YAMAHA

WR200R(E)

OWNER'S SERVICE MANUAL

4BF-28199-71

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WR200R(E)
OWNER'S SERVICE MANUAL

1st Edition, July 1992

Printed in Japan

INTRODUCTION

Congratulations on your purchase of a Yamaha WR 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As improvements are made on this model, some data in this manual may become outdated.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.

⚠ 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.

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.
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 vicinty 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.

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.

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.

HOW TO USE THIS MANUAL

PARTICULARLY IMPORTANT INFORMATION

⚠

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

⚠ WARNING

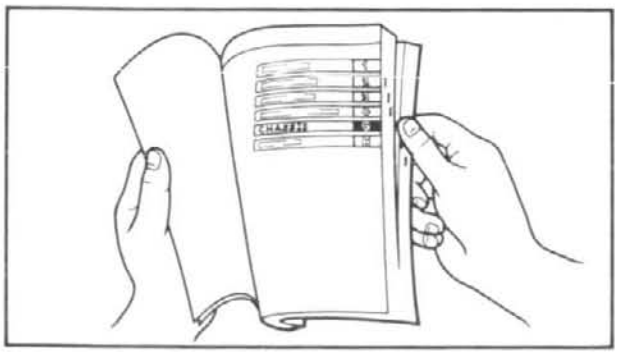
Failure to follow WARNING instructions could result in severe injury or death to the machine operator, a bystander, or a person inspecting or repairing the machine.

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.



FINDING THE REQUIRED PAGE

1. This manual consists of six chapters; "General Information", "Specifications", "Regular inspection and adjustments", "Engine", "Chassis" and "Electrical".
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

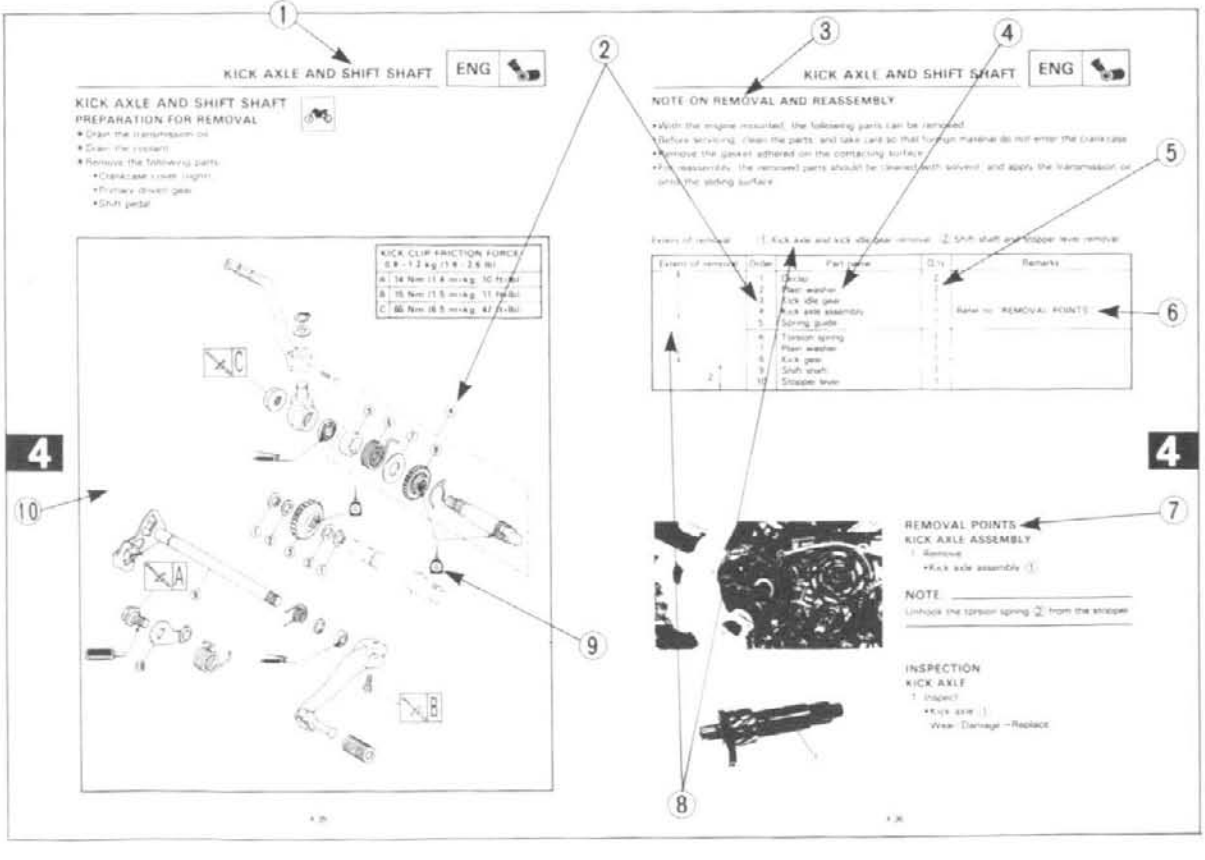
All of the procedures in this manual are organized in a sequential, step-by-step format. The information has been complied to provide the mechanic with an easy to read, handy reference that contains comprehensive explanations of all disassembly, repair, assembly, and inspection operations.
In this revised format, the condition of a faulty component will precede an arrow symbol and the course of action required will follow the symbol, e.g.,

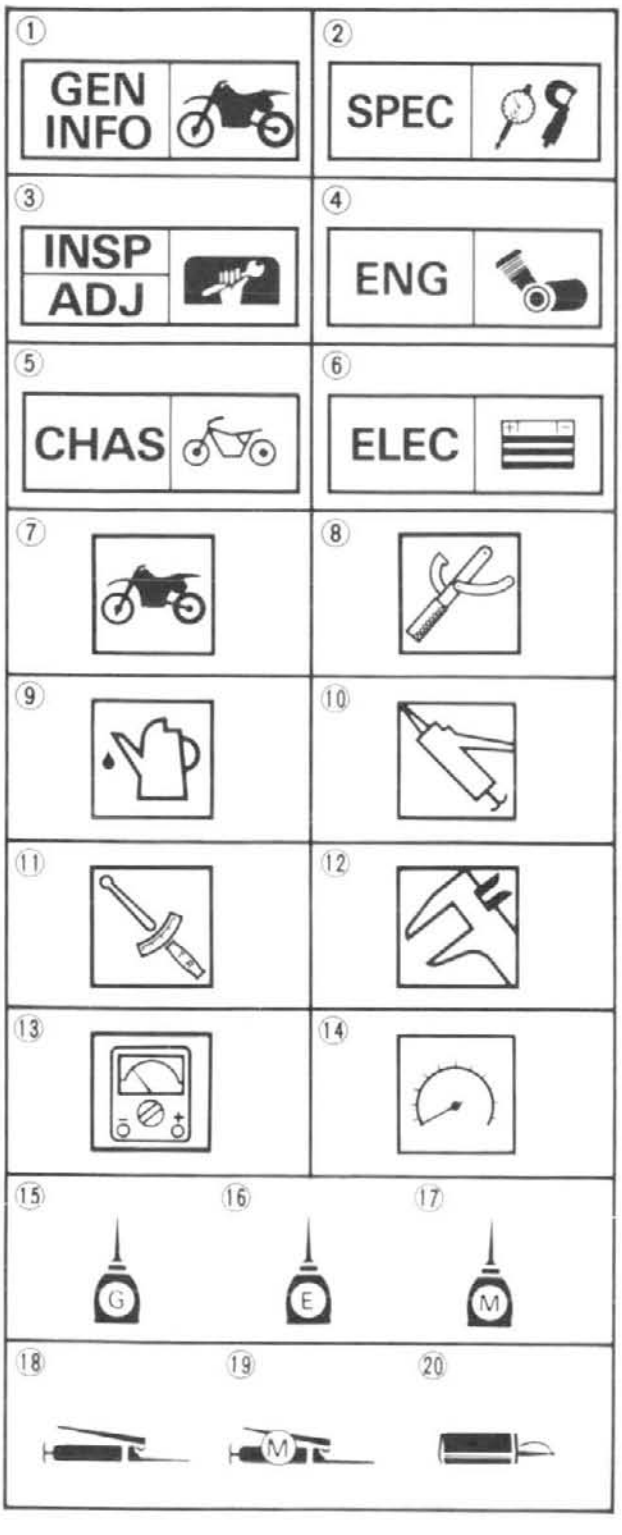
•Bearings
Pitting/Damage→Replace.

HOW TO READ DESCRIPTIONS

1. An easy-to-see disassembly illustration is mainly provided for a disassembly job.
2. Numbers are given in the order of a disassembly job in the disassembly illustration.
3. An explanation of jobs and notes is presented in an easy-to-read way by the use of symbol marks. The meanings of the symbol marks are given on the next page.
4. A job instruction chart accompanies the assembly illustration, providing the order of jobs, names of parts, notes in jobs, etc.
5. In addition to the disassembly illustration, "Points for Removal" is provided to supplement in detail the explanation which does or cannot necessarily cover the main jobs.
6. Jobs necessary before and after those which are not included in the disassebly illustration are explained before the same illustration as related jobs.

① Section
② Order of removal
③ Note on removal and reassembly
④ Part name
⑤ Q'ty
⑥ Remarks
⑦ Removal point
⑧ Extent of removal
⑨ Symbol mark
⑩ Exploded diagram





ILLUSTRATED SYMBOLS (Refer to the illustration)

Illustrated symbols ① to ⑥ are designed as thumb tabs to indicate the chapter's number and content.

① General information
② Appendices
③ Regular inspection and adjustment
④ Engine
⑤ Chassis
⑥ Electrical

Illustrated symbols ⑦ to ⑭ are used to identify the specifications appearing in the text.

⑦ With engine mounted
⑧ Special tool
⑨ Filling fluid
⑩ Lubricant
⑪ Tightening
⑫ Wear limit, clearance
⑬ Resistance (Ω), Voltage (V), Electric current (A)
⑭ Engine speed

Illustrated symbols ⑮ to ⑳ in the exploded diagram indicate grade of lubricant and location of lubrication point.

⑮ Apply gear oil
⑯ Apply engine mixing oil
⑰ Apply molybdenum disulfide oil
⑱ Apply lightweight lithium-soap base grease
⑲ Apply molybdenum disulfide grease
⑳ Apply locking agent (LOCTITE®)

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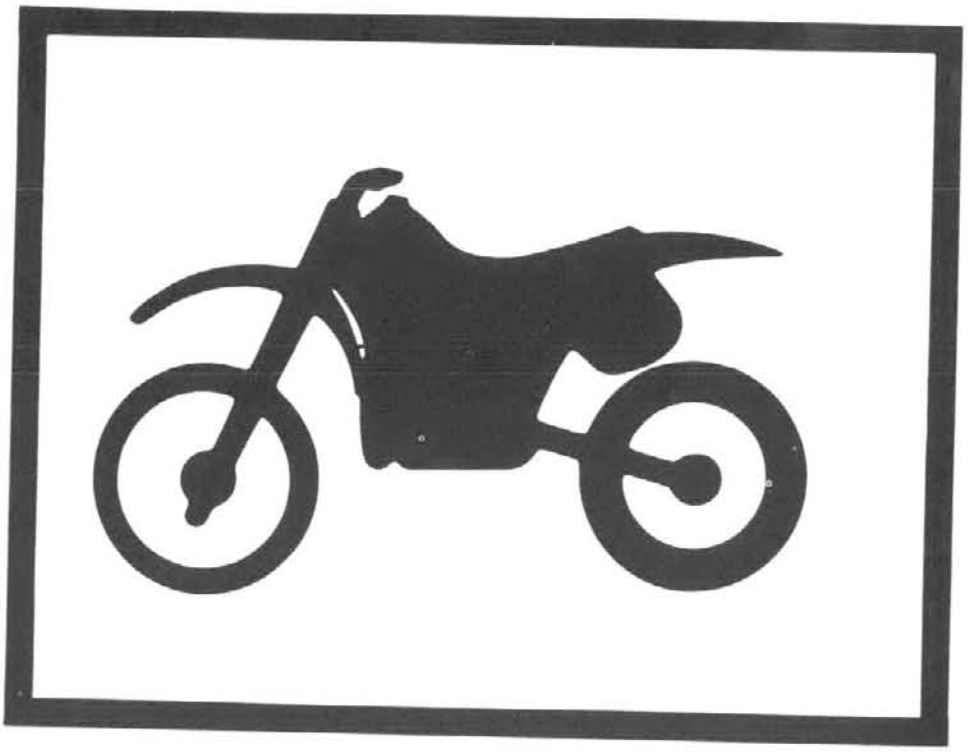
CHAPTER 1
GENERAL INFORMATION



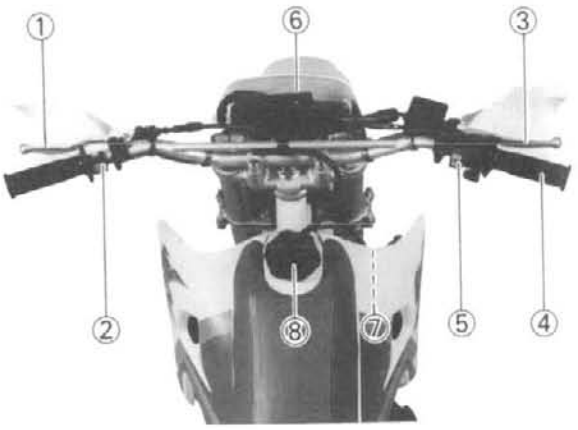
DESCRIPTION

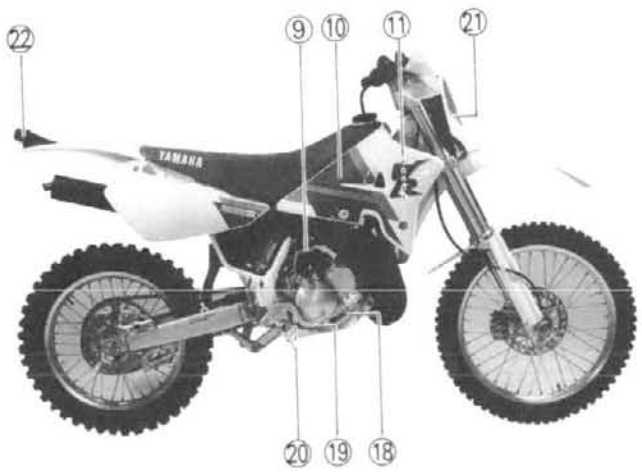
1

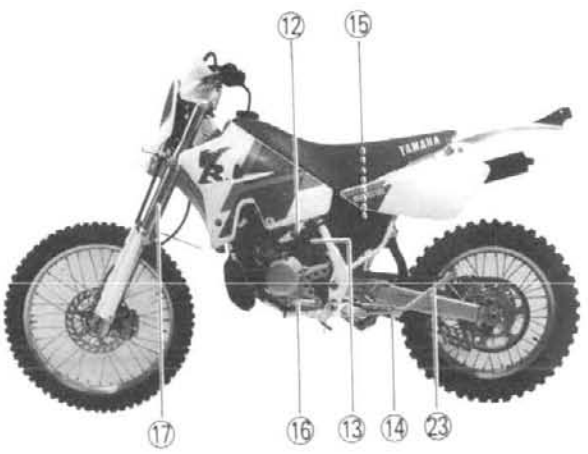
① Clutch lever
② "ENGINE STOP" button
③ Front brake lever
④ Throttle grip
⑤ "LIGHTS" switch
⑥ Odometer
⑦ Radiator cap
⑧ Fuel tank cap
⑨ Kick starter
⑩ Fuel tank
⑪ Radiator
⑫ Fuel cock
⑬ Starter lever
⑭ Drive chain
⑮ Air cleaner
⑯ Shift pedal
⑰ Front fork
⑱ Coolant drain bolt
⑲ Rear brake pedal
⑳ Level window
㉑ Headlight
㉒ Taillight
㉓ Sidestand

NOTE:

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







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 bike is stolen, the authorities will need the number to search for and identify your machine.

VEHICLE IDENTIFICATION NUMBER (For AUS and NZ)

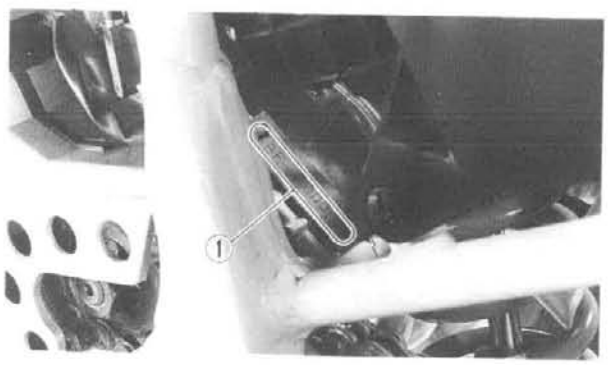
The vehicle identification number (1) is stamped on the right of the steering head pipe.

Starting Serial Number:
JYA4BFT0✱PA007101

FRAME SERIAL NUMBER (Except for AUS and NZ)

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

Starting Serial Number:
4BF-007101



ENGINE SERIAL NUMBER

The engine serial number (1) is stamped into the elevated part of the left rear section of the engine.

NOTE:

The first three digits of these numbers are for model identifications; the remaining digits are the unit production number.

Starting Serial Number:
4BF-007101

1

IMPORTANT INFORMATION

PREPARATION FOR REMOVAL AND DISASSEMBLY

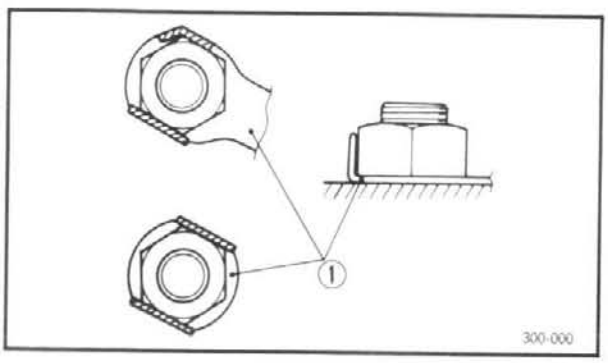
1. Remove all dirt, mud, dust, and foreign material before removal and disassembly.
2. Use proper tools and cleaning equipment. Refer to "SPECIAL TOOL".
3. When disassembling the machine, keep mated parts together. They include gears, cylinders, pistons, and other mated parts that have been "mated" through 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.

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.

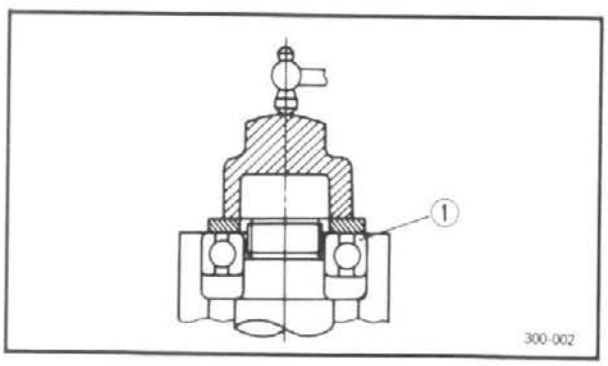
GASKETS, OIL SEALS AND O-RINGS

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.



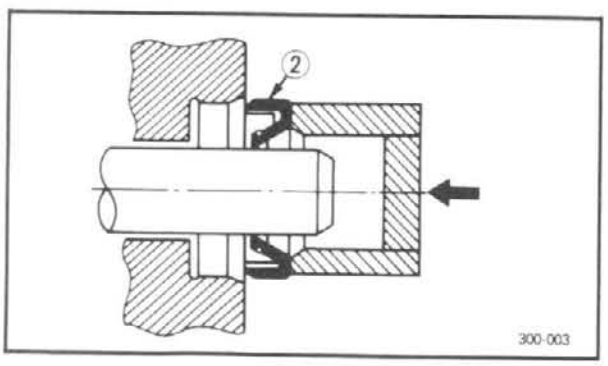
LOCK WASHERS/PLATES AND COTTER PINS

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.



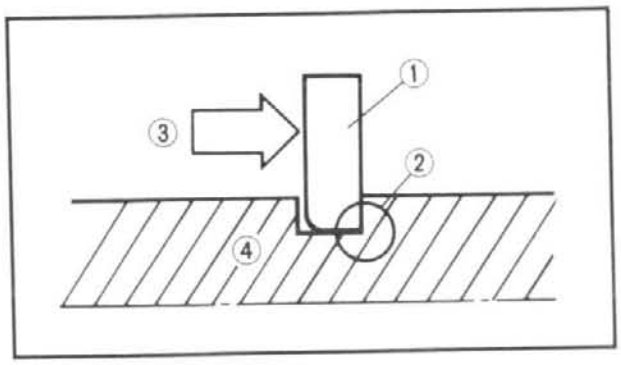
BEARINGS AND OIL SEALS

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.



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.

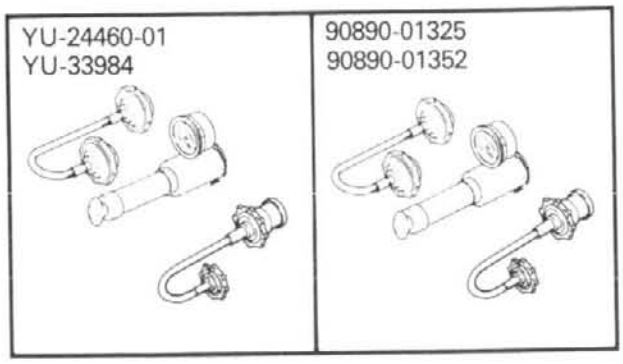
(4) Shaft

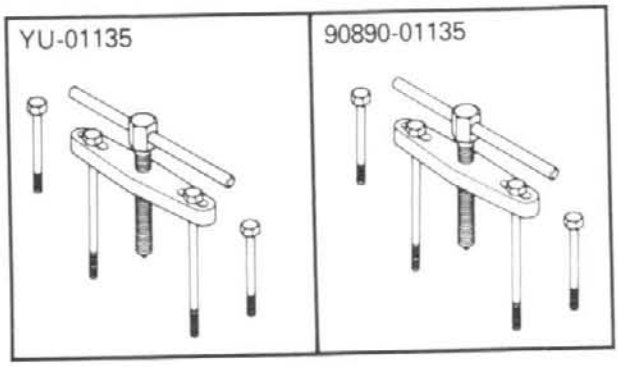
SPECIAL TOOLS

The following special tools are required to perform maintenance, adjustments, and repairs on your machine. These tools can be obtained through your Yamaha dealer.

NOTE:

- For U.S.A., use part number starting with "YM-" or "YU-".
- For others, use part number starting with "90890-".





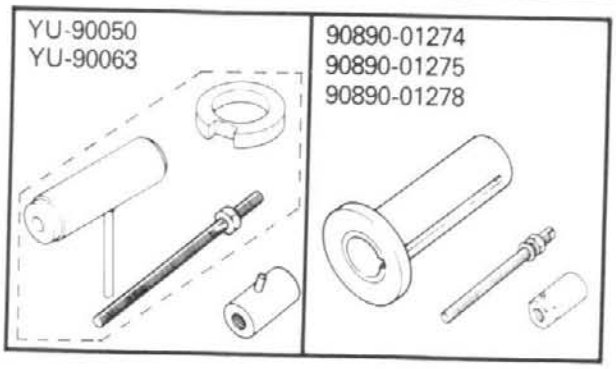
FOR ENGINE SERVICE

1. Radiator Cap Tester and Adapter
   Radiator Cap Tester P/N. YU-24460-01
   90890-01325
   Adapter P/N. YU-33984
   90890-01352

There tools are used for checking the cooling system.

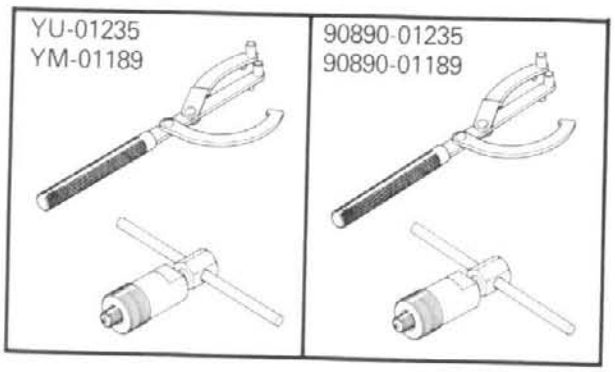
2. Crankcase Separating Tool
   P/N. YU-01135
   90890-01135

This tool is used to split the crankcases as well as remove the crankshaft from either case.



3. Crankshaft Installing Tool
   Pot P/N. YU-90050, 90890-01274
   Bolt P/N. YU-90050, 90890-01275
   Adapter P/N. YU-90063, 90890-01278

These tools are used to install the crankshaft.

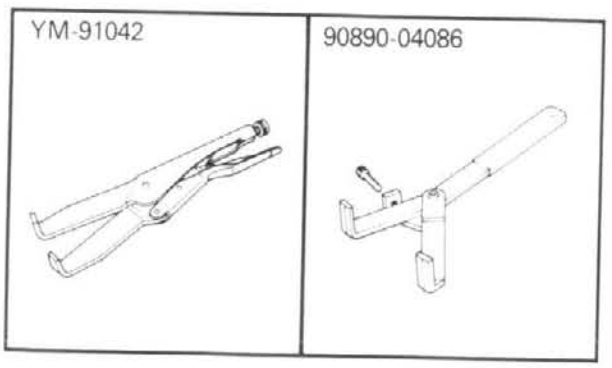


4. Rotor Holder and Rotor Puller
   Holder P/N. YU-01235
   90890-01235

This tool is used when loosening or tightening the flywheel magneto securing nut.

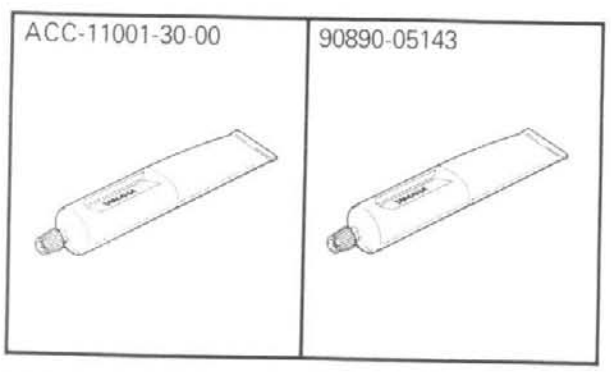
   Puller P/N. YM-01189
   90890-01189

This tool is used to remove the magneto.



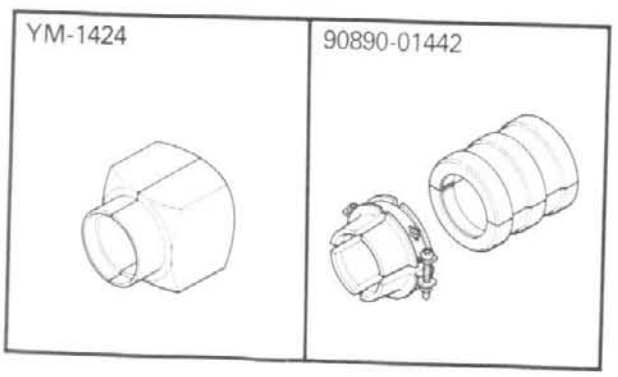
5. Clutch Holder
   P/N. YM-91042
   90890-04086

This tool is used to hold the clutch when removing or installing the clutch boss securing nut.



6. Quick Gasket®
   P/N. ACC-11001-30-00
   YAMAHA Bond No. 4
   P/N. 90890-05143

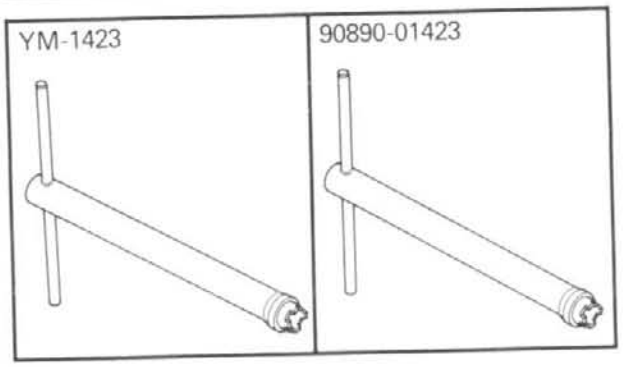
This sealant (Bond) is used for crankcase mating surfaces, etc.



FOR CHASSIS SERVICE

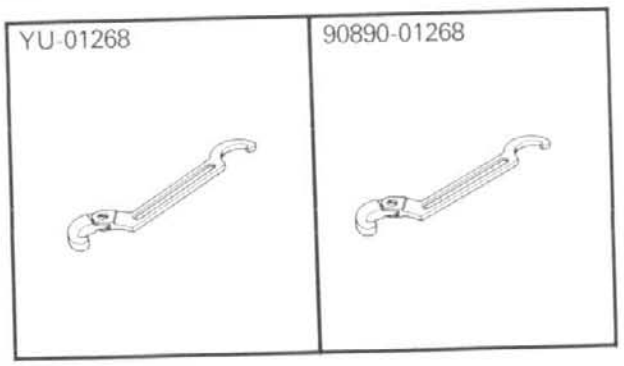
1. Fork Seal Driver
   P/N. YM-1424
   90890-01442

This tool is used when install the fork oil seal.



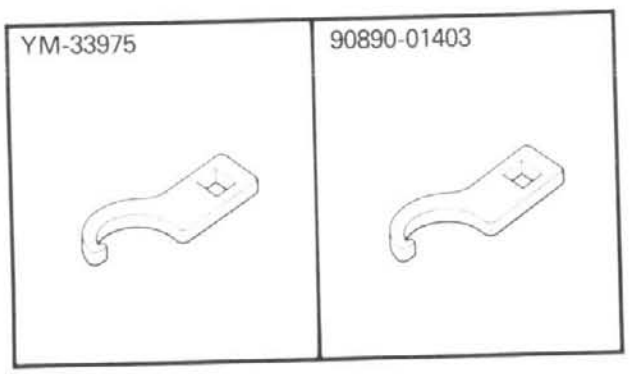
2. Damper Rod Holder
   P/N. YM-1423
   90890-01423

Use this tool to remove and isntall the damper rod.



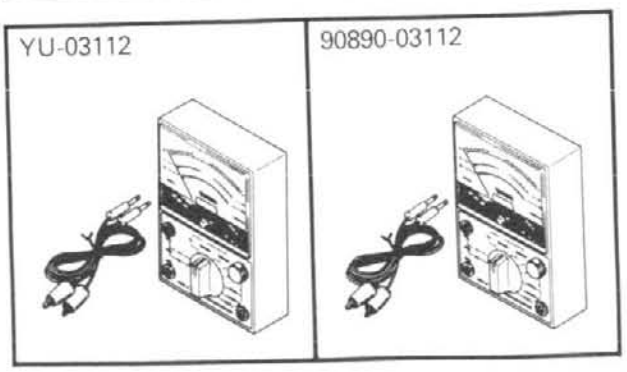
3. Ring Nut Wrench
   P/N. YU-01268
   90890-01268

This tool is used to loosen or tighten the steering ring nut.



4. Ring Nut Wrench
   P/N. YM-33975
   90890-01403

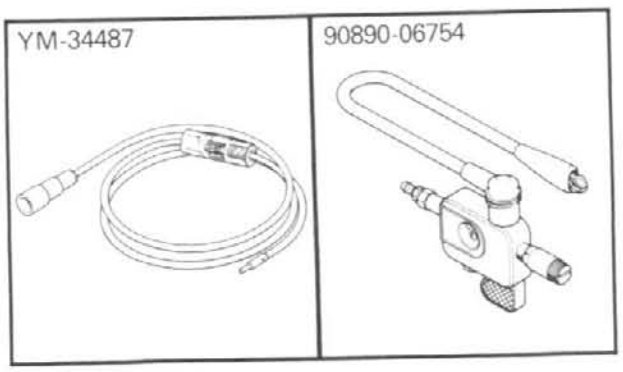
This tool is used when tighten the steering ring nut to specification.



FOR ELECTRICAL SERVICE

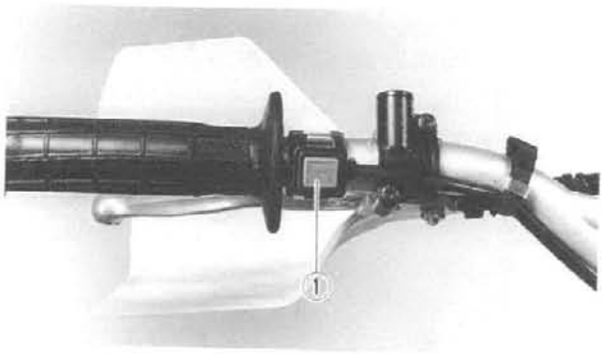
1. Yamaha Pocket Tester
   P/N. YU-03112
   90890-03112

Use this tool to inspect the coil resistance, output voltage and amperage.



2. Dynamic Spark Tester:
   P/N. YM-34487
   Ignition Checker:
   P/N. 90890-06754

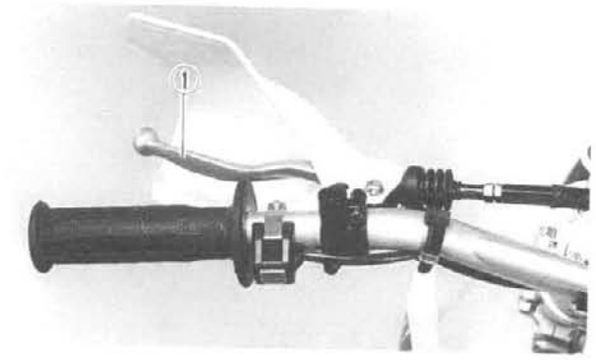
This instrument is necessary for checking the ignition system components.



CONTROL FUNCTIONS

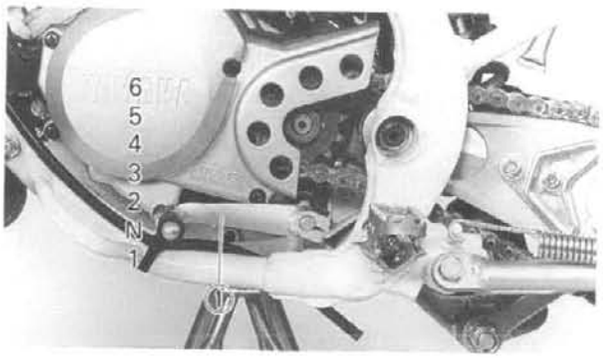
"ENGINE STOP" BUTTON

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



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.

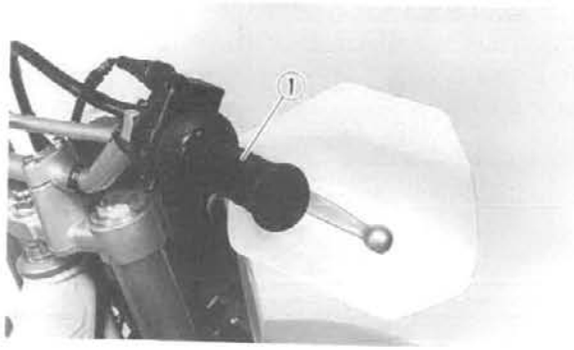


SHIFT PEDAL

The gear ratios of the constant-mesh 6 speed transmission are ideally spaced. The gears can be shifted by using the shift pedal (1) on the left side of the engine.

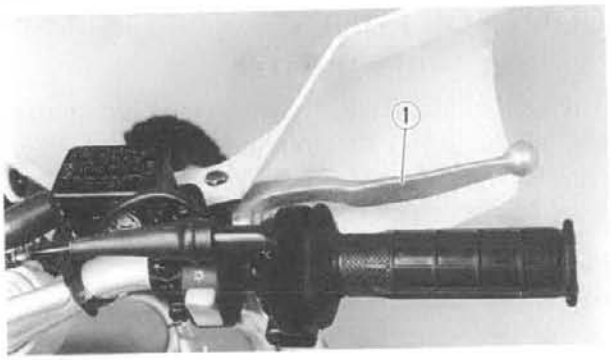
KICK STARTER

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.



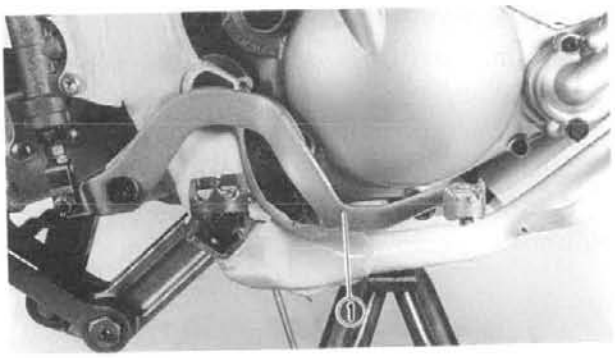
THROTTLE GRIP

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.



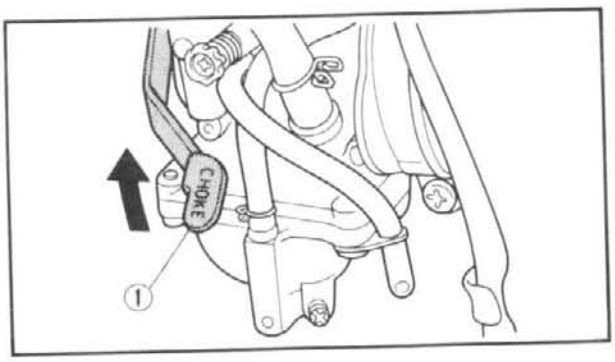
FRONT BRAKE LEVER

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



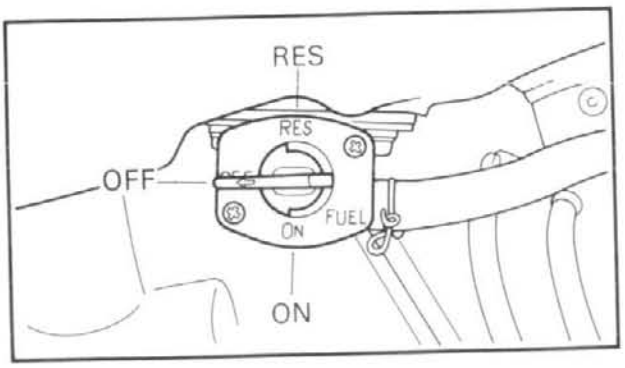
REAR BRAKE PEDAL

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.



STARTER LEVER (CHOKE)

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



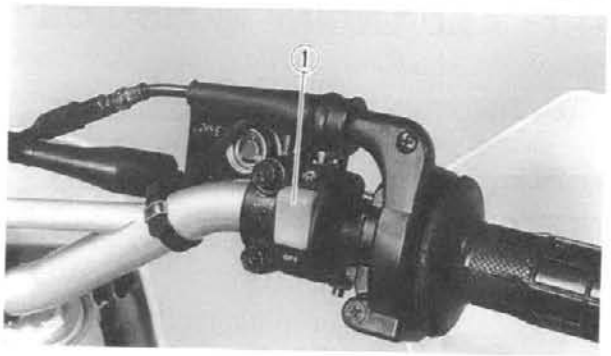
FUEL COCK

The fuel cock supplies fuel from the tank to carburetor while filtering the fuel. The fuel cock has the three 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.

RES: This indicates reserve. If you run out of fuel while riding, move the lever to this position. FILL THE TANK AT THE FIRST OPPORTUNITY. BE SURE TO SET THE LEVER TO "ON" AFTER REFUELING.



"LIGHTS" SWITCH

The "LIGHTS" switch ① is located on the right handlebar. Turn the "LIGHTS" switch to "☼" to turn on the headlight and taillight.

ODOMETER

The trip odometer ① can be reset to "0" with the reset knob ②.

1

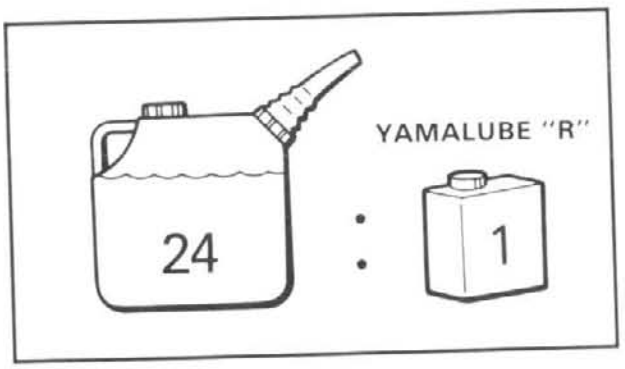
FUEL AND ENGINE MIXING OIL

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 AUS:
Premium unleaded fuel with a research octane number of 95 or higher.
For AUS:
Unleaded fuel only

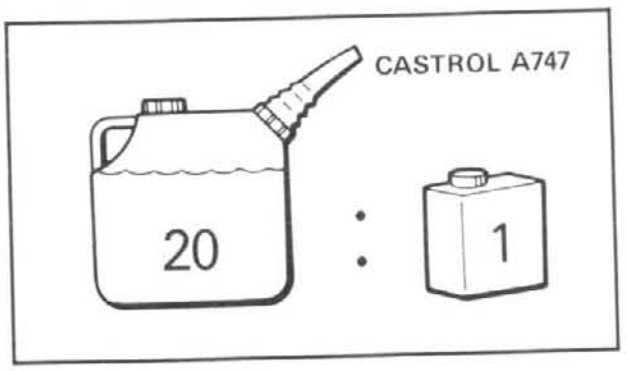
NOTE:

Except for AUS:
1. If knocking or pinging occurs, use a different brand of gasoline or higher octane grade.
2. If unleaded gasoline is not available, then leaded gasoline can be used.



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:
Total:
10.0 L
(2.20 Imp gal, 2.64 US gal)
Reserve:
2.0 L
(0.44 Imp gal, 0.53 US gal)

Mixing Oil
Recommended Oil:
Yamalube "R"
(Yamalube Racing 2-cycle Oil)
Mixing Ratio: 24 : 1
If for any reason you should use another type, select from the following list.
Mixing ratio: 20 : 1
•Castrol A747

PRE-OPERATION CHECK LIST

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.

Item	Routine	Page
Coolant	Check that coolant is filled up to the radiator filler cap. Check the cooling system for leakage.	P3-3 ~ 8
Fuel	Check that a fresh mixture of oil and gasoline is filled in the fuel tank. Check the fuel line for leakage.	P1-11
Transmission Oil	Check that the oil level is correct. Check the crankcase for leakage.	P3-13 ~ 14
Gear Shifter and Clutch	Check that gears can be shifted correctly in order and that the clutch operates smoothly.	P1-8, P3-8
Throttle grip/Housing	Check for smooth operation, Lubricate/Adjust if necessary.	P3-8 ~ 9
Brakes	Check the free play of front brake and effect of front and rear brake.	P3-15 ~ 18
Chain	Check chain slack and alignment. Check that the chain is lubricated properly.	P3-18 ~ 21
Wheels	Check for excessive wear and tire pressure. Check for loose spokes and have no excessive play.	P3-26 ~ 27
Steering	Check that the handlebar can be turned smoothly and have no excessive play.	P3-27 ~ 29
Front Forks and Rear Shock Absorber	Check that they operate smoothly and there is no oil leakage.	P3-21 ~ 26
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.	P3-8 ~ 9
Muffler	Check that the muffler is tightly mounted and has no cracks.	—
Sprocket	Check that the rear wheel sprocket tightening bolt is not loose.	P3-18
Light	Check for proper operation.	P3-32
Lubrication	Check for smooth operation. Lubricate if necessary.	P3-30
Bolts and Nuts	Check the chassis and engine for loose bolts and nuts.	P1-16 ~ 17
Lead Connectors	Check that the CDI magneto, CDI unit, and ignition coil are connected tightly.	—
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? Is inspection and maintenance completely done?	—
YPVS	Check operation.	P3-9 ~ 10

STARTING AND BREAK-IN

CAUTION:

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

1

⚠ 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.

STARTING A COLD ENGINE

1. Shift the transmission into neutral.
2. Turn the fuel cock to "ON" and full open the starter lever (CHOKE).
3. With the throttle completely closed start the engine by kicking the kick starter forthly 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 lever (CHOKE) turned off.

CAUTION:

Do not warm up the engine for extended periods.

STARTING A WARM ENGINE

Do not operate the starter. Open the throttle slightly and start the engine by kicking the kick starter forthly with firm stroke.

CAUTION:

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

BREAK-IN PROCEDURES

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

Mixing Oil:	Mixing Ratio:
Yamalube "R"	14 : 1
Castrol A747	12 : 1

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.

1

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.

TORQUE CHECK POINTS

- Frame Construction
  - Frame to Under Tube
  - Frame to Seat Rail
  - Combined Seat and Tank
    - Fuel Tank to Frame
- Engine Mounting
  - Frame to Engine
- Steering
  - Steering Shaft to Handlebar
    - Steering Shaft to Handlebar
    - Steering Shaft to Handle Crown
    - Handle Crown to Handlebar
- Suspension
  - Front
    - Steering Shaft to Front Fork
      - Front Fork to Handle Crown
      - Front fork to Under Bracket
    - Front Fork to Wheel
      - Front Fork to Front Axle
      - Tightening of Front Axle
  - Rear
    - For Link Type
      - Assembly of Links
      - Link to Frame
      - Link to Shock Absorber
      - Link to Swingarm
  - Rear
    - Installation of Shock Absorber
      - Shock Absorber to Frame
      - Shock Absorber to Swingarm
      - Shock Absorber to Crankcase (Engine)
  - Rear
    - Installation of Swingarm
      - Tightening of Pivot Shaft
- Wheel
  - Installation of Wheel
    - Front
      - Tightening of Front Axle
      - Tightening of Fork End
    - Rear
      - Tightening of Rear Axle
      - Tightening of Swingarm End
      - Wheel to Sprocket
- Brake
  - Hydraulic Type
    - Front
      - Caliper to Front Fork
      - Brake Disc to Wheel
      - Tightening of Union Bolt
      - Master Cylinder to Handlebar
      - Tension Bar to Front Fork
      - Compression Bar to Front Fork
      - Tightening of Air Bleeder
    - Rear
      - Caliper to Swingarm
      - Brake Disc to Wheel
      - Tightening of Union Bolt
      - Master Cylinder to Frame
      - Tension Bar to Swingarm
      - Compression Bar to Swingarm
      - Tightening of Air Bleeder
  - Mechanical Type
    - Front
      - Brake Cam to Lever
      - Tension Bar to Front Fork
      - Compression Bar to Front Fork
    - Rear
      - Brake Cam to Lever
      - Tension Bar to Swingarm
      - Compression Bar to Swingarm
- Fuel System
  - Fuel Tank to Fuel Cock
  - Fuel Tank to Fuel Sender

NOTE:

- Concerning the tightening torque, refer to the MAINTENANCE SPECIFICATIONS in CHAPTER 2 SPECIFICATIONS.
- The above chart indicates the TORQUE-CHECK POINTS for all models. Refer to only those items relate to your machine.

CLEANING AND STORAGE

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.

STORAGE

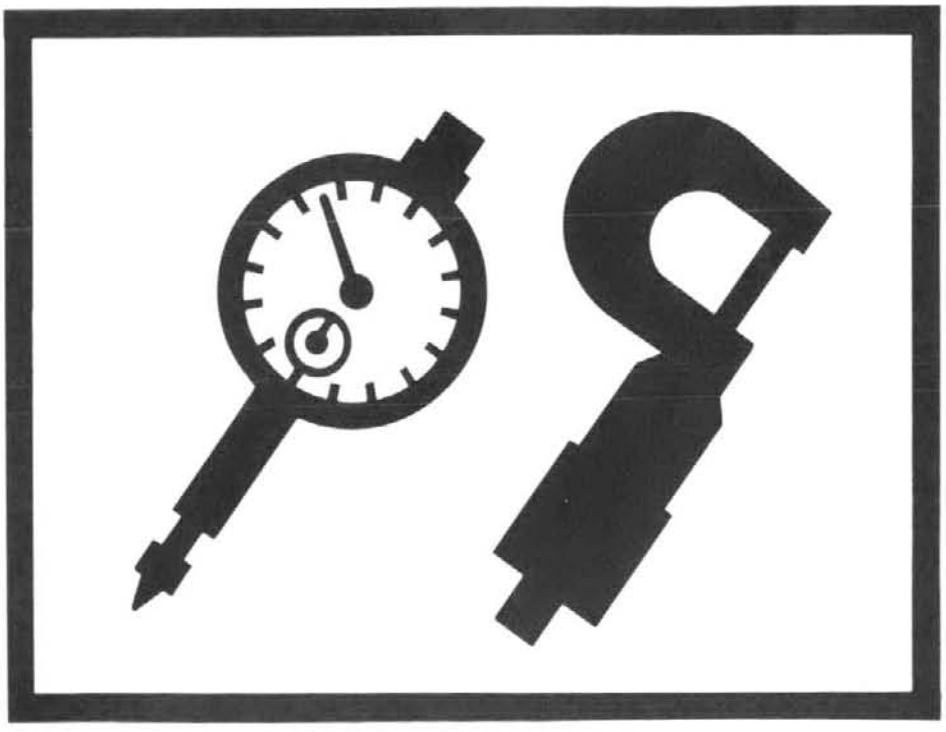
If your machine is to be stored for 60 days or more, some preventive measures must be taken to avoid deterioration. After cleaning the machine thoroughly, prepare it for storage as follows:

1. Drain the fuel tank, fuel lines, and the carburetor float bowl.
2. Remove the spark plug, pour a tablespoon of SAE 10W30 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.

CHAPTER 2
SPECIFICATIONS



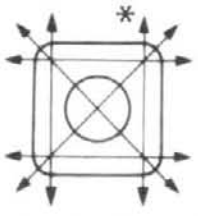
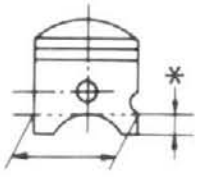
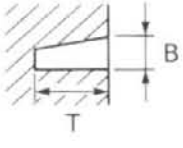
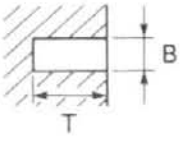
SPECIFICATIONS

GENERAL SPECIFICATIONS

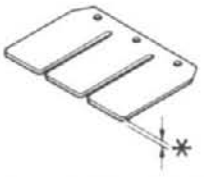
Model	WR200R(E)
Model Code Number:	4BF2
Frame Starting Number:	4BF-007101 (Except for AUS and NZ)
Vehicle Identification Number:	JYA4BFT0*PA007101 (For AUS and NZ)
Engine Starting Number:	4BF-007101
Dimensions:	
Overall Length	2,145 mm (84.4 in)
Overall Width	835 mm (32.9 in)
Overall Height	1,335 mm (52.6 in)
Seat Height	990 mm (39.0 in)
Wheelbase	1,460 mm (57.5 in)
Minimum Ground Clearance	365 mm (14.4 in)
Basic Weight:	
With Oil and Full Fuel Tank	111 kg (244.7 lb)
Engine:	
Engine Type	Liquid cooled 2-stroke, gasoline
Cylinder Arrangement	Single cylinder, forward inclined
Displacement	199.7 cm^3 (7.03 Imp oz, 6.75 US oz)
Bore × Stroke	66.8 × 57.0 mm (2.630 × 2.244 in)
Compression Ratio	6.3 : 1
Starting System	Kick starter
Lubrication System:	Premix (24 : 1) (Yamalube R) Premix (20 : 1) (Castrol A747)
Oil Type or Grade (2-Cycle):	
Transmission Oil	Yamalube 4 (10W-30) or SAE 10W30 type SE motor oil
Periodic Oil Change	0.75 L (0.66 Imp qt, 0.79 US qt)
Total Amount	0.80 L (0.70 Imp qt, 0.85 US qt)
Radiator Capacity (Including All Routes):	1.41 L (1.24 Imp qt, 1.49 US qt)
Coolant Capacity (Including All Routes and Reservoir Tank):	1.41 L (1.24 Imp qt, 1.49 US qt)
Air Filter:	Wet type element
Fuel:	
Type	Except for AUS: Premium unleaded fuel with a research octane number of 95 or higher For AUS: Unleaded fuel only
Tank Capacity	10.6 L (2.33 Imp gal, 2.80 US gal)
Reserve Amount	2.0 L (0.44 Imp gal, 0.53 US gal)
Carburetor:	
Type/Manufacturer	TM30SS/MIKUNI
Spark Plug:	
Type/Manufacturer	BR9ES/NGK
Gap	0.7 ~ 0.8 mm (0.028 ~ 0.031 in)

Model	WR200R(E)
Clutch Type:	Wet, multiple-disc
Transmission:	
Primary Reduction System	Gear
Primary Reduction Ratio	51/18 (2.833)
Secondary Reduction System	Chain drive
Secondary Reduction Ratio	52/13 (4.000)
Transmission Type	Constant mesh, 6-speed
Operation	Left foot operation
Gear Ratio: 1st	32/13 (2.461)
2nd	30/16 (1.875)
3rd	24/17 (1.412)
4th	24/21 (1.143)
5th	22/23 (0.957)
6th	18/22 (0.818)
Chassis:	
Frame Type	Semi double cradle
Caster Angle	28°
Trail	125 mm (4.92 in)
Tire:	
Type	With tube
Size (F)	80/100-21 51M
Size (R)	100/100-18 59M
Tire Pressure (Front and Rear)	100 kPa (1.0 kg/cm^2, 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	Air, coil spring/oil damper
Rear Shock Absorber	Gas, coil spring/oil damper
Wheel Travel:	
Front Wheel Travel	300 mm (11.8 in)
Rear Wheel Travel	310 mm (12.2 in)
Electrical:	
Ignition System	C.D.I.
Generator System	Flywheel magneto
Headlight Type	Bulb type
Bulb Wattage/Quantity	
Headlight	12V 35W/36.5W × 1
Taillight	12V 5W/18W × 1

MAINTENANCE SPECIFICATIONS
ENGINE

Model	WR200R(E)
Cylinder Head: Warp Limit 	<0.03 mm (0.0012 in)> *Lines indicate straightedge measurement.
Cylinder: Bore Size Wear Limit Taper Limit Out of Round Limit	 66.800 ~ 66.814 mm (2.6299 ~ 2.6305 in) 66.9 mm (2.634 in) <0.05 mm (0.0020 in)> <0.01 mm (0.0004 in)>
Piston: Piston Size/ Measuring Point* Piston Clearance <Limit> Piston Offset 	 66.752 ~ 66.767 mm (2.6280 ~ 2.6286 in)/ 15 mm (0.59 in) 0.045 ~ 0.050 mm (0.0018 ~ 0.0020 in) <0.1 mm (0.004 in)> 0.5 mm (0.020 in)/IN-side
Piston Pin: Piston Pin Outside Diameter/ <Limit>	 15.995 ~ 16.000 mm (0.6297 ~ 0.6299 in)/ <15.975 mm (0.6289 in)>
Piston Ring: Top Ring: Sectional Sketch  End Gap (Installed)/ <Limit> Side Clearance (Installed)/ <Limit> 2nd Ring: Sectional Sketch  End Gap (Installed)/ <Limit> Side Clearance (Installed)/ <Limit>	 Keystone B = 1.2 mm (0.047 in) T = 2.8 mm (0.110 in) 0.30 ~ 0.45 mm (0.012 ~ 0.018 in)/ <0.8 mm (0.031 in)> 0.030 ~ 0.070 mm (0.0012 ~ 0.0028 in)/ <0.1 mm (0.004 in)> Plain B = 1.2 mm (0.047 in) T = 2.45 mm (0.096 in) 0.30 ~ 0.45 mm (0.012 ~ 0.018 in)/ <0.8 mm (0.031 in)> 0.035 ~ 0.070 mm (0.0014 ~ 0.0028 in)/ <0.1 mm (0.004 in)>

Model		WR200R(E)
Crankshaft:		
Crank Width "A"		57.90 ~ 57.95 mm (2.280 ~ 2.281 in)
Runout Limit "C"		<0.03 mm (0.0012 in)>
Connecting Rod Big End Side Clearance "D"		0.2 ~ 0.7 mm (0.008 ~ 0.028 in)
Small End Free Play "F"		0.8 ~ 1.0 mm (0.031 ~ 0.039 in)
<Limit>		<2.0 mm (0.08 in)>
Clutch:		
Friction Plate Thickness/Quantity		2.9 ~ 3.1 mm (0.114 ~ 0.122 in) × 7
<Wear Limit>		<2.7 mm (0.106 in)>
Clutch Plate Thickness/Quantity		1.2 mm (0.047 in) × 6
<Warp Limit>		<0.05 mm (0.0020 in)>
Clutch Spring Free Length/Quantity		34.5 mm (1.36 in) × 5
<Limit>		<32.0 mm (1.26 in)>
Clutch Housing Radial Clearance		0.015 ~ 0.049 mm (0.0006 ~ 0.0019 in)
Clutch Release Method		Outer pull, rack & pinion pull
Transmission:		
Main Axle Deflection Limit		<0.08 mm (0.0031 in)>
Drive Axle Deflection Limit		<0.08 mm (0.0031 in)>
Shifter:		
Shifting Type		Cam drum and guide bar
Guide Bar Bending Limit		<0.05 mm (0.0020 in)>
Kick Starter Type:		Kick and mesh type
Kick Clip Friction Force		P = 0.8 ~ 1.2 kg (1.8 ~ 2.6 lb)
Air Filter Oil Grade (Oiled Filter):		Foam-air-filter oil or SAE 10W30SE
Carburetor:		
Type/Manufacturer		TM30SS/MIKUNI
I.D. Mark		4BF00
Main Jet	(M.J.)	#210
Jet Needle-clip Position	(J.N.)	6DHY40-3
Needle Jet	(N.J.)	N-8
Cutaway	(C.A.)	4.0
Pilot Jet	(P.J.)	#35
Pilot Air Screw	(P.A.S.)	1-1/2
Valve Seat Size	(V.S.)	φ3.0
Starter Jet	(G.S.)	#40
Float Arm Height	(F.H.)	2.1 ~ 4.1 mm (0.08 ~ 0.16 in)

Model	WR200R(E)
Reed Valve:	
Thickness* 	0.42 mm (0.017 in)
Valve Stopper Height	8.8 ~ 9.2 mm (0.346 ~ 0.362 in)
Valve Bending Limit	0.2 mm (0.008 in)
Cooling:	
Radiator Core Size:	
Width (Left)	135 mm (5.31 in)
(Right)	110 mm (4.33 in)
Height (Left)	220 mm (8.66 in)
(Right)	180 mm (7.09 in)
Thickness	32 mm (1.26 in)
Radiator Cap Opening Pressure	95 ~ 125 kPa (0.95 ~ 1.25 kg/cm^2, 13.5 ~ 17.8 psi)
Radiator Capacity (Total)	0.65 L (0.57 Imp qt, 0.69 US qt)
Water Pump:	
Type	Single-suction centrifugal pump

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	5	22	2.2	16
(Stud)	M 8×1.25	5	13	1.3	9.4
(Bolt)	M 6×1.0	2	8	0.8	5.8
Cylinder (Nut)	M 8×1.25	4	28	2.8	20
(Stud)	M 8×1.25	4	13	1.3	9.4
Power valve (Bolt)	M 5×0.8	1	Refer to NOTE		
Holder (Right)	M 5×0.8	2	7	0.7	5.1
Pulley	M 6×1.0	1	10	1.0	7.2
Pulley housing	M 5×0.8	2	7	0.7	5.1
Pulley cover	M 5×0.8	2	7	0.7	5.1
Balancer weight gear	M12×1.0	1	55	5.5	40
Water pump housing	M 6×1.0	2	8	0.8	5.8
Coolant drain bolt	M 6×1.0	1	10	1.0	7.2
Joint 1	M 6×1.0	3	8	0.8	5.8
Pipe 1	M 6×1.0	2	8	0.8	5.8
Radiator	M 6×1.0	4	8	0.8	5.8
Carburetor joint	M 6×1.0	4	8	0.8	5.8
Reed valve	M 3×0.5	6	1	0.1	0.7
Exhaust pipe (Nut)	M 8×1.25	2	18	1.8	13
(Stud)	M 8×1.25	2	10	1.0	7.2
(Bolt)	M 6×1.0	2	8	0.8	5.8
Silencer	M 8×1.25	2	40	4.0	29
Crankcase	M 6×1.0	11	8	0.8	5.8
Crankcase cover (Left)	M 6×1.0	6	8	0.8	5.8
Crankcase cover (Right)	M 6×1.0	6	8	0.8	5.8
Cover 1	M 6×1.0	3	5	0.5	3.6
Baffle plate	M 6×1.0	2	8	0.8	5.8
Plate bearing cover	M 6×1.0	2	10	1.0	7.2
Oil seal holder	M 8×1.25	1	16	1.6	11
Oil drain bolt	M 8×1.25	1	15	1.5	11
Kick starter	M12×1.0	1	65	6.5	47
Primary drive gear	M12×1.0	1	80	8.0	58
Clutch	M12×1.0	1	70	7.0	50
Clutch spring	M 5×0.8	5	6	0.6	4.3
Drive sprocket	M16×1.0	1	60	6.0	43
Shift pedal	M 6×1.0	1	15	1.5	11
Stopper lever	M 6×1.0	1	14	1.4	10
Magneto rotor	M12×1.25	1	80	8.0	58
Stator	M 8×1.25	2	8	0.8	5.8

NOTE:

First, tighten the bolt to 6 Nm (0.6 m•kg, 4.3 ft•lb) using the torque wrench, then turn the bolt 1/8 of a turn tighter.

CHASSIS

Model	WR200R(E)
Steering System:	
Steering Bearing Type	Taper roller bearing
Front Suspension:	
Front Fork Travel	300 mm (11.8 in)
Fork Spring Free Length	480.5 mm (18.92 in)
Spring Rate, STD	K = 3.50 N/mm (0.350 kg/mm, 19.6 lb/in)
Oil Capacity	468 cm^3 (16.5 Imp oz, 15.8 US oz)
Oil Level	98 mm (3.86 in)
(From top of outer tube with inner tube and damper rod fully compressed without spring.)	
Oil Grade	Suspension oil "01"
Inner Tube Outer Diameter	41 mm (1.61 in)
Front Fork Top End	1 mm (0.04 in)
Rear Suspension:	
Shock Absorber Travel	129 mm (5.08 in)
Spring Free Length	282 mm (11.10 in)
Fitting Length	270 mm (10.63 in)
<Min. ~ Max.>	260 ~ 277 mm (10.24 ~ 10.91 in)
Spring Rate, STD	K = 50 N/mm (5.0 kg/mm, 280 lb/in)
Enclosed Gas Pressure	1,000 kPa (10 kg/cm^2, 142 psi)
Rear Arm:	
Swingarm Free Play Limit	
End	<1.0 mm (0.04 in)>
Side Clearance	<0.4 ~ 0.7 mm (0.016 ~ 0.028 in)>
Wheel:	
Front Wheel Type	Spoke wheel
Rear Wheel Type	Spoke wheel
Front Rim Size/Material	1.60 × 21/Aluminum
Rear Rim Size/Material	1.85 × 18/Aluminum
Rim Runout Limit:	
Vertical	<2.0 mm (0.08 in)>
Lateral	<2.0 mm (0.08 in)>

Model	WR200R(E)
Drive Chain:	
Type/Manufacturer	DID520V2/DAIDO
Number of Links	115 links + Joint
Chain Slack	25 ~ 40 mm (1.0 ~ 1.6 in)
Front Disc Brake:	
Disc Outside Dia. × Thickness	245 × 3.5 mm (9.65 × 0.14 in)
Pad Thickness	4.4 mm (0.17 in)
<Limit>	<1.5 mm (0.06 in)>
Master Cylinder Inside Dia.	12.7 mm (0.500 in)
Caliper Cylinder Inside Dia.	27.0 mm (1.063 in) × 2
Brake Fluid Type	DOT #4
Rear Disc Brake:	
Disc Outside Dia. × Thickness	220 × 4.5 mm (8.66 × 0.18 in)
Pad Thickness	4.7 mm (0.19 in)
<Limit>	<1.0 mm (0.04 in)>
Master Cylinder Inside Dia.	12.7 mm (0.500 in)
Caliper Cylinder Inside Dia.	30.23 mm (1.190 in)
Brake Fluid Type	DOT #4
Brake Lever & Brake Pedal:	
Brake Lever Free Play	2 ~ 5 mm (0.08 ~ 0.20 in) (at lever end)
Brake Pedal Position	15 mm (0.6 in) (Vertical height below footrest top)
Clutch Lever Free Play/Position	2 ~ 3 mm (0.08 ~ 0.12 in)/at lever pivot

	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	M10×1.25	2	24	2.4	17
△	Handle crown and steering shaft	M22×1.0	1	110	11.0	80
△	Handlebar holder and handle crown	M 8×1.25	4	23	2.3	17
△	Steering ring nut (Lower)	M25×1.0	1	Refer to NOTE		
	Front fork and cap bolt	M44×1.0	2	30	3.0	22
	Front fork and base valve	M22×1.0	2	55	5.5	40
	Cap bolt and damper rod (Front fork)	M10×1.0	2	15	1.5	11
	Front fork and hose cover	M 6×1.0	4	7	0.7	5.1
	Front fork and protector	M 6×1.0	6	7	0.7	5.1
△	Front brake master cylinder and bracket	M 6×1.0	2	7	0.7	5.1
	Front brake master cylinder cap	M 4×0.7	2	2	0.2	1.4
△	Front brake hose union bolt (Master cylinder and caliper)	M10×1.25	2	26	2.6	19
△	Front brake caliper and axle bracket	M 8×1.25	2	23	2.3	17
△	Brake caliper (Front and rear) and pad pin	M10×1.0	2	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	M14×1.5	1	58	5.8	42
△	Front wheel axle holder	M 6×1.0	4	10	1.0	7.2
△	Brake disk (Front and rear) and wheel hub	M 6×1.0	6	12	1.2	8.7
△	Rear brake master cylinder and frame	M 8×1.25	2	20	2.0	14
	Rear brake reservoir tank and frame	M 6×1.0	1	4	0.4	2.9
△	Rear brake caliper and joint bolt	M10×1.25	1	26	2.6	19
△	Rear brake hose and joint bolt	M10×1.25	1	14	1.4	10
△	Rear wheel axle and nut	M18×1.5	1	90	9.0	65
△	Rear wheel sprocket and wheel hub	M 8×1.25	6	35	3.5	25
	Engine mounting:					
△	Engine bracket (Lower) and frame	M 8×1.25	4	38	3.8	27
△	Engine bracket (Lower) and engine	M10×1.25	1	64	6.4	46
△	Engine bracket (Upper) and frame	M 8×1.25	2	38	3.8	27
△	Engine bracket (Upper) and engine	M 8×1.25	1	38	3.8	27
△	Engine and frame (Rear)	M 8×1.25	1	33	3.3	24
△	Pivot shaft and nut	M16×1.5	1	90	9.0	65
△	Relay arm and frame	M10×1.25	1	58	5.8	42
△	Relay arm and connecting rod	M14×1.5	1	58	5.8	42
△	Connecting rod and swingarm	M14×1.5	1	58	5.8	42
△	Rear shock absorber and frame	M10×1.25	1	49	4.9	35
△	Rear shock absorber and relay arm	M10×1.25	1	33	3.3	24
	Spring preload adjuster and locknut	M52×1.5	1	70	7.0	50

NOTE:

1. First, tighten the ring nut approximately 38 Nm (3.8 m•kg, 27 ft•lb) by using the torque wrench, then loosen the ring nut one turn.
2. Retighten the ring nut 4 Nm (0.4 m•kg, 2.9 ft•lb).

	Part to be tightened	Thread size	Q'ty	Tightening torque		
				Nm	m•kg	ft•lb
	Drive chain tensioner mounting	M 8×1.25	2	19	1.9	13
	Seal guard and swingarm	M 6×1.0	2	5	0.5	3.6
	Support chain and protector chain	M 6×1.0	2	3	0.3	2.2
	Protector and swingarm	M 6×1.0	2	12	1.2	8.7
△	Fuel tank mounting	M 6×1.0	2	10	1.0	7.2
△	Fuel cock and fuel tank	M 6×1.0	2	7	0.7	5.1
	Radiator stay and frame	M 8×1.25	2	26	2.6	19
	Air scoop (Left and right) mounting	M 6×1.0	2	6	0.6	4.3
	Rear fender mounting	M 6×1.0	2	7	0.7	5.1
	Guard flap mounting	M 6×1.0	2	5	0.5	3.6
	Seat mounting	M 6×1.0	2	10	1.0	7.2
	Sidestand mounting bolt and frame	M10×1.25	1	40	4.0	29
	Sidestand mounting bolt and nut	M10×1.25	1	40	4.0	29

NOTE:

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

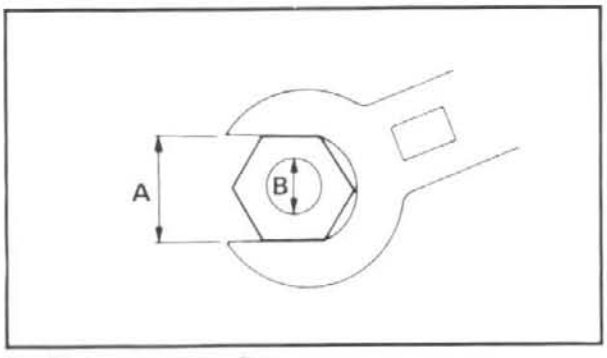
ELECTRICAL

Model	WR200R(E)
Ignition System:	
Ignition Timing (B.T.D.C.)	14°/1,350 r/min 1.1 mm (0.042 in)
Advancer Type	Electrical
CDI:	
Magneto-Model/Manufacturer	F4BF/YAMAHA
Charging Coil Resistance (Color)	192 ~ 288Ω at 20°C (68°F) (Black/Red-Green/White)
Pickup Coil Resistance (Color)	280 ~ 420Ω at 20°C (68°F) (White/Green-White/Black)
CDI Unit-Model/Manufacturer	4BF-00/YAMAHA
Ignition Coil:	
Model/Manufacturer	3XP-00/YAMAHA
Minimum Spark Gap	6 mm (0.24 in)
Primary Winding Resistance	0.56 ~ 0.84Ω at 20°C (68°F)
Secondary Winding Resistance	5.7 ~ 8.5kΩ at 20°C (68°F)
Lighting System:	
Lighting Coil Resistance (Color)	0.24 ~ 0.36Ω at 20°C (68°F) (White-White)
Lighting Voltage Min.	7.7V or more/1,300 r/min
Max.	12.0V or less/10,000 r/min
Voltage Regulator:	
Type	Semi conductor short circuit type
Model/Manufacturer	SH565-12/SHINDENGEN
Regulated Voltage	14.0 ~ 15.0V

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 (Nut)	B (Bolt)	General torque specifications		
		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	13.0	94



A: Distance across flats
B: Outside thred diameter

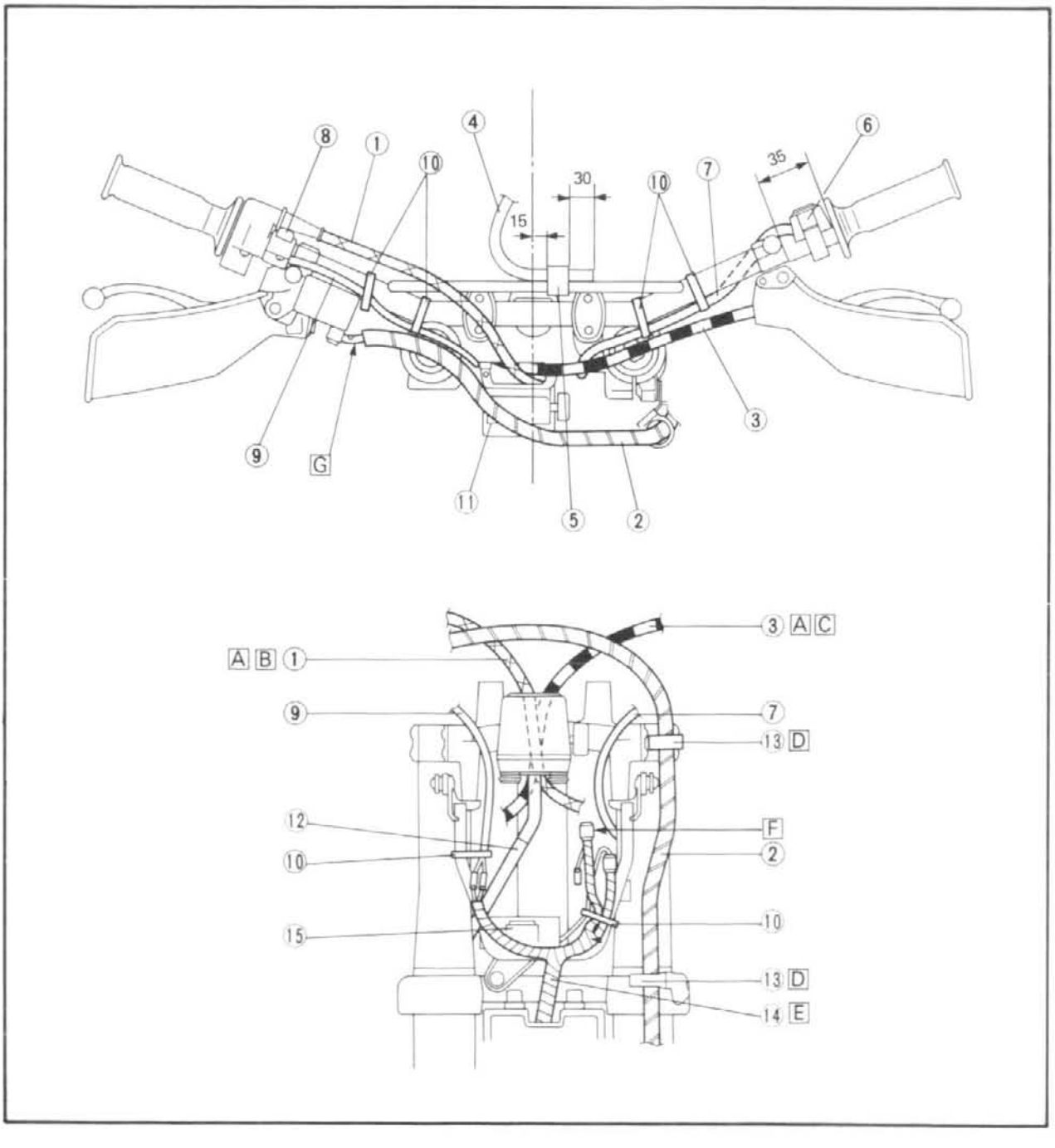
DEFINITION OF UNITS

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 kg × m/sec^{2}	Force
Nm	Newton meter	N × m	Torque
m•kg	Meter kilogram	m × kg	Torque
Pa	Pascal	N/m^{2}	Pressure
N/mm	Newton per millimeter	N/mm	Spring rate
L	Liter	—	Volume or capacity
cm^{3}	Cubic centimeter		
r/min	Rotation per minute	—	Engine speed

CABLE ROUTING DIAGRAM

① Throttle cable
② Brake hose
③ Clutch cable
④ Fuel tank breather hose
⑤ Clamp
⑥ "ENGINE STOP" button
⑦ "ENGINE STOP" button lead
⑧ "LIGHTS" switch
⑨ "LIGHTS" switch lead
⑩ Band
⑪ Odometer
⑫ Odometer cable
⑬ Hose guide
⑭ Wireharness
⑮ Condenser

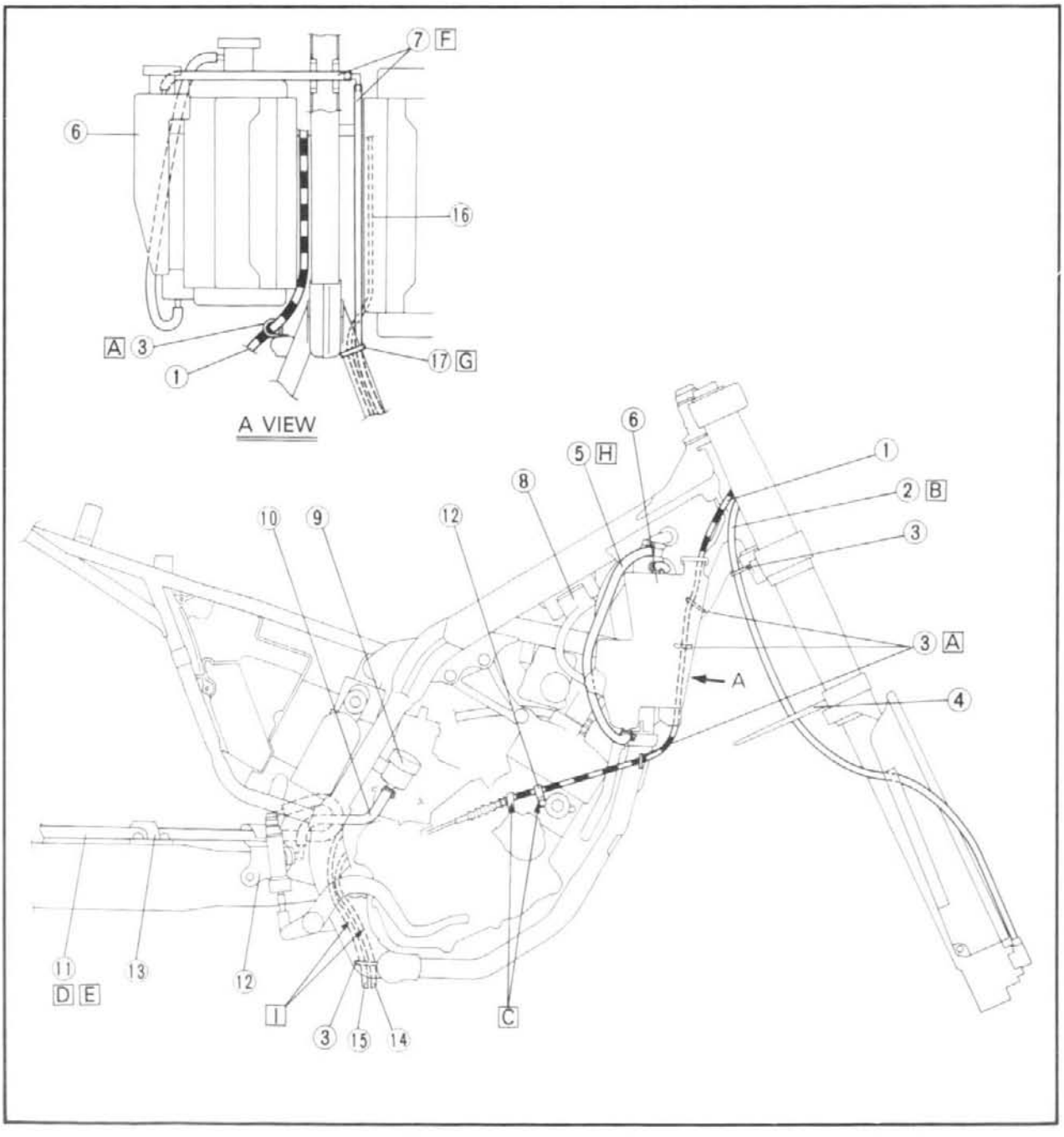
[A] Pass the throttle cable and clutch cable between the odometer and handle crown.
[B] Pass the throttle cable behind the brake hose.
[C] Pass the clutch cable behind the throttle cable.
[D] Pass the brake hose through the cable guide.
[E] Pass the wireharness between the under bracket and front fender.
[F] Connect the wire to the headlight lead.
[G] Install the brake pipe with its white paint facing the master cylinder.



