



**YAMAHA**

**2002**

**YZ250**



**Motorcycle  
Service Manual**



**OWNER'S SERVICE MANUAL  
MANUEL D'ATELIER DU  
PROPRIETAIRE  
FAHRER-UND  
WARTUNGS-HANDBUCH  
MANUALE DI SEVIZIO DEL  
PROPRIETARIO**

***YZ250(R)/LC***

5UP-28199-30

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EC010010

**YZ250(R)/LC  
OWNER'S SERVICE MANUAL  
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## INTRODUCTION

Congratulations on your purchase of a Yamaha YZ series. This model is the culmination of Yamaha's vast experience in the production of pacesetting racing machines. It represents the highest grade of craftsmanship and reliability that have made Yamaha a leader.

This manual explains operation, inspection, basic maintenance and tuning of your machine. If you have any questions about this manual or your machine, please contact your Yamaha dealer.

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

As improvements are made on this model, some data in this manual may become outdated. If you have any questions, please consult your Yamaha dealer.

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### **⚠WARNING** \_\_\_\_\_

**PLEASE READ THIS MANUAL CAREFULLY AND COMPLETELY BEFORE OPERATING THIS MACHINE. DO NOT ATTEMPT TO OPERATE THIS MACHINE UNTIL YOU HAVE ATTAINED A SATISFACTORY KNOWLEDGE OF ITS CONTROLS AND OPERATING FEATURES AND UNTIL YOU HAVE BEEN TRAINED IN SAFE AND PROPER RIDING TECHNIQUES. REGULAR INSPECTIONS AND CAREFUL MAINTENANCE, ALONG WITH GOOD RIDING SKILLS, WILL ENSURE THAT YOU SAFELY ENJOY THE CAPABILITIES AND THE RELIABILITY OF THIS MACHINE.**

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## IMPORTANT NOTICE

THIS MACHINE IS DESIGNED STRICTLY FOR COMPETITION USE, ONLY ON A CLOSED COURSE. It is illegal for this machine to be operated on any public street, road, or highway. Off-road use on public lands may also be illegal. Please check local regulations before riding.

### **⚠ SAFETY INFORMATION**

- 1. THIS MACHINE IS TO BE OPERATED BY AN EXPERIENCED RIDER ONLY.**  
Do not attempt to operate this machine at maximum power until you are totally familiar with its characteristics.
- 2. THIS MACHINE IS DESIGNED TO BE RIDDEN BY THE OPERATOR ONLY.**  
Do not carry passengers on this machine.
- 3. ALWAYS WEAR PROTECTIVE APPAREL.**  
When operating this machine, always wear an approved helmet with goggles or a face shield. Also wear heavy boots, gloves, and protective clothing. Always wear proper fitting clothing that will not be caught in any of the moving parts or controls of the machine.
- 4. ALWAYS MAINTAIN YOUR MACHINE IN PROPER WORKING ORDER.**  
For safety and reliability, the machine must be properly maintained. Always perform the pre-operation checks indicated in this manual. Correcting a mechanical problem before you ride may prevent an accident.

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**5. GASOLINE IS HIGHLY FLAMMABLE.**

Always turn off the engine while refueling. Take care to not spill any gasoline on the engine or exhaust system. Never refuel in the vicinity of an open flame, or while smoking.

**6. GASOLINE CAN CAUSE INJURY.**

If you should swallow some gasoline, inhale excess gasoline vapors, or allow any gasoline to get into your eyes, contact a doctor immediately. If any gasoline spills onto your skin or clothing, immediately wash skin areas with soap and water, and change your clothes.

**7. ONLY OPERATE THE MACHINE IN AN AREA WITH ADEQUATE VENTILATION.**

Never start the engine or let it run for any length of time in an enclosed area. Exhaust fumes are poisonous. These fumes contain carbon monoxide, which by itself is odorless and colorless. Carbon monoxide is a dangerous gas which can cause unconsciousness or can be lethal.

**8. PARK THE MACHINE CAREFULLY; TURN OFF THE ENGINE.**

Always turn off the engine if you are going to leave the machine. Do not park the machine on a slope or soft ground as it may fall over.

**9. PROPERLY SECURE THE MACHINE BEFORE TRANSPORTING IT.**

When transporting the machine in another vehicle, always be sure it is properly secured and in an upright position and that the fuel cock is in the "OFF" position. Otherwise, fuel may leak out of the carburetor or fuel tank.

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EC050000

## TO THE NEW OWNER

This manual will provide you with a good basic understanding of features, operation, and basic maintenance and inspection items of this machine. Please read this manual carefully and completely before operating your new machine. If you have any questions regarding the operation or maintenance of your machine, please consult your Yamaha dealer.

### NOTE:

This manual should be considered a permanent part of this machine and should remain with it even if the machine is subsequently sold.

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EC060000

## NOTICE

**Some data in this manual may become outdated due to improvements made to this model in the future. If there is any question you have regarding this manual or your machine, please consult your Yamaha dealer.**

EC070001

### F.I.M. MACHINE WEIGHTS:

#### Weights of machines without fuel

The minimum weights for motocross machines are:

for the class 125 cc.....minimum	88 kg (194 lb)
for the class 250 cc.....minimum	98 kg (216 lb)
for the class 500 cc.....minimum	102 kg (225 lb)

In modifying your machine (e.g., for weight reduction), take note of the above limits of weight.



EC080000

## HOW TO USE THIS MANUAL

EC081000

### PARTICULARLY IMPORTANT IN FORMATION



The Safety Alert Symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

#### **WARNING**

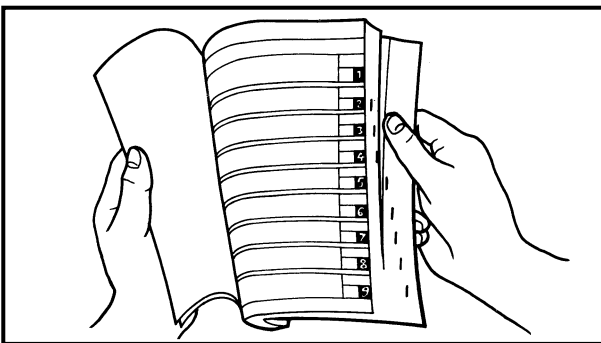
Failure to follow WARNING instructions could result in severe injury or death to the machine operator, a bystander, or a person inspecting or repairing the machine.

#### **CAUTION:**

A CAUTION indicates special precautions that must be taken to avoid damage to the machine.

#### **NOTE:**

A NOTE provides key information to make procedures easier or clearer.



EC082000

#### **FINDING THE REQUIRED PAGE**

1. This manual consists of seven chapters; "General Information", "Specifications", "Regular inspection and adjustments", "Engine", "Chassis", "Electrical" and "Tuning".
2. The table of contents is at the beginning of the manual. Look over the general layout of the book before finding then required chapter and item.

Bend the book at its edge, as shown, to find the required fore edge symbol mark and go to a page for required item and description.

# MANUAL FORMAT

All of the procedures in this manual are organized in a sequential, step-by-step format. The information has been compiled to provide the mechanic with an easy to read, handy reference that contains comprehensive explanations of all disassembly, repair, assembly, and inspection operations.

In this revised format, the condition of a faulty component will precede an arrow symbol and the course of action required will follow the symbol, e.g.,

•Bearings

Pitting/Damage → Replace.

# HOW TO READ DESCRIPTIONS

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 ① is provided for removal and disassembly jobs.
2. Numbers ② 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 ③. The meanings of the symbol marks are given on the next page.
4. A job instruction chart ④ accompanies the exploded diagram, providing the order of jobs, names of parts, notes in jobs, etc.
5. Extent of removal ⑤ is provided in the job instruction chart to save the trouble of an unnecessary removal job.
6. For jobs requiring more information, the step-by-step format supplements ⑥ are given in addition to the exploded diagram and job instruction chart.

**CLUTCH AND PRIMARY DRIVEN GEAR** ENG

**PRIMARY DRIVEN GEAR, PUSH ROD AND PUSH LEVER AXLE**

Extent of removal: ① Push rod and push lever axle removal ② Push rod 1 disassembly ③ Primary driven gear removal

Extent of removal	Order	Part name	Qty	Remarks
①	1	Push rod 1	1	
②	2	Circclip	1	
③	3	Plain washer	1	
④	4	Bearing	1	
⑤	5	Push rod 2	1	
	6	Nut (clutch boss)	1	
	7	Lock washer	1	Use special tool. Refer to "REMOVAL POINTS".
	8	Clutch boss	1	
	9	Thrust plate [D=44mm (1.73 in)]	1	
	10	Primary driven gear	1	
	11	Bearing	1	
	12	Thrust plate [D=42mm (1.65 in)]	1	
	13	Bolt (push lever axle)	1	
	14	Push lever axle	1	

**CLUTCH AND PRIMARY DRIVEN GEAR** ENG

**REMOVAL POINTS**

**Clutch boss**

- Remove:
  - Nut ①
  - Lock washer ②
  - Clutch boss ③

**NOTE:**

Straighten the lock washer tab and use the clutch holding tool ④, ⑤ to hold the clutch boss.

	④
	⑤

A] For USA and CDN  
B] Except for USA and CDN

**INSPECTION**

**Clutch housing and boss**

- Inspect:
  - Cracks/Wear/Damage → Replace.
  - Clutch boss ②
  - Scoring/Wear/Damage → Replace.

**Primary driven gear**






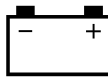




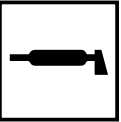










- Check:
  - Circumferential play
  - Free play exists → Replace.
  - Gear teeth ③
  - Wear/ Damage → Replace.

**Clutch spring**

1. Measure:

- Clutch spring free length ⑥
- Out of specification → Replace springs as a set.

Clutch spring free length:	
Standard	<Limit>
44.0 mm (1.732 in)	42.0 mm (1.654 in)

① GEN INFO 	② SPEC 	
③ INSP ADJ 	④ ENG 	
⑤ CHAS 	⑥ ELEC 	
⑦ TUN 	⑧ 	
⑨ 	⑩ 	
⑪ 	⑫ 	
⑬ 	⑭ 	
⑮ 	⑯ 	⑰ 
⑱ 	⑲ 	
⑳ 	㉑ 	

EC085002

## ILLUSTRATED SYMBOLS (Refer to the illustration)

Illustrated symbols ① to ⑦ are designed as thumb tabs to indicate the chapter's number and content.

- ① General information
- ② Specifications
- ③ Regular inspection and adjustments
- ④ Engine
- ⑤ Chassis
- ⑥ Electrical
- ⑦ Tuning

Illustrated symbols ⑧ to ⑭ are used to identify the specifications appearing in the text.

- ⑧ With engine mounted
- ⑨ Special tool
- ⑩ Filling fluid
- ⑪ Lubricant
- ⑫ Tightening
- ⑬ Specified value, Service limit
- ⑭ Resistance ( $\Omega$ ), Voltage (V), Electric current (A)

Illustrated symbols ⑮ to ⑲ in the exploded diagrams indicate grade of lubricant and location of lubrication point.

- ⑮ Apply transmission oil
- ⑯ Apply engine mixing oil
- ⑰ Apply molybdenum disulfide oil
- ⑱ Apply lightweight lithium-soap base grease
- ⑲ Apply molybdenum disulfide grease

Illustrated symbols ⑳ to ㉑ in the exploded diagrams indicate where to apply a locking agent and where to install new parts.

- ㉑ Apply locking agent (LOCTITE®)
- ㉑ Use new one

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**GENERAL  
INFORMATION**

**SPECIFICATIONS**

**REGULAR  
INSPECTION AND  
ADJUSTMENTS**

**ENGINE**

**CHASSIS**

**ELECTRICAL**

**TUNING**

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EC100000

## GENERAL INFORMATION

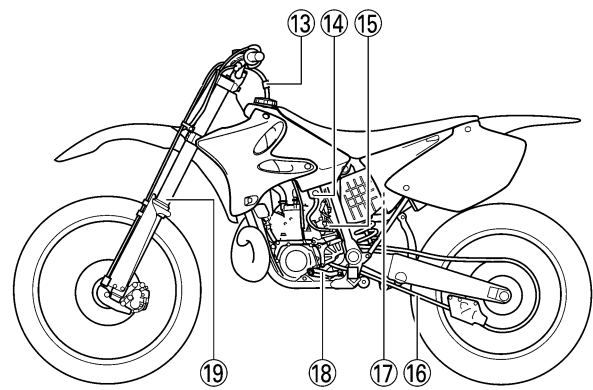
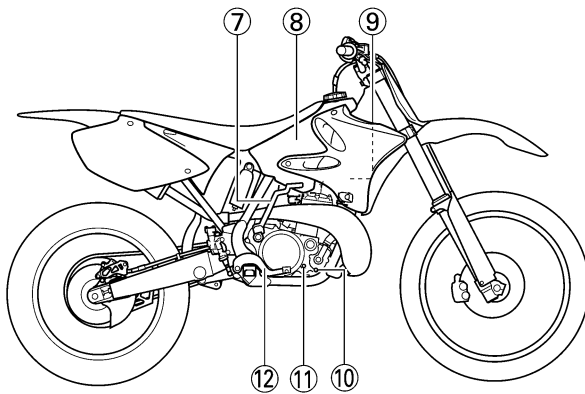
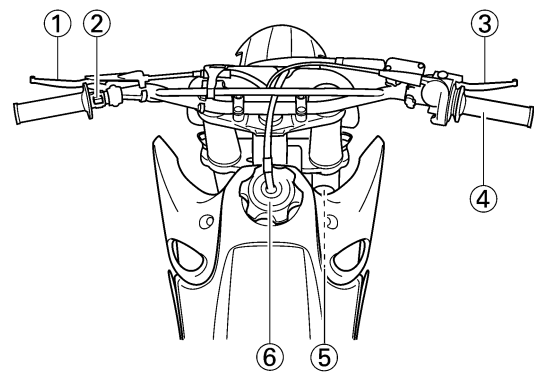
EC110000

### DESCRIPTION

- ① Clutch lever
- ② "ENGINE STOP" button
- ③ Front brake lever
- ④ Throttle grip
- ⑤ Radiator cap
- ⑥ Fuel tank cap
- ⑦ Kick starter
- ⑧ Fuel tank
- ⑨ Radiator
- ⑩ Coolant drain bolt
- ⑪ Check bolt (Transmission oil level)
- ⑫ Rear brake pedal
- ⑬ Valve joint
- ⑭ Fuel cock
- ⑮ Starter knob
- ⑯ Drive chain
- ⑰ Air cleaner
- ⑱ Shift pedal
- ⑲ Front fork

### NOTE:

- The machine you have purchased may differ slightly from those shown in the following.
- Designs and specifications are subject to change without notice.



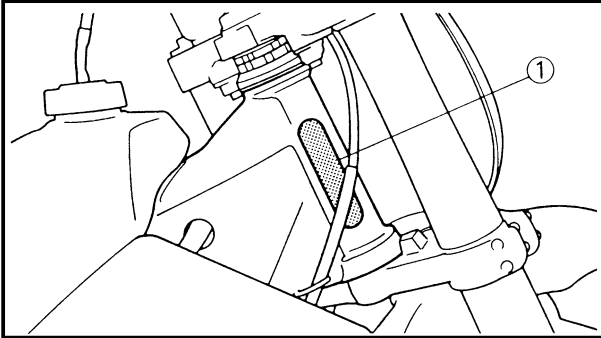


EC120001

## MACHINE IDENTIFICATION

There are two significant reasons for knowing the serial number of your machine:

1. When ordering parts, you can give the number to your Yamaha dealer for positive identification of the model you own.
2. If your machine is stolen, the authorities will need the number to search for and identify your machine.



EC121001

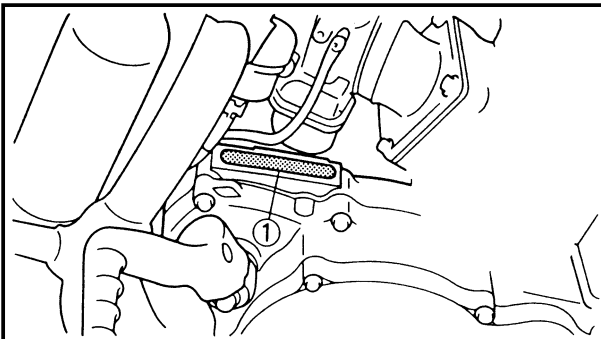
## VEHICLE IDENTIFICATION NUMBER (For USA, CDN, AUS, NZ and E)

The vehicle identification number ① is stamped on the right of the steering head pipe.

EC122001

## FRAME SERIAL NUMBER (For F, D, GB, I and ZA)

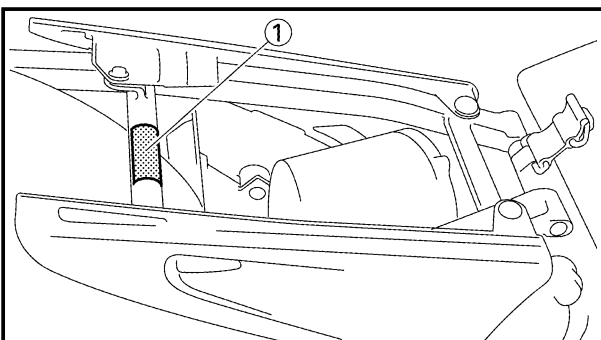
The frame serial number ① is stamped on the right of the steering head pipe.



EC123001

## ENGINE SERIAL NUMBER

The engine serial number ① is stamped into the elevated part of the right-side of the engine.



EC124000

## MODEL LABEL

The model label ① is affixed to the frame under the rider's seat. This information will be needed to order spare parts.



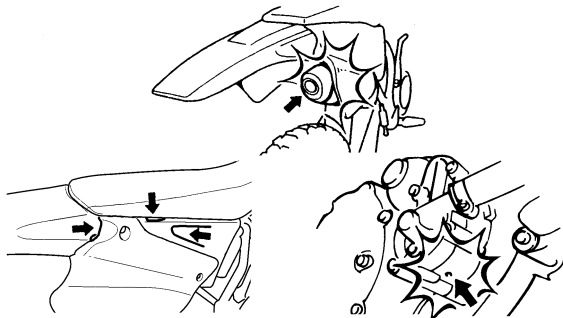
EC130000

**IMPORTANT INFORMATION**

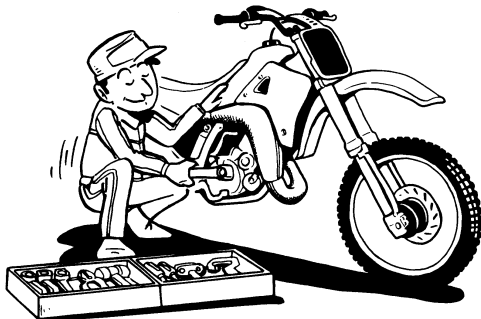
EC131010

**PREPARATION FOR REMOVAL AND DISASSEMBLY**

1. Remove all dirt, mud, dust, and foreign material before removal and disassembly. When washing the machine with high pressured water, cover the parts as follows.
  - Silencer exhaust port
  - Side cover air intake port
  - Water pump housing hole at the bottom



2. Use proper tools and cleaning equipment. Refer to "SPECIAL TOOLS" section.



3. When disassembling the machine, keep mated parts together. They include gears, cylinders, pistons, and other mated parts that have been "mated" through normal wear. Mated parts must be reused as an assembly or replaced.



4. During the machine disassembly, clean all parts and place them in trays in the order of disassembly. This will speed up assembly time and help assure that all parts are correctly reinstalled.



5. Keep away from fire.

EC132000

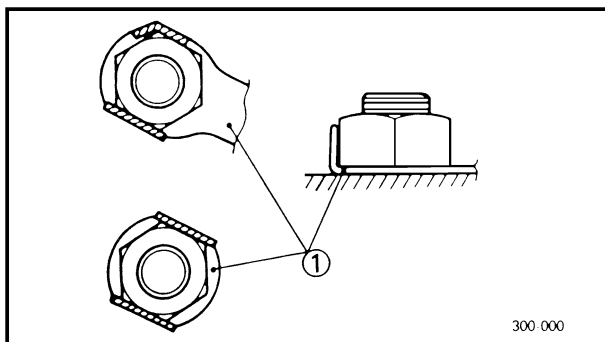
**ALL REPLACEMENT PARTS**

1. We recommend to use Yamaha genuine parts for all replacements. Use oil and/or grease recommended by Yamaha for assembly and adjustment.

EC133000

**GASKETS, OIL SEALS AND O-RINGS**

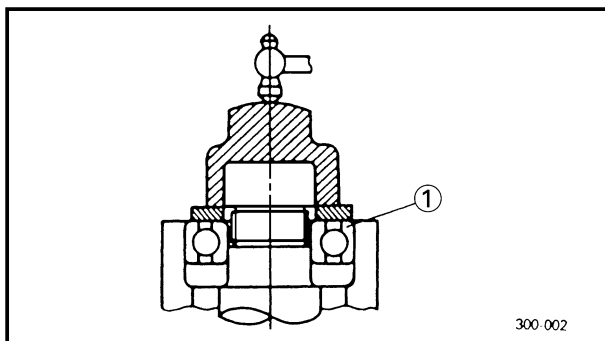
1. All gaskets, oil seals, and O-rings should be replaced when an engine is overhauled. All gasket surfaces, oil seal lips, and O-rings must be cleaned.
2. Properly oil all mating parts and bearings during reassembly. Apply grease to the oil seal lips.



EC134000

**LOCK WASHERS/PLATES AND COTTER PINS**

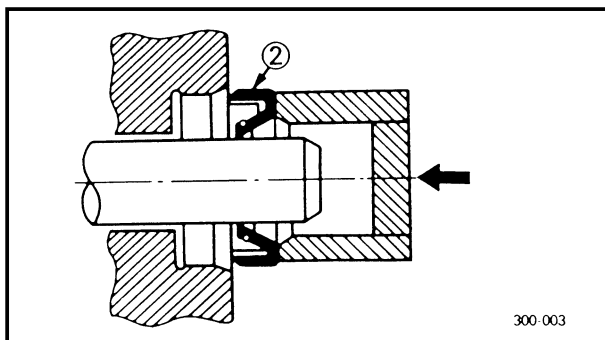
1. All lock washers/plates ① and cotter pins must be replaced when they are removed. Lock tab(s) should be bent along the bolt or nut flat(s) after the bolt or nut has been properly tightened.



EC135001

**BEARINGS AND OIL SEALS**

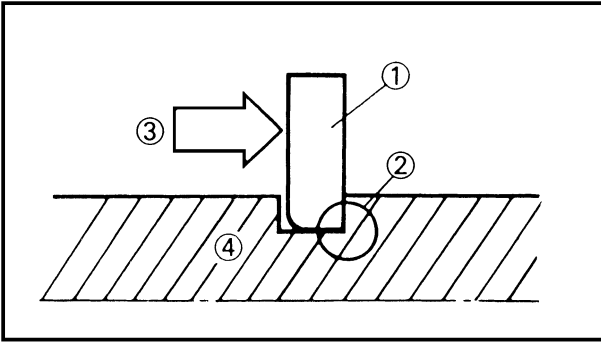
1. Install the bearing (s) ① and oil seal (s) ② with their manufacturer's marks or numbers facing outward. (In other words, the stamped letters must be on the side exposed to view.) When installing oil seal(s), apply a light coating of light-weight lithium base grease to the seal lip(s). Oil the bearings liberally when installing.



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

**Do not use compressed air to spin the bearings dry. This causes damage to the bearing surfaces.**

\_\_\_\_\_



EC136000

## CIRCLIPS

1. All circlips should be inspected carefully before reassembly. Always replace piston pin clips after one use. Replace distorted circlips. When installing a circlip ①, make sure that the sharp-edged corner ② is positioned opposite to the thrust ③ it receives. See the sectional view.

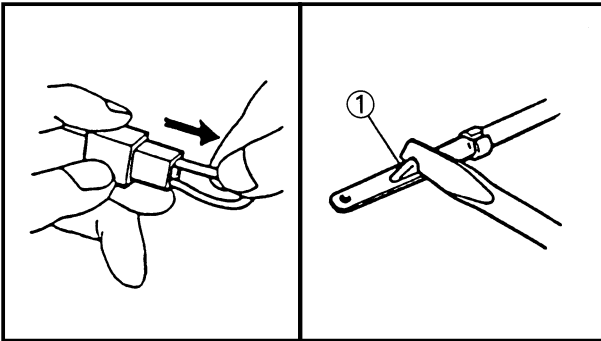
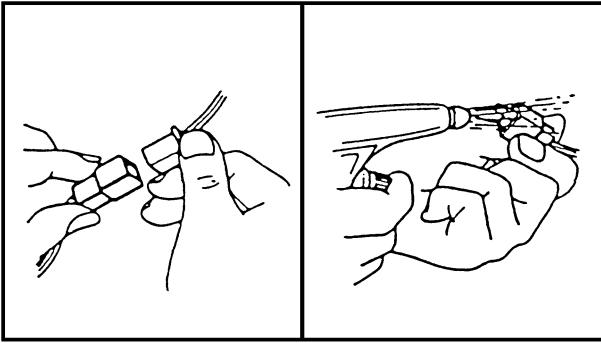
④ Shaft

EC1C0001

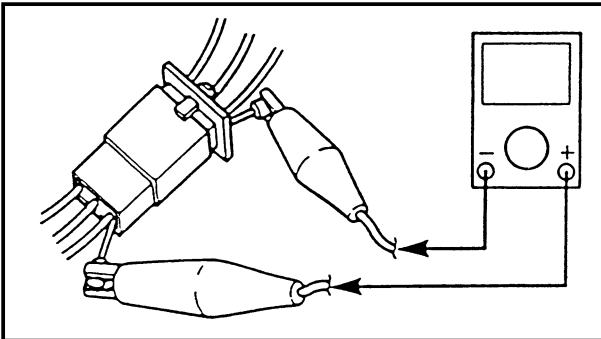
## CHECKING OF CONNECTION

Dealing with stains, rust, moisture, etc. on the connector.

1. Disconnect:
  - Connector
2. Dry each terminal with an air blower.



3. Connect and disconnect the connector two or three times.
4. Pull the lead to check that it will not come off.
5. If the terminal comes off, bend up the pin ① and reinsert the terminal into the connector.



6. Connect:
  - Connector

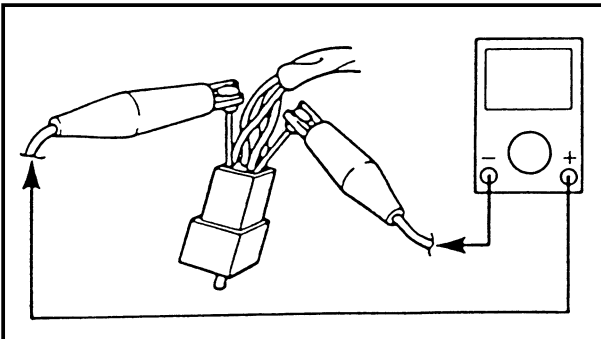
**NOTE:** \_\_\_\_\_

The two connectors “click” together.

7. Check for continuity with a tester.

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

- If there is no continuity, clean the terminals.
- Be sure to perform the steps 1 to 7 listed above when checking the wireharness.
- For a field remedy, use a contact revitalizer available on the market.
- Use the tester on the connector as shown.



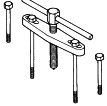
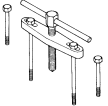
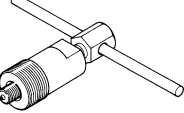
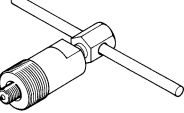
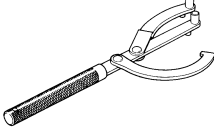
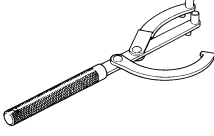
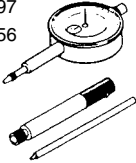

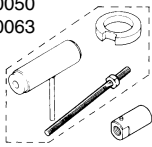
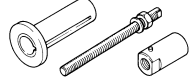
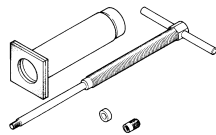
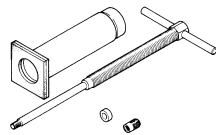
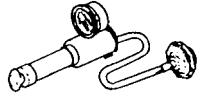
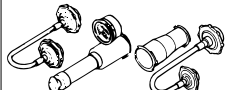
EC140002

**SPECIAL TOOLS**

The proper special tools are necessary for complete and accurate tune-up and assembly. Using the correct special tool will help prevent damage caused by the use of improper tools or improvised techniques. The shape and part number used for the special tool differ by country, so two types are provided. Refer to the list provided to avoid errors when placing an order.

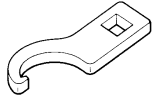
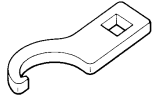
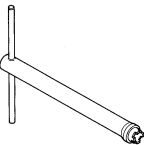
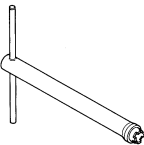
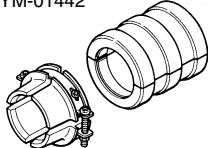
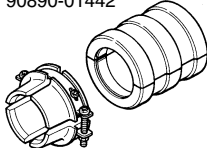


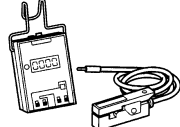
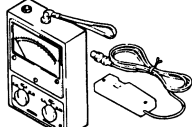
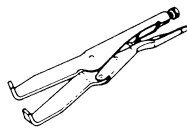
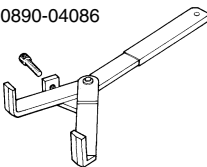
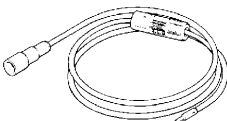
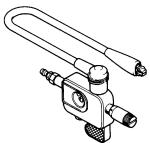
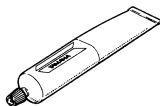
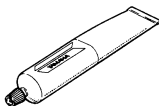
**NOTE:**

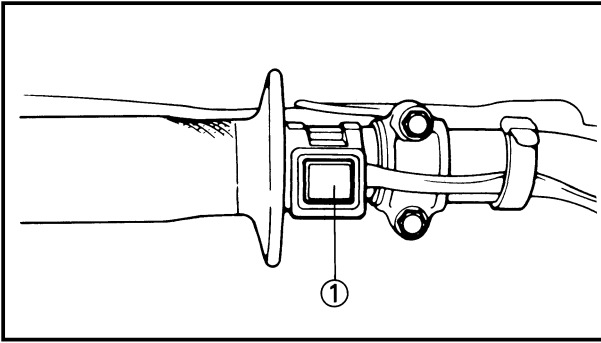
- For U.S.A. and Canada, use part number starting with “YM-”, “YU-” or “ACC -”.
- For others, use part number starting with “90890-”.

Part number	Tool name / How to use	Illustration	
YU-1135-A, 90890-01135	Crankcase separating tool  This tool is used to split the crankcase as well as remove the crankshaft from either case.	YU-1135-A 	90890-01135 
YM-1189, 90890-01189	Flywheel puller  This tool is used to remove the flywheel magneto.	YM-1189 	90890-01189 
YU-1235, 90890-01235	Rotor holding tool  This tool is used when loosening or tightening the flywheel magneto securing nut.	YU-1235 	90890-01235 
YU-3097, 90890-01252 YU-1256	Dial gauge and stand Spark plug hole dial stand  These tools are used to set the ignition timing.	YU-3097 YU-1256 	90890-01252 
YU-90050, 90890-01274 YU-90050, 90890-01275 YU-90063, 90890-01278	Crankcase installing tool Pot Bolt Adapter These tools are used to install the crankshaft.	YU-90050 YU-90063 	90890-01274 90890-01275 90890-01278 
YU-1304, 90890-01304	Piston pin puller  This tool is used to remove the piston pin.	YU-1304 	90890-01304 
YU-24460-01, 90890-01325 YU-33984, 90890-01352	Radiator cap tester Adapter  These tools are used for checking the cooling system.	YU-24460-01 YU-33984 	90890-01325 90890-01352 

# SPECIAL TOOLS



Part number	Tool name / How to use	Illustration	
YU-33975, 90890-01403	Ring nut wrench  This tool is used when tighten the steering ring nut to specification.	YU-33975  	90890-01403  
YM-1423, 90890-01423	Damper rod holder  Use this tool to remove and install the damper rod.	YM-1423  	90890-01423  
YM-01442, 90890-01442	Fork seal driver  This tool is used when install the fork oil seal.	YM-01442  	90890-01442  
YU-3112-C, 90890-03112	Yamaha pocket tester  Use this tool to inspect the coil resistance, output voltage and amperage.	YM-3112-C  	90890-03112  
YU-8036-B 90890-03113	Inductive tachometer Engine tachometer  This tool is needed for observing engine rpm.	YU-8036-B  	90890-03113  
YM-91042, 90890-04086	Clutch holding tool  This tool is used to hold the clutch when removing or installing the clutch boss securing nut.	YM-91042  	90890-04086  
YM-34487 90890-06754	Dynamic spark tester Ignition checker  This instrument is necessary for checking the ignition system components.	YM-34487  	90890-06754  
ACC-QUICK-GS-KT 90890-85505	Quick gasket® YAMAHA Bond No. 1215  This sealant (Bond) is used for crankcase mating surface, etc.	ACC-QUICK-GS-KT  	90890-85505  



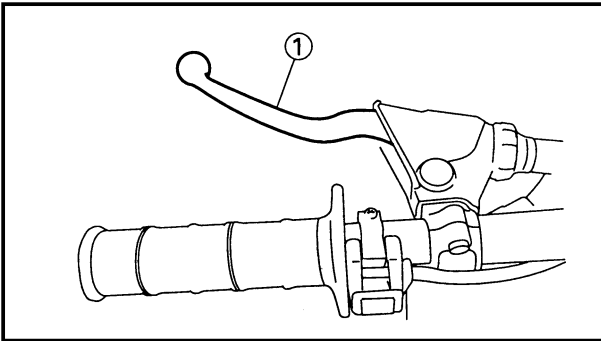
EC150000

## CONTROL FUNCTIONS

EC151000

### “ENGINE STOP” BUTTON

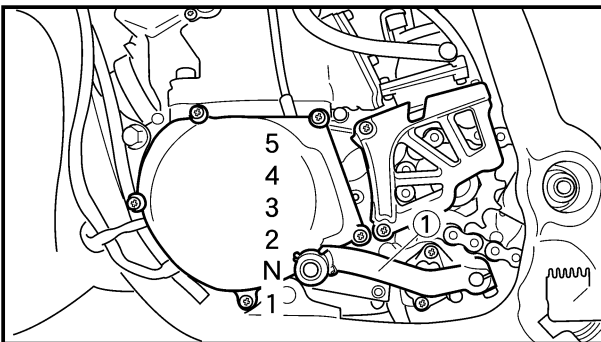
The “ENGINE STOP” button ① is located on the left handlebar. Continue pushing the “ENGINE STOP” button till the engine comes to a stop.



EC152000

### CLUTCH LEVER

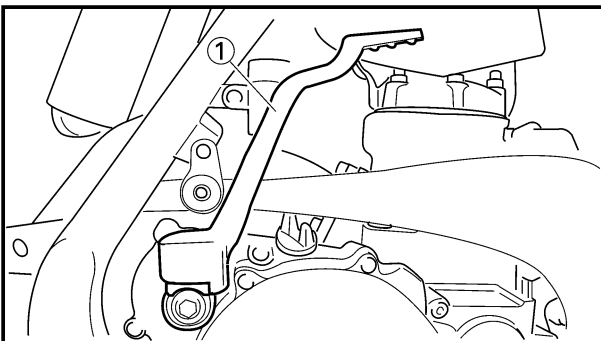
The clutch lever ① is located on the left handlebar; it disengages or engages the clutch. Pull the clutch lever to the handlebar to disengage the clutch, and release the lever to engage the clutch. The lever should be pulled rapidly and released slowly for smooth starts.



EC153000

### SHIFT PEDAL

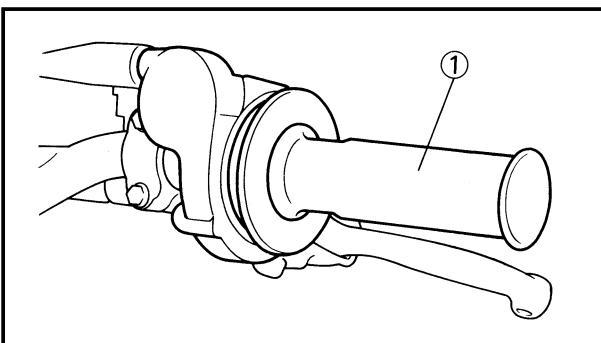
The gear ratios of the constant-mesh 5 speed transmission are ideally spaced. The gears can be shifted by using the shift pedal ① on the left side of the engine.



EC154000

### KICK STARTER

Rotate the kick starter ① away from the engine. Push the starter down lightly with your foot until the gears engage, then kick smoothly and forcefully to start the engine. This model has a primary kick starter so the engine can be started in any gear if the clutch is disengaged. In normal practices, however, shift to neutral before starting.

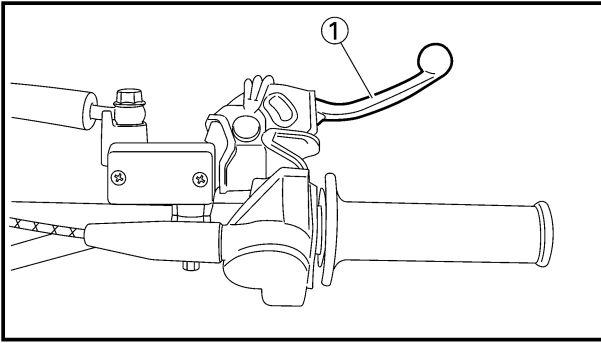


EC155001

### THROTTLE GRIP

The throttle grip ① is located on the right handlebar; it accelerates or decelerates the engine. For acceleration, turn the grip toward you; for deceleration, turn it away from you.

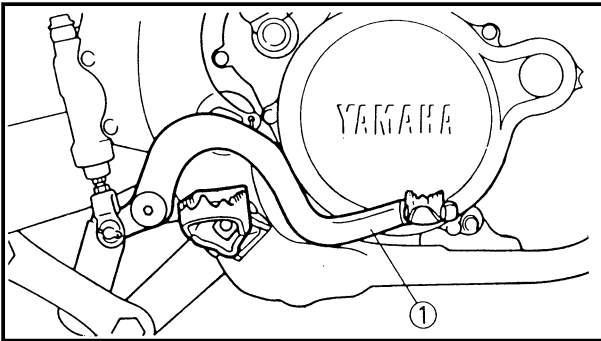




EC156000

## FRONT BRAKE LEVER

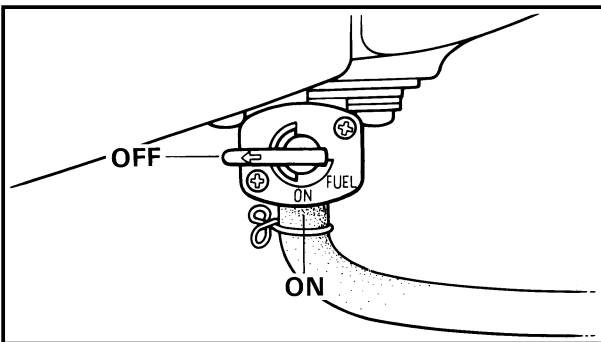
The front brake lever ① is located on the right handlebar. Pull it toward the handlebar to activate the front brake.



EC157000

## REAR BRAKE PEDAL

The rear brake pedal ① is located on the right side of the machine. Press down on the brake pedal to activate the rear brake.



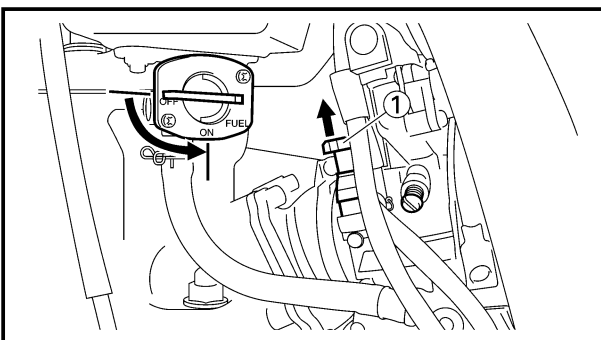
EC158001

## FUEL COCK

The fuel cock supplies fuel from the tank to carburetor while filtering the fuel. The fuel cock has the two positions:

**OFF:** With the lever in this position, fuel will not flow. Always return the lever to this position when the engine is not running.

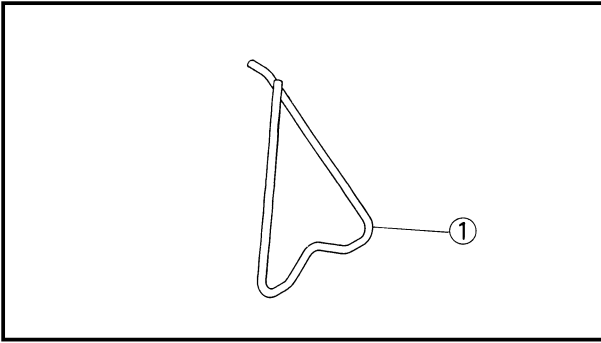
**ON:** With the lever in this position, fuel flows to the carburetor. Normal riding is done with the lever in this position.



EC159000

## STARTER KNOB (CHOKE)

When cold, the engine requires a richer air-fuel mixture for starting. A separate starter circuit, which is controlled by the starter knob ①, supplies this mixture. Pull the starter knob out to open the circuit for starting. When the engine has warmed up, push it in to close the circuit.



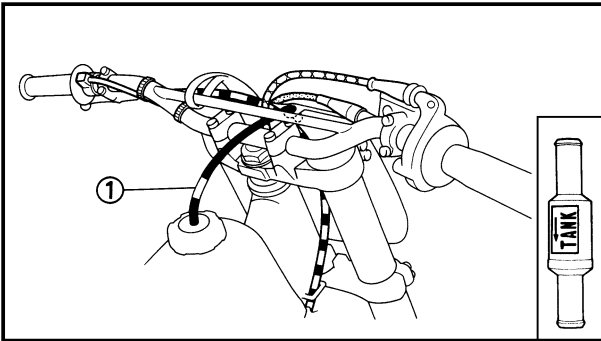
EC15R001

## DETACHABLE SIDESTAND

This sidestand ① is used to support only the machine when standing or transporting it.

### **WARNING**

- Never apply additional force to the side-stand.
- Remove this sidestand before starting out.



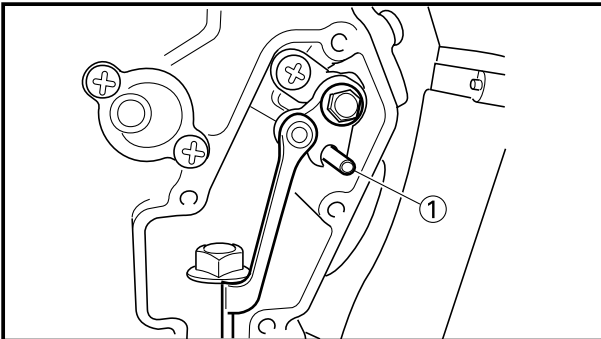
EC15F000

## VALVE JOINT

This valve joint ① prevents fuel from flowing out and is installed to the fuel tank breather hose.

### **CAUTION:**

In this installation, make sure the arrow faces the fuel tank and also downward.



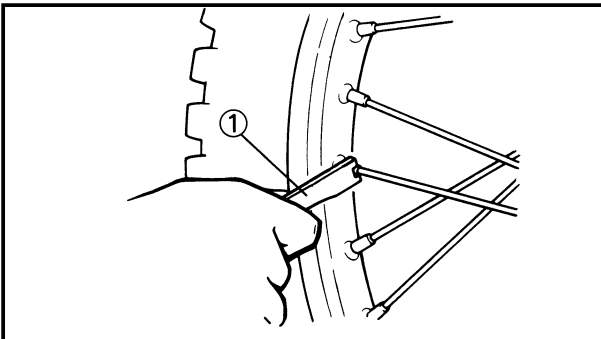
EC15f000

## SET PIN

This set pin ① is used to remove and install the push rod of the engine.

### **CAUTION:**

Be sure to use the set pin. If the set pin is not used, the power valve constituent parts will result in damage.



EC15e000

## NIPPLE WRENCH

This nipple wrench ① is used to tighten the spoke.

EC160051

**FUEL AND ENGINE MIXING OIL**

Mix oil with the gas at the ratio specified below. Always use fresh, name-brand gasoline, and mix the oil and gas the day of the race. Do not use premix that is more than a few hours old.



**Recommended fuel:**

**Except for ZA:**

**Premium unleaded gasoline only with a research octane number of 95 or higher.**

**For ZA:**

**Premium gasoline**

**NOTE:**

If knocking or pinging occurs, use a different brand of gasoline or higher octane grade.

**CAUTION:**

Never mix two types of oil in the same batch; clotting of the oil could result. If you wish to change oil types, be sure to drain the fuel tank and the carburetor float bowl of old premix prior to filling with the new type.



**Fuel tank capacity:**

**8.0 L (1.76 Imp gal, 2.11 US gal)**



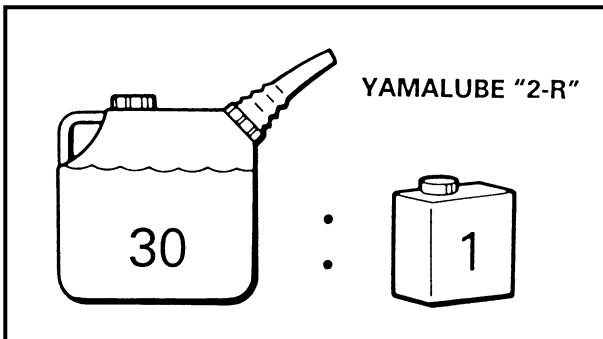
**Mixing oil**

**Recommended oil:**

**Yamalube "2-R"  
(Yamalube racing 2-cycle oil)**

**Mixing ratio: 30 : 1**

**If unavailable, use an equivalent type of oil.**



EC190000

## STARTING AND BREAK-IN

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

Before starting the machine, perform the checks in the pre-operation check list.

---

### **⚠WARNING** \_\_\_\_\_

Never start or run the engine in a closed area. The exhaust fumes are poisonous; they can cause loss of consciousness and death in a very short time. Always operate the machine in a well-ventilated area.

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EC191001

## STARTING A COLD ENGINE

1. Shift the transmission into neutral.
2. Turn the fuel cock to "ON" and full open the starter knob (CHOKE).
3. With the throttle completely closed start the engine by kicking the kick starter forcefully with firm stroke.
4. Run the engine at idle or slightly higher until it warms up: this usually takes about one or two minutes.
5. The engine is warmed up when it responds normally to the throttle with the starter knob (CHOKE) turned off.

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

Do not warm up the engine for extended periods.

---

EC193001

## STARTING A WARM ENGINE

Do not operate the starter knob (CHOKE). Open the throttle slightly and start the engine by kicking the kick starter forcefully with firm stroke.

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


Observe the following break-in procedures during initial operation to ensure optimum performance and avoid engine damage.

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EC194001

## BREAK-IN PROCEDURES

1. Before starting the engine, fill the fuel tank with a break-in oil-fuel mixture as follows.

	<b>Mixing oil:</b> Yamalube "2-R"	<b>Mixing ratio:</b> 15:1
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2. Perform the pre-operation checks on the machine.
3. Start and warm up the engine. Check the idle speed, and check the operation of the controls and the "ENGINE STOP" button.
4. Operate the machine in the lower gears at moderate throttle openings for five to eight minutes. Stop and check the spark plug condition; it will show a rich condition during break-in.
5. Allow the engine to cool. Restart the engine and operate the machine as in the step above for five minutes. Then, very briefly shift to the higher gears and check full-throttle response. Stop and check the spark plug.
6. After again allowing the engine to cool, restart and run the machine for five more minutes. Full throttle and the higher gears may be used, but sustained full-throttle operation should be avoided. Check the spark plug condition.
7. Allow the engine to cool, remove the top end, and inspect the piston and cylinder. Remove any high spots on the piston with #600 grit wet sandpaper. Clean all components and carefully reassemble the top end.
8. Drain the break-in oil-fuel mixture from the fuel tank and refill with the specified mix.
9. Restart the engine and check the operation of the machine throughout its entire operating range. Stop and check the spark plug condition. Restart the machine and operate it for about 10 to 15 more minutes. The machine will now be ready to race.



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

- After the break-in or before each race, you must check the entire machine for loose fittings and fasteners as per “TORQUE-CHECK POINTS”.

Tighten all such fasteners as required.

- When any of the following parts have been replaced, they must be broken in.

**CYLINDER AND CRANKSHAFT:**

About one hour of break-in operation is necessary.

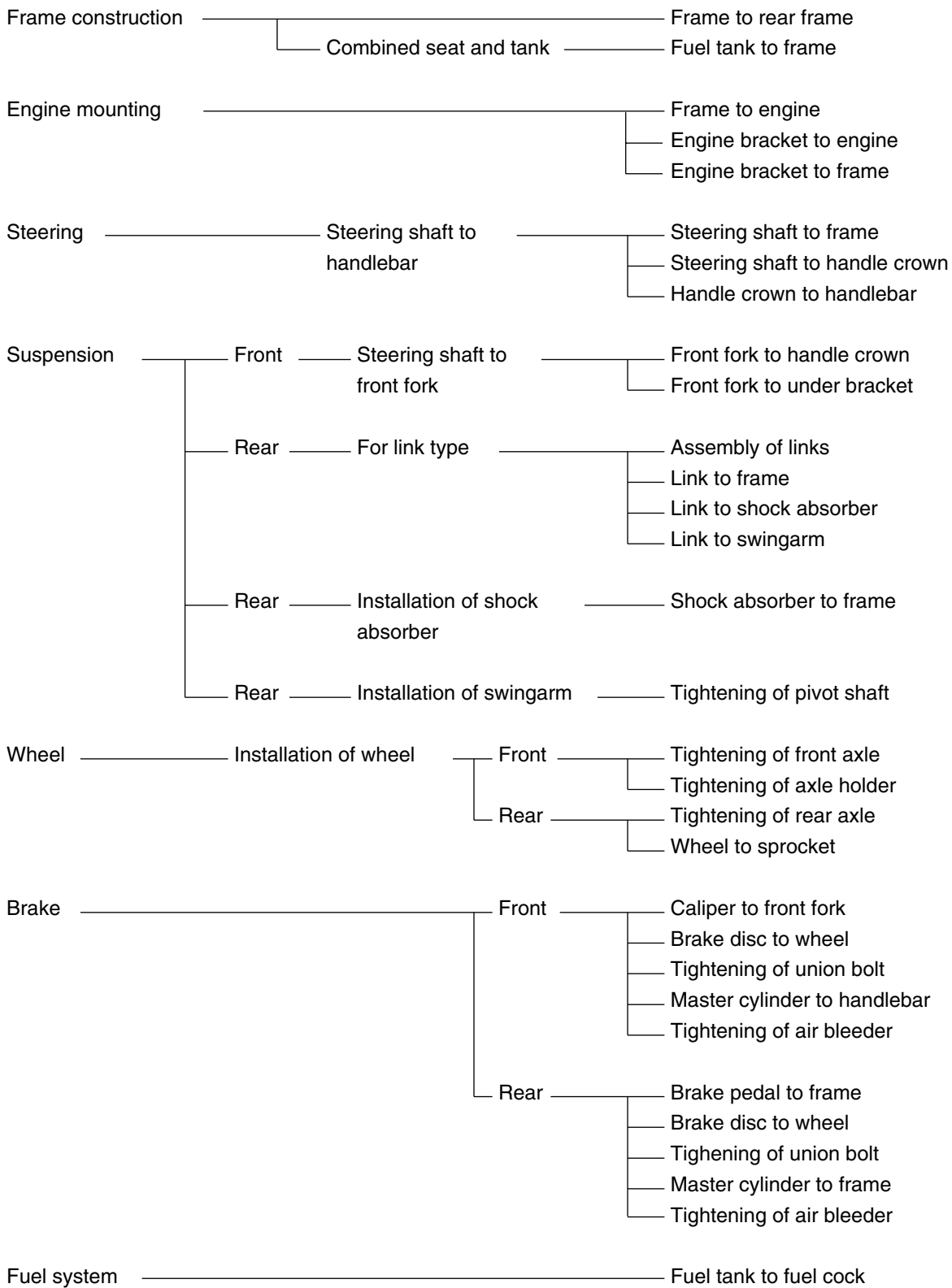
**PISTON, RING AND GEARS:**

These parts require about 30 minutes of break-in operation at half-throttle or less. Observe the condition of the engine carefully during operation.

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EC1A0013

## TORQUE-CHECK POINTS



### NOTE:

Concerning the tightening torque, refer to “MAINTENANCE SPECIFICATIONS” section in the CHAPTER 2.



EC1B0000

### CLEANING AND STORAGE

EC1B1000

#### CLEANING

Frequent cleaning of your machine will enhance its appearance, maintain good overall performance, and extend the life of many components.

1. Before washing the machine, block off the end of the exhaust pipe to prevent water from entering. A plastic bag secured with a rubber band may be used for this purpose.
2. If the engine is excessively greasy, apply some degreaser to it with a paint brush. Do not apply degreaser to the chain, sprockets, or wheel axles.
3. Rinse the dirt and degreaser off with a garden hose; use only enough pressure to do the job.

#### **CAUTION:**

**Excessive hose pressure may cause water seepage and contamination of wheel bearings, front forks, brakes and transmission seals. Many expensive repair bills have resulted from improper high pressure detergent applications such as those available in coin-operated car washers.**

4. After the majority of the dirt has been hosed off, wash all surfaces with warm water and a mild detergent. Use an old toothbrush to clean hard-to-reach places.
5. Rinse the machine off immediately with clean water, and dry all surfaces with a soft towel or cloth.
6. Immediately after washing, remove excess water from the chain with a paper towel and lubricate the chain to prevent rust.
7. Clean the seat with a vinyl upholstery cleaner to keep the cover pliable and glossy.
8. Automotive wax may be applied to all painted or chromed surfaces. Avoid combination cleaner-waxes, as they may contain abrasives.
9. After completing the above, start the engine and allow it to idle for several minutes.





EC1B2001

### STORAGE

If your machine is to be stored for 60 days or more, some preventive measures must be taken to avoid deterioration. After cleaning the machine thoroughly, prepare it for storage as follows:

1. Drain the fuel tank, fuel lines, and the carburetor float bowl.
2. Remove the spark plug, pour a tablespoon of SAE 10W-30 motor oil in the spark plug hole, and reinstall the plug. With the engine stop switch pushed in, kick the engine over several times to coat the cylinder walls with oil.
3. Remove the drive chain, clean it thoroughly with solvent, and lubricate it. Reinstall the chain or store it in a plastic bag tied to the frame.
4. Lubricate all control cables.
5. Block the frame up to raise the wheels off the ground.
6. Tie a plastic bag over the exhaust pipe outlet to prevent moisture from entering.
7. If the machine is to be stored in a humid or salt-air environment, coat all exposed metal surfaces with a film of light oil. Do not apply oil to rubber parts or the seat cover.

### NOTE: \_\_\_\_\_

Make any necessary repairs before the machine is stored.

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EC200000

**SPECIFICATIONS**

EC211000

**GENERAL SPECIFICATIONS**

Model name:	YZ250LC (EUROPE) YZ250R (USA) YZ250(R) (CDN, AUS, NZ, ZA)			
Model code number:	5UP1 (USA, CDN, ZA) 5UP2 (EUROPE) 5UP4 (AUS, NZ)			
Dimensions:	USA, ZA	AUS, NZ	EUROPE	CDN
Overall length	2,183 mm (85.9 in)	←	2,182 mm (85.9 in)	←
Overall width	827 mm (32.6 in)	←	←	←
Overall height	1,309 mm (51.5 in)	1,296 mm (51.0 in)	1,302 mm (51.3 in)	1,307 mm (51.5 in)
Seat height	991 mm (39.0 in)	←	990 mm (39.0 in)	←
Wheelbase	1,481 mm (58.3 in)	←	1,485 mm (58.5 in)	←
Minimum ground clearance	395 mm (15.6 in)	←	393 mm (15.5 in)	←
Basic weight: With oil and full fuel tank	104.5 kg (230.4 lb)			
Engine:	Liquid cooled 2-stroke, gasoline			
Engine type	Single cylinder, forward inclined			
Cylinder arrangement	249 cm <sup>3</sup> (8.76 Imp oz, 8.42 US oz)			
Displacement	66.4 × 72 mm (2.614 × 2.835 in)			
Bore × Stroke	9.1~10.9 : 1 (For USA, CDN and ZA)			
Compression ratio	9.0~10.6 : 1 (For EUROPE, AUS and NZ)			
Starting system	Kick starter			
Lubrication system:	Premix (30 : 1)(Yamalube 2-R)			
Oil type or grade (2-Cycle):	Yamalube 4 (10W-30) or SAE 10W-30 type SE motor oil			
Transmission oil	0.75 L (0.66 Imp qt, 0.79 US qt)			
Periodic oil change	0.80 L (0.70 Imp qt, 0.85 US qt)			
Total amount				
Coolant capacity (including all routes):	1.20 L (1.06 Imp qt, 1.27 US qt)			
Air filter:	Wet type element			
Fuel:	Except for ZA: Premium unleaded gasoline only with a research octane number of 95 or higher			
Type	For ZA: Premium gasoline			
Tank capacity	8.0 L (1.76 Imp gal, 2.11 US gal)			

# GENERAL SPECIFICATIONS

**SPEC**



Carburetor: Type/Manufacturer	PWK38S/KEIHIN	
Spark plug: Type/Manufacturer Gap	BR8EG/NGK (resistance type) 0.5~0.6 mm (0.020~0.024 in)	
Clutch type:	Wet, multiple-disc	
Transmission:	USA, ZA, AUS, NZ	EUROPE, CDN
Primary reduction system	Gear	←
Primary reduction ratio	63/21 (3.000)	←
Secondary reduction system	Chain drive	←
Secondary reduction ratio	50/14 (3.571)	49/14 (3.500)
Transmission type	Constant mesh, 5-speed	←
Operation	Left foot operation	←
Gear ratio: 1st	27/14 (1.929)	←
2nd	23/15 (1.533)	←
3rd	23/18 (1.278)	←
4th	24/22 (1.091)	←
5th	20/21 (0.952)	←
Chassis:	USA, ZA, AUS, NZ	EUROPE, CDN
Frame type	Semi double cradle	←
Caster angle	27.0°	26.8°
Trail	118 mm (4.65 in)	114 mm (4.49 in)
Tire:		
Type	With tube	
Size (front)	80/100-21 51M	
Size (rear)	110/90-19 62M	
Tire pressure (front and rear)	100 kPa (1.0 kgf/cm <sup>2</sup> , 15 psi)	
Brake:		
Front brake type	Single disc brake	
Operation	Right hand operation	
Rear brake type	Single disc brake	
Operation	Right foot operation	
Suspension:		
Front suspension	Telescopic fork	
Rear suspension	Swingarm (link type monocross suspension)	
Shock absorber:		
Front shock absorber	Coil spring/oil damper	
Rear shock absorber	Coil spring/Gas, oil damper	
Wheel travel:		
Front wheel travel	300 mm (11.8 in)	
Rear wheel travel	315 mm (12.4 in)	
Electrical:		
Ignition system	CDI magneto	

**2**

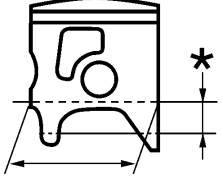
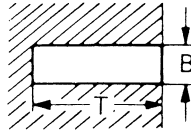
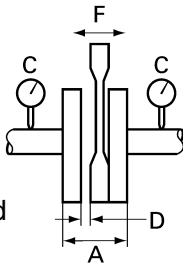


EC212000

## MAINTENANCE SPECIFICATIONS

EC212100

### ENGINE

Item	Standard		Limit
Cylinder head:	USA, CDN, ZA, AUS, NZ	EUROPE	
Combustion chamber capacity	21.0 cm <sup>3</sup> (0.739 Imp oz, 0.710 US oz)	21.5 cm <sup>3</sup> (0.757 Imp oz, 0.727 US oz)	...
Warp limit	...	...	0.03 mm (0.0012 in)
Cylinder:			
Bore size	66.400~66.414 mm (2.6142~2.6147 in)		66.5 mm (2.618 in)
Taper limit	...		0.05 mm (0.0020 in)
Out of round limit	...		0.01 mm (0.0004 in)
Piston:			
Piston size/  Measuring point* Piston clearance  Piston offset		66.352~66.367 mm (2.6120~2.6129 in) 17.5 mm (0.69 in) 0.045~0.050 mm (0.0018~0.0020 in) 1.5 mm (0.059 in)/EX-side	... ... 0.1 mm (0.004 in) ...
Piston pin:			
Piston pin outside diameter	17.995~18.000 mm (0.7085~0.7087 in)		17.975 mm (0.7077 in)
Piston ring:			
Sectional sketch		Plain B=1.0 mm (0.039 in) T=2.55 mm (0.100 in)	... ... ...
End gap (installed)	0.40~0.55 mm (0.016~0.022 in)		0.95 mm (0.037 in)
Side clearance (installed) : 1st	0.030~0.065 mm (0.0012~0.0026 in)		0.1 mm (0.004 in)
: 2nd	0.030~0.065 mm (0.0012~0.0026 in)		0.1 mm (0.004 in)
Crankshaft:			
Crank width "A" Runout limit "C" Connecting rod big end side clearance "D" Small end free play "F"		59.95~60.00 mm (2.360~2.362 in) 0.03 mm (0.0012 in) 0.25~0.75 mm (0.010~0.030 in) 0.4~1.0 mm (0.016~0.039 in)	... 0.05 mm (0.0020 in) ... 2.0 mm (0.08 in)
Clutch:			
Friction plate thickness	2.9~3.1 mm (0.114~0.122 in)		2.8 mm (0.110 in)
Quantity	8		...
Clutch plate thickness	1.5~1.7 mm (0.059~0.067 in)		...
Quantity	7		...
Warp limit	...		0.2 mm (0.008 in)
Clutch spring free length	50.0 mm (1.969 in)		48.0 mm (1.890 in)
Quantity	6		...

# MAINTENANCE SPECIFICATIONS

**SPEC**



Item	Standard		Limit
Clutch housing thrust clearance	0.17~0.23 mm (0.007~0.009 in)		...
Clutch housing radial clearance	0.030~0.055 mm (0.001~0.002 in)		...
Clutch release method	Inner push, cam push		...
Transmission:			
Main axle deflection limit	...		0.01 mm (0.0004 in)
Drive axle deflection limit	...		0.01 mm (0.0004 in)
Shifter:			
Shifting type	Cam drum and guide bar		...
Guide bar bending limit	...		0.05 mm (0.0020 in)
Kick starter type:	Kick and ratchet type		...
Air filter oil grade (oiled filter):	Foam-air-filter oil or equivalent oil		...
Carburetor:	USA, CDN, ZA, AUS, NZ	EUROPE	
Type/Manufacturer	PWK38S/KEIHIN	←	...
I.D. mark	5NX1 00	5UP2 10	...
Main jet (M.J.)	#178	#180	...
Main air jet (M.A.J.)	#200	←	...
Jet needle-clip position (J.N.)	N3EJ-2	N3EW-3	...
Main nozzle (N.J.)	ø2.9	←	...
Cutaway (C.A.)	#7	←	...
Pilot jet (P.J.)	#50	#52	...
Pilot air screw (P.A.S.)	1	7/8	...
(for reference only)			
Valve seat size (V.S.)	ø3.8 mm (0.15 in)	←	...
Starter jet (G.S.)	#85	←	...
Power jet (P.W.J.)	#50	←	...
Float arm height (F.H.)	5.5~7.5 mm (0.22~0.30 in)	←	...
Reed valve:			
Thickness*	0.42 mm (0.017 in)		...
Valve stopper height	10.3~10.7 mm (0.406~0.421 in)		...
Valve bending limit	...		0.2 mm (0.008 in)
Cooling:			
Radiator core size:			
Width	107.8 mm (4.24 in)		...
Height	240 mm (9.45 in)		...
Thickness	32 mm (1.26 in)		...
Radiator cap opening pressure	95~125 kPa (0.95~1.25 kg/cm <sup>2</sup> , 13.5~17.8 psi)		...
Radiator capacity (total)	0.63 L (0.55 Imp qt, 0.67 US qt)		...
Water pump:			
Type	Single-suction centrifugal pump		...

# MAINTENANCE SPECIFICATIONS

**SPEC**


Part to be tightened	Thread size	Q'ty	Tightening torque		
			Nm	m•kg	ft•lb
Spark plug	M14 × 1.25	1	20	2.0	14
Cylinder head (nut)	M 8 × 1.25	6	25	2.5	18
(stud)	M 8 × 1.25	6	13	1.3	9.4
Cylinder (nut)	M10 × 1.25	4	42	4.2	30
(stud)	M10 × 1.25	4	13	1.3	9.4
Power valve :					
Holder	M 5 × 0.8	2	6	0.6	4.3
Link rod	M 5 × 0.8	2	6	0.6	4.3
Push rod	M 5 × 0.8	1	5	0.5	3.6
Thrust plate	M 5 × 0.8	1	6	0.6	4.3
Side holder	M 5 × 0.8	4	4	0.4	2.9
Link lever	M 4 × 0.7	1	4	0.4	2.9
Pulley	M 4 × 0.7	2	4	0.4	2.9
Cover	M 5 × 0.8	4	4	0.4	2.9
Governor fork	M 4 × 0.7	2	5	0.5	3.6
Housing	M 5 × 0.8	4	5	0.5	3.6
Impeller	M 8 × 1.25	1	14	1.4	10
Water pump housing cover	M 6 × 1.0	4	10	1.0	7.2
Coolant drain bolt	M 6 × 1.0	1	10	1.0	7.2
Radiator	M 6 × 1.0	6	10	1.0	7.2
Radiator panel	M 6 × 1.0	2	10	1.0	7.2
Radiator hose clamp	M 6 × 1.0	8	1	0.1	0.7
Air filter element	M 6 × 1.0	1	2	0.2	1.4
Carburetor joint	M 6 × 1.0	5	10	1.0	7.2
Air filter case	M 6 × 1.0	4	8	0.8	5.8
Air filter guide clamp	M 5 × 0.8	1	1	0.1	0.7
Reed valve	M 3 × 0.5	4	1	0.1	0.7
Exhaust pipe (front)	M 6 × 1.0	1	14	1.4	10
Exhaust pipe (rear)	M 6 × 1.0	1	12	1.2	8.7
Exhaust pipe stay (front)	M 8 × 1.25	1	25	2.5	18
Exhaust pipe stay (rear)	M 6 × 1.0	1	12	1.2	8.7
Silencer (front)	M 6 × 1.0	1	12	1.2	8.7
Silencer (rear)	M 6 × 1.0	1	11	1.1	8.0
Fiber (silencer)	M 6 × 1.0	2	10	1.0	7.2
Crankcase	M 6 × 1.0	11	14	1.4	10
Crankcase cover (left)	M 6 × 1.0	5	8	0.8	5.8
Chain cover	M 6 × 1.0	2	8	0.8	5.8
Crankcase cover (right)	M 6 × 1.0	9	10	1.0	7.2
Bearing plate cover (drive axle left)	M 6 × 1.0	2	10	1.0	7.2
Bearing plate cover (main axle right)	M 6 × 1.0	2	10	1.0	7.2
Holder	M 6 × 1.0	2	10	1.0	7.2
Oil drain bolt	M12 × 1.5	1	20	2.0	14
Oil check bolt	M 6 × 1.0	1	10	1.0	7.2
Kick starter	M 8 × 1.25	1	30	3.0	22
Ratchet wheel stopper	M 6 × 1.0	2	10	1.0	7.2
Clutch cover	M 6 × 1.0	6	10	1.0	7.2

# MAINTENANCE SPECIFICATIONS

**SPEC**



Part to be tightened	Thread size	Q'ty	Tightening torque		
			Nm	m•kg	ft•lb
Primary drive gear	M10 × 1.25	1	55	5.5	40
Clutch boss	M20 × 1.0	1	75	7.5	54
Clutch spring	M 6 × 1.0	6	10	1.0	7.2
Push lever axle	M 5 × 0.8	1	6	0.6	4.3
Drive sprocket	M20 × 1.0	1	75	7.5	54
Shift guide	M 6 × 1.0	2	10	1.0	7.2
Stopper lever	M 6 × 1.0	1	10	1.0	7.2
Torsion spring (shift shaft) stopper bolt	M 8 × 1.25	1	22	2.2	16
Segment	M 8 × 1.25	1	30	3.0	22
Bearing plate cover (shift cam right)	M 6 × 1.0	2	10	1.0	7.2
Shift pedal	M 6 × 1.0	1	10	1.0	7.2

# MAINTENANCE SPECIFICATIONS

**SPEC**



EC212201

## CHASSIS

Item	Standard		Limit
Steering system: Steering bearing type	Taper roller bearing		...
Front suspension:	USA, CDN, ZA, AUS, NZ	EUROPE	
Front fork travel	300 mm (11.8 in)	←	...
Fork spring free length	460 mm (18.1 in)	←	455 mm (17.9 in)
Spring rate, STD	K=4.22 N/mm (0.430 kg/mm, 24.1 lb/in)	K=Approx. 4.22 N/mm (0.430 kg/mm) 24.1 lb/in	...
Optional spring/Spacer	Yes	←	...
Oil capacity	568 cm <sup>3</sup> (20.0 Imp oz, 19.2 US oz)	←	...
Oil level	135 mm (5.31 in)	←	...
<Min.~Max.> (From top of outer tube with inner tube and damper rod fully compressed without spring.)	80~150 mm (3.15~5.91 in)	←	...
Oil grade	Suspension oil "01"	←	...
Inner tube outer diameter	46 mm (1.81 in)	←	...
Front fork top end	Zero mm (Zero in)	←	...
Rear suspension:	USA, CDN, ZA, AUS,NZ	EUROPE	
Shock absorber travel	132 mm (5.20 in)	←	...
Spring free length	260 mm (10.24 in)	275 mm (10.83 in)	...
Fitting length	251 mm (9.88 in)	261 mm (10.28 in)	...
<Min.~Max.>	240.5~258.5 mm (9.47~10.18 in)	255.5~273.5 mm (10.06~10.77 in)	...
Spring rate, STD	K=48 N/mm (4.9 kg/mm, 274.4 lb/in)	K=Approx. 48 N/mm (4.9 kg/mm, 274.4 lb/in)	...
Optional spring	Yes	←	...
Enclosed gas pressure	1,000 kPa (10 kg/cm <sup>2</sup> , 142 psi)	←	...
Swingarm: Swingarm free play limit			
End	...		1.0 mm (0.04 in)
Side clearance	...		0.2~0.9 mm (0.008~0.035 in)



# MAINTENANCE SPECIFICATIONS

**SPEC**



Item	Standard	Limit
<b>Wheel:</b> Front wheel type Rear wheel type Front rim size/Material Rear rim size/Material Rim runout limit: Radial Lateral	Spoke wheel Spoke wheel 21 × 1.60/Aluminum 19 × 2.15/Aluminum ... ...	... ... ... ... 2.0 mm (0.08 in) 2.0 mm (0.08 in)
<b>Drive chain</b> Type/Manufacturer Number of links Chain slack Chain length (10 links)	DID520DMA2 SDH/DAIDO 113 links + joint 40~50 mm (1.6~2.0 in) ...	... ... ... 152.5 mm (6.004 in)
<b>Front disc brake:</b> Disc outside dia. × Thickness  Pad thickness Master cylinder inside dia. Caliper cylinder inside dia. Brake fluid type	250 × 3.0 mm (9.84 × 0.12 in) 4.4 mm (0.17 in) 11.0 mm (0.433 in) 27.0 mm (1.063 in) × 2 DOT #4	250 × 2.5 mm (9.84 × 0.10 in) 1.0 mm (0.04 in) ... ... ...
<b>Rear disc brake:</b> Disc outside dia. × Thickness  Deflection limit Pad thickness Master cylinder inside dia. Caliper cylinder inside dia. Brake fluid type	245 × 4.0 mm (9.65 × 0.16 in) ... 6.4 mm (0.25 in) 11.0 mm (0.433 in) 25.4 mm (1.000 in) DOT #4	245 × 3.5 mm (9.65 × 0.14 in) 0.15 mm (0.006 in) 1.0 mm (0.04 in) ... ... ...
<b>Brake lever &amp; brake pedal:</b> Brake lever position Brake pedal height (vertical height above footrest top) Clutch lever free play (lever end) Throttle grip free play	95 mm (3.74 in) Zero mm (Zero in)  8~13 mm (0.31~0.51 in) 3~5 mm (0.12~0.20 in)	... ... ... ...

# MAINTENANCE SPECIFICATIONS

**SPEC**



	Part to be tightened	Thread size	Q'ty	Tightening torque		
				Nm	m•kg	ft•lb
△	Handle crown and outer tube	M 8 × 1.25	4	23	2.3	17
△	Under bracket and outer tube	M 8 × 1.25	4	20	2.0	14
△	Handle crown and steering shaft	M24 × 1.0	1	145	14.5	105
△	Handlebar holder (upper)	M 8 × 1.25	4	28	2.8	20
△	Steering ring nut	M28 × 1.0	1	Refer to NOTE.		
	Front fork and cap bolt	M48 × 1.0	2	30	3.0	22
	Front fork and base valve	M30 × 1.0	2	55	5.5	40
	Cap bolt and damper rod (front fork)	M12 × 1.25	2	29	2.9	21
	Bleed screw (front fork) and cap bolt	M 5 × 0.8	2	1	0.1	0.7
	Front fork and protector	M 6 × 1.0	6	10	1.0	7.2
	Front fork and brake hose holder	M 6 × 1.0	2	10	1.0	7.2
	Front fork and hose cover	M 8 × 1.25	1	16	1.6	11
	Front fork and hose cover	M 6 × 1.0	1	7	0.7	5.1
	Throttle cable cap	M 4 × 0.7	2	1	0.1	0.7
	Grip cap upper and lower	M 6 × 1.0	2	4	0.4	2.9
	Clutch lever (bolt)	M 6 × 1.0	1	2	0.2	1.4
	Clutch lever holder	M 5 × 0.8	2	4	0.4	2.9
△	Front brake master cylinder and bracket	M 6 × 1.0	2	9	0.9	6.5
	Front brake master cylinder cap	M 4 × 0.7	2	2	0.2	1.4
	Brake lever mounting (bolt)	M 6 × 1.0	1	6	0.6	4.3
	Brake lever mounting (nut)	M 6 × 1.0	1	6	0.6	4.3
	Brake lever position locknut	M 6 × 1.0	1	5	0.5	3.6
	Cable guide (front brake hose) and guide stay	M 5 × 0.8	1	4	0.4	2.9
△	Front brake hose union bolt (master cylinder)	M10 × 1.25	1	30	3.0	22
△	Front brake hose union bolt (caliper)	M10 × 1.25	1	30	3.0	22
△	Front brake caliper and front fork	M 8 × 1.25	2	23	2.3	17
	Brake caliper (front and rear) and pad pin plug	M10 × 1.0	1	3	0.3	2.2
△	Brake caliper (front and rear) and pad pin	M10 × 1.0	1	18	1.8	13
△	Brake caliper (front and rear) and bleed screw	M 8 × 1.25	1	6	0.6	4.3
△	Front wheel axle and nut	M16 × 1.5	1	105	10.5	75
△	Front wheel axle holder	M 8 × 1.25	4	23	2.3	17
△	Front brake disc and wheel hub	M 6 × 1.0	6	12	1.2	8.7
△	Rear brake disc and wheel hub	M 6 × 1.0	6	14	1.4	10
△	Brake pedal mounting	M 8 × 1.25	1	26	2.6	19
△	Rear brake master cylinder and frame	M 6 × 1.0	2	10	1.0	7.2

**NOTE:**

1. First, tighten the ring nut approximately 38 Nm (3.8 m•kg, 27 ft•lb) by using the ring nut wrench, then loosen the ring nut one turn.
2. Retighten the ring nut 7 Nm (0.7 m•kg, 5.1 ft•lb).

# MAINTENANCE SPECIFICATIONS

**SPEC**



Part to be tightened	Thread size	Q'ty	Tightening torque		
			Nm	m•kg	ft•lb
Rear brake master cylinder cap	M 4 × 0.7	2	2	0.2	1.4
△ Rear brake hose union bolt (caliper)	M10 × 1.25	1	30	3.0	22
△ Rear brake hose union bolt (master cylinder)	M10 × 1.25	1	30	3.0	22
△ Rear wheel axle and nut	M20 × 1.5	1	125	12.5	90
△ Driven sprocket and wheel hub	M 8 × 1.25	6	42	4.2	30
△ Nipple (spoke)	–	72	3	0.3	2.2
Disc cover and rear brake caliper	M 6 × 1.0	2	7	0.7	5.1
Protector and rear brake caliper	M 6 × 1.0	2	7	0.7	5.1
Chain puller adjust bolt and locknut	M 8 × 1.25	2	16	1.6	11
Engine mounting:					
△ Engine bracket and frame	M 8 × 1.25	2	34	3.4	24
△ Engine and frame (front)	M10 × 1.25	1	69	6.9	50
△ Engine and frame (upper)	M10 × 1.25	1	69	6.9	50
△ Engine and frame (lower)	M10 × 1.25	1	69	6.9	50
△ Pivot shaft and nut	M16 × 1.5	1	85	8.5	61
△ Relay arm and swingarm	M14 × 1.5	1	80	8.0	58
△ Relay arm and connecting rod	M14 × 1.5	1	80	8.0	58
△ Connecting rod and frame	M14 × 1.5	1	80	8.0	58
△ Rear shock absorber and frame	M10 × 1.25	1	56	5.6	40
△ Rear shock absorber and relay arm	M10 × 1.25	1	53	5.3	38
△ Rear frame and frame (upper)	M 8 × 1.25	1	32	3.2	23
△ Rear frame and frame (lower)	M 8 × 1.25	2	29	2.9	21
Swingarm and brake hose holder	M 5 × 0.8	4	1	0.1	0.7
Swingarm and patch	M 4 × 0.7	4	2	0.2	1.4
Drive chain tensioner mounting	M 8 × 1.25	2	19	1.9	13
Chain support and swingarm	M 6 × 1.0	3	7	0.7	5.1
Seal guard and swingarm	M 5 × 0.8	4	6	0.6	4.3
△ Fuel tank mounting	M 6 × 1.0	2	10	1.0	7.2
△ Fuel tank and fuel cock	M 6 × 1.0	2	7	0.7	5.1
Fuel tank and seat set bracket	M 6 × 1.0	1	7	0.7	5.1
Fuel tank and hooking screw (fitting band)	M 6 × 1.0	1	7	0.7	5.1
Fuel tank and fuel tank bracket	M 6 × 1.0	4	7	0.7	5.1
Seat mounting	M 8 × 1.25	2	19	1.9	13
Side cover mounting	M 6 × 1.0	2	7	0.7	5.1
Air scoop mounting	M 6 × 1.0	6	4	0.4	2.9
Front fender mounting	M 6 × 1.0	4	7	0.7	5.1
Rear fender mounting (front)	M 6 × 1.0	2	7	0.7	5.1
Rear fender mounting (rear)	M 6 × 1.0	2	11	1.1	8.0
Number plate	M 6 × 1.0	1	7	0.7	5.1

**NOTE:**

△ - marked portion shall be checked for torque tightening after break-in or before each race.

# MAINTENANCE SPECIFICATIONS

**SPEC**



EC212300

## ELECTRICAL

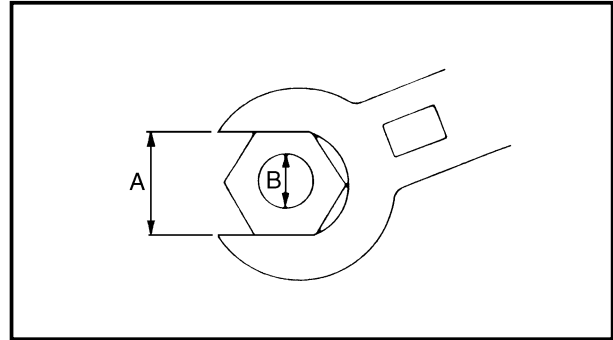
Item	Standard	Limit
Ignition system: Ignition timing (B.T.D.C.)	0.18 mm (0.007 in)	...
Advancer type	Electrical	...
CDI:		
Magneto-model (stator)/Manufacturer	5CU-02/YAMAHA	...
Source coil 1 resistance (color)	720~1,080 Ω at 20°C (68°F) (Black-Black/Red)	...
Source coil 2 resistance (color)	44~66 Ω at 20°C (68°F) (Green/Blue-Green/White)	...
Pickup coil resistance (color)	248~372 Ω at 20°C (68°F) (White/Blue-White/Red)	...
CDI unit-model/Manufacturer	5NX-00/YAMAHA	...
Ignition coil:		
Model/Manufacturer	4MX-00/YAMAHA	...
Minimum spark gap	6 mm (0.24 in)	...
Primary winding resistance	0.20~0.30 Ω at 20°C (68°F)	...
Secondary winding resistance	9.5~14.3 kΩ at 20°C (68°F)	...
Spark plug cap: Resistance	4~6 kΩ at 20°C (68°F)	...

Part to be tightened	Thread size	Q'ty	Tightening torque		
			Nm	m•kg	ft•lb
Stator	M 6 × 1.0	3	8	0.8	5.8
Rotor	M12 × 1.25	1	56	5.6	40
Ignition coil	M 6 × 1.0	2	7	0.7	5.1

EC220001

## GENERAL TORQUE SPECIFICATIONS

This chart specifies torque for standard fasteners with standard I.S.O. pitch threads. Torque specifications for special components or assemblies are included in the applicable sections of this book. To avoid warpage, tighten multi-fastener assemblies in a crisscross fashion, in progressive stages, until full torque is reached. Unless otherwise specified, torque specifications call for clean, dry threads. Components should be at room temperature.



A: Distance across flats

B: Outside thread diameter

A (Nut)	B (Bolt)	TORQUE SPECIFICATION		
		Nm	m•kg	ft•lb
10 mm	6 mm	6	0.6	4.3
12 mm	8 mm	15	1.5	11
14 mm	10 mm	30	3.0	22
17 mm	12 mm	55	5.5	40
19 mm	14 mm	85	8.5	61
22 mm	16 mm	130	13	94

EC230000

## DEFINITION OF UNITS

Unit	Read	Definition	Measure
mm	millimeter	$10^{-3}$ meter	Length
cm	centimeter	$10^{-2}$ meter	Length
kg	kilogram	$10^3$ gram	Weight
N	Newton	$1 \text{ kg} \times \text{m}/\text{sec}^2$	Force
Nm	Newton meter	$\text{N} \times \text{m}$	Torque
m•kg	Meter kilogram	$\text{m} \times \text{kg}$	Torque
Pa	Pascal	$\text{N}/\text{m}^2$	Pressure
N/mm	Newton per millimeter	$\text{N}/\text{mm}$	Spring rate
L	Liter	—	Volume or capacity
cm <sup>3</sup>	Cubic centimeter	—	Volume or capacity
r/min	Revolution per minute	—	Engine speed

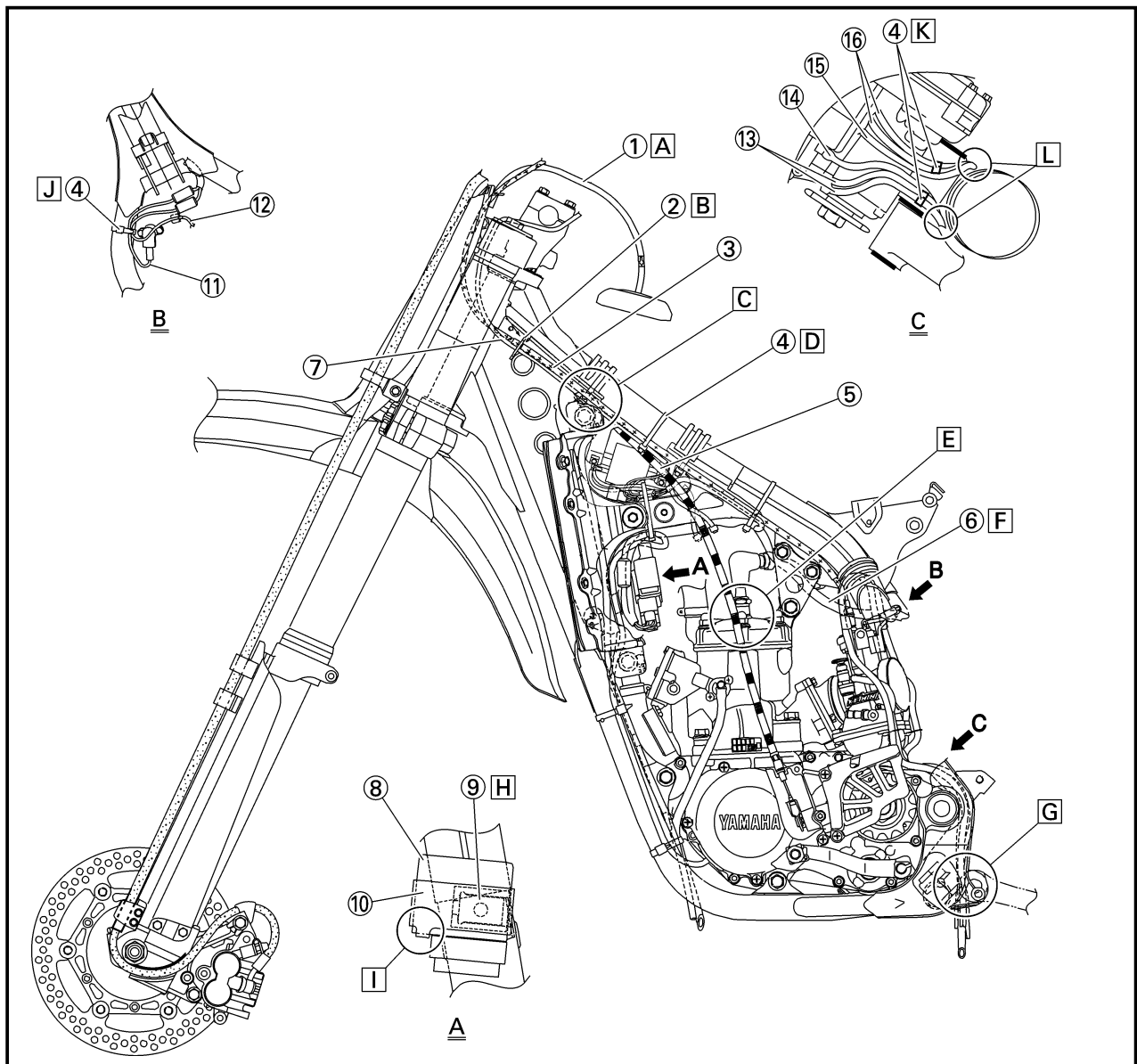


EC240000

## CABLE ROUTING DIAGRAM

- ① Fuel tank breather hose
- ② Cable guide
- ③ Throttle cable
- ④ Clamp
- ⑤ Clutch cable
- ⑥ Wireharness
- ⑦ "ENGINE STOP" button lead
- ⑧ CDI unit
- ⑨ CDI unit stay
- ⑩ CDI unit band
- ⑪ TPS (throttle position sensor) lead
- ⑫ Solenoid valve lead
- ⑬ Air vent hose (left)
- ⑭ Transmission oil breather hose
- ⑮ Overflow hose
- ⑯ Air vent hose (right)

- A** Pass the fuel tank breather hose between the handlebar and tension bar, then insert its end into the hole of the number plate.
- B** Pass the throttle cable and "ENGINE STOP" button lead into the cable guide. Align with the tape on the throttle cable.
- C** Pass the throttle cable and "ENGINE STOP" button lead over the radiator hose.
- D** Clamp the throttle cable and "ENGINE STOP" button lead with the clamp ends downward.
- E** Pass the clutch cable a little forward of the extreme left nut that holds the cylinder head.
- F** Pass the wireharness between the engine brackets.
- G** Pass the air vent hoses, overflow hose and transmission oil breather hose between the frame and connecting rod.
- H** Fit the CDI unit band into the CDI unit stay till it stops.
- I** Insert the CDI unit into the CDI unit band till it stops.
- J** Clamp the TPS (throttle position sensor) lead and solenoid valve lead at the side of the TPS with the clamp ends backward.
- K** Clamp the air vent hoses.
- L** Pass the air vent hoses, overflow hose and transmission oil breather hose so that all these hoses do not contact the rear shock absorber.



# CABLE ROUTING DIAGRAM

SPEC

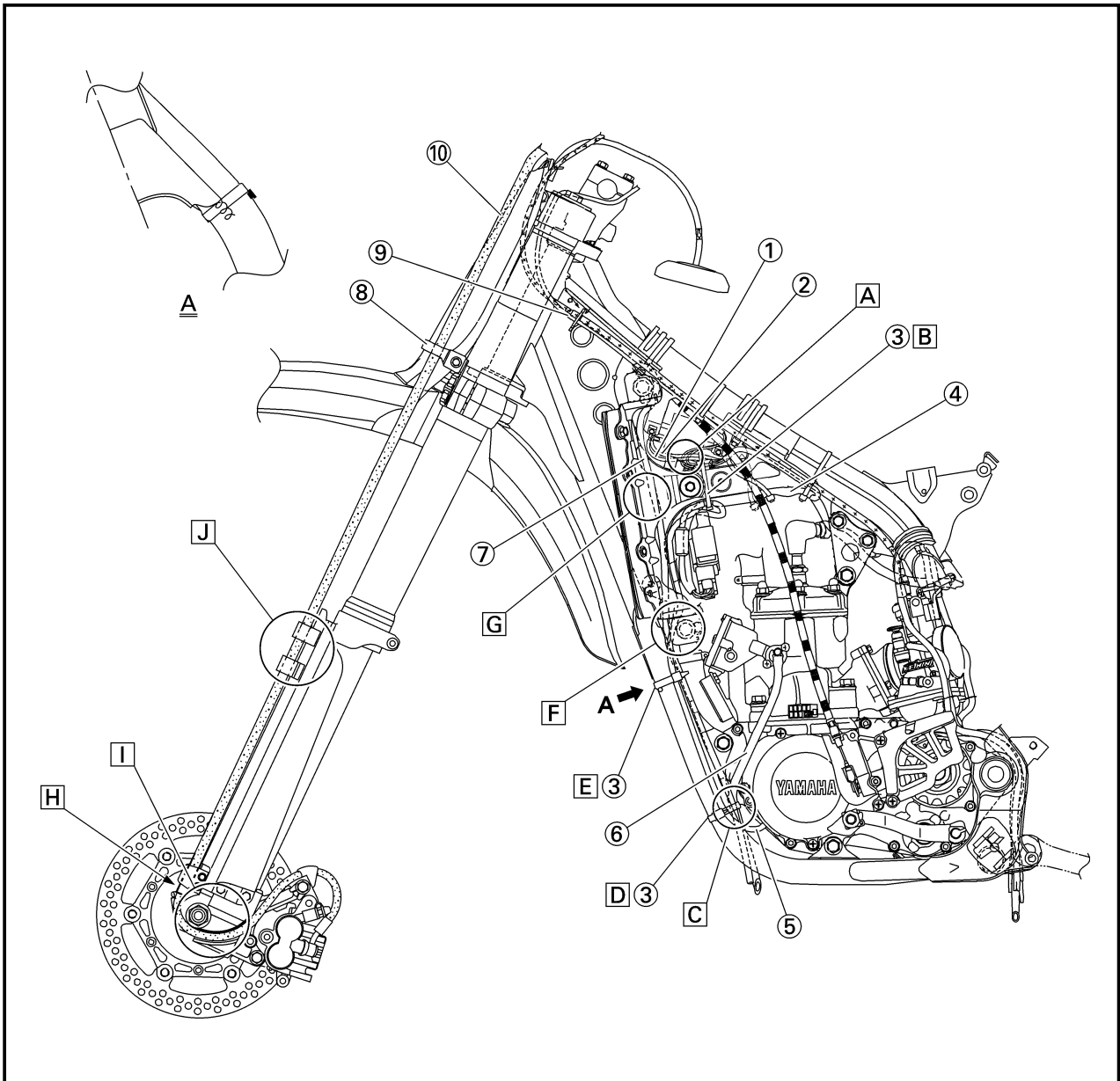


- ① Ground lead
- ② Ignition coil lead
- ③ Clamp
- ④ Wireharness
- ⑤ CDI magneto lead
- ⑥ YPVS breather hose
- ⑦ Radiator breather hose
- ⑧ Cable guide
- ⑨ "ENGINE STOP" button lead
- ⑩ Brake hose

**A** Pass the "ENGINE STOP" button lead on the inside of the ignition coil lead and ground lead.

- B** Clamp the "ENGINE STOP" button lead, ground lead, ignition coil lead, wireharness and CDI magneto lead with the clamp ends downward. In so doing, clamp the "ENGINE STOP" button lead at its coupler and do not allow the CDI magneto lead to slacken.
- C** Pass the radiator breather hose outside the engine bracket and inside the down-tube. Pass the radiator breather hose inside the CDI magneto lead.
- D** Clamp the CDI magneto lead, radiator breather hose and YPVS breather hose. In so doing, clamp the CDI magneto lead at the rear of the down-tube with the clamp ends outward.

- E** Clamp the radiator breather hose and CDI magneto lead at the rear of the down-tube with the clamp ends outward.
- F** Pass the radiator breather hose and CDI magneto lead in front of the radiator hose.
- G** Pass the radiator breather hose between the frame and radiator.
- H** Align the top of the brake hose neck with the brake hose holder bottom.
- I** Pass the brake hose in front of the axle boss, then fit it into the hose groove so that the brake hose does not contact the nut (wheel axle).
- J** Fit the brake hose into the guide on the protector.



# CABLE ROUTING DIAGRAM

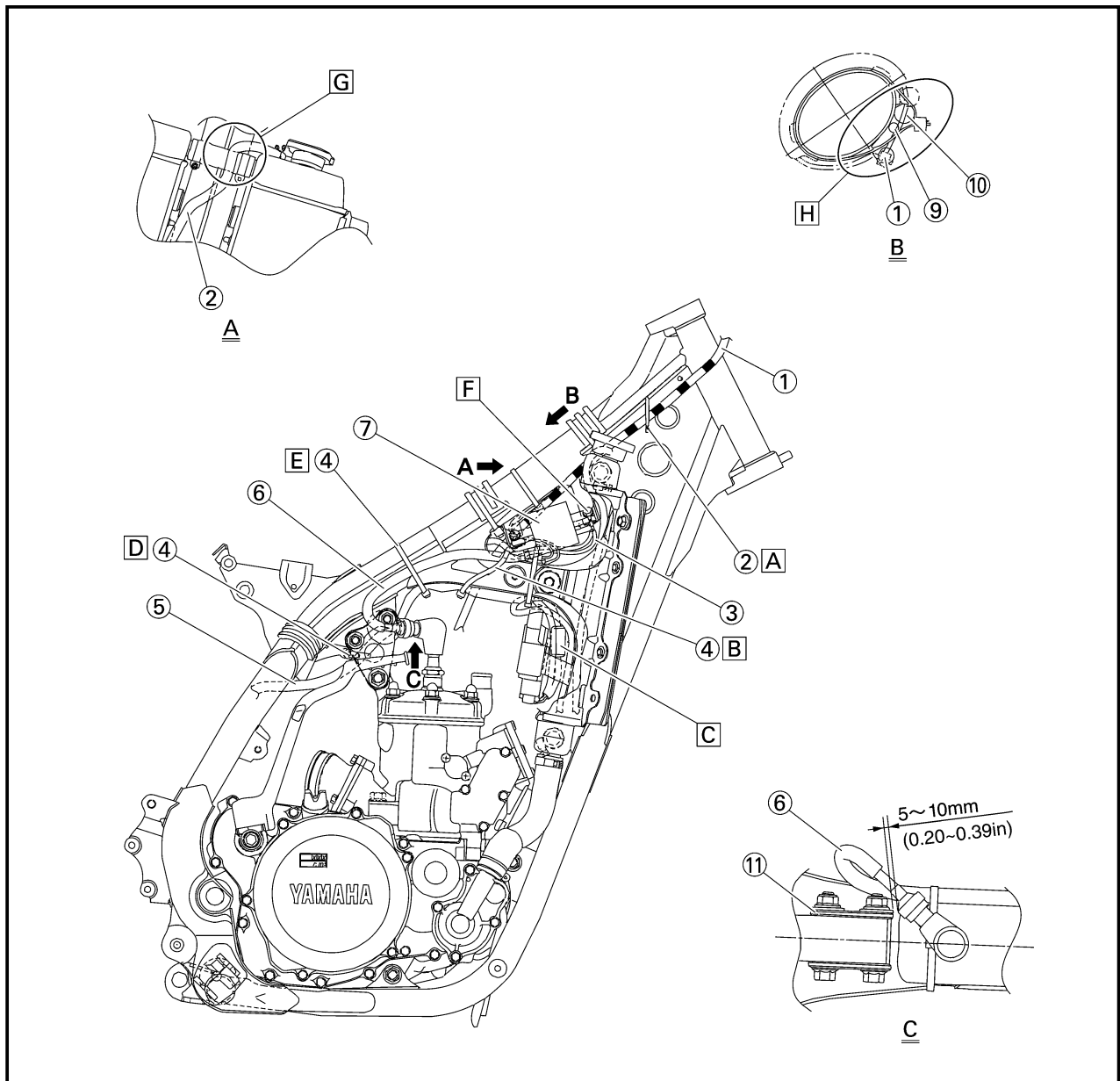
**SPEC**



- ① Clutch cable
- ② Cable guide
- ③ Ground lead
- ④ Clamp
- ⑤ Wireharness
- ⑥ High tension cord
- ⑦ Ignition coil
- ⑧ Radiator breather hose
- ⑨ "ENGINE STOP" button lead
- ⑩ Throttle cable
- ⑪ Engine bracket

- A** Pass the clutch cable into the cable guide.
- B** Clamp the clutch cable, high tension cord and wireharness at the protector of the high tension cord so that the clamp passes with its ends downward, as shown.
- C** Position the CDI magneto lead coupler between the radiators.
- D** Clamp the wireharness to the right engine bracket.
- E** Clamp the high tension cord, throttle cable and wireharness with the clamp ends downward, so that the high tension cord does not contact the engine bracket installation nuts.

- F** Fasten the ground lead together with the front installation portion of the ignition coil.
- G** Pass the radiator breather hose at the rear of the radiator hose and in front of the ignition coil bracket.
- H** Position the throttle cable, "ENGINE STOP" button lead and clutch cable as shown.





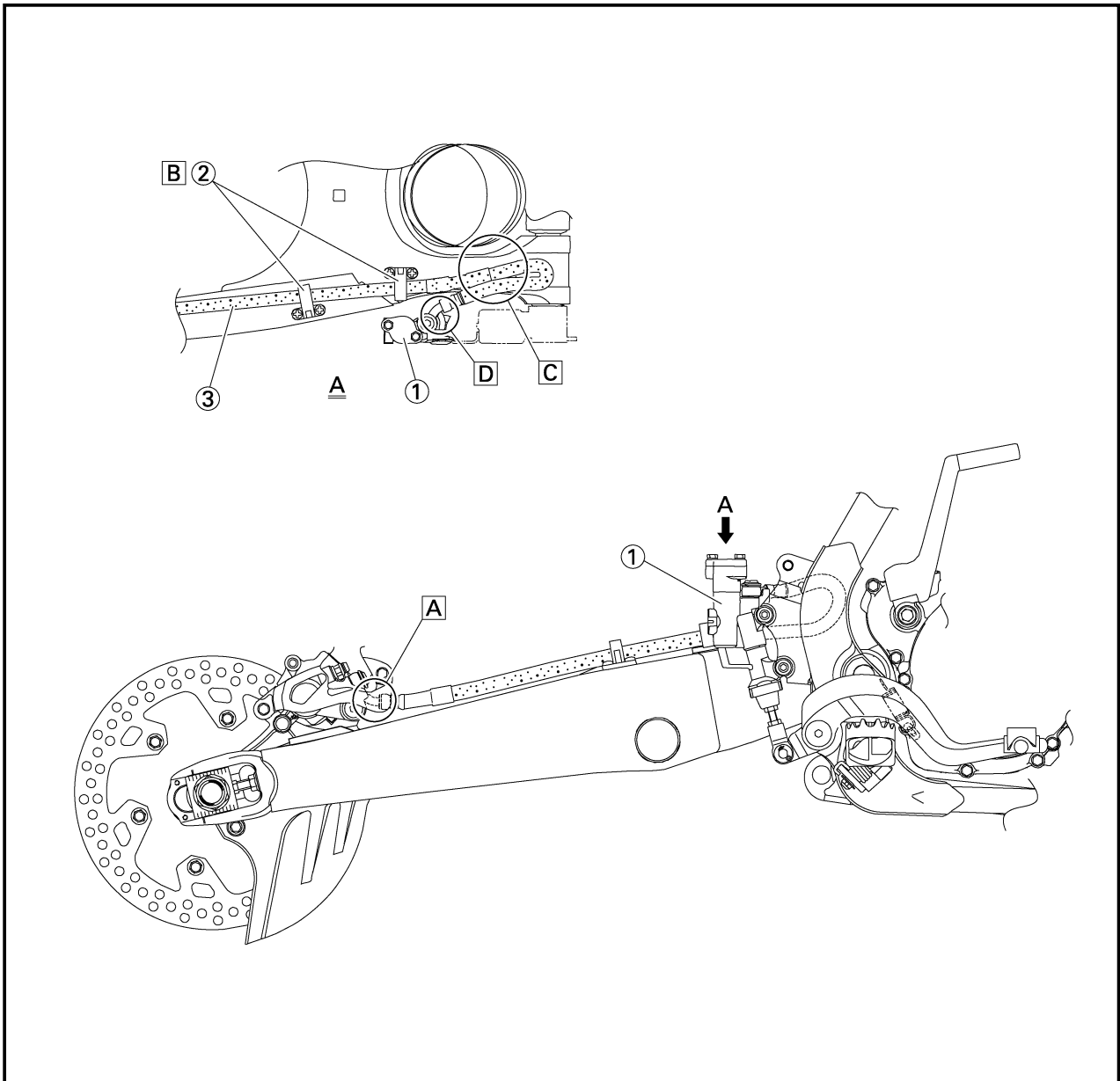
# CABLE ROUTING DIAGRAM

SPEC



- ① Master cylinder
- ② Brake hose holder
- ③ Brake hose

- A Install the brake hose so that its pipe portion directs as shown and lightly touches the projection on the caliper.
- B Pass the brake hose into the brake hose holders.
- C If the brake hose contacts the spring (rear shock absorber), correct its twist.
- D Install the brake hose so that its pipe portion directs as shown and lightly touches the projection on the master cylinder.



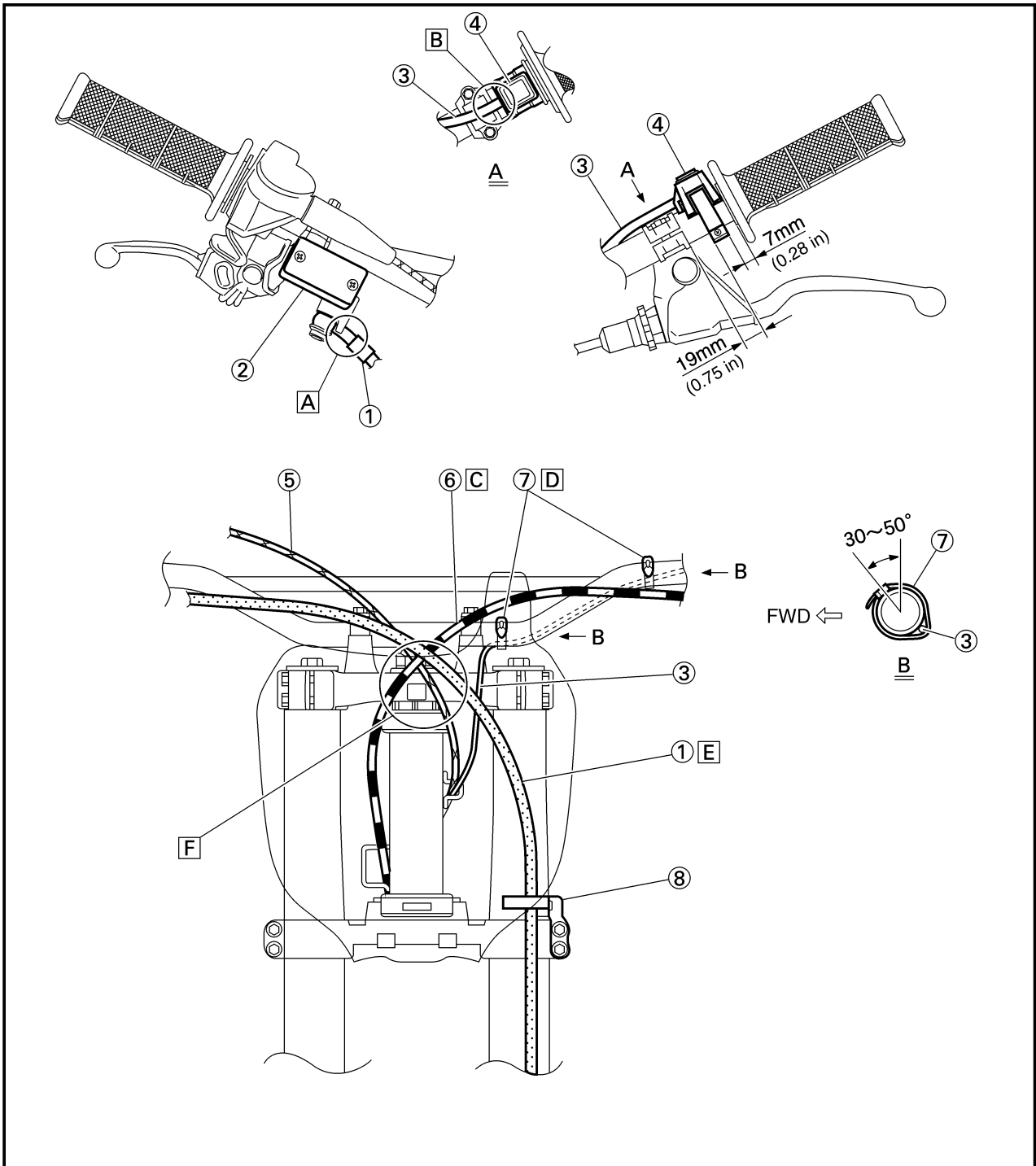
# CABLE ROUTING DIAGRAM

**SPEC**



- ① Brake hose
- ② Master cylinder
- ③ "ENGINE STOP" button lead
- ④ "ENGINE STOP" button
- ⑤ Throttle cable
- ⑥ Clutch cable
- ⑦ Clamp
- ⑧ Cable guide

- A** Install the brake hose so that its pipe portion directs as shown and lightly touches the projection on the master cylinder.
- B** Pass the "ENGINE STOP" button lead in the middle of the clutch holder.
- C** Pass the clutch cable in front of the throttle cable.
- D** Clamp the "ENGINE STOP" button lead to the handlebar to 3 clicks.
- E** Pass the brake hose in front of the number plate and through the cable guide.
- F** Cross the clutch cable and throttle cable over the number plate boss.



