2001-2002

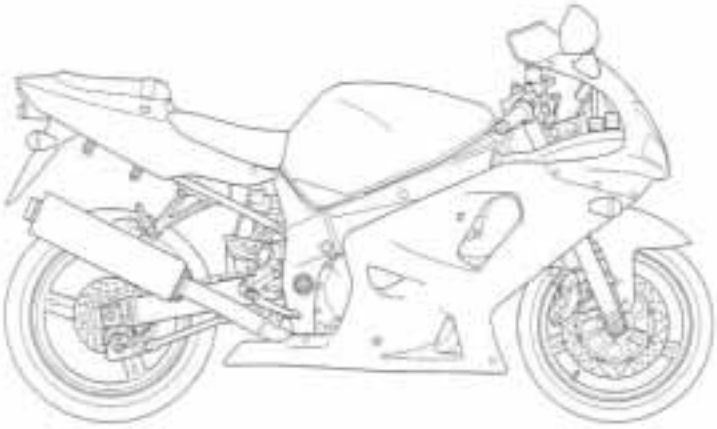
SUZUKI

GSX-R600

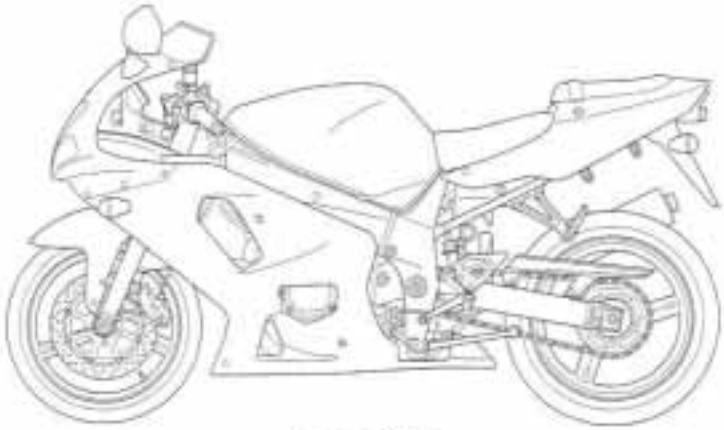
SERVICE MANUAL

99500-35080-01E

SUZUKI GSX-R600K1 (2001-MODEL)



RIGHT SIDE



LEFT SIDE

* Difference between photograph and actual motorcycle depends on the markets.

SERIAL NUMBER LOCATION

The frame serial number or V.I.N. (Vehicle Identification Number) Ⓐ is stamped on the right side of the steering head pipe. The engine serial number Ⓑ is located on the rear side of the crankcase. These numbers are required especially for registering the machine and ordering spare parts.

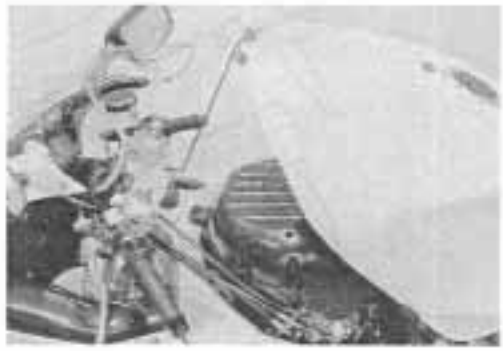
MAINTENANCE AND TUNE-UP PROCEDURES

This section describes the servicing procedures for each item mentioned in the Periodic Maintenance chart.

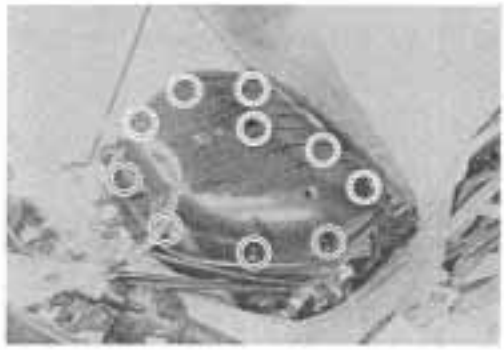
AIR CLEANER

Inspect every 6 000 km (4 000 miles, 6 months) and replace every 18 000 km (11 000 miles, 18 months).

- Remove the front and rear seats. (☞ 6-6)
- Lift and support the fuel tank. (☞ 4-52)



- Remove the air cleaner element by removing the screws.



- Carefully use air hose to blow the dust from the cleaner element.

⚠ CAUTION

Always use air pressure on the outside of the air cleaner element. If air pressure is used on the inside, dirt will be forced into the pores of the air cleaner element thus restricting air flow through the air cleaner element.

- Reinstall the cleaned or new air cleaner element in the reverse order of removal.

⚠ CAUTION

If driving under dusty conditions, clean the air cleaner element more frequently. The surest way to accelerate engine wear is to operate the engine without the element or to use a torn element. Make sure that the air cleaner is in good condition at all times. The life of the engine depends largely on this component!

- Remove the drain plugs from the air cleaner box to allow any water to drain out.

OIL FILTER REPLACEMENT

- Drain the engine oil as described in the engine oil replacement procedure.
- Remove the oil filter ① using the special tool.

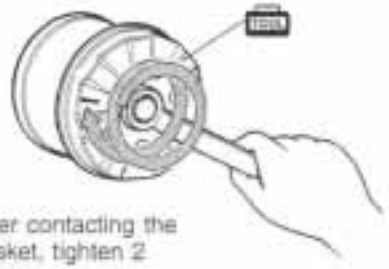
09915-40610: Oil filter wrench

- Apply engine oil lightly to the gasket of the new oil filter before installation.

- Install the new oil filter. Turn it by hand until you feel that the oil filter gasket has contacted the oil filter mounting surface. Then, tighten the oil filter two full turns using the special tool.

NOTE:

To properly tighten the oil filter, use the special tool. Never tighten the oil filter by hand.



After contacting the gasket, tighten 2 turns.

- Add new engine oil and check the oil level as described in the engine oil replacement procedure.

DATA NECESSARY AMOUNT OF ENGINE OIL:

Oil change: 2.8L (3.0/2.5 US/Imp qt)
Oil and filter change: 3.1L (3.3/2.7 US/Imp qt)
Engine overhaul: 3.4L (3.6/3.0 US/Imp qt)

⚠ CAUTION

ONLY USE A GENUINE SUZUKI MOTORCYCLE OIL FILTER.
Other manufacturer's oil filters may differ in thread specifications (thread diameter and pitch), filtering performance and durability which may lead to engine damage or oil leaks. Also, do not use a genuine Suzuki automobile oil filter on this motorcycle.

AIR BLEEDING THE BRAKE FLUID CIRCUIT

Air trapped in the brake fluid circuit acts like a cushion to absorb a large proportion of the pressure developed by the master cylinder and thus interferes with the full braking performance of the brake caliper. The presence of air is indicated by "sponginess" of the brake lever and also by lack of braking force. Considering the danger to which such trapped air exposes the machine and rider, it is essential that after remounting the brake and restoring the brake system to the normal condition, the brake fluid circuit be purged of air in the following manner:

FRONT BRAKE

- Fill the master cylinder reservoir to the top of the inspection window. Replace the reservoir cap to prevent dirt from entering.
- Attach a hose to the air bleeder valve and insert the free end of the hose into a receptacle.

- Squeeze and release the brake lever several times in rapid succession and squeeze the lever fully without releasing it. Loosen the air bleeder valve by turning it a quarter of a turn so that the brake fluid runs into the receptacle, this will remove the tension of the brake lever causing it to touch the handlebar grip. Then, close the air bleeder valve, pump and squeeze the lever, and open the valve. Repeat this process until fluid flowing into the receptacle no longer contains air bubbles.

NOTE:

While bleeding the brake system, replenish the brake fluid in the reservoir as necessary. Make sure that there is always some fluid visible in the reservoir.

- Close the air bleeder valve and disconnect the hose. Fill the reservoir with brake fluid to the top of the inspection window.

Air bleeder valve: 8 N·m (0.8 kgf·m, 6.0 lb-ft)

⚠ CAUTION

Handle brake fluid with care: the fluid reacts chemically with paint, plastics, rubber materials, etc.

ENGINE COMPONENTS REMOVABLE WITH ENGINE IN PLACE

The parts listed below can be removed and reinstalled without removing the engine from the frame. Refer to page listed in each section for removal and reinstallation instructions.

ENGINE CENTER

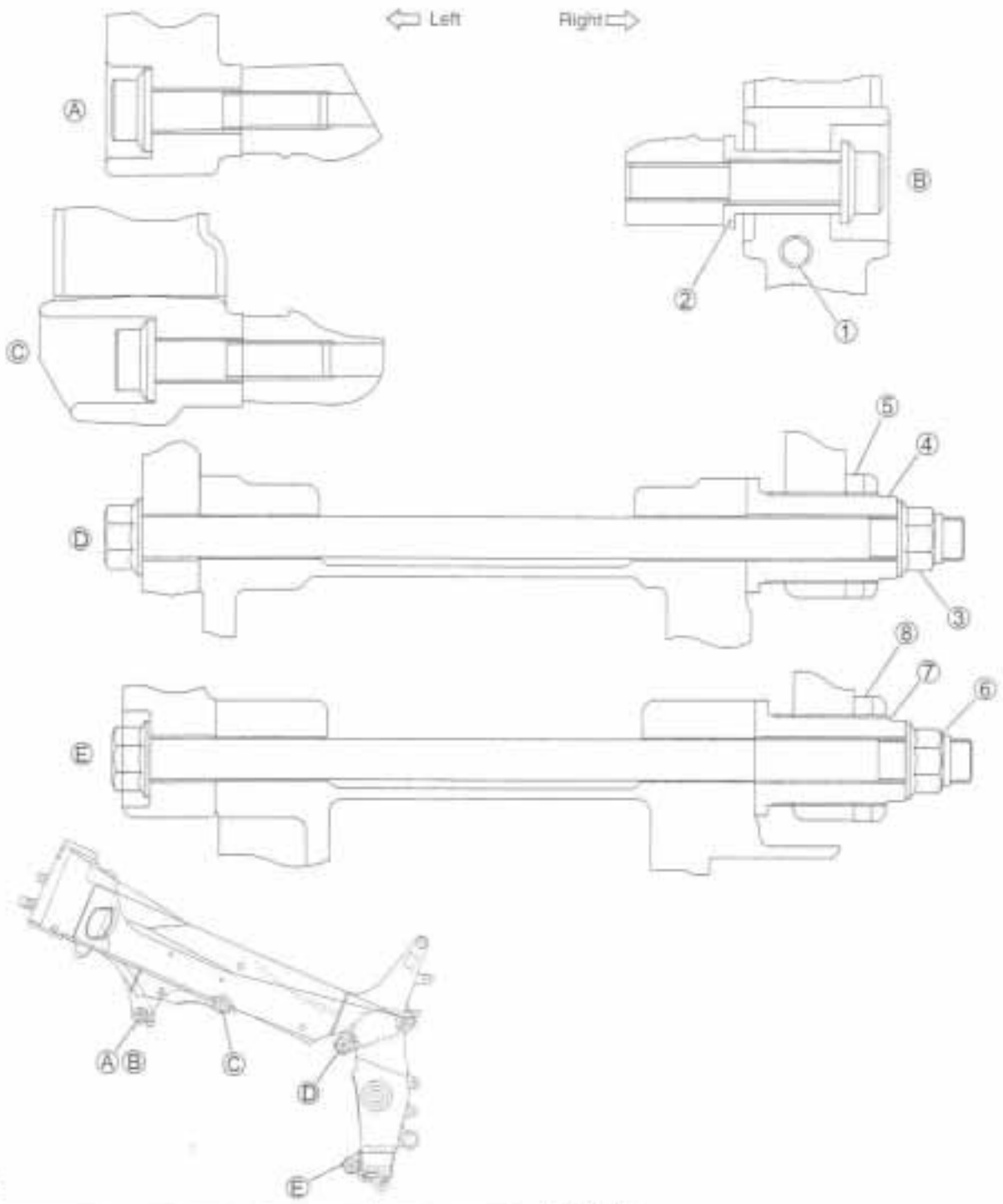
ITEM	REMOVAL	INSPECTION	REINSTALLATION
PAIR valve	☞3-15	☞3-28	☞3-97
Starter motor	☞3-15	☞7-12	☞3-97
Breather cover	☞3-24	—	☞3-77
Thermostat	☞3-17	☞5-10	☞3-90
Cylinder head cover	☞3-15	☞3-29	☞3-96
Camshaft	☞3-16	☞3-29	☞3-91
Intake pipe	—	—	☞3-41
Oil filter	☞3-24	—	☞3-76
Oil cooler	☞3-24	—	☞3-76
Oil pan	☞3-25	—	☞3-75

ENGINE RIGHT SIDE

ITEM	REMOVAL	INSPECTION	REINSTALLATION
Exhaust pipe and muffler	☞3-5	—	☞3-14
Cam chain tension adjuster	☞3-16	☞3-31	☞3-94
Clutch cover	☞3-18	—	☞3-88
Clutch (plates)	☞3-18	☞3-42	☞3-86
Primary driven gear	☞3-19	—	☞3-84
Oil pump	☞3-20	☞3-43	☞3-84
Gearshift shaft	☞3-20	☞3-44	☞3-84
Starter idle gear cover	☞3-22	—	☞3-82
Starter idle gear	☞3-22	—	☞3-81
Starter clutch cover	☞3-22	—	☞3-81
Starter clutch	☞3-23	☞3-43	☞3-81
CKP sensor	☞3-23	☞4-35	☞3-80
Primary drive gear	☞3-23	—	☞3-81
Cam chain and cam chain tensioner	☞3-22	☞3-31	☞3-80
Cam chain guide	☞3-22	☞3-31	☞3-80

ENGINE LEFT SIDE

ITEM	REMOVAL	INSPECTION	REINSTALLATION
Engine sprocket	☞3-8	—	☞3-13
Gear position sensor	☞3-24	☞4-49	☞3-77
Generator (cover)	☞3-23	☞3-43	☞3-79
Generator rotor	☞3-23	—	☞3-79
Water pump	☞3-23	☞5-14	☞3-78



ITEM	N·m	kgf·m	lb-ft
ⒶⒷⒸ	55	5.5	39.8
③⑥	75	7.5	54.0
①⑦	23	2.3	16.5
④	10	1.0	7.3
⑤⑧	45	4.5	32.5

LENGTH

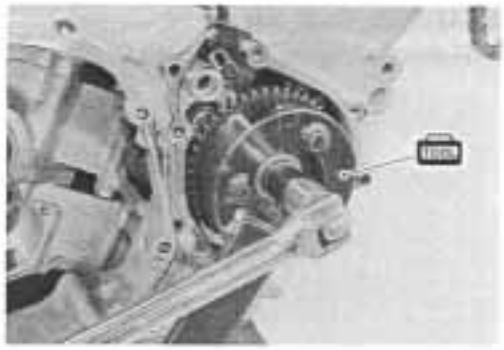
ITEM		mm	in
Bolt	ⒶⒸ	45	1.77
	Ⓑ	55	2.17
	ⒹⒺ	215	8.46
Spacer	②	30.5	1.20
Adjuster	④⑦	40	1.57

STARTER CLUTCH

- Hold the starter clutch with the special tool.

