

## COMBINED ABS AIR BLEEDING INFORMATION

- Due to the various components of the Combined ABS, including the valve and power units and solenoids, the brake fluid passages are very complex. This complexity requires that together with normal brake line air bleeding procedures, the valve and power units must also be bled.

The air bleeding procedures for the Combined ABS are very involved and include many steps. All the steps must be followed exactly and completely for proper bleeding. Always perform a brake inspection and test ride after bleeding.

- Due to the by-wire nature of the Combined ABS, it may be difficult to feel if air is still in the system. For this reason it is important to perform a brake test and test ride after brake system servicing.
- Check the fluid level often while bleeding the brakes to prevent air from being pumped into the system. If any air gets into the system during air bleeding, perform the air bleeding from the beginning.
- The air bleeding mode is activated by operation of the brake lever and pedal in a specific sequence. If the correct sequence is not followed, the procedure cannot be completed properly. Refer to the air bleeding procedure before starting the air bleeding and always check the Combined ABS indicator and an activation sound of the valve/power unit.

### AIR BLEEDING OPERATION

The brake fluid filling/air bleeding procedures are different depending on the case of brake components disassembly.

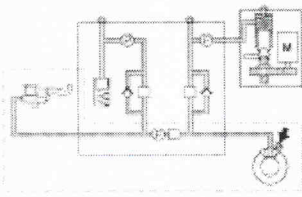
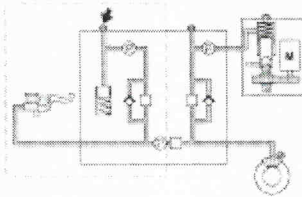
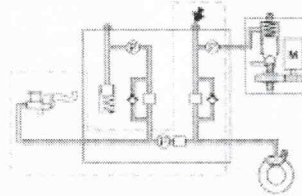
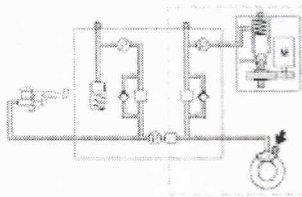
- If there is any air in the normal brake line, there is a possibility that there is any air in the valve unit line. Perform the valve unit line air bleeding if any removal or disassembly of the normal brake line component has been done.
  - Front valve unit line air bleeding
  - Rear valve unit line air bleeding
- If the valve unit is removed even though the power unit is not removed, there is a possibility that there is any air in the power unit line. Perform the both valve unit and power unit line air bleeding.
  - Front valve unit/power unit line air bleeding
  - Rear valve unit/power unit line air bleeding

Refer to each procedure summary before starting the air bleeding, and refer to the air bleeding procedure in the each brake fluid filling/bleeding.

**BRAKE FLUID FILLING/AIR BLEEDING PROCEDURE SUMMARY****FRONT VALVE UNIT LINE AIR BLEEDING**

Remove the following:

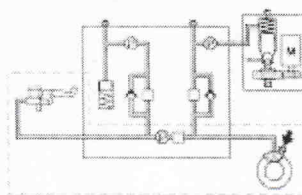
- Left rear under cover , Fuse (HEAD LIGHT 20 A, STOP/HORN TURN 10 A)

PROCESS	STEP	AIR BLEEDING LINE
1. Normal brake line air bleeding	1- <u>Air bleeding at caliper bleed valve</u>	
2. Air bleeding mode activation	1- <u>connector terminal short</u> 2- <u>Air bleeding mode activation</u>	
3. Valve unit line air bleeding	3- <u>Air bleeding at valve unit</u> 1. <u>simulator side bleed valve</u>	
	3- <u>Air bleeding at valve unit</u> 2. <u>power unit side bleed valve</u>	
4. One-way valve air bleeding (with motor activation)	4- <u>Power unit activation</u> 1. <u>(pressurization)</u> 4- <u>Air bleeding at caliper bleed valve</u> 2. <u>valve</u> 4- <u>Power unit activation</u> 3. <u>(depressurization)</u>	
5. Completion inspection	5- <u>Jumper wire removal</u> 1. 5- <u>Pre-ride inspection and test</u> 2. <u>ride for brake system</u>	

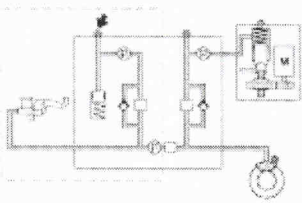
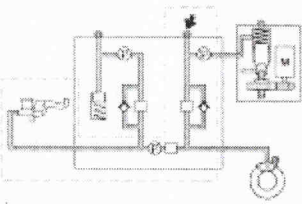
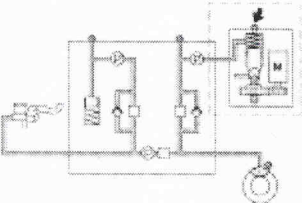
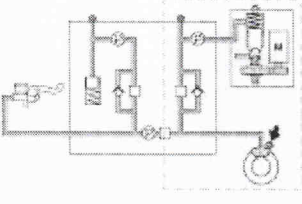
**FRONT VALVE UNIT/POWER UNIT LINE AIR BLEEDING**

Remove the following:

- Seat , Radiator , Front power unit heat guard , Left rear under cover , Fuse (HEAD LIGHT 20 A, STOP/HORN TURN 10 A)

PROCESS	STEP	AIR BLEEDING LINE
1. Normal brake line air bleeding	1- <u>Air bleeding at caliper bleed valve</u> 1. <u>valve</u>	
2. Air bleeding mode	2- <u>Combined ABS check</u>	

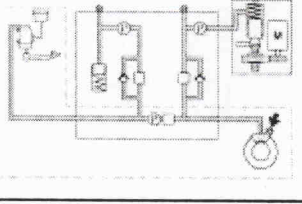


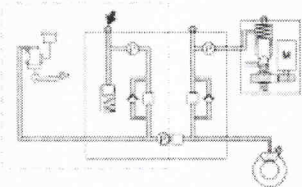
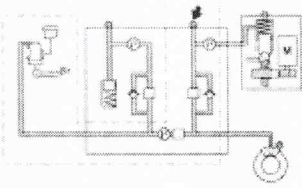
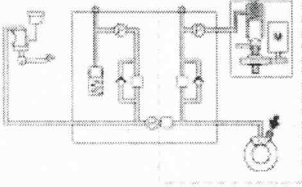
activation	1. <u>connector terminal short</u> 2- Air bleeding mode activation 2.	
3. Valve unit line air bleeding	3- <u>Air bleeding at valve unit simulator side bleed valve</u> 1.	
	3- <u>Air bleeding at valve unit power unit side bleed valve</u> 2.	
4. Power unit line air bleeding	4- <u>Air bleeding at power unit bleed valve</u> 1.	
5. Valve unit line air bleeding	5- <u>Air bleeding at valve unit power unit side bleed valve</u> 1.	same as 3-2
6. One-way valve air bleeding (with motor activation)	6- <u>Power unit activation (pressurization)</u> 1. 6- Air bleeding at caliper bleed valve 2. 6- Power unit activation (depressurization) 3.	
7. Air bleeding mode activation	7- <u>Air bleeding mode activation</u> 1.	same as 2-2
8. Power unit line air bleeding	8- <u>Air bleeding at power unit bleed valve</u> 1.	same as 4-1
9. Valve unit line air bleeding	9- <u>Air bleeding at valve unit power unit side bleed valve</u> 1.	same as 3-2
10. Completion inspection	10- Jumper wire removal 1. 10- <u>Pre-ride inspection and test</u> 2. <u>ride for brake system</u>	

