



**CHAPTER 3.  
PERIODIC CHECKS AND ADJUSTMENTS**

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EB300000

## PERIODIC CHECKS AND ADJUSTMENTS

### INTRODUCTION

This chapter includes all information necessary to perform recommended checks and adjustments. If followed, these preventive maintenance procedures will ensure more reliable vehicle operation, a longer service life and reduce the need for costly overhaul work. This information applies to vehicles already in service as well as to new vehicles that are being prepared for sale. All service technicians should be familiar with this entire chapter.

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### PERIODIC MAINTENANCE CHART FOR EMISSION CONTROL SYSTEM

No.	ITEM	ROUTINE	INITIAL	ODOMETER READINGS				
			600 mi (1,000 km) or 1 month	4,000 mi (7,000 km) or 6 months	8,000 mi (13,000 km) or 12 months	12,000 mi (19,000 km) or 18 months	16,000 mi (25,000 km) or 24 months	20,000 mi (31,000 km) or 30 months
1	* Valve clearance	• Check and adjust valve clearance when engine is cold.	Every 26,600 mi (42,000 km)					
2	Spark plugs	• Check condition. • Adjust gap and clean. • Replace at 8,000 mi (13,000 km) or 12 months and thereafter every 8,000 mi (12,000 km) or 12 months.		√	Replace	√	Replace	√
3	* Crankcase ventilation system	• Check ventilation hose for cracks or damage. • Replace if necessary.		√	√	√	√	√
4	* Fuel line	• Check fuel hose for cracks or damage. • Replace if necessary.		√	√	√	√	√
5	* Fuel filter	• Replace initial 20,000 mi (31,000 km) and thereafter every 20,000 mi (31,000 km).						Replace
6	* Exhaust system	• Check for leakage. • Retighten if necessary. • Replace gasket(s) if necessary.		√	√	√	√	√
7	* Carburetor Synchronization	• Adjust synchronization of carburetors.	√	√	√	√	√	√
8	* Idle speed	• Check and adjust engine idle speed. • Adjust throttle cable free play.		√	√	√	√	√
9	* Evaporative emission control system**	• Check control system for damage. • Replace if necessary.				√		√

\* Since these items require special tools, data and technical skills, they should be serviced by a Yamaha dealer.

\*\* California only.



## GENERAL MAINTENANCE AND LUBRICATION CHART

No.	ITEM	ROUTINE	INITIAL	ODOMETER READINGS					
			600 mi (1,000 km) or 1 month	4,000 mi (7,000 km) or 6 months	8,000 mi (13,000 km) or 12 months	12,000 mi (19,000 km) or 18 months	16,000 mi (25,000 km) or 24 months	20,000 mi (31,000 km) or 30 months	
1	Engine oil	• Replace. Warm engine before draining.	√	√	√	√	√	√	
2	Engine oil filter	• Replace at 600 mi (1,000 km) or 1 month, and thereafter every 8,000 mi (12,000 km) or 12 months.	√		√		√		
3	Air filter/ Surge tank	• Clean. • Replace if necessary.		√	√	√	√	√	
4	Cooling system	• Check hose for cracks or damage. • Replace if necessary.  • Replace coolant every 24 months. • Ethylene glycol anti-freeze coolant.		√	√	√	√	Replace	
5	Brake system	• Check operation, pad wear, and fluid leakage. (See NOTE.) • Correct if necessary.	√	√	√	√	√	√	
6	Clutch	• Check operation. • Correct if necessary.	√	√	√	√	√	√	
7	Control cable	• Apply chain lube thoroughly. • Yamaha chain and cable lube or SAE 10 W 30 motor oil.	√	√	√	√	√	√	
8	Swing arm pivot bearing	• Check bearing assembly for looseness. • Moderately repack every 16,000 mi (24,000 km) or 24 months. • Lithium soap base grease.			√		Repack		
9	Rear suspension link pivots	• Check operation. • Correct if necessary.			√		√		
10	Rear shock absorber	• Check operation and oil leakage. • Replace if necessary.		√	√	√	√	√	
11	Front fork	• Check operation and leakage. • Replace if necessary.		√	√	√	√	√	
12	Steering bearings	• Check bearing assembly for looseness. • Correct accordingly. • Moderately repack every 16,000 mi (24,000 km). • Lithium soap base grease.		√	√	√	Repack	√	
13	Brake/clutch lever pivot shaft	• Apply chain lube lightly. • Yamaha chain and cable lube or SAE 10 W 30 motor oil.		√	√	√	√	√	
14	Brake pedal and shift pedal shafts	• Apply chain lube lightly. • Yamaha chain and cable lube or SAE 10 W 30 motor oil.		√	√	√	√	√	
15	Drive chain	• Check chain slack/alignment condition. • Adjust and lubricate chain thoroughly. • SAE 30 W-50 W motor oil.	Every 600 mi (1,000 km) and after washing the motorcycle or riding in the rain						
16	Wheel bearings	• Check bearing for smooth rotation.		√	√	√	√	√	
17	Sidestand pivot	• Check operation and lubricate. • Apply chain lube lightly. • Yamaha chain and cable lube or SAE 10 W 30 motor oil.		√	√	√	√	√	
18	Sidestand switch	• Check and clean or replace if necessary.	√	√	√	√	√	√	
19	Chassis fasteners	• Check all chassis fittings and fasteners. • Correct if necessary.		√	√	√	√	√	

\* Since these items require special tools, data and technical skills, they should be serviced by a Yamaha dealer.

**NOTE:**

For odometer readings or time periods higher than 20,000 mi (31,000 km) or 30 months, repeat the same maintenance as listed in the chart from the 4,000 mi (7,000 km) or 6 months interval.

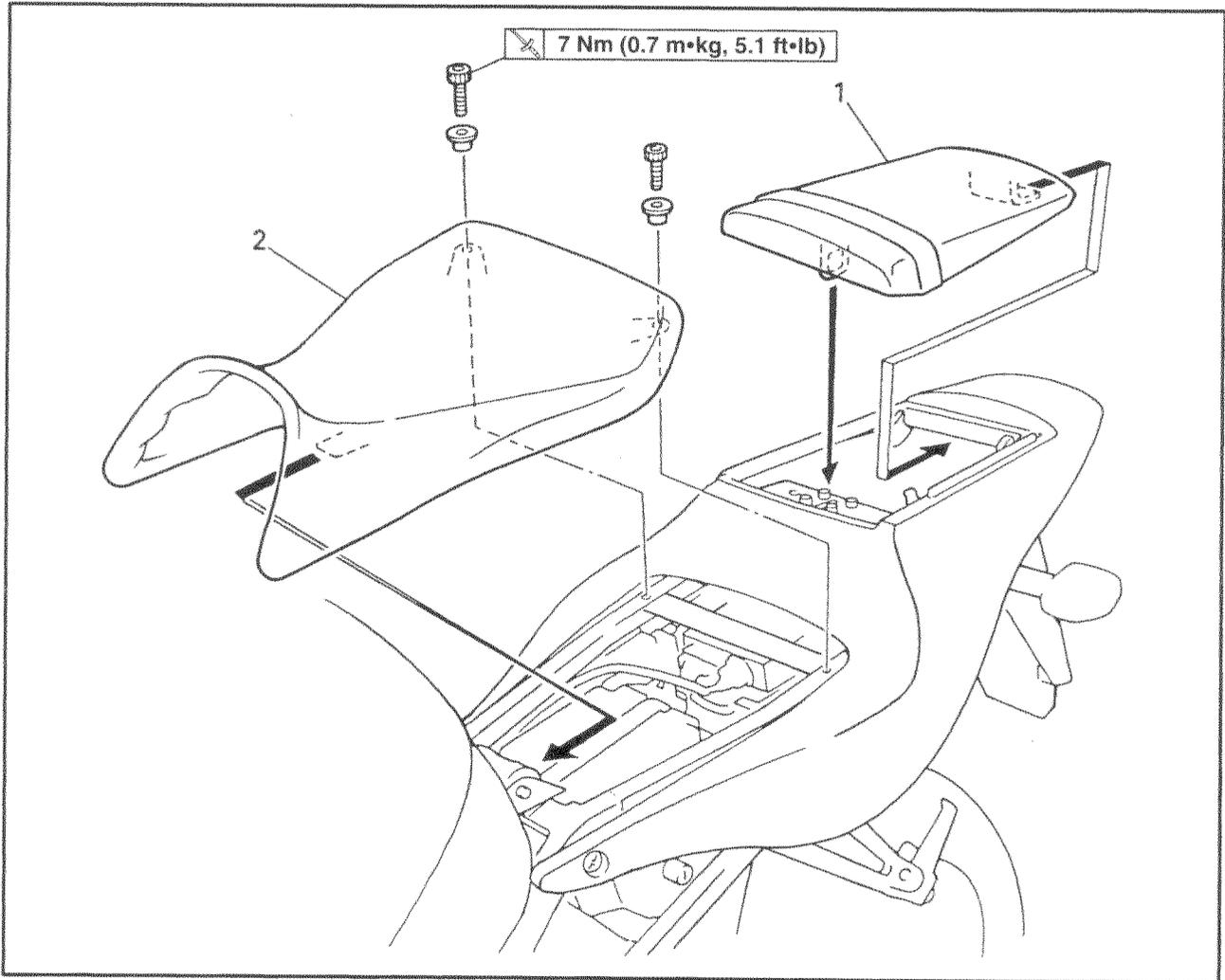
**NOTE:**

- The air filter needs more frequent service if you are riding in unusually wet or dusty areas.
- Hydraulic brake system
  - When disassembling the master cylinder or caliper cylinder, always replace the brake fluid. Check the brake fluid level regularly and fill as required.
  - Replace the oil seals on the inner parts of the master cylinder and caliper cylinder every two years.
  - Replace the brake hoses every four years or if cracked or damaged.



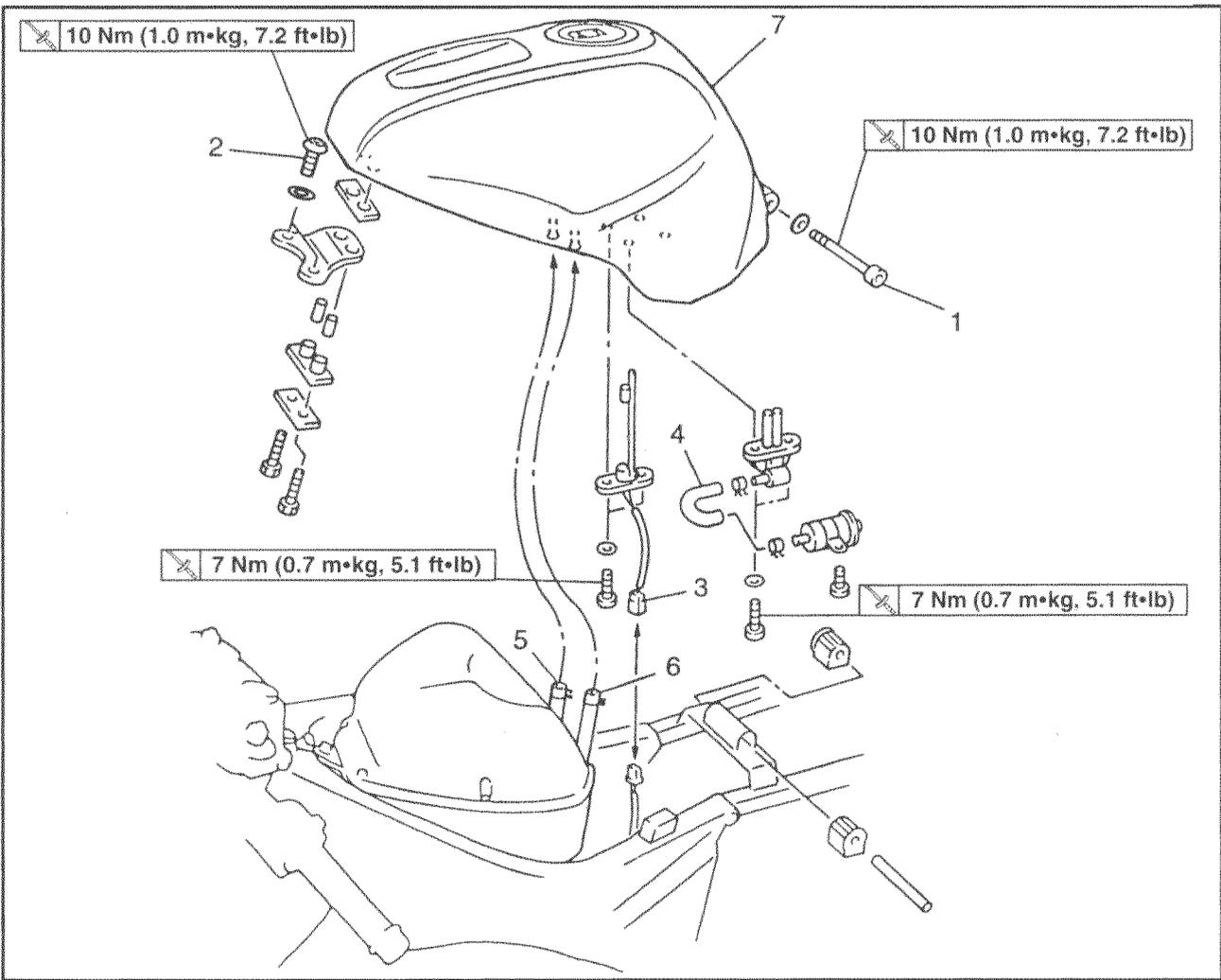
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RIDER AND PASSENGER SEATS



Order	Job/Part	Q'ty	Remarks
	<b>Removing the rider and passenger seats</b>		Remove the parts in the order listed.
1	Passenger seat	1	
2	Rider seat	1	
			For installation, reverse the removal procedure.