09920-34830: Starter clutch holder

- Remove the starter clutch bolt and washer.
- Remove the starter clutch assembly.



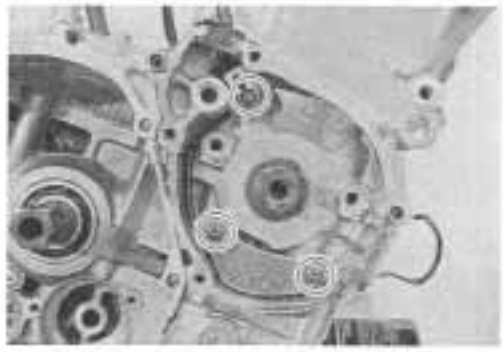
CAM CHAIN, CAM CHAIN TENSIONER, CAM CHAIN GUIDE

- Remove the cam chain tensioner ① and cam chain guide ②.
- Remove the cam chain ③ and cam chain drive sprocket ④.

CKP SENSOR

CKP SENSOR INSPECTION:☞7-24

- Remove the CKP sensor.



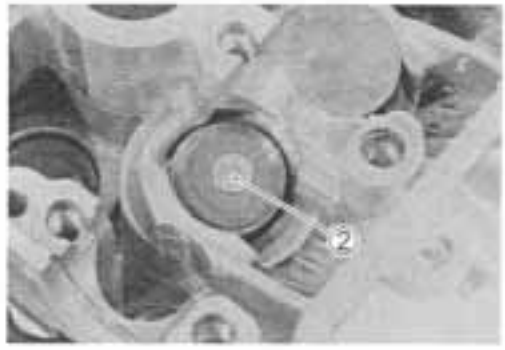
CYLINDER HEAD AND VALVE

VALVE AND VALVE SPRING DISASSEMBLY

- Remove the tappets ① and shims ② by fingers or magnetic hand.

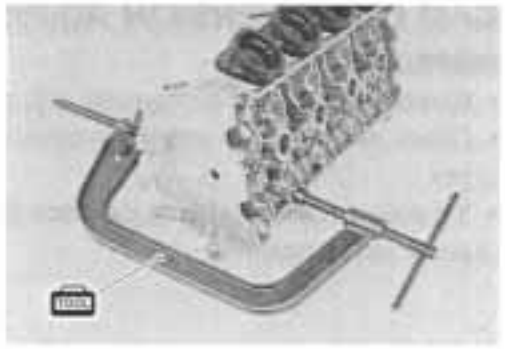
⚠ CAUTION

Identify the position of each removed part.



- Using special tools, compress the valve springs and remove the two cotter halves ③ from valve stem.

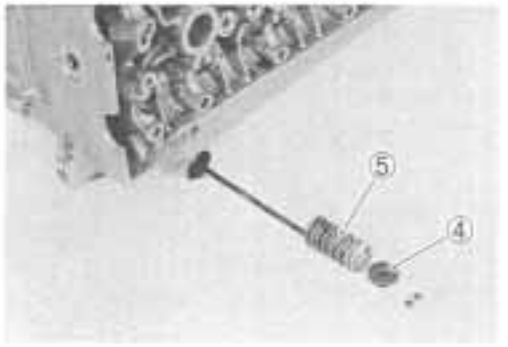
09916-14510: Valve lifter
09916-14521: Valve lifter attachment (IN.)
09916-14530: Valve lifter attachment (EX.)
09916-84511: Tweezers



⚠ CAUTION

Be careful not to damage the tappet sliding surface with the special tool.

- Remove the valve spring retainer ④ and valve springs ⑤.
- Pull out the valve from the other side.



CLUTCH

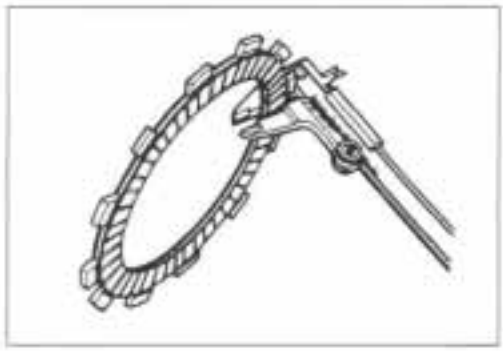
CLUTCH DRIVE PLATES INSPECTION

NOTE:
Wipe off engine oil from the clutch drive plates with a clean rag.

- Measure the thickness of drive plates with a vernier calipers.
- If each drive plate is not within the standard range, replace it with a new one.

DATA Drive plate thickness (No. 1, 2 & 3):
Standard: 2.92 – 3.08 mm (0.115 – 0.121 in)

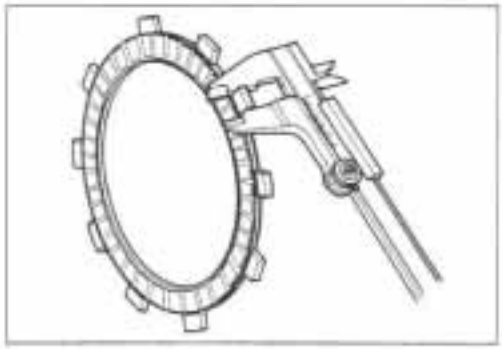
09900-20102: Vernier calipers



- Measure the claw width of drive plates with a vernier calipers.
- Replace the drive plates found to have worn down to the limit.

DATA Drive plate claw width (No. 1, 2 & 3):
Service Limit: 12.9 mm (0.508 in)

09900-20102: Vernier calipers



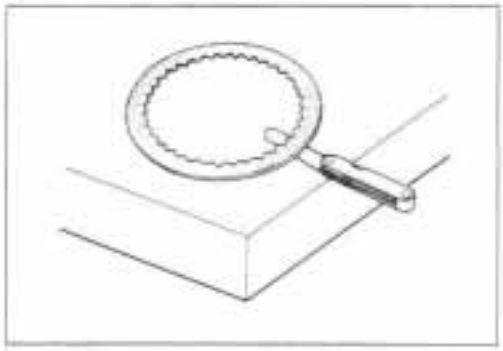
CLUTCH DRIVEN PLATES INSPECTION

NOTE:
Wipe off engine oil from the clutch driven plates with a clean rag.

- Measure each driven plate for distortion with a thickness gauge and surface plate.
- Replace driven plates which exceed the limit.

DATA Driven plate distortion (No.1 and No.2):
Service Limit: 0.10 mm (0.004 in)

09900-20803: Thickness gauge

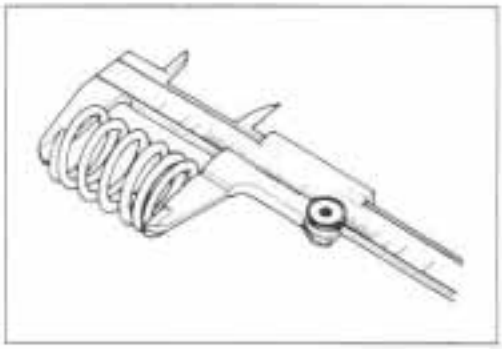


CLUTCH SPRING INSPECTION

- Measure the free length of each coil spring with a vernier calipers, and compare the length with the specified limit.
- Replace all the springs if any spring is not within the limit.

DATA Clutch spring free length:
Service Limit: 45.4 mm (1.787 in)

09900-20102: Vernier calipers



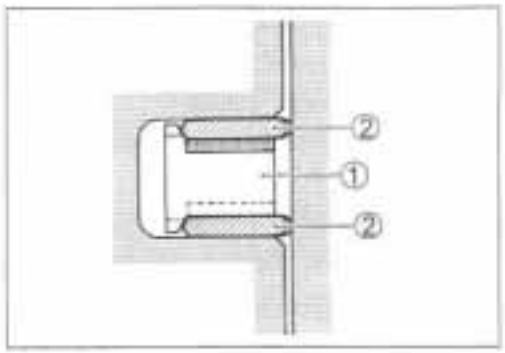
CLUTCH BEARING INSPECTION

- Inspect the clutch release bearing for any abnormality, particularly cracks, to decide whether it can be reused or should be replaced.
- Smooth engagement and disengagement of the clutch depends on the condition of this bearing.

PISTON RING REASSEMBLY

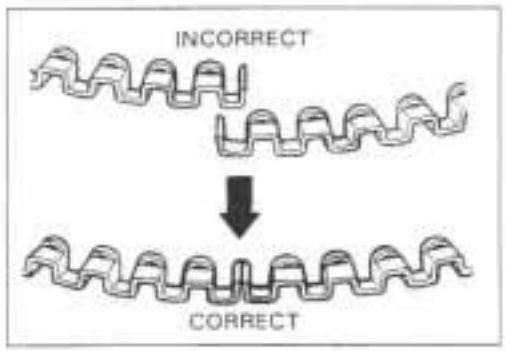
- Install the piston rings in the order of oil ring, 2nd ring and 1st ring.
- The first member to go into the oil ring groove is a spacer ①. After placing the spacer, fit the two side rails ②.

NOTE:
Side designations, top and bottom, are not applied to the spacer and side rails: you can position each either way.



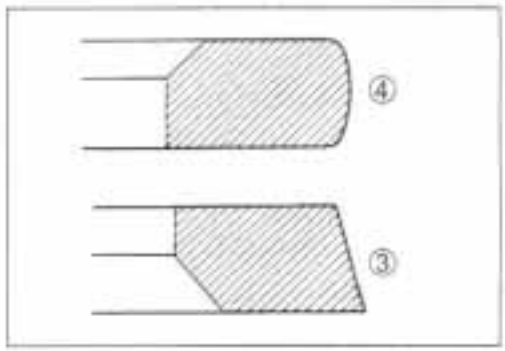
⚠ CAUTION

When installing the spacer, be careful not to allow its two ends to overlap in the groove.

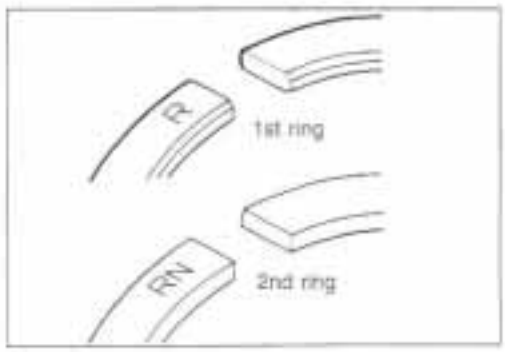


- Install the 2nd ring ③ and the 1st ring ④.

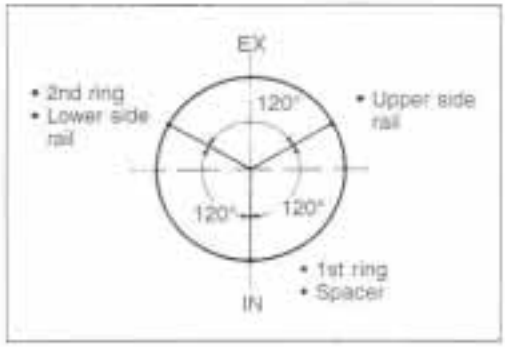
NOTE:
1st ring and 2nd ring differ in shape.



- 1st ring and 2nd ring have letters "R" and "RN" marked on the side. Be sure to bring the marked side to the top when fitting them to the piston.



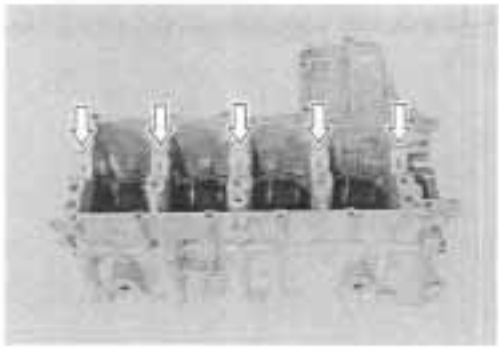
- Position the gaps of the three rings as shown. Before inserting each piston into the cylinder, check that the gaps are so located.



