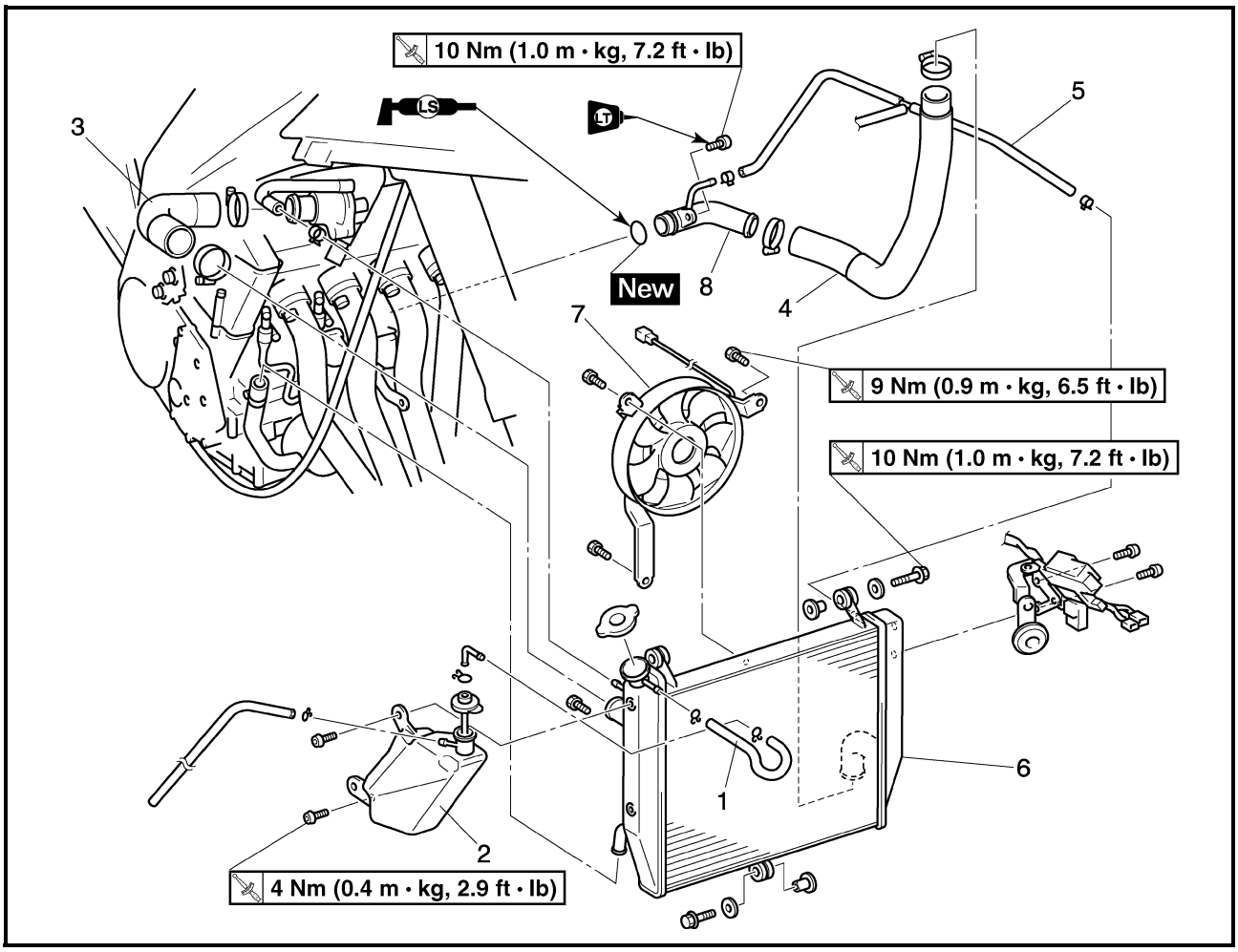
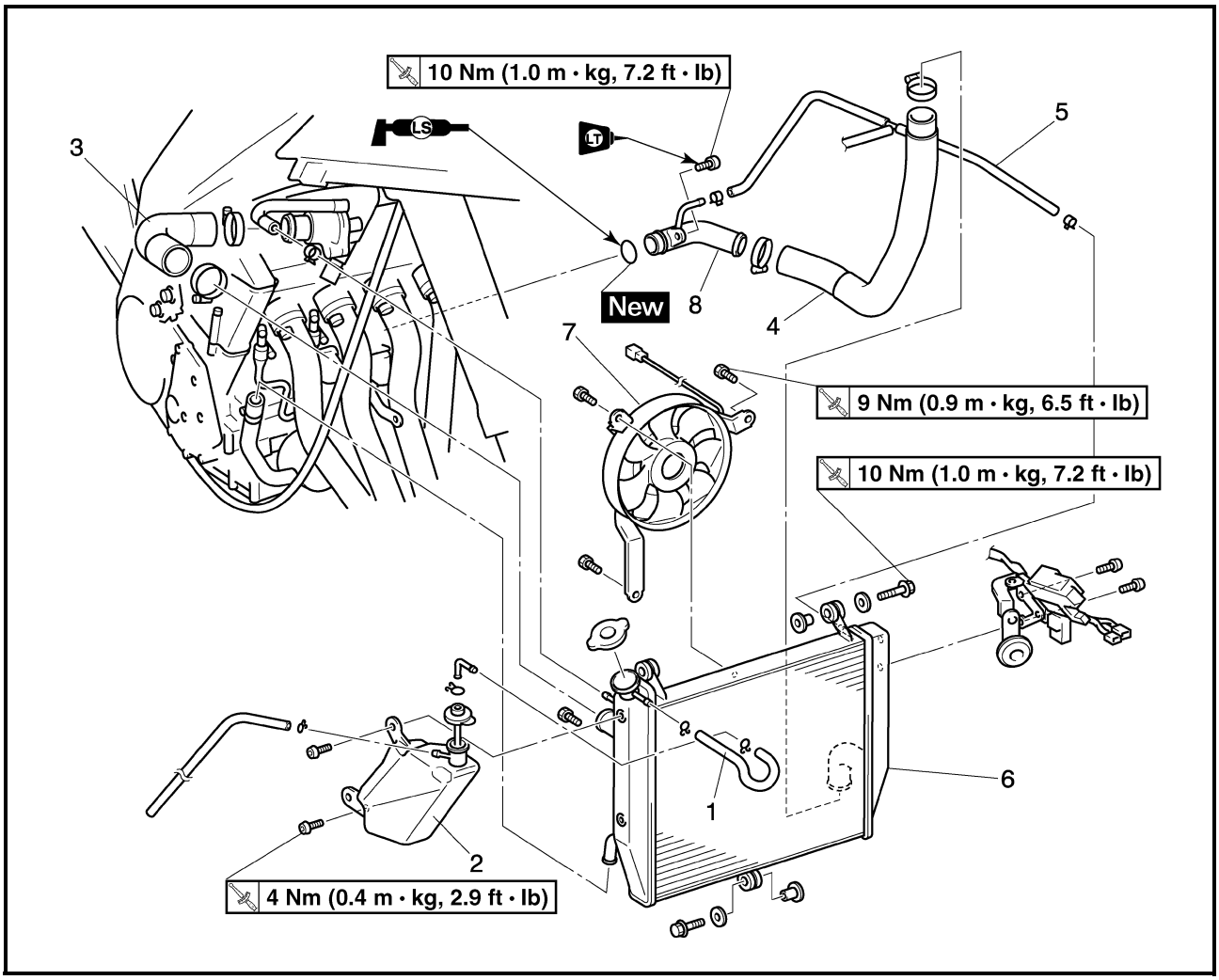
EAS00454

COOLING SYSTEM

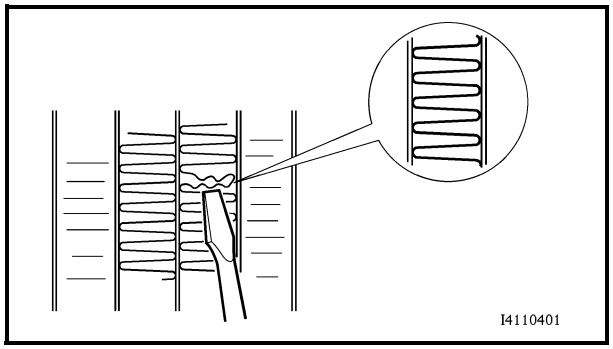
RADIATOR



Order	Job/Part	Q'ty	Remarks
	Removing the radiator		Remove the parts in the order listed.
	Rider seat and fuel tank		Refer to "SEATS" and "FUEL TANK" in chapter 3.
	Air filter case and rubber cover		Refer to "AIR FILTER CASE" in chapter 3.
	Bottom cowling and side cowlings		Refer to "COWLINGS" in chapter 3.
	Drive sprocket cover		Refer to "ENGINE" in chapter 5.
	Coolant		Drain. Refer to "CHANGING THE COOLANT" in chapter 3.
1	Coolant reservoir hose	1	
2	Coolant reservoir	1	



Order	Job/Part	Q'ty	Remarks
3	Radiator inlet hose	1	
4	Radiator outlet hose	1	
5	Water pump breather hose	1	
6	Radiator	1	
7	Radiator fan	1	
8	Water pump inlet pipe	1	
			For installation, reverse the removal procedure.

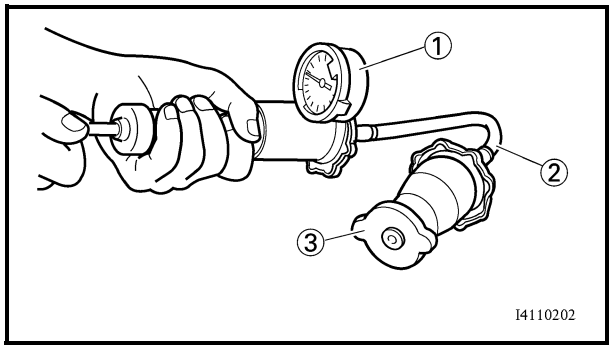


EAS00455
CHECKING THE RADIATOR

1. Check:
   - radiator fins
     Obstruction → Clean.
     Apply compressed air to the rear of the radiator.
     Damage → Repair or replace.

NOTE:
Straighten any flattened fins with a thin, flat-head screwdriver.

2. Check:
   - radiator hoses
   - radiator pipes
     Cracks/damage → Replace.



3. Measure:
   - radiator cap opening pressure
     Below the specified pressure → Replace the radiator cap.

Radiator cap opening pressure
95 ~ 125 kPa
(0.95 ~ 1.25 kg/cm², 13.8 ~ 18.1 psi)

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a. Install the radiator cap tester ① and radiator cap tester adapter ② to the radiator cap ③.

Radiator cap tester
YU-24460-01
Radiator cap tester adapter
YU-33984

b. Apply the specified pressure for ten seconds and make sure there is no drop in pressure.

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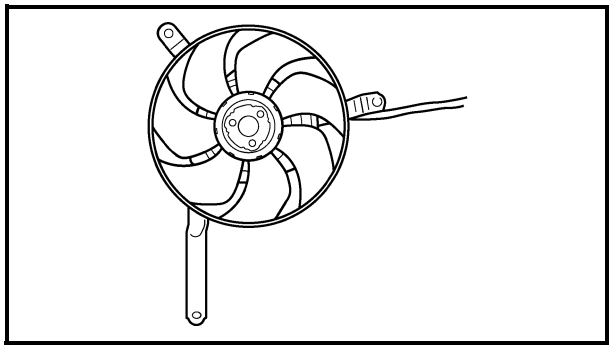
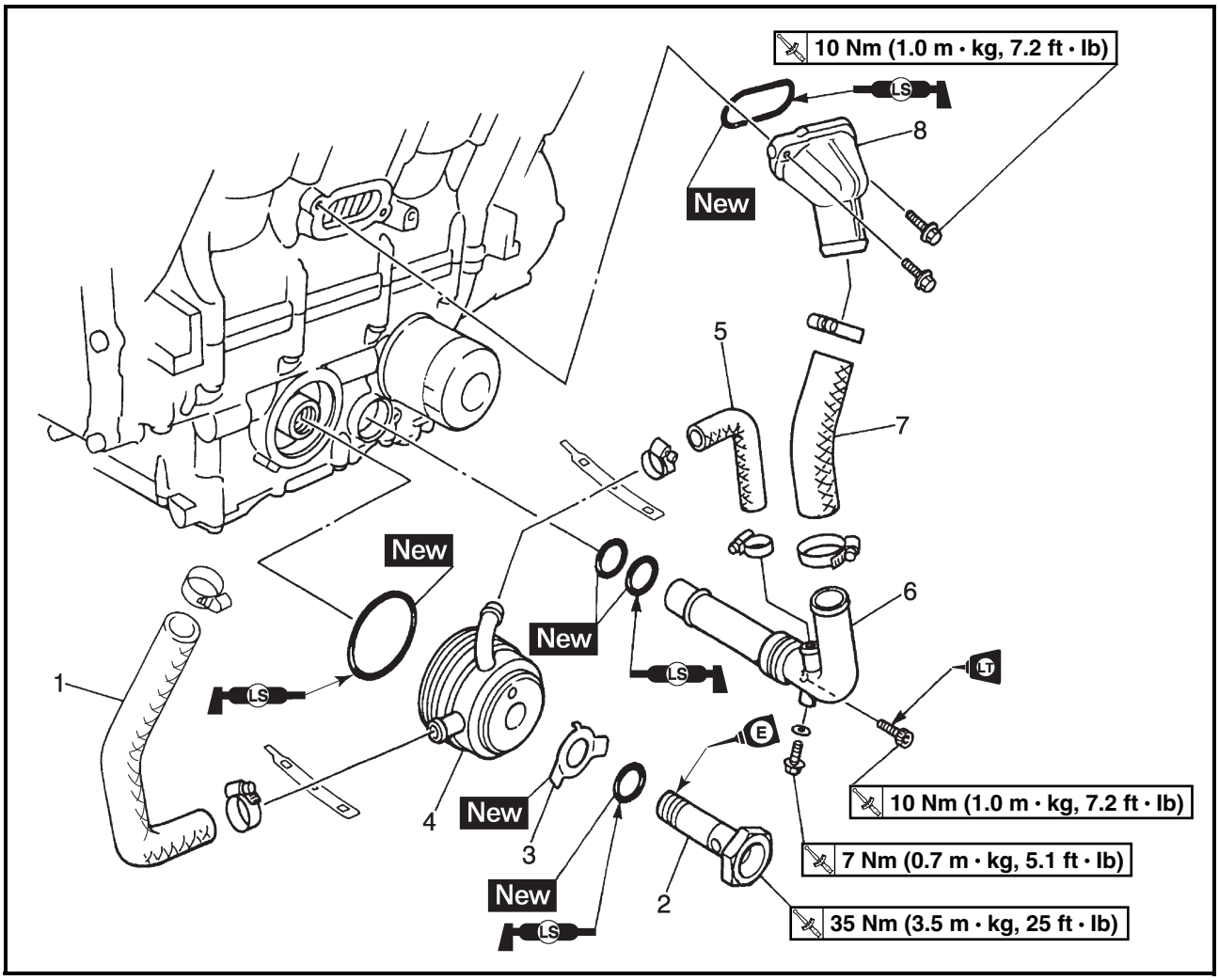


4. Check:
   - radiator fan
     Damage → Replace.
     Malfunction → Check and repair.
     Refer to “COOLING SYSTEM” in chapter 8.

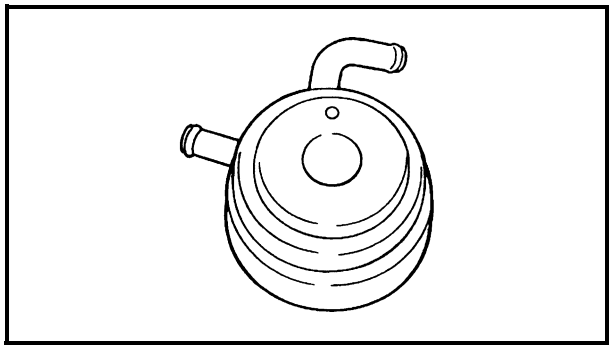
EAS00456
INSTALLING THE RADIATOR

1. Fill:
   - cooling system
     (with the specified amount of the recommended coolant)
     Refer to “CHANGING THE COOLANT” in chapter 3.
2. Check:
   - cooling system
     Leaks → Repair or replace any faulty part.
3. Measure:
   - radiator cap opening pressure
     Below the specified pressure → Replace the radiator cap.
     Refer to “CHECKING THE RADIATOR”.

EAS00457
OIL COOLER



Order	Job/Part	Q'ty	Remarks
	Removing the oil cooler		Remove the parts in the order listed.
	Radiator assembly		Refer to "RADIATOR".
	Exhaust pipe assembly		Refer to "ENGINE" in chapter 5.
	Engine oil		Drain. Refer to "CHANGING THE ENGINE OIL" in chapter 3.
1	Oil cooler outlet hose	1	
2	Bolt	1	
3	Lock washer	1	
4	Oil cooler	1	
5	Oil cooler inlet hose	1	
6	Water pump outlet pipe	1	
7	Water jacket joint inlet hose	1	
8	Water jacket joint	1	
			For installation, reverse the removal procedure.

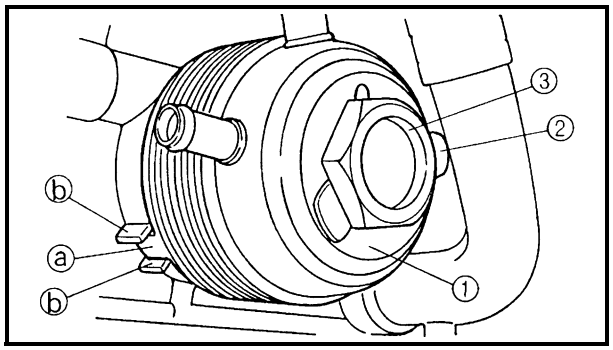


EAS00458
CHECKING THE OIL COOLER

1. Check:
   - oil cooler
     Cracks/damage → Replace.
2. Check:
   - oil cooler inlet hose
   - oil cooler outlet hose
     Cracks/damage/wear → Replace.

