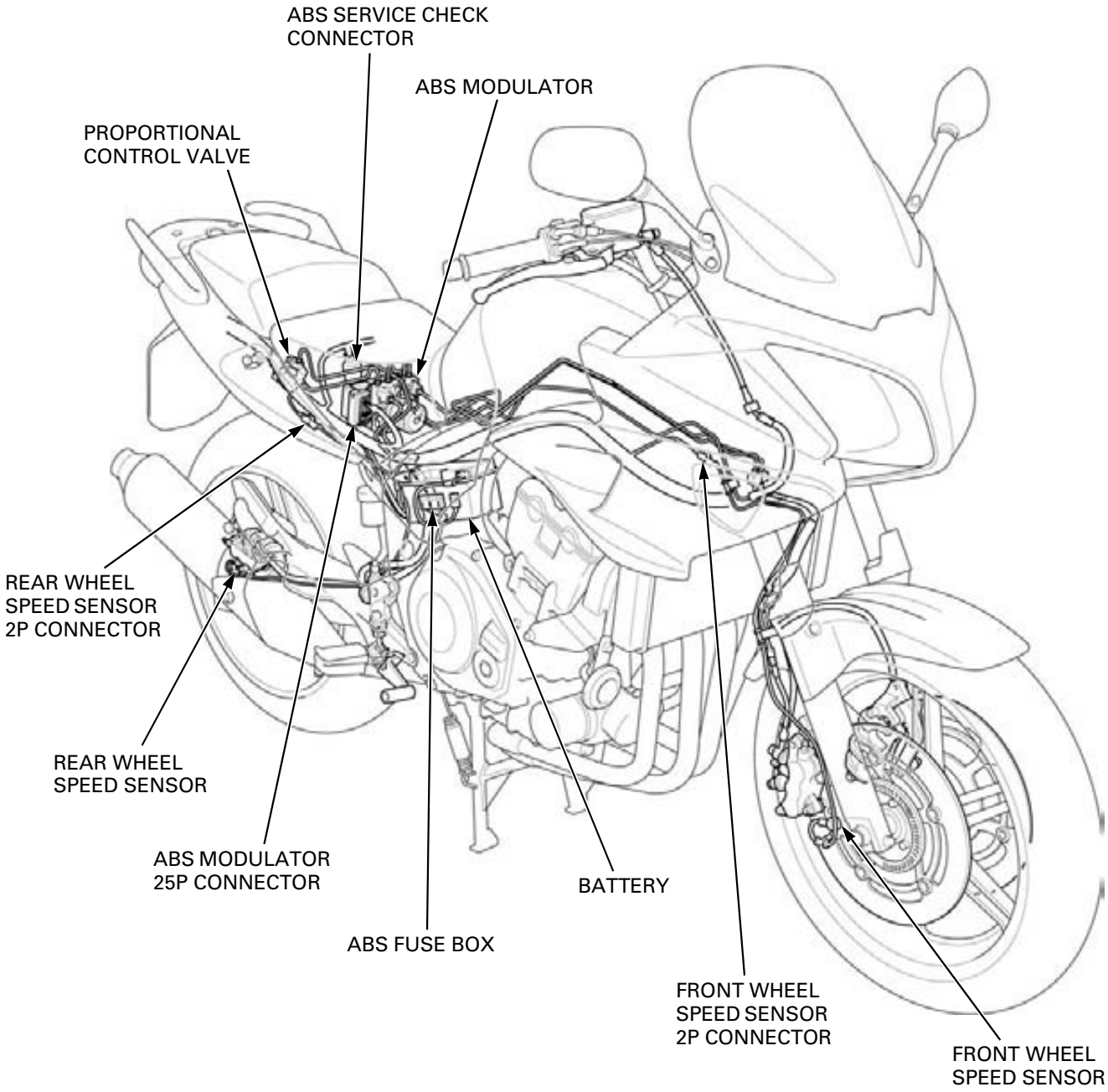
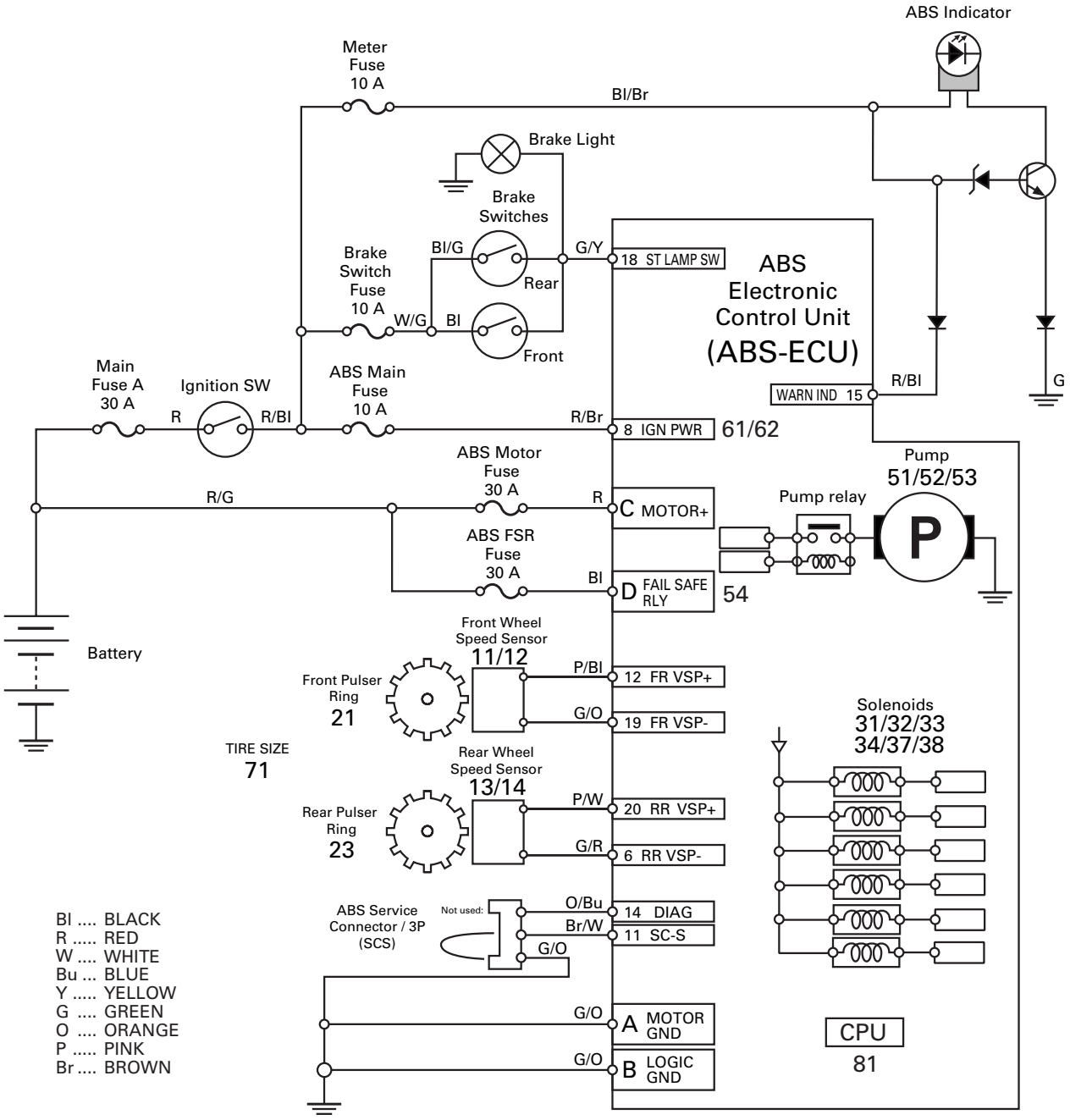
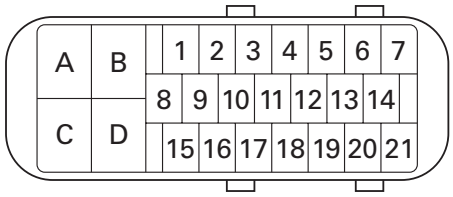
17. ANTI-LOCK BRAKE SYSTEM (ABS; CBF1000A)

ABS SYSTEM LOCATION



ABS SYSTEM DIAGRAM





ABS MODULATOR 25P CONNECTOR
(Modulator side of male terminals)

SERVICE INFORMATION

GENERAL

- This section covers service of the Anti-lock Brake System (ABS). For conventional brake service 16-2.
- When the ABS control unit detects a problem, it stops the ABS function and switches back to the conventional brake operation, and the ABS indicator blinks or stays on. Take care during the test ride.
- Troubles not resulting from a faulty ABS (e.g. brake disc squeak, unevenly worn brake pad) cannot be recognized by the ABS diagnosis system.
- Read "ABS Troubleshooting information" carefully, inspect and troubleshoot the ABS system according to the Diagnostic Troubleshooting. Observe each step of the procedures one by one. Write down the problem code and probable faulty part before starting diagnosis and troubleshooting.
- After troubleshooting, erase the problem code and perform the pre-start self-diagnosis to be sure that the ABS indicator is operating normally.
- When the wheel speed sensor and/or pulser ring is replaced, check the clearance (air gap) between both components.
- The ABS control unit (ECU) is mounted on the modulator (the modulator with the built-in ECU). Do not disassemble the ABS modulator. Replace the ABS modulator as an assembly when the it is faulty.
- The ABS modulator may be damaged if dropped. Also if a connector is disconnected when current is flowing, the excessive voltage may damage the control unit. Always turn off the ignition switch before servicing.
- Be careful not to damage the wheel speed sensor and pulser ring when removing and installing the wheel.
- The following color codes are used throughout this section.

Bu = Blue	G = Green	Lg = Light Green	R = Red
Bl = Black	Gr = Gray	O = Orange	W = White
Br = Brown	Lb = Light Blue	P = Pink	Y = Yellow

TORQUE VALUES

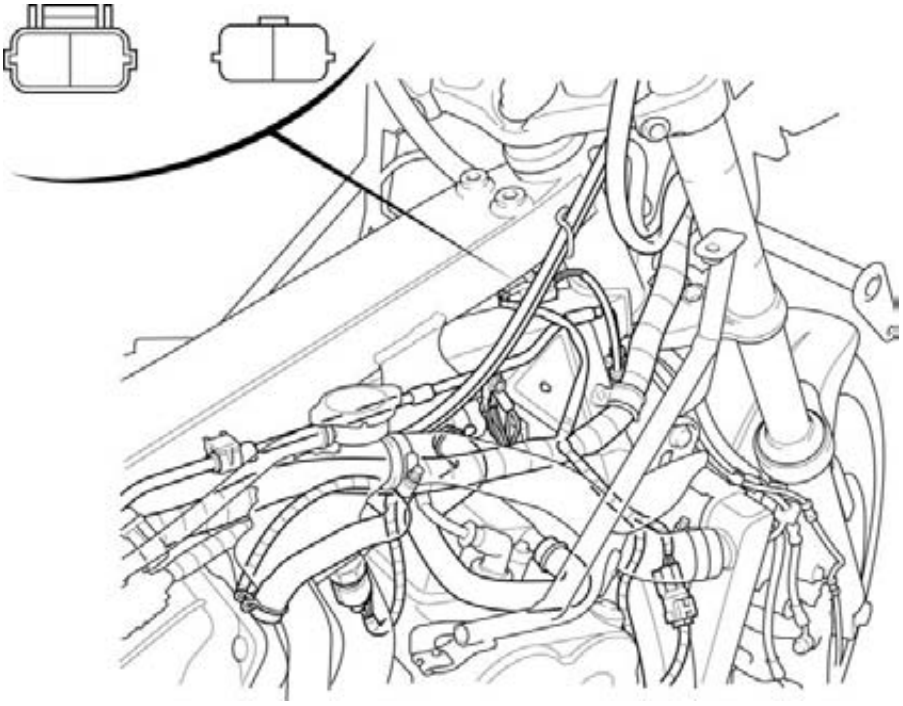
ABS modulator lower mounting bolt	12 N·m (1.2 kgf·m, 9 lbf·ft)	ALOC bolt; replace with new one.
ABS modulator left mounting bolt	10 N·m (1.0 kgf·m, 7 lbf·ft)	
Rear brake pipe stay bolt	12 N·m (1.2 kgf·m 9 lbf·ft)	
Front brake hose joint bolt	10 N·m (1.0 kgf·m, 7 lbf·ft)	
Wheel speed sensor mounting bolt	10 N·m (1.0 kgf·m, 7 lbf·ft)	
Front wheel speed sensor wire clamp bolt	10 N·m (1.0 kgf·m, 7 lbf·ft)	ALOC bolt; replace with a new one.
Brake pipe joint nut	17 N·m (1.7 kgf·m, 13 lbf·ft)	Apply brake fluid to the threads.