CRANKSHAFT JOURNAL BEARING

INSPECTION

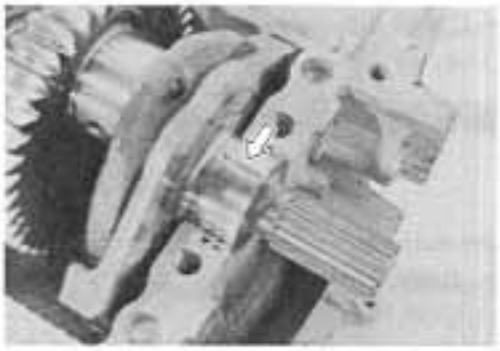
- Inspect each bearing of upper and lower crankcases for any damage.



SELECTION

- Place the plastigauge axially along the crankshaft journal, avoiding the oil hole, as shown.

09900-22301: Plastigauge



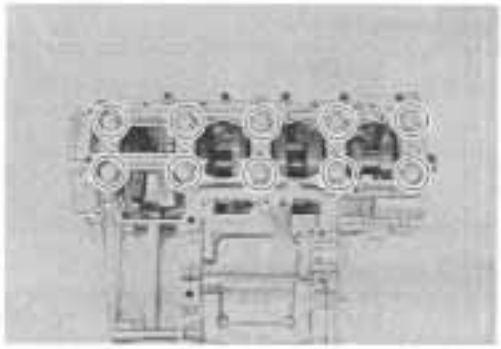
⚠ CAUTION

Never rotate the crankshaft when a piece of plastigauge is installed.

- Mate the lower crankcase with the upper crankcase, and tighten the crankcase bolts (M9) with the specified torque value in the indicated order.

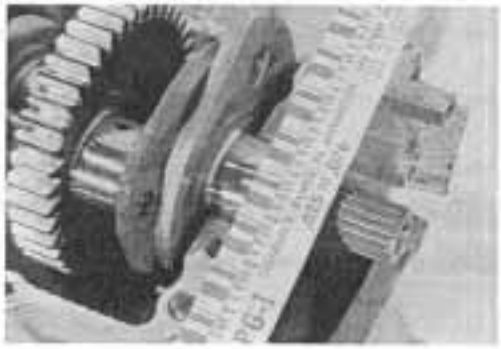
Crankcase bolt (9 mm)

Initial : 18 N·m (1.8 kgf·m, 13.0 lb-ft)
Final : 32 N·m (3.2 kgf·m, 23.0 lb-ft)



- Remove the lower crankcase and measure the width of the compressed plastigauge using the envelope scale. This measurement should be taken at the widest part of the compressed plastigauge.

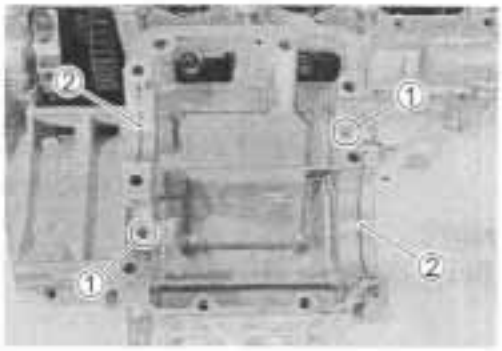
DATA Crankshaft journal oil clearance:
Standard: 0.016 – 0.040 mm (0.0006 – 0.0016 in)
Service Limit: 0.080 mm (0.031 in)



- If the oil clearance exceeds the service limit, select the specified bearings from the bearing selection table.

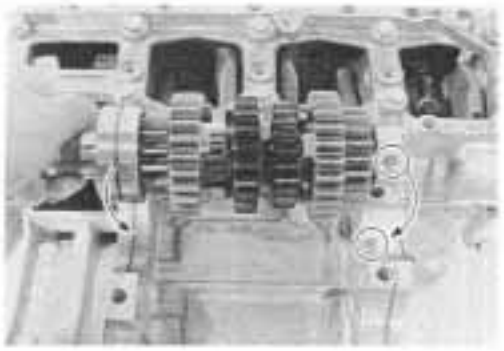
TRANSMISSION

- Install the bearing pins ① and the C-ring ② on the upper crankcase.



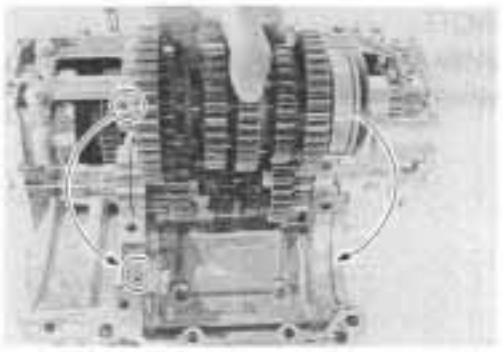
- Install the countershaft assembly on the upper crankcase.

NOTE:
Align the C-ring with the groove on the bearing and the bearing pin with the indent on the bearing.

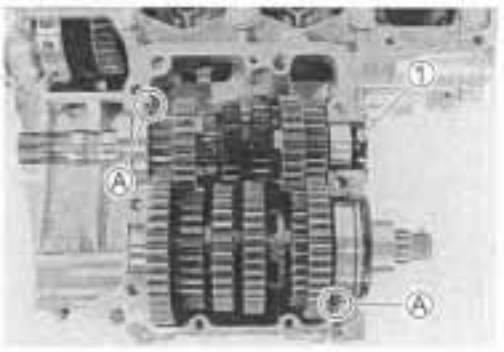


- Install the driveshaft assembly on the upper crankcase.

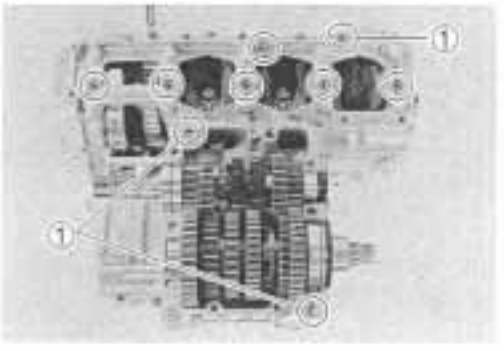
NOTE:
Align the bearing ring with the groove on the crankcase and the bearing pin with the indent on the bearing.



- Install the oil seal ①.
- Turn the bearings to install the bearing dowel pins Ⓐ in the respective positions.



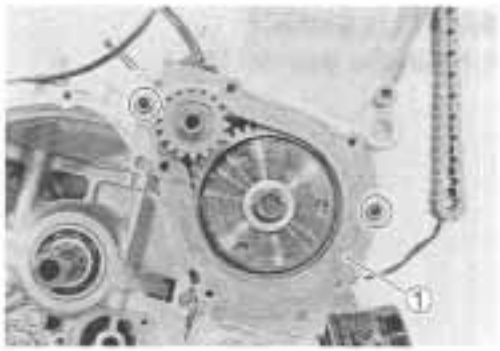
- Install the O-rings.
- Install the dowel pins ①.



• Install the new gasket ① and the dowel pins.

⚠ CAUTION

Use a new gasket to prevent oil leakage.



• Install the starter clutch cover and tighten its bolt as shown.

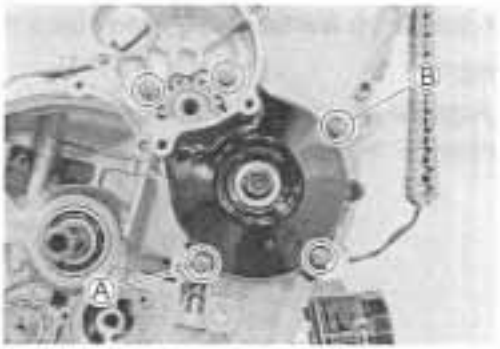
NOTE:

- *Fit the wire clamp to the starter clutch cover bolt Ⓐ as shown.*
- *Fit the new gasket washer to the starter clutch cover bolt Ⓑ as shown.*

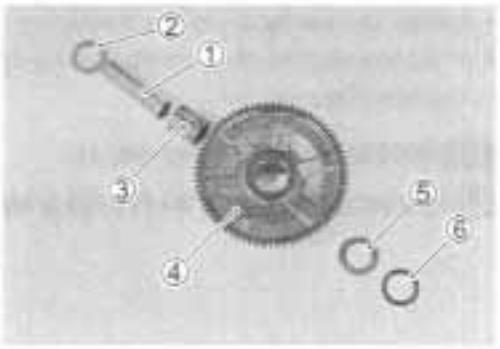
⚠ CAUTION

Use the new gasket washer to prevent oil leakage.

Starter idle gear cover: 10 N·m (1.0 kgf·m, 7.0 lb-ft)



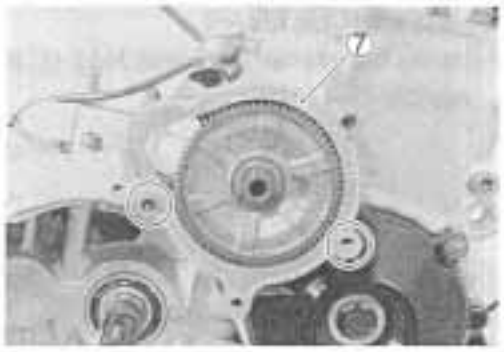
• Install the starter idle gear No.1 shaft ① and the thrust washer ② the bearing ③ and the starter idle gear No.1 ④ the washer ⑤ and the wave washer ⑥.



• Install the dowel pins and the new gasket ⑦.

⚠ CAUTION

Use a new gasket to prevent oil leakage.

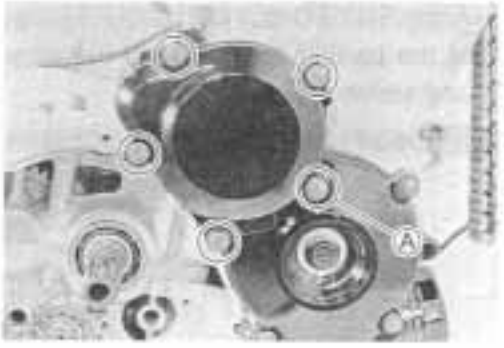


• Install the starter idle gear cover and tighten its bolts to the specified torque.

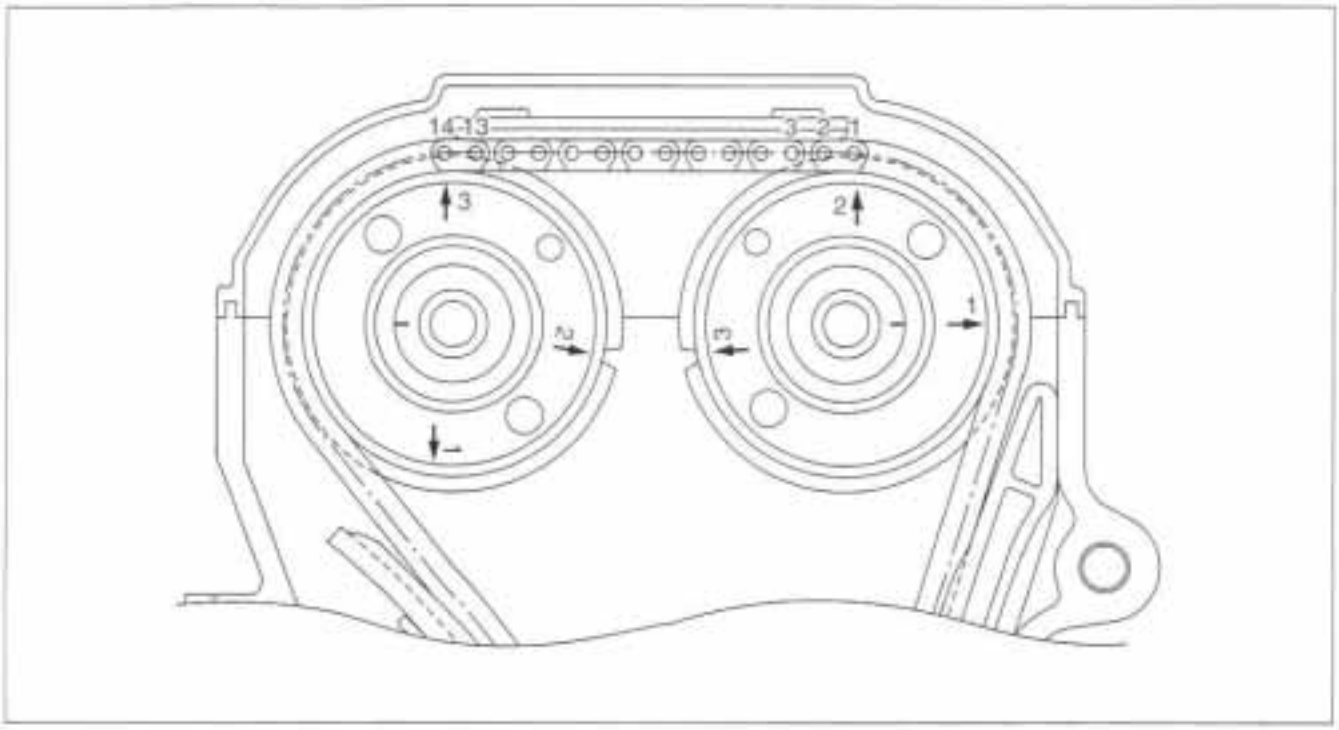
Starter idle gear cover: 10 N·m (1.0 kgf·m, 7.0 lb-ft)

NOTE:

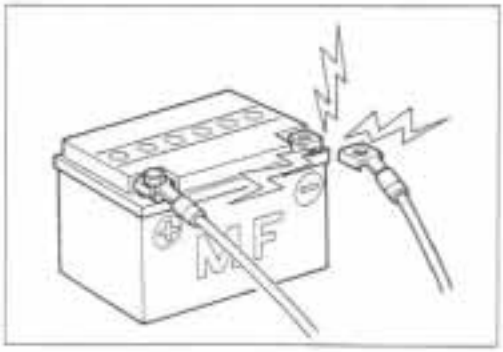
Fit the gasket washer to the bolt Ⓐ.