**REAR VALVE UNIT LINE AIR BLEEDING**

Remove the following fuse:

- HEAD LIGHT 20 A, STOP/HORN TURN 10 A

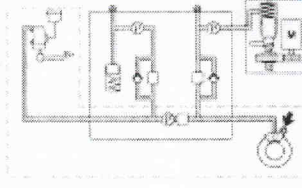
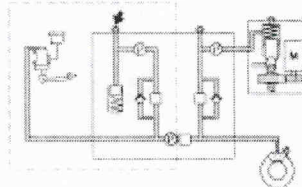
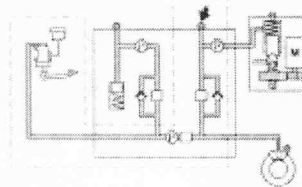

PROCESS	STEP	AIR BLEEDING LINE
1. Normal brake line air bleeding	1- <u>Air bleeding at caliper bleed valve</u> 1. <u>valve</u>	
2. Air bleeding mode activation	2- <u>Combined ABS check</u> 1. <u>connector terminal short</u>	

	2- Air bleeding mode activation 2.	
3. Valve unit line air bleeding	3- <u>Air bleeding at valve unit</u> 1. <u>simulator side bleed valve</u>	
	3- <u>Air bleeding at valve unit</u> 2. <u>power unit side bleed valve</u>	
4. One-way valve air bleeding (with motor activation)	4- <u>Power unit activation</u> 1. <u>(pressurization)</u> 4- Air bleeding at caliper bleed 2. valve 4- Power unit activation 3. <u>(depressurization)</u>	
5. Completion inspection	5- Jumper wire removal 1. 5- <u>Pre-ride inspection and test</u> 2. <u>ride for brake system</u>	

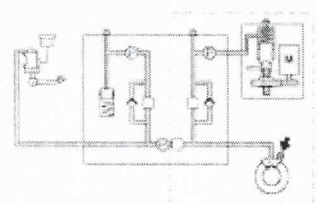
**REAR VALVE UNIT/POWER UNIT LINE AIR BLEEDING**

Remove the following fuse:

- HEAD LIGHT 20 A, STOP/HORN TURN 10 A

PROCESS	STEP	AIR BLEEDING LINE
1. Normal brake line air bleeding	1- <u>Air bleeding at caliper bleed</u> 1. <u>valve</u>	
2. Air bleeding mode activation	2- <u>Combined ABS check</u> 1. <u>connector terminal short</u> 2- Air bleeding mode activation 2.	
3. Valve unit line air bleeding	3- <u>Air bleeding at valve unit</u> 1. <u>simulator side bleed valve</u>	
	3- <u>Air bleeding at valve unit</u> 2. <u>power unit side bleed valve</u>	
4. Power unit line air	4- <u>Air bleeding at power unit</u>	



bleeding	1. <u>bleed valve</u>	
5. Valve unit line air bleeding	5- <u>Air bleeding at valve unit</u> 1. <u>power unit side bleed valve</u>	same as 3-2
6. One-way valve air bleeding (with motor activation)	6- <u>Power unit activation</u> 1. <u>(pressurization)</u> 6- Air bleeding at caliper bleed valve 2. valve 6- Power unit activation 3. <u>(depressurization)</u>	
7. Air bleeding mode activation	7- <u>Air bleeding mode activation</u> 1.	same as 2-2
8. Power unit line air bleeding	8- <u>Air bleeding at power unit</u> 1. <u>bleed valve</u>	same as 4-1
9. Valve unit line air bleeding	9- <u>Air bleeding at valve unit</u> 1. <u>power unit side bleed valve</u>	same as 3-2
10. Completion inspection	10- Jumper wire connector 1. removal 10- <u>Pre-ride inspection and test</u> 2. <u>ride for brake system</u>	

## FRONT VALVE UNIT LINE AIR BLEEDING

### NOTE:

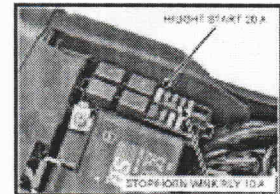
- Before Combined ABS line brake fluid air bleeding, check the battery condition.
  - Do not turn the ignition switch OFF or disconnect the jumper wire during the air bleeding as this could cause the Combined ABS to malfunction.
- Once started, if the air bleeding procedure is not completed, re-start the air bleeding from the beginning.

### 1. Normal brake line air bleeding

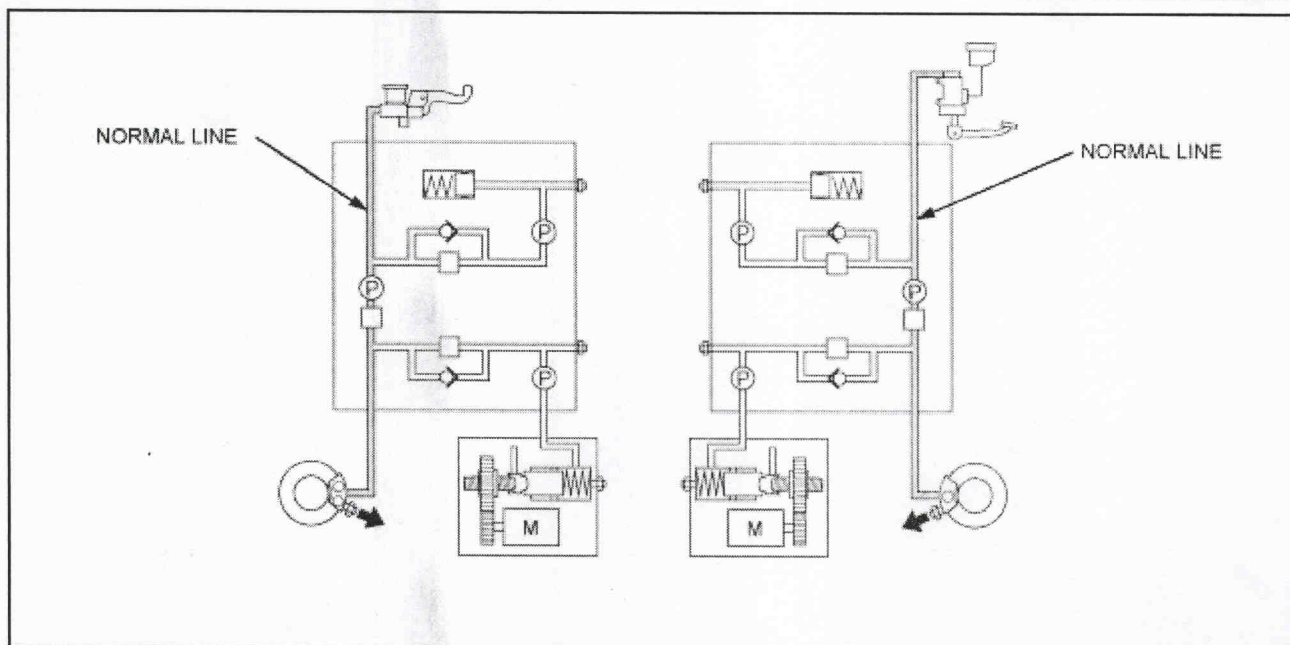
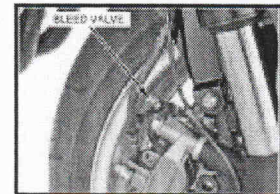
Remove the left rear under cover.

Open the fuse/relay box and remove the following fuse.