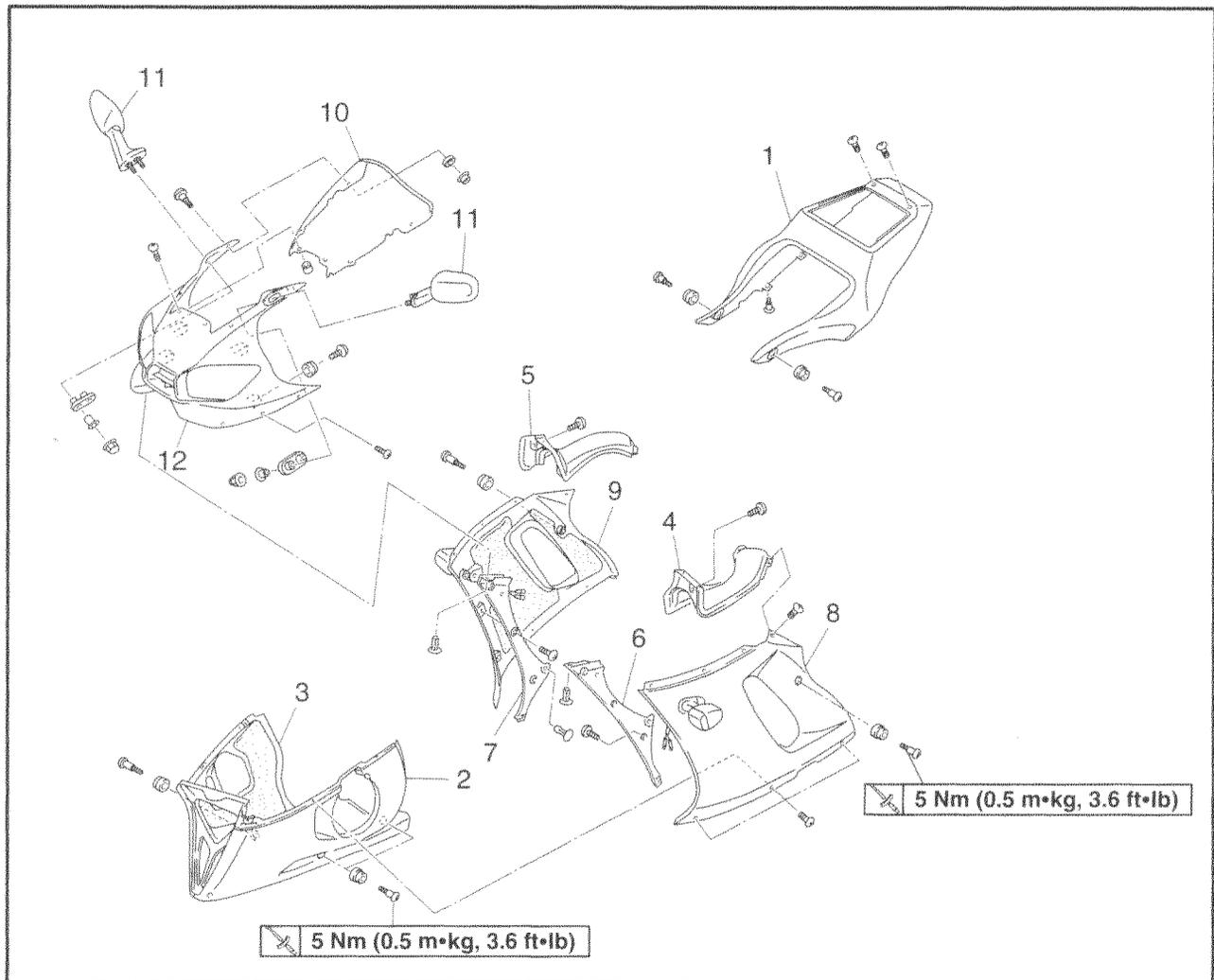
FUEL TANK



Order	Job/Part	Q'ty	Remarks
	<b>Removing the fuel tank</b>		
	Rider seat		Remove the parts in the order listed Refer to "SEATS".
1	Bolt	1	
2	Bolts	2	
3	Fuel sender coupler	1	Disconnect.
4	Fuel hose	1	<b>NOTE:</b> _____ Before disconnecting the fuel hose, set the fuel cock "OFF".
5	Fuel tank overflow hose	1	
6	Fuel tank breather hose	1	
7	Fuel tank	1	
			For installation reverse the removal procedure.



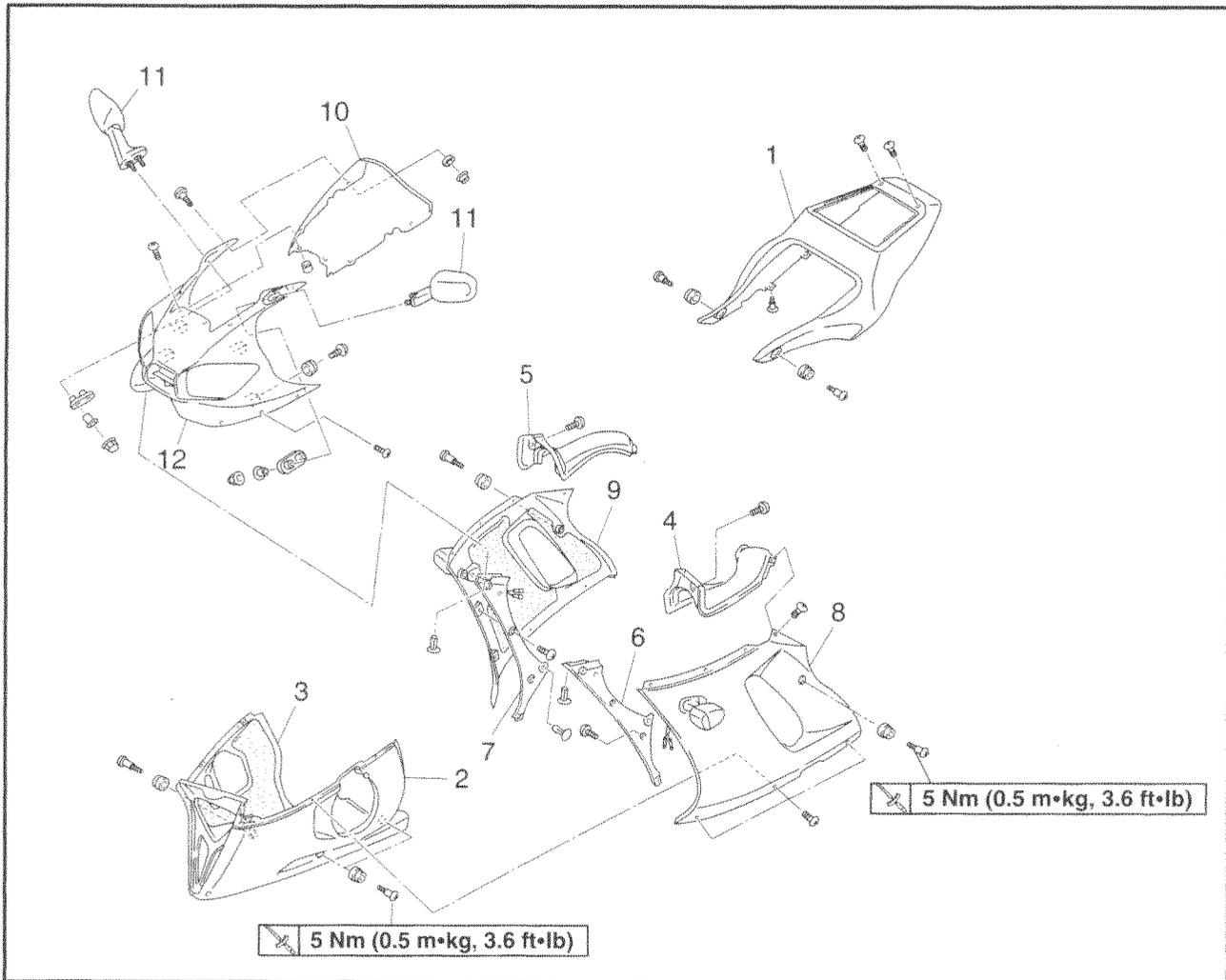
COWLINGS



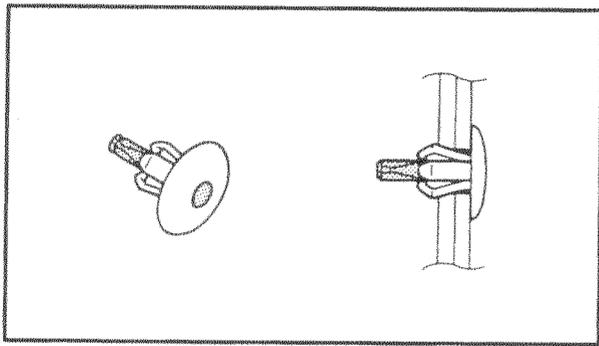
Order	Job/Part	Q'ty	Remarks
	<b>Removing the cowlings</b>		
	Rider and passenger seats		Remove the parts in the order listed Refer to "SEATS".
1	Rear cowling	1	
2	Bottom cowling (left)	1	
3	Bottom cowling (right)	1	
4	Front cowling inner panel (left)	1	
5	Front cowling inner panel (right)	1	
6	Side cowling inner panel (left)	1	
7	Side cowling inner panel (right)	1	



COWLINGS



Order	Job/Part	Q'ty	Remarks
8	Left side cowling	1	For installation, reverse the removal procedure.
9	Right side cowling	1	
10	Windshield	1	
11	Rear view mirror	2	
12	Front cowling	1	

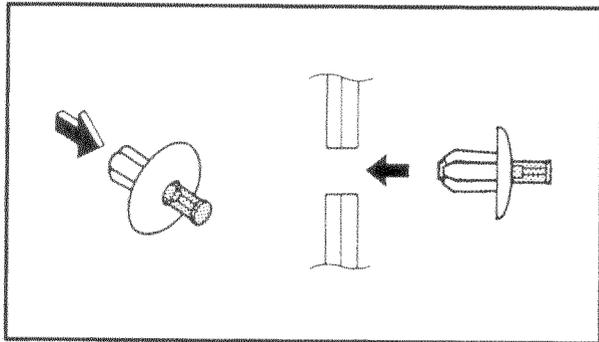
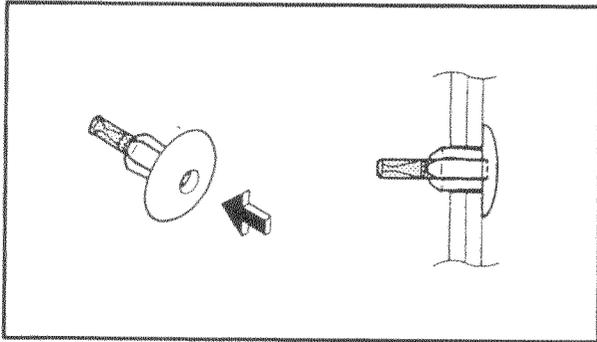


**REMOVAL**

1. Remove:
  - rear cowlings
  - side cowlings

**NOTE:** \_\_\_\_\_

To remove the quick fastener, turn its center to 90° with a screwdriver, then pull the fastener out.

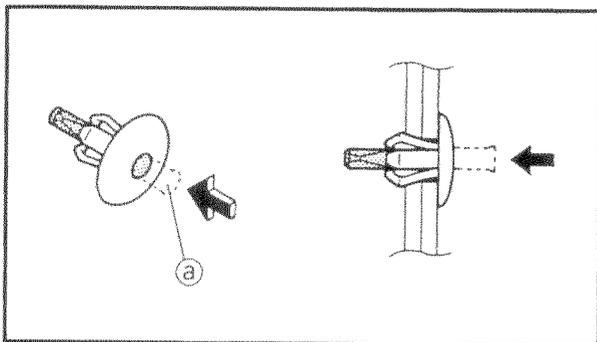


**INSTALLATION**

1. Install:
  - side cowlings
  - rear cowlings

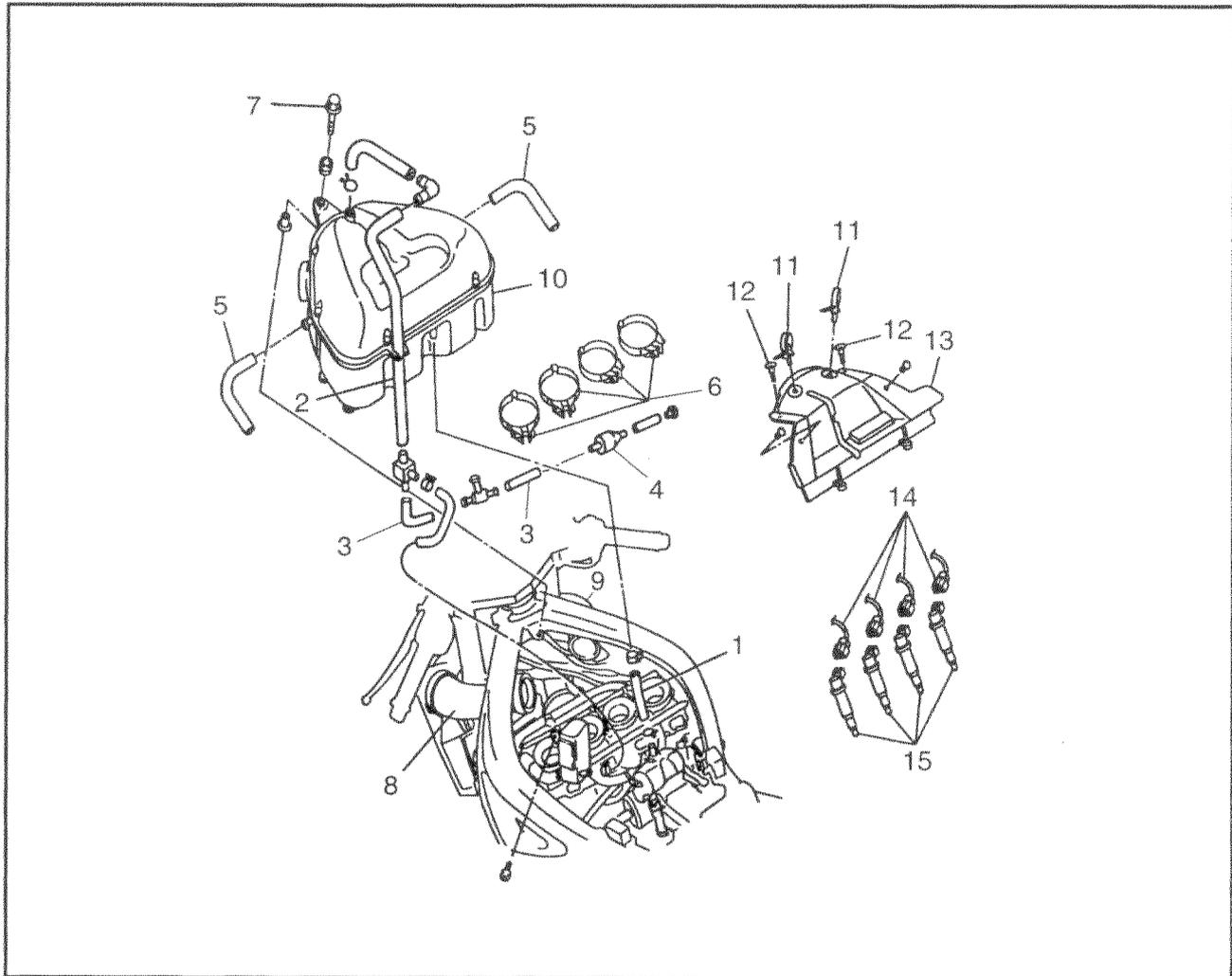
**NOTE:** \_\_\_\_\_

To install the quick fastener, push its pin so that it protrudes from the fastener head, then insert the fastener into the cowl and push the pin in with a screwdriver. Make sure that the pin is flush with the fastener's head.