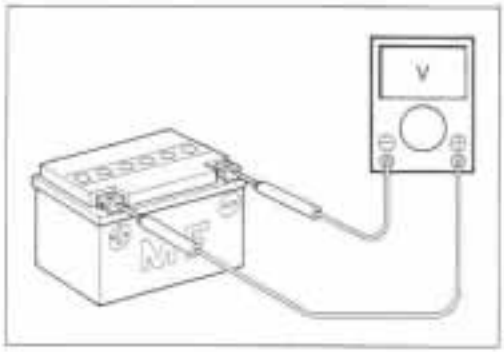
NOTE:
The cam chain should now be on all three sprockets. Be careful not to move the crankshaft until the camshaft journal holders and cam chain tension adjuster are secured.



- Removing any battery terminal of a running engine is strictly prohibited.
  The moment such removal is made, damaging counter electromotive force will be applied to the ECM which may result in serious damage.



- Before measuring voltage at each terminal, check to make sure that battery voltage is 11V or higher. Terminal voltage check at low battery voltage will lead to erroneous diagnosis.



- Never connect any tester (voltmeter, ohmmeter, or whatever) to the ECM when its coupler is disconnected. Otherwise, damage to ECM may result.
- Never connect an ohmmeter to the ECM with its coupler connected. If attempted, damage to ECM or sensors may result.
- Be sure to use a specified voltmeter/ohmmeter. Otherwise, accurate measurements may not be obtained and personal injury may result.

ELECTRICAL CIRCUIT INSPECTION PROCEDURE

While there are various methods for electrical circuit inspection, described here is a general method to check for open and short circuit using an ohmmeter and a voltmeter.

OPEN CIRCUIT CHECK

Possible causes for the open circuit are as follows. As the cause can exist in the connector/coupler or terminal, they need to be checked carefully.

- Loose connection of connector/coupler
- Poor contact of terminal (due to dirt, corrosion or rust, poor contact tension, entry of foreign object etc.)
- Wire harness being open
- Poor terminal-to-wire connection

ECM (FI CONTROL UNIT)

The ECM is located under the seat.

The ECM consists of CPU (Central Processing Unit), memory (ROM) and I/O (Input/Output) sections. The signal from each sensor is sent to the input section and then sent to CPU. On the basis of signal information received, CPU calculates the volume of fuel necessary for injection using maps programmed for varying engine conditions. Then, the operation signal of the fuel injection is sent from the output section to the fuel injector.

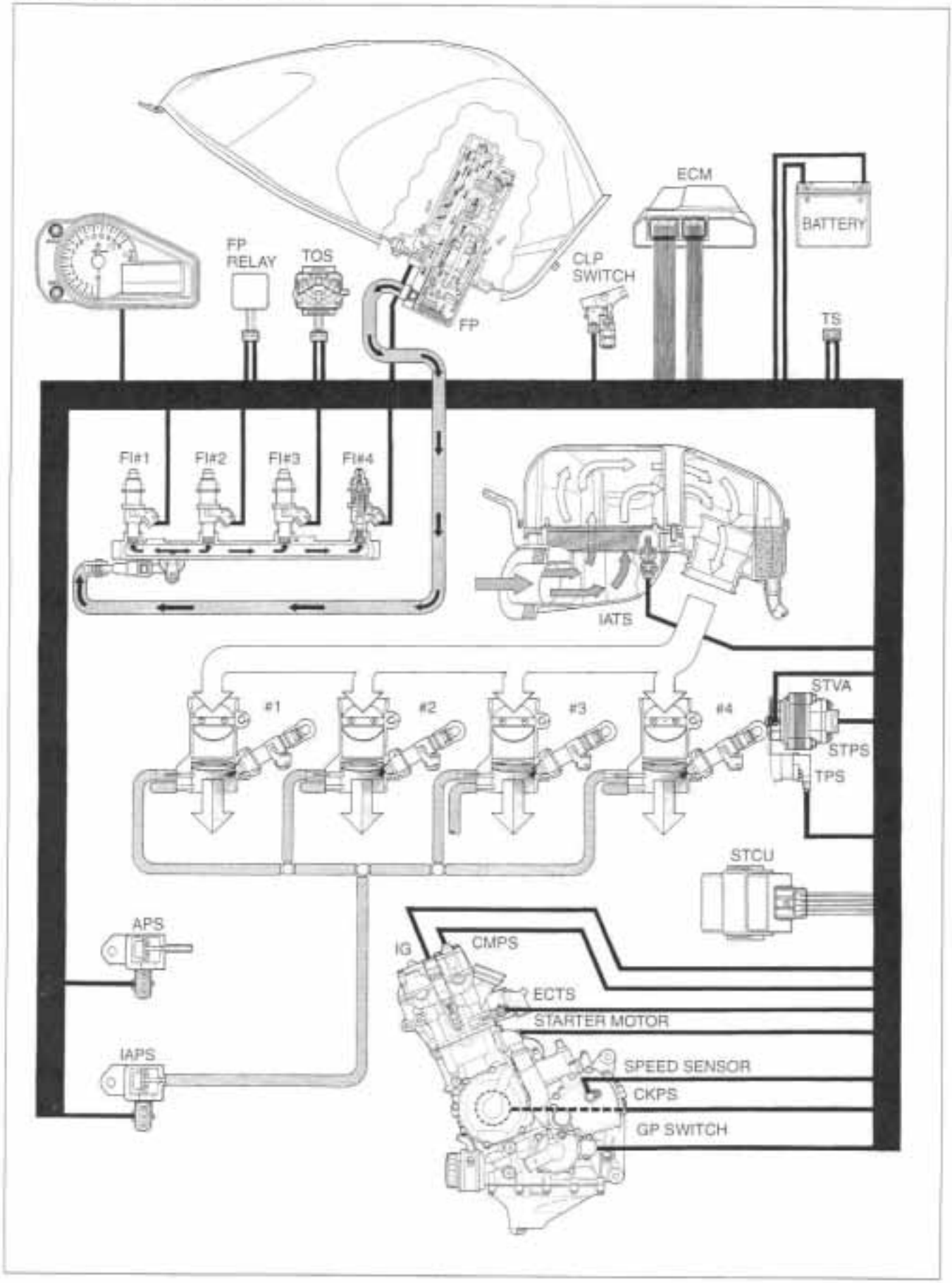
The eight kinds of independent program maps are programmed in the ROM.

These eight kinds of maps are designed to compensate for differences of the intake/exhaust systems and cooling performance.

LIGHT LOAD: When the engine is running in a light load, the fuel injected volume (time) is determined the basis of the intake air pressure and engine speed.

HEAVY LOAD: When the engine is running in a heavy load, the fuel injected volume (time) is determined the basis of the throttle valve opening and engine speed.

FI SYSTEM DIAGRAM



"C11" CMP SENSOR CIRCUIT MALFUNCTION

DETECTED CONDITION	POSSIBLE CAUSE
No CMP sensor signal for 4 seconds at engine cranking.	• Metal particles or foreign material being attached on the CMP sensor and rotor tip. • CMP sensor circuit open or short. • CMP sensor malfunction. • ECM malfunction.

INSPECTION

- Lift and support the fuel tank with its prop stay. (☞4-52)
- Remove the air cleaner box. (☞4-62)

1 Turn the ignition switch OFF.
Check the CMP sensor coupler for loose or poor contacts.
If OK, then measure the CMP sensor resistance.
Disconnect the CMP sensor coupler and measure the resistance.

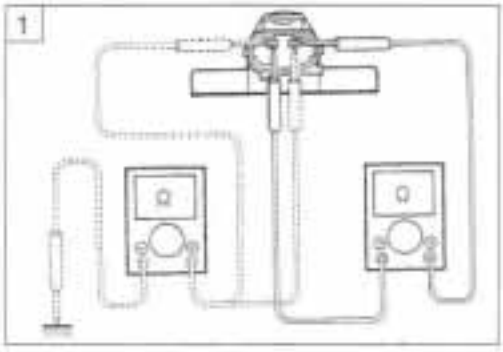
DATA **CMP sensor resistance: 0.9 – 1.7 kΩ (Terminal – Terminal)**

If OK, then check the continuity between each terminal and ground.

DATA **CMP sensor continuity: ∞Ω (Infinity) (Terminal – Ground)**

09900-25008: Multi circuit tester

Tester knob indication: Resistance (Ω)



No → Replace the CMP sensor with a new one.

Yes ↓

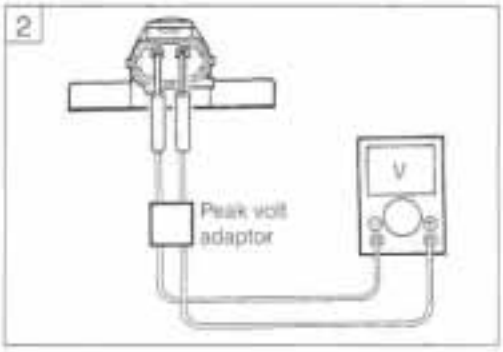
2 Disconnect the CMP sensor coupler.
Crank the engine a few seconds with the starter motor, and measure the CMP sensor peak voltage at the sensor.

DATA **CMP sensor peak voltage: More than 0.7 V (B/Y – Br)**

Repeat the above test procedure a few times and measure the highest peak voltage.
If OK, then measure the CMP sensor peak voltage at the ECM terminals. (G+/G– or ㉗/㊶)

09900-25008: Multi circuit tester

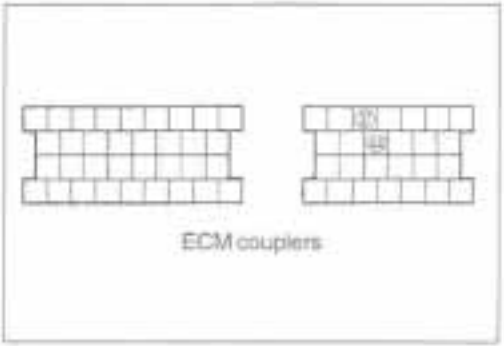
Tester knob indication: Voltage (⎓)



No → Loose or poor contacts on the CMP sensor coupler or ECM coupler. Replace the CMP sensor with a new one.

Yes ↓

B/Y or Br wire open or shorted to ground, or poor ㉗ or ㊶ connection. (☞4-25)
If wire and connection are OK, intermittent trouble or faulty ECM. Recheck each terminal and wire harness for open circuit and poor connection. (☞4-4)



→ Replace the ECM with a new one, and inspect it again.

"C23" TO SENSOR CIRCUIT MALFUNCTION

DETECTED CONDITION	POSSIBLE CAUSE
No TO sensor signal for more than 2 seconds, after ignition switch turns ON. Sensor voltage high. (0.25 V ≤ Sensor Voltage < 4.85 V without the above range.)	• TO sensor circuit open or short. • TO sensor malfunction. • ECM malfunction.

INSPECTION

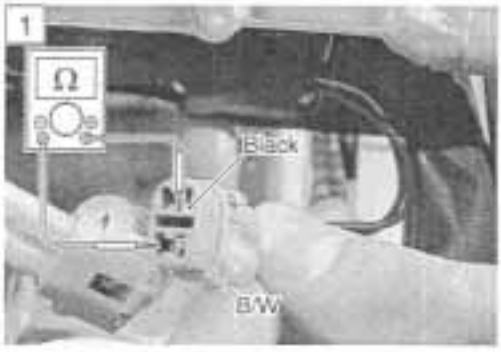
• Lift and support the fuel tank with its prop stay. (☞ 4-52)

1 Turn the ignition switch OFF.
Check the TO sensor coupler for loose or poor contacts.
If OK, then measure the TO sensor resistance.
Disconnect the TO sensor coupler.
Measure the resistance between Black and B/W wire terminals.

DATA **TO sensor resistance: 60 – 64 kΩ (Black – B/W)**

TOOL **09900-25008: Multi circuit tester**

Tester knob indication: Resistance (Ω)



No → Replace the TO sensor with a new one.

Yes ↓

2 Connect the TO sensor coupler.
Insert the copper wires to the wire lead coupler.
Turn the ignition switch ON.
Measure the voltage at the wire side coupler between Black and B/Br wires.

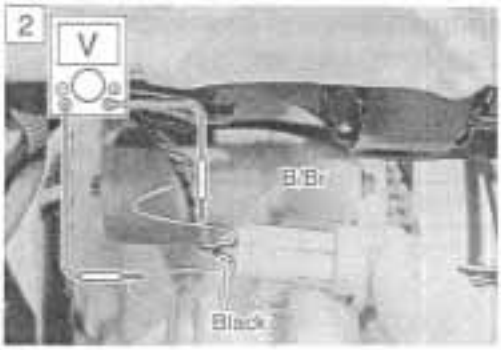
DATA **TO sensor voltage: Approx. 2.5 V (Black – B/Br)**

Also, measure the voltage when leaning of the motorcycle.
Dismount the TO sensor from its bracket and measure the voltage when it is leaned more than 43°, left and right, from the horizontal level.

