



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.

EB301000

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). • Lithum 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 throughly. • 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.

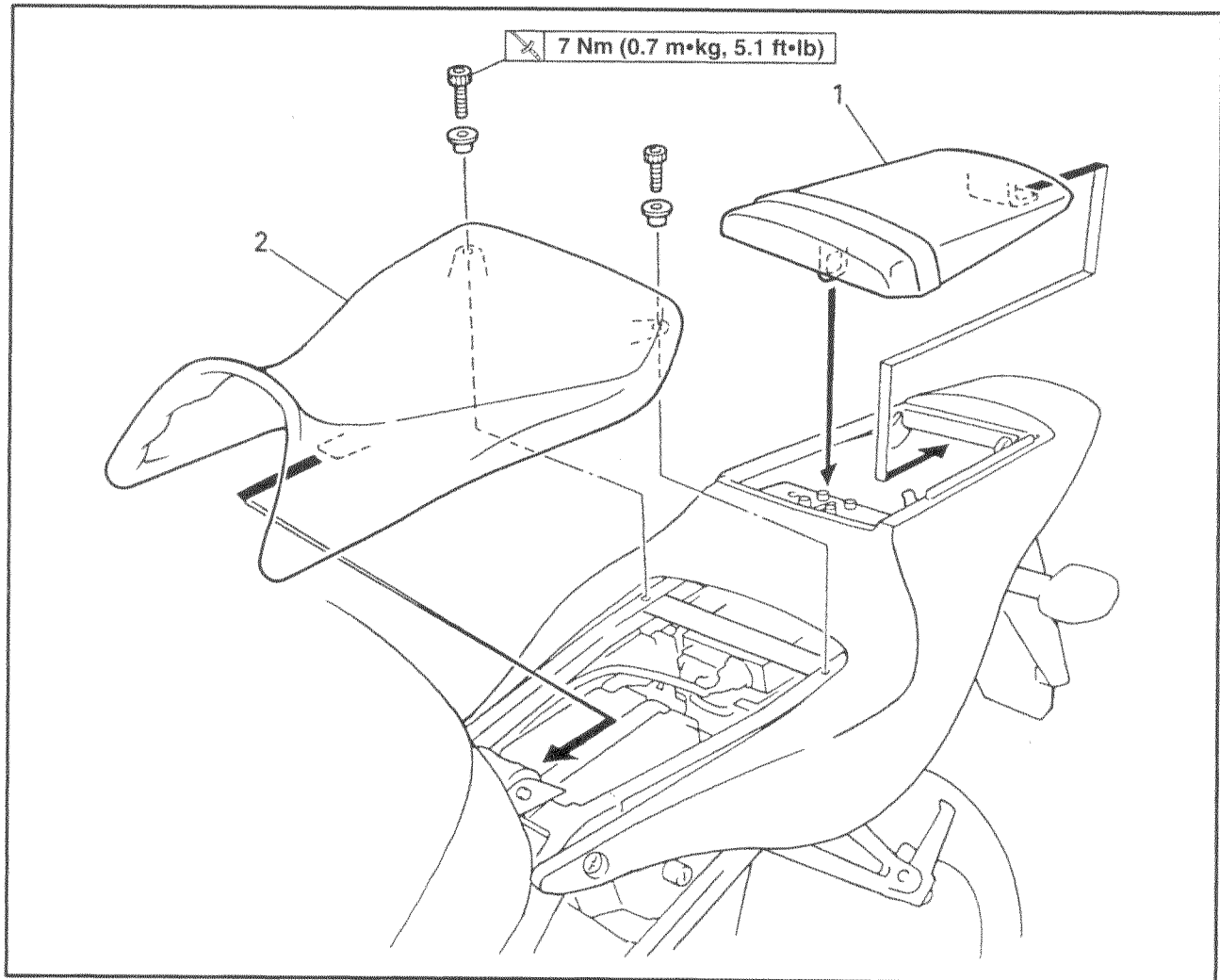
NOTE:

- 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.



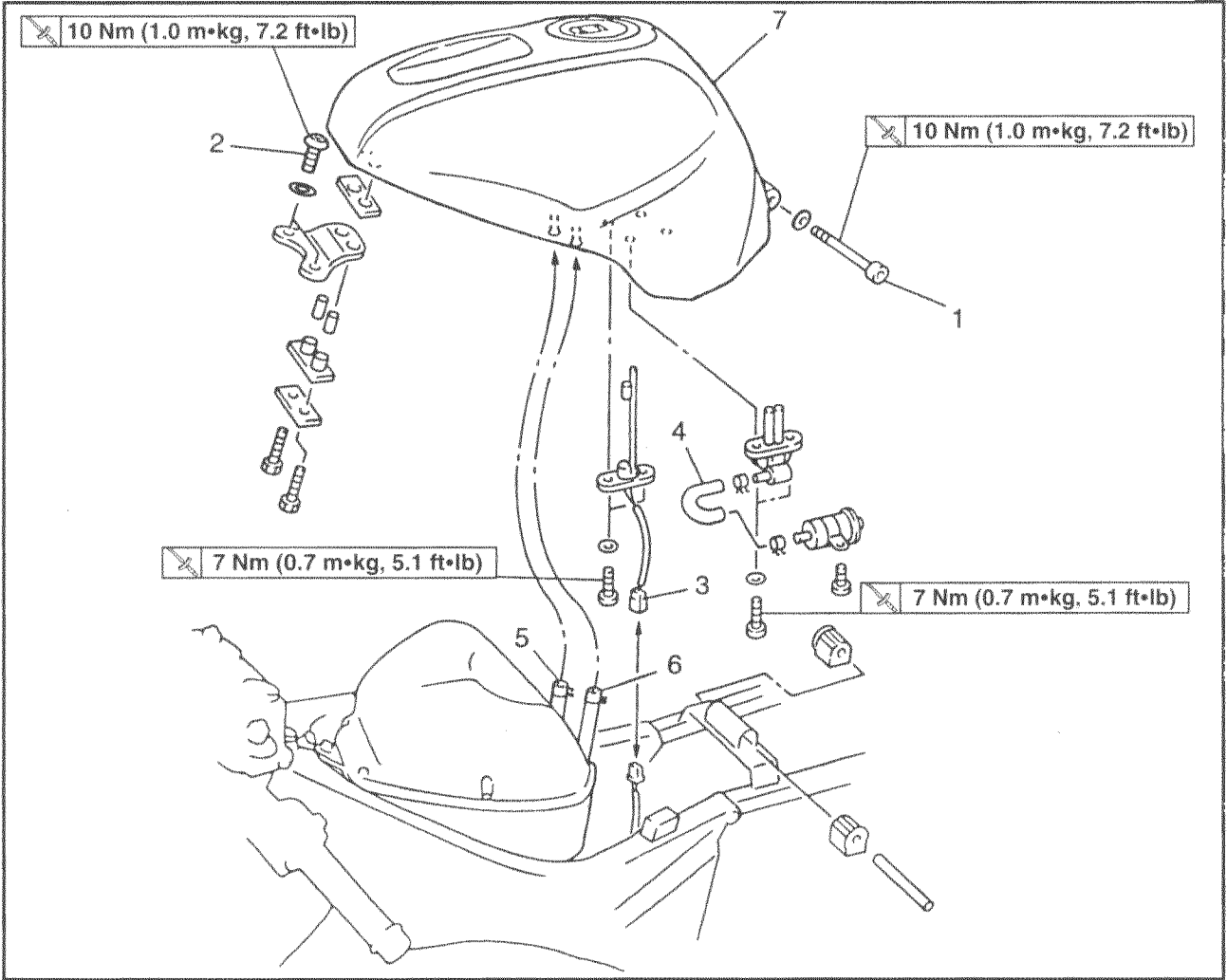
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RIDER AND PASSENGER SEATS



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

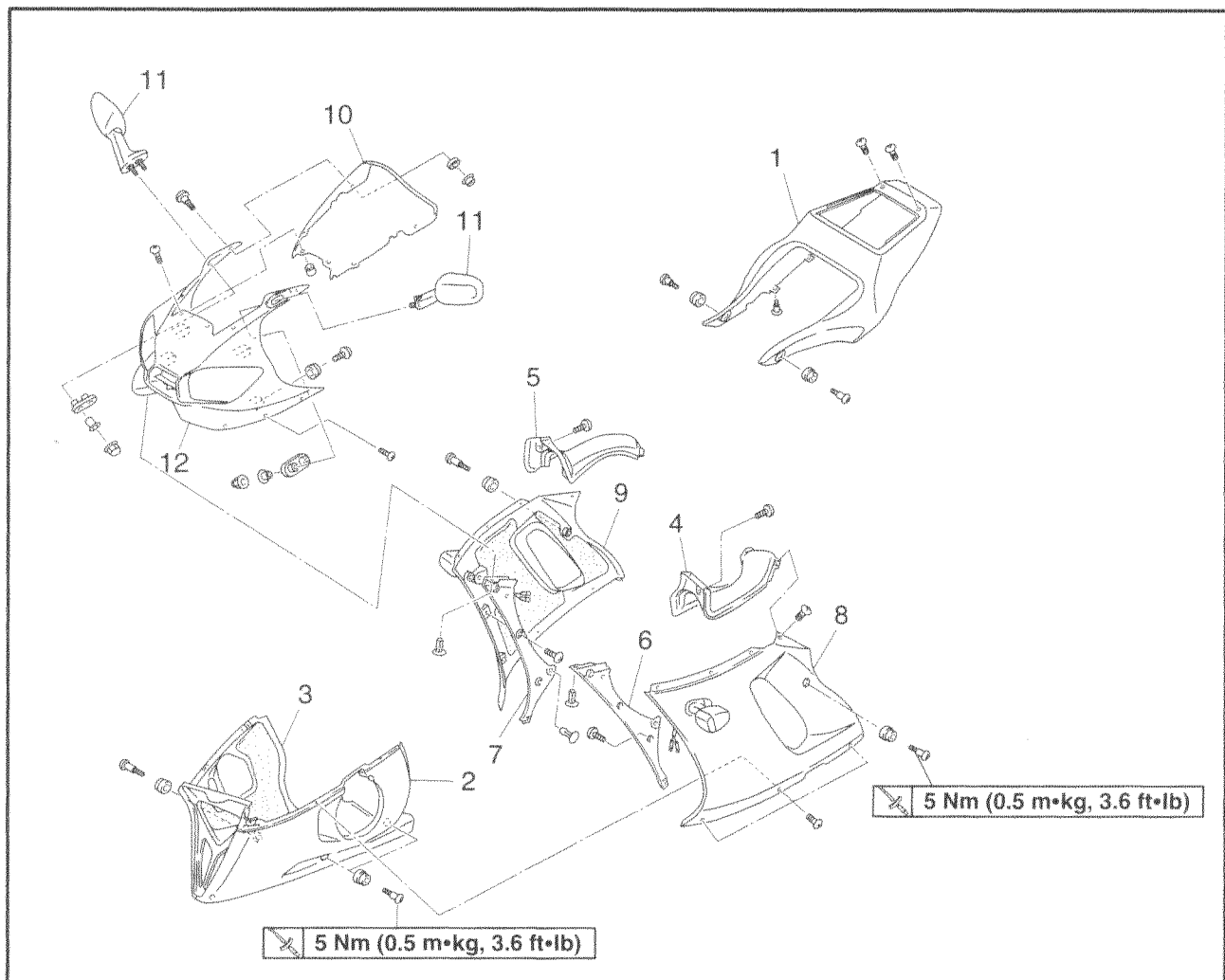
FUEL TANK



Order	Job/Part	Q'ty	Remarks
	Removing the fuel tank		
	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	NOTE: _____ 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.



