



YAMAHA

1987 - 2000

MOTORCYCLE

SERVICE MANUAL

Model : SH50A, SH50B, SH50F, SH50H,
SH50J, SH50K, SH50M, SH50T, SH50U,
SH50W

2FU281972000



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NOTICE

This manual was written by the Yamaha Motor Company primarily for use by Yamaha dealers and their qualified mechanics. It is not possible to put an entire mechanic's education into one manual, so it is assumed that persons using this book to perform maintenance and repairs on Yamaha motorcycles have a basic understanding of the mechanical concepts and procedures inherent in scooter repair technology. Without such knowledge, attempted repairs or service to this model may render it unfit to use and/or unsafe.

This model has been designed and manufactured to perform within certain specifications in regard to performance and emissions. Proper service with the correct tools is necessary to ensure that the scooter will operate as designed. If there is any question about a service procedure, it is imperative that you contact a Yamaha dealer for any service information changes that apply to this model. This policy is intended to provide the customer with the most satisfaction from his scooter and to conform with federal environmental quality objectives.

Yamaha Motor Company, Ltd. is continually striving to improve all models manufactured by Yamaha. Modifications and significant changes in specifications or procedures will be forwarded to all Authorized Yamaha dealers and will, where applicable, appear in future editions of this manual.

TECHNICAL PUBLICATIONS
SERVICE DIVISION
MOTORCYCLES OPERATIONS
YAMAHA MOTOR CO., LTD.

HOW TO USE THIS MANUAL

PARTICULARLY IMPORTANT INFORMATION

This material is distinguished by the following notation.

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

CAUTION:

A **CAUTION** indicates special procedures that must be followed to avoid damage to the scooter.

WARNING:

A **WARNING** indicates special procedures that must be followed to avoid injury to a scooter operator or person inspecting or repairing the scooter.

MANUAL FORMAT

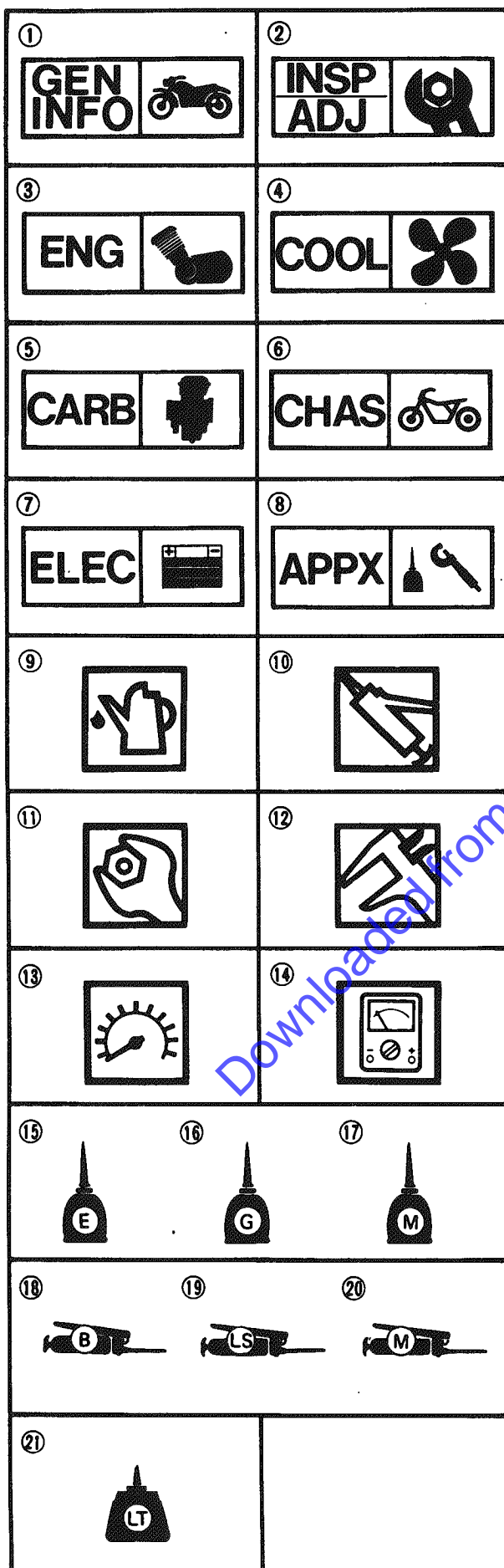
All of the procedures in this manual are organized in a sequential, step-by-step format. The information has been compiled to provide the mechanic with an easy to read, handy reference that contains comprehensive explanations of all disassembly, repair, assembly, and inspection operations.

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

- Bearings
Pitting/Damage → Replace.

EXPLODED DIAGRAM

Each chapter provides exploded diagrams before each disassembly section for ease in identifying correct disassembly and assembly procedures.



ILLUSTRATED SYMBOLS (Refer to the illustration)

Illustrated symbols ① to ⑧ are designed as thumb tabs to indicate the chapter's number and content.

- ① General information
- ② Periodic inspection and adjustment
- ③ Engine
- ④ Cooling system
- ⑤ Carburetion
- ⑥ Chassis
- ⑦ Electrical
- ⑧ Appendices








Illustrated symbols ⑨ to ⑭ are used to identify the specifications appearing.

- ⑨ Filling fluid
- ⑩ Lubricant
- ⑪ Tightening
- ⑫ Wear limit, clearance
- ⑬ Engine speed
- ⑭ Ω , V, A

Illustrated symbols ⑮ to ㉑ in the exploded diagram indicate grade of lubricant and location of lubrication point.

- ⑮ Apply engine oil
- ⑯ Apply gear oil
- ⑰ Apply molybdenum disulfide oil
- ⑱ Apply wheel bearing grease
- ⑲ Apply lightweight lithium-soap base grease
- ⑳ Apply molybdenum disulfide grease
- ㉑ Apply locking agent (LOCTITE®)

INDEX

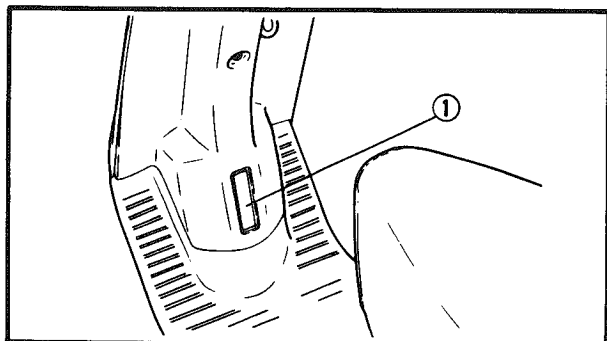
GENERAL INFORMATION	 GEN INFO 1
PERIODIC INSPECTIONS AND ADJUSTMENTS	 INSP ADJ 2
ENGINE OVERHAUL	 ENG 3
CARBURETION	 CARB 4
CHASSIS	 CHAS 5
ELECTRICAL	 ELEC 6
APPENDICES	 APPX 7.

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CHAPTER 1 GENERAL INFORMATION

SCOOTER IDENTIFICATION	1-1
VEHICLE IDENTIFICATION NUMBER	1-1
ENGINE SERIAL NUMBER.....	1-1
 IMPORTANT INFORMATION	1-2
ALL REPLACEMENT PARTS	1-2
GASKETS, OIL SEALS, AND O-RINGS	1-2
LOCK WASHER/PLATES AND COTTER PINS.....	1-2
BEARINGS AND OIL SEALS	1-2
CIRCLIPS.....	1-3
 SPECIAL TOOLS	1-3
FOR TUNE-UP	1-3
FOR ENGINE SERVICE	1-3
FOR CHASSIS SERVICE	1-5
FOR ELECTRICAL COMPONENTS	1-5

1



GENERAL INFORMATION

SCOOTER IDENTIFICATION

VEHICLE IDENTIFICATION NUMBER

The vehicle identification number ① is stamped into the frame.

Starting Serial Number:
SH50T.....JYA2FU00 * HA000101

NOTE:

The vehicle identification number is used to identify your scooter and may be used to register your scooter with the licensing authority in your state.

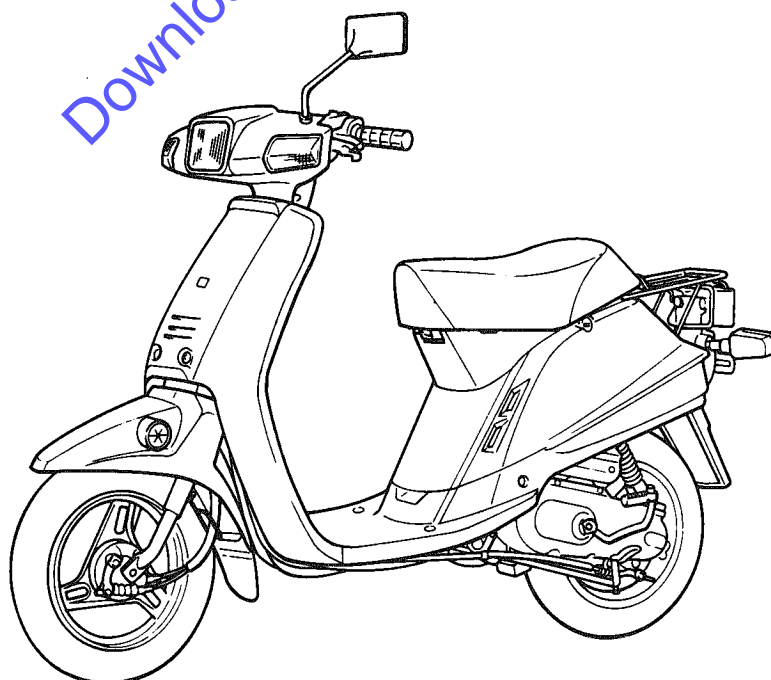
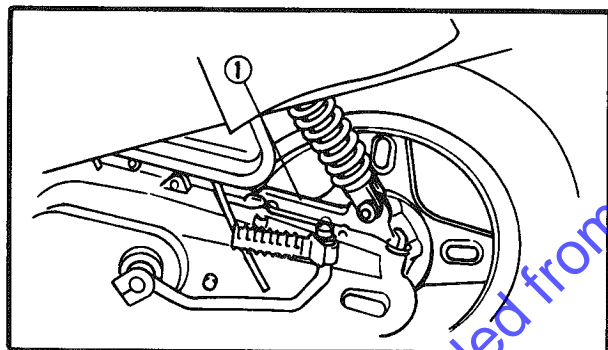
ENGINE SERIAL NUMBER

The engine serial number ① is stamped into the crankcase.

Starting Serial Number:
SH50T.....2FU-000101

NOTE:

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



IMPORTANT INFORMATION

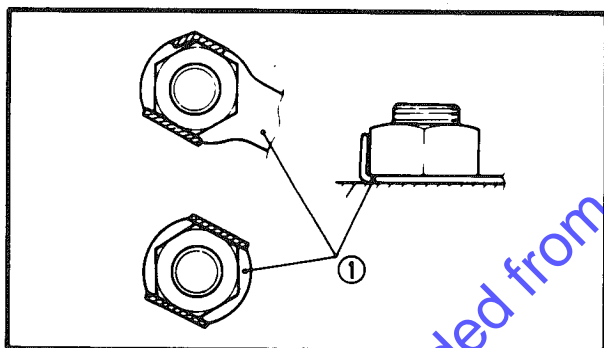
ALL REPLACEMENT PARTS

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

1

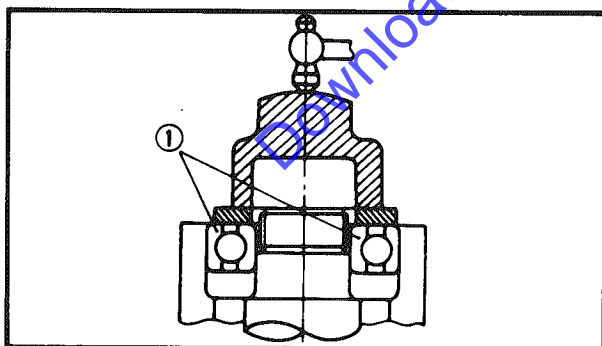
GASKETS, OIL SEALS, AND O-RINGS

1. All gaskets, 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.

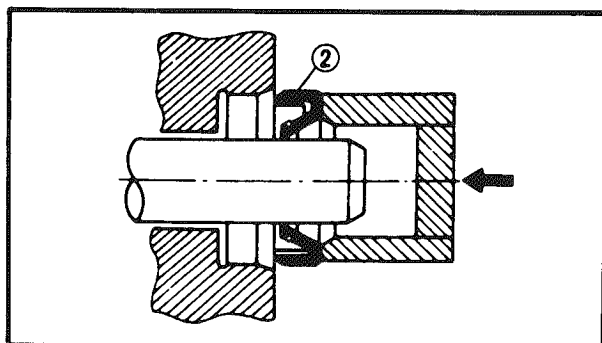


BEARINGS AND OIL SEALS

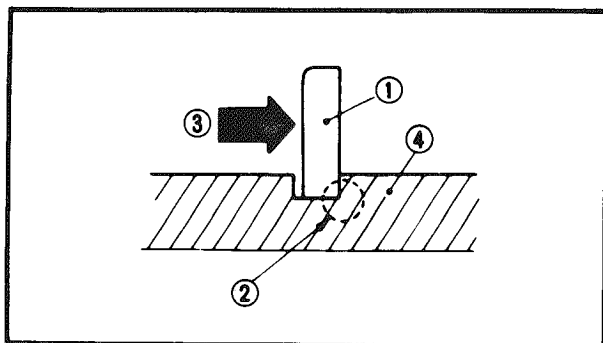
1. Install the bearing(s) ① and oil seal(s) ② with their manufacture's marks or numbers facing outward. (In other words, the stamped letters must be on the side exposed to view.) When installing oil seal(s), apply a light coating of light-weight lithium base grease to the seal lip(s). Oil the bearings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

CAUTION:

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



1



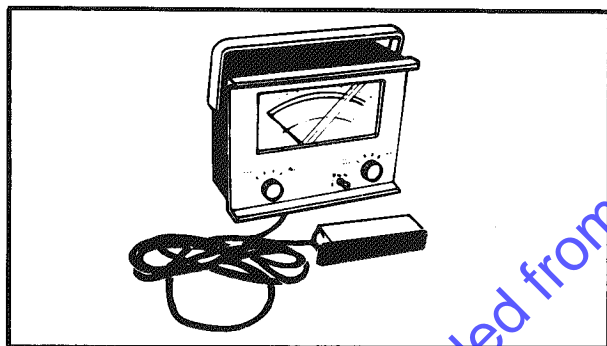
CIRCLIPS

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

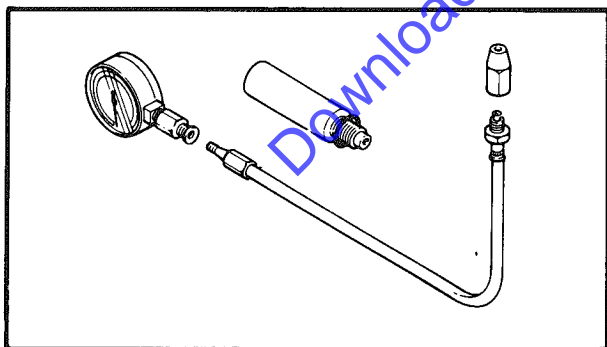
The proper special tools are necessary for complete and accurate tune-up and assembly. Using the correct special tool will help prevent damage caused by the use of improper tools or improvised techniques.



FOR TUNE-UP

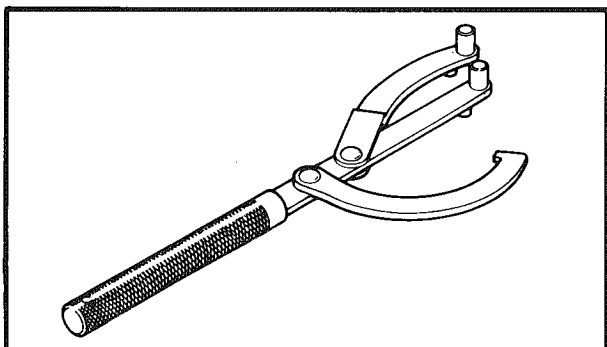
1. Inductive Tachometer
P/N. YU-08036

This tool is needed for detecting engine rpm.



2. Compression Gauge
P/N. YU-33223

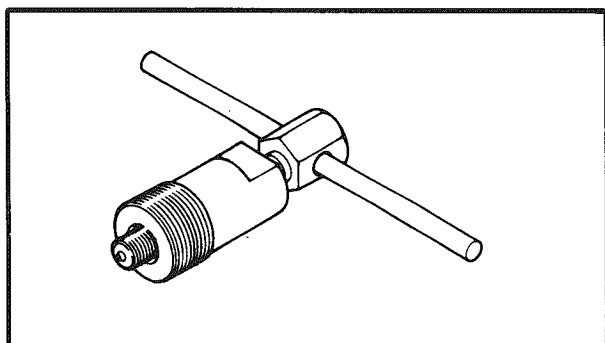
This gauge is used to measure engine compression.



FOR ENGINE SERVICE

1. Flywheel Holding Tool
P/N. YU-01235

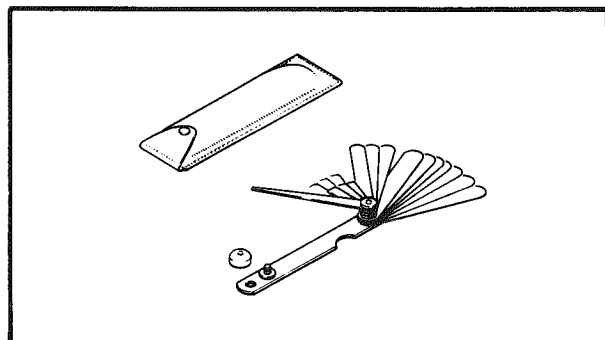
This tool is used to hold the flywheel magneto and clutch assembly when removing or installing the securing nut.



2. Flywheel Magneto Puller

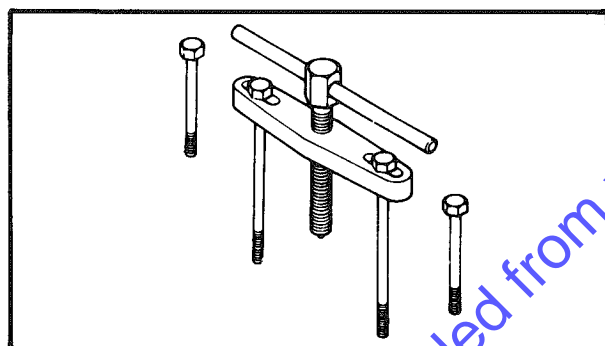
P/N. YM-01189

This tool is used to remove the flywheel.



3. Thickness Gauge

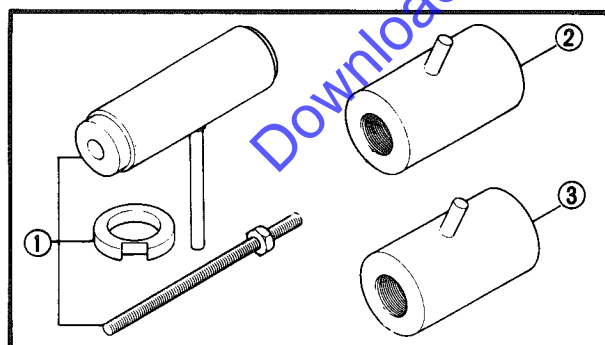
P/N. YU-03001



4. Crankcase Separating Tool

P/N. YU-01135

This tool is used to remove the crankshaft or separate the crankcase.



5. Crankshaft Installation Set

P/N. YU-90050 – ①

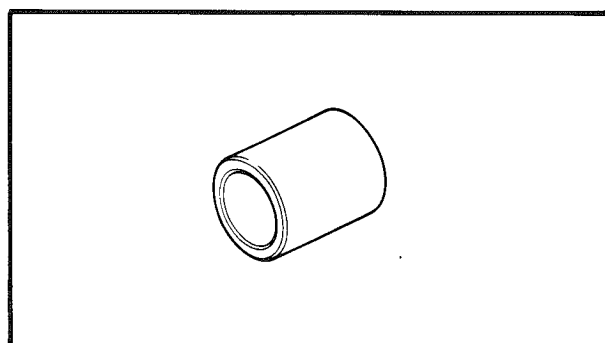
Adapter (M10)

P/N. YM-90062 – ②

Adapter (M12)

P/N. YM-90063 – ③

These Tools are used to install the crankshaft.

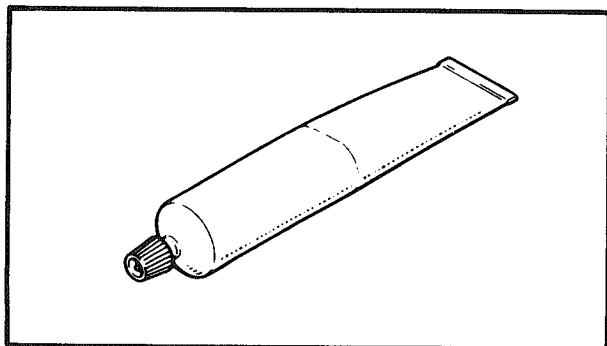


6. Crankshaft Installer Spacer

P/N. YM-01411

This tool is used to install the crankshaft.

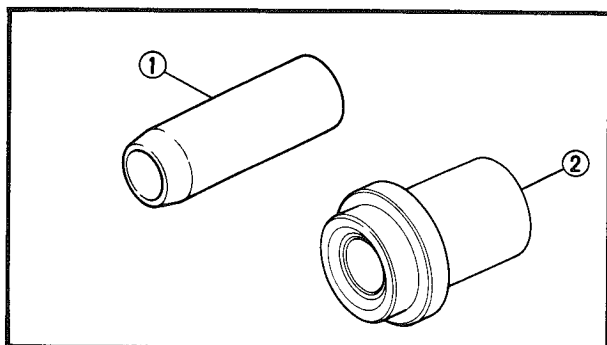
1



7. Sealant (Quick Gasket®)

P/N. ACC-11001-05-01

This sealant (bond) is used for crankcase mating surfaces.



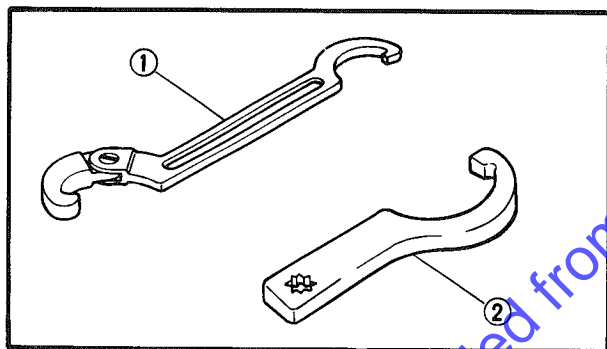
8. Oil seal guide

P/N. YM-01409 – ①

Oil seal driver

P/N. YM-01410 – ②

These tools are used to install the crankshaft oil seal.



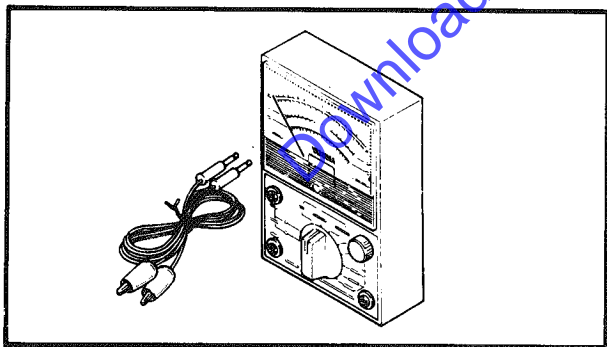
FOR CHASSIS SERVICE

1. Ring Nut Wrench

P/N. YU-01268 – ①

P/N. YU-33975 – ②

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

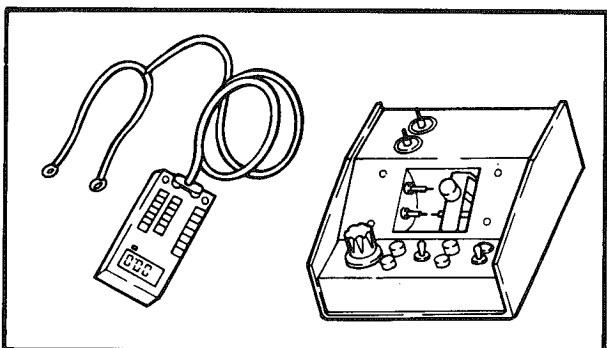


FOR ELECTRICAL COMPONENTS

1. Pocket Tester

P/N. YU-03112

This instrument is invaluable for electrical system inspection and adjustment.



2. Electro Tester

P/N. YU-33260

This instrument is necessary for ignition system inspection.

CHAPTER 2

PERIODIC INSPECTION AND ADJUSTMENTS

INTRODUCTION	2-1
PERIODIC MAINTENANCE/LUBRICATION INTERVALS	2-1
COVERS REMOVAL AND INSTALLATION	2-2
TAIL COVER AND MOLES	2-2
FOOTREST BOARD	2-4
FRONT PANEL AND LEG SHIELD	2-4
HANDLBAR COVERS	2-5
ENGINE	2-6
IDLE SPEED ADJUSTMENT	2-6
THROTTLE CABLE ADJUSTMENT	2-7
AUTOLUBE PUMP AIR BLEEDING	2-8
AIR CLEANER ELEMENT CLEANING	2-9
FUEL LINE INSPECTION	2-10
FUEL COCK CLEANING	2-11
COMPRESSION PRESSURE MEASUREMENT	2-11
ENGINE OIL LEVEL INSPECTION	2-13
TRANSMISSION OIL REPLACEMENT	2-14
EXHAUST SYSTEM INSPECTION	2-15
CHASSIS	2-16
FRONT BRAKE ADJUSTMENT	2-16
REAR BRAKE ADJUSTMENT	2-16
FRONT AND REAR BRAKE LINING INSPECTION	2-17
TIRE AND WHEEL INSPECTION	2-17
STEERING ADJUSTMENT	2-18
ELECTRICAL	2-19
BATTERY	2-19
FUSE INSPECTION	2-21
SPARK PLUG INSPECTION	2-22
HEADLIGHT BEAM ADJUSTMENT	2-23
IGNITION TIMING CHECK	2-23

PERIODIC INSPECTIONS AND ADJUSTMENTS

INTRODUCTION

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

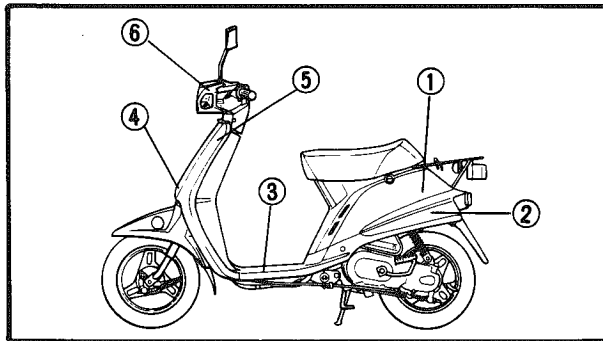
PERIODIC MAINTENANCE/LUBRICATION INTERVALS

Unit: km (miles)

ITEM	REMARKS	BREAK-IN 500 (300)	EVERY	
			3,000 (2,000) or 6 months	6,000 (4,000) or 12 months
Spark plug	Check condition. Clean or replace if necessary.	○	○	○
Air filter*	Clean. Replace if necessary.		○	○
Carburetor*	Check idle speed/starter operation. Adjust if necessary.	○		○
Fuel line*	Check fuel hose for cracks or damage. Replace if necessary.		○	○
Transmission oil*	Check oil leakage. Correct if necessary. Replace every 12,000 (8,000) or 24 months. (Warm engine before draining.)	REPLACE	○	○
Autolube pump*	Check operation. Correct if necessary. Air bleeding.	○		○
Brake	Check operation. Adjust if necessary.		○	○
Wheels*	Check/damage/runout. Repair if necessary.		○	○
Wheel bearings*	Check bearings assembly for looseness/ damage. Replace if damaged.		○	○
Steering bearing*	Check bearings assembly for looseness. Correct if necessary. Moderately repack every 12,000 (8,000) or 24 months.**	○	○	○
Rear shock absorber*	Check operation/oil leakage. Repair if necessary.		○	○
Fittings/Fasteners*	Check all chassis fittings and fasteners. Correct if necessary.	○	○	○
Centerstand*	Check operation. Repair if necessary.	○	○	○
Battery*	Check specific gravity. Check breather pipe for proper operation. Correct if necessary.		○	○

*: It is recommended that these items be serviced by a Yamaha dealer or other qualified mechanic.

**: Medium weight wheel bearing grease.



COVERS REMOVAL AND INSTALLATION

- ① Tail cover
- ② Mole (Left and right)
- ③ Footrest board
- ④ Front panel
- ⑤ Leg shield
- ⑥ Handlebar covers (Front and rear)

TAIL COVER AND MOLES

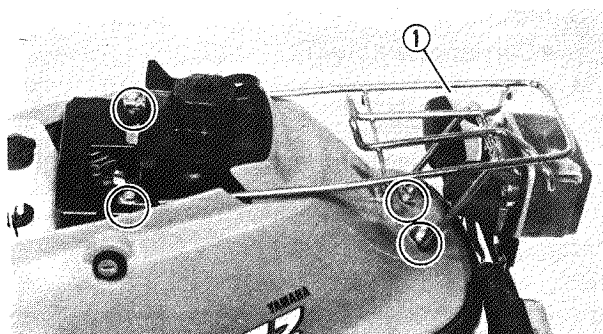
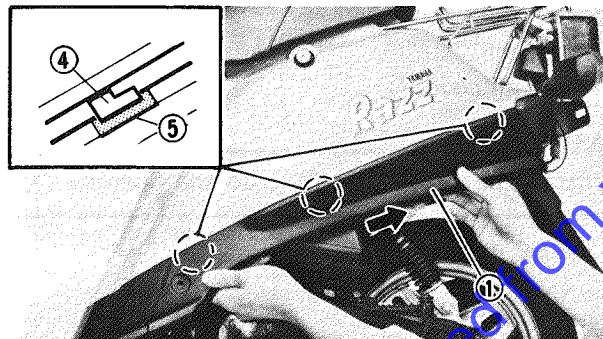
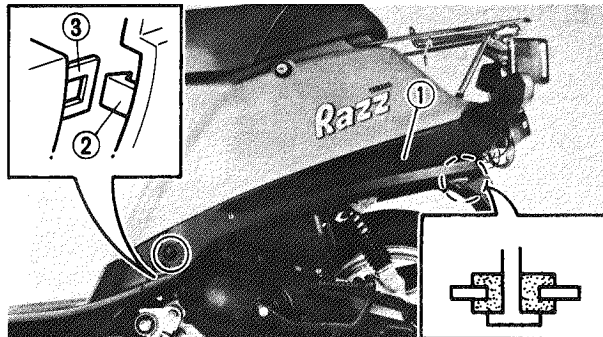
Removal

1. Remove:

- Mole (Left and right) ①

NOTE:

- Unhook the pawl ② out of groove ③ of the footrest board.
- Slide the mole backward and unhook the pawl ④ out of groove ⑤ of the tail cover.



2. Remove:

- Clip ①
- Pin ②
- Seat ③

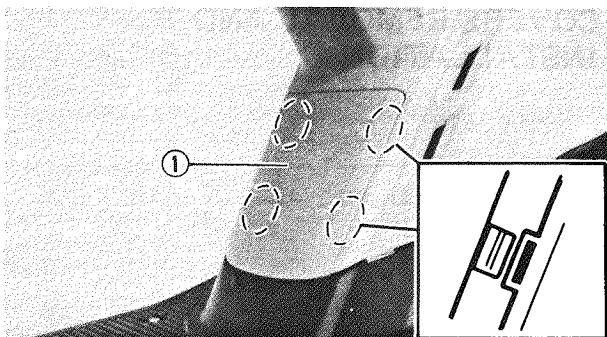
3. Disconnect:

- Taillight leads
- Rear flasher light leads

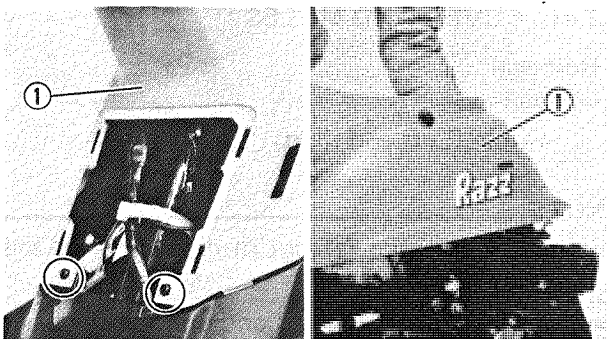
4. Remove:

- Carrier assembly ①

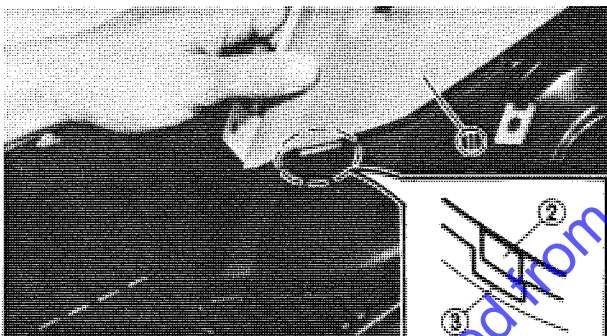
2



5. Remove:
- Cover ①



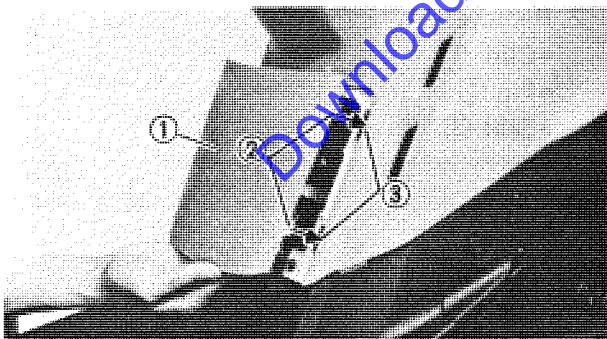
6. Remove:
- Tail cover ①



Installation

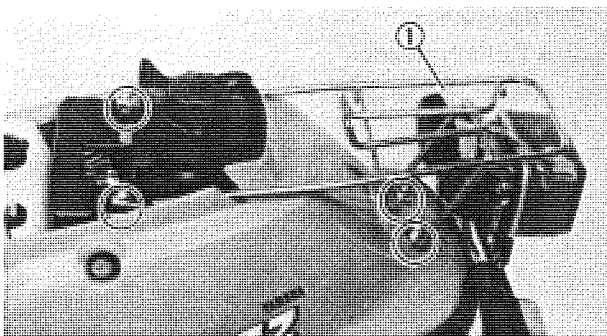
1. Install:
- Tail cover ①

NOTE: _____
Install the projection ② into the opening ③ .



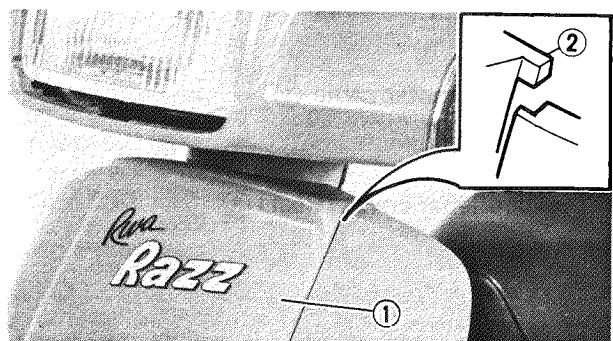
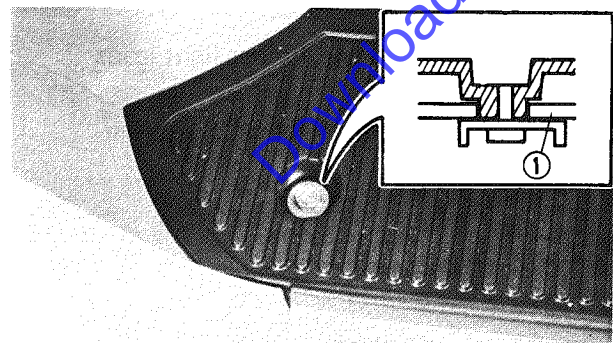
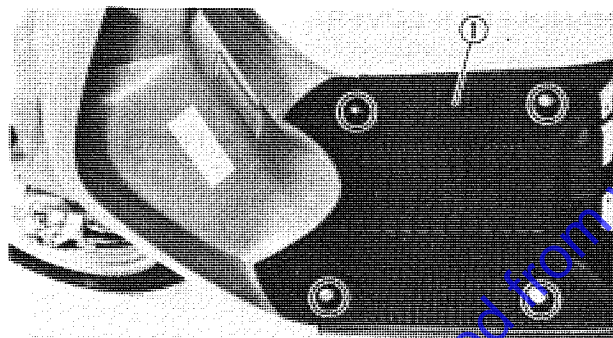
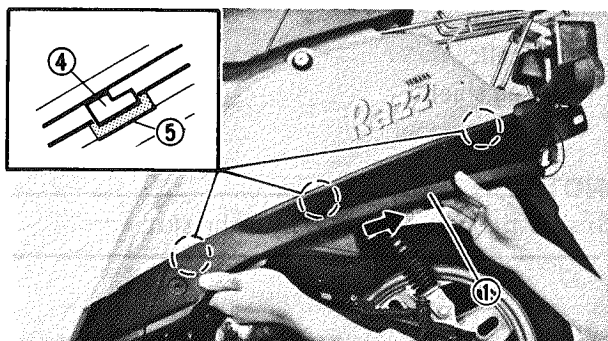
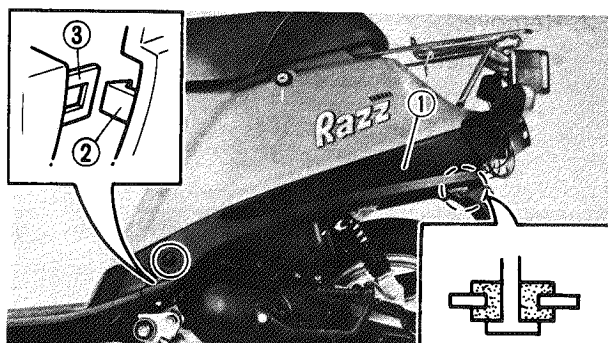
2. Install:
- Cover ①

NOTE: _____
Install the projection ② into the opening ③ .



3. Install:
- Carrier assembly ①
4. Connect:
- Taillight leads
 - Rear flasher light leads

FOOTREST BOARD/ FRONT PANEL AND LEG SHIELD



5. Install:

- Mole (Left and right) ①

NOTE:

- Hook the pawl ② onto the opening ③ , and slide the mole forward.
- Hook the pawl ④ onto the opening ⑤ .

2

FOOTREST BOARD

Removal

1. Remove:

- Tail cover

Refer to "TAIL COVER AND MOLE" section.

2. Remove:

- Footrest board ①

Installation

1. Install:

- Footrest board ①

2. Install:

- Tail cover

FRONT PANEL AND LEG SHIELD

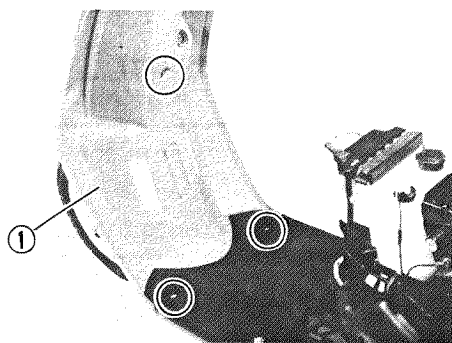
Removal

1. Remove:

- Front panel ①

NOTE:

Unhook the projection ② by pulling up the front panel.



2. Remove:
 - Leg shield ①



Installation

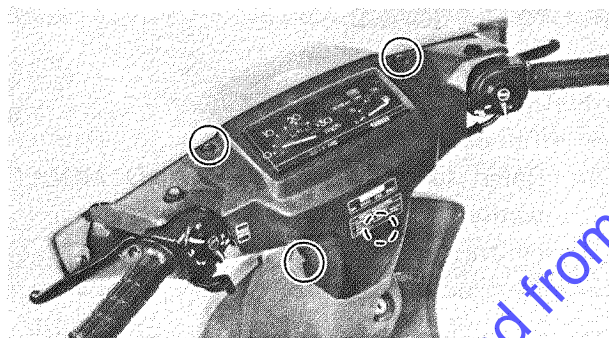
1. Install:
 - Leg shield
 - Front panel ①

NOTE: _____
Install the projection ② into the slot.

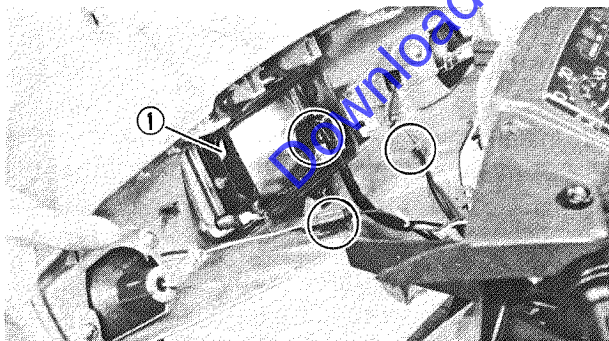
HANDLEBAR COVERS

Removal

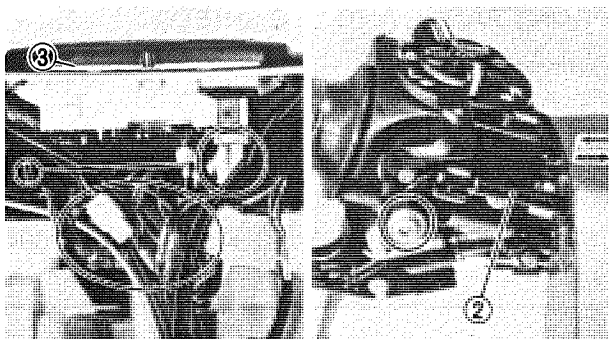
1. Remove:
 - Screws (Handlebar cover — Front)

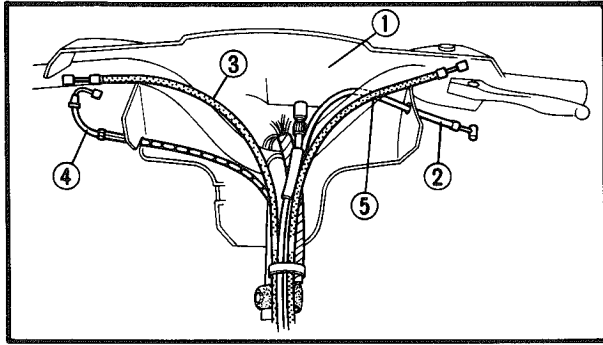


2. Disconnect:
 - Headlight lead and flasher light leads
3. Remove:
 - Handlebar cover (Front) ①



4. Disconnect:
 - Leads
 - Speedometer cable ①
 - Starter cable ②
5. Remove:
 - Handlebar cover (Rear) ③





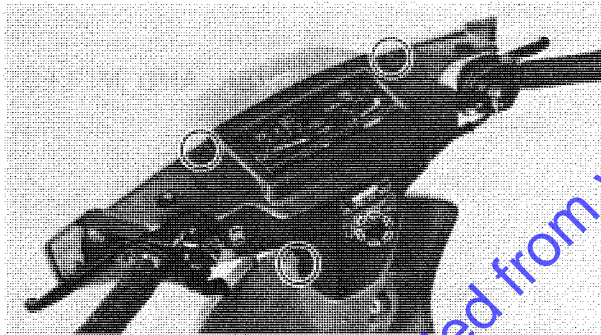
Installation

1. Install:
 - Handlebar cover (Rear) ①
2. Connect:
 - Leads
 - Speedometer cable
 - Starter cable ②

NOTE:

- Position the cables as shown.
- Pass the starter cable ② through the handlebar cover (Rear) ① hole.

- ③ Front brake cable
- ④ Throttle cable
- ⑤ Rear brake cable



3. Connect:
 - Headlight lead and flasher light leads
4. Install:
 - Handlebar cover (Front)

ENGINE

IDLE SPEED ADJUSTMENT

1. Remove:
 - Tail cover

Refer to "TAIL COVER AND MOLES" section.

2. Start the engine and warm it up before checking the idle speed.

NOTE:

A warm engine is defined as one which had been operated for about 3 minutes at 3,000 r/min with no load.



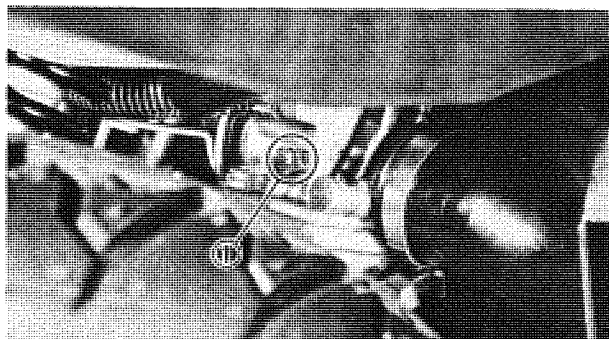
3. Attach:
 - Inductive Tachometer (YU-08036)
4. Check:
 - Engine idle speed
 Out of specification → Adjust.



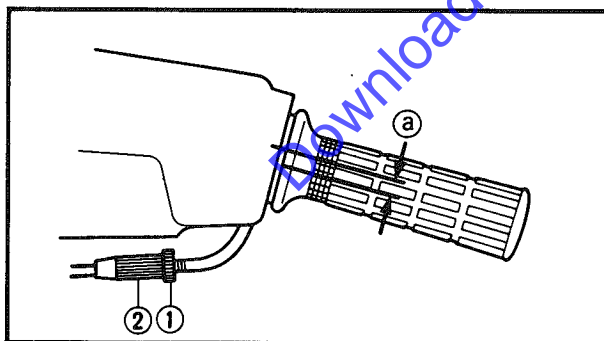
Engine Idle Speed:
1,500 ~ 2,100 r/min

Engine idle speed adjustment steps:

- Start the engine at idle speed.
- Turn the throttle stop screw ① clockwise to increase engine speed and counterclockwise to decrease engine speed.



5. Install:
 - Tail cover
 Refer to "TAIL COVER AND MOLES" section.



THROTTLE CABLE ADJUSTMENT

1. Check:
 - Throttle cable free play ②
 Out of specification → Adjust.



Throttle Cable Free Play ② :
3.0 ~ 5.0 mm (0.12 ~ 0.20 in)

Throttle cable free play adjustment steps:

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

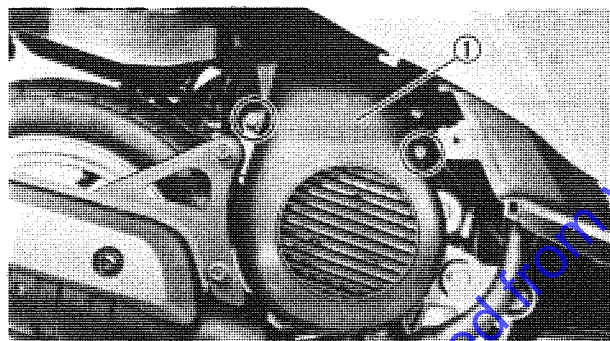


- Loosen the locknut ①.
- Turn the adjuster ② in or out until the correct free play is obtained.
- Tighten the locknut.

AUTOLUBE PUMP AIR BLEEDING

The Autolube pump and delivery lines must be bled on the following occasions:

- Whenever the Autolube tank has run dry.
- Whenever any portion of the Autolube system is disconnected.

2**1. Remove:**

- Mole (Right)

Refer to "TAIL COVER AND MOLES" section.

- Fan cover ①

2. Remove:

- Bleed screw ①

NOTE:

Place a rag under the autolube pump.

3. Bleed:

- Air

Keep the oil running out until air bubbles disappear.

NOTE:

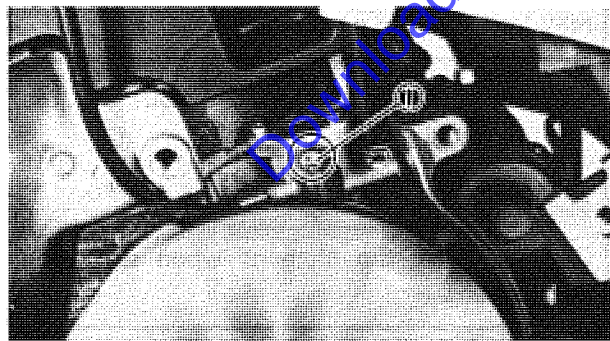
Clean the oil stains on the engine and CDI magneto.

4. Inspect:

- Bleed screw gasket
Damage → Replace.

5. Install:

- Bleed screw gasket
- Bleed screw
- Fan cover
- Mole (Right)



AIR CLEANER ELEMENT CLEANING

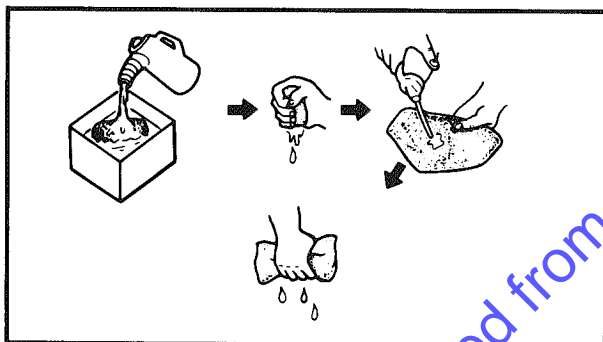
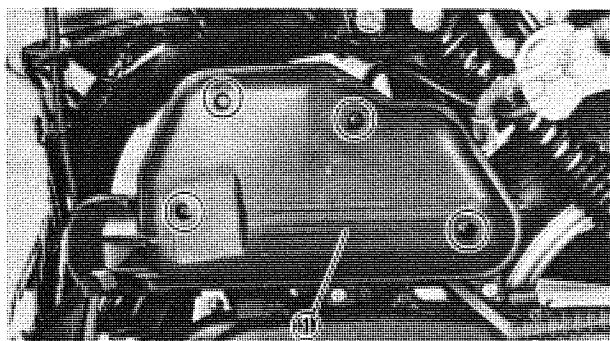
1. Remove:

- Tail cover

Refer to "TAIL COVER AND MOLE" section.

2. Remove:

- Air cleaner case cover ①
- Air cleaner element



3. Clean:

- Air cleaner element

Air cleaner element cleaning steps:

- Wash the element gently, but thoroughly in solvent.

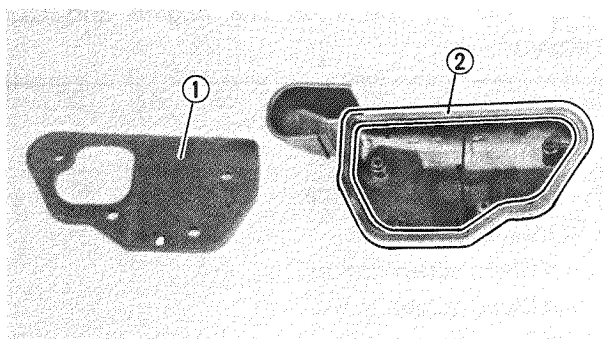
WARNING:

Never use low flash point solvents such as gasoline to clean the element. Such solvent may lead to a fire or explosion.

- Squeeze the excess solvent out of the element and let dry.

CAUTION:

Do not twist the element when squeezing the element.



4. Inspect:

- Air cleaner element ①
- Seal ②

Damage → Replace.

5. Apply:

- Foam-air-filter oil or 2-stroke engine oil
Onto the element.

6. Squeeze out the excess oil.

NOTE:

The element should be wet but not dripping.

7. Install:

- Air cleaner element
- Air cleaner case cover

8. Install:

- Tail cover

CAUTION:

Never operate the engine with the air cleaner element removed. This will allow unfiltered air to enter, causing rapid wear and possible engine damage. Additionally, operation without the cleaner element will affect carburetor jetting with subsequent poor performance and possible engine overheating.

Be careful not to have rags or the like blocking the intake area of the air cleaner.

2

FUEL LINE INSPECTION

1. Remove:

- Tail cover

Refer to "TAIL COVER AND MOLE" section.

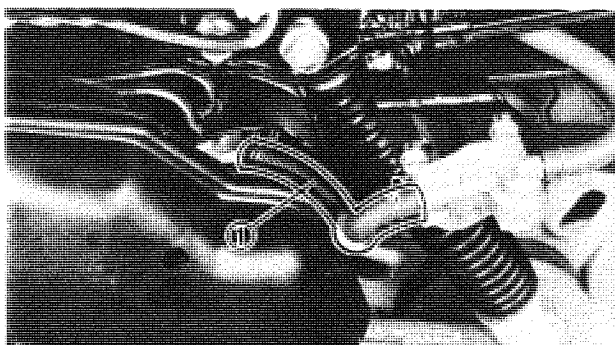
2. Inspect:

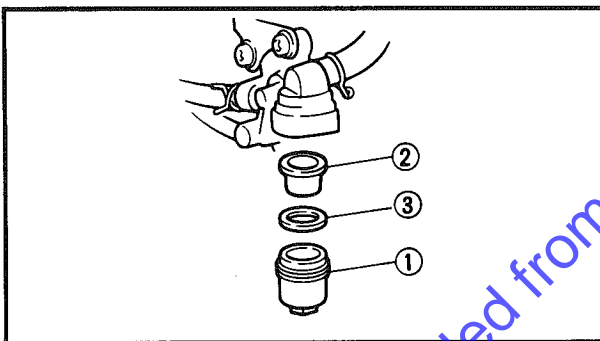
- Fuel hose ①
Cracks/Damage → Replace.

3. Install:

- Tail cover

Refer to "TAIL COVER AND MOLE" section.



**FUEL COCK CLEANING**

1. Remove:
 - Tail cover
Refer to "TAIL COVER AND MOLE" section.
2. Drain:
 - Fuel

WARNING:**FUEL IS HIGHLY FLAMMABLE:**

- Always turn off the engine when draining.
- Take care not to spill any fuel on the engine or exhaust pipe/muffler when draining.
- Never drain fuel while smoking or in the vicinity of an open flame.

3. Remove:

- Cap ①
- Filter ②
- O-ring ③

4. Clean:

- Filter
- Cap

Wash the filter and cap gently using solvent.

5. Inspect:

- Filter
- O-ring

Damage → Replace.

6. Install:

- O-ring
- Filter
- Cap
- Tail cover

Refer to "TAIL COVER AND MOLE" section.

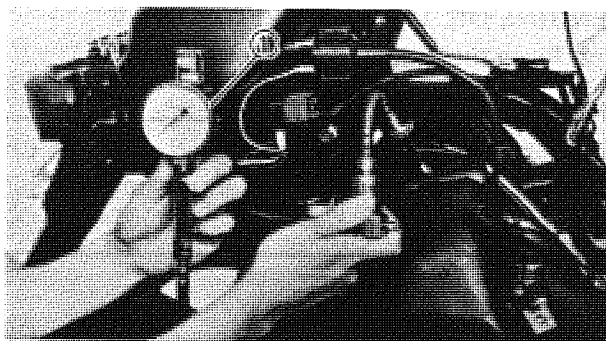
COMPRESSION PRESSURE MEASUREMENT

Insufficient compression pressure will result in performance loss and may indicate worn or damaged piston-rings.

1. Remove:

- Tail cover

Refer to "TAIL COVER AND MOLE" section.



2. Warm up engine for several minutes, then stop the engine.
3. Remove:
 - Spark plugs
4. Connect:
 - Compression Gauge (YU-33223) ①
5. Measure:
 - Compression

NOTE:

- Start the starter motor and throttle valve wide-open until the pressure indicated on gauge can rise no further. Compression should be within the specified levels.
- Be sure to use a battery that is fully charged.

Compression Pressure (at sea level):

Standard490 kPa
 (5.0 kg/cm² , 71 psi)
 Minimum373 kPa
 (3.8 kg/cm² , 54 psi)

WARNING:

When cranking engine, ground spark plug wires to prevent sparking.

Compression test steps (below minimum levels):

- Squirt a few drops of oil into cylinder.
- Measure compression again.

Reading	Diagnosis
Higher than without oil	• Worn cylinder, piston and piston rings
Same as without oil	• Defective piston, ring(s), valve(s) and cylinder head gasket

Compression test steps (above standard levels):

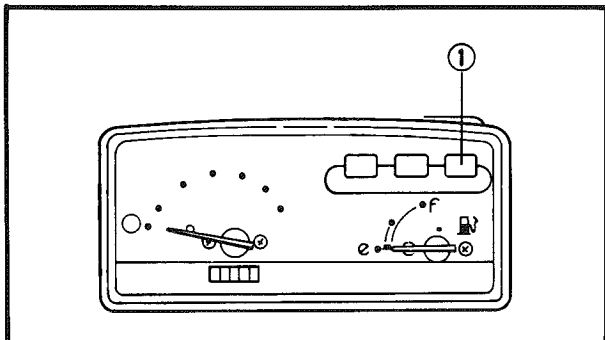
- Check cylinder head or piston crown for carbon deposits.

ENGINE OIL LEVEL INSPECTION

1. Place the scooter on the level place.

NOTE:

Be sure the scooter is positioned straight up and on both wheels when inspecting the oil level.



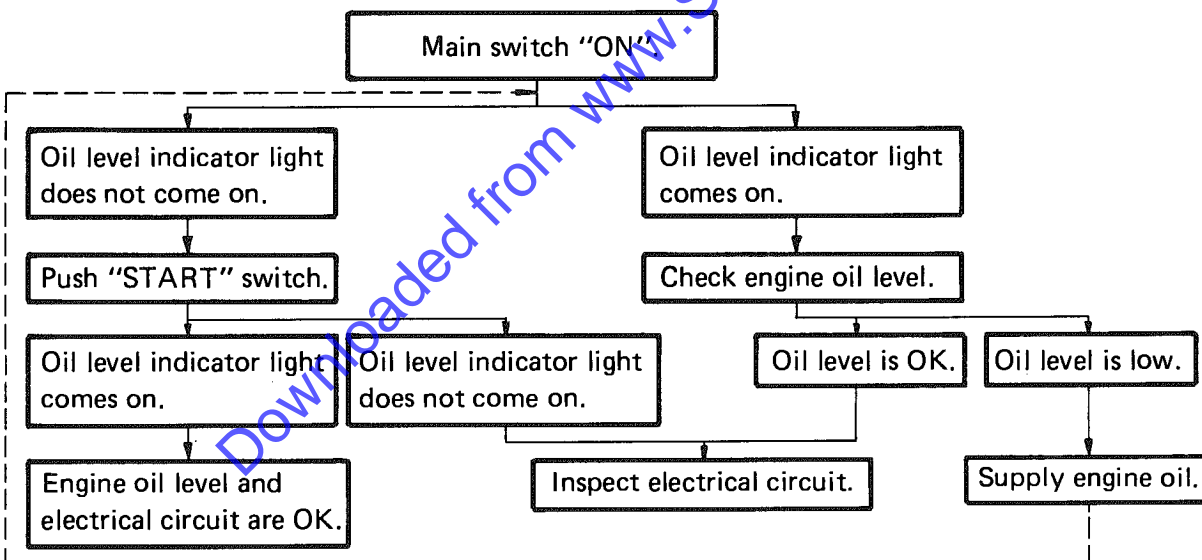
2. Inspect:

- Engine oil level

Oil level low → Add sufficient oil by the following inspection steps.

① "OIL" indicator light

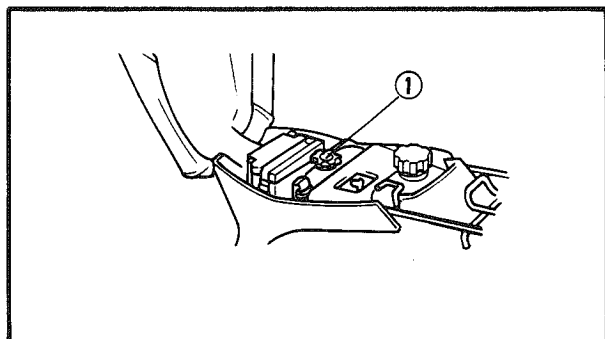
Engine oil level visual inspection steps:





Recommended Oil:
Yamalube 2 or Air Cooled
2 Stroke Engine Oil

Oil Capacity:
Total:
1.0 L (0.88 Imp qt, 1.06 US qt)



NOTE: _____
Install the oil tank filler cap ① and push it fully into the filler.

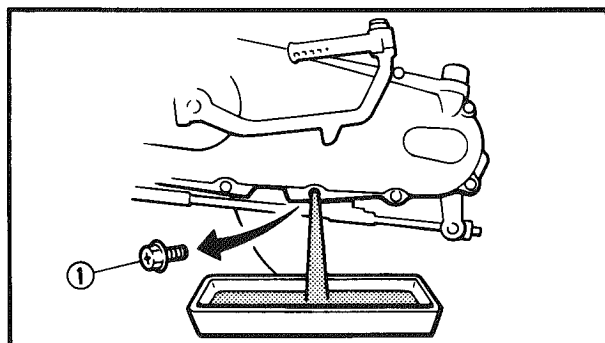
CAUTION: _____

Always use the same type of engine oil; mixing oils may result in a harmful chemical reaction and lead to poor performance.

2

TRANSMISSION OIL REPLACEMENT

1. Warm up the engine at idle speed, then stop it.
2. Place the oil pan under the drain hole.



3. Remove:
 - Drain bolt ①
 - Drain the transmission oil.
 - Oil filler plug



2

4. Inspect:

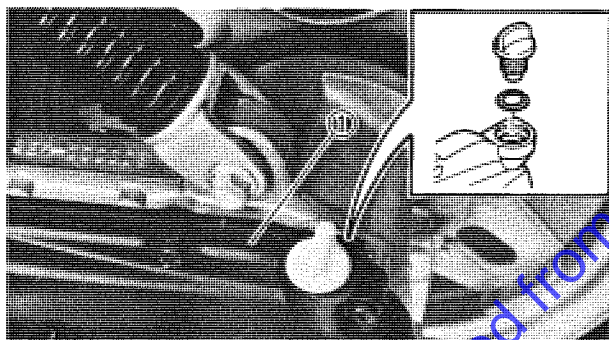
- Gasket (Drain bolt)
 - O-ring (Oil filler plug)
- Damage → Replace.