CABLE ROUTING DIAGRAM

① Clutch cable
② Odometer cable
③ Cable guide
④ Cable holder
⑤ Coolant reservoir hose
⑥ Coolant reservoir tank
⑦ Breather hose
⑧ Ignition coil
⑨ Reservoir tank
⑩ Reservoir tank hose
⑪ Brake hose
⑫ Clamp
⑬ Brake hose holder
⑭ Crankcase breather hose
⑮ Carburetor overflow pipe
⑯ C.D.I. magneto lead
⑰ Band

[A] Pass the clutch cable through the cable guide.
[B] Pass the odometer cable through the cable guide, cable holder and protector guide.
[C] Clamp the clutch cable on right side of the engine.
[D] Pass the brake hose through the clamp and brake hose holder.
[E] Pass the brake hose through the brake hose guide.
[F] Pass the breather hose through the hole on the frame.
[G] Clamp the breather hose and C.D.I. magneto lead on left side of the down-tube.
[H] Pass the coolant reservoir hose behind the radiator stay.
[I] Pass the crankcase breather hose and carburetor overflow pipe through the swingarm and cable guide.



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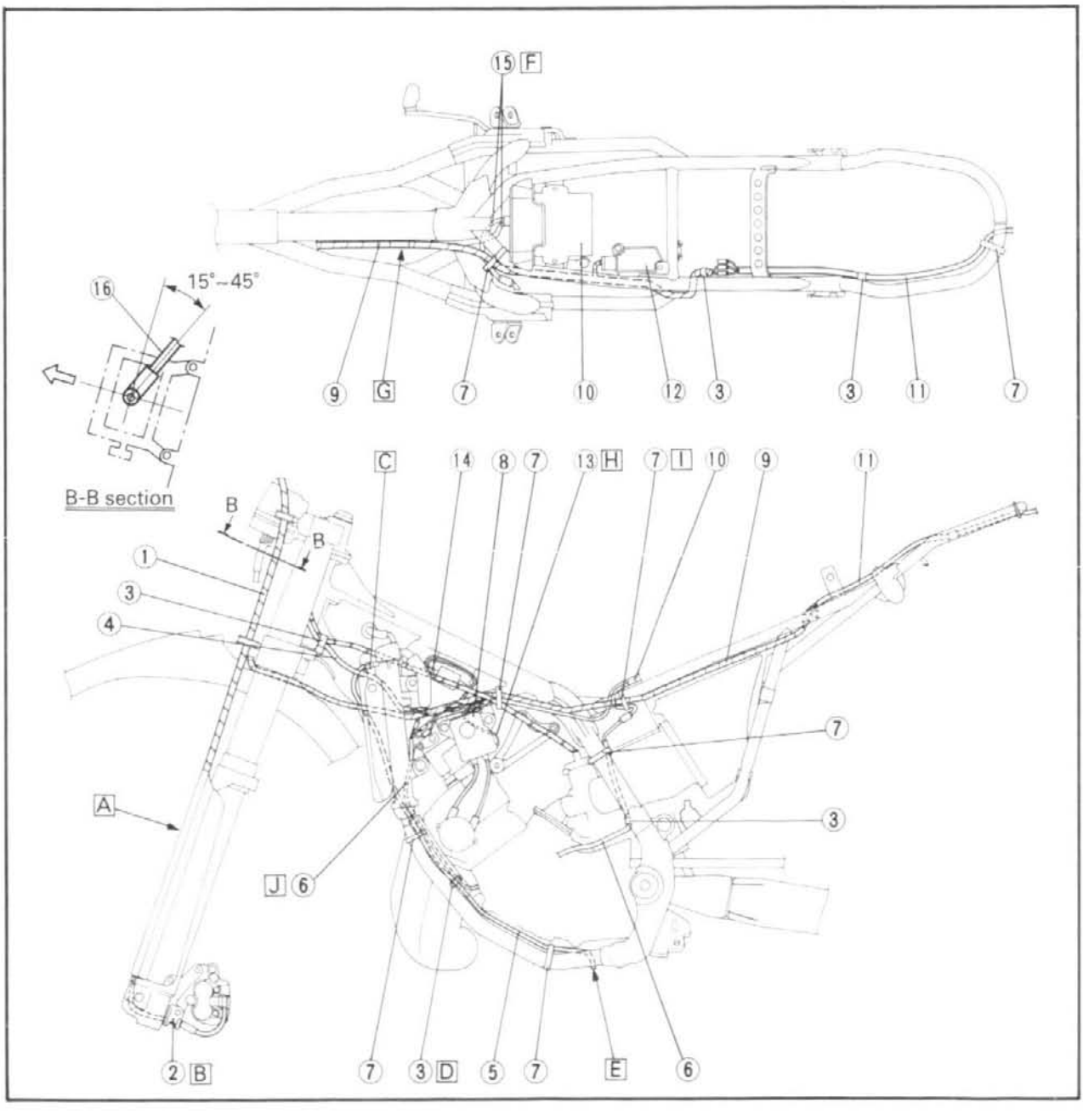
① Brake hose
② Brake hose holder
③ Clamp
④ "ENGINE STOP" button lead
⑤ Breather hose
⑥ C.D.I. magneto lead
⑦ Band
⑧ Servomotor
⑨ Wireharness
⑩ C.D.I. unit
⑪ Taillight lead
⑫ Regulator
⑬ Servomotor lead
⑭ Earth
⑮ C.D.I. unit lead
⑯ Odometer cable

[A] Insert the brake hose into the guide of the protector.
[B] Pass the brake hose through the brake hose holder.
[C] Pass the "ENGINE STOP" button lead over the radiator bracket.
[D] Clamp the breather hose and C.D.I. magneto lead on left side of the down-tube.
[E] Pass the breather hose between the down-tube and cross-tube.
[F] Pass the C.D.I. unit lead under the seat-rail.
[G] Align the white tape on the wireharness with the rear screw holding the servomotor.
[H] Pass the servomotor lead between the servomotor and servomotor bracket.
[I] Band the C.D.I. unit lead and wireharness on the seat-rail.
[J] Pass the C.D.I. magneto lead between the radiator and radiator stay.



CHAPTER 3
REGULAR INSPECTION AND ADJUSTMENTS

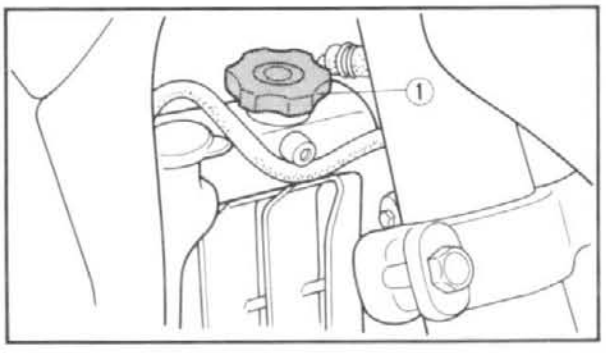
MAINTENANCE INTERVALS

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 Remove carbon
PISTON RING Inspect Replace	●	●	●		●	Check ring end gap
PISTON PIN, SMALL END BEARING Inspect Replace		●			●	
CYLINDER HEAD Inspect and clean Retighten	● ●	● ●				Remove carbon Check gasket
CYLINDER Inspect and clean Replace	●	●			●	Seizure Wear
Y.P.V.S. Inspect and clean	●	●				
CLUTCH Inspect and adjust Replace	●	●			●	Inspect friction plate, clutch plate and spring
TRANSMISSION Replace oil Inspect transmission	●			●	●	Yamalube 4 (10W-30) or SAE 10W30 SE motor oil
SHIFT CAM, FORK 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: 25 ~ 40 mm (1.0 ~ 1.6 in)

Item	After break-in	Every race	Every third	Every fifth	As required	Remarks
COOLING SYSTEM						
Check coolant level and leakage	●	●				
Check radiator cap operation					●	
Replace coolant					●	Every two years
Inspect hoses		●				
OUTSIDE NUTS AND BOLTS						Refer to the "STARTING AND BREAK-IN" in CHAPTER 1. GENERAL INFORMATION.
Retighten	●	●				
AIR FILTER						Use foam air-filter oil
Clean and lubricate	●	●				
Replace					●	
FRAME						
Clean and inspect	●	●				
FUEL TANK, COCK						
Clean and inspect	●		●			
BRAKES						
Adjust free play	●	●				
Lubricate pivot point	●	●				
Check fluid level and leakage	●	●				
Retighten brake disc bolts, caliper bolts and union bolts	●	●				
Replace pads					●	
FRONT FORKS						
Inspect and adjust	●	●				Suspension oil "01"
Replace oil	●			●		
Replace oil seal					●	
FRONT FORK OIL SEAL AND DUST SEAL						
Clean and lube	●	●				Lithium base grease
REAR SHOCK ABSORBER						
Inspect and adjust	●	●				Lithium base grease
Lube and retighten	●	●				
CHAIN GUARD AND ROLLERS						
Inspect	●	●				
SWINGARM						
Inspect and retighten	●	●				
RELAY ARM, CONNECTING ROD						
Inspect and lube	●	●				Lithium base grease
STEERING HEAD						
Inspect free play and retighten	●	●				Lithium base grease
Clean and lube				●		
Replace bearing					●	
TIRE, WHEELS						
Inspect air pressure, wheel run-out, tire wear and spoke looseness	●	●				
Retighten sprocket bolt	●	●				
Inspect bearings			●			
Replace bearings					●	
Lubricate			●			Lithium base grease
THROTTLE, CONTROL CABLE						Yamaha cable lube or SAE 10W30 motor oil
Check routing and connection	●	●				
Lubricate	●	●				

3



COOLANT LEVEL INSPECTION

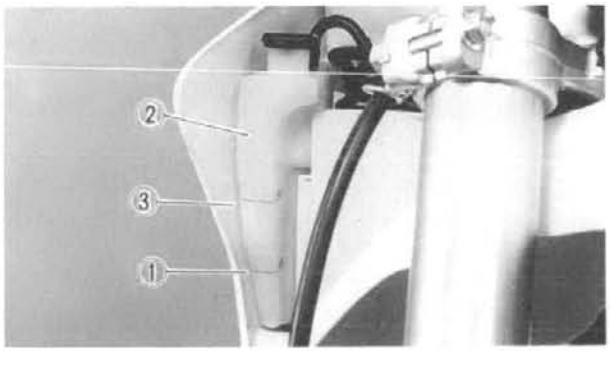
CAUTION:

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

⚠ 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.



1. Place the machine on a level place, and hold it in an upright position.
2. Inspect:
   - Coolant level
     Coolant level is under "LOW" level line ①
     →Add soft water (tap water).

② Coolant reservoir tank

3. Add:
   - Soft water (Tap water)
     Until the coolant level reaches "FULL" level line ③.

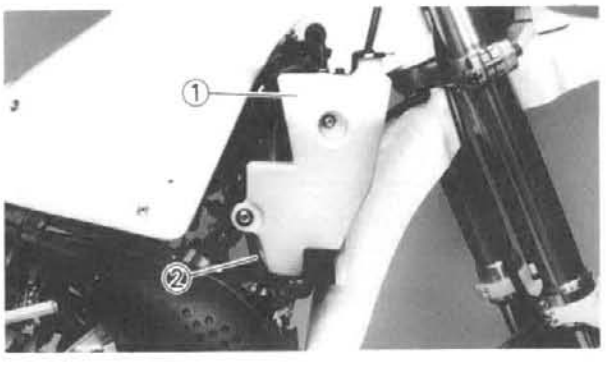
COOLANT REPLACEMENT

⚠ WARNING

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

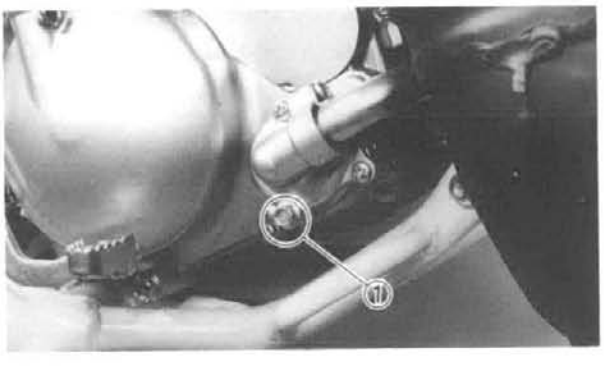
CAUTION:

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



1. Remove:
   - Air scoop (right)
2. Place a container under the coolant reservoir tank ①.
3. Disconnect:
   - Coolant reservoir hose ②

   Drain the coolant from the coolant reservoir tank.



4. Place a container under the engine.
5. Remove:
   - Coolant drain bolt ①
6. Remove:
   - Radiator cap

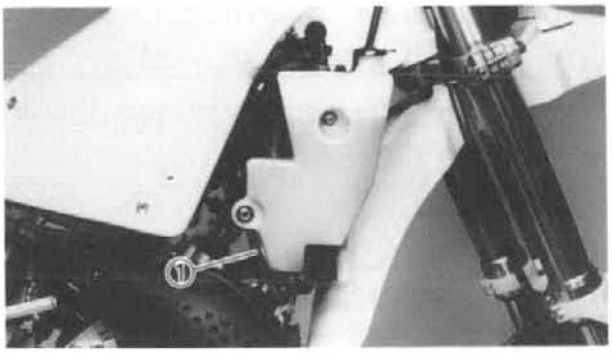
   Drain the coolant completely.
7. Clean:
   - Cooling system

   Thoroughly flush the cooling system with clean tap water.
8. Install:
   - Copper washer
   - Coolant drain bolt

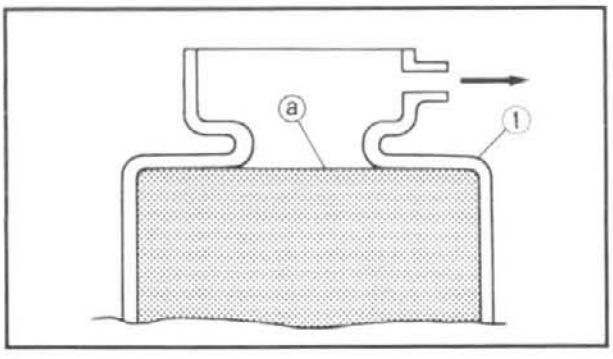
NOTE:

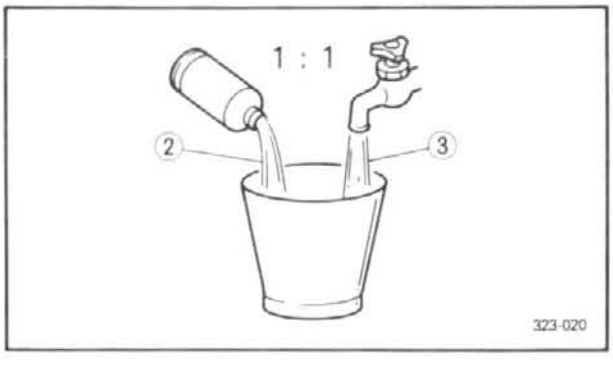
Always use a new copper washer.

	Coolant Drain Bolt: **10 Nm (1.0 m•kg, 7.2 ft•lb)**



9. Connect:
   - Coolant reservoir hose ①





10. Fill:
    - Radiator ①
    - Engine
      To specified level ⓐ.

Recommended Coolant:
High Quality Ethylene Glycol Anti-freeze Containing Anti-corrosion for Aluminum Engine Inhibitors
Coolant ② and Water (Soft Water) ③
Mixed Ratio:
50%/50%
Total Amount:
1.16 L (1.02 Imp qt, 1.23 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.**

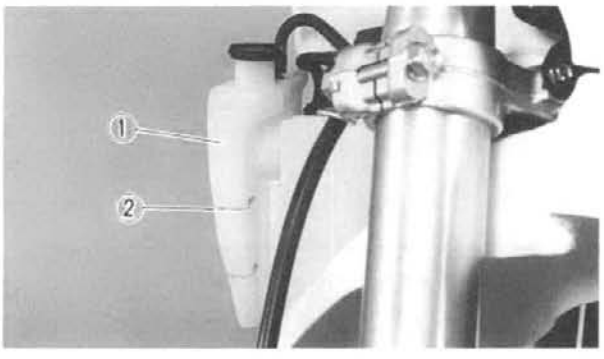
INSP ADJ

11. Install:
    - Radiator cap

    Start the engine and warm it up for a several minute.

12. Check:
    - Coolant level

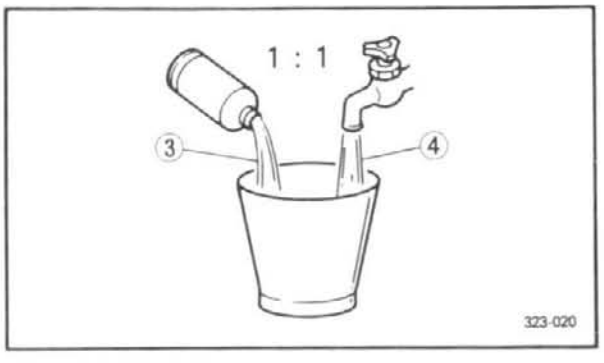
    Coolant level low→Add coolant.

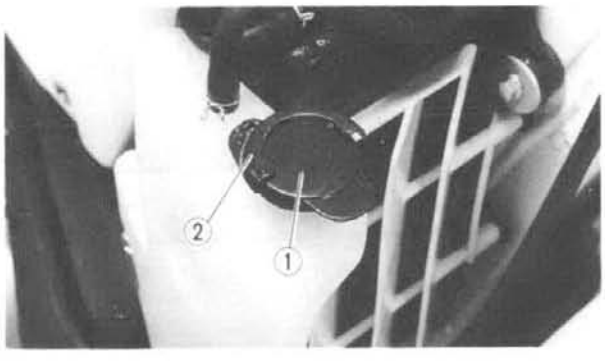


13. Fill:
    - Coolant reservoir tank (1)

    To "FULL" level line (2).

Recommended Coolant:
High Quality Ethylene Glycol Anti-freeze Containing Anti-corrosion for Aluminum Engine Inhibitors
Coolant (3) and Water (Soft Water) (4)
Mixed Ratio:
50%/50%
Coolant Reservoir Tank Capacity:
0.18 L (0.16 Imp qt, 0.19 US qt)





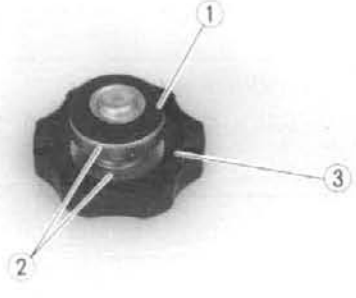
14. Install:
    - Reservoir tank cap (1)
    - Stopper bracket (2)

15. Install:
    - Air scoop R

RADIATOR CAP INSPECTION

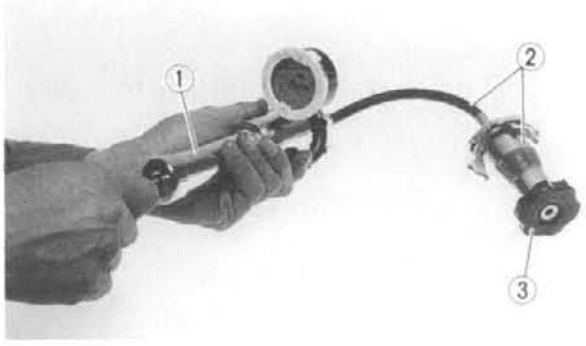
1. Inspect:
    - Seal (radiator cap) (1)
    - Valve and valve seat (2)

    Crack/Damage→Replace.
    Exist fur deposits (3)→Clean or replace.



RADIATOR CAP OPENING PRESSURE INSPECTION/ COOLING SYSTEM INSPECTION

INSP ADJ



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.

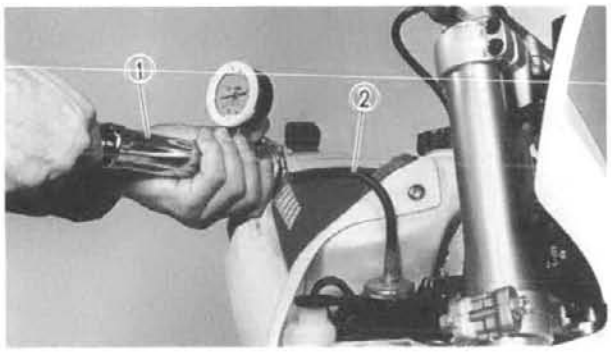
③ Radiator cap

2. Apply the specified pressure.

Valve Opening Pressure:
95 ~ 125 kPa (0.95 ~ 1.25 kg/cm², 13.5 ~ 17.8 psi)

3. Inspect:
   - Pressure

   Impossible to maintain the specified pressure for 10 seconds → Replace.



COOLING SYSTEM INSPECTION

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

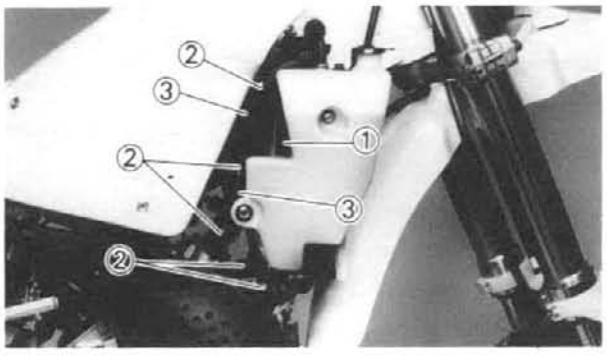
Radiator Cap Tester:
YU-24460-01/90890-01325
Adapter:
YU-33984/90890-01352

3. Apply the specified pressure.

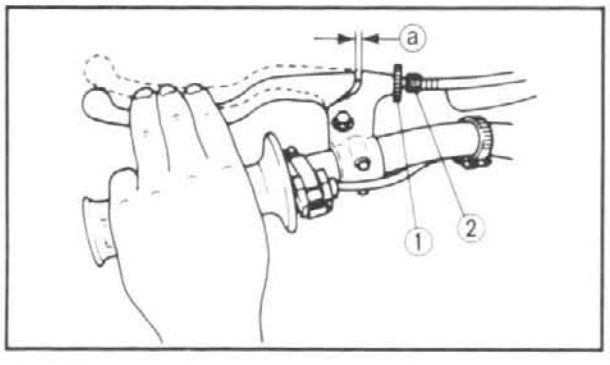
Standard Pressure:
180 kPa (1.8 kg/cm², 25.6 psi)

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 hoses joint (2)
     Coolant leakage → Repair or replace.
   - Radiator hoses (3)
     Swelling → Replace.

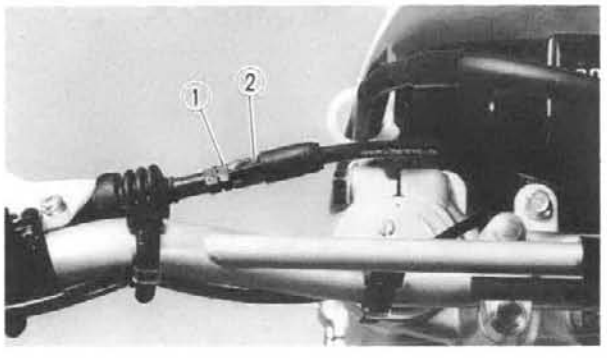


CLUTCH ADJUSTMENT

1. Remove:
   - Brush guard (left)

2. Check:
   - Clutch lever free play (a)
     Out of specification → Adjust

Clutch Lever Free Play (a):
2 ~ 3 mm (0.08 ~ 0.12 in)

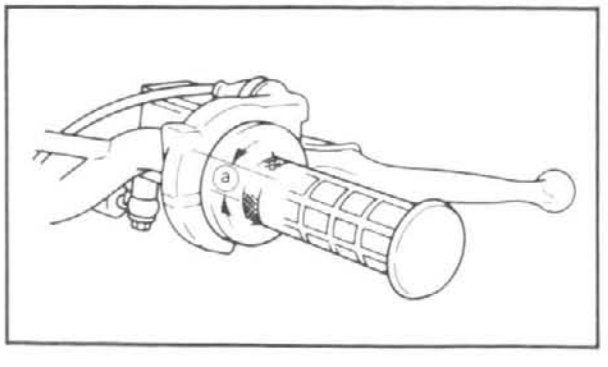


3. Adjust:
   - Clutch lever free play

Clutch lever free play adjustment steps:
- Loosen the looknut (1).
- Turn the adjuster (2) until free play (a) is within the specified limits.
- Tighten the locknut.

NOTE:

After adjustment, check proper operation of clutch lever.

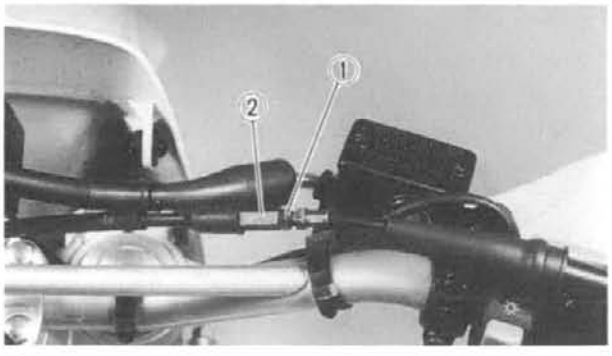


THROTTLE CABLE ADJUSTMENT

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

Free Play (a):
3 ~ 5 mm (0.12 ~ 0.20 in)

INSP ADJ



2. Adjust:
   - Throttle cable free play (a)

Throttle cable free play adjustment steps:
- Loosen the locknut (1).
- Turn the adjuster (2) until the specified free play is obtained.
- Tighten the locknut.

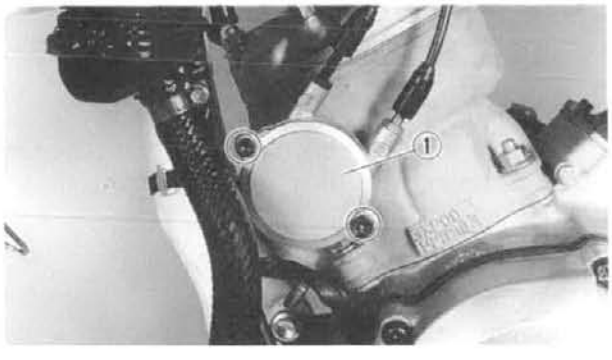
NOTE:

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

⚠ WARNING

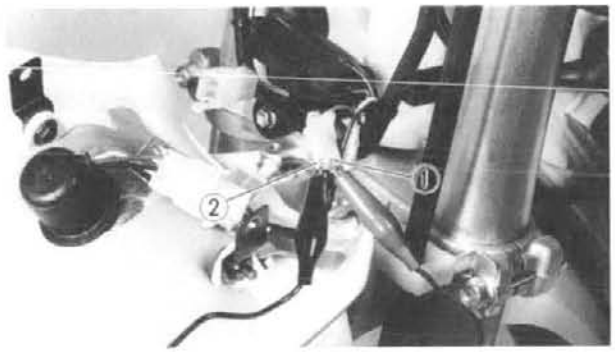
After adjusting, turn the handlebar to right and left and make sure that the engine idling does not run faster.

3



YPVS CABLE ADJUSTMENT

1. Remove:
   - Pulley cover (1)



2. Remove the headlight and disconnect the condenser lead.

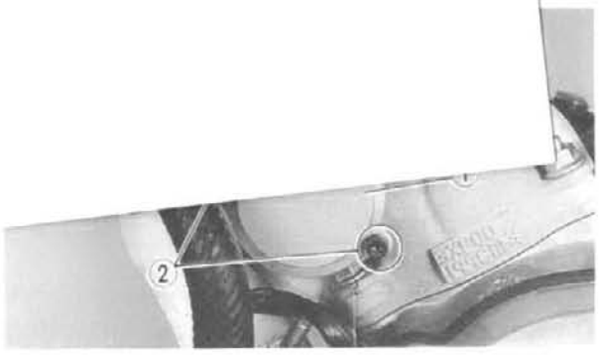
3. Connect 12V battery to the condenser lead.

Battery (+) lead → Red lead (1)
Battery (−) lead → Black lead (2)

4. Check:
   - Alignment mark (a)
     Not aligned → Adjust the YPVS cables.

5. Adjust:
   - YPVS cables

Adjustment steps:
- Loosen both locknuts (1) and turn in both adjusters (2).
- Insert a pin (3) [φ4 mm (φ0.16 in)] through the aligning indent in the pulley and into the hole to lock the pulley.
- Turn both adjusters (2) counterclockwise so that the cable free play (b) becomes Zero mm (Zero in) with fingers.
- Turn both adjusters (2) 1/4 turn clockwise.
- Tighten the locknuts (1).
- Remove the pin (3).
- Connect 12V battery to the condenser lead and, check that the alignment mark is aligned. If not, repeat the above steps.



6. Install:
   - Pulley cover (1)
   - Bolt (pulley cover) (2)

Bolt (Pulley Cover):
7 Nm (0.7 m•kg, 5.1 ft•lb)

7. Connect the condenser lead and install the headlight.

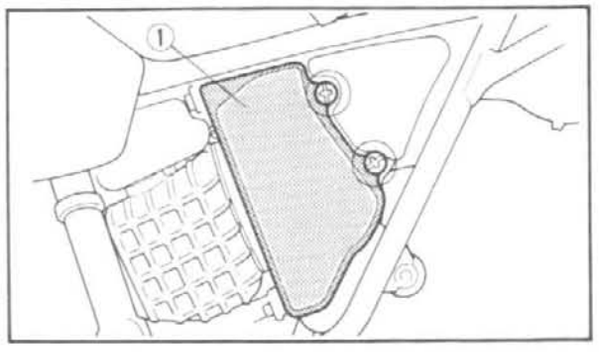
AIR FILTER CLEANING

NOTE:

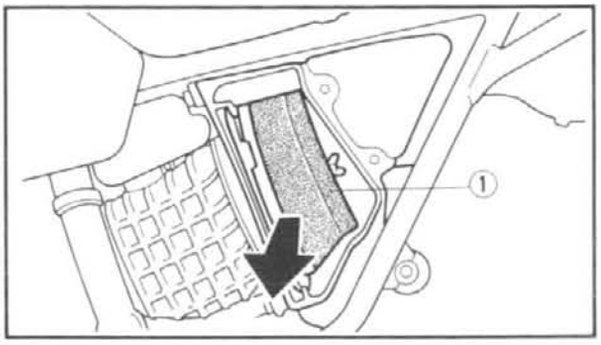
Proper air filter maintenance is the biggest key to preventing premature engine wear and damage.

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.



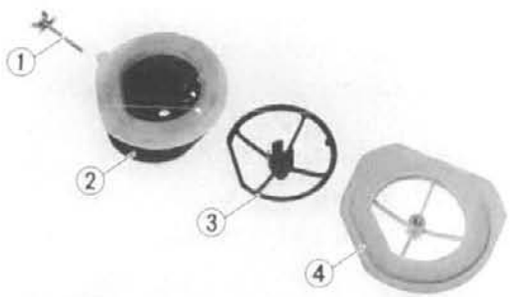
1. Remove:
   - Side cover (left)
   - Filter case cover (1)



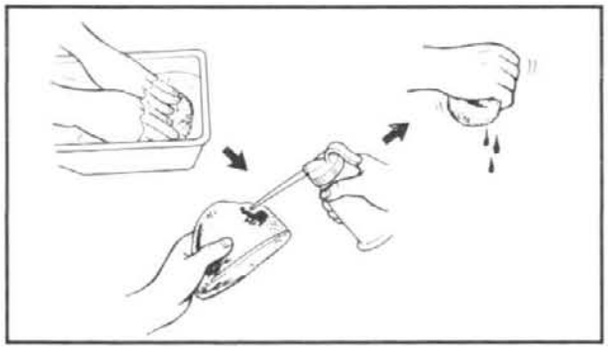
2. Remove:
   • Air filter assembly ①

NOTE:

Remove the air filter assembly from the air filter case by sliding it as indication by the arrow.



3. Remove:
   • Fitting bolt ①
   • Air filter element ②
   • Filter guide ③
     From the filter holder ④.



4. Clean:
   • Air filter element
     Clean them with solvent.

NOTE:

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

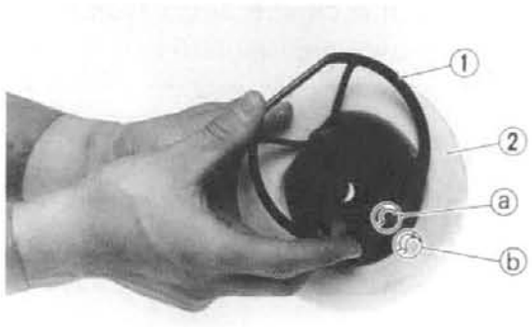
CAUTION:

Do not twist the element when squeezing the element.

5. Inspect:
   • Air filter element
     Damage → Replace.
6. Apply:
   • Foam-air-filter oil or engine mixing oil
     To the element.

NOTE:

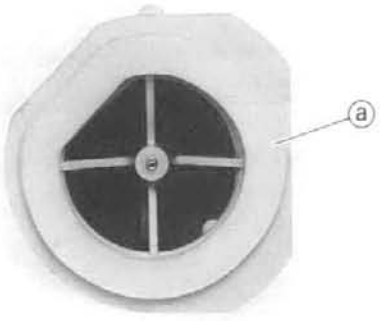
Squeeze out the excess oil. Element should be wet but not dripping.



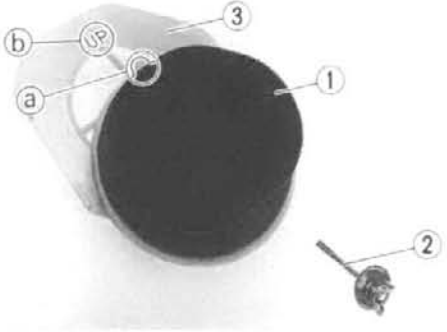
7. Install:
   • Filter guide ①
     To the air filter element ②.

NOTE:

Align the projection ⓐ on filter guide with the projection ⓑ on air filter element.



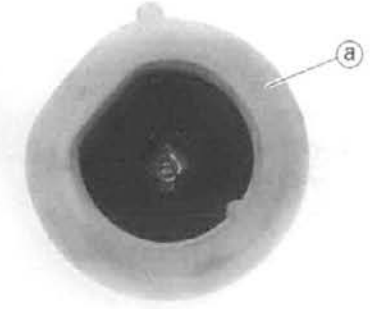
8. Apply:
   - Lithium soap base grease
     On-to the matching surface (a) on air filter element.



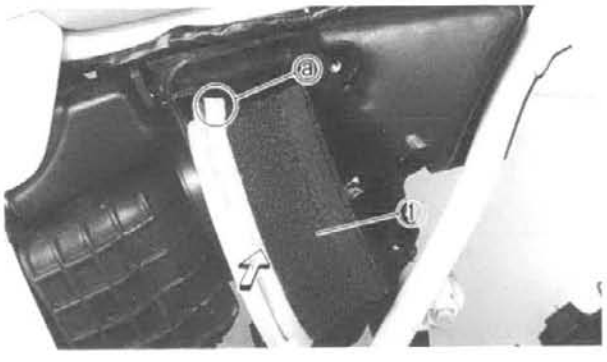
9. Install:
   - Air filter element (1)
   - Fitting bolt (2)
     To the filter holder (3).

NOTE:

Align the projection (a) on air filter element with the "UP" mark (b) on filter holder.



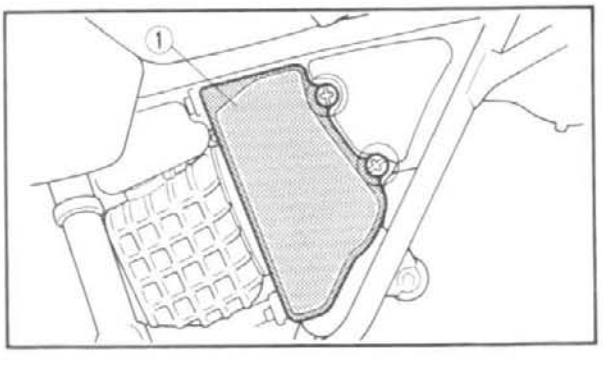
10. Apply:
    - Lithium soap base grease
      On-to the matching surface (a) on filter holder.



11. Install:
    - Air filter element assembly (1)

NOTE:

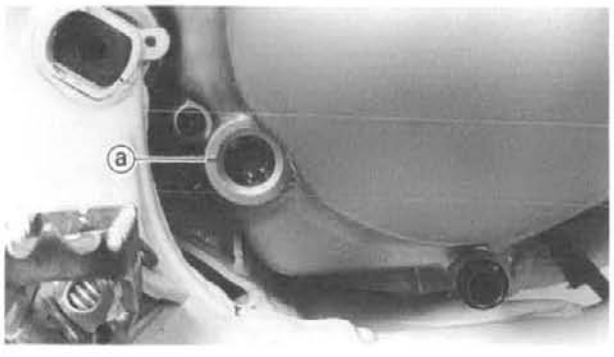
- Be sure the projection (a) is upward.
- Install the air filter assembly to the air filter case by sliding it as indication by the arrow.



12. Install:
    - Filter case cover (1)
    - Side cover (left)

TRANSMISSION OIL LEVEL INSPECTION

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.



3. Inspect:
   - Transmission oil level
     Oil level is under the level line ⓐ → Add the transmission oil.

NOTE:

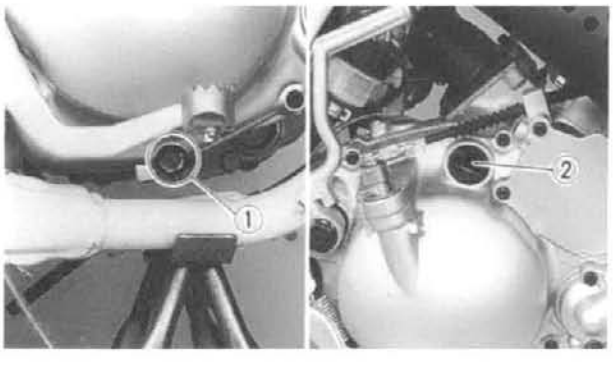
Be sure the machine is positioned straight up when inspecting the oil level.

4. Add:
   - Transmission oil
     Until the oil level reaches the level line.

Recommended Oil:
Yamalube 4 (10W-30) or 10W-30 Type SE Motor Oil

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.

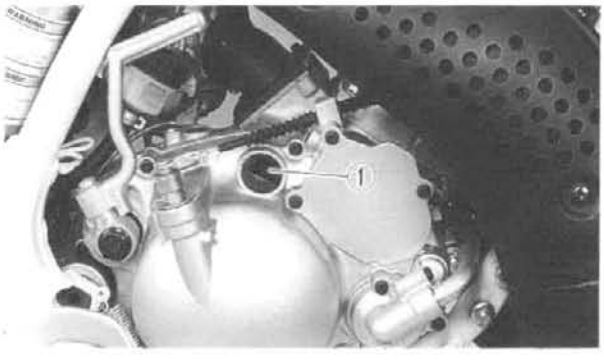


4. Remove:
   - Oil drain bolt ①
   - Oil filler cap ②
     Drain the transmission oil.
5. Install:
   - Drain bolt ①

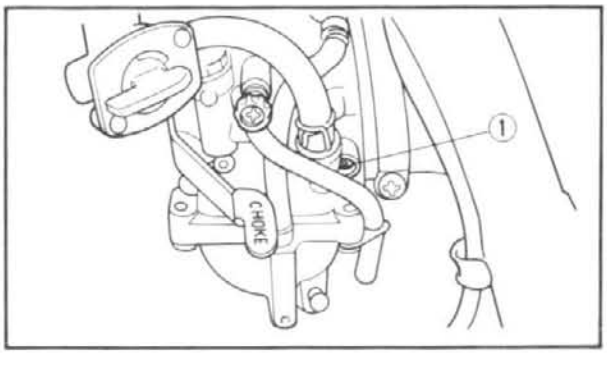
Oil Drain Bolt:
15 Nm (1.5 m•kg, 11 ft•lb)

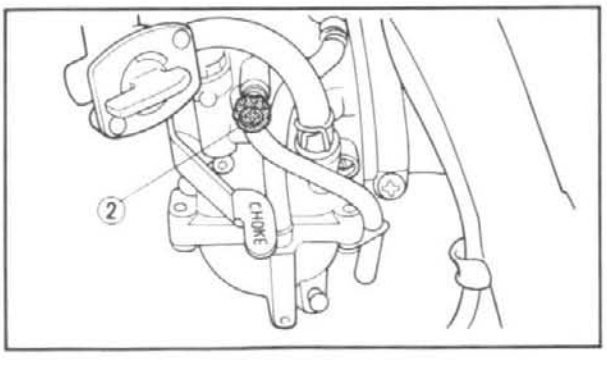
6. Fill:
   • Transmission oil

Recommended Oil:
Yamalube 4 (10W-30) or 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 (1)





IDLE SPEED ADJUSTMENT

1. Start the engine and warm it up for a few minutes.
2. Adjust:
   • Idle speed

Idle speed adjusting steps:
• Screw in the pilot air screw (1) until it is lightly seated.
• Back out by the specified number of turns.

Pilot Air Screw:
1-1/2 turns out

• Turn the screw (2) until the idle is at the desired rpm.

Standard Idle Speed:
1,300 – 1,400 r/min

• Turn the pilot air screw (1) in or out in 1/8-turn increments to achieve the highest rpm with just the pilot screw.
• Once again, turn the throttle stop screw (2) to attain the desired idle rpm.

NOTE:

The throttle response off idle should be crisp and clean, without any hesitation. If the engine is completely warmed up and hesitates off idle, turn the pilot air screw in or out in 1/8-turn increments until the problem is eliminated.

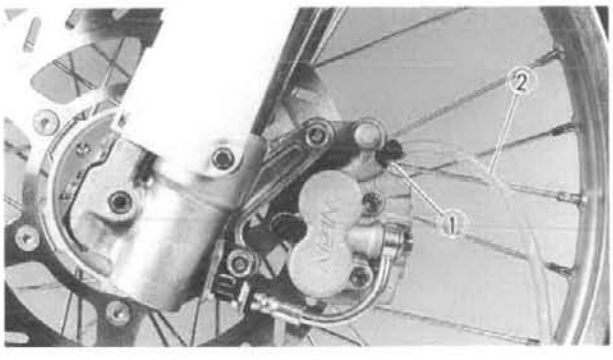
BRAKE SYSTEM AIR BLEEDING

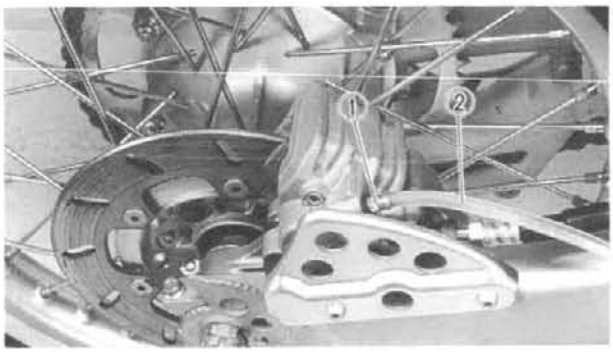
⚠ WARNING

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 bled.





1. Bleed:
   - Brake fluid

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.

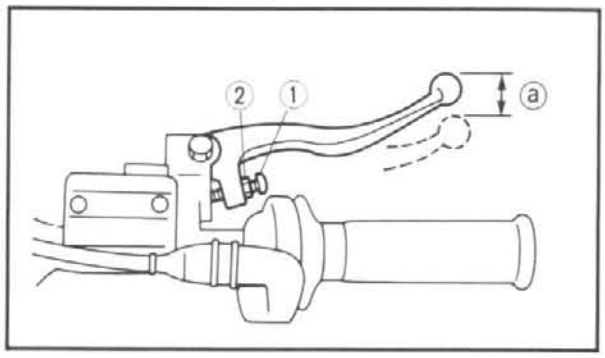
Bleed Screw:
6 Nm (0.6 m·kg, 4.3 ft·lb)

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 disappered.

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



FRONT BRAKE ADJUSTMENT

CAUTION:

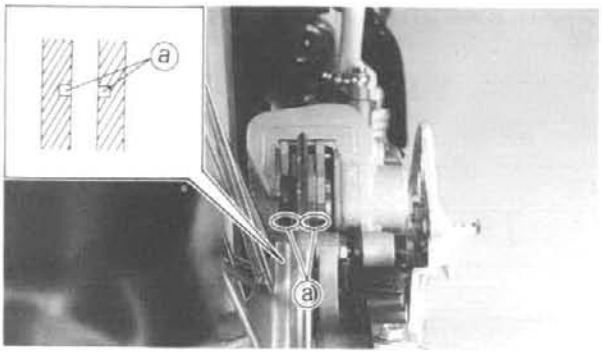
Proper lever free play is essential to avoid excessive brake drag.

1. Check:
   - Front brake lever free play ⓐ
     Out of specification → Adjust.

Front Brake Lever Free Play ⓐ:
2 ~ 5 mm (0.08 ~ 0.20 in)

2. Adjust:
   - Front brake lever free play

Front brake lever free play adjustment steps:
- Loosen the locknut ②.
- Turn the adjuster ① until the free play ⓐ is within the specified limits.
- Tighten the locknut.

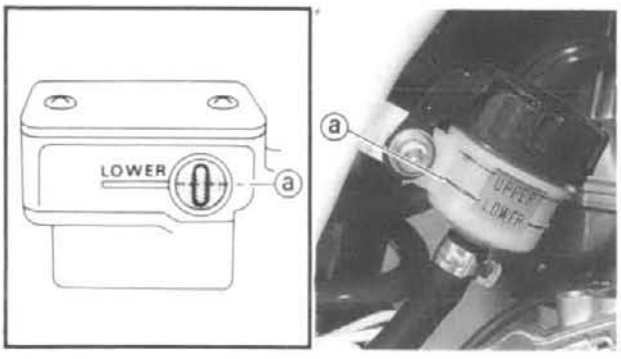


BRAKE PAD INSPECTION

1. Inspect:
   - Brake pads
     Over wear limit ⓐ → Replace as a set.

BRAKE FLUID LEVEL INSPECTION/ REAR BRAKE ADJUSTMENT

INSP ADJ



BRAKE FLUID LEVEL INSPECTION

1. Place the master cylinder so that its top is in a horizontal position.
2. Inspect:
   - Brake fluid level

   Fluid level is under the "LOWER" level line ⓐ → Add the brake fluid.
3. Add:
   - Brake fluid

   Until the fluid level reaches "LOWER" level line.

Recommended Brake Fluid:
DOT #4

NOTE:

If DOT #4 is not available, #3 can be used for the front brake only.

⚠ WARNING

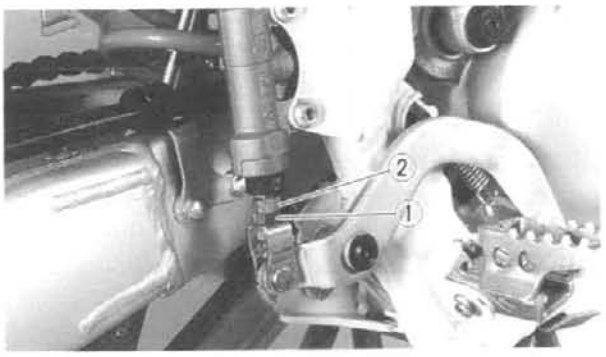
- **Use only designated quality brake fluid to avoid poor brake performance.**
- **Refill with same type and brand of brake fluid; mixing fluids could result in poor brake performance.**
- **Be sure that water or other contaminants do not enter master cylinder when refilling.**
- **Clean up spilled fluid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

REAR BRAKE ADJUSTMENT

1. Check:
   - Brake pedal height

   Out of specification → Adjust.

Brake Pedal Height ⓐ:
15 mm (0.6 in)

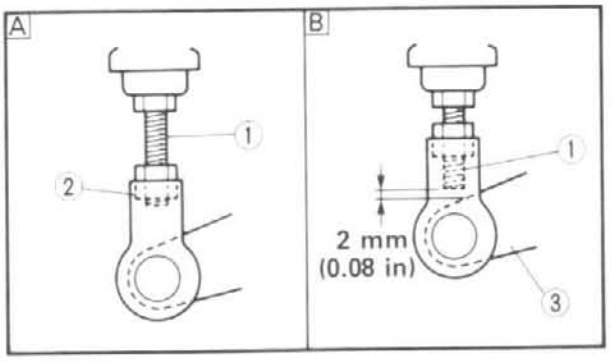


2. Adjust:
   - Brake pedal height

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 (1) end should protrude out of the lower adjusting nut (2) but not be less than 2 mm (0.08 in) away from the brake pedal (3)).**
- **After the pedal height adjustment, make sure that the rear brake does not drag.**

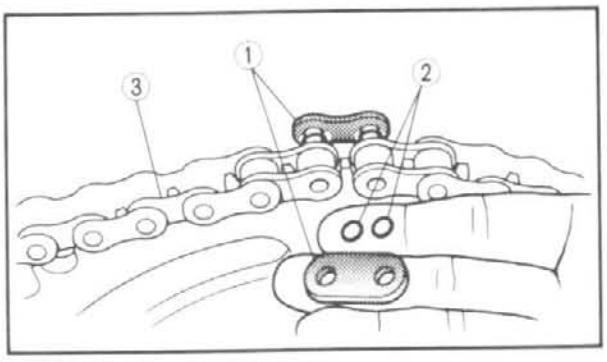


SPROCKETS INSPECTION

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

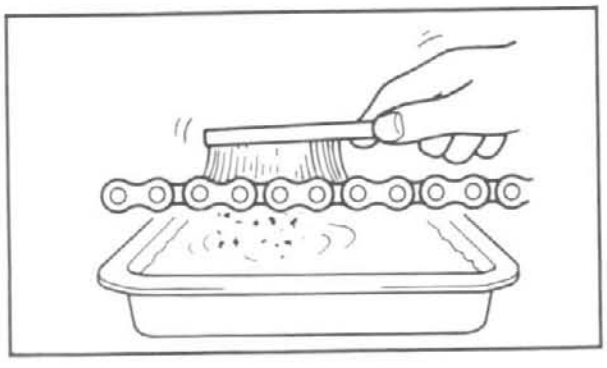
NOTE:

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



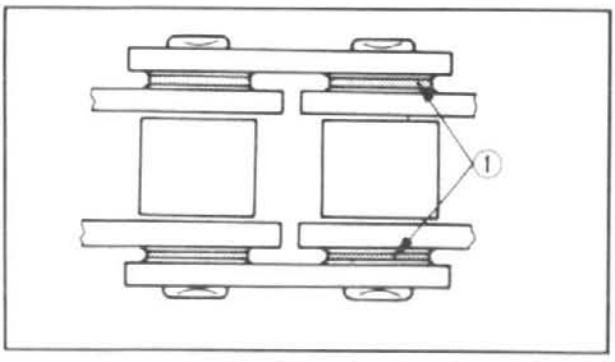
DRIVE CHAIN INSPECTION

1. Remove:
   - Master link clip
   - Joint (1)
   - O-ring (2)
   - Drive chain (3)



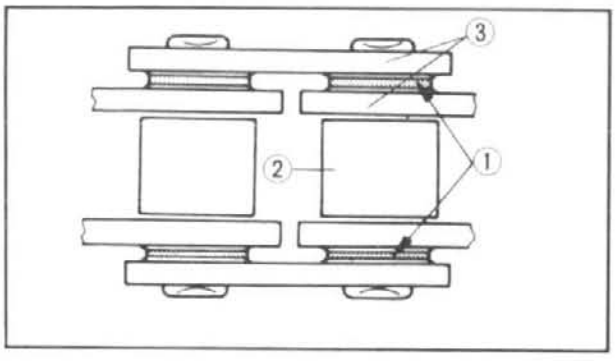
2. Clean:
   - Drive chain
     Place it in kerosene, and brush off as much dirt as possible. Then remove the chain from the kerosene and dry the chain.

INSP ADJ

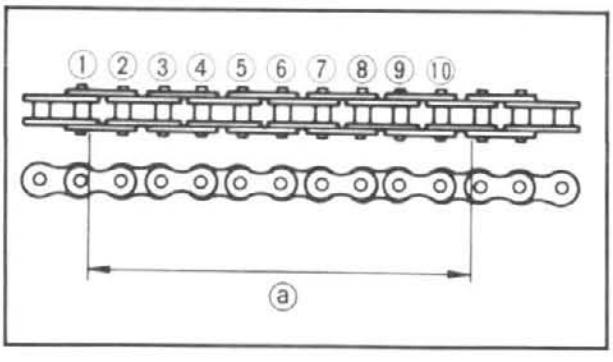


CAUTION:

This machine has a drive chain with small rubber O-rings ① between the chain plates. Steam cleaning, high-pressure washes and certain solvent can damage these O-rings. Use only kerosene to clean the drive chain.

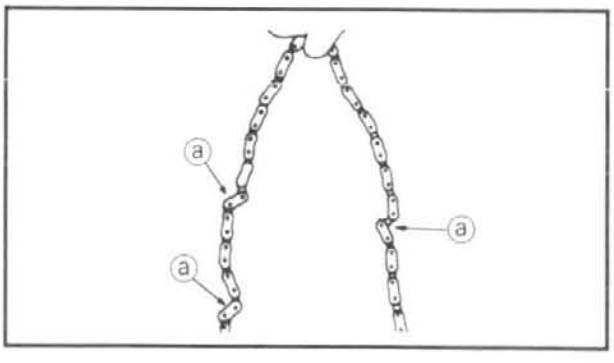


3. Inspect:
   - O-rings ① (Drive chain)
     Damage → Replace drive chain.
   - Rollers ②
   - Side plates ③
     Damage/Wear → Replace drive chain.

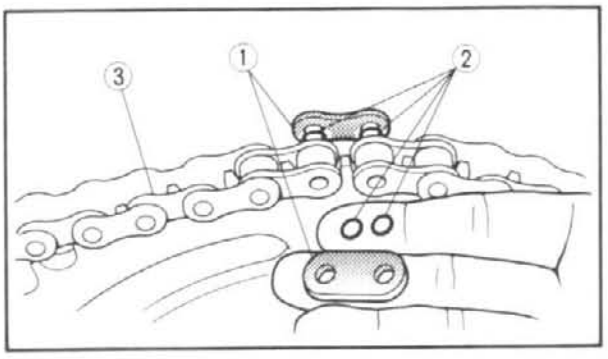


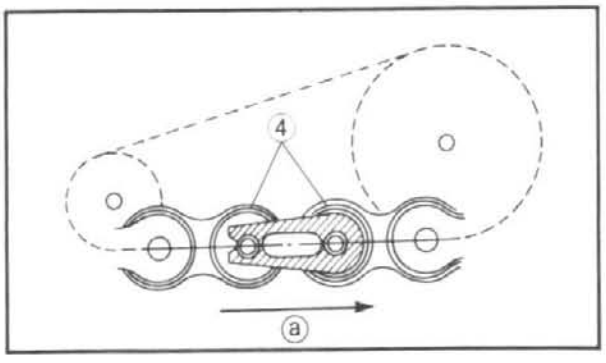
4. Measure:
   - Drive chain length (10 links) ⓐ
     Out of specification → Replace.

Drive Chain Length (10 links):
Limit: 150.1 mm (5.91 in)



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





6. Install:
   - Drive chain ①
   - O-ring ②
   - Joint ③
   - Master link clip ④

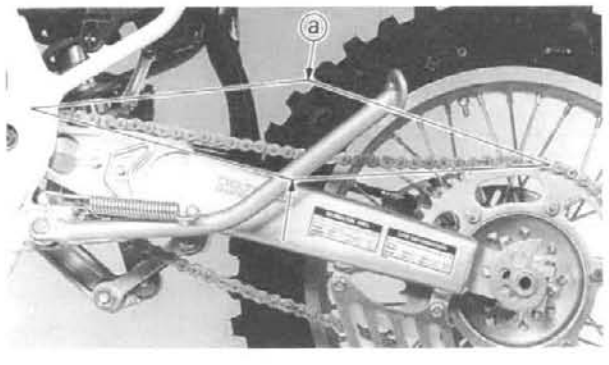
NOTE:

During reassembly, the master link clip must be installed with the rounded end facing the direction of travel.

ⓐ Turning direction

7. Lubricate:
   - Drive chain

Drive chain lubricant:
SAE 30 – 50W motor oil or chain lubricants suitable for "O-ring" chains



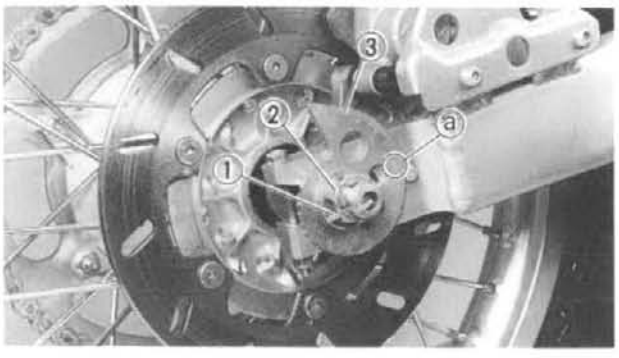
DRIVE CHAIN SLACK ADJUSTMENT

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

Drive Chain Slack:
25 – 40 mm (1.0 – 1.6 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:
- Remove the cotter pin (1).
- Loosen the axle nut (2).
- Turn both chain pullers (3) (left and right) the same amount (a) until the drive chain slack is within the specified limits.

CAUTION:

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

- Tighten the axle nut.

Axle Nut:
90 Nm (9.0 m•kg, 65 ft•lb)

- Install the cotter pin (1).

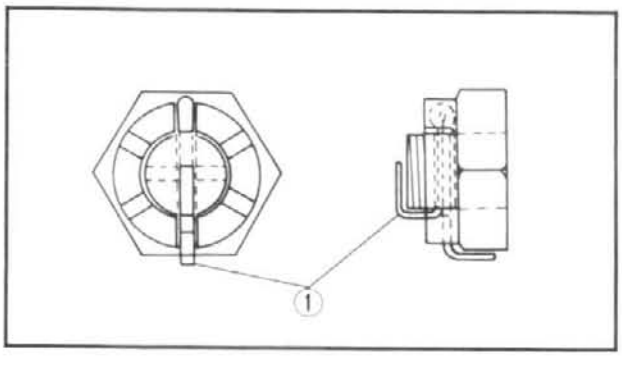
NOTE:

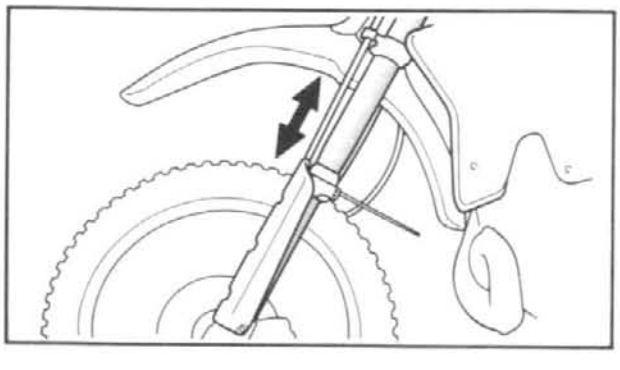
If the axle nut notch and cotter pin hole do not match, tighten the axle nut slightly to align them.

⚠ WARNING

Always use a new cotter pin on the axle nut.

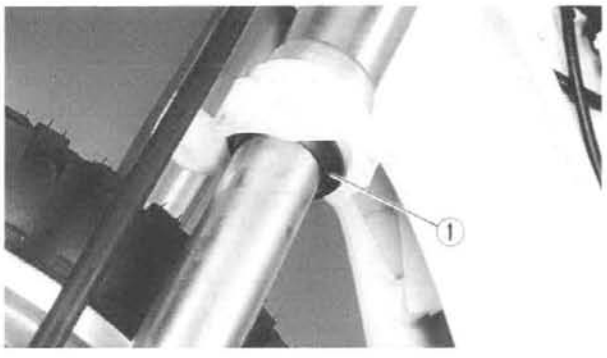
- Bend the end of the cotter pin as shown in the illustration.





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.

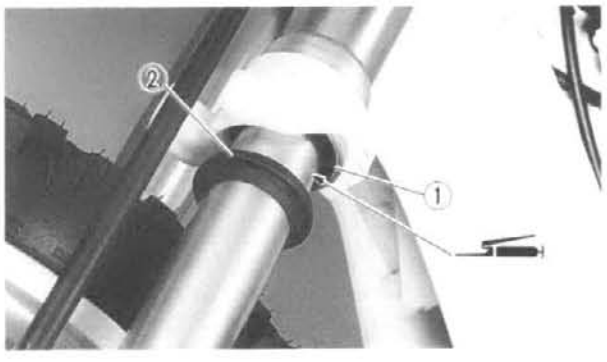


FRONT FORK OIL SEAL AND DUST SEAL CLEANING

1. Remove:
   - Protector
   - Dust seal (1)

NOTE:

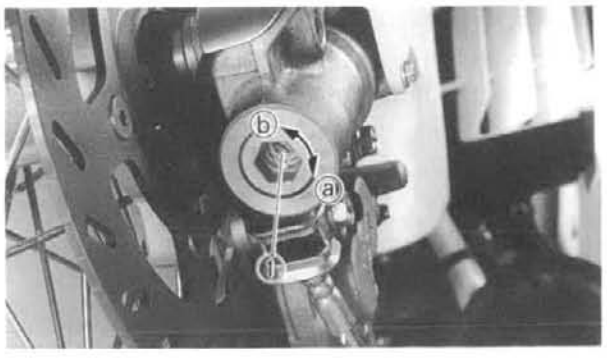
Use a thin screw driver, and be careful not to damage the inner fork tube and dust seal.



2. Clean:
   - Oil seal (1)
   - Dust seal (2)

NOTE:

Apply the lithium soap base grease on the inner tube.



FRONT FORK COMPRESSION DAMPING FORCE ADJUSTMENT

1. Adjust:
   - Compression damping force
     By turning the adjuster (1).

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

Extent of Adjustment:

Maximum	Minimum
Fully turned in position	18 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.

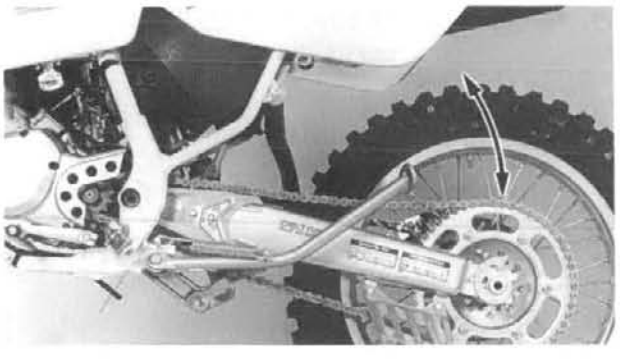
STANDARD POSITION:
6 Clicks Out

CAUTION:

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

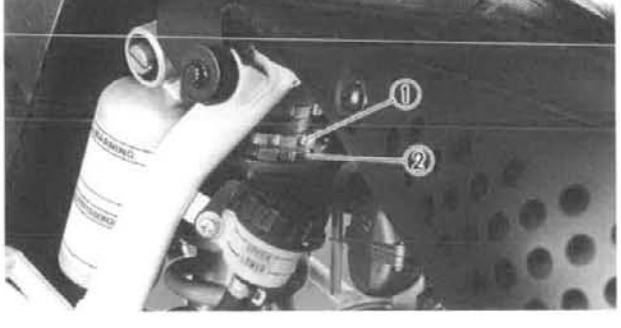
⚠ WARNING

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



REAR SHOCK ABSORBER INSPECTION

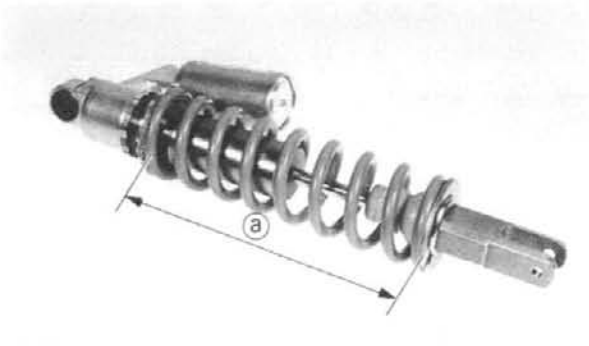
1. Inspect:
   - Swingarm smooth action
     Abnormal noise/Unsmooth action→
     Grease the pivoting points or repair the pivoting points.
     Damage/Oil leakage→Replace.



REAR SHOCK ABSORBER SPRING PRELOAD ADJUSTMENT

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

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



Spring Length (Installed) ⓐ:	
Standard position	Extent of adjustment
270 mm (10.63 in)	260 – 277 mm (10.24 – 10.91 in)

NOTE:

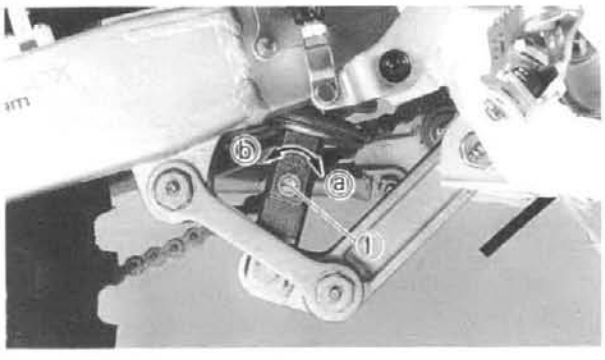
The length of the spring (installed) changes 1.5 mm (0.06 in) per turn of the adjuster.

CAUTION:

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

4. Tighten:
   - Locknut

Locknut: 70 Nm (7.0 m•kg, 50 ft•lb)

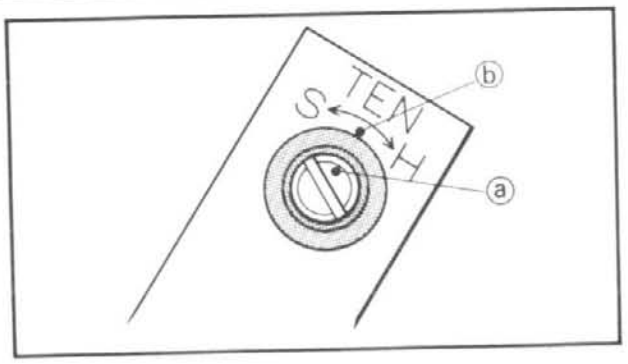


REAR SHOCK ABSORBER REBOUND DAMPING FORCE ADJUSTMENT

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

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

Extent of Adjustment:	
Maximum	Minimum
Fully turned in position	25 clicks out (From maximum position)



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

STANDARD POSITION:
About 6 Clicks Out

CAUTION:

Do not turn out (in) the adjuster from the damping force minimum (maximum) setting.

3

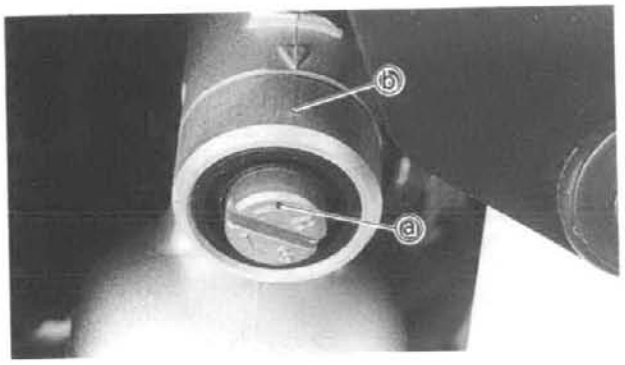
REAR SHOCK ABSORBER COMPRESSION DAMPING FORCE ADJUSTMENT

1. Adjust:
   •Compression damping force
   By turning the adjuster ①.

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

Extent of Adjustment:

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

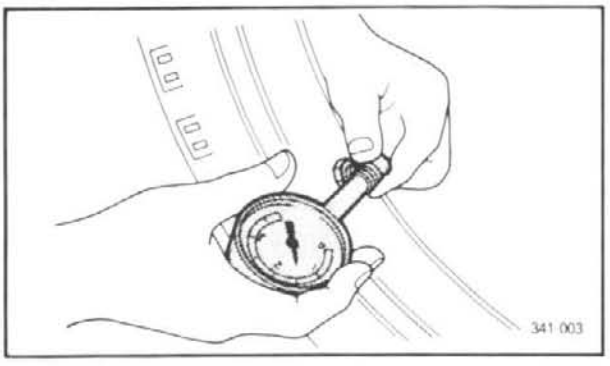


•STANDARD POSITION:
This is the position which is back by the specific number of clicks from the fully turned-in position. (Which align the punch mark ⓐ on adjuster with punch mark ⓑ on the bracket.)

STANDARD POSITION:
About 16 Clicks Out

CAUTION:

Do not turn out (in) the adjuster from the damping force minimum (maximum) setting.



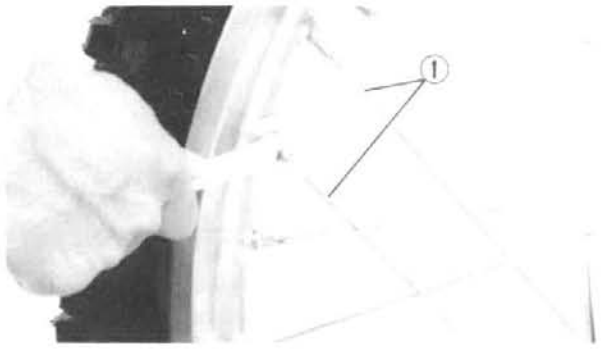
TIRE PRESSURE CHECK

1. Measure:
   - Tire pressure
     Out of specification → Adjust.

Standard Tire Pressure:
100 kPa (1.0 kg/cm², 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.



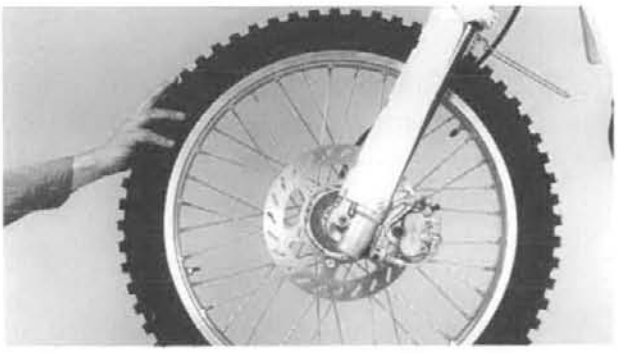
SPOKES INSPECTION AND TIGHTENING

1. Inspect:
   - Spokes (1)
     Bend/Damage → Replace.
     Loose spoke → Retighten.
2. Tighten:
   - Spokes

NOTE:

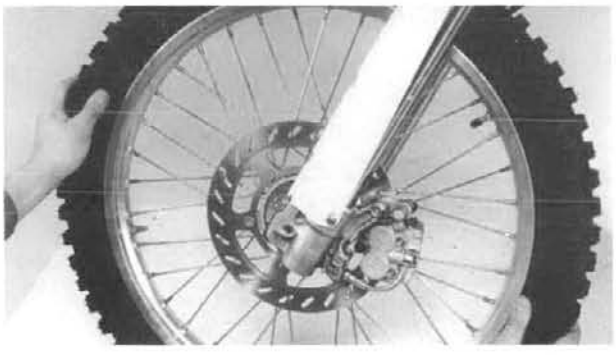
Be sure to retighten these spokes before and after Break-in.
After a practice or a race check spokes for looseness.

Nipple:
6 Nm (0.6 m•kg, 4.3 ft•lb)

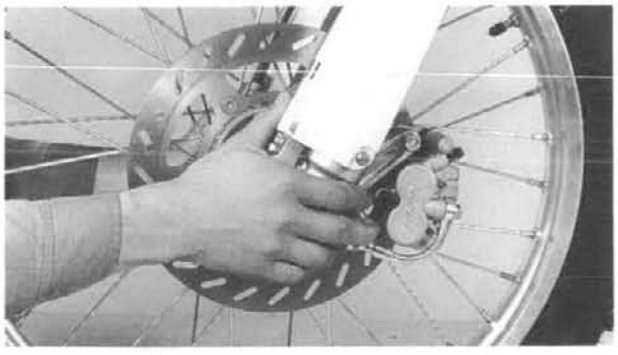


WHEEL INSPECTION

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

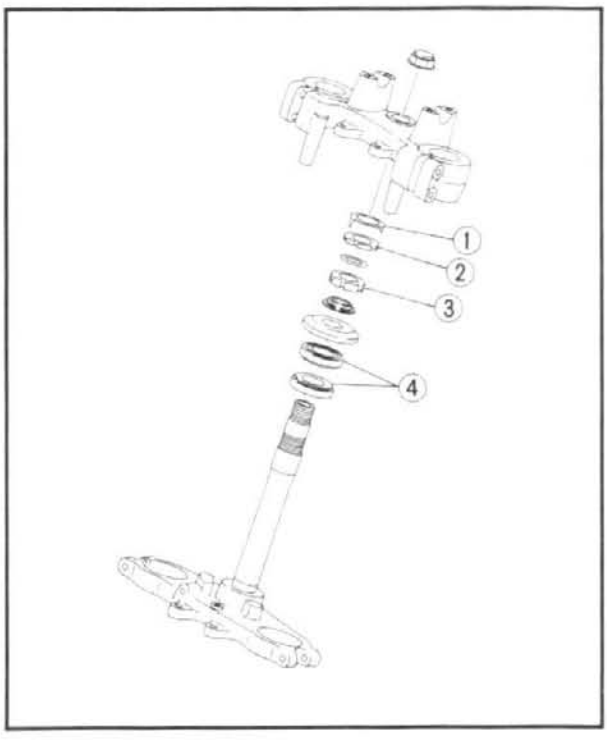


2. Inspect:
   - Bearing free play
     Exist play → Replace.



STEERING HEAD INSPECTION AND ADJUSTMENT

1. Elevate the front wheel by placing a suitable stand under the engine.
2. Check:
   - Steering stem
     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 headlight, headlight stay and odometer.
- Remove the handlebar and handle crown.
- Remove the lock washer (1).
- Remove the ring nut (upper) (2), and loosen the ring nut (lower) (3).
- Tighten the ring nut (lower) (3) using Ring Nut Wrench.

