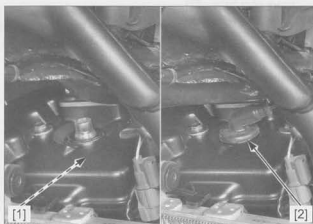


### INSTALLATION

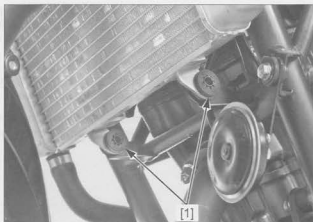
Install and hand tighten the spark plug [1] to the cylinder head, then tighten the spark plug to the specified torque using a spark plug wrench.

**TORQUE: 16 N·m (1.6 kgf·m, 12 lbf·ft)**

Connect the spark plug cap [2] securely.



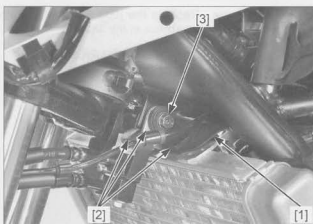
Insert the radiator lower grommets [1] to the frame.



Hook the rubber [1] to the radiator tabs [2].

Install and tighten the radiator mounting bolt [3].

Install the middle cowl (page 2-7).



## VALVE CLEARANCE

### INSPECTION

#### NOTE:

- Inspect and adjust the valve clearance while the engine is cold (below 35°C/95°F).
- After the valve clearance inspection, check the engine idle speed (page 3-16).
- Inspect and adjust the valve clearance can be serviced with the engine installed in the frame.

Remove the cylinder head cover (page 8-6).

Remove the timing hole cap [1] and crankshaft hole cap [2].

#### TOOL:

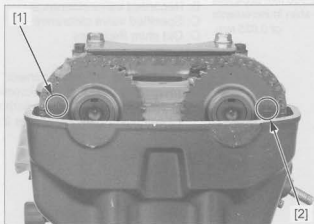
Timing cap wrench

07709-0010001

Rotate the crankshaft counterclockwise and align the "T" mark [1] on the flywheel with the index notch [2] on the left crankcase cover.

Make sure that the outside index lines ("IN" [1] and "EX" [2] marks) on the cam sprockets are flush with the cylinder head top surface and facing outward as shown.

If the "IN" and "EX" marks are facing inward, turn the crankshaft counterclockwise one full turn (360°) and realign the "T" mark with the index notch.



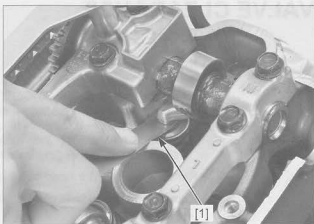
## MAINTENANCE

Check the valve clearance by inserting a feeler gauge [1] between the rocker arm and shim.

### VALVE CLEARANCE:

IN:  $0.16 \pm 0.03$  mm ( $0.006 \pm 0.001$  in)

EX:  $0.27 \pm 0.03$  mm ( $0.011 \pm 0.001$  in)



## ADJUSTMENT

### NOTE:

- The valve clearances can be adjusted without removing the camshafts.
- The intake and exhaust valve clearance service procedures are the same.

Remove the bolt, sealing washer and rocker arm shaft (page 8-14).

Slide the rocker arm [1] and remove the shims [2].

### NOTE:

- Do not allow the shims to fall into the crankcase.
- Mark all shims to ensure correct reassembly in their original locations.
- The shims can be easily removed with a tweezers or magnet.



Sixty-nine different thickness shims are available from the thinnest 1.200 mm thickness shim to the thickest 2.900 mm thickness shim in increments of 0.025 mm.

Measure the shim [1] thickness and record it.

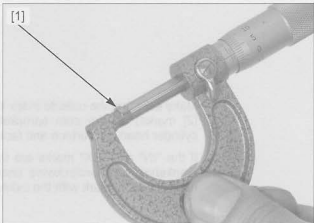
Calculate the new shim thickness using the equation below.

$$A = (B - C) + D$$

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

### NOTE:

- Make sure of the correct shim thickness by measuring the shim by micrometer.
- Reface the valve seat if carbon deposit result in a calculated dimension of over 2.900 mm.



1.80 mm



1.825 mm



1.85 mm



1.875 mm

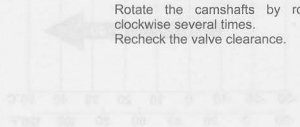
*Do not allow the shims to fall into the crankcase.*

Install the newly selected shim [1] on the valve spring retainer.

