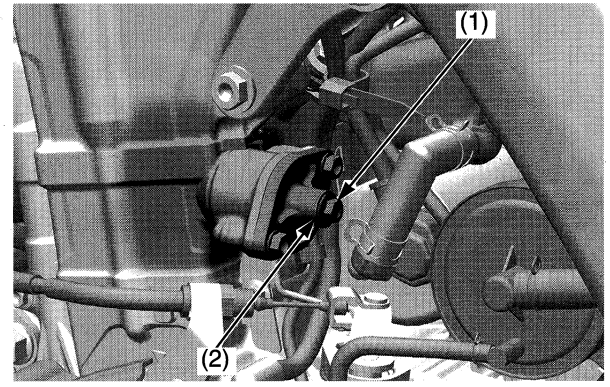
(1) feeler gauge
(4) exhaust rocker arms
(5) valve shims

Valve Clearance:
EX: 0.011 ± 0.001 in (0.28 ± 0.03 mm)

If intake valve clearance and exhaust valve clearance need adjustment, see Camshaft Removal (this page) and select the correct shim for each valve.

Camshaft Removal

1. Record the intake valve and exhaust valve clearances (this page).
   Make sure the piston is at TDC on the compression stroke (page 88).
2. Remove the cam chain tensioner lifter cover bolt (1) and sealing washer (2).

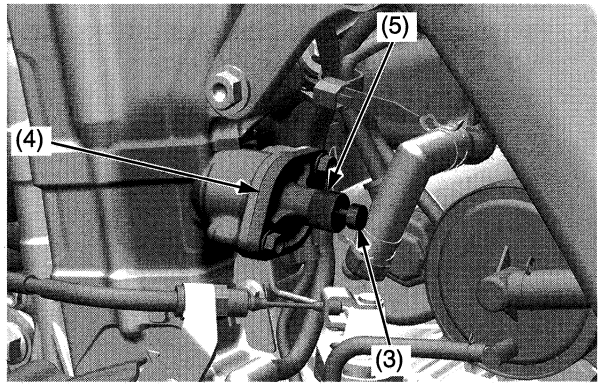


(1) cam chain tensioner lifter cover bolt
(2) sealing washer

(cont'd)

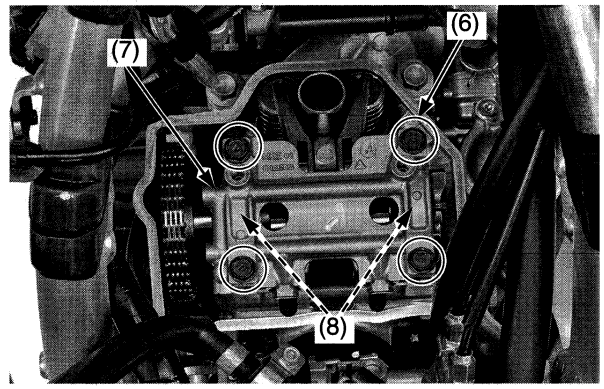
3. Insert the tensioner stopper (3) into the cam chain tensioner lifter (4).
   Turn the tensioner stopper clockwise and lock the cam chain tensioner lifter by pushing the handle (5) to the cam chain tensioner lifter.

• Tensioner stopper 07AMG-001A100



(3) tensioner stopper
(4) cam chain tensioner lifter
(5) handle

4. Check the piston is at TDC on the compression stroke (page 88).
   Loosen the camshaft holder bolts (6) in a crisscross pattern in two or three steps.
   Remove the camshaft holder bolts, camshaft holder (7) and set rings (8).
5. As you remove the camshaft holder, set rings may be sticking in the camshaft holder.



(6) camshaft holder bolts
(7) camshaft holder
(8) set rings

NOTICE

Do not let the set rings fall into the crankcase.

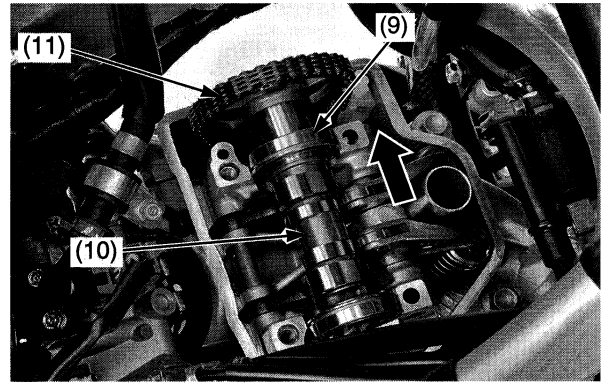
If the set rings are remained on the camshaft holder, remove the set rings carefully.