5. Install:

- Gasket
- Drain bolt



Drain Bolt:
18 Nm (1.8 m·kg, 13 ft·lb)



6. Fill:

- Transmission case ①



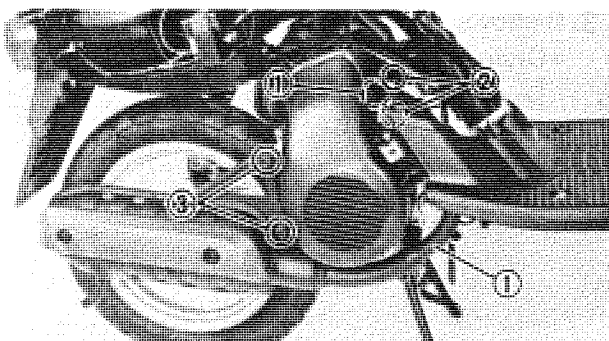
Transmission Oil:
Yamalube 4 or SAE 10W30 Type
SE Motor Oil
Capacity:
0.7 L (0.6 Imp qt, 0.7 US qt)

NOTE:

Wipe off any oil split on the crankcase, tire or wheel.

7. Install:

- Oil filler plug

**EXHAUST SYSTEM INSPECTION**

1. Inspect:

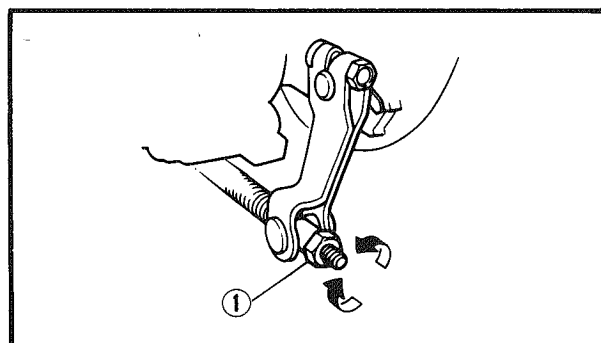
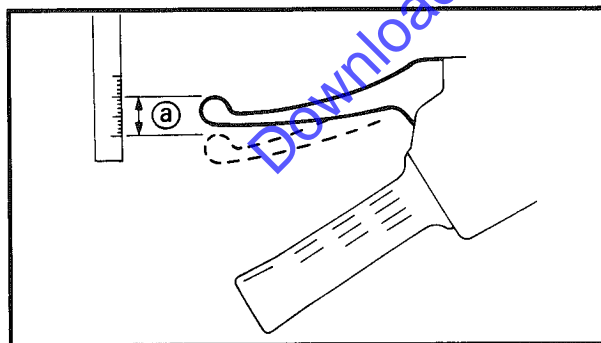
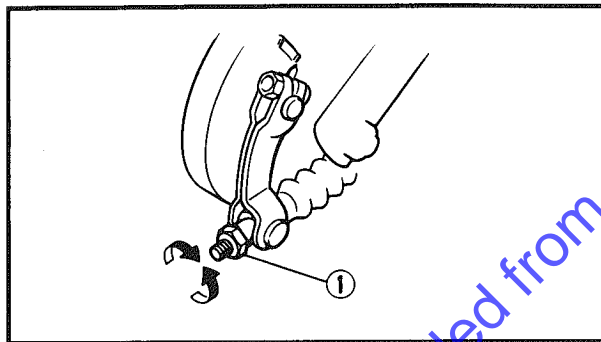
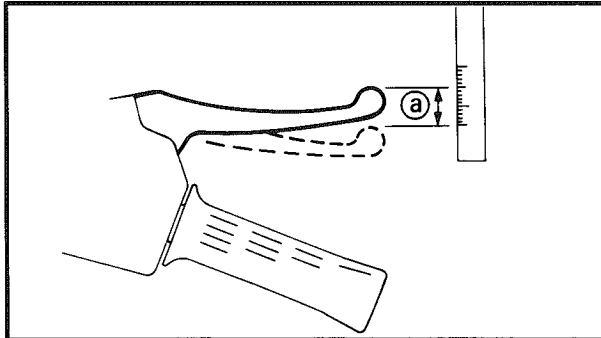
- Exhaust pipe gasket ①
- Damage → Replace.
Exhaust gas leakage → Repair.

2. Tighten:

- Bolts ② , ③



Bolt (Exhaust pipe) ② :
9 Nm (0.9 m·kg, 6.5 ft·lb)
Bolt (Muffler) ③ :
28 Nm (2.8 m·kg, 20 ft·lb)



CHASSIS

FRONT BRAKE ADJUSTMENT

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



Front Brake Lever Free Play ① :
10 ~ 20 mm (0.4 ~ 0.8 in)

Front brake lever free play adjustment steps:

- Turn the adjuster ① in or out until the correct free play is obtained.

REAR BRAKE ADJUSTMENT

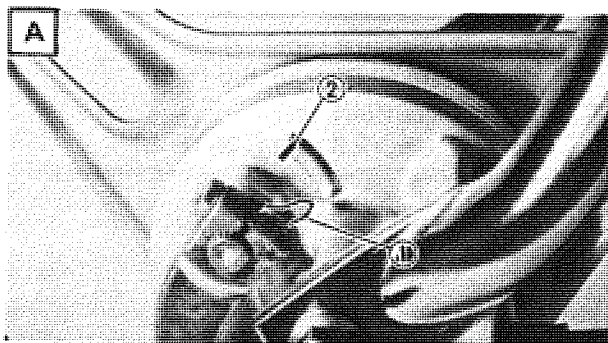
1. Check:
 - Rear brake lever free play ①
 - Out of specification → Adjust.



Rear Brake Lever Free Play ① :
10 ~ 20 mm (0.4 ~ 0.8 in)

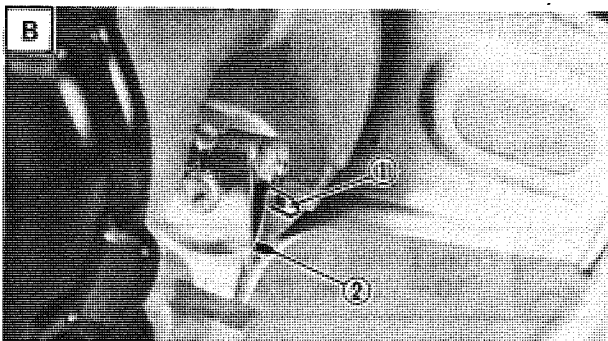
Rear brake lever free play adjustment steps:

- Turn the adjuster ① in or out until the correct free play is obtained.

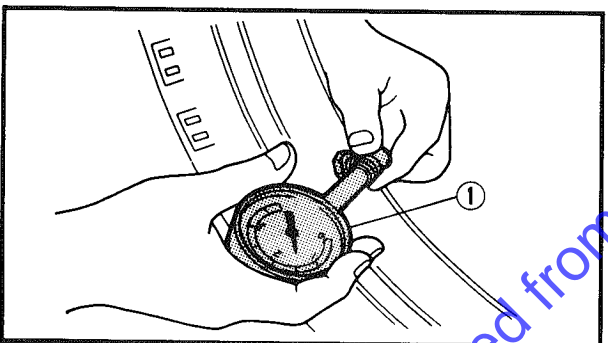


FRONT AND REAR BRAKE LINING INSPECTION

1. Activate the brake lever.
2. Inspect:
 - Wear indicator ①
 - Indicator at wear limit line ② → Replace brake shoes.



- Ⓐ Front
- Ⓑ Rear



TIRE AND WHEEL INSPECTION

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

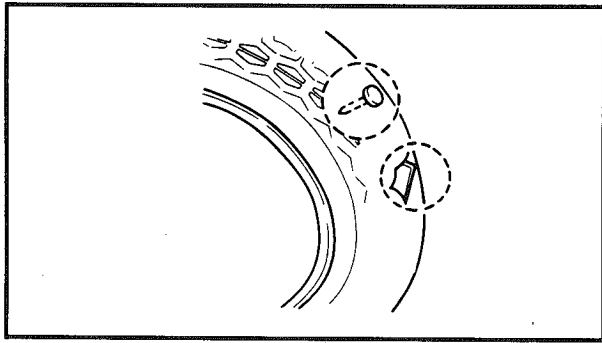
	Cold tire pressure
Front	127 kPa (1.3 kg/cm ² , 18 psi)
Rear	226 kPa (2.3 kg/cm ² , 33 psi)

- ① Tire pressure gauge

WARNING:

Proper loading of your scooter is important for the handling, braking, and other performance and safety characteristics of your scooter. Do not carry loosely packed items that can shift. Securely pack your heaviest items close to the center of the scooter, and distribute the weight evenly from side to side. And check the condition and pressure of your tires. **NEVER OVERLOAD YOUR SCOOTER.** Make sure the total weight to the cargo, rider, passenger, and accessories (fairing, saddlebags, etc. if approved for this model) does not exceed the maximum load of the scooter. Operation of an overloaded scooter could cause tire damage, an accident, or even injury.

STEERING ADJUSTMENT



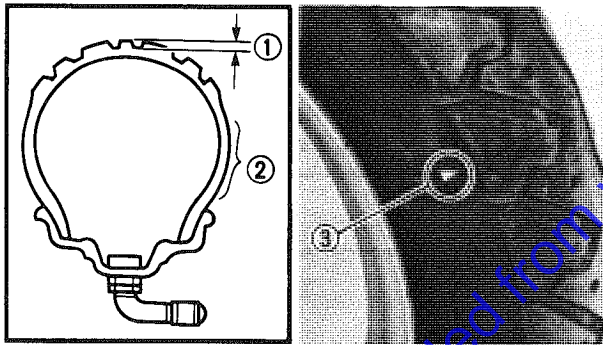
2. Inspect:

- Tire surface
Wear/Damage/Cracks/Road hazards → Replace.
- Aluminum wheels
Damage/Bends → Replace.
Never attempt even small repairs to the wheel.

WARNING:


Ride conservatively after installing a tire to allow it to seat itself properly on the rim.

2



3. Measure:

- Tire tread depth
Out of specification → Replace.

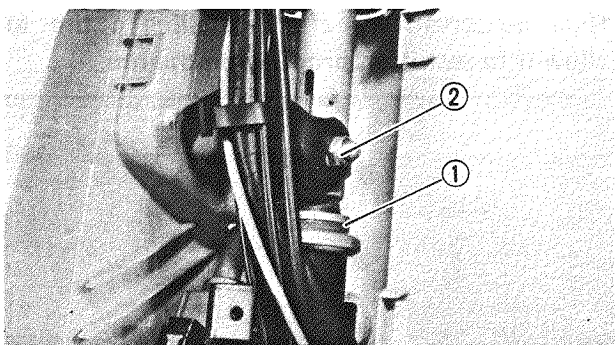
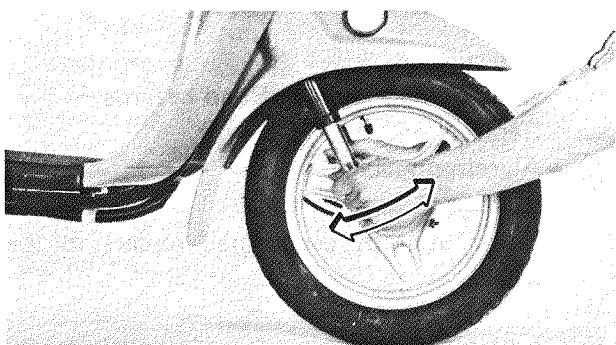


Minimum Tire Tread Depth:
(Front and rear)
1.0 mm (0.04 in)

- ① Tread depth
- ② Side wall
- ③ Wear indicator

STEERING ADJUSTMENT

1. Place the scooter on its centerstand, then elevate the front wheel.



2. Check:

- Steering assembly bearings

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

Looseness → Adjust.

Steering head adjustment steps:

- Remove the front panel.
Refer to "FRONT PANEL" section.
- Tighten the ring nut ① to specification using the Ring Nut Wrench (YU-33975).



Ring Nut ① :
30 Nm (3.0 m·kg, 22 ft·lb)

NOTE:

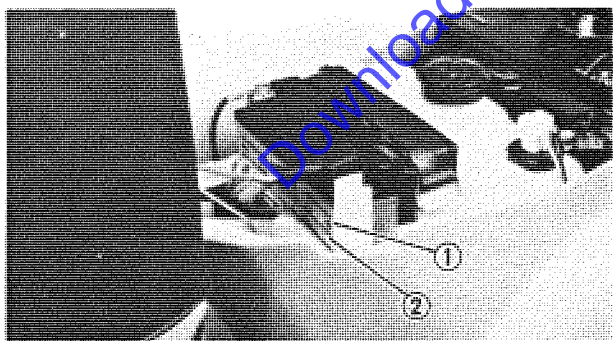
Set the torque wrench to the ring nut wrench so that they form right angle.

- Move the handlebar up and down, and/or back and forth. If handlebar free play is excess, tighten the bolt ② to specification.



Bolt ② :
60 Nm (6.0 m·kg, 43 ft·lb)

- Install the front panel.



ELECTRICAL

BATTERY

1. Check:

- Fluid level

Incorrect → Refill.

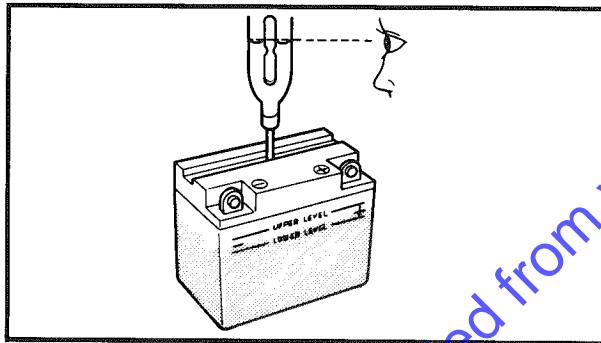
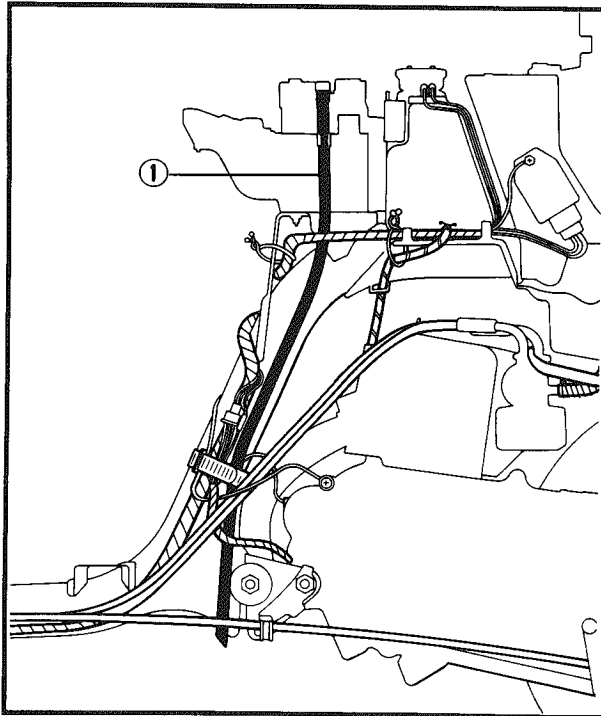
Fluid level should be between upper and lower level marks.

① Upper level

② Lower level

CAUTION:

Refill with distilled water only; tap water contains minerals harmful to a battery.



2. Inspect:

- Breather hose ①
Obstruction → Remove.
Damage → Replace.

3. Inspect:

- Battery

Replace the battery if:

- Battery voltage will not rise to a specific value or bubbles fail to rise even after many hours of charging.
- Sulfation of one or more cells occurs, as indicated by the plates turning white, or an accumulation of material exists in the bottom of the cell.
- Specific gravity readings after a long, slow charge indicate one cell to be lower than the rest.
- Warpage or buckling of plates or insulators is evident.

4. Measure:

- Specific gravity
Less than 1.280 → Recharge battery.

Charging Current:

0.4 amps/10 hrs

Specific Gravity:

1.280 at 20°C (68°F)

CAUTION:

Always charge a new battery before using it to ensure maximum performance.

WARNING:

Battery electrolyte is dangerous; it contains sulfuric acid and therefore is poisonous and highly caustic.

Always follow these preventive measures:

- Avoid bodily contact with electrolyte as it can cause severe burns or permanent eye injury.
- Wear protective eye gear when handling or working near batteries.

Antidote (EXTERNAL):



- SKIN – Flush with water.
- EYES – Flush with water for 15 minutes and get immediate medical attention.

Antidote (INTERNAL):

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

Batteries also generate explosive hydrogen gas, therefore you should always follow these preventive measures:

- Charge batteries in a well-ventilated area.
- Keep batteries away from fire, sparks, or open flames (e.g., welding equipment, lighted cigarettes, etc.)
- DO NOT SMOKE when charging or handling batteries.

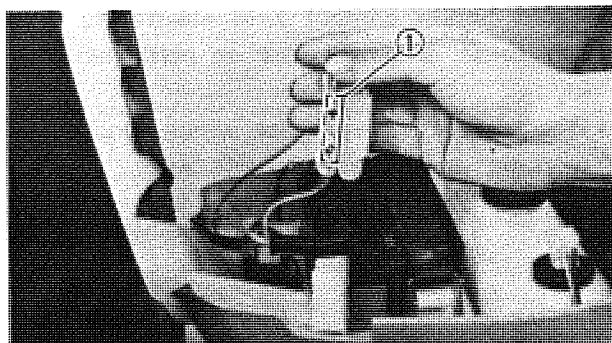
KEEP BATTERIES AND ELECTROLYTE OUT OF REACH OF CHILDREN.

WARNING:

Be sure the hose is properly attached and routed.

FUSE INSPECTION

1. Open the seat lock.



2. Inspect:

- Fuse ①

Defective → Replace.

Blown fuse procedure steps:

- Turn off ignition and the circuit.
- Install a new fuse of proper amperage.
- Turn on switches to verify operation of electrical device.

SPARK PLUG INSPECTION



- If fuse blows immediately again, check circuit in question.

WARNING:

Do not use fuses of higher amperage rating than recommended. Extensive electrical system damage and fire could result from substitution of a fuse of improper amperage:

Description	Amperage	Quantity
Main	7A	1

2

SPARK PLUG INSPECTION

1. Remove:

- Mole (Right)

Refer to "TAIL COVER AND MOLE" section.

- Spark plug

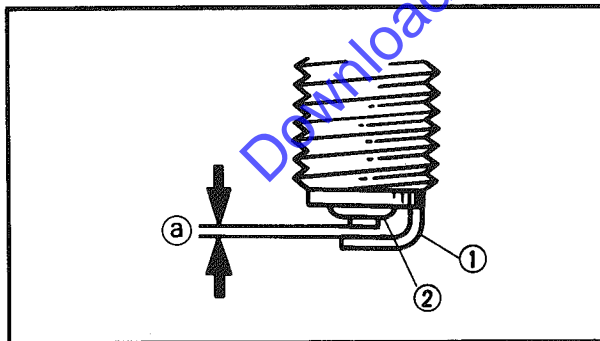
2. Inspect:

- Electrode ①

Wear/Damage → Replace.

- Insulator ②

Abnormal Color → Replace.



Standard Spark Plug:
BPR6HS (NGK)

3. Measure:

- Plug gap ③

Out of specification → Regap.


Use a Wire Gauge or Feeler Gauge.



Spark Plug Gap ③ :
1.0 ~ 1.1 mm (0.039 ~ 0.043 in)

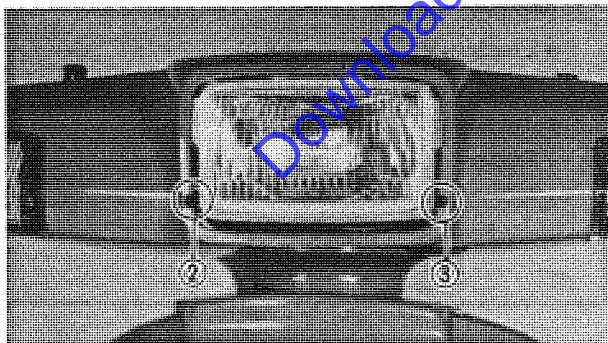
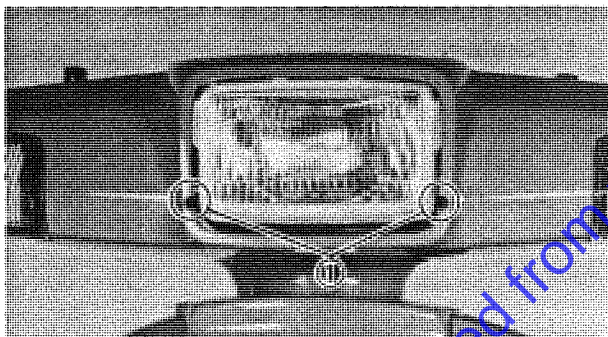
4. Clean the plug with a spark plug cleaner if necessary.
5. Tighten:
 - Before installing a spark plug, clean the gasket and plug surfaces.

NOTE: _____
 Finger-tighten the spark plug before torquing to specification.



Spark Plug:
 20 Nm (2.0 m·kg, 14 ft·lb)

2



HEADLIGHT BEAM ADJUSTMENT

1. Adjust:
 - Headlight (Vertically)

	Vertical adjustment
Higher	Loosen the adjusters ①
Lower	Tighten the adjusters ①

- Headlight (Horizontal)

	Horizontal adjustment
Right	Loosen the adjuster ② or tighten the adjuster ③
Left	Loosen the adjuster ③ or tighten the adjuster ②

IGNITION TIMING CHECK

Adjustment free.



CHAPTER 3 ENGINE OVERHAUL

ENGINE REMOVAL	3-1
PREPARATION FOR REMOVAL	3-1
TAIL COVER	3-2
CARBURETOR	3-2
CABLES, LEADS AND HOSES	3-3
ENGINE REMOVAL	3-4
DISASSEMBLY	3-5
CYLINDER AIR SHROUD	3-5
MUFFLER	3-5
CYLINDER HEAD	3-5
CYLINDER	3-6
PISTON PIN AND PISTON	3-6
KICK AXLE	3-7
CLUTCH AND TRANSMISSION	3-8
STARTER CLUTCH	3-9
STARTER MOTOR	3-10
CDI MAGNETO	3-10
OIL PUMP	3-11
DRIVE AXLE AND REAR WHEEL	3-11
CRANKCASE AND CRANKSHAFT	3-12
INSPECTION AND REPAIR	3-13
CYLINDER HEAD	3-13
CYLINDER	3-14
PISTON	3-15
PISTON RINGS	3-16
PISTON PIN AND PISTON PIN BEARING	3-17
AUTOLUBE PUMP	3-18
CRANKSHAFT	3-18
CLUTCH AND TRANSMISSION	3-19
STARTER CLUTCH	3-20
KICK AXLE	3-21
ENGINE ASSEMBLY AND ADJUSTMENT	3-22
CRANKSHAFT AND CRANKCASE	3-23
DRIVE AXLE AND REAR WHEEL	3-27
OIL PUMP	3-29
CDI MAGNETO	3-31
STARTER CLUTCH AND STARTER MOTOR	3-34
CLUTCH AND TRANSMISSION	3-36
KICK AXLE	3-40
PISTON AND PISTON PIN	3-43
CYLINDER AND CYLINDER HEAD	3-45
MUFFLER	3-47
CYLINDER AIR SHROUD	3-47
REMOUNTING ENGINE	3-48



ENGINE OVERHAUL

ENGINE REMOVAL

NOTE:

It is necessary to remove the engine in order to remove the following components.

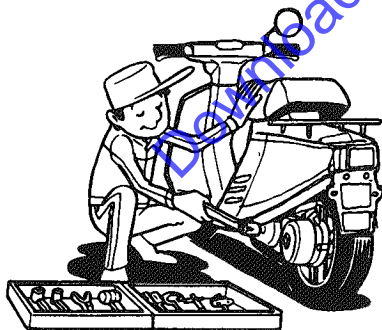
- Cylinder head
- Cylinder
- Piston
- CDI magneto
- Starter motor
- Clutch and transmission

3



PREPARATION FOR REMOVAL

1. Remove all dirt, mud, dust and foreign material before removal and disassembly.

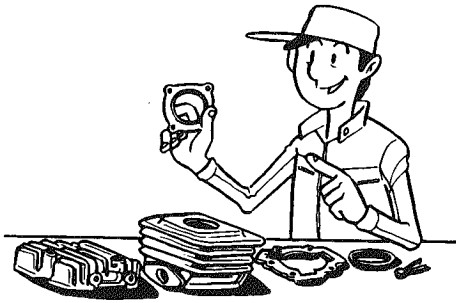


2. Use proper tools and cleaning equipment. Refer to "CHAPTER 1. GENERAL INFORMATION – SPECIAL TOOLS" section.

NOTE:

When disassembling the engine, keep mated parts together. This includes gears, cylinder, piston and other parts that have been "mated" through normal wear. Mated parts must be reused as an assembly or replaced.





3. During engine 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 in the engine.
4. Drain the transmission oil completely. Refer to "CHAPTER 2. — TRANSMISSION OIL REPLACEMENT" section.

3

TAIL COVER

1. Remove:

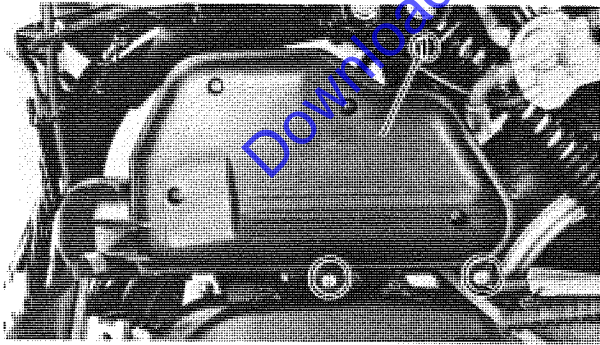
- Seat
- Mole
- Rear carrier
- Tail cover

Refer to "CHAPTER 2. — TAIL COVER AND MOLE" section.

CARBURETOR

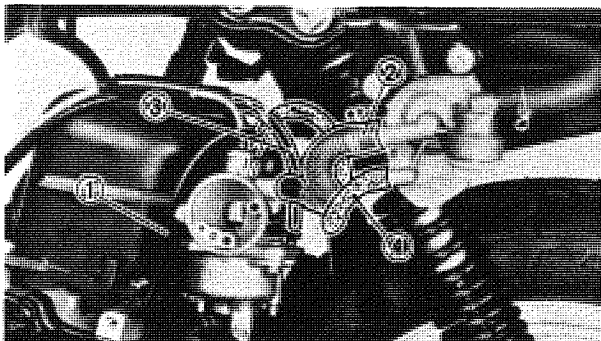
1. Remove:

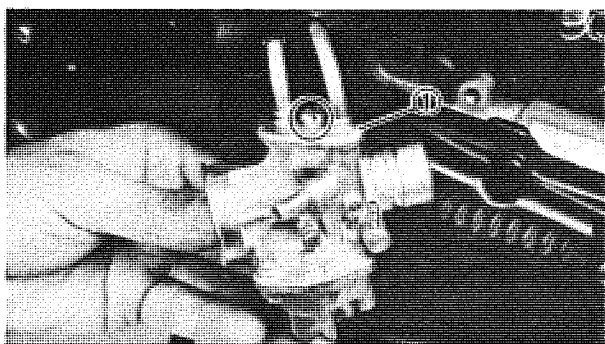
- Air cleaner case ①



2. Remove:

- Carburetor cover ①
- Fuel hose ②
- Oil delivery hose ③
- Vacuum hose ④



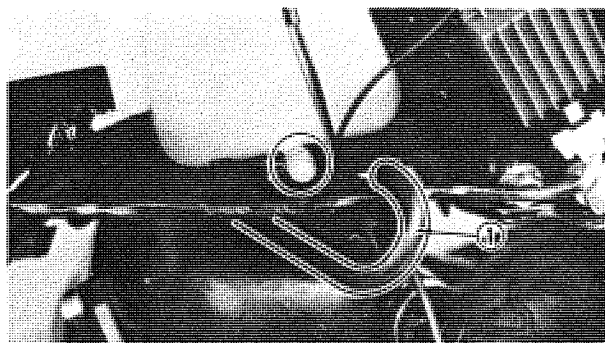


3. Remove:

- Carburetor top cover ①
- Carburetor

NOTE:

Cover the carburetor with a clean rag to prevent dirt or foreign matter into the carburetor.



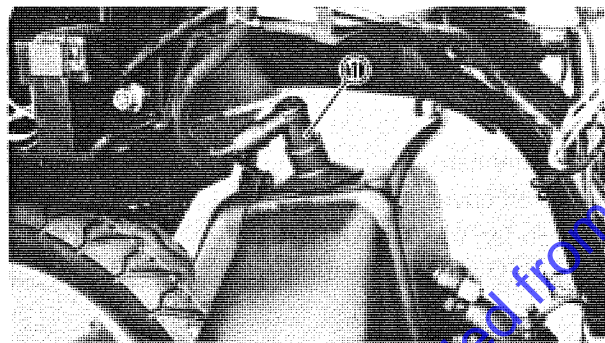
CABLES, LEADS AND HOSES

1. Remove:

- Oil hose ①

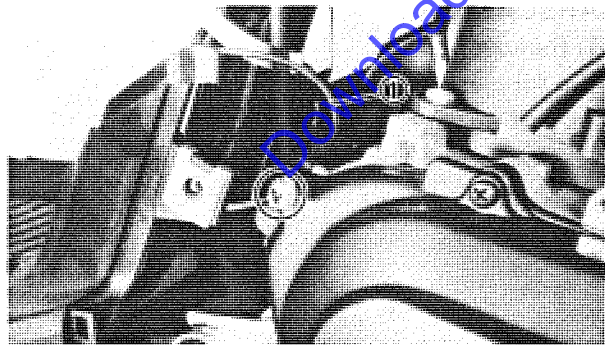
NOTE:

Plug the oil pipe so the oil will not run out of the oil tank.



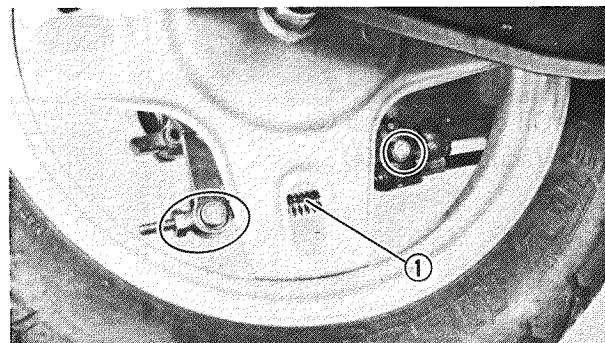
2. Remove:

- Spark plug cap ①



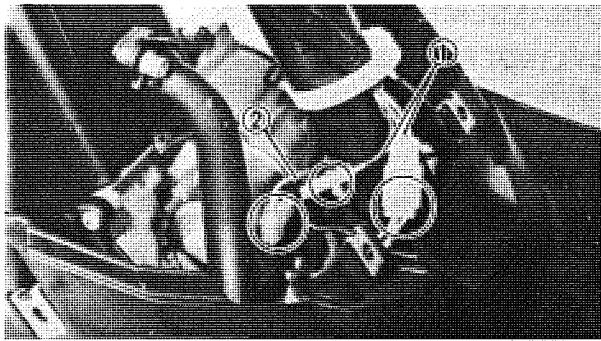
3. Remove:

- Ground lead ①



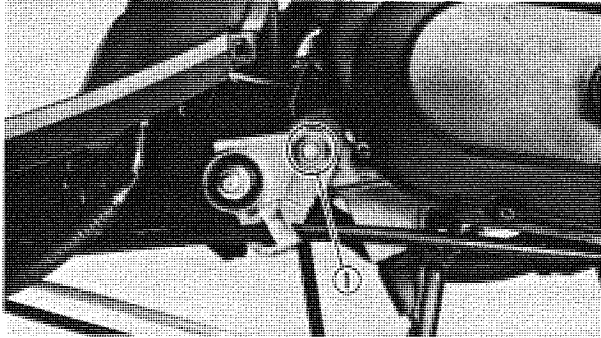
4. Remove:

- Rear brake cable ①



5. Disconnect:

- CDI magneto leads ①
- Starter motor lead ②



ENGINE REMOVAL

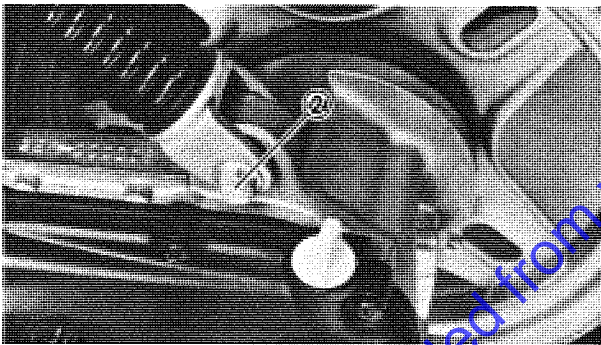
1. Loosen:

- Bolt (Engine mounting) ①
- Bolt (Rear shock absorber — Lower) ②

2. Place the frame on a suitable stand.

3. Remove:

- Bolt (Engine mounting)
- Bolt (Rear shock absorber — Lower)

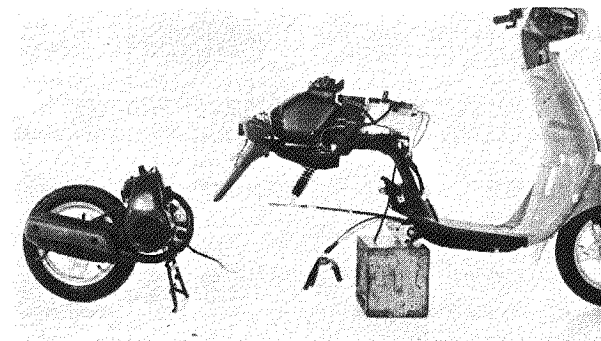


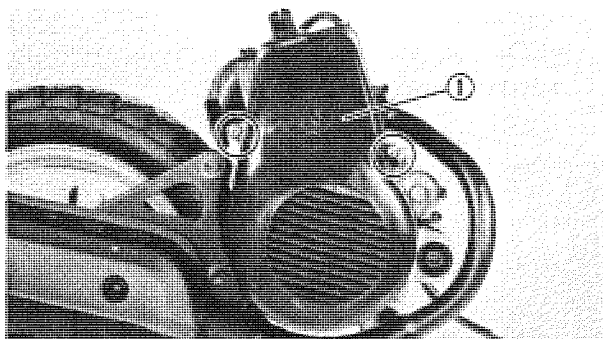
4. Remove:

- Engine

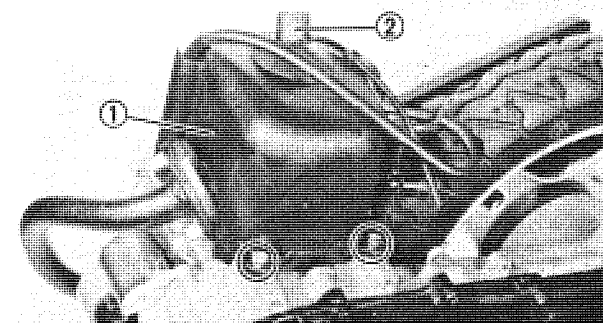
Lift up the frame and remove the engine.

5. Place the frame on a suitable stand.

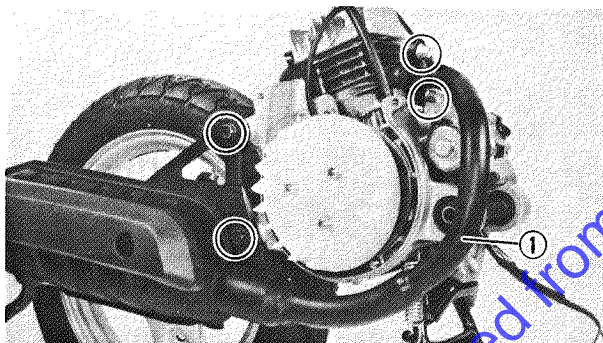


**DISASSEMBLY****CYLINDER AIR SHROUD**

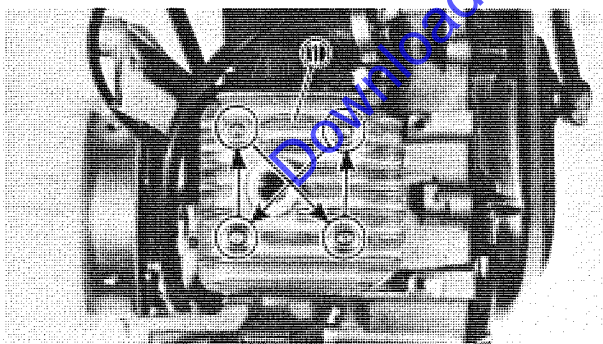
1. Remove:
 - Fan cover ①



2. Remove:
 - Cylinder air shroud ①
 - Plug cover ②

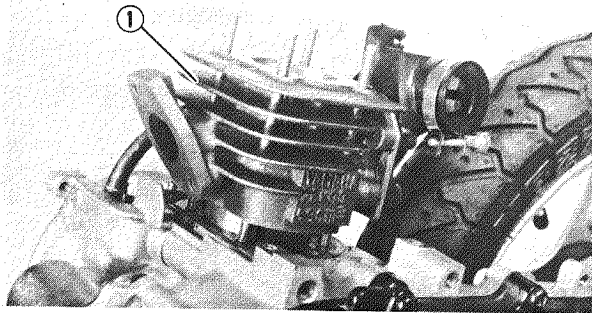
**MUFFLER**

1. Remove:
 - Muffler assembly ①

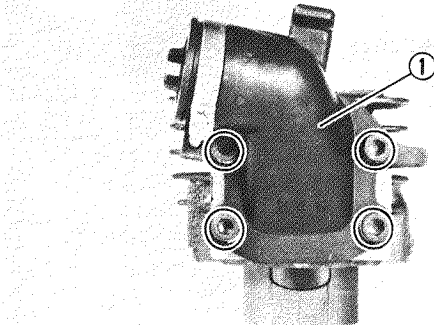
**CYLINDER HEAD**

1. Remove:
 - Spark plug
 - Cylinder head ①
 - Gasket (Cylinder head)

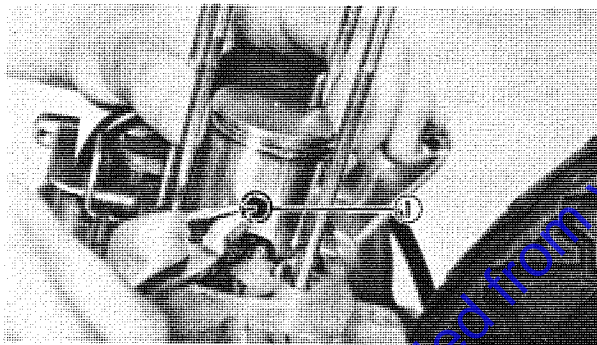
NOTE: _____
Loosen the nuts in this stage, using a crisscross pattern.

**CYLINDER****1. Remove:**

- Cylinder ①
- Gasket (Cylinder)

**2. Remove:**

- Carburetor joint ①
- Reed valve assembly

**PISTON PIN AND PISTON****1. Remove:**

- Piston pin clip ①

NOTE:

Before removing the piston pin clip, cover the crankcase with a clean rag so you will not accidentally drop the clip into the crankcase.

**2. Remove:**

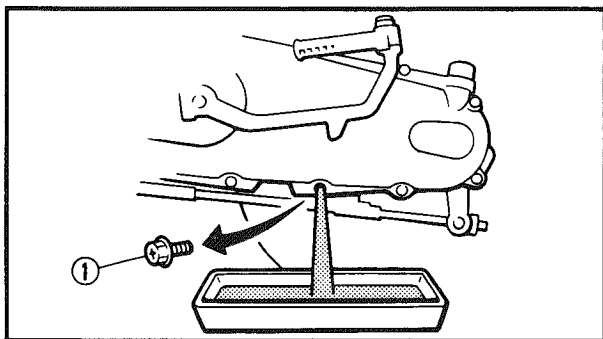
- Piston pin ①
- Piston ②
- Small end bearing

NOTE:

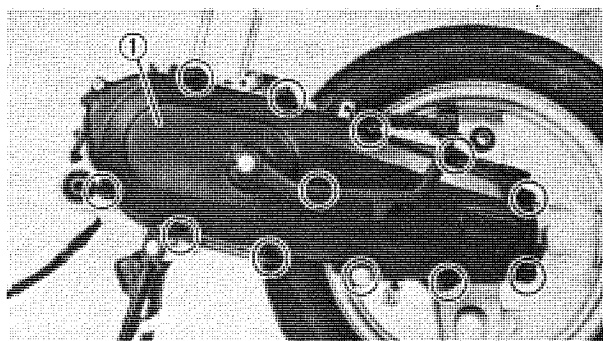
Before removing the piston pin, deburr the clip groove and pin hole area. If the piston pin groove is deburred and piston pin is still difficult to remove, use Piston Pin Puller (YU-01304).

CAUTION:

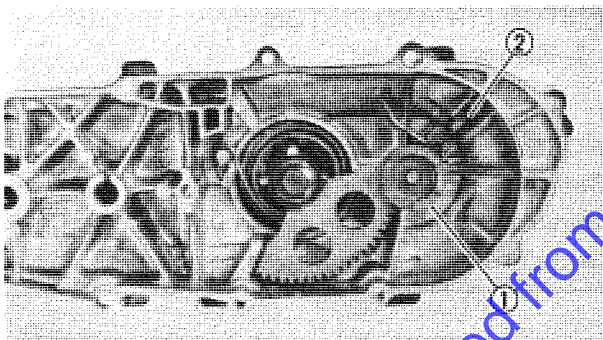
Do not use a hammer to drive the piston pin out.

**KICK AXLE**

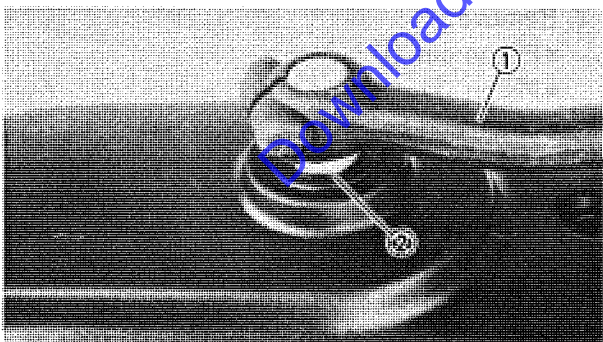
1. Place an oil pan under the engine.
2. Remove:
 - Drain plug ①
 Drain the transmission oil.



3. Remove:
 - Crankcase cover (Left) ①
 - Dowel pins
 - Gasket



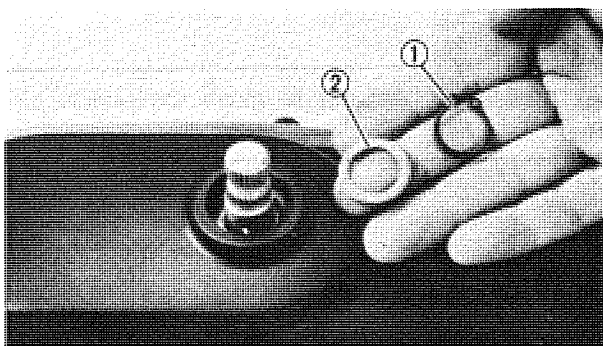
4. Remove:
 - Kick pinion gear ①
 - Clip ②



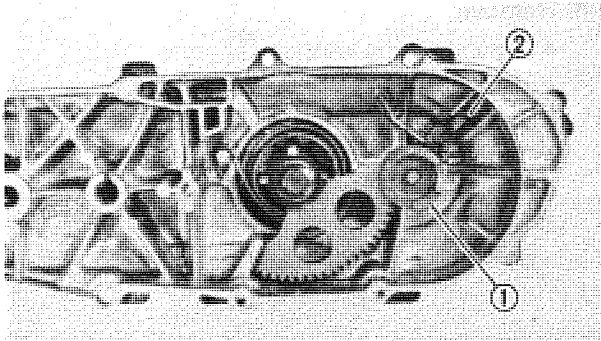
5. Remove:
 - Kick crank ①
 - Oil seal ②

CAUTION:

When removing the oil seal, take care not to scratch the kick axle or the crankcase cover.

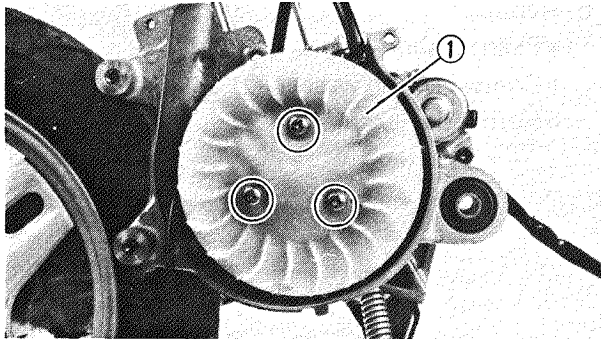


6. Remove:
 - Circlip ①
 - Washer ②



7. Remove:

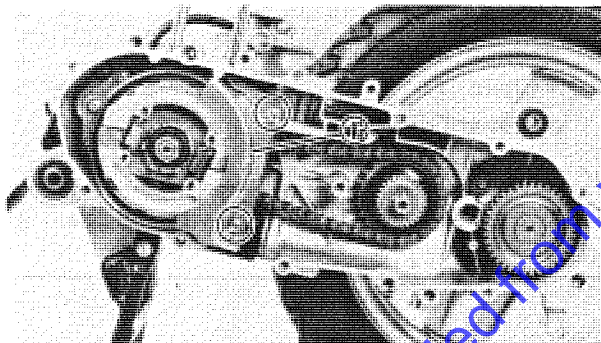
- Kick axle assembly ①
- Torsion spring ②



CLUTCH AND TRANSMISSION

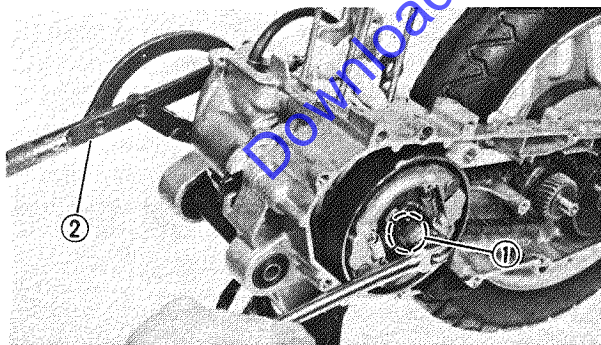
1. Remove:

- Fan ①



2. Remove:

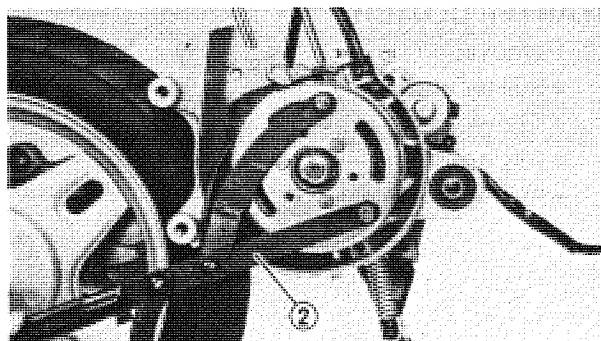
- Clutch housing cover ①

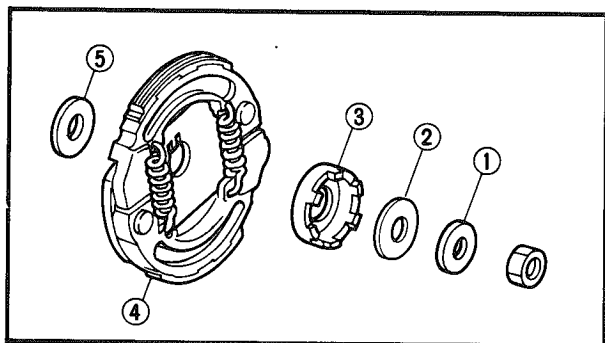


3. Remove:

- Nut (Clutch housing) ①

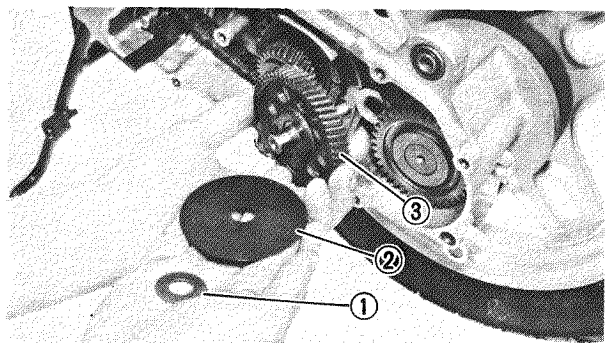
Using the Flywheel Holding Tool ② (YU-01235) to lock the CDI magneto.





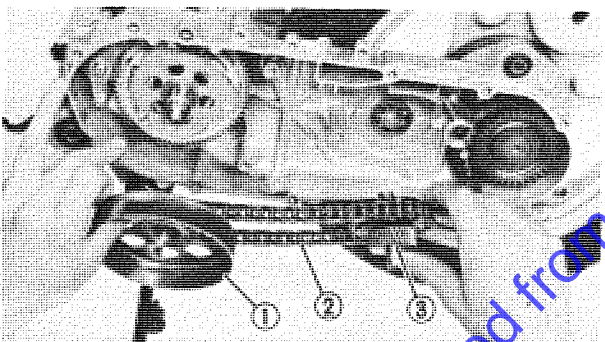
4. Remove:

- Conical spring washer ①
- Plain washer ②
- One-way clutch ③
- Clutch carrier ④
- Plain washer ⑤



5. Remove:

- Plain washer ①
- Conical spring washer ②
- Main axle ③

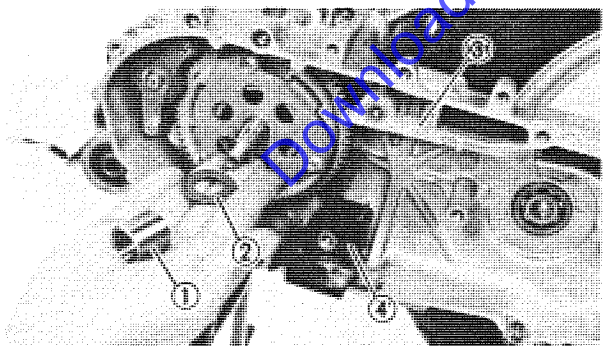


6. Remove:

- Clutch housing ①
- Chain ②
- Primary drive gear ③

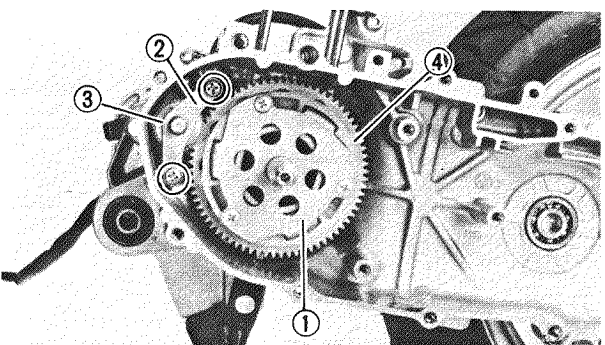
NOTE:

Remove both parts ① and ③ with the chain ② on.



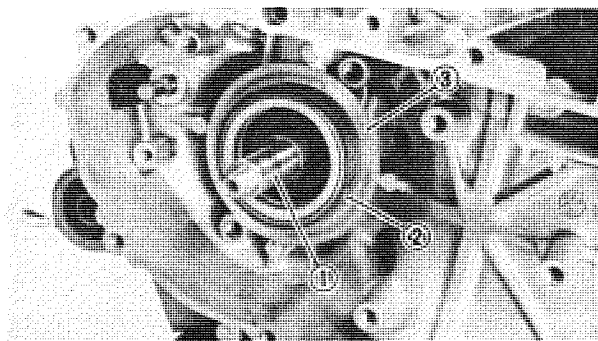
7. Remove:

- Collar ①
- Plain washer ②
- Chain guide (Upper) ③
- Chain guide (Lower) ④

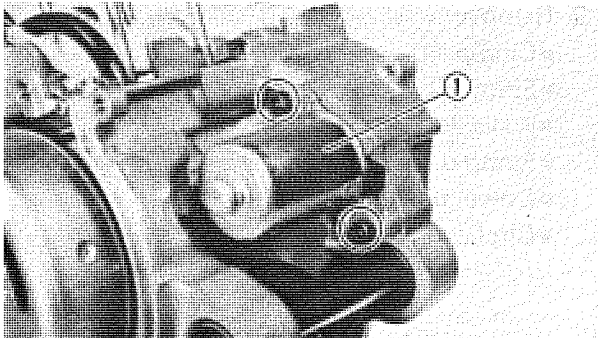
**STARTER CLUTCH**

1. Remove:

- Starter clutch ①
- Idle gear plate ②
- Idle gear ③
- Starter wheel gear ④

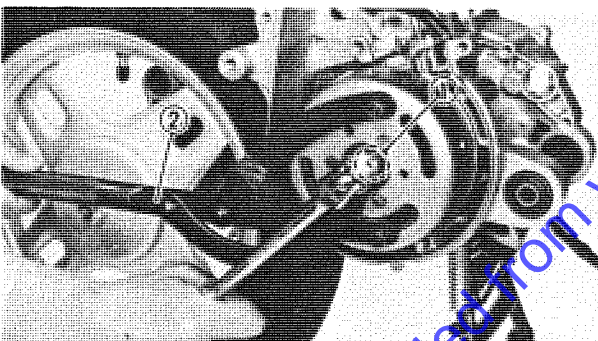


2. Remove:
- Collar ①
 - Bearing ②
 - Plain washer ③



STARTER MOTOR

1. Remove:
- Starter motor ①

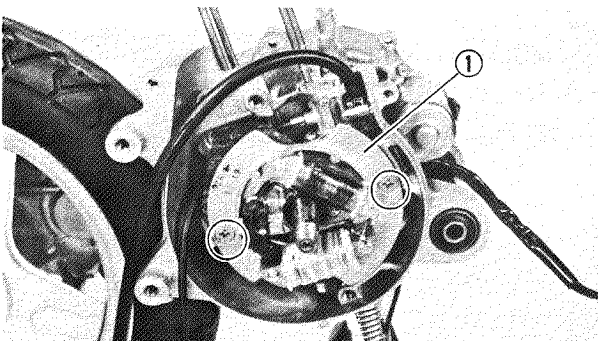


CDI MAGNETO

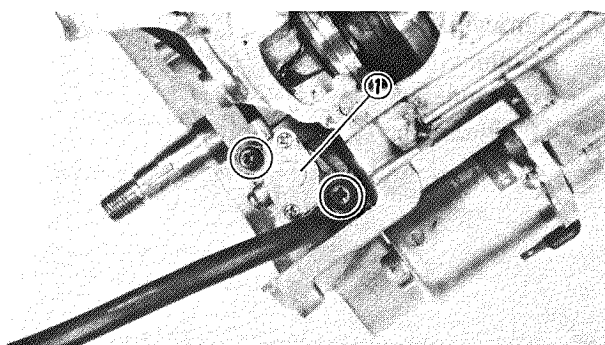
1. Remove:
- Nut ① (CDI magneto)
- Using the Flywheel Holding Tool (YU-01235) ② to lock the CDI magneto.



2. Remove:
- CDI magneto ①
- Using the Flywheel Magneto Puller (YM-01189) ②.
- Woodruff key

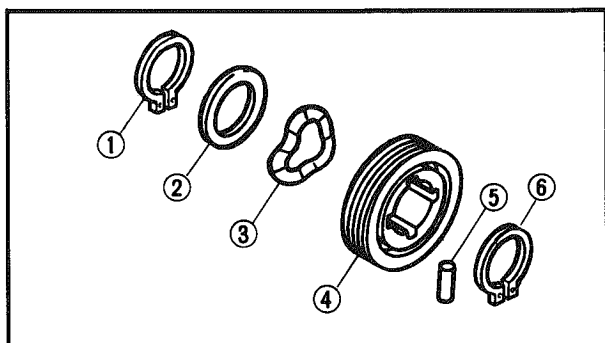


3. Remove:
- Stator assembly ①

**OIL PUMP**

1. Remove:

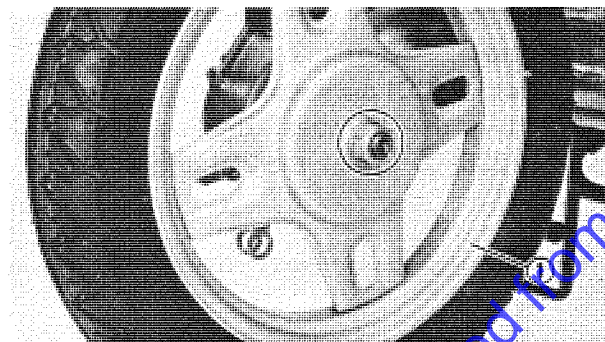
- Oil pump ①



2. Remove:

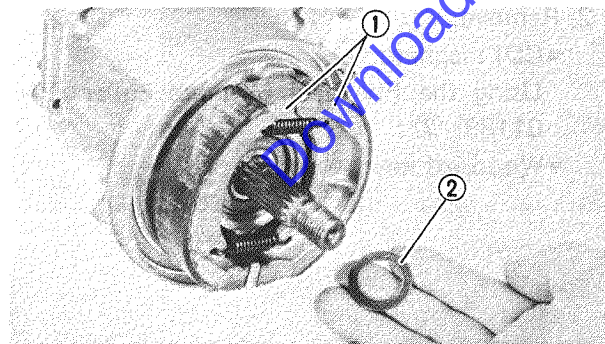
- Circlip ①
- Shim ②
- Wave washer ③
- Pump drive gear ④
- Dowel pin ⑤
- Circlip ⑥

3

**DRIVE AXLE AND REAR WHEEL**

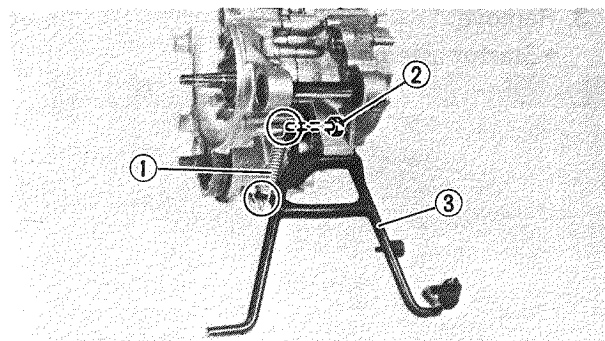
1. Remove:

- Rear wheel ①



2. Remove:

- Brake shoe ①
- Plain washer ②

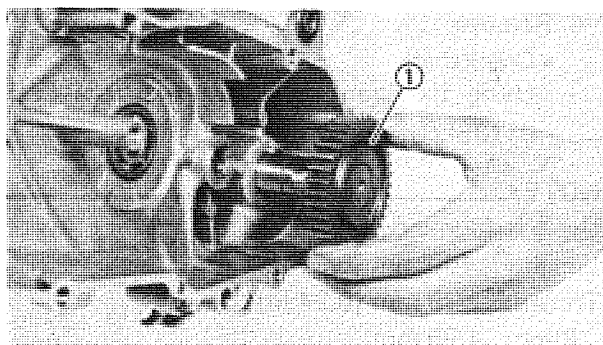


3. Unhook:

- Spring (Centerstand) ①

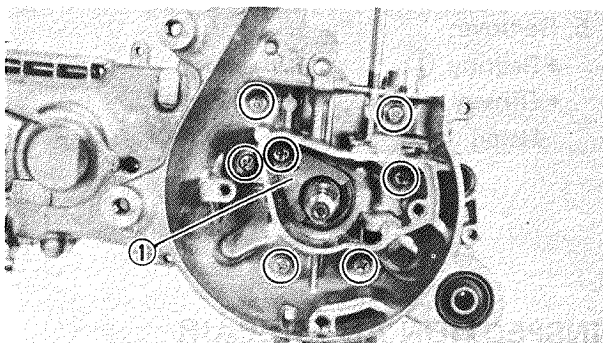
4. Remove:

- Clip
- Pin ②
- Centerstand ③



5. Remove:

- Drive axle ①



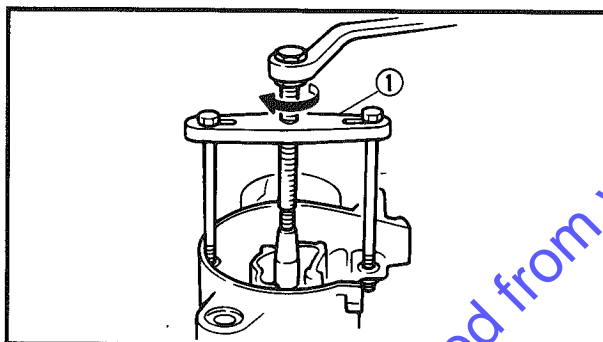
CRANKCASE AND CRANKSHAFT

1. Remove:

- Oil seal stopper ①
- Screws (Crankcase)

NOTE: _____

Loosen each screw 1/4 turn, and remove them after all are loosened.



2. Attach:

- Crankcase Separating Tool (YU-01135) ①

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.

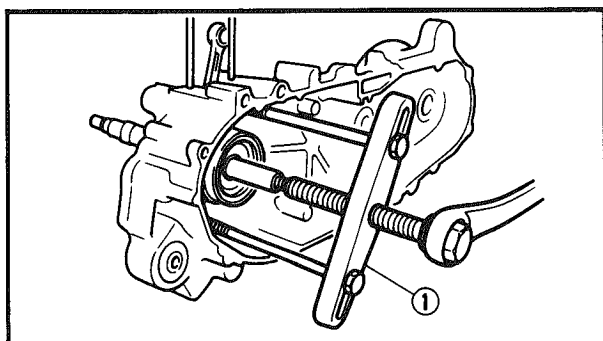
3. Remove:

- Crankcase (Left)

As pressure is applied, alternately tap on the engine mounting bosses.

CAUTION: _____

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



4. Remove:

- Crankshaft
- Using the Crankcase separating tool (YU-01135) ①.

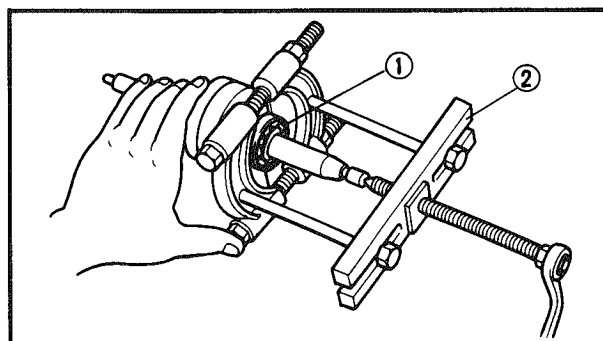
NOTE:

Use the following bolts available on the market.