# MAINTENANCE INTERVALS



EC300000

## REGULAR INSPECTION AND ADJUSTMENTS

EC310013

### MAINTENANCE INTERVALS

The following schedule is intended as a general guide to maintenance and lubrication. Bear in mind that such factors as weather, terrain, geographical location, and individual usage will alter the required maintenance and lubrication intervals. If you are a doubt as to what intervals to follow in maintaining and lubricating your machine, consult your Yamaha dealer.

Item	After break-in	Every race	Every third	Every fifth	As required	Remarks
PISTON Inspect and clean Replace	●	●		●	●	Inspect crack Inspect carbon deposits and eliminate them
PISTON RING Inspect Replace	●	●	●		●	Check ring end gap
PISTON PIN, SMALL END BEARING Inspect Replace		●			●	
CYLINDER HEAD Inspect and clean  Retighten	● ●	● ●				Inspect carbon deposits and eliminate them Check gasket
CYLINDER Inspect and clean Replace	●	●			●	Inspect score marks Inspect wear
YPVS Inspect and clean	●	●				Inspect carbon deposits and eliminate them
CLUTCH Inspect and adjust Replace	●	●			●	Inspect housing, friction plate, clutch plate and spring
TRANSMISSION Replace oil Inspect Replace bearing	●			●	● ●	Yamalube 4 (10W-30) or SAE 10W-30 SE motor oil
SHIFT FORK, SHIFT CAM, GUIDE BAR Inspect					●	Inspect wear
ROTOR NUT Retighten	●			●		
MUFFLER Inspect Clean	●	●		●		
CRANK Inspect and clean				●	●	
CARBURETOR Inspect, adjust and clean	●	●				
SPARK PLUG Inspect and clean Replace	●	●			●	
DRIVE CHAIN Lubricate, slack, alignment Replace	●	●			●	Use chain lube Chain slack: 40~50 mm (1.6~2.0 in)

# MAINTENANCE INTERVALS



3

Item	After break-in	Every race	Every third	Every fifth	As required	Remarks
<b>COOLING SYSTEM</b> Check coolant level and leakage Check radiator cap operation Replace coolant Inspect hoses	●	●			● ●	Every two years
<b>OUTSIDE NUTS AND BOLTS</b> Retighten	●	●				Refer to "STARTING AND BREAK-IN" section in the CHAPTER 1.
<b>AIR FILTER</b> Clean and lubricate Replace	●	●			●	Use foam air-filter oil or equivalent oil
<b>FRAME</b> Clean and inspect	●	●				
<b>FUEL TANK, COCK</b> Clean and inspect	●		●			
<b>BRAKES</b> Adjust lever position and pedal height Lubricate pivot point Check brake disc surface Check fluid level and leakage Retighten brake disc bolts, caliper bolts, master cylinder bolts and union bolts Replace pads Replace brake fluid	● ● ● ● ●	● ● ● ● ●			● ●	Every one year
<b>FRONT FORKS</b> Inspect and adjust Replace oil Replace oil seal	● ●	●		●	●	Suspension oil "01"
<b>FRONT FORK OIL SEAL AND DUST SEAL</b> Clean and lube	●	●				Lithium base grease
<b>REAR SHOCK ABSORBER</b> Inspect and adjust Lube Retighten	● ●	● ●	●		● (After rain ride)	Molybdenum disulfide grease
<b>CHAIN GUARD AND ROLLERS</b> Inspect	●	●				
<b>SWINGARM</b> Inspect, lube and retighten	●	●				Molybdenum disulfide grease
<b>RELAY ARM, CONNECTING ROD</b> Inspect, lube and retighten	●	●				Molybdenum disulfide grease
<b>STEERING HEAD</b> Inspect free play and retighten Clean and lube Replace bearing	●	●		●	●	Lithium base grease
<b>TIRE, WHEELS</b> Inspect air pressure, wheel run-out, tire wear and spoke looseness Retighten sprocket bolt Inspect bearings Replace bearings Lubricate	● ●	● ●		● ●	●	Lithium base grease
<b>THROTTLE, CONTROL CABLE</b> Check routing and connection Lubricate	● ●	● ●				Yamaha cable lube or SAE 10W-30 motor oil

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**MEMO**

# PRE-OPERATION INSPECTION AND MAINTENANCE



EC320000

## PRE-OPERATION INSPECTION AND MAINTENANCE

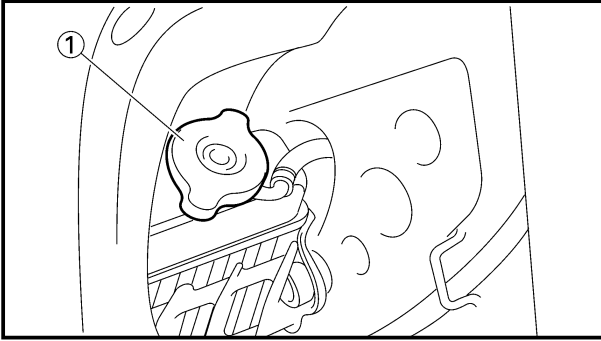
Before riding for break-in operation, practice or a race, make sure the machine is in good operating condition.

Before using this machine, check the following points.

EC321000

## GENERAL INSPECTION AND MAINTENANCE

Item	Routine	Page
Coolant	Check that coolant is filled up to the radiator filler cap. Check the cooling system for leakage.	P3-5~9
Fuel	Check that a fresh mixture of oil and gasoline is filled in the fuel tank. Check the fuel line for leakage.	P1-12
Transmission oil	Check that the oil level is correct. Check the crankcase for leakage.	P3-12~14
Gear shifter and clutch	Check that gears can be shifted correctly in order and that the clutch operates smoothly.	P3-9
Throttle grip/Housing	Check that the throttle grip operation and free play are correctly adjusted. Lubricate the throttle grip and housing, if necessary.	P3-10~11
Brakes	Check the play of front brake and effect of front and rear brake.	P3-17~23
Chain	Check chain slack and alignment. Check that the chain is lubricated properly.	P3-24~26
Wheels	Check for excessive wear and tire pressure. Check for loose spokes and have no excessive play.	P3-34~35
Steering	Check that the handlebar can be turned smoothly and have no excessive play.	P3-35~36
Front forks and rear shock absorber	Check that they operate smoothly and there is no oil leakage.	P3-26~33
Cables (wires)	Check that the clutch and throttle cables move smoothly. Check that they are not caught when the handlebars are turned or when the front forks travel up and down.	—
Muffler	Check that the muffler is tightly mounted and has no cracks.	P3-15~16
Sprocket	Check that the driven sprocket tightening bolt is not loose.	P3-24
Lubrication	Check for smooth operation. Lubricate if necessary.	P3-37
Bolts and nuts	Check the chassis and engine for loose bolts and nuts.	P1-16
Lead connectors	Check that the CDI magneto, CDI unit, and ignition coil are connected tightly.	P1-6
Settings	Is the machine set suitably for the condition of the racing course and weather or by taking into account the results of test runs before racing? Are inspection and maintenance completely done?	P7-1~24



EC350000

## ENGINE

EC351011

### COOLANT LEVEL INSPECTION

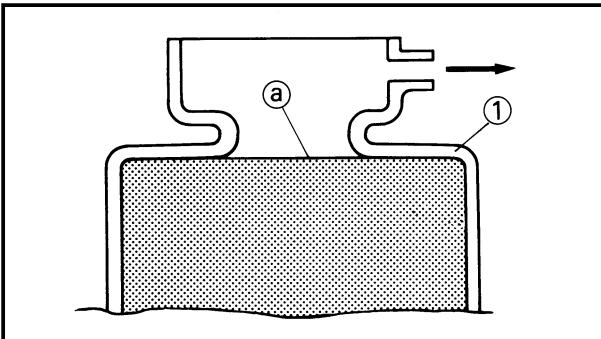
#### **⚠WARNING**

Do not remove the radiator cap ①, drain bolt and hoses when the engine and radiator are hot. Scalding hot fluid and steam may be blown out under pressure, which could cause serious injury.

When the engine has cooled, place a thick towel over the radiator cap, slowly rotate the cap counterclockwise to the detent. This procedure allows any residual pressure to escape. When the hissing sound has stopped, press down on the cap while turning counterclockwise and remove it.

#### **CAUTION:**

Hard water or salt water is harmful to the engine parts. You may use distilled water, if you can't get soft water.



1. Place the machine on a level place, and hold it in an upright position.
2. Remove:
  - Radiator cap
3. Check:
  - Coolant level (a)Coolant level low→Add coolant.

① Radiator

EC353011

### COOLANT REPLACEMENT

#### **⚠WARNING**

Do not remove the radiator cap when the engine is hot.

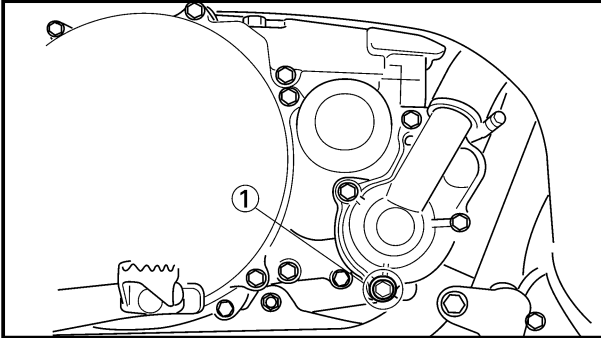
# COOLANT REPLACEMENT

INSP  
ADJ




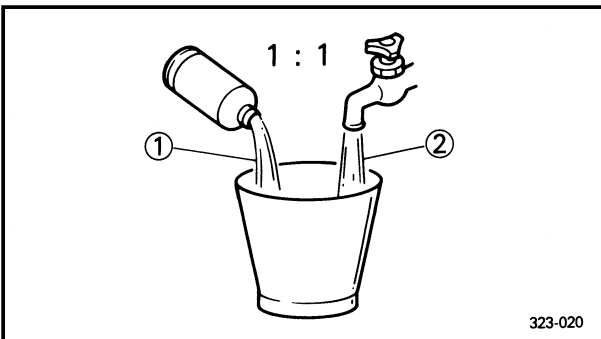
## CAUTION:

Take care so that coolant does not splash on painted surfaces. If it splashes, wash it away with water.



1. Place a container under the engine.
2. Remove:
  - Coolant drain bolt ①
3. Remove:
  - Radiator capDrain the coolant completely.
4. Clean:
  - Cooling systemThoroughly flush the cooling system with clean tap water.
5. Install:
  - Copper washer **New**
  - Coolant drain bolt

 10 Nm (1.0 m•kg, 7.2 ft•lb)



6. Fill:
  - Radiator
  - EngineTo specified level.



**Recommended coolant:**  
High quality ethylene glycol anti-freeze containing anti-corrosion for aluminum engine  
Coolant ① and water (soft water) ② mixing ratio:  
50%/50%  
Coolant capacity:  
1.20 L (1.06 Imp qt, 1.27 US qt)



## CAUTION:

- Do not mix more than one type of ethylene glycol antifreeze containing corrosion inhibitors for aluminum engine.
- Do not use water containing impurities or oil.

## Handling notes of coolant:

The coolant is harmful so it should be handled with special care.

## ⚠ WARNING

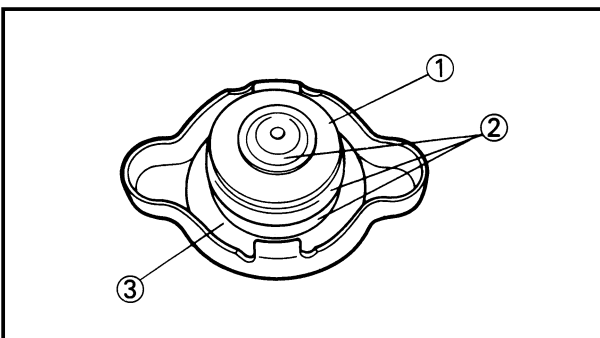
- When coolant splashes to your eye.  
Thoroughly wash your eye with water and see your doctor.
- When coolant splashes to your clothes.  
Quickly wash it away with water and then with soap.
- When coolant is swallowed.  
Quickly make him vomit and take him to a doctor.

## 7. Install:

- Radiator cap  
Start the engine and warm it up for a several minutes.

## 8. Check:

- Coolant level  
Coolant level low → Add coolant.



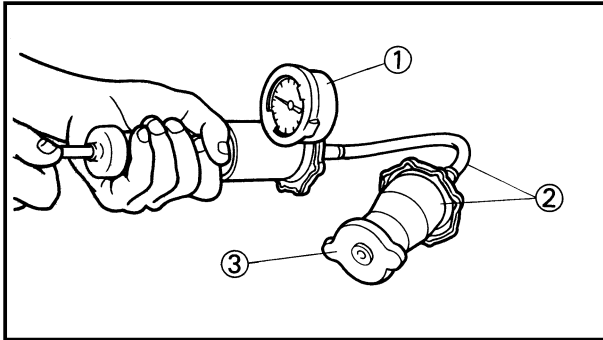
EC355000

## RADIATOR CAP INSPECTION

### 1. Inspect:

- Seal (radiator cap) ①
- Valve and valve seat ②  
Crack/Damage → Replace.  
Exist fur deposits ③ → Clean or replace.

# RADIATOR CAP OPENING PRESSURE INSPECTION/ COOLING SYSTEM INSPECTION



EC356002

## RADIATOR CAP OPENING PRESSURE INSPECTION

1. Attach:
  - Radiator cap tester ① and adapter ②



**Radiator cap tester:**  
YU-24460-01/90890-01325  
**Adapter:**  
YU-33984/90890-01352

### NOTE:

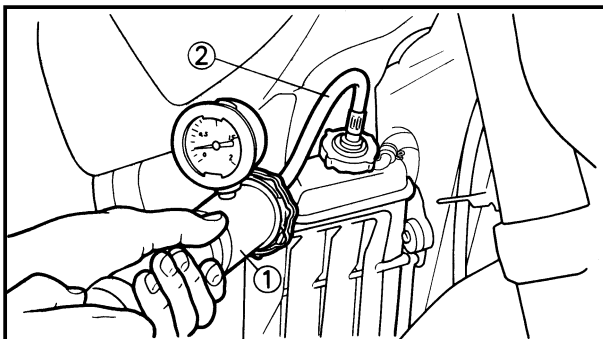
Apply water on the radiator cap seal.

- ③ Radiator cap
2. Apply the specified pressure.



**Radiator cap opening pressure:**  
95~125 kPa (0.95~1.25 kg/cm<sup>2</sup>,  
13.5~17.8 psi)

3. Inspect:
  - Pressure
  - Impossible to maintain the specified pressure for 10 seconds → Replace.



EC357003

## COOLING SYSTEM INSPECTION

1. Inspect:
  - Coolant level
2. Attach:
  - Radiator cap tester ① and adapter ②



**Radiator cap tester:**  
YU-24460-01/90890-01325  
**Adapter:**  
YU-33984/90890-01352

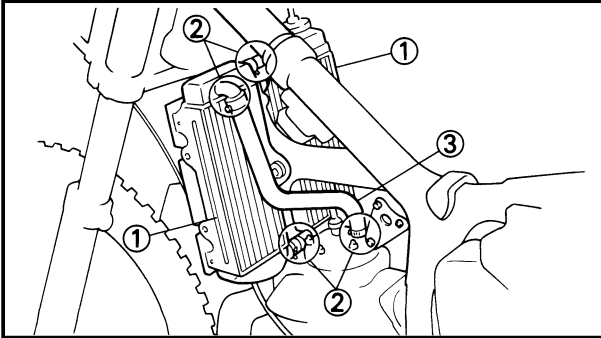
3. Apply the specified pressure.



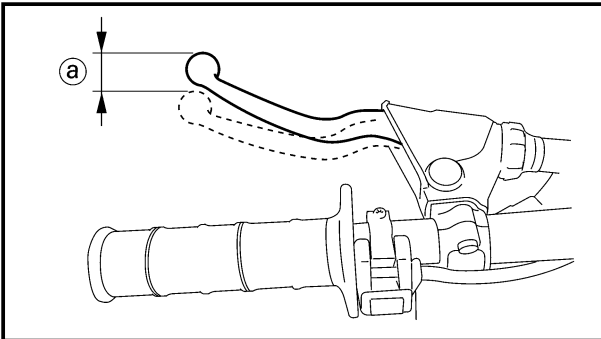
**Standard pressure:**  
180 kPa (1.8 kg/cm<sup>2</sup>, 25.6 psi)

**NOTE:**

- Do not apply pressure more than specified pressure.
- Radiator should be filled fully.



4. Inspect:
- Pressure  
Impossible to maintain the specified pressure for 10 seconds → Repair.
  - Radiator ①
  - Radiator hose joint ②  
Coolant leakage → Repair or replace.
  - Radiator hose ③  
Swelling → Replace.



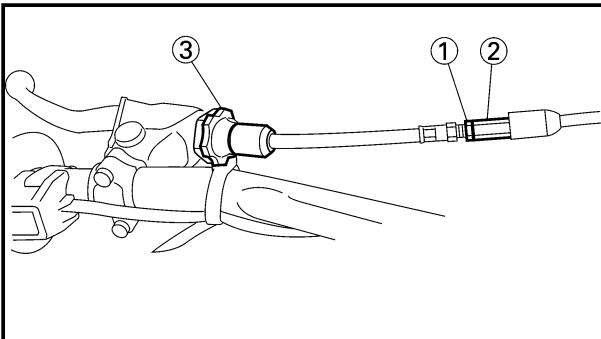
EC359020

## CLUTCH ADJUSTMENT

1. Check:
- Clutch lever free play ①  
Out of specification → Adjust.



**Clutch lever free play ①:**  
8~13 mm (0.31~0.51 in)



2. Adjust:
- Clutch lever free play

### Clutch lever free play adjustment steps:

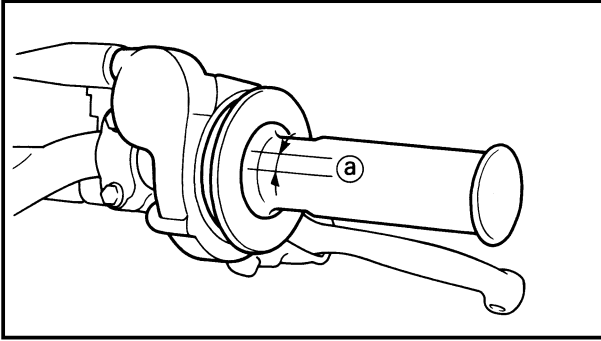
- Loosen the locknut ①.
- Turn the adjuster ② until free play ① is within the specified limits.
- Tighten the locknut.

**NOTE:**

- Make minute adjustment on the lever side using the adjuster ③.
- After adjustment, check proper operation of clutch lever.

# THROTTLE CABLE ADJUSTMENT/ THROTTLE LUBRICATION

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ADJ



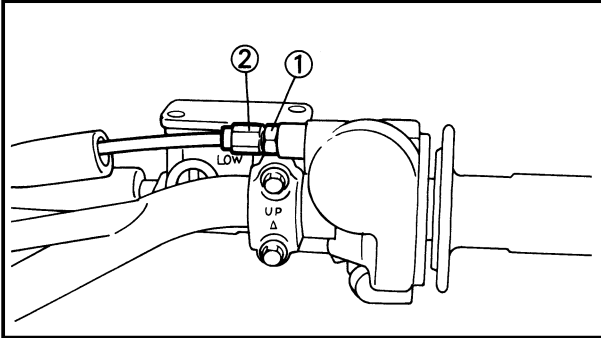
EC35A001

## THROTTLE CABLE ADJUSTMENT

1. Check:
  - Throttle grip free play (a)Out of specification → Adjust.



**Throttle grip free play (a):**  
3~5 mm (0.12~0.20 in)



2. Adjust:
  - Throttle grip free play

### Throttle grip free play adjustment steps:

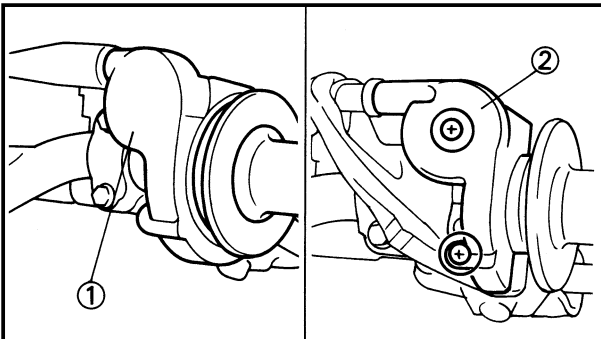
- Loosen the locknut (1).
- Turn the adjuster (2) until the specified free play is obtained.
- Tighten the locknut.

### NOTE:

Before adjusting the throttle cable free play, the engine idle speed should be adjusted.

### ⚠ WARNING

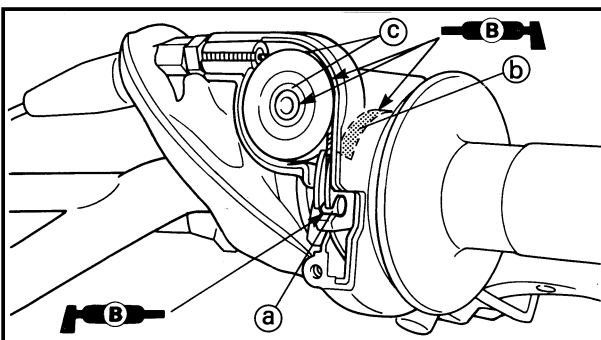
After adjusting, turn the handlebar to right and left and make sure that the engine idling does not run faster.




EC35S002

## THROTTLE LUBRICATION

1. Remove:
  - Cap cover (1)
  - Throttle cable cap (2)
2. Apply:
  - Lithium soap base greaseOn the throttle cable end (a), tube guide cable winding portion (b) and roller sliding surface (c).



3. Install:
  - Throttle cable cap
  - Cap cover

 1 Nm (0.1 m•kg, 0.7 ft•lb)

EC35G041

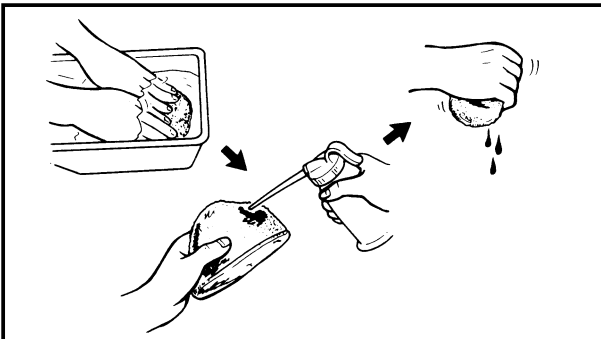
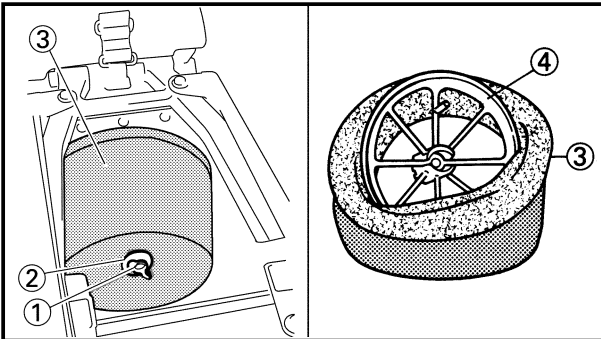
## AIR FILTER CLEANING

### NOTE:

Proper air filter maintenance is the biggest key to preventing premature engine wear and damage.

### CAUTION:

Never run the engine without the air filter element in place; this would allow dirt and dust to enter the engine and cause rapid wear and possible engine damage.



1. Remove:
  - Seat
  - Fitting bolt ①
  - Washer ②
  - Air filter element ③
  - Filter guide ④

2. Clean:
  - Air filter element

Clean them with solvent.

### NOTE:

After cleaning, remove the remaining solvent by squeezing the element.

### CAUTION:

Do not twist the element when squeezing the element.

## TRANSMISSION OIL LEVEL CHECK

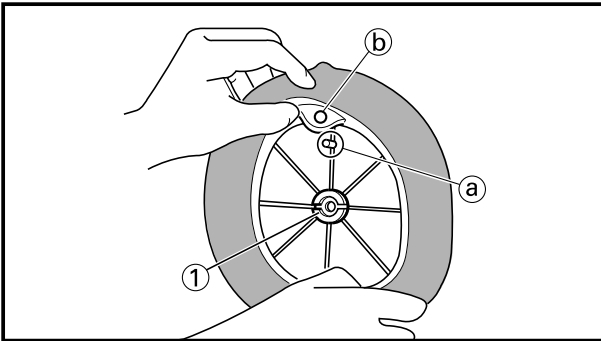
INSP  
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3. Inspect:
  - Air filter element  
Damage → Replace.
4. Apply:
  - Foam-air-filter oil or equivalent oil  
To the element.

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

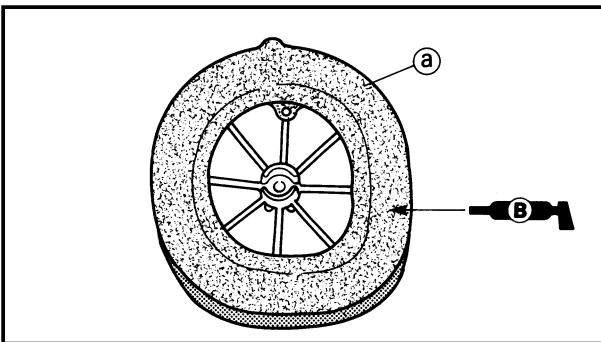
Squeeze out the excess oil. Element should be wet but not dripping.



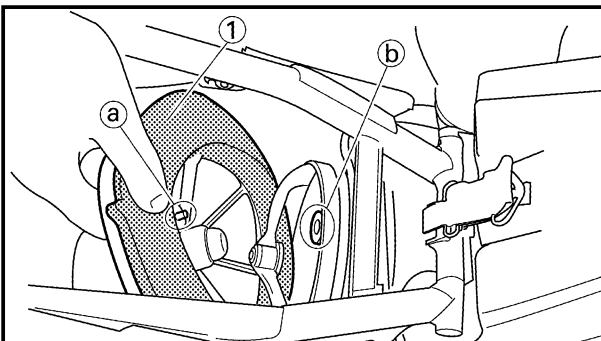
5. Install:
  - Filter guide (1)

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

Align the projection (a) on filter guide with the hole (b) in air filter element.



6. Apply:
  - Lithium soap base grease  
On the matching surface (a) on air filter element.



7. Install:
  - Air filter element (1)
  - Washer
  - Fitting bolt

2 Nm (0.2 m•kg, 1.4 ft•lb)

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

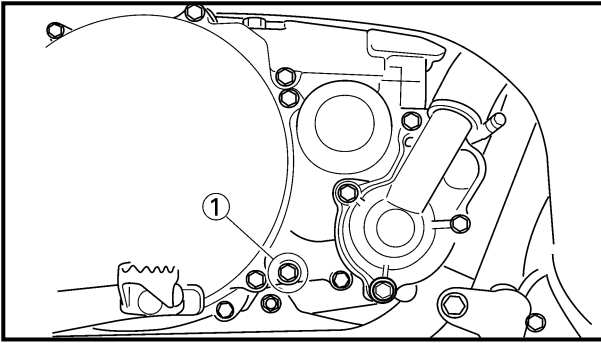
Align the projection (a) on filter guide with the hole (b) in air filter case.

EC35H002

## TRANSMISSION OIL LEVEL CHECK

1. Start the engine, warm it up for several minutes and wait for five minutes.
2. Place the machine on a level place and hold it up on upright position by placing the suitable stand under the engine.

# TRANSMISSION OIL REPLACEMENT



3. Check:
- Transmission oil level

**Transmission oil level checking steps:**

- Remove the oil check bolt ①.
- Inspect the oil level.

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

Be sure the machine is positioned straight up when inspecting the oil level.

**⚠WARNING** \_\_\_\_\_

Never attempt to remove the oil check bolt just after high speed operation. The heated oil could spout out, causing danger. Wait until the oil cools down.

Oil flows out → Oil level is correct.

Oil does not flow out → Oil level is low.

Add transmission oil until oil flows out.



**Recommended oil:**

Yamalube 4 (10W-30) or SAE 10W-30 type SE motor oil

- Inspect the gasket (oil check bolt), replace if damaged.
- Tighten the oil check bolt.



**Oil check bolt:**

10 Nm (1.0 m•kg, 7.2 ft•lb)

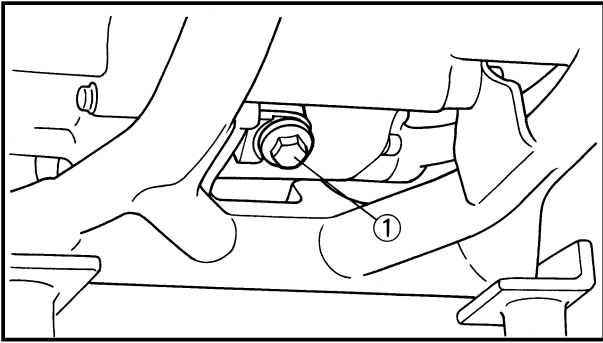
EC35K002

## TRANSMISSION OIL REPLACEMENT

1. Start the engine and warm it up for several minutes and wait for five minute.
2. Place the machine on a level place and hold it on upright position by placing the suitable stand under the engine.
3. Place a suitable container under the engine.

## PILOT AIR SCREW ADJUSTMENT

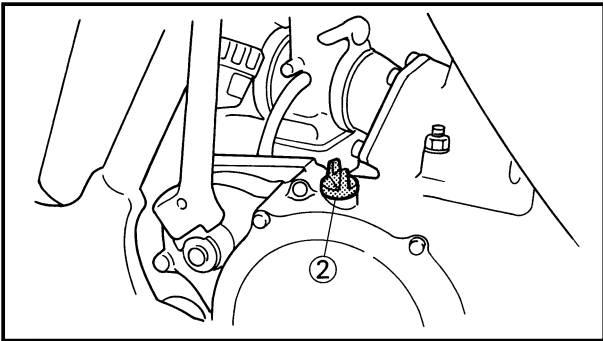
INSP  
ADJ



4. Remove:
  - Oil drain bolt ①
  - Oil filler cap ②Drain the transmission oil.

5. Install:
  - Aluminum washer **New**
  - Oil drain bolt ①

20 Nm (2.0 m•kg, 14 ft•lb)



6. Fill:
  - Transmission oil



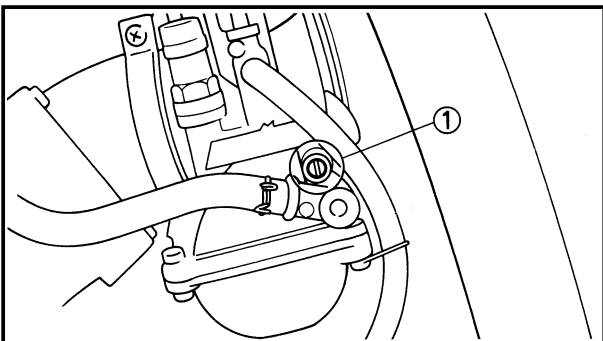
**Recommended oil:**  
Yamalube 4 (10W-30) or SAE  
10W-30 type SE motor oil  
**Oil capacity**  
(periodic oil change):  
0.75 L (0.66 Imp qt, 0.79 US qt)

7. Check:
  - Oil leakage
8. Check:
  - Transmission oil level
9. Install:
  - Oil filler cap ②

EC35L021

## PILOT AIR SCREW ADJUSTMENT

1. Adjust:
  - Pilot air screw ①



### Adjusting steps:

- Turn in the pilot air screw until it is lightly seated.
- Turn out the pilot air screw by the factory-set number of turns.

### NOTE:

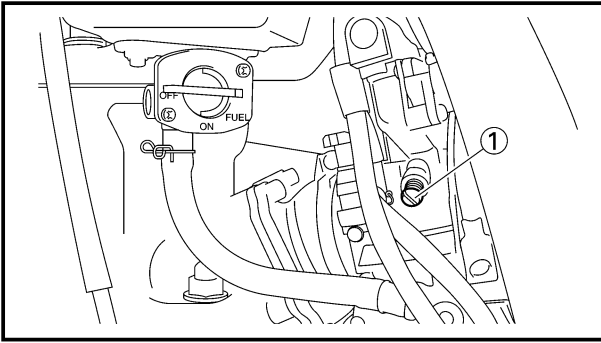
To optimize the fuel flow at a smaller throttle opening, each machine's pilot air screw has been individually set at the factory. Before adjusting the pilot air screw, turn it in fully and count the number of turns. Record this number as the factory-set number of turns out.



**Pilot air screw:**  
1 turn out  
\*7/8 turns out  
(for reference only)

\*For EUROPE





EC35M001

**IDLE SPEED ADJUSTMENT**

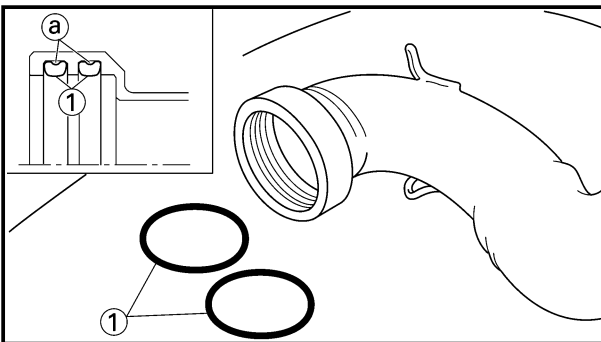
1. Start the engine and thoroughly warm it up.
2. Adjust:
  - Idle speed

**Adjustment steps:**

Turn the throttle stop screw ① until the engine runs at the lowest possible speed.

**To increase idle speed** → Turn the throttle stop screw ① in.

**To decrease idle speed** → Turn the throttle stop screw ① out.



EC35P030

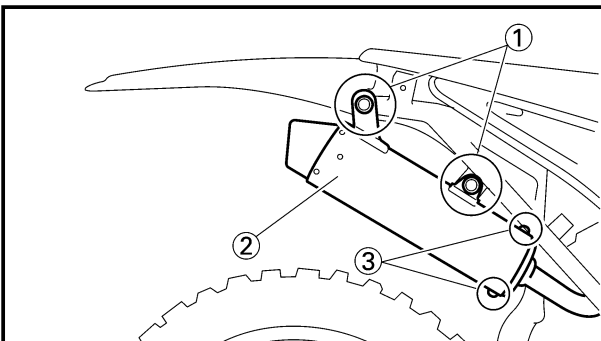
**MUFFLER INSPECTION**

1. Inspect:
  - O-ring ①
 Damage → Replace.

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

Install the O-rings with their depressed ① facing outward.

\_\_\_\_\_

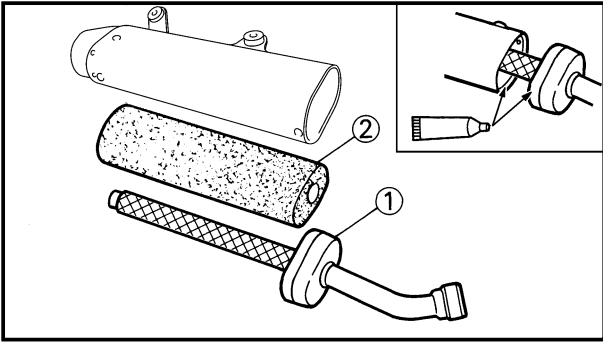


EC35R051

**SILENCER FIBER REPLACEMENT**

1. Remove:
  - Side cover (right)
  - Bolt (silencer) ①
  - Silencer ②
  - Bolt (fiber) ③

# SILENCER FIBER REPLACEMENT



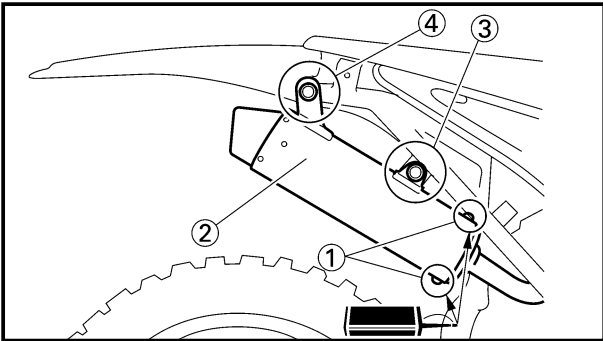
2. Remove:
  - Inner pipe ①
3. Replace:
  - Fiber ②
4. Install:
  - Inner pipe

**NOTE:**

Fully apply Quick gasket® (Yamaha bond No. 1215) or equivalent as shown.



**Quick gasket®:**  
**ACC-QUICK-GS-KT**  
 Yamaha bond No. 1215:  
 90890-85505



5. Install:
  - Bolt (fiber) ① **10 Nm (1.0 m•kg, 7.2 ft•lb)**
  - Silencer ②
  - Bolt [silencer (front)] ③ **12 Nm (1.2 m•kg, 8.7 ft•lb)**
  - Bolt [silencer (rear)] ④ **11 Nm (1.1 m•kg, 8.0 ft•lb)**
  - Side cover (right) **7 Nm (0.7 m•kg, 5.1 ft•lb)**



EC360000

## CHASSIS

EC361012

### BRAKE SYSTEM AIR BLEEDING

#### **⚠WARNING**

Bleed the brake system if:

- The system has been disassembled.
- A brake hose has been loosened or removed.
- The brake fluid is very low.
- The brake operation is faulty.

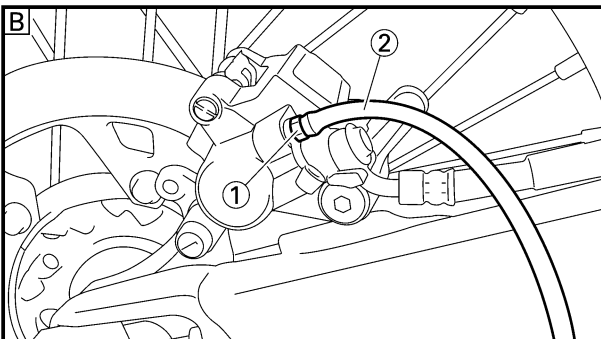
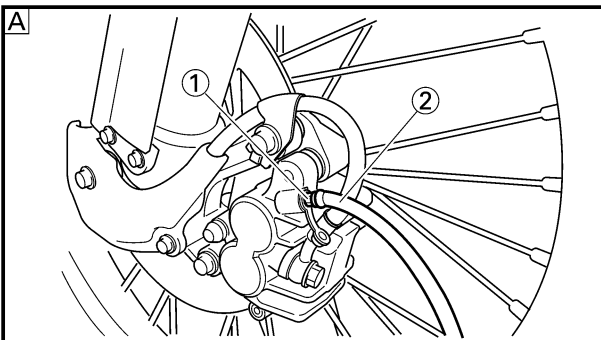
A dangerous loss of braking performance may occur if the brake system is not properly bleed.

1. Remove:
  - Master cylinder cap
  - Diaphragm
  - Protector (rear brake)

2. Bleed:
  - Brake fluid

**A** Front

**B** Rear



#### **Air bleeding steps:**

- a. Add proper brake fluid to the reservoir.
- b. Install the diaphragm. Be careful not to spill any fluid or allow the reservoir to overflow.
- c. Connect the clear plastic tube (2) tightly to the caliper bleed screw (1).
- d. Place the other end of the tube into a container.
- e. Slowly apply the brake lever or pedal several times.
- f. Pull the lever in or push down on the pedal. Hold the lever or pedal in position.
- g. Loosen the bleed screw and allow the lever or pedal to travel towards its limit.
- h. Tighten the bleed screw when the lever or pedal limit has been reached; then release the lever or pedal.



#### **Bleed screw:**

**6 Nm (0.6 m•kg, 4.3 ft•lb)**

- i. Repeat steps (e) to (h) until of the air bubbles have been removed from the system.

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

If bleeding is difficult, it may be necessary to let the brake fluid system stabilize for a few hours. Repeat the bleeding procedure when the tiny bubbles in the system have disappeared.

- j. Add brake fluid to the level line on the reservoir.

**⚠ WARNING** \_\_\_\_\_

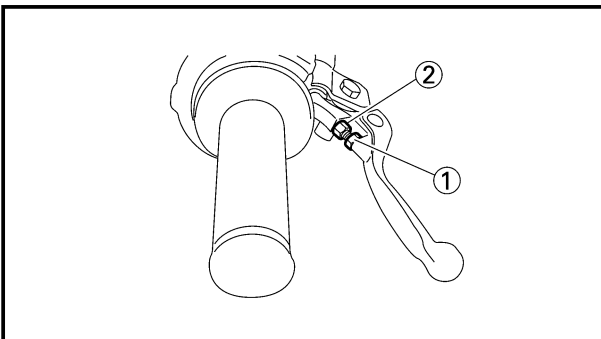
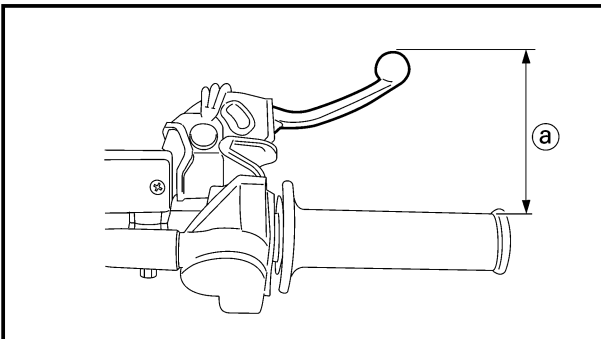
**Check the operation of the brake after bleeding the brake system.**

3. Install:
  - Protector (rear brake)
  - Diaphragm
  - Master cylinder cap

EC362041

## FRONT BRAKE ADJUSTMENT

1. Check:
  - Brake lever position ①



<b>Brake lever position ①:</b>	
Standard position	Extent of adjustment
95 mm (3.74 in)	76 ~ 97 mm (2.99 ~ 3.82 in)

2. Remove:
  - Lever cover
3. Adjust:
  - Brake lever position

**Brake lever position adjustment steps:**

- Loosen the locknut ①.
- Turn the adjusting bolt ② until the lever position ① is within specified position.
- Tighten the locknut.

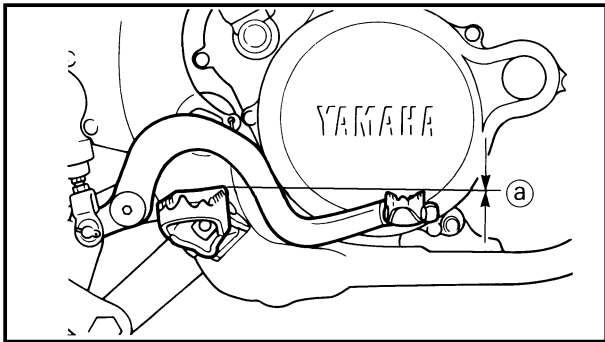
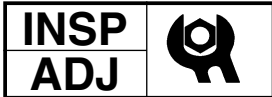
	<b>Locknut:</b> 5 Nm (0.5 m•kg, 3.6 ft•lb)
--	---

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

**Be sure to tighten the locknut, as it will cause poor brake performance.**

4. Install:
  - Lever cover

# REAR BRAKE ADJUSTMENT/ FRONT BRAKE PAD INSPECTION AND REPLACEMENT



EC364004

## REAR BRAKE ADJUSTMENT

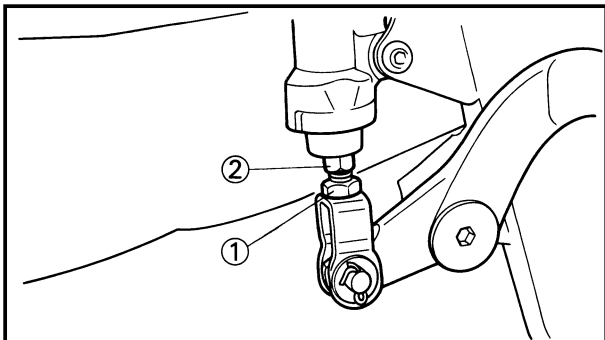
1. Check:
  - Brake pedal height (a)
 Out of specification → Adjust.



**Brake pedal height (a):**  
Zero mm (Zero in)

### NOTE:

The brake pedal height is the vertical distance from the inside top end of the footrest.



2. Adjust:
  - Brake pedal height

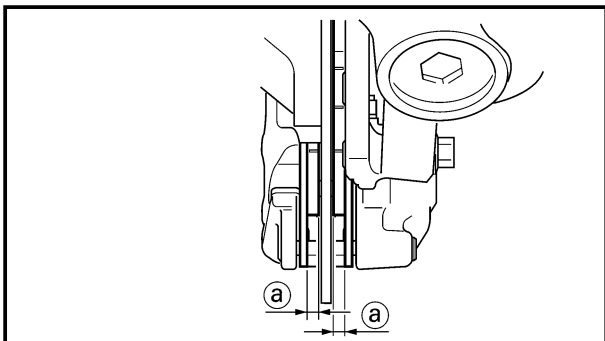
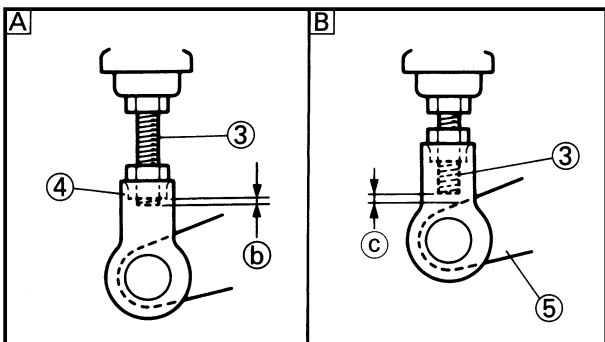
### Pedal height adjustment steps:

- Loosen the locknut (1).
- Turn the adjusting nut (2) until the pedal height (a) is within specified height.
- Tighten the locknut.

### ⚠ WARNING

- Adjust the pedal height between the maximum [A] and the minimum [B] as shown. (In this adjustment the bolt (3) end (b) should protrude out of the threaded portion (4) but not be less than 2 mm (0.08 in) (c) away from the brake pedal (5).

- After the pedal height adjustment, make sure that the rear brake does not drag.



EC365080

## FRONT BRAKE PAD INSPECTION AND REPLACEMENT

1. Inspect:
  - Brake pad thickness (a)
 Out of specification → Replace as a set.



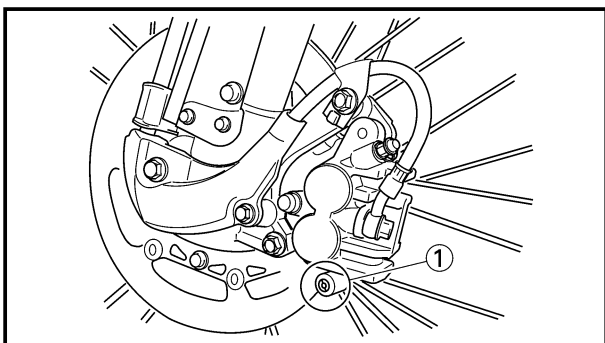
**Brake pad thickness (a):**

Standard	<Limit>
4.4 mm (0.17 in)	1.0 mm (0.04 in)

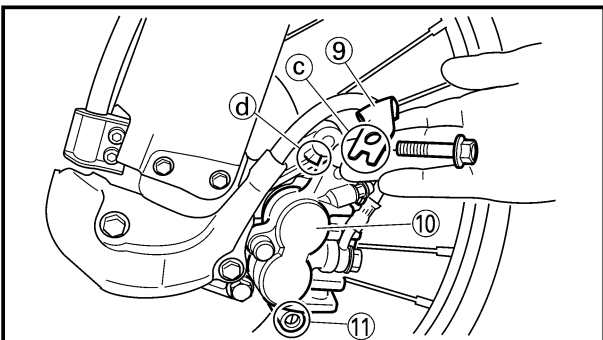
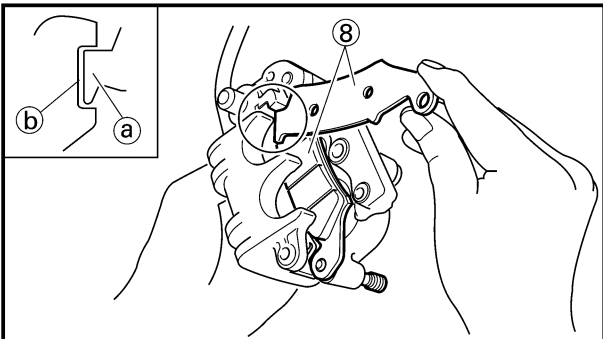
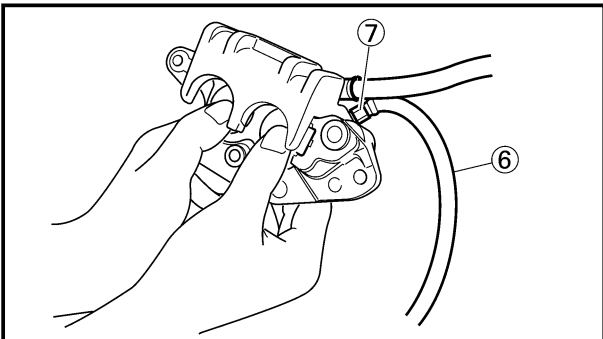
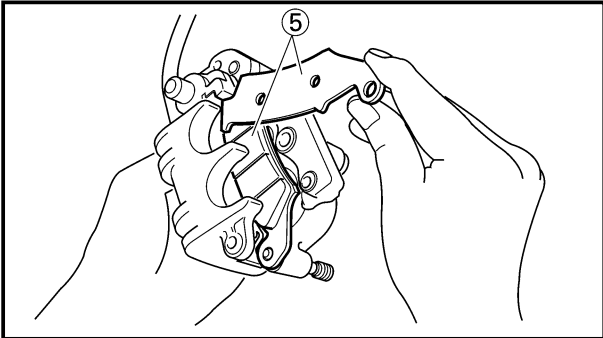
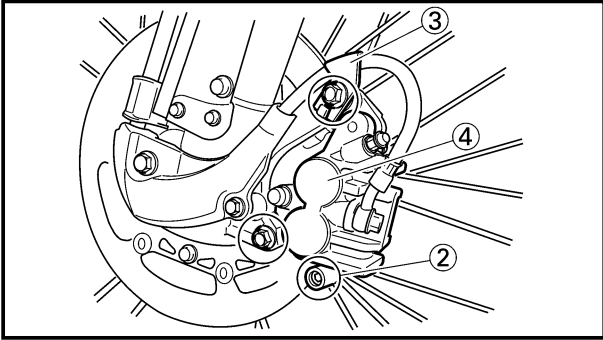
2. Replace:
  - Brake pad

### Brake pad replacement steps:

- Remove the pad pin plug (1).



# FRONT BRAKE PAD INSPECTION AND REPLACEMENT



- Loosen the pad pin (2).
- Remove the brake hose holder (3) and caliper (4) from the front fork.
- Remove the pad pin and brake pads (5).
- Connect the transparent hose (6) to the bleed screw (7) and place the suitable container under its end.
- Loosen the bleed screw and push the caliper piston in.

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

**Do not reuse the drained brake fluid.**

- Tighten the bleed screw.



**Bleed screw:**

**6 Nm (0.6 m•kg, 4.3 ft•lb)**

- Install the brake pads (8) and pad pin.

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

- Install the brake pads with their projections (a) into the caliper recesses (b).
- Temporarily tighten the pad pin at this point.

- Install the brake hose holder (9) and caliper (10) and tighten the pad pin (11).

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

Fit the brake hose holder cut (c) over the projection (d) on the front fork and clamp the brake hose.



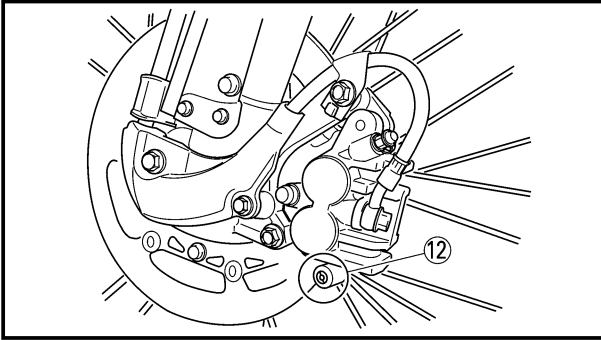
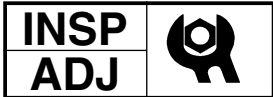
**Bolt (caliper):**

**23 Nm (2.3 m•kg, 17 ft•lb)**

**Pad pin:**

**18 Nm (1.8 m•kg, 13 ft•lb)**

# REAR BRAKE PAD INSPECTION AND REPLACEMENT

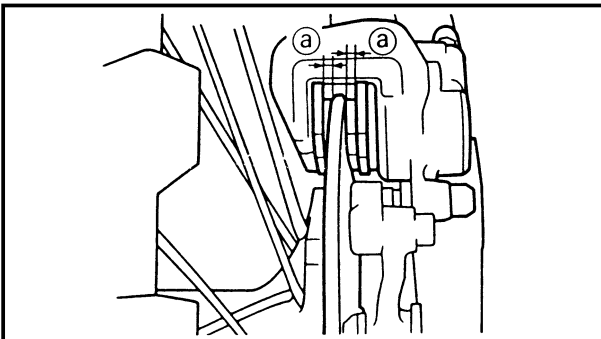


- Install the pad pin plug ⑫.



**Pad pin plug:**  
**3 Nm (0.3 m•kg, 2.2 ft•lb)**

3. Inspect:
  - Brake fluid level  
 Refer to “BRAKE FLUID LEVEL INSPECTION” section.
4. Check:
  - Brake lever operation  
 A softy or spongy feeling → Bleed brake system.  
 Refer to “BRAKE SYSTEM AIR BLEEDING” section.



EC366060

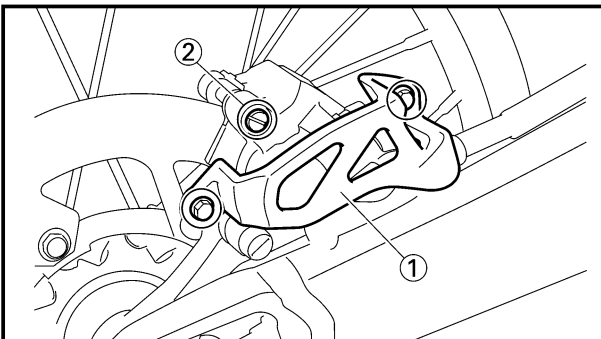
## REAR BRAKE PAD INSPECTION AND REPLACEMENT

1. Inspect:
  - Brake pad thickness ①  
 Out of specification → Replace as a set.

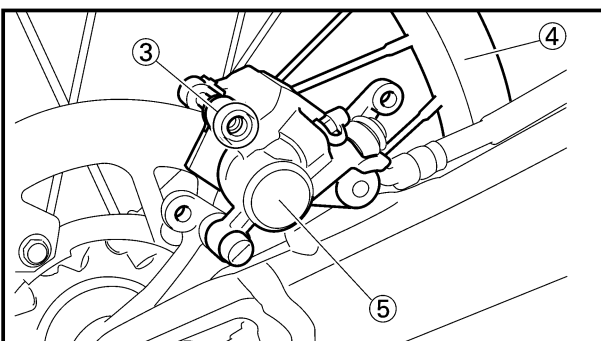


**Brake pad thickness ①:**

Standard	<Limit>
6.4 mm (0.25 in)	1.0 mm (0.04 in)



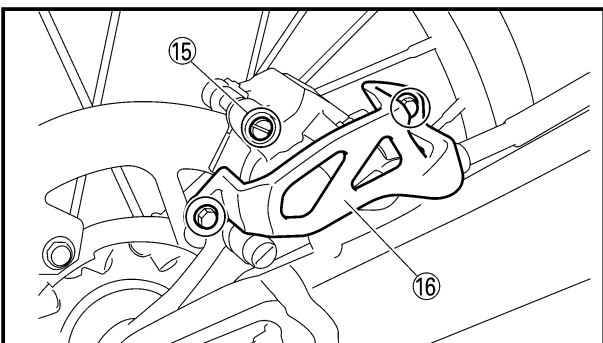
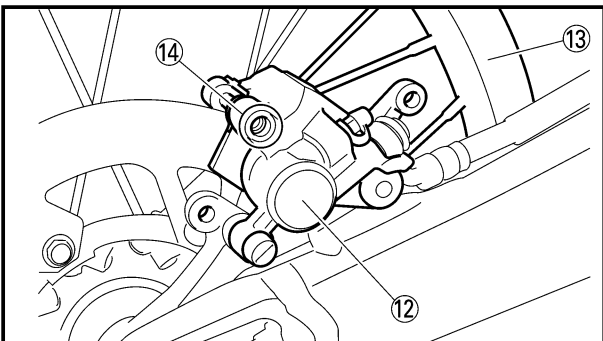
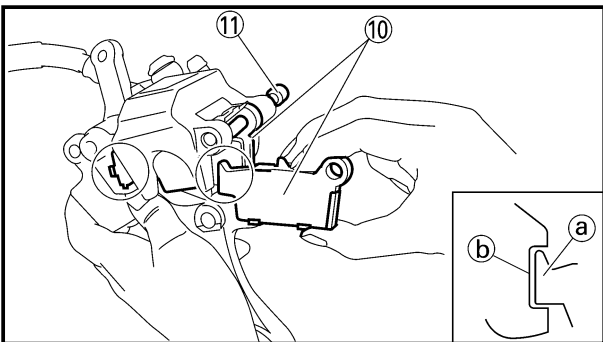
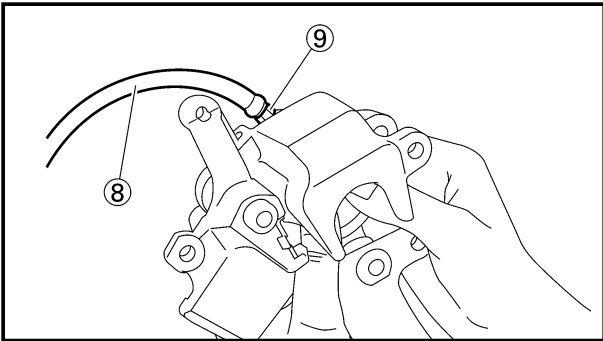
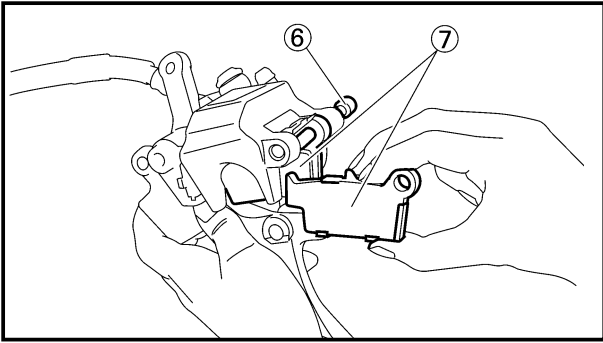
2. Replace:
  - Brake pad



### Brake pad replacement steps:

- Remove the protector ① and pad pin plug ②.
- Loosen the pad pin ③.
- Remove the rear wheel ④ and caliper ⑤.  
 Refer to “FRONT WHEEL AND REAR WHEEL” section in the CHAPTER 5.

# REAR BRAKE PAD INSPECTION AND REPLACEMENT



- Remove the pad pin (6) and brake pads (7).
- Connect the transparent hose (8) to the bleed screw (9) and place the suitable container under its end.
- Loosen the bleed screw and push the caliper piston in.

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

**Do not reuse the drained brake fluid.**

- Tighten the bleed screw.



**Bleed screw:**

**6 Nm (0.6 m•kg, 4.3 ft•lb)**

- Install the brake pads (10) and pad pin (11).

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

- Install the brake pads with their projections (a) into the caliper recesses (b).
- Temporarily tighten the pad pin at this point.

- Install the caliper (12) and rear wheel (13). Refer to "FRONT WHEEL AND REAR WHEEL" section in the CHAPTER 5.
- Tighten the pad pin (14).



**Pad pin:**

**18 Nm (1.8 m•kg, 13 ft•lb)**

- Install the pad pin plug (15) and protector (16).



**Pad pin plug:**

**3 Nm (0.3 m•kg, 2.2 ft•lb)**

**Bolt (protector):**

**7 Nm (0.7 m•kg, 5.1 ft•lb)**

3. Inspect:

- Brake fluid level  
Refer to "BRAKE FLUID LEVEL INSPECTION" section.

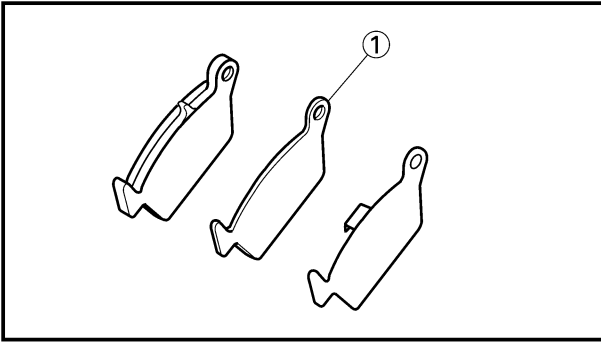
4. Check:

- Brake pedal operation  
A softy or spongy feeling → Bleed brake system.  
Refer to "BRAKE SYSTEM AIR BLEEDING" section.



## REAR BRAKE PAD INSULATOR INSPECTION BRAKE FLUID LEVEL INSPECTION

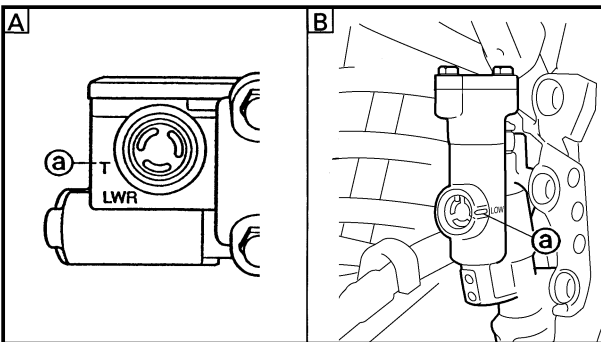
INSP  
ADJ



EC36b000

### REAR BRAKE PAD INSULATOR INSPECTION

1. Remove:
  - Brake pad  
Refer to “REAR BRAKE PAD INSPECTION AND REPLACEMENT” section.
2. Inspect:
  - Rear brake pad insulator ①  
Damage → Replace.



EC367001

### BRAKE FLUID LEVEL INSPECTION

1. Place the master cylinder so that its top is in a horizontal position.
2. Inspect:
  - Brake fluid level  
Fluid at lower level → Fill up.

Ⓐ Lower level

Ⓐ Front

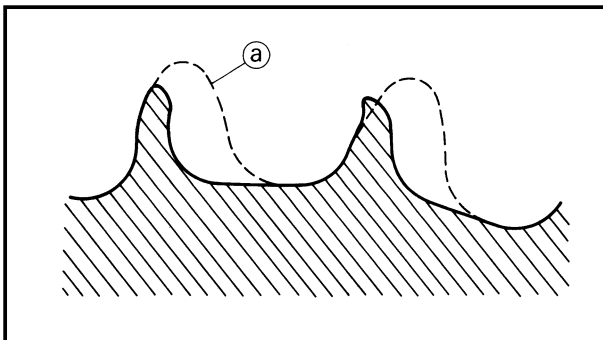
Ⓑ Rear



Recommended brake fluid:  
DOT #4

### ⚠ WARNING

- Use only designated quality brake fluid to avoid poor brake performance.
- Refill with same type and brand of brake fluid; mixing fluids could result in poor brake performance.
- Be sure that water or other contaminants do not enter master cylinder when refilling.
- Clean up spilled fluid immediately to avoid erosion of painted surfaces or plastic parts.



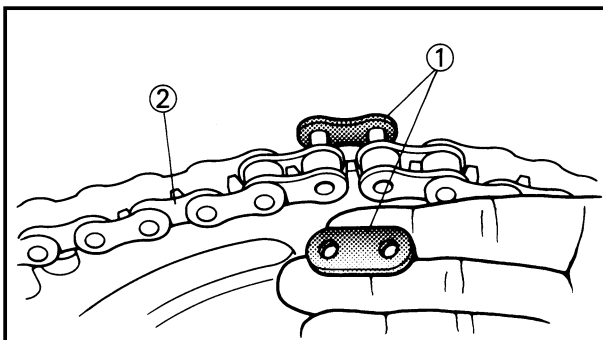
EC368000

## SPROCKETS INSPECTION

- Inspect:
  - Sprocket teeth (a)
 Excessive wear → Replace.

### NOTE:

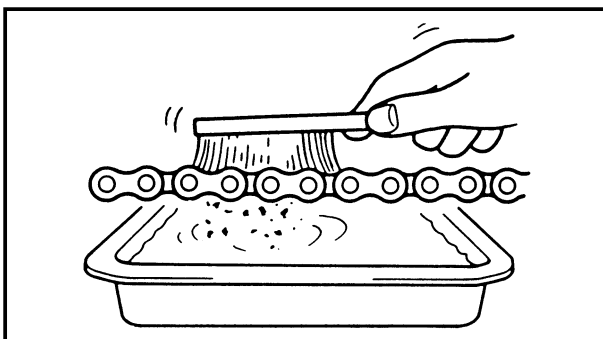
Replace the drive, driven sprockets and drive chain as a set.



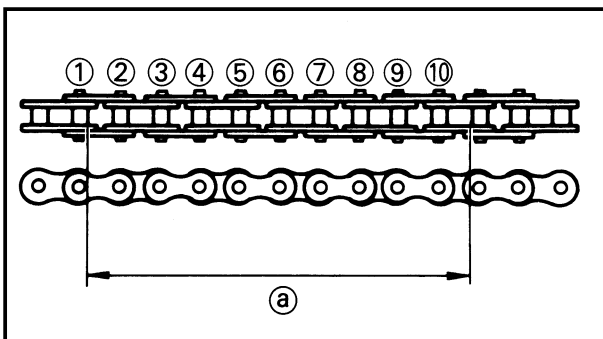
EC369002

## DRIVE CHAIN INSPECTION

- Remove:
  - Master link clip (1)
  - Drive chain (2)



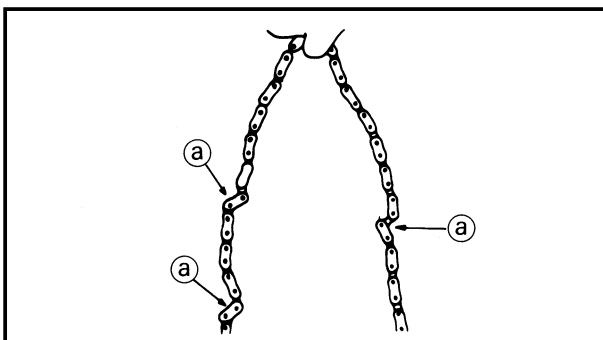
- Clean:
  - Drive chain
 Place it in kerosene, and brush off as much dirt as possible. Then remove the chain from the kerosene and dry the chain.



- Measure:
  - Drive chain length (10 links) (a)
 Out of specification → Replace.



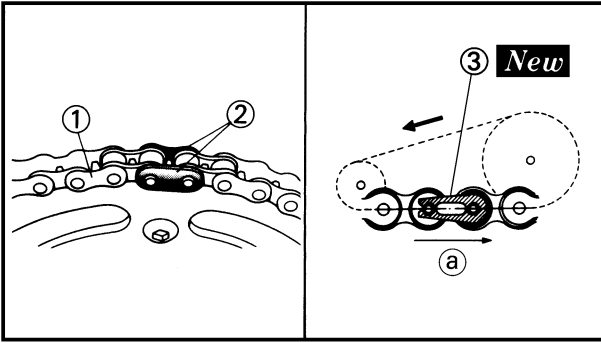
**Drive chain length (10 links):**  
Limit: 152.5 mm (6.004 in)



- Check:
  - Drive chain stiffness (a)
 Clean and oil the chain and hold as illustrated.  
Stiff → Replace drive chain.

## DRIVE CHAIN SLACK ADJUSTMENT

INSP  
ADJ



5. Install:

- Drive chain ①
- Joint ②
- Master link clip ③ **New**

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

Be sure to install the master link clip to the direction as shown.

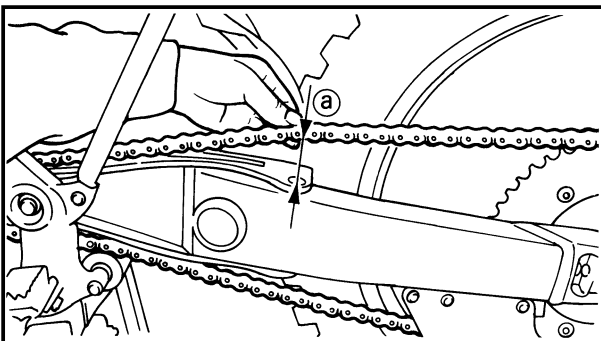
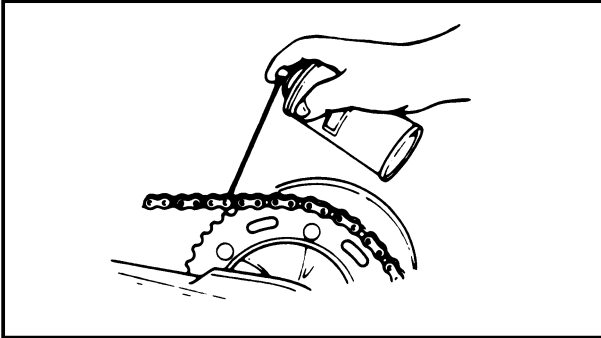
① Turning direction

6. Lubricate:

- Drive chain



**Drive chain lubricant:**  
SAE 10W-30 motor oil or suitable  
chain lubricants



EC36A061

## DRIVE CHAIN SLACK ADJUSTMENT

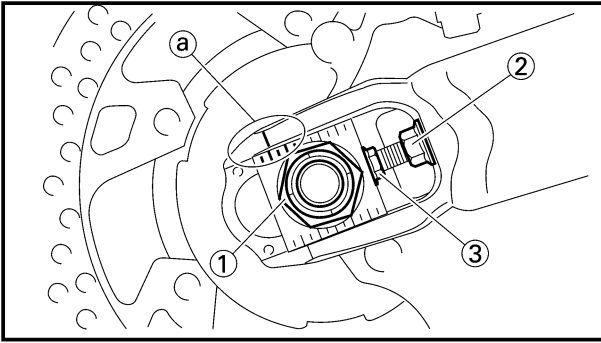
1. Elevate the rear wheel by placing the suitable stand under the engine.
2. Check:
  - Drive chain slack ①
  - Above the seal guard installation bolt.
  - Out of specification → Adjust



**Drive chain slack:**  
40~50 mm (1.6~2.0 in)

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

Before checking and/or adjusting, rotate the rear wheel through several revolutions and check the slack several times to find the tightest point. Check and/or adjust chain slack with rear wheel in this "tight chain" position.



3. Adjust:
- Drive chain slack

**Drive chain slack adjustment steps:**

- Loosen the axle nut ① and locknuts ②.
- Adjust chain slack by turning the adjusters ③.

**To tighten** → Turn adjuster ③ counter-clockwise.

**To loosen** → Turn adjuster ③ clockwise and push wheel forward.

- Turn each adjuster exactly the same amount to maintain correct axle alignment. (There are marks ① on each side of chain puller alignment.)

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

Turn the adjuster so that the chain is in line with the sprocket, as viewed from the rear.

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

**Too small chain slack will overload the engine and other vital parts; keep the slack within the specified limits.**

- Tighten the axle nut while pushing down the drive chain.

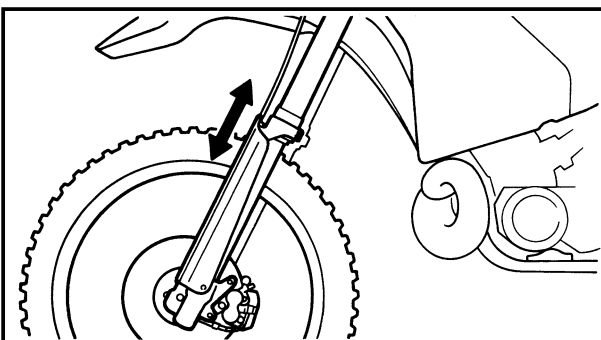


**Axle nut:**  
**125 Nm (12.5 m•kg, 90 ft•lb)**

- Tighten the locknuts.



**Locknut:**  
**16 Nm (1.6 m•kg, 11 ft•lb)**

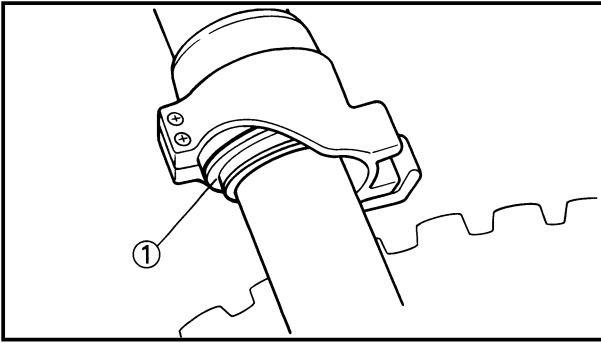


EC36C000

## FRONT FORK INSPECTION

1. Inspect:
- Front fork smooth action  
Operate the front brake and stroke the front fork.  
Unsmooth action/oil leakage → Repair or replace.

**FRONT FORK OIL SEAL AND DUST SEAL CLEANING/  
FRONT FORK INTERNAL PRESSURE RELIEVING/  
FRONT FORK REBOUND DAMPING FORCE ADJUSTMENT**



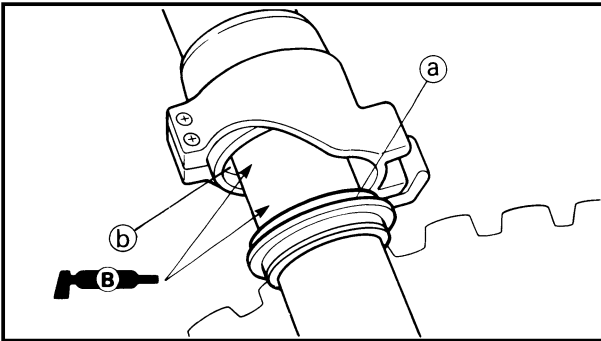
EC36D001

**FRONT FORK OIL SEAL AND DUST SEAL CLEANING**

1. Remove:
  - Protector
  - Dust seal ①

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

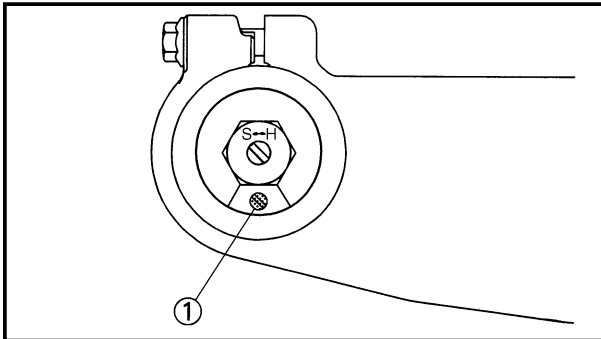
Use a thin screw driver, and be careful not to damage the inner fork tube and dust seal.



2. Clean:
  - Dust seal (a)
  - Oil seal (b)

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

- Clean the dust seal and oil seal after every run.
- Apply the lithium soap base grease on the inner tube.



EC36f000

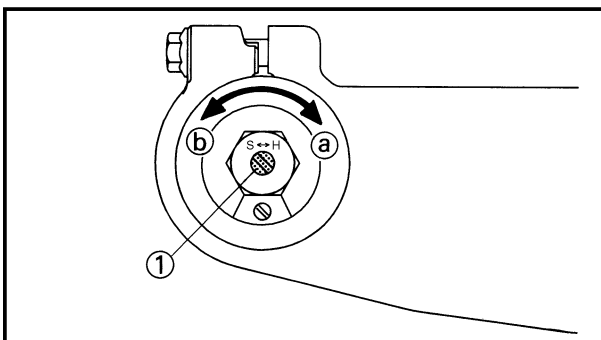
**FRONT FORK INTERNAL PRESSURE RELIEVING**

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

If the front fork initial movement feels stiff during a run, relieve the front fork internal pressure.

1. Elevate the front wheel by placing a suitable stand under the engine.
2. Remove the air bleed screw ① and release the internal pressure from the front fork.
3. Install:
  - Air bleed screw

1 Nm (0.1 m•kg, 0.7 ft•lb)



EC36H002


**FRONT FORK REBOUND DAMPING FORCE ADJUSTMENT**

1. Adjust:
  - Rebound damping force
 By turning the adjuster ①.

**Stiffer (a) → Increase the rebound damping force. (Turn the adjuster ① in.)**  
**Softer (b) → Decrease the rebound damping force. (Turn the adjuster ① out.)**

# FRONT FORK COMPRESSION DAMPING FORCE ADJUSTMENT



 <b>Extent of adjustment:</b>	
<b>Maximum</b>	<b>Minimum</b>
Fully turned in position	20 clicks out (from maximum position)

• **STANDARD POSITION:**

This is the position which is back by the specific number of clicks from the fully turned-in position.

 <b>Standard position:</b> 11 clicks out *10 clicks out
--

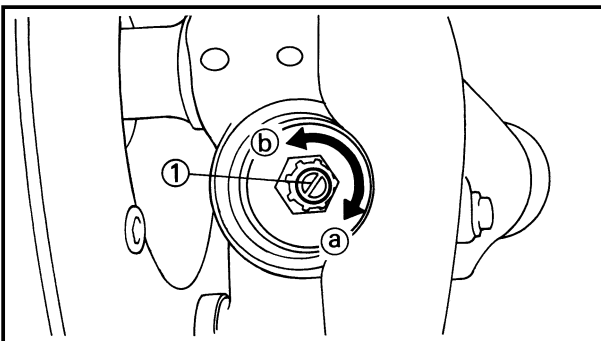
\*For EUROPE

**CAUTION:**

Do not force the adjuster past the minimum or maximum extent of adjustment. The adjuster may be damaged.

**WARNING**

Always adjust each front fork to the same setting. Uneven adjustment can cause poor handling and loss of stability.




EC36J001

## FRONT FORK COMPRESSION DAMPING FORCE ADJUSTMENT

1. Remove:
  - Rubber cap
2. Adjust:
  - Compression damping force  
By turning the adjuster ①.

**Stiffer ①** → Increase the compression damping force. (Turn the adjuster ① in.)

**Softer ②** → Decrease the compression damping force. (Turn the adjuster ① out.)

 <b>Extent of adjustment:</b>	
<b>Maximum</b>	<b>Minimum</b>
<b>Fully turned in position</b>	<b>20 clicks out (from maximum position)</b>

• **STANDARD POSITION:**

This is the position which is back by the specific number of clicks from the fully turned-in position.

 <b>Standard position:</b>
<b>11 clicks out</b>
<b>*8 clicks out</b>

\*For EUROPE

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

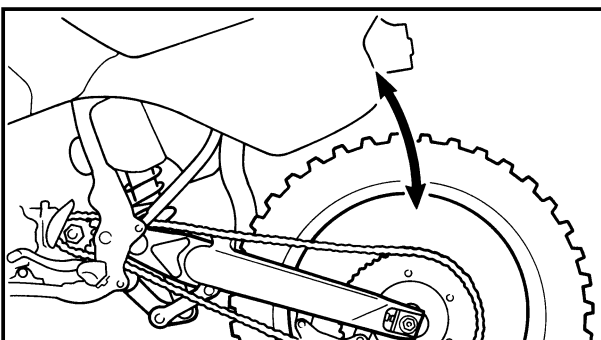
Do not force the adjuster past the minimum or maximum extent of adjustment. The adjuster may be damaged.

**WARNING** \_\_\_\_\_

Always adjust each front fork to the same setting. Uneven adjustment can cause poor handling and loss of stability.

3. Install:

- Rubber cap



EC36K000

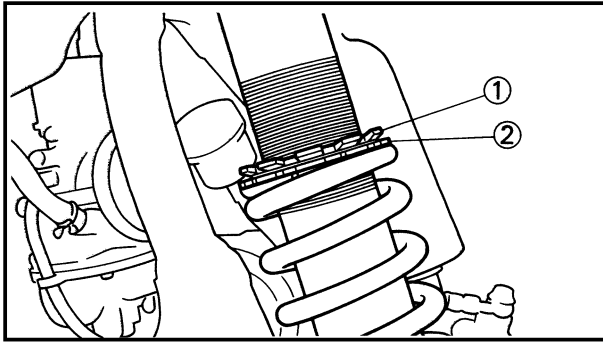
## REAR SHOCK ABSORBER INSPECTION

1. Inspect:

- Swingarm smooth action  
Abnormal noise/Unsmooth action → Grease the pivoting points or repair the pivoting points.  
Damage/Oil leakage → Replace.

# REAR SHOCK ABSORBER SPRING PRELOAD ADJUSTMENT

**INSP**  
**ADJ**

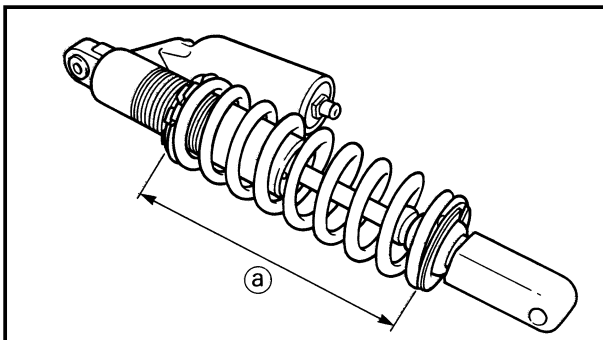


EC36M014

## REAR SHOCK ABSORBER SPRING PRELOAD ADJUSTMENT

1. Elevate the rear wheel by placing the suitable stand under the engine.
2. Remove:
  - Rear frame
3. Loosen:
  - Locknut ①
4. Adjust:
  - Spring preload
 By turning the adjuster ②.

<b>Stiffer</b> →	<b>Increase the spring preload. (Turn the adjuster ② in.)</b>
<b>Softer</b> →	<b>Decrease the spring preload. (Turn the adjuster ② out.)</b>



Spring length (installed) ②:	
Standard length	Extent of adjustment
251 mm (9.88 in)	240.5~258.5 mm (9.47~10.18 in)
*261 mm (10.28 in)	*255.5~273.5 mm (10.06~10.77 in)

\*For EUROPE

### NOTE:

- Be sure to remove all dirt and mud from around the locknut and adjuster before adjustment.
- The length of the spring (installed) changes 1.5 mm (0.06 in) per turn of the adjuster.

### CAUTION:

**Never attempt to turn the adjuster beyond the maximum or minimum setting.**

5. Tighten:
  - Locknut
6. Install:
  - Rear frame (upper)
  - Rear frame (lower)

**32 Nm (3.2 m•kg, 23 ft•lb)**

**29 Nm (2.9 m•kg, 21 ft•lb)**



# REAR SHOCK ABSORBER REBOUND DAMPING FORCE ADJUSTMENT

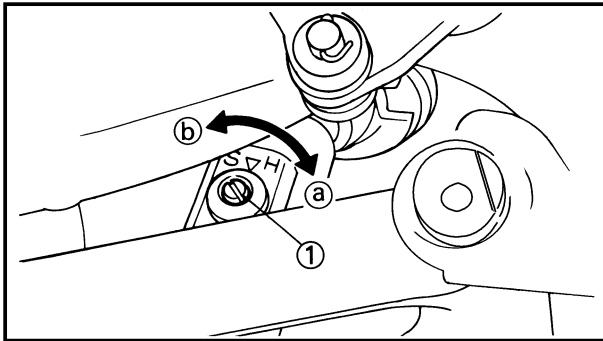


EC36N014

## REAR SHOCK ABSORBER REBOUND DAMPING FORCE ADJUSTMENT

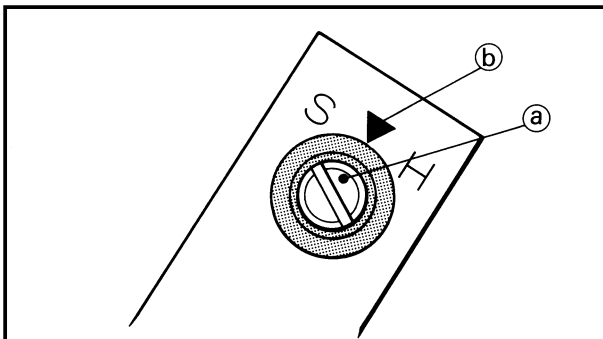
1. Adjust:

- Rebound damping force  
By turning the adjuster ①.



**Stiffer (a) → Increase the rebound damping force. (Turn the adjuster ① in.)**  
**Softer (b) → Decrease the rebound damping force. (Turn the adjuster ① out.)**

Extent of adjustment:	
Maximum	Minimum
Fully turned in position	20 clicks out (from maximum position)



• **STANDARD POSITION:**

This is the position which is back by the specific number of clicks from the fully turned-in position. (Which align the punch mark (a) on the adjuster with the punch mark (b) on the bracket.)

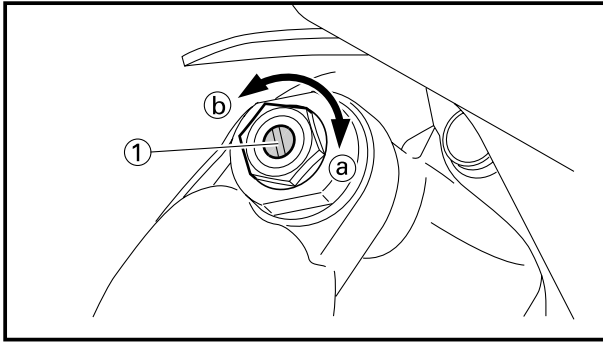
<p><b>Standard position:</b>  <b>About 12 clicks out</b>  <b>*About 8 clicks out</b></p>
--

\*For EUROPE

**CAUTION:**

Do not force the adjuster past the minimum or maximum extent of adjustment. The adjuster may be damaged.

# REAR SHOCK ABSORBER LOW COMPRESSION DAMPING FORCE ADJUSTMENT



EC36c000

## REAR SHOCK ABSORBER LOW COMPRESSION DAMPING FORCE ADJUSTMENT

- Adjust:
  - Low compression damping force  
By turning the adjuster ①.

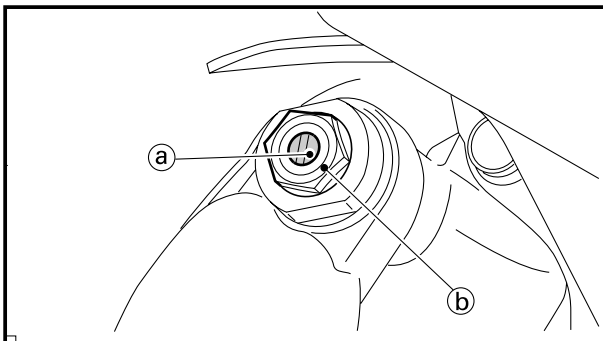
**Stiffer ①** → Increase the low compression damping force. (Turn the adjuster ① in.)

**Softer ②** → Decrease the low compression damping force. (Turn the adjuster ① out.)



### Extent of adjustment:

Maximum	Minimum
Fully turned in position	20 clicks out (from maximum position)



### •STANDARD POSITION:

This is the position which is back by the specific number of clicks from the fully turned-in position. (Which align the punch mark ① on the adjuster with the punch mark ② on the high compression damping adjuster.)



### Standard position:

About 13 clicks out

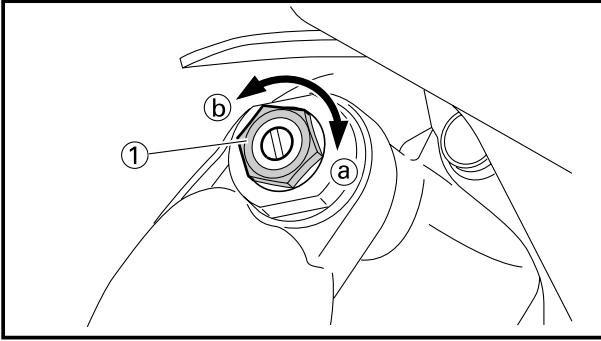
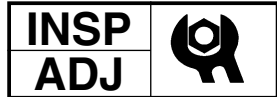
\*About 9 clicks out

\*For EUROPE

### CAUTION:

Do not force the adjuster past the minimum or maximum extent of adjustment. The adjuster may be damaged.

# REAR SHOCK ABSORBER HIGH COMPRESSION DAMPING FORCE ADJUSTMENT



EC36d000

## REAR SHOCK ABSORBER HIGH COMPRESSION DAMPING FORCE ADJUSTMENT

- Adjust:
  - High compression damping force  
By turning the adjuster ①.

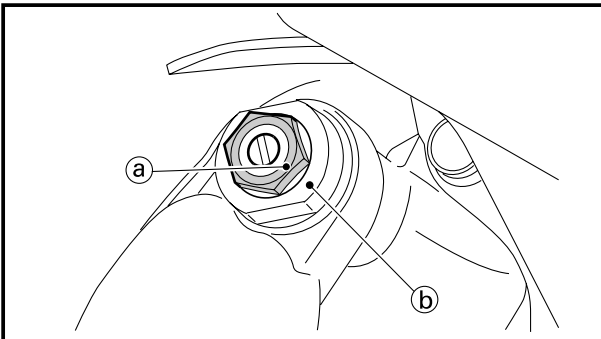
**Stiffer ①** → Increase the high compression damping force. (Turn the adjuster ① in.)

**Softer ②** → Decrease the high compression damping force. (Turn the adjuster ① out.)



### Extent of adjustment:

Maximum	Minimum
Fully turned in position	2 turns out (from maximum position)



### •STANDARD POSITION:

This is the position which is back by the specific number of turns from the fully turned-in position. (Which align the punch mark ① on the adjuster with the punch mark ② on the adjuster body.)



### Standard position:

About 1-1/8 turns out

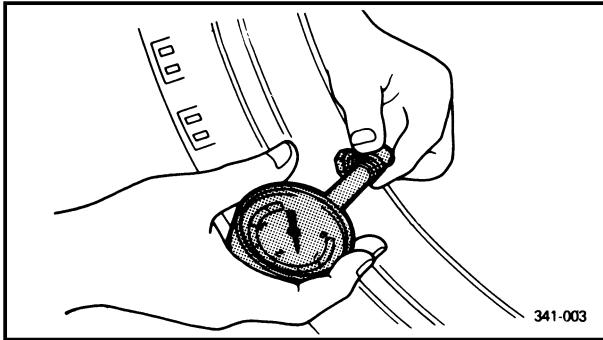
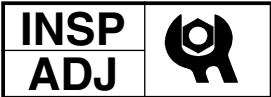
\*About 1-1/4 turns out

\*For EUROPE

### CAUTION:

Do not force the adjuster past the minimum or maximum extent of adjustment. The adjuster may be damaged.

# TIRE PRESSURE CHECK/SPOKES INSPECTION AND TIGHTENING/WHEEL INSPECTION



EC36Q001

## TIRE PRESSURE CHECK

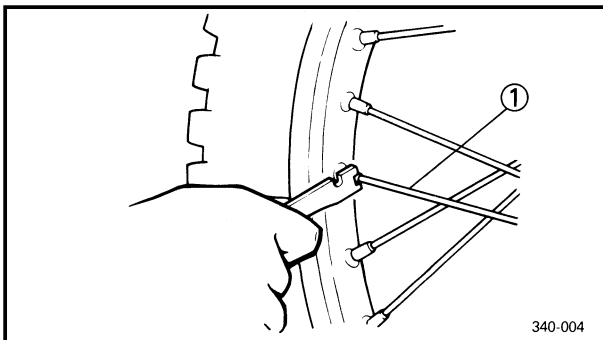
1. Measure:
  - Tire pressureOut of specification → Adjust.



**Standard tire pressure:**  
**100 kPa (1.0 kgf/cm<sup>2</sup>, 15 psi)**

### NOTE:

- Check the tire while it is cold.
- Loose bead stoppers allow the tire to slip off its position on the rim when the tire pressure is low.
- A tilted tire valve stem indicates that the tire slips off its position on the rim.
- If the tire valve stem is found tilted, the tire is considered to be slipping off its position. Correct the tire position.



EC36S002

## SPOKES INSPECTION AND TIGHTENING

1. Inspect:
  - Spokes ①Bend/Damage → Replace.  
Loose spoke → Retighten.

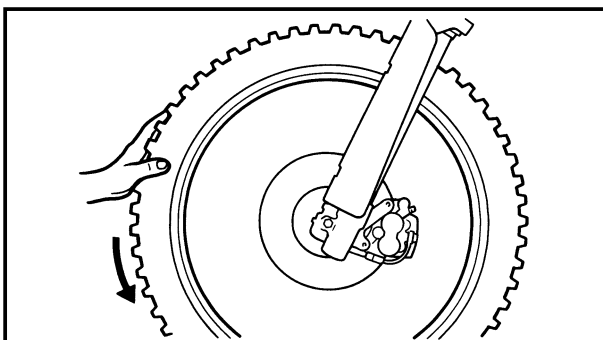
2. Tighten:

- Spokes

**3 Nm (0.3 m•kg, 2.2 ft•lb)**

### NOTE:

Be sure to retighten these spokes before and after break-in. After a practice or a race check spokes for looseness.

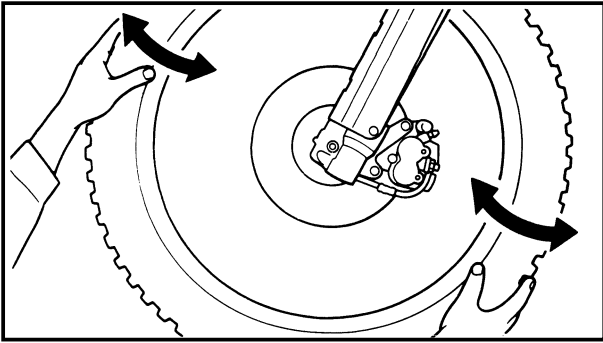
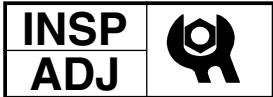


EC36T000

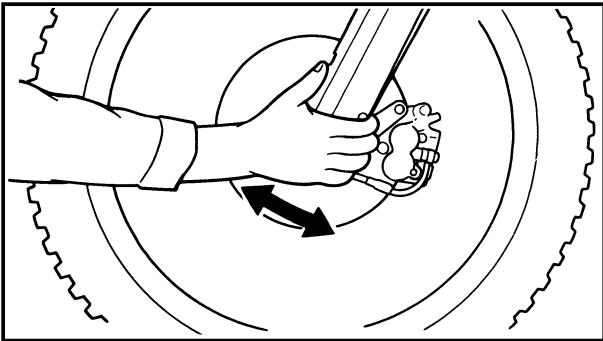
## WHEEL INSPECTION

1. Inspect:
  - Wheel runoutElevate the wheel and turn it.  
Abnormal runout → Replace.

# STEERING HEAD INSPECTION AND ADJUSTMENT



2. Inspect:
- Bearing free play
- Exist play → Replace.



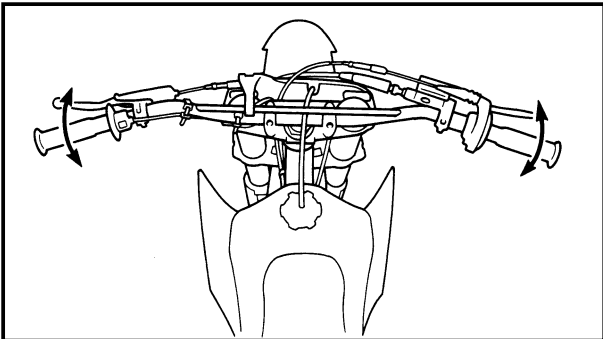
EC36U014

## STEERING HEAD INSPECTION AND ADJUSTMENT

1. Elevate the front wheel by placing a suitable stand under the engine.
2. Check:
  - Steering shaft

Grasp the bottom of the forks and gently rock the fork assembly back and forth.

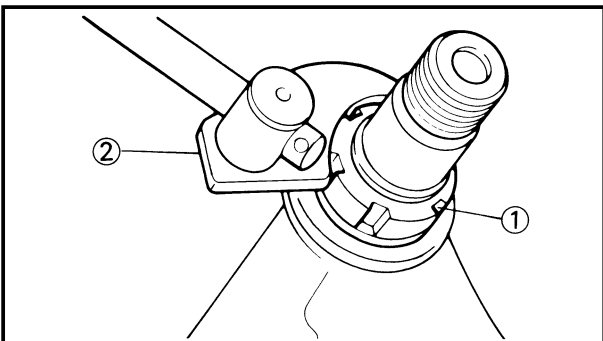
Free play → Adjust steering head.



3. Check:
  - Steering smooth action

Turn the handlebar lock to lock.

Unsmooth action → Adjust steering ring nut.



4. Adjust:
  - Steering ring nut

### Steering ring nut adjustment steps:

- Remove the number plate.
- Remove the handlebar and handle crown.
- Loosen the ring nut ① using the ring nut wrench ②.



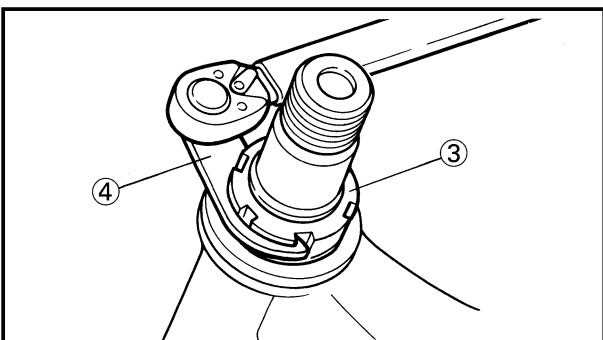
**Ring nut wrench:**  
**YU-33975/90890-01403**

- Tighten the ring nut ③ using ring nut wrench ④.

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

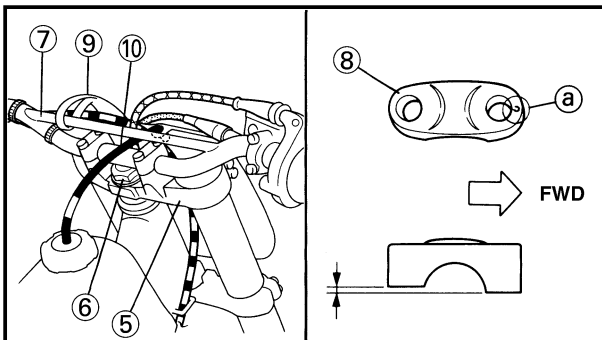
Set the torque wrench to the ring nut wrench so that they form a right angle.

\_\_\_\_\_



# STEERING HEAD INSPECTION AND ADJUSTMENT

**INSP**  
**ADJ**



	<b>Ring nut wrench:</b> <b>YU-33975/90890-01403</b>
	<b>Ring nut (initial tightening):</b> <b>38 Nm (3.8 m•kg, 27ft•lb)</b>
<ul style="list-style-type: none"> <li>•Loosen the ring nut one turn.</li> <li>•Retighten the ring nut using the ring nut wrench.</li> </ul> <p><b>⚠ WARNING</b> _____</p> <p><b>Avoid over-tightening.</b></p>	
	<b>Ring nut (final tightening):</b> <b>7 Nm (0.7 m•kg, 5.1 ft•lb)</b>
<ul style="list-style-type: none"> <li>•Check the steering shaft by turning it lock to lock. If there is any binding, remove the steering shaft assembly and inspect the steering bearings.</li> <li>•Install the handle crown (5), plain washer, steering shaft nut (6), handlebar (7), handlebar holder (8) and number plate (9).</li> </ul> <p><b>NOTE:</b> _____</p> <ul style="list-style-type: none"> <li>•The upper handlebar holder should be installed with the punched mark (a) forward.</li> <li>•Insert the end of fuel breather hose (10) into the hole of the number plate.</li> </ul>	
<p><b>CAUTION:</b> _____</p> <p><b>First tighten the bolts on the front side of the handlebar holder, and then tighten the bolts on the rear side.</b></p>	
	<b>Steering shaft nut:</b> <b>145 Nm (14.5 m•kg, 105 t•lb)</b>
<b>Handlebar upper holder:</b> <b>28 Nm (2.8 m•kg, 20 ft•lb)</b>	
<b>Pinch bolt (handle crown):</b> <b>23 Nm (2.3 m•kg, 17 ft•lb)</b>	
<b>Number plate:</b> <b>7 Nm (0.7 m•kg, 5.1 ft•lb)</b>	

EC36a042

## LUBRICATION

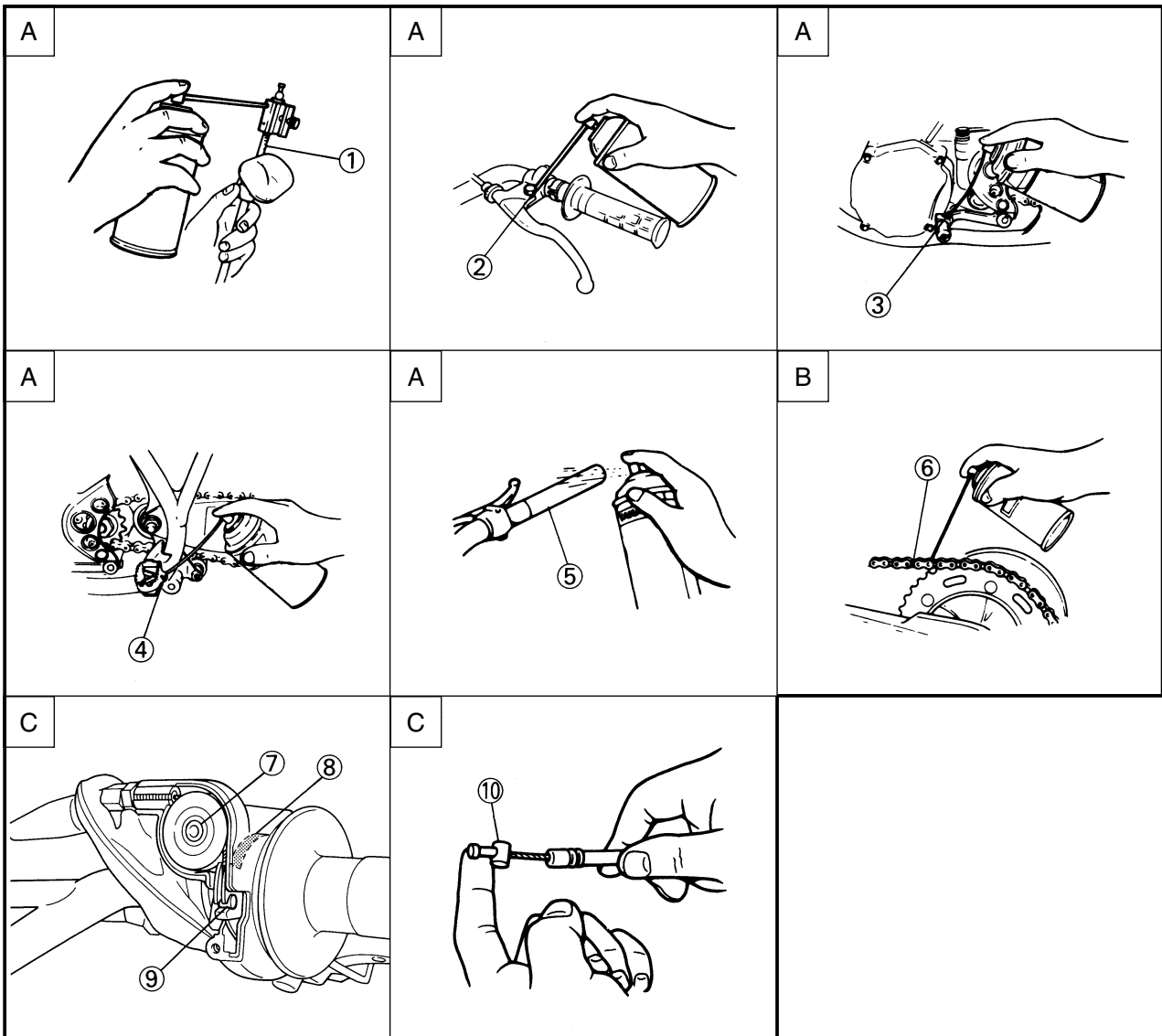
To ensure smooth operation of all components, lubricate your machine during setup, after break-in, and after every race.