6. Slide the left camshaft bearing (9) and remove the camshaft (10) by removing the cam chain (11).

Suspend the cam chain with a piece of wire to prevent the chain from falling into the crankcase.

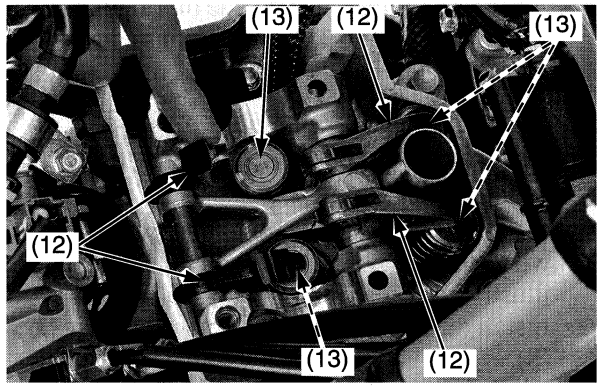
NOTICE

Do not let the cam chain fall into the crankcase.



(9) left camshaft bearing
(10) camshaft
(11) cam chain

7. Lift the rocker arms (12) up and remove the shims (13).



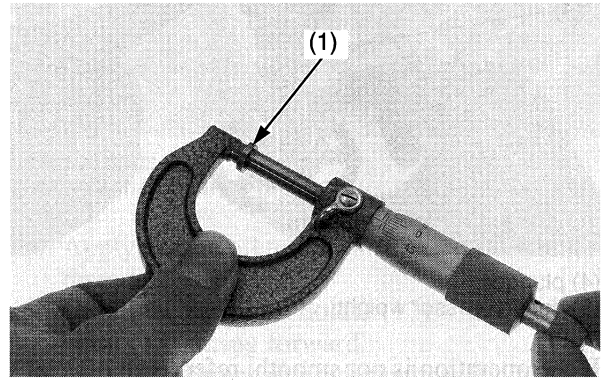
(12) rocker arms
(13) shims

NOTICE

Be careful not to damage the intake rocker arms. Do not let the shims fall into the crankcase. Do not clean the intake rocker arms using a commercially available compound cleaner.

Shim Selection

1. Measure the shim thickness with a micrometer and record it.
   Seventy-three different shims (1) are available in 0.025 mm thickness intervals, from 1.200 mm (the thinnest) to 3.000 mm (the thickest).



(1) shim

2. Calculate the new shim thickness using the equation below.

$A = (B - C) + D$

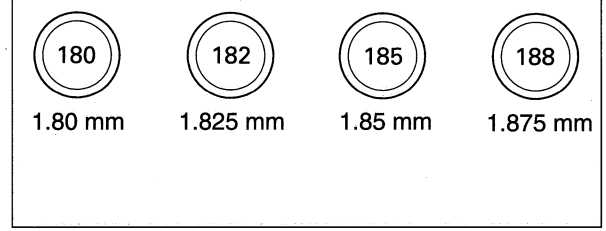
A: New shim thickness
B: Recorded valve clearance
C: Specified valve clearance
D: Old shim thickness

- Make sure of the correct shim thickness by measuring the shim with a micrometer.
- Reface the exhaust valve seat if carbon deposits result in a calculated dimension of over 3.000 mm.

NOTICE

Do not lap the intake valves. They are titanium and have a thin oxide coating. Lapping will damage this coating.

If a calculated dimension is out of specifications, have your motorcycle inspected by your dealer.

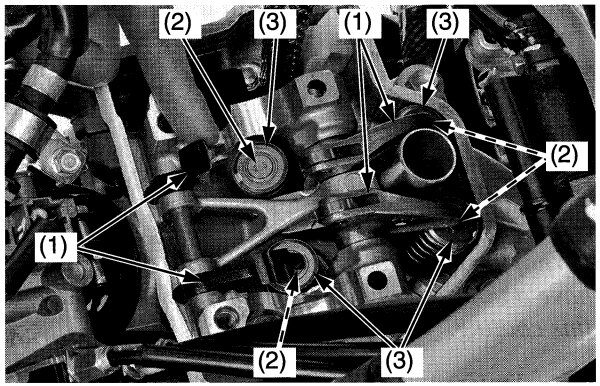


Camshaft Installation

1. Lift the rocker arms (1) up and install the newly selected shims (2) on the valve spring retainers (3).

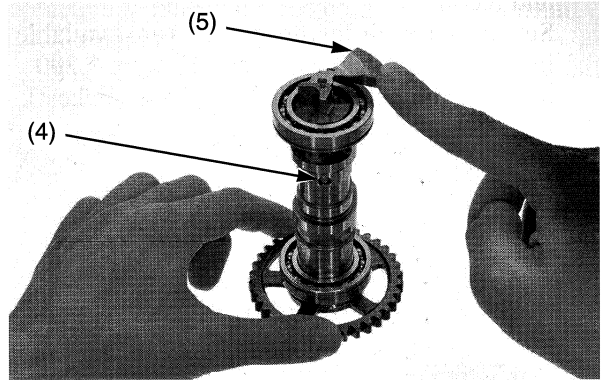
NOTICE

Do not let the shims fall into the crankcase.



(1) rocker arms
(2) shims
(3) valve spring retainers

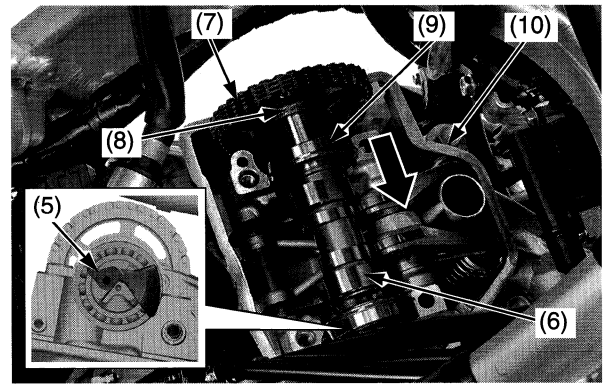
2. Check the operation of the plunger (4) by turning the decompressor weight (5) with your finger. The plunger should be retracted and protruded smoothly.



(4) plunger
(5) decompressor weight

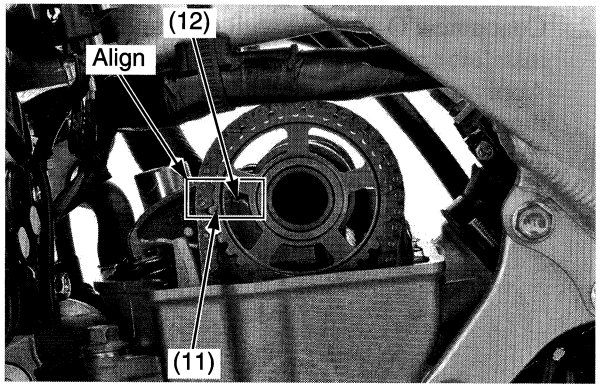
If the operation is not smooth, refer to an official Honda Service Manual (page 194) for decompressor disassembly or see your dealer.

3. Make sure the piston is at TDC on the compression stroke (page 88).
4. Apply molybdenum disulfide oil (a mixture of 1/2 engine oil and 1/2 molybdenum disulfide grease containing more than 3% molybdenum disulfide additive Moly Paste 77) to the following parts.
   – camshaft cam lobes
   – plunger whole surface
5. Install the camshaft (6) onto the cylinder head with the decompressor weight (5) facing up as illustrated below.
6. Install the cam chain (7) over the cam sprocket (8).
   While holding the left camshaft bearing (9) to the left fully, install the camshaft (6) onto the cylinder head (10) and slide the left camshaft bearing to the right fully.



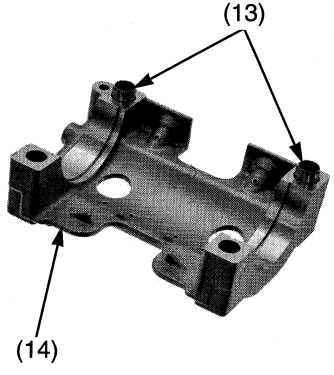
(5) decompressor weight
(6) camshaft
(7) cam chain
(8) cam sprocket
(9) left camshaft bearing
(10) cylinder head

7. Make sure that the timing mark (11) on the cam sprocket aligns with the camshaft holder mating surface (12) of the cylinder head.



(11) timing mark
(12) camshaft holder mating surface

8. Make sure that the dowel pins (13) are installed into the camshaft holder (14).

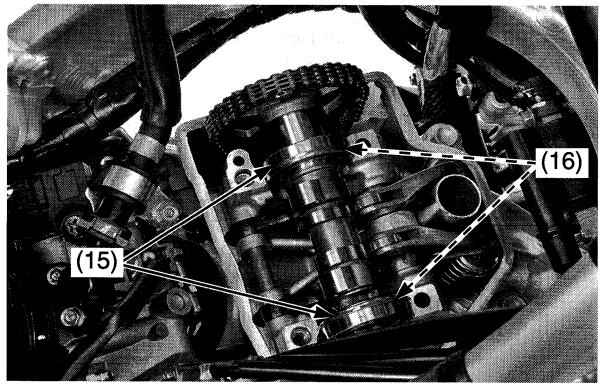


(13) dowel pins (14) camshaft holder

9. Install the set rings (15) on the camshaft bearing grooves (16).

NOTICE

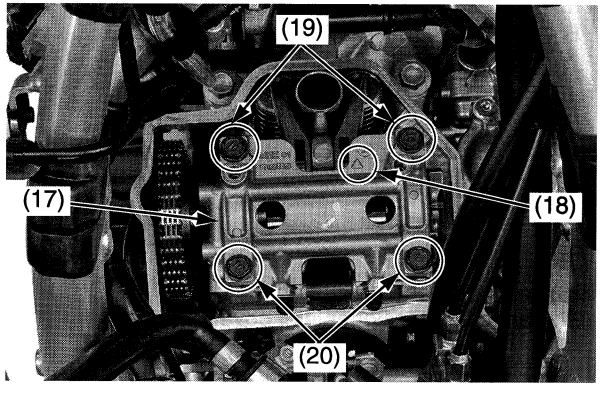
Do not let the set rings fall into the crankcase.



(15) set rings
(16) camshaft bearing grooves

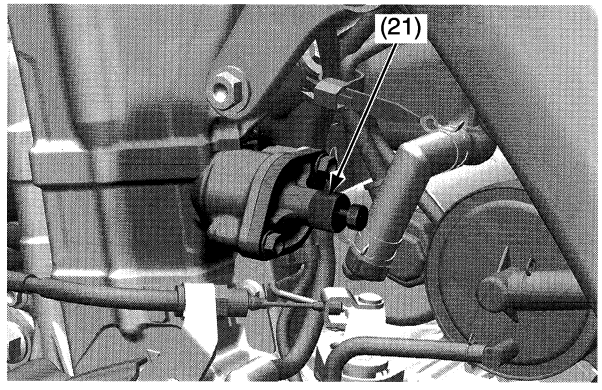
10. Apply engine oil to the camshaft holder bolt threads.
Install the camshaft holder (17) with the " Δ " mark (18) facing forward.
Install the camshaft holder bolts (19) (20) and tighten the camshaft holder bolts to the specified torque:
11 lbf·ft (15 N·m, 1.5 kgf·m)

Tighten the camshaft holder bolts in a crisscross pattern in two or three steps.



(17) camshaft holder (19) camshaft holder bolts (long)
(18) " Δ " mark (20) camshaft holder bolts (short)

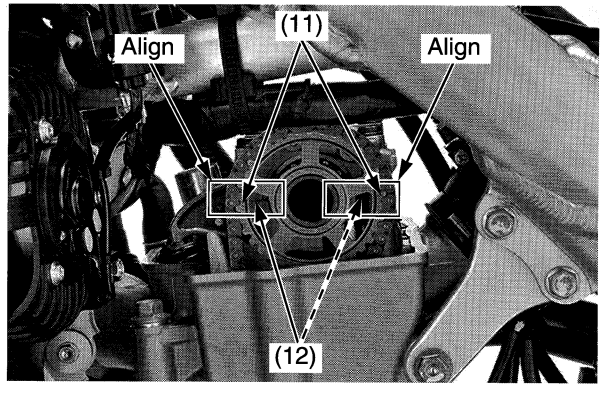
11. Remove the tensioner stopper (21) from the cam chain tensioner lifter.