NOTE:

Set the torque wrench to the Ring Nut Wrench so that they form a right angle.

Ring Nut Wrench:
YU-01268/90890-01268
YM-33975/90890-01403

Ring Nut (Initial Tightening):
38 Nm (3.8 m•kg, 27 ft•lb)

- Loosen the ring nut (lower) one turn.
- Retighten the ring nut (lower) using the Ring Nut Wrench.

⚠ WARNING

Avoid over-tightening.

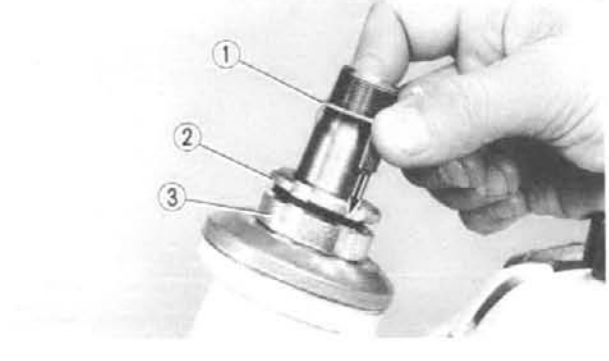
Ring Nut (Final Tightening):
4 Nm (0.4 m•kg, 2.9 ft•lb)

- Check the steering stem by turning it lock to lock. If there is any binding, remove the steering stem assembly and inspect the steering bearings (4).
- Install the ring nut (upper).
- Finger tighten the ring nut (upper) (2), then align the slots of both ring nuts. If not aligned, hold the ring nut (lower) (3) and tighten the other until they are aligned.
- Install the lock washer (1).

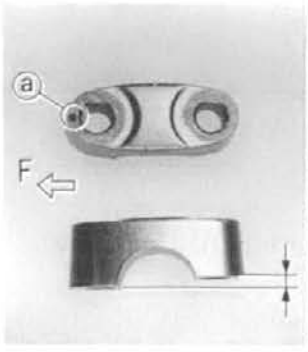
NOTE:

Make sure the lock washer tab is placed in the slots.

- Install the handle crown and handlebar.



INSP ADJ



NOTE:

- The upper handlebar holder should be installed with the punched mark ⓐ forward.
- Clamp the fuel breather hose on the handlebar.

CAUTION:

First tighten the bolts on the front side of the handlebar holder, and then tighten the bolts on the rear side.

Steering Stem Nut:
110 Nm (11.0 m•kg, 80 ft•lb)
Handlebar Upper Holder:
23 Nm (2.3 m•kg, 17 ft•lb)
Pinch Bolt (Handle Crown):
23 Nm (2.3 m•kg, 17 ft•lb)

- Install the odometer, headlight stay and headlight.

LUBRICATION

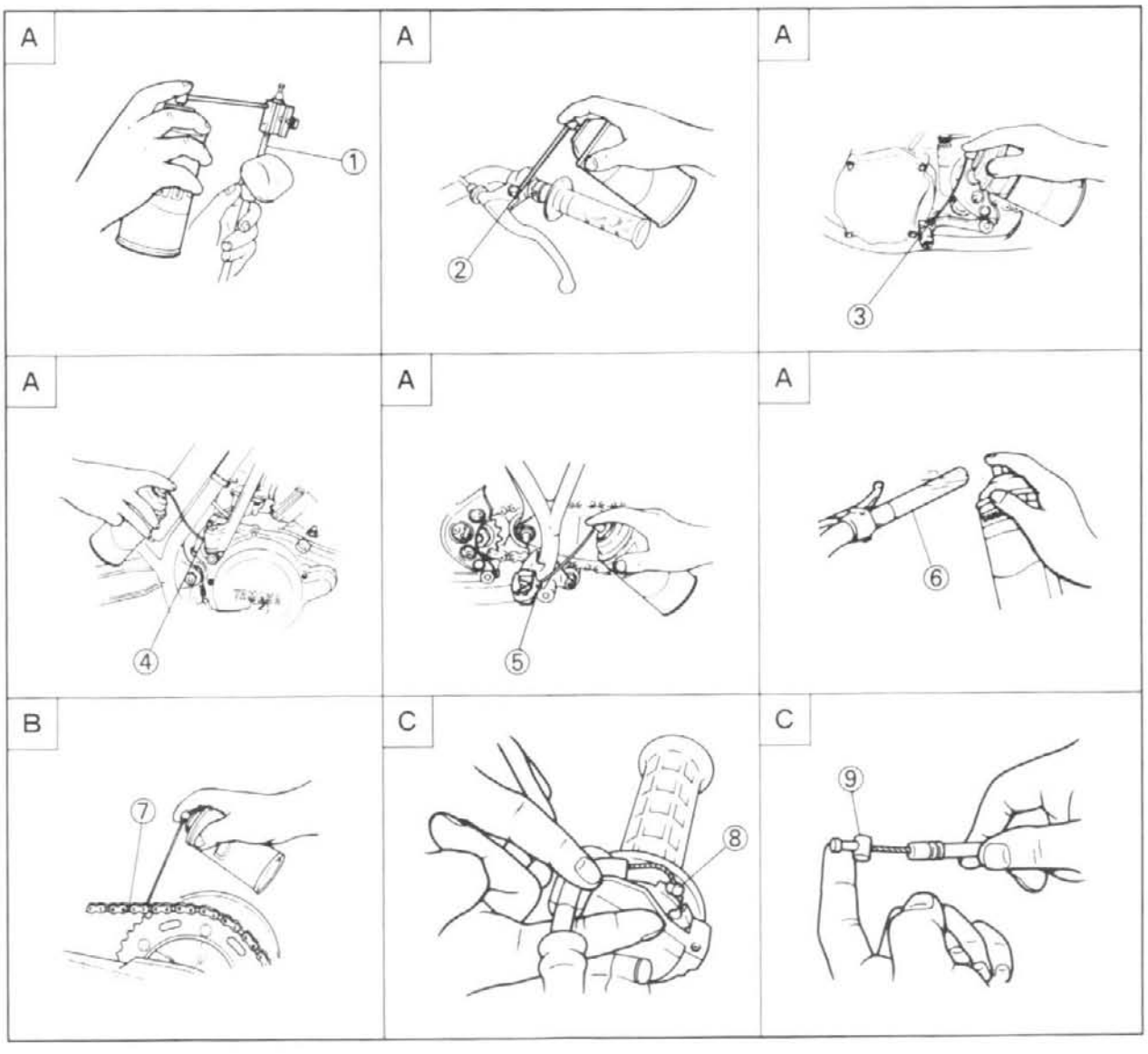
To ensure smooth operation of all components, lubricate your machine during setup, after break-in, and after every race.

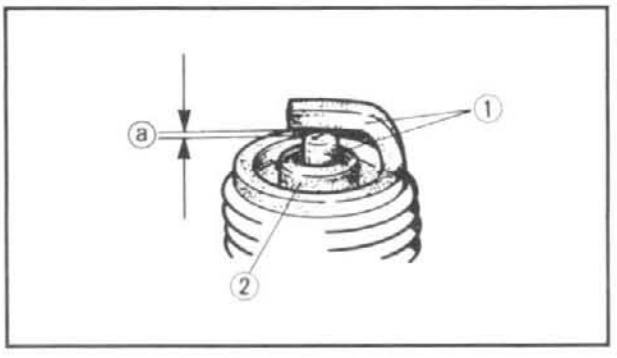
① All control cable
② Brake and clutch lever pivots
③ Shift pedal pivot
④ Kick axle pivot
⑤ Footrest pivot
⑥ Throttle-to-handlebar contact
⑦ Drive chain
⑧ Throttle guide and cable end
⑨ Clutch cable end

[A] Use Yamaha cable lube or equivalent on these areas.
[B] Use SAE 30 ~ 50W motor oil or chain lubricants suitable for "O-ring" chains.
[C] Lubricate the following areas with highquality, lightweight lithium-soap base grease.

CAUTION:

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





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.

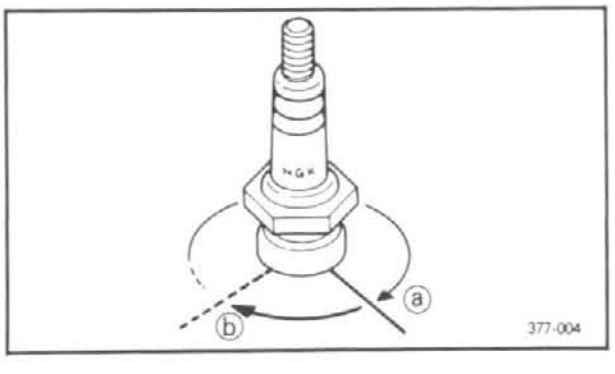
3. Measure:
   - Plug gap ⓐ
     Use a Wire Gauge or Thickness Gauge.
     Out of specification → Regap.

Spark Plug Gap:
0.7 ~ 0.8 mm (0.028 ~ 0.031 in)

Standard Spark Plug:
BR9ES (NGK)

4. Clean the plug with a spark plug cleaner if necessary.
5. Tighten:
   - Spark plug

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 ⓐ the spark plug before torquing to specification ⓑ.

INSP ADJ

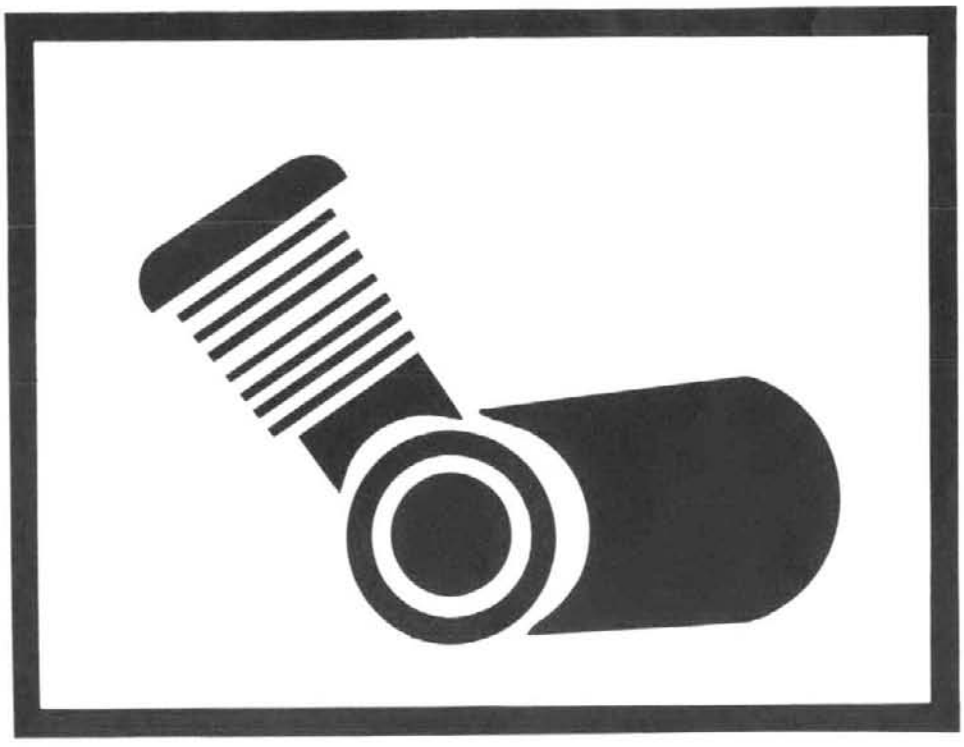
HEADLIGHT BEAM ADJUSTMENT

1. Adjust:
   - Vertical adjustment

To raise→	Turn the adjuster (1) clockwise.
To lower→	Turn the adjuster (1) counterclockwise.

3

CHAPTER 4
ENGINE

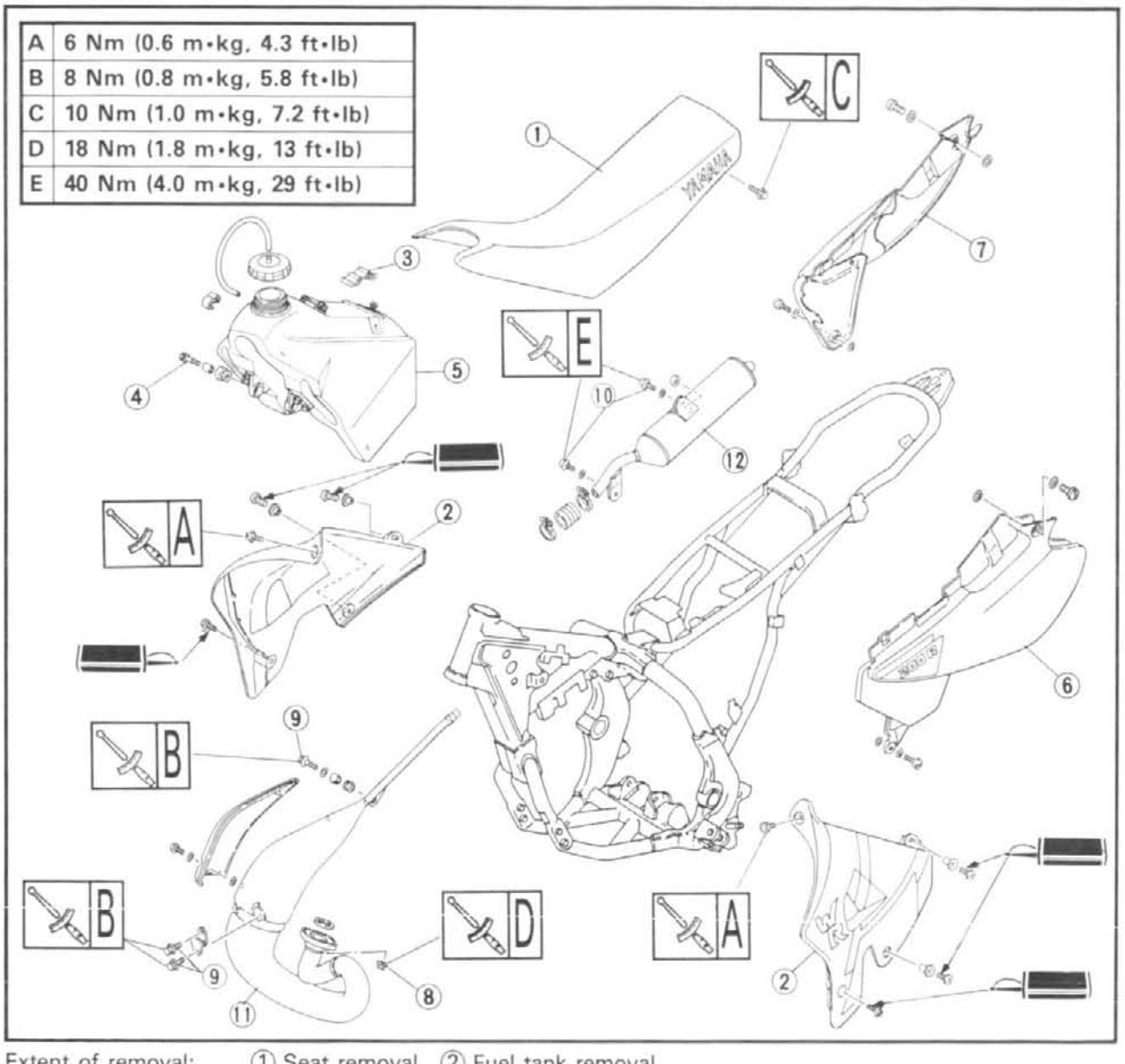


SEAT, FUEL TANK, SIDE COVERS, EXHAUST PIPE AND SILENCER

PREPARATION FOR REMOVAL

*Turn the fuel cock to "OFF".

*Disconnect the fuel hose.



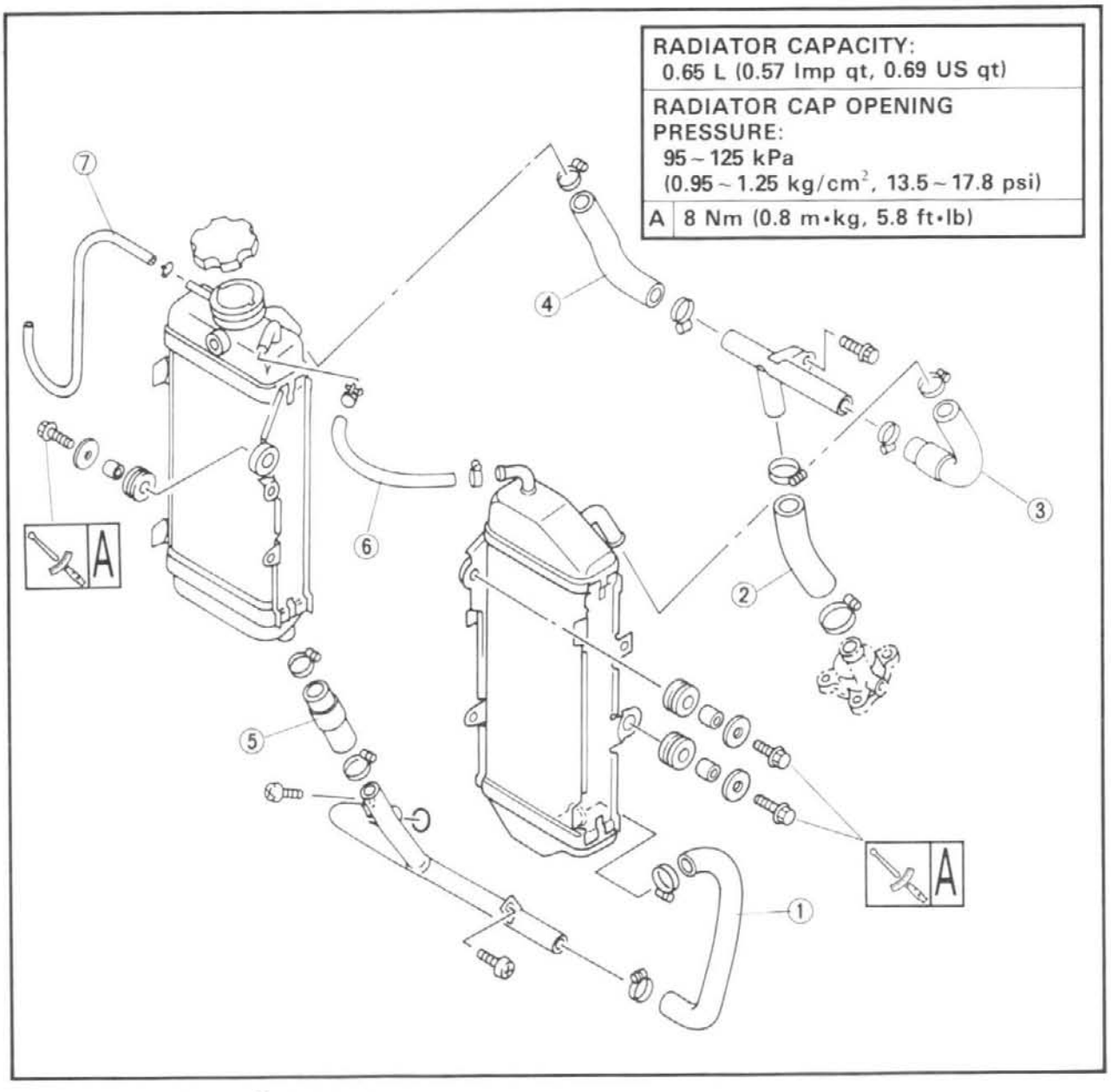
Extent of removal: ① Seat removal ② Fuel tank removal
③ Exhaust pipe and silencer removal

Extent of removal	Order	Part name	Q'ty	Remarks
① ↕	1	Seat	1	
↑	2	Air scoop (left and right)	2	
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	Nut (exhaust pipe)	2	
③	9	Bolt (exhaust pipe)	2	
	10	Bolt (silencer)	2	
↓	11	Exhaust pipe	1	
	12	Silencer	1	

RADIATOR HOSES

PREPARATION FOR REMOVAL

* Drain the coolant.
* Remove the following parts:
  - Air scoop (left and right)
  - Fuel tank



Extent of removal: ① Radiator hose removal

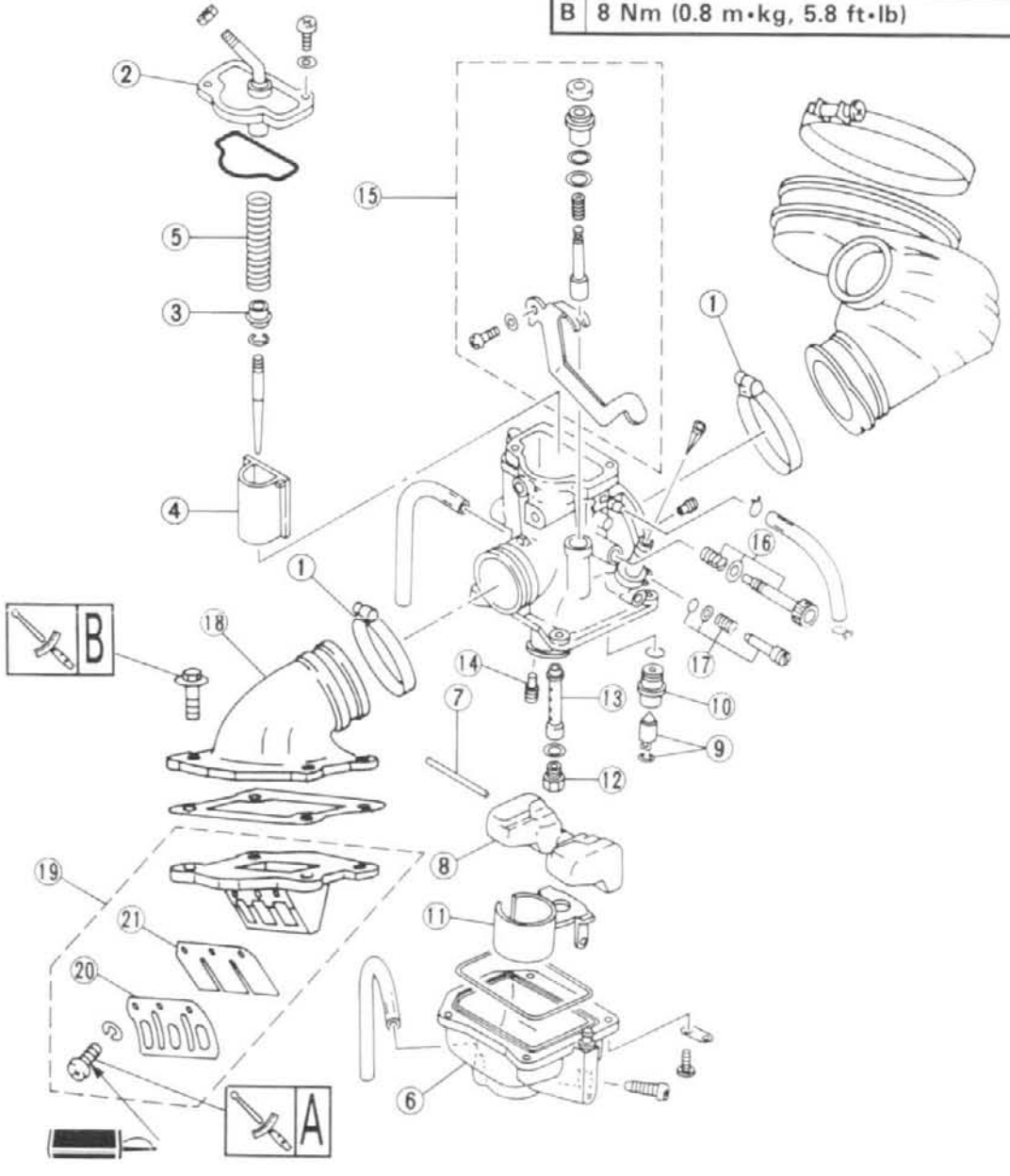
Extent of removal	Order	Part name	Q'ty	Remarks
①	1	Radiator hose 2	1	
	2	Radiator hose 3	1	
	3	Radiator hose 4	1	
	4	Radiator hose 5	1	
	5	Radiator hose 6	1	
	6	Radiator hose 8	1	
	7	Coolant reservoir hose	1	

CARBURETOR AND REED VALVE

PREPARATION FOR REMOVAL

* Turn the fuel cock to "OFF".
* Disconnect the fuel hose at carburetor side.
* Remove the fuel tank.

SPECIFICATIONS	
MAIN JET (M.J.)	#210
JET NEEDLE (J.N.)	6DHY40-3
PILOT JET (P.J.)	#35
PILOT AIR SCREW (P.A.S.)	1-1/2
FLOAT ARM HEIGHT	2.1 ~ 4.1 mm (0.08 ~ 0.16 in)
A	1 Nm (0.1 m•kg, 0.7 ft•lb)
B	8 Nm (0.8 m•kg, 5.8 ft•lb)

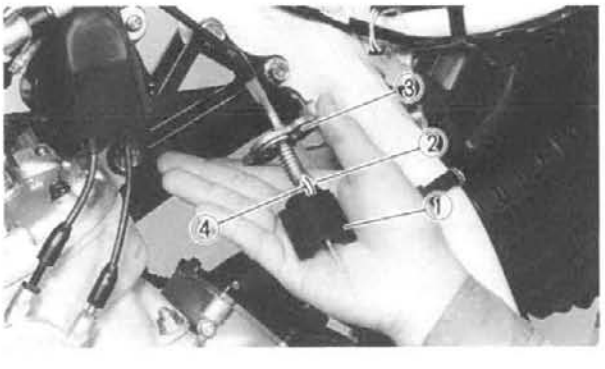


NOTE ON REMOVAL AND REASSEMBLY

- With the engine mounted, the following parts can be removed.
- Before servicing, clean the machine and take care so that foreign material do not enter the engine.
- Remove the gasket adhered on the contacting surface.
- Before inspection, the removed parts should be cleaned and blow out all passages and jets with compressed air.
- After removing the carburetor, cover the carburetor joint not to enter foreign material.

Extent of removal: ① Carburetor removal ② Carburetor disassembly
③ Reed valve removal and disassembly

Extent of removal	Order	Part name	Q'ty	Remarks
①	1	Clamp (carburetor joint)	2	Loosen the screws (carburetor joint).
	2	Mixing chamber top	1	
	3	Ring	1	Refer to "REMOVAL POINTS".
	4	Throttle valve	1	
	5	Spring (throttle valve)	1	
②	6	Float chamber	1	
	7	Pin (float)	1	
	8	Float	1	
	9	Needle valve	1	
	10	Valve seat	1	
	11	Needle jet cover	1	
	12	Main jet	1	
	13	Main nozzle	1	
	14	Pilot jet	1	
	15	Starter lever	1	
③	16	Throttle stop screw	1	
	17	Pilot air screw	1	
	18	Carburetor joint	1	
	19	Reed valve assembly	1	
	20	Stopper (reed valve)	2	
	21	Reed valve	2	



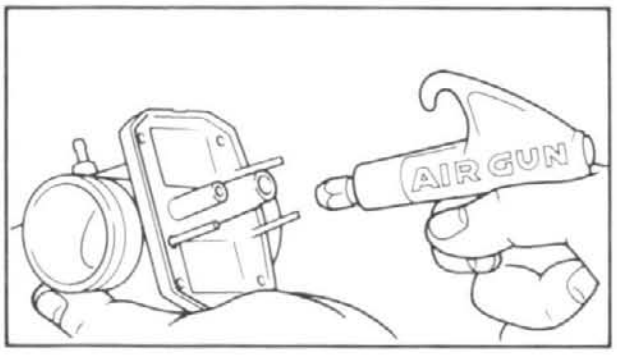
REMOVAL POINTS

THROTTLE VALVE

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

NOTE:

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



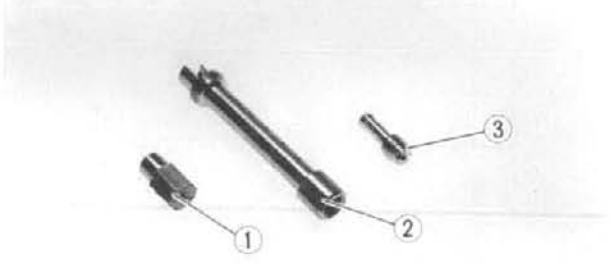
INSPECTION

CARBURETOR

1. Inspect:
   - Carburetor body
     Contamination → Clean.

NOTE:

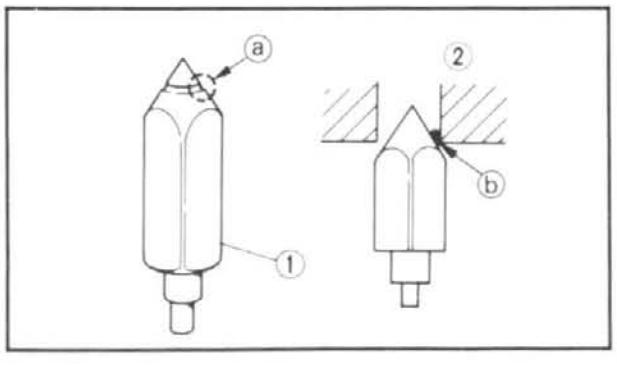
- Use a petroleum based solvent for cleaning. Blow out all passages and jets with compressed air.
- Never use a wire.



2. Inspect:
   - Main jet ①
   - Main nozzle ②
   - Pilot 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.

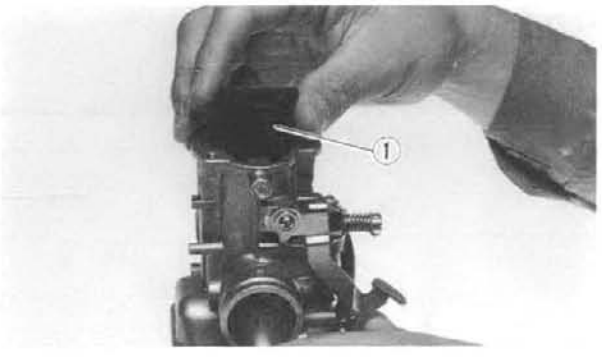


NEEDLE VALVE

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

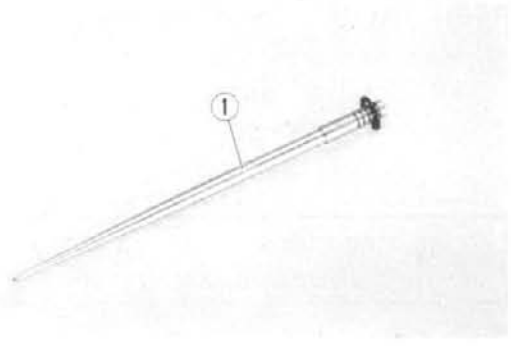
NOTE:

Always replace the needle valve and valve seat as a set.



THROTTLE VALVE

1. Check:
   - Free movement
     Stick → Repair or replace.
     Insert the throttle valve (1) into the carburetor body, and check for free movement.

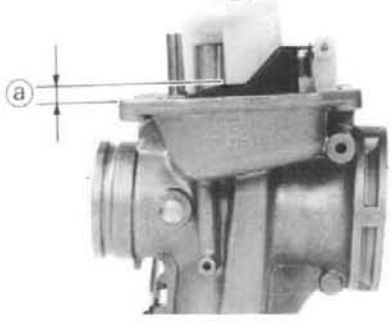


2. Inspect:
   - Jet needle (1)
     Bends/Wear → Replace.
   - Clip position

Standard Clip Position:
No. 3 Groove

FLOAT ARM HEIGHT

1. Measure:
   - Float arm height (a)
     Out of specification → Adjust.



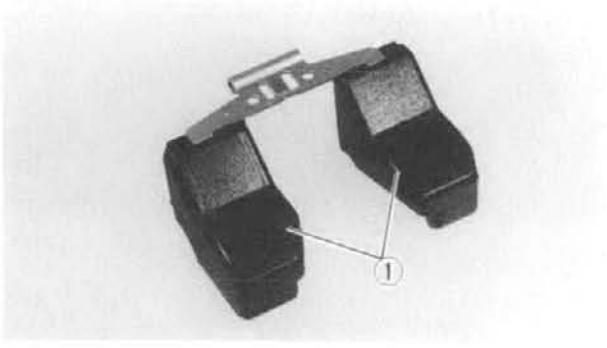
Float Arm Height.
2.1 ~ 4.1 mm (0.08 ~ 0.16 in)

Measurement and adjustment steps:
- Hold the carburetor in an upside down position.
- Measure the distance between the mating surface of the float chamber (gasket removed) and top of the float using a gauge.

NOTE:

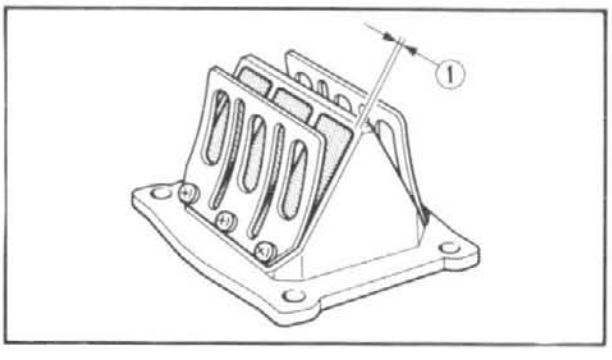
The float arm should be resting on the needle valve, but not compressing the needle valve.

- 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 (b) on the float.
- Recheck the float height.



FLOAT

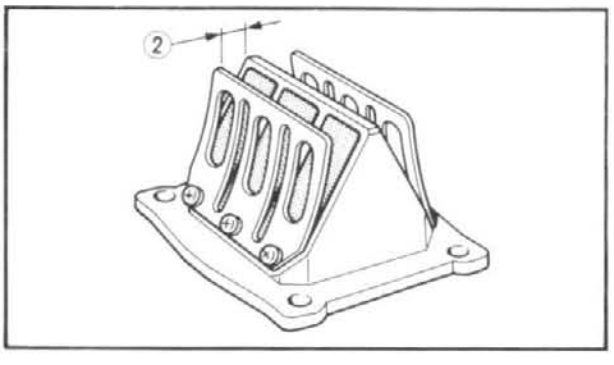
1. Inspect:
   - Float ①
     Damage → Replace.



REED VALVE

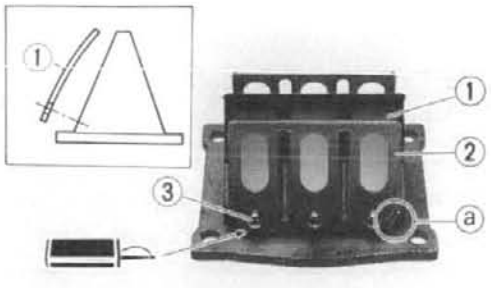
1. Measure:
   - Reed valve bending ①
     Out of specification → Replace.

Reed Valve Bending Limit:
0.2 mm (0.008 in)



- Valve Stopper Height ②
  Out of specification → Adjsut stopper/Replace valve stopper.

Valve Stopper Height:
8.8 ~ 9.2 mm (0.346 ~ 0.362 in)



ASSEMBLY AND INSTALLATION

REED VALVE

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

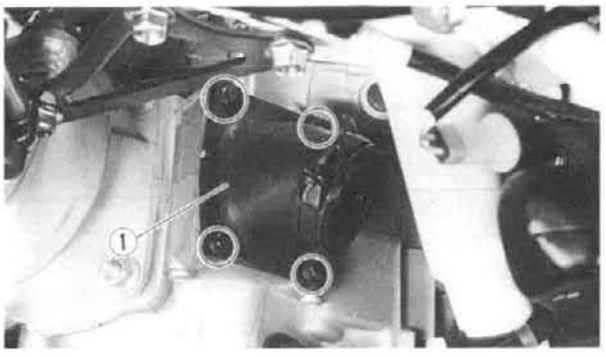
NOTE:

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

Screw (Reed Valve):
1 Nm (0.1 m•kg, 0.7 ft•lb)
LOCTITE®

CAUTION:

Tighten each screw gradually to avoid warping.



2. Install:
   - Reed valve assembly
   - Gasket (reed valve assembly)
   - Carburetor joint ①

NOTE:

Always use a new gasket.

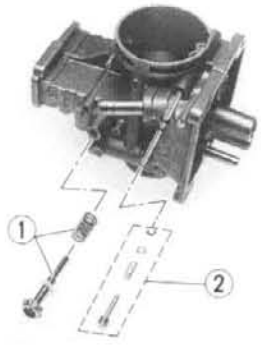
	Bolt (Carburetor Joint): **8 Nm (0.8 m•kg, 5.8 ft•lb)**

CARBURETOR

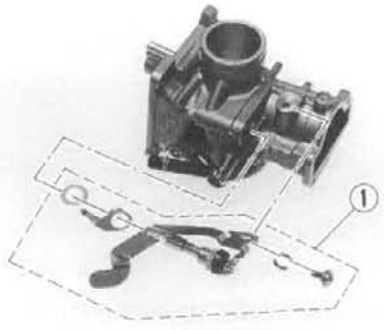
1. Install:
   - Throttle stop screw ①
   - Pilot air screw ②

Note the following installation points:
- Screw in the pilot air screw ② until it is lightly seated.
- Back out it by the specified number of turns.

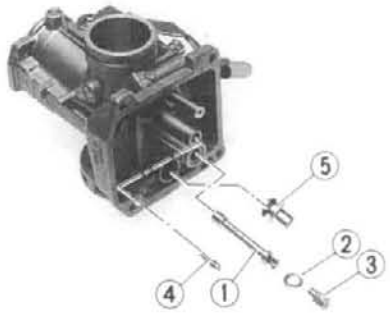
	Pilot Air Screw: **1-1/2 turns out**



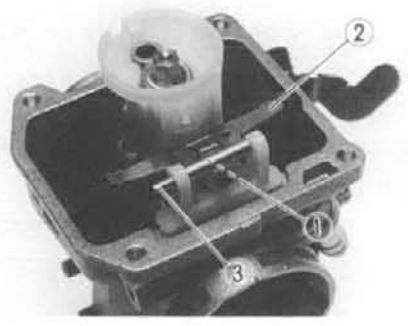
2. Install:
   - Starter lever ①



3. Install:
   - Main nozzle ①
   - Plain washer ②
   - Main jet ③
   - Pilot jet ④
   - Valve seat ⑤



4. Install:
   - Needle jet cover ①

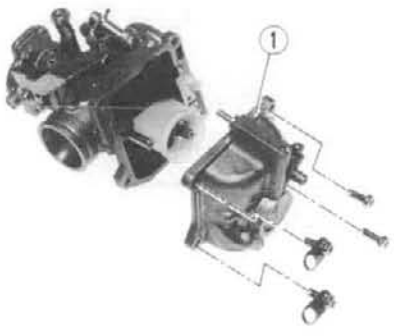


5. Install:
   - Needle valve ①
   - Float ②
   - Float pin ③

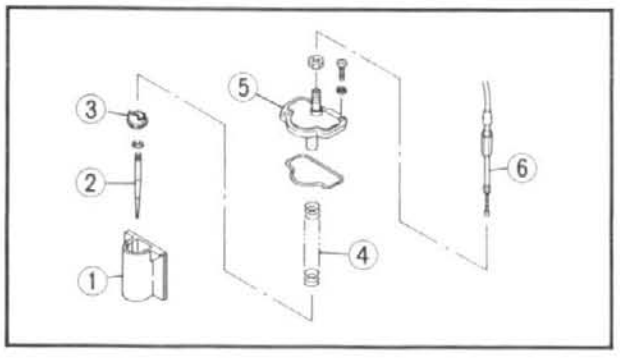
   After installing the needle valve to float, install them to the carburetor.

NOTE:

Make sure the float for smooth movement.



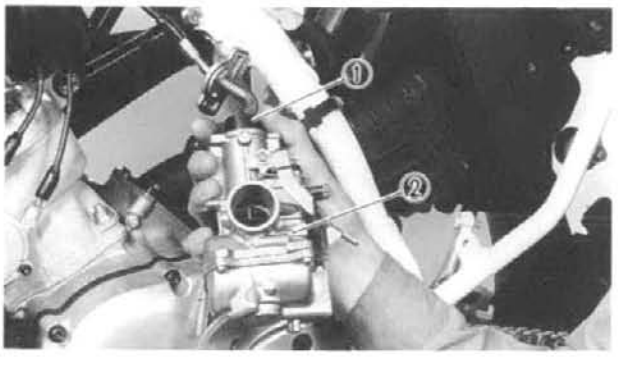
6. Install:
   - Float chamber ①



7. Install:
   - Throttle valve ①
   - Jet needle ②
   - Ring ③
   - Spring (throttle valve) ④
   - Mixing chamber top ⑤
   - Throttle cable ⑥

NOTE:

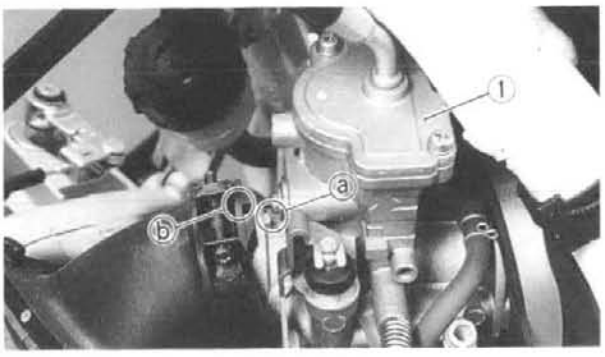
While compressing the spring, connect the throttle cable.



CARBURETOR INSTALLATION

1. Install:
   - Throttle valve ①

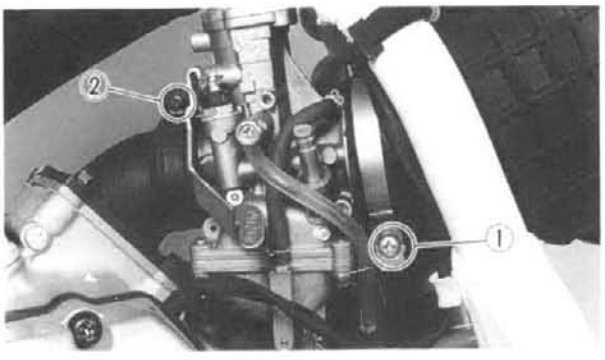
   To carburetor ②.



2. Install:
   - Carburetor (1)

NOTE:

Install the projection (a) between the carburetor joint slots (b).



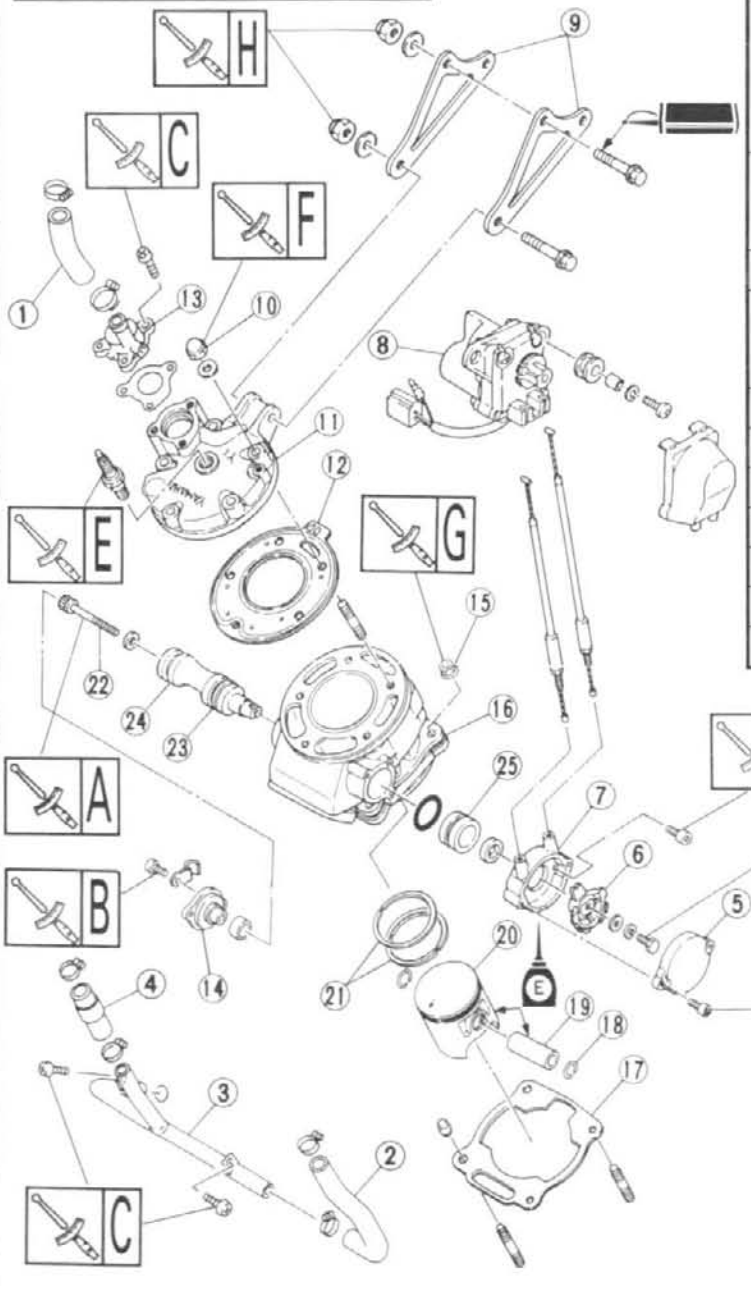
3. Tighten:
   - Screw (air cleaner joint) (1)
   - Screw (carburetor joint) (2)

CYLINDER HEAD, CYLINDER AND PISTON

PREPARATION FOR REMOVAL

* Drain the coolant.
* Remove the following parts:
  - Side cover (left and right)
  - Seat
  - Air scoop (left and right)
  - Fuel tank
  - Exhaust pipe and silencer
  - Plug cap and spark plug
* Disconnect the servomotor lead.

SPARK PLUG:
BR9ES/NGK
SPARK PLUG GAP:
0.7 ~ 0.8 mm (0.028 ~ 0.031 in)



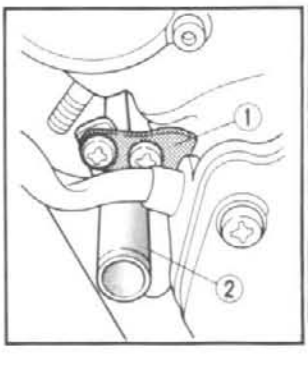
CYLINDER HEAD WARPAGE LIMIT:	0.03 mm (0.0012 in)
PISTON CLEARANCE:	0.045 ~ 0.050 mm (0.0018 ~ 0.0020 in)
PISTON RING SIDE CLEARANCE:	1st: 0.030 ~ 0.070 mm (0.0012 ~ 0.0028 in) 2nd: 0.035 ~ 0.070 mm (0.0014 ~ 0.0028 in)
PISTON RING END GAP (INSTALLED):	0.30 ~ 0.45 mm (0.012 ~ 0.018 in)
A	TIGHTENING STEPS:
	• Tighten the bolt to 6 Nm (0.6 m•kg, 4.3 ft•lb). • Turn the bolt 1/8 of a turn tighter.
B	7 Nm (0.7 m•kg, 5.1 ft•lb)
C	8 Nm (0.8 m•kg, 5.8 ft•lb)
D	10 Nm (1.0 m•kg, 7.2 ft•lb)
E	20 Nm (2.0 m•kg, 14 ft•lb)
F	22 Nm (2.2 m•kg, 16 ft•lb)
G	28 Nm (2.8 m•kg, 20 ft•lb)
H	38 Nm (3.8 m•kg, 27 ft•lb)

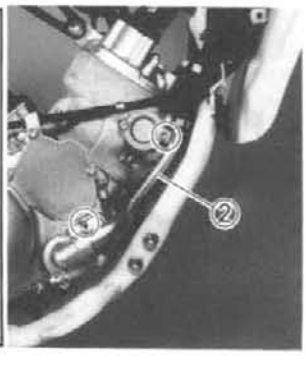
NOTE ON REMOVAL AND REASSEMBLY

- With the engine mounted, the following parts can be removed.
- Before servicing, clean the parts, and take care so that foreign material do not enter the crankcase.
- Remove the gasket adhered on the contacting surface.
- Take care not to scratch the contacting surface when removing the cylinder and cylinder head.
- Take care not to scratch the cylinder and piston surface.
- For reassembly, the removed parts should be cleaned with solvent, and apply the engine oil onto the sliding surface.
- Take care so that the coolant does not enter the crankcase. If the coolant enter the crankcase, clean the inside of the crankcase and apply oil on it.
- When removing the cylinder head, the piston should be positioned at TDC (top dead center).

Extent of removal: ① Cylinder head removal ② Cylinder removal ③ Piston and piston ring removal ④ Power valve removal

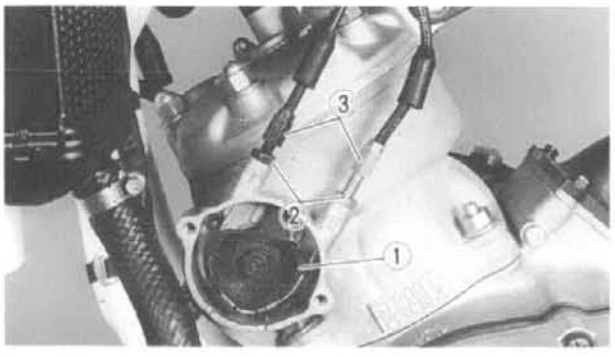
Extent of removal	Order	Part name	Q'ty	Remarks
①	1	Radiator hose 3	1	Refer to "REMOVAL POINTS".
	2	Radiator hose 2	1	
	3	Radiator pipe 1	1	
	4	Radiator hose 6	1	
	5	Pulley cover	1	
④	6	Pulley	1	Refer to "REMOVAL POINTS".
	7	Pulley housing	1	
	8	Servomotor	1	
②	9	Rear upper bracket	2	
①	10	Nut (cylinder head)	5	
③	11	Cylinder head	1	
	12	Cylinder head gasket	1	
	13	Joint 1	1	
④	14	Holder (right)	1	
	15	Nut (cylinder)	4	
	16	Cylinder	1	Refer to "REMOVAL POINTS".
	17	Cylinder gasket	1	
	18	Piston pin clip	1	
	19	Piston pin	1	
	20	Piston	1	
	21	Piston ring	2	
④	22	Bolt (power valve)	1	Refer to "REMOVAL POINTS".
	23	Power valve (left)	1	
	24	Power valve (right)	1	
	25	Holder (left)	1	

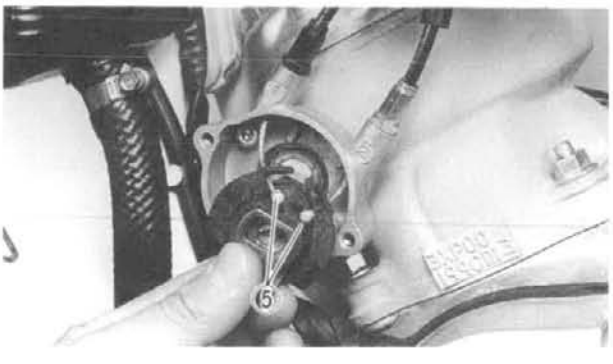


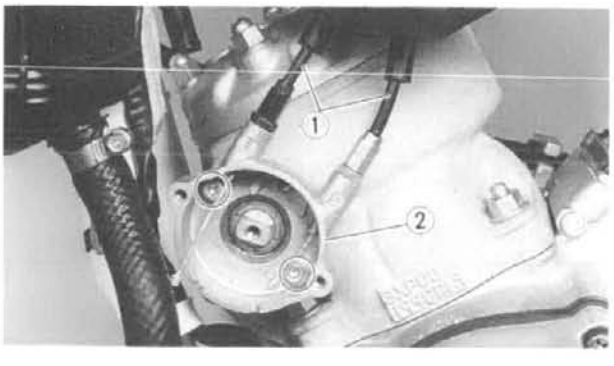


REMOVAL POINTS
RADIATOR PIPE 1

1. Remove:
   - Radiator pipe stay ①
   - Radiator pipe 1 ②





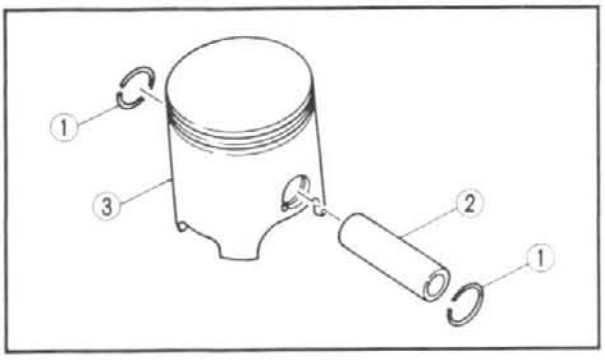


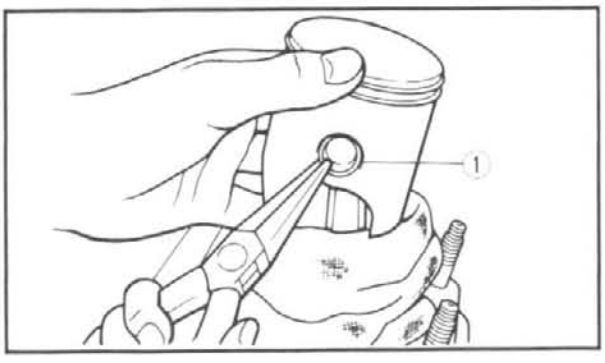
PULLEY

1. Remove:
   - Pulley ①

Removal steps:
- Loosen both locknuts ② and turn in both adjusters ③.
- Insert a pin ④ [ϕ4 mm (ϕ0.16 in)] through the aligning indent in the pulley ① and into the hole to lock the pulley.
- Remove the pulley ① from the power valve and then disconnect the YPVS cables ⑤ from the pulley.
- Remove the pin ④.

2. Remove:
   - YPVS cable ①
   - Pulley housing ②





PISTON AND PISTON RING

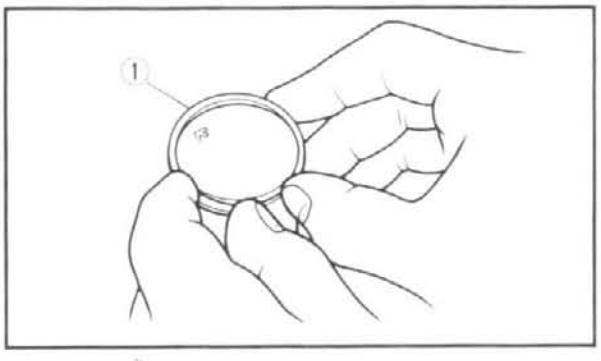
1. Remove:
   - Piston pin clip ①
   - Piston pin ②
   - Piston ③

NOTE:

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

CAUTION:

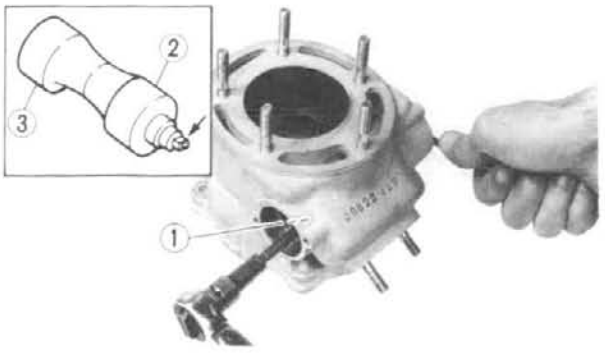
Do not use a hammer to drive the piston pin out.



2. Remove:
   - Piston ring ①

NOTE:

Take care not to scratch the piston and damage the piston ring.

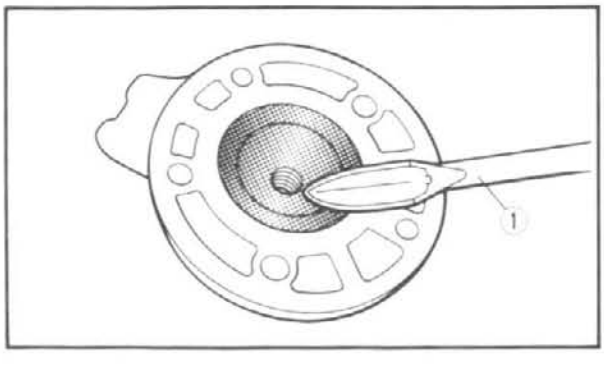


POWER VALVE

1. Remove:
   - Bolt (power valve) ①
   - Power valve (left) ②
   - Power valve (right) ③

NOTE:

Hold the valve (pulley side) by spanner etc. to remove the bolt.



INSPECTION

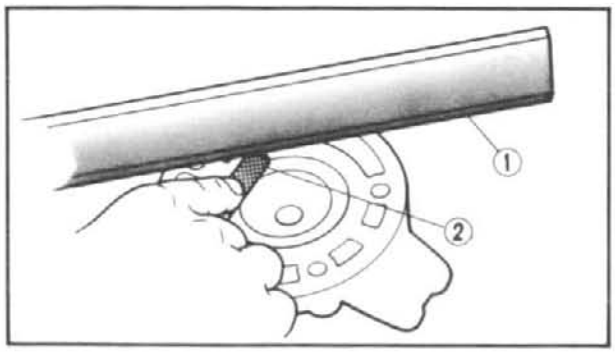
CYLINDER HEAD

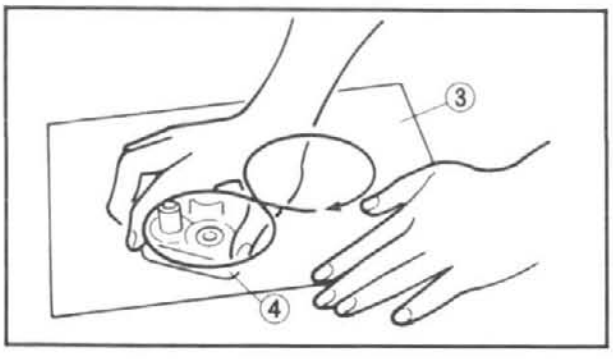
1. Remove:
   - Carbon deposits

   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.

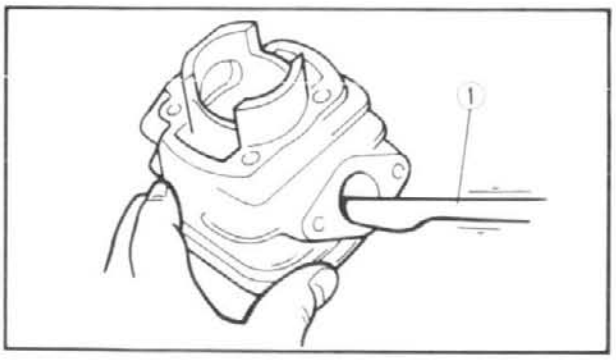
Warpage measurement and re-surfacement steps:
- Attach a straightedge (1) and a thickness gauge (2) on the cylinder head.
- Measure the warpage.

Warpage Limit:
0.03 mm (0.0012 in)

- If the warpage is out of specification, resurface the cylinder head.
- Place a 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 head several times to avoid removing too much material from one side.

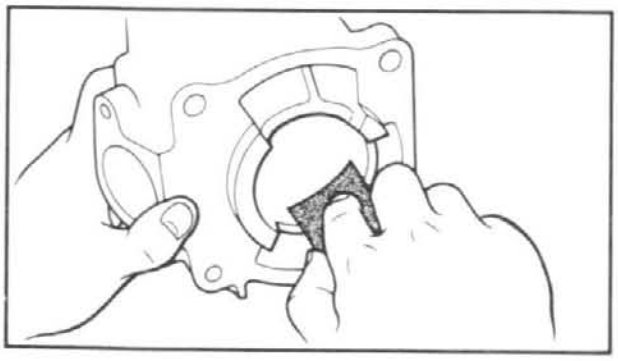


CYLINDER

1. Remove:
   - Carbon deposits
     Use a rounded scraper (1).

NOTE:

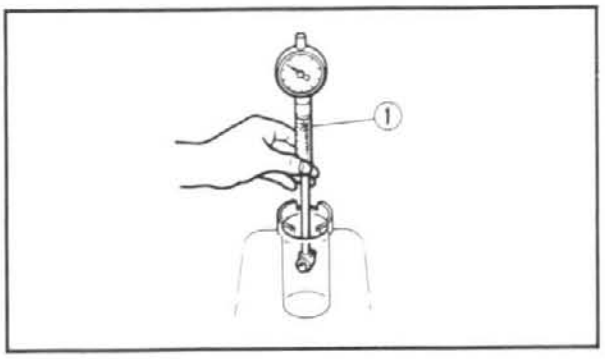
Do not use a sharp instrument. Avoid scratching the aluminum.

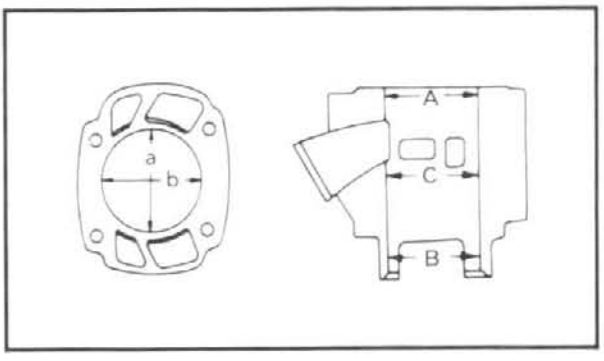


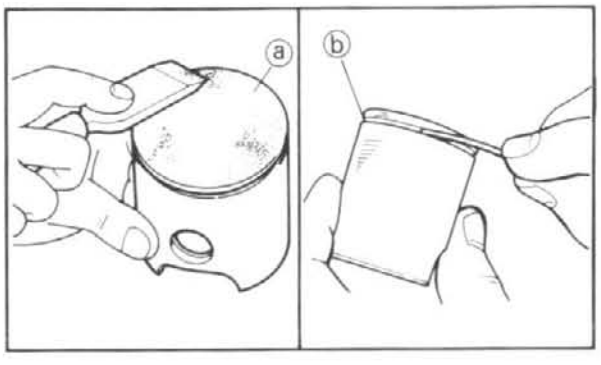
2. Inspect:
   - Cylinder inner surface
     Score marks → Repair or replace.
     Use #600 ~ 800 grit wet sandpaper.

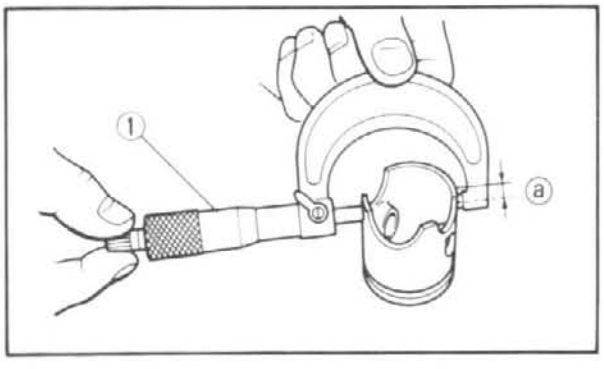
CAUTION:

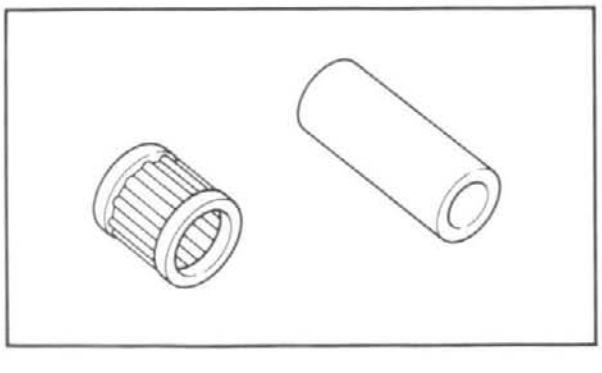
Do not rebore the cylinder.











3. 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
Cylinder Bore "C"	66.800 ~ 66.814 mm (2.6299 ~ 2.6305 in)	66.9 mm (2.634 in)
Taper "T"	—	0.05 mm (0.0020 in)

C = Maximum Aa ~ Cb
T = (Maximum Aa, or Ab) − (Maximum Ba, or Bb)

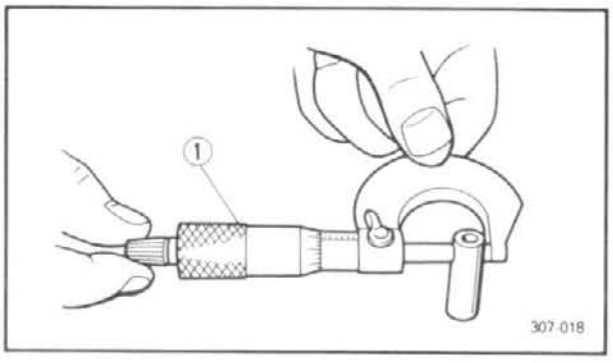
PISTON

1. Remove:
   - Carbon deposits
     From the piston crown (a) and ring groove (b).
2. Inspect:
   - Piston wall
     Score marks → Repair or replace.
3. Measure:
   - Piston skirt diameter
     Use Micrometer (1).
     Measure specific distance (a) from the bottom edge.
     Out of specification → Replace.

Distance (a)	Piston DIA.
15 mm (0.59 in)	66.752 ~ 66.767 mm (2.6280 ~ 2.6286 in)

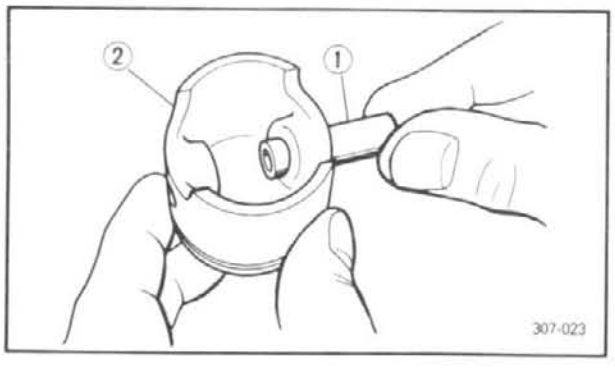
PISTON PIN AND SMALL END BEARING

1. Inspect:
   - Piston pin
   - Small end bearing
     Signs of heat discoloration → Replace.



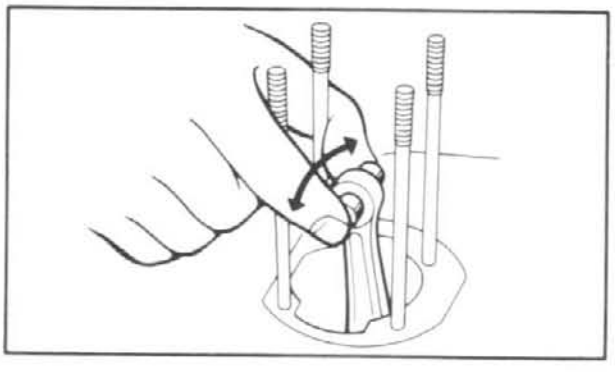
2. Measure:
   - Piston pin outside diameter
     Use micrometer (1).
     Out of limit→Replace.

Piston Pin Outside Diameter:	
Standard	<Limit>
15.995 – 16.000 mm (0.6297 – 0.6299 in)	15.975 mm (0.6289 in)

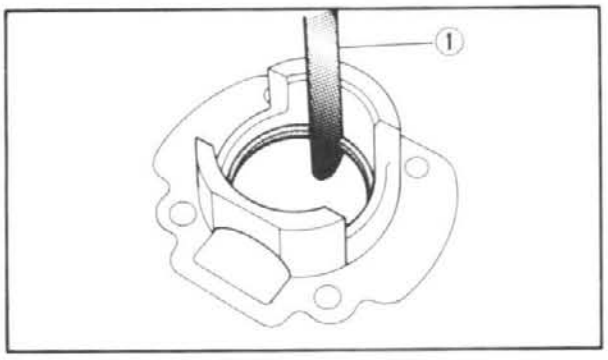


3. Check:
   - Free play (when the piston pin (1) is in place in the piston (2))
     There should be no noticeable for the play.
     Free play exists→Replace piston pin and/or piston.

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.



PISTON RING

1. Install:
   - Piston ring

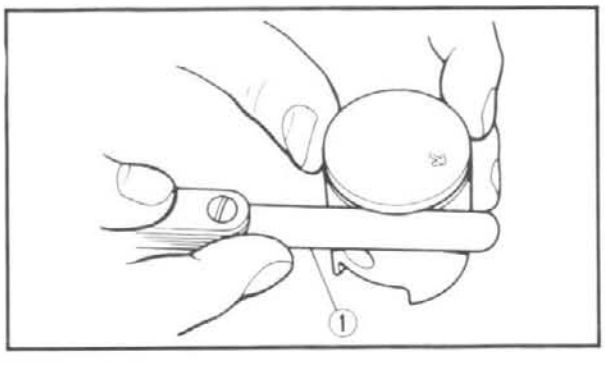
   Into the cylinder.

   Push the ring with the piston crown.
2. Measure:
   - End gap

   Out of specification → Replace rings as a set.

   Using a Thickness Gauge (1).

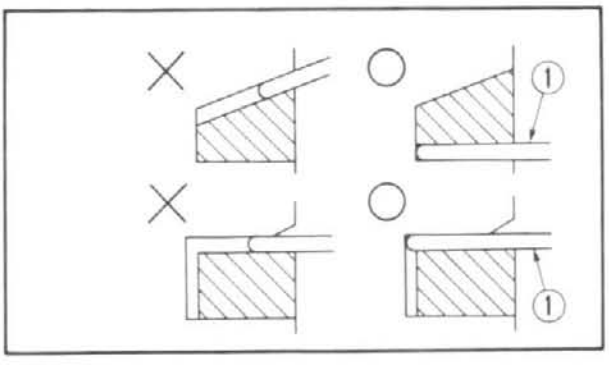
Ring End Gap (Installed):	
Standard	<Limit>
0.30 ~ 0.45 mm (0.012 ~ 0.018 in)	0.8 mm (0.031 in)



3. Measure:
   - Side clearance

   Use a Thickness Gauge (1).

   Out of limit → Replace piston and/or ring.



Side Clearance:		
	Standard	<Limit>
1st	0.030 ~ 0.070 mm (0.0012 ~ 0.0028 in)	0.1 mm (0.004 in)
2nd	0.035 ~ 0.070 mm (0.0014 ~ 0.0028 in)	0.1 mm (0.004 in)

NOTE:

Check at several points.

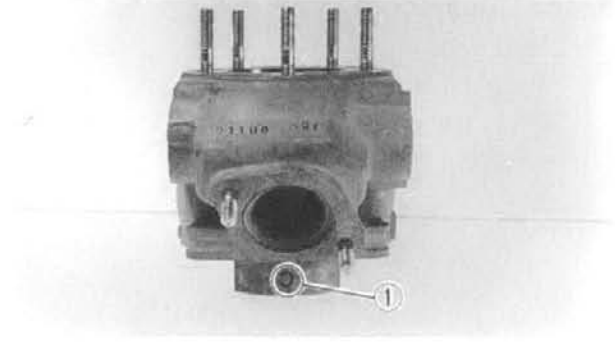
4

PISTON CLEARANCE

1. Calculate:
   - Piston clearance
     Out of limit → Replace piston, and piston ring and/or cylinder.
     Refer to "CYLINDER" and "PISTON".

PISTON CLEALANCE	=	CYLINDER BORE	−	PISTON DIAMETER

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



COMBINATION OF PISTON AND CYLINDER

1. Cylinder mark:

Cylinder mark ①	Cylinder size
A	66.800 ~ 66.802 mm (2.6299 ~ 2.6300 in)
B	66.804 ~ 66.806 mm (2.6301 ~ 2.6302 in)
C	66.808 ~ 66.810 mm (2.6302 ~ 2.6303 in)
D	66.812 ~ 66.814 mm (2.6304 ~ 2.6305 in)

2. Piston indication:

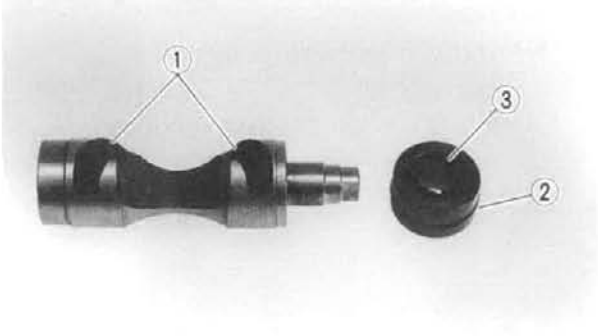
Piston indication ①	Piston size
Red	66.752 ~ 66.755 mm (2.6280 ~ 2.6281 in)
Orange	66.756 ~ 66.759 mm (2.6282 ~ 2.6283 in)
Green	66.760 ~ 66.763 mm (2.6283 ~ 2.6285 in)
Purple	66.764 ~ 66.767 mm (2.6285 ~ 2.6286 in)

3. Combination:
   Combine the piston and cylinder by the following chart.

Cylinder mark	Piston indication
A	Red
B	Orange
C	Green
D	Purple

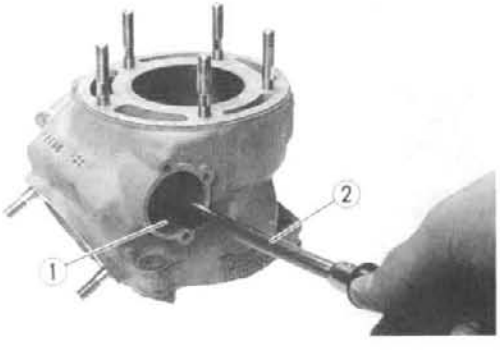
NOTE:

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



POWER VALVE

1. Inspect:
   - Power valve (left and right) ①
     Wear/Damage → Replace.
     Carbon deposits → Remove.
   - O-ring ②
   - Oil seal ③
     Wear/Damage → Replace.

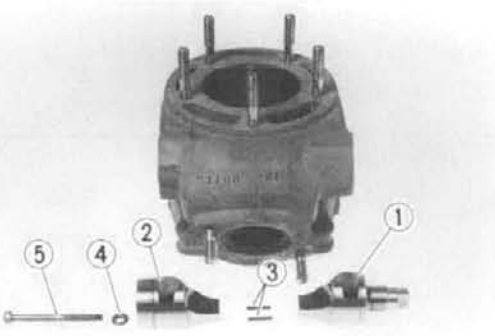


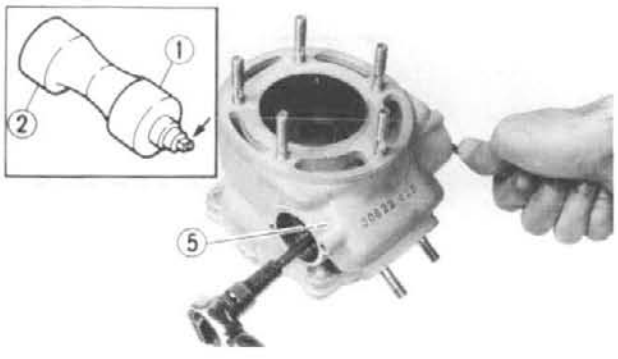
POWER VALVE HOLE ON CYLINDER

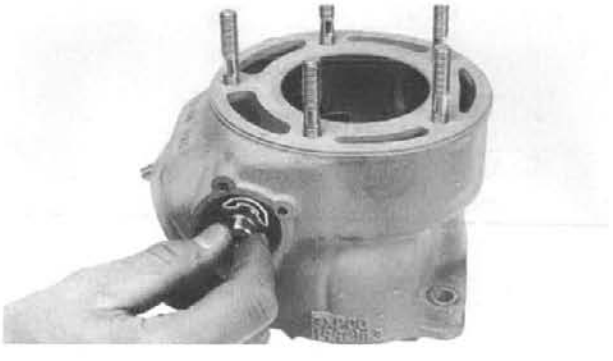
1. Remove:
   - Carbon deposits
     From power valve hole surface ①.
     Use a rounded scraper ②.

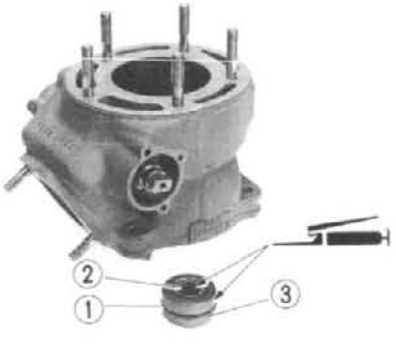
NOTE:

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









ASSEMBLY AND INSTALLATION

POWER VALVE

1. Install:
   - Power valve (left) ①
   - Power valve (right) ②
   - Dowel pin ③
   - Plain washer ④
   - Bolt (power valve) ⑤

Bolt (power valve) tightening steps:
- Tighten the bolt ⑤ using the torque wrench.