- H/LIGHT START 20 A
- STOP/HORN WINK RLY 10 A



Bleed the air from the front and rear normal hydraulic system.



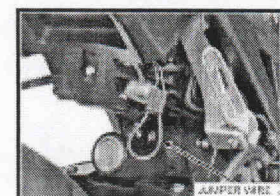
### 2. Air bleeding mode activation

Turn the ignition switch OFF.

Remove the dummy connector and short the Combined ABS check connector terminals with a jumper wire.

**Connection: Brown – Green**

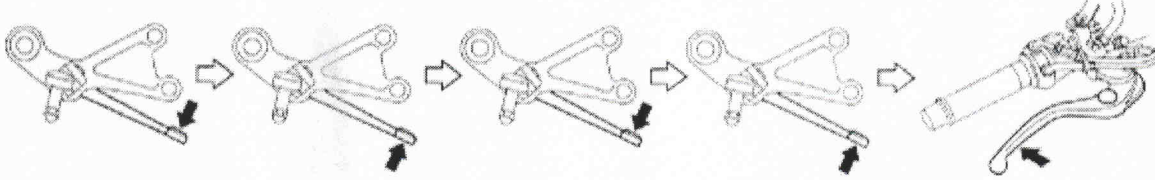
Switch to the front Combined ABS line air bleeding mode as follows.





- Perform the following procedure within five seconds.

1. Turn the ignition switch ON while applying the rear brake pedal. (Combined ABS indicator: ON)	2. Release the rear brake pedal. (Combined ABS indicator: OFF)	3. Reapply the rear brake pedal. (Combined ABS indicator: ON)	4. Release the rear brake pedal. (Combined ABS indicator: OFF)	5. Apply the front brake lever.
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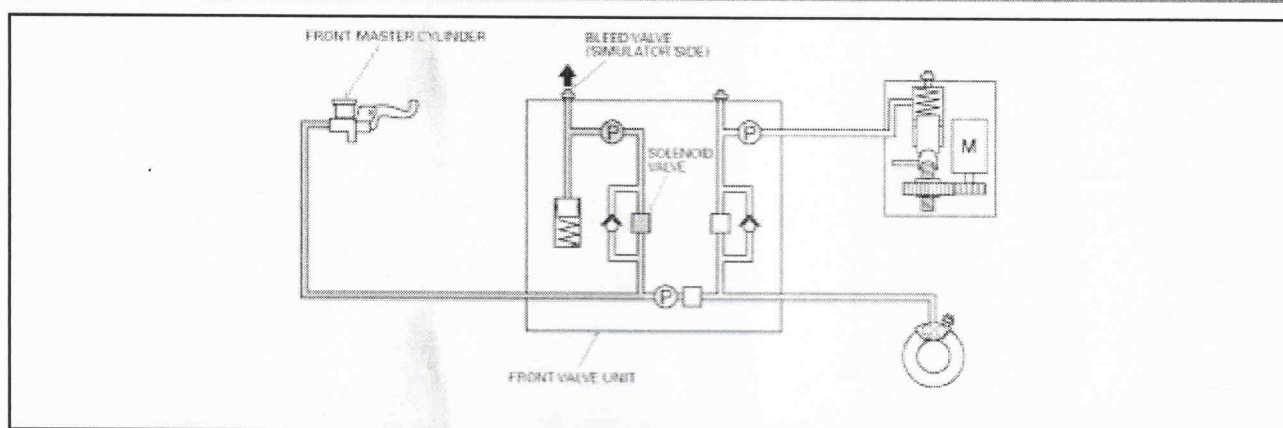
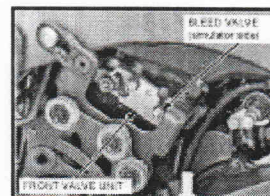
The motorcycle will now be in the front Combined ABS line air bleeding mode, and the Combined ABS indicator will start blinking.

- If the indicator does not start blinking, turn off the ignition switch and try the above procedure again.

### 3. Valve unit line air bleeding

Bleed the air from the simulator side bleed valve of the front valve unit. Perform the bleeding until the system is completely flushed/bled. Tighten the valve unit bleed valve to the specified torque.

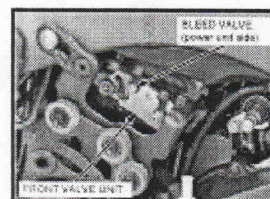
**TORQUE: 5.4 N·m (0.6 kgf·m, 4.0 lbf·ft)**

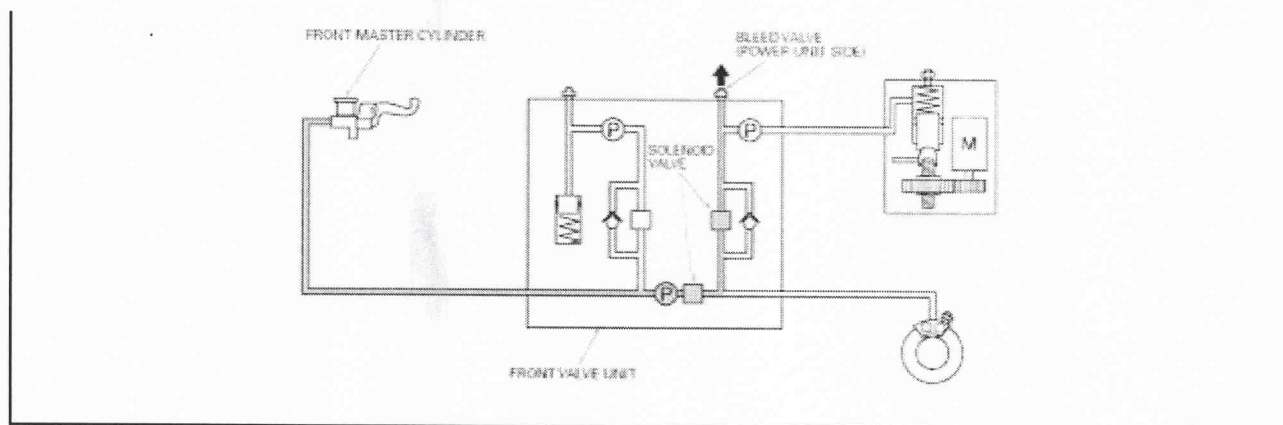


Bleed the air from the power unit side bleed valve of the front valve unit.

Perform the bleeding until the system is completely flushed/bled. Tighten the valve unit bleed valve to the specified torque.

**TORQUE: 5.4 N·m (0.6 kgf·m, 4.0 lbf·ft)**

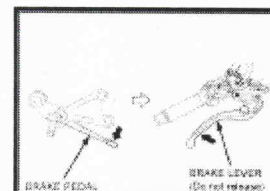




#### 4. One-way valve air bleeding (with motor activation)

Apply the rear brake pedal.

! The system will then move to the next step in the procedure. The Combined ABS indicator will then begin blinking two times.



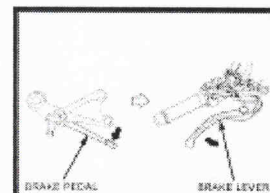
Squeeze and hold the front brake lever to operate the stroke simulator in the valve unit.

#### NOTE:

Don't release the front brake lever.

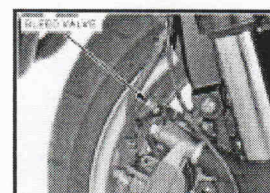
Apply the rear brake pedal.