Length: 160 mm (6.3 in)

Thread: 6 mm (0.24 in)

Pitch: 1.25 mm



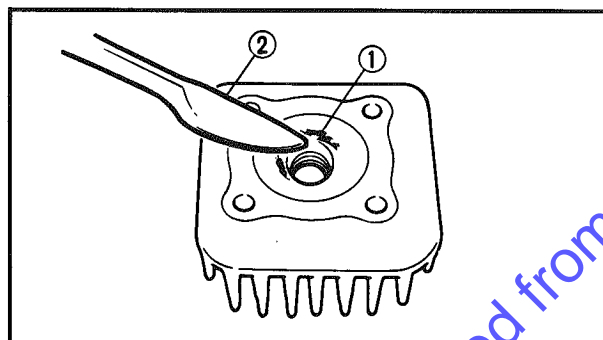
5. Remove:

- Bearing ①
- Oil seal
- Using the bearing puller ②.

INSPECTION AND REPAIR CYLINDER HEAD

1. Remove:

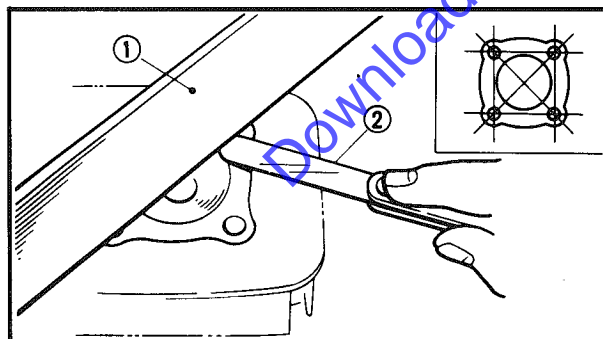
- Carbon deposits ①
- Use a rounded scraper ②.

**NOTE:**

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

2. Inspect:

- Cylinder head warpage
- Out of specification → Re-surface.



Warpage measurement and re-surfacement steps:

- Attach a straight edge ① and a thickness gauge ② on the cylinder head.
- Measure the warpage limit.

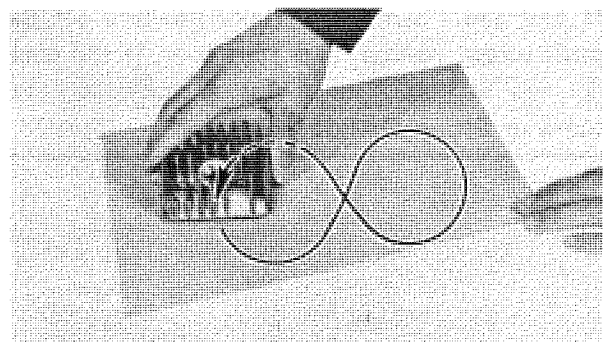


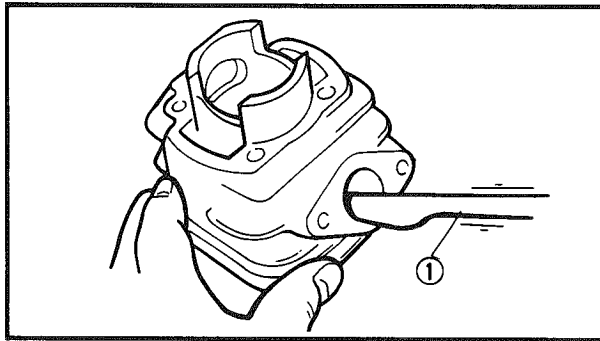
Warpage Limit:
0.03 mm (0.001 in)

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

NOTE:

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

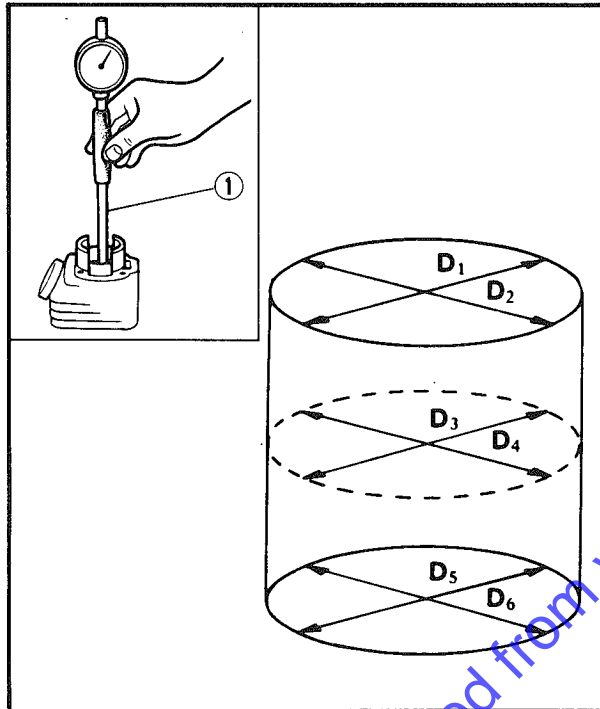


**CYLINDER****1. Remove:**

- Carbon deposits
Use a rounded scraper ①.

2. Inspect:

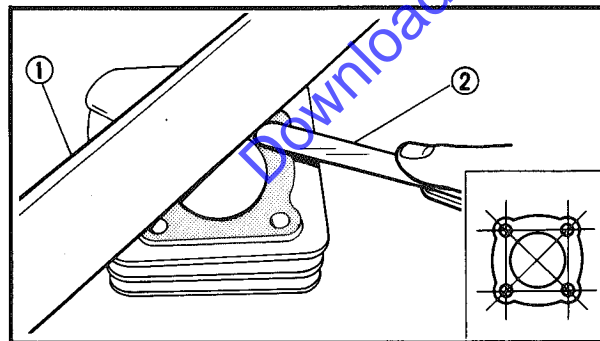
- Cylinder wall
Wear/Scratches → Rebore or replace.

**3. Measure:**

- Cylinder bore "C"
Out of specification → Rebore.
Use a Cylinder Bore Gauge ①.

	Standard	Wear limit
Cylinder bore "C"	40.0 mm (1.575 in)	40.1 mm (1.579 in)
Taper "T"	—	0.05 mm (0.002 in)
Out of round "R"	—	0.01 mm (0.0004 in)

$C = \text{Maximum } D$
 $T = (\text{Maximum } D_1 \text{ or } D_2) - (\text{Minimum } D_5 \text{ or } D_6)$
 $R = (\text{Maximum } D_1, D_3 \text{ or } D_5) - (\text{Minimum } D_2, D_4 \text{ or } D_6)$

**4. Inspect:**

- Cylinder head warpage
Out of specification → Replace.

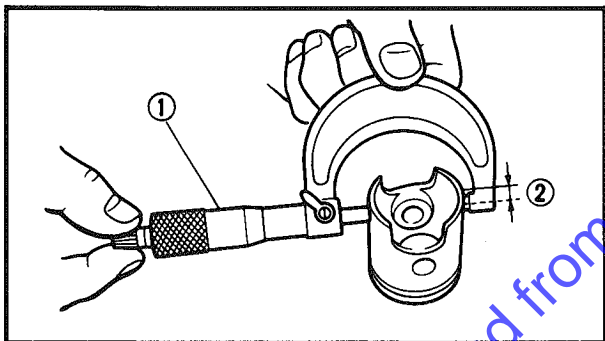
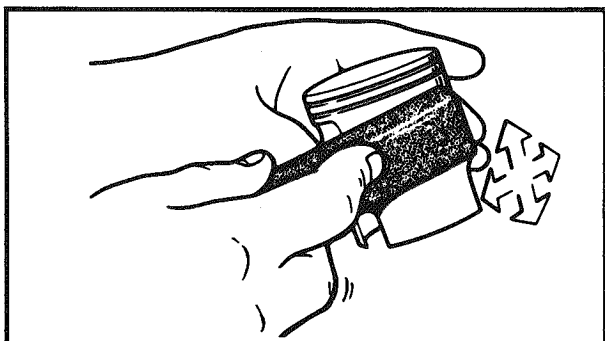
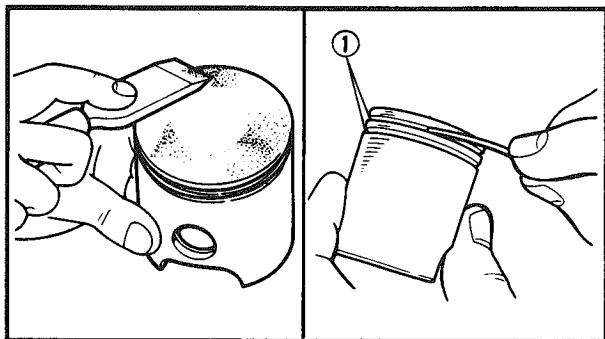
Warpage measurement and replacement steps.

- Attach a straight edge ① and a thickness gauge ② on the cylinder head.
- Measure the warpage limit.



Warpage Limit:
0.03 mm (0.001 in)

- If the warpage is out of specification, reface the cylinder head.

**PISTON****1. Remove:**

- Carbon deposits
From the piston crown and ring grooves ①.

2. Remove:

- Score marks and lacquer deposits
From the sides of piston.
Use a 600 ~ 800 grit wet sandpaper.

NOTE:

Sand in a crisscross pattern. Do not sand excessively.

3. Inspect:

- Piston wall
Wear/Scratches/Damage → Replace.

4. Measure:

- Piston outside diameter "P"
Out of specification → Replace.
Use a Micrometer ①.

NOTE:

Measurement should be made at a point 5 mm (0.2 in) ② above the bottom edge of the piston.

	Size
Standard	40.00 mm (1.575 in)
Overize 1	40.25 mm (1.585 in)
Overize 2	40.50 mm (1.594 in)

5. Measure:

- Piston clearance
Out of specification → Rebore cylinder or replace piston.



Piston Clearance:
0.034 ~ 0.047 mm
(0.0013 ~ 0.0018 in)

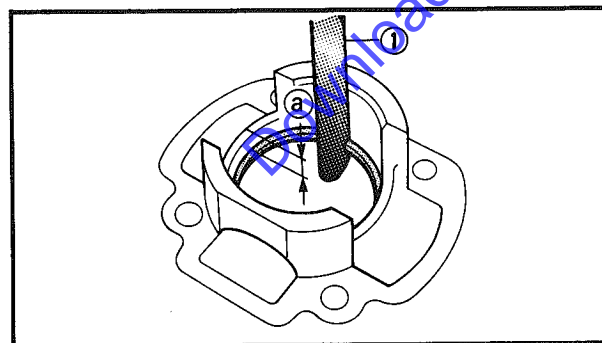
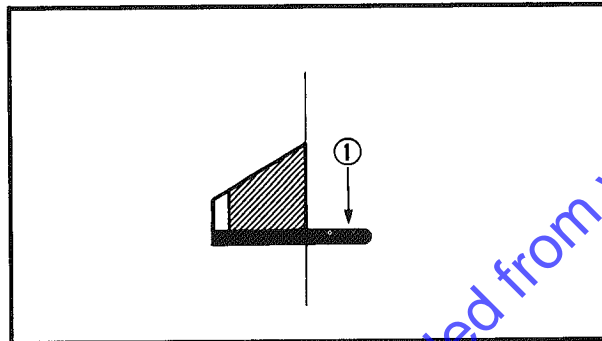
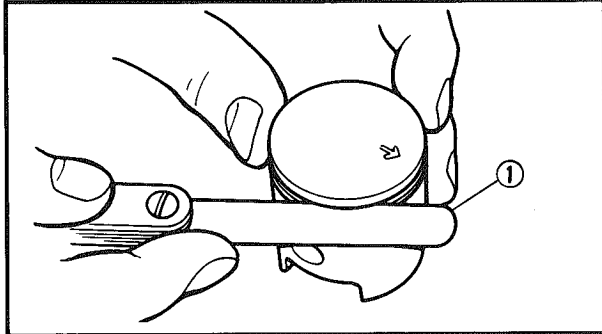


$$A = C - P$$

A: Piston clearance

C: Cylinder bore

P: Piston outside diameter



PISTON RINGS

1. Measure:

• Side clearance

Out of specification → Replace piston and/or rings.

Use a Feeler Gauge ①.

	Standard	Limit
Top ring	0.03 ~ 0.05 mm (0.001 ~ 0.002 in)	0.10 mm (0.004 in)
2nd ring	0.03 ~ 0.05 mm (0.001 ~ 0.002 in)	0.10 mm (0.004 in)

2. Install:

• Piston ring

Into the cylinder.

Push the ring with the piston crown.

3. Measure:

• End gap

Out of specification → Replace rings as a set.

Use a Feeler Gauge ①.

	Standard	Limit
Top ring	0.15 ~ 0.35 mm (0.006 ~ 0.014 in)	0.70 mm (0.028 in)
2nd ring	0.15 ~ 0.35 mm (0.006 ~ 0.014 in)	0.70 mm (0.028 in)

① Measuring Point 20 mm (0.8 in)



4. Overseize piston ring size:

Ring size is stamped on top of the ring.

Overseize piston ring	
Overseize 1	25
Overseize 2	50

PISTON PIN AND PISTON PIN BEARING

1. Inspect:

- Piston pin

Warpage/Wear → Replace.

2. Apply:

- 2-stroke oil

To the piston pin and bearing.

3. Install:

- Piston pin
- Small end bearing

Into the small end of the connecting rod.

4. Check:

- Free play

There should be no noticeable for the play.
Free play exists → Inspect the connecting rod for wear/Replace the pin and/or connecting rod as required.

5. Install:

- Piston pin

Into the piston pin hole.

6. Check:

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

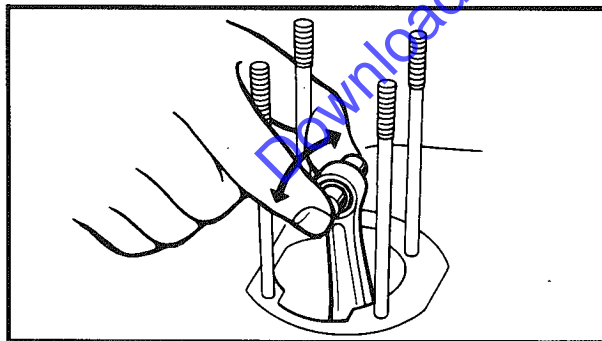
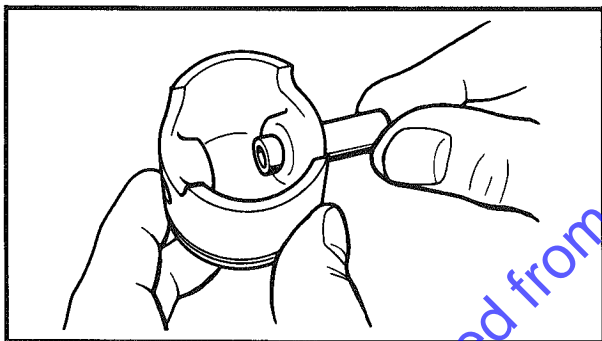
There should be no noticeable for the play.
Free play exists → Replace piston pin and/or piston.

7. Inspect:

- Piston pin and bearing

Signs of heat discoloration → Replace.

3



**AUTOLUBE PUMP**

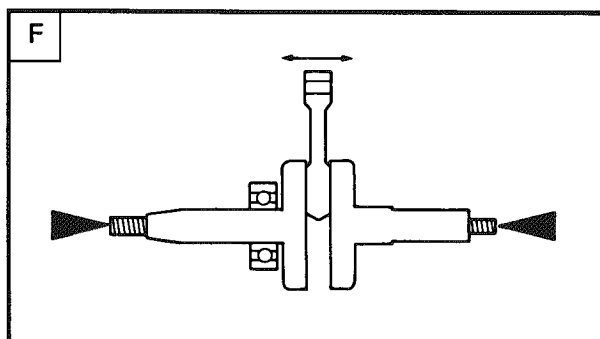
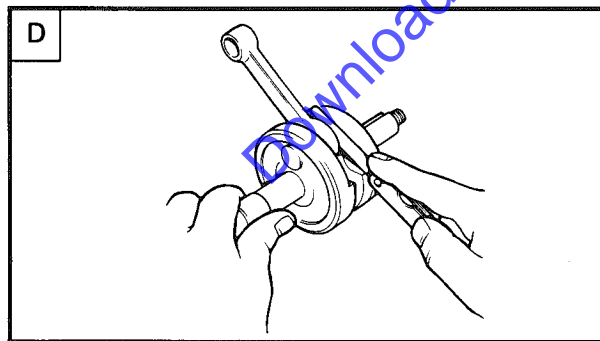
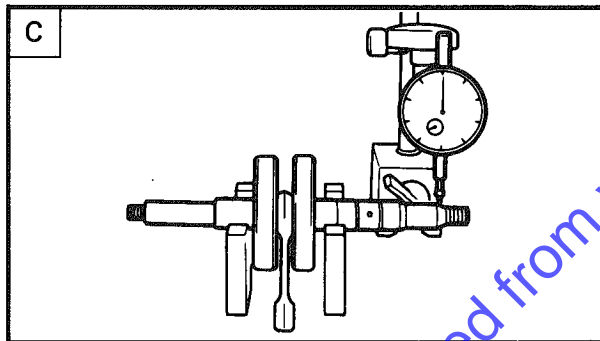
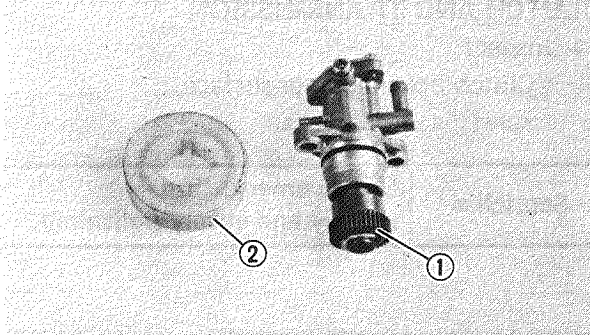
Wear or an internal malfunction may cause pump output to vary from the factory setting. This situation is, however, extremely rare. If improper output is suspected, inspect the following:

1. Inspect:

- Delivery line
Obstructions → Blow out.
- O-ring
Wear/Damage → Replace.

2. Inspect:

- Autolube pump drive gear teeth ①
- Autolube pump driven gear teeth ②
Pitting/Wear/Damage → Replace.

**CRANKSHAFT**

1. Measure:

- Runout limit "C"
 - Connecting rod big end side clearance "D"
 - Small end free play limit "F"
- Out of specification → Replace.
Use V-Blocks, Dial Gauge and thickness gauge.



Runout Limit "C":

0.03 mm (0.001 in)

**Connecting Rod Big End Side
Clearance "D":**

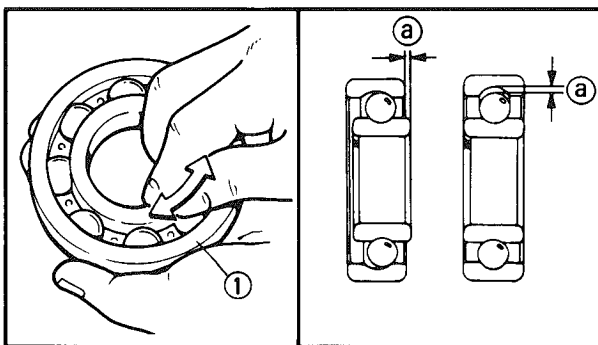
0.35 ~ 0.75 mm (0.014 ~ 0.030 in)

Small End Free Play "F":

0.4 ~ 0.8 mm (0.015 ~ 0.031 in)

2. Inspect:

- Bearings (Crankshaft)
Spin the bearing inner race.
Excessive play/Roughness → Replace.
Pitting/Damage → Replace.



3. Inspect:

- Bearing (Crankshaft) ①
- Spin the bearing inner race.
- Excessive play/Roughness → Replace.
- Pitting/Damage → Replace.

① Play

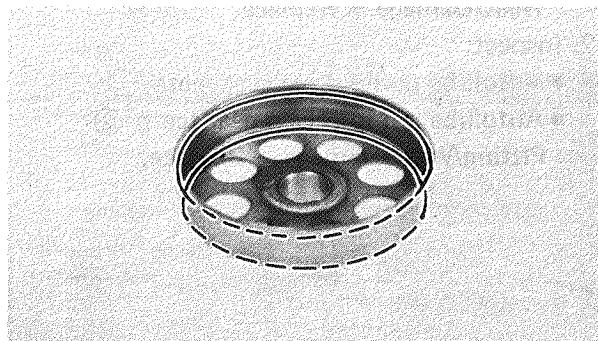
CLUTCH AND TRANSMISSION

1. Inspect:

- Clutch housing inner surface
- Scratches → Remove.

Scratches

Use an emery cloth
(lightly and evenly polishing).

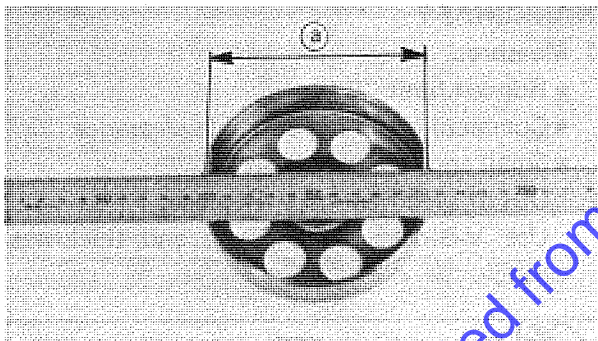


2. Measure:

- Clutch housing inside diameter ②
- Out of specification → Replace.



Clutch Housing Inside Diameter:
105.0 mm (4.13 in)
< Wear Limit >:
105.4 mm (4.15 in)



3. Inspect:

- Clutch shoes
- Glazed parts → Sand with coarse sandpaper.

NOTE:

After using the sand paper, clean of the polished particles with cloth.

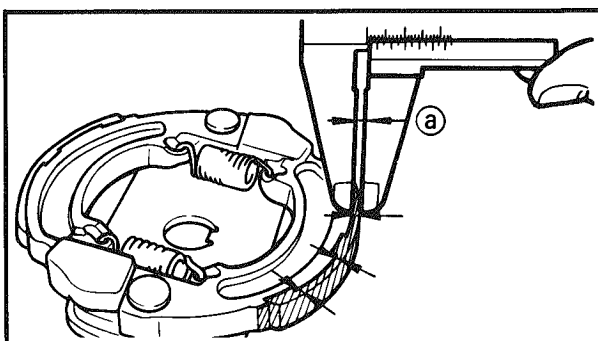


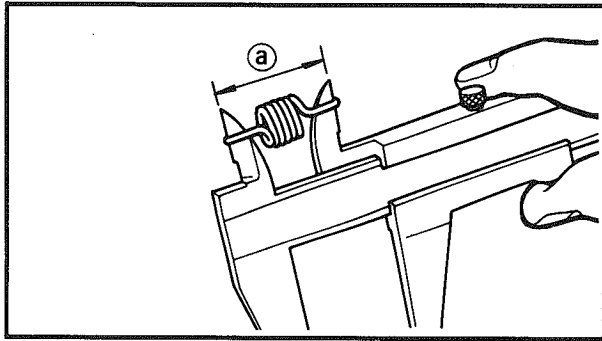
4. Measure:

- Clutch shoe thickness ③
- Out of specification → Replace.



Clutch Shoe Thickness:
2.4 mm (0.09 in)
< Wear Limit >:
1.0 mm (0.04 in)



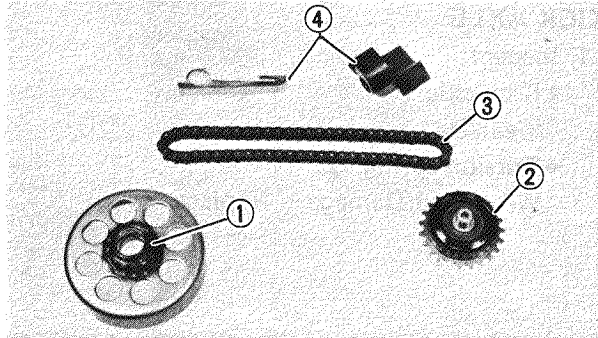


5. Inspect:

- Clutch weight spring free length
- Out of specification → Replace.

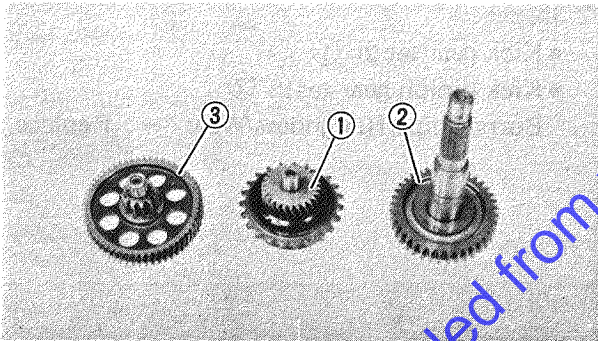


Clutch Weight Spring Free Length (a) :
29.1 mm (1.2 in)



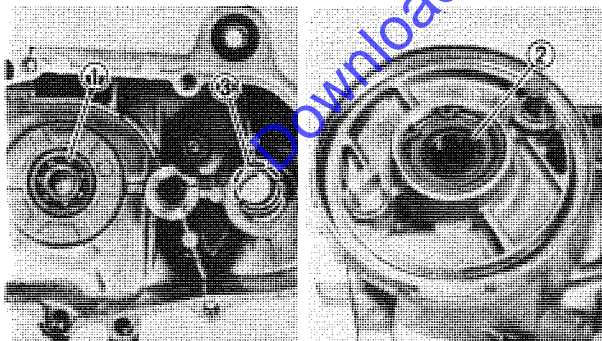
6. Inspect:

- Drive sprocket ①
- Driven sprocket ②
- Wear/Damage → Replace.
- Chain ③
- Damage/Expansion → Replace.
- Chain guides (Upper and lower) ④
- Wear/Damage → Replace.



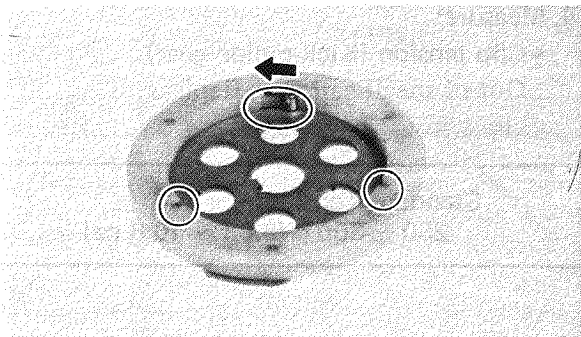
7. Inspect:

- Primary drive gear ①
- Drive axle ②
- Main axle ③
- Wear/Damage → Replace.



8. Inspect:

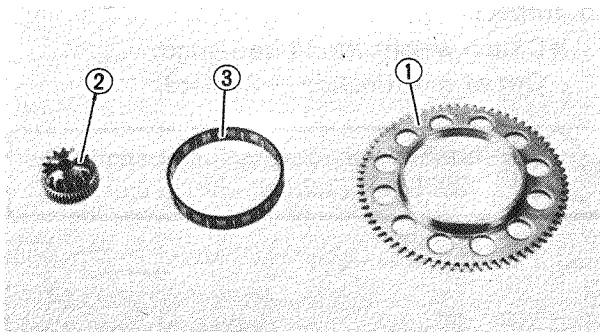
- Bearing (Primary drive gear) ①
- Bearing (Drive axle) ②
- Excessive play/Roughness → Replace.
- Pitting/Damage → Replace.
- Oil seal (Drive axle) ③
- Damage/Wear → Replace.



STARTER CLUTCH

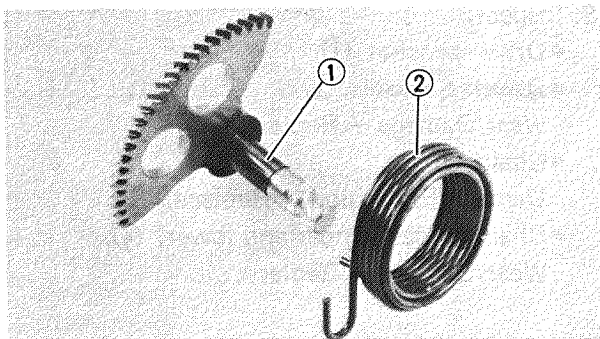
1. Inspect:

- Starter clutch
- Push the dowel pin to arrow direction.
- Unsmooth operation → Replace starter clutch assembly.



2. Inspect:

- Starter wheel gear teeth ①
- Idle gear teeth ②
- Bearing (Starter wheel gear) ③
Burrs/Chips/Roughness/Wear/Damage
→ Replace.



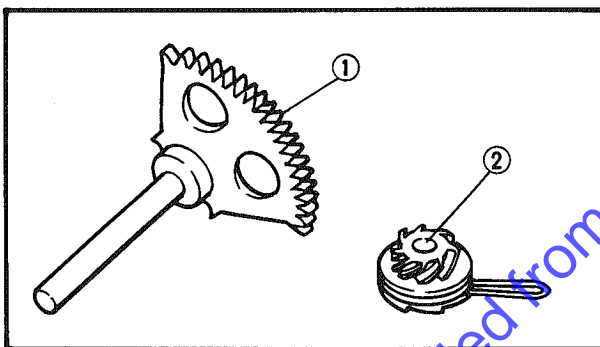
KICK AXLE

1. Inspect:

- Kick axle ①
Wear/Damage → Replace.
- Torsion spring ②
Weakened/Damage → Replace.

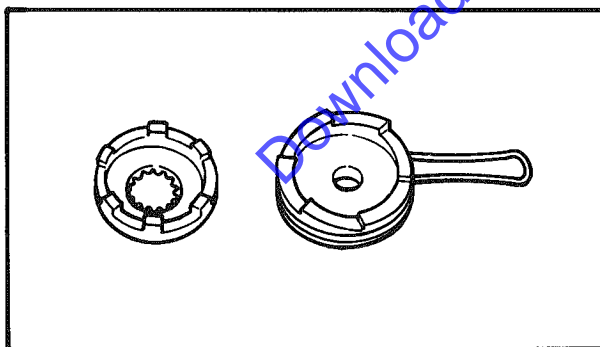
2. Inspect:

- Kick gear teeth ①
- Kick pinion gear teeth ②
Burrs/Chips/Roughness/Wear → Replace.



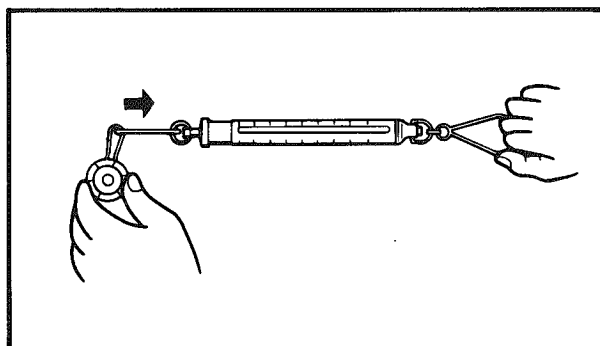
3. Inspect:

- Mating dogs (Kick pinion gear and one-way clutch)
Rounded edges/Damage → Replace.



4. Measure:

- Clip tension (Kick pinion gear)
Out of specification → Replace.
Use a spring balance.



Standard Tension:
250 ~ 300 g (8.83 ~ 10.6 oz)

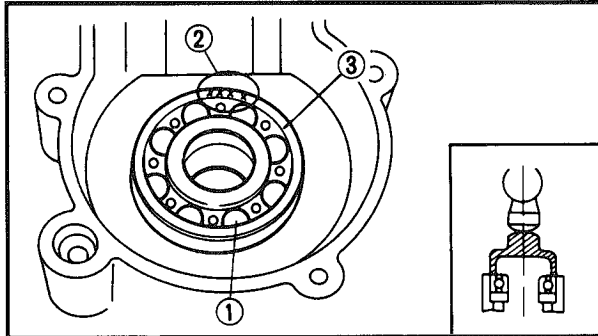


ENGINE ASSEMBLY AND ADJUSTMENT

CRANKSHAFT AND CRANKCASE

CAUTION:

To protect the crankshaft against scratches or to facilitate the operation of the installation. Apply the grease to the oil seal lips, and apply the engine oil to each bearing.

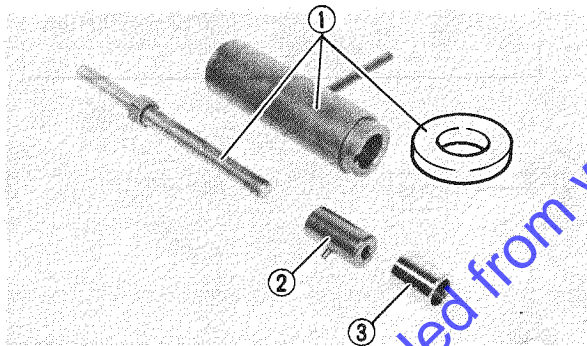


1. Install:

- Bearing ①

NOTE:

With the punched mark side ② facing the crank (inward), install by applying force evenly on the outer race ③.

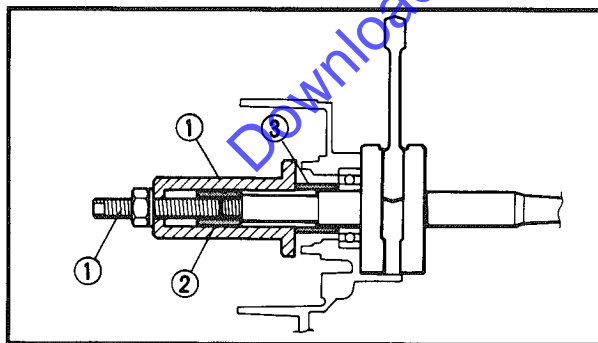


2. Apply:

- Engine oil
To bearing (Crankshaft).

3. Attach:

- Crankshaft Install Tools (YU-90050 ①, YM-90062 ②, YM-01411 ③)

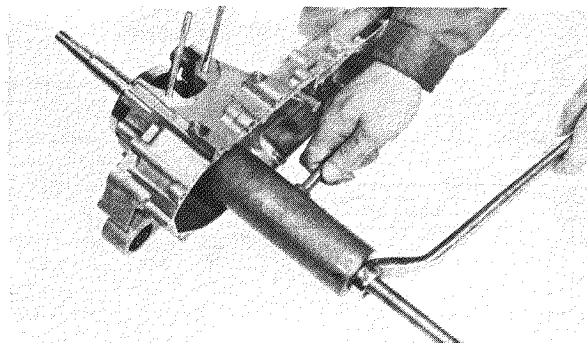


4. Install:

- Crankshaft
To left crankcase.

NOTE:

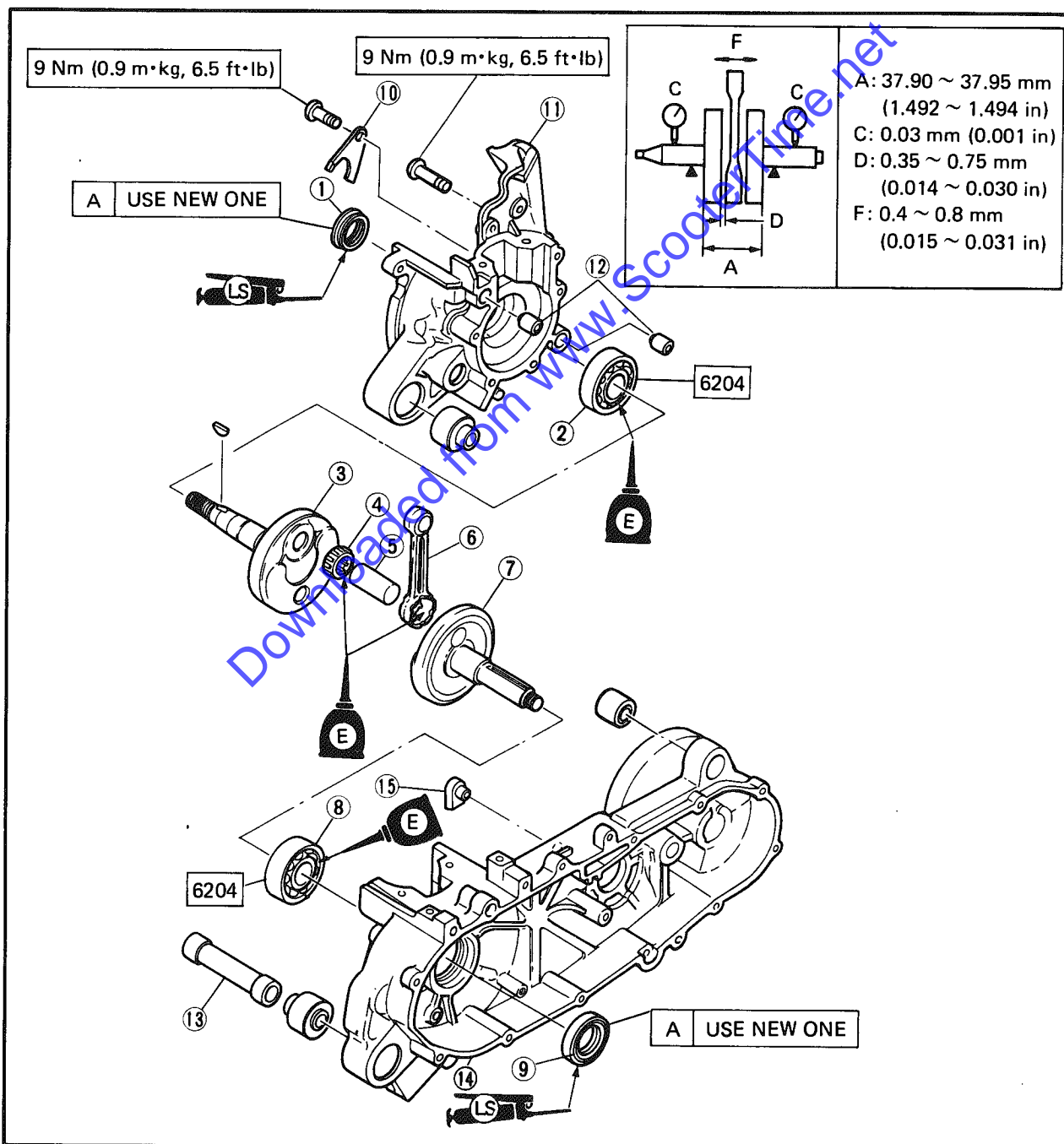
Hold the connecting rod at top dead center with one hand while turning the nut of the Installing Tool with the other. Operate the Installing Tool until the crankshaft bottoms against the bearing.

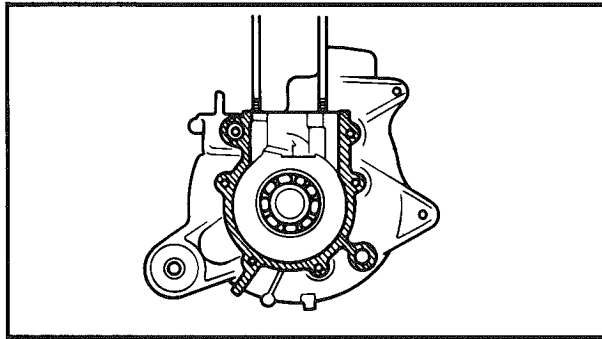




CRANKSHAFT AND CRANKCASE

- | | |
|------------------|---------------------|
| ① Oil seal | ⑪ Crankcase (Right) |
| ② Bearing | ⑫ Dowel pin |
| ③ Crank (Right) | ⑬ Spacer |
| ④ Bearing | ⑭ Crankcase (Left) |
| ⑤ Crank pin | ⑮ Breather |
| ⑥ Connecting rod | |
| ⑦ Crank (Left) | |
| ⑧ Bearing | |
| ⑨ Oil seal | |
| ⑩ Holder | |

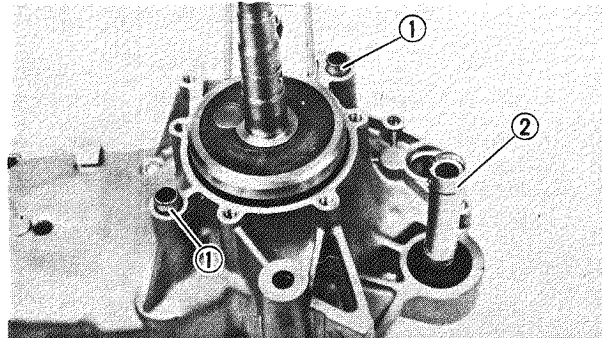




5. Apply:

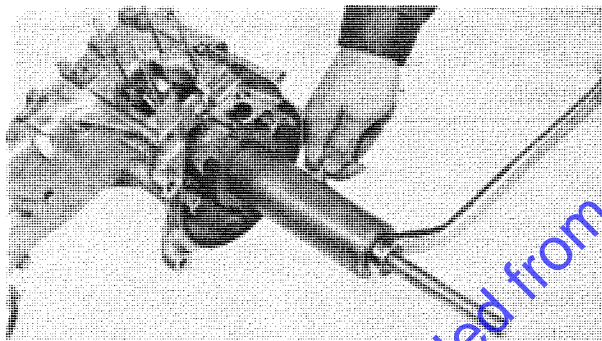
- Yamabond NO. 4®
(ACC-11001-30-00)

To the mating surfaces of both case halves.



6. Install:

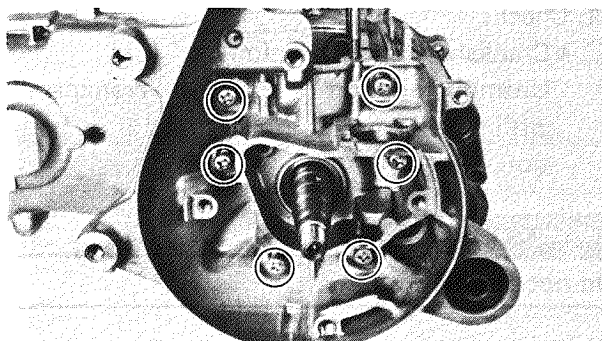
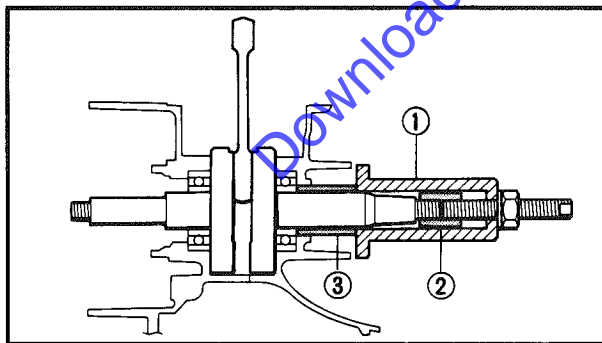
- Dowel pins ①
- Spacer ②



7. Install:

- Crankcase (Right)

Using the Crankshaft Installing Tool (YM-90050 ①, YM-90062 ②, YM-01411 ③)



8. Tighten:

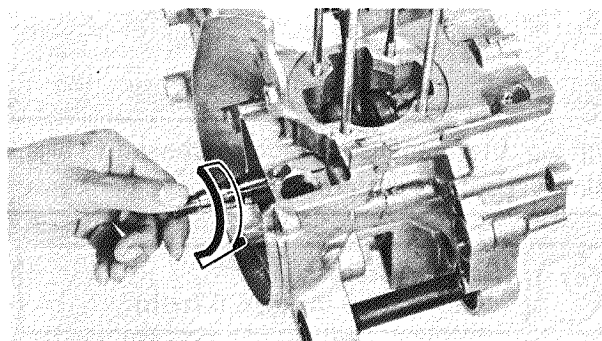
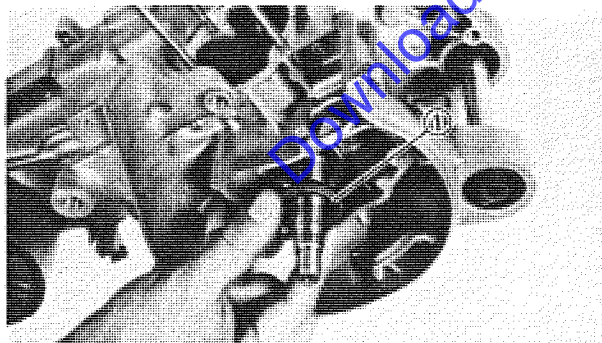
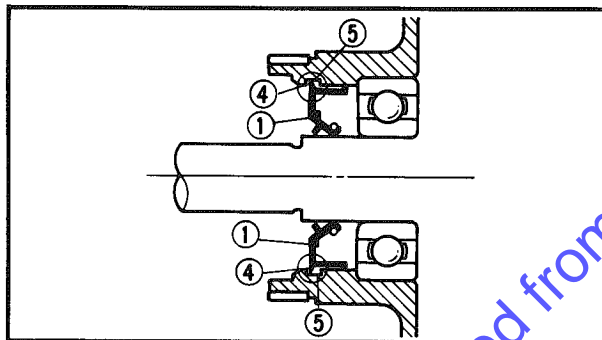
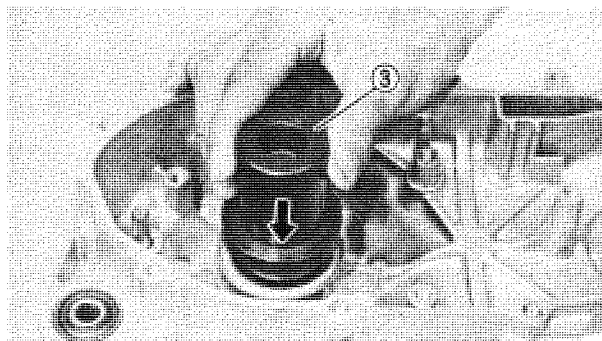
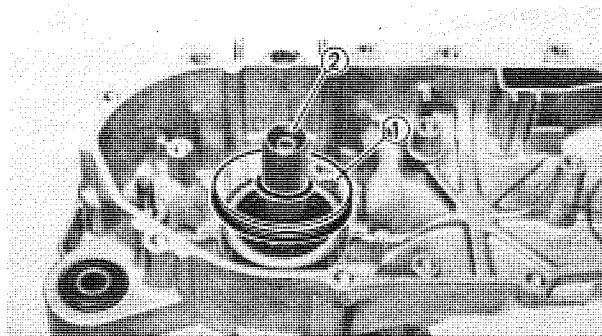
- Screws (Crankcase)

NOTE:

Tighten the crankcase holding screws in stage, using a crisscross pattern.



Screws (Crankcase):
9 Nm (0.9 m·kg, 6.5 ft·lb)



9. Install:

- Oil seal (Left-New) ①

Using the Oil Seal Guide ② (YM-01409)
and Oil Seal Driver ③ (YM-01410).

NOTE:

Apply lithium soap base grease onto the oil
seal lips.

NOTE:

Install the oil seal lip into the crankcase slot
as shown.

- ④ Oil seal lip

- ⑤ Slot

10. Install:

- Oil seal (Right-New) ①

NOTE:

Apply lithium soap base grease onto the oil
seal lips.

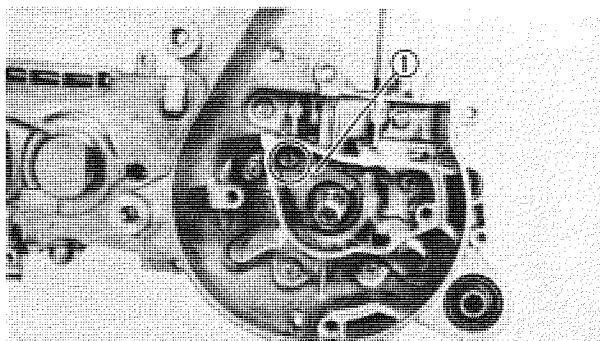
11. Check:

- Crankshaft smooth action

Unsmooth action → Pat the "crankcase"
with a soft-head hammer to set it in posi-
tion.

CAUTION:

Do not pat the crankshaft.



12. Install:

- Holder ①



Screw (Holder):
9 Nm (0.9 m·kg, 6.5 ft·lb)

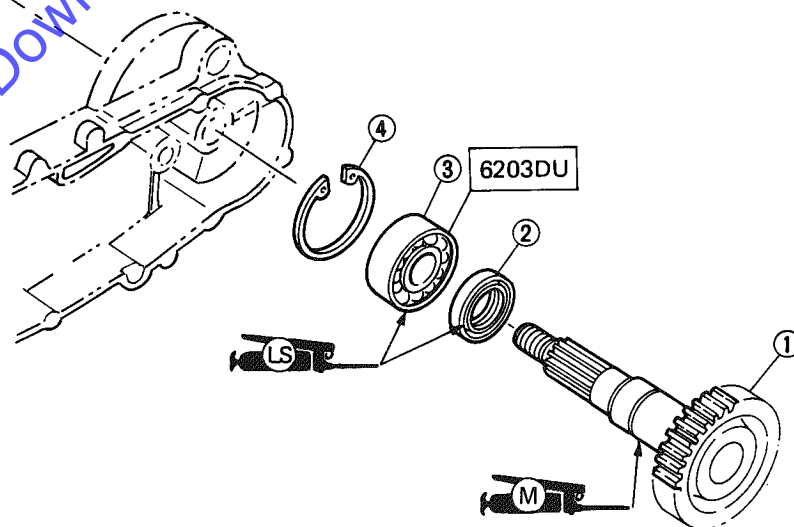
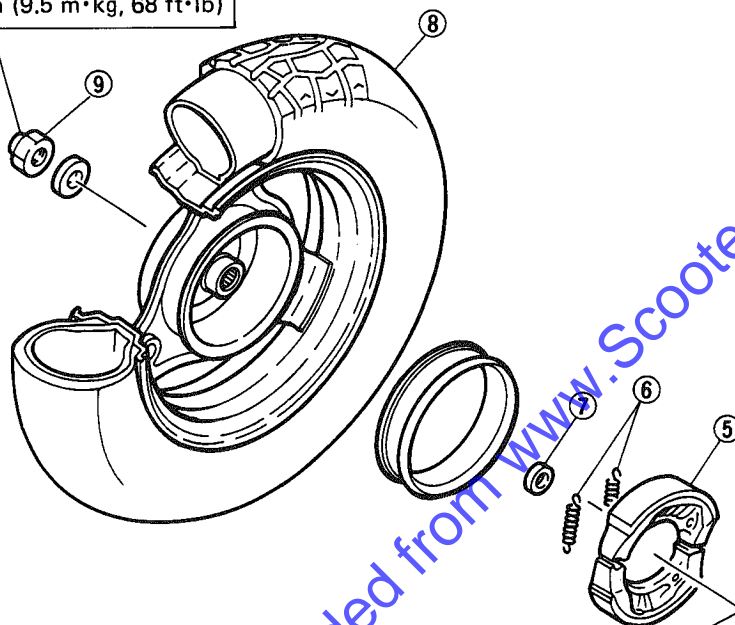
Downloaded from www.ScooterTime.net

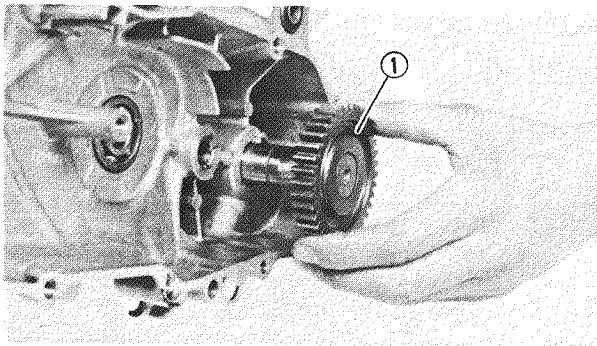


DRIVE AXLE AND REAR WHEEL

- | | |
|--------------|---------------------|
| ① Drive axle | ⑥ Brake shoe spring |
| ② Oil seal | ⑦ Plain washer |
| ③ Bearing | ⑧ Rear wheel |
| ④ Circlip | ⑨ Nut |
| ⑤ Brake shoe | |

95 Nm (9.5 m•kg, 68 ft•lb)



**DRIVE AXLE AND REAR WHEEL****1. Install:**

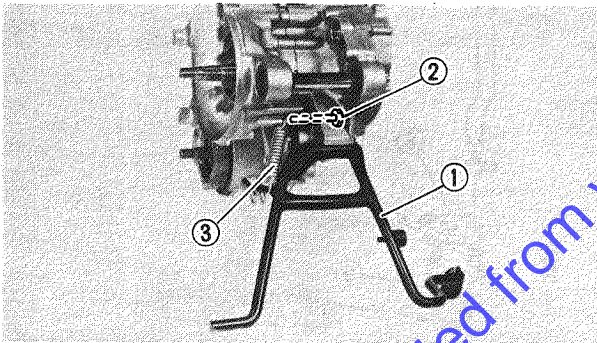
- Drive axle ①

NOTE:

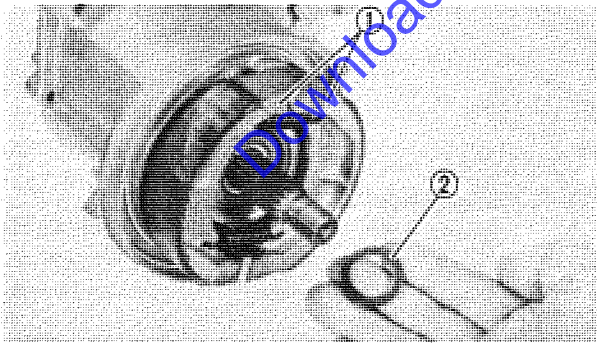
Apply the molybdenum disulfide oil onto the drive axle as shown.

CAUTION:

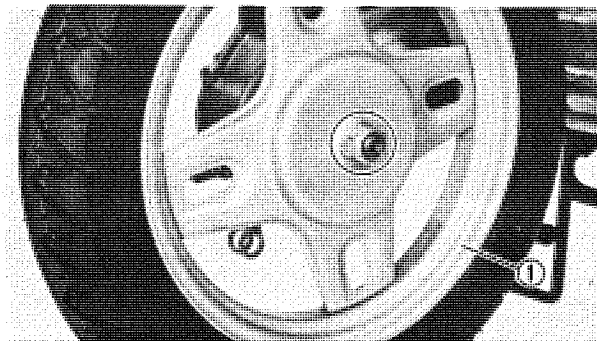
Be careful not to allow the drive axle screw thread or serration to damage the oil seal lip to prevent leakage.

**2. Install:**

- Centerstand ①
- Pin ②
- Clip
- Spring ③

**3. Install:**

- Brake shoe plate ①
- Plain washer ②

**4. Install:**

- Rear wheel ①

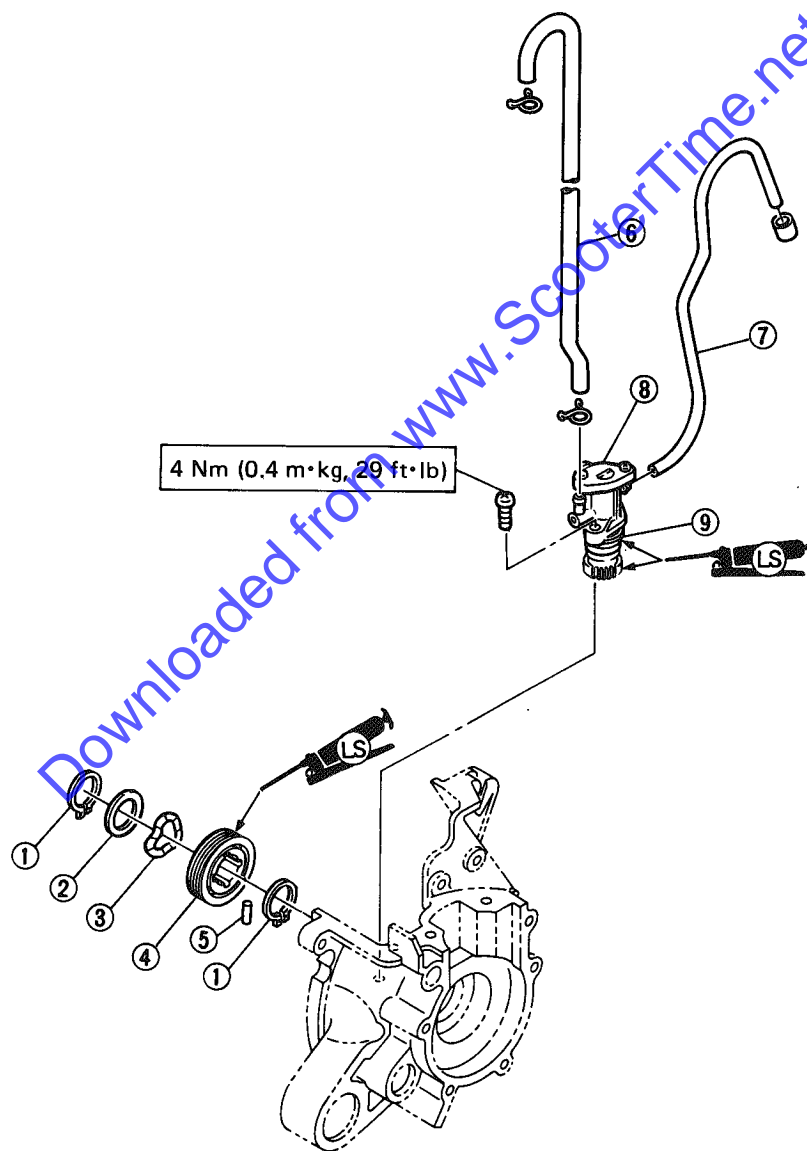


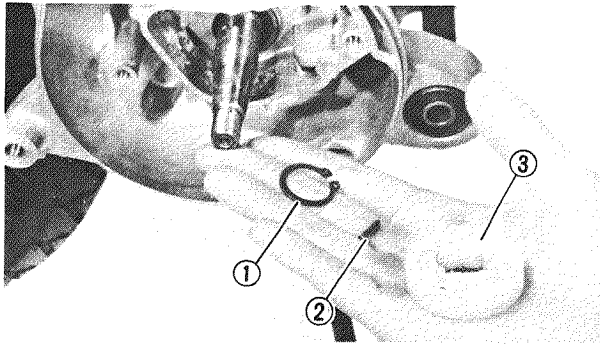
Nut (Rear Wheel):
95 Nm (9.5 m·kg, 68 ft·lb)



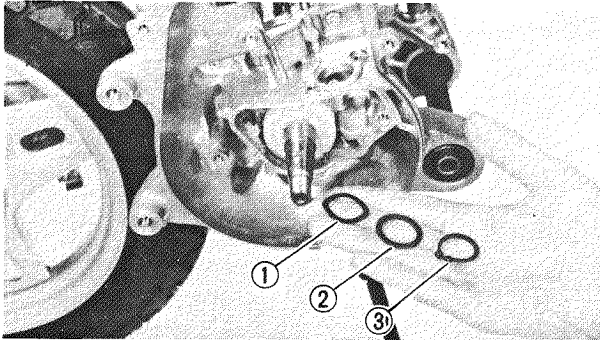
OIL PUMP

- ① Circlip
- ② Shim
- ③ Wave washer
- ④ Pump drive gear
- ⑤ Dowel pin
- ⑥ Oil hose (Oil tank – Oil pump)
- ⑦ Oil delivery hose (Oil pump – Carburetor)
- ⑧ Oil pump
- ⑨ O-ring

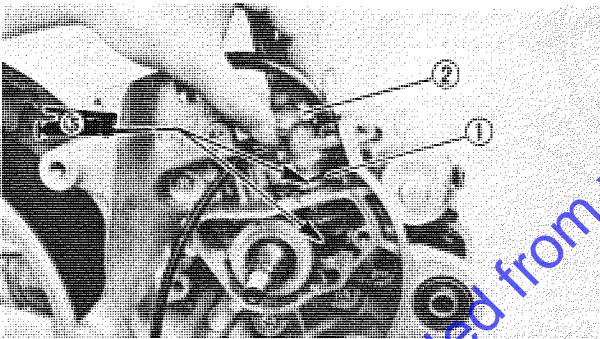


**OIL PUMP****1. Install:**

- Circlip ①
- Dowel pin ②
- Pump drive gear ③

**2. Install:**

- Wave washer ①
- Shim ②
- Circlip ③

**3. Inspect:**

- O-ring (Oil pump) ①
- Damage → Replace.

4. Apply:

- Lithium soap base grease
- To the O-ring.