DATA **TO sensor voltage: 0 V (Black – B/Br)**

TOOL **09900-25008: Multi circuit tester**

Tester knob indication: Voltage (⎓)

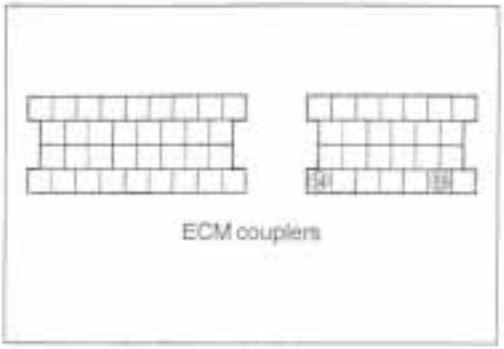


No → Loose or poor contacts on the ECM coupler.
Open or short circuit in the Black wire or B/Br wire.
Replace the TO sensor with a new one.

Yes ↓

Black or B/Br wire open or shorted to ground, or poor ㉞ or ㉟ connection. (☞ 4-25)
If wire and connection are OK, intermittent trouble or faulty ECM.
Recheck each terminal and wire harness for open circuit and poor connection. (☞ 4-4)

→ Replace the ECM with a new one, and inspect it again.



ECM couplers

FUEL PUMP INSPECTION

Turn the ignition switch ON and check that the fuel pump operates for few seconds.
If the fuel pump motor does not make operating sound, replace the fuel pump assembly or inspect the fuel pump relay and tip over sensor.

FUEL DISCHARGE AMOUNT INSPECTION

⚠ WARNING

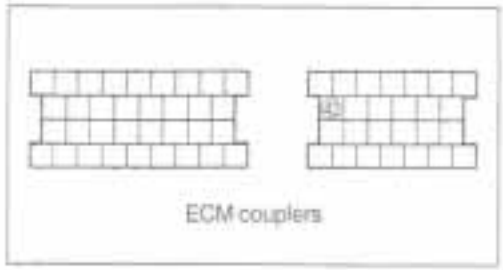
Gasoline is highly flammable and explosive.
Keep heat, spark and flame away.

- Lift and support the fuel tank with its prop stay. (☞4-52)
- Disconnect the fuel feed hose ① from the fuel pump.

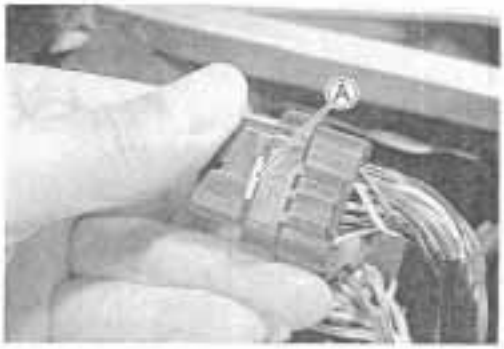
- Connect a proper fuel hose ② to the fuel pump.

- Disconnect the ECM lead wire coupler ③.

- Push the lock Ⓐ to pull out the power source lead wire (Yellow with red tracer ④).



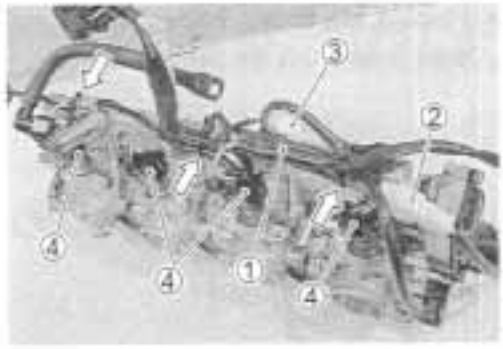
ECM couplers



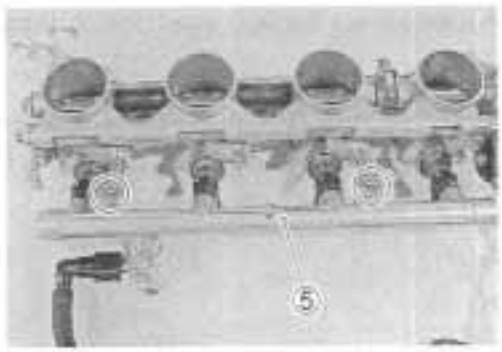
THROTTLE BODY DISASSEMBLY

- Disconnect the respective vaccum hoses from each throttle body.

- Remove the lead wire clamps.
- Disconnect the TP sensor lead wire coupler ①, STP sensor lead wire coupler ②, STVA motor lead wire coupler ③ and fuel injector lead wire couplers ④.



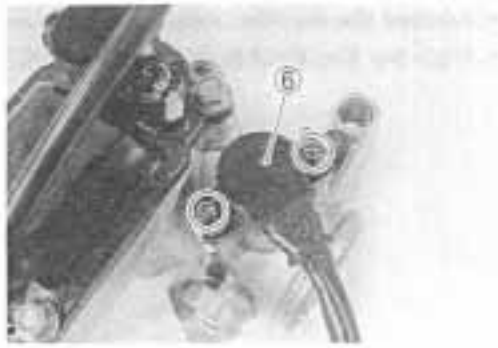
- Remove the fuel delivery pipe assembly ⑤ by removing its mounting screws.
- Remove the fuel injectors.



- Separate the four throttle bodies respectively by removing their connecting bolts.

- Remove the TP sensor ⑥ with the special tool.

09930-11960: Torx wrench



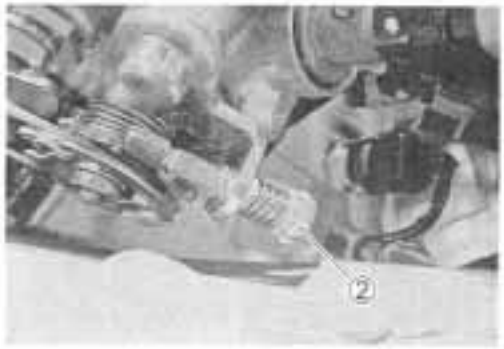
- Connect one of the four rubber hoses of the vacuum balancer gauge to the nipple ① on the No.1 throttle body.

09913-13121: Vacuum balancer gauge

- Connect a tachometer.
- Start up the engine and keep it running at 1 300 rpm by turning throttle stop screw ②.

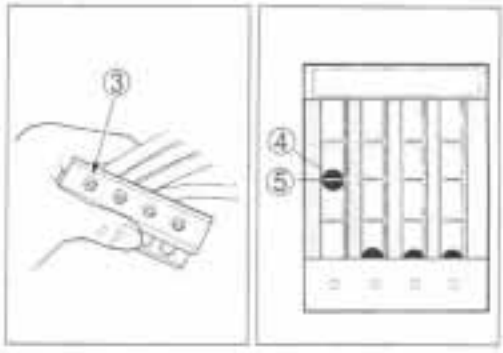
⚠ CAUTION

Avoid drawing dirt into the throttle body while running the engine without air cleaner box. Dirt drawn into the engine will damage the internal engine parts.



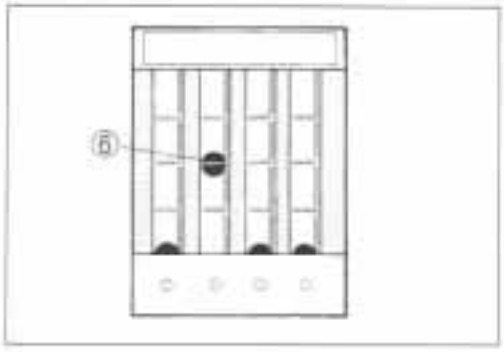
- Turn the air screw ③ of the gauge so that the vacuum acting on the tube of that hose will bring the steel ball ④ in the tube to the center line ⑤.

NOTE:
The vacuum gauge is positioned approx. 30° from the horizontal level.



- After making sure that the steel ball stays steady at the center line, disconnect the hose from the No.1 throttle body nipple and connect the next hose to this nipple.
- Turn air screw to bring the other steel ball ⑥ to the center line.
- Repeat the above process on the third and fourth hoses.

The balancer gauge is now ready for use in balancing the throttle valves.



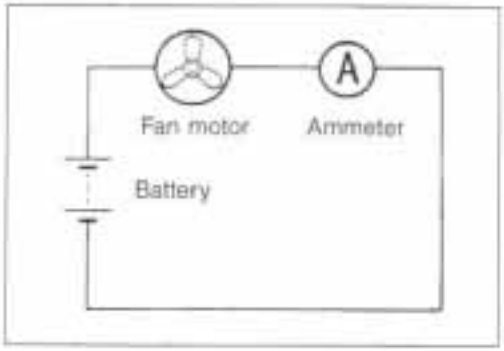
COOLING FAN

REMOVAL

- Remove the under cowling. (☞6-3)
- Drain engine coolant. (☞2-18)
- Remove the radiator. (☞3-5)
- Remove the cooling fan.

INSPECTION

- Remove the under cowling. (☞6-3)
- Disconnect the cooling fan lead wire coupler ①.
- Test the cooling fan motor for load current with an ammeter connected as shown in the illustration.



- The voltmeter is for making sure that the battery applies 12 volts to the motor. With the motor with electric motor fan running at full speed, the ammeter should be indicating not more than 5 amperes.
- If the fan motor does not turn, replace the motor assembly with a new one.

NOTE:
When making above test, it is not necessary to remove the cooling fan.

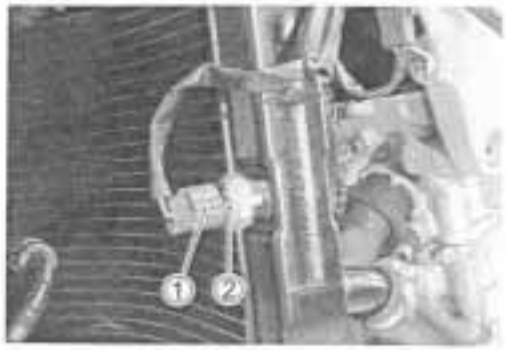
INSTALLATION

- Install the radiator.
- Route the radiator hoses. (☞8-19)
- Pour engine coolant. (☞2-18)
- Bleed the air from the cooling circuit. (☞2-19)
- Install the under cowling. (☞6-3)

COOLING FAN THERMO-SWITCH

REMOVAL

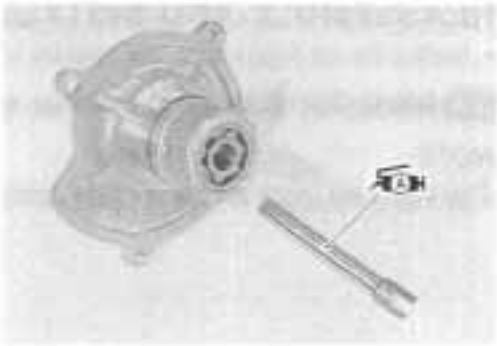
- Remove the under cowling. (☞6-3)
- Drain engine coolant. (☞2-18)
- Disconnect the cooling fan thermo-switch lead wire coupler ①.
- Remove the cooling fan thermo-switch ②.



- Apply grease to the impeller shaft.

99000-25010: SUZUKI SUPER GREASE "A"

- Install the impeller shaft to the water pump body.

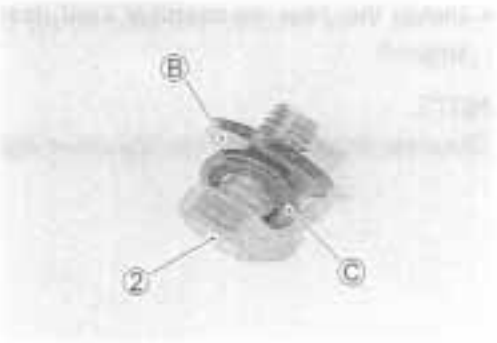


- Install the rubber seal ① into the impeller.
- After wiping off the oily or greasy matter from the mechanical seal ring, install it into the impeller.

NOTE:
The marked side Ⓐ of the mechanical seal ring faces the impeller.

- Install the seal washer and the washer onto the impeller securing bolt ②.

NOTE:
The metal side Ⓑ of the seal washer and the convex side Ⓒ of the washer face the impeller securing bolt head.

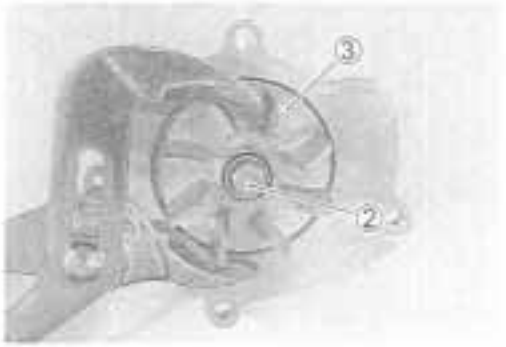


- Install the impeller ③ and its securing bolt ② onto the shaft.
- Tighten the impeller securing bolt ② to the specified torque.

Impeller securing bolt: 8 N·m (0.8 kgf·m, 6.0 lb-ft)

NOTE:
Before installing the impeller securing bolt, apply a small quantity of the THREAD LOCK "1342" to it.

