

HOW TO USE THIS MANUAL

MANUAL ORGANIZATION

This manual consists of chapters for the main categories of subjects. (See “symbols”)

1st title ①: This is the title of the chapter with its symbol in the upper right corner of each page.

2nd title ②: This title indicates the section of the chapter and only appears on the first page of each section. It is located in the upper left corner of the page.

3rd title ③: This title indicates a sub-section that is followed by step-by-step procedures accompanied by corresponding illustrations.

EXPLODED DIAGRAMS

To help identify parts and clarify procedure steps, there are exploded diagrams at the start of each removal and disassembly section.

1. An easy-to-see exploded diagram ④ is provided for removal and disassembly jobs.
2. Numbers ⑤ are given in the order of the jobs in the exploded diagram. A number that is enclosed by a circle indicates a disassembly step.
3. An explanation of jobs and notes is presented in an easy-to-read way by the use of symbol marks ⑥. The meanings of the symbol marks are given on the next page.
4. A job instruction chart ⑦ accompanies the exploded diagram, providing the order of jobs, names of parts, notes in jobs, etc.
5. For jobs requiring more information, the step-by-step format supplements ⑧ are given in addition to the exploded diagram and the job instruction chart.

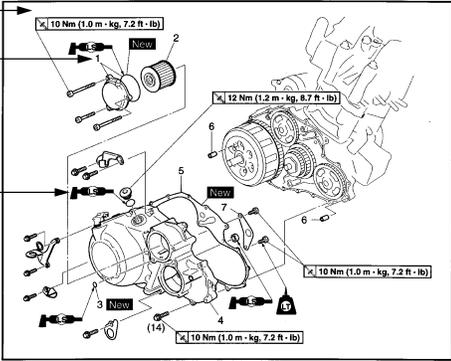
②

CLUTCH

①

ENG

④



⑤

⑥

⑦

Order	Job/Part	Qty	Remarks
	Removing the clutch cover		Remove the parts in the order listed.
	Engine oil		Drain.
	Front fender		Refer to "SEAT, FENDERS AND FUEL TANK" in chapter 3.
	Rear brake light switch/Right foot rest/ Brake pedal/spring		Refer to "FRONT AND REAR BRAKES" in chapter 7.
	Oil delivery pipe		Refer to "CYLINDER HEAD".
1	Oil filter cover/O-ring	1/1	
2	Oil filter	1	
3	O-ring	1	
4	Clutch cover	1	
5	Clutch cover gasket	1	Refer to "REMOVING THE CLUTCH" and "INSTALLING THE CLUTCH".
6	Dowel pin	2	
7	Oil seal retainer	1	

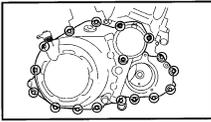
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CLUTCH

ENG

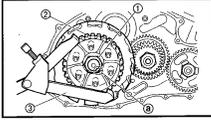
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⑧



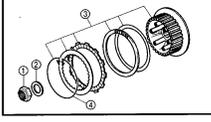
③

⑧



③

⑧



③

⑧

REMOVING THE CLUTCH

1. Remove:

- clutch cover

NOTE:
Loosen each bolt 1/4 of a turn at a time, in stages and in a crisscross pattern. After all of the bolts are fully loosened, remove them.

2. Straighten the clutch boss nut staked point ④.

3. Loosen:

- clutch boss nut ①

NOTE:
While holding the clutch boss ② with the universal clutch holder ③, loosen the clutch boss nut.

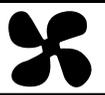
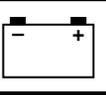
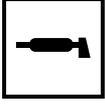
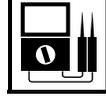
 Universal clutch holder
90890-04086, YM-91042

4. Remove:

- clutch boss nut ①
- conical spring washer ②
- clutch boss assembly ③

NOTE:
There is a built-in damper between the clutch boss and the clutch plate. It is not necessary to remove the wire circlip ⑤ and disassemble the built-in damper unless there is serious clutch chattering.

4 - 51

① GEN INFO 	② SPEC 	
③ CHK ADJ 	④ ENG 	
⑤ COOL 	⑥ FI 	
⑦ CHAS 	⑧ ELEC 	
⑨ TRBL SHTG ?	⑩ 	
⑪ 	⑫ 	
⑬ 	⑭ 	
⑮ 	⑯ 	⑰ 
⑱ 	⑲ 	⑳ 
㉑ 	㉒ 	㉓ 
㉔ 	㉕ New	

EBS00006

SYMBOLS

The following symbols are not relevant to every vehicle.

Symbols ① to ⑨ indicate the subject of each chapter.

- ① General information
- ② Specifications
- ③ Periodic checks and adjustments
- ④ Engine
- ⑤ Cooling system
- ⑥ Fuel injection system
- ⑦ Chassis
- ⑧ Electrical
- ⑨ Troubleshooting

Symbols ⑩ to ⑰ indicate the following.

- ⑩ Serviceable with engine mounted
- ⑪ Filling fluid
- ⑫ Lubricant
- ⑬ Special tool
- ⑭ Tightening torque
- ⑮ Wear limit, clearance
- ⑯ Engine speed
- ⑰ Electrical data (Ω , V, A)

Symbols ⑱ to ㉓ in the exploded diagrams indicate the types of lubricants and lubrication points.