5. Install:

- Oil pump ②

6. Apply:

- Lithium soap base grease
- To oil pump gear



15 cc (0.92 cu·in)

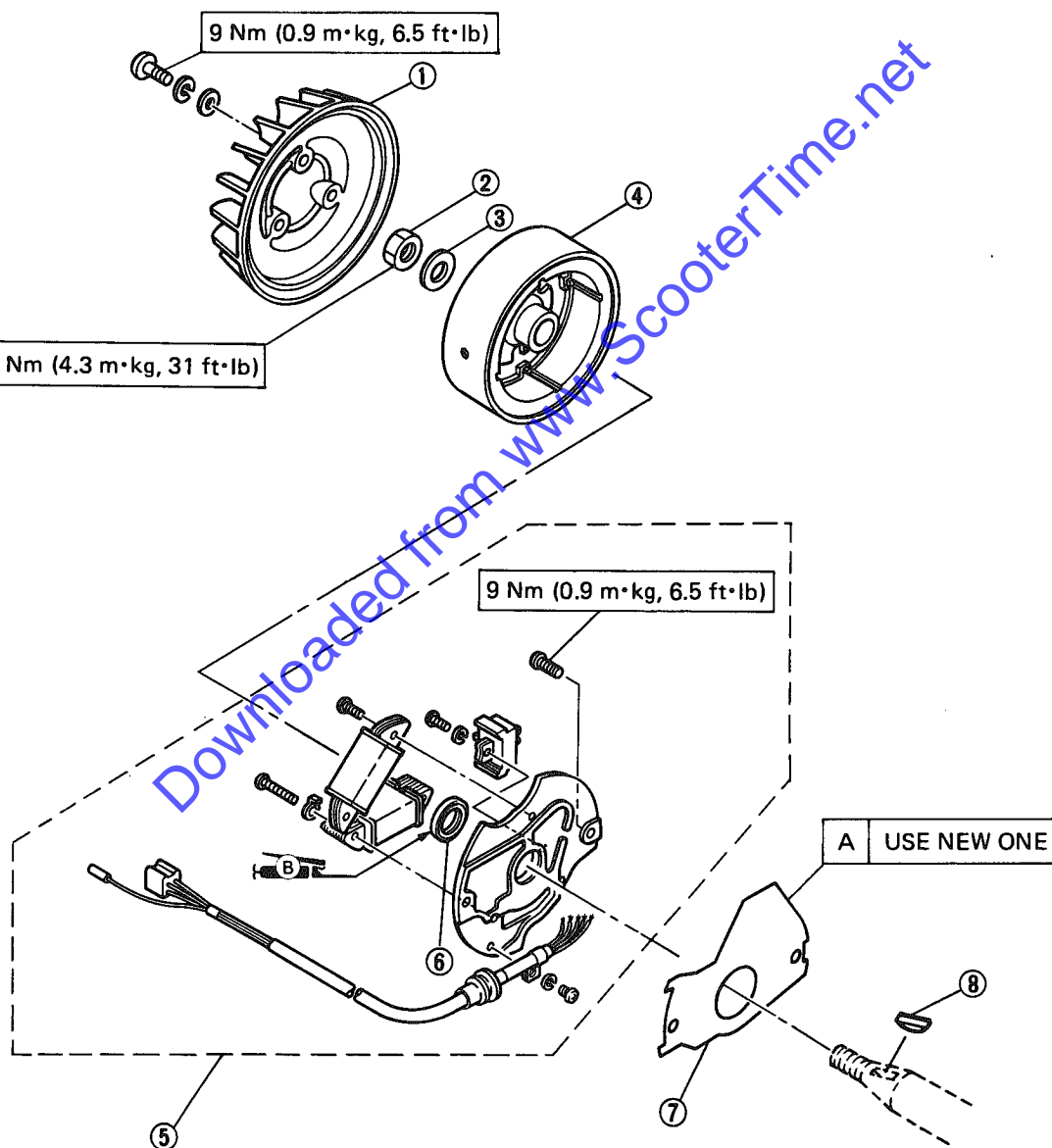
7. Connect:

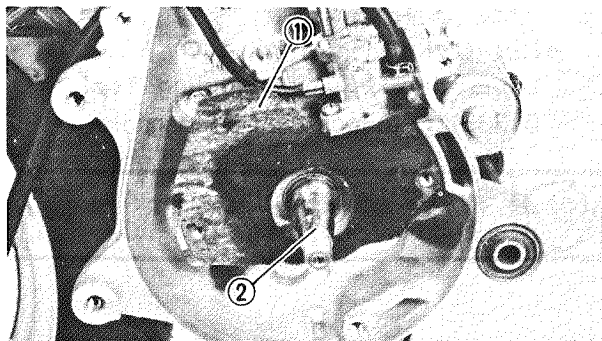
- Oil hose
- Oil delivery hose



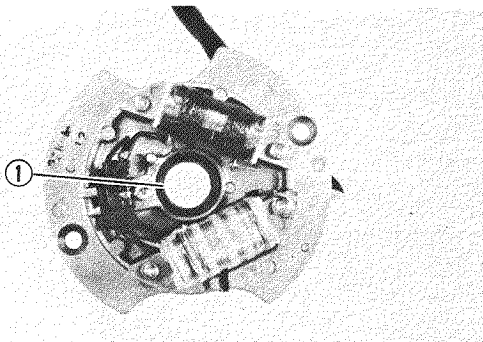
CDI MAGNETO

- ① Fan
- ② Nut
- ③ Plain washer
- ④ CDI magneto
- ⑤ Stator assembly
- ⑥ Oil seal
- ⑦ Crankcase cover gasket (Right)
- ⑧ Woodruff key



**CDI MAGNETO****1. Install:**

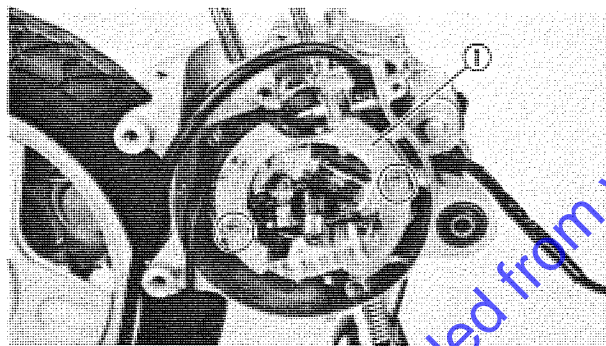
- Gasket (Crankcase cover-Right) ① (New)
- Woodruff key ②

**2. Install:**

- Oil seal ①

NOTE:

- Apply the lithium soap base grease onto the oil seal lips.
- Inspect the oil seal, and replace it if damaged.

**3. Install:**

- Stator assembly ①



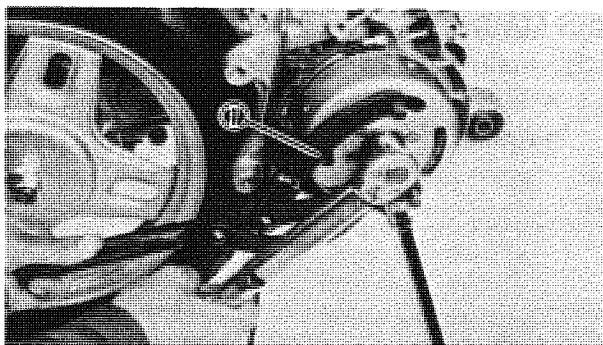
Screw (Stator):
9 Nm (0.9 m·kg, 6.5 ft·lb)

4. Install:

- Woodruff key
- CDI magneto
- Plain washer
- Spring washer
- Nut

NOTE:

When installing the CDI magneto, make sure the woodruff key is properly seated in the key way of the crankshaft. Apply a light coating or lithium soap base grease to the tapered portion of the crankshaft end.



5. Tighten:

- Nut (CDI magneto)

Using the Flywheel Holding Tool (YU-01235) ① to lock the CDI magneto.



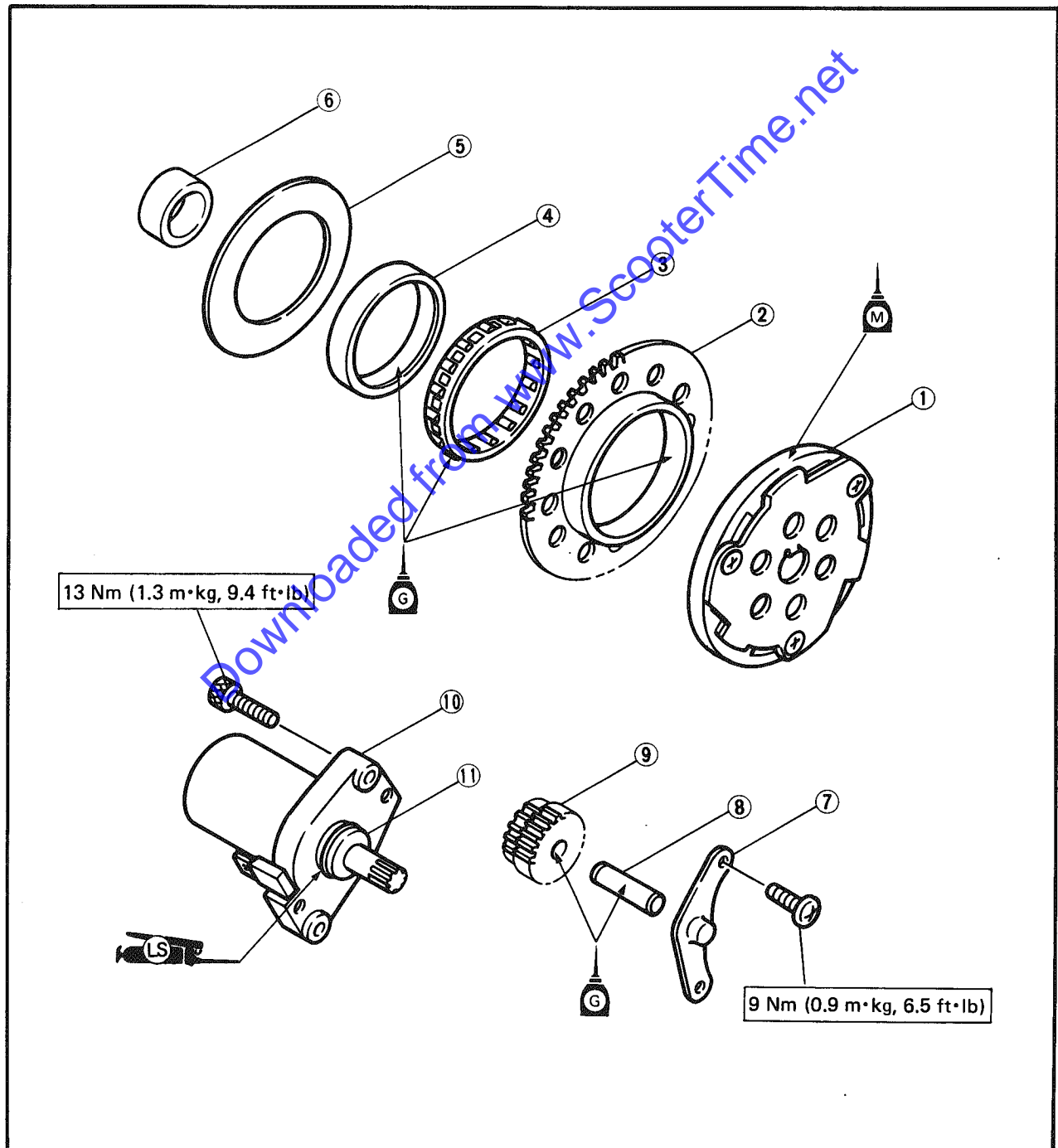
Nut (CDI magneto):

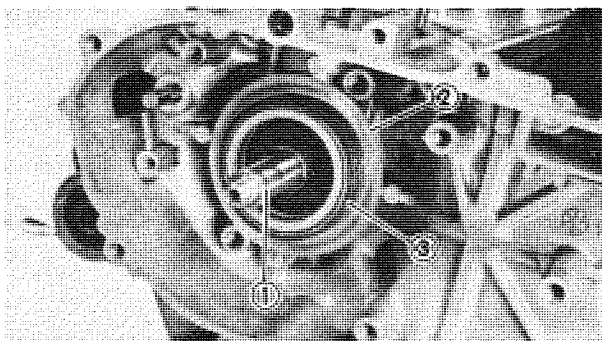
43 Nm (4.3 m·kg, 31 ft·lb)



STARTER CLUTCH AND STARTER MOTOR

- ① Starter clutch
- ② Starter wheel gear
- ③ Bearing
- ④ Boss
- ⑤ Plain washer
- ⑥ Collar
- ⑦ Idle gear plate
- ⑧ Idle gear shaft
- ⑨ Starter idle gear
- ⑩ Starter motor
- ⑪ O-ring

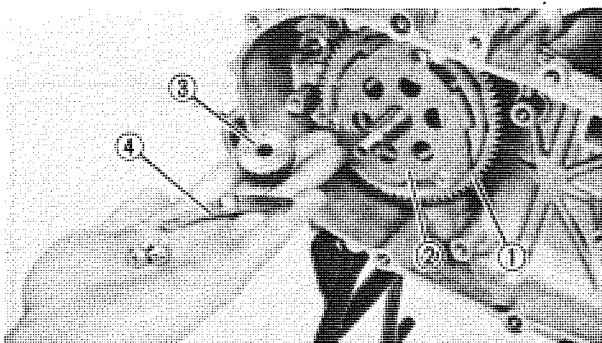


**STARTER CLUTCH AND STARTER MOTOR****1. Install:**

- Collar ①
- Plain washer ②
- Bearing ③

NOTE:

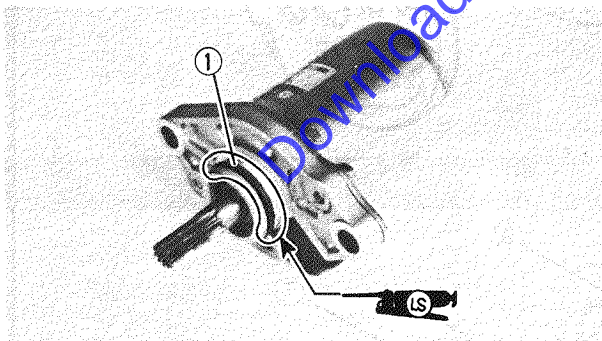
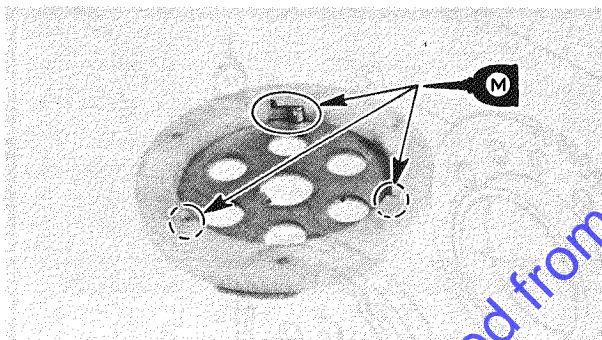
Apply the gear oil onto the bearing.

**2. Install:**

- Starter wheel gear ①
- Starter clutch ②
- Starter idle gear ③
- Idle gear plate ④

NOTE:

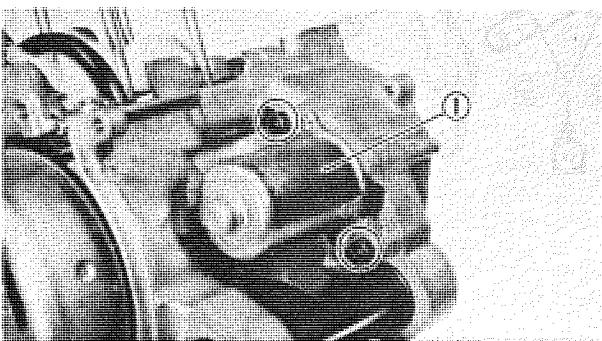
- Apply the gear oil onto the idle gear shaft.
- Apply the molybdenum disulfide oil onto the starter clutch as shown.

**3. Inspect:**

- O-ring (Starter motor) ①
Damage → Replace.

4. Apply:

- Lithium soap base grease
To the O-ring.

**6. Install:**

- Starter motor ①

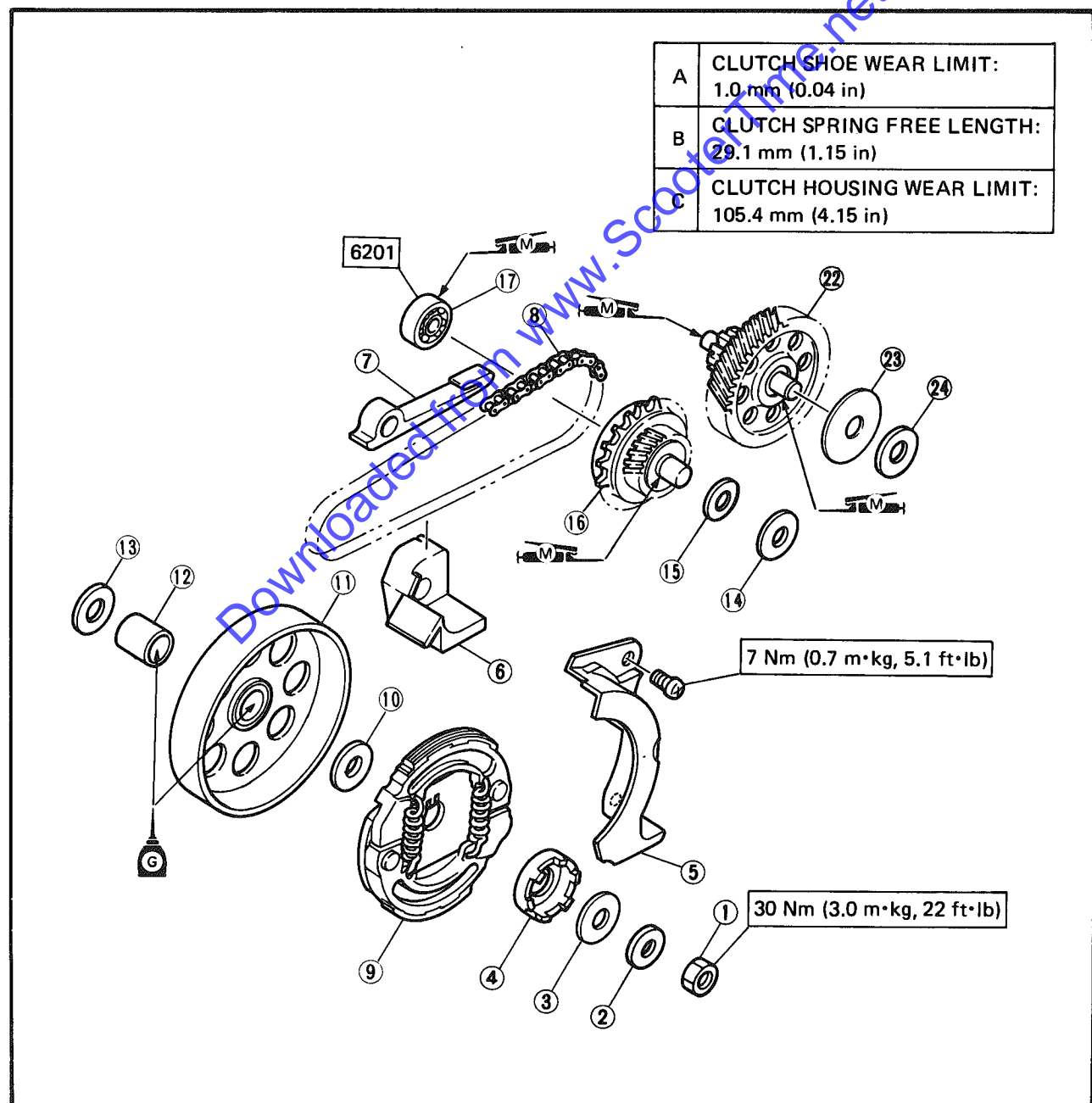


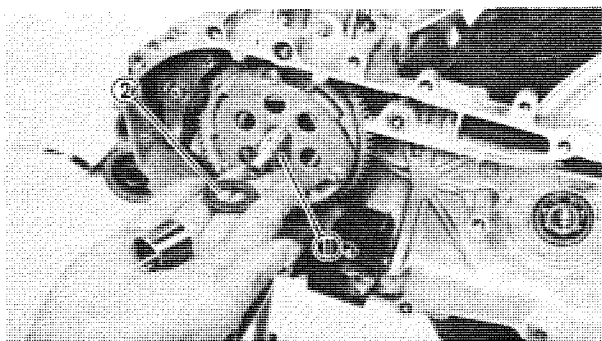
Bolt (Starter motor) ① :
13 Nm (1.3 m·kg, 9.4 ft·lb)



CLUTCH AND TRANSMISSION

- | | |
|-------------------------|-------------------------|
| ① Nut | ⑬ Plain washer |
| ② Conical spring washer | ⑭ Plain washer |
| ③ Plain washer | ⑮ Conical spring washer |
| ④ One-way clutch | ⑯ Primary drive gear |
| ⑤ Clutch housing cover | ⑰ Bearing |
| ⑥ Chain guide (Lower) | ⑱ Drive axle |
| ⑦ Chain guide (Upper) | ⑲ Oil seal |
| ⑧ Chain | ⑳ Bearing |
| ⑨ Clutch carrier | ㉑ Circlip |
| ⑩ Plain washer | ㉒ Main axle |
| ⑪ Clutch housing | ㉓ Conical spring washer |
| ⑫ Collar | ㉔ Plain washer |

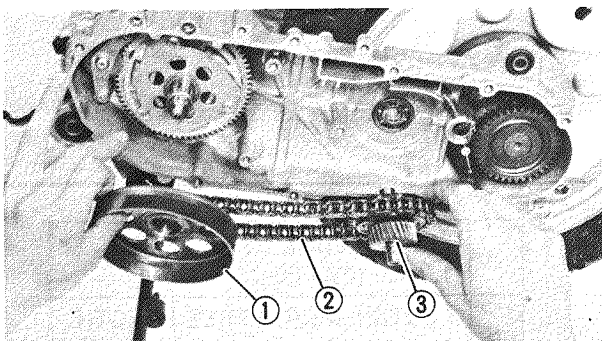


**CLUTCH AND TRANSMISSION****1. Install:**

- Collar ①
- Plain washer ②

NOTE:

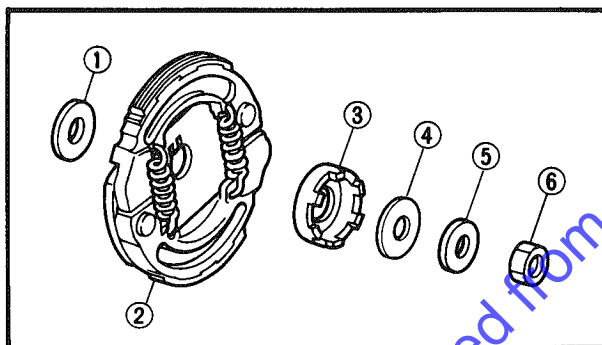
Apply the gear oil onto the collar.

**2. Install:**

- Clutch housing ①
- Chain ②
- Primary drive gear ③

NOTE:

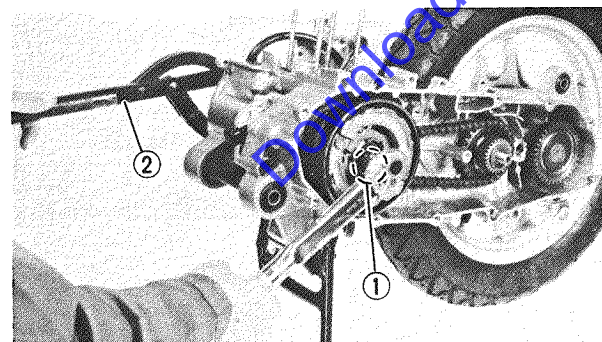
- Apply the gear oil onto the clutch housing ① and primary drive gear ③ as shown.
- Install both parts ① and ③ with the chain on.

**3. Install:**

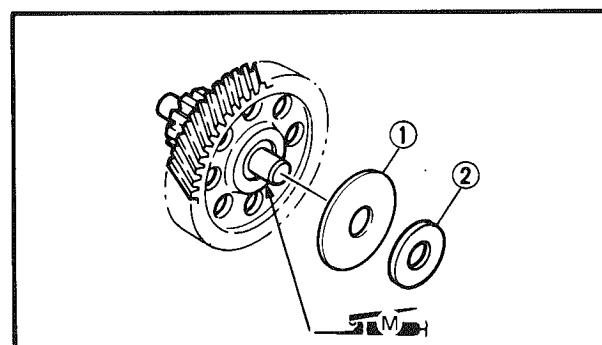
- Plain washer ①
- Clutch carrier ②
- One-way clutch ③
- Clutch carrier ④
- Plain washer ⑤
- Nut ⑥

4. Tighten:

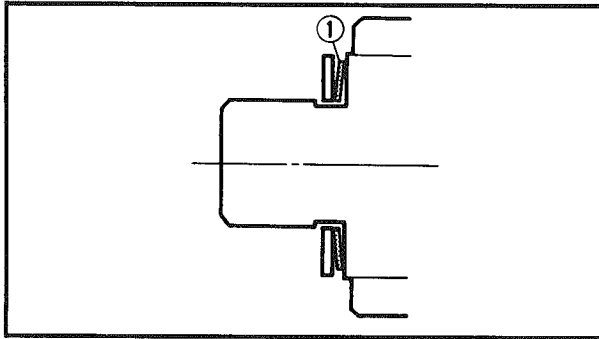
- Nut (Clutch housing) ①
- Using the Flywheel Holding Tool ② (YU-01235) to lock the CDI magneto.



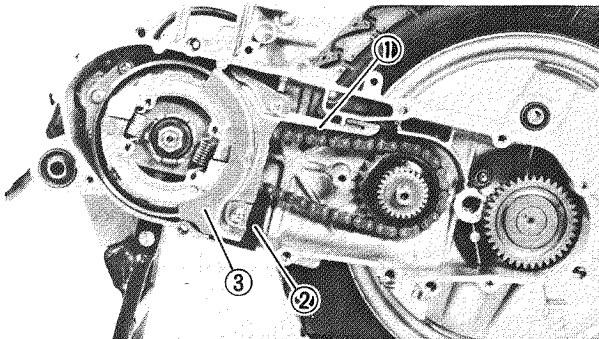
Nut (Clutch Housing):
30 Nm (3.0 m·kg, 22 ft·lb)

**5. Install:**

- Conical spring washer ①
- Plain washer ②

**NOTE:**

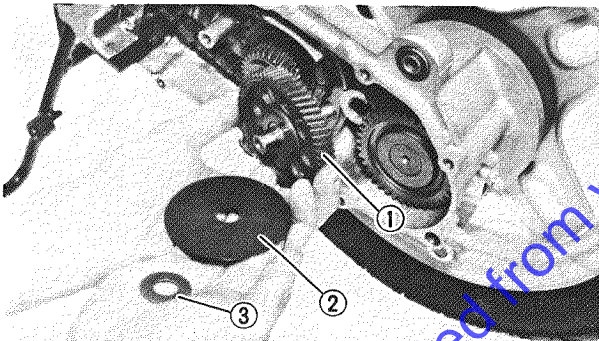
Be sure to install the conical spring washer ① as shown.

**6. Install:**

- Chain guide (Upper) ①
- Chain guide (Lower) ②
- Clutch housing plate ③



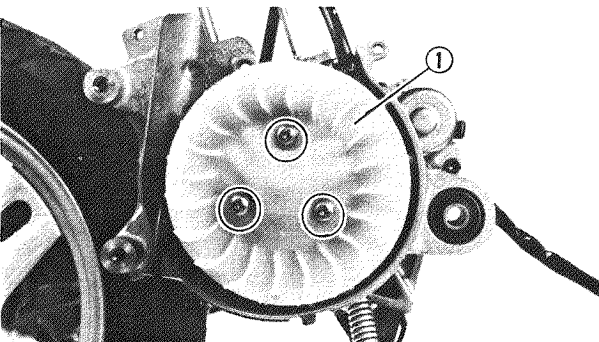
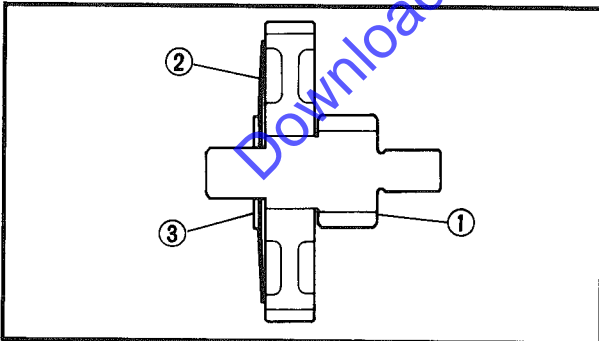
Screw (Clutch Housing Plate):
7 Nm (0.7 m·kg, 5.1 ft·lb)

**7. Install:**

- Main axle ①
- Conical spring washer ②
- Plain washer ③

NOTE:

- Apply the molybdenum disulfide oil onto the main axle ① as shown.
- Be sure to install the conical spring washer ② as shown.

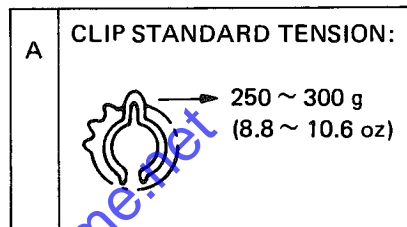
**8. Install:**

- Fan ①

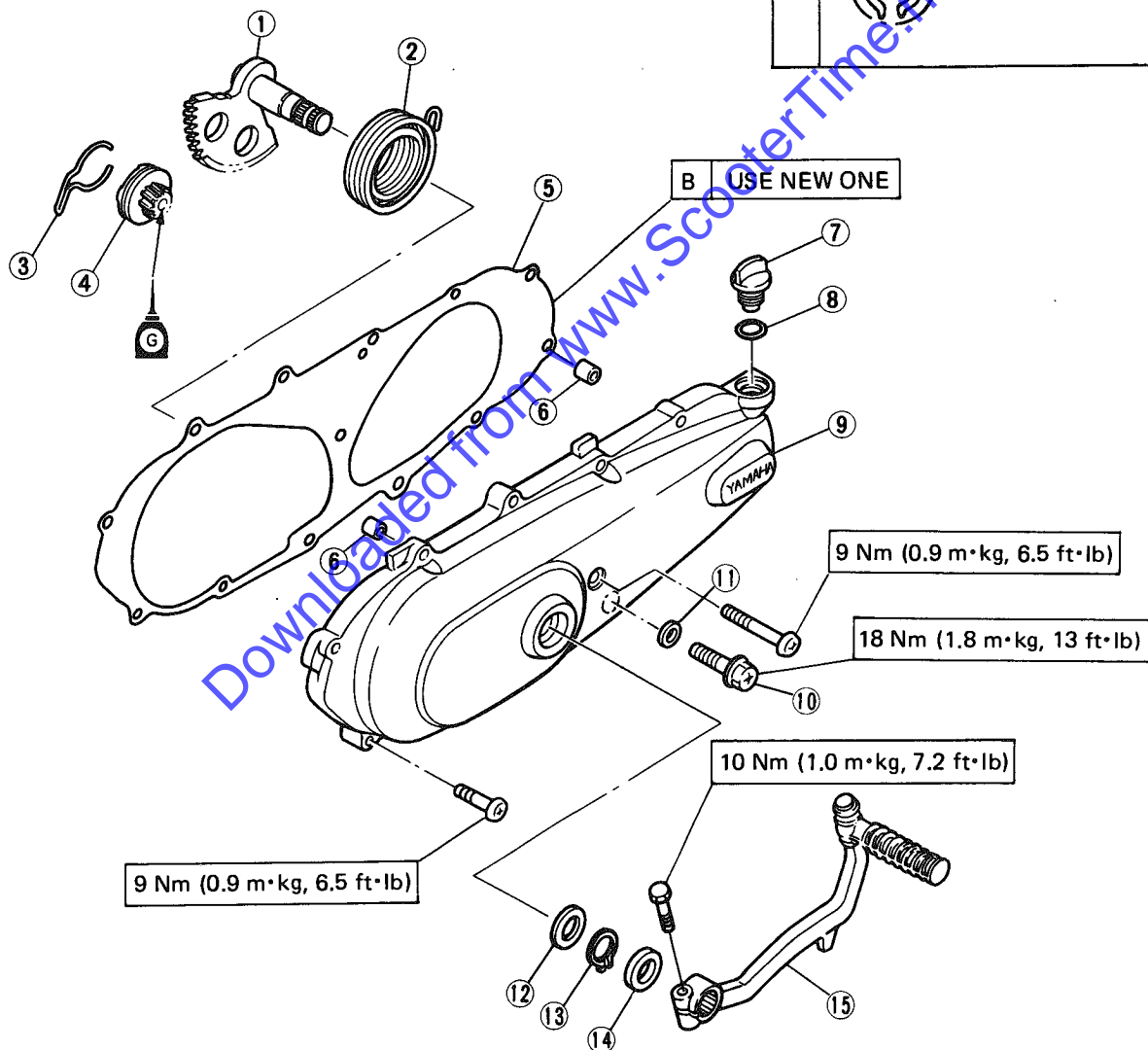


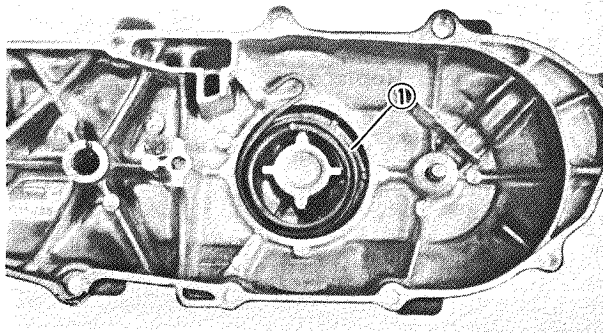
KICK AXLE

- | | |
|---------------------------------|----------------|
| ① Kick axle assembly | ⑪ Gasket |
| ② Torsion spring | ⑫ Plain washer |
| ③ Clip | ⑬ Circlip |
| ④ Kick pinion gear | ⑭ Oil seal |
| ⑤ Crankcase cover gasket (Left) | ⑮ Kick crank |
| ⑥ Dowel pin | |
| ⑦ Oil plug | |
| ⑧ O-ring | |
| ⑨ Crankcase cover | |
| ⑩ Drain bolt | |

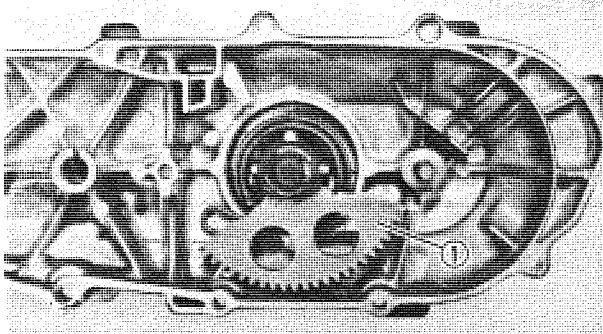


B USE NEW ONE

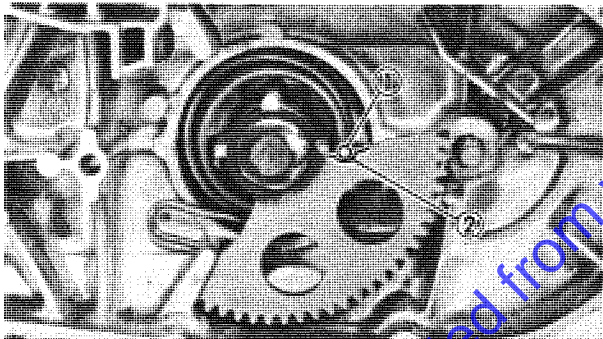


**KICK AXLE****1. Install:**

- Torsion spring ①

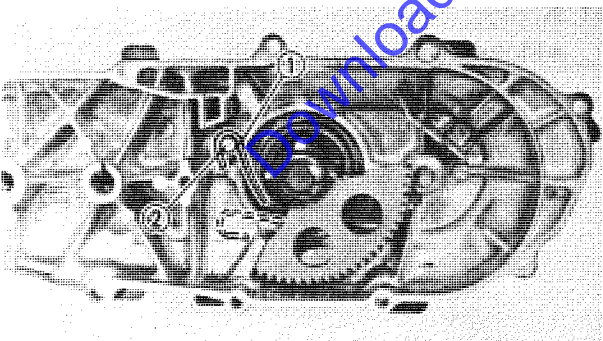
**2. Install:**

- Kick axle assembly ①

**3. Hook:**

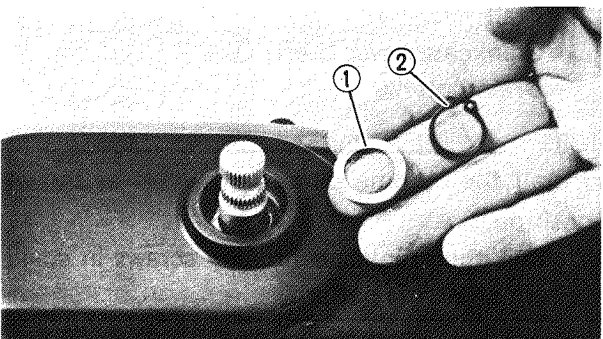
- Torsion spring

Hook the torsion spring hook ① on the kick axle slot ② as shown.

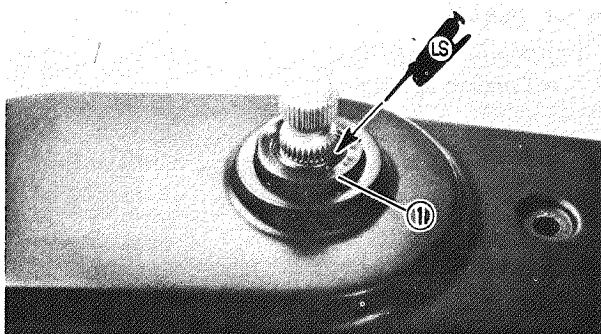
**4. Hook:**

- Torsion spring

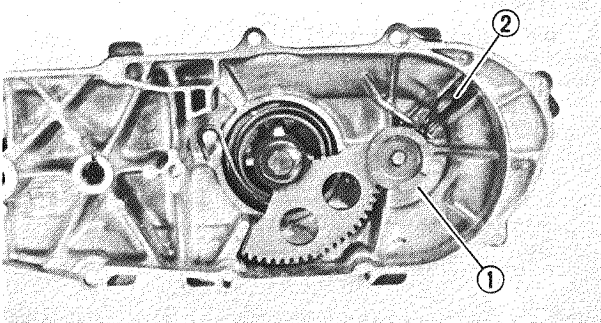
Hook the torsion spring hook ① on the projection ② as shown.

**5. Install:**

- Plain washer ①
- Circlip ②



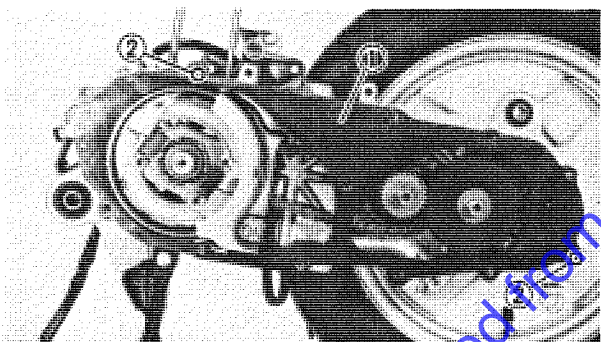
6. Inspect:
 - Oil seal ①
 - Damage → Replace.
7. Apply:
 - Lithium soap base grease
 - To the oil seal lip.
8. Install:
 - Oil seal



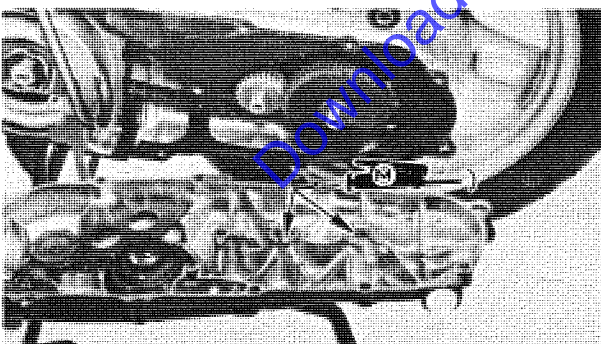
9. Install:
 - Kick pinion gear ①
 - Clip ②

NOTE:

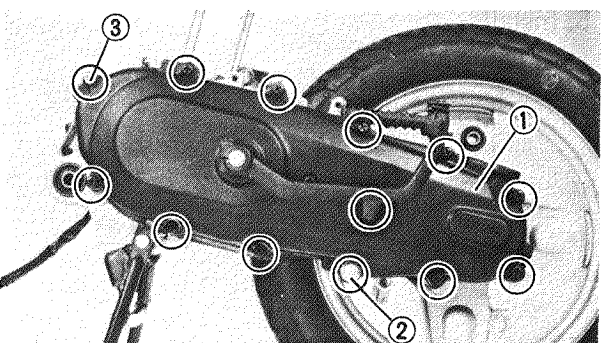
Install the clip as shown position.



10. Install:
 - Gasket (Crankcase cover-Left) (New) ①
 - Dowel pin ②



11. Apply:
 - Molybdenum disulfide oil
 - To the main axle hole and primary drive gear axle hole.



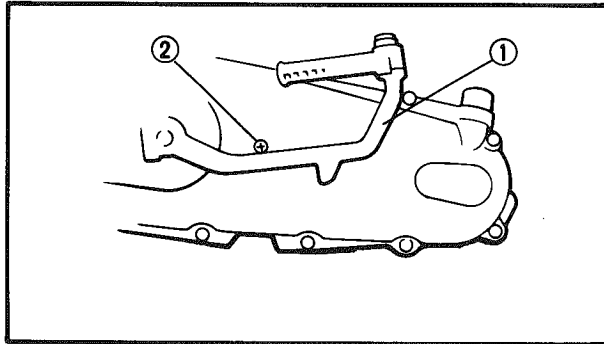
12. Install:
 - Crankcase cover (Left) ①
 - Drain bolt ②

NOTE:

- Install the chrome plated screw ③ as shown position.
- Tighten the crankcase holding screws in stage using a crisscross pattern.



Screw (Crankcase Cover):
9 Nm (0.9 m·kg, 6.5 ft·lb)
Drain Bolt:
18 Nm (1.8 m·kg, 13 ft·lb)



13. Install:

- Kick crank ①

WARNING:

Install the kick crank by positioning it as shown.



Bolt (Kick Crank) ① :
10 Nm (1.0 m·kg, 7.2 ft·lb)

② Screw

3

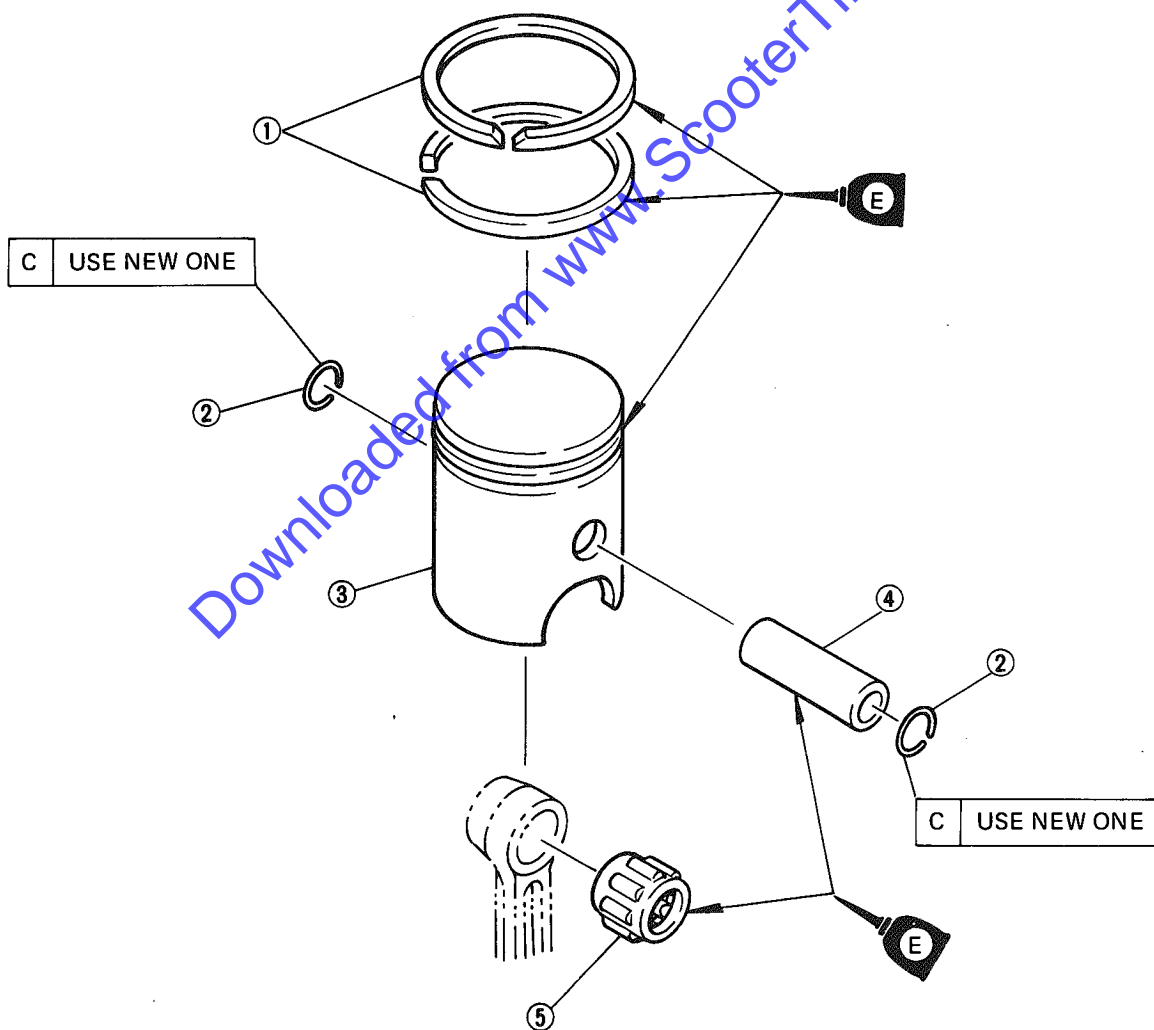
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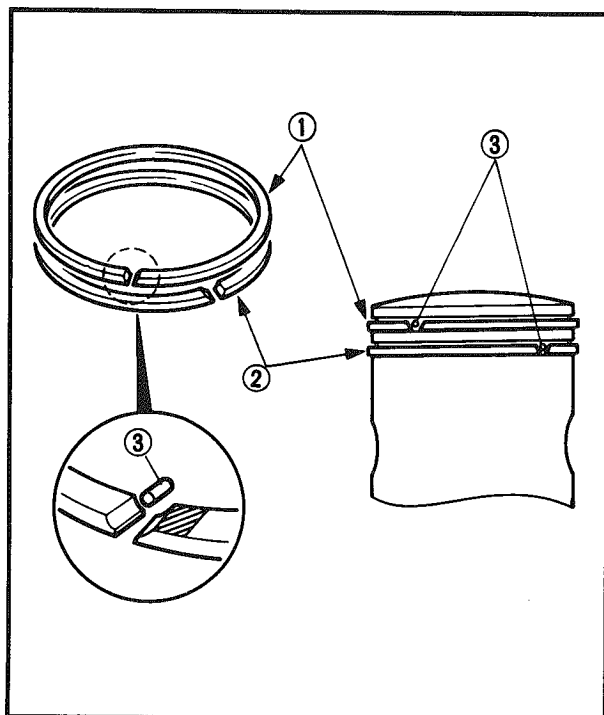


PISTON AND PISTON PIN

- ① Piston ring
- ② Piston pin clip
- ③ Piston
- ④ Piston pin
- ⑤ Small end bearing

A	PISTON RING SIDE CLEARANCE:
	0.03 ~ 0.05 mm (0.001 ~ 0.002 in) < LIMIT >: 0.10 mm (0.004 in)
B	PISTON RING END GAP:
	0.15 ~ 0.35 mm (0.006 ~ 0.014 in) < LIMIT >: 0.7 mm (0.028 in)

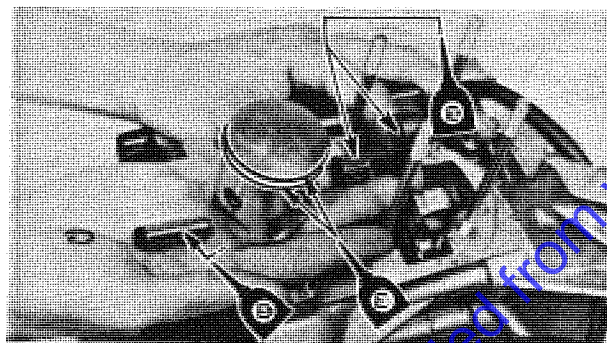


**PISTON AND PISTON PIN****1. Install:**

- Piston ring (Top) ①
- Piston ring (Second) ②

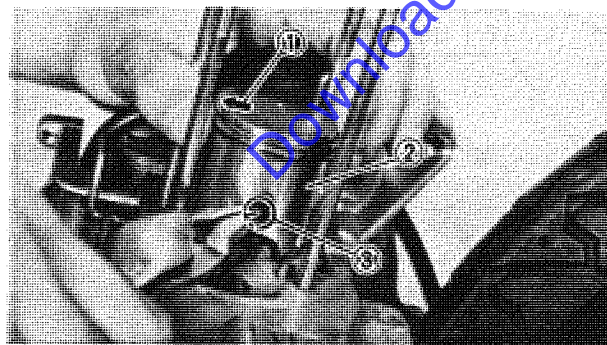
NOTE:

Install with the punched mark up and fit the meeting ends to the knockpin ③.

**2. Apply:**

- Yamalube 2

To the piston pin, bearing, piston ring grooves and piston skirt areas.

**3. Install:**

- Small end bearing
- Piston ②
- Piston pin
- Piston pin clip ③

NOTE:

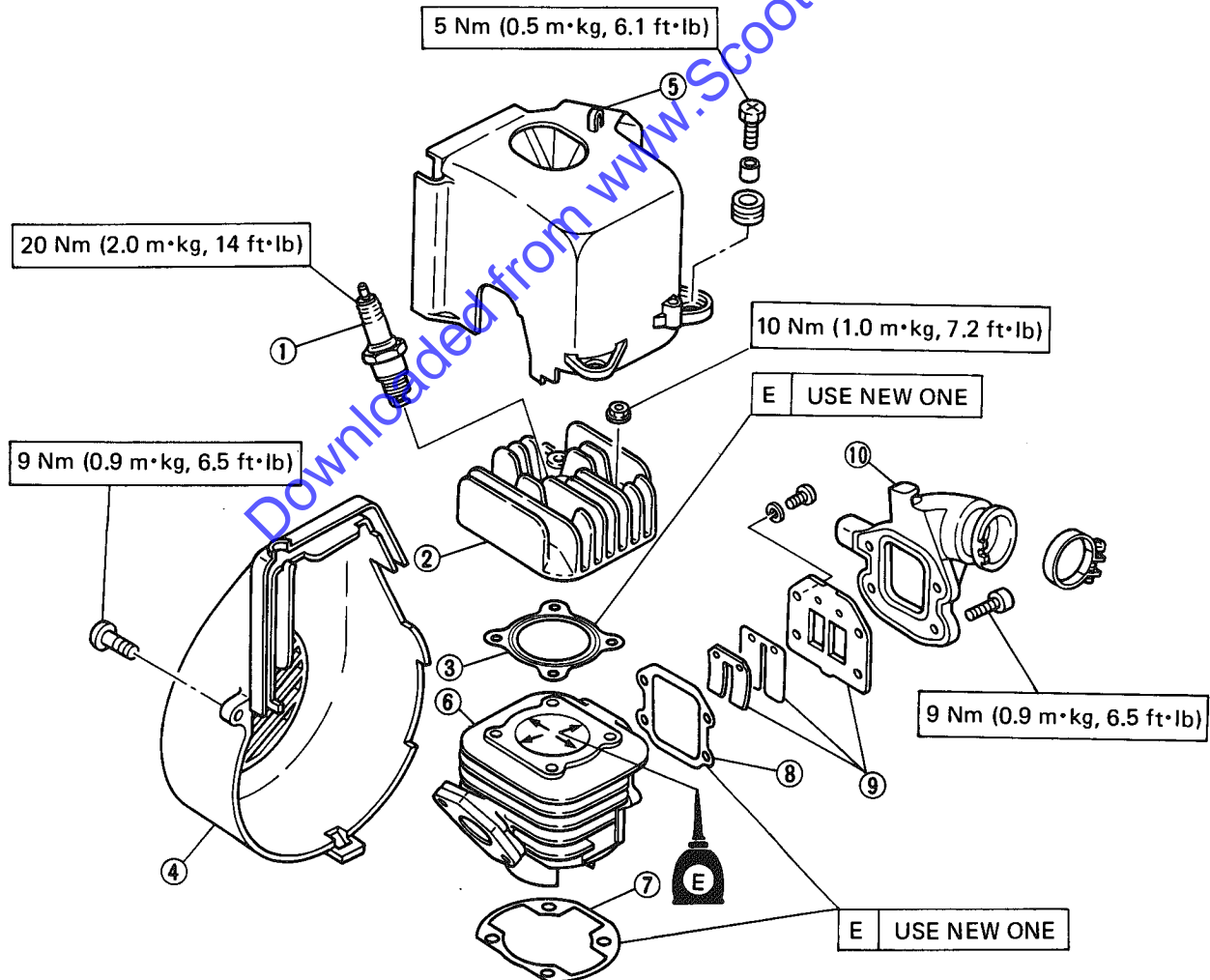
- The arrow ① on the piston must point to the front of the engine.
- Before installing the piston pin clip, cover the crankcase with a clean towel or rag so you will not accidentally drop the pin clip and material into the crankcase.
- Always use a new piston pin clip.

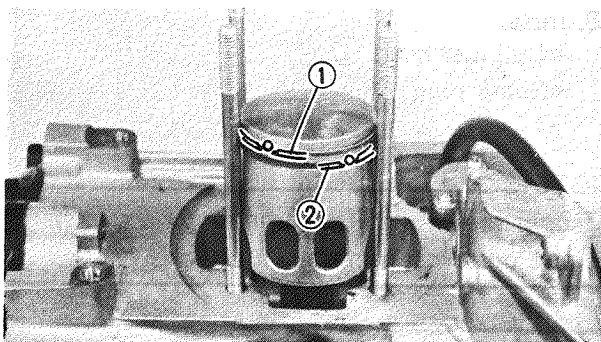


CYLINDER, CYLINDER HEAD AND CYLINDER AIR SHROUD

- ① Spark plug
- ② Cylinder head
- ③ Cylinder head gasket
- ④ Fan cover
- ⑤ Cylinder air shroud
- ⑥ Cylinder
- ⑦ Cylinder gasket
- ⑧ Gasket
- ⑨ Reed valve assembly
- ⑩ Intake manifold

A	PISTON CLEARANCE: 0.034 ~ 0.047 mm (0.0013 ~ 0.0018 in)
B	CYLINDER HEAD WARPAGE LIMIT: 0.03 mm (0.001 in)
C	CYLINDER WARPAGE LIMIT: 0.03 mm (0.001 in)
D	SPARK PLUG: BP6HS-10 (N.G.K.) GAP: 1.0 ~ 1.1 mm (0.039 ~ 0.043 in)



**CYLINDER AND CYLINDER HEAD****1. Install:**

- Cylinder gasket (New gasket)

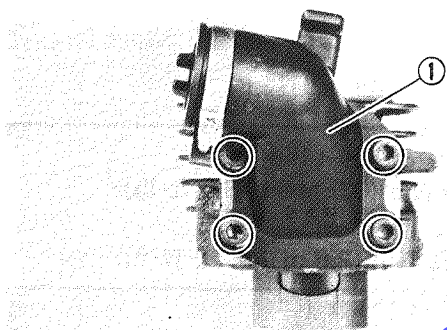
2. Offset the piston ring end gaps as shown.

① 1st ring

② 2nd ring

NOTE:

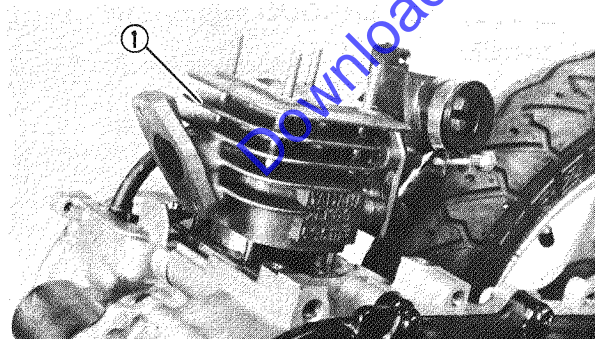
- Be sure to check the manufacturer's marks or numbers stamped on the rings are on the top side of the rings.
- Before installing the cylinder, apply a liberal coating of 2-stroke to the piston rings.

**3. Install:**

- Reed valve
- Carburetor joint ①



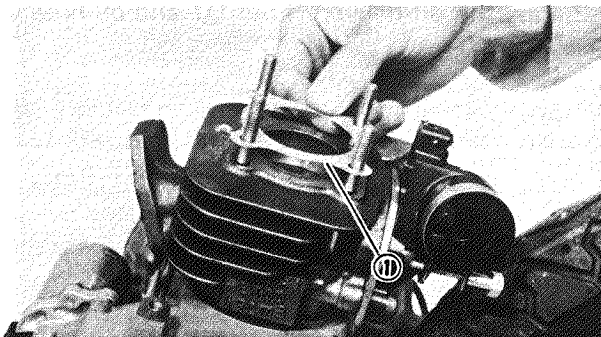
Bolt (Carburetor Joint):
8 Nm (0.8 m·kg, 5.8 ft·lb)

**4. Install:**

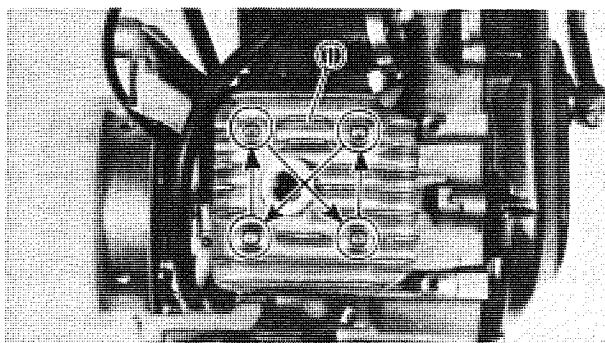
- Cylinder ①

NOTE:

Install the cylinder with one hand while compressing the piston rings with the other hand.

**5. Install:**

- Gasket (Cylinder Head-New) ①



6. Install:
- Cylinder head ①
 - Spark plug

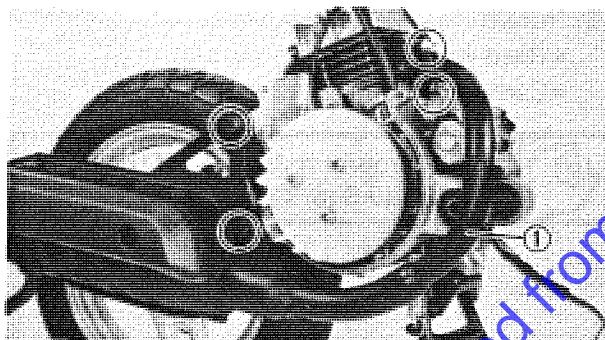
NOTE: _____
Tighten the cylinder head holding nuts in stage, using a crisscross pattern.



Cylinder Head Holding Nuts:
10 Nm (1.0 m·kg, 7.2 ft·lb)

Spark Plug:
20 Nm (2.0 m·kg, 14 ft·lb)

3



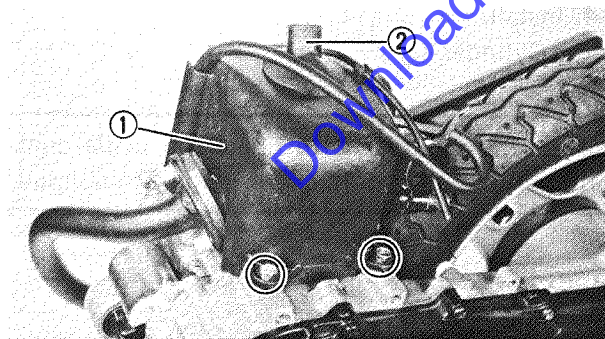
MUFFLER

1. Install:
- Muffler assembly ①



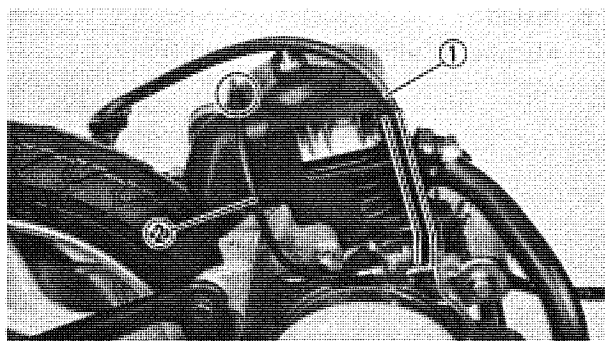
Bolt (Exhaust Pipe):
9 Nm (0.9 m·kg, 6.5 ft·lb)

Bolt (Muffler):
28 Nm (2.8 m·kg, 20 ft·lb)

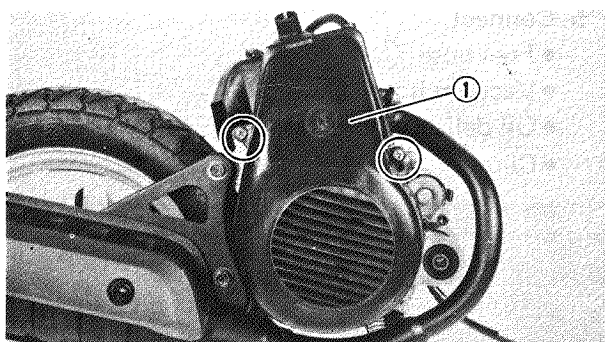


CYLINDER AIR SHROUD

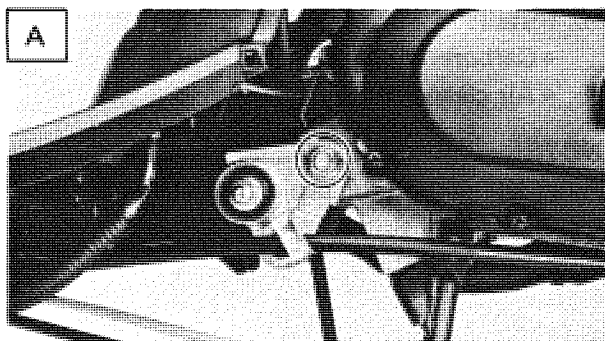
1. Install:
- Cylinder air shroud ①
 - Plug cover ②



2. Pass the oil delivery hose ① and oil hose ② as shown.



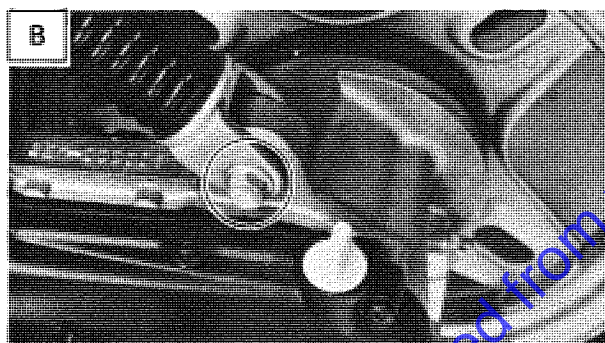
3. Install:
- Fan cover ①



REMounting ENGINE

When remounting the engine, reverse the removal procedure.