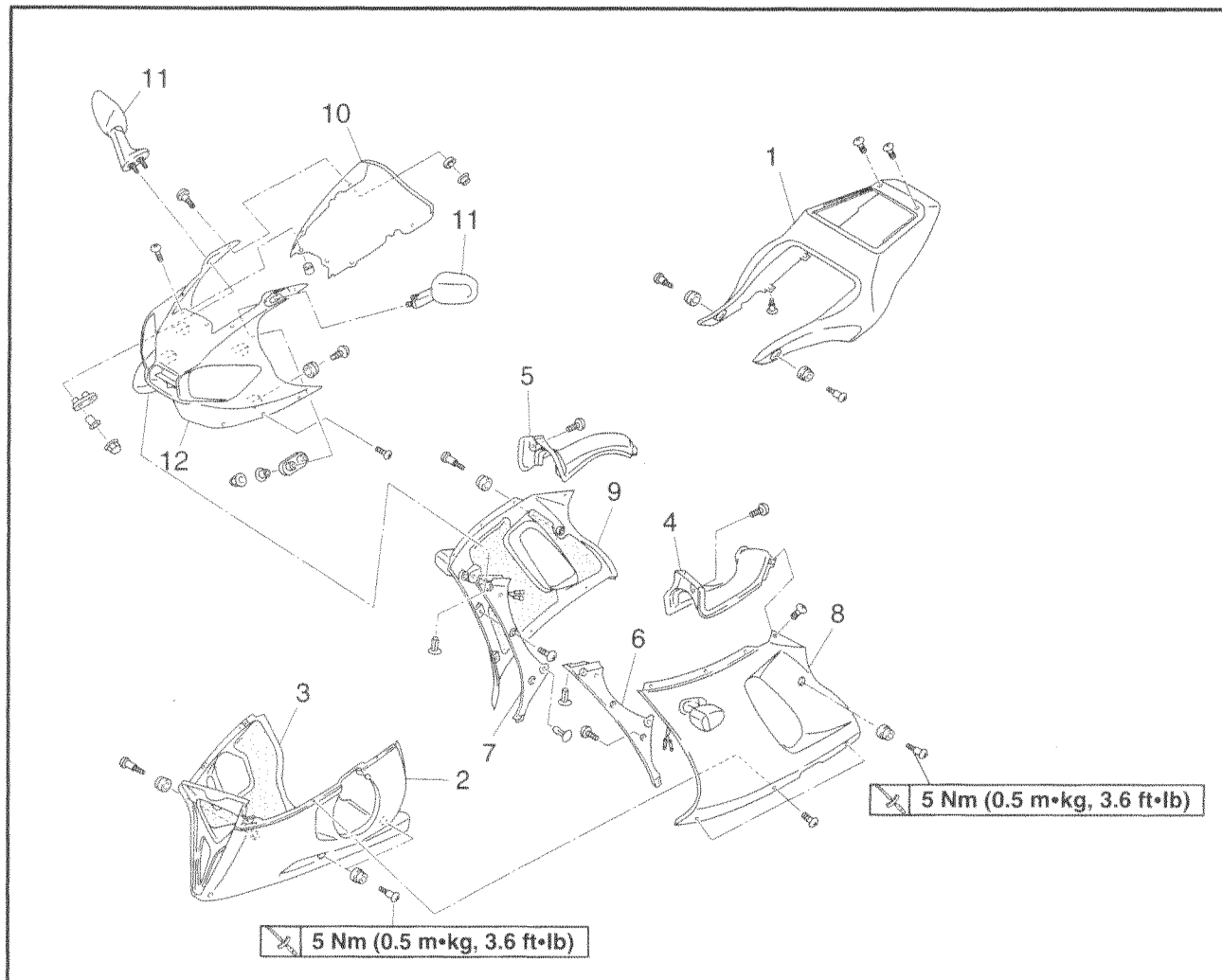
COWLINGS



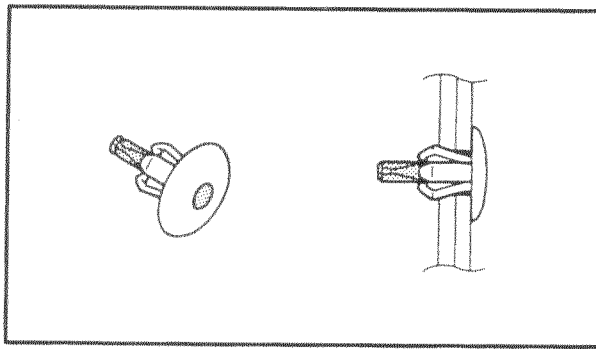
Order	Job/Part	Q'ty	Remarks
	Removing the cowlings		
	Rider and passenger seats		Remove the parts in the order listed Refer to "SEATS".
1	Rear cowl	1	
2	Bottom cowl (left)	1	
3	Bottom cowl (right)	1	
4	Front cowl inner panel (left)	1	
5	Front cowl inner panel (right)	1	
6	Side cowl inner panel (left)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



COWLINGS



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

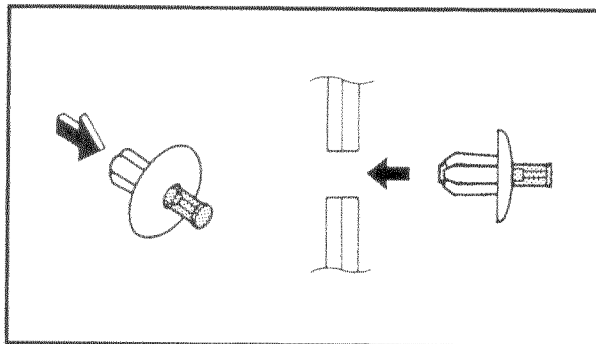
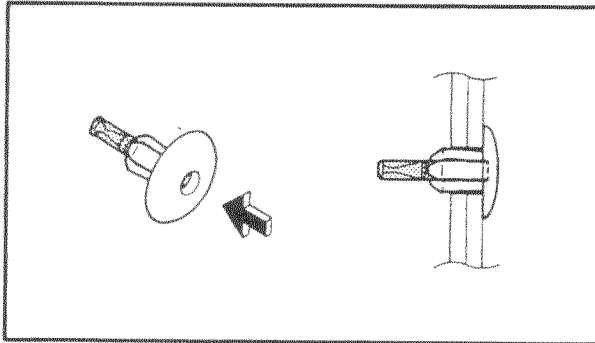
**REMOVAL**

1. Remove:

- rear cowl
- side cowlings

NOTE:

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

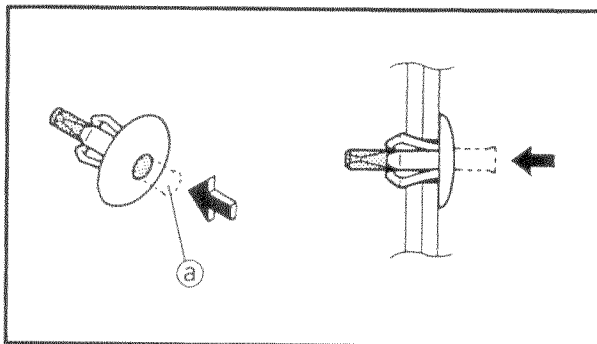
**INSTALLATION**

1. Install:

- side cowlings
- rear cowl

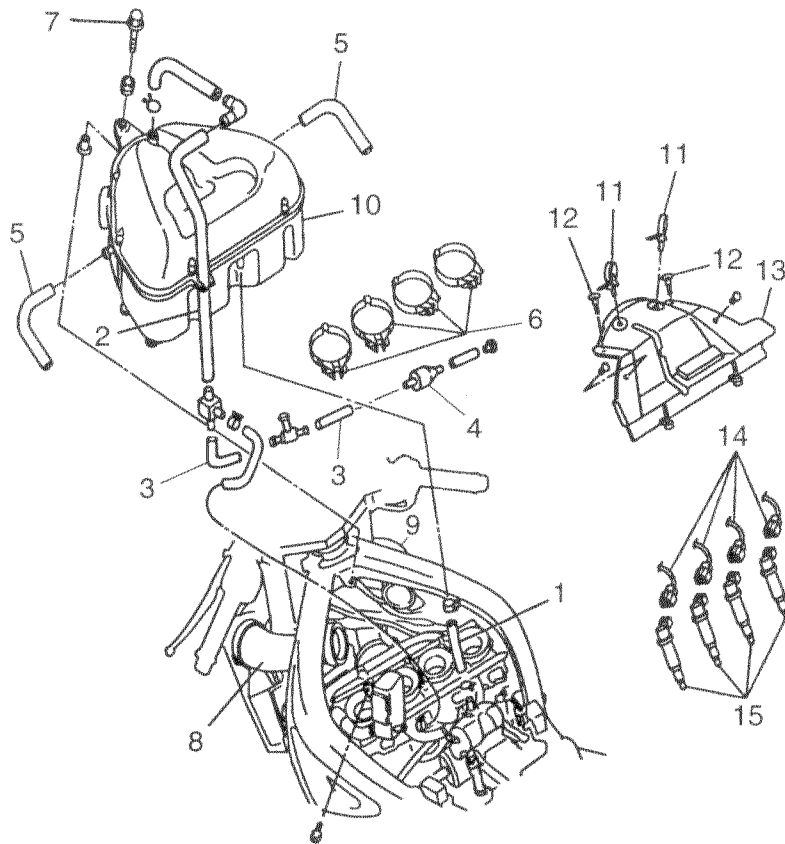
NOTE:

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 (a) in with a screwdriver. Make sure that the pin is flush with the fastener's head.

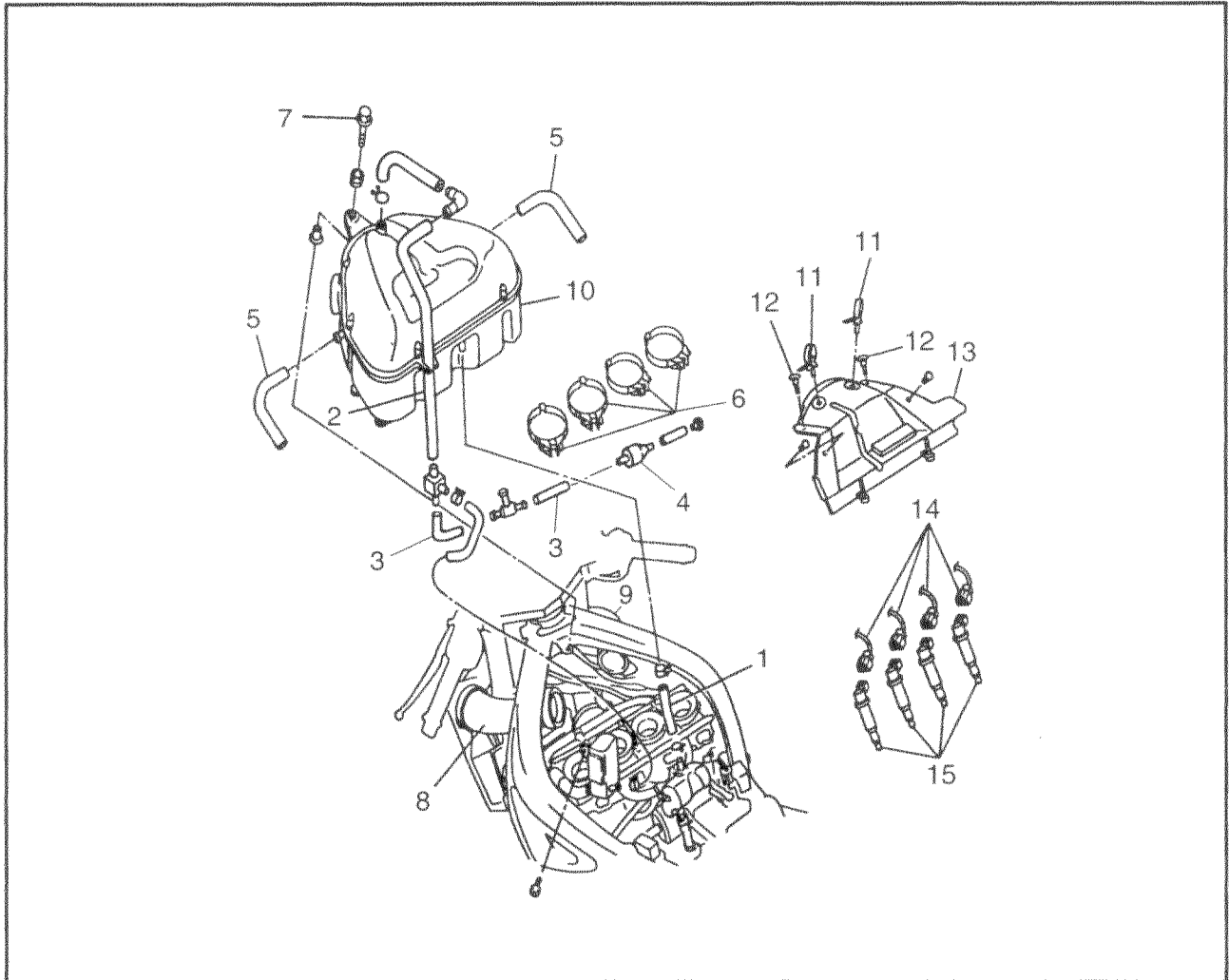




AIR FILTER CASE AND IGNITION COILS



Order	Job/Part	Q'ty	Remarks
	Removing the air filter case and ignition coils		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	