Bolt (Initial Tightening):
6 Nm (0.6 m•kg, 4.3 ft•lb)

- Turn the bolt ⑤ 1/8 of a turn tighter.

NOTE:

Hold the valve (pulley side) by spanner etc. to install the bolt.

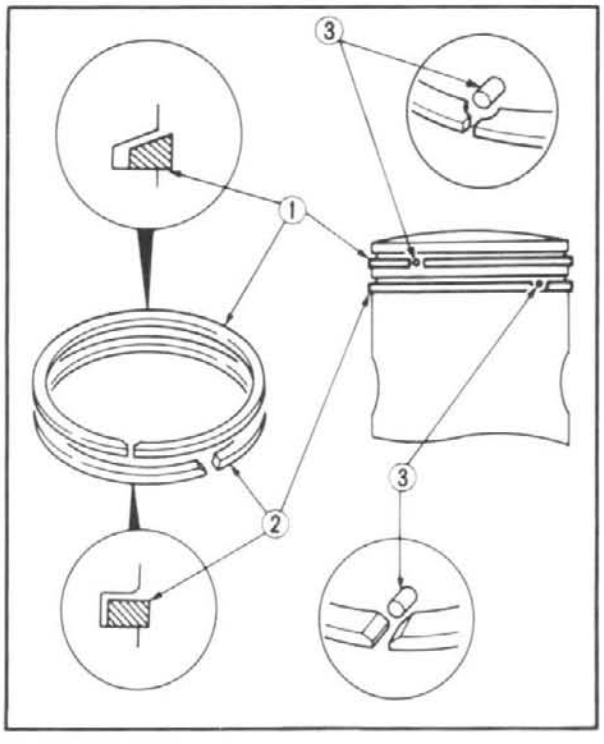
2. Check:
   - Power valve smooth movement
     Sticks→Repair.
     Use #600 – 800 grit wet sandpaper.

3. Install:
   - O-ring ①
   - Oil seal ②
   - Holder (right) ③

NOTE:

- Always use a new O-ring.
- Apply the lithium soap base grease on the O-ring and oil seal lip.

4



PISTON RING AND PISTON

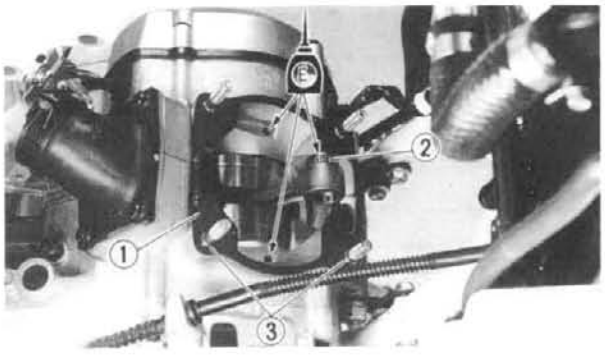
1. Install:
   - Top ring (keystone) ①
   - 2nd ring (plain) ②

NOTE:

- Align the piston ring gap with the pin ③.
- After installing the piston ring, check the smooth movement of it.

CAUTION:

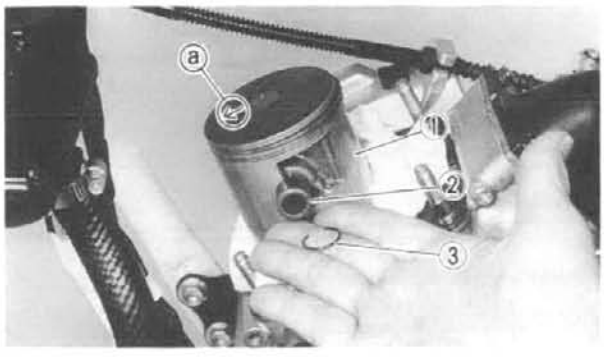
Take care not to scratch the piston and damage the piston ring.



2. Install:
   - Cylinder gasket ①
   - Small end bearing ②
   - Dowel pin ③

NOTE:

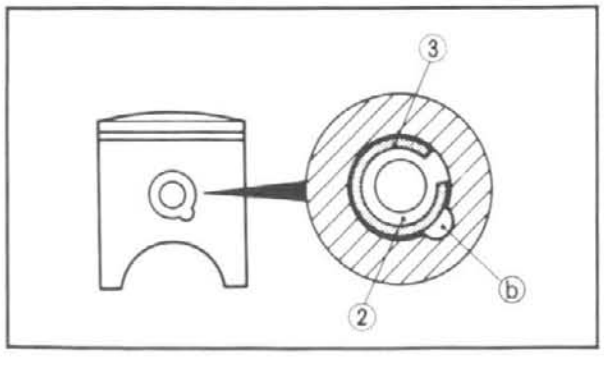
- Apply the engine mixing oil onto the bearing (crankshaft and connecting rod).
- Always use a new gasket.



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

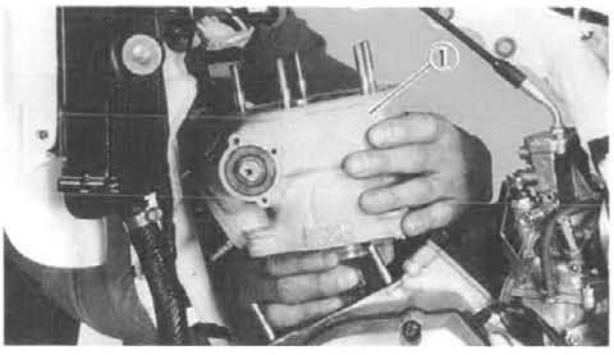
NOTE:

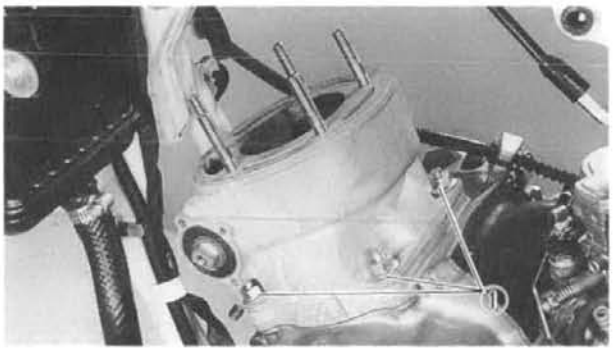
- The arrow ⓐ on piston dome must face forward.
- Before installing piston pin clip, cover crankcase with a clean rag to prevent piston pin clip from falling into crankcase cavity.

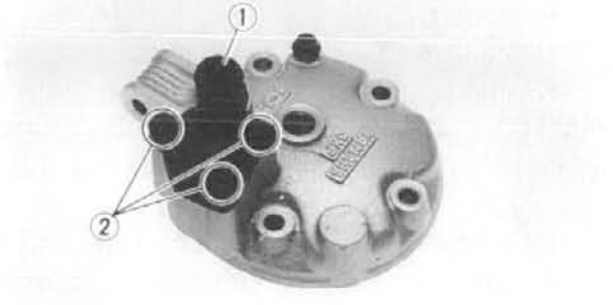


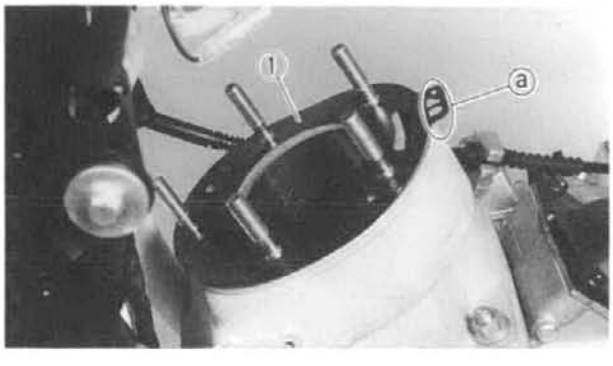
CAUTION:

- **Do not allow the clip open ends to meet the piston slot ⓑ.**
- **Always use a new piston pin clip.**









CYLINDER HEAD AND CYLINDER

1. Apply:
   - Engine mixing oil

   To piston ①, piston ring ② and cylinder surface.

2. Install:
   - Cylinder ①

CAUTION:

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

NOTE:

After installing, check the smooth movement of the piston.

3. Install:
   - Nut (cylinder) ①

NOTE:

Tighten the nuts in stage, using a diagonal pattern.

	Nut (Cylinder): **28 Nm (2.8 m•kg, 20 ft•lb)**

4. Install:
   - Joint 1 gasket
   - Joint 1 ①
   - Screw (Joint 1) ②

NOTE:

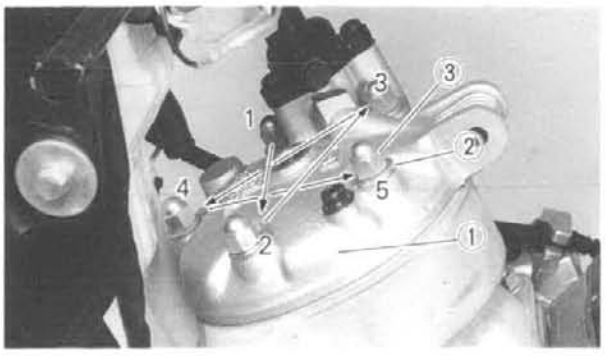
Always use a new gasket.

	Screw (Joint 1): **8 Nm (0.8 m•kg, 5.8 ft•lb)**

5. Install:
   - Cylinder head gasket ①

NOTE:

- Always use a new gasket.
- Install the gasket so that the "UP" mark ⓐ face upward.

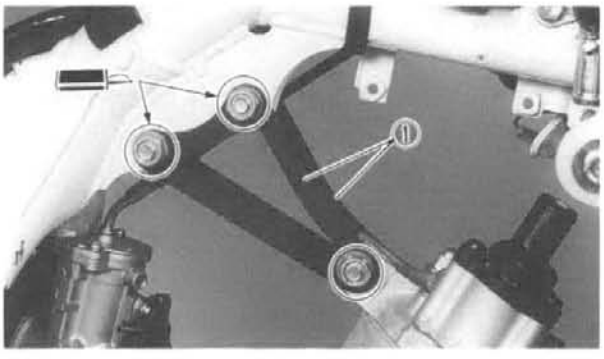


6. Install:
   - Cylinder head ①
   - Plain washer ②
   - Nut (cylinder head) ③

NOTE:

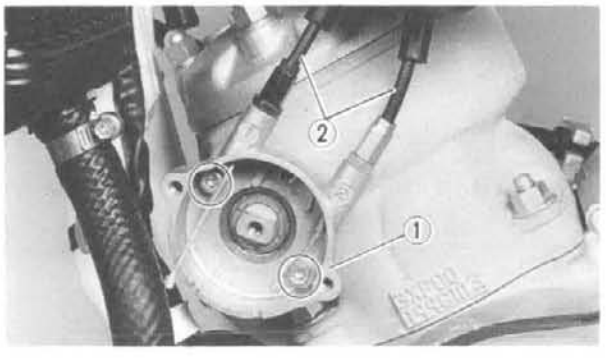
Tighten the nuts (cylinder head) ③ in stage, using a diagonal pattern.

	Nut (Cylinder Head): **22 Nm (2.2 m•kg, 16 ft•lb)**



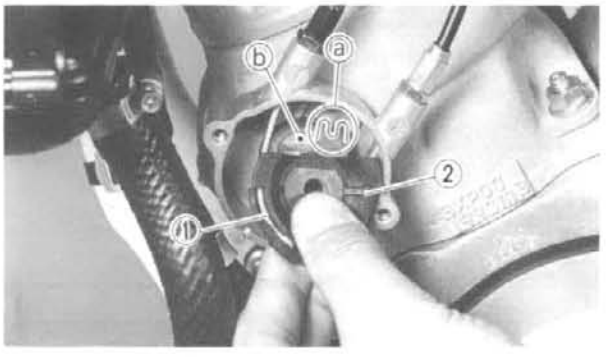
7. Install:
   - Rear upper bracket ①

	Bolt **(Rear Upper Bracket—Frame):** **38 Nm (3.8 m•kg, 27 ft•lb)** **LOCTITE®** **Bolt** **(Rear Upper Bracket—Engine):** **38 Nm (3.8 m•kg, 27 ft•lb)**



8. Install:
   - Servomotor
   - Pulley housing ①
   - YPVS cable ②

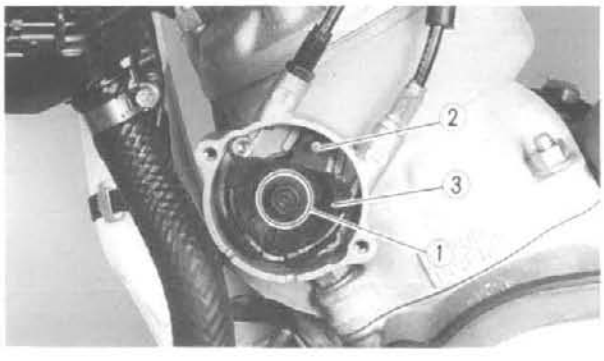
	Bolt (Pulley Housing): **7 Nm (0.7 m•kg, 5.1 ft•lb)**



9. Install:
   - YPVS cable ①
   - Pulley ②

NOTE:

Align the indent ⓐ on the pulley with the punch mark ⓑ on the valve.

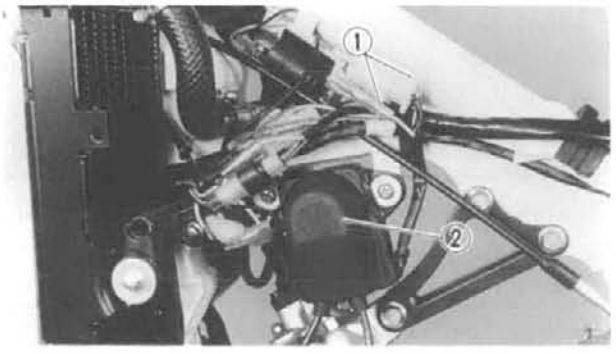


10. Install:
    - Bolt (pulley) ①

NOTE:

Insert a pin ② [ϕ4 mm (ϕ0.16 in)] through the aligning indent in the pulley ③ and into the hole to lock the pulley.

	Bolt (Pulley): **10 Nm (1.0 m•kg, 7.2 ft•lb)**

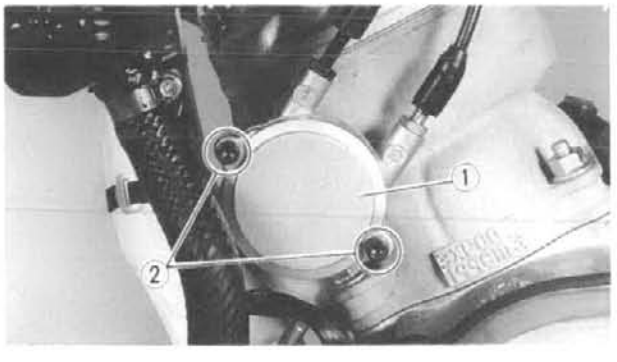


11. Connect:
    - YPVS servomotor lead ①

12. Install:
    - YPVS servomotor cover ②

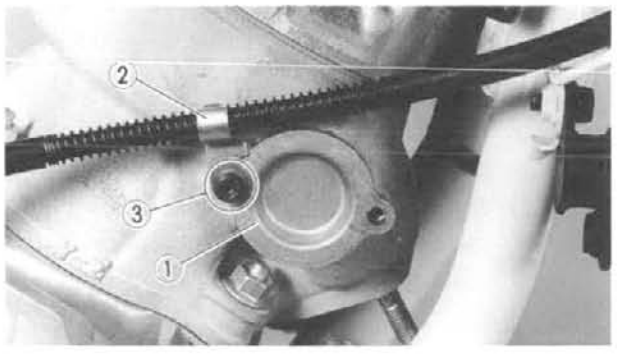
13. Adjust:
    - YPVS cable

    Refer to the "YPVS CABLE ADJUSTMENT" section in the CHAPTER 3.



14. Install:
    - Pulley cover gasket
    - Pulley cover ①
    - Bolt (pulley cover) ②

	Bolt (Pulley Cover): **7 Nm (0.7 m•kg, 5.1 ft•lb)**

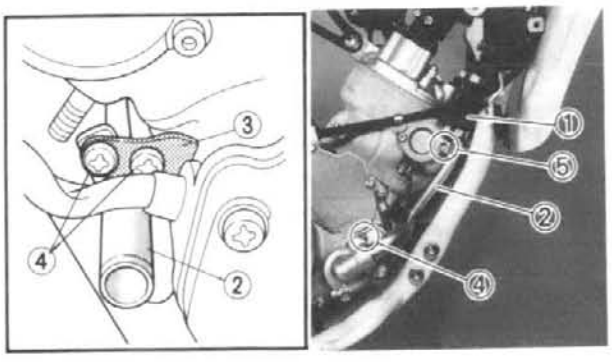


15. Install:
    - Holder (right) gasket
    - Holder (right) ①
    - Clamp ②
    - Bolt (holder right) ③

NOTE:

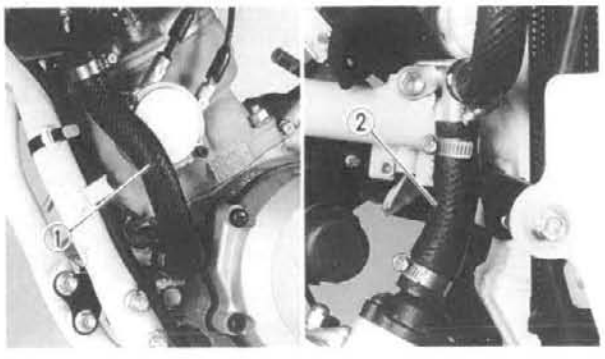
Always use a new gasket.

	Bolt (Holder Right): **7 Nm (0.7 m•kg, 5.1 ft•lb)**



16. Install:
- Radiator hose 6 (1)
- Radiator pipe 1 (2)
- Radiator pipe stay (3)
- Screw (radiator pipe 1) (4)
- Bolt (radiator pipe 1) (5)

Screw (Radiator Pipe 1):
8 Nm (0.8 m•kg, 5.8 ft•lb)
Bolt (Radiator Pipe 1):
7 Nm (0.7 m•kg, 5.1 ft•lb)



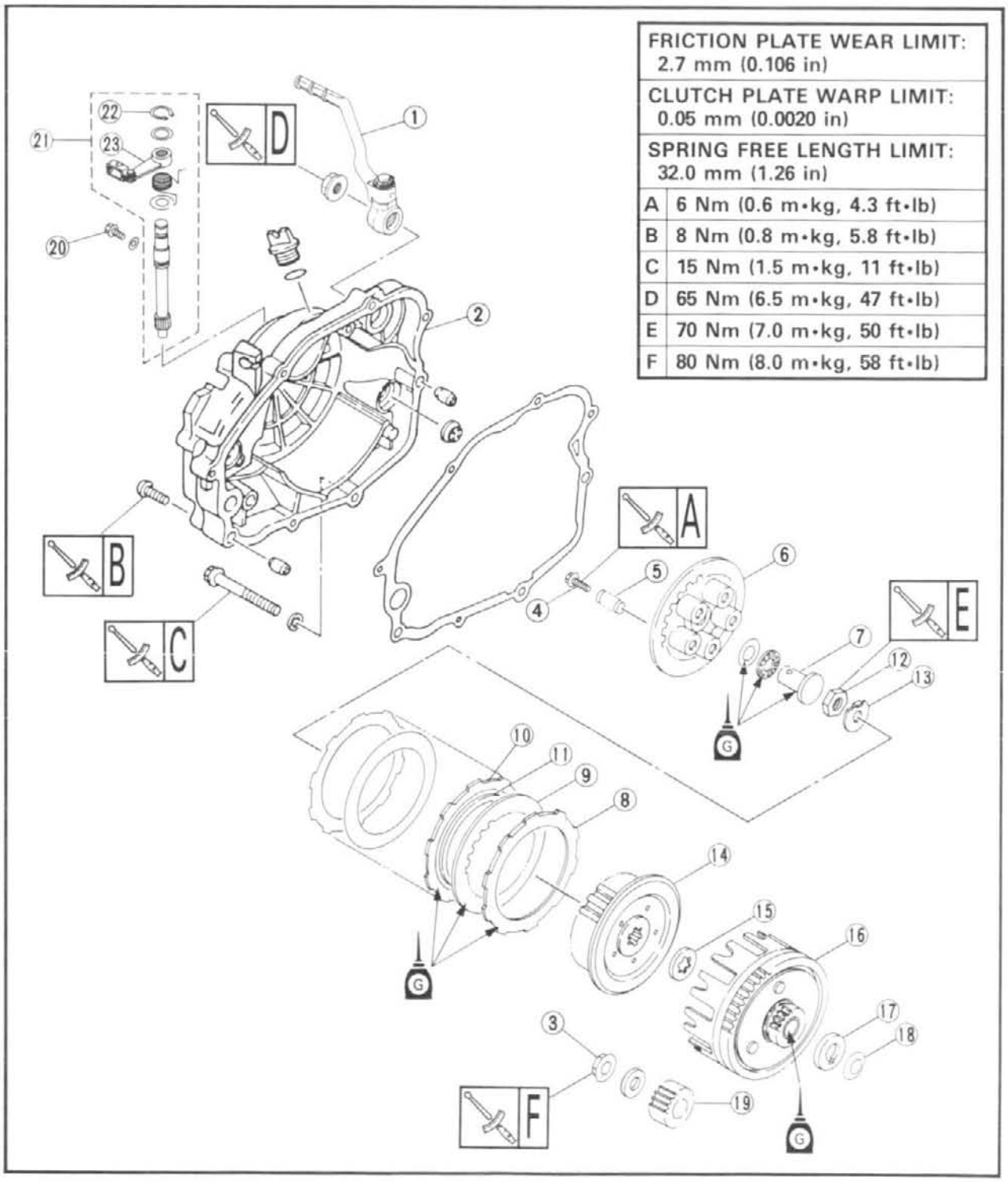
17. Connect:
- Radiator hose 2 (1)
- Radiator hose 3 (2)

CLUTCH, PRIMARY DRIVEN GEAR AND PRIMARY DRIVE GEAR

PREPARATION FOR REMOVAL

* Drain the transmission oil.
* Drain the coolant.
* Disconnect the clutch cable at engine side.
* Remove the following parts:
  - Exhaust pipe and silencer
  - Radiator pipe 1
  - Brake pedal

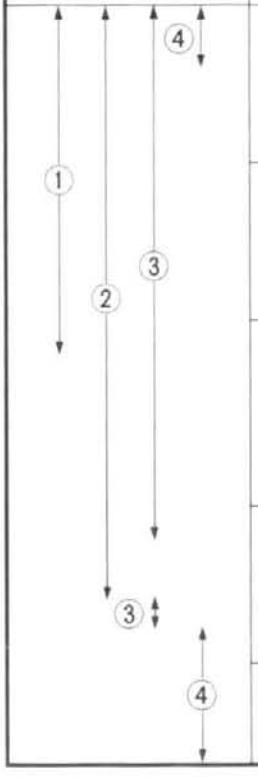
FRICTION PLATE WEAR LIMIT: 2.7 mm (0.106 in)	
CLUTCH PLATE WARP LIMIT: 0.05 mm (0.0020 in)	
SPRING FREE LENGTH LIMIT: 32.0 mm (1.26 in)	
A	6 Nm (0.6 m•kg, 4.3 ft•lb)
B	8 Nm (0.8 m•kg, 5.8 ft•lb)
C	15 Nm (1.5 m•kg, 11 ft•lb)
D	65 Nm (6.5 m•kg, 47 ft•lb)
E	70 Nm (7.0 m•kg, 50 ft•lb)
F	80 Nm (8.0 m•kg, 58 ft•lb)

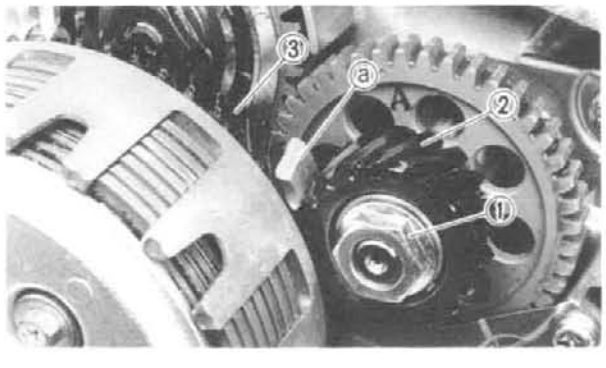


NOTE ON REMOVAL AND REASSEMBLY

- With the engine mounted, the following parts can be removed.
- Before servicing, clean the parts, and take care so that foreign material do not enter the crankcase.
- Remove the gasket adhered on the contacting surface.
- For reassembly, the removed parts should be cleaned with solvent, and apply the transmission oil onto the sliding surface.

Extent of removal: ① Clutch plate and friction plate removal ② Primary driven gear removal ③ Primary drive gear removal ④ Push lever axle removal

Extent of removal	Order	Part name	Q'ty	Remarks
	1	Kick starter	1	
	2	Crankcase cover (right)	1	
	3	Nut (primary drive gear)	1	Refer to "REMOVAL POINTS".
	4	Screw (clutch spring)	5	
	5	Clutch spring	5	
	6	Pressure plate	1	
	7	Push rod	1	
	8	Friction plate 1	6	
	9	Clutch plate	6	
	10	Friction plate 2	1	
	11	Cushion spring	1	
	12	Nut (clutch boss)	1	Use special tool. Refer to "REMOVAL POINTS".
	13	Lock washer	1	
	14	Clutch boss	1	
	15	Thrust plate	1	
	16	Primary driven gear	1	
	17	Plain washer	1	
	18	Conical washer	1	
	19	Primary drive gear	1	
	20	Bolt (push lever axle)	1	Refer to "REMOVAL POINTS".
	21	Push lever axle	1	
	22	Circlip	1	
	23	Push lever	1	



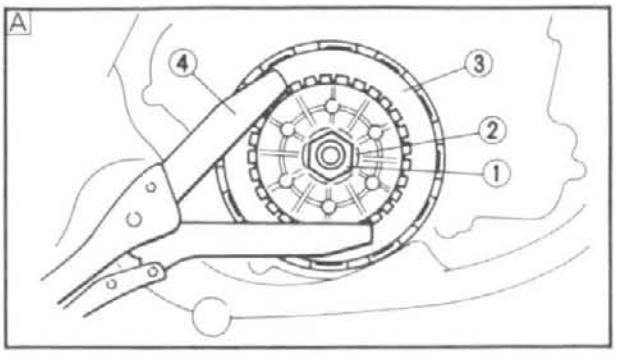
REMOVAL POINTS

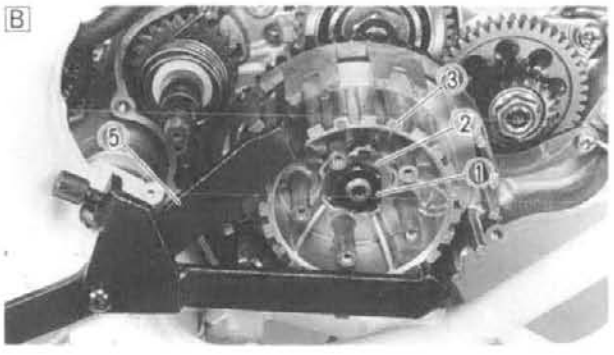
PRIMARY DRIVE GEAR

1. Loosen:
   - Nut (primary drive gear) ①

NOTE:

Place an alminum plate ⓐ between the teeth of the primary drive gear ② and driven gear ③.





CLUTCH BOSS

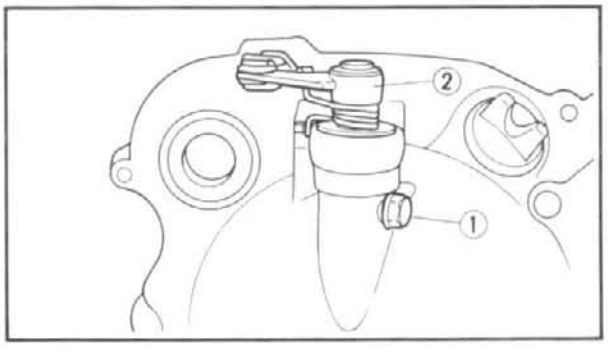
1. Remove:
   - Nut ①
   - Lock washer ②
   - Clutch boss ③

NOTE:

Straighten the lock washer tab and use the Clutch Holder ④, ⑤ to hold the clutch boss.

Clutch Holder:
YM-91042 ..... ④
90890-04086 ..... ⑤

A For USA
B Except for USA

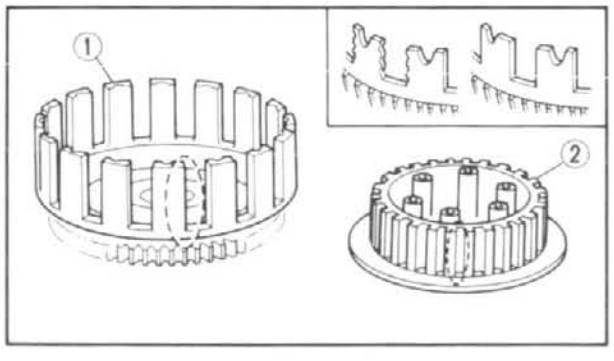


PUSH LEVER AXLE

1. Remove:
   - Bolt ①
   - Push lever axle ②

NOTE:

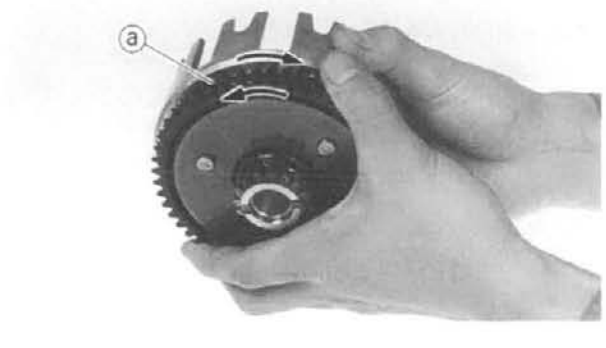
Remove the bolt and pull out the push lever axle.



INSPECTION

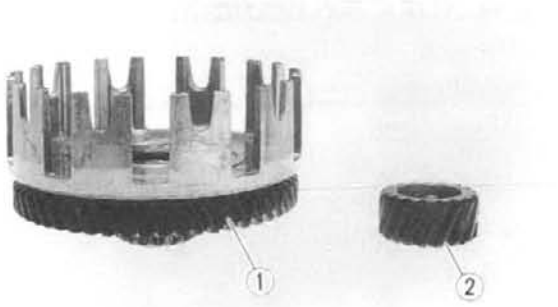
CLUTCH HOUSING AND BOSS

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



PRIMARY DRIVEN GEAR

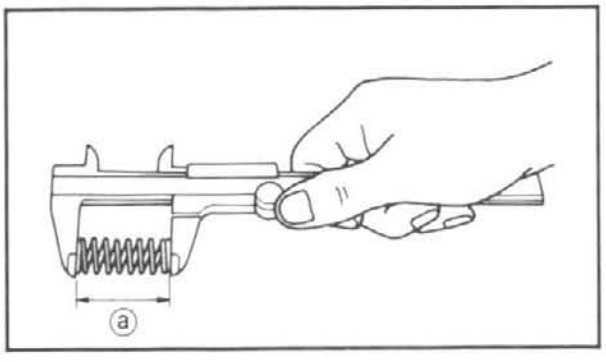
1. Check:
   - Circumferential play
     Free play exists → Replace.
   - Gear teeth ⓐ
     Wear/Damage → Replace.



PRIMARY DRIVE GEAR AND DRIVEN GEAR

1. Inspect:
   - Primary driven gear ①
   - Primary drive gear ②

   Wear/Damage → Replace.

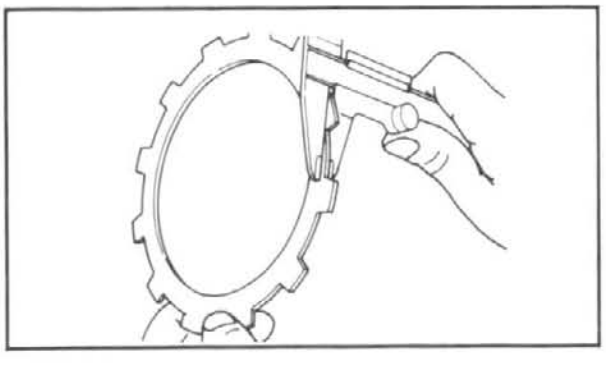


CLUTCH SPRING

1. Measure:
   - Clutch spring free length ⓐ

   Out of specification → Replace spring as a set.

Clutch Spring Minimum Length:	
Standard	<Limit>
34.5 mm (1.36 in)	32.0 mm (1.26 in)



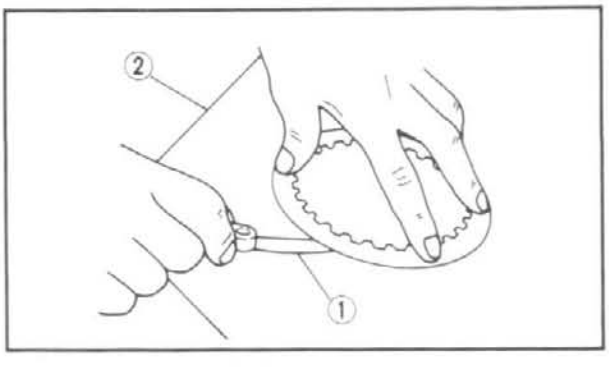
FRICTION PLATE

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)	2.7 mm (0.106 in)



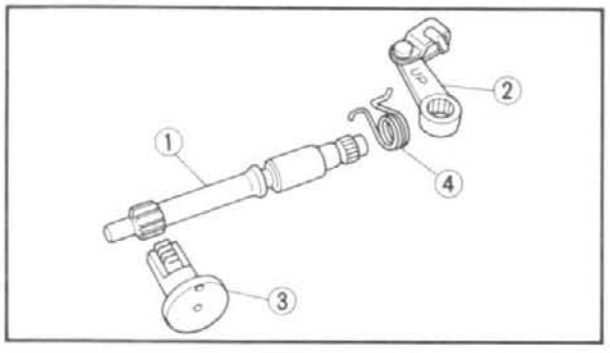
CLUTCH PLATE

1. Measure:
   - Clutch plate warpage

   Out of specification → Replace clutch plate as a set.

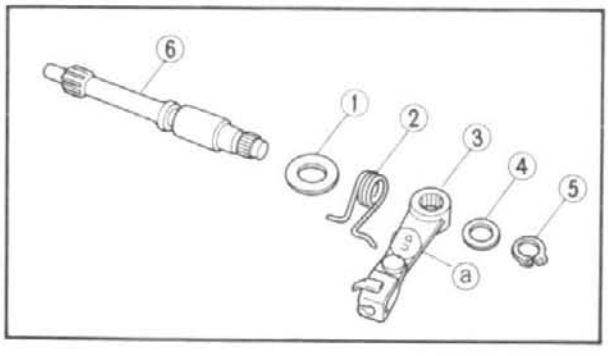
   Use a surface plate ② and thickness gauge ①.

Warp Limit: 0.05 mm (0.0020 in)



PUSH LEVER AXLE AND PUSH ROD

1. Inspect:
   - Push lever axle ①
   - Push lever ②
   - Push rod ③
     Wear/Damage → Replace.
   - Torsion spring ④
     Broken → Replace.



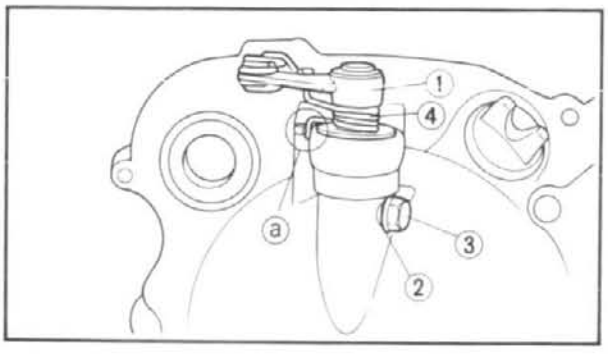
ASSEMBLY AND INSTALLATION

PUSH LEVER AXLE

1. Install:
   - Plain washer [φ25 mm (φ0.98 in)] ①
   - Torsion spring ②
   - Push lever ③
   - Plain washer [φ16 mm (φ0.63 in)] ④
   - Circlip ⑤
     To push lever axle ⑥.

NOTE:

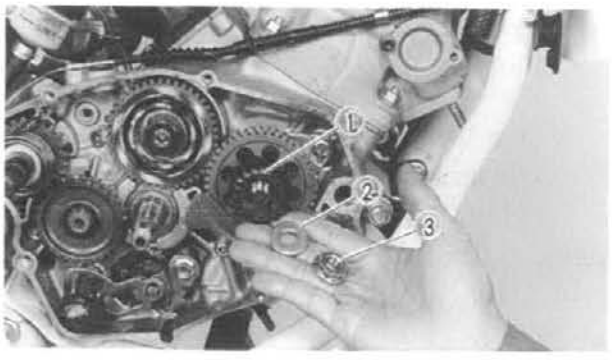
Install the push lever so that the "UP" mark ⓐ face upward.



2. Install:
   - Push lever axle ①
   - Copper washer ②
   - Bolt (push lever axle) ③

NOTE:

Align the torsion spring end ④ with the slot ⓐ.

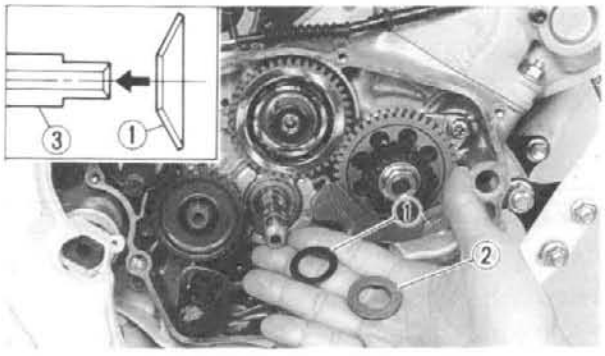


CLUTCH

1. Install:
   - Primary drive gear ①
   - Plain washer ②
   - Nut (primary drive gear) ③

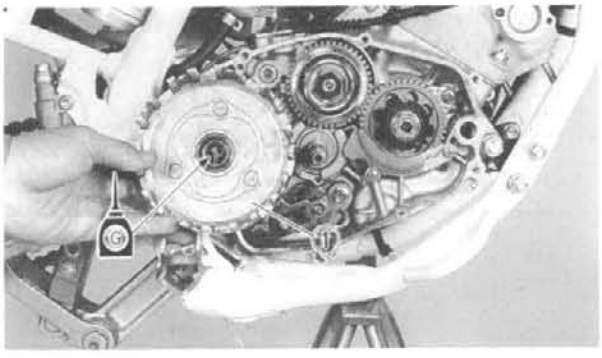
NOTE:

Temporarily tighten the nut.



2. Install:
   - Conical washer (1)
   - Plain washer (2)

NOTE:
Install the conical washer to the main axle (3) as shown in the illustration.

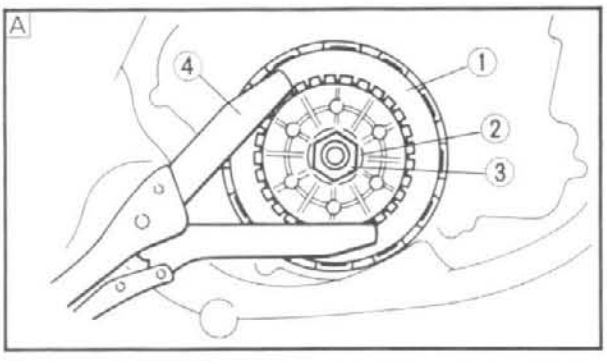


3. Install:
   - Primary driven gear (1)

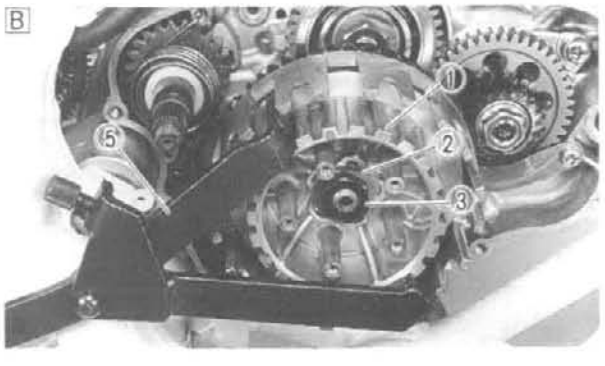
NOTE:
Apply the transmission oil onto the primary driven gear.

4. Install:
   - Thrust plate (1)
   - Clutch boss (2)

A



B



5. Install:
   - Clutch boss (1)
   - Lock washer (2)
   - Nut (clutch boss) (3)

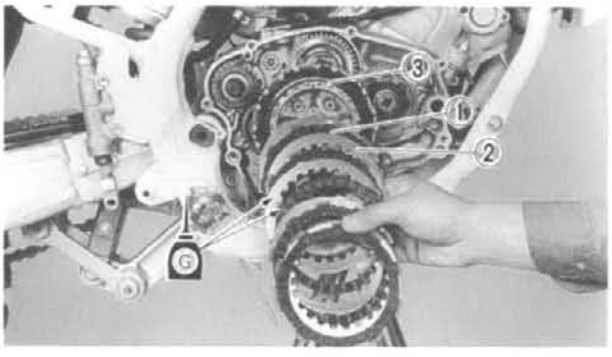
NOTE:
- Always use a new lock washer.
- Use the Clutch Holder (4), (5) to hold the clutch boss.

Clutch Holder:	
YM-91042	(4)
90890-04086	(5)

A For USA
B Except for USA

Nut (Clutch Boss):	
70 Nm (7.0 m•kg, 50 ft•lb)	

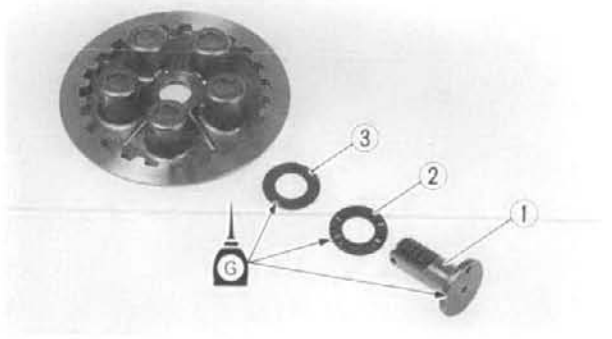
6. Bend the lock washer tab.



7. Install:
   - Friction plates ①
   - Clutch plates ②
   - Cushion spring ③

NOTE:

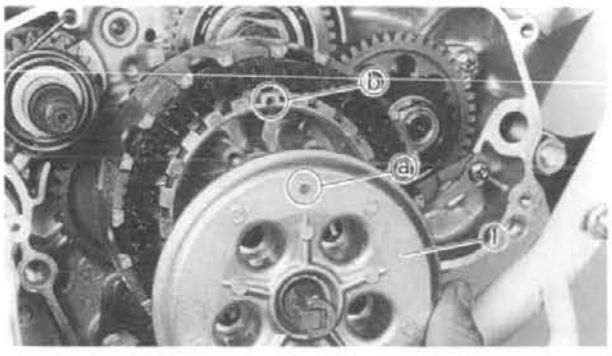
- Install the clutch plates and friction plates alternately on the clutch boss, starting with a friction plate and ending with a friction plate.
- Apply the transmission oil onto the friction plates and clutch plates.
- Friction plates are two type:
  Smaller friction plate should be installed at 2nd place from inside.
- Cushion spring should be installed at 2nd place from inside with smaller friction plate.



8. Install:
   - Push rod ①
   - Bearing ②
   - Plain washer ③

NOTE:

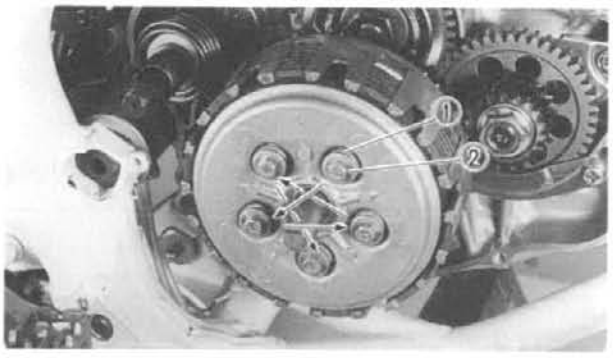
Apply the transmission oil onto the bearing and push rod.



9. Install:
   - Pressure plate ①

NOTE:

Make sure the alignment mark ⓐ on the pressure plate fits on the alignment mark ⓑ on the clutch boss.

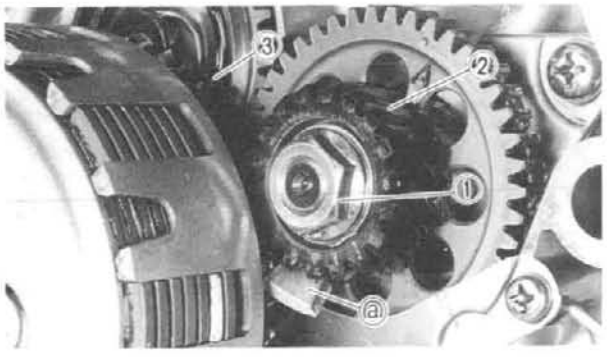


10. Install:
    - Clutch spring ①
    - Screw (clutch spring) ②

NOTE:

Tighten the screws in stage, using a diagonal pattern.

	Screws (Clutch Spring): **6 Nm (0.6 m•kg, 4.3 ft•lb)**

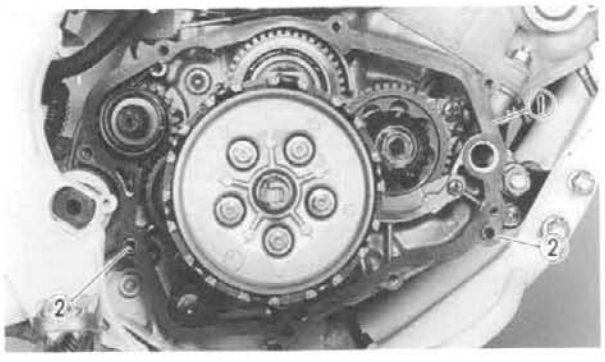


11. Tighten:
    - Nut (primary drive gear) ①

	Nut (Primary Drive Gear): **80 Nm (8.0 m•kg, 58 ft•lb)**

NOTE:

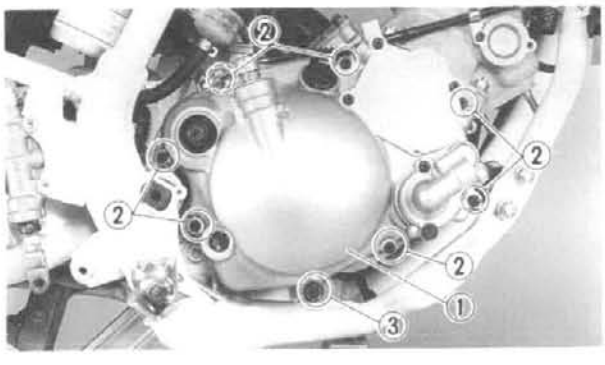
Place an aluminum plate ⓐ between the teeth of the primary drive gear ② and driven gear ③.



12. Install:
    - Crankcase cover (right) gasket ①
    - Dowel pin ②

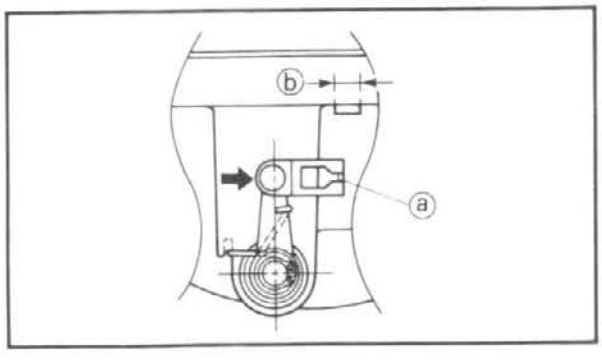
NOTE:

Always use a new gasket.



13. Install:
    - Crankcase cover (right) ①
    - Screw (crankcase cover right) ②
    - Oil drain bolt ③

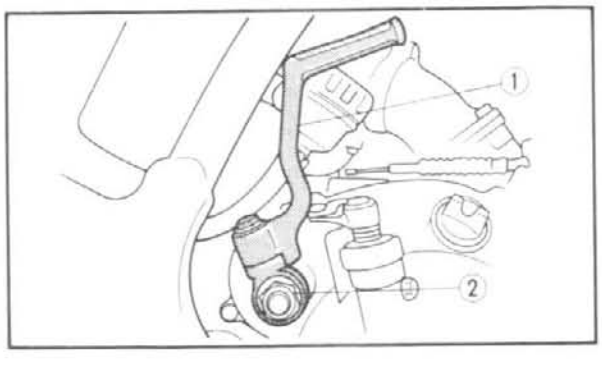
	Screw (Crankcase Cover Right): **8 Nm (0.8 m•kg, 5.8 ft•lb)** **Oil Drain Bolt:** **15 Nm (1.5 m•kg, 11 ft•lb)**



14. Check:
    - Push lever position

NOTE:

When pushing the push lever forward, the forward edge ⓐ of the push lever should be positioned between area ⓑ.



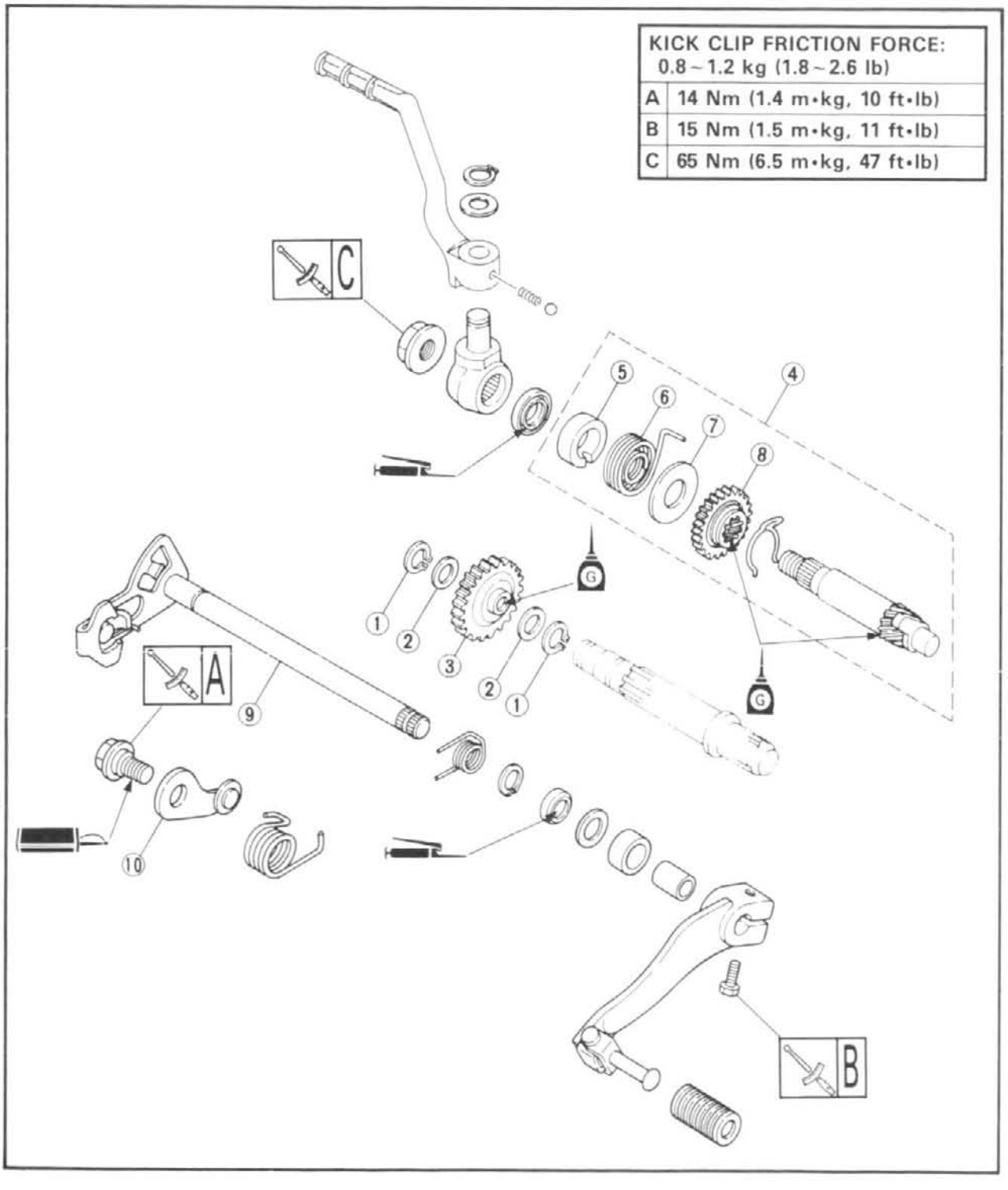
15. Install:
    - Kick starter ①
    - Nut (kick starter) ②

	Nut (Kick Starter): **65 Nm (6.5 m•kg, 47 ft•lb)**

KICK AXLE AND SHIFT SHAFT

PREPARATION FOR REMOVAL

* Drain the transmission oil.
* Drain the coolant.
* Remove the following parts.
  - Crankcase cover (right)
  - Primary driven gear
  - Shift pedal

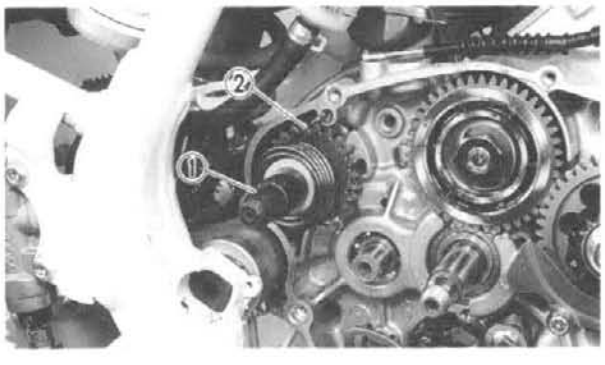


NOTE ON REMOVAL AND REASSEMBLY

- With the engine mounted, the following parts can be removed.
- Before servicing, clean the parts, and take care so that foreign material do not enter the crankcase.
- Remove the gasket adhered on the contacting surface.
- For reassembly, the removed parts should be cleaned with solvent, and apply the transmission oil onto the sliding surface.

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
①	1	Circlip	2	
	2	Plain washer	2	
	3	Kick idle gear	1	
	4	Kick axle assembly	1	Refer to "REMOVAL POINTS".
	5	Spring guide	1	
②	6	Torsion spring	1	
	7	Plain washer	1	
	8	Kick gear	1	
	9	Shift shaft	1	
	10	Stopper lever	1	



REMOVAL POINTS

KICK AXLE ASSEMBLY

1. Remove:
   - Kick axle assembly ①

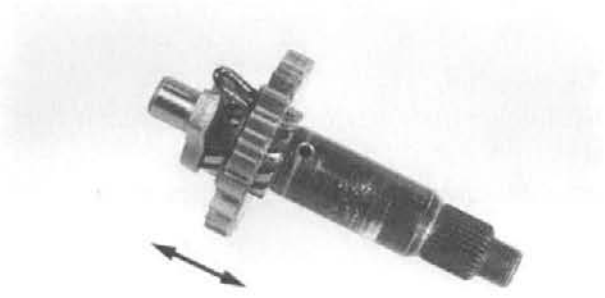
NOTE:

Unhook the torsion spring ② from the stopper.

INSPECTION

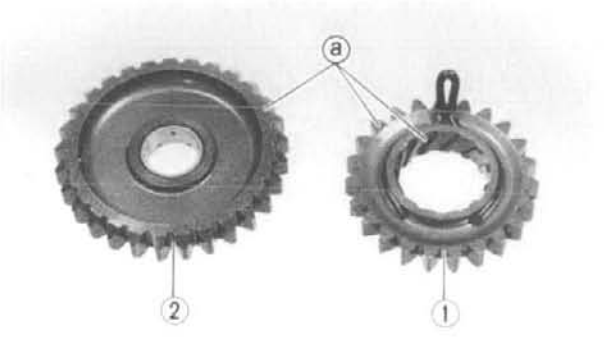
KICK AXLE

1. Inspect:
   - Kick axle ①
     Wear/Damage → Replace.



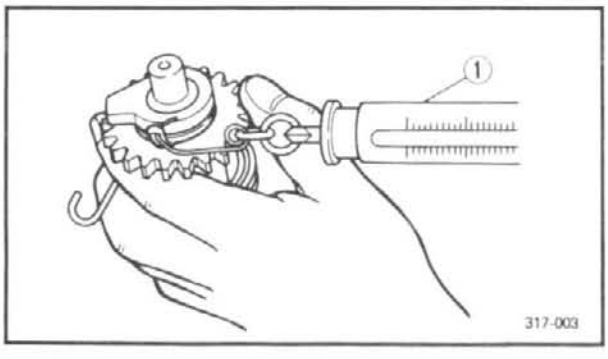
KICK AXLE AND KICK GEAR

1. Check:
   - Kick gear smooth movement
     Unsmooth movement → Replace.



KICK GEAR AND KICK IDLE GEAR

1. Inspect:
   - Kick gear ①
   - Kick idle gear ②
   - Gear teeth ⓐ
     Wear/Damage → Replace.



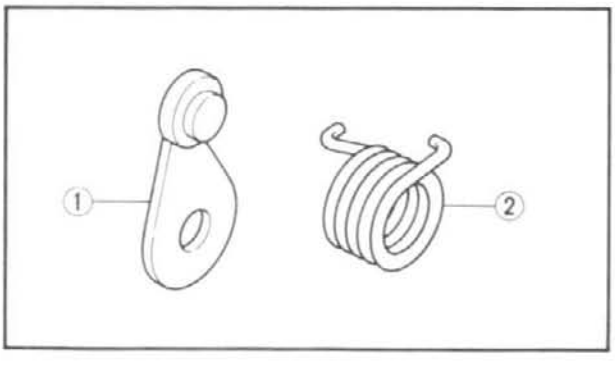
KICK GEAR CLIP

1. Measure:
   - Kick clip friction force
     Out of specification → Replace.
     Use a spring gauge ①.

Kick Clip Friction Force:
0.8 ~ 1.2 kg (1.8 ~ 2.6 lb)

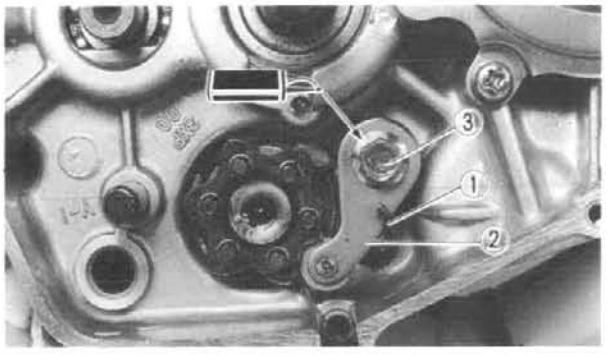
SHIFT SHAFT

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



STOPPER LEVER

1. Inspect:
   - Stopper lever ①
     Wear/Damage → Replace.
   - Torsion spring ②
     Broken → Replace.



ASSEMBLY AND INSTALLATION

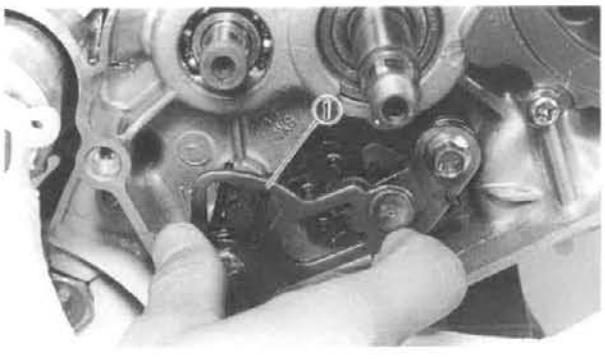
STOPPER LEVER

1. Install:
   - Torsion spring ①
   - Stopper lever ②
   - Bolt (stopper lever) ③

NOTE:

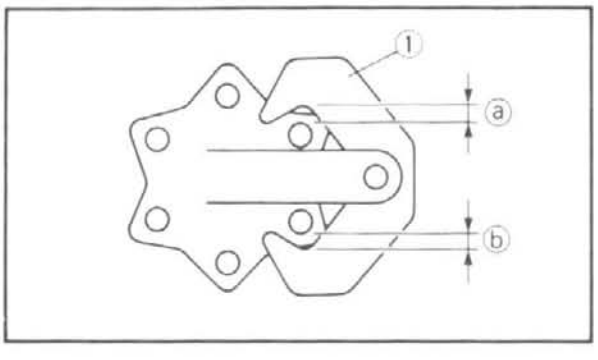
Align the stopper lever roller with the slot on segment.

Bolt (Stopper Lever):
14 Nm (1.4 m•kg, 10 ft•lb)
LOCTITE®

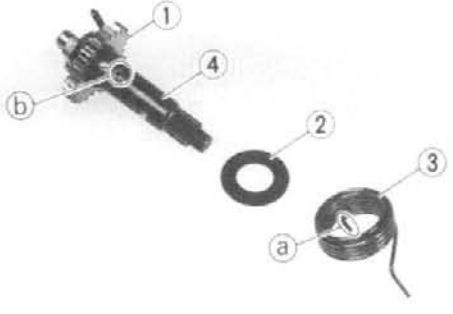


SHIFT SHAFT

1. Install:
   - Shift shaft ①



2. Check:
   - Shift lever ① position
     Gaps ⓐ and ⓑ are not equal → Replace the shift shaft.

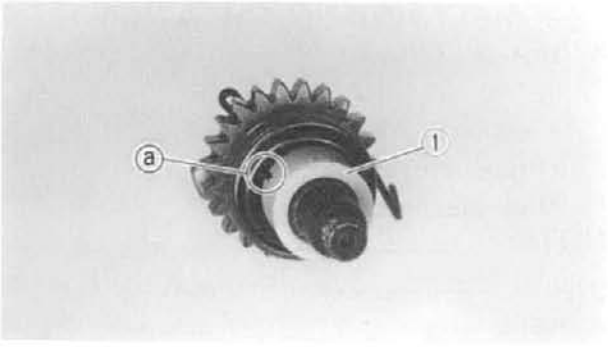


KICK AXLE ASSEMBLY

1. Install:
   - Kick gear ①
   - Plain washer ②
   - Torsion spring ③
     To kick axle ④.

NOTE:

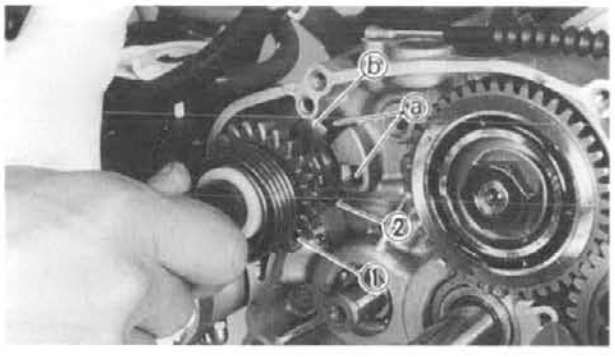
Make sure the stopper ⓐ of the torsion spring fits into the hole ⓑ on the kick axle.



2. Install:
   - Spring guide (1)

NOTE:

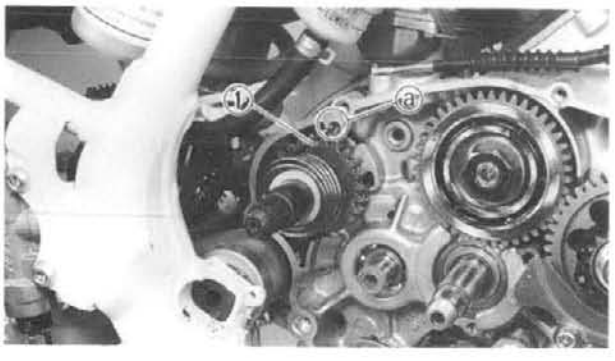
Slide the spring guide (1) into the kick axle, make sure the groove (a) in the spring guide fits on the stopper of the torsion spring.



3. Install:
   - Kick axle assembly (1)

NOTE:

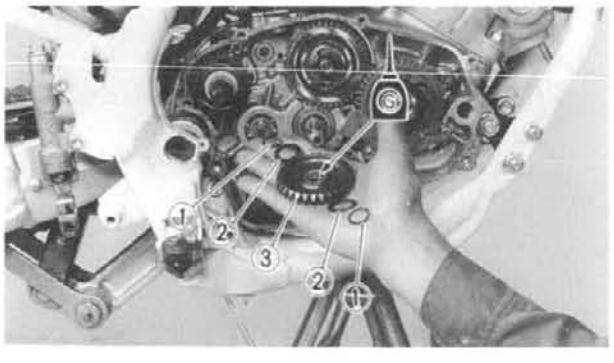
Slide the kick axle assembly into the case, make sure the clip (2) and kick axle stopper (b) fit into their home positions (a).



4. Hook:
   - Torsion spring (1)

NOTE:

Turn the kick starter return spring clockwise and hook into the proper hole (a) in the crankcase.



KICK IDLE GEAR

1. Install:
   - Circlip (1)
   - Plain washer (2)
   - Kick idle gear (3)

NOTE:

- Always use new circlips.
- Apply the transmission oil onto the kick idle gear.

2. Install:
   - Clutch
   - Crankcase cover (right)

   Refer to the "CLUTCH, PRIMARY DRIVEN GEAR AND PRIMARY DRIVE GEAR" section in the CHAPTER 4.

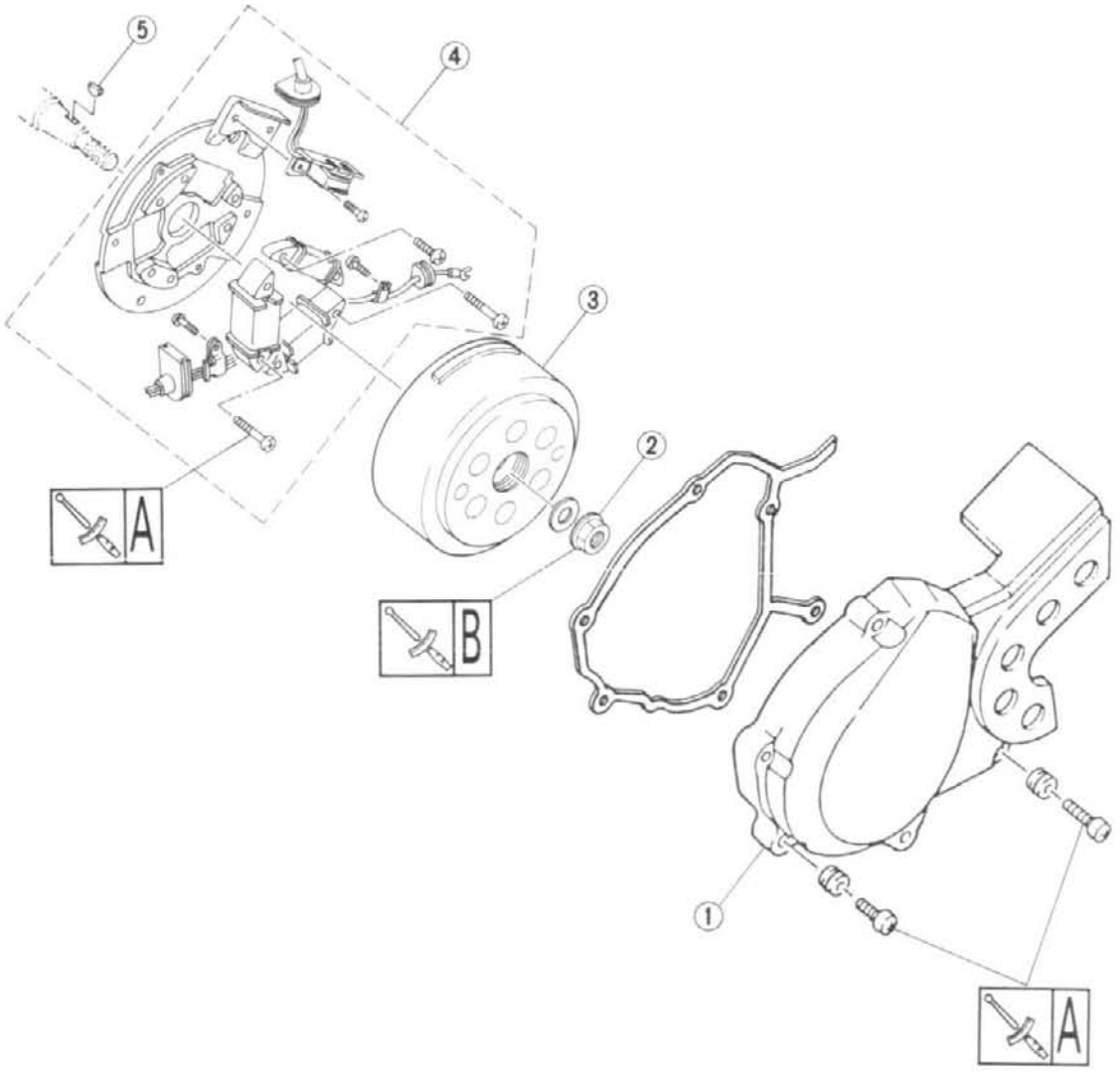
CDI MAGNETO

PREPARATION FOR REMOVAL

*Remove the following parts:
- Side cover (left and right)
- Seat
- Air scoop (left and right)
- Fuel tank

*Disconnect the CDI magneto lead.

IGNITION TIMING: 1.1 mm (0.042 in)	
A	8 Nm (0.8 m•kg, 5.8 ft•lb)
B	80 Nm (8.0 m•kg, 58 ft•lb)

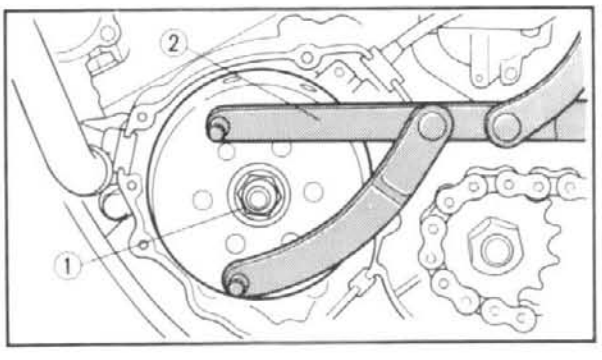


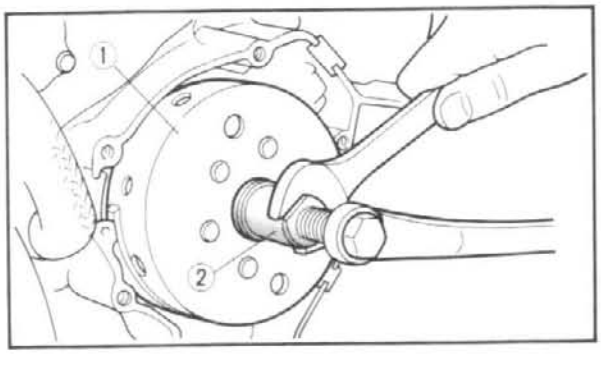
NOTE ON REMOVAL AND REASSEMBLY

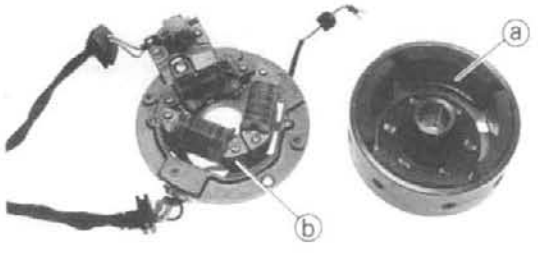
- With the engine mounted, the following parts can be removed.
- Before servicing, clean the parts, and take care so that foreign material do not enter the crankcase.
- Remove the gasket adhered on the contacting surface.

Extent of removal: ① CDI magneto removal

Extent of removal	Order	Part name	Q'ty	Remarks
①	1	Crankcase cover (left)	1	
	2	Nut (rotor)	1	Use special tool. Refer to "REMOVAL POINTS".
	3	Rotor	1	
	4	Stator	1	
	5	Woodruff key	1	







REMOVAL POINTS

ROTOR

1. Remove:
   - Nut (rotor) ①
     Use the Rotor Holding Tool ②.

	Rotor Holding Tool: **YU-01235/90890-01235**

2. Remove:
   - Rotor ①
     Use the Rotor Puller ②.

	Rotor Puller: **YM-01189/90890-01189**

INSPECTION

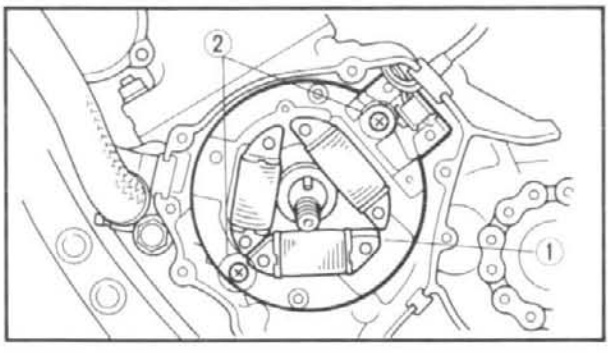
CDI MAGNETO

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

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

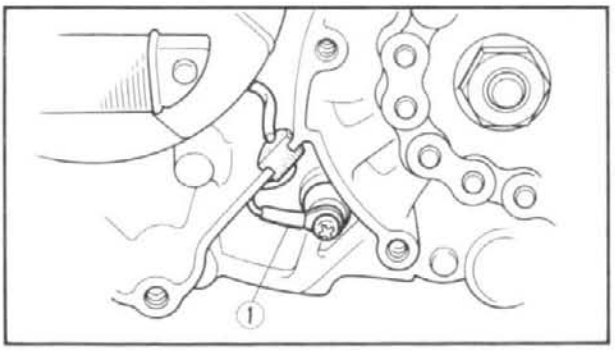
ASSEMBLY AND INSTALLATION

CDI MAGNETO

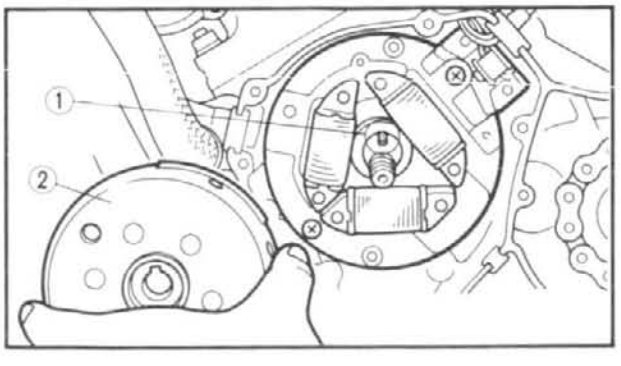


1. Install:
   - Stator ①
   - Screw (stator) ②

	Screw (Stator): **8 Nm (0.8 m•kg, 5.8 ft•lb)**



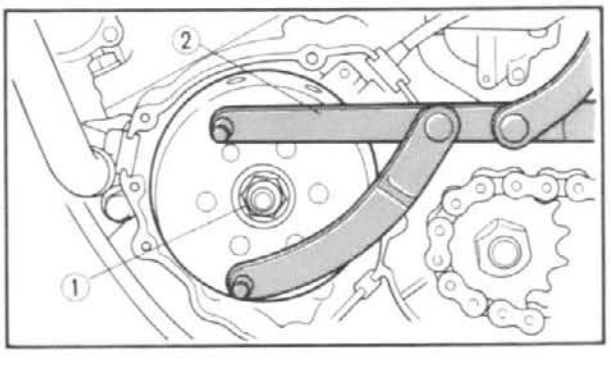
2. Connect:
   - Neutral switch lead ①



3. Install:
   - Woodruff key ①
   - Rotor ②

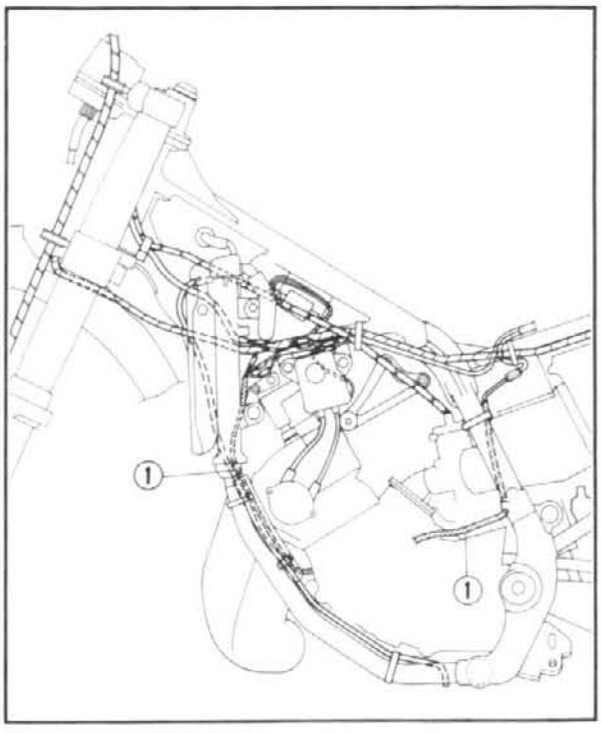
NOTE:

- Clean the tapered portions of the crankshaft and rotor.
- When installing the rotor ② make sure the woodruff key ① is properly seated in the key-way of the crankshaft.