1. Install:
- Engine mounting bolts
- These bolts should be temporarily secured.
2. Tighten:
- Engine mounting bolts

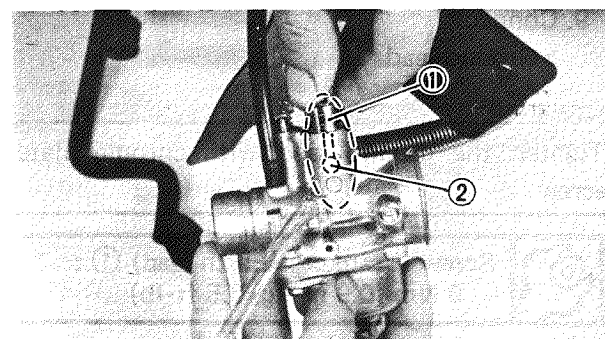


	Bolt A :
	40 Nm (4.0 m·kg, 29 ft·lb)
	Bolt B :
	18 Nm (1.8 m·kg, 13 ft·lb)

3



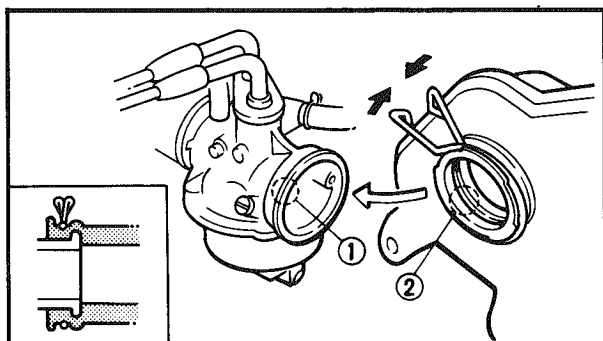
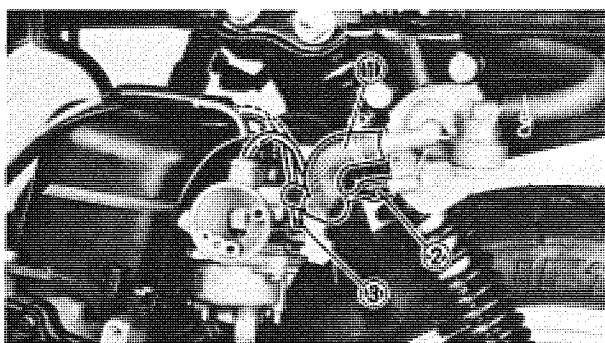
3. Clamp the oil hose ① as shown.



4. Install:
- Carburetor
 - Carburetor top together with throttle valve

NOTE:

When installing the throttle valve into the carburetor, align the groove ① of the throttle valve with the projection ② of the carburetor.



5. Connect:

- Fuel hose ①
- Vacuum hose ②
- Oil delivery hose ③
- Clip

6. Install:

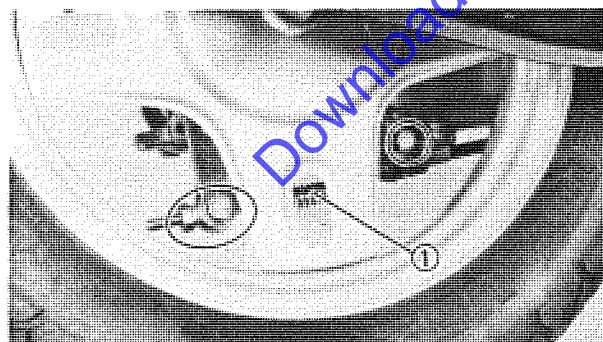
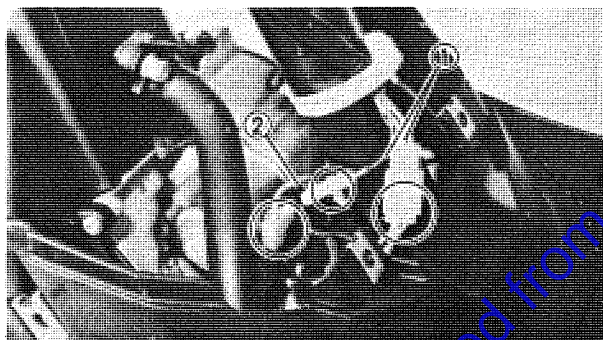
- Carburetor cover
- Air cleaner case

NOTE:

Align the carburetor projection ① with the air cleaner (Joint) slot ②.

7. Connect:

- CDI magneto leads ①
- Starter motor leads ②



8. Connect:

- Rear brake cable ①

9. Connect:

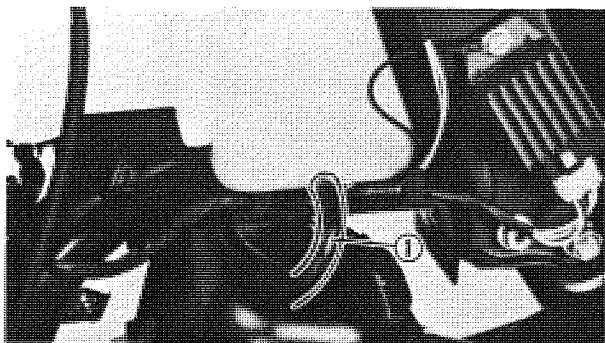
- Ground lead ①

NOTE:

Tighten the ground lead with chrome plated screw.



Screw (Crankcase-Earth lead) ① :
9 Nm (0.9 m·kg, 6.5 ft·lb)



10. Connect:

- Oil hose ①

11. Air bleeding:

- Autolube pump

Refer to "CHAPTER 2 – AUTOLUBE PUMP AIR BLEEDING" section.

12. Connect:

- Battery negative (–) lead

13. Apply:

- Transmission oil

Refer to "CHAPTER 2 – TRANSMISSION OIL REPLACEMENT" section.

14. Adjust:

- Brake lever free play

Refer to "CHAPTER 2 – FRONT BRAKE ADJUSTMENT and REAR BRAKE ADJUSTMENT" section.

- Throttle cable free play

Refer to "THROTTLE CABLE ADJUSTMENT" section.

15. Install:

- Tail cover
- Rear carrier
- Mole
- Seat

Refer to "CHAPTER 2 – TAIL COVER AND MOLE" section.

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CHAPTER 4 CARBURETION

CARBURETOR	4-1
SECTION VIEW	4-2
REMOVAL	4-3
DISASSEMBLY	4-3
INSPECTION	4-4
ASSEMBLY	4-7
INSTALLATION	4-7
FUEL COCK	4-8
INSPECTION	4-8
REED VALVE	4-9
REMOVAL	4-9
INSPECTION	4-9
INSTALLATION	4-10

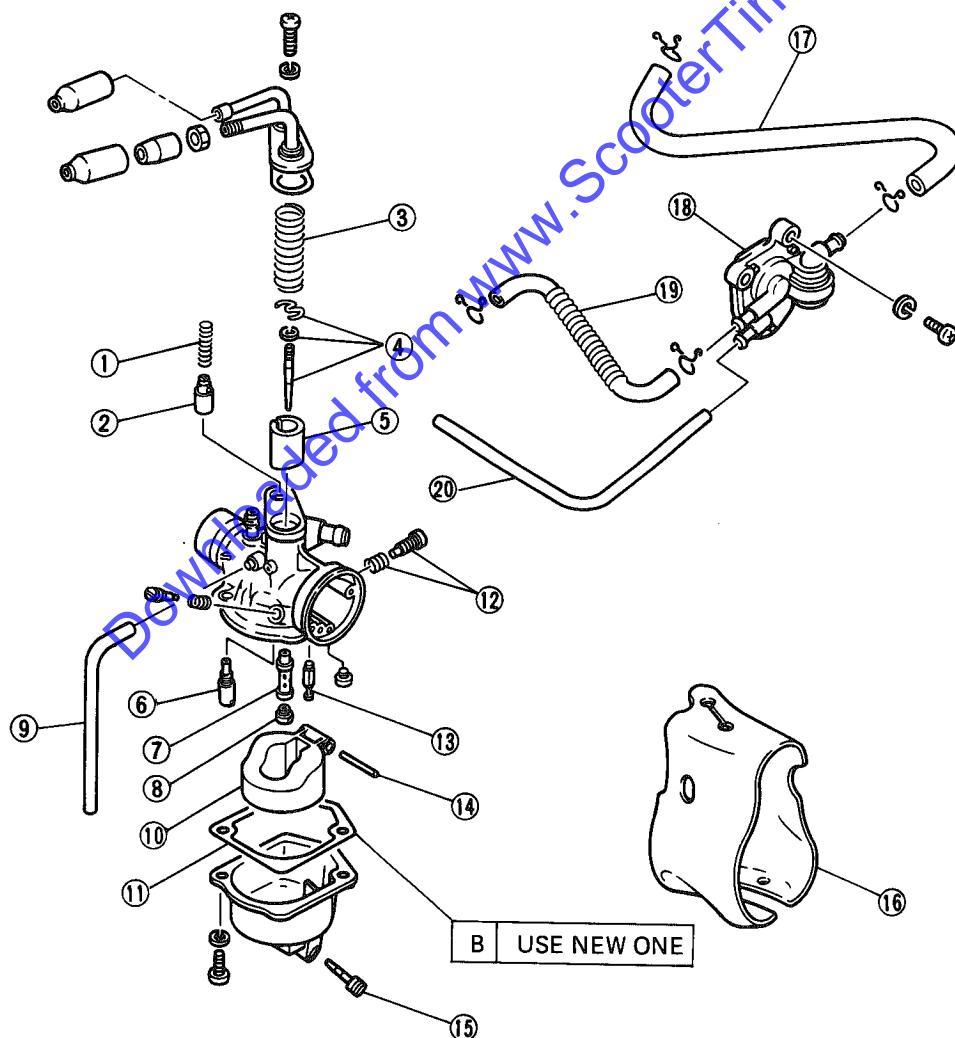
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CARBURETION

CARBURETOR

- ① Starter plunger spring
- ② Starter plunger
- ③ Spring
- ④ Jet needle
- ⑤ Throttle valve
- ⑥ Pilot jet
- ⑦ Main nozzle
- ⑧ Main jet
- ⑨ Air vent hose
- ⑩ Float
- ⑪ Gasket
- ⑫ Throttle stop screw
- ⑬ Needle valve
- ⑭ Pin
- ⑮ Drain screw
- ⑯ Carburetor cover
- ⑰ Fuel hose
- ⑱ Fuel cock
- ⑲ Fuel hose
- ⑳ Vacuum hose

A	SPECIFICATIONS
MAIN JET	#82
JET NEEDLE	3S11-3/5
MAIN AIR JET	φ2.0
PILOT JET	#46
STARTER JET	#46
PILOT AIR JET	φ0.8
VALVE SEAT	φ1.5
FLOAT HEIGHT	15.0 ~ 17.0 (0.59 ~ 0.67 in)
ENGINE IDLE SPEED	1,500 ~ 2,100 r/min



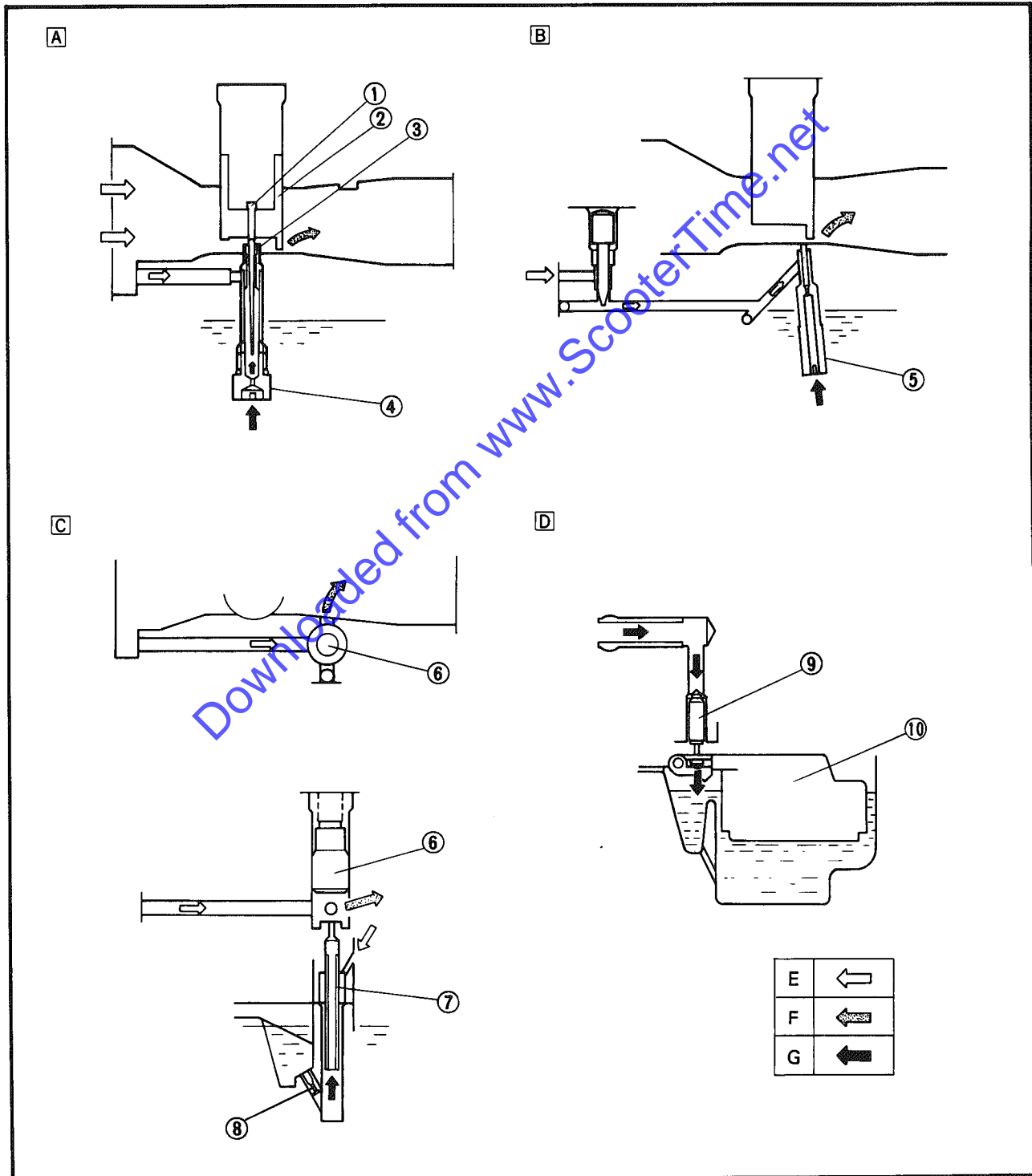


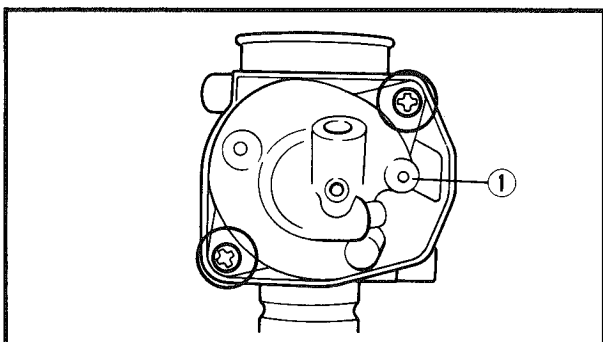
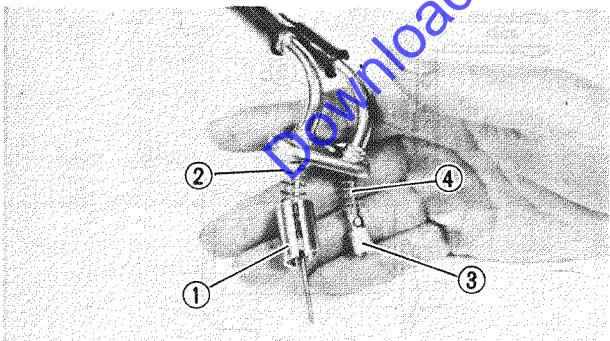
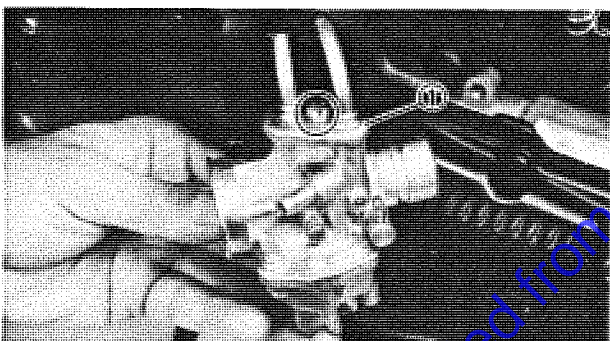
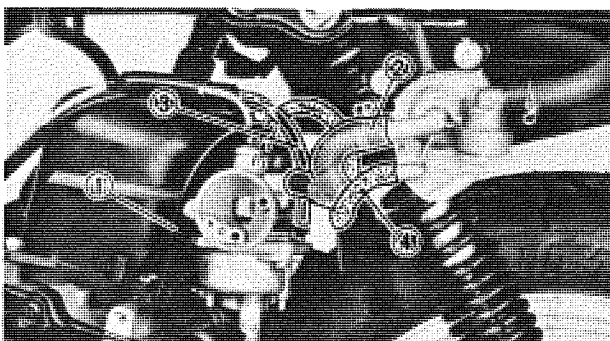
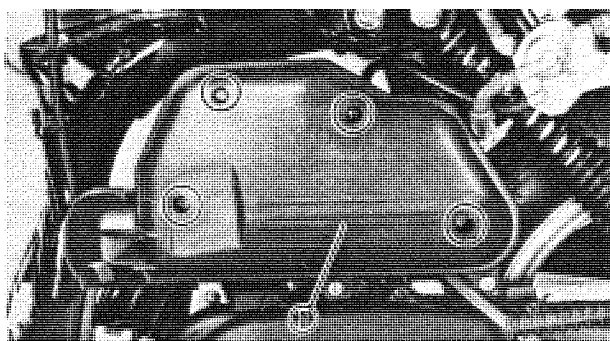
SECTION VIEW

- ① Jet needle
- ② Throttle valve
- ③ Main nozzle
- ④ Main jet
- ⑤ Pilot jet

- ⑥ Starter plunger
- ⑦ Starter needle jet
- ⑧ Starter jet
- ⑨ Needle valve
- ⑩ Float

- A Main metering system
- B Slow metering system
- C Starter metering system
- D Fuel metering system
- E Air
- F Mixture
- G Fuel





REMOVAL

1. Remove:

- Seat
- Tail cover
- Rear carrier

Refer to CHAPTER 2 – TAIL COVER AND MOLE" section.

- Air cleaner case ①

2. Disconnect:

- Carburetor cover ①
- Fuel hose ②
- Oil delivery hose ③
- Vacuum hose ④

3. Remove:

- Carburetor top cover ①
- Carburetor

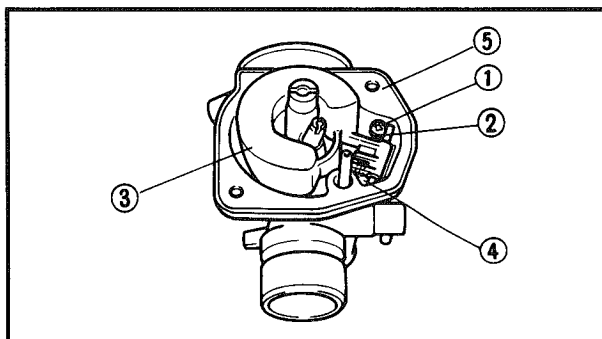
4. Remove:

- Throttle valve ①
- Throttle valve spring ②
- Starter plunger ③
- Plunger spring ④

DISASSEMBLY

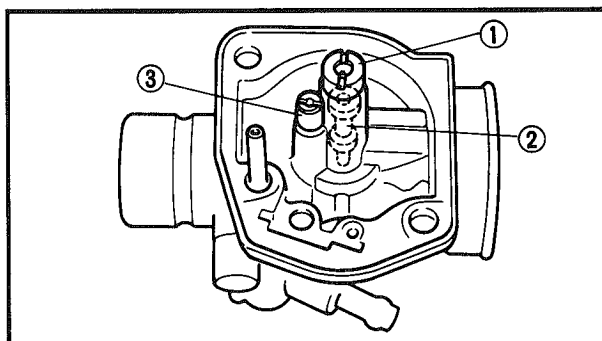
1. Remove:

- Float chamber ①
- Gasket



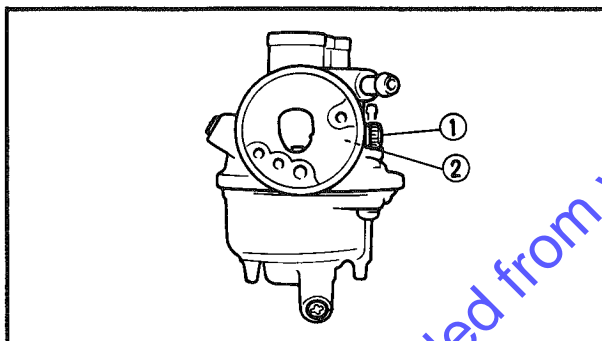
2. Remove:

- Screw (Float pin) ①
- Float pin ②
- Float ③
- Needle valve ④
- Gasket ⑤



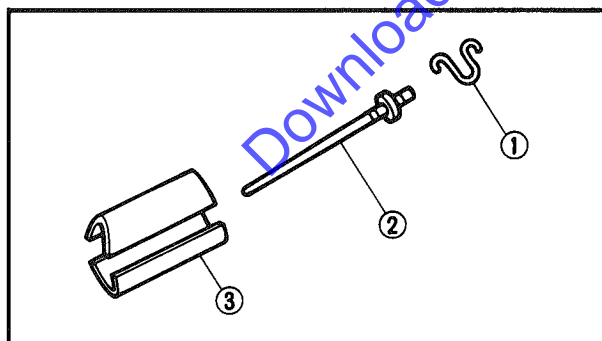
3. Remove:

- Main jet ①
- Main nozzle ②
- Pilot jet ③



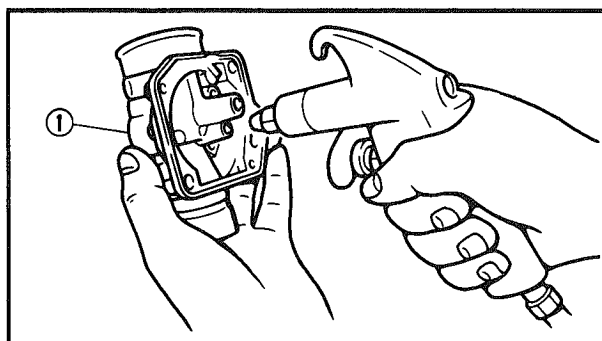
4. Remove:

- Throttle stop screw ①
- Sprint (Throttle stop screw) ②



5. Remove:

- Spring seat ①
- Jet needle assembly ②
- Throttle valve ③



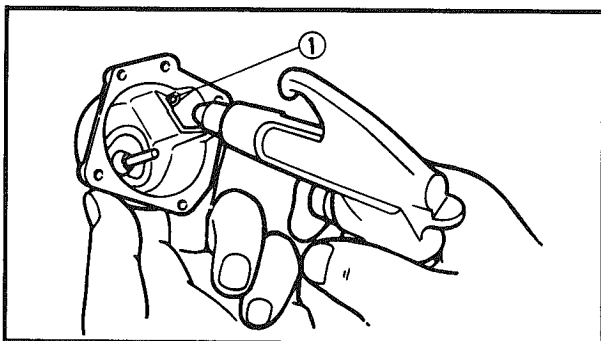
INSPECTION

1. Inspect:

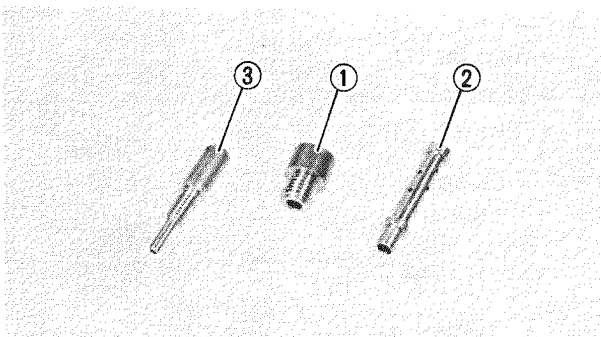
- Carburetor body ①
- Contamination → Clean.

NOTE:

Use a petroleum based solvent for cleaning.
Blow out all passages and jets with compressed air.



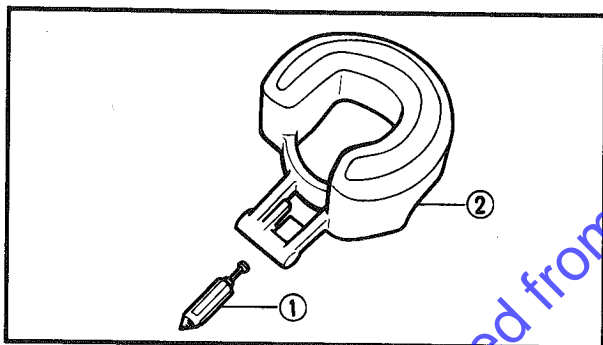
2. Blow out the starter jet ① with compressed air.



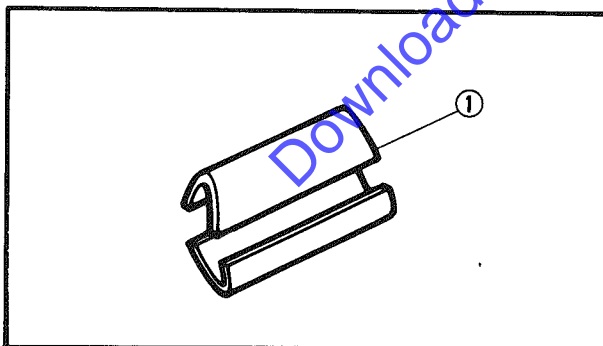
3. Inspect:
 - Main jet ①
 - Main nozzle ②
 - Pilot jet ③
 Contamination → Replace.

NOTE:

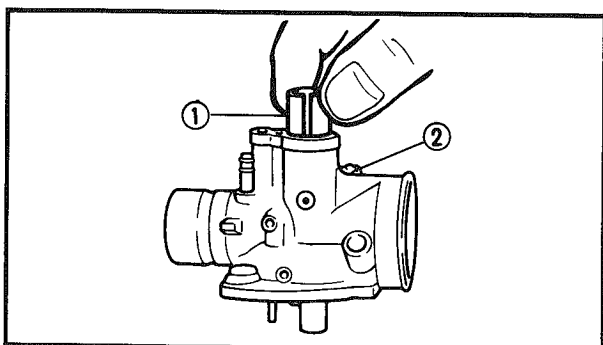
Use a petroleum based solvent for cleaning.
Blow out the jets with compressed air.



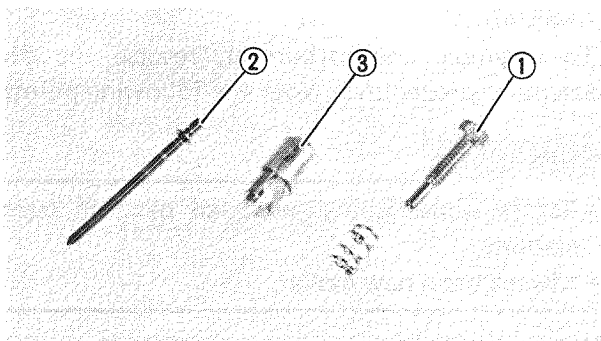
4. Inspect:
 - Needle valve ①
 - Wear/Contamination → Replace.
 - Float ②
 - Damage → Replace.
 - Gasket
 - Damage → Replace.



5. Inspect:
 - Throttle valve ①
 - Wear/Damage → Replace.

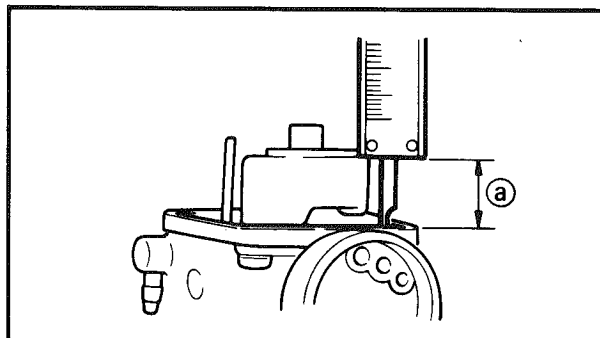


6. Check
 - Free movement
 - Stick → Replace.
 Insert the throttle valve ① into the carburetor body ②, and check for free movement.



7. Inspect:

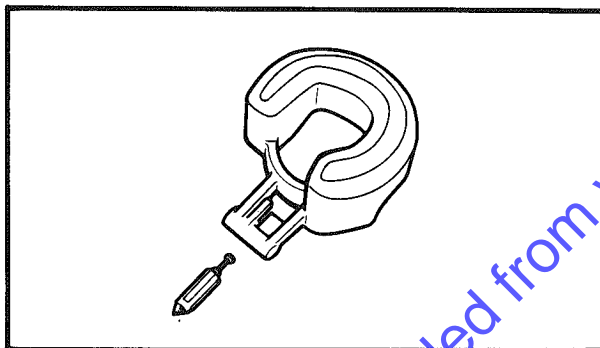
- Throttle stop screw ①
- Jet needle ②
- Starter plunger ③



8. Measure:

- Float height ①
- Out of specification → Inspect needle valve, float and valve seat.

Float Height ①:
15.0 ~ 17.0 mm (0.59 ~ 0.67 in)

**Float height measurement steps:**

- Install the needle valve, float and float pin to the carburetor body.
- 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 needle valve, and valve seat.
- If either is worn, replace them both.
- If both are fine, replace the float.
- Recheck the float height.

NOTE:

The float height is properly adjusted at the Yamaha factory. Never attempt to adjust it.

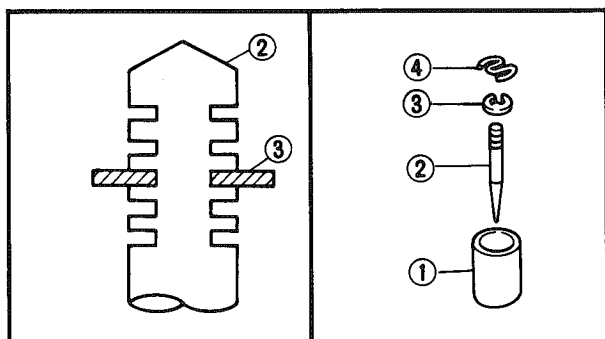


ASSEMBLY

To assemble the carburetor, reverse the disassembly procedures. Note the following points.

CAUTION:

- Before reassembling, wash all parts in clean gasoline.
- Always use a new gasket.



1. Install:

- Throttle valve ①
- Jet needle ②
- Clip ③
- Spring seat ④

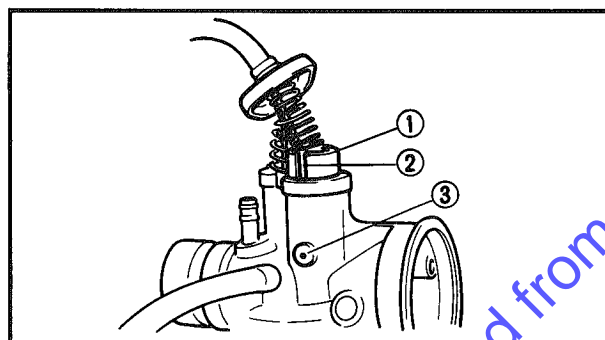
Jet Needle Clip Position:
3/5

2. Install:

- Throttle valve ①

NOTE:

Align the groove ② of the throttle valve with the projection ③ of the carburetor body.

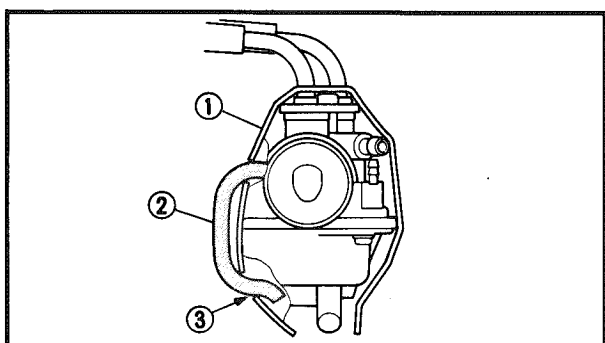
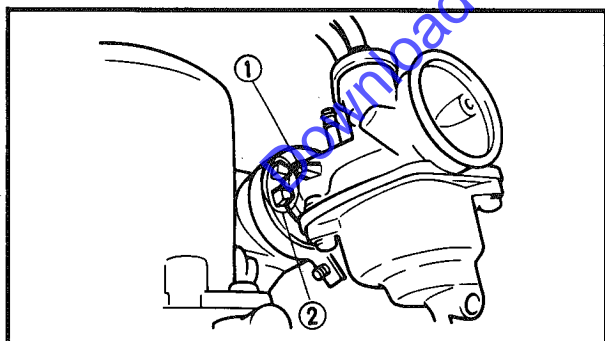


3. Install:

- Carburetor assembly

NOTE:

Align the projection ① with the projections ②.



INSTALLATION

To assemble the carburetor, reverse the removal procedures. Note the following points.

1. Install:

- Carburetor cover ①
- Air vent hose ②

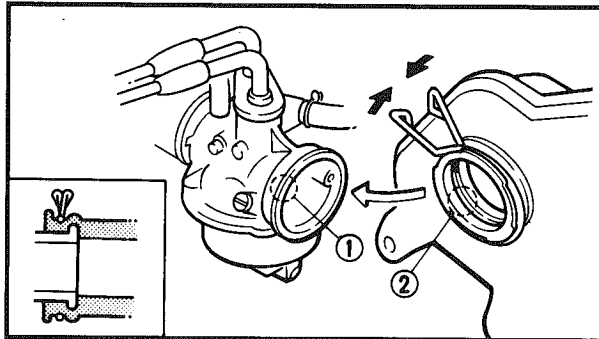
Pass the air vent hose through the carburetor cover hole ③.



2. Adjust:

- Throttle cable free play

Refer to "CHAPTER 2 — THROTTLE CABLE FREE PLAY" section.



3. Install:

- Air cleaner box

NOTE:

Align the carburetor projection ① with the air cleaner box (joint) slot ②.

FUEL COCK**INSPECTION**

1. Stop the engine.

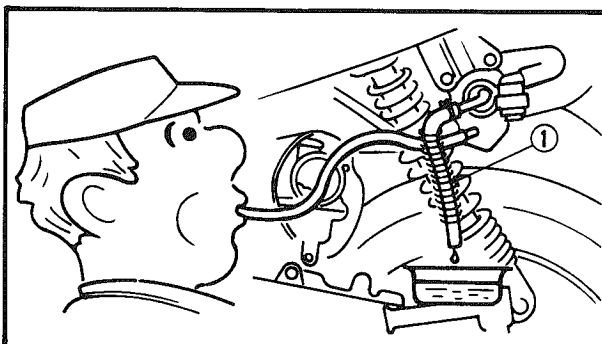
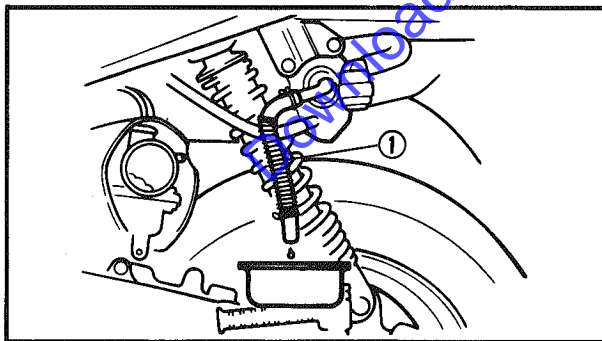
2. Remove:

- Mole (Tail cover)

Refer to "CHAPTER 2 — TAIL COVER AND MOLE" section.

3. Inspect:

- Fuel cock

**Fuel cock inspection steps:**

- Disconnect the fuel hose ①.
- Place the receptacle under the fuel hose end.
- If fuel steps flowing out in a few seconds, The fuel cock is in good condition. If not, clean or replace the fuel cock.
- Disconnect the vacuum hose and breath in the vacuum hose with the mouth etc. for vacuum.
- If fuel flows out of the fuel hose under vacuum and stops under non-vacuum, the fuel cock is in good condition. If not, clean or replace the vacuum hose, fuel hose and fuel cock.



REED VALVE

REMOVAL

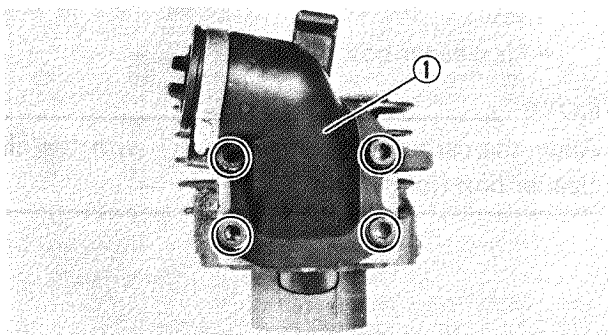
1. Remove:

- Seat
- Tail cover
- Rear carrier
- Air cleaner case
- Carburetor

Refer to "CARBURETOR – REMOVAL" section.

2. Remove:

- Carburetor joint ①
- Reed valve assembly



INSPECTION

1. Inspect:

- Carburetor joint
Damage/Cracks → Replace.
- Reed valve
Fatigue/Cracks → Replace.

Inspection steps:

- Visually inspect the reed valve.

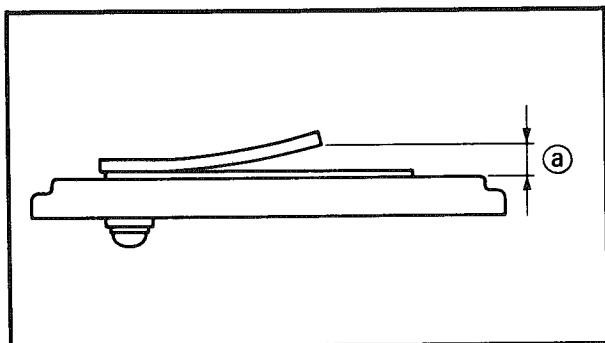
NOTE:

Correct reed valve should fit flush or nearly flush against valve seat.

- If in doubt as to sealing ability, apply suction to carburetor side of assembly.
- Leakage should be slight to moderate.

2. Measure:

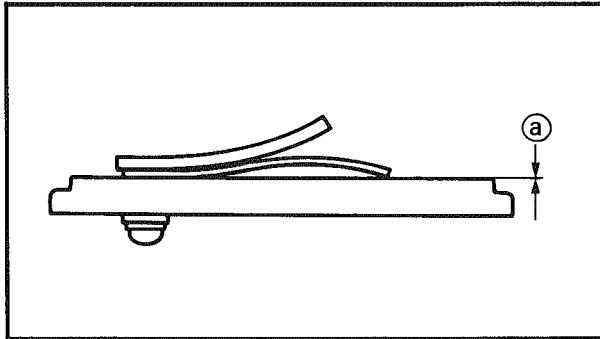
- Valve stopper height ② :
Out of specification → Adjust stopper/Replace valve stopper.



Valve Stopper Height ② :
3.0 ~ 3.4 mm (0.12 ~ 0.13 in)


NOTE:

If it is 0.4 mm (0.016 in) more or less than specified, replace the valve stopper.


3. Measure:

- Reed valve clearance (a)

Out of specification → Replace reed valve.



Reed Valve Clearance (a) :
Less than 0.2 mm (0.008 in)

INSTALLATION

When installing the reed valve assembly, reverse the removal procedure. Note the following points.

1. Install:

- Gasket (New)

2. Tighten:

- Reed valve securing bolts



Bolt (Reed Valve):
9 Nm (0.9 m·kg, 6.5 ft·lb)

NOTE:

Tighten each bolt gradually to avoid warping.

Downloaded from www.ScooterTime.net

CHAPTER 5

CHASSIS

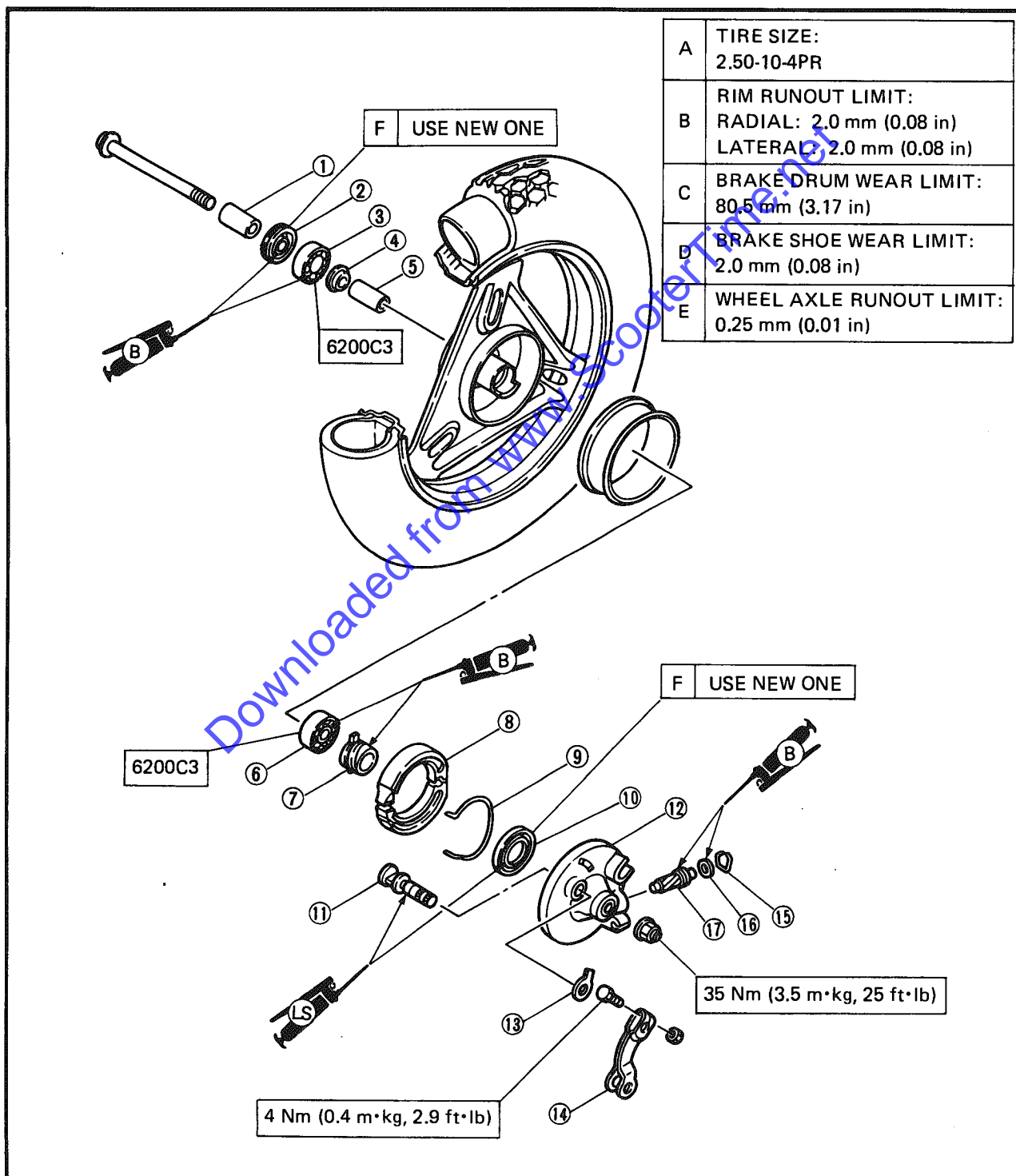
FRONT WHEEL	5-1
REMOVAL	5-2
INSPECTION	5-2
ASSEMBLY	5-4
INSTALLATION	5-6
 REAR WHEEL	 5-8
REMOVAL	5-9
INSPECTION	5-9
ASSEMBLY	5-10
INSTALLATION	5-11
 FRONT FORK AND STEERING	 5-13
REMOVAL	5-14
DISASSEMBLY	5-16
INSPECTION	5-16
ASSEMBLY AND INSTALLATION	5-17
 REAR SHOCK ABSORBER	 5-21
REMOVAL	5-22
INSPECTION	5-22
INSTALLATION	5-22

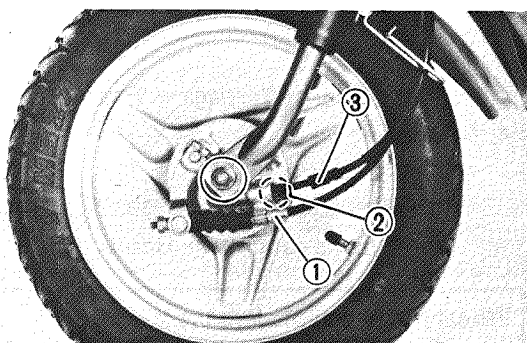
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CHASSIS

FRONT WHEEL

- | | | |
|--------------------------|--------------------|---------------------------|
| ① Collar | ⑧ Brake shoe | ⑮ Stop ring |
| ② Dust seal | ⑨ Return spring | ⑯ Plain washer |
| ③ Bearing | ⑩ Dust seal | ⑰ Speedometer driven gear |
| ④ Spacer (Flange) | ⑪ Brake cam shaft | |
| ⑤ Spacer | ⑫ Brake shoe plate | |
| ⑥ Bearing | ⑬ Wear indicator | |
| ⑦ Speedometer drive gear | ⑭ Cam shaft lever | |

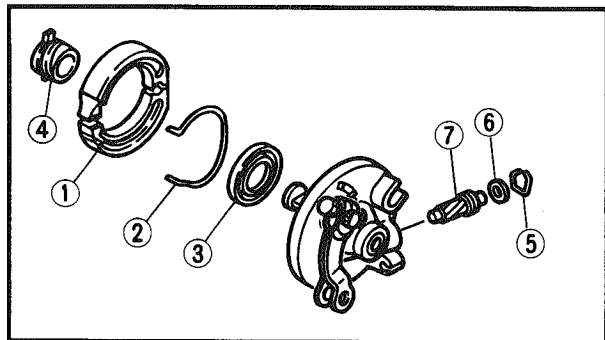


**REMOVAL**

1. Place the scooter on its centerstand.

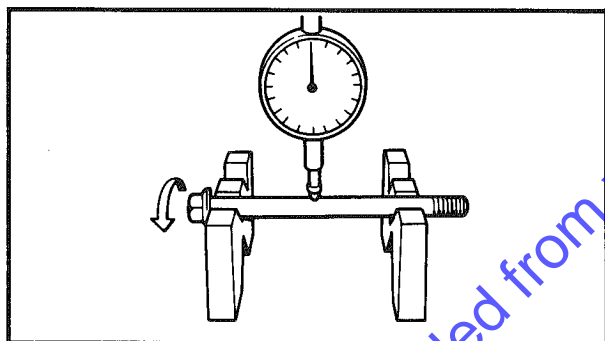
2. Remove:

- Brake cable ①
- Stop ring ②
- Speedometer cable ③
- Nut (Front axle)
- Front wheel
- Brake shoe plate



3. Remove:

- Brake shoe ①
- Return spring ②
- Oil seal ③
- Speedometer drive gear ④
- Stop ring ⑤
- Plain washer ⑥
- Speedometer driven gear ⑦

**INSPECTION**

1. Measure:

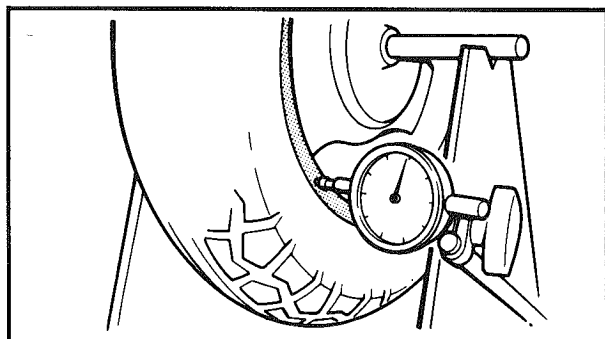
- Wheel axle runout
- Out of specification → Replace.



Wheel Axle Runout Limit:
0.25 mm (0.01 in)

WARNING:

Do not attempt to straighten a bent axle.

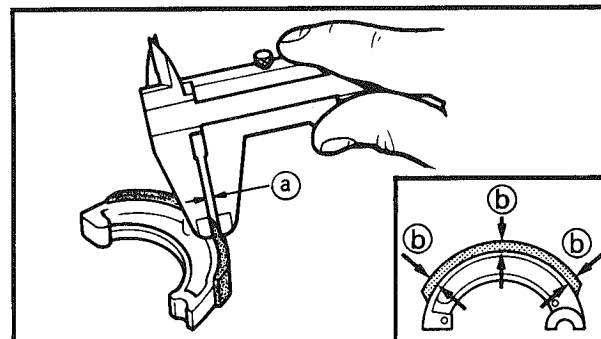
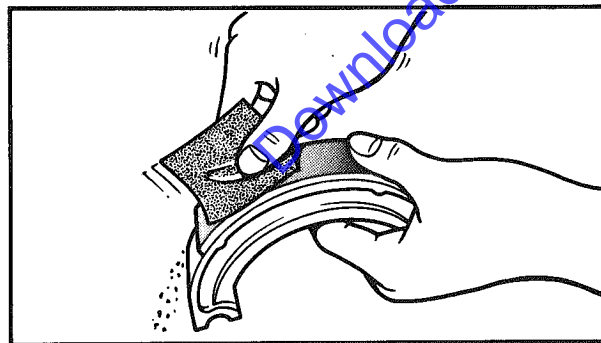
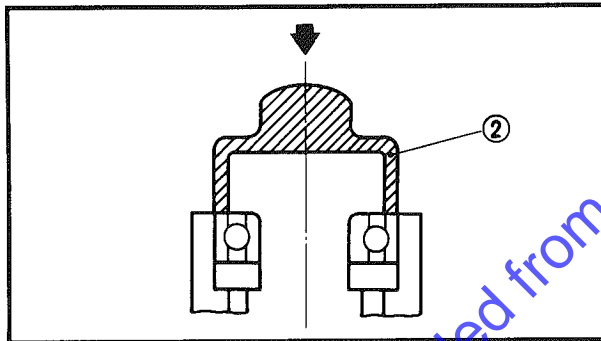
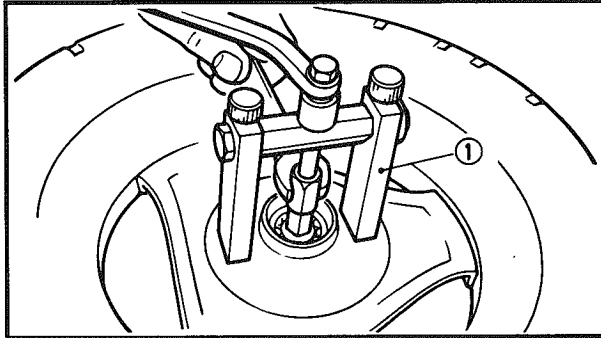
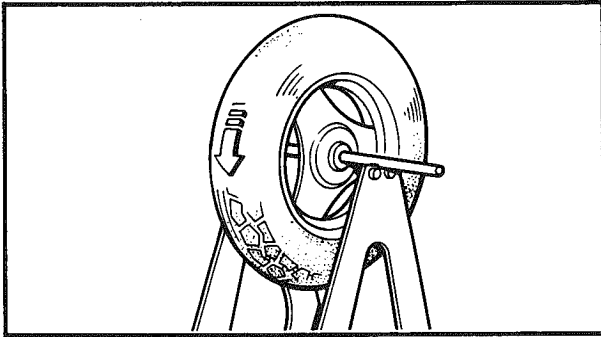


2. Measure:

- Wheel runout
- Out of specification → Replace.



Runout Limit:
Radial: 2.0 mm (0.08 in)
Lateral: 2.0 mm (0.08 in)



3. Inspect:

- Wheel
Cracks/Bends/Warpage → Replace.

4. Inspect:

- Wheel bearings
Bearings allow play in the wheel hub or wheel turns roughly → Replace.

Wheel bearing replacement steps:

- Remove the dust seal.
- Clean the out side of the wheel hub.
- Remove the bearing using a general bearing puller ① .
- Install the new bearing.

NOTE:

Use a socket ② that matches the outside diameter of the race of the bearing.

CAUTION:

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

- Install the dust seal.

5. Inspect:

- Brake shoes
Glazed parts → Sand with coarse sandpaper.

NOTE:

After using the sand paper, clean of the polished particles with cloth.

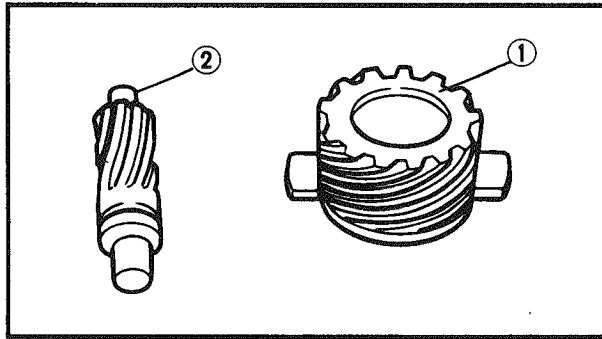
6. Measure:

- Brake shoe thickness (a)
Out of specification → Replace.



Brake Shoe Thickness:
Standard: 3.5 mm (0.14 in)
Limit: 2.0 mm (0.08 in)

(b) Measuring point



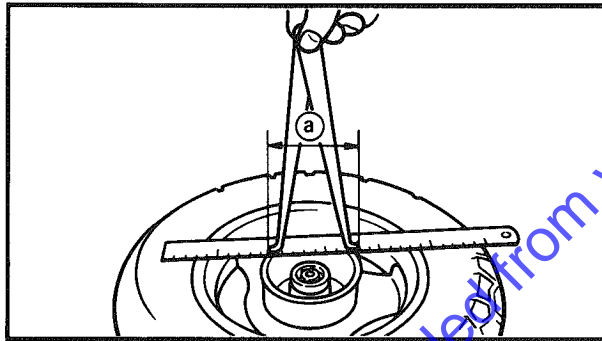
7. Inspect:

- Speedometer drive gear ①
 - Speedometer driven gear ②
- Wear/Damage → Replace.

8. Inspect:


- Brake drum inner surface
- Oil/Scratches → Remove.

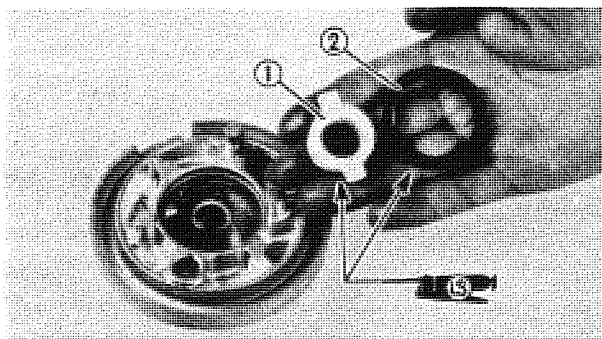
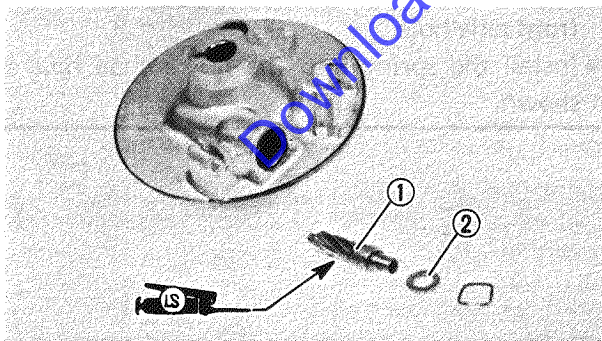
Oil	Use a rag soaked in lacquer thinner or solvent.
Scratches	Use an emery cloth (Lightly and evenly polishing).



9. Measure:

- Brake drum inside diameter (a)
- Out of specification → Replace.

	Brake Drum Wear Limit: 80.5 mm (3.17 in)
---	--



ASSEMBLY

When assembling the brake shoe plate, reverse the removal procedure.

Note the following points.

1. Apply:

- Lithium-soap base grease
- To speedometer driven gear ① .

2. Apply:

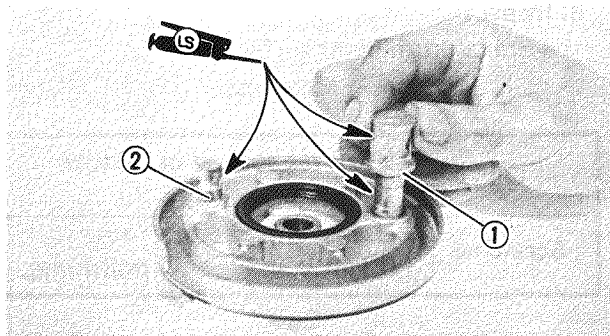
- Lithium-soap base grease
- To speedometer drive gear ① and dust seal ② .

3. Install:

- Dust seal (New)

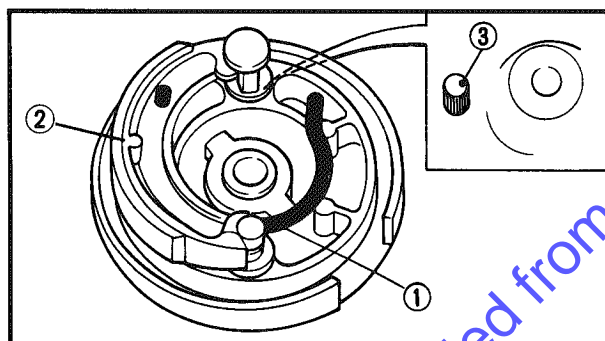
NOTE:

Install the dust seal with the manufacturer's marks or numbers facing outward.



4. Apply:

- Lithium-soap base grease
- To the brake cam shaft ① and pivot pin ② .



5. Install:

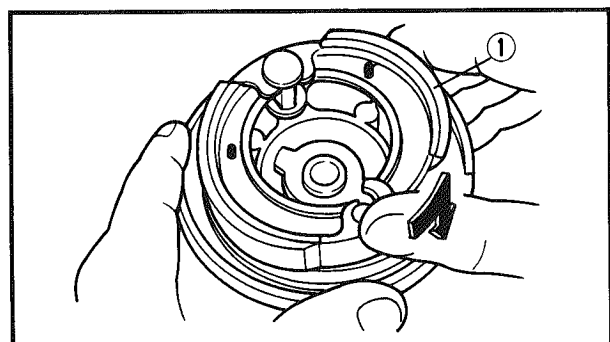
- Return spring ①
- Brake shoe (Left) ②

CAUTION:

When installing the brake shoe, take care not to apply grease to the brake shoe.

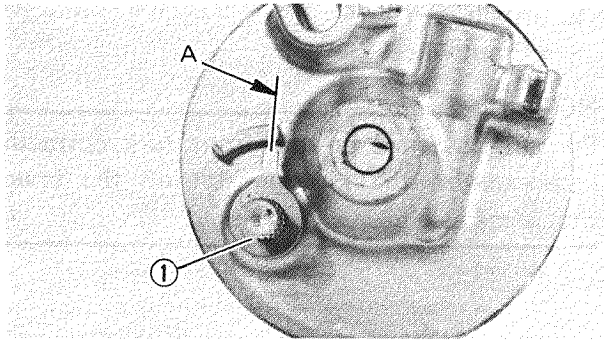
NOTE:

- Install with the camshaft mark ③ toward the front axle hole.
- Install the spring into the brake shoe hole as shown.



6. Install:

- Brake shoe ①

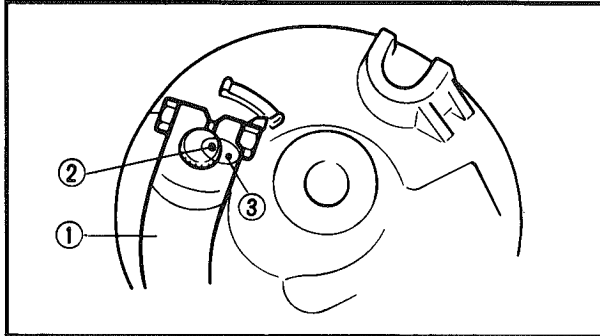


7. Install:

- Brake cam shaft
- Wear indicator ①

NOTE:

Align the wear indicator projection with "A" line as shown.




8. Install:

- Cam shaft lever ①

NOTE:

Align the cam shaft mark ② with the lever mark ③ as shown.

	Bolt (Cam Shaft Lever) ① : 4 Nm (0.4 m·kg, 2.9 ft·lb)
---	---

9. Check:

- Brake shoe operation
- Unsmoothly operation → Repair.

INSTALLATION

When installing the front wheel, reverse the removal procedure.

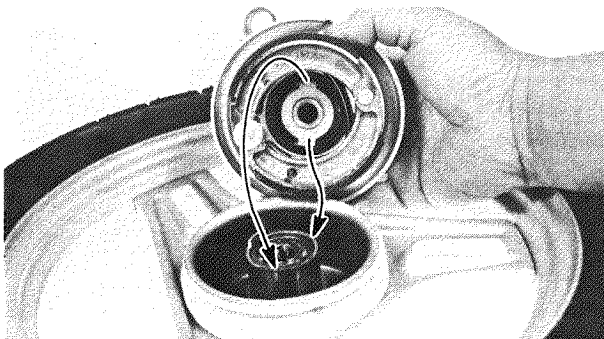
Note the following points.

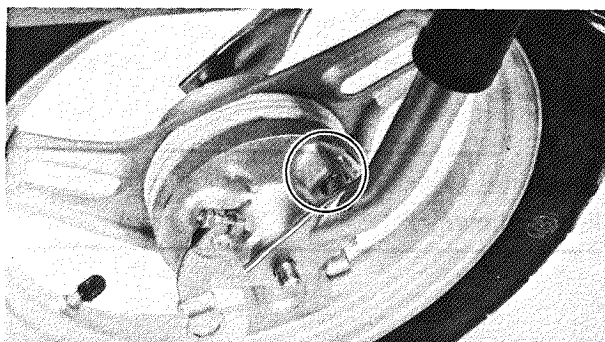
1. Install:

- Brake shoe plate

NOTE:

Make sure the projections inside the gear unit are meshed with the flats in the wheel hub.