! The system will then move to the next step in the procedure. The Combined ABS indicator will then begin blinking three times.



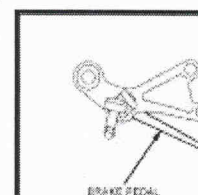
Release the front brake lever.

Connect a clear bleed hose to the front brake caliper bleed valve.  
Loosen the front brake caliper bleed valve.



Apply the rear brake pedal so to operate the power unit motor pressurization.

! The system will then move to the next step in the procedure. The Combined ABS indicator will then begin blinking four times.



After the power unit motor operation, close the front brake caliper bleed valve.

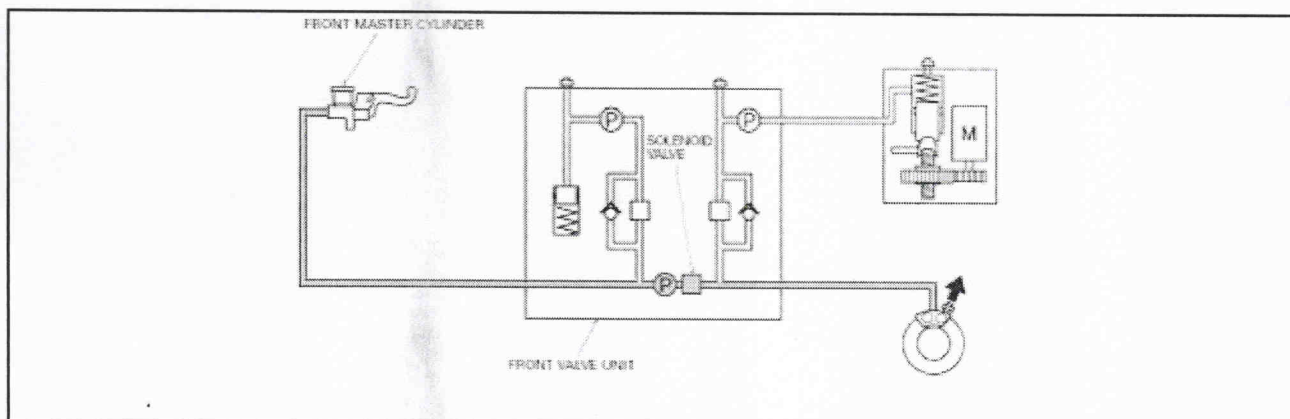
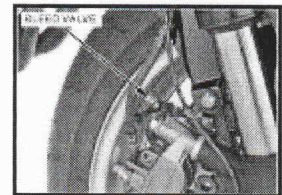
#### NOTE:

If the air bleeding process is suspended incompletely, perform the following procedures and re-start the air bleeding from the beginning.

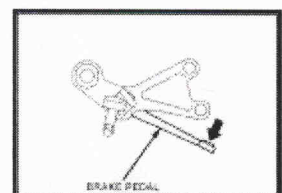


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**TORQUE:** 8.0 N·m (0.8 kgf·m, 5.9 lbf·ft)



The system will then move to the next step in the procedure. The Combined ABS indicator will then begin blinking five times.



- Turn the ignition switch OFF and disconnect the jumper wire.  
Fill the reservoir to the upper level with DOT 4 brake fluid from a sealed container.  
Reinstall the diaphragm and set plate.



Install the reservoir cap, stopper plate and tighten the screw to the specified torque.

**TORQUE:** 1.2 N·m (0.1 kgf·m, 0.9 lbf·ft)

Install the removed parts in the reverse order of removal.

Perform the pre-start self-diagnosis and check the Combined ABS indicator.

Test ride and check the Combined ABS operation.

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# REAR VALVE UNIT LINE AIR BLEEDING

## NOTE:

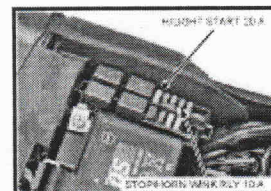
- Before Combined ABS line brake fluid air bleeding, check the battery condition .
- Do not turn the ignition switch OFF or disconnect the jumper wire during the air bleeding as this could cause the Combined ABS to malfunction.  
Once started, if the air bleeding procedure is not completed, re-start the air bleeding from the beginning.

## 1. Normal brake line air bleeding

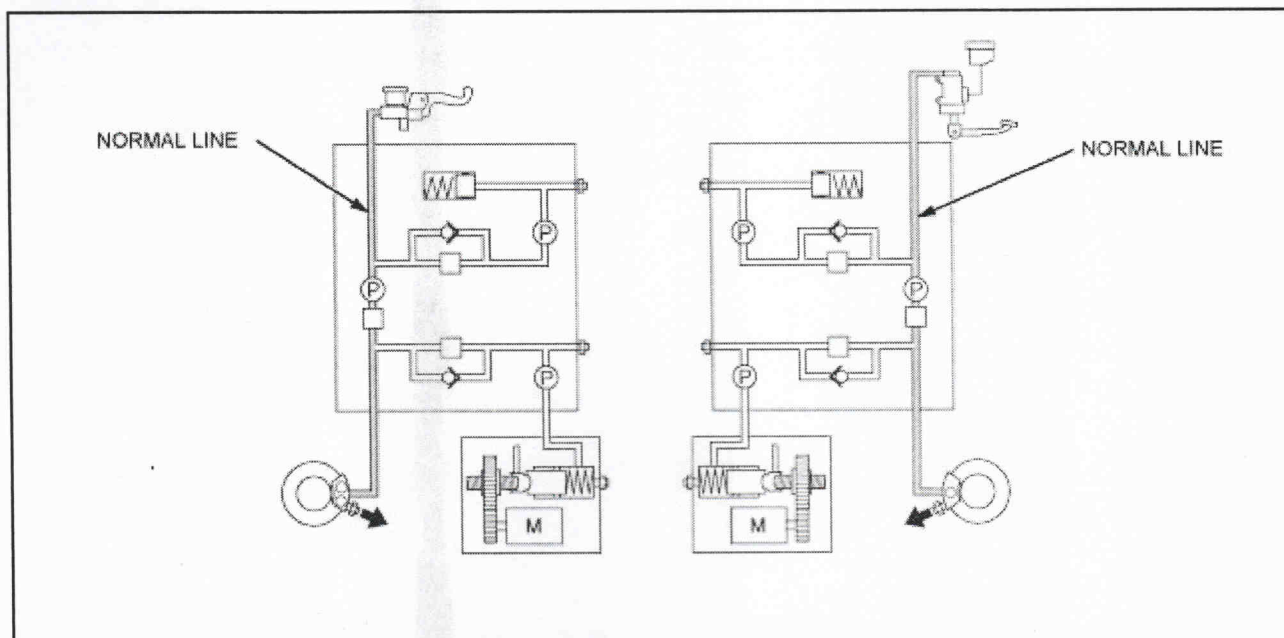
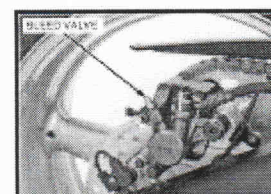
Remove the seat .

Open the fuse/relay box and remove the following fuse.

- H/LIGHT START 20 A
- STOP/HORN WINK RLY 10 A



Bleed the air from the front and rear normal hydraulic system .



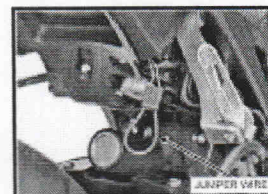
## 2. Air bleeding mode activation

Turn the ignition switch OFF.

Remove the dummy connector and short the Combined ABS check connector terminals with a jumper wire.

**Connection: Brown – Green**

Switch to the rear Combined ABS line air bleeding mode as follows.



- Perform the following procedure within five seconds.

1. Turn the ignition switch ON while applying the rear brake pedal. (Combined ABS indicator: ON)	2. Release the rear brake pedal. (Combined ABS indicator: OFF)	3. Reapply the rear brake pedal. (Combined ABS indicator: ON)	4. Release the rear brake pedal. (Combined ABS indicator: OFF)	5. Apply the rear brake pedal.
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The motorcycle will now be in the rear Combined ABS line air bleeding mode, and the Combined ABS indicator will start blinking.

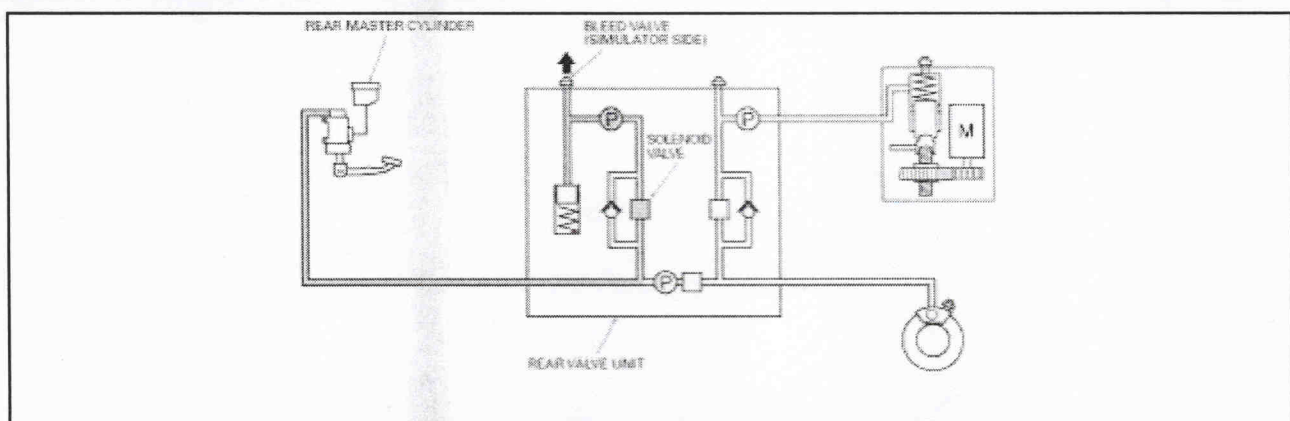
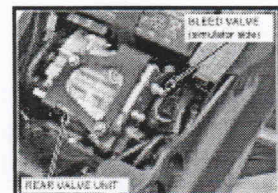
- If the indicator does not start blinking, turn off the ignition switch and try the above procedure again.

### 3. Valve unit line air bleeding

Bleed the air from the simulator side bleed valve of the rear valve unit. Perform the bleeding procedure until the system is completely flushed/bled.

Tighten the valve unit bleed valve to the specified torque.

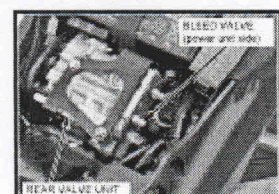
**TORQUE: 5.4 N·m (0.6 kgf·m, 4.0 lbf·ft)**



Bleed the air from the power unit side bleed valve of the rear valve unit.

Perform the bleeding until the system is completely flushed/bled. Tighten the valve unit bleed valve to the specified torque.

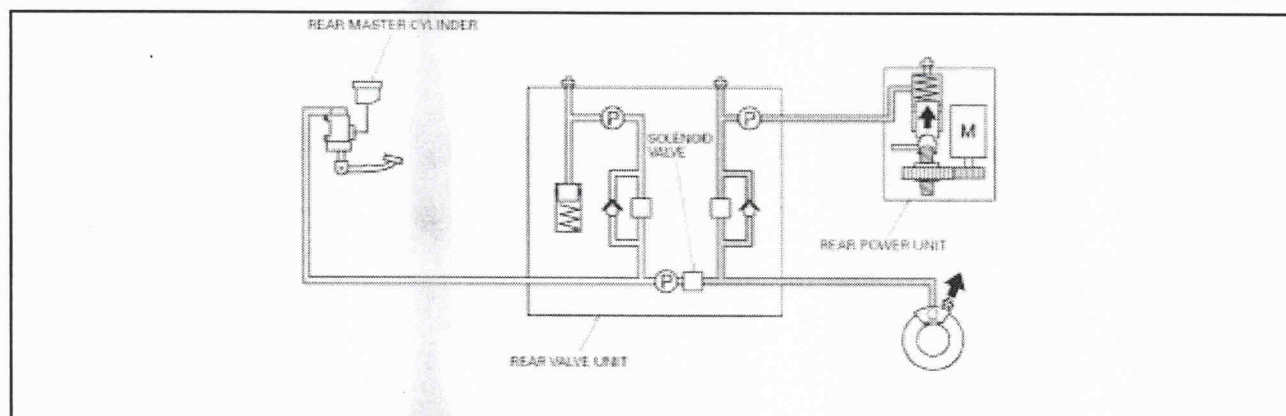
**TORQUE: 5.4 N·m (0.6 kgf·m, 4.0 lbf·ft)**








- Turn the ignition switch OFF and disconnect the jumper wire.
- Turn the ignition switch ON and wait for initial operation (about five seconds), then turn the ignition switch OFF.
- Repeat above procedure five times to clear the detecting malfunction.



A schematic diagram of a rear wheel drive system. On the left, a 'REAR MASTER CYLINDER' is connected to a 'REAR VALVE UNIT'. The valve unit contains a 'SOLENOID VALVE' with two internal valves and check valves. It has two output ports, each marked with a 'P' in a circle. The top port leads to a rear wheel assembly, and the bottom port leads to a rear wheel assembly. A solenoid valve is shown on the right, connected to a motor 'M'.



BRAKE LEVER

- ## 5. Completion inspection



Turn the ignition switch OFF and disconnect the jumper wire.  
Fill the reservoir to the upper level with DOT 4 brake fluid from a sealed container.

Install the removed parts in the reverse order of removal.

Perform the pre-start self-diagnosis and check the Combined ABS indicator.

Test ride and check the Combined ABS operation.

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# REAR VALVE UNIT/POWER UNIT LINE AIR BLEEDING

## NOTE:

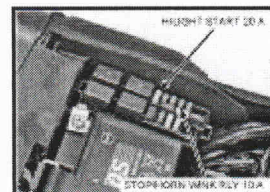
- Before Combined ABS line brake fluid air bleeding, check the battery condition .
- Do not turn the ignition switch OFF or disconnect the jumper wire during the air bleeding as this could cause the Combined ABS to malfunction.  
Once started, if the air bleeding procedure is not completed, re-start the air bleeding from the beginning.