EAS00459
INSTALLING THE OIL COOLER

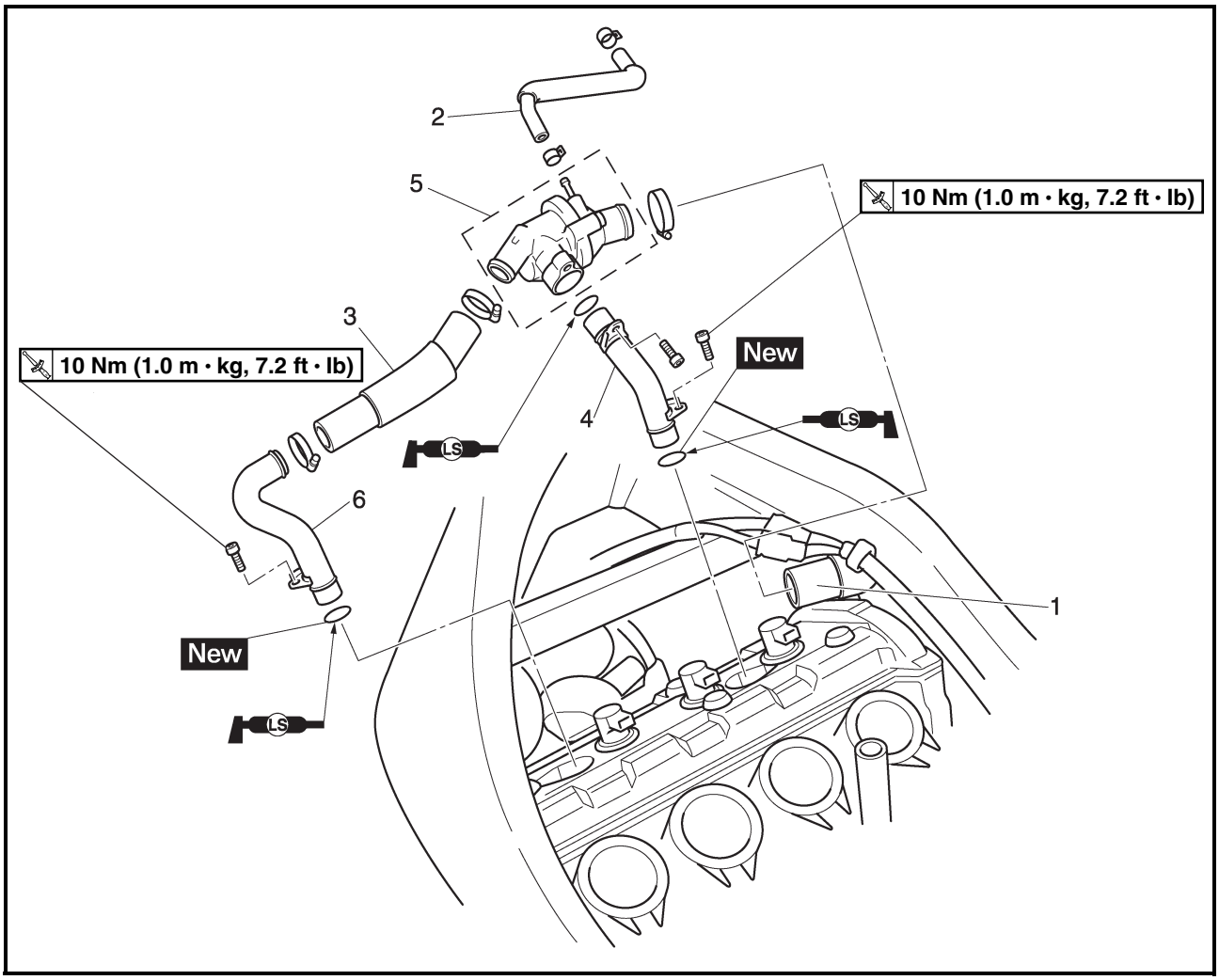
1. Clean:
   - mating surfaces of the oil cooler and the crankcase
     (with a cloth dampened with lacquer thinner)
2. Install:
   - O-ring New
   - oil cooler ①
   - lock washer ② New
   - bolt ③



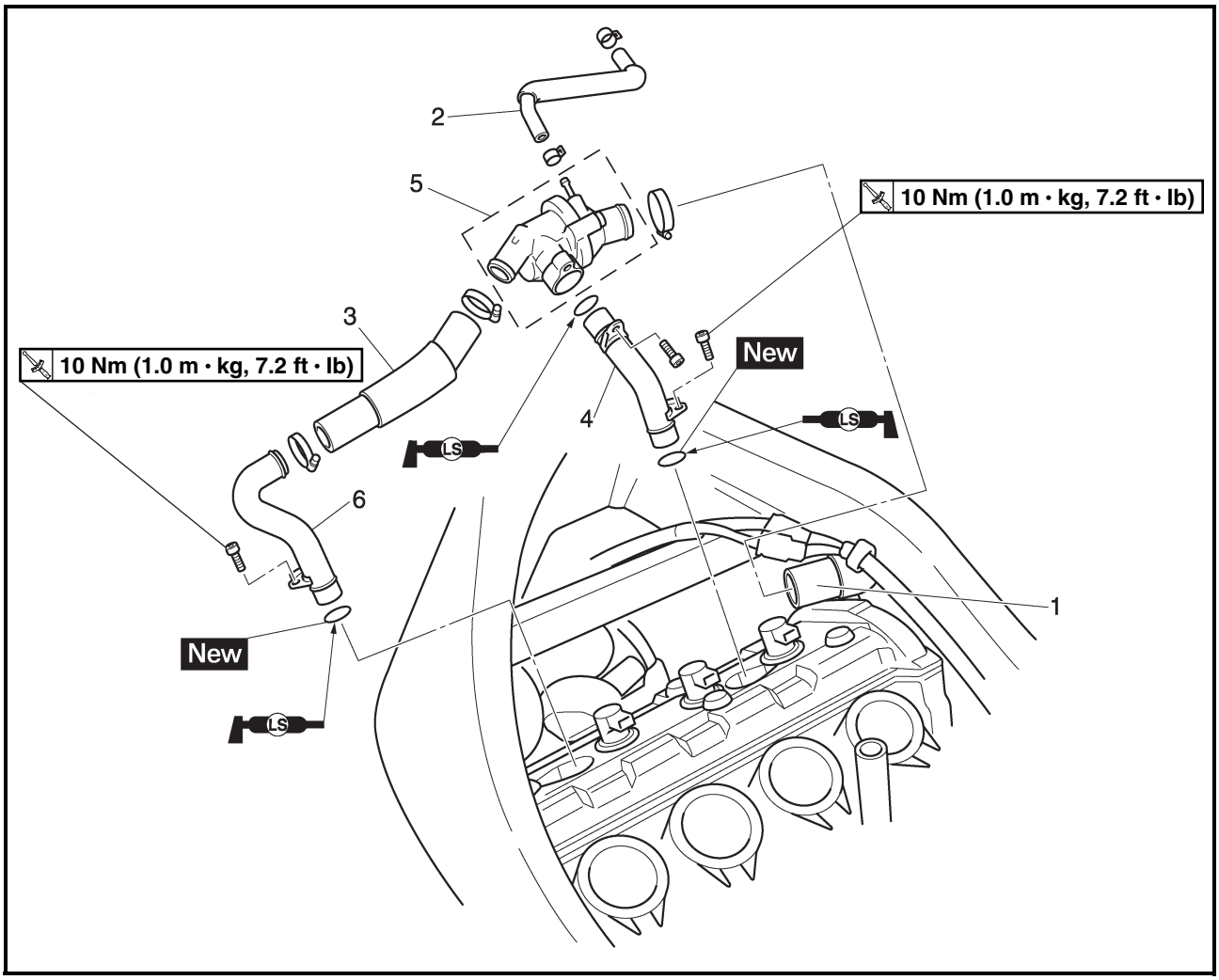
NOTE:
- Before installing the oil cooler, lubricate the oil cooler bolt and O-ring with a thin coat of engine oil.
- Make sure the O-ring is positioned properly.
- Align the projection ⓐ on the oil cooler with the slot ⓑ in the crankcase.

3. Bend the lock washer tab along a flat side of the bolt.
4. Fill:
   - cooling system
     (with the specified amount of the recommended coolant)
     Refer to “CHANGING THE COOLANT” in chapter 3.
   - crankcase
     (with the specified amount of the recommended engine oil)
     Refer to “CHANGING THE ENGINE OIL” in chapter 3.
5. Check:
   - cooling system
     Leaks → Repair or replace any faulty part.
6. Measure:
   - radiator cap opening pressure
     Below the specified pressure → Replace the radiator cap.
     Refer to “CHECKING THE RADIATOR”.

EAS00460
THERMOSTAT

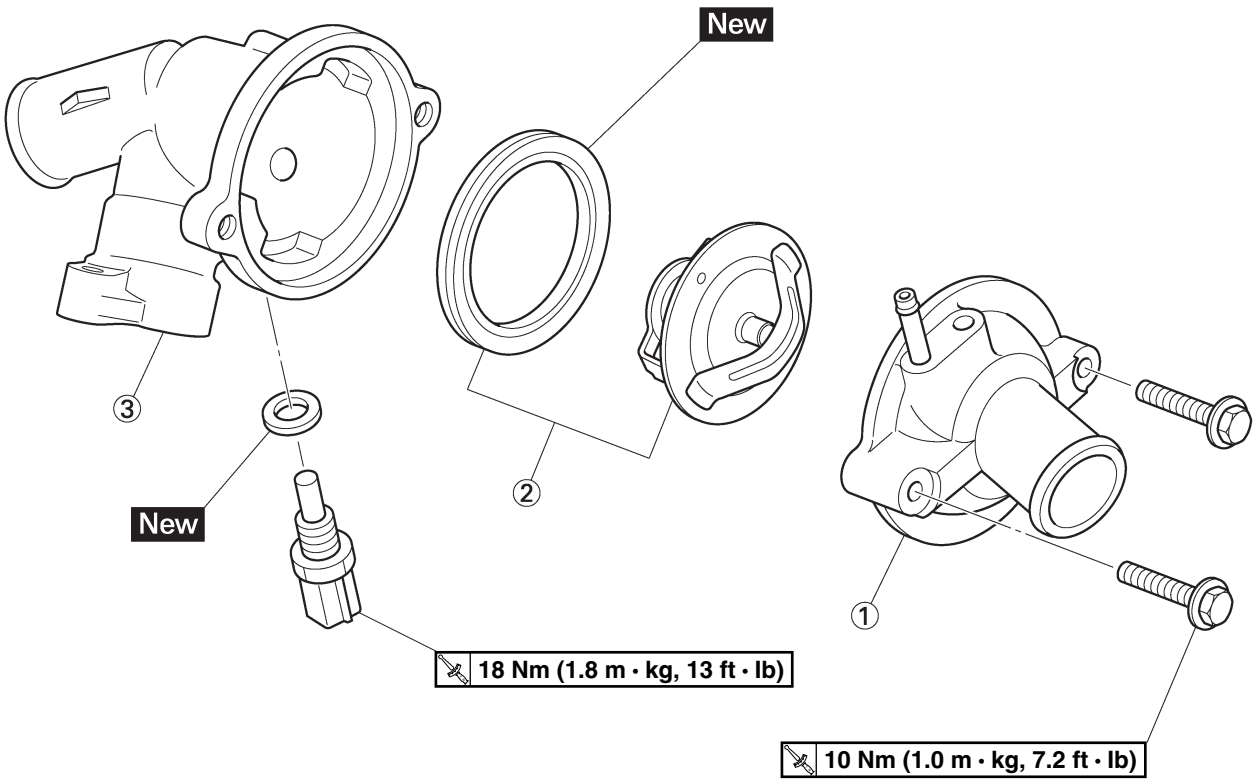


Order	Job/Part	Q'ty	Remarks
	Removing the thermostat assembly		Remove the parts in the order listed.
	Rider seat and fuel tank		Refer to "SEATS" and "FUEL TANK" in chapter 3.
	Air filter case and rubber cover		Refer to "AIR FILTER CASE" in chapter 3.
	Throttle body assembly		Refer to "THROTTLE BODIES" in chapter 7.
	Coolant		Drain. Refer to "CHANGING THE COOLANT" in chapter 3.
1	Radiator inlet hose	1	
2	Thermostat assembly breather hose	1	
3	Thermostat assembly inlet hose (left)	1	
4	Thermostat assembly inlet pipe (right)	1	

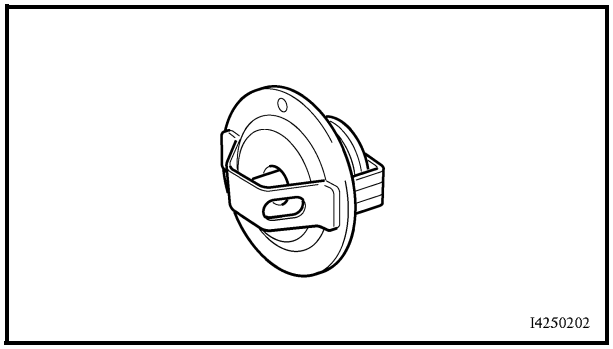


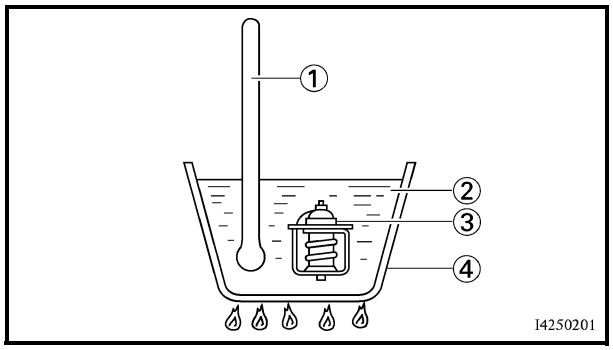
Order	Job/Part	Q'ty	Remarks
5	Thermostat assembly	1	
6	Thermostat assembly inlet pipe (left)	1	For installation, reverse the removal procedure.

EAS00461



Order	Job/Part	Q'ty	Remarks
	Disassembling the thermostat housing		Remove the parts in the order listed.
①	Thermostat housing cover	1	
②	Thermostat	1	
③	Thermostat housing	1	
			For assembly, reverse the disassembly procedure.


I4250202



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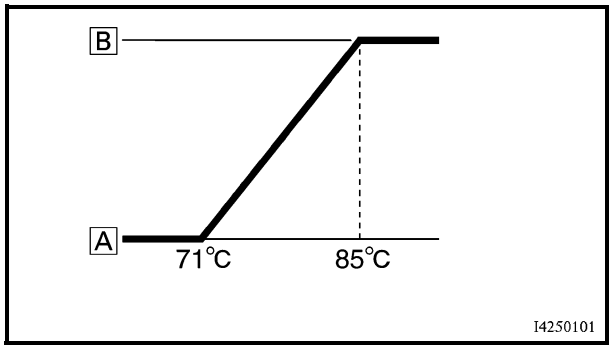

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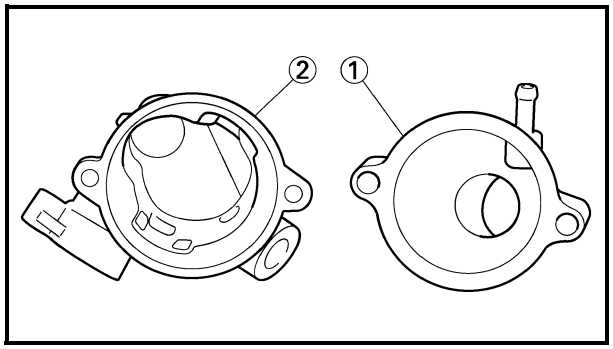

EAS00462
CHECKING THE THERMOSTAT

1. Check:
   - thermostat
     Does not open at 71 ~ 85 °C (160 ~ 185 °F)
     → Replace.

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a. Suspend the thermostat in a container filled with water.
b. Slowly heat the water.
c. Place a thermometer in the water.
d. While stirring the water, observe the thermostat and thermometer's indicated temperature.

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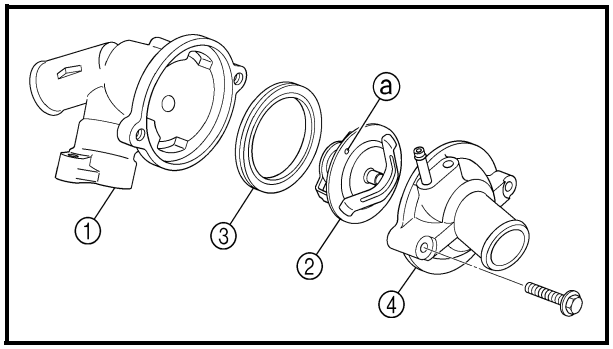
① Thermometer
② Water
③ Thermostat
④ Container
A Fully closed
B Fully open

NOTE:

If the accuracy of the thermostat is in doubt, replace it. A faulty thermostat could cause serious overheating or overcooling.

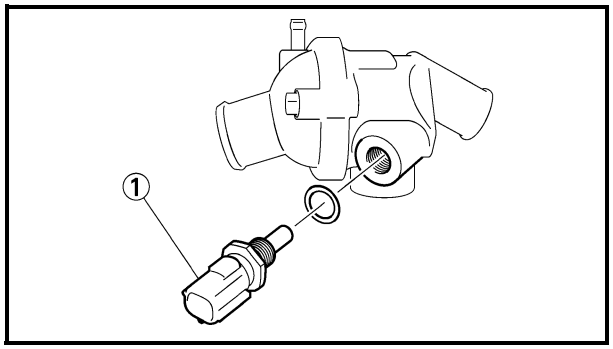
2. Check:
   - thermostat housing cover ①
   - thermostat housing ②
     Cracks/damage → Replace.



EAS00464
ASSEMBLING THE THERMOSTAT ASSEMBLY

1. Install:
   - thermostat housing ①
   - thermostat ②
   - O-ring New ③
   - thermostat housing cover ④

NOTE:
Install the thermostat with its breather hole ⓐ facing up.