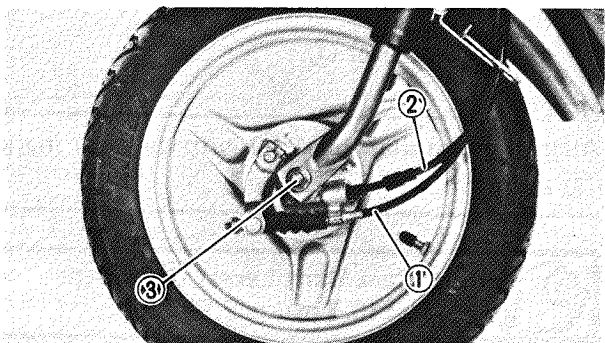


**2. Install:**

- Front wheel

NOTE:

Be sure the boss on the front fork correctly engages with the locating slot on the brake shoe plate assembly.

**3. Install:**

- Front brake cable (1)
- Speedometer cable (2)
- Nut (Front wheel axle) (3)



Nut (Front Wheel Axle):
35 Nm (3.5 m·kg, 25 ft·lb)

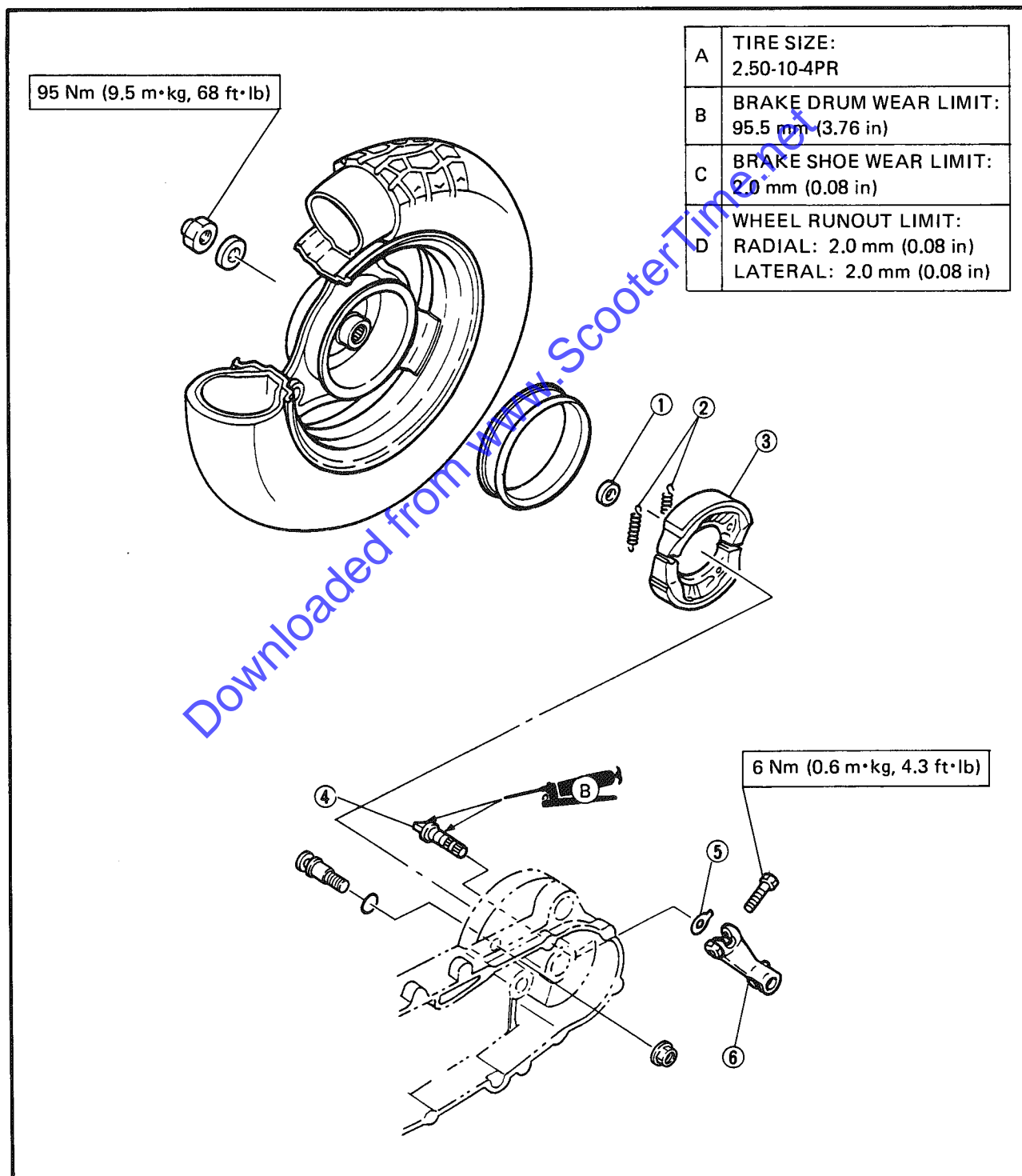
4. Adjust

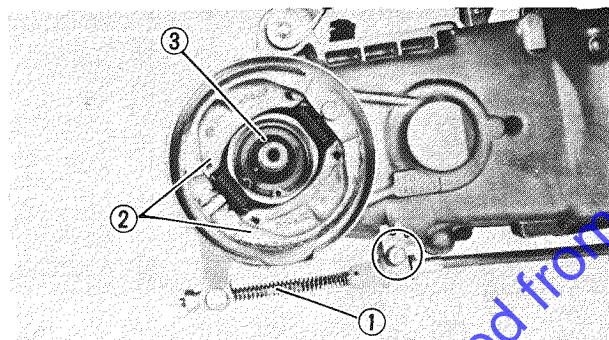
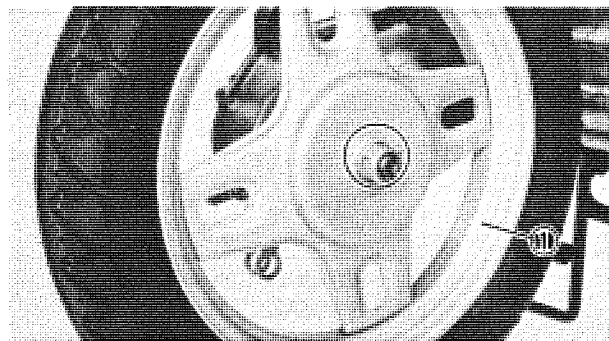
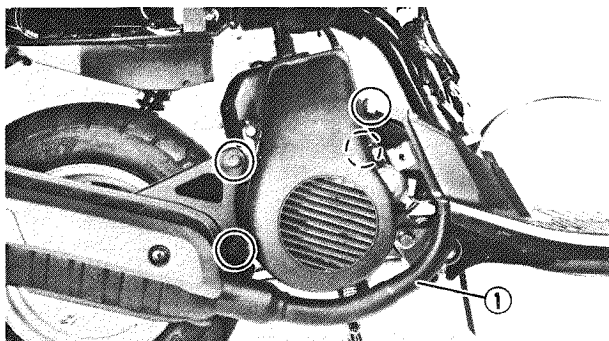
- Front brake lever free play

Refer to "CHAPTER 2 – FRONT BRAKE ADJUSTMENT" section.

REAR WHEEL

- ① Plain washer
- ② Spring
- ③ Brake shoes
- ④ Brake cam shaft
- ⑤ Wear indicator
- ⑥ Cam shaft lever



**REMOVAL**

1. Remove:
 - Mole (Right)
Refer to "CHAPTER 2 – TAIL COVER AND MOLE" section.
2. Remove:
 - Muffler ①
3. Remove:
 - Rear wheel ①

NOTE:

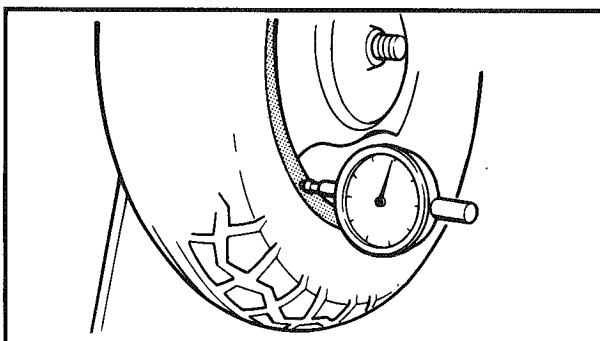
When loosening the rear wheel nut, operate the rear brake.

4. Remove:
 - Rear brake cable ①
 - Brake shoe ②
 - Plain washer ③

INSPECTION

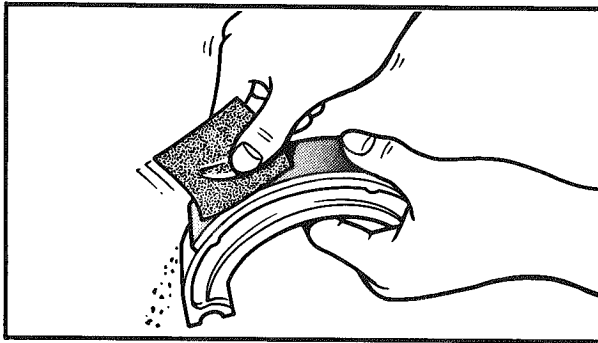
1. Inspect:
 - Wheel
Cracks/Bends/Warpage → Replace.

2. Measure:
 - Wheel runout
Out of specification → Replace.

**Runout Limit:**

Radial: 2.0 mm (0.08 in)

Lateral: 2.0 mm (0.08 in)



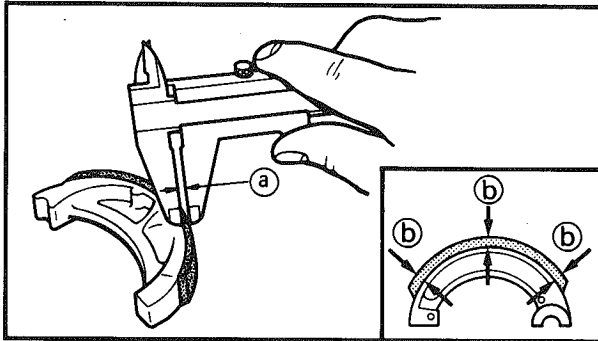
3. Inspect:

- Brake shoes

Glazed parts → Sand with coarse sandpaper.

NOTE:

After using the sand paper, clean of the polished particles with cloth.



4. Measure:

- Brake shoe thickness (a)

Out of specification → Replace.



Brake Shoe Thickness:

Standard: 3.5 mm (0.14 in)

Limit: 2.0 mm (0.08 in)

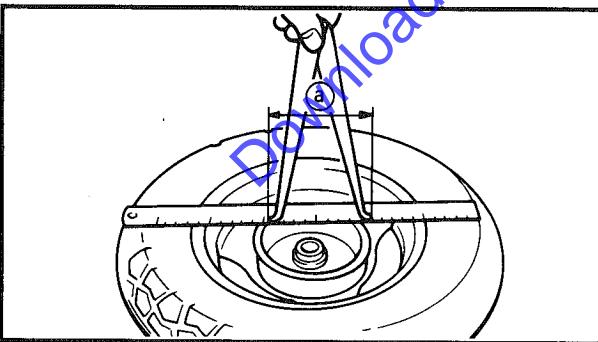
(b) Measuring point

5. Inspect:

- Brake drum inner surface

Oil/Scratches → Remove.

Oil	Use a rag soaked in lacquer thinner or solvent.
Scratches	Use an emery cloth (lightly and evenly polishing).



6. Measure:

- Brake drum inside diameter (a)

Out of specification → Replace.



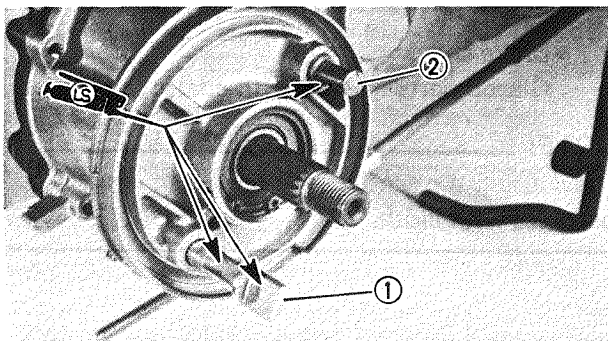
Brake Drum Wear Limit:

95.5 mm (3.76 in)

ASSEMBLY

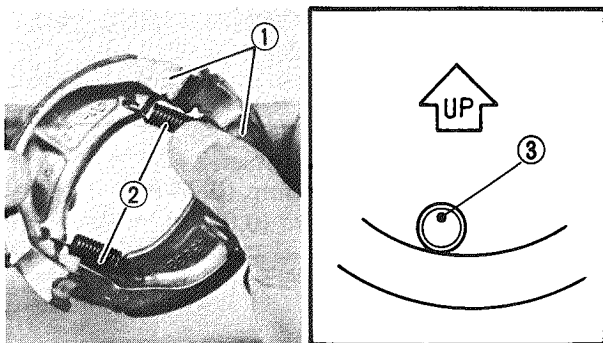
When assembling the brake shoe plate, reverse the removal procedure.

Note the following points.



1. Apply:

- Lithium-soap base grease
To the brake cam shaft ① and pivot pin ② .



2. Install:

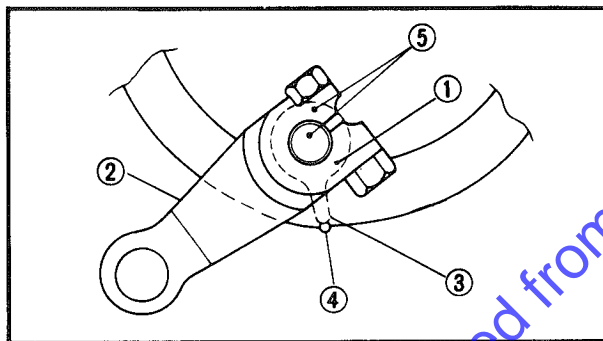
- Brake shoe ①
- Spring ②

NOTE:

Install with the punched mark ③ upward.

CAUTION:

When installing the spring and brake shoe, take care not to damage the spring.



3. Install:

- Wear indicator ①
- Cam shaft lever ②

NOTE:

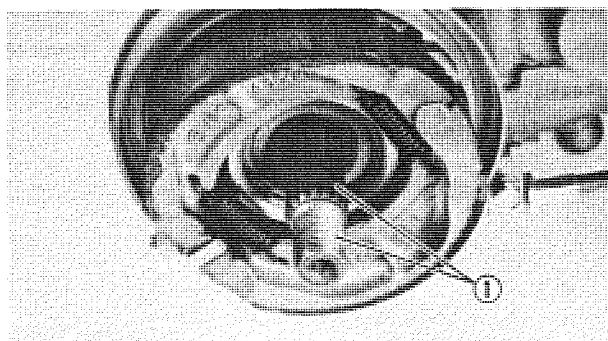
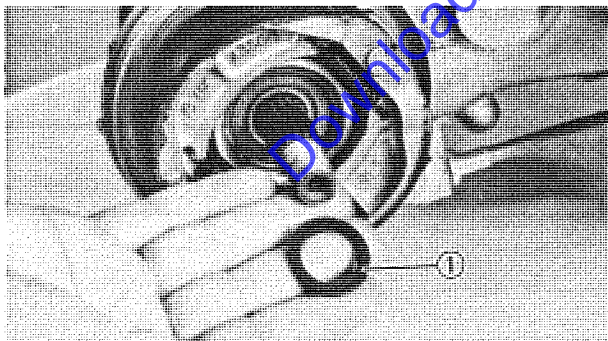
- Align the wear indicator projection ③ with the camshaft slot ④ .
- Align the punch marks ⑤ .



Bolt (Cam Shaft Lever):
6 Nm (0.6 m·kg, 4.3 ft·lb)

4. Install:

- Plain washer ①
- Brake cable



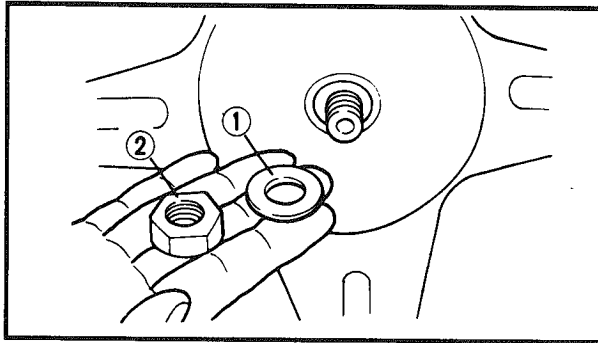
INSTALLATION

When installing the rear wheel, reverse the removal procedure.

Note the following points.

1. Clean:

- Rear wheel axle ①



2. Install:

- Rear wheel
- Plain washer ①
- Nut ②

NOTE:

Make sure the splines on the wheel hub fit the rear drive axle.



Nut (Rear Wheel Axle):
95 nm (9.5 m·kg, 68 ft·lb)

4. Install:

- Muffler



Bolt (Exhaust Pipe Side):
9 Nm (0.9 m·kg, 6.5 ft·lb)
Bolt (Muffler Side):
28 Nm (2.8 m·kg, 20 ft·lb)

5. Install:

- Mole (Right)

Refer to "CHAPTER 2 – TAIL COVER AND MOLE" section.

6. Adjust:

- Rear brake lever free play

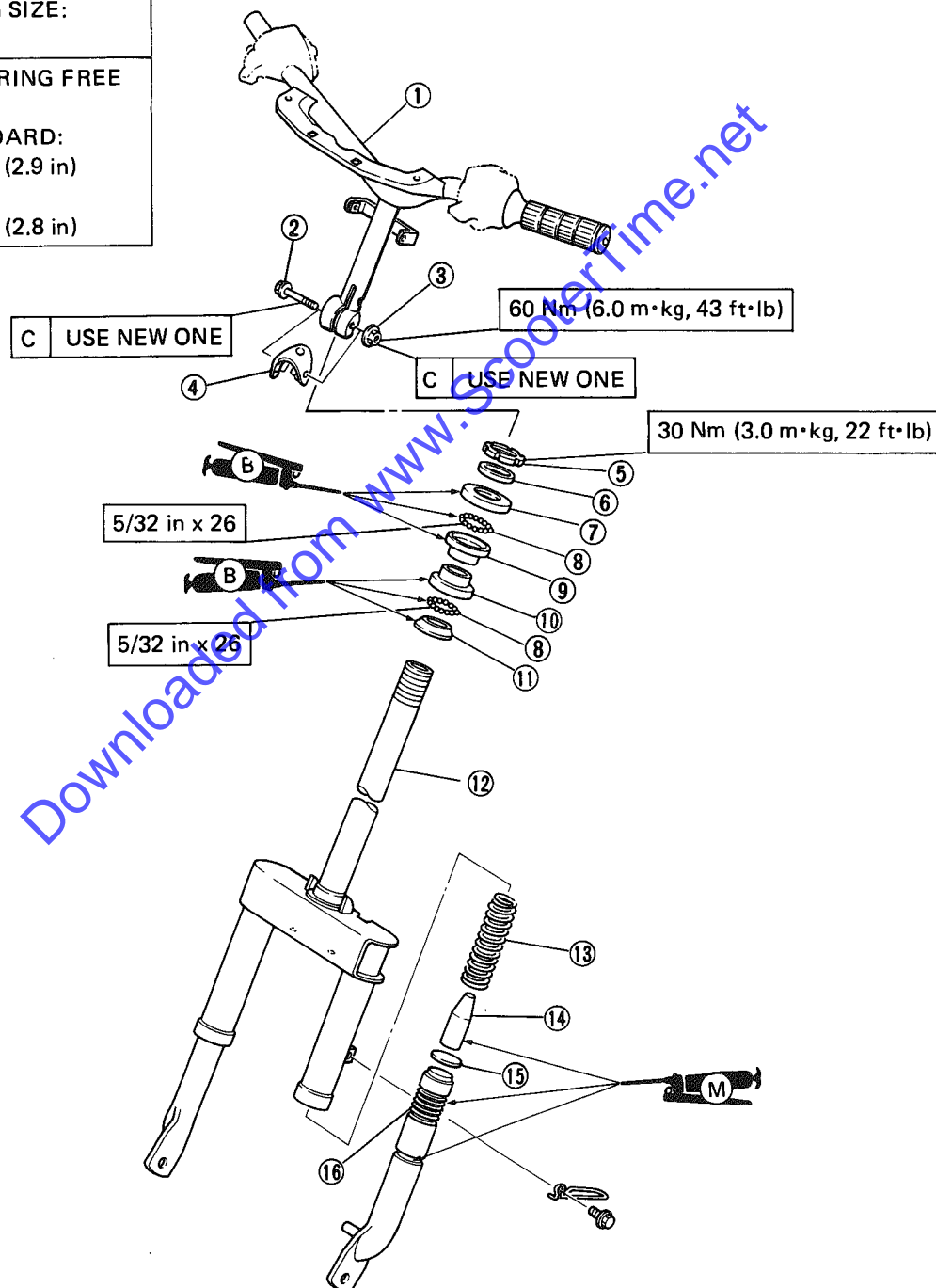
Refer to "CHAPTER 2 – REAR BRAKE ADJUSTMENT" section.



FRONT FORK AND STEERING

- | | |
|-------------------------------|-------------------------------|
| ① Handlebar | ⑩ Lower bearing race (Top) |
| ② Flange bolt | ⑪ Lower bearing race (Bottom) |
| ③ Frange nut | ⑫ Steering column |
| ④ Damper | ⑬ Front fork spring |
| ⑤ Ring nut | ⑭ Rubber (Left side only) |
| ⑥ Washer | ⑮ Spring seat |
| ⑦ Upper bearing race (Top) | ⑯ Inner tube (Right and left) |
| ⑧ Bearings | |
| ⑨ Upper bearing race (Bottom) | |

A	BEARING SIZE: 5/32 in
B	FORK SPRING FREE LENGTH: STANDARD: 75 mm (2.9 in) LIMIT: 71 mm (2.8 in)



REMOVAL

1. Place the scooter on the centerstand.

WARNING:

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

2. Remove:

- Front wheel

Refer to "FRONT WHEEL – REMOVAL" section.

3. Remove:

- Leg shield
- Front panel

Refer to "CHAPTER 2 – LEG SHIELD, FRONT PANEL AND FOOTREST BOARD" section.

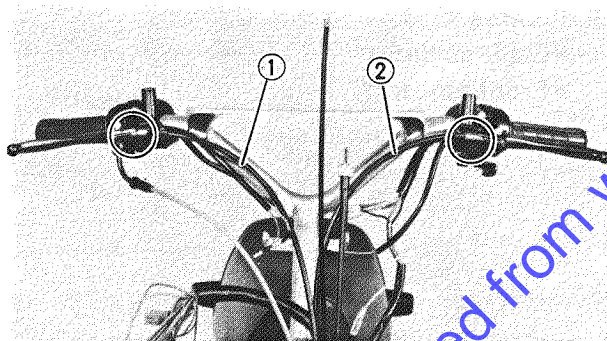
4. Remove:

- Handlebar cover

Refer to "CHAPTER 2 – HANDLEBAR COVER" section.

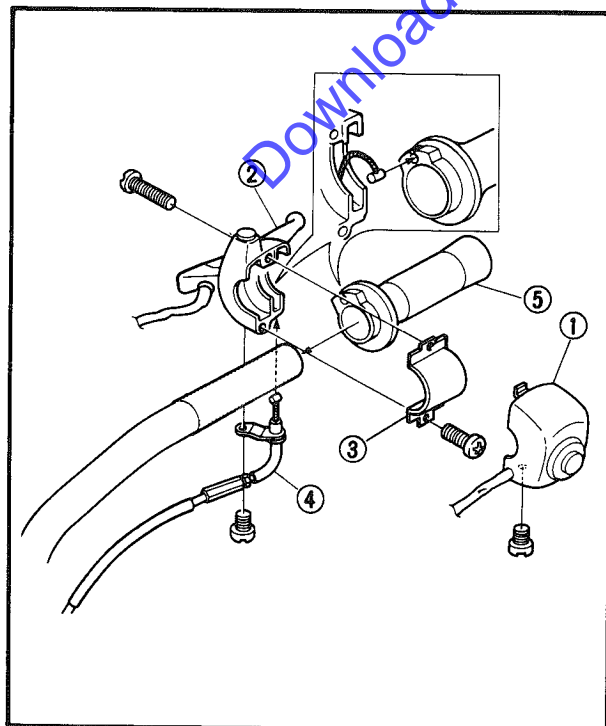
5. Remove:

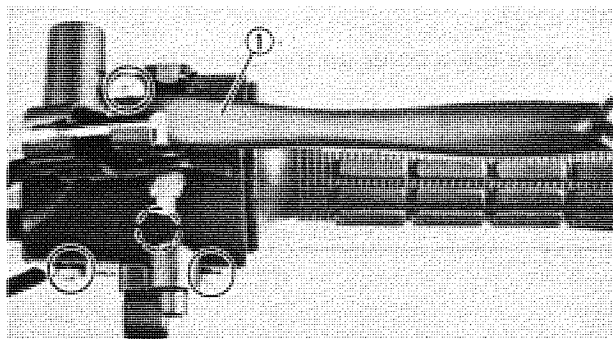
- Front brake cable ①
- Rear brake cable ②



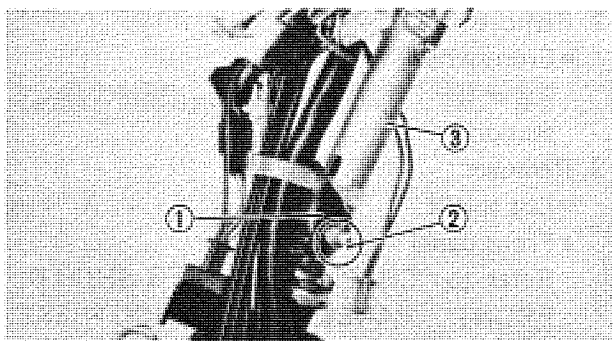
6. Remove:

- Handlebar switch (Right) ①
- Front brake lever assembly ②
- Bracket ③
- Throttle cable ④
- Throttle grip ⑤

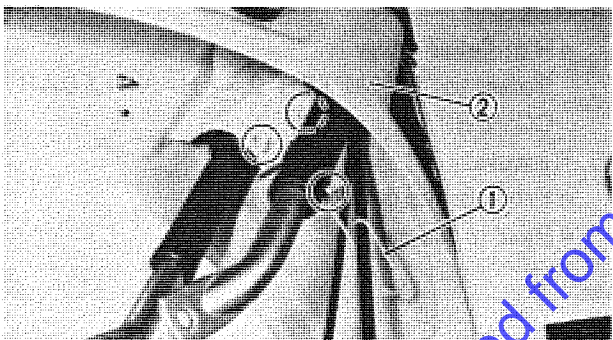




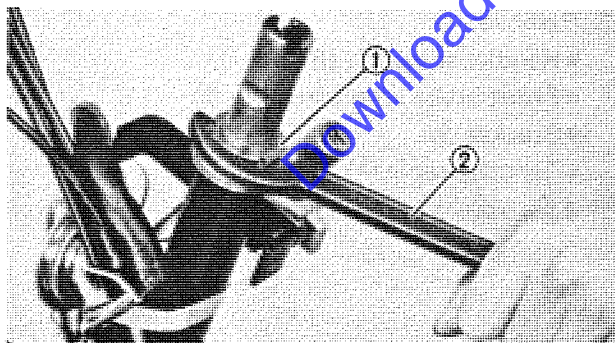
7. Remove:
- Rear brake lever assembly ①



8. Remove:
- Damper ①
 - Bolt ②
 - Handlebar ③

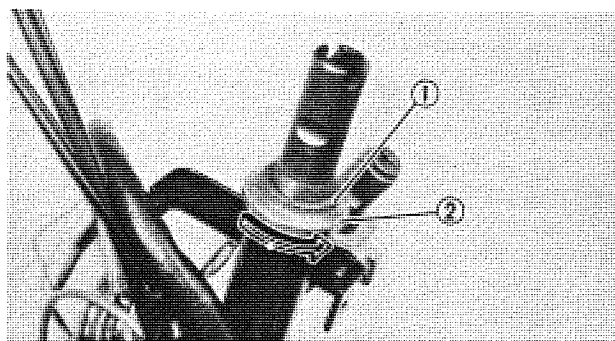


9. Remove:
- Cable guide ①
 - Front fender ②



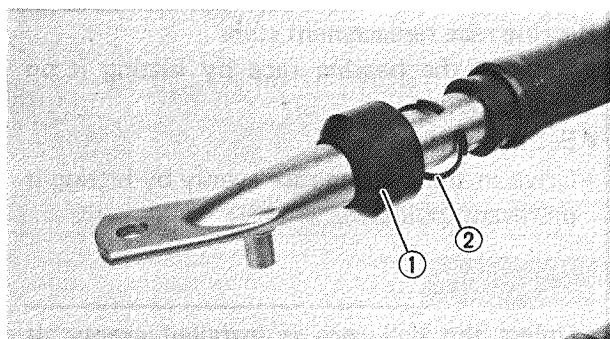
10. Remove:
- Ring nut ①
- Using the Ring Nut Wrench ② (YU-01268).

NOTE: _____
Support the steering column so that it may not fall down.



11. Remove:
- Washer ①
 - Upper bearing race (Top) ②
- Turn it counterclockwise.
- Steering column
 - Bearings

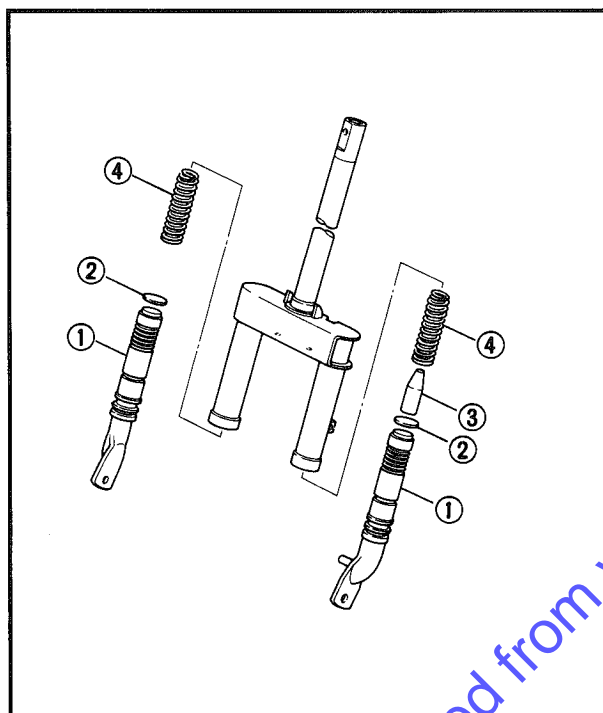
NOTE: _____
Take care not to lose the bearings. (Upper: 26 pieces, Lower: 26 pieces)



DISASSEMBLY

1. Remove:

- Dust seal ①
- Circlip ②



2. Remove:

- Inner tube (Left and right) ①
- Spring seat ②
- Rubber ③ (Left side only)
- Front fork spring ④



INSPECTION

1. Wash the bearings in solvent.

2. Inspect:

- Bearing races
Pitting/Damage → Replace.
- Bearings
Pitting/Damage → Replace.

NOTE:

Always replace the bearing and race as a set.

Bearing Size:

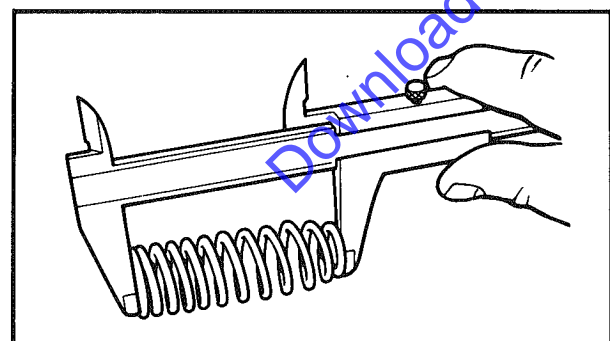
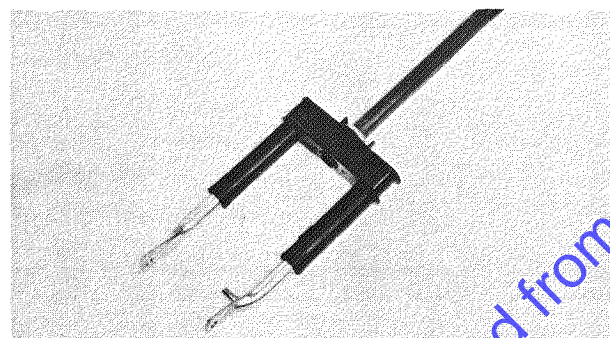
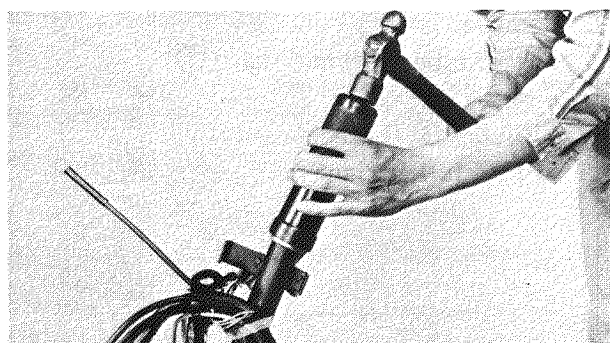
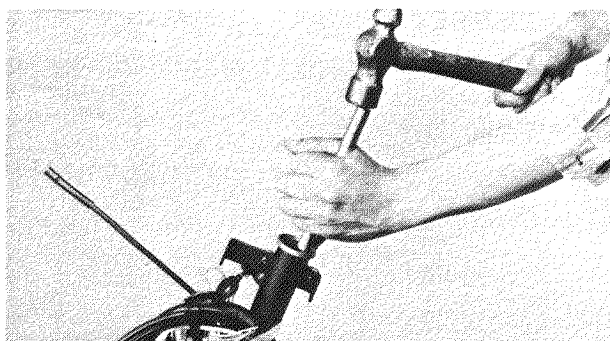
Upper: 5/32 in

Lower: 5/32 in

Bearing Quantity:

Upper: 26 pcs.

Lower: 26 pcs.



Bearing race replacement steps

- Remove the bearing race by hitting it on several points.
- Set the bearing race.
- Drive in the bearing race evenly by hitting it on several points.

CAUTION:

- Unless the ball race is installed evenly, it will damage the frame or steering column.
- Do not hit the face of the ball race.

3. Inspect:

- Steering column
 - Inner fork tube
- Bends/Damage → Replace.

WARNING:

Do not attempt to straighten a bent fork tube.

4. Measure:

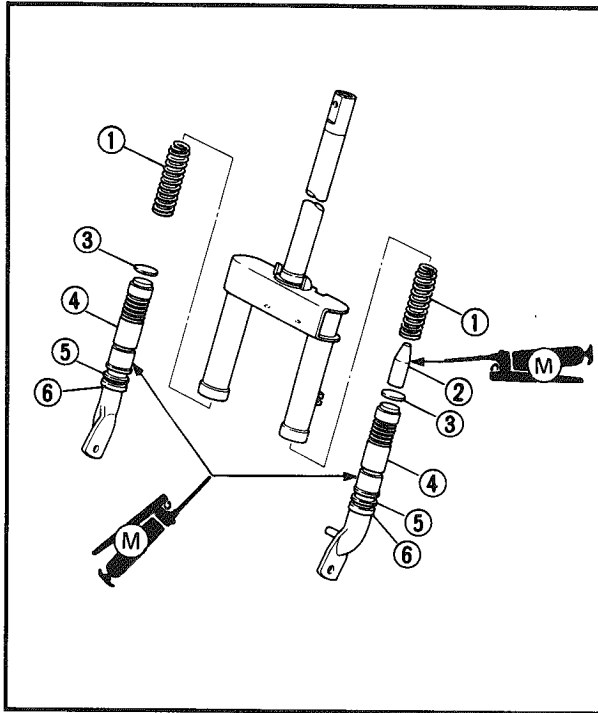
- Fork spring free length
- Out of specification → Replace.



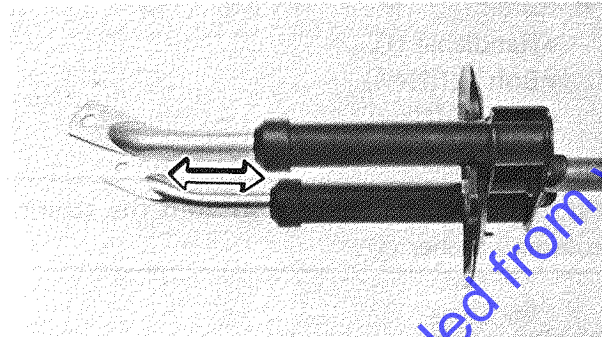
Fork Spring Free Length:
Standard: 75 mm (2.9 in)
Limit: 71 mm (2.8 in)

ASSEMBLY AND INSTALLATION

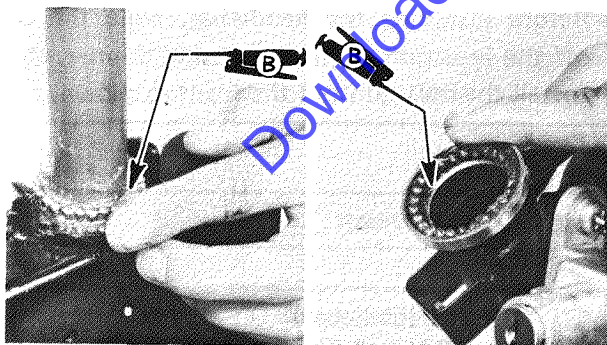
Reverse the disassembly and removal steps.
 Note the following points.



1. Apply:
 - Molybdenum disulfide grease
To inner tube ④ and rubber ⑤ .
2. Install:
 - Front fork spring ①
 - Rubber ② (Left side only)
 - Spring seat ③
 - Inner tube ④
 - Circlip ⑤
 - Oil seal ⑥



3. Check:
 - Front fork operation
Unsmooth operation → Repair.

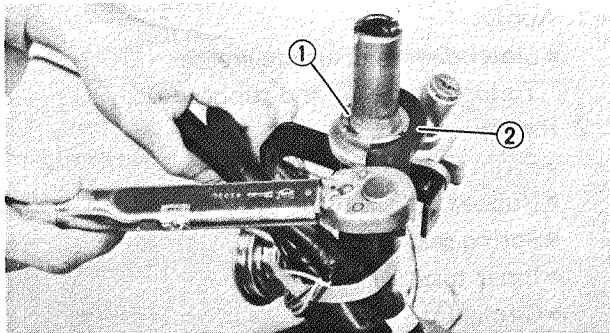


4. Apply:
 - Wheel bearing grease
To upper bearings and lower bearings.

5. Install:
 - Steering column
 - Upper bearing race (Top)
 - Washer
 - Ring nut

CAUTION:

Hold the steering column until it is secured.



6. Tighten:

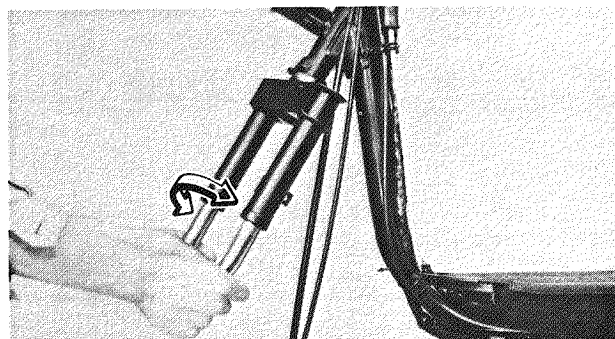
- Ring nut ①
- Using the Ring Nut Wrench ② (YU-33975).



Ring Nut ① :
30 Nm (3.0 m·kg, 22 ft·lb)

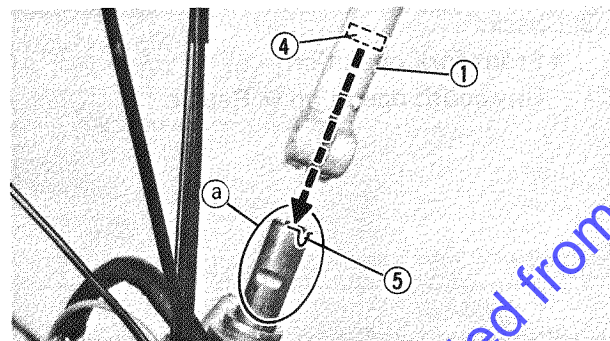
NOTE:

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



7. Check:

- Steering column for smooth action
- Slack → Tighten the ring nut.
- Sticky → Loosen the ring nut.



8. Install:

- Handlebar ①
- Bolt ② (New)
- Nut ③ (New)

NOTE:

Fit the handlebar bridge ④ into the steering column notcher ⑤.

CAUTION:

- Before installing the handlebar, wipe the oil off the insertion portion ⑧ using thinner, etc.
- Install the bolt ③ from the front as shown.

WARNING:

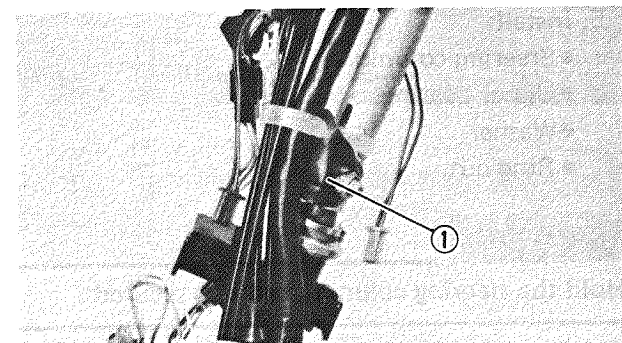
Always use a new bolt ② and nut ③.

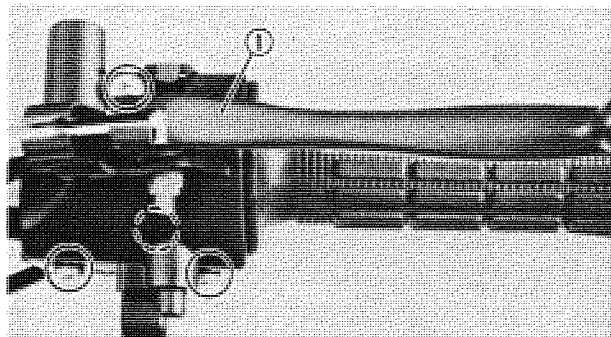


Bolt (Handlebar) ① :
60 Nm (6.0 m·kg, 43 ft·lb)

9. Install:

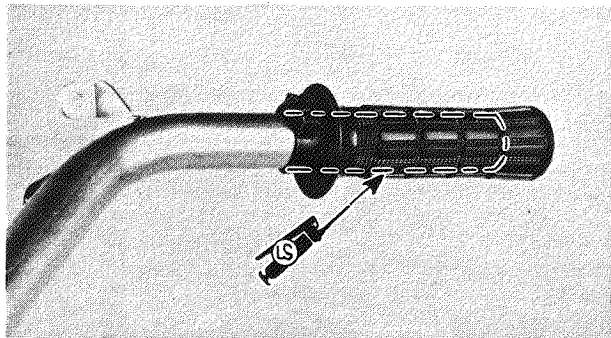
- Damper ①





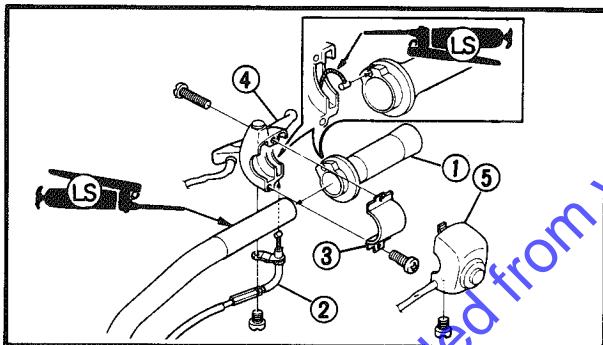
10. Install:

- Rear brake lever assembly ①



11. Apply:

- Lithium-soap base grease
To throttle cable end and handlebar right end.



12. Install:

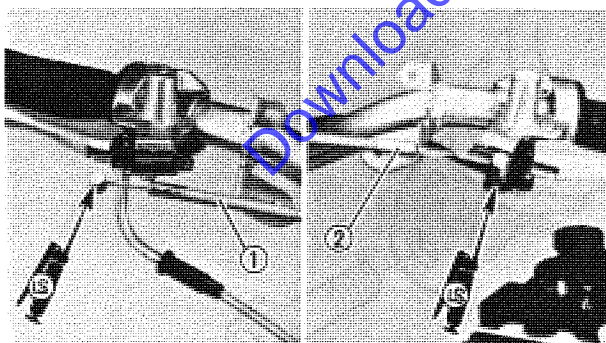
- Throttle grip ①
- Throttle cable ②
- Bracket ③
- Front brake lever assembly ④
- Handlebar switch (Right) ⑤

13. Install:

- Front brake cable ①
- Rear brake cable ②

NOTE:

Apply lithium-soap base grease onto the cable end pivot.



14. Install:

- Handlebar covers (Front and rear)
- Starter cable
- Speedometer cable
- Leg shield
- Front panel

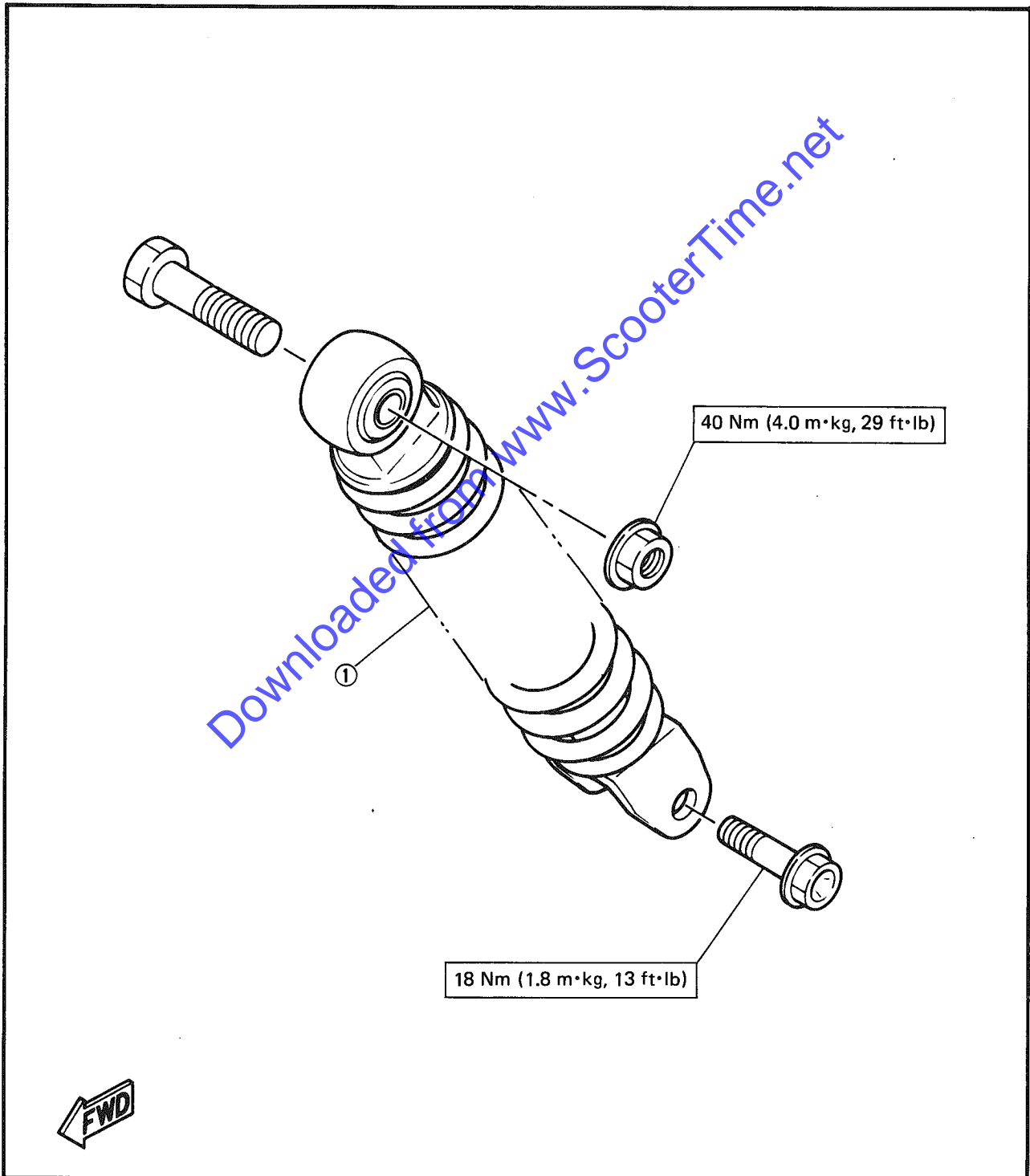
Refer to "CHAPTER 2 – FRONT PANEL AND REG SHIELD" and "HANDLEBAR COVERS" section.

15. Adjust:

- Front and rear brake lever free play.
- Throttle cable free play
Refer to "CHAPTER 2".

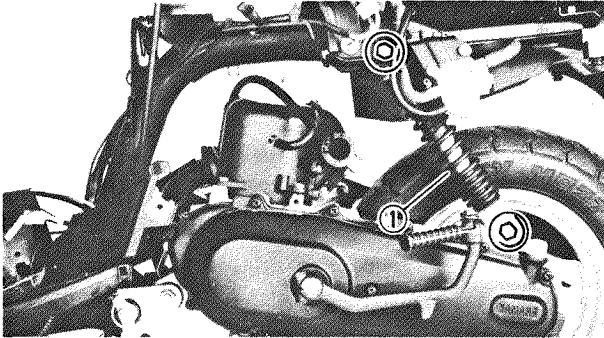
REAR SHOCK ABSORBER

① Rear shock absorber



REMOVAL

1. Place the scooter on its centerstand.
2. Remove:
 - Tail cover
Refer to "CHAPTER 2 – TAIL COVER" section.



3. Remove:
 - Rear shock absorber ①

INSPECTION

1. Inspect:
 - Rear shock absorber
Oil leaks/Damage → Replace.



INSTALLATION

When installing the rear shock absorber, reverse the removal procedure. Note the following points.

1. Install:
 - Rear shock absorber



Upper:
40 Nm (4.0 m·kg, 29 ft·lb)

Lower:
18 Nm (1.8 m·kg, 13 ft·lb)

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CHAPTER 6

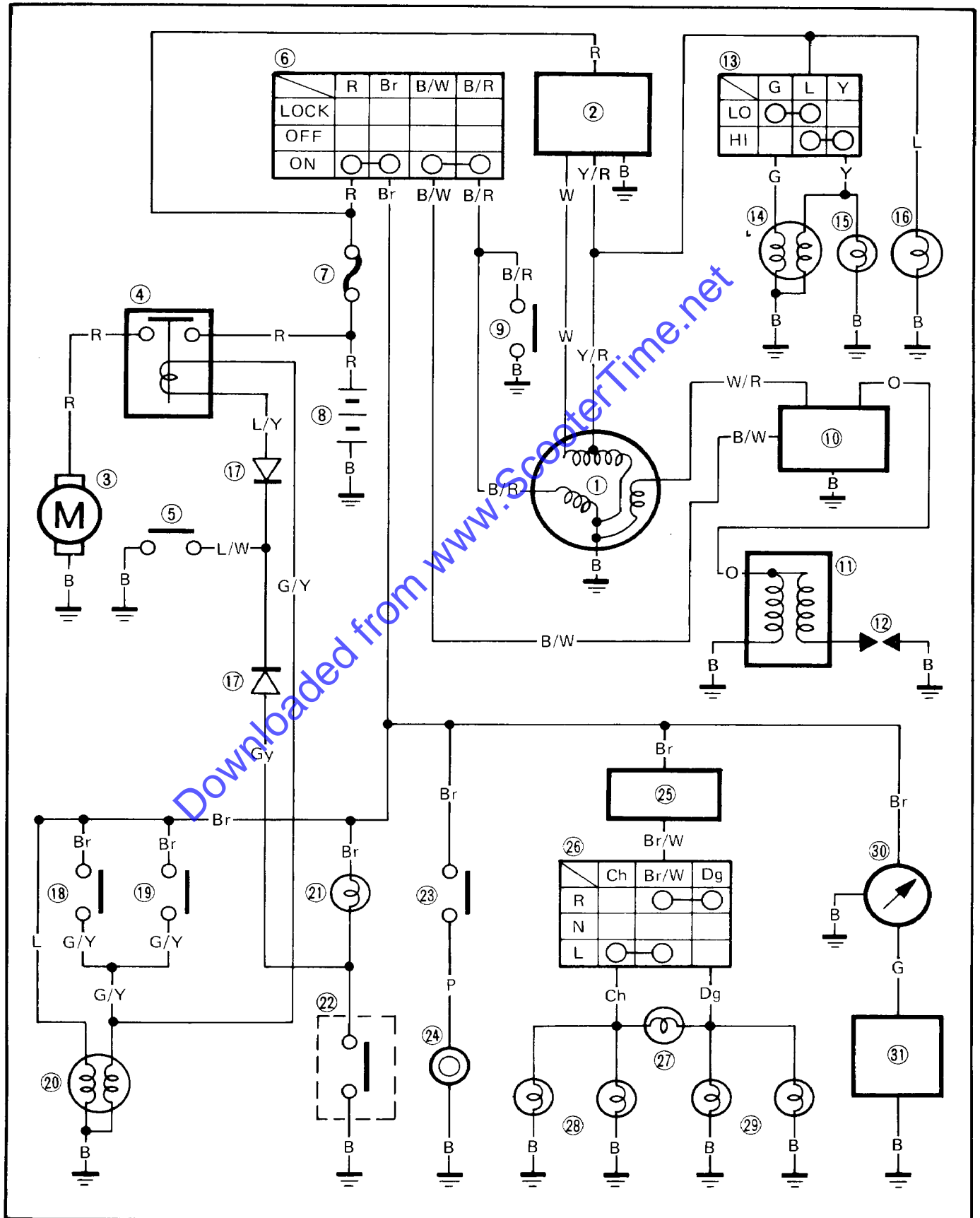
ELECTRICAL

SH50T CIRCUIT DIAGRAM	6-1
ELECTRICAL COMPONENTS	6-3
ELECTRICAL STARTING SYSTEM	6-5
CIRCUIT DIAGRAM	6-5
TROUBLESHOOTING CHART	6-7
STARTER MOTOR CHECK	6-11
IGNITION SYSTEM	6-15
CIRCUIT DIAGRAM	6-15
TROUBLESHOOTING CHART	6-17
CHARGING SYSTEM	6-23
CIRCUIT DIAGRAM	6-23
TROUBLESHOOTING CHART	6-25
LIGHTING SYSTEM	6-27
CIRCUIT DIAGRAM	6-27
TROUBLESHOOTING CHART	6-29
SIGNAL SYSTEM	6-33
CIRCUIT DIAGRAM	6-33
TROUBLESHOOTING CHART	6-35
SIGNAL SYSTEM TEST AND CHECKS	6-37



ELECTRICAL

SH50T CIRCUIT DIAGRAM





- ① CDI magneto
- ② Rectifier/Regulator
- ③ Starter motor
- ④ Starter relay
- ⑤ "START" switch
- ⑥ Main switch
- ⑦ Fuse
- ⑧ Battery
- ⑨ "ENGINE STOP" switch
- ⑩ CDI unit
- ⑪ Ignition coil
- ⑫ Spark plug
- ⑬ "LIGHTS" (Dimmer) switch
- ⑭ Headlight
- ⑮ "HIGH BEAM" indicator light
- ⑯ Meter light

- ⑰ Diode
- ⑱ Front brake switch
- ⑲ Rear brake switch
- ⑳ Tail/Brake light
- ㉑ "OIL" indicator light
- ㉒ Oil level gauge
- ㉓ Horn switch
- ㉔ Horn
- ㉕ Flasher relay
- ㉖ "TURN" switch
- ㉗ "TURN" indicator light
- ㉘ Left flasher lights (Front and rear)
- ㉙ Right flasher lights (Front and rear)
- ㉚ Fuel meter
- ㉛ Fuel sender

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COLOR CODE

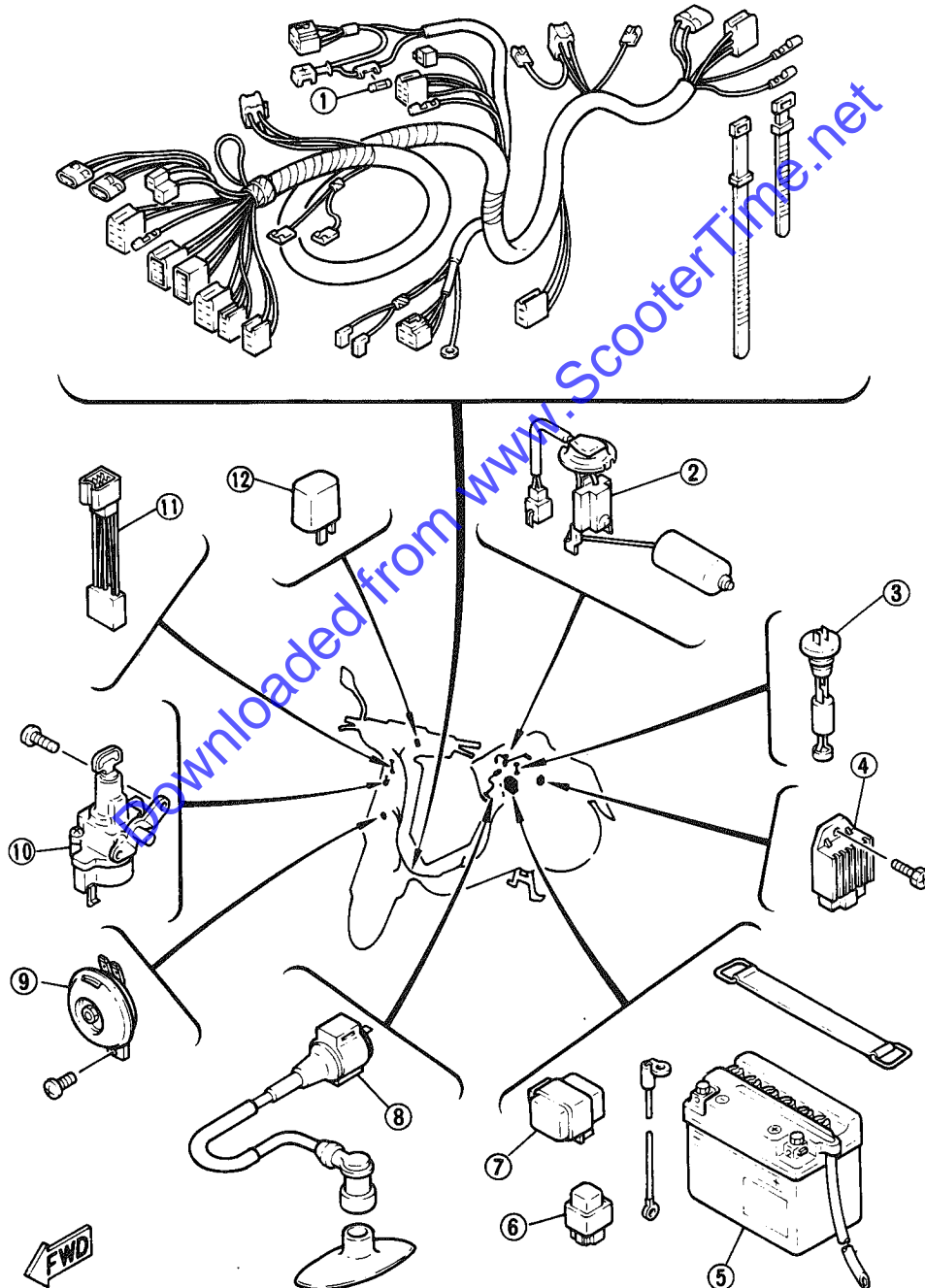
R	Red	P	Pink
B	Black	L	Blue
W	White	Y/R	Yellow/Red
Y	Yellow	L/W	Blue/White
Br	Brown	G/Y	Green/Yellow
Gy	Gray	B/W	Black/White
O	Orange	B/R	Black/Red
Ch	Chocolate	W/R	White/Red
Dg	Dark green	Br/W	Brown/White
G	Green	L/Y	Blue/Yellow



ELECTRICAL COMPONENTS

- ① Fuse
- ② Fuel sender
- ③ Oil level gauge
- ④ Rectifier/Regulator
- ⑤ Battery
- ⑥ Starter relay
- ⑦ CDI unit
- ⑧ Ignition coil
- ⑨ Horn
- ⑩ Main switch
- ⑪ Diode
- ⑫ Flasher relay

A	BATTERY
	TYPE: GM4-3B SPECIFIC GRAVITY: 1.280
B	IGNITION COIL RESISTANCE
	PRIMARY: 0.21 ~ 0.25Ω at 20°C (68°F) SECONDARY: 4.9 ~ 6.7 kΩ at 20°C (68°F)



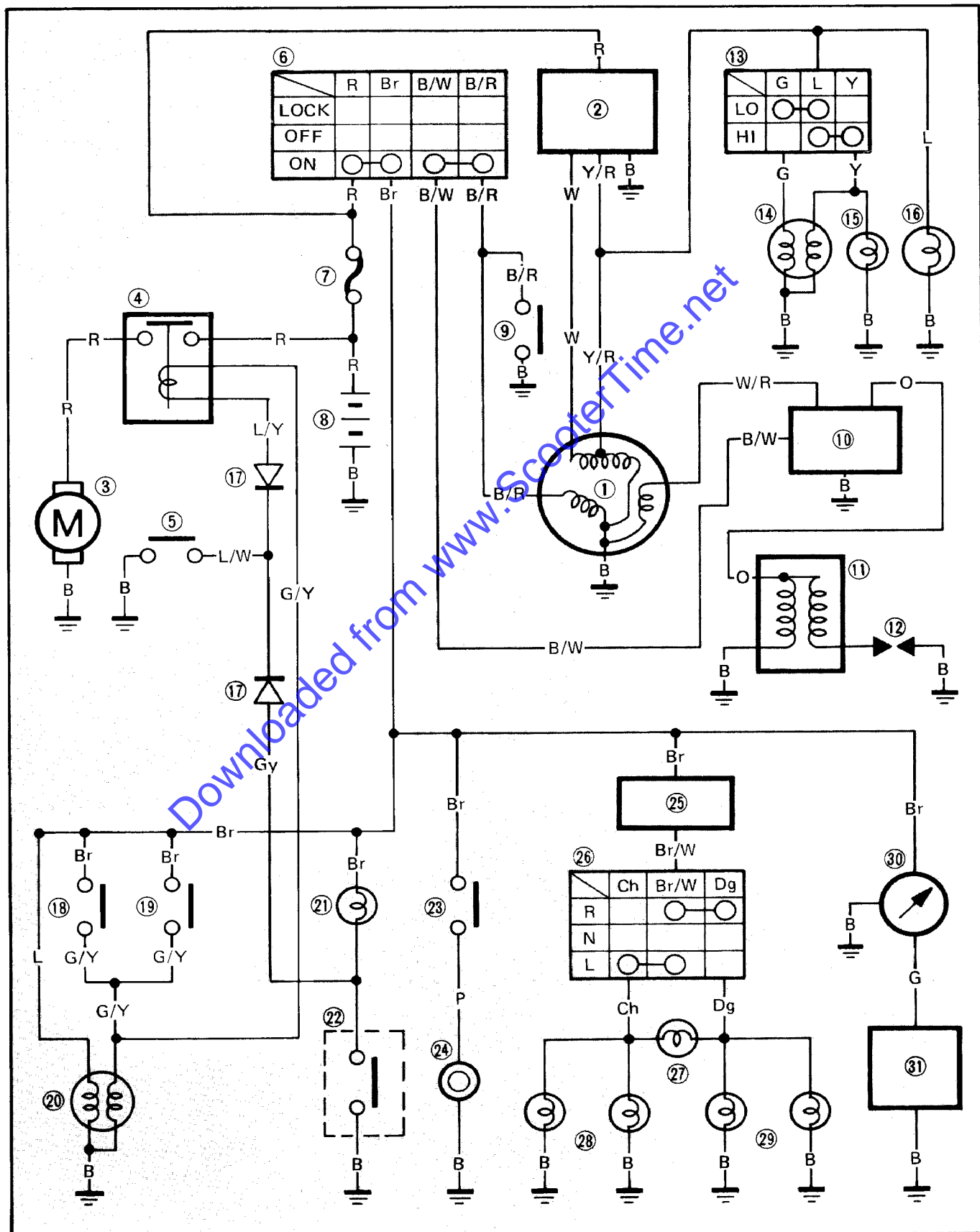


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ELECTRICAL STARTING SYSTEM

CIRCUIT DIAGRAM

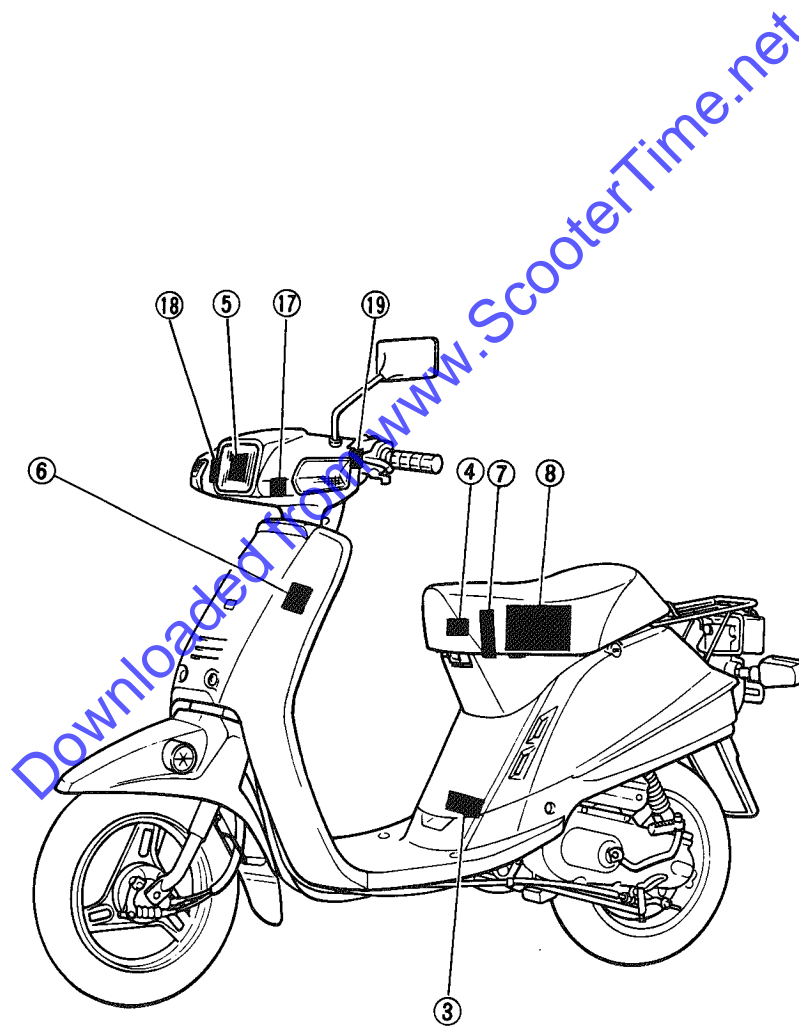
Below circuit diagram shows starter circuit.