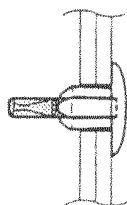
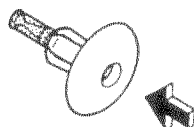
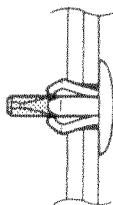
REMOVAL

1. Remove:

- heat protector plate

NOTE:

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



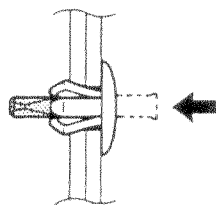
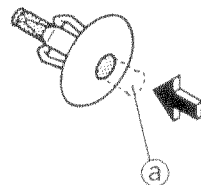
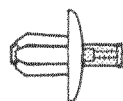
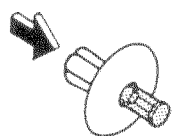
INSTALLATION

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.





EB303001

ENGINE**ADJUSTING THE VALVE CLEARANCE**

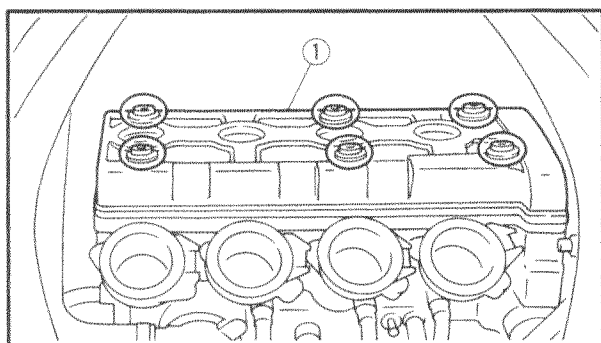
The following procedure applies to all of the valves.

NOTE:

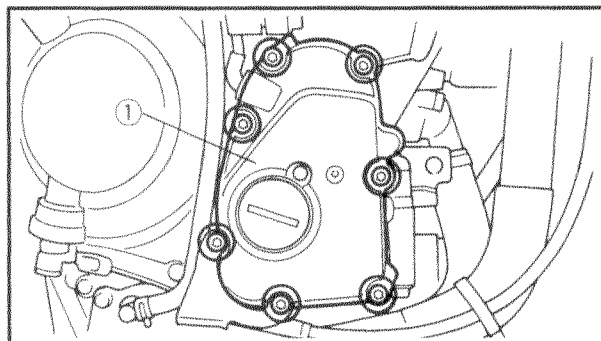
- Valve clearance adjustment should be made on a cold engine, at room temperature.
- When the valve clearance is to be measured or adjusted, the piston must be at top dead center (TDC) on the compression stroke.

1. Remove:

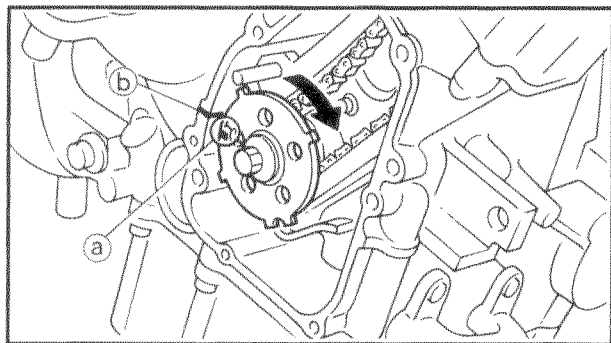
- rider seat
- fuel tank
Refer to "SEATS" and "FUEL TANK".
- air filter case
- heat protector plate
Refer to "AIR FILTER CASE AND IGNITION COILS".
- bottom cowlings
- side cowlings
Refer to "COWLINGS".
- carburetor assembly
Refer to "CARBURETORS" in chapter 6.
- radiator assembly
Refer to "RADIATOR"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

**2. Remove:**

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

**3. Remove:**

- pickup coil rotor cover (1)



4. Measure:

- valve clearance

Out of specification → Adjust



Valve clearance (cold)

Intake valve

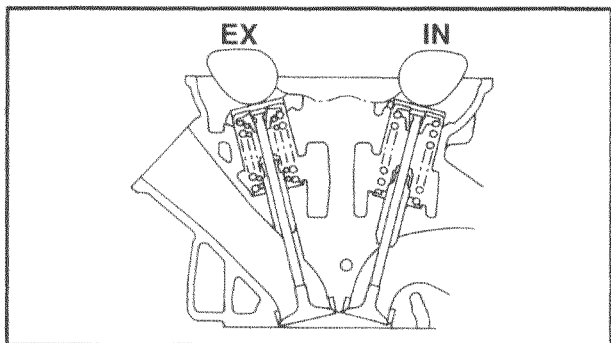
0.11 ~ 0.20 mm

(0.0043 ~ 0.0079 in)

Exhaust valve

0.21 ~ 0.30 mm

(0.0083 ~ 0.0118 in)



a. Turn the crankshaft clockwise.

b. When piston #1 is at TDC on the compression stroke, align the TDC mark (a) on the pickup coil rotor with the crankcase mating surface (b).

NOTE:

TDC on the compression stroke can be found when the camshaft lobes are turned away from each other.

c. Measure the valve clearance with a thickness gauge (1).

NOTE:

- If the valve clearance is incorrect, record the measured reading.
- Measure the valve clearance in the following sequence.

Valve clearance measuring sequence

Cylinder #1 → #2 → #4 → #3

A Front

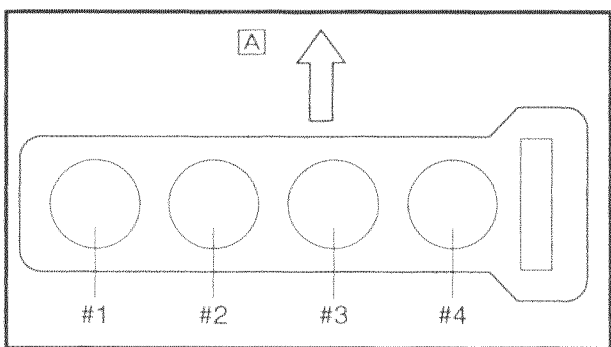
d. To measure the valve clearances of the other cylinders, starting with cylinder #1 at TDC, turn the crankshaft counterclockwise as specified in the following table.

B Degrees that the crankshaft is turned counterclockwise

C Cylinder

D Combustion cycle

Cylinder #2	180°
Cylinder #4	360°
Cylinder #3	540°

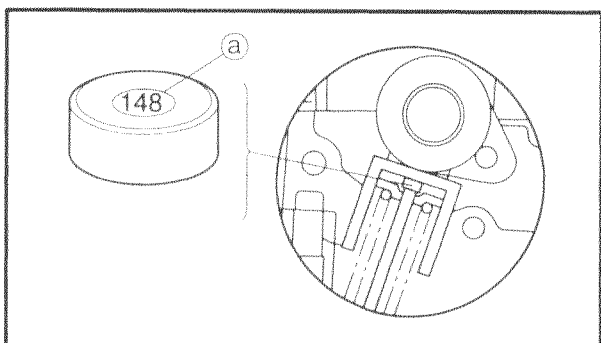


B →		0°	180°	360°	540°	720°
C	#1	D				
	#2		D			
	#3				D	
	#4			D		

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- NOTE:** _____
- Refer to “CAMSHAFTS” in chapter 4.
 - When removing the timing chain from camshafts, fasten the timing chain with a wire to retrieve it if it falls into the crankcase.



- | Valve pad thickness range | | Available valve pads |
|---------------------------|-------------------|---|
| Nos.
120 ~
240 | 1.20 ~
2.40 mm | 25 thicknesses in
0.05 mm increments |

- 3-13



- 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:

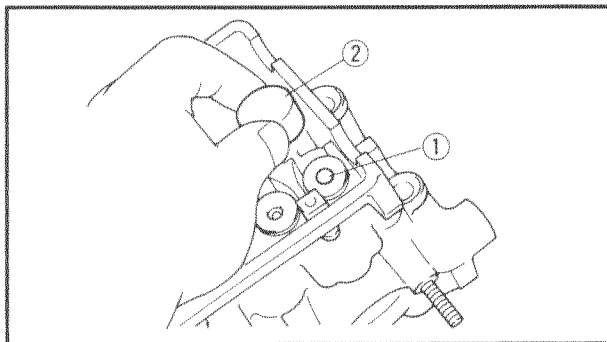
Original valve pad number = 148 (thickness = 1.48 mm)

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.



Camshaft cap bolt
10 Nm (1.0 m•kg, 7.2 ft•lb)

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

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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
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
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.

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
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
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
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
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
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.

Example:

Valve Clearance (cold)

0.21 ~ 0.30 mm

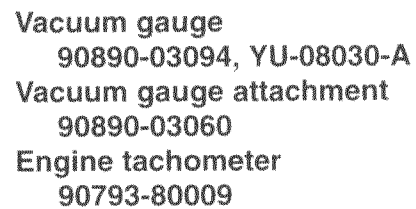
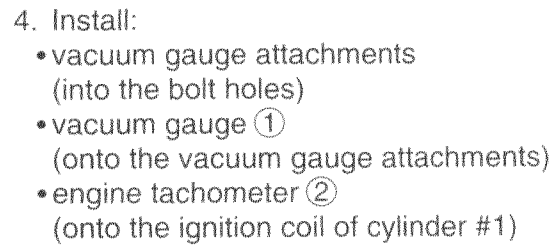
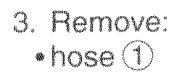
Rounded value 175

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</

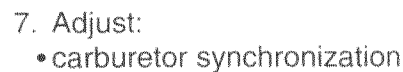
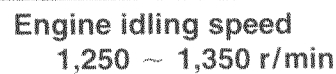


5. Start the engine and let it warm up for several minutes.

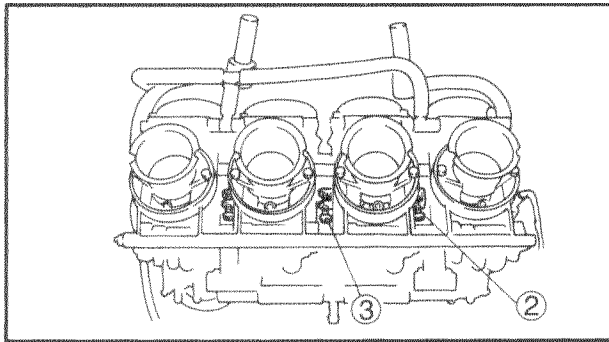
6. Measure:

- engine idling speed

Out of specification → Adjust.
Refer to “ADJUSTING THE ENGINE IDLING SPEED”.



a. Synchronize carburetor #1 to carburetor #2 by turning the synchronizing screw ① in either direction until both gauges read the same.

**NOTE:**

After each step, rev the engine two or three times, each time for less than a second, and check the synchronization again.

- b. Synchronize carburetor #4 to carburetor #3 by turning the synchronizing screw ② in either direction until both gauges read the same.
- c. Synchronize carburetor #2 to carburetor #3 by turning the synchronizing screw ③ in either direction until both gauges read the same.



**Vacuum pressure at engine
idling speed**

24.0 kPa (0.24 kg/cm², 3.41 psi)

NOTE:

The difference in vacuum pressure between two carburetors should not exceed 1.33 kPa (10 mm Hg).