- ⑱ Apply engine oil
- ⑲ Apply gear oil
- ⑳ Apply molybdenum disulfide oil
- ㉑ Apply wheel bearing grease
- ㉒ Apply lithium-soap-based grease
- ㉓ Apply molybdenum disulfide grease

Symbols ㉔ to ㉕ in the exploded diagrams indicate where to apply a locking agent ㉔ and when to install a new part ㉕.

- ㉔ Apply the locking agent (LOCTITE®)
- ㉕ Replace

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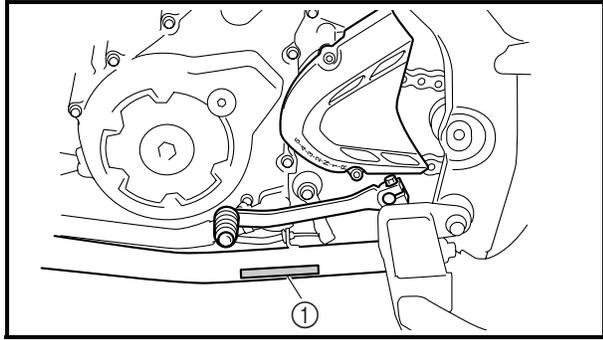
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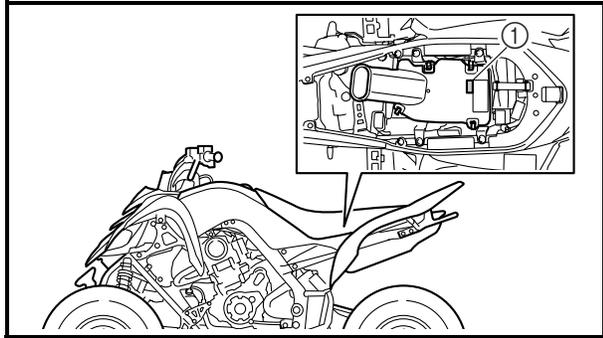
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GENERAL INFORMATION VEHICLE IDENTIFICATION

EBS00010

VEHICLE IDENTIFICATION NUMBER

The vehicle identification number ① is stamped into the left side of the frame.



EBS00011

MODEL LABEL

The model label ① is affixed to the air filter case cover. This information will be needed to order spare parts.

EAS20170

FEATURES

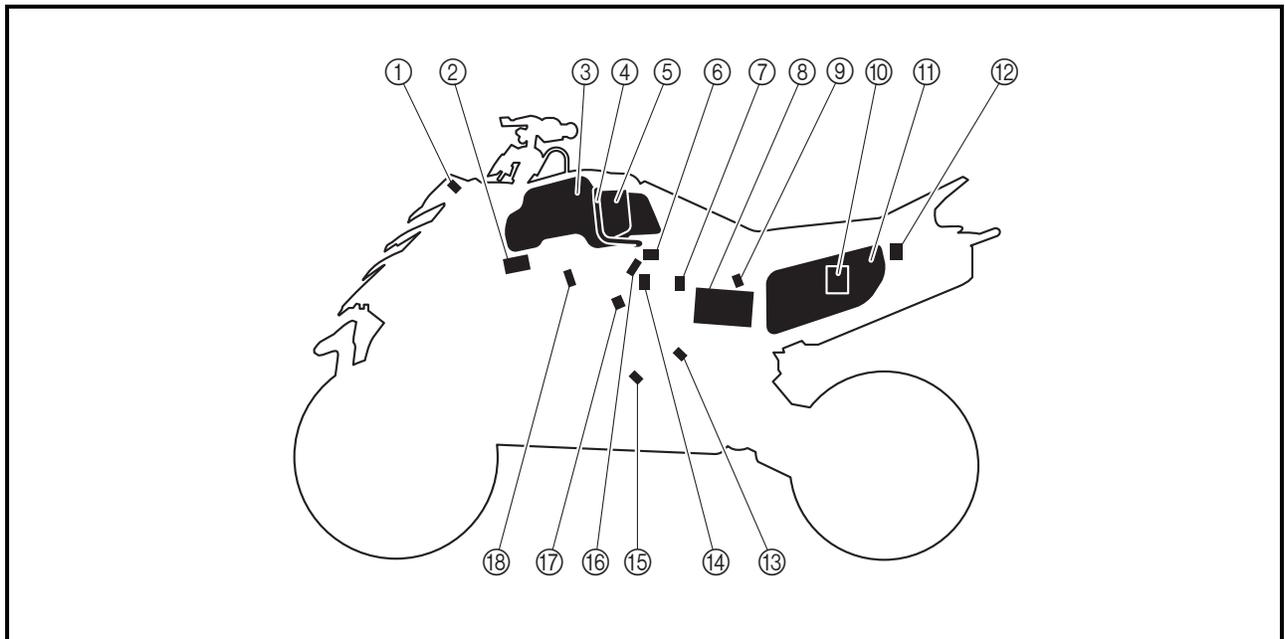
OUTLINE OF THE FI SYSTEM

The main function of a fuel supply system is to provide fuel to the combustion chamber at the optimum air-fuel ratio in accordance with the engine operating conditions and the atmospheric temperature. In the conventional carburetor system, the air-fuel ratio of the mixture that is supplied to the combustion chamber is created by the volume of the intake air and the fuel that is metered by the jet used in the respective carburetor.