2. Install:
   - coolant temperature sensor ①

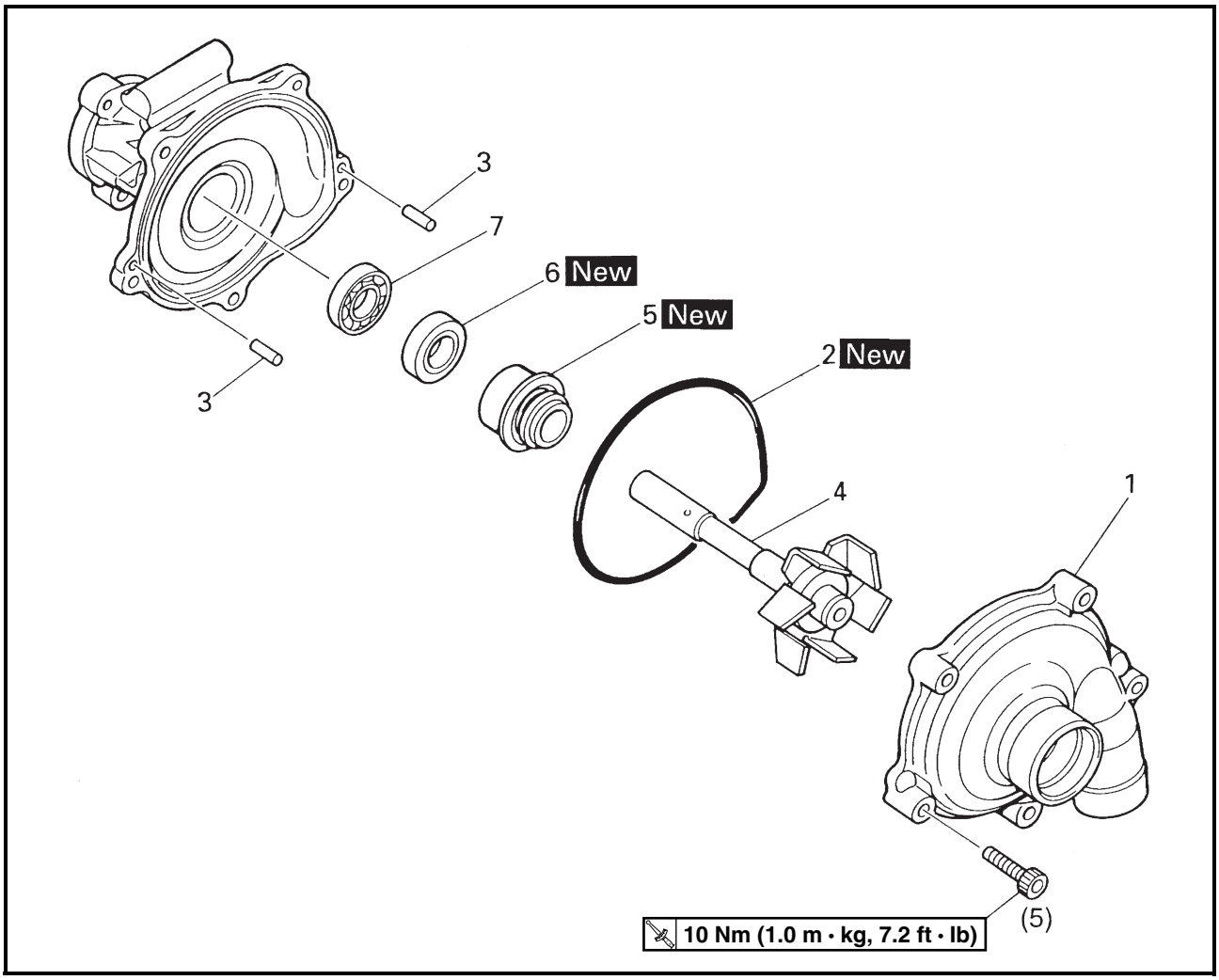
18 Nm (1.8 m · kg, 13 ft · lb)

CAUTION:
Use extreme care when handling the thermo switch and temperature sender. Replace any part that was dropped or subjected to a strong impact.

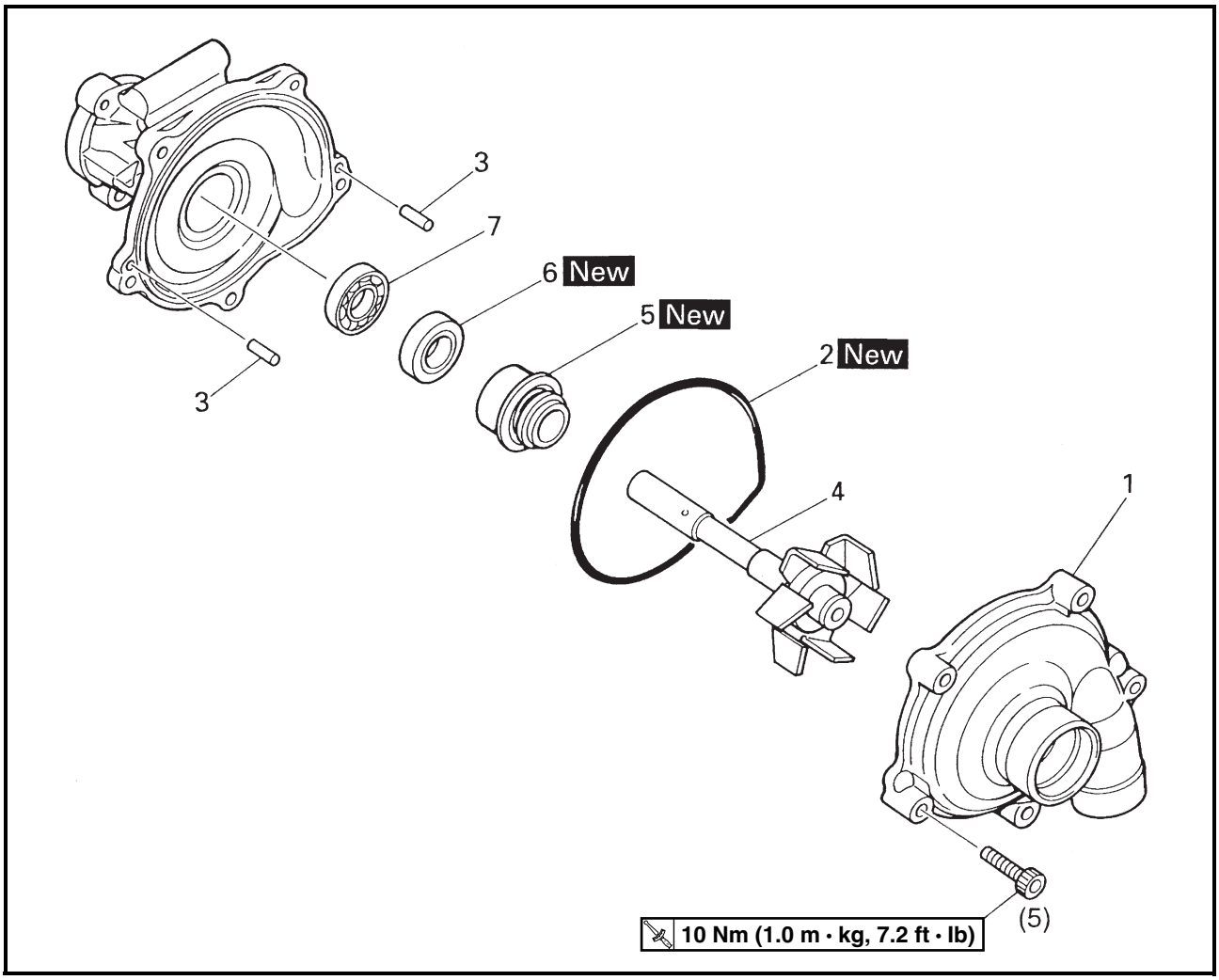
EAS00466
INSTALLING THE THERMOSTAT ASSEMBLY

1. Fill:
   - cooling system
     (with the specified amount of the recommended coolant)
     Refer to "CHANGING THE COOLANT" in chapter 3.
2. Check:
   - cooling system
     Leaks → Repair or replace any faulty part.
3. Measure:
   - radiator cap opening pressure
     Below the specified pressure → Replace the radiator cap.
     Refer to "CHECKING THE RADIATOR".

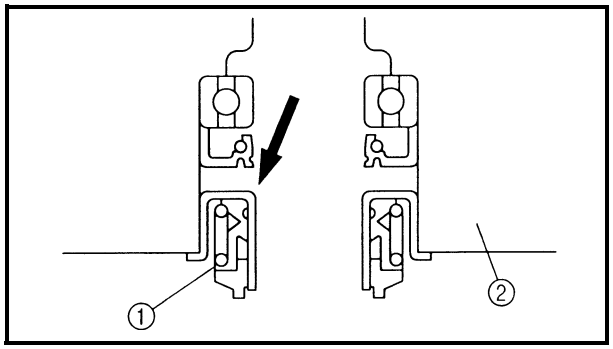
EAS00468
WATER PUMP



Order	Job/Part	Q'ty	Remarks
	Removing the impeller shaft		Remove the parts in the order listed. **NOTE:** • The water pump and oil pump are combined into one unit (oil/water pump assembly). • It is not necessary to remove the impeller shaft unless the coolant level is extremely low or coolant leaks from the oil pan.
	Oil/water pump assembly and oil pump rotor		Refer to "OIL PAN AND OIL PUMP" in chapter 5.
1	Water pump cover	1	
2	O-ring	1	
3	Pin	2	
4	Impeller shaft (along with the impeller)	1	



Order	Job/Part	Q'ty	Remarks
5	Water pump seal	1	
6	Oil seal	1	
7	Bearing	1	
			For installation, reverse the removal procedure.

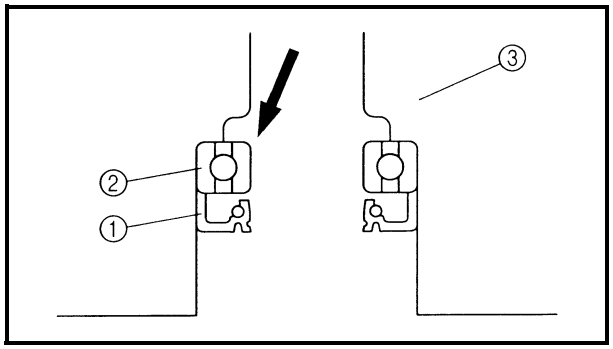


EAS00471
DISASSEMBLING THE WATER PUMP

1. Remove:
   • water pump seal ①

NOTE:
Tap out the water pump seal from the inside of the water pump housing.

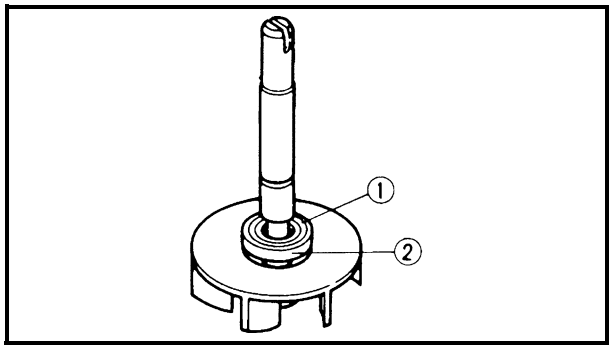
② Water pump housing



2. Remove:
   • oil seal ①
   • bearing ②

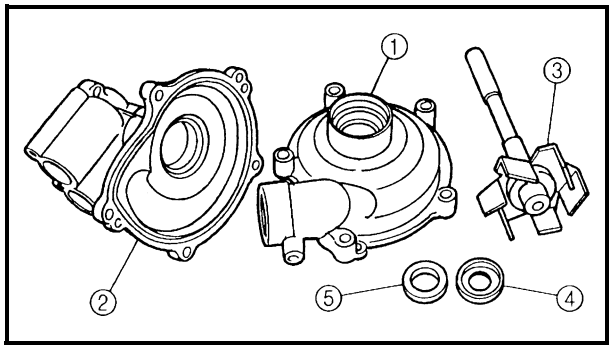
NOTE:
Tap out the bearing and oil seal from the outside of the water pump housing.

③ Water pump housing



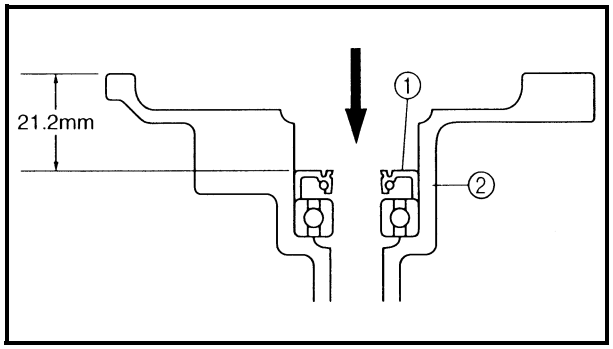
3. Remove:
   • rubber damper holder ①
   • rubber damper ②
     (from the impeller, with a thin, flat-head screwdriver)

NOTE:
Do not scratch the impeller shaft.



EAS00473
CHECKING THE WATER PUMP

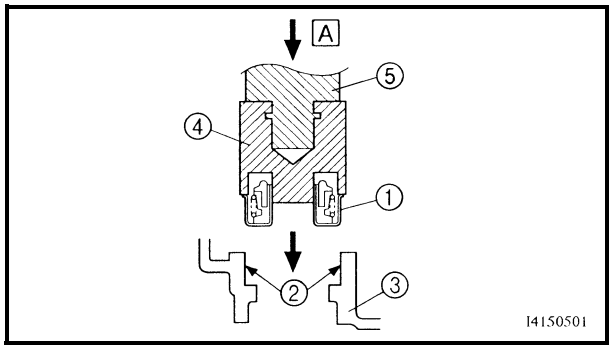
1. Check:
   • water pump housing cover ①
   • water pump housing ②
   • impeller ③
   • rubber damper ④
   • rubber damper holder ⑤
   • water pump seals
   • oil seal
     Cracks/damage/wear → Replace.
2. Check:
   • bearing
     Rough movement → Replace.
3. Check:
   • water pump outlet pipe
     Cracks/damage/wear → Replace.



EAS00475
ASSEMBLING THE WATER PUMP

1. Install:
   - oil seal New ①
     (into the water pump housing ②)

NOTE:
- Before installing the oil seal, apply tap water or coolant onto its out surface.
- Install the oil seal with a socket that matches its outside diameter.



2. Install:
   - water pump seal New ①

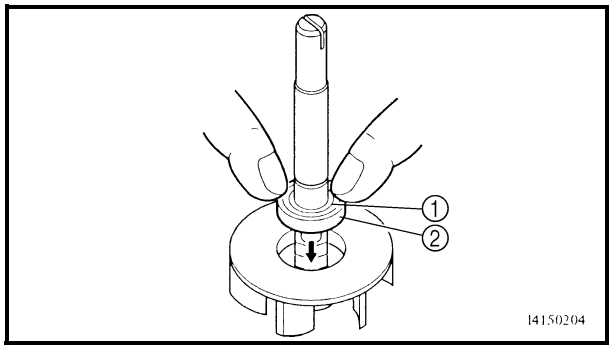
CAUTION:

Never lubricate the water pump seal surface with oil or grease.

NOTE:
- Install the water pump seal with the special tools.
- Before installing the water pump seal, apply Yamaha bond No.1215 or Quick Gasket ② to the water pump housing ③.

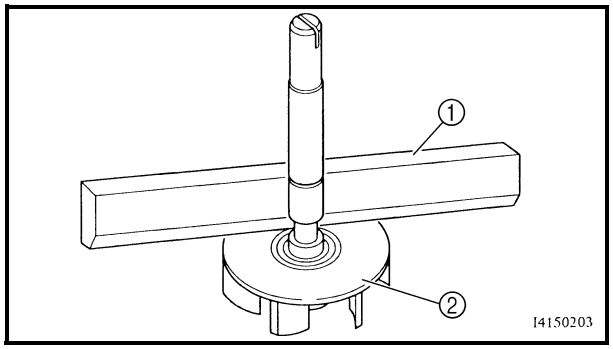
Mechanical seal installer ④
YM-33221
Middle driven shaft bearing driver ⑤
YM-4058-1
Quick Gasket®
ACC-11001-05-01

A Push down.



3. Install:
   - rubber damper New ①
   - rubber damper holder New ②

NOTE:
Before installing the rubber damper, apply tap water or coolant onto its outer surface.



4. Measure:
   • impeller shaft tilt
   Out of specification → Repeat steps (3) and (4).

CAUTION:

Make sure the rubber damper and rubber damper holder are flush with the impeller.

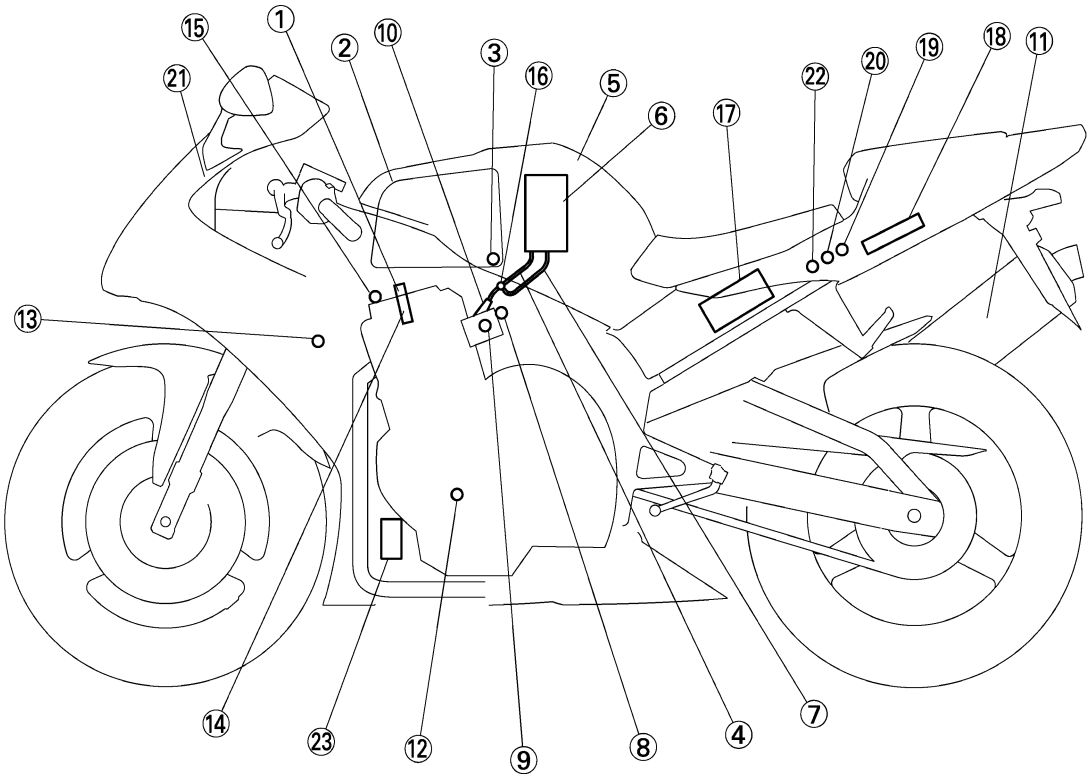
Impeller shaft tilt limit
0.15 mm (0.0059 in)