ABS CONNECTOR LOCATIONS

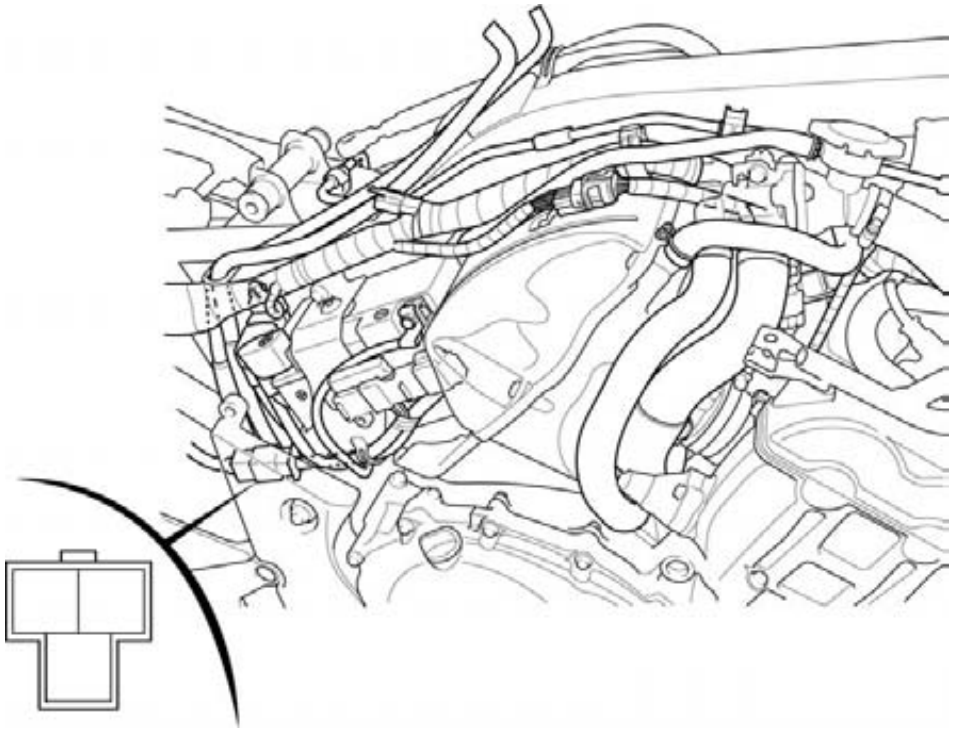
NOTE 1: Lift and support the fuel tank (page 4-5).

FRONT WHEEL SPEED SENSOR 2P (Blue) CONNECTOR
(NOTE 1)

Sensor side: Main harness side:



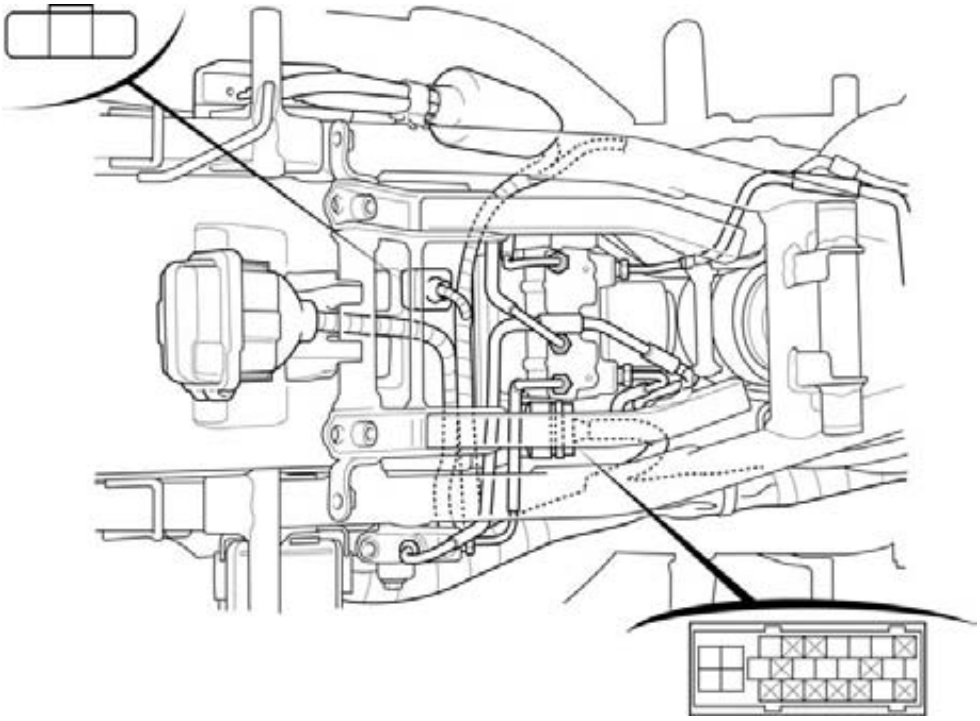
NOTE 2: Remove the right side cover (page 3-4).



ABS FUSE BOX 3P CONNECTOR
(NOTE 2)

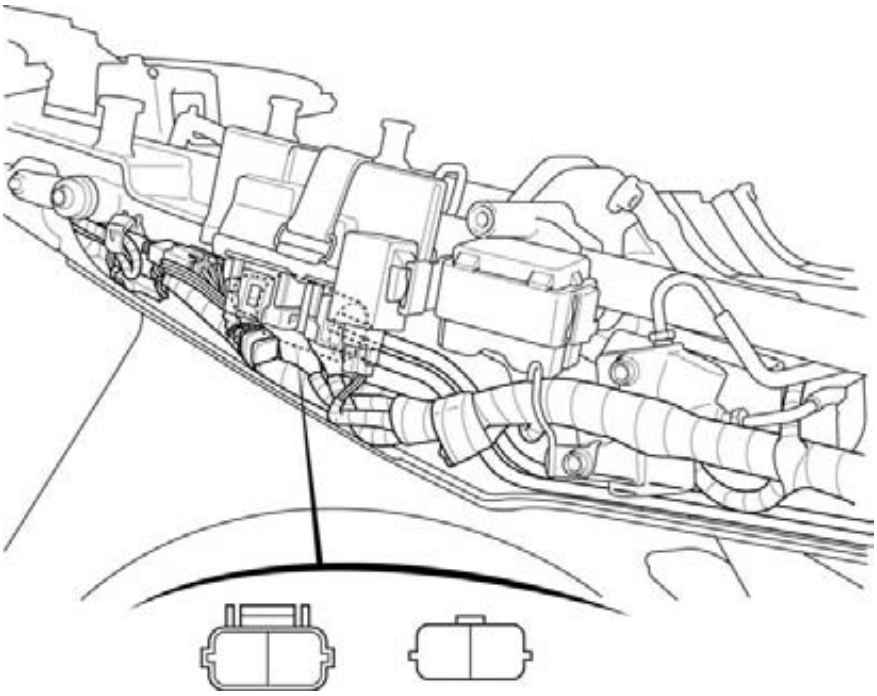
NOTE 1: Remove the seats and seat bracket (page 3-3).

ABS SERVICE CHECK CONNECTOR
(NOTE 1)



ABS MODULATOR 25P CONNECTOR
(NOTE 1)

NOTE 2: Remove the right rear cowl (page 3-8).



Main harness side: Sensor side:

REAR WHEEL SPEED SENSOR 2P (Green) CONNECTOR
(NOTE 2: Inside of the connector boot behind the ECM)

ABS TROUBLESHOOTING INFORMATION

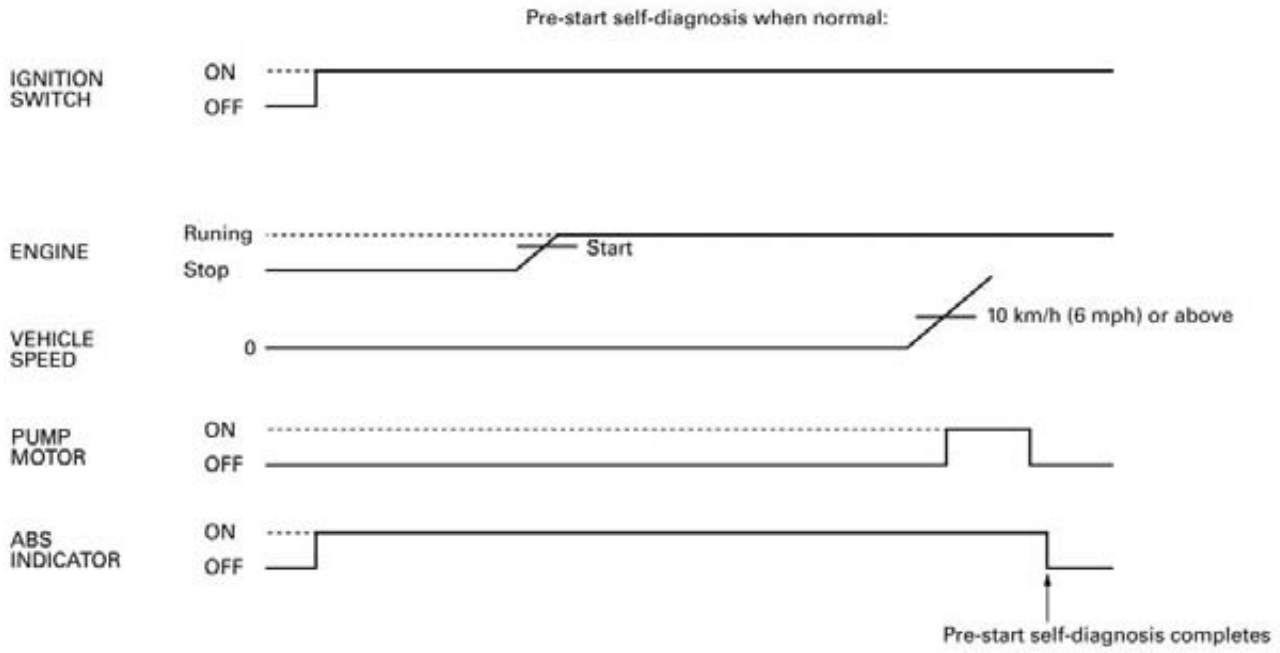
SYSTEM DESCRIPTION

ABS PRE-START SELF-DIAGNOSIS SYSTEM

The ABS pre-start self-diagnosis system diagnoses the electrical system as well as the operating status of the modulator. When there is any abnormality, the problem and the problematic part can be detected by outputting the problem code.

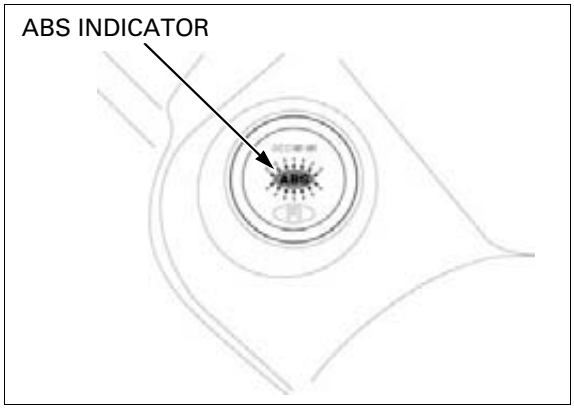
When the vehicle speed is approximately 10 km/h (6mph) or more, the wheel speed sensor signal is sent to the ABS control unit, then the pre-start self-diagnosis system operates the pump motor (inside the modulator) and detects whether the hydraulic operation is normal, and it completes the pre-start self-diagnosis.