Despite the same volume of intake air, the fuel volume requirement varies with the engine operating conditions, such as acceleration, deceleration, or operating under a heavy load. Carburetors that meter the fuel through the use of jets have been provided with various auxiliary devices, so that an optimum air-fuel ratio can be achieved to accommodate the constant changes in the operating conditions of the engine.

As the requirements for the engine to deliver more performance and cleaner exhaust gases increase, it becomes necessary to control the air-fuel ratio in a more precise and finely tuned manner. To accommodate this need, this model has adopted an electronically controlled fuel injection (FI) system, in place of the conventional carburetor system. This system can achieve an optimum air-fuel ratio required by the engine at all times by using a microprocessor that regulates the fuel injection volume according to the engine operating conditions detected by various sensors.

The adoption of the FI system has resulted in a highly precise fuel supply, improved engine response, better fuel economy, and reduced exhaust emissions.



- ① Engine trouble warning light
- ② Ignition coil
- ③ Fuel tank
- ④ Fuel hose
- ⑤ Fuel pump
- ⑥ Intake air pressure sensor
- ⑦ Lean angle sensor
- ⑧ Battery
- ⑨ Intake air temperature sensor

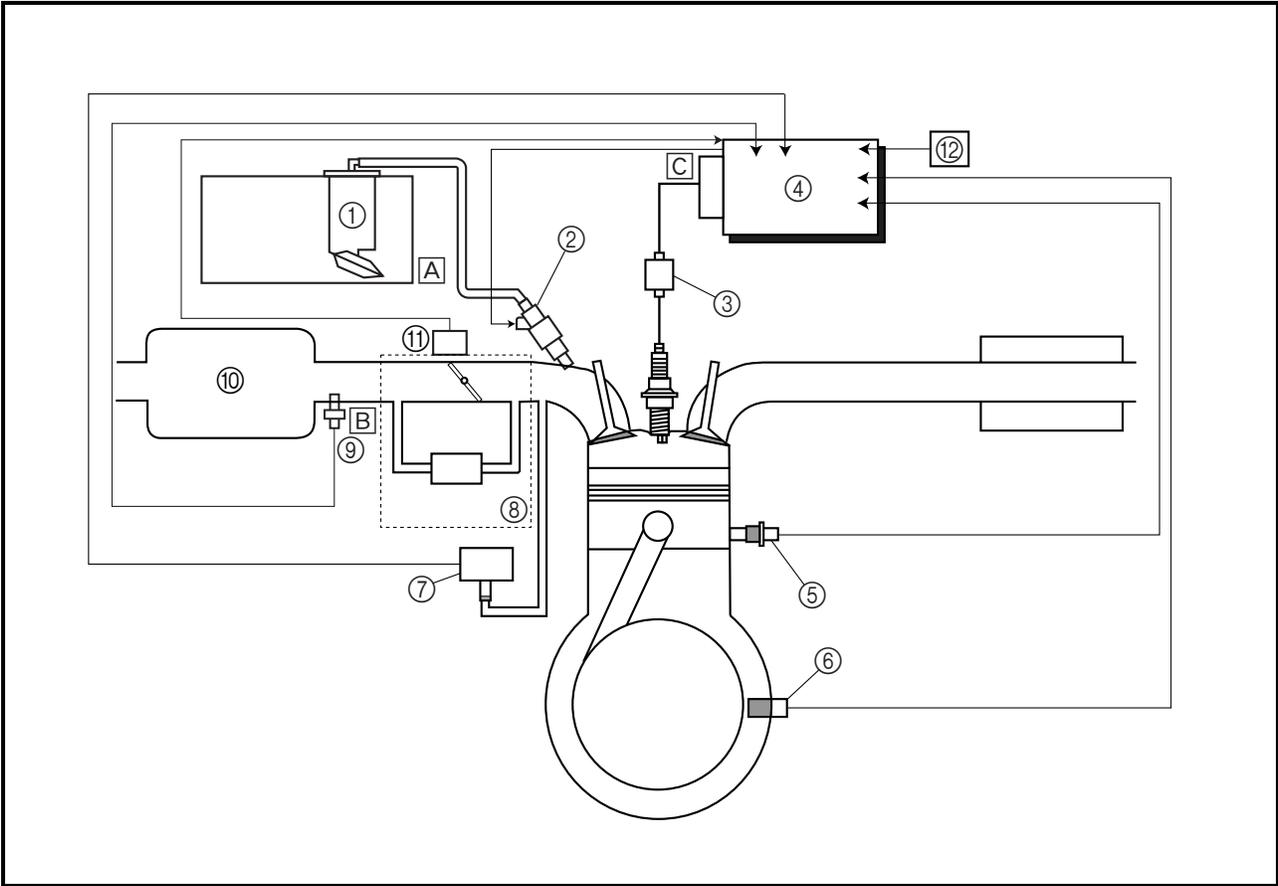
- ⑩ ECU (electronic control unit)
- ⑪ Air filter case
- ⑫ Relay unit (fuel pump relay)
- ⑬ Speed sensor
- ⑭ Throttle position sensor
- ⑮ Crankshaft position sensor
- ⑯ Fuel injector
- ⑰ Coolant temperature sensor
- ⑱ Spark plug

FI SYSTEM

The fuel pump delivers fuel to the fuel injector via the fuel filter. The pressure regulator maintains the fuel pressure that is applied to the fuel injector at only 324 kPa (3.24 kg/cm², 46.1 psi). Accordingly, when the energizing signal from the ECU energizes the fuel injector, the fuel passage opens, causing the fuel to be injected into the intake manifold only during the time the passage remains open. Therefore, the longer the length of time the fuel injector is energized (injection duration), the greater the volume of fuel that is supplied. Conversely, the shorter the length of time the fuel injector is energized (injection duration), the lesser the volume of fuel that is supplied.