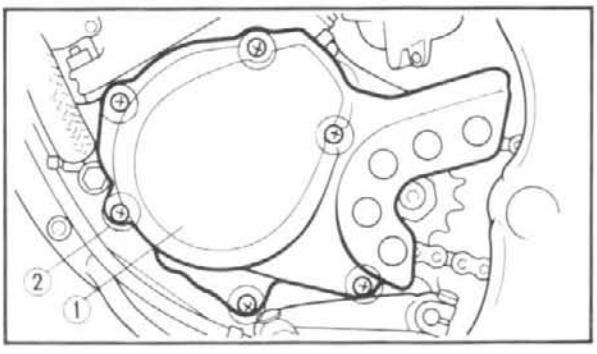


4. Install:
   - Plain washer
   - Nut (rotor) ①
     Use the Rotor Holding Tool ②.

	Rotor Holding Tool: **YU-01235/90890-01235**
	Nut (CDI Magneto): **80 Nm (8.0 m•kg, 58 ft•lb)**



5. Connect:
   - CDI magneto lead (1)



6. Install:
   - Crankcase cover (left) gasket
   - Crankcase cover (left) (1)
   - Screw (crankcase cover left) (2)

	Screw (Crankcase Cover Left): 8 Nm (0.8 m•kg, 5.8 ft•lb)

ENGINE REMOVAL

PREPARATION FOR REMOVAL

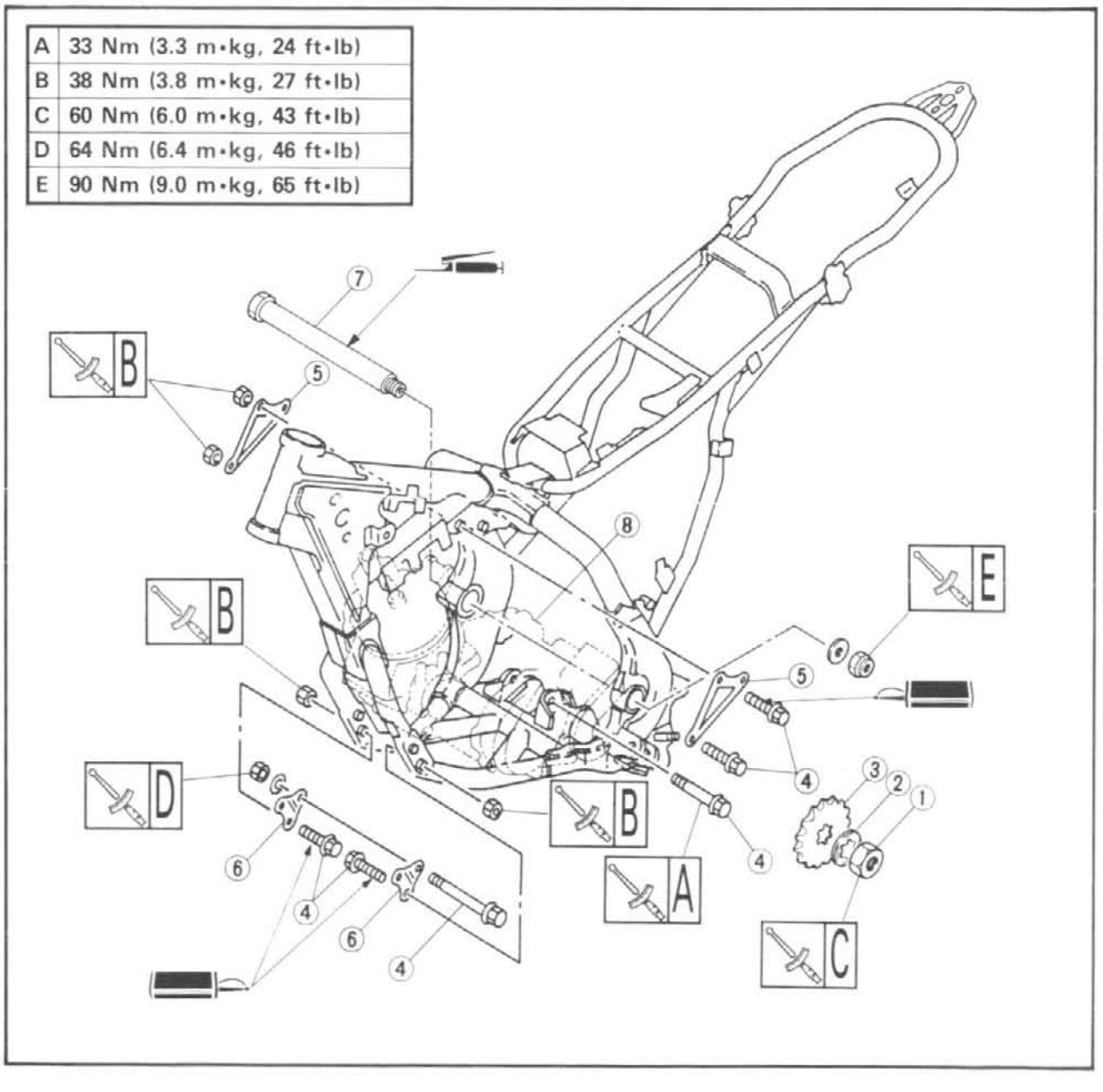
* Hold the machine by placing the suitable stand under the engine.

⚠ WARNING

Support the machine securely so there is no danger of it falling over.

* Drain the coolant.
* Drain the transmission oil.
* Disconnect the clutch cable at engine side.
* Disconnect the YPVS cable at engine side.
* Remove the following parts:
  - Carburetor
  - Side cover (left and right)
  - Seat
  - Air scoop (left and right)
  - Fuel tank
  - Exhaust pipe and silencer
  - Servomotor
  - Crankcase cover (left)
  - Radiator pipe 1
  - Brake pedal
* Disconnect the radiator hose 2, 3 and 6 at engine side.
* Disconnect the spark plug cap.
* Disconnect the CDI magneto lead.
* Remove the reservoir tank installation screw.

A	33 Nm (3.3 m•kg, 24 ft•lb)
B	38 Nm (3.8 m•kg, 27 ft•lb)
C	60 Nm (6.0 m•kg, 43 ft•lb)
D	64 Nm (6.4 m•kg, 46 ft•lb)
E	90 Nm (9.0 m•kg, 65 ft•lb)

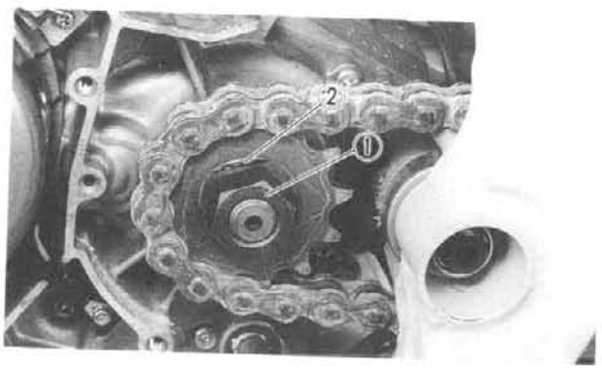


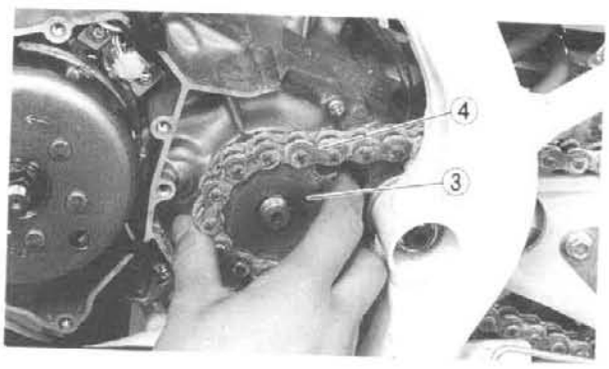
NOTE ON REMOVAL AND REASSEMBLY

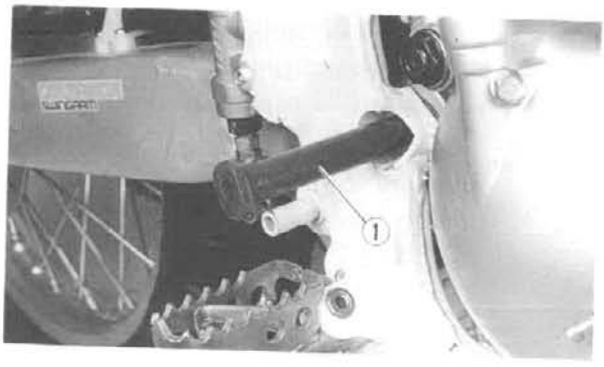
•Before servicing, clean the parts, and take care so that foreign material do not enter the crankcase.

Extent of removal: ① Engine removal

Extent of removal	Order	Part name	Q'ty	Remarks
①	1	Nut (drive sprocket)	1	Refer to "REMOVAL POINTS".
	2	Lock washer	1	
	3	Drive sprocket	1	
	4	Engine mounting bolt	9	
	5	Rear upper bracket	2	
	6	Front lower bracket	2	Refer to "REMOVAL POINTS".
	7	Pivot shaft	1	
	8	Engine	1	







REMOVAL POINTS
DRIVE SPROCKET

1. Remove:
   - Nut (drive sprocket) ①
   - Lock washer ②
   - Drive sprocket ③
   - Drive chain ④

   Straighten the lock washer.

NOTE:

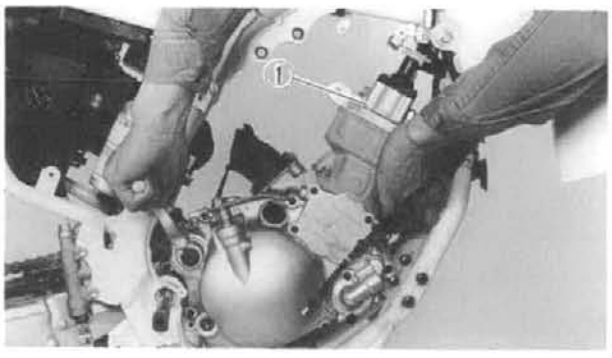
Remove the drive sprocket ③ together with the drive chain ④.

ENGINE REMOVAL

1. Remove:
   - Pivot shaft ①

NOTE:

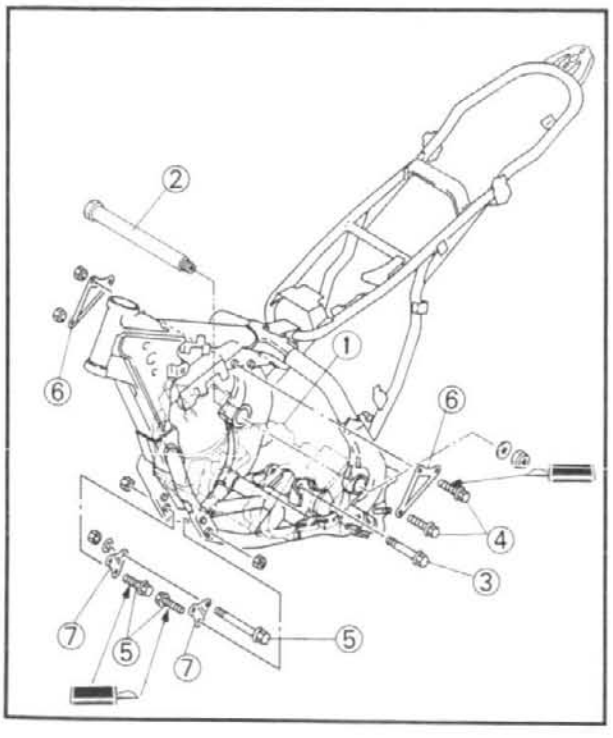
If the shaft ① is pulled all the way out, the swingarm will come loose. If possible, insert a shaft of similar diameter into the other side of the swingarm to support it.



2. Remove:
   - Engine ①
     From right side.

NOTE:

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

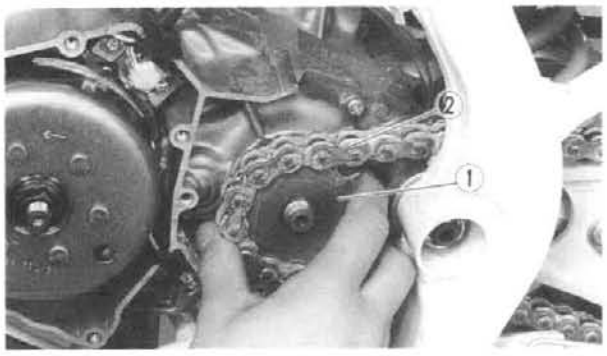


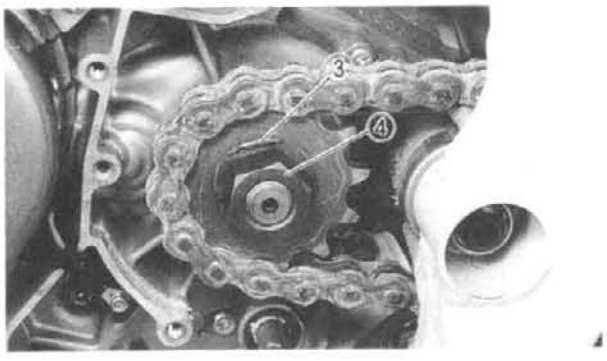
ASSEMBLY AND INSTALLATION

ENGINE INSTALLATION

1. Install:
   - Engine ①
     Install the engine from right side.
   - Pivot shaft ②
   - Engine mounting bolt (rear) ③
   - Engine mounting bolt (upper) ④
   - Engine mounting bolt (lower) ⑤
   - Rear upper bracket ⑥
   - Front lower bracket ⑦

Pivot Shaft:
90 Nm (9.0 m•kg, 65 ft•lb)
Engine Mounting Bolt (Rear):
33 Nm (3.3 m•kg, 24 ft•lb)
Engine Mounting Bolt (Upper):
38 Nm (3.8 m•kg, 27 ft•lb)
Engine Mounting Bolt (Lower):
64 Nm (6.4 m•kg, 46 ft•lb)
Engine Mounting Bolt
(Rear Upper Bracket—Frame):
38 Nm (3.8 m•kg, 27 ft•lb)
LOCTITE®
Engine Mounting Bolt
(Front Lower Bracket—Frame):
38 Nm (3.8 m•kg, 27 ft•lb)
LOCTITE®





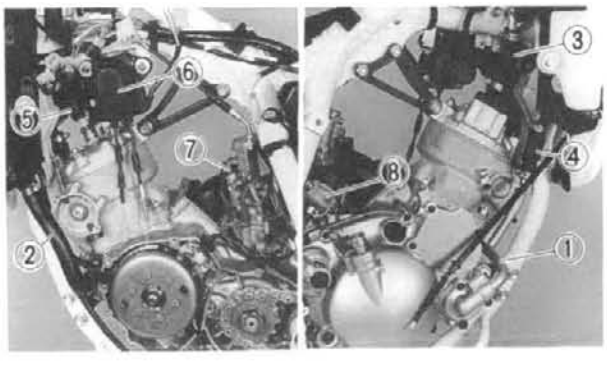
2. Install:
   - Drive sprocket ①
   - Drive chain ②
   - Lock washer ③
   - Nut (drive sprocket) ④

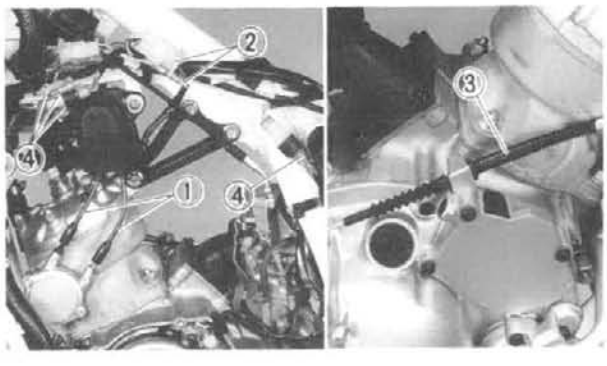
NOTE:

- Install the drive sprocket ① together with the drive chain ②.
- Always use a new lock washer.

	Nut (Drive Sprocket): 60 Nm (6.0 m•kg, 43 ft•lb)

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





4. Install:
   - Radiator pipe 1 ①
   - Radiator hose 2 ②
   - Raidator hose 3 ③
   - Radiator hose 6 ④
   - Plug cap ⑤
   - Servomotor ⑥
   - Carburetor ⑦
   - Reservoir tank ⑧

	Screw (Reservoir Tank): 4 Nm (0.4 m•kg, 2.9 ft•lb)

5. Connect:
   - YPVS cable ①
   - YPVS servomotor lead ②
   - Clutch cable ③
   - CDI magneto lead ④

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

CRANKCASE, CRANKSHAFT AND BALANCER WEIGHT

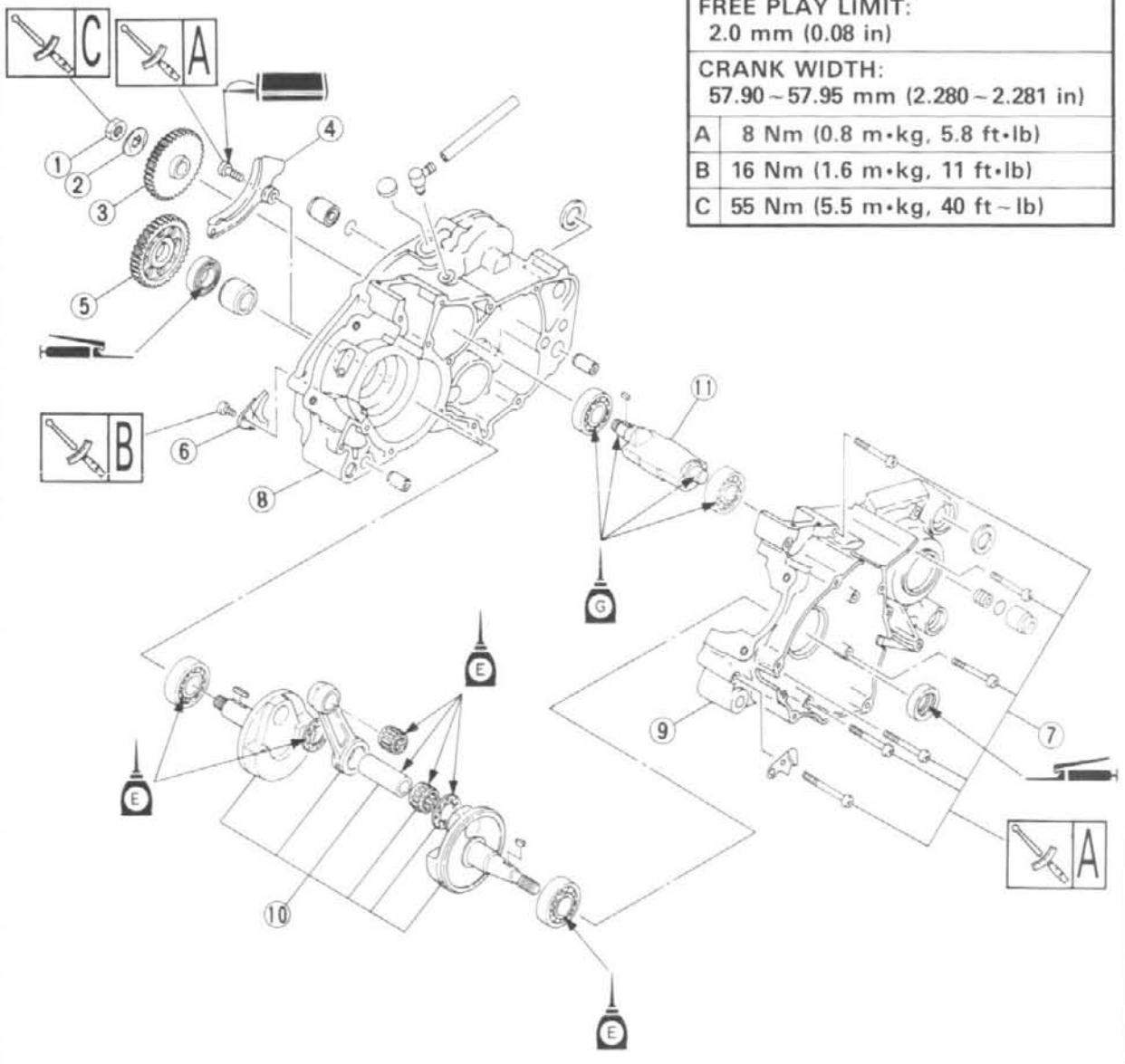
PREPARATION FOR REMOVAL

✳Remove the engine.

✳Remove the following parts:

- Cylinder head
- Cylinder
- Piston
- Crankcase cover (left)
- Crankcase cover (right)
- Primary drive gear
- Primary driven gear
- Kick axle
- Kick idle gear
- Shift shaft
- Stopper lever
- Rotor and stator
- Reed valve assembly

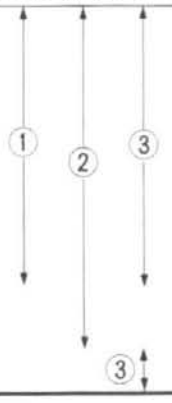
CRANKSHAFT RUNOUT LIMIT: 0.03 mm (0.0012 in)	
CONNECTING ROD BIG END SIDE CLEARANCE: 0.2 ~ 0.7 mm (0.008 ~ 0.028 in)	
CONNECTING ROD SMALL END FREE PLAY LIMIT: 2.0 mm (0.08 in)	
CRANK WIDTH: 57.90 ~ 57.95 mm (2.280 ~ 2.281 in)	
A	8 Nm (0.8 m•kg, 5.8 ft•lb)
B	16 Nm (1.6 m•kg, 11 ft•lb)
C	55 Nm (5.5 m•kg, 40 ft ~ lb)

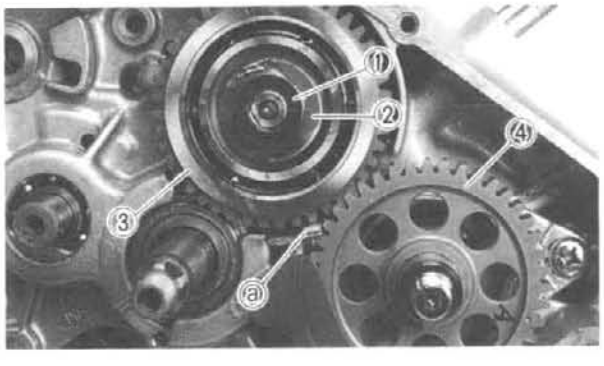


NOTE ON REMOVAL AND REASSEMBLY

- Before servicing, clean the parts, and take care so that foreign material do not enter the crankcase.
- Remove the gasket adhered on the contacting surface.
- For reassembly, the removed parts should be cleaned and apply the transmission oil onto the sliding surface.

Extent of removal: ① Separating crankcase ② Crankshaft removal ③ Balancer weight removal

Extent of removal	Order	Part name	Q'ty	Remarks
	1	Nut (balancer weight gear)	1	Refer to "REMOVAL POINTS".
	2	Lock washer	1	
	3	Balancer weight gear	1	
	4	Baffle plate	1	
	5	Balancer drive gear	1	
	6	Oil seal holder	1	
	7	Bolt (crankcase left and right)	13	
	8	Crankcase (right)	1	Use special tool.
	9	Crankcase (left)	1	Refer to "REMOVAL POINTS".
	10	Crankshaft	1	Use special tool. Refer to "REMOVAL POINTS".
	11	Balancer weight	1	



REMOVAL POINTS

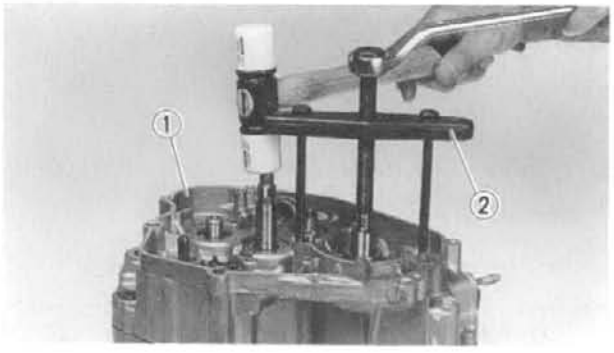
BALANCER WEIGHT GEAR

1. Remove:
   - Nut (balancer weight gear) ①
   - Lock washer ②
   - Balancer weight gear ③

   Straighten the lock washer.

NOTE:

Place an aluminum plate ⓐ between the teeth of the balancer weight gear ③ and balancer drive gear ④.



CRANKCASE

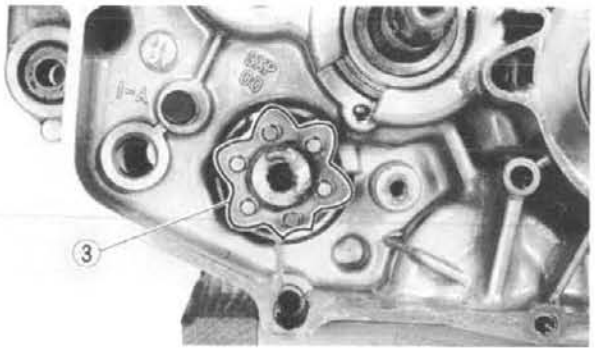
1. Remove:
   - Crankcase 2 (1)

   Use the Crankcase Separating Tool (2).

	Crankcase Separating Tool: YU-01135/90890-01135

NOTE:

- 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.



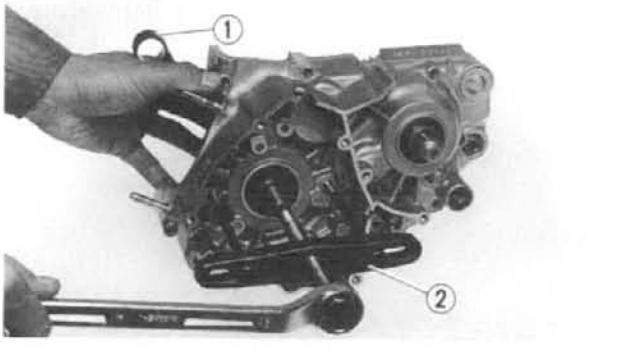
CAUTION:

- **Turn the segment (3) to the position shown in the figure so that it does not contact the crankcase.**
- **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.**

CRANKSHAFT

1. Remove:
   - Crankshaft (1)

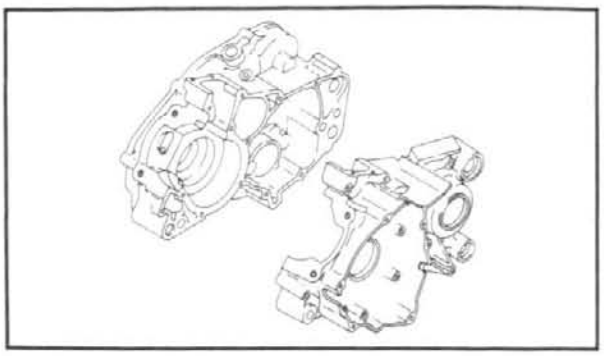
   Use the Crankcase Separating Tool (2).



	Crankcase Separating Tool: YU-01135/90890-01135

CAUTION:

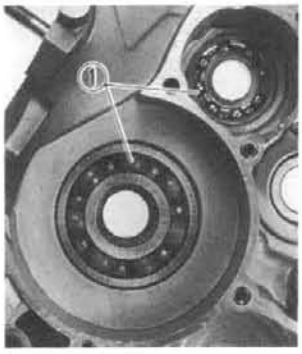
Do not use a hammer to drive out the crankshaft.

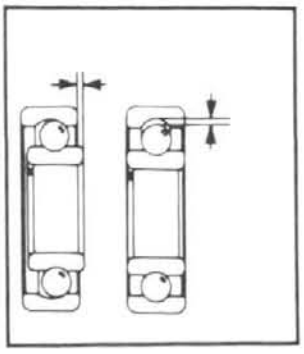


INSPECTION

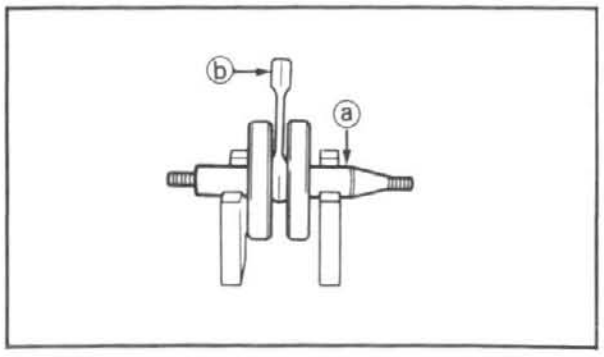
CRANKCASE

1. Inspect:
   - Contacting surface
     Scratches → Replace.
   - Crankcase
     Cracks/Damage → Replace.



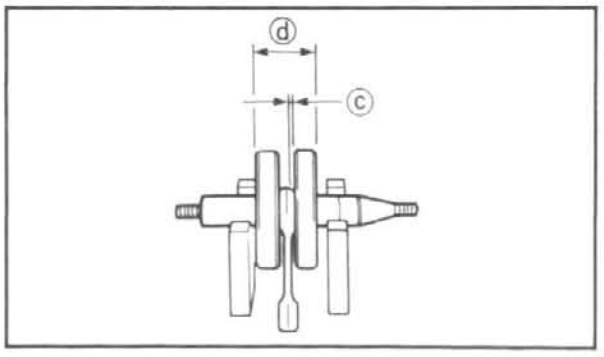


2. Inspect:
   - Bearings ①
     Rotate inner race with a finger.
     Rough spot/Seizure → Replace.



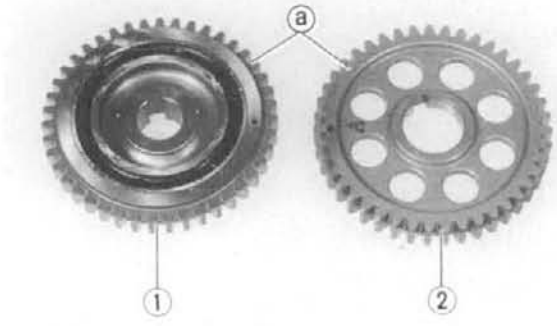
CRANKSHAFT

1. Measure:
   - Runout limit ⓐ
   - Small end free play limit ⓑ
   - Connecting rod big end side clearance ⓒ
   - Crank width ⓓ
     Out of specification → Replace.
     Use a V-Blocks, the Dial Gauge and a thickness gauge.



	Dial Gauge: **YU-03097/90890-03097**

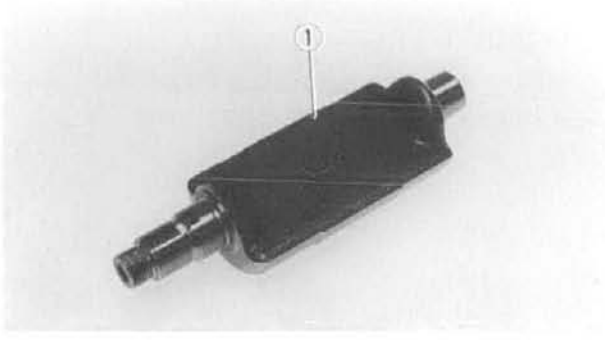
	Standard	<Limit>
Runout Limit:	—	0.03 mm (0.0012 in)
Small End Free Play:	0.8 ~ 1.0 mm (0.031 ~ 0.039 in)	2.0 mm (0.08 in)
Side Clearance:	0.2 ~ 0.7 mm (0.008 ~ 0.028 in)	←
Crank Width:	57.90 ~ 57.95 mm (2.280 ~ 2.281 in)	←



BALANCER WEIGHT GEAR AND BALANCER DRIVE GEAR

1. Inspect:
   - Balancer weight gear ①
   - Balancer drive gear ②

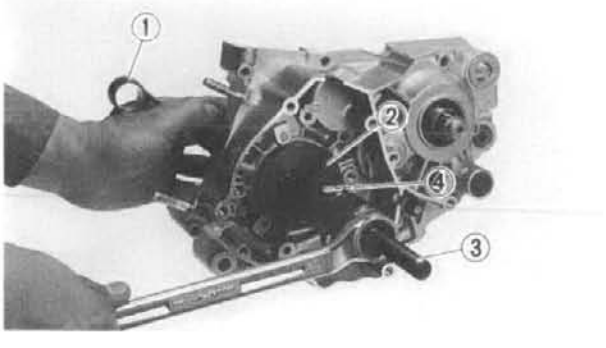
   Gear teeth ⓐ
   Wear/Damage → Replace.



BALANCER WEIGHT

1. Inspect:
   - Balancer weight ①

   Wear/Damage → Replace.



ASSEMBLY AND INSTALLATION

CRANKSHAFT

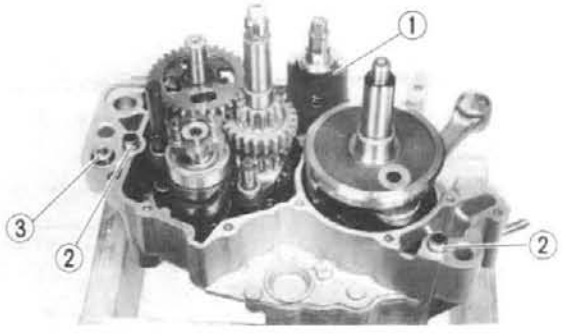
1. Install:
   - Crankshaft ①

   To the crankcase left.
   Use the Crankshaft Installing Tool ②, ③ and ④.

Crankshaft Installing Tool:
(Pot) ②: YU-90050/90890-01274
(Bolt) ③: YU-90050/90890-01275
(Adapter) ④:
YU-90063/90890-01278

NOTE:

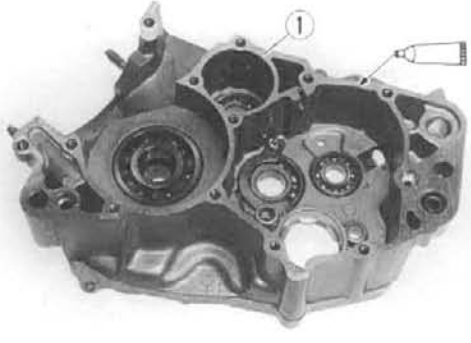
- Hold the connecting rod at top dead center with one hand while turning the nut of the Installing Tool with the other. Operate the Installing Tool until the crankshaft bottoms against the bearing.
- Before installing the crankshaft, clean the contacting surface of crankcase.
- Apply the lithium soap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



2. Install:
   - Balancer weight ①
   - Dowel pin ②
   - Damper collar ③

3. Check:
   - Shifter operation
   - Transmission operation

   Unsmooth operation → Repair.



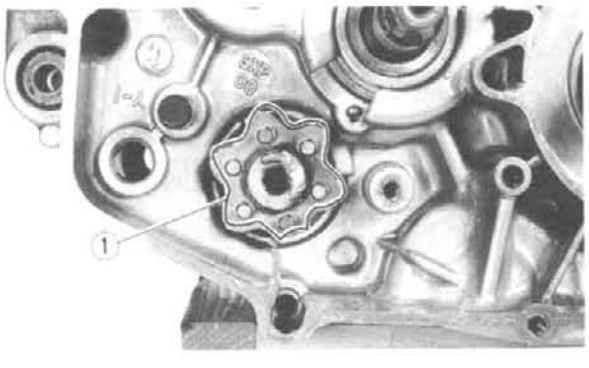
4. Apply:
   - Sealant

   Onto the crankcase right ①.

Quick Gasket®:
ACC-11001-30-00
Yamaha Bond No. 4:
90890-05143

NOTE:

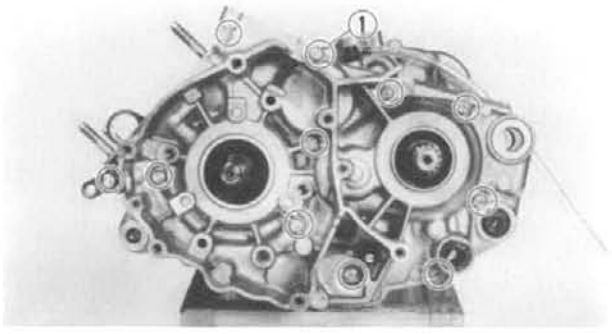
Clean the contacting surface of crankcase left and right before applying the sealant.



5. Install:
   - Crankcase (left)
   - Crankcase (right)

NOTE:

- Turn the segment ① to the position shown in the figure so that it does not contact the crankcase when installing the crankcase.
- Fit the crankcase (right) onto the crankcase (left). Tap lightly on the case with soft hammer.

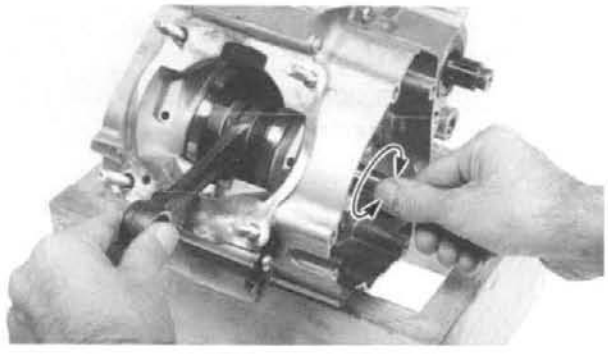


6. Tighten:
   - Screw (crankcase) ①

NOTE:

Tighten the crankcase tightening screws in stage, using a diagonal pattern.

	Screws (Crankcase): **8 Nm (0.8 m·kg, 5.8 ft·lb)**

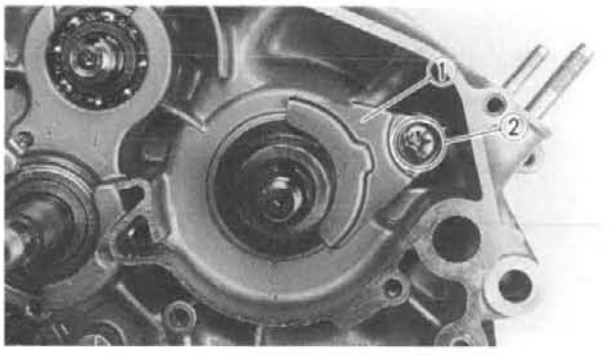


7. Remove:
   - Sealant

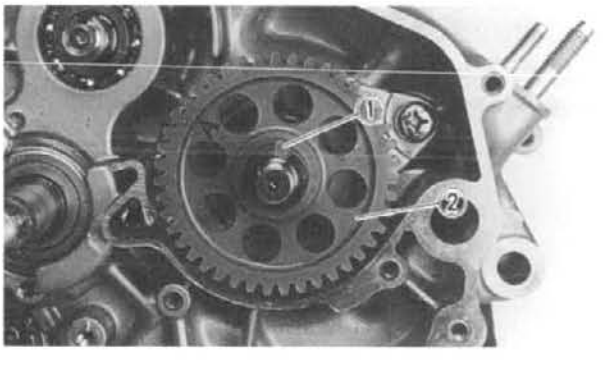
   Forced out on-the cylinder mating surface.
8. Apply:
   - Engine mixing oil

   To the crank pin, bearing and oil delivery hole.
9. Check:
   - Crankshaft and transmission operation

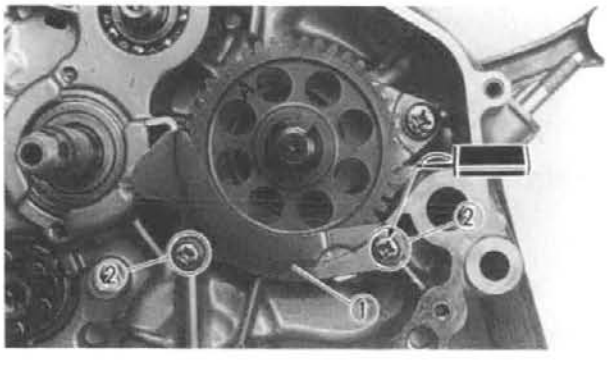
   Unsmooth operation→Repair.
10. Install:
    - Oil seal holder ①
    - Screw (oil seal holder) ②



	Screw (Oil Seal Holder): **16 Nm (1.6 m·kg, 11 ft·lb)**

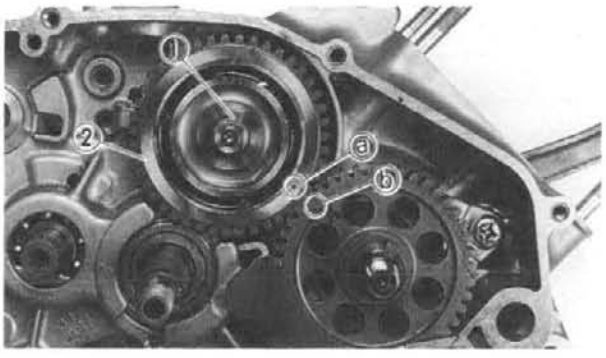


11. Install:
    - Straight key ①
    - Balancer drive gear ②



12. Install:
    - Baffle plate ①
    - Screw (baffle plate) ②

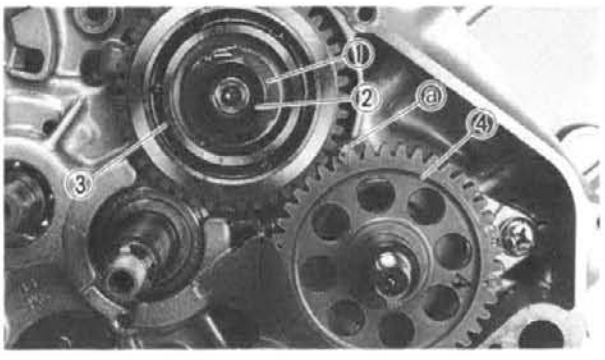
	Screw (Baffle Plate): **8 Nm (0.8 m·kg, 5.8 ft·lb)** **LOCTITE®**



13. Install:
    - Straight key (1)
    - Balancer weight gear (2)

NOTE:

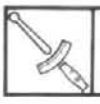
Align the punch mark (a) on the balancer weight gear with the punch mark (b) on the balancer drive gear.



14. Install:
    - Lock washer (1)
    - Nut (balancer weight gear) (2)

NOTE:

- Always use a new lock washer.
- Place an aluminum plate (a) between the teeth of the balancer weight gear (3) and balancer drive gear (4).

	**Nut (Balancer Weight Gear): 55 Nm (5.5 m·kg, 40 ft·lb)**

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

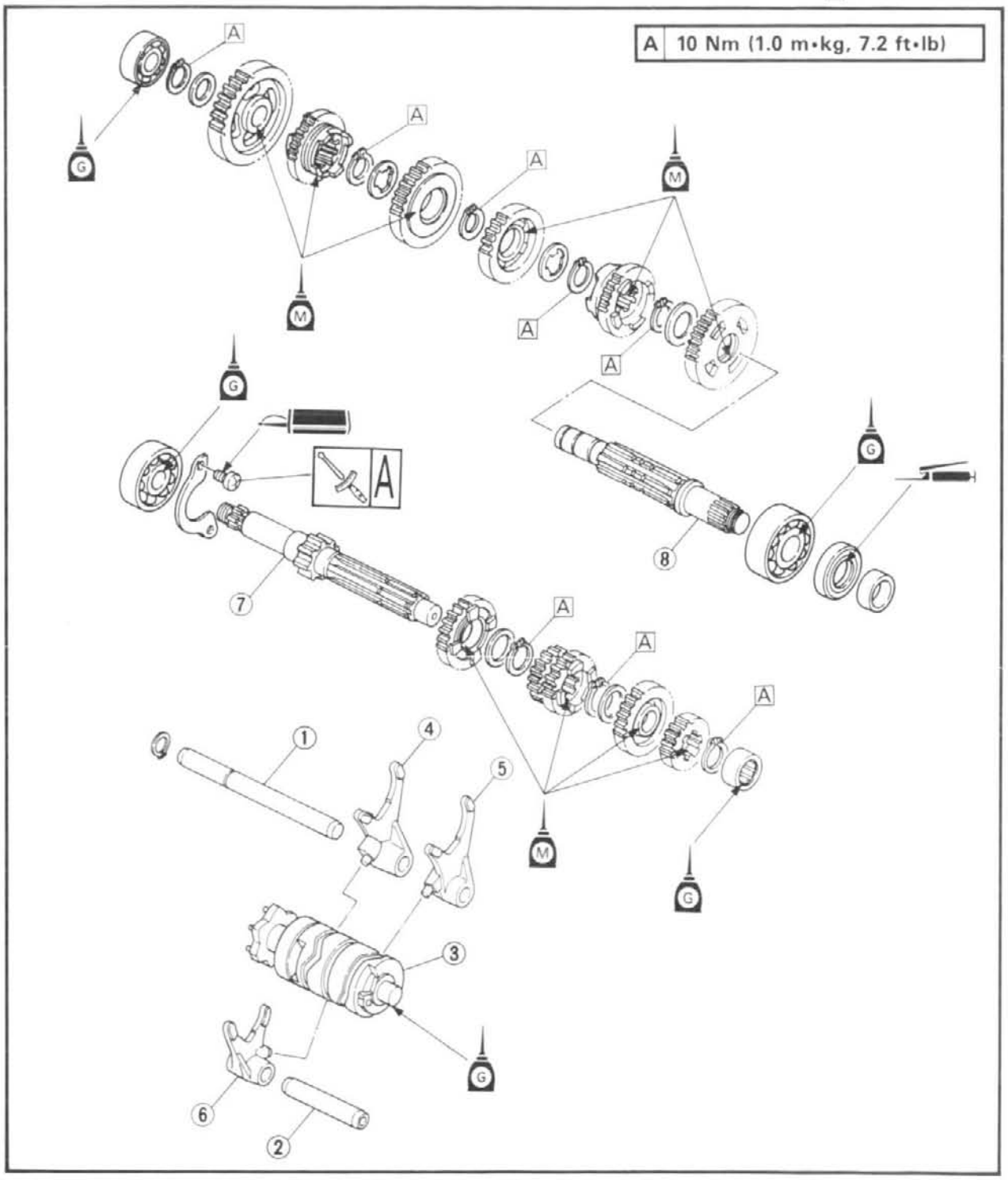
4

TRANSMISSION, SHIFT CAM AND SHIFT FORK

PREPARATION FOR REMOVAL

* Remove the engine.
* Separate the crankcase.

A USE NEW ONE

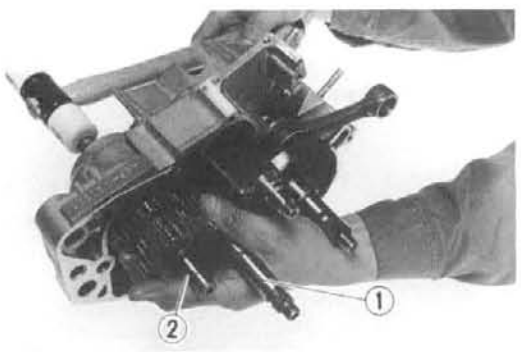


NOTE ON REMOVAL AND REASSEMBLY

- Before servicing, clean the parts, and take care so that foreign material do not enter the crankcase.
- Remove the gasket adhered on the contacting surface.
- For reassembly, the removed parts should be cleaned and apply the transmission oil onto the sliding surface.

Extent of removal: ① Shift cam
② Main axle and drive axle removal

Extent of removal	Order	Part name	Q'ty	Remarks
① ②	1	Guide bar (long)	1	
	2	Guide bar (short)	1	
	3	Shift cam	1	
	4	Shift fork 3	1	
	5	Shift fork 1	1	
	6	Shift fork 2	1	
	7	Main axle	1	Refer to "REMOVAL POINTS".
	8	Drive axle	1	



REMOVAL POINTS

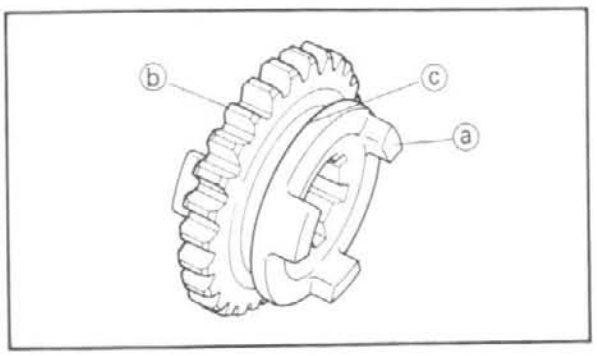
TRANSMISSION

1. Remove:
   - Main axle ①
   - Drive axle ②

   Tap lightly on the transmission drive axle with a soft hammer to remove.

NOTE:

Remove assembly carefully. Note the position of each part. Pay particular attention to the location and direction of shift forks.

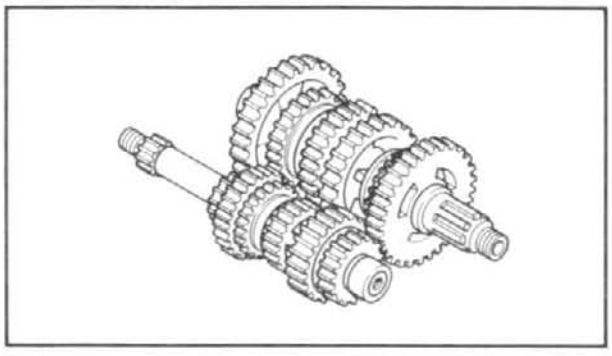


INSPECTION

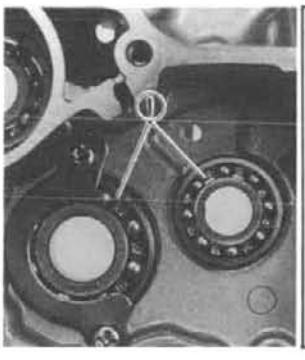
GEARS

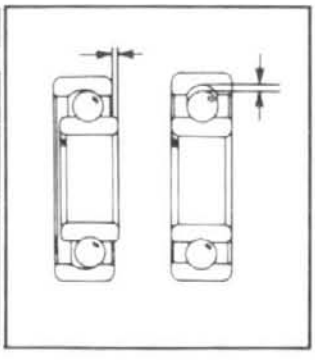
1. Inspect:
   - Matching dog ⓐ
   - Gear teeth ⓑ
   - Shift fork groove ⓒ

   Wear/Damage → Replace



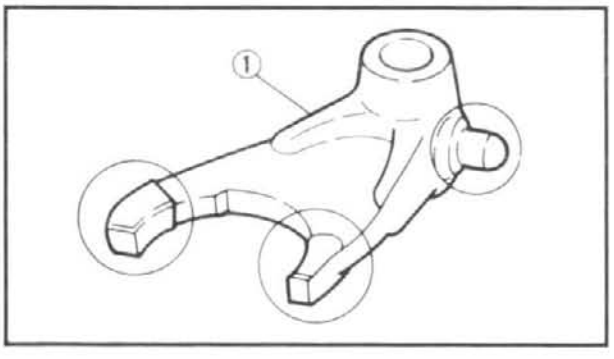
2. Check:
   - Gears movement
     Unsmooth movement → Repair or replace.





BEARING

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



SHIFT FORK AND SHIFT CAM

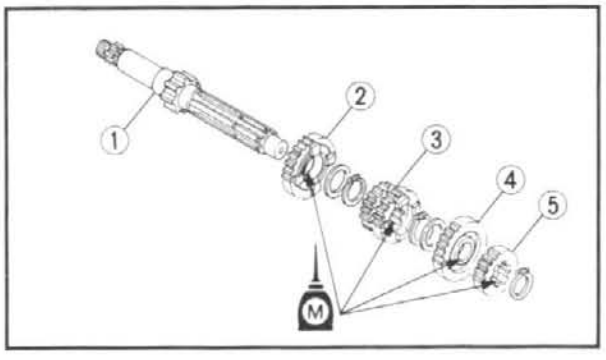
1. Inspect:
   - Shift fork ①
     Wear/Damage/Scratches → Replace.

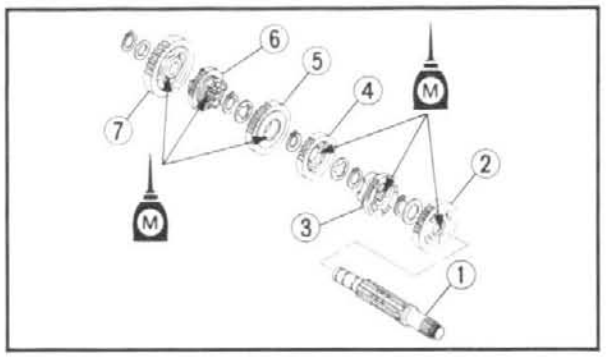
2. Inspect:
   - Shift cam ①
   - Shift fork ②
     Wear/Damage/Scratches → Replace.
   - Guide bar ③
     Bend/Wear/Damage → Replace.

3. Check:
   - Shift fork movement
     On its guide bar.
     Unsmooth operation → Replace.
     Shift fork and/or guide bar.

NOTE:

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





ASSEMBLY AND INSTALLATION

TRANSMISSION

1. Install:
   - Main axle (1)
   - 5th pinion gear (23T) (2)
   - 3rd/4th pinion gear (17/21T) (3)
   - 6th pinion gear (22T) (4)
   - 2nd pinion gear (16T) (5)

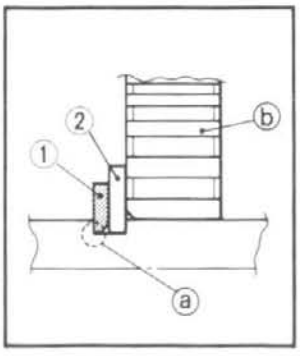
NOTE:

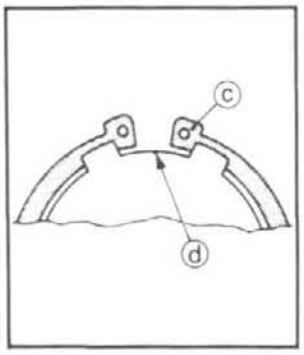
Apply the molybdenum disulfide oil onto the gears inner circumference.

2. Install:
   - Drive axle (1)
   - 2nd wheel gear (30T) (2)
   - 6th wheel gear (18T) (3)
   - 4th wheel gear (24T) (4)
   - 3rd wheel gear (24T) (5)
   - 5th wheel gear (22T) (6)
   - 1st wheel gear (32T) (7)

NOTE:

Apply the molybdenum disulfide oil onto the gears inner circumference.

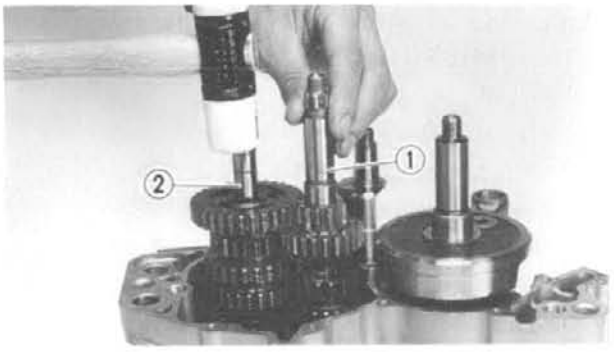




3. Install:
   - Circlip (1)
   - Washer (2)

NOTE:

- Be sure the circlip sharp-edged corner (a) is positioned opposite side to the washer (2) and gear (b).
- Always use new circlips.
- Be sure the circlip end (c) is positioned at axle spline groove (d).



4. Install:
   - Main axle (1)
   - Drive axle (2)

NOTE:

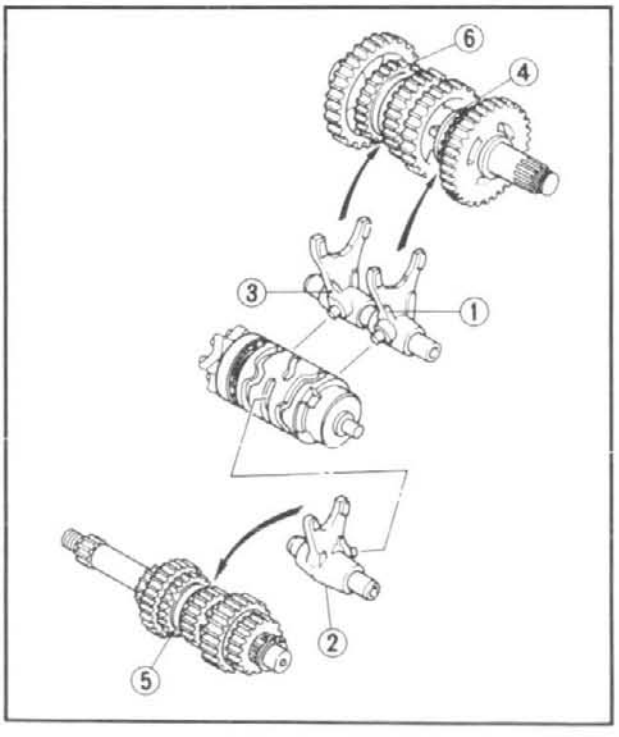
When installing the drive axle into the crankcase, pay careful attention to the crankcase oil seal lip.

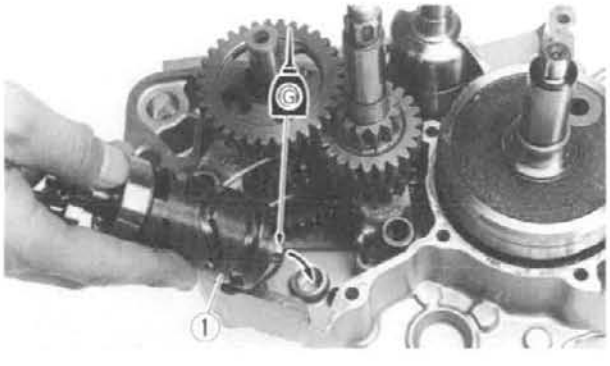
SHIFT CAM AND SHIFT FORK

1. Install:
   - Shift fork 1 (1)
   - Shift fork 2 (2)
   - Shift fork 3 (3)

NOTE:

- Mesh the shift fork #1 (1) with the 6th wheel gear (4) and #3 (3) with the 5th wheel gear (6) on the drive axle.
- Mesh the shift fork #2 (2) with the 3rd pinion gear (5) on the main axle.





2. Install:
   - Shift cam (1)

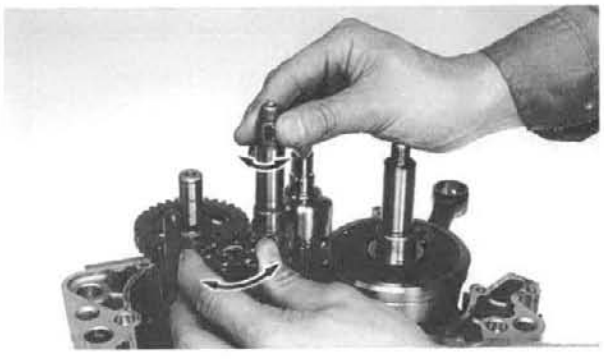
NOTE:

Apply the transmission oil onto the shift cam.

3. Install:
   - Guide bar (longer) ①
   - Guide bar (shorter) ②

NOTE:

Be sure the long bar ① is inserted into the shift forks #1 and #3 and the short one ② into #2.



4. Check:
   - Shifter operation
   - Transmission operation

   Unsmooth operation → Repair.

5. Install:
   - Crankcase (right)

   Refer to "CRANKCASE, CRANKSHAFT AND BALANCER WEIGHT" section in the CHAPTER 4.

RADIATOR AND WATER PUMP

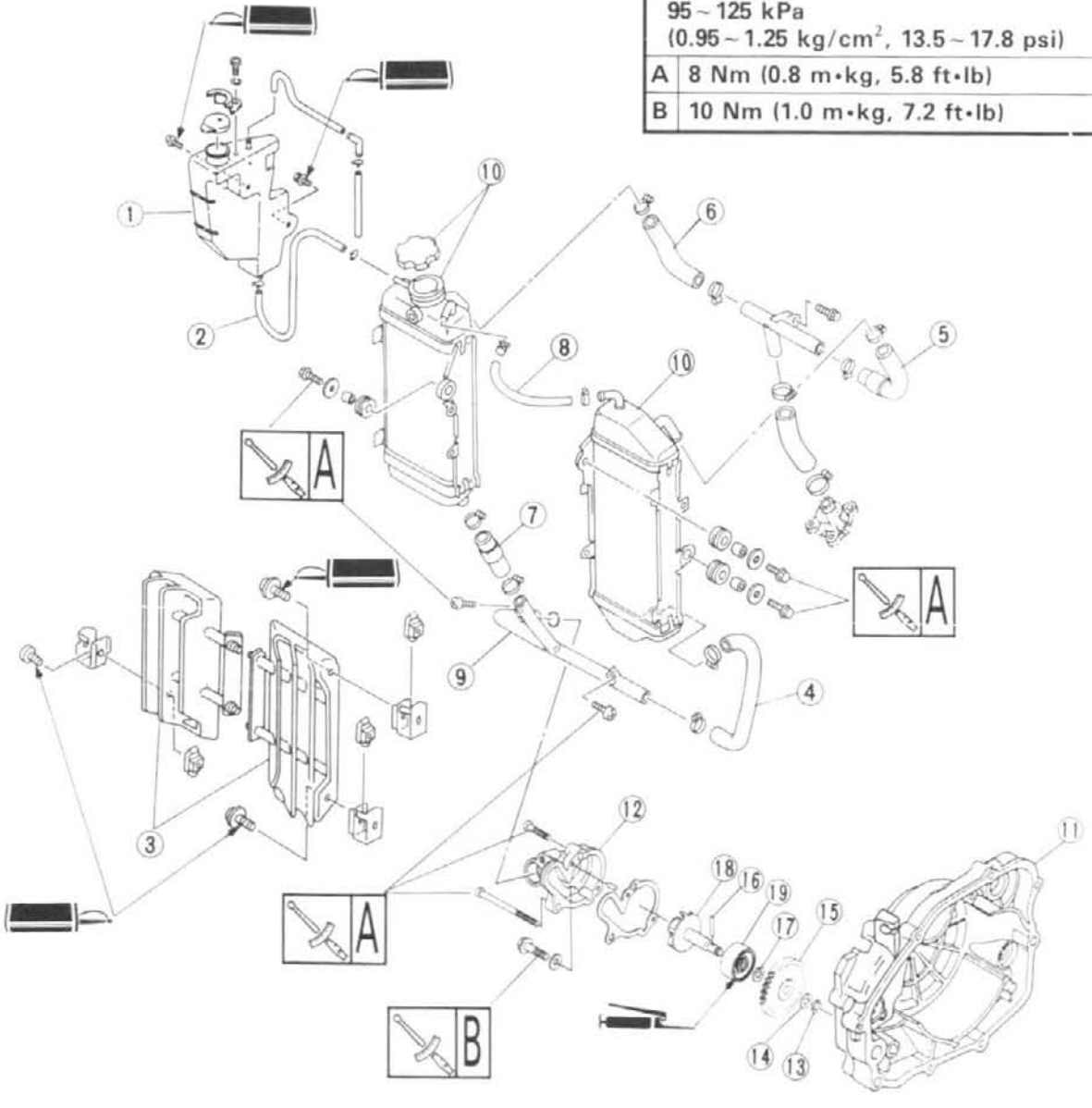
PREPARATION FOR REMOVAL

✻Drain the coolant.

✻Remove the following parts:

- Side cover (left and right)
- Seat
- Air scoop (left and right)
- Fuel tank
- Exhaust pipe and silencer

RADIATOR CAPACITY: 0.65 L (0.57 Imp qt, 0.69 US qt)	
RADIATOR CAP OPENING PRESSURE: 95 ~ 125 kPa (0.95 ~ 1.25 kg/cm², 13.5 ~ 17.8 psi)	
A	8 Nm (0.8 m•kg, 5.8 ft•lb)
B	10 Nm (1.0 m•kg, 7.2 ft•lb)



NOTE ON REMOVAL AND REASSEMBLY

- With the engine mounted, following parts can be removed.
- Before servicing, clean the parts, and take care so that foreign material do not enter the crankcase.
- Remove the gasket adhered on the contacting surface.
- For reassembly, the removed parts should be cleaned with solvent, and apply the transmission oil onto the sliding surface.

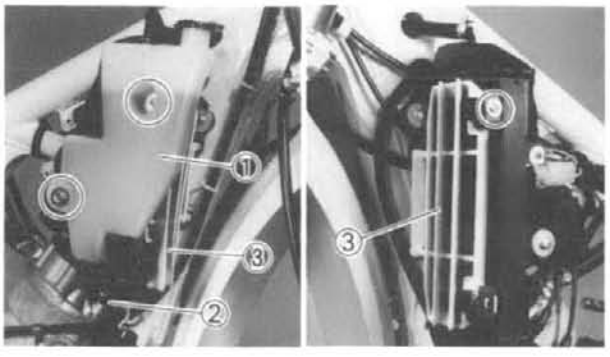
Extent of removal: ① Radiator removal ② Impeller shaft removal ③ Oil seal removal

Extent of removal	Order	Part name	Q'ty	Remarks
①	1	Coolant reservoir tank	1	
	2	Coolant reservoir hose	1	
	3	Panel	2	
	4	Radiator hose 2	1	
	5	Radiator hose 4	1	Refer to "REMOVAL POINTS".
	6	Radiator hose 5	1	
	7	Radiator hose 6	1	
	8	Radiator hose 8	1	
	9	Radiator pipe 1	1	
	10	Radiator	2	
② ③	11	Crankcase cover (right)	1	
	12	Water pump housing	1	
	13	Circlip	1	
	14	Plain washer	1	
	15	Impeller shaft gear	1	Refer to "REMOVAL POINTS".
③	16	Dowel pin	1	
	17	Plain washer	1	
	18	Impeller shaft	1	
	19	Oil seal	1	Refer to "REMOVAL POINTS".

REMOVAL POINTS

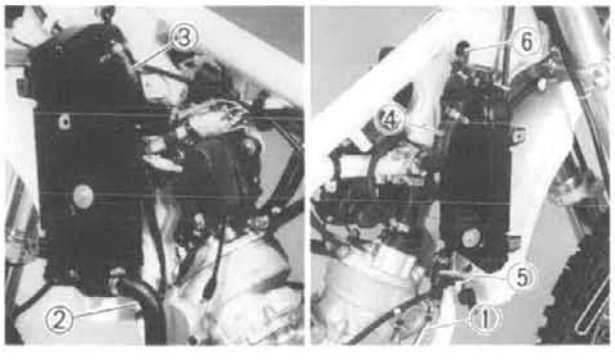
⚠ WARNING

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:
Remove the air scoop by removing the screw. 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.

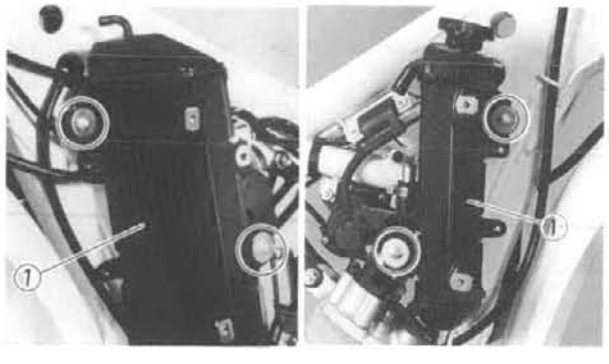


RADIATOR

1. Remove:
   - Coolant reservoir tank ①
   - Coolant reservoir hose ②
   - Panel ③

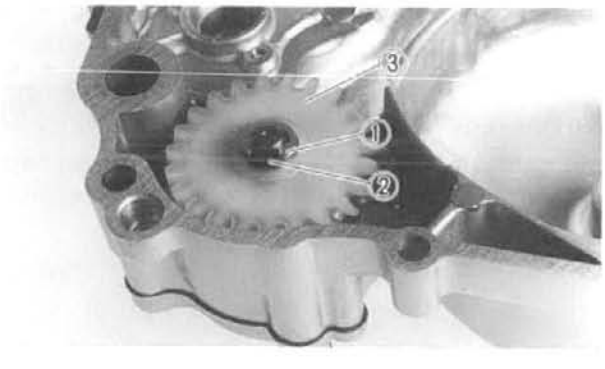


2. Remove:
   - Radiator pipe 1 ①
   - Radiator hose 2 ②
   - Radiator hose 4 ③
   - Radiator hose 5 ④
   - Radiator hose 6 ⑤
   - Radiator hose 8 ⑥



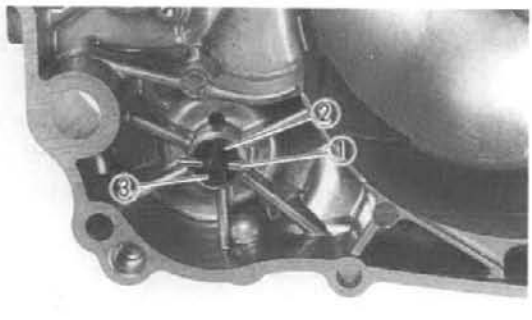
3. Remove:
   - Radiator ①

4

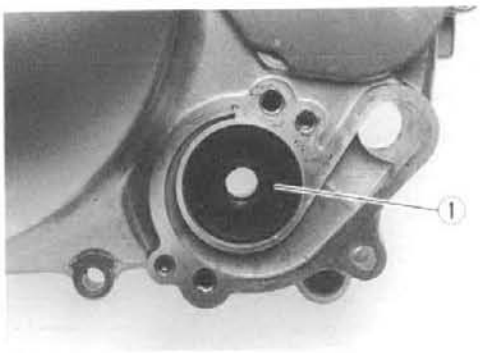


IMPELLER SHAFT

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



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

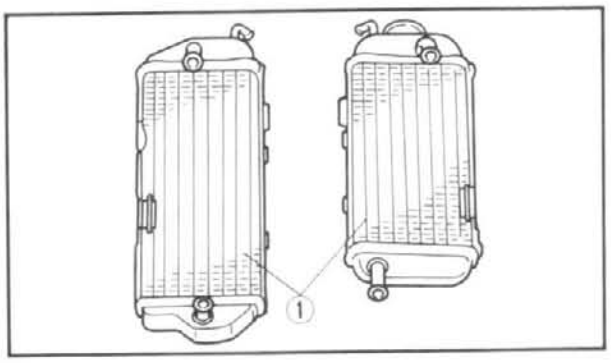


OIL SEAL

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:
   - Oil seal (1)

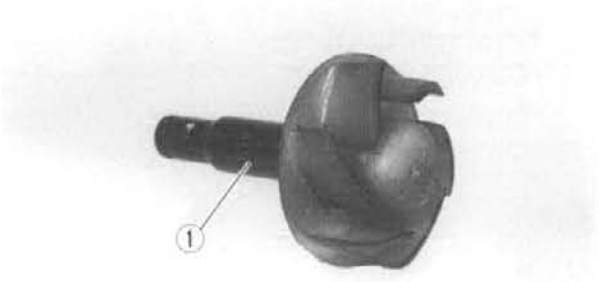


INSPECTION

RADIATOR

1. Inspect:
   - Radiator core (1)

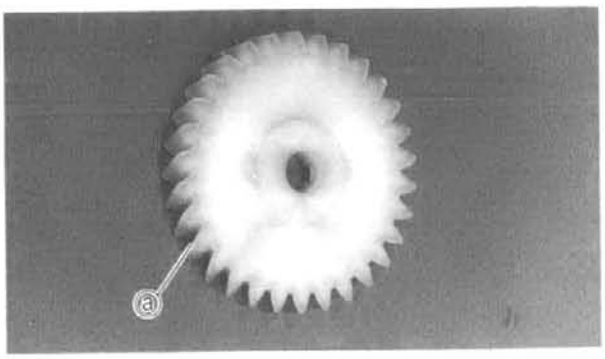
   Obstruction → Blow out with compressed air through rear or the radiator.
   Bent fin → Repair/Replace.



IMPELLER SHAFT

1. Inspect:
   - Impeller shaft (1)

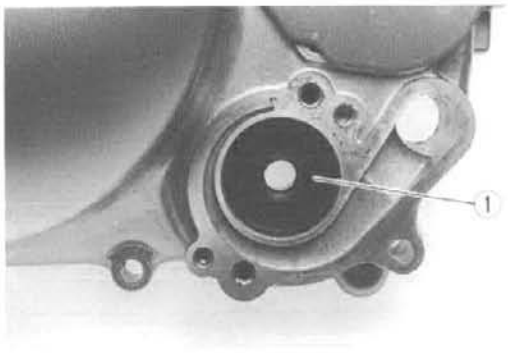
   Bend/Wear/Damage → Replace.
   Fur deposits → Clean.



IMPELLER SHAFT GEAR

1. Inspect:
   - Gear teeth (a)

   Wear/Damage → Replace.

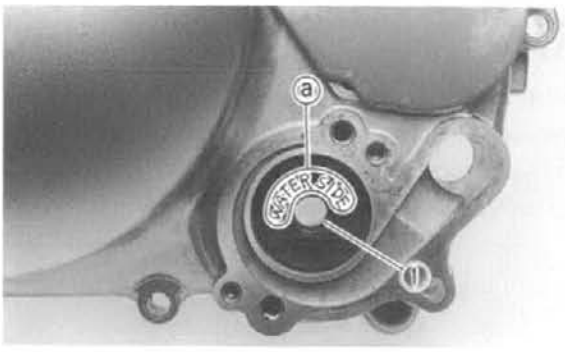


OIL SEAL

1. Inspect:
   - Oil seal (1)

   Wear/Damage → Replace.

4



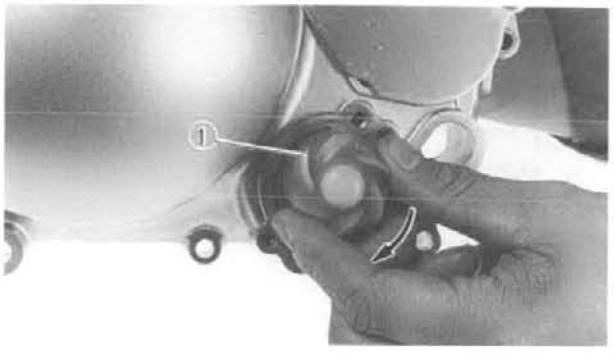
ASSEMBLY AND INSTALLATION

OIL SEAL

1. Install:
   - Oil seal (1)

NOTE:

- Always use a new oil seal.
- Install the oil seal with the "WATER SIDE" mark (a) on the outside.

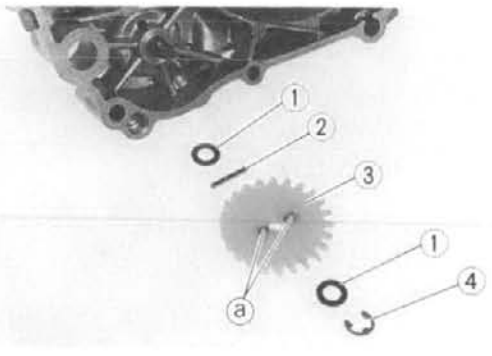


IMPELLER SHAFT

1. Install:
   - Impeller shaft (1)

NOTE:

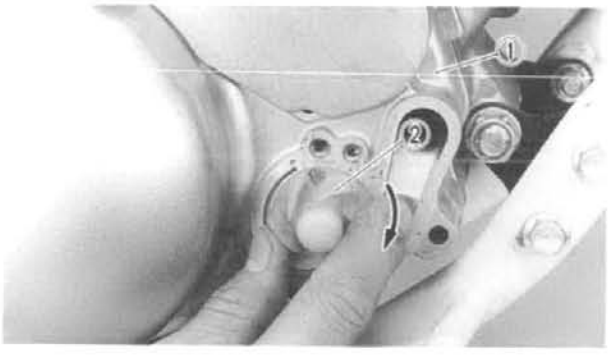
- Take care so that the oil seal lip is not damaged or the spring does not slip off its position.
- When installing the impeller shaft, apply the lithium soap base grease on the oil seal lip and impeller shaft. And install the shaft while turning it.