(21) tensioner stopper

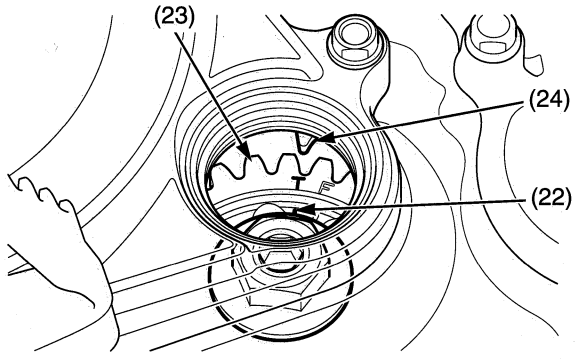
12. Make sure that the piston is at TDC on the compression stroke (page 88).
Check that the timing mark (11) on the cam sprocket aligns with the camshaft holder mating surface (12) of the cylinder head.

If the timing mark doesn't align with the camshaft holder mating surface, insert the tensioner stopper into the cam chain tensioner lifter (page 90) and then remove the cam chain and realign the timing mark.



(11) timing mark
(12) camshaft holder mating surface

13. Check that "T" mark (22) on the primary drive gear (23) aligns with the index mark (24) on the right crankcase cover.

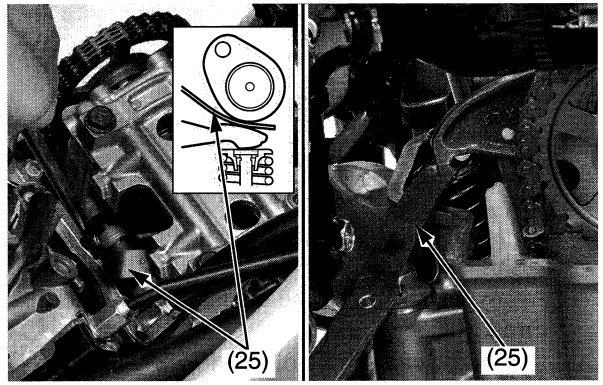


(22) "T" mark
(23) primary drive gear
(24) index mark

14. Rotate the camshaft by rotating the crankshaft clockwise several times.

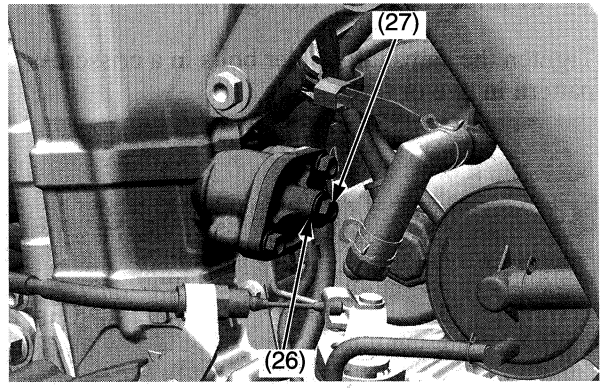
15. Measure the intake and exhaust valve clearances by inserting a feeler gauge (25).
Valve Clearance:
IN: 0.004 ± 0.001 in (0.11 ± 0.03 mm)
EX: 0.011 ± 0.001 in (0.28 ± 0.03 mm)

Intake side: Exhaust side:



(25) feeler gauge

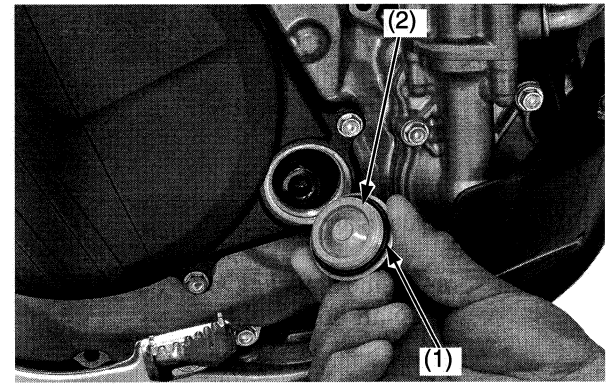
16. Install a new sealing washer (26) and tighten the cam chain tensioner lifter cover bolt (27).