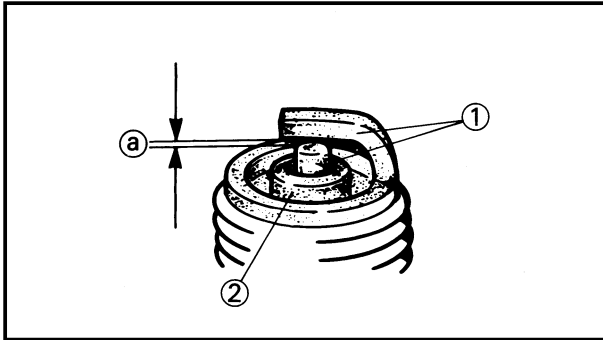
- ① All control cable
- ② Clutch lever pivot
- ③ Shift pedal pivot
- ④ Footrest pivot
- ⑤ Throttle-to-handlebar contact
- ⑥ Drive chain
- ⑦ Throttle roller sliding surface
- ⑧ Tube guide cable winding portion
- ⑨ Throttle cable end
- ⑩ Clutch cable end

- A** Use Yamaha cable lube or equivalent on these areas.
- B** Use SAE10W-30 motor oil or suitable chain lubricants.
- C** Lubricate the following areas with high quality, lightweight lithium-soap base grease.

### CAUTION:

**Wipe off any excess grease, and avoid getting grease on the brake discs.**





EC370000

## ELECTRICAL

EC371001

### SPARK PLUG INSPECTION

1. Remove:
  - Spark plug
2. Inspect:
  - Electrode ①  
Wear/Damage → Replace.
  - Insulator color ②  
Normal condition is a medium to light tan color.  
Distinctly different color → Check the engine condition.

#### NOTE: \_\_\_\_\_

When the engine runs for many hours at low speeds, the spark plug insulator will become sooty, even if the engine and carburetor are in good operating condition.

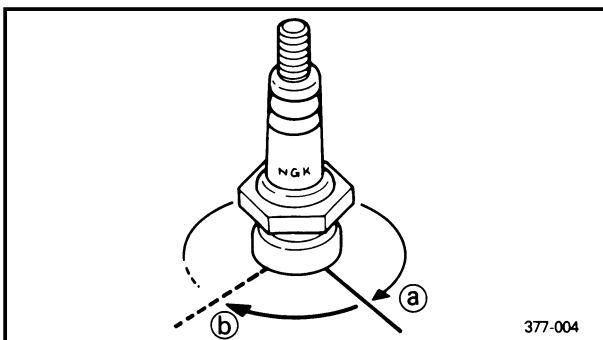
3. Measure:
  - Plug gap ③  
Use a wire gauge or thickness gauge.  
Out of specification → Regap.



**Spark plug gap:**  
0.5~0.6 mm (0.020~0.024 in)

**Standard spark plug:**  
**BR8EG (NGK)**

4. Clean the plug with a spark plug cleaner if necessary.



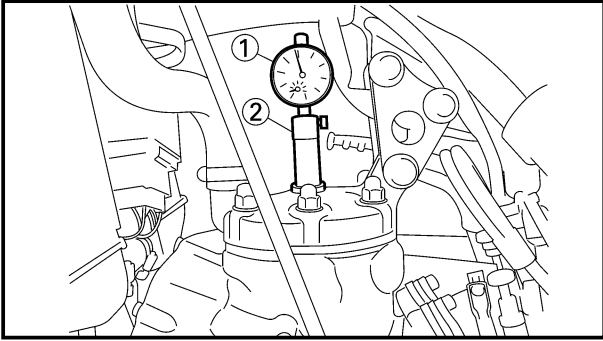
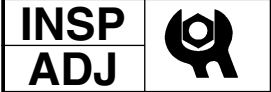
5. Tighten:
  - Spark plug  **20 Nm (2.0 m•kg, 14 ft•lb)**

#### NOTE: \_\_\_\_\_

- Before installing a spark plug, clean the gasket surface and plug surface.
- Finger-tighten ④ the spark plug before torquing to specification ⑤.



# IGNITION TIMING CHECK



EC372012

## IGNITION TIMING CHECK

1. Remove:
  - Fuel tank  
Refer to “SEAT, FUEL TANK AND SIDE COVERS” section in the CHAPTER 4.
  - Spark plug
  - Crankcase cover (left)
2. Attach:
  - Dial gauge ①
  - Spark plug hole dial stand ②

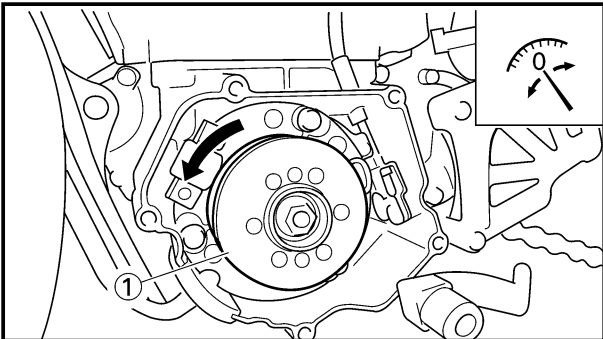


**Dial gauge:**

**YU-3097/90890-01252**

**Spark plug hole dial stand:**

**YU-1256**



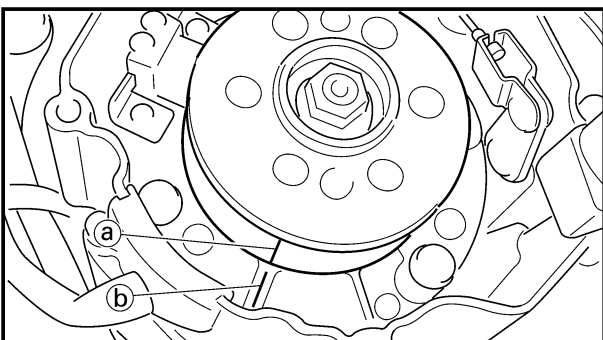
3. Rotate the magneto rotor ① until the piston reaches top dead center (TDC). When this happens, the needle on the dial gauge will stop and reverse directions even though the rotor is being turned in the same direction.
4. Set the dial gauge to zero at TDC.

5. From TDC, rotate the rotor clockwise until the dial gauge indicates that the piston is at a specified distance from TDC.



**Ignition timing (B.T.D.C.):**

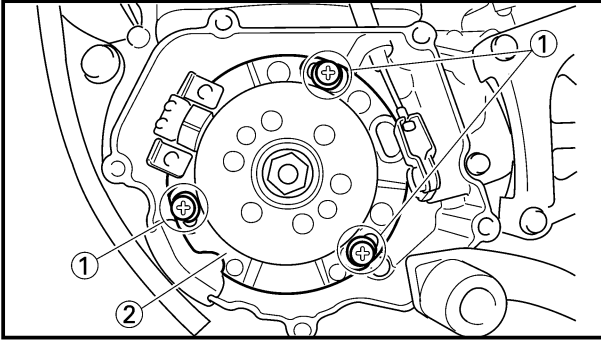
**0.18 mm (0.007 in)**



6. Check:
  - Ignition timing  
Punch mark ① on rotor should be aligned with punch mark ② on stator.  
Not aligned → Adjust.

## IGNITION TIMING CHECK

INSP  
ADJ



7. Adjust:
- Ignition timing

### Adjustment steps:

- Loosen the screws (stator) ①.
- Align the punch mark on the rotor with punch mark on the stator ② by moving the stator.
- Tighten the screws (stator).



### Screw (stator):

**8 Nm (0.8 m•kg, 5.8 ft•lb)**

# SEAT, FUEL TANK AND SIDE COVERS

ENG

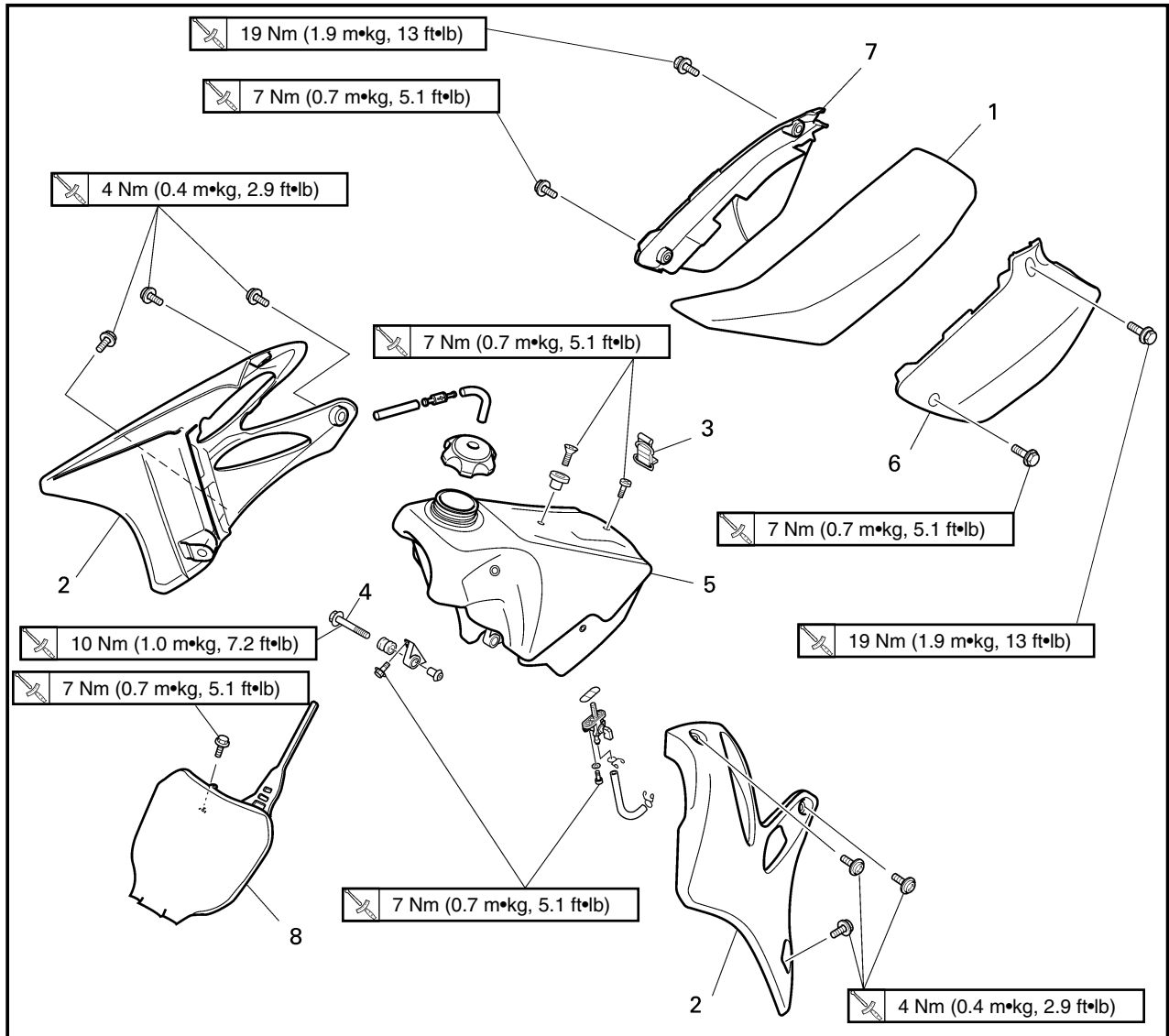


EC400000

## ENGINE

EC4R0000

## SEAT, FUEL TANK AND SIDE COVERS



Extent of removal:

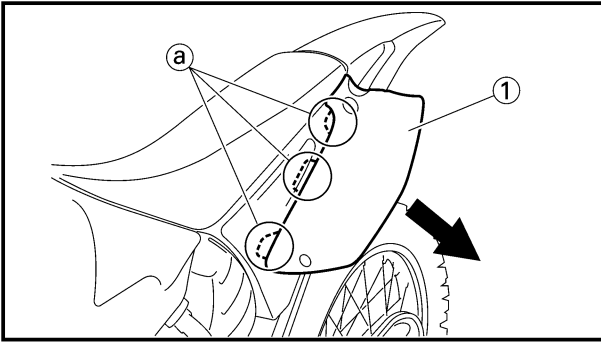
① Seat removal

② Fuel tank removal

③ Side covers removal

④ Number plate removal

Extent of removal	Order	Part name	Q'ty	Remarks	
<b>SEAT, FUEL TANK AND SIDE COVERS REMOVAL</b>					
Preparation for removal		Turn the fuel cock to "OFF". Disconnect the fuel hose.			
	1	Seat	1	} Refer to "REMOVAL POINTS".	
	2	Air scoop (left and right)	2		
	3	Fitting band	1		Remove on fuel tank side.
	4	Bolt (fuel tank)	2		
	5	Fuel tank	1		
	6	Side cover (left)	1		
	7	Side cover (right)	1		
	8	Number plate	1		



EC4R3000

## REMOVAL POINTS

EC413110

### Side cover

1. Remove:
  - Bolt (side cover)
  - Side cover (left and right) ①

### NOTE: \_\_\_\_\_

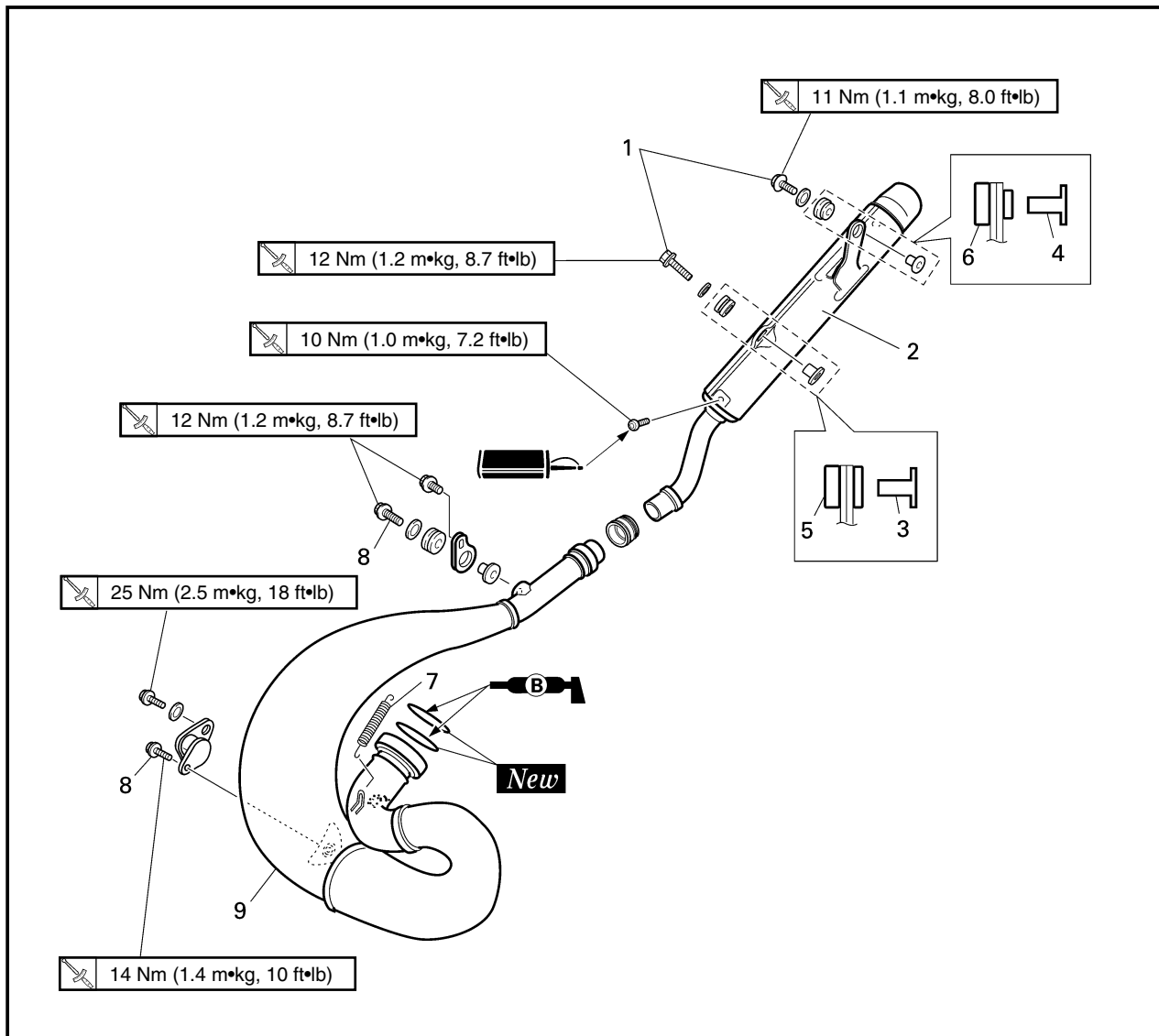
Draw the side cover downward to remove it because its claws (a) are inserted in the air cleaner case.

---



EC4S0000

## EXHAUST PIPE AND SILENCER



Extent of removal:

① Silencer removal

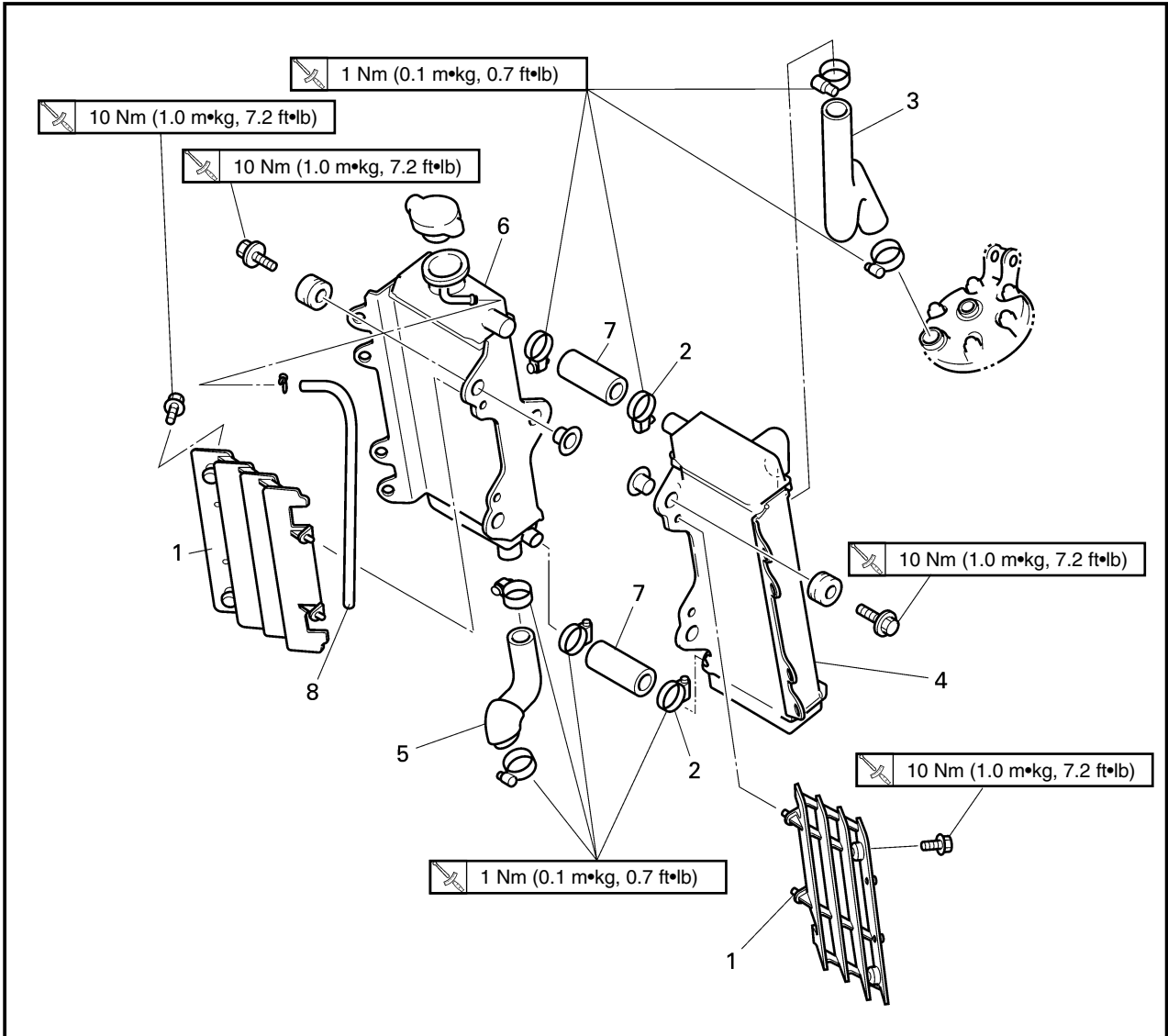
② Exhaust pipe removal

Extent of removal	Order	Part name	Q'ty	Remarks
Preparation for removal		<b>EXHAUST PIPE AND SILENCER REMOVAL</b> Side cover (right)		Refer to "SEAT, FUEL TANK AND SIDE COVERS" section.
<div style="display: flex; align-items: center; justify-content: center;"> <div style="text-align: center; margin-right: 10px;">             ↑ ① ↓           </div> <div style="text-align: center; margin-right: 10px;">             ↑ ② ↓           </div> </div>	1	Bolt (silencer)	2	
	2	Silencer	1	
	3	Collar [D=ø10.5 mm (0.41 in)]	1	
	4	Collar [D=ø10.0 mm (0.39 in)]	1	
	5	Grommet (front)	1	
	6	Grommet (rear)	1	
	7	Tension spring	2	
	8	Bolt (exhaust pipe)	2	
	9	Exhaust pipe	1	



EC450001

## RADIATOR



Extent of removal: ① Radiator removal

Extent of removal	Order	Part name	Q'ty	Remarks
Preparation for removal		<b>RADIATOR REMOVAL</b> Drain the coolant.  Seat and fuel tank		Refer to "COOLANT REPLACEMENT" section in the CHAPTER 3. Refer to "SEAT, FUEL TANK AND SIDE COVERS" section.
①	1	Panel	2	Only loosening.
	2	Clamp (radiator hose 2)	2	
	3	Radiator hose 1	1	
	4	Radiator (left)	1	
	5	Radiator hose 4	1	
	6	Radiator (right)	1	
	7	Radiator hose 2	2	
	8	Radiator breather hose	1	



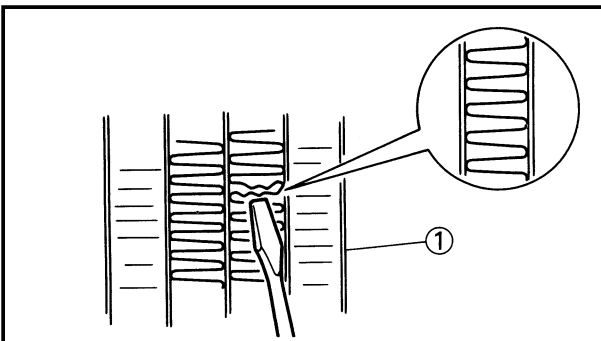
EC456000

**HANDLING NOTE****⚠WARNING**

Do not remove the radiator cap when the engine and radiator are hot. Scalding hot fluid and steam may be blown out under pressure, which could cause serious injury.

When the engine has cooled, open the radiator cap by the following procedure:

Place a thick rag, like a towel, over the radiator cap, slowly rotate the cap counterclockwise to the detent. This procedure allows any residual pressure to escape. When the hissing sound has stopped, press down on the cap while turning counterclockwise and remove it.



EC454000

**INSPECTION**

EC444100

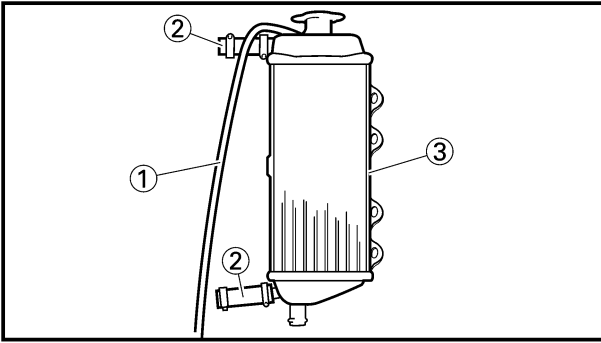
**Radiator**

## 1. Inspect:

- Radiator core ①

Obstruction → Blow out with compressed air through rear of the radiator.

Bent fin → Repair/replace.



EC455000

## ASSEMBLY AND INSTALLATION

EC445353

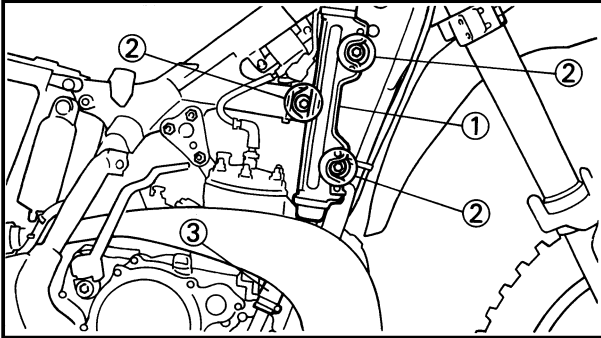
### Radiator

1. Install:

- Radiator breather hose ①
- Radiator hose 2 ②

1 Nm (0.1 m•kg, 0.7 ft•lb)

To radiator (right) ③.



2. Install:

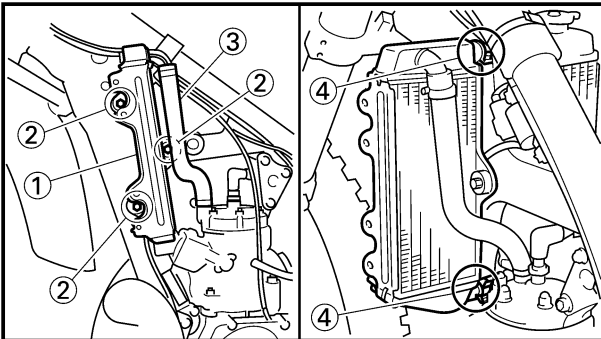
- Radiator (right) ①
- Bolt [radiator (right)] ②

10 Nm (1.0 m•kg, 7.2 ft•lb)

- Radiator hose 4 ③

1 Nm (0.1 m•kg, 0.7 ft•lb)

Refer to "CABLE ROUTING DIAGRAM" section in the CHAPTER 2.



3. Install:

- Radiator (left) ①
- Bolt [radiator (left)] ②

10 Nm (1.0 m•kg, 7.2 ft•lb)

- Radiator hose 1 ③

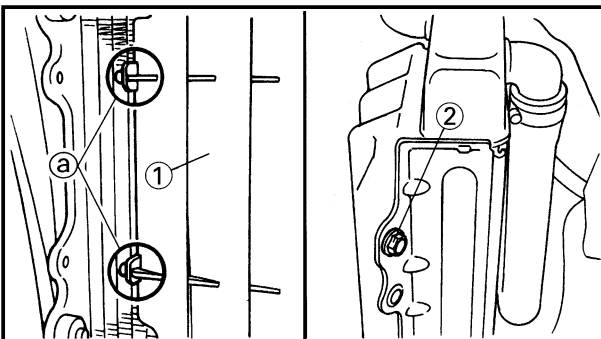
1 Nm (0.1 m•kg, 0.7 ft•lb)

Refer to "CABLE ROUTING DIAGRAM" section in the CHAPTER 2.

4. Tighten:

- Clamp (radiator hose 2) ④

1 Nm (0.1 m•kg, 0.7 ft•lb)



5. Install:

- Panel ①
- Bolt (panel) ②

10 Nm (1.0 m•kg, 7.2 ft•lb)

### NOTE:

Fit the hook (a) on the inner side first into the radiator.



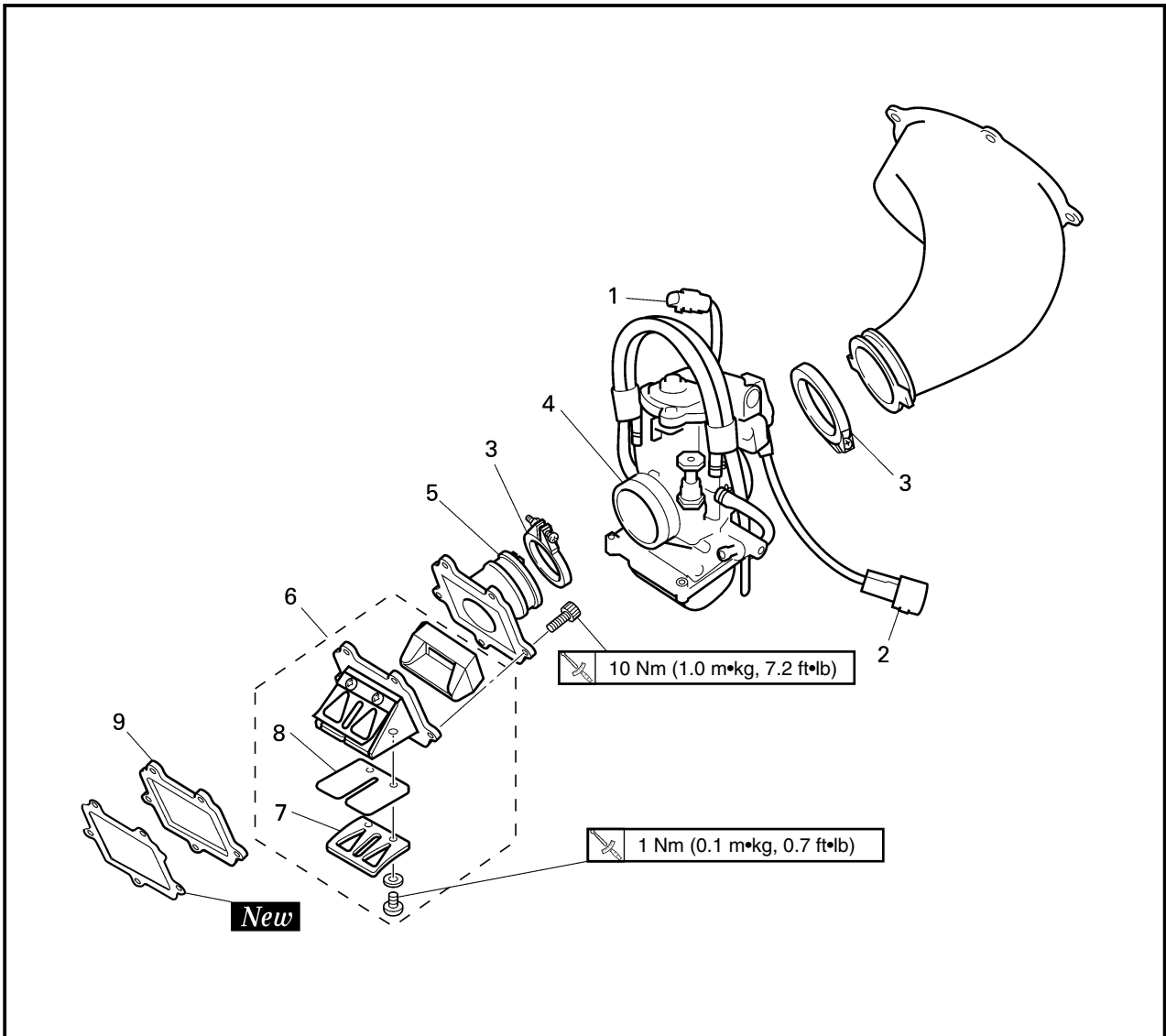
# CARBURETOR AND REED VALVE

ENG



EC460000

## CARBURETOR AND REED VALVE



Extent of removal:

① Carburetor removal

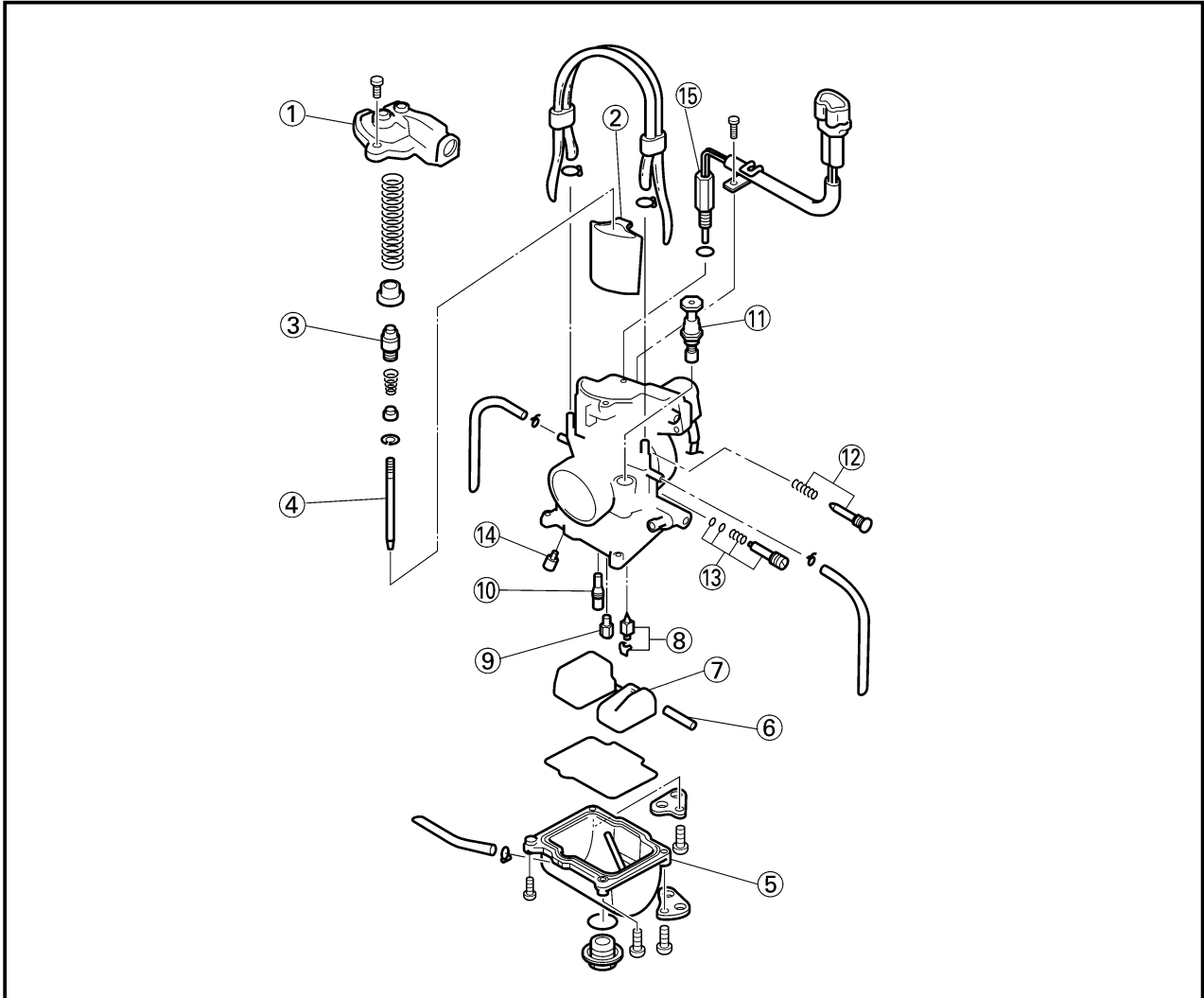
② Reed valve removal

Extent of removal	Order	Part name	Q'ty	Remarks
<b>CARBURETOR AND REED VALVE REMOVAL</b>				
Preparation for removal		Fuel tank		Refer to "SEAT, FUEL TANK AND SIDE COVERS" section.
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>↑</p> <p>①</p> <p>↓</p> </div> <div style="text-align: center;"> <p>↑</p> <p>②</p> <p>↓</p> </div> </div>	1	Solenoid valve lead	1	Disconnect the solenoid valve lead.
	2	TPS (throttle position sensor) lead	1	Disconnect the TPS (throttle position sensor) lead.
	3	Clamp (carburetor joint)	2	Loosen the screws (carburetor joint).
	4	Carburetor	1	
	5	Carburetor joint	1	
	6	Reed valve assembly	1	
	7	Stopper (reed valve)	2	
	8	Reed valve	2	
	9	Plate (reed valve)	1	



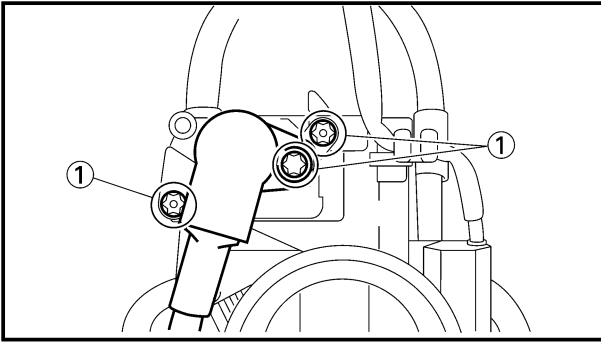
EC468000

## CARBURETOR DISASSEMBLY



Extent of removal: ① Carburetor disassembly

Extent of removal	Order	Part name	Q'ty	Remarks
	<b>CARBURETOR DISASSEMBLY</b>			
	①	Mixing chamber top	1	Refer to "REMOVAL POINTS".
	②	Throttle valve	1	
	③	Needle holder	1	
	④	Jet needle	1	
	⑤	Float chamber	1	
	⑥	Float pin	1	
	⑦	Float	1	
	⑧	Needle valve	1	
	⑨	Main jet	1	
	⑩	Pilot jet	1	
	⑪	Starter plunger	1	
	⑫	Throttle stop screw	1	
	⑬	Pilot air screw	1	
	⑭	Power jet	1	
⑮	Solenoid valve	1		
				Refer to "REMOVAL POINTS".

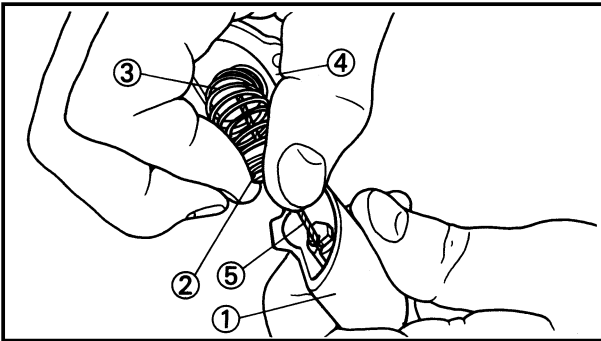


EC466020

## HANDLING NOTE

### CAUTION:

Do not loosen the screws {TPS (throttle position sensor)} except when changing the TPS (throttle position sensor) due to failure because it will cause a drop in engine performance.



EC463000

## REMOVAL POINTS

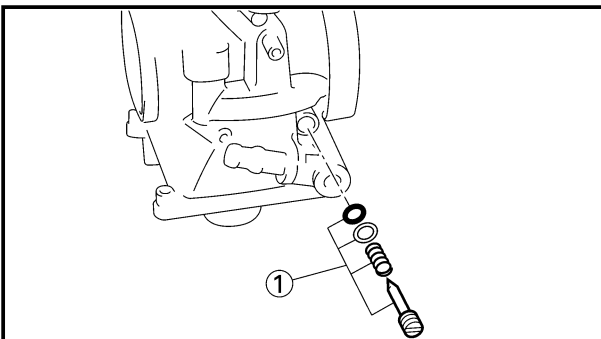
EC463110

### Throttle valve

1. Remove:
  - Throttle valve ①
  - Ring ②
  - Spring (throttle valve) ③
  - Mixing chamber top ④
  - Throttle cable ⑤

### NOTE:

While compressing the spring (throttle valve), disconnect the throttle cable.



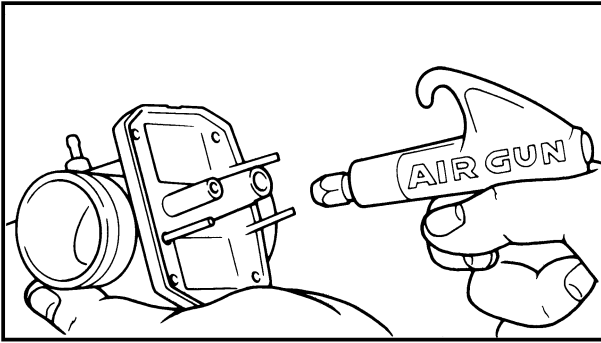
EC463401

### Pilot air screw

1. Remove:
  - Pilot air screw ①

### NOTE:

To optimize the fuel flow at a smaller throttle opening, each machine's pilot air screw has been individually set at the factory. Before removing the pilot air screw, turn it in fully and count the number of turns. Record this number as the factory-set number of turns out.



EC464000

## INSPECTION

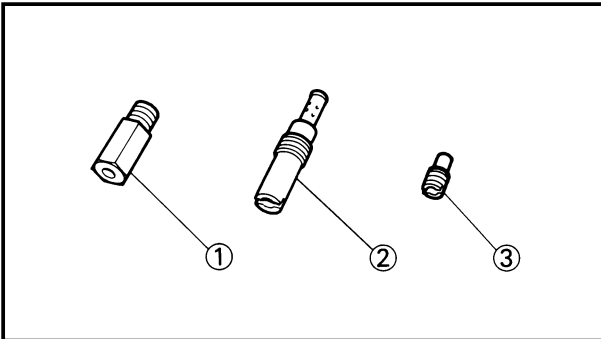
EC464130

### Carburetor

1. Inspect:
  - Carburetor body
  - Contamination → Clean.

#### NOTE:

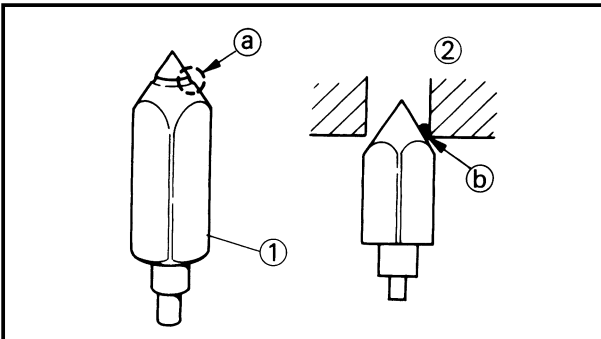
- Use a petroleum based solvent for cleaning. Blow out all passages and jets with compressed air.
- Never use a wire.



2. Inspect:
  - Main jet ①
  - Pilot jet ②
  - Power jet ③
  - Contamination → Clean.

#### NOTE:

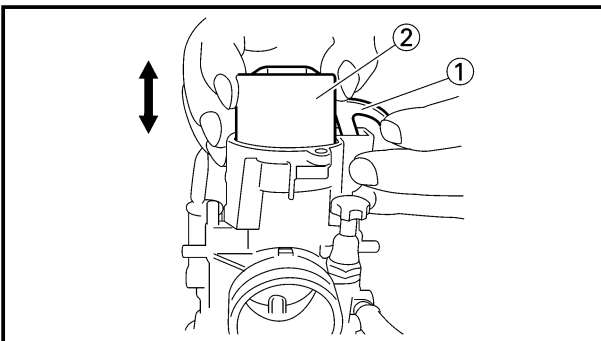
- Use a petroleum based solvent for cleaning. Blow out all passages and jets with compressed air.
- Never use a wire.



EC464210

### Needle valve

1. Inspect:
  - Needle valve ①
  - Valve seat ②
  - Grooved wear ① → Replace.
  - Dust ② → Clean.



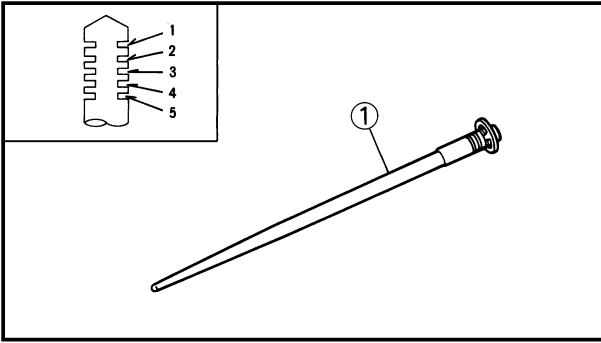
EC464310

### Throttle valve

1. Check:
  - Free movement
  - Stick → Repair or replace.

#### NOTE:

Insert the throttle valve ② into the carburetor body while pulling up the lever ①, and check for free movement.



EC464401

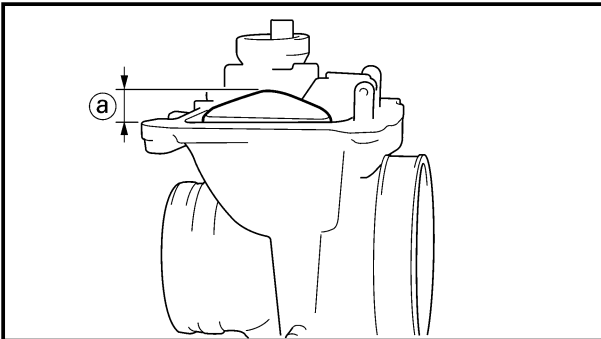
### Jet needle

- Inspect:
  - Jet needle ①
    - Bends/Wear → Replace.
  - Clip groove
    - Free play exists/Wear → Replace.
  - Clip position



**Standard clip position:**  
**No.2 Groove**  
**\*No.3 Groove**

\*For EUROPE



EC464511

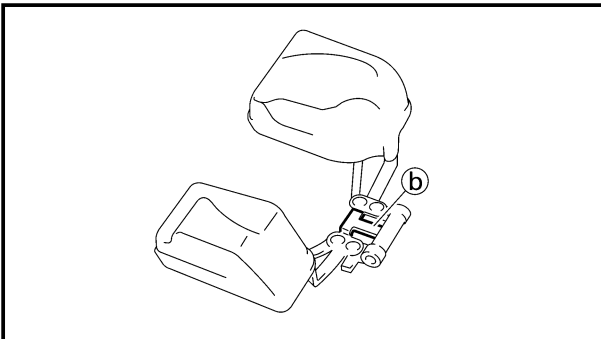
### Float height

- Measure:
  - Float height ①

Out of specification → Adjust.



**Float height:**  
**5.5~7.5 mm (0.22~0.30 in)**



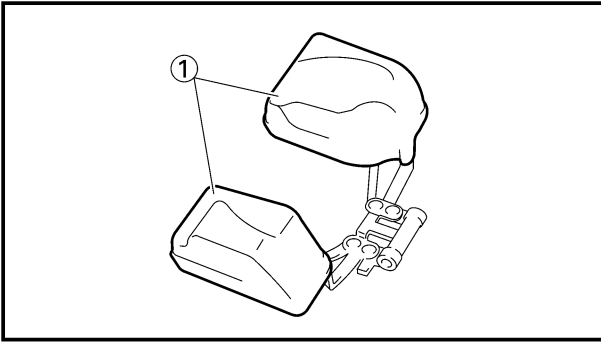
### Measurement and adjustment steps:

- Hold the carburetor in an upside down position.
- Measure the distance between the mating surface of the float chamber and top of the float using a vernier calipers.

### NOTE: \_\_\_\_\_

The float arm should be resting on the needle valve, but not compressing the needle valve.

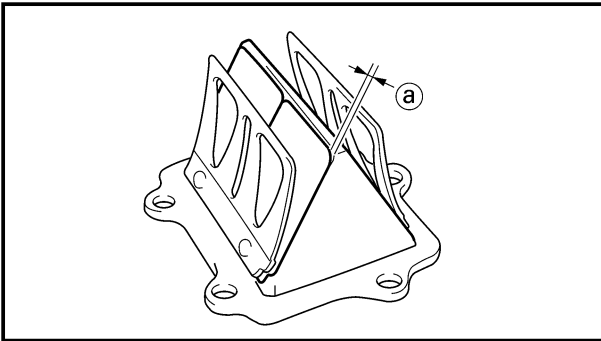
- If the float height is not within specification, inspect the valve seat and needle valve.
- If either is worn, replace them both.
- If both are fine, adjust the float height by bending the float tab ② on the float.
- Recheck the float height.



EC464600

### Float

- Inspect:
  - Float ①
  - Damage → Replace.



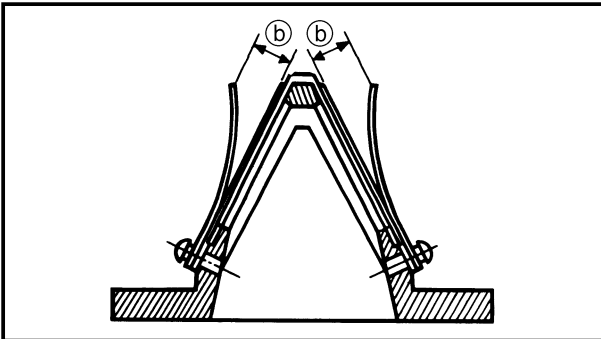
EC464701

### Reed valve

- Measure:
  - Reed valve bending ①
  - Out of specification → Replace.



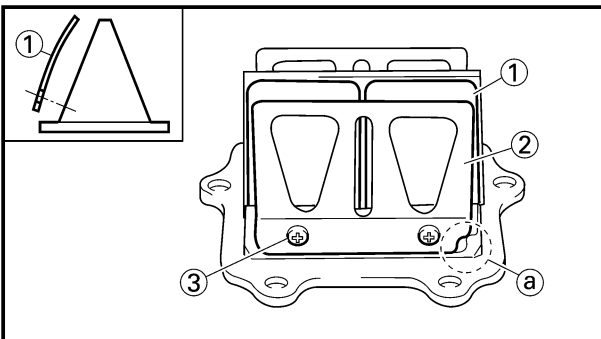
**Reed valve bending limit:**  
0.2 mm (0.008 in)



- Valve stopper height ①
- Out of specification → Adjust stopper/  
Replace valve stopper.



**Valve stopper height:**  
10.3 ~10.7 mm (0.406~0.421 in)



EC465000

### ASSEMBLY AND INSTALLATION

EC465172

### Reed valve

- Install:
  - Reed valve ①
  - Stopper (reed valve) ②
  - Screw (reed valve) ③



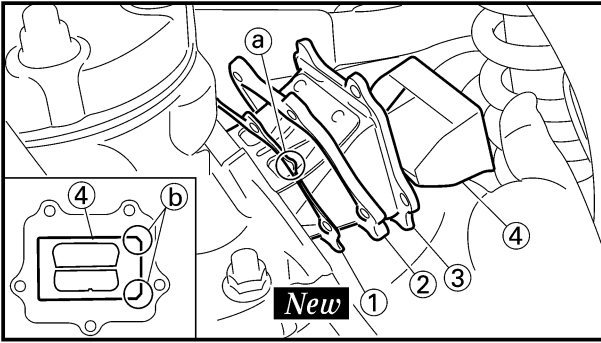
**1 Nm (0.1 m•kg, 0.7 ft•lb)**

### NOTE:

- Install the reed valve with the reed valve bending as shown.
- Note the cut ① in the lower corner of the reed and stopper plate.

### CAUTION:

Tighten each screw gradually to avoid warping.

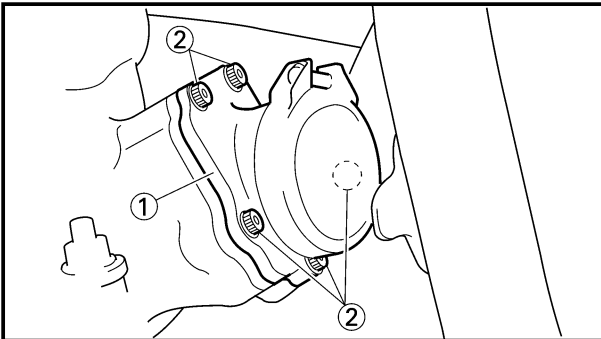


2. Install:

- Gasket (reed valve) ① **New**
- Plate (reed valve) ②
- Reed valve assembly ③
- Reed valve spacer ④

**NOTE:**

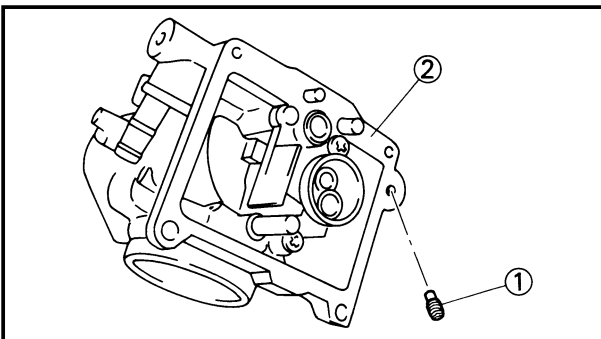
- Install the gasket (reed valve) with its projection ① **a** to the left.
- Install the reed valve spacer with its chamfered side ① **b** to the right.



**10 Nm (1.0 m•kg, 7.2 ft•lb)**

3. Install:

- Carburetor joint ①
- Bolt (carburetor joint) ②

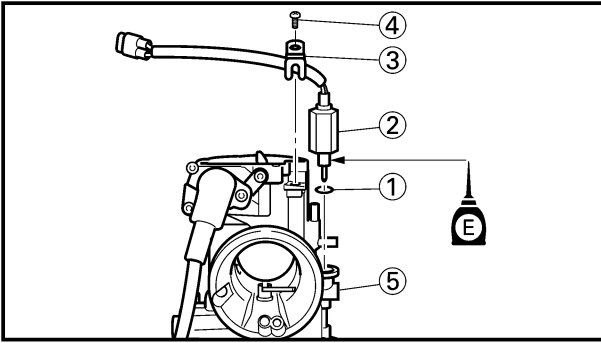


EC4652F0

**Carburetor**

1. Install:

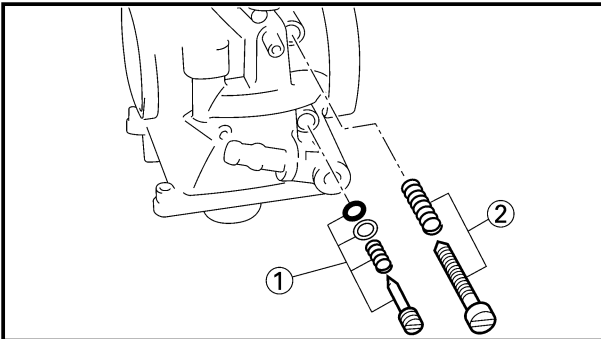
- Power jet ①  
To carburetor ②.



2. Install:
- O-ring ①
  - Solenoid valve ②
  - Clamp ③
  - Screw (clamp) ④
  - To carburetor ⑤.

**CAUTION:**

- Before installing the solenoid valve, blow air on the solenoid valve and its installing location on the carburetor in order to remove any foreign particles such as chips etc.
- Apply the engine oil on the solenoid valve thread.



3. Install:
- Pilot air screw ①
  - Throttle stop screw ②

**Note the following installation points:**

- Turn in the pilot air screw until it is lightly seated.
- Turn out the pilot air screw by the number of turns recorded before removing.



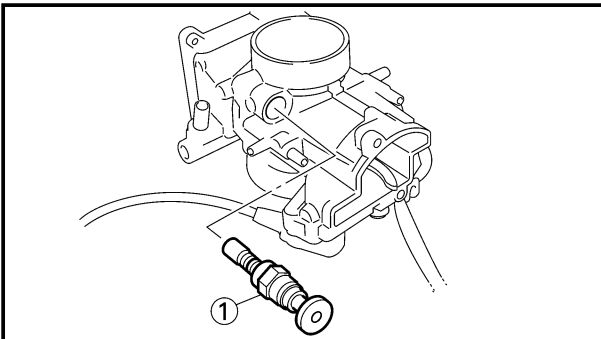
**Pilot air screw:**

1 turn out

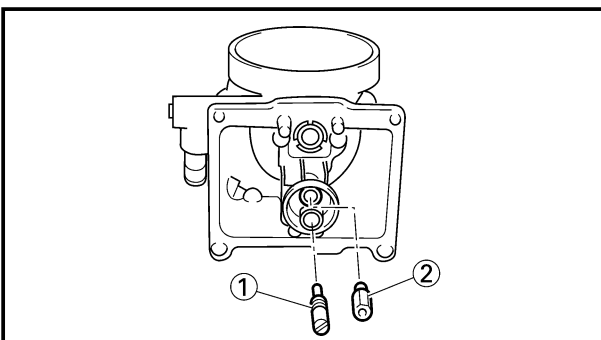
\*7/8 turns out

(for reference only)

\*For EUROPE

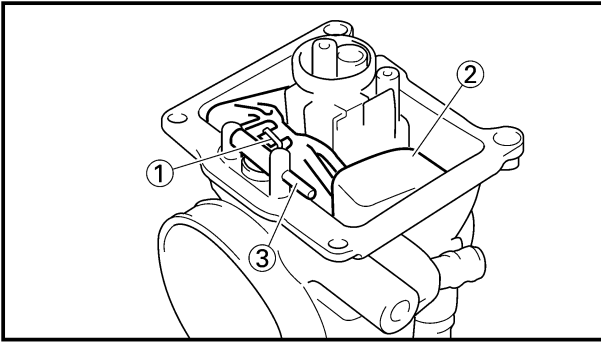


4. Install:
- Starter plunger ①



5. Install:
- Pilot jet ①
  - Main jet ②

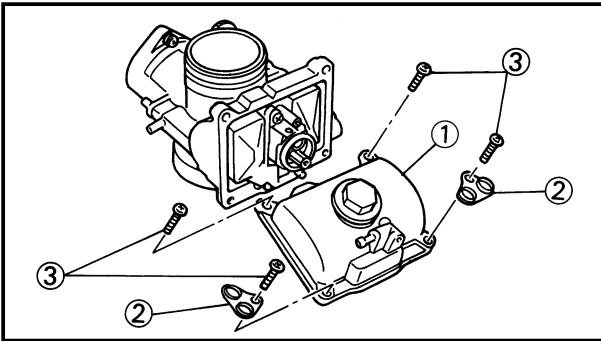




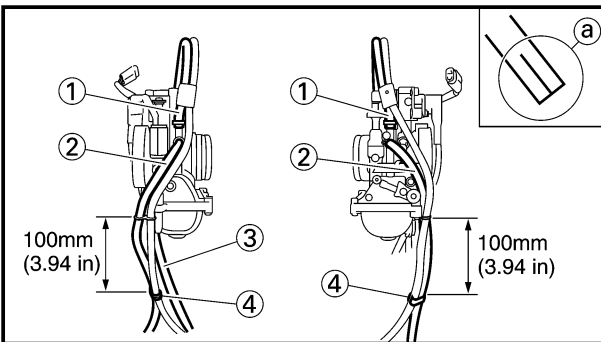
6. Install:
- Needle valve ①
  - Float ②
  - Float pin ③

**NOTE:**

- After installing the needle valve to the float, install them to the carburetor.
- Check the float for smooth movement.



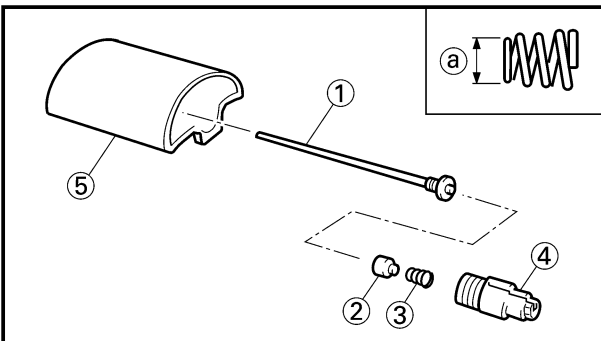
7. Install:
- Float chamber ①
  - Plate ②
  - Screw (float chamber) ③



8. Install:
- Air vent hose [ $\ell=580$  mm (22.8 in)] ①
  - Air vent hose [ $\ell=400$ mm (15.7 in)] ②
  - Overflow hose [ $\ell=280$ mm (11.0 in)] ③
  - Clamp ④

**NOTE:**

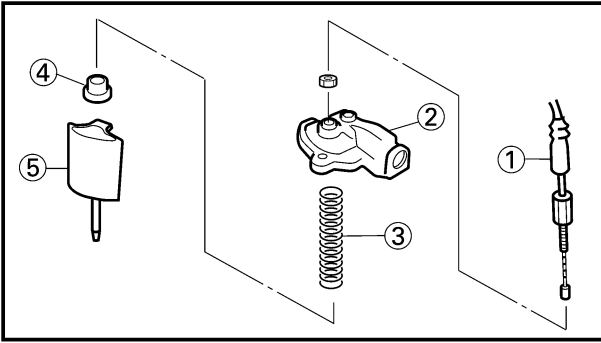
Install the air vent hoses and overflow hose to the carburetor with their ends not having the cuts ① toward the carburetor.



9. Install:
- Jet needle ①
  - Collar ②
  - Spring ③
  - Needle holder ④
  - To throttle valve ⑤.

**NOTE:**

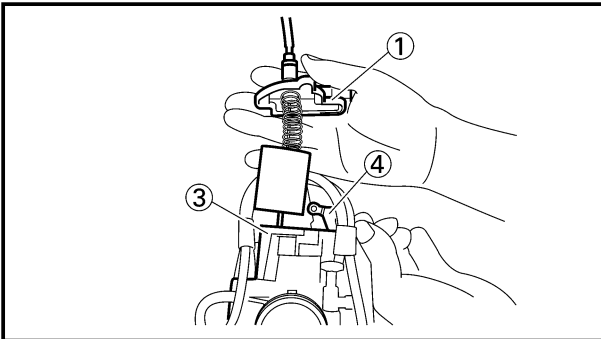
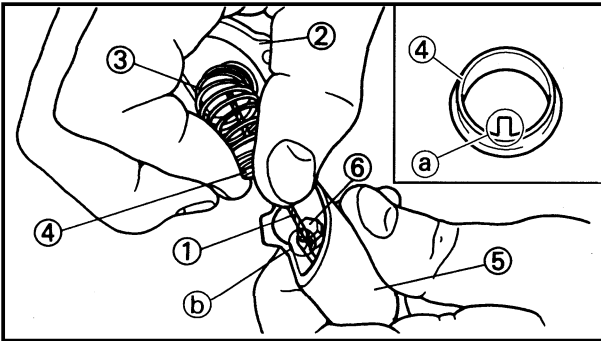
Install the spring with its smaller dia. ① facing the collar.



10. Install:
- Throttle cable ①
  - Mixing chamber top ②
  - Spring (throttle valve) ③
  - Ring ④
  - Throttle valve ⑤

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

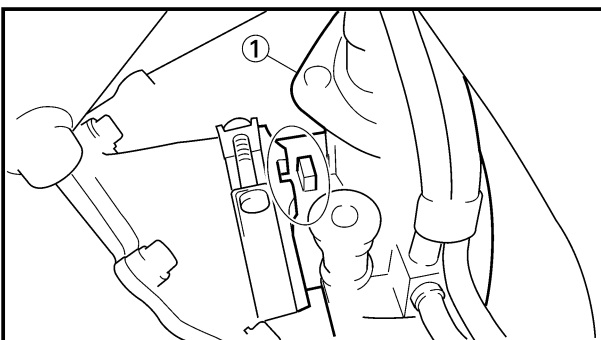
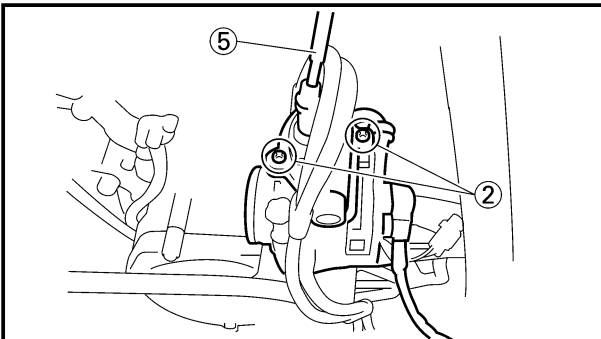
- While compressing the spring, connect the throttle cable.
- Align the projection (a) on the ring with the groove (b) in the needle holder ⑥.



11. Install:
- Mixing chamber top ①
  - Screw (mixing chamber top) ②  
To carburetor ③.

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

- Insert the throttle valve into the carburetor body while pulling up the lever ④.
- Pass the throttle cable ⑤ at the front (on the cylinder side) of the air vent hose.
- After installing, check the throttle grip for smooth movement.



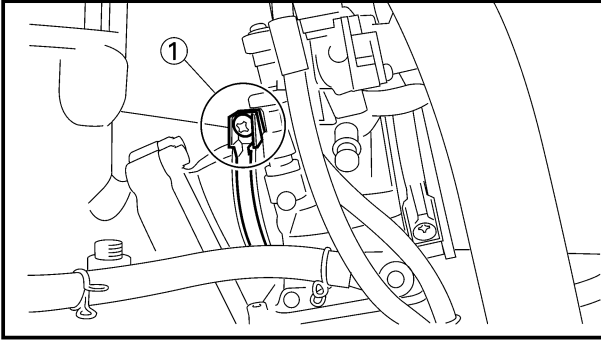
EC465391

**Carburetor installation**

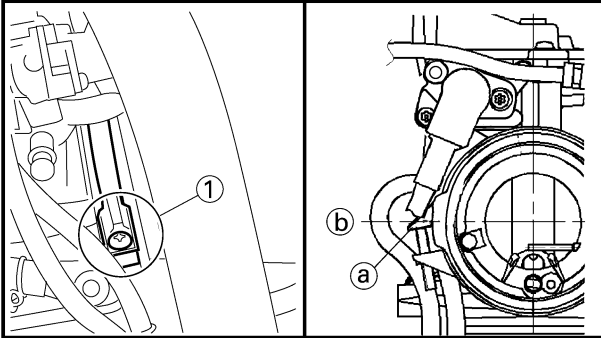
1. Install:
- Carburetor ①

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

Install the projection between the carburetor joint slots.



2. Tighten:
  - Screw (carburetor joint) ①

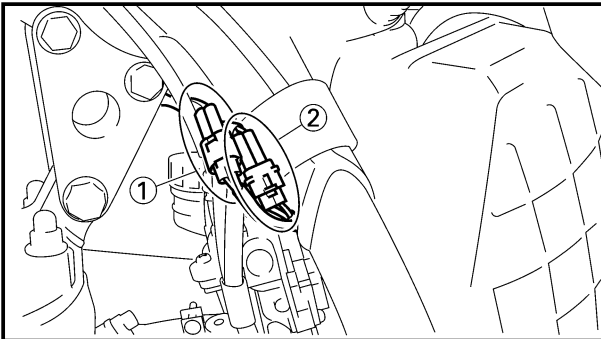


3. Tighten:
  - Screw (air cleaner joint) ①

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

Place the screw head (a) with its top as shown and secure the clamp in alignment with the horizontal line (b) that passes the center of the carburetor bore.

---



4. Connect:
  - TPS (throttle position sensor) lead ①
  - Solenoid valve lead ②
  - Refer to “CABLE ROUTING DIAGRAM” section in the CHAPTER 2.
5. Adjust:
  - Idle speed
  - Refer to “IDLE SPEED ADJUSTMENT” section in the CHAPTER 3.

# CYLINDER HEAD, CYLINDER AND PISTON

ENG



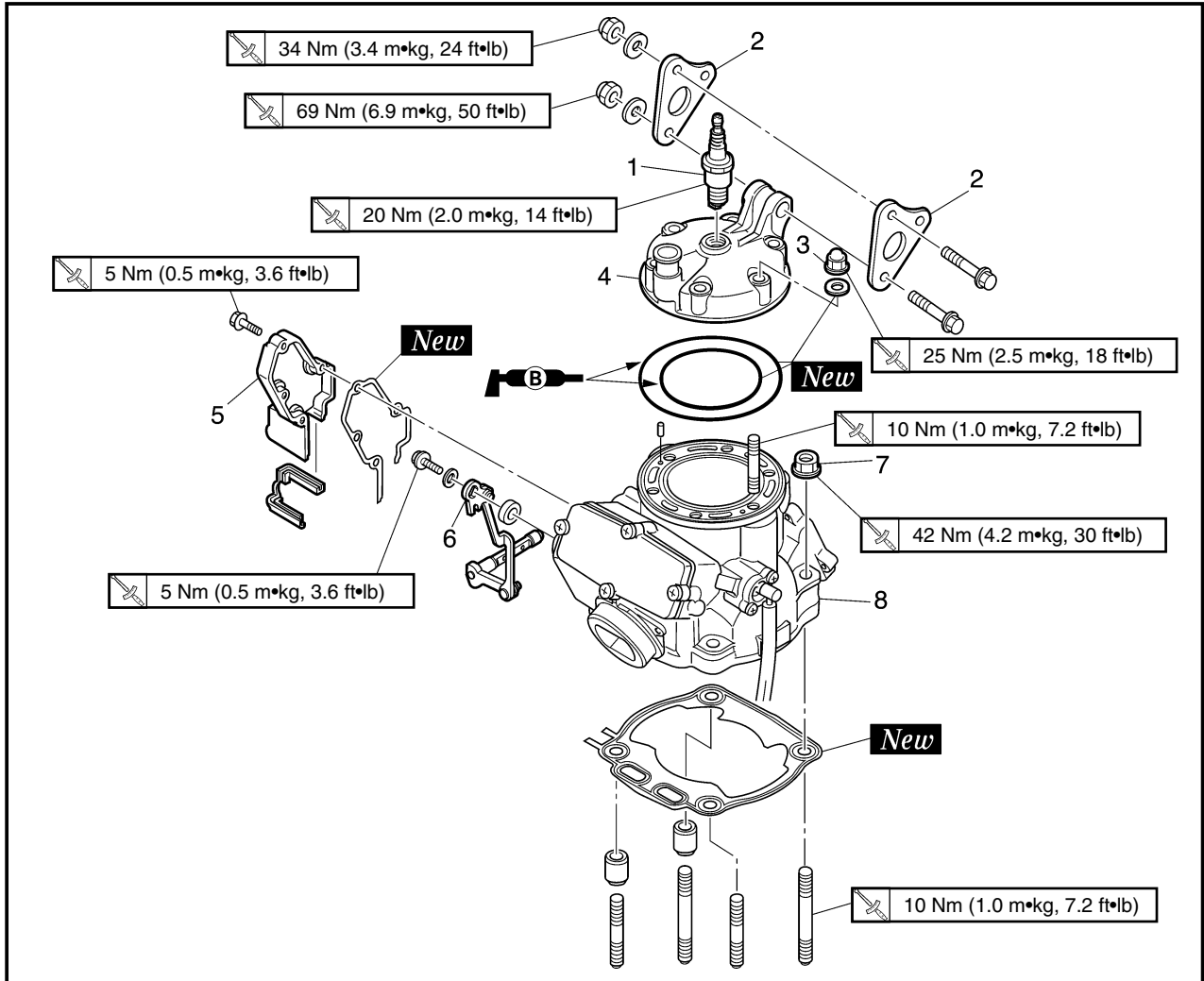
EC470000

## CYLINDER HEAD, CYLINDER AND PISTON



EC478000

### CYLINDER HEAD AND CYLINDER



Extent of removal:

① Cylinder head removal

② Cylinder removal

Extent of removal	Order	Part name	Q'ty	Remarks
Preparation for removal		<b>CYLINDER HEAD AND CYLINDER REMOVAL</b>		
		Seat and fuel tank		Refer to "SEAT, FUEL TANK AND SIDE COVERS" section.
		Exhaust pipe and silencer		Refer to "EXHAUST PIPE AND SILENCER" section.
		Radiator hose 1		Disconnect at cylinder head side.
		Carburetor		Refer to "CARBURETOR AND REED VALVE" section.
	1	Spark plug	1	Loosen each nut 1/4 turn, and remove them after all nuts are loosened.
	2	Engine bracket	2	
	3	Nut (cylinder head)	6	
	4	Cylinder head	1	Refer to "REMOVAL POINTS".
	5	Power valve housing	1	
	6	Push rod	1	
	7	Nut (cylinder)	4	
	8	Cylinder	1	

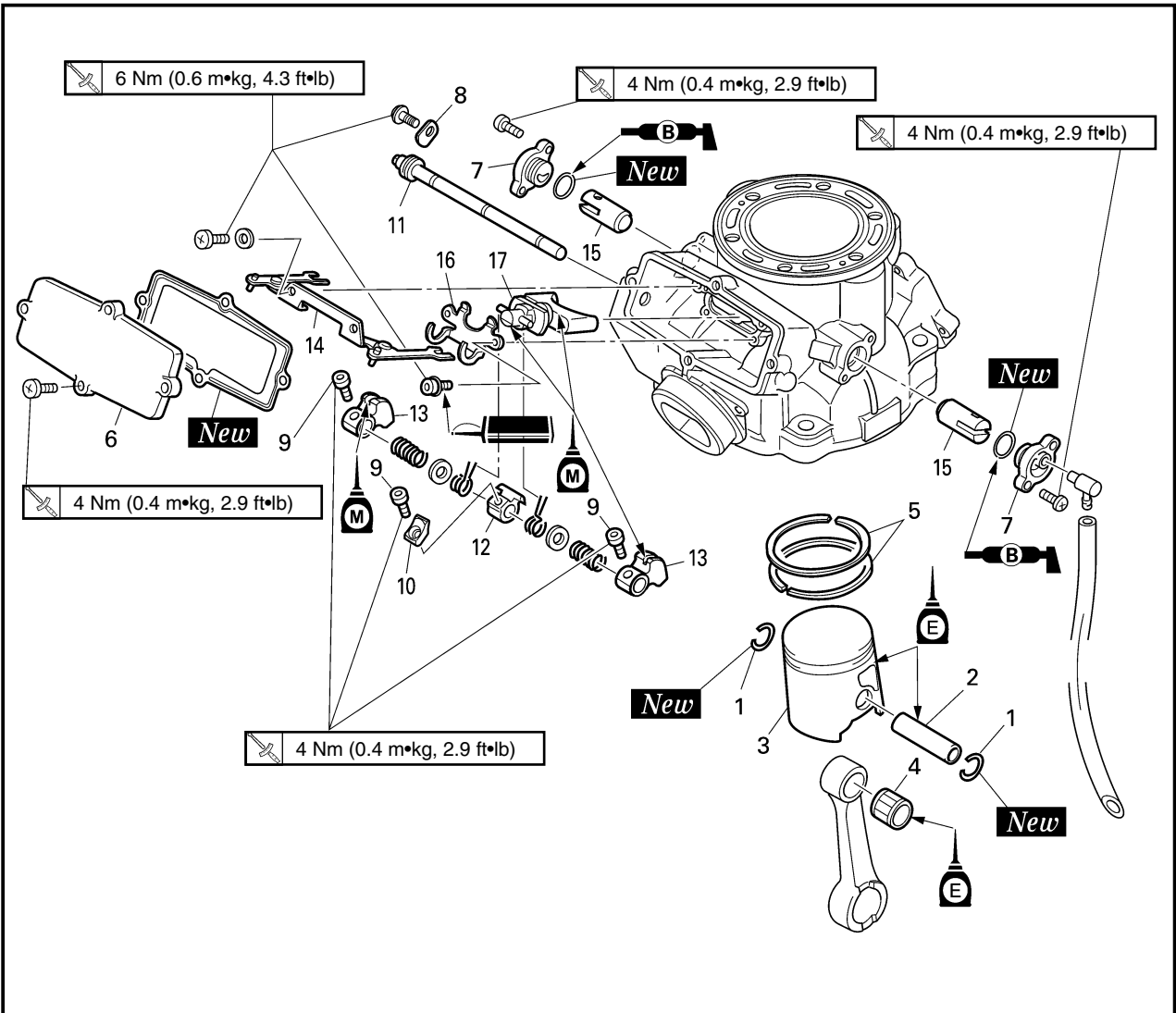
# CYLINDER HEAD, CYLINDER AND PISTON

ENG



EC478100

## PISTON AND POWER VALVE

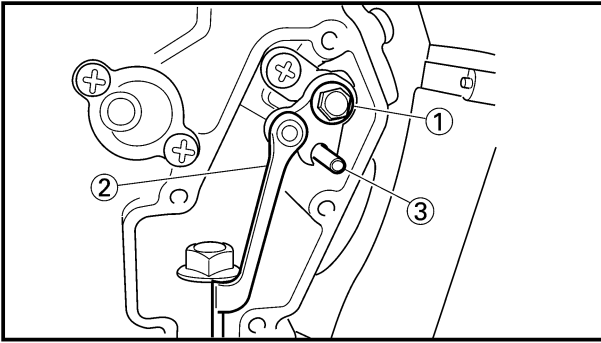


Extent of removal:

① Piston and piston ring removal

② Power valve removal

Extent of removal	Order	Part name	Q'ty	Remarks
<div style="display: flex; align-items: center;"> <div style="margin-right: 20px;"> <p>↑</p> <p>①</p> <p>↓</p> </div> <div style="margin-right: 20px;"> <p>↑</p> <p>②</p> <p>↓</p> </div> </div>	<b>PISTON AND POWER VALVE REMOVAL</b>			
	1	Piston pin clip	2	} Refer to "REMOVAL POINTS".
	2	Piston pin	1	
	3	Piston	1	
	4	Small end bearing	1	
	5	Piston ring	2	
	6	Power valve cover	1	
	7	Side holder	2	
	8	Thrust plate	1	
	9	Bolt	3	
	10	Valve holder 1	1	
	11	Valve shaft	1	
	12	Link lever	1	
	13	Pulley	2	
	14	Link rod	1	
	15	Power valve 2	2	
	16	Valve holder 2	1	
17	Power valve 1	1		



EC473000

## REMOVAL POINTS

EC473220

### Push rod

- Remove:
  - Bolt (push rod) ①
  - Push rod ②

### NOTE:

Insert the set pin ③ included in owner's tool kit to remove the bolt (push rod).

### CAUTION:

Be sure to use the set pin. If the set pin is not used, the power valve constituent parts will result in damage.

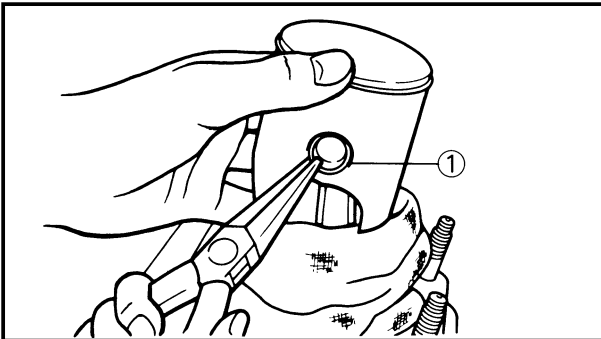
EC473402

### Piston and piston ring

- Remove:
  - Piston pin clip ①

### NOTE:

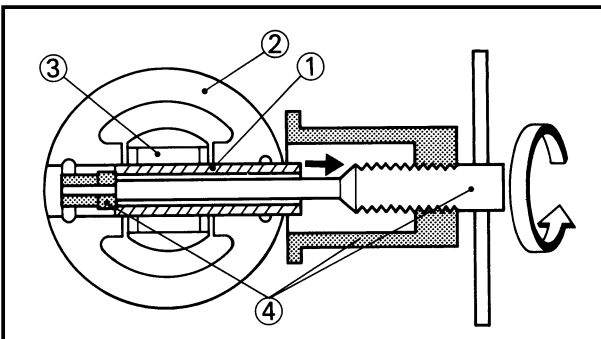
Before removing the piston pin clip, cover the crankcase with a clean rag to prevent the piston pin clip from falling into the crankcase cavity.



- Remove:
  - Piston pin ①
  - Piston ②
  - Small end bearing ③

### NOTE:

Before removing the piston pin, deburr the clip groove and pin hole area. If the piston pin groove is deburred and piston pin is still difficult to remove, use the piston pin puller ④.

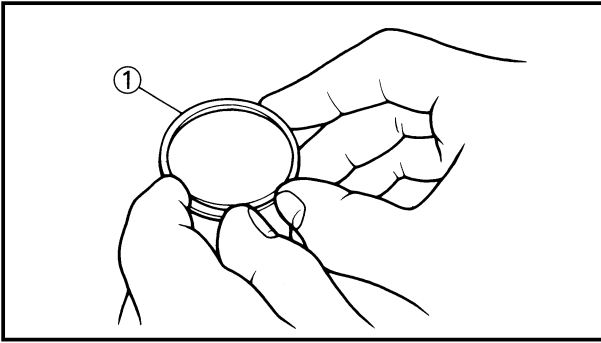


**Piston pin puller:**

**YU-1304/90890-01304**

### CAUTION:

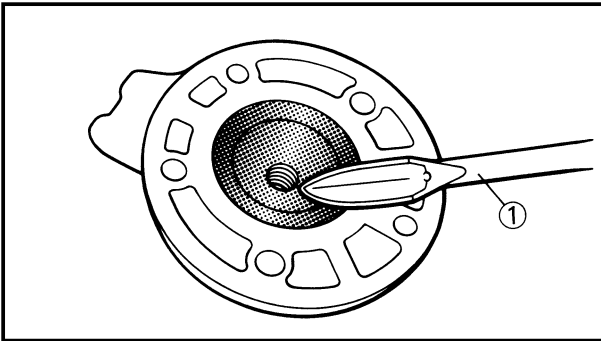
Do not use a hammer to drive the piston pin out.



3. Remove:
- Piston ring ①

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

Take care not to scratch the piston or damage the piston ring by expanding it more than necessary.



EC474000

**INSPECTION**

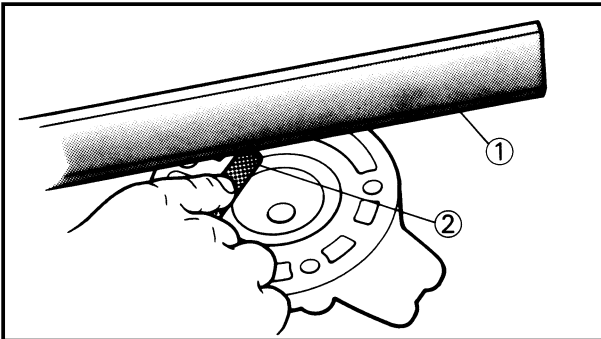
EC474102

**Cylinder head**

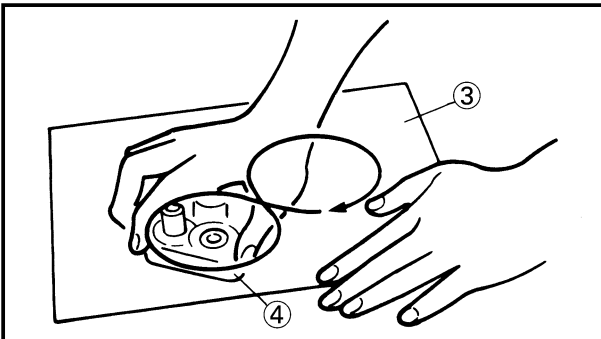
1. Eliminate:
- Carbon deposits  
Use a rounded scraper ①.

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

Take care to avoid damaging the spark plug threads. Do not use a sharp instrument. Avoid scratching the aluminum.



2. Inspect:
- Cylinder head water jacket  
Crust of minerals/Rust → Remove.
  - Cylinder head warpage  
Out of specification → Re-surface.



**Warpage measurement and re-surfacing steps:**

- Attach a straightedge ① and a thickness gauge ② on the cylinder head.
- Measure the warpage.

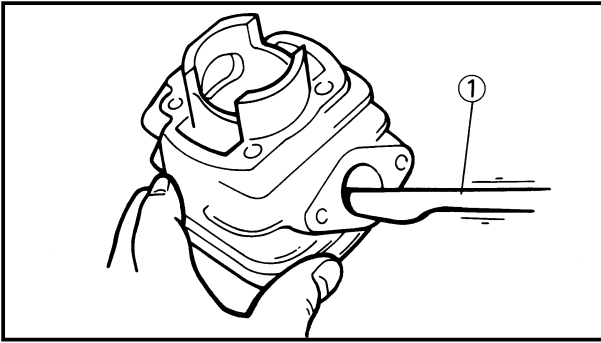


**Warpage limit:**  
**0.03 mm(0.0012 in)**

- If the warpage is out of specification, re-surface the cylinder head.
- Place # 400~600 grit wet sandpaper ③ on the surface plate, and re-surface the head ④ using a figure-eight sanding pattern.

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

Rotate the cylinder head several times to avoid removing too much material from one side.



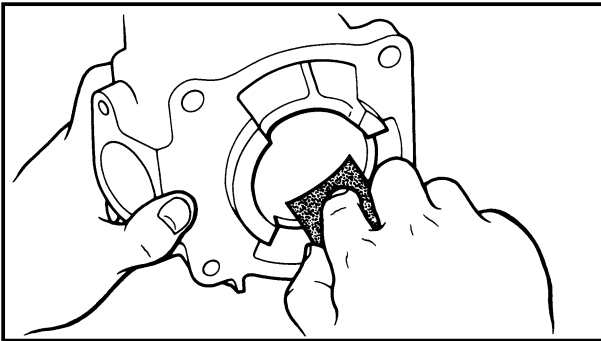
EC474201

### Cylinder

- Eliminate:
  - Carbon deposits
  - Use a rounded scraper ①.

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

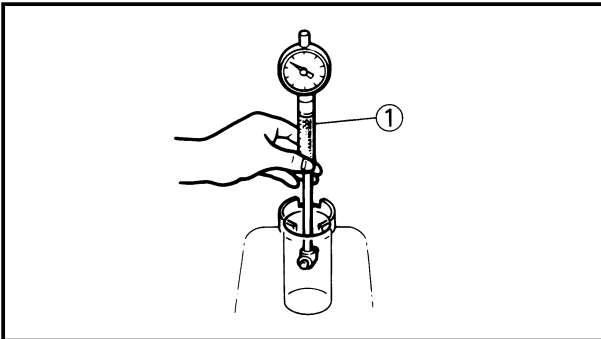
Do not use a sharp instrument. Avoid scratching the aluminum.



- Inspect:
  - Cylinder inner surface
  - Score marks → Repair or replace.
  - Use #400~600 grit wet sandpaper.

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

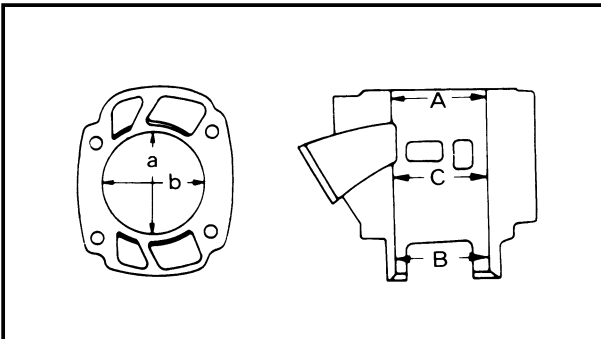
**Do not rebore the cylinder.**




- Measure:
  - Cylinder bore "C"
  - Use cylinder gauge ①.
  - Out of limit → Replace.

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

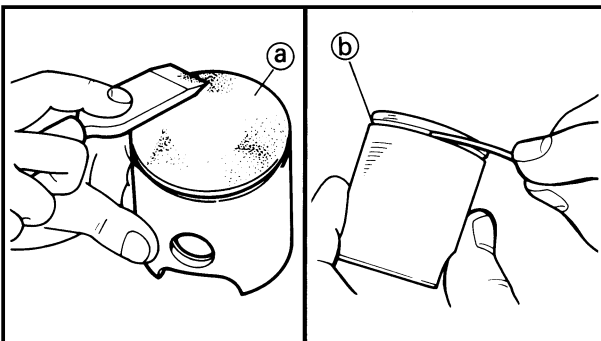
Measure the cylinder bore "C" in parallel (A, B, C) to and at right angles to the crankshaft (a, b). Then, find the average of the measurements.



	Standard	Wear limit
<b>Cylinder bore "C"</b>	<b>66.400~66.414mm (2.6142~2.6147 in)</b>	<b>66.5 mm (2.618 in)</b>
<b>Taper "T"</b>	—	<b>0.05 mm (0.0020 in)</b>
<b>C=Maximum Aa~Cb</b> <b>T=(Maximum Aa, or Ab) — (Maximum Ba, or Bb)</b>		

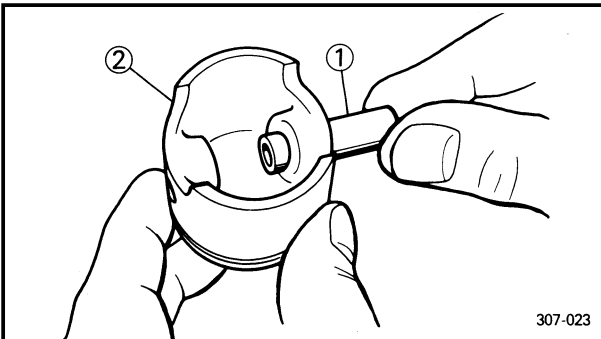
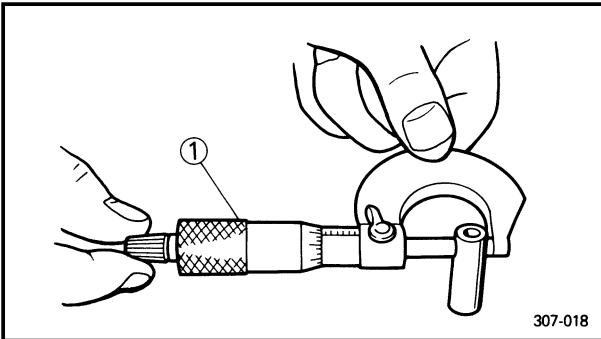
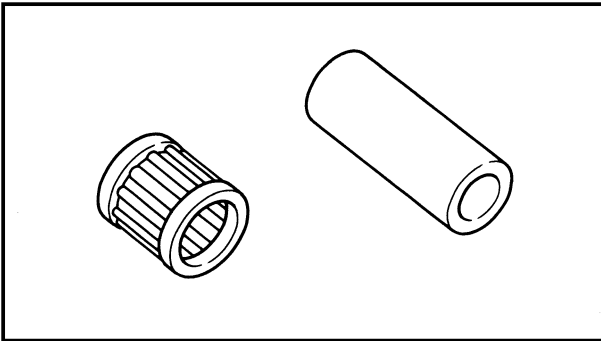
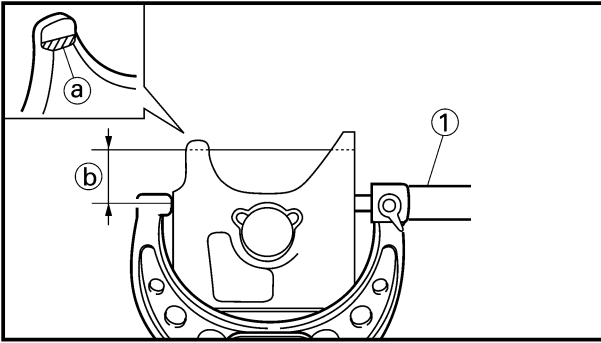
EC474321

### Piston



- Eliminate:
  - Carbon deposits
  - From the piston crown ① and ring groove ②.
- Inspect:
  - Piston wall
  - Score marks → Repair or replace.





3. Measure:

- Piston skirt diameter

Use micrometer ①.

Measure the specific distance ② from the stepped surface ③ on inside of the piston.

Out of specification → Replace.

Distance ②	Piston dia.
17.5 mm (0.69 in)	66.352~66.367 mm (2.6120~2.6129 in)

EC474402

### Piston pin and small end bearing

1. Inspect:

- Piston pin
- Small end bearing

Signs of heat discoloration → Replace.

2. Measure:

- Piston pin outside diameter

Use micrometer ①.

Out of limit → Replace.

Piston pin outside diameter:	
Standard	<Limit>
17.995~18.000 mm (0.7085~0.7087 in)	17.975 mm (0.7077 in)

3. Check:

- Free play (when the piston pin ① is in place in the piston ②)

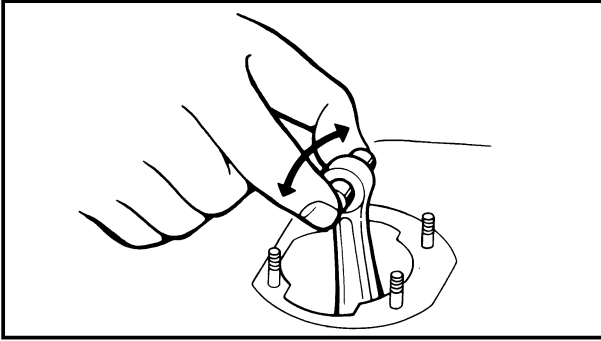
There should be no noticeable for the play.

Free play exists → Replace piston pin and/or piston.

4. Install:

- Small end bearing
- Piston pin

Into the small end of connecting rod.

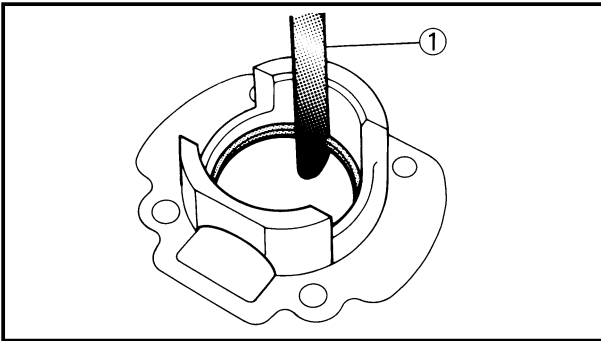


5. Check:

- Free play

There should be no noticeable free play.

Free play exists → Inspect the connecting rod for wear/Replace the pin and/or connecting rod as required.



EC474502

**Piston ring**

1. Install:

- Piston ring

Into the cylinder.

Push the ring with the piston crown.

2. Measure:

- End gap

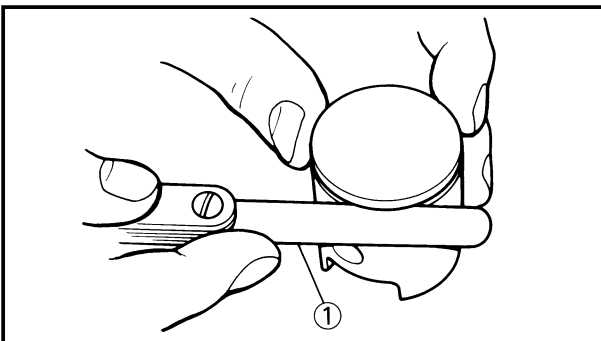
Use a thickness gauge ①.

Out of limit → Replace.



**Ring end gap (installed):**

Standard	<Limit>
0.40~0.55 mm (0.016~0.022 in)	0.95 mm (0.037 in)



3. Measure:

- Side clearance

Use a thickness gauge ①.

Out of limit → Replace piston and/or ring.

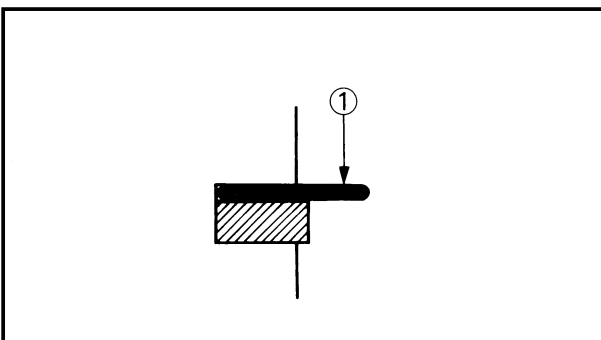


**Side clearance:**

Standard	<Limit>
0.030~0.065 mm (0.0012~0.0026 in)	0.1 mm (0.004 in)

**NOTE:**

Check at several points.





EC474602

## Piston clearance

1. Calculate:

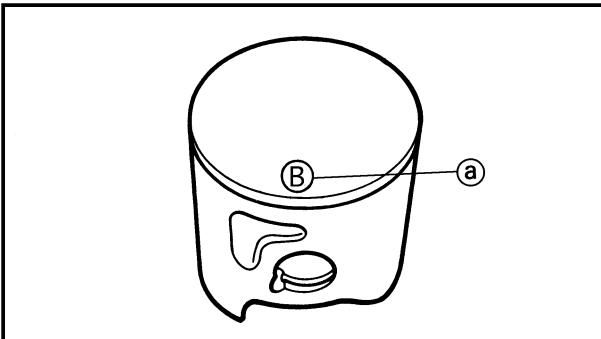
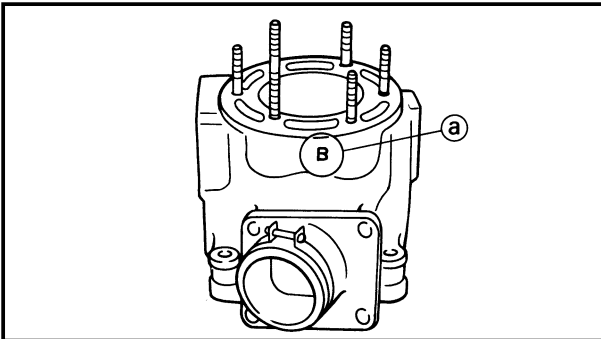
- Piston clearance

Out of limit → Replace piston, and piston ring and/or cylinder.

Refer to “Cylinder” and “Piston”.

$$\text{PISTON CLEARANCE} = \text{CYLINDER BORE} - \text{PISTON DIAMETER}$$

Piston clearance:	
Standard	<Limit>
0.045~0.050 mm (0.0018~0.0020 in)	0.1 mm (0.004 in)



EC474700

## Combination of piston and cylinder

1. Check:

- Cylinder mark (a)

Cylinder mark (a)	Cylinder size
A	66.400~66.402 mm (2.61417~2.61425 in)
B	66.404~66.406 mm (2.61433~2.61441 in)
C	66.408~66.410 mm (2.61449~2.61457 in)
D	66.412~66.414 mm (2.61465~2.61472 in)

2. Check:

- Piston mark (a)

Piston mark (a) (color)	Piston size
A (red)	66.352~66.355 mm (2.61228~2.61240 in)
B (orange)	66.356~66.359 mm (2.61244~2.61256 in)
C (green)	66.360~66.363 mm (2.61260~2.61272 in)
D (purple)	66.364~66.367 mm (2.61276~2.61287 in)



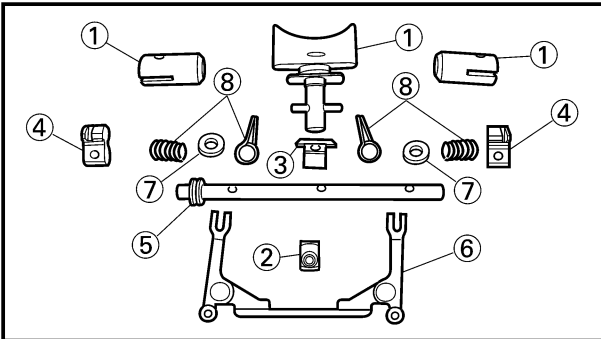
### 3. Combination:

Combine the piston and cylinder by the following chart.

Cylinder mark	Piston mark (color)
A	A (red)
B	B (orange)
C	C (green)
D	D (purple)

### NOTE:

When you purchase a cylinder, you cannot designate its size. Choose the piston that matches the above chart.

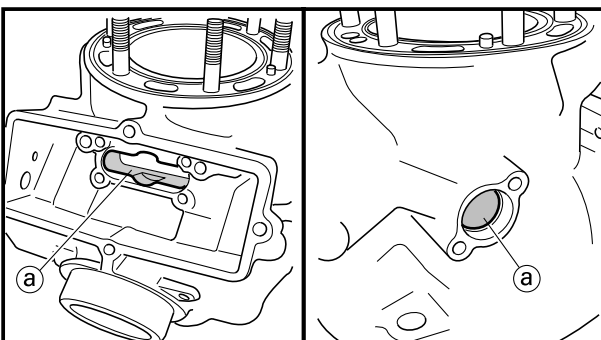


EC474841

### Power valve

#### 1. Inspect:

- Power valve 1, 2 ①  
Wear/Damage → Replace.  
Carbon deposits → Remove.
- Valve holder 1 ②
- Link lever ③
- Pulley ④
- Valve shaft ⑤
- Link rod ⑥
- Plain washer ⑦  
Wear/Damage → Replace.
- Spring 1, 2 ⑧  
Broken → Replace.



EC474901

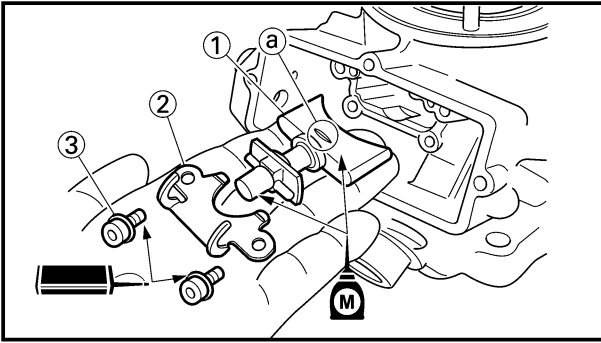
### Power valve hole on cylinder

#### 1. Remove:

- Carbon deposits  
From power valve hole surface ①.

### NOTE:

Do not use a sharp instrument. Avoid scratching the aluminum.



EC475000

### ASSEMBLY AND INSTALLATION

EC475193

#### Power valve

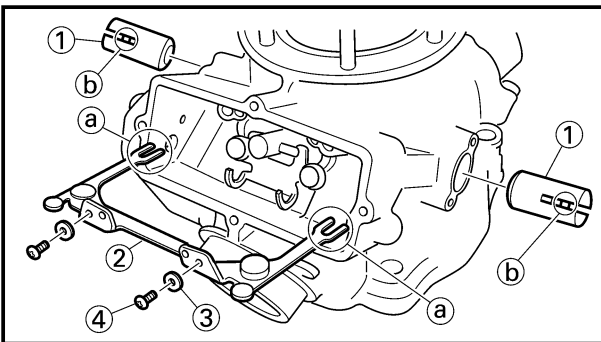
##### 1. Install:

- Power valve 1 ①
- Valve holder 2 ②
- Bolt (valve holder 2) ③

**6 Nm (0.6 m•kg, 4.3 ft•lb)**

#### NOTE:

- Install the power valve 1 with its gouge (a) facing upside.
- Apply the molybdenum disulfide oil on the power valve 1.



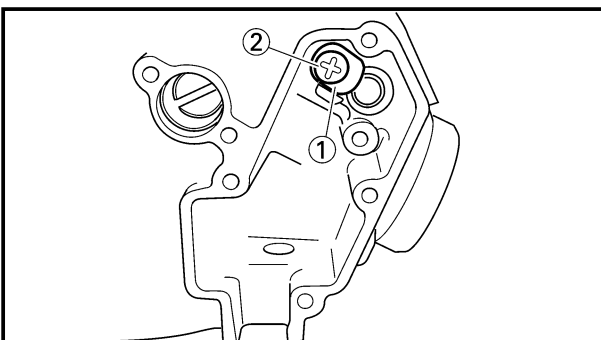
##### 2. Install:

- Power valve 2 ①
- Link rod ②
- Plain washer ③
- Screw (link rod) ④

**6 Nm (0.6 m•kg, 4.3 ft•lb)**

#### NOTE:

Install the link rod with the cuts (a) in its arm ends fitting over the pins (b) on the power valves 2.



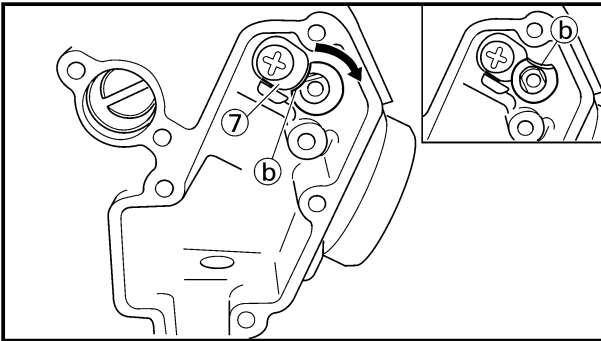
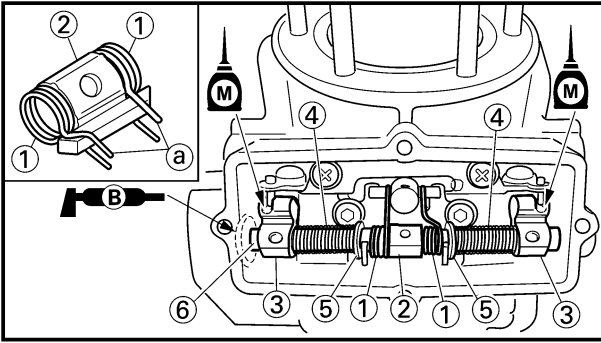
##### 3. Install:

- Thrust plate ①
- Screw (thrust plate) ②

**6 Nm (0.6 m•kg, 4.3 ft•lb)**

#### NOTE:

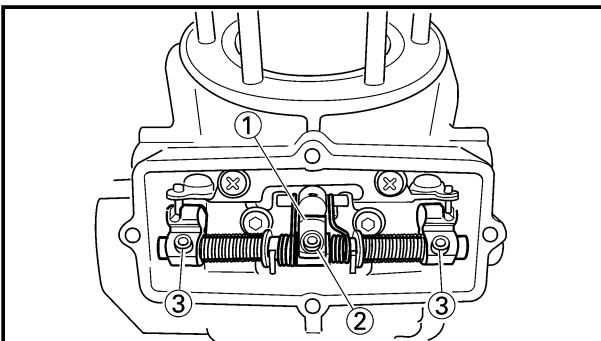
Be sure to install the thrust plate to the cylinder before installing the valve shaft.



4. Install:
- Spring 1 ①
  - Link lever ②
  - Pulley ③
  - Spring 2 ④
  - Plain washer ⑤
  - Valve shaft ⑥

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

- Install the spring 1 to the link lever, and then to the cylinder.
- Install the spring 1 with its stopper portion ① facing inward.
- Apply the molybdenum disulfide oil on the grooves in the pulleys.
- Apply the lithium soap base grease on the oil seal lip.
- Install the valve shaft with its cut ⑥ aligning with the thrust plate ⑦, and then rotate the valve shaft so that its cut faces upward.