Install the rocker arm shaft while aligning the hole of the rocker arm [2] and cylinder head (page 8-14).

Rotate the camshafts by rotating the crankshaft clockwise several times.

Recheck the valve clearance.



Install the cylinder head cover (page 8-6).

Apply engine oil to new O-rings [1] and install them to each hole cap.

Apply engine oil to timing hole cap [2] and crankshaft hole cap [3] threads.

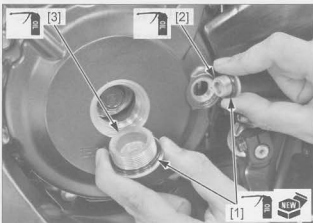
Install and tighten the timing hole cap and crankshaft hole cap to the specified torque.

**TOOL:**

Timing cap wrench 07709-0010001

**TORQUE:**

- Timing hole cap: 6.0 N·m (0.6 kgf·m, 4.4 lbf·ft)
- Crankshaft hole cap: 8.0 N·m (0.8 kgf·m, 5.9 lbf·ft)



## ENGINE OIL

### OIL LEVEL INSPECTION

Hold the motorcycle in an upright position.

Start the engine and let it idle for 3 – 5 minutes.

Stop the engine and wait 2 – 3 minutes.

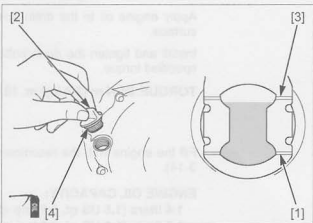
Check the oil level through the inspection window.

If the level is below the lower level line [1], remove the oil filler cap [2] and fill the crankcase with the recommended oil up to the upper level line [3].

Check that the O-ring [4] is in good condition, replace it if necessary.

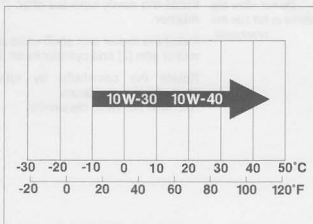
Apply engine oil to the O-ring.

Install the oil filler cap.



### RECOMMENDED ENGINE OIL:

Pro Honda GN4 4-stroke oil (U.S.A. and Canada) or equivalent motor oil  
API service classification: SG or Higher  
JASO T 903 standard: MA  
Viscosity: 10W-30



### ENGINE OIL CHANGE

Warm up the engine.

Stop the engine and remove the oil filler cap [1].



Place an oil pan under the engine to catch the engine oil, then remove the engine oil drain bolt [1]/sealing washer [2].

Drain the engine oil completely.

Install a new sealing washer onto the drain bolt.

Apply engine oil to the drain bolt threads and seating surface.

Install and tighten the drain bolt/sealing washer to the specified torque.

**TORQUE: 24 N·m (2.4 kgf·m, 18 lbf·ft)**



Fill the engine with the recommended engine oil (page 3-14).

### ENGINE OIL CAPACITY:

- 1.4 liters (1.5 US qt, 1.2 Imp qt) at draining
- 1.5 liters (1.6 US qt, 1.3 Imp qt) at oil filter change
- 1.8 liters (1.9 US qt, 1.6 Imp qt) at disassembly

Install the oil filler cap [1].

Check the oil level (page 3-13).

Make sure there are no oil leaks.



## ENGINE OIL FILTER

Remove the under cowl (page 2-11).  
 Drain the engine oil (page 3-14).

Remove the following:

- Bolts [1]
- Oil filter cover [2]
- Gasket [3]
- Spring [4]

Remove the oil filter [1].

Install a new oil filter with the "OUT-SIDE" mark [2] facing out.

**NOTE:**

Installing the oil filter backwards will result in severe engine damage.

Install the oil filter spring [1] into the oil filter cover [2].

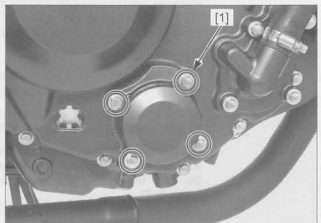
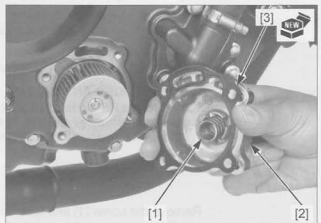
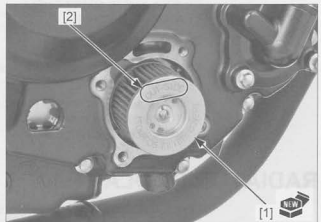
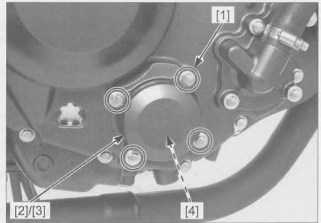
Install a new gasket [3] and oil filter cover.