- 8. Measure:
 - engine idling speedOut of specification → Adjust.
- 9. Stop the engine and remove the measuring equipment.
- 10. Adjust:
 - throttle cable free playRefer 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)

EB303020

ADJUSTING THE ENGINE IDLING SPEED**NOTE:**

Prior to adjusting the engine idling speed, the carburetor synchronization should be adjusted properly, the air filter element should be clean, and the engine should have adequate compression.

- 1. Start the engine and let it warm up for several minutes.



7. Adjust:

- throttle cable free play

Refer to "ADJUSTING THE THROTTLE CABLE FREE PLAY".



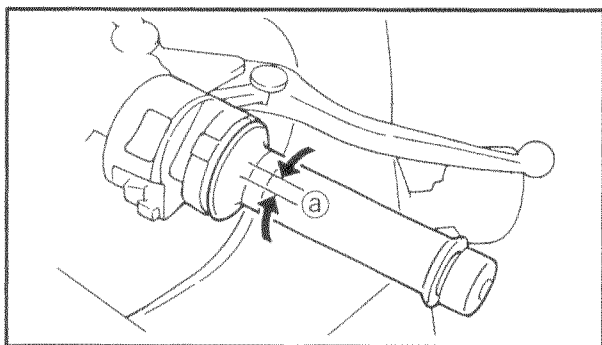
Throttle cable free play
(at the flange of the throttle grip)
6 ~ 8 mm (0.24 ~ 0.31 in)

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
- fuel tank

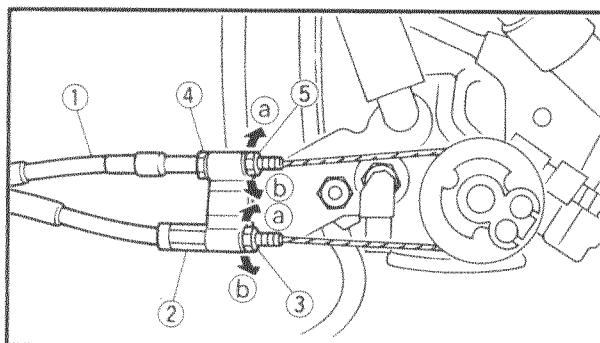
Refer to "SEATS" and "FUEL TANK".

- air filter case
- heat protector plate

Refer to "AIR FILTER CASE AND IGNITION COILS".

ADJUSTING THE THROTTLE CABLE FREE PLAY

CHK
ADJ



3. Adjust:
 - throttle cable free play

NOTE:

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

Carburetor side

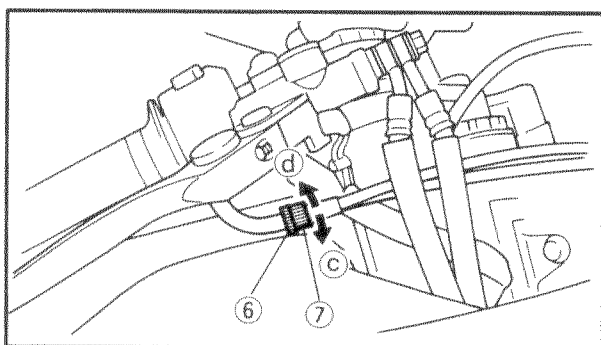
- a. Loosen the locknut ② on the decelerator cable.
- b. Turn the adjusting nut ③ in direction (a) or (b) to take up any slack on the decelerator cable.
- c. Loosen the locknut ④ on the accelerator cable.
- d. Turn the adjusting nut ⑤ in direction (a) or (b) until the specified throttle cable free play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

Direction (a)	Throttle cable free play is increased.
Direction (b)	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 (c) or (d) until the specified throttle cable free play is obtained.

Direction (c)	Throttle cable free play is increased.
Direction (d)	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: _____

- Remove the coupler.
- Turn the coil counterclockwise. (5 to 6 turns would be adequate.)
- Pull out the coil upward.
Never pry the coupler with a screw driver.
- Press the coil in the plug hole by hand as far as it will go.
- Turn the coil clockwise and screw it in, 5 to 6 turns would be adequate.
- 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**

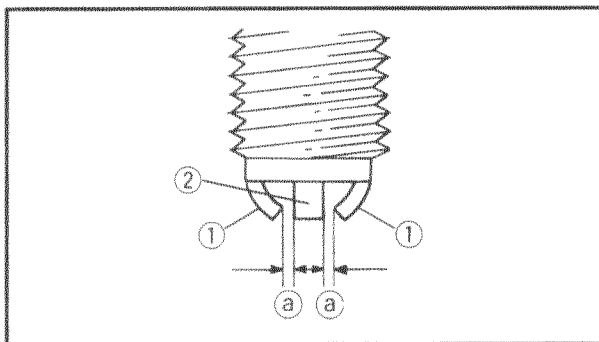
type (manufacturer)

CR10EK (NGK)

CR9EK (NGK) (California)

CHECKING THE SPARK PLUGS/ CHECKING THE IGNITION TIMING

CHK
ADJ




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 (a)
(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:

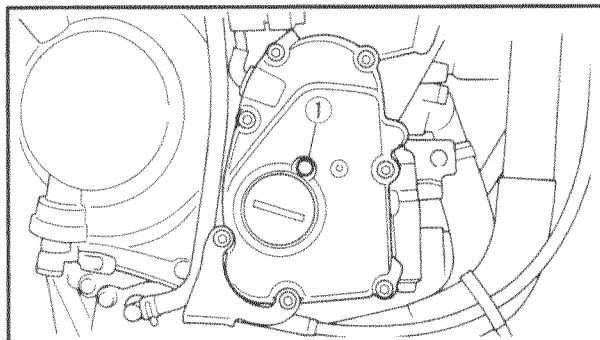
Before installing the spark plug, clean the spark plug and gasket surface.

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.



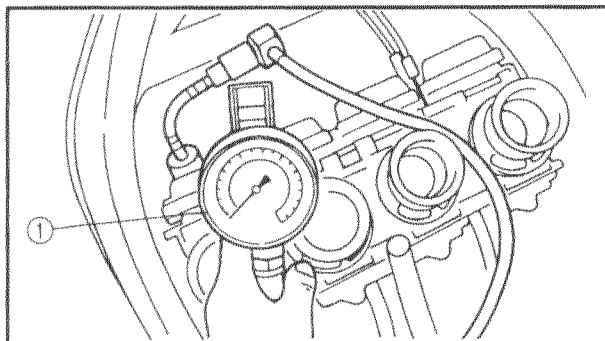
1. Remove:
 - bottom cowlings
Refer to "COWLINGS".
 - rider seat
 - fuel tank
Refer to "SEATS" and "FUEL TANK".
 - air filter case
Refer to "AIR FILTER CASE AND IGNITION COILS".
 - timing mark accessing screw (1)



4. Remove:
 - spark plug

CAUTION:

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



5. Install:
 - compression gauge ①



Compression gauge
90890-03081, YU-33223
Adapter
90890-04136

6. Measure:
 - compression pressure
 - Out of specification → Refer to steps (c) and (d).



Compression pressure (at sea level)

Minimum

1300 kPa (13.0 kg/cm²,
184.90 psi)

Standard

1550 kPa (15.5 kg/cm²,
224.75 psi)

Maximum

1600 kPa (16.0 kg/cm²,
227.57 psi)

- a. Set the main switch to "ON".
- b. With the throttle wide open, crank the engine until the reading on the compression gauge stabilizes.

⚠ WARNING

To prevent sparking, ground all spark plug leads before cranking the engine.

NOTE:

The difference in compression pressure between cylinders should not exceed 100 kPa (1 kg/cm², 14.22 psi).




- 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.

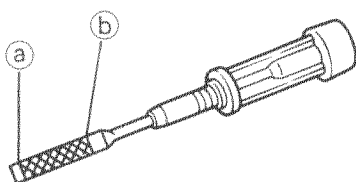
2. Start the engine, let it idle for several minutes, and then stop it.

3. Check:

- engine oil level

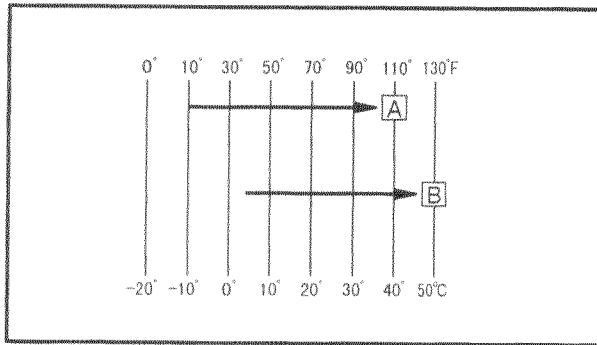
The engine oil level should be between the minimum level mark (a) and maximum level mark (b).

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



CHECKING THE ENGINE OIL LEVEL/ CHANGING THE ENGINE OIL

CHK
ADJ



Recommended oil:

At -10°C (10°F) or higher **A**:

Yamalube 4 (10W-30)
or SAE

10W-30 type SE motor oil

At 5°C (40°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.

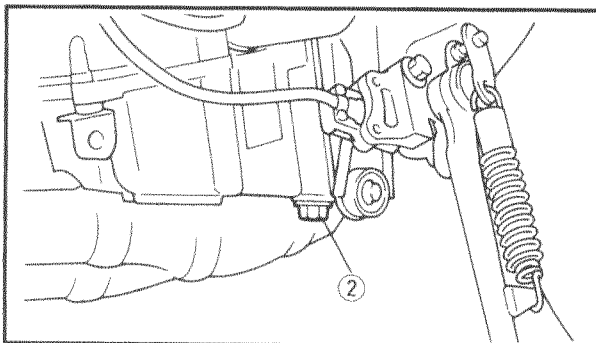
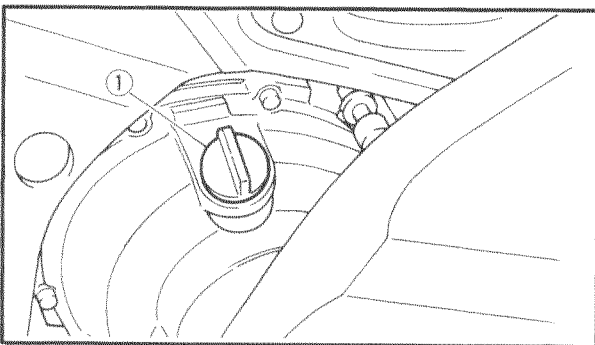
NOTE:

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:

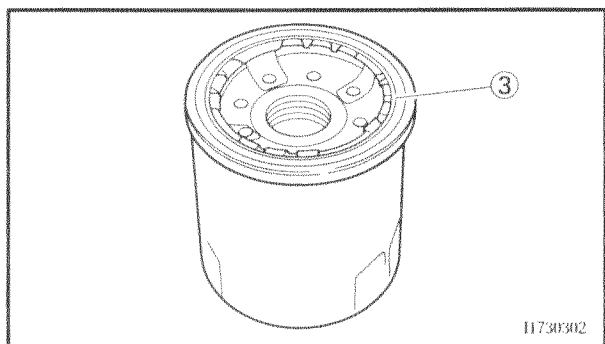
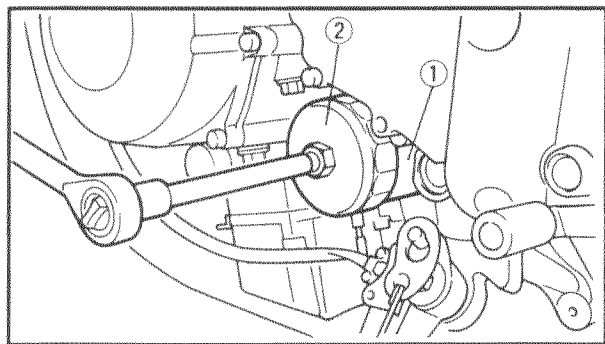
Before checking the engine oil level, wait a few minutes until the oil has settled.



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)



11730302

6. If the oil filter cartridge is also to be replaced, perform the following procedure.

- a. Remove the oil filter cartridge ① with an oil filter wrench ②.



Oil filter wrench
90890-01426, YU-38411

- b. Lubricate the O-ring ③ of the new oil filter cartridge with a thin coat of engine oil.

CAUTION:

Make sure that the O-ring ③ is positioned correctly in the groove of the oil filter cartridge.

- c. Tighten the new oil filter cartridge to specification with an oil filter wrench.



Oil filter cartridge
17 Nm (1.7 m•kg, 12 ft•lb)

7. Check:

- engine oil drain bolt washer
Damage → Replace.

8. Install:

- engine oil drain bolt

43 Nm (4.3 m•kg, 31 ft•lb)

9. Fill:

- crankcase
(with the specified amount of the recommended engine oil)



Quantity

Total amount

3.5 L (3.7 US qt)

Without oil filter cartridge replacement

2.5 L (2.64 US qt)

With oil filter cartridge replacement

2.7 L (2.85 US qt)

10. Install:

- engine oil filler cap

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

12. Check:

- engine
(for engine oil leaks)



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

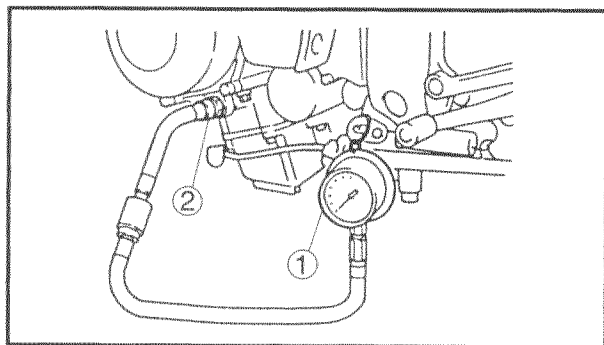
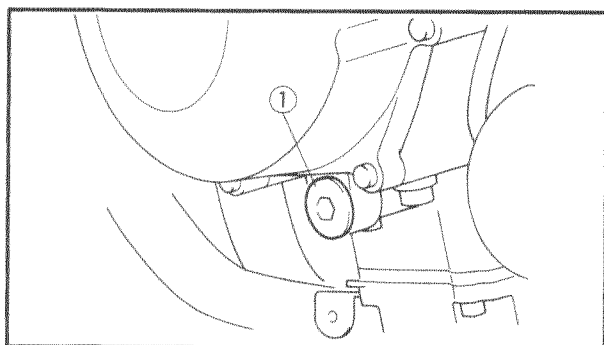
240 kpa (2.4 kg/cm², 34.1 psi)

Engine speed

Approx. 6000 r/min

Engine oil temperature

96°C (205°F)



CHK
ADJ

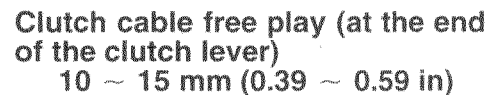
Regarding the oil pressure as its own data may fluctuate depending on the oil temperature and viscosity, the oil pressure may fluctuate when measuring. The following data should be used only as a reference when measuring the engine oil pressure.

Engine oil pressure	Possible cause
Below specification	Faulty oil pump Clogged oil filter Leaking oil passage Broken or damaged oil seal
Above specification	Leaking oil passage Faulty oil filter Oil viscosity too high

- 20 Nm (2.0 m•kg, 14 ft•lb)

ADJUSTING THE CLUTCH CABLE FREE PLAY

- clutch cable free play (a)
Out of specification → Adjust.



- clutch cable free play



a. Turn the adjusting bolt ① in direction ② or ③ until the specified clutch cable free play is obtained.

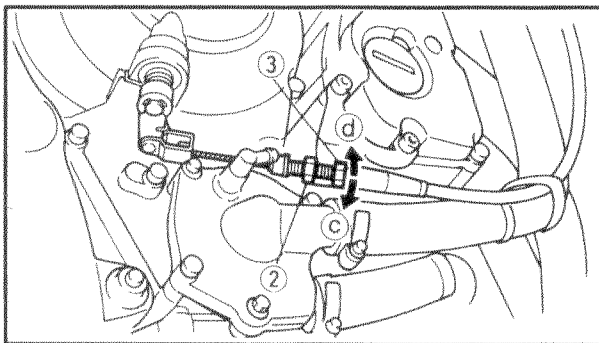
Direction (a)	Clutch cable free play is increased.
Direction (b)	Clutch cable free play is decreased.

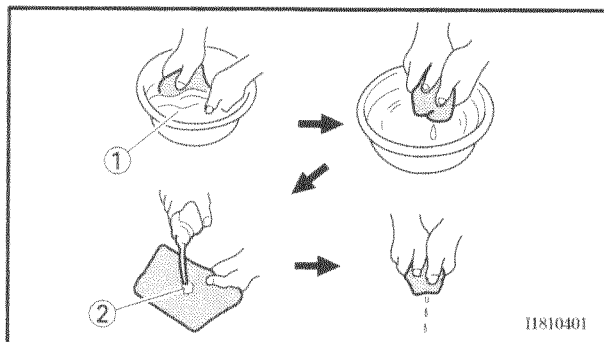
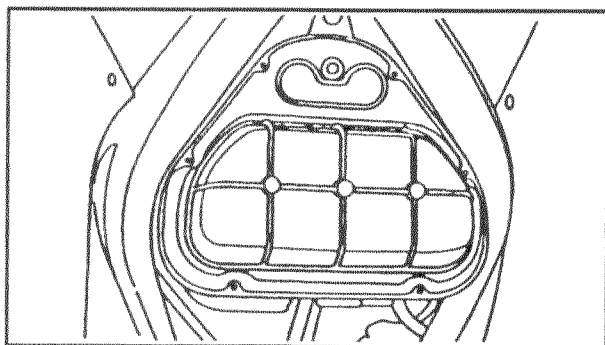
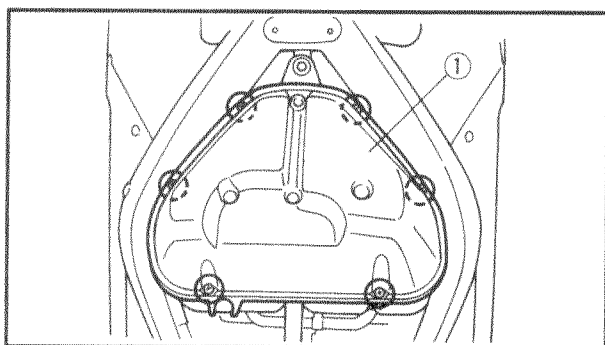
If the specified clutch cable free play cannot be obtained on the handlebar side of the cable, use the adjusting nut on the engine side.

- Loosen the locknut ②.
- Turn the adjusting nut ③ in direction ③ or ④ until the specified clutch cable free play is obtained.

Direction (c)	Clutch cable free play is increased.
Direction (d)	Clutch cable free play is decreased.

- [illegible]





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

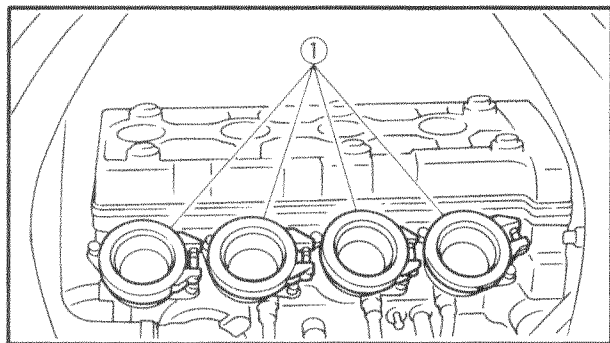
CAUTION:

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

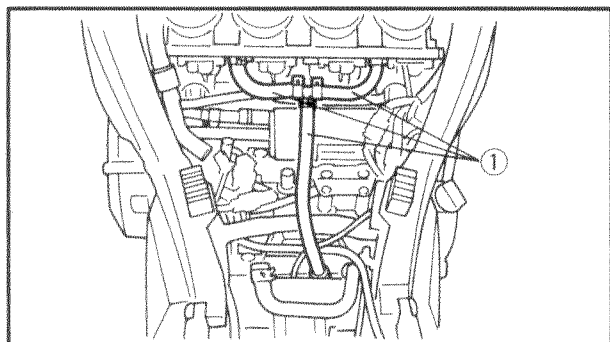
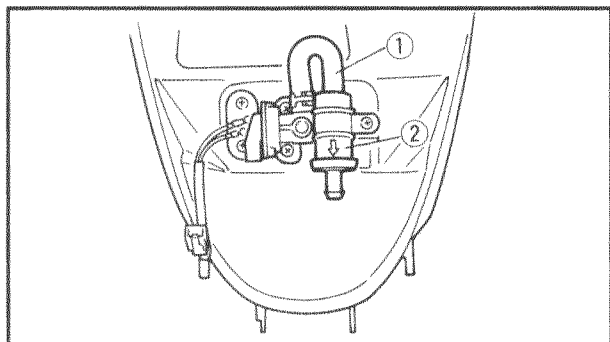
CHECKING THE FUEL HOSES AND FUEL FILTER

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.

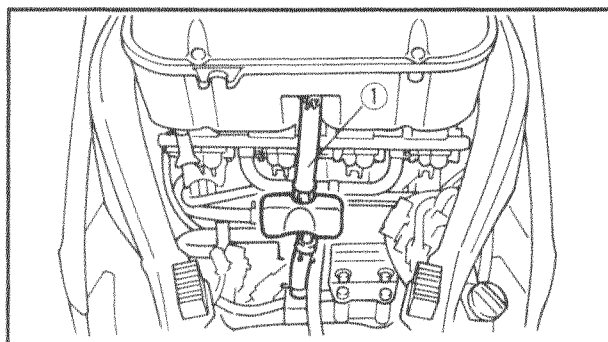
NOTE:

- 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



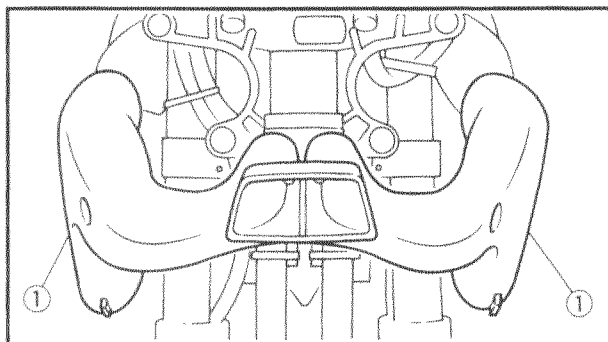
EB303190

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.

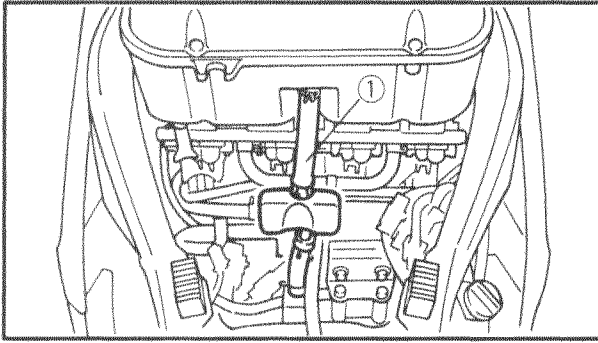


EAS00092

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:

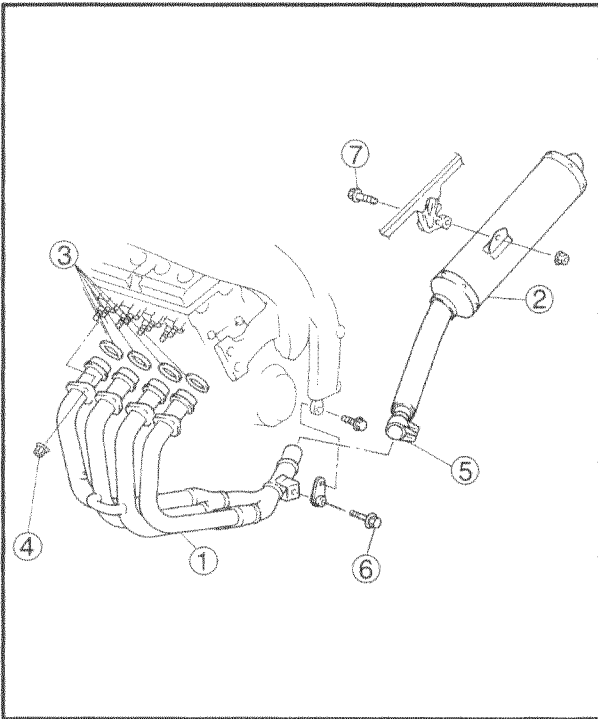
- crankcase breather hose (1)
Cracks/damage → Replace.
Loose connection → Connect properly.