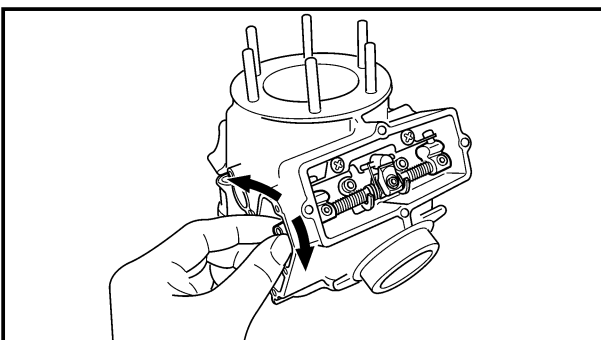
5. Install:
- Valve holder 1 ①
  - Bolt (link lever) ②
  - Bolt (pulley) ③

4 Nm (0.4 m•kg, 2.9 ft•lb)

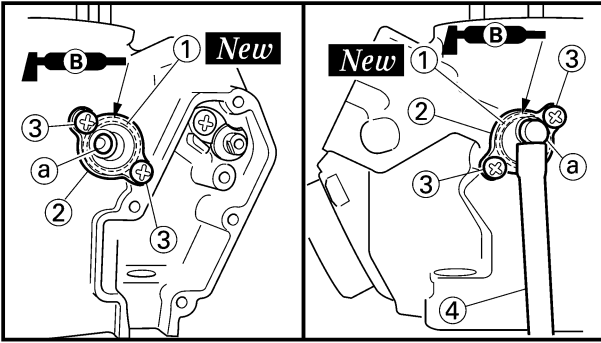
4 Nm (0.4 m•kg, 2.9 ft•lb)

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

First tighten the bolt (link lever), and then tighten the bolts (pulleys).



6. Check:
- Power valve 1 smooth movement
  - Unsmooth movement → Repair or replace.



7. Install:

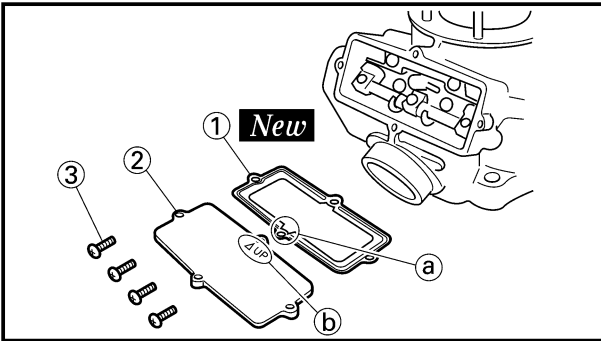
- O-ring ① **New**
- Side holder ②
- Screw (side holder) ③

4 Nm (0.4 m•kg, 2.9 ft•lb)

- YPVS breather hose ④

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

- Apply the lithium soap base grease on the O-rings.
- Install the side holder with its projection (a) facing upward.



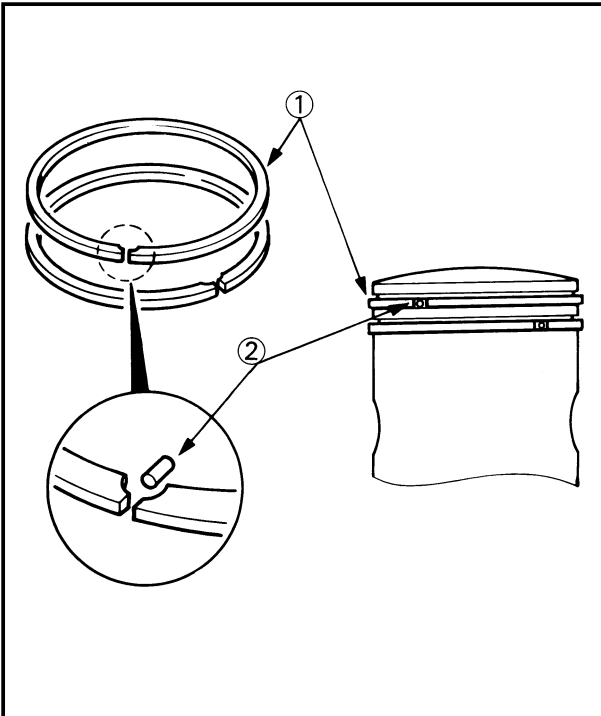
8. Install:

- Gasket (power valve cover) ① **New**
- Power valve cover ②
- Screw (power valve cover) ③

4 Nm (0.4 m•kg, 2.9 ft•lb)

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

- Install the gasket with its cut (a) facing downward and the seal print side toward the power valve cover.
- Install the power valve cover so that the arrow mark (b) faces upward.



EC475233

**Piston ring and piston**

1. Install:

- Piston ring ①

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

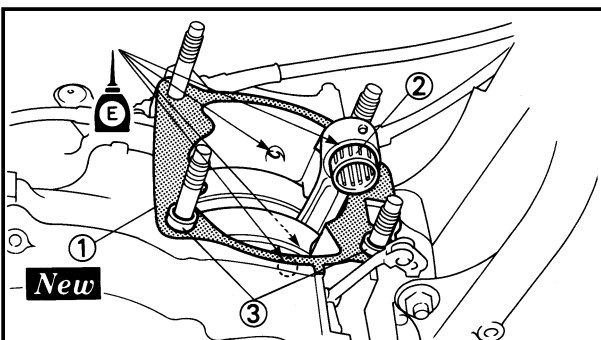
- Take care not to scratch the piston or damage the piston ring.
- Align the piston ring gap with the pin (2).
- After installing the piston ring, check the smooth movement of it.

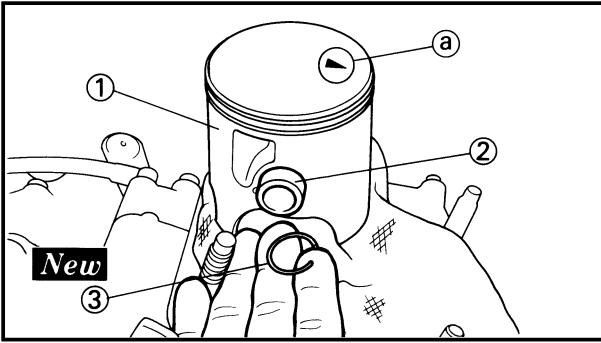
2. Install:

- Gasket (cylinder) ① **New**
- Small end bearing ②
- Dowel pin ③

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

- Apply the engine oil onto the bearing (crankshaft and connecting rod) and connecting rod big end washers.
- Install the gasket with the seal print side toward the crankcase.





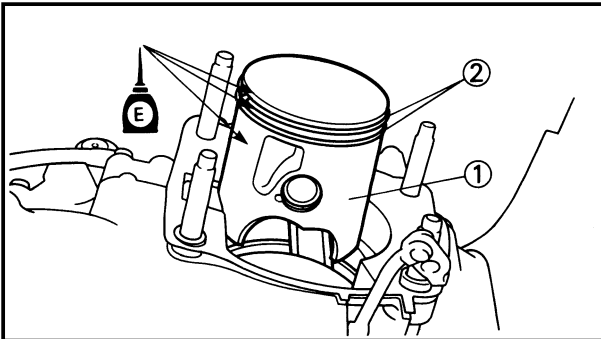
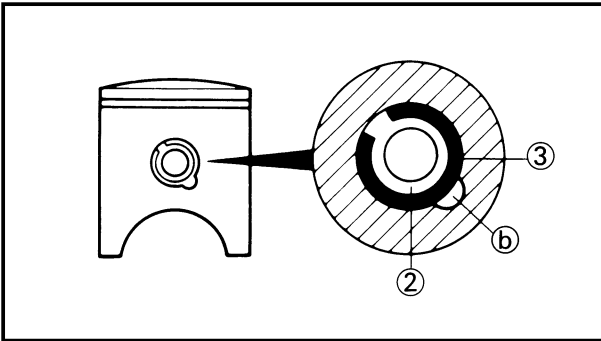
3. Install:
  - Piston ①
  - Piston pin ②
  - Piston pin clip ③ **New**

**NOTE:**

- The arrow (a) on the piston dome must point to exhaust side.
- Before installing the piston pin clip, cover the crankcase with a clean rag to prevent the piston pin clip from falling into the crankcase cavity.

**CAUTION:**

Do not allow the clip open ends to meet the piston pin slot (b).



EC475383

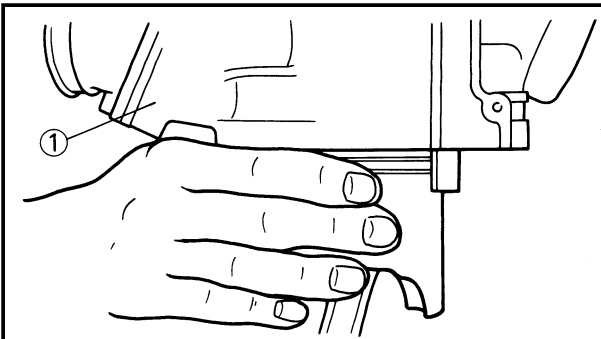
**Cylinder head and cylinder**

1. Apply:
  - Engine oil  
To piston ① piston ring ② and cylinder surface.

2. Install:
  - Cylinder ①

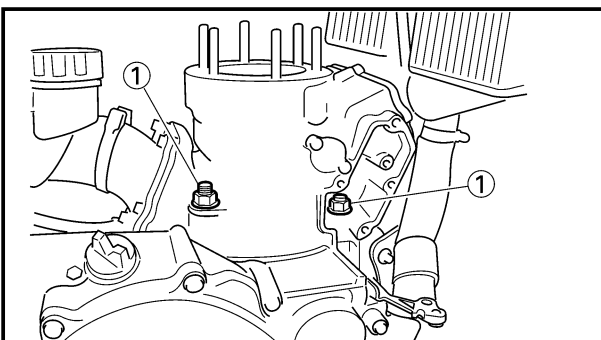
**CAUTION:**

Make sure the piston rings are properly positioned. Install the cylinder with one hand while compressing the piston rings with the other hand.



**NOTE:**

After installing, check the smooth movement of the piston.



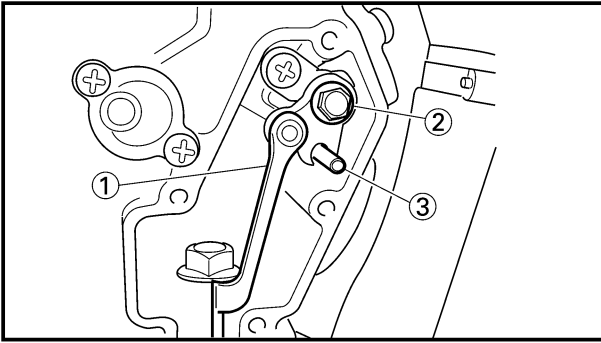
3. Install:
  - Nut (cylinder) ①

42 Nm (4.2 m•kg, 30 ft•lb)

**NOTE:**

Tighten the nuts in stage, using a crisscross pattern.





4. Install:

- Push rod ①
- Bolt (push rod) ②

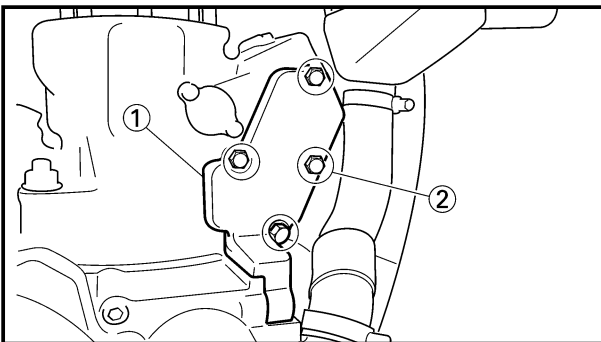
5 Nm (0.5 m•kg, 3.6 ft•lb)

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

- Insert the set pin ③ included in owner's tool kit to install the bolt (push rod).
- Do not forget to remove the set pin.

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

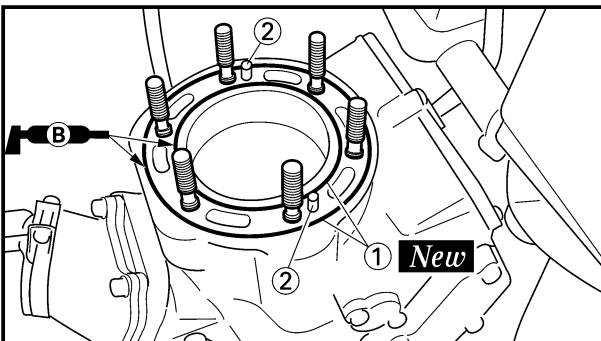
**Be sure to use the set pin. If the set pin is not used, the power valve constituent parts will result in damage.**



5. Install:

- Gasket (power valve housing) **New**
- Power valve housing ①
- Bolt (power valve housing) ②

5 Nm (0.5 m•kg, 3.6 ft•lb)

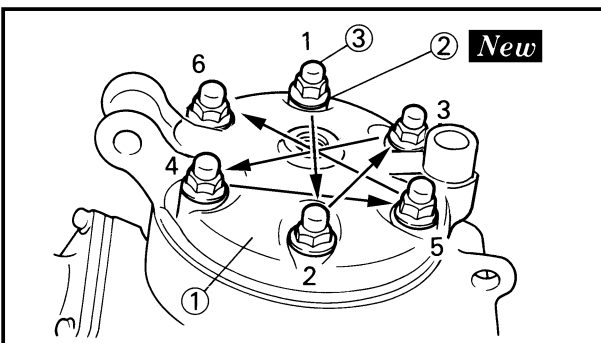


6. Install:

- O-ring ① **New**
- Dowel pin ②

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

Apply the lithium soap base grease on the O-rings.



7. Install:

- Cylinder head ①
- Copper washer ② **New**
- Nut (cylinder head) ③

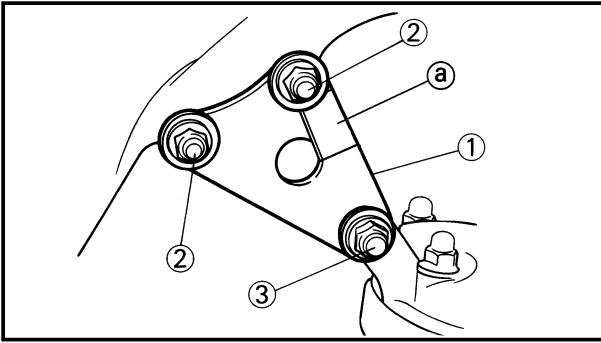
25 Nm (2.5 m•kg, 18 ft•lb)

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

Tighten the nuts (cylinder head) in stage, using a crisscross pattern.


## CYLINDER HEAD, CYLINDER AND PISTON

ENG




8. Install:

- Engine bracket ①
- Bolt (engine bracket) ②

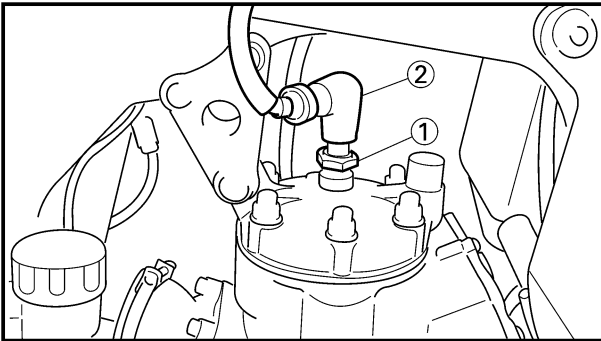
 **34 Nm (3.4 m•kg, 24 ft•lb)**

- Engine mounting bolt (upper) ③

 **69 Nm (6.9 m•kg, 50 ft•lb)**

### NOTE:

Install the engine bracket with its damper (a) on the right side of the body.



9. Install:

- Spark plug ①

 **20 Nm (2.0 m•kg, 14 ft•lb)**

- Spark plug cap ②



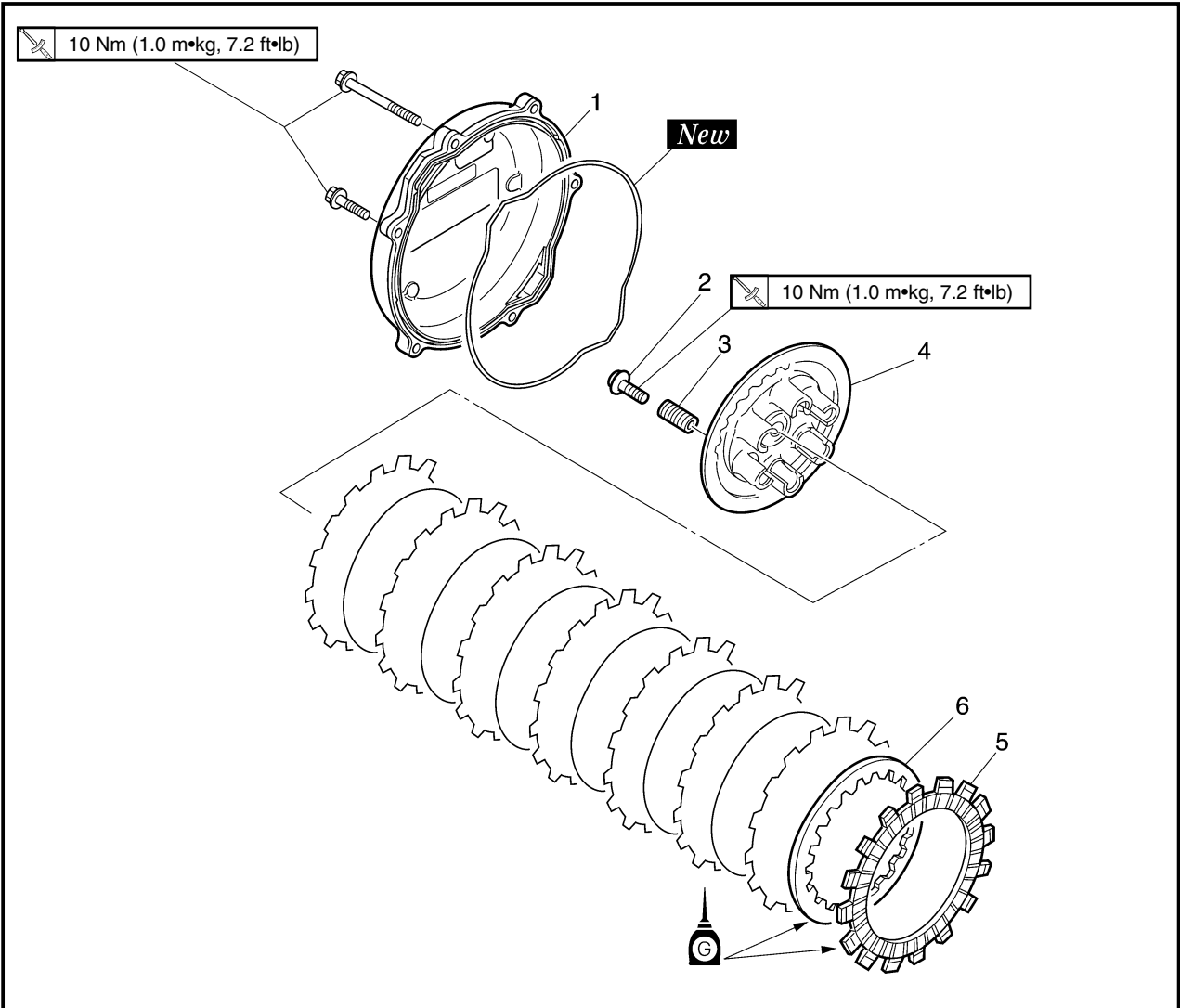
EC490000

## CLUTCH AND PRIMARY DRIVEN GEAR



EC498000

### CLUTCH PLATE AND FRICTION PLATE



Extent of removal: ① Clutch plate and friction plate removal

Extent of removal	Order	Part name	Q'ty	Remarks
Preparation for removal		<b>CLUTCH PLATE AND FRICTION PLATE REMOVAL</b> Drain the transmission oil. Bolt (brake pedal) Rotor and stator Clutch cable		Refer to "TRANSMISSION OIL REPLACEMENT" section in the CHAPTER 3. Shift the brake pedal downward. Refer to "CDI MAGNETO" section. Disconnect at engine side.
↑ ① ↓	1	Clutch cover	1	
	2	Screw (clutch spring)	6	
	3	Clutch spring	6	
	4	Pressure plate	1	
	5	Friction plate	8	
	6	Clutch plate	7	

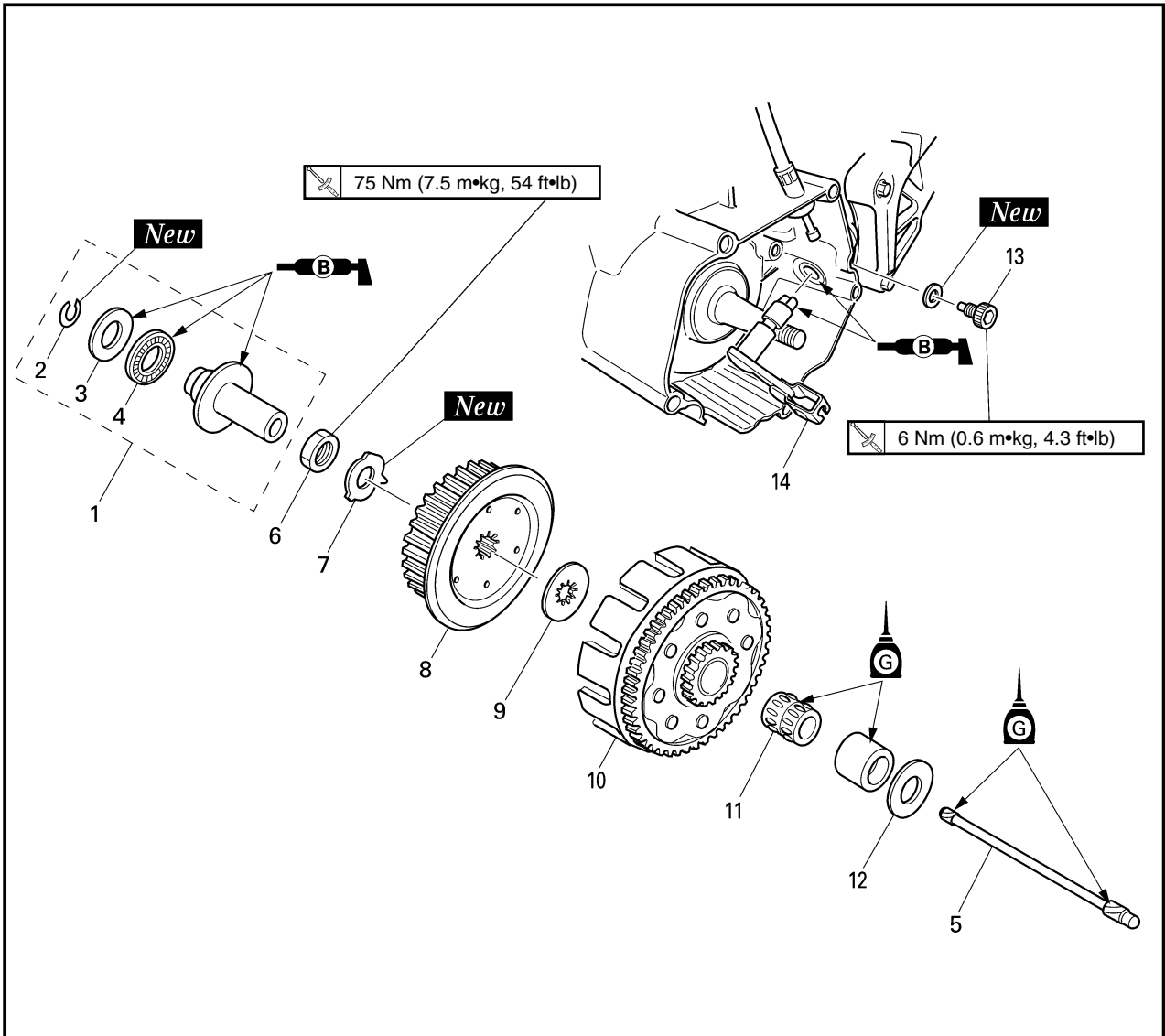
# CLUTCH AND PRIMARY DRIVEN GEAR

ENG



EC498200

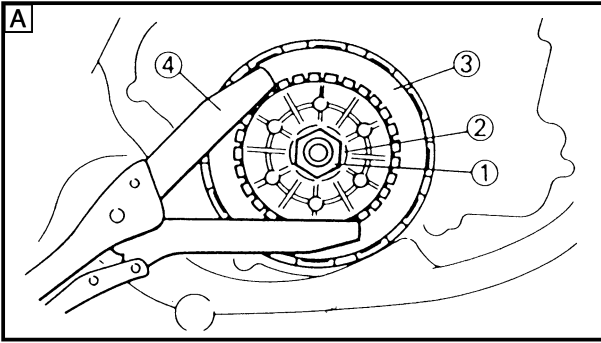
## PRIMARY DRIVEN GEAR, PUSH ROD AND PUSH LEVER AXLE



Extent of removal:

- ① Push rod and push lever axle removal
- ② Push rod 1 disassembly
- ③ Primary driven gear removal

Extent of removal	Order	Part name	Q'ty	Remarks
		<b>PRIMARY DRIVEN GEAR, PUSH ROD AND PUSH LEVER AXLE REMOVAL</b>		
① ↑ ↓	1	Push rod 1	1	Use special tool. Refer to "REMOVAL POINTS".
	2	Circlip	1	
	3	Plain washer	1	
	4	Bearing	1	
① ↑ ↓	5	Push rod 2	1	
	6	Nut (clutch boss)	1	
	7	Lock washer	1	
	8	Clutch boss	1	
	9	Thrust plate [D=ø44mm (1.73 in)]	1	
	10	Primary driven gear	1	
	11	Bearing	1	
	12	Thrust plate [D=ø42mm (1.65 in)]	1	
	13	Bolt (push lever axle)	1	
① ↑ ↓	14	Push lever axle	1	



EC493000

## REMOVAL POINTS

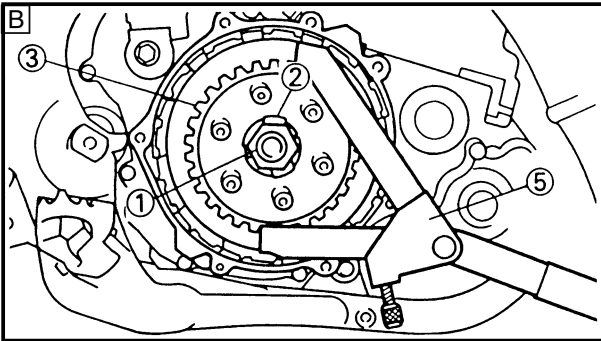
EC483211

### Clutch boss

- Remove:
  - Nut ①
  - Lock washer ②
  - Clutch boss ③

### NOTE:

Straighten the lock washer tab and use the clutch holding tool ④, ⑤ to hold the clutch boss.

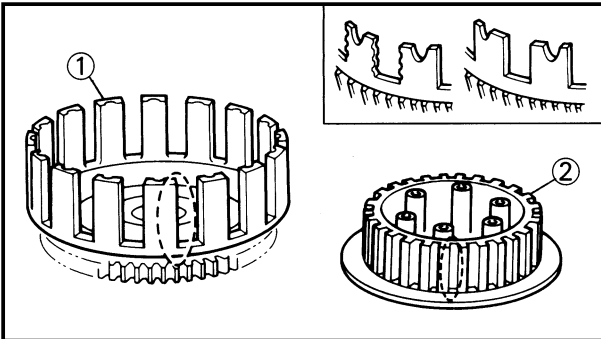


### Clutch holding tool:

- YM-91042.....④
- 90890-04086.....⑤

**A** For USA and CDN

**B** Except for USA and CDN



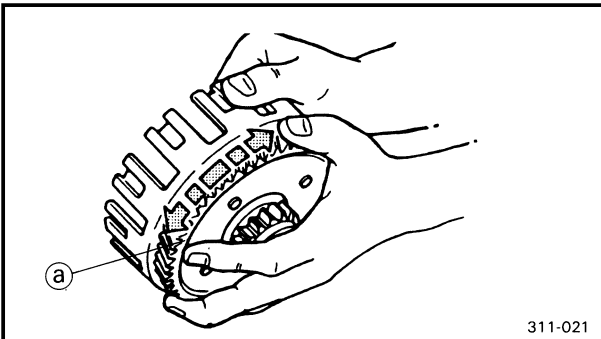
EC494000

## INSPECTION

EC484100

### Clutch housing and boss

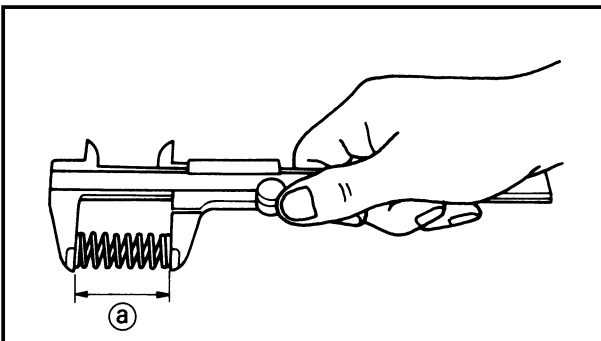
- Inspect:
  - Clutch housing ①  
Cracks/Wear/Damage → Replace.
  - Clutch boss ②  
Scoring/Wear/Damage → Replace.



EC484201

### Primary driven gear

- Check:
  - Circumferential play  
Free play exists → Replace.
  - Gear teeth (a)  
Wear/ Damage → Replace.



EC484400

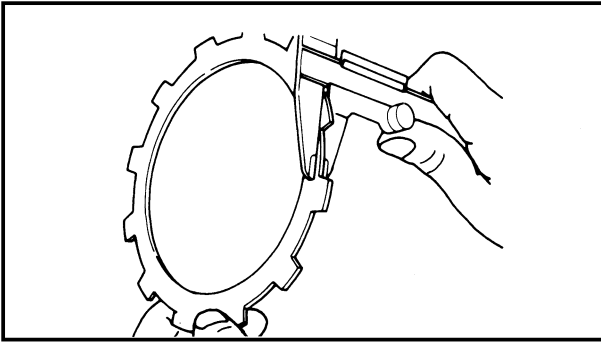
### Clutch spring

- Measure:
  - Clutch spring free length (a)  
Out of specification → Replace springs as a set.



### Clutch spring free length:

Standard	<Limit>
50.0 mm (1.969 in)	48.0 mm (1.890 in)



EC484500

### Friction plate

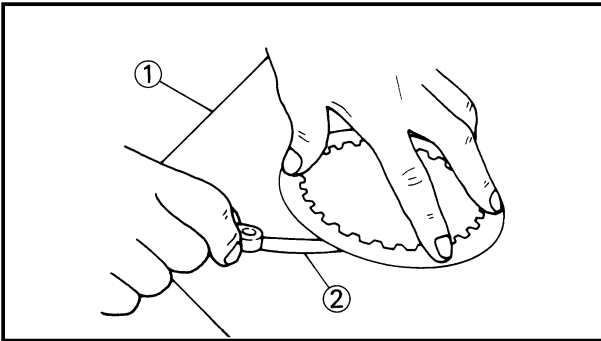
1. Measure:

- Friction plate thickness

Out of specification → Replace friction plate as a set.

Measure at all four points.

Friction plate thickness:	
Standard	<Limit>
2.9~3.1 mm (0.114~0.122 in)	2.8 mm (0.110 in)



EC484600

### Clutch plate

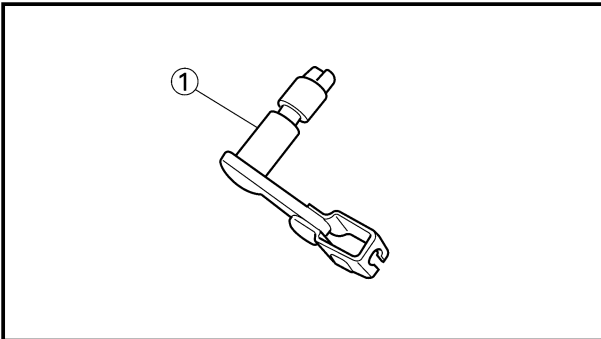
1. Measure:

- Clutch plate warpage

Out of specification → Replace clutch plate as a set.

Use a surface plate ① and thickness gauge ②.

Warp limit:
0.2 mm (0.008 in)



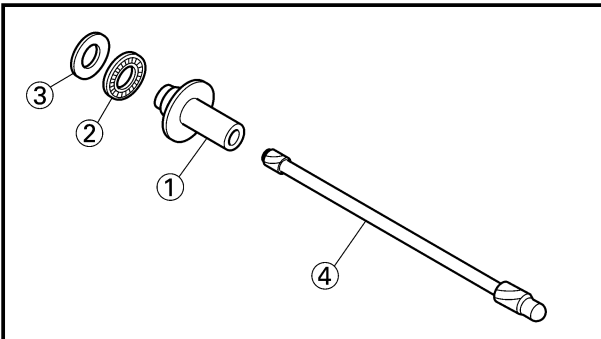
EC484700

### Push lever axle

1. Inspect:

- Push lever axle ①

Wear/Damage → Replace.



EC484810

### Push rod

1. Inspect:

- Push rod 1 ①
- Bearing ②
- Plain washer ③
- Push rod 2 ④

Wear/Damage/Bend → Replace.

EC495000

## ASSEMBLY AND INSTALLATION

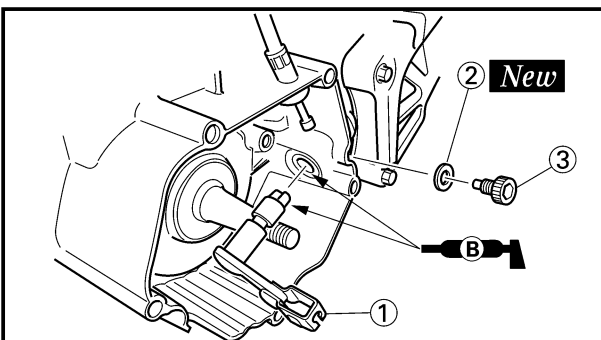
EC485120

### Push lever axle

1. Install:

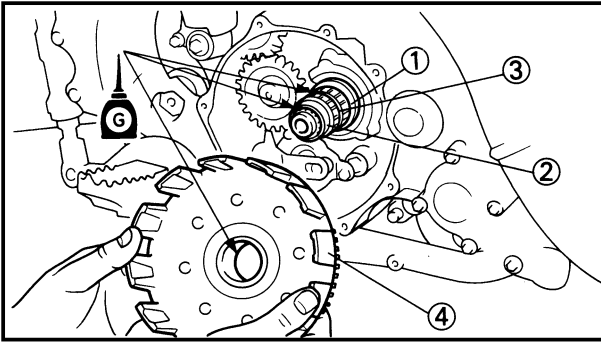
- Push lever axle ①
- Copper washer ② **New**
- Bolt (push lever axle) ③

6 Nm (0.6 m•kg, 4.3ft•lb)



### NOTE:

Apply the lithium soap base grease on the oil seal lip and push lever axle.



EC495230

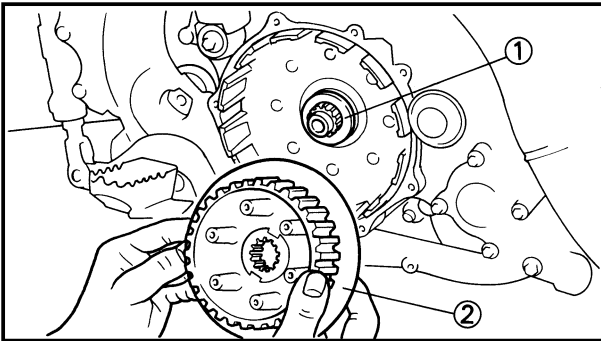
### Clutch

1. Install:

- Thrust plate [D=ø 42 mm (1.65 in)] ①
- Spacer ②
- Bearing ③
- Primary driven gear ④

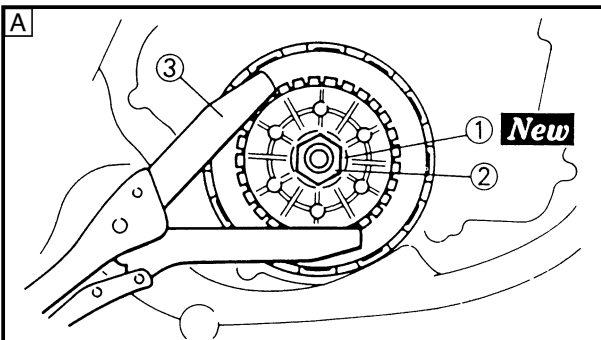
### NOTE:

Apply the transmission oil on the bearing, spacer and primary driven gear inner circumference.



2. Install:

- Thrust plate [D=ø 44 mm (1.73 in)] ①
- Clutch boss ②



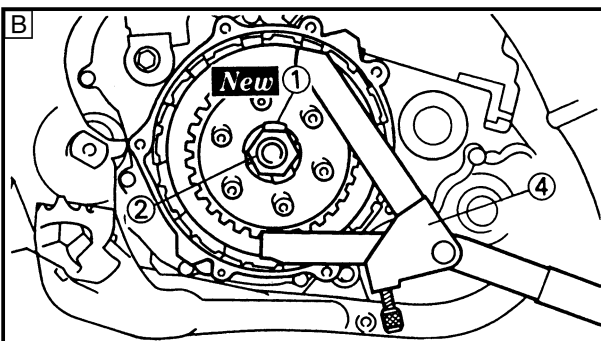
3. Install:

- Lock washer ① **New**
- Nut (clutch boss) ②

75 Nm (7.5 m•kg, 54 ft•lb)

### NOTE:

Use the clutch holding tool ③, ④ to hold the clutch boss.

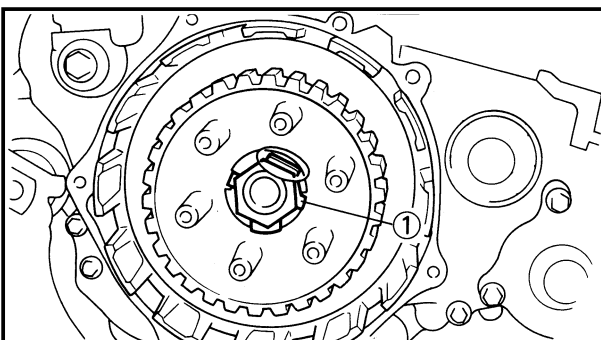


### Clutch holding tool:

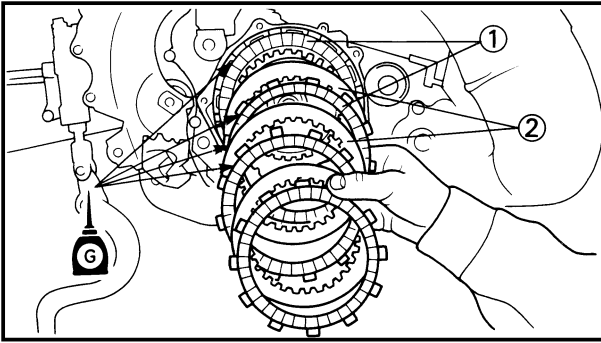
- YM-91042 .....③
- 90890-04086 .....④

**A** For USA and CDN

**B** Except for USA and CDN



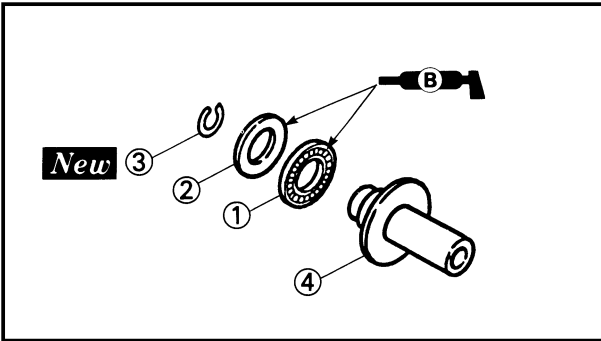
4. Bend the lock washer ① tab.



5. Install:
- Friction plate ①
  - Clutch plate ②

**NOTE:**

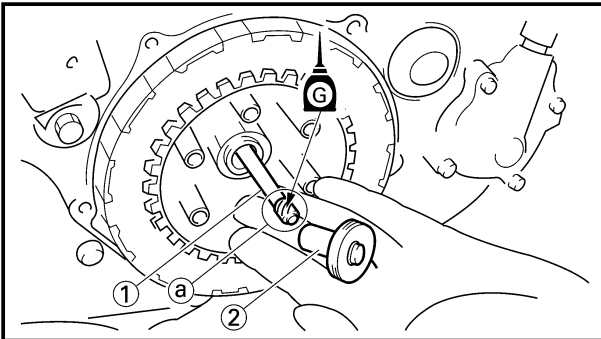
- Install the clutch plates and friction plates alternately on the clutch boss, starting with a friction plate and ending with a friction plate.
- Apply the transmission oil on the friction plates and clutch plates.



6. Install:
- Bearing ①
  - Plain washer ②
  - Circlip ③ **New**
- To push rod 1 ④.

**NOTE:**

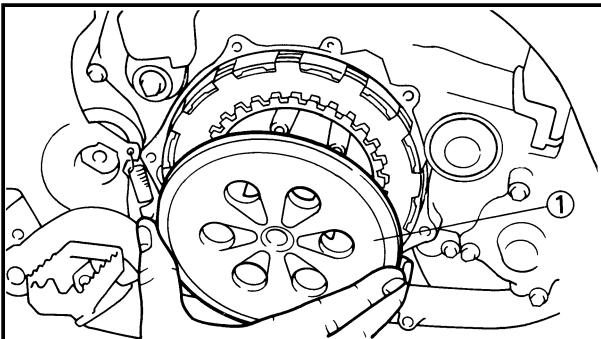
Apply the lithium soap base grease on the bearing and plain washer.



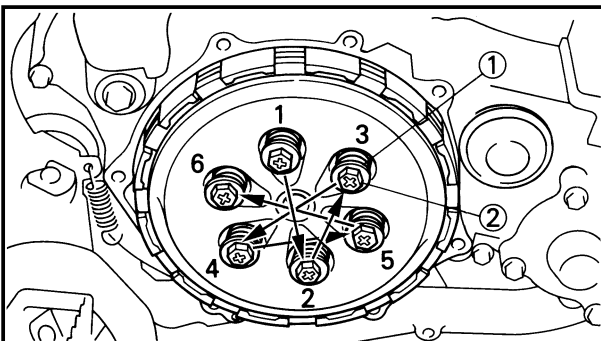
7. Install:
- Push rod 2 ①
  - Push rod 1 ②

**NOTE:**

- Apply the transmission oil on the ends of the push rod 2.
- Install the push rod 2 with its smaller end (a) toward you.



8. Install:
- Pressure plate ①



9. Install:
- Clutch spring ①
  - Screw (clutch spring) ②

10 Nm (1.0 m•kg, 7.2 ft•lb)

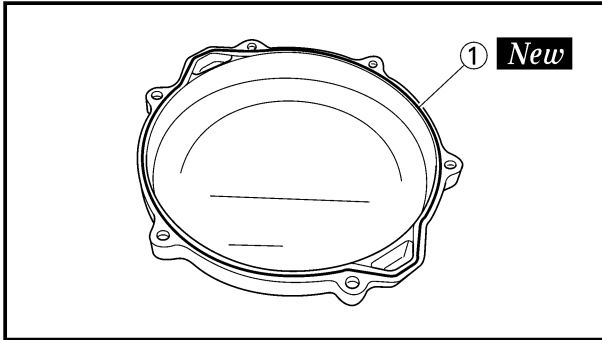
**NOTE:**

Tighten the screws in stage, using a crisscross pattern.



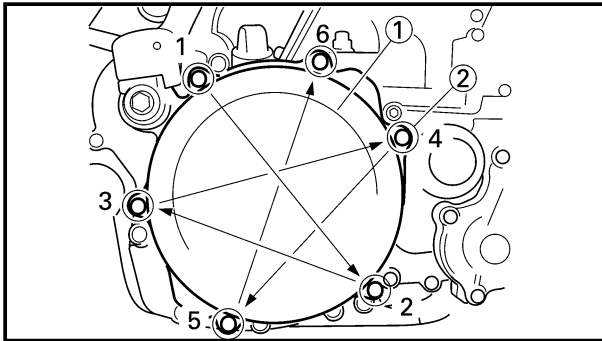
## CLUTCH AND PRIMARY DRIVEN GEAR

ENG



10. Install:

- O-ring ① **New**  
To clutch cover.



11. Install:

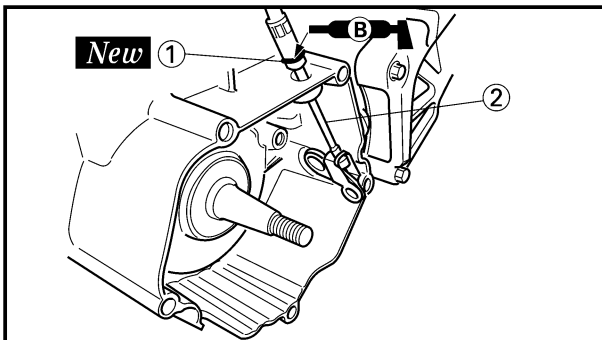
- Clutch cover ①
- Bolt (clutch cover) ②

10 Nm (1.0 m•kg, 7.2 ft•lb)

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

Tighten the bolts in stage, using a crisscross pattern.

\_\_\_\_\_



12. Install:

- O-ring ① **New**
- Clutch cable ②

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

Apply the lithium soap base grease on the O-ring.

\_\_\_\_\_

# KICK AXLE, SHIFT SHAFT AND PRIMARY DRIVE GEAR



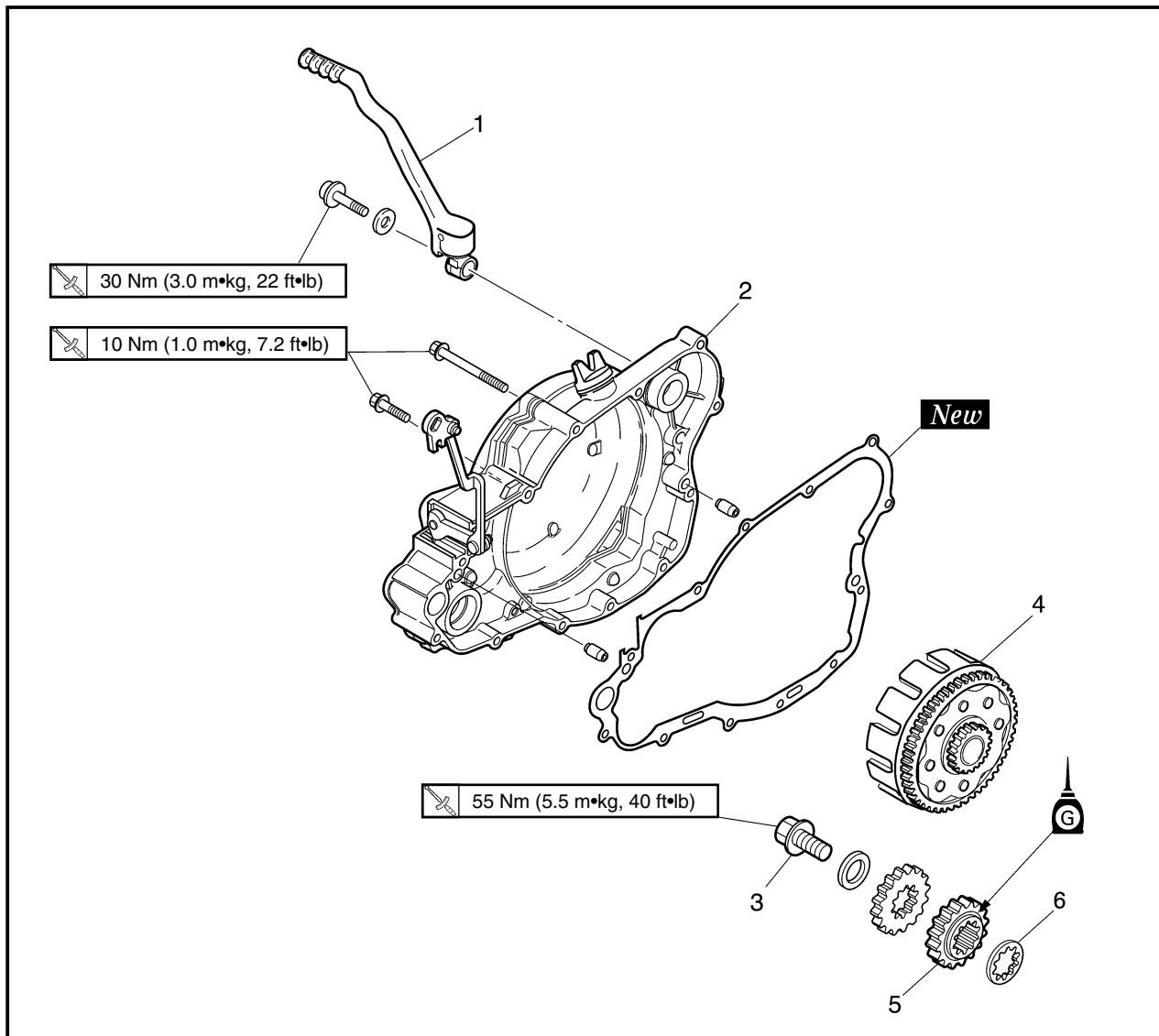
EC4C0000

## KICK AXLE, SHIFT SHAFT AND PRIMARY DRIVE GEAR



EC4C8000

### PRIMARY DRIVE GEAR



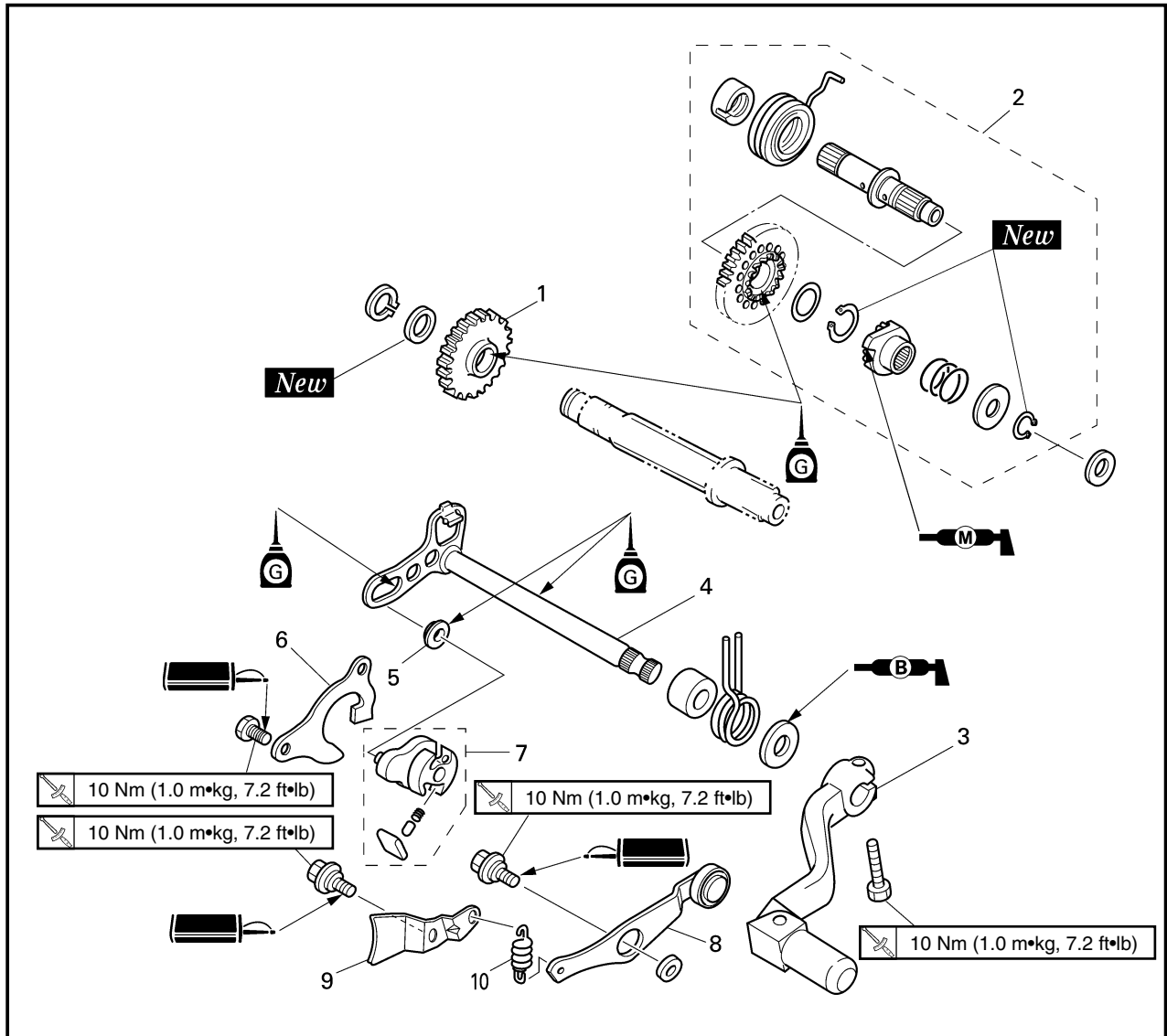
Extent of removal: ① Primary drive gear removal

Extent of removal	Order	Part name	Q'ty	Remarks
Preparation for removal		<b>PRIMARY DRIVE GEAR REMOVAL</b> Drain the transmission oil.  Bolt (brake pedal) Radiator hose 4 Bolt (push rod)		Refer to "TRANSMISSION OIL REPLACEMENT" section in the CHAPTER 3. Shift the brake pedal downward. Disconnect at water pump side. Refer to "CYLINDER HEAD, CYLINDER AND PISTON" section.
↑ ① ↓	1	Kick starter	1	Only loosening Refer to "REMOVAL POINTS". Refer to "CLUTCH AND PRIMARY DRIVEN GEAR" section.
	2	Crankcase cover (right)	1	
	3	Bolt (Primary drive gear)	1	
	4	Primary driven gear	1	
	5	Primary drive gear	1	
	6	Thrust plate	1	



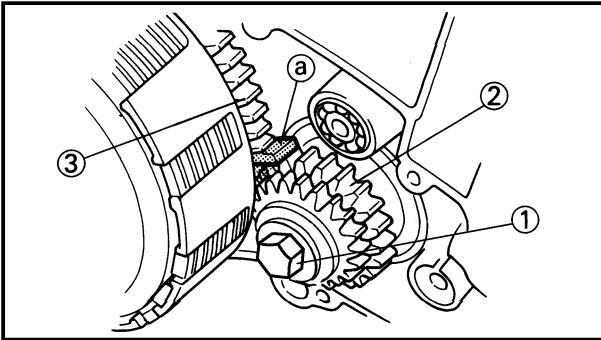
EC4C8100

## KICK AXLE AND SHIFT SHAFT



- Extent of removal:
- ① Kick axle and kick idle gear removal
  - ② Shift shaft and stopper lever removal

Extent of removal	Order	Part name	Q'ty	Remarks
<div style="display: flex; align-items: center;"> <div style="margin-right: 20px;"> <p>①</p> <p>↑</p> </div> <div style="margin-right: 20px;"> <p>②</p> <p>↑</p> </div> </div>	<b>KICK AXLE AND SHIFT SHAFT REMOVAL</b>			
	1	Kick idle gear	1	Refer to "REMOVAL POINTS".
	2	kick axle assembly	1	
	3	Shift pedal	1	Refer to "REMOVAL POINTS".
	4	Shift shaft	1	
	5	Roller	1	
	6	Shift guide	1	
	7	Shift lever assembly	1	
	8	Stopper lever	1	
	9	Holder	1	
10	Tension spring	1		



EC4C3000

## REMOVAL POINTS

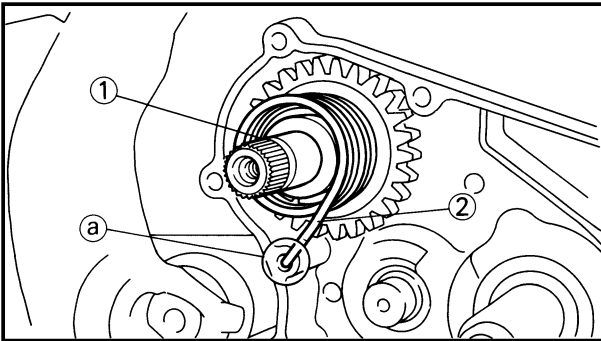
EC4B3111

### Primary drive gear

- Loosen:
  - Bolt (primary drive gear) ①

#### NOTE:

Place an aluminum plate ① between the teeth of the primary drive gear ② and driven gear ③.



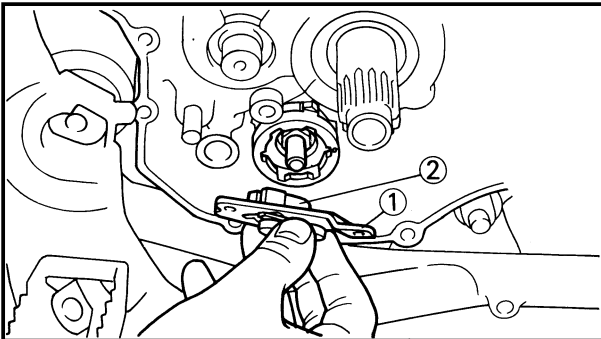
EC4B3101

### Kick axle assembly

- Remove:
  - Kick axle assembly ①

#### NOTE:

Unhook the torsion spring ② from the hole ① in the crankcase.



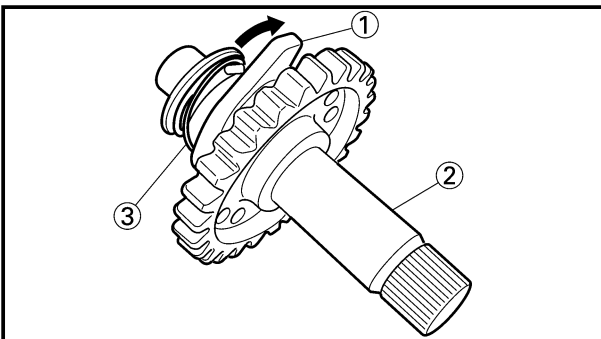
EC4C3101

### Shift guide and shift lever assembly

- Remove:
  - Bolt (shift guide)
  - Shift guide ①
  - Shift lever assembly ②

#### NOTE:

The shift lever assembly is disassembled at the same time as the shift guide.



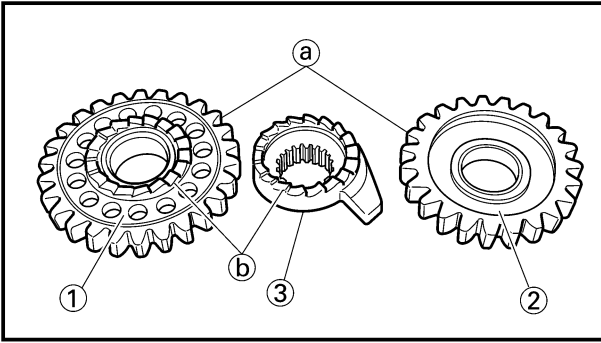
EC4C4000

## INSPECTION

EC4C4200

### Kick axle and ratchet wheel

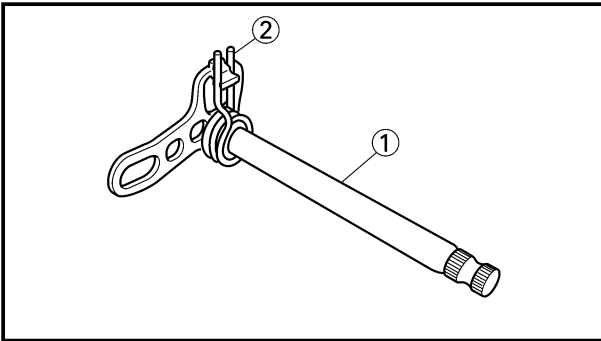
- Check:
  - Ratchet wheel ① smooth movement  
Unsmooth movement → Replace.
  - Kick axle ②  
Wear/Damage → Replace.
  - Spring ③  
Broken → Replace.



EC4C4300

## Kick gear, kick idle gear and ratchet wheel

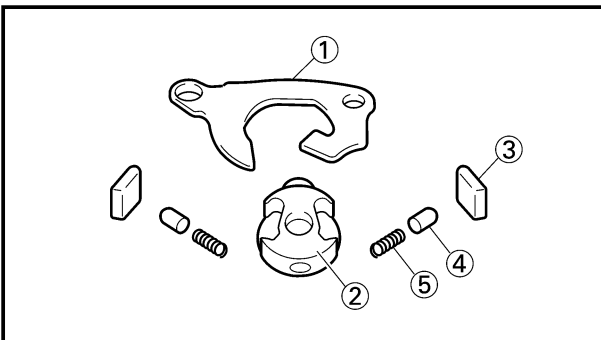
- Inspect:
  - Kick gear ①
  - Kick idle gear ②
  - Ratchet wheel ③
  - Gear teeth (a)
  - Ratchet teeth (b)
 Wear/Damage → Replace.



EC4B4400

## Shift shaft

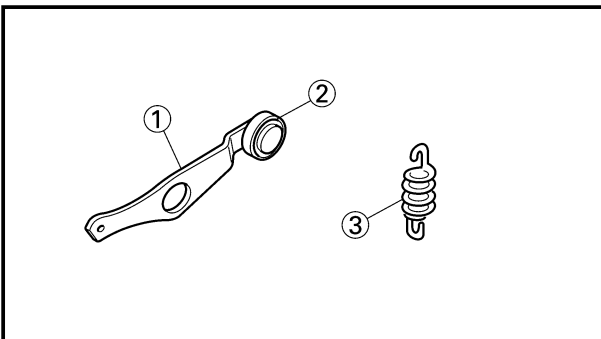
- Inspect:
  - Shift shaft ①
 Bend/Damage → Replace.
  - Spring ②
 Broken → Replace.



EC4C4100

## Shift guide and shift lever assembly

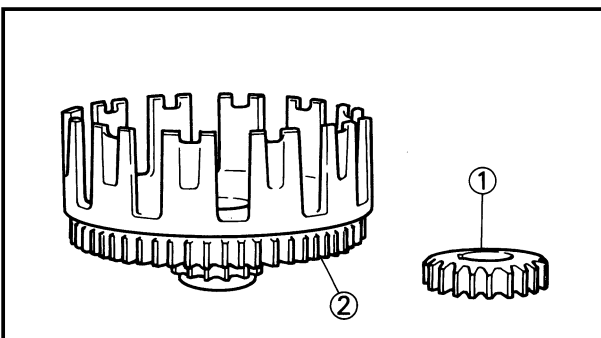
- Inspect:
  - Shift guide ①
  - Shift lever ②
  - Pawl ③
  - Pawl pin ④
  - Spring ⑤
 Wear/Damage → Replace.



EC4C4400

## Stopper lever

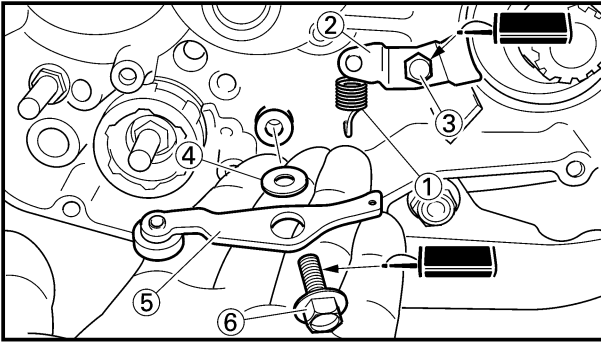
- Inspect:
  - Stopper lever ①
 Wear/Damage → Replace.
  - Bearing ②
 Rotate outer race with a finger.  
 Rough spot/Seizure → Replace the stopper lever.
  - Tension spring ③
 Broken → Replace.



EC484300

## Primary drive gear and primary driven gear

- Inspect:
  - Primary drive gear ①
  - Primary driven gear ②
 Wear/Damage → Replace.



EC4C500

## ASSEMBLY AND INSTALLATION

EC4C5130

### Stopper lever

1. Install:

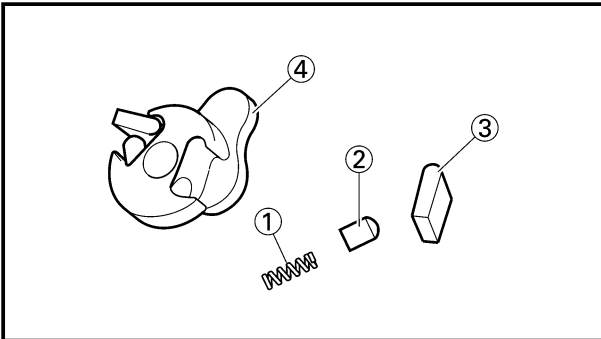
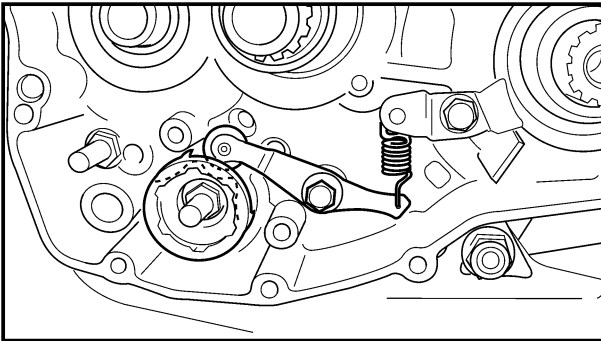
- Tension spring ①
- Holder ②
- Bolt (holder) ③
- Plain washer ④
- Stopper lever ⑤
- Bolt (stopper lever) ⑥

10 Nm (1.0 m•kg, 7.2 ft•lb)

10 Nm (1.0 m•kg, 7.2 ft•lb)

### NOTE:

Align the stopper lever roller with the slot on segment.



EC4C5202

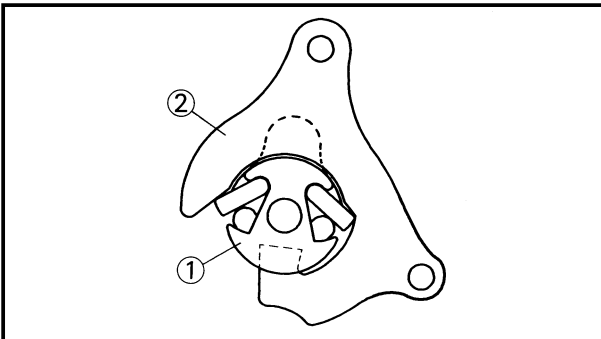
### Shift guide and shift lever assembly

1. Install:

- Spring ①
- Pawl pin ②
- Pawl ③
- To shift lever ④.

2. Install:

- Shift lever assembly ①
- To shift guide ②.

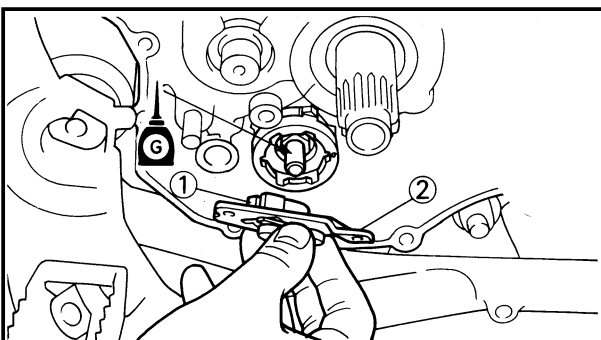


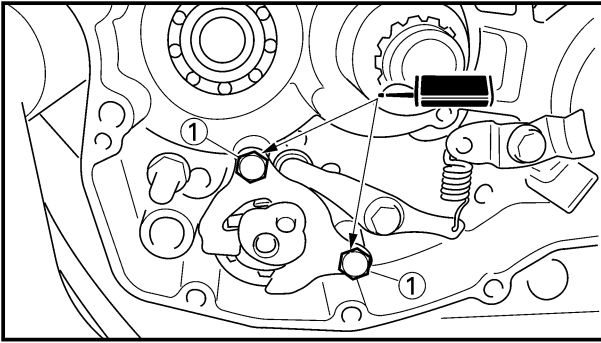
3. Install:

- Shift lever assembly ①
- Shift guide ②

### NOTE:

- The shift lever assembly is installed at the same time as the shift guide.
- Apply the transmission oil on the bolt (segment) shaft.

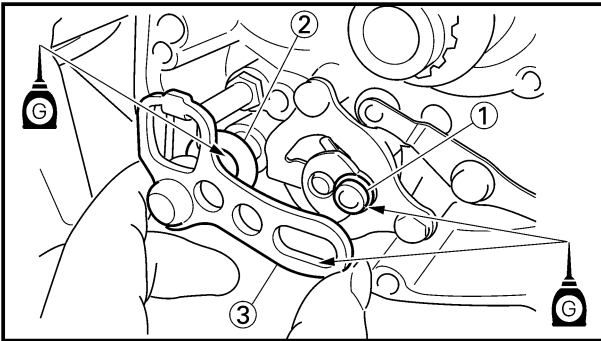




4. Install:

- Bolt (shift guide) ①

**10 Nm (1.0 m•kg, 7.2 ft•lb)**



EC4C5310

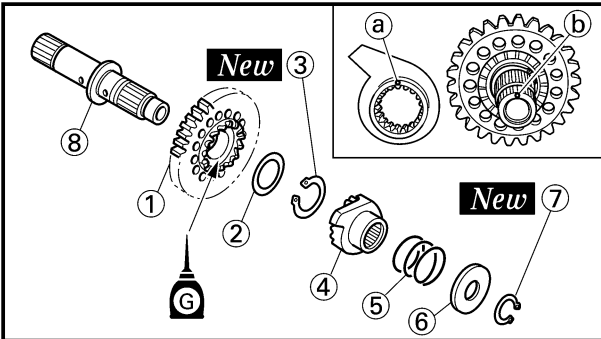
### Shift shaft

1. Install:

- Roller ①
- Plain washer ②
- Shift shaft ③

### NOTE:

Apply the transmission oil on the roller and shift shaft.



EC4C5602

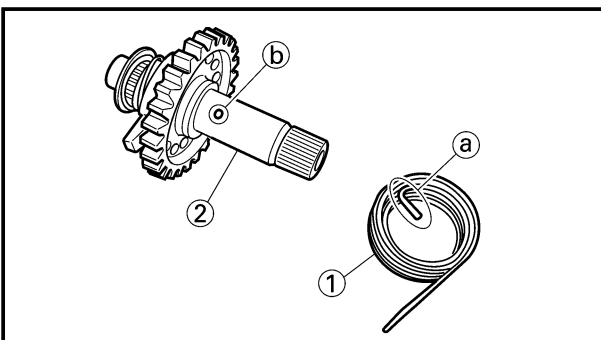
### Kick axle assembly

1. Install:

- Kick gear ①
  - Plain washer ②
  - Circlip ③ **New**
  - Ratchet wheel ④
  - Spring ⑤
  - Plain washer ⑥
  - Circlip ⑦ **New**
- To kick axle ⑧.

### NOTE:

- Apply the transmission oil on the kick gear inner circumference.
- Align the punch mark (a) on the ratchet wheel with the punch mark (b) on the kick axle.

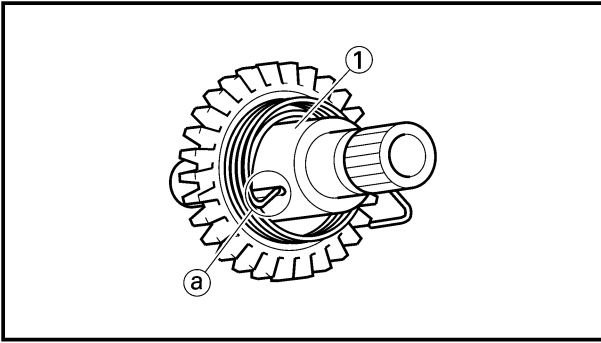


2. Install:

- Torsion spring ①
- To kick axle ②.

### NOTE:

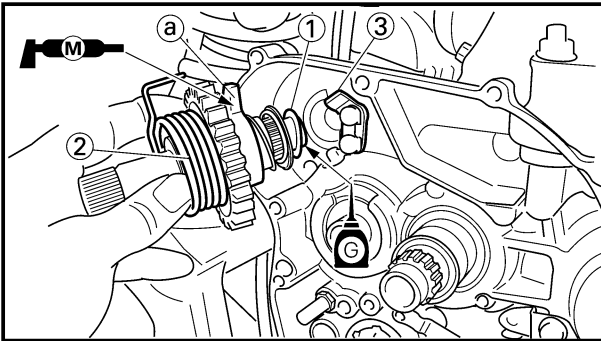
Make sure the stopper (a) of the torsion spring fits into the hole (b) on the kick axle.



3. Install:
- Spring guide ①

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

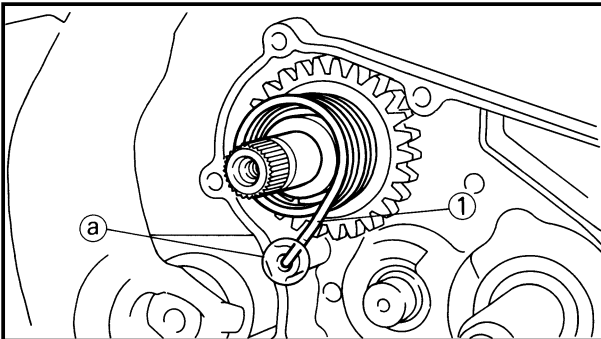
Slide the spring guide into the kick axle, make sure the groove (a) in the spring guide fits on the stopper of the torsion spring.



4. Install:
- Plain washer ①
  - Kick axle assembly ②

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

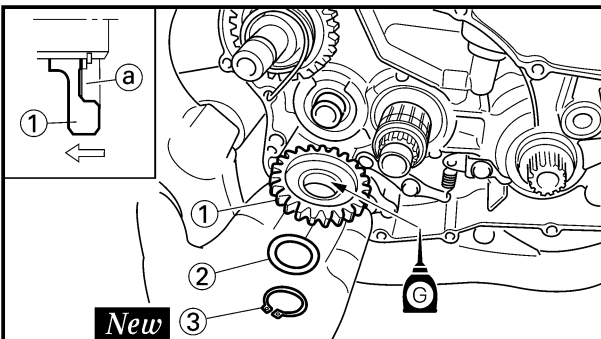
- Apply the molybdenum disulfide grease on the contacting surfaces of the kick axle stopper (a) and stopper plate (3).
- Apply the transmission oil on the kick axle.
- Slide the kick axle assembly into the crankcase and make sure the kick axle stopper fits into the stopper plate.



5. Hook:
- Torsion spring ①

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

Turn the torsion spring clockwise and hook into the proper hole (a) in the crankcase.



EC4C5420

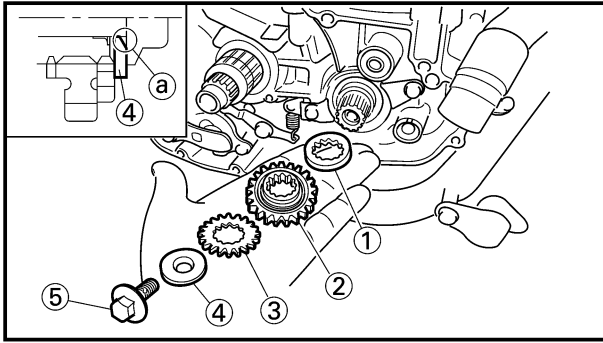
**Kick idle gear**

1. Install:
- Kick idle gear ①
  - Plain washer ②
  - Circlip ③ **New**

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

- Apply the transmission oil on the kick idle gear inner circumference.
- Install the kick idle gear with its depressed side (a) toward you.





EC4C5531

## Primary drive gear

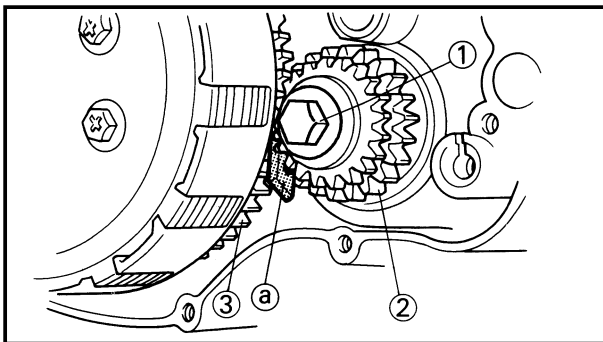
1. Install:
  - Thrust plate ①
  - Primary drive gear ②
  - Governor drive gear ③
  - Plain washer ④
  - Bolt (primary drive gear) ⑤

### NOTE:

- Install the plain washer with its chamfered side ④ toward you.
- Temporarily tighten the bolt at this point.

2. Install:

- Primary driven gear  
Refer to "CLUTCH AND PRIMARY DRIVEN GEAR" section.



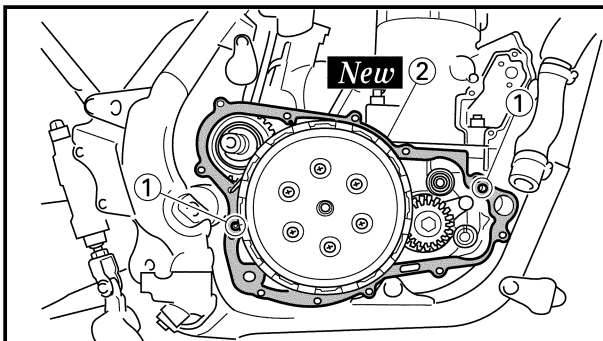
3. Tighten:

- Bolt (primary drive gear) ①

55 Nm (5.5 m•kg, 40 ft•lb)

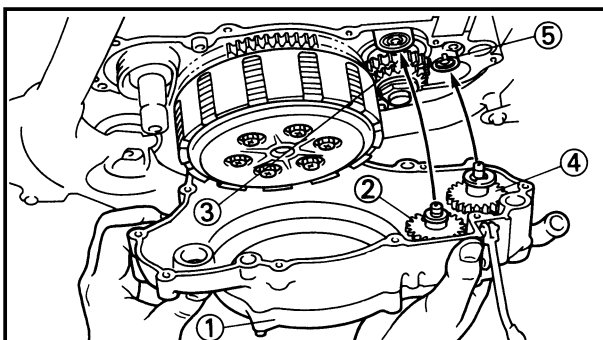
### NOTE:

Place an aluminum plate ④ between the teeth of the primary drive gear ② and driven gear ③.



4. Install:

- Dowel pin ①
- Gasket [crankcase cover (right)] ② **New**

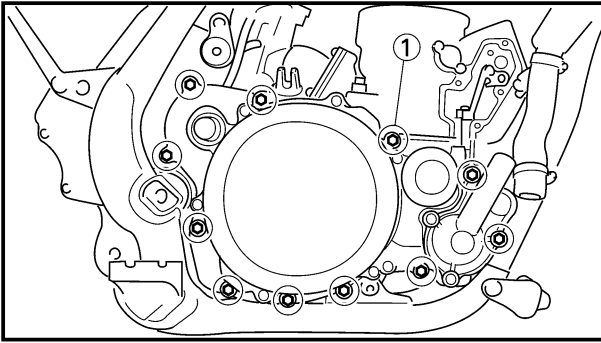


5. Install:

- Crankcase cover (right) ①

### NOTE:

Mesh the governor gear ② with the governor drive gear ③ and the impeller shaft gear ④ with the primary drive gear ⑤.



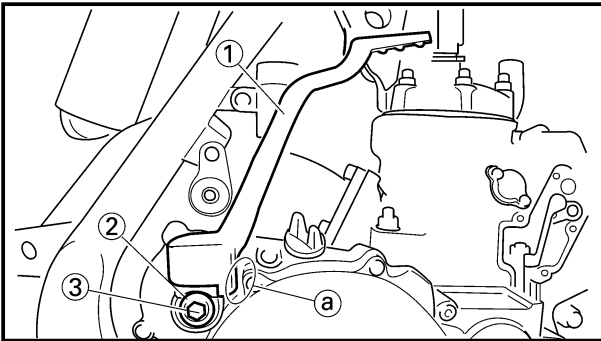
6. Install:
- Bolt [crankcase cover (right)] ①

10 Nm (1.0 m•kg, 7.2 ft•lb)

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

Tighten the bolts in stage, using a crisscross pattern.

---



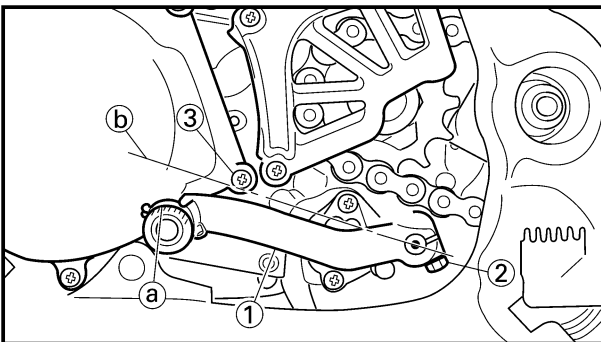
7. Install:
- Kick starter ①
  - Plain washer ②
  - Bolt (kick starter) ③

30 Nm (3.0 m•kg, 22 ft•lb)

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

Install the kick starter closest to but not contacting the clutch cover mounting boss ①.

---



8. Install:
- Shift pedal ①
  - Bolt (shift pedal) ②

10 Nm (1.0 m•kg, 7.2 ft•lb)

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

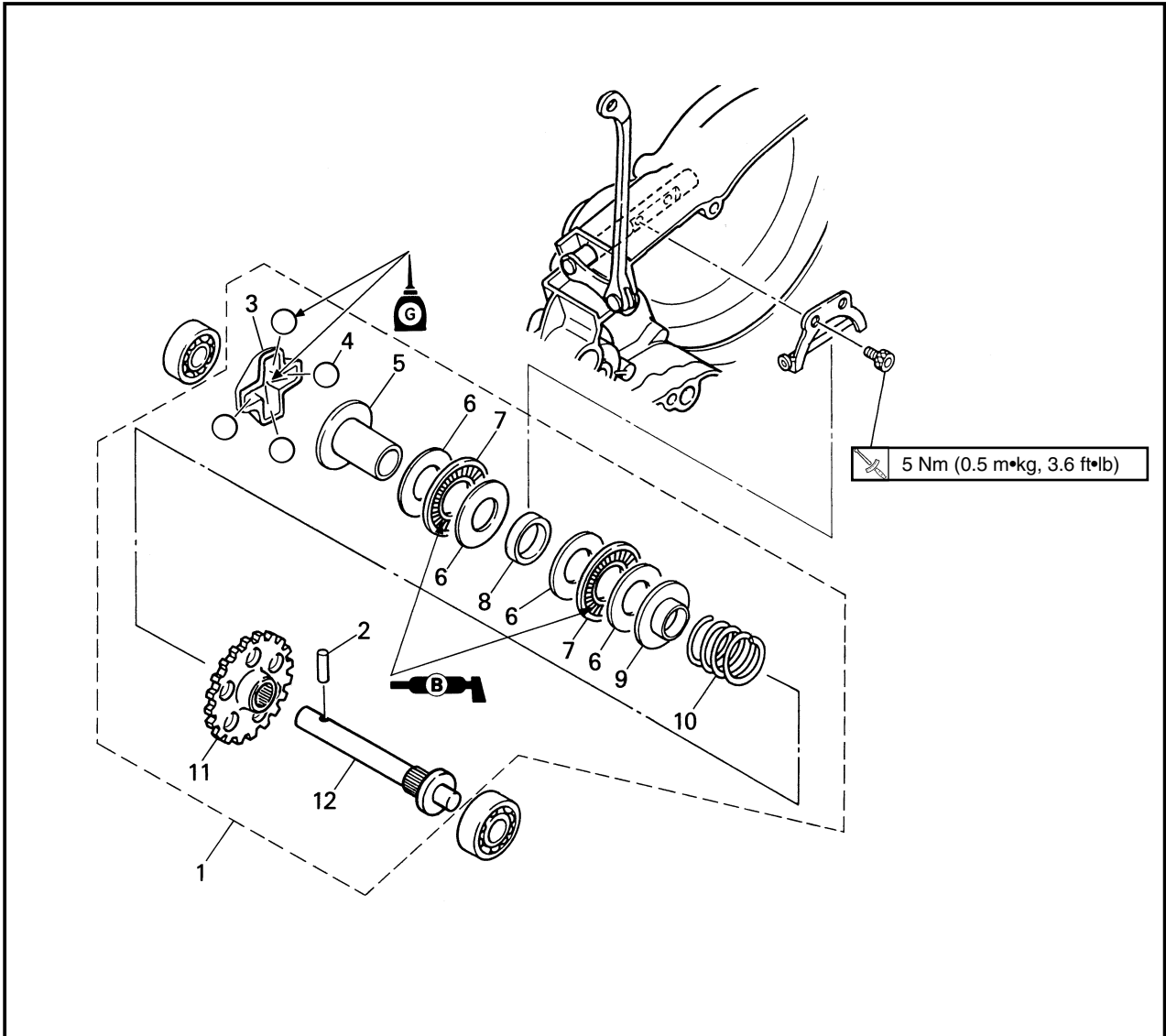
Install the shift pedal so that the top of the shift pedal outer diameter ① is highest without exceeding the line ② connecting the center of the shift shaft and bottom of the screw [crankcase cover (left)] ③.

---



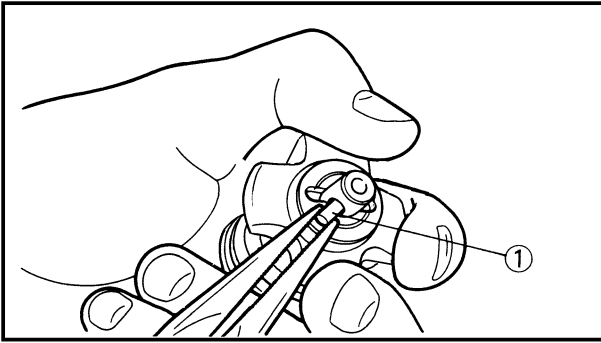
EC4K0000

YPVS GOVERNOR



Extent of removal: ① YPVS governor removal and disassembly

Extent of removal	Order	Part name	Q'ty	Remarks
Preparation for removal		<b>YPVS GOVERNOR REMOVAL</b> Crankcase cover (right)		Refer to "KICK AXLE, SHIFT SHAFT AND PRIMARY DRIVE GEAR" section.
<div style="text-align: center;"> <span style="font-size: 2em;">↑</span>  <span style="font-size: 2em;">①</span>  <span style="font-size: 2em;">↓</span> </div>	1	Governor assembly	1	Refer to "REMOVAL POINTS".
	2	Dowel pin	1	
	3	Retainer	1	
	4	Ball	4	
	5	Retainer weight	1	
	6	Plain washer	4	
	7	Thrust bearing	2	
	8	Collar	1	
	9	Plate	1	
	10	Compression spring	1	
	11	Governor gear	1	
	12	Governor shaft	1	



EC4K3000

**REMOVAL POINTS**

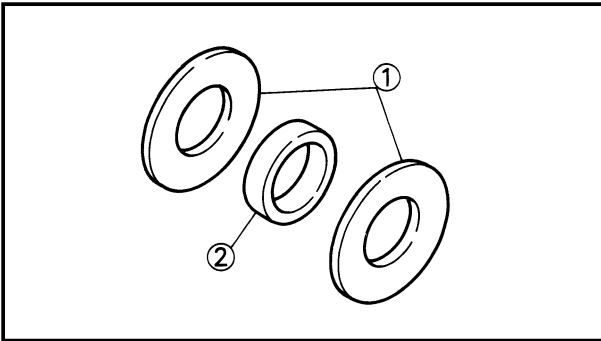
EC4K3100

**Governor**

1. Remove:
  - Dowel pin ①

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

While compressing the spring, remove the dowel pin.



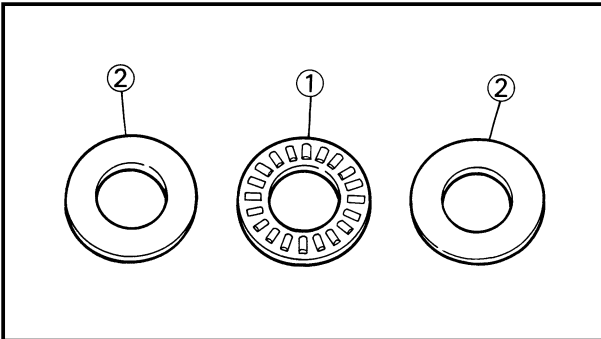
EC4K4000

**INSPECTION**

EC4K4100

**Governor groove**

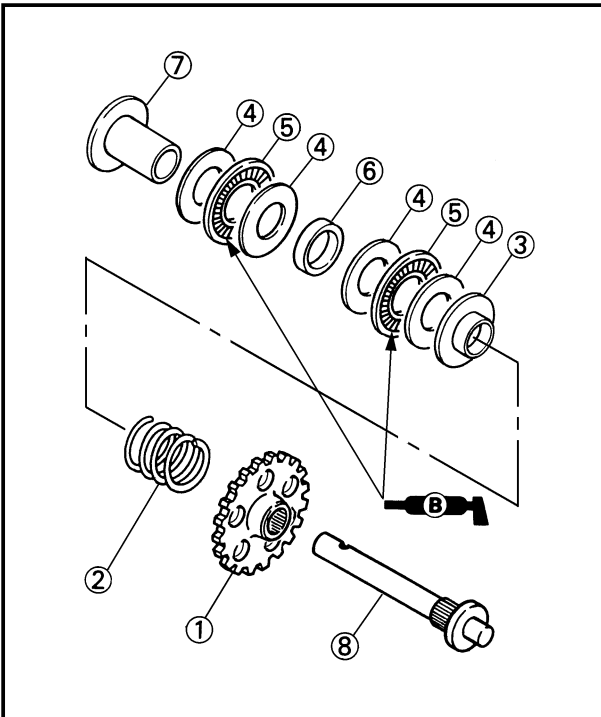
1. Inspect:
  - Plain washer ①
  - Collar ②
 Wear/Damage → Replace.



EC4K4200

**Bearing**

1. Inspect:
  - Thrust bearing ①
  - Plain washer ②
 Wear/Damage → Replace.



EC4K5000

**ASSEMBLY AND INSTALLATION**

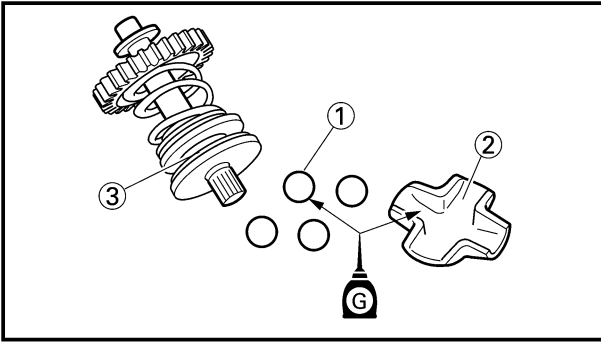
EC4K5130

**Governor**

1. Install:
  - Governor gear ①
  - Compression spring ②
  - Plate ③
  - Plain washer ④
  - Thrust bearing ⑤
  - Collar ⑥
  - Retainer weight ⑦
 To governor shaft ⑧.

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

Apply the lithium soap base grease on the thrust bearing.

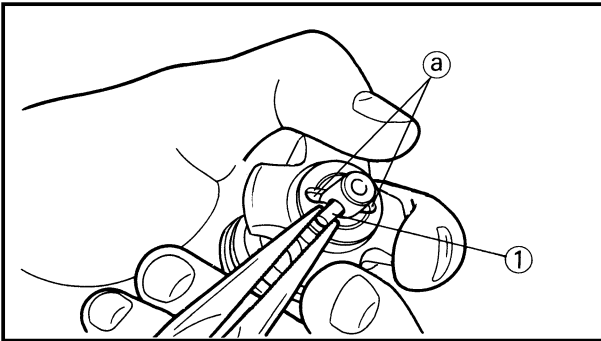


2. Install:
- Ball ①
  - Retainer ②
- To governor shaft ③.

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

Apply the transmission oil on the retainer and ball.

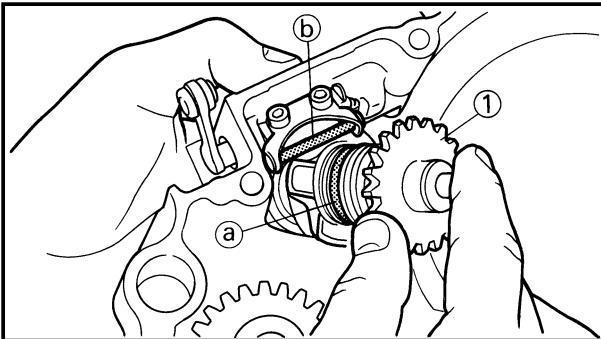
\_\_\_\_\_



3. Install:
- Dowel pin ①

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

- While compressing the spring, install the dowel pin.
  - Make sure the dowel pin fits into the groove (a) in the retainer.
- \_\_\_\_\_



4. Install:
- Governor assembly ①

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

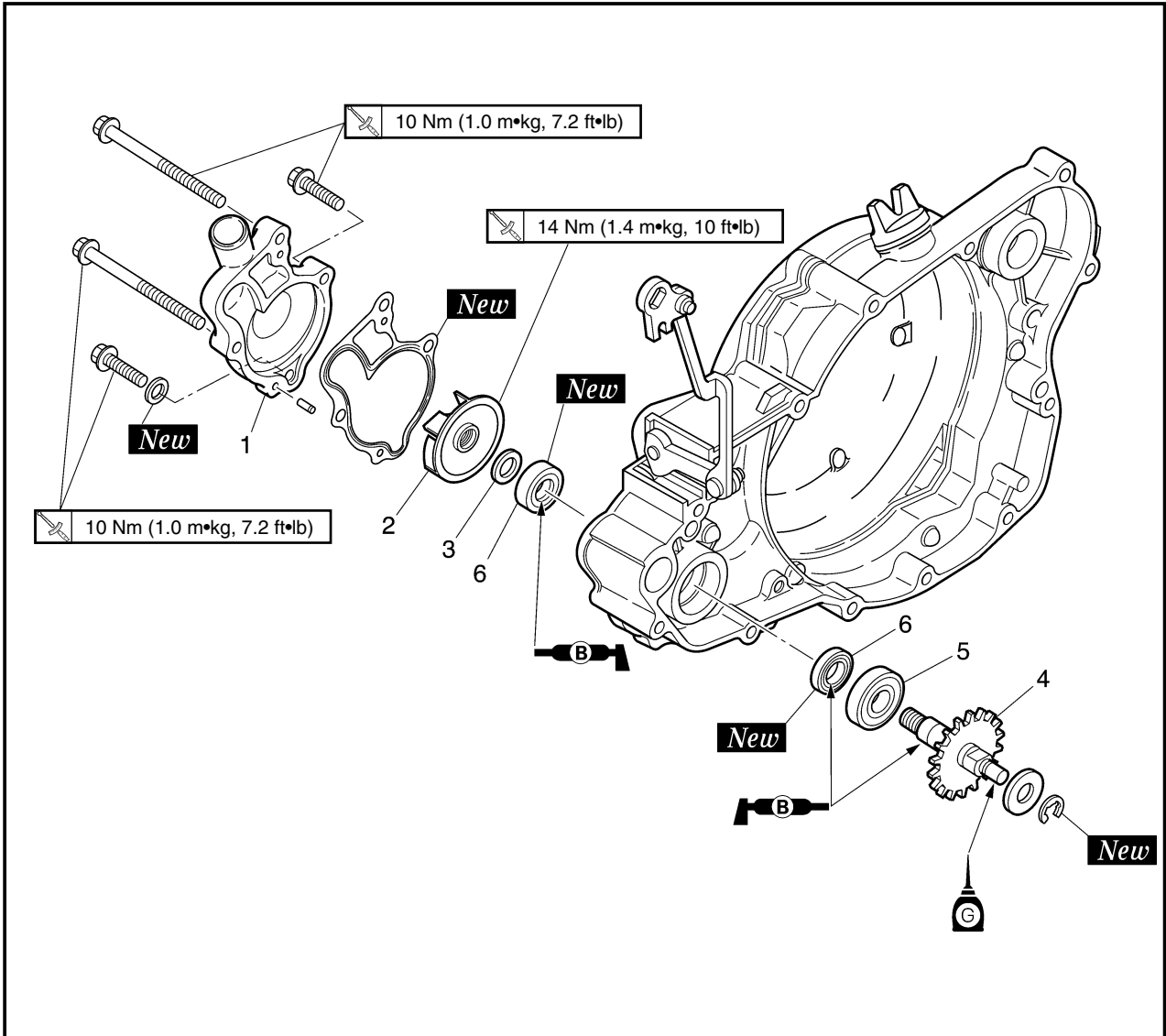
Align the groove (a) in the governor with the fork (b) and set the governor in the crankcase cover.

\_\_\_\_\_



EC4G0000

WATER PUMP

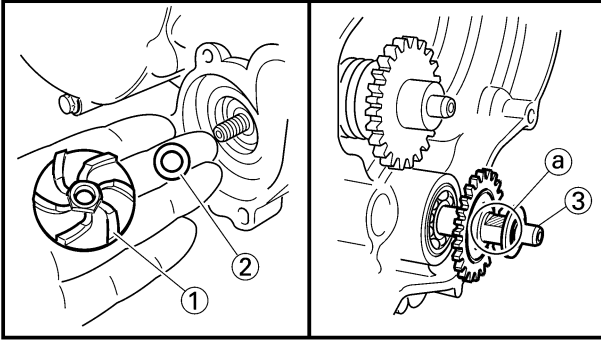


Extent of removal:

① Impeller shaft removal

② Oil seal removal

Extent of removal	Order	Part name	Q'ty	Remarks
Preparation for removal		<b>WATER PUMP DISASSEMBLY</b> Crankcase cover (right)		Refer to "KICK AXLE, SHIFT SHAFT AND PRIMARY DRIVE GEAR" section.
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>①</p> <p>↑</p> <p>↓</p> </div> <div style="text-align: center;"> <p>②</p> <p>↑</p> <p>↓</p> </div> </div>	1	Water pump housing cover	1	Refer to "REMOVAL POINTS".  Refer to "REMOVAL POINTS".
	2	Impeller	1	
	3	Plain washer	1	
	4	Impeller shaft	1	
	5	Bearing	1	
	6	Oil seal	2	



EC4G3000

**REMOVAL POINTS**

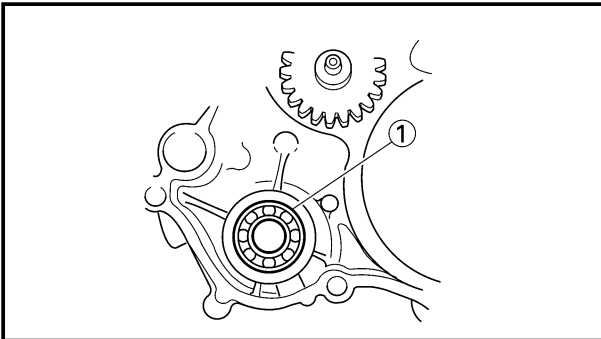
EC4G3110

**Impeller shaft**

1. Remove:
  - Impeller ①
  - Plain washer ②
  - Impeller shaft ③

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

Hold the impeller shaft on its width across the flats ① with spanners, etc. and remove the impeller.

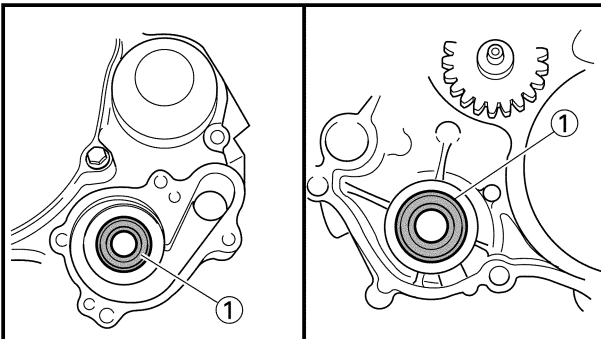


EC4G3210

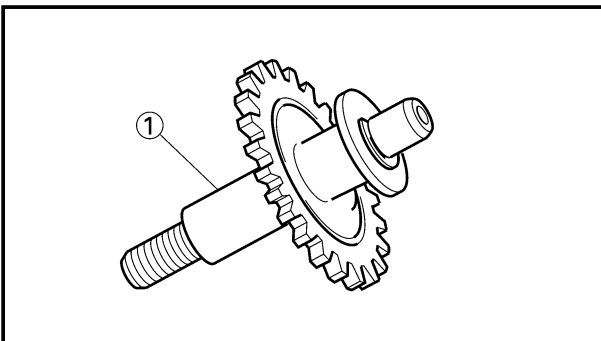
**Oil seal**

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

It is not necessary to disassemble the water pump, unless there is an abnormality such as excessive change in coolant level, discoloration of coolant, or milky transmission oil.



1. Remove:
  - Bearing ①
2. Remove:
  - Oil seal ①



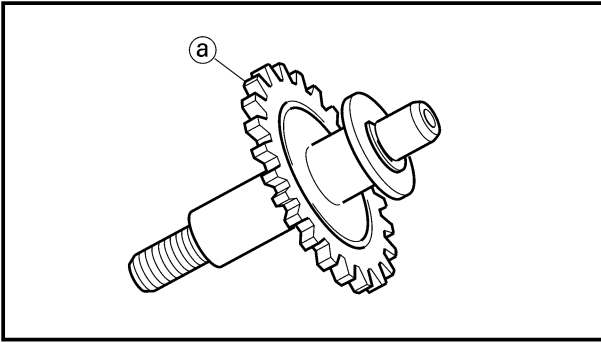
EC4G4000

**INSPECTION**

EC444200

**Impeller shaft**

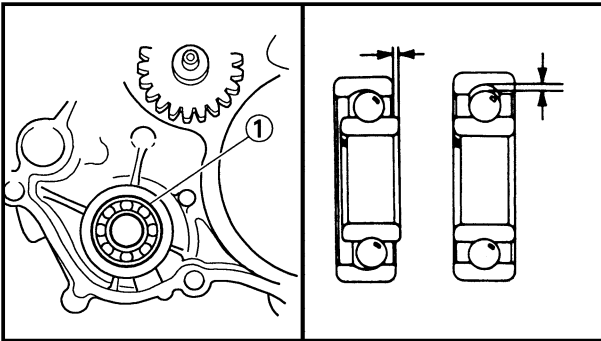
1. Inspect:
  - Impeller shaft ①
  - Bend/Wear/Damage → Replace.
  - Fur deposits → Clean.



EC444300

**Impeller shaft gear**

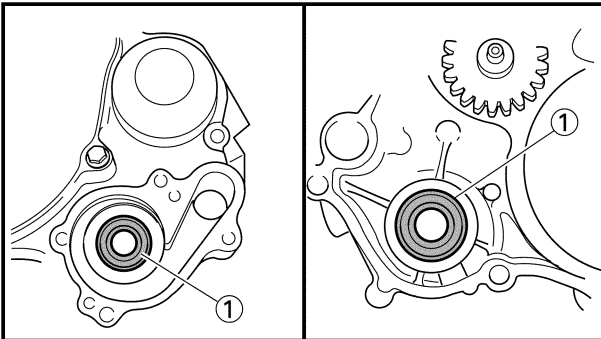
1. Inspect:
  - Gear teeth (a)
  - Wear/Damage → Replace.



EC4H4600

**Bearing**

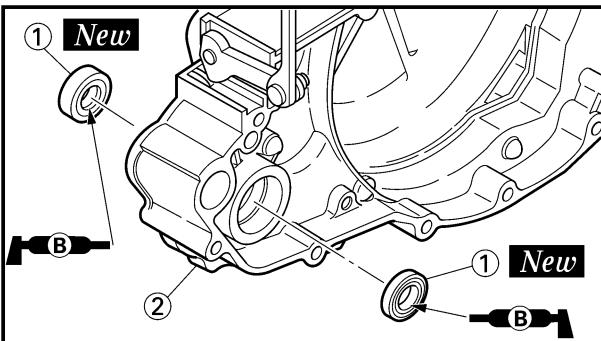
1. Inspect:
  - Bearing (1)
  - Rotate inner race with a finger.
  - Rough spot/Seizure → Replace.



EC444400

**Oil seal**

1. Inspect:
  - Oil seal (1)
  - Wear/Damage → Replace.



EC4G5000

**ASSEMBLY AND INSTALLATION**

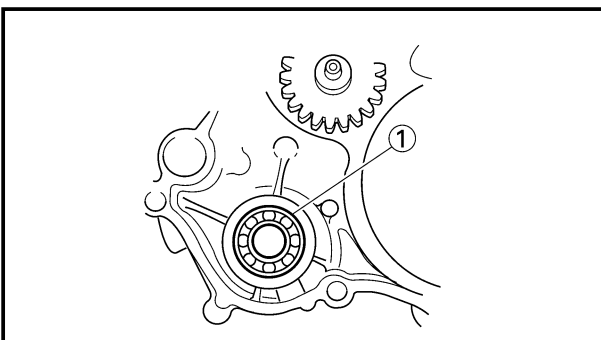
EC4G5111

**Oil seal**

1. Install:
  - Oil seal (1) **New**

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

- Apply the lithium soap base grease on the oil seal lip.
- Install the oil seal with its manufacture's marks or numbers facing the crankcase cover (right) (2).

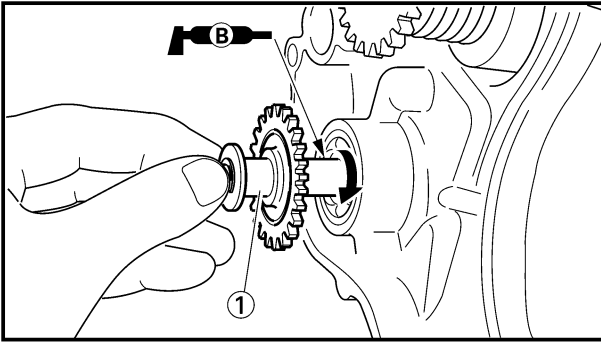


2. Install:
  - Bearing (1)

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

Install the bearing by pressing its outer race parallel.