Install and tighten the bolts [1] securely.

Fill the engine with the recommended engine oil (page 3-14).

Make sure there are no oil leaks.

Install the under cowl (page 2-11).



## ENGINE IDLE SPEED

**NOTE:**

- Inspect the idle speed after all other engine maintenance items have been performed and are within specifications.
- Before checking the idle speed, inspect the following items:
  - No DTC and MIL blinking
  - Spark plug condition (page 3-8)
  - Air cleaner element condition (page 3-7)
- The engine must be warm for accurate idle speed inspection.
- This system eliminates the need for manual idle speed adjustment compared to previous designs.

Turn the ignition switch ON and engine stop switch "O".

Start the engine and let it idle.

Check the idle speed.

**IDLE SPEED: 1,400 ± 100 rpm**

If the idle speed is out of the specification, check the following:

- Intake air leak or engine top-end problem (page 8-5)
- Throttle operation and freeplay (page 3-6)
- IACV operation (page 5-53)

## RADIATOR COOLANT

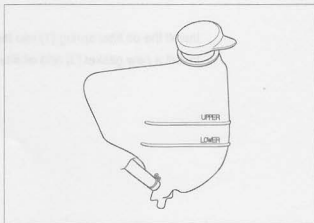
Check the coolant level of the reserve tank with the engine running at normal operating temperature.

The level should be between the "UPPER" and "LOWER" level lines with the motorcycle in an upright position.

If necessary, add recommended coolant.

**RECOMMENDED ANTIFREEZE:**

**Pro Honda HP Coolant or an equivalent high quality ethylene glycol antifreeze containing silicate-free corrosion inhibitors**



Remove the screw [1] and reserve tank cover [2].

Remove the reserve tank cap [3] and add the coolant to the "UPPER" level line with a 1:1 mixture of distilled water and antifreeze (coolant preparation: page 6-6).

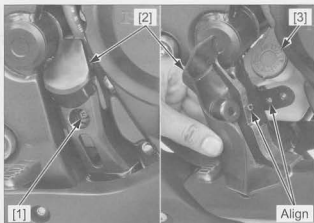
Reinstall the reserve tank cap.

Install the reserve tank cover while aligning the tab on the reserve tank cover with the hole of frame.

Check to see if there are any coolant leaks when the coolant level decreases very rapidly.

If the reserve tank becomes completely empty, there is a possibility of air getting into the cooling system.

Be sure to remove any air from the cooling system (page 6-7).



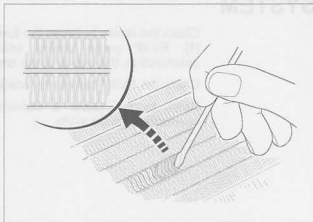
## COOLING SYSTEM

Remove the middle cowl (page 2-7).

Check the radiator air passages for clogging or damage.

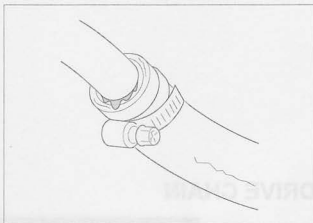
Straighten bent fins, and remove insects, mud or other obstructions with compressed air or low water pressure.

Replace the radiator if the air flow is restricted over more than 20 % of the radiating surface.



Inspect the water hoses for cracks or deterioration, and replace them if necessary.

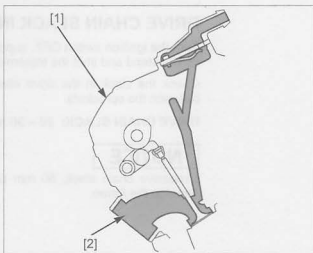
Check the tightness of all water hose band screws (page 6-10).



## SECONDARY AIR SUPPLY SYSTEM

**NOTE:**

- This model is equipped with a built-in secondary air supply system. The pulse secondary air supply system is located on the cylinder head cover [1].
- The secondary air supply system introduces filtered air into exhaust gases in the exhaust port [2]. The secondary air is drawn into the exhaust port whenever there is negative pressure pulse in the exhaust system. This charged secondary air promotes burning of the unburned exhaust gases and changes a considerable amount of hydrocarbons and carbon monoxide into relatively harmless carbon dioxide and water.