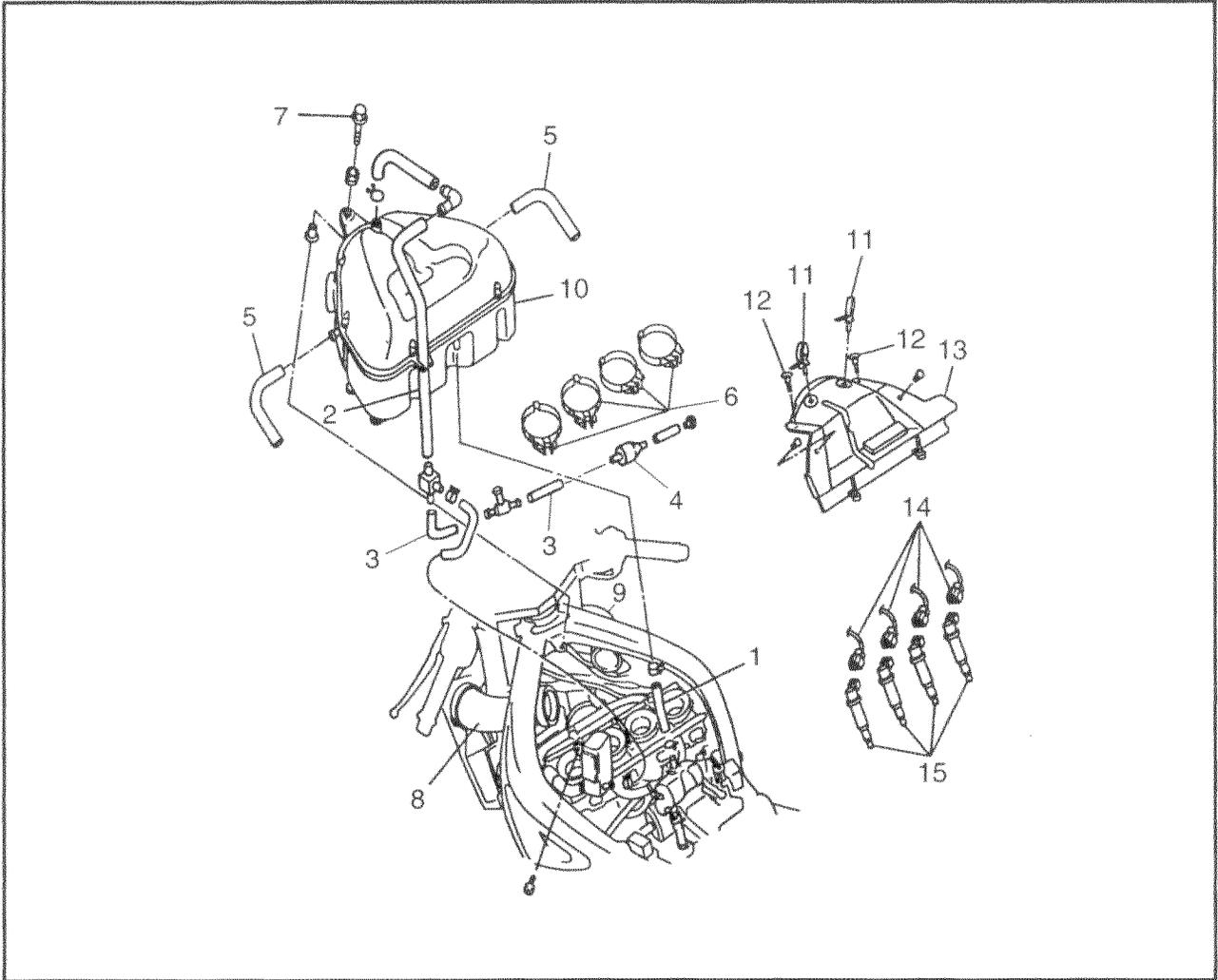




AIR FILTER CASE AND IGNITION COILS



Order	Job/Part	Q'ty	Remarks
	<b>Removing the air filter case and ignition coils</b>		Remove the parts in the order listed.
	Rider seat and fuel tank		Refer to "SEATS" and "FUEL TANK".
	Front cowling inner panel (left)		Refer to "COWLINGS".
	Front cowling inner panel (right)		
1	Crankcase breather hose	1	
2	Air vent hose	1	
3	Hoses	2	
4	Drain cup	1	
5	Air filter case balance hose	2	
6	Clamp screw	4	Loosen.
7	Bolt	1	
8	Surge tank joint (left)	1	
9	Surge tank joint (right)	1	
10	Air filter case	1	
11	Clamp	2	
12	Quick fastener	2	



Order	Job/Part	Q'ty	Remarks
13	Heat protector plate	1	For installation, reverse the removal procedure.
14	Ignition coil coupler	4	
15	Ignition coil	4	



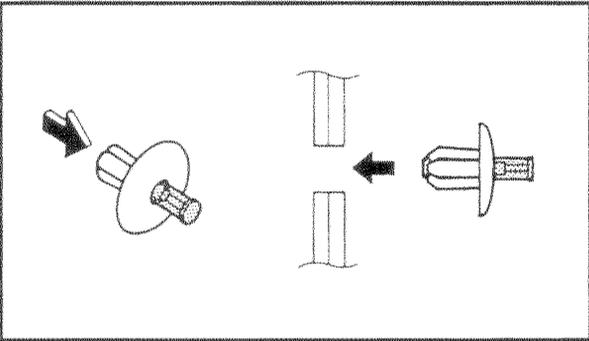
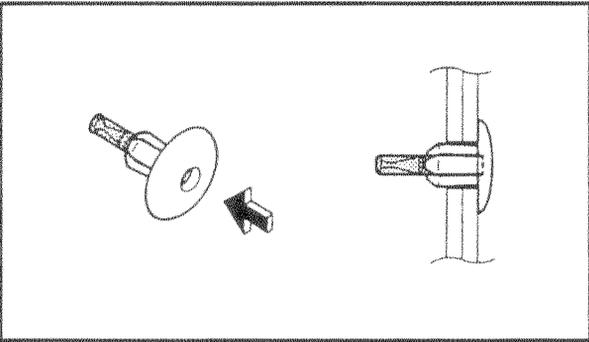
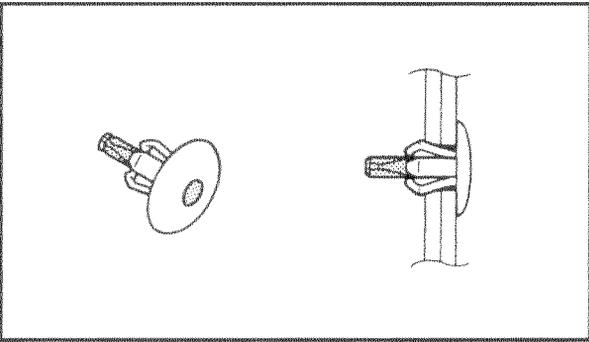
**REMOVAL**

1. Remove:
  - heat protector plate

**NOTE:** \_\_\_\_\_

To remove the quick fastener, push its center in with a screwdriver, then pull the fastener out.

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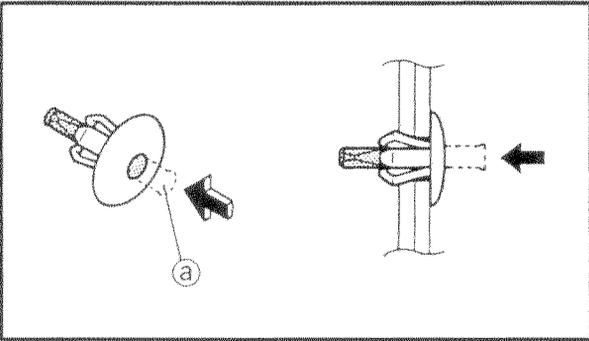
**INSTALLATION**

1. Install:
  - heat protector plate

**NOTE:** \_\_\_\_\_

To install the quick fastener, push its pin so that it protrudes from the fastener head, then insert the fastener into the rubber baffle and push the pin ① in with a screwdriver. Make sure that the pin is flush with the fastener's head.

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## ENGINE

### ADJUSTING THE VALVE CLEARANCE

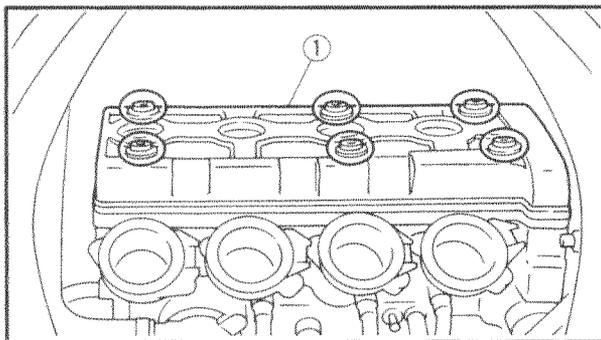
The following procedure applies to all of the valves.

**NOTE:** \_\_\_\_\_

- Valve clearance adjustment should be made on a cold engine, at room temperature.
- When the valve clearance is to be measured or adjusted, the piston must be at top dead center (TDC) on the compression stroke.

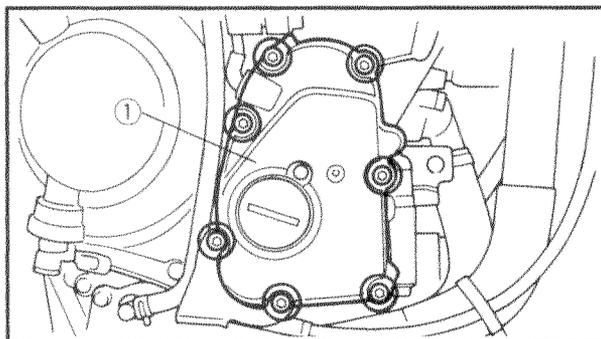
1. Remove:

- rider seat
- fuel tank  
Refer to "SEATS" and "FUEL TANK".
- air filter case
- heat protector plate  
Refer to "AIR FILTER CASE AND IGNITION COILS".
- bottom cowl
- side cowlings  
Refer to "COWLINGS".
- carburetor assembly  
Refer to "CARBURETORS" in chapter 6.
- radiator assembly  
Refer to "RADIATOR" in chapter 5.



2. Remove:

- ignition coils
- spark plugs
- cylinder head cover ①
- cylinder head cover gasket



3. Remove:

- pickup coil rotor cover ①





- c. Round off the original valve pad number according to the following table.

Last digit	Rounded value
0 or 2	0
5	5
8	10

**EXAMPLE:**

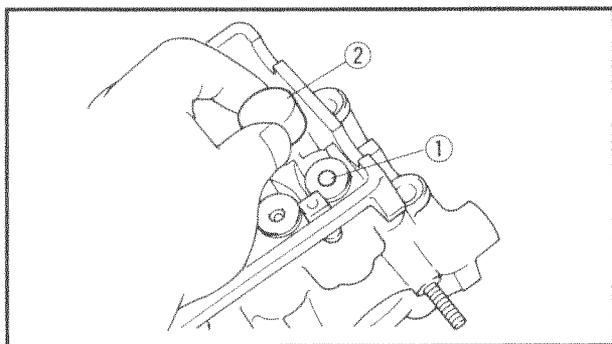
Original valve pad number = 148 (thickness = 1.48 mm)

Rounded value = 150

- d. Locate the rounded number of the original valve pad and the measured valve clearance in the valve pad selection table. The point where the column and row intersect is the new valve pad number.

**NOTE:**

The new valve pad number is only an approximation. The valve clearance must be measured again and the above steps should be repeated if the measurement is still incorrect.



- e. Install the new valve pad ① and the valve lifter ②.

**NOTE:**

- Lubricate the valve pad with molybdenum disulfide grease.
- Lubricate the valve lifter with molybdenum disulfide oil.
- The valve lifter must turn smoothly when rotated by hand.
- Install the valve lifter and the valve pad in the correct place.

- f. Install the exhaust and intake camshafts, timing chain and camshaft caps.

	<b>Camshaft cap bolt</b> <b>10 Nm (1.0 m•kg, 7.2 ft•lb)</b>
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**NOTE:**

- Refer to "CAMSHAFTS" in chapter 4.
- Lubricate the camshaft lobes and camshaft journals.
- First, install the exhaust camshaft.
- Align the camshaft marks with the camshaft cap marks.
- Turn the crankshaft counterclockwise several full turns to seat the parts.

# ADJUSTING THE VALVE CLEARANCE

**CHK  
ADJ**



## VALVE PAD SELECTION TABLE INTAKE

[B] MEASURED VALVE CLEARANCE	[A] ORIGINAL VALVE PAD NUMBER																									
	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240	
0.00 ~ 0.02					120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225
0.03 ~ 0.07			120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235
0.08 ~ 0.10		120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240
0.11 ~ 0.20	[C] STANDARD CLEARANCE																									
0.21 ~ 0.22	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240		
0.23 ~ 0.27	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240			
0.28 ~ 0.32	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240				
0.33 ~ 0.37	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240					
0.38 ~ 0.42	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240						
0.43 ~ 0.47	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240							
0.48 ~ 0.52	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240								
0.53 ~ 0.57	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240									
0.58 ~ 0.62	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240										
0.63 ~ 0.67	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240											
0.68 ~ 0.72	175	180	185	190	195	200	205	210	215	220	225	230	235	240												
0.73 ~ 0.77	180	185	190	195	200	205	210	215	220	225	230	235	240													
0.78 ~ 0.82	185	190	195	200	205	210	215	220	225	230	235	240														
0.83 ~ 0.87	190	195	200	205	210	215	220	225	230	235	240															
0.88 ~ 0.92	195	200	205	210	215	220	225	230	235	240																
0.93 ~ 0.97	200	205	210	215	220	225	230	235	240																	
0.98 ~ 1.02	205	210	215	220	225	230	235	240																		
1.03 ~ 1.07	210	215	220	225	230	235	240																			
1.08 ~ 1.12	215	220	225	230	235	240																				
1.13 ~ 1.17	220	225	230	235	240																					
1.18 ~ 1.22	225	230	235	240																						
1.23 ~ 1.27	230	235	240																							
1.28 ~ 1.32	235	240																								
1.33 ~ 1.37	240																									

Example:  
 Valve Clearance (cold)  
 0.11 ~ 0.20 mm  
 Rounded value 150  
 Measured valve clearance is 0.24 mm  
 Replace pad 150 with pad 160  
 Pad No. 150 = 1.50 mm  
 Pad No. 160 = 1.60 mm  
 Always install the valve pad with the  
 number facing down.

## EXHAUST

[B] MEASURED VALVE CLEARANCE	[A] ORIGINAL VALVE PAD NUMBER																									
	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240	
0.00 ~ 0.02						120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220
0.03 ~ 0.07					120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225
0.08 ~ 0.12				120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230
0.13 ~ 0.17			120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235
0.18 ~ 0.20		120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240
0.21 ~ 0.30	[C] STANDARD CLEARANCE																									
0.31 ~ 0.32	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240		
0.33 ~ 0.37	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240			
0.38 ~ 0.42	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240				
0.43 ~ 0.47	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240					
0.48 ~ 0.52	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240						
0.53 ~ 0.57	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240							
0.58 ~ 0.62	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240								
0.63 ~ 0.67	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240									
0.68 ~ 0.72	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240										
0.73 ~ 0.77	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240											
0.78 ~ 0.82	175	180	185	190	195	200	205	210	215	220	225	230	235	240												
0.83 ~ 0.87	180	185	190	195	200	205	210	215	220	225	230	235	240													
0.88 ~ 0.92	185	190	195	200	205	210	215	220	225	230	235	240														
0.93 ~ 0.97	190	195	200	205	210	215	220	225	230	235	240															
0.98 ~ 1.02	195	200	205	210	215	220	225	230	235	240																
1.03 ~ 1.07	200	205	210	215	220	225	230	235	240																	
1.08 ~ 1.12	205	210	215	220	225	230	235	240																		
1.13 ~ 1.17	210	215	220	225	230	235	240																			
1.18 ~ 1.22	215	220	225	230	235	240																				
1.23 ~ 1.27	220	225	230	235	240																					
1.28 ~ 1.32	225	230	235	240																						
1.33 ~ 1.37	230	235	240																							
1.38 ~ 1.42	235	240																								
1.43 ~ 1.47	240																									

Example:  
 Valve Clearance (cold)  
 0.21 ~ 0.30 mm  
 Rounded value 175  
 Measured valve clearance is 0.35 mm  
 Replace pad 150 with pad 185  
 Pad No. 175 = 1.75 mm  
 Pad No. 185 = 1.85 mm  
 Always install the valve pad with the  
 number facing down.



- g. Measure the valve clearance again.
- h. If the valve clearance is still out of specification, repeat all of the valve clearance adjustment steps until the specified clearance is obtained.



- 7. Install:
  - all removed parts

**NOTE:** \_\_\_\_\_

For installation, reverse the removal procedure. Note the following points.

---

- 8. Install:
  - timing chain guide (exhaust side)
  - timing chain tensioner
  - pickup coil rotor cover
  - cylinder head cover
  - spark plugs
  - ignition coilsRefer to "CAMSHAFTS" in chapter 4.

EB303010

## SYNCHRONIZING THE CARBURETORS

**NOTE:** \_\_\_\_\_

Prior to synchronizing the carburetors, the valve clearance and the engine idling speed should be properly adjusted and the ignition timing should be checked.

---

- 1. Stand the motorcycle on a level surface.

**NOTE:** \_\_\_\_\_

Place the motorcycle on a suitable stand.

---

- 2. Remove:
  - rider seat
  - fuel tankRefer to "SEATS" and "FUEL TANK".