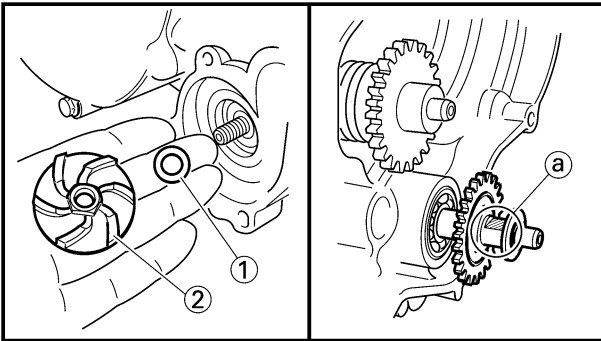
EC4G5220

**Impeller shaft**

1. Install:
  - Impeller shaft ①

**NOTE:**

- Take care so that the oil seal lip is not damaged or the spring does not slip off its position.
- When installing the impeller shaft, apply the lithium soap base grease on the oil seal lip and impeller shaft. And install the shaft while turning it.



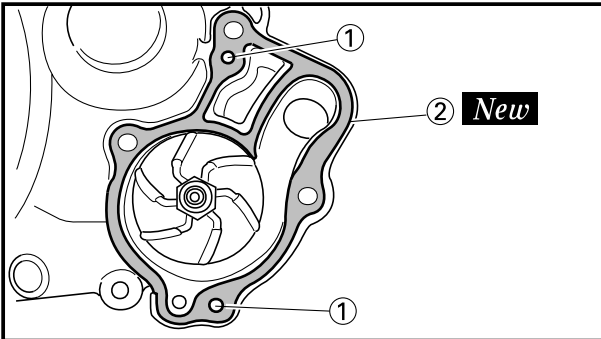
2. Install:

- Plain washer ①
- Impeller ②

**14 Nm (1.4 m•kg, 10 ft•lb)**

**NOTE:**

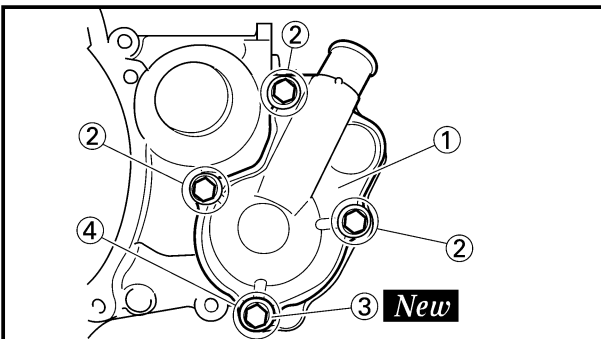
Hold the impeller shaft on its width across the flats ① with spanners, etc. and install the impeller.



3. Install:

- Dowel pin ①
- Gasket (water pump housing cover) ②

**New**



4. Install:

- Water pump housing cover ①
- Bolt (water pump housing cover) ②

**10 Nm (1.0 m•kg, 7.2 ft•lb)**

- Copper washer (coolant drain bolt) ③

**New**

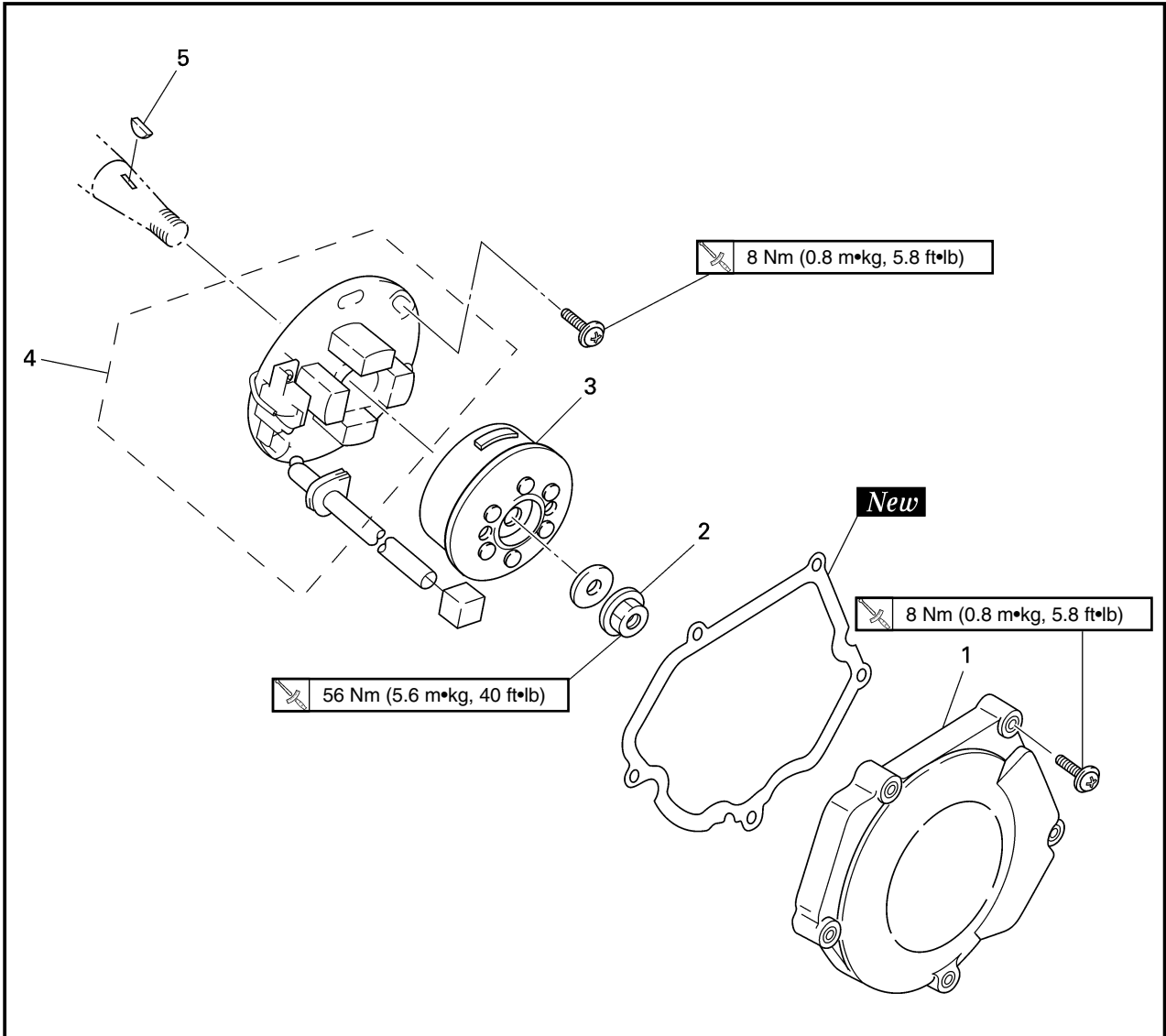
- Coolant drain bolt ④

**10 Nm (1.0 m•kg, 7.2 ft•lb)**



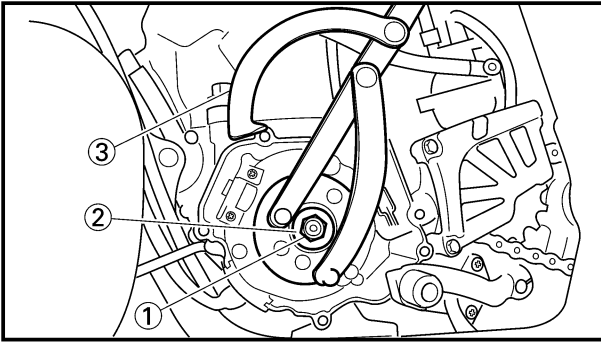
EC4L0000

CDI MAGNETO



Extent of removal: ① CDI magneto removal

Extent of removal	Order	Part name	Q'ty	Remarks
Preparation for removal		<b>CDI MAGNETO REMOVAL</b>		
		Seat and fuel tank		Refer to "SEAT, FUEL TANK AND SIDE COVERS" section.
		Bolt [radiator (left)] Disconnect the CDI magneto lead.		Refer to "RADIATOR" section.
<div style="text-align: center;">             ↑              ①              ↓           </div>	1	Crankcase cover (left)	1	Use special tool. Refer to "REMOVAL POINTS".
	2	Nut (rotor)	1	
	3	Rotor	1	
	4	Stator	1	
	5	Woodruff key	1	



EC4L3000

**REMOVAL POINTS**

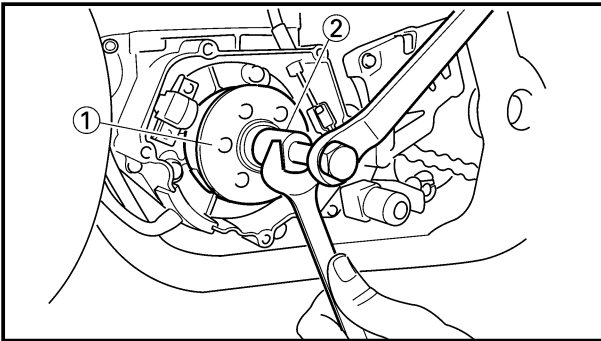
EC4L3102

**Rotor**

1. Remove:
  - Nut (rotor) ①
  - Plain washer ②
 Use the rotor holding tool ③.



**Rotor holding tool:**  
YU-1235/90890-01235



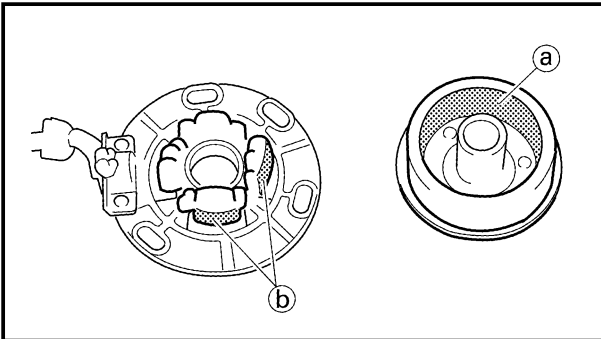
2. Remove:
  - Rotor ①
 Use the flywheel puller ②.



**Flywheel puller:**  
YM-1189/90890-01189

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

When installing the flywheel puller, turn it counterclockwise.



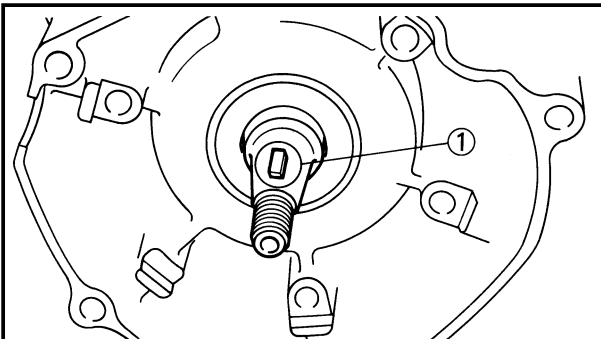
EC4L4000

**INSPECTION**

EC4L4101

**CDI magneto**

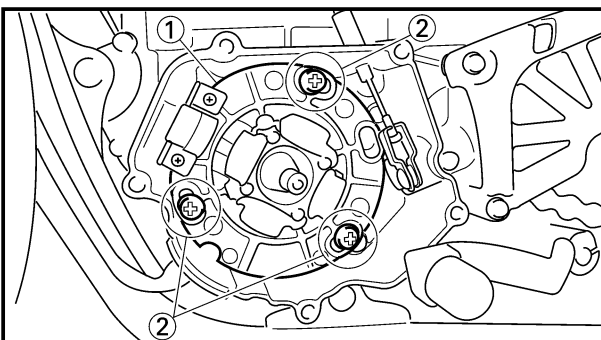
1. Inspect:
  - Rotor inner surface ①
  - Stator outer surface ②
 Damage → Inspect the crankshaft runout and crankshaft bearing.  
 If necessary, replace CDI magneto and/or stator.



EC4L4200

**Woodruff key**

1. Inspect:
  - Woodruff key ①
 Damage → Replace.



EC4L5000

**ASSEMBLY AND INSTALLATION**

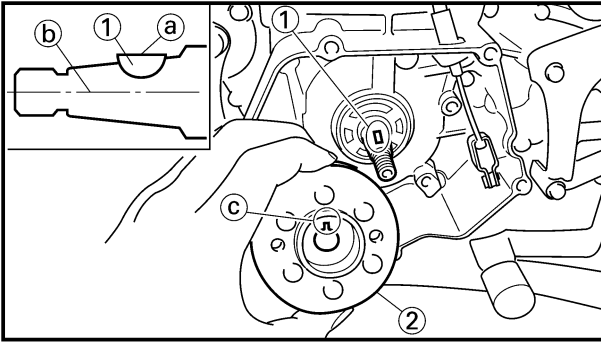
EC4L5172

**CDI magneto**

1. Install:
  - Stator ①
  - Screw (stator) ②

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

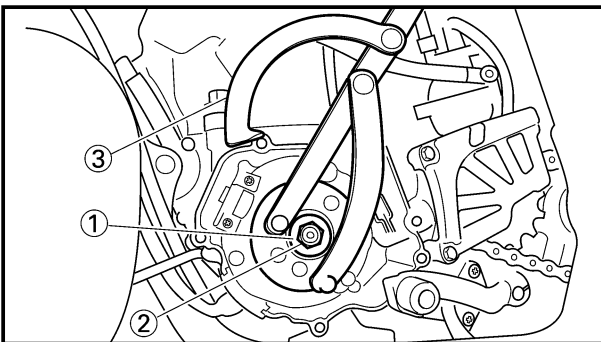
Temporarily tighten the screw (stator) at this point.



2. Install:
- Woodruff key ①
  - Rotor ②

**NOTE:**

- Clean the tapered portions of the crankshaft and rotor.
- When installing the woodruff key, make sure that its flat surface ① is in parallel with the crankshaft center line ②.
- When installing the rotor, align the keyway ③ of the rotor with the woodruff key.



3. Install:
- Plain washer ①
  - Nut (rotor) ②

**56 Nm (5.6 m•kg, 40 ft•lb)**

Use the rotor holding tool ③.



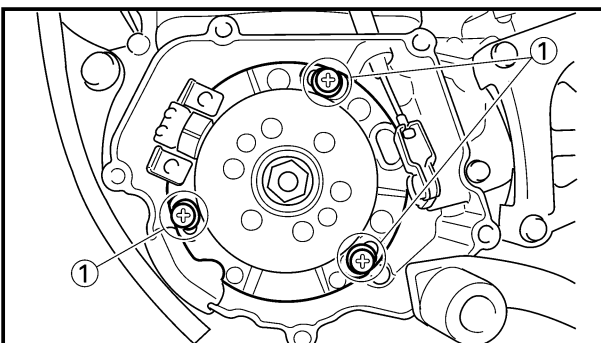
**Rotor holding tool:  
YU-1235/90890-01235**

4. Adjust:
- Ignition timing



**Ignition timing (B.T.D.C.):  
0.18 mm (0.007 in)**

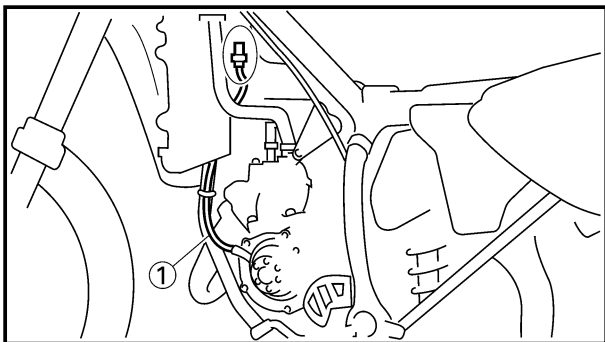
Refer to “IGNITION TIMING CHECK” section in the CHAPTER 3.



5. Tighten:
- Screw (stator) ①

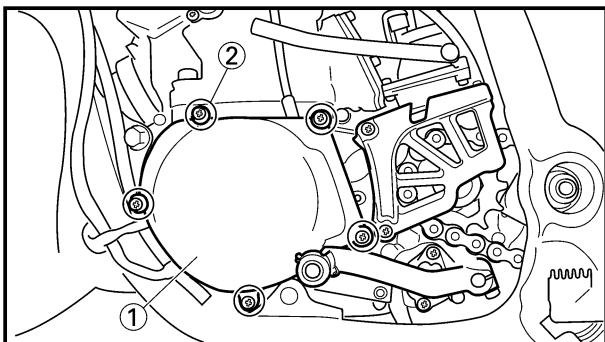
**8 Nm (0.8 m•kg, 5.8 ft•lb)**

6. Check:
- Ignition timing
  - Re-check the ignition timing.




7. Connect:

- CDI magneto lead ①  
Refer to “CABLE ROUTING DIAGRAM” section in the CHAPTER 2.



8. Install:

- Gasket [crankcase cover (left)] **New**
- Crankcase cover (left) ①
- Screw [crankcase cover (left)] ②

 **8 Nm (0.8 m•kg, 5.8 ft•lb)**

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

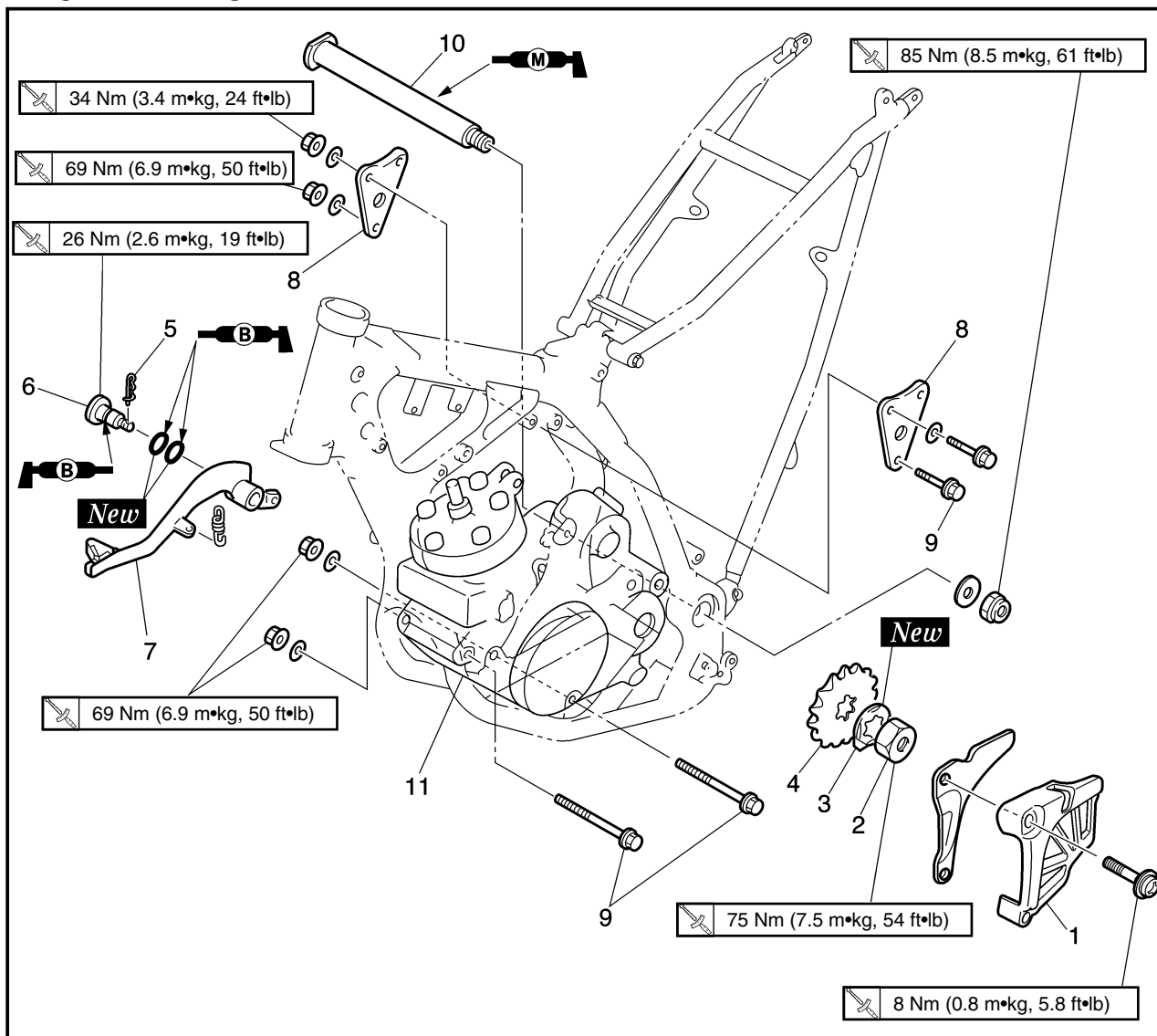
Tighten the screws in stage, using a crisscross pattern.

\_\_\_\_\_



EC4M0000

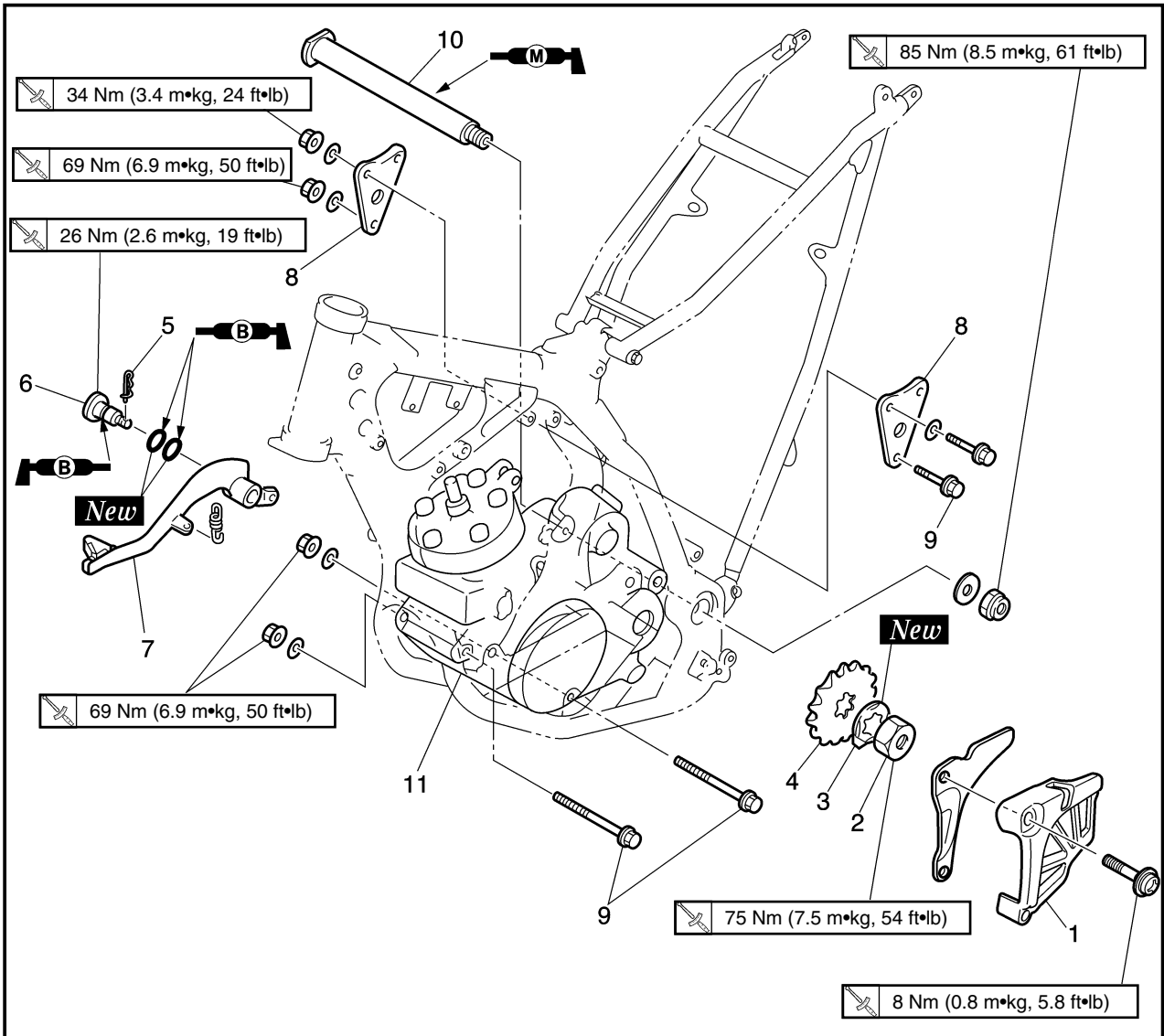
## ENGINE REMOVAL



Extent of removal	Order	Part name	Q'ty	Remarks
Preparation for removal		<b>ENGINE REMOVAL</b> Hold the machine by placing the suitable stand under the engine.		<b>▲WARNING</b> Support the machine securely so there is no danger of it falling over.
		Seat and fuel tank Carburetor and carburetor joint Exhaust pipe and silencer Exhaust pipe stay (rear) Clutch cable Radiator Spark plug Disconnect the CDI magneto lead. CDI unit Reservoir tank (rear brake)		Refer to "SEAT, FUEL TANK AND SIDE COVERS" section. Refer to "CARBURETOR AND REED VALVE" section. Refer to "EXHAUST PIPE AND SILENCER" section. Disconnect at engine side. Refer to "RADIATOR" section.  Refer to "FRONT BRAKE AND REAR BRAKE" section in the CHAPTER 5.

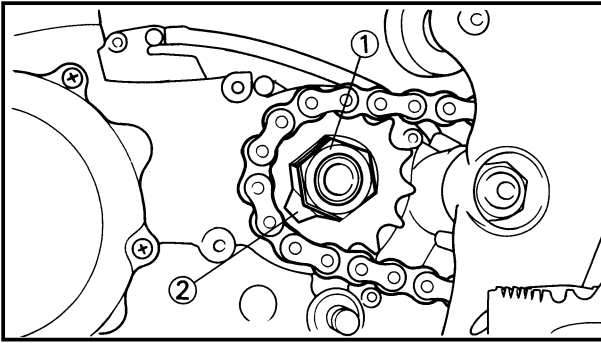
# ENGINE REMOVAL

ENG



Extent of removal: ① Engine removal

Extent of removal	Order	Part name	Q'ty	Remarks
↑ ① ↓	1	Chain cover	1	} Refer to "REMOVAL POINTS".
	2	Nut (drive sprocket)	1	
	3	Lock washer	1	
	4	Drive sprocket	1	
	5	Clip	1	
	6	Bolt (brake pedal)	1	Remove completely. Refer to "REMOVAL POINTS".
	7	Brake pedal	1	
	8	Engine bracket	2	
	9	Engine mounting bolt	3	
	10	Pivot shaft	1	
	11	Engine	1	



EC4M3000

### REMOVAL POINTS

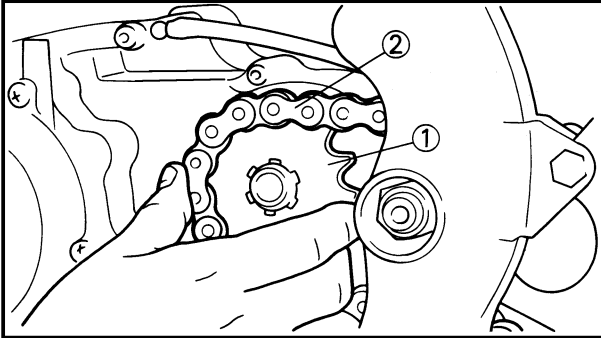
EC4F3100

#### Drive sprocket

- Remove:
  - Nut (drive sprocket) ①
  - Lock washer ②

#### NOTE:

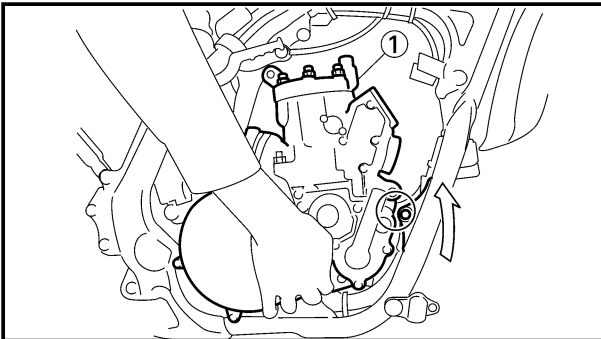
- Straighten the lock washer tab.
- Loosen the nut while applying the rear brake.



- Remove:
  - Drive sprocket ①
  - Drive chain ②

#### NOTE:

Remove the drive sprocket together with the drive chain.



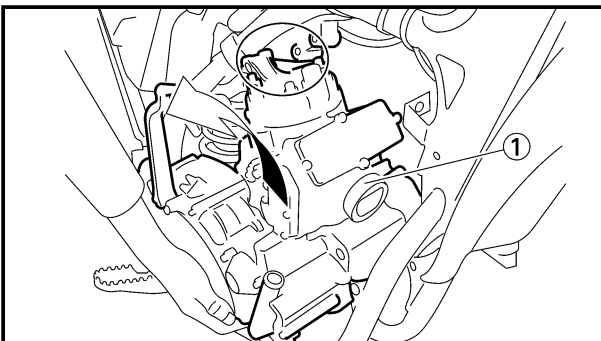
EC4M3340

#### Engine removal

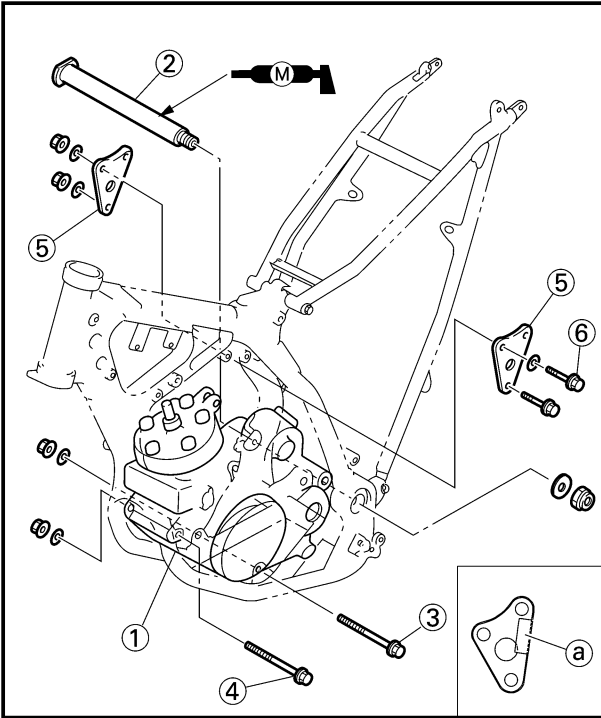
#### NOTE:

Make sure that the couplers, hoses and cables are disconnected.

- Lift the engine ① up to the point where the engine's mounting front does not contact the bracket on the frame.
- Remove the engine ① aslant and upward while inclining it toward the kick crank side so that the engine's mounting top does not contact the bracket on the frame.







EC4M5000

## ASSEMBLY AND INSTALLATION

EC4M5124

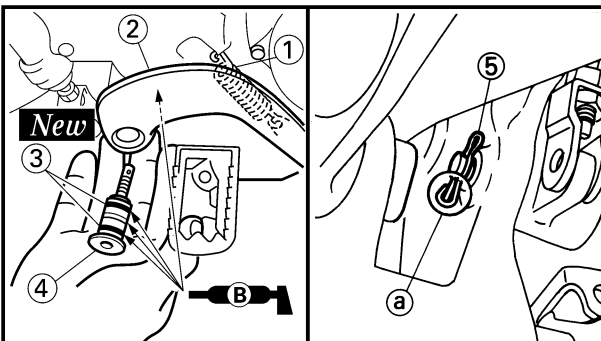
### Engine installation

#### 1. Install:

- Engine ①  
Install the engine from right side.
- Pivot shaft ②  
**85 Nm (8.5 m•kg, 61 ft•lb)**
- Engine mounting bolt (lower) ③  
**69 Nm (6.9 m•kg, 50 ft•lb)**
- Engine mounting bolt (front) ④  
**69 Nm (6.9 m•kg, 50 ft•lb)**
- Engine bracket ⑤
- Bolt (engine bracket) ⑥  
**34 Nm (3.4 m•kg, 24 ft•lb)**
- Engine mounting bolt (upper) ⑦  
**69 Nm (6.9 m•kg, 50 ft•lb)**

### NOTE:

- Apply the molybdenum disulfide grease on the pivot shaft.
- Install the engine bracket with its damper (a) on the right side of the body.



EC4M5211

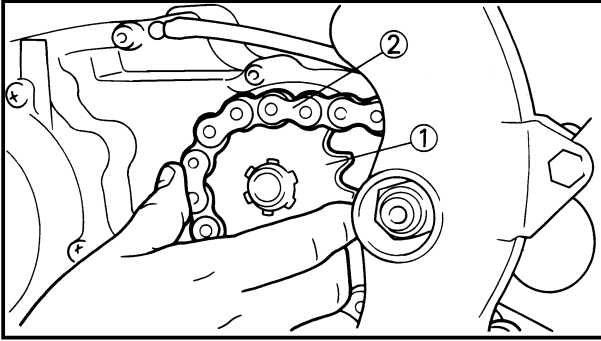
### Brake pedal

#### 1. Install:

- Spring ①
- Brake pedal ②
- O-ring ③ **New**
- Bolt (brake pedal) ④  
**26 Nm (2.6 m•kg, 19 ft•lb)**
- Clip ⑤

### NOTE:

- Apply the lithium soap base grease on the bolt, O-rings and brake pedal bracket.
- Install the clip with its stopper portion (a) facing inward.



EC4M5341

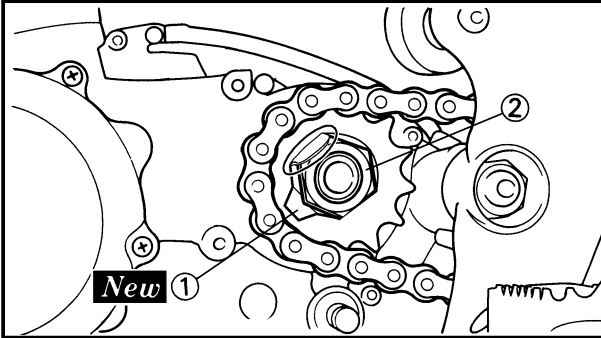
### Drive sprocket

1. Install:

- Drive sprocket ①
- Drive chain ②

#### NOTE:

Install the drive sprocket together with the drive chain.



2. Install:

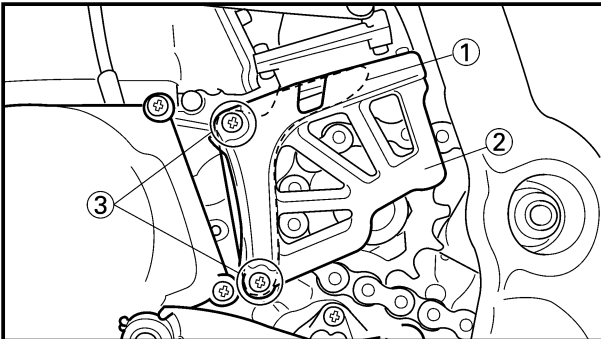
- Lock washer ① **New**
- Nut (drive sprocket) ②

**75 Nm (7.5 m•kg, 54 ft•lb)**

#### NOTE:

Tighten the nut while applying the rear brake.

3. Bend the lock washer tab to lock the nut.



4. Install:

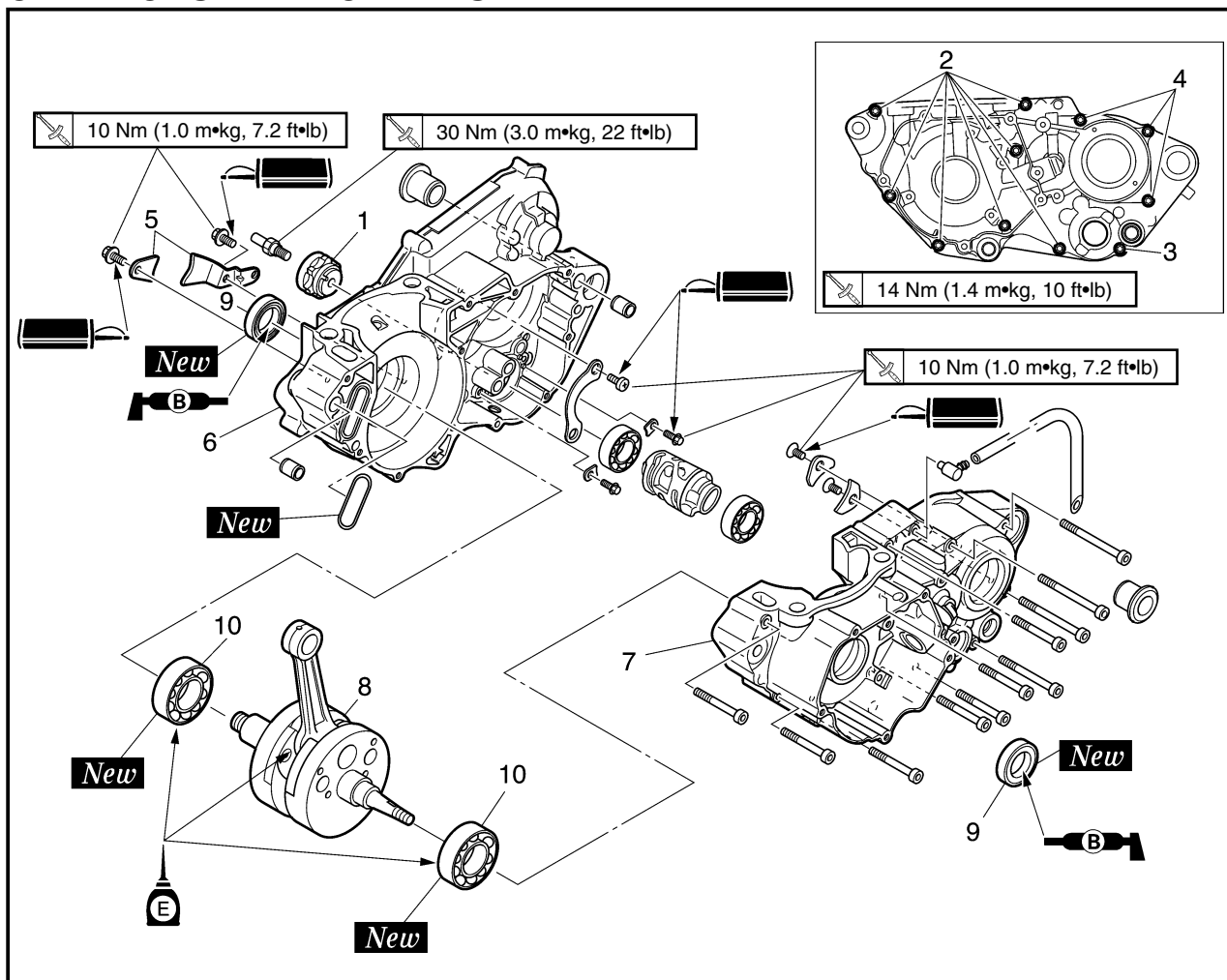
- Chain guide ①
- Chain cover ②
- Screw (chain cover) ③

**8 Nm (0.8 m•kg, 5.8 ft•lb)**



EC4N0000

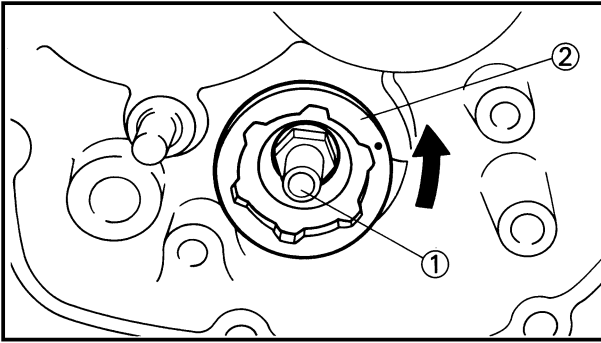
## CRANKCASE AND CRANKSHAFT



Extent of removal:

- ① Crankcase separation
- ② Crankshaft removal
- ③ Crankshaft bearing removal

Extent of removal	Order	Part name	Q'ty	Remarks
Preparation for removal	<b>CRANKCASE AND CRANKSHAFT REMOVAL</b>			
			Engine	Refer to "ENGINE REMOVAL" section. Refer to "CYLINDER HEAD, CYLINDER AND PISTON" section. Refer to "KICK AXLE, SHIFT SHAFT AND PRIMARY DRIVE GEAR" section. Refer to "CDI MAGNETO" section.
			Piston	
			Primary drive gear	
			Kick idle gear	
			Stopper lever	
		Rotor and stator		
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">↑ ① ↓</div> <div style="margin-bottom: 10px;">↑ ② ↓</div> <div style="margin-bottom: 10px;">↑ ③ ↓</div> </div>	1	Segment	1	Refer to "REMOVAL POINTS".  Use special tool. Refer to "REMOVAL POINTS". Use special tool. Refer to "REMOVAL POINTS".  Refer to "REMOVAL POINTS".
	2	Bolt [L=50 mm (1.97 in)]	7	
	3	Bolt [L=60 mm (2.36 in)]	1	
	4	Bolt [L=70 mm (2.76 in)]	3	
	5	Holder	2	
	6	Crankcase (right)	1	
	7	Crankcase (left)	1	
	8	Crankshaft	1	
	9	Oil seal	2	
	10	Bearing	2	



EC4N3000

## REMOVAL POINTS

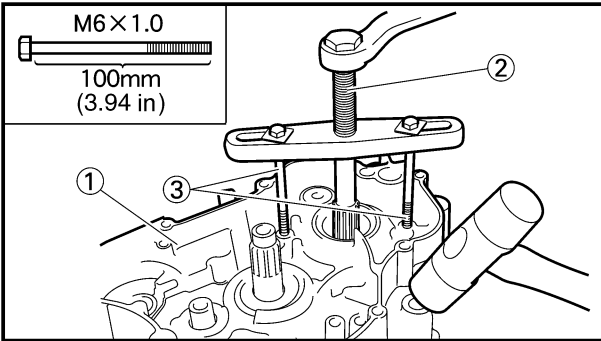
EC4N3100

### Segment

- Remove:
  - Bolt (segment) ①
  - Segment ②

### NOTE:

Turn the segment counterclockwise until it stops and loosen the bolt.



EC4N3212

### Crankcase

- Remove:
  - Crankcase (right) ①
 Use the crankcase separating tool ②.



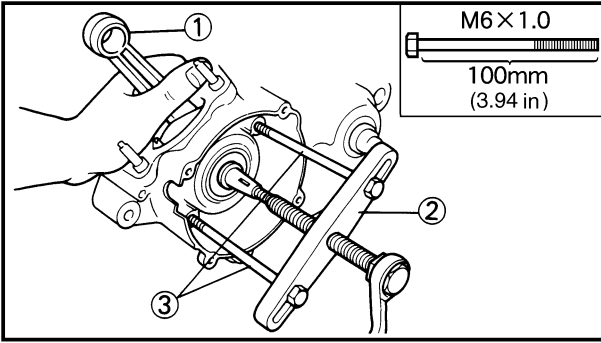
**Crankcase separating tool:**  
YU-1135-A/90890-01135

### NOTE:

- Make appropriate bolts ③ as shown available by yourself and attach the tool with them.
- Fully tighten the tool holding bolts, but make sure the tool body is parallel with the case. If necessary, one screw may be backed out slightly to level tool body.
- As pressure is applied, alternately tap on the front engine mounting boss and transmission shafts.

### CAUTION:

Use soft hammer to tap on the case half. Tap only on reinforced portions of case. Do not tap on gasket mating surface. Work slowly and carefully. Make sure the case halves separate evenly. If one end “hangs up”, take pressure off the push screw, realign, and start over. If the cases do not separate, check for a remaining case screw or fitting. Do not force.



EC4N3302

## Crankshaft

- Remove:
  - Crankshaft ①
 Use the crankcase separating tool ②.



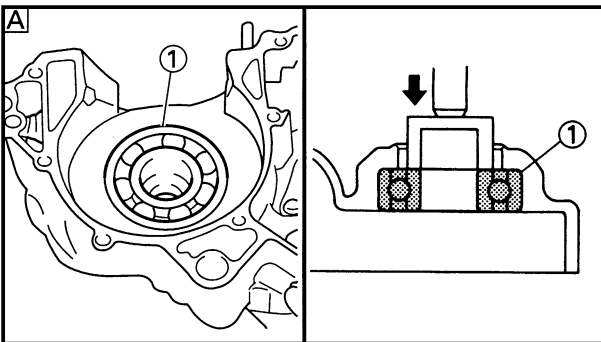
**Crankcase separating tool:**  
YU-1135-A/90890-01135

### NOTE:

Make appropriate bolts ③ as shown available by yourself and attach the tool with them.

### CAUTION:

**Do not use a hammer to drive out the crankshaft.**



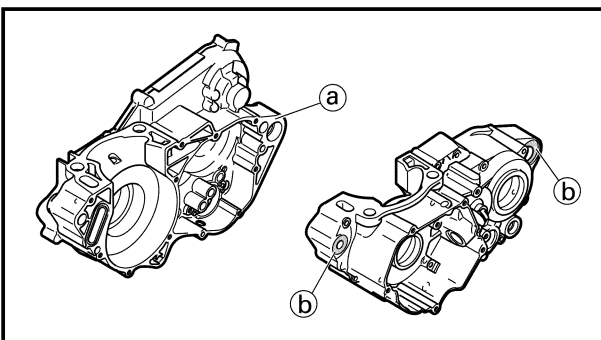
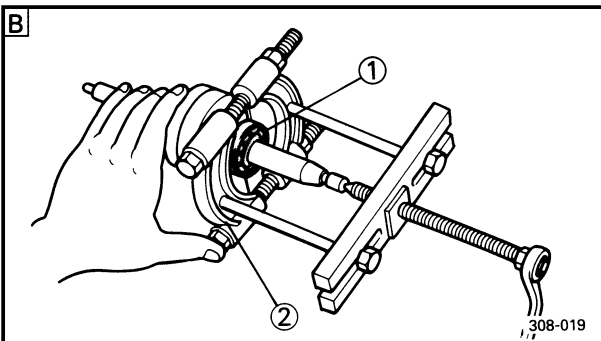
EC4N3401

## Crankshaft bearing

- Remove:
  - Bearing ①

### NOTE:

- Remove the bearing from the crankcase by pressing its inner race as shown in [A].
- If the bearing is removed together with the crankshaft, remove the bearing using a general bearing puller ② as shown in [B].
- Do not use the removed bearing.



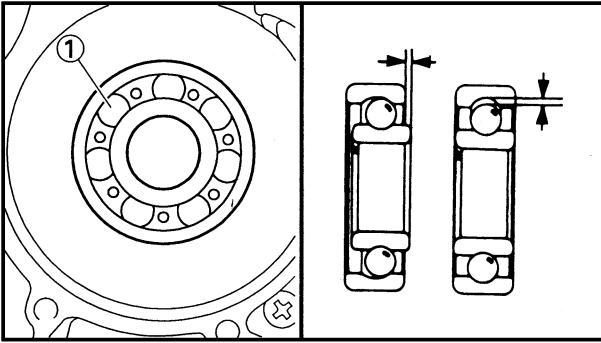
EC4N4000

## INSPECTION

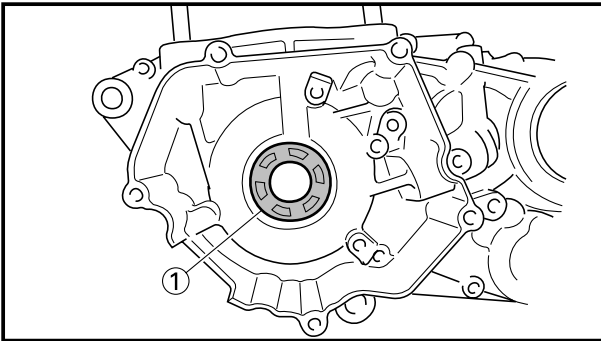
EC4N4101

## Crankcase

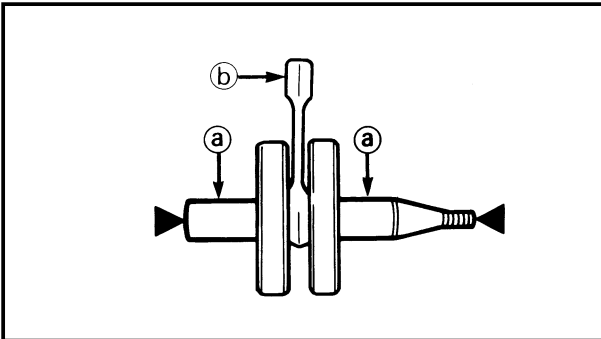
- Inspect:
  - Contacting surface ①  
Scratches → Replace.
  - Engine mounting boss ②, crankcase  
Cracks/Damage → Replace.



- Inspect:
  - Bearings ①  
Rotate inner race with a finger.  
Rough spot/Seizure → Replace.



- Inspect:
  - Oil seal ①  
Damage → Replace.



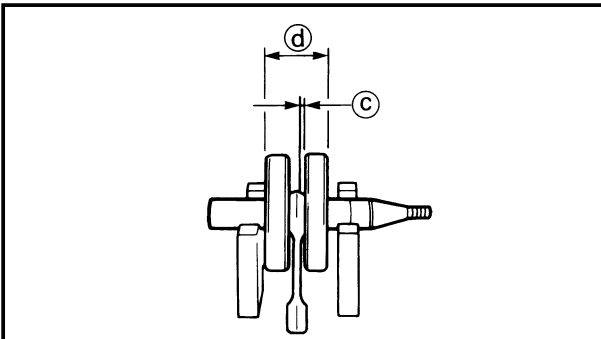
EC4N4202

### Crankshaft

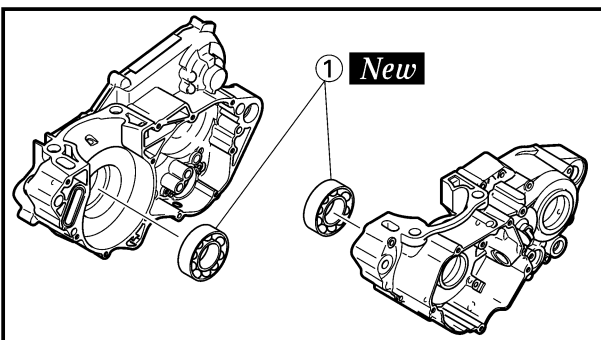
- Measure:
  - Runout limit ①
  - Small end free play limit ②
  - Connecting rod big end side clearance ③
  - Crank width ④

Out of specification → Replace.  
Use the dial gauge and a thickness gauge.

	<b>Dial gauge:</b> YU-3097/90890-01252
--	---



	Standard	<Limit>
<b>Runout limit:</b>	0.03 mm (0.0012 in)	0.05 mm (0.0020 in)
<b>Small end free play:</b>	0.4~1.0 mm (0.016~0.039 in)	2.0 mm (0.08 in)
<b>Side clearance:</b>	0.25~0.75 mm (0.010~0.030in)	—
<b>Crank width:</b>	59.95~60.00 mm (2.360~2.362 in)	—



EC4N5000

### ASSEMBLY AND INSTALLATION

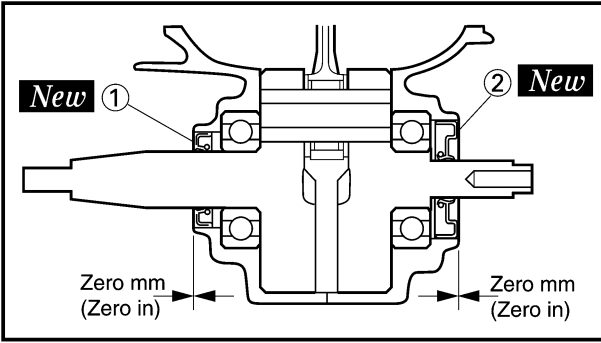
EC4N5300

### Crankshaft bearing

- Install:
  - Bearing ① **New**  
To crankcase (left and right).

### NOTE:

Install the bearing by pressing its outer race parallel.



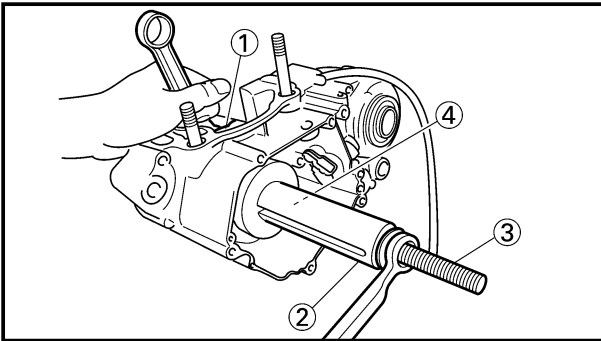
EC4N5102

### Oil seal

1. Install:
  - Oil seal (left) ① **New**
  - Oil seal (right) ② **New**

### NOTE:

- Apply the lithium soap base grease on the oil seal lip.
- Install the oil seal with its manufacture's marks or numbers facing outward.



EC4N5283

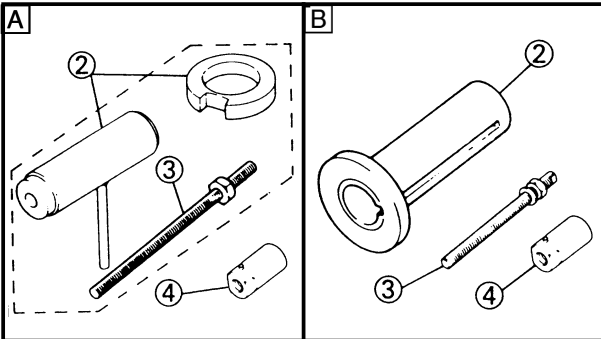
### Crankshaft

1. Install:
  - Crankshaft ①
  - Use the crankshaft installing tool ②, ③, ④.



### Crankshaft installing tool:

**Pot ②:** YU-90050/90890-01274  
**Bolt ③:** YU-90050/90890-01275  
**Adapter ④:** YU-90063/90890-01278



**A** For USA and CDN

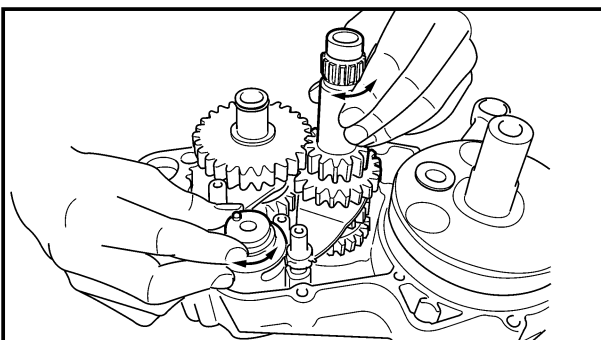
**B** Except for USA and CDN

### NOTE:

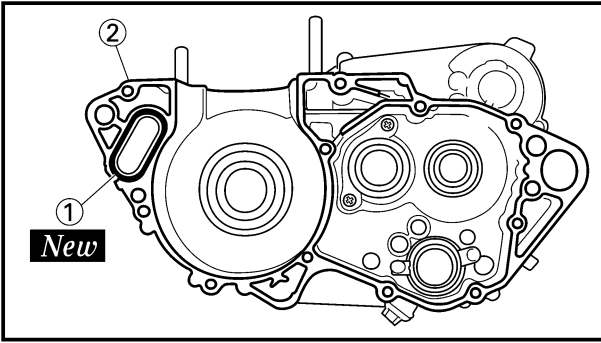
- Hold the connecting rod at top dead center with one hand while turning the nut of the installing tool with the other. Operate the installing tool until the crankshaft bottoms against the bearing.
- Before installing the crankshaft, clean the contacting surface of crankcase.
- Apply the lithium soap base grease on the oil seal lip.

### CAUTION:

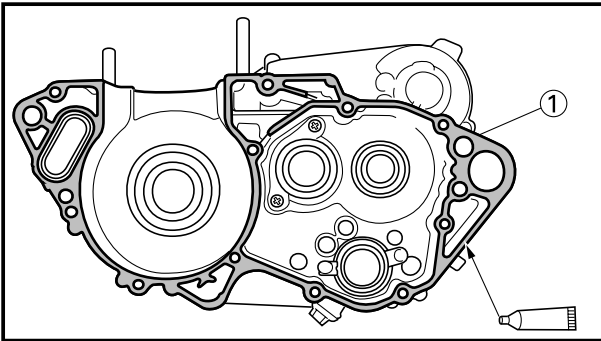
**Do not use a hammer to drive in the crankshaft.**



2. Check:
  - Shifter operation
  - Transmission operation
  - Unsmooth operation → Repair.



3. Install:
- O-ring ① **New**  
To crankcase (right) ②.



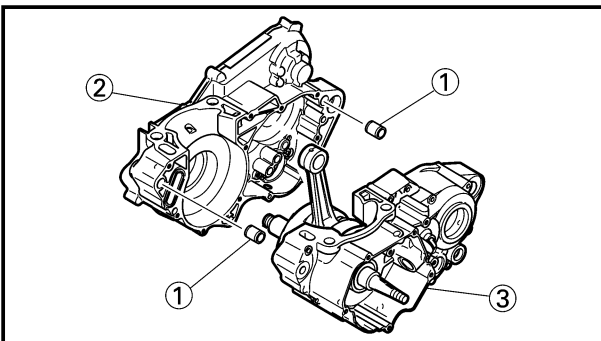
4. Apply:
- Sealant  
On the crankcase (right) ①.



**Quick gasket®:**  
**ACC-QUICK-GS-KT**  
**Yamaha bond No. 1215:**  
**90890-85505**

**NOTE:**

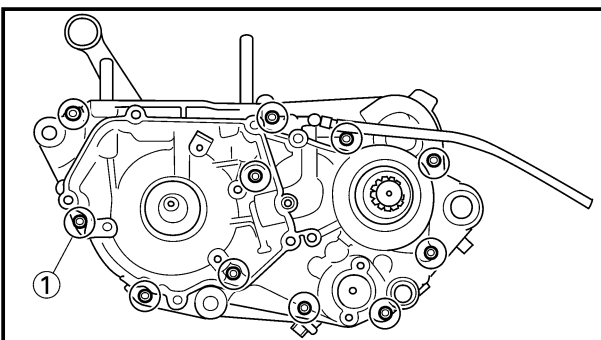
Clean the contacting surface of crankcase (left and right) before applying the sealant.



5. Install:
- Dowel pin ①
  - Crankcase (right) ②  
To crankcase (left) ③.

**NOTE:**

- Fit the crankcase (right) onto the crankcase (left). Tap lightly on the case with soft hammer.
- When installing the crankcase, the connecting rod should be positioned at TDC (top dead center).



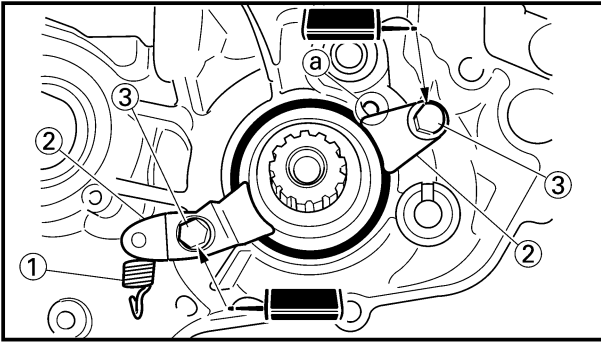
6. Install:
- Bolt (crankcase) ①

**14 Nm (1.4 m•kg, 10 ft•lb)**

**NOTE:**

Tighten the crankcase tightening bolts in stage, using a crisscross pattern.





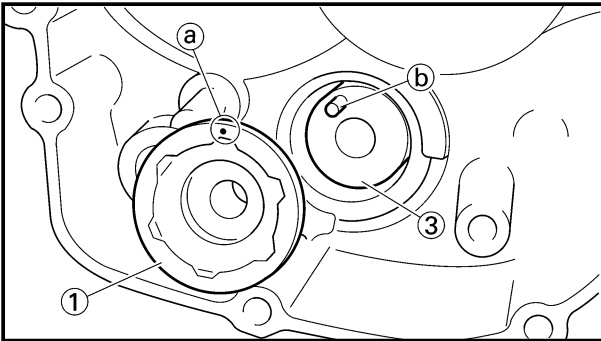
7. Install:

- Tension spring ①
- Holder ②
- Bolt (holder) ③

10 Nm (1.0 m•kg, 7.2 ft•lb)

**NOTE:**

Install the holder so that it contacts the projection (a) on the crankcase (right).



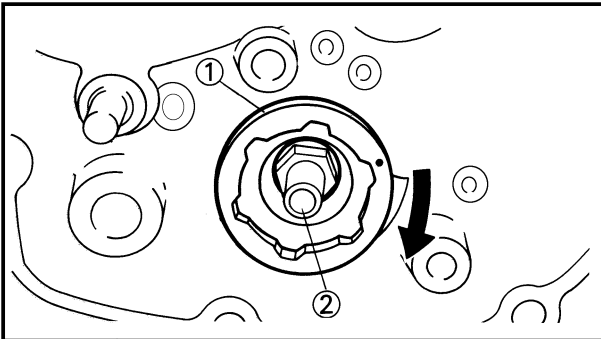
8. Tighten:

- Segment ①
- Bolt (segment) ②

30 Nm (3.0 m•kg, 22 ft•lb)

**NOTE:**

- When installing the segment onto the shift cam ③, align the punch mark (a) with the dowel pin (b).
- Turn the segment clockwise until it stops and tighten the bolt.



9. Remove:

- Sealant  
Forced out on the cylinder mating surface.

10. Apply:

- Engine oil  
To the crank pin, bearing, oil delivery hole and connecting rod big end washer.

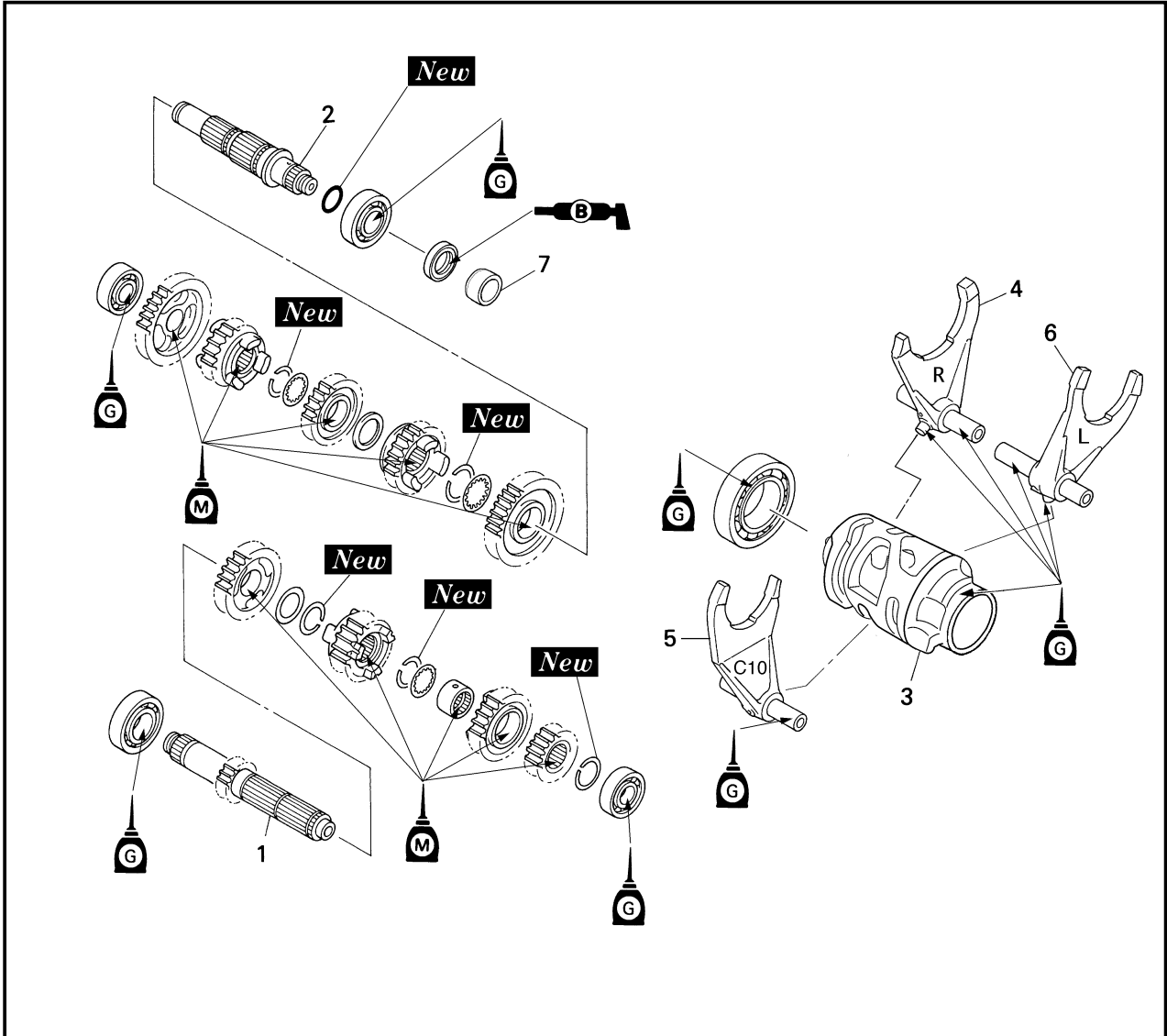
11. Check:

- Crankshaft and transmission operation  
Unsmooth operation → Repair.



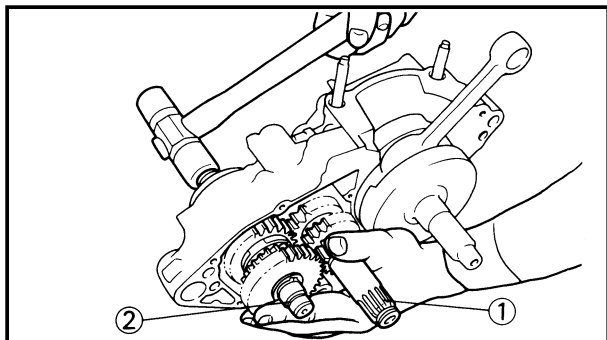
EC4H0000

## TRANSMISSION, SHIFT CAM AND SHIFT FORK



Extent of removal: ① Main axle, drive axle, shift cam and shift fork removal

Extent of removal	Order	Part name	Q'ty	Remarks
Preparation for removal		<b>TRANSMISSION, SHIFT CAM AND SHIFT FORK REMOVAL</b> Engine Separate the crankcase.		Refer to "ENGINE REMOVAL" section. Refer to "CRANKCASE AND CRANK SHAFT" section.
↑ ① ↓	1	Main axle	1	} Refer to "REMOVAL POINTS".
	2	Drive axle	1	
	3	Shift cam	1	
	4	Shift fork 3	1	
	5	Shift fork 2	1	
	6	Shift fork 1	1	
	7	Spacer	1	



EC4H3000

## REMOVAL POINTS

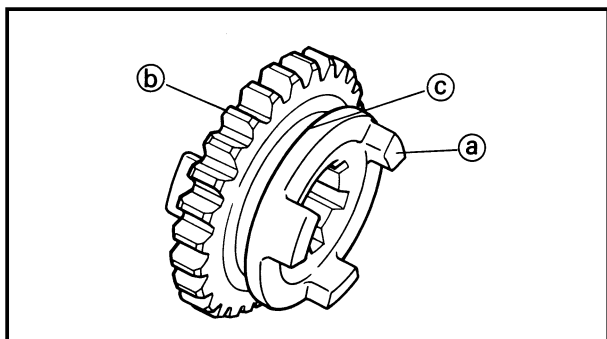
EC4H3230

### Transmission

1. Remove:
  - Main axle ①
  - Drive axle ②
  - Shift cam
  - Shift fork 3
  - Shift fork 2
  - Shift fork 1

### NOTE:

- Remove assembly carefully. Note the position of each part. Pay particular attention to the location and direction of shift forks.
- Remove the main axle, drive axle, shift cam and shift fork all together by tapping lightly on the transmission drive axle with a soft hammer.



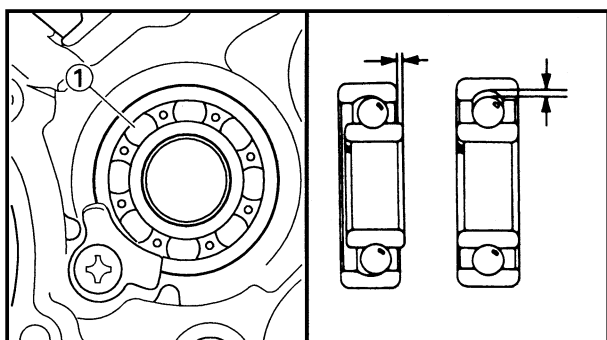
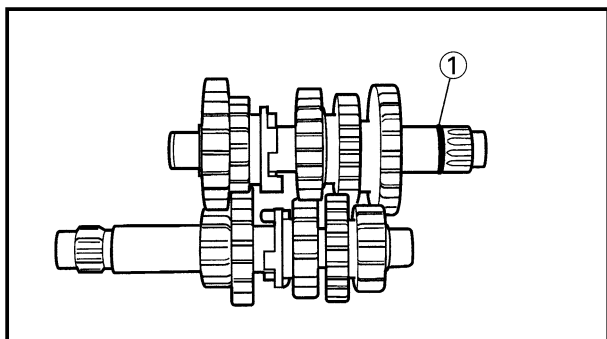
EC4H4000

## INSPECTION

EC4H4230

### Gears

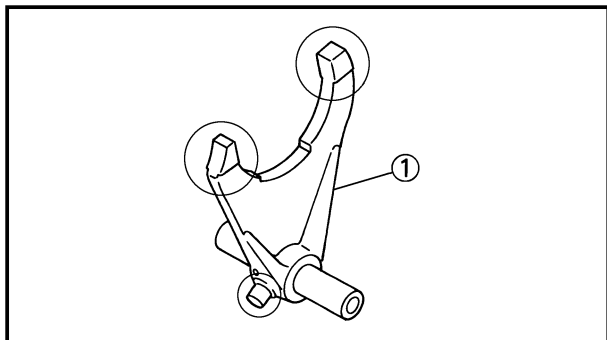
1. Inspect:
  - Matching dog (a)
  - Gear teeth (b)
  - Shift fork groove (c)
 Wear/Damage → Replace.
  
2. Inspect:
  - O-ring ①
 Damage → Replace.
  
3. Check:
  - Gears movement
 Unsmooth movement → Repair or replace.



EC4H4600

### Bearing

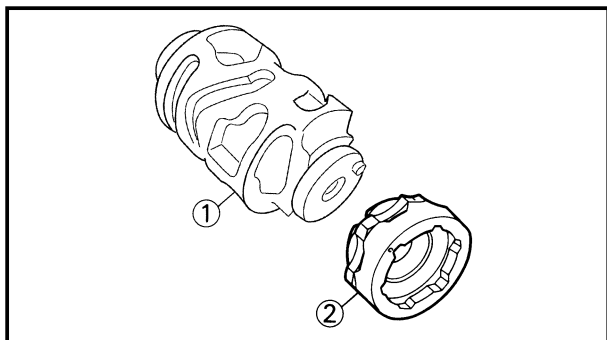
1. Inspect:
  - Bearing ①
 Rotate inner race with a finger.  
 Rough spot/Seizure → Replace.



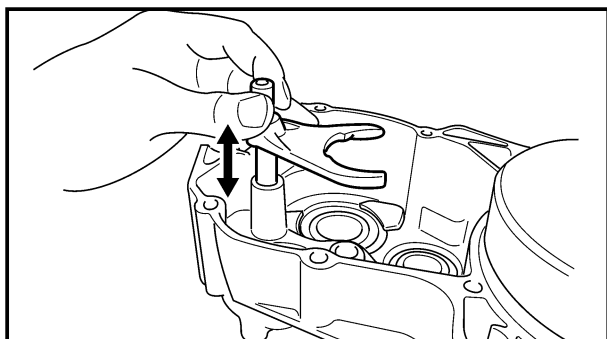
EC4H4810

## Shift fork, shift cam and segment

1. Inspect:
  - Shift fork ①
  - Wear/Damage/Scratches → Replace.



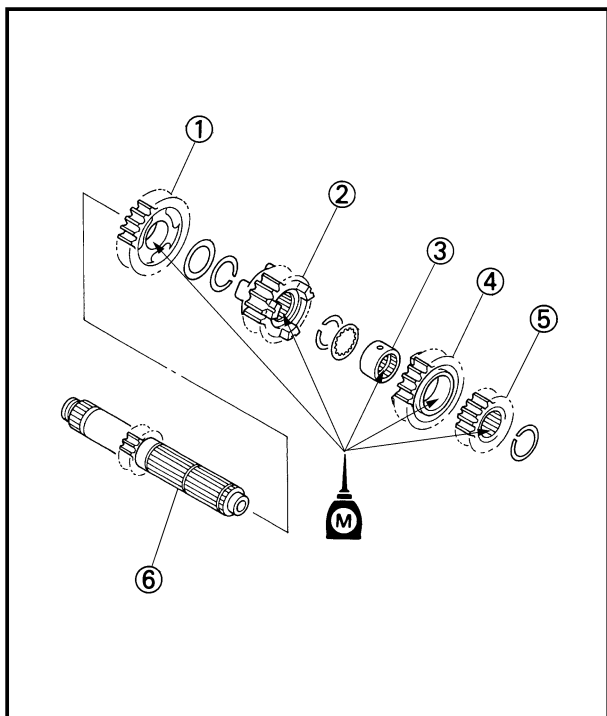
2. Inspect:
  - Shift cam ①
  - Segment ②
  - Wear/Damage → Replace.



3. Check:
  - Shift fork movement
  - Unsmooth operation → Replace shift fork.

### NOTE:

For a malfunctioning shift fork, replace not only the shift fork itself but the two gears each adjacent to the shift fork.



EC4H5000

## ASSEMBLY AND INSTALLATION

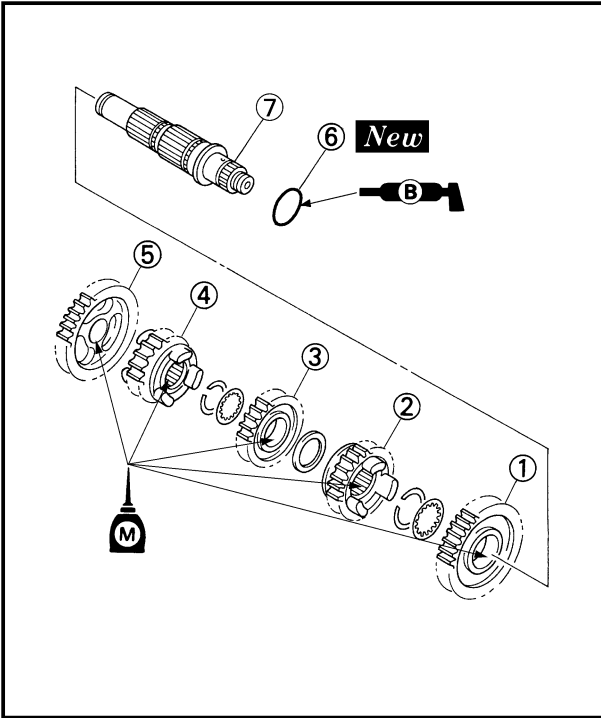
EC4H5242

### Transmission

1. Install:
  - 5th pinion gear (21T) ①
  - 3rd pinion gear (18T) ②
  - Collar ③
  - 4th pinion gear (22T) ④
  - 2nd pinion gear (15T) ⑤
  - To main axle ⑥.

### NOTE:

- Apply the molybdenum disulfide oil on the 4th and 5th pinion gears inner circumference and on the end surface.
- Apply the molybdenum disulfide oil on the 2nd and 3rd pinion gears inner circumference.

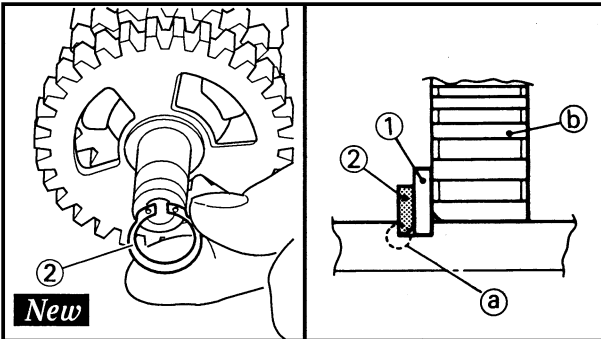


2. Install:

- 2nd wheel gear (23 T) ①
- 4th wheel gear (24 T) ②
- 3rd wheel gear (23 T) ③
- 5th wheel gear (20 T) ④
- 1st wheel gear (27 T) ⑤
- O-ring ⑥ **New**
- To drive axle ⑦.

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

- Apply the molybdenum disulfide oil on the 1st, 2nd and 3rd wheel gears inner circumference and on the end surface.
- Apply the molybdenum disulfide oil on the 4th and 5th wheel gears inner circumference.
- Apply the lithium soap base grease on the O-ring.

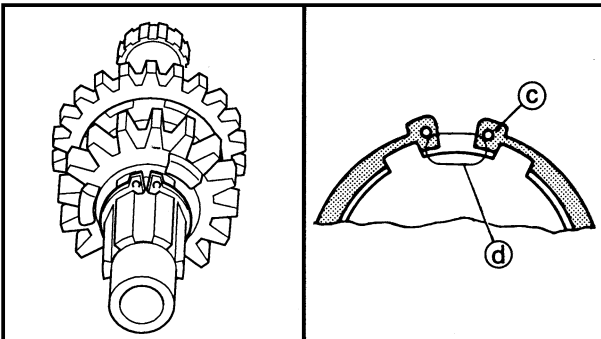


3. Install:

- Plain washer ①
- Circlip ② **New**

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

- Be sure the circlip sharp-edged corner (a) is positioned opposite side to the plain washer and gear (b).
- Be sure the circlip end (c) is positioned at axle spline groove (d).

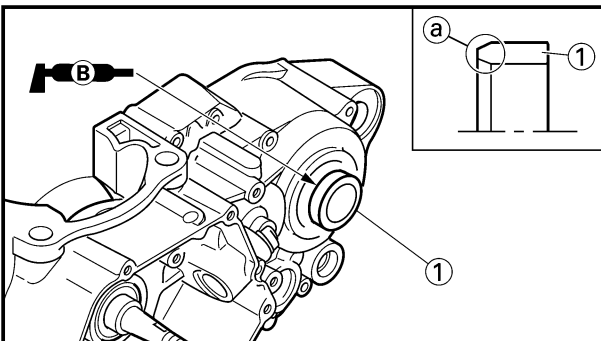


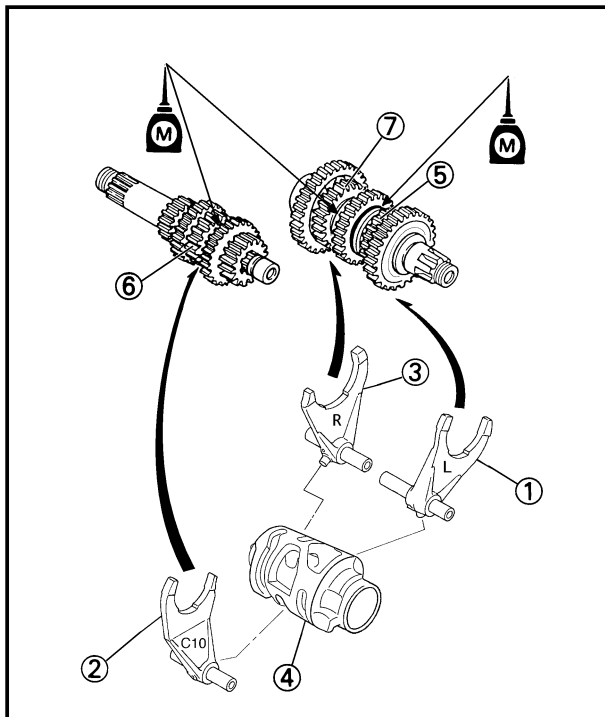
4. Install:

- Spacer ①

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

- Apply the lithium soap base grease on the oil seal lip.
- When installing the spacer into the crankcase, pay careful attention to the crankcase oil seal lip.
- Install the spacer with its chamfered side (a) facing the crankcase.





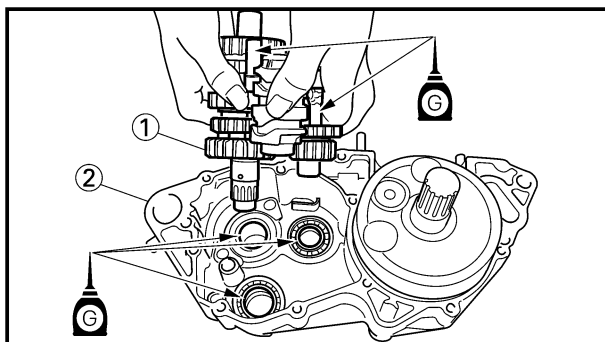
5. Install:

- Shift fork 1 (L) ①
- Shift fork 2 (C10) ②
- Shift fork 3 (R) ③
- Shift cam ④

To main axle and drive axle.

**NOTE:**

- Apply the molybdenum disulfide oil on the shift fork grooves.
- Mesh the shift fork #1 (L) with the 4th wheel gear ⑤ and #3 (R) with the 5th wheel gear ⑦ on the drive axle.
- Mesh the shift fork #2 (C10) with the 3rd pinion gear ⑥ on the main axle.

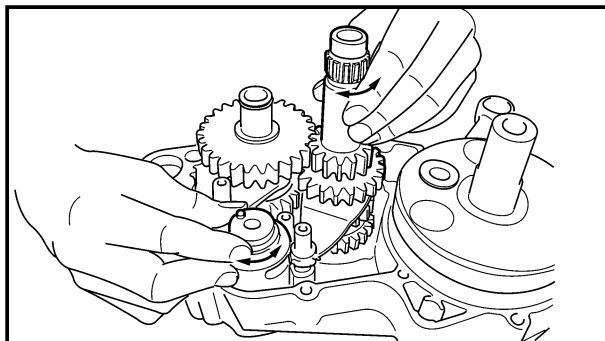


6. Install:

- Transmission assembly ①
- To crankcase (left) ②.

**NOTE:**

Apply the transmission oil on the bearings and guide bars.



7. Check:

- Shifter operation
- Transmission operation
- Unsmooth operation → Repair.

EC500000

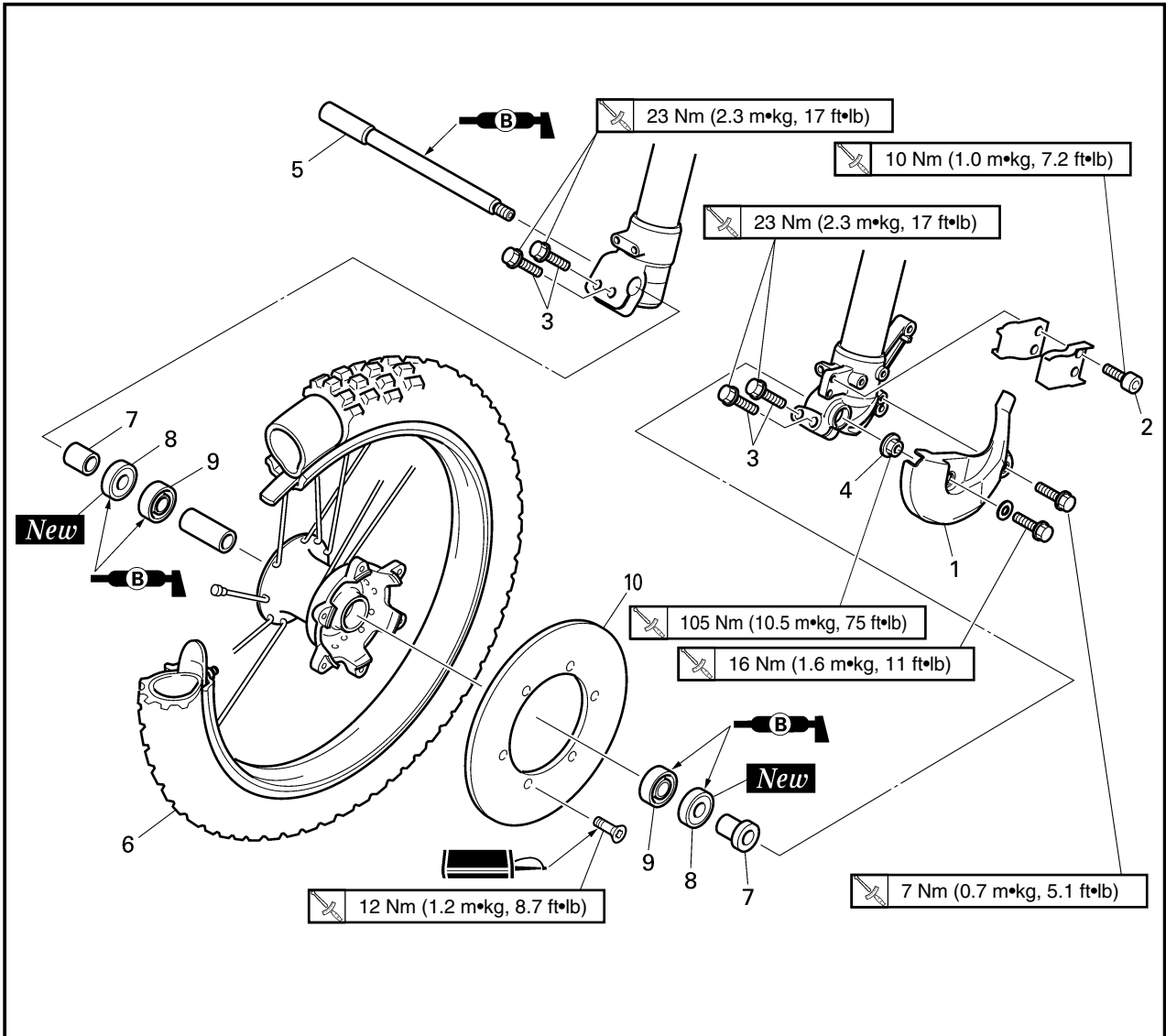
## CHASSIS

EC590000

### FRONT WHEEL AND REAR WHEEL

EC598000

#### FRONT WHEEL

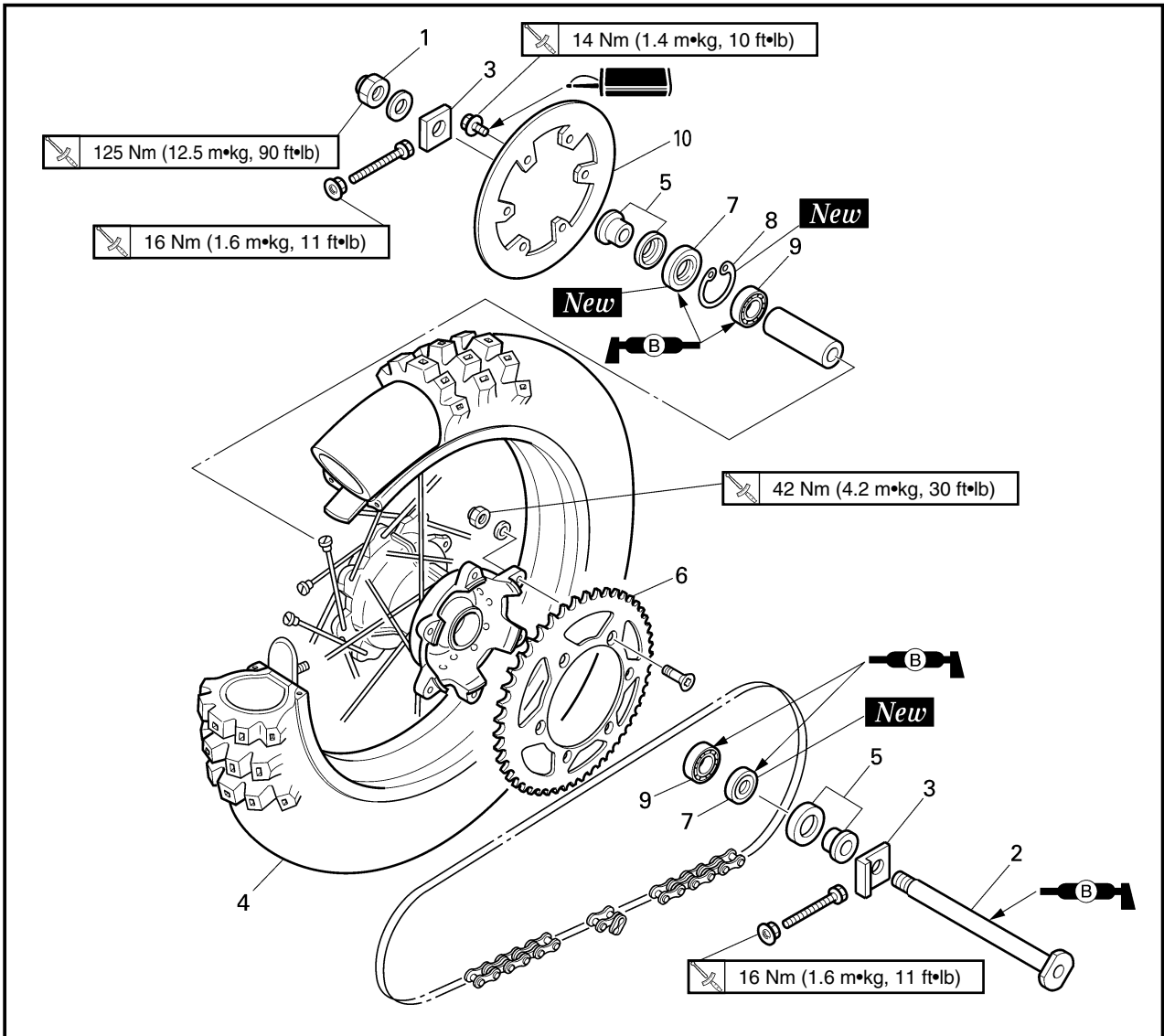


Extent of removal: ① Front wheel removal    ② Wheel bearing removal    ③ Brake disc removal

Extent of removal	Order	Part name	Q'ty	Remarks
Preparation for removal		<b>FRONT WHEEL REMOVAL</b> Hold the machine by placing the suitable stand under the engine.		<b>▲WARNING</b> Support the machine securely so there is no danger of it falling over.
↑ ① ↓	1	Hose cover	1	Only loosening.
↑ ② ↓	2	Bolt (brake hose holder)	2	
↑ ③ ↓	3	Bolt (axle holder)	4	
	4	Nut (front wheel axle)	1	
	5	Front wheel axle	1	Refer to "REMOVAL POINTS".
	6	Front wheel	1	
	7	Collar	2	
	8	Oil seal	2	
	9	Bearing	2	
↑ ③ ↓	10	Brake disc	1	

EC598100

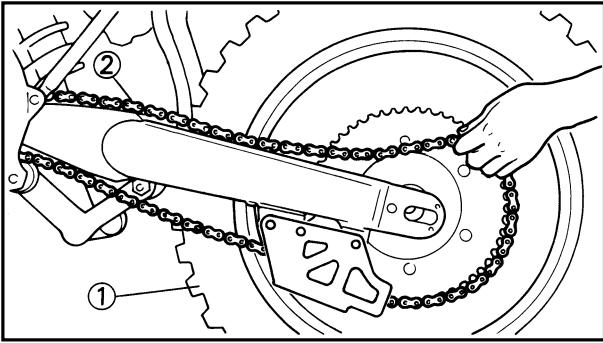
## REAR WHEEL



Extent of removal:    ① Rear wheel removal    ② Wheel bearing removal    ③ Brake disc removal

Extent of removal	Order	Part name	Q'ty	Remarks
Preparation for removal		<b>REAR WHEEL REMOVAL</b> Hold the machine by placing the suitable stand under the engine.		<b>⚠ WARNING</b> Support the machine securely so there is no danger of it falling over.
<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">             ① ↑ ↓           </div> <div style="text-align: center;">             ② ↑ ↓           </div> <div style="text-align: center;">             ③ ↑ ↓           </div> </div>	1 2 3 4 5 6 7 8 9 10	Nut (rear wheel axle) Rear wheel axle Chain puller Rear wheel Collar Driven sprocket Oil seal Circlip Bearing Brake disc	1 1 2 1 2 1 2 1 2 1	Refer to "REMOVAL POINTS".  Refer to "REMOVAL POINTS".





EC593000

## REMOVAL POINTS

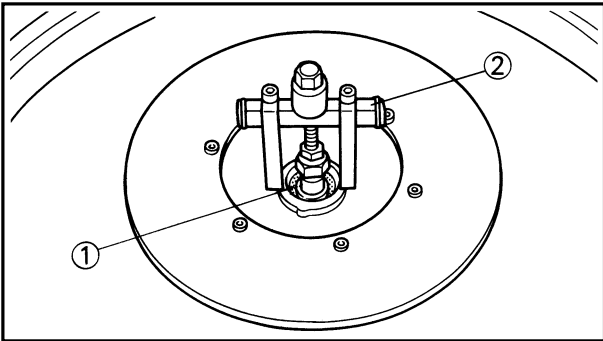
EC523101

### Rear wheel

1. Remove:
  - Wheel ①

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

Push the wheel forward and remove the drive chain ②.



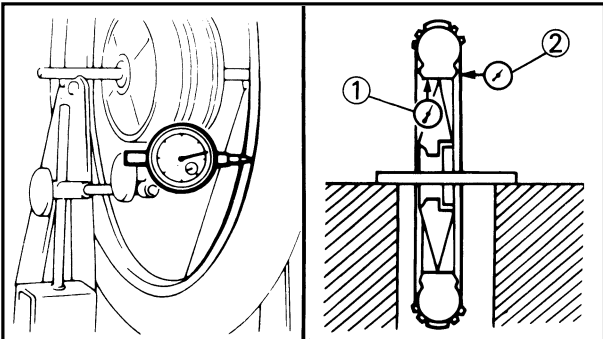
EC513201

### Wheel bearing (if necessary)

1. Remove:
  - Bearing ①

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

Remove the bearing using a general bearing puller ②.



EC594000

## INSPECTION

EC514100

### Wheel

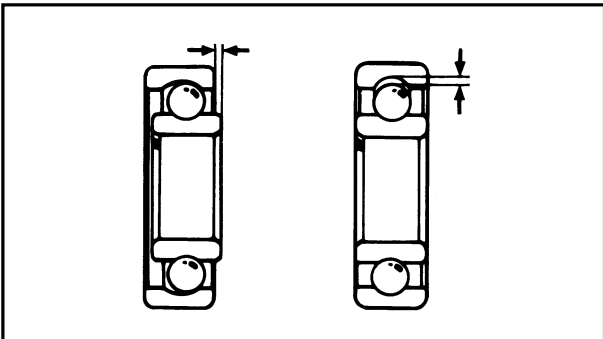
1. Measure:
  - Wheel runout
  - Out of limit → Repair/Replace.



#### Wheel runout limit:

Radial ①: 2.0mm (0.08 in)

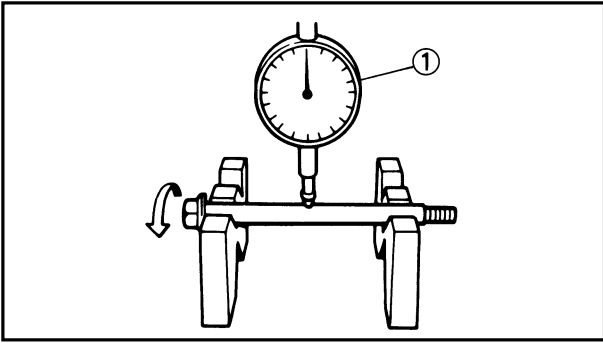
Lateral ②: 2.0mm (0.08 in)



2. Inspect:
  - Bearing
  - Rotate inner race with a finger.
  - Rough spot/Seizure → Replace.

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

Replace the bearings, oil seal and wheel collar as a set.



EC514200

### Wheel axle

- Measure:
  - Wheel axle bends  
Out of specification → Replace.  
Use the dial gauge ①.



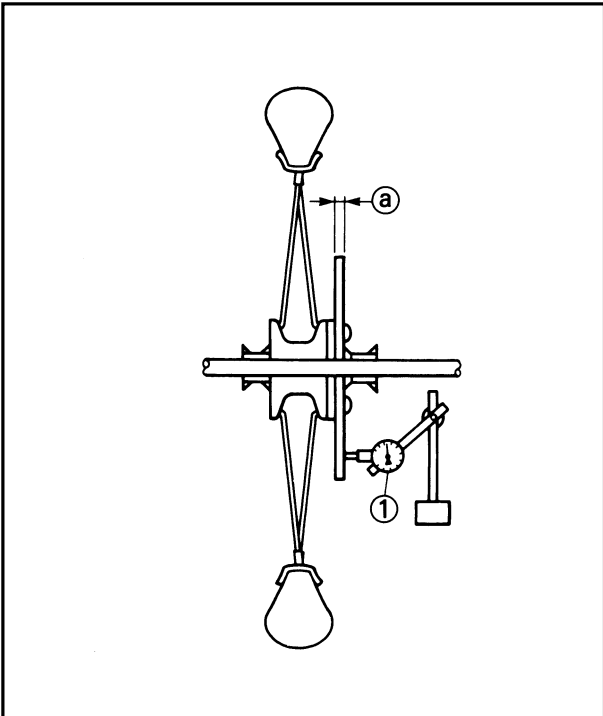
**Wheel axle bending limit:**  
0.5 mm (0.020 in)

### NOTE:

The bending value is shown by one half of the dial gauge reading.

### ⚠ WARNING

**Do not attempt to straighten a bent axle.**



EC594200

### Brake disc

- Measure:
  - Brake disc deflection (only rear brake disc)  
Use the dial gauge ①.  
Out of specification → Inspect wheel runout.  
If wheel runout is in good condition, re-  
place the brake disc.



**Disc deflection limit:**

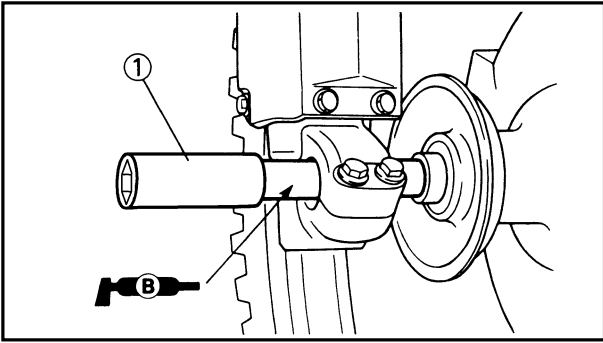
	Standard	<Limit>
Rear	—	0.15 mm (0.006 in)

- Measure:
  - Brake disc thickness ②  
Out of limit → Replace.



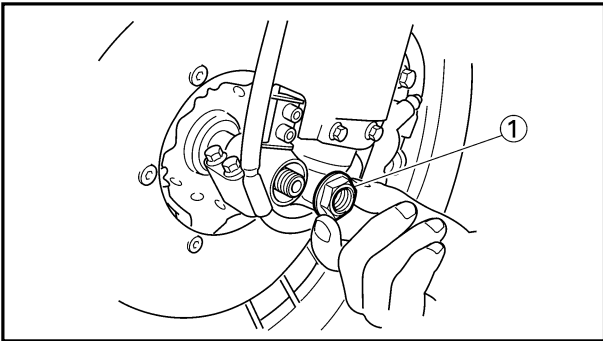
**Disc wear limit:**

	Standard	<Limit>
Front	3.0 mm (0.12 in)	2.5 mm (0.10 in)
Rear	4.0 mm (0.16 in)	3.5 mm (0.14 in)




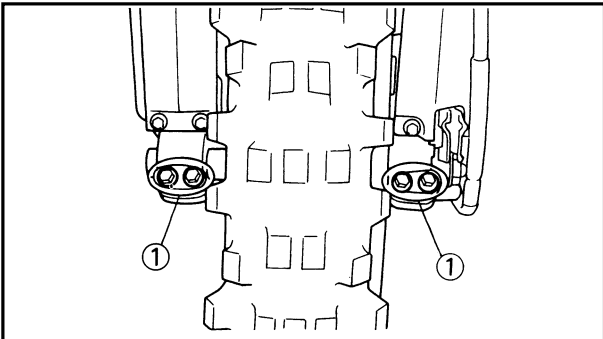
5. Install:  
 • Wheel axle ①

**NOTE:** \_\_\_\_\_  
 Apply the lithium soap base grease on the wheel axle.




6. Install:  
 • Nut (wheel axle) ①

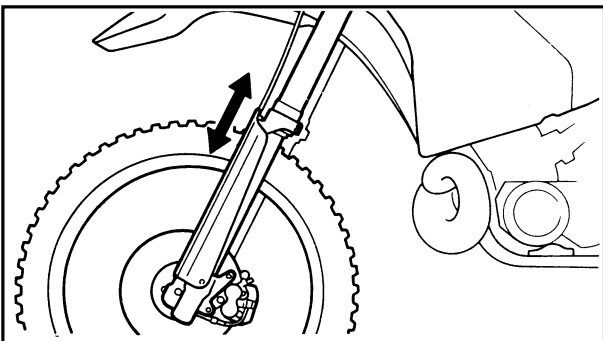
 **105 Nm (10.5 m•kg, 75 ft•lb)**




7. Tighten:  
 • Bolt (axle holder) ①

 **23 Nm (2.3 m•kg, 17 ft•lb)**

**NOTE:** \_\_\_\_\_  
 Before tightening the bolt, fit the wheel axle to the axle holder by stroking the front fork several times with the front brake applied.

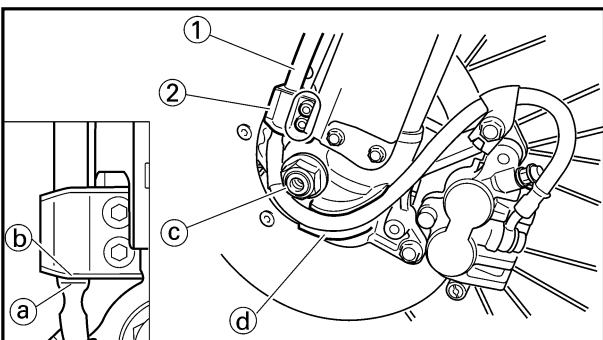


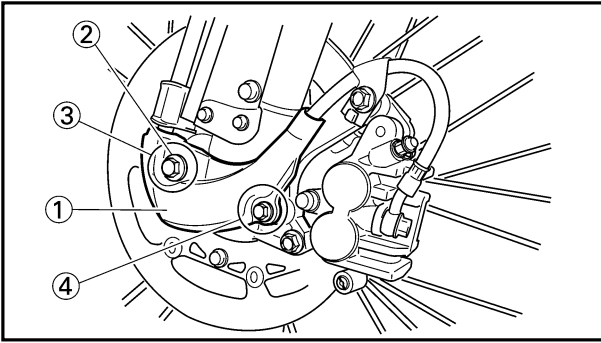
8. Install:  
 • Brake hose ①

 **10 Nm (1.0 m•kg, 7.2 ft•lb)**

To brake hose holder ②.


**NOTE:** \_\_\_\_\_  
 Before tightening the bolt (brake hose holder), align the top ① of the brake hose neck with the brake hose holder bottom ②. Then pass the brake hose in front of the axle boss ③ and fit it into the hose groove ④ so that the brake hose does not contact the nut (wheel axle).






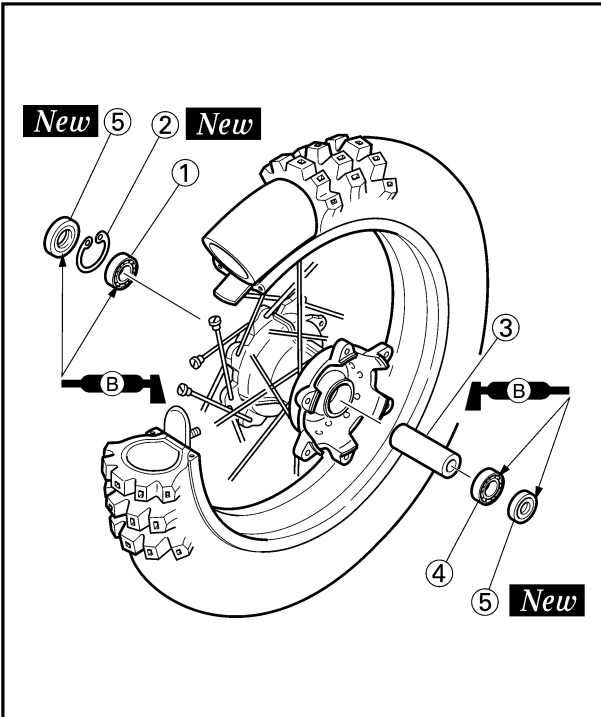
9. Install:

- Hose cover ①
- Plain washer ②
- Bolt [hose cover (M8)] ③

 **16 Nm (1.6 m•kg, 11 ft•lb)**

- Bolt [hose cover (M6)] ④

 **7 Nm (0.7 m•kg, 5.1 ft•lb)**



EC5251A1

## Rear wheel

1. Install:

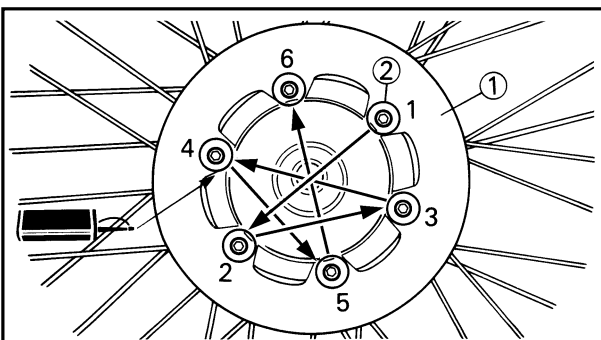
- Bearing (right) ①
- Circlip ② **New**
- Spacer ③
- Bearing (left) ④
- Oil seal ⑤ **New**

### NOTE:

- Apply the lithium soap base grease on the bearing and oil seal lip when installing.
- Install the bearing with seal facing outward.
- Use a socket that matches the outside diameter of the race of the bearing.
- Right side of bearing shall be installed first.
- Install the oil seal with its manufacturer's marks or numbers facing outward.


### CAUTION:

**Do not strike the inner race of the bearing. Contact should be made only with the outer race.**



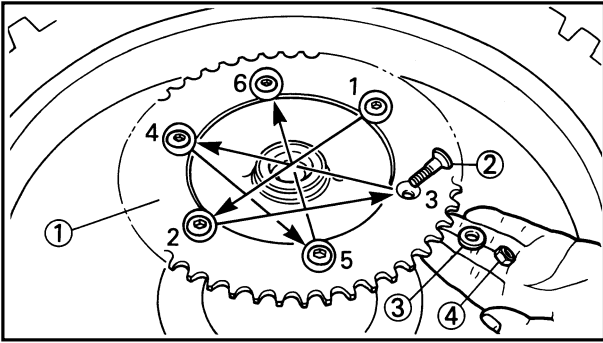
2. Install:

- Brake disc ①
- Bolt (brake disc) ②


 **14 Nm (1.4 m•kg, 1.0 ft•lb)**

### NOTE:

Tighten the bolts in stage, using a crisscross pattern.

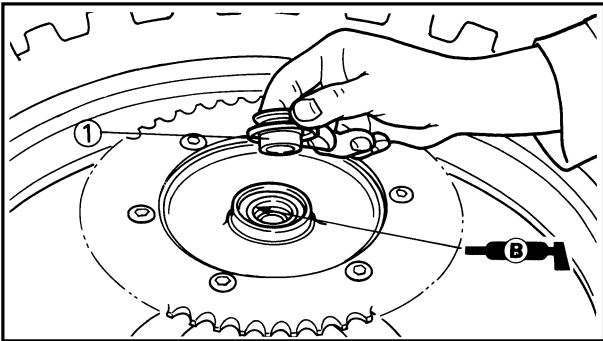


3. Install:
- Driven sprocket ①
  - Bolt (driven sprocket) ②
  - Plain washer (driven sprocket) ③
  - Nut (driven sprocket) ④

 **42 Nm (4.2 m•kg, 30 ft•lb)**

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

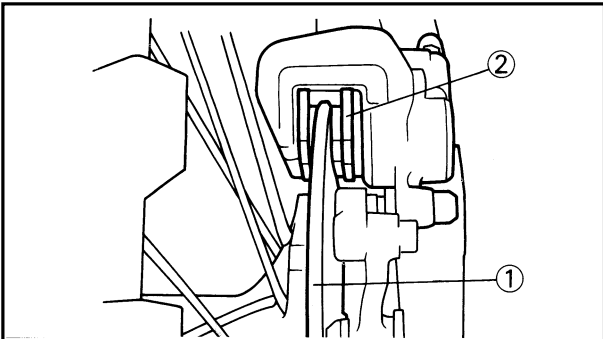
Tighten the nuts in stage, using a crisscross pattern.



4. Install:
- Collar ①

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

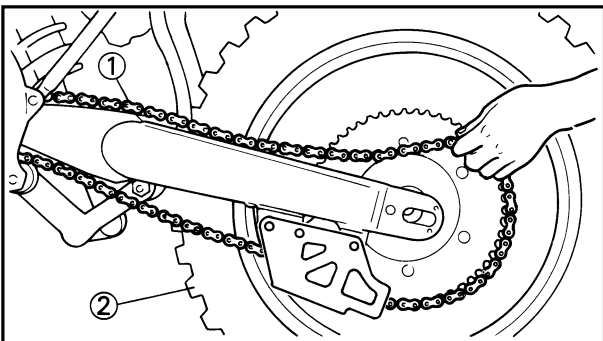
Apply the lithium soap base grease on the oil seal lip.



5. Install:
- Wheel

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

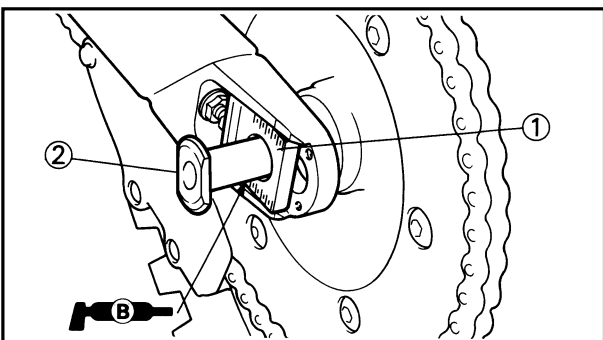
Install the brake disc ① between the brake pads ② correctly.



6. Install:
- Drive chain ①

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

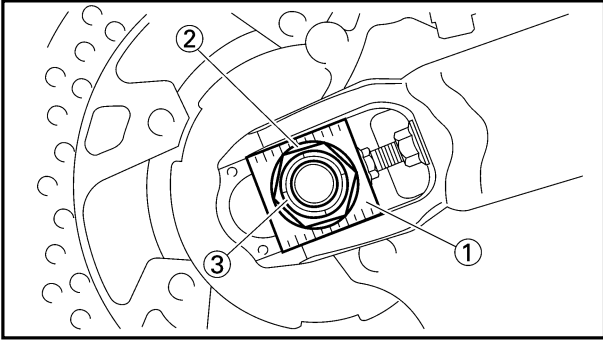
Push the wheel ② forward and install the drive chain.



7. Install:
- Chain puller (left) ①
  - Wheel axle ②

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

- Install the chain puller (left), and insert the wheel axle from left side.
- Apply the lithium soap base grease on the wheel axle.

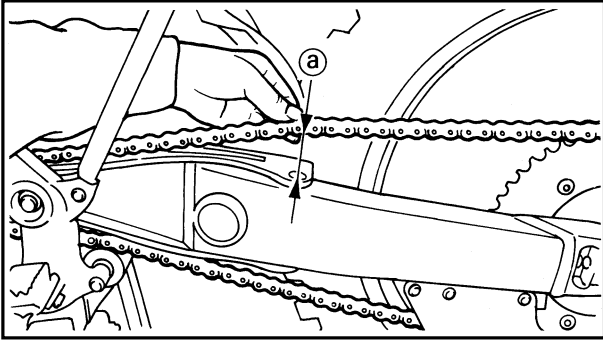


8. Install:
- Chain puller (right) ①
  - Plain washer ②
  - Nut (wheel axle) ③


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

Temporarily tighten the nut (wheel axle) at this point.

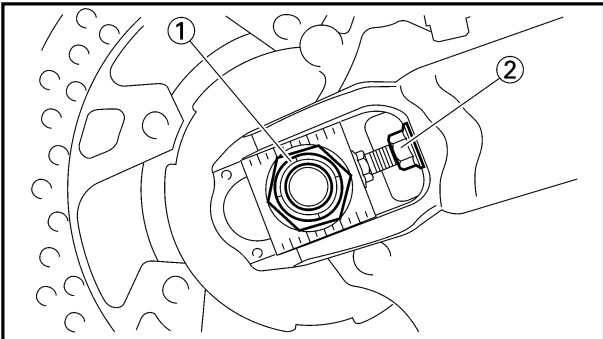
\_\_\_\_\_




9. Adjust:
- Drive chain slack ①

	<p><b>Drive chain slack :</b> 40~50 mm (1.6~2.0 in)</p>
---	---


Refer to “DRIVE CHAIN SLACK ADJUSTMENT” section in the CHAPTER 3.



10. Tighten:
- Nut (wheel axle) ①

	<b>125 Nm (12.5 m•kg, 90 ft•lb)</b>
---	-------------------------------------

- Locknut ②

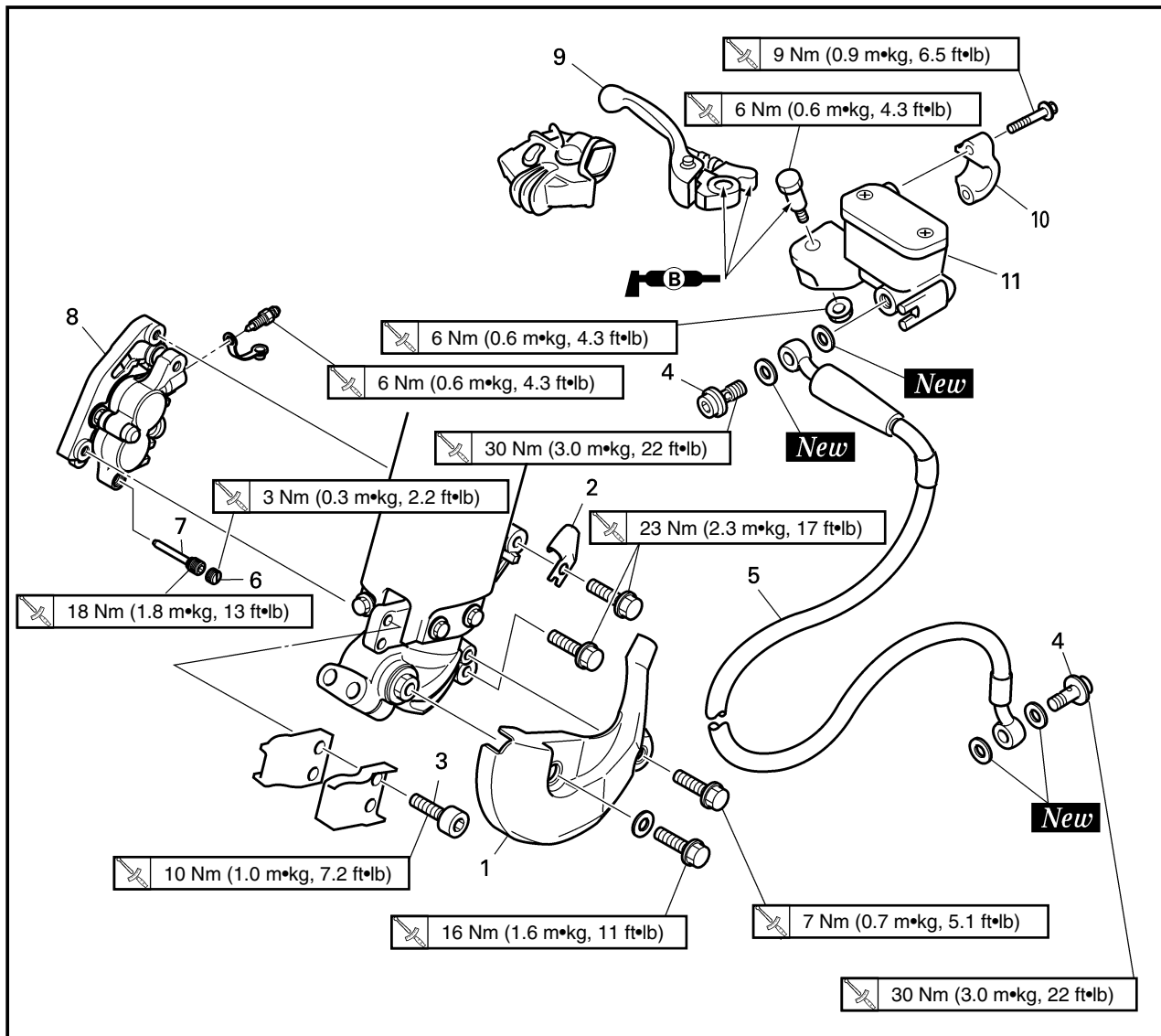
	<b>16 Nm (1.6 m•kg, 11 ft•lb)</b>
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EC5A0000

## FRONT BRAKE AND REAR BRAKE

EC5A8000

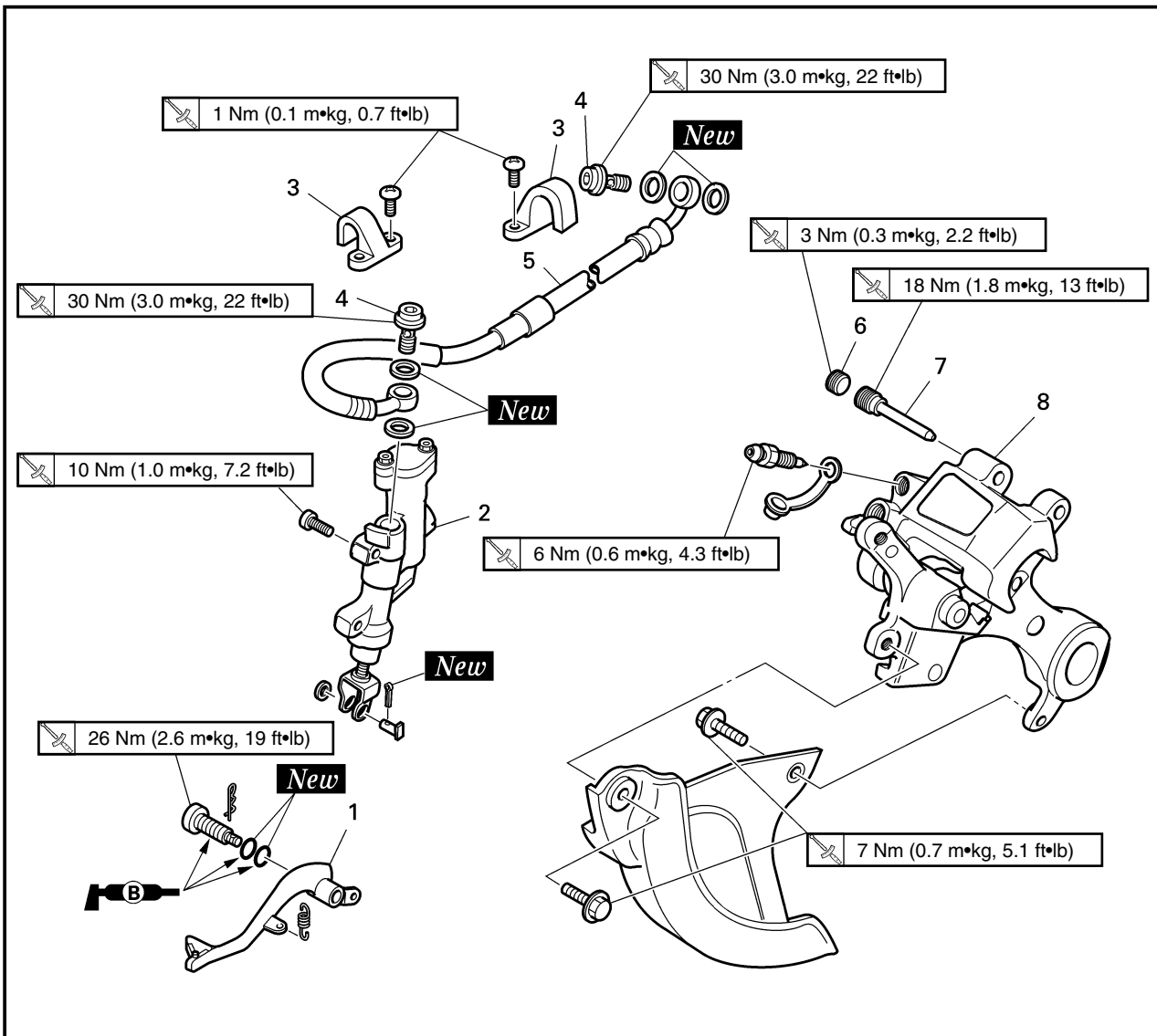
### FRONT BRAKE



Extent of removal: ① Brake hose removal ② Caliper removal ③ Master cylinder removal

Extent of removal	Order	Part name	Q'ty	Remarks
Preparation for removal		<b>FRONT BRAKE REMOVAL</b> Hold the machine by placing the suitable stand under the engine. Drain the brake fluid.		<b>⚠WARNING</b> Support the machine securely so there is no danger of it falling over.  Refer to "REMOVAL POINTS".
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="display: flex; gap: 20px;"> <div style="text-align: center;">① ↑ ↓</div> <div style="text-align: center;">② ↑ ↓</div> </div> <div style="display: flex; gap: 20px; margin-top: 20px;"> <div style="text-align: center;">② ↑ ↓</div> <div style="text-align: center;">③ ↑ ↓</div> </div> <div style="display: flex; gap: 20px; margin-top: 20px;"> <div style="text-align: center;">③ ↑ ↓</div> </div> </div>	1 2 3 4 5 6 7 8 9 10 11	Hose cover Brake hose holder Bolt (brake hose holder) Union bolt Brake hose Pad pin plug Pad pin Caliper Brake lever Master cylinder bracket Master cylinder	1 1 2 1 1 1 1 1 1 1 1	Only loosening.  Remove when loosening the pad pin. Loosen when disassembling the caliper.

EC5A8100  
**REAR BRAKE**



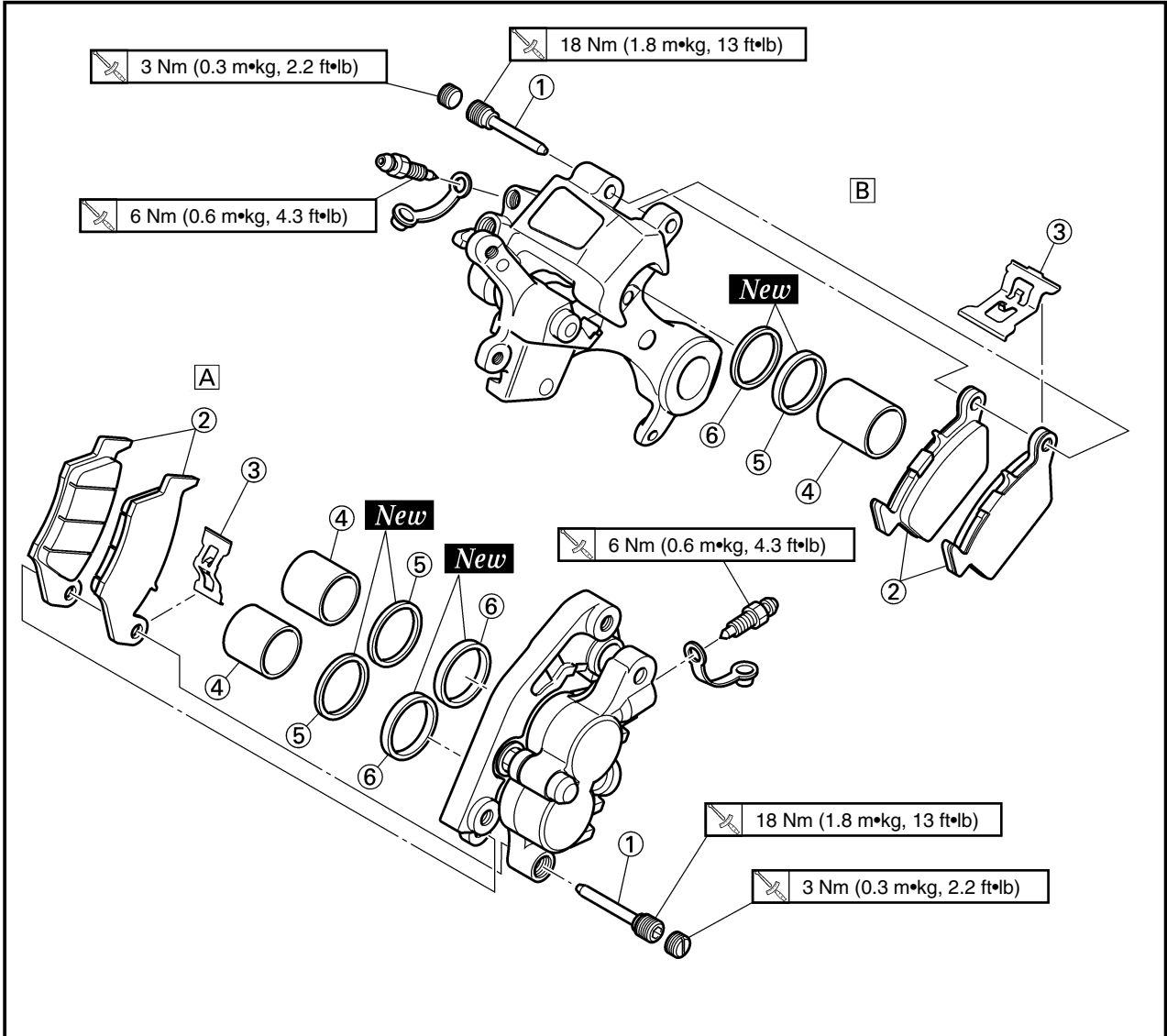
Extent of removal: ① Master cylinder removal ② Brake hose removal ③ Caliper removal

Extent of removal	Order	Part name	Q'ty	Remarks
Preparation for removal		<b>REAR BRAKE REMOVAL</b> Hold the machine by placing the suitable stand under the engine. Rear wheel  Drain the brake fluid.		<b>⚠WARNING</b> Support the machine securely so there is no danger of it falling over.  Refer to "FRONT WHEEL AND REAR WHEEL" section. Refer to "REMOVAL POINTS".
① ↑↓	1	Brake pedal	1	Remove when loosening the pad pin. Loosen when disassembling the caliper.
	2	Master cylinder	1	
① ↑↓	3	Brake hose holder	2	
	4	Union bolt	2	
② ↑↓	5	Brake hose	1	
③ ↑↓	6	Pad pin plug	1	
	7	Pad pin	1	
	8	Caliper	1	



EC5A8200

## CALIPER DISASSEMBLY



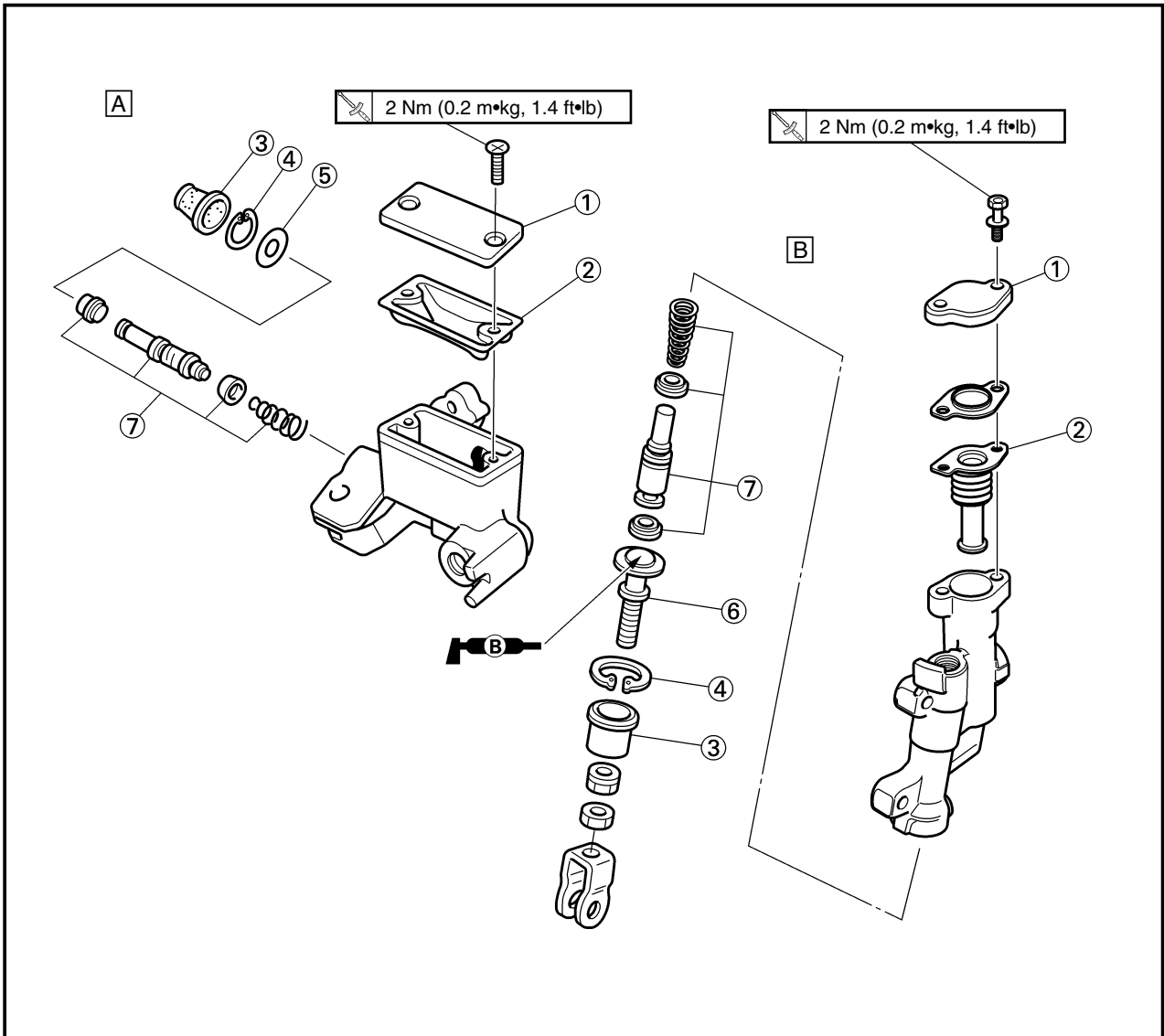
- A Front
- B Rear

Extent of removal:    ① Front caliper disassembly    ② Rear caliper disassembly

Extent of removal	Order	Part name	Q'ty		Remarks
			A	B	
<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">①</span>  <span style="display: inline-block; width: 10px; height: 10px; border: 1px solid black; margin: 0 auto;"></span> </div> <div style="text-align: center;"> <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">②</span>  <span style="display: inline-block; width: 10px; height: 10px; border: 1px solid black; margin: 0 auto;"></span> </div> </div>		<b>CALIPER DISASSEMBLY</b>			
	①	Pad pin	1	1	
	②	Brake pad	2	2	
	③	Pad support	1	1	
	④	Caliper piston	2	1	Refer to "REMOVAL POINTS".
	⑤	Dust seal	2	1	
	⑥	Piston seal	2	1	

EC5A8300

## MASTER CYLINDER DISASSEMBLY

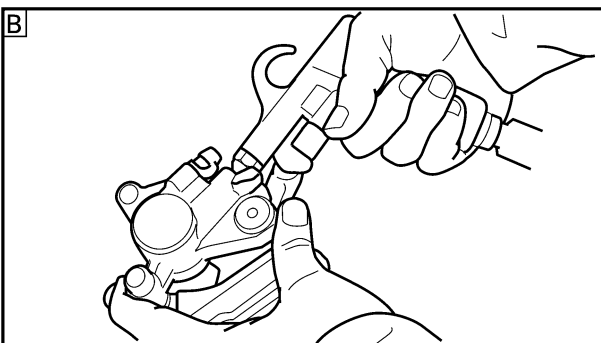
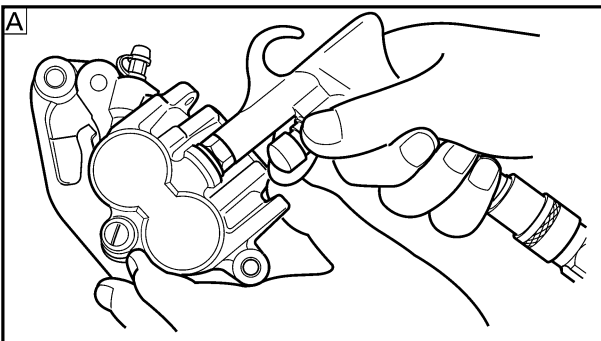
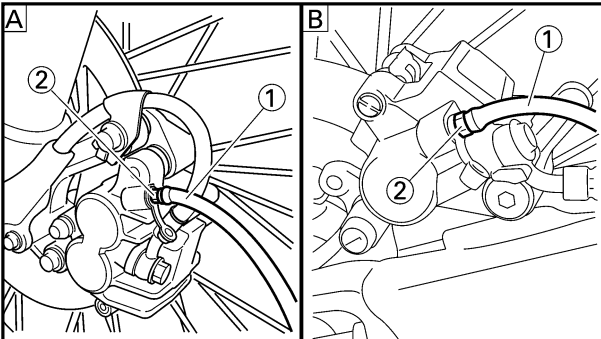
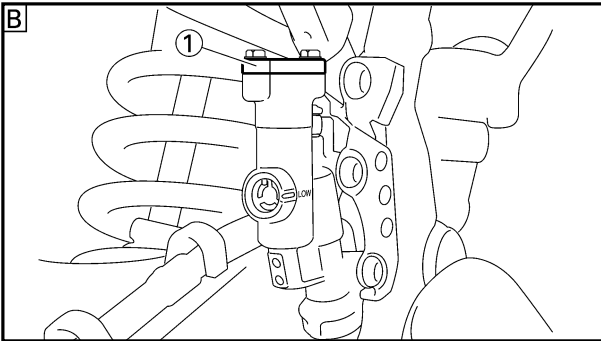
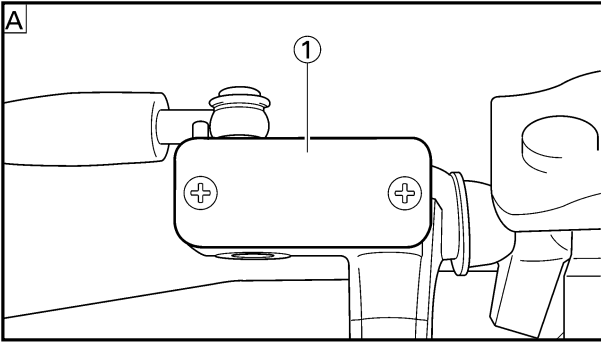


**A** Front

**B** Rear

Extent of removal:    ① Front master cylinder disassembly    ② Rear master cylinder disassembly

Extent of removal	Order	Part name	Q'ty	Remarks
<b>MASTER CYLINDER DISASSEMBLY</b>				
↑ ① ↓	①	Master cylinder cap	1	Use a long nose circlip pliers.
↑ ② ↓	②	Diaphragm	1	
↑ ③ ↓	③	Master cylinder boot	1	
↑ ④ ↓	④	Circlip	1	
↑ ⑤ ↓	⑤	Plain washer	1	
↑ ⑥ ↓	⑥	Push rod	1	
↑ ⑦ ↓	⑦	Master cylinder kit	1	



EC5A3000

## REMOVAL POINTS

EC5A3101

### Brake fluid

- Remove:
  - [Front]
    - Master cylinder cap ①
  - [Rear]
    - Master cylinder cap ①
    - Protector

### NOTE:

Do not remove the diaphragm.

- A** Front
- B** Rear

- Connect the transparent hose ① to the bleed screw ② and place a suitable container under its end.

- A** Front
- B** Rear

- Loosen the bleed screw and drain the brake fluid while pulling the lever in or pushing down on the pedal.

### CAUTION:

- Do not reuse the drained brake fluid.
- Brake fluid may erode painted surfaces or plastic parts. Always clean up spilled fluid immediately.

EC533301

### Caliper piston

- Remove:
  - Caliper piston

Use compressed air and proceed carefully.

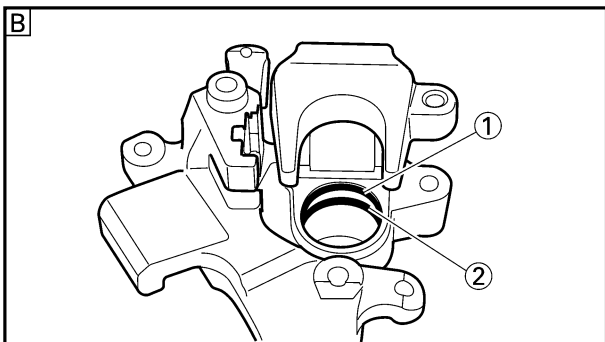
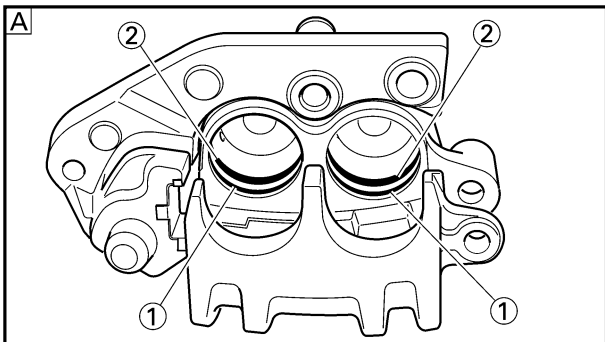
### WARNING

- Cover piston with rag and use extreme caution when expelling piston from cylinder.
- Never attempt to pry out piston.

### Caliper piston removal steps:

- Insert a piece of rag into the caliper to lock one caliper.
- Carefully force the piston out of the caliper cylinder with compressed air.

- A** Front
- B** Rear



EC533402

**Piston seal kit**

1. Remove:
  - Dust seal ①
  - Piston seal ②

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

Remove the piston seals and dust seals by pushing them with a finger.

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

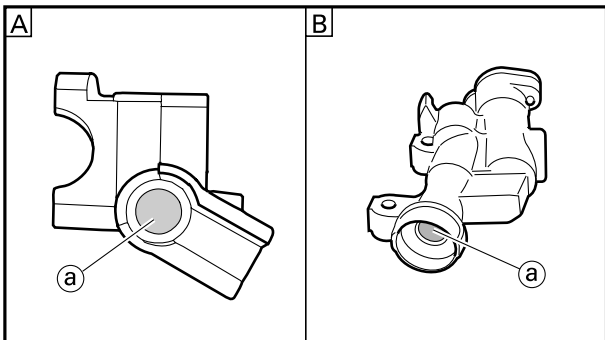
Never attempt to pry out piston seals and dust seals.

**⚠WARNING** \_\_\_\_\_

Replace the piston seals and dust seals whenever a caliper is disassembled.

Ⓐ Front

Ⓑ Rear



EC5A4000

**INSPECTION**

EC534112

**Master cylinder**

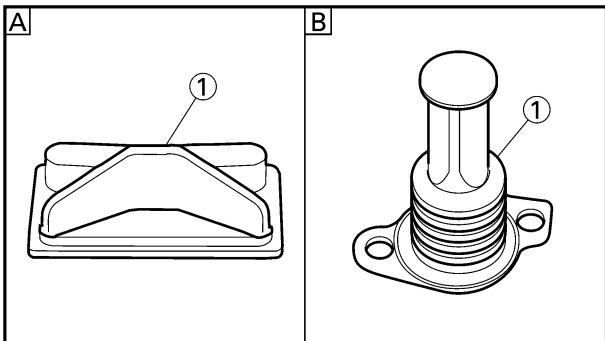
1. Inspect:
  - Master cylinder inner surface ①
  - Wear/Scratches→Replace master cylinder assembly.
  - Stains→Clean.

**⚠WARNING** \_\_\_\_\_

Use only new brake fluid.

Ⓐ Front

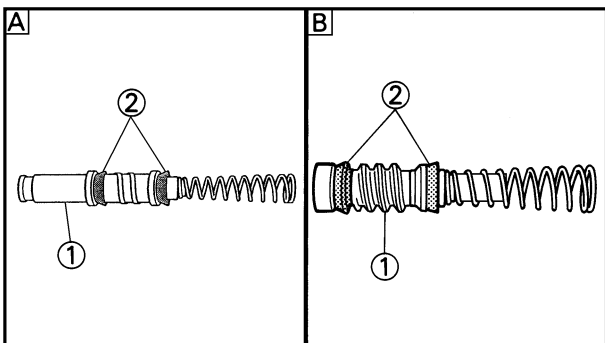
Ⓑ Rear



2. Inspect:
  - Diaphragm ①
  - Crack/Damage→Replace.

Ⓐ Front

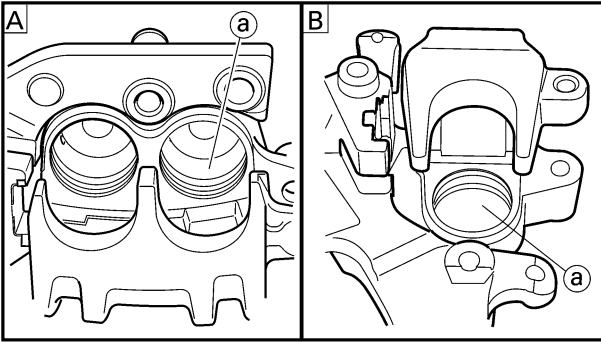
Ⓑ Rear



3. Inspect:
  - Master cylinder piston ①
  - Master cylinder cup ②
  - Wear/Damage/Score marks→Replace master cylinder kit.

Ⓐ Front

Ⓑ Rear



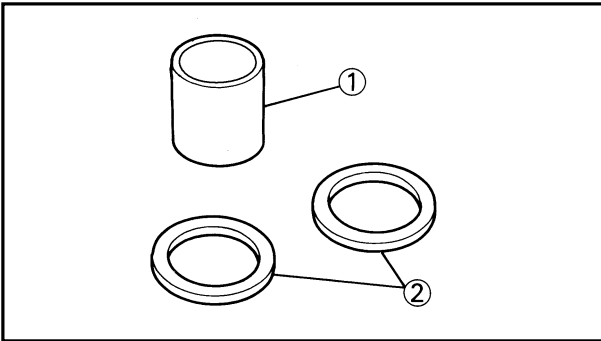
EC534214

## Caliper

1. Inspect:
  - Caliper cylinder inner surface (a)
  - Wear/Score marks → Replace caliper assembly.

A Front

B Rear

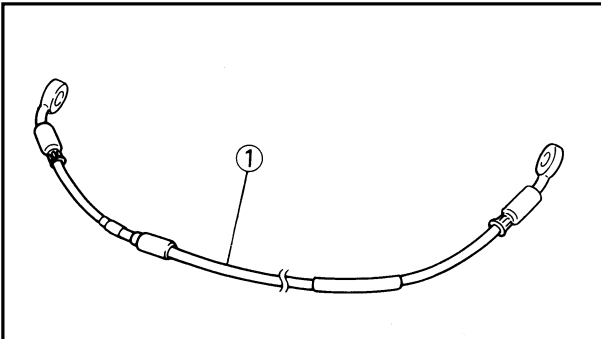


2. Inspect:

- Caliper piston (1)
- Wear/Score marks → Replace caliper piston assembly.

### **⚠ WARNING**

Replace the piston seals and dust seals (2) whenever a caliper is disassembled.



EC534301

## Brake hose

1. Inspect:
  - Brake hose (1)
  - Crack/Damage → Replace.

EC5A5000

## ASSEMBLY AND INSTALLATION

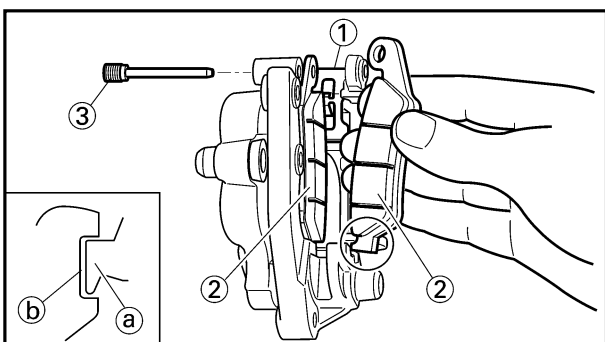
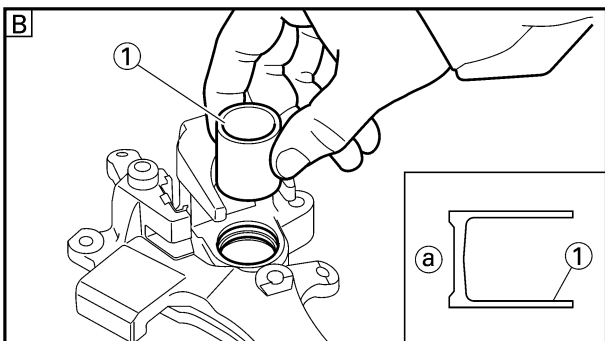
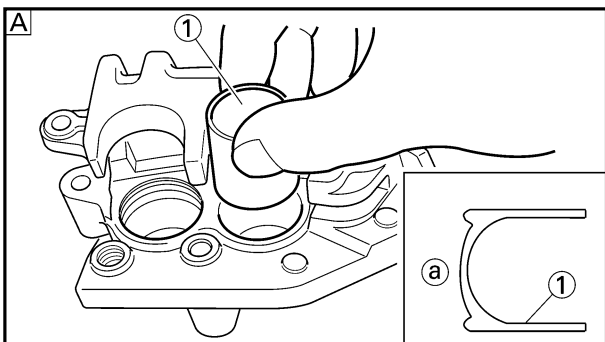
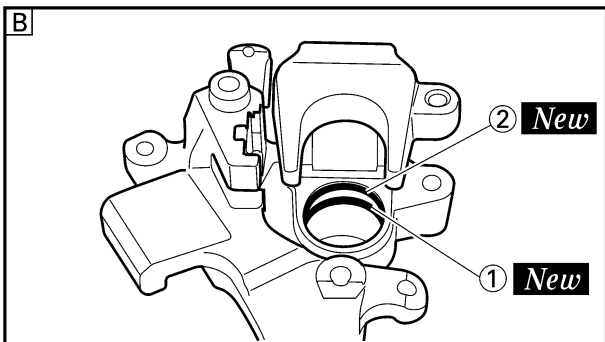
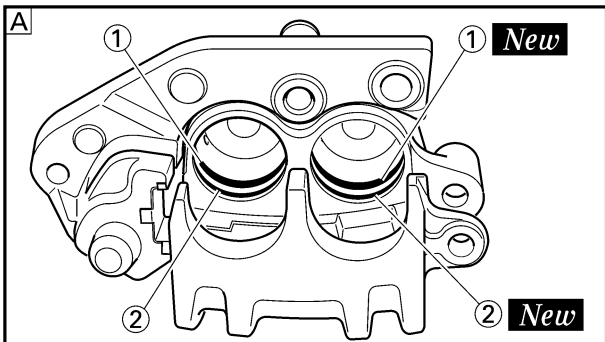
### **⚠ WARNING**

- All internal parts should be cleaned in new brake fluid only.
- Internal parts should be lubricated with brake fluid when installed.
- Replace the piston seals and dust seals whenever a caliper is disassembled.

EC5A5801

## Caliper piston

1. Clean:
  - Caliper
  - Piston seal
  - Dust seal
  - Caliper piston
  - Clean them with brake fluid.



2. Install:
- Piston seal ① **New**
  - Dust seal ② **New**

**WARNING**

Always use new piston seals and dust seals.

**NOTE:**

Fit the piston seals and dust seals onto the slot on caliper correctly.

- A Front
- B Rear

3. Install:
- Caliper piston ①

**NOTE:**

Apply the brake fluid on the piston wall.

**CAUTION:**

- Install the piston with its shallow depressed side (a) facing the caliper.
- Never force to insert.

- A Front
- B Rear

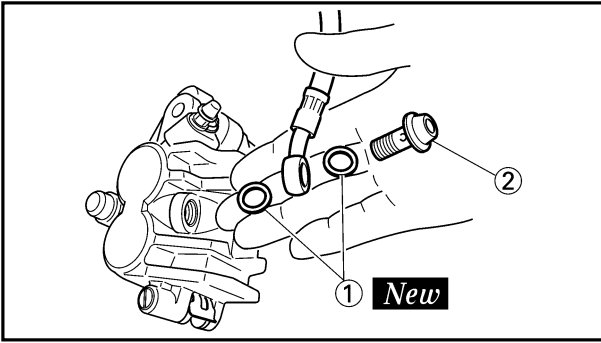
EC5A5700

**Front caliper**

1. Install:
- Pad support ①
  - Brake pad ②
  - Pad pin ③


**NOTE:**

- Install the brake pads with their projections (a) into the caliper recesses (b).
- Temporarily tighten the pad pin at this point.



2. Install:

- Copper washer ① **New**
- Union bolt ②

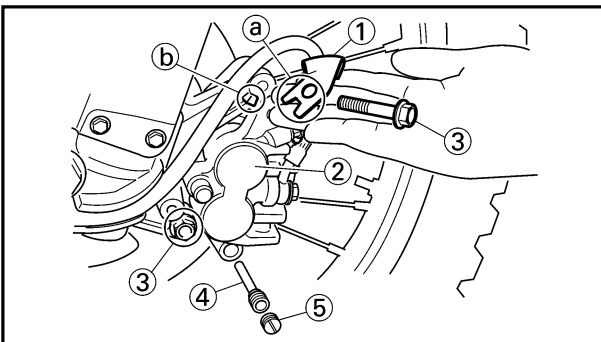
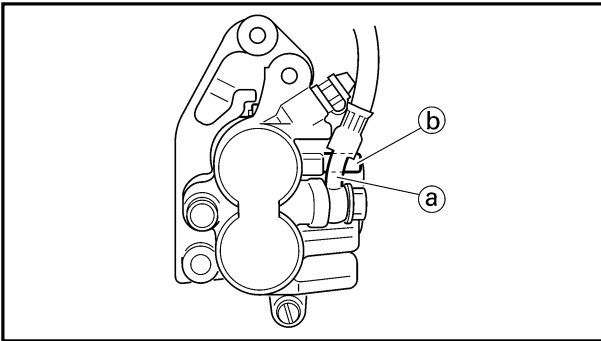
 **30 Nm (3.0 m•kg, 22 ft•lb)**

**⚠ WARNING**

Always use new copper washers.


**CAUTION:**

Install the brake hose so that its pipe portion ① directs as shown and lightly touches the projection ② on the caliper.



3. Install:

- Brake hose holder ①
- Caliper ②
- Bolt (caliper) ③


 **23 Nm (2.3 m•kg, 17 ft•lb)**

**NOTE:**

Fit the brake hose holder cut ① over the projection ② on the front fork and clamp the brake hose.


4. Tighten:

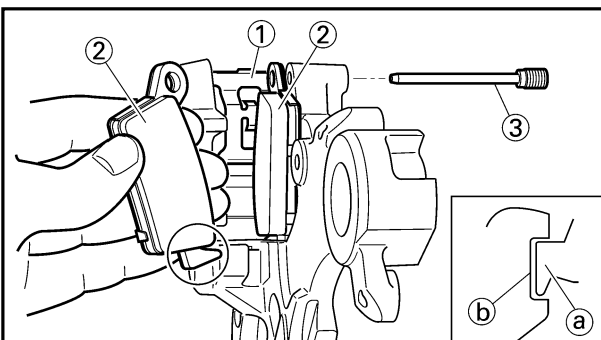
- Pad pin ④

 **18 Nm (1.8 m•kg, 13 ft•lb)**

5. Install:

- Pad pin plug ⑤

 **3 Nm (0.3 m•kg, 2.2 ft•lb)**



EC5A5121

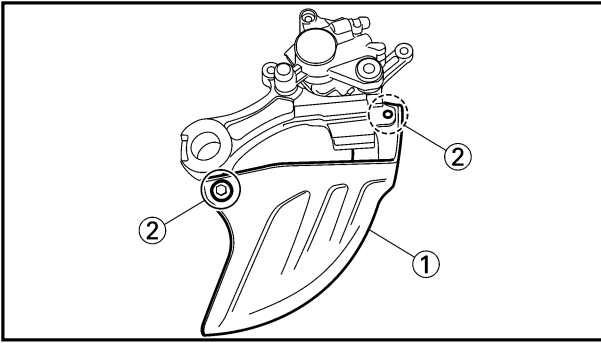
**Rear caliper**

1. Install:


- Pad support ①
- Brake pad ②
- Pad pin ③

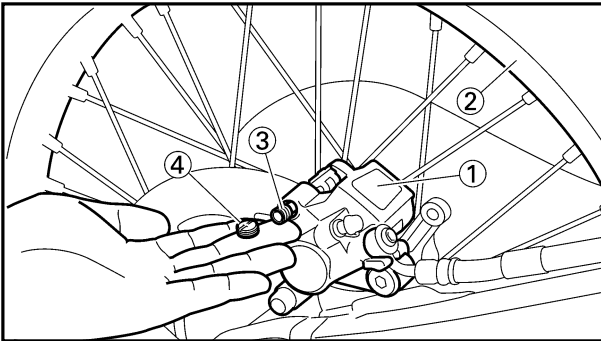
**NOTE:**

• Install the brake pads with their projections ① into the caliper recesses ②.  
 • Temporarily tighten the pad pin at this point.




2. Install:
  - Disc cover ①
  - Bolt (disc cover) ②

 **7 Nm (0.7 m•kg, 5.1 ft•lb)**




3. Install:
  - Caliper ①
  - Rear wheel ②
 Refer to “FRONT WHEEL AND REAR WHEEL” section.

4. Tighten:

•Pad pin ③  **18 Nm (1.8 m•kg, 13 ft•lb)**

5. Install:

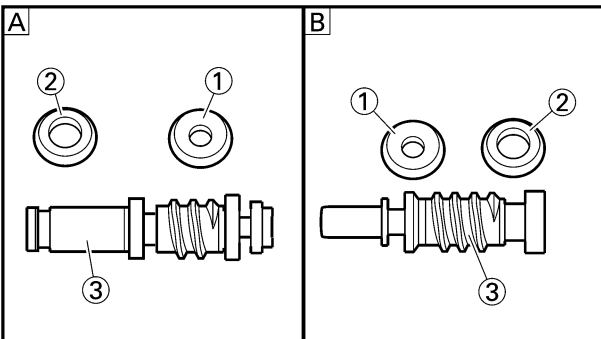
•Pad pin plug ④

 **3 Nm (0.3 m•kg, 2.2 ft•lb)**

EC5A5220

## Master cylinder kit

1. Clean:
  - Master cylinder
  - Master cylinder kit
 Clean them with brake fluid.



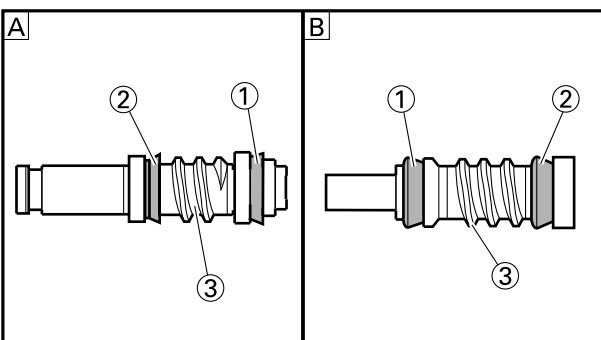
2. Install:
  - Master cylinder cup (primary) ①
  - Master cylinder cup (secondary) ②
 To master cylinder piston ③.

### NOTE:

Apply the brake fluid on the master cylinder cup.

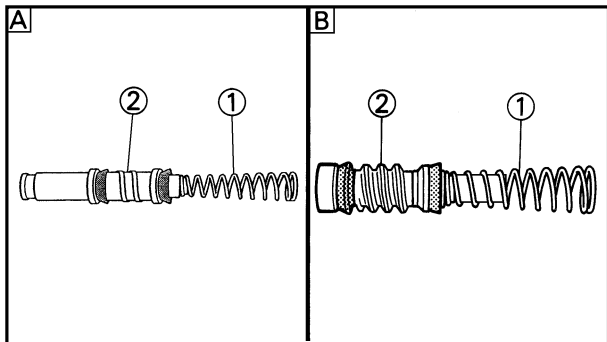
### ⚠ WARNING

After installing, cylinder cup should be installed as shown direction. Wrong installation cause improper brake performance.



**A** Front  
**B** Rear

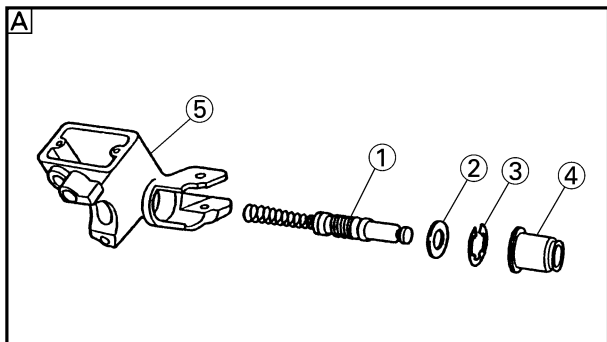




3. Install:
- Spring ①
  - To master cylinder piston ②.

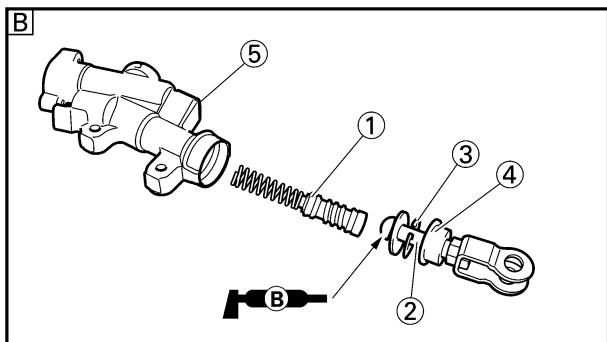
**NOTE:** \_\_\_\_\_  
Install the spring at the smaller dia. side.

**A** Front  
**B** Rear



4. Install:
- [Front]
- Master cylinder kit ①
  - Plain washer ②
  - Circlip ③
  - Master cylinder boot ④
  - To master cylinder ⑤.

- [Rear]
- Master cylinder kit ①
  - Push rod ②
  - Circlip ③
  - Master cylinder boot ④
  - To master cylinder ⑤.



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


- Apply the brake fluid on the master cylinder kit.
- Apply the lithium soap base grease on the tip of the push rod.
- When installing the circlip, use a long nose circlip pliers.

**A** Front  
**B** Rear

EC5A5310

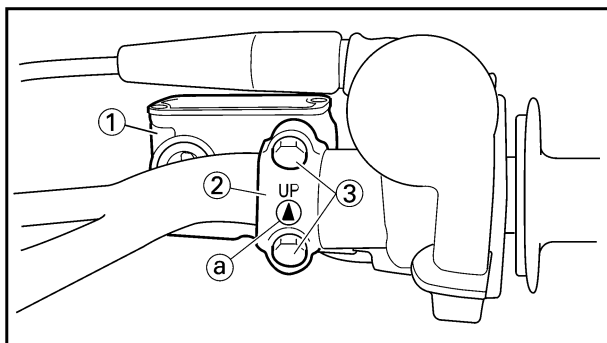
**Front master cylinder**

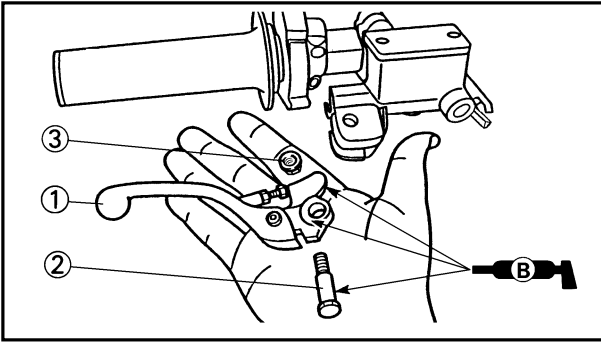
1. Install:
- Master cylinder ①
  - Master cylinder bracket ②
  - Bolt (master cylinder bracket) ③

 **9 Nm (0.9 m•kg, 6.5 ft•lb)**

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


- Install the bracket so that the arrow mark (a) face upward.
- First tighten the bolts on the upper side of the master cylinder bracket, and then tighten the bolts on the lower side.






2. Install:

- Brake lever ①
- Bolt (brake lever) ②

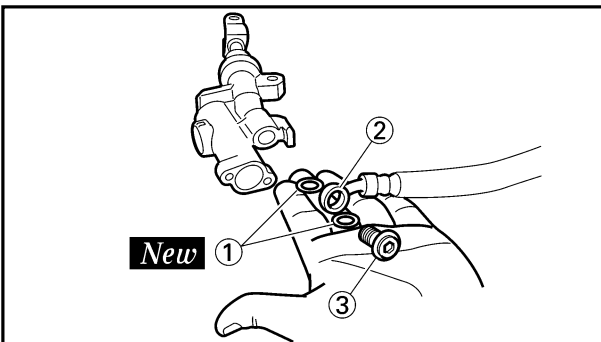
 **6 Nm (0.6 m•kg, 4.3 ft•lb)**

- Nut (brake lever) ③

 **6 Nm (0.6 m•kg, 4.3 ft•lb)**

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

Apply the lithium soap base grease on the brake lever sliding surface, bolt and contacting surface of the master cylinder piston.




EC5A5401

**Rear master cylinder**

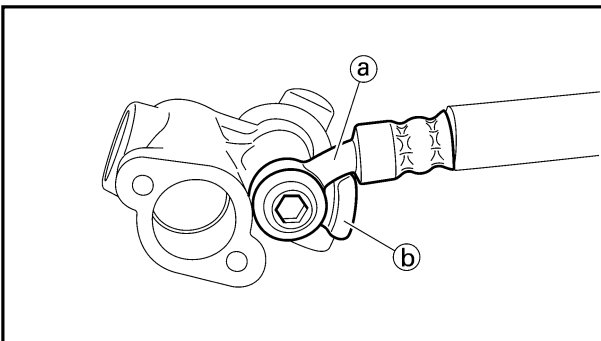
1. Install:

- Copper washer ① **New**
- Brake hose ②

- Union bolt ③  **30 Nm (3.0 m•kg, 22 ft•lb)**

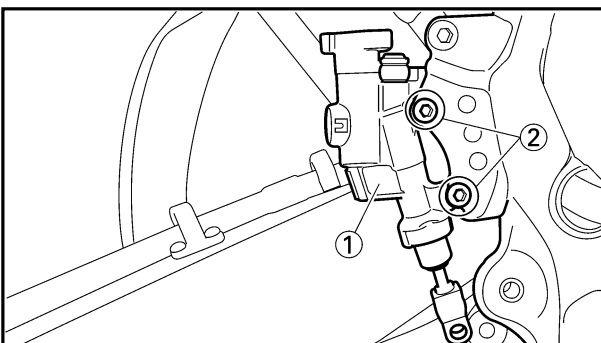
**⚠ WARNING** \_\_\_\_\_

Always use new copper washers.




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

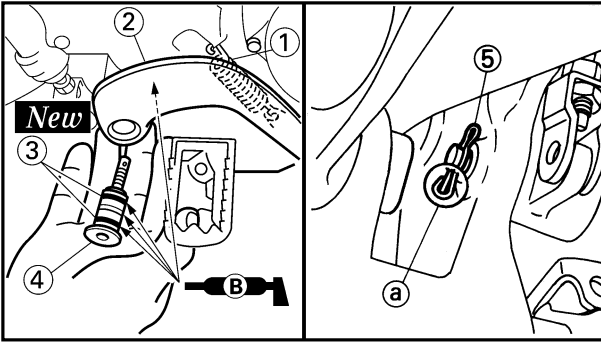
Install the brake hose so that its pipe portion ① directs as shown and lightly touches the projection ② on the master cylinder.




2. Install:

- Master cylinder ①
- Bolt (master cylinder) ②

 **10 Nm (1.0 m•kg, 7.2 ft•lb)**



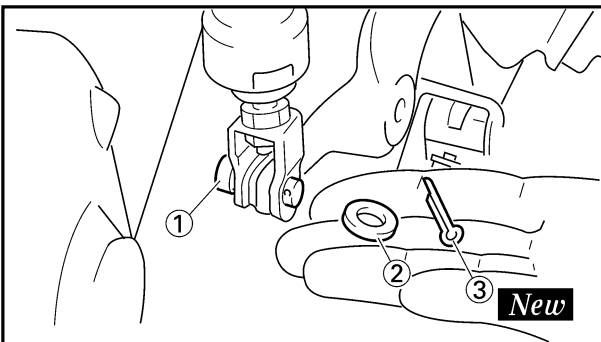
3. Install:
- Spring ①
  - Brake pedal ②
  - O-ring ③ **New**
  - Bolt (brake pedal) ④

 **26 Nm (2.6 m•kg, 19 ft•lb)**

- Clip ⑤

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

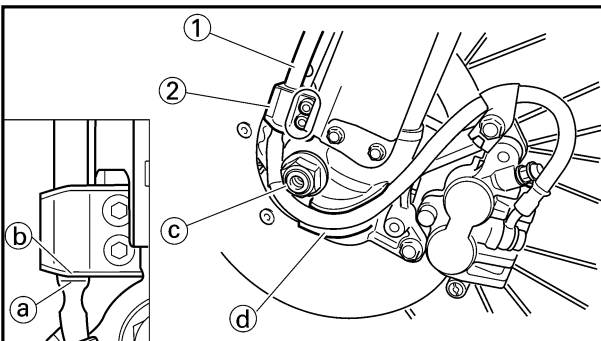
- Apply the lithium soap base grease on the bolt, O-ring and brake pedal bracket.
- Install the clip with its stopper portion ① facing inward.



4. Install:
- Pin ①
  - Plain washer ②
  - Cotter pin ③ **New**

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


After installing, check the brake pedal height. Refer to "REAR BRAKE ADJUSTMENT" section in the CHAPTER 3.



EC5A5911

**Front brake hose**

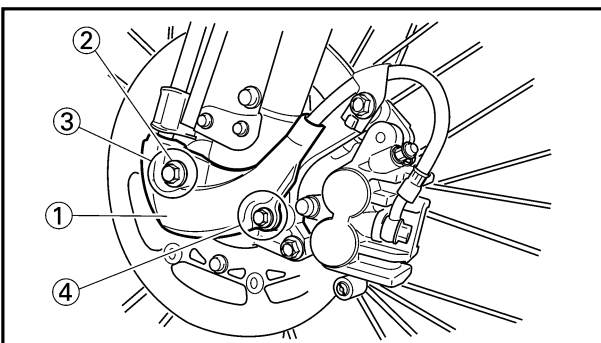
1. Install:
- Brake hose ①

 **10 Nm (1.0 m•kg, 7.2 ft•lb)**


To brake hose holder ②.

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


Before tightening the bolt (brake hose holder), align the top ① of the brake hose neck with the brake hose holder bottom ②. Then pass the brake hose in front of the axle boss ③ and fit it into the hose groove ④ so that the brake hose does not contact the nut (wheel axle).

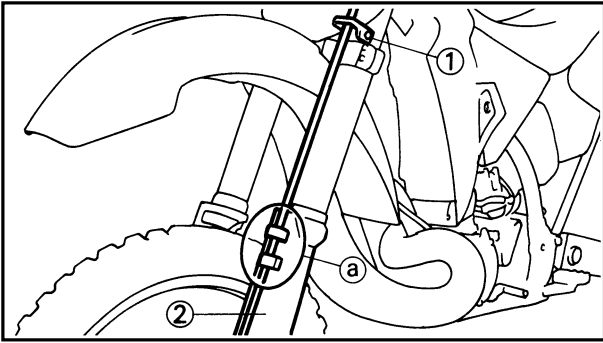


2. Install:
- Hose cover ①
  - Plain washer ②
  - Bolt [hose cover (M8)] ③

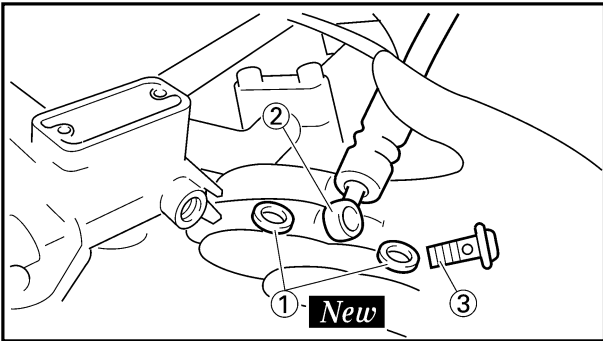
 **16 Nm (1.6 m•kg, 11 ft•lb)**

- Bolt [hose cover (M6)] ④

 **7 Nm (0.7 m•kg, 5.1 ft•lb)**



3. Pass the brake hose through the cable guide ①, then through the guide ① on the protector ②.



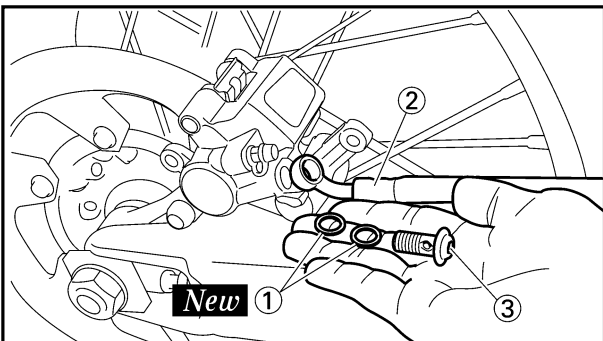
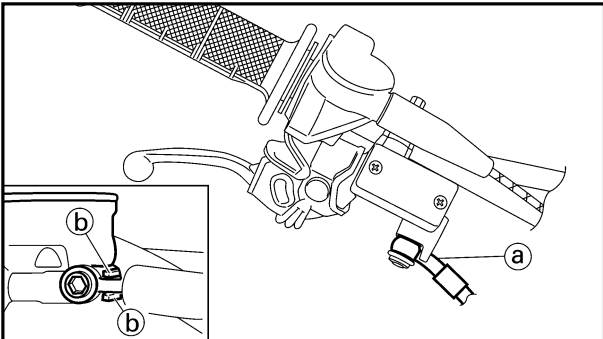
4. Install:  
 •Copper washer ① **New**  
 •Brake hose ②  
 •Union bolt ③ **30 Nm (3.0 m•kg, 22 ft•lb)**

**⚠WARNING**

Always use new copper washers.

**CAUTION:**

Install the brake hose so that its pipe portion ① directs as shown and lightly touches the projection ② on the master cylinder.



EC5A6502

**Rear brake hose**

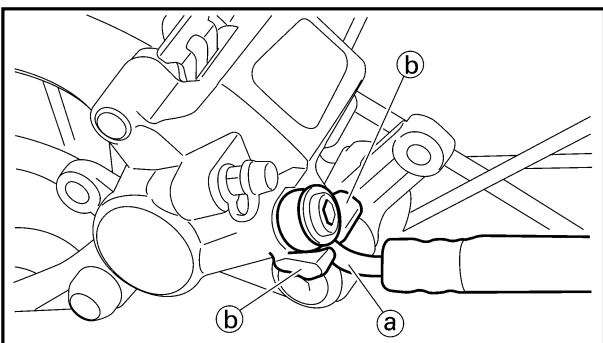
1. Install:  
 •Copper washer ① **New**  
 •Brake hose ②  
 •Union bolt ③ **30 Nm (3.0 m•kg, 22 ft•lb)**

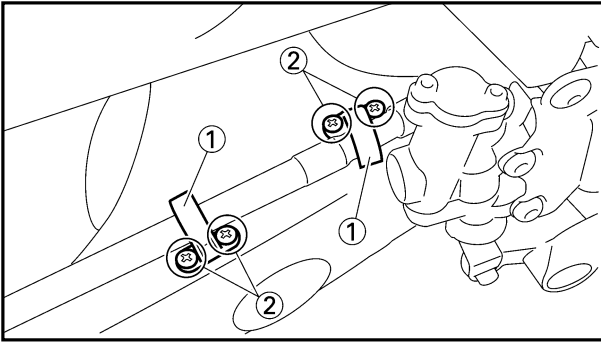
**⚠WARNING**

Always use new copper washers.


**CAUTION:**

Install the brake hose so that its pipe portion ① directs as shown and lightly touches the projection ② on the caliper.



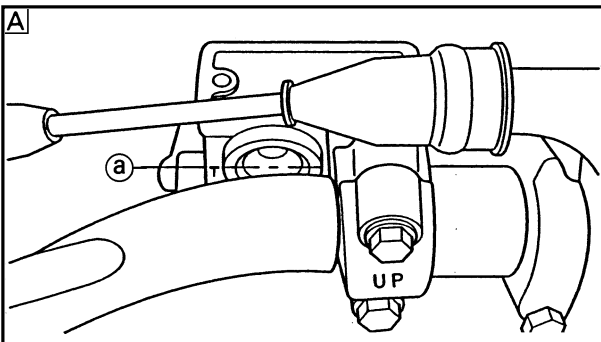
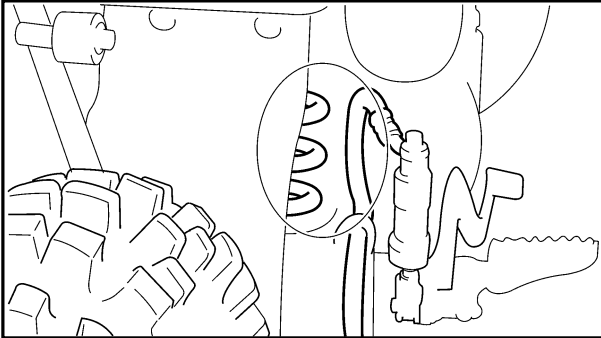


2. Install:
  - Brake hose holder ①
  - Screw (brake hose holder) ②

 1 Nm (0.1 m•kg, 0.7 ft•lb)

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

After installing the brake hose holders, make sure the brake hose does not contact the spring (rear shock absorber). If it does, correct its twist.



EC5A5601

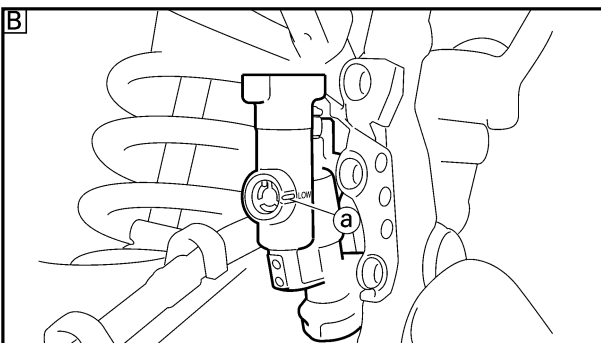
**Brake fluid**

1. Fill:
  - Brake fluid
 Until the fluid level reaches “LOWER” level line (a).

 **Recommended brake fluid:**  
DOT #4

**⚠ WARNING** \_\_\_\_\_

- Use only the designated quality brake fluid: otherwise, the rubber seals may deteriorate, causing leakage and poor brake performance.
- Refill with the same type of brake fluid; mixing fluids may result in a harmful chemical reaction and lead to poor performance.
- Be careful that water does not enter the master cylinder when refilling. Water will significantly lower the boiling point of the fluid and may result in vapor lock.



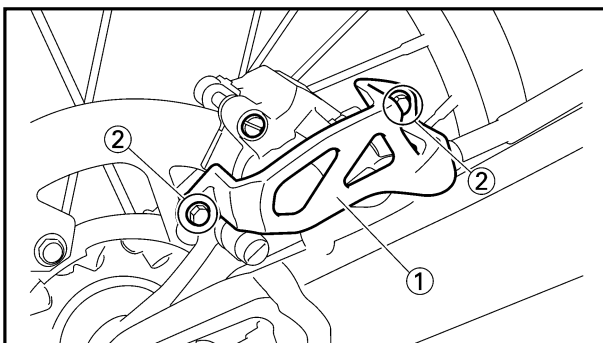
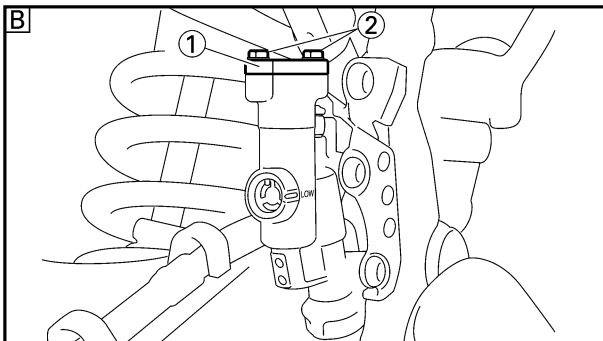
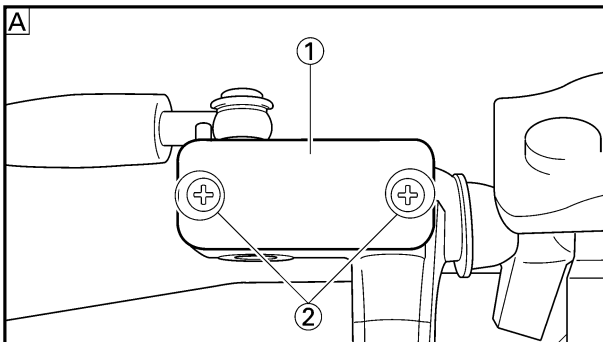
**CAUTION:** \_\_\_\_\_

Brake fluid may erode painted surfaces or plastic parts. Always clean up spilled fluid immediately.


**A** Front  
**B** Rear

2. Air bleed:
  - Brake system
  - Refer to “BRAKE SYSTEM AIR BLEEDING” section in the CHAPTER 3.


3. Inspect:
  - Brake fluid level
  - Fluid at lower level → Fill up.
  - Refer to “BRAKE FLUID LEVEL INSPECTION” section in the CHAPTER 3.



4. Install:
  - [Front]
    - Diaphragm
    - Master cylinder cap ①
    - Screw (master cylinder cap) ②

 **2 Nm (0.2 m•kg, 1.4 ft•lb)**

- [Rear]
  - Diaphragm
  - Master cylinder cap ①
  - Bolt (master cylinder cap) ②


 **2 Nm (0.2 m•kg, 1.4 ft•lb)**

**CAUTION:**

After installation, while pulling the lever in or pushing down on the pedal, check whether there is any brake fluid leaking where the union bolts are installed respectively at the master cylinder and caliper.

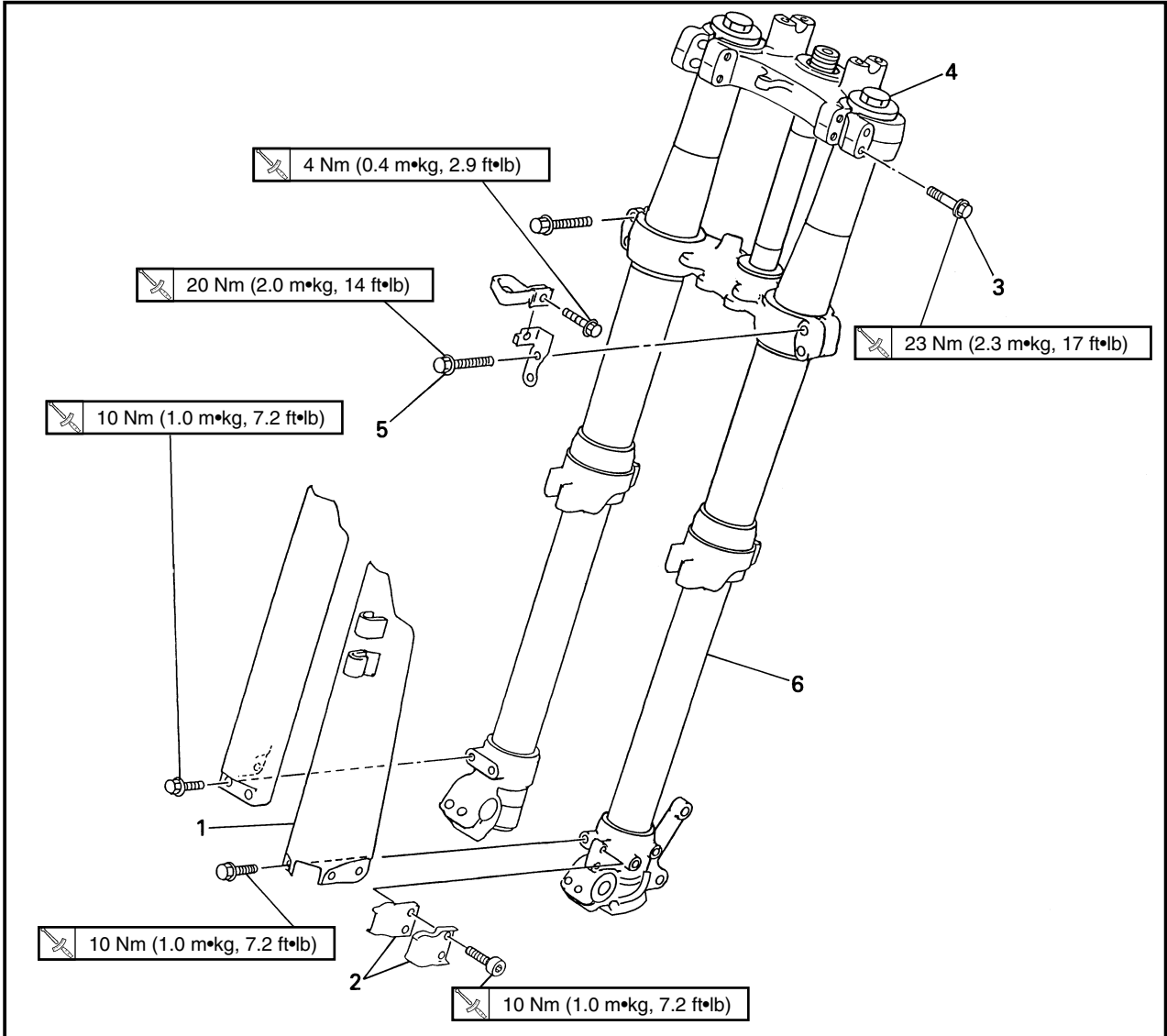
- A** Front
- B** Rear

5. Install: (rear brake only)
  - Protector ①
  - Bolt (protector) ②


 **7 Nm (0.7 m•kg, 5.1 ft•lb)**

EC550000

FRONT FORK

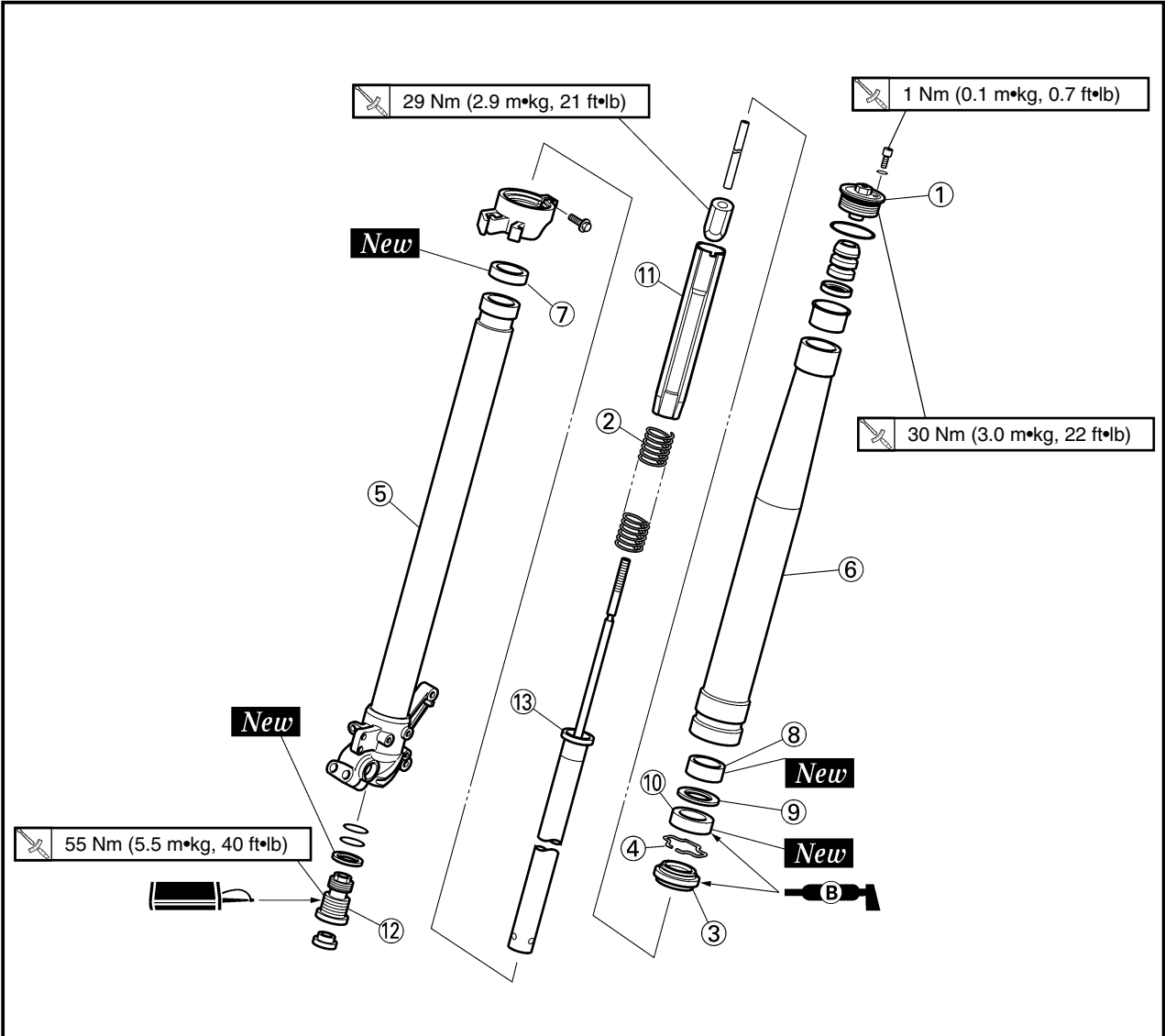


Extent of removal: ① Front fork removal



Extent of removal	Order	Part name	Q'ty	Remarks
Preparation for removal		<b>FRONT FORK REMOVAL</b>		<b>⚠WARNING</b> Support the machine securely so there is no danger of it falling over. Refer to "FRONT WHEEL AND REAR WHEEL" section. Refer to "FRONT BRAKE AND REAR BRAKE" section.
		Front wheel		
		Front caliper		
		Number plate		
	1	Protector	1	Only loosening. Loosen when disassembling the front fork. Only loosening.
	2	Brake hose holder	2	
	3	Pinch bolt (handle crown)	2	
	4	Cap bolt	1	
	5	Pinch bolt (under bracket)	2	
	6	Front fork	1	

EC558000

FRONT FORK DISASSEMBLY



Extent of removal: ① Oil seal removal ② Damper rod removal

Extent of removal	Order	Part name	Q'ty	Remarks	
		<b>FRONT FORK DISASSEMBLY</b>			
<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>①</p>  </div> <div style="text-align: center;"> <p>②</p>  </div> </div>	①	Cap bolt	1	Refer to "REMOVAL POINTS". Drain the fork oil.	
	②	Fork spring	1		
		③	Dust seal	1	} Refer to "REMOVAL POINTS".
		④	Stopper ring	1	
		⑤	Inner tube	1	
		⑥	Outer tube	1	
		⑦	Piston metal	1	
		⑧	Slide metal	1	
		⑨	Plain washer	1	
		⑩	Oil seal	1	
		⑪	Spring guide	1	
		⑫	Base valve	1	} Use special tool. } Refer to "REMOVAL POINTS".
		⑬	Damper rod	1	





EC556000

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

The front fork requires careful attention. So it is recommended that the front fork be maintained at the dealers.

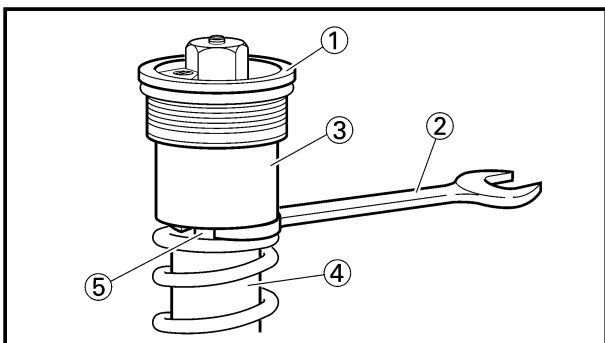
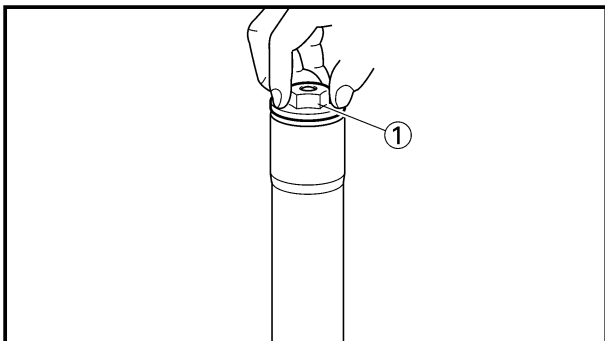
**CAUTION:** \_\_\_\_\_

To prevent an accidental explosion of air, the following instructions should be observed:

- The front fork with a built-in piston rod has a very sophisticated internal construction and is particularly sensitive to foreign material.

Use enough care not to allow any foreign material to come in when the oil is replaced or when the front fork is disassembled and reassembled.

- Before removing the cap bolts or front forks, be sure to extract the air from the air chamber completely.



EC553000

**REMOVAL POINTS**

EC553151

**Cap bolt**

1. Remove:
  - Cap bolt ①
 From the outer tube.

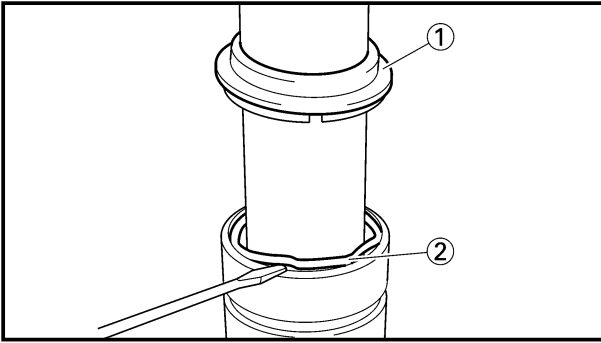
**NOTE:** \_\_\_\_\_

Before removing the front fork from the machine, loosen the cap bolt.

2. Remove:
  - Cap bolt ①

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

- While compressing the fork spring, set the thin type spanners ② between the spacer ③ and spring guide ④.
- Hold the locknut ⑤ and remove the cap bolt.



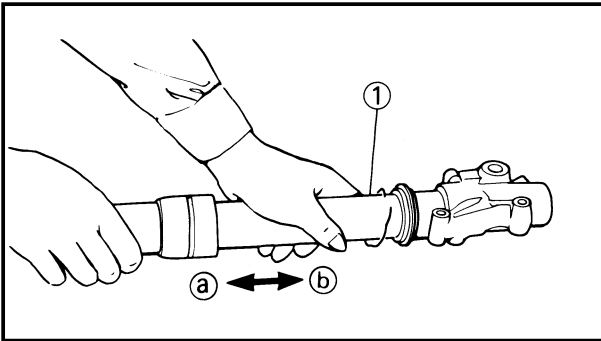
EC553201

**Inner tube**

- Remove:
  - Dust seal ①
  - Stopper ring ②
 Using slotted-head screwdriver.

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

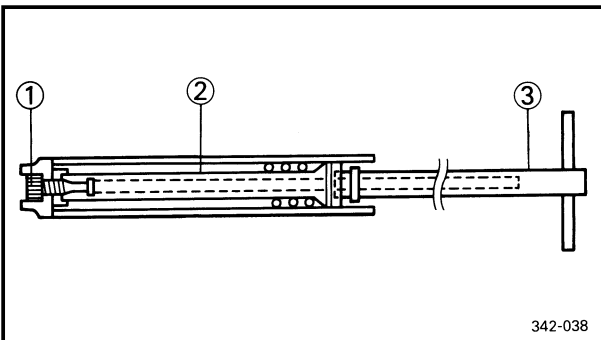
**Take care not to scratch the inner tube.**



- Remove:
  - Inner tube ①

**Oil seal removal steps:**

- Push in slowly (a) the inner tube just before it bottoms out and then pull it back quickly (b).
- Repeat this step until the inner tube can be pulled out from the outer tube.



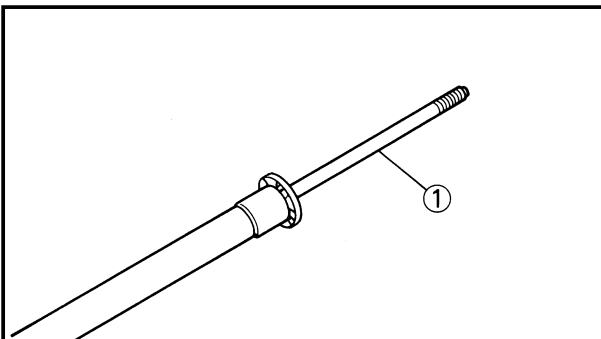
EC553311

**Damper rod**

- Remove:
  - Base valve ①
  - Damper rod ②

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

Use a damper rod holder ③ to lock the damper rod.



EC554000

**INSPECTION**

EC554100

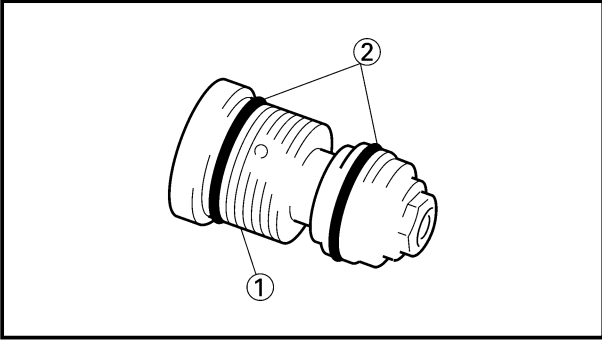
**Damper rod**

- Inspect:
  - Damper rod ①
 Bend/Damage → Replace damper rod.

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

**The front fork with a built-in piston rod has a very sophisticated internal construction and is particularly sensitive to foreign material.**

**Use enough care not to allow any foreign material to come in when the oil is replaced or when the front fork is disassembled and reassembled.**



EC554200

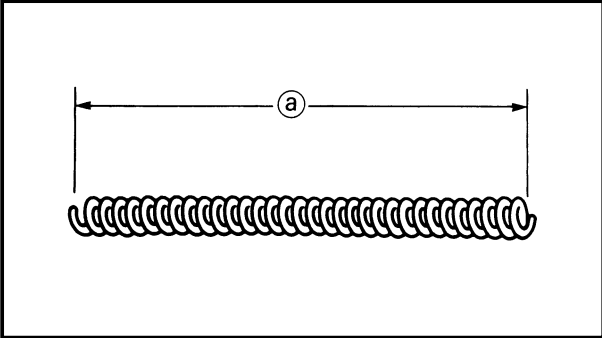
**Base valve**

1. Inspect:
  - Valve assembly ①  
Wear/Damage → Replace.
  - O-ring ②  
Damage → Replace.

EC554400

**Fork spring**

1. Measure:
  - Fork spring free length ①  
Out of specification → Replace.

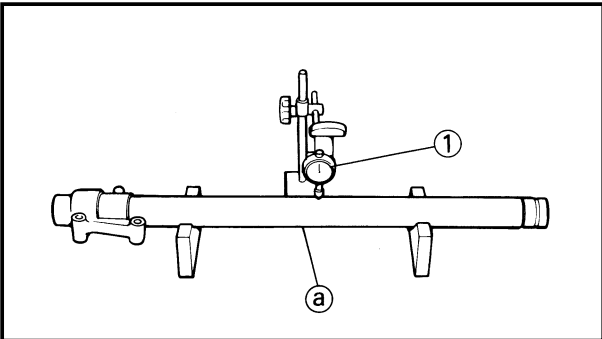


Fork spring free length:	
Standard	<Limit>
460 mm (18.1 in)	455 mm (17.9 in)

EC554502

**Inner tube**

1. Inspect:
  - Inner tube surface ①  
Score marks → Repair or replace.  
Use #1,000 grit wet sandpaper.  
Damaged oil lock piece → Replace.
  - Inner tube bends  
Out of specification → Replace.  
Use the dial gauge ①.



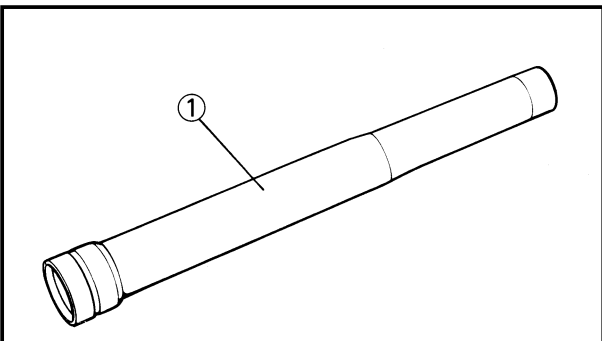
Inner tube bending limit:
0.2 mm (0.008 in)

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

The bending value is shown by one half of the dial gauge reading.

**⚠ WARNING** \_\_\_\_\_

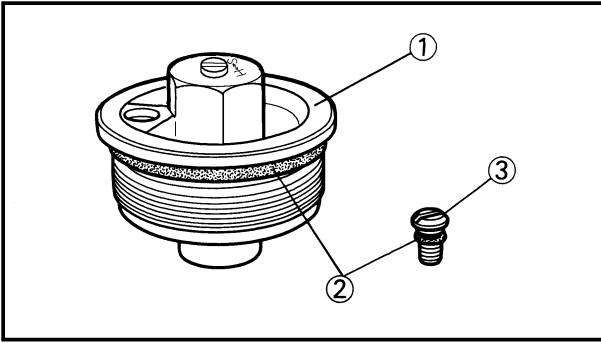
Do not attempt to straighten a bent inner tube as this may dangerously weaken the tube.



EC554600

**Outer tube**

1. Inspect:
  - Outer tube ①  
Score marks/Wear/Damage → Replace.



EC554700

**Cap bolt**

1. Inspect:
  - Cap bolt ①
  - O-ring ②
  - Air bleed screw ③
 Wear/Damage → Replace.

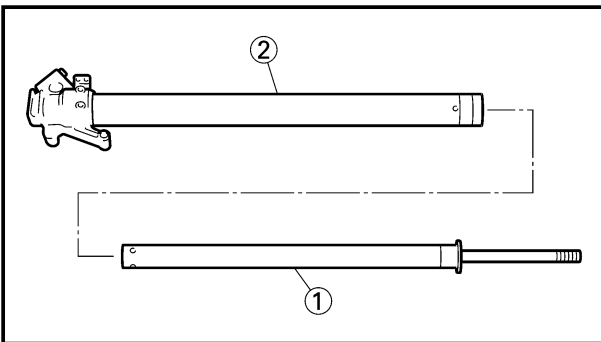
EC555000

**ASSEMBLY AND INSTALLATION**

EC5551A1

**Front fork assembly**

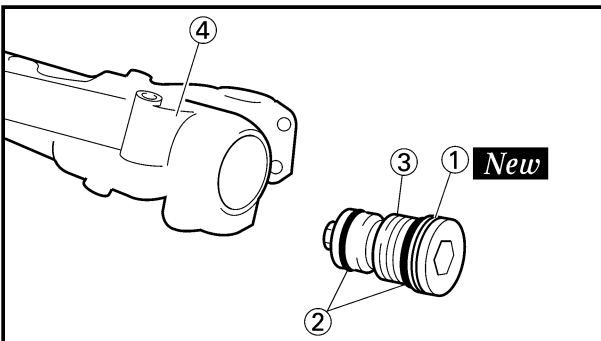
1. Wash the all parts in a clean solvent.



2. Install:
  - Damper rod ①
  - To inner tube ②.

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

To install the damper rod into the inner tube, hold the inner tube aslant. If the inner tube is held vertically, the damper rod may fall into it, damaging the valve inside.



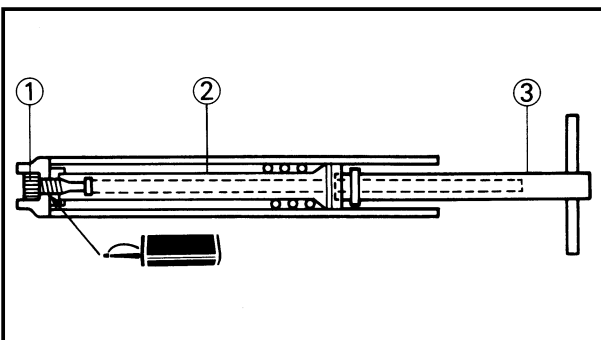
3. Install:
  - Copper washer ① **New**
  - O-ring ②
  - Base valve ③
  - To inner tube ④.

4. Tighten:
  - Base valve ①

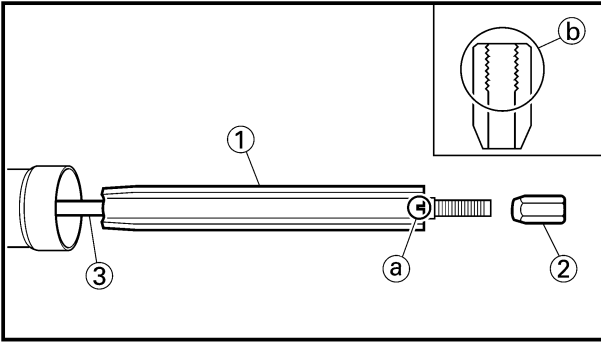
**55 Nm (5.5 m•kg, 40 ft•lb)**

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

- Use a damper rod holder ② to lock the damper rod ③.
- Apply the LOCTITE® on the base valve thread.



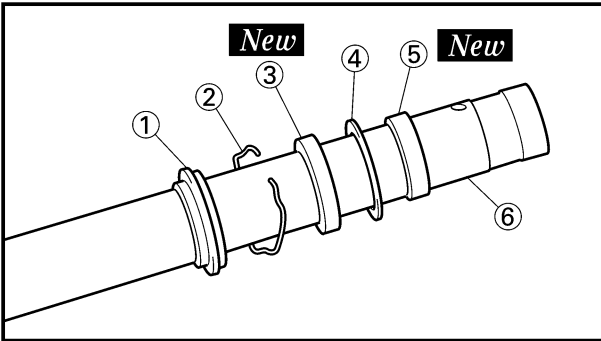
**Damper rod holder:**  
YM-1423/90890-01423



5. Install:
- Spring guide ①
  - Locknut ②
- To damper rod ③.

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

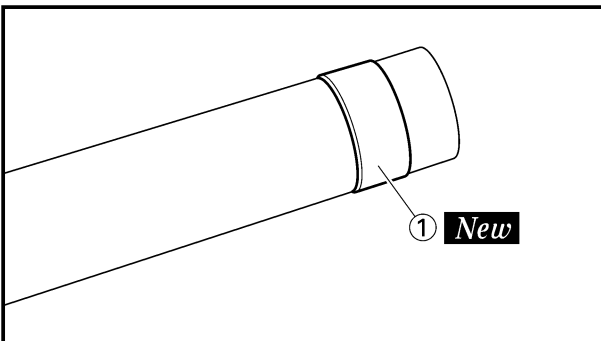
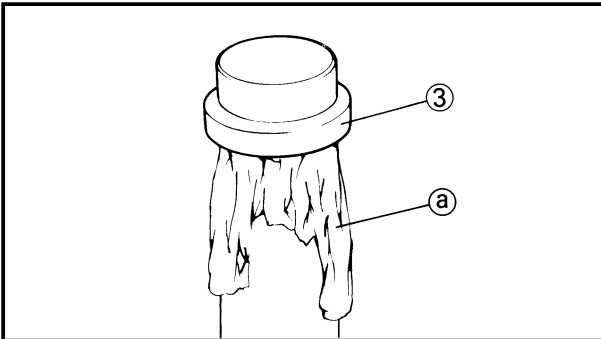
- Install the spring guide with its cut (a) facing upward.
- With its thread (b) facing upward, fully finger tighten the locknut onto the damper rod.



6. Install:
- Dust seal ①
  - Stopper ring ②
  - Oil seal ③ **New**
  - Plain washer ④
  - Slide metal ⑤ **New**
- To inner tube ⑥.

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

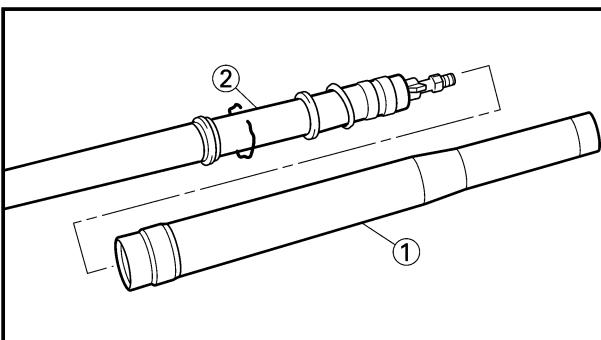
- Apply the fork oil on the inner tube.
- When installing the oil seal, use vinyl seat (a) with fork oil applied to protect the oil seal lip.
- Install the oil seal with its manufacture's marks or number facing the axle holder side.



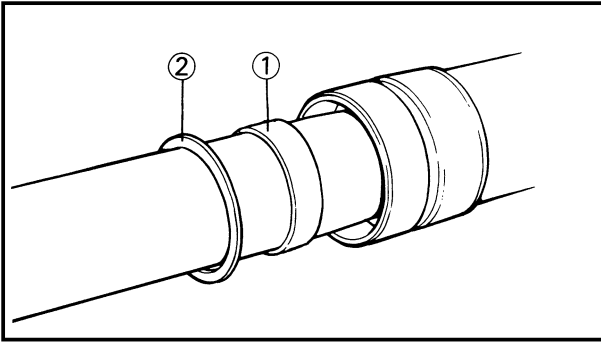
7. Install:
- Piston metal ① **New**

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

Install the piston metal onto the slot on inner tube.



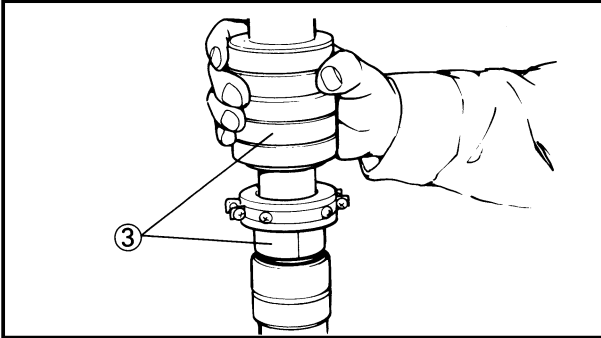
8. Install:
- Outer tube ①
- To inner tube ②.



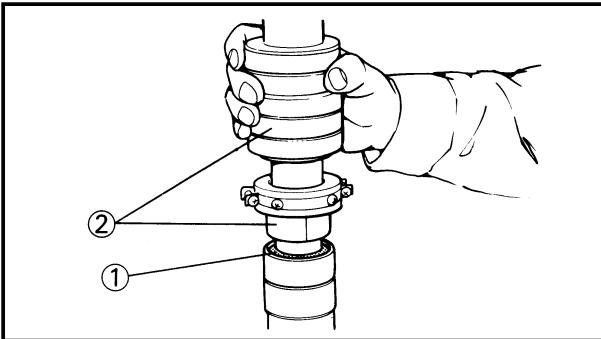
9. Install:
- Slide metal ①
  - Plain washer ②
- To outer tube slot.

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

Press the slide metal into the outer tube with fork seal driver ③.



**Fork seal driver:**  
YM-01442/90890-01442



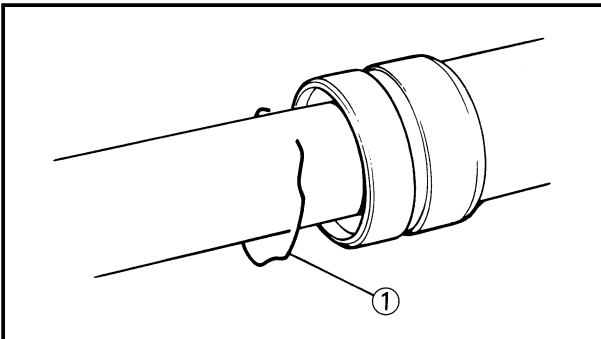
10. Install:
- Oil seal ①

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

Press the oil seal into the outer tube with fork seal driver ②.



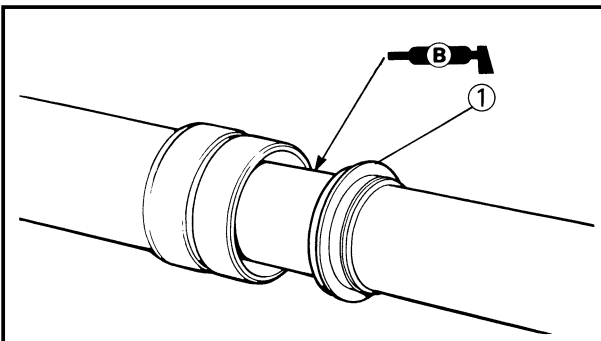
**Fork seal driver:**  
YM-01442/90890-01442



11. Install:
- Stopper ring ①

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

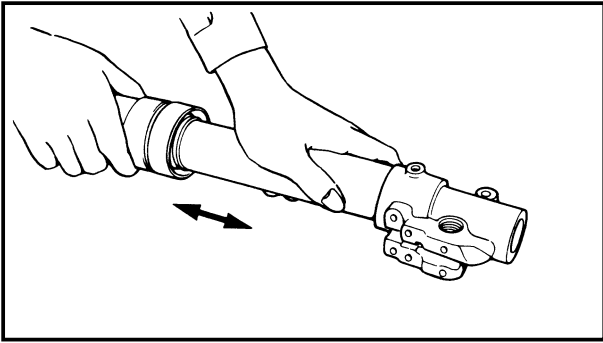
Fit the stopper ring correctly in the groove in the outer tube.



12. Install:
- Dust seal ①

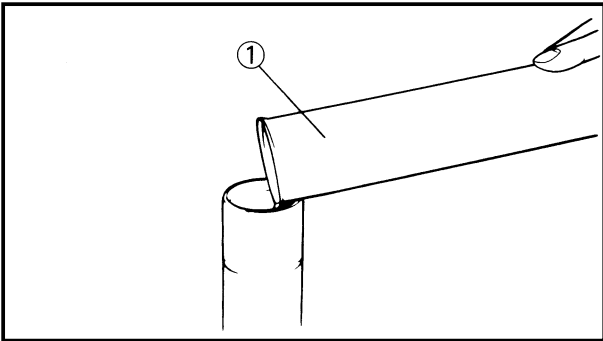
**NOTE:** \_\_\_\_\_

Apply the lithium soap base grease on the inner tube.