2. Install:
   - Plain washer (1)
   - Dowel pin (2)
   - Impeller shaft gear (3)
   - Circlip (4)

NOTE:

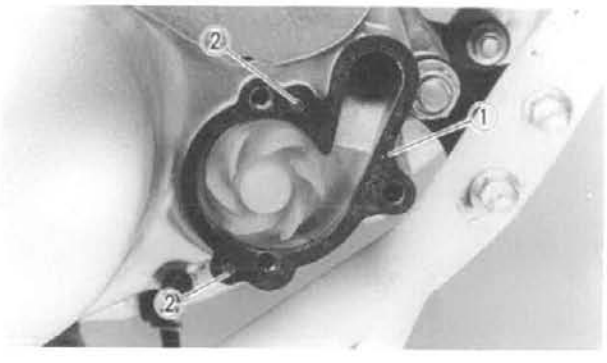
- Make sure the dowel pin (2) fits into the groove (a) in the impeller shaft gear (3)
- Always use a new circlip.



3. Install:
   - Crankcase cover (right) (1)

NOTE:

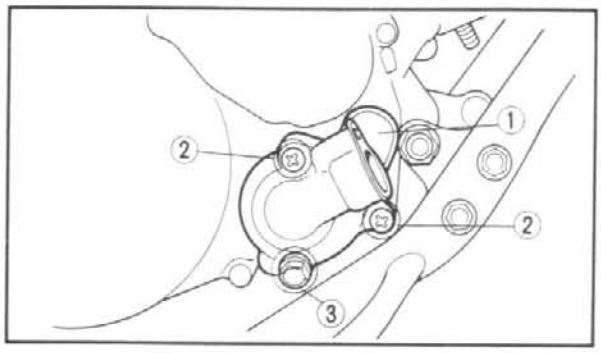
Mesh the impeller shaft gear and primary drive gear by turning the impeller shaft (2).



4. Install:
   - Water pump housing gasket (1)
   - Dowel pin (2)

NOTE:

Always use a new gasket.

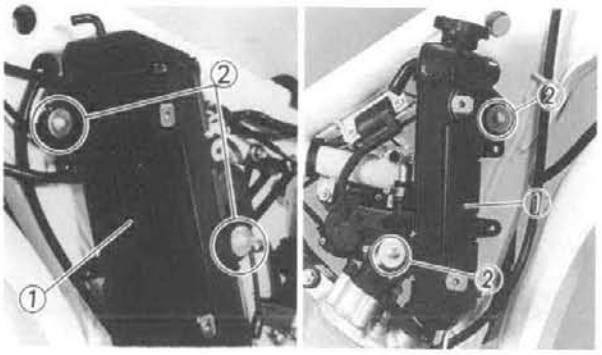


5. Install:
   - Water pump housing ①
   - Screw (water pump housing) ②
   - Copper washer (coolant drain bolt)
   - Coolant drain bolt ③

NOTE:

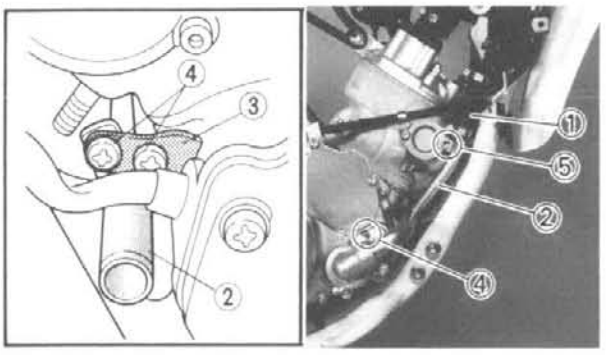
Always use a new copper washer.

	Screw (Water Pump Housing): **8 Nm (0.8 m•kg, 5.8 ft•lb)** **Coolant Drain Bolt:** **10 Nm (1.0 m•kg, 7.2 ft•lb)**



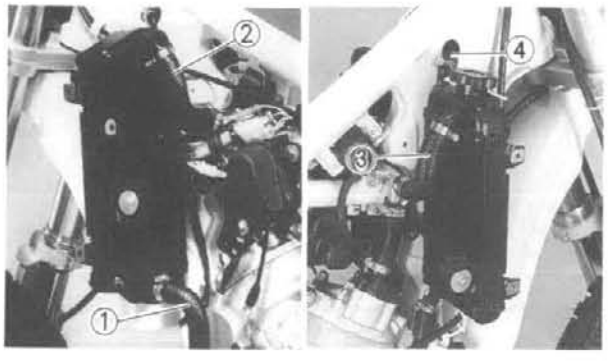
6. Install:
   - Radiator ①
   - Bolt (radiator) ②

	Bolt (Radiator): **8 Nm (0.8 m•kg, 5.8 ft•lb)**

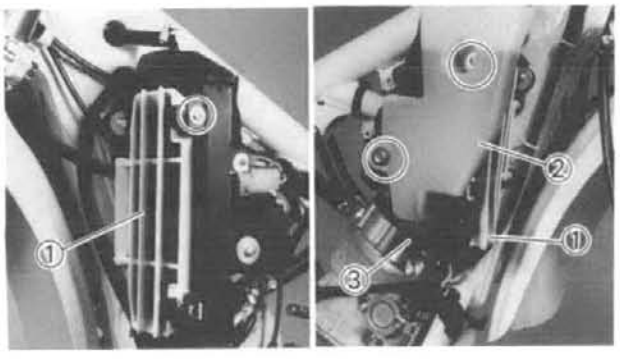


7. Install:
   - Radiator hose 6 ①
   - Radiator pipe 1 ②
   - Radiator pipe stay ③
   - Screw (radiator pipe 1) ④
   - Bolt (radiator pipe 1) ⑤

	Screw (Radiator Pipe 1): **8 Nm (0.8 m•kg, 5.8 ft•lb)** **Bolt (Radiator Pipe 1):** **7 Nm (0.7 m•kg, 5.1 ft•lb)**



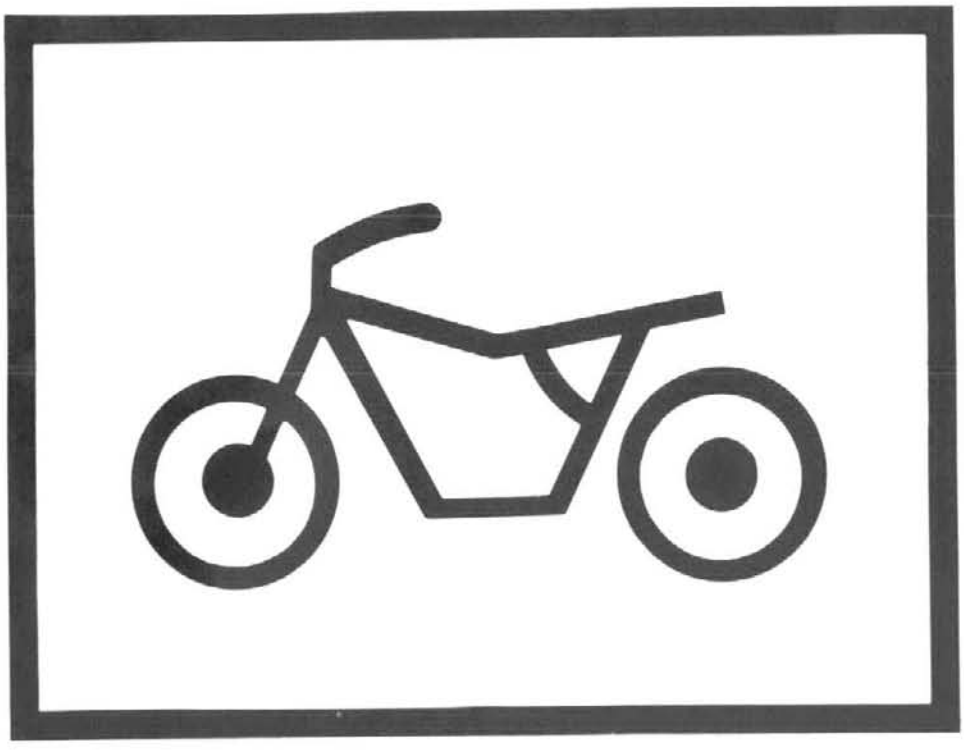
8. Install:
   - Radiator hose 2 ①
   - Radiator hose 4 ②
   - Radiator hose 5 ③
   - Radiator hose 8 ④



9. Install:
   - Panel ①
   - Coolant reservoir tank ②
   - Coolant reservoir hose ③

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

CHAPTER 5
CHASSIS



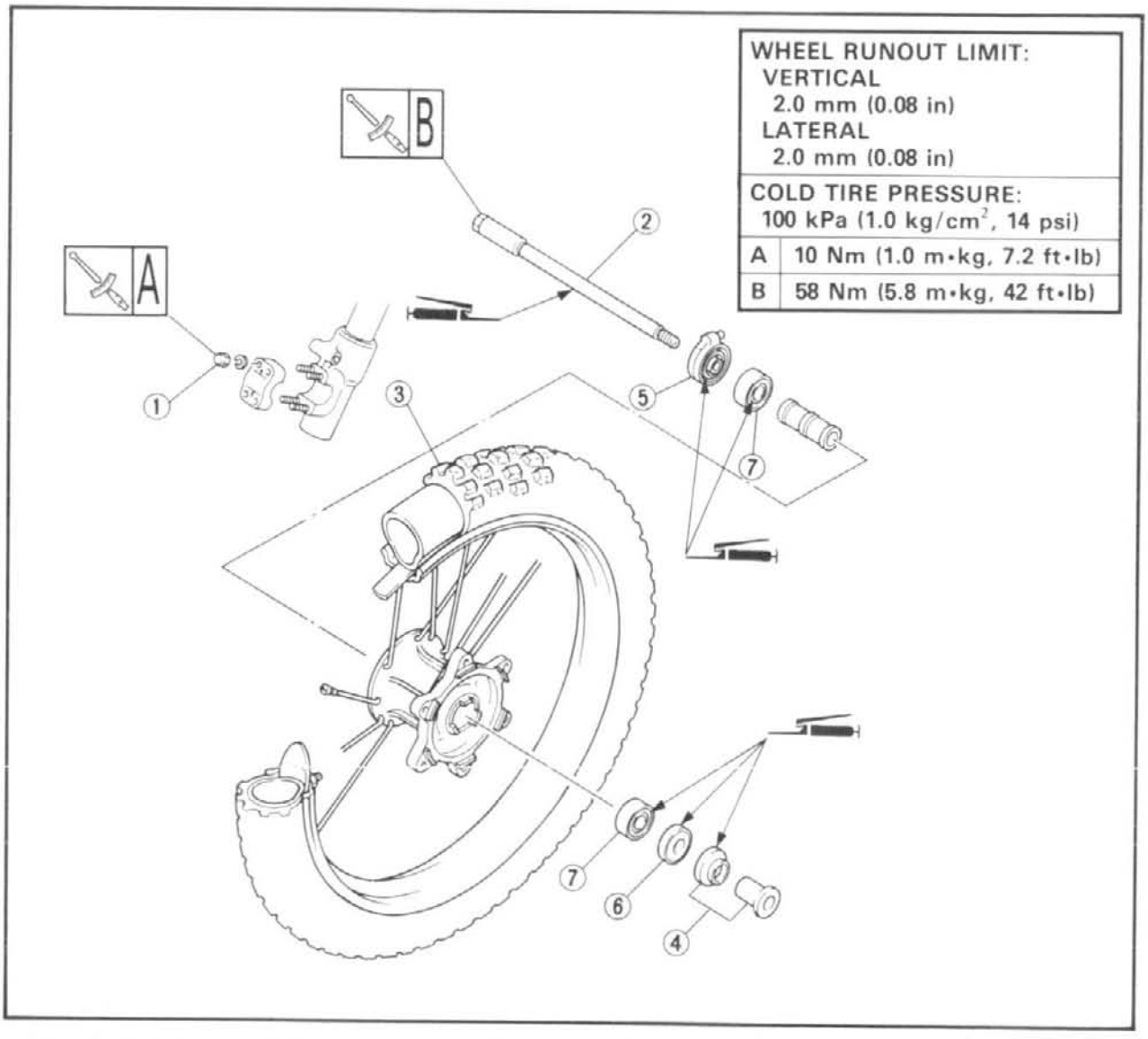
FRONT WHEEL

PREPARATION FOR REMOVAL

* Hold the machine by placing the suitable stand under the engine.
* Disconnect the odometer cable.

⚠ WARNING

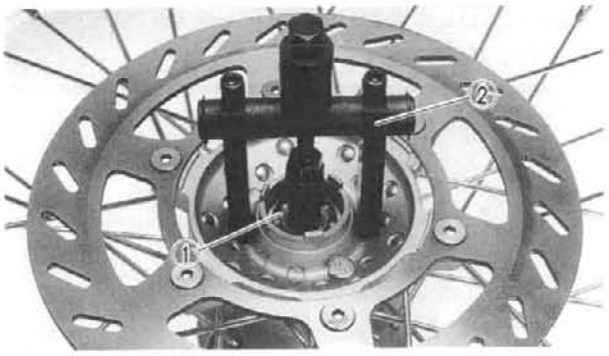
Support the machine securely so there is no danger of it falling over.



WHEEL RUNOUT LIMIT: VERTICAL 2.0 mm (0.08 in) LATERAL 2.0 mm (0.08 in)	
COLD TIRE PRESSURE: 100 kPa (1.0 kg/cm², 14 psi)	
A	10 Nm (1.0 m•kg, 7.2 ft•lb)
B	58 Nm (5.8 m•kg, 42 ft•lb)

Extent of removal: ① Front wheel removal ② Wheel bearing removal

Extent of removal	Order	Part name	Q'ty	Remarks
①	1	Nut (axle holder)	4	Only loosening
	2	Front wheel axle	1	
	3	Front wheel	1	
②	4	Collar	1	
	5	Odometer gear unit	1	
	6	Oil seal	1	
	7	Bearing	2	Refer to "REMOVAL POINTS".



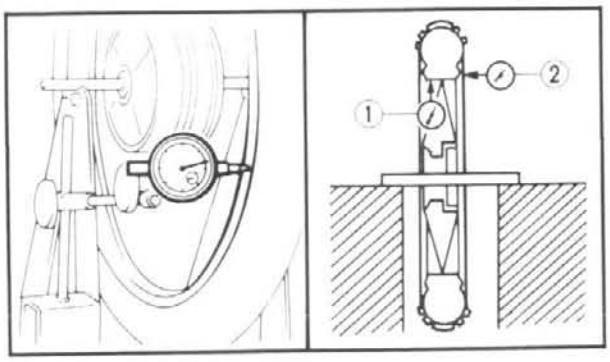
REMOVAL POINTS

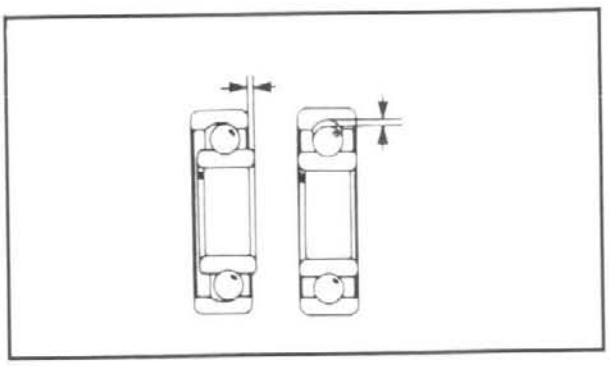
WHEEL BEARING (IF NECESSARY)

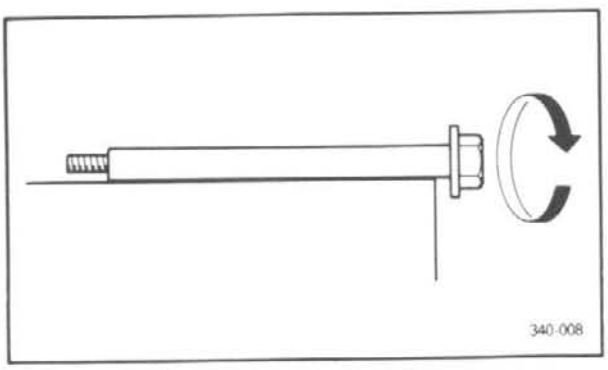
1. Remove:
   - Bearing ①

NOTE:

Remove the bearing ① using a general bearing puller ②







INSPECTION

FRONT WHEEL

1. Measure:
   - Wheel runout

   Out of limit→Replace.

Rim Runout Limits:
Radial ①: 2.0 mm (0.08 in)
Lateral ②: 2.0 mm (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.

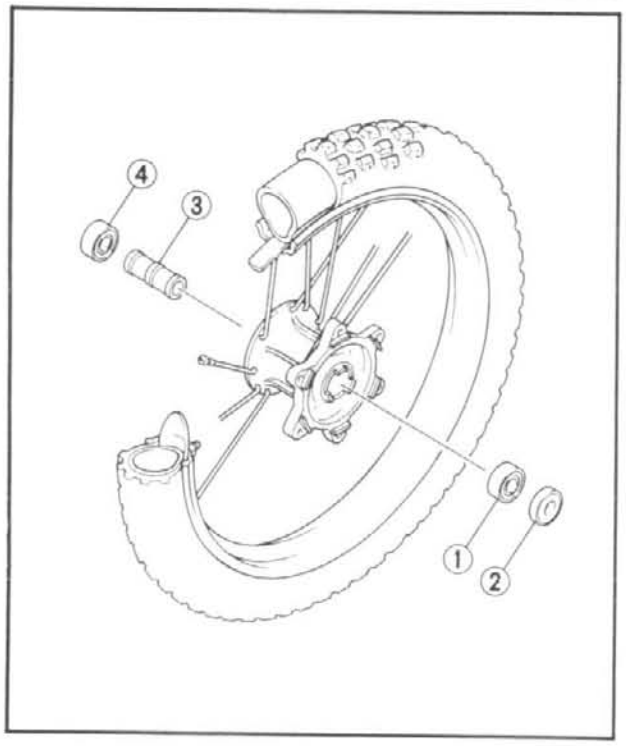
3. Inspect:
   - Front wheel axle

   Roll the axle on a flat surface.
   Bends→Replace.

⚠ WARNING

Do not attempt to straighten a bent axle.

5



ASSEMBLY AND INSTALLATION

FRONT WHEEL

1. Install:
   - Bearing (left) ①
   - Oil seal (left) ②
   - Spacer ③
   - Bearing (right) ④

NOTE:

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

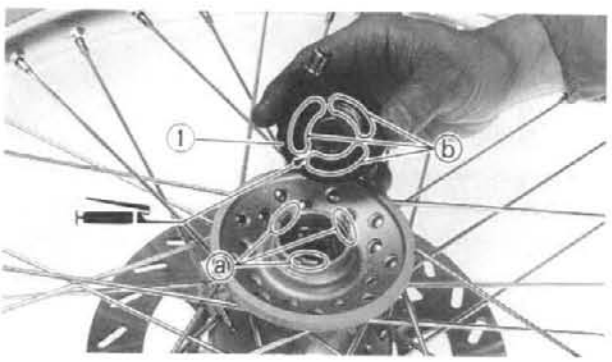
CAUTION:

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

2. Install:
   - Collar ①

NOTE:

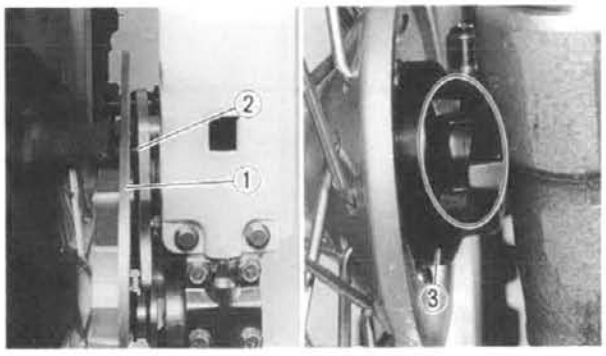
Apply the lithium soap base grease on the oil seal lip.



3. Install:
   - Odometer gear unit ①

NOTE:

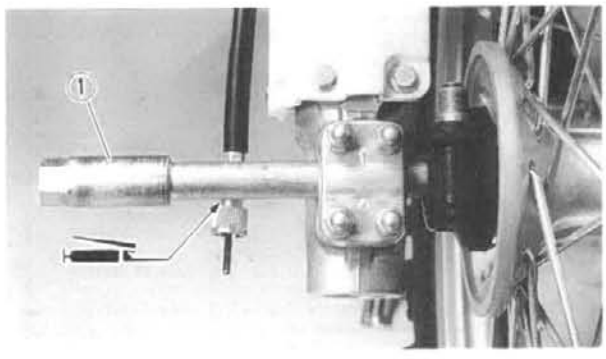
- Make sure the three projections ⓐ in the wheel hub are meshed with the three notches ⓑ in the odometer gear unit.
- Apply the lithium soap base grease on the oil seal lip.



4. Install:
   - Front wheel

NOTE:

- Install the brake disc (1) between the brake pads (2) correctly.
- Make sure the projecting portion (torque stopper) of the odometer gear unit (3) is positioned correctly.

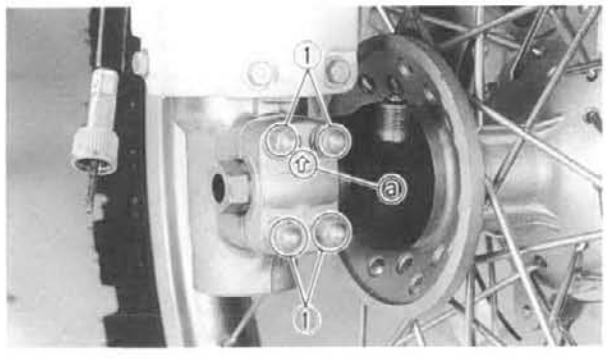


5. Install:
   - Front wheel axle (1)

	Front Wheel Axle: **58 Nm (5.8 m•kg, 42 ft•lb)**

NOTE:

Apply the lithium soap base grease on the wheel axle.

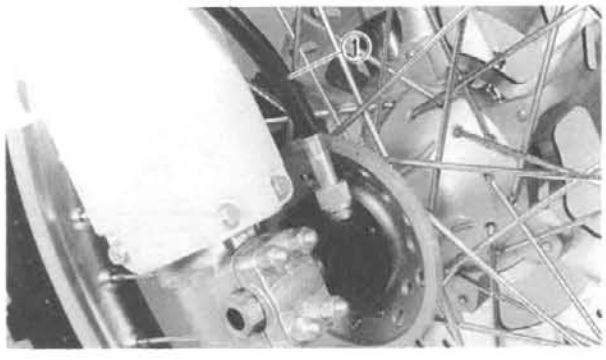


6. Tighten:
   - Nut (axle holder) (1)

	Nut (Axle Holder): **10 Nm (1.0 m•kg, 7.2 ft•lb)**

NOTE:

- Face the arrow mark (a) upward.
- When tightening the axle holder nuts, first, tighten the nuts on the upper side of axle holder.



7. Connect:
   - Odometer cable (1)

5

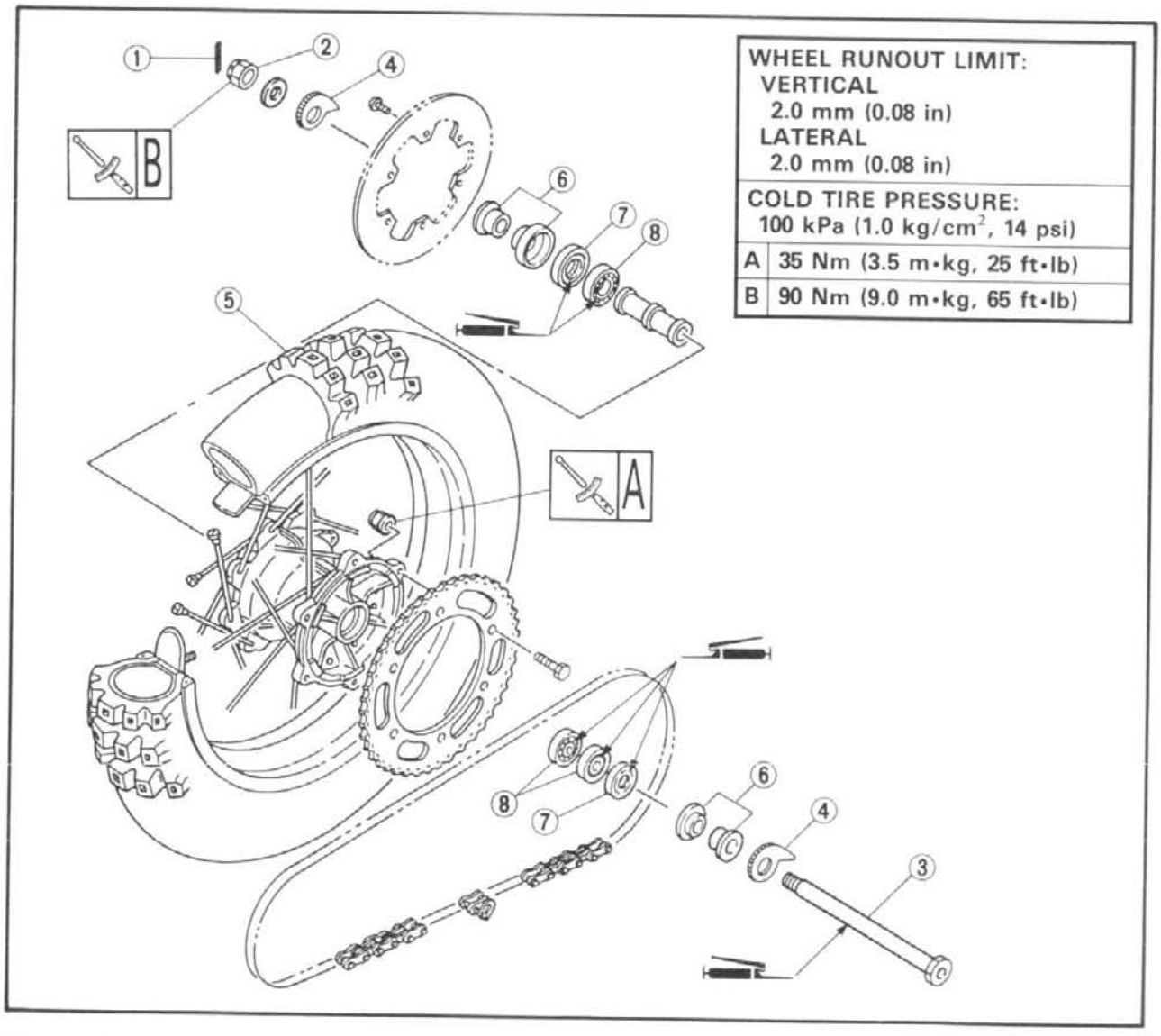
REAR WHEEL

PREPARATION FOR REMOVAL

* Hold the machine by placing the suitable stand under the engine.

⚠ WARNING

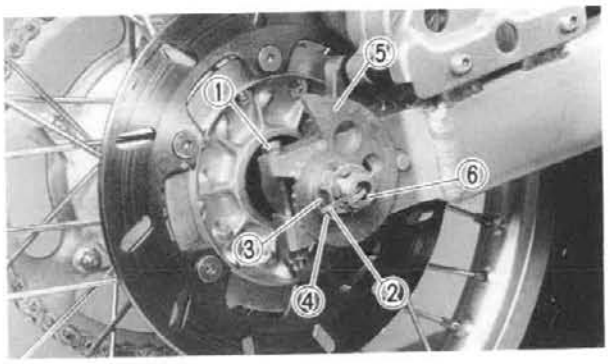
Support the machine securely so there is no danger of it falling over.

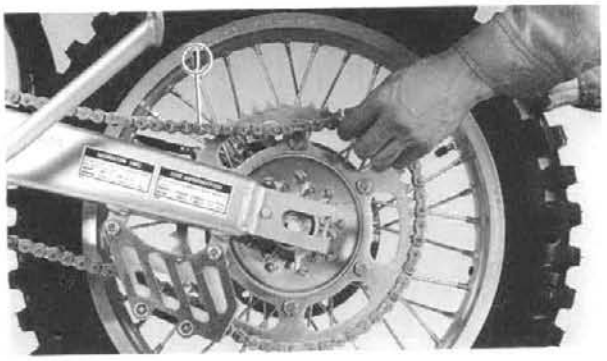


WHEEL RUNOUT LIMIT: VERTICAL 2.0 mm (0.08 in) LATERAL 2.0 mm (0.08 in)	
COLD TIRE PRESSURE: 100 kPa (1.0 kg/cm², 14 psi)	
A	35 Nm (3.5 m•kg, 25 ft•lb)
B	90 Nm (9.0 m•kg, 65 ft•lb)

Extent of removal: ① Rear wheel removal ② Wheel bearing removal

Extent of removal	Order	Part name	Q'ty	Remarks
① ②	1	Cotter pin	1	Refer to "REMOVAL POINTS".
	2	Nut (rear wheel axle)	1	
	3	Rear wheel axle	1	
	4	Chain puller	2	
	5	Rear wheel	1	
	6	Collar	2	Refer to "REMOVAL POINTS".
	7	Oil seal	2	
	8	Bearing	3	





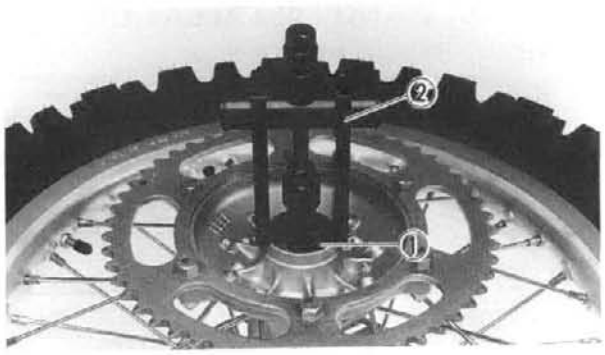
REMOVAL POINTS

REAR WHEEL

1. Loosen:
   - Bolt ①
2. Remove:
   - Cotter pin ②
   - Nut (rear wheel axle) ③
   - Plain washer ④
   - Chain puller ⑤
   - Rear wheel axle ⑥
3. Remove:
   - Drive chain ①

NOTE:

Push the rear wheel forward and remove the drive chain.

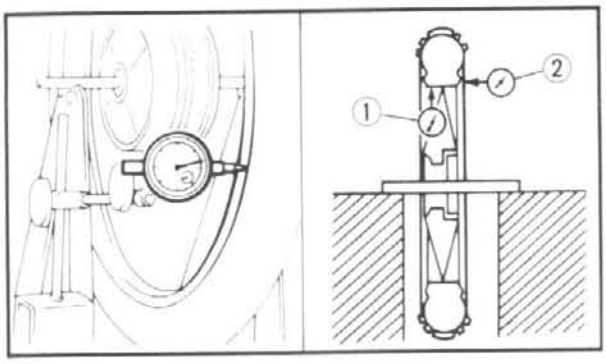


WHEEL BEARING (IF NECESSARY)

1. Remove:
   - Bearing ①

NOTE:

Remove the bearing ① using a general bearing puller ②.

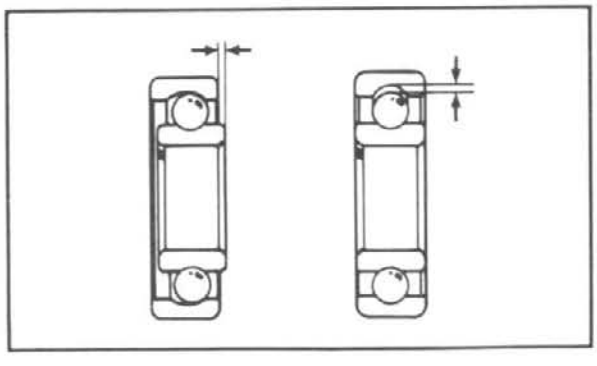


INSPECTION

REAR WHEEL

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

Rim Runout Limits:
Radial ①: 2.0 mm (0.08 in)
Lateral ②: 2.0 mm (0.08 in)

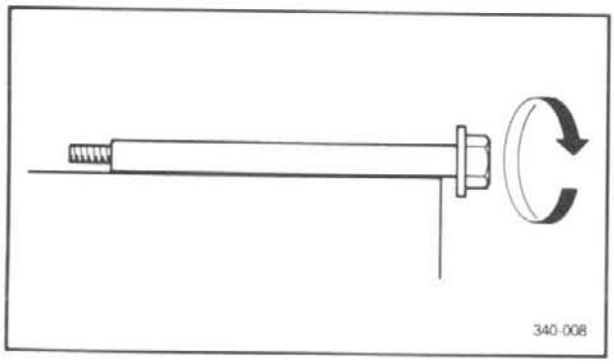


2. Inspect:
   - Bearing
     Rotate inner race with a finger.
     Rough spot/Seizure→Replace.

NOTE:

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

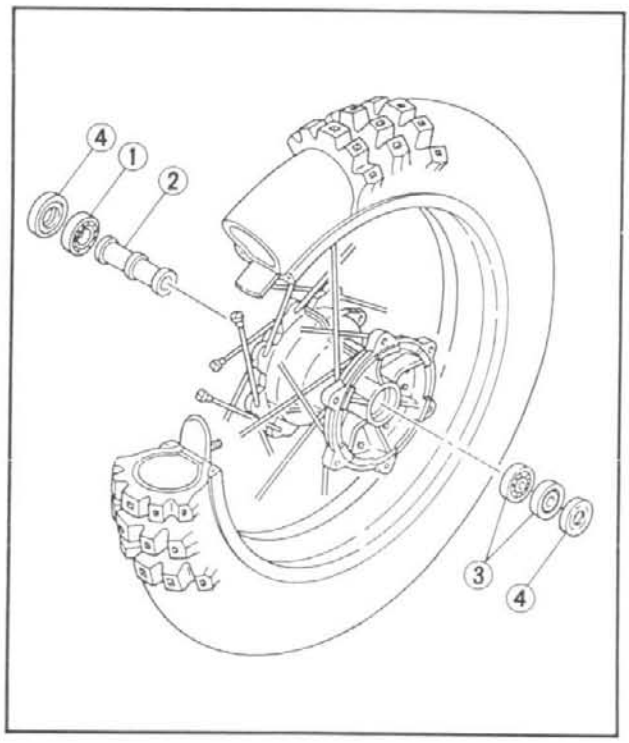
5



3. Inspect:
   - Rear wheel axle
     Roll the axle on a flat surface.
     Bends → Replace.

⚠ WARNING

Do not attempt to straighten a bent axle.



ASSEMBLY AND INSTALLATION

REAR WHEEL

1. Install:
   - Bearing (right) ①
   - Spacer ②
   - Bearing (left) ③
   - Oil seal ④

NOTE:

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

CAUTION:

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

2. Install:
   - Driven sprocket (1)
   - Bolt (driven sprocket) (2)
   - Nut (driven sprocket)

NOTE:

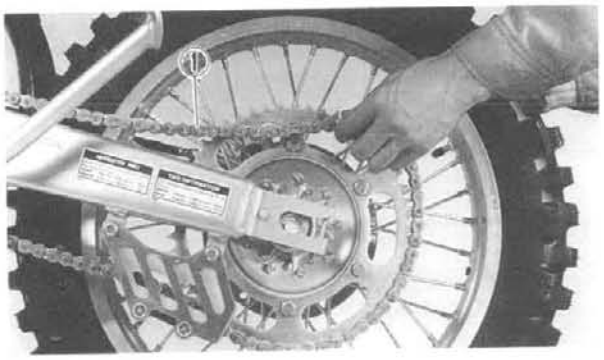
Tighten the bolts in stage, using a diagonal pattern.

	Nut (Drive Sprocket): 35 Nm (3.5 m•kg, 25 ft•lb)

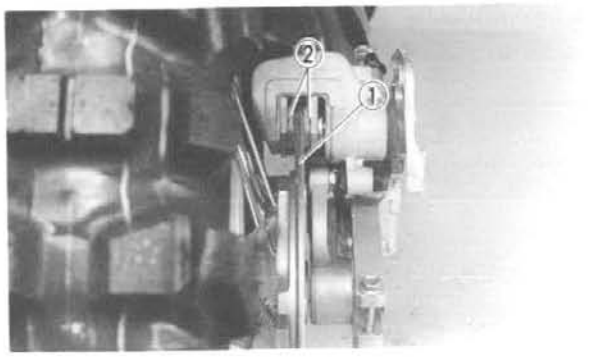
3. Install:
   - Collar (1)

NOTE:

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



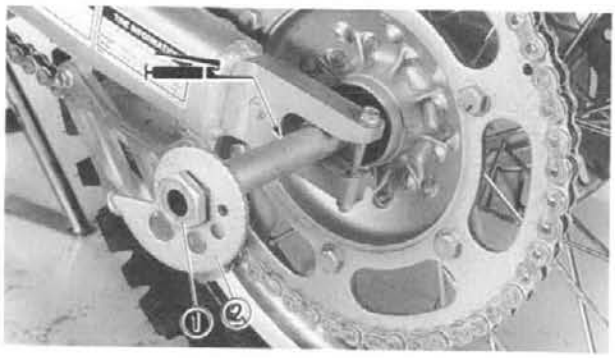
4. Install:
   - Drive chain (1)
     To driven sprocket.



5. Install:
   - Rear wheel

NOTE:

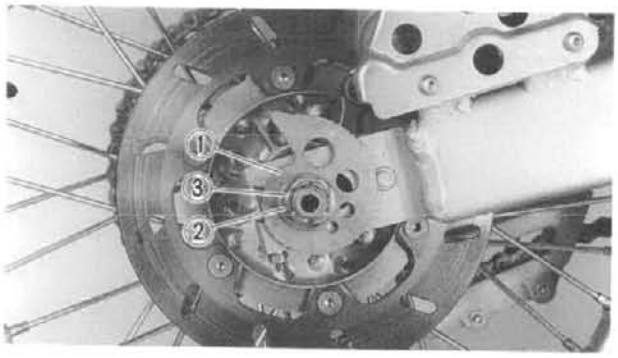
Install the brake disc (1) between the brake pads (2) correctly.



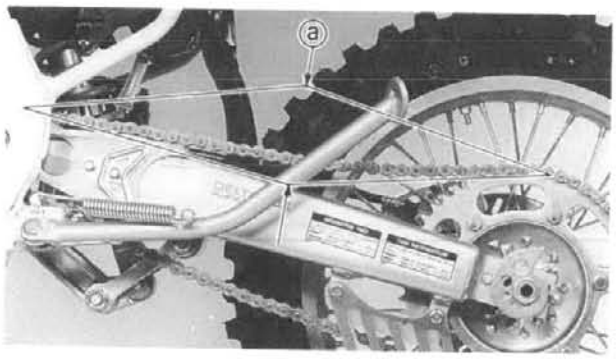
6. Install:
   - Rear wheel axle (1)
   - Chain puller (left) (2)

NOTE:

- Apply the lithium soap base grease on the wheel axle.
- Insert the wheel axle from left side.



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



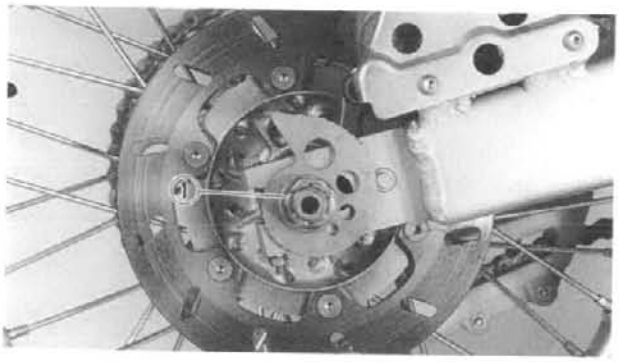
8. Adjust:
   - Drive chain slack (a)

   Turn both chain pullers (left and right) the same amount until the drive chain slack is within the specified limits.

Drive Chain Slack:
25 ~ 40 mm (1.0 ~ 1.6 in)

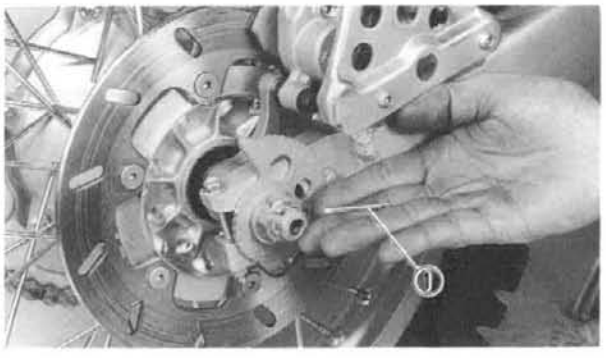
CAUTION:

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



9. Tighten:
   - Nut (rear wheel axle) (1)

Nut (Rear Wheel Axle):
90 Nm (9.0 m•kg, 65 ft•lb)



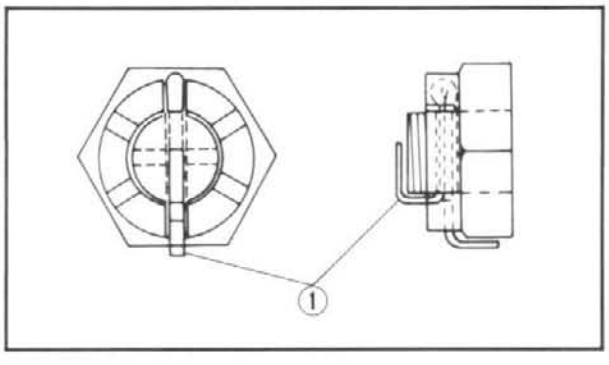
10. Install:
    • Cotter pin ①

NOTE:

If the axle nut notch and cotter pin hole do not match, tighten the axle nut slightly to align them.

⚠ WARNING

Always use a new cotter pin on the axle nut.



11. Bend the end of the cotter pin ① as shown in the illustration.

12. Tighten:
    • Bolt ①

5

FRONT BRAKE

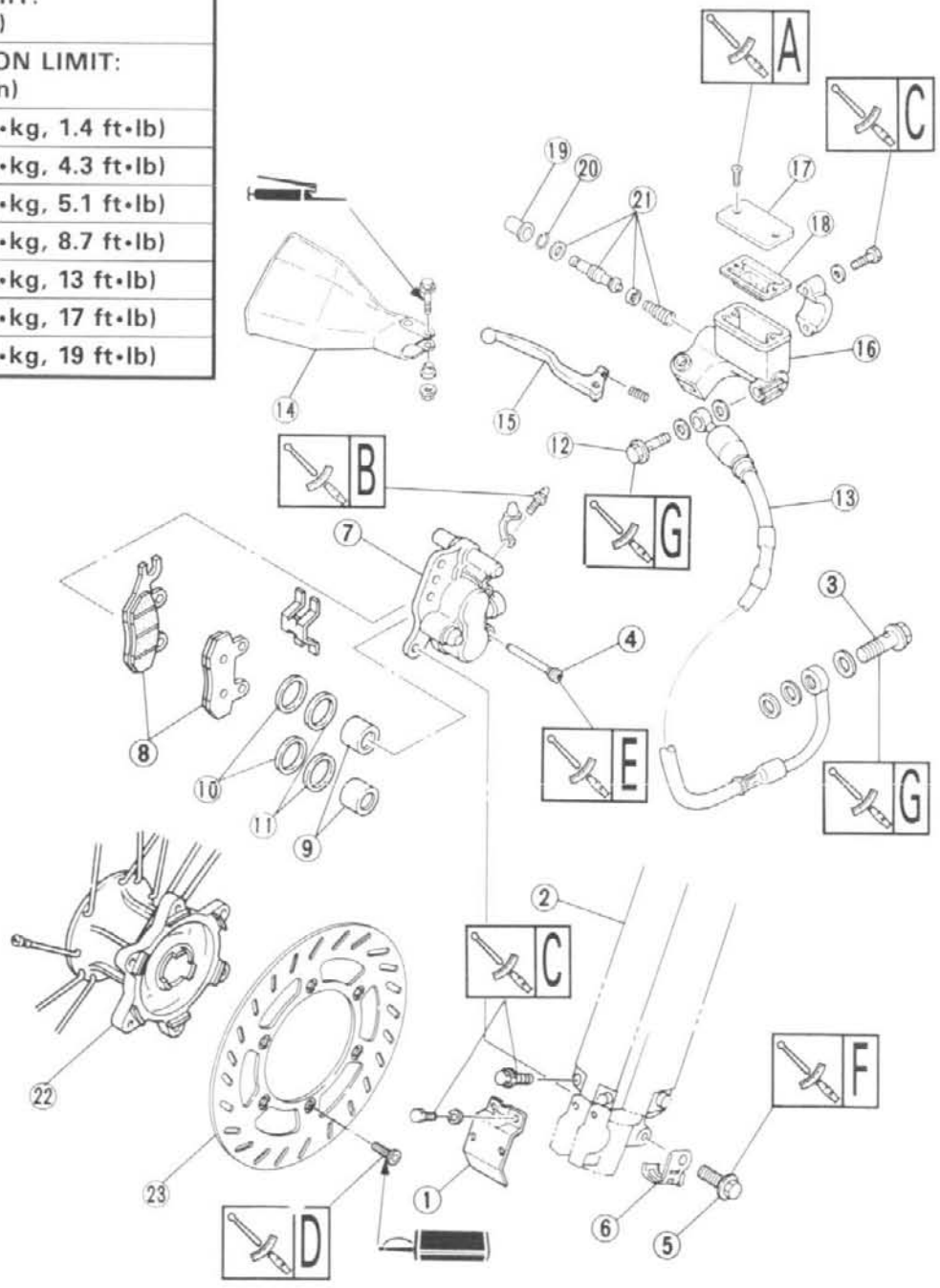
PREPARATION FOR REMOVAL

* Hold the machine by placing the suitable stand under the engine.

⚠ WARNING

Support the machine securely so there is no danger of it falling over.

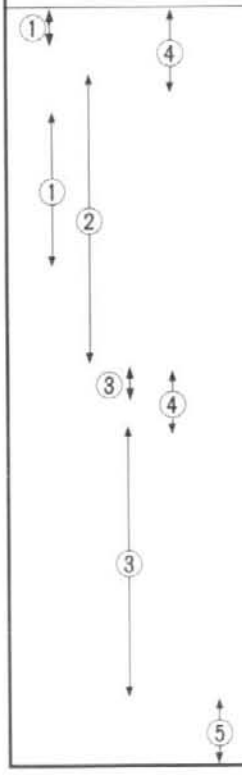
PAD WEAR LIMIT: 1.5 mm (0.06 in)	
DISC WEAR LIMIT: 3.0 mm (0.12 in)	
DISC DEFLECTION LIMIT: 0.3 mm (0.012 in)	
A	2 Nm (0.2 m•kg, 1.4 ft•lb)
B	6 Nm (0.6 m•kg, 4.3 ft•lb)
C	7 Nm (0.7 m•kg, 5.1 ft•lb)
D	12 Nm (1.2 m•kg, 8.7 ft•lb)
E	18 Nm (1.8 m•kg, 13 ft•lb)
F	23 Nm (2.3 m•kg, 17 ft•lb)
G	26 Nm (2.6 m•kg, 19 ft•lb)



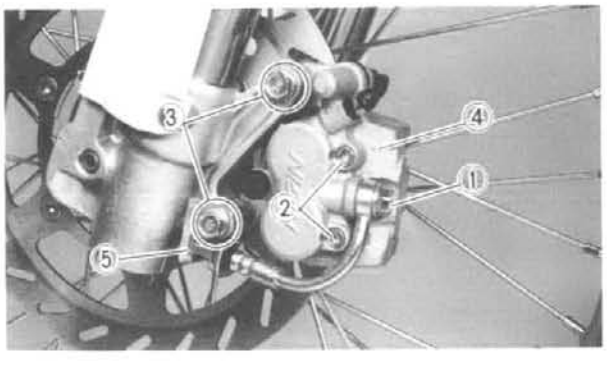
CAUTION:

Disc brake components rarely require disassembly. DO NOT:
- **Disassemble components unless absolutely necessary.**
- **Use solvents on internal brake component.**
- **Use contaminated brake fluid for cleaning.**
  Use only clean brake fluid.
- **Allow brake fluid to come in contact with the eyes otherwise eye injury may occur.**
- **Allow brake fluid to contact painted surfaces or plastic parts otherwise damage may occur.**
- **Disconnect any hydraulic connection otherwise the entire system must be disassembled, drained, cleaned, and then properly filled and bled after reassembly.**

Extent of removal: ① Brake pads removal ② Caliper removal and disassembly ③ Master cylinder removal and disassembly ④ Brake hose removal ⑤ Brake disc removal



Order	Parts name	Q'ty	Remarks
1	Hose cover	1	
2	Protector	1	
3	Union bolt	1	Drain the brake fluid.
4	Pad pin	2	Only loosening.
5	Bolt (caliper)	2	Refer to "REMOVAL POINTS".
6	Brake hose holder	1	
7	Caliper	1	
8	Brake pad	2	
9	Caliper piston	2	
10	Dust seal	2	Refer to "REMOVAL POINTS".
11	Piston seal	2	
12	Union bolt	1	Drain the brake fluid.
13	Brake hose	1	
14	Brush guard (right)	1	
15	Brake lever	1	
16	Master cylinder	1	
17	Reservoir tank cap	1	
18	Diaphragm	1	
19	Master cylinder boot	1	
20	Circlip	1	Refer to "REMOVAL POINTS".
21	Master cylinder kit	1	
22	Front wheel	1	Refer to "FRONT WHEEL" section.
23	Brake disc	1	



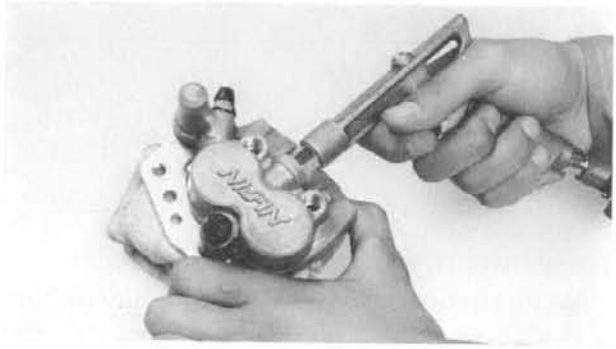
REMOVAL POINTS

CALIPER

1. Remove:
   - Union bolt ①
   - Pad pin ②
   - Bolt (caliper) ③
   - Caliper ④
   - Brake hose holder ⑤

NOTE:

Before removing the caliper from the front fork, loosen the pad pin.



CALIPER PISTON

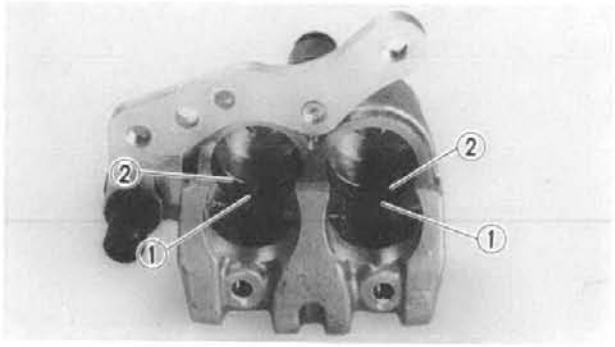
1. Remove:
   - Caliper piston

   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.



PISTON SEAL KIT

1. Remove:
   - Dust seal ①
   - Piston seal ②

NOTE:

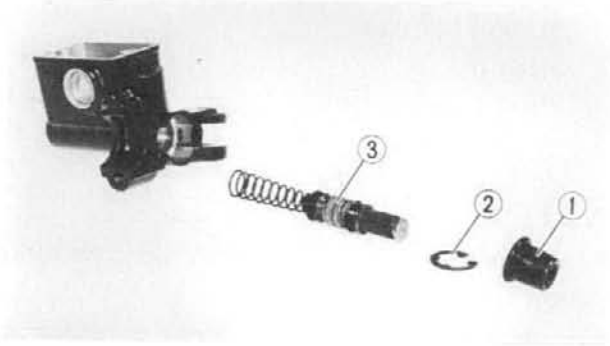
Remove the piston and dust seals by pushing it with a finger.

CAUTION:

Never attempt to pry out piston and dust seals.

⚠ WARNING

Replace the piston and dust seals whenever a caliper is disassembled.



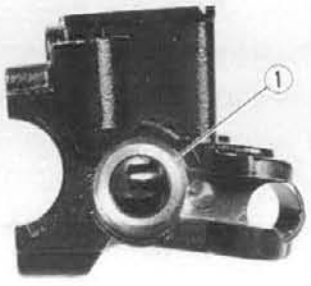
MASTER CYLINDER KIT

1. Remove:
   - Master cylinder boot ①
   - Circlip ②
   - Master cylinder kit ③

   Use a long nose circlip plier.

INSPECTION

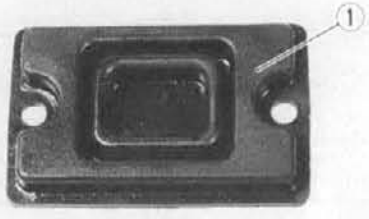
MASTER CYLINDER



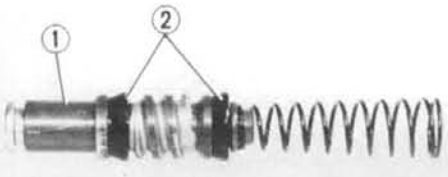
1. Inspect:
   - Master cylinder body ①
     Wear/Scratches → Replace master cylinder assembly.
     Stains → Clean.

NOTE:

Use new brake fluid.



2. Inspect:
   - Diaphragm ①
     Crack/Damage → Replace.



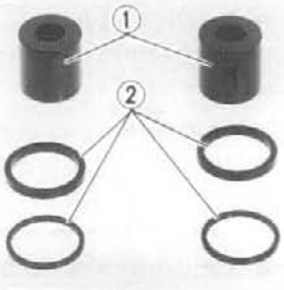
3. Inspect:
   - Master cylinder piston ①
   - Master cylinder cup ②
     Wear/Damage/Score marks → Replace master cylinder kit.

NOTE:

Replace master cylinder piston and cup as a set.

CALIPER

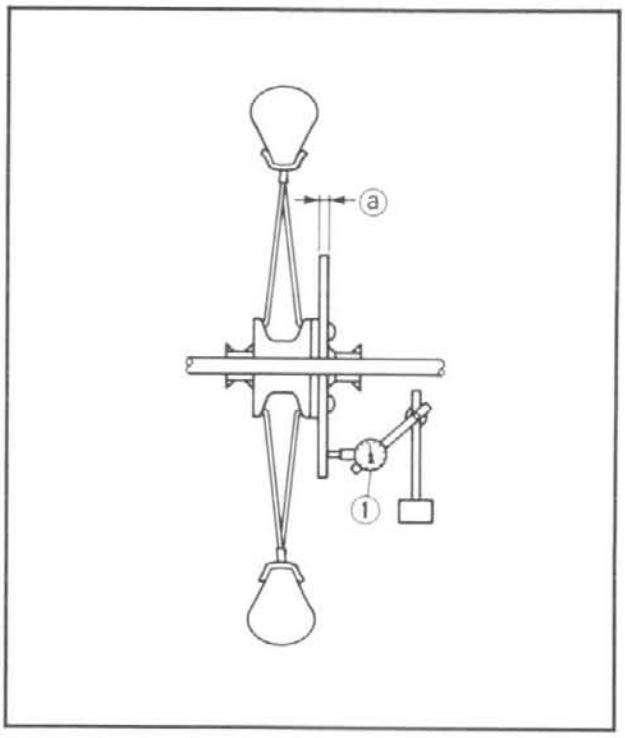
1. Inspect:
   - Caliper cylinder ①
     Wear/Score marks → Replace caliper assembly.



2. Inspect:
   - Caliper piston ①
     Wear/Score marks → Replace caliper assembly.

⚠ WARNING

Replace the piston and dust seals ② whenever a caliper is disassembled.



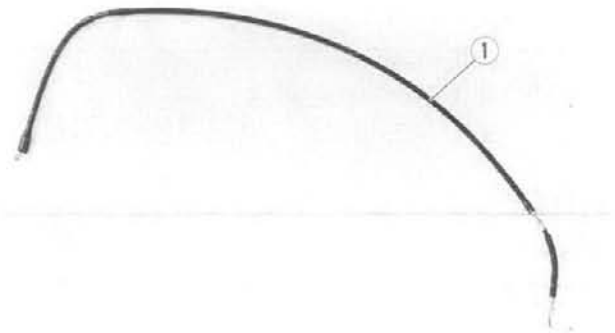
BRAKE DISC

1. Measure:
   - Brake disc deflection
     Use Dial Gauge (1).
     Out of specification → Inspect wheel runout.
     If wheel runout is in good condition, replace.

Maximum Deflection:
0.3 mm (0.01 in)

   - Brake disc thickness (a)
     Out of limit → Replace.

Disc Wear Limit:	
Standard	Limit
3.5 mm (0.14 in)	3.0 mm (0.12 in)



BRAKE HOSE

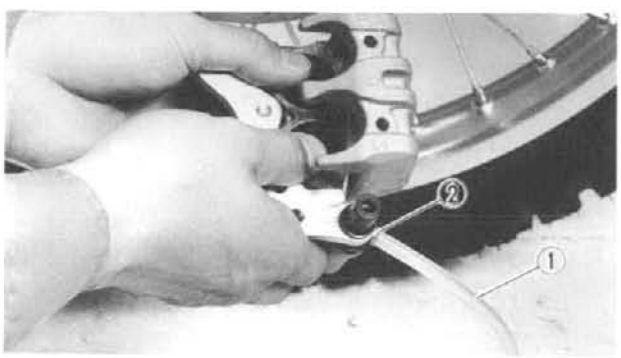
1. Inspect:
   - Brake hose (1)
     Crack/Damage → Replace.

5

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 seal and dust seal whenever a caliper is disassembled.**

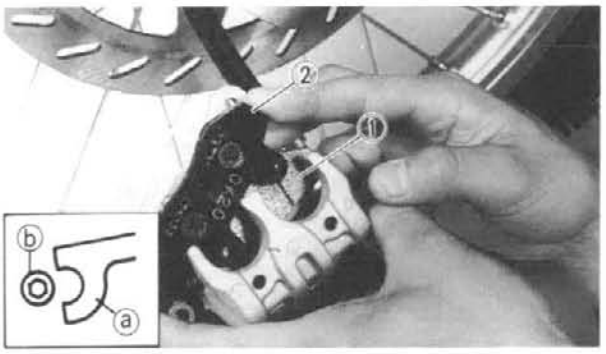


BRAKE PAD

1. Connect the transparent hose (1) to the bleed screw (2) and place the suitable container under its end.
2. Loosen the bleed screw and push the caliper piston in.

CAUTION:

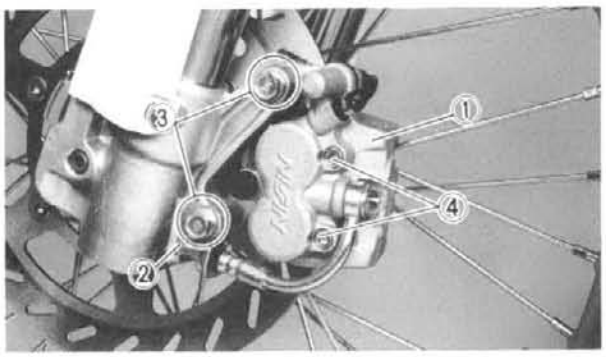
Do not reuse the drained brake fluid.



3. Install:
   - Brake pad 1 ①
   - Brake pad 2 ②
   - Pad pin

NOTE:

Fit the brake pad receptacle ⓐ around the projection ⓑ on the caliper.

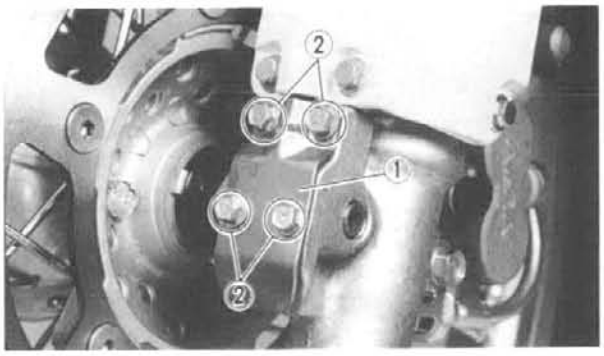


4. Install:
   - Caliper ①
   - Brake hose holder ②
   - Bolt (caliper) ③

Bolt (Caliper): 23 Nm (2.3 m•kg, 17 ft•lb)

5. Tighten:
   - Pad pin ④

Pad Pin: 18 Nm (1.8 m•kg, 13 ft•lb)



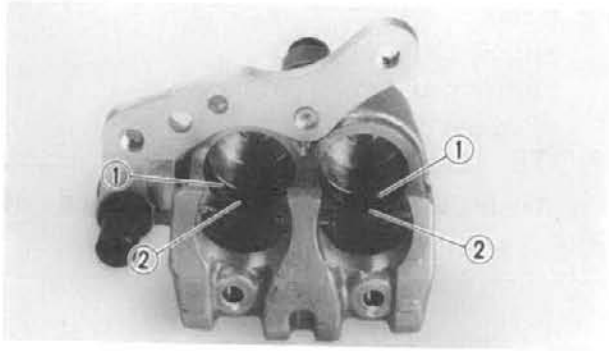
6. Install:
   - Hose cover ①
   - Bolt (hose cover) ②

Bolt (Hose Cover): 7 Nm (0.7 m•kg, 5.1 ft•lb)

CALIPER PISTON

1. Clean:
   - Caliper
   - Piston seal
   - Caliper piston

   Clean them with brake fluid.



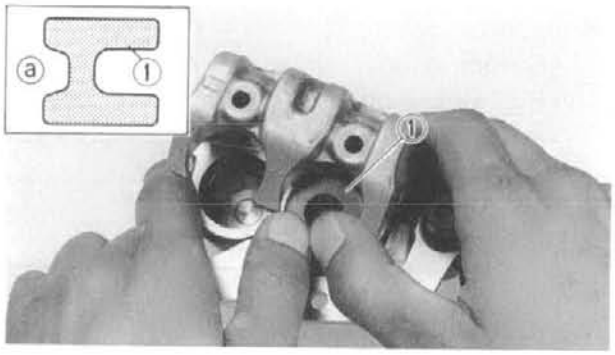
2. Install:
   - Piston seal ①
   - Dust seal ②

NOTE:

Fit the piston and dust seals onto the slot on caliper correctly.

⚠ WARNING

Replace the piston and dust seals whenever a caliper is disassembled.



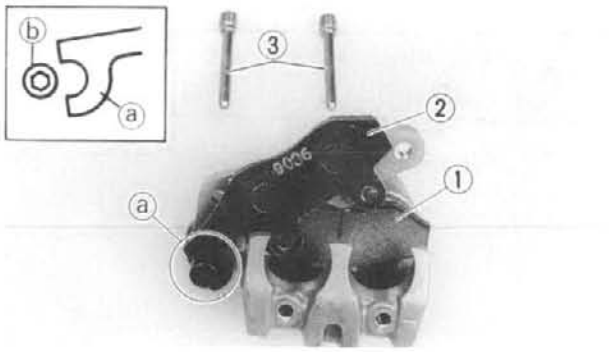
3. Install:
   - Caliper piston ①

NOTE:

Apply the brake fluid on the piston wall.

CAUTION:

- **Be sure that the shallow depressed side ⓐ face the caliper side.**
- **Never force to insert.**

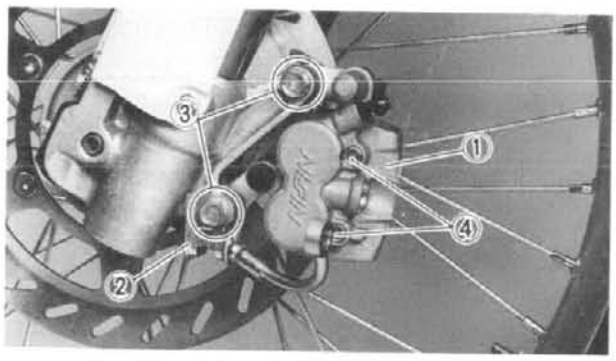


CALIPER

1. Install:
   - Brake pad 1 ①
   - Brake pad 2 ②
   - Pad pin ③

NOTE:

Fit the brake pad receptacle ⓐ on the brake pad 2 around the projection ⓑ on the caliper.

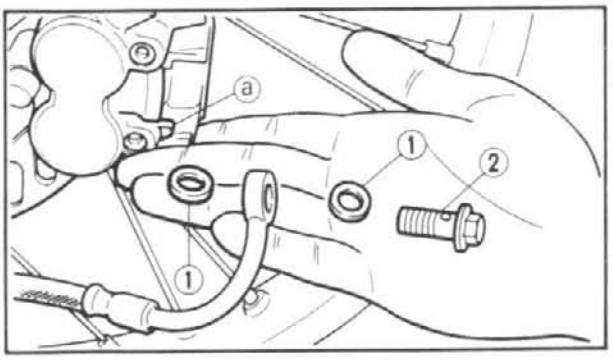


2. Install:
   - Caliper ①
   - Brake hose holder ②
   - Bolt (caliper) ③

	Bolt (Caliper): **23 Nm (2.3 m•kg, 17 ft•lb)**

3. Tighten:
   - Pad pin ④

	Pad Pin: **18 Nm (1.8 m•kg, 13 ft•lb)**



4. Install:
   - Copper washer ①
   - Union bolt ②

	Union Bolt: **26 Nm (2.6 m•kg, 19 ft•lb)**

NOTE:

Always use new copper washers.

CAUTION:

When installing the brake hose to the caliper, lightly touch the brake pipe with the projection ⓐ on the caliper.

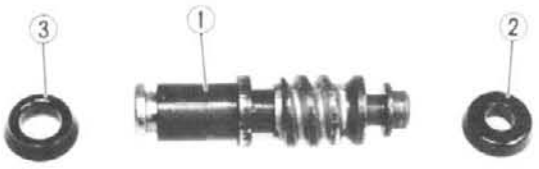
5. Air bleed:
   - Brake system

   Refer to the "BRAKE SYSTEM AIR BLEEDING" section in the CHAPTER 3.

MASTER CYLINDER KIT

1. Clean:
   - Master cylinder
   - Master cylinder kit

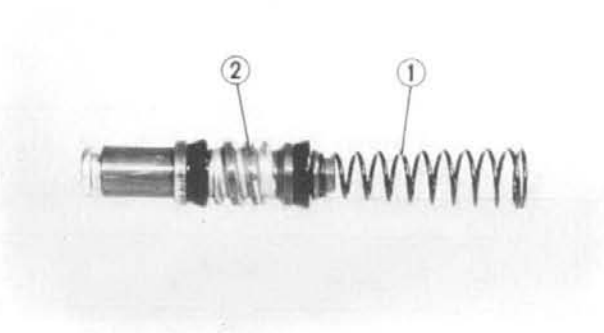
   Clean them with brake fluid.



2. Install:
   - Master cylinder piston ①
   - Master cylinder cup (primary) ②
   - Master cylinder cup (secondary) ③

NOTE:

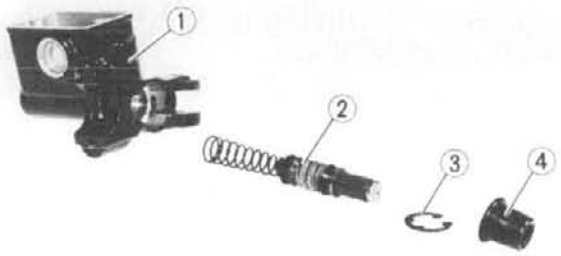
- Apply the brake fluid on the master cylinder cup.
- After installing, cylinder cup should be insalled as shown direction. Wrong installation cause improper brake performance.



3. Install:
   - Spring (1)
   - Master cylinder piston (2)

NOTE:

Install the spring at the smaller dia. side.



4. Install:
   - Master cylinder (1)
   - Master cylinder kit (2)
   - Circlip (3)
   - Master cylinder boot (4)

   Use a long nose circlip plier.

NOTE:

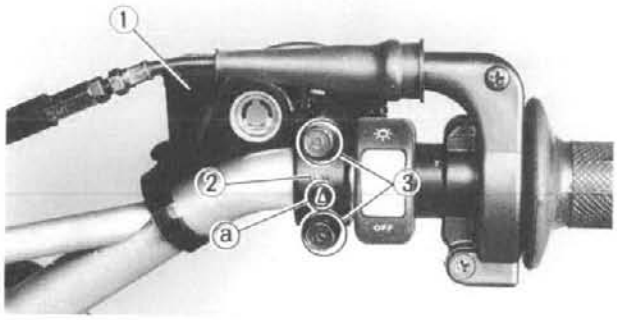
Apply the brake fluid on the master cylinder kit.

MASTER CYLINDER

1. Install:
   - Master cylinder (1)
   - Master cylinder bracket (2)
   - Bolt (master cylinder bracket) (3)

NOTE:

Install the bracket so that the arrow mark (a) face upward.

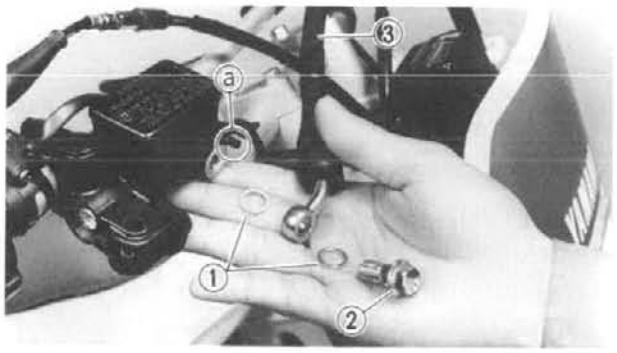


	Bolt (Master Cylinder Bracket): 7 Nm (0.7 m•kg, 5.1 ft•lb)

2. Install:
   - Copper washer (1)
   - Union bolt (2)
   - Brake hose (3)

NOTE:

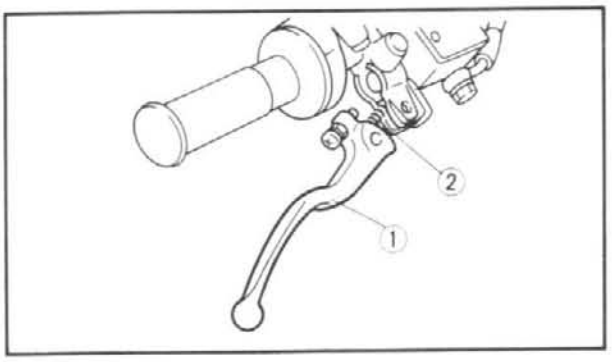
Always use a new copper washer.



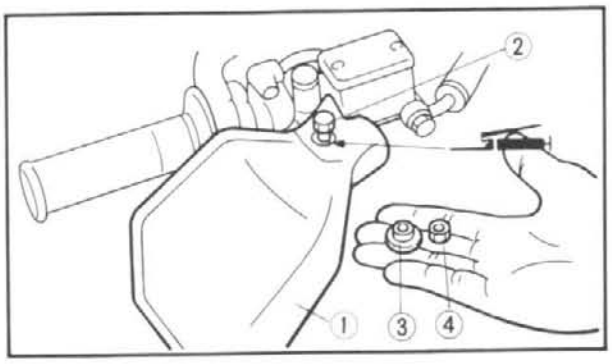
CAUTION:

When installing the brake hose to the master cylinder, lightly touch the brake pipe with the projection (a) on the master cylinder.

	Union Bolt: 26 Nm (2.6 m•kg, 19 ft•lb)



3. Install:
   - Brake lever (1)
   - Spring (2)



4. Install:
   - Brush guard (right) (1)
   - Bolt (brush guard) (2)
   - Collar (3)
   - Nut (brush guard) (4)

NOTE:

Apply the lithium soap base grease on the sliding surfase.

BRAKE DISC

1. Install:
   - Brake disc (1)
   - Bolt (brake disc) (2)

NOTE:

Tighten the bolts in stage, using a diagonal pattern.

	**Bolt (Brake Disc):** **12 Nm (1.2 m•kg, 8.7 ft•lb)** **LOCTITE®**

BRAKE FLUID

1. Fill:
   - Master cylinder tank

	**Recommended Brake Fluid:** **DOT #4**

NOTE:

If DOT #4 is not available, #3 can be used.

CAUTION:

Brake fluid may erode painted surfaces or plastic parts. Always clean up spilled fluid immediately.

⚠ 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.**

2. Air bleed:
   - Brake system

   Refer to the "BRAKE SYSTEM AIR BLEEDING" section in the CHAPTER 3.

5

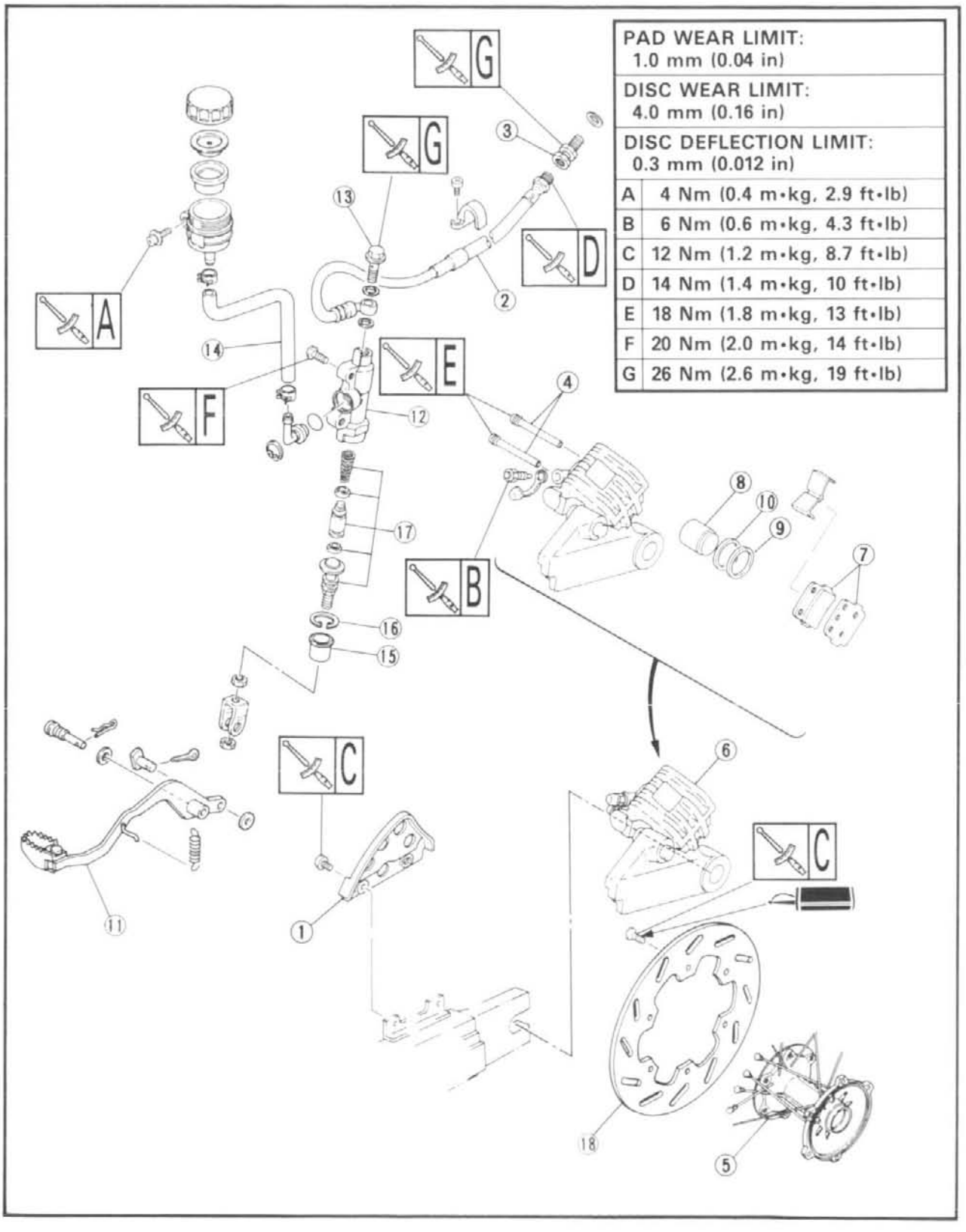
REAR BRAKE

PREPARATION FOR REMOVAL

* Hold the machine by placing the suitable stand under the engine.

⚠ WARNING

Support the machine securely so there is no danger of it falling over.