7. Adjust:
- throttle cable free play  
Refer to "ADJUSTING THE THROTTLE CABLE FREE PLAY".



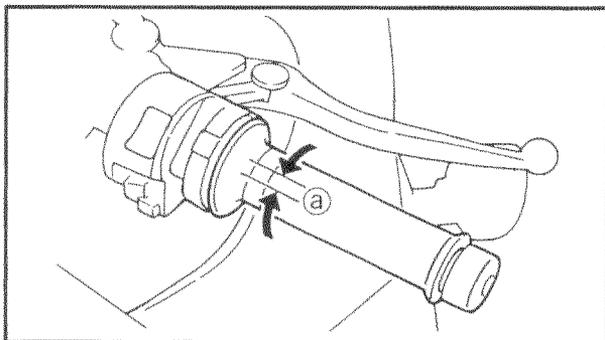
**Throttle cable free play  
(at the flange of the throttle grip)**  
6 ~ 8 mm (0.24 ~ 0.31 in)

EB303031

### ADJUSTING THE THROTTLE CABLE FREE PLAY

**NOTE:** \_\_\_\_\_

Prior to adjusting the throttle cable free play, the engine idling speed and carburetor synchronization should be adjusted properly.



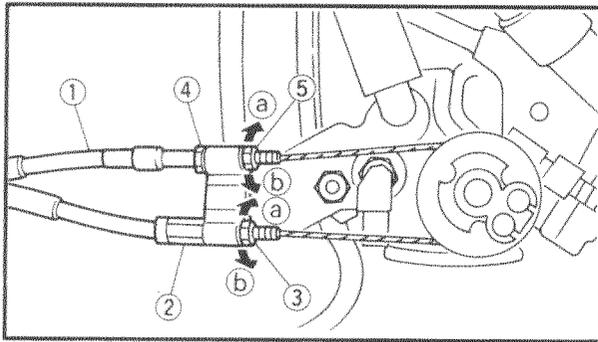
1. Measure:
- throttle cable free play (a)  
Out of specification → Adjust.



**Throttle cable free play  
(at the flange of the throttle grip)**  
6 ~ 8 mm (0.24 ~ 0.31 in)

2. Remove:
- rider seat  
Refer to "SEATS" and "FUEL TANK".
  - fuel tank
  - air filter case
  - heat protector plate  
Refer to "AIR FILTER CASE AND IGNITION COILS".

# ADJUSTING THE THROTTLE CABLE FREE PLAY



3. Adjust:
  - throttle cable free play



**NOTE:** \_\_\_\_\_

When the throttle is opened, the accelerator cable ① is pulled.

**Carburetor side**

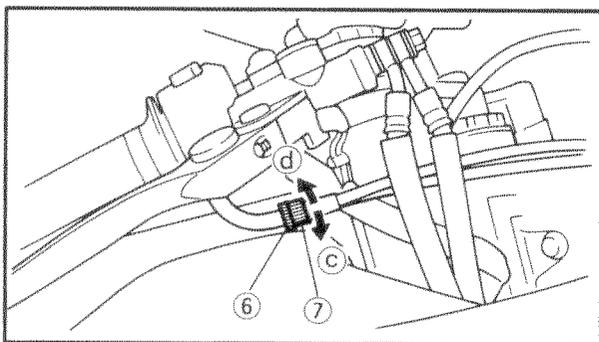
- a. Loosen the locknut ② on the decelerator cable.
- b. Turn the adjusting nut ③ in direction ① or ② to take up any slack on the decelerator cable.
- c. Loosen the locknut ④ on the accelerator cable.
- d. Turn the adjusting nut ⑤ in direction ① or ② until the specified throttle cable free play is obtained.

Direction ①	Throttle cable free play is increased.
Direction ②	Throttle cable free play is decreased.

- e. Tighten the locknuts.

**NOTE:** \_\_\_\_\_

If the specified throttle cable free play cannot be obtained on the carburetor side of the cable, use the adjusting nut on the handlebar side.



**Handlebar side**

- a. Loosen the locknut ⑥.
- b. Turn the adjusting nut ⑦ in direction ③ or ④ until the specified throttle cable free play is obtained.

Direction ③	Throttle cable free play is increased.
Direction ④	Throttle cable free play is decreased.

- d. Tighten the locknut.

**⚠ WARNING** \_\_\_\_\_

After adjusting the throttle cable free play, start the engine and turn the handlebars to the right and to the left to ensure that this does not cause the engine idling speed to change.





EB903040

**CHECKING THE SPARK PLUGS**

The following procedure applies to all of the spark plugs.

1. Remove:
  - rider seat
  - fuel tank  
Refer to "SEATS" and "FUEL TANK".
  - air filter case
  - heat protector plate  
Refer to "AIR FILTER CASE AND IGNITION COILS".
2. Disconnect:
  - Ignition coils
3. Remove:
  - spark plug

**NOTE:** \_\_\_\_\_

- a. Remove the coupler.
- b. Turn the coil counterclockwise. (5 to 6 turns would be adequate.)
- c. Pull out the coil upward.  
Never pry the coupler with a screw driver.
- d. Press the coil in the plug hole by hand as far as it will go.
- e. Turn the coil clockwise and screw it in, 5 to 6 turns would be adequate.
- f. Reinstall the coupler.  
Do not strike on the coil with a hammer or the like.

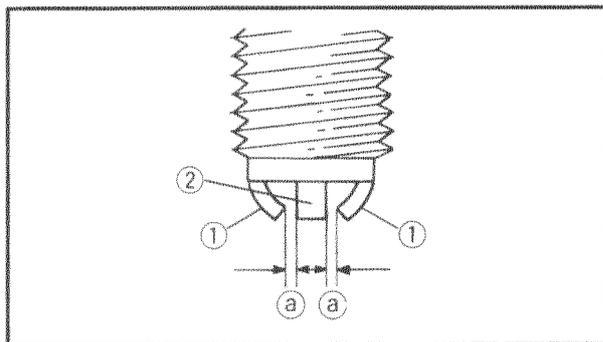
**CAUTION:** \_\_\_\_\_

**Before removing the spark plugs, blow away any dirt accumulated in the spark plug wells with compressed air to prevent it from falling into the cylinders.**

4. Check:
  - spark plug type  
Incorrect → Change.



**Spark plugs  
type (manufacturer)  
CR10EK (NGK)  
CR9EK (NGK) (California)**



5. Check:
  - electrodes ①  
Damage/wear → Replace the spark plug.
  - insulator ②  
Abnormal color → Replace the spark plug.  
Normal color is medium-to-light tan.
6. Clean:
  - spark plug  
(with a spark plug cleaner or wire brush)
7. Measure:
  - spark plug gap ③  
(with a wire gauge)  
Out of specification → Regap.



**Spark plug gap**

**0.6 ~ 0.7 mm (0.02 ~ 0.03 in)**

8. Install:
  - spark plug  **13 Nm (1.3 m•kg, 9.4 ft•lb)**

**NOTE:** \_\_\_\_\_

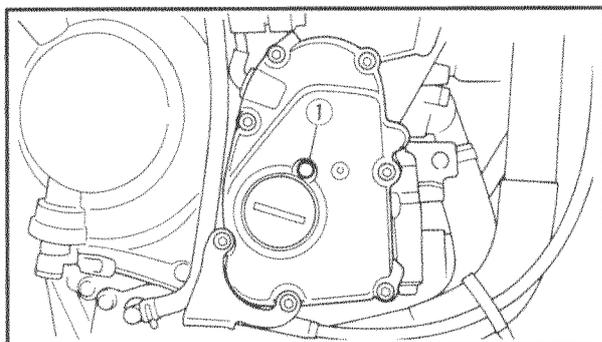
Before installing the spark plug, clean the spark plug and gasket surface.

EB303050

**CHECKING THE IGNITION TIMING**

**NOTE:** \_\_\_\_\_

Prior to checking the ignition timing, check the wiring connections of the entire ignition system. Make sure that all connections are tight and free of corrosion.



1. Remove:
  - bottom cowling  
Refer to "COWLINGS".
  - rider seat
  - fuel tank  
Refer to "SEATS" and "FUEL TANK".
  - air filter case  
Refer to "AIR FILTER CASE AND IGNITION COILS".
  - timing mark accessing screw ①





- c. If the compression pressure is above the maximum specification, check the cylinder head, valve surfaces, and piston crown for carbon deposits.  
Carbon deposits → Eliminate.
- d. If the compression pressure is below the minimum specification, squirt a few drops of oil into the cylinder and measure again.

Refer to the following table.

Compression pressure (with oil applied into the cylinder)	
Reading	Diagnosis
Higher than without oil	Piston wear or damage → Repair.
Same as without oil	Piston ring(-s), valve(-s), cylinder head gasket or piston possibly defective → Repair.

7. Install:

- spark plug

 13 Nm (1.3 m•kg, 9.4 ft•lb)

EB303070

### CHECKING THE ENGINE OIL LEVEL

1. Stand the motorcycle on a level surface.

**NOTE:** \_\_\_\_\_

- Place the motorcycle on a suitable stand.
- Make sure that the motorcycle is upright.

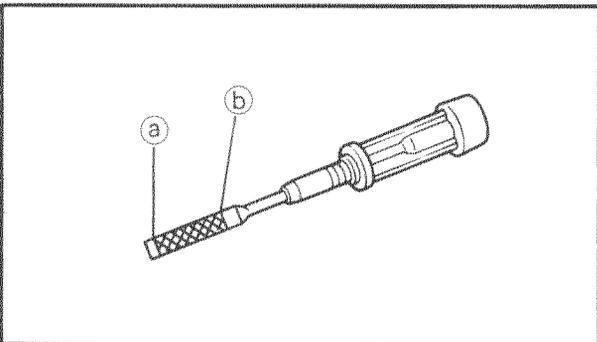
2. Start the engine, let it idle for several minutes, and then stop it.

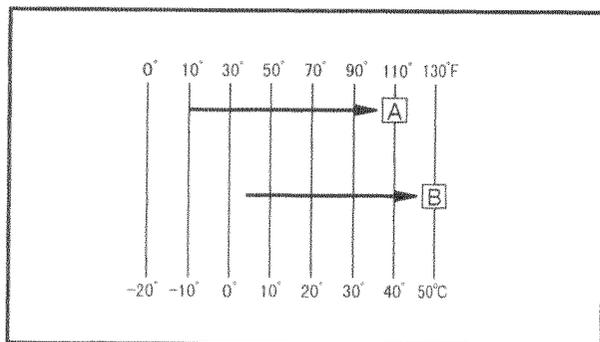
3. Check:

- engine oil level

The engine oil level should be between the minimum level mark (a) and maximum level mark (b).

Below the minimum level mark → Add the recommended engine oil to the proper level.





**Recommended oil:**

At  $-10^{\circ}\text{C}$  ( $10^{\circ}\text{F}$ ) or higher **A**:  
Yamalube 4 (10W-30)  
or SAE

10W-30 type SE motor oil  
At  $5^{\circ}\text{C}$  ( $40^{\circ}\text{F}$ ) or higher **B**:  
Yamalube 4 (20W-40)  
or SAE  
20W-40 type SE motor oil

**CAUTION:**

- Engine oil also lubricates the clutch and the wrong oil types or additives could cause clutch slippage. Therefore, do not add any chemical additives.
- Do not allow foreign materials to enter the crankcase.

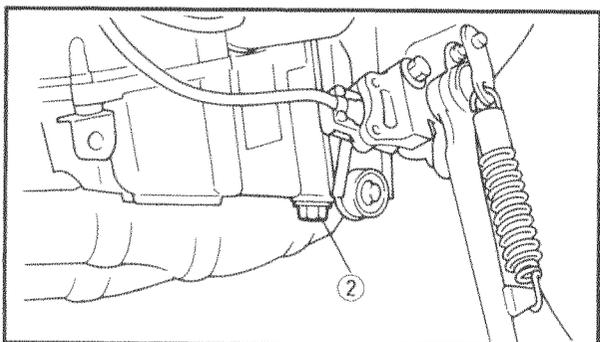
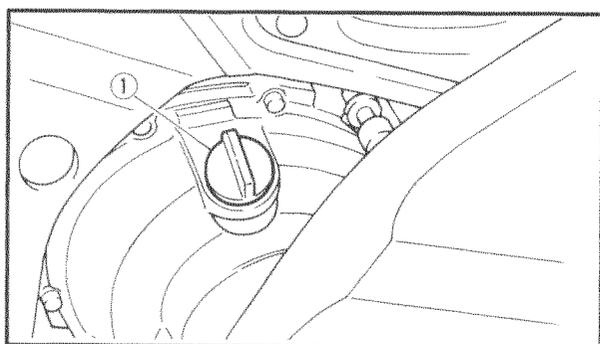
**NOTE:**

API Service "SE", "SF" and "SG" type or equivalent (e. g., "SF-SE", "SF-SE-CC", "SF-SE-SD")

4. Start the engine, warm it up for several minutes, and then turn it off.
5. Check:
  - engine oil level

**NOTE:**

Before checking the engine oil level, wait a few minutes until the oil has settled.



EB303081

**CHANGING THE ENGINE OIL**

1. Remove:
  - bottom cowling  
Refer to "COWLINGS".
2. Start the engine, warm it up for several minutes, and then turn it off.
3. Place a container under the engine oil drain bolt.
4. Remove:
  - engine oil filler cap ①
  - engine oil drain bolt ②  
(along with the washer)
5. Drain:
  - engine oil  
(completely from the crankcase)





13. Check:
  - engine oil level  
Refer to "CHECKING THE ENGINE OIL LEVEL".
14. Install:
  - bottom cowling  
Refer to "COWLINGS".

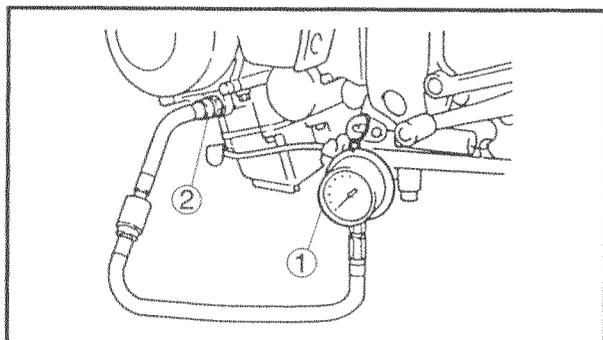
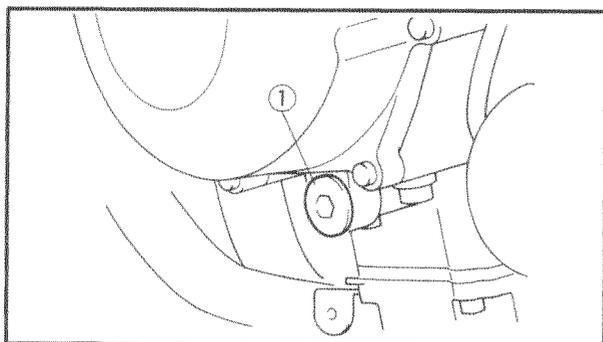
EB303090

### MEASURING THE ENGINE OIL PRESSURE

1. Check:
  - engine oil level  
Below the minimum level mark → Add the recommended engine oil to the proper level.
2. Start the engine, warm it up for several minutes, and then turn it off.

#### CAUTION:

When the engine is cold, the engine oil will have a higher viscosity, causing the engine oil pressure to increase. Therefore, be sure to measure the engine oil pressure after warming up the engine.



3. Remove:
  - oil gallery bolt ①

#### WARNING

The engine, muffler and engine oil are extremely hot.