The injection duration and the injection timing are controlled by the ECU. Signals that are input from the throttle position sensor, crankshaft position sensor, intake air pressure sensor, intake air temperature sensor, coolant temperature sensor and speed sensor enable the ECU to determine the injection duration. The injection timing is determined through the signals from the crankshaft position sensor. As a result, the volume of fuel that is required by the engine can be supplied at all times in accordance with the driving conditions.

Illustration is for reference only.

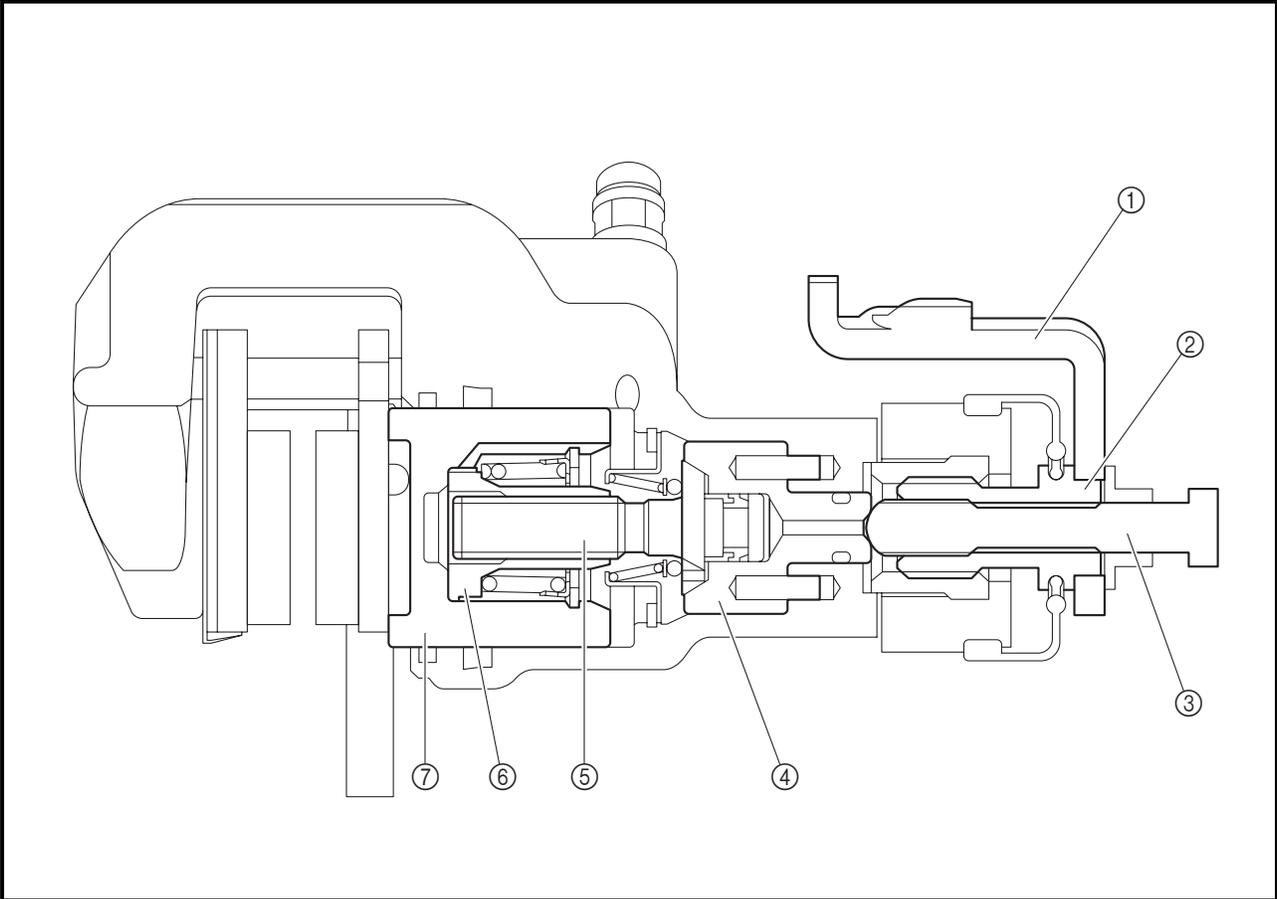


- ① Fuel pump
- ② Fuel injector
- ③ Ignition coil
- ④ ECU (electronic control unit)
- ⑤ Coolant temperature sensor
- ⑥ Crankshaft position sensor
- ⑦ Intake air pressure sensor
- ⑧ Throttle body
- ⑨ Intake air temperature sensor
- ⑩ Air filter case
- ⑪ Throttle position sensor
- ⑫ Speed sensor
- A Fuel system
- B Air system
- C Control system