**NOTE:**

For the encircled numbers and color codes, see 6-2.

- ③ Starter motor
- ④ Starter relay
- ⑤ "START" switch
- ⑥ Main switch
- ⑦ Fuse
- ⑧ Battery
- ⑪ Diode
- ⑫ Front brake switch
- ⑬ Rear brake switch





TROUBLESHOOTING CHART

NOTE:

Before this troubleshooting, remove the seat and tail cover.

STARTER MOTOR DOES NOT OPERATE



1. Fuse inspection:

- Check the fuse condition. Refer to "CHAPTER 2. FUSE INSPECTION" section.

FAULTY

Fuse is faulty. Replace it.



OK

2. Battery inspection:

- Check the battery condition. Refer to "CHAPTER 2. BATTERY INSPECTION" section.

FAULTY

Battery is faulty.
Recharge or replace it.

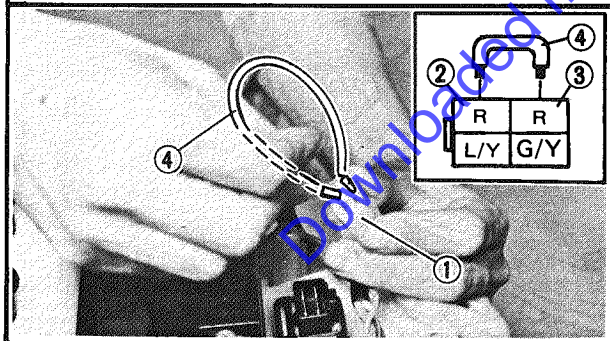
OK

3. Starter motor inspection

- Disconnect the starter relay coupler ①.
- Connect the "Red" lead ② to "Red" ③ lead. Using the jumper lead ④.

STARTER MOTOR
DOES NOT RUN

Inspect or replace the starter motor.

STARTER MOTOR
RUNS

*

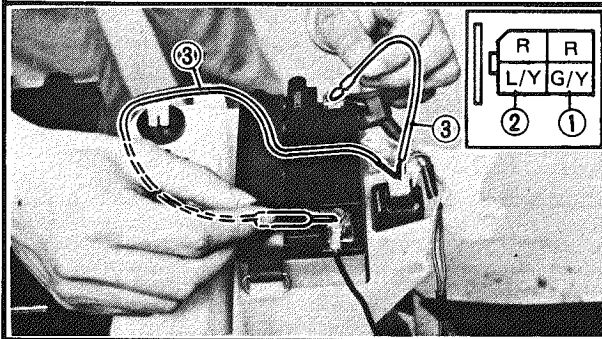


4. Starter relay check:

- Connect the starter relay coupler.
- Connect the "Green/Yellow" lead ① to the battery (+) terminal and "Blue/Yellow" lead ② to the battery (-) terminal.
- Use the jumper leads ③.

NOTE:

Be sure to check with the coupler and relay connected.



STARTER MOTOR
DOES NOT RUN

Inspect or replace the starter relay.

STARTER MOTOR
RUNS

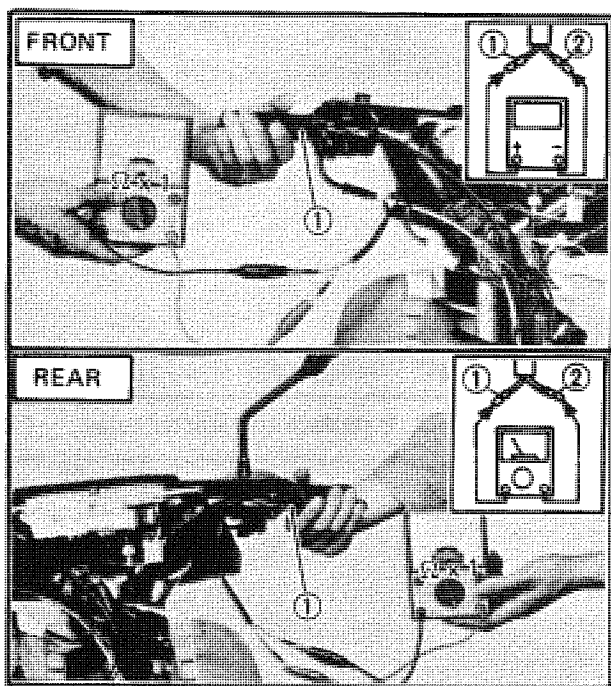
5. Front and rear brake switch conduct check:

- Disconnect the front and rear brake switch leads.
- Set the Pocket Tester (YU-03112) selector to " $\Omega \times 1$ " position.
- Connect the tester leads to brake switch leads (Brown ① and Green/Yellow ②).

- Pull in the brake lever ①.

NO CONTINUITY

Replace the front and/or rear brake switch.



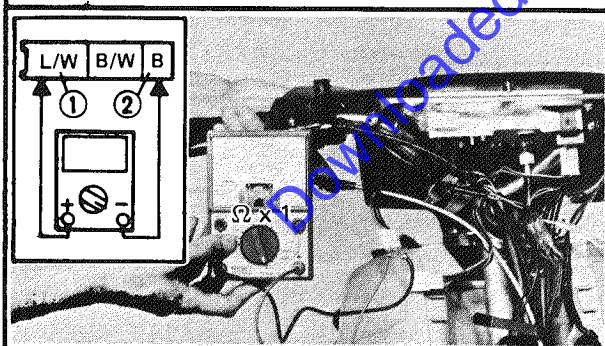
↓ CONTINUITY

6. "START" switch conduct check:

- Disconnect the handlebar switch (Right) coupler.
- Set the Pocket Tester selector (YU-03112) to " $\Omega \times 1$ " position.
- Connect the tester leads to "START" switch coupler (Blue/White ① and Black ②).

NO CONTINUITY

→ Replace the handlebar switch (Right).

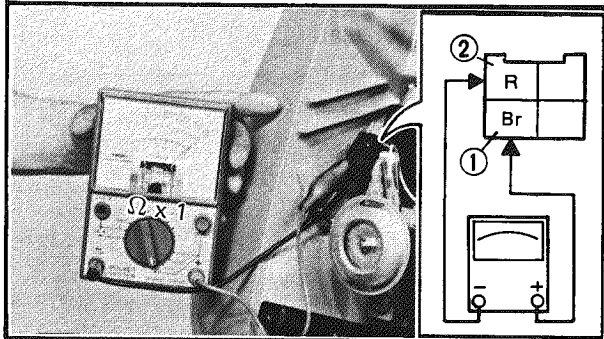


↓ CONTINUITY
*

**7. Main switch conduct check:**

- Disconnect the main switch leads.
- Set the Pocket Tester (YU-03112) selector to " $\Omega \times 1$ " position.
- Connect the tester leads to main switch leads (Brown ① and Red ②).

- Turn the main switch to "ON" position.



CONTINUITY

- 8. Check entire electrical starting system for connections.**
Refer to "WIRING DIAGRAM".

NO CONTINUITY

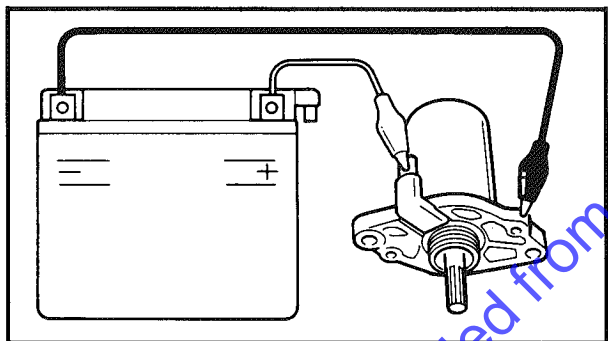
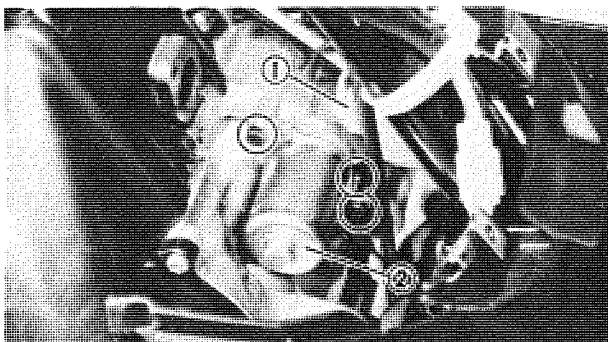
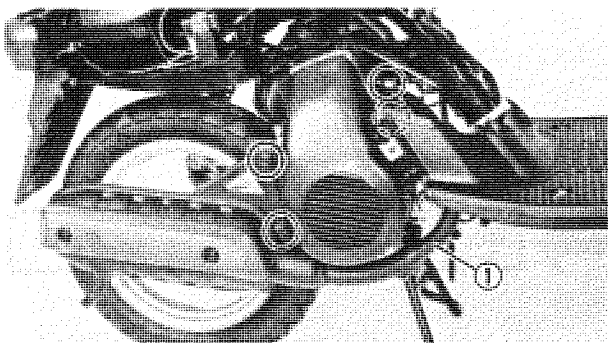


Replace the main switch.

POOR
CONDITION

Correct.

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STARTER MOTOR CHECK

Removal

1. Remove:
 - Tail cover
 - Refer to "TAIL COVER AND MOLE" section.
2. Remove:
 - Muffler ①
3. Disconnect:
 - Starter motor lead ①
4. Remove:
 - Starter motor ②

Starter motor test

1. Connect 12V battery to starter relay terminals as shown.

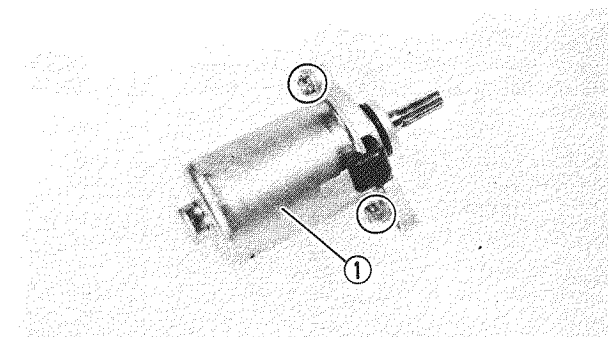
NOTE:

Use full charged battery.

CAUTION:

Do not run the starter motor for more than a few seconds.

No action → Replace.

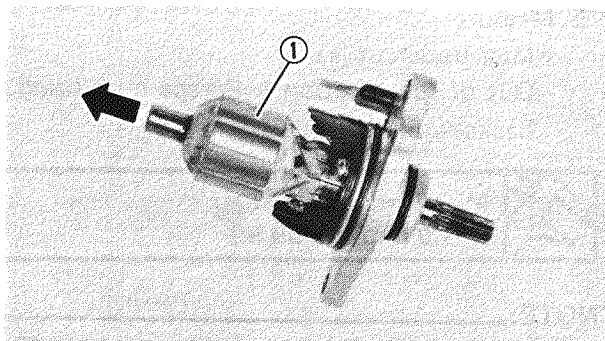


Disassembly

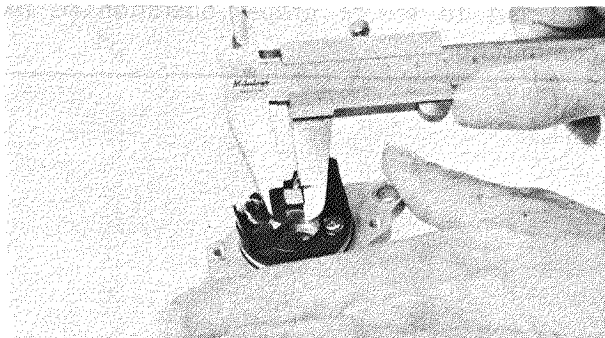
NOTE:

Replace the starter motor in assembly form.

1. Remove:
 - Starter motor cover ①



2. Remove:
- Armature

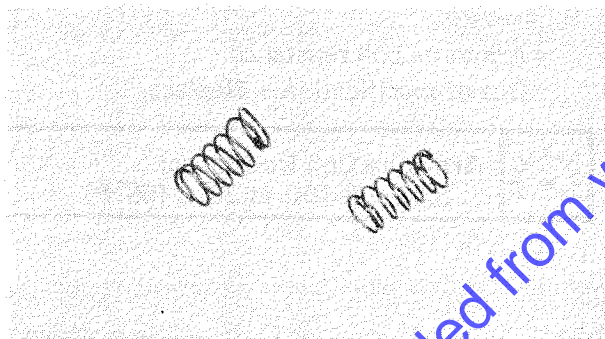


Inspection and Repair

1. Measure:
- Brush length (Each)
- Out of specification → Replace.



Minimum Brush Length:
2.5 mm (0.10 in)

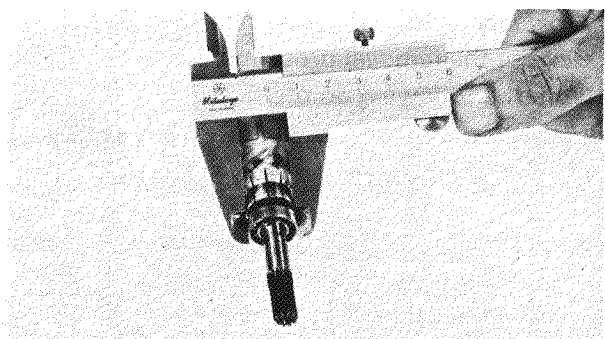


2. Inspect:
- Brush spring
- Wear/Damage → Replace.



3. Inspect:
- Commutator (Outer surface)
- Grooved wear/Burning/Scratches →
Smooth out using a sandpaper (#500 ~ 600)

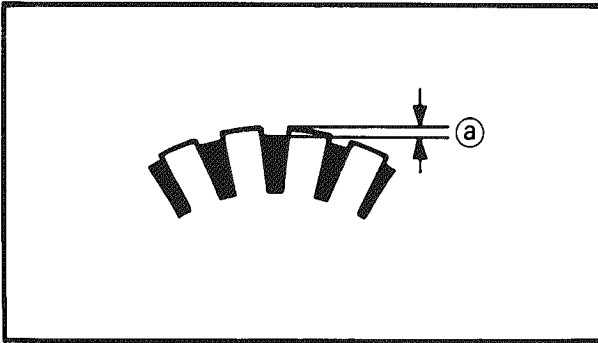
NOTE: _____
Sand the commutator outer surface lightly and evenly.



4. Measure:
- Commutator diameter
- Out of specification → Replace.



Outside Diameter Limit:
14.5 mm (0.57 in)



5. Measure:

- Mica undercut (a)

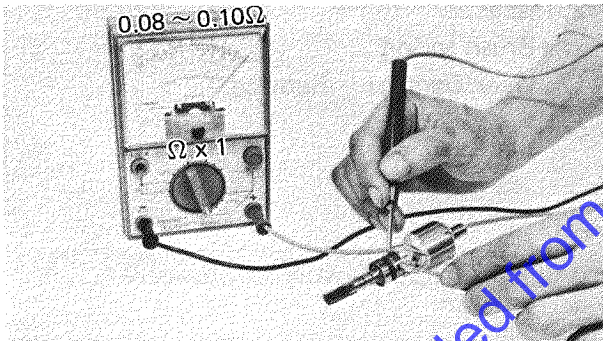
Out of specification → Scrape mica using a hacksaw blade.



Mica Undercut (a):
1.0 mm (0.039 in)

NOTE:

The mica insulation of the commutator must be undercut to ensure proper operation of the commutator.



6. Measure:

- Armature coil resistance

Out of specification → Replace.



Armature Coil Resistance:
0.08 ~ 0.10Ω at 20°C (68°F)



7. Check:

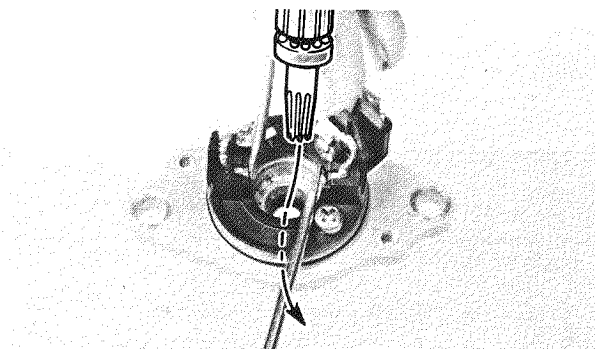
- Armature coil insulation

Continuity → Replace.

Assembly

Reverse the removal procedure.

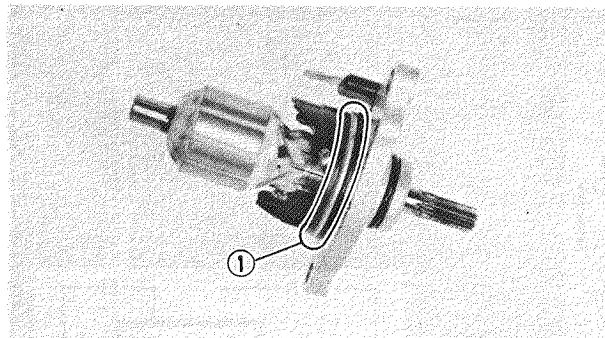
Note the following points.



1. Install:

- Brush
- Brush spring

Using a thin screw driver.



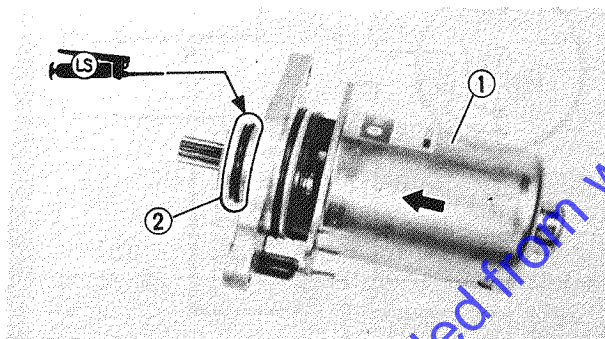
2. Install:

- Armature coil assembly

3. Inspect:

- O-ring ①

Damage → Replace



4. Inspect:

- O-ring ②

NOTE:

Apply a grease lightly.

5. Install:

- Starter motor cover ①

Installation

1. Install:

- Starter motor



13 Nm (1.3 m·kg, 9.4 ft·lb)

- Starter motor lead
- Muffler



Bolt (Muffler — Exhaust pipe side):
9 Nm (0.9 m·kg, 6.5 ft·lb)

Bolt (Muffler):
27 Nm (2.7 m·kg, 19 ft·lb)

2. Install:

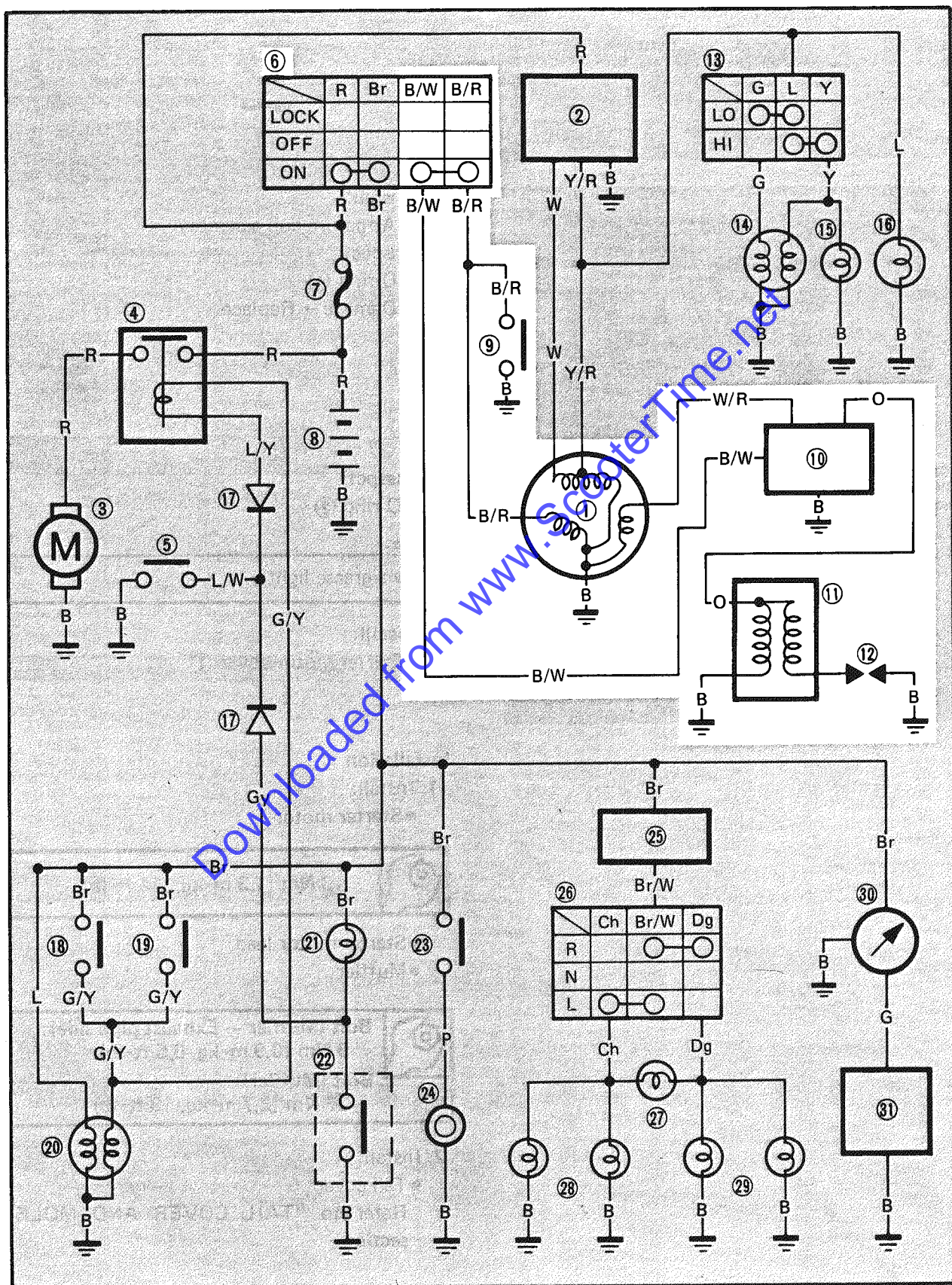
- Tail cover

Refer to "TAIL COVER AND MOLE" section.

IGNITION SYSTEM

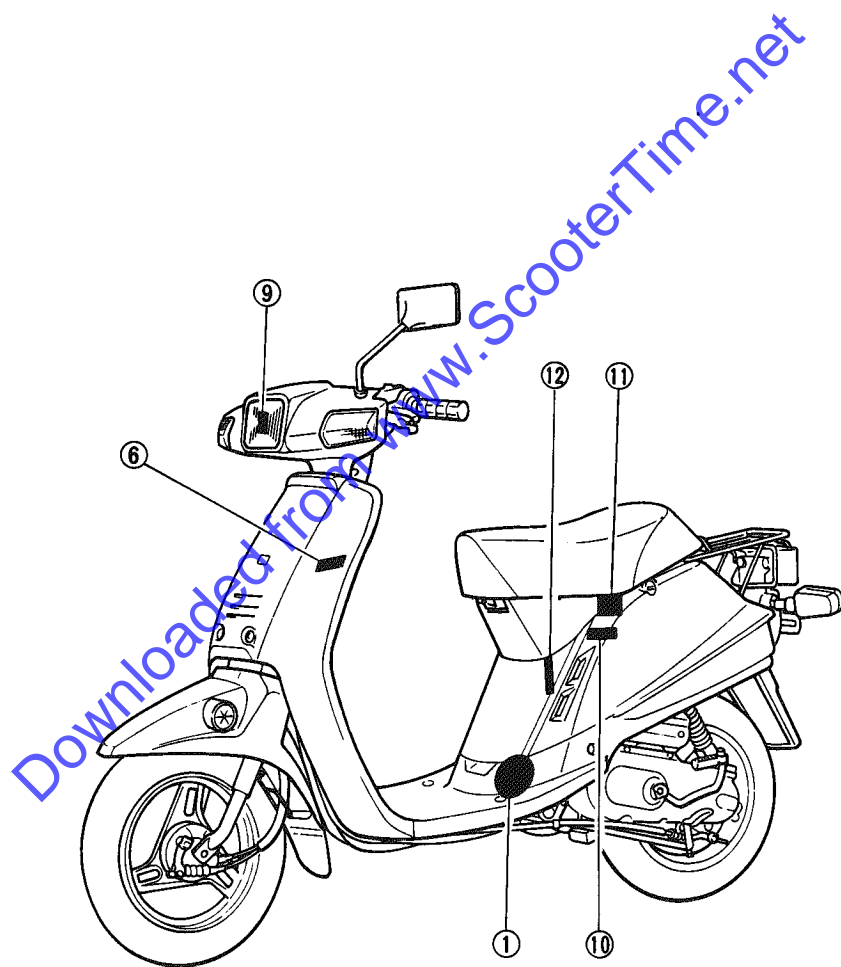
CIRCUIT DIAGRAM

Below circuit diagram shows ignition circuit.



NOTE:
For the encircled numbers and color codes, see 6-2.

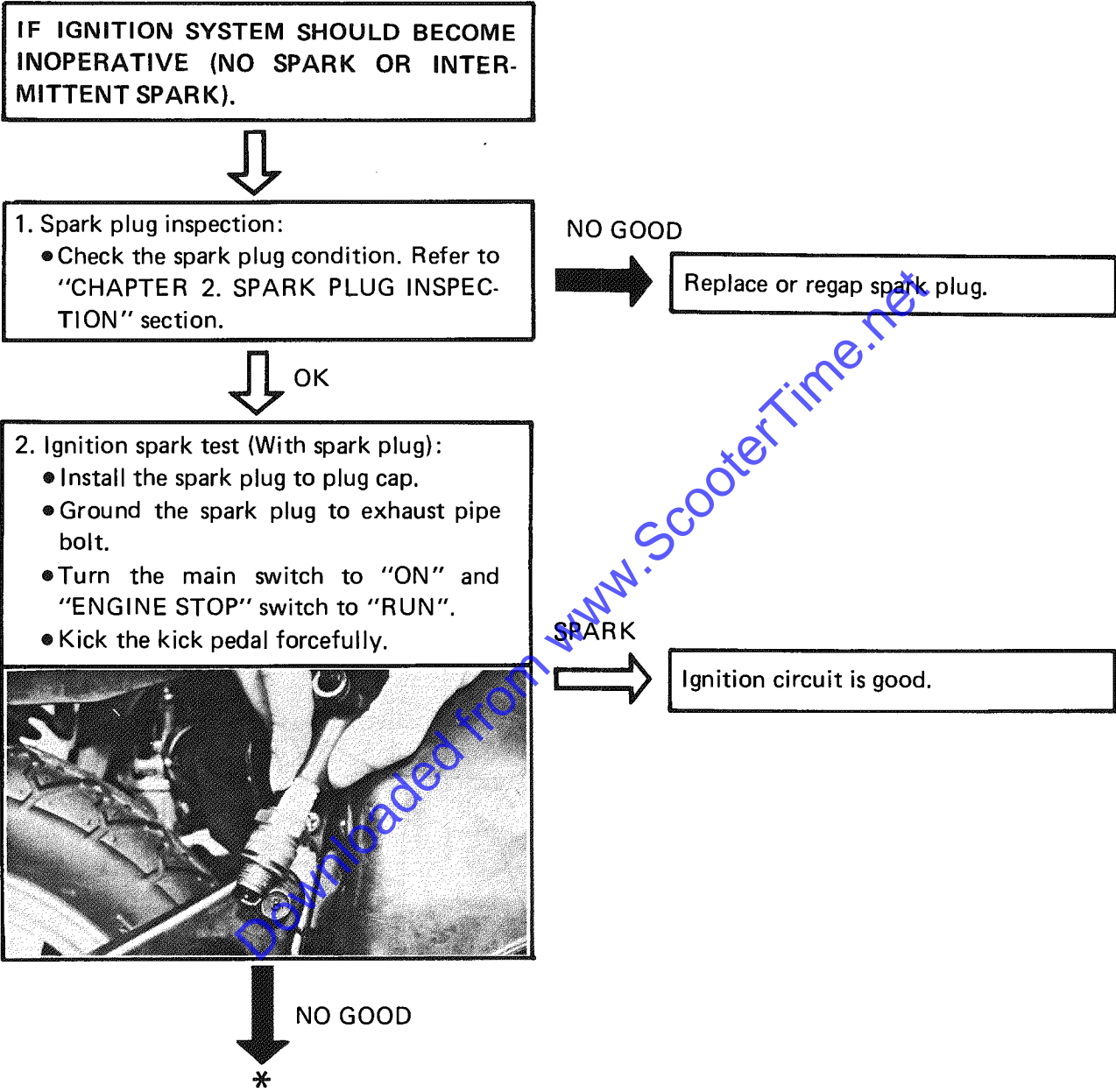
- ① CDI magneto
- ⑥ Main switch
- ⑨ "ENGINE STOP" switch
- ⑩ CDI unit
- ⑪ Ignition coil
- ⑫ Spark plug



TROUBLESHOOTING CHART

NOTE:

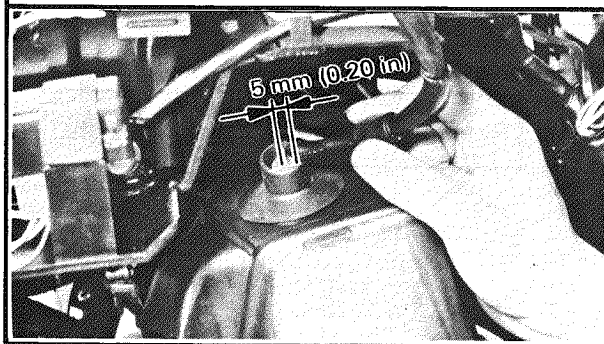
Before this troubleshooting, remove the seat and tail cover.





3. Ignition spark gap test (Without spark plug and cap):

- Remove the spark plug and plug cap.
- Hold the spark plug lead about 5 mm (0.20 in) from the air shroud.
- Kick the kick pedal forcefully.



SPARK



Replace spark plug and/or plug cap.

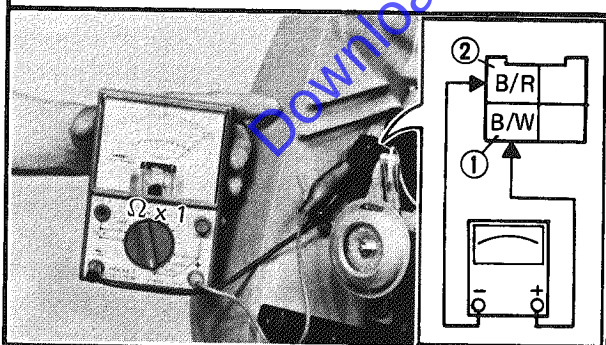


NO SPARK

4. Main switch conduct check:

- Disconnect the main switch leads.
- Set the Pocket Tester (YU-03112) selector to " $\Omega \times 1$ " position.
- Connect the tester leads to main switch leads (Black/White ① and Black/Red ②).

- Turn the main switch to "ON" position.



NO CONTINUITY
CONTINUITY



Replace the main switch.



CONTINUITY



5. "ENGINE STOP" switch conduct check:

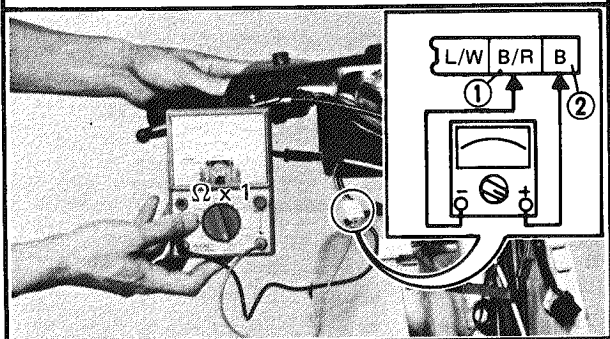
- Disconnect the handlebar switch (Right) coupler.
- Set the Pocket Tester (YU-03112) selector to " $\Omega \times 1$ " position.
- Connect the tester leads to "ENGINE STOP" switch coupler (Black/Red ① and Black ②).

CONTINUITY



Replace the handlebar switch (Right).

- Turn the "ENGINE STOP" switch to "RUN" position.



NO CONTINUITY



6. Ignition coil resistance test:

- Disconnect the ignition coil lead (Orange).
- Measure the coil resistances.
 Primary coil resistance **A**
 (Orange lead ① — Ignition coil base ②)
 Secondary coil resistance **B**
 (Orange lead ① — Spark plug lead ③)

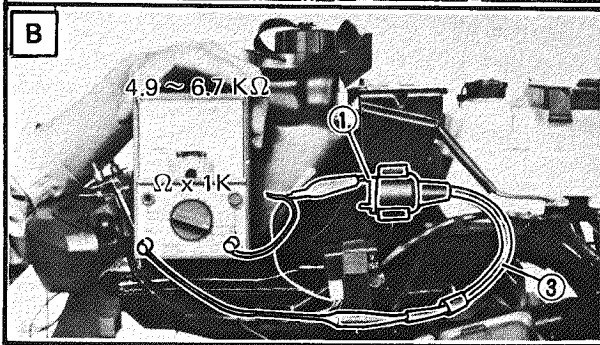
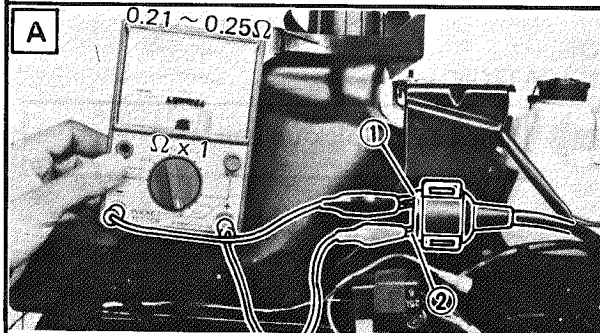


Primary Coil Resistance:
 $0.21 \sim 0.25\Omega$ at 20°C (68°F)
Secondary Coil Resistance:
 $4.9 \sim 6.7\text{ k}\Omega$ at 20°C (68°F)

OUT OF
SPECIFICATION



Replace the ignition coil.



7. Source coil resistance test:

- Disconnect the CDI magneto leads.
- Set the Pocket Tester (YU-03112) selector to " $\Omega \times 100$ " position.
- Connect the tester leads to source coil leads (Black/Red ① and Black ②).

- Measure the source coil resistance.

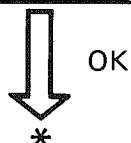
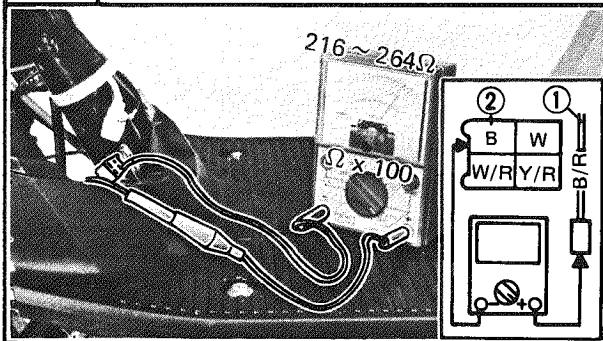
OUT OF
SPECIFICATION



Replace the source coil.



Source Coil Resistance:
 $216 \sim 264\Omega$ at 20°C (68°F)

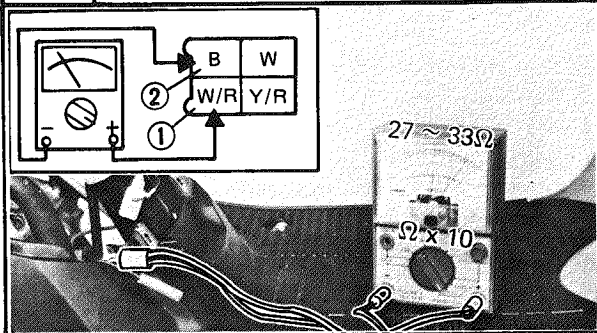


**8. Pick-up coil resistance test:**

- Set the Pocket Tester (YU-03112) selector to " $\Omega \times 10$ " position.
- Connect the tester leads to pick-up coil leads (White/Red ① and Black ②).
- Measure the pick-up coil resistance.



Pick-up Coil Resistance:
 $27 \sim 33\Omega$ at 20°C (68°F)



9. Check entire ignition system for connections. Refer to 'WIRING DIAGRAM' section.



CDI Unit is faulty, replace it.

OUT OF
SPECIFICATION



Replace the pick-up coil.

POOR
CONNECTION



Correct.



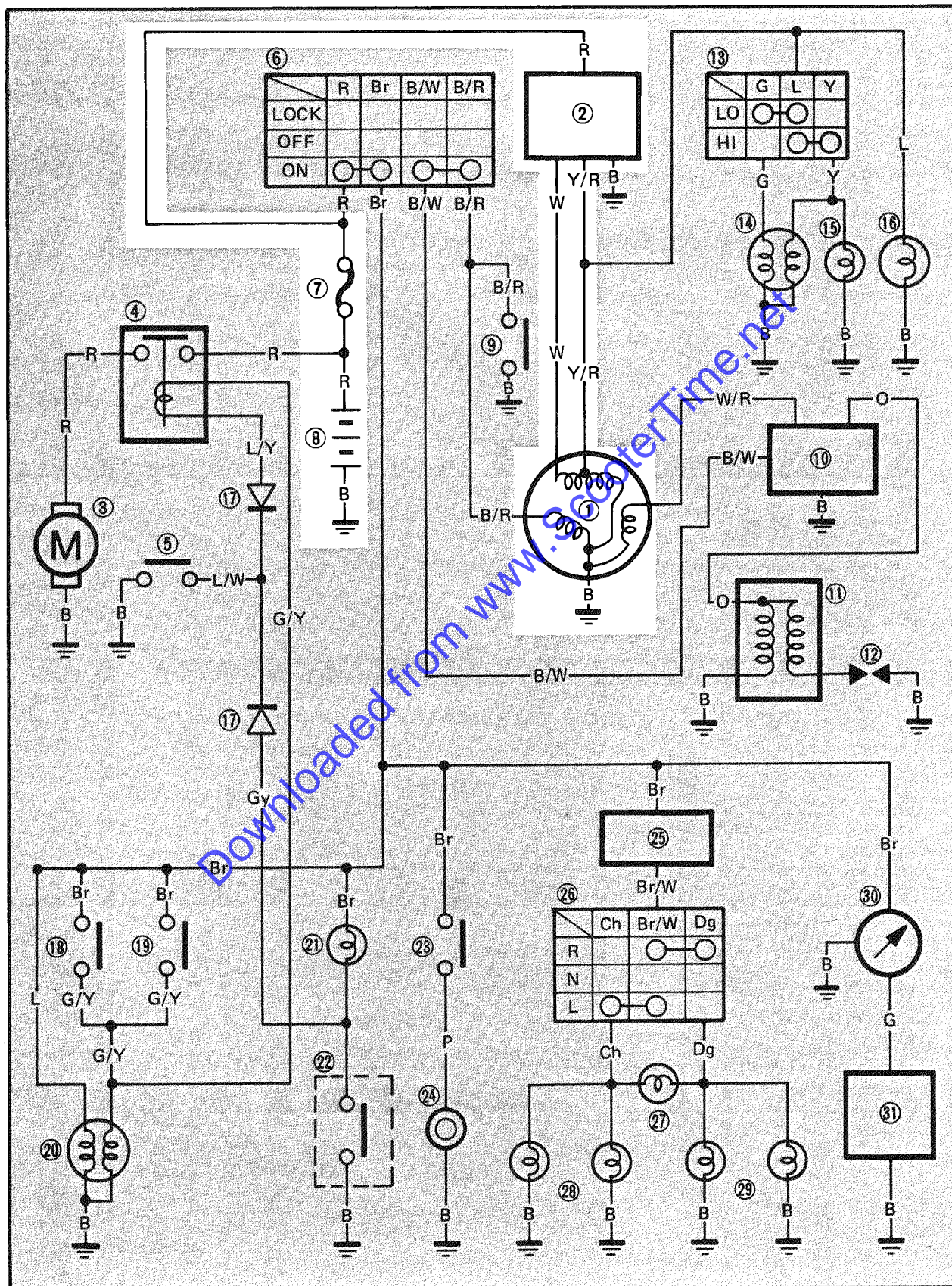
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CHARGING SYSTEM

CIRCUIT DIAGRAM

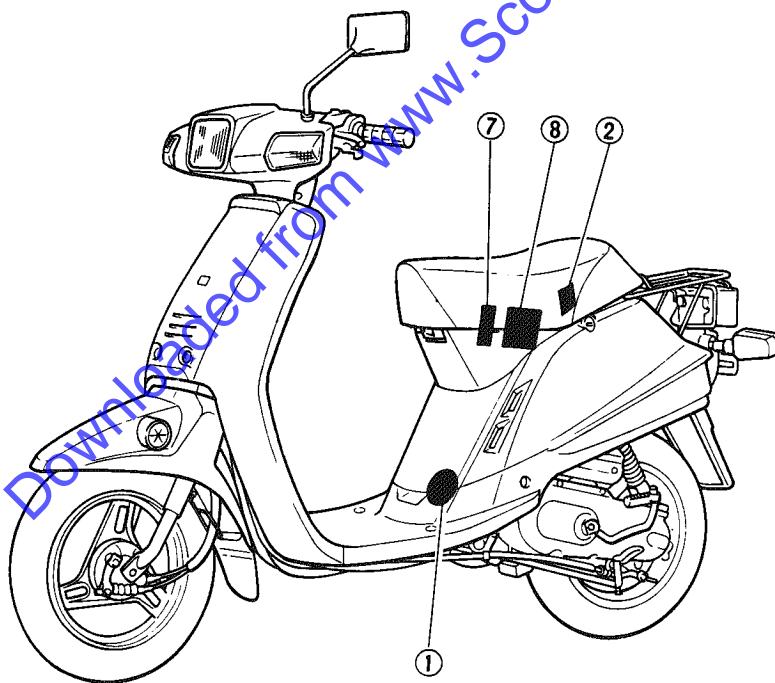
Below circuit diagram shows ignition circuit.



**NOTE:**

For the encircled numbers and color codes, see 6-2.

- ① CDI magneto
- ② Rectifier/Regulator
- ⑦ Fuse
- ⑧ Battery





TROUBLESHOOTING CHART

NOTE:

Before this troubleshooting, remove the seat and tail cover.

THE BATTERY IS NOT CHARGED.



1. Fuse inspection:

- Check the fuse condition. Refer to "CHAPTER 2. FUSE INSPECTION" section.

FAULTY

Fuse is faulty.
Replace it.



FAULTY

2. Battery inspection

- Check the battery condition. Refer to "CHAPTER 2. BATTERY INSPECTION" section.

FAULTY

Battery is faulty.
Recharge or replace it.



OK

3. Charging current test:

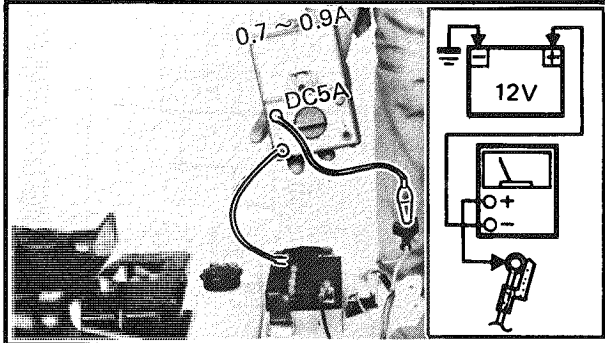
- Connect the Inductive Tachometer (YU-08036) to ignition lead.
- Disconnect the battery (+) lead.
- Set the Pocket Tester (YU-03112) selector to "DC5A" position.
- Connect the negative tester lead to the positive battery terminal, and connect the positive tester lead to the positive battery lead.



- Start the engine and accelerate to about 4,000 r/min.
- Measure the charging current.



Charging Current:
0.7 ~ 0.9A at 4,000 r/min



OK

Replace the battery.

OUT OF
SPECIFICATION

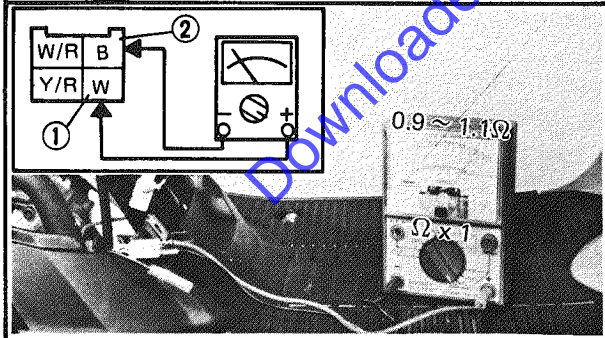
4. Charging coil resistance test:
- Disconnect the CDI magneto leads.
 - Set the Pocket Tester (YU-03112) selector to " $\Omega \times 1$ " position.
 - Connect the tester leads to charging coil leads (White ① and Black ②).

OUT OF
SPECIFICATION

- Measure the charging coil resistance.



Charging Coil Resistance:
0.9 ~ 1.1 Ω at 20°C (68°F)



Replace the charging coil.

OK

POOR
CONNECTION

5. Check entire charging system for connections. Refer to "WIRING DIAGRAM".

Correct.

OK

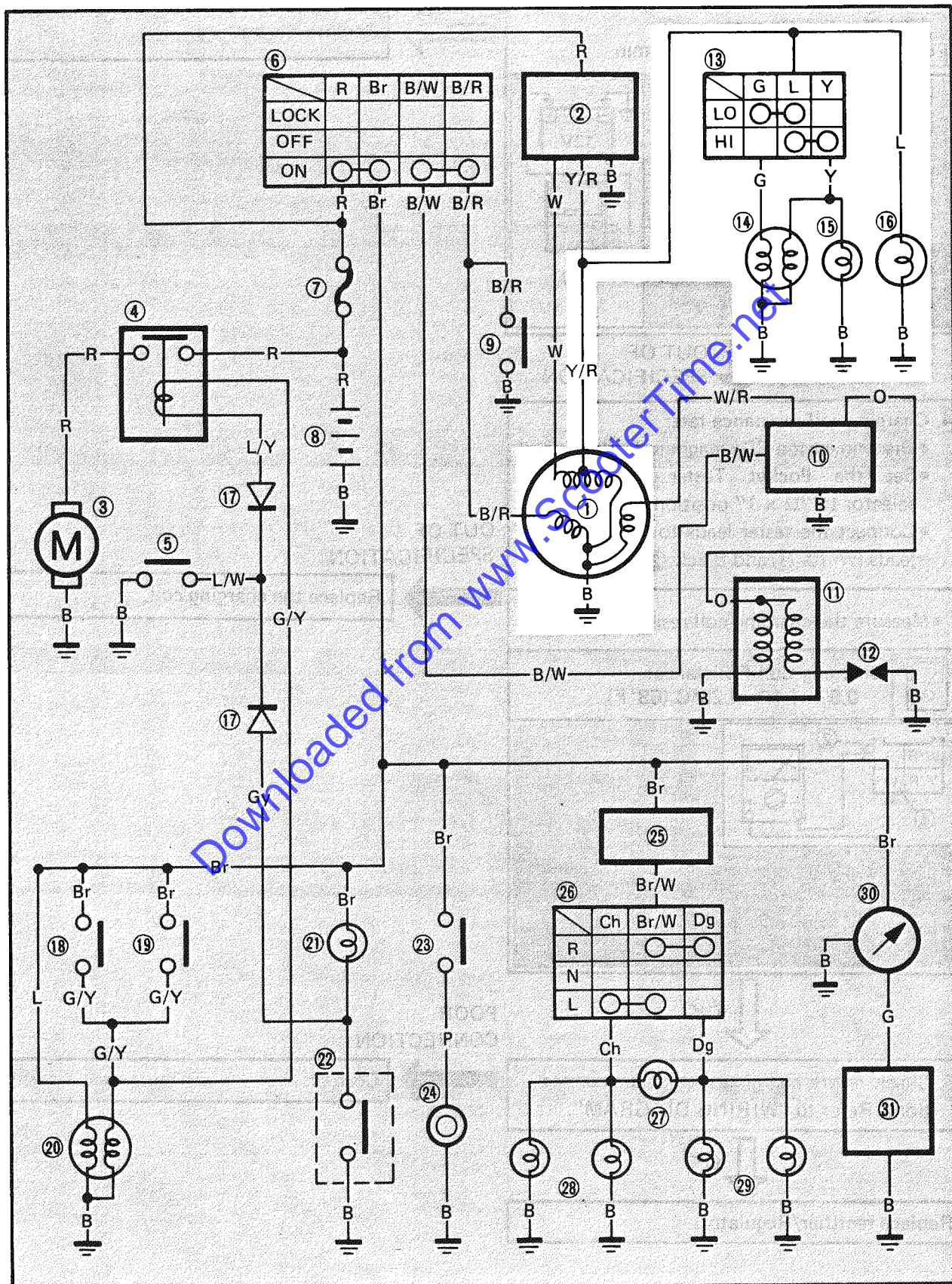
Replace rectifier/Regulator.



LIGHTING SYSTEM

CIRCUIT DIAGRAM

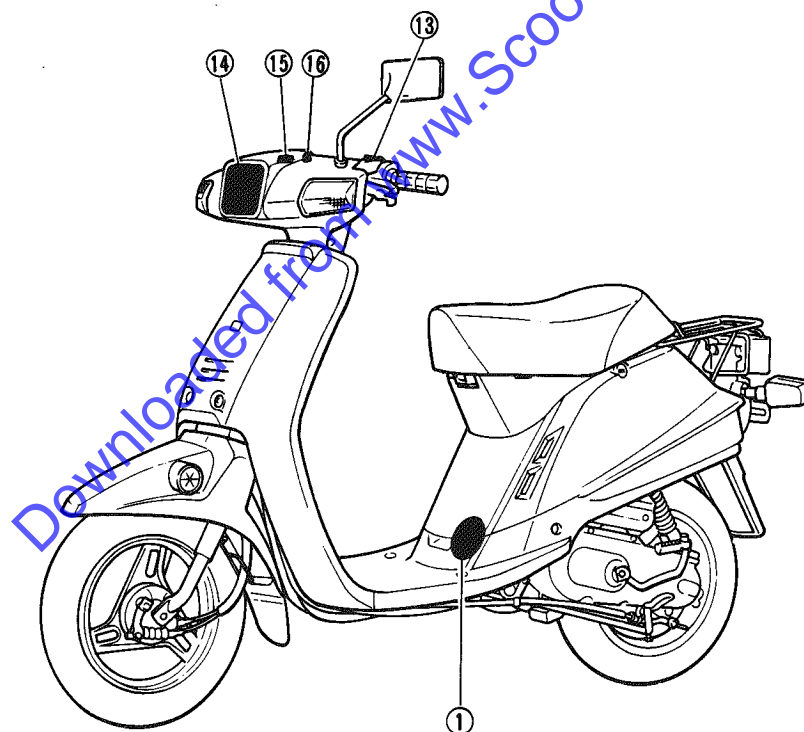
Below circuit diagram shows lighting circuit.



**NOTE:**

For the encircled numbers and color codes, see 6-2.

- ① CDI magneto
- ⑬ "LIGHTS" (Dimmer) switch
- ⑭ Headlight
- ⑮ "HIGH BEAM" indicator light
- ⑯ Meter light





TROUBLESHOOTING CHART

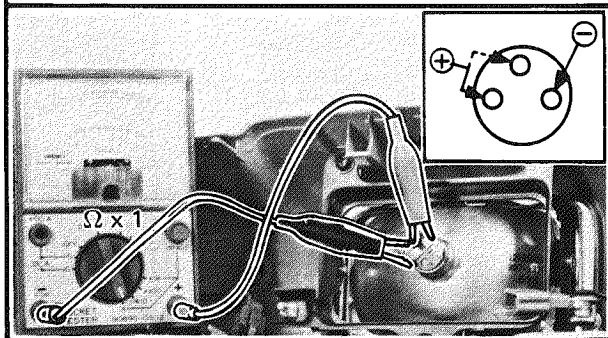
NOTE:

Before this troubleshooting, remove the seat and tail cover.

HEADLIGHT DOES NOT COME ON.

1. Headlight condition check:

- Remove the headlight lens unit.
- Set the Pocket Tester (YU-03112) selector to " $\Omega \times 1$ " position.
- Connect the tester leads to headlight terminals and check it for continuity.



CONTINUITY DOES NOT EXIST ON ONE CIRCUIT

Replace the headlight lens unit.

CONTINUITY EXISTS ON BOTH CIRCUITS

2. Lighting Voltage test:

- Set the Pocket Tester (YU-03112) selector to "AC20V" position.
- Turn the "LIGHTS" switch to "HI" position.
- Connect the tester leads to headlight leads (Green ①, Black ② and Yellow ③).

Tester (+) lead → Yellow lead/or Green lead
Tester (−) lead → Black lead

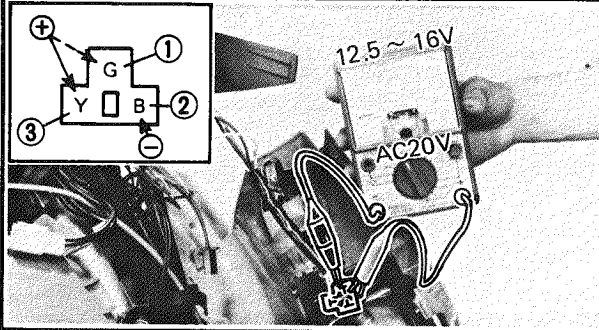
- Connect the inductive Tachometer (YU-08036) to ignition lead.
- Start the engine and accelerate to about 4,000 r/min.



- Measure the lighting voltage.



Lighting Voltage:
12.5 ~ 16V at 4,000 r/min



OK

Lighting system is good.

OUT OF SPECIFICATION

3. "LIGHTS" switch conduct check:

- Remove the front fender and disconnect the left handlebar switch lead.
- Set the Pocket Tester (YU-03112) selector to " $\Omega \times 1$ " position.
- Connect the tester leads to "LIGHTS" switch leads (Handlebar switch side).

If switch is turned to "LO" position.

Tester (+) lead → Blue lead
Tester (–) lead → Green lead

If switch is turned to "HI" position.

Tester (+) lead → Blue lead
Tester (–) lead → Yellow lead

CONTINUITY DOES
NOT EXIST ON ONE
CIRCUIT

Replace the left handlebar switch.

CONTINUITY EXISTS
ON BOTH CIRCUITS

4. Lighting coil resistance test:

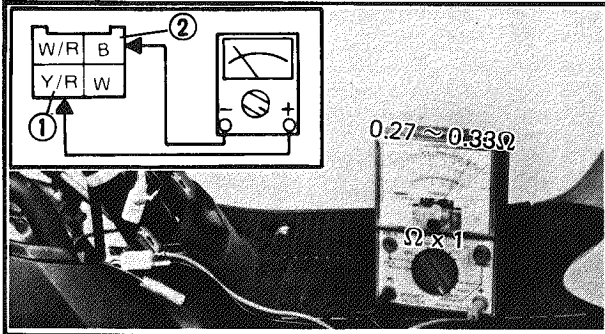
- Disconnect the CDI magneto leads.
- Set the Pocket Tester (YU-03112) selector to " $\Omega \times 1$ " position.
- Connect the tester leads to lighting coil leads (Yellow/Red ① and Black ②)



- Measure the lighting coil resistance.



Lighting Coil Resistance
 $0.27 \sim 0.33\Omega$ at 20°C (68°F)



OUT OF
SPECIFICATION

Replace the lighting coil.

OK

5. Check entire lighting system for connections. Refer to "WIRING DIAGRAM".

POOR
CONNECTION

Correct.

OK

Replace rectifier/Regulator.