4. Install:
  - oil pressure gauge ①
  - adapter ②



Oil pressure gauge  
90890-03153

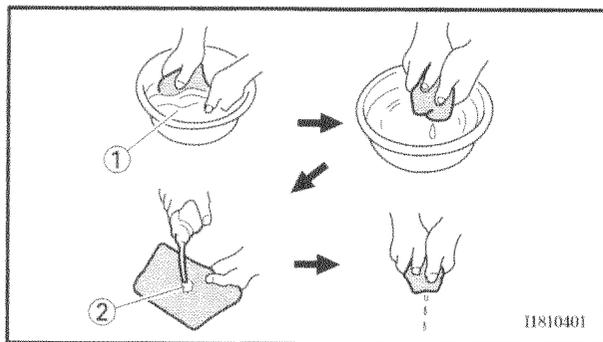
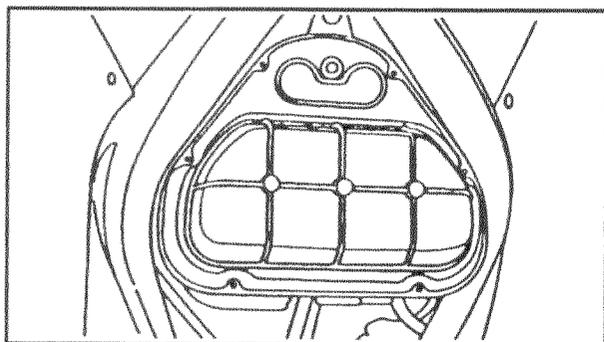
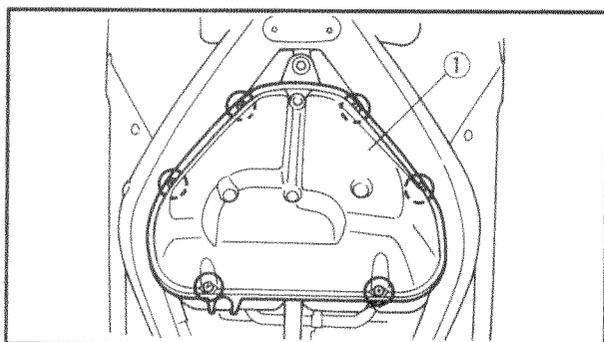
Adapter  
90890-03139

5. Measure:
  - engine oil pressure  
(at the following conditions)



Engine oil pressure  
240 kpa (2.4 kg/cm<sup>2</sup>, 34.1 psi)  
Engine speed  
Approx. 6000 r/min  
Engine oil temperature  
96°C (205°F)





EB303130

## CLEANING THE AIR FILTER ELEMENT

1. Remove:
  - fuel tank  
Refer to "FUEL TANK".
  - air filter case cover ①
  - air filter element
  
2. Clean:
  - air filter element  
Use solvent to clean the air filter element. After cleaning the air filter element, remove the solvent from the air filter element.
3. Apply the engine oil to the entire surface of the filter and remove the excess oil. The air filter should be wet but not dripping.
4. Check:
  - air filter element  
Damage → Replace.
5. Install:
  - air filter element
  - air filter case cover

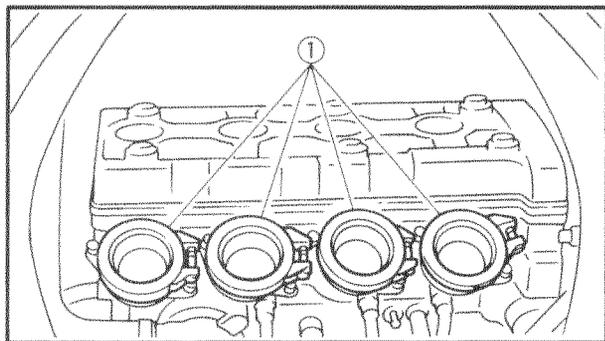
### CAUTION:

Never operate the engine without the air filter element installed. Unfiltered air will cause rapid wear of engine parts and may damage the engine. Operating the engine without the air filter element will also affect the carburetor tuning, leading to poor engine performance and possible overheating.

### NOTE:

When installing the air filter element into the air filter case cover, make sure that their sealing surfaces are aligned to prevent any air leaks.

6. Install:
  - fuel tank  
Refer to "FUEL TANK".



EB303171

### CHECKING THE CARBURETOR JOINTS

The following procedure applies to all of the carburetor joints and intake manifolds.

1. Remove:
  - carburetor assembly  
Refer to "CARBURETORS" in chapter 6.
2. Check:
  - carburetor joint ①  
Cracks/damage → Replace.  
Refer to "CARBURETORS" in chapter 6.
3. Install:
  - carburetor assembly  
Refer to "CARBURETORS" in chapter 6.

EB303181

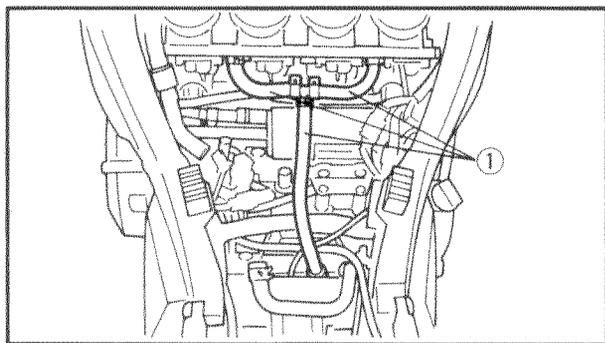
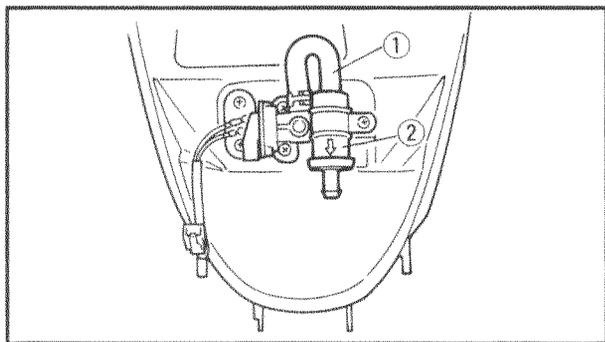
### CHECKING THE FUEL HOSES AND FUEL FILTER

The following procedure applies to all of the fuel hoses.

1. Remove:
  - fuel tank  
Refer to "FUEL TANK".
2. Check:
  - fuel hose ①  
Cracks/damage → Replace.
  - fuel filter ②  
Contaminants/damage → Replace.

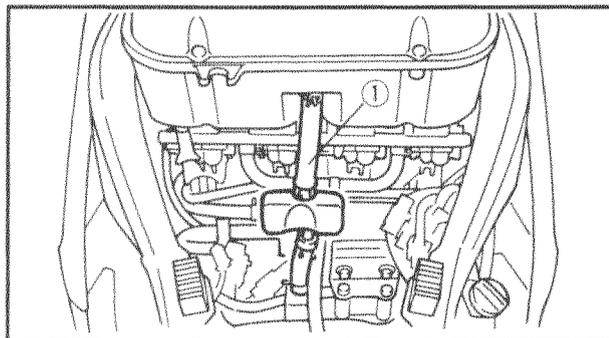
#### NOTE:

- Drain and flush the fuel tank if abrasive damage to any components of the fuel line is evident.
- The arrow mark on the fuel filter must point towards the fuel pump as shown.



## CHECKING THE CRANKCASE BREATHER HOSE/ CLEANING THE AIR INTAKE SYSTEM

CHK  
ADJ



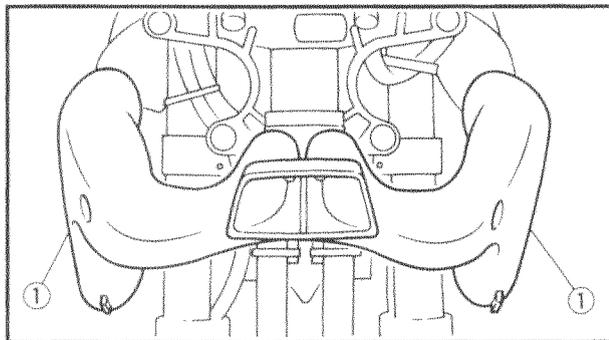
EB303190

### CHECKING THE CRANKCASE BREATHER HOSE

1. Remove:
  - fuel tank  
Refer to "FUEL TANK".
2. Check:
  - crankcase breather hose ①  
Cranks/damage → Replace.  
Loose connection → Connect properly.

### CAUTION:

**Make sure that the crankcase breather hose is routed correctly.**

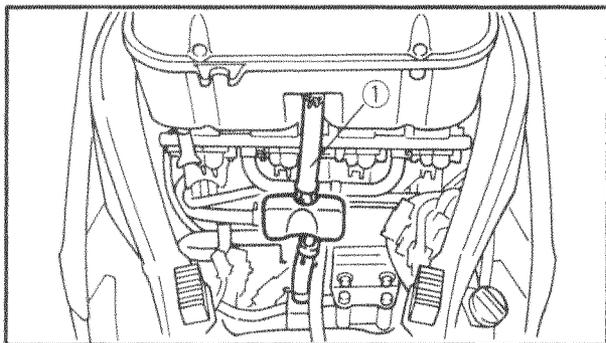


EAS00992

### CLEANING THE AIR INTAKE SYSTEM

The following procedure applies to both air intake system.

1. Remove:
  - side cowling inner covers
  - side cowlings
  - front cowling inner covers
  - front cowling
  - fuel tank
2. Loosen:
  - clamps  
(on the inside of the front cowling)
3. Remove:
  - air intake system air ducts ①
4. Clean:
  - air intake system air ducts
    - a. Thoroughly flush out the air intake system air ducts with clean water.
    - b. Hold the air intake system air ducts upside down to allow the water to drain out.
    - c. Repeat the flushing steps until the excess water is clear and free of debris.
    - d. Place the air intake system air ducts in an upright position to allow any remaining water to drain out of the lower drain tube.
    - e. Keep the air intake system air ducts upright to allow it to dry sufficiently.
5. Install:
  - air intake system air ducts
  - fuel tank
  - front cowling
  - front cowling inner covers
  - side cowlings
  - side cowlings inner covers

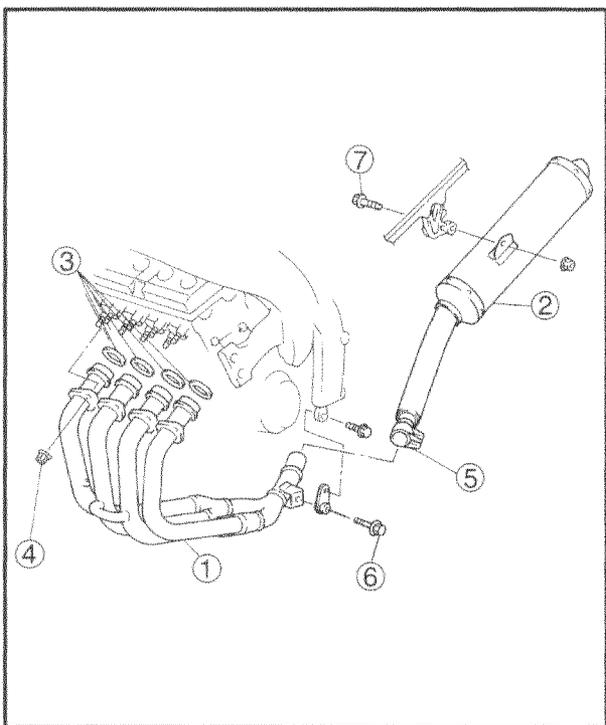


2. Check:
  - crankcase breather hose (1)
  - Cracks/damage → Replace.
  - Loose connection → Connect properly.

**CAUTION:**

Make sure that the crankcase breather hose is routed correctly.

3. Install:
  - fuel tank
  - Refer to "FUEL TANK"



EB303200

**CHECKING THE EXHAUST SYSTEM**

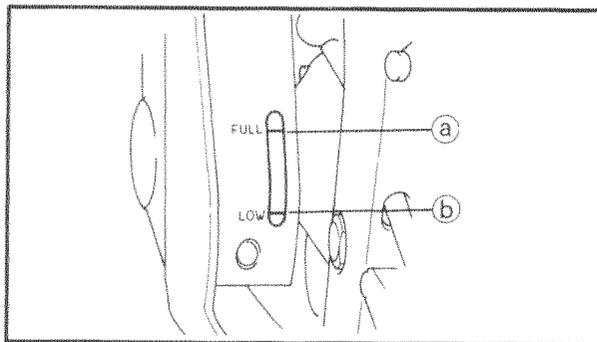
The following procedure applies to all of the exhaust pipes and gaskets.

1. Remove:
  - radiator assembly
  - Refer to "RADIATOR" in chapter 5.
2. Check:
  - exhaust pipe (1)
  - muffler (2)
  - Cracks/damage → Replace.
  - gasket (3)
  - Exhaust gas leaks → Replace.
3. Measure:
  - tightening torque



- Exhaust pipe nut (4)
- 20 Nm (2.0 m•kg, 14 ft•lb)
- Muffler clamp bolt (5)
- 20 Nm (2.0 m•kg, 14 ft•lb)
- Exhaust pipe bolt (6)
- 20 Nm (2.0 m•kg, 14 ft•lb)
- Muffler bolt (7)
- 38 Nm (3.8 m•kg, 27 ft•lb)

4. Install:
  - radiator assembly
  - Refer to "RADIATOR" in chapter 5



EB303220

**CHECKING THE COOLANT LEVEL**

1. Stand the motorcycle on a level surface.

**NOTE:** \_\_\_\_\_

- Place the motorcycle on a suitable stand.
- Make sure that the motorcycle is upright.

2. Check:

- coolant level

The coolant level should be between the maximum level mark (a) and minimum level marks (b).

Below the minimum level mark → Add the recommended coolant to the proper level.

**CAUTION:** \_\_\_\_\_

- Adding water instead of coolant lowers the antifreeze content of the coolant. If water is used instead of coolant, check and correct the antifreeze concentration of the coolant.
- Use only distilled water. Soft water may be used if distilled water is not available.

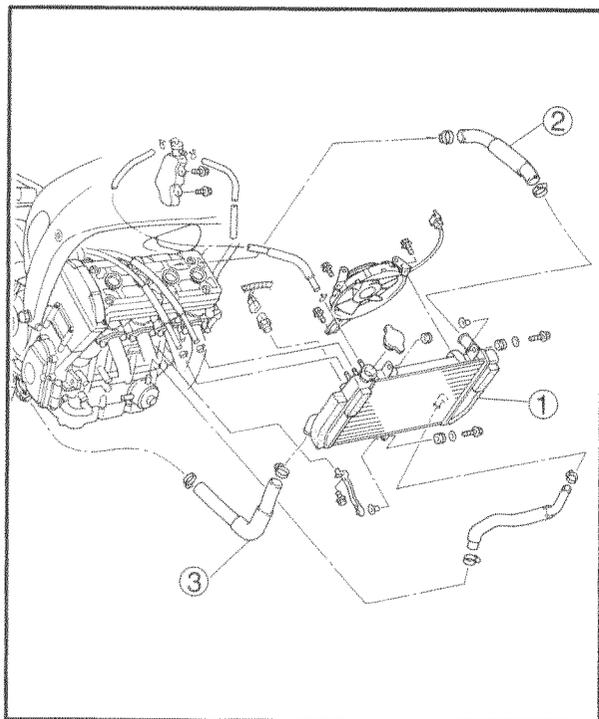
3. Start the engine, warm it up for several minutes, and then turn it off.

4. Check:

- coolant level

**NOTE:** \_\_\_\_\_

Before checking the coolant level, wait a few minutes until it settles.



EB303230

**CHECKING THE COOLING SYSTEM**

1. Remove:

- bottom cowlings
  - side cowlings
- Refer to "COWLINGS".

2. Check:

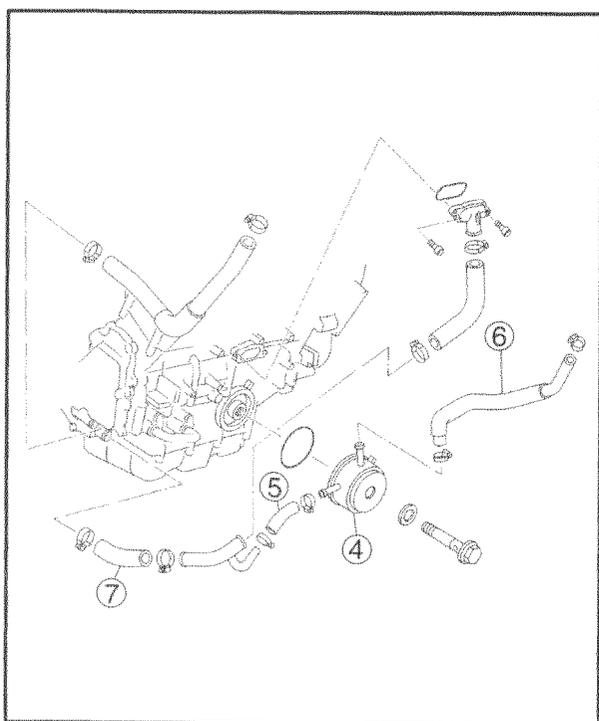
- radiator (1)
- radiator inlet hose (2)
- radiator outlet hose (3)
- oil cooler (4)
- oil cooler inlet hose (5)
- oil cooler outlet hose (6)
- water pump outlet hose (7)

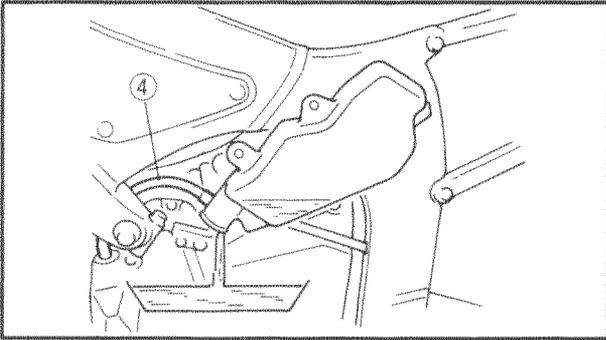
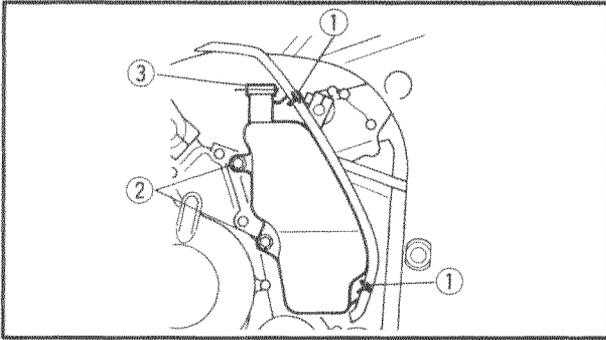
Cracks/damage → Replace.

Refer to "COOLING SYSTEM" in chapter 5.

3. Install:

- side cowlings
  - bottom cowlings
- Refer to "Cowlings".





EB303240

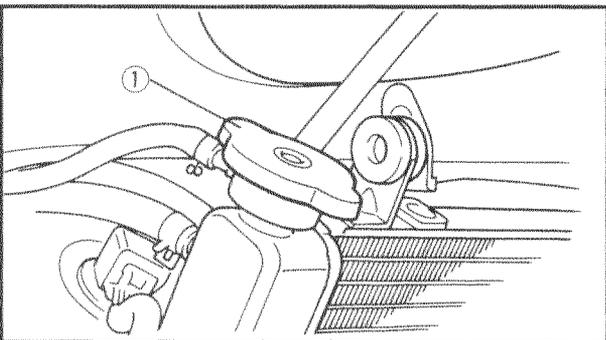
## CHANGING THE COOLANT

1. Remove:
  - bottom cowling
  - left side cowling  
Refer to "COWLINGS".
  - reservoir hose clamps ①
2. Remove:
  - coolant reservoir bolts ②
  - coolant reservoir cap ③

### NOTE:

When draining the coolant from the coolant reservoir, be sure to tilt the reservoir so that coolant cannot flow through the coolant reservoir breather hose ④.

3. Drain:
  - coolant  
(from the coolant reservoir)
4. Install:
  - coolant reservoir bolts
  - reservoir cover

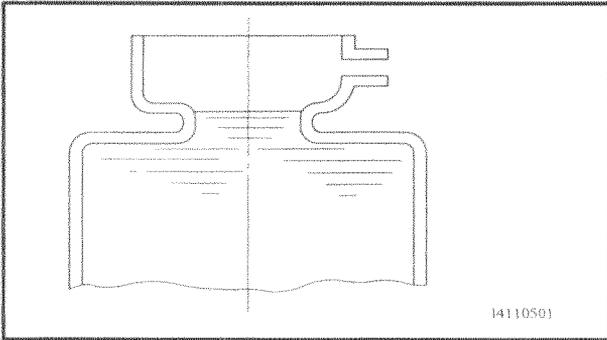
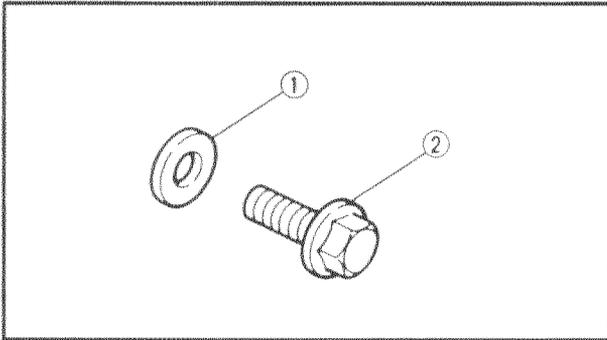
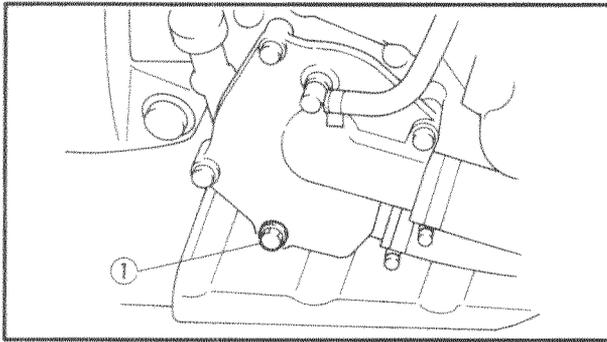


5. Remove:
  - radiator cap ①

### **⚠ WARNING**

A hot radiator is under pressure. Therefore, do not remove the radiator cap when the engine is hot. Scalding hot fluid and steam may be blown out, which could cause serious injury. When the engine has cooled, open the radiator cap as follows:

Place a thick rag or a towel over the radiator cap and slowly turn the radiator cap counterclockwise toward the detent to allow any residual pressure to escape. When the hissing sound has stopped, turn the radiator cap counterclockwise while pressing down on it and then remove it.



6. Remove:
  - coolant drain bolt ①  
(along with the copper washer)
7. Drain:
  - coolant
8. Check:
  - copper washer ①
  - coolant drain bolt ②
  - Damage → Replace

9. Install:
  - coolant drain bolt

7 Nm (0.7 m•kg, 5.1 ft•lb)

10. Fill:
  - cooling system  
(with the specified amount of the recommended coolant)

	<p><b>Recommended antifreeze</b>  <b>High-quality ethylene glycol antifreeze containing corrosion inhibitors for aluminum engines</b></p> <p><b>Mixing ratio</b>                  1:1 (antifreeze: water)</p> <p><b>Quantity</b>                  Total amount                  2.15 L (2.27 US qt)                  Coolant reservoir capacity                  0.44 L (0.47 US qt)</p>
--	--

**Handling notes for coolant**

Coolant is potentially harmful and should be handled with special care.

**⚠ WARNING**

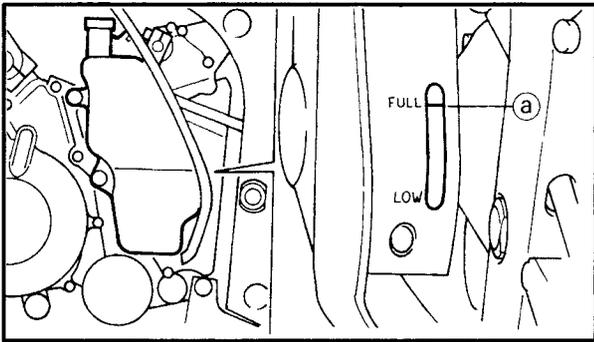
- If coolant splashes in your eyes, thoroughly wash them with water and consult a doctor.
- If coolant splashes on your clothes, quickly wash it away with water and then with soap and water.
- If coolant is swallowed, induce vomiting and get immediate medical attention.



## CAUTION:

- Adding water instead of coolant lowers the antifreeze content of the coolant. If water is used instead of coolant, check, and if necessary, correct the antifreeze concentration of the coolant.
- Use only distilled water. However, soft water may be used if distilled water is not available.
- If coolant comes into contact with painted surfaces, immediately wash them with water.
- Do not mix different types of antifreeze.

11. Install:
  - radiator cap



12. Fill:
  - coolant reservoir (with the recommended coolant to the maximum level mark (a))
13. Install:
  - coolant reservoir cap
14. Start the engine, warm it up for several minutes, and then turn it off.

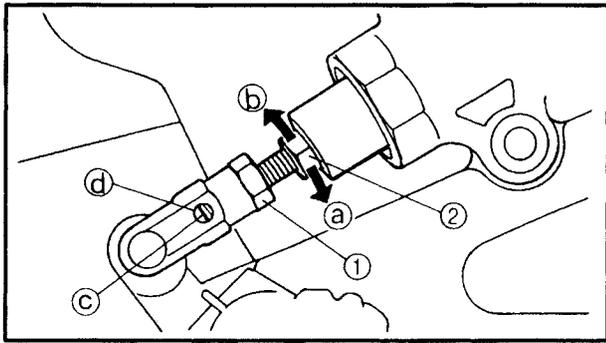
15. Check:
  - coolant level
 Refer to "CHECKING THE COOLANT LEVEL".

## NOTE:

Before checking the coolant level, wait a few minutes until the coolant has settled.

16. Install:
  - left side cowling
  - bottom cowling
 Refer to "COWLINGS".





2. Adjust:
- brake pedal position



- Loosen the locknut ①.
- Turn the adjusting bolt ② in direction ③ or ④ until the specified brake pedal position is obtained.

Direction ③	Brake pedal is raised.
Direction ④	Brake pedal is lowered.

**⚠ WARNING**

After adjusting the brake pedal position, check that the end of the adjusting bolt ③ is visible through the hole ④.

- Tighten the locknut ① to specification.

	<b>Locknut</b> 16 Nm (1.6 m•kg, 12 ft•lb)
---	--

**⚠ WARNING**

A soft or spongy feeling in the brake pedal can indicate the presence of air in the brake system. Before the vehicle is operated, the air must be removed by bleeding the brake system. Air in the brake system will considerably reduce braking performance and could result in loss of control and possibly an accident.

Therefore, check and, if necessary, bleed the brake system.

**CAUTION:**

After adjusting the brake pedal position, make sure that there is no brake drag.



3. Adjust:
- rear brake light switch
- Refer to "ADJUSTING THE REAR BRAKE LIGHT SWITCH".

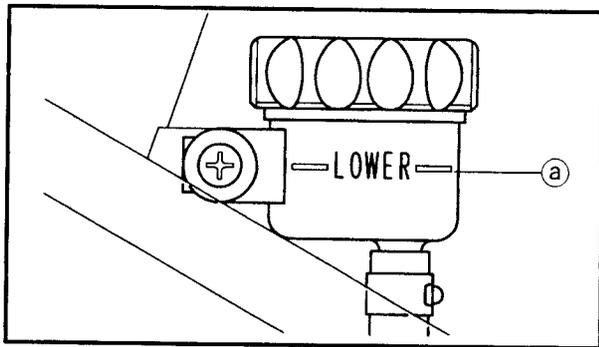
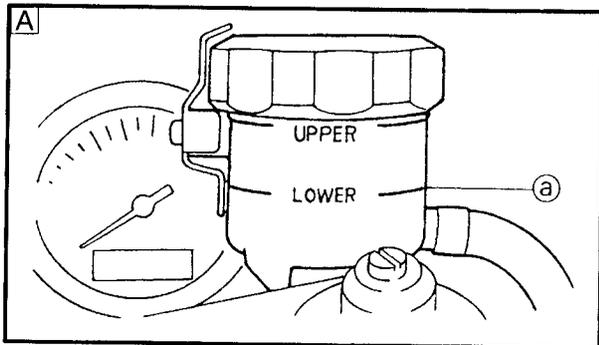
EB304020

## CHECKING THE BRAKE FLUID LEVEL

1. Stand the motorcycle on a level surface.

### NOTE:

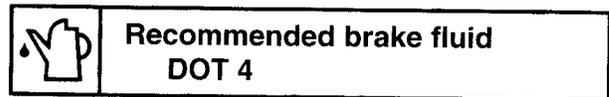
- Place the motorcycle on a suitable stand.
- Make sure that the motorcycle is upright.



2. Check:

- brake fluid level

Below the minimum level mark (a) → Add the recommended brake fluid to the proper level.



**A** Front brake

**B** Rear brake

### **! WARNING**

- Use only the designated brake fluid. Other brake fluids may cause the rubber seals to deteriorate, causing leakage and poor brake performance.
- Refill with the same type of brake fluid that is already in the system. Mixing brake fluids may result in a harmful chemical reaction, leading to poor brake performance.
- When refilling, be careful that water does not enter the brake fluid reservoir. Water will significantly lower the boiling point of the brake fluid and could cause vapor lock.

### **CAUTION:**

Brake fluid may damage painted surfaces and plastic parts. Therefore, always clean up any spilt brake fluid immediately.

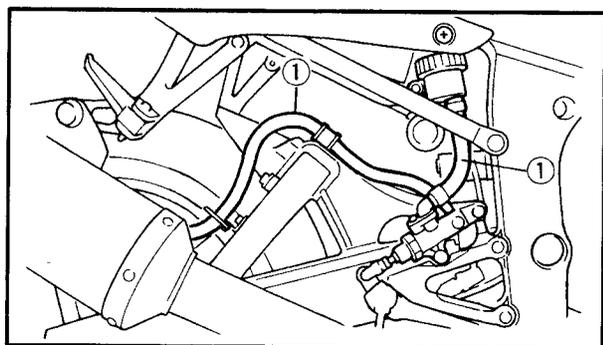
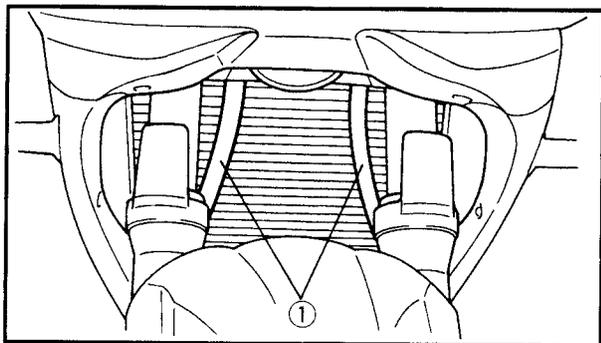
### NOTE:

In order to ensure a correct reading of the brake fluid level, make sure that the top of the brake fluid reservoir is horizontal.



## CHECKING THE BRAKE HOSES/ BLEEDING THE HYDRAULIC BRAKE SYSTEM

CHK  
ADJ



EB304062

### CHECKING THE BRAKE HOSES

The following procedure applies to all of the brake hoses and brake hose clamps.

1. Check:
  - brake hose ①  
Cracks/damage/wear → Replace.
2. Check:
  - brake hose clamp  
Loose → Tighten the clamp bolt.
3. Hold the motorcycle upright and apply the brake several times.
4. Check:
  - brake hose  
Brake fluid leakage → Replace the damaged hose.  
Refer to "FRONT AND REAR BRAKES" in chapter 7.

EB304072

### BLEEDING THE HYDRAULIC BRAKE SYSTEM

#### **WARNING**

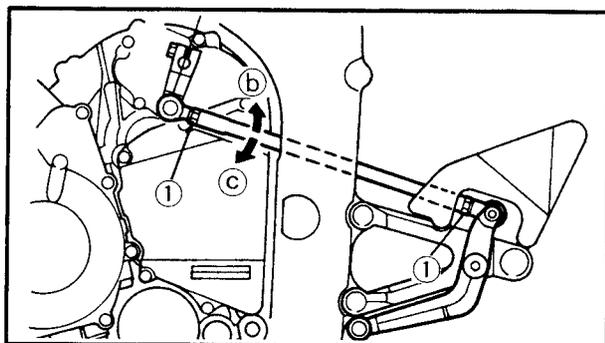
Bleed the hydraulic brake system whenever:

- the brake system was disassembled,
- a brake hose was loosened, disconnected or replaced,
- the brake fluid level is very low,
- brake operation is faulty.

#### **NOTE:**

- Be careful not to spill any brake fluid or allow the brake fluid reservoir to overflow.
- When bleeding the hydraulic brake system, make sure that there is always enough brake fluid before applying the brake. Ignoring this precaution could allow air to enter the hydraulic brake system, considerably lengthening the bleeding procedure.
- If bleeding is difficult, it may be necessary to let the brake fluid settle for a few hours. Repeat the bleeding procedure when the tiny bubbles in the hose have disappeared.





EB304081

**ADJUSTING THE SHIFT PEDAL**

**NOTE:** \_\_\_\_\_

The shift pedal position is determined by the shift rod length.

1. Measure:
  - incorrect → Adjust.

	<b>The top of shift pedal should be aligned with the lower part of the bracket. (from the horizontal view)</b>
---	--

2. Adjust:
  - installed shift rod length



- a. Loosen both locknuts ①.
- b. Turn the shift rod ② in direction ⑥ or ⑦ to obtain the correct shift pedal position.

Direction ⑥	Installed shift rod length increases.
Direction ⑦	Installed shift rod length decreases.

- c. Tighten both locknuts.
- d. Make sure that the installed shift rod length is within specification.



EB304092

**ADJUSTING THE DRIVE CHAIN SLACK**

**NOTE:** \_\_\_\_\_

The drive chain slack must be checked at the tightest point on the chain.

**CAUTION:** \_\_\_\_\_

A drive chain that is too tight will overload the engine and other vital parts, and one that is too loose can skip and damage the swingarm or cause an accident. Therefore, keep the drive chain slack within the specified limits.

1. Stand the motorcycle on a level surface.

**⚠ WARNING** \_\_\_\_\_

Securely support the motorcycle so that there is no danger of it falling over.

**NOTE:** \_\_\_\_\_

Place the motorcycle on a suitable stand so that the rear wheel is elevated.

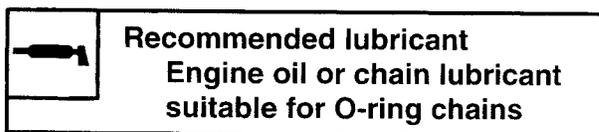




EB304100

### LUBRICATING THE DRIVE CHAIN

The drive chain consists of many interacting parts. If the drive chain is not maintained properly, it will wear out rapidly. Therefore, the drive chain should be serviced, especially when the motorcycle is used in dusty areas. This motorcycle has a drive chain with small rubber O-rings between each side plate. Steam cleaning, high-pressure washing, certain solvents, and the use of a coarse brush can damage these O-rings. Therefore, use only kerosine to clean the drive chain. Wipe the drive chain dry and thoroughly lubricate it with engine oil or chain lubricant that is suitable for O-ring chains. Do not use any other lubricants on the drive chain since they may contain solvents that could damage the O-rings.



EB304130

### CHECKING AND ADJUSTING THE STEERING HEAD

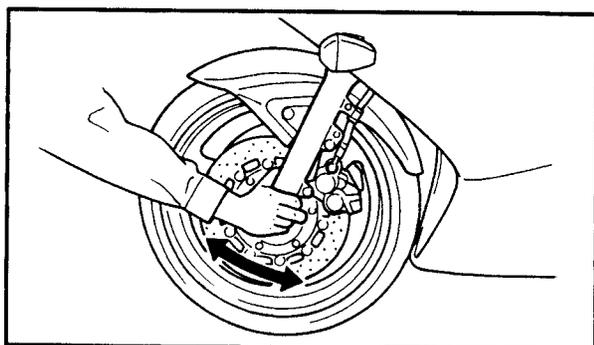
1. Stand the motorcycle on a level surface.

#### **⚠ WARNING**

**Securely support the motorcycle so that there is no danger of it falling over.**

#### **NOTE:**

Place the motorcycle on a suitable stand so that the front wheel is elevated.



2. Check:
  - steering head  
Grasp the bottom of the front fork legs and gently rock the front fork.  
Looseness/binding → Adjust the steering head.

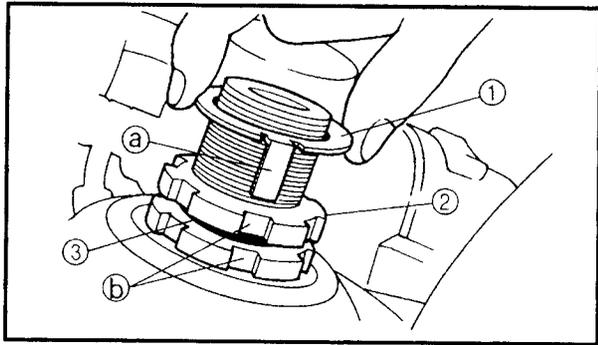


- c. Loosen the lower ring nut completely, then tighten it to specification.

**⚠ WARNING**

**Do not overtighten the lower ring nut.**

 **Lower ring nut (final tightening torque)**  
**9 Nm (0.9 m•kg, 6.5 ft•lb)**



- d. Check the steering head for looseness or binding by turning the front fork all the way in both directions. If any binding is felt, remove the lower bracket and check the upper and lower bearings. Refer to “STEERING HEAD” in chapter 7.
- e. Install the washer ③.
- f. Install the upper ring nut ②.
- g. Finger tighten the upper ring nut ②, then align the slots of both ring nuts. If necessary, hold the lower ring nut and tighten the upper ring nut until their slots are aligned.
- h. Install the lock washer ①.

**NOTE:**

Make sure that the lock washer tabs (a) sit correctly in the ring nut slots (b).



8. Install:

- steering stem nut  **115 Nm (11.5 m•kg, 83 ft•lb)**
- upper bracket bolt  **13 Nm (1.3 m•kg, 9.4 ft•lb)**
- handlebar pinch bolt  **13 Nm (1.3 m•kg, 9.4 ft•lb)**
- upper bracket pinch bolt  **23 Nm (2.3 m•kg, 17 ft•lb)**

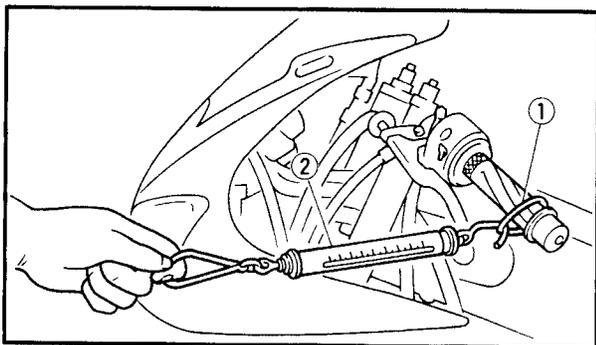
9. Measure:

- steering head tension (with the motorcycle still on the stand)

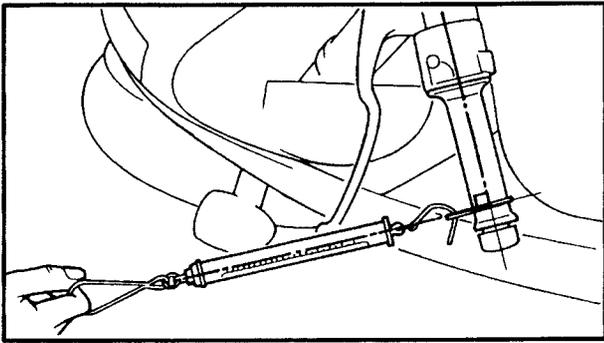


**NOTE:**

Make sure that all of the cables and wires are properly routed.



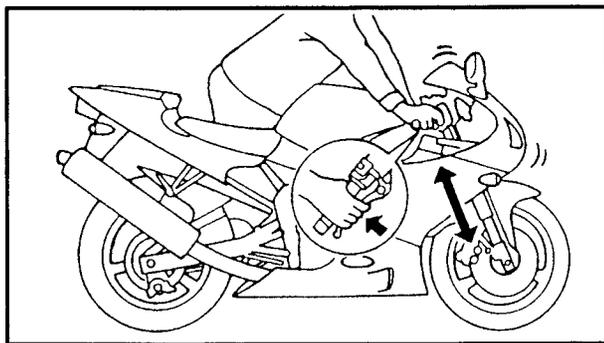
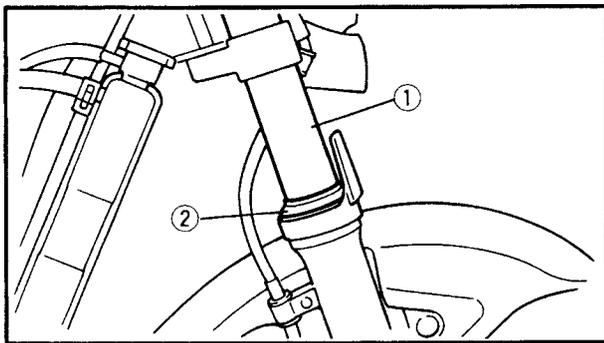
- a. Point the front wheel straight ahead.
- b. Install a plastic locking tie ① loosely around the end of the handlebar as shown.
- c. Hook a spring gauge ② onto the plastic locking tie.



- d. Hold the spring gauge at a 90° angle from the handlebar, pull the spring gauge, and record the measurement when the handlebar starts to turn.

 **Steering head tension**  
200 ~ 500 g (7.1 ~ 17.6 oz)

- e. Repeat the above procedure on the opposite handlebar.  
f. If the steering head tension is out of specification (both handlebars should be within specification), remove the upper bracket and loosen or tighten the upper ring nut.  
g. Reinstall the upper bracket and measure the steering head tension again as described above.  
h. Repeat the above procedure until the steering head tension is within specification.  
i. Grasp the bottom of the front fork legs and gently rock the front fork.  
Looseness or binding → Adjust the steering head.



EB304141

**CHECKING THE FRONT FORK**

1. Stand the motorcycle on a level surface.

**⚠ WARNING**

**Securely support the motorcycle so that there is no danger of it falling over.**

2. Check:
- inner tube ①  
Damage/scratches → Replace.
  - oil seal ②  
Oil leakage → Replace.
3. Hold the motorcycle upright and apply the front brake.
4. Check:
- front fork operation  
Push down hard on the handlebars several times and check if the front fork rebounds smoothly.  
Rough movement → Repair.  
Refer to “FRONT FORK” in chapter 7.





**Adjusting positions**  
**Minimum: 10 clicks out\***  
**Standard: 6 clicks out\***  
**Maximum: 1 clicks out\***  
**\* from the fully turned-in position**

**NOTE:** \_\_\_\_\_  
Although the number of clicks between the minimum and maximum settings may vary with each individual shock absorber and may not exactly match these specifications, it is always the full damping force range that extends over the actual number of clicks.







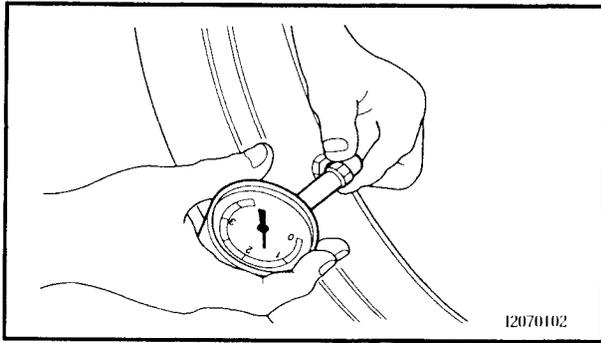


**Adjusting positions**  
**Minimum: 13 clicks out\***  
**Standard: 7 clicks out\***  
**Maximum: 1 click out\***  
**\* from the fully turned-in position**

**NOTE:** \_\_\_\_\_

Although the number of clicks between the minimum and maximum settings may vary with each individual shock absorber and may not exactly match these specifications, it is always the full damping force range that extends over the actual number of clicks.





EB304170

**CHECKING THE TIRES**

The following procedure applies to both of the tires.

1. Measure:
  - tire pressure
 Out of specification → Regulate.

**⚠ WARNING**

- The tire pressure should only be checked and regulated when the tire temperature equals the ambient air temperature.
- The tire pressure and the suspension must be adjusted according to the total weight (including cargo, rider, passenger and accessories) and the anticipated riding speed.
- Operation of an overloaded motorcycle could cause tire damage, an accident or an injury.

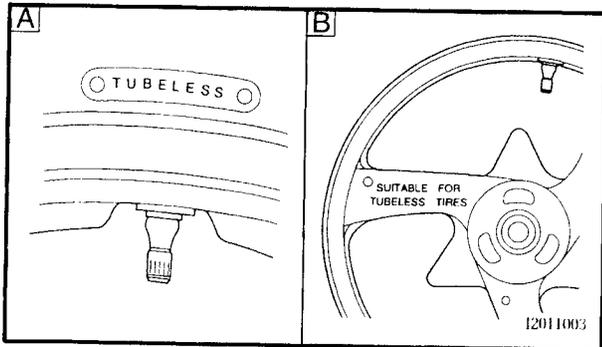
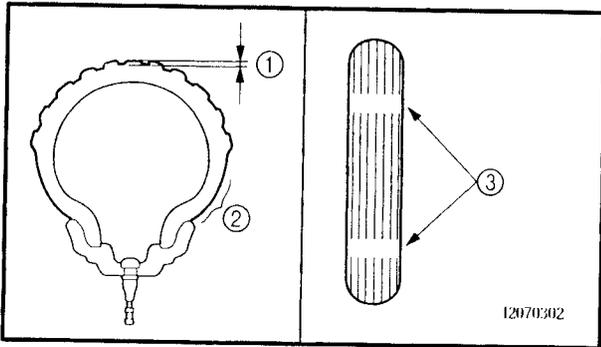
**NEVER OVERLOAD THE MOTORCYCLE.**

Basic weight (with oil and a full fuel tank)	188 kg	
Maximum load*	187 kg	
Cold tire pressure	Front	Rear
Up to 90 kg (198 lb) load*	250 kPa (2.5 kg/cm <sup>2</sup> , 36.3 psi)	250 kPa (2.5 kg/cm <sup>2</sup> , 36.3 psi)
90 kg (198 lb) ~ maximum load*	250 kPa (2.5 kg/cm <sup>2</sup> , 36.3 psi)	290 kPa (2.9 kg/cm <sup>2</sup> , 42.1 psi)
High-speed riding	250 kPa (2.5 kg/cm <sup>2</sup> , 36.3 psi)	250 kPa (2.5 kg/cm <sup>2</sup> , 36.3 psi)

\* total of cargo, rider, passenger and accessories

**⚠ WARNING**

It is dangerous to ride with a worn-out tire. When the tire tread reaches the wear limit, replace the tire immediately.



## 2. Check:

- tire surfaces

Damage/wear → Replace the tire.

	<b>Minimum tire tread depth</b> 1.6 mm (0.06 in)
---	---

- ① Tire tread depth
- ② Side wall
- ③ Wear indicator

## **⚠ WARNING**

- Do not use a tubeless tire on a wheel designed only for tube tires to avoid tire failure and personal injury from sudden deflation.
- When using a tube tire, be sure to install the correct tube.
- Always replace a new tube tire and a new tube as a set.
- To avoid pinching the tube, make sure that the wheel rim band and tube are centered in the wheel groove.
- Patching a punctured tube is not recommended. If it is absolutely necessary to do so, use great care and replace the tube as soon as possible with a good quality replacement.

A Tire      B Wheel

Tube wheel	Tube tire only
Tubeless wheel	Tube or tubeless tire

- After extensive tests, the tires listed below have been approved by Yamaha Motor Co., Ltd. for this model. The front and rear tires should always be by the same manufacturer and of the same design. No guarantee concerning handling characteristics can be given if a tire combination other than one approved by Yamaha is used on this motorcycle.

### Front tire

Manufacturer	Size	Model
BRIDGESTONE	120/60 ZR17 (55W)	BT56F•E
DUNLOP	120/60 ZR17 (55W)	D207F•J

Rear tire

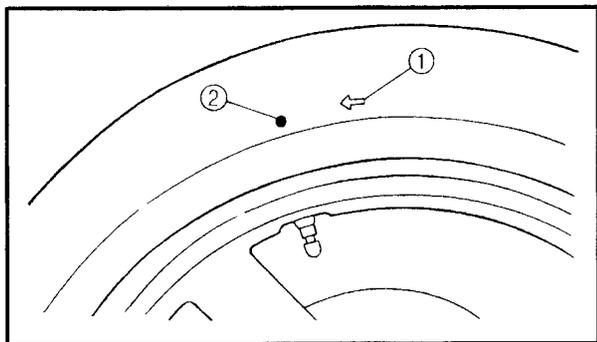
Manufacturer	Size	Model
BRIDGESTONE	180/55 ZR17 (73W)	BT56R•E
DUNLOP	180/55 ZR17 (73W)	D207•N

**⚠ WARNING**

New tires have a relatively low grip on the road surface until they have been slightly worn. Therefore, approximately 100 km could be traveled at normal speed before any highspeed riding is done.

**NOTE:**

- For tires with a direction of rotation mark ①:
- Install the tire with the mark pointing in the direction of wheel rotation.
  - Align the mark ② with the valve installation point.



EB304180

**CHECKING THE WHEELS**

The following procedure applies to both of the wheels.

1. Check:
  - wheel  
Damage/out-of-round → Replace.

**⚠ WARNING**

Never attempt to make any repairs to the wheel.

**NOTE:**

After a tire or wheel has been changed or replaced, always balance the wheel.



EB304200

### CHECKING AND LUBRICATING THE CABLES

The following procedure applies to all of the cable sheaths and cables.

#### **⚠ WARNING**

**Damaged cable sheaths may cause the cable to corrode and interfere with its movement. Replace damaged cable sheaths and cables as soon as possible.**

1. Check:
  - cable sheath  
Damage → Replace.
2. Check:
  - cable operation  
Rough movement → Lubricate.

	<b>Recommended lubricant</b> Engine oil or a suitable cable lubricant
---	--

#### **NOTE:**

Hold the cable end upright and pour a few drops of lubricant into the cable sheath or use a suitable lubing device.

EB304210

### LUBRICATING THE LEVERS AND PEDALS

Lubricate the pivoting point and metal-to-metal moving parts of the levers and pedals.

	<b>Recommended lubricant</b> Lithium soap base grease
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EB304220

### LUBRICATING THE SIDESTAND

Lubricate the pivoting point and metal-to-metal moving parts of the sidestand.

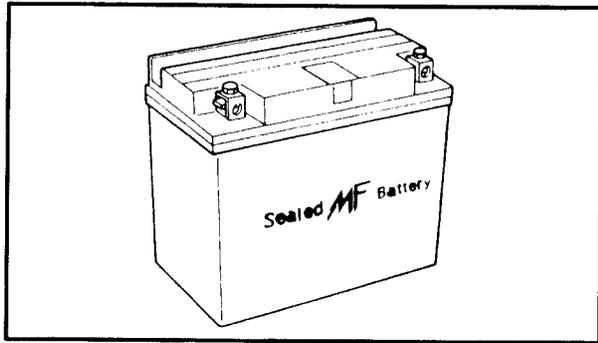
	<b>Recommended lubricant</b> Lithium soap base grease
---	--

EB304240

### LUBRICATING THE REAR SUSPENSION

Lubricate the pivoting point and metal-to-metal moving parts of the rear suspension.

	<b>Recommended lubricant</b> Lithium soap base grease
---	--



EB305020

## ELECTRICAL SYSTEM

### CHECKING AND CHARGING THE BATTERY

#### **⚠ WARNING**

Batteries generate explosive hydrogen gas and contain electrolyte which is made of poisonous and highly caustic sulfuric acid. Therefore, always follow these preventive measures:

- Wear protective eye gear when handling or working near batteries.
- Charge batteries in a well-ventilated area.
- Keep batteries away from fire, sparks or open flames (e.g., welding equipment, lighted cigarettes).
- DO NOT SMOKE when charging or handling batteries.
- KEEP BATTERIES AND ELECTROLYTE OUT OF REACH OF CHILDREN.
- Avoid bodily contact with electrolyte as it can cause severe burns or permanent eye injury.

#### FIRST AID IN CASE OF BODILY CONTACT: EXTERNAL

- Skin – Wash with water
- Eyes – Flush with water for 15 minutes and get immediate medical attention.

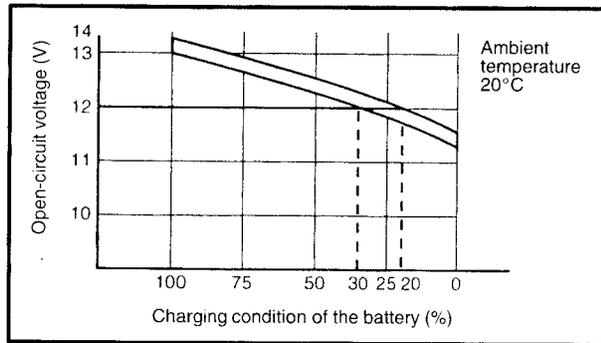
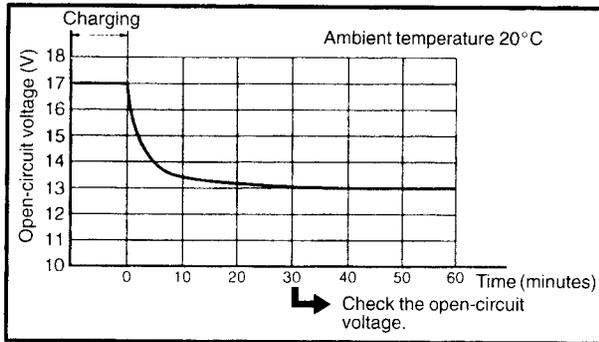
#### INTERNAL

- Drink large quantities of water or milk followed with milk of magnesia, beaten egg or vegetable oil. Get immediate medical attention.

#### **CAUTION:**

- This is a sealed battery. Never remove the sealing caps because the balance between cells will not be maintained and battery performance will deteriorate.
- Charging time, charging amperage and charging voltage for an MF battery are different from those of conventional batteries. The MF battery should be charged as explained in the charging method illustrations. If the battery is overcharged, the electrolyte level will drop considerably. Therefore, take special care when charging the battery.





## 5. Charge:

- battery  
(refer to the appropriate charging method illustration)

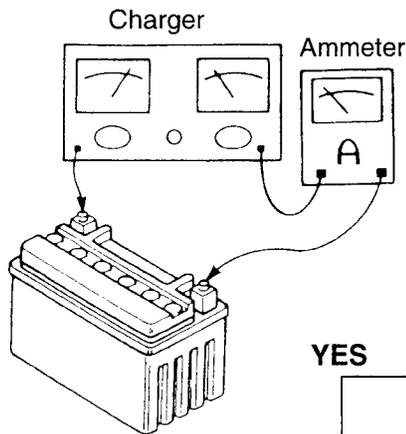
### ⚠ WARNING

Do not quick charge a battery.

### CAUTION:

- Never remove the MF battery sealing caps.
- Do not use a high-rate battery charger since it forces a high-amperage current into the battery quickly and can cause battery overheating and battery plate damage.
- If it is impossible to regulate the charging current on the battery charger, be careful not to overcharge the battery.
- When charging a battery, be sure to remove it from the motorcycle. (If charging has to be done with the battery mounted on the motorcycle, disconnect the negative lead from the battery terminal.)
- To reduce the chance of sparks, do not plug in the battery charger until the battery charger leads are connected to the battery.
- Before removing the battery charger lead clips from the battery terminals, be sure to turn off the battery charger.
- Make sure that the battery charger lead clips are in full contact with the battery terminal and that they are not shorted. A corroded battery charger lead clip may generate heat in the contact area and a weak clip spring may cause sparks.
- If the battery becomes hot to the touch at any time during the charging process, disconnect the battery charger and let the battery cool before reconnecting it. Hot batteries can explode!
- As shown in the following illustration, the open-circuit voltage of an MF battery stabilizes about 30 minutes after charging has been completed. Therefore, wait 30 minutes after charging is completed before measuring the open-circuit voltage.

## Charging method using a variable-voltage charger



Measure the open-circuit voltage prior to charging.

Connect a charger and ammeter to the battery and start charging.

Is the amperage higher than the standard charging amperage written on the battery?

**NOTE:**  
Leave the battery unused for more than 30 minutes before measuring its open-circuit voltage.

**NOTE:**  
Set the charging voltage to 16 ~ 17 V. (If the charging voltage is lower, charging will be insufficient, if it is higher, the battery will be over-charged.)

**YES**

**NO**

Adjust the voltage to obtain the standard charging amperage.

Adjust the charging voltage to 20 ~ 25 V.

Monitor the amperage for 3 ~ 5 minutes. Is the standard charging amperage exceeded?

**YES**

**NO**

Set the timer to the charging time determined by the open-circuit voltage. Refer to "CHECKING AND CHARGING THE BATTERY".

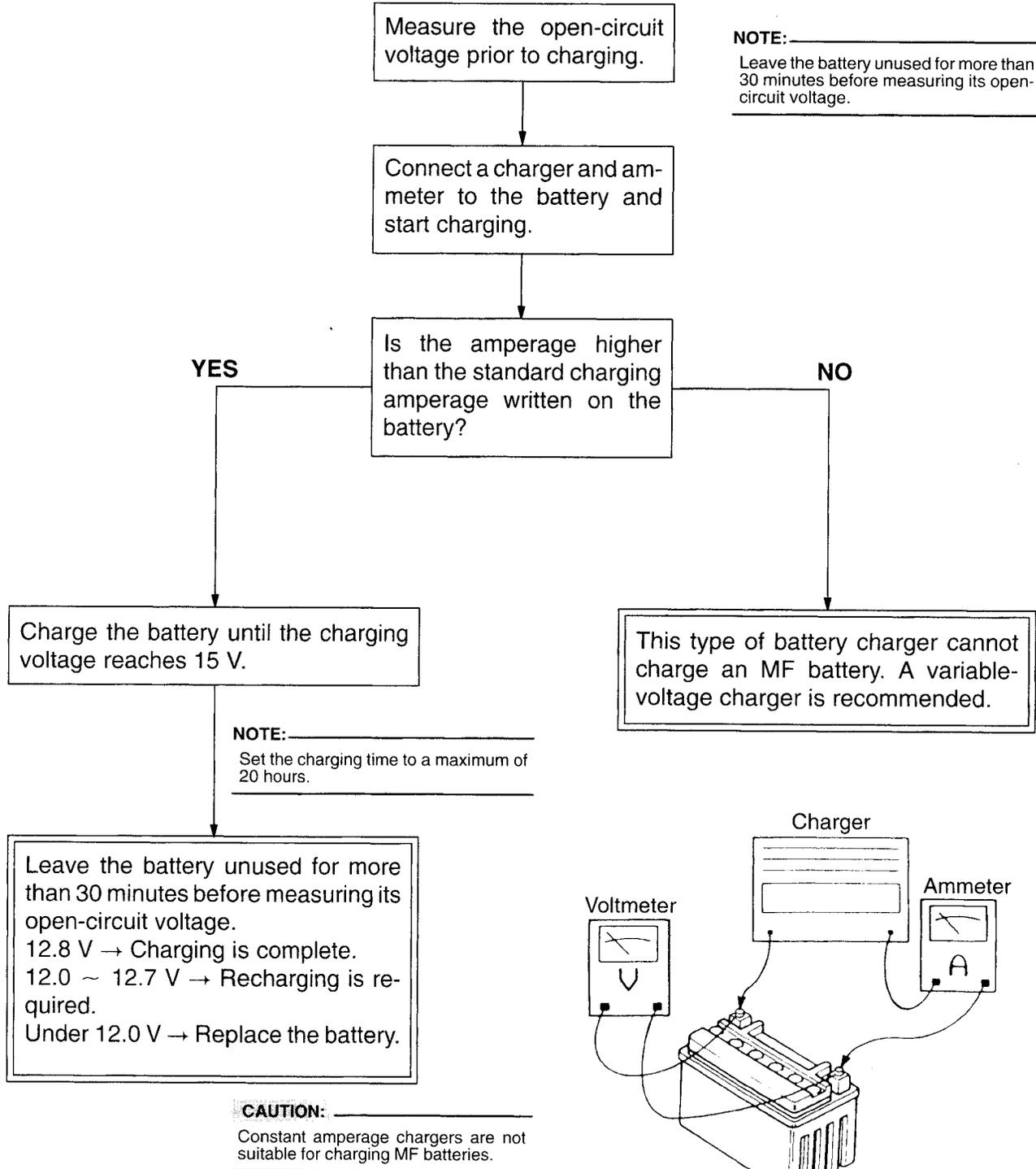
If the amperage does not exceed the standard charging amperage after 5 minutes, replace the battery.

If the required charging time exceeds 5 hours, it is advisable to check the charging amperage after 5 hours. If there is any change in the amperage, readjust the voltage to obtain the standard charging amperage.

Leave the battery unused for more than 30 minutes before measuring its open-circuit voltage.  
 12.8 V → Charging is complete.  
 12.0 ~ 12.7 V → Recharging is required.  
 Under 12.0 V → Replace the battery.

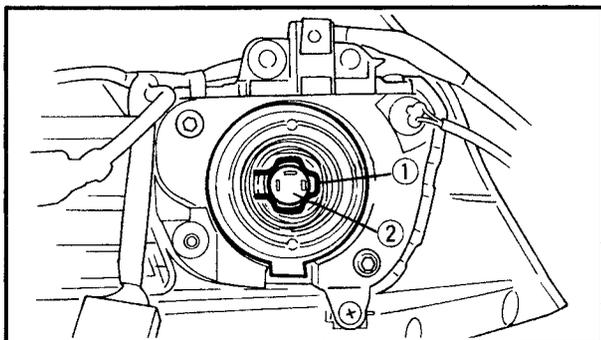
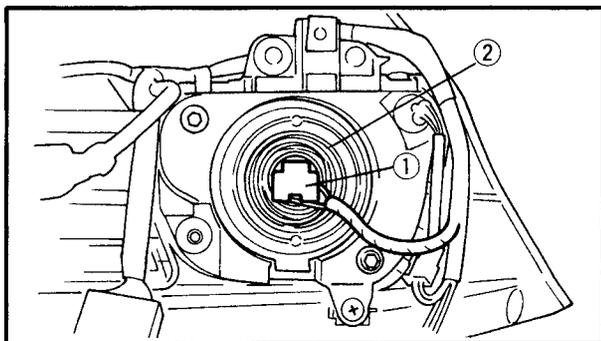


## Charging method using a constant-voltage charger









EB305051

## REPLACING THE HEADLIGHT BULBS

The following procedure applies to both of the headlight bulbs.

1. Disconnect:
  - headlight coupler ①
  - headlight bulb holder cover ②

2. Detach:
  - headlight bulb holder ①
3. Remove:
  - headlight bulb ②

### **⚠ WARNING**

Since the headlight bulb gets extremely hot, keep flammable products and your hands away from the bulb until it has cooled down.

4. Install:
  - headlight bulb **New**

Secure the new headlight bulb with the headlight bulb holder.

### **CAUTION:**

Avoid touching the glass part of the headlight bulb to keep it free from oil, otherwise the transparency of the glass, the life of the bulb and the luminous flux will be adversely affected. If the headlight bulb gets soiled, thoroughly clean it with a cloth moistened with alcohol or lacquer thinner.

5. Attach:
  - headlight bulb holder
6. Install:
  - headlight bulb holder cover
7. Connect:
  - headlight coupler