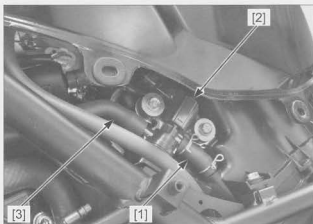
Remove the left side cover (page 2-16).

*If the hoses show any signs of heat damage, inspect the PAIR check valves in the cylinder head covers for damage (page 5-60).*

Check the PAIR air supply hose [1] between the PAIR control solenoid valve [2] and cylinder head cover for deterioration, damage or loose connections. Make sure that the hoses are not cracked.

Check the air suction hose [3] between the air cleaner and PAIR control solenoid valve for deterioration, damage or loose connections.

Make sure that the hoses are not kinked, pinched or cracked.





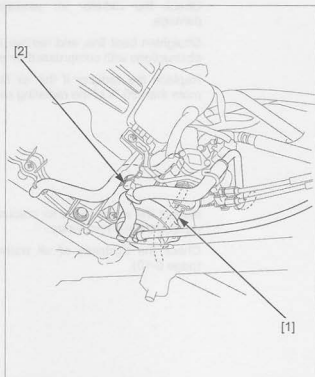
## MAINTENANCE

### EVAPORATIVE EMISSION CONTROL SYSTEM

Check the hoses between the fuel tank, EVAP canister [1], EVAP purge control solenoid valve [2] for deterioration, damage or loose connection.

Check the EVAP canister for cracks or other damage.

Refer to the cable & harness routing for hose connections (page 1-18).



### DRIVE CHAIN

#### **⚠ WARNING**

Amputation hazard. Never inspect or adjust the drive chain while the engine is running.

#### DRIVE CHAIN SLACK INSPECTION

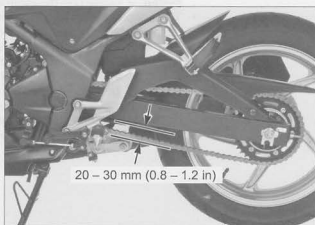
Turn the ignition switch OFF, support the motorcycle on its sidestand and shift the transmission into neutral.

Check the slack in the drive chain lower run midway between the sprockets.

**DRIVE CHAIN SLACK: 20 – 30 mm (0.8 – 1.2 in)**

#### **NOTICE**

Excessive chain slack, 50 mm (2.0 in) or more, may damage the frame.



**ADJUSTMENT**

Loosen the rear axle nut [1].

Loosen the lock nuts [2] and turn the adjusting nuts [3] until the correct drive chain slack is obtained.

Make sure the index lines [4] on both adjusting plates are aligned with the rear end of the axle slots [5] in the swingarm.

Tighten the axle nut to the specified torque.

**TORQUE: 88 N-m (9.0 kgf-m, 65 lbf-ft)**

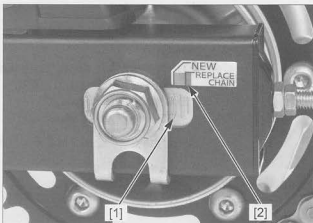
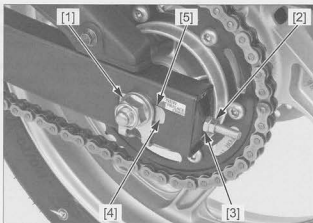
Hold the adjusting nuts and tighten the lock nuts to the specified torque.

**TORQUE: 21 N-m (2.1 kgf-m, 15 lbf-ft)**

Recheck the drive chain slack and free wheel rotation.

Check the drive chain wear indicator label attached on the left swingarm.

If the drive chain adjuster arrow mark [1] reaches the zone [2] of the indicator label, replace the drive chain with a new one (page 3-21).

**CLEANING AND LUBRICATION**

Clean the drive chain [1] with a chain cleaner designed specifically for O-ring chains or a neutral detergent. Use a soft brush if the drive chain is dirty.

**NOTICE**

*Do not use a steam cleaner, high pressure cleaner, wire brush, volatile solvent such as gasoline and benzene, abrasive cleaner or a chain cleaner NOT designed specifically for O-ring chains to clean the drive chain.*

Inspect the drive chain for possible damage or wear.

Replace any drive chain that has damaged rollers, loose fitting links, or otherwise appears unserviceable.

Be sure the drive chain has dried completely before lubricating.

Lubricate the drive chain with Pro Honda Chain Lube or equivalent chain lubricant designed specifically for use on O-ring chains.

**NOTICE**

*Do not use a chain lubricant NOT designed specifically for use with O-ring chains to lubricate the drive chain.*

Wipe off the excess oil or drive chain lubricant.