## 1. Normal brake line air bleeding

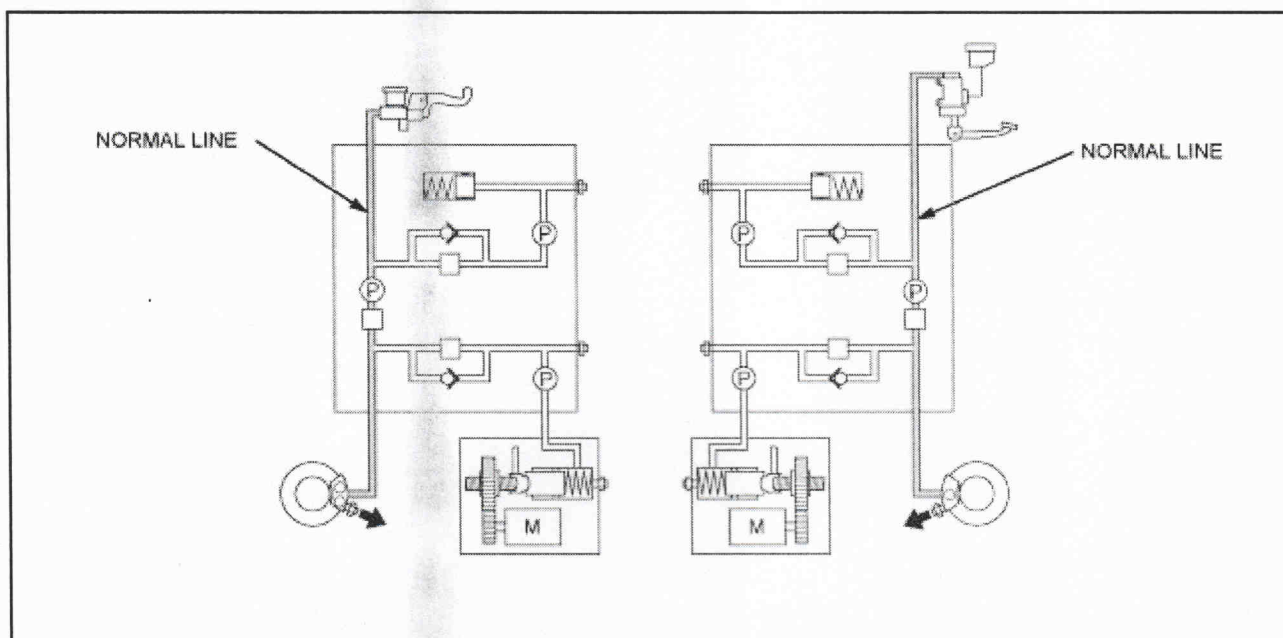
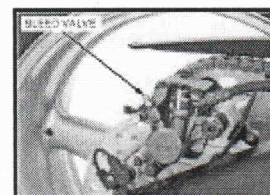
Remove the fuel tank .

Open the fuse/relay box and remove the following fuse.

- H/LIGHT START 20 A
- STOP/HORN WINK RLY 10 A



Bleed the air from the front and rear normal hydraulic system .



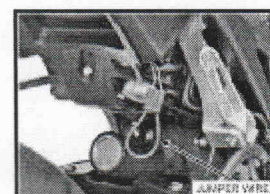
## 2. Air bleeding mode activation

Turn the ignition switch OFF.

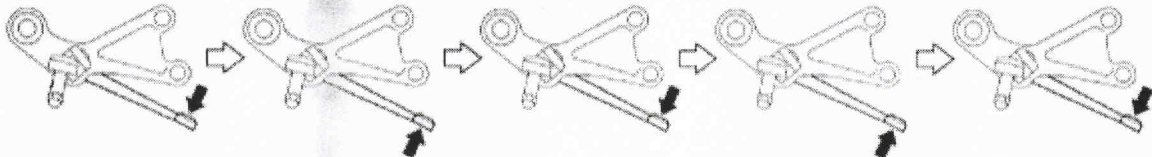
Remove the dummy connector and short the Combined ABS check connector terminals with a jumper wire.

**Connection: Brown – Green**

Switch to the rear Combined ABS line air bleeding mode as follows.



- Perform the following procedure within five seconds.

1. Turn the ignition switch ON while applying the rear brake pedal. (Combined ABS indicator: ON)	2. Release the rear brake pedal. (Combined ABS indicator: OFF)	3. Reapply the rear brake pedal. (Combined ABS indicator: ON)	4. Release the rear brake pedal. (Combined ABS indicator: OFF)	5. Apply the rear brake pedal.
 <p>The motorcycle will now be in the rear Combined ABS line air bleeding mode, and the Combined ABS indicator will start blinking.</p>				

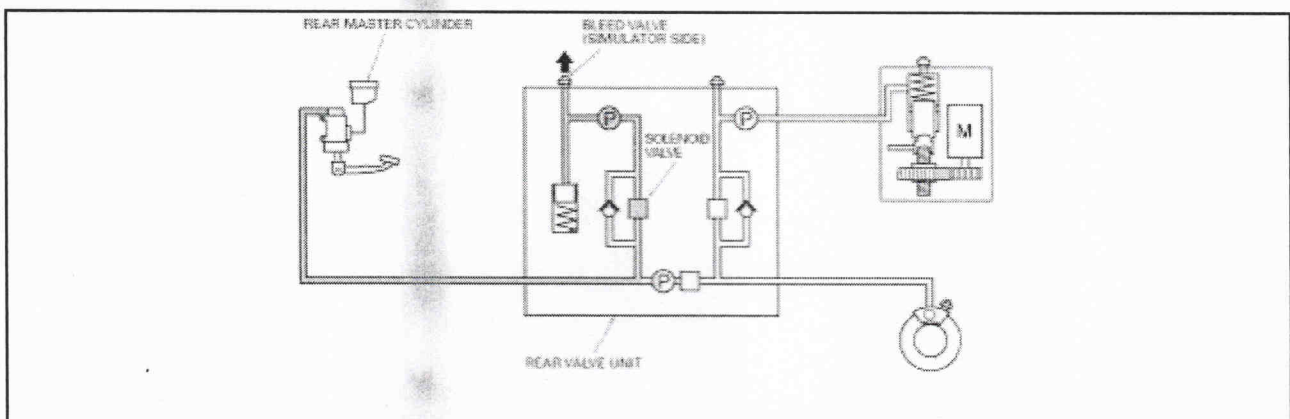
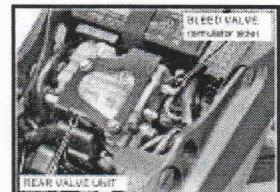
- If the indicator does not start blinking, turn off the ignition switch and try the above procedure again.

### 3. Valve unit line air bleeding

Bleed the air from the simulator side bleed valve of the rear valve unit. Perform the bleeding procedure until the system is completely flushed/bled.

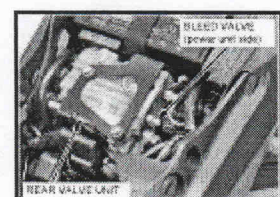
Tighten the valve unit bleed valve to the specified torque.

**TORQUE: 5.4 N·m (0.6 kgf·m, 4.0 lbf·ft)**

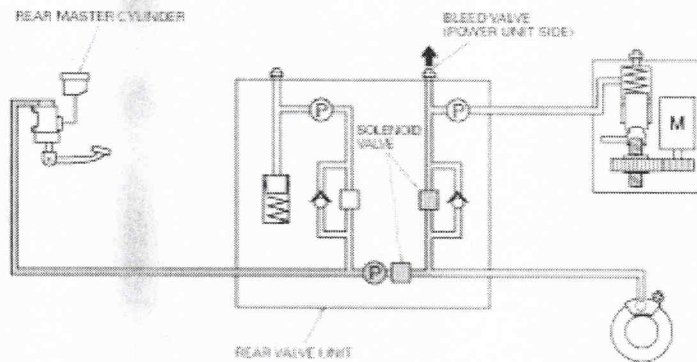


Bleed the air from the power unit side bleed valve of the rear valve unit.