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)
Cracks/damage → Replace.
- muffler (2)
Cracks/damage → Replace.
- gasket (3)
Exhaust gas leaks → Replace.

3. Measure:

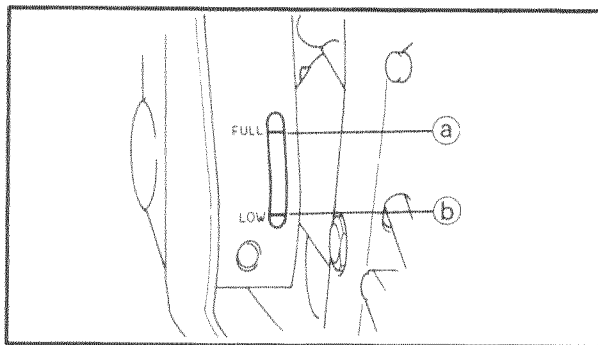
- tightening torque



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:

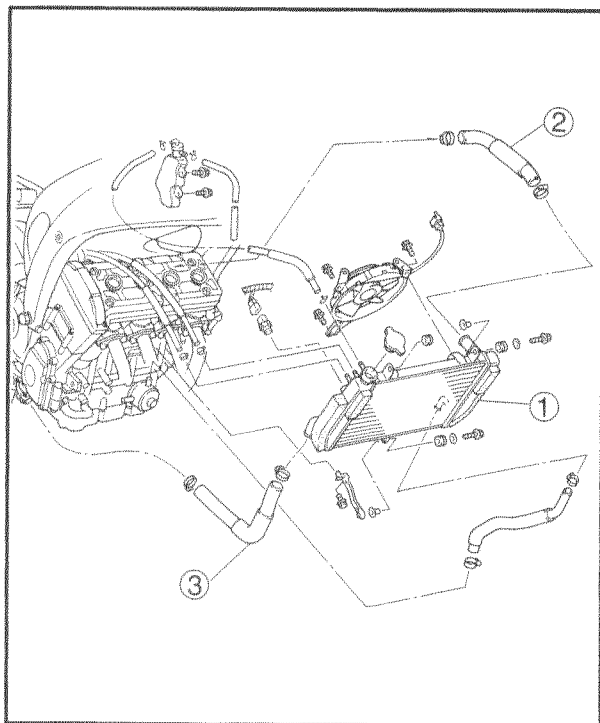
- coolant level

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.



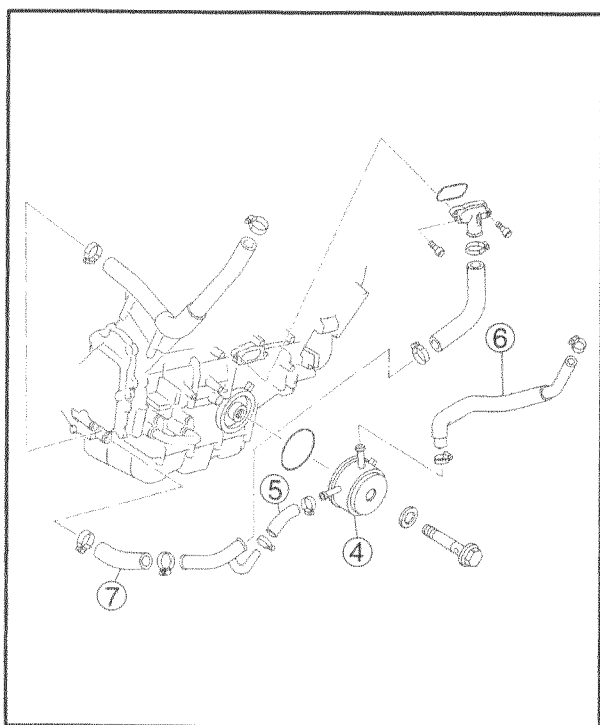
3. Start the engine, warm it up for several minutes, and then turn it off.

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:

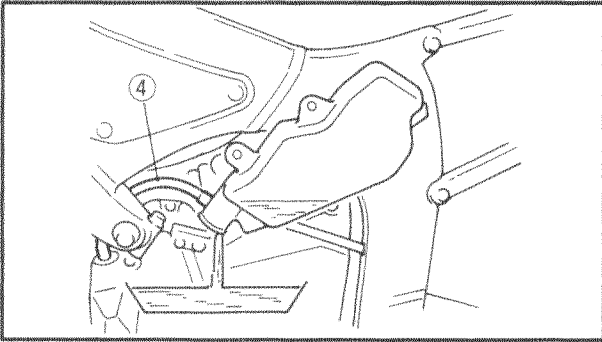
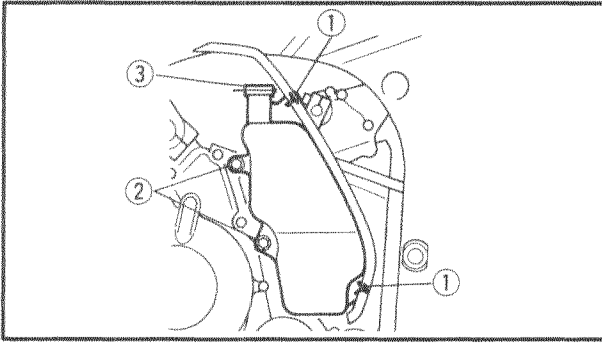
- radiator (1)
- radiator inlet hose (2)
- radiator outlet hose (3)
- oil cooler (4)
- oil cooler inlet hose (5)
- oil cooler outlet hose (6)
- water pump outlet hose (7)

Cracks/damage → Replace.

Refer to "COOLING SYSTEM" in chapter 5.

3. Install:

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



EB303240

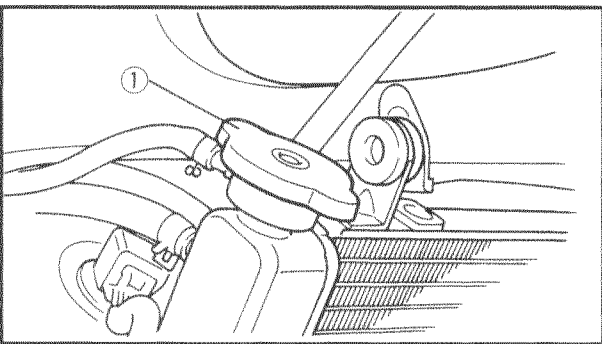
CHANGING THE COOLANT

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)

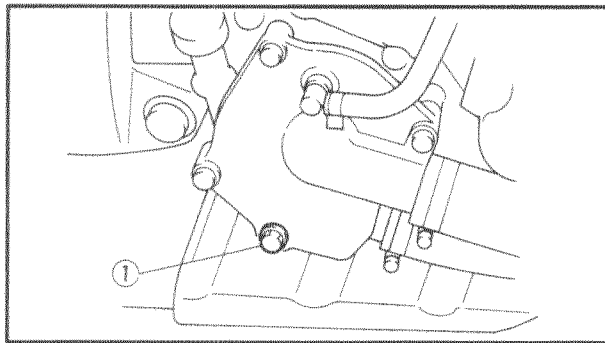
⚠ WARNING

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:

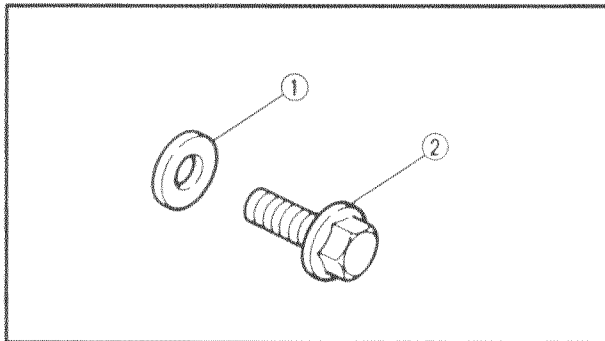
Place a thick rag or a towel over the radiator cap and slowly turn the radiator cap counterclockwise toward the detent to allow any residual pressure to escape. When the hissing sound has stopped, turn the radiator cap counterclockwise while pressing down on it and then remove it.

CHANGING THE COOLANT


CHK
ADJ

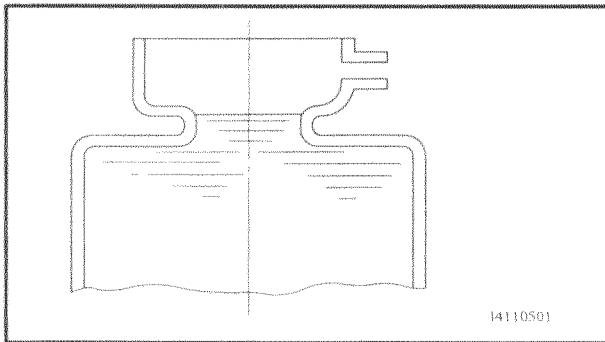


6. Remove:
 - coolant drain bolt ①
(along with the copper washer)
7. Drain:
 - coolant
8. Check:
 - copper washer ①
 - coolant drain bolt ②Damage → Replace



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)



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

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.

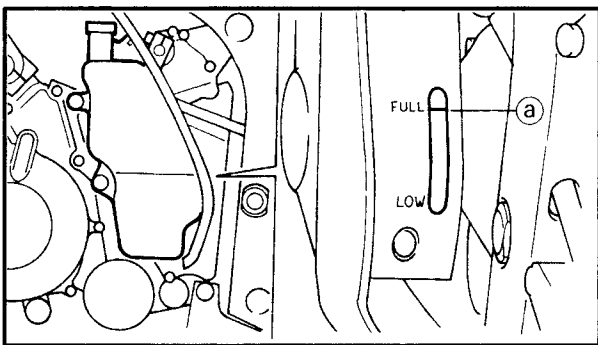


CAUTION:

- 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 cowl
 - bottom cowl
- Refer to "COWLINGS".



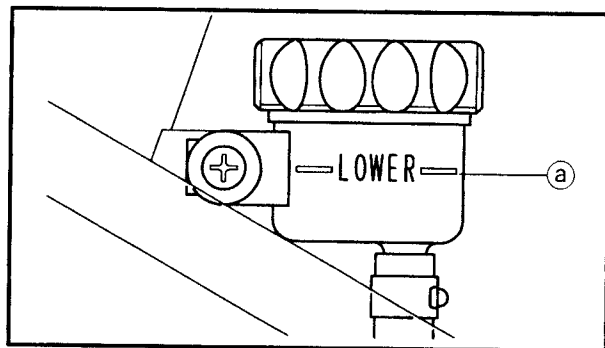
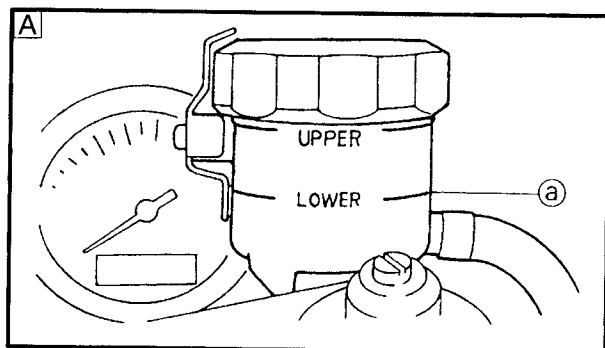
EB304020

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.



**Recommended brake fluid
DOT 4**

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:

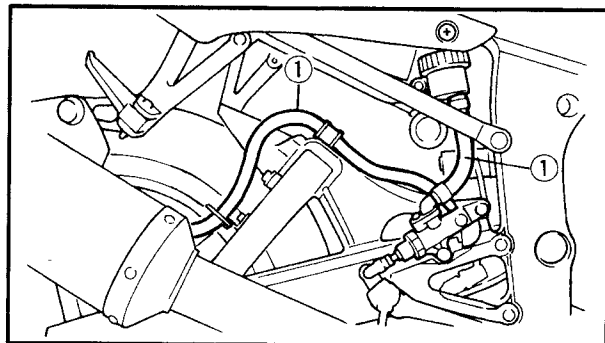
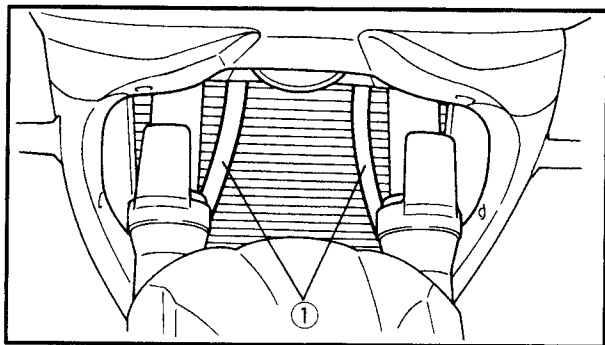
Brake fluid may damage painted surfaces and plastic parts. Therefore, always clean up any spilt brake fluid immediately.

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.



NOTE:

1. Measure:

-

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.

c. Tighten both locknuts.

- d. Make sure that the installed shift rod length is within specification.

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.

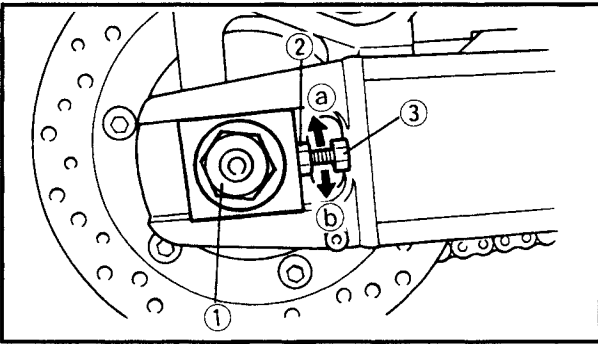
1. Stand the motorcycle on a level surface.

⚠ 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.



2. Rotate the rear wheel several times and check the drive chain to locate its tightest point.
3. Measure:
 - drive chain slack (a)Out of specification → Adjust.



Drive chain slack
40 ~ 50 mm (1.57 ~ 1.97 in)

- 4. Adjust:
 - drive chain slack

- Loosen the wheel axle nut ①.
- Loosen both locknuts ②.
- Turn both adjusting bolts ③ in direction ④ or ⑤ until the specified drive chain slack is obtained.

Direction (a)	Drive chain slack is reduced.
Direction (b)	Drive chain slack is increased.

NOTE:

To maintain the proper wheel alignment, adjust both sides evenly.

- d. Tighten both locknuts to specification.



Locknut
16 Nm (1.6 m•kg, 12 ft•lb)

- e. Tighten the wheel axle nut to specification.



Wheel axle nut
150 Nm (15.0 m•kg, 108 ft•lb)



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.



Recommended lubricant
Engine oil or chain lubricant
suitable for O-ring chains

EB304130

CHECKING AND ADJUSTING THE STEERING HEAD

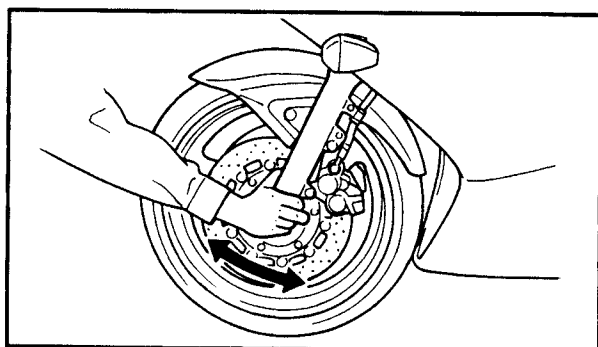
1. Stand the motorcycle on a level surface.

⚠ WARNING

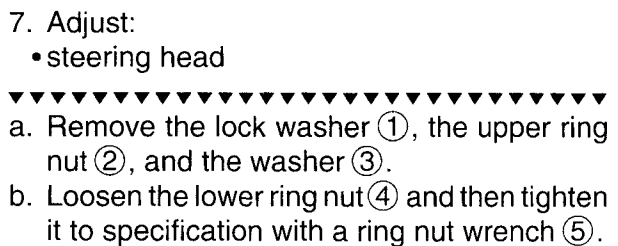
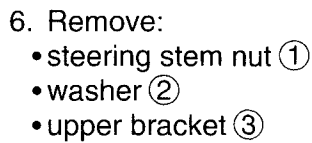
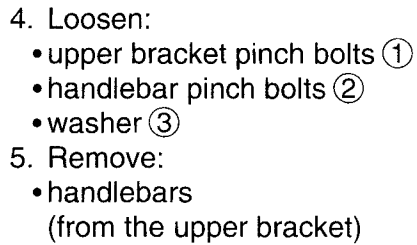
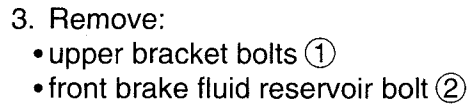
Securely support the motorcycle so that there is no danger of it falling over.

NOTE:

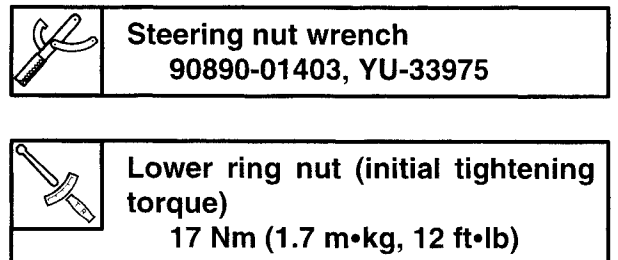
Place the motorcycle on a suitable stand so that the front wheel is elevated.



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



NOTE: _____
Set the torque wrench at a right angle to the steering nut wrench.





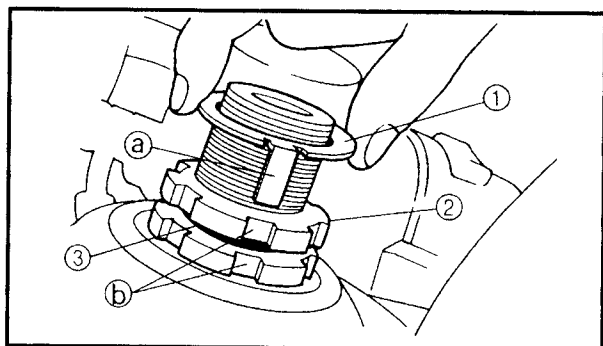
- c. Loosen the lower ring nut completely, then tighten it to specification.

⚠ 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

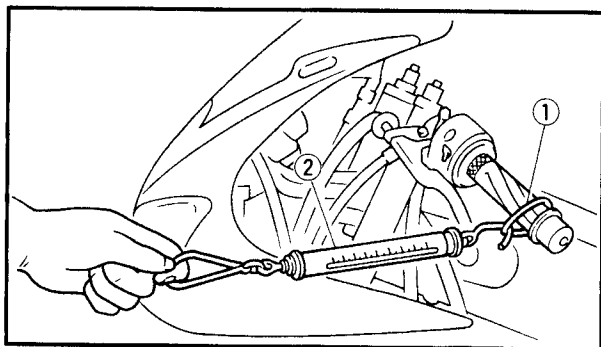
23 Nm (2.3 m•kg, 17 ft•lb)

9. Measure:

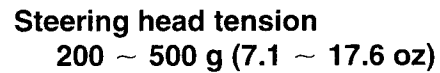
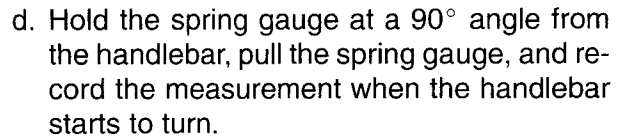
- steering head tension
(with the motorcycle still on the stand)

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.

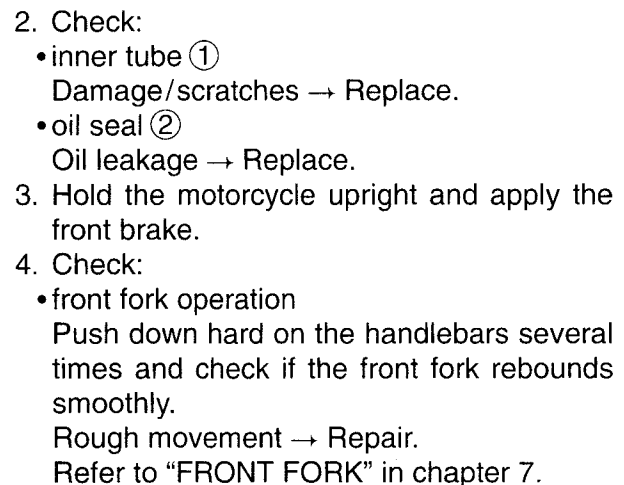


- e. Repeat the above procedure on the opposite handlebar.
- f. If the steering head tension is out of specification (both handlebars should be within specification), remove the upper bracket and loosen or tighten the upper ring nut.
- g. Reinstall the upper bracket and measure the steering head tension 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.



1. Stand the motorcycle on a level surface.

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



**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.





Minimum: 13 clicks out*

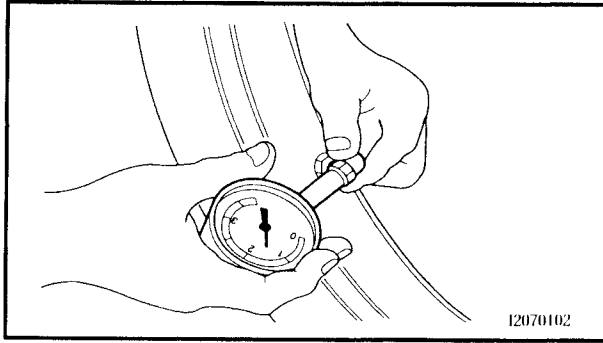
Standard: 7 clicks out*

Maximum: 1 click out*

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.





I2070102

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.

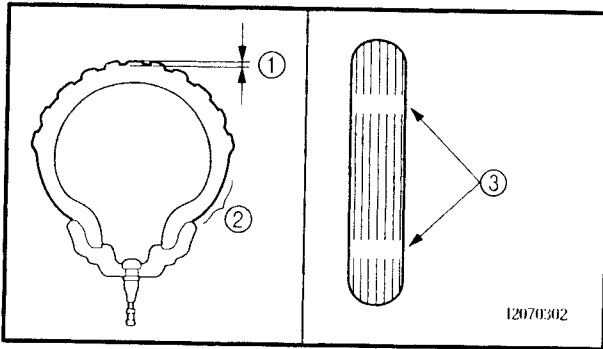
NEVER OVERLOAD THE MOTORCYCLE.

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 ² , 36.3 psi)	250 kPa (2.5 kg/cm ² , 36.3 psi)
90 kg (198 lb) ~ maximum load*	250 kPa (2.5 kg/cm ² , 36.3 psi)	290 kPa (2.9 kg/cm ² , 42.1 psi)
High-speed riding	250 kPa (2.5 kg/cm ² , 36.3 psi)	250 kPa (2.5 kg/cm ² , 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.