① Straightedge
② Impeller

FUEL INJECTION SYSTEM

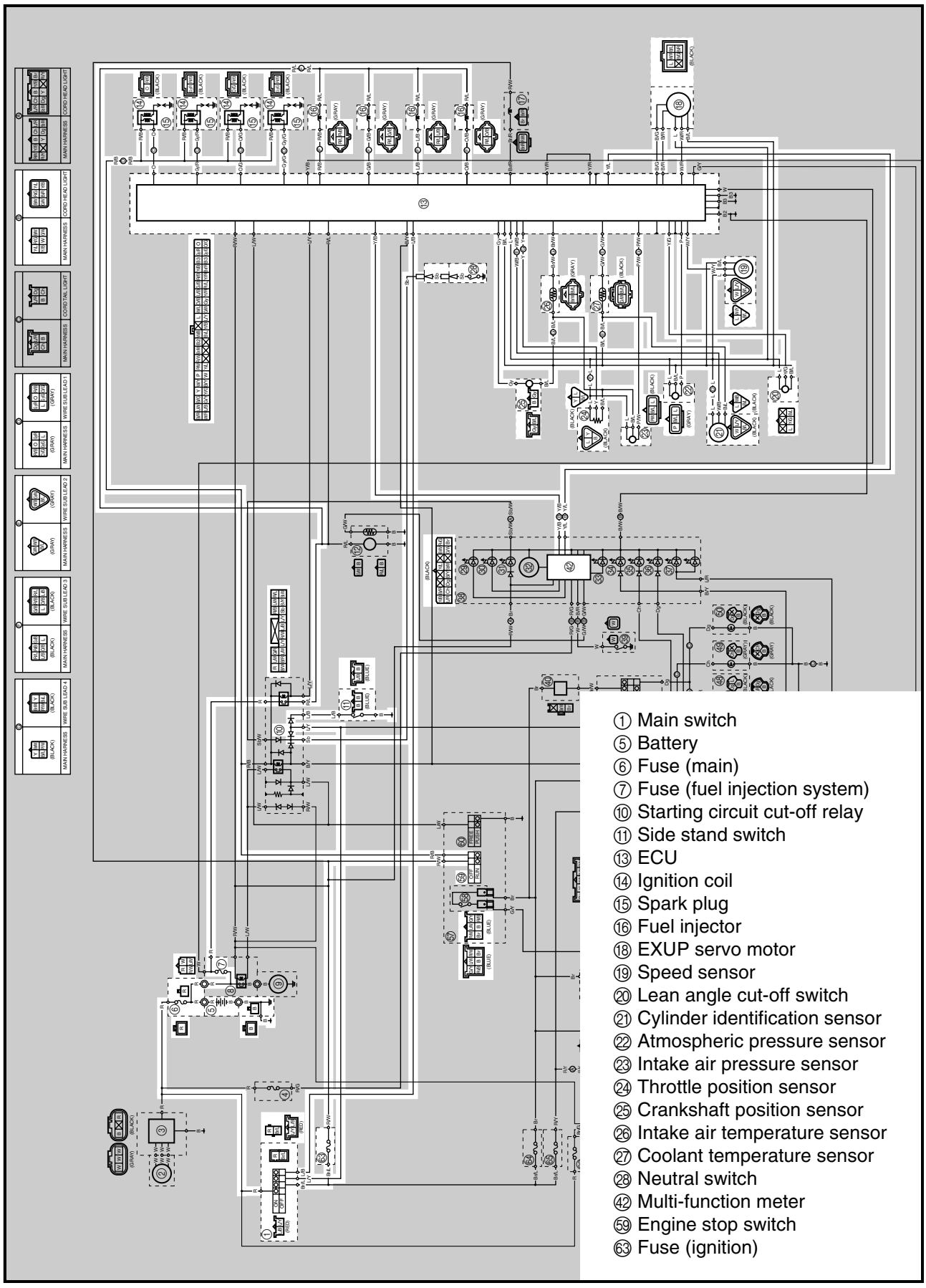
FUEL INJECTION SYSTEM

① Ignition coil
② Air filter case
③ Intake temperature sensor
④ Fuel delivery hose
⑤ Fuel tank
⑥ Fuel pump
⑦ Fuel return hose
⑧ Intake air pressure sensor
⑨ Throttle position sensor
⑩ Fuel injector
⑪ Catalytic converter
⑫ Crankshaft position sensor
⑬ Coolant temperature sensor
⑭ Spark plug
⑮ Cylinder identification sensor
⑯ Pressure regulator
⑰ Battery
⑱ ECU
⑲ Atmospheric pressure sensor
⑳ Fuel injection system relay
㉑ Engine trouble warning light
㉒ Lean angle cut-off switch
㉓ Air cut-off valve



7

WIRING DIAGRAM



① Main switch
⑤ Battery
⑥ Fuse (main)
⑦ Fuse (fuel injection system)
⑩ Starting circuit cut-off relay
⑪ Side stand switch
⑬ ECU
⑭ Ignition coil
⑮ Spark plug
⑯ Fuel injector
⑱ EXUP servo motor
⑲ Speed sensor
⑳ Lean angle cut-off switch
㉑ Cylinder identification sensor
㉒ Atmospheric pressure sensor
㉓ Intake air pressure sensor
㉔ Throttle position sensor
㉕ Crankshaft position sensor
㉖ Intake air temperature sensor
㉗ Coolant temperature sensor
㉘ Neutral switch
㊷ Multi-function meter
㊾ Engine stop switch
㊸ Fuse (ignition)

ECU'S SELF-DIAGNOSTIC FUNCTION

The ECU is equipped with a self-diagnostic function in order to ensure that the engine control system is operating normally. If this function detects a malfunction in the system, it immediately operates the engine under substitute characteristics and illuminates the engine trouble warning light to alert the rider that a malfunction has occurred in the system. Once a malfunction has been detected, it becomes stored in the ECU memory in the form of a fault code.

- To inform the rider that the fuel injection stop function is active, the engine trouble warning light blinks while the start switch is being pressed to start the engine.
- If a malfunction in the system is detected by the self-diagnostic function, this mode provides an appropriate substitute characteristic operation, and alerts the rider of the detected malfunction by illuminating a engine trouble warning light.
- After the engine has been stopped, digital numbers representing the self-diagnostic fault codes appear on the clock LCD. Once a self-diagnostic fault code has been displayed, it remains stored in the ECU memory until a deletion operation is performed.

Engine trouble warning light indication and FI system operating conditions

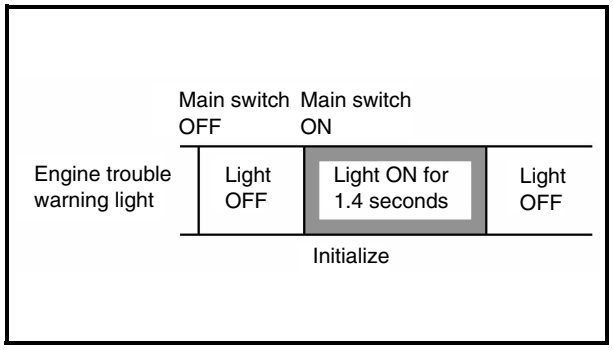
Warning light indication	ECU's operating condition	FI operating condition	Starting and driving
Blinking *	Warning control when unable to start engine	Operation stopped	Unable
Continuous ON	Detecting malfunction	Gives driving instructions with substitute characteristics in accordance with the description of the malfunction.	Able/Unable depending on self-diagnostic fault code

* This control is effected when any one of the conditions listed below is present and the starter switch is turned ON:

11: Cylinder identification sensor
12: Crankshaft position sensor
19: Sidestand switch (open circuit in wire to ECU)
30: Lean angle cut-off switch (latch up detected)
41: Lean angle cut-off switch (open or short circuit)
50: ECU internal malfunction (memory check error)

Function to check for blown engine trouble warning light bulb

The engine trouble warning light illuminates for 1.4 seconds after the main switch has been turned "ON" and while the starter switch is being pressed. If the warning light does not illuminate under these conditions, a problem may have possibly occurred, such as a blown warning light bulb.



SUBSTITUTE CHARACTERISTICS OPERATION CONTROL (FAIL-SAFE ACTION)

If the ECU detects an abnormal signal from a sensor while the motorcycle is being driven, the ECU illuminates the engine trouble warning light and provides the engine with substitute characteristic operation instructions that are appropriate for the type of the malfunction.

When an abnormal signal is received from a sensor, the ECU processes the specified values that are programmed for every sensor, in order to provide the engine with substitute characteristics operation instructions that enable the engine to continue to operate (or to stop its operation, depending on circumstances).

The ECU takes fail-safe actions in two ways: one in which the sensor output is set to a prescribed value, and the other in which the ECU directly operates an actuator. Details on the fail-safe actions are given in the table below.

FAIL-SAFE ACTIONS TABLE

Fault Code No.	Item	Symptom	Fail-safe action	Able/unable to start	Able/unable to drive
11	Cylinder identification sensor	No normal signals are received from the cylinder identification sensor.	Continues to operate the engine based on the results of the cylinder identification that existed up to that point.	Unable	Able
12	Crankshaft position sensor	No normal signals are received from the crankshaft position sensor.	• Stops the engine (by stopping the injection and ignition).	Unable	Unable
13 14	Intake air pressure sensor (open or short circuit) (pipe system)	Intake air pressure sensor - open or short circuit detected. Faulty intake air pressure sensor system.	• Fixes the intake air pressure to 760 mmHg.	Able	Able
15 16	Throttle position sensor (open or short circuit) (stuck)	Throttle position sensor - open or short circuit detected.	• Fixes the throttle position sensor to fully open.	Able	Able
17	EXUP servo motor (open or short circuit)	EXUP servo motor-open or short circuit detected.	• Turn the EXUP servo motor toward the open side for 3 seconds and then stop it.	Able	Able
18	EXUP servo motor (lock)	A lock EXUP servo motor is detected.	• Perform the preventive control against motor locking. (Preform the lock release operation twice every 100 seconds.)	Able	Able
19	Sidestand switch (open circuit in wire to ECU)	Open circuit is detected in the input line from the sidestand switch to the ECU.	– (No start)	Unable	Unable
20	Intake temperature Atmospheric pressure	Defective values are detected due to the internal malfunction	• Fixes the intake air pressure and atmospheric pressure to 760 mmHg.	Able	Able
21	Coolant temperature sensor	Coolant temperature sensor - open or short circuit detected.	• Fixes the coolant temperature to 60 °C.	Able	Able
22	Intake temperature sensor	Intake temperature sensor - open or short circuit detected.	• Fixes the intake temperature to 20 °C.	Able	Able
23	Atmospheric pressure sensor	Atmospheric pressure sensor - open or short circuit detected.	• Fixes the atmospheric pressure to 760 mmHg.	Able	Able
33 34 35 36	Faulty ignition	Open circuit detected in the primary lead of the ignition coil.	• Fuel is cut off only to the cylinder in which a malfunction is detected.	Able (depending on the number of faulty cylinders)	Able (depending on the number of faulty cylinders)
30 41	Lean angle cut-off switch (latch up detected) (open or short circuit)	Lean angle cut-off switch-open or short circuit detected.	• Turns OFF the fuel injection system relay of the fuel system.	Unable	Unable
42	Speed sensor, neutral switch	No normal signals are received from the speed sensor; or, an open or short circuit is detected in the neutral switch.	• Fixes the gear to the top gear.	Able	Able
43	Fuel system voltage (monitor voltage)	The ECU is unable to monitor the battery voltage (an open circuit in the line to the ECU).	• Fixes the battery voltage to 12 V.	Able	Able
44	Error in writing the amount of CO adjustment on EEPROM	An error is detected while reading or writing on EEPROM (CO adjustment value).	–	Able	Able
50	ECU internal malfunction (memory check error)	Faulty ECU memory. When this malfunction is detected, the code number might not appear on the meter.	–	Unable	Unable

TROUBLESHOORING CHART

"Engine runs irregularly." or "Engine trouble warning light is illuminated."
* Engine trouble warning light may not be illuminated even if the engine runs irregularly.

When the engine trouble warning light is illuminated

Checking the self-diagnostic fault code number:
Check the self-diagnostic fault code number displayed on the meter.

Specifying the malfunctioned system:
Specify the malfunctioned system by referring to the Fail-safe actions table.

Presuming the cause:
Presume the malfunction cause by referring to the Diagnostic monitoring code table.

Checking and repaining the presumed place of malfunction.

Diagnostic Monitoring code No. YES	Diagnostic Monitoring code No. NONE
Check and repair in accordance with the "Troubleshooting details", monitoring the operation of sensor and actuator in the Diagnostic monitoring mode (Refer to "Diagnostic mode table" in chapter 7.).	Check and repair in accordance with the trouble shooting details.

ECU reinstatement action:
Perform ECU reinstatement action referring to the reinstatement method in the troubleshooting details.

Checking the meter display:
Check whether the self-diagnostic fault code number is shown after turning the main switch OFF once, and then turning it back ON.

Displayed again. → Checking and repaining the presumed place of malfunction.

Not displayed

Erasing the malfunction history:*
Malfunction history will be stored even if the main switch is turned OFF. To erase the malfunction history, it is required to operate to erase the malfunction history in the Diagnostic monitoring mode. (Refer to Diagnostic mode table (Diagnostic code No.62))

When the engine trouble warning light is not illuminated

Inspecting the sensor actuator: Check the operation of following sensors and actuators in the Diagnostic monitoring mode (Refer to "Diagnostic mode table" in chapter 7.)
01: Throttle position sensor (throttle angle)
30: Ignition coil #1
31: Ignition coil #2
32: Ignition coil #3
33: Ignition coil #4
36: Injector #1
37: Injector #2
38: Injector #3
39: Injector #4
48: AI system solenoid

OK → Malfunction of engine unit → Check and repair the inner parts of engine referring to the engine edition of chapter 5. → OK → Checking the engine condition.

NG → Defective sensor or actuator → Check and repair the corresponding sensor or actuator. → OK → Checking the engine condition.

NG → Malfunction of engine unit

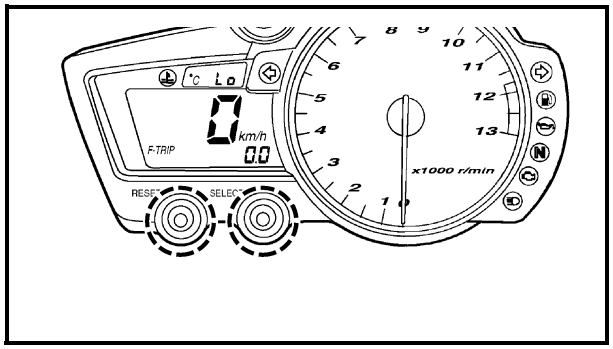
Checking the engine condition. → OK → Repair Completion

Repair Completion

* Operation when the engine trouble warning light is illuminated.

DIAGNOSTIC MODE

- In this mode, diagnostic codes are input into the ECU in accordance with the number of times the start switch has been operated.
- In accordance with the diagnostic codes, the ECU displays the values received from the sensors and actuates the actuators.
- Whether or not the system is operating normally is determined by a human operator through the observations of the values indicated by the engine trouble warning light or the actuating conditions of the actuators.



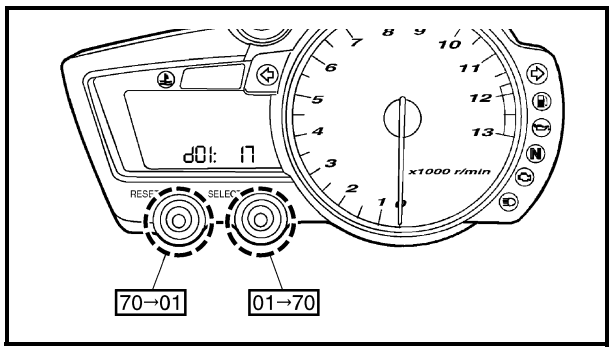
How to set the diagnostic mode

1. Turn the main switch to “OFF” and engine stop switch “ON”.
2. While keeping the “SELECT” and “RESET” buttons pressed simultaneously, turn “ON” the main switch (keep them pressed for 8 seconds or more).

NOTE:

- All indications on the meter disappear except the clock and trip indications.
- Letters “dIAG” appear on the clock LCD.

3. Using the “SELECT” button, select either the CO adjustment mode (which appears as “CO”) or the diagnosis mode (which appears as “dIAG”).
4. After “dIAG” appears as a result of pressing the “SELECT” button, simultaneously press the “SELECT” and “RESET” buttons for 2 seconds or more to execute the selection.
5. Disconnect the wiring harness coupler from the fuel pump.
6. Turn the engine stop switch “OFF”.
   Turn the engine stop switch “ON” if diagnostic code numbers 03 and 09 are shown.
7. Select the diagnostic code number that applies to the item that was verified with the self-diagnostic fault code number, and enter it on the meter by operating the “SELECT” or “RESET” button.



NOTE:

- “RESET” button
  Decrement (press 1 second or longer → auto) “SELECT” button
  Increment (press 1 second or longer → auto)
- Diagnostic code number appears on clock LCD (01 ~ 70)

8. Turn the main switch to “OFF”. The diagnosis mode will be cancelled.

Diagnostic fault code table

Fault Code No.	Symptom	Probable cause of malfunction	Code of diagnostic mode
11	No normal signals are received from the cylinder identification sensor. **NOTE:** This code number appears if the condition continued for 10 seconds in which the starter motor does not run even if the starter switch has been pressed.	• Open or short circuit in wiring sub lead. • Open or short circuit in wiring harness. • Defective cylinder identification sensor. • Malfunction in ECU. • Improperly installed sensor.	—
12	No normal signals are received from the crankshaft position sensor.	• Open or short circuit in wiring harness. • Defective crankshaft position sensor. • Malfunction in pickup rotor. • Malfunction in ECU. • Improperly installed sensor.	—
13	Intake air pressure sensor-open or short circuit detected.	• Open or short circuit in wiring sub lead. • Open or short circuit in wiring harness. • Defective intake air pressure sensor. • Malfunction in ECU.	03
14	Faulty intake air pressure sensor hose system; a hose is detached, causing constant application of the atmospheric pressure to the sensor; or, the hose is clogged.	• Intake air pressure sensor hose is detached, clogged, kinked, or pinched. • Malfunction in ECU.	03
15	Throttle position sensor-open or short circuit detected.	• Open or short circuit in wiring sub lead. • Open or short circuit in wiring harness. • Defective throttle position sensor. • Malfunction in ECU. • Improperly installed throttle position sensor.	01
16	A stuck throttle position sensor is detected.	• Stuck throttle position sensor. • Malfunction in ECU.	01
17	EXUP servo motor potention circuit-open or short circuit detected.	• Open or short circuit in wiring sub lead. • Detected EXUP servo motor (potention circuit).	53
18	EXUP servo motor is stuck.	• Open or short circuit in wiring sub lead. • Stuck EXUP servo motor (mechanism). • Stuck EXUP servo motor (motor).	53
19	Open circuit in the input line from the sidestand switch to the ECU is detected when the start switch is pressed.	• Open or short circuit in wiring harness. • Malfunction in ECU.	20
20	When the main switch is turned to ON, the atmospheric sensor voltage and intake air pressure sensor voltage differ greatly.	• Atmospheric pressure sensor hose is clogged. • Intake air pressure sensor hose is clogged, kinked, or pinched. • Malfunction of the atmospheric pressure sensor in the intermediate electrical potential. • Malfunction of the intake air pressure sensor in the intermediate electrical potential. • Malfunction in ECU.	03 02
21	Coolant temperature sensor - open or short circuit detected.	• Open or short circuit in wiring harness. • Defective coolant temperature sensor. • Malfunction in ECU. • Improperly installed sensor.	06
22	Intake temperature sensor - open or short circuit detected.	• Open or short circuit in wiring harness. • Defective intake temperature sensor. • Malfunction in ECU. • Improperly installed sensor.	05
23	Atmospheric pressure sensor - open or short circuit detected.	• Open or short circuit in wiring sub lead. • Defective atmospheric pressure sensor. • Improperly installed sensor. • Malfunction in ECU.	02
30	The motorcycle has overturned.	• Overturned. • Malfunction in ECU.	08

Fault Code No.	Symptom	Probable cause of malfunction	Code of diagnostic mode
33	Open circuit is detected in the primary lead of the ignition coil (#1).	• Open or short circuit in wiring harness. • Malfunction in ignition coil. • Malfunction in ECU. • Malfunction in a component of ignition cut-off circuit system.	30
34	Open circuit is detected in the primary lead of the ignition coil (#2).	• Open or short circuit in wiring harness. • Malfunction in ignition coil. • Malfunction in ECU. • Malfunction in a component of ignition cut-off circuit system.	31
35	Open circuit is detected in the primary lead of the ignition coil (#3).	• Open or short circuit wiring harness. • Malfunction in ignition coil. • Malfunction in ECU. • Malfunction in a component of ignition cut-off circuit system.	32
36	Open circuit is detected in the primary lead of the ignition coil (#4).	• Open or short circuit in wiring harness. • Malfunction in ignition coil. • Malfunction in ECU. • Malfunction in a component of ignition cut-off circuit system.	33
41	Lean angle cut-off switch - open or short circuit detected.	• Open or short circuit in wiring harness. • Defective lean angle cut-off switch. • Malfunction in ECU.	08
42	No normal signals are received from the speed sensor; or, an open or short circuit is detected in the neutral switch.	• Open or short circuit in wiring harness. • Defective speed sensor. • Malfunction in vehicle speed sensor detected unit. • Defective neutral switch. • Malfunction in the engine side of the neutral switch. • Malfunction in ECU.	07 21
43	The ECU is unable to monitor the battery voltage (an open circuit in the monitor line to the ECU).	• Open circuit in wiring harness. • Malfunction in ECU.	09
44	An error is detected while reading or writing on EEPROM.	• Malfunction in ECU.	60
50	Faulty ECU memory. When this malfunction is detected, the code number might not appear on the meter.	• Malfunction in ECU. (The program and data are not properly written on or read from the internal memory.)	—
Er-1	No signal are received from the ECU.	• Open or short circuit in wiring sub lead. • Malfunction in meter. • Malfunction in ECU.	—
Er-2	No signal are received from the ECU within the specified duration.	• Improper connection in wiring sub lead. • Malfunction in meter. • Malfunction in ECU.	—
Er-3	Date from the ECU cannot be received correctly.	• Improper connection in wiring sub lead. • Malfunction in meter. • Malfunction in ECU.	—
Er-4	Non-registered date has been received from the meter.	• Improper connection in wiring sub lead. • Malfunction in meter. • Malfunction in ECU.	—

Diagnostic mode table

Set the meter display from the regular mode to the diagnosis mode. For the setting method, refer to "DIAGNOSTIC MODE".

NOTE:

- Check the intake temperature and coolant temperature as close as possible to the area in which the respective sensor is mounted.
- If it is not possible to check it with an atmospheric pressure gauge, judge it by using 760 mmHg (29.9 inHg) as the standard.
- If it is not possible to check the intake temperature, use the ambient temperature as reference (use the compared values for reference).

Diagnostic code	Item	Description of action	Data displayed on meter (reference value)
01	Throttle angle	Displays the throttle angle. • Check with throttle fully closed. • Check with throttle fully open.	0 ~ 125 degrees • Fully closed position (15 ~ 17) • Fully open position (97 ~ 100)
02	Atmospheric pressure	Displays the atmospheric pressure. * Use an atmospheric pressure gauge to check the atmospheric pressure.	Compare it to the value displayed on the meter.
03	Pressure difference (atmospheric pressure - intake air pressure)	Displays the pressure difference (atmospheric pressure - intake air pressure). Engine stop switch is on. * Generate the pressure difference by cranking the engine with the starter, without actually starting the engine.	10 ~ 200 mmHg
05	Intake temperature	Displays the intake air temperature. * Check the temperature in the air cleaner case.	Compare it to the value displayed on the meter.
06	Coolant temperature	Displays the coolant temperature. * Check the temperature of the coolant.	Compare it to the value displayed on the meter.
07	Vehicle speed pulse	Displays the accumulation of the vehicle pulses that are generated when the tire is spun.	(0 ~ 999; resets to 0 after 999) OK if the numbers appear on the meter.
08	Lean angle cut-off switch	Displays the lean angle cut-off switch values.	Upright: 0.4 ~ 1.4 V Overturned: 3.8 ~ 4.2 V
09	Fuel system voltage (battery voltage)	Displays the fuel system voltage (battery voltage). Engine stop switch is on.	0 ~ 18.7 V Normally, approximately 12.0 V
20	Sidestand switch	Displays that the switch is ON or OFF. (When the gear is in a position other than neutral.)	Stand retracted: ON Stand extended: OFF
21	Neutral switch	Displays that the switch is ON or OFF.	Neutral: ON In gear: OFF
30	Ignition coil #1	After 1 second has elapsed from the time the engine stop switch has been turned from OFF to ON, it actuates ignition coil #1 for five times every second and illuminates the engine trouble warning light. * Connect an ignition checker. * If the engine stop switch is ON, turn it OFF once, and then turn it back ON.	Check that spark is generated, 5 times with the engine stop switch ON.
31	Ignition coils #2	After 1 second has elapsed from the time the engine stop switch has been turned from OFF to ON, it actuates ignition coil #2 for five times every second and illuminates the engine trouble warning light. * Connect an ignition checker. * If the engine stop switch is ON, turn it OFF once, and then turn it back ON.	Check that spark is generated, 5 times with the engine stop switch ON.

Diagnostic code	Item	Description of action	Data displayed on meter (reference value)
32	Ignition coil #3	After 1 second has elapsed from the time the engine stop switch has been turned from OFF to ON, it actuates ignition coil #3 for five times every second and illuminates the engine trouble warning light. * Connect an ignition checker. * If the engine stop switch is ON, turn it OFF once, and then turn it back ON.	Check that spark is generated, 5 times with the engine stop switch ON.
33	Ignition coil #4	After 1 second has elapsed from the time the engine stop switch has been turned from OFF to ON, it actuates ignition coil #4 for five times every second and illuminates the engine trouble warning light. * Connect an ignition checker. * If the engine stop switch is ON, turn it OFF once, and then turn it back ON.	Check that spark is generated, 5 times with the engine stop switch ON.
36	Injector #1	After 1 second has elapsed from the time the engine stop switch has been turned from OFF to ON, it actuates the injector five times every second and illuminates the engine trouble warning light. * If the engine stop switch is ON, turn it OFF once, and then turn it back ON.	Check the operating sound of the injector five times with engine stop switch ON.
37	Injector #2	After 1 second has elapsed from the time the engine stop switch has been turned from OFF to ON, it actuates the injector five times every second and illuminates the engine trouble warning light. * If the engine stop switch is ON, turn it OFF once, and then turn it back ON.	Check the operating sound of the injector five times with engine stop switch ON.
38	Injector #3	After 1 second has elapsed from the time the engine stop switch has been turned from OFF to ON, it actuates the injector five times every second and illuminates the engine trouble warning light. * If the engine stop switch is ON, turn it OFF once, and then turn it back ON.	Check the operating sound of the injector five times with engine stop switch ON.
39	Injector #4	After 1 second has elapsed from the time the engine stop switch has been turned from OFF to ON, it actuates the injector five times every second and illuminates the engine trouble warning light. * If the engine stop switch is ON, turn it OFF once, and then turn it back ON.	Check the operating sound of the injector five times with engine stop switch ON.
48	AI system solenoid	After 1 second has elapsed from the time the engine stop switch has been turned from OFF to ON, it actuates the AI system solenoid five times every second and illuminates the engine trouble warning light. * If the engine stop switch is ON, turn it OFF once, and then turn it back ON.	Check the operating sound of the AI system solenoid 5 times with the engine stop switch ON.
50	Fuel injection system relay	After 1 second has elapsed from the time the engine stop switch has been turned from OFF to ON, it actuates the fuel injection system relay five times every second and illuminates the engine trouble warning light (the light is OFF when the relay is ON, and the light is ON when the relay is OFF). * If the engine stop switch is ON, turn it OFF once, and then turn it back ON.	Check the fuel injection system relay operating sound 5 times with the engine stop switch ON.
51	Radiator fan motor relay	After 1 second has elapsed from the time the engine stop switch has been turned from OFF to ON, it actuates the radiator fan motor relay five times every 5 seconds and illuminates the engine trouble warning light. (ON 2 seconds, OFF 3 seconds) * If the engine stop switch is ON, turn it OFF once, and then turn it back ON.	Check the radiator fan motor relay operating sound 5 times with the engine stop switch ON. (At that time, the fan motor rotates.)

Diagnostic code	Item	Description of action	Data displayed on meter (reference value)
52	Headlight relay 1	After 1 second has elapsed from the time the engine stop switch has been turned from OFF to ON, it actuates the headlight relay five times every 5 seconds and illuminates the engine trouble warning light. (ON 2 seconds, OFF 3 seconds) * If the engine stop switch is ON, turn it OFF once, and then turn it back ON.	Check the headlight relay operating sound 5 times with the engine stop switch ON. (At that time, the headlight turns ON.)
53	EXUP servo motor	After 1 second has elapsed from the time the engine stop switch has been turned from OFF to ON, it actuates the servo motor turns to open side at 3 seconds and to close side at 3 seconds. * If the engine stop switch is ON, turn it OFF once, and then turn it back ON.	Turn on the engine trouble warning light while servo motor is operated.
60	E2PROM fault code display	• Transmits the abnormal portion of the data in the E2PROM that has been detected as a self-diagnostic fault code 44. • If multiple malfunctions have been detected, different codes are displayed at 2-second intervals, and this process is repeated.	(01 ~ 04) Displays the cylinder number. (00) Displays when there is no malfunction.
61	Malfunction history code display	• Displays the codes of the history of the self-diagnosis malfunctions (i.e., a code of a malfunction that occurred once and which has been corrected). • If multiple malfunctions have been detected, different codes are displayed at 2-second intervals, and this process is repeated.	11 ~ 50 (00) Displays when there is no malfunction.
62	Malfunction history code erasure	• Displays the total number of codes that are being detected through self diagnosis and the fault codes in the past history. • Erases only the history codes when the engine stop switch is turned from OFF to ON. If the engine stop switch is ON, turn it OFF once, and then turn it back ON.	00 ~ 21 (00) Displays when there is no malfunction.
70	Control number	• Displays the program control number.	00 ~ 255

TROUBLESHOOTING DETAILS

This section describes the measures per fault code number displayed on the meter.Carry out check and maintenance on items or components that could be a cause of malfunction in accordance with the order.

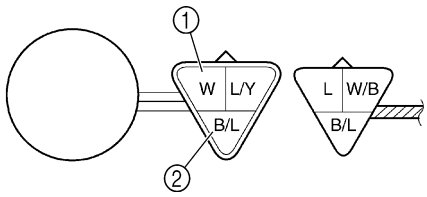
When the check and maintenance of malfunctioned part is completed, restore the meter display according to the “Restore method”.

Fault code No.:

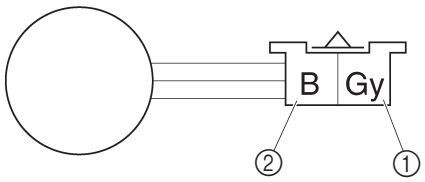
Fault code number displayed on the meter when the engine failed to work normally. (Refer to “Diagnostic fault code table”.)

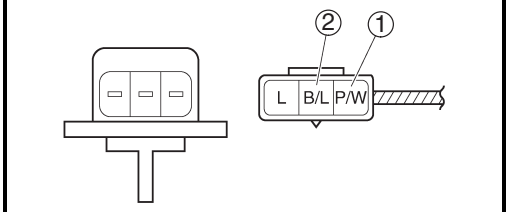
Diagnostic code No.:

Code number to be used when the diagnostic monitoring mode is operated. (Refer to “DIAGNOSTIC MODE”.)

Fault code No.	11	Symptom	No normal signals are received from the cylinder identification sensor.	
Used diagnostic code No.--				
Inspection operation item			Operation item and countermeasure	Reinstatement method
Installed condition of sensor			Check the installed area for looseness or pinching.	Reinstated by starting the engine and operating it at idle.
Defective cylinder identification sensor.			Replace if defective. 1. Connect the pocket tester (DC 20 V) to the cylinder identification sensor coupler terminal as shown. **Tester positive probe → white ①** **Tester negative probe → black/blue ②**  2. Set the main switch to “ON”. 3. Measure the cylinder identification sensor output voltage.  **Cylinder identification sensor output voltage** **When sensor is on** **4.8 V or more** **When sensor is off** **0.8 V or less** 4. Is the cylinder identification sensor OK?	
Defective starter motor.			Replace if defective. Refer to “ELECTRIC STARTING SYSTEM” in chapter 8.	
Open or short circuit in wiring harness and/or sub lead.			Repair or replace if there is an open or short circuit. Between sensor coupler and ECU coupler Blue - Blue White/Black - White/Black Black/Blue - Black/Blue	
Connected condition of connector Inspect the coupler for any pins that may have pulled out. Check the locking condition of the coupler.			If there is a malfunction, repair it and connect it securely. Cylinder identification sensor coupler Main wiring harness ECU coupler Sub-wire harness coupler	

Fault code No.	12	Symptom	No normal signals are received from the crankshaft position sensor.
Used diagnostic code No.--			

Inspection operation item and probable cause	Operation item and countermeasure	Reinstatement method
Installed condition of sensor	Check the installed area for looseness or pinching.	Reinstated by cranking the engine.
Defective crankshaft position sensor.	Replace if defective. 1. Disconnect the crankshaft position sensor coupler from the wire harness. 2. Connect the pocket tester ($\Omega \times 100$) to the crankshaft position sensor coupler as shown. **Tester positive probe → gray ①** **Tester negative probe → black ②**  3. Measure the crankshaft position sensor resistance. **Crankshaft position sensor resistance** **248 ~ 372 Ω at 20 °C (68 °F)** **(between gray and black)** 4. Is the crankshaft position sensor OK?	
Open or short circuit in wiring harness.	Repair or replace if there is an open or short circuit between the main wiring harnesses. Between sensor coupler and ECU coupler Gray - Gray Black/Blue - Black/Blue	
Connected condition of connector Inspect the coupler for any pins that may have pulled out. Check the locking condition of the coupler.	If there is a malfunction, repair it and connect it securely. Crankshaft position sensor coupler Main wiring harness ECU coupler	

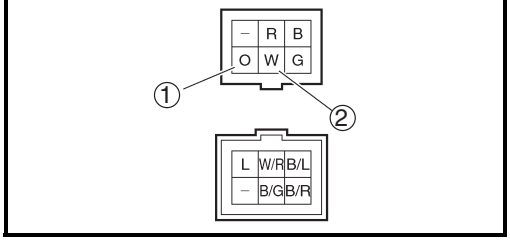
Fault code No.	13	Symptom	Intake air pressure sensor - open or short circuit detected.	
Used diagnostic code No. 03 (intake air pressure sensor)				
Inspection operation item and probable cause			Operation item and countermeasure	Reinstatement method
Defective intake air pressure sensor			Replace if defective. 1. Connect the pocket tester (DC 20 V) to the intake air pressure sensor coupler terminal as shown. **Tester positive probe → pink/white ①** **Tester negative probe → black/blue ②**  2. Set the main switch to “ON”. 3. Measure the intake air pressure sensor output voltage. **Intake air pressure sensor output voltage** **3.75 ~ 4.25 V** 4. Is the intake air pressure sensor OK?	Reinstated by turning the main switch ON.
Open or short circuit in wiring harness and/or sub lead.			Repair or replace if there is an open or short circuit. Between sensor coupler and ECU coupler Black/Blue - Black/Blue Pink/White - Pink/White Blue - Blue	
Connected state of connector Inspect the coupler for any pins that may have pulled out. Check the locking condition of the coupler.			If there is a malfunction, repair it and connect it securely. Intake air pressure sensor coupler Main wiring harness ECU coupler Sub-wire harness coupler	

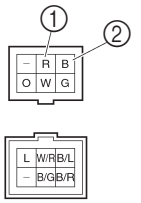
Fault code No.	14	Symptom	Intake air pressure sensor - hose system malfunction (clogged or detached hose).
Used diagnostic code No. 03 (intake air pressure sensor)			
Inspection operation item and probable cause		Operation item and countermeasure	Reinstatement method
Intake air pressure sensor hose detached, clogged, kinked, or pinched. Intake air pressure sensor malfunction at intermediate electrical potential. Atmospheric pressure sensor malfunction at intermediate electrical potential.		Repair or replace the sensor hose. Inspect and repair the connection.	Reinstated by starting the engine and operating it at idle.
Defective intake air pressure sensor.		Replace if defective. Refer to “Fault code No.13”.	

Fault code No.	15	Symptom	Throttle position sensor - open or short circuit detected.
Used diagnostic code No. 01 (throttle position sensor)			
Inspection operation item and probable cause		Operation item and countermeasure	Reinstatement method
Defective throttle position sensor.		Replace if defective. Refer to “THROTTLE BODIES” section.	Reinstated by turning the main switch ON.
Open or short circuit in wiring harness and/or sub lead.		Repair or replace if there is an open or short circuit. Between sensor coupler and ECU coupler Black/Blue - Black/Blue Yellow - Yellow Blue - Blue	
Installed condition of throttle position sensor.		Check the installed area for looseness or pinching. Check that it is installed in the specified position. Refer to “THROTTLE BODIES” section.	
Connected condition of connector Inspect the coupler for any pins that may have pulled out. Check the locking condition of the coupler.		If there is a malfunction, repair it and connect it securely. Throttle position sensor coupler Main wiring harness ECU coupler Sub-wire harness coupler	

Fault code No.	16	Symptom	Stuck throttle position sensor detected.
Used diagnostic code No. 01 (throttle position sensor)			
Inspection operation item and probable cause		Operation item and countermeasure	Reinstatement method
Defective throttle position sensor		Replace if defective. Refer to “THROTTLE BODIES” section.	Reinstated by starting the engine, operating it at idle, and then racing it.
Installed condition of throttle position sensor.		Check the installed area for looseness or pinching. Check that it is installed in the specified position. Refer to “THROTTLE BODIES” section.	