(26) sealing washer (new)
(27) cam chain tensioner lifter cover bolt

Crankshaft Hole Cap Installation

1. Install the spark plug (page 86).
2. Coat a new O-ring (1) with engine oil and install it onto the crankshaft hole cap (2). Apply grease to the crankshaft hole cap threads. Install and tighten the crankshaft hole cap to the specified torque:
11 lbf·ft (15 N·m, 1.5 kgf·m)

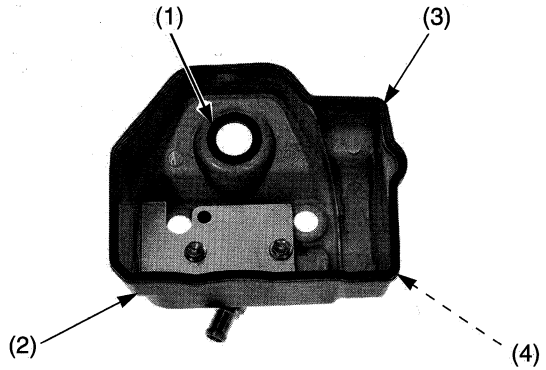


(1) O-ring (new)
(2) crankshaft hole cap

3. Install the right crankcase over cover (page 85).

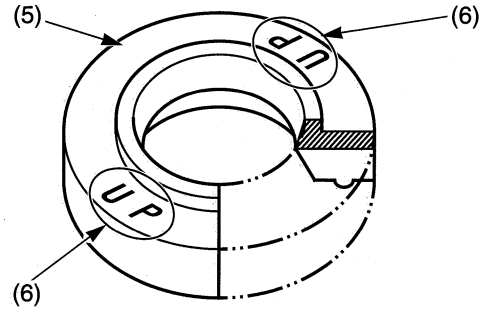
Cylinder Head Cover Installation

1. Check that the spark plug hole packing (1) is in good condition and replace it if necessary. Apply engine oil to the spark plug hole packing and install it to the cylinder head cover (2).
2. Check that the cylinder head cover packing (3) is in good condition and replace it if necessary. Clean and apply liquid sealant (TB1207B or equivalent) to the cylinder head cover groove (4) in the shown and install the cylinder head cover packing into the cylinder head cover groove.



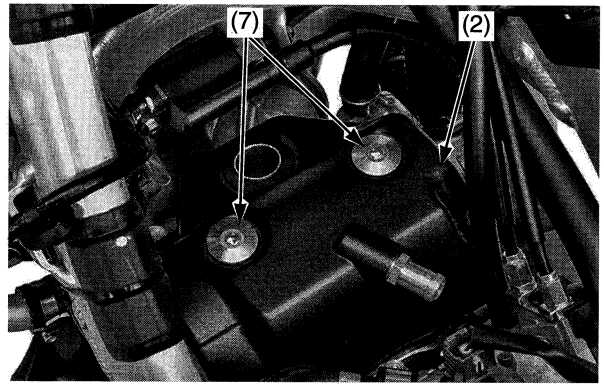
(1) spark plug hole packing
(2) cylinder head cover
(3) cylinder head cover packing
(4) cylinder head cover groove

3. Check that the rubber seals (5) are in good condition, replace them if necessary. Install the rubber seals onto the cylinder head cover with the "UP" marks (6) facing up.



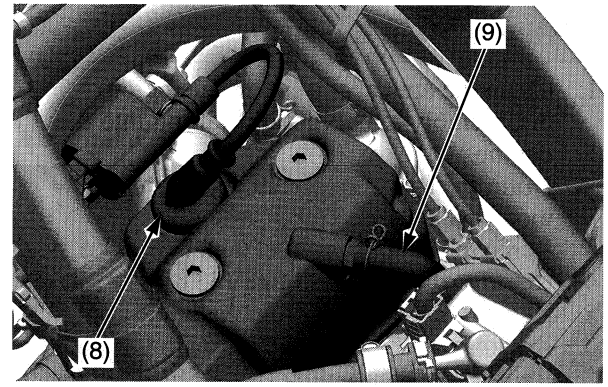
(5) rubber seals
(6) "UP" marks

4. Install the cylinder head cover (2) and tighten the cylinder head cover socket bolts (7) to the specified torque:
   7 lbf·ft (10 N·m, 1.0 kgf·m)



(2) cylinder head cover
(7) cylinder head cover socket bolts

5. Connect the spark plug cap (8) and breather tube (9).



(8) spark plug cap
(9) breather tube

6. Install the fuel tank and seat (pages 46, 50).