Minimum tire tread depth
1.6 mm (0.06 in)

① Tire tread depth

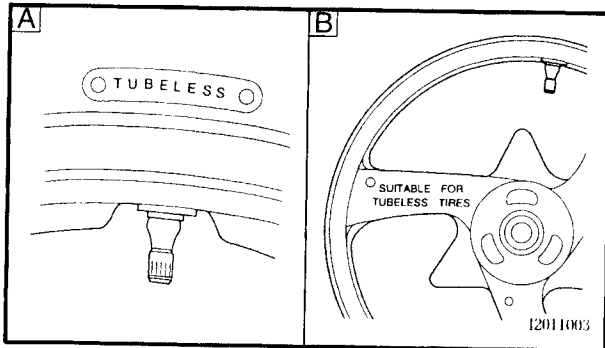
② Side wall

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

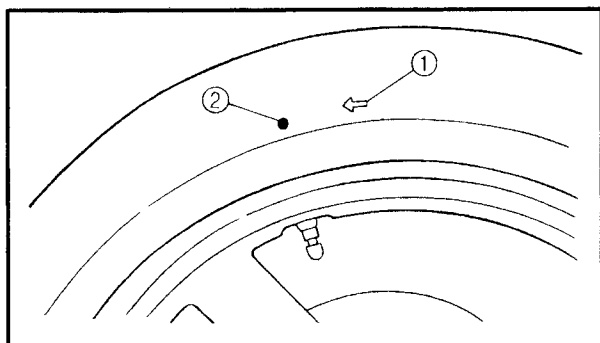
Manufacturer	Size	Model
BRIDGESTONE	180/55 ZR17 (73W)	BT56R•E
DUNLOP	180/55 ZR17 (73W)	D207•N

⚠ 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:
 - wheelDamage/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.



Recommended lubricant
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.



Recommended lubricant
Lithium soap base grease

EB304220

LUBRICATING THE SIDESTAND

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



Recommended lubricant
Lithium soap base grease

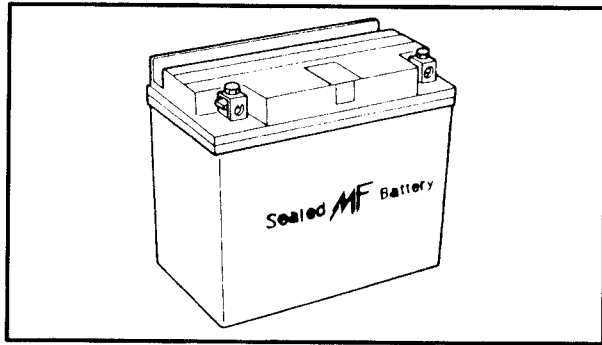
EB304240

LUBRICATING THE REAR SUSPENSION

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



Recommended lubricant
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**

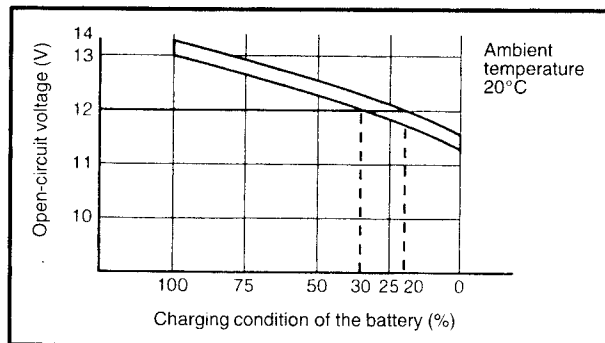
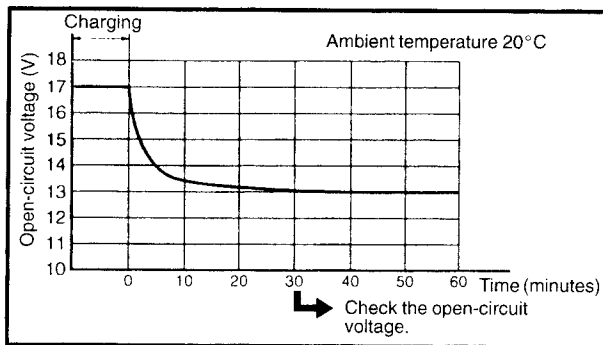
- Skin – Wash with water
- Eyes – Flush with water for 15 minutes and get immediate medical attention.

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

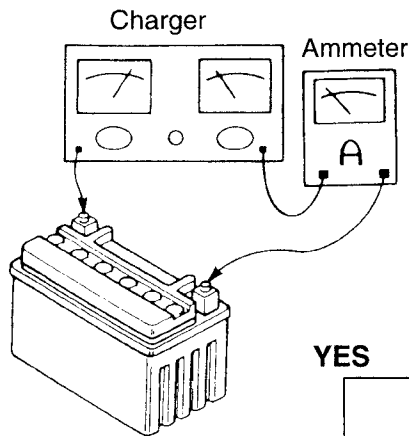
Do not quick charge a battery.

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?

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.

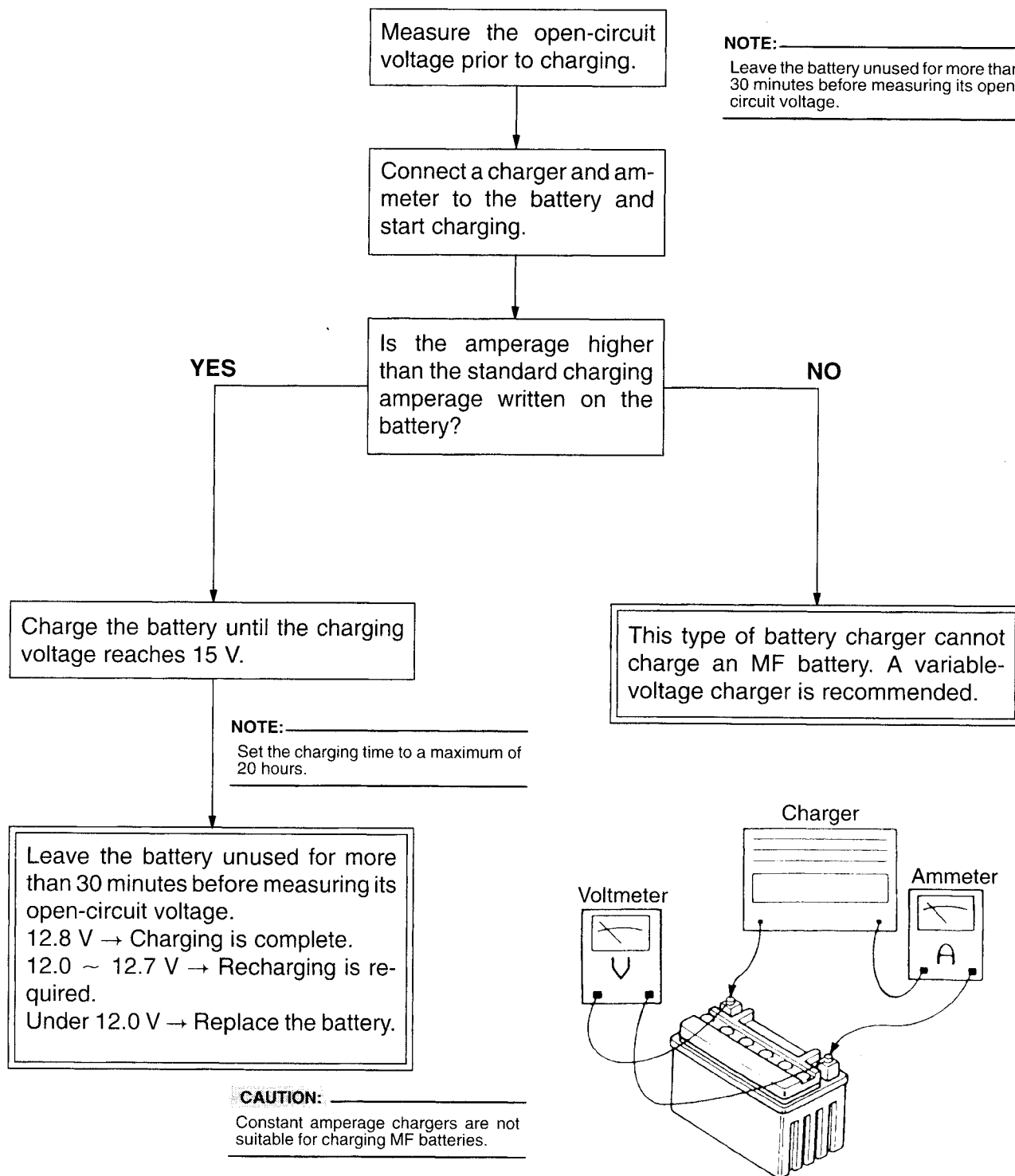
Leave the battery unused for more than 30 minutes before measuring its open-circuit voltage.
12.8 V → Charging is complete.
12.0 ~ 12.7 V → Recharging is required.
Under 12.0 V → Replace the battery.

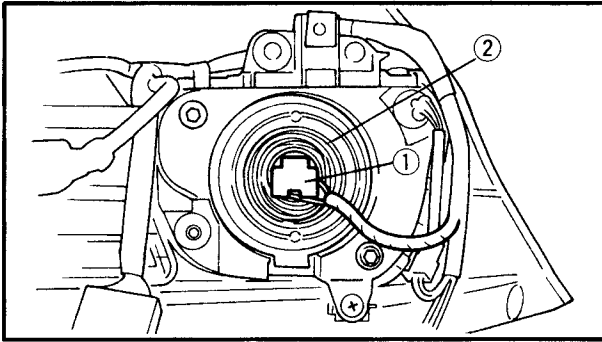
NOTE:
Leave the battery unused for more than 30 minutes before measuring its open-circuit voltage.

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.)



Charging method using a constant-voltage charger



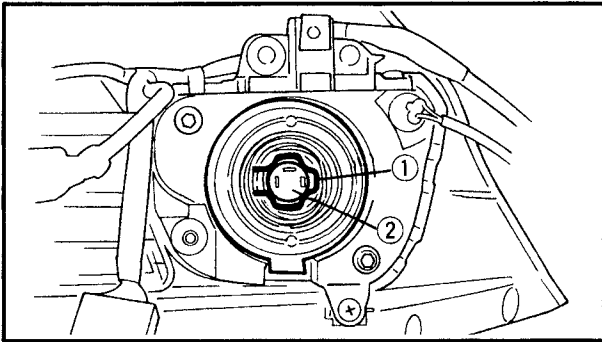


EB305051

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.

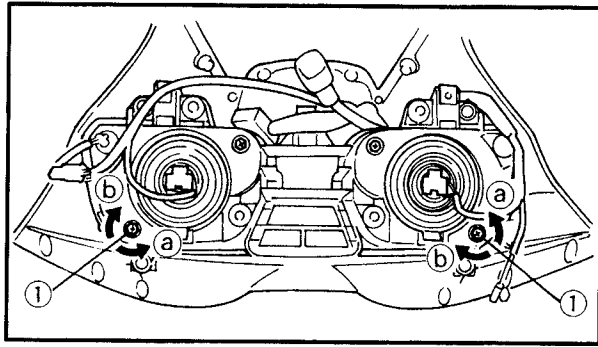
4. Install:
 - headlight bulb **New**

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



EB305061

ADJUSTING THE HEADLIGHT BEAMS

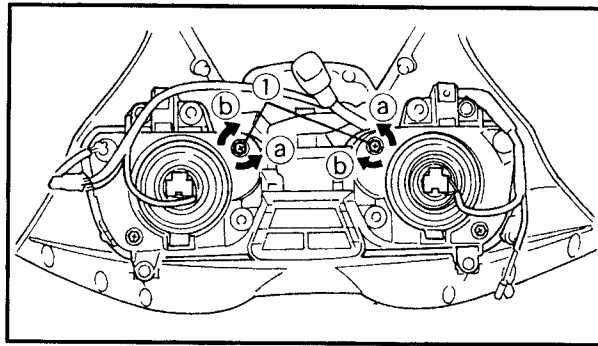
The following procedure applies to both of the headlights.

1. Adjust:

- headlight beam (vertically)

a. Turn the adjusting screw ① in direction ① or ②.

Direction ①	Headlight beams is raised.
Direction ②	Headlight beams is lowered.



2. Adjust:

- headlight beam (horizontally)

a. Turn the adjusting knob ① in direction ① or ②.

Left headlight

Direction ①	Headlight beam moves to the right.
Direction ②	Headlight beams moves to the left.

Right headlight

Direction ①	Headlight beam moves to the left.
Direction ②	Headlight beam moves to the right.