SELF-ADJUSTING PARKING BRAKE MECHANISM

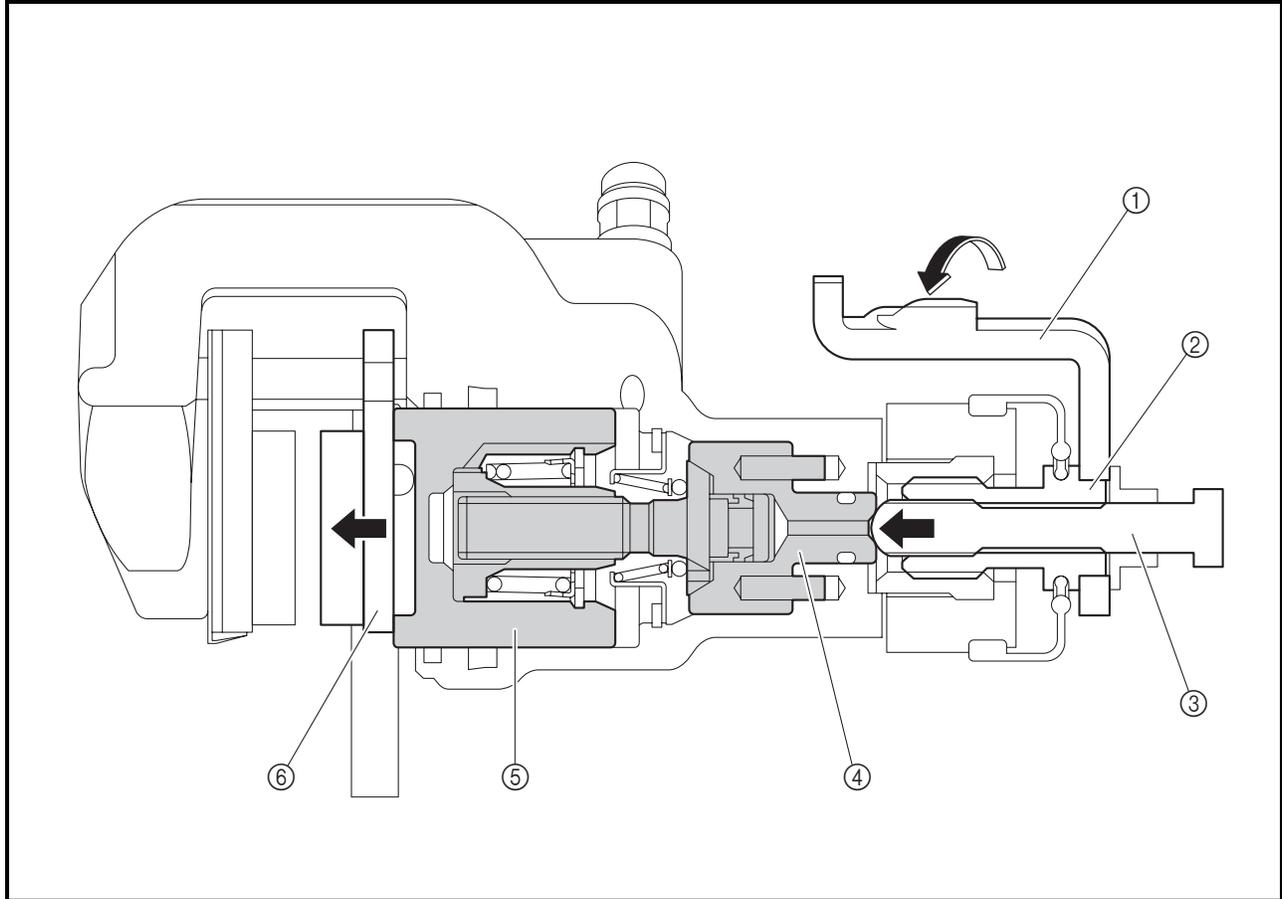
Usually, for vehicles equipped with a parking brake that must be adjusted manually, it is necessary to adjust the adjusting bolt ⑤ to achieve the proper clearance between the brake caliper piston ⑦ and the adjusting bolt ⑤.

This adjustment procedure is unnecessary for vehicles equipped with a self-adjusting parking brake mechanism. The proper clearance is automatically maintained at all times, ensuring stable braking performance when parking the vehicle.



- ① Parking brake arm
- ② Parking brake shaft
- ③ Adjusting bolt
- ④ Adjusting bolt sleeve
- ⑤ Adjusting bolt
- ⑥ Nut
- ⑦ Brake caliper piston

Parking Brake Operation



- ① Parking brake arm
- ② Parking brake shaft
- ③ Adjusting bolt
- ④ Adjusting bolt sleeve
- ⑤ Brake caliper piston
- ⑥ Brake pad