Fault code No.	17	Symptom	EXUP servo motor potention circuit - open or short circuit detected.
Used diagnostic code 53			

Inspection operation item and probable cause	Operation item and countermeasure	Reinstatement method
Defective EXUP servo motor potention circuit.	Replace if defective. 1. Disconnect the EXUP servomotor coupler from the wire harness. 2. Connect the pocket tester ($\Omega \times 1k$) to the EXUP servomotor coupler. **Positive tester terminal → orange ①** **Negative tester probe → white ②**  3. While slowly turning the EXUP servomotor pulley, measure the EXUP servomotor resistance.  **EXUP servomotor resistance (when the pulley is turned once)** **0 ~ approximately 7.5 kΩ (blue - white/red)** 4. Is the EXUP servomotor OK?	Reinstated by turning the main switch ON.
Open or short circuit in wire harness.	Repair or replace if there is an open or short circuit. Between motor coupler and ECU coupler Blue - Blue White/Red - White/Red Black/Blue - Black/Blue	
Connected condition of connector Inspect the coupler for any pins that may have pulled out. Check the locking condition of the coupler.	If there is a malfunction, repair it and connect it securely. EXUP servo motor coupler Main wire harness ECU coupler	

Fault code No.	18	Symptom	EXUP servo motor is stuck.	
Used diagnostic code 53				
Inspection operation item and probable cause		Operation item and countermeasure		Reinstatement method
Defective EXUP servo motor.		Replace if defective. 1. Disconnect the EXUP cables from the EXUP servomotor pulley. 2. Disconnect the EXUP servomotor coupler from the wire harness. 3. Connect the battery leads to the EXUP servomotor coupler as shown. **Positive battery terminal → red ①** **Negative battery lead → black ②**  4. Check that the EXUP servomotor pulley rotates several times. **CAUTION:** **To prevent damaging the EXUP servomotor, perform this test within a few seconds of connecting the battery.** 5. Does the EXUP servomotor pulley turn?	Reinstated by turning the main switch ON. It takes 120 seconds at the maximum before the original state returns.
Open or short circuit in wire harness.		Repair or replace if there is an open or short circuit. Between motor coupler and ECU coupler. Black/Green - Black/Green Black/Red - Black/Red		
Connected condition of connector Inspect the coupler for any pins that may have pulled out. Check the locking condition of the coupler.		If there is a malfunction repair it and connect it securely. EXUP servo motor coupler Main wire harness ECU coupler.		

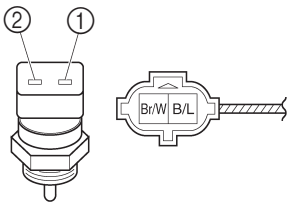
Fault code No.	19	Symptom	Open circuit is detected in the input line from the sidestand switch to the ECU.
Used diagnostic code No. 20 (sidestand switch)			
Inspection operation item and probable cause		Operation item and countermeasure	Reinstatement method
Defective sidestand switch		Replace if defective. Refer to “CHECKING THE SWITCHES” in chapter 8.	If the transmission is in gear, it is reinstated by retracting the sidestand. If the transmission is in neutral, it is reinstated by reconnecting the wiring.
Open or short circuit in wiring harness and/or sub lead.		Repair or replace if there is an open or short circuit. Between sidestand switch coupler and ECU coupler Blue/Black - Black	

Fault code No.	20	Symptom	Faulty atmospheric pressure sensor or intake air pressure sensor.
Used diagnostic code No.03 (intake air pressure sensor) 02 (atmospheric pressure sensor)			
Inspection operation item and probable cause		Operation item and countermeasure	Reinstatement method
Intake air pressure sensor hose detached, clogged, kinked, or pinched. Atmospheric pressure sensor hose is clogged.		Repair or replace the sensor hose.	Reinstated by turning the main switch ON.
Defective intake air pressure sensor or atmospheric pressure sensor.		Replace if defective. Refer to “Fault code No.13 or No.23”.	

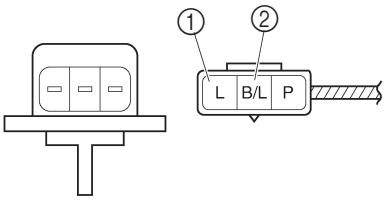
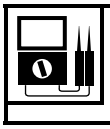
Fault code No.	21	Symptom	Open or short circuit is detected from the coolant temperature sensor.
Used diagnostic code No. 06 (coolant temperature sensor)			
Inspection operation item and probable cause		Operation item and countermeasure	Reinstatement method
Installed condition of sensor		Check the installed area for looseness or pinching.	Reinstated by turning the main switch ON.
Defective coolant temperature sensor.		Replace if defective. Refer to “COOLING SYSTEM” in chapter 8.	
Open or short circuit in wiring harness and/or sub lead.		Repair or replace if there is an open or short circuit. Between sensor coupler and ECU coupler Black/Blue - Black/Blue Green/White - Green/White	
Connected condition of connector Inspect the coupler for any pins that may have pulled out. Check the locking condition of the coupler.		If there is a malfunction, repair it and connect it securely. Coolant temperature sensor coupler Main wiring harness ECU coupler Sub-wire harness coupler	

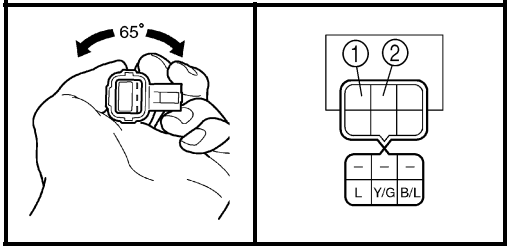
Fault code No.	22	Symptom	Open or short circuit detected from the intake temperature sensor.

Used diagnostic code No. 05 (intake temperature sensor)

Inspection operation item and probable cause	Operation item and countermeasure	Reinstatement method
Installed condition of sensor	Check the installed area for looseness or pinching.	Reinstated by turning the main switch ON.
Defective intake temperature sensor.	Replace if defective. 1. Remove the intake air temperature sensor from the air filter case. 2. Connect the pocket tester ($\Omega \times 100$) to the intake air temperature sensor terminal as shown. **Tester positive probe → brown/white ①** **Tester negative probe → black/blue ②**  3. Measure the intake air temperature sensor resistance. **Intake air temperature sensor resistance** **450 ~ 550 Ω at 20 °C** **⚠ WARNING** **• Handle the intake air temperature sensor with special care.** **• Never subject the intake air temperature sensor to strong shocks. If the intake air temperature sensor is dropped, replace it.** **Intake air temperature sensor** **25 Nm (2.5 m · kg, 18 ft · lb)** 4. Is the intake air temperature sensor OK?	
Open or short circuit in wiring harness and/or sub lead.	Repair or replace if there is an open or short circuit. Between sensor coupler and ECU coupler Black/Blue - Black/Blue Brown/White - Brown/White	
Connected condition of connector Inspect the coupler for any pins that may have pulled out. Check the locking condition of the coupler.	If there is a malfunction, repair it and connect it securely. Intake temperature sensor coupler Main wiring harness ECU coupler Sub-wire harness coupler	

Fault code No.	23	Symptom	Open or short circuit detected from the atmospheric pressure sensor.
Used diagnostic code No. 02 (atmospheric pressure sensor)			

Inspection operation item and probable cause	Operation item and countermeasure	Reinstatement method
Defective atmospheric pressure sensor.	Replace if defective. 1. Connect the pocket tester (DC 20 V) to the atmospheric pressure sensor coupler terminal as shown. **Tester positive probe → blue ①** **Tester negative probe → black/blue ②**  2. Set the main switch to “ON”. 3. Measure the atmospheric pressure sensor output voltage.  **Atmospheric pressure sensor output voltage** **3.75 ~ 4.25 V** 4. Is the atmospheric air pressure sensor OK?	Reinstated by turning the main switch ON.
Open or short circuit in wiring harness.	Repair or replace if there is an open or short circuit. Between sensor coupler and ECU coupler Blue - Blue Black/Blue - Black/Blue Pink - Pink	
Installed condition of atmospheric pressure sensor	Check the installed area for looseness or pinching.	
Connected condition of connector Inspect the coupler for any pins that may have pulled out. Check the locking condition of the coupler.	If there is a malfunction, repair it and connect it securely. Atmospheric pressure sensor coupler Main wiring harness ECU coupler	

Fault code No.	30	Symptom	The motorcycle has overturned.	
Used diagnostic code No. 08 (lean angle cut-off switch)				
Inspection operation item and probable cause			Operation item and countermeasure	Reinstatement method
Defective lean angle cut-off switch			Replace if defective. 1. Remove the emergency stop switch from the motorcycle. 2. Connect the lean angle cut-off switch coupler to the wire harness. 3. Connect the pocket tester (DC 20 V) to the emergency stop switch coupler as shown. **Tester positive probe → blue** ① **Tester negative probe → yellow/green** ②  4. When turn the lean angle cut-off switch approx. 65°, the voltage reading is 1.0 V to 4.0 V. 5. Is the emergency stop switch OK?	Reinstated by turning the main switch ON (however, the engine cannot be restarted unless the main switch is first turned OFF).
The motorcycle has overturned.			Raise the motorcycle upright.	
Installed condition of the lean angle cut-off switch			Check the installed area for looseness or pinching.	
Connected condition of connector Inspect the coupler for any pins that may have pulled out. Check the locking condition of the coupler.			If there is a malfunction, repair it and connect it securely. Lean angle cut-off switch coupler Main wiring harness ECU coupler	

Fault code No.	33	Symptom	Malfunction detected in the primary lead of the ignition coil (#1).
Used diagnostic code No. 30 (ignition coil #1)			
Inspection operation item and probable cause		Operation item and countermeasure	Reinstatement method
Defective ignition coil (test the primary and secondary coils for continuity).		Replace if defective. Refer to “IGNITION SYSTEM” in chapter 8.	Reinstated by starting the engine and operating it at idle. In case of multiple cylinder open or short circuit in lead, make sure to turn ON and OFF the main switch after each time of cranking.
Open or short circuit in lead.		Repair or replace if there is an open or short circuit. Between ignition coil coupler (#1) and ECU coupler/main harness Orange - Orange Red/Black - Red/Black	
Connected condition of connector Inspect the coupler for any pins that may have pulled out. Check the locking condition of the coupler.		If there is a malfunction, repair it and connect it securely. Ignition coil primary side coupler - Orange Main wiring harness ECU coupler	

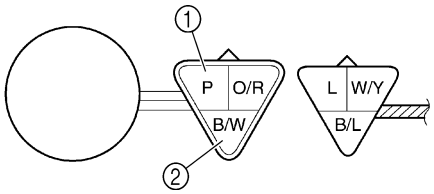
Fault code No.	34	Symptom	Malfunction detected in the primary lead of the ignition coil (#2).
Used diagnostic code No. 31 (ignition coil #2)			
Inspection operation item and probable cause		Operation item and countermeasure	Reinstatement method
Defective ignition coil (test the primary and secondary coils for continuity).		Replace if defective. Refer to “IGNITION SYSTEM” in chapter 8.	Reinstated by starting the engine and operating it at idle. In case of multiple cylinder open or short circuit in lead, make sure to turn ON and OFF the main switch after each time of cranking.
Open or short circuit in lead wire.		Repair or replace if there is an open or short circuit. Between ignition coil coupler (#2) and ECU coupler/main harness Gray/Red - Gray/Red Red/Black - Red/Black	
Connected condition of connector Inspect the coupler for any pins that may have pulled out. Check the locking condition of the coupler.		If there is a malfunction, repair it and connect it securely. Ignition coil primary side coupler - Gray/Red Main wiring harness ECU coupler	

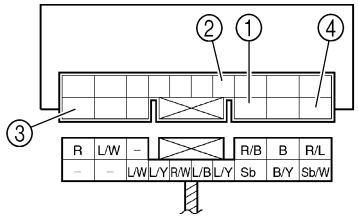
Fault code No.	35	Symptom	Malfunction detected in the primary lead of the ignition coil (#3).
Used diagnostic code No. 32 (ignition coil #3)			
Inspection operation item and probable cause		Operation item and countermeasure	Reinstatement method
Defective ignition coil (test the primary and secondary coils for continuity).		Replace if defective. Refer to “IGNITION SYSTEM” in chapter 8.	Reinstated by starting the engine and operating it at idle. In case of multiple cylinder open or short circuit in lead, make sure to turn ON and OFF the main switch after each time of cranking.
Open or short circuit in lead wire.		Repair or replace if there is an open or short circuit. Between ignition coil coupler (#3) and ECU coupler/main harness Orange/Green - Orange/Green Red/Black - Red/Black	
Connected condition of connector Inspect the coupler for any pins that may have pulled out. Check the locking condition of the coupler.		If there is a malfunction, repair it and connect it securely. Ignition coil primary side coupler - Orange/Green Main wiring harness ECU coupler	

Fault code No.	36	Symptom	Malfunction detected in the primary lead of the ignition coil (#4).
Used diagnostic code No. 33 (ignition coil #4)			
Inspection operation item and probable cause		Operation item and countermeasure	Reinstatement method
Defective ignition coil (test the primary and secondary coils for continuity).		Replace if defective. Refer to “IGNITION SYSTEM” in chapter 8.	Reinstated by starting the engine and operating it at idle. In case of multiple cylinder open or short circuit in lead, make sure to turn ON and OFF the main switch after each time of cranking.
Open or short circuit in lead wire.		Repair or replace if there is an open or short circuit. Between ignition coil coupler (#4) and ECU coupler/main harness Gray/Green - Gray/Green Red/Black - Red/Black	
Connected state of connector Inspect the coupler for any pins that may have pulled out. Check the locking condition of the coupler.		If there is a malfunction, repair it and connect it securely. Ignition coil primary side coupler - Gray/Green Main wiring harness ECU coupler	

Fault code No.	41	Symptom	Open or short circuit detected in the lean angle cut-off switch.
Used diagnostic code No. 08 (lean angle cut-off switch)			
Inspection operation item and probable cause		Operation item and countermeasure	Reinstatement method
Defective lean angle cut-off switch		Replace if defective. Refer to Fault code No. 30.	Reinstated by turning the main switch ON.
Open or short circuit in wiring harness.		Repair or replace if there is an open or short circuit. Between switch coupler and ECU coupler Black/Blue - Black/Blue Yellow/Green - Yellow/Green Blue - Blue	
Connected condition of connector Inspect the coupler for any pins that may have pulled out. Check the locking condition of the coupler.		If there is a malfunction, repair it and connect it securely. Lean angle cut-off switch coupler Main wiring harness ECU coupler	

Fault code No.	42	Symptom	1 No normal signals are received from the speed sensor. 2 Open or short circuit is detected in the neutral switch.
Used diagnostic code	No. 07 (speed sensor) No. 21 (neutral switch)		

Inspection operation item and probable cause	Operation item and countermeasure	Reinstatement method
Defective speed sensor	Replace if defective. 1. Measure the speed sensor output voltage. 2. Connect the pocket tester (DC 20 V) to the speed sensor coupler terminal as shown. **Tester positive probe → pink ①** **Tester negative probe → black/white ②**  3. Measure the speed sensor output voltage. **Speed sensor output voltage** **When sensor is on** **DC 4.8 V or more** **When sensor is off** **DC 0.6 V or less** 4. Is the speed sensor OK?	Reinstated by starting the engine, and inputting the vehicle speed signals by operating the motorcycle at a low speed of 20 to 30 km/h. (12 to 19 mi/h)
Open or short circuit in speed sensor lead.	Repair or replace if there is an open or short circuit. Between sensor coupler and ECU coupler. Blue - Blue White/Yellow - White/Yellow Black/Blue - Black/Blue	
Gear for detecting vehicle speed has broken.	Replace if defective. Refer to “TRANSMISSION” in chapter 5.	
Connected condition of speed sensor connector Inspect the coupler for any pins that may have pulled out. Check the locking condition of the coupler.	If there is a malfunction, repair it and connect it securely. Speed sensor coupler Main wiring harness ECU coupler	
Defective neutral switch	Replace if defective. Refer to “CHECKING THE SWITCHES” in chapter 8.	
Faulty shift drum (neutral detection area)	Replace if defective. Refer to “TRANSMISSION” in chapter 5.	
Open or short circuit in neutral switch lead.	Repair or replace if there is an open or short circuit. Between switch connector and ECU coupler Sky blue - Black/Yellow	
Connected condition of connector Inspect the coupler for any pins that may have pulled out. Check the locking condition of the coupler.	If there is a malfunction, repair it and connect it securely. Neutral switch connector Main wiring harness ECU coupler	

Fault code No.	43	Symptom	The ECU is unable to monitor the battery voltage.	
Used diagnostic code No. 09 (fuel system voltage)				
Inspection operation item and probable cause		Operation item and countermeasure		Reinstatement method
Malfunction in ECU		Fuel injection system relay is on.		Reinstated by starting the engine and operating it at idle.
Open or short circuit in the wiring harness.		Repair or replace if there is an open or short circuit. Between battery terminal and ECU coupler. Red - White Red - Blue/Yellow (Main switch and engine stop switch are on.) Red - Red/Blue (Fuel injection system relay is on.)		
Malfunction or open circuit in fuel injection system relay		Replace if defective. 1. Disconnect the starting circuit cut-off relay from the wire harness. 2. Connect the pocket tester ($\Omega \times 1$) and battery (12 V) to the starting circuit cut-off relay terminals as shown. **Battery positive terminal → red/black** ① **Battery positive terminal → blue/yellow** ② **Tester positive probe → red** ③ **Tester negative probe → red/blue** ④  3. Does the starting circuit cut-off relay have continuity between blue/white and black?		
Connected condition of connector Inspect the coupler for any pins that may have pulled out. Check the locking condition of the coupler.		If there is a malfunction, repair it and connect it securely. Starting circuit cut-off relay coupler (fuel injection system relay) ECU coupler		

Fault code No.	44	Symptom	Error is detected while reading or writing on EEP-ROM.
Used diagnostic No. 60 (EEP-ROM improper cylinder indication)			
Inspection operation item and probable cause		Operation item and countermeasure	Reinstatement method
Malfunction in ECU		Execute diagnostic code 60 * Check the faulty cylinder. (If there are multiple cylinders, the number of the faulty cylinders appear alternately at 2-second intervals.) Replace ECU if defective.	Reinstated by turning the main switch ON.

Fault code No.	50	Symptom	Faulty ECU memory. (When this malfunction is detected in the ECU, the fault code number might not appear on the meter.)
Used diagnostic code No.--			
Inspection operation item and probable cause		Operation item and countermeasure	Reinstatement method
Malfunction in ECU		Replace the ECU.	Reinstated by turning the main switch ON.