When the ABS is normal, the ABS indicator goes off just after a road speed of 10 km/h (6 mph) indicating that the diagnosis is completed.
If a problem is detected, the ABS indicator blinks or comes on and stays on to notify the rider of the problem. The self-diagnosis is also made while the motorcycle is running, and the indicator blinks when a problem is detected.
When the indicator blinks, the cause of the problem can be identified by retrieving the problem code following the specified retrieval procedure (page 17-8).



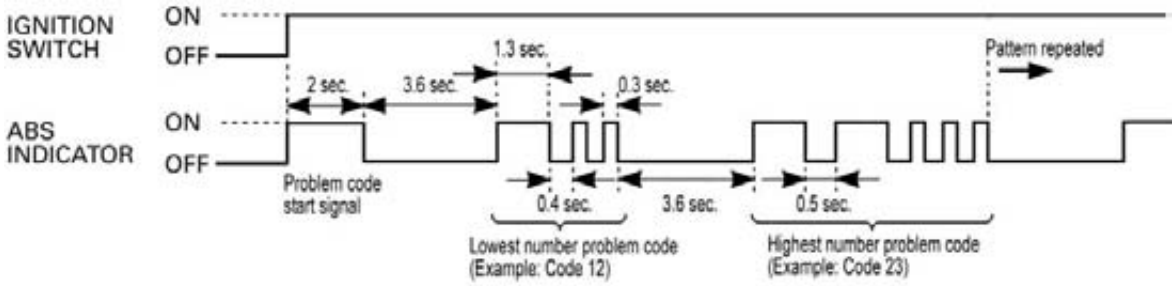
PRE-START SELF-DIAGNOSIS PROCEDURE (Daily check)

1. Turn the ignition switch to "ON".
2. Make sure the ABS indicator comes on.
3. Start the engine.
4. Ride the motorcycle and increase the vehicle speed to approximately 10 km/h (6 mph).
5. The ABS is normal if the ABS indicator goes off.



PROBLEM CODE INDICATION PATTERN

- The ABS indicator indicates the problem code by blinking a specified number of times.
  The indicator has two types of blinks, a long blink and short blink. The long blink lasts for 1.3 seconds, the short blink lasts for 0.3 seconds. When two long blinks occur, and three short blinks, that problem code is 23 (two long blinks = 20 blinks, three short blinks = 3 blinks). Then, go to the troubleshooting and see problem code 23.
- When the ABS control unit stores some problem codes, the ABS indicator shows the problem codes in the order from the lowest number to highest number. For example, when the indicator indicates code 12, then indicates code 23, two failures have occurred.



When the problem code is not stored:

PROBLEM CODE READOUT

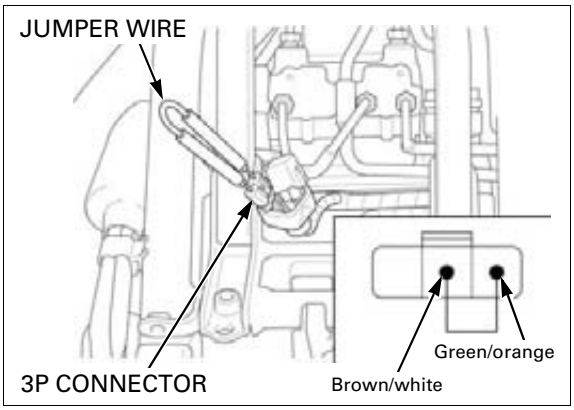
NOTE:

- The problem code is not erased by turning the ignition switch to "OFF" while the problem code is being output. Note that turning the ignition switch to "ON" again does not indicate the problem code. To show the problem code again, repeat the problem code retrieval procedures from the beginning.
- After diagnostic troubleshooting, erase the problem code(s) and perform the pre-start self-diagnosis to be sure that there is no problem in the ABS indicator (indicator is operating normally).

1. Remove the seats (page 3-3).
   Remove the seat bracket (page 3-3).

   Remove the dummy connector from the ABS service check 3P connector.
   Short the wire terminals of the service check connector with a jumper wire with the ignition switch turned to "OFF".

   CONNECTION: Brown/white – Green/orange

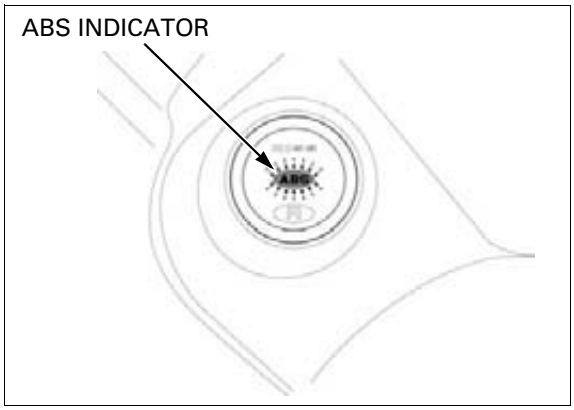


Do not apply the front or rear brake during retrieval.

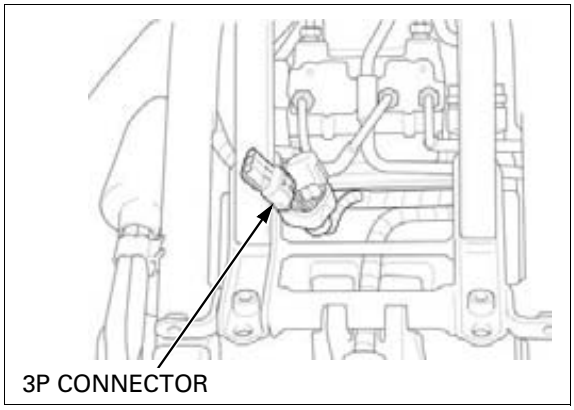
2. Turn the ignition switch to "ON". The ABS indicator should come on 2 seconds (start signal) (then goes off 3.6 seconds) and starts problem code indication.

   The problem code is indicated by the number of the times of the indicator blinking.

   If the problem code is not stored, the ABS indicator stays on.



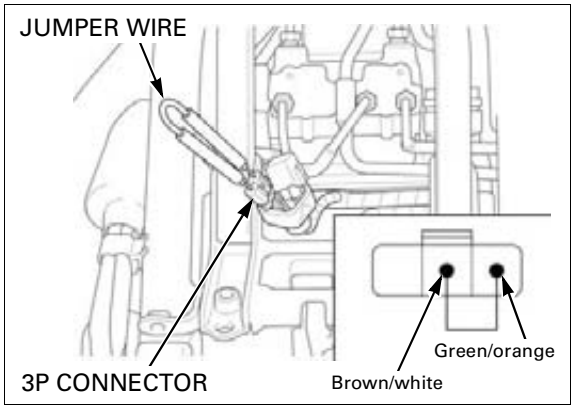
3. Turn the ignition switch to "OFF" and remove the jumper wire.



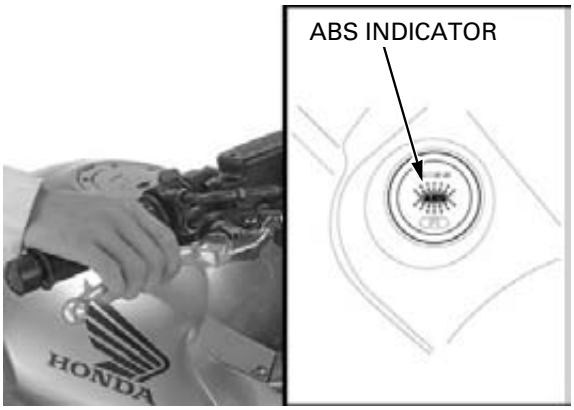
CLEARING PROBLEM CODE

1. Short the wire terminals of the service check connector with a jumper wire with the ignition switch turned to "OFF" in the same manner as retrieval.

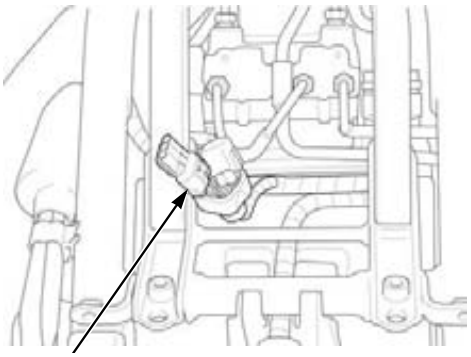
   CONNECTION: Brown/white – Green/orange



2. Turn the ignition switch to "ON" while squeezing the brake lever. The ABS indicator should come on 2 seconds and go off.
3. Release the brake lever immediately after the ABS indicator is off. The ABS indicator should come on.
4. Squeeze the brake lever immediately after the ABS indicator is on. The ABS indicator should go off.



5. Release the brake lever immediately after the ABS indicator is off.
   When code erasure is complete, the ABS indicator blinks 2 times and stays on.
6. Turn the ignition switch to "OFF".



ABS PROBLEM CODE INDEX

NOTE:

- The ABS indicator might blink in the following cases. Correct the faulty part.
  – Incorrect tire pressure.
  – Tires not recommended for the motorcycle were installed (incorrect tire size).
  – Deformation of the wheel or tire.
- The ABS indicator might blink while riding under the following conditions. This is temporary failure. Erase the problem code and perform the pre-start self-diagnosis. The ABS is normal if the indicator goes off. Ask the rider for the riding conditions in detail when the motorcycle is brought in for inspection.
  – The motorcycle has continuously run bumpy roads.
  – The front wheel leaves the ground for a long time when riding (wheelie).
  – Only either the front or rear wheel rotates.
  – The ABS operates continuously.
  – The ABS control unit has been disrupted by an extremely powerful radio wave (electromagnetic interference).

Problem Code	Function failure	Detection		Symptom/Fail-safe function	Refer to
		A	B		
–	ABS indicator circuit malfunction • Indicator related wires			• ABS indicator never come ON at all	17-22
				• ABS indicator stays ON at all	17-22
11	Front wheel speed sensor circuit malfunction • Wheel speed sensor or related wires	○	○	• Stops ABS operation	17-12
12	Front wheel speed sensor malfunction • Wheel speed sensor or related wires • Electrical noise/intermittent interruption		○	• Stops ABS operation	17-12
13	Rear wheel speed sensor circuit malfunction • Wheel speed sensor or related wires	○	○	• Stops ABS operation	17-14
14	Rear wheel speed sensor • Wheel speed sensor or related wires • Electrical noise/intermittent interruption		○	• Stops ABS operation	17-14
21	Front speed sensor pulse • Pulser ring or wheel speed sensor		○	• Stops ABS operation	17-12
23	Rear speed sensor pulse • Pulser ring or wheel speed sensor		○	• Stops ABS operation	17-14
31	Solenoid valve malfunction	○	○	• Stops ABS operation	17-16
32					
33					
34					
37					
38					
41	Front wheel lock • Riding condition • Wheel speed sensor or related wires		○	• Stops ABS operation	17-12
42					
43	Rear wheel lock • Riding condition • Wheel speed sensor or related wires		○	• Stops ABS operation	17-14
51	Motor lock		○	• Stops ABS operation	17-16
52	Motor stuck OFF		○	• Stops ABS operation	
53	Motor stuck ON	○	○	• Stops ABS operation	
54	Fail-safe relay circuit malfunction	○		• Stops ABS operation	17-18
61	Power supply voltage low	○	○	• Stops ABS operation	17-20
62	Power supply voltage high		○	• Stops ABS operation	
71	Incorrect tire size		○	• Stops ABS operation	17-21
81	CPU (ABS control unit)	○	○	• Stops ABS operation	17-21

(A) Pre-start self-diagnosis (page 17-7)

(B) Ordinary self-diagnosis: diagnoses while the motorcycle is running (after pre-start self-diagnosis)

ABS TROUBLESHOOTING

NOTE:

- Perform inspection with the ignition switch turned to "OFF", unless otherwise specified.
- Refer to the ABS Connector Locations (page 17-5). All connector diagrams in the troubleshooting are viewed from the terminal side.
- Use a fully charged battery. Do not diagnose with a charger connected to the battery.
- When the ABS modulator assembly is detected to be faulty, recheck the wire harness and connector connections closely before replacing it.
- After troubleshooting, erase the problem code (page 17-9).
  Perform the pre-start self-diagnosis to be sure that the ABS indicator is operating normally (page 17-7).