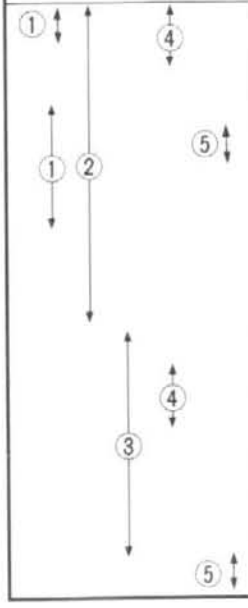
PAD WEAR LIMIT: 1.0 mm (0.04 in)	
DISC WEAR LIMIT: 4.0 mm (0.16 in)	
DISC DEFLECTION LIMIT: 0.3 mm (0.012 in)	
A	4 Nm (0.4 m•kg, 2.9 ft•lb)
B	6 Nm (0.6 m•kg, 4.3 ft•lb)
C	12 Nm (1.2 m•kg, 8.7 ft•lb)
D	14 Nm (1.4 m•kg, 10 ft•lb)
E	18 Nm (1.8 m•kg, 13 ft•lb)
F	20 Nm (2.0 m•kg, 14 ft•lb)
G	26 Nm (2.6 m•kg, 19 ft•lb)

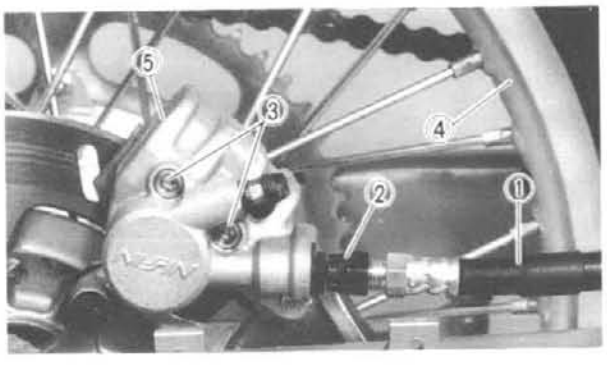
5

CAUTION:

Disc brake components rarely require disassembly. DO NOT:
- **Disassemble components unless absolutely necessary.**
- **Use solvents on internal brake component.**
- **Use contaminated brake fluid for cleaning.**
  Use only clean brake fluid.
- **Allow brake fluid to come in contact with the eyes otherwise eye injury may occur.**
- **Allow brake fluid to contact painted surfaces or plastic parts otherwise damage may occur.**
- **Disconnect any hydraulic connection otherwise the entire system must be disassembled, drained, cleaned, and then properly filled and bled after reassembly.**

Extent of removal: ① Brake pads removal ② Caliper removal and disassembly ③ Master cylinder removal and disassembly ④ Brake hose removal ⑤ Brake disc removal

Extent of removal	Order	Parts name	Q'ty	Remarks
	1	Protector	1	
	2	Brake hose	1	Drain the brake fluid.
	3	Joint bolt	1	Only loosening.
	4	Pad pin	2	Refer to "REMOVAL POINTS".
	5	Rear wheel	1	Refer to "REAR WHEEL" section.
	6	Caliper	1	
	7	Brake pad	2	
	8	Caliper piston	2	
	9	Dust seal	1	Refer to "REMOVAL POINTS".
	10	Piston seal	1	
	11	Brake pedal	1	Refer to "REMOVAL POINTS".
	12	Master cylinder	1	
	13	Union bolt	1	Drain the brake fluid.
	14	Reservoir hose	1	
	15	Master cylinder boot	1	
	16	Circlip	1	Refer to "REMOVAL POINTS".
	17	Master cylinder kit	1	
	18	Brake disc	1	



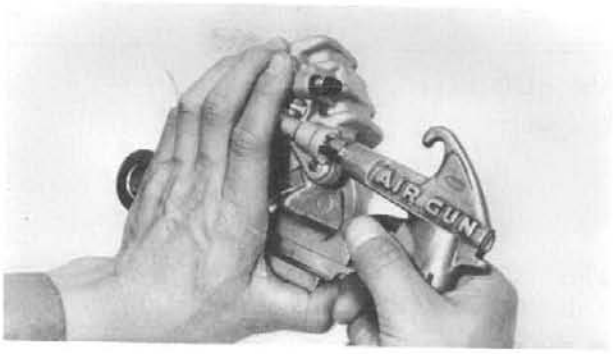
REMOVAL POINTS

CALIPER

1. Remove:
   - Brake hose ①
   - Joint bolt ②
   - Pad pin ③
   - Rear wheel ④
   - Caliper ⑤

NOTE:

Before removing the caliper from the swingarm, loosen the pad pin.



CALIPER PISTON

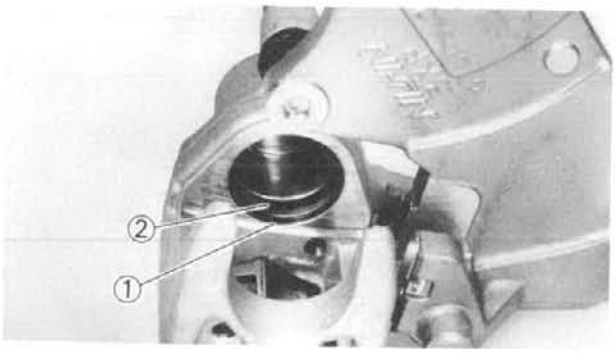
1. Remove:
   - Caliper piston

   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.



PISTON SEAL KIT

1. Remove:
   - Dust seal ①
   - Piston seal ②

NOTE:

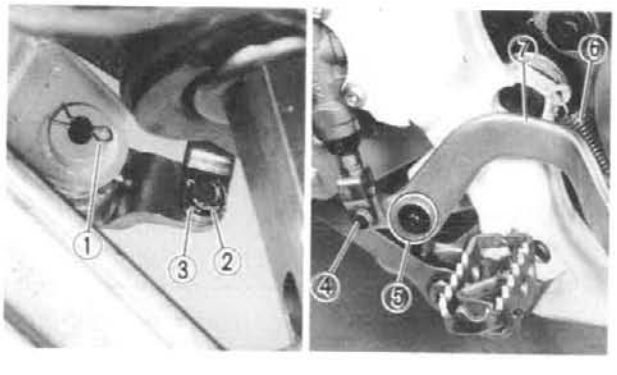
Remove the piston and dust seals by pushing it with a finger.

CAUTION:

Never attempt to pry out piston and dust seals.

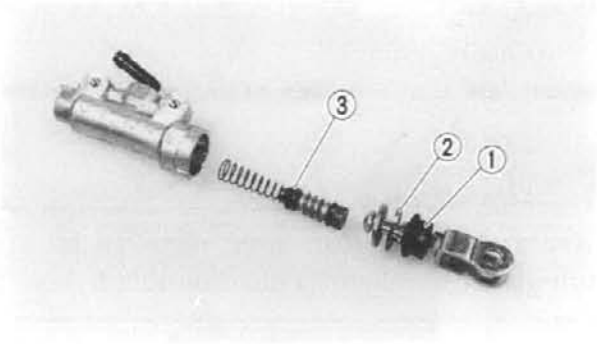
⚠ WARNING

Replace the piston and dust seals whenever a caliper is disassembled.



BRAKE PEDAL

1. Remove:
   - Clip ①
   - Cotter pin ②
   - Plain washer ③
   - Pin ④
   - Bolt (brake pedal) ⑤
   - Spring ⑥
   - Brake pedal ⑦



MASTER CYLINDER KIT

1. Remove:
   - Master cylinder boot ①
   - Circlip ②
   - Master cylinder kit ③

   Use a long nose circlip plier.

INSPECTION

MASTER CYLINDER

1. Inspect.:
   - Master cylinder body ①

   Wear/Scratches → Replace master cylinder assembly.

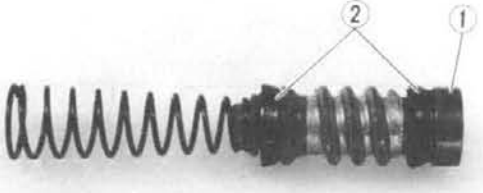
   Stains → Clean.

NOTE:

Use new brake fluid.

2. Inspect:
   - Diaphragm ①

   Crack/Damage → Replace.

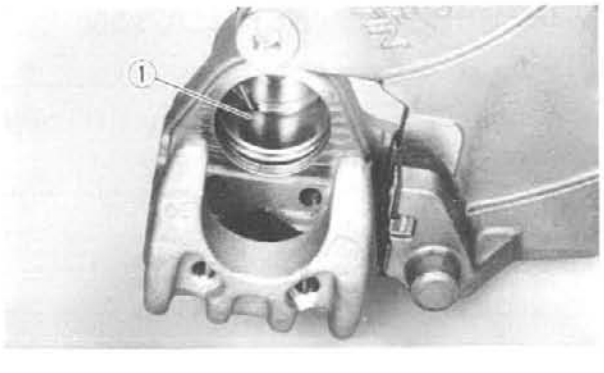


3. Inspect:
   - Master cylinder piston ①
   - Master cylinder cup ②

   Wear/Damage/Score marks → Replace master cylinder kit.

NOTE:

Replace master cylinder piston and cup as a set.

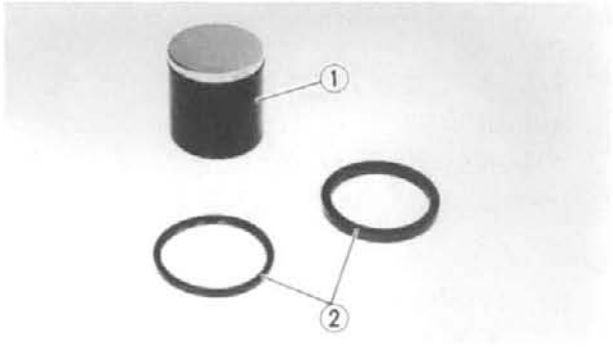


CALIPER

1. Inspect:
   - Caliper cylinder ①

   Wear/Score marks → Replace caliper assembly.

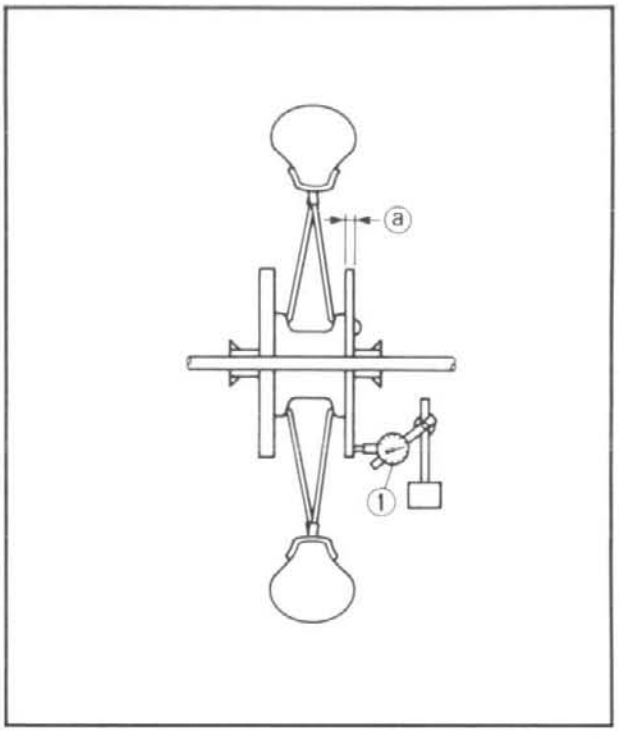
5



2. Inspect:
   • Caliper piston (1)
   Wear/Score marks → Replace caliper assembly.

⚠ WARNING

Replace the piston and dust seals (2) whenever a caliper is disassembled.



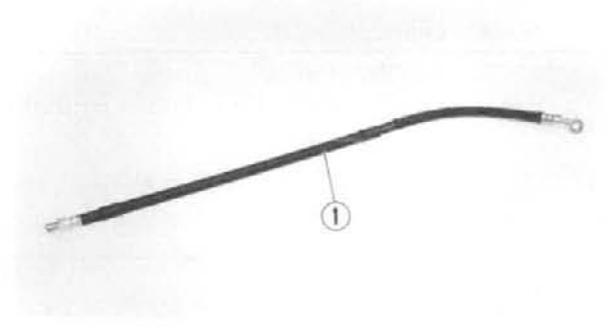
BRAKE DISC

1. Measure:
   • Brake disc deflection
   Use Dial Gauge (1).
   Out of specification → Inspect wheel runout.
   If wheel runout is in good condition, replace.

Maximum Deflection:
0.3 mm (0.01 in)

   • Brake disc thickness (a)
   Out of limit → Replace.

Disc Wear Limit:	
Standard	Limit
4.5 mm (0.18 in)	4.0 mm (0.16 in)



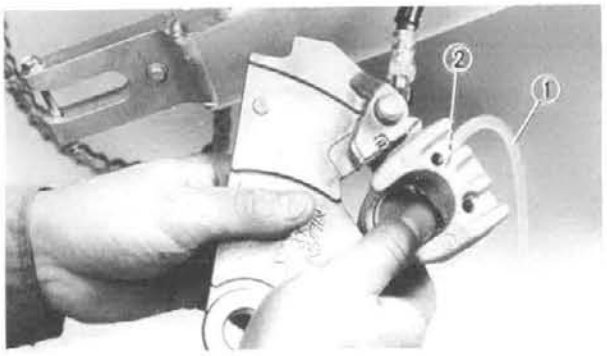
BRAKE HOSE

1. Inspect:
   • Brake hose (1)
   Crack/Damage → Replace.

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 seal and dust seal whenever a caliper is disassembled.**

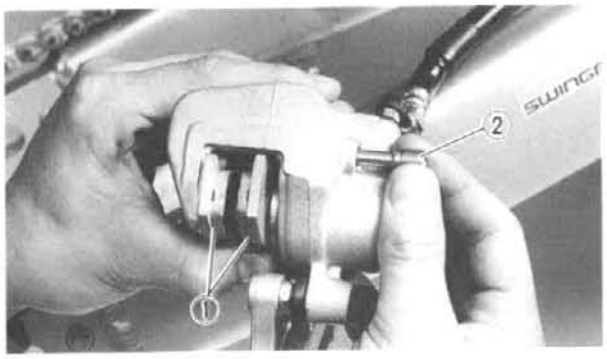


BRAKE PAD

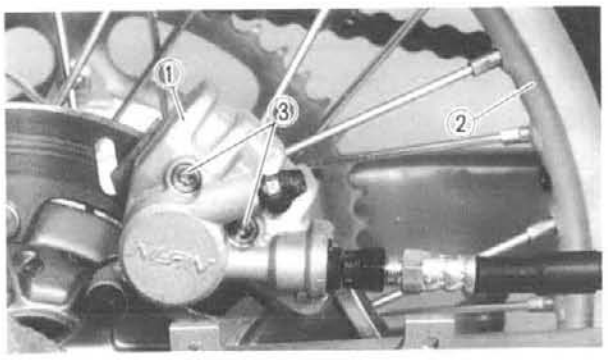
1. Connect the transparent hose ① to the bleed screw ② and place the suitable container under its end.
2. Loosen the bleed screw and push the caliper piston in.

CAUTION:

Do not reuse the drained brake fluid.



3. Install:
   - Brake pad ①
   - Pad pin ②

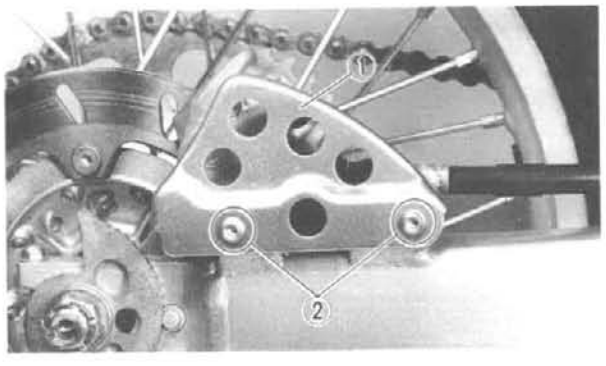


4. Install:
   - Caliper ①
   - Rear wheel ②

   Refer to the "REAR WHEEL" section in the CHAPTER 5.

5. Tighten:
   - Pad pin ③

	Pad Pin: **18 Nm (1.8 m•kg, 13 ft•lb)**



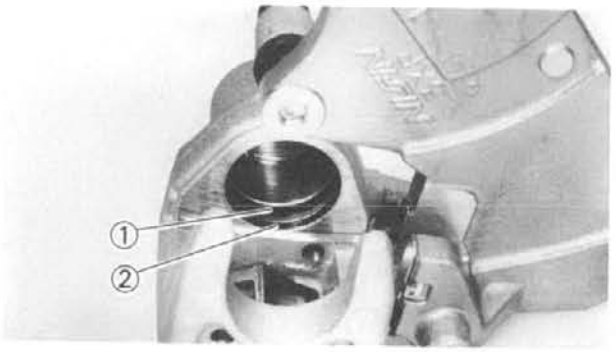
6. Install:
   - Protector ①
   - Bolt (protector) ②

	Bolt (Protector): **12 Nm (1.2 m•kg, 8.7 ft•lb)**

CALIPER PISTON

1. Clean:
   - Caliper
   - Piston seal
   - Caliper piston

   Clean them with brake fluid.



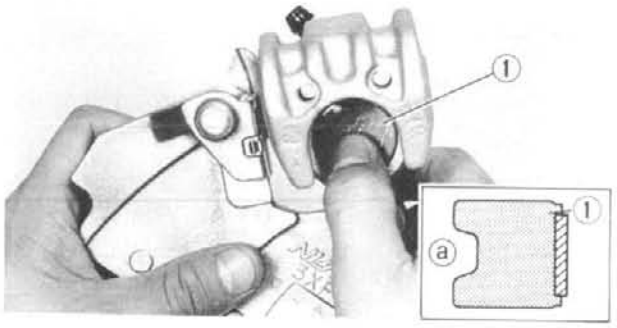
2. Install:
   - Piston seal (1)
   - Dust seal (2)

NOTE:

Fit the piston and dust seals onto the slot on caliper correctly.

⚠ WARNING

Replace the piston and dust seals whenever a caliper is disassembled.



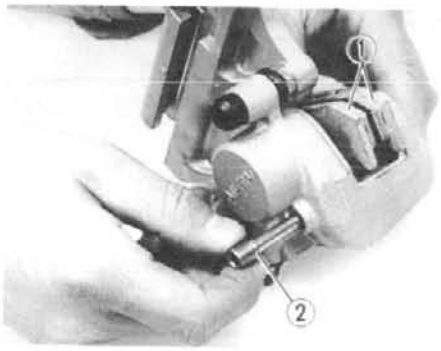
3. Install:
   - Caliper piston (1)

NOTE:

Apply the brake fluid on the piston wall.

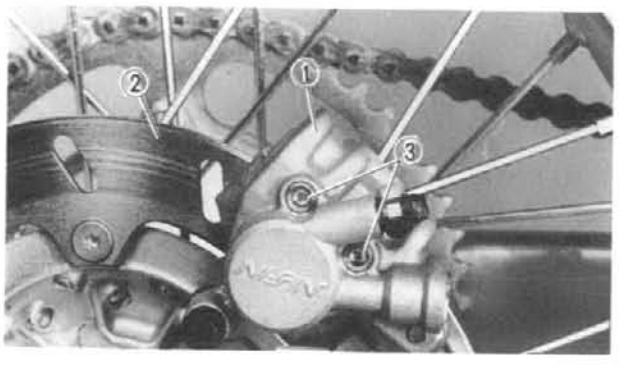
CAUTION:

- **Be sure that the depressed side (a) face the caliper side.**
- **Never force to insert.**



CALIPER

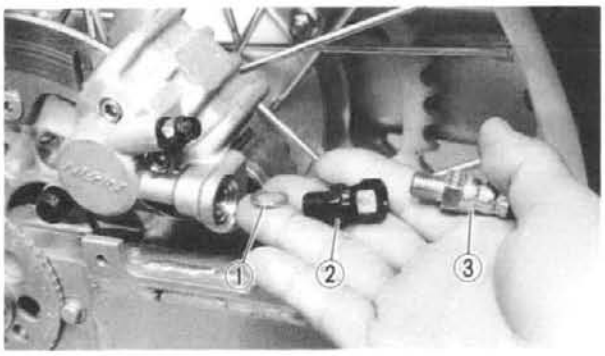
1. Install:
   - Brake pad (1)
   - Pad pin (2)



2. Install:
   - Caliper (1)
   - Rear wheel (2)

   Refer to the "REAR WHEEL" section in the CHAPTER 5.
3. Tighten:
   - Pad pin (3)

	Pad Pin: **18 Nm (1.8 m•kg, 13 ft•lb)**

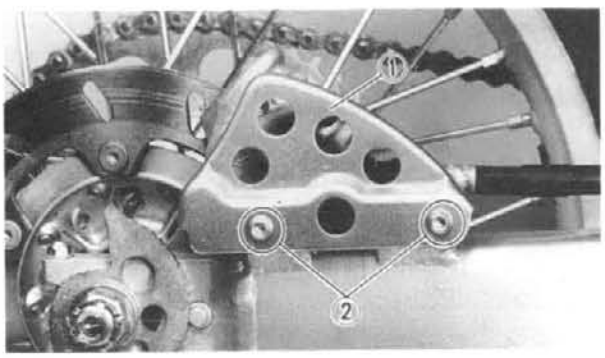


4. Install:
   - Copper washer (1)
   - Joint bolt (2)
   - Brake hose (3)

Joint Bolt:
26 Nm (2.6 m•kg, 19 ft•lb)
Brake Hose:
14 Nm (1.4 m•kg, 10 ft•lb)

NOTE:
Always use a new copper washer.

5. Air bleed:
   - Brake system
   Refer to the "BRAKE SYSTEM AIR BLEEDING" section in the CHAPTER 3.

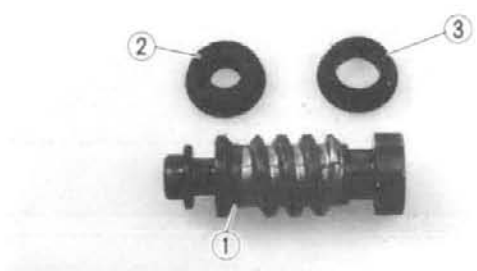


6. Install:
   - Protector (1)
   - Bolt (protector) (2)

Bolt (Protector):
12 Nm (1.2 m•kg, 8.7 ft•lb)

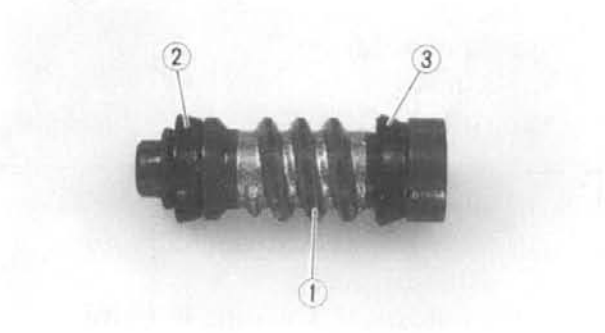
MASTER CYLINDER KIT

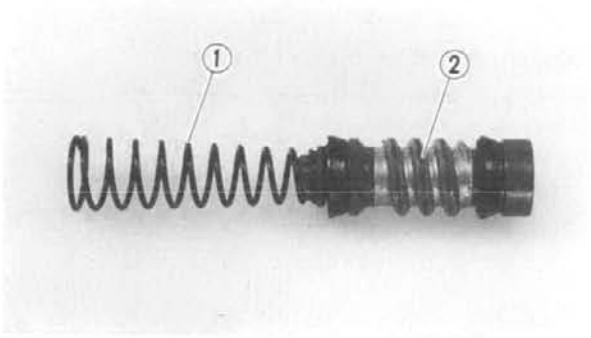
1. Clean:
   - Master cylinder
   - Master cylinder kit
   Clean them with brake fluid.



2. Install:
   - Master cylinder piston (1)
   - Master cylinder cup (primary) (2)
   - Master cylinder cup (secondary) (3)

NOTE:
- Apply the brake fluid on the master cylinder cup.
- After installing, cylinder cup should be installed as shown direction. Wrong installation cause improper brake performance.

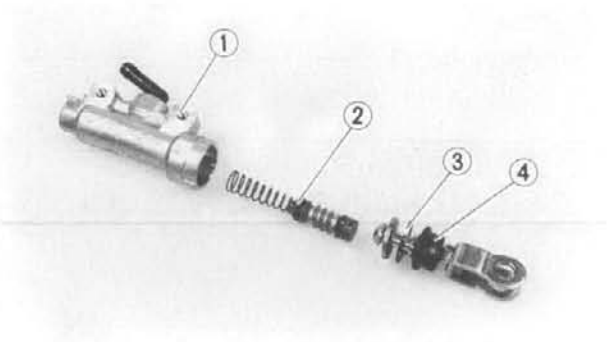




3. Install:
   - Spring (1)
   - Master cylinder piston (2)

NOTE:

Install the spring at the smaller dia. side.

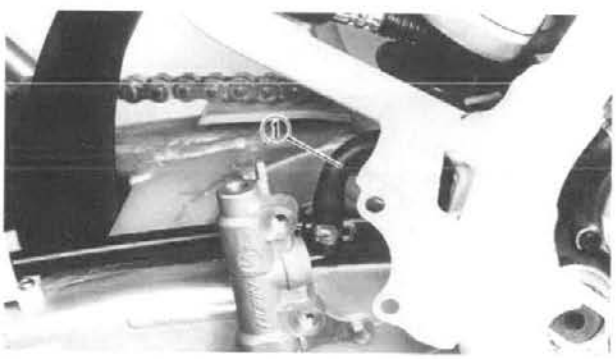


4. Install:
   - Master cylinder (1)
   - Master cylinder kit (2)
   - Circlip (3)
   - Master cylinder boot (4)

NOTE:

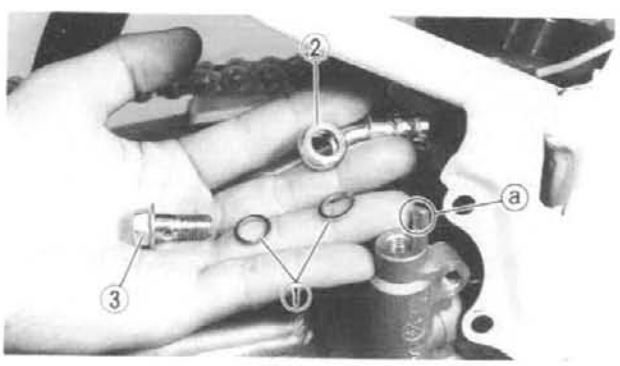
Apply the brake fluid on the master cylinder kit.

5



MASTER CYLINDER

1. Install:
   - Reservoir hose (1)



2. Install:
   - Copper washer (1)
   - Brake hose (2)
   - Union bolt (3)

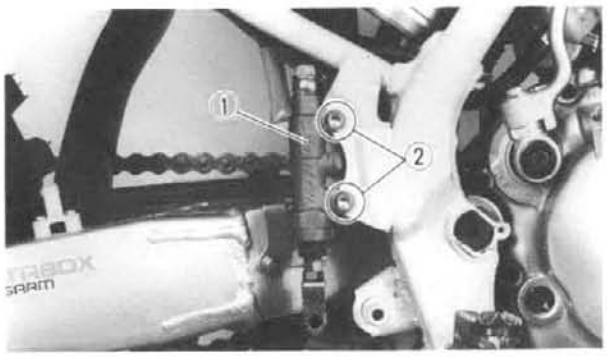
NOTE:

Always use a new copper washer.

CAUTION:

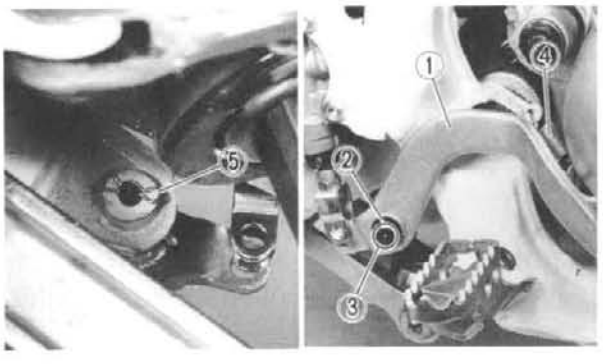
When installing the brake hose to the master cylinder, lightly touch the brake pipe with the projection ⓐ on the master cylinder.

	Union Bolt: 26 Nm (2.6 m•kg, 19 ft•lb)

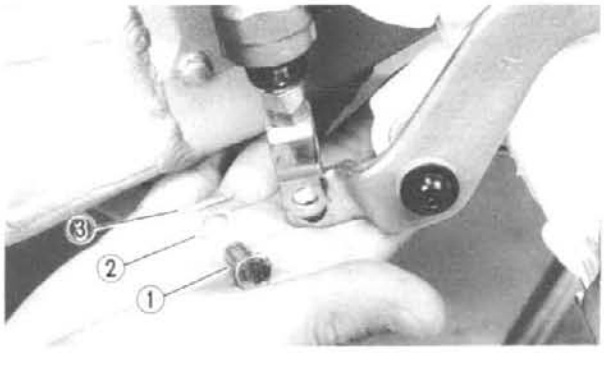


3. Install:
   - Master cylinder ①
   - Bolt (master cylinder) ②

	Bolt (Master Cylinder): 20 Nm (2.0 m•kg, 14 ft•lb)



4. Install:
   - Brake pedal ①
   - Plain washer ②
   - Bolt (brake pedal) ③
   - Spring ④
   - Clip ⑤



5. Install:
   - Pin ①
   - Plain washer ②
   - Cotter pin ③

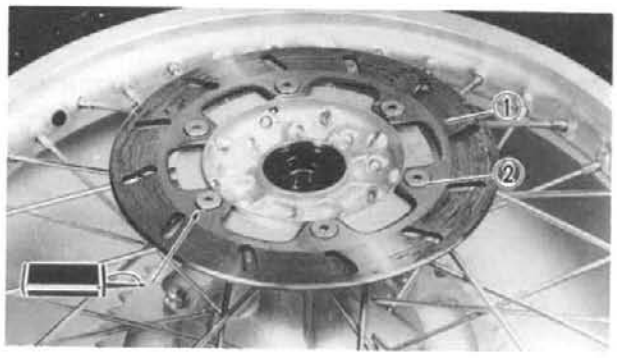
⚠ WARNING

Always use new cotter pins.

NOTE:

After installing, check the brake pedal height. Refer to the "REAR BRAKE ADJUSTMENT" section in the CHAPTER 3.

5



BRAKE DISC

1. Install:
   - Brake disc ①
   - Bolt (brake disc) ②

NOTE:

Tighten the bolts in stage, using a diagonal pattern.

Bolt (Brake Disc):
12 Nm (1.2 m•kg, 8.7 ft•lb)
LOCTITE®

BRAKE FLUID

1. Fill:
   - Brake fluid

Recommended Brake Fluid:
DOT #4

CAUTION:

Brake fluid may erode painted surfaces or plastic parts. Always clean up spilled fluid immediately.

⚠ 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.**

2. Air bleed:
   - Brake system

   Refer to the "BRAKE SYSTEM AIR BLEEDING" section in the CHAPTER 3.

FRONT FORK

PREPARATION FOR REMOVAL

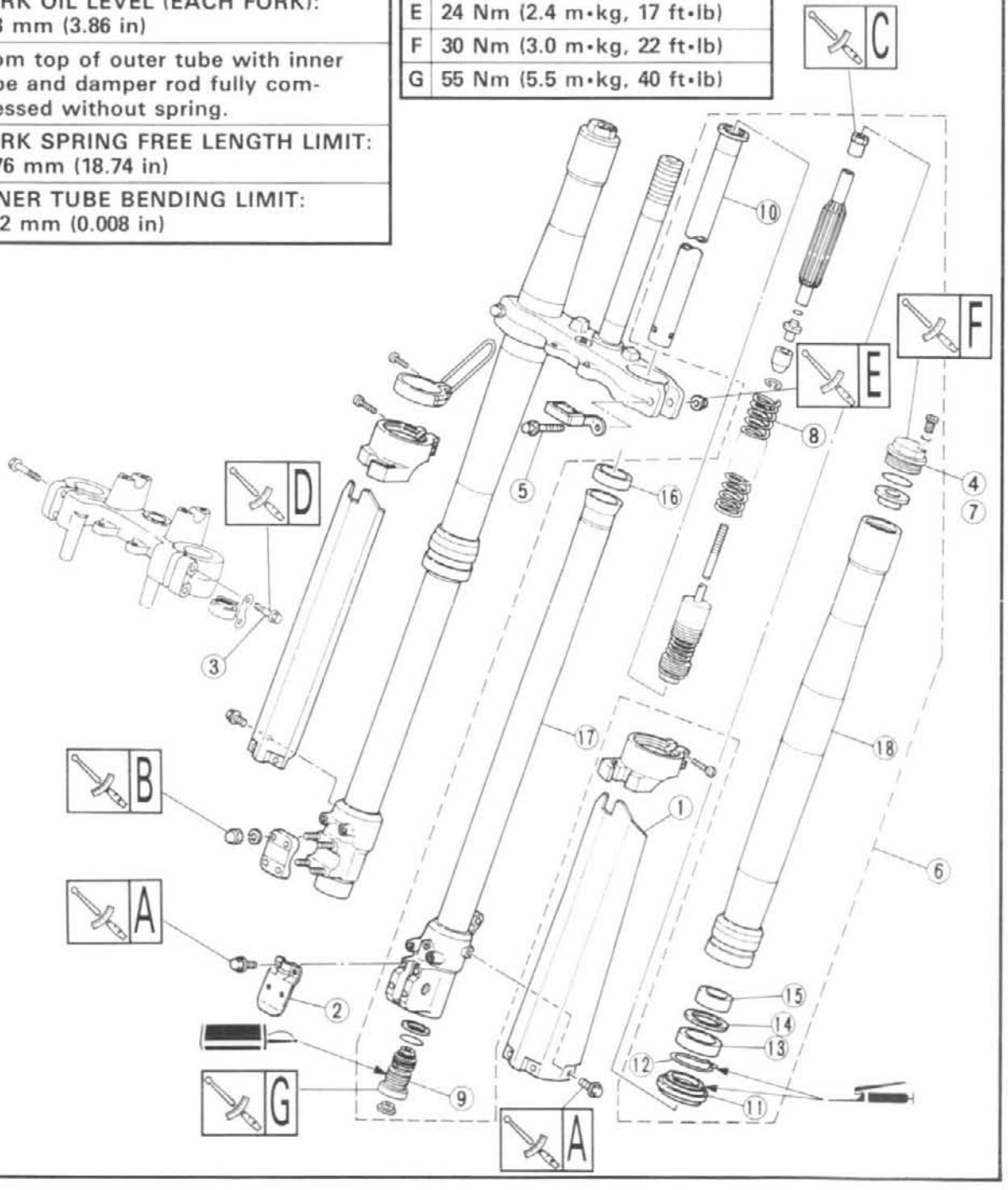
* Remove the following parts:
  - Front wheel
  - Caliper
  - Handlebar
* Disconnect the odometer cable at wheel side.
* Hold the machine by placing the suitable stand under the engine.

⚠ WARNING

Support the machine securely so there is no danger of it falling over.

FORK OIL CAPACITY (EACH FORK): 468 cm^3 (16.5 Imp oz, 15.8 US oz)
RECOMMENDED OIL: Suspension oil "01"
FORK OIL LEVEL (EACH FORK): 98 mm (3.86 in)
From top of outer tube with inner tube and damper rod fully compressed without spring.
FORK SPRING FREE LENGTH LIMIT: 476 mm (18.74 in)
INNER TUBE BENDING LIMIT: 0.2 mm (0.008 in)

A	7 Nm (0.7 m•kg, 5.1 ft•lb)
B	10 Nm (1.0 m•kg, 7.2 ft•lb)
C	15 Nm (1.5 m•kg, 11 ft•lb)
D	23 Nm (2.3 m•kg, 17 ft•lb)
E	24 Nm (2.4 m•kg, 17 ft•lb)
F	30 Nm (3.0 m•kg, 22 ft•lb)
G	55 Nm (5.5 m•kg, 40 ft•lb)



Extent of removal: ① Front fork removal ② Front fork disassembly

Extent of removal	Order	Part name	Q'ty	Remarks
①	1	Protector	1	
	2	Hose cover	1	
	3	Pinch bolt (handle crown)	2	Only loosening
	4	Cap bolt	1	Only loosening
①	5	Pinch bolt (under bracket)	2	Only loosening
	6	Front fork	1	
	7	Cap bolt	1	Refer to "REMOVAL POINTS".
	8	Fork spring	1	Drain the fork oil.
②	9	Base valve	1	Use special tool. Refer to "REMOVAL POINTS".
	10	Damper rod	1	
	11	Dust seal	1	
	12	Stopper ring	1	Refer to "REMOVAL POINTS".
	13	Oil seal	1	Refer to "REMOVAL POINTS".
	14	Oil seal washer	1	
	15	Slide metal	1	
	16	Piston metal	1	
	17	Inner tube	1	
	18	Outer tube	1	

REMOVAL POINTS

CAP BOLT

1. Remove:
   - Cap bolt ①

   From the outer tube.

NOTE:

Before removing the front fork from the machine, loosen the cap bolt ①.

2. Remove:
   - Cap bolt ①

   Hold the locknut ② (damper rod).

5

HANDLING NOTE

NOTE:

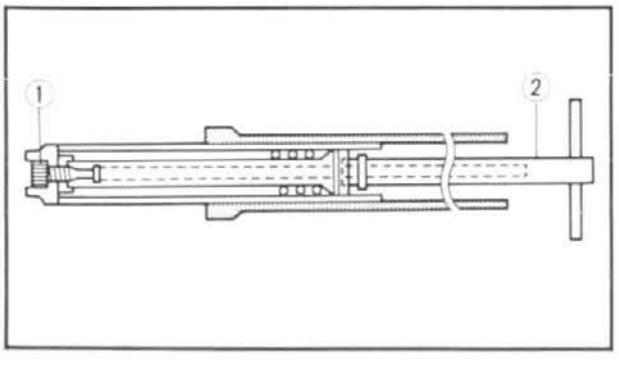
The front fork requires careful attention. So it is recommended that the front fork be maintained at the dealers.

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.**

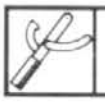
5



BASE VALVE

1. Remove:
   - Base valve ①

   Use a Damper Rod Holder ② to lock the rod assembly.

	Damper Rod Holder: YM-1423/90890-01423

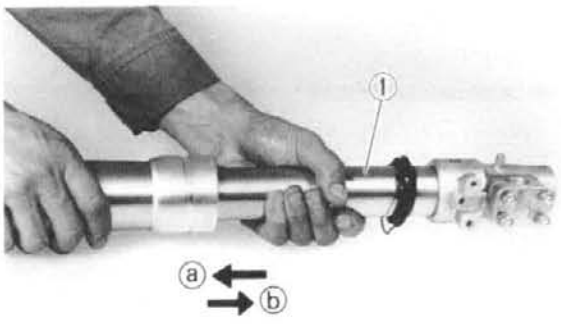
OIL SEAL

1. Remove:
   - Dust seal ①
   - Stopper ring ②

   Using slotted-head screwdriver.

CAUTION:

Take care not to scratch the inner tube.

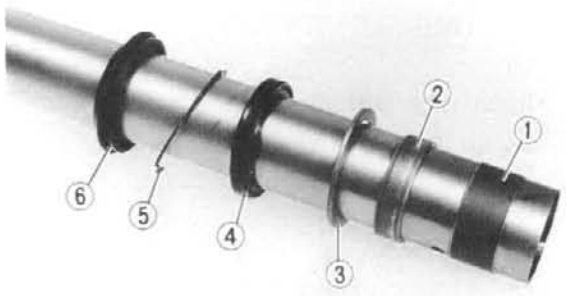


2. Remove:
   - Inner tube (1)

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.

CAUTION:

Don't bottom out the inner tube in the above step, or the oil lock piece will be damaged.



3. Remove:
   - Piston metal (1)
   - Slide metal (2)
   - Oil seal washer (3)
   - Oil seal (4)
   - Stopper ring (5)
   - Dust seal (6)

INSPECTION

DAMPER ROD

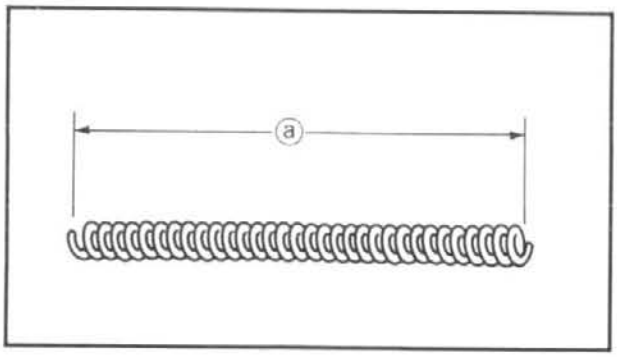
1. Inspect:
   - Damper rod (1)
     Bend/Damage → Replace damper rod.

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.

BASE VALVE

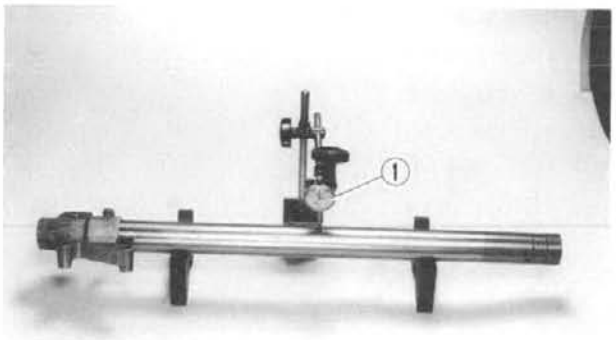
1. Inspect:
   - Valve assembly ①
     Wear/Damage → Replace.
   - O-ring ②
     Damage → Replace.



FORK SPRING

1. Measure:
   - Fork spring free length ⓐ
     Out of specification → Replace.

Fork Spring Free Length:	
Standard	Limit
480.5 mm (18.92 in)	476 mm (18.74 in)



INNER TUBE

1. Inspect:
   - Inner tube surface
     Score marks → Repair or replace.
     Use #1,000 grit wet sandpaper.
     Damaged oil lock piece → Replace.
   - Inner tube bends
     Out of specification → Replace.
     Use Dial Gauge ①.

Inner Tube Bending Limit:
0.2 mm (0.008 in)

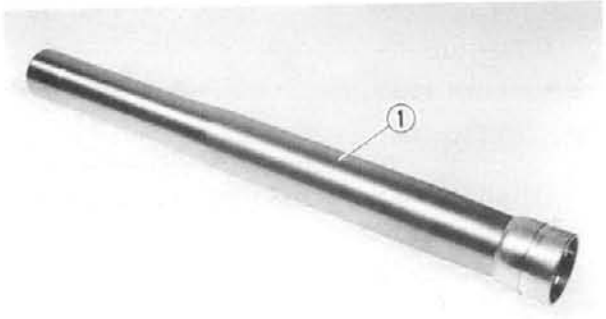
NOTE:

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.

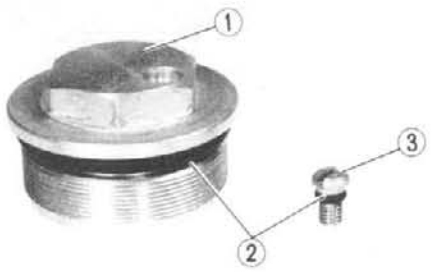
5



OUTER TUBE

1. Inspect:
   - Outer tube (1)

   Score marks/Wear/Damage → Replace.



CAP BOLT

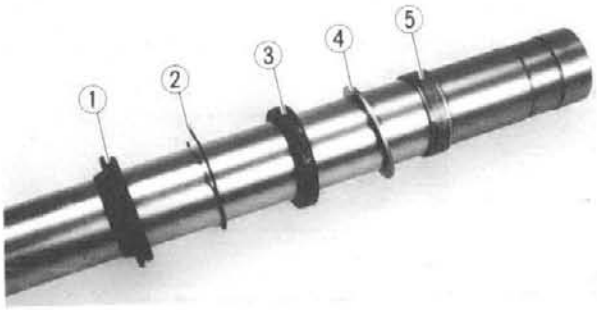
1. Inspect:
   - Cap bolt (1)
   - O-ring (2)
   - Air bleed screw (3)

   Wear/Damage → Replace.

ASSEMBLY AND INSTALLATION

FRONT FORK ASSEMBLY

1. Wash the all parts in a clean solvent.
2. Install:
   - Dust seal (1)
   - Stopper ring (2)
   - Oil seal (3)
   - Oil seal washer (4)
   - Slide metal (5)



NOTE:

- Apply the fork oil on the inner tube.
- When installing the oil seal (2), use vinyl seat (1) 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.

CAUTION:

Always use a new oil seal and slide metal.

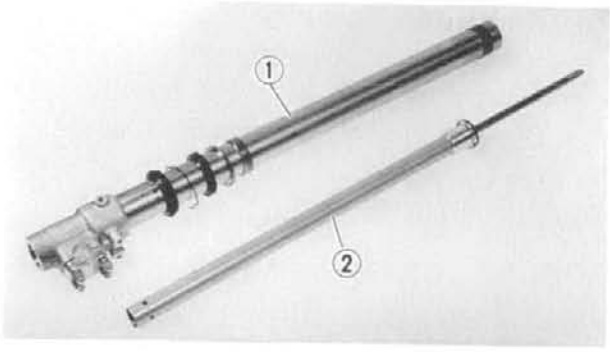
3. Install:
   - Piston metal (1)

NOTE:

Install the piston metal onto the slot on inner tube.

CAUTION:

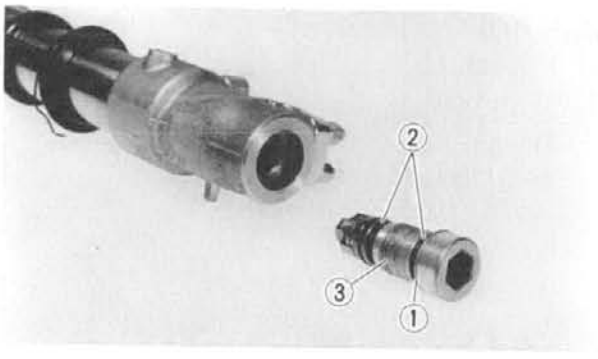
Always use a new piston metal.



4. Install:
   - Inner tube ①
   - Damper rod ②

CAUTION:

To install the damper rod into the inner tube, hold the inner tube aslant. If the inner tube is held vertically, the rod assembly may fall into it, damping the valve inside.

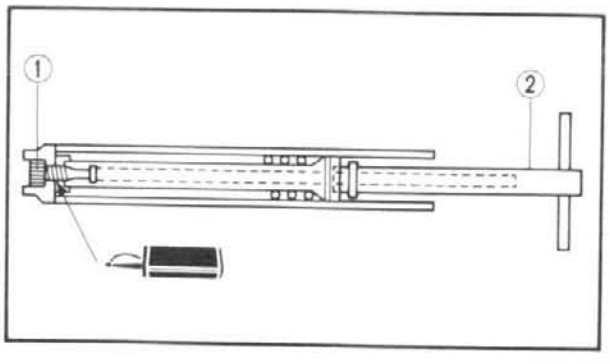


5. Install:
   - Copper washer ①
   - O-ring ②
   - Base valve ③

   To inner tube.

NOTE:

Always use a new copper washer.



6. Tighten:
   - Base valve ①

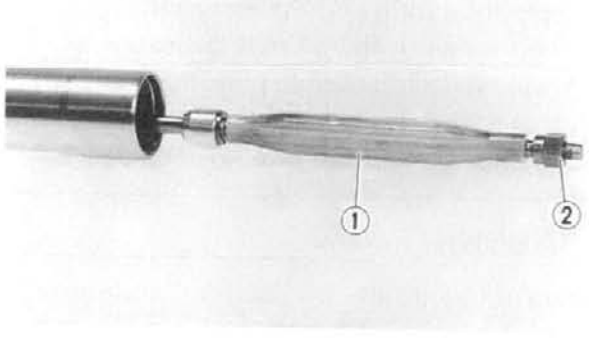
   Use Damper Rod Holder ② to lock the rod assembly.

	Damper Rod Holder: **YM-1423/90890-01423**

	Base Valve: **55 Nm (5.5 m•kg, 40 ft•lb)** **LOCTITE®**

NOTE:

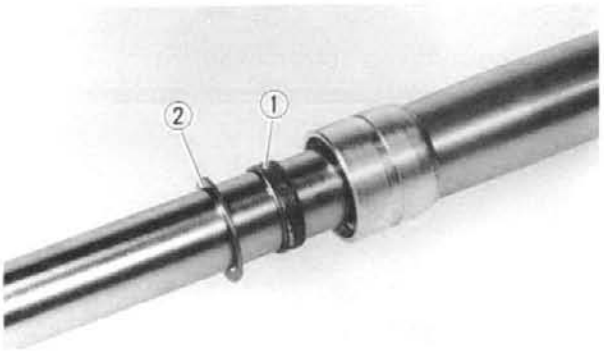
Apply the LOCTITE® onto the base valve thread.



7. Install:
   - Spring guide ①
   - Locknut ②

   To piston rod.

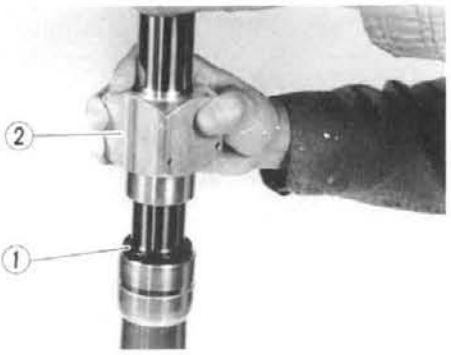
8. Install:
   - Outer tube ①
   - Inner tube ②



9. Install:
   - Slide metal ①
   - Oil seal washer ②

   To outer tube slot.

A



10. Install:
    - Oil seal ①

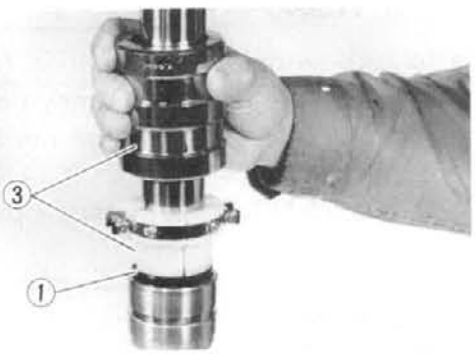
NOTE:

Press the oil seal into the outer tube with Fork Seal Driver ②, ③.

Fork Seal Driver:	
YM-1424	②
90890-01442	③

A For USA
B Except for USA

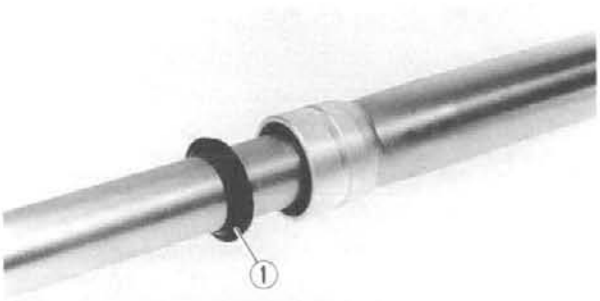
B



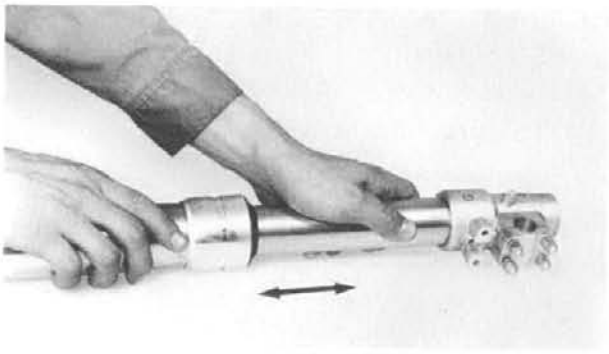
11. Install:
    - Stopper ring ①

NOTE:

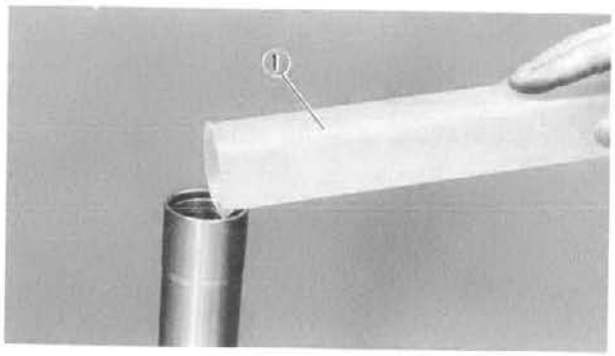
Fit the stopper ring correctly in the groove in the outer tube.



12. Install:
    - Dust seal ①



13. Check:
    - Inner tube smooth movement
      Tighteness/Binding/Rough spots→
      Repeat the steps 2 to 12.



14. Compress the front fork fully.

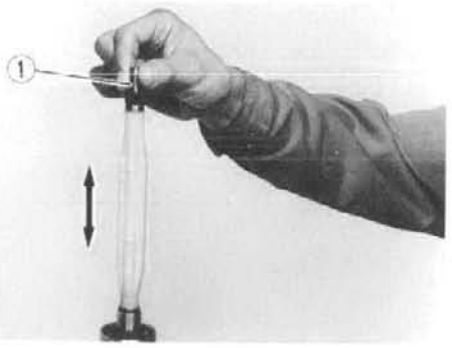
15. Fill:
    - Front fork oil
      Until outer tube top surface with recommended fork oil (1).

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.**

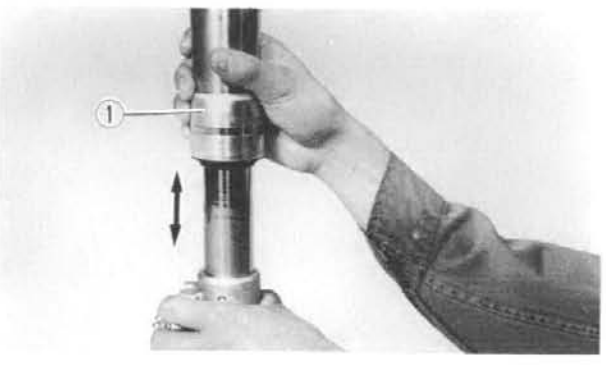
16. After filling, pump the damper rod (1) slowly up and down more than 10 times to distribute the fork oil.



NOTE:

Be sure to pump the damper rod slowly because the fork oil will spurt out from its end.

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.

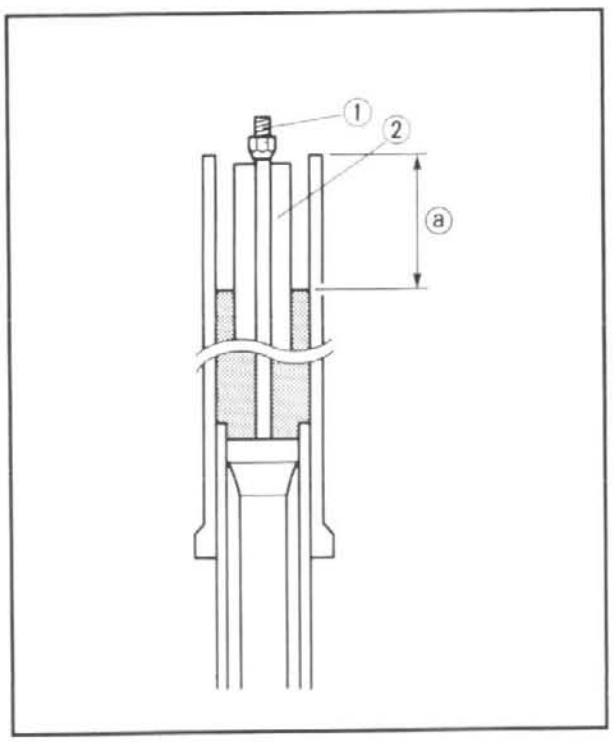
NOTE:

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) ⓐ
      Out of specification→Adjust.

Fork Oil Level: 98 mm (3.86 in)
From top of outer tube with inner tube and damper rod ① fully compressed without spring.

NOTE:

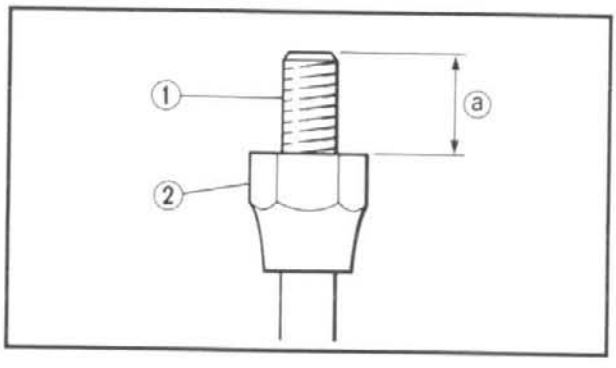
Be sure to install the spring guide ② when checking the oil level.

⚠ WARNING

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

21. Install:
    - Fork spring ①
    - Spring guide ②

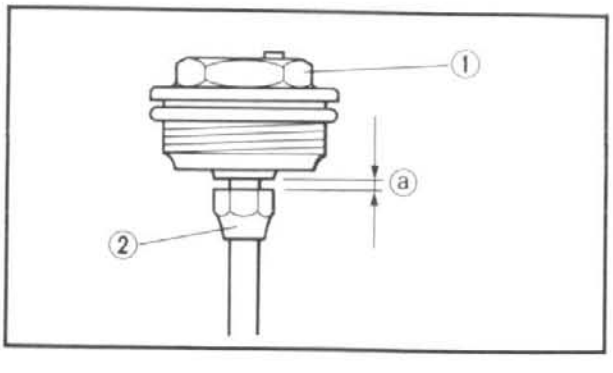
5



22. Measure:
- Distance (a)

Out of specification → Turn into the locknut.

Distance (a):
18 mm (0.71 in) or more
Between damper rod top (1) and locknut top (2).

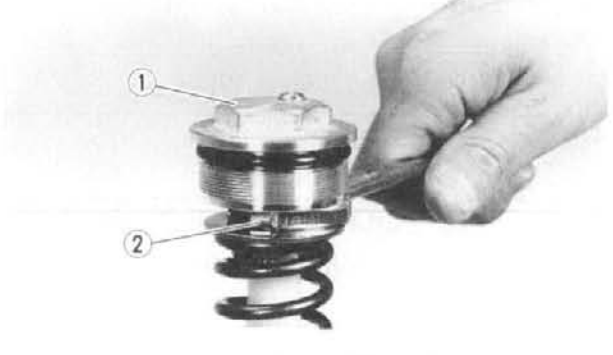


23. Install:
- Cap bolt (1)

Fully tighten the cap bolt onto the damper rod by hand.

NOTE:

Make sure that there is a clearance (a) of Zero ~ 1 mm (Zero ~ 0.04 in) between the cap bolt and locknut (2).



24. Tighten:
- Locknut

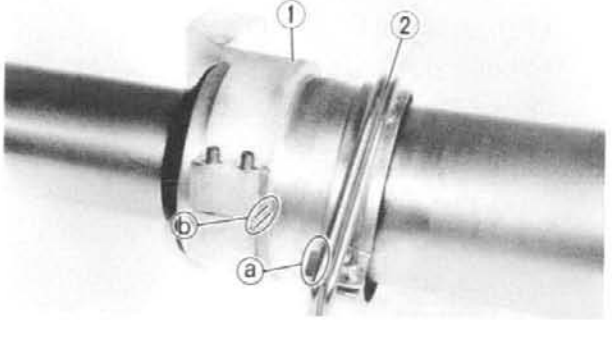
NOTE:

Hold the cap bolt (1) and tighten the locknut (2) with specified torque.

Locknut:
15 Nm (1.5 m•kg, 11 ft•lb)

25. Install:
- Cap bolt (1)

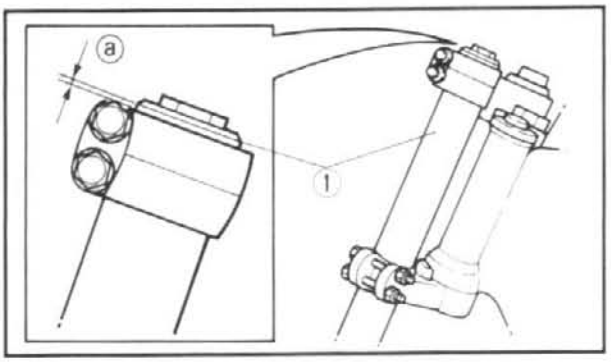
To outer tube.
Temporarily tighten the cap bolt.



26. Install
- Protector guide (1)
- Cable holder (2)

NOTE:

When installing the cable holder, make sure the tab (a) on the cable holder fits in the groove (b) on the cable guide.



INSTALLATION

1. Install:
   - Front fork ①

   Temporarily tighten the pinch bolt (under bracket).
2. Tighten:
   - Cap bolt

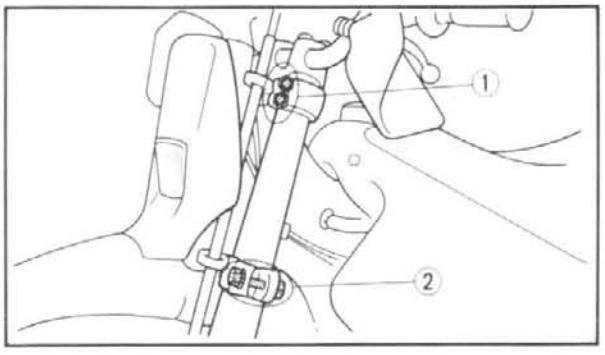
	Cap Bolt: **30 Nm (3.0 m•kg, 22 ft•lb)**

NOTE:

Do not tighten the pinch bolt (upper) yet.

3. Adjust:
   - Front fork top end ⓐ

	Front Fork Top End (Standard) ⓐ: **1 mm (0.04 in)**

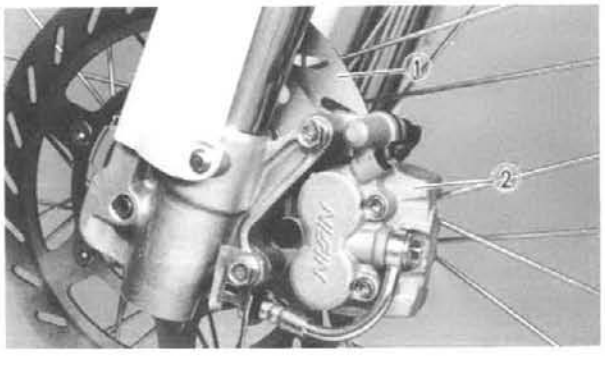


4. Tighten:
   - Pinch bolt (handle crown) ①
   - Pinch bolt (under bracket) ②

	Pinch Bolt (Handle Crown): **23 Nm (2.3 m•kg, 17 ft•lb)** **Pinch Bolt (Under Bracket):** **24 Nm (2.4 m•kg, 17 ft•lb)**

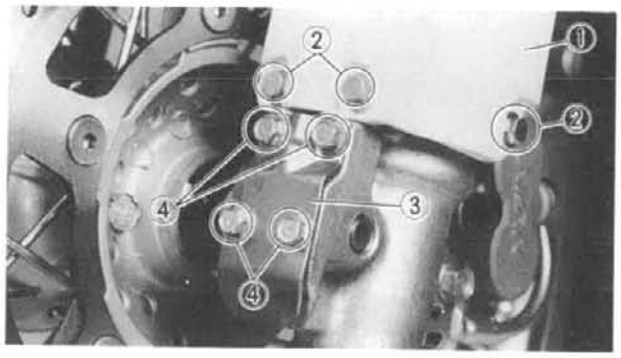
CAUTION:

Tighten the under bracket to specified torque. If torqued too much, it may cause the front fork to malfunction.



5. Install:
   - Front wheel ①
   - Caliper ②

   Refer to the "FRONT WHEEL" and "FRONT BRAKE" section in the CHAPTER 5.



6. Install:
   - Protector (1)
   - Bolt (protector) (2)
   - Hose cover (3)
   - Bolt (hose cover) (4)

Bolt (Protector):
7 Nm (0.7 m•kg, 5.1 ft•lb)
Bolt (Hose Cover):
7 Nm (0.7 m•kg, 5.1 ft•lb)

7. Connect:
   - Odometer cable (1)

5

STEERING

PREPARATION FOR REMOVAL

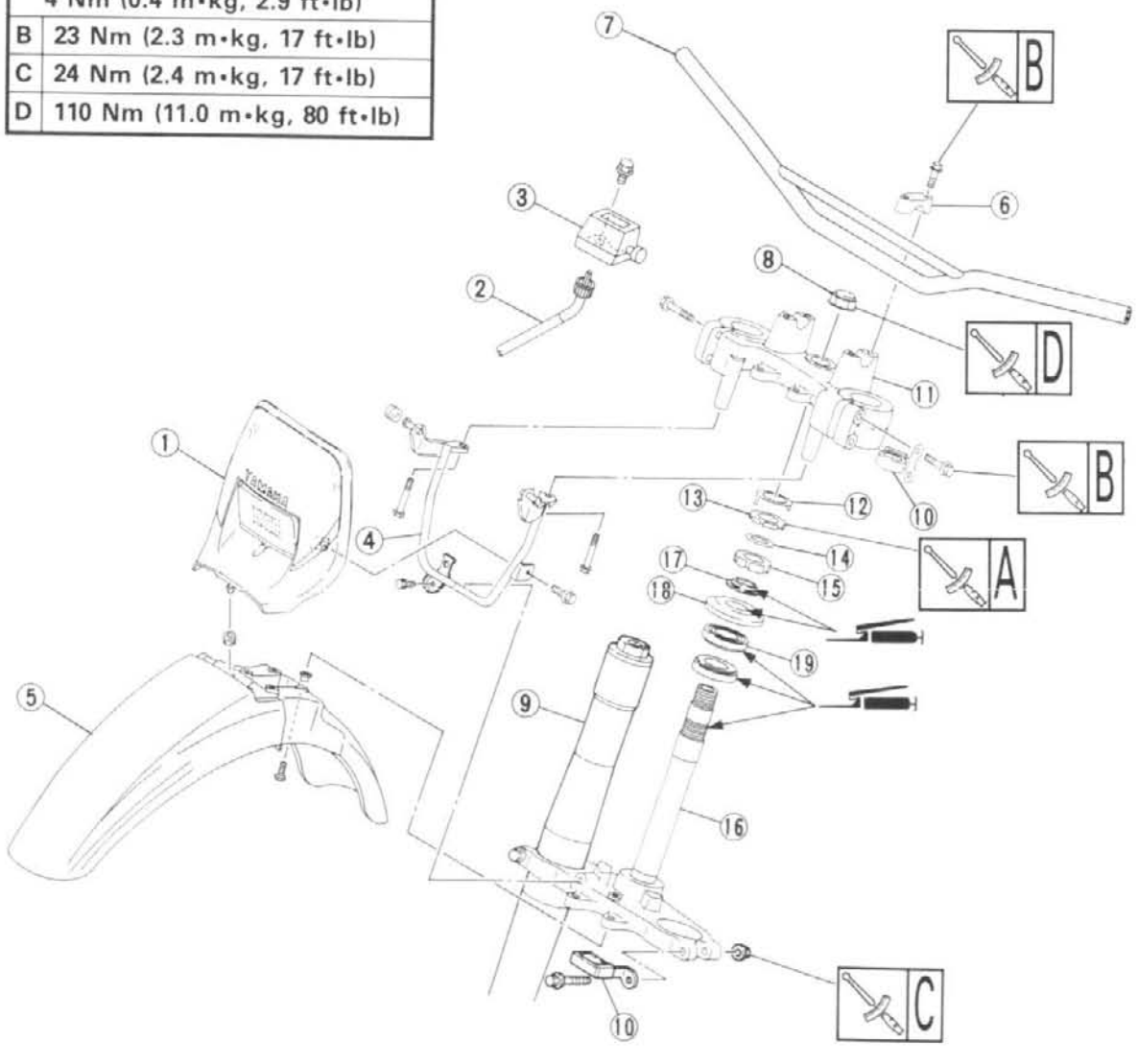
* Hold the machine by placing the suitable stand under the engine.

⚠ WARNING

Support the machine securely so there is no danger of it falling over.

* Remove the front wheel.

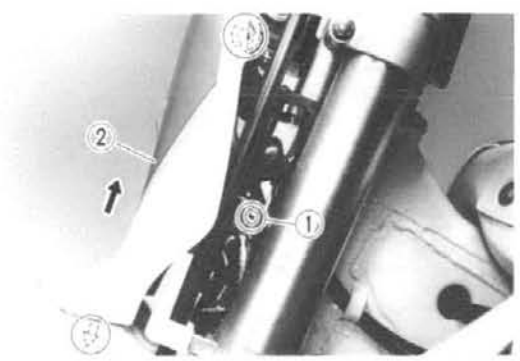
A	TIGHTENING STEPS
	•Tighten ring nut. 38 Nm (3.8 m•kg, 27 ft•lb) •Loosen it one turn. •Retighten it. 4 Nm (0.4 m•kg, 2.9 ft•lb)
B	23 Nm (2.3 m•kg, 17 ft•lb)
C	24 Nm (2.4 m•kg, 17 ft•lb)
D	110 Nm (11.0 m•kg, 80 ft•lb)



5

Extent of removal: ① Handlebar removal ② Under bracket removal

Extent of removal	Order	Part name	Q'ty	Remarks
②	1	Headlight	1	Refer to "REMOVAL POINTS".
	2	Odometer cable	1	
	3	Odometer	1	
	4	Headlight stay	1	
	5	Front fender	1	
①	6	Handle holder	2	
	7	Handlebar	1	
	8	Steering shaft nut	1	
	9	Front fork	2	Refer to "FRONT FORK" section.
	10	Hose guide	2	
②	11	Handle crown	1	
	12	Lock washer	1	
	13	Ring nut (upper)	1	Refer to "REMOVAL POINTS".
	14	Plain washer	1	
	15	Ring nut (lower)	1	Refer to "REMOVAL POINTS".
②	16	Steering shaft	1	
	17	Steering seal	1	
	18	Ball race cover	1	
	19	Bearing	1	



REMOVAL POINTS

HEADLIGHT

1. Remove:
   - Bolt (headlight) ①
   - Headlight ②

NOTE:

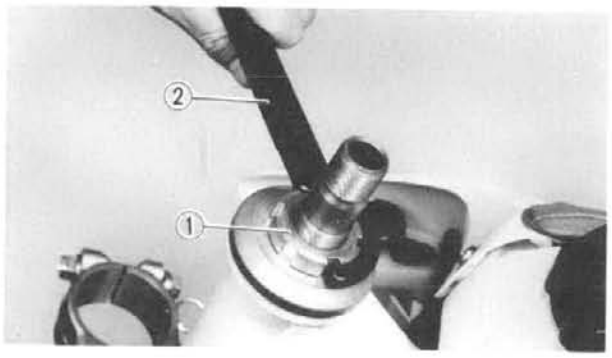
After removing the bolt ①, pull the headlight ② upward to remove it from the front fender and headlight stay.

RING NUT

1. Remove:
   - Ring nut (upper) ①

   Use the Ring Nut Wrench ②.

	Ring Nut Wrench: YU-01268/90890-01268

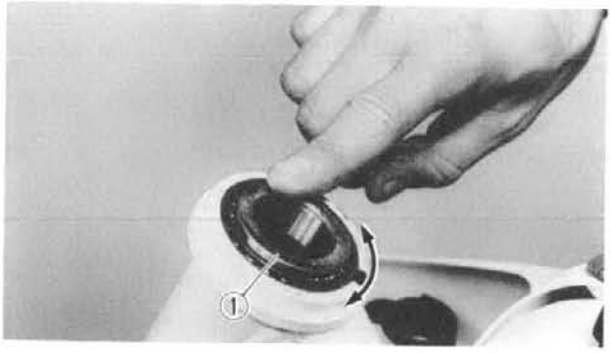


2. Remove:
   - Ring nut (lower) ①
     Use the Ring Nut Wrench ②.

	Ring Nut Wrench: **YU-01268/90890-01268**

⚠ WARNING

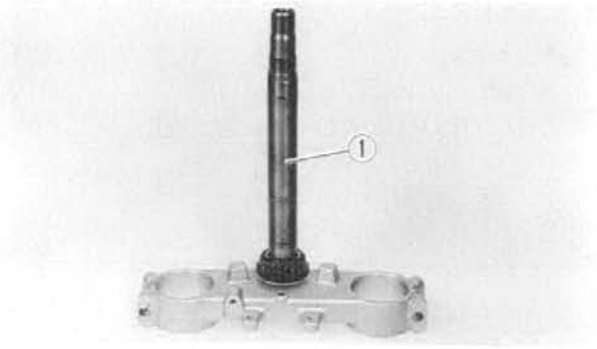
Support the steering shaft so that is may not fall down.



INSPECTION

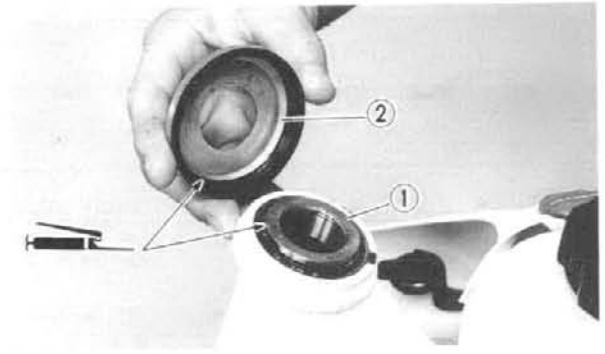
BEARING

1. Wash the bearings in solvent.
2. Inspect:
   - Bearing (upper and lower) ①
     Pitting/Damage → Replace races and bearing.
     Install the bearing in the races. Spin the bearings by hand. If the bearings hang up or are not smooth in their operation in the races, replace bearings and races.



STEERING SHAFT

1. Inspect:
   - Steering shaft ①
     Bend/Damage → Replace.



ASSEMBLY AND INSTALLATION

UNDER BRACKET

1. Install:
   - Bearing ①
   - Ball race cover ②

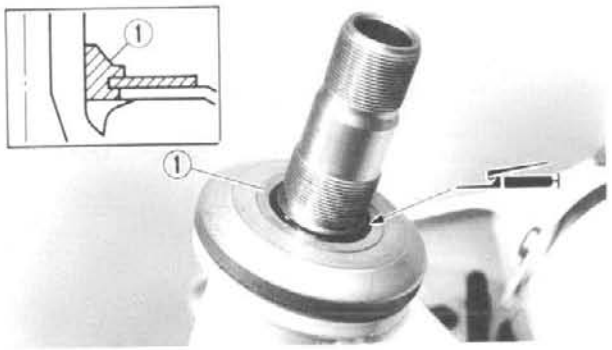
NOTE:

Apply the lithium soap base grease on the bearing and ball race cover lip.

2. Install:
   - Under bracket ①

NOTE:

Apply the lithium soap base grease on the bearing.



3. Install:
   - Steering seal ①

NOTE:

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

4. Install:
   - Ring nut (lower) ①

   Use the Ring Nut Wrench ②.

	Ring Nut Wrench: **YM-33975/90890-01403**

NOTE:

Apply the lithium soap base grease on the steering shaft thread.

Ring nut tightening steps:

NOTE:

Set the Torque Wrench to the Ring Nut Wrench so that they form a right angle.

- Tighten the ring nut using the Ring Nut Wrench.

5

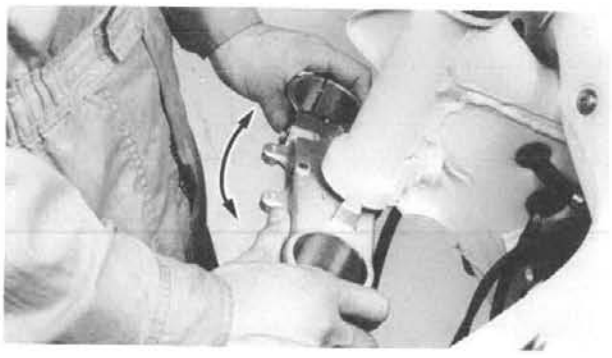
Ring Nut (Lower)
(Initial Tightening):
38 Nm (3.8 m•kg, 27 ft•lb)

- Loosen the ring nut ① completely and retighten it to specification.

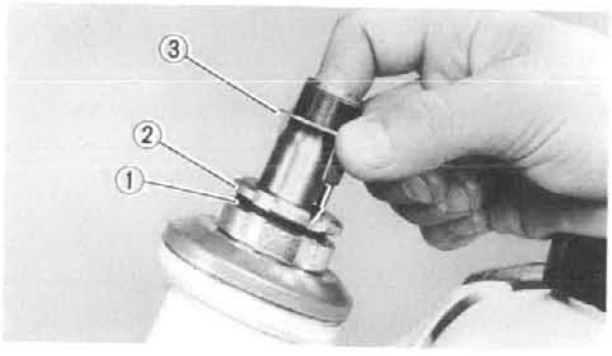
⚠ WARNING

Do not over-tightening.