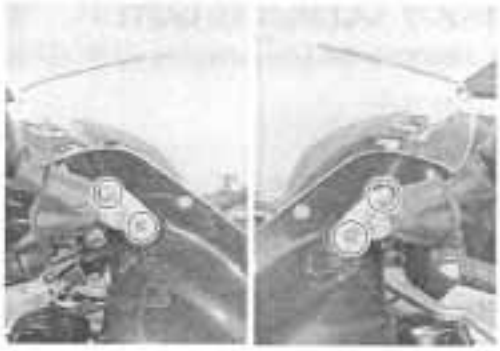
99000-32050: THREAD LOCK "1342"



BODY COWLING

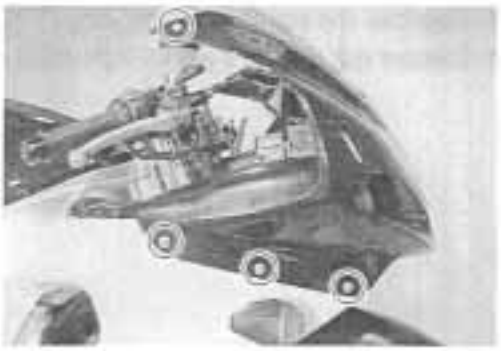
REMOVAL

- Remove the rear view mirrors.



- Remove the fasteners.

- Remove the bolts.
- Remove the body cowling by disconnecting the lead wire couplers.



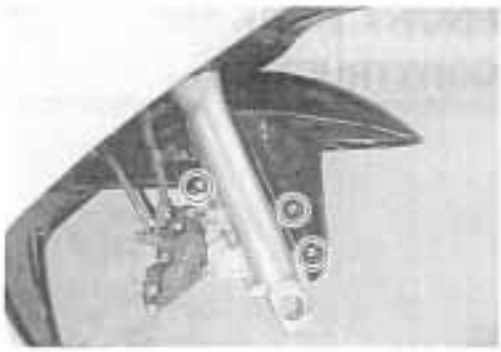
REMOUNTING

NOTE:

When remounting the body cowling, install the hooks Ⓐ to the cowling brace holes.

REMOVAL AND DISASSEMBLY

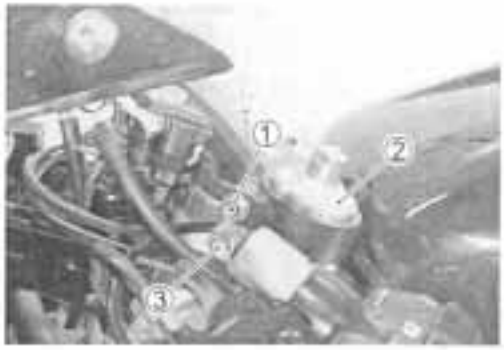
- Remove the front wheel. (☞6-8)
- Disconnect the brake hoses.
- Remove the front fender.



- Loosen the front fork upper clamp bolt ①.

NOTE:
Slightly loosen the front fork cap bolts ② before loosening the lower clamp bolts to facilitate later disassembly.

- Loosen the handlebar clamp bolt ③.



- Remove the handlebar set bolt ④.

NOTE:
Place the rags under each handlebar to prevent scratching the upper fairing and the air intake pipes.

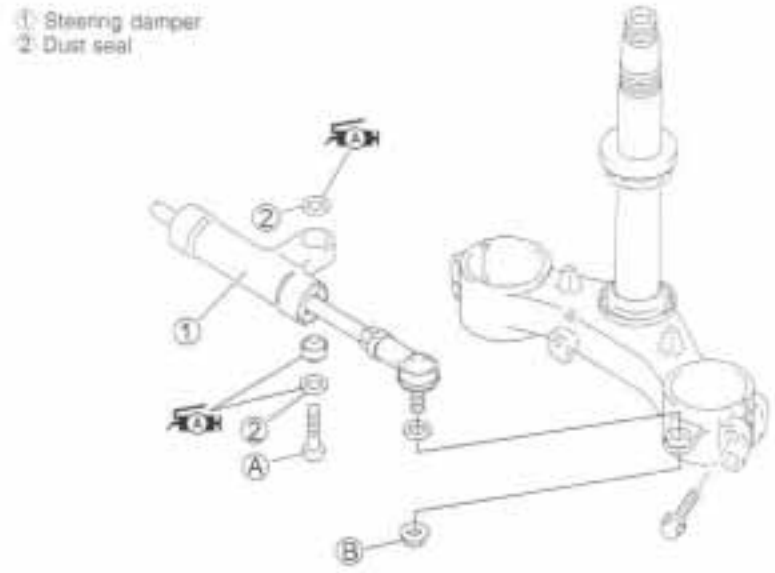
- Loosen the front fork set bolts.

NOTE:
Be careful not to drop the front fork when loosening the bolts.

- Remove the protecter ⑤.

STEERING DAMPER

CONSTRUCTION



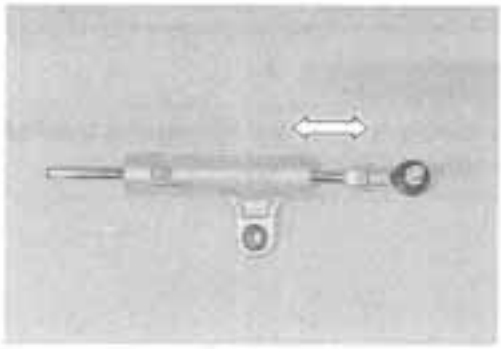
ITEM	N·m	kgf·m	lb-ft
A	23	2.3	16.5
B	23	2.3	16.5

REMOVAL

- Remove the nut ① by holding the nut Ⓐ.
- Remove the bolt ② and remove the steering damper.

INSPECTION

Inspect the steering damper body, bearing and oil seal for damage and oil leaking.
Move the steering damper rod by hand to inspect for a smooth movement.
If any defects are found, replace the steering damper with a new one.



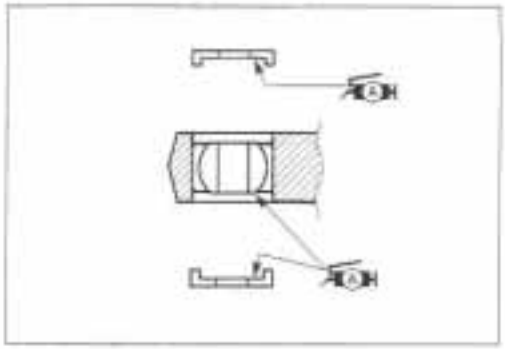
REMOUNTING

- Install the steering damper and tighten the bolt and nut.

Steering damper bolt and nut: 23 N·m (2.3 kgf·m, 16.5 lb-ft)

- Apply grease to the bearings and dust seals.

99000-25010: SUZUKI SUPER GREASE "A"



REMOVAL

- Remove the cotter pin. (For Canada and USA)
- Loosen the axle nut.
- Raise the rear wheel off the ground and support the motorcycle with a jack or wooden block.
- Remove the axle nut and draw out the rear axle.

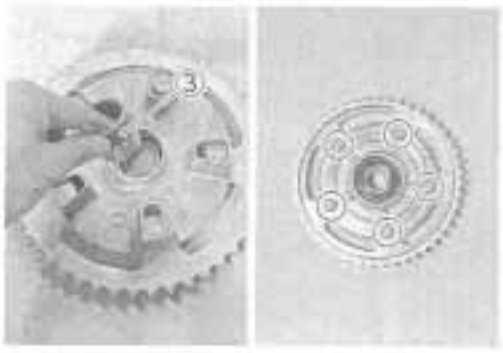
- Remove the rear wheel by disengaging the drive chain.

⚠ CAUTION

Do not operate the brake pedal while removing the rear wheel.

- Remove the collar ①.
- Draw out the rear sprocket mounting drum ② from the wheel hub.

- Remove the rear sprocket mounting drum retainer ③.
- Separate the rear sprocket from its mounting drum by removing nuts.

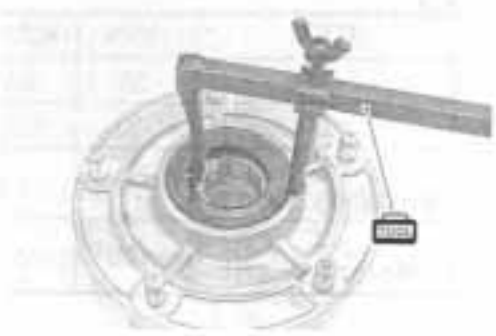


- Remove the dust seal by using special tool.

09913-50121: Oil seal remover

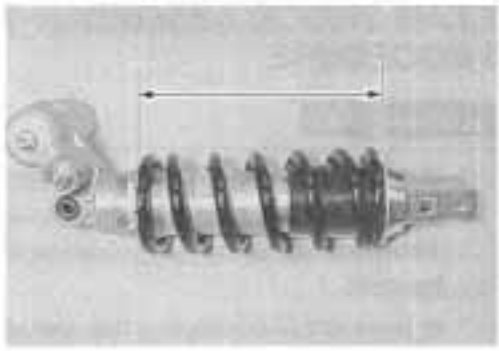
⚠ CAUTION

The removed dust seal must be replaced with a new one.



SUSPENSION SETTING

After installing the rear suspension, adjust the spring pre-load and damping force as follows.



SPRING PRE-LOAD ADJUSTMENT

The set length 186.5 mm provides the maximum spring pre-load.
The set length 196.5 mm provides the minimum spring pre-load.
(STD length: 191.5 mm)

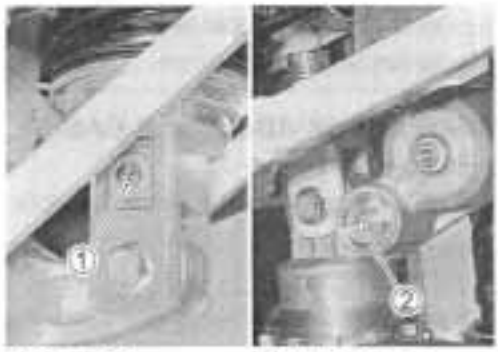
DAMPING FORCE ADJUSTMENT

(Rebound side)

Fully turn the damping force adjuster ① clockwise. It is at stiffest position and turn it out to standard setting position.
(STD position: 1 and ¼ turns out [Fine-tune the adjuster by turning it slightly until two punch marks align.])

(Compression side)

Fully turn the damping force adjuster ② clockwise. It is at stiffest position and turn it out to standard setting position.
(STD position: 1 and ⅛ turns out [Fine-tune the adjuster by turning it slightly until two punch marks align.])



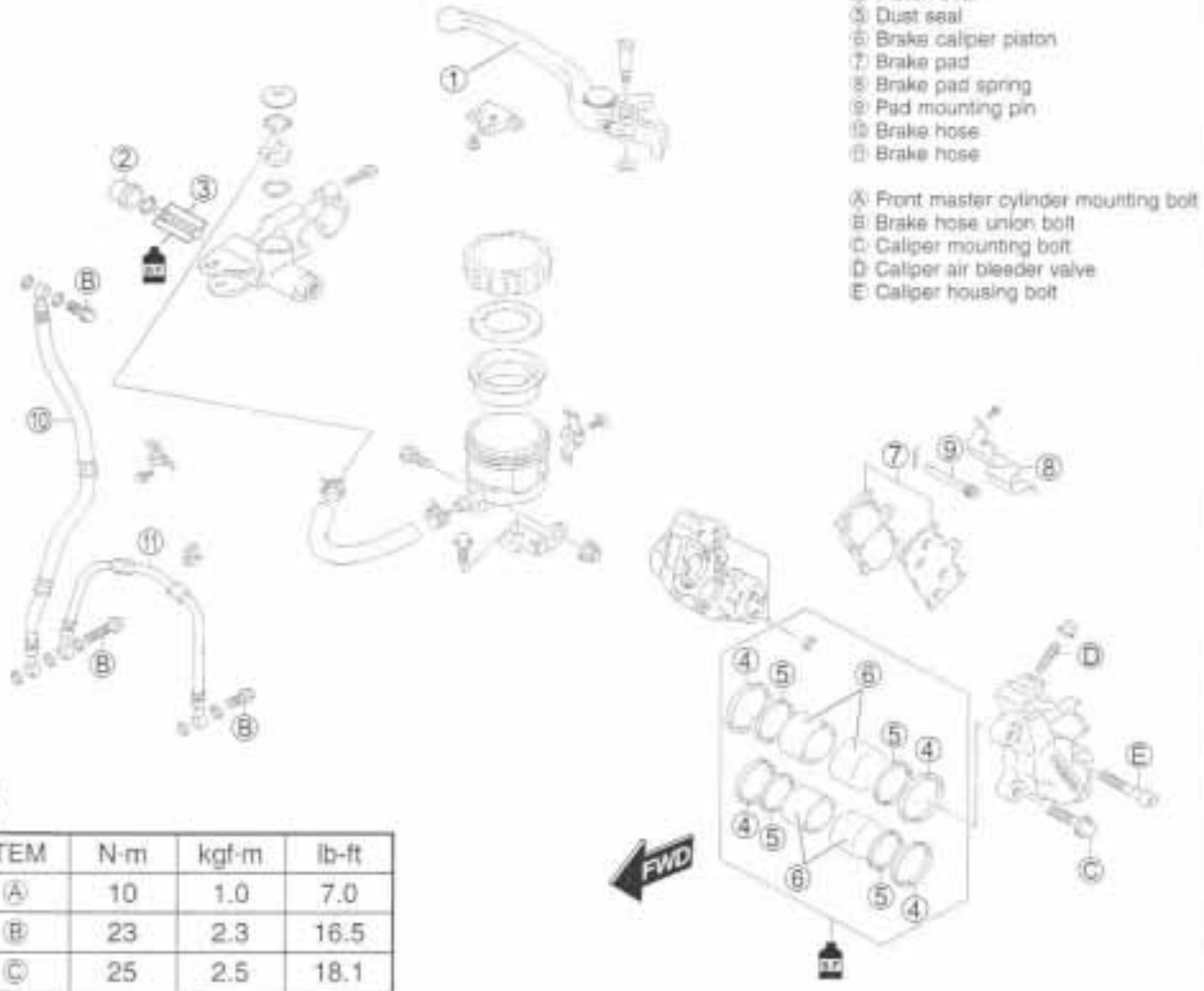
Rebound side Compression side

STANDARD SUSPENSION SETTING

		REAR		
		Spring set length	Damping force adjuster	
			Rebound	Compression
Solo riding	Softer	191.5 mm (7.54 in)	1 and ⅛ turns out	1 and ⅛ turns out
	Standard	191.5 mm (7.54 in)	1 and ¼ turns out	1 and ⅛ turns out
	Stiffer	191.5 mm (7.54 in)	1 and ¼ turns out	1 turn out
Dual riding		191.5 mm (7.54 in)	1 and ¼ turns out	1 and ⅛ turns out