PROBLEM CODE 11, 12, 21, 41 or 42 (Front Wheel Speed Sensor)

NOTE:

- The ABS indicator might blink under unusual riding or conditions (page 17-11). This is temporary failure. Erase the problem code and perform the pre-start self-diagnosis before troubleshooting. The ABS is normal if the indicator goes off.
- If the problem code 41 is indicated, check the front brake for drag.

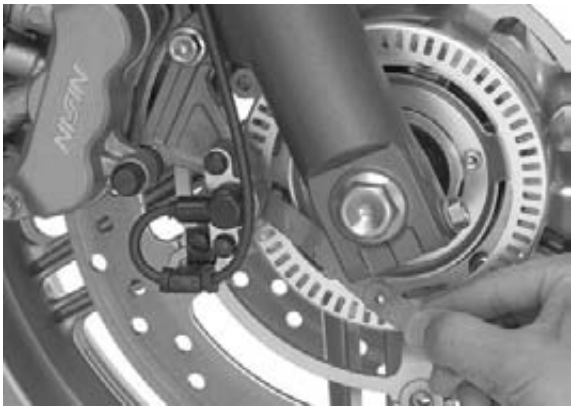
1. Speed Sensor Air Gap Inspection

Measure the air gap between the wheel speed sensor and pulser ring (page 17-25).

Is the air gap correct?

NO – Check each part for deformation and looseness and correct accordingly. Recheck the air gap.

YES – GO TO STEP 2.



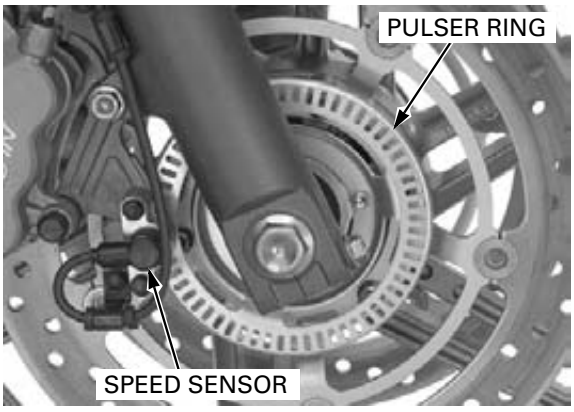
2. Speed Sensor Condition Inspection

Inspect the area around the speed sensor:
Check that there is iron or other magnetic deposits between the pulser ring and wheel speed sensor, and the pulser ring slots for obstructions.
Check installation condition of the pulser ring or wheel speed sensor for looseness.
Check the pulser ring and sensor tip for deformation or damage (e.g., chipped pulser ring teeth).

Are the sensor and pulser ring in good condition?

NO – Remove any deposits. Install properly or replace faulty part.

YES – GO TO STEP 3.



3. Speed Sensor Line Short Circuit Inspection (at control unit side)

Remove the following:

– Seats (page 3-3)
– Seat bracket (page 3-3)

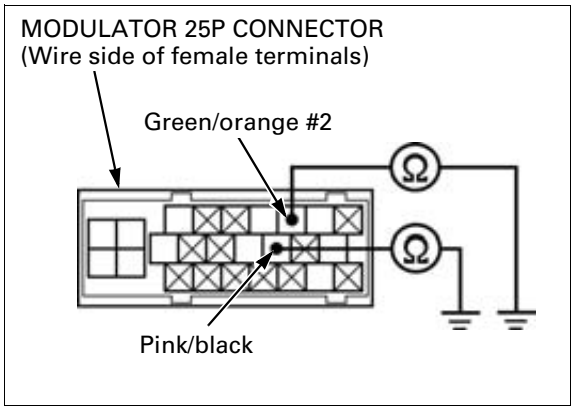
Lift and support the fuel tank (page 4-5).

Disconnect the ABS modulator 25P connector and the speed sensor 2P (Blue) connector.
Check for continuity between the Pink/black wire terminal of the connector and ground, and between the Green/orange #2 wire terminal of the connector and ground.

Is there continuity?

YES – Short circuit in wire between the ABS modulator and speed sensor.

NO – GO TO STEP 4.



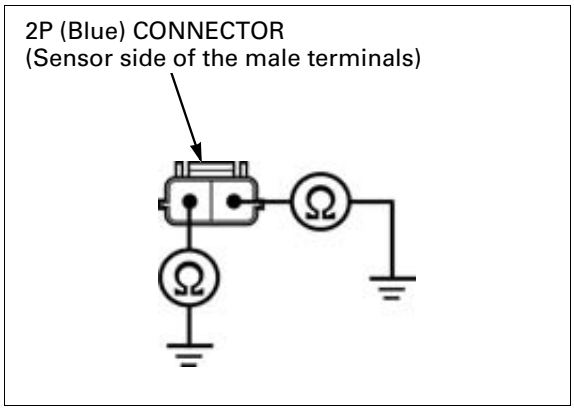
4. Speed Sensor Line Short Circuit Inspection (at sensor side)

Check for continuity between each terminal (Black and White) of the sensor side 2P connector and ground in the same manner as the previous step.

Is there continuity?

YES – Faulty front wheel speed sensor.

NO – GO TO STEP 5.



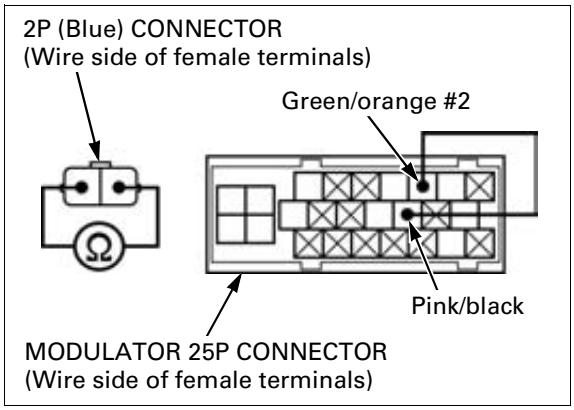
5. Speed Sensor Line Open Circuit Inspection

Short the Pink/black and Green/orange #2 wire terminals of the 25P connector with a jumper wire.
Check for continuity between the terminals of the wire harness side sensor 2P (Blue) connector.

Is there continuity?

NO – Open circuit in wire between the ABS modulator and speed sensor.

YES – GO TO STEP 6.



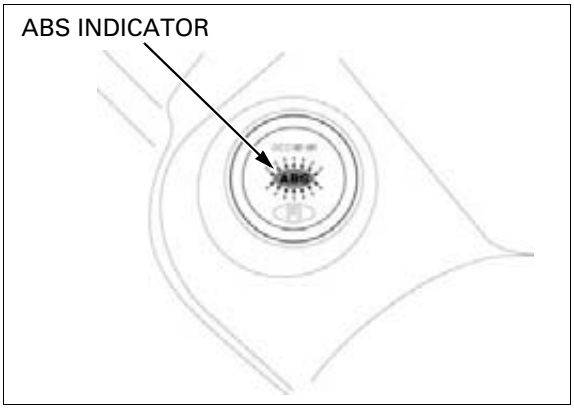
6. Failure Reproduction with a New Speed Sensor

Replace the front wheel speed sensor with new one (page 17-25).
Connect the modulator 25P connector.
Erase the problem code (page 17-9).
Perform the pre-start self-diagnosis and check the ABS indicator (page 17-7).

Dose the indicator blink?

NO – Faulty removed wheel speed sensor.

YES – Faulty ABS modulator.



PROBLEM CODE 13, 14, 23 or 43 (Rear Wheel Speed Sensor)

NOTE:

- The ABS indicator might blink under unusual riding or conditions (page 17-11). This is temporary failure. Erase the problem code and perform the pre-start self-diagnosis before troubleshooting. The ABS is normal if the indicator goes off.
- If the problem code 43 is indicated, check the rear brake for drag.

1. Speed Sensor Air Gap Inspection

Measure the air gap between the speed sensor and pulser ring (page 17-25).

Is the air gap correct?

NO – Check each part for deformation and looseness and correct accordingly. Recheck the air gap.

YES – GO TO STEP 2.

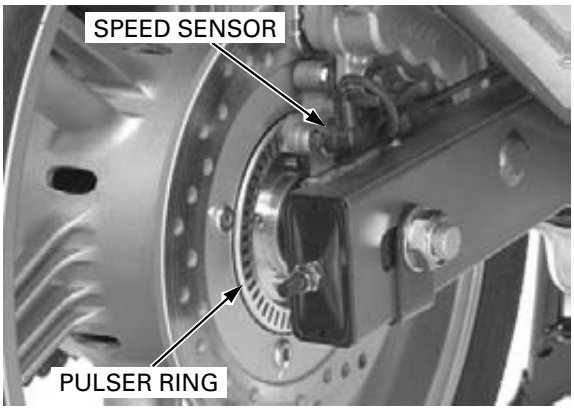
2. Speed Sensor Condition Inspection

Inspect the area around the speed sensor:
Check that there is iron or other magnetic deposits between the pulser ring and wheel speed sensor, and the pulser ring slots for obstructions.
Check installation condition of the pulser ring or wheel speed sensor for looseness.
Check the pulser ring and sensor tip for deformation or damage (e.g., chipped pulser ring teeth).

Are the sensor and pulser ring in good condition?

NO – Remove any deposits. Install properly or replace faulty part.

YES – GO TO STEP 3.



3. Speed Sensor Line Short Circuit Inspection (at control unit side)

Remove the following:

– Seats (page 3-3)
– Seat bracket (page 3-3)

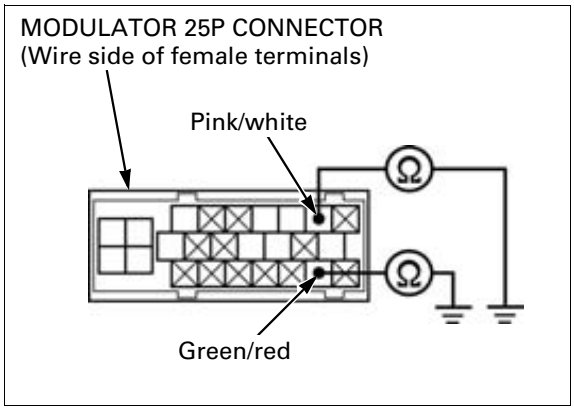
Remove the right rear cowl (page 3-8).

Disconnect the ABS modulator 25P connector and the speed sensor 2P (Green) connector.
Check for continuity between the Pink/white wire terminal of the connector and ground, and between the Green/red wire terminal of the connector and ground.

Is there continuity?

YES – Short circuit in wire between the ABS modulator and speed sensor.

NO – GO TO STEP 4.



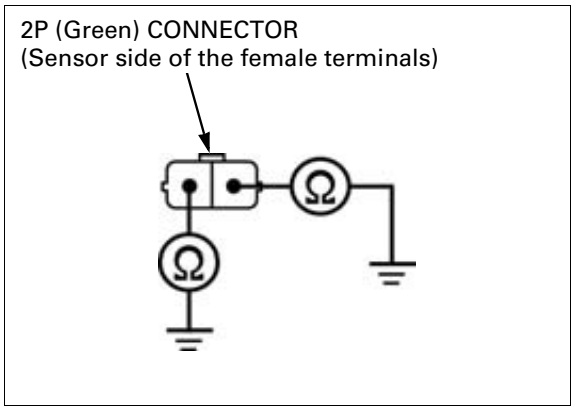
4. Speed Sensor Line Short Circuit Inspection (at sensor side)

Check for continuity between each terminal (Black and White) of the sensor side 2P connector and ground in the same manner as the previous step.

Is there continuity?

YES – Faulty rear wheel speed sensor.

NO – GO TO STEP 5.



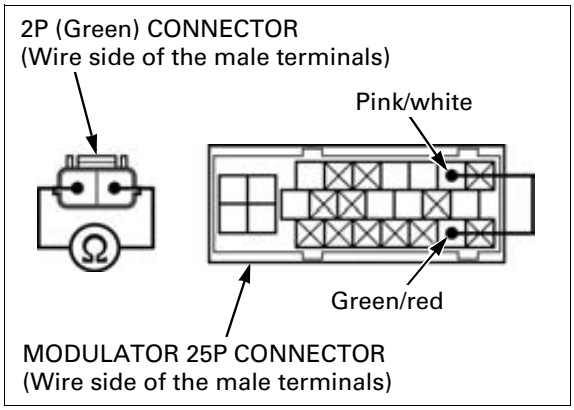
5. Speed Sensor Line Open Circuit Inspection

Short the Pink/white and Green/red wire terminals of the 25P connector with a jumper wire.
Check for continuity between the terminals of the wire harness side sensor 2P (Green) connector.

Is there continuity?

NO – Open circuit in wire between the ABS modulator and speed sensor.

YES – GO TO STEP 6.



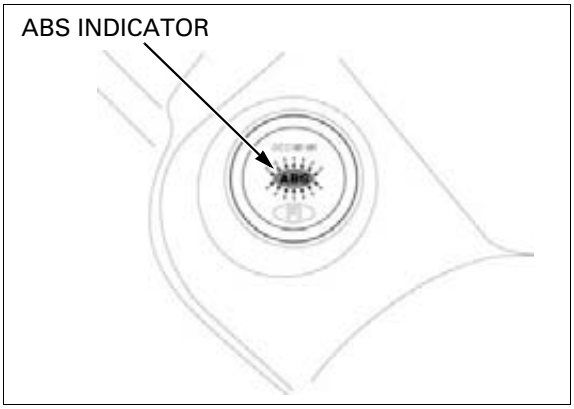
6. Failure Reproduction with a New Speed Sensor

Replace the rear wheel speed sensor with new one (page 17-25).
Connect the modulator 25P connector.
Erase the problem code (page 17-9).
Perform the pre-start self-diagnosis and check the ABS indicator (page 17-7).

Dose the indicator blink?

NO – Faulty removed wheel speed sensor.

YES – Faulty ABS modulator.



PROBLEM CODE 31, 32, 33, 34, 37 or 38 (Solenoid Valve)

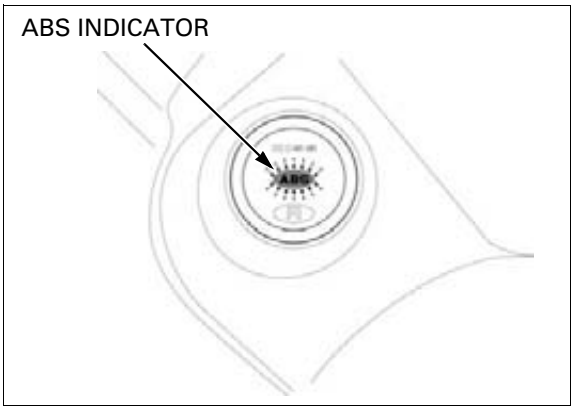
1. Failure Reproduction

Erase the problem code (page 17-9).
Perform the pre-start self-diagnosis (page 17-7).
Retrieve the problem code (page 17-8).

Does the indicator indicate the code "31, 32, 33 or 34"?

YES – Faulty ABS modulator.

NO – Normal (problem code is not stored; temporary failure).



PROBLEM CODE 51, 52 or 53 (Pump Motor)

1. Fuse Inspection

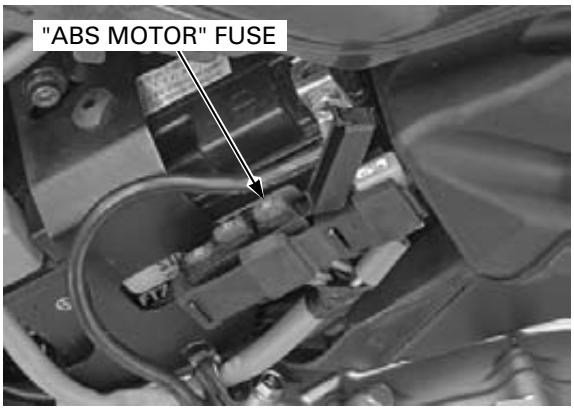
Remove the right side cover (page 3-4).

Check the "ABS MOTOR" fuse (30A) in the ABS fuse box for blown.

Is the fuse blown?

YES – GO TO STEP 2.

NO – GO TO STEP 3.



2. Motor Power Input Line Short Circuit Inspection

Remove the following:

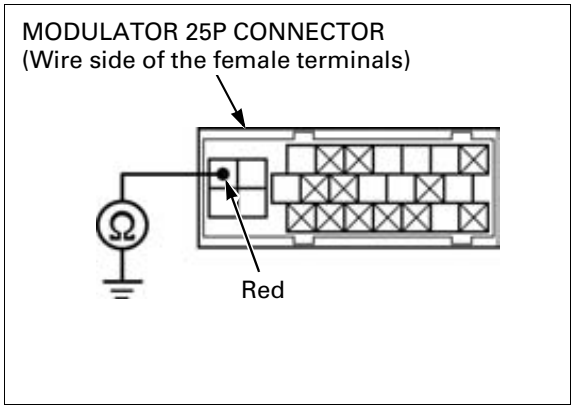
– Seats (page 3-3)
– Seat bracket (page 3-3)

Disconnect the ABS modulator 25P connector. Check for continuity between the Red wire terminal of the 25P connector and ground.

Is there continuity?

YES – Short circuit in Red wire between the fuse box and ABS modulator.

NO – Temporary failure (install a spare fuse and recheck from the first step)



3. Motor Power Input Line Open Circuit Inspection (at control unit side)

Remove the following:

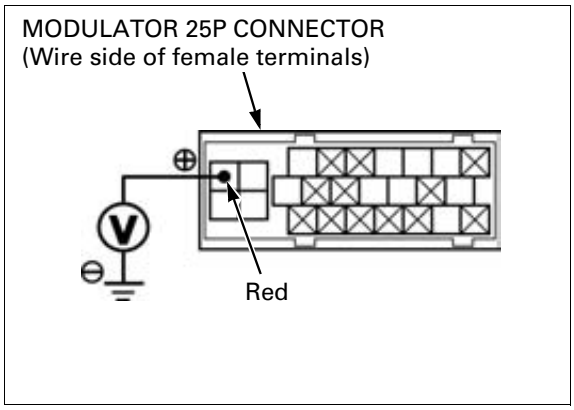
– Seats (page 3-3)
– Seat bracket (page 3-3)

Disconnect the ABS modulator 25P connector. Measure the voltage between Red wire terminal (+) of the 25P connector and ground (–). There should be battery voltage at all times.

Is there battery voltage?

NO – GO TO STEP 4.

YES – GO TO STEP 5.



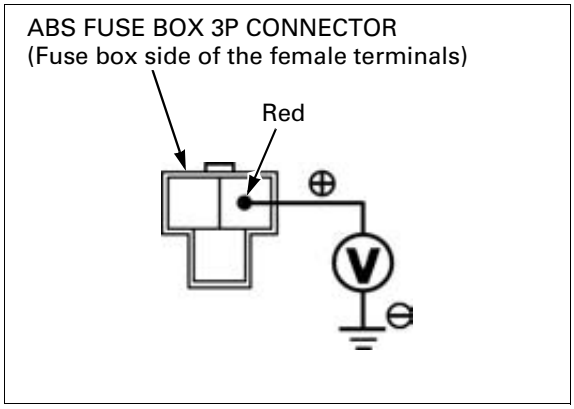
4. Motor Power Input Line Open Circuit Inspection (at fuse box side)

Disconnect the ABS fuse box 3P connector. Measure the voltage between Red wire terminal (+) of the fuse box side 3P connector and ground. There should be battery voltage at all times.

Is there battery voltage?

YES – Open circuit in Red wire between the fuse box and control unit.

NO – Open circuit in Red or Red/green wire between the battery and fuse box 3P connector.



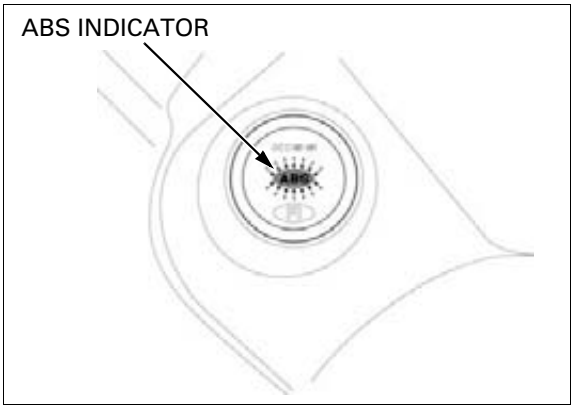
5. Failure Reproduction

Connect the modulator 25P connector.
Erase the problem code (page 17-9).
Perform the pre-start self-diagnosis (page 17-7).
Retrieve the problem code (page 17-8).

Does the indicator indicate the code "51, 52, or 53"?

YES – Faulty ABS modulator.

NO – Normal (problem code is not stored; temporary failure).



PROBLEM CODE 54 (Fail-safe Relay)

1. Fuse Inspection

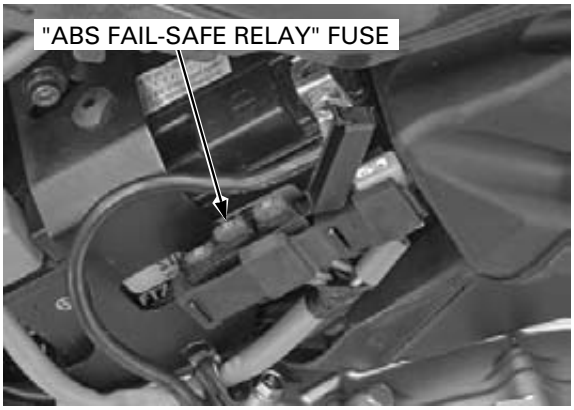
Remove the right side cover (page 3-4).

Check the "ABS FAIL-SAFE RELAY" fuse (30A) in the ABS fuse box for blown.

Is the fuse blown?

YES – GO TO STEP 2.

NO – GO TO STEP 3.



2. Relay Power Input Line Short Circuit Inspection

Remove the following:

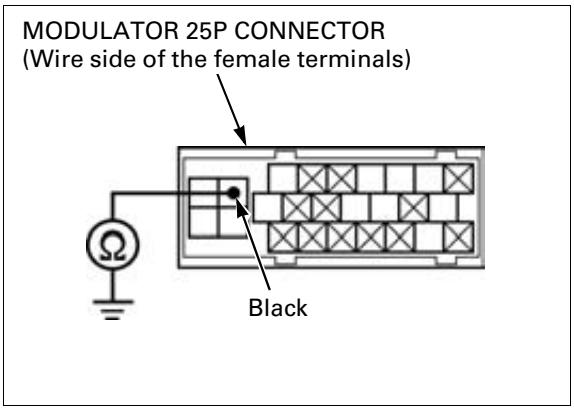
- Seats (page 3-3)
- Seat bracket (page 3-3)

Disconnect the ABS modulator 25P connector.
Check for continuity between the Black wire terminal of the 25P connector and ground.

Is there continuity?

YES – Short circuit in Black wire between the fuse box and ABS modulator.

NO – Temporary failure (install a spare fuse and recheck from the first step)



3. Relay Power Input Line Open Circuit Inspection (at control unit side)

Remove the following:

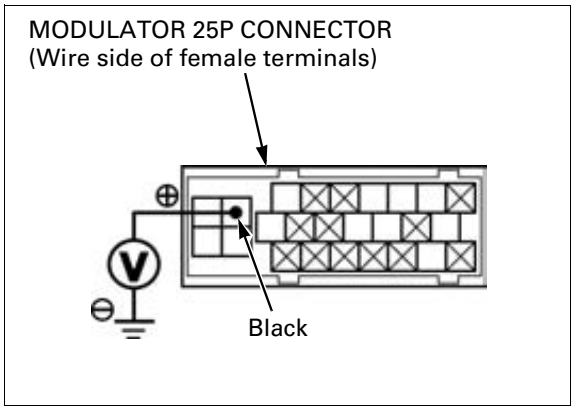
– Seats (page 3-3)
– Seat bracket (page 3-3)

Disconnect the ABS modulator 25P connector.
Measure the voltage between Black wire terminal (+) of the 25P connector and ground (–). There should be battery voltage at all times.

Is there battery voltage?

NO – GO TO STEP 4.

YES – GO TO STEP 5.



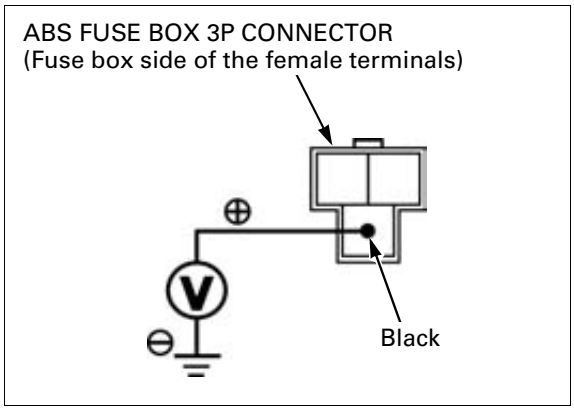
4. Relay Power Input Line Open Circuit Inspection (at fuse box side)

Disconnect the ABS fuse box 3P connector.
Measure the voltage between Black wire terminal (+) of the fuse box side 3P connector and ground. There should be battery voltage at all times.

Is there battery voltage?

YES – Open circuit in Black wire between the fuse box and control unit.

NO – Open circuit in Black or Red/green wire between the battery and fuse box 3P connector.



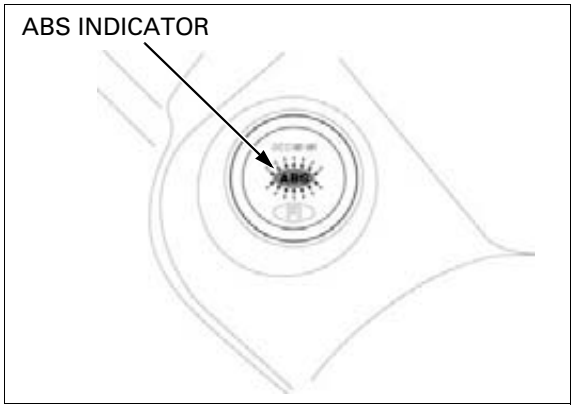
5. Failure Reproduction

Connect the modulator 25P connector.
Erase the problem code (page 17-9).
Perform the pre-start self-diagnosis (page 17-7).
Retrieve the problem code (page 17-8).

Does the indicator indicate the code "54"?

YES – Faulty ABS modulator.

NO – Normal (problem code is not stored; temporary failure).



PROBLEM CODE 61 or 62 (Power Circuit)

1. Fuse Inspection

Remove the rear seat (page 3-3).

Check the "ABS MAIN" fuse (10A) in the ABS main fuse box for blown.

Is the fuse blown?

YES – GO TO STEP 2.

NO – GO TO STEP 3.

2. Power Input Line Short Circuit Inspection

Remove the following:

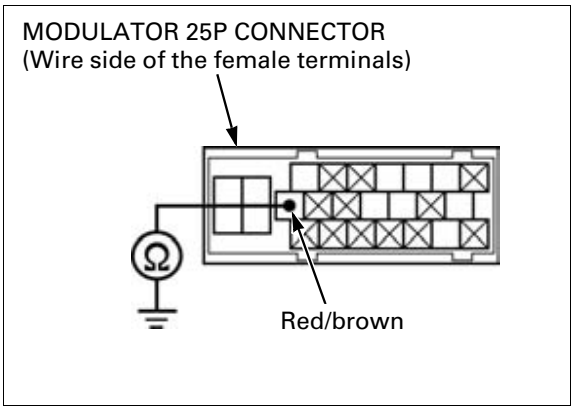
– Seats (page 3-3)
– Seat bracket (page 3-3)

Disconnect the ABS modulator 25P connector.
With the ABS main fuse (10A) removed, check for continuity between the Red/brown wire terminal of the 25P connector and ground.

Is there continuity?

YES – Short circuit in Red/brown wire between the fuse box and ABS modulator.

NO – Temporary failure (install a spare fuse and recheck from the first step)



3. Power Input Line Open Circuit Inspection

Remove the following:

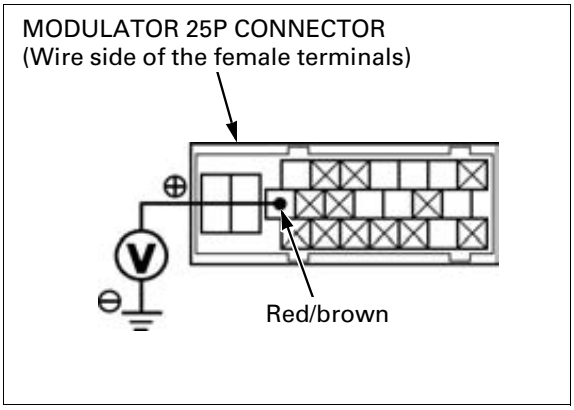
– Seats (page 3-3)
– Seat bracket (page 3-3)

Disconnect the ABS modulator 25P connector.
Install the ABS main fuse.
Measure the voltage between the Red/brown wire terminal of 25P connector and ground.
There should be battery voltage with the ignition switch turned to "ON".

Is the voltage 10 – 17 V?

NO – • Open circuit in Red/brown or Red/black wire between the ignition switch and control unit.
• If the wire is OK, check the charging system (page 18-2).

YES – GO TO STEP 4.



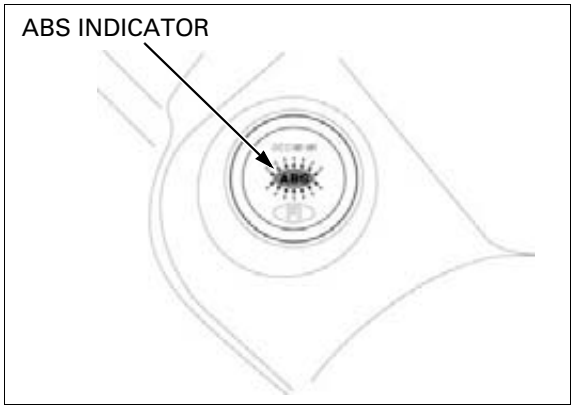
4. Failure Reproduction

Connect the modulator 25P connector.
Erase the problem code (page 17-9).
Perform the pre-start self-diagnosis (page 17-7).
Retrieve the problem code (page 17-8).

Does the indicator indicate the code "61 or 62"?

YES – Faulty ABS modulator.

NO – Normal (problem code is not stored; temporary failure).



PROBLEM CODE 71 (Tire Size)

NOTE:

- Check the following and correct the faulty part.
  – Incorrect tire pressure.
  – Tires not recommended for the motorcycle were installed (incorrect tire size).
  – Deformation of the wheel or tire.

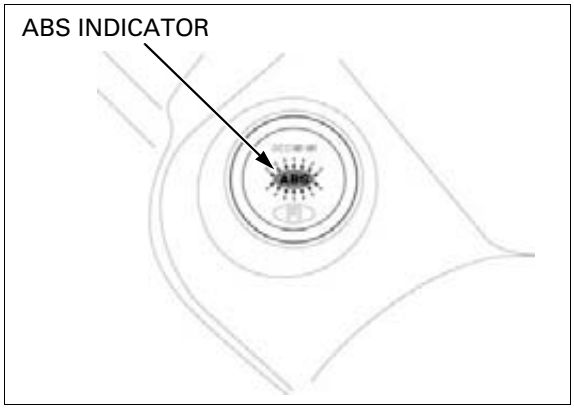
1. Failure Reproduction

If the above items are normal, recheck the problem code indication:
Erase the problem code (page 17-9).
Perform the pre-start self-diagnosis (page 17-7).
Retrieve the problem code (page 17-8).

Does the indicator indicate the code "71"?

YES – Faulty ABS modulator.

NO – Normal (problem code is not stored; temporary failure).



PROBLEM CODE 81 (CPU; ABS Control Unit)

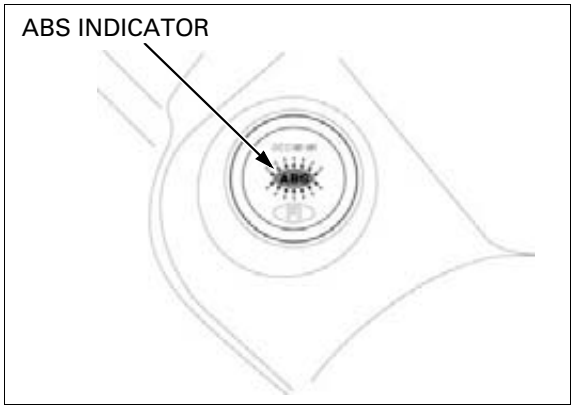
1. Failure Reproduction

Erase the problem code (page 17-9).
Perform the pre-start self-diagnosis (page 17-7).
Retrieve the problem code (page 17-8).

Does the indicator indicate the code "81"?

YES – Faulty ABS modulator.

NO – Normal (problem code is not stored; temporary failure).



ABS INDICATOR CIRCUIT TROUBLESHOOTING

ABS INDICATOR DOES NOT COME ON (when the ignition switch turned to "ON")

1. Combination Meter Power/Ground Line Inspection

Check the combination meter power and ground lines (page 21-12).

Are the wires normal?

NO – Open circuit in related wires.

YES – GO TO STEP 2.

2. Indicator Operation Inspection

Remove the following:

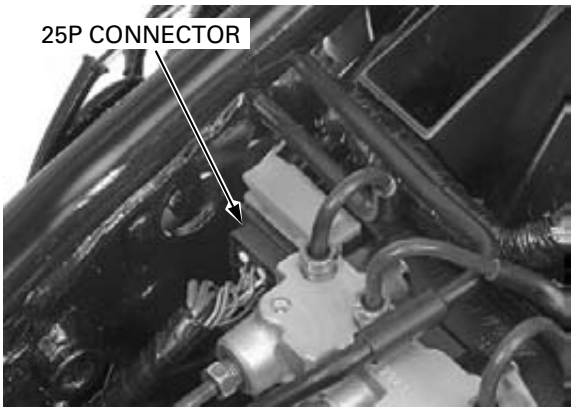
– Seats (page 3-3)
– Seat bracket (page 3-3)

Disconnect the ABS modulator 25P connector.
Turn the ignition switch to "ON" and check the ABS indicator.

Does the indicator come on?

YES – Faulty ABS modulator.

NO – GO TO STEP 3.



3. Indicator Signal Line Short Circuit Inspection

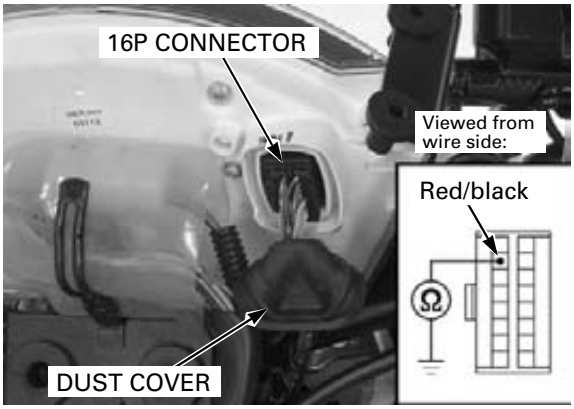
Remove the front center cowl (page 3-7).

Disconnect the combination meter 16P connector.
Check for continuity between the Red/black wire terminal of the harness side connector and ground.

Is there continuity?

YES – Short circuit in Red/black wire between the combination meter and ABS modulator.

NO – Faulty combination meter.



ABS INDICATOR STAYS ON (Indicator does not go off when the motorcycle is running, and Problem Code is not indicated by the retrieval procedure)

1. Fuse Inspection

Remove the rear seat (page 3-3).

Check the "ABS MAIN" fuse (10A) in the ABS main fuse box for blown.

Is the fuse blown?

YES – GO TO STEP 2.

NO – GO TO STEP 3.

2. Power Input Line Short Circuit Inspection

Remove the following:

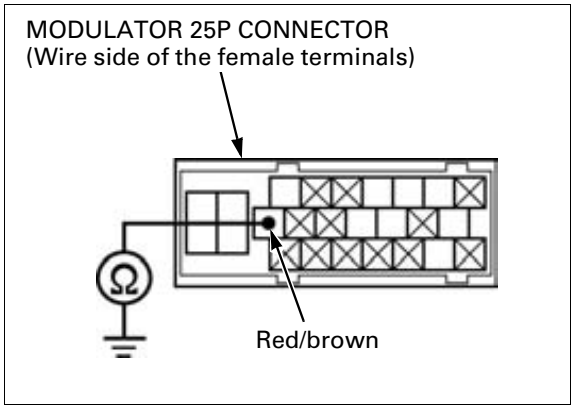
– Seats (page 3-3)
– Seat bracket (page 3-3)

Disconnect the ABS modulator 25P connector. With the ABS main fuse (10 A) removed, check for continuity between the Red/brown wire terminal of the 25P connector and body ground.