Perform the bleeding procedure until the system is completely flushed/bled.

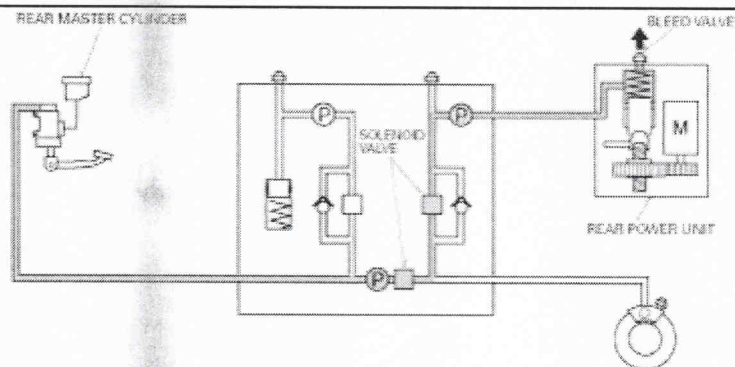
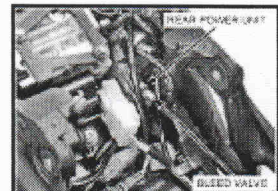






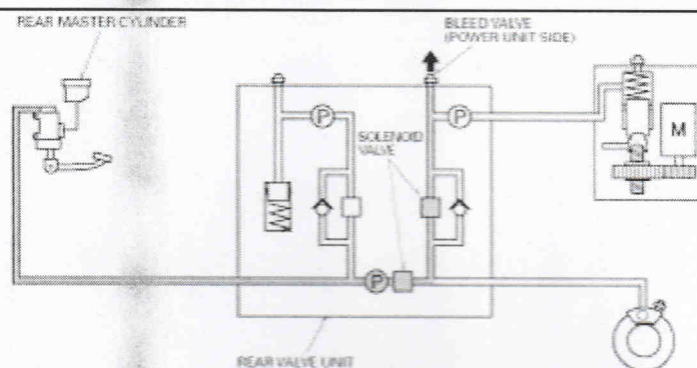
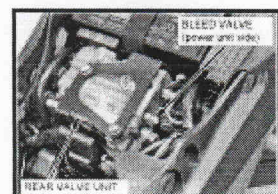
#### 4. Power unit line air bleeding

Bleed the air from the power unit bleed valve.  
Perform the bleeding procedure until the system is completely flushed/bled.



#### 5. Valve unit line air bleeding

Bleed the air from the power unit side bleed valve of the rear valve unit.  
Perform the bleeding procedure until the system is completely flushed/bled.





## 6. One-way valve air bleeding (with motor activation)

Squeeze the front brake lever.

**!** The system will then move to the next step in the procedure. The Combined ABS indicator will then begin blinking two times.

Apply the rear brake pedal to operate the stroke simulator in the valve unit.

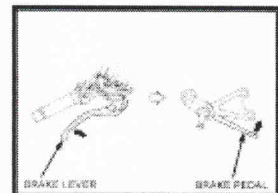
### NOTE:

Don't release the rear brake pedal.

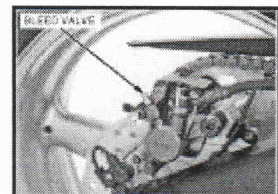
Squeeze the front brake lever.

**!** The system will then move to the next step in the procedure. The Combined ABS indicator will then begin blinking three times.

Release the rear brake pedal.

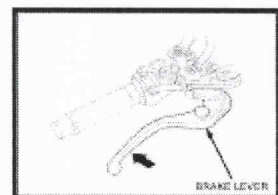


Connect a clear bleed hose to the rear brake caliper bleed valve. Loosen the rear brake caliper bleed valve.



Squeeze the front brake lever so to operate the power unit motor pressurization.

**!** The system will then move to the next step in the procedure. The Combined ABS indicator will then begin blinking four times.



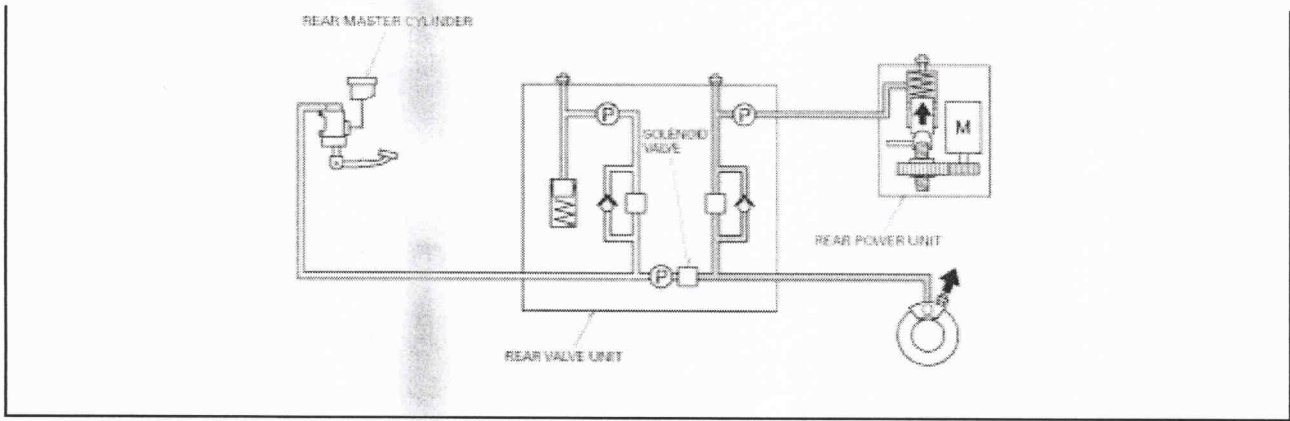
After the power unit motor operation, close the rear brake caliper bleed valve.

### NOTE:

If the air bleeding process is suspended incompletely, perform the following procedures and re-start the air bleeding from the beginning.

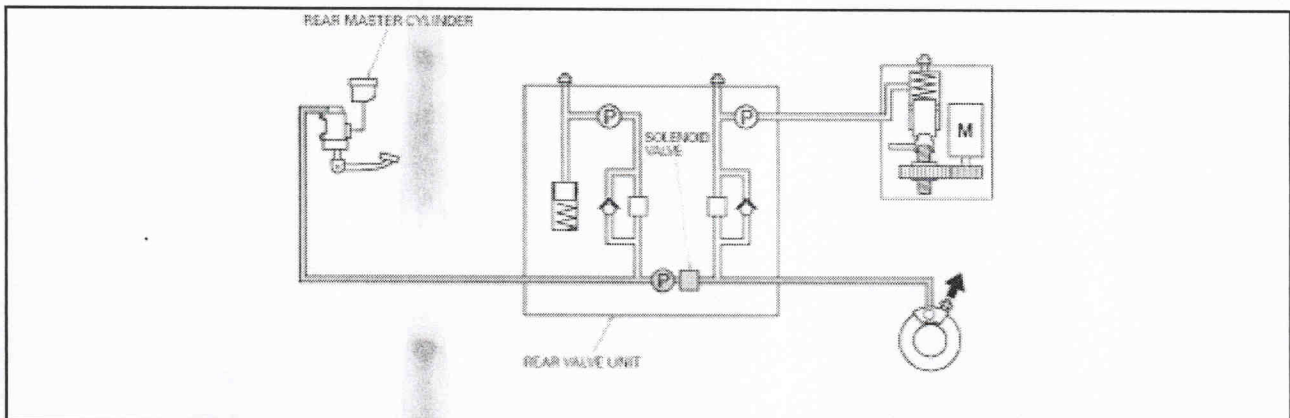
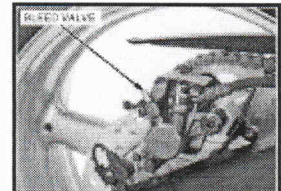
- Turn the ignition switch OFF and disconnect the jumper wire.
- Turn the ignition switch ON and wait for initial operation (about five seconds), then turn the ignition switch OFF.
- Repeat above procedure five times to clear the detecting malfunction.