13. Check:

- Inner tube smooth movement
- Tightness/Binding/Rough spots → Repeat the steps 2 to 12.



14. Compress the front fork fully.

15. Fill:

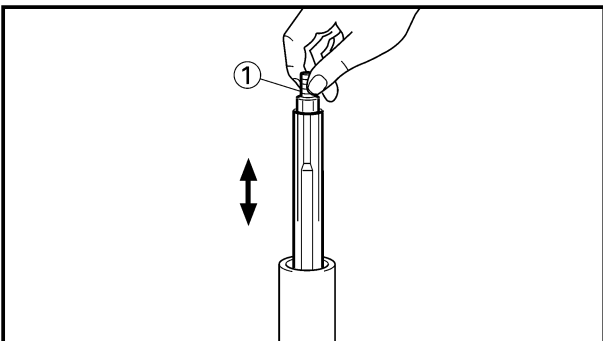
- Front fork oil
- Until outer tube top surface with recommended fork oil ①.



**Recommended oil:**  
Suspension oil "01"

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

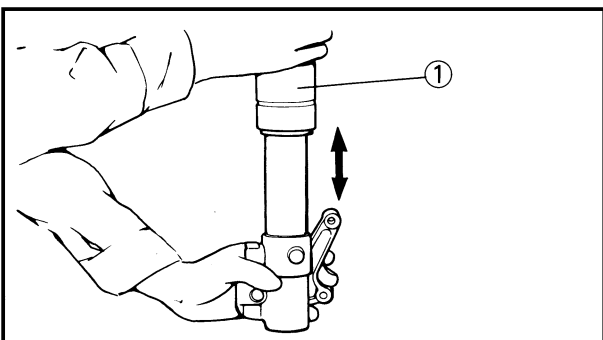
- Be sure to use recommended fork oil. If other oils are used, they may have an excessively adverse effect on the front fork performance.
- Never allow foreign materials to enter the front fork.



16. After filling, pump the damper rod ① slowly up and down more than 10 times to distribute the fork oil.

17. Fill:

- Front fork oil
- Until outer tube top surface with recommended fork oil once more.



18. After filling, pump the outer tube ① slowly up and down (about 200 mm (7.9 in) stroke) to distribute the fork oil once more.

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

Be careful not to excessive full stroke. A stroke of 200 mm (7.9 in) or more will cause air to enter. In this case, repeat the steps 15 to 18.

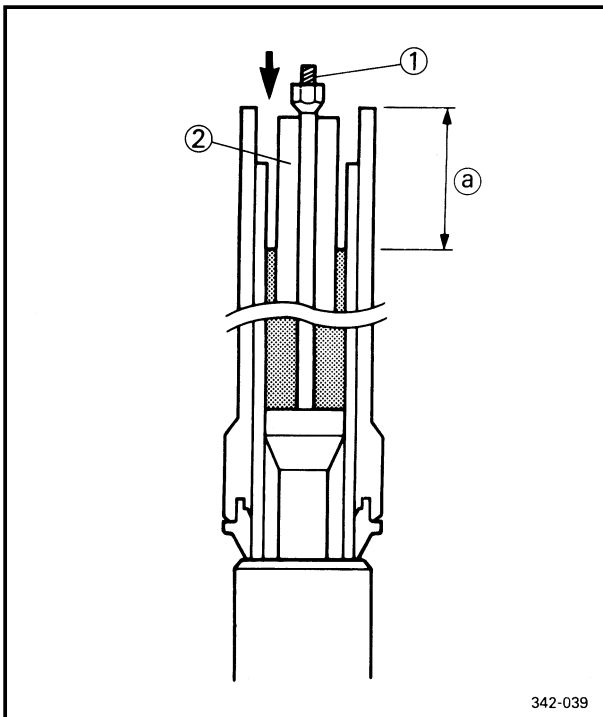


19. Wait ten minutes until the air bubbles have been removed from the front fork, and the oil has dispense evenly in system before setting recommended oil level.

**NOTE:**

Fill with the fork oil up to the top end of the outer tube, or the fork oil will not spread over to every part of the front forks, thus making it impossible to obtain the correct level.

Be sure to fill with the fork oil up to the top of the outer tube and bleed the front forks.



20. Measure:

- Oil level (left and right) (a)
- Out of specification → Adjust.



**Standard oil level:**

135 mm (5.31 in)

**Extent of adjustment:**

80~150 mm (3.15~5.91 in)

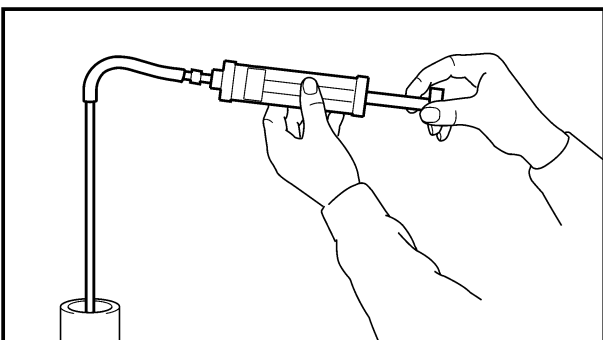
From top of outer tube with inner tube and damper rod (1) fully compressed without spring.

**NOTE:**

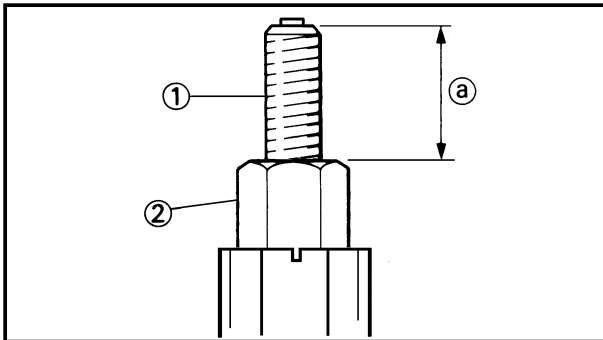
Be sure to install the spring guide (2) when checking the oil level.

**WARNING**

Never fail to make the oil level adjustment between the maximum and minimum level and always adjust each front fork to the same setting. Uneven adjustment can cause poor handling and loss of stability.



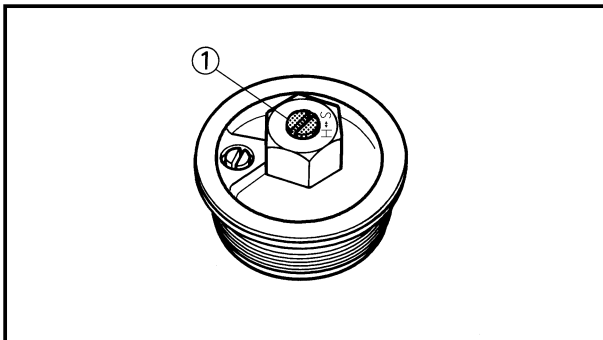




21. Measure:
- Distance (a)
- Out of specification → Turn into the locknut.



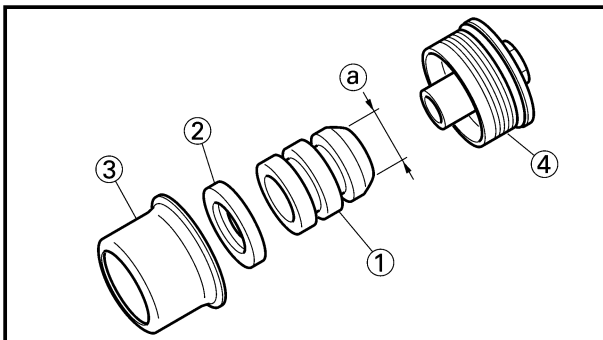
**Distance (a):**  
**20 mm (0.79 in) or more**  
**Between damper rod (1) top and**  
**locknut (2) top.**



22. Loosen:
- Rebound damping adjuster (1)

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

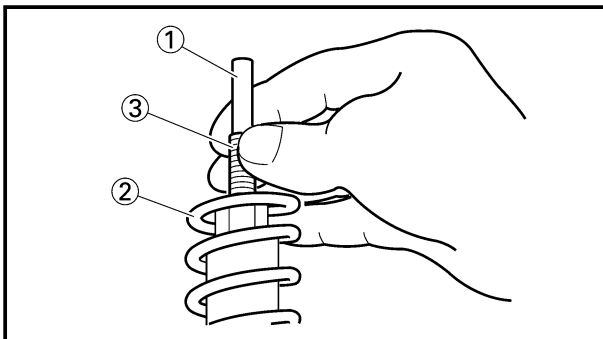
- Loosen the rebound damping adjuster finger tight.
- Record the set position of the adjuster (the amount of turning out the fully turned in position).



23. Install:
- Cushion rubber (1)
  - Washer (2)
  - Spacer (3)
- To cap bolt (4).

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

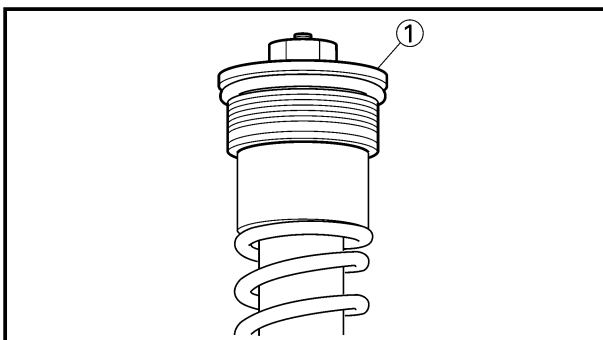
Install the cushion rubber with its smaller dia. end (a) facing the cap bolt.



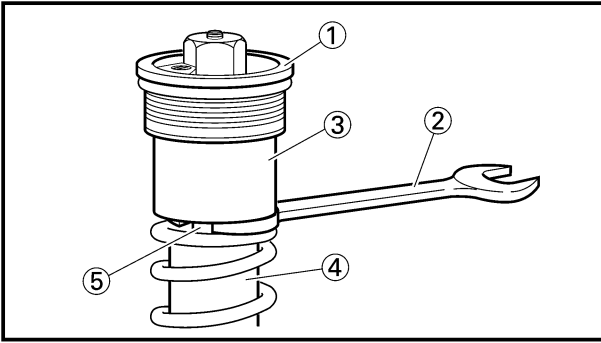
24. Install:
- Push rod (1)
  - Fork spring (2)

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


- Install the fork spring with the damper rod (3) pulled up.
- Install the fork spring with its smaller pitch end facing the cap bolt. (For EUROPE)
- After installing the fork spring, hold the damper rod end so that it will not go down.



25. Install:
- Cap bolt (1)
- Fully tighten the cap bolt onto the damper rod by hand.

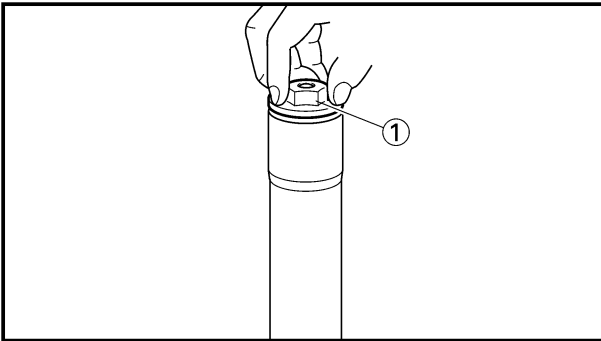


26. Tighten:  
 • Cap bolt (locknut) ①

 29 Nm (2.9 m•kg, 21 ft•lb)

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

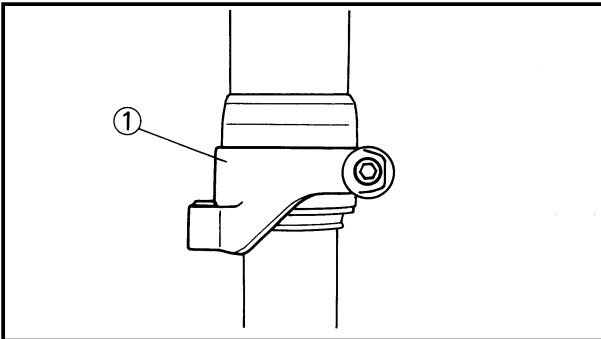
- While compressing the fork spring, set the thin type spanners ② between the spacer ③ and spring guide ④.
- Hold the locknut ⑤ and tighten the cap bolt with specified torque.



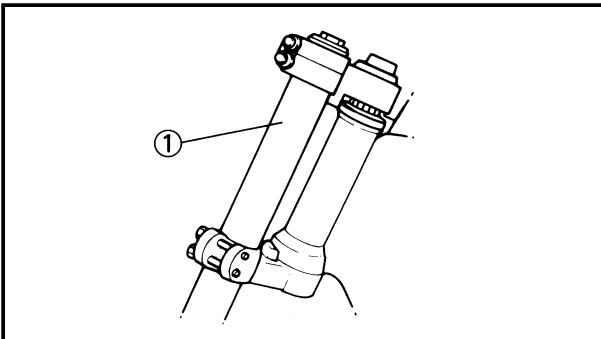
27. Install:  
 • Cap bolt ①  
 To outer tube.

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

Temporarily tighten the cap bolt.



28. Install:  
 • Protector guide ①

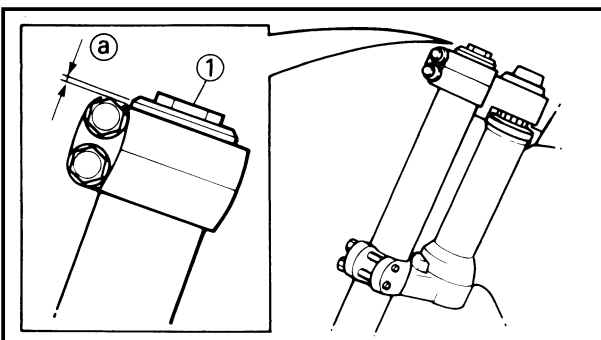


EC5552A1  
**Installation**

1. Install:  
 • Front fork ①


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

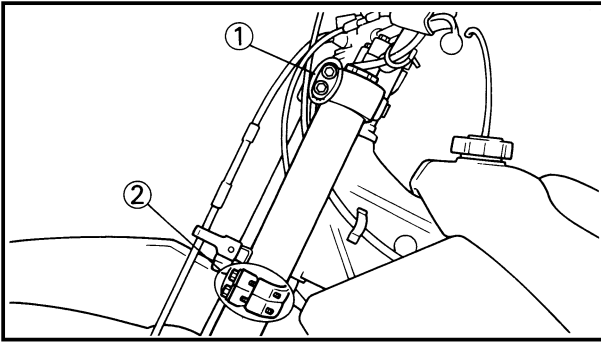
- Temporarily tighten the pinch bolts (under bracket).
- Do not tighten the pinch bolts (handle crown) yet.



2. Tighten:  
 • Cap bolt ①  30 Nm (3.0 m•kg, 22 ft•lb)

3. Adjust:  
 • Front fork top end ②

 **Front fork top end (standard) ②:  
 Zero mm (Zero in)**



4. Tighten:

- Pinch bolt (handle crown) ①

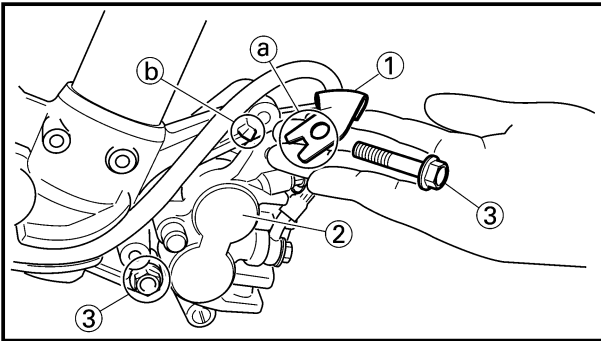
23 Nm (2.3 m•kg, 17 ft•lb)

- Pinch bolt (under bracket) ②

20 Nm (2.0 m•kg, 14 ft•lb)

**CAUTION:**

Tighten the under bracket to specified torque. If torqued too much, it may cause the front fork to malfunction.



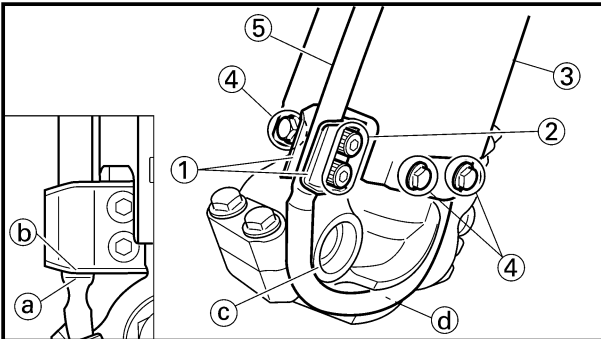
5. Install:

- Brake hose holder ①
- Caliper ②
- Bolt (caliper) ③

23 Nm (2.3 m•kg, 17 ft•lb)

**NOTE:**

Fit the brake hose holder cut ① over the projection ② on the front fork and clamp the brake hose.



6. Install:

- Brake hose holder ①
- Bolt (brake hose holder) ②

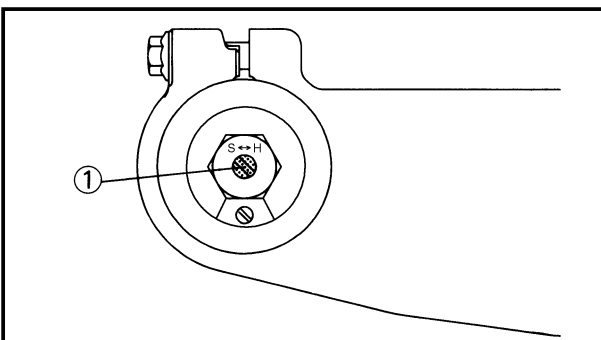
10 Nm (1.0 m•kg, 7.2 ft•lb)

- Protector ③
- Bolt (protector) ④

10 Nm (1.0 m•kg, 7.2 ft•lb)

**NOTE:**

When installing the brake hose holder, align the top ① of the brake hose neck with the brake hose holder bottom ②. Then pass the brake hose ⑤ in front of the axle boss ③ and fit it into the hose groove ④ so that the brake hose does not contact the nut (wheel axle).



7. Adjust:

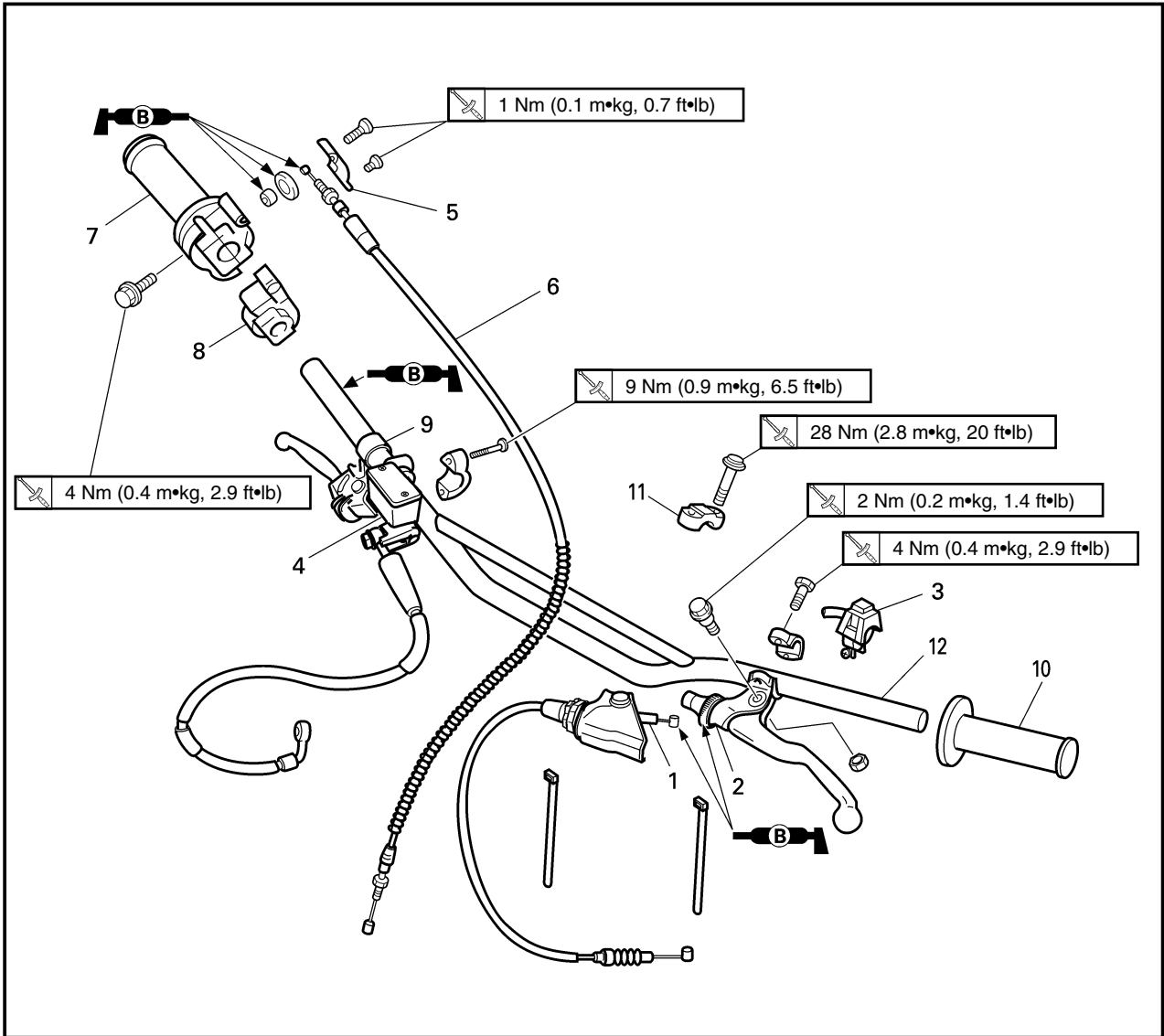
- Rebound damping force

**NOTE:**

Turn in the damping adjuster ① finger-tight and then turn out to the originally set position.

EC5B0000

## HANDLEBAR



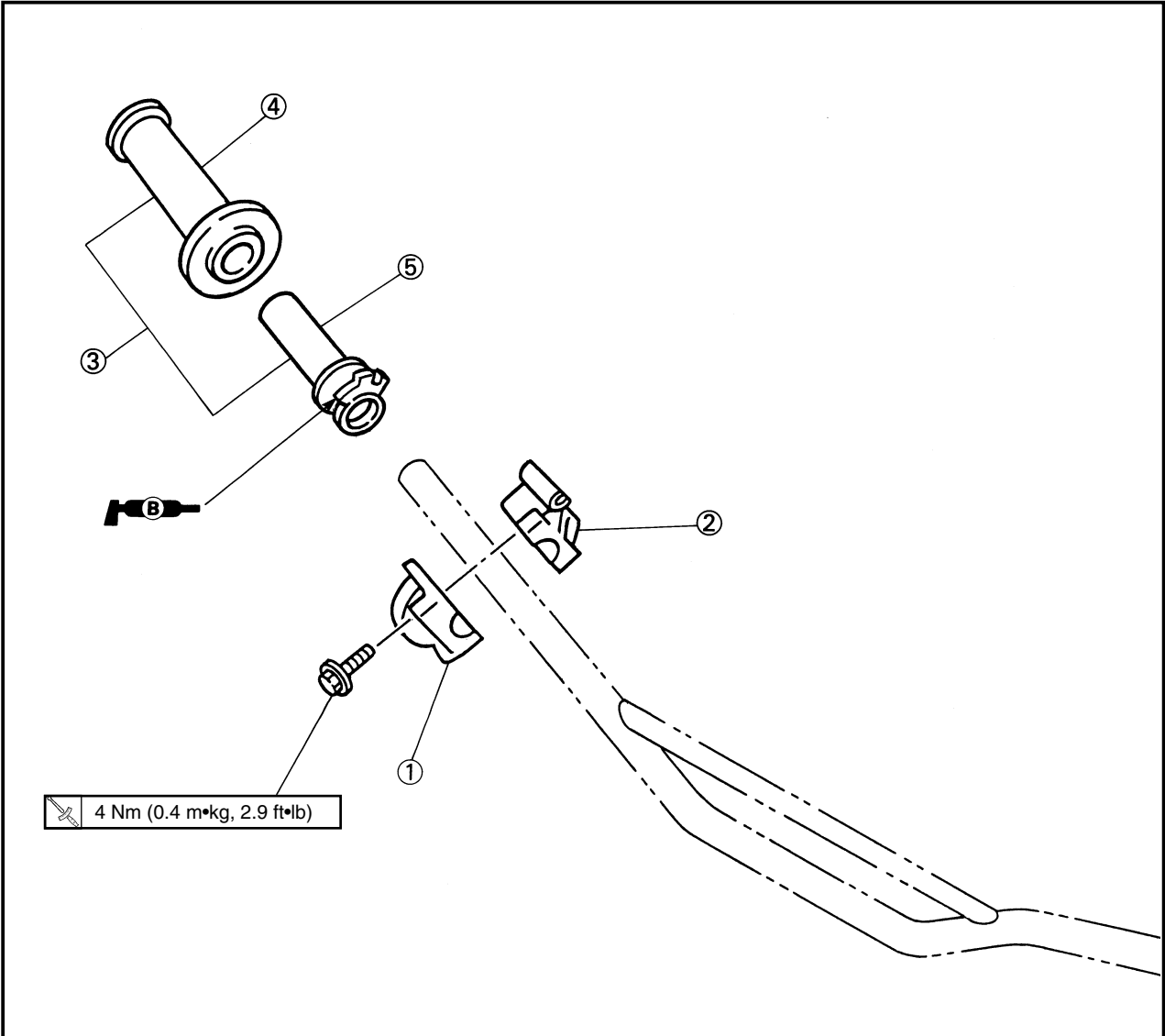
Extent of removal: ① Handlebar removal

Extent of removal	Order	Part name	Q'ty	Remarks
Preparation for removal		<b>HANDLEBAR REMOVAL</b>		
		Number plate		Remove the clamp portion only.
↑ ① ↓	1	Clutch cable	1	Disconnect at the lever side.
	2	Clutch lever holder	1	
	3	"ENGINE STOP" button	1	
	4	Master cylinder	1	Refer to "REMOVAL POINTS".
	5	Throttle cable cap	1	Turn over the cap cover.
	6	Throttle cable	1	Disconnect at the throttle side.
	7	Throttle	1	Loosen the bolts.
	8	Cap cover	1	
	9	Collar	1	
	10	Grip (left)	1	Refer to "REMOVAL POINTS".
	11	Handlebar holder (upper)	2	
	12	Handlebar	1	



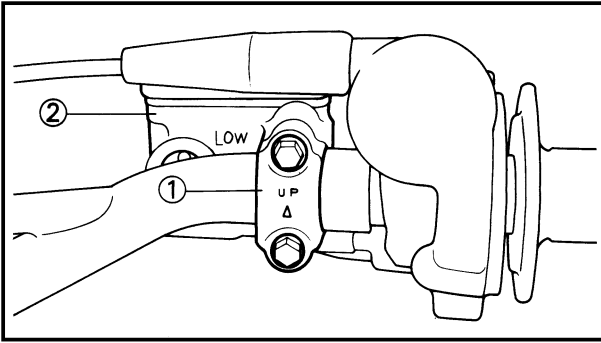
EC5B8000

**THROTTLE DISASSEMBLY**



Extent of removal: ① Throttle disassembly

Extent of removal	Order	Part name	Q'ty	Remarks
↑ ① ↓	<b>THROTTLE DISASSEMBLY</b>			
	①	Grip cap (lower)	1	Refer to "REMOVAL POINTS".
	②	Grip cap (upper)	1	
	③	Grip assembly	1	
	④	Grip (right)	1	
⑤	Tube guide	1		



EC5B3000

**REMOVAL POINTS**

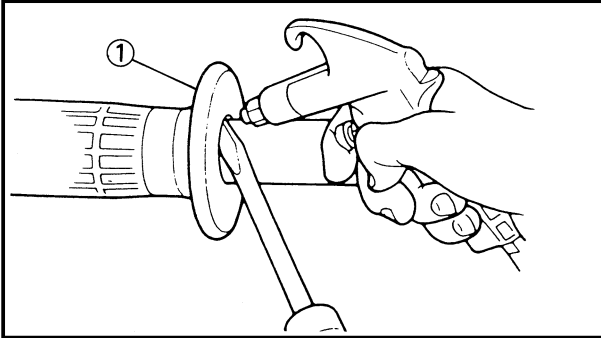
EC5B3100

**Master cylinder**

- Remove:
  - Master cylinder bracket ①
  - Master cylinder ②

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

- Do not let the master cylinder hang on the brake hose.
- Keep the master cylinder cap side horizontal to prevent air from coming in.



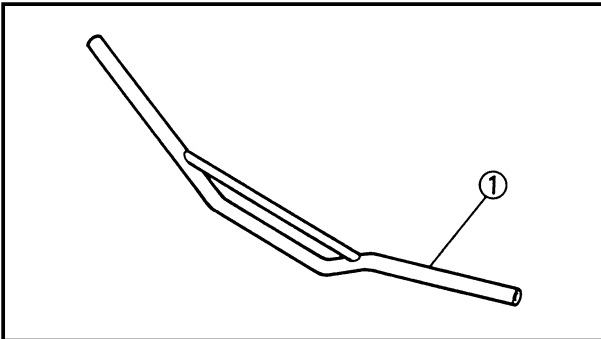
EC5B3200

**Grip**

- Remove:
  - Grip ①

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

Blow in air between the handlebar or tube guide and the grip. Then remove the grip which has become loose.



EC5B4000

**INSPECTION**

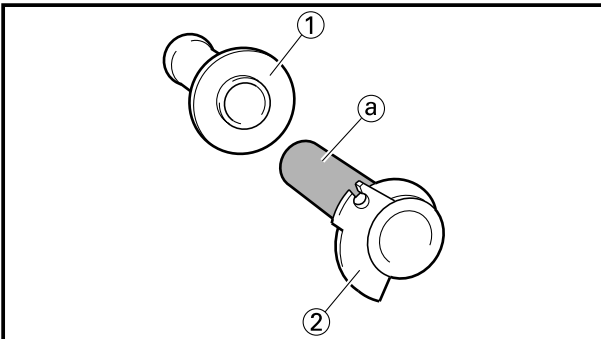
EC5B4100

**Handlebar**

- Inspect:
  - Handlebar ①
 Bends/Cracks /Damage → Replace.

**⚠WARNING** \_\_\_\_\_

Do not attempt to straighten a bent handlebar as this may dangerously weaken the handlebar.



EC5B5000

**ASSEMBLY AND INSTALLATION**

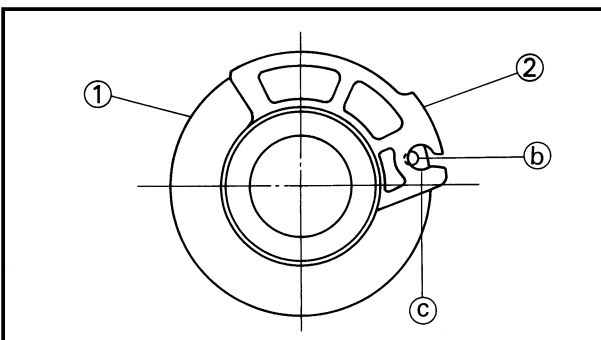
EC5B5100

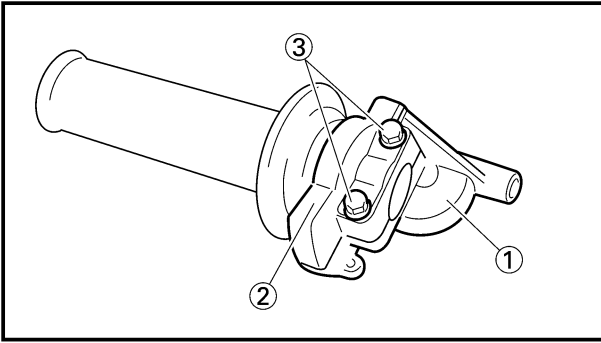
**Throttle assembly**

- Install
  - Grip (right) ①
 Apply the adhesive on the tube guide ②.

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

- Before applying the adhesive, wipe off grease or oil on the tube guide surface ② with a lacquer thinner.
- Align the mating mark ② on the grip (right) with the slot ③ in the tube guide.

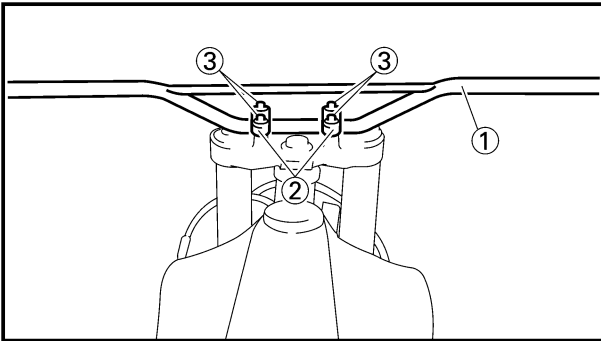




2. Install:
- Grip cap (upper) ①
  - Grip cap (lower) ②
  - Bolt (grip cap) ③

**NOTE:**


Temporarily tighten the bolts (grip cap).



EC5B5210

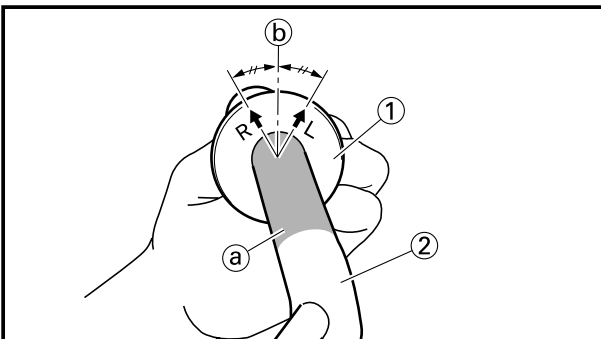
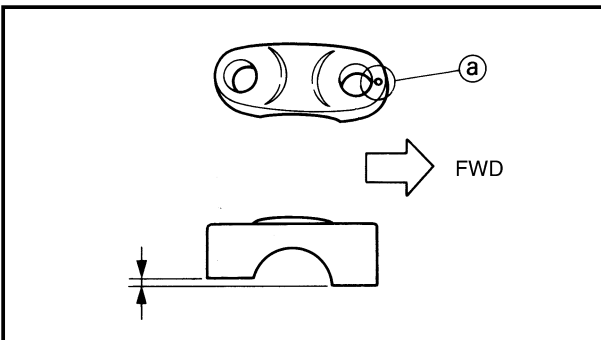
**Handlebar**

1. Install:
- Handlebar ①
  - Handlebar holder ②
  - Bolt (handlebar holder) ③

 **28 Nm (2.8 m•kg, 20 ft•lb)**

**NOTE:**

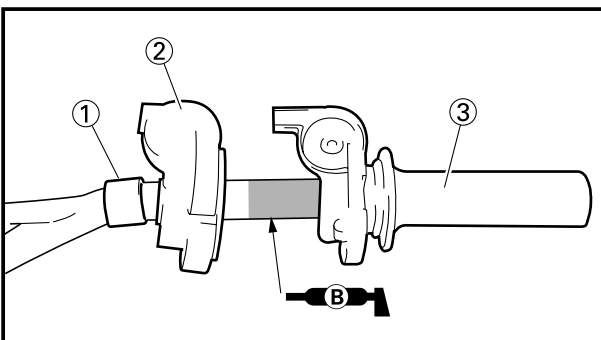
- The upper handlebar holder should be installed with the punched mark (a) forward.
- First tighten the bolts on the front side of the handlebar holder, and then tighten the bolts on the rear side.



2. Install:
- Grip (left) ①
- Apply the adhesive to the handlebar ②.

**NOTE:**

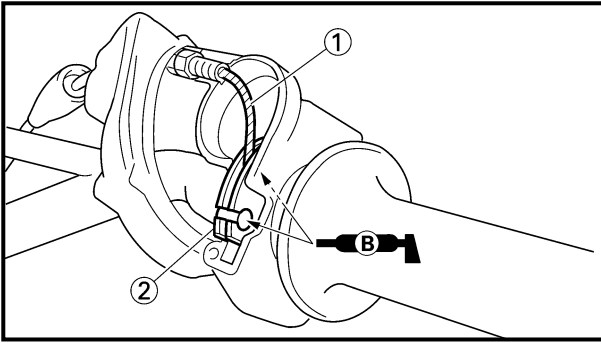
- Before applying the adhesive, wipe off grease or oil on the handlebar surface (a) with a lacquer thinner.
- Install the grip (left) to the handlebar so that the line (b) between the two arrow marks faces straight upward.



3. Install:
- Collar ①
  - Cap cover ②
  - Throttle ③

**NOTE:**

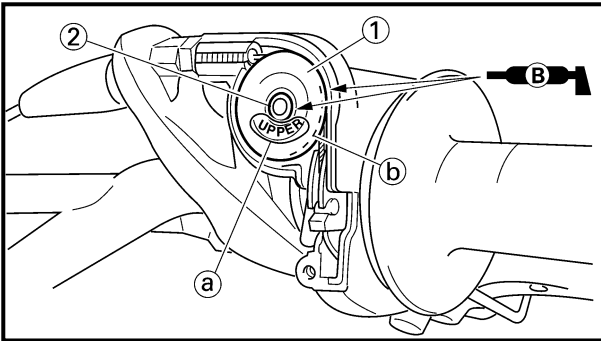
- Apply the lithium soap base grease on the throttle grip sliding surface.
- Tighten the grip cap bolts temporarily without the throttle being fixed to the handlebar.



4. Install:
- Throttle cable ①
  - To tube guide ②.

**NOTE:**

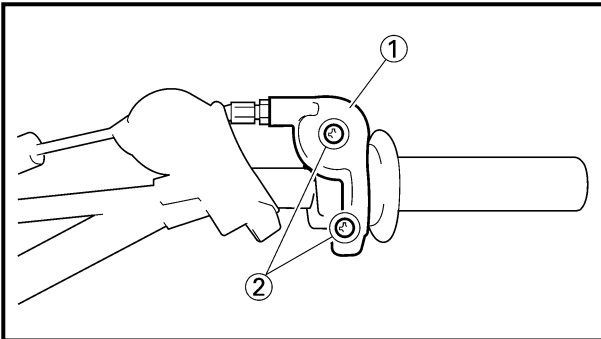
Apply the lithium soap base grease on the throttle cable end and tube guide cable winding portion.



5. Install:
- Roller ①
  - Collar ②

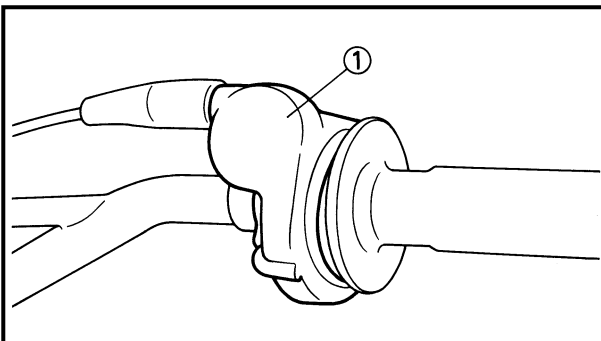
**NOTE:**

- Apply the lithium soap base grease on the roller sliding surface.
- Install the roller so that the "UPPER" mark (a) faces upward.
- Pass the throttle cable in the groove (b) in the roller



6. Install:
- Throttle cable cap ①
  - Screw (throttle cable cap) ②

1 Nm (0.1 m•kg, 0.7 ft•lb)



7. Adjust:
- Throttle grip free play
- Refer to "THROTTLE CABLE ADJUSTMENT" section in the CHAPTER 3.

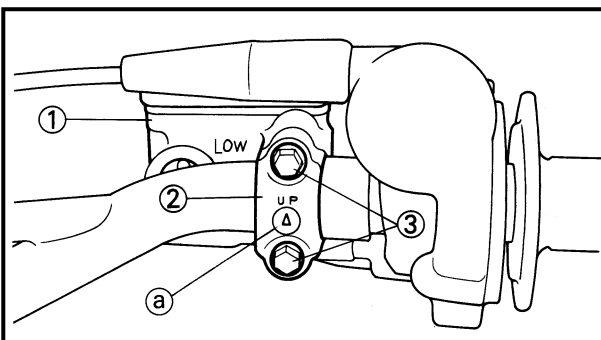
8. Install:
- Cap cover ①

9. Install:
- Master cylinder ①
  - Master cylinder bracket ②
  - Bolt (master cylinder bracket) ③

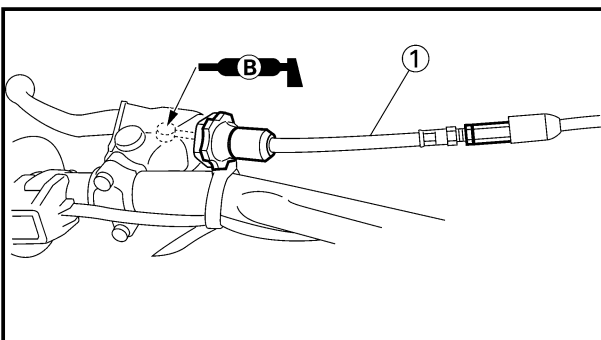
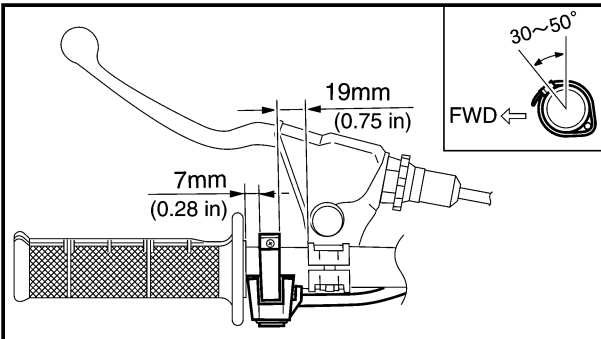
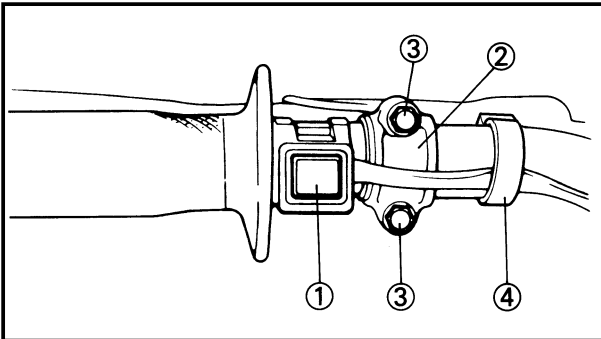
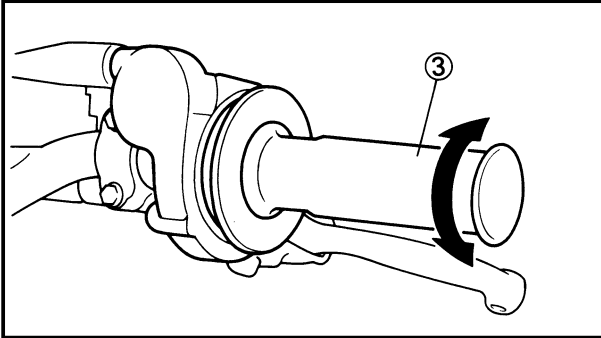
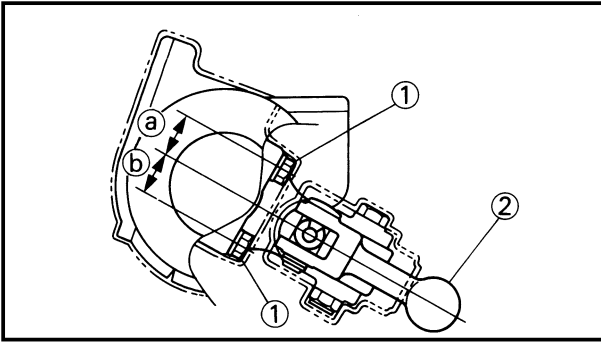
9 Nm (0.9 m•kg, 6.5 ft•lb)

**NOTE:**

- Install the bracket so that the arrow mark (a) faces upward.
- First tighten the bolt on the upper side of the master cylinder bracket, and then tighten the bolt on the lower side.







10. Install:

- Bolt (grip cap) ①

4 Nm (0.4 m•kg, 2.9 ft•lb)

**WARNING**

• Install the grip cap so that the gaps ② and ③ between the bolt (grip cap) and brake lever ② are equal. If you make a mistake in the grip cap installation position, the brake lever may contact the grip cap, resulting in poor brake performance.

• After tightening the bolts, check that the throttle grip ③ moves smoothly. If it does not, retighten the bolts for adjustment.

11. Install:

- "ENGINE STOP" button ①
- Clutch lever holder ②
- Bolt (clutch lever holder) ③

4 Nm (0.4 m•kg, 2.9 ft•lb)

- Clamp ④

**NOTE:**

• The "ENGINE STOP" button, clutch lever holder and clamp should be installed according to the dimensions shown.

• Pass the "ENGINE STOP" button lead in the middle of the clutch holder.

12. Install:

- Clutch cable ①

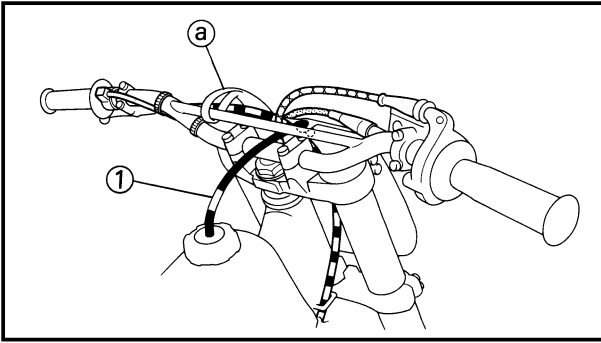
**NOTE:**

Apply the lithium soap base grease on the clutch cable end.

13. Adjust:

- Clutch lever free play

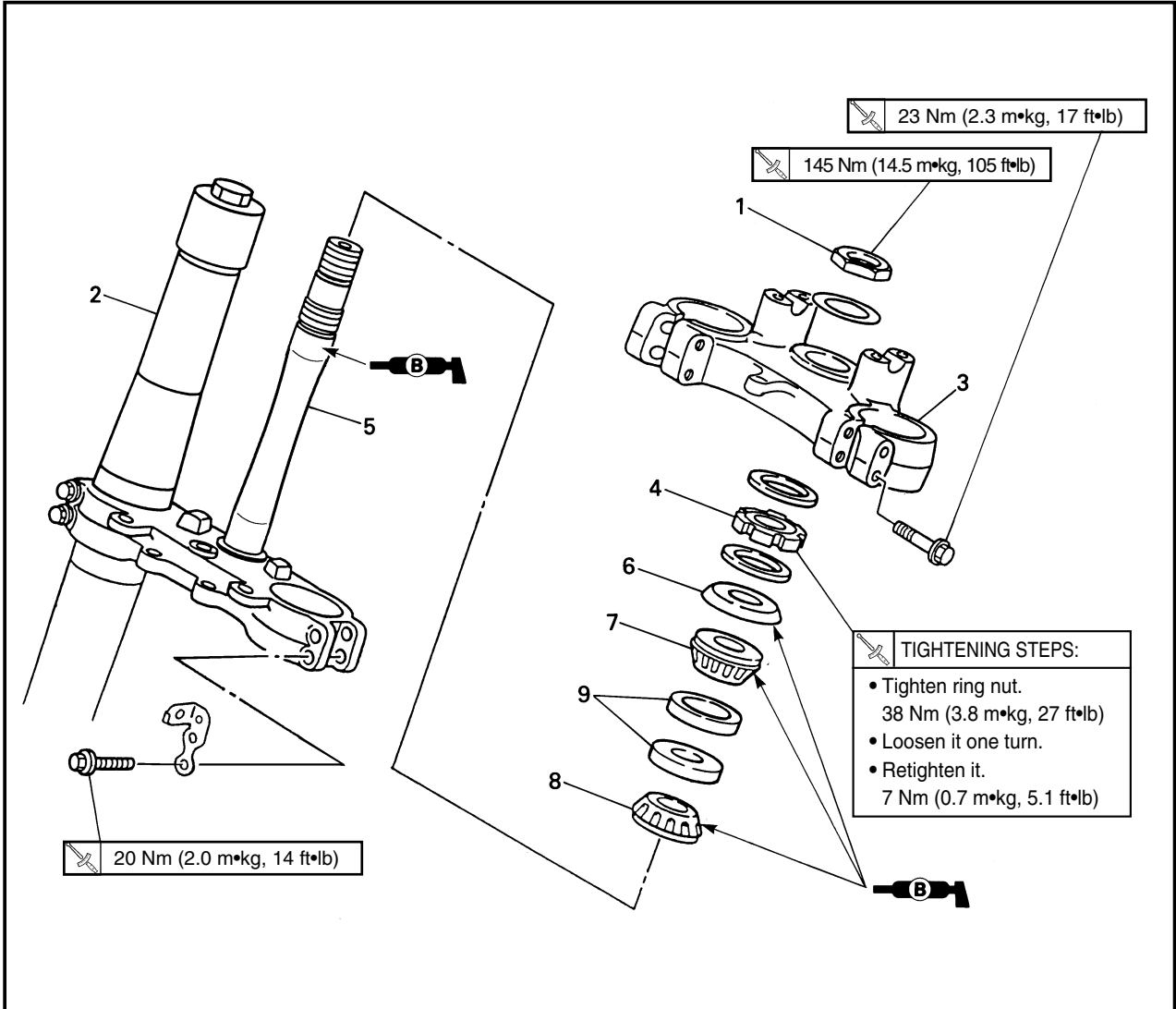
Refer to "CLUTCH ADJUSTMENT" section in the CHAPTER 3.



14. Clamp the clamp portion (a) of the number plate to the handlebar.
15. Insert the end of the fuel breather hose (1) into the hole of the number plate.

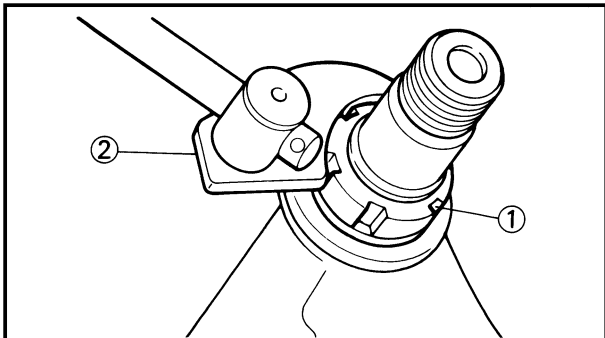
EC560000

STEERING



Extent of removal: ① Under bracket removal ② Bearing removal

Extent of removal	Order	Part name	Q'ty	Remarks
Preparation for removal		<b>STEERING REMOVAL</b> Hold the machine by placing the suitable stand under the engine. Number plate Handlebar Cable guide Front fender		<b>WARNING</b> Support the machine securely so there is no danger of it falling over.  Refer to "HANDLEBAR" section.
①	1	Steering shaft nut	1	
	2	Front fork	2	Refer to "FRONT FORK" section.
	3	Handle crown	1	
	4	Ring nut	1	Use special tool. Refer to "REMOVAL POINTS".
②	5	Under bracket	1	
	6	Ball race cover	1	
	7	Bearing (upper)	1	
	8	Bearing (lower)	1	Refer to "REMOVAL POINTS".
	9	Ball race	2	Refer to "REMOVAL POINTS".



EC563000

**REMOVAL POINTS**

EC563202

**Ring nut**

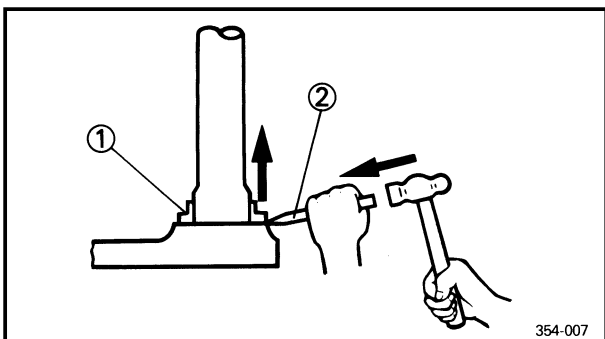
1. Remove:
  - Ring nut ①
 Use the ring nut wrench ②.



**Ring nut wrench:**  
YU-33975/90890-01403

**⚠WARNING**

Support the steering shaft so that it may not fall down.



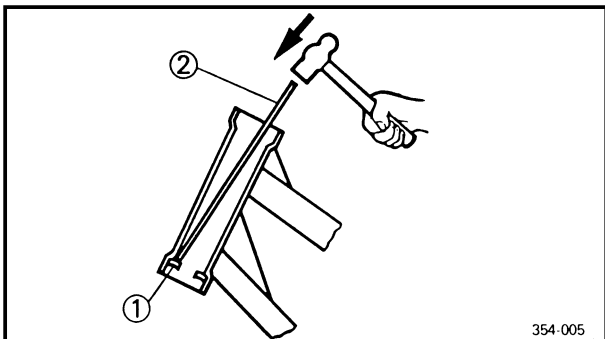
EC563300

**Bearing (lower)**

1. Remove:
  - Bearing (lower) ①
 Use the floor chisel ②.

**CAUTION:**

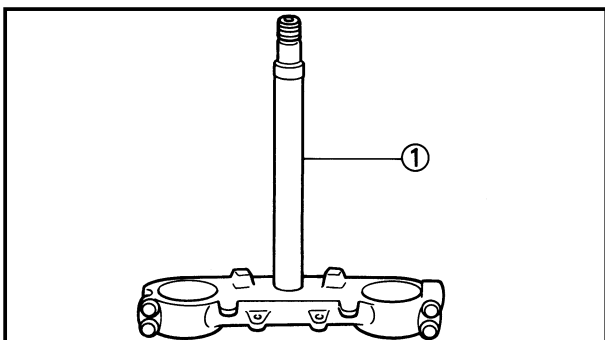
Take care not to damage the steering shaft thread.



EC563400

**Ball race**

1. Remove:
  - Ball race ①
 Remove the ball race using long rod ② and the hammer.



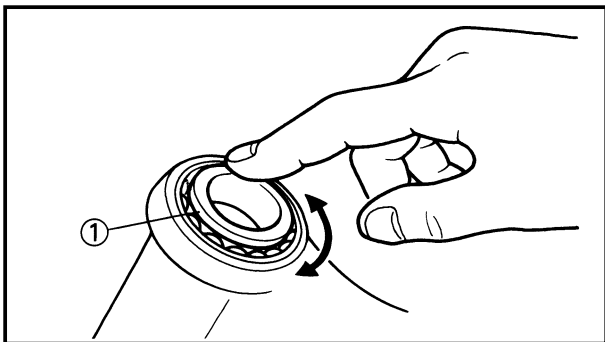
EC564000

**INSPECTION**

EC564200

**Steering shaft**

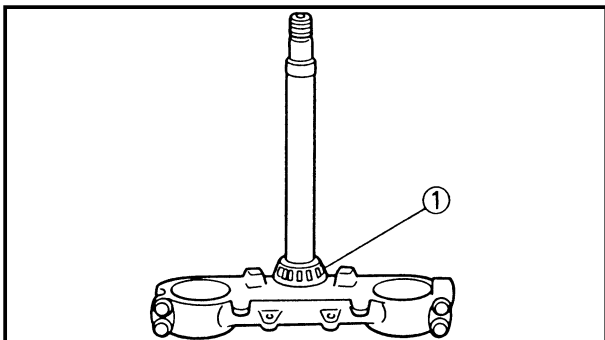
1. Inspect:
  - Steering shaft ①
 Bend/Damage → Replace.



EC564101

**Bearing and ball race**

1. Wash the bearings and ball races with a solvent.
2. Inspect:
  - Bearing ①
  - Ball race
 Pitting/Damage → Replace bearings and ball races as a set.  
 Install the bearing in the ball races. Spin the bearings by hand. If the bearings hang up or are not smooth in their operation in the ball races, replace bearings and ball races as a set.



EC565000

**ASSEMBLY AND INSTALLATION**

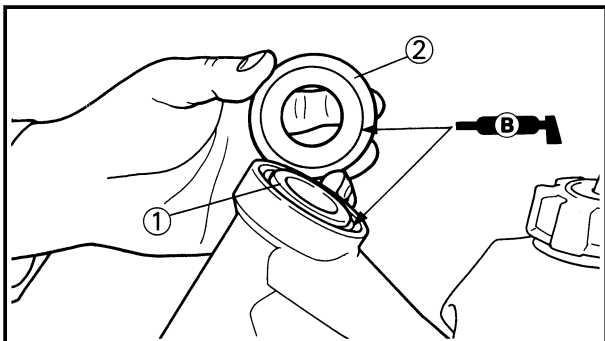
EC565113

**Under bracket**

1. Install:
  - Bearing (lower) ①

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

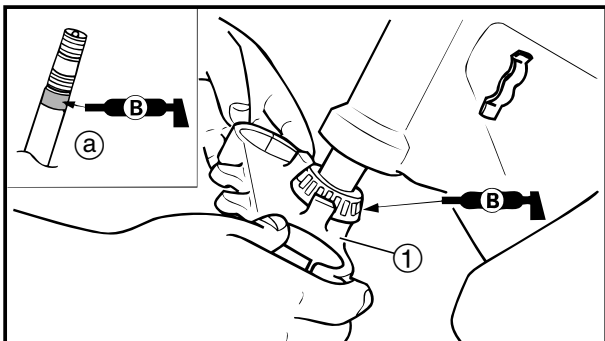
Apply the lithium soap base grease on the dust seal lip and bearing inner circumference.



2. Install:
  - Ball race
  - Bearing (upper) ①
  - Ball race cover ②

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

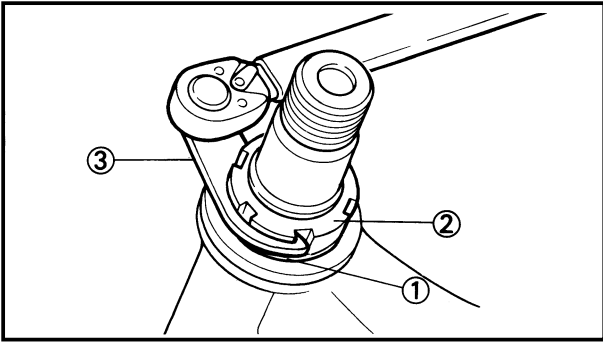
Apply the lithium soap base grease on the bearing and ball race cover lip.



3. Install:
  - Under bracket ①

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

Apply the lithium soap base grease on the bearing and the portion ② of the steering shaft.



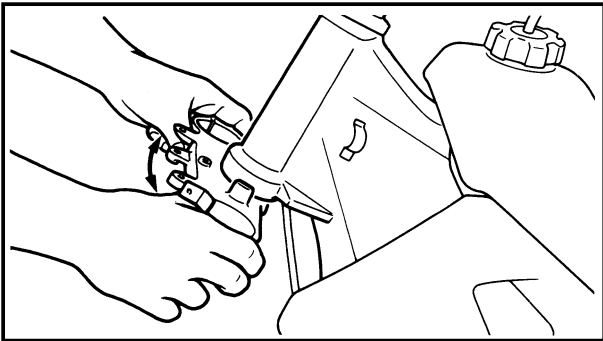
4. Install:

- Plain washer ①
- Ring nut ②

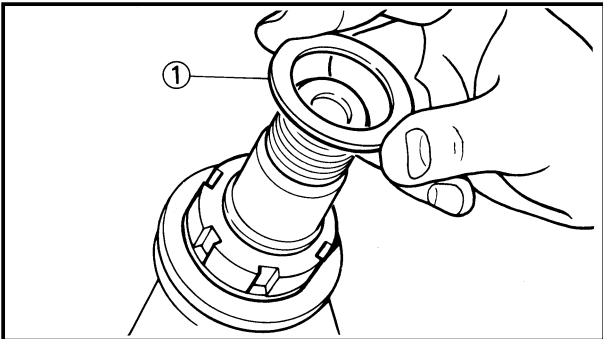
7 Nm (0.7 m•kg, 5.1 ft•lb)

Tighten the ring nut using the ring nut wrench ③.

Refer to “STEERING HEAD INSPECTION AND ADJUSTMENT” section in the CHAPTER 3.

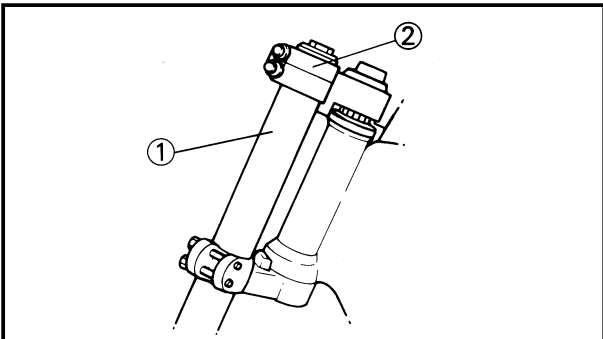


5. Check the steering shaft by turning it lock to lock. If there is any binding, remove the steering shaft assembly and inspect the steering bearings.



6. Install:

- Plain washer ①

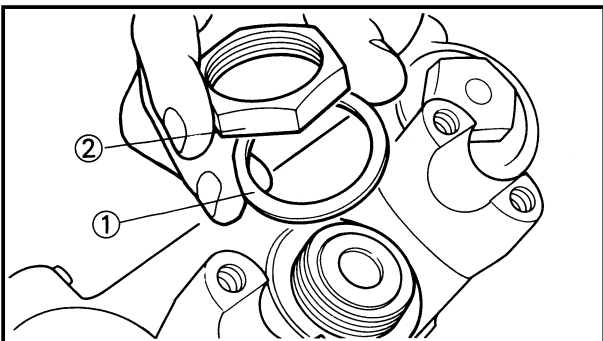


7. Install:

- Front fork ①
- Handle crown ②

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

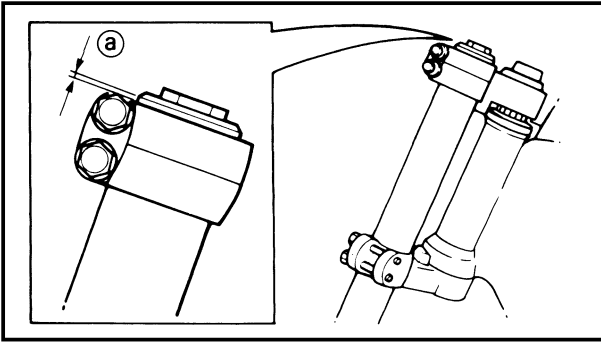
- Temporarily tighten the pinch bolts (under bracket).
- Do not tighten the pinch bolts (handle crown) yet.



8. Install:

- Plain washer ①
- Steering shaft nut ②

145 Nm (14.5 m•kg, 105 ft•lb)



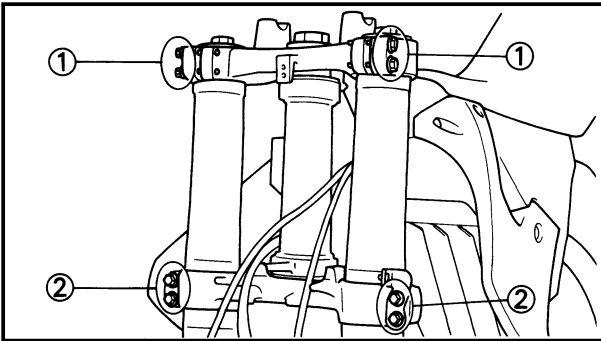
9. After tightening the nut, check the steering for smooth movement. If not, adjust the steering by loosening the ring nut little by little.

10. Adjust:

- Front fork top end ①



**Front fork top end (standard) ①:**  
**Zero mm (Zero in)**



11. Tighten:

- Pinch bolt (handle crown) ①

**23 Nm (2.3 m•kg, 17 ft•lb)**

- Pinch bolt (under bracket) ②

**20 Nm (2.0 m•kg, 14 ft•lb)**

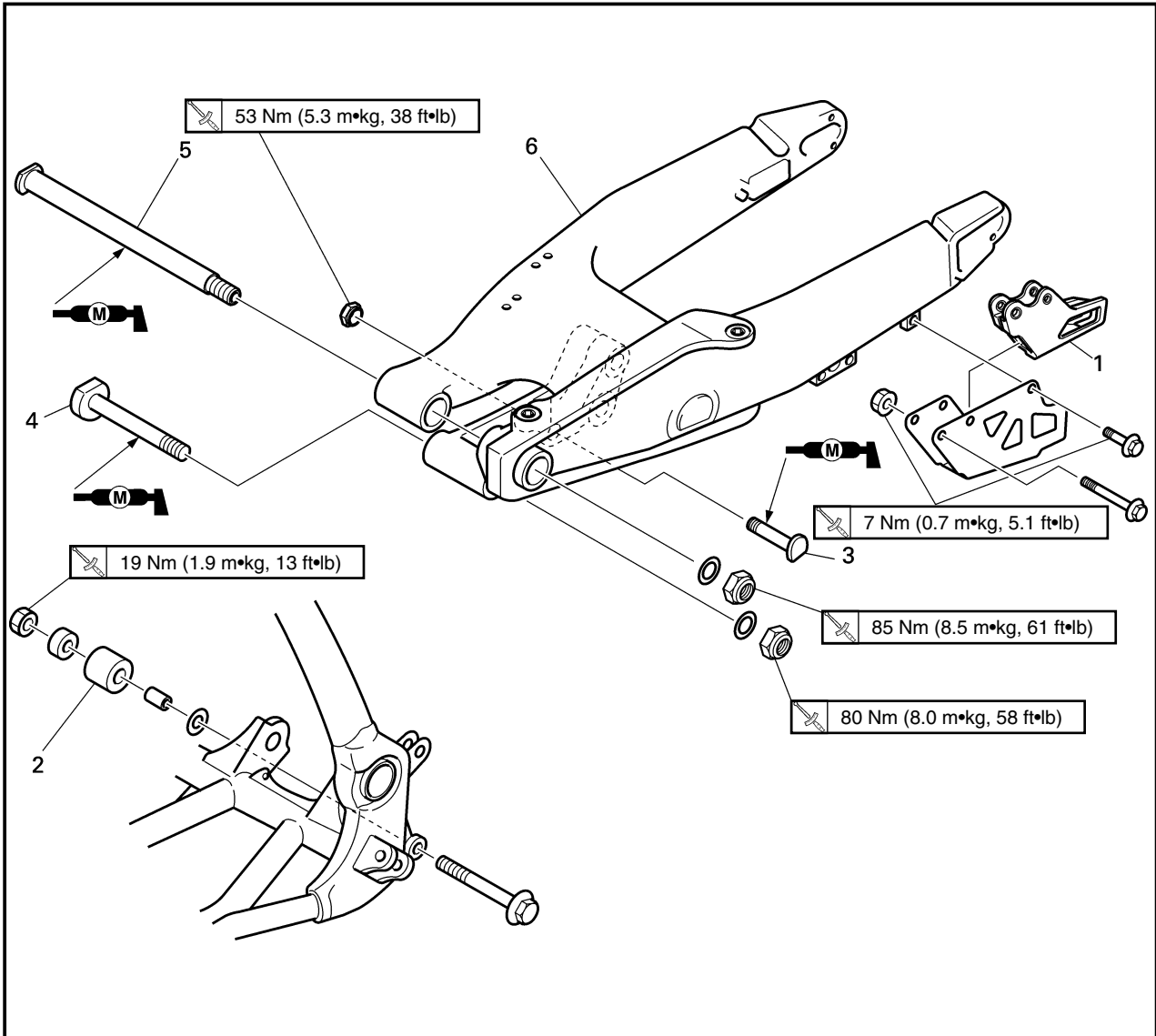
**CAUTION:**

**Tighten the under bracket to specified torque. If torqued too much, it may cause the front fork to malfunction.**



EC570000

SWINGARM



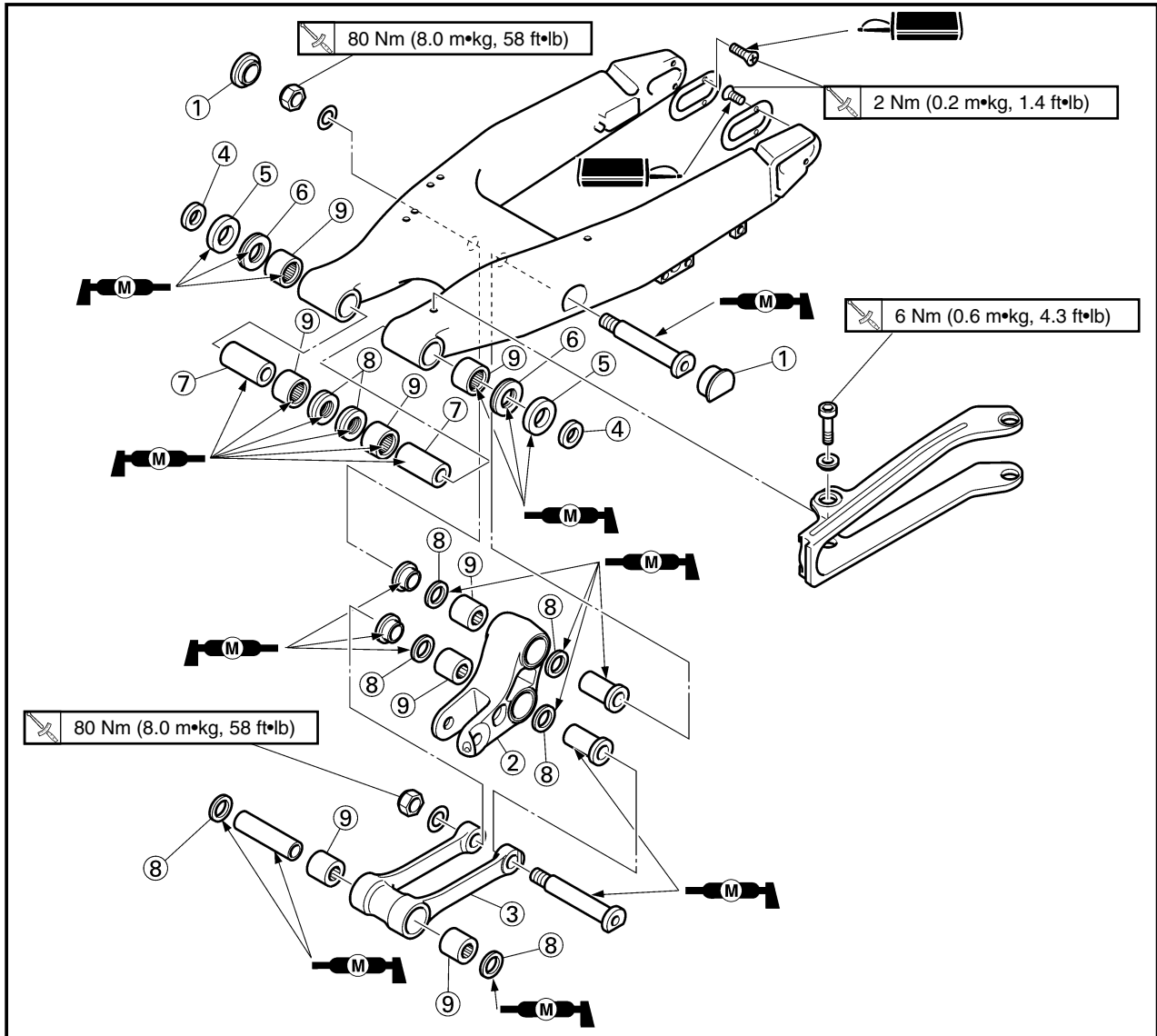
Extent of removal: ① Swingarm removal

Extent of removal	Order	Part name	Q'ty	Remarks
Preparation for removal		<b>SWINGARM REMOVAL</b> Hold the machine by placing the suitable stand under the engine. Brake hose holder Rear caliper Bolt (brake pedal) Drive chain		<b>▲WARNING</b> Support the machine securely so there is no danger of it falling over. Refer to "FRONT BRAKE AND REAR BRAKE" section. Shift the brake pedal backward.
↑ ① ↓	1	Chain support	1	Hold the swingarm.
	2	Chain tensioner (lower)	1	
	3	Bolt (rear shock absorber-relay arm)	1	
	4	Bolt (connecting rod)	1	
	5	Pivot shaft	1	
	6	Swingarm	1	



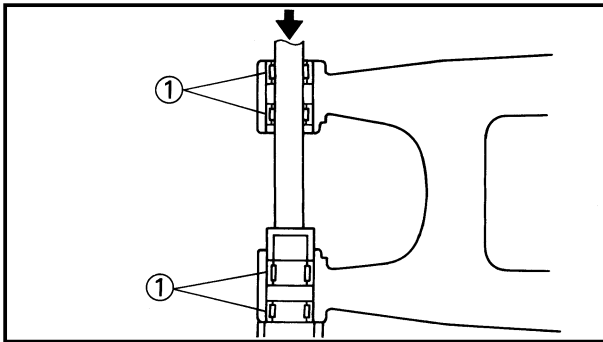
EC578000

**SWINGARM DISASSEMBLY**



Extent of removal: ① Swingarm disassembly ② Connecting rod removal and disassembly  
③ Relay arm removal and disassembly

Extent of removal	Order	Part name	Q'ty	Remarks
		<b>SWINGARM DISASSEMBLY</b>		
↑	①	Cap	2	
	②	Relay arm	1	
	③	Connecting rod	1	
	④	Collar	2	
	⑤	Oil seal	2	
	⑥	Thrust bearing	2	
	⑦	Bush	2	
	⑧	Oil seal	8	
	⑨	Bearing	8	Refer to "REMOVAL POINTS".



EC573000

## REMOVAL POINTS

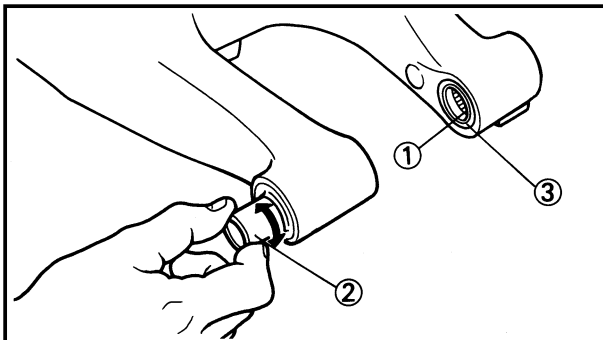
EC573201

### Bearing

1. Remove:
  - Bearing ①

### NOTE:

Remove the bearing by pressing its outer race.



EC574010

### INSPECTION

Wash the bearings, bushes, collars, and covers in a solvent.

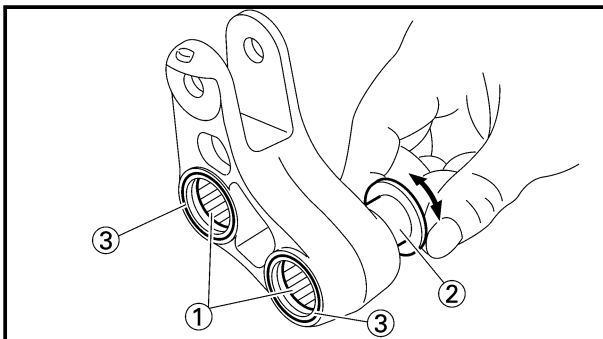
EC574111

### Swingarm

1. Inspect:
  - Bearing ①
  - Bush ②

Free play exists/Unsmooth revolution/Rust → Replace bearing and bush as a set.
2. Inspect:
  - Oil seal ③

Damage → Replace.



EC574211

### Relay arm

1. Inspect:
  - Bearing (polylube bearing) ①
  - Collar ②

Free play exists/Unsmooth revolution/Rust → Replace bearing and collar as a set.
2. Inspect:
  - Bearing (polylube bearing) ①

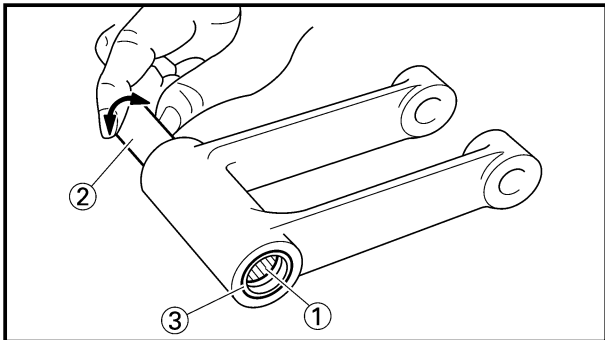
Loss of solid lubrication → Replace.

  - Oil seal ③

Damage → Replace.

### NOTE:

Polylube bearings, with solid lubrication, have been adopted with the intent to make the needle bearings, used in this model, maintenance free. With polylube bearings, no grease nipple and regular lubrication is necessary. However, grease should be applied to all oil seals and collars when removed or installed.



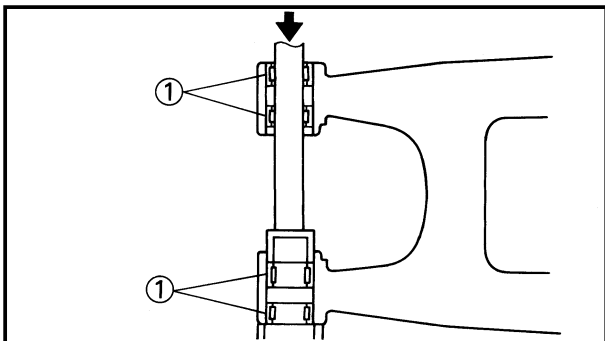
EC574311

**Connecting rod**

1. Inspect:
  - Bearing (polylube bearing) ①
  - Collar ②
  - Free play exists/Unsmooth revolution/Rust → Replace bearing and collar as a set.
2. Inspect:
  - Bearing (polylube bearing) ①
  - Loss of solid lubrication → Replace.
  - Oil seal ③
  - Damage → Replace.

**NOTE:**

Polylube bearings, with solid lubrication, have been adopted with the intent to make the needle bearings, used in this model, maintenance free. With polylube bearings, no grease nipple and regular lubrication is necessary. However, grease should be applied to all oil seals and collars when removed or installed.



EC575000

**ASSEMBLY AND INSTALLATION**

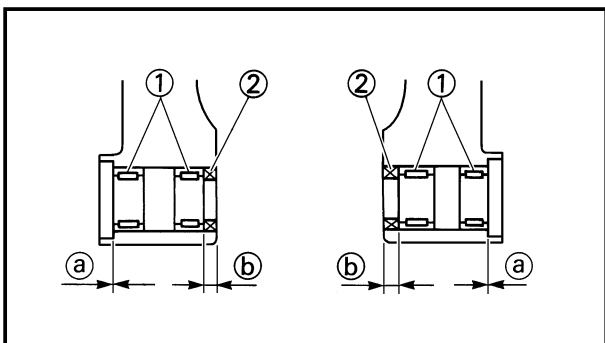
EC575202

**Bearing and oil seal**

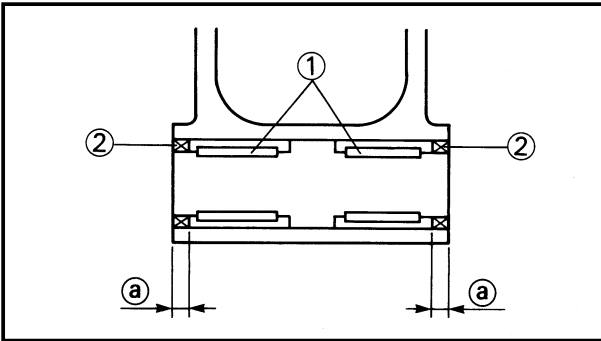
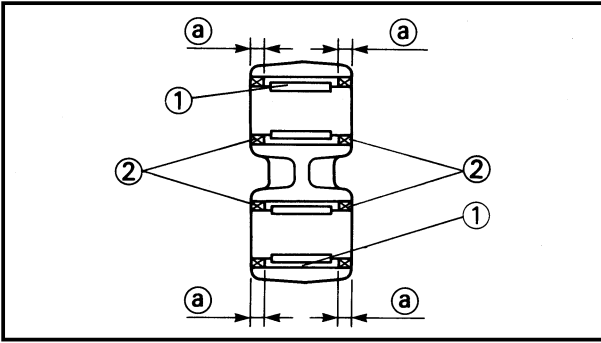
1. Install:
  - Bearing ①
  - Oil seal ②
  - To swingarm.

**NOTE:**

- Apply the molybdenum disulfide grease on the bearing when installing.
- Install the bearing by pressing it on the side having the manufacture's marks or numbers.
- First install the outer and then the inner bearings to a specified depth from inside.



**Installed depth of bearings:**  
 Outer **a**: Zero mm (Zero in)  
 Inner **b**: 8.5 mm (0.33 in)



2. Install:
- Bearing ①
  - Oil seal ②
- To relay arm.

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

- Apply the molybdenum disulfide grease on the bearing when installing.
- Install the bearing by pressing it on the side having the manufacturer's marks or numbers.



**Installed depth of bearings ①:**  
5 mm (0.20 in)

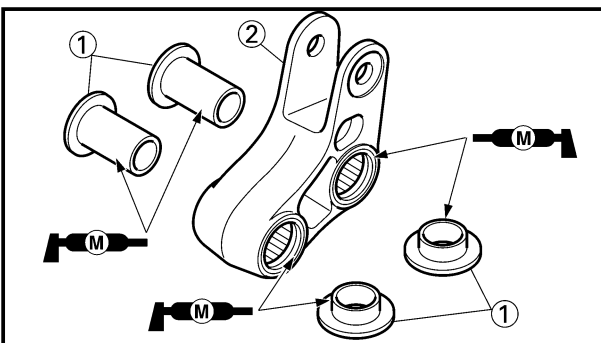
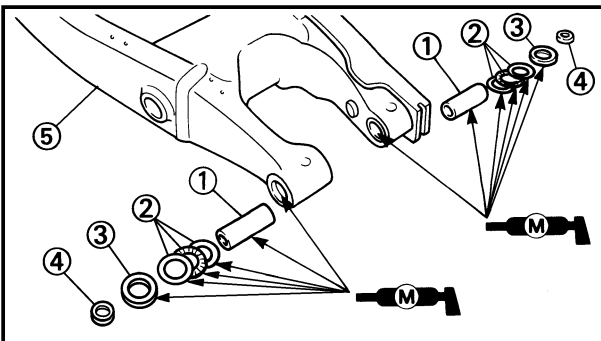
3. Install:
- Bearing ①
  - Oil seal ②
- To connecting rod.

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

- Apply the molybdenum disulfide grease on the bearing when installing.
- Install the bearing by pressing it on the side having the manufacturer's marks or numbers.



**Installed depth of bearings ①:**  
5 mm (0.20 in)



EC5751B3

**Swingarm**

1. Install:
- Bush ①
  - Thrust bearing ②
  - Oil seal ③
  - Collar ④
- To swingarm ⑤.

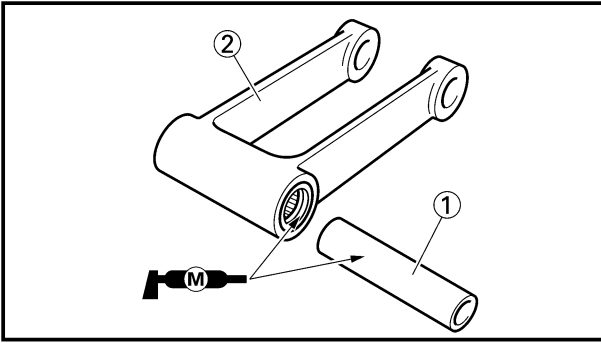
**NOTE:** \_\_\_\_\_

Apply the molybdenum disulfide grease on the bushes, thrust bearings and oil seal lips.

2. Install:
- Collar ①
- To relay arm ②.

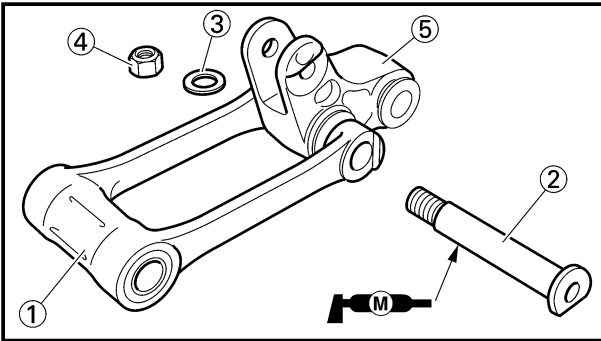
**NOTE:** \_\_\_\_\_

Apply the molybdenum disulfide grease on the collars and oil seal lips.




3. Install:
- Collar ①  
To connecting rod ②.

**NOTE:** \_\_\_\_\_  
Apply the molybdenum disulfide grease on the collar and oil seal lips.

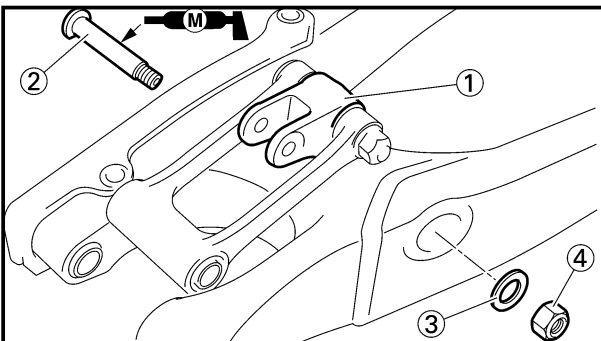


4. Install:
- Connecting rod ①
  - Bolt (connecting rod) ②
  - Plain washer ③
  - Nut (connecting rod) ④

 **80 Nm (8.0 m•kg, 58 ft•lb)**

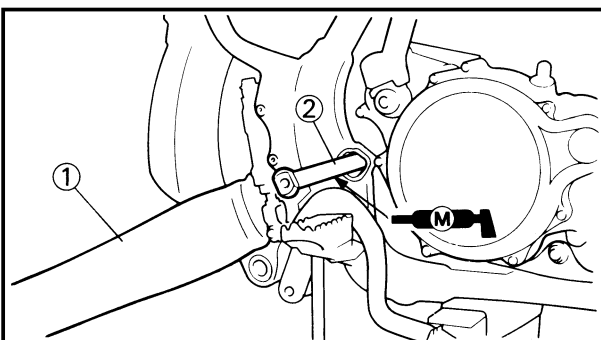
To relay arm ⑤.

**NOTE:** \_\_\_\_\_  
Apply the molybdenum disulfide grease on the bolt.



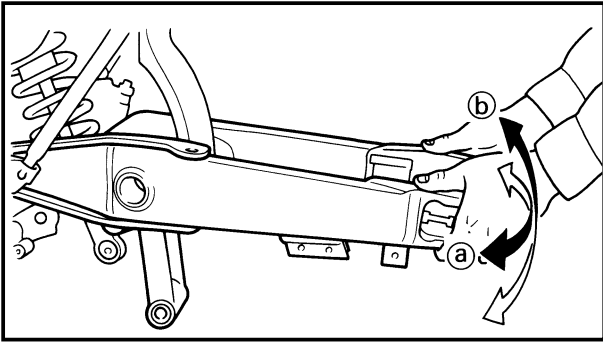
5. Install:
- Relay arm ①
  - Bolt (relay arm) ②
  - Plain washer ③
  - Nut (relay arm) ④  
To swingarm.

**NOTE:** \_\_\_\_\_  
• Apply the molybdenum disulfide grease on the bolt.  
• Do not tighten the nut yet.



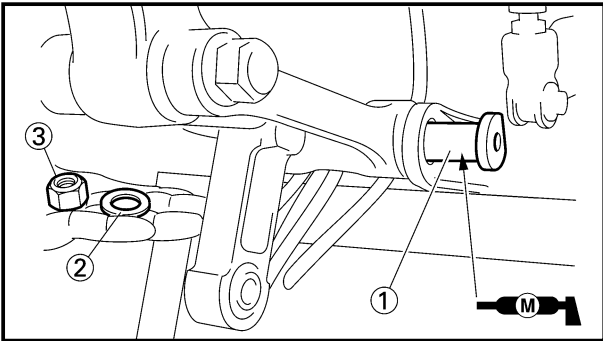
6. Install:
- Swingarm ①
  - Pivot shaft ②  **85 Nm (8.5 m•kg, 61 ft•lb)**

**NOTE:** \_\_\_\_\_  
• Apply the molybdenum disulfide grease on the pivot shaft.  
• Insert the pivot shaft from right side.



7. Check:

- Swingarm side play (a)  
Free play exists → Replace thrust bearing.
- Swingarm up and down movement (b)  
Unsmooth movement/Binding/Rough spots → Grease or replace bearings, bushes and collars.

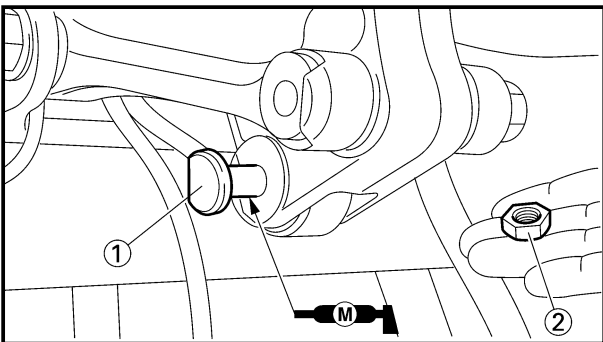


8. Install:

- Bolt (connecting rod) (1)
- Plain washer (2)
- Nut (connecting rod) (3)

**NOTE:**

- Apply the molybdenum disulfide grease on the bolt.
- Do not tighten the nut yet.



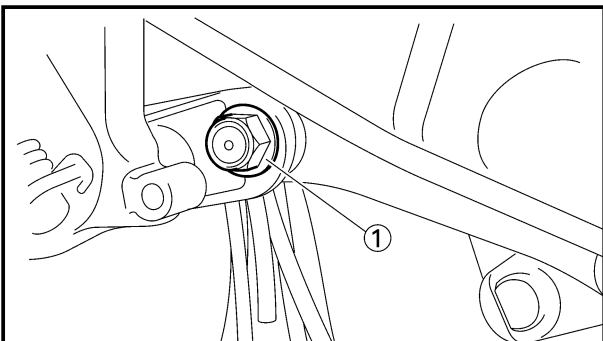
9. Install:

- Bolt (rear shock absorber-relay arm) (1)
- Nut (rear shock absorber-relay arm) (2)

**53 Nm (5.3 m•kg, 38 ft•lb)**

**NOTE:**

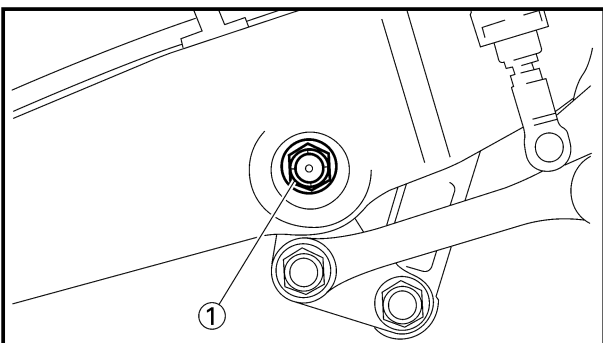
- Apply the molybdenum disulfide grease on the bolt.



10. Tighten:

- Nut (connecting rod) (1)

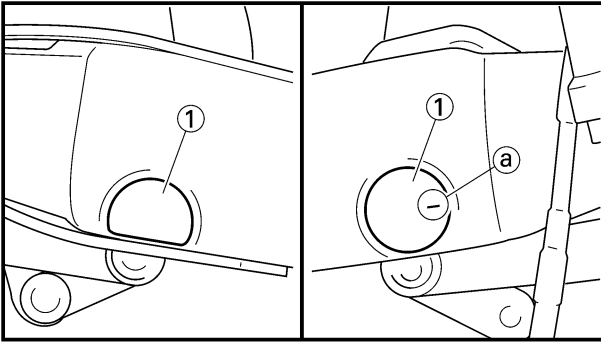
**80 Nm (8.0 m•kg, 58 ft•lb)**



11. Tighten:

- Nut (relay arm) (1)

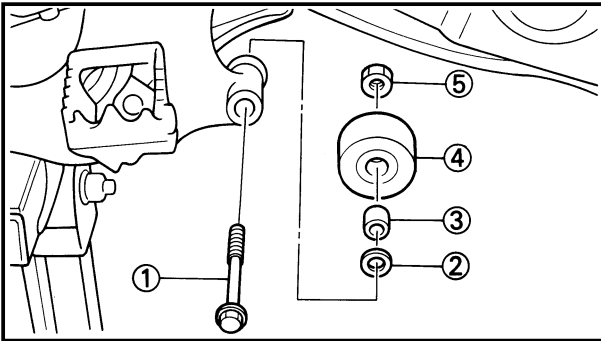
**80 Nm (8.0 m•kg, 58 ft•lb)**



12. Install:  
 •Cap ①

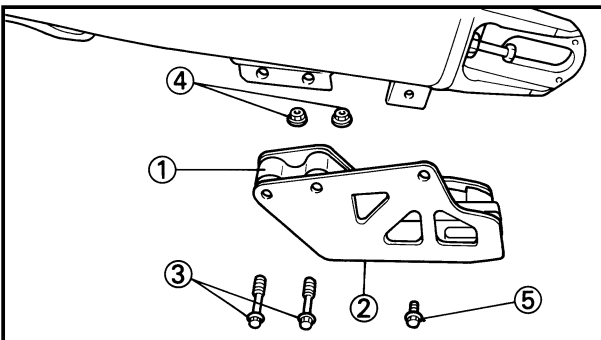
**NOTE:**

Install the cap (right) with its mark (a) facing forward.



13. Install:  
 •Bolt [chain tensioner (lower)] ①  
 •Plain washer ②  
 •Collar ③  
 •Chain tensioner ④  
 •Nut [chain tensioner (lower)] ⑤

**19 Nm (1.9 m•kg, 13 ft•lb)**



14. Install:  
 •Chain support ①  
 •Support cover ②  
 •Bolt {chain support [  $l = 50\text{mm}$  (1.97in)]} ③  
 •Nut (chain support) ④

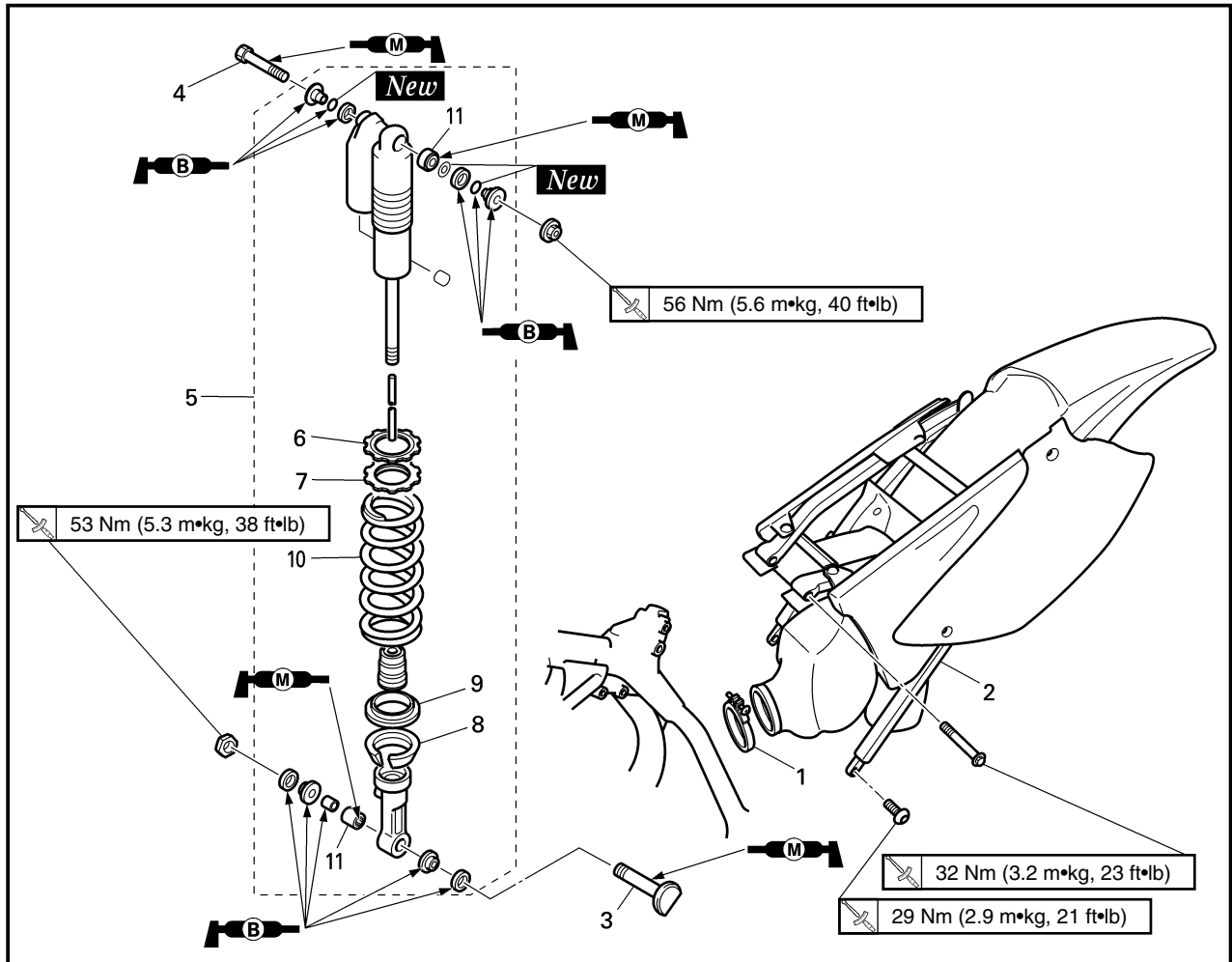
**7 Nm (0.7 m•kg, 5.1 ft•lb)**

- Bolt { support cover [  $l = 10\text{mm}$  (0.39in)]} ⑤

**7 Nm (0.7 m•kg, 5.1 ft•lb)**

EC580000

## REAR SHOCK ABSORBER



Extent of removal: ① Rear shock absorber removal ② Rear shock absorber disassembly

Extent of removal	Order	Part name	Q'ty	Remarks
Preparation for removal		<b>REAR SHOCK ABSORBER REMOVAL</b>		<b>▲WARNING</b> Support the machine securely so there is no danger of it falling over.
		Hold the machine by placing the suitable stand under the engine. Seat  Silencer		Refer to "SEAT, FUEL TANK AND SIDE COVERS" section. Refer to "EXHAUST PIPE AND SILENCER" section.
<div style="display: flex; align-items: center;"> <div style="margin-right: 20px;">             ① ↑ ↓           </div> <div style="margin-right: 20px;">             ② ↑ ↓           </div> </div>	1	Clamp (air cleaner joint)	1	Loosen the screw (air cleaner joint).
	2	Rear frame	1	
	3	Bolt (rear shock absorber-relay arm)	1	Hold the swingarm.
	4	Bolt (rear shock absorber-frame)	1	
	5	Rear shock absorber	1	
	6	Locknut	1	
	7	Adjuster	1	
	8	Spring guide (lower)	1	
	9	Spring guide (upper)	1	
	10	Spring (rear shock absorber)	1	
	11	Bearing	2	Refer to "REMOVAL POINTS".





EC586000

**HANDLING NOTE****⚠WARNING**

This shock absorber is provided with a separate type tank filled with high-pressure nitrogen gas. To prevent the danger of explosion, read and understand the following information before handling the shock absorber.

The manufacturer can not be held responsible for property damage or personal injury that may result from improper handling.

1. Never tamper or attempt to disassemble the cylinder or the tank.
2. Never throw the shock absorber into an open flame or other high heat. The shock absorber may explode as a result of nitrogen gas expansion and/or damage to the hose.
3. Be careful not to damage any part of the gas tank. A damaged gas tank will impair the damping performance or cause a malfunction.
4. Take care not to scratch the contact surface of the piston rod with the cylinder; or oil could leak out.
5. Never attempt to remove the plug at the bottom of the nitrogen gas tank. It is very dangerous to remove the plug.
6. When scrapping the shock absorber, follow the instructions on disposal.

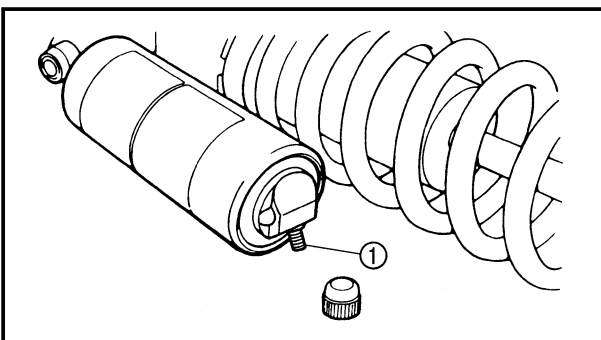
EC587000

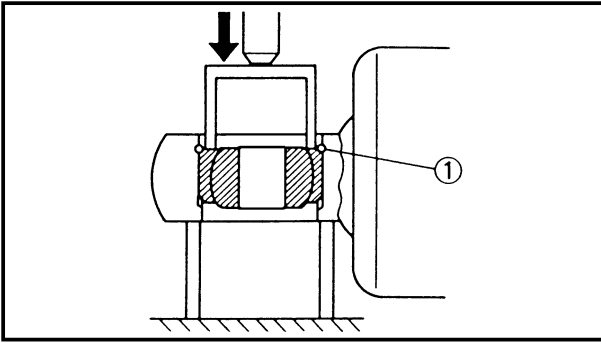
**NOTES ON DISPOSAL (YAMAHA DEALERS ONLY)**

Before disposing the shock absorber, be sure to extract the nitrogen gas from valve ①. Wear eye protection to prevent eye damage from escaping gas and/or metal chips.

**⚠WARNING**

To dispose of a damaged or worn-out shock absorber, take the unit to your Yamaha dealer for this disposal procedure.





EC583000

## REMOVAL POINTS

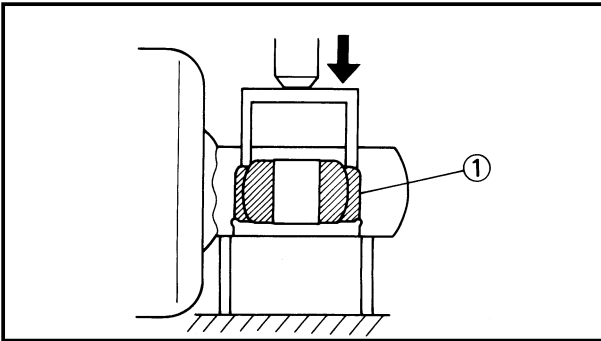
EC583320

### Bearing

1. Remove:
  - Stopper ring (upper bearing) ①

#### NOTE:

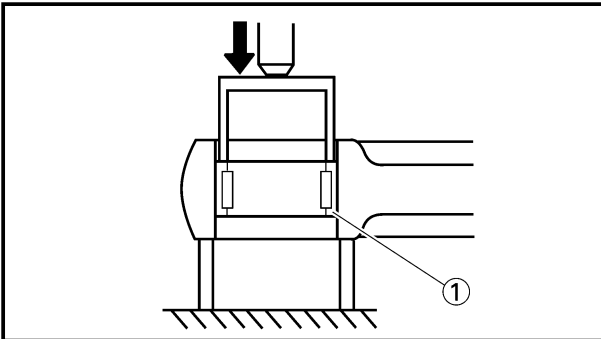
Press in the bearing while pressing its outer race and remove the stopper ring.



2. Remove:
  - Upper bearing ①

#### NOTE:

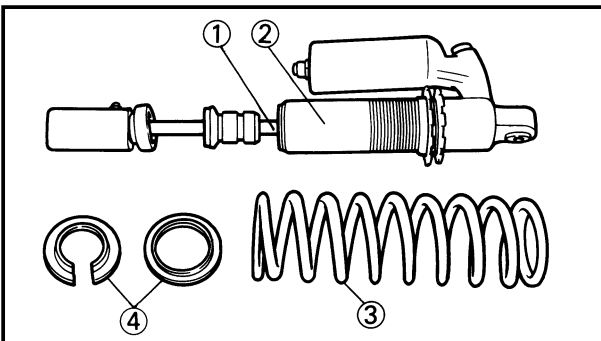
Remove the bearing by pressing its outer race.



3. Remove:
  - Lower bearing ①

#### NOTE:

Remove the bearing by pressing its outer race.



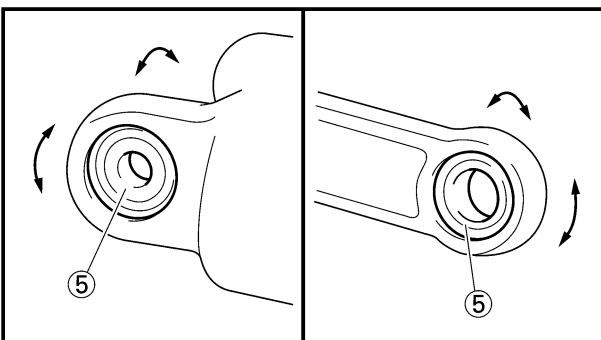
EC584000

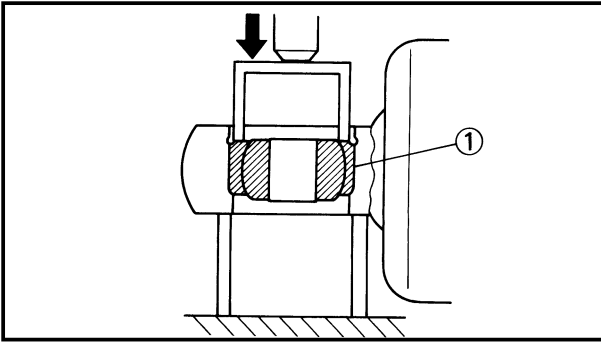
## INSPECTION

EC584110

### Rear shock absorber

1. Inspect:
  - Damper rod ①  
Bends/Damage → Replace absorber assembly.
  - Shock absorber ②  
Oil leaks → Replace absorber assembly.  
Gas leaks → Replace absorber assembly.
  - Spring ③  
Damage → Replace spring.  
Fatigue → Replace spring.  
Move spring up and down.
  - Spring guide ④  
Wear/Damage → Replace spring guide.
  - Bearing ⑤  
Free play exists/Unsmooth revolution/  
Rust → Replace.