Is there continuity?

YES – Short circuit in Red/brown wire.

NO – Temporary failure (install a spare fuse and recheck from the first step).



3. Power Input Line Open Circuit Inspection

Remove the following:

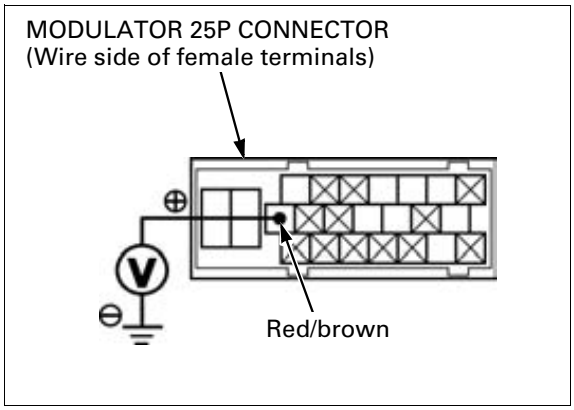
– Seats (page 3-3)
– Seat bracket (page 3-3)

Disconnect the ABS modulator 25P connector. Measure the voltage between the Red/brown wire terminal of the 25P connector and body ground.
There should be battery voltage with the ignition switch turned to "ON".

Is the voltage 10 – 17 V?

NO – • Open circuit in Red/brown wire between the ignition switch and ABS modulator.
• If the wire is OK, check the charging system (page 18-7).

YES – GO TO STEP 4.



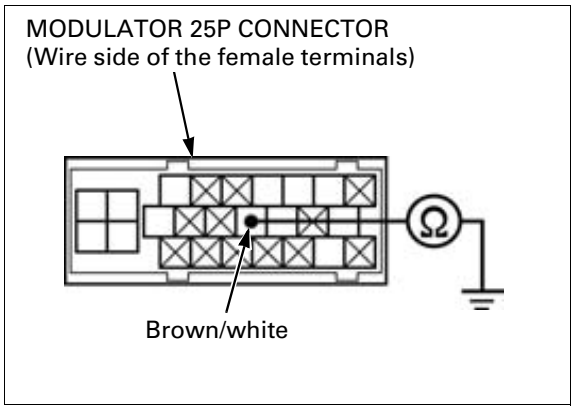
4. Service Check Line Short Circuit Inspection

Check for continuity between the Brown/white wire terminal of the 25P connector and body ground.

Is there continuity?

YES – Short circuit in Brown/white wire between the service check connector and ABS modulator.

NO – GO TO STEP 5.



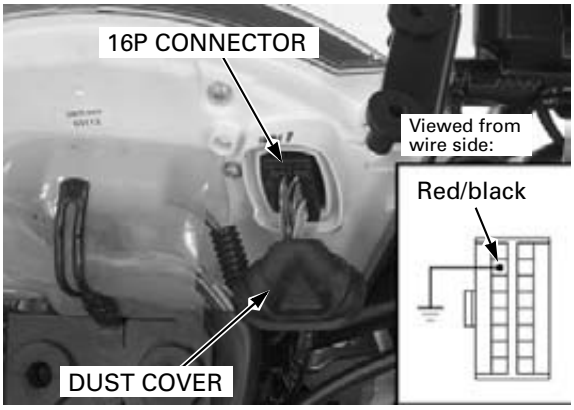
5. Indicator Operation Inspection

Remove the front center cowl (page 3-7).
With the connector connected, short the Red/black wire terminal of the combination meter 16P connector and ground with a jumper wire.
Check the ABS indicator with the ignition switch turned to "ON".

Does it go off?

NO – Faulty combination meter.

YES – GO TO STEP 6.



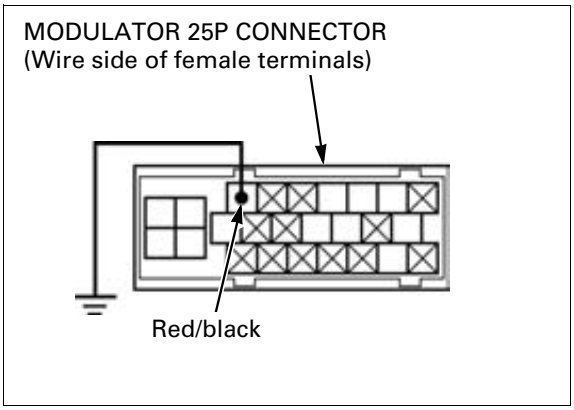
6. Indicator Signal Line Open Circuit Inspection

Remove the jumper wire from the combination meter 16P connector.
Short the Red/black wire terminal of the 25P connector and ground with a jumper wire.
Check the ABS indicator with the ignition switch turned to "ON".

Does it go off?

NO – Open circuit in Red/black wire between the combination meter and ABS modulator.

YES – GO TO STEP 7.



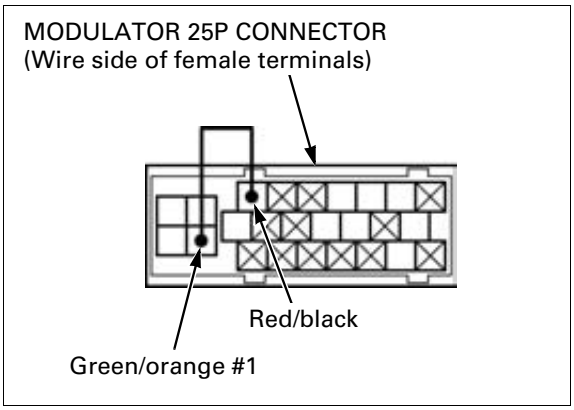
7. Logic Ground Line Open Circuit Inspection

Remove a jumper wire from the 25P connector.
Short the Red/black and Green/orange #1 wire terminals of the 25P connector with a jumper wire.
Check the ABS indicator with the ignition switch turned to "ON".

Does it go off?

NO – • Open circuit in Green/orange wire between the ABS modulator and body ground.

YES – • Faulty ABS modulator.



WHEEL SPEED SENSOR

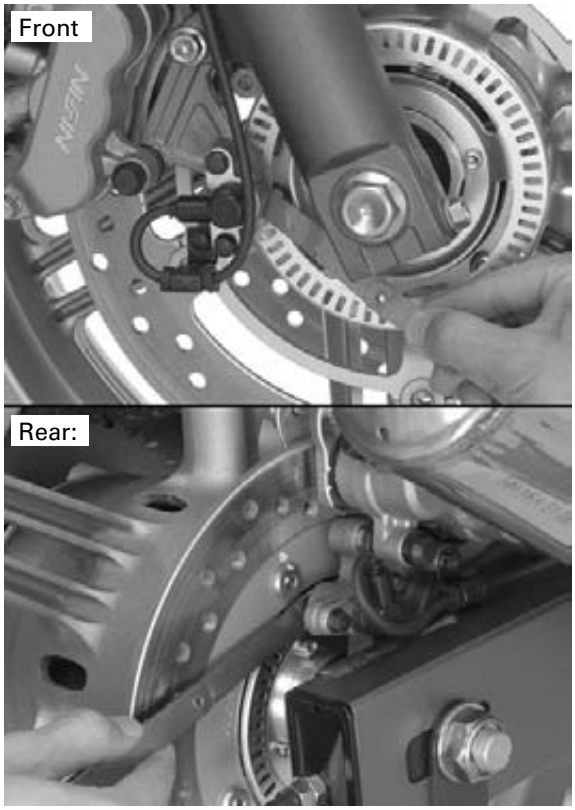
AIR GAP INSPECTION

Support the motorcycle securely using a hoist or equivalent and raise the wheel off the ground.

Measure the clearance (air gap) between the sensor and pulser ring at several points by turning the wheel slowly.
It must be within specification.

STANDARD: 0.2 – 1.2 mm (0.01 - 0.05 in)

The sensor air gap cannot be adjusted.
If it is not within specification, check each installation part for deformation, looseness and damage.



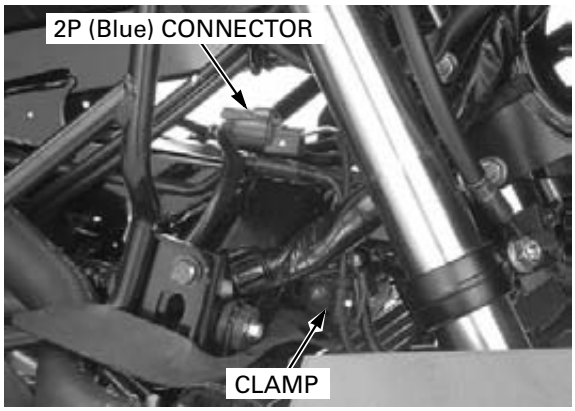
REPLACEMENT

FRONT WHEEL SPEED SENSOR

Lift and support the fuel tank (page 4-5).

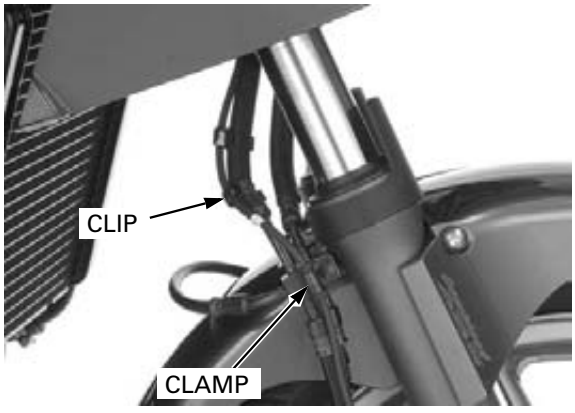
Disconnect the front wheel speed sensor 2P (Blue) connector.

Loosen the clamp bolt, and release the speed sensor wire.

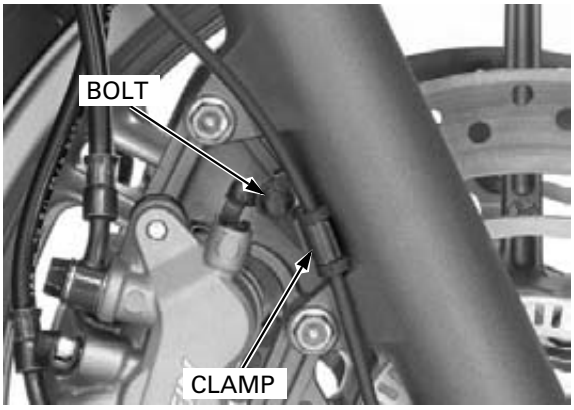


Release the sensor wire from the clip.

Remove the brake hose joint bolt (front fender mounting bolt) and clamp.

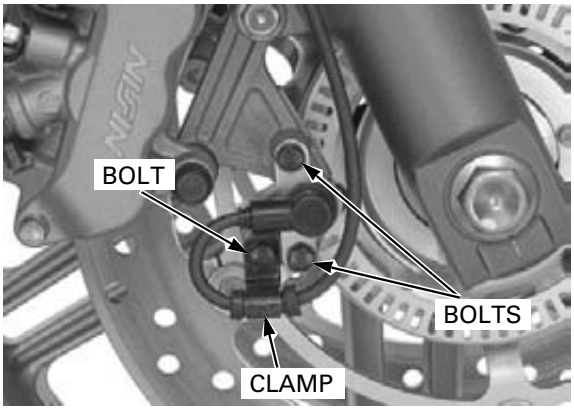


Remove the bolt and clamp.



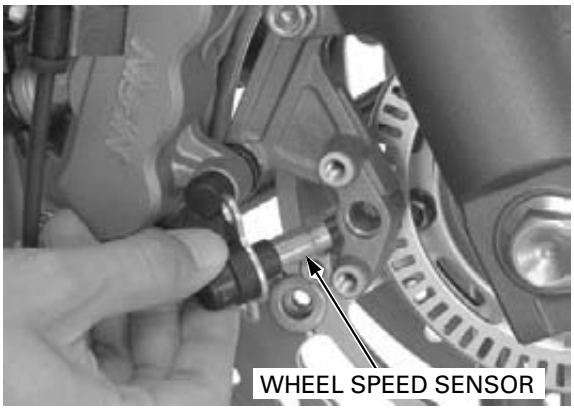
Remove the bolt and clamp.