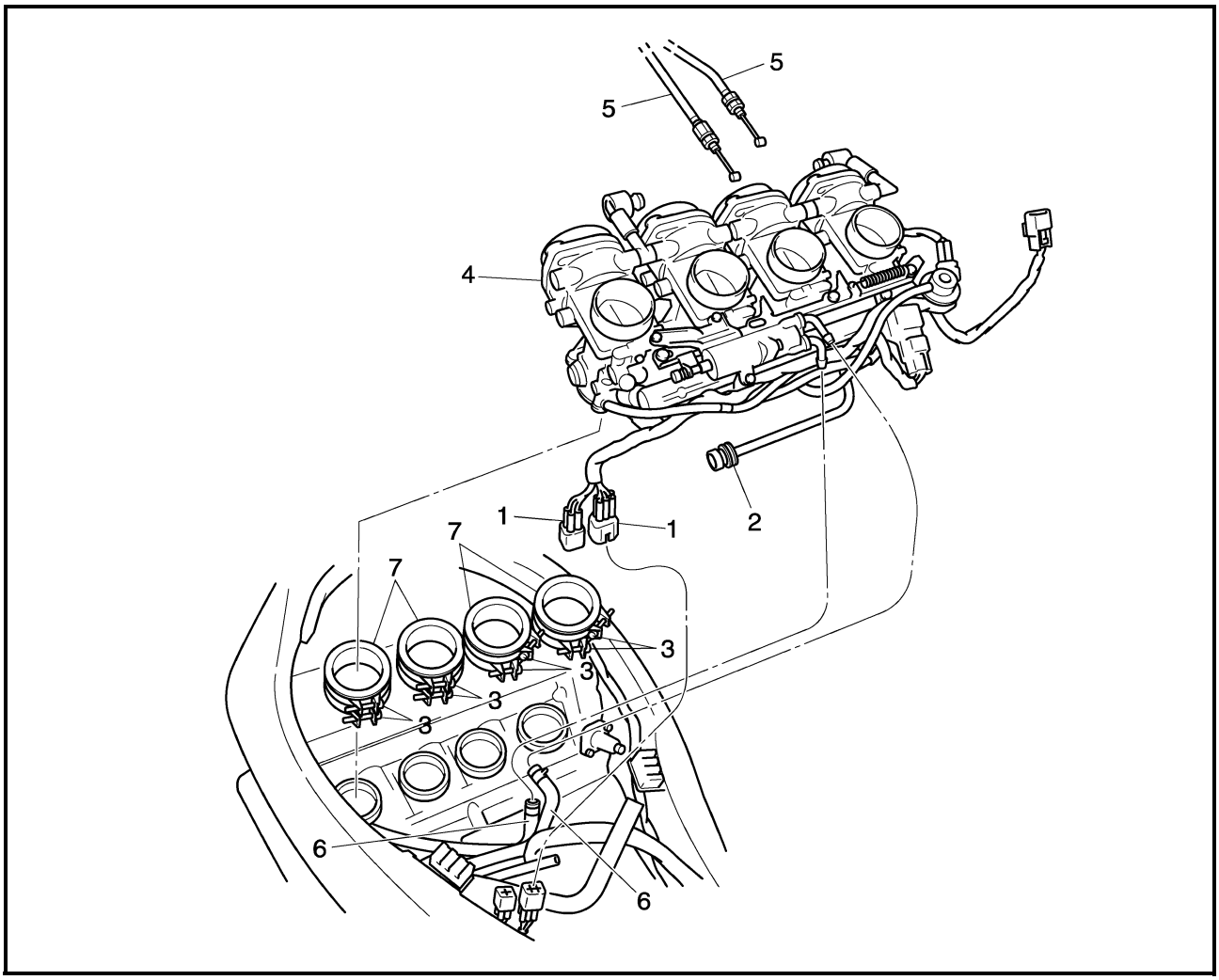
Fault code No.	Er-1	Symptom	No signal are received from the ECU.
Used diagnostic code No. --			
Inspection operation item and probable cause		Operation item and countermeasure	Reinstatement method
Open or short circuit in wiring harness and/or sub lead.		Repair or replace if there is an open or short circuit. Between sensor coupler and ECU coupler Yellow/Red - Yellow/Red Black/White - Black/White	Reinstated by turning the main switch ON.
Connected condition of connector Inspect the coupler for any pins that may have pulled out. Check the locking condition of the coupler.		If there is a malfunction, repair it and connect it securely. Cylinder identification sensor coupler Main wiring harness ECU coupler Sub-wire harness coupler	
Malfunction in meter		Replace the meter.	
Malfunction in ECU		Replace the ECU.	

Fault code No.	Er-2	Symptom	No signal are received from the ECU within the specified duration.
Used diagnostic code No. --			
Inspection operation item and probable cause		Operation item and countermeasure	Reinstatement method
Open or short circuit in wiring harness and/or sub lead.		Repair or replace if there is an open or short circuit. Between sensor coupler and ECU coupler Yellow/Red - Yellow/Red Black/White - Black/White	Reinstated by turning the main switch ON.
Connected condition of connector Inspect the coupler for any pins that may have pulled out. Check the locking condition of the coupler.		If there is a malfunction, repair it and connect it securely. Cylinder identification sensor coupler Main wiring harness ECU coupler Sub-wire harness coupler	
Malfunction in meter		Replace the meter.	
Malfunction in ECU		Replace the ECU.	

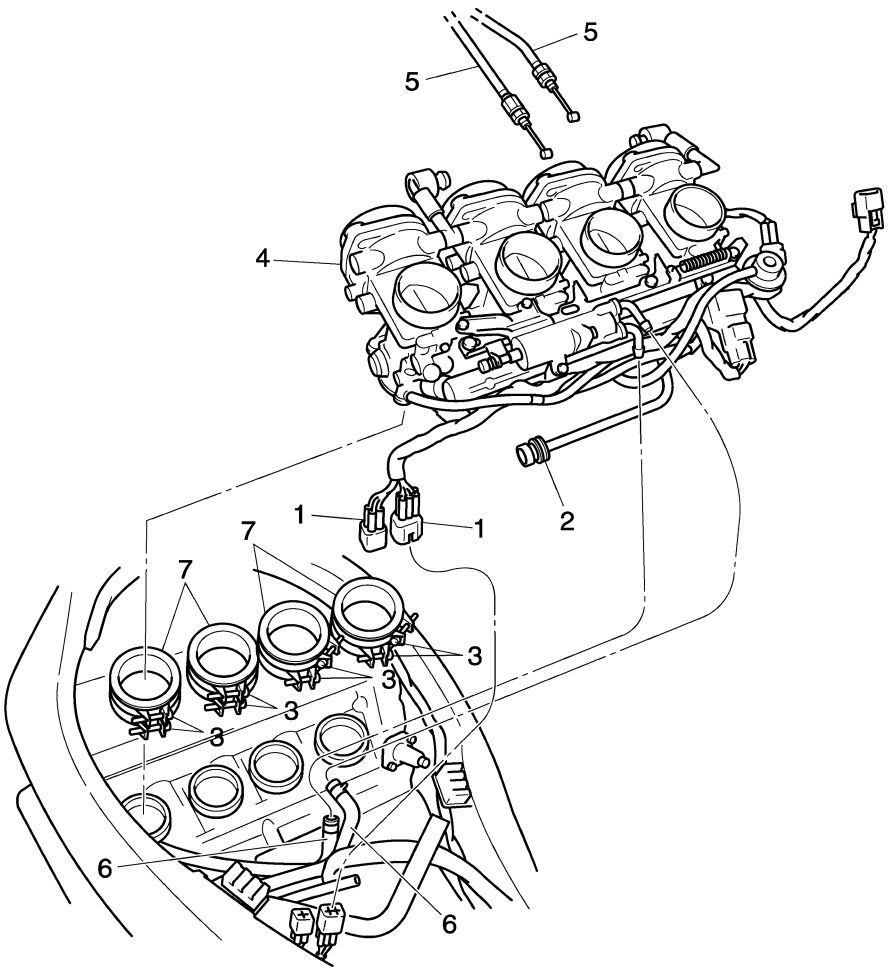
Fault code No.	Er-3	Symptom	Data from the ECU cannot be received correctly.
Used diagnostic code No. --			
Inspection operation item and probable cause		Operation item and countermeasure	Reinstatement method
Open or short circuit in wiring harness and/or sub lead.		Repair or replace if there is an open or short circuit. Between sensor coupler and ECU coupler Yellow/Red - Yellow/Red Black/White - Black/White	Reinstated by turning the main switch ON.
Connected condition of connector Inspect the coupler for any pins that may have pulled out. Check the locking condition of the coupler.		If there is a malfunction, repair it and connect it securely. Cylinder identification sensor coupler Main wiring harness ECU coupler Sub-wire harness coupler	
Malfunction in meter		Replace the meter.	
Malfunction in ECU		Replace the ECU.	

Fault code No.	Er-4	Symptom	Non-registered data has been received from the meter.	
Used diagnostic code No. --				
Inspection operation item and probable cause			Operation item and countermeasure	Reinstatement method
Open or short circuit in wiring harness and/or sub lead.			Repair or replace if there is an open or short circuit. Between sensor coupler and ECU coupler Yellow/Red - Yellow/Red Black/White - Black/White	Reinstated by turning the main switch ON.
Connected condition of connector Inspect the coupler for any pins that may have pulled out. Check the locking condition of the coupler.			If there is a malfunction, repair it and connect it securely. Cylinder identification sensor coupler Main wiring harness ECU coupler Sub-wire harness coupler	
Malfunction in meter			Replace the meter.	
Malfunction in ECU			Replace the ECU.	

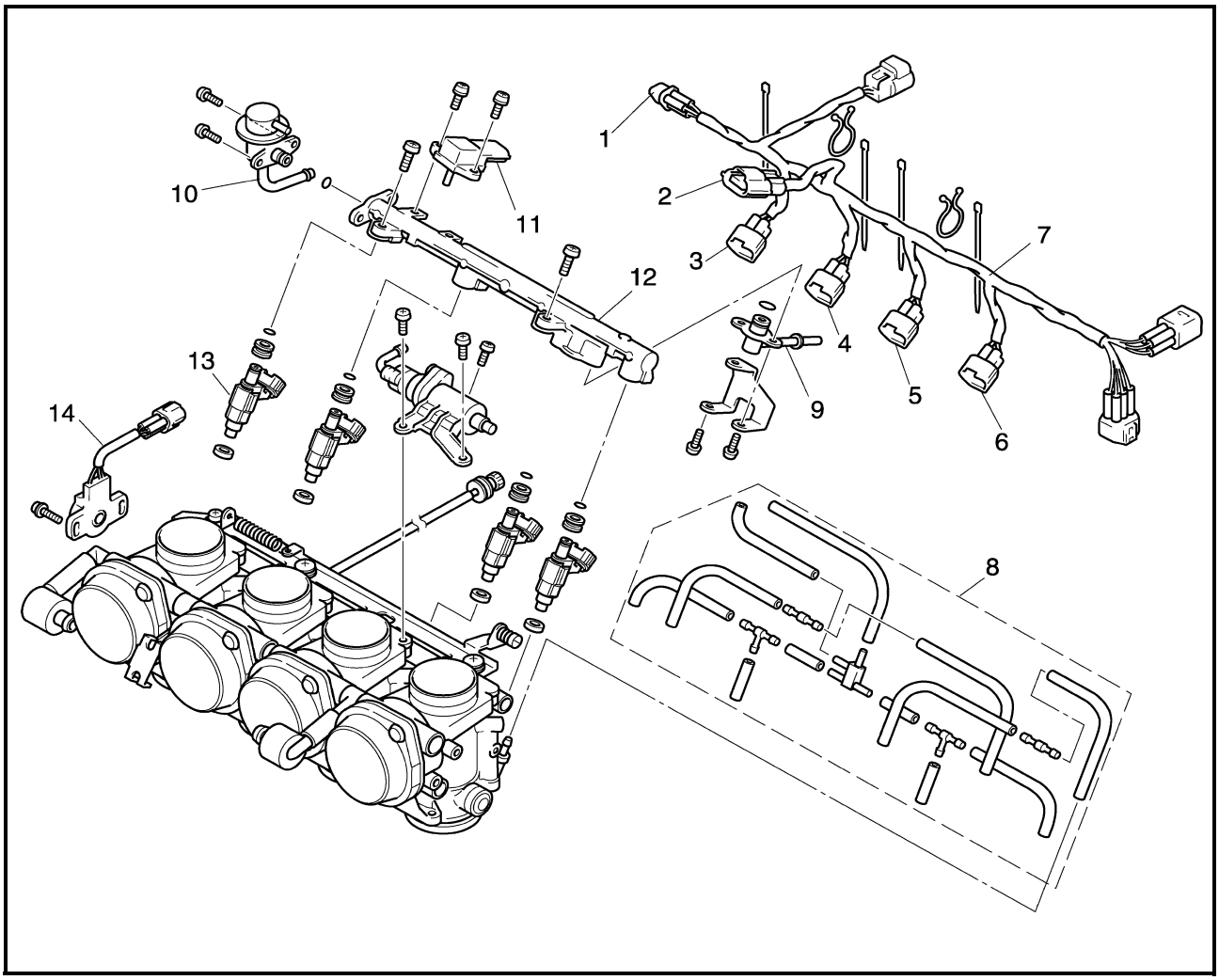
THROTTLE BODIES



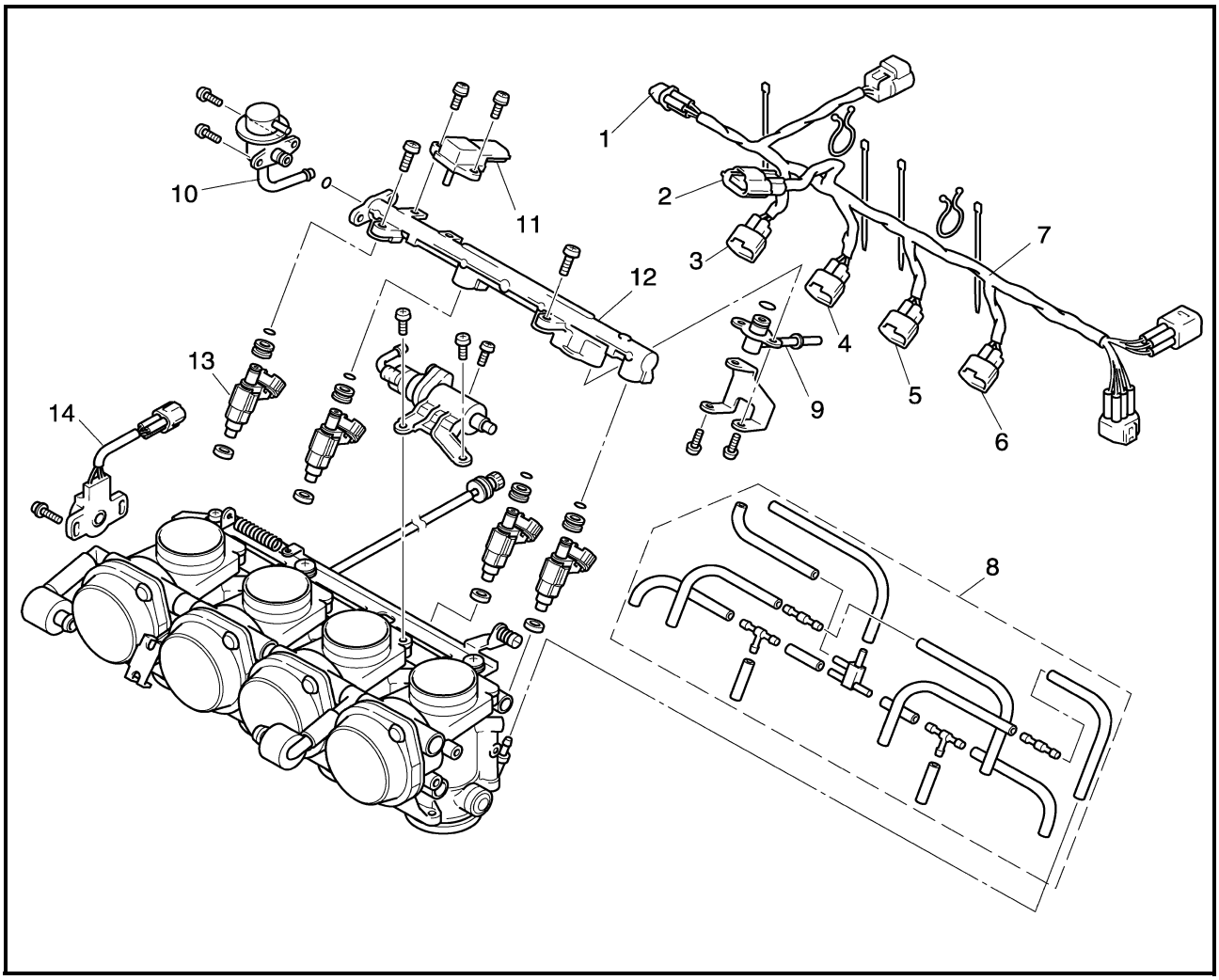
Order	Job/Part	Q'ty	Remarks
	Removing the throttle bodies		Remove the parts in the order listed.
	Seats/fuel tank/rubber sheet		Refer to "SEATS" and "FUEL TANK" in chapter 3.
	Air filter case		Refer to "AIR FILTER CASE" in chapter 3.
	Coolant		Drain. Refer to "CHANGING THE COOLANT" in chapter 3.
1	Sub-wire harness 2 coupler	3	Disconnect.
2	Throttle stop screw	1	
3	Throttle body joint clamp screw	8	Loosen.
4	Throttle bodies	1	



Order	Job/Part	Q'ty	Remarks
5	Throttle cable	2	Disconnect.
6	Plunger control unit hose	2	Disconnect.
7	Throttle body joint	4	For installation, reverse the removal procedure.

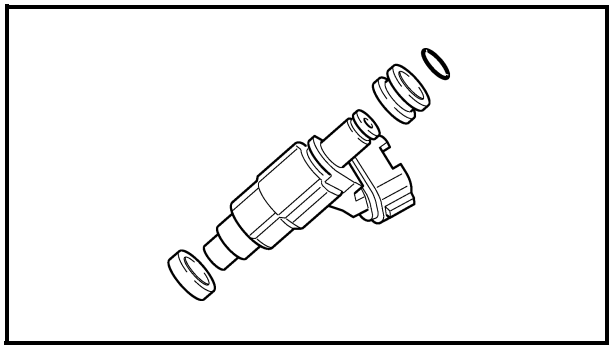


Order	Job/Part	Q'ty	Remarks
	Removing the injector		Remove the parts in the order listed.
1	Throttle position sensor coupler	1	Disconnect.
2	Intake air pressure sensor	1	Disconnect.
3	Cylinder #1-injector coupler	1	Disconnect.
4	Cylinder #2-injector coupler	1	Disconnect.
5	Cylinder #3-injector coupler	1	Disconnect.
6	Cylinder #4-injector coupler	1	Disconnect.
7	Sub-wire harness 2	1	
8	Negative pressure hose	1	Disconnect.
9	Fuel injection pipe	1	
10	Pressure regulator	1	



Order	Job/Part	Q'ty	Remarks
11	Intake air pressure sensor	1	
12	Fuel distributor	1	
13	Injector	4	
14	Throttle position sensor	1	
			For installation, reverse the removal procedure.

CAUTION:
The throttle bodies should not be disassembled unnecessarily.



CHECKING THE INJECTOR
1. Check:
   • injector
   Damage → Replace.

CHECKING THE THROTTLE BODY
1. Check:
   • throttle body
   Cracks/damage → Replace the throttle bodies.

2. Check:
   • fuel passages
   Obstruction → Clean.

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a. Wash the throttle body in a petroleum-based solvent.
   Do not use any caustic carburetor cleaning solution.
b. Blow out all of passages with compressed air.
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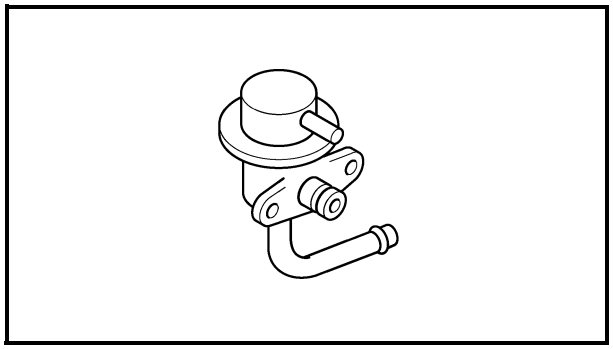

CHECKING THE PRESSURE REGULATOR

1. Check:
   - pressure regulator
     Damage → Replace.

CHECKING THE FUEL PUMP AND PRESSURE REGULATOR OPERATION

1. Check:
   - pressure regulator operation

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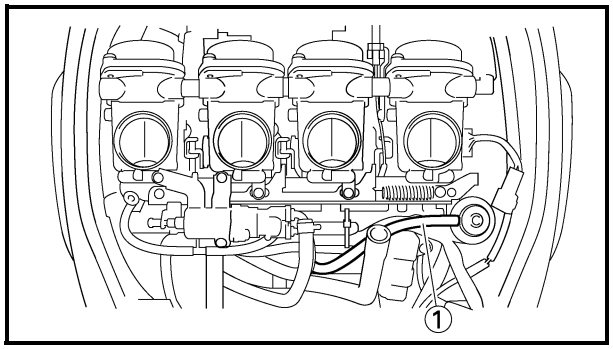
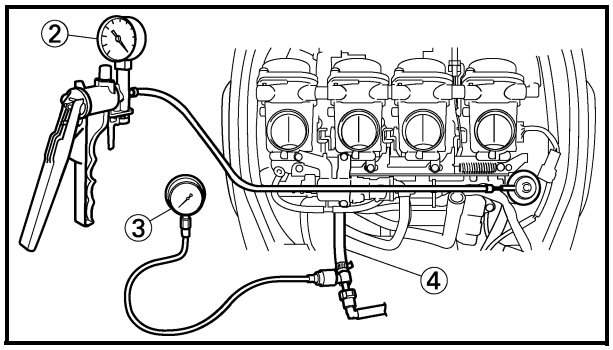
a. Remove the fuel tank.
   Refer to "SEATS" and "FUEL TANK" in chapter 3.
b. Disconnect the negative pressure hose ① from the pressure regulator at the joint.
c. Connect the mity vac ② onto the negative pressure hose from the pressure regulator.
d. Connect the pressure gauge ③ and adapter ④ onto the fuel injection pipe.





Mity vac
YB-35956
Pressure gauge
YU-03153
Adapter
YM-03176

e. Install the fuel tank.
   Refer to "SEATS" and "FUEL TANK" in chapter 3.
f. Start the engine.
g. Measure the fuel pressure.

Fuel pressure
284 kPa (2.84 kg/cm², 40.4 psi)

h. Use the vacuum pressure pump gauge set to adjust the fuel pressure in relation to the vacuum pressure as described below.

NOTE:

The vacuum pressure should not exceed 100 kPa (760 mmHg, 29.9 inHg).

Increase the vacuum pressure → Fuel pressure is decreased
Decrease the vacuum pressure → Fuel pressure is increased

Faulty → Replace the pressure regulator.

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EAS00500

CHECKING AND ADJUSTING THE THROTTLE POSITION SENSOR

NOTE:

Before adjusting the throttle position sensor, the engine idling speed should be properly adjusted.

1. Check:
   - throttle position sensor

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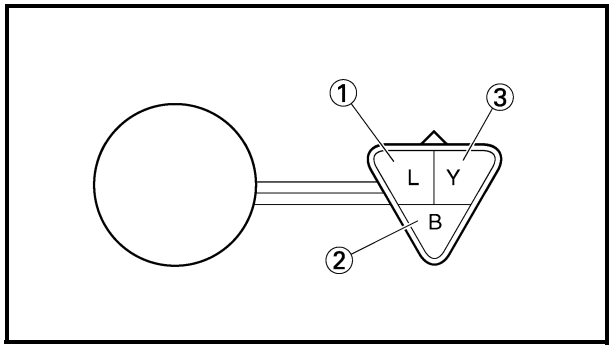
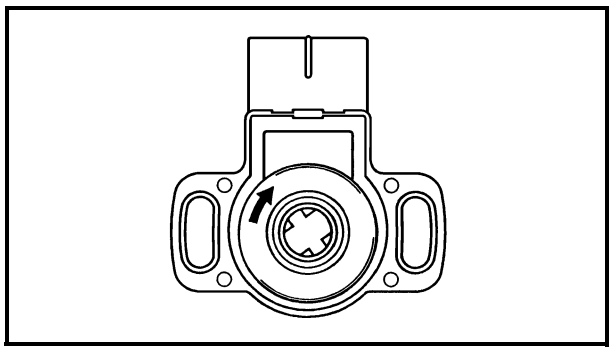


a. Disconnect the throttle position sensor coupler.
b. Remove the throttle position sensor from the throttle body.
c. Connect the pocket tester (Ω × 1k) to the throttle position sensor.

Positive tester probe → blue terminal ①
Negative tester probe → black terminal ②



d. Measure the maximum throttle position sensor resistance.
   Out of specification → Replace the throttle position sensor.

Maximum throttle position sensor resistance
3.5 ~ 6.5 kΩ at 20 °C (68 °F)
(blue - black)

e. Connect the pocket tester (Ω × 1K) to the throttle position sensor.

Positive tester probe → yellow terminal ③
Negative tester probe → black terminal ②

f. While slowly opening the throttle, check that the throttle position sensor resistance is within the specified range.
   The resistance does not change or it changes abruptly → Replace the throttle position sensor.
   The slot is worn or broken → Replace the throttle position sensor.

NOTE:
Check mainly that the resistance changes gradually when turning the throttle, since the readings (from closed to wide-open throttle) may differ slightly from those specified.

Throttle position sensor resistance
0 ~ 5 ± 1.5 kΩ at 20 °C (68 °F)
(yellow - black)

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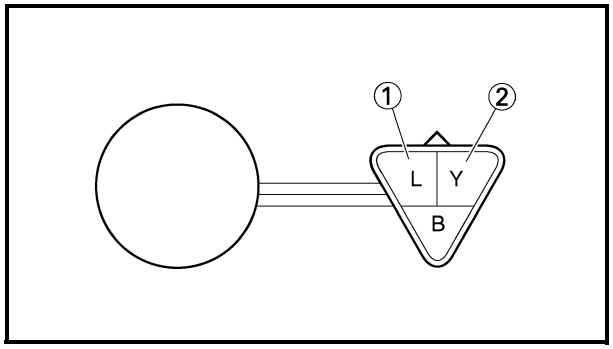

2. Adjust:
   • throttle position sensor angle

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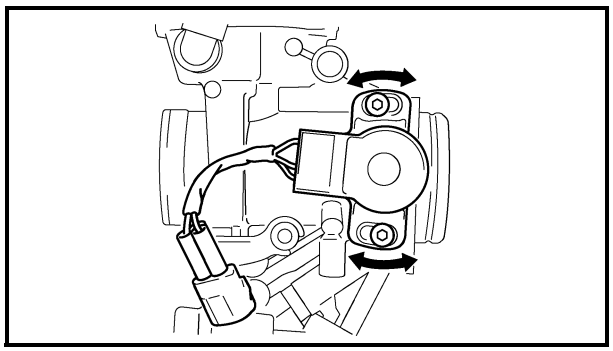
a. Connect the throttle position sensor coupler to the wire harness.
b. Connect the digital circuit tester to the throttle position sensor.

Tester positive probe → blue terminal ①
Tester negative probe → yellow terminal ②



c. Measure the throttle position sensor voltage.
d. Adjust the throttle position sensor angle so the measured voltage is within the specified range.

Throttle position sensor voltage
0.63 ~ 0.73 V
(yellow - blue)

e. After adjusting the throttle position sensor angle, tighten the throttle position sensor screws.

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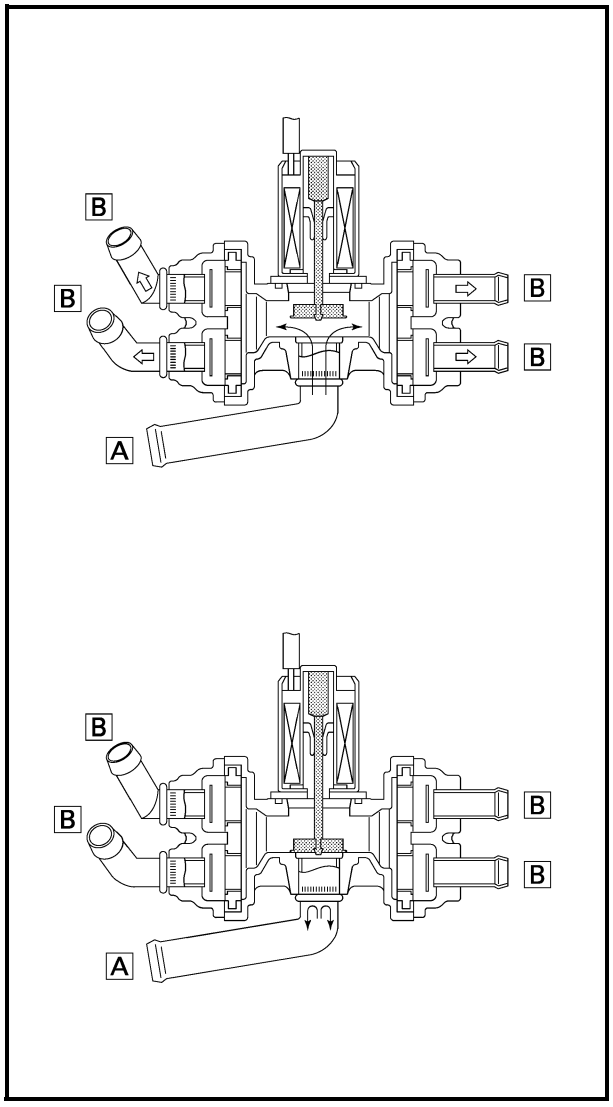
EAS00507
AIR INDUCTION SYSTEM

AIR INDUCTION

The air induction system burns unburned exhaust gases by injecting fresh air (secondary air) into the exhaust port, reducing the emission of hydrocarbons.

When there is negative pressure at the exhaust port, the reed valve opens, allowing secondary air to flow into the exhaust port. The required temperature for burning the unburned exhaust gases is approximately 600 to 700 °C (1,100 to 1,300 °F).



EAS00508

AIR CUT-OFF VALVE

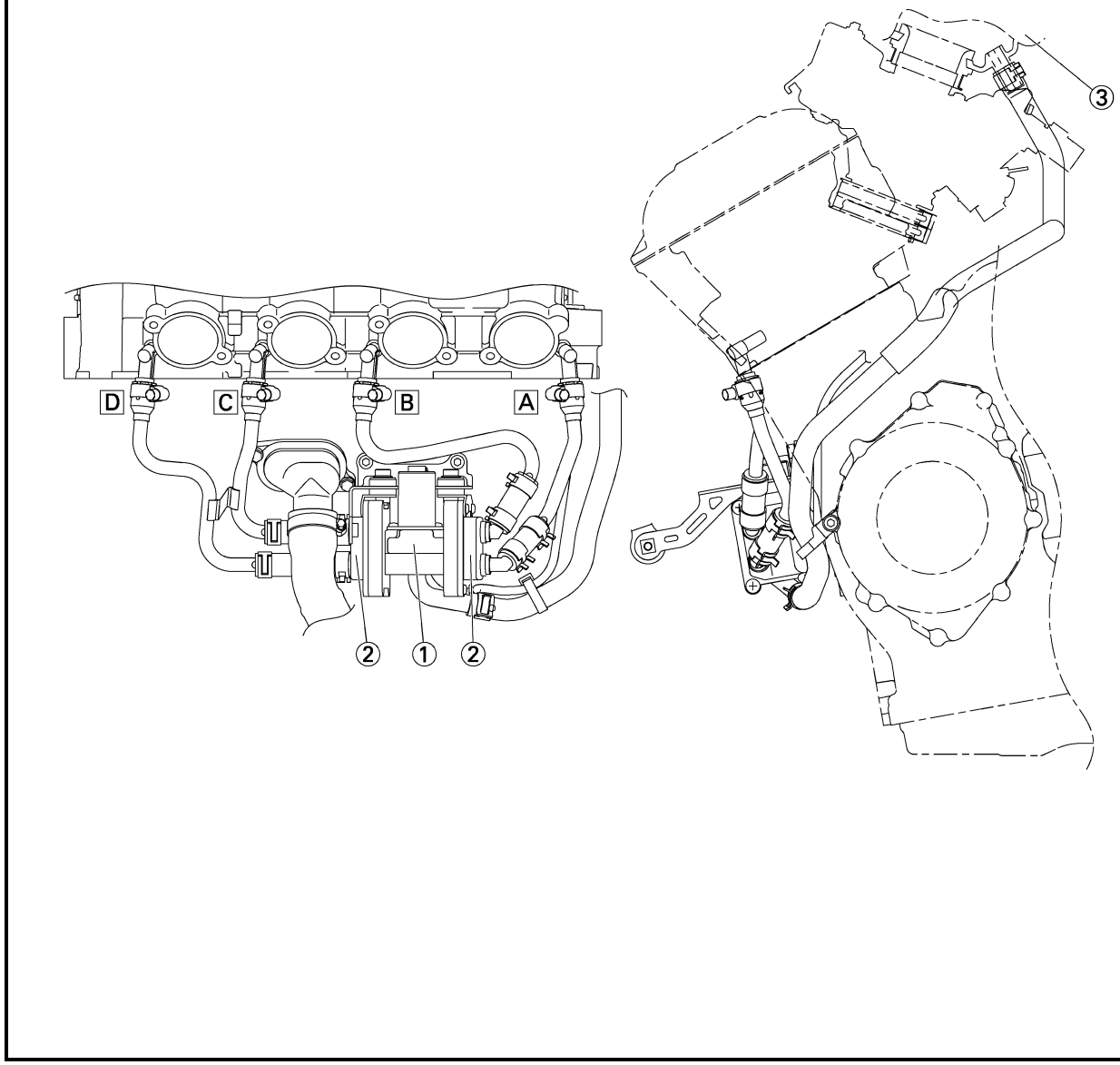
The air cut-off valve is controlled by the signals from the ECU in accordance with the combustion conditions. Ordinarily, the air cut-off valve opens to allow the air to flow during idle and closes to cut-off the flow when the motorcycle is being driven. However, if the coolant temperature is below the specified value, the air cut-off valve remains open and allows the air to flow into the exhaust pipe until the temperature becomes higher than the specified value.

A From the air cleaner
B To the cylinder head

EAS00509
AIR INDUCTION SYSTEM DIAGRAMS

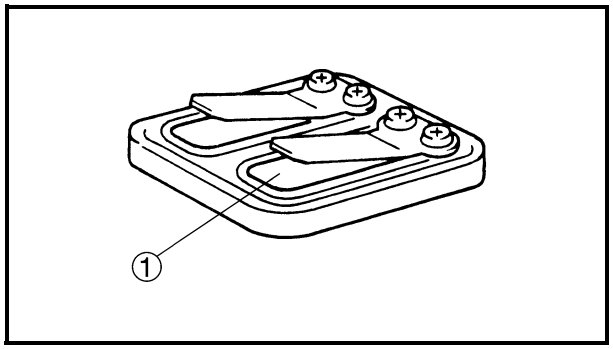
① Air cut-off valve
② Reed valve
③ Air cleaner

A To cylinder #1
B To cylinder #2
C To cylinder #3
D To cylinder #4

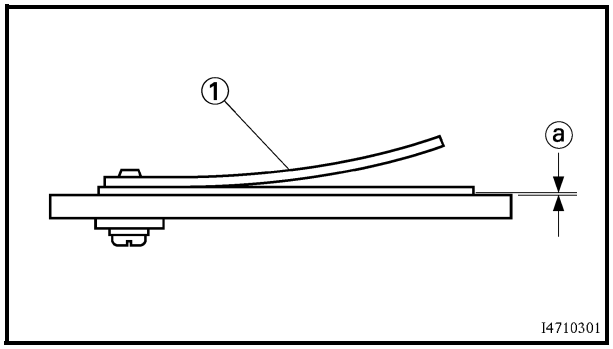


EAS00510
CHECKING THE AIR INDUCTION SYSTEM

1. Check:
   - hoses
     Loose connection → Connect properly.
     Cracks/damage → Replace.
   - pipes
     Cracks/damage → Replace.



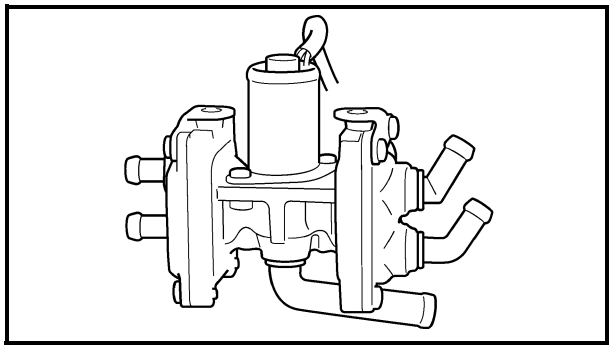
2. Check:
   - reed valve ①
   - reed valve stopper
   - reed valve seat
     Cracks/damage → Replace the reed valve.



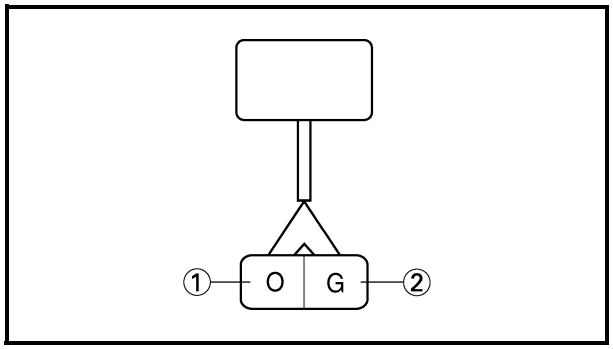
3. Measure:
   - reed valve bending limit ⓐ
     Out of specification → Replace the reed valve.

	Reed valve bending limit **0.4 mm (0.016 in)**

① Surface plate



4. Check:
   - air cut-off valve
     Cracks/damage → Replace.



5. Check
   - AI system solenoid

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a. Remove the AI system solenoid coupler from the wire harness.
b. Connect the pocket tester (Ω × 1) to the AI system solenoid terminal as shown.

Tester positive probe → orange ①
Tester negative probe → green ②

c. Measure the AI system solenoid resistance.

AI system solenoid resistance
18 ~ 22 Ω at 20 °C (68 °F)

d. Out of specification → Replace.

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