EC585000

## ASSEMBLY AND INSTALLATION

EC585320

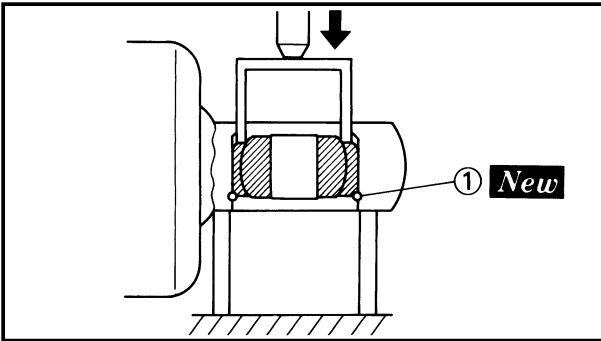
### Bearing

1. Install:

- Upper Bearing ①

### NOTE:

Install the bearing parallel until the stopper ring groove appears by pressing its outer race.



### CAUTION:

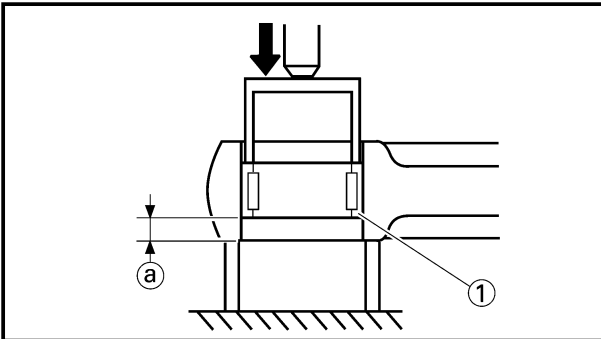
Do not apply the grease on the bearing outer race because it will wear the rear shock absorber surface on which the bearing is press fitted.

2. Install:

- Stopper ring (upper bearing) ① **New**

### NOTE:

After installing the stopper ring, push back the bearing until it contacts the stopper ring.

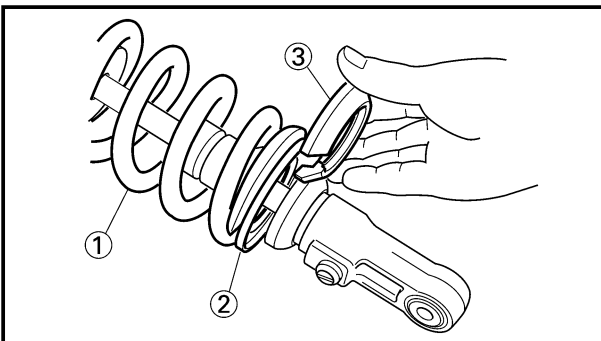



3. Install:

- Lower bearing ①

### NOTE:

Install the bearing by pressing it on the side having the manufacturer's marks or numbers.



 **Installed depth of the bearing ①:**  
4 mm (0.16 in)

EC585111

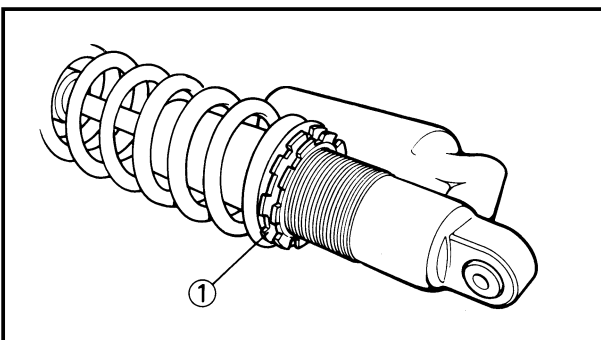
### Spring (rear shock absorber)

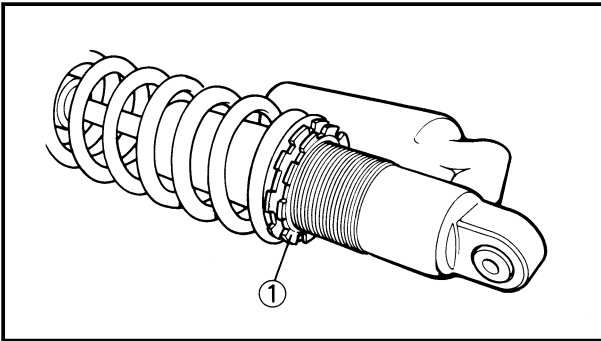
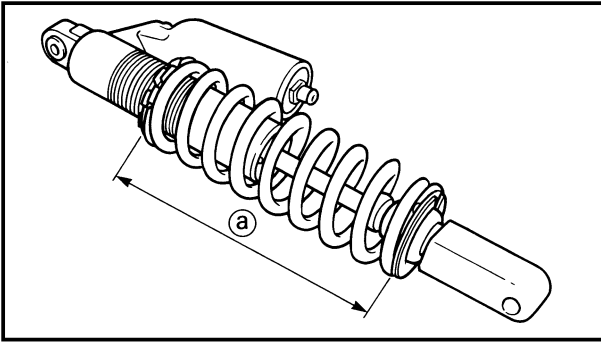
1. Install:

- Spring ①
- Spring guide (upper) ②
- Spring guide (lower) ③

2. Tighten:

- Adjuster ①





3. Adjust:
  - Spring length (installed) ①

Spring length (installed) ①:	
Standard length	Extent of adjustment
251 mm (9.88 in)	240.5~258.5 mm (9.47~10.18 in)
*261 mm (10.28 in)	*255.5~273.5 mm (10.06~10.77 in)

\*For EUROPE

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

The length of the spring (installed) changes 1.5 mm (0.06 in) per turn of the adjuster.

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

Never attempt to turn the adjuster beyond the maximum or minimum setting.

4. Tighten:
  - Locknut ①

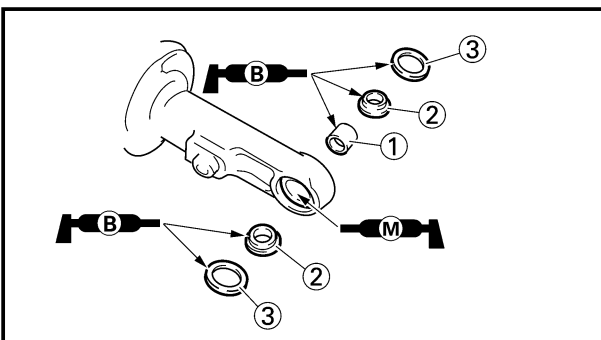
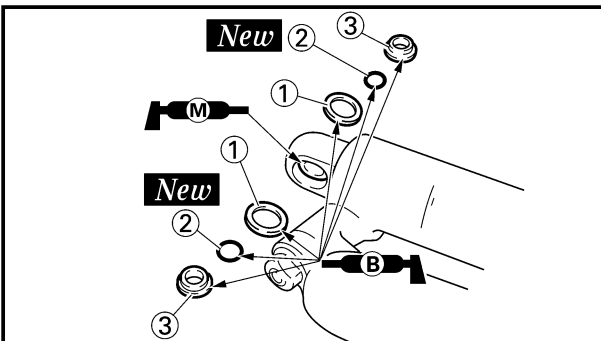
EC5852B5

**Rear shock absorber**

1. Install:
  - Dust seal ①
  - O-ring ② **New**
  - Collar ③

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

- Apply the molybdenum disulfide grease on the bearing.
- Apply the lithium soap base grease on the dust seals, O-rings and collars.



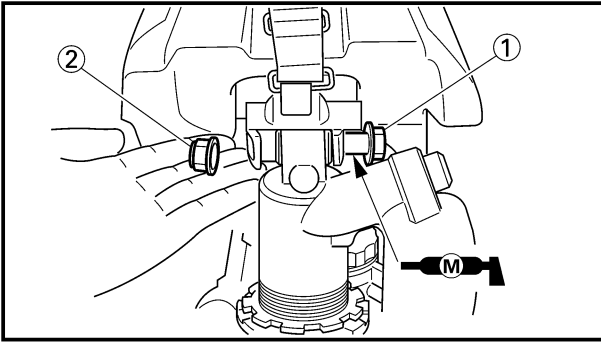
2. Install:
  - Bush ①
  - Collar ②
  - Dust seal ③

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

- Apply the molybdenum disulfide grease on the bearing.
- Apply the lithium soap base grease on the bush, collars and dust seals.
- Install the dust seals with their lips facing outward.

# REAR SHOCK ABSORBER

CHAS



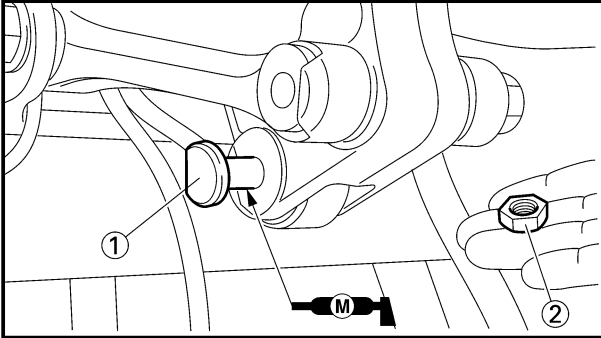
3. Install:
  - Rear shock absorber

4. Install:
  - Bolt (rear shock absorber-frame) ①
  - Nut (rear shock absorber-frame) ②

**56 Nm (5.6 m•kg, 40 ft•lb)**

## NOTE:

Apply the molybdenum disulfide grease on the bolt.

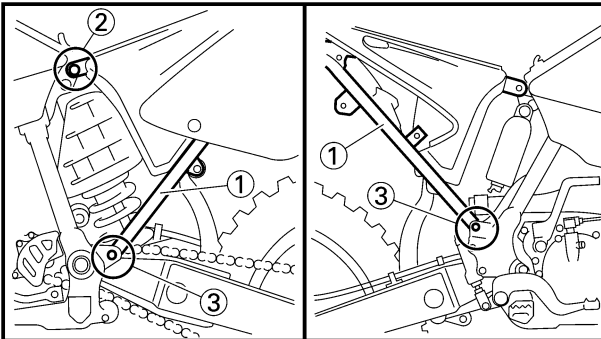


5. Install:
  - Bolt (rear shock absorber-relay arm) ①
  - Nut (rear shock absorber-relay arm) ②

**53 Nm (5.3 m•kg, 38 ft•lb)**

## NOTE:

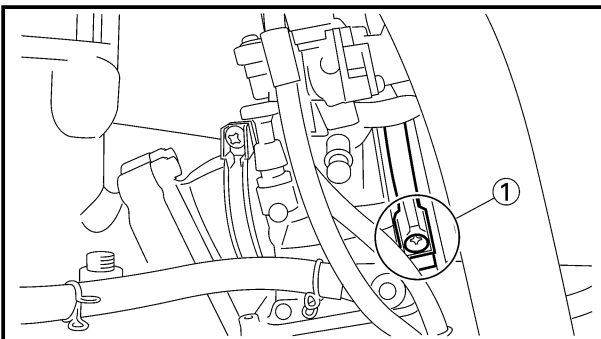
Apply the molybdenum disulfide grease on the bolt.



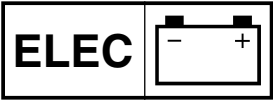
6. Install:
  - Rear frame ①
  - Bolt [rear frame (upper)] ②
  - Bolt [rear frame (lower)] ③

**32 Nm (3.2 m•kg, 23 ft•lb)**

**29 Nm (2.9 m•kg, 21 ft•lb)**



7. Tighten:
  - Screw (air cleaner joint) ①



EC600000

## ELECTRICAL

EC610000

## ELECTRICAL COMPONENTS AND WIRING DIAGRAM

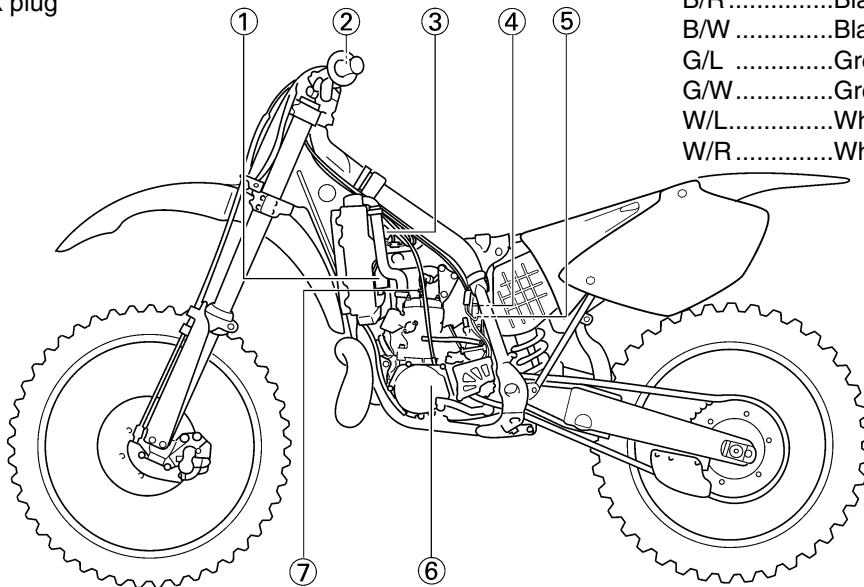
EC611000

### ELECTRICAL COMPONENTS

- ① CDI unit
- ② "ENGINE STOP" button
- ③ Ignition coil
- ④ TPS (throttle position sensor)
- ⑤ Solenoid valve
- ⑥ CDI magneto
- ⑦ Spark plug

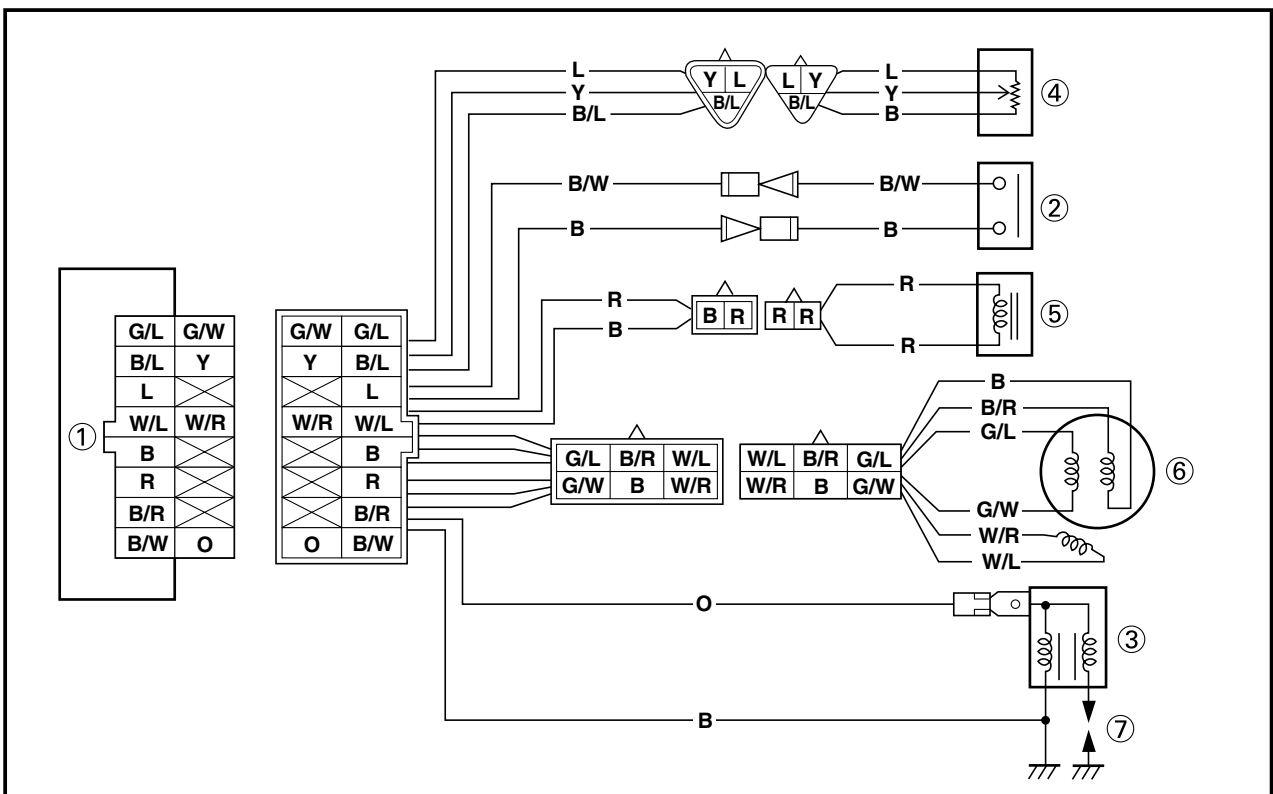
### COLOR CODE

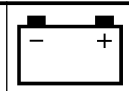
- B.....Black
- L.....Blue
- O.....Orange
- R.....Red
- Y.....Yellow
- B/L.....Black/Blue
- B/R.....Black/Red
- B/W.....Black/White
- G/L.....Green/Blue
- G/W.....Green/White
- W/L.....White/Blue
- W/R.....White/Red



EC612000

### WIRING DIAGRAM





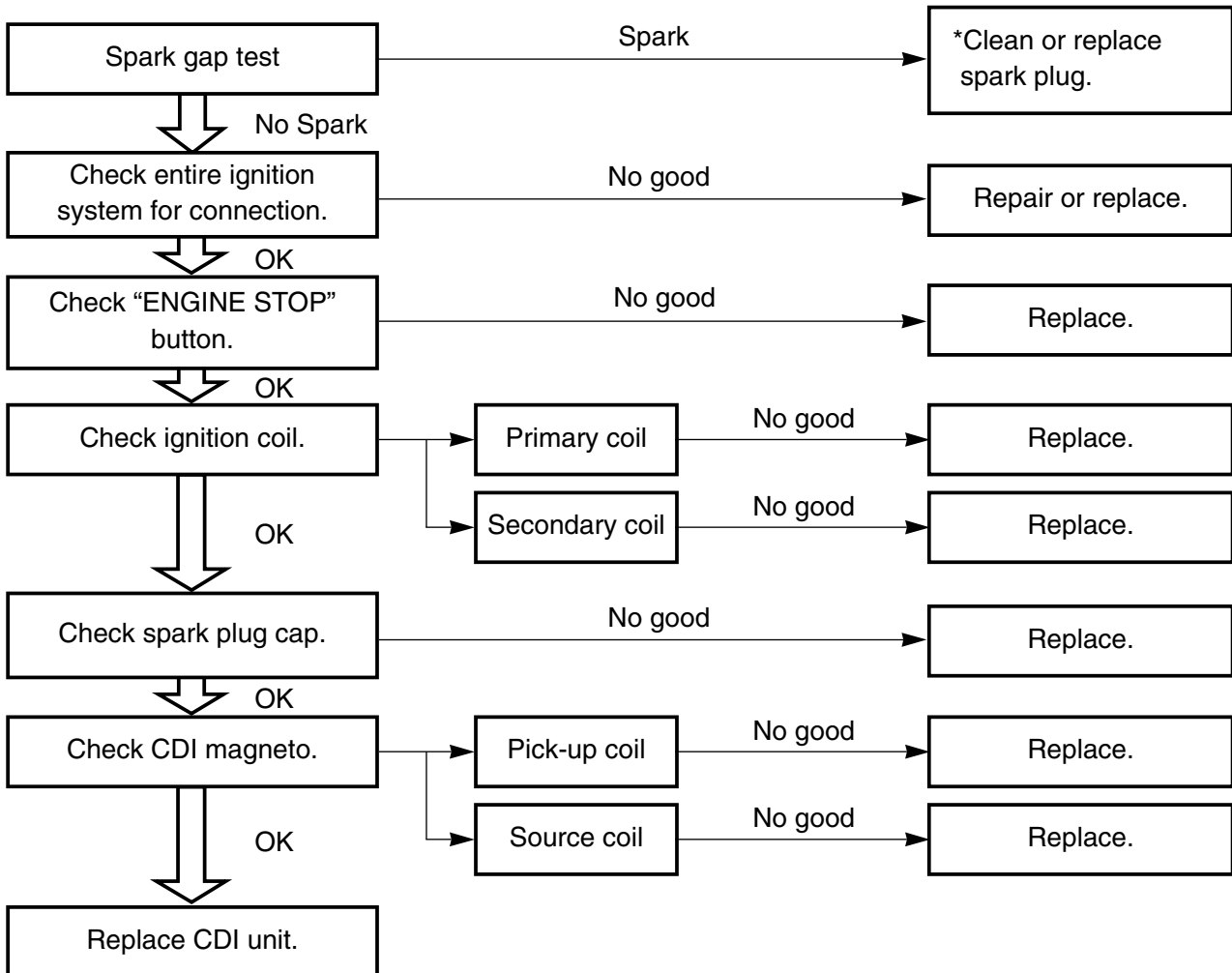
EC620000

## IGNITION SYSTEM

EC621003

### INSPECTION STEPS


Use the following steps for checking the possibility of the malfunctioning engine being attributable to ignition system failure and for checking the spark plug which will not spark.




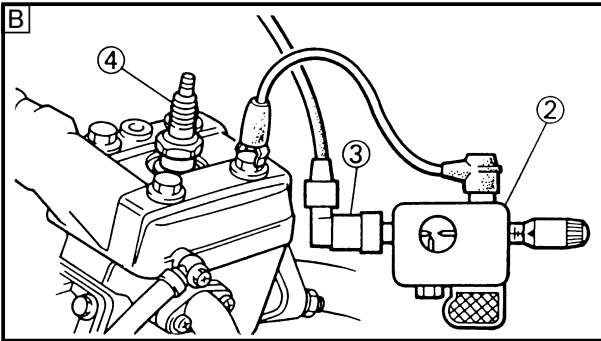
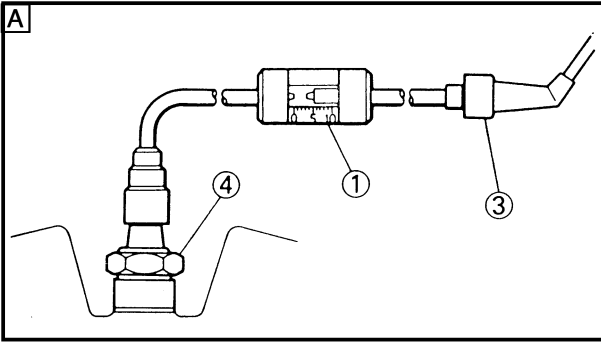
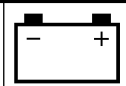
\*marked: Only when the ignition checker is used.

### NOTE:

- Remove the following parts before inspection.
  - 1) Seat
  - 2) Fuel tank
- Use the following special tools in this inspection.

	<b>Dynamic spark tester:</b> <b>YM-34487</b> <b>Ignition checker:</b> <b>90890-06754</b>
---	---

	<b>Pocket tester:</b> <b>YU-3112-C/90890-03112</b>
---	---



EC622001

### SPARK GAP TEST

1. Disconnect the spark plug cap from spark plug.
2. Connect the dynamic spark tester ① (ignition checker ②) as shown.
  - Spark plug cap ③
  - Spark plug ④
3. Kick the kick starter.
4. Check the ignition spark gap.
5. Start engine, and increase spark gap until misfire occurs. (for USA and CDN only)

**A** For USA and CDN

**B** Except for USA and CDN

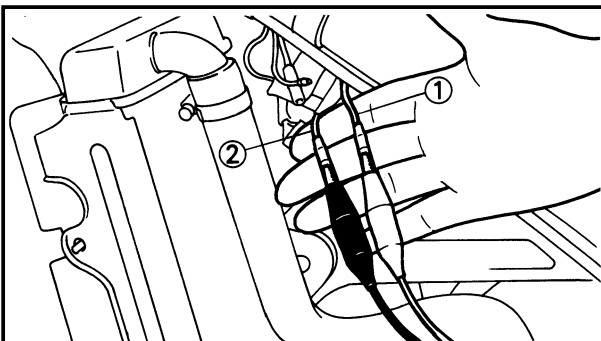


**Minimum spark gap:  
6.0 mm (0.24 in)**

EC624000

### COUPLERS AND LEADS CONNECTION INSPECTION

1. Check:
  - Couplers and leads connection
  - Rust/ Dust/ Looseness/Short-circuit → Repair or replace.



EC625002

### “ENGINE STOP” BUTTON INSPECTION

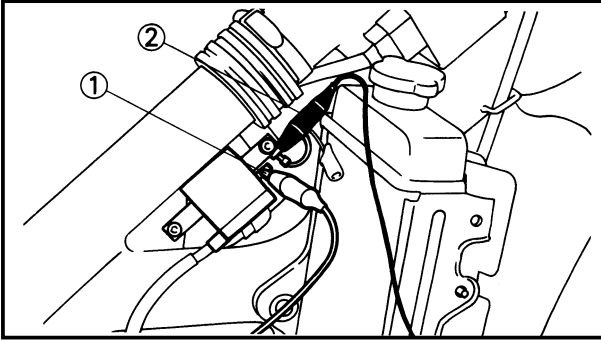
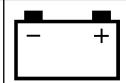
1. Inspect:
  - “ENGINE STOP” button conduct

**Tester (+) lead → Black/White lead ①**  
**Tester (-) lead → Black lead ②**

		B/W ①	B ②	Tester selector position
	<b>PUSH IN</b>	○—○		
<b>FREE</b>				

Not continuous while being pushed → Replace.  
 Continuous while being freed → Replace.






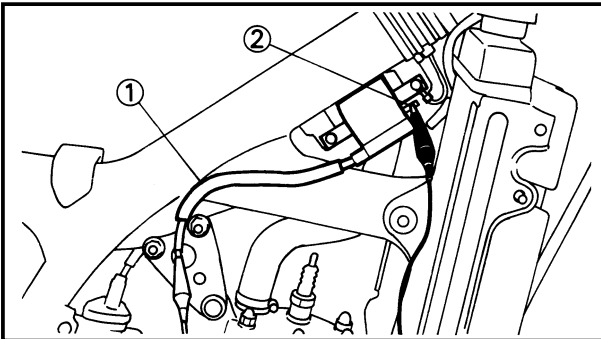
EC626003

### IGNITION COIL INSPECTION

- Inspect:
  - Primary coil resistance  
Out of specification → Replace.


Tester (+) lead → Orange lead ①  
Tester (-) lead → Black lead ②

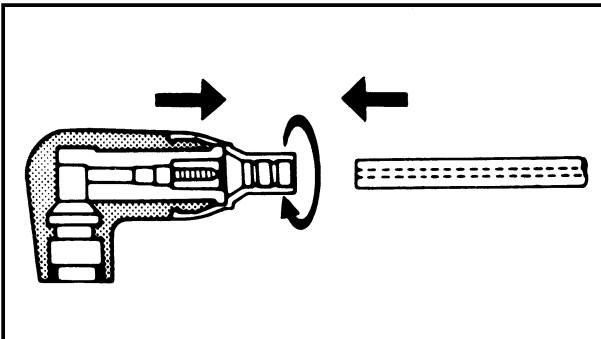
	Primary coil resistance	Tester selector position
	0.20~0.30Ω at 20°C (68°F)	Ω × 1



- Inspect:
  - Secondary coil resistance  
Out of specification → Replace.

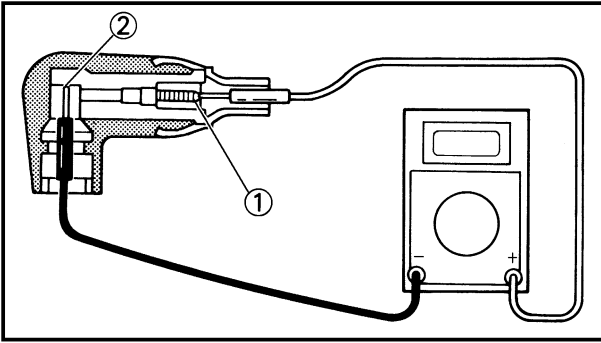
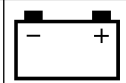
Tester (+) lead → Spark plug lead ①  
Tester (-) lead → Orange lead ②

	Secondary coil resistance	Tester selector position
	9.5~14.3kΩ at 20°C (68°F)	kΩ × 1



### NOTE: \_\_\_\_\_

- Remove the spark plug cap by turning it counterclockwise and inspect.
- Install the spark plug cap by turning it clockwise until it is tight.




EC62B000

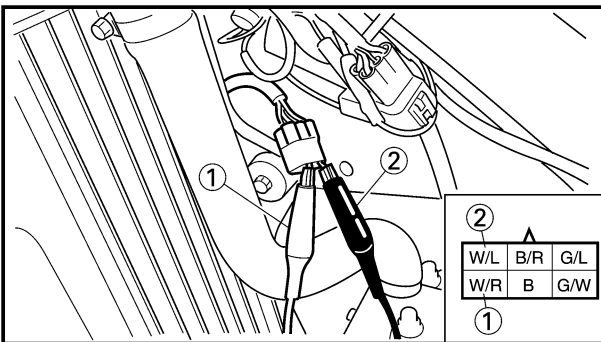
### SPARK PLUG CAP INSPECTION

1. Inspect:

- Spark plug cap  
Loose connection → Tighten.  
Deteriorated/Damaged → Replace.
- Spark plug cap resistance  
Out of specification → Replace.

**Tester (+) lead → Spark plug lead terminal ①**  
**Tester (-) lead → Spark plug terminal ②**

	Spark plug cap resistance	Tester selector position
	4~6kΩ at 20°C (68°F)	kΩ × 1




EC627011

### CDI MAGNETO INSPECTION

1. Inspect:

- Pick-up coil resistance  
Out of specification → Replace.

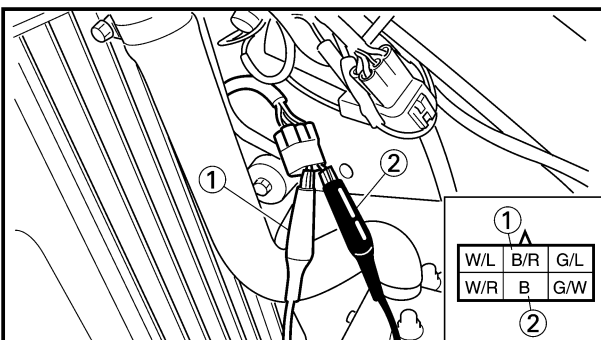
**Tester (+) lead → White/Red lead ①**  
**Tester (-) lead → White/Blue lead ②**


	Pick-up coil resistance	Tester selector position
	248~372Ω at 20°C (68°F)	Ω × 100

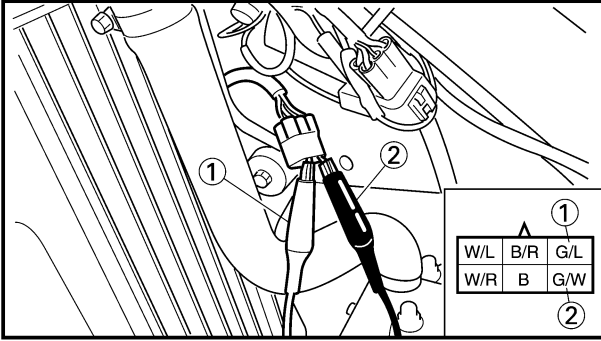
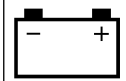
2. Inspect:

- Source coil 1 resistance  
Out of specification → Replace.

**Tester (+) lead → Black/Red lead ①**  
**Tester (-) lead → Black lead ②**




	Source coil 1 resistance	Tester selector position
	720~1,080Ω at 20°C (68°F)	Ω × 100



### 3. Inspect:

- Source coil 2 resistance  
Out of specification → Replace.

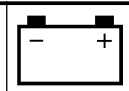
**Tester (+) lead** → Green/Blue lead ①  
**Tester (-) lead** → Green/White lead ②

	Source coil 2 resistance	Tester selector position
	44~66Ω at 20°C (68°F)	Ω × 10

EC628000

### CDI UNIT INSPECTION

Check all electrical components. If no fault is found, replace the CDI unit. Then check the electrical components again.



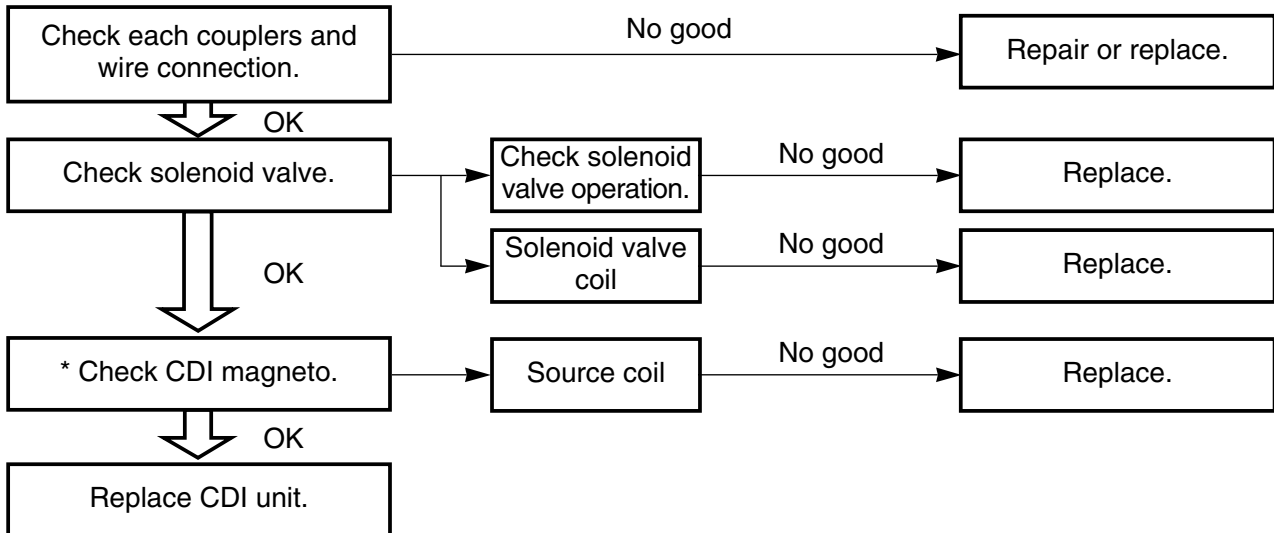
EC650001

## SOLENOID VALVE SYSTEM

EC651032

### INSPECTION STEPS

If the solenoid valve will not operate, use the following inspection steps.

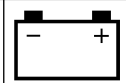


\* marked: Refer to "IGNITION SYSTEM" section.

### NOTE:

- Remove the following parts before inspection.
  - 1) Seat
  - 2) Fuel tank
- Use 12V battery in this inspection.
- Use the following special tools in this inspection.

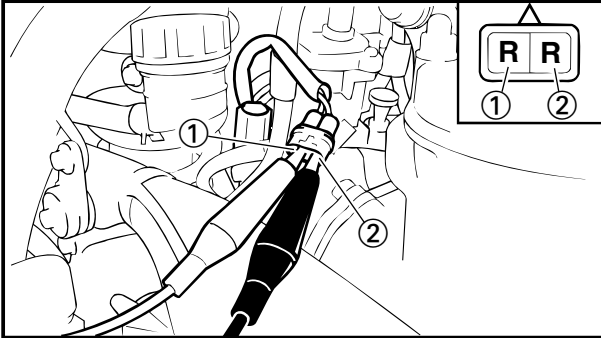
	<p><b>Pocket tester:</b> YU-3112-C/90890-03112</p>
--	--



EC624000

## COUPLERS AND LEADS CONNECTION INSPECTION

1. Check:
  - Couplers and leads connection  
Rust/ Dust/ Looseness/Short-circuit → Repair or replace.

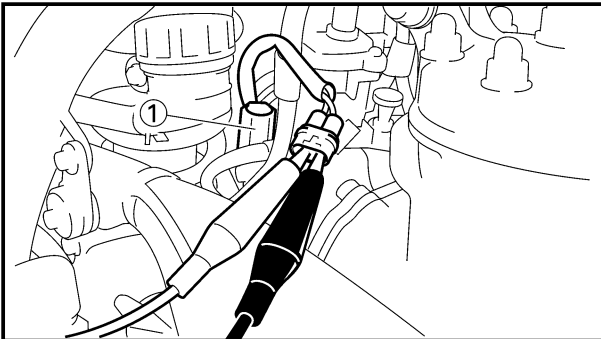


EC652040

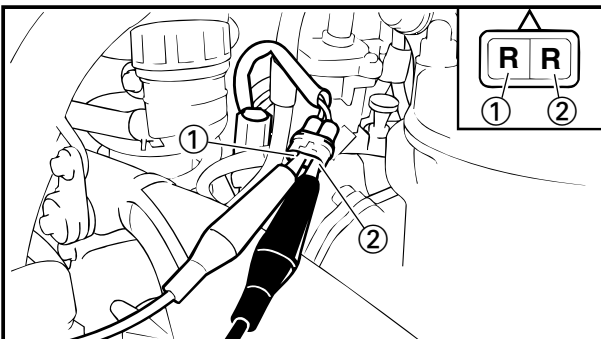
## SOLENOID VALVE OPERATION

1. Disconnect the solenoid valve coupler.
2. Connect 12V battery to the solenoid valve coupler.

**Battery (+) lead → Red lead ①**  
**Battery (-) lead → Red lead ②**



3. Inspect:
  - Solenoid valve ①  
No click when connecting the battery → Replace.




EC653002

## SOLENOID VALVE COIL INSPECTION

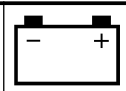
1. Inspect:
  - Solenoid valve coil resistance  
Out of specification → Replace.

**Tester (+) lead → Red lead ①**  
**Tester (-) lead → Red lead ②**

	Solenoid resistance	Tester selector position
	22.8~27.8Ω at 20°C (68°F)	Ω × 10

# TPS (THROTTLE POSITION SENSOR) SYSTEM

ELEC



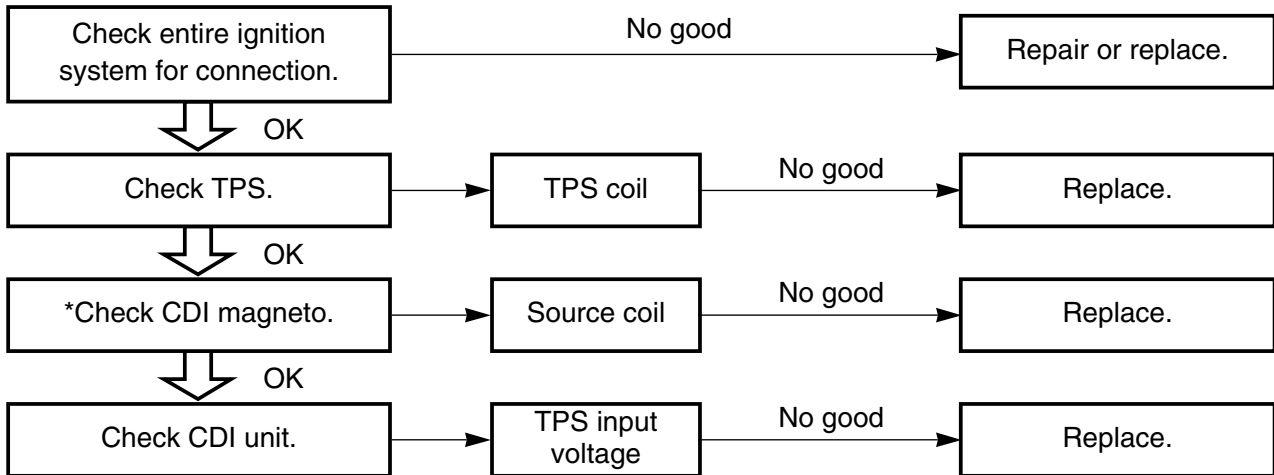
EC690000

## TPS (THROTTLE POSITION SENSOR) SYSTEM

EC691001

### INSPECTION STEPS

If the TPS will not operate, use the following inspection steps.



\*marked: Refer to "IGNITION SYSTEM" section.

### NOTE:

- Remove the following parts before inspection.
  - 1) Seat
  - 2) Fuel tank
- Use the following special tools in this inspection.



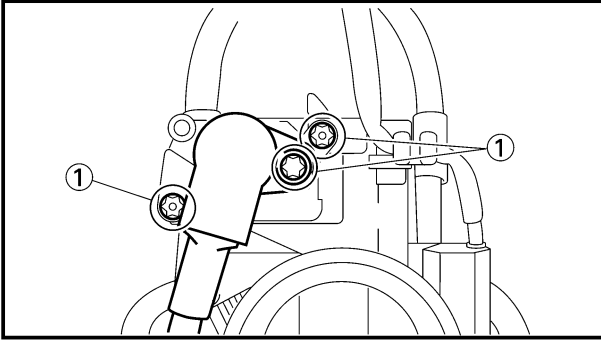
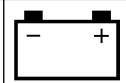
**Pocket tester:**  
YU-3112-C/90890-03112



**Inductive tachometer:**  
YU-8036-B  
**Engine tachometer:**  
90890-03113

# TPS (THROTTLE POSITION SENSOR) SYSTEM

**ELEC**



EC69A000

## HANDLING NOTE

### CAUTION:

Do not loosen the screws {TPS (throttle position sensor)} except when changing the TPS (throttle position sensor) due to failure because it will cause a drop in engine performance.

EC624000

## COUPLERS AND LEADS CONNECTION INSPECTION

### 1. Check:

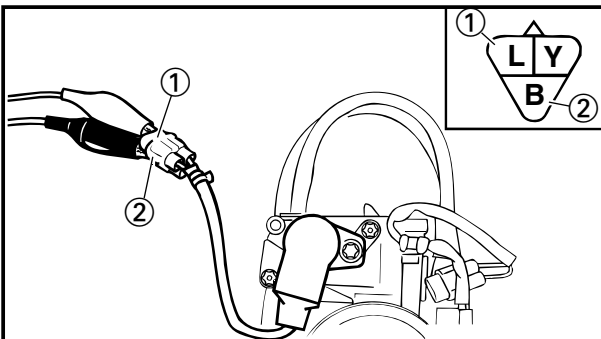
- Couplers and leads connection  
Rust/ Dust/ Looseness/Short-circuit →  
Repair or replace.

EC692000

## TPS COIL INSPECTION

### 1. Remove:


- Carburetor
  - Mixing chamber top
- Refer to “CARBURETOR AND REED VALVE” section in the CHAPTER 4.



### 2. Inspect:

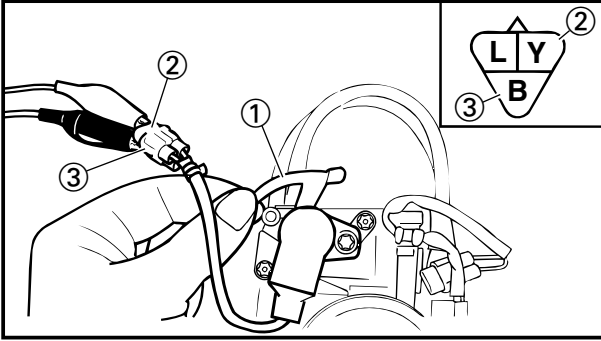
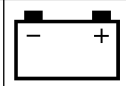
- TPS coil resistance  
Out of specification → Replace.

Tester (+) lead → Blue lead ①  
Tester (-) lead → Black lead ②

	TPS coil resistance	Tester selector position
	4~6kΩ at 20°C (68°F)	kΩ × 1

# TPS (THROTTLE POSITION SENSOR) SYSTEM

**ELEC**




### 3. Inspect:

- TPS coil variable resistance  
Check that the resistance is increased as the lever ① is moved from the full close position to the full open position.  
Out of specification → Replace.

**Tester (+) lead → Yellow lead ②**

**Tester (-) lead → Black lead ③**

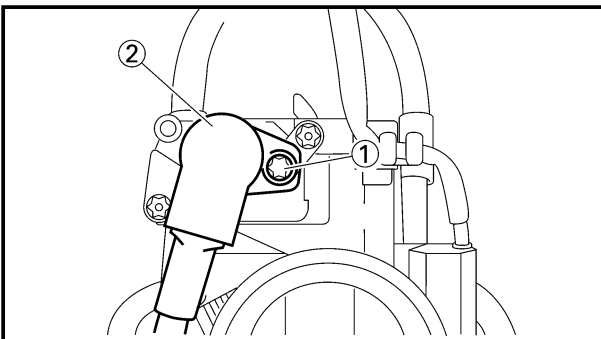
	TPS coil variable resistance		Tester selector position
	Full closed	Full opened	
	Zero~2kΩ at 20°C (68°F)	4~6kΩ at 20°C (68°F)	kΩ × 1

EC693001

## TPS REPLACEMENT AND ADJUSTMENT

### 1. Remove:

- Carburetor
- Mixing chamber top  
Refer to “CARBURETOR AND REED VALVE” section in the CHAPTER 4.



### 2. Remove:

- Screw (TPS) ①
- TPS ②

### NOTE:

Loosen the screws using the T25 bit.

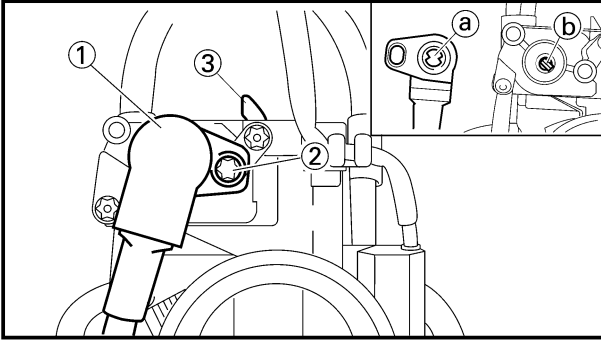
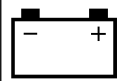
### 3. Replace:

- TPS



## TPS (THROTTLE POSITION SENSOR) SYSTEM

ELEC



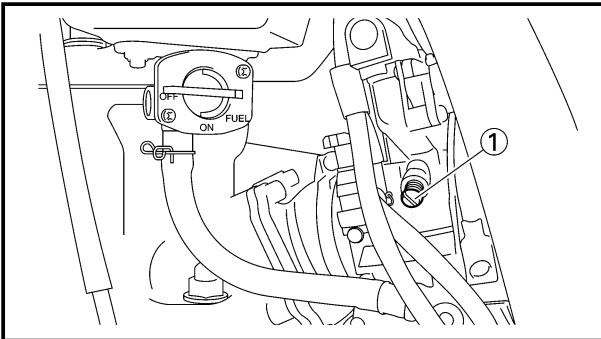
4. Install:
  - TPS ①
  - Screw (TPS) ②

### NOTE:

- Align the slot (a) in the TPS with the projection (b) on the carburetor while the lever (3) is held down.
- Temporarily tighten the screws (TPS).

5. Install:
  - Mixing chamber top
  - CarburetorRefer to "CARBURETOR AND REED VALVE" section in the CHAPTER 4.

6. Adjust:
  - Idle speed for TPS adjustment

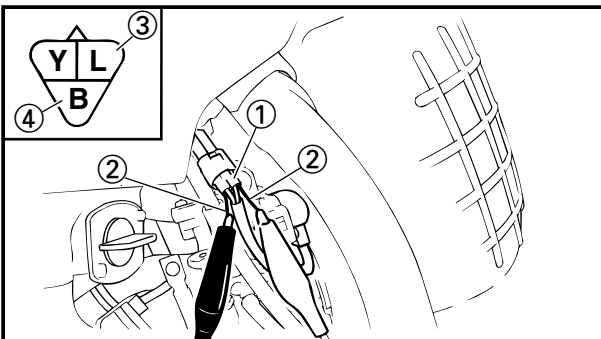


### Adjustment steps:

- Set the inductive tachometer (engine tachometer) to the high tension cord.
- Turn the throttle stop screw ① until the specified idle speed.  
Refer to "IDLE SPEED ADJUSTMENT" section in the CHAPTER 3.



**Idle speed for TPS adjustment:**  
1,700~1,900 rpm



7. Insert the thin electric conductors ② (lead wire) into the TPS coupler ①, as shown, and connect the tester to them.

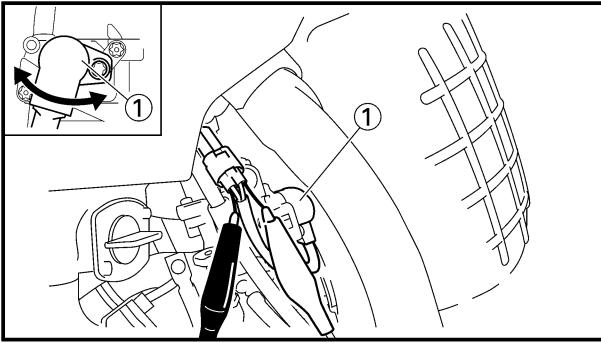
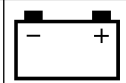
**Tester (+) lead** → Yellow lead ③  
**Tester (-) lead** → Black lead ④

### CAUTION:

- Do not insert the electric conductors more than required because it may reduce the waterproof function of the coupler.
- Make sure that a short-circuit does not develop between the terminals because it may cause damage to electrical components.


# TPS (THROTTLE POSITION SENSOR) SYSTEM

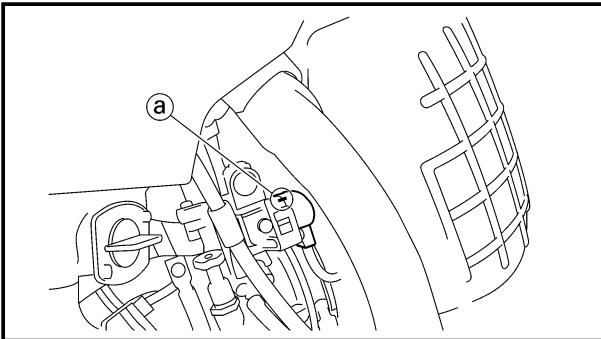
**ELEC**



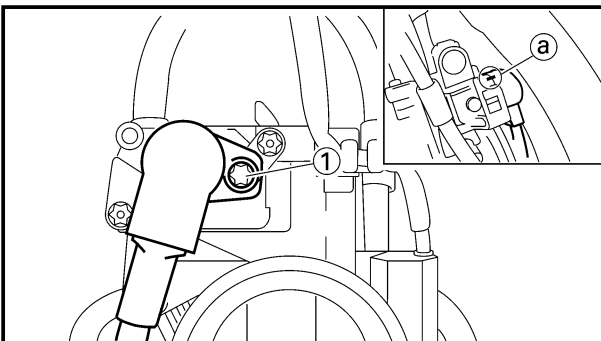
8. Start the engine.
9. Adjust:
  - TPS output voltage

**Adjustment steps:**  
**Adjust the installation angle of the TPS**  
 ① to obtain the specified output voltage.

	TPS output voltage	Tester selector position
	0.5~0.7V	DCV-20



10. Put the aligning marks (a) on the TPS and carburetor.
11. Stop the engine.
12. Remove:
  - Carburetor
 Refer to "CARBURETOR AND REED VALVE" section in the CHAPTER 4.



13. Tighten:
  - Screw (TPS) ①

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

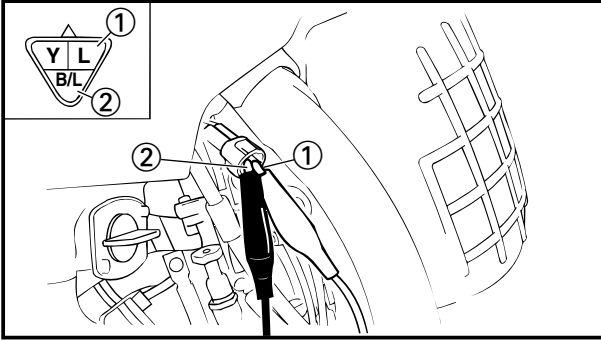
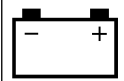
Tighten the screws (TPS) using the T20 bit (tamper resistant fastener type) by aligning the marks (a) that were put before removal.

\_\_\_\_\_

14. Install:
  - Carburetor
 Refer to "CARBURETOR AND REED VALVE" section in the CHAPTER 4.

# TPS (THROTTLE POSITION SENSOR) SYSTEM

**ELEC**




EC694000

## TPS INPUT VOLTAGE INSPECTION

1. Disconnect the TPS coupler.
2. Start the engine.
3. Inspect:
  - TPS input voltage  
Out of specification → Replace the CDI unit.

**Tester (+) lead → Blue lead ①**

**Tester (-) lead → Black/Blue lead ②**

	TPS input voltage	Tester selector position
	4~6V	DCV-20



EC700000

## TUNING

EC710000

### ENGINE

EC711001

#### Carburetor setting

- The role of fuel is to cool the engine, and in the case of a 2-stroke engine, to lubricate the engine in addition to power generation. Accordingly, if a mixture of air and fuel is too lean, abnormal combustion will occur, and engine seizure may result. If the mixture is too rich, spark plugs will get wet with oil, thus making it impossible to bring the engine into full play or if the worst comes to the worst, the engine may stall.
  - The richness of the air-fuel mixture required for the engine will vary with atmospheric conditions of the day and therefore, the settings of the carburetor must be properly suited to the atmospheric conditions (air pressure, humidity and temperature).
  - Finally, the rider himself must make a test-run and check his machine for conditions (pick-up of engine speed, road surface conditions) and for the discoloration of the spark plug(s). After taking these into consideration, he must select the best possible carburetor settings.
- ※ It is advisable to make a note of settings, atmospheric conditions, road surface condition, lap-time, etc. so that the memorandum can be used as a reference useful for future.

EC712000

#### Atmospheric conditions and carburetor setting

Air temp.	Humidity	Air pressure (altitude)	Mixture	Setting
High	High	Low (high)	Richer	Leaner
Low	Low	High (low)	Leaner	Richer

The reason for the above tendency is that the richness or leanness of a fuel mixture depends on the density of the air (i.e. the concentration of oxygen in it).



That is:

- Higher temperature expands the air with its resultant reduced density.
- Higher humidity reduces the amount of oxygen in the air by so much of the water vapor in the same air.
- Lower atmospheric pressure (at a high altitude) reduces the density of the air.



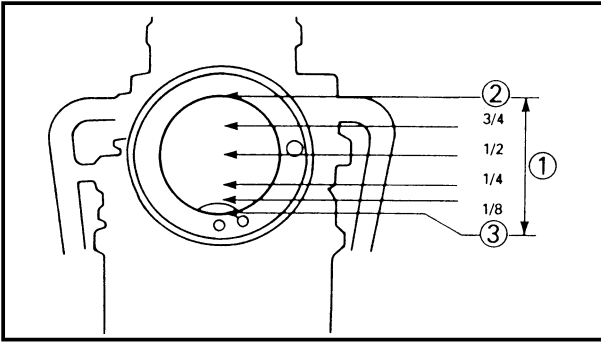
EC713001

**Test run**

After warming up the engine equipped with the standard type carburetor(s) and spark plug(s), run two or three laps of the circuit and check the smooth operation of the engine and discoloration of spark plug(s).

Discoloration	Condition of spark plug
Normal	Insulator is dry and burnt brown.
Over burned (too lean)	Insulator is whitish.
Oil fouled (too rich)	Insulator is sooty and wet.

- A** Normal
- B** Over burned (too lean)
- C** Oil fouled (too rich)



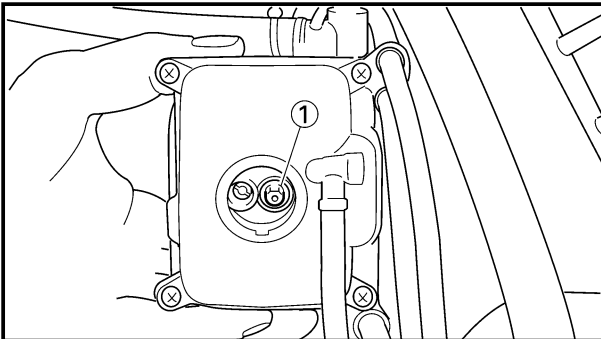
EC714032

**Effects of setting parts in relation to throttle valve opening**

Setting part	Throttle valve opening				
	Full-closed	1/4	1/2	3/4	Full-open
Pilot jet Pilot air screw					
Jet needle	Diameter of straight portion				
Clip position	Clip position				
Throttle valve					
Power jet					
Main jet					

**NOTE:**

The power jet closes at 8,500 rpm of the engine, after which only the main jet dominates.



- ① Throttle valve opening
- ② Full-open
- ③ Full-closed

EC715002

**Main jet adjustment**

The richness of air-fuel mixture with 3/4-4/4 throttle can be set by changing the main jet ①.

<b>Standard main jet</b>	<b>#178</b> <b>*#180</b>
--------------------------	-----------------------------

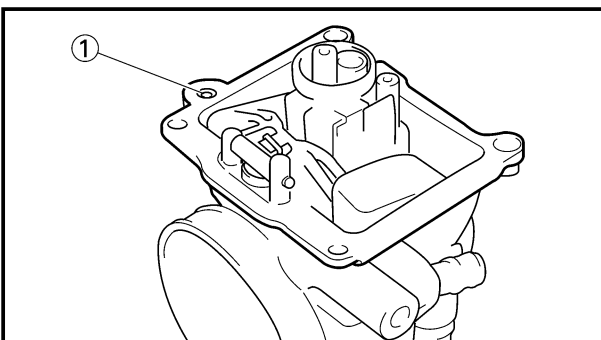
\*For EUROPE

1. Spark plug is too hot.  
Select a main jet having higher calibrating No. than standard. (To be enriched)
2. Spark plug is wet.  
Select a main jet having lower calibrating No. than standard. (To be leaned out)

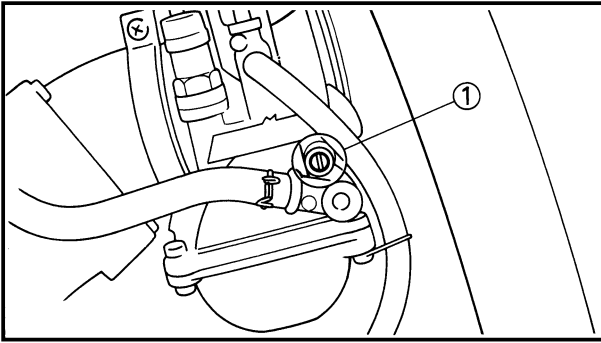
EC71V000

**Power jet adjustment**

The richness of air-fuel mixture under 8,500 rpm to the extent of 1/2 to full opened throttle can be set by changing the power jet ①. A larger size jet results in a richer mixture, and a smaller size in a leaner mixture.



<b>Standard power jet</b>	<b>#50</b>
---------------------------	------------



EC716001

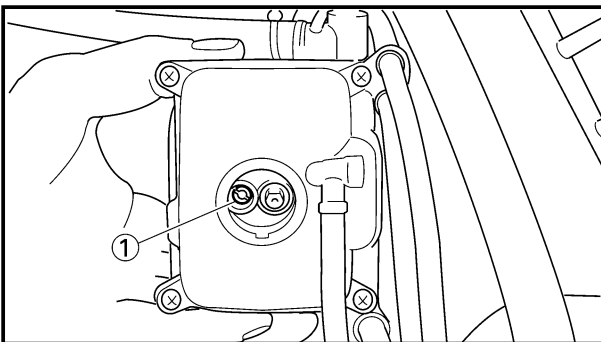
**Pilot air screw adjustment**

The richness of air-fuel mixture with full closed to 1/8 throttle can be set by turning the pilot air screw ①.

Turning in the pilot air screw will enrich the mixture at low speeds, and turning out it will lean out the mixture.

<b>Standard pilot air screw position</b>	<b>1 turn out *7/8 turns out (for reference only)</b>
--	---

\*For EUROPE



EC71R010

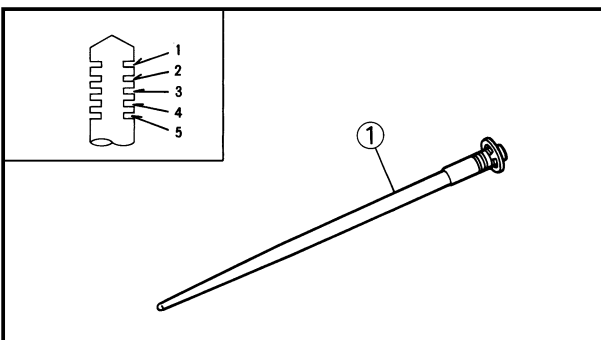
**Pilot jet adjustment**

The richness of air - fuel mixture with the throttle fully closed to 1/2 open can be set by turning the pilot jet ①.

It is changed when adjustment cannot be made by the pilot air screw alone.

<b>Standard pilot jet</b>	<b>#50 *#52</b>
---------------------------	---------------------

\*For EUROPE



EC718001

**Jet needle groove position adjustment**

Should the engine be hard to run smoothly at intermediate speeds, the jet needle ① must be adjusted. If the mixture is too rich or too lean at intermediate speed operation, irregular engine operation and poor acceleration will result. Whether or not the richness of the mixture is proper is hard to be determined by means of the spark plug and therefore, it should be judged from your feeling of actual engine operation.

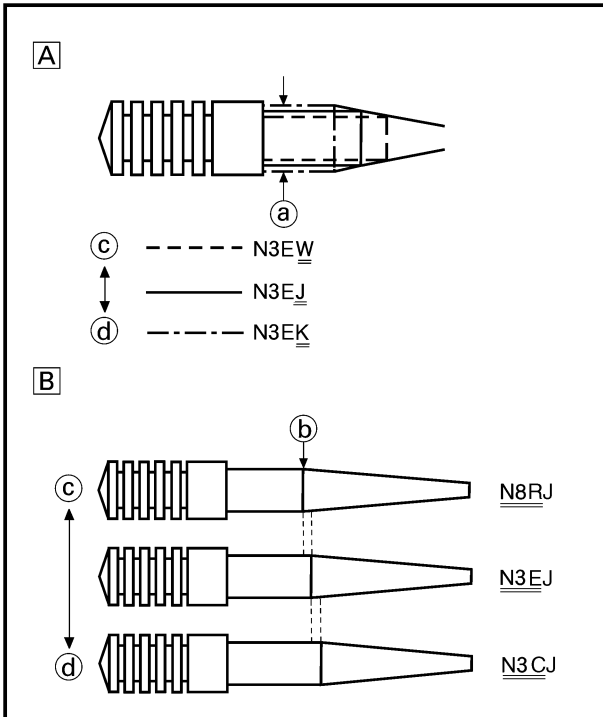
<b>Standard clip position</b>	<b>No.2 groove *No 3 groove</b>
-------------------------------	-------------------------------------

\*For EUROPE



1. Too rich at intermediate speeds  
Rough engine operation is felt and the engine will not pick up speed smoothly. In this case, step up the jet needle clip by one groove and move down the needle to lean out the mixture.
2. Too lean at intermediate speeds  
The engine breathes hard and will not pick up speed quickly.  
Step up the jet needle clip by one groove and move up the needle to enrich the mixture.





EC719081

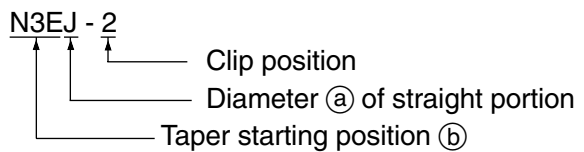
**Jet needle adjustment  
(For USA, CDN, ZA, AUS and NZ)**

On the carburetors used in the YZ250, the main nozzle is press-fitted, so it can not be replaced. Therefore, carburetor setting requires the change of the jet needle.

1. The jet needle setting parts, having the same taper angle, are available in different straight portion diameters and in different taper starting positions.

Standard jet needle	N3EJ
---------------------	------

<Example>

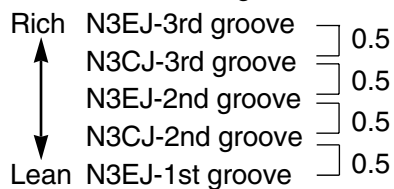


- [A] Difference in straight portion dia.
- [B] Difference in taper starting position
- [C] Rich
- [D] Lean

2. Effects of changing the jet needle (reference)

- Diameter of straight portion  
Changing the diameter of the straight portion adjusts the air-fuel mixture when the throttle is 1/8 to 1/4 open.

- Taper starting position  
<Difference of 0.5 groove>

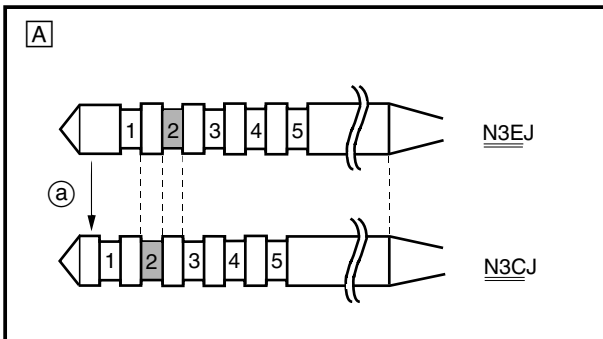


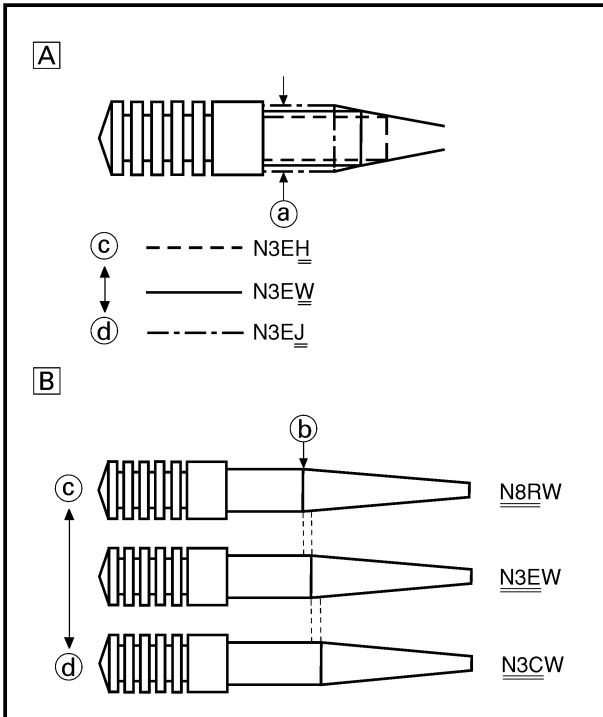
Changing the taper starting position produces the same effect as changing the clip position by 0.5 groove.

<Example>

In case of being 0.5 groove leaner in relation to N3EJ-2nd groove, choose N3CJ-2nd groove.

- [A] In case of being 0.5 groove leaner in relation to N3EJ-2nd groove.
- [a] Difference of 0.5 groove





EC719081

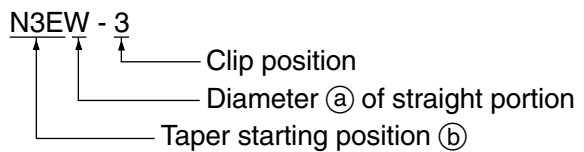
**Jet needle adjustment  
(For EUROPE)**

On the carburetors used in the YZ250, the main nozzle is press-fitted, so it can not be replaced. Therefore, carburetor setting requires the change of the jet needle.

1. The jet needle setting parts, having the same taper angle, are available in different straight portion diameters and in different taper starting positions.

Standard jet needle	N3EW
---------------------	------

<Example>

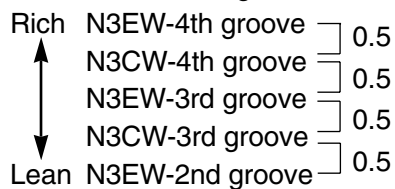


- [A] Difference in straight portion dia.
- [B] Difference in taper starting position
- [C] Rich
- [D] Lean

2. Effects of changing the jet needle (reference)

- Diameter of straight portion  
Changing the diameter of the straight portion adjusts the air-fuel mixture when the throttle is 1/8 to 1/4 open.

- Taper starting position  
<Difference of 0.5 groove>

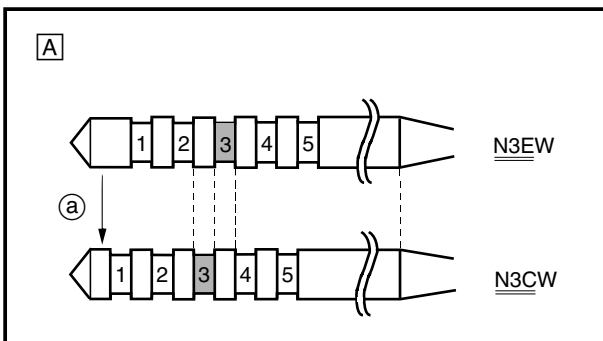


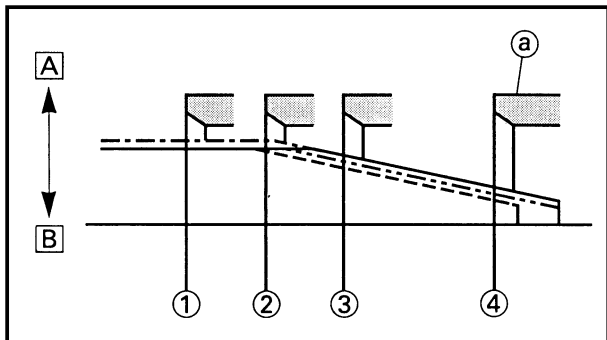
Changing the taper starting position produces the same effect as changing the clip position by 0.5 groove.

<Example>

In case of being 0.5 groove leaner in relation to N3EW-3rd groove, choose N3CW-3rd groove.

- [A] In case of being 0.5 groove leaner in relation to N3EW-3rd groove.
- [a] Difference of 0.5 groove





EC71B011

**Relationship with throttle opening**

The flow of the fuel through the carburetor main system is controlled by the main jet and then, it is further regulated by the area between the main nozzle and the jet needle. On the relationship between the fuel flow and the throttle opening, the fuel flow relates to the jet needle straight portion diameter around 1/8 to 1/4 throttle opening, whereas around 1/4 to 1/1 throttle opening it relates to the taper starting position and to the clip position.

Therefore, the fuel flow is balanced at each stage of throttle opening by the combination of the jet needle straight portion diameter, taper starting position and clip position.

<Example>

(For USA, CDN, ZA, AUS and NZ)

- N3EJ-2nd groove
- N3EJ-3rd groove
- .-.-.-.- N3EK-2nd groove
- N8RJ-2nd groove

(For EUROPE)

- N3EW-3rd groove
- N3EW-4th groove
- .-.-.-.- N3EJ-3rd groove
- N8RW-3rd groove

[A] Lean (larger diameter)

[B] Rich (smaller diameter)

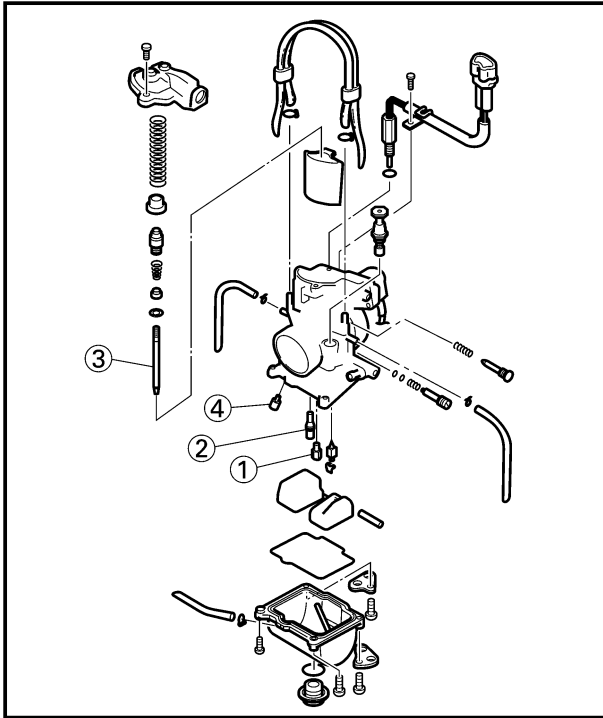
① 1/8 throttle

② 1/4 throttle

③ 1/2 throttle

④ 1/1 throttle

Ⓐ Main nozzle



EC71Q000

Carburetor setting parts

Part name	Size	Part number
Main jet ①  *(STD) (STD)	Rich	#190 4MX-14943-45
		#188 4MX-14943-95
		#185 4MX-14943-44
		#182 4MX-14943-94
		#180 4MX-14943-43
		#178 4MX-14943-93
		#175 4MX-14943-42
		#172 4MX-14943-92
		#170 4MX-14943-41
		#168 4MX-14943-91
		#165 4MX-14943-40
		#162 4MX-14943-90
	Lean	
Pilot jet ②  *(STD) (STD)	Rich	#62 4MX-14948-12
		#60 4MX-14948-11
		#58 4MX-14948-10
		#55 4MX-14948-09
		#52 4MX-14948-08
		#50 4MX-14948-07
		#48 4MX-14948-06
		#45 4MX-14948-05
		#42 4MX-14948-04
		#40 4MX-14948-03
		#38 4MX-14948-02
	Lean	
	Jet needle ③  (STD)	Rich
		N3EW 4SR-14916-EW
		N8RJ 4SR-14916-RJ
		N3EJ 4SR-14916-EJ
		N3CJ 4SR-14916-CJ
		N3EK 4SR-14916-EK
		N3CK 4SR-14916-CK
Lean		
*Jet needle ③  (STD)	Rich	N8RH 4SR-14916-RH
		N3EH 4SR-14916-EH
		N8RW 4SR-14916-RW
		N3EW 4SR-14916-EW
		N3CW 4SR-14916-CW
		N3EJ 4SR-14916-EJ
		N3CJ 4SR-14916-CJ
	Lean	
Power jet ④  (STD)	Rich	#65 4JT-1494F-13
		#60 4JT-1494F-11
		#55 4JT-1494F-09
		#50 4JT-1494F-07
		#45 4JT-1494F-05
	Lean	#40 4JT-1494F-03

\*For EUROPE



EC71C030

**Road condition and examples of carburetor setting**

Parts	General condition			Sandy condition		
	Under 10°C (50°F) (Winter)	10~25°C (50~77°F) (Spring, Autumn)	Over 25°C (77°F) (Summer)	Under 10°C (50°F) (Winter)	10~25°C (50~77°F) (Spring, Autumn)	Over 25°C (77°F) (Summer)
Main jet	#178 *#180	#178	#178	#180 *#182	#178 *#180	#178
Jet needle	N3EW-3	N3EJ-2 *N3CW-3	N3CJ-2 *N3EW-2	N3CW-3 *N3CW-4	N3CW-3 *N3EW-3	N3CW-3 *N3EW-3
Pilot jet	#50	#50	#50	#52	#52	#52
Pilot air screw	-1/4	Zero	Zero	Zero * -1/4	Zero	+1/4
Power jet	#50	#50	#50	#50	#50	#50

\*For EUROPE

**NOTE:**

Optimum pilot air screw setting can be obtained by adding the ex-factory number of the same screw back-out turns to any required value provided in the chart.

For example, if the ex-factory number is "1", add "1" to the value chosen in the chart.

EC71D021

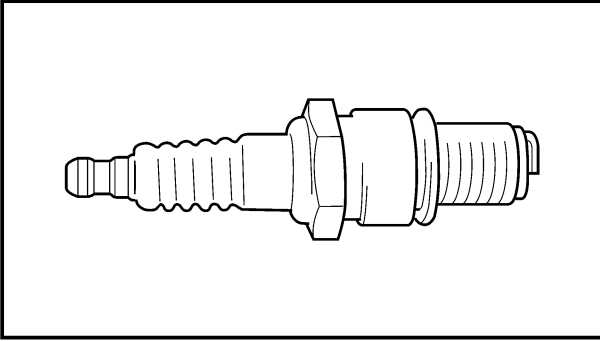
**Examples of carburetor setting depending on symptom**

Symptom	Setting	Checking
At full throttle Hard breathing Shearing noise Whitish spark plug ↓ Lean mixture	Increase main jet calibration No. (Gradually)	Discoloration of spark plug → If tan color, it is in good condition. If can not be normalized: Clogged float valve seat Clogged fuel hose Clogged fuel cock
At full-throttle Stop of speed pick-up Slow speed pick-up Slow response Sooty spark plug ↓ Rich mixture	Decrease main jet calibration No. (Gradually) *In case of racing slight enrichment of mixture reduces engine trouble.	Discoloration of spark plug → If tan color, it is in good condition. If not effect: Clogged air cleaner Fuel overflow from carburetor
Lean mixture	Lower jet needle clip position. (1 groove down)	
Rich mixture	Raise jet needle clip position. (1 groove up)	
1/4~3/4 throttle Hard breathing Lack of speed	Lower jet needle clip position. (1 groove down)	
1/4~1/2 throttle Slow speed pick-up White smoke Poor acceleration	Raise jet needle clip position. (1 groove up)	



Symptom	Setting	Checking
0~1/4 throttle Hard breathing Speed down	Use jet needle having a smaller diameter.	Number of turns-back → Correct properly Overflow from carburetor
0~1/4 throttle Poor acceleration White smoke	Use jet needle having a larger diameter.	
Unstable at low speeds Pinking noise	Lower jet needle clip position. (1 groove down) Turn in pilot air screw.	
Poor response at extremely low speed	Reduce pilot jet calibration No. Turn out pilot air screw. If not effect, reverse the above procedures.	Dragging brake Overflow from carburetor
Poor response in the range of low to intermediate speeds	Raise jet needle clip position. If no effect, reverse the above procedures.	
Poor response when throttle is opened quickly	Check overall settings. Use main jet having lower calibration No. Raise jet needle clip position. (1 groove up) If no effect, reverse the above procedures.	Check air cleaner for fouling.
Poor engine operation	Turn in pilot air screw.	Check throttle valve operation.

- ※ This should be taken simply for an example. It is necessary to set the carburetor while checking the operating conditions of the engine and discoloration of spark plugs. Normally, carburetor setting is made by means of the main jet, needle clip position, pilot jet and pilot air screw. If the result of setting is still unsatisfactory, it is advisable to change the sizes of the jet needle.



EC71M010

### Change of the heat range of spark plugs

Judging from the discoloration of spark plugs, if they are found improper, it can be corrected by the following two methods; changing carburetor settings and changing the heat range of spark plug.

<b>Standard spark plug</b>	<b>BR8EG/NGK (resistance type)</b>
----------------------------	--

- In principle, it is advisable to first use spark plugs of standard heat range, and judging from the discoloration of spark plugs, adjust carburetor settings.
- If the calibration No. of the main jet must be changed by  $\pm 15$ , it is advisable to change the heat range of spark plugs and newly select the proper main jet.

### NOTE: \_\_\_\_\_

- When checking the discoloration of spark plugs, be sure to stop the engine immediately after a run and check.
- Avoid racing.
- When changing the heat range of spark plugs, never attempt to change it more than  $\pm 1$  rank.
- When using a spark plug other than standard, check its heat range against the standard and check that it is a resistance type.
- Note that even if the discoloration seems proper, it may slightly vary with the spark plug maker and oil in use.



EC720000

**CHASSIS**

EC71P002

**Selection of the secondary reduction ratio (Sprocket)**

Secondary reduction ratio =  $\frac{\text{Number of driven sprocket teeth}}{\text{Number of drive sprocket teeth}}$

<b>Standard secondary reduction ratio</b>	<b>50/14 (3.571) *49/14 (3.500)</b>
---	---

\*For EUROPE and CDN

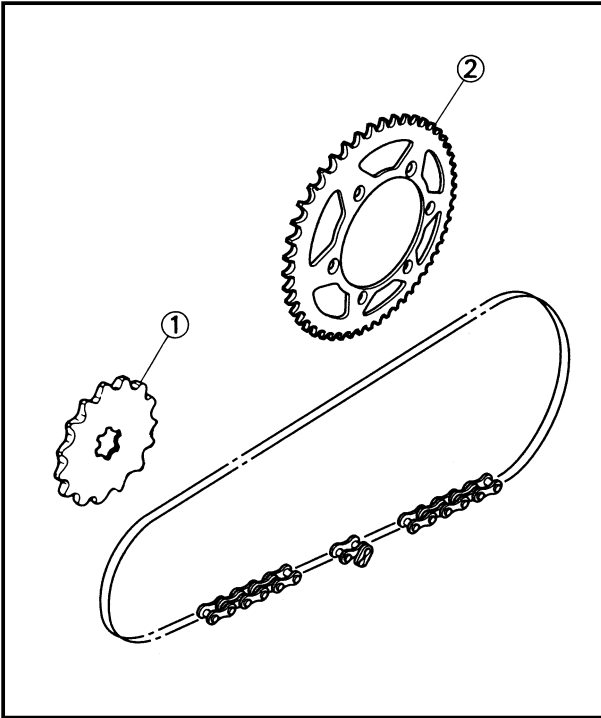
<Requirement for selection of secondary gear reduction ratio>

- It is generally said that the secondary gear ratio should be reduced for a longer straight portion of a speed course and should be increased for a course with many corners. Actually, however, as the speed depends on the ground condition of the day of the race, be sure to run through the circuit to set the machine suitable for the entire course.
- In actuality, it is very difficult to achieve settings suitable for the entire course and some settings may be sacrificed. Thus, the settings should be matched to the portion of the course that has the greatest effect on the race result. In such a case, run through the entire course while making notes of lap times to find the best balance; then, determine the secondary reduction ratio.
- If a course has a long straight portion where a machine can run at maximum speed, the machine is generally set such that it can develop its maximum revolutions toward the end of the straight line, with care taken to avoid the engine over-revving.

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

Riding technique varies from rider to rider and the performance of a machine also vary from machine to machine. Therefore, do not imitate other rider's settings from the beginning but choose your own setting according to the level of your riding technique.





EC72N000

**Drive and driven sprockets setting parts**

Part name	Size	Part number
Drive sprocket ① (STD)	13T	9383E-13144
	14T	9383E-14215
Driven sprocket ②  *(STD) (STD)	47T	5ET-25447-00
	48T	5NY-25448-00
	49T	5NY-25449-00
	50T	5NY-25450-00
	51T	5NY-25451-00
	52T	5NY-25452-00

\*For EUROPE and CDN

EC721003

**Tire pressure**

Tire pressure should be adjust to suit the road surface condition of the circuit.



**Standard tire pressure:**  
100 kPa (1.0 kgf/cm<sup>2</sup>, 15 psi)

- Under a rainy, muddy, sandy, or slippery condition, the tire pressure should be lower for a larger area of contact with the road surface.



**Extent of adjustment:**  
60~80 kPa  
(0.6~0.8 kgf/cm<sup>2</sup>, 9.0~12 psi)

- Under a stony or hard road condition, the tire pressure should be higher to prevent a flat tire.



**Extent of adjustment:**  
100~120 kPa  
(1.0~1.2 kgf/cm<sup>2</sup>, 15~18 psi)



EC722011

### Front fork setting

The front fork setting should be made depending on the rider's feeling of an actual run and the circuit conditions.

The front fork setting includes the following three factors:

1. Setting of air spring characteristics
  - Change the fork oil level.
2. Setting of spring preload
  - Change the spring.
  - Install the adjustment washer.
3. Setting of damping force
  - Change the compression damping.
  - Change the rebound damping.

The spring acts on the load and the damping force acts on the cushion travel speed.

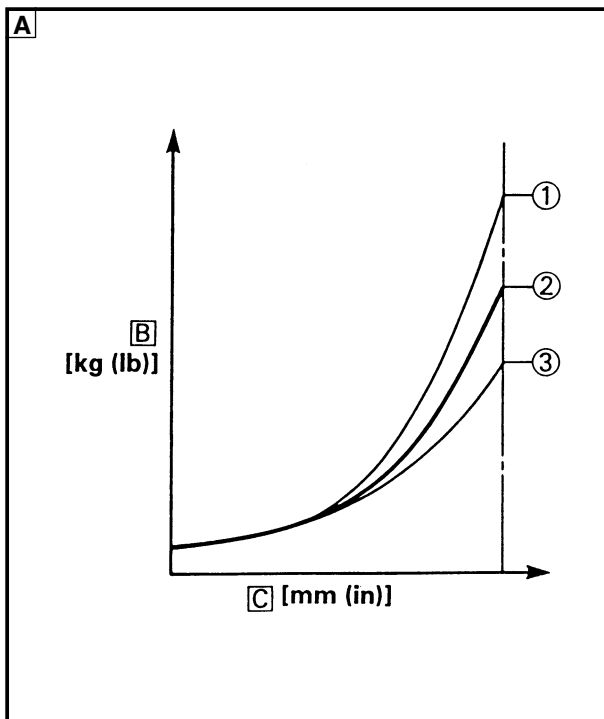
EC723001

### Change in level and characteristics of fork oil

Damping characteristic near the final stroke can be changed by changing the fork oil amount.

#### CAUTION:

Adjust the oil level in 5 mm (0.2 in) increments or decrements. Too low oil level causes the front fork to produce a noise at full rebound or the rider to feel some pressure on his hands or body. Alternatively, too high oil level will develop unexpectedly early oil lock with the consequent shorter front fork travel and deteriorated performance characteristics. Therefore, adjust the front fork within the specified range.



**Standard oil level:**

135 mm (5.31 in)

**Extent of adjustment:**

80~150 mm (3.15~5.91 in)

From top of outer tube with inner tube and damper rod fully compressed without spring.

**A** Air spring characteristics in relation to oil level change

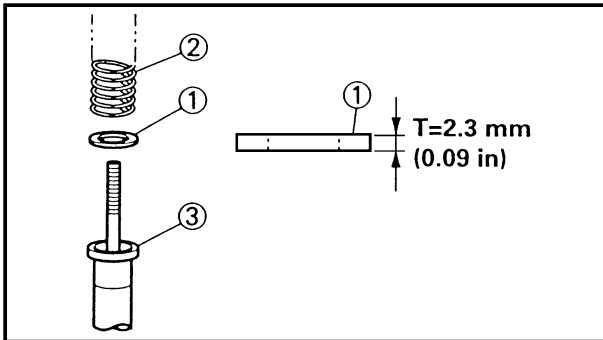
**B** Load

**C** Stroke

① Max. oil level

② Standard oil level

③ Min. oil level



EC727021

### Spring preload adjustment

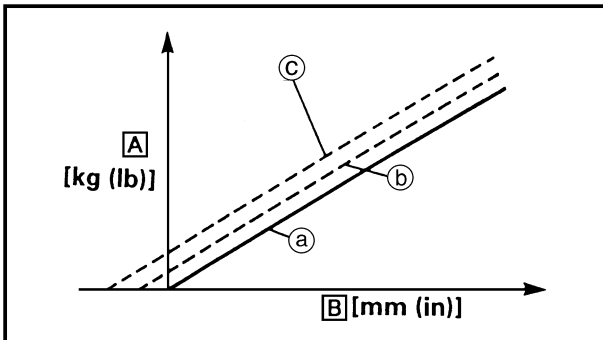
The spring preload is adjusted by installing the adjustment washer ① between the fork spring ② and damper rod ③.

#### CAUTION:

Do not install three or more adjustment washers for each front fork.

#### WARNING

Always adjust each front fork to the same setting. Uneven adjustment can cause poor handling and loss of stability.



**Standard washer quantity:**  
Zero adjustment washers  
**Extent of adjustment:**  
Zero ~ 2 adjustment washers

- [A] Load
- [B] Fork stroke
- (a) Without adjustment washer (standard)
- (b) 1 adjustment washer
- (c) 2 adjustment washers

EC72A001

### Setting of spring after replacement

As the front fork setting can be easily affected by rear suspension, take care so that the machine front and rear are balanced (in position, etc.) when setting the front fork.

#### 1. Use of soft spring

Generally a soft spring gives a soft riding feeling. Rebound damping tends to become stronger and the front fork may sink deeply over a series of gaps.

To set a soft spring:

- Change the rebound damping.  
Turn out one or two clicks.
- Change the compression damping.  
Turn in one or two clicks.

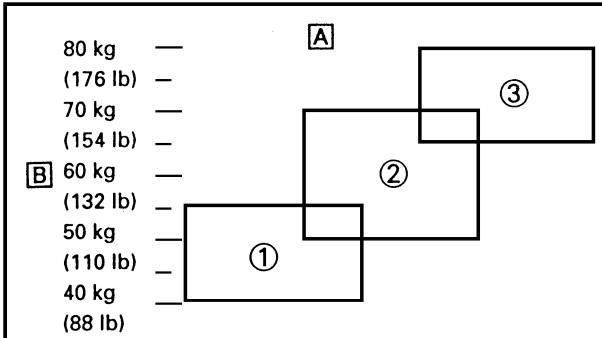


2. Use of stiff spring

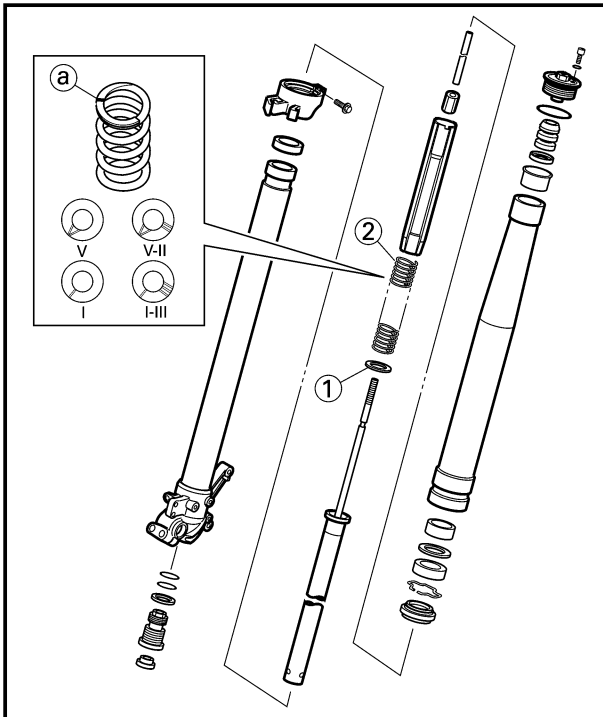
Generally a stiff spring gives a stiff riding feeling. Rebound damping tends to become weaker, resulting in lack of a sense of contact with the road surface or in a vibrating handlebar.

To set a stiff spring:

- Change the rebound damping.  
Turn in one or two clicks.
- Change the compression damping.  
Turn out one or two clicks.



- A** Coverage of spring by weight
- B** Rider weight
- ① Soft
- ② Standard
- ③ Stiff



EC72P010

**Front fork setting parts**

- Adjustment washer ①

TYPE (thickness)	PART NUMBER
T=2.3 mm (0.09 in)	4SS-23364-L0

- Front fork spring ②

[Equal pitch spring ]

TYPE	SPRING RATE	SPRING PART NUMBER	I.D. MARK (slits)
SOFT	0.380	4SS-23141-10	I-I
	0.390	4SS-23141-20	I-II
	0.400	4SS-23141-30	I-III
	0.410	4SS-23141-40	I
	0.420	4SS-23141-50	II
STD	0.430	4XL-23141-L0	—
STIFF	0.440	4SS-23141-70	III

[Unequal pitch spring ]

TYPE	SPRING RATE (approx.)	SPRING PART NUMBER	I.D. MARK (slits)
SOFT	0.400	5ET-23141-20	V
	0.410	5ET-23141-00	V-I
	0.420	5ET-23141-30	V-II
*STD	0.430	5CU-23141-L0	—
STIFF	0.440	5ET-23141-40	V-III

\*For EUROPE

**NOTE:**

- The unequal pitch spring is softer in initial characteristic than the equal pitch spring and is difficult to bottom out under full compression.
- The I.D. mark (slits) ② is proved on the end of the spring.



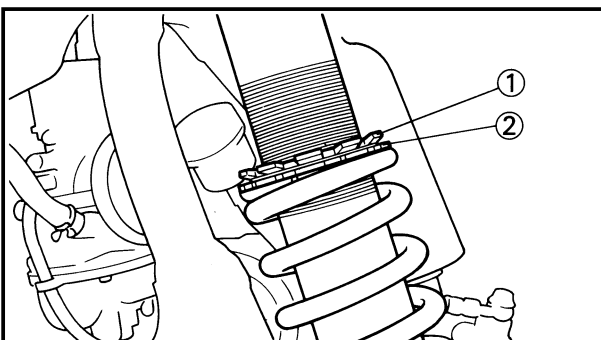
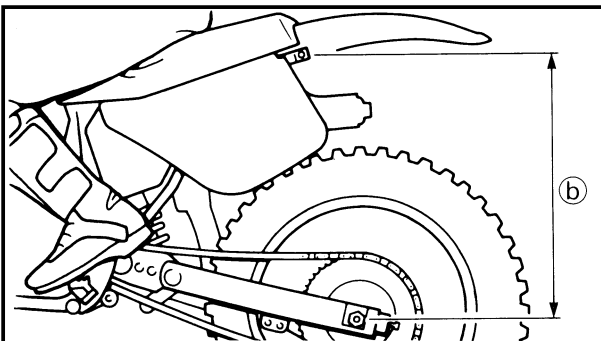
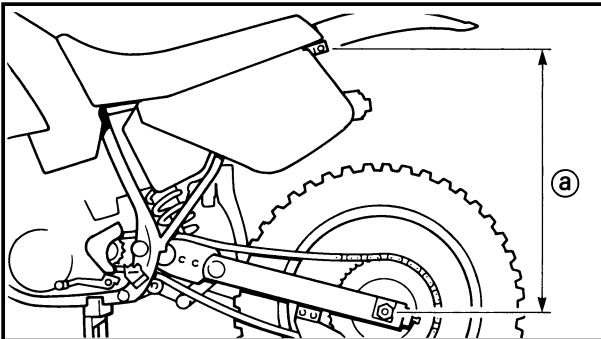
EC72B000

### Rear suspension setting

The rear suspension setting should be made depending on the rider's feeling of an actual run and the circuit conditions.

The rear suspension setting includes the following two factors:

1. Setting of spring preload
  - Change the set length of the spring.
  - Change the spring.
2. Setting of damping force
  - Change the rebound damping.
  - Change the compression damping.



EC72C001

### Choosing set length

1. Place a stand or block under the engine to put the rear wheel above the floor, and measure the length (a) between the rear wheel axle center and the rear fender holding bolt.
2. Remove the stand or block from the engine and with a rider astride the seat, measure the sunken length (b) between the rear wheel axle center and the rear fender holding bolt.
3. Loosen the locknut (1) and make adjustment by turning the spring adjuster (2) to achieve the standard figure from the subtraction of the length (b) from the length (a).



**Standard figure:**

**90~100 mm (3.5~3.9 in)**

**NOTE:**

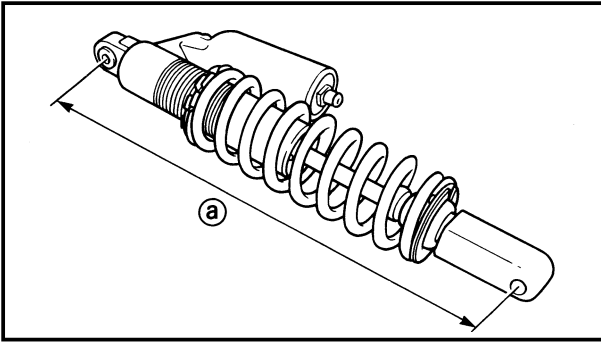
- If the machine is new and after it is broken in, the same set length of the spring may change because of the initial fatigue, etc. of the spring. Therefore, be sure to make re-evaluation.
- If the standard figure cannot be achieved by adjusting the spring adjuster and changing the spring set length, replace the spring with an optional one and make re-adjustment.

EC72G020

**Setting of spring after replacement**

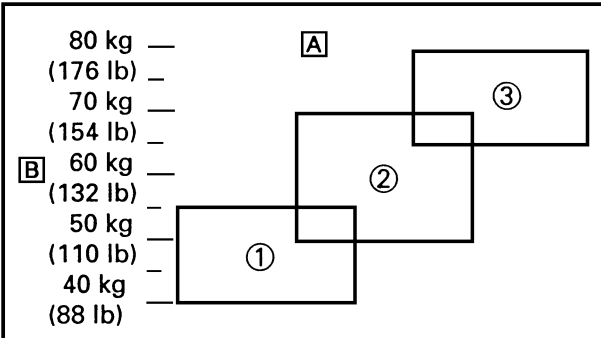
After replacement, be sure to adjust the spring to the set length [sunken length 90~100 mm (3.5~3.9 in)] and set it.

1. Use of soft spring
    - Set the soft spring for less rebound damping to compensate for its less spring load. Run with the rebound damping adjuster one or two clicks on the softer side and readjust it to suit your preference.
  2. Use of stiff spring
    - Set the soft spring for more rebound damping to compensate for its greater spring load. Run with the rebound damping adjuster one or two clicks on the stiffer side and readjust it to suit your preference.
- ※ Adjusting the rebound damping will be followed more or less by a change in the compression damping. For correction, turn the low compression damping adjuster on the softer side.



**CAUTION:**

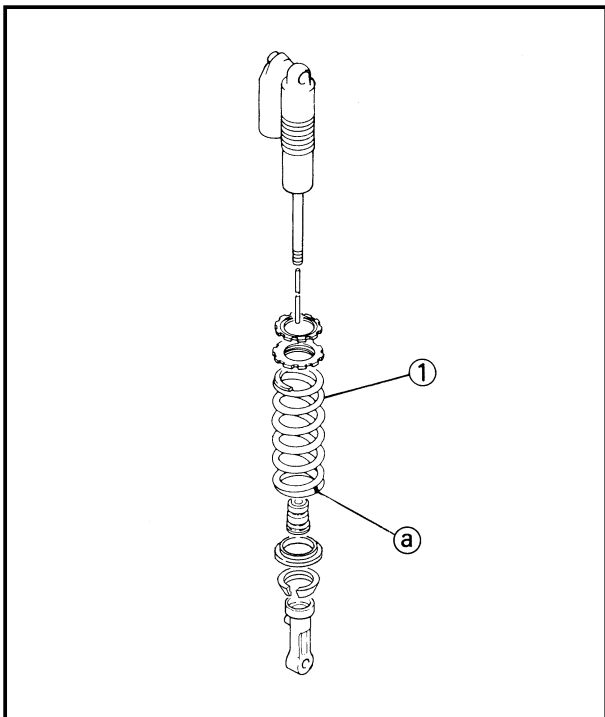
When using a rear cushion other than currently installed, use the one whose overall length ① does not exceed the standard as it may result in faulty performance. Never use one whose overall length is greater than standard.



**Length ① of standard shock:**  
490.5 mm (19.31 in)

- A** Coverage of spring by weight
- B** Rider weight
- ① Soft
- ② Standard
- ③ Stiff





EC72Q011

**Rear shock absorber setting parts**

- Rear shock spring ①

[Equal pitch spring ]

TYPE	SPRING RATE	SPRING PART NUMBER	I.D. COLOR /POINT	SPRING FREE LENGTH
SOFT	4.3	5UN-22212-00	Brown/1	260
	4.5	5UN-22212-10	Green/1	260
	4.7	5UN-22212-20	Red/1	260
STD	4.9	5UN-22212-30	Black/1	260
STIFF	5.1	5UN-22212-40	Blue/1	260
	5.3	5UN-22212-50	Yellow/1	260
	5.5	5UN-22212-60	Pink/1	260
	5.7	5UN-22212-70	White/1	260

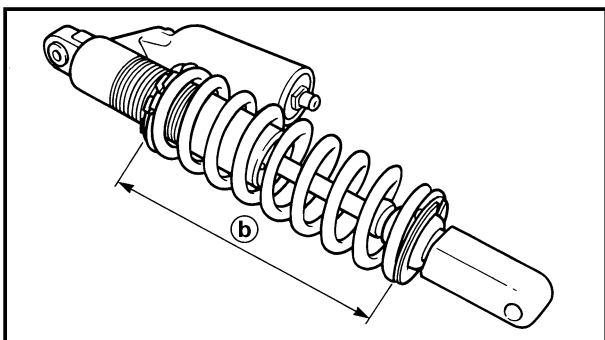
[Unequal pitch spring ]

TYPE	SPRING RATE (approx.)	SPRING PART NUMBER	I.D. COLOR /POINT	SPRING FREE LENGTH
SOFT	4.5	5UN-22212-A0	Green/2	275
	4.7	5UN-22212-B0	Red/2	275
*STD	4.9	5UN-22212-C0	Black/2	275
STIFF	5.1	5UN-22212-D0	Blue/2	275
	5.3	5UN-22212-E0	Yellow/2	275
	5.5	5UN-22212-F0	Pink/2	275
	5.7	5UN-22212-G0	White/2	275

\*For EUROPE

**NOTE:**

- The unequal pitch spring is softer in initial characteristic than the equal pitch spring and is difficult to bottom out under full compression.
- The I.D. color ② is marked at the end of the spring.



- Extent of adjustment (spring length)

SPRING FREE LENGTH	EXTENT OF ADJUSTMENT ②
260mm (10.24in)	240.5~258.5mm (9.47~10.18in)
275mm (10.83in)	255.5~273.5mm (10.06~10.77in)



EC72H010

**Suspension setting**

- Front fork

**NOTE:**

- If any of the following symptoms is experienced with the standard position as the base, make resetting by reference to the adjustment procedure given in the same chart.
- Before any change, set the rear shock absorber sunken length to the standard figure 90~100 mm (3.5~3.9 in).

Symptom	Section				Check	Adjust
	Jump	Large gap	Medium gap	Small gap		
Stiff over entire range	○	○	○		Compression damping Oil level (oil amount) Spring	Turn adjuster counterclockwise (about 2 clicks) to decrease damping. Decrease oil level by about 5~10 mm (0.2~0.4 in). Replace with soft spring.
Unsmooth movement over entire range	○	○	○	○	Outer tube Inner tube Under bracket tightening torque	Check for any bends, dents, and other noticeable scars, etc. If any, replace affected parts. Retighten to specified torque.
Poor initial movement				○	Rebound damping Oil seal	Turn adjuster counterclockwise (about 2 clicks) to decrease damping. Apply grease in oil seal wall.
Soft over entire range, bottoming out	○	○			Compression damping Oil level (oil amount) Spring	Turn adjuster clockwise (about 2 clicks) to increase damping. Increase oil level by about 5~10 mm (0.2~0.4 in). Replace with stiff spring.
Stiff toward stroke end	○				Oil level (oil amount)	Decrease oil level by about 5 mm (0.2 in).
Soft toward stroke end, bottoming out	○				Oil level (oil amount)	Increase oil level by about 5 mm (0.2 in).
Stiff initial movement	○	○	○	○	Compression damping	Turn adjuster counterclockwise (about 2 clicks) to decrease damping.
Low front, tending to lower front posture			○	○	Compression damping Rebound damping Balance with rear end Oil level (oil amount)	Turn adjuster clockwise (about 2 clicks) to increase damping. Turn adjuster counterclockwise (about 2 clicks) to decrease damping. Set sunken length for 95~100 mm (3.7~3.9 in) when one passenger is astride seat (lower rear posture). Increase oil level by about 5 mm (0.2 in).
"Obtrusive" front, tending to upper front posture			○	○	Compression damping Balance with rear end Spring Oil lever (oil amount)	Turn adjuster counterclockwise (about 2 clicks) to decrease damping. Set sunken length for 90~95 mm (3.5~3.7 in) when one passenger is astride seat (upper rear posture). Replace with soft spring. Decrease oil level by about 5~10 mm (0.2~0.4 in).



- Rear shock absorber

**NOTE:**

- If any of the following symptoms is experienced with the standard position as the base, make resetting by reference to the adjustment procedure given in the same chart.
- Adjust the rebound damping in 2-click increments or decrements.
- Adjust the low compression damping in 1-click increments or decrements.
- Adjust the high compression damping in 1/6 turn increments or decrements.

Symptom	Section				Check	Adjust
	Jump	Large gap	Medium gap	Small gap		
Stiff, tending to sink			○	○	Rebound damping Spring set length	Turn adjuster counterclockwise (about 2 clicks) to decrease damping. Set sunken length for 90~100 mm (3.5~3.9 in) when one passenger is astride seat.
Spongy and unstable			○	○	Rebound damping Low compression damping Spring	Turn adjuster clockwise (about 2 clicks) to increase damping. Turn adjuster clockwise (about 1 click) to increase damping. Replace with stiff spring.
Heavy and dragging			○	○	Rebound damping Spring	Turn adjuster counterclockwise (about 2 clicks) to decrease damping. Replace with soft spring.
Poor road gripping				○	Rebound damping Low compression damping High compression damping Spring set length Spring	Turn adjuster counterclockwise (about 2 clicks) to decrease damping. Turn adjuster clockwise (about 1 click) to increase damping. Turn adjuster clockwise (about 1/6 turn) to increase damping. Set sunken length for 90~100 mm (3.5~3.9 in) when one passenger is astride seat. Replace with soft spring.
Bottoming out	○	○			High compression damping Spring set length Spring	Turn adjuster clockwise (about 1/6 turn) to increase damping. Set sunken length for 90~100 mm (3.5~3.9 in) when one passenger in astride seat. Replace with stiff spring.
Bouncing	○	○			Rebound damping Spring	Turn adjuster clockwise (about 2 clicks) to increase damping. Replace with soft spring.
Stiff travel	○	○			High compression damping Spring set length Spring	Turn adjuster counterclockwise (about 1/6 turn) to decrease damping. Set sunken length for 90~100 mm (3.5~3.9 in) when one passenger is astride seat. Replace with soft spring.

**TUN**



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**MEMO**





**YAMAHA**

YAMAHA MOTOR CO., LTD.  
2500 SHINGAI IWATA SHIZUOKA JAPAN

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