Remove the wheel speed sensor mounting bolts.



Remove the wheel speed sensor from the caliper bracket.

Clean around the mounting area of the caliper bracket thoroughly, and be sure that no foreign material is allowed to enter the mounting hole.



Route the sensor wire properly (page 1-23).

Install a new speed sensor in the reverse order of removal.

NOTE:

- Replace the clamp bolts at the caliper bracket with new ones.

TORQUE:
Sensor and clamp bolts:
10 N·m (1.0 kgf·m, 7 lbf·ft)
Fender bolt: 12 N·m (1.2 kgf·m, 9 lbf·ft)

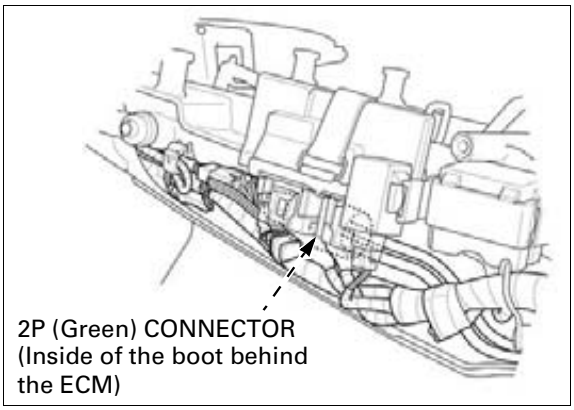
After installation, check the air gap (page 17-25).

REAR WHEEL SPEED SENSOR

Remove the right rear cowl (page 3-8).

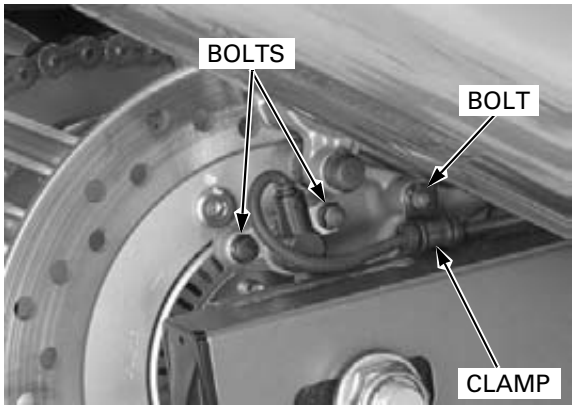
Disconnect the rear wheel speed sensor 2P (Green) connector.

Release the speed sensor wire from the wire band and clips.



Remove the bolt and sensor wire clamp.

Remove the wheel speed sensor mounting bolts.



Clean around the mounting area of the caliper bracket thoroughly, and be sure that no foreign material is allowed to enter the mounting hole.

Route the sensor wire properly (page 1-23).

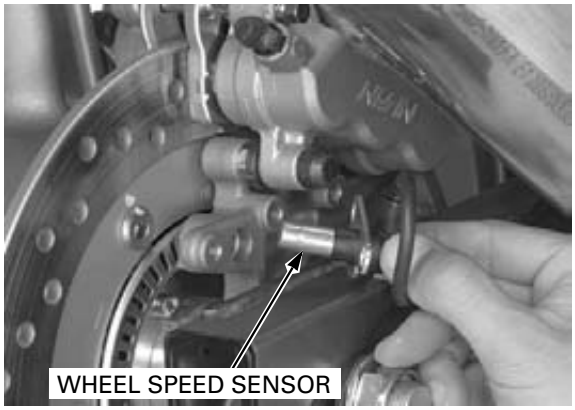
Install a new speed sensor in the reverse order of removal.

NOTE:

- Replace the clamp bolt with a new one.

TORQUE:
Sensor and clamp bolts: 10 N·m (1.0 kgf·m, 7 lbf·ft)
Brake pipe joint attaching bolt:
12 N·m (1.2 kgf·m, 9 lbf·ft)

After installation, check the air gap (page 17-25).



ABS MODULATOR

REMOVAL

Drain the brake fluid from the front and rear hydraulic systems (page 16-7).

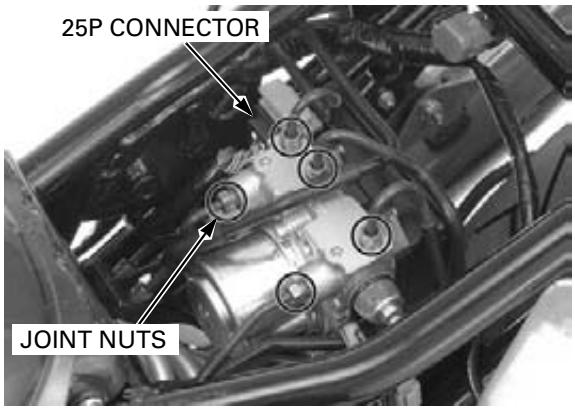
Remove the following:

– Seats (page 3-3)
– Side covers (page 3-4)
– Seat bracket (page 3-3)
– Rear fender (page 3-10)

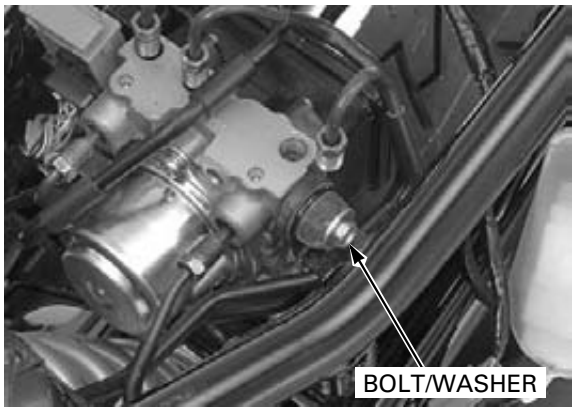
When loosening the joint nuts, cover the end of the brake pipes to prevent contamination.

Pull the lock lever up and disconnect the ABS modulator 25P connector.

Loosen the brake pipe joint nuts and disconnect the brake pipes.



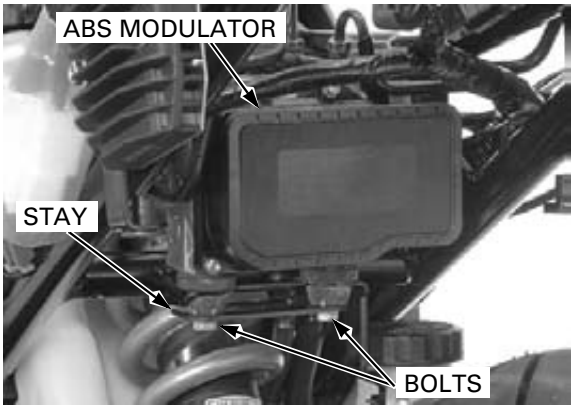
Remove the modulator side mounting bolt.



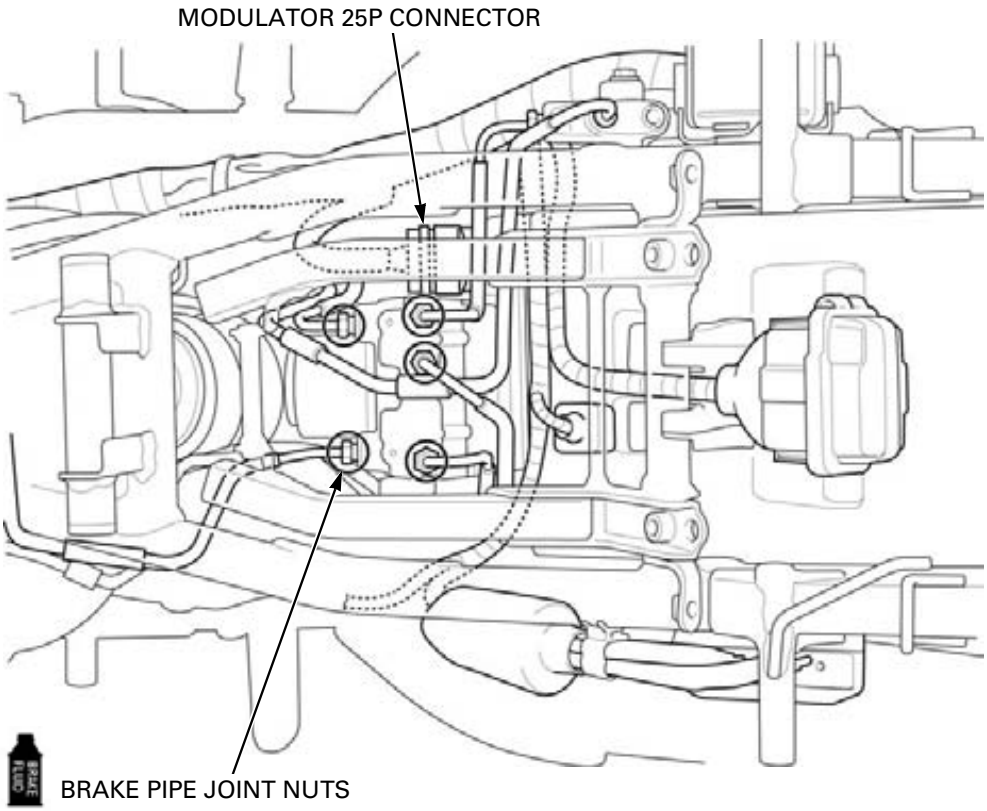
Remove the lower mounting bolts.

Be careful not to bend or damage the brake pipes during removal.

Remove the ABS modulator from the stay (so the modulator is not interfere with the brake pipes).



INSTALLATION

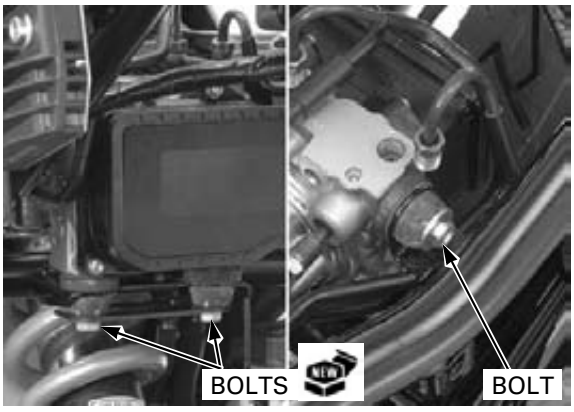


Installation is in the reverse order of removal by loosely tightening all the fasteners.

NOTE:

- Replace the lower mounting bolts with new ones.
- Apply brake fluid to the brake pipe joint nut threads.

Tighten the fasteners in the sequence as follows.



TORQUE:

Lower mounting bolt:
12 N·m (1.2 kgf·m, 9 lbf·ft)

Left mounting bolt:
10 N·m (1.0 kgf·m, 7 lbf·ft)

Brake pipe joint nut:
17 N·m (1.7 kgf·m, 13 lbf·ft)

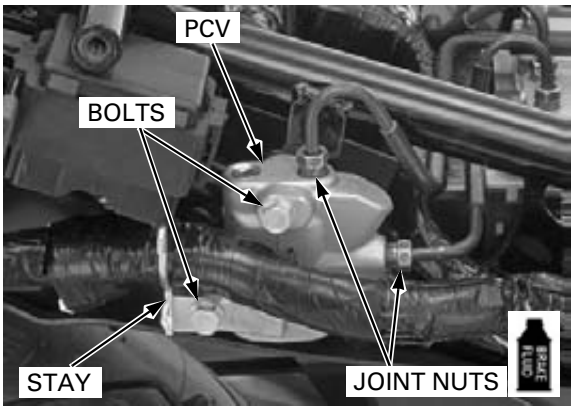
Fill and bleed the hydraulic systems (page 16-7).

PROPORTIONAL CONTROL VALVE (PCV)

REMOVAL/INSTALLATION

Remove the right rear cowl (page 3-8).

Remove the brake pipe joint nuts.
Remove the mounting bolts, main harness stay and the proportional control valve.



Apply brake fluid to the brake pipe joint nut threads.

Installation is in the reverse order of removal.

TORQUE:
Brake pipe joint nut:
17 N·m (1.7 kgf·m, 13 lbf·ft)

MEMO