Bleed the air from the rear brake caliper bleed valve.  
 Perform the bleeding until the system is completely flushed/bled.  
 Operate the brake pedal. If it still feels spongy, bleed the system again.  
 Tighten the caliper bleed valve to the specified torque.

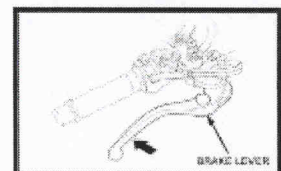
**TORQUE: 6.0 N·m (0.6 kgf·m, 4.4 lbf·ft)**



## 7. Air bleeding mode activation

Squeeze the front brake lever.

**!** The system will then move to the next step in the procedure. The Combined ABS indicator will then begin blinking five times.



- After blinking five times, check that the Combined ABS indicator changes to long blinking.

Turn the ignition switch OFF and restart the following procedure.

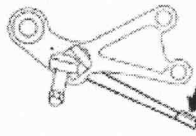
- Perform the following procedure within five seconds.





1. Turn the ignition switch ON while applying the rear brake pedal.

(Combined ABS indicator: ON)



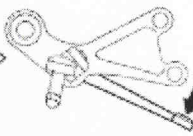
2. Release the rear brake pedal.

(Combined ABS indicator: OFF)



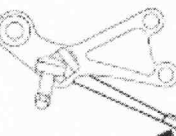
3. Reapply the rear brake pedal.

(Combined ABS indicator: ON)

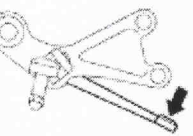


4. Release the rear brake pedal.

(Combined ABS indicator: OFF)



5. Apply the rear brake pedal.



The motorcycle will now be in the rear Combined ABS line air bleeding mode, and the Combined ABS indicator will start blinking.

- If the indicator does not start blinking, turn off the ignition switch and try the above procedure again.

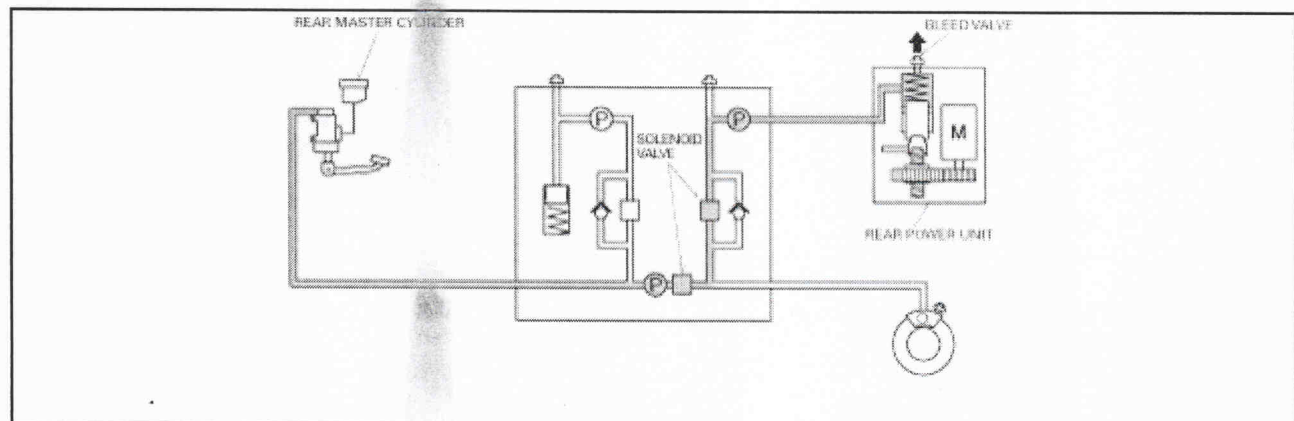
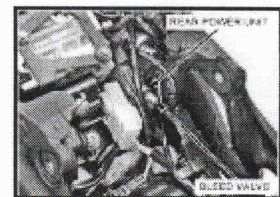
### 8. Power unit line air bleeding

Bleed the air from the power unit bleed valve.

Perform the bleeding until the system is completely flushed/bled.

Tighten the power unit bleed valve to the specified torque.

**TORQUE: 5.4 N·m (0.6 kgf·m, 4.0 lbf·ft)**



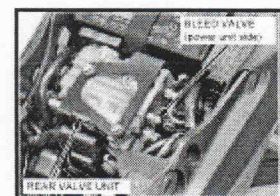
### 9. Valve unit line air bleeding

Bleed the air from the power unit side bleed valve of the rear valve unit.

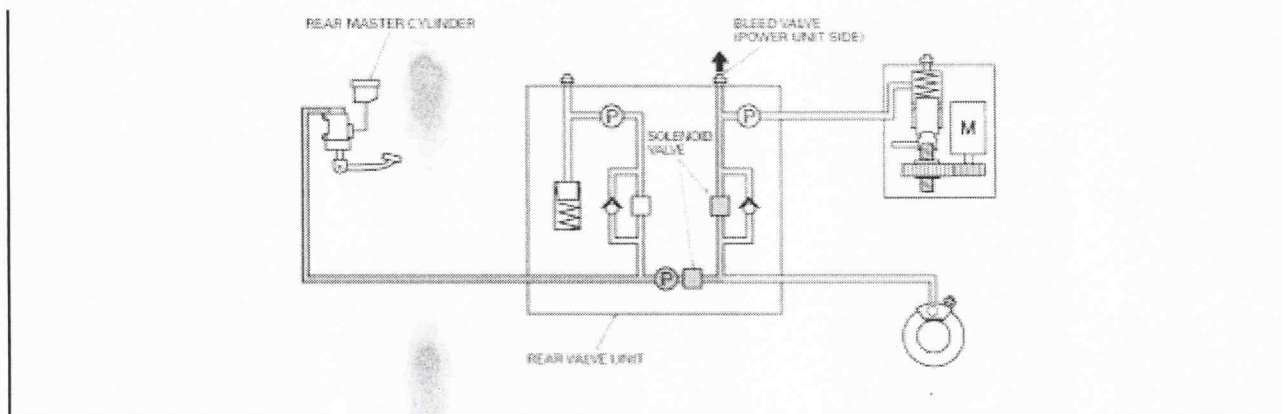
Perform the bleeding until the system is completely flushed/bled.

Tighten the valve unit bleed valve to the specified torque.

**TORQUE: 5.4 N·m (0.6 kgf·m, 4.0 lbf·ft)**







# 10. Completion inspection

Turn the ignition switch OFF and disconnect the jumper wire.  
Fill the reservoir to the upper level with DOT 4 brake fluid from a sealed container.

Install the removed parts in the reverse order of removal.

Perform the pre-start self-diagnosis and check the Combined ABS indicator.

Test ride and check the Combined ABS operation.