FRONT BRAKE

CONSTRUCTION



ITEM	N-m	kgf-m	lb-ft
Ⓐ	10	1.0	7.0
Ⓑ	23	2.3	16.5
Ⓒ	25	2.5	18.1
Ⓓ	8	0.8	6.0
Ⓔ	21	2.1	15.1

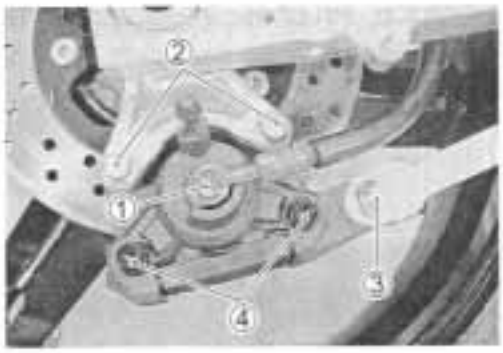
⚠ WARNING

- This brake system is filled with an ethylene glycol-based DOT 4 brake fluid. Do not use mix different types of fluid such as silicone-based or petroleum-based.
- Do not use any brake fluid taken from old, used or unsealed containers. Never reuse brake fluid left over from the last servicing or stored for long periods.
- When storing the brake fluid, seal the container completely and keep away from children.
- When replenishing brake fluid, take care not to get dust into fluid.
- When washing brake components, use fresh brake fluid. Never use cleaning solvent.
- A contaminated brake disc or brake pad reduces braking performance. Discard contaminated pads and clean the disc with high quality brake cleaner or neutral detergent.

⚠ CAUTION

Handle brake fluid with care: the fluid reacts chemically with paint, plastics, rubber materials etc.

CALIPER REMOVAL AND DISASSEMBLY



- Remove the union bolt ① and catch the brake fluid in a suitable receptacle.

⚠ CAUTION

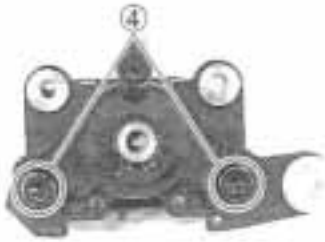
Never reuse the brake fluid left over from previous servicing and stored for long periods.

⚠ WARNING

Brake fluid, if it leaks, will interfere with safe running and discolor painted surfaces. Check the brake hose and hose joints for cracks and fluid leakage.

- Remove the brake caliper mounting bolts ② and torque link bolt ③.

NOTE:
Slightly loosen the caliper housing bolts ④ to facilitate later disassembly before removing the caliper mounting bolts.



- Remove the brake pads. (☞ 6-63)
- Remove the caliper housing bolts ④.
- Separate the caliper halves.
- Remove the O-ring ⑤.

⚠ CAUTION

Replace the O-ring with a new one.

- Place a rag over the piston to prevent it from popping out and then force out the pistons using compressed air.

⚠ CAUTION

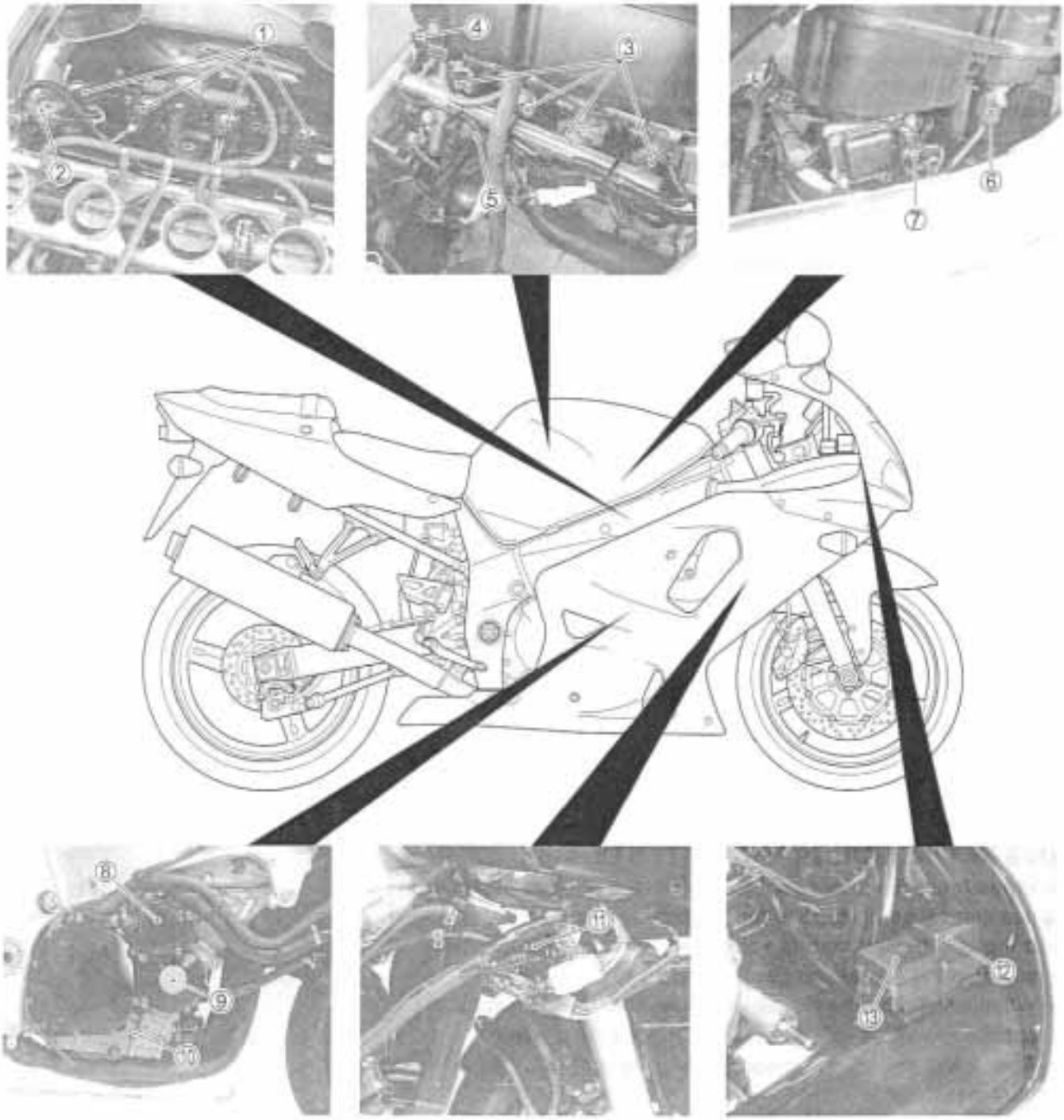
Do not use high pressure air to prevent piston damage.

- Remove the dust seals and piston seals.

⚠ CAUTION

Do not reuse the dust seals and piston seals to prevent fluid leakage.

LOCATION OF ELECTRICAL COMPONENTS

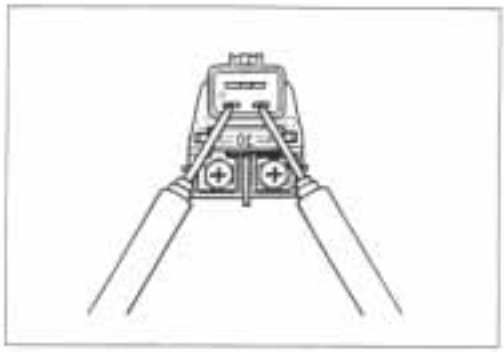


① Ignition coil (No.1, 2, 3, 4)
② Cam position sensor (☞4-35)
③ Fuel injector (☞4-50)
④ Intake air pressure sensor (☞4-36)
⑤ Engine coolant temp. sensor (☞4-40)
⑥ Intake air temp. sensor (☞4-41)
⑦ Throttle position sensor (☞4-38)
⑧ Starter motor
⑨ Crankshaft position sensor (☞4-35)
⑩ Oil pressure switch
⑪ Horn
⑫ Turn signal/side-stand relay
⑬ Fuse box

Measure the relay coil resistance between the terminals using the multi circuit tester. If the resistance is not within the specified value, replace the starter relay with a new one.

09900-25008: Multi circuit tester set

Starter relay resistance: 3 – 5 Ω



SIDE STAND/IGNITION INTERLOCK SYSTEM PARTS INSPECTION

Check the interlock system for proper operation. If the interlock system does not operate properly, check each component for damage or abnormalities. If any abnormality is found, replace the component with a new one.

SIDE-STAND SWITCH

The side-stand switch coupler is located upper the crankcase.

- Lift the fuel tank. (☞ 4-52)
- Disconnect the side-stand switch coupler and measure the voltage between Green and Black/White lead wires.

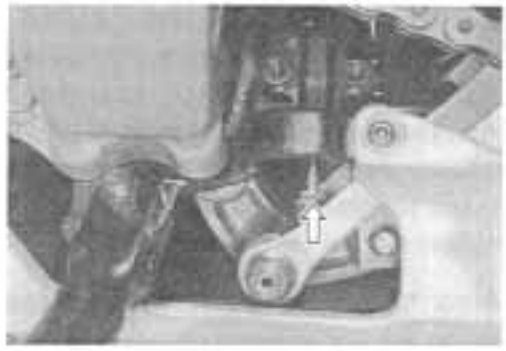
09900-25008: Multi circuit tester set

Tester knob indication: Diode test (⊣◀)

	Green (⊕ Probe)	Black/White (⊖ Probe)
ON (Side-stand up)	0.4–0.6 V	
OFF (Side-stand down)	More than 1.4 V (Tester's battery voltage)	

NOTE:

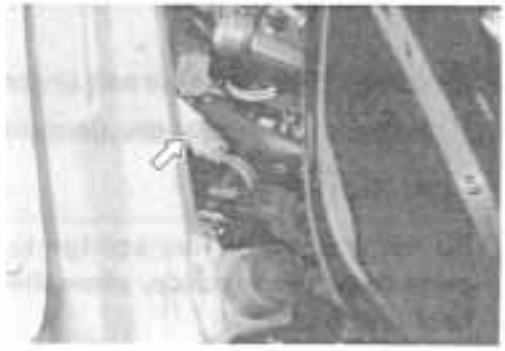
If the tester reads under 1.4V when the tester probes are not connected, replace its battery.



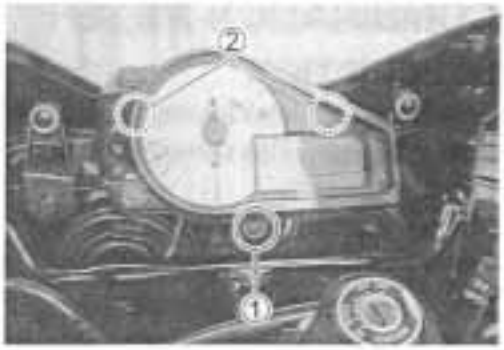
GEAR POSITION SWITCH

- Lift the fuel tank. (☞ 4-52)
- Disconnect the gear position switch coupler and check the continuity between Blue and Black/White with the transmission in "NEUTRAL".

	Blue	Black / White
ON (Neutral)	○	○
OFF (Except neutral)		



REMOVAL AND DISASSEMBLY



- Remove the screw ①.
- Draw out the hook ② from the body cowling.
- Disconnect the lead wire coupler.
- Remove the combination meter.

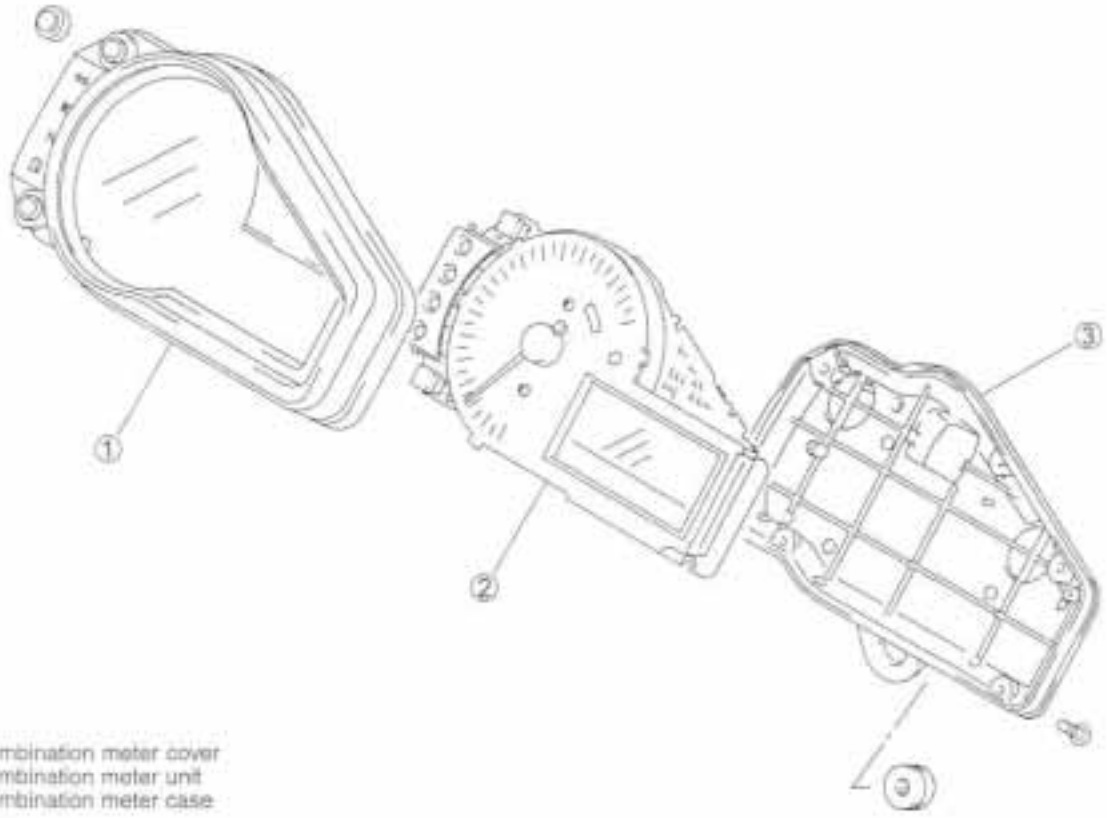
⚠ CAUTION

When disconnecting and connecting the combination meter coupler, make sure to turn OFF the ignition switch, or electronic parts may get damaged.

- Disassemble the combination meter as follows.

⚠ CAUTION

Do not attempt to disassemble the combination meter unit ②.



① Combination meter cover
② Combination meter unit
③ Combination meter case

RECHARGING OPERATION

- Using the multi circuit tester, check the battery voltage. If the voltage reading is less than the 12.0V (DC), recharge the battery with a battery charger.

⚠ CAUTION

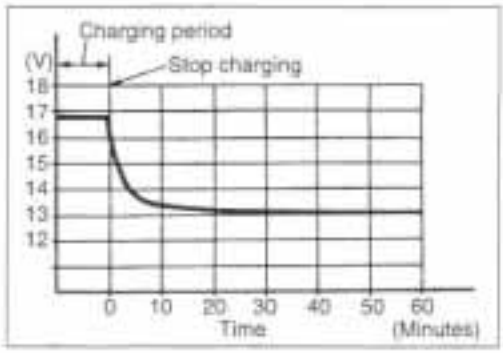
*** When recharging the battery, remove the battery from the motorcycle.**
*** Do not remove the caps on the battery top while recharging.**

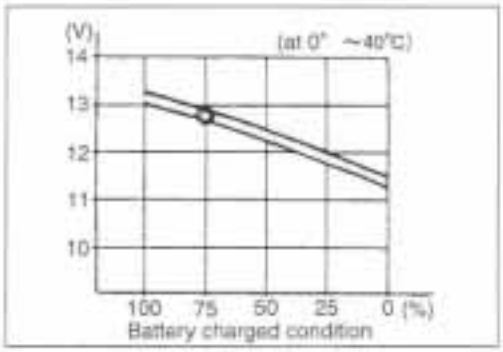
Recharging time: 4A for one hour or 0.9A for 5 to 10 hours

⚠ CAUTION

Be careful not to permit the charging current to exceed 4A at any time.

- After recharging, wait for more than 30 minutes and check the battery voltage with a multi circuit tester.
- If the battery voltage is less than the 12.5V, recharge the battery again.
- If battery voltage is still less than 12.5V, after recharging, replace the battery with a new one.
- When the motorcycle is not used for a long period, check the battery every 1 month to prevent the battery discharge.

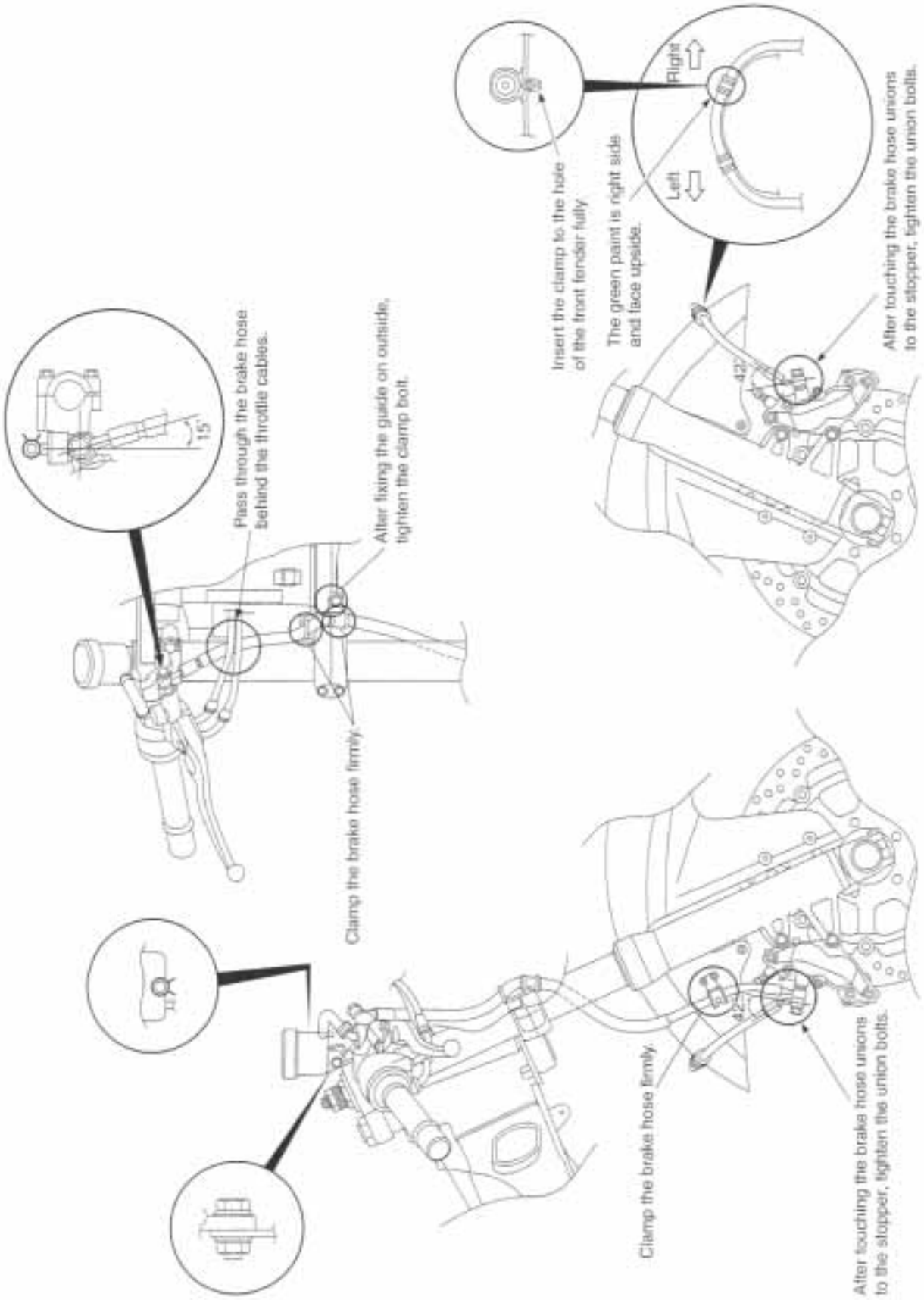




CHASSIS

Complaint	Symptom and possible causes	Remedy
Heavy steering.	1. Overtightened steering stem nut.	Adjust.
	2. Broken bearing in steering stem.	Replace.
	3. Distorted steering stem.	Replace.
	4. Not enough pressure in tires.	Adjust.
Wobbly handlebars.	1. Loss of balance between right and left front forks.	Replace.
	2. Distorted front fork.	Repair or replace.
	3. Distorted front axle or crooked tire.	Replace.
	4. Loose steering stem nut.	Adjust.
	5. Worn or incorrect tire or wrong tire pressure.	Adjust or replace.
	6. Worn bearing/race in steering stem.	Replace.
Wobbly front wheel.	1. Distorted wheel rim.	Replace.
	2. Worn front wheel bearings.	Replace.
	3. Defective or incorrect tire.	Replace.
	4. Loose axle or axle pinch bolt.	Retighten.
	5. Incorrect front fork oil level.	Adjust.
Front suspension too soft.	1. Weakened springs.	Replace.
	2. Not enough fork oil.	Replenish.
	3. Wrong weight fork oil.	Replace.
	4. Improperly set front fork spring adjuster.	Adjust.
	5. Improperly set front fork damping force adjuster.	Adjust.
Front suspension too stiff.	1. Too viscous fork oil.	Replace.
	2. Too much fork oil.	Drain excess oil.
	3. Improperly set front fork spring adjuster.	Adjust.
	4. Improperly set front fork damping force adjuster.	Adjust.
	5. Bent front axle.	Replace.
Noisy front suspension.	1. Not enough fork oil.	Replenish.
	2. Loose bolts on suspension.	Retighten.
Wobbly rear wheel.	1. Distorted wheel rim.	Replace.
	2. Worn rear wheel bearing or swingarm bearings.	Replace.
	3. Defective or incorrect tire.	Replace.
	4. Worn swingarm and rear suspension bearings.	Replace.
	5. Loose nuts or bolts on rear suspensions.	Retighten.
Rear suspension too soft.	1. Weakened spring of shock absorber.	Replace.
	2. Leakage oil or gas of shock absorber.	Replace.
	3. Improperly set rear spring unit adjuster.	Adjust.
	4. Improperly set rear suspension damping force adjuster.	Adjust.
Rear suspension too stiff.	1. Bent shock absorber shaft.	Replace.
	2. Bent swingarm.	Replace.
	3. Worn swingarm and rear suspension bearings.	Replace.
	4. Improperly set rear suspension adjuster.	Adjust.
	5. Improperly set rear suspension damping force adjuster.	Adjust.
Noisy rear suspension.	1. Loose nuts or bolts on rear suspension.	Retighten.
	2. Worn swingarm and suspension bearings.	Replace.

FRONT BRAKE HOSE ROUTING



TIGHTENING TORQUE

ENGINE

ITEM		N·m	kgf·m	lb-ft
Exhaust pipe bolt		23	2.3	16.5
Muffler mounting nut		23	2.3	16.5
Speed sensor rotor bolt		20	2.0	14.4
Engine sprocket nut		115	11.5	83.2
Engine mounting bolt and nut	(M:12)	75	7.5	54.0
	(M:10)	55	5.5	39.8
Engine mounting thrust adjuster		23	2.3	16.5
Engine mounting thrust adjuster lock nut		45	4.5	32.5
Engine mounting pinch bolt		23	2.3	16.5
Cylinder head cover bolt		14	1.4	10.0
Spark plug		11	1.1	8.0
Cam chain guide bolt		10	1.0	7.0
Camshaft journal holder bolt		10	1.0	7.0
Cam chain tension adjuster cap bolt		23	2.3	16.5
Cam chain tension adjuster mounting bolt		10	1.0	7.0
Cylinder head side bolt		14	1.4	10.0
Cam chain tensioner bolt		10	1.0	7.0
Cylinder head bolt	(M:10)	46	4.6	33.3
	(M:6)	10	1.0	7.0
PAIR reed valve cover bolt		10	1.0	7.0
Water jacket plug		9.5	0.95	6.9
Water inlet cover bolt		10	1.0	7.0
Clutch cover bolt		10	1.0	7.0
Clutch sleeve hub nut		150	15.0	108
Clutch spring set bolt		10	1.0	7.0
Starter clutch cover bolt		10	1.0	7.0
Starter idle gear cover bolt		10	1.0	7.0
Valve timing inspection plug		11	1.1	8.0
Starter clutch bolt		55	5.5	40.0
Generator cover bolt		10	1.0	7.0
Generator rotor bolt		120	12.0	88.5
Generator stator set bolt		10	1.0	7.0
Gearshift cam stopper bolt		10	1.0	7.0
Gearshift cam stopper plate bolt		10	1.0	7.0
Oil pressure switch		14	1.4	10.0
Crankcase bolt	(M:6)	11	1.1	8.0
	(M:8)	26	2.6	19.0
	(M:9)	32	3.2	23.0
Oil gallery plug	(M:6) (M:10)	11	1.1	8.0
	(M:16)	35	3.5	26.5
Oil drain plug		23	2.3	16.5