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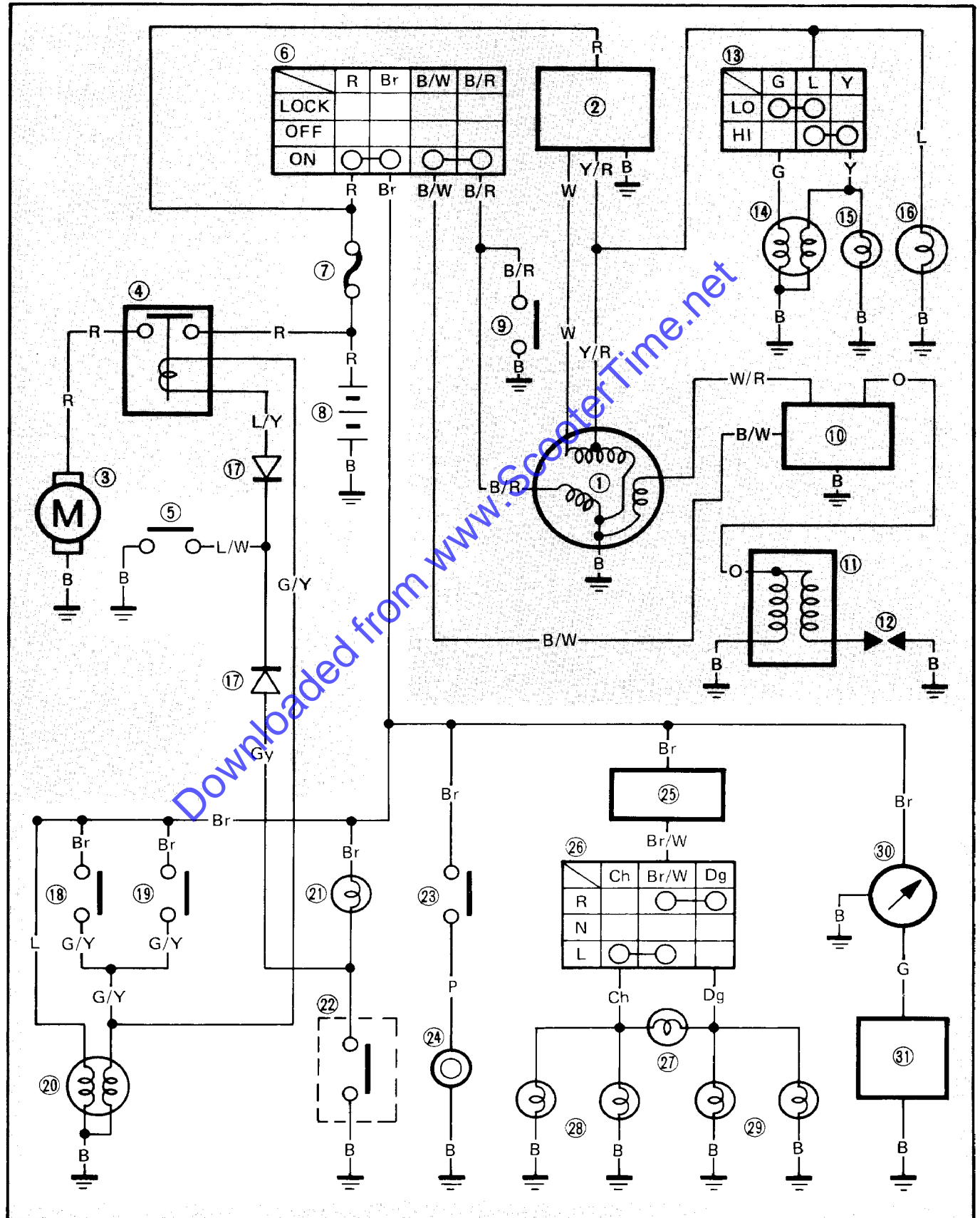


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SIGNAL SYSTEM

CIRCUIT DIAGRAM

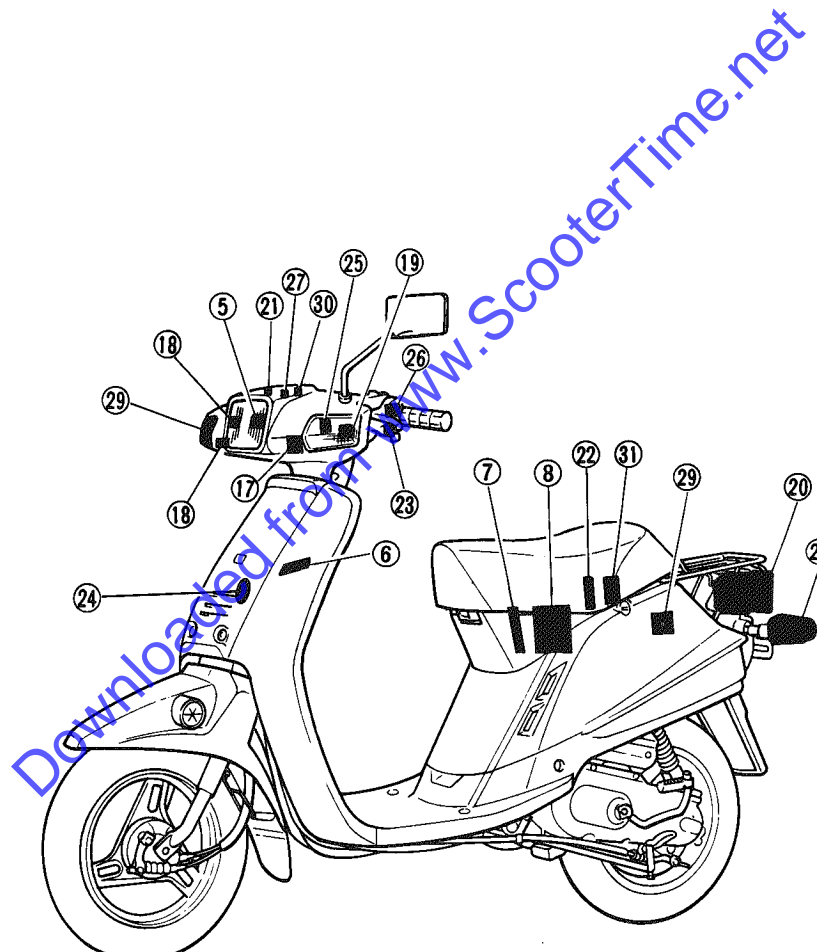
Below circuit diagram shows signal circuit.



**NOTE:**

For the encircled numbers and color codes, see 6-2.

- | | |
|--------------------------|---|
| ⑤ "START" switch | ②③ Horn switch |
| ⑥ Main switch | ②④ Horn |
| ⑦ Fuse | ②⑤ Flasher relay |
| ⑧ Battery | ②⑥ "TURN" switch |
| ①⑦ Diode | ②⑦ "TURN" indicator light |
| ①⑧ Front brake switch | ②⑧ Left flasher light (Front and rear) |
| ①⑨ Rear brake switch | ②⑨ Right flasher light (Front and rear) |
| ②⑩ Tail/Brake light | ③⑩ Fuel meter |
| ②① "OIL" indicator light | ③① Fuel sender |
| ②② Oil level gauge | |





TROUBLESHOOTING CHART

NOTE:

Before this troubleshooting, remove the seat and tail cover.

SIGNAL SYSTEM SHOULD BECOME IN-OPERATIVE.



1. Bulb inspection

- If flasher light(s), tail/brake light, indicator light(s) is faulty, check bulb(s) condition.

POOR
CONDITION



Replace bulb(s).



2. Fuse inspection

- Check fuse condition. Refer to "CHAPTER 2. FUSE INSPECTION" section.

FAULTY



Fuse is faulty.
Replace it.



OK

3. Battery inspection

- Check the battery condition. Refer to "CHAPTER 2. BATTERY INSPECTION" section.



Battery is faulty.
Recharge or replace it.



OK

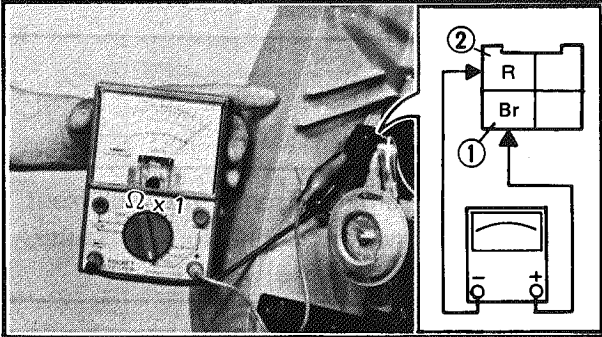
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**4. Main switch conduct check:**

- Disconnect the main switch leads.
- Set the Pocket Tester (YU-03112) selector to " $\Omega \times 1$ " position.
- Connect the tester leads to main switch (Red ① and Brown ②).

- Turn the main switch to "ON" position.

NO
CONTINUITY

Replace the main switch.

CONTINUITY

- 5. Check condition of each circuit for signal system.**
Refer to "SIGNAL SYSTEM TEST AND CHECKS" section.

POOR
CONDITION

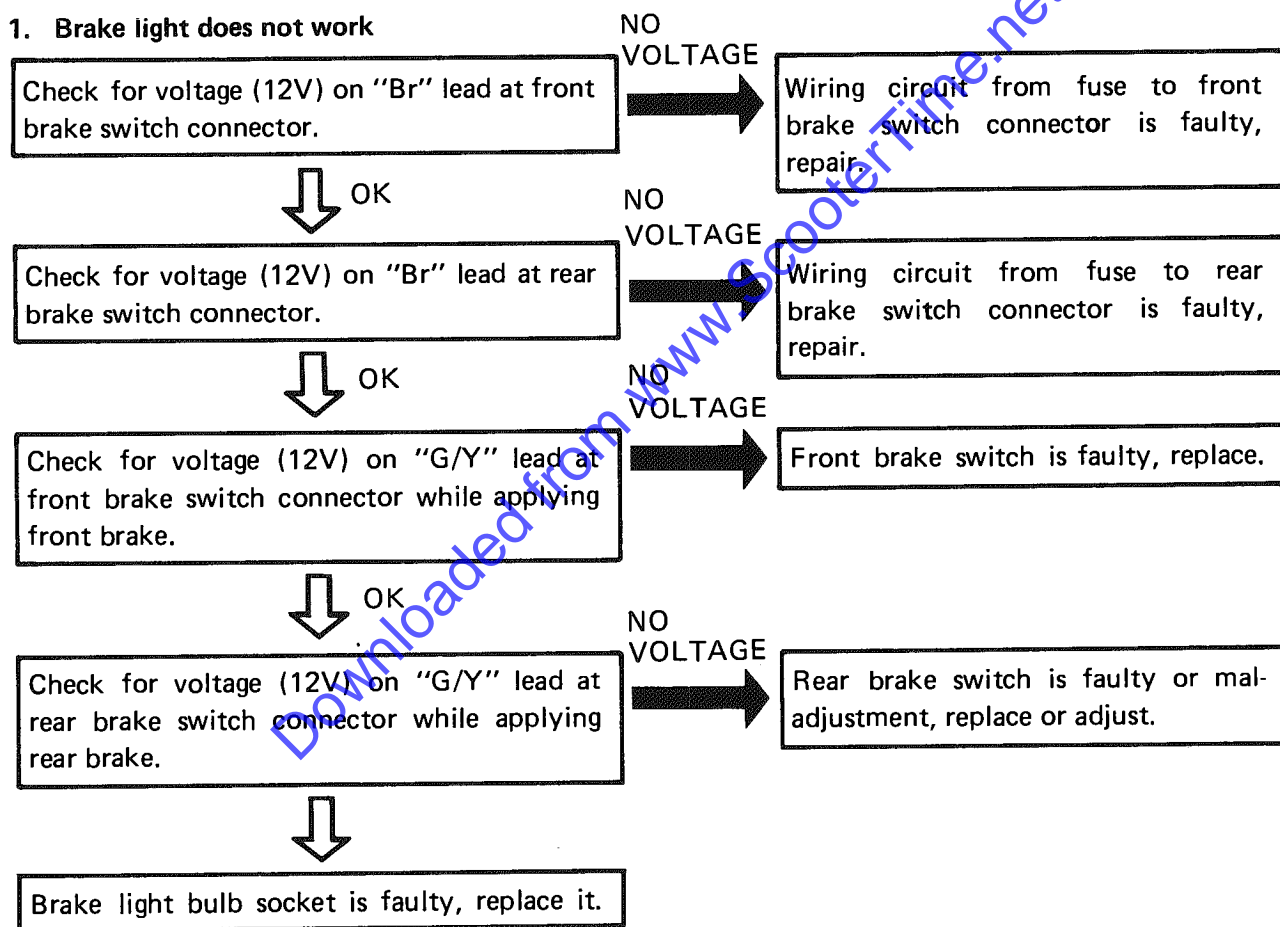
Replace poor condition electrical component(s).

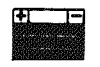


SIGNAL SYSTEM TEST AND CHECKS

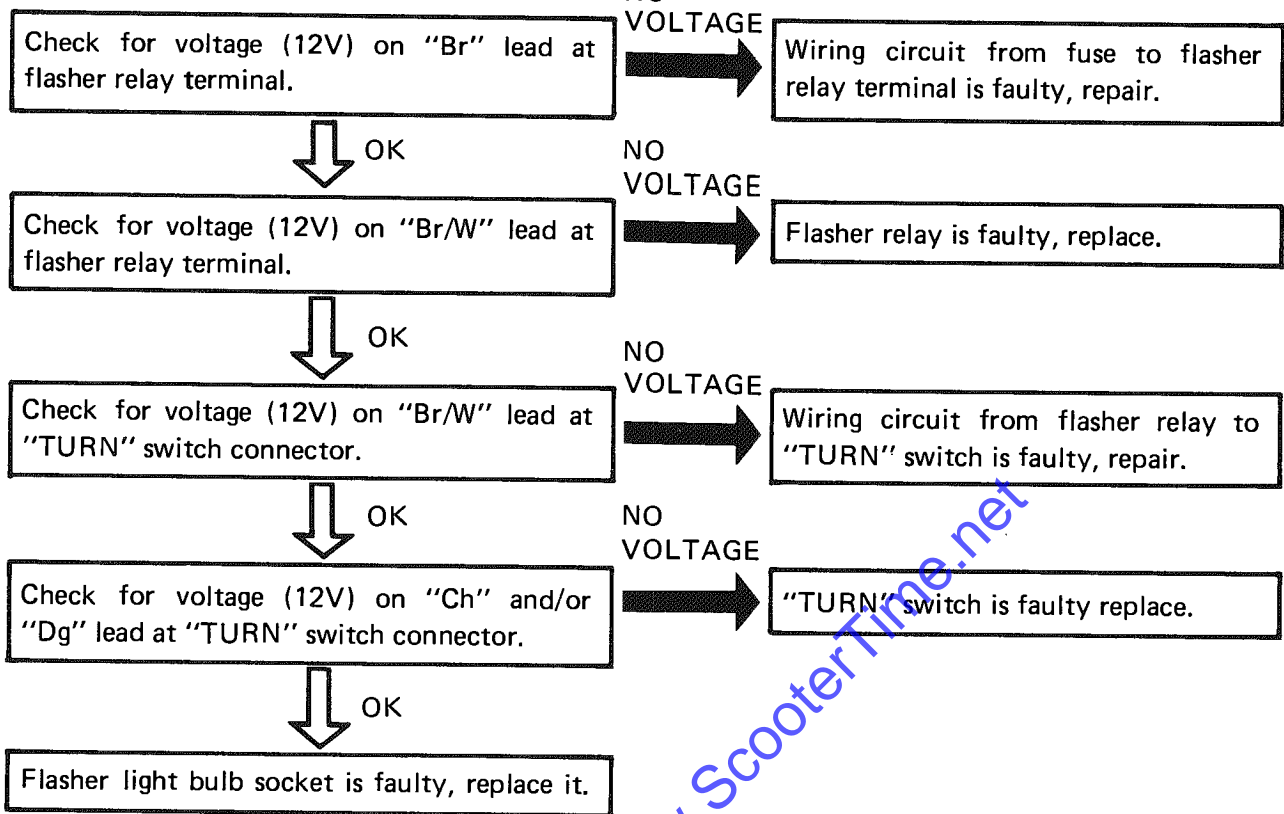
NOTE:

The battery provides power for operation of the horn, flasher lights, indicator light and brake light. If none of the above operates, always check the battery voltage before proceeding further. Low battery voltage indicates either a faulty battery, low battery electrolyte, or a defective charging system. See "CHARGING SYSTEM" for checks of the battery and charging system. Also, check the fuse condition. Replace the fuse if necessary.

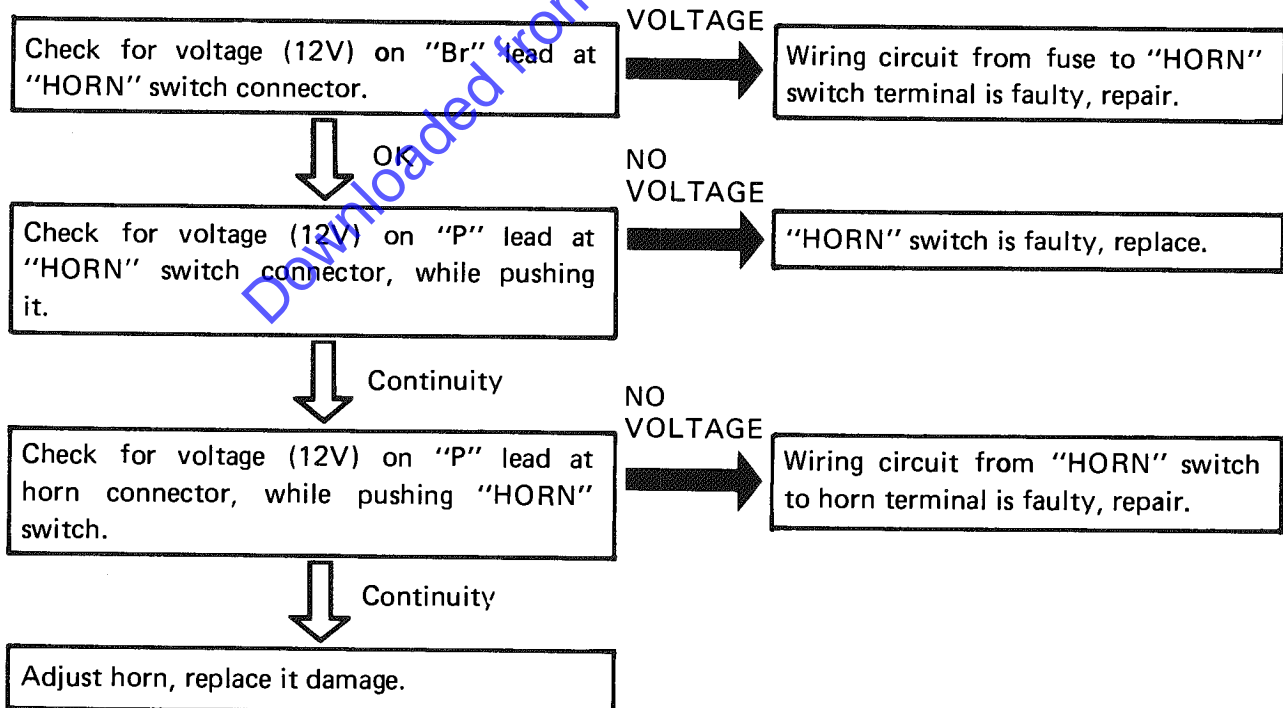
1. Brake light does not work



2. Flasher lights (left and/or right) do not work



3. Horn does not work





4. "OIL" indicator light does not work

Check for voltage (12V) on "Br" lead at "OIL" indicator light connector.



Check for voltage (12V) on "Gy" lead at "OIL" indicator light connector.



Check for voltage (12V) on "Gy" lead at oil level gauge connector.



Check for condition of oil level gauge. If oil level gauge is poor condition, replace it.

NO
VOLTAGE



Wiring circuit from fuse to "OIL" indicator light connector is faulty, repair.

NO
VOLTAGE



"OIL" indicator light socket is faulty, replace it.

NO
VOLTAGE



Wiring circuit from "OIL" indicator light to oil level gauge is faulty, repair.

[Oil level gauge check]

1. Disconnect:

- Oil level gauge leads

2. Remove:

- Oil level gauge

3. Connect:

- Pocket Tester (YU-03112)

Set the tester selector to " $\Omega \times 1$ " position.

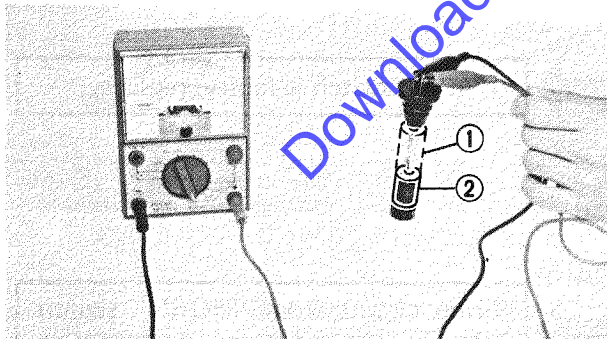
4. Check:

- Oil level gauge conduct

Refer to following table.

Not per result → Replace.

Float position	Good
Up ①	No continuity
Down ②	Continuity



5. Taillight does not work

Check for voltage (12V) on "Br" lead at taillight connector.



Taillight bulb socket is faulty, replace it.

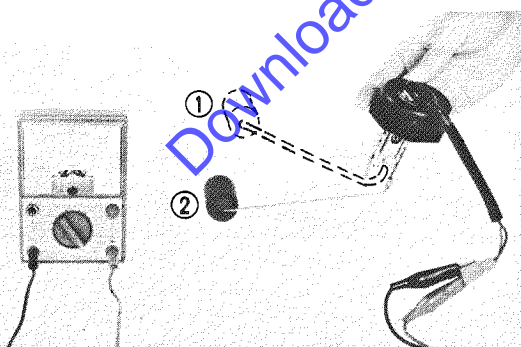
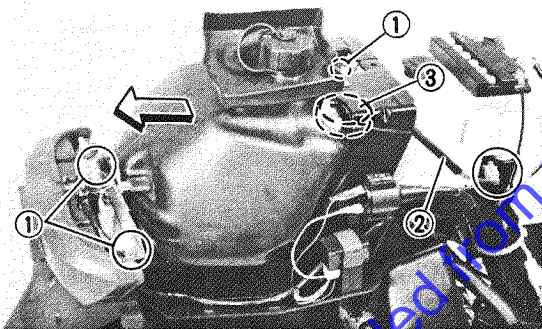
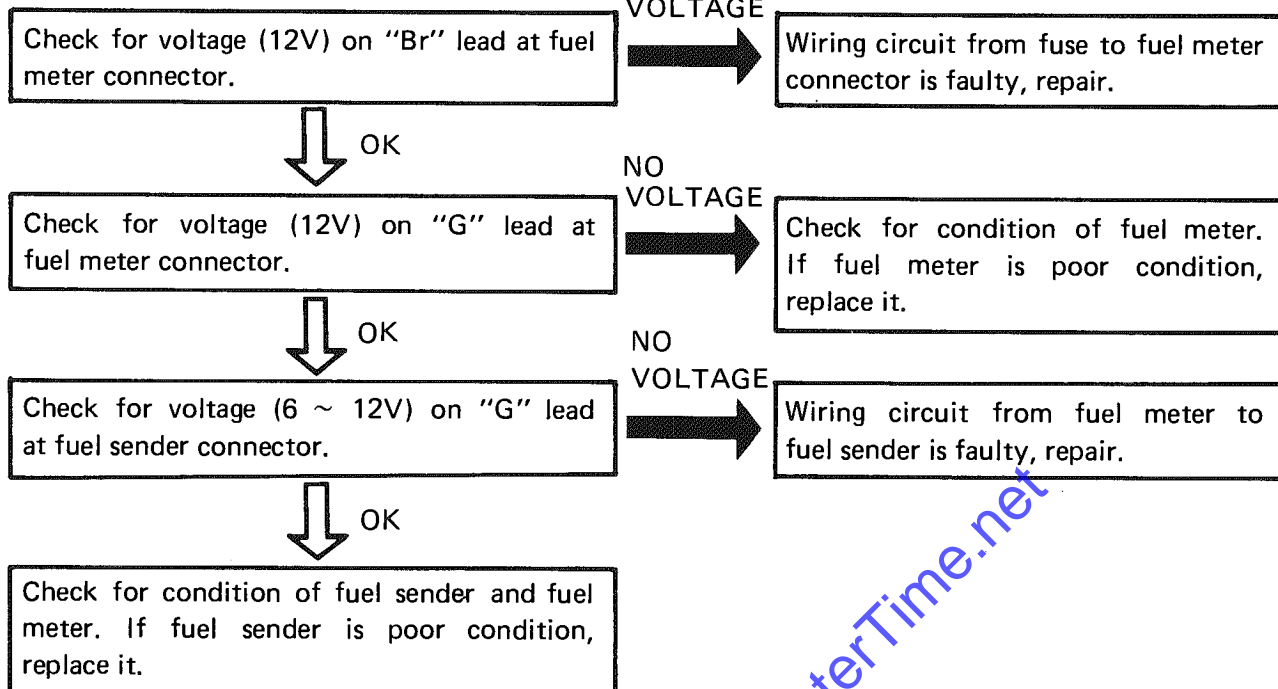
NO
VOLTAGE



Wiring circuit from fuse to taillight connector is faulty, repair.



6. Fuel meter does not work

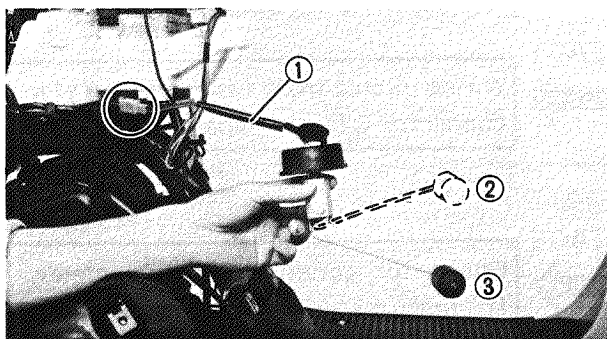


[Fuel sender check]

1. Remove:
 - Bolts (Fuel tank mounting) ①
2. Disconnect:
 - Fuel sender lead ②
3. Slide the fuel tank backward.
4. Remove:
 - Fuel sender ③
5. Connect:
 - Pocket Tester (YU-03112)
 Set the tester selector to " $\Omega \times 10$ " position.
6. Check:
 - Fuel sender conduct
 Refer to following table.
 Not per result → Replace.

Float position	Fuel sender resistance
Up ①	4.2 ~ 9.8 Ω
Down ②	85 ~ 104.5 Ω

NOTE: _____
 Check from top to bottom.

**[Fuel meter check]**

1. Connect:
 - Fuel sender lead ①
2. Turn the main switch to "ON".
3. Check:
 - Fuel meterRefer to following table.
Not per result → Replace.

Float position	Fuel meter position
Up ②	"F"
Down ③	"e"

NOTE:

Before reading the meter, stay put the float for more than three minutes respectively at ② and ③ .

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CHAPTER 7

APPENDICES

SPECIFICATIONS	7-1
GENERAL SPECIFICATIONS.....	7-1
MAINTENANCE SPECIFICATIONS	7-3
 GENERAL TORQUE SPECIFICATIONS.....	 7-10
 DEFINITION OF UNITS	 7-10
 CABLE ROUTING	 7-11
 SH50T WIRING DIAGRAM	

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APPENDICES

SPECIFICATIONS

GENERAL SPECIFICATIONS

Model	SH50T
Model Code Number	2FU
Vehicle Identification Number	JYA 2FU00 * HA000101
Engine Starting Number	2FU-000101
Dimensions:	
Overall Length	1,540 mm (60.6 in)
Overall Width	620 mm (24.4 in)
Overall Height	980 mm (38.6 in)
Seat Height	705 mm (27.8 in)
Wheelbase	1,095 mm (43.1 in)
Minimum Ground Clearance	110 mm (4.3 in)
Basic Weight:	
With Oil and Full Fuel Tank	57 kg (126 lb)
Minimum Turning Radius	1,600 mm (63 in)
Engine:	
Engine Type	Air cooled 2-stroke, gasoline torque induction
Cylinder Arrangement	Single cylinder, Forward inclined
Displacement	49.3 cm ³
Bore x Stroke	40.0 x 39.2 mm (1.57 x 1.54 in)
Compression Ratio	6.3 : 1
Starting System	Electric and Kick Starter
Lubrication System	Separate lubrication (Yamaha Autolube)
Oil Type or Grade:	
Engine Oil	Yamalube 2-cycle oil or Air cooled 2-stroke engine oil
Transmission Oil	Yamalube 4-cycle oil, SAE 10W30 type SE motor oil or GL gear oil
Oil Capacity:	
Oil Tank (Engine Oil)	1.0 L (0.88 Imp qt, 1.05 US qt)
Transmission Oil:	
Periodic Oil Change	0.70 L (0.62 Imp qt, 0.74 US qt)
Total Amount	0.75 L (0.66 Imp qt, 0.79 US qt)
Air Filter	Wet type element
Fuel:	
Type	Regular gasoline
Tank Capacity	4.4 L (0.97 Imp gal, 1.16 US gal)
Carburetor:	
Type/Manufacturer	Y12-8B/TEIKEI KIKAKI x 1
Spark Plug:	
Type/Manufacturer	BPR6HS/NGK
Gap	1.0 ~ 1.1 mm (0.039 ~ 0.043 in)
Clutch Type	Wet, Centrifugal Automatic

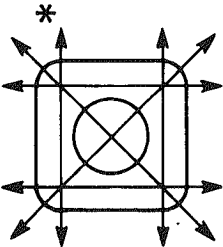
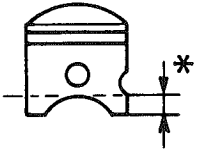
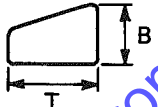
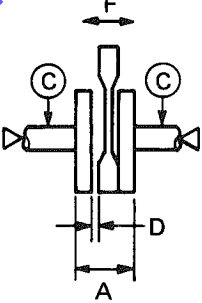


Model	SH50T
Transmission: Primary Reduction System Primary Reduction Ratio Secondary Reduction System Secondary Reduction Ratio Transmission Type Operation	Chain 23/14 (1.643) Spur gear 57/26 x 37 x 11 (7.374) Single-speed Automatic Centrifugal Automatic
Chassis: Frame Type Caster Angle Trail	Steel Tube Underbone 26.5° 66 mm (2.6 in)
Tire: Size (F) Size (R)	2.50-10-4PR (With tube) 2.50-10-4PR (With tube)
Tire Pressure (Cold tire): Front Rear	122 kPa (1.25 kg/cm ² 18 psi) 220 kPa (2.25 kg/cm ² 32 psi)
Brake: Front Brake Type Operation Rear Brake Type Operation	Drum brake Right hand operation Drum brake Left hand operation
Suspension: Front Suspension Rear Suspension	Telescopic Fork Unit Swing
Shock Absorber: Rear Shock Absorber	Coil Spring/Oil Damper
Wheel Travel: Front Wheel Travel Rear Wheel Travel	40 mm (1.6 in) 55 mm (2.2 in)
Electrical: Ignition System Generator System Battery Type or Model Battery Capacity	CDI Flywheel magneto GM4-3B 12V 4AH
Headlight Type	Sealed Beam
Bulb Wattage x Quantity: Headlight Tail/Brake Light Flasher Light Meter Light	12V 25W/25W x 1 12V 5W/21W x 1 12V 10W x 4 12W 3.4W x 1
Indicator Light Wattage x Quantity: "TURN" "HIGH BEAM" "OIL"	12V 1.7W x 1 12V 1.7W x 1 12V 3.4W x 1



MAINTENANCE SPECIFICATIONS

Engine

Model	SH50T
Cylinder Head: Warp Limit 	0.03 mm (0.001 in) *Lines indicate straightedge measurement
Cylinder: Bore Size < Limit > Taper Limit Out of Round Limit	40.0 mm (1.575 in) 40.1 mm (1.579 in) 0.03 mm (0.001 in) 0.01 mm (0.0004 in)
Piston: Piston Size Measuring Point*  Piston Clearance Oversize 1st 2nd	40.0 mm (1.575 in) 5 mm (0.2 in) 0.034 ~ 0.047 mm (0.0013 ~ 0.0018 in) 40.25 mm (1.585 in) 40.50 mm (1.594 in)
Piston Ring: Sectional Sketch (B x T) Top Ring 2nd Ring End Gap (Installed) Top Ring 2nd Ring Side Clearance (Installed) Top Ring 2nd Ring	 1.5 x 1.8 mm (0.059 x 0.071 in) 1.5 x 1.8 mm (0.059 x 0.071 in) 0.15 ~ 0.35 mm (0.006 ~ 0.014 in) 0.15 ~ 0.35 mm (0.006 ~ 0.014 in) 0.03 ~ 0.05 mm (0.0012 ~ 0.0020 in) 0.03 ~ 0.05 mm (0.0012 ~ 0.0020 in)
Crankshaft:  Crank Width "A" Run Out Limit "C" Connecting Rod Big End Side Clearance "D" Small End Free Play "F"	 37.90 ~ 37.95 mm (1.492 ~ 1.494 in) 0.03 mm (0.001 in) 0.35 ~ 0.75 mm (0.012 ~ 0.030 in) 0.4 ~ 0.8 mm (0.015 ~ 0.031 in)



Model	SH50T
Automatic Centrifugal Clutch:	
Shoe Thickness	2.3 ~ 2.4 mm (0.091 ~ 0.096 in)
< Wear Limit >	< 1.0 mm (0.039 in) >
Clutch Spring Free Length	29.1 mm (1.15 in)
< Limit >	< 28.0 mm (1.10 in) >
Clutch-In Revolution	3,070 r/min
Clutch-Stall Revolution	4,060 r/min
Kick Starter:	
Type	Ratchet Type
Kick Clip Tension	250 ~ 300 g (8.83 ~ 10.6 oz)
Carburetor:	
I.D. Mark	2EK00
Main Jet (M.J.)	#82
Jet Needle-clip Position (J.N.)	3S11-3/5
Main Air Jet (M.A.J.)	2.0
Cut away (C.A.)	2.5
Pilot Jet (P.J.)	#46
Pilot Air Jet (P.A.J.)	φ 1.04
Pilot Air Screw (A.S.)	1-3/8 ~ 1-7/8
Valve Seat Size (V.S.)	1.5
Starter Jet (G.S.)	#46
Float Height	15.0 ~ 17.0 mm (0.59 ~ 0.67 in)
Engine Idling Speed	1,500 ~ 2,100 r/min
Reed Valve:	
Valve Stopper Height	3.0 ~ 3.4 mm (0.12 ~ 0.13 in)
Reed Valve Clearance	Less than 0.2 mm (0.008 in)
Lubrication System:	
Autolube Pump	
Minimum Stroke	0.5 mm (0.02 in)



Tightening Torque						
Part to be tightened	Thread size	Q'ty	Tightening torque			Remarks
			Nm	m·kg	ft·lb	
Spark Plug	M14 x 1.25	1	20	2.0	14	
Cylinder Head	M6 x 1.0	4	10	1.0	7.2	
Stud Bolt	M6 x 1.0	4	10	1.0	7.2	
Stator Assembly	M6 x 1.0	2	9	0.9	6.5	
C.D.I. Magneto	M12 x 1.25	1	43	4.3	31	
Air Shroud	M6 x 1.0	1	5	0.5	3.6	
Fan Cover	M6 x 1.0	2	9	0.9	6.5	
Fan	M6 x 1.0	2	7	0.7	5.1	
Autolube Pump	M5 x 0.8	2	4	0.4	2.9	
Reed Valve (Carburetor Joint)	M6 x 1.0	4	9	0.9	6.5	
Air Cleaner Case	M6 x 1.0	2	9	0.9	6.5	
Exhaust Pipe	M6 x 1.0	2	9	0.9	6.5	
Muffler	M8 x 1.25	2	27	2.7	19	
Muffler Protector	M6 x 1.0	2	8	0.8	5.8	
Crankcase	M6 x 1.0	6	8	0.8	5.8	
Crankcase Cover	M6 x 1.0	12	8	0.8	5.8	
Transmission Oil Drain Bolt	M8 x 1.25	1	18	1.8	13	
Stay (Starter Clutch)	M6 x 1.0	3	8	0.8	5.8	
Kick Crank	M6 x 1.0	1	10	1.0	7.2	
Clutch Housing	M10 x 1.0	1	30	3.0	22	
Idle Gear Plate	M6 x 1.0	2	8	0.8	5.8	
Oil Seal Stopper Plate	M6 x 1.0	1	13	1.3	9.4	
Fuel Cock	M6 x 1.0	2	8	0.8	5.8	
Starter Motor	M6 x 1.0	2	13	1.3	9.4	



Chassis

Model	SH50T
Steering System: Steering Bearing Type No./Size of Steel Balls Upper Lower	Ball bearing 5/32 in 26 pcs 5/32 in 26 pcs
Front Suspension: Front Fork Travel Fork Spring Free Length < Limit > Spring Rate (K1) (K2) Stroke (K1) (K2) Optional Spring	40 mm (1.57 in) 75 mm (2.95 in) < 74 mm (2.90 in) > 14.1 N/mm (1.44 kg/mm, 80.5 lb/in) 27.7 N/mm (2.82 kg/mm, 158 lb/in) 2.0 ~ 27 mm (0.08 ~ 1.06 in) 27 ~ 40 mm (1.06 ~ 1.57 in) No.
Rear Suspension: Shock Absorber Travel Spring Free Length Spring Fitting Length Spring Rate (K1) (K2) Stroke (K1) (K2) Optional Spring	50 mm (1.97 in) 165.6 mm (6.52 in) 162.8 mm (6.41 in) 17.7 N/mm (1.8 kg/mm, 101 lb/in) 29.2 N/mm (3.0 kg/mm, 167 lb/in) 0.0 ~ 23.7 mm (0.0 ~ 0.93 in) 23.7 ~ 50 mm (0.93 ~ 2.00 in) No.
Wheel: Front Wheel Type Rear Wheel Type Front Rim Size/Material Rear Rim Size/Material Rim Runout Limit Vertical Radial	Panel wheel Panel wheel 1.50 x 10 DC/Steel 1.50 x 10 DC/Steel 2.0 mm (0.08 in) 2.0 mm (0.08 in)
Front Drum Brake: Type Drum Inside Diameter < Wear Limit > Lining Thickness < Wear Limit > Shoe Spring Free Length	Leading, Trailing 80.0 mm (3.15 in) < 80.5 mm (3.17 in) > 3.5 mm (0.14 in) < 2.0 mm (0.08 in) > 33 mm (1.3 in)
Rear Drum Brake: Type Drum Inside Diameter < Wear Limit > Lining Thickness < Wear Limit >	Leading, Trailing 95.0 mm (3.74 in) < 95.5 mm (3.76 in) > 3.5 mm (0.14 in) < 2.0 mm (0.08 in) >



Tightening torque						
Part to be tightened	Thread size	Q'ty	Tightening torque			Remarks
			Nm	m•kg	ft•lb	
Frame and Engine Bracket	M10 x 1.25	1	40	4.0	29	
Engine Bracket and Engine	M10 x 1.25	1	40	4.0	29	
Rear Suspension (Upper)	M10 x 1.25	1	40	4.0	29	
(Lower)	M8 x 1.25	1	18	1.8	13	
Handlebar and Steering Column	M10 x 1.25	1	60	6.0	43	
Ring nut (Steering Column)	M25	1	30	3.0	22	
Front Wheel Axle	M10 x 1.25	1	35	3.5	25	
Front Brake Cam Lever	M5 x 0.8	1	4	0.4	2.9	
Rear Brake Cable Holder	M6 x 1.0	1	7	0.7	5.1	
Rear Brake Cam Lever	M5 x 0.8	1	6	0.6	4.3	
Rear Wheel Axle	M14 x 1.5	1	95	9.5	68	
Fuel Sender	—	1	7	0.7	5.1	
Carrier (Nut)	M6 x 1.0	2	7	0.7	5.1	
Carrier (Bolt)	M6 x 1.0	2	10	1.0	7.2	
Bridge Plate	M8 x 1.25	4	26	2.6	19	
Cable Holder (Front)	M6 x 1.0	3	7	0.7	5.1	
Battery Box	M6 x 1.0	1	7	0.7	5.1	
Horn	M6 x 1.0	1	6	0.6	4.3	
Plastic Part (M6)	M6 x 1.0	—	6	0.6	4.3	
(M5)	M5 x 1.0	—	1	0.1	0.7	

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Electrical

Model	SH50T
Voltage:	12V
Ignition System: Ignition Timing (B.T.D.C.) Advancer Type	18°/5,000 r/min Electrical
<p>Ignition Timing (B.T.D.C.)</p> <p>Engine Speed (x 10³ r/min)</p>	
CDI:	
CDI Unit-Model/Manufacturer	25L/YAMAHA
Ignition Coil:	
Model/Manufacturer	2EK/YAMAHA
Minimum Spark Gap	6 mm (0.24 in)
Primary Winding Resistance	0.20 ~ 0.26Ω at 20°C (68°F)
Secondary Winding Resistance	4.5 ~ 7.9 kΩ at 20°C (68°F)
Charging System/Type:	Flywheel Magneto
CDI Magneto:	
Model/Manufacturer	F2EK/YAMAHA
Charging Voltage	13.0 ~ 17.5V at 4,000 r/min
Lighting Voltage	11.5 ~ 13.5V at 4,000 r/min
Pickup Coil Resistance (Color)	27 ~ 33Ω at 20°C (68°F) (White/Red – Black)
Source Coil Resistance (Color)	264 ~ 396Ω at 20°C (68°F) (Black/Red – Black)
Charging Coil Resistance (Color)	0.9 ~ 1.1Ω at 20°C (68°F) (White – Black)
Lighting Coil Resistance (Color)	0.27 ~ 0.33Ω at 20°C (68°F) (Yellow/Red – Black)
Voltage Regulator:	
Type	Semi conductor short circuit type
Model/Manufacturer	SH582-12/SHINDENGEN
No Load Regulated Voltage	12.6 ~ 13.6V

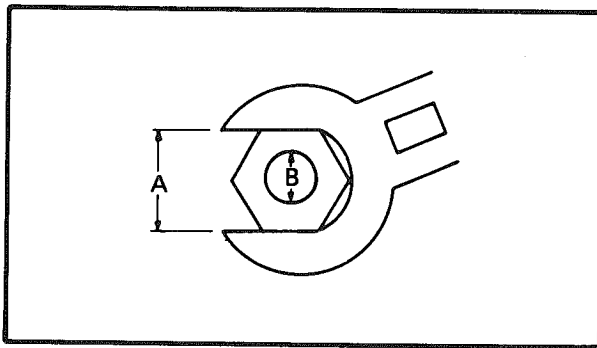


Model	SH50T
Rectifier: Model/Manufacturer Capacity Withstand Voltage	SH582-12/SHINDENGEN 8A 120V
Battery: Capacity Specific Gravity	12V, 4AH 1.280
Starter Motor: Model Manufacturer Out Put Armature Coil Resistance Brush Length < Wear Limit > Commutator Diameter < Wear Limit > Mica Undercut	DA5AE NIPPON DENSO 0.14 kW 0.082 ~ 0.100Ω 5.5 mm (0.22 in) < 2.5 mm (0.098 in) > 15.5 mm (0.61 in) < 14.5 mm (0.57 in) > 1.0 mm (0.039 in)
Starter Relay: Model/Manufacturer Amperage Rating Coil Resistance	53L/TATEISHI 20A 54 ~ 66Ω
Horn: Type/Quantity Model/Manufacturer Maximum Amperage	Plain type GF-12/NIKKO 1.5A
Flasher Relay: Type Model/Manufacturer Self Cancelling Device Flasher Frequency Wattage	Condenser type FZ222SD/NIPPON DENSO No 60 ~ 120 cycle/min 10W x 2 + 3.4W
Circuit Breaker: Type Amperage for Individual Circuit x Quantity Main	Fuse 7A x 1

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 thread diameter

DEFINITION OF UNITS

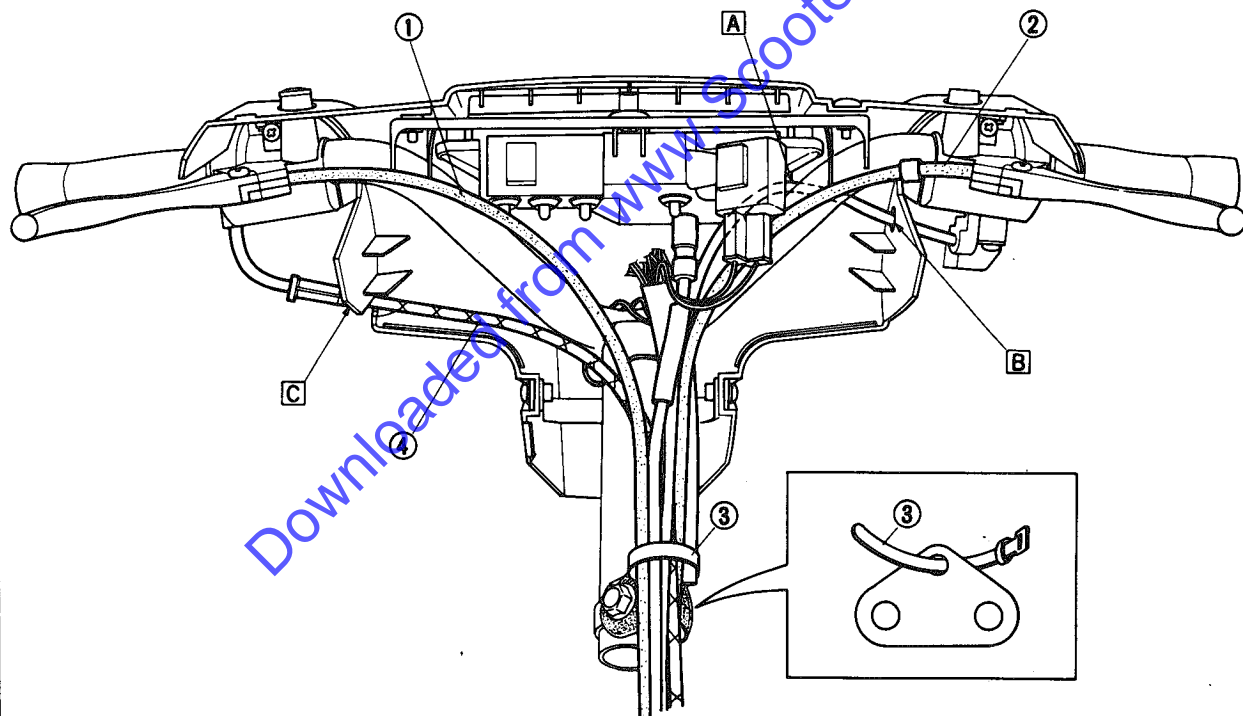
Unit	Read	Definition	Measure
mm cm	millimeter centimeter	10^{-3} meter 10^{-2} meter	Length Length
kg	kilogram	10^3 gram	Weight
N	Newton	$1 \text{ kg} \times \text{m/sec}^2$	Force
Nm m•kg	Newton meter Meter kilogram	$\text{N} \times \text{m}$ $\text{m} \times \text{kg}$	Torque Torque
Pa N/mm	Pascal Newton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



CABLE ROUTING

- ① Front brake cable
- ② Rear brake cable
- ③ Band
- ④ Throttle cable

- A Pass the starter cable behind the handlebar.
- B Pass the starter cable through the handlebar cover hole.
- C Position the throttle cable as shown.



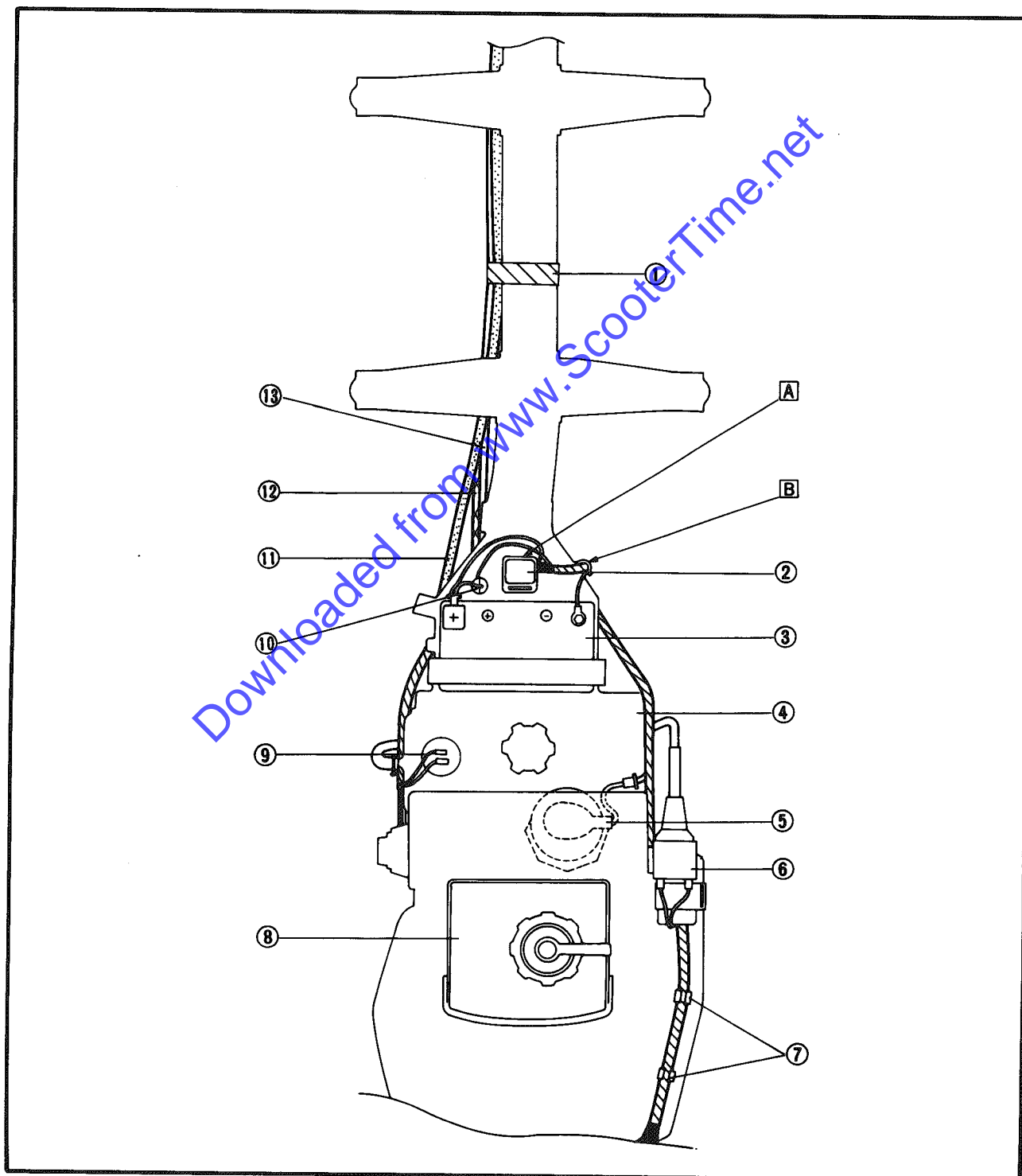
CABLE ROUTING



- ① Band
- ② Starter relay
- ③ Battery
- ④ Oil tank
- ⑤ Fuel sender
- ⑥ Ignition coil
- ⑦ Clamp
- ⑧ Fuel tank

- ⑨ Oil level gauge
- ⑩ Fuse
- ⑪ Rear brake cable
- ⑫ Throttle cable
- ⑬ Starter cable

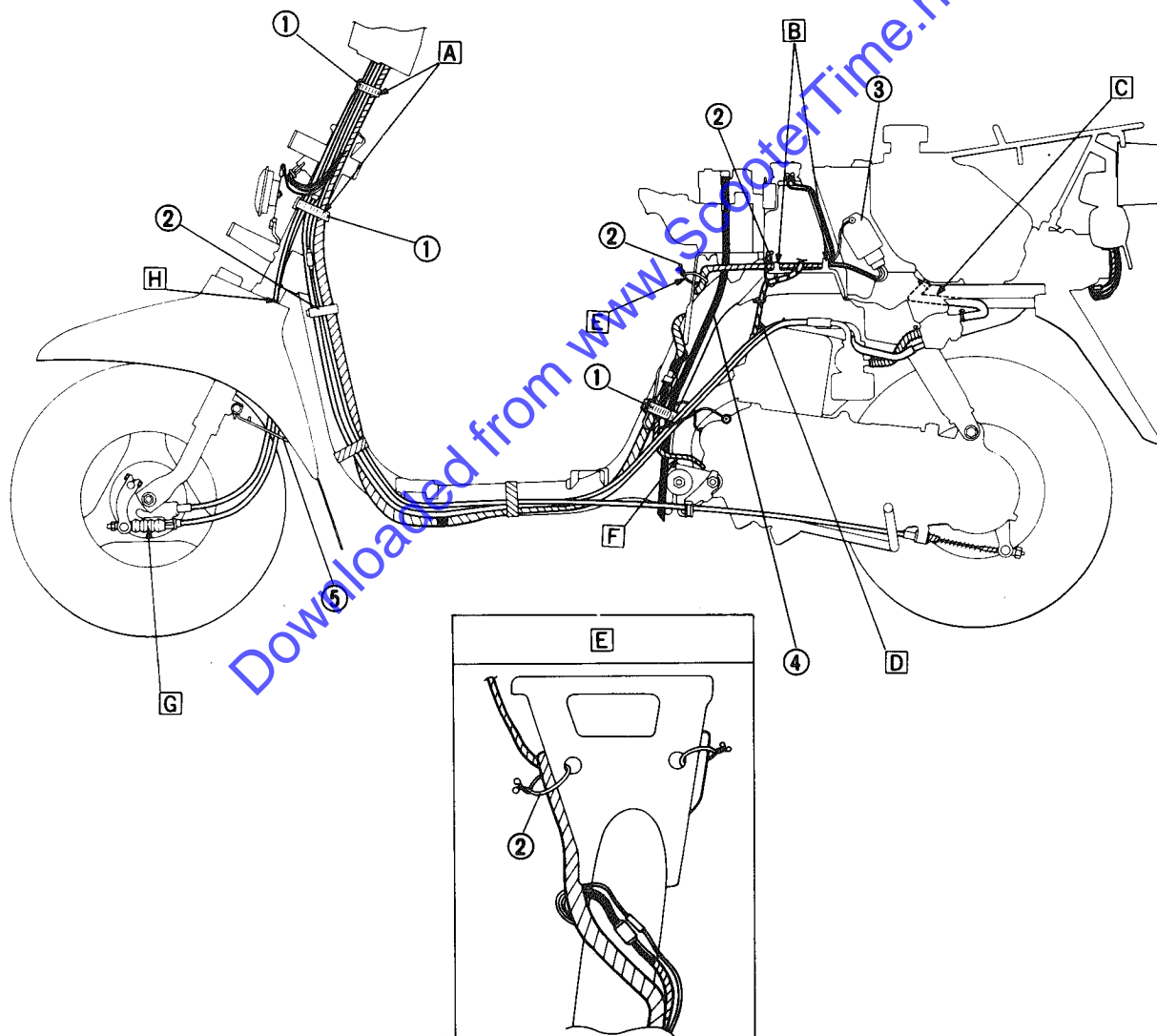
- A Pass the starter relay lead through the slot.
- B Clamp the wireharness and battery negative (-) lead.





- ① Band
- ② Clamp
- ③ Rectifier/Regulator
- ④ Battery breather hose
- ⑤ Cable guide

- A Clamp the cables and wireharness.
- B Pass the wireharness between the mud guard and oil tank.
- C Pass the wireharness between the mud guard and frame.
- D Pass the oil hose through the guide.
- E View "A".
- F Pass the CDI magneto lead on engine bracket.
- G Be sure to install the spring in the rubber boots.
- H Pass the front brake cable and speedometer cable through the front fender hole.

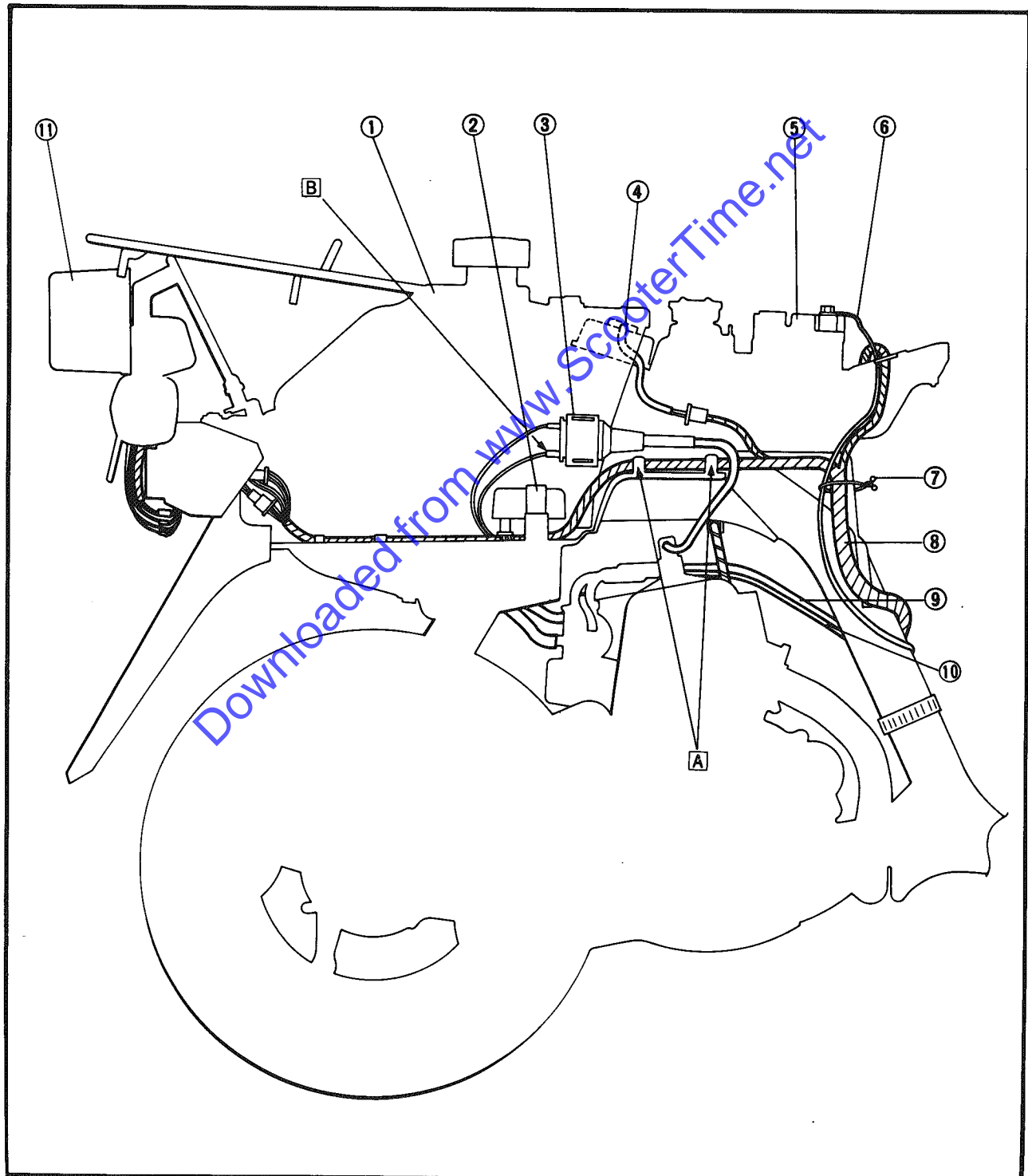




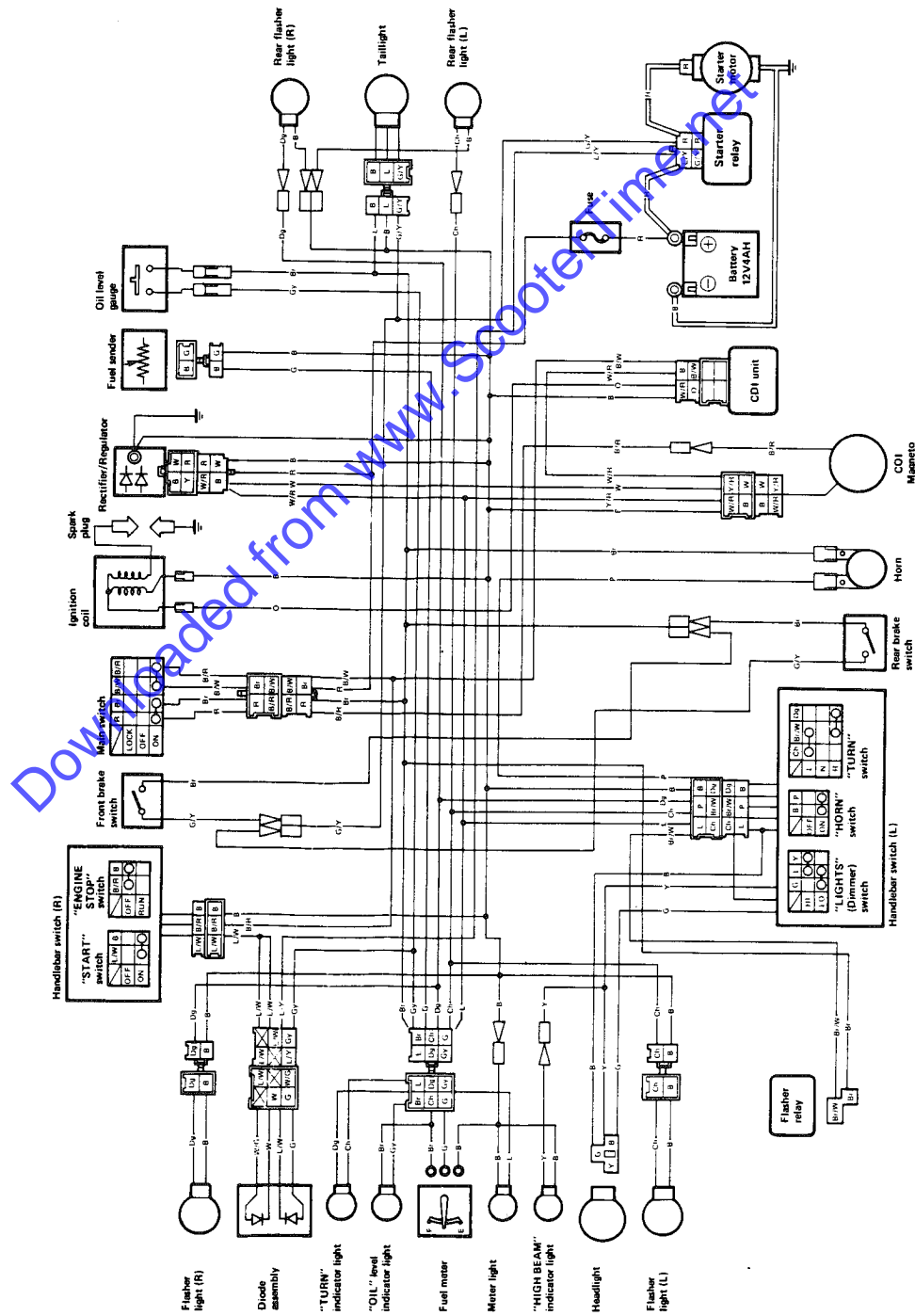
- ① Fuel tank
- ② CDI unit
- ③ Ignition coil
- ④ Fuel sender
- ⑤ Battery
- ⑥ Battery negative (-) lead
- ⑦ Clamp
- ⑧ Wireharness
- ⑨ Starter cable
- ⑩ Throttle cable

⑪ Taillight

- A** Pass the wireharness between the mud guard and oil tank.
- B** Install the ignition coil so that orange lead is lower.



SH50T WIRING DIAGRAM



COLOR CODE

B	Black
L	Blue
O	Orange
R	Red
P	Pink
G	Green
Y	Yellow
Br	Brown
Gy	Gray
Ch	Chocolate
Dg	Dark green
W	White
B/R	Black/Red
B/W	Black/White
L/Y	Blue/Yellow
L/W	Blue/White
G/Y	Green/Yellow
Y/R	Yellow/Red
Br/W	Brown/White
W/R	White/Red
W/G	White/Green

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