Ring Nut (Lower)
(Final Tightening):
4 Nm (0.4 m•kg, 2.9 ft•lb)



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.

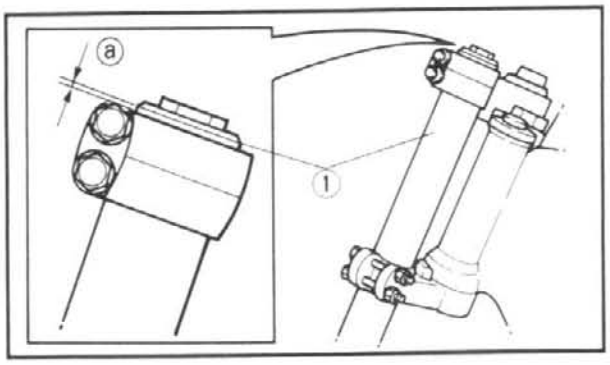


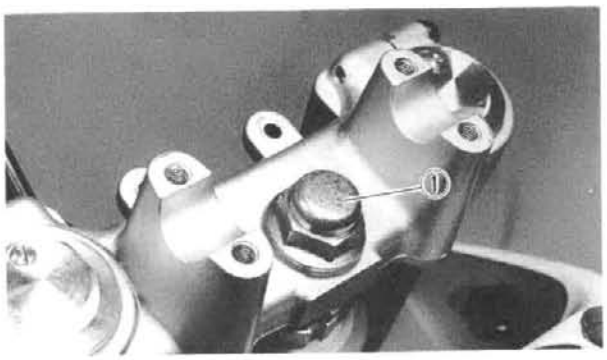
6. Install:
   - Plain washer ①
   - Ring nut (upper) ②
   - Lock washer ③

Installation steps:
- Install the ring nut (upper) ②.
- Finger tighten the ring nut (upper), then align the slots of both ring nuts. If not aligned, hold the ring nut (lower) and tighten the other until they are aligned.
- Install the lock washer ③.

NOTE:

Make sure the lock washer tab is placed in the slots.





7. Install:
   - Handle crown
   - Front fork (left and right) ①

	Front Fork Top End (Standard) ⓐ: 1 mm (0.04 in)

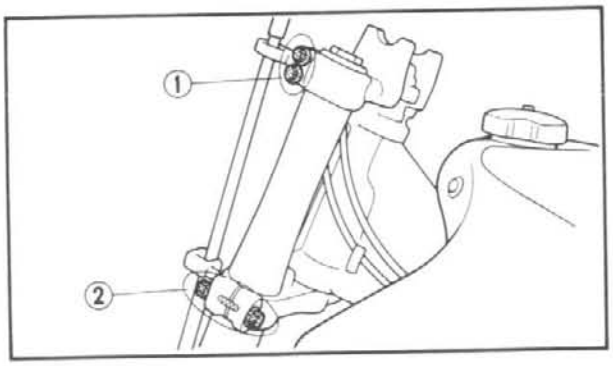
NOTE:

Temporarily install at the lower pinch bolt end to keep at position.

8. Install:
   - Steering shaft nut ①

	Steering Shaft Nut: 110 Nm (11.0 m•kg, 80 ft•lb)

9. After tightening the nut, check the steering for smooth movement. If not, adjust the steering by loosening the ring nut (lower) little by little.



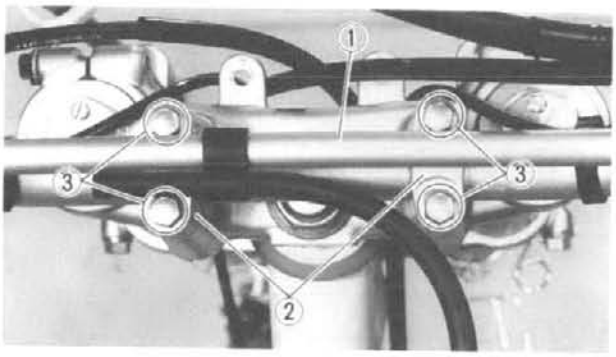
10. Tighten:
    - Pinch bolt (handle crown) ①
    - Pinch bolt (under bracket) ②

	Pinch Bolt (Handle Crown): 23 Nm (2.3 m•kg, 17 ft•lb) **Pinch Bolt (Under Bracket): 24 Nm (2.4 m•kg, 17 ft•lb)**

CAUTION:

Tighten the under bracket to specified torque. If torqued too much, it may cause the front fork to malfunction.

5

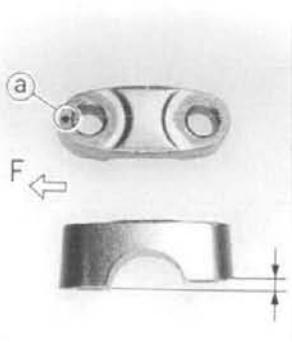


11. Install:
    - Handlebar (1)
    - Handlebar holder (2)
    - Bolt (handlebar holder) (3)

	Bolt (Handlebar Holder): 23 Nm (2.3 m·kg, 17 ft·lb)

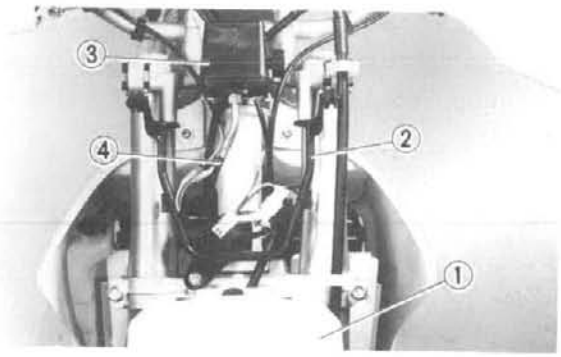
NOTE:

- The upper handlebar holder should be installed with the punched mark (a) forward.
- Clamp the fuel breather hose on the handlebar.



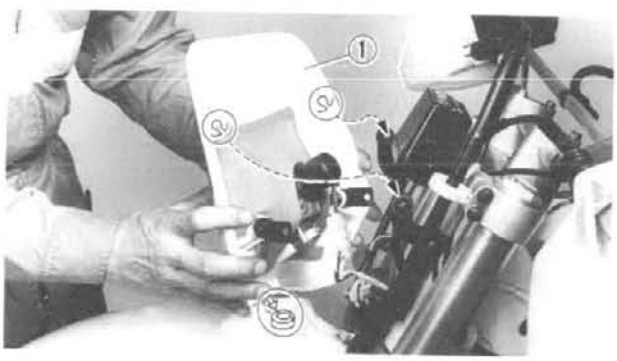
CAUTION:

First tighten the bolts on the front side of the handlebar holder, and then tighten the bolts on the rear side.

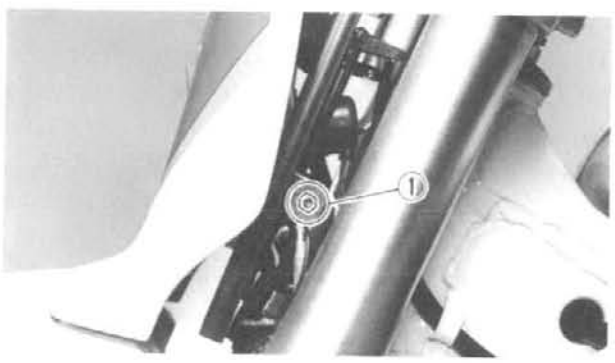


12. Install:
    - Front fender (1)
    - Headlight stay (2)
    - Odometer (3)

13. Connect:
    - Odometer cable (4)



14. Install:
    - Headlight (1)



15. Install:
    - Bolt (headlight) (1)

16. Install:
    - Front wheel

    Refer to the "FRONT WHEEL" section in the CHAPTER 5.

SWINGARM

PREPARATION FOR REMOVAL

* Hold the machine by placing the suitable stand under the engine.

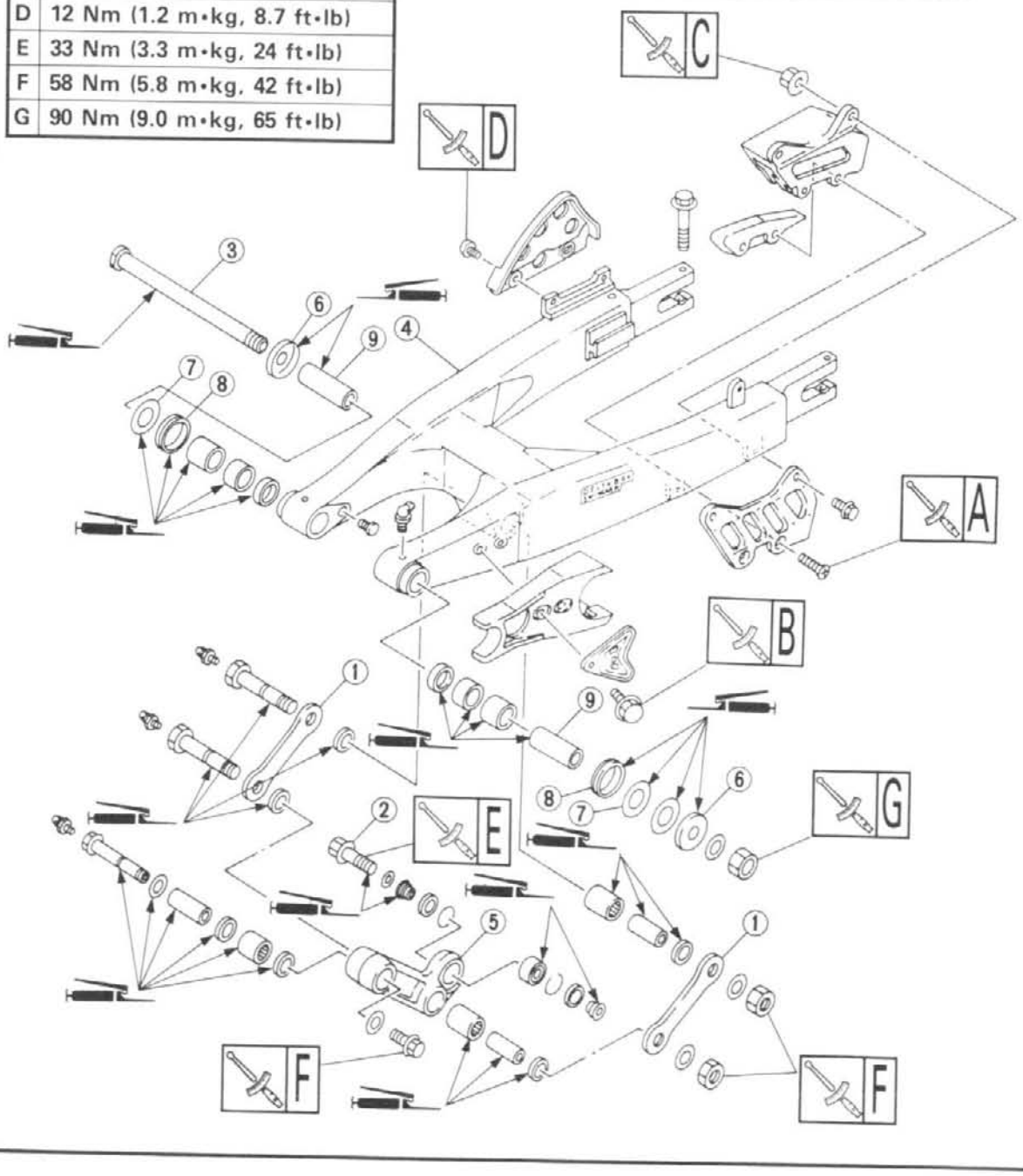
⚠ WARNING

Support the machine securely so there is no danger of it falling over.

* Remove the following parts:
  - Rear wheel
  - Brake caliper (rear)
  - Chain support
  - Brake hose holder
  - Brake pedal

A	3 Nm (0.3 m•kg, 2.2 ft•lb)
B	5 Nm (0.5 m•kg, 3.6 ft•lb)
C	7 Nm (0.7 m•kg, 5.1 ft•lb)
D	12 Nm (1.2 m•kg, 8.7 ft•lb)
E	33 Nm (3.3 m•kg, 24 ft•lb)
F	58 Nm (5.8 m•kg, 42 ft•lb)
G	90 Nm (9.0 m•kg, 65 ft•lb)

SWINGARM FREE PLAY LIMIT
END: 1.0 mm (0.04 in)
SIDE CLEARANCE: 0.4 ~ 0.7 mm (0.016 ~ 0.028 in)



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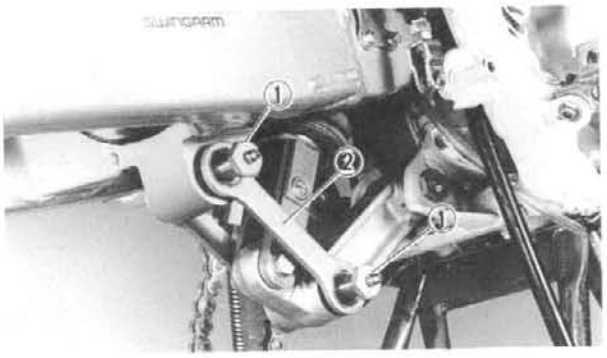
NOTE ON REMOVAL AND REASSEMBLY

- For reassembly, the removed parts should be cleaned with the solvent, and apply the grease on the moving parts.

Extent of removal: ① Swingarm removal ② Swingarm disassembly

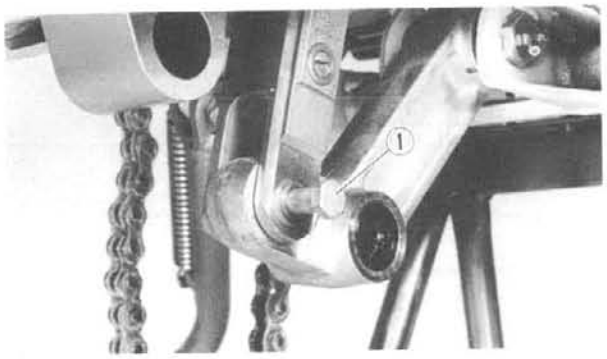
Extent of removal	Order	Part name	Q'ty	Remarks
①	1	Connecting rod	2	Refer to "REMOVAL POINTS".
	2	Bolt (rear shock absorber)	1	
	3	Pivot shaft	1	
	4	Swingarm	1	
	5	Relay arm	1	
②	6	Cover	2	
	7	Plain washer	2	
	8	Oil seal	2	
	9	Collar	2	



REMOVAL POINTS

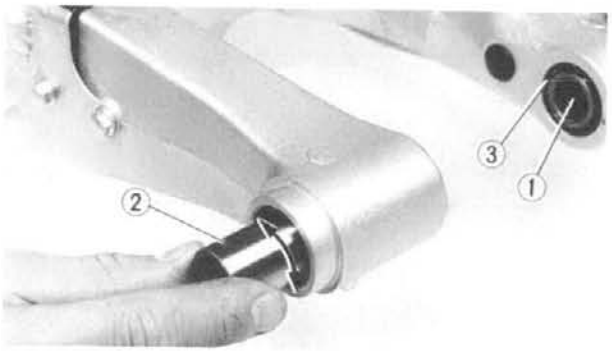
SWINGARM

1. Remove:
   - Union bolt (connecting rod) ①
   - Connecting rod ②



2. Remove:
   - Bolt (rear shock absorber—relay arm) ①

3. Remove:
   - Pivot shaft ①
   - Swingarm ②



INSPECTION

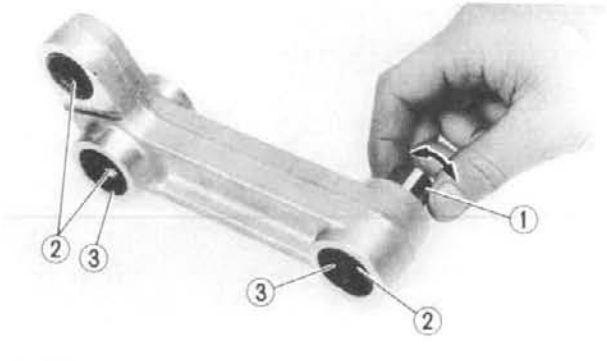
Wash the bearings, plain washers, collars, and covers in a solvent.

SWINGARM

1. Inspect:
   - Bearing (Swingarm) ①
   - Collar (Swingarm) ②

   Free play exists/Unsmooth revolution/Rust→Replace bearing and collar as a set.
2. Inspect:
   - Oil seal ③

   Damage→Replace.

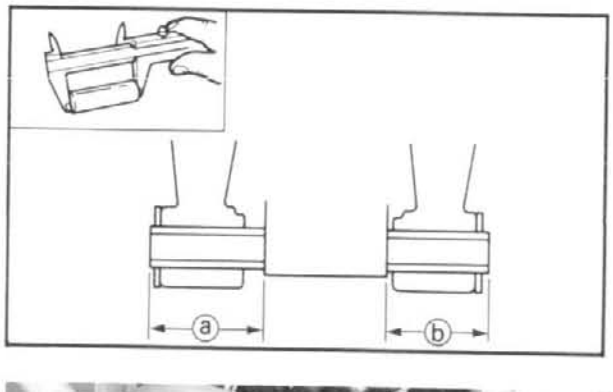


RELAY ARM

1. Inspect:
   - Collar (relay arm) ①
   - Bearing (relay arm) ②

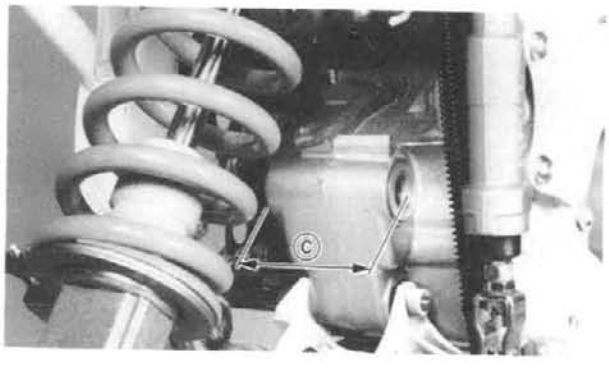
   Free play exists/Unsmooth revolution/Rust→Replace bearing and collar as a set.
2. Inspect:
   - Oil seal (relay arm) ③

   Damage→Replace.

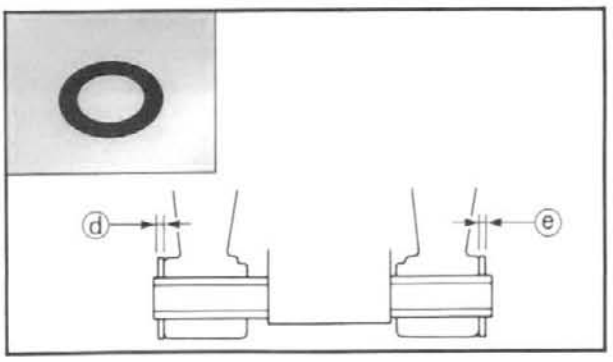


SWINGARM SIDE CLEARANCE

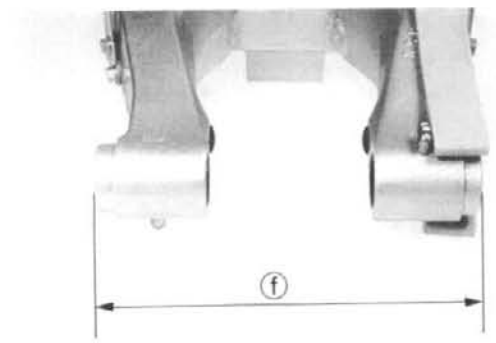
1. Measure:
   - Collar (right) length ⓐ
   - Collar (left) length ⓑ



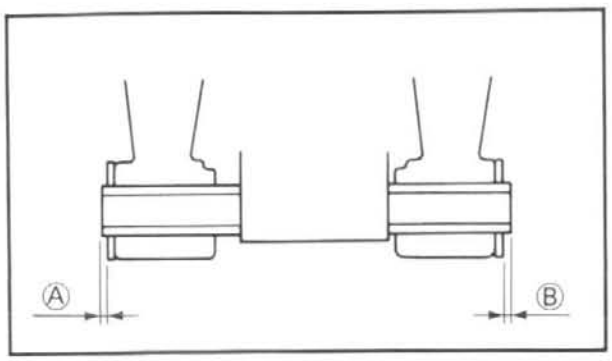
2. Measure:
   - Engine mounting boss width ⓒ



3. Measure:
   - Plain washer (right) thickness ⓓ
   - Plain washer (left) thickness ⓔ



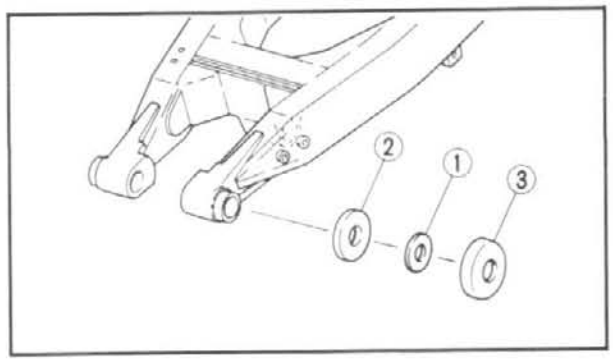
4. Measure:
   - Swingarm head pipe length ⓕ



5. Calculate:
   - Swingarm side clearance "Ⓐ + Ⓑ"
     Out of specification → Adjust side clearance using shim.
     By using formula given below.

"Ⓐ + Ⓑ" = (ⓐ + ⓑ + ⓒ) − (ⓓ + ⓔ + ⓕ)

Side Clearance "A + B":
0.4 ~ 0.7 mm (0.016 ~ 0.028 in)



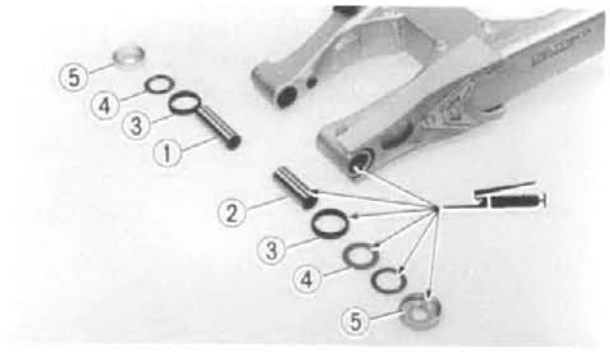
If the thrust clearance is out of specification, adjust it to specification by installing the adjust shim ① at position, Ⓐ and Ⓑ.

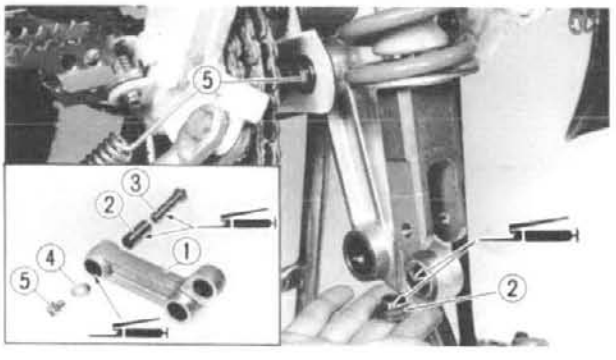
NOTE:

- The adjust shim is available only in the 0.3 mm (0.012 in)-thick type.
- When only one shim is required, install it on the left side, and when two shims are necessary, install them on both right and left sides.

- Adjust shim ①
- Plain washer ②
- Cover ③

5





ASSEMBLY AND INSTALLATION

SWINGARM

1. Install:
   - Collar (longer) ①
   - Collar (shorter) ②
   - Oil seal ③
   - Plain washer ④
   - Cover ⑤

NOTE:

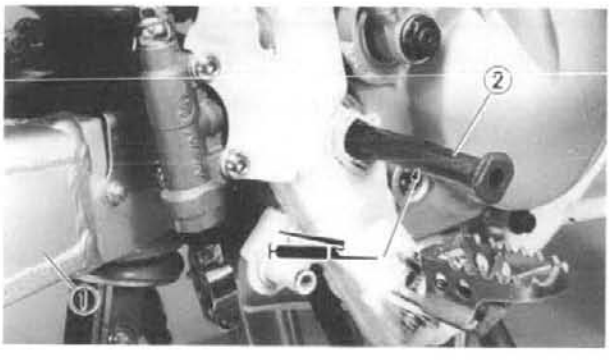
- Apply the lithium soap base grease on the collar bearing, plain washer and oil seal lip.
- Be sure the long collar ① is inserted into right side and short one ② into left side.

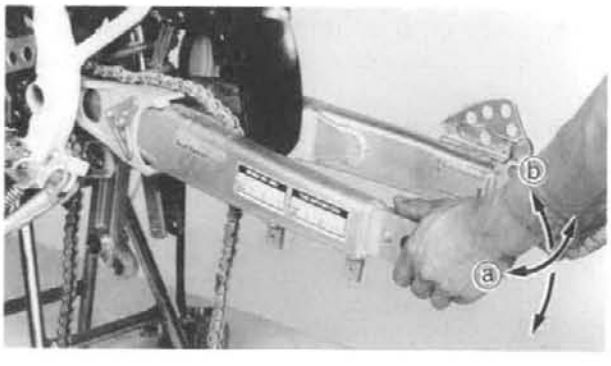
2. Install:
   - Relay arm ①
   - Collar ②
   - Union nut ③
   - Plain washer ④
   - Flange bolt ⑤

NOTE:

- Apply the lithium soap base grease on the sliding surface of the union nut, collar and oil seal lip.
- Insert the union nut from right side.

Flange Bolt: 58 Nm (5.8 m•kg, 42 ft•lb)





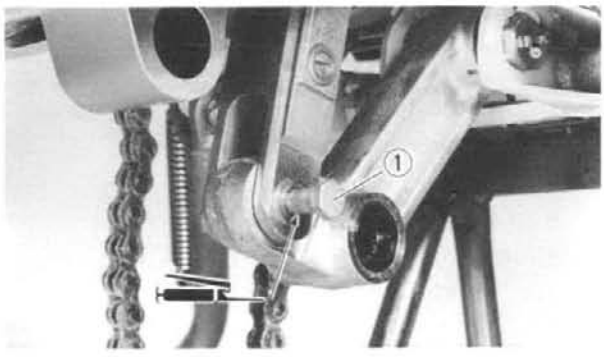
3. Install:
   - Swingarm ①
   - Pivot shaft ②

NOTE:

- Apply the lithium soap base grease on the pivot shaft.
- Insert the pivot shaft from right side.

Nut (Pivot Shaft): 90 Nm (9.0 m•kg, 65 ft•lb)

4. Check:
   - Swingarm side play ⓐ
     Free play exists→Check side clearance.
   - Swingarm up and down movement ⓑ
     Unsmooth movement/Binding/Rough spots →Grease or replace bearings, solid bushes and collars.

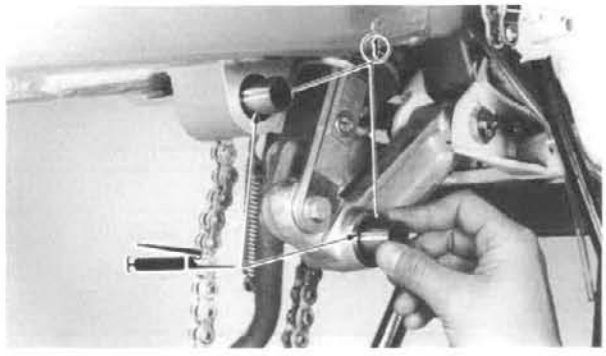


5. Install:
   - Bolt (rear shock absorber—relay arm) ①

NOTE:

- Apply the molybdenum disulfide grease on the bolt.
- Insert the bolt from right side.

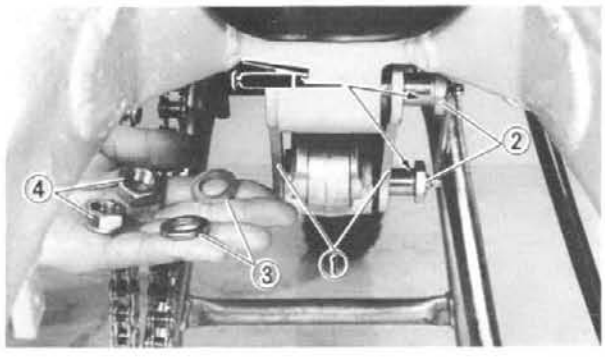
	Bolt (Rear Shock Absorber—Relay Arm): **33 Nm (3.3 m•kg, 24 ft•lb)**



6. Install:
   - Collar ①

NOTE:

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



7. Install:
   - Connecting rod ①
   - Union bolt ②
   - Plain washer ③
   - Nut (connecting rod) ④

NOTE:

- Apply the lithium soap base grease on the union bolt.
- Insert the union bolt from right side.

	Nut (Connecting Rod): **58 Nm (5.8 m•kg, 42 ft•lb)**

5

REAR SHOCK ABSORBER

PREPARATION FOR REMOVAL

* Hold the machine by placing the suitable stand under the engine.

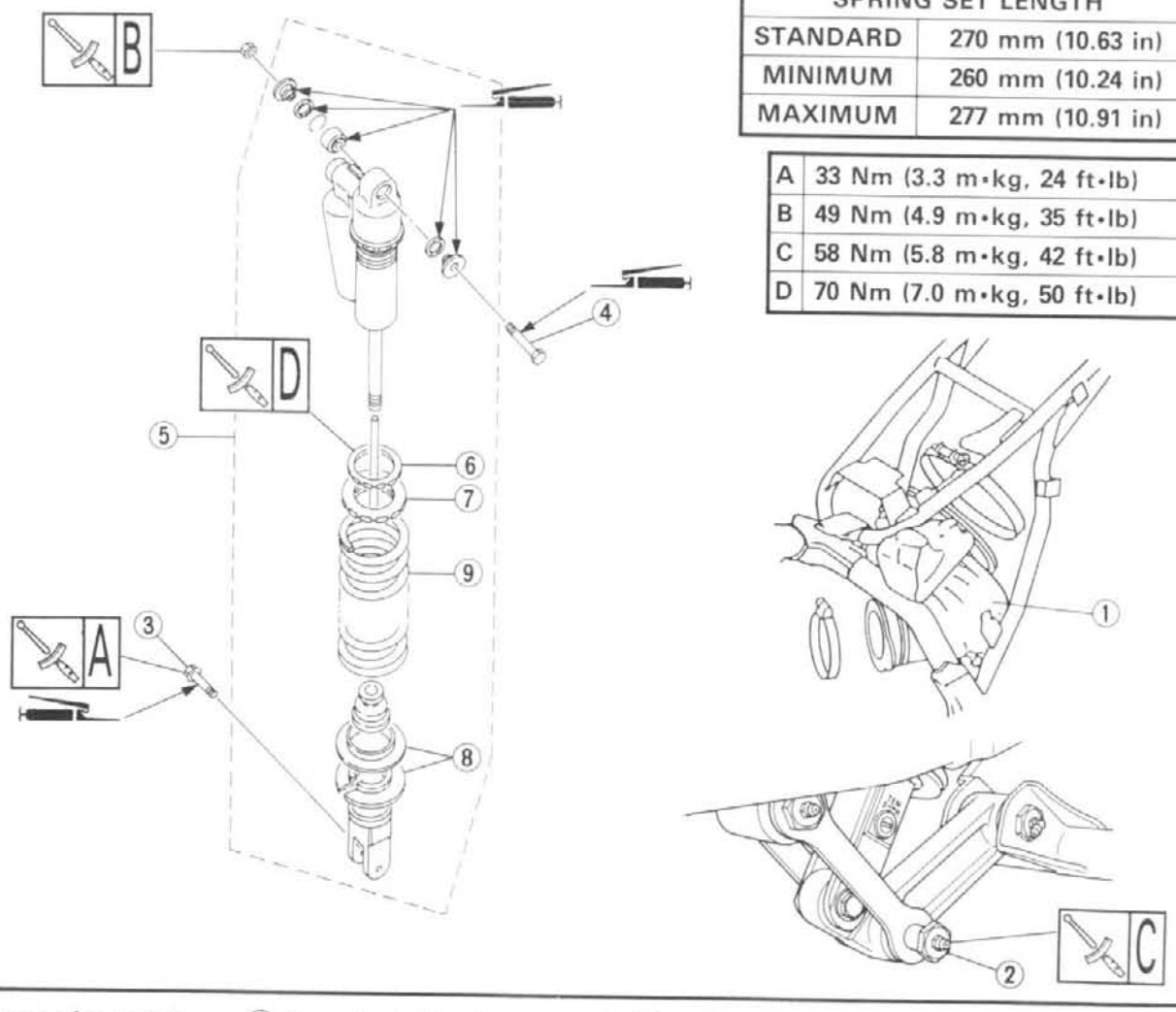
⚠ WARNING

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

* Remove the following parts:
  - Side cover (left and right)
  - Seat
  - Air scoop (left and right)
  - Fuel tank

SPRING SET LENGTH	
STANDARD	270 mm (10.63 in)
MINIMUM	260 mm (10.24 in)
MAXIMUM	277 mm (10.91 in)

A	33 Nm (3.3 m•kg, 24 ft•lb)
B	49 Nm (4.9 m•kg, 35 ft•lb)
C	58 Nm (5.8 m•kg, 42 ft•lb)
D	70 Nm (7.0 m•kg, 50 ft•lb)



Extent of removal: ① Rear shock absorber removal ② Spring (rear shock absorber) removal

Extent of removal	Order	Part name	Q'ty	Remarks
① ②	1	Air cleaner joint	1	Refer to "REMOVAL POINTS".
	2	Union bolt (connecting rod)	1	
	3	Bolt (rear shock absorber—relay arm)	1	
	4	Bolt (rear shock absorber—frame)	1	
	5	Rear shock absorber	1	Refer to "REMOVAL POINTS".
	6	Locknut	1	Refer to "REMOVAL POINTS".
	7	Adjuster	1	
	8	Spring guide	2	
	9	Spring (rear shock absorber)	1	

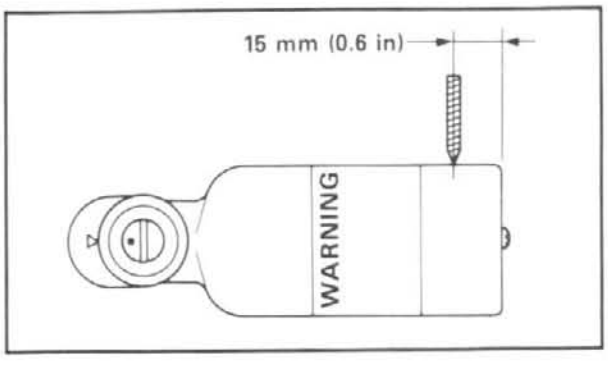
⚠ WARNING

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.

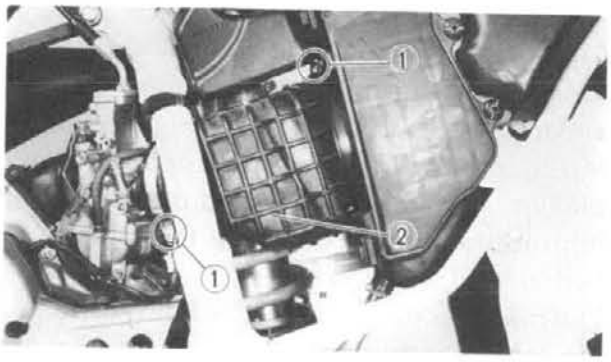
NOTES ON DISPOSAL (YAMAHA DEALERS ONLY)

Before disposing the shock absorber, be sure to extract the nitrogen gas. To do so, drill a 2 or 3 mm (0.08 ~ 0.12 in) hole through the tank at a position 15 mm (0.6 in) from the bottom end of the tank. At this time, wear eye protection to prevent eye damage from escaping gas and/or metal chips.



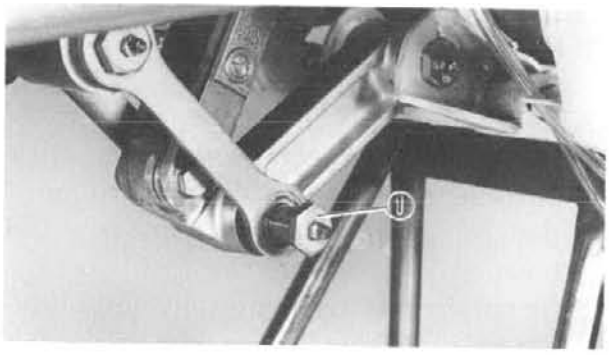
⚠ WARNING

To dispose of a damaged or worn-out shock absorber, take the unit to your Yamaha dealer for this disposal procedure.

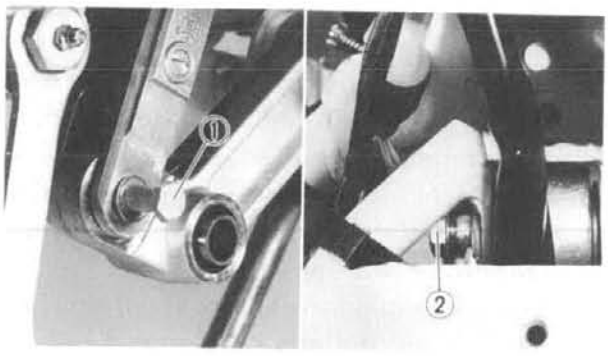


REMOVAL POINTS
REAR SHOCK ABSORBER

1. Loosen:
   - Screw (air cleaner joint) ①
2. Remove:
   - Air cleaner joint ②

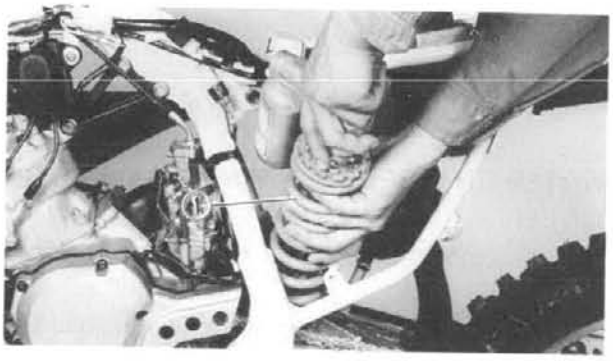


3. Remove:
   - Union bolt (connecting rod—relay arm) ①

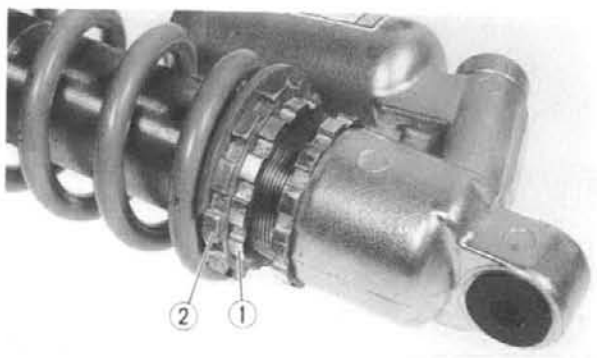


4. Remove:
   - Bolt (rear shock absorber—relay arm) ①
   - Bolt (rear shock absorber—frame) ②

5



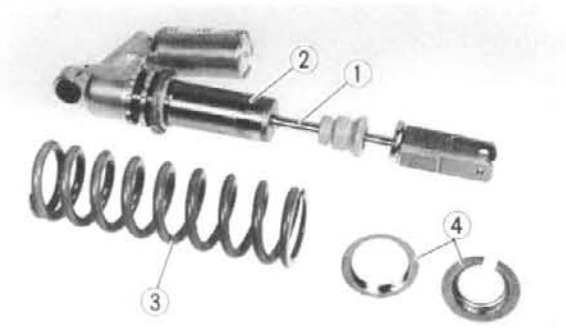
5. Remove:
   - Rear shock absorber ①
     From left side.



SPRING (REAR SHOCK ABSORBER)

1. Loosen:
   - Locknut ①
   - Adjuster ②

2. Remove:
   - Spring guide ①
   - Spring ②



INSPECTION

DAMPER ROD/SHOCK ABSORBER/ SPRING/SPRING GUIDE

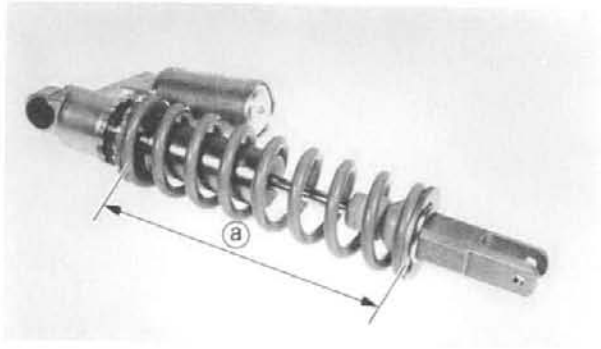
1. Inspect:
   - Damper rod ①
     Bends/Damage → Replace absorber assembly.
   - Shock absorber ②
     Oil leaks → Replace absorber assembly.
     Gas leaks → Replace absorber assembly.
   - Spring ③
     Damage → Replace spring.
     Fatigue → Replace spring.
     Move spring up and down.
   - Spring guide ④
     Wear/Damage → Replace spring guide.

ASSEMBLY AND INSTALLATION

SPRING (REAR SHOCK ABSORBER)

1. Install:
   - Spring ①
   - Spring guide ②

2. Install:
   - Adjuster ①
   - Locknut ②



3. Adjuster:
   - Spring Length (Installed) ⓐ

Spring Length (Installed) ⓐ:	
Standard position	Extent of adjustment
270 mm (10.63 in)	260 – 277 mm (10.24 – 10.91 in)

NOTE:

The length of the spring (installed) changes 1.5 mm (0.06 in) per turn of the adjuster.

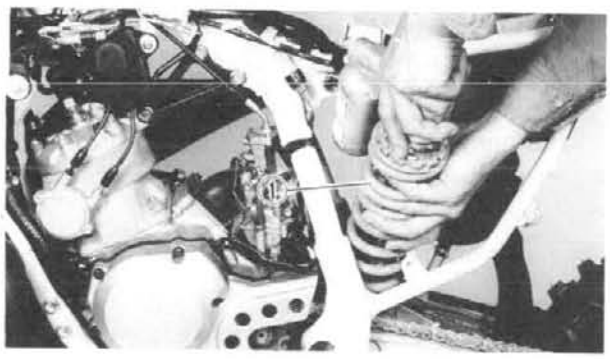
CAUTION:

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

4. Tighten:
   - Locknut ①

Locknut:
70 Nm (7.0 m•kg, 50 ft•lb)

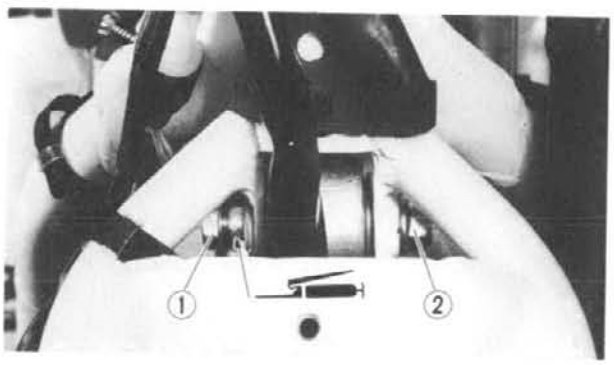
5



REAR SHOCK ABSORBER

1. Install:
   - Rear shock absorber ①

   From left side.

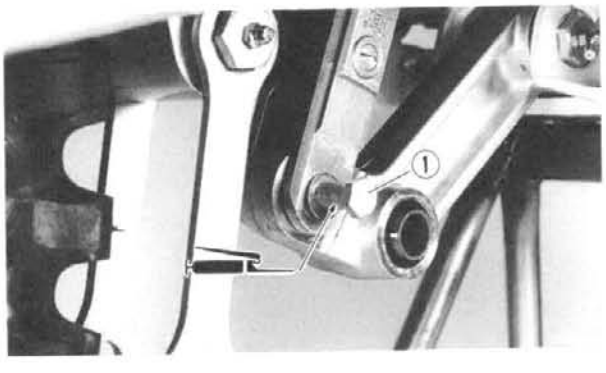


2. Install:
   - Bolt (rear shock absorber – frame) ①
   - Nut (rear shock absorber – frame) ②

NOTE:

- Apply the lithium soap base grease on the bolt.
- Insert the bolt from left side.

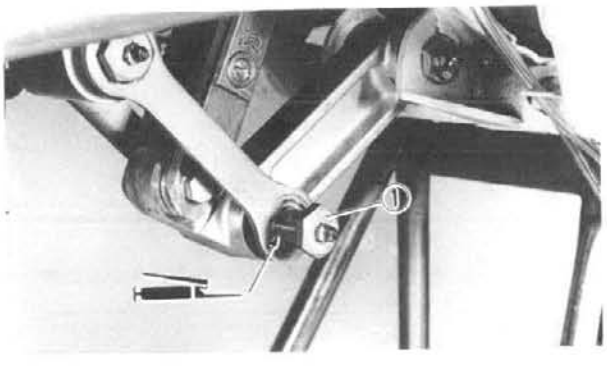
	Nut (Rear Shock Absorber—Frame): 49 Nm (4.9 m•kg, 35 ft•lb)



3. Install:
   - Bolt (rear shock absorber—relay arm) ①

NOTE:
- Apply the lithium soap base grease on the bolt.
- Insert the bolt from right side.

	Bolt (Rear Shock Absorber—Relay Arm): 33 Nm (3.3 m•kg, 24 ft•lb)

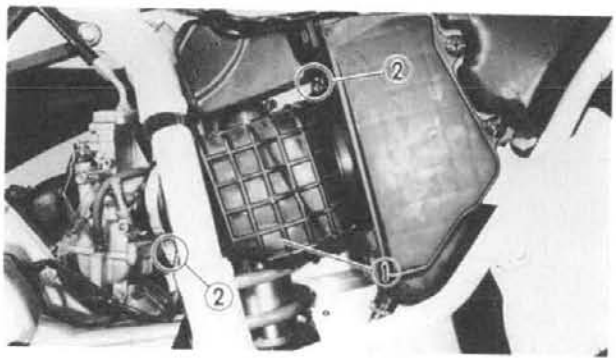


4. Install:
   - Union bolt ①
   - Plain washer
   - Nut (connecting rod—relay arm)

NOTE:
- Apply the lithium soap base grease on the union bolt.
- Insert the union bolt from right side.

	Nut (Connecting Rod—Relay Arm): 58 Nm (5.8 m•kg, 42 ft•lb)

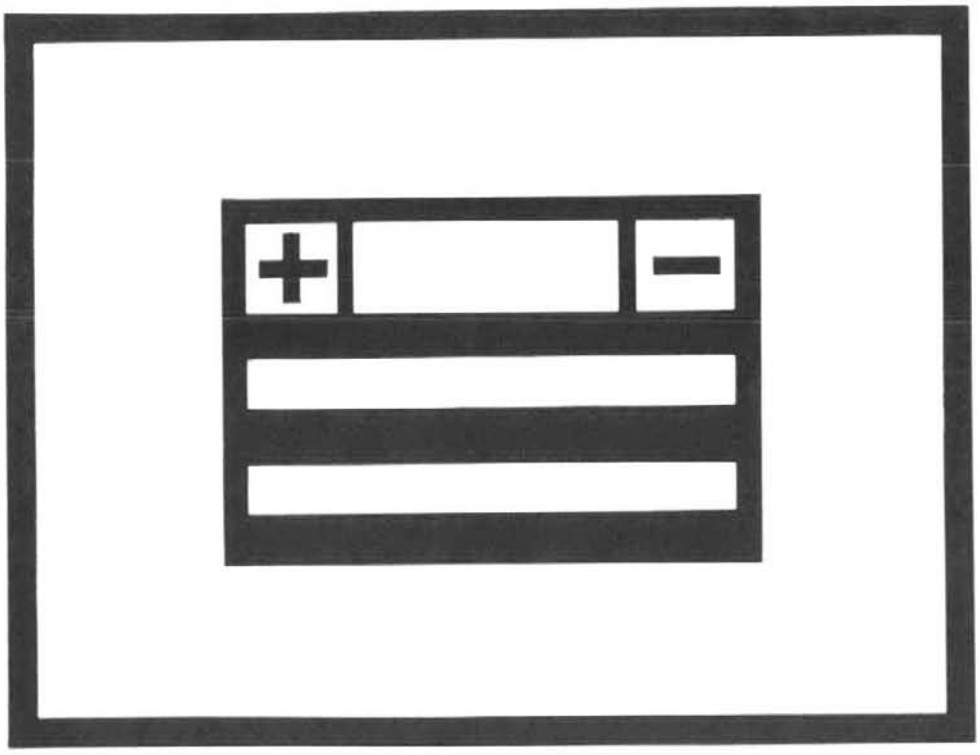
5



5. Install:
   • Air cleaner joint (1)

6. Tighten:
   • Screw (air cleaner joint) (2)

CHAPTER 6
ELECTRICAL



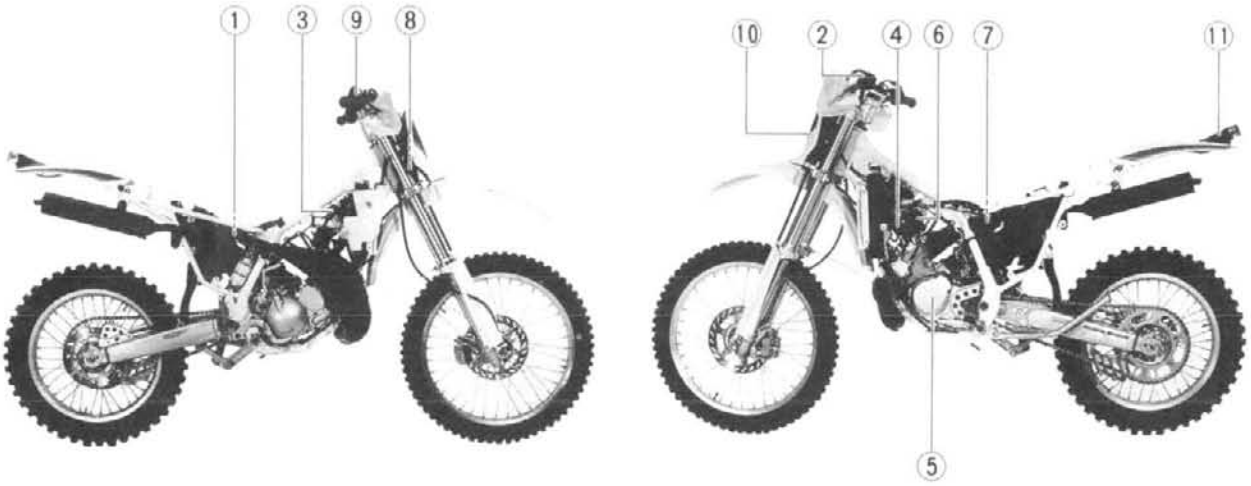
ELECTRICAL COMPONENTS AND WIRING DIAGRAM

① CDI unit
② "ENGINE STOP" button
③ Ignition coil
④ Spark plug
⑤ CDI magneto
⑥ Servomotor
⑦ Voltage regulator
⑧ Condenser
⑨ "LIGHTS" switch
⑩ Headlight
⑪ Taillight

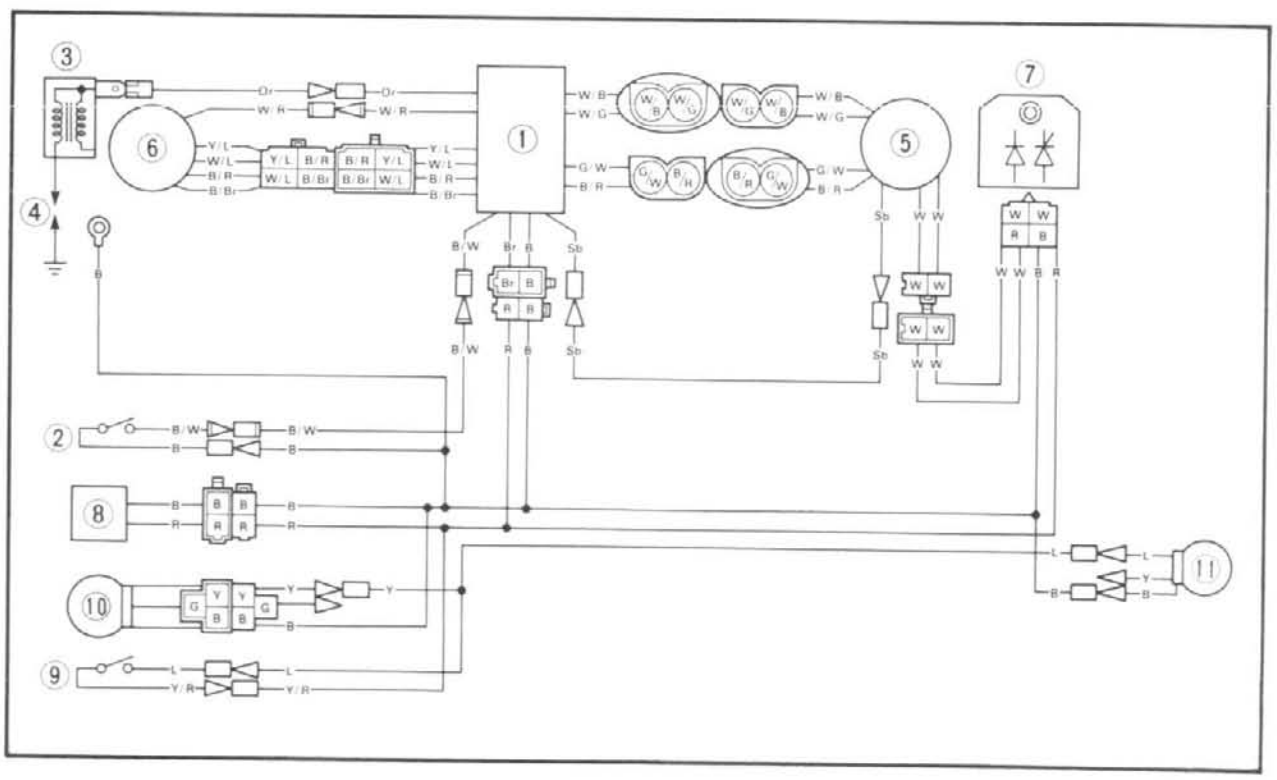
COLOR CODE

Br	Brown	B/R	Black/Red
Or	Orange	B/Br	Black/Brown
B	Black	W/G	White/Green
W	White	W/B	White/Black
R	Red	W/L	White/Blue
L	Blue	Y/L	Yellow/Blue
B/W	Black/White	Y/R	Yellow/Red
W/R	White/Red	Y	Yellow
G/W	Green/White	Sb	Sky blue

ELECTRICAL COMPONENTS



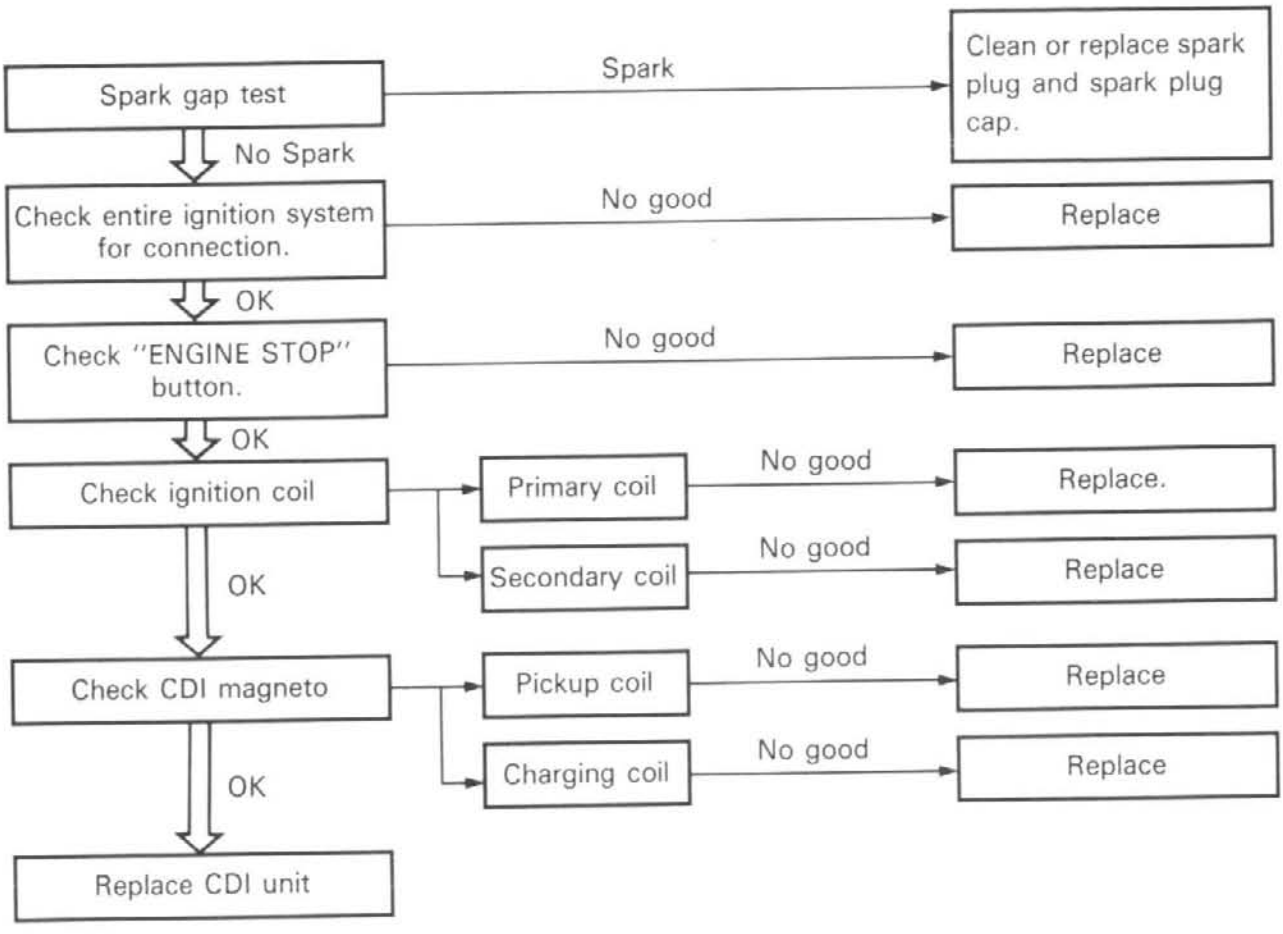
WIRING DIAGRAM



IGNITION SYSTEM

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.



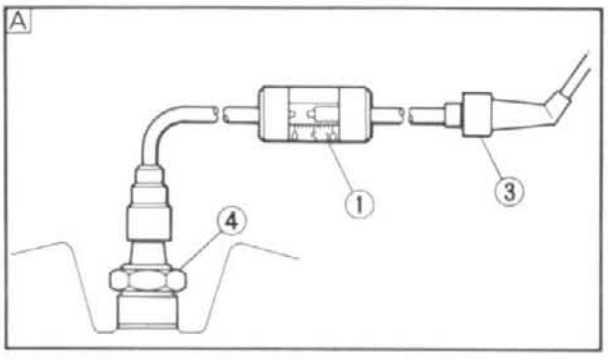
NOTE:

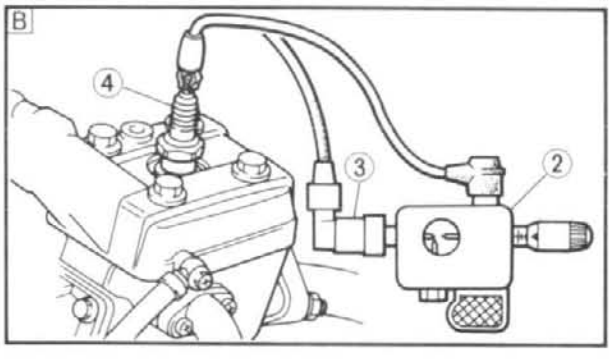
- Remove the following parts before inspection.
  1) Side cover (left and right)
  2) Seat
  3) Air scoop (left and right)
  4) Fuel tank
- Use the following special tools in this inspection.

Dynamic Spark Tester:
YM-34487
Ignition Checker:
90890-06754

Pocket Tester:
YU-03112/09890-03112

6





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

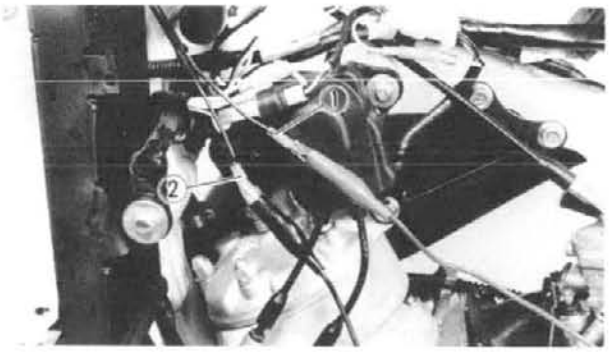
A For USA
B Except for USA

3. Kick the kick starter.
4. Check the ignition spark gap.
5. Start engine, and increase spark gap until misfire occurs.

Minimum Spark Gap:
6.0 mm (0.24 in)

COUPLERS AND LEADS CONNECTION INSPECTION

1. Check:
   - Couplers and leads connection
     Rust/Dust/Looseness/Short-circuit→Repair or replace.



"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
	PUSH IN	○——○		Ω×1
	FREE			

No continuity while being pushed→Replace.
Continuity while being freed→Replace.

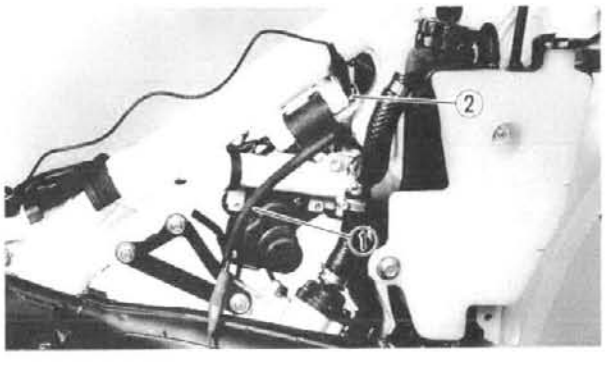
6

IGNITION COIL INSPECTION

1. Inspect:
   - Primary coil resistance
     Out of Specification → Replace.

Tester (+) lead → Orange lead ①
Tester (−) lead → Black lead ②

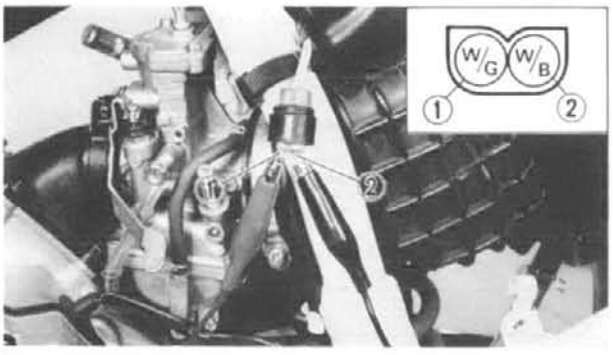
	Primary Coil Resistance	Tester Selector Position
	0.56 ~ 0.84Ω at 20°C (68°F)	Ω × 1



2. Inspect:
   - Secondary coil resistance
     Out of specification → Replace.

Tester (+) lead → Spark plug lead ①
Tester (−) lead → Black lead ②

	Secondary Coil Resistance	Tester Selector Position
	5.7 ~ 8.5kΩ at 20°C (68°F)	kΩ × 1

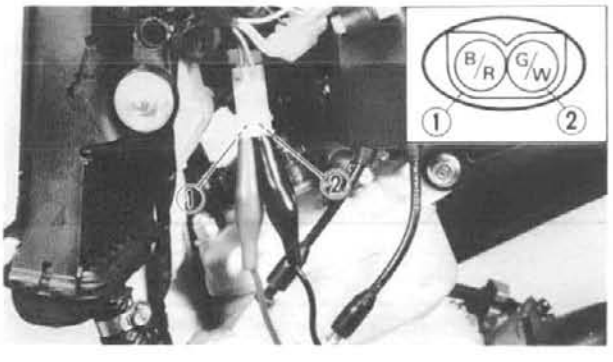


CDI MAGNETO INSPECTION

1. Inspect:
   - Pick-up coil resistance
     Out of specification → Replace.

Tester (+) lead → White/Green lead (1) Tester (−) lead → White/Black lead (2)

Pick-up Coil Resistance	Tester Selector Position
280 ~ 420Ω at 20°C (68°F)	Ω × 100



2. Inspect:
   - Charging coil resistance
     Out of specification → Replace.

Tester (+) lead → Black/Red lead (1) Tester (−) lead → Green/White lead (2)

Charging Coil 1 Resistance	Tester Selector Position
192 ~ 288Ω at 20°C (68°F)	Ω × 100

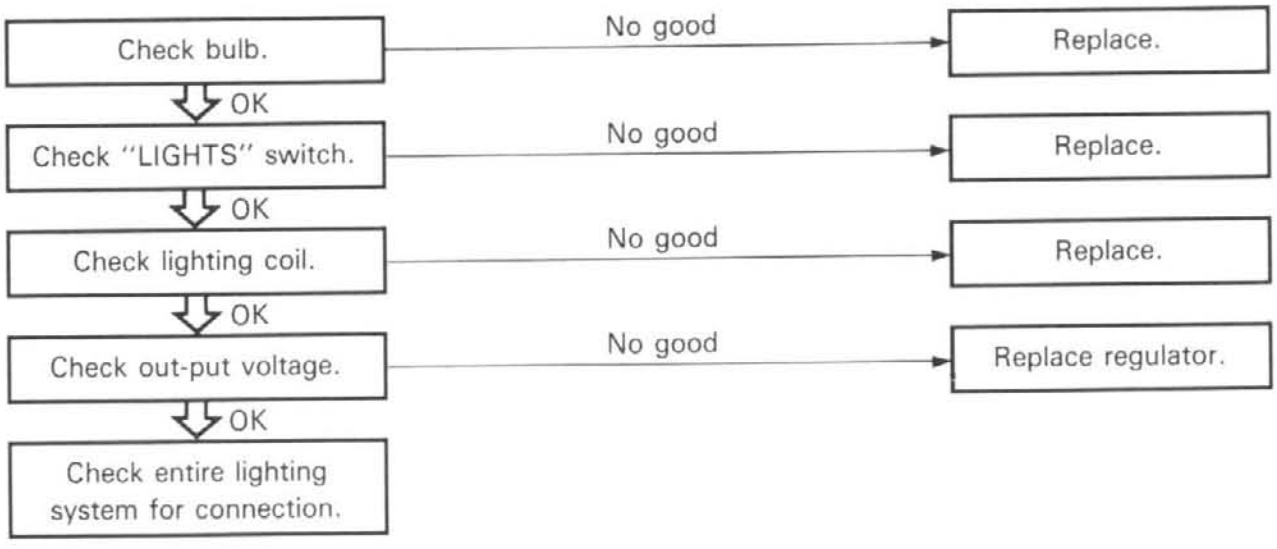
CDI UNIT INSPECTION

Check all electrical components. If no fault is found, replace the CDI unit. Then check the electrical components again.

LIGHTING SYSTEM

INSPECTION STEPS

If the headlight or tailight will not come on, use the following inspection steps.



NOTE:

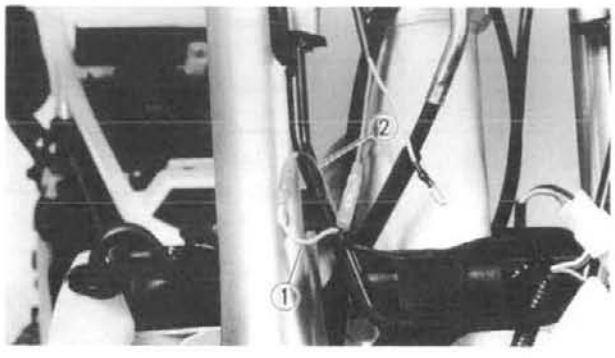
- Remove the following parts before inspection.
  1) Headlight
  2) Side cover (left and right)
  3) Seat
  4) Air scoop (left and right)
  5) Fuel tank
- Use the following special tool in this inspection.

Pocket Tester:
YU-03112/90890-03112

6

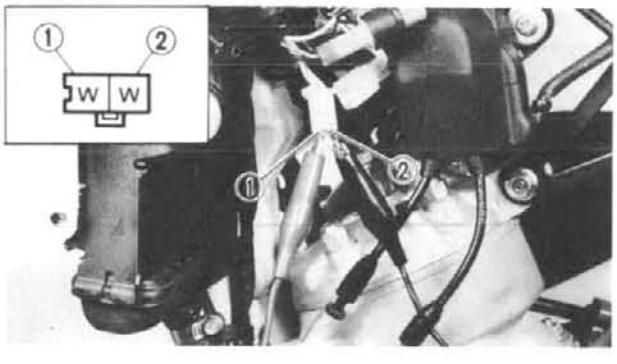
BULB INSPECTION

1. Check:
   - Bulb condition
     Burn out→Replace.
   - Bulb wattage
     Wrong wattage→Replace.



"LIGHTS" SWITCH INSPECTION

1. Disconnect the leads from the "LIGHTS" switch, and connect the Yellow/Red lead ① directly to Blue lead ②.
2. Check:
   - Lighting
     Come on→Repair or replace the "LIGHTS" switch.

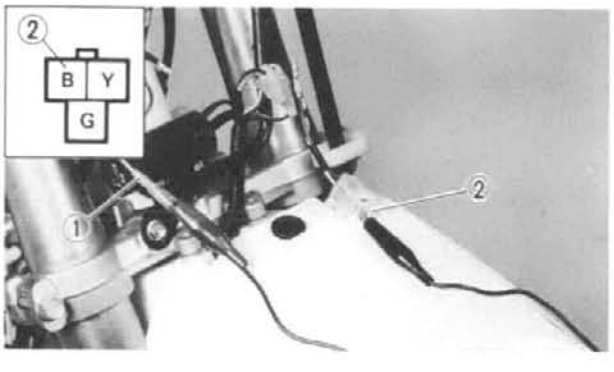


LIGHTING COIL INSPECTION

1. Inspect:
   - Lighting coil resistance
     Out of specification→Replace.

Tester (+) lead→White lead ①
Tester (−) lead→White lead ②

Lighting Coil Resistance	Tester Selector Position
0.24 ~ 0.36Ω at 20°C (68°F)	Ω × 1



OUT-PUT VOLTAGE INSPECTION

1. Disconnect the "LIGHTS" switch lead and headlight coupler.
2. Inspect:
   - Out-put voltage
     Out of specification→Replace the regulator.

Tester (+) lead→Yellow/Red lead ①
Tester (−) lead→Black lead ②

	Out-put Voltage	Tester Selector Position
	7.7V or more at 1,300 r/min	ACV-20
	12.0V or less at 10,000 r/min	

CAUTION:

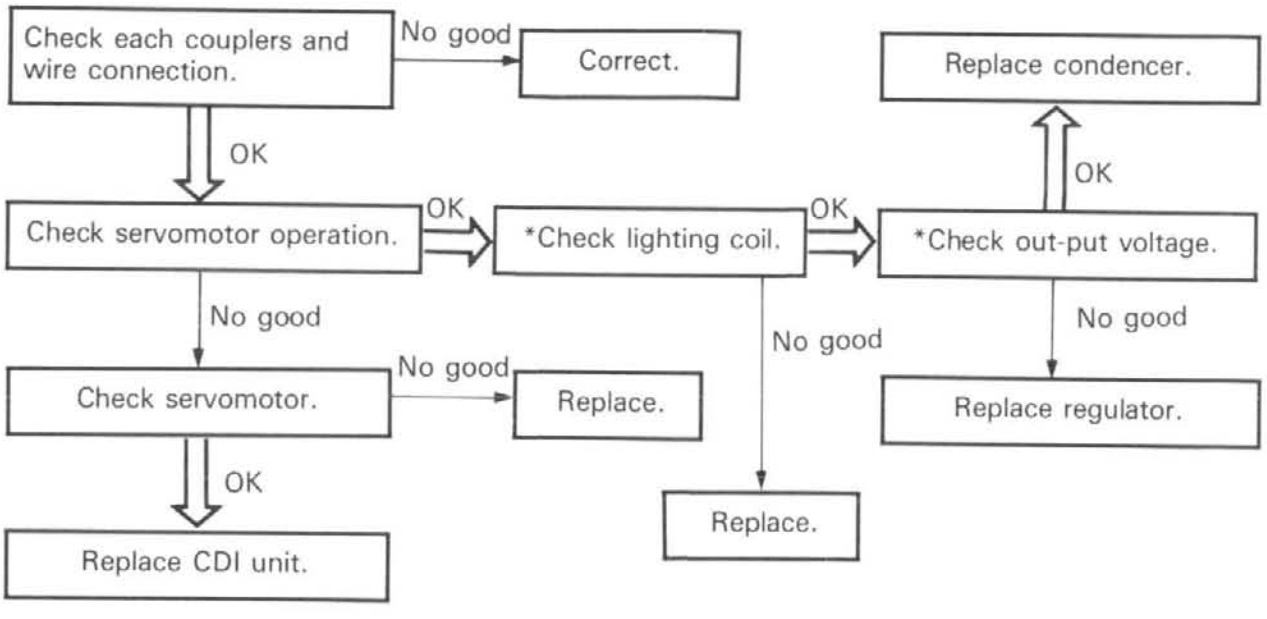
Do not run the engine in neutral above 6,000 r/min for more than 1 or 2 seconds.

COUPLERS AND LEADS CONNECTION INSPECTION

1. Check:
   - Couplers and leads connection
     Rust/Dust/Looseness/Short-circuit→Repair or replace.

YPVS SYSTEM

INSPECTION STEPS



*marked: Refer to the "LIGHTING SYSTEM" section in the CHAPTER 6.

NOTE:

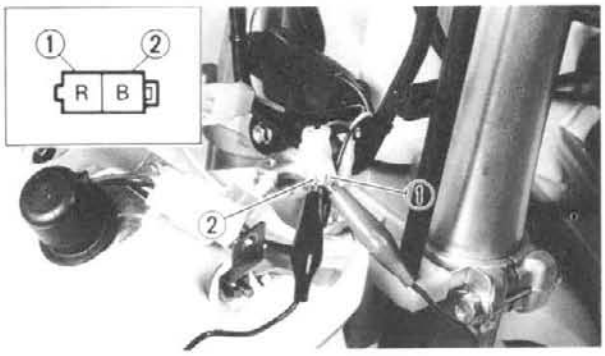
- Remove the following parts before inspection.
  1) Side cover (left and right)
  2) Seat
  3) Air scoop (left and right)
  4) Fuel tank
  5) Headlight

- Use 12V battery in this inspection.

6

COUPLERS AND LEADS CONNECTION INSPECTION

1. Check:
   - Couplers and leads connection
     Rust/Dust/Looseness/Short-circuit→
     Replair or replace.

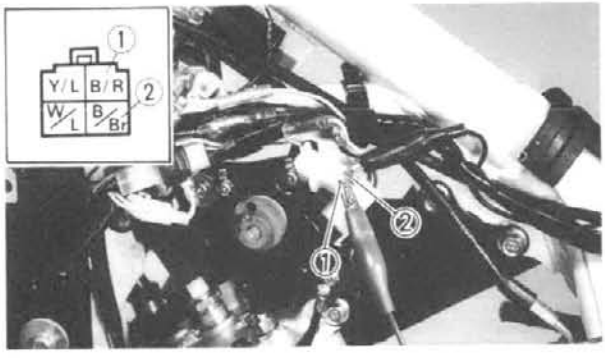


SERVOMOTOR OPERATION

1. Disconnect the condenser coupler.
2. Connect 12V battery to the condenser coupler.

Battery (+) lead→Red lead ①
Battery (−) lead→Black lead ②

3. Inspect:
   - Servomotor ①
     Operate→If no failure is found in checking the lighting coil resistance and headlight output voltage, replace the condenser.



SERVOMOTOR INSPECTION

1. Disconnect the YPVS cable from the servomotor.
2. Disconnect the servomotor coupler.
3. Connect 12V battery to the servomotor coupler.

Battery (+) lead→Black/Red lead ①
Battery (−) lead→Black/Brown lead ②

4. Inspect:
   - Servomotor ①
     Not operate→Replace the servomtor.

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YAMAHA

WR200R(E)

MANUEL D'ATELIER DU PROPRIETAIRE

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