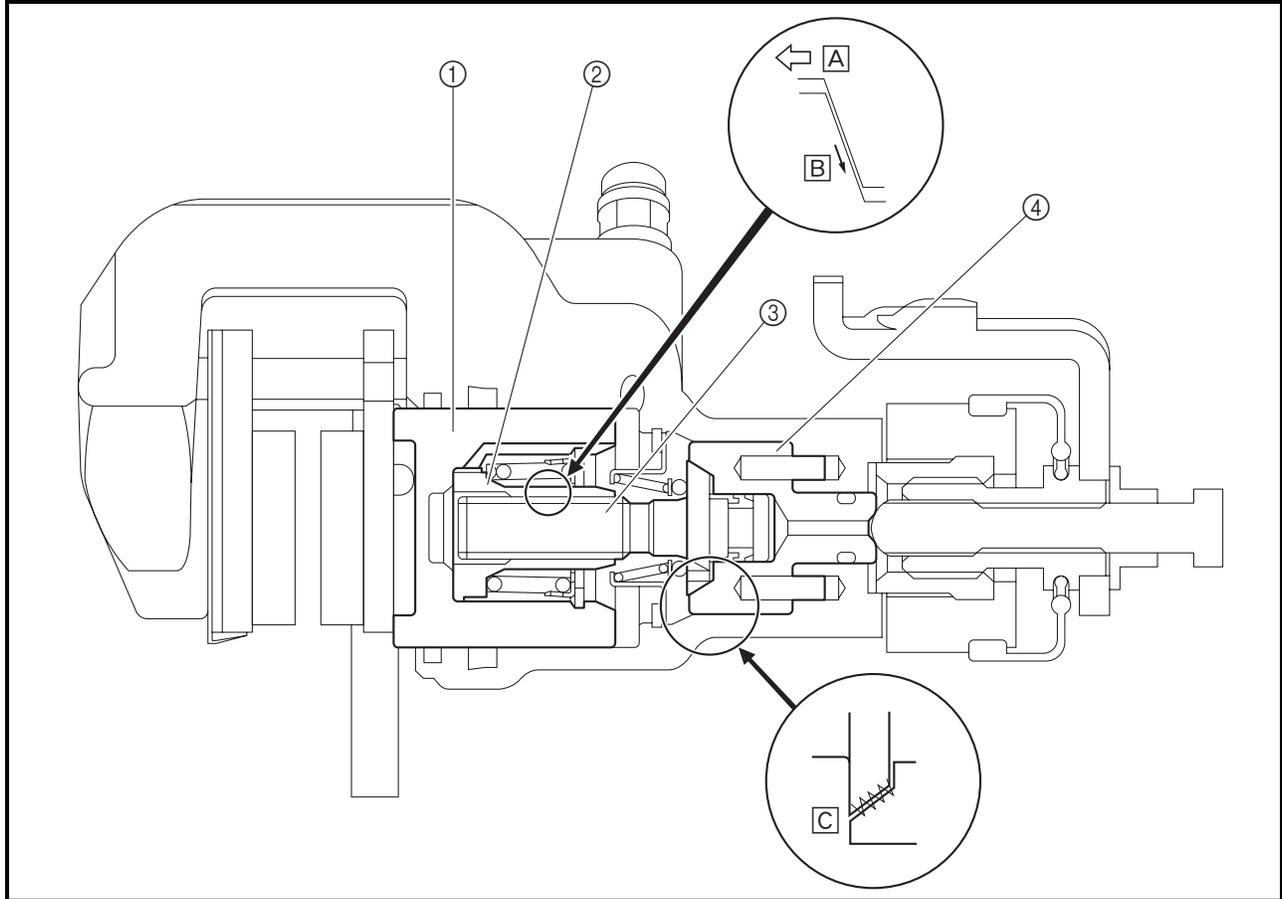
When the parking brake is operated, the parking brake cable turns the parking brake arm ①. The rotation of the parking brake arm is changed to axial thrust in the parking brake shaft ② and the adjusting bolt ③ is pushed against the adjusting bolt sleeve ④.

When the adjusting bolt sleeve receives the force, the dark shaded area in the above illustration is pushed and the brake pad ⑥ is pushed against the brake disc.

When the brake pad wears, the clearance between the brake caliper piston ⑤ and the brake pad becomes larger and the force applied to the brake pad becomes weaker.

If this occurs, the self-adjusting parking brake mechanism adjusts automatically to achieve the proper clearance.

Parking Brake Operation



- ① Brake caliper piston
- ② Nut

- ③ Adjusting bolt
- ④ Adjusting bolt sleeve

When the brake pedal is operated, the brake fluid pressure in the master cylinder increases and the brake caliper piston ① and the nut ② are pushed.

When there is proper clearance between the brake caliper piston and the brake pad, no other parts move because the movement of the brake caliper piston and the nut is absorbed by the backlash of the threads of the nut and the adjusting bolt ③.

When the movement of the nut is greater than the backlash between the nut and the adjusting bolt, the parking brake adjusts automatically.

The amount of the adjustment varies with brake fluid pressure. Operating the parking brake makes no adjustment.

The adjustment operation is as follows.

1. When the brake pedal is operated, the brake fluid pressure increases and the brake caliper piston and the nut move.
2. When the movement of the brake caliper piston and the nut is greater than the backlash of the threads of the nut and the adjusting bolt, the force **A** will be required to pull the adjusting bolt. The force to pull the adjusting bolt will be turned into the rotation torque **B** by the shape of the threads of the nut and the adjusting bolt.
3. At this time, the clutch torque **C** between the adjusting bolt and the adjusting bolt sleeve ④ will decrease depending on the force required to pull the adjusting bolt.

When the rotation torque exceeds the clutch torque, the adjusting bolt rotates and the clearance between the brake caliper piston and the brake pad decreases by the movement of the threads of the nut and the adjusting bolt.



EBS00013

IMPORTANT INFORMATION PREPARATION FOR REMOVAL AND DISASSEMBLY

1. Before removal and disassembly remove all dirt, mud, dust and foreign material.
2. Use only the proper tools and cleaning equipment.
Refer to "SPECIAL TOOLS".
3. When disassembling always keep mated parts together. This includes gears, cylinders, pistons and other parts that have been "mated" through normal wear. Mated parts must always be reused or replaced as an assembly.
4. During disassembly, clean all of the parts and place them in trays in the order of disassembly. This will speed up assembly and allow for the correct installation of all parts.
5. Keep all parts away from any source of fire.

EBS00014

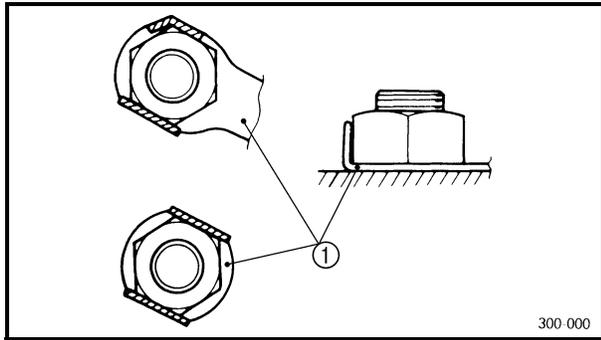
REPLACEMENT PARTS

1. Use only genuine Yamaha parts for all replacements. Use oil and grease recommended by Yamaha for all lubrication jobs. Other brands may be similar in function and appearance, but inferior in quality.

EBS00015

GASKETS, OIL SEALS AND O-RINGS

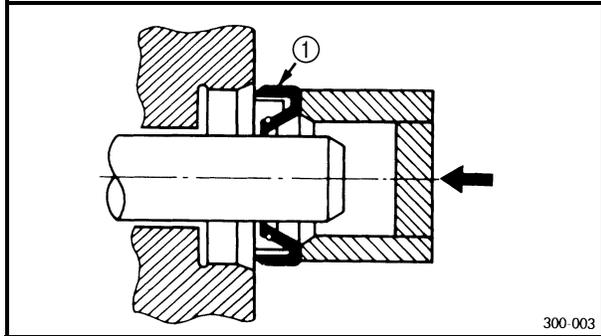
1. When overhauling the engine, replace all gaskets, seals and O-rings. All gasket surfaces, oil seal lips and O-rings must be cleaned.
2. During reassembly properly oil all mating parts and bearings, and lubricate the oil seal lips with grease.



EBS00016

LOCK WASHERS/PLATES AND COTTER PINS

After removal, replace all lock washers/plates ① and cotter pins. After the bolt or nut has been tightened to specification, bend the lock tabs along a flat of the bolt or nut.



EBS00017

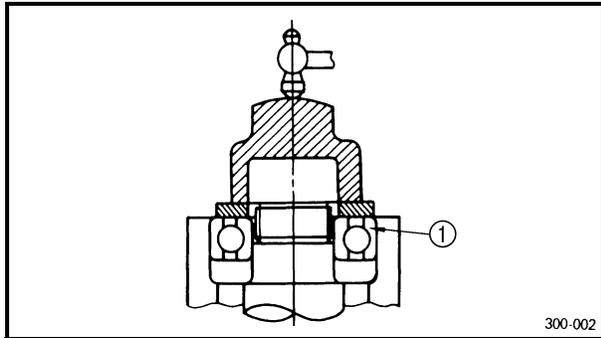
BEARINGS AND OIL SEALS

Install bearings and oil seals so that the manufacturer's marks or numbers are visible. When installing oil seals, lubricate the oil seal lips with a light coat of lithium-soap-based grease. Oil bearings liberally when installing, if appropriate.

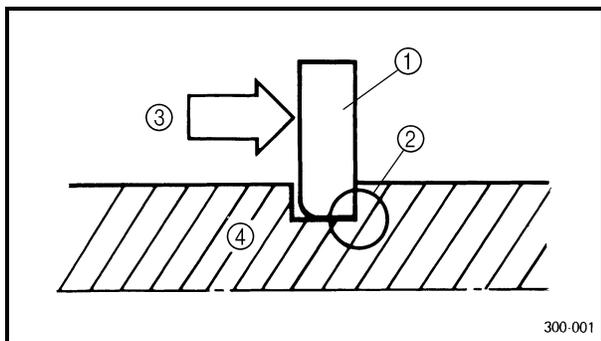
① Oil seal

CAUTION:

Do not spin the bearing with compressed air because this will damage the bearing surfaces.



① Bearing

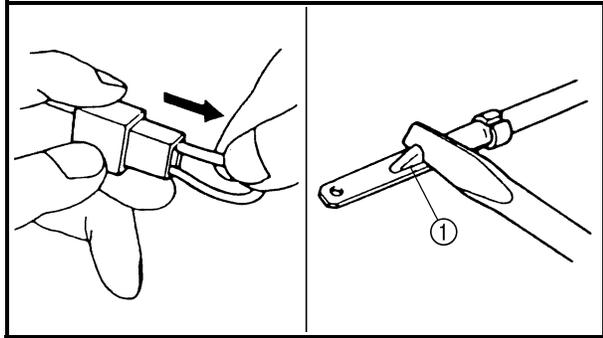
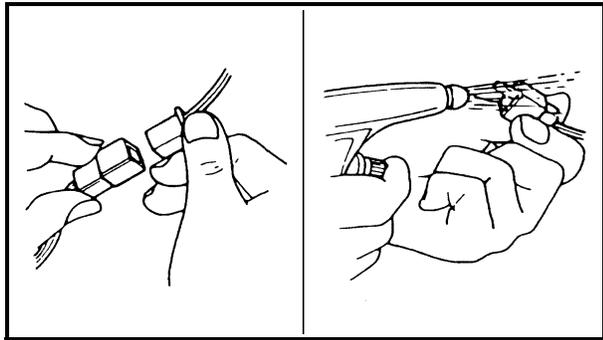


EBS00018

CIRCLIPS

Before reassembly, check all circlips carefully and replace damaged or distorted circlips. Always replace piston pin clips after one use. When installing a circlip ①, make sure the sharp-edged corner ② is positioned opposite the thrust ③ that the circlip receives.

④ Shaft



EBS00019

CHECKING THE CONNECTIONS

Check the leads, couplers, and connectors for stains, rust, moisture, etc.

1. Disconnect:

- lead
- coupler
- connector

2. Check:

- lead
- coupler
- connector

Moisture → Dry with an air blower.

Rust/stains → Connect and disconnect several times.

3. Check:

- all connections

Loose connection → Connect properly.

NOTE: _____

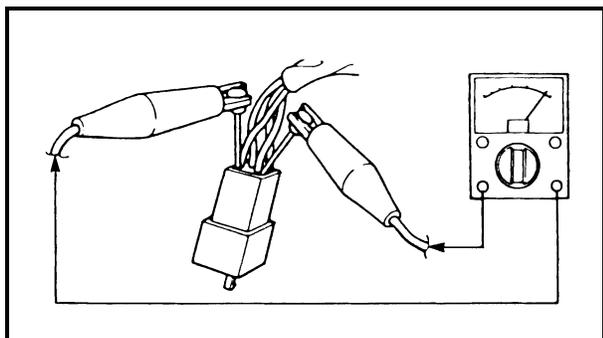
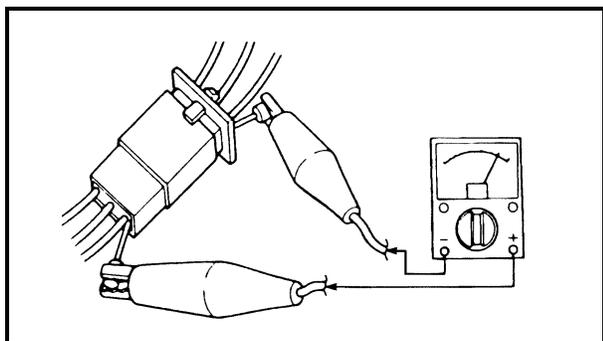
If the pin ① on the terminal is flattened, bend it up.

4. Connect:

- lead
- coupler
- connector

NOTE: _____

Make sure all connections are tight.



5. Check:

- continuity (with the pocket tester)



Pocket tester
90890-03112
Analog pocket tester
YU-03112-C

NOTE: _____

- If there is no continuity, clean the terminals.
- When checking the wire harness, perform steps (1) to (3).
- As a quick remedy, use a contact revitalizer available at most part stores.

EBS00021

SPECIAL TOOLS

The following special tools are necessary for complete and accurate tune-up and assembly. Use only the appropriate special tools; this will help prevent damage caused by the use of inappropriate tools or improvised techniques. Special tools may differ by shape and part number from country to country. In such a case, two types are provided.

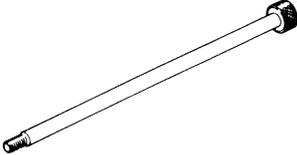
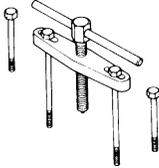
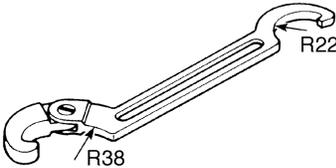
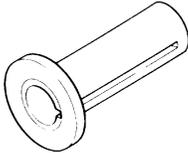
When placing an order, refer to the list provided below to avoid any mistakes.

For US and CDN

P/N. YM-, YU-, YS-, YK-, ACC-

Except for US and CDN

P/N. 90890-

Tool No.	Tool name/Function	Illustration
90890-01083 YU-01083-1	Slide hammer bolt Slide hammer bolt (6 mm) This tool is used to remove the rocker arm shaft.	
90890-01084 YU-01083-3	Weight This tool is used to remove the rocker arm shaft.	
90890-01135 YU-01135-B	Crankcase separating tool Crankcase separator This tool is used to separate the crankcase.	
90890-01268 YU-01268	Ring nut wrench Spanner wrench This tool is used to loosen or tighten the rear shock absorber locknuts.	
90890-01274 YU-90058 YU-90059	Crankshaft installer pot Installer pot Pot installer This tool is used to install the crankshaft.	
90890-01275 YU-90060	Crankshaft installer bolt Bolt This tool is used to install the crankshaft.	