YAMAHA

1987

MOTORCYCLE

SERVICE MANUAL

Model : XC200T

1YA281972000

XC200T
SERVICE MANUAL
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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 scooter 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.
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.

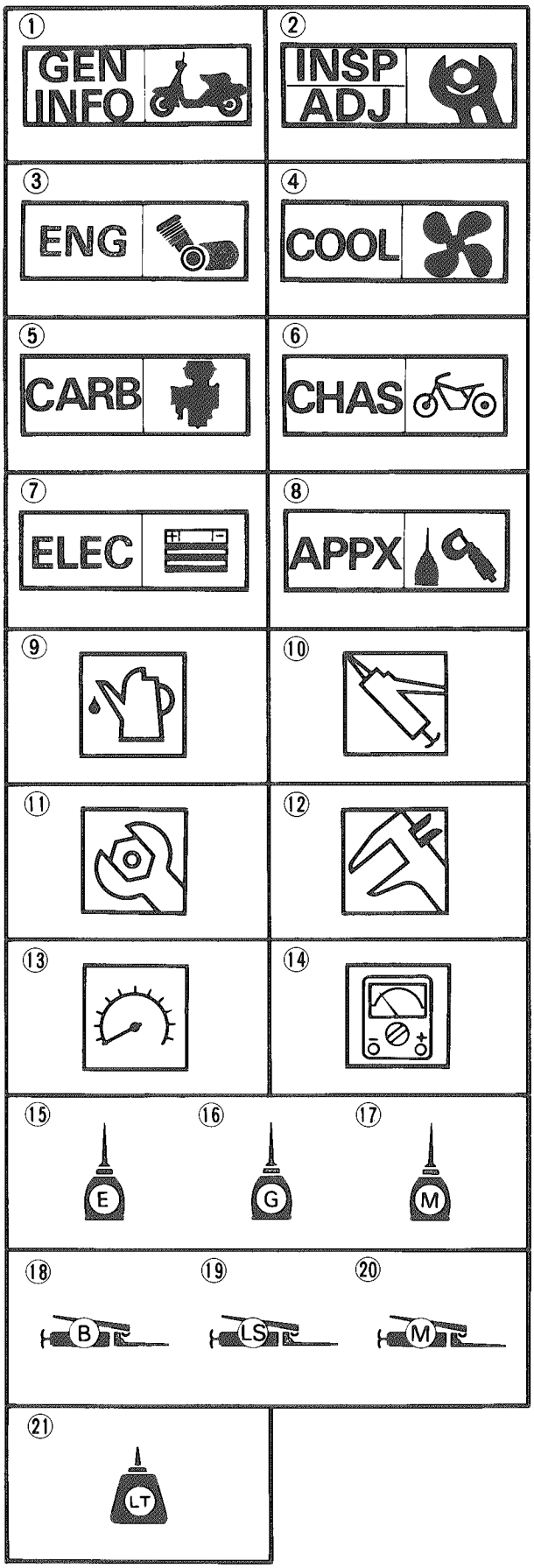
MANUAL FORMAT

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 in the text.

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®)

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CARBURETION — CARB 4

CHASSIS — CHAS 5

ELECTRICAL — ELEC 6

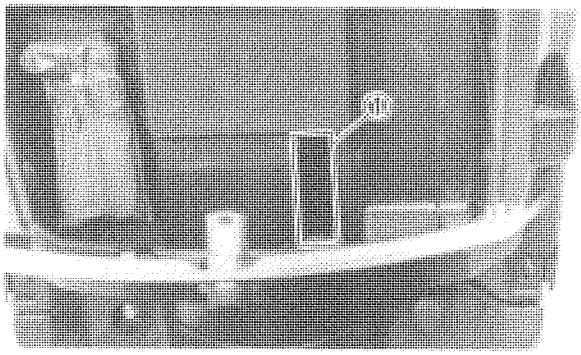
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CHAPTER 1.
GENERAL INFORMATION

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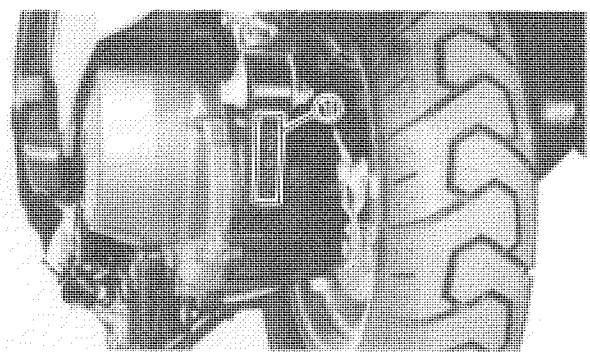


GENERAL INFORMATION
SCOOTER IDENTIFICATION

VEHICLE IDENTIFICATION NUMBER
The vehicle identification number ① is stamped into the steering head pipe.

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.

Starting Serial Number:
JYA1YA00✱HA000101

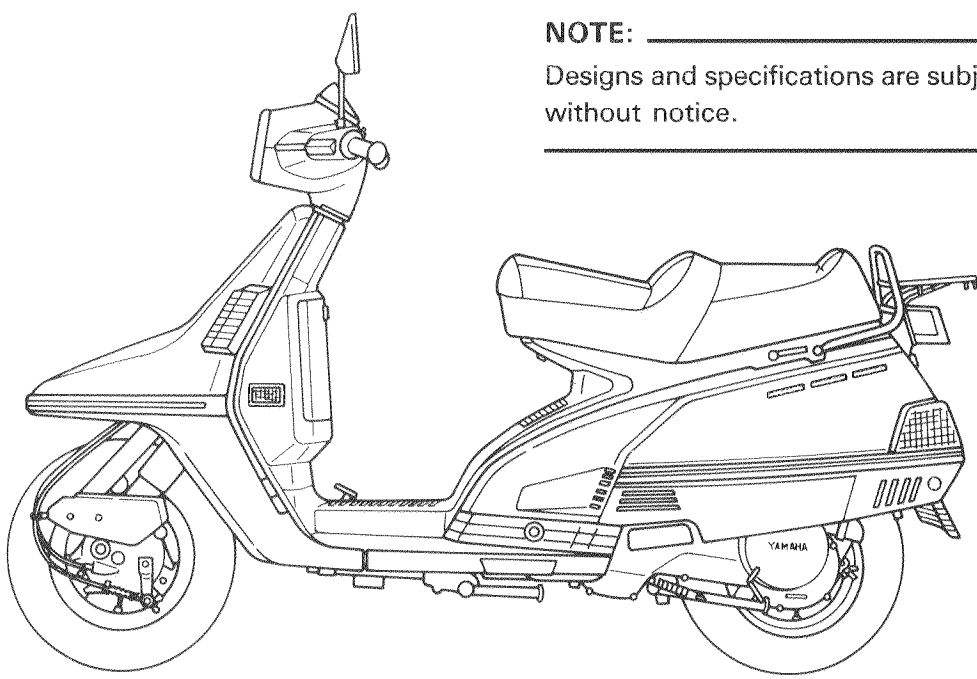


ENGINE SERIAL NUMBER
The engine serial number ① is stamped into the elevated part of the left rear section of the transmission case.

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

Starting Serial Number:
1YA-000101

NOTE:
Designs and specifications are subject to change without notice.



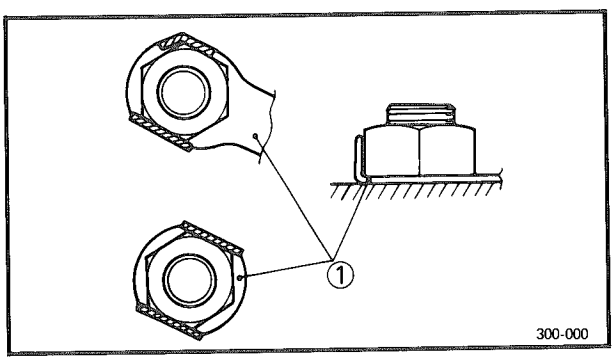
INPORTANT INFORMATION

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.

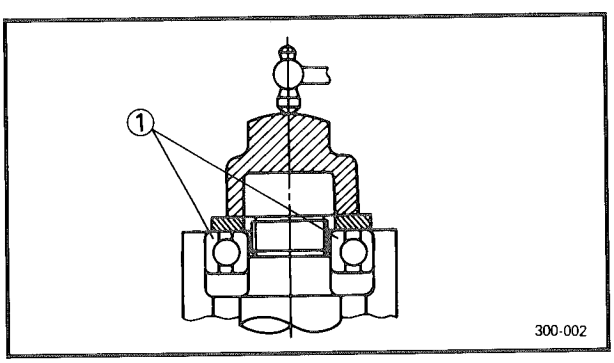
GASKETS, OIL SEALS, AND O-RINGS

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 COTTERPINS

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

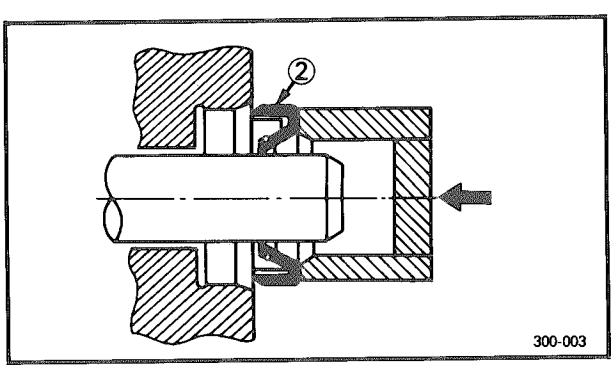


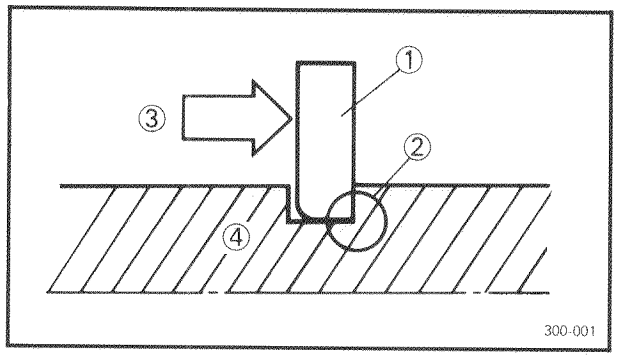
BEARINGS AND OIL SEALS

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

CAUTION:

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





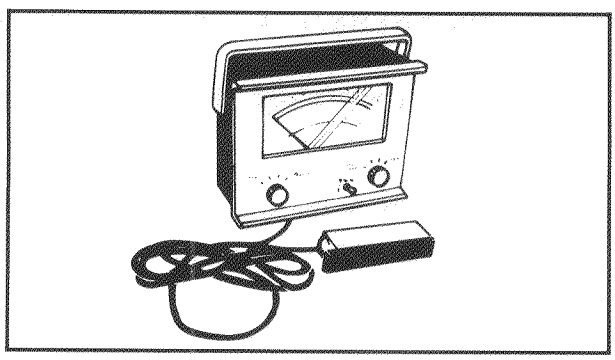
CIRCLIPS

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

④ Shaft

SPECIAL TOOLS

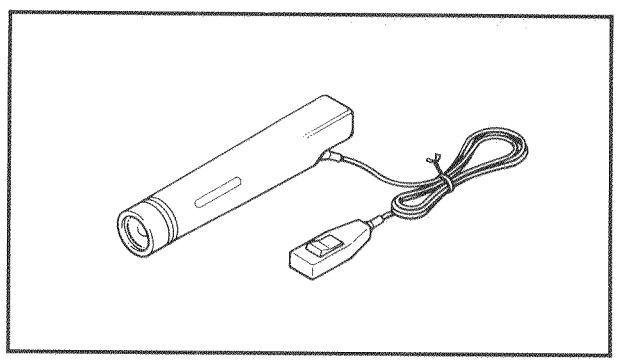
The proper special tools are necessary for complete and accurate tune-up and assembly. Using the correct special tool will help prevent damage caused by the use of improper tools or improvised techniques.



FOR TUNE UP

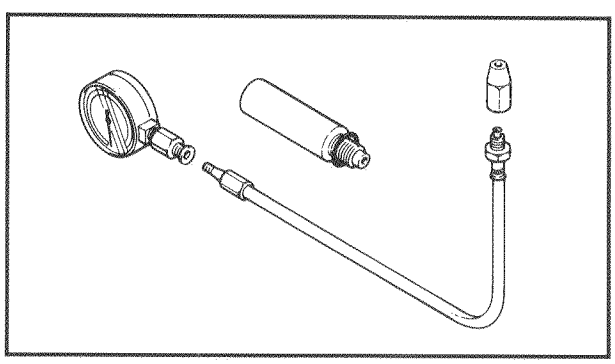
1. Inductive Tachometer
   P/N YU-08036

This tool is needed for detecting engine rpm.



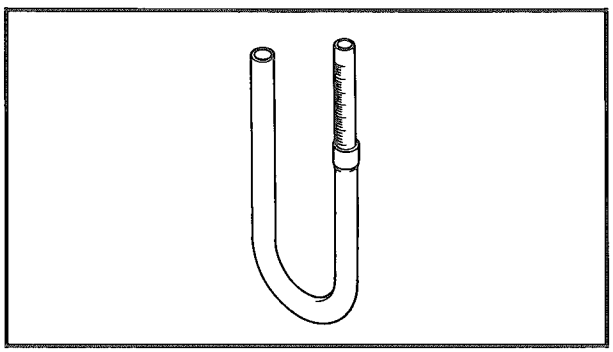
2. Inductive Timing Light
   P/N YU-33277

This tool is necessary for checking ignition timing.



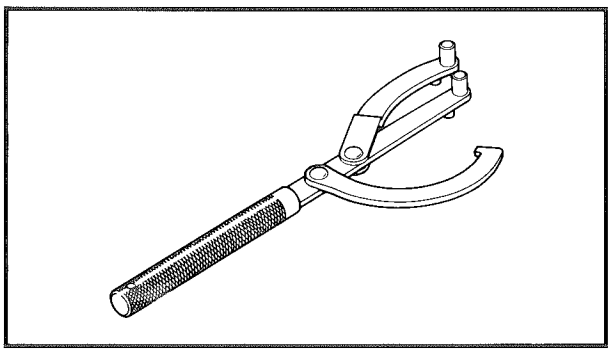
3. Compression Gauge
   P/N YU-33223

This gauge is used to measure the engine compression.



4. Fuel Level Gauge
   P/N YM-01312-A

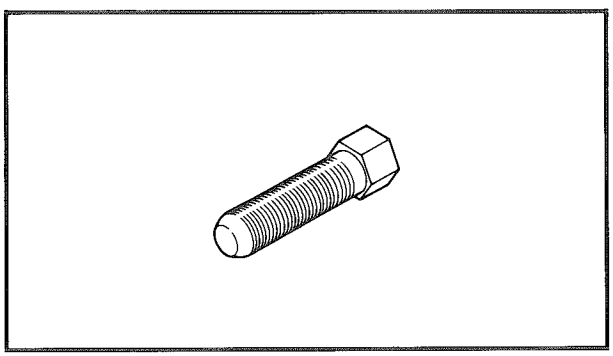
This gauge is used to measure the fuel level in the float chamber.



FOR ENGINE SERVICE

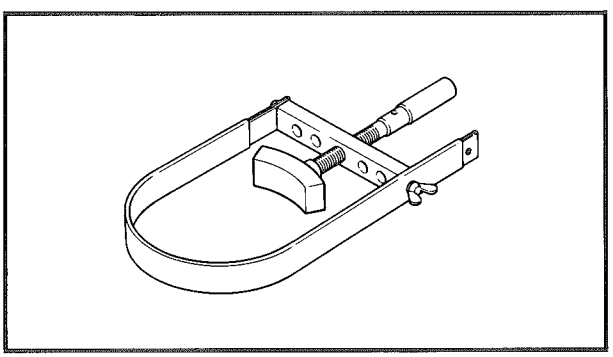
1. Rotor Holder
   P/N YU-01235

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



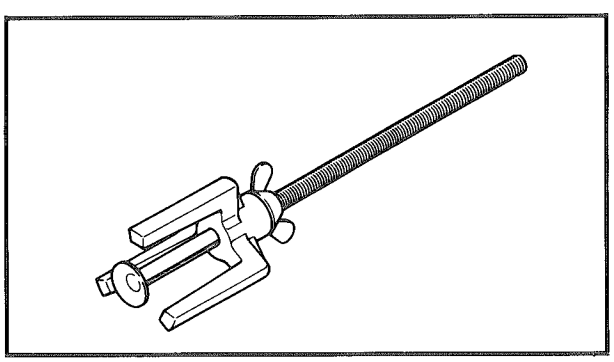
2 Flywheel Magneto Puller
P/N YM-01080

This tool is used for removing the flywheel magneto.



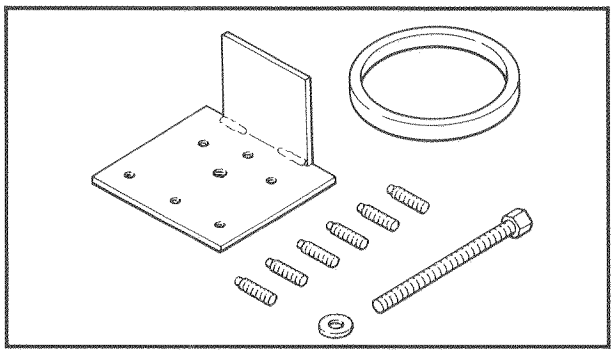
3. Primary Sheave Holder
   P/N YS-01880

This tool is used when holding the clutch hub.



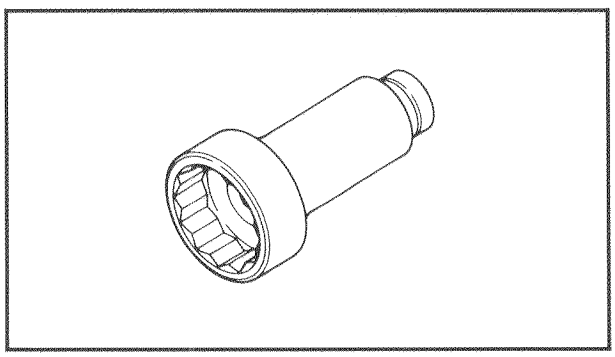
4. Clutch Spring Holder
   P/N YS-28891

This tool is used to dis-/re-assemble the secondary sheave.



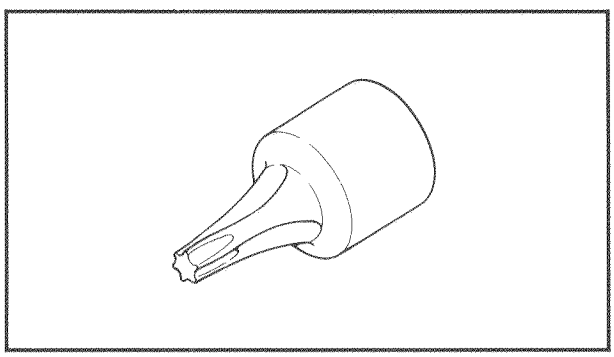
5. Clutch Compressor Holder
   P/N YM-33285-1 ..... ①

This tool is used to dis-/re-assemble the secondary sheave.



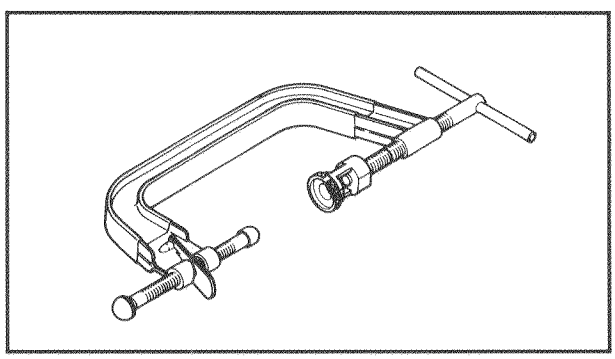
6. Locknut Wrench
   P/N YM-04045-A

This tool is used to loosen or tighten the clutch assembly securing nut.



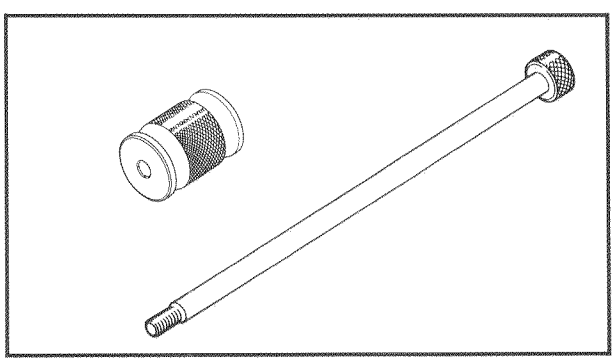
7. #40 Torx Driver
   P/N YU-29843-7

This tool is used to loosen or tighten the starter wheel securing screw.



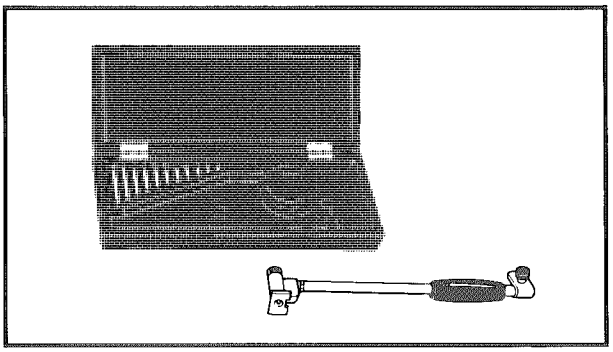
8. Valve Spring Compressor
   P/N YM-04019

This tool is needed to remove and install the valve assemblies.



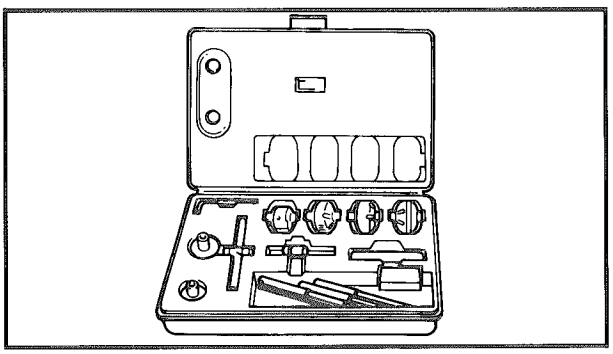
9. Slide Hammer Set
   P/N YU-01083

These tools are used to remove the rocker arm and rocker arm shaft.



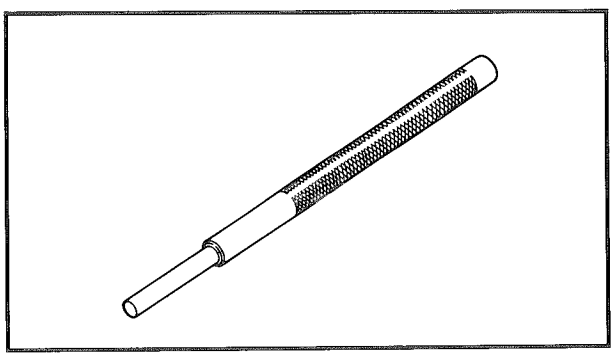
10. Cylinder Gauge
    P/N YU-03016

This tool is used to measure cylinder bore.



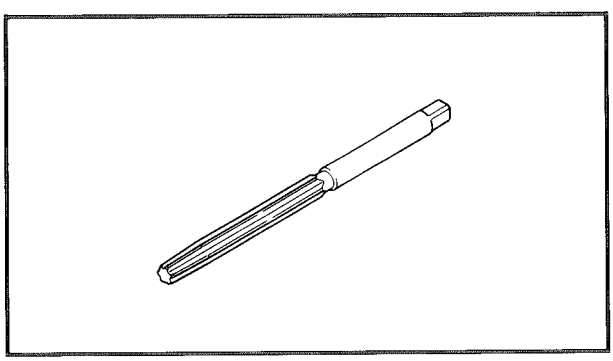
11. Valve Seat Cutter Set
    P/N YM-91043

This tool is needed to resurface the valve seat.



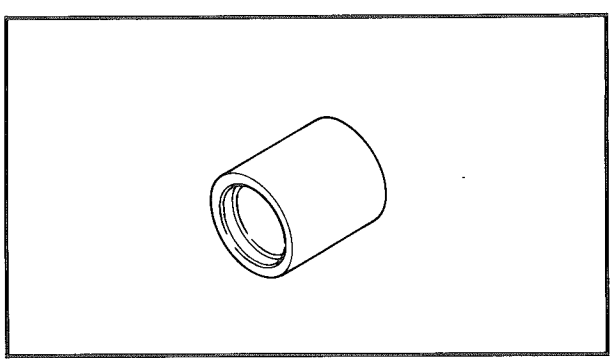
12. Valve Guide Remover (7.0 mm)
    P/N YM-01225

This tool is used to remove the valve guides.



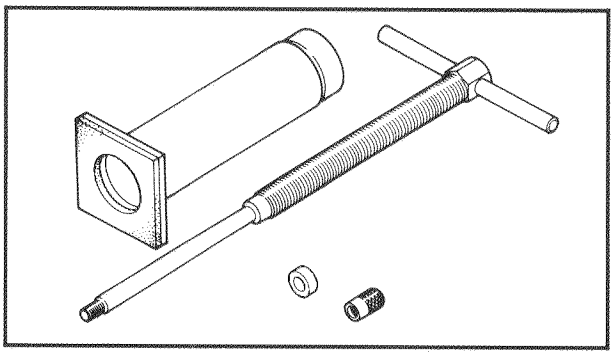
13. Valve Guide Reamer (7.0 mm)
    P/N YM-01227

This tool is used to rebore the new valve guide.



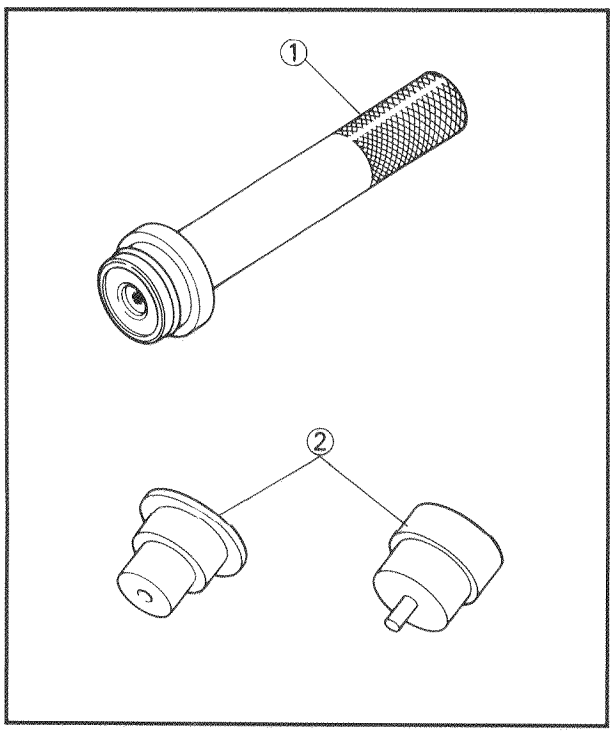
14. Valve Guide Installer
    P/N YM-04017

This tool is needed to install the valve guides properly.



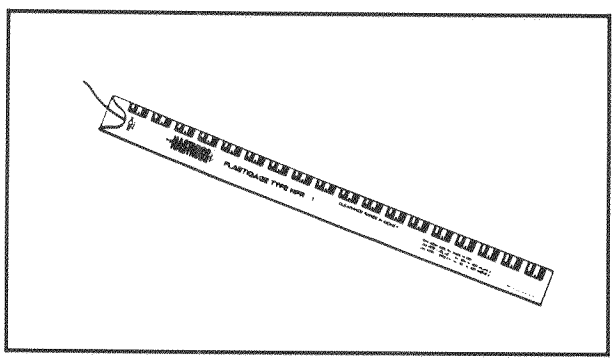
15. Piston Pin Puller
    P/N YU-01304

This tool is used to remove the piston pin.



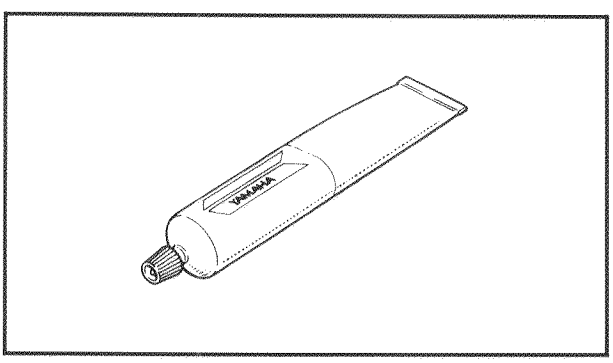
16. Plain Bearing Handle
    P/N YM-04058 ..... ①
    Plain Bearing Installer/Remover
    P/N YM-33297 ..... ②

These tools are used for removing and installing the crankshaft plain bearing



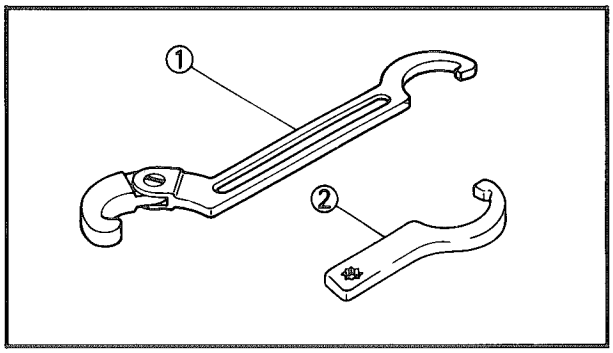
17. Plastigage® Set "Green"
    P/N YU-33210

This gauge is needed to measure the clearance for the connecting rod bearing.



18. Sealant (Quick Gasket®)
    P/N ACC-11001-05-01

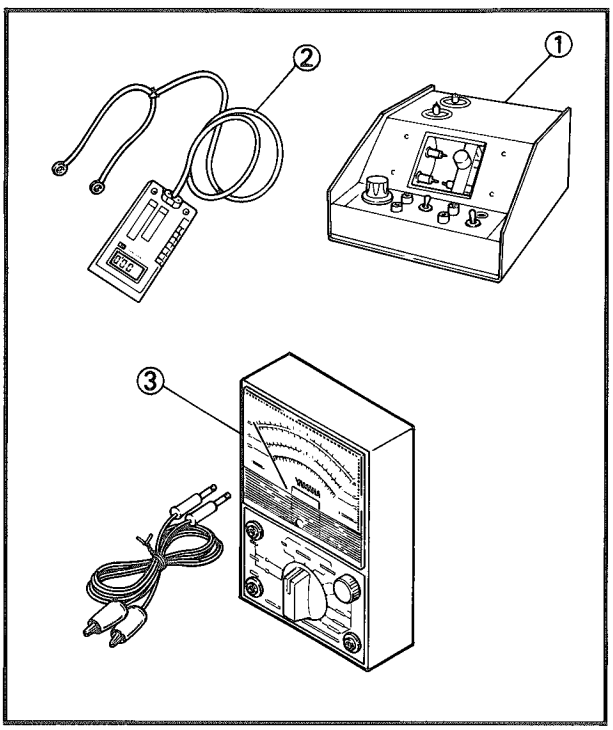
This sealant (bond) is used for crankcase mating surfaces, etc.



FOR CHASSIS SERVICE

1. Ring Nut Wrench
   P/N YU-01268 ..... ①
   P/N YU-33975 ..... ②

These tools are used to loosen and tighten the steering ring nut.



FOR ELECTRICAL COMPONENTS

1. Electro Tester
   P/N YU-33260 ..... ①

This instrument is necessary for checking the ignition system components.

2. Pocket Tester
   P/N YU-33263 .... ② or YU-03112 .... ③

This instrument is invaluable for checking the electrical system.

CHAPTER 2
PERIODIC INSPECTION AND ADJUSTMENTS

INTRODUCTION 2-1

PERIODIC MAINTENANCE/LUBRICATION 2-1

ENGINE 2-3
- CRANKCASE VENTILATION SYSTEM INSPECTION 2-3
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- INTAKE MANIFOLD INSPECTION 2-3
- EXHAUST SYSTEM INSPECTION 2-3
- IDLING SPEED ADJUSTMENT 2-4
- THROTTLE CABLE ADJUSTMENT 2-4
- ENGINE OIL LEVEL INSPECTION 2-5
- ENGINE OIL REPLACEMENT 2-5
- OIL PRESSURE INSPECTION 2-8
- V-BELT INSPECTION 2-8
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- COMPRESSION PRESSURE MEASUREMENT 2-10

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- FUEL COCK CLEANING 2-15
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- CENTERSTAND AND SIDESTAND LUBRICATION 2-22
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- COMPRESSION ARM PIVOTS LUBRICATION 2-22
- FRONT AXLE AND ENGINE PIVOT SHAFT LUBRICATION 2-22

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- BATTERY INSPECTION 2-25
- SPARK PLUG INSPECTION 2-27
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- HEADLIGHT BULB REPLACEMENT 2-28
- HEADLIGHT BEAM ADJUSTMENT 2-29
- FUSE INSPECTION 2-29

PERIODIC INSPECTIONS AND ADJUSTMENTS

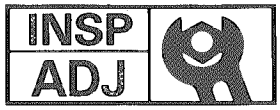
INTRODUCTION

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

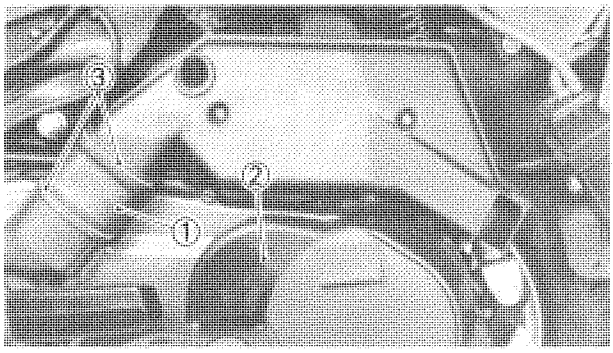
Unit: km (milles)

Item	Remarks	Break-in 1,000 (600)	EVERY 6,000 (4,000) or 6 months	EVERY 12,000 (8,000) or 12 months
Spark plug(s)	Check condition. Clean or replace if necessary.	○	○	○
Air filter	Clean. Replace if necessary.		○	○
Crankcase filter	Clean. Replace if necessary.			○
Carburetor*	Check idle speed/starter operation. Adjust if necessary.	○	○	○
Fuel line*	Check fuel hose and vacuum pipe for cracks or damage. Replace if necessary.		○	○
Engine oil	Replace (Warm engine before draining.)	○	○	○
Engine oil filter*	Replace.	○		○
Final gear oil (Sub transmission oil)	Check oil level/oil leakage. Replace every 24,000 (16,000) or 24 months.	REPLACE	○	○
Brake	Check operation. Adjust if necessary.		○	○
V-belt	Check damage and wear. Replace if necessary. Replace every 18,000 (12,000).		○	○
Wheels*	Check balance/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 24,000 (16,000) or 24 months.**	○		○
Bottom link pivots and front axle	Apply grease lightly.***		○	○
Front forks*	Check operation/oil leakage. Repair if necessary.		○	○
Front shock absorber lower pivots	Apply until new grease shows.***		○	○
Rear shock absorber*	Check operation/oil leakage. Repair if necessary.		○	○



Item	Remarks	Break-in 1,000 (600)	EVERY	
			6,000 (4,000) or 6 months	12,000 (8,000) or 12 months
Fittings/Fasteners*	Check all chassis fittings and fasteners. Correct if necessary.	○	○	○
Center and sidestand*	Check operation. Repair if necessary.	○	○	○
Sidestand switch*	Check operation. Clean or replace if necessary.	○	○	○
Battery*	Check specific gravity. Check breather pipe for proper operation. Correct if necessary.		○	○

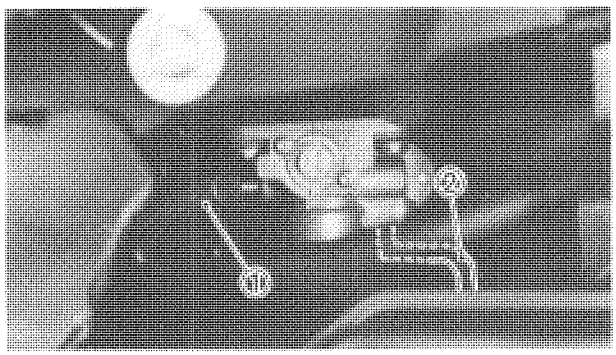
*: It is recommended that these items be serviced by a Yamaha dealer.
**: Medium weight wheel bearing grease.
***: Lithium soap base grease.



ENGINE

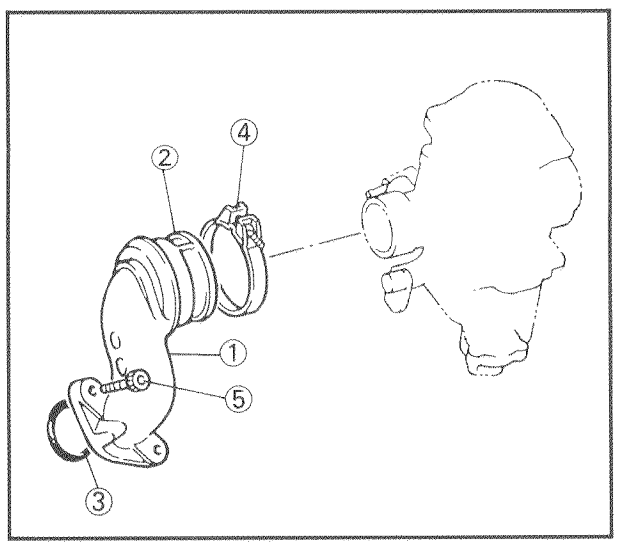
CRANKCASE VENTILATION SYSTEM INSPECTION

1. Inspect:
   - Cleaner joint hose ①
   - Air duct (Outlet) ②
     Cracks/Damage→Replace.
   - Spring bands ③
     Damage/Loose→Replace.



FUEL LINE INSPECTION

1. Inspect:
   - Fuel hose ①
   - Vacuum hose ②
     Cracks/Damage→Replace.

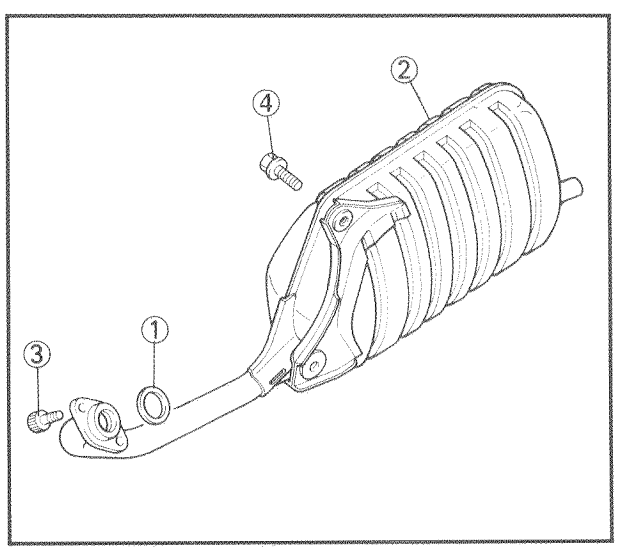


INTAKE MANIFOLD INSPECTION

1. Inspect:
   - Intake manifold ①
   - Carburetor joint ②
   - Gasket (Intake manifold) ③

2. Tighten:
   - Screw (Carburetor clamp) ④
   - Bolts (Intake manifold) ⑤

	Bolt (Intake Manifold) ⑤: **10 Nm (1.0 m•kg, 7.2 ft•lb)**

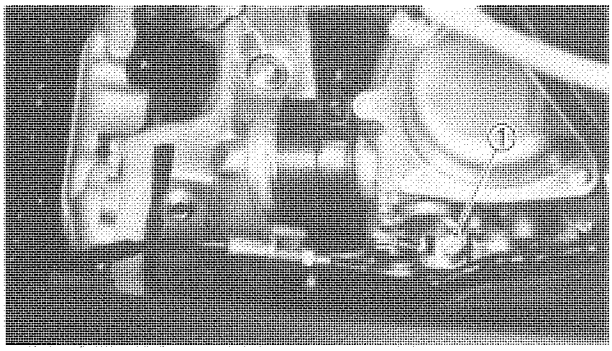


EXHAUST SYSTEM INSPECTION

1. Inspect:
   - Gasket (Exhaust pipe) ①
   - Muffler assembly ②
     Damage→Replace.

2. Tighten:
   - Socket bolt (Exhaust) ③
   - Flange bolt (Muffler) ④

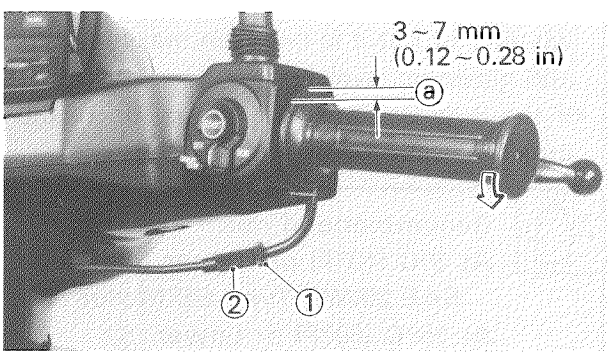
	Socket Bolt (Exhaust) ③: **30 Nm (3.0 m•kg, 22 ft•lb)** **Flange Bolt (Muffler) ④:** **25 Nm (2.5 m•kg, 18 ft•lb)**



IDLING SPEED ADJUSTMENT

1. Remove:
   - Front cover
     Refer to "REMOVING THE COVERS AND PANELS", page 2-12.
2. Adjust:
   - Idle speed
     Warm up the engine and turn the throttle stop screw ① to adjust.
     Use the Inductive Tachometer (YU-08036).

Idle Speed:
1,250 ~ 1,350 r/min



THROTTLE CABLE ADJUSTMENT

NOTE:

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

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

Throttle Cable Free Play ⓐ:
3 ~ 7 mm (0.12 ~ 0.28 in)

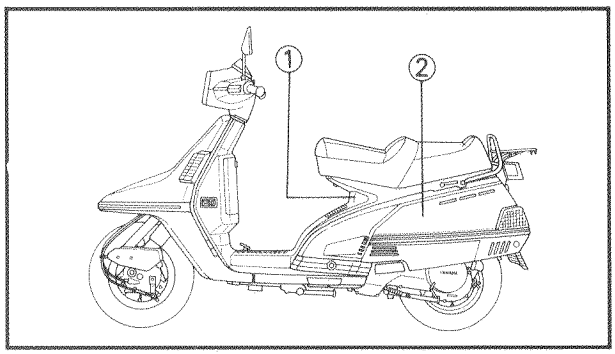
2. Adjust:
   - Throttle cable free play

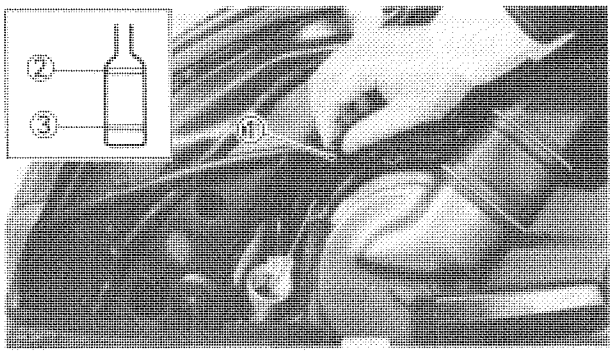
Throttle cable adjustment steps:
- Loosen the adjuster lock nut ①.
- Turn the adjuster ② clockwise or counter-clockwise until proper free play is attained.
- Tighten the adjuster locknut ①.

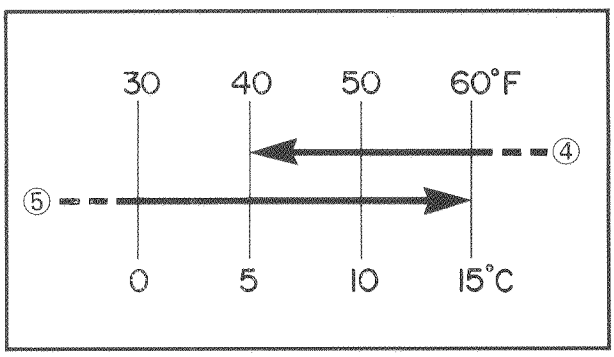
NOTE:

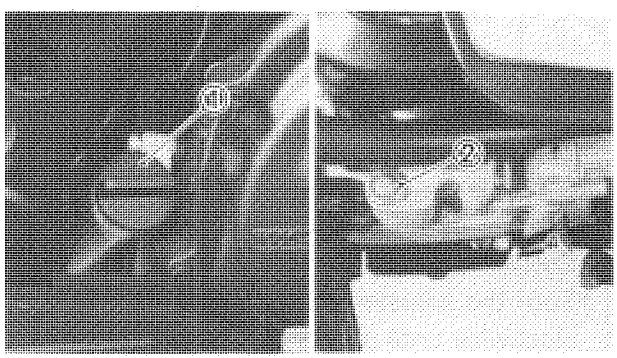
After adjusting, turn the handlebars to right and left and make sure that the engine idling does not run faster.

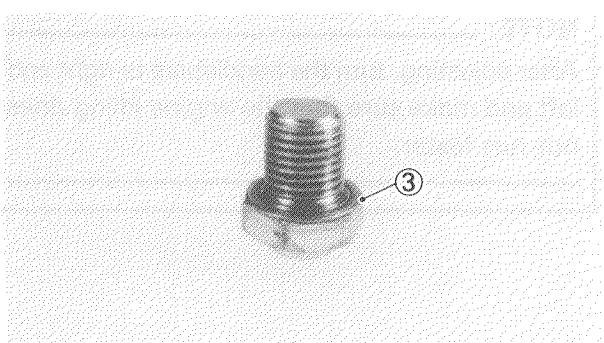
ENGINE OIL LEVEL INSPECTION/ ENGINE OIL REPLACEMENT











ENGINE OIL LEVEL INSPECTION

1. Remove:
   - Front cover ①
   - Side cover (Left) ②

   Refer to "REMOVING THE COVERS AND PANELS", page 2-12.
2. Inspect:
   - Engine oil level

   Oil level low→Add sufficient oil.

Engine oil level inspection steps:

- Place the scooter on a level place.
- Warm up the engine for serveral minutes, and stop it.
- Screw the dipstick ① completely out, and then just rest the dipstick in the hole.

NOTE:

Waite afew minutes until level settles before checking.

- Pull up the dipstick, and inspect the oil level whether or not it is between maximum ② and minimum level ③.
- If the level is lower, add the oil up to the proper level.

Recommended oil:
At 5°C (40°F) or Higher ④:
SAE 20W40 Type SE Motor Oil
At 15°C (60°F) or Lower ⑤:
SAE 10W30 Type SE Motor Oil

ENGINE OIL REPLACEMENT

Engine Oil Replacement (Without Oil Filter)

1. Warm up the engine for several minutes, then place a receptacle under the engine.
2. Remove:
   - Side cover (Left)

   Refer to "REMOVING THE COVERS AND PANELS", page 2-13.
   - Dipstick ①
   - Drain bolt ②

   Drain the engine oil completely.
3. Inspect:
   - Gasket (Drain bolt) ③

   Damage→Replace.
4. Tighten:

Drain Bolt:
43 Nm (4.3 m•kg, 31 ft•lb)

5. Fill
   - Crankcase

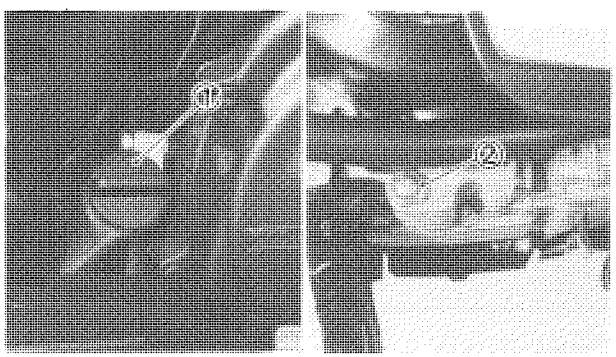
Recommended Oil:
At 5°C (40°F) or Higher:
SAE 20W40 Type SE Motor Oil
At 15°C (60°F) or Lower
SAE 10W30 Type SE Motor Oil
Periodic Oil Change:
1.0 L (0.88 Imp qt, 1.1 US qt)

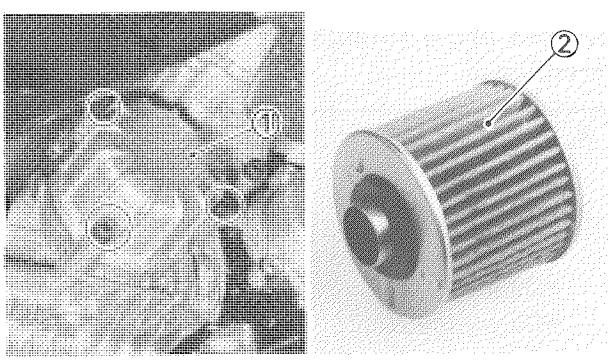
CAUTION:

Do not allow foreign material to enter the crankcase.

6. Install:
   - Dipstick
7. Inspect:
   - Oil leaks
   - Oil level
   - Oil pressure

   Refer to "OIL PRESSURE INSPECTION" section.





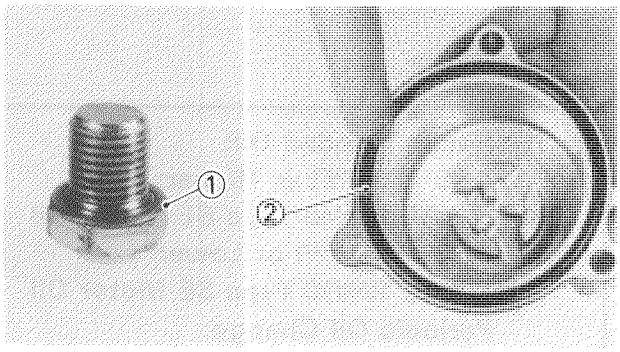
Engine Oil Replacement (With Oil Filter)

1. Warm up the engine for several minutes, then place a receptacle under the engine.
2. Remove:
   - Side cover (Left)

     Refer to "REMOVING THE COVERS AND PANELS", page 2-13.
   - Dipstick ①
   - Drain bolt ②

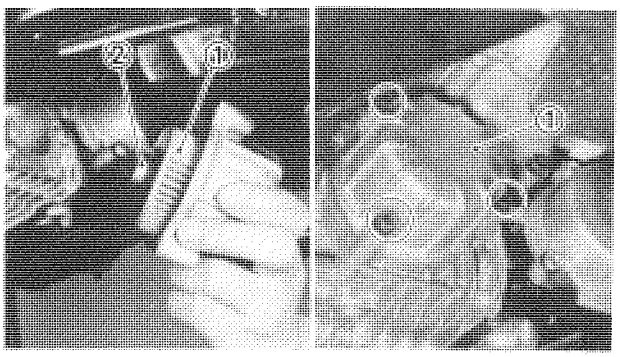
     Drain the engine oil completely.
3. Remove:
   - Oil filter cover ①
   - Oil filter ②

ENGINE OIL REPLACEMENT



4. Inspect:
   - Gasket (Drain bolt) ①
   - O-ring (Oil filter cover) ②

   Damage→Replace.



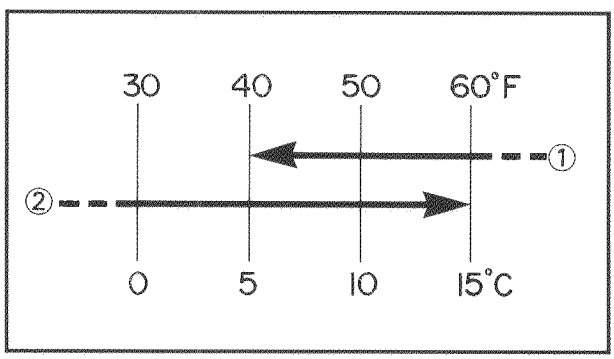
5. Install:
   - Oil filter (New)
   - Oil filter cover
   - Drain bolt

NOTE:

- Install the oil filter ① with its projection ② facing towards the engine.
- Before installing the oil filter cover, apply the engine oil to the O-ring on the filter cover.

6. Tighten:
   - Drain bolt
   - Bolt (Oil filter cover)

Drain Bolt:
43 Nm (4.3 m•kg, 31 ft•lb)
Bolt (Oil Filter Cover):
10 Nm (1.0 m•kg, 7.2 ft•lb)



7. Fill:
   - Crankcase

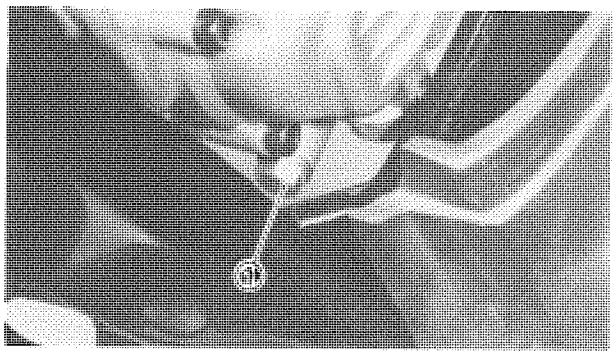
Recommended Oil:
At 5°C (40°F) or Higher ①:
SAE 20W40 Type SE Motor Oil
At 15°C (60°F) or Lower ②:
SAE 10W30 Type SE Motor Oil
With Oil Filter Replacement:
1.1 L (0.97 Imp qt, 1.16 US qt)

CAUTION:

Do not allow foreign material to enter the crankcase.

8. Install:
   - Dipstick
9. Inspect:
   - Oil leaks
   - Oil level
   - Oil pressure

   Refer to "OIL PRESSURE INSPECTION" section.



OIL PRESSURE INSPECTION

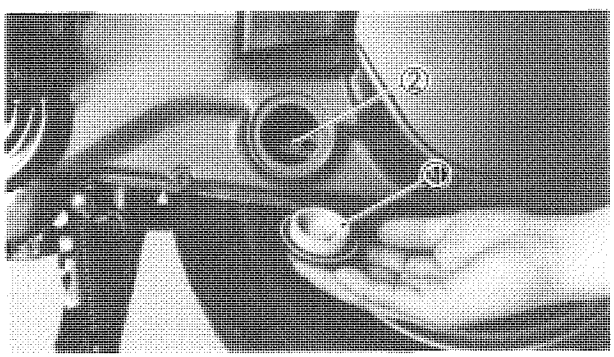
1. Remove:
   - Front cover
     Refer to "REMOVING THE COVERS AND PANELS", page 2-12.
   - Air bleed bolt ①
2. Start the engine and keep it idling for several minutes.
3. Inspect:
   - Oil condition of the bleed hole
     Oil flows out→Oil pressure is good.
     No oil comes out→Oil pressure is bad.

CAUTION:

If no oil comes out after a lapse of one minute, turn off the engine immediately so it will not seize.

4. Tighten:
   - Air bleed bolt

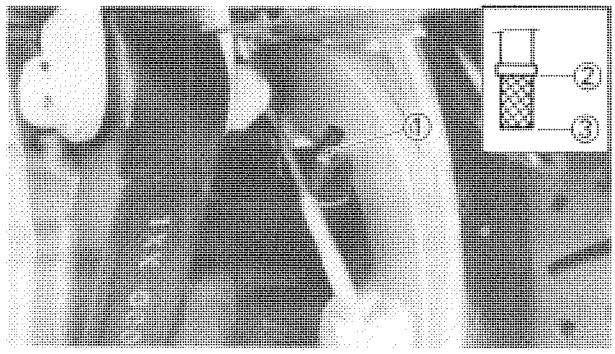
	Air Bleed Bolt: **20 Nm (2.0 m•kg, 14 ft•lb)**

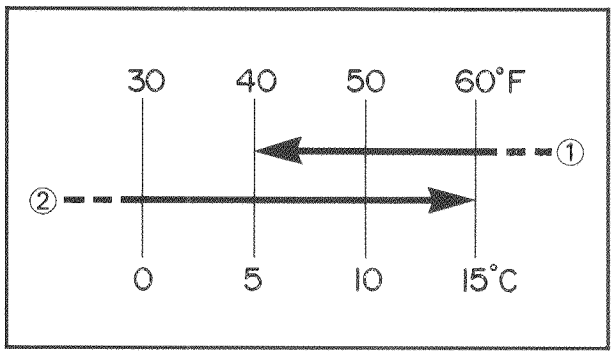


V-BELT INSPECTION

1. Remove:
   - Check plug (V-belt) ①
2. Inspect:
   - V-belt ②
     Crack/Wear/Chipping→Replace
     Oil or grease adhered to the V-belt→Check the primary and secondary sheaves.
     Refer to "CHAPTER 3. PRIMARY AND SECONDARY SHEAVE" section.
3. Install:
   - Check plug (V-belt) ①

TRANSMISSION OIL LEVEL INSPECTION/ TRANSMISSION OIL REPLACEMENT





TRANSMISSION OIL LEVEL INSPECTION

1. Inspect:
   - Transmission oil level
     Oil level low→Add sufficient oil.

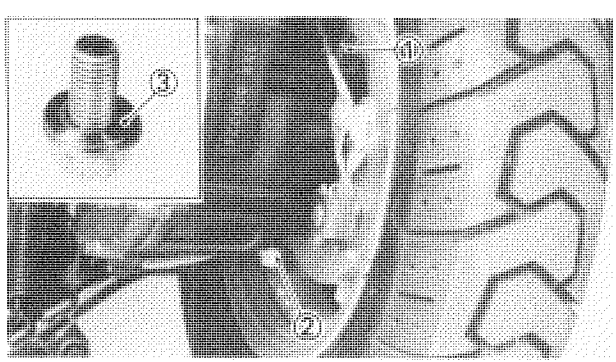
Transmission oil level inspection steps:
- Place the scooter on a level place.
- Screw the dipstick ① completely out, and then just rest the dipstick in the hole.
- Pull up the dipstick, and inspect the oil level whether or not it is between maximum ② and minimum level ③.
- If the level is lower, add the oil up to the proper level.

Recommended Oil:
At 5°C (40°F) or Higher ①:
SAE 20W40 Type SE Motor Oil
At 15°C (60°F) or Lower ②:
SAE 10W30 Type SE Motor Oil
Total Amount:
0.2 L (0.18 Imp qt, 0.21 US qt)

CAUTION:
Do not allow foreign material to enter the transmission case.

TRANSMISSION OIL REPLACEMENT

1. Remove:
   - Rear wheel assembly
     Refer to "CHAPTER 5. REAR WHEEL- REMOVAL" section.
2. Replace:
   - Transmission oil



Transmission oil replacement steps:
- Place a receptacle under the transmission case.
- Remove the dipstick ① and drain bolt ② then drain the transmission oil completely.
- Inspect the gasket ③ on the drain bolt. If damaged, replace it.
- Install the drain bolt, then tighten the it.

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

- Apply the oil to the proper level.

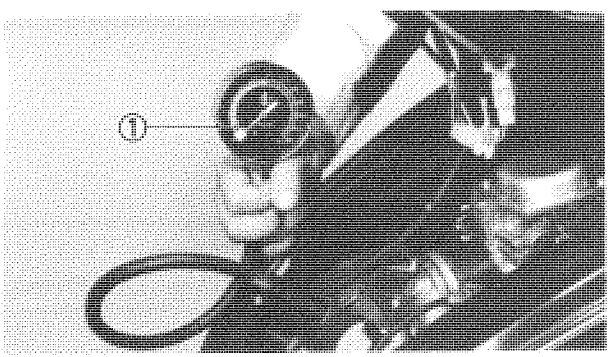
Recommended Oil:
At 5°C (40°F) or Higher:
SAE 20W40 Type SE Motor Oil
At 15°C (60°F) or Lower:
SAE 10W30 Type SE Motor Oil
Total Amount:
0.2 L (0.18 Imp qt, 0.21 US qt)

- Install the dipstick and inspect the oil level. Refer to "TRANSMISSION OIL LEVEL INSPECTION" section.

COMPRESSION PRESSURE MEASUREMENT

NOTE:
Insufficient compression pressure will result in performance loss.

1. Warm up the engine, and stop it.
2. Remove:
   - Front cover
     Refer to "REMOVING THE COVERS AND PANELS" section.
   - Spark plug
3. Measure:
   - Compression pressure



Compression pressure measurement steps:
- Install the Compression Gauge ① (YU-33223).
- Crank over the engine with the electric starter (be sure the battery is fully charged) with the throttle wide-open until the compression reading on the gauge stabilizes.
- Check readings with specified levels (See chart).

COMPRESSION PRESSURE MEASUREMENT

Compression Pressure (at sea level):
Standard:
1,079 kPa (11 kg/cm^2, 156 psi)
Minimum:
981 kPa (10 kg/cm^2, 142 psi)
Maximum:
1,177 kPa (12 kg/cm^2, 171 psi)

WARNING:

When cranking the engine, ground all of the spark plug lead to prevent sparking.

- If pressure falls below the minimum level:
  1. Squirt a few drops of oil into the affected cylinder.
  2. Measure the compression again.

Compression Pressure (with oil introduced into cylinder)

Reading	Diagnosis
Higher than without Oil	Worn or damaged pistonrings.
Same as without Oil	Defective ring(s) valves, cylinder head gasket or piston is possible.
Above Maximum Level	Inspect cylinder head, valve surfaces, or piston crown for carbon deposits.

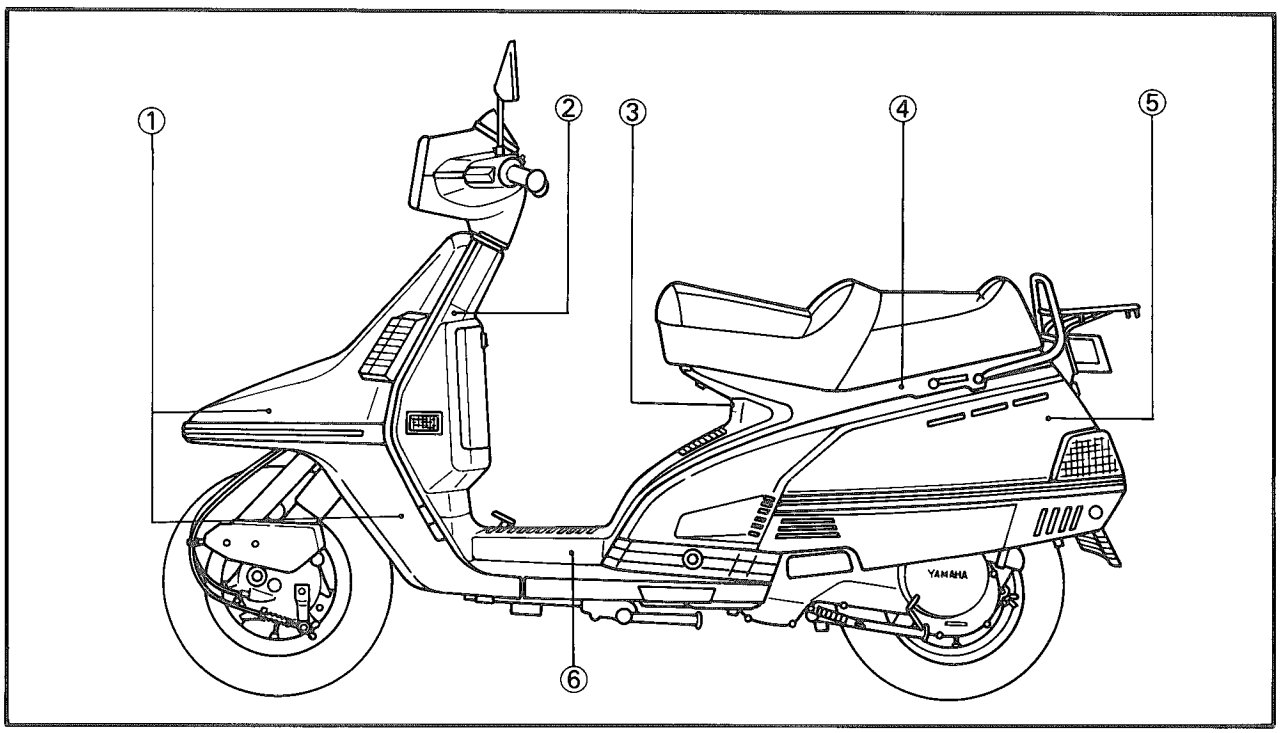
4. Install:
   - Spark plug
   - Front cover

Spark Plug:
17.5 Nm (1.75 m•kg, 12.5 ft•lb)

CHASSIS

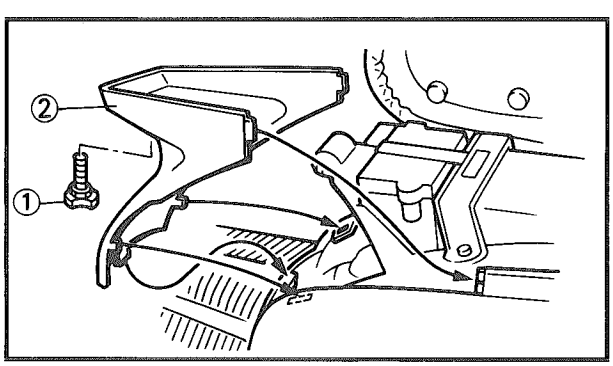
REMOVING THE COVERS AND PANELS

① Scooter panel
② Front trunk
③ Front cover
④ Upper cover
⑤ Side cover
⑥ Footrest board



CAUTION:

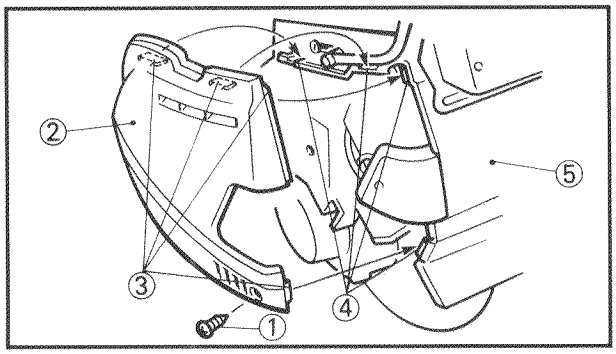
- **Before removing the cover(s), make sure that all hooks are free.**
- **After installing the cover(s), make sure that all hooks are securely fitted.**



Front Cover

1. Open the seat.
2. Remove:
   - Special screw ①
   - Front cover ②

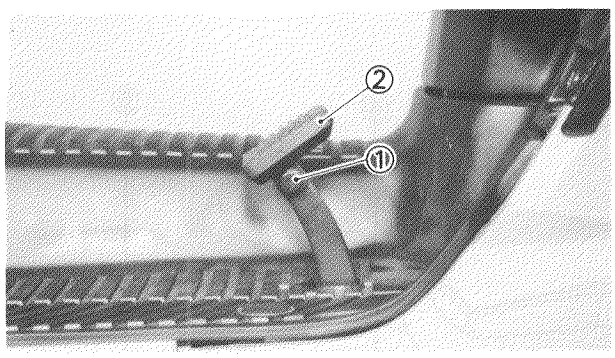
REMOVING THE COVERS AND PANELS



Side Covers

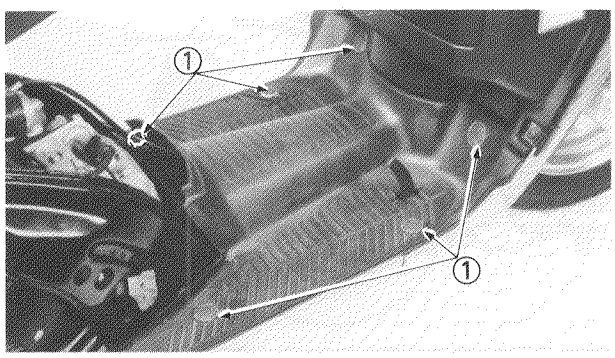
1. Remove:
   - Screws (Side cover) ①
   - Side cover (Left and right) ②

   Lift up the side cover, then unhook the lobs ③ on the side cover from the receptacles ④ in the upper cover ⑤.

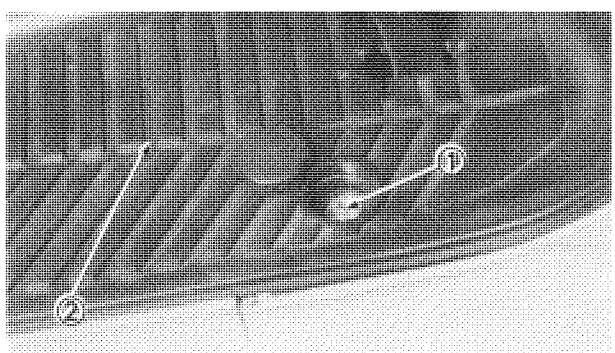


Footrest Board

1. Remove:
   - Bolt (Rear brake pedal) ①
   - Brake pedal ②

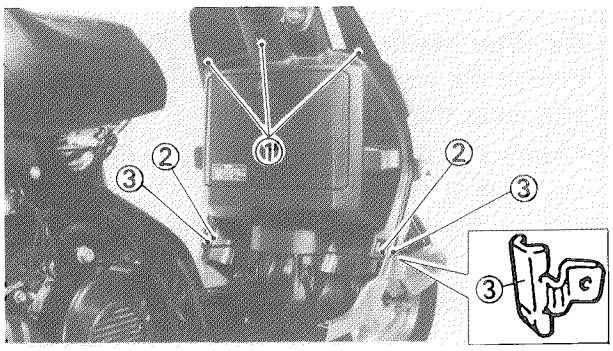


2. Remove:
   - Caps (Lower & Upper) ①



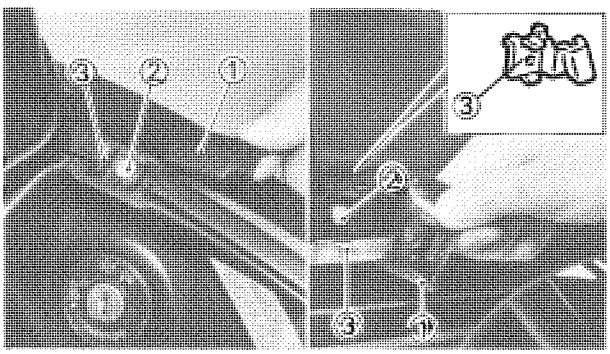
3. Remove:
   - Bolts (Footrest board) ①
   - Footrest board ②

   Pull up the footrest board end, and then pull out the footrest board to the backward.



Front Trunk

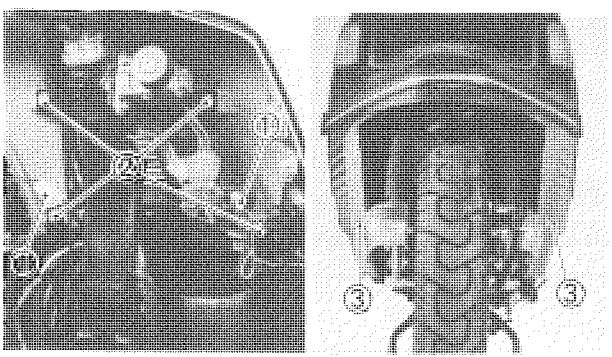
1. Remove:
   - Screws ①
   - Screws ② with clamps ③



2. Remove:
   - Caps ①
   - Screws ② with clamps ③

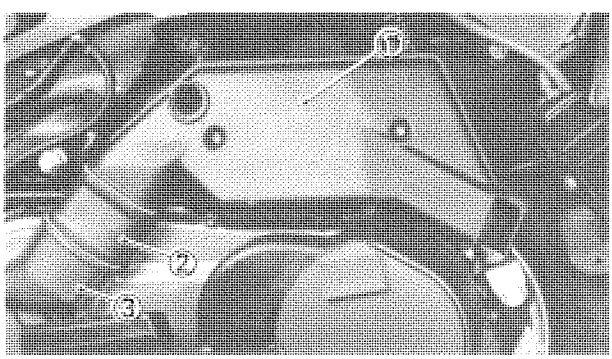
3. Strip the side mold end ①.

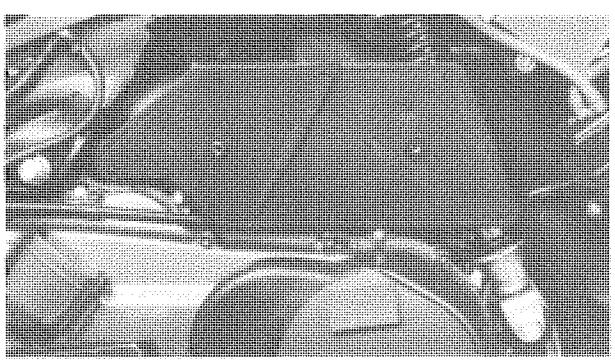
4. Remove:
   - Screw (Front trank) ②
   - Clamp ③
   - Front trunk assembly



Scooter Panel

1. Disconnect:
   - Flasher lead couplers ①
2. Remove:
   - Bolts (Scooter panel) ②
   - Screws (Scooter panel) ③
   - Scooter panel assembly





AIR FILTER ELEMENT CLEANING

1. Remove:
   - Front cover
   - Side cover (Left)

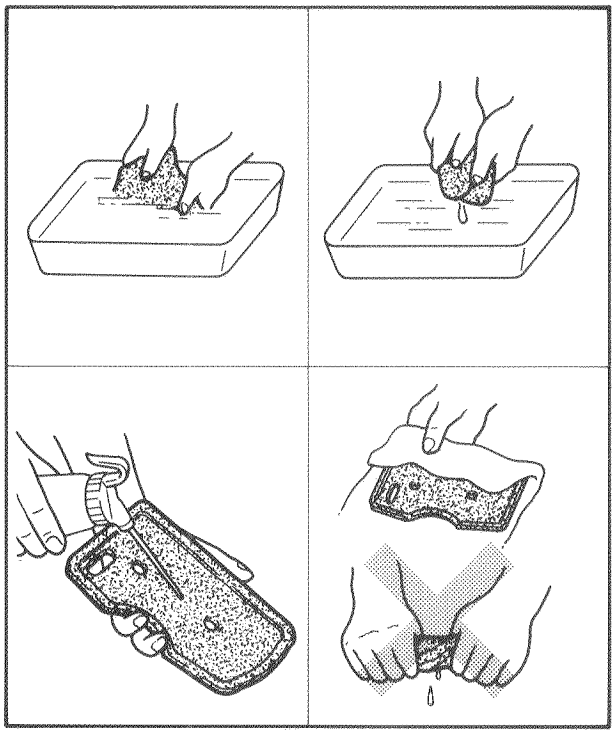
   Refer to "REMOVING THE COVERS AND PANELS" section.
   - Cover (Air filter case) ①

   Remove the cleaner joint hose ② from the sheave case ③ at the same time.
2. Remove:
   - Element

CAUTION:

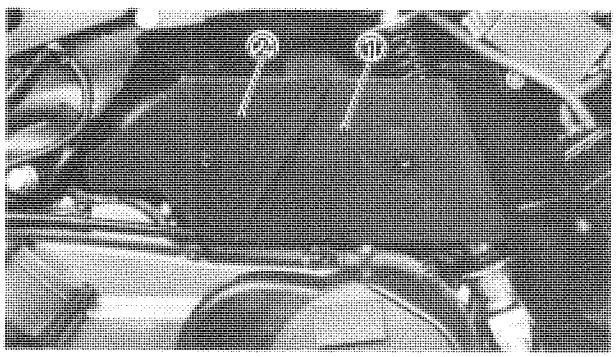
The engine should never be run without the air filter element installed; excessive piston and/or cylinder wear may result.

AIR FILTER ELEMENT CLEANING/ FUEL COCK CLEANING



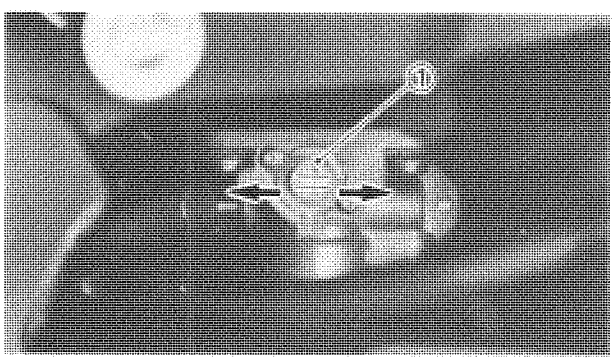
Air filter element cleaning steps:
- Wash the air filter element with solvent.
- Squeeze the element dry.
- Apply the Yamalube 2-cycle oil to the entire surface of the element.
- Wrap the element with a clean rag, and squeeze out the excess oil.
  The element should be wet but not be dripping.

CAUTION:
- **Do not squeeze the element hard.**
- **Replace the element if damaged.**
- **After installing the element, make sure it is positioned correctly in place.**



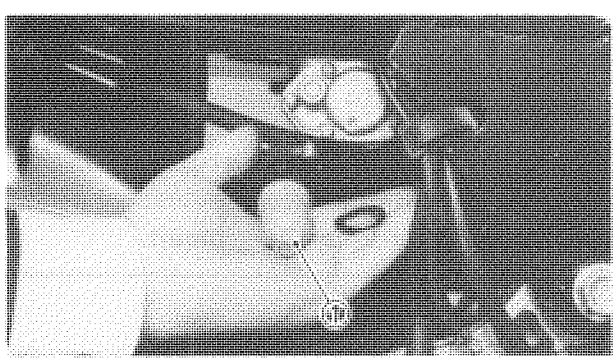
3. Lightly grease the element sealing side for an air-tight seal between the element and case.
4. Install:
   - Element (Rear) ①
   - Element (Front) ②
   - Components in above list (Step "1")

NOTE:
Install the rear element first.



FUEL COCK CLEANING

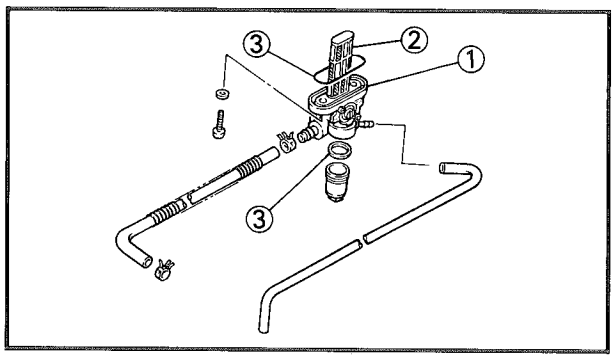
1. Remove:
   - Front cover
   - Side cover (Left and right)
   Refer to "REMOVING THE COVERS AND PANELS" section.
2. Turn the fuel cock lever ① to the "OFF".



3. Disconnect:
   - Fuel hose
   - Vacuum hose
4. Remove:
   - Filter cup ①
5. Place areceptacle under the fuel cock, and turn the fuel cock lever to the "ON", then drain the fuel completely.

WARNING:

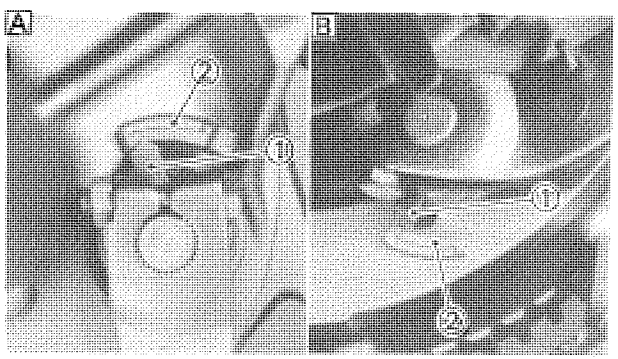
FUEL IS HIGHLY FLAMMABLE:
- **Always turn off the engine when draining.**
- **Take care not to spill any fuel on the engine or exhaust pipe/muffler when draining.**
- **Never drain fuel while smoking or in the vicinity an open flame.**

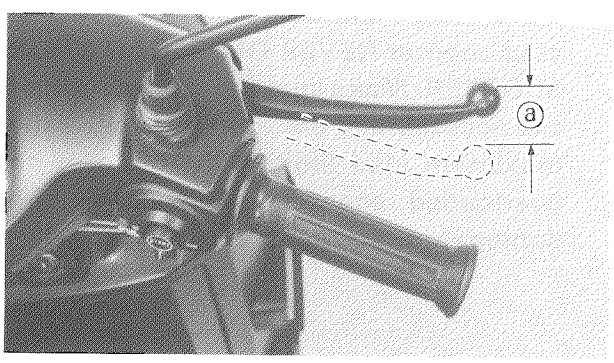


6. Remove:
   - Fuel cock assembly ①
7. Inspect:
   - Filter screen ②
   - Rubber gaskets ③
     Damage→Replace.
8. Clean:
   - Filter screen
   - Filter cup
     Clean it with solvent.
9. Install:
   - Fuel cock component parts

NOTE:

Be careful not to clamp the fuel cock too tightly as this may unseat the rubber gaskets and lead to a fuel leak.





FRONT AND REAR BRAKE INSPECTION

Lining Inspecton (Front/Rear)

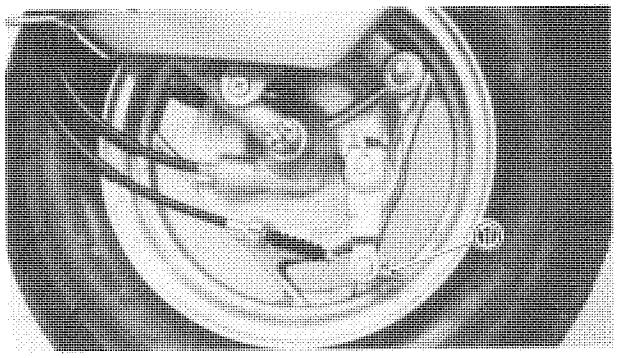
1. Activate the brake lever or brake pedal.
2. Inspect:
   - Wear indicator ①
     Indicator at wear limit line ②→Replace brake shoes.
     Refer to "CHAPTER 5. FRONT WHEEL" section.

A Front B Rear

Front Brake Lever Free Play Adjustment

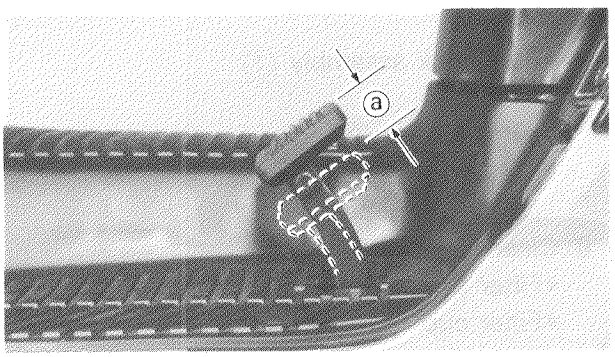
1. Check:
   - Front brake lever free play ⓐ
     Out of specification→Adjust.

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



2. Adjust:
   • Free play
   Turn the adjuster ① until the free play is within the specified range.

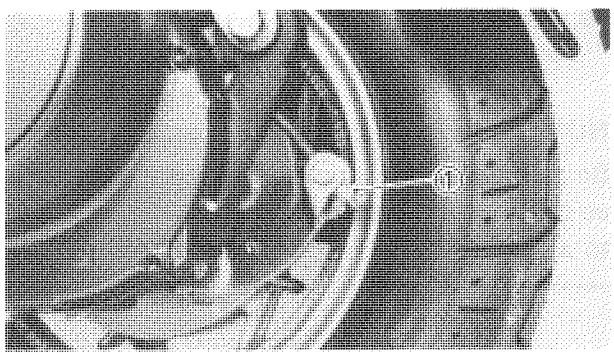
NOTE:
After adjusting, check the operation of the brake light.



Rear Brake Pedal Free Play Adjustment

1. Check:
   • Rear brake pedal free play ⓐ
   Out of specification → Adjust.

Rear Brake Pedal Free Play:
5 ~ 15 mm (0.20 ~ 0.60 in)



2. Adjust:
   • Free play
   Turn the adjuster ① until the free play is within the specified range.

NOTE:
After adjusting, check the operation of the brake light.

TIRE AND CAST WHEEL INSPECTION

This scooter is equipped with cast wheels designed for tubeless tires only.
Tubeless tires are installed as standard equipments.

WARNING:

1. Proper loading of your scooter is important for the handling, braking, and other performance and safety characteristics of your scooter NEVER OVERLOAD YOUR SCOOTER. Make sure the total weight of the accessories, etc. do not exceed the maximum load limits. Operation of an overloaded scooter could cause tire damage, an accident, and injury.

2. Improper tire pressures greatly affect tire life and handling. Check tire pressures prior to each trip and adjust properly if necessary.
If tire pressures are too high, shocks from the road will not be damped and will be carried to the frame and handlebars, thus adversely affecting riding comfort. In addition, scooter stability will be poor when making a turn.
If tire pressures are too low, tires will be deformed greatly, thus shortening tire life. When braking the wheels, tires could slip over wheel rims and tire tubes could broken. When turning the corner or the curve, the scooter could easily turn over.

Always perform the following steps to ensure safe operation, maximum tire performance, and long service.

1. Measure:
   - Tire pressure
     Use an air gauge
     Out of specification→Adjust.

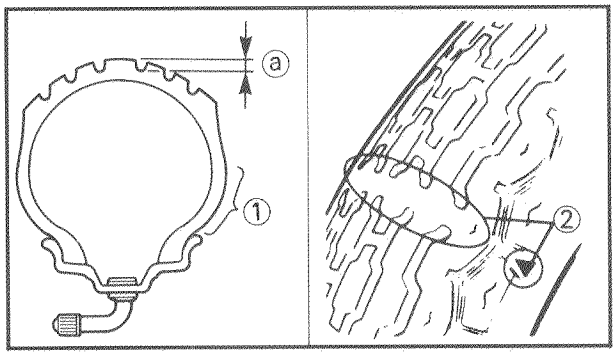
WARNING:

Tire inflation pressure should be checked and adjusted when the temperature of the tire equals the ambient air temperature. Tire inflation pressure must be adjusted according to total weight of cargo, rider, passenger, and accessories (fairing, saddlebags, etc. if approved for this model), and vehicle speed.

Basic weight: With oil and full fuel tank	128 kg (282 lb)	
Maximum load*	156 kg (343 lb)	
Cold tire pressure:	Front	Rear
Up to 90 kg (198 lb) load*	147 kPa (1.5 kg/cm^2, 21 psi)	196 kPa (2.0 kg/cm^2, 28 psi)
90 kg (198 lb)~ Maximum load*	147 kPa 1.5 kg/cm^2, 21 psi)	245 kPa (2.5 kg/cm^2, 35 psi)

*Load is the total weight of cargo, rider, passenger, and accessories.

TIRES AND CAST WHEEL INSPECTION



2. Inspect:
   - Tire surfaces
     Wear/Damage→Replace.

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

① Side wall
② Wear indicator
ⓐ Tread depth

WARNING:

- **It is dangerous to ride with a wornout tire.**
- **If the wear indicator ② exposed to view, replace the tire immediately.**

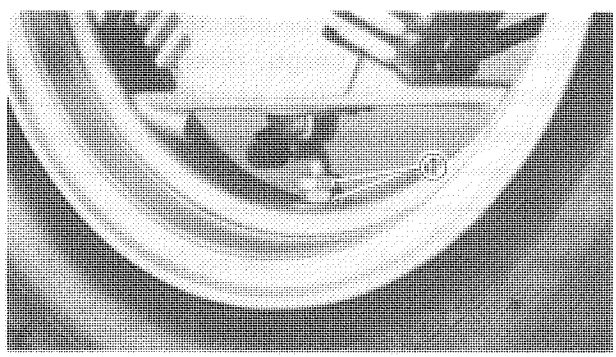
3. Inspect:
   - Aluminum wheels
     Damage/Bends→Replace.

NOTE:

Always balance the wheel when a tire or wheel has been changed or replaced.

WARNING:

Never attempt even small repairs to the wheel.

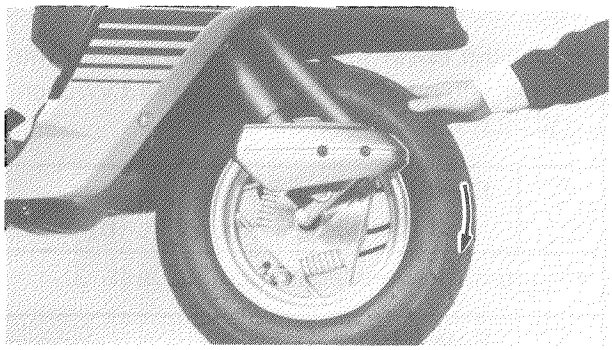


4. Tighten:
   - Valve stem locknuts ① (Front wheel only)

Valve Stem Locknut:
1.5 Nm (0.15 m•kg, 1.1 ft•lb)

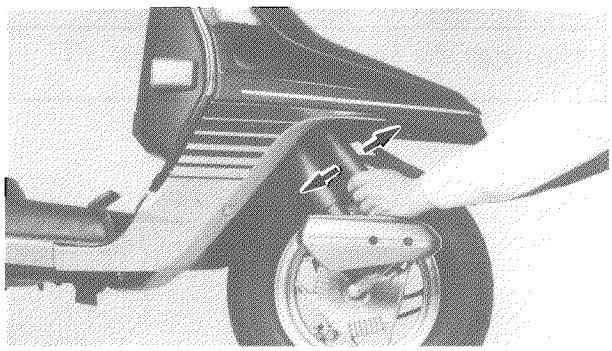
WARNING:

- **Install the rear wheel air valve on the right of the scooter (on the muffler side).**
- **Ride conservatively after installing a tire to allow it to seat itself properly on the rim.**



FRONT WHEEL BEARING CHECK

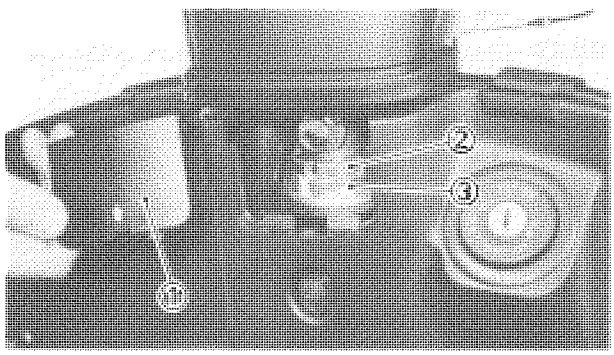
1. Place the scooter on its centerstand, then elevate the front wheel.
2. Check:
   - Front wheel bearings
     Spin the wheel by hand. Tuch the axle or front fork while spinning the wheel.
     Excessive vibration→Replace bearings.



STEERING HEAD ADJUSTMENT

Steering Head Inspection

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 steering nut cover ①.
- Loosen the upper ring nut ② completely, using the Ring Nut Wrench (YU-01268).

NOTE:

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

- Tighten the lower ring nut ③ using the Ring Nut Wrench (YU-33975).

Ring Nut ③ (Initial Tightening): 30 Nm (3.0 m•kg, 22 ft•lb)

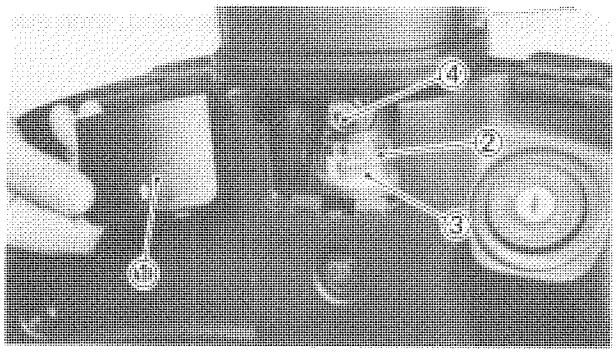
- Loosen the lower ring nut ③ completely and retighten it to specification.

WARNING:

Do not over-tightening.

Ring Nut ③(Final Tightening): 3 Nm (0.3 m•kg, 2.2 ft•lb)

- Check the front fork by turning it lock to lock. If there is any binding, remove the front fork assembly and inspect the steering boll bearings and boll races.
  Refer to "CHAPTER 5. FRONT FORK" for more detaills.



- Hold the lower ring nut ③ and tighten the upper ring nut ② using the Ring Nut Wrench (YU-33975)

Ring Nut (Upper) ②:
30 Nm (3.0 m•kg, 22 ft•lb)

- Tighten the handlebar securing bolt ③.

Bolt (Handlebar) ④:
60 Nm (6.0 m•kg, 43 ft•lb)

- Reinstall the steering nut cover ①.

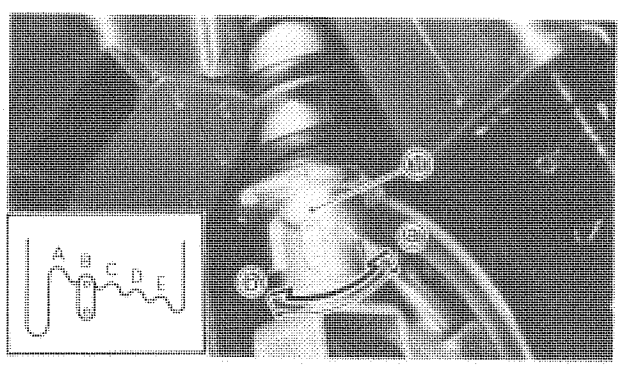
2

REAR SHOCK ABSORBER ADJUSTMENT

1. Adjust:
   - Spring preload

NOTE:

The spring preload of the rear shock absorber can be adjusted to suit rider's preferance, weight, and the course conditions.



Spring preload adjustment steps:
- Adjust the spring preload with the spring seat ①.

Stiffer ⓐ→Increase the spring preload. (Turn the spring seat clockwise.)
Softer ⓑ→Decrease the spring preload. (Turn the spring seat counter-clockwise.)

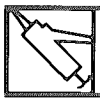
Standard Position: B
Softest Position (Minimum Position): A
Stiffest Position (Maximum Position): E

CAUTION:

Never attempt to turn the spring seat beyond the maximum or minimum setting.

CONTROL AND METER CABLES LUBRICATION

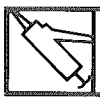
Lubricate the inner cable and cable end.



Yamaha Chain and Cable Lube or SAE 10W30 Motor Oil

BRAKE LEVER AND BRAKE PEDAL SHAFT LUBRICATION

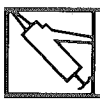
Lubricate the pivoting parts of the brake lever and pedal shaft.



Yamaha Chain and Cable Lube or SAE 10W30 Motor Oil

CENTERSTAND AND SIDESTAND LUBRICATION

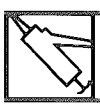
Lubricate the centerstand and sidestand at their pivot points.



Yamaha Chain and Cable Lube or SAE 10W30 Motor Oil

FRONT SHOCK ABSORBER LOWER PIVOT LUBRICATION

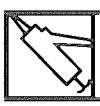
Apply the grease from nipple on the compresion arm until new grease comes out.



Lithium Soap Base Grease

COMPRESSION ARM PIVOTS LUBRICATION

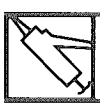
Lubricate the pivoting parts of the compression arm.



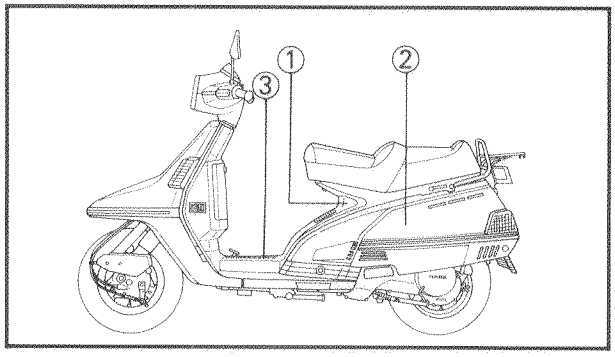
Lithium Soap Base Grease

FRONT AXLE AND ENGINE PIVOT SHAFT LUBRICATION

Lubricate the front axle and engine pivot shaft.



Lithium Soap Base Grease

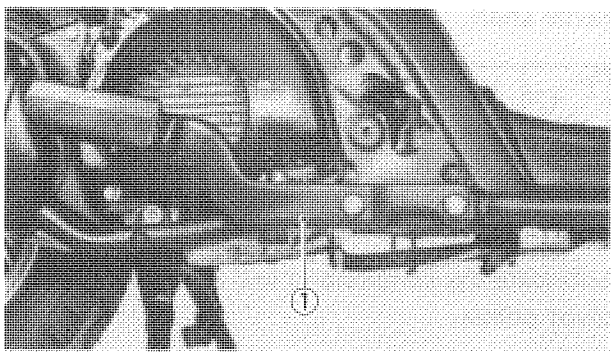


ELECTRICAL

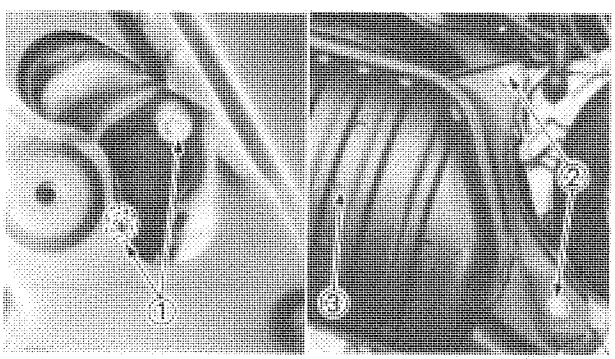
IGNITION TIMING CHECK

1. Remove:
   - Front cover ①
   - Side cover (Left and right) ②
   - Footrest board ③

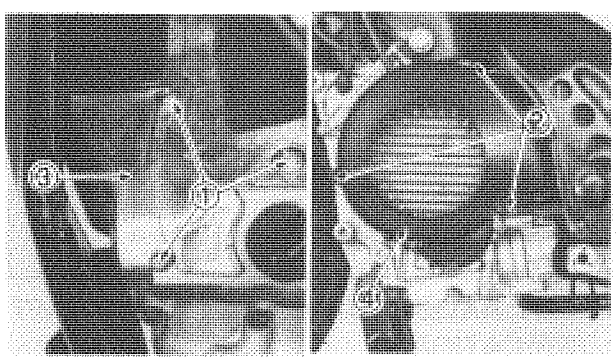
   Refer to "REMOVING THE COVERS AND PANELS" section.



2. Remove:
   - Passenger footrest (Right) ①



3. Remove:
   - Socket bolts (Exhaust pipe) ①
   - Flange bolts (Muffler) ②
   - Muffler assembly ③



4. Remove:
   - Screws (Air shroud 1) ①
   - Screws (Fancase cover) ②
   - Air shroud 1 ③ with fancase cover ④

5. Install:
   - Muffler assembly

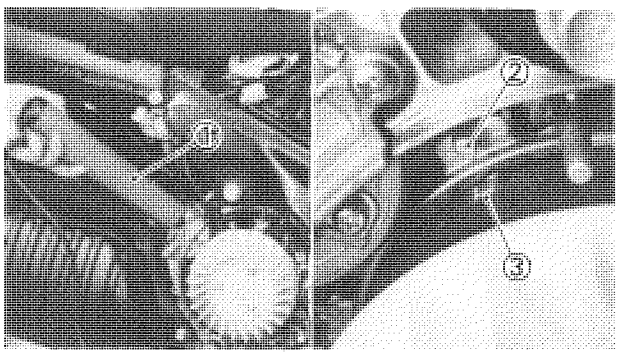
CAUTION:

When checking the ignition timing, the muffler must be installed in place.

6. Check:
   • Ignition timing

WARNING:

The ignition timing is adjusted for maximum performance at the factory. DO NOT attempt to change this setting.

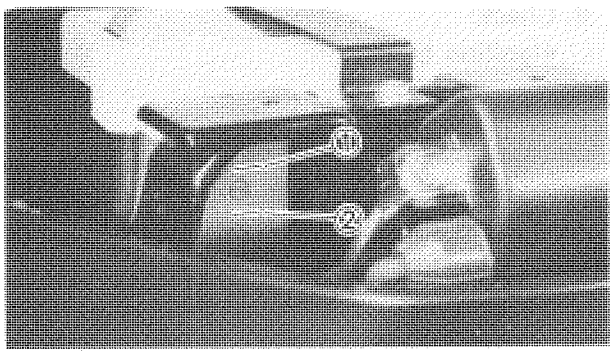


Ignition timing check steps:
- Connect the Timing Light ① (YU-33277) to the spark plug wire.
- Warm up the engine, and keep the engine running at the specified idle speed of 1,300 r/min. Use the Inductive Tachometer (YU-08036) to check the engine speed.
- Visually check the stationary pointer ② on the crankcase to verify it is within the required firing range ③ indicated on the flywheel. Incorrect firing range→Check flywheel and/or pickup assembly (tightness and/or damage). Refer to "CHAPTER 6. ELECTRICAL" for further information.

7. Remove:
   • Muffler assembly
8. Install:
   • Components in above list (step "4 ~ 1")
9. Tighten:
   • Components in above list (step "3 and 2")

Flange Bolt (Muffler):
25 Nm (2.5 m•kg, 18 ft•lb)
Socket Bolt (Exhaust Pipe)
30 Nm (3.0 m•kg, 22 ft•lb)
Bolt (Passenger Footrest):
25 Nm (2.5 m•kg, 18 ft•lb)

BATTERY INSPECTION



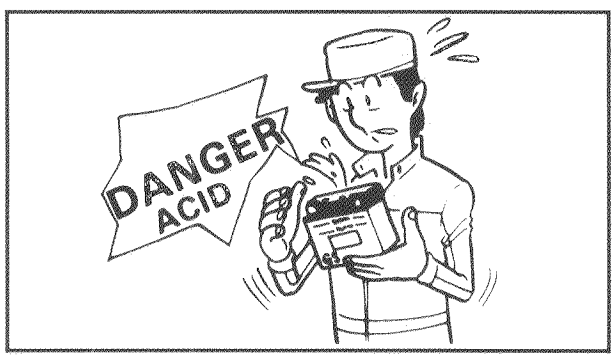
BATTERY INSPECTION

1. Inspect:
   - Battery fluid level
     Battery fluid level low→Fill.
     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 battry.



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 immeditate 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.**

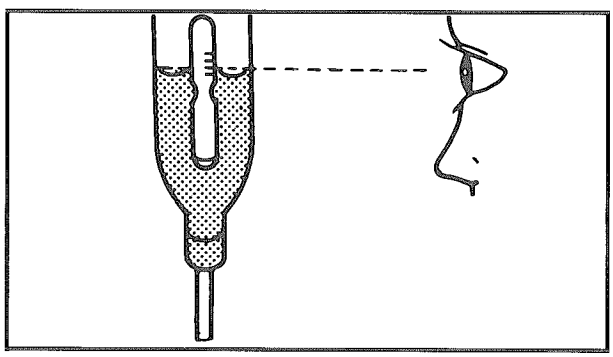
KEEP BATTERIES AND ELECTROLYTE OUT OF REACH OF CHILDREN.

2. Remove:
   - Battery

NOTE:

Disconnect the negative lead farst.

3. Inspect:
   - Battery fluid specific gravity
     Out of specification→Charge.



CAUTION:

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

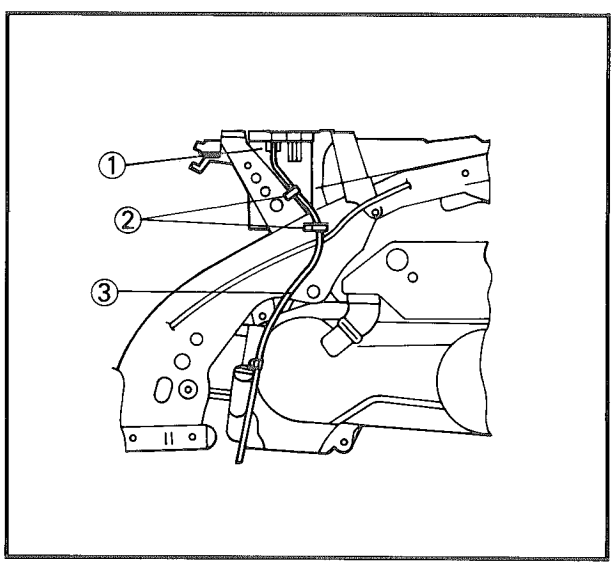
Charging Current: 1.0 amps/10 hrs
Specific Gravity: 1.280 at 20°C (68°F)

4. Install:
   - Battery

NOTE:

Connect the positive lead farst.

5. Inspect:
   - Breather hose
     Obstruction→Remove.
     Damage→Replace.



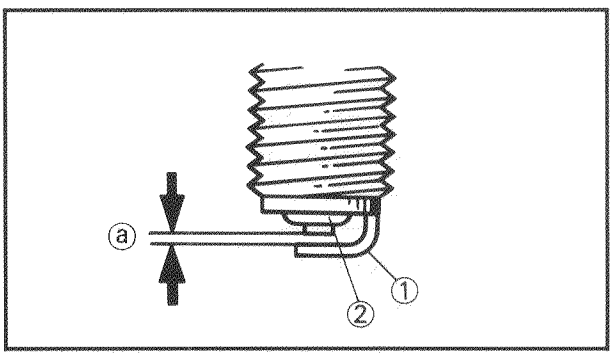
6. Connect:
   - Breather hose
     Be sure the hose is properly attached and routed.

CAUTION:

When inspecting the battery, be sure the breather hose is routed correctly. If the breather hose touches the frame or exits in such a way as to cause battery electrolyte or gas to exit onto the frame, structural and cosmetic damage to the scooter can occur.

① Battery
② Clamp
③ Breather hose

2



SPARK PLUG INSPECTION

1. Inspect:
   - Spark plug type
     Incorrect→Replace.

Standard Spark Plug:
DPR7EA-9 (NGK)
X22EPR-U9 (N.D.)

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

3. Clean:
   - Spark plug
     Clean the spark plug with a spark plug cleaner or wire brush.

4. Measure:
   - Spark plug gap ⓐ
     Out of specification→Regap.
     Use a wire gauge.

Spark Plug Gap ⓐ:
0.8~0.9 mm (0.031~0.035 in)

5. Tighten:
   - Spark Plug

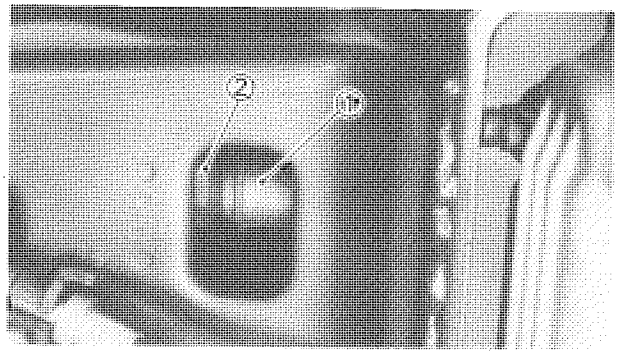
NOTE:

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

Spark Plug:
17.5 Nm (1.75 m•kg, 12.5 ft•lb)

NOTE:

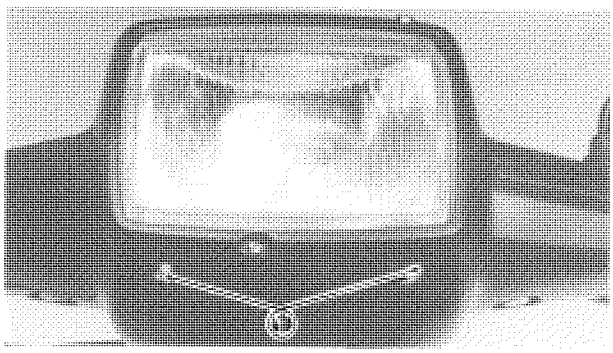
If a torque wrench is not available when you are installing a spark plug, a good estimate of the correct torque is 1/4 to 1/2 turns part finger tight. Have the spark plug torqued to the correct value as soon as possible with a torque wrench.



BRAKE LIGHT SWITCH ADJUSTMENT

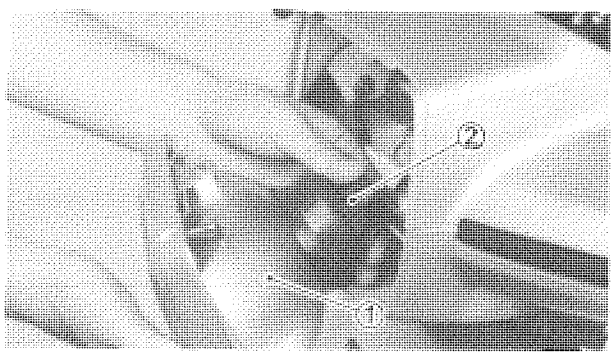
1. Adjust:
   - Brake light operating timing

   Hold the main body ① of the switch with your hand so that it does not rotate, and turn the adjuster ② until the operating timing is correct.

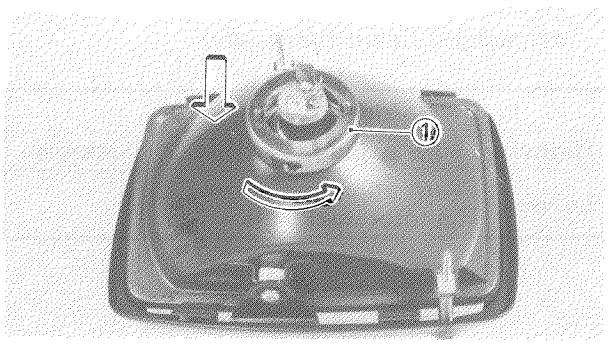


HEADLIGHT BULB REPLACEMENT

1. Remove:
   - Bolts (Headlight unit) ①

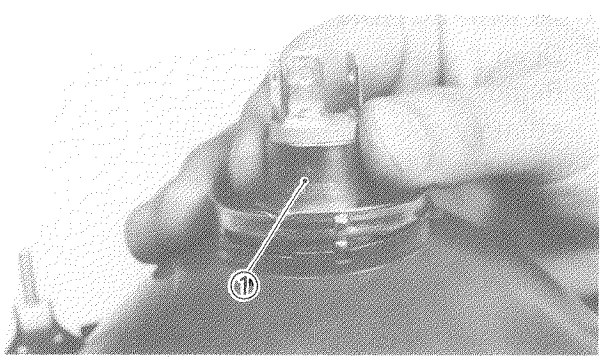


2. Remove:
   - Headlight unit ①
3. Disconnect:
   - Connecter (Headlight lead) ②



4. Remove:
   - Rubber cover (Headlight bulb)
   - Bulb holder ①

   While pushing the bulb holder ①, turn it counterclockwise

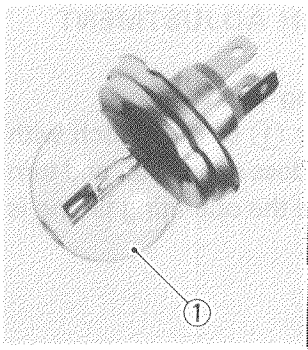


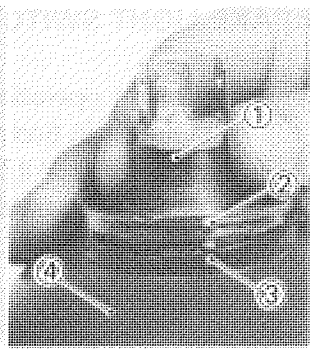
5. Remove:
   - Bulb ①

WARNING:

Do not touch headlight bulb when it is on as the bulb generates enormous heat; keep flammable objects away.

HEADLIGHT BULB REPLACEMENT/HEADLIGHT BEAM ADJUSTMENT/FUSE INSPECTION





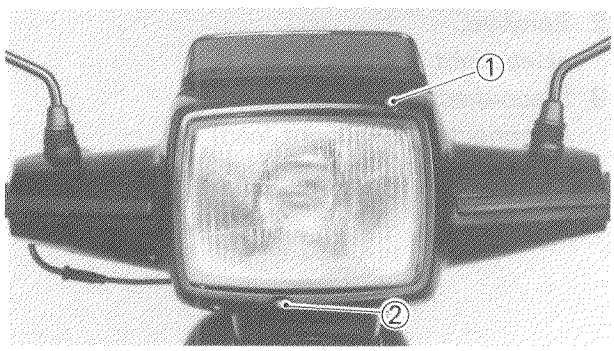
6. Install:
   - Bulb (New) ①

NOTE:

Make sure the projections ② on the bulb flange are meshed with the slots ③ on the bulb case ④.

7. Install:
   - Components above list (Step "4 ~ 1")

8. Adjust:
   - Headlight beam
     Refer to following section.



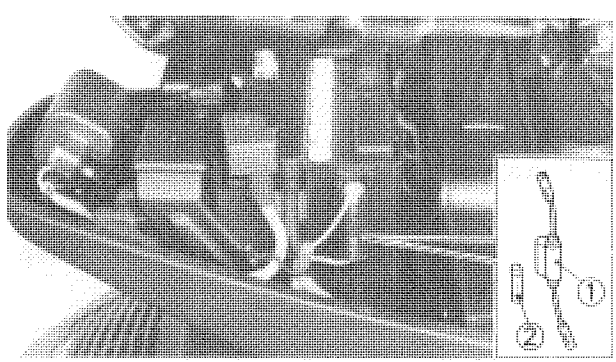
HEADLIGHT BEAM ADJUSTMENT

1. Adjust:
   - Headlight beam (Horizontally)

Horizontal Adjustment	
Right	Turn adjusting screw ① clockwise
Left	Turn adjusting screw ① counterclockwise

2. Adjust:
   - Headlight beam (Vertically)

Vertical Adjustment	
Higher	Turn adjusting screw ② clockwise
Lower	Turn adjusting screw ② counterclockwise



FUSE INSPECTION

1. Open the seat
2. Remove:
   - Battery cover
3. Inspect:
   - Fuse ①
     Defective → Replace.
     Blow fuse (new) → Inspect circuit.

② Spare fuse



NOTE:

Install new fuses of proper amperage.

Description	Amperage	Quantity
Main	20A	1
Reserve	20A	1

Blown fuse replacement steps:

- Turn off ignition and the circuit.
- Install a new fuse of proper amperage.
- Turn on the switches and see if the electrical device operates.
- Fuse interrupts the circuit again→Check electrical system.
  Refer to "CHAPTER 6. ELECTRICAL" for further information.

CHAPTER 3
ENGINE OVERHAUL

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ENGINE OVERHAUL

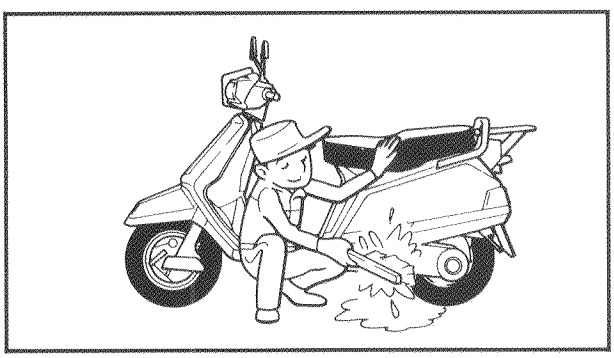
ENGINE REMOVAL

NOTE:

It is not necessary to remove the engine in order to remove the following components.

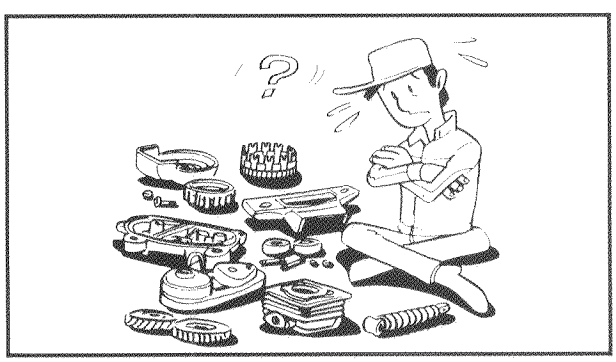
- Primary and secondary sheeve
- Clutch
- Flywheel magneto
- Oil pump
- Starter motor
- Carburetor
- Oil filter
- V-Belt
- Starter clutch
- Transmission

3



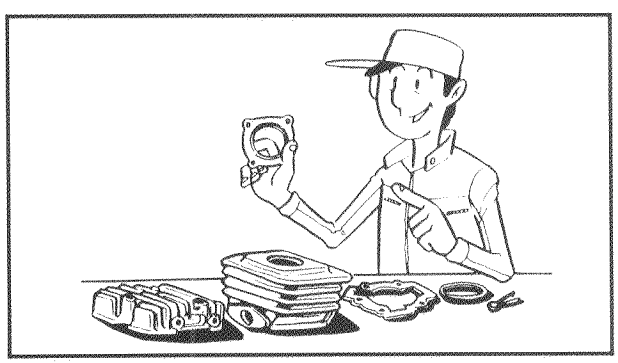
PREPARATION FOR REMOVAL

1. Remove all dirt, mud, dust, and foreign material before removal and disassembly.
2. Use proper tools and cleaning equipment. Refer to CHAPTER 1, "SPECIAL TOOL."

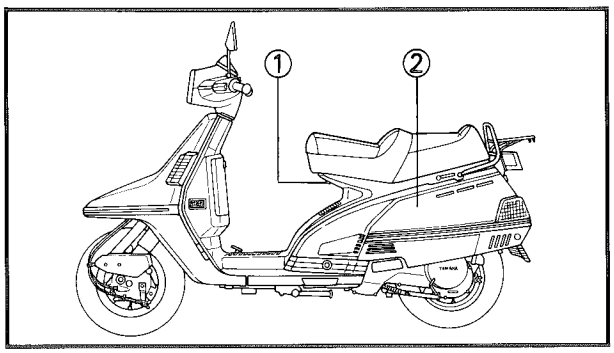


NOTE:

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

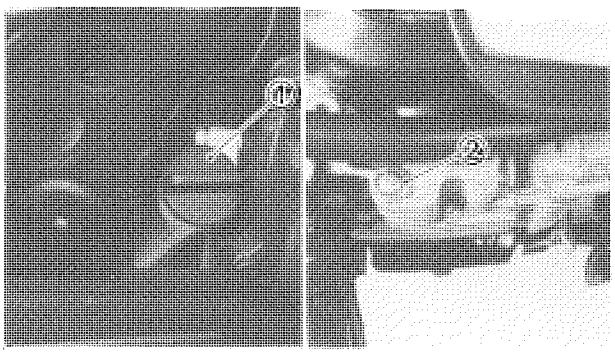


3. During the engine disassembly, clean all parts and place them in trays in the order of disassembly. This will speed up assembly time and help assure that all parts are correctly reinstalled in the engine.



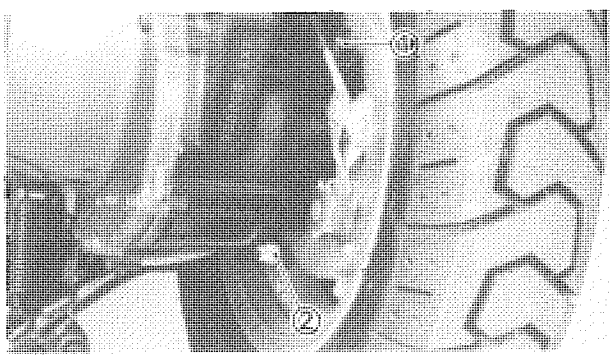
4. Remove:
   - Front cover ①
   - Side covers (Left and right) ②

   Refer to "CHAPTER 2 REMOVING THE COVERS AND PANELS" section.



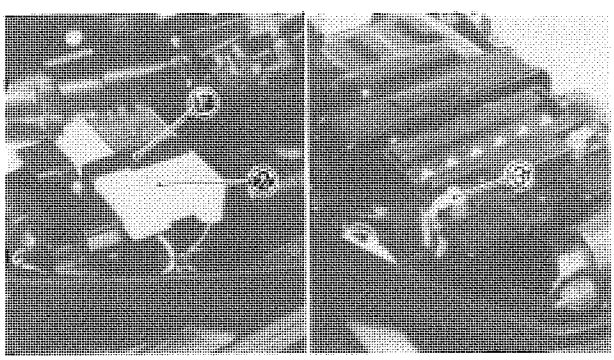
5. Remove:
   - Dipstick (Crankcase) ①
   - Drain bolt (Crankcase) ②

   Drain the engine oil completely.
   Refer to "CHAPTER 2. ENGINE OIL REPLACEMENT" section.



6. Remove:
   - Dipstick (Transmission case) ①
   - Drain bolt (Transmission case) ②

   Drain the transmission oil completely.
   Refer to "CHAPTER 2. TRANSMISSION OIL REPLACEMENT" section.

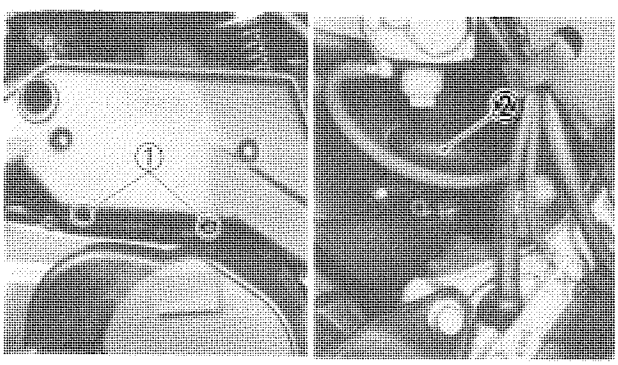


BATTERY LEAD

1. Remove:
   - Bridge plate ①
   - Cover ②
2. Disconnect:
   - Battely leads

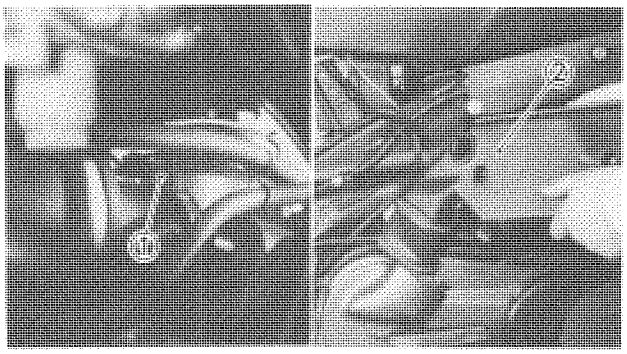
NOTE:

Disconnect the negative lead ③ first.

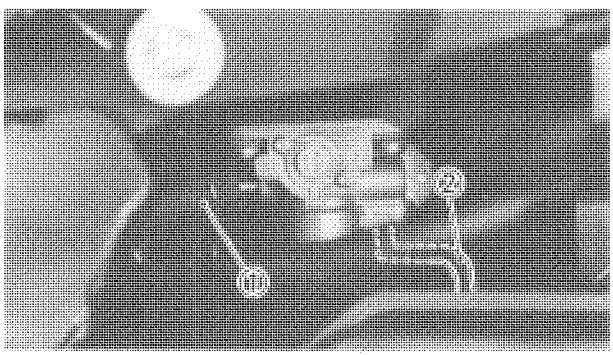


AIR CLEANER CASE

1. Remove:
   - Screws (Air cleaner case) ①
   - Breather hose (Crankcase) ②



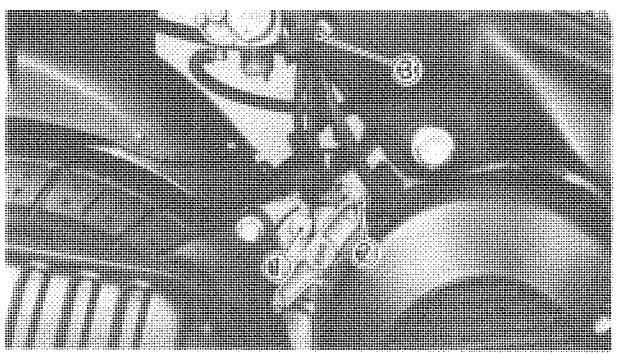
2. Loosen:
   - Screw (Carburetor-clamp) ①
3. Remove:
   - Air cleaner case assembly ②



CARBURETOR HOSES

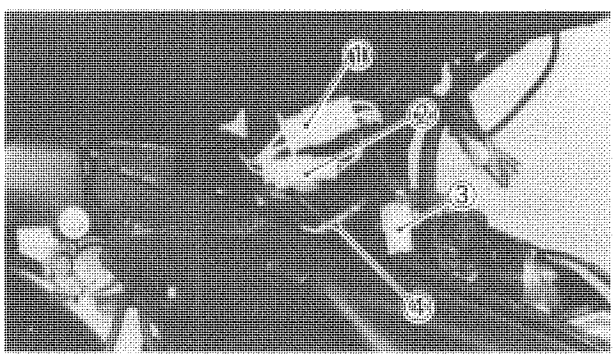
1. Disconnect:
   - Fuel feed hose ①
   - Vacuum hose ②

   From fuel cock side.

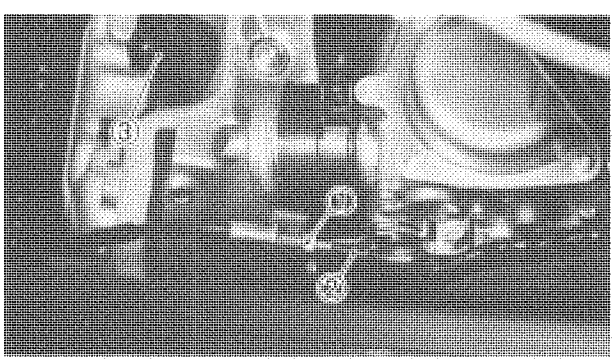


CONNECTORS

1. Remove:
   - Starter motor lead (Positive) ①
   - Starter motor lead (Negative) ②
   - Band ③



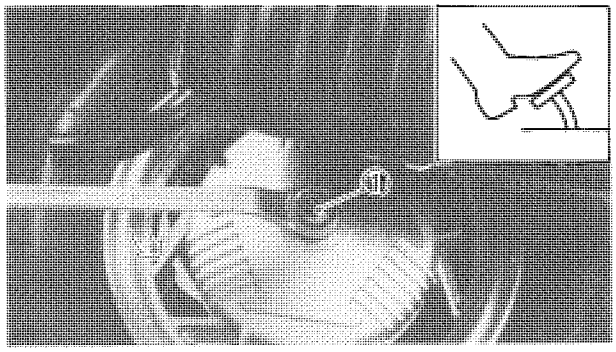
2. Disconnect:
   - AC magneto lead connecter ①
   - Pickup coil lead connecter ②
   - Choke unit lead coupler ③
   - Oil level switch lead coupler ④



CONTROL CABLES

1. Loosen:
   - Looknut (Throttle cable adjuster) ①
2. Remove:
   - Throttle cable ②

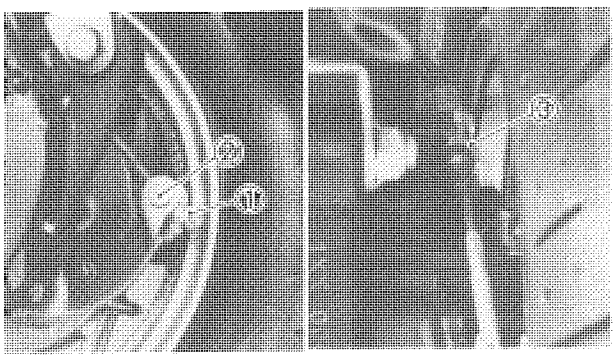
   From carburetor side.
   - Spark plug cap ③



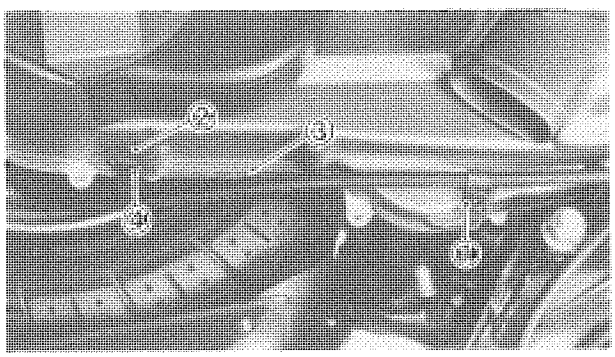
3. Remove:
   - Cotter pin
4. Loosen:
   - Nut (Rear wheel axle) ①

NOTE:

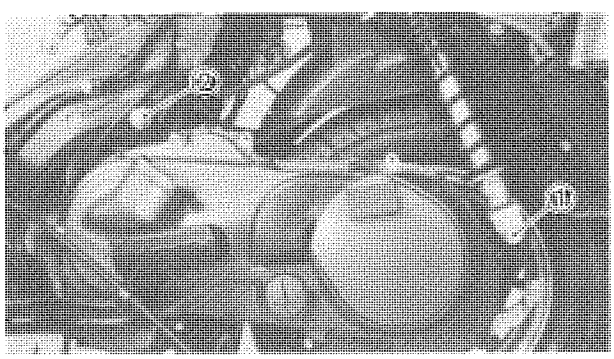
While applying the rear brake, fully loosen the axle nut.



5. Remove:
   - Adjuster (Rear brake) ①
   - Pivot pin ②
   - Bolt (Rear brake cable-clamp) ③

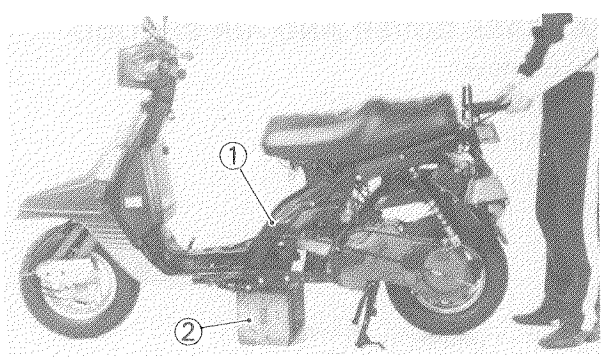


6. Loosen:
   - Bolt (Rear brake cable-clamp) ①
7. Remove:
   - Bolt (Rear brake cable-guide) ②
   - Rear brake cable ③ with guide ④



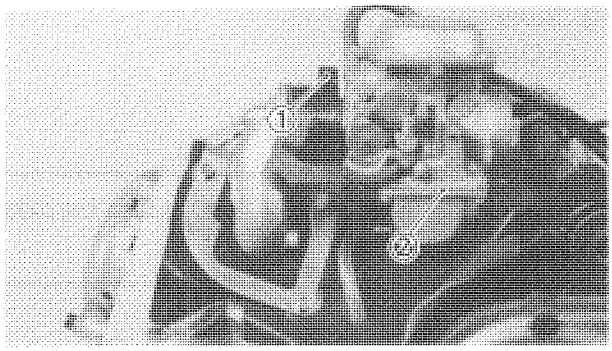
ENGINE

1. Remove:
   - Bolt (Shock absorber-lower) ①
   - Pivot shaft (Engine) ②



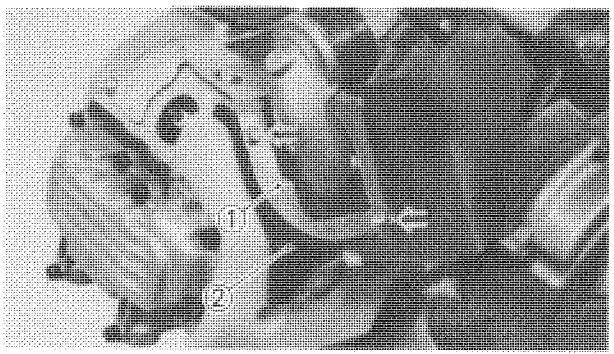
2. Remove:
   - Frame assembly ①

   From the engine assembly
3. Place the frame assembly ① on a suitable stand ②.

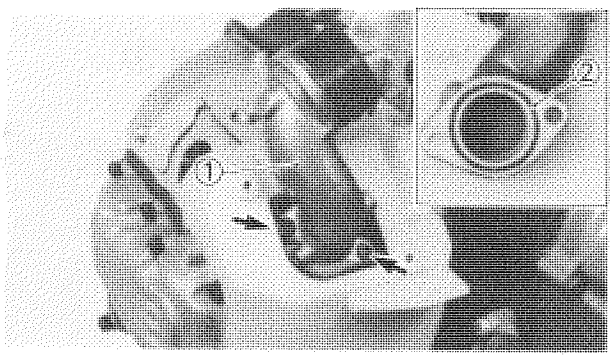


CARBURETOR AND INTAKE MANIFOLD

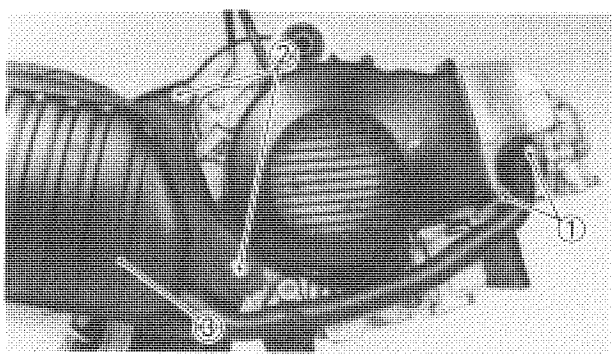
1. Loosen:
   - Screw (Carburetor-clamp) ①
2. Remove:
   - Carburetor assembly ②



3. Remove:
   - Clamp plate (Heat protecter) ①
   - Heat protecter ②

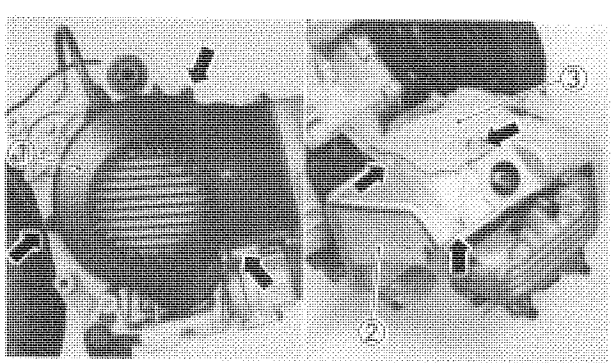


4. Remove:
   - Intake manifold ① with O-ring ②



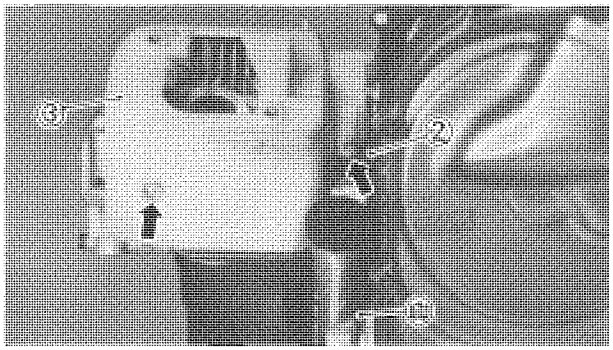
MUFFLER

1. Remove:
   - Socket bolts (Exhaust pipe) ①
   - Flange bolts (Muffler) ②
   - Muffler assembly ③ with gasket



FANCASE COVER AND AIR SHROUD

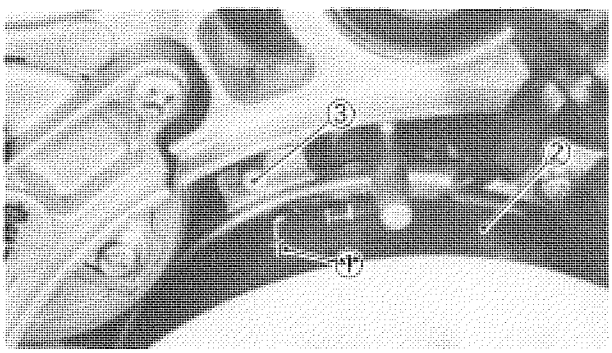
1. Remove:
   - Fancase cover ①
   - Air shroud 1 ②
   - Air shroud 2 ③



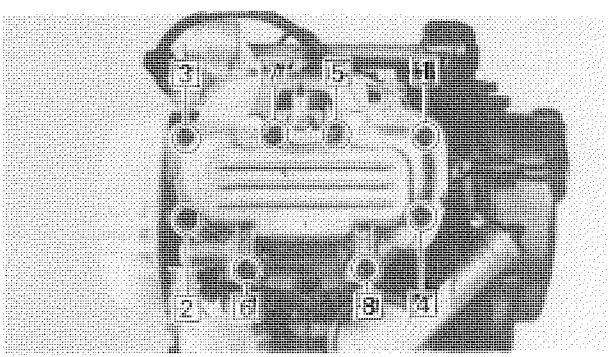
2. Remove:
   - Oil level switch lead ①
     From the lead guide ②
   - Air shroud 3 ③

ENGINE DISASSEMBLY

CYLINDER HEAD COVER AND CYLINDER HEAD



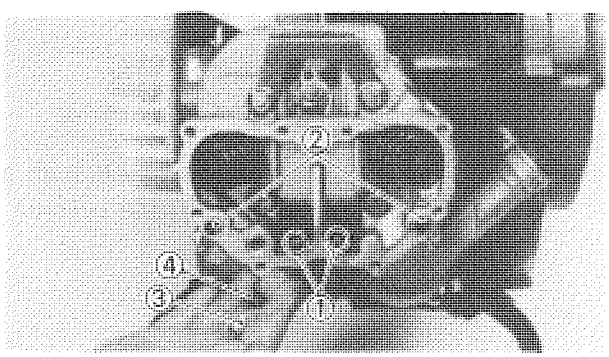
1. Align the "T" mark ① on the flywheel magneto ② with the stationary pointer ③ on the crankcase so that the piston is at TDC on the compression stroke.



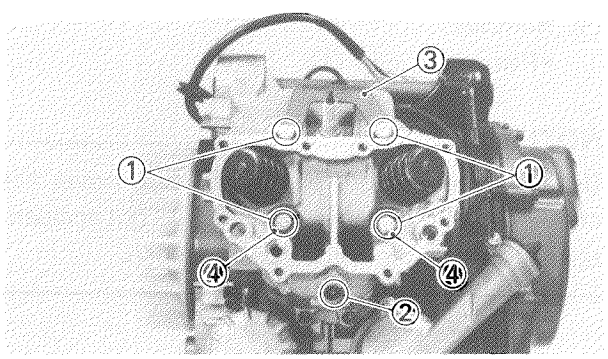
2. Remove:
   - Bolts (Cylinder head cover)
   - Cylinder head cover

NOTE:

Follow numerical order shown in photo. Start by loosening each bolt 1/2 turn until all are loose.



3. Remove:
   - Push rods ①
   - Dowel pins ②
   - Nozzle ③ with O-ring ④

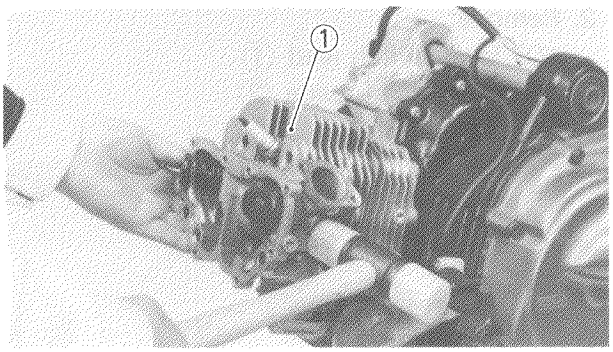


4. Remove:
   - Socket bolt (Cylinder head) ①
   - Bolts (Cylinder head) ②
   - Stay (Air shroud) ③

NOTE:

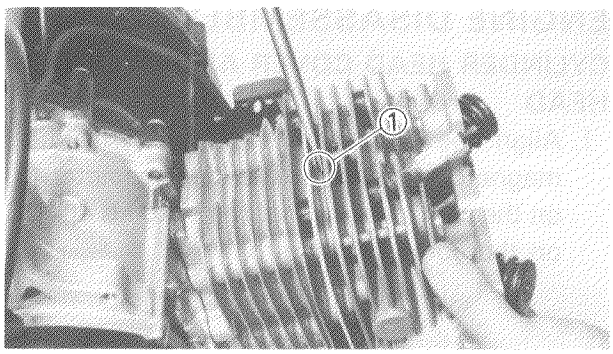
Loosen the bolts in stage, using a crisscross pattern.

④ With washer



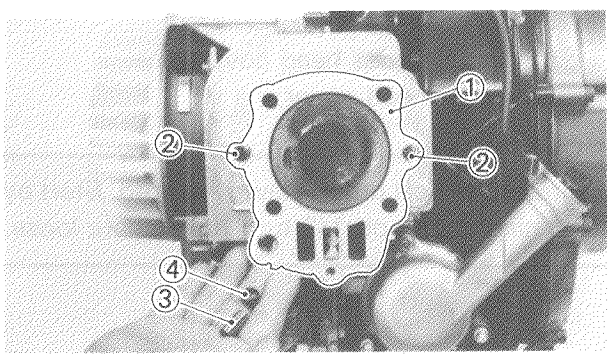
5. Remove:
   - Cylinder head assembly ①.

   Tap lightly the cylinder head solid points with a soft-head hammer to remove the cylinder head.

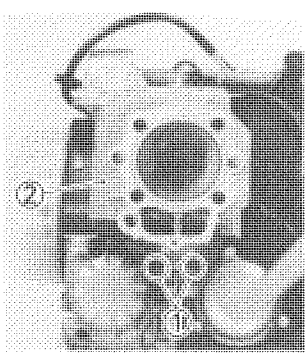


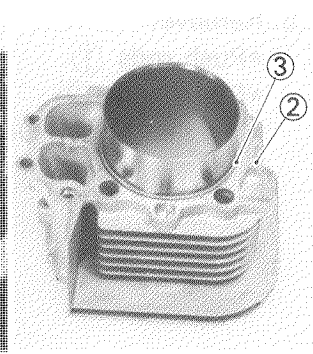
NOTE:

If it is necessary to pry the cylinder head loose from the gasket, carefully use a broad, flat-blade screw driver at the reinforced points ① shown.



6. Remove:
   - Gasket (Cylinder head) ①
   - Dowel pins ②
   - Nozzle ③ with oil seal ④

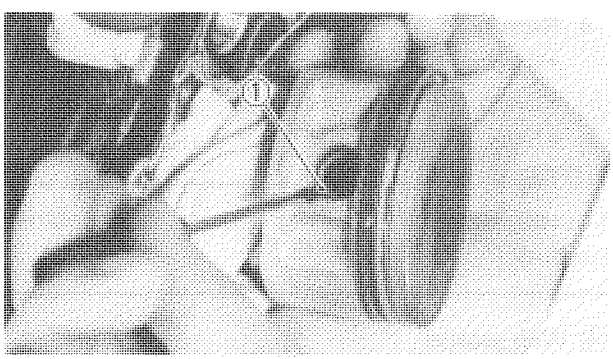




CYLINDER AND PISTON

1. Remove:
   - Socket bolts (Cylinder) ①
   - Cylinder ② with O-ring ③

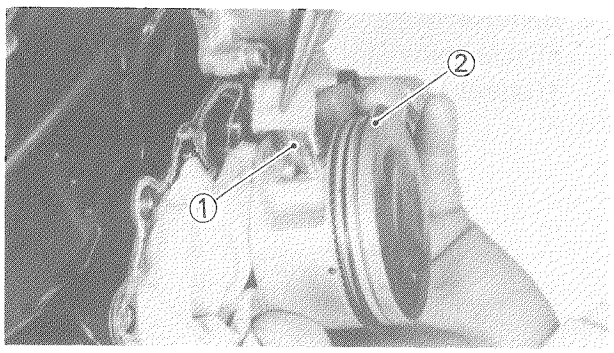
   Tap lightly the cylinder solid points with a soft-head hammer to remove the cylinder.



2. 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.



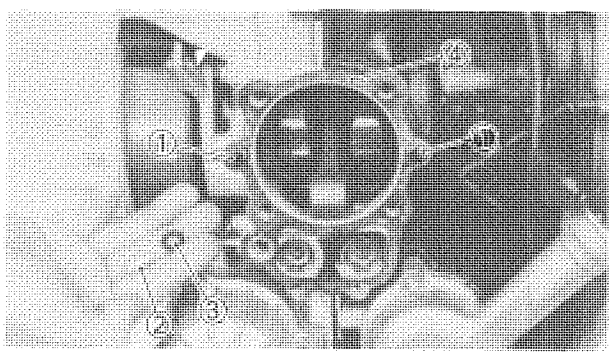
3. Remove:
   - Piston pin ①
   - Piston ②

NOTE:

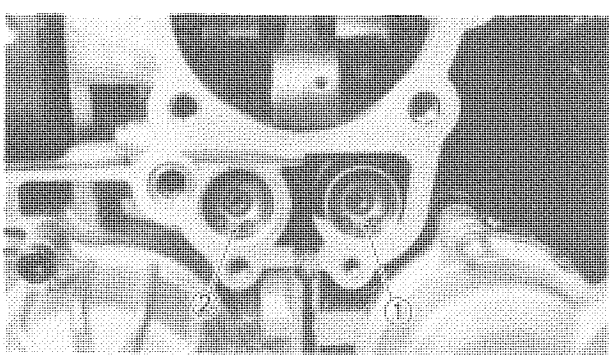
Before removing the piston pin, deburr the clip groove and pin hole area. If the piston pin groove is deburred and piston pin is still difficult to remove, use Piston Pin Puller (YU-01304).

CAUTION:

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



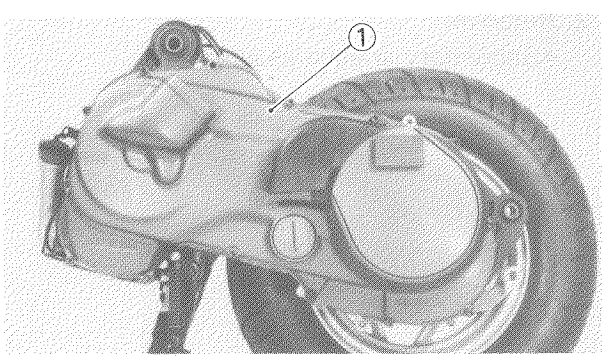
4. Remove:
   - Dowel pins ①
   - Nozzle ② with O-ring ③
   - Gasket (Cylinder) ④



5. Remove:
   - Valve lifter (Intake ① and Exhaust ②)

NOTE:

Put marks on them so that they can be identified as "intake" and "exhaust".

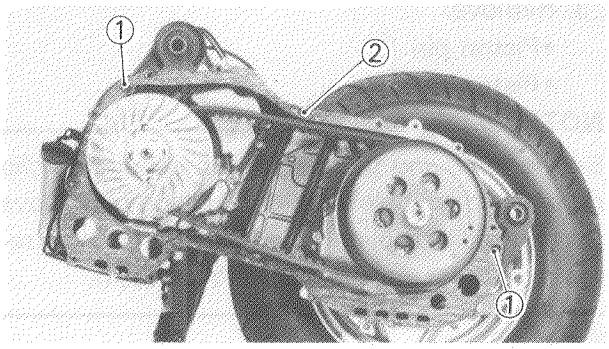


PRIMARY SHEAVE AND V-BELT

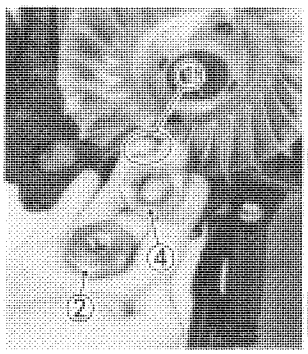
1. Remove:
   - Sheave case cover ①

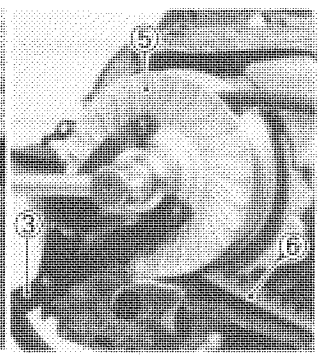
NOTE:

Working in a crisscross pattern, loosen screw 1/4 turn each. Remove them after all are loosened.

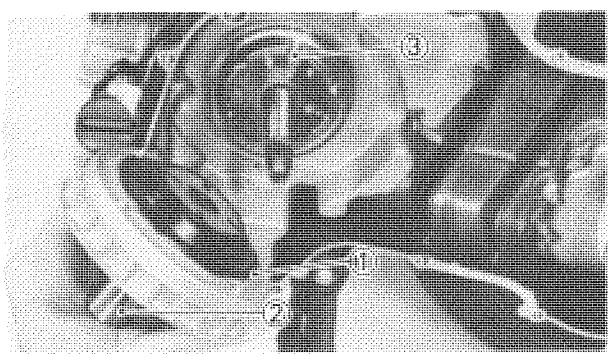


2. Remove:
   - Dowel pins ①
   - Gasket (Sheave case cover) ②

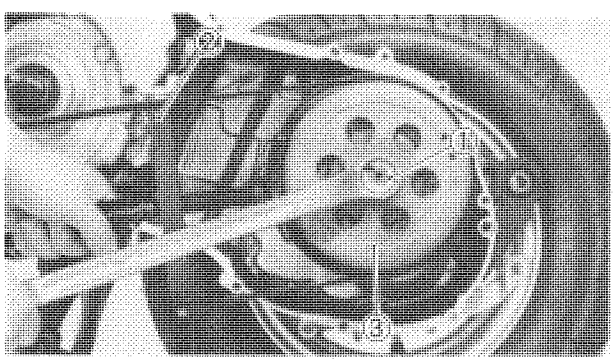




3. Straighten:
   - Tab (Lock washer) ①
4. Remove:
   - Nut (Primary sheave assembly) ②
     Use the Roter Holder (YU-01235) ③.
   - Lock washer ④
   - Primary fixed sheave ⑤
   - V-belt ⑥

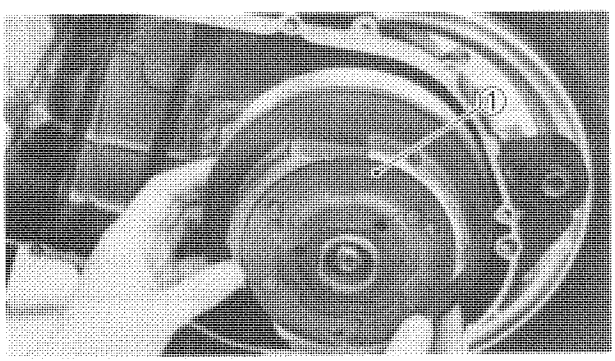


5. Remove:
   - Primary sliding sheave ① with collar ②
   - Holding plate ③

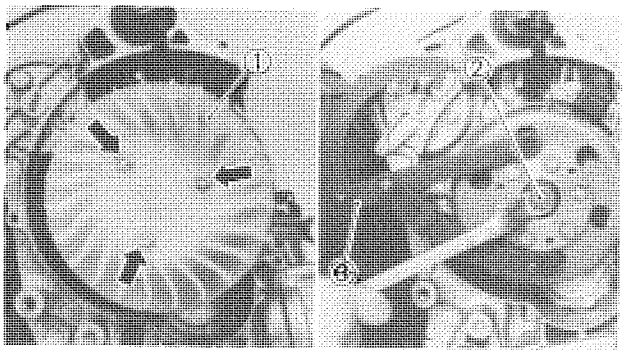


CLUTCH HOUSING AND SECONDARY SHEAVE

1. Remove:
   - Nut (Secondary sheave) ①
     Use the Sheave Holder (YS-01880) ②.
   - Clutch housing ③

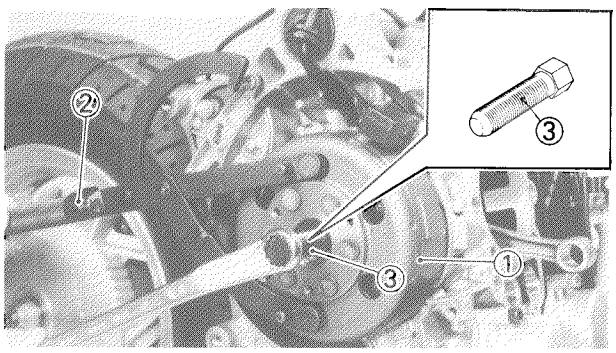


2. Remove:
   - Secondary sheave assembly ①

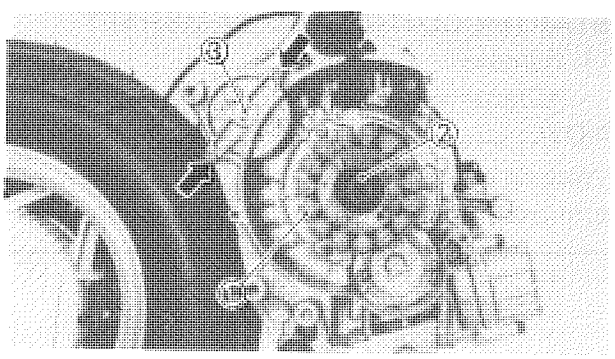


FLYWHEEL MAGNETO AND STARTER MOTOR

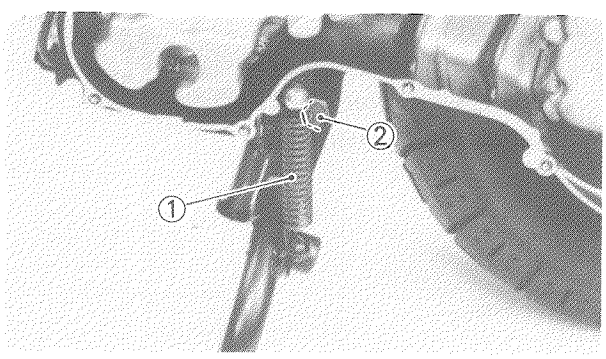
1. Remove:
   - Cooling fan ①
   - Flange bolt (Flywheel magneto) ②
     Use the Roter Holder (YU-01235) ③.



2. Remove:
   - Flywheel magneto ①
     Use the Rotor Holder (YU-01235) ② and Flywheel Magneto Puller (YU-01080) ③.



3. Remove:
   - Stator assembly ①
   - Woodruff key ②
   - Starter motor ③

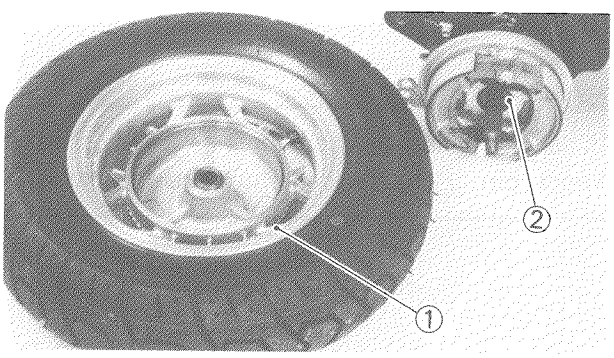


REAR WHEEL AND MAINSTAND

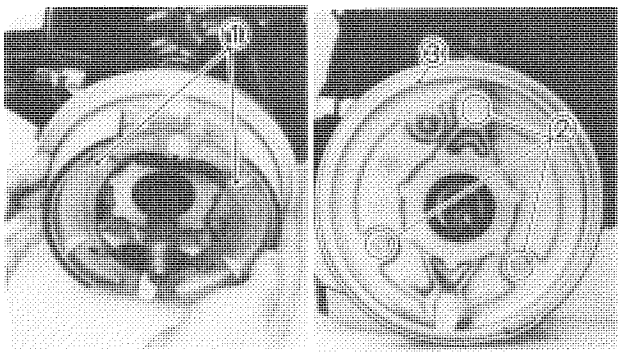
1. Unhook:
   - Spring (Mainstand) ①
2. Loosen:
   - Bolts (Mainstand) ②

NOTE:

Do not remove the bolts (Mainstand) yet.

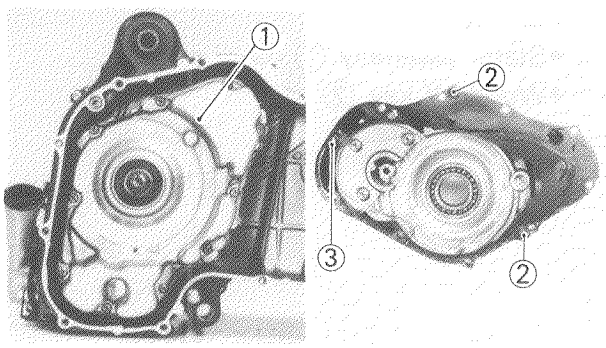


3. Remove:
   - Nut (Rear wheel axle)
   - Rear wheel ①
   - Thrust washer ②



4. Remove:
   - Brake shoes ①
   - Bolts (Brake shoe plate) ②
   - Brake shoe plate ③
   - Bolts (Mainstand)
   - Mainstand

3



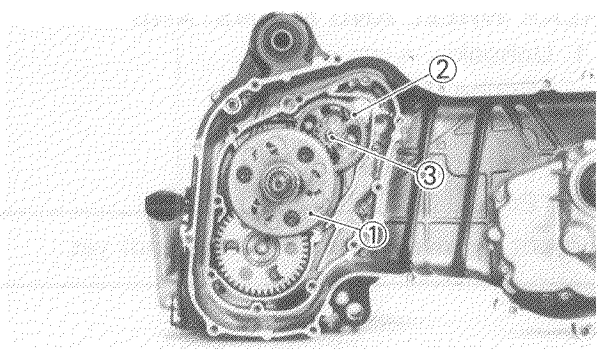
STARTER CLUTCH AND CAMSHAFT

1. Remove:
   - Starter gear case cover ①

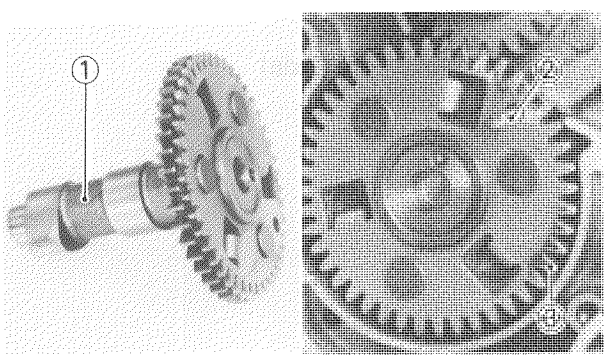
NOTE:

Working in a crisscross pattern, loosen screw 1/4 turn each. Remove them after all are loosened.

   - Dowel pins ②
   - Gasket ③



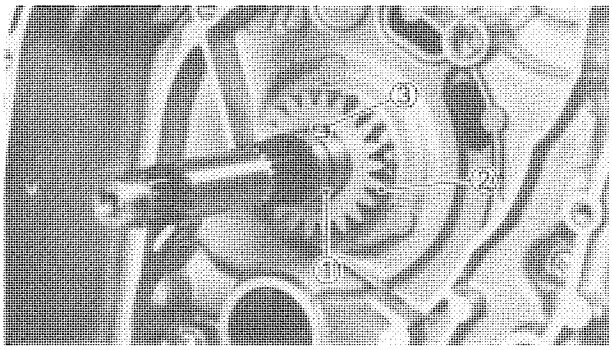
2. Remove:
   - Starter clutch assembly ①
   - Idler gear (Starter motor) ②
   - Shaft (Idler gear) ③



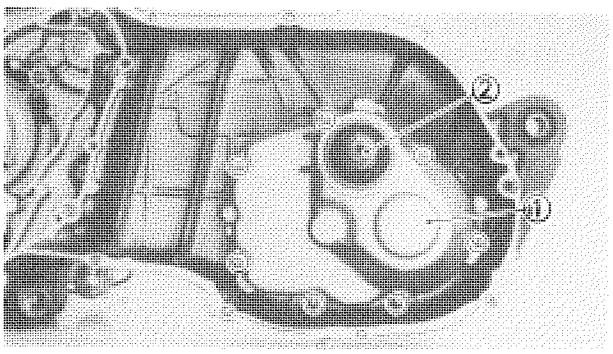
3. Remove:
   - Camshaft assembly ①

NOTE:

When removing the camshaft assembly, fit the knock pin ② to the camshaft driven gear ③.



4. Remove:
   - O-ring (Crankshaft) ①
   - Drive gear (Camshaft) ②
   - Woodruff key ③

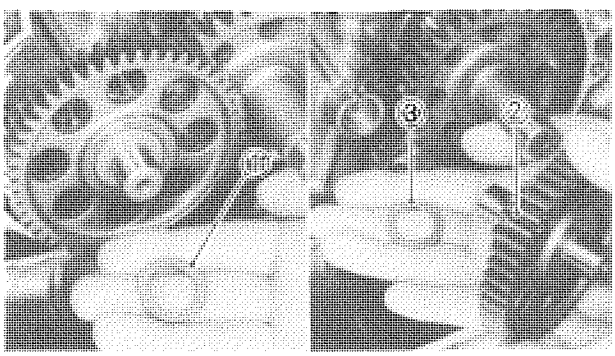


TRANSMISSION

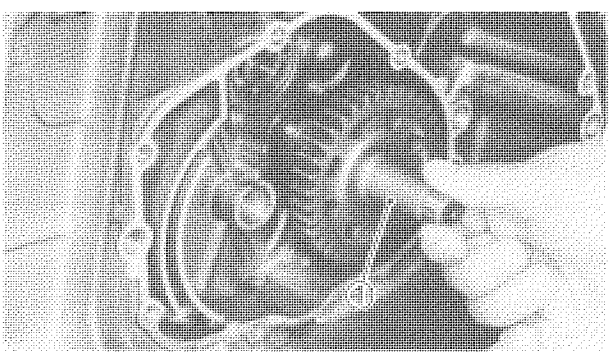
1. Remove:
   - Transmission case cover ① with primary drive axle ②
   - Dowel pins
   - Gasket

NOTE:

Working in a crisscross pattern, loosen screw 1/4 turn each. Remove them after all are loosened.



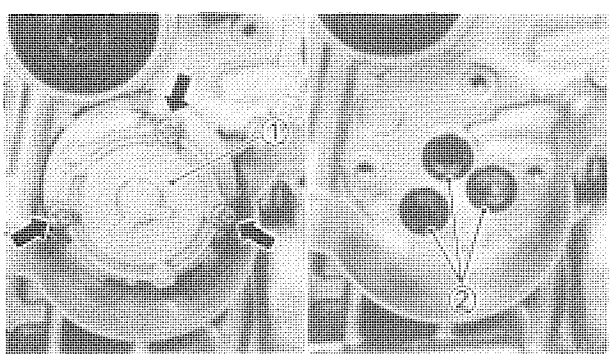
2. Remove:
   - Thrust washer ①
   - Main axle ②
   - Thrust washer ③



3. Remove:
   - Drive axle ①

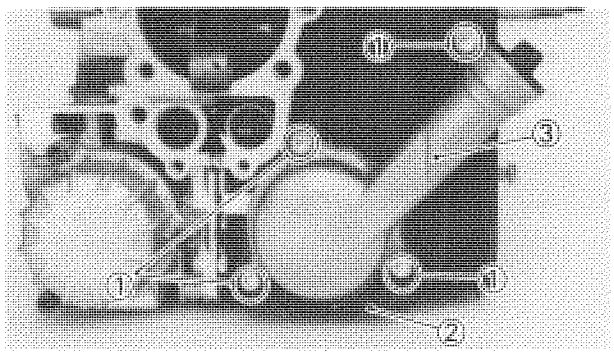
NOTE:

Take care not to damage the oil seal.



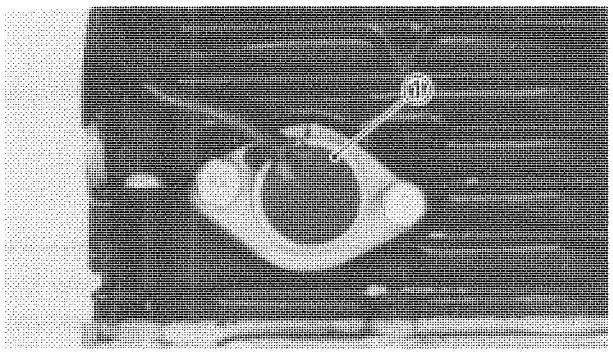
OIL PUMP

1. Remove:
   - Oil pump assembly ①
   - O-rings ②

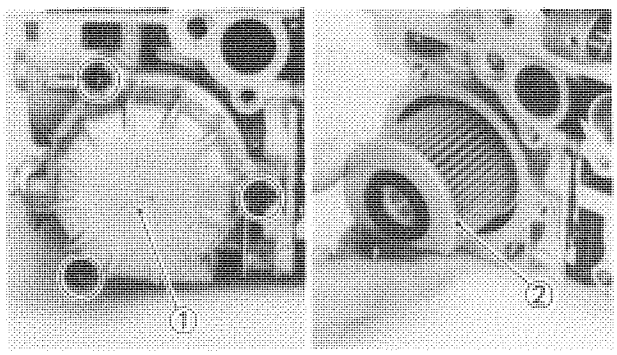


CRANKCASE AND CRANKSHAFT

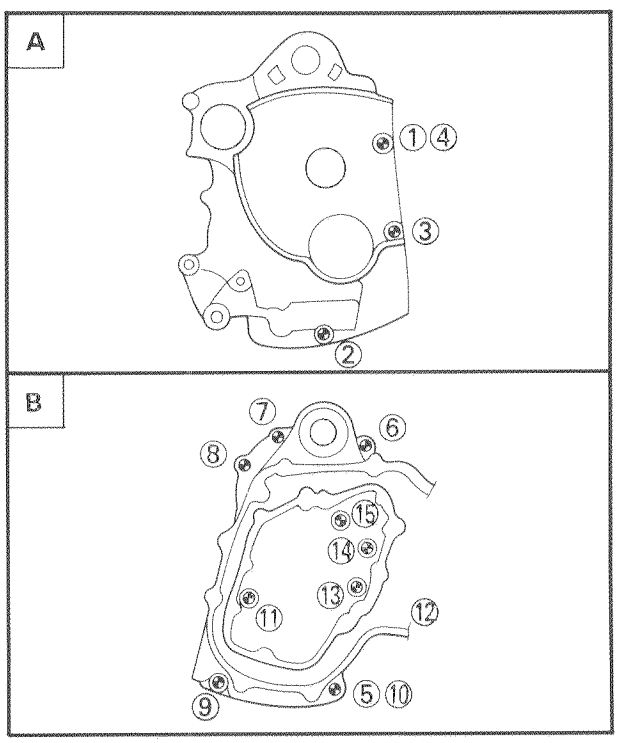
1. Remove:
   - Bolts (Oil filler case) ①
   - Guard (Oil level switch lead) ②
   - Oil filler case ③



2. Remove:
   - Oil level switch ①



3. Remove:
   - Oil filter cover ①
   - Oil filter ②

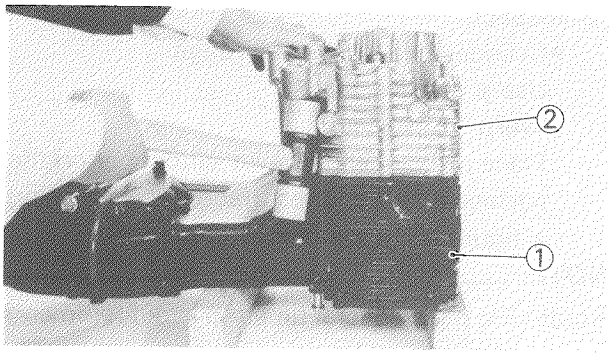


4. Remove:
   - Screws (Crankcase) ①~⑮

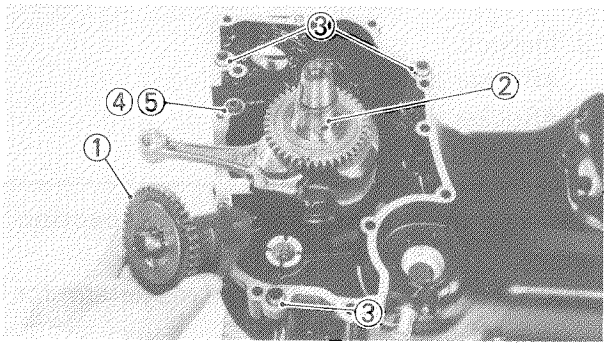
NOTE:

Remove the screws starting with the highest numbered one, in two steps.

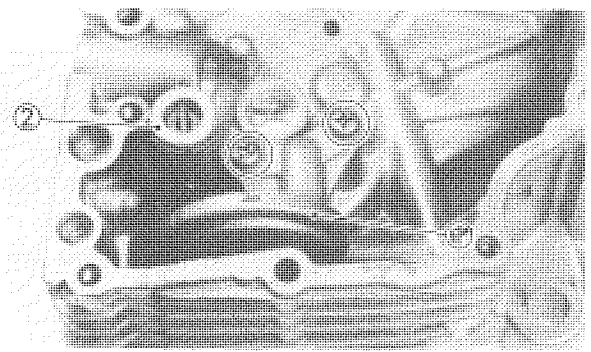
A RIGHT
B LEFT



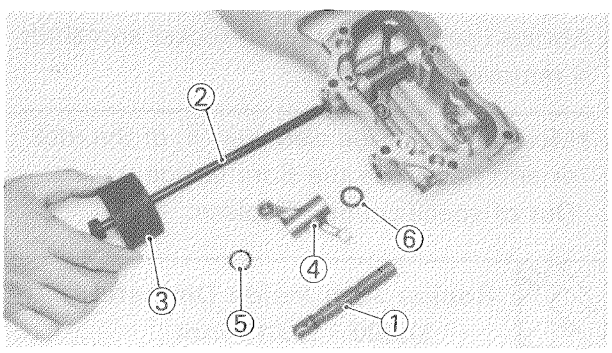
6. Separate:
   - Crankcase 1 ① and 2 ②
     While tapping the crankcase 2 with a soft-head hammer.
7. Remove:
   - Spacer collar



8. Remove:
   - Balancer weight assembly ①
   - Crankshaft assembly ②
   - Dowel pins ③
   - Nozzle ④ with O-ring ⑤



9. Remove:
   - Oil strainer ①
   - Relief valve ②



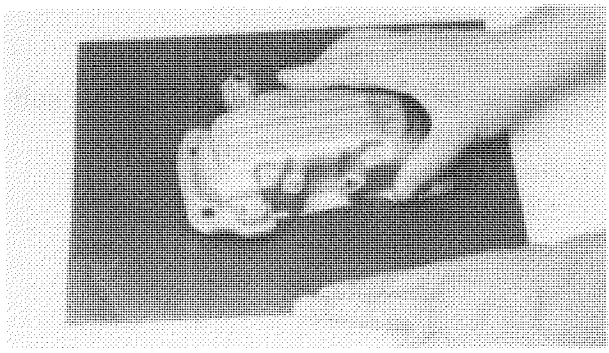
INSPECTION AND REPAIR

CYLINDER HEAD COVER, ROCKER ARMS AND ROCKER ARM SHAFTS

1. Remove:
   - Rocker arm shafts ①
     Use the Slide Hammer Set (YU-01083) ② and ③.
   - Rocker arms ④
   - Wave washers ⑤
   - Plate washers ⑥

NOTE:

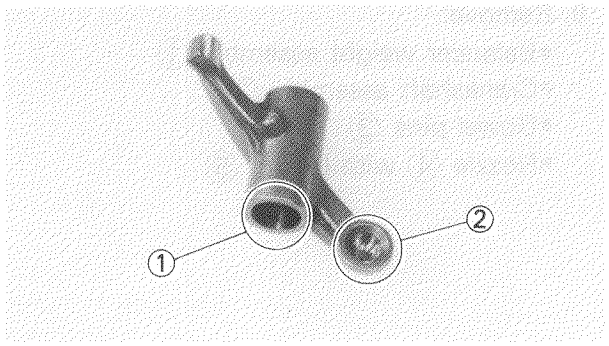
Identify each rocker arm and rocker arm shaft position very carefully so that it can be reinstalled in its original position.



2. Inspect:
   - Cylinder head cover warpage
     Use a surface plate.
     Warp → Resurface.
     Place a 400 ~ 600 grit wet sandpaper on the surface plate, and resurface the head using a figure-eight sanding pattern.

NOTE:

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



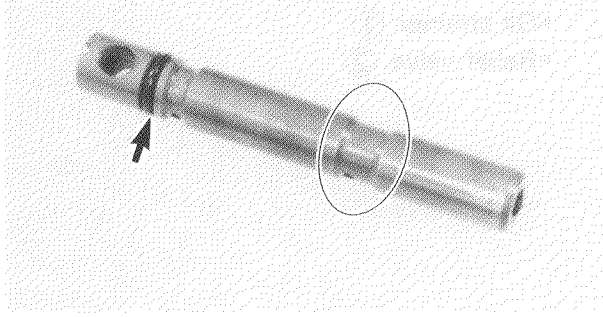
3. Inspect:
   - Rocker arms
   - Rocker arm shafts
     Wear/Damage → Replace.

Rocker arm shaft and arm inspection steps:

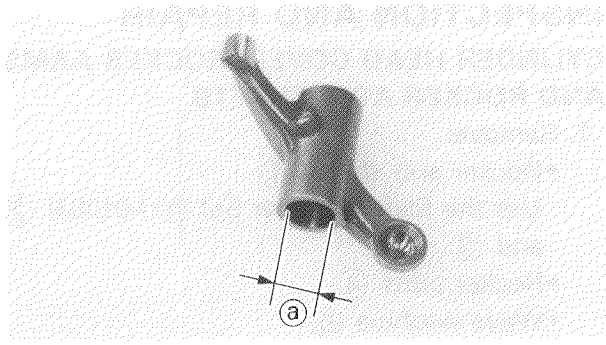
- Inspect the two areas on the rocker arm for signs of unusual wear.
  1) Rocker arm shaft hole ①
  2) Cam-lobe-contact surface ②
     Excessive wear → Replace.
- Inspect the surface condition of the rocker arm shaft.
  Pitting/Scratches/Blue discoloration → Replace/Check lubrication.
- Inspect the oil passages of the rocker arm shaft.
  Clogged/Damage → Clean or replace

NOTE:

Always use a new O-ring. If rocker arm shaft is removed.

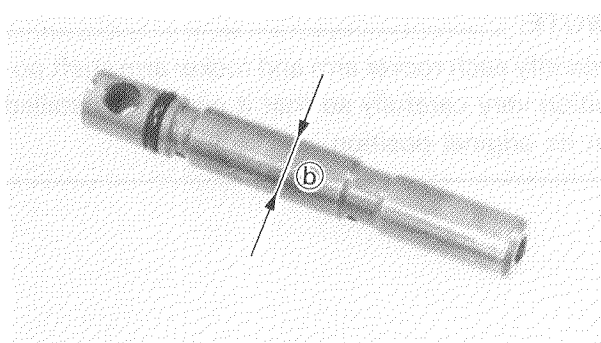


- Measure the inside diameter ⓐ of the rocker arm hole. Use the Bore Gauge.
  Out of specification → Replace.



Rocker Arm Inside Diameter
12.000 ~ 12.018 mm
(0.472 ~ 0.473 in)

- Measure the outside diameter ⓑ of the rocker arm shaft, where the rocker arm rides.
  Use the Micrometer.
  Out of specification → Replace.



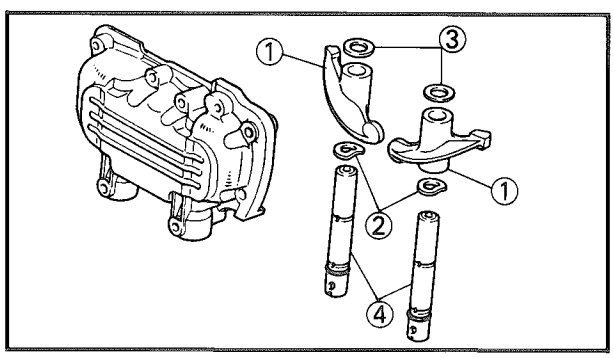
Rocker Arm Shaft Outside Diameter
11.976 ~ 11.991 mm
(0.471 ~ 0.472 in)

• Calculate the clearance by subtracting the rocker-arm-shaft outside diameter from the rocker-arm inside diameter.
Out of specification → Replace either or both parts.

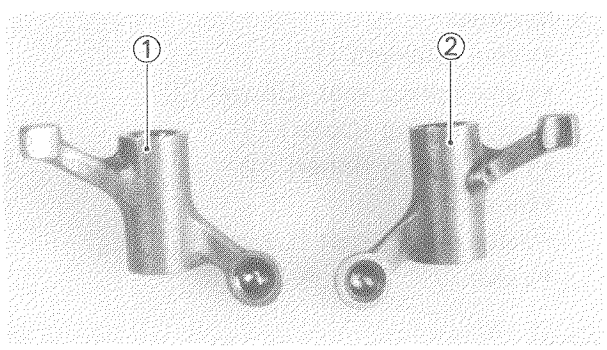
Arm-to-shaft Clearance (Standard):
0.009 ~ 0.042 mm
(0.0004 ~ 0.0017 in)

4. Apply:
   • Rocker arm inner surfaces
   • Rocker arm shaft outer surfaces
   • Wave wahsers
   • Plate washers

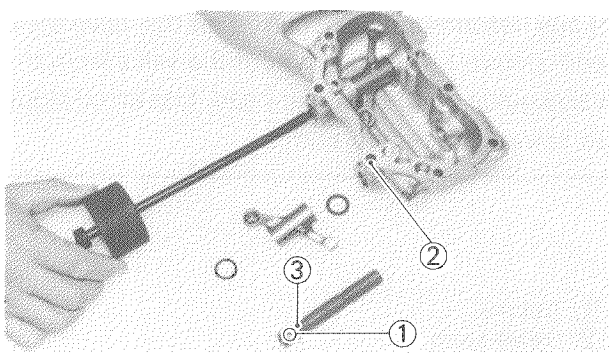
Molybdenum Disulfide Grease



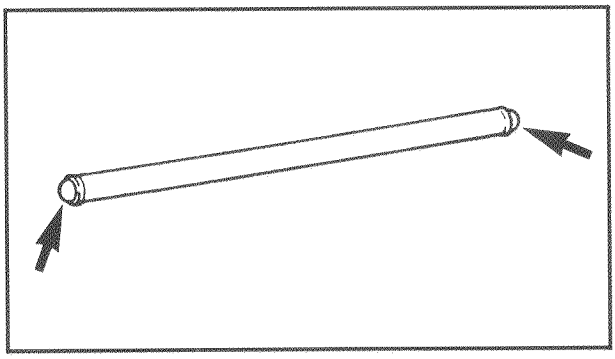
5. Install:
   • Rocker arms ①
   • Wave washers ②
   • Plate washers ③
   • Rocker arm shafts ④



NOTE:
The rocker arms are consist of intake ① and exhaust ② parts. Make sure they are installed to correct positions.

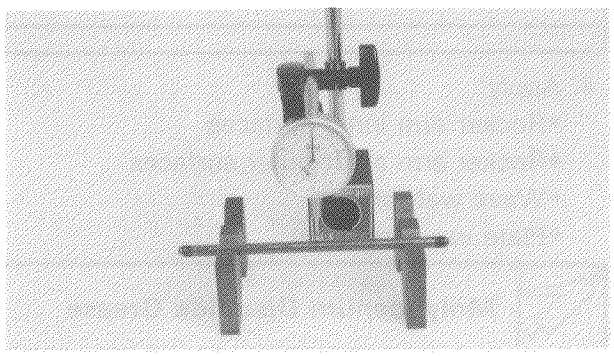


NOTE:
• The rocker arm shaft should be installed so that the threaded portion faces outward.
• The hole ① in the rocker arm shaft should be aligned with the hole ② in the cylinder head cover.
• Be careful not to damage the O-ring ③ during the installation of rocker arm shaft.



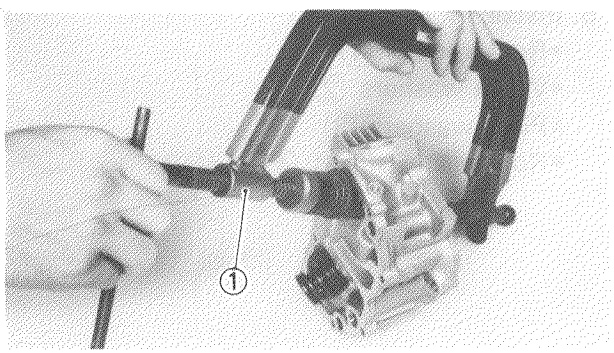
PUSH RODS

1. Inspect:
   - Push rod end
     Damage/Uneven wear→Replace.



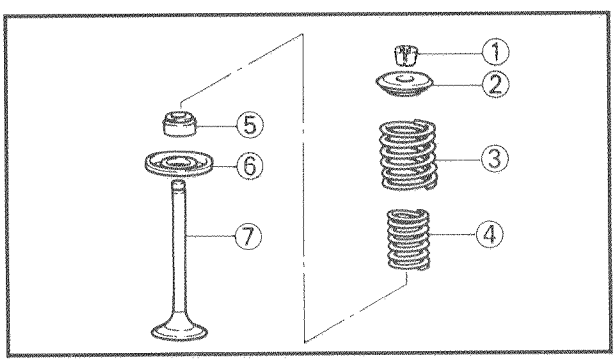
2. Measure:
   - Push rod runout
     Out of specification→Replace.

	Push Rod Runout Limit: **0.3 mm (0.012 in)**

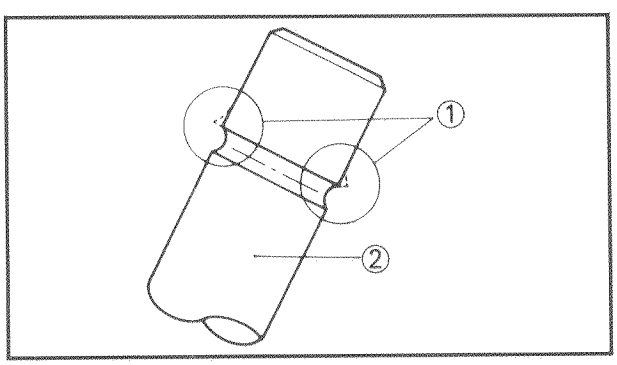


CYLINDER HEAD

1. Attach:
   - Valve Spring Compressor (YU-04019) ①
     Depress the valve springs.



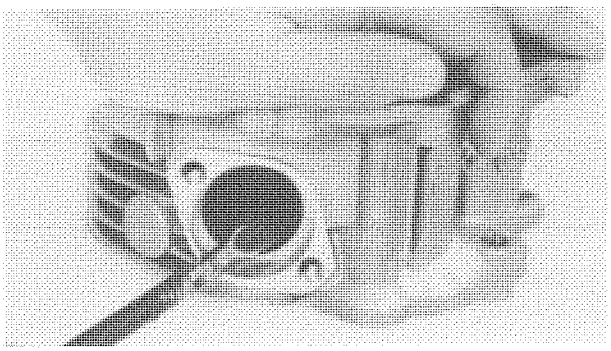
2. Remove:
   - Valve retainers ①
   - Valve spring seat (Upper) ②
   - Valve spring (Outer) ③
   - Valve spring (Inner) ④
   - Oil seal ⑤
   - Valve spring seat (Lower) ⑥
   - Valve ⑦



NOTE:

If any deformation is occurred on the valve stem end, deburr before pulling out the valve from the valve guide on the cylinder head. Use an oil stone to smooth the stem end.

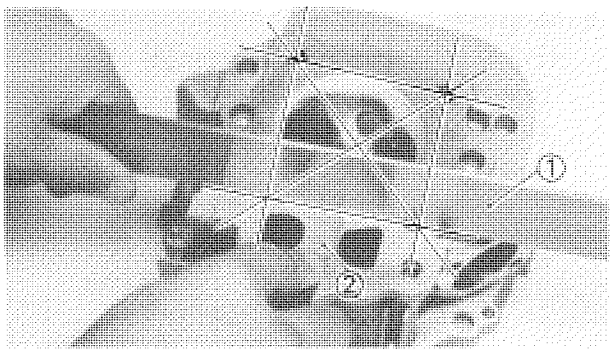
① Deburr
② Valve stem



3. Eliminate:
   - Carbon deposit
     Use rounded scraper, and wire brush.

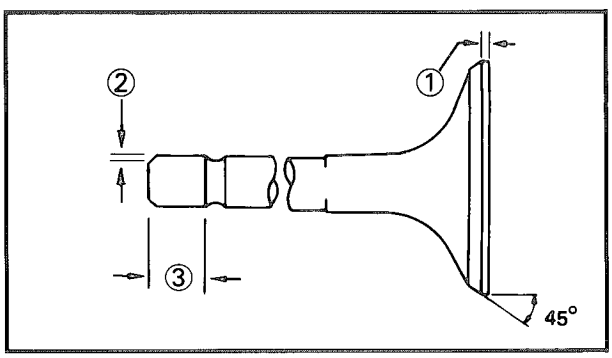
NOTE:

Do not a sharp instrument and avoid damaging or scratching:
- Spark plug threads
- Exhaust port
- Combustion chamber



4. Measure:
   - Cylinder head warpage
     Use a Straightedge ① and Feeler Gauge ②.
     Under specification→Resurface.
     Outer specification→Replace.

Cylinder Head Warp Limit:
Less than 0.025 mm (0.001 in)

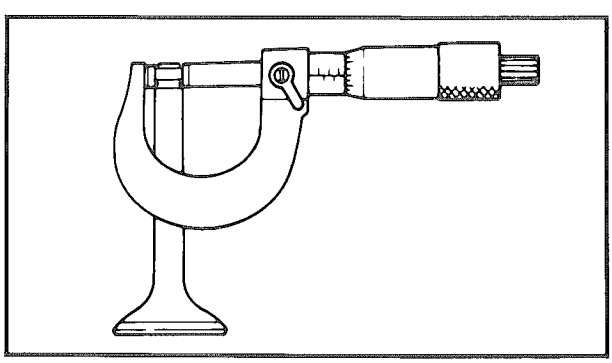


VALVE, VALVE GUIDE AND VALVE SEAT

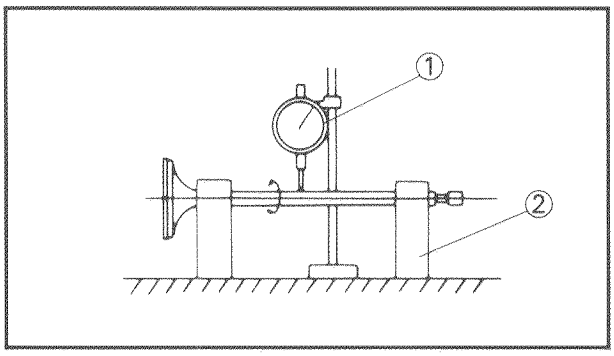
Valve Inspection

1. Eliminate:
   - Carbon deposit
     Use a 400~600 grit wet sandpaper.
2. Check:
   - Valve face
   - Stem end
     Wear/Pitting/Out of specification→Replace.

Margin Thickness (Service limit) ①:
Intake 0.7 mm (0.028 in)
Exhaust 0.7 mm (0.028 in)
Beveled ②: 0.50 mm (0.020 in)
Minimum Length (Service limit) ③:
4.0 mm (0.157 in)



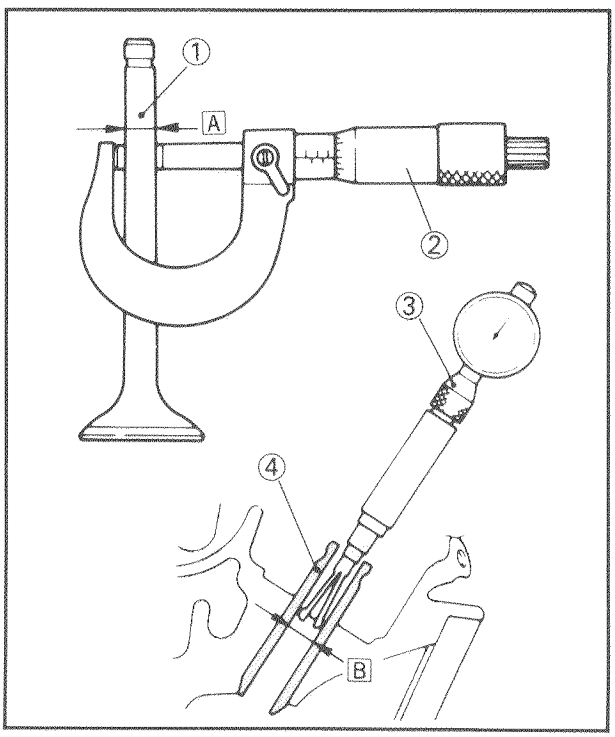
3. Inspect:
   - Valve stem end
     Mushroom shape/Larger diameter than rest of stem→Replace valve, valve guide, and oil seal.



4. Measure:
   • Valve stem runout
   Out of specification → Replace.

Maximum Runout:
0.01 mm (0.0004 in)

① Dial gauge
② V-block



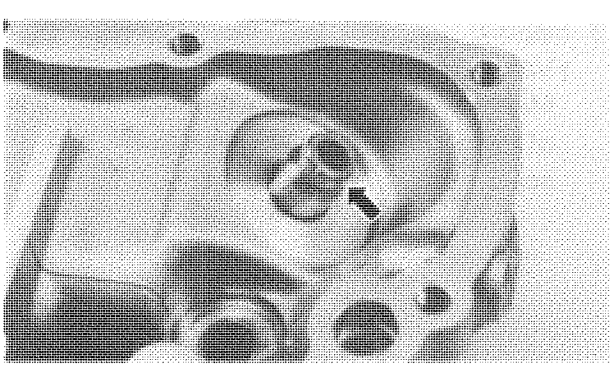
5. Measure:
   • Valve stem outside diameter [A]
   Use the Micrometer ①.
   Out of specification → Replace the valve and valve guide as a set.

Valve Stem Outside Diameter [A]		Limit
Intake	5.978 ~ 5.990 mm (0.2354 ~ 0.2358 in)	5.945 mm (0.234 in)
Exhaust	5.963 ~ 5.975 mm (0.2348 ~ 0.2352 in)	5.920 mm (0.233 in)

6. Measher:
   • Valve guide inside diameter [B]
   Use the Bore Gauge ②.
   Out of specification → Replace the valve guide and valve as a set.

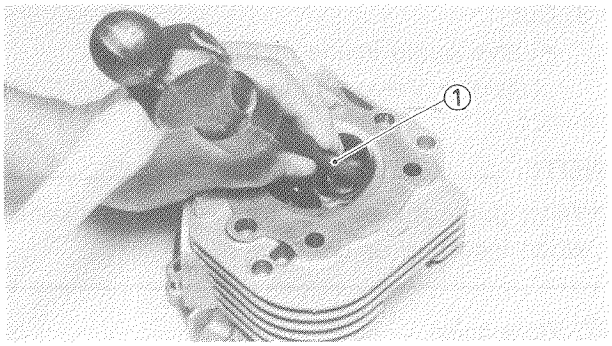
Valve Guide Inside Diameter [B]		Limit
Intake/ Exhaust	6.000 ~ 6.012 mm (0.2362 ~ 0.2367 in)	6.05 mm (0.238 in)

③ Valve
④ Valve guide



Valve Guide Inspection
Inspect:
• Valve guides
Wear/Oil leakage into cylinder → Replace.

NOTE:
• Always replace valve guide if valve is replaced.
• Always replace valve stem seal if valve is removed.



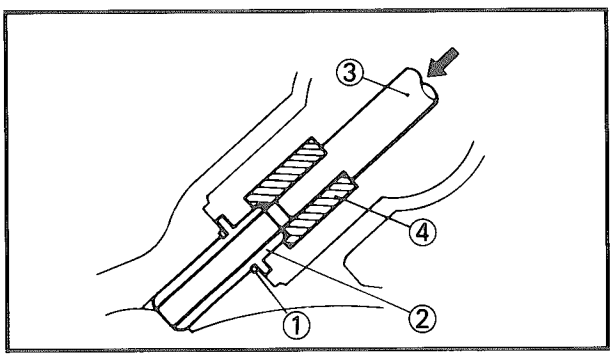
Valve Guide Removal

1. Remove:
   - Valve guide

   Use the Valve Guide Remover (YM-01225) ①.

NOTE:

Heat the head in an oven to 100°C (212°F) to ease guide removal and installation and to maintain correct interference fit.



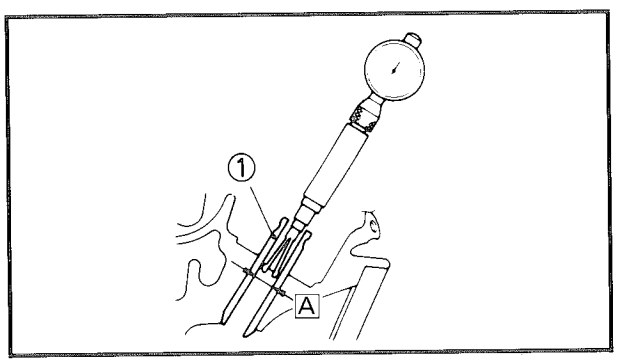
Valve Guide Installation

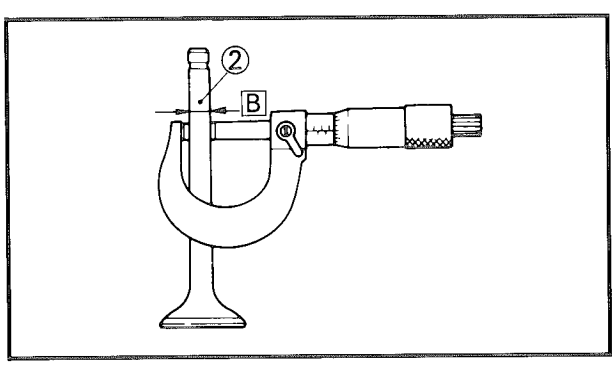
1. Install:
   - O-ring (New) ①
   - Valve guide (Oversize) ②

   Use the Valve Guide Remover (YM-01225) ③ with Valve Guide Installer (YM-04017) ④.

NOTE:

- Always use a new O-ring when valve guide is replaced.
- After installing the valve guide in the cylinder head, cut the valve guide with the Valve Guide Reamer (YM-01227) to the specified clearance limit.
- After replacing the valve guide, relap the valve.



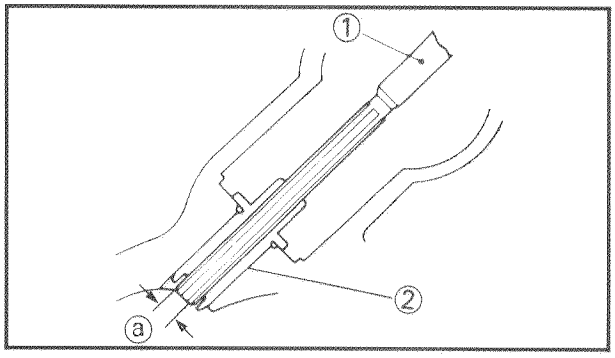


2. Measure:
   - Valve stem to valve guide clearance

   Subtracting the valve stem outside diameter [B] from the valve guide inside diameter [A].
   Refer to "Valve Inspection" section.
   Less than Limit→Cut (Valve guide inside diameter). Refer to next step.

	Valve Stem to Valve Guide Clearance	Limit
Intake	0.010 ~ 0.034 mm (0.0004 ~ 0.0013 in)	0.08 mm (0.0031 in)
Exhaust	0.025 ~ 0.049 mm (0.0010 ~ 0.0019 in)	0.10 mm (0.0039 in)

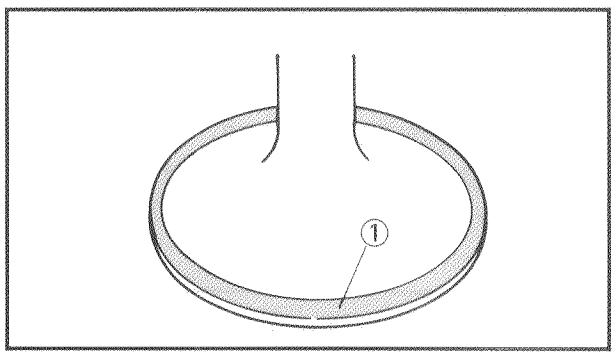
① Valve guide
② Valve stem



3. Cut:
   • Valve guide inside diameter ⓐ
   Use the Valve Guide Reamer (YM-01227) ①.

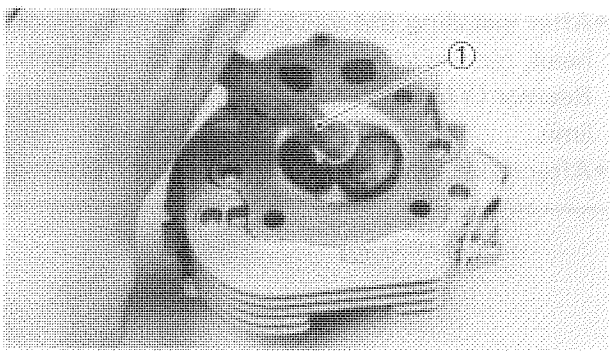
NOTE:
• Valve guide reamer must be turned clockwise when inserting or drawing.

② Valve guide

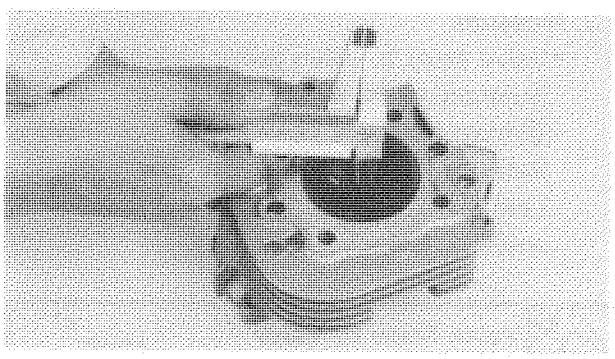


Valve Seat

1. Eliminate:
   • Carbon deposit
   From valve seat and valve face ①.
2. Apply:
   • Mechanics bluing dye (Dykem) ①
   To contact surface of valve face.

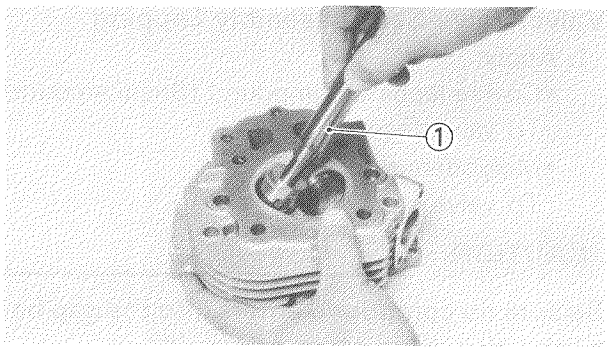


3. Position:
   • Valves (Intake and exhaust)
   Into cylinder head.
   Spin the valve quickly back and forth with a Lapping Stick ①, then pull out the valves.



4. Measure:
   • Valve seat width
   The valve seat and valve face will have removed bluing wherever they contacted each other.
   Out of specification/Pitting/Variation of valve seat width → Cut valve seat further.

Seat Width:
Standard: 0.9 ~ 1.1 mm (0.035 ~ 0.043 in)
Wear limit: 2.0 mm (0.080 in)

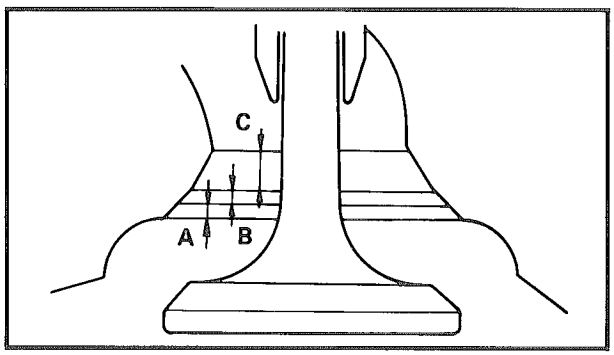


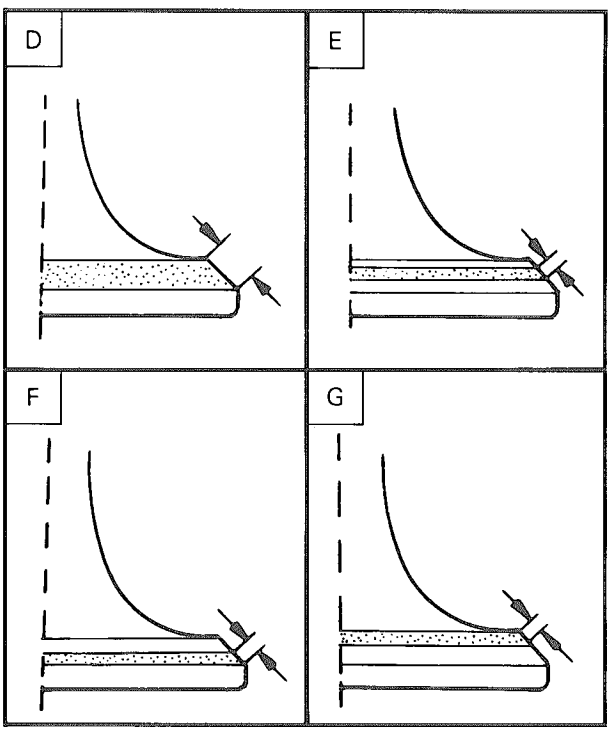
6. Resurface:
   - Valve Seats

   Use a 30°, 45° and 60° Valve Seat Cutter (YM-91043) ①.

CAUTION:

When twisting cutter, keep an even down ward pressure (4~5 kg) to prevent chatter marks.





Valve seat recutting steps:

- Valve seat is uniform around perimeter of valve face but too wide or not centered on valve face.

Selection of cutter:	
Section	**Cutter**
A	30°
B	45°
C	60°

- Valve face indicates that valve seat is centered on valve face but is too wide (see "D" diagram).

Valve Seat Cutter Set		Desired Result
Use lightly	30° cutter	To reduce valve seat width to 1.0 mm (0.039 in)
	60° cutter	

- Valve seat is in the middle of the valve face but too narrow (See "E" diagram).

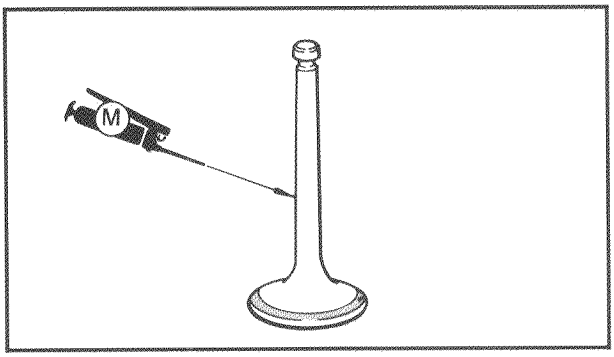
Valve Seat Cutter Set		Desired Result
Use	45° cutter	To achieve a uniform valve seat width of 1.0 mm (0.039 in)

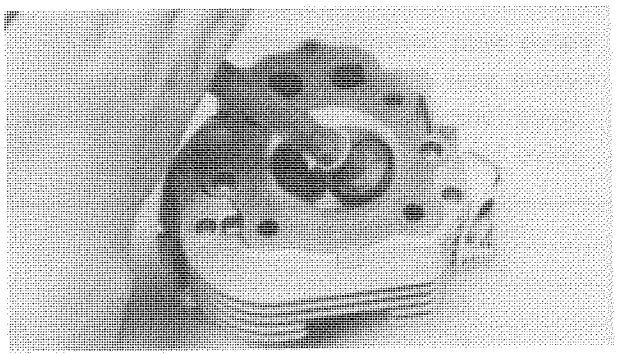
- Valve seat is too narrow and right up near valve margin (see "F" diagram).

Valve Seat Cutter Set		Desired Result
Use	30° cutter, first	To center the seat and to achieve its width of 1.0 mm (0.039 in)
	45° cutter	

- Valve seat is too narrow and is located down near the bottom edge of the valve face (see diagram "G").

Valve Seat Cutter Set		Desired Result
Use	60° cutter, first	To center the seat and to achieve its width of 1.0 mm (0.039 in)
	45° cutter	





3

Valve/Valve Seat Assembly Lapping

1. Apply:
   - Coarse lapping compound (Small amount)
     To valve face.
   - Molybdenum disulfide oil
     To valve stem.

CAUTION:

Be sure no compound enters into the gap between the valve stem and guide.

2. Position:
   - Valves
     In cylinder head.
3. Rotate:
   - Valve
     Turn until valve and valve seat are evenly polished, then clean off all compound.

NOTE:

To obtain the best lapping results, lightly tap the valve seat while rotating the valve back and forth between your hands.

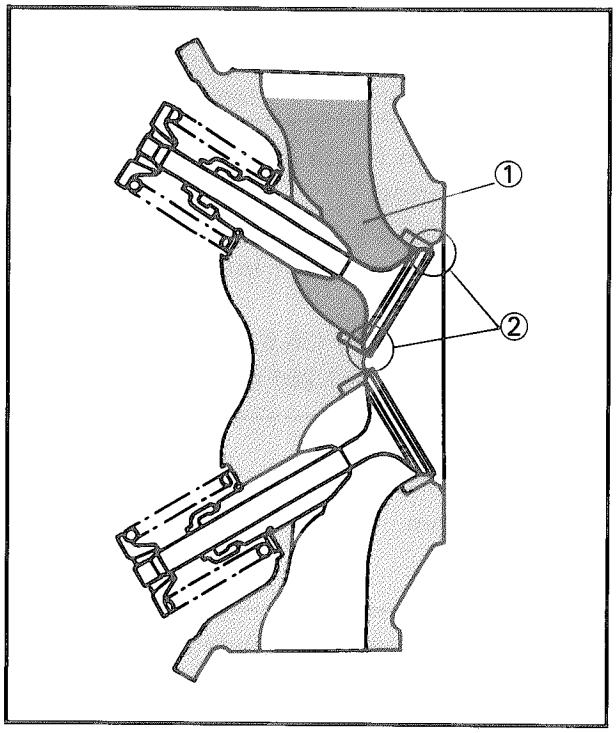
4. Apply:
   - Fine lapping compound (Small amount)
     To valve face.

5. Repeat steps 2 and 3.

NOTE:

Be sure to clean off all compound from valve face after every lapping operation.

6. Inspect:
   - Valve face
     Not yet uniformly smooth→Repeat procedure from step 1.
7. Apply:
   - Mechanics bluing dye (Dykem)
     To valve face and seat
8. Lap:
   - Valve
9. Inspect:
   - Valve face
     Valve must make full seat contact indicated by gray surface all around. The valve face where bluing was removed.
     Faulty contact→Replace.
     See procedure below



10. Clean/Assembly:
    - All cylinder head parts.
11. Apply:
    - Solvent ①

    Into each intake and exhaust port.

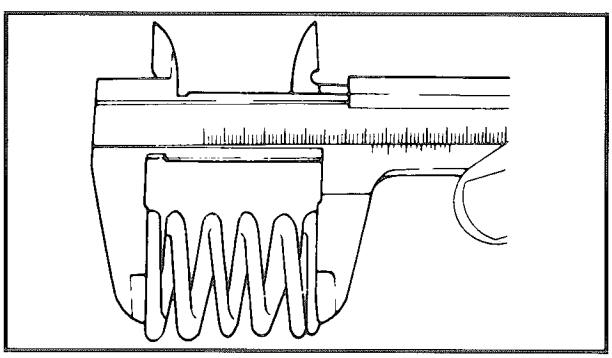
NOTE:

Pour solvent into intake and exhaust ports only after completion of all valve work and assembly of all head parts.

12. Check:
    - Valve seat to valve face seal ②

    Leakage past valve seat→Relap.
    (See procedure below)

Relapping steps:
- Disassemble head parts.
- Repeat lapping steps using fine lapping compound.
- Clean all parts thoroughly.
- Reassemble and check for leakage again using solvent.
- Repeat steps as often as necessary to achieve a satisfactory seal.

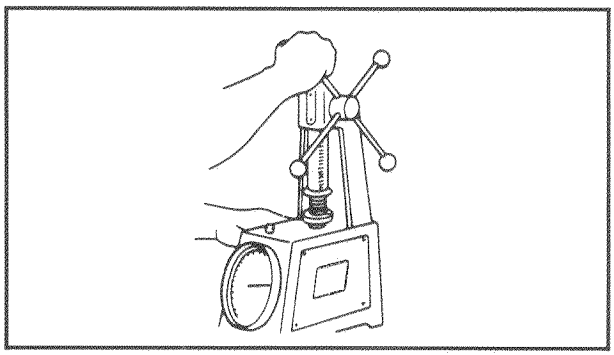


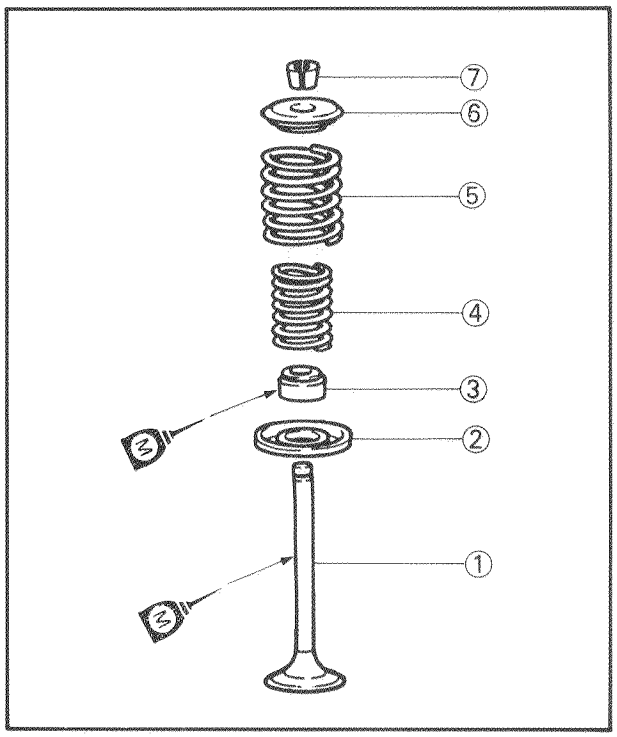
Valve Spring

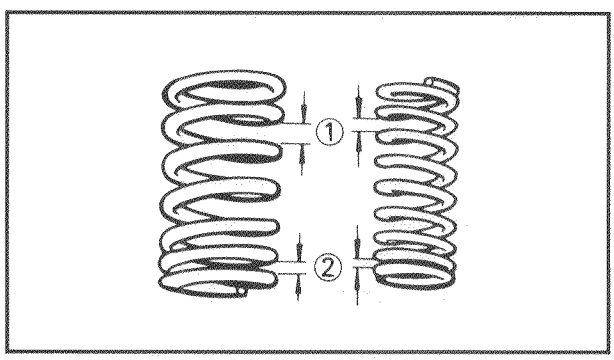
1. Measure:
    - Spring free length

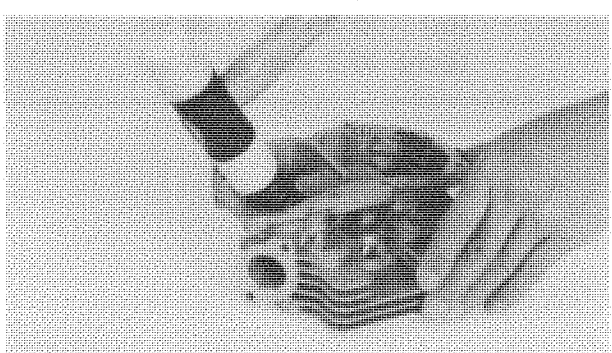
    Out of specification→Replace.

Minimum Free Length:
Inner Spring:
(In) 35.5 mm (1.4 in)
(Exh) 35.5 mm (1.4 in)
Outer Spring:
(In) 37.2 mm (1.46 in)
(Exh) 37.2 mm (1.46 in)









2. Measure:
   - Spring force (Installed length)
     Out of specification → Replace.

Compression Force (Valve Closed)
Inner Spring:
8.4 ~ 10.2 kg (18.5 ~ 22.5 lb)
at 30.5 mm (1.201 in)
Outer Spring:
16.6 ~ 20.4 kg (36.6 ~ 45.0 lb)
at 32.0 mm (1.260 in)

Valve Installation

1. Lubricate:
   - Valve stem
   - Oil seal

High-Quality Molybdenum Disulfide Motor Oil or Molybdenum Disulfide Grease

2. Install:
   - Valve ①
   - Valve spring seat (Lower) ②
   - Valve stem seal (New) ③
   - Valve spring (Inner) ④
   - Valve spring (Outer) ⑤
   - Valve spring seat (Upper) ⑥
   - Valve retainers ⑦

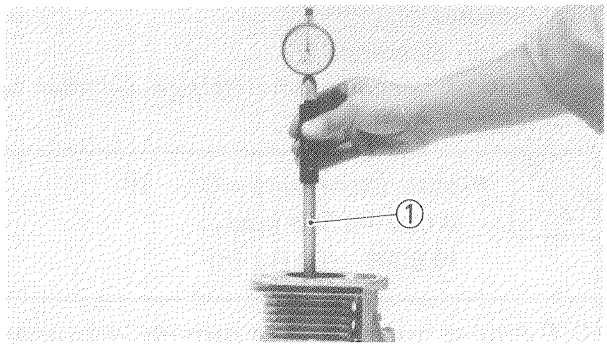
NOTE:

All valve springs must be installed with larger pitch upward as shown.

① Larger pitch
② Smaller pitch

NOTE:

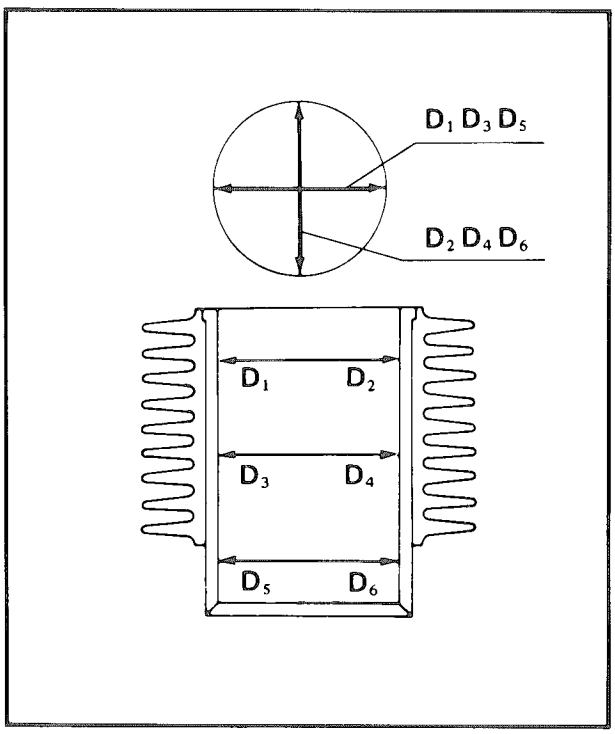
After installing the valve assembly, tap on the stem end with a soft-head hammer so that the valve and valve retainer are seated snugly.

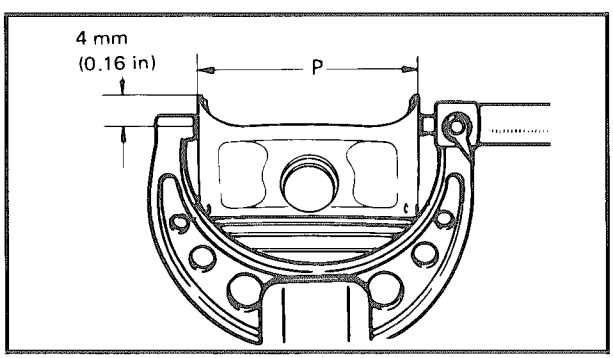


CYLINDER

1. Inspect:
   - Cylinder wall
     Wear/Scratches→Rebore or replace.
2. Measure:
   - Cylinder bore "C"
     Use a Cylinder Bore Gauge ①.
     Out of specification→Rebore.

	Standard	Wear Limit
Cylinder Bore "C":	67.98 ~ 68.03 mm (2.6764 ~ 2.6783 in)	68.04 mm (2.6787 in)
Cylinder Taper "T":	—	0.05 mm (0.002 in)
C = Maximum D T = Maximum (D_1 or D_2) — Minimum (D_5 or D_6)		





PISTON, PISTON RING AND PISTON PIN

Piston

1. Inspect:
   - Piston wall
     Wear/Scratches/Damage→Replace.
2. Measure:
   - Piston outside diameter "P"
     Use Micrometer.
     Out of specification→Replace.

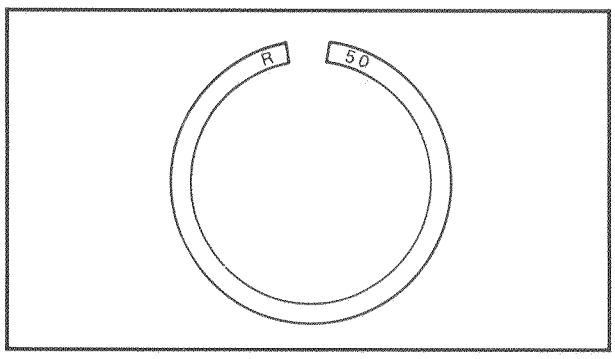
NOTE:

Measurement should be made at a point 4.0 mm (0.16 in) below the bottom edge of the piston.

	Size
Standard	67.95 ~ 68.00 mm (2.675 ~ 2.677 in)
Oversize Oversize	68.5 mm (2.70 in) 69.0 mm (2.72 in)

3. Measure:
   • Piston clearance
   Out of specification → Rebore cylinder or replace piston.

Piston Clearance = C — P: 0.020 ~ 0.040 mm (0.0008 ~ 0.0016 in)
C: Cylinder bore P: Piston outside diameter



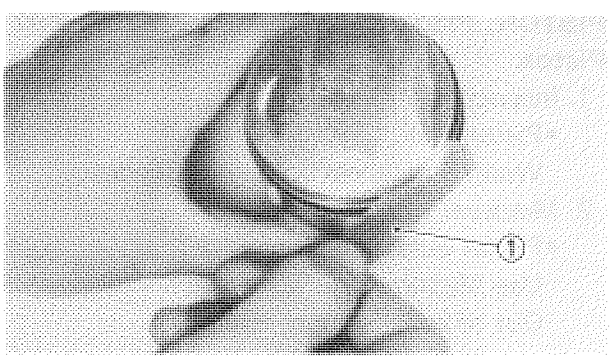
Piston Ring

The oversize top and 2nd ring sizes are stamped on top of the ring.

Oversize 2	0.50 mm (0.0197 in)
Oversize 4	1.00 mm (0.0394 in)

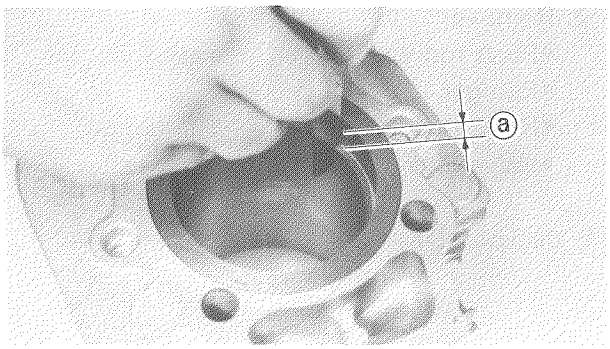
The expander spacer of the bottom ring (oil control ring) is color-coded to identify sizes. The color mark is painted on the expander spacer.

Size	Color
Oversize 2	Blue
Oversize 4	Yellow



1. Measure:
   • Side clearance
   Use a Feeler Gauge ①.
   Out of specification → Replace piston and/or rings.

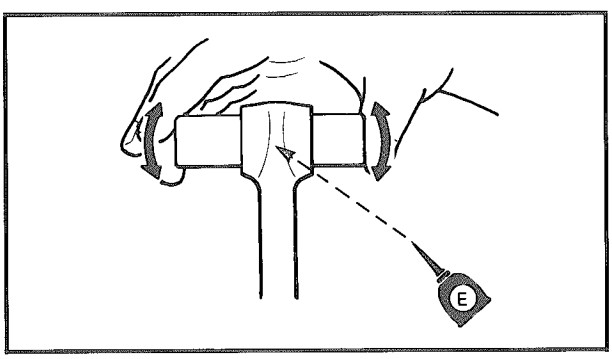
	Side Clearance	
	Standard	Limit
Top Ring	0.03 ~ 0.07 mm (0.0012 ~ 0.0028 in)	0.12 mm (0.0047 in)
2nd Ring	0.02 ~ 0.06 mm (0.0008 ~ 0.0024 in)	0.12 mm (0.0047 in)

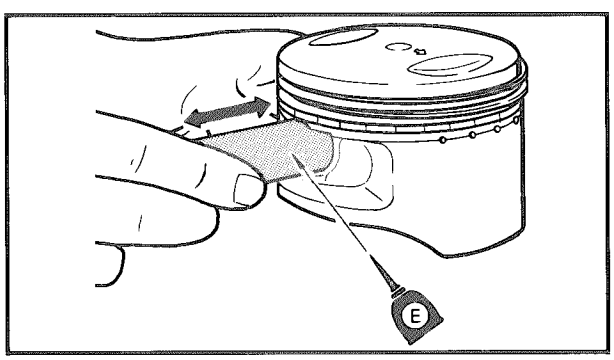


3. Measure:
   - End gap

   Insert a ring into the cylinder, and push it approximately 20 mm (0.80 in) into the cylinder with the piston crown.
   Use Feeler Gauge ①.
   Out of specification→Replace rings as set.

	Standard	Limit
Top Ring	0.30~0.45 mm (0.0118~0.0177 in)	0.70 mm (0.0276 in)
2nd Ring	0.30~0.45 mm (0.0118~0.0177 in)	0.80 mm (0.0315 in)
Oil Control (Rails)	0.20~0.70 mm (0.0079~0.0276 in)	—





Piston Pin

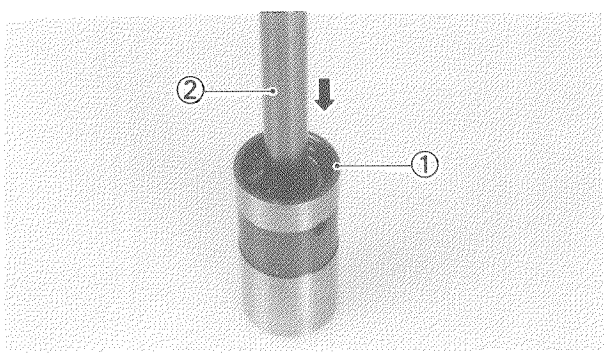
1. Lubricate:
   - Piston pin (lightly)
2. Install:
   - Piston pin

   Into small end of connecting rod.
3. Check:
   - Free play

   Free play→Inspect connecting rod and piston pin for wear.
4. Position:
   - Piston pin

   Into piston.
5. Check:
   - Free play

   When pin is in place in piston.
   Free play→Replace piston pin and/or piston.

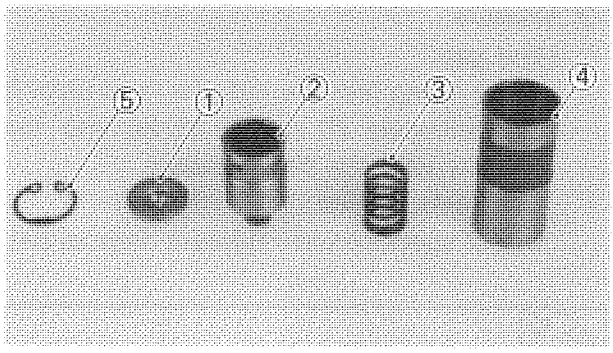


HYDRAULIC VALVE LIFTER

Disassembly

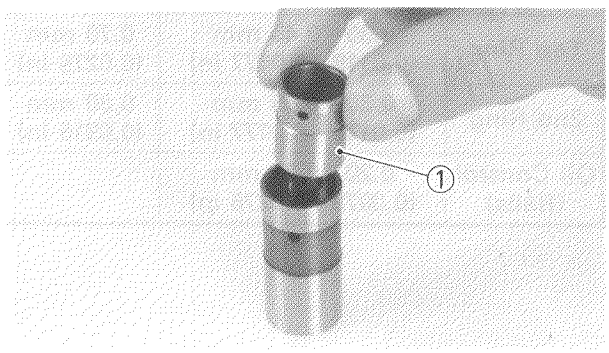
1. Remove:
   - Circlip ①

   Hold down the push rod seat with a push rod ②.



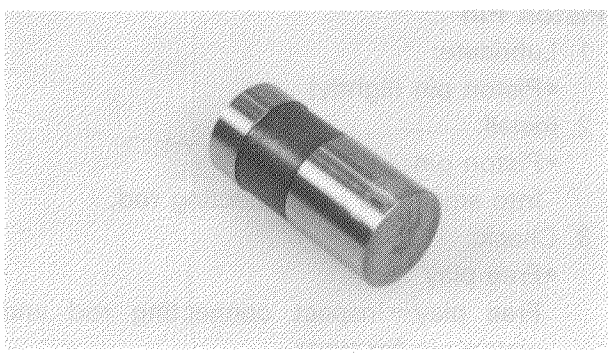
2. Remove:
   - Push rod seat ①
   - Plunger ②
   - Return spring ③
   - Valve lifter body ④

⑤ Circlip

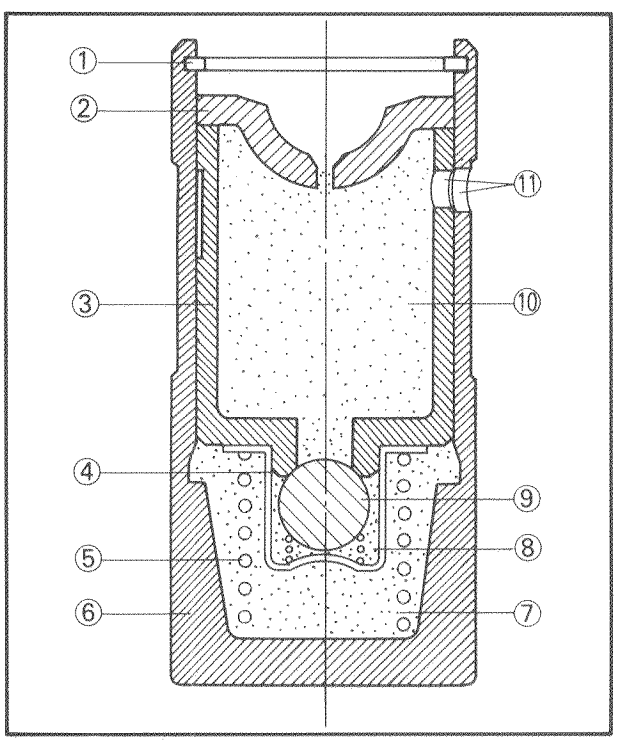


Inspection

1. Inspect:
   - Push rod seat
   - Return spring
     Damage→Replace.
   - Plunger ①
     Damage/Wear/Scratches→Replace valve lifter assembly.



2. Inspect:
   - Valve lifter body
     Contact surface of the plunger with the camshaft.
     Damage/wear/scratches→Replace valve lifter assembly and camshaft as a set.



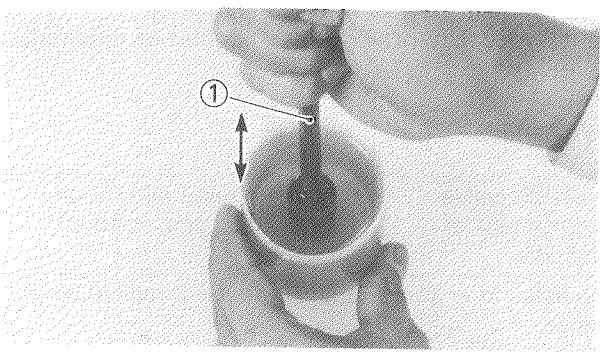
Assembly

① Circlip
② Push rod seat
③ Plunger
④ Retainer
⑤ Return spring
⑥ Valve lifter body
⑦ High pressure chamber
⑧ Check ball spring
⑨ Check ball
⑩ Oil reservoir
⑪ Oil inlet hole

When reassembling the valve lifter, reverse the disassembly procedure. Note the following points.

CAUTION:

Valve lifter assembly should be filled with clean engine oil into the high pressure chamber before reinstallation. If the empty valve lifter is installed, it will create excessive noise and could be damaged.



How to fill:
Pump the valve lifter plunger with using push rod ① in the clean oil (engine oil) bath until the plunger locks so that the high pressure chamber is filled with oil.

3

Service Points for Hydraulic Valve Lifter

1. This engine may create some valve noise when started. After few seconds, the noise will be eliminated when the valve lifter assembly is lubricated.
2. As the valve lifter is composed of high precision parts, oil and oil filter mast be kept clean at all the time. Replace the oil and oil filter periodically as described in the PERIODIC MAINTENANCE chart in chapter 2.
3. If any component part of valve lifter should get damaged, the Valve lifter assembly must be replaced as a set.
4. Valve lifter should be handled with extreme care.
   - Do not drop.
   - Do not wipe with cloth.

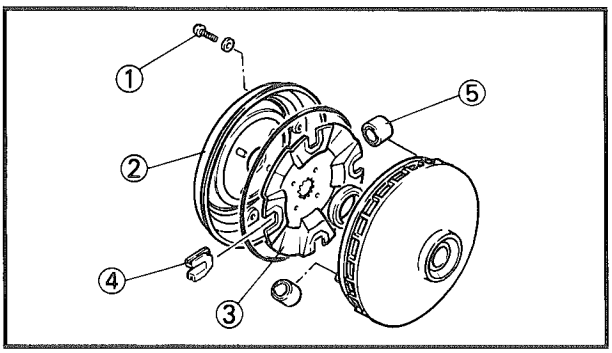
Troubleshooting

This troubleshooting table describes abnormal noises caused by the valve lifter(s).

NOTE:

This engine may create some valve noise when started. After few seconds, the noise will be eliminated when the valve lifter assembly is lubricated.

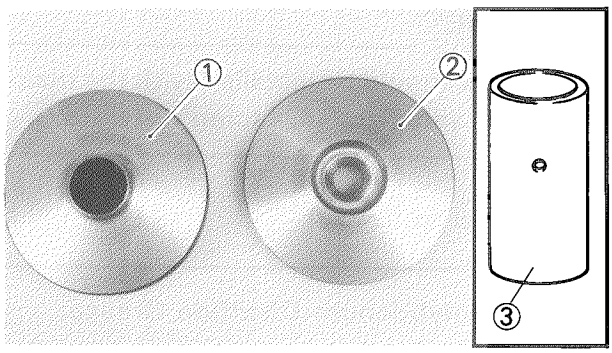
PROBABLE CAUSE	DESCRIPTION	REMEDY
Deterioration of engine oil.	Oil leak from hydraulic valve lifter becomes greater due to low viscosity of engine oil. This causes plunger to move excessively in lifter body, making excesive noise.	Replace engine oil. Replace oil filter as required.
Block of oil gallery.	Lack of oil supply to hydraulic valve lifter causes excessive movement of plunger in hydraulic valve lifter.	Replace engine oil and oil filter. Check and clean oil passages.
	NOTE: Oil is supplied to valve lifter through small orifice 2 mm (0.08 in) in oil filter chamber. Therefore, if oil filter is damaged, this orifice can be easily blocked by foreign particles.	
Insufficient sealing in valve lifter.	If check ball or ball seat is damaged oil leak from high pressure chamber becomes greater. This causes excessive movement of plunger in hydraulic valve lifter. If inner spring(s) is broken, valve lifter does not operate properly.	Check hydraulic valve lifter and replace as required.



PRIMARY SHEAVE

Primary Sliding Sheave Disassembly

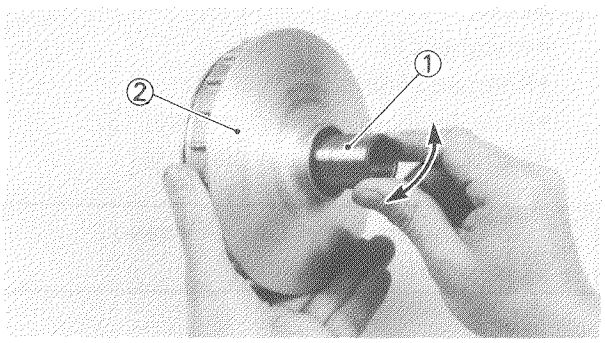
1. Remove:
   - Screws (Primary sheave cap) ①
   - Primary sheave cap ②
   - Cam plate ③
   - Slider bushings ④
   - Weights ⑤



Inspection

1. Inspect:
   - Primary sliding sheave ①
   - Primary fixed sheave ②
   - Collar ③

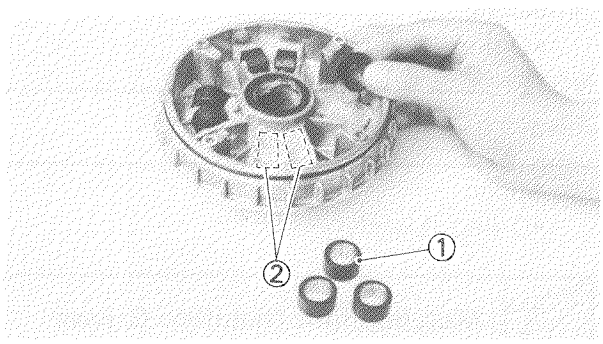
   Wear/Cracks/Scratches→Replace.



2. Position:
   - Collar ①

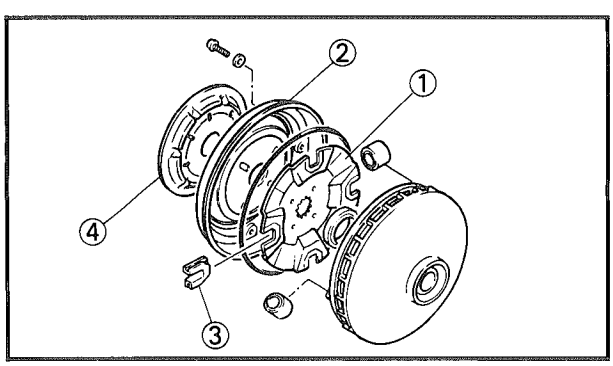
   Into primary sliding sheave ②.
3. Check:
   - Free play

   Excessive free play or stiff→Inspect collar or sliding sheave inner bushing, if necessary replaced.



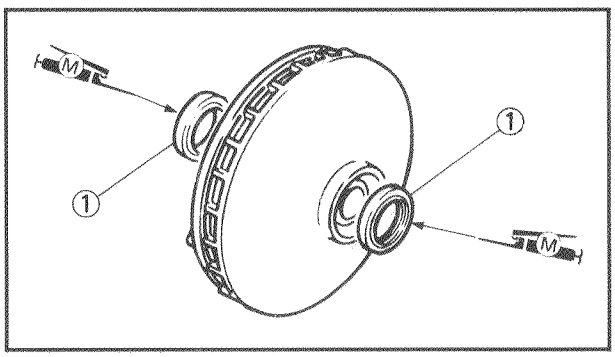
4. Inspect:
   - Weight ①
   - Ramps (Sliding sheave) ②

   Damage/Scratch/Wear→Replace.



5. Inspect:
   - Cam plate ①
   - Primary sheave cap ②
   - Slider bushings ③
   - Holding plate ④

   Damage/Cracks/Wear→Replace.



Primary Sliding Sheave Assembly

When reassembling the primary sliding sheave, reverse the disassembly procedure. Note the following points.

1. Install:
   - Oil seals (New) ①

NOTE:

Always use a new oil seal.

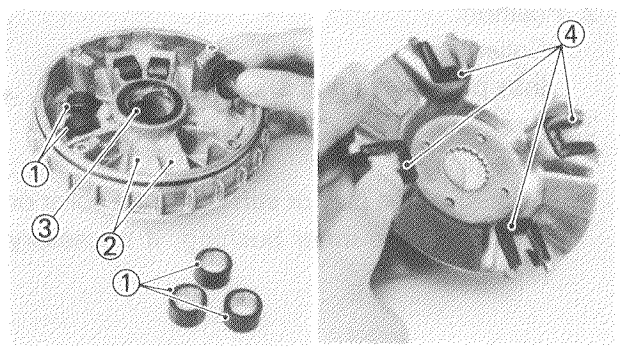
CAUTION:

The oil seal should be installed with the maker's mark and size No. facing outward.

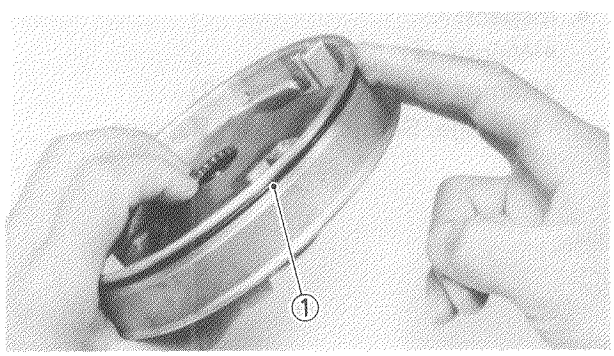
2. Apply:
   - Oil seal lip (lightly)

Molybdenum Disulfide Grease

3. Apply:
   - Weights ①
   - Ramps (Sliding sheave) ②
   - Inner bushing (Sliding sheave) ③
   - Slider bushings (Cam plate) ④



Lithium-Soap Base Grease
Sufficiently coat



4. Install:
   - O-ring (New) ①

NOTE:

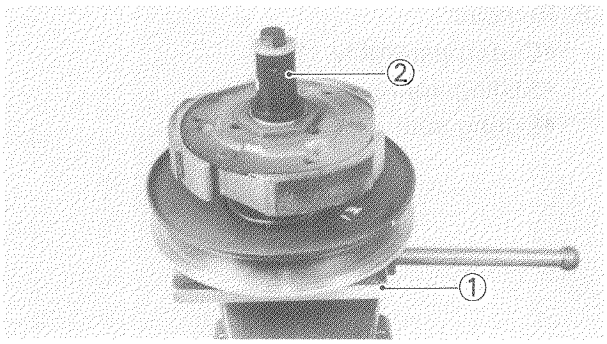
Always use a new O-ring.

5. Apply:
   - O-ring (Lightly)

Molybdenum Disulfide Grease

CAUTION:

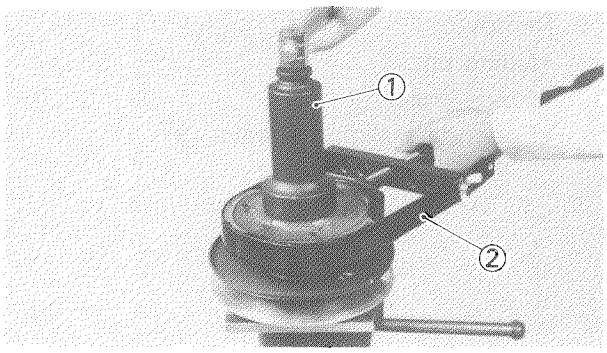
Be sure to remove the any oil and or grease from the primary sheaves and collar with a thinner.



SECONDARY SHEAVE

Disassembly

1. Attach:
   - Clutch Compressor Holder (YM-33285-1) ①, Hexagon Wrench (YM-01307) ② or suitable collar and plate washer

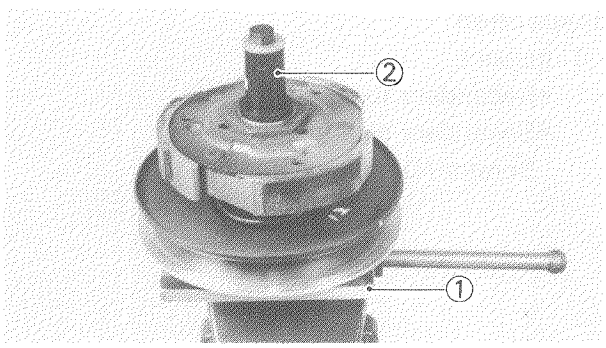


2. Loosen:
   - Locknut (Clutch assembly)

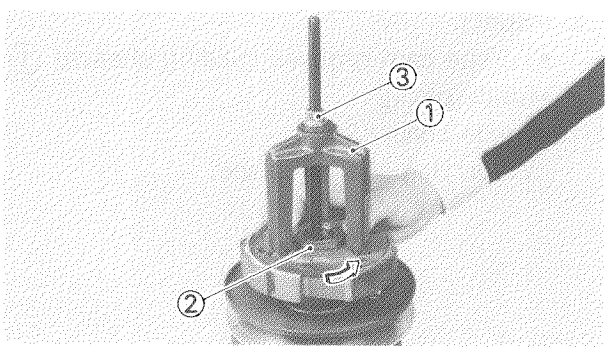
   Use the Locknut Wrench (YM-04045-A) ① and Primary Sheave Holder (YS-01880) ②.

CAUTION:

Do not remove the clutch locknut at this stage yet.



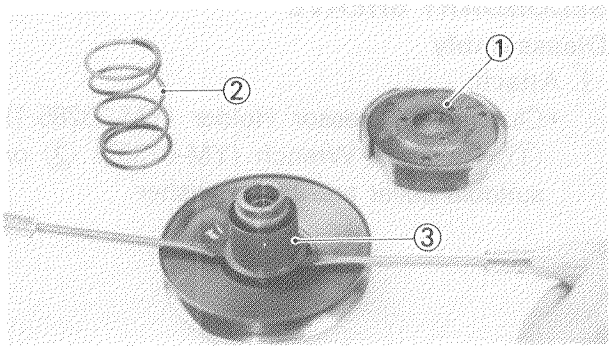
3. Remove:
   - Clutch compressor Holder (YM-33285-1) ①, Hexagon Wrench (YM-01307) ② or suitable collar and plate washer



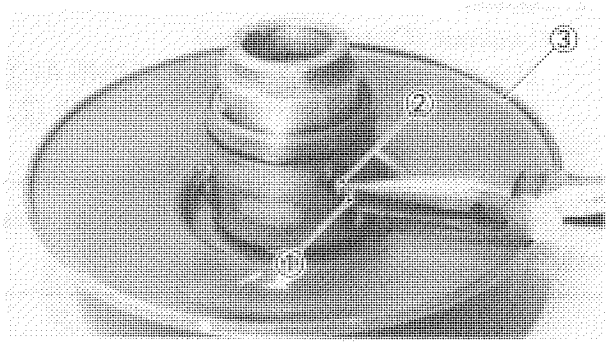
4. Attach:
   - Secondary Sheave Compressor (YS-28891) ①
5. Remove:
   - Locknut (Clutch assembly) ②
6. Loosen:
   - Nut (Secondary Sheave Compressor) ③

   Until the sliding spring gets free.

7. Remove:
   - Secondary Sheave Compressor (YS-28891) ①

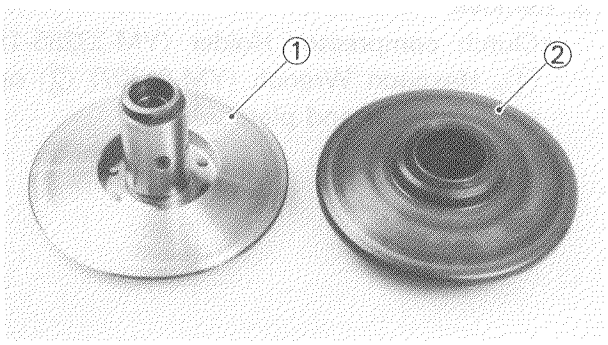


8. Remove:
   - Clutch assembly ①
   - Sliding spring ②
   - Spring seat ③



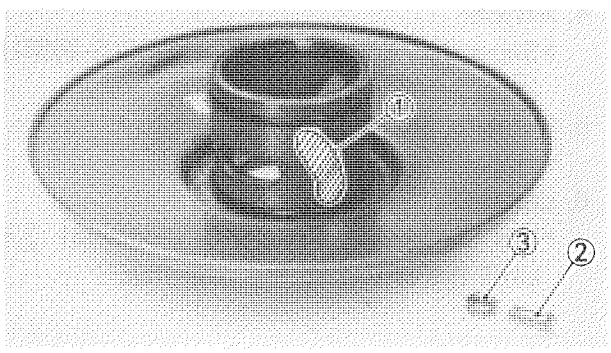
9. Remove:
   - Guide pin ①
   - Guide collar ②
   - Secondary sliding sheave ③

Inspection



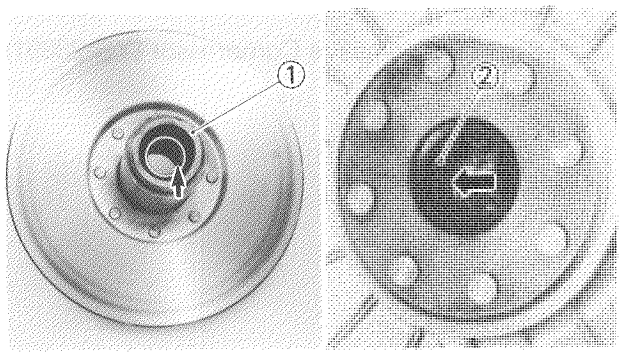
1. Inspect:
   - Secondary fixed sheave ①
   - Secondary sliding sheave ②

   Scratch/Damage→Replace.



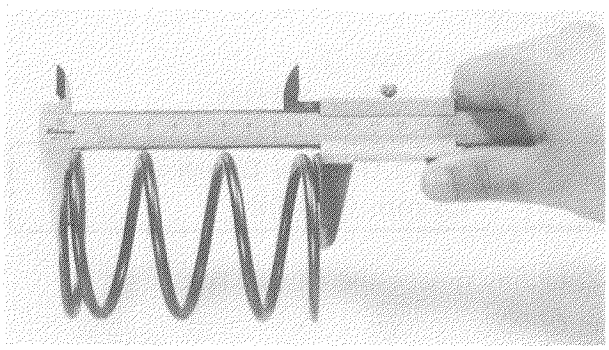
2. Inspect:
   - Torque cam grooves (Sliding sheave) ①
   - Guide pin ②
   - Guide collar ③

   Wear/Damage→Replace.



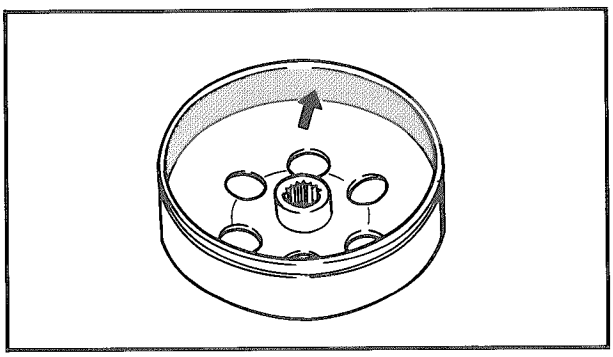
3. Inspect:
   - Ball bearing ①
   - Needle bearing ②

   Roughness/Damage/Wear→Replace.



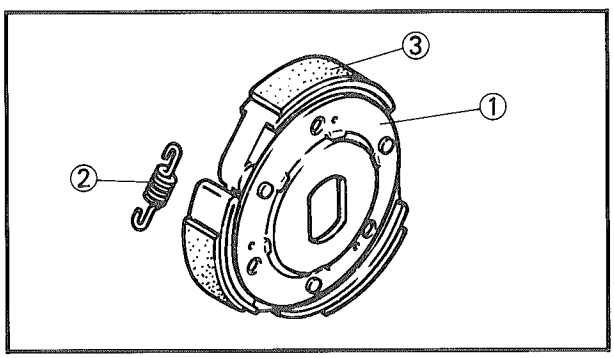
4. Measure:
   - Sliding spring free length
     Out of specification→Replace.

Sliding Spring Free Length:
STD: 96.7 mm (3.81 in)
Limit: 93.7 mm (3.69 in)

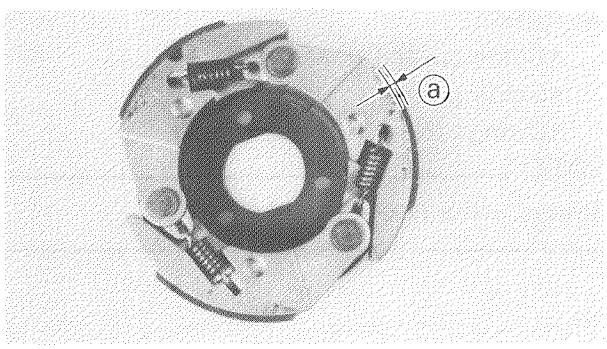


5. Inspect:
   - Clutch housing (Inner surfaces)
     Scratch/Damage→Replace.

Clutch Housing Wear Limit:
136 mm (5.35 in)



6. Inspect:
   - Clutch body ①
   - Clutch spring ②
   - Clutch shoe ③
     Damage→Replace as set.

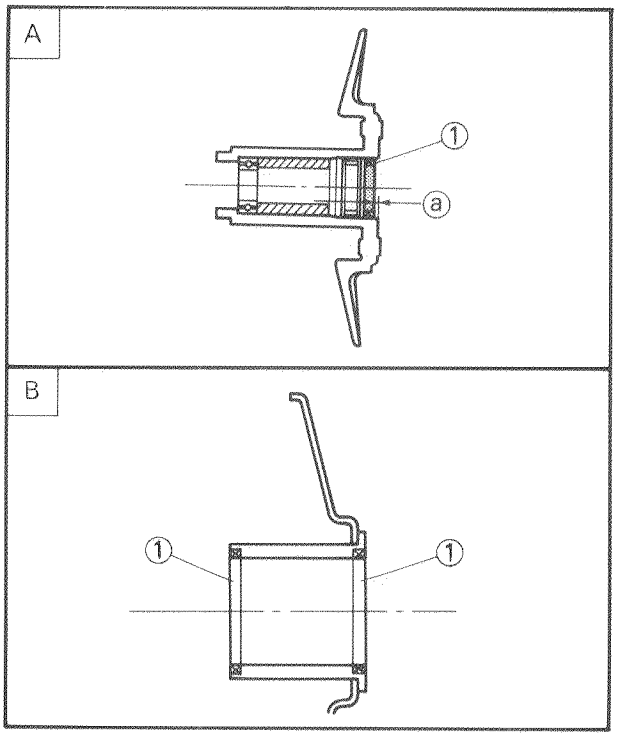


7. Measure:
   - Clutch shoe thickness ⓐ
     Out of specification→Replace.

Clutch Shoe Thickness ⓐ:
New: 4.0 mm (0.157 in)
Limit: 2.0 mm (0.079 in)

Assembly

When reassembling the secondary sheave, reverse the disassembly procedure.
Note the following points.



1. Install:
   - Oil seals (New) ①

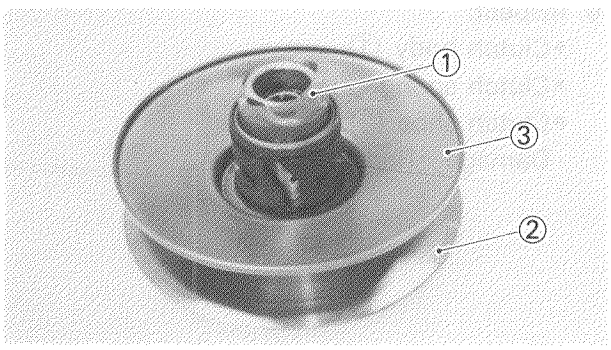
   To the secondary sheaves.

Press-in Oil Seal Depth ⓐ:
1.5 mm (0.06 in)

2. Lightly grease the oil seal lips.
3. Apply:
   - Shaded areas (as a illustration A)

Lithium-Soap Base Grease
Sufficiently Coat.

A Fixed sheave
B Sliding sheave

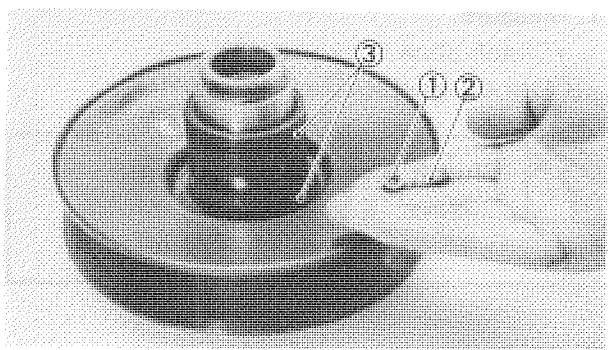


4. Wind:
   - Adhesive tape ①

   Around the shaft end of the secondary fixed sheave ②.
5. Install:
   - Sliding sheave ③

NOTE:

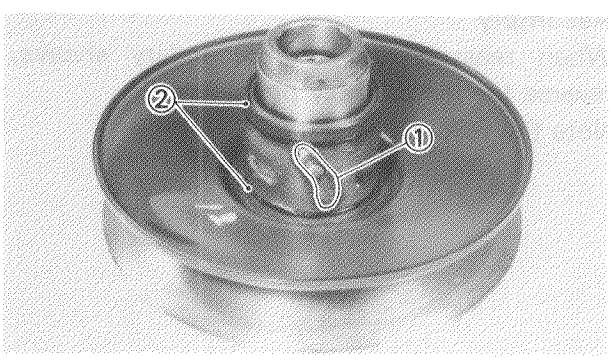
Be carefull so that the oil seal lips are not turned over when installing the sliding sheave.



6. Install:
   - Guide collar ①
   - Guide pin ②
   - O-rings (New) ③

NOTE:

Always use a new O-ring.



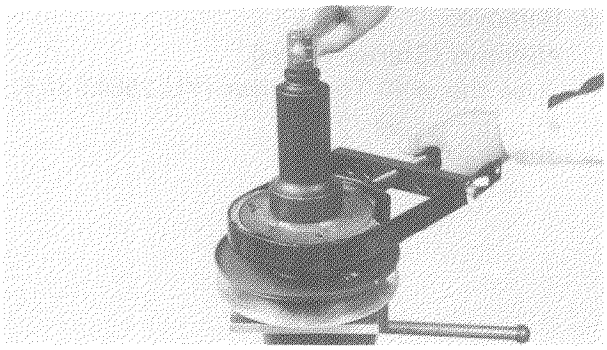
7. Apply:
   - Groove (Secondary sliding sheave) ①
   - O-rings ②

Lithium-soap Base Grease
Sufficiently Coat.

8. Install:
   - Spring seat
   - Clutch assembly

NOTE:

Thoroughly wipe off the excess grease.

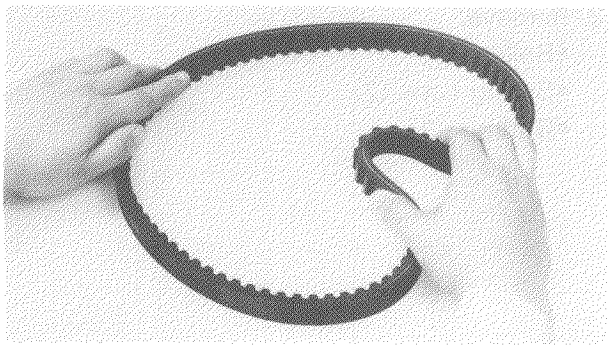


9. Tighten:
   - Locknut (Clutch assembly)

	Locknut (Clutch Assembly): 90 Nm (9.0 m•kg, 65 ft•lb)

CAUTION:

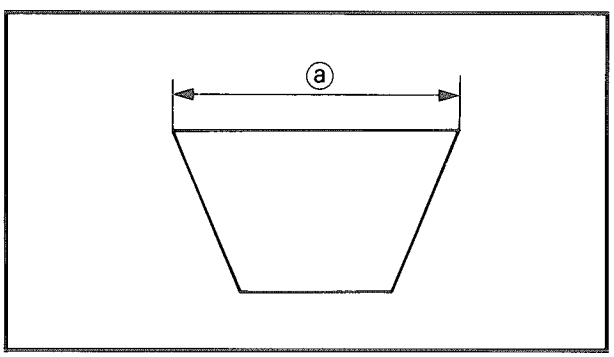
Be sure to remove the any oil and or grease from the secondary sheaves with a thinner.



V-BELT

1. Inspect:
   - V-belt

   Crack/Wear/Scaling/Chipping→Replace.
   Oil or grease adhered to the V-belt→Check the primary and secondary sheaves.



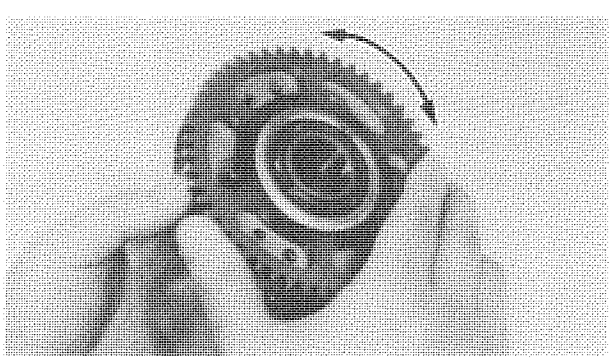
2. Measure:
   - V-belt width ⓐ

   Out of specification →Replace.

	V-belt Width: **STD: 22.6 mm (0.890 in)** **Limit: 20.0 mm (0.787 in)**

WARNING:

Replace at 11,000 km (6,900 mi) irrespective at limit.



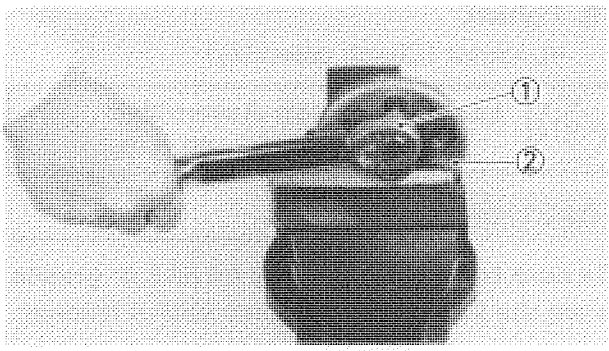
STARTER CLUTCH AND IDLE GEAR

Starter Clutch Disassembly

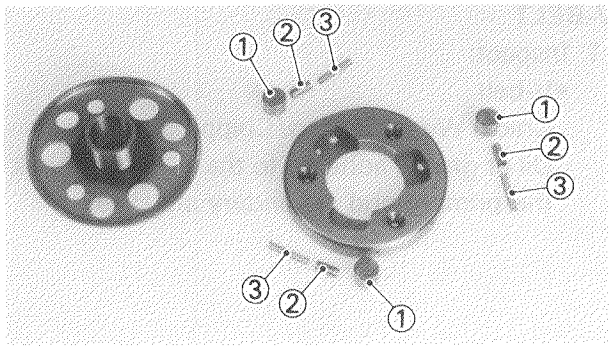
1. Remove:
   - Starter clutch gear

NOTE:

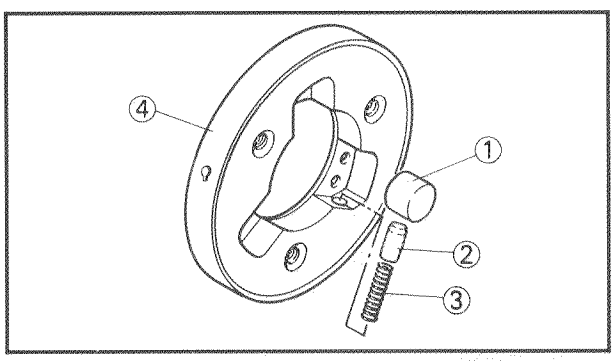
While pulling the starter clutch gear, turn it to counterclockwise.



2. Remove:
   - Screws (Starter wheel)
     Use the #40 Torx Driver (YU-29843-7)①.
   - Starter wheel ②

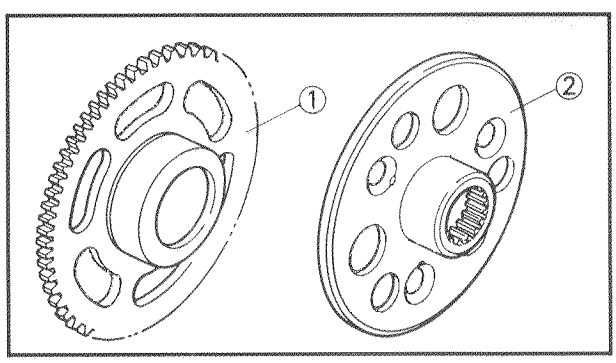


3. Remove:
   - Rollers ①
   - Spring caps ②
   - Springs ③

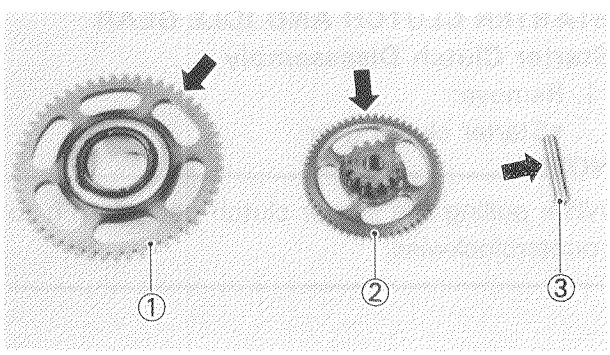


Inspection

1. Inspect:
   - Roller ①
   - Spring cap ②
   - Spring ③
   - Clutch housing ④
     Deform/Wear/Damage→Replace.



2. Inspect:
   - Bushing/Roller contact surfaces (Starter clutch gear ①)
   - Bushing contact surfaces (Starter wheel ②)
     Scratches/Heat damage/Wear→Replace.

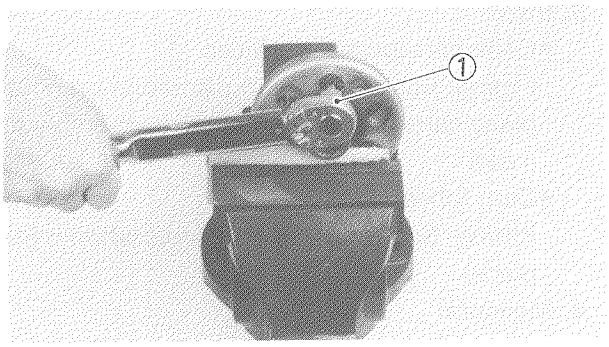


3. Inspect:
   - Starter clutch gear ①
   - Idle gears ②
   - Idle gear shaft ③
     Scratches/Wear/Damage→Replace.

Starter Clutch Assembly

When reassembling the starter clutch, reverse the disassembly procedure. Note the following points.

1. Oil the all component parts of the starter clutch.

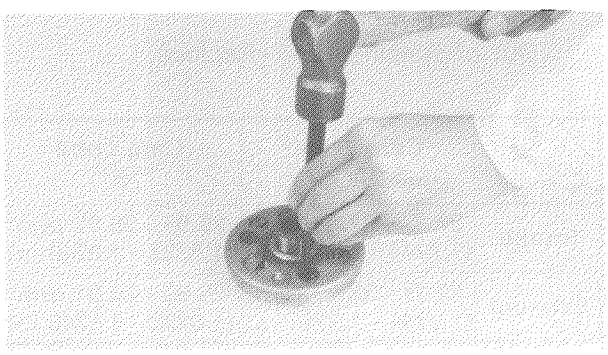


2. Tighten:
   - Screws (Starter wheel)
     Use the #40 Torx Driver (YU-29843-7) ①.

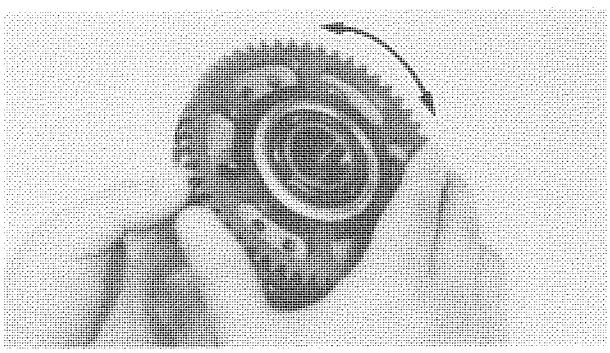
NOTE:

Always use a new screw.

Screw (Starter Wheel):
30 Nm (3.0 m•kg, 22 ft•lb)
LOCTITE®



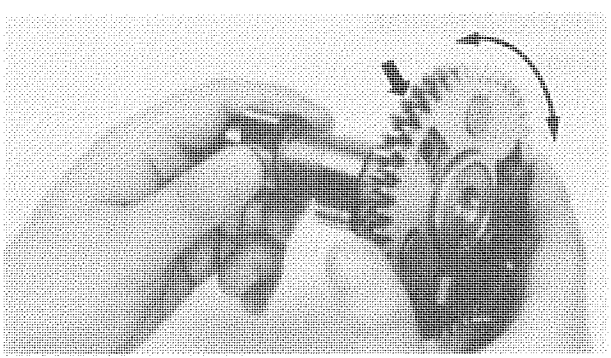
3. Clinch:
   - Screw head (Starter wheel)
     Use a center punch.
     Screw head flattens in the recess in the starter wheel.
4. After installing the rollers, check the smooth movement.



5. Install:
   - Starter clutch gear.

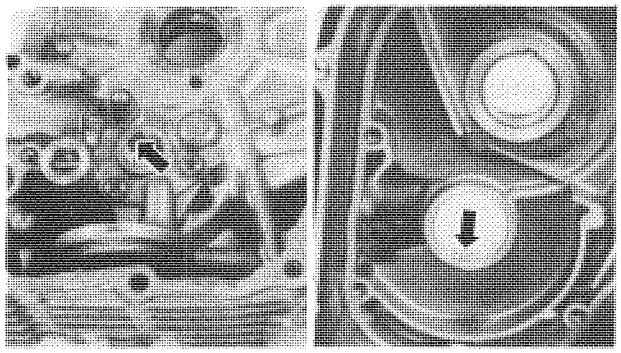
NOTE:

While pushing the starter clutch gear, turn it counterclockwise.

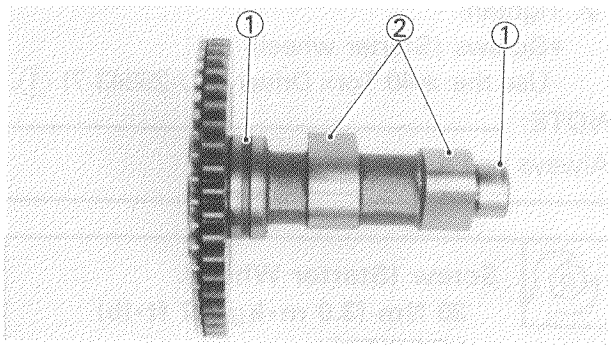


CAMSHAFT

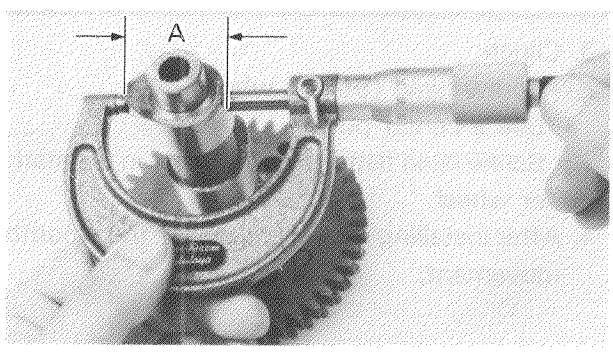
1. Inspect:
   - Camshaft zero-rash gear spring damper
     Looseness/Damage→Replace camshaft assemly.
   - Camshaft gears
     Cracks/Damage→Replace camshaft assembly.



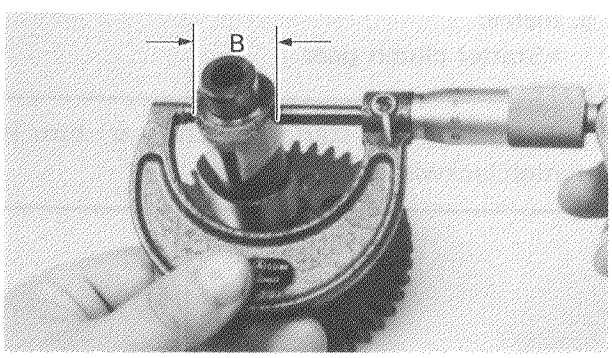
2. Inspect:
   - Camshaft holder surfaces
     Pitting/Scratches/Damage→Replace crankcase assembly.

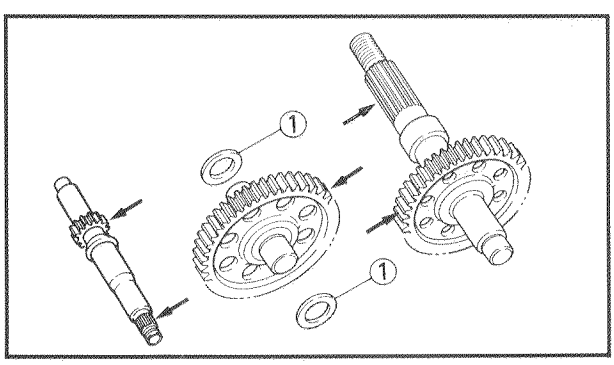


3. Inspect:
   - Camshaft journal surfaces ①
     Pitting/Scratches/Blue discoloration→Replace camshaft and crankcase assembly as a set.
   - Cam lobes ②
     Pitting/Scratches/Blue discoloration→Replace.
4. Measure:
   - Cam lobes
     Use a Micrometer.
     Out of specification→Replace.



	Cam Lobe "A"	Cam Lobe "B"
Intake	32.37 ~ 32.49 mm (1.2744 ~ 1.2791 in)	25.99 ~ 26.01 mm (1.0232 ~ 1.0240 in)
Exhaust	32.37 ~ 32.49 mm (1.2744 ~ 1.2791 in)	25.99 ~ 26.01 mm (1.0232 ~ 1.0240 in)

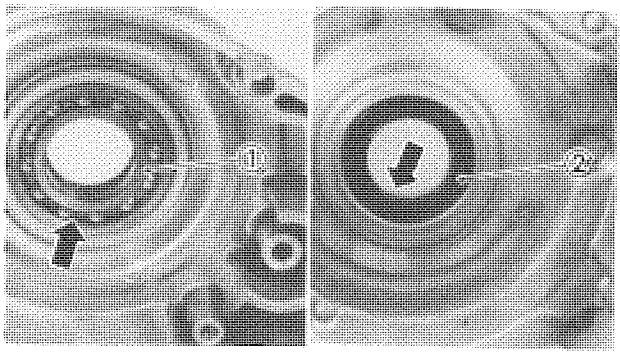




TRANSMISSION

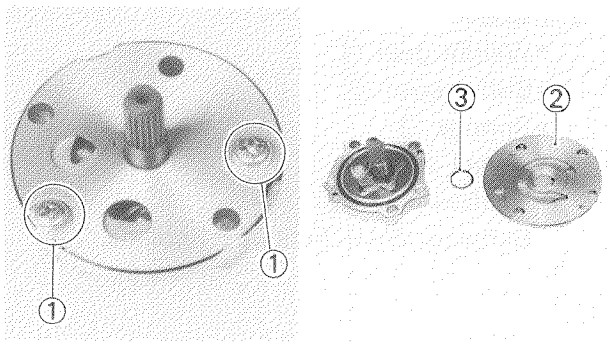
Gear

1. Inspect:
   - Gear teeth
     Pitting/Galling/Wear→Replace.
   - Thrust washers ①
     Damage/Wear→Replace.
   - Primary drive/Drive axle splines
     Wear/Damage→Replace.



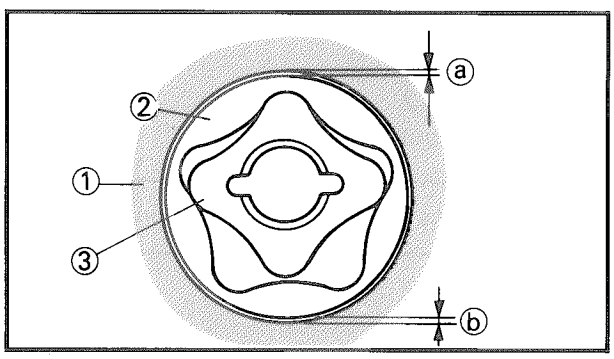
Bearing and Oil Seal

1. Inspect:
   - Bearings ①
     Roughness/Damage/Wear→Replace.
   - Oil seals ②
     Wear/Damage→Replace.
   - Main axle shaft holes
     Pitting/Galling/Wear→Replace.



OIL PUMP

1. Remove:
   - Screws (Oil pump) ①
   - Oil pump housing cover ②
   - Thrust washer ③

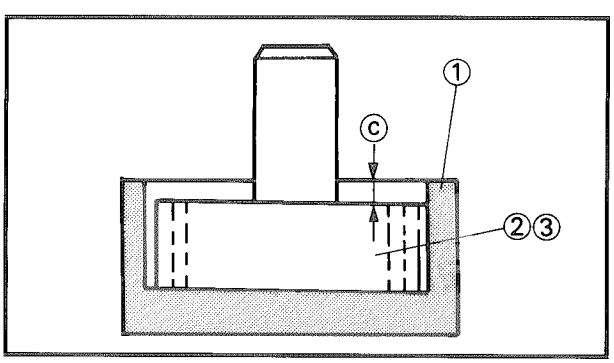


2. Measure:
   - Housing ①/Outer rotor ② clearance
     Use Feeler Gauge.
     Out of specification→Replace oil pump assembly.

Side Clearane ⓐ:
0.03~0.08 mm
(0.0012~0.0031 in)
Limit: 0.15 mm (0.006 in)

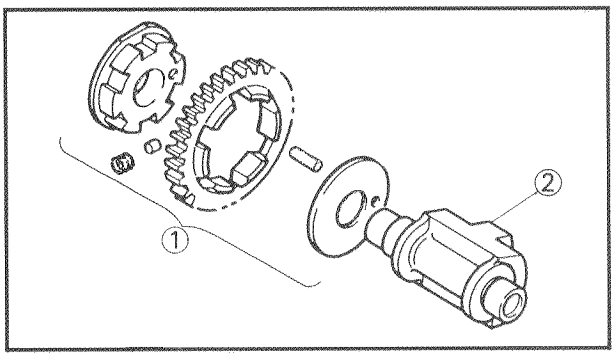
3. Measure:
   - Outer rotor ②/Inner rotor ③ clearance
     Use a Feeler Gauge.
     Out of specification→Replace oil pump assembly.

Tip Clearance ⓑ:
0.12 mm (0.0047 in)
Limit: 0.2 mm (0.008 in)



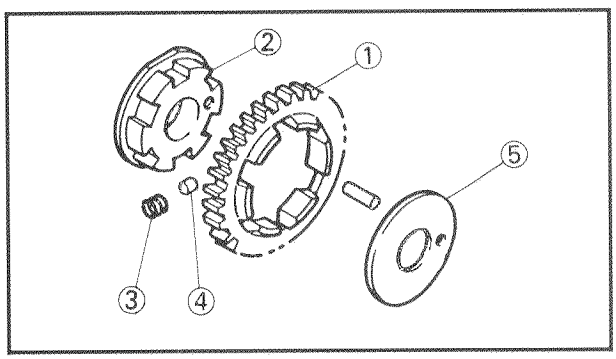
4. Measure:
   - Rotor ②, ③/Housing ① clearance
     Use a Feeler Gauge and Straight Edge.
     Out of specification→Replace oil pump assembly.

Standard Clearance ⓒ:
0.03~0.08 mm
(0.0012~0.0031 in)
Limit: 0.15 mm (0.006 in)

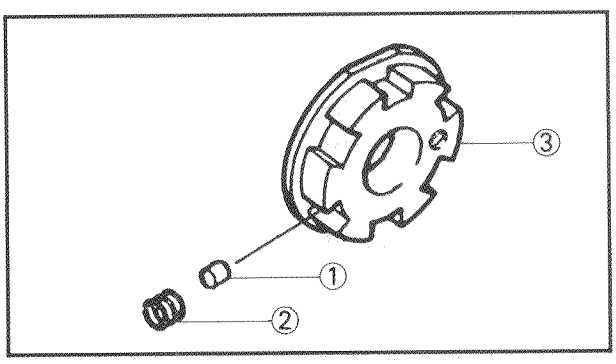


BALANCER WEIGHT

1. Remove:
   - Balancer weight gear component parts ①
     From the balancer weight ②.



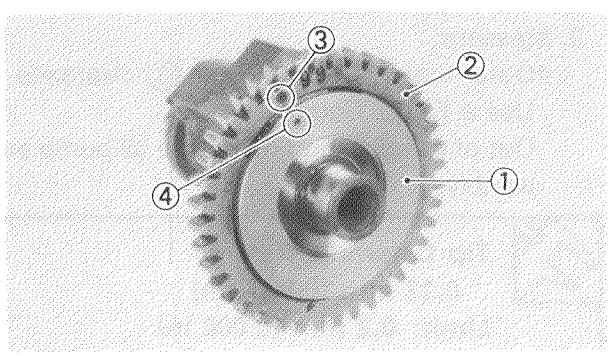
2. Inspect:
   - Weight gear ①
   - Buffer boss ②
   - Springs ③
   - Dowel pins ④
   - Holding plate ⑤
     Damage/Wear/Fatigue→Replace.



3. Install:
   - Dowel pins ①
   - Springs ②
     To the buffer boss ③.

NOTE:

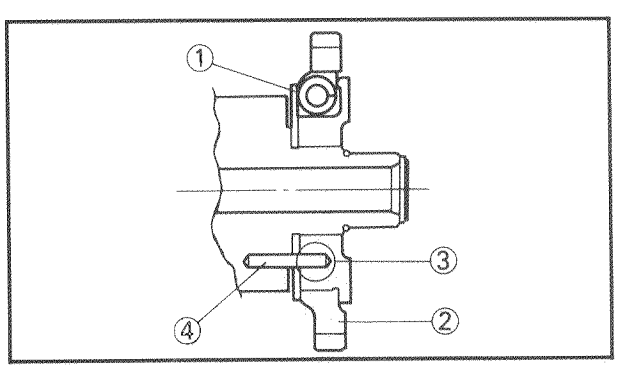
Place the pins as illustrated position.



4. Install:
   - Buffer boss assembly ①
     To the weight gear ②

NOTE:

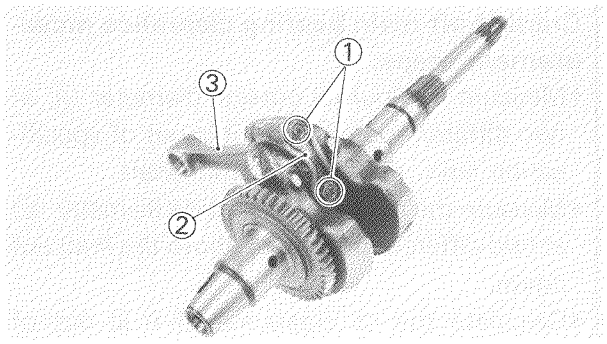
Align the match mark ③ on the weight gear with the match mark ④ on the buffer boss.

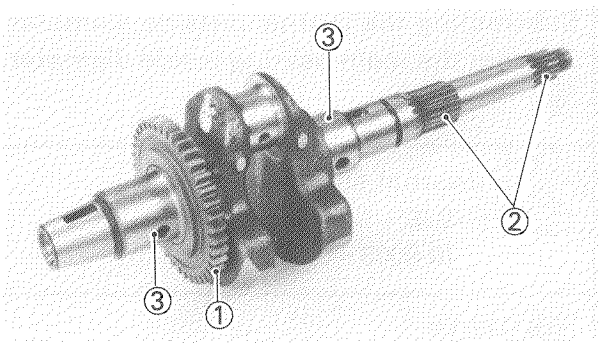


5. Install:
   - Holding plate ①
   - Weight gear assembly ②
     To the balancer weight.

NOTE:

Align the hole ③ on the holding plate and buffer boss with the dowel pin ④ on the balancer weight.





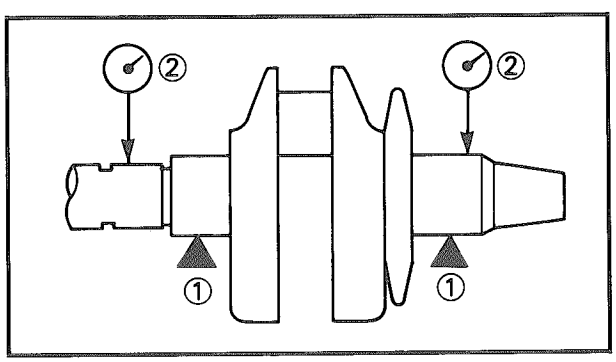
CRANKSHAFT, CONNECTING ROD AND CRANKCASE

1. Thoroughly clean all parts.

Crankshaft

1. Remove:
   - Nuts (Rod cap) ①
   - Rod cap ②
   - Connecting rod ③

2. Inspect:
   - Drive gear teeth (Balancer) ①
     Pitting/Galling/Wear→Replace crankshaft assembly.
   - Crankshaft splines ②
     Wear/Damage→Replace.
   - Crankshaft journals ③
     Pitting/Scratches→Replace.

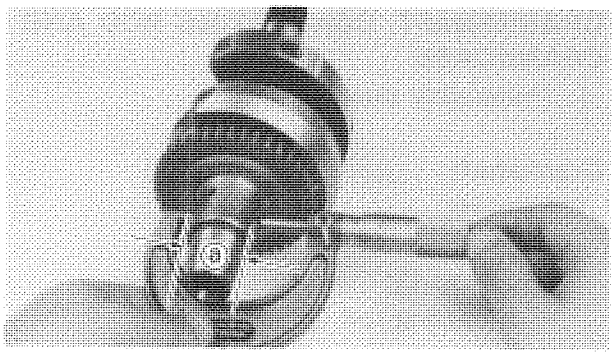


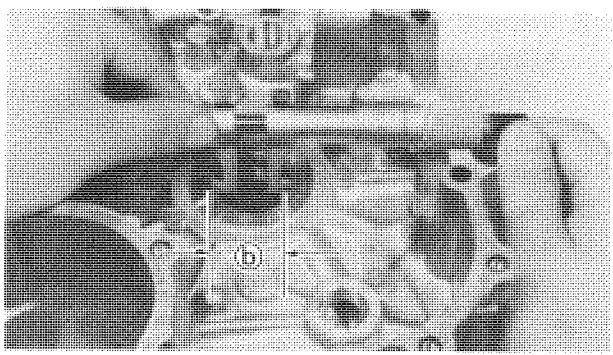
3. Measure:
   - Rounout:
     Use the V-Blocks ① and Dial Gauge ②.
     Out of specification→Replace.

Rounout Limit:
0.02 mm (0.0008 in)

Crankshaft Main Bearing Clearance Measurement

1. Measher:
   - Main bearing clearance





Crankshaft main bearing clearance measurement steps:

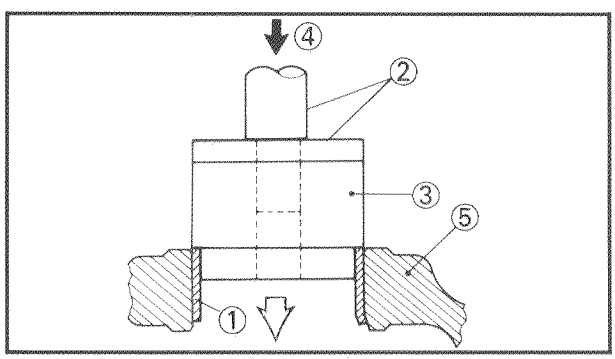
- Measure the journal outside diameter ⓐ at two different positions, if it is out of specification limit, replace the crankshaft.
- Measure the main bearing inside diameter ⓑ at two different positions, photo the read out down.
- Calculate the oil clearance, if it is out of specifications, replace the main bearings.

Subtracting the journal outside diameter ⓐ from the main bearing inside diameter ⓑ.

Journal Oil Clearance:
0.02 ~ 0.05 mm
(0.0008 ~ 0.0020 in)

CAUTION:

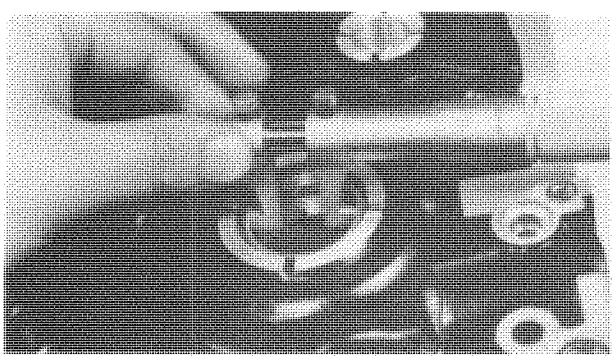
On the journal, the larger measurement is used as a basis for calculation of the oil clearance, and on the main bearing, the smaller value is used.



Main Bearing Removal and Selection

1. Remove:
   - Main bearing ①
     Use a Plain Bearing Handle (YU-04058) ②, Plain Bearing Installer/Remover (YU-04095) and Haydraulic Press ④.

⑤ Crankcase



2. Select:
   - Main bearing

Main bearing selection steps:

- Clean the counterbore in the crankcase where the main bearing is fitted, and measure the diameter of the counterbore. By referring to the table below, choose the proper over-size main bearing.

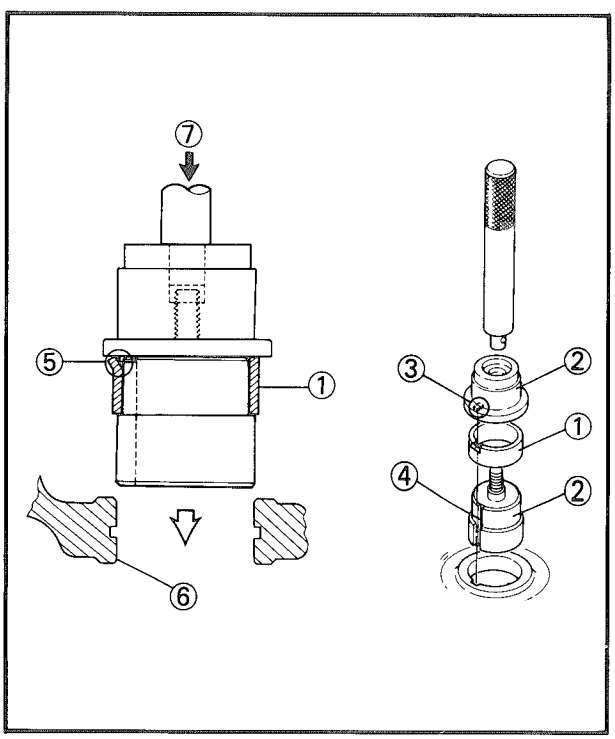
CAUTION:

The diameter of counterbore should be measured at two places, and the average of the two measurements should be used to choose the bearing.

Diameter of counterbore in crankcase	Color code
34.000 ~ 34.010 mm (1.3385 ~ 1.3389 in)	Red
34.011 ~ 34.020 mm (1.3390 ~ 1.3393 in)	Black

NOTE:

If the diameter of the counterbore in the crankcase exceeds 34.020 mm (1.3393 in), the crankcase should be replaced with a new one. The new crankcase is already fitted with main bearings, and their inside diameters are normally 30.000 to 30.020 mm (1.1811 ~ 1.1818 in).



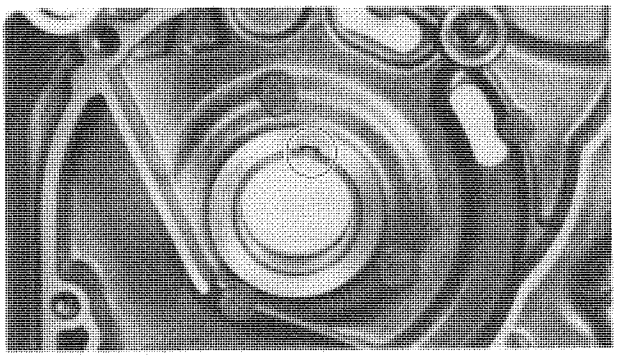
Main Bearing Installation

1. Position:
   - Main bearing (Oversize) ①
     To the Plain Bearing Installer/Remover (YM-33297) ②.

NOTE:

As shown in the photo, fit the key ③ vertically to the bearing ①, and align the straight cutaway ④ of the plate (special tool) with the key ③, then grip the bearing with the tool set.

2. Install:
   - Main bearing with tool set
     Align the key ⑤ with the keyway ⑥ on the crankcase, and using a hydraulic press ⑦, force-fit the bearing.



3. Remove:
   • Tool set

NOTE:

Make sure the bearing is positioned correctly in place.

Connecting Rod Bearing Clearance Measurement

1. Clean all parts.
2. Install:
   • Connecting rod bearings
     Into connecting rod and cap.
3. Attach:
   • Plastigage® (YU-33210)
     Onto the crank pin.
4. Install:
   • Connecting rod
   • Connecting rod cap

NOTE:

Be sure the letter on both components align to form perfect character.

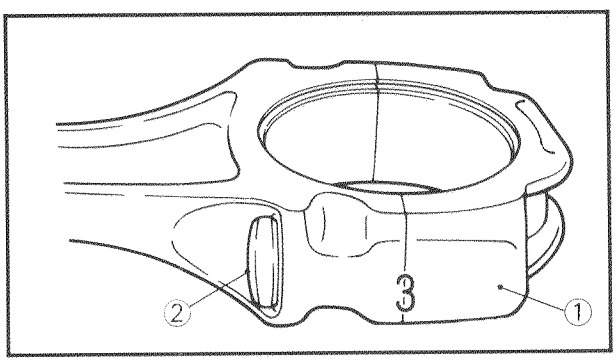
5. Apply:
   • Bolt threads (Connecting rod) ②
   • Nuts surfaces (Connecting rod cap) ①

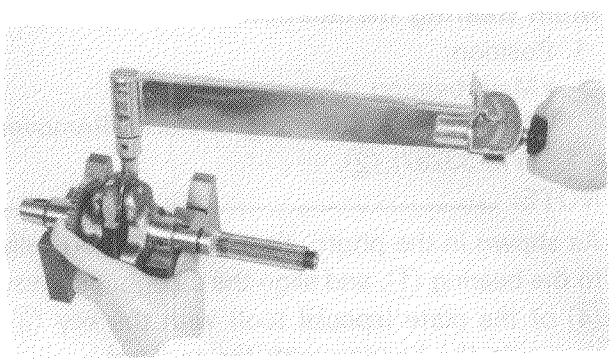
	Molybdenum Disulfide Grease

6. Tighten:
   • Nuts (Connecting rod cap)

NOTE:

Do not turn connecting rod until clearance measurement has been completed.

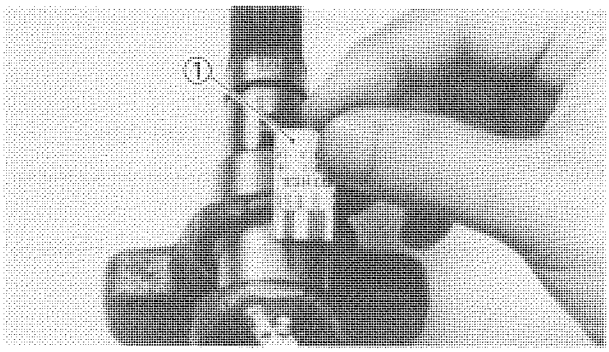




CAUTION:

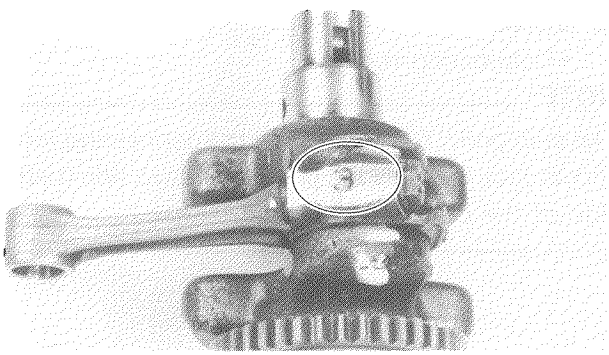
Tighten to full torque specification without pausing. Apply continuous torque between 1.0 and 1.8 m•kg. Once you reach 1.0 m•kg, DO NOT STOP TIGHTENING until final torque is reached. If tightening is interrupted between 1.0 and 1.8 m•kg, loosen nut to less than 1.0 m•kg and start again.

	Nut (Connecting Rod Cap) **18 Nm (1.8 m•kg, 13 ft•lb)**



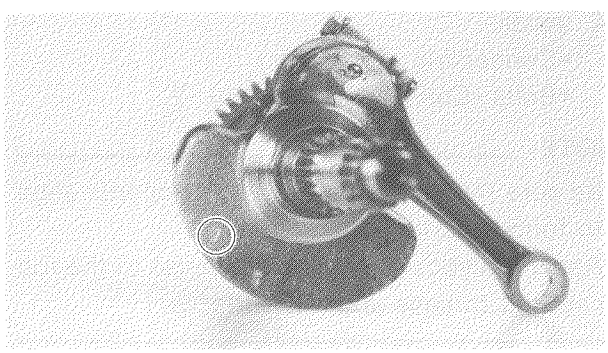
7. Remove:
   - Connecting rod cap
     Use care in removing.
8. Measure:
   - Width of Plastigage® ①
     Out of specification→Replace bearings and/or replace crankshaft if necessary.

Connecting Rod Bearing Clearance:
0.021 ~ 0.045 mm
(0.0008 ~ 0.0018 in)



Rod Bearing Selection

- The connecting rod size numbers are indicated by 3 or 4 and are marked in ink on the connecting rods and caps.



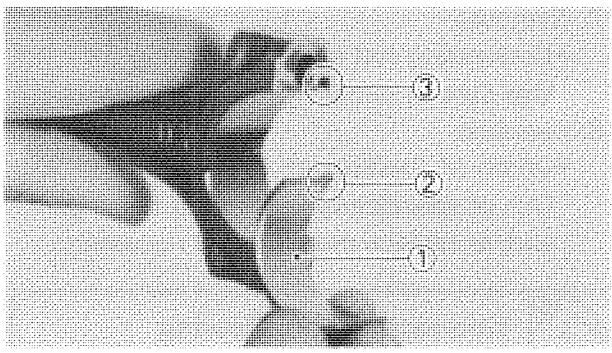
- The rod bearing journal size numbers is indicated by 0.1 or 2 and are stamped on the left end of the crank web.

Example selection of the connecting rod bearing:

- If the connecting rod size is No. 4 and crankshaft size is No. 2, respectively, the bearing size No. is:

Bearing Size No. =
Connecting rod No. — Crankshaft No. =
4 – 2 = 2 (Black)

BEARING COLOR CODE	
No. 1	Blue
No. 2	Black
No. 3	Brown
No. 4	Green



Connecting Rod Installation

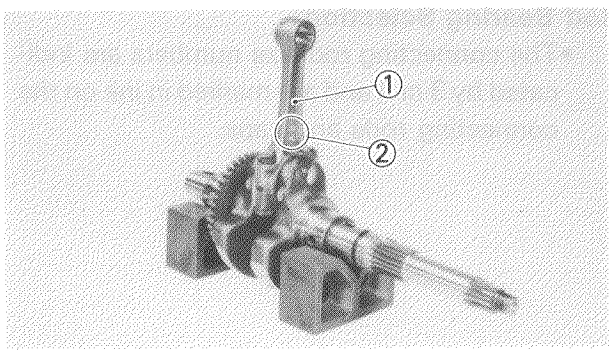
1. Install:
   - Connecting rod bearings ①
     To the connecting rod and rod cap.

NOTE:

Aligh the tab ② with the slot ③.

2. Apply:
   - Bearing contact surfaces

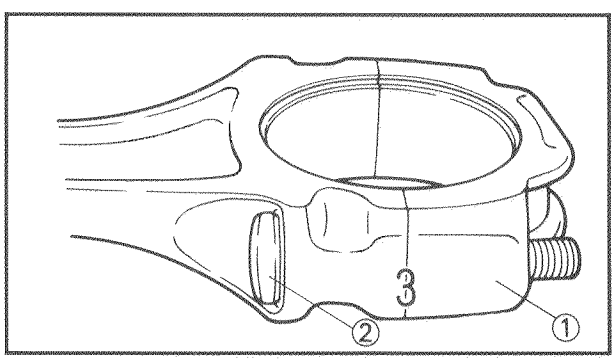
	Molybdenum Disulfide Grease **Lightly Coat.**



3. Install:
   - Connecting rod ①

NOTE:

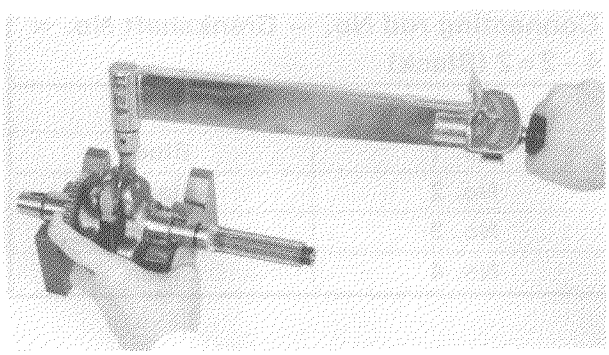
The stamped "Y" mark ② on the connecting rod should face towards the primary sheave side (Left side of the crankshaft)



4. Install:
   - Connecting rod cap ①
   - Bolts (Connecting rod cap) ②

NOTE:

- Be sure the letters on both components align to form a perfect character.
- Apply Molybdenum disulfide grease to the rod cap bolt threads and nut surfaces.



5. Tighten:
   - Nuts (Connecting rod cap)

	Nut (Connecting Rod Cap): **18 Nm (1.8 m•kg, 13 ft•lb)**

CAUTION:

Apply even tightening torque to both nuts in two or three steps.

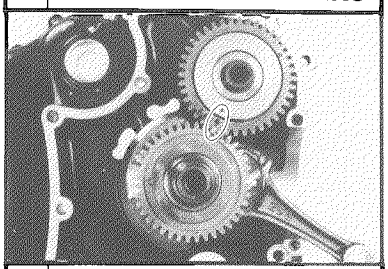
ENGINE ASSEMBLY AND ADJUSTMENT

CRANKSHAFT AND CRANKCASE

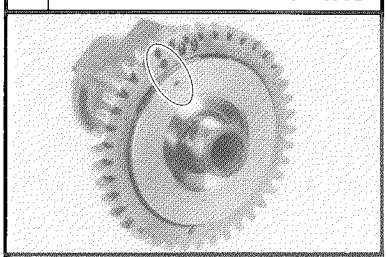
① Buffer boss
② Weight gear
③ Balancer weight
④ Crankshaft
⑤ Plain bearing
⑥ Connecting rod
⑦ Connecting rod cap
⑧ Oil pump
⑨ Crankcase 2.
⑩ Collar
⑪ Breather hose
⑫ Crankcase 1
⑬ Dipstick
⑭ Drain bolt
⑮ Dipstick
⑯ Oil filler case
⑰ Oil level switch guard
⑱ Oil strainer
⑲ Relief valve
⑳ Oil filter
㉑ Oil filter cover
㉒ Air bleed bolt

CRANKSHAFT RUNOUT LIMIT: **0.02 mm (0.0008 in)**
JOURNAL OIL CLEARANCE: **0.02 ~ 0.05 mm (0.0008 ~ 0.0020 in)**
CONNECTING ROD BEARING CLEARANCE: **0.021 ~ 0.045 mm (0.0008 ~ 0.0018 in)**
ENGINE OIL: **TOTAL AMOUNT:** **1.3 L (1.2 Imp qt, 1.4 US qt)**

A ALIGN PUNCH MARKS

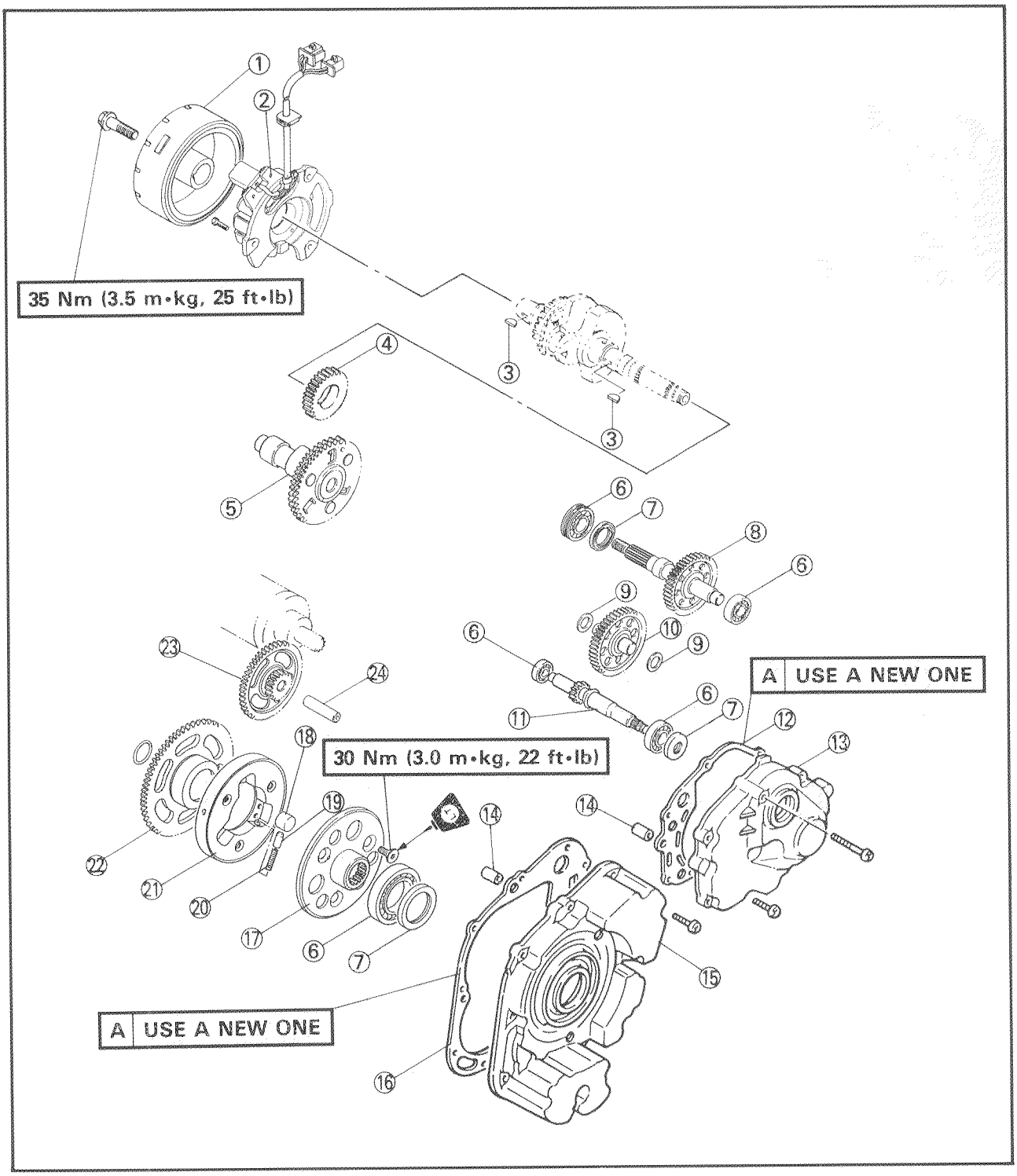


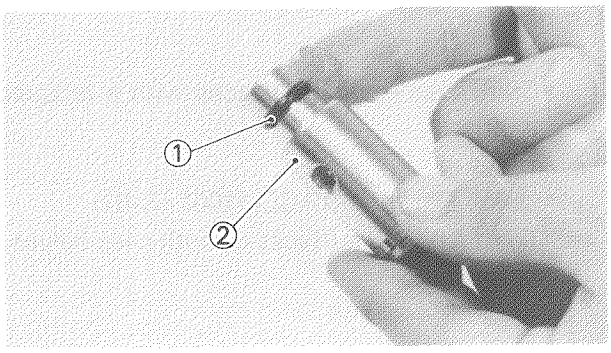
A ALIGN PUNCH MARKS



TRANSMISSION

① Flywheel magneto
② Stator assembly
③ Woodruff key
④ Camshaft drive gear
⑤ Camshaft
⑥ Bearing
⑦ Oil seal
⑧ Drive axle
⑨ Thrust washer
⑩ Main axle
⑪ Primary drive axle
⑫ Gasket
⑬ Transmission case cover
⑭ Dowel pin
⑮ Starter gear case cover
⑯ Gasket
⑰ Starter wheel
⑱ Roller
⑲ Spring cap
⑳ Spring
㉑ Cluch housing
㉒ Starter clutch gear
㉓ Starter Idle gear
㉔ Idle gear shaft





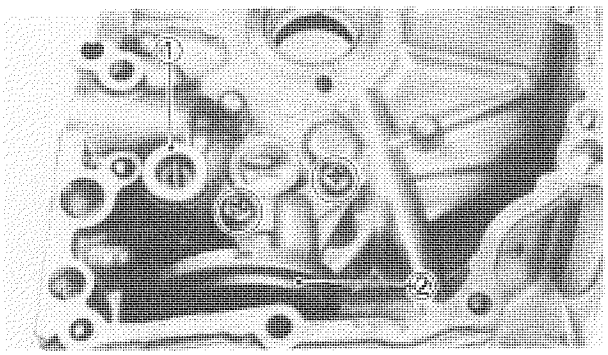
CRANKSHAFT AND CRANKCASE

Oil Strainer and Relief Valve

1. Install:
   - O-ring (New) ①
     To the relief valve ②.

NOTE:

- Always use a new O-ring.
- Before installing the relief valve, grease the O-ring sparingly.



2. Install:
   - Relief valve ①
   - Oil strainer ②

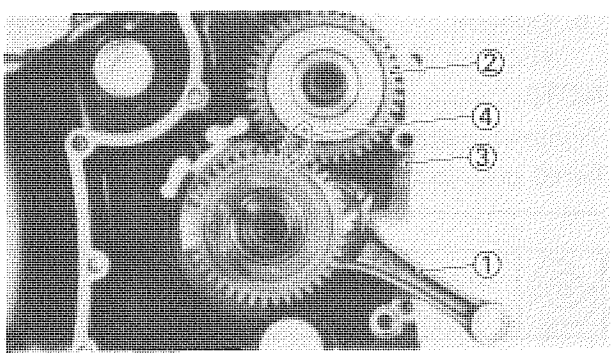
NOTE:

Before installing the oil strainer thorough wash the oil strainer in a solvent.

Crankshaft and Balancer Weight

1. Apply:
   - Crankshaft jounals
   - Main bearings
   - Balancer shaft jounals
   - Balancer shaft jounal bearings

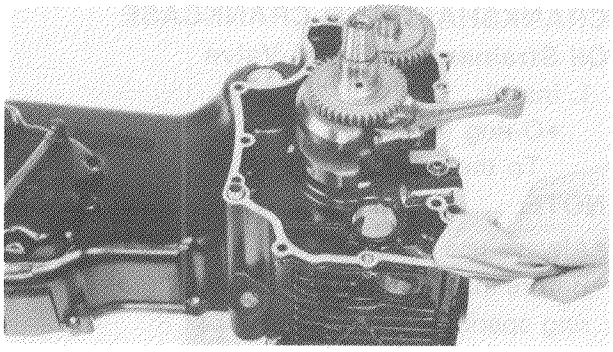
	Molybdenum Disulfide Grease



2. Install:
   - Crankshaft ①
   - Balancer weight ②
     To the crankcase 1 ③.

CAUTION:

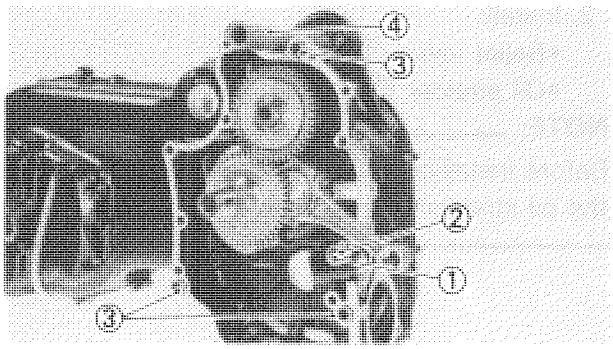
- **Be careful not to damage the main bearing when installing the crankshaft.**
- **Align the punch marks ④ on the drive and driven gear.**



Crankcase

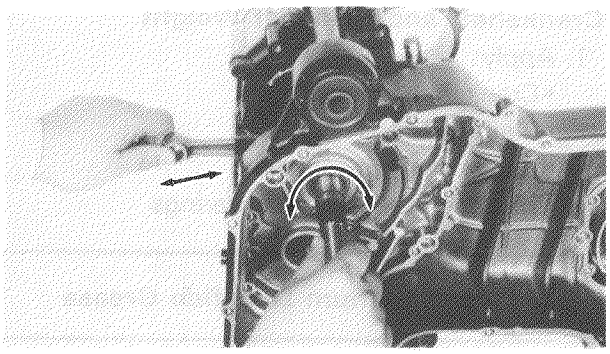
1. Clean:
   - Crankcase mating surfaces with a lacquer thinner.
2. Apply:
   - Quick Gasket® (ACC-11001-05-01)

   To the mating surfaces of both case halves.



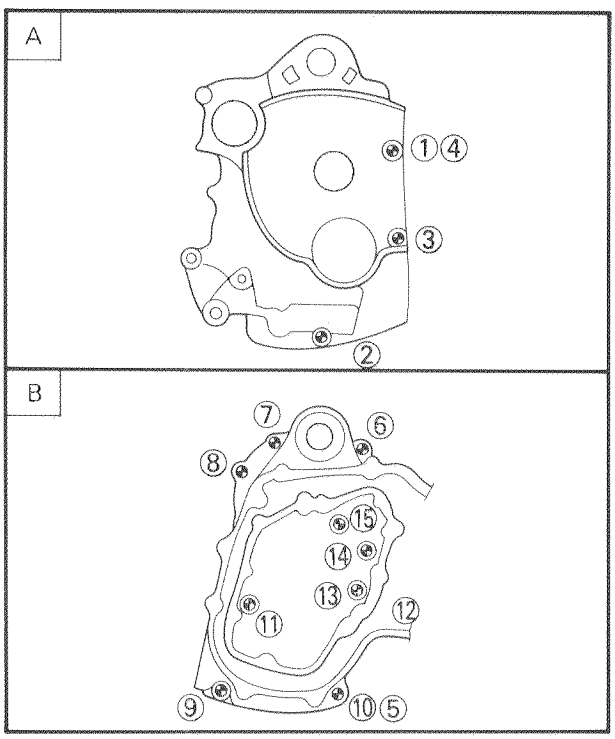
3. Install:
   - Nozzle ①
   - O-ring (New) ②
   - Dowel pins ③
   - Spacer collar ④

   To the crankcase 1.



4. Fit the crankcase 2 onto the crankcase 1. Tap lightly the crankcase 2 with a soft-head hammer.
5. Check:
   - Crankshaft smooth movement

   Not smooth→Reset.



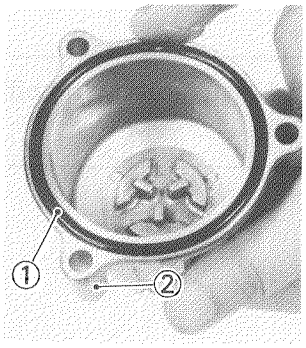
6. Tighten:
   - Screws (Crankcase) ①~⑮

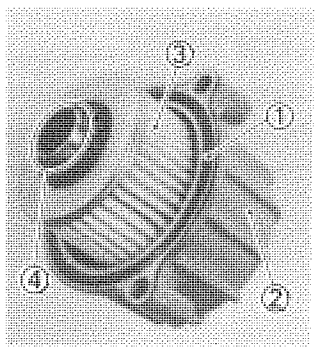
NOTE:

Tighten the screws starting with the lowest numbered one, in two or three steps.

	Screw (Crankcase): **12 Nm (1.2 m•kg, 8.7 ft•lb)**

A RIGHT
B LEFT

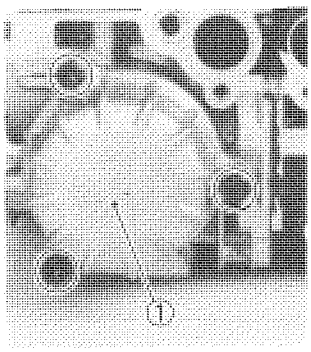


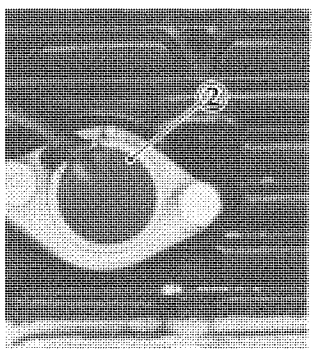


7. Install:
   - O-ring (New) ①
     To the oil filter cover ②.
   - Oil filter ③ with filter cover ②

NOTE:

- Install the oil filter ③ with its projection ④ facing towards the engine.
- Before installing the oil filter cover apply the engine oil to the O-ring on the filter cover.

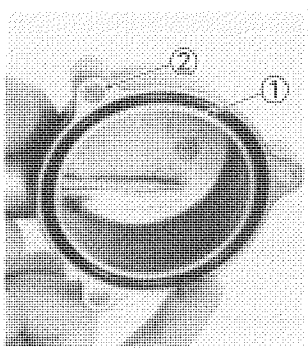


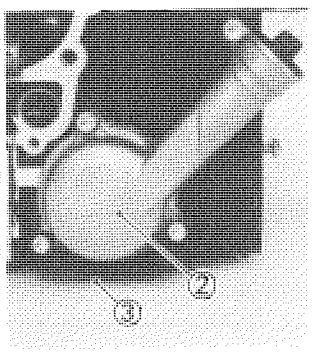


8. Tighten:
   - Oil filter cover ①

	Oil Filter Cover ①: **10 Nm (1.0 m•kg, 7.2•lb)**

9. Install:
   - Oil level switch ②



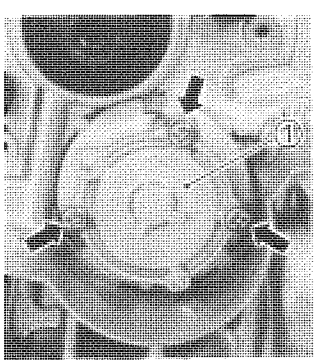


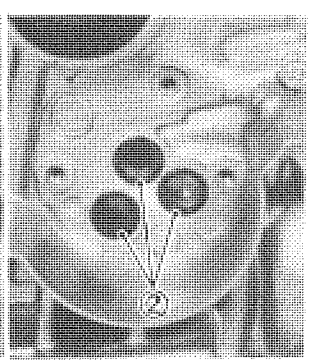
10. Install:
    - O-ring (New) ①
      To the oil filler case ②.
    - Oil filler case ②
    - Guard (Oil level switch lead) ③

	Oil Filler Case ②: **10 Nm (1.0 m•kg, 7.2 ft•lb)**

NOTE:

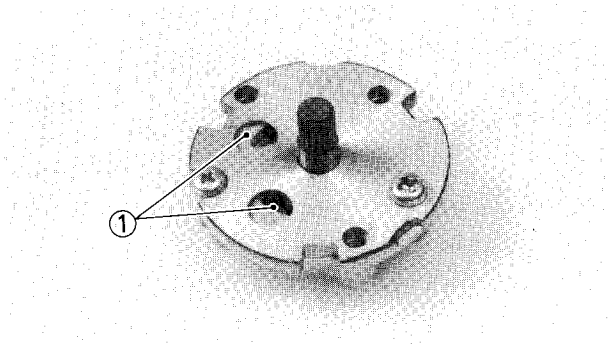
- Apply the engine oil to the O-ring on the filler case.
- Before installing the guard ③, through the oil level switch lead between the guard and crankcase.





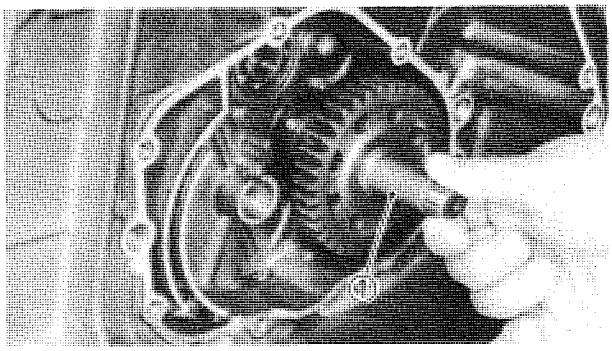
Oil Pump

1. Install:
   - Oil pump assembly ①
   - O-rings (New) ②



CAUTION:

Apply a liberal amount of 4-stroke engine oil to the oil pump passages ①.

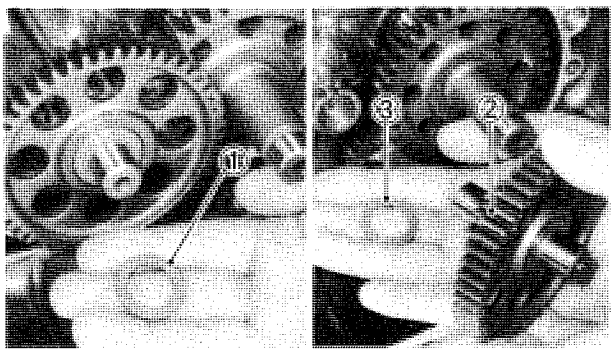


TRANSMISSION

1. Install:
   - Drive axle ①

NOTE:

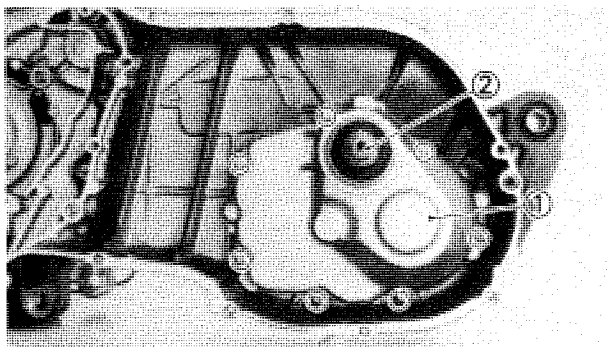
- Oil the drive axle bearing and shaft.
- Grease the oil seal lip.
- Be careful not to damage the oil seal rip when installing the drive axle.



2. Install:
   - Thrust washer ③
   - Main axle ②
   - Thrust washer ①

NOTE:

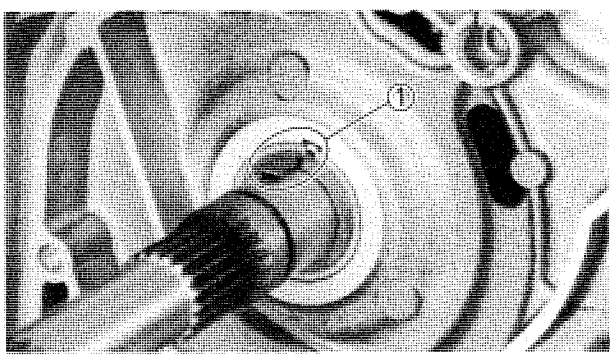
Oil the main axle bearing, shaft and thrust washers.



3. Install:
   - Dowel pins
   - Gasket (New)
   - Transmission case cover ① with primary drive axle ②
4. Tighten:
   - Screws (Transmission case cover)

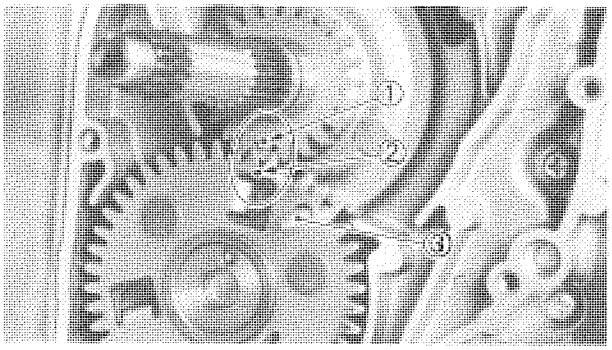
NOTE:

Tighten the screws in two stage, using a criss-cross pattern.



CAMSHAFT AND STARTER CLUTCH

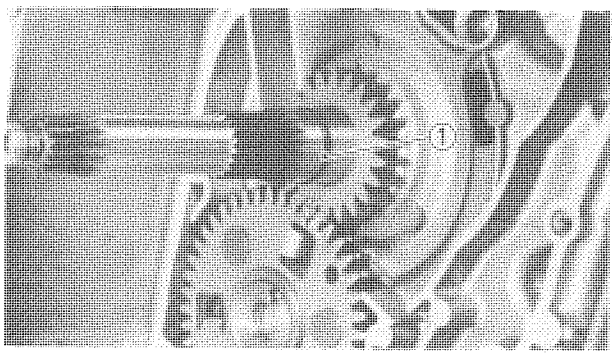
1. Install:
   - Woodruff key ①
   - Drive gear (Camshaft)



2. Install:
   - Camshaft assembly

CAUTION:

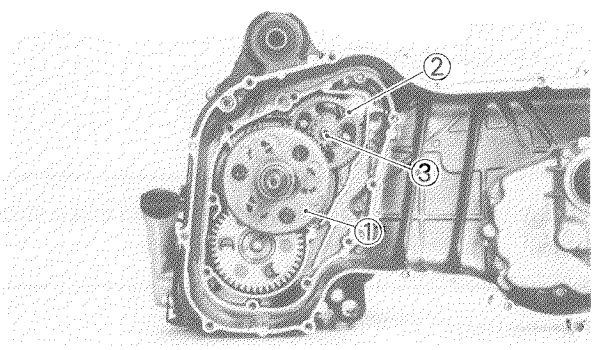
- **Be careful not to damage the jounal bearing, when installing the camshaft assembly.**
- **Aligh the punch marks on the drive ① and driven gear ②.**
- **After installing the camshaft assembly remove the knock pin ③ from the driven gear.**



3. Install:
   - O-ring (New) ①

NOTE:

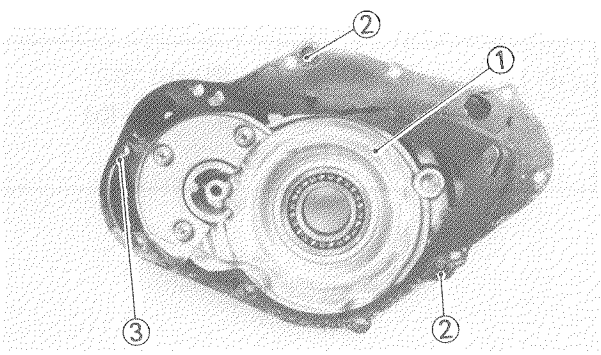
Grease the O-ring.



4. Install:
   - Shaft (Idler gear) ③
   - Idler gear (Starter motor) ②
   - Starter clutch assembly ①

NOTE:

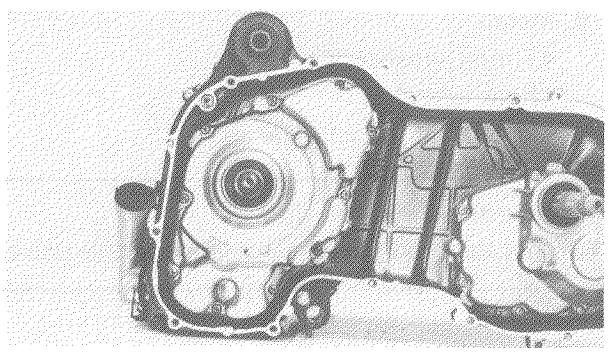
Before installing the Idler gear shaft, grease the Idler gear shaft bearing.



5. Install:
   - Dowel pins ②
   - Gasket (New) ③
   - Starter gear case cover ①

NOTE:

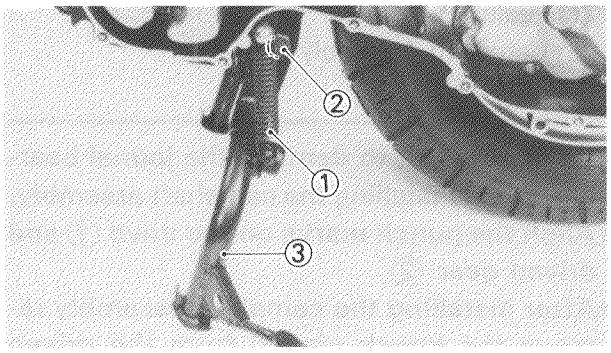
- Before installing the starter gear case cover, grease the oil seal rip.
- Be careful not to damage the oil seal rip, when installing the case cover.



6. Tighten:
   - Screws (Starter gear case cover)

NOTE:

Tighten the screws in two stage, using a acriss-cross pattern.



MAINSTAND AND REAR WHEEL

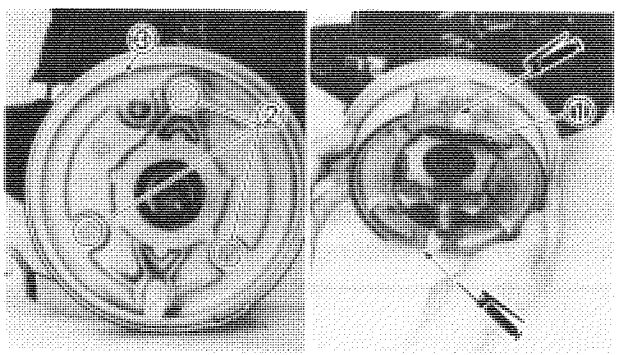
1. Install
   - Mainstand ③
   - Bolts (Mainstand) ②

NOTE:

Grease the mainstand bolts.

2. Hook:
   - Spring (Mainstand) ①
3. Tighten:
   - Bolts (Mainstand) ②

Bolt (Mainstand) ②:
30 Nm (3.0 m•kg, 22 ft•lb)
LOCTITE®



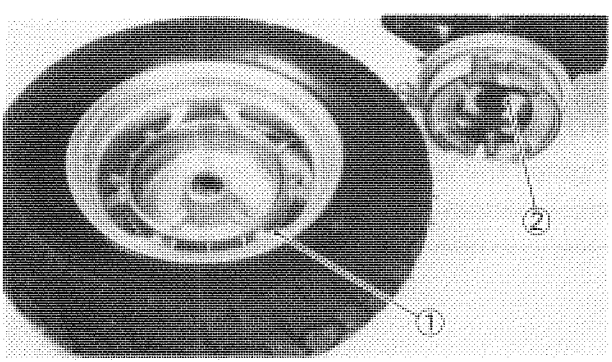
4. Install:
   - Brake shoe plate ③
   - Bolts (Brake shoe plate) ②
   - Brake shoes ①

NOTE:

Grease the cam and pivot pin on the brake shoe plate.

5. Tighten:
   - Bolts (Brake shoe plate) ③

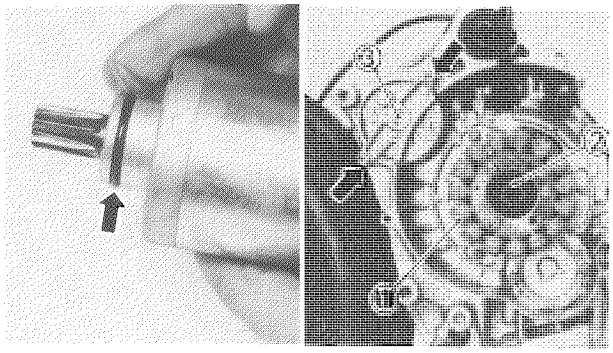
Bolt (Brake Shoe Plate) ③:
18 Nm (1.8 m•kg, 13 ft•lb)
LOCTITE®



6. Install:
   - Thrust washer ②
   - Rear wheel ①
   - Nut (Rear wheel axle)

NOTE:

- Grease the thrust washer.
- Do not thighten the wheel axle nut at this point.



STARTER MOTOR AND FLYWHEEL MAGNETO

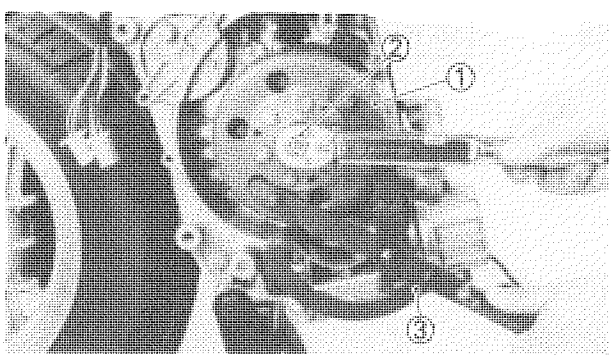
1. Install:
   - Starter motor ③
   - Woodruff key ②
   - Stator assembly ①

NOTE:

Grease the O-ring on the starter motor.

2. Tighten:
   - Screws (Starter motor)
   - Screws (Stator assembly)

Screw (Starter Motor)
7 Nm (0.7 m•kg, 5.0 ft•lb)
Screw (Stator Assembly)
7 Nm (0.7 m•kg, 5.0 ft•lb)



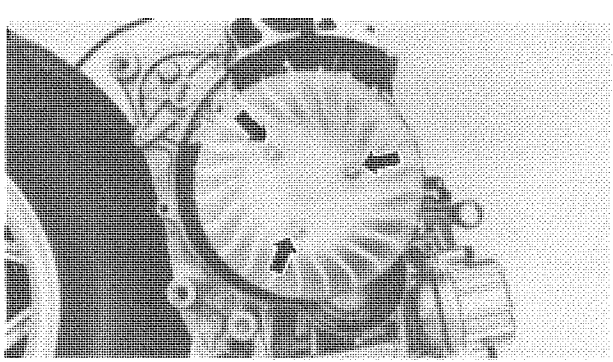
3. Install:
   - Flywheel magento ①
   - Flange bolt ②

NOTE:

- When installing the flywheel magneto make sure the woodruff key is properly seated in the key way of the flywheel magneto.
- Lightly grease the tapered portion of the crankshaft.

4. Tighten:
   - Flange bolt (Flywheel magneto) ②
     Use the Rotor Holder (YU-01235) ③.

Flange Bolt (Flywheel Magneto) ②:
35 Nm (3.5 m•kg, 25 ft•lb)



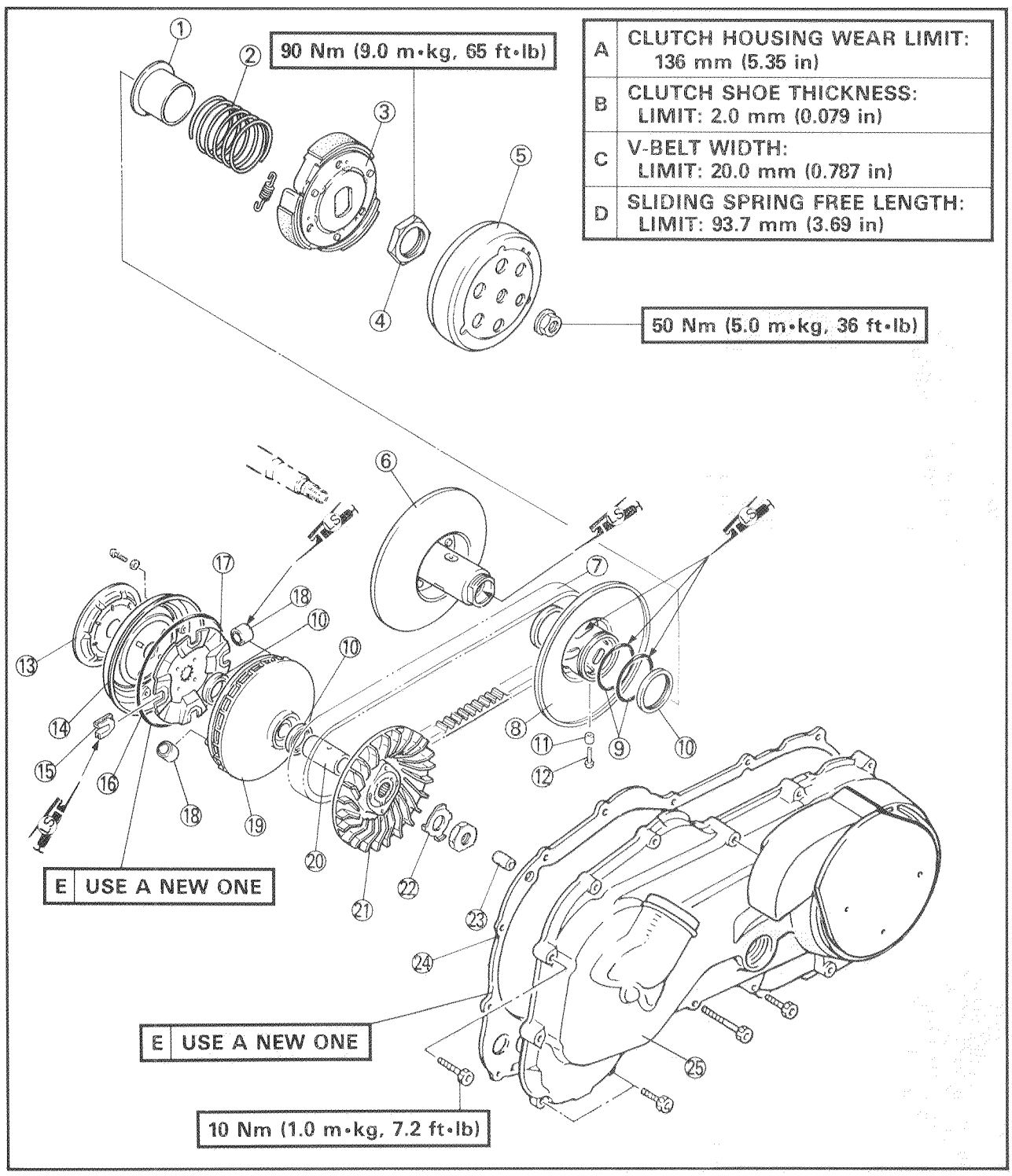
5. Install:
   - Cooling fan
6. Tighten:
   - Screws (Cooling far)

Screw (Cooling Fan)
7 Nm (0.7 m•kg, 5.1 ft•lb)

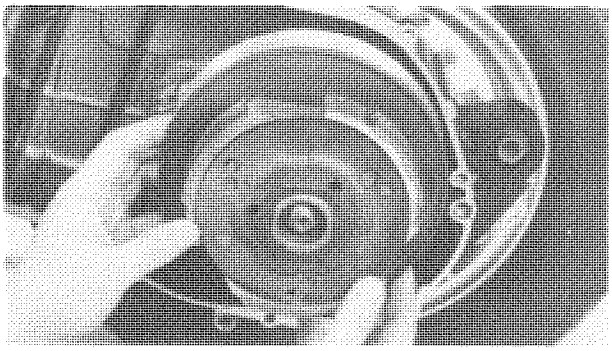
3

SECONDARY AND PRIMARY SHEAVES

① Spring seat
② Spring
③ Clutch assembly
④ Lock nut
⑤ Clutch housing
⑥ Secondary fixed sheave
⑦ V-belt
⑧ Secondary sliding sheave
⑨ O-ring
⑩ Oil seal
⑪ Guide coller
⑫ Guide pin
⑬ Holding plate
⑭ Primary sheave cap
⑮ Slider bushing
⑯ O-ring
⑰ Camplate
⑱ Weight
⑲ Primary sliding sheave
⑳ Collar
㉑ Primary fixed sheave
㉒ Lock washer
㉓ Dowel pin
㉔ Gasket
㉕ Sheave case cover



A	CLUTCH HOUSING WEAR LIMIT: 136 mm (5.35 in)
B	CLUTCH SHOE THICKNESS: LIMIT: 2.0 mm (0.079 in)
C	V-BELT WIDTH: LIMIT: 20.0 mm (0.787 in)
D	SLIDING SPRING FREE LENGTH: LIMIT: 93.7 mm (3.69 in)

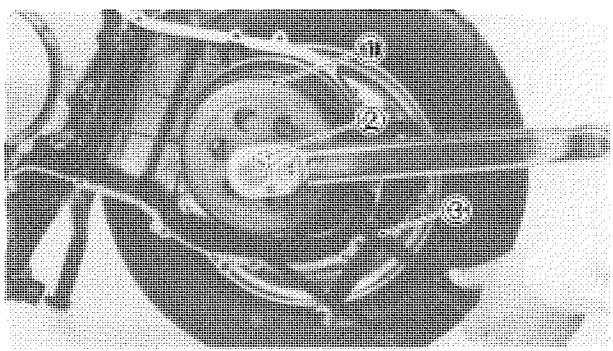


SECONDARY AND PRIMARY SHEAVES
Secondary Sheave and Clutch Housing

1. Install:
   - Secondary sheave assembly

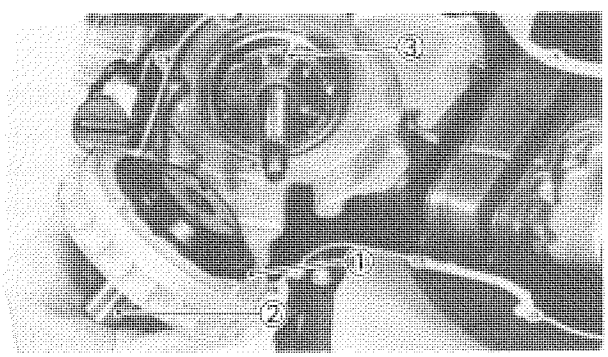
CAUTION:

- Before installing the secondary sheave, remove the any oil and grease from the contact surfaces of the sheaves with a thinner.
- Be careful not to damage the oil seal lip on the secondary sheave, when installing the secondary sheave.



2. Install:
   - Clutch housing ①
3. Tighten:
   - Nut (Secondary sheave) ②
     Use the Sheave Holder (YS-01880) ③.

	Nut (Secondary Sheave) ② **50 Nm (5.0 m•kg, 36 ft•lb)**

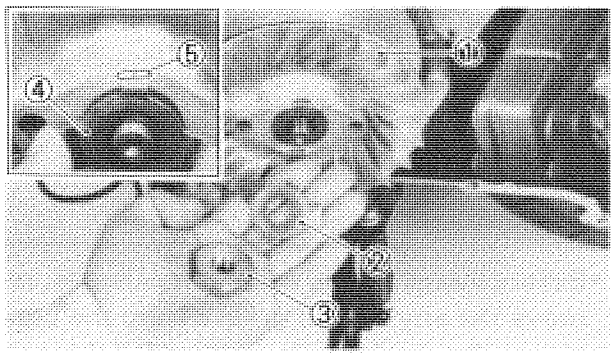


Primary Sheave and V-belt

1. Install:
   - Holding plate ③
   - Collar ②
     To the primary sliding sheave ①.
   - Primary sliding sheave ①

CAUTION:

Remove the any oil and grease from the contact surfaces of sliding sheave collar and holding plate with a thinner.

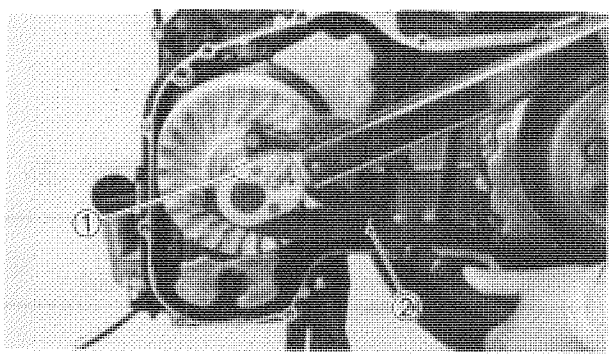


2. Install:
   - Primary fixed sheave ①
   - Lock washer (New) ②
   - Nut (Primary sheave assembly) ③

CAUTION:

- **Remove the any oil and grease from the contact surfaces of fixed sheave with a thinner.**
- **Be sure that the projections ④ on the lock washer align with the slots ⑤ on the fixed sheave.**

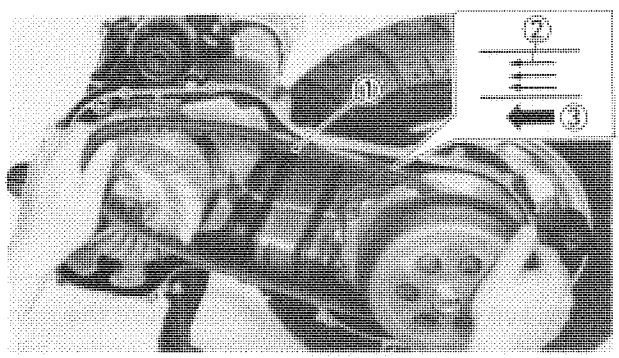
3



3. Tighten:
   - Nut (Primary sheave assembly) ①
     Use the Rotor Holder (YU-01235) ②.

Nut (Primary Sheave Assembly) ①:
50 Nm (5.0 m•kg, 36 ft•lb)

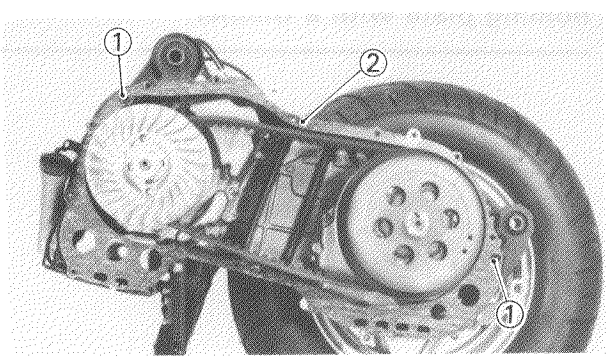
4. Bend the lock washer tab.



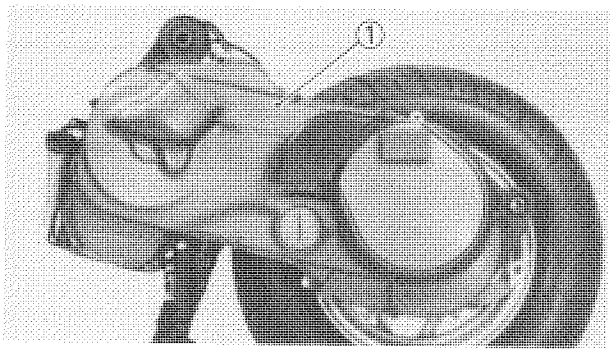
5. Install:
   - V-belt ①
     Place the V-belt around the secondary sheave, and compress the secondary sheave spring hard so that the V-belt moves toward the clutch hub. And hook onto the primary sheave.

NOTE:

- The V-belt must be installed with the arrow marks ② facing the direction of travel ③.
- Be sure to remove the any oil and or grease.



6. Install:
   - Dowel pins ①
   - Gasket (New) ②

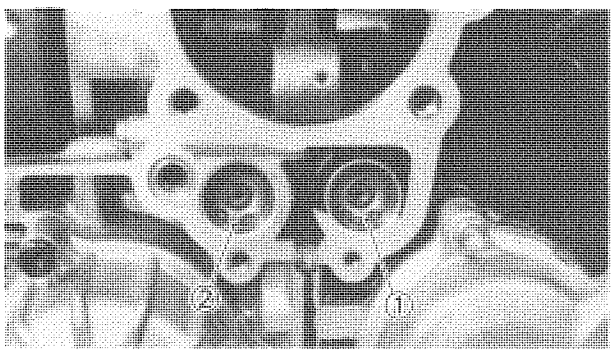


7. Install:
   - Sheave case cover ①
8. Tighten:
   - Bolts (sheave case cover)

Bolts (Sheave Case Cover):
10 Nm (1.0 m•kg, 7.2 ft•lb)

NOTE:

Thighten the bolts in two stage, using a crisscross pattern.

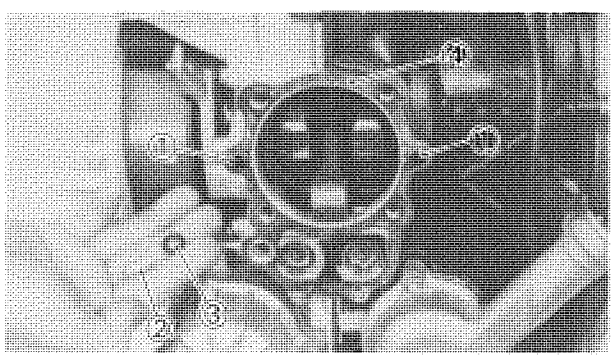


CYLINDER AND PISTON

1. Install:
   - Valve lifters (Intake ① and Exhaust ②)

NOTE:

Liberally coat the valve lifters with a engine oil.



2. Install:
   - Dowel pins ①
   - Nozzle ②
   - O-ring (New) ③
   - Gasket (New) ④

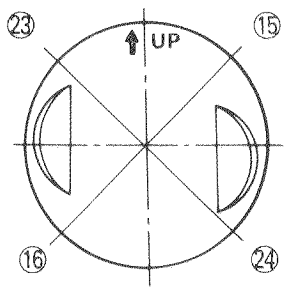
ENGINE ASSEMBLY AND ADJUSTMENT

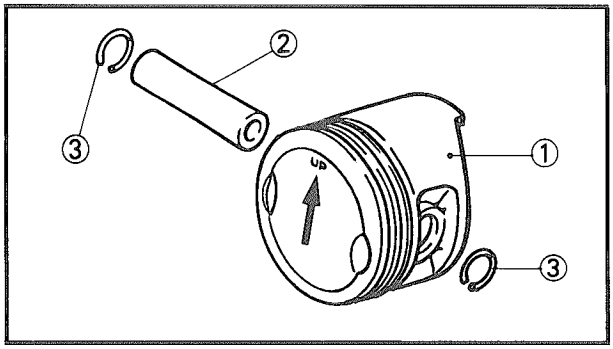
CYLINDER, PISTON AND CYLINDER HEAD COVER

① Rocker arm shaft
② Wave washer
③ Rocker arm
④ Plate washer
⑤ Air bleed bolt
⑥ Cylinder head cover
⑦ O-ring
⑧ Nozzle
⑨ Cylinder head
⑩ Gasket
⑪ Dowel pin
⑫ Cylinder
⑬ O-ring
⑭ Gasket
⑮ Top ring
⑯ 2nd ring
⑰ Oil ring
⑱ Circlip
⑲ Piston pin
⑳ Piston
㉑ Valve lifter
㉒ Push rod
㉓ Oil ring (lower rail)
㉔ Oil ring (Upper rail)

PISTON CLEARANCE: 0.020 ~ 0.040 mm (0.0008 ~ 0.0016 in)
SIDE CLEARANCE LIMIT: TOP RING: 0.12 mm (0.0047 in) 2ND RING: 0.12 mm (0.0047 in)
END GAP LIMIT: TOP RING: 0.80 mm (0.0315 in) 2ND RING: 0.80 mm (0.0315 in)
ARM-TO-SHAFT CLEARANCE: STANDARD: 0.009 ~ 0.042 mm (0.0004 ~ 0.0017 in)
PUSH ROD RUNOUT LIMIT: 0.3 mm (0.012 in)

A PISTON RING INSTALLATION

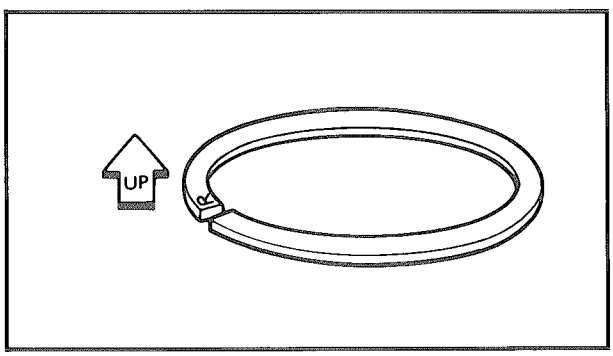




3. Install:
   - Piston ①
   - Piston pin ②
   - Piston pin clip (New) ③

NOTE:

- The UP mark on the piston crown must point to the upward (Ex mark faces exhaust side).
- 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.



4. Install:
   - Piston rings

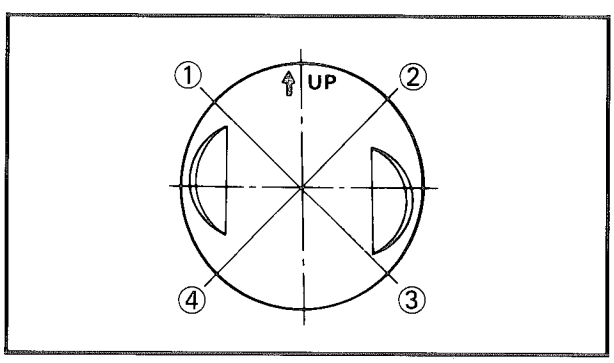
NOTE:

Be sure to install rings so that Manufacturer's marks or numbers are located on the top side of the rings.

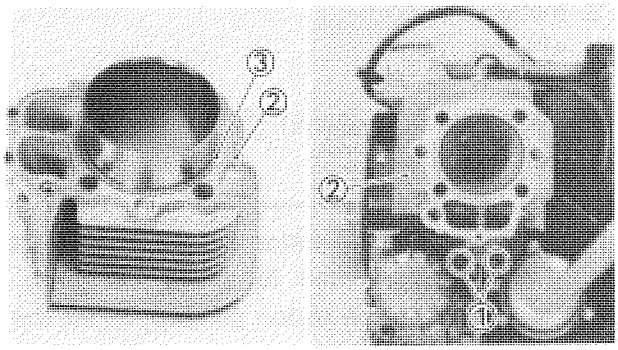
5. Oil liberally:
   - Pistons
   - Rings
   - Cylinders
6. Set:
   - Piston ring ends

CAUTION:

Make sure the ends of the oil ring expanders do not overlap.



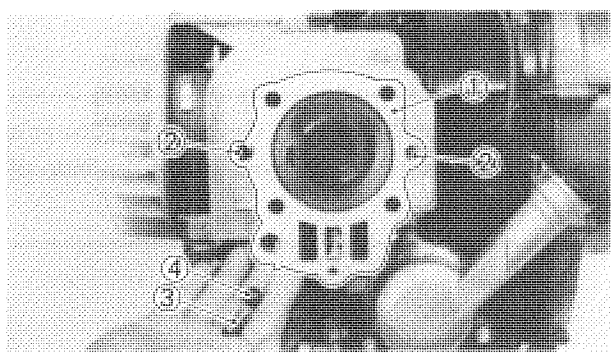
① OIL RING (LOWER RAIL)
② TOP
③ OIL RING (UPPER RAIL)
④ 2ND



7. Install:
   - O-ring (New) ③
     To the cylinder skirt.
   - Cylinder ②
   - Socket bolts (cylinder) ①

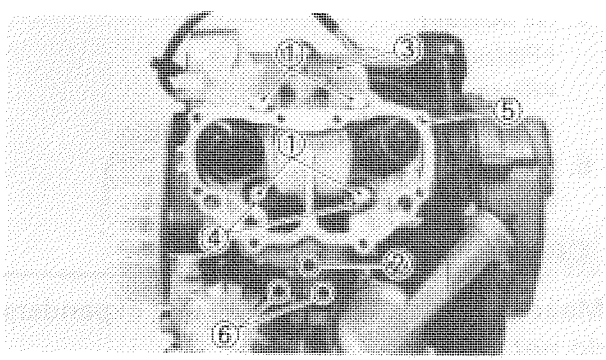
NOTE:
- Install the cylinder with one hand while compressing the piston rings with the other hand.
- Do not thighten the socket bolts ① at this point. Finger-tighten the bolts.

3



CYLINDER HEAD AND CYLINDER HEAD COVER

1. Install:
   - Nozzle ③
   - Oil seal ④
   - Dowel pins ②
   - Gasket (New) ①



2. Install:
   - Cylinder head assembly ⑤
   - Stay (Air shrond) ③
   - Bolts (Cylinder head) ②
   - Socket bolt (Cylinder head) ①

④ With washer

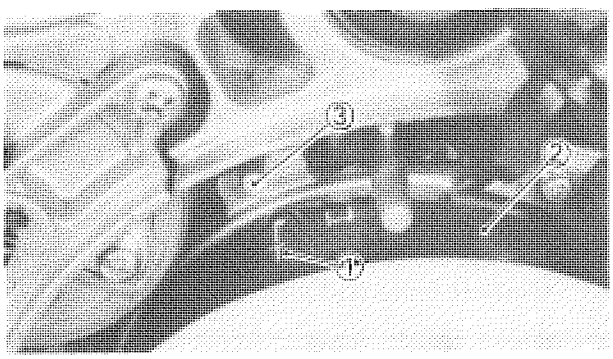
3. Tighten:
   - Bolts (Cylinder head) ②
   - Socket bolts (Cylinder) ⑥
   - Socket bolt (Cylinder head) ①

CAUTION:

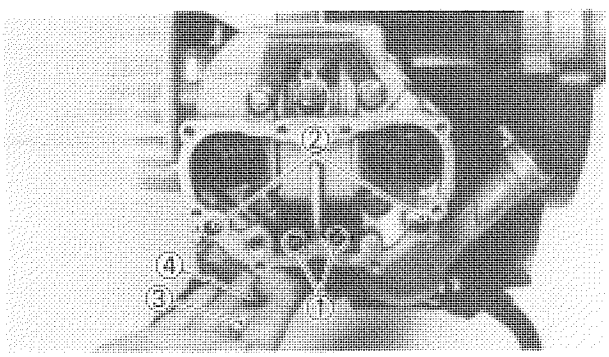
This tightening squence is important. So follow this steps.

Bolts (Cylinder Head):
22 Nm (2.2 m•kg, 16 ft•lb)
Socket Bolt (Cylinder):
10 Nm (1.0 m•kg, 7.2 ft•lb)
Socket Bolt (Cylinder Head):
22 Nm (2.2 m•kg, 16 ft•lb)

NOTE:
Thighten the bolts in two stage, using a crisscross pattern.

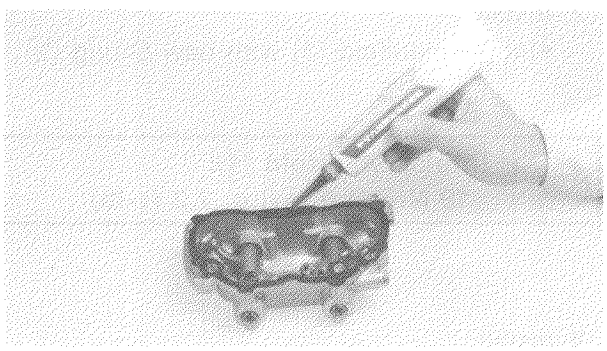


4. Align the "T" wark ① on the flywheel magneto ② with the stationary pointer ③ on the crankcase so that the piston is at TDC on the compression stroke.



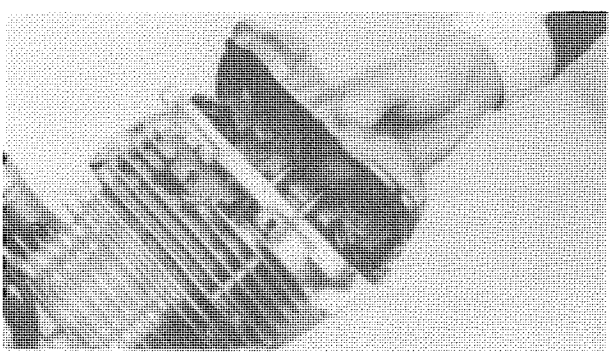
5. Install:
   - Nozzle ③
   - O-ring (New) ④
   - Dowel pins ②
   - Push rods ①

NOTE:
Oil the push rod ends.



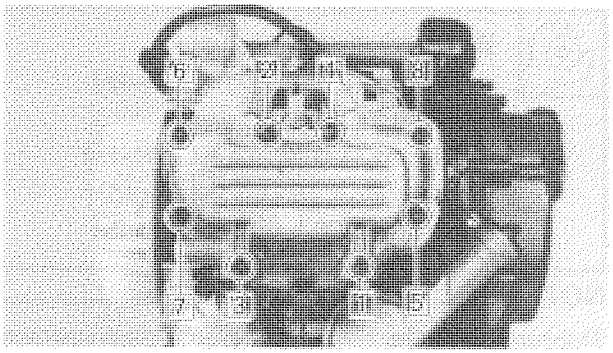
6. Apply:
   - Quick Gasket® (ACC-11001-05-01)

   To the cylinder head cover mating surface.



7. Install:
   - Cylinder head cover

NOTE:
Make sure the push rod has correctly seated into the rocker arm.

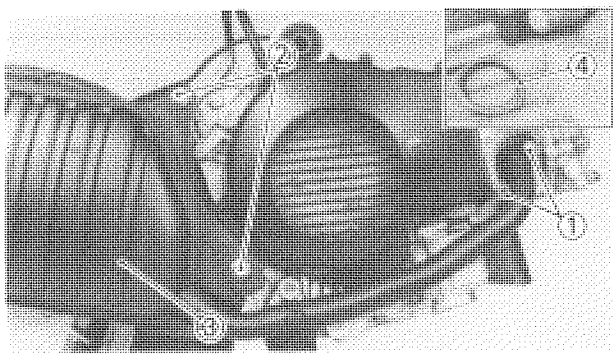


8. Tighten:
   - Bolts (Cylinder head cover)

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

NOTE:

Tighten the bolt in numerical order as shown, in two or three steps.

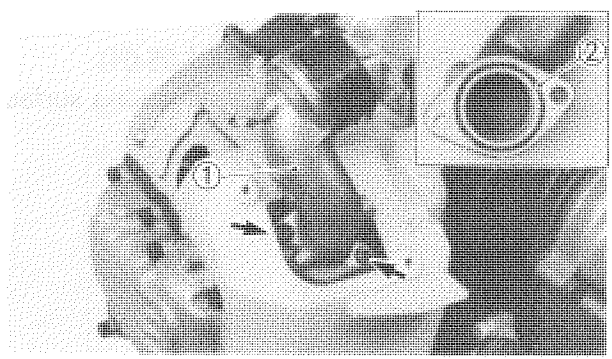


ENGINE MOUNTING

When remounting the engine, reverse the removal procedure.
Note the following points.

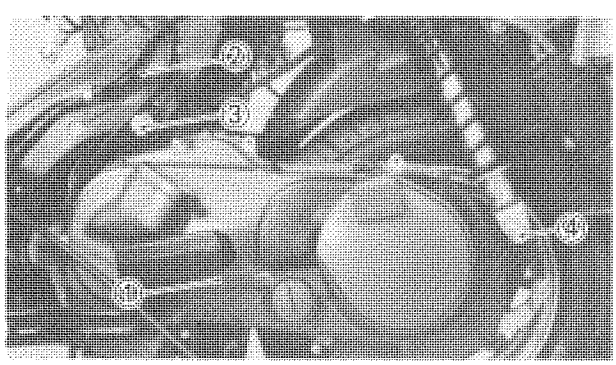
1. Install:
   - Maffler assembly ③ with new gasket ④
   - Flange bolts (Muffler) ②
   - Socket bolts (Exhaust pipe) ①

Flange Bolt (Muffler) ②:
25 Nm (2.5 m•kg, 18 ft•lb)
Socket Bolt (Exhaust pipe) ①:
30 Nm (3.0 m•kg, 22 ft•lb)



2. Install:
   - Intake manifold ① with new O-ring ②

Intake Manifold ①:
10 Nm (1.0 m•kg, 7.2 ft•lb)



3. Install:
   - Engine assembly ①
     To the frame assembly ②
   - Pivot shaft (Engine) ③
     Grease the pivot shaft surface.
   - Bolt (Shock absorber-lower) ④

Pivot Shaft (Engine) ③:
80 Nm (8.0 m•kg, 56 ft•lb)
Bolt (Shock Absorber-Lower) ④:
50 Nm (5.0 m•kg, 36 ft•lb)



4. Tighten:
   Nut (Rear wheel axle) ①

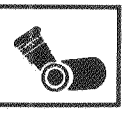
	Nut (Rear Wheel Axle) ①: 100 Nm (10.0 m•kg, 72 ft•lb)

5. Install:
   - Cotter pin (New)

6. Adjust:
   - Throttle cable free plays
     Refer to "CHAPTER 2. THROTTLE CABLE ADJUSTMENT" section.
   - Rear brake pedal free play
     Refer to "CHAPTER 2. FRONT AND REAR BRAKE INSPECTION" section.

7. Add:
   - Engine oil
     Refer to "CHAPTER 2. ENGINE OIL AND OIL FILTER REPLACEMENT" section.

8. Add:
   Transmission oil
   Refer to "CHAPTER 2. TRANSMISSION OIL REPLACEMENT" section.



CHAPTER 4
CARBURETION

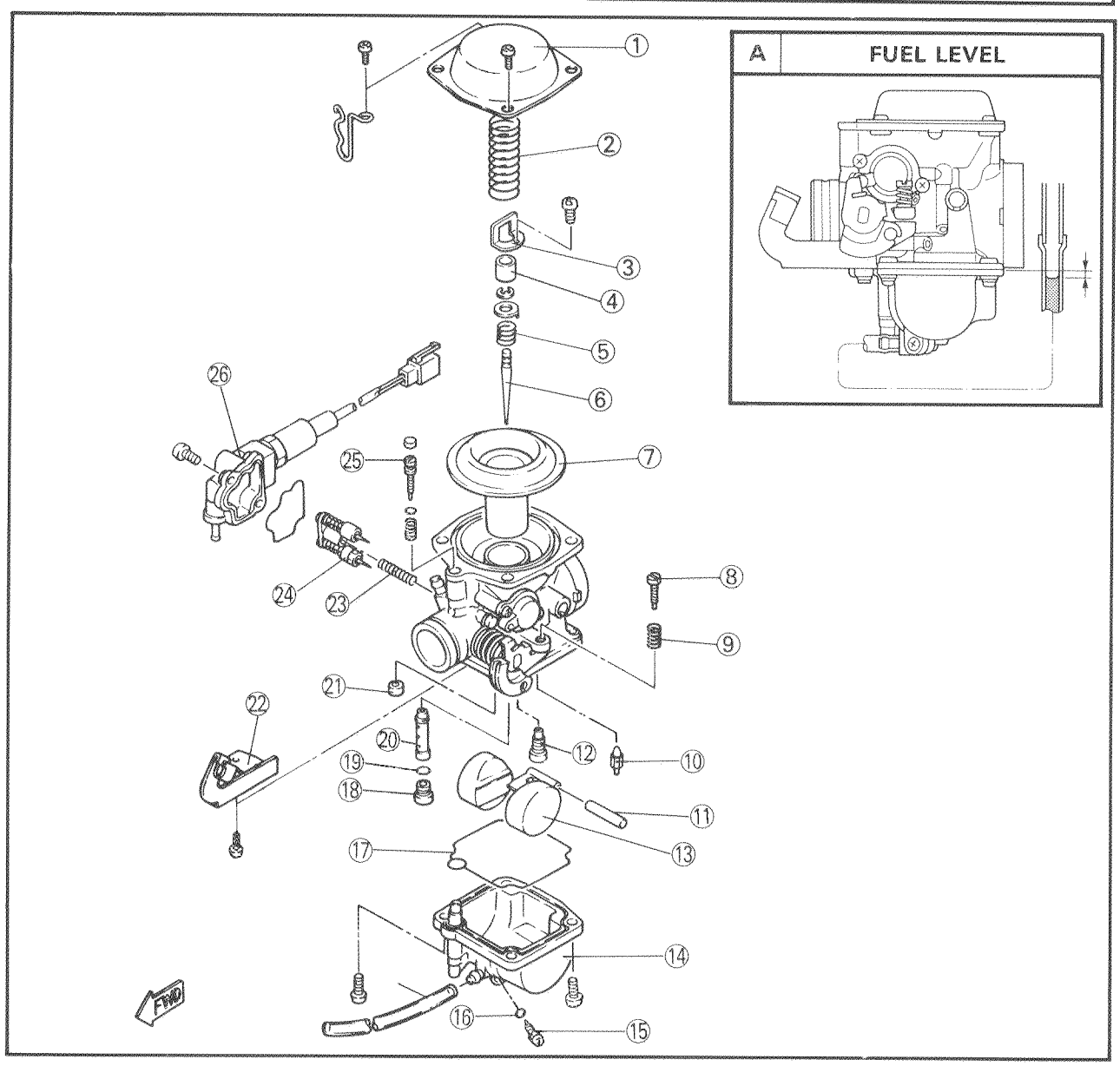
CARBURETOR 4-1
SECTION VIEW 4-2
FUEL FLOW DIAGRAMS 4-3
AUTO CHOKE SYSTEM 4-4
REMOVAL 4-7
DISASSEMBLY 4-8
INSPECTION 4-9
ASSEMBLY 4-11
INSTALLATION 4-12
ADJUSTMENT 4-12

CARBURETION

CARBURETOR

① Vacuum chamber cover
② Vacuum piston spring
③ Jet needle holder
④ Spring seat
⑤ Spring
⑥ Jetneedle
⑦ Vacuum piston
⑧ Throttle stop screw
⑨ Spring
⑩ Needle valve
⑪ Float pin
⑫ Pilot jet
⑬ Float
⑭ Float chamber
⑮ Drain screw
⑯ O-ring
⑰ Gasket
⑱ Main jet
⑲ Gasket
⑳ Needle jet
㉑ Rubber cap
㉒ Cable holder
㉓ Spring
㉔ Starter plunger assembly
㉕ Pilot screw
㉖ Starter choke unit

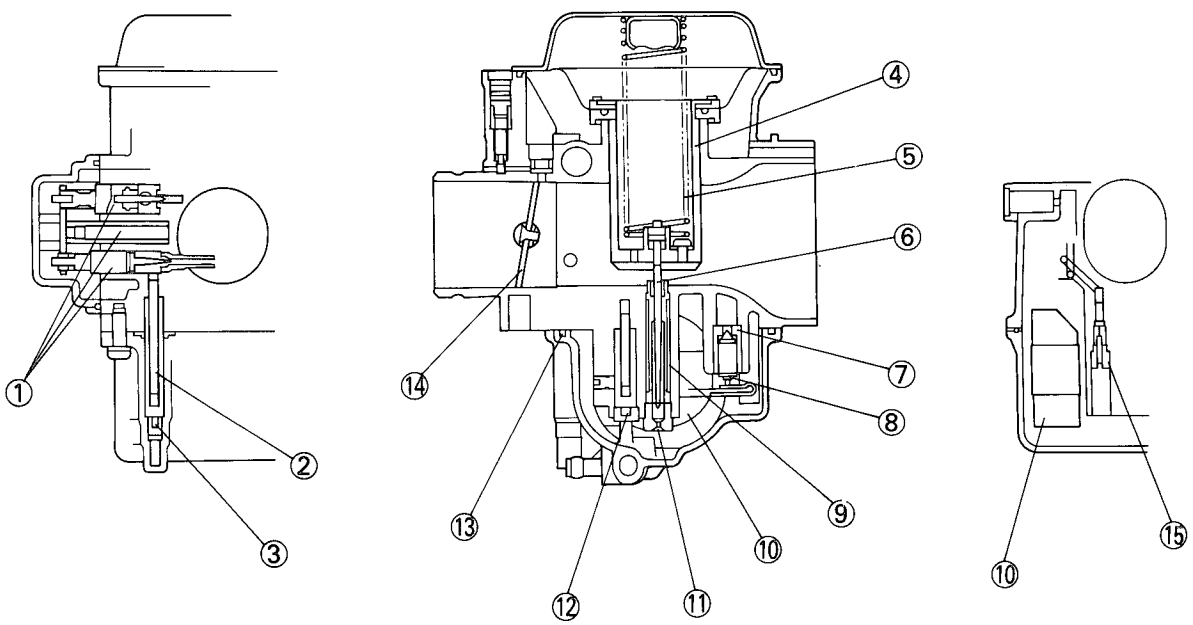
SPECIFICATIONS	
MAIN JET	#128
MAIN AIR JET	φ1.5
JET NEEDLE	5C14-3/5
NEEDLE JET	#95
PILOT JET	#36
PILOT AIR JET	φ0.8
PILOT OUTLET	φ0.8
BYPASS 1 (B.P.1)	φ0.8
BYPASS 2 (B.P.2)	φ0.8
FUEL LEVEL	4.5 ~ 5.5 mm (0.177 ~ 0.217 in)
FLOAT HEIGHT	26 ~ 28 mm (1.024 ~ 1.102 in)
PILOT SCREW	2.0 turns out
FLOAT VALVE SEAT	φ2.0
STARTER JET	G.S.1: #48 G.S.2: φ0.8
ENGINE IDLE SPEED	1,250 ~ 1,350 r/min



A FUEL LEVEL

SECTION VIEW

① Starter plunger assembly
② Cold starter nozzle
③ Cold starter jet
④ Vacuum piston
⑤ Spring
⑥ Jet needle
⑦ Valve seat
⑧ Needle valve
⑨ Needle jet
⑩ Float
⑪ Main jet
⑫ Rubber cap
⑬ Rubber gasket
⑭ Throttle valve
⑮ Pilot jet

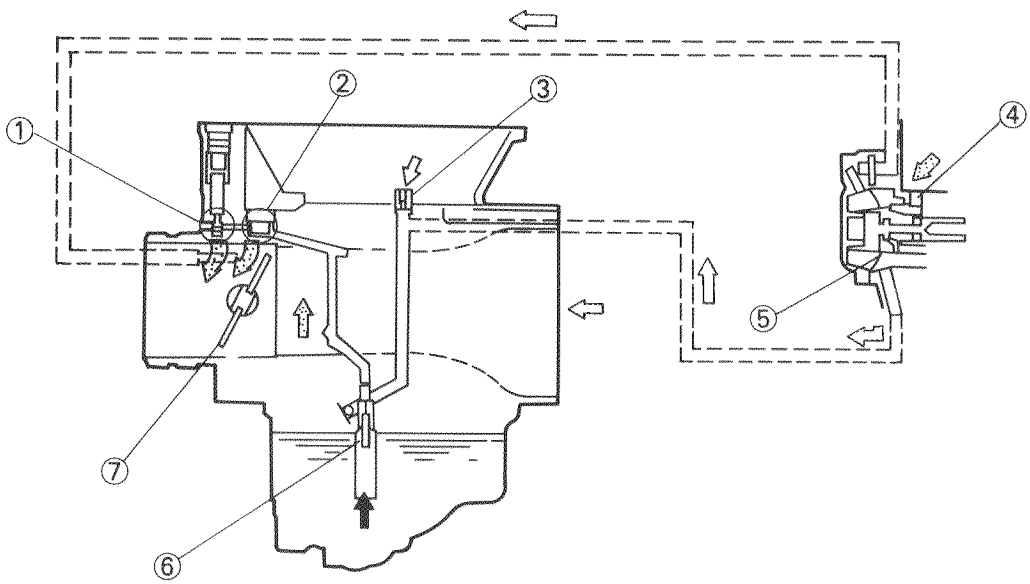


FUEL FLOW DIAGRAM

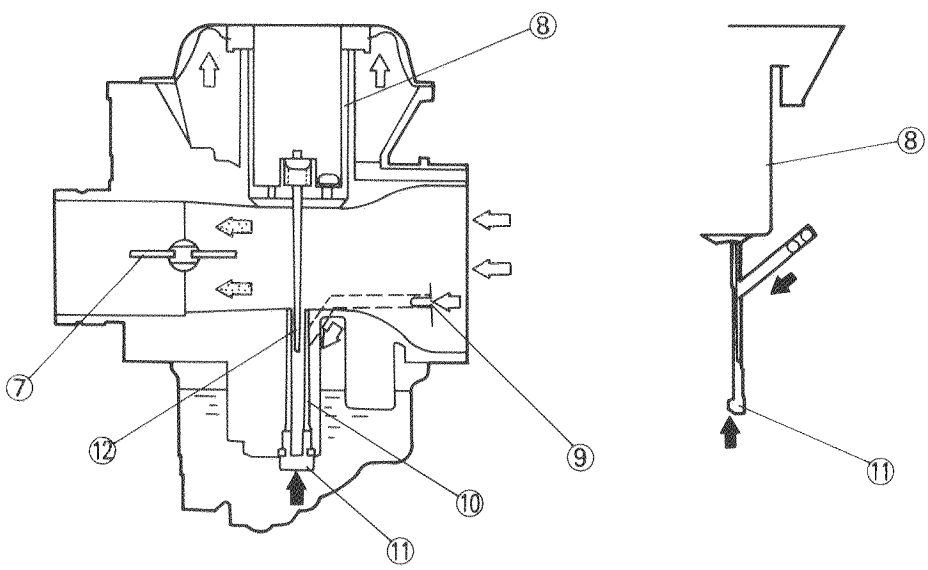
① Pilot outlet
② Bypass holes
③ Pilot air jet
④ Air jet (Coasting enricher)
⑤ Diaphram (Coasting enricher)
⑥ Pilot jet
⑦ Throttle valve
⑧ Vacuum piston
⑨ Main air jet
⑩ Needle jet
⑪ Main jet
⑫ Jet needle

A	⇦	Air
B	⇦	Fuel
C	⇦	Mixture

D SLOW METERING SYSTEM



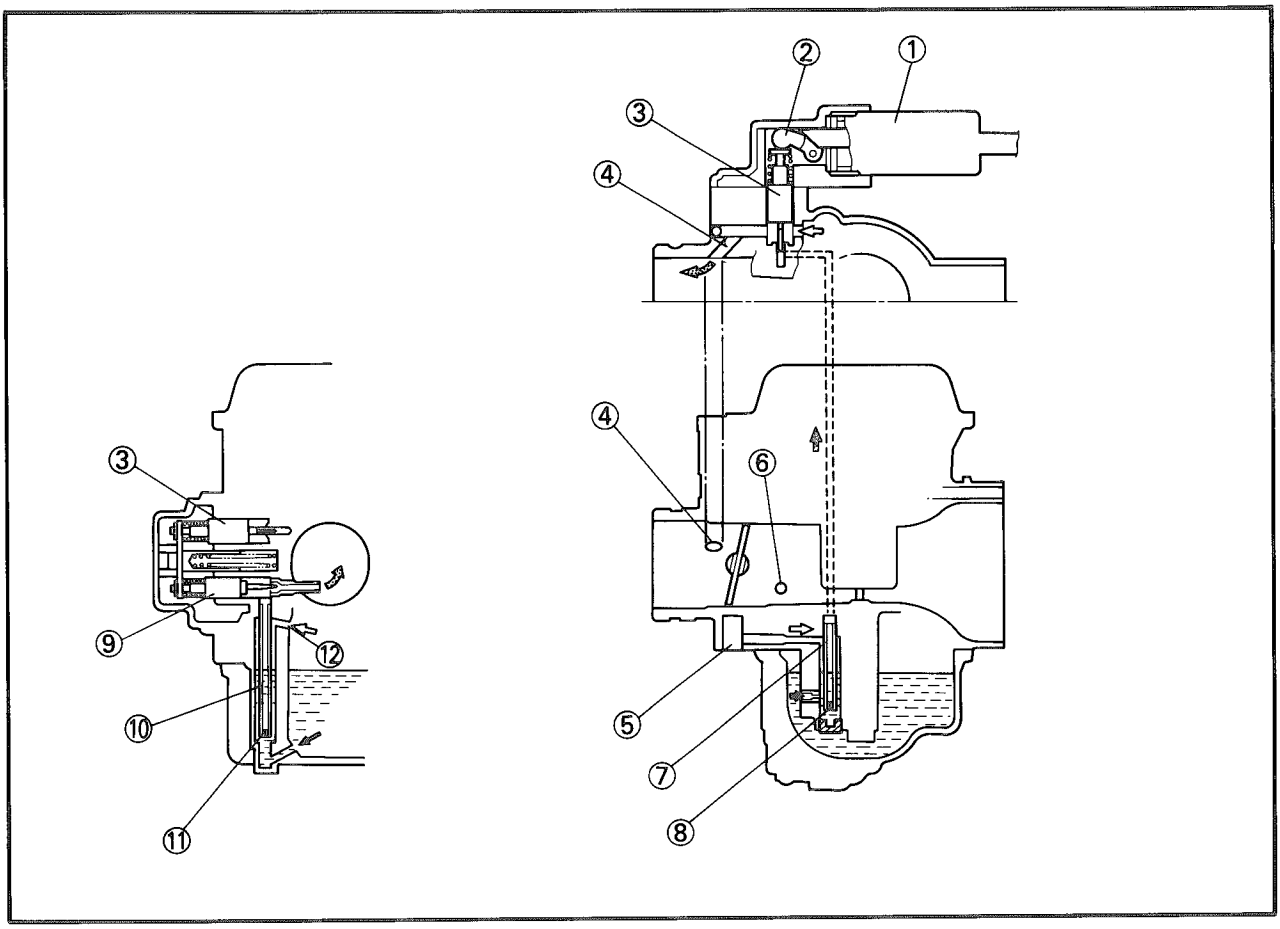
E MAIN METERING SYSTEM

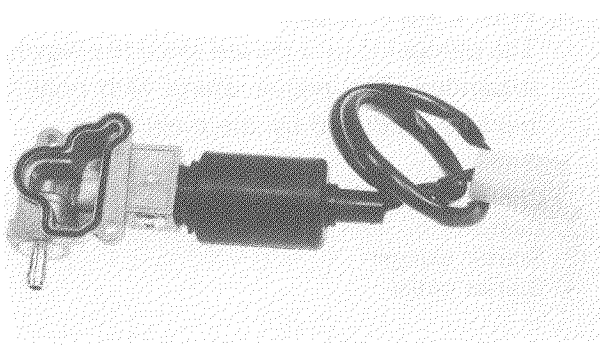


AUTO CHOKE SYSTEM

① Choke unit
② Cam
③ Starter plunger
④ Starter outlet
⑤ Starter air inlet
⑥ Cold starter outlet
⑦ Starter nozzle
⑧ Starter jet
⑨ Cold starter nozzle plunger
⑩ Cold starter nozzle
⑪ Cold starter jet
⑫ Cold starter air jet

A	⇦	Air
B	⇦	Fuel
C	⇦	Mixture



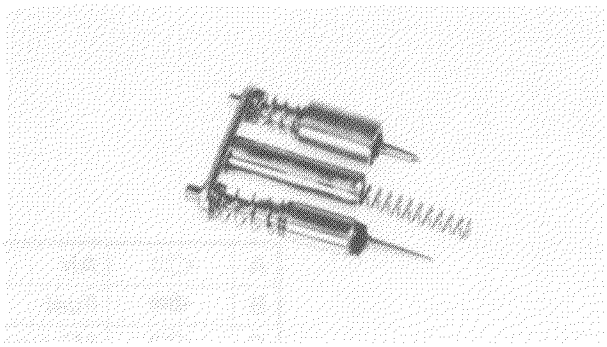


Construction

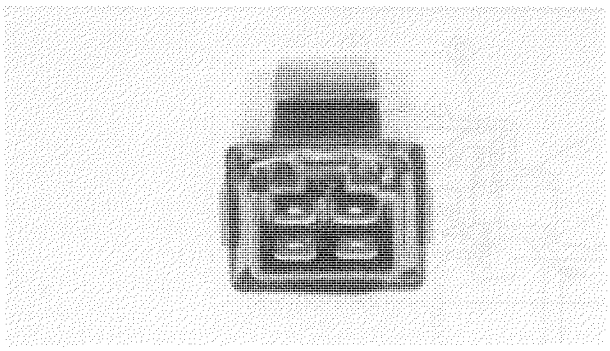
1. Choke unit

The choke unit which is composed of wax and heater, controls the plunger assembly after the engine is started.

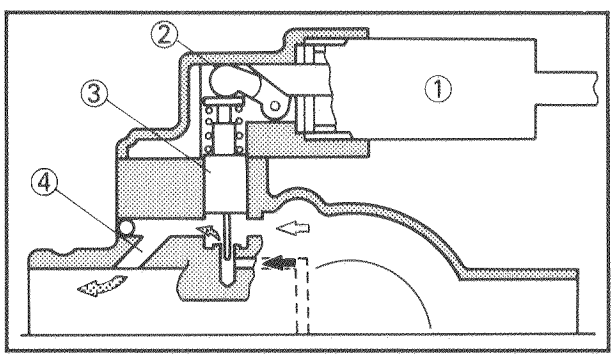
Heat generated in the heater due to an electric current flow causes the wax to expand and push the cam which controls the plunger assembly.



2. Plunger assembly
The plunger assembly is composed of the starter plunger and cold starter plunger. The starter plunger provides air-fuel an mixture for starting and idling, the cold starter plunger provides a cold engine with a rich fuel mixture for smooth acceleration.



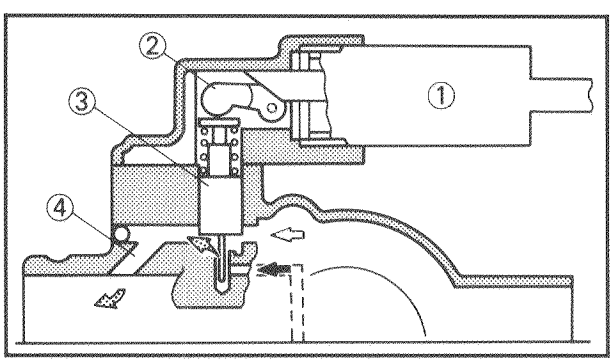
3. Choke relay
The choke relay provides electric current from the battery to the heater. When the engine rpm reaches 600 r/min, the choke relay is activated.



Operation

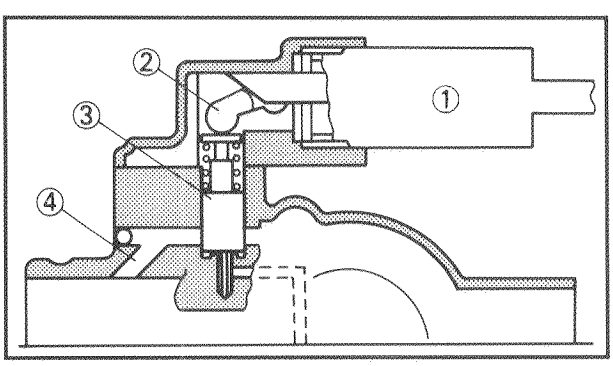
1. With a cold engine
When the starter plunger is fully open due to unexpanded wax in the choke unit, a rich mixture is provided for starting the engine.

① Choke unit
② Cam
③ Starter plunger
④ Starter outlet



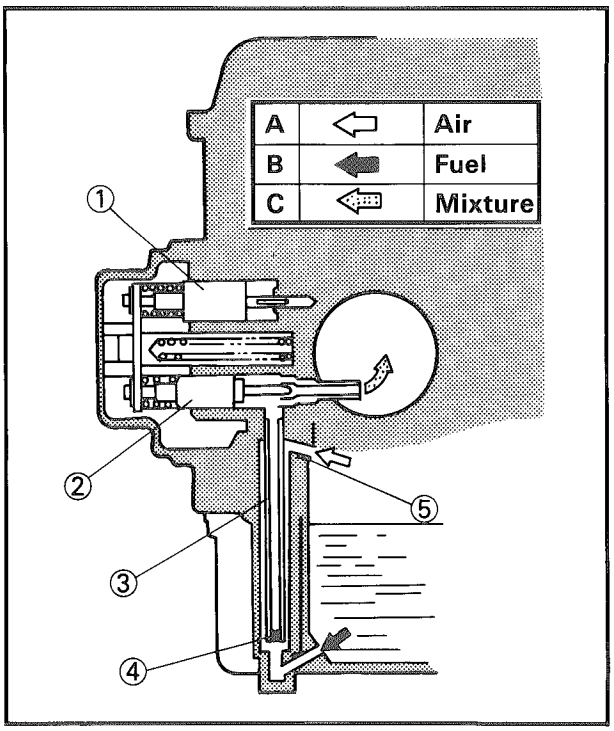
2. With a slightly warm engine
The wax contracts slowly since it is covered with a heat insulating material, thus a leaner mixture than that produced for a cold engine is provided.

① Choke unit
② Cam
③ Starter plunger
④ Starter outlet



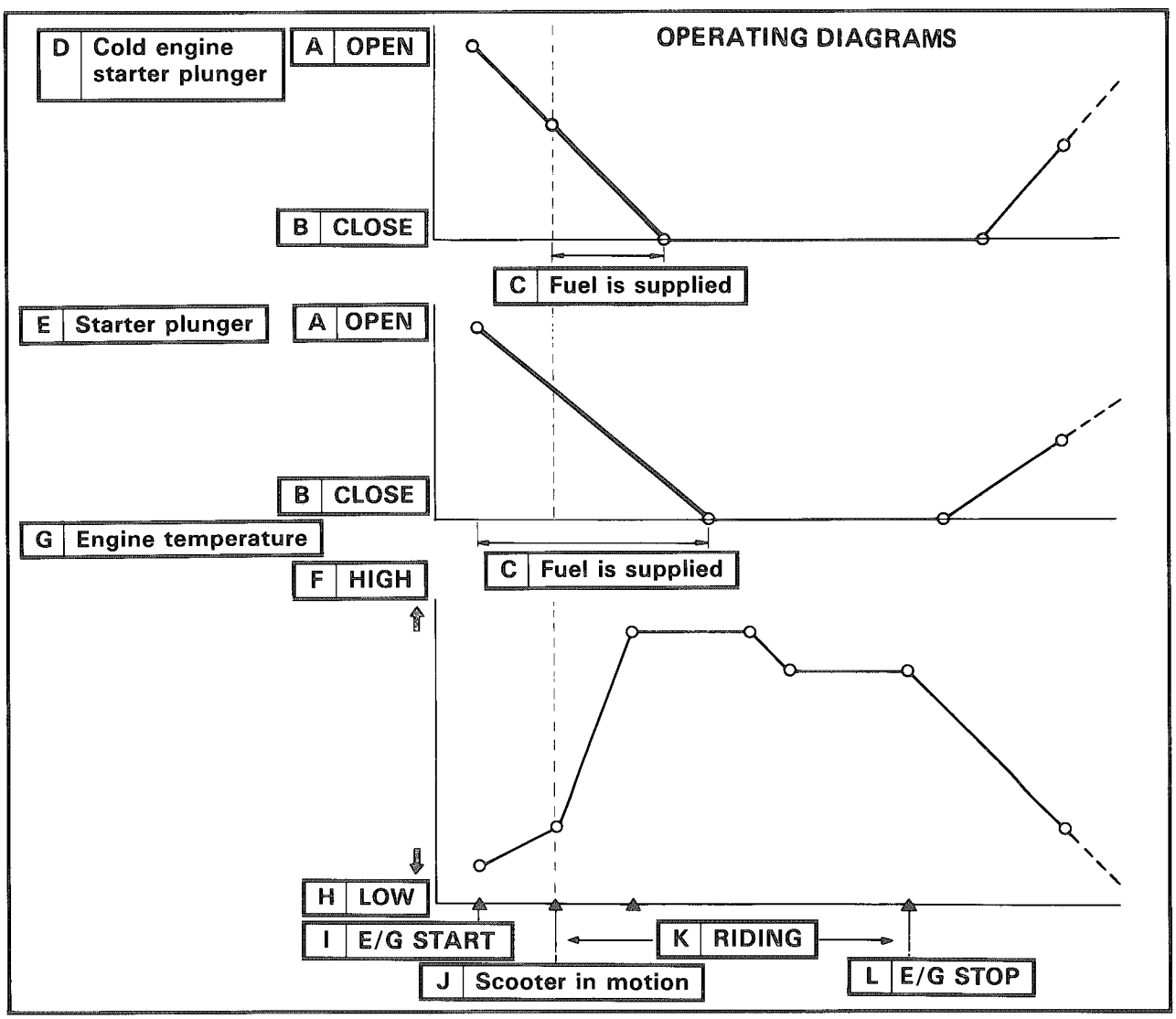
3. With a warm engine
The plunger is fully closed since the wax has expanded. The engine starts with only the mixture produced by the main bore.

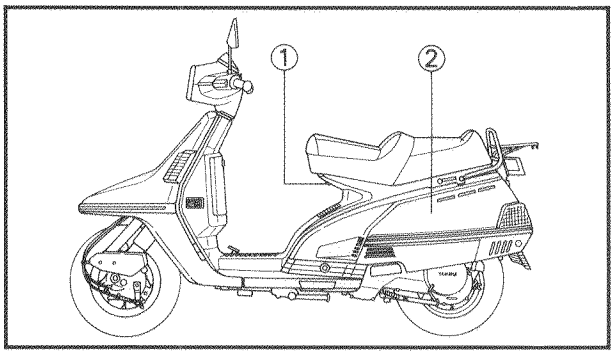
① Choke unit
② Cam
③ Starter plunger
④ Starter outlet



4. Accelerating with a cold engine
When an engine is not warmed-up sufficiently, the mixture will be lean during acceleration. The Cold Engine Starting System provides a rich mixture for smooth acceleration when the engine is cold, because the Cold Engine Starting Plunger is open due to the cold wax in the choke unit. However, fuel will not be supplied unless the engine is accelerated. When the engine warms up sufficiently, the plunger will close due to the warmed wax in the choke unit.

① Starter plunger
② Cold starter nozzle plunger
③ Cold starter nozzle
④ Cold starter jet
⑤ Cold starter air jet

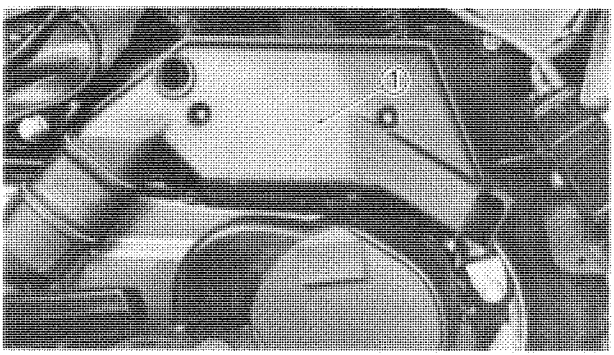




REMOVAL

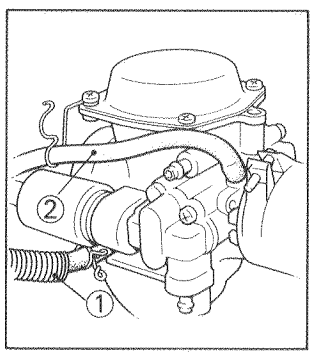
1. Remove:
   - Front cover ①
   - Side covers (Left and right) ②

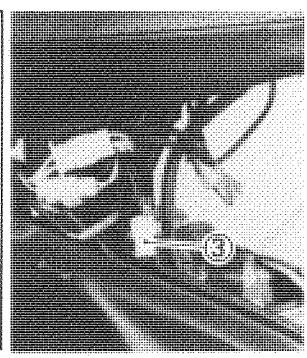
   Refer to "REMOVING THE COVERS AND PANELS", page 2-13.



2. Remove:
   - Air cleaner case ①

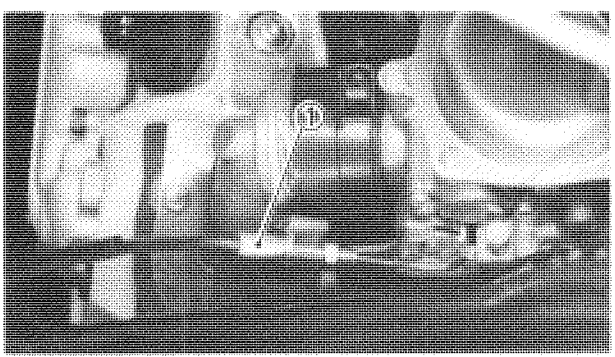
   Refer to "ENGINE REMOVAL-AIR CLEANER CASE", page 3-2.





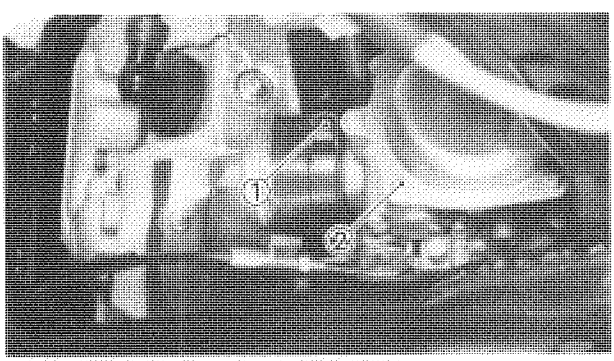
3. Disconnect:
   - Fuel feed hose ①
   - Vacuum hose ②

   From carburetor side.
   - Choke unit lead coupler ③



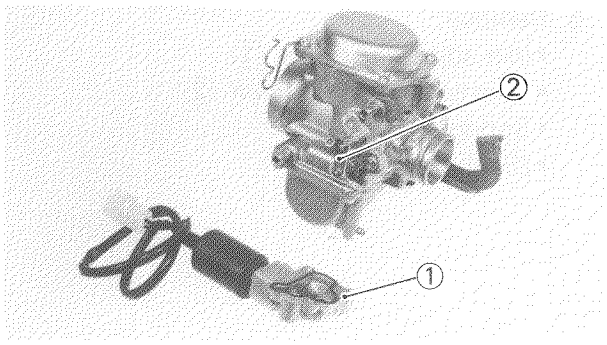
4. Remove:
   - Throttle cable ①

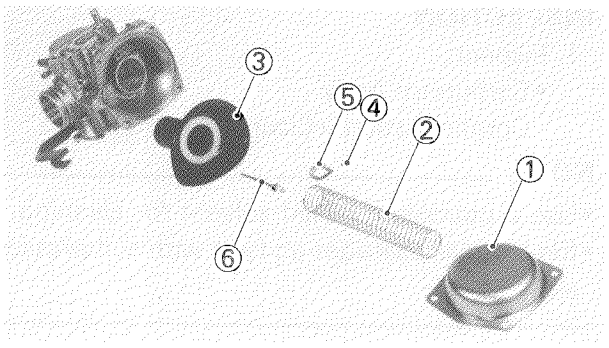
   From carburetor side
   Refer to "ENGINE REMOVAL CONTROL CABLES", page 3-3.



5. Loosen:
   - Screw (Carburetor-clamp) ①

6. Remove:
   - Carburetor assembly ②





DISASSEMBLY

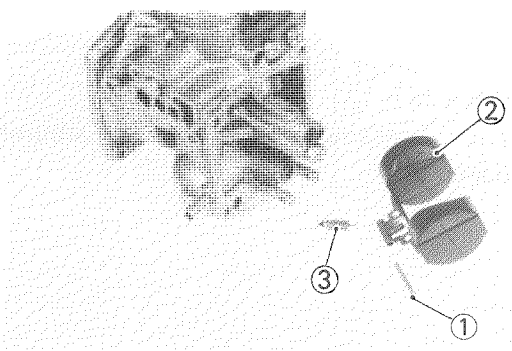
CAUTION:

Never attempt to disassemble the following parts.
- **Throttle valve**
- **Throttle shaft**

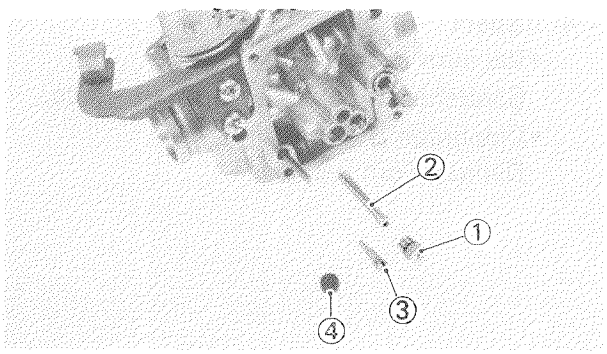
1. Remove:
   - Starter choke unit ①
   - Starter plunger assembly ②
2. Remove:
   - Vacuum chamber cover ①
   - Spring ②
   - Vacuum piston ③
   - Screw (Jet needle holder) ④
   - Jet needle holder ⑤
   - Jet needle ⑥

NOTE:

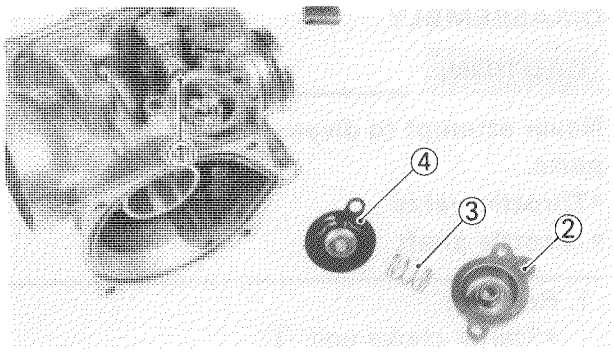
When removing the jet needle be sure not ot loose the small spring that may fall out. This spring holds the jet needle.



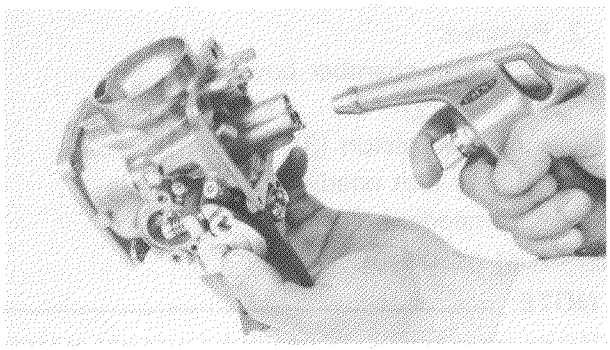
3. Remove:
   - Float chamber
   - Float pin ①
   - Float ②
   - Float valve ③



4. Remove:
   - Main jet ①
   - Needle jet ②
   - Pilot jet ③
   - Rubber cap ④



5. Remove:
   - Idle adjusting screw ①
   - Coasting enricher cover ②
   - Spring ③
   - Diaphragm ④

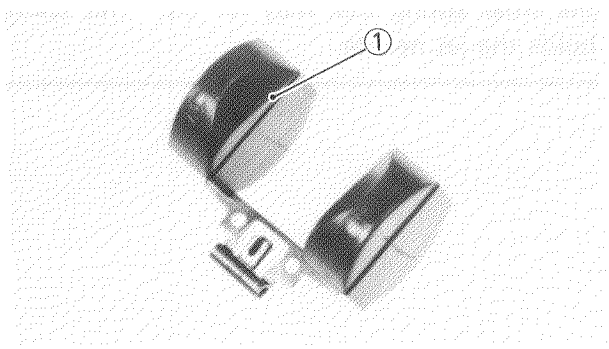


INSPECTION

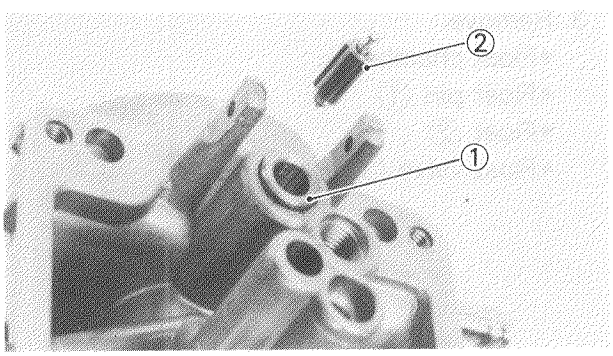
1. Inspect:
   - Carburetor body
     Contamination→Clean.

NOTE:

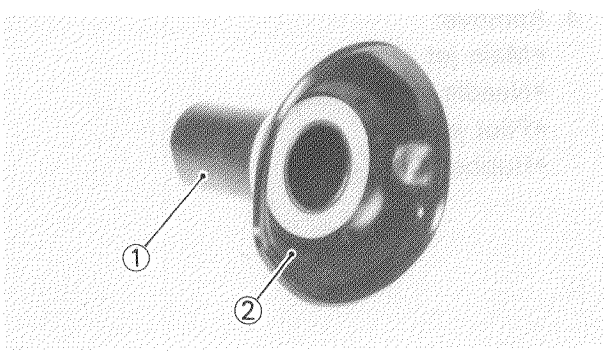
- Use a petroleum based solvent for cleaning.
- Blow out all passages and jets with compressed air.



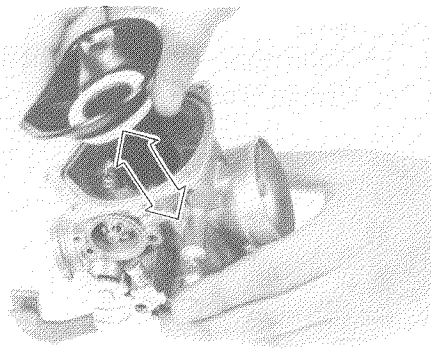
2. Inspect:
   - Float ①
     Damage→Replace.
   - Gasket/O-rings
     Damage→Replace.



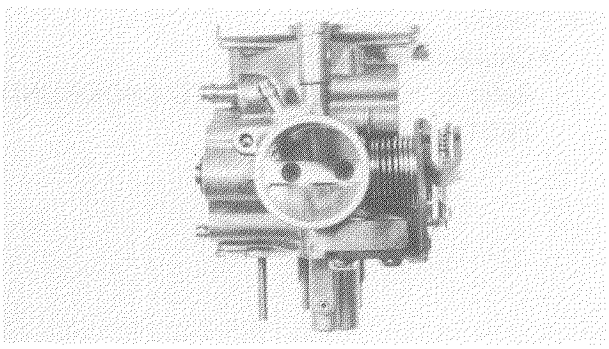
3. Inspect:
   - Needle valve ①
   - Valve seat ②
     Wear/Contamination→Replace (Carburetor Assembly)



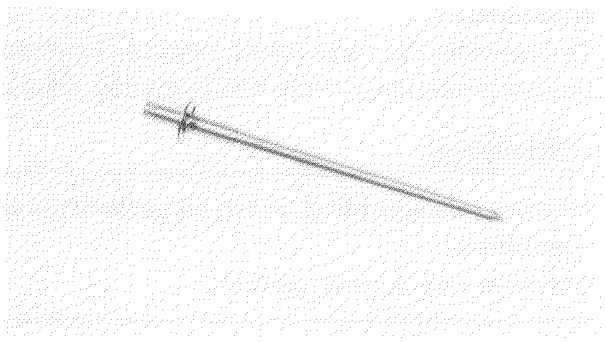
4. Inspect
   - Vacuum piston ①
     Scratches/Cracks/Damage→Replace.
   - Diaphragm ②
     Damge/Torn→Replace.



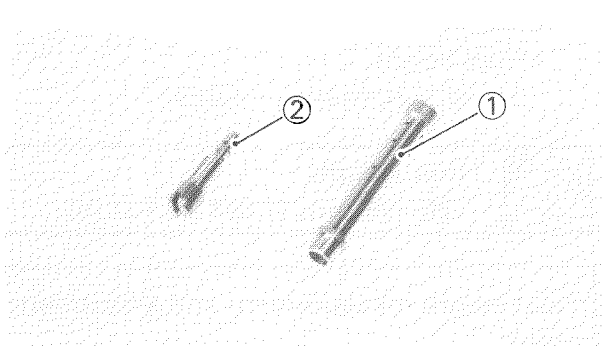
5. Check:
   - Free movement
     Stick→Replace.
     Isnert the vacuum piston into the carburetor body, and check for free movement.



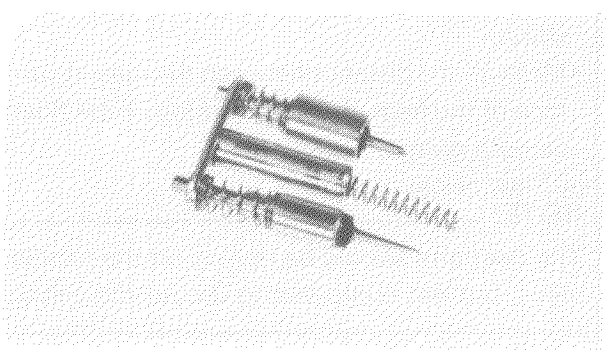
6. Inspect:
   - Throttle valve
     Wear/Damage→Replace.
7. Check:
   - Vlave free movement
     Stick→Replace carburetor assembly.



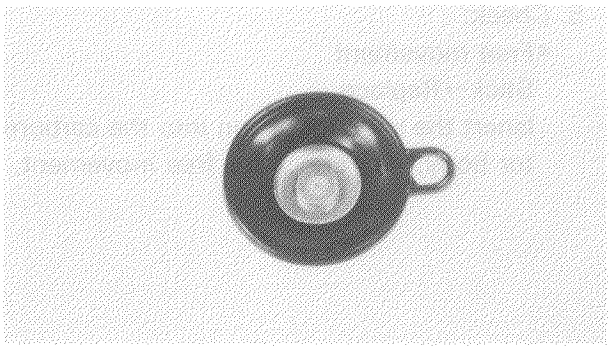
8. Inspect:
   - Jet needle
     Bends/Wear→Replace.



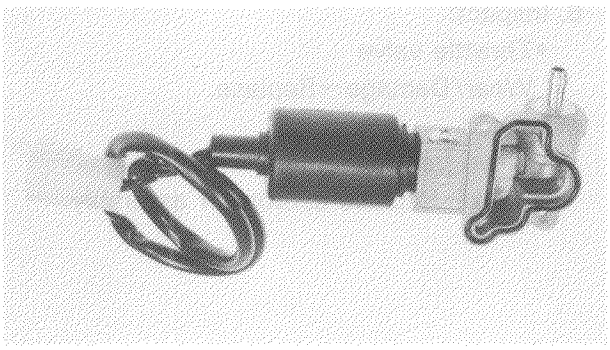
9. Inspect:
   - Needle jet ①
   - Pilot jet ②
     Damage/Contamination→Replace.



10. Inspect:
    - Starter plunger
      Damage/Wear→Replace.
11. Install the starter pluger into the carburetor body and check for smooth movement with finger.
    Not smooth→Replace plunger assembly and carburetor body as a set.



12. Inspect:
    - Diaphragm (Coasting enricher)
      Damge/Torn→Replace.



13. Check:
    - Choke unit operation
      Refer to "CHAPTER 6. AUTO CHOKE UNIT TEST" section.

ASSEMBLY

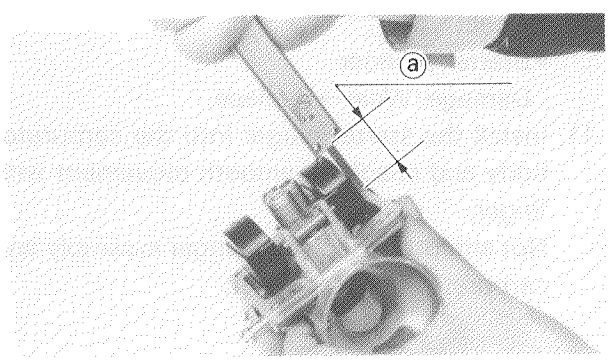
To assemble the carburetors, reverse the disassembly procedures. Note the following points.

CAUTION:

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

1. Measure:
    - Float height
      Out of specification→Adjust.

Float Height:
26 ~ 28 mm (1.024 ~ 1.102 in)



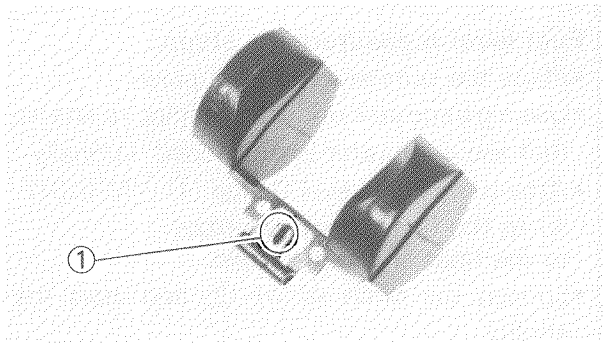
Float height measurement and adjustment steps:

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

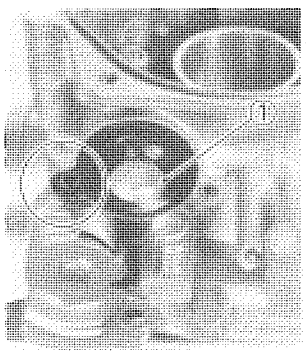
ⓐ Float height

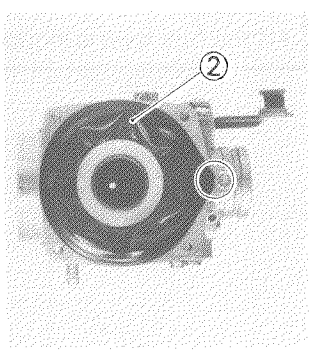
NOTE:

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



- If the float height is not within specification, inspect the valve seat and needle valve.
- If eifher is worn, replace them both.
- If both are fine, adjust the float height by bending the float tang ① on the float.
- Recheck the float height.

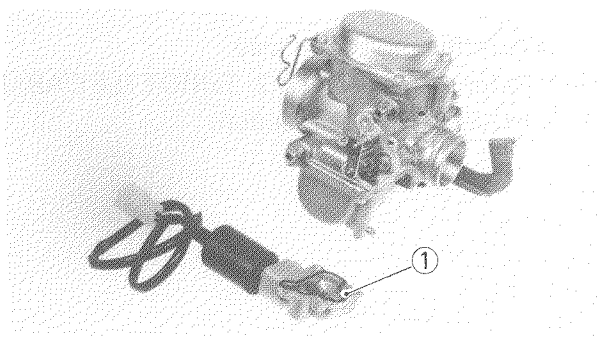




2. Install:
   - Coasting enricher ①
   - Vacuum piston ②

NOTE:

There is a tab on the rubber diaphragm and a matching recess in the carburetor body to accept the diaphragm tab.



3. Install:
   - Choke unit ①

   Apply LOCTITE® to the choke unit securing screws.

4

INSTALLATION

1. Install:
   - Carburetor assembly

   Reverse the removal steps.

ADJUSTMENT

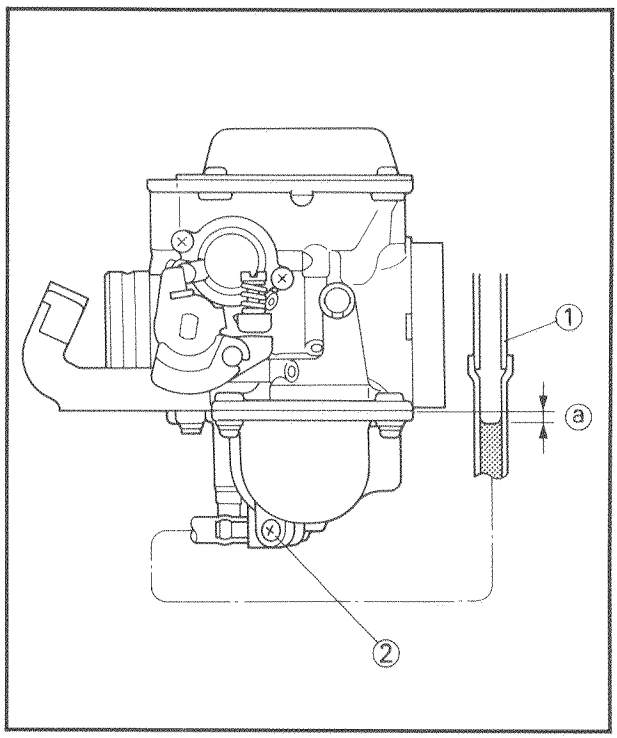
NOTE:

Before adjusting the fuel level, the float height should be adjusted.

1. Measure:
   - Fuel level

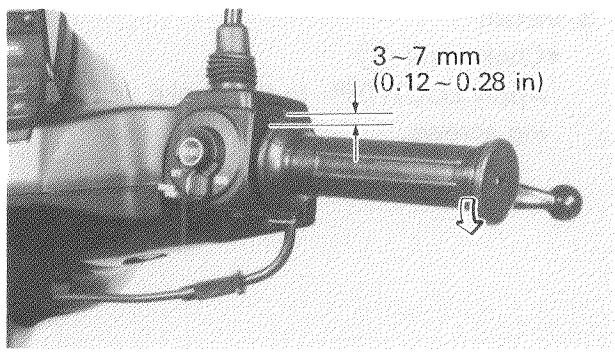
   Out of specification→Adjust.

Fuel Level:
4.5~5.5 mm (0.177~0.217 in)
Below the Carburetor Body Edge.



Fuel level measurement steps:

- Place the scooter on a level place.
- Use a garage jack under the engine to ensure that the carburetor is positioned vertically.
- Attach the Fuel Level Gauge ① (YM-01312-A) to the float chamber nozzle.
  to the float chamber nozzle.
- Loosen the drain screw ② and start the engine.
- Measure the fuel level ⓐ with gauge.
- If the fuel level is incorrect adjust the fuel level.



2. Adjust:
   - Throttle cable free play
     Refer to "CHAPTER 2. THROTTLE CABLE ADJUSTMENT" section.

CHAPTER 5
CHASSIS

FRONT WHEEL 5-1
REMOVAL 5-2
INSPECTION 5-3
INSTALLATION 5-6

REAR WHEEL 5-8
REMOVAL 5-9
BRAKE DISASSEMBLY 5-9
INSPECTION 5-10
INSTALLATION 5-11

HANDLEBAR AND FRONT FORK 5-13
REMOVAL 5-14
INSPECTION 5-17
ASSEMBLY 5-18

REAR SHOCK ABSORBER 5-21
REMOVAL 5-21
INSPECTION 5-22
INSTALLATION 5-22

CHASSIS

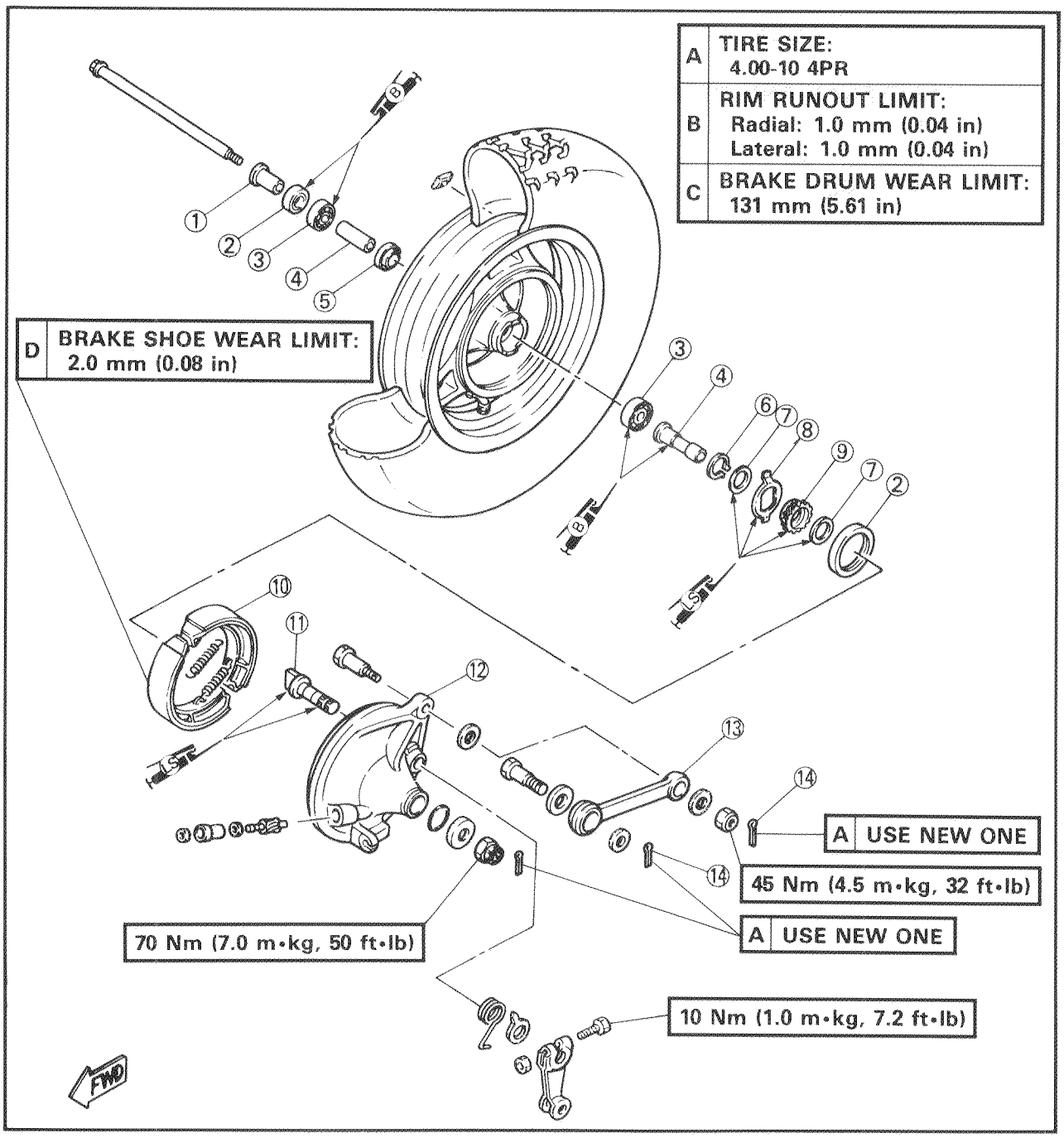
FRONT WHELL

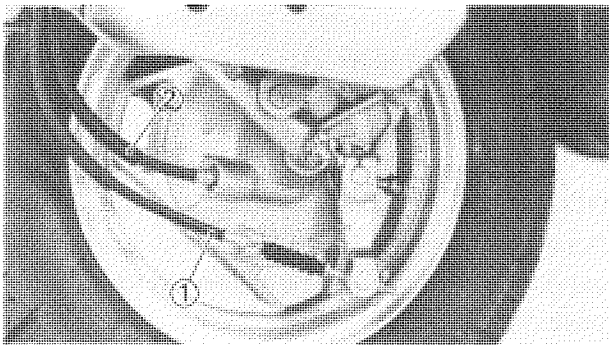
① Spacer collar
② Oil seal
③ Bearing
④ Spacer
⑤ Spacer frange
⑥ Circlip
⑦ Washer
⑧ Meter clutch
⑨ Speedometer drive gear
⑩ Brake shoe
⑪ Brake cam shaft
⑫ Brake shoe plate
⑬ Tension bar
⑭ Cotter pin
⑮ Oil seal
⑯ Bushing
⑰ Washer
⑱ Speedometer driven gear
⑲ O-ring
⑳ Dust cover
㉑ Return spring
㉒ Wear indicator plate
㉓ Cam lever

TIRE AIR PRESSURE

COLD TIRE PRESSION:	FRONT	REAR
UP TO 90 kg (198 lb) LOAD*	147 kPa (1.5 kg/cm², 21 psi)	196 kPa (2.0 kg/cm², 28 psi)
BASIC WEIGHT: WITH OIL AND FULL FUEL TANK	128 kg (282 lb)	
MAXIMUM LOAD*	156 kg (343 lb)	

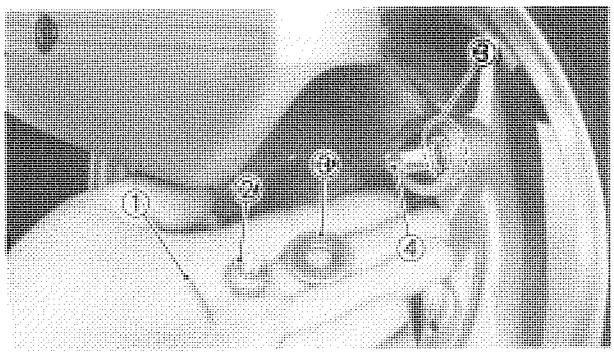
*Load is the total weight of cargo, rider, passenger, and accessories.



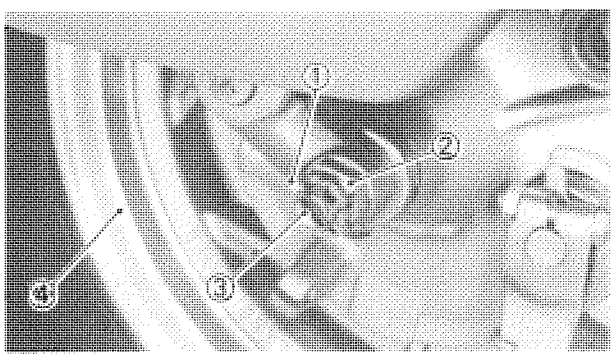


REMOVAL

1. Place a suitable stand under the footrest boad, then elevate the front wheel.
2. Remove:
   - Brake cable ①
   - Speedometer cable ②

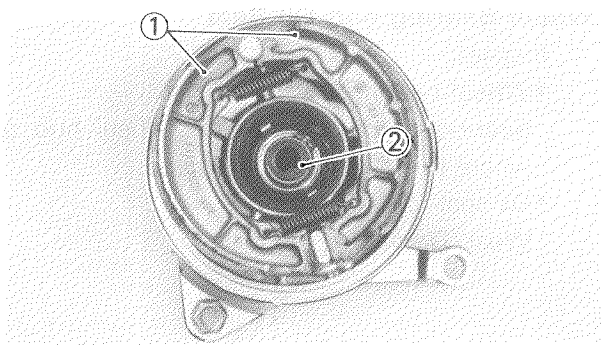


3. Remove:
   - Cotter pin ①
   - Nut (Tension bar) ②
   - Plain washer ③
   - Bolt (Tension bar) ④

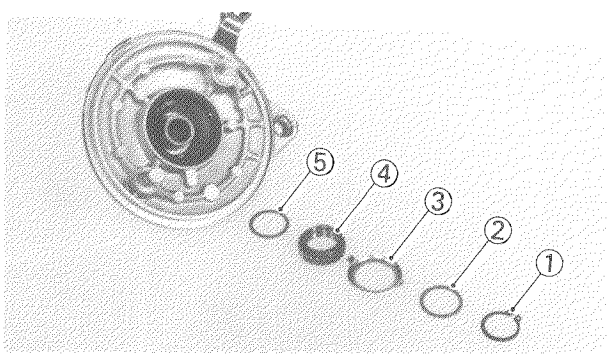


4. Remove:
   - Cotter pin ①
   - Nut (Front wheel axle) ②
   - Front wheel axle ③
   - Front wheel ④

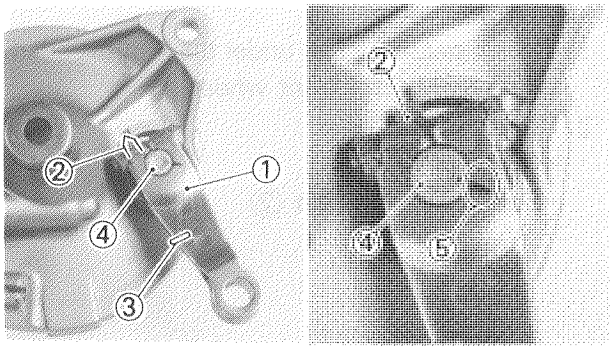
Brake Shoe Plate Disassembly



1. Remove:
   - Brake shoes ①
   - Inner collar ②



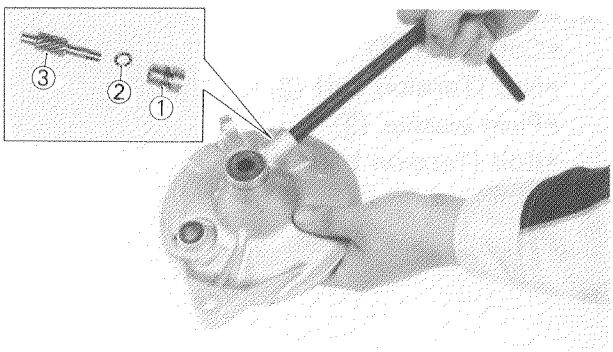
2. Remove:
   - Circlip ①
   - Washer ②
   - Meter clutch ③
   - Drive gear (Speedometer cable) ④
   - Washer ⑤



3. Remove:
   - Brake cam lever ①
   - Wear indicator plate ②
   - Return spring ③
   - Camshaft ④

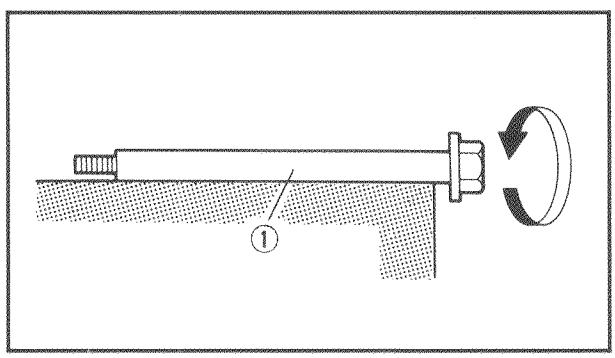
NOTE:

Put mark ⑤ on the camshaft lever before removing out so that it can be reinstalled in the original position.



4. Remove:
   - Bushing ①
   - Washer ②
   - Driven gear (Speedometer cable) ③

   Use the Meter Gear Bush Driver.



INSPECTION

Axle Shaft

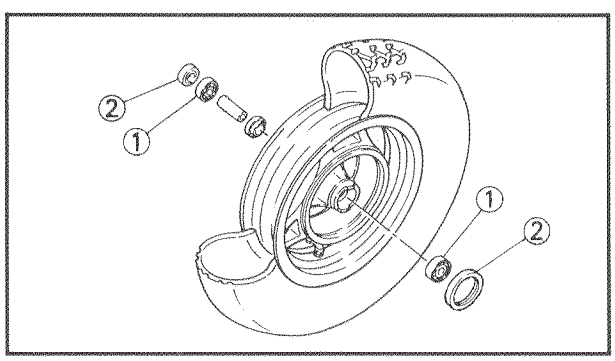
1. Inspect:
   - Front axle shaft ①

   Roll the axle on a Flat Surface.

   Bends→Replace.

WARNING:

Do not attempt to straighten a bent axle.

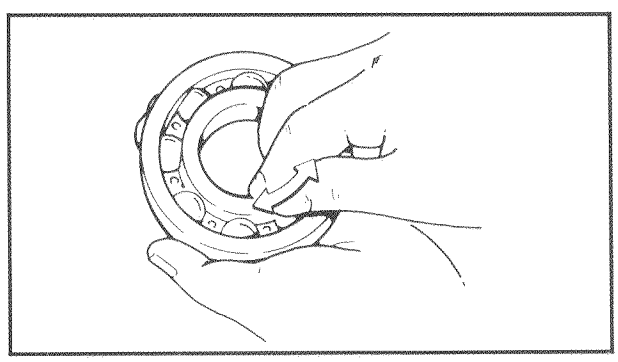


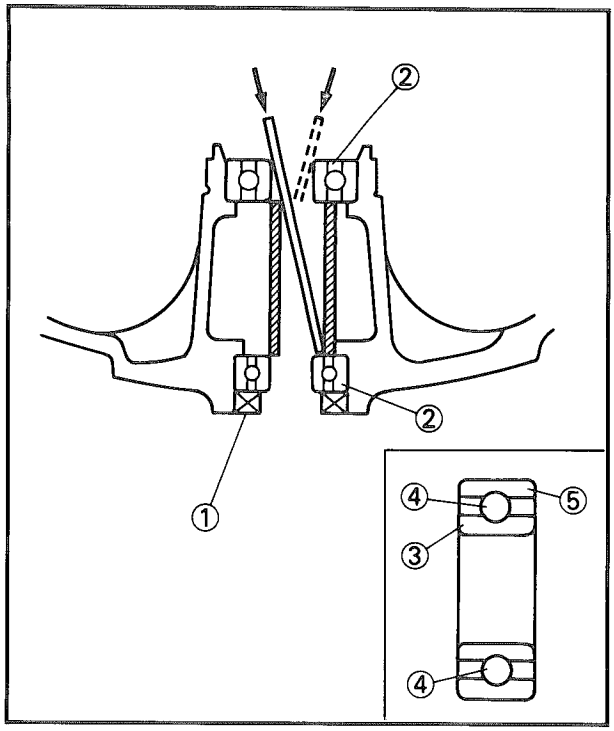
Wheel Bearing and Oil Seal

1. Inspect:
   - Wheel bearing ①

   Bearings allow play in the wheel hub or wheel turns roughly→Replace.
   - Oil seal ②

   Wear/Damage→Replace.





Wheel bearing and oil seal replacement steps:

- Clean the outside of the wheel hub.
- Remove the oil seal ① use a flat-head screw driver.
- Drive out the bearing ②.

WARNING:

Eye protection is recommended when using striking tools.

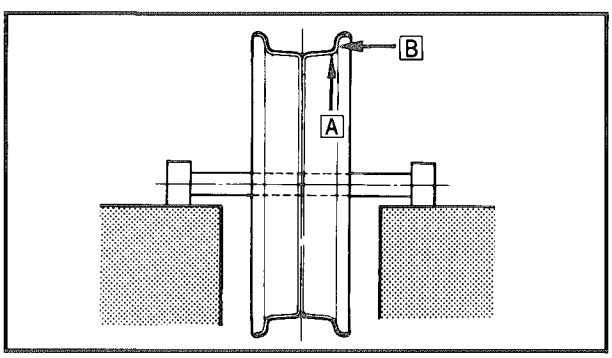
- Install the new bearing and oil seal by reversing the previous steps.

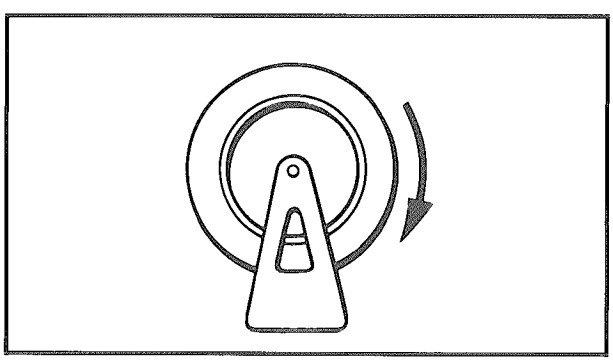
NOTE:

Use a socket that matches the outside diameter of the race of the bearing and oil seal.

CAUTION:

Do not strike the center race ③ or balls ④ of the bearing. Contact should be made only with the outer race ⑤.





Wheel Runout and Wheel Balance

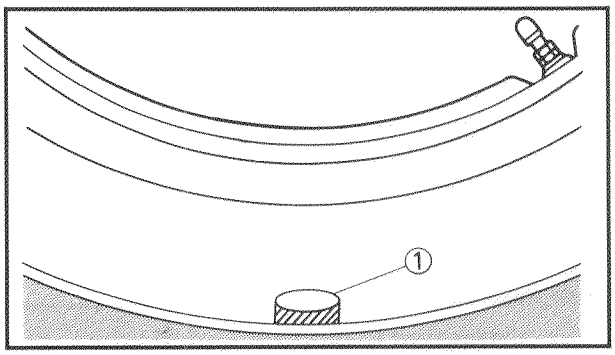
1. Inspect:
   - Wheel
     Cracks/Bends/Warpage→Replace.
2. Measure:
   - Wheel runout
     Out of specification→Replace.

Rim Runout Limits:
Radial A : 1.0 mm (0.04 in)
Lateral B : 1.0 mm (0.04 in)

3. Check:
   - Wheel balance
     Out of balance→Adjust.

CAUTION:

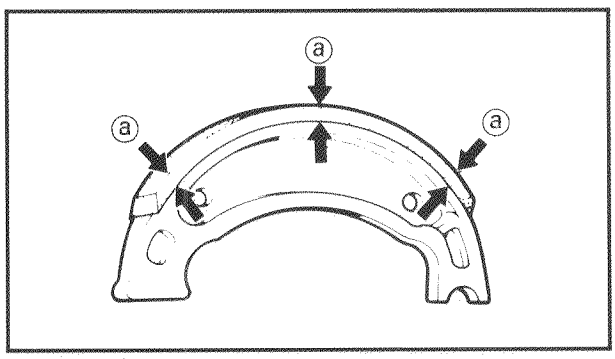
Be sure the valve stem locknuts are tightened securely after repairing or replacing a tire and/or wheel.



WARNING:

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

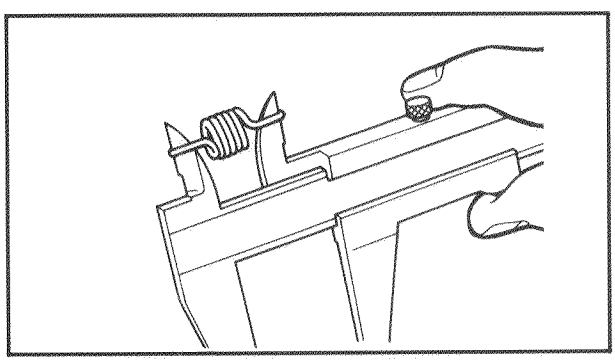
① Balance weight



Brake Shoe

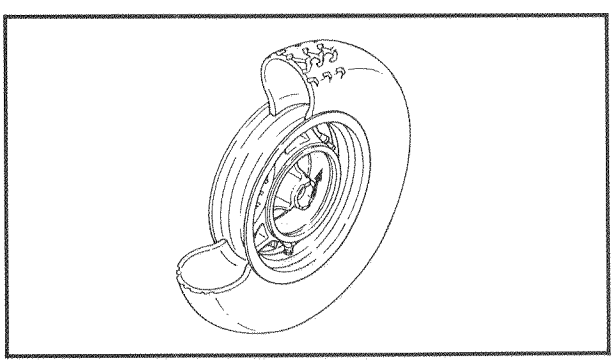
1. Inspect:
   - Brake shoes
     Glazed parts→Sand with coarse sand-paper.
2. Measure:
   - Brake shoe (Thickness) ⓐ
     Out of specification→Replace.

Brake Shoe Thickness:
STD: 4.0 mm (0.16 in)
Limit: 2.0 mm (0.08 in)



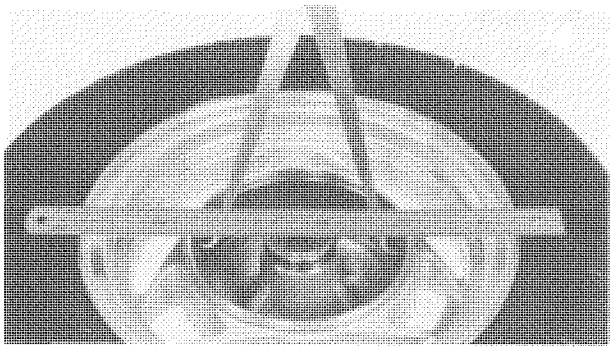
3. Inspect:
   - Shoe springs
     Wear/Damage→Replace.
4. Measure:
   - Shoe spring free length
     Out of specification→Replace.

Shoe Spring Free Length:
Limit: 36.5 mm (1.44 in)



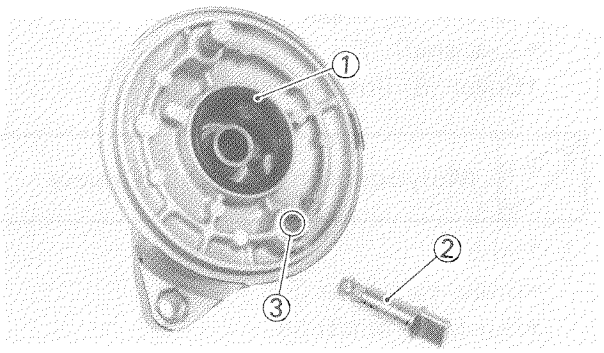
Brake Drum

1. Inspect:
   - Brake drum (Inner surface)
     Oil→Wipe off brake drum with rag soaked in lacquer thinner or solvent.
     Scracthes→Polish brake drum lightly and evenly with emery cloth.



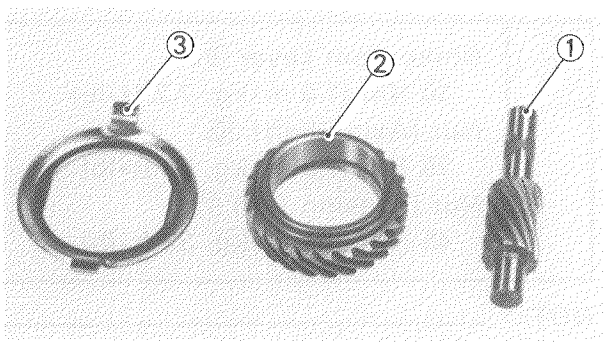
2. Measure:
   - Brake drum inside diameter
     Out of specification→Replace.

Brake Drum Inside Diameter:
STD: 130 mm (5.12 in)
Limit: 131 mm (5.16 in)



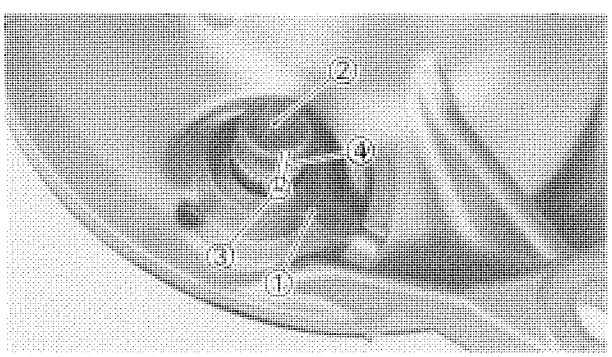
Brake Shoe Plate and Camshaft

1. Inspect:
   - Oil seal ①
     Wear/Damage→Replace
   - Camshaft ②
   - Camshaft hole ③
     Scratches/Excessive wear→Replace.



Speedometer Gears

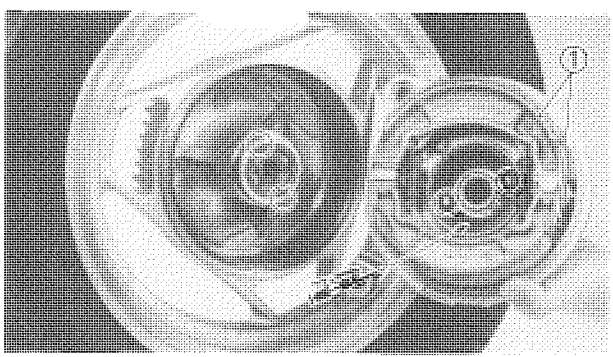
1. Inspect:
   - Meter gear ①
   - Drive gear ②
   - Meter clutch ③
     Wear/Damage→Replace.



INSTALLATION

When installing the front wheel, reverse the removal procedure. Note the following points.

1. When installing the wear indicator ① to the camshaft ② align the projection ③ on the wear indicator with the slot ④ on the camshaft.



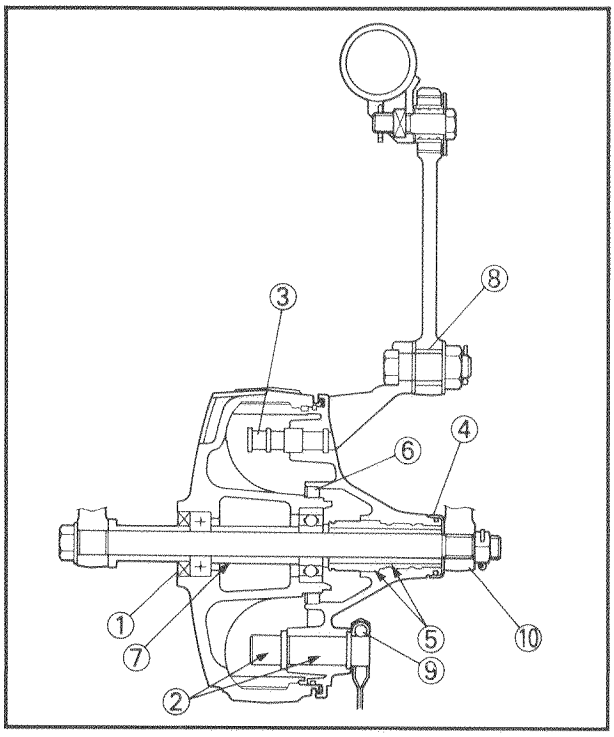
2. Apply:
   - Speedometer drive and meter gears.

Lightweight Lithium-Soap Base Grease

3. Install:
   - Brake shoe plate assembly ①

NOTE:

Be sure that the two projections inside the wheel hub mesh with the slots on the meter clutch.



4. Apply:
   - Oil seals ① (Lips)
   - Cam shaft ② (Shaft and cam)
   - Pivot pin (Brake shoe) ③

Lightweight Lithium-soap Base Grease

   - O-ring (New) ④
   - Collar ⑤ (Insides and outside)
   - Oil seal ⑥ (Lips)
   - Axle shaft ⑦
   - Collar ⑧ (Inside and outside)

Molybdenum Disulfide Grease

5. Tighten:
   - Brake cam lever ⑨
   - Nut (Axle shaft) ⑩
   - Nut (Tension bar) ⑪

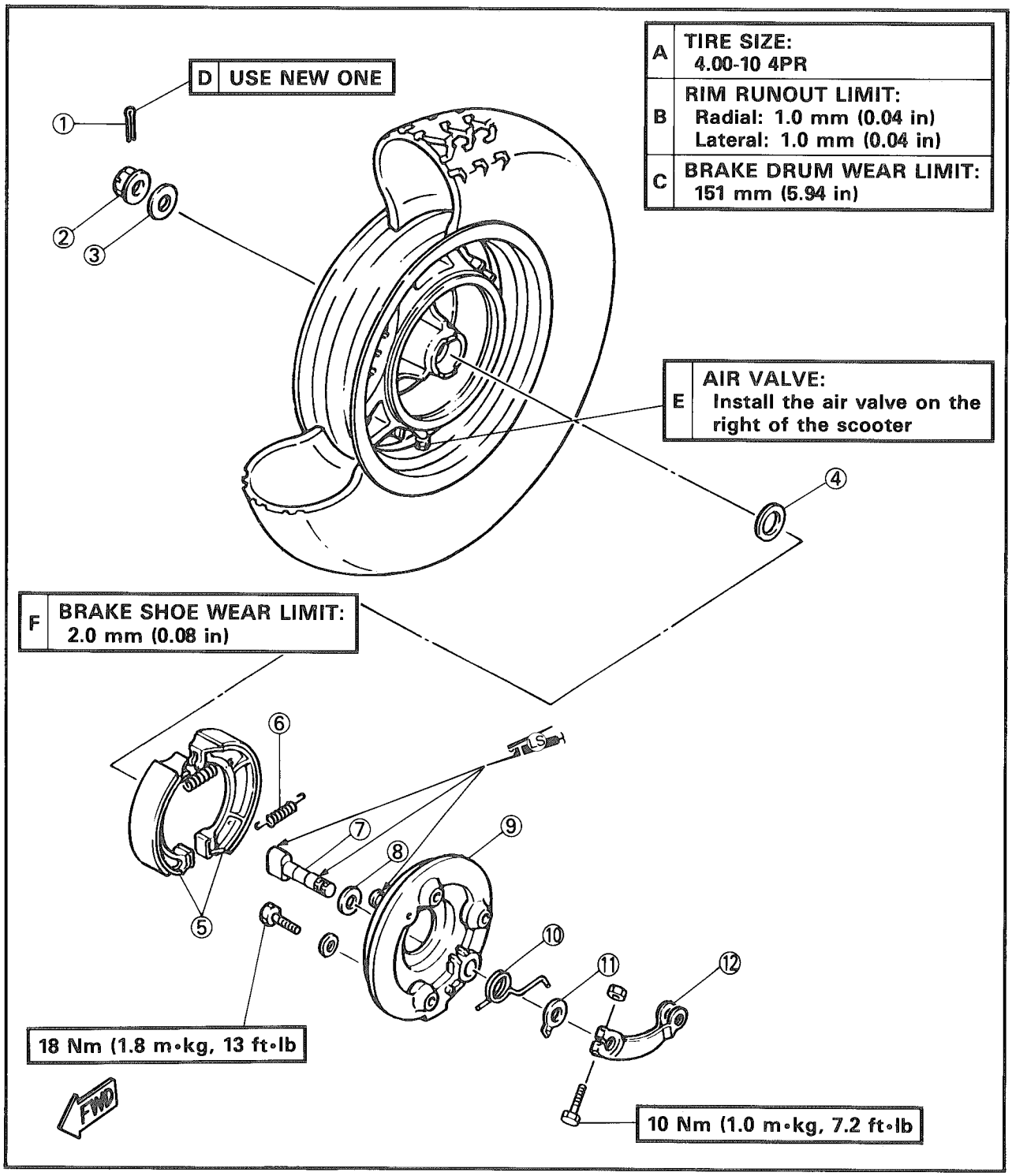
Brake Cam Lever ⑨:
10 Nm (1.0 m•kg, 7.2 ft•lb)
Nut (Axle Shaft) ⑩:
70 Nm (7.0 m•kg, 50 ft•lb)
Nut (Tension Bar) ⑪:
45 Nm (4.5 m•kg, 32 ft•lb)

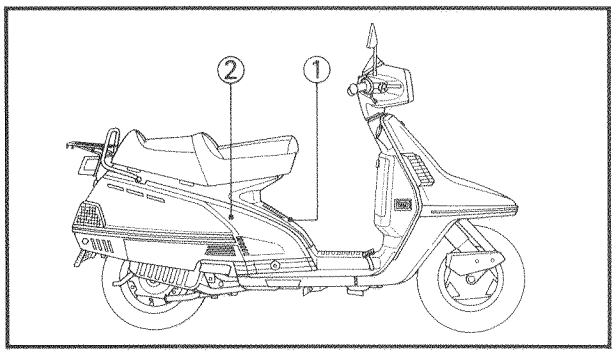
NOTE:
- Thoroughly wipe off the excess grease.
- Always use a new O-ring and cotter pin.

5

REAR WHEEL

① Cotter pin
② Axle nut
③ Plate washer
④ Thrust washer
⑤ Brake shoe
⑥ Return spring
⑦ Brake camshaft
⑧ Washer
⑨ Brake shoe plate
⑩ Return spring
⑪ Wear indicator plate
⑫ Cam lever

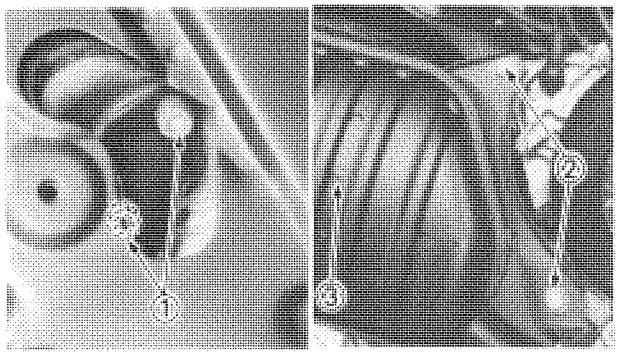




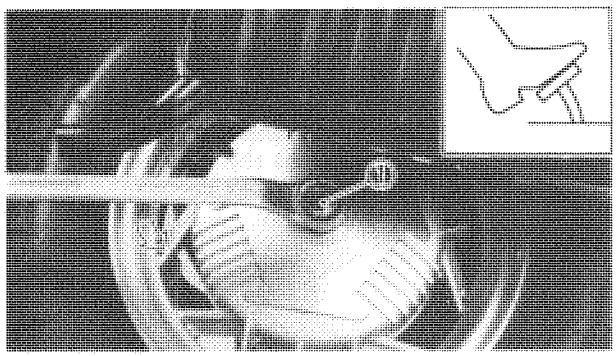
REMOVAL

1. Place the scooter on its centerstand.
2. Remove:
   - Front cover ①
   - Side cover (Right) ②

   Refer to "REMOVING THE COVERS AND PANELS" section.



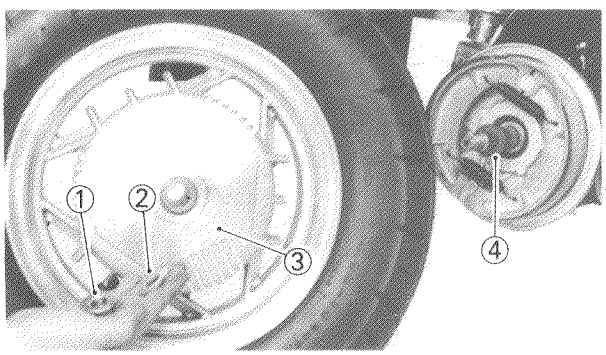
3. Remove:
   - Socket bolts (Exhaust pipe) ①
   - Flange bolts (Muffler) ②
   - Muffler assembly ③



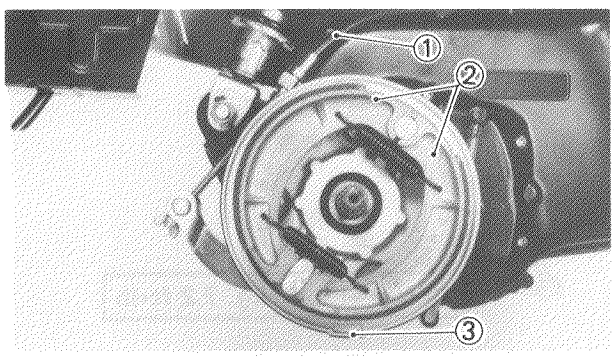
4. Remove:
   - Cotter pin
5. Loosen:
   - Nut (Rear wheel axle) ①

NOTE:

While applying the rear brake, fully loosen the axle nut.

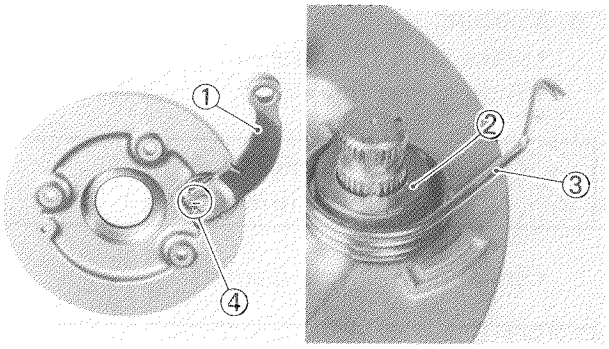


6. Remove:
   - Nut (Rear wheel axle) ①
   - Plate washer ②
   - Rear wheel assembly ③
   - Thrust washer ④



BRAKE DISASSEMBLY

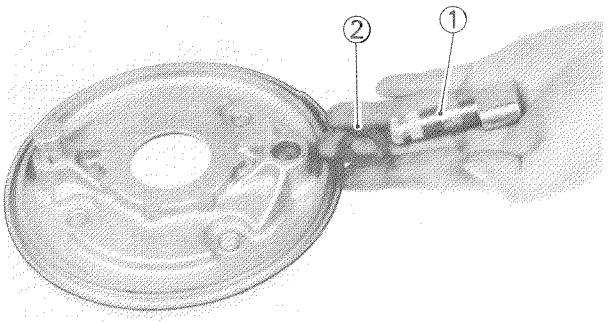
1. Remove:
   - Rear brake cable ①
   - Brake shoes ②
   - Brake shoe plate ③



2. Remove:
   - Brake cam lever ①
   - Wear indicator plate ②
   - Return spring ③

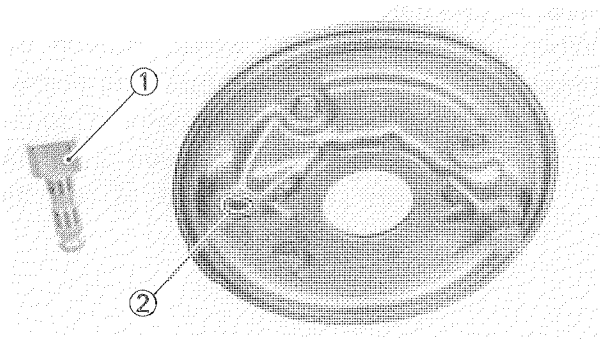
NOTE:

Put mark ④ on the camshaft lever before removing out so that it can be reinstalled in the original position.



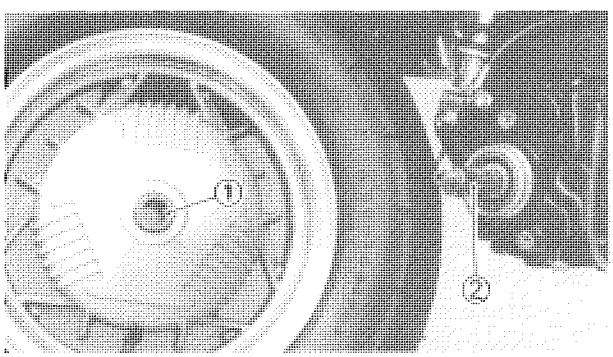
3. Remove:
   - Camshaft ①
   - Plate washer ②

INSPECTION



1. Inspect:
   - Camshaft ①
   - Camshaft hole ②

   Scratches/Excessive wear→Replace.



2. Inspect:
   - Splines (Rear wheel) ①
   - Splines (Drive axle) ②

   Wear/Damage→Replace.

3. Inspect:
   - Brake shoes
   - Shoe springs
   - Brake drum (Inner surface)

   Refer to "FRONT WHEEL-INSPECTION" section.

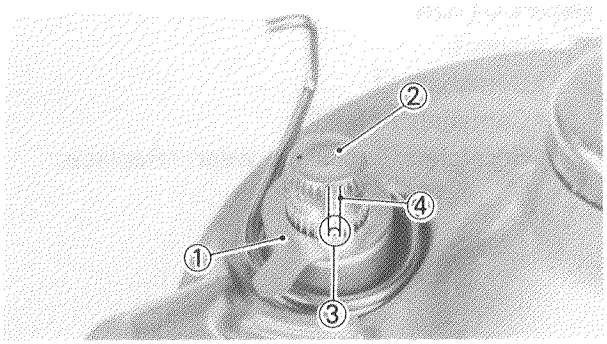
4. Measure:
   - Brake shoe (Thickness)
   - Shoe spring free lengh

Shoe Spring Free Lengh:
Limit: 68.0 mm (2.68 in)

- Brake drum inside diameter

Brake Drum Inside Diameter:
STD: 150 mm (5.91 in)
Limit: 151 mm (5.94 in)

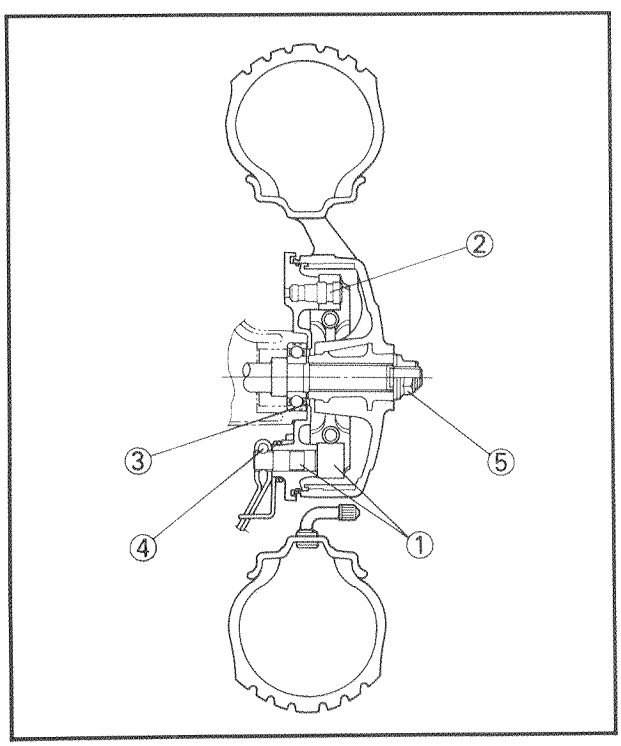
Refer to "FRONT WHEEL-INSPECTION" section.



INSTALLATION

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

1. When installing the wear indicator ① to the camshaft ②, align the projection ③ on the wear indicator with the slot ④ on the camshaft.



2. Apply:
   - Camshaft ① (Shaft and cam)
   - Pivot pin ② (Brake shoe)
   - Thrust washer ③

Lightweight Lithium-soap Base Grease

3. Tighten:
   - Brake cam lever ④
   - Bolts (Brake shoe plate)
   - Nut (Rear wheel axle) ⑤

Brake Cam Lever ④:
10 Nm (1.0 m•kg, 7.2 ft•lb)
Bolts (Brake Shoe Plate):
18 Nm (1.8 m•kg, 13 ft•lb)
LOCTITE®
Rear Wheel Axle ⑤:
100 Nm (10.0 m•kg, 72 ft•lb)

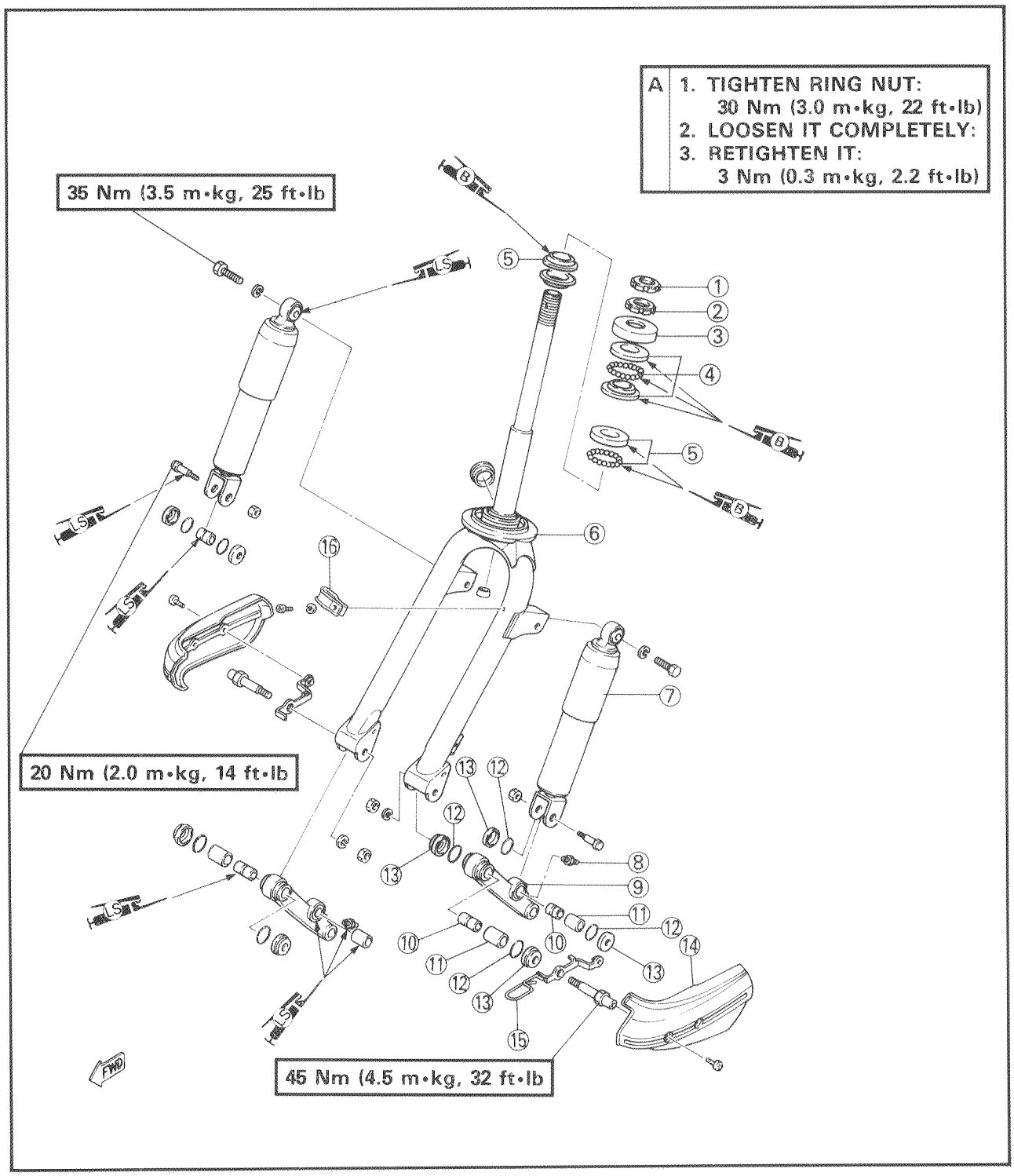
NOTE:

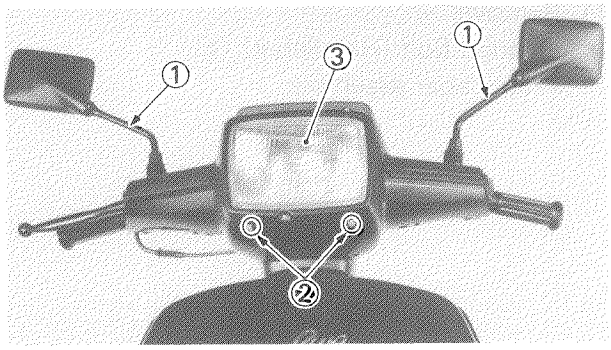
- Thoroughly wipe off the excess grease.
- Always use a new cotter pin.

4. Adjust:
   - Rear brake pedal free play
     Refer to "CHAPTER 2. REAR BRAKE INSEPCTION" section.

HANDLEBAR AND FRONT FORK

① Ring nut (Upper)
② Ring nut (Lower)
③ Ball race cover
④ Bearing (Upper)
⑤ Bearing (Lower)
⑥ Front fork
⑦ Shock absorber
⑧ Nipple
⑨ Compression arm
⑩ Collar
⑪ Bushing
⑫ Dust seal
⑬ Dust cover
⑭ Side caps
⑮ Side cap stay
⑯ Cable clamp

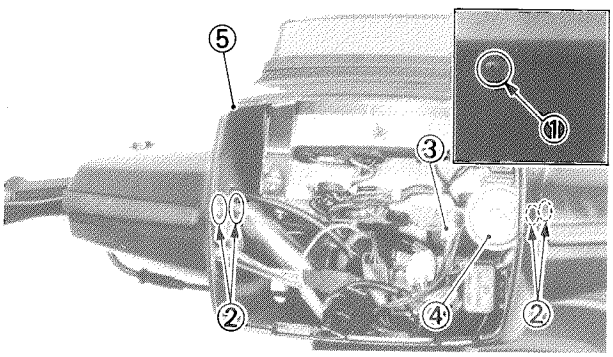




REMOVAL

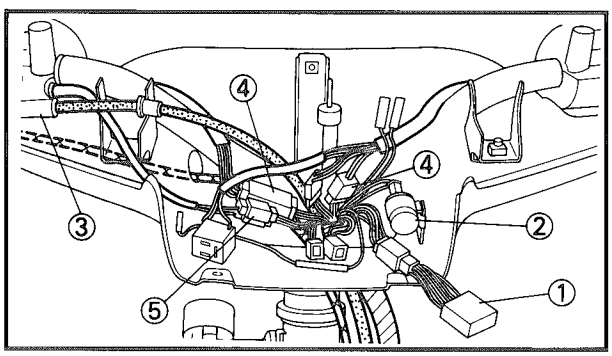
Handlebar

1. Place the scooter on its centerstand.
2. Remove:
   - Rear view mirrors ①
   - Bolts (Headlight) ②
   - Headlight unit ③



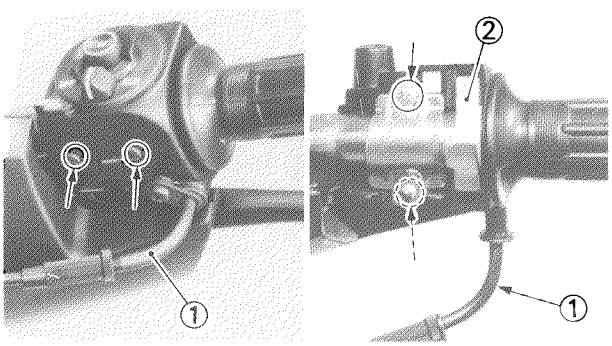
3. Remove:
   - Screw (Handlebar cover-upper) ①
4. Loosen:
   - Bolts (Handlebar cover-upper) ②
5. Remove:
   - Speedometer cable ③
   - Audio pilot ④

   From upper handlebar cover ⑤
6. Disconnect:
   - Speedometer lead connecters
7. Remove:
   - Upper handlebar cover ⑤



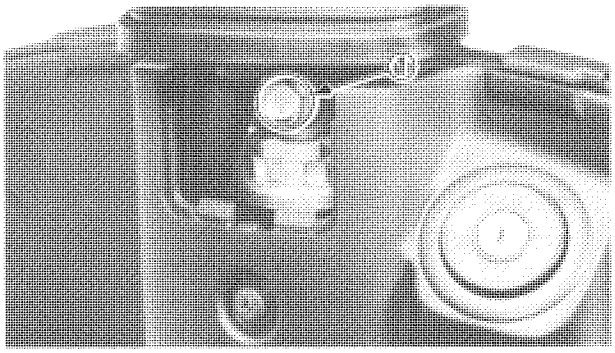
8. Remove:
   - Diode ①
   - Flasher relay unit ②
9. Disconnect
   - Front brake cable ③

   From brake lever
   - Handlebar switch connecters ④
   - Brake switch connecter (Front) ⑤

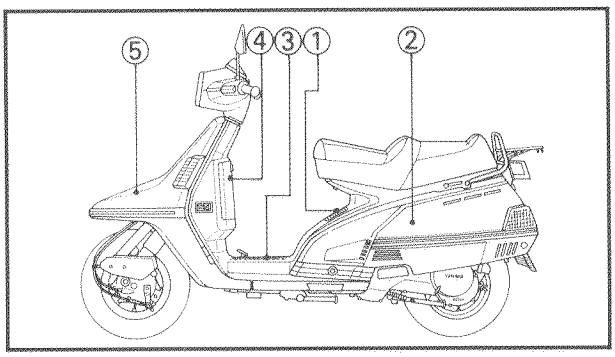


10. Remove:
    - Throttle cable ①

    From throttle cable holder ②



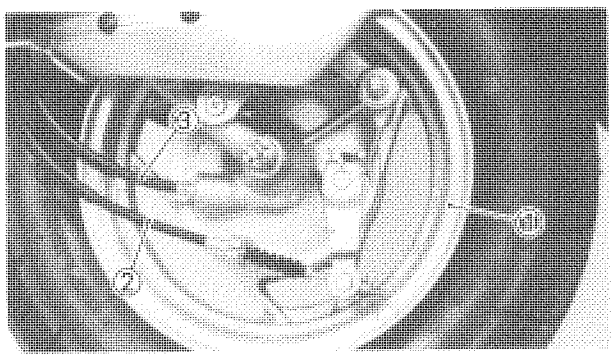
11. Remove:
- Flange bolt (Handlebar) ①
- Handlebar assemble



Shock Absorber and Front Fork

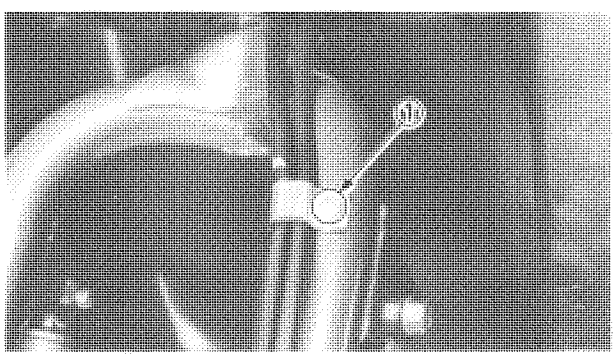
1. Remove:
- Front cover ①
- Side cover (Left and right) ②
- Footrest board ③
- Front trunk ④
- Scooter panel ⑤

Refer to "REMOVING THE COVERS AND PANELS" section.

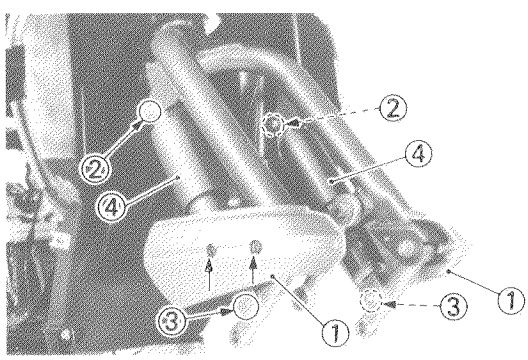


2. Remove:
- Front wheel ①
- Brake cable ②
- Speedometer cable ③

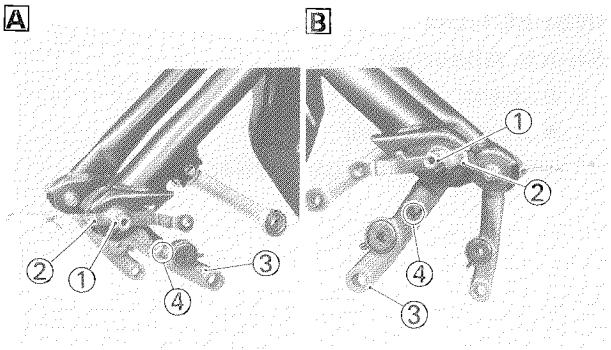
5



3. Remove:
- Cable clamp ① with cables



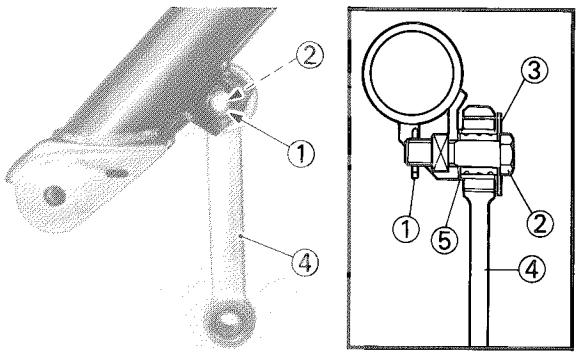
4. Remove:
- Side caps ①
- Bolts (Shock absorber-Upper) ②
- Bolts (Shock absorber-Lower) ③
- Shock absorbers ④



4. Remove:
   - Bolts (Compression arm-Fork) ①
   - Stay (Side cap) ②
   - Compression arms ③

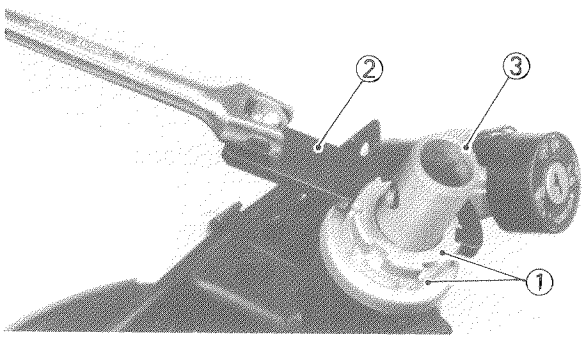
NOTE:

Put mark ④ on the compression arms before removing out so that it can be reinstalled in the original position.



A Left B Right

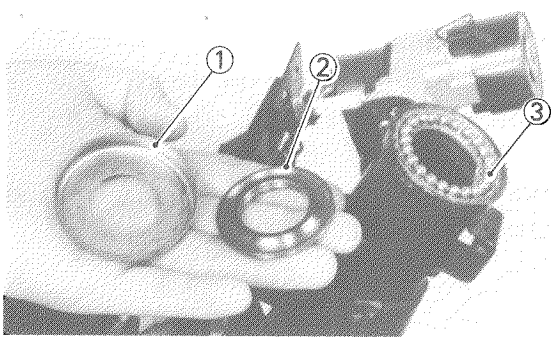
5. Remove:
   - Cotter pin ①
   - Bolt ②
   - Washer ③
   - Tension arm ④
   - Washer ⑤



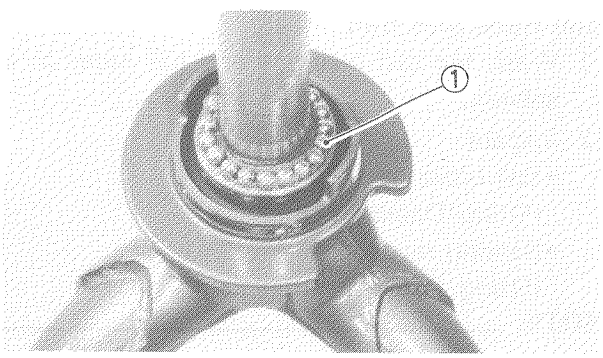
6. Remove:
   - Ring nuts (Upper and Lower) ①
     Use the Ring Nut Wrench (YU-01268) or (YU-33975) ②.
   - Front fork assembly ③

NOTE:

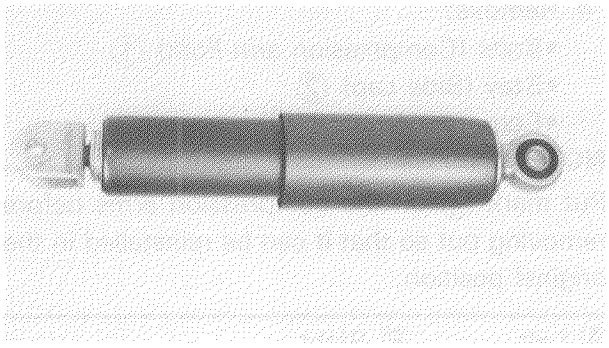
Support the front fork not to drop the ball bearings.



7. Remove:
   - Ball race cover ①
   - Ball race (Upper) ②
   - Ball bearings (Upper/22 pcs) ③



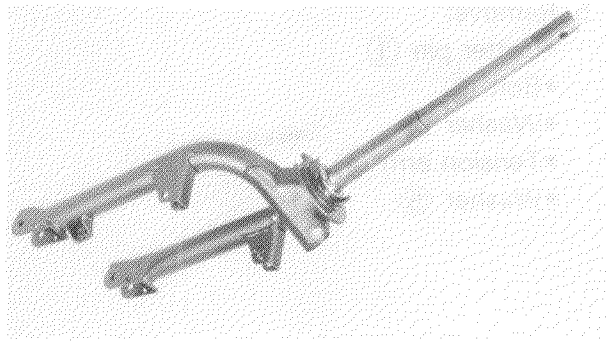
8. Remove:
   - Ball bearings (Lower/19 pcs) ①



INSPECTION

Shock Absorber

1. Inspect:
   - Shock absorber
     Oil leakage/Damage → Replace.

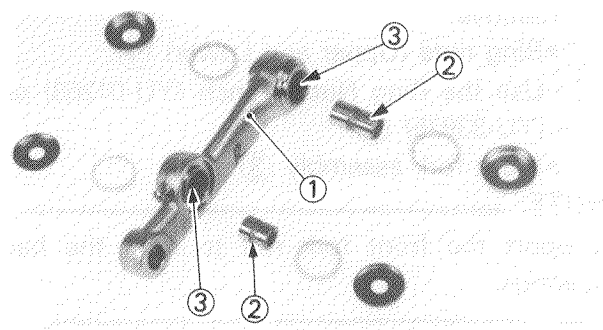


Front Fork

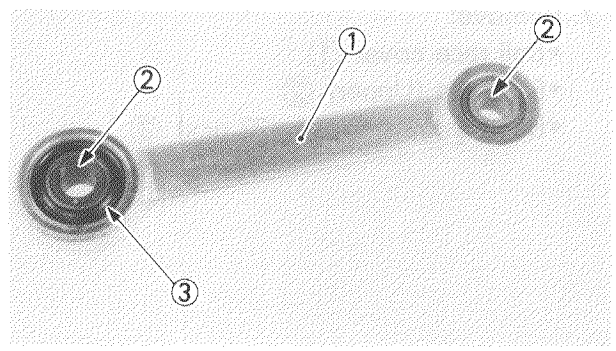
1. Inspect:
   - Front fork
     Crack/Bend/Damage → Replace.

WARNING:

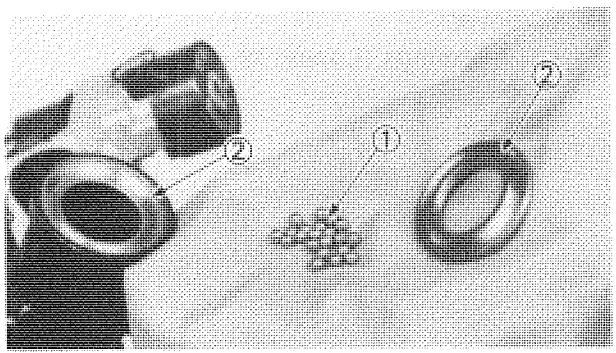
Do not attempt to straighten a bent front fork this may dangerously weaken the front fork.



2. Inspect:
   - Compression arm ①
     Crack/Bend/Damage → Replace.
   - Inner collar ②
     Wear/Pitting/Damage → Replace.
   - Inner bushing ③
     Wear/Pitting/Damage → Replace.



3. Inspect:
   - Tension arm ①
     Crack/Bend/Damage → Replace.
   - Inner collar/bushing ②
     Pitting/Damage → Replace.
   - Rubber bushing ③
     Damage → Replace.



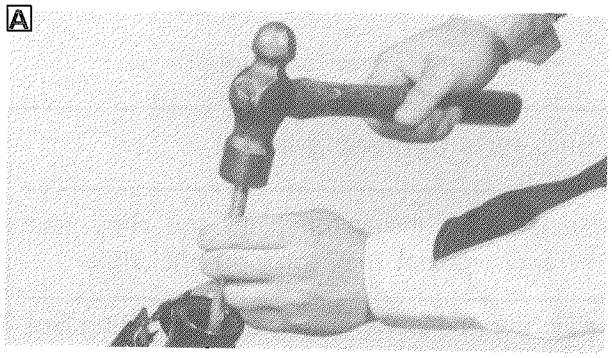
Ball Race and Ball

1. Wash the ball bearings and ball races in a solvent.
2. Inspect:
   - Ball bearings ①
     Pitting/Damage → Replace.
   - Bearing races ②
     Pitting/Damage → Replace.

NOTE:

Always replace bearing and race as a set.

A



B



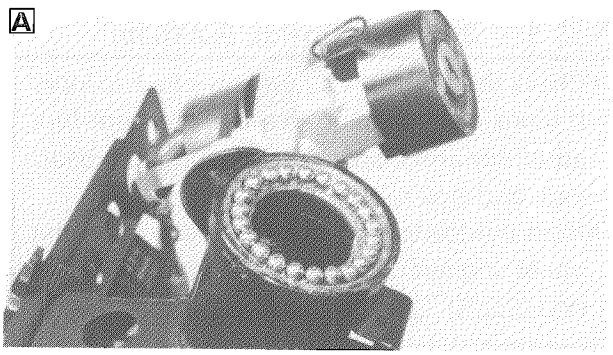
3. When removing the race, drive out by striking it in steps. And fit the race squarely in the head pipe.

CAUTION:

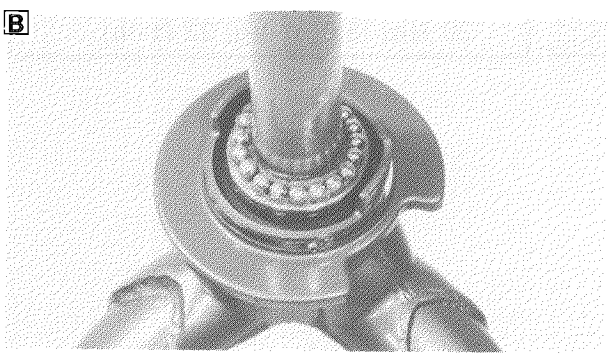
If the bearing race is fitted not squarely, the head pipe could be damaged.

A Lower
B Upper

A



B



ASSEMBLY

When reassembling the front fork assembly, reverse the removal procedure.
Note the following poits.

Front Fork

1. Grease the races and put the balls in it.

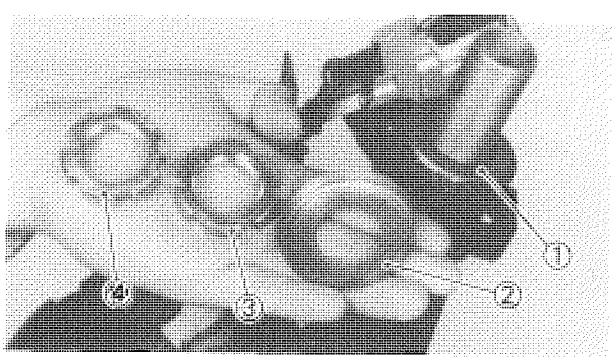
Wheel Bearing Grease

NOTE:

Make sure the balls are of the same size and the quantity is correct.

Upper . . . . . .22 pcs 3/16 in
Lower . . . . . .19 pcs 1/4 in

A Upper
B Lower



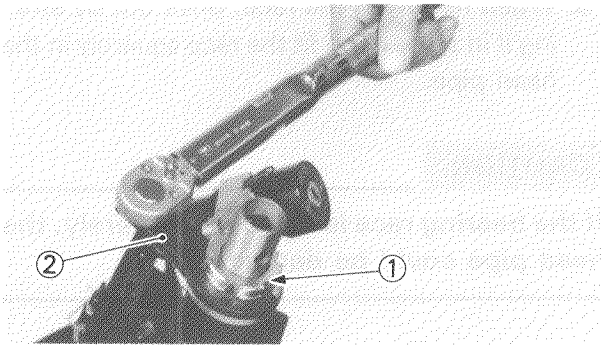
2. Install:
   - Front fork

NOTE:

Hold the front fork until it is secured.

- Ball race (Upper) ①
- Ball race cover ②
- Ring nut (Lower) ③
- Ring nut (Upper) ④

5



3. Tighten:
   • Ring nuts (Lower and upper)

Ring nuts tightening steps:
NOTE:
Set the Torque Wrench to the Ring Nut Wrench so that they form a right angle.

• Tighten the lower nut ① using the Ring Nut Wrench (YU-33975) ②.

Ring Nut ① (Initial Tightening):
30 Nm (3.0 m•kg, 22 ft•lb)

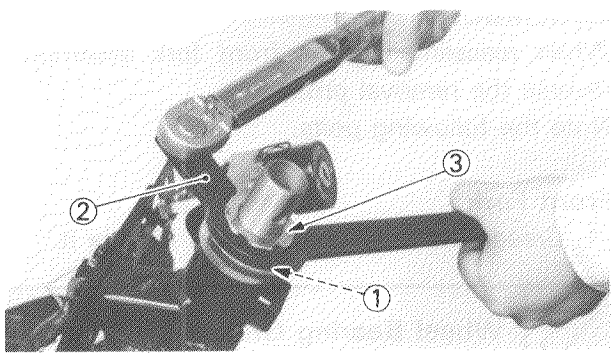
• Loosen the lower ring nut ① completely and retighten it to specification.

WARNING:
Do not over-tightening.

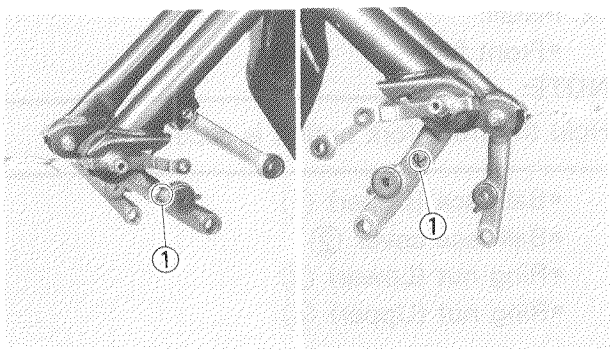
Ring Nut ① (Final Tightening):
3 Nm (0.3 m•kg, 2.2 ft•lb)

• Check the front fork by turning it lock to lock. If there is any binding, remove the front fork assembly and inspect the steering boll bearings and boll races.
• Hold the lower ring nut ① and tighten the upper ring nut ③ using the Ring Nut Wrench (YU-33975) ②.

Ring Nut (Upper):
30 Nm (3.0 m•kg, 22 ft•lb)

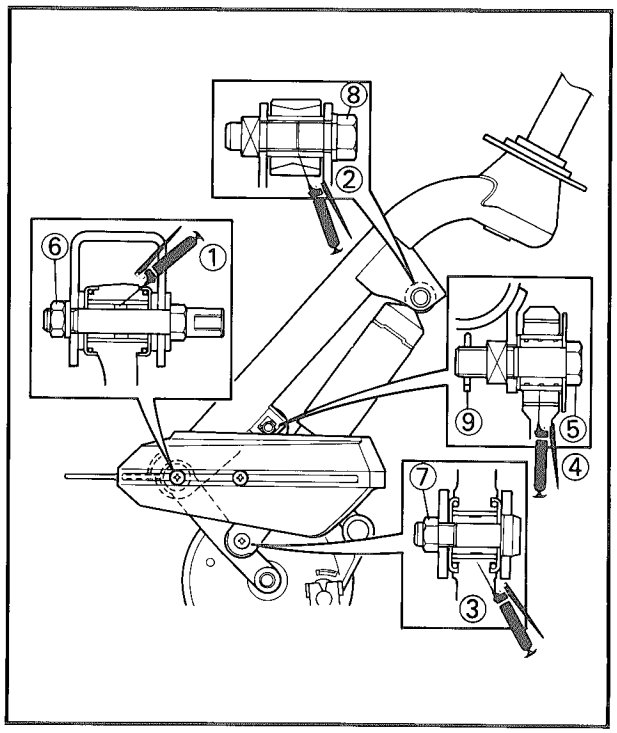


5



Shock Absorber

1. The compression arms should be installed with the identified mark (L) (R) ① face left-side of scooter.



1. Apply:
   - Compresion arm-Front fork ①
   - Shock absorber (Upper)-Front fork ②
   - Shock absorber (Lower)-Front fork ③

Lightweight Lithium-soap Base Grease

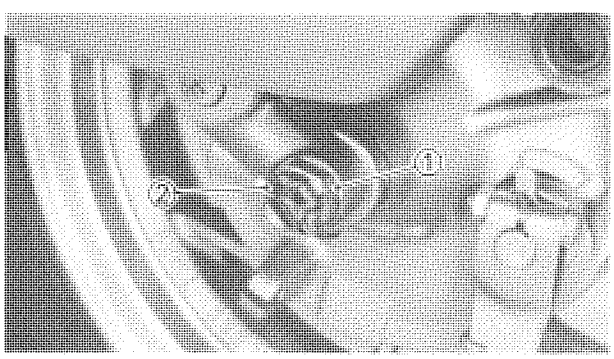
   - Tension arm-Front fork ④

Molybdenum Disulfide Grease

2. Tighten:
   - Bolts and nuts

Bolt (Tension arm-Front fork) ⑤:
40 Nm (4.0 m•kg, 29 ft•lb)
Nut (Compresion arm-Front fork) ⑥:
45 Nm (4.5 m•kg, 32 ft•lb)
Nut (Shock absorber (Lower)-Front fork) ⑦:
20 Nm (2.0 m•kg, 14 ft•lb)
Bolt (Shock absorber (Upper)-Front fork) ⑧:
35 Nm (3.5 m•kg, 25 ft•lb)

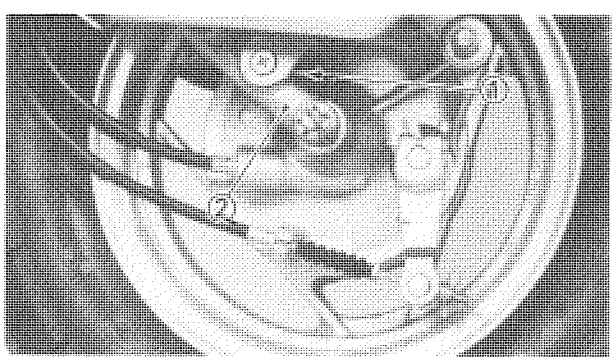
NOTE:
Always use a new cotter pin ⑨.



3. Tighten:
   - Nut (Front wheel axle) ①

Nut (Front Wheel Axle) ①:
70 Nm (7.0 m•kg, 50 ft•lb)

4. Install:
   - Cotter pin (New) ②

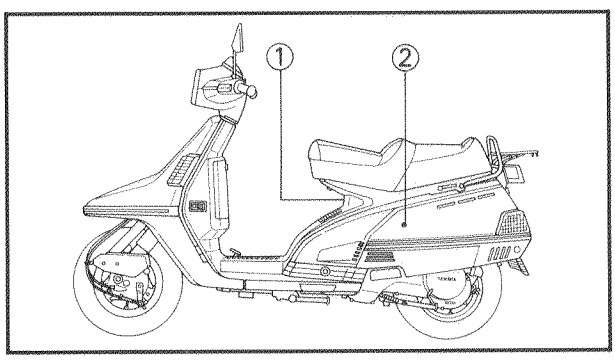


5. After assembling the front fork apply the grease from nipple ① on the compresion arm ② until new grease comes out.

Lightweight Lithium-soap Base Grease

5

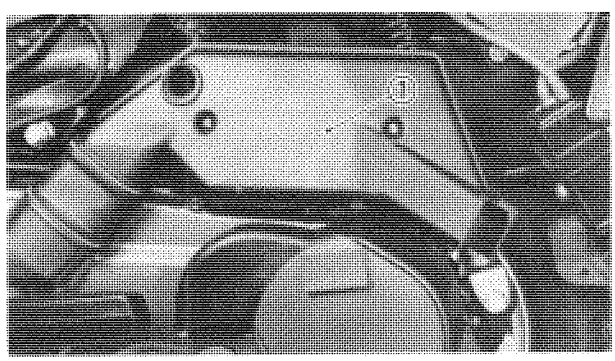
6. Check:
   • Electrical component operations.
7. Adjust:
   • Throttle cable free plays
   Refer to "CHAPTER 2. THROTTLE CABLE ADJUSTMENT", section.
   • Front brake lever free play
   Refer to "CHAPTER 2. FRONT AND REAR BRAKE INSPECTION" section.



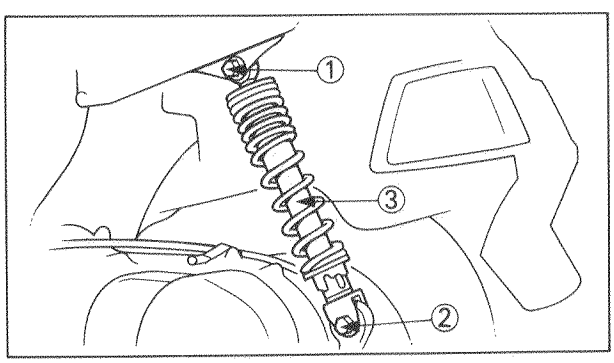
REAR SHOCK ABSORBER

REMOVAL

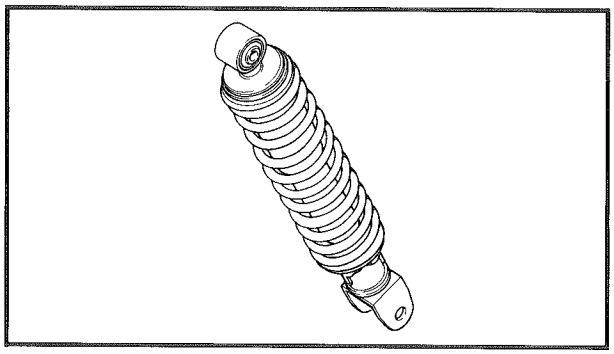
1. Remove:
   • Front cover ①
   • Side cover (Left) ②
   Refer to "CHAPTER 2. REMOVING THE COVERS AND PANELS" section.



2. Remove:
   • Air cleaner case ①
   Refer to "CHAPTER 3. AIR CLEANER CASE" section.



3. Remove:
   • Bolt (Shock absorber-Upper) ①
   • Bolt (Shock absorber-Lower) ②
   • Rear shock absorber ③



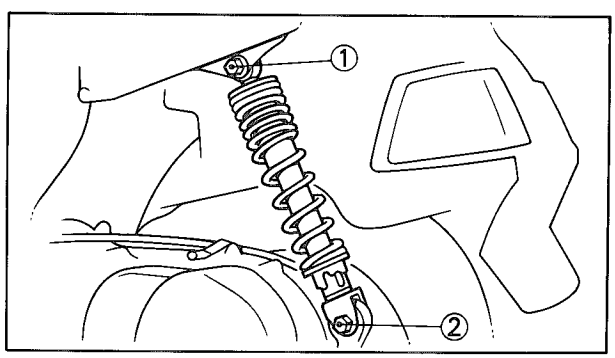
INSPECTION

1. Inspect:
   - Shock absorber rod
     Bends/Damage→Replace the shock absorber assembly.
   - Shock absorber
     Oil leakes→Replace the shock absorber assembly.
   - Spring
     Fatigue→Replace the shock absorber assembly.
     Move the spring up and down.

INSTALLATION

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

1. Apply:
   - Lithium base grease
     To the pivot points.



2. Tighten:
   - Bolt (Shock absorber-Upper) ①
   - Bolt (Shock absorber-Lower) ②

Bolt (Shock Absorber-Upper) ①: 50 Nm (5.0 m•kg, 36 ft•lb)
Bolt (Shock Absorber-Lower) ②: 50 Nm (5.0 m•kg, 36 ft•lb)

3. Adjust:
   - Spring preload
     Refer to "CHAPTER 2. REAR SHOCK ABSORBER ADJUSTMENT" section.

CHAPTER 6
ELECTRICAL

CIRCUIT DIAGRAM 6-1

ELECTRICAL COMPONENTS 6-3

ELECTRIC STARTING SYSTEM 6-5
- TROUBLESHOOTING 6-7
- STARTING CIRCUIT CUT-OFF SYSTEM 6-9
- STARTER MOTOR 6-10
- BATTERY INSPECTION 6-14
- STARTER RELAY TEST 6-14
- STARTING CIRCUIT CUT-OFF RELAY TEST 6-15
- DIODE UNIT TEST 6-15
- SWITCHES TEST 6-16

CHARGING SYSTEM 6-19
- TROUBLESCHOOTING 6-21
- BATTERY INSPECTION 6-22
- CHARGING VOLTAGE TEST 6-22
- STATOR COIL RESISTANCE TEST 6-22
- RECTIFIER TEST 6-23

IGNITION SYSTEM 6-25
- TROUBLESHOOTING 6-27
- IGNITION SPARK GAP TEST 6-29
- IGNITION COIL RESISTANCE TEST 6-29
- PICKUP COIL RESISTANCE TEST 6-30
- SPARK PLUG INSPECTION 6-30

LIGHTING SYSTEM 6-31
- LIGHTING TESTS AND CHECKS 6-33

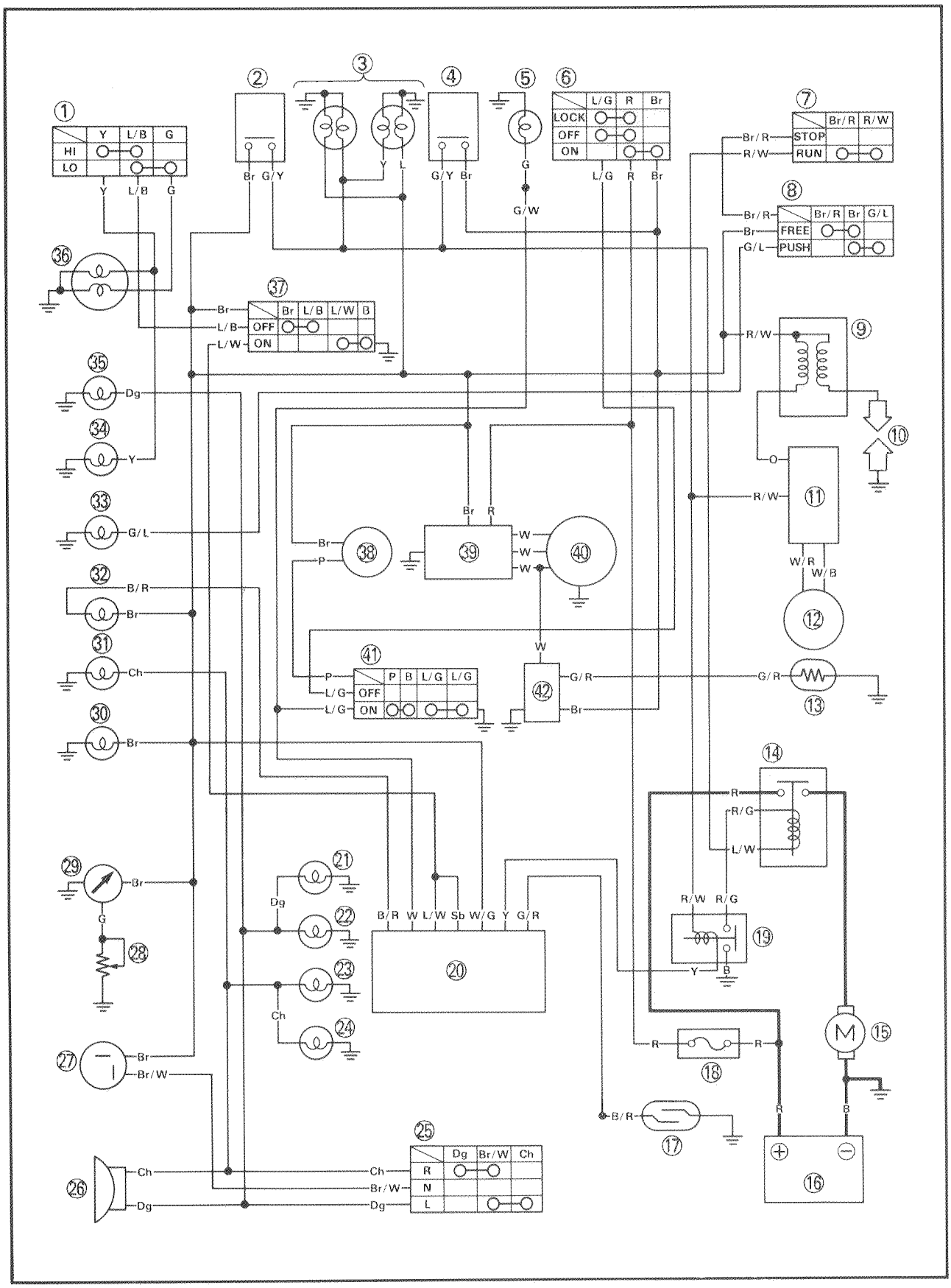
SIGNAL SYSTEM 6-37
- TROUBLESHOOTING 6-39
- AUDIO PILOT TEST 6-41
- SWITCHES TEST 6-41

ACCESSORY SYSTEM 6-43
- MAIN SWITCH ILLUMINATION 6-45
- TROUBLESHOOTING 6-45
- FUEL SENDER TEST 6-49
- OIL LEVEL SWITCH TEST 6-49
- HORN TEST 6-50
- SWITCHES TEST 6-50

AUTO CHOKE SYSTEM 6-51
- TROUBLESHOOTING 6-53
- CHOKE UNIT TEST 6-54
- CHOKE RELAY TEST 6-54
- STATOR COIL RESISTANCE TEST 6-55

ELECTRICAL

CIRCUIT DIAGRAM



① "LIGHTS" (Dimmer) switch
② Front brake switch
③ Tail/Brake light
④ Rear brake switch
⑤ Main switch illumination
⑥ Main switch
⑦ "ENGINE STOP" switch
⑧ Sidestand switch
⑨ Ignition coil
⑩ Spark plug
⑪ Ignitor unit
⑫ Pickup coil
⑬ Choke unit
⑭ Starter relay
⑮ Starter motor
⑯ Battery
⑰ Oil level switch
⑱ Main fuse
⑲ Starting circuit cut-off relay
⑳ Diode unit
㉑ Front flasher light (Right)
㉒ Rear flasher light (Right)
㉓ Front flasher light (Left)
㉔ Rear flasher light (Left)
㉕ "TURN" switch
㉖ Audio pilot
㉗ Flasher relay
㉘ Fuel sender
㉙ Fuel meter
㉚ Meter illumination
㉛ "TURN" indicator light (Left)
㉜ "OIL LEVEL" indicator light
㉝ "SIDESTAND" indicator light
㉞ "HIGH BEAM" indicator light
㉟ "TURN" indicator light (Right)
㊱ Headlight
㊲ "START" switch
㊳ Horn
㊴ Rectifier/Regulator
㊵ AC magneto generator
㊶ "HORN" switch
㊷ Choke relay

COLOR CODE

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

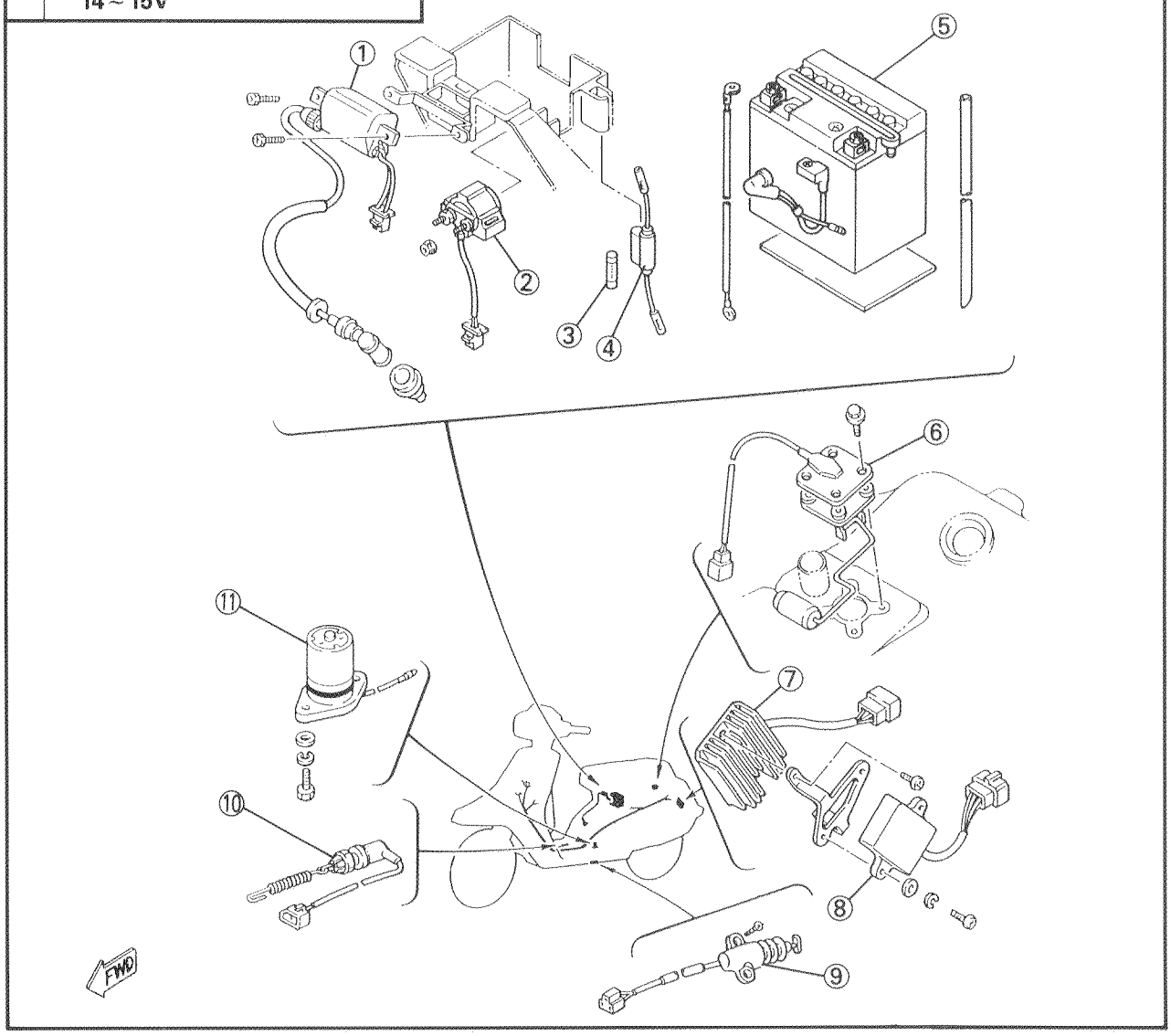
ELECTRICAL COMPONENTS

① Ignition coil
② Starter relay
③ Reserve fuse (20A × 1)
④ Main fuse (20A × 1)
⑤ Battery
⑥ Fuel sender
⑦ Rectifier/Regulator
⑧ Ignitor unit
⑨ Sidestand switch
⑩ Rear brake switch
⑪ Oil level switch

Fuel Sender Resistance:
Full position:
20Ω ± 10% at 20°C (68°F)
Empty position:
236Ω ± 10% at 20°C (68°F)

Ignition Coil:
Primary winding resistance:
2.7Ω ± 10% at 20°C (68°F)
Secondary winding resistance:
13.2kΩ ± 20% at 20°C (68°F)

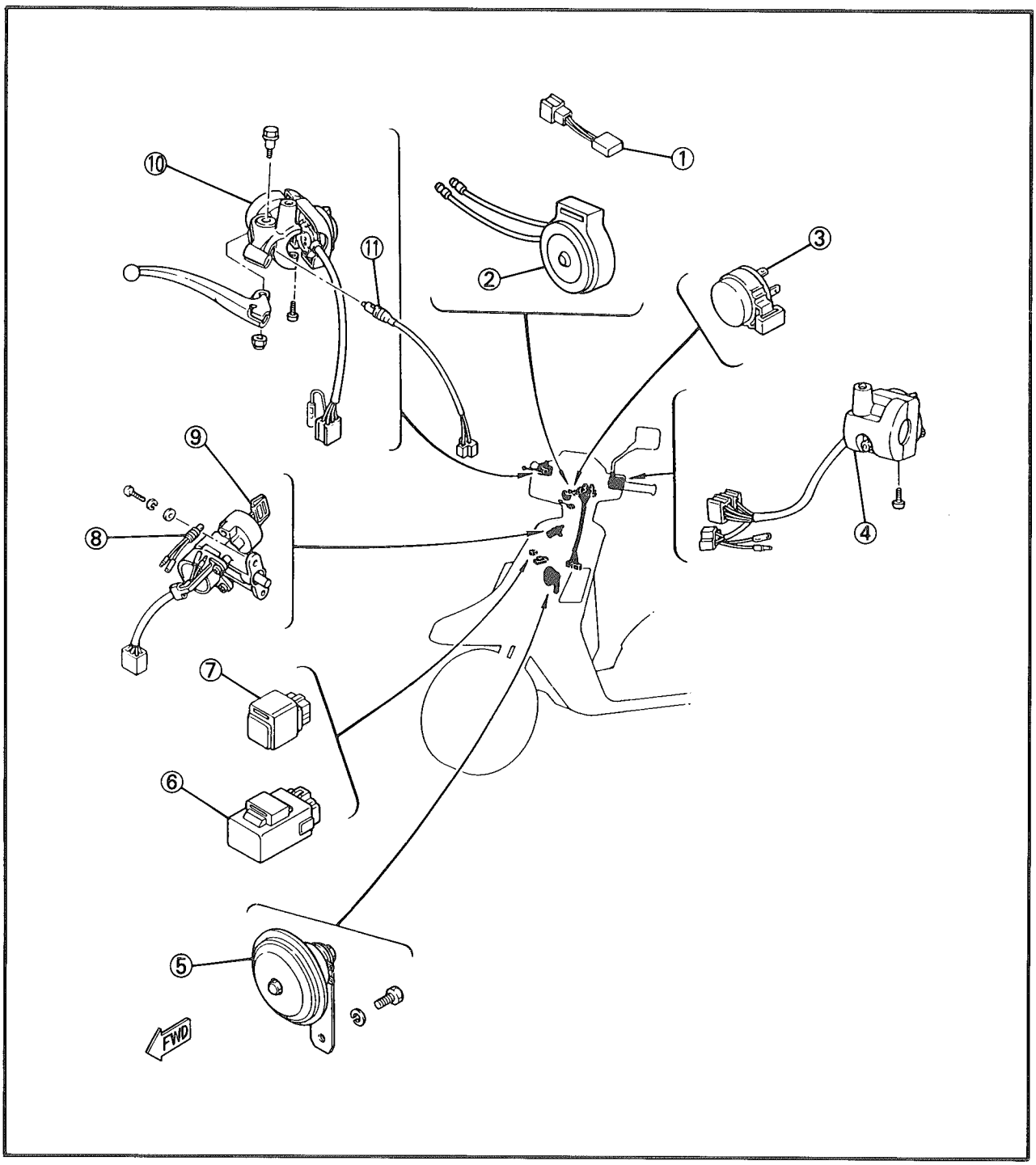
A	**Starter Relay Coil Resistance:** **3.4Ω ± 10% at 20°C (68°F)** **(Red/Green-Red/White)**
B	**Battery:** **Capacity: 12V 10AH** **Specific gravity: 1.280**
C	**Voltage Regulator:** **Regulated Voltage:** **14 ~ 15V**



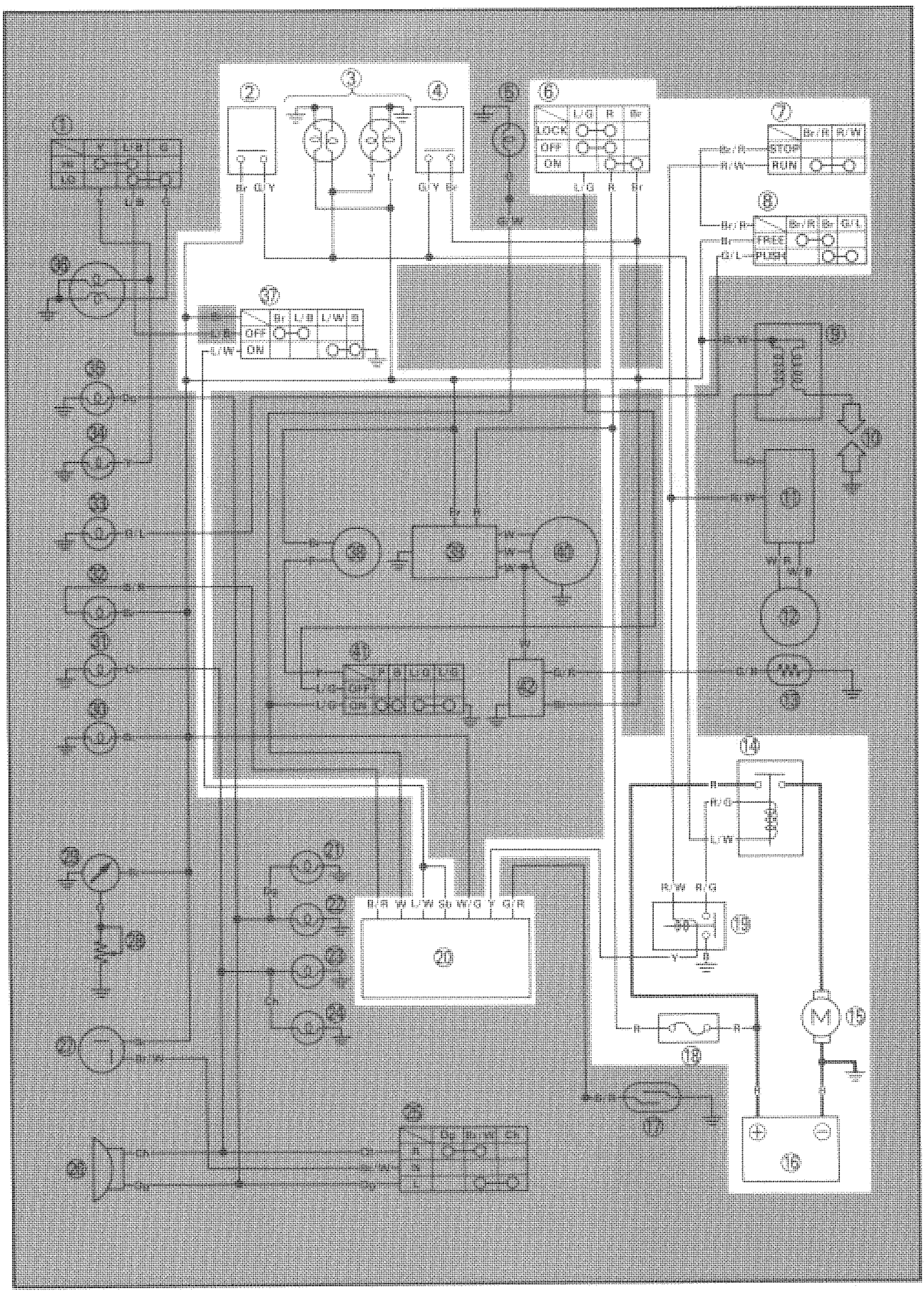
ELECTRICAL COMPONENTS

① Diode unit
② Audio pilot
③ Flasher relay
④ Handlebar switch (Left)
⑤ Horn
⑥ Choke relay
⑦ Starting circuit cut-off relay
⑧ Main swtich
⑨ Main switch illumination
⑩ Handlebar switch (Right)
⑪ Front brake switch

A	**Starting Circuit Cut-off Relay Coil Resistance: 75Ω ± 10% at 20°C (68°F) (Blue/White-Red/Green)**



ELECTRIC STARTING SYSTEM

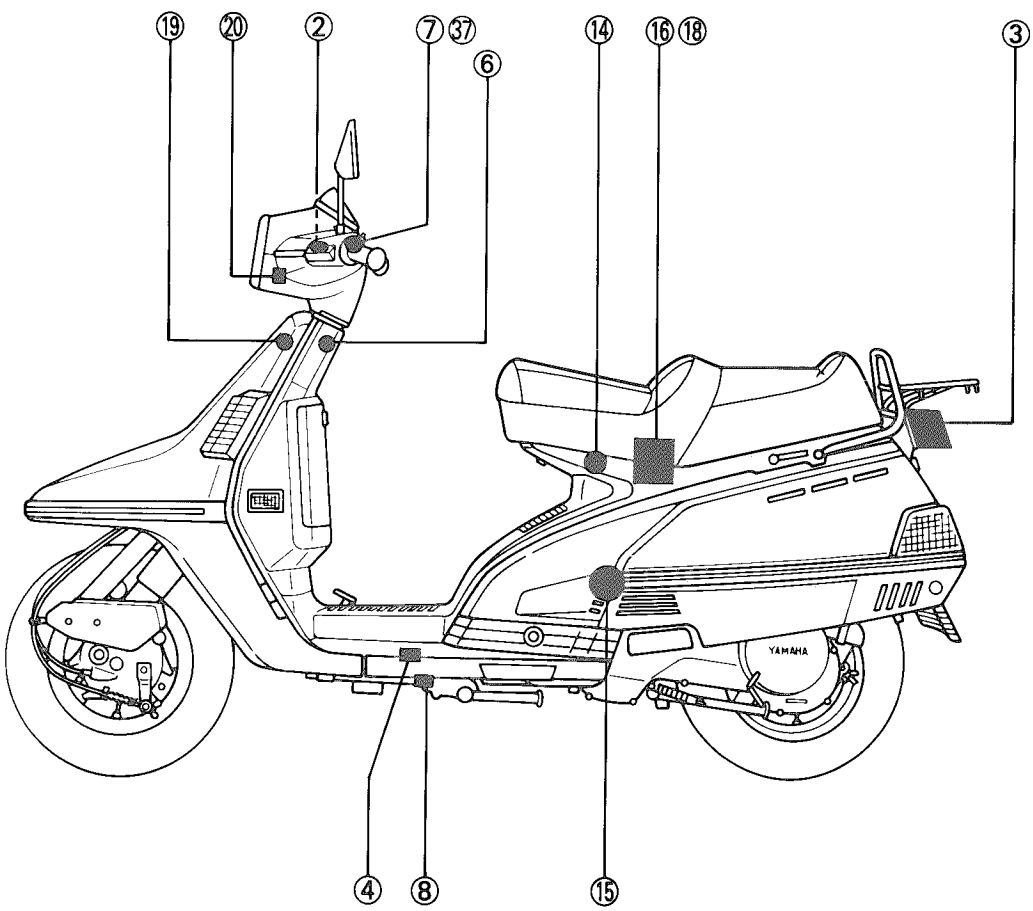


Aforementioned circuit diagram shows electrical starting circuit in wiring diagram.

NOTE:

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

② Front brake switch
③ Tail/Brake light
④ Rear brake switch
⑥ Main switch
⑦ "ENGINE STOP" switch
⑧ Sidestand switch
⑭ Starter relay
⑮ Starter motor
⑯ Battery
⑱ Main fuse
⑲ Starting circuit cut-off relay
⑳ Diode unit
㊲ "START" switch



TROUBLESHOOTING

THE STARTER MOTOR DOES NOT OPERATE.*

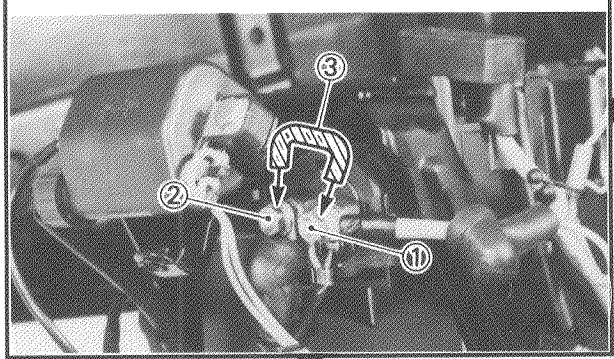
↓

Check the following parts.
- Battery and fuse
  Refer to "CHAPTER 2. BATTERY and FUSE INSPECTION" section.
- Main switch
- Sidestand switch
- "ENGINE STOP" switch
- Brake switch
- "START" switch
  Refer to "SWITCHES TEST" page 6-16.

FAULTY → Replace defective parts.

OK ↓

Connect the battery positive (+) lead ① and starter motor lead ②; use the heavy duty jumper lead ③. **



→ If the starter motor does not run, inspect and repair the starter motor.

↓

*

NOTE:

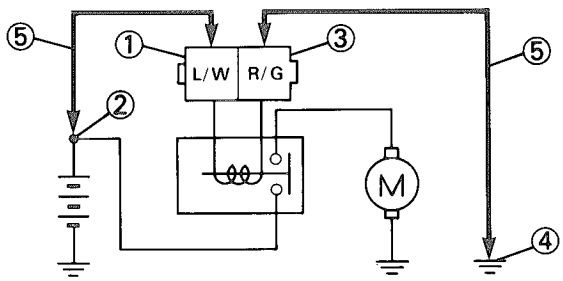
Make sure that the battery should be fully charged.

**

WARNING:

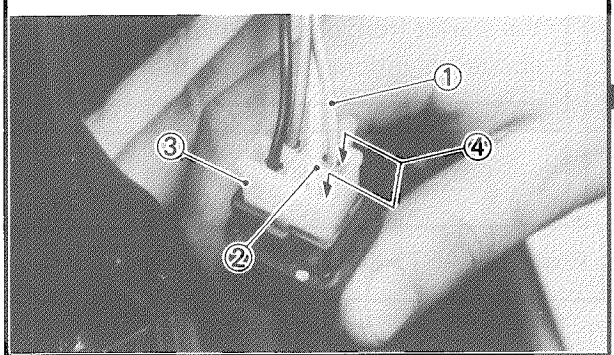
This test should be performed within a few seconds to prevent further damage. Also, there should be no flammables close to the starter relay.

Disconnect the starter relay coupler, then connects the "Blue/White" lead ① to the battery positive (+) lead ② and "Red/Green" lead ③ to the body earth ④; use a jumper lead ⑤.



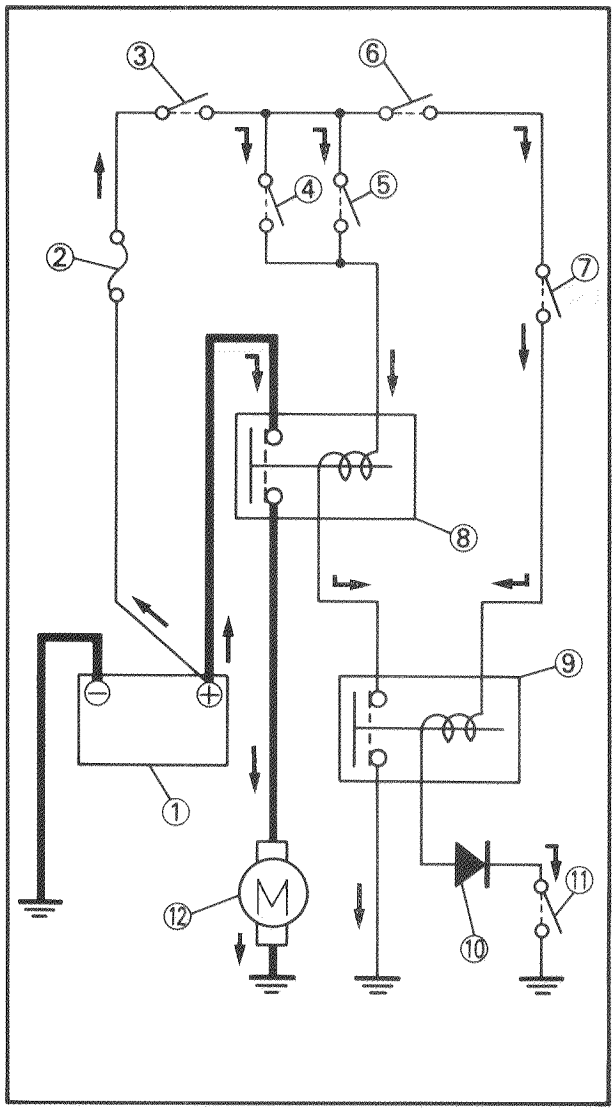
If the starter motor does not run, replace the starter relay.

Connect the "Red/White" lead ① to the "Yellow" lead ② on the starting circuit cut-off relay coupler ③; use a jumper lead ④.



If the starter motor does not run, replace the starting circuit cut-off relay.

If the starter motor runs, replace the diode unit.



STARTING CIRCUIT CUT-OFF SYSTEM

Engine Starting Operation

Turn main switch to "ON".

↓

Set "ENGINE STOP" switch to "RUN".

Activate starting circuit cut-off relay to start the engine.

Fold sidestand in (sidestand switch is "ON").

↓

Apply either front or rear brake. (Brake switch is "ON").

NOTE:

The starting circuit cut-off relay prevents the starter from operating when neither of above conditions has been met.

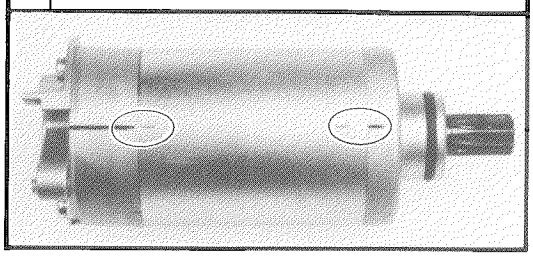
Push "START" switch, and start the engine.

① Battery
② Fuse
③ Main switch
④ Front brake switch
⑤ Rear brake switch
⑥ Sidestand switch
⑦ "ENGINE STOP" switch
⑧ Starter relay
⑨ Starting circuit cut-off relay
⑩ Diode
⑪ "START" switch

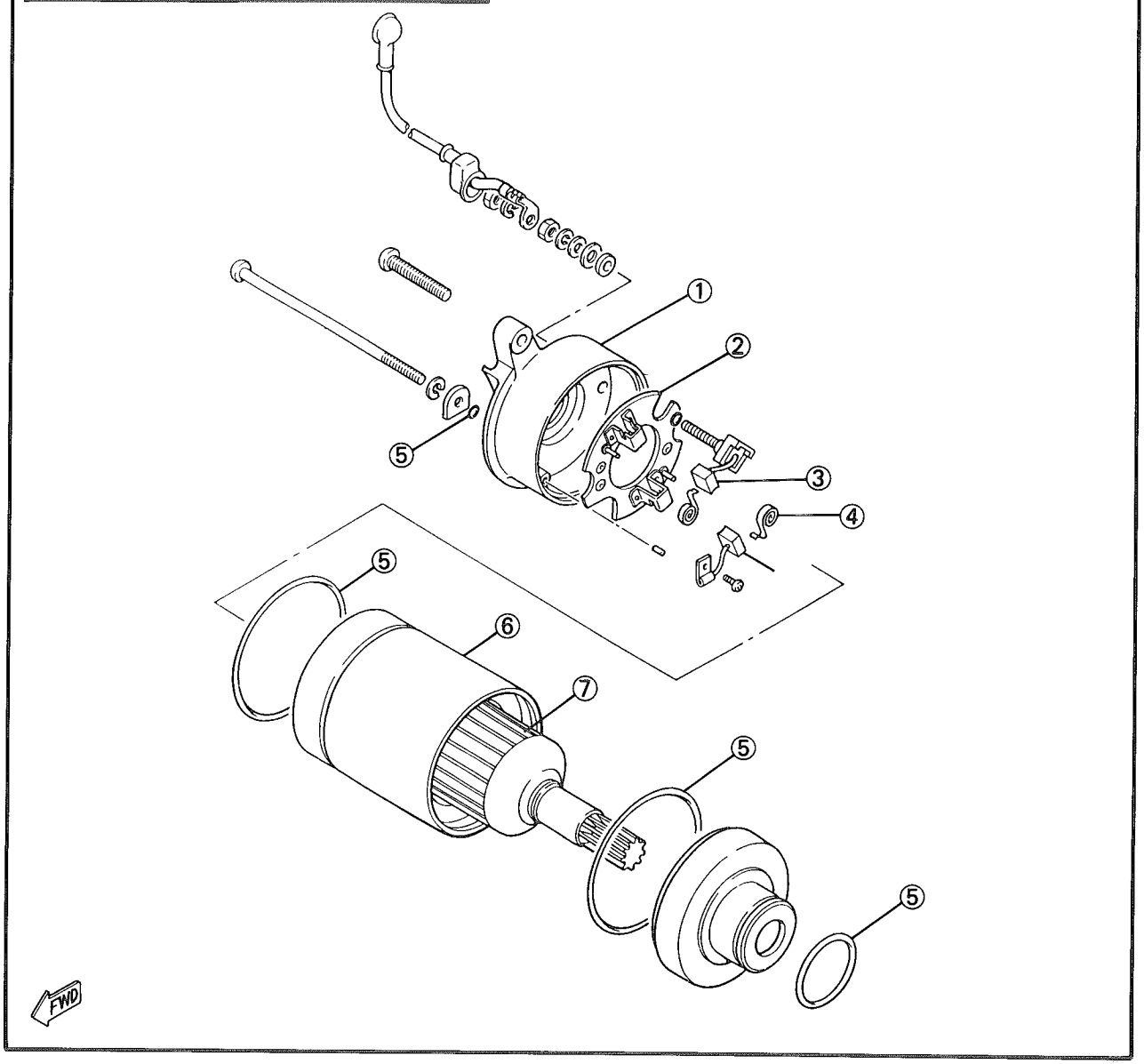
STARTER MOTOR

① Bracket
② Brush holder assembly
③ Brush
④ Brush spring
⑤ O-ring
⑥ Housing
⑦ Armature

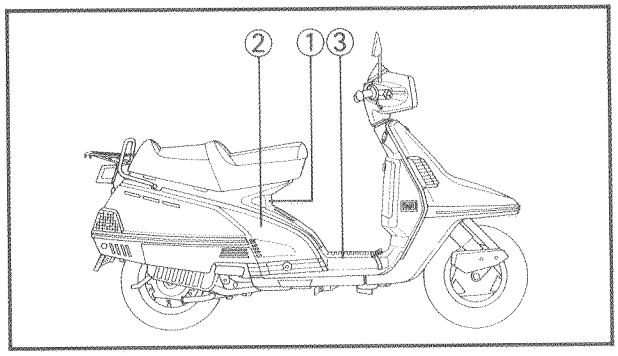
D	ALIGN MATCH MARK



A	MINIMUM BRUSH LENGTH: 5.0 mm (0.20 in)
B	COMMUTATOR WEAR LIMIT: 22.0 mm (0.87 in)
C	MICA UNDERCUT: 0.8 mm (0.031 in)



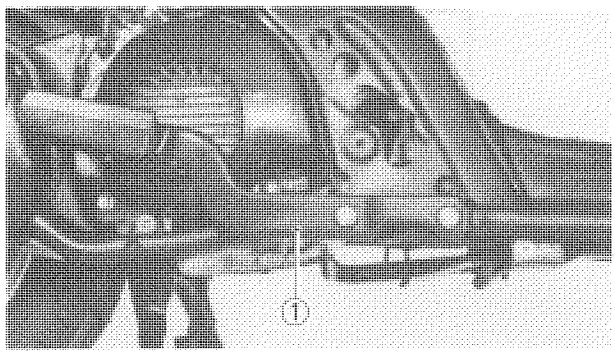
6



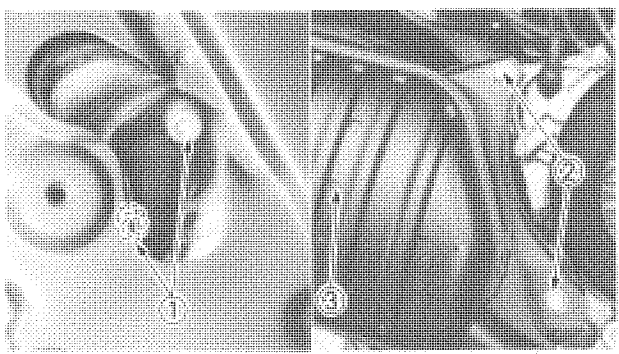
Removal

1. Remove:
   - Front cover ①
   - Side cover (Right) ②
   - Footrest board ③

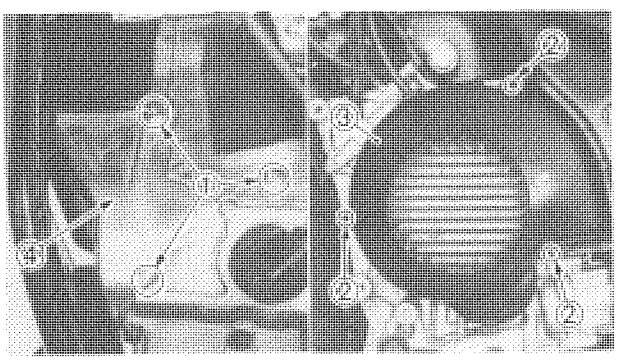
   Refer to "CHAPTER 2. REMOVING THE COVERS AND PANELS" section.



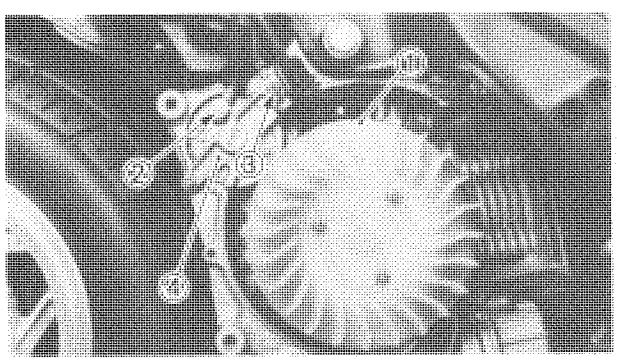
2. Remove:
   - Passenger footrest (Right) ①



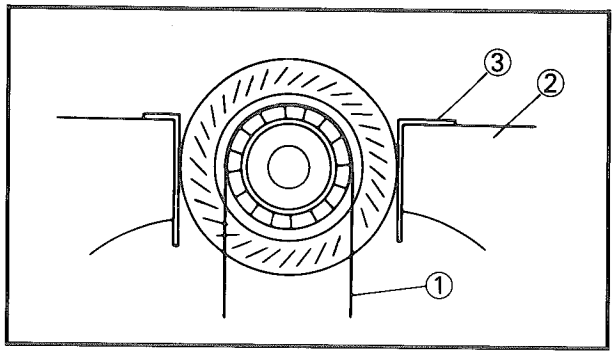
3. Remove:
   - Socket bolts (Exhaust pipe) ①
   - Flange bolts (Muffler) ②
   - Muffler assembly ③



4. Remove:
   - Screws (Air shroud 1) ①
   - Screws (Fancase cover) ②
   - Fancase cover ③ with air shroud ④



5. Remove:
   - Cooling fan ①
   - Starter motor lead (Positive) ②
   - Starter motor lead (Negative) ③
   - Starter motor assembly ④



Inspection and Repair

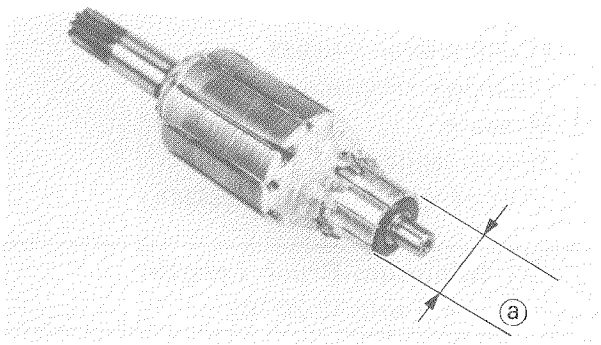
1. Inspect:
   - Commutator (Outer surface)

   Dirty→Clean it with #600 grit sandpaper ①.

   Hold the armature in a vise ② and copper or aluminium plate ③.

NOTE:

Lightly grip the armature with a vise.

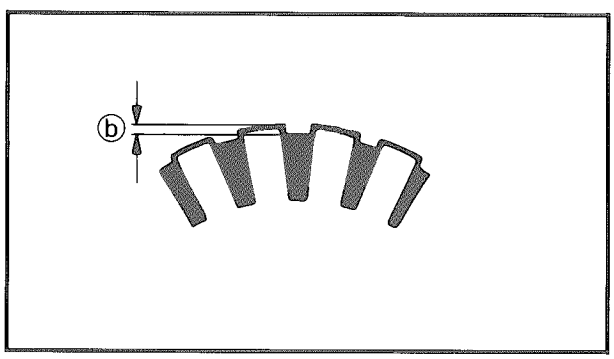


2. Measure:
   - Commutator (Diameter)

   Measure the diameter ⓐ of the commutator at which the brush contacts.

   Out of specification→Replace.

Commutator Wear Limit ⓐ:
22.0 mm (0.87 in)



3. Measure:
   - Mica undercut ⓑ

   (between commutator segments)

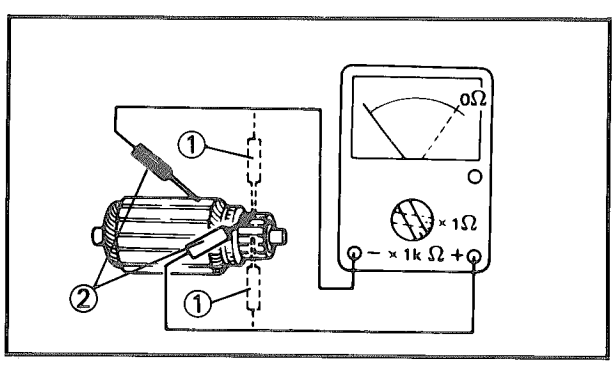
   Out of specification→Scrape mica to proper value.

   Use a hacksaw blade that is ground to fit.

Mica Undercut ⓑ:
0.8 mm (0.031 in)

NOTE:

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

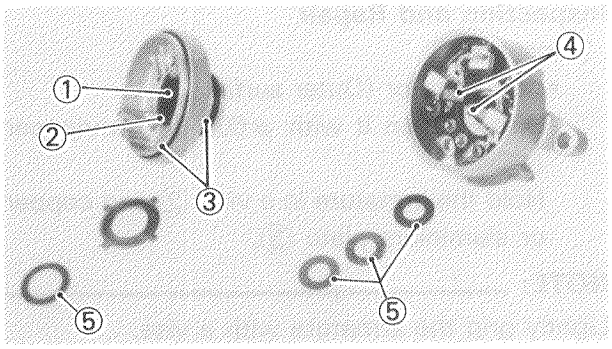


4. Measure:
   - Armature coil resistance

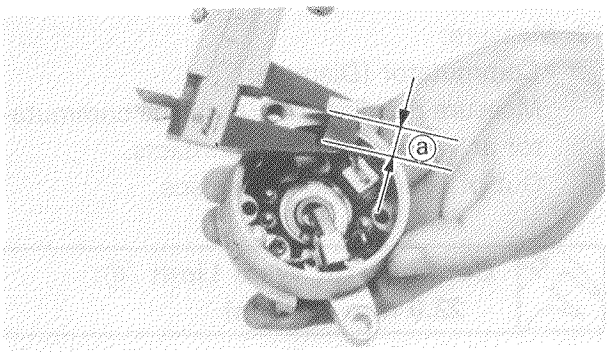
   (insulation/continuity)

   Defect(s)→Replace starter motor.

Armature Coil Resistance:
Continuity Check ①:
0.014Ω ± 6% at 20°C (68°F)
Insulation Check ②:
1MΩ or more at 20°C (68°F)



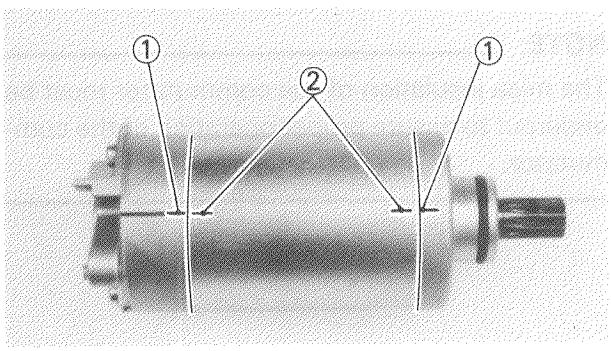
5. Inspect:
   - Bearing ①
   - Oil seal ②
   - O-rings ③
   - Bushing ④
   - Thrust washer ⑤



6. Inspect:
   - Commutator brushes
     Damage → Replace.
7. Measure:
   - Brush length ⓐ
     Out of specification → Replace.

Minimum Brush Length:
5.0 mm (0.20 in)

8. Inspect:
   - Brush springs
     Compare with new spring.
     Wear/Damage → Replace.



Installation

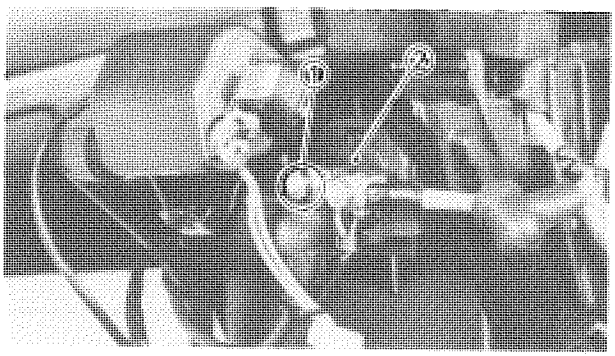
1. Install:
   - Starter motor

NOTE:

Align the match marks ① on the brackets with the match marks ② on the housing.

BATTERY INSPECTION

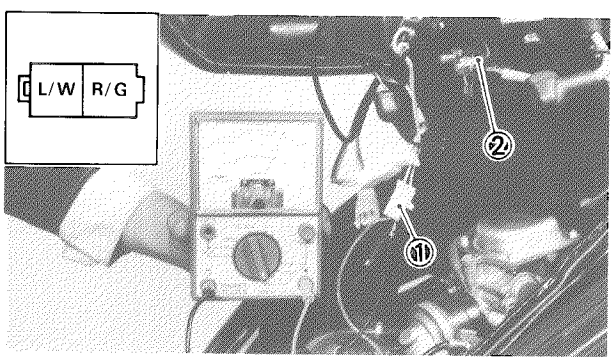
1. Inspect:
   - Battery
     Refer to "CHAPTER 2. BATTERY INSPECTION" section.



STARTER RELAY TEST

1. Inspect:
   - Starter relay
     Poor condition→Replace.

Starter relay inspection steps:
- Open the seat, and remove the front cover.
- Disconnect the starter motor lead ① from the starter relay ②.
- Turn main switch to "ON", engine "STOP" switch to "RUN" and apply either front or rear brake and sidestand to up.
- Push the starter switch and check to see if the starter relay clicks.
  Starter relay clicking→Starter relay OK.
  Starter relay not clicking→Measure coil resistance.



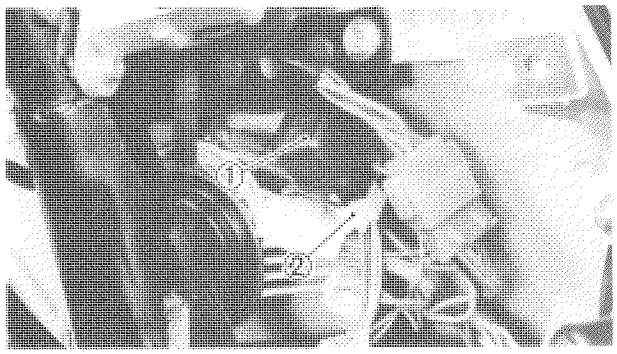
2. Measure:
   - Starter relay resistance
     Out of specification→Replace.

Starter relay resistance measurement steps:
- Disconnect the 2-pin connector ① from starter relay ②.
- Connect the Pocket Tester (YU-03112) leads to "Blue/White" and "Red/Green" leads.
- Measure the coil resistance.

Starter Relay Resistance:
3.4Ω ± 10% at 20°C (68°F)

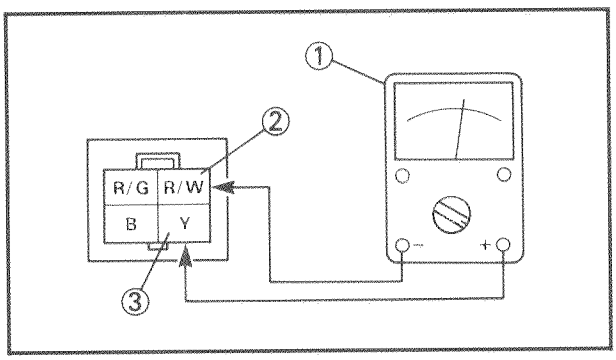
- If the resistance is out of specification, replace the starter relay.

6



STARTING CIRCUIT CUT-OFF RELAY TEST

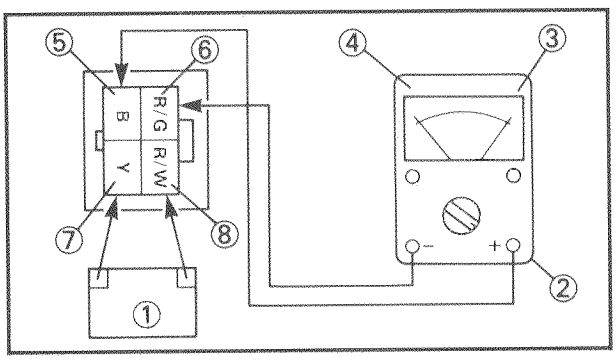
1. Remove:
   - Scooter panel
     Refer to "CHAPTER 2. REMOVING THE COVERS AND PANELS" section.
   - Relay assembly ①
2. Disconnect:
   - Relay assembly connector ②



3. Measure:
   - Starting circuit out-off relay resistance
     Use the Pocket Tester ① (YU-03112).
     Out of specification→Replace.

Starting Circuit Cut-off Relay Resistance:
75Ω ± 10% at 20°C (68°F)

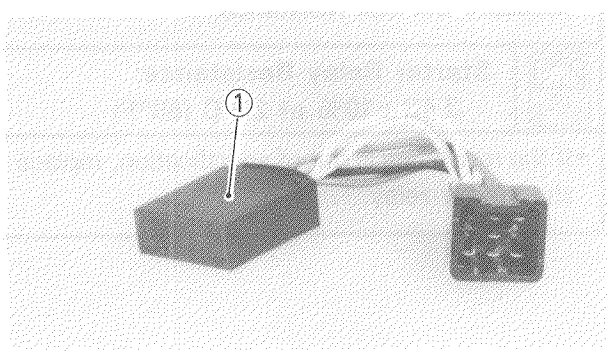
② Red/White
③ Yellow



4. Check:
   - Starting circuit cut-off relay contacts
     Use 12V battery ① and the Pocket Tester ② (YU-03112).
     Out of specification→Replace.

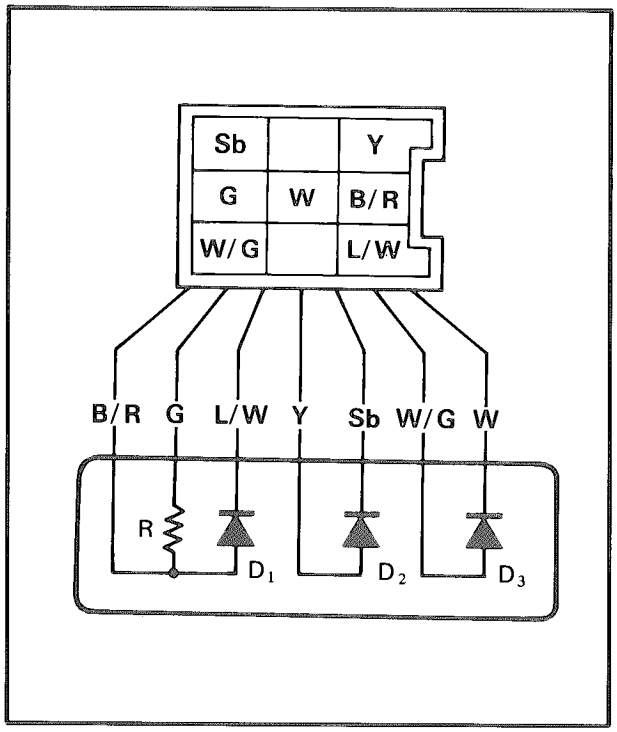
Battery Connected ③: 0Ω
Battery Disconnected ④: ∞

⑤ Black
⑥ Red/Green
⑦ Yellow
⑧ Red/White



DIODE UNIT TEST

1. Remove:
   - Headlight unit
     Refer to "CHAPTER 2. HEADLIGHT BULB REPLACEMENT" section.
   - Diode unit ①



2. Check:
   - Diode continuity/discontinuity
     Defective element(s)→Replace the unit.

Checking element	Pocket tester connecting point (+) (red)	Pocket tester connecting point (−) (black)	Good
D_1	L/W	B/R	○
	B/R	L/W	×
D_2	Sb	Y	○
	Y	Sb	×
D_3	W	W/G	○
	W/G	W	×
R	B/R	G	8.2Ω

○: Continuity (0Ω) (Scale Ω×1K)
×: Discontinuity (∞) (Scale Ω×1)

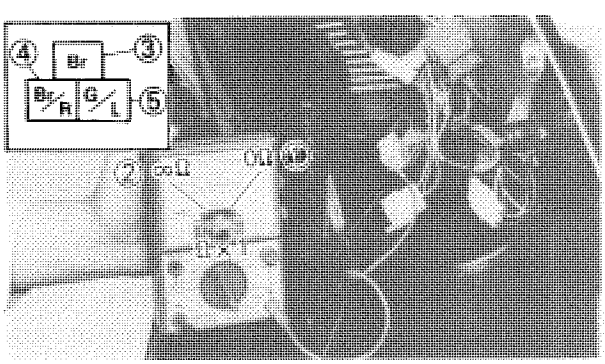
NOTE:

The results "○" or "×" should be reversed according to the pocket tester polarity.

SWITCHES TEST

Sidestand Switch

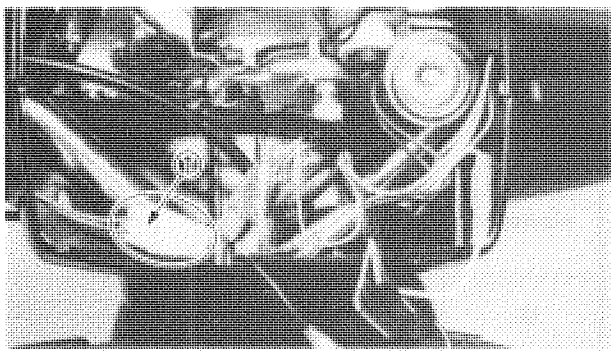
1. Remove:
   - Scooter panel
     Refer to "CHAPTER 2. REMOVING THE COVERS AND PANELS" section.
2. Disconnect:
   - 3-pin connector (Brown, Brown/Red and Green/Blue)
3. Check:
   - Sidestand switch contacts
     Out of specification→Replace switch



Sidestand position	Pocket tester connecting point	Good
Up	③ − ④	○
	③ − ⑤	×
Down	③ − ⑤	○
	③ − ④	×

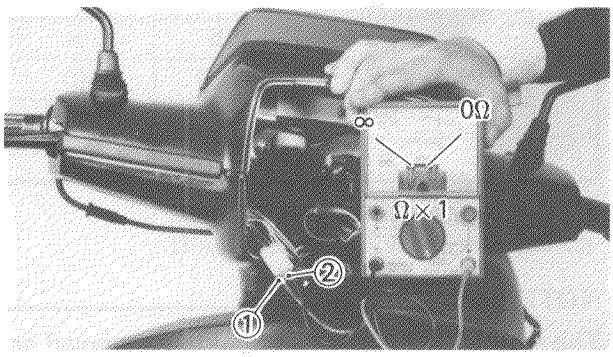
○: Continuity (0Ω) ①
×: Discontinuity (∞) ②

③ Brown
④ Brown/Red
⑤ Green/Blue



Front Brake Switch

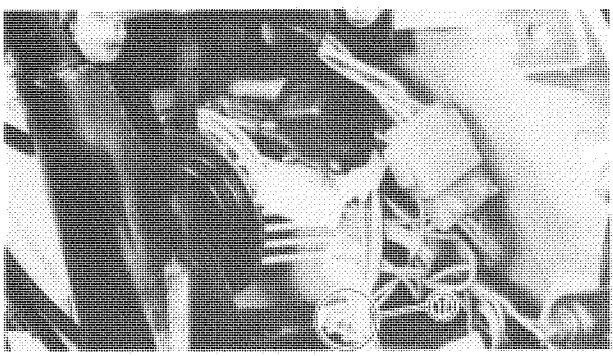
1. Remove:
   - Headlight unit
     Refer to "CHAPTER 2. HEADLIGHT BULB REPLACEMENT" section.
2. Disconnect:
   - 2-pin connector (Green/Yellow, Brown) ①



3. Check:
   - Front brake switch contact
     Out of specification→Replace switch.

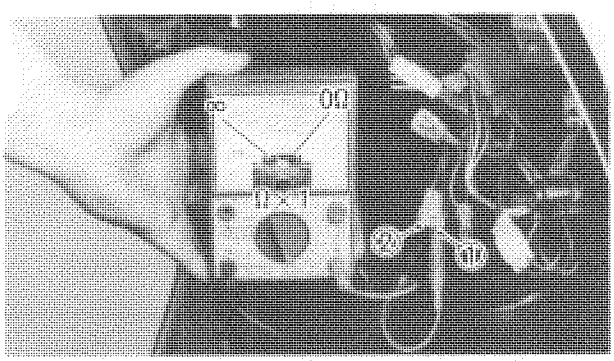
Brake lever	Pull in	Not pull in
Tester	0Ω	∞

① Brown
② Green/Yellow



Rear Brake Switch

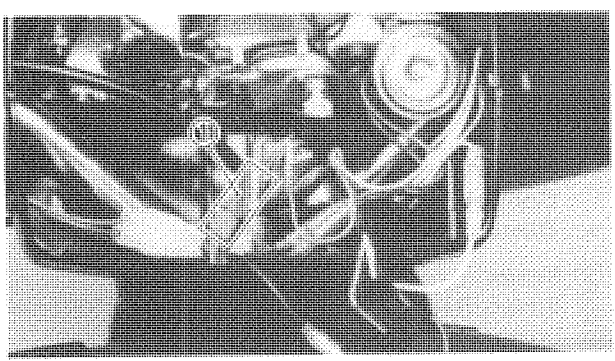
1. Remove:
   - Scooter panel
     Refer to "CHAPTER 2. REMOVING THE COVERS AND PANELS" section.
2. Disconnect:
   - 2-pin connector ① (Green/Yellow, Brown)



3. Check:
   - Rear brake switch contact
     Out of specification→Replace switch.

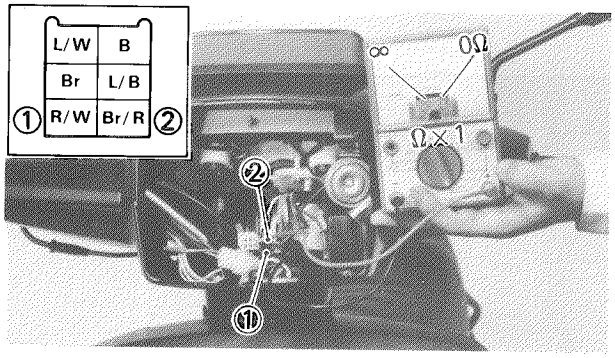
Brake pedal	Depress	Free
Tester	0Ω	∞

① Brown
② Green/Yellow



"ENGINE STOP" switch and "START" switch

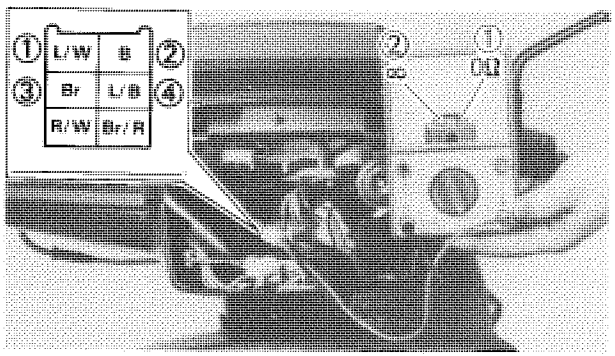
1. Remove:
   - Headlight unit
     Refer to "CHAPTER 2. HEADLIGHT BULB REPLACE MENT" section.
2. Disconnect:
   - 6-pin connector ① (Blue/White, Black, Brown, Blue/Black, Red/White and Brown/Red)



3. Check:
   - "ENGINE STOP" switch contact
     Out of specification→Replace switch.

"ENGINE STOP" switch	RUN	OFF
Tester	0Ω	∞

① Red
② Brown/White



4. Check:
   - "START" switch contact
     Out of specification→Replace

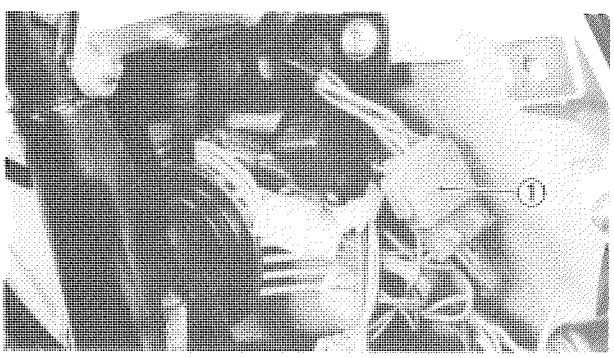
"START" switch position	Pocket tester connecting point	Good
ON (Push)	① – ②	○
	③ – ④	×
OFF (Free)	③ – ④	○
	① – ②	×

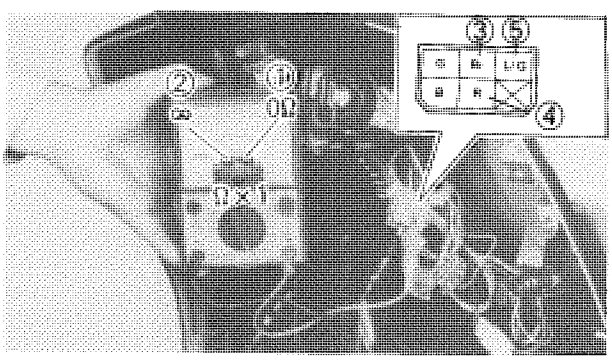
○: Continuity (0Ω) ①
×: Discontinuity (∞) ②

① Blue/White
② Black
③ Brown
④ Blue/Black

Main Switch

1. Remove:
   - Scooter panel
     Refer to "CHAPTER 2. REMOVING THE COVERS AND PANELS" section.
2. Disconnect:
   - 6-pin connector ① (Green, Brown, Blue/Green, Black and Red).
3. Check:
   - Main switch contacts
     Out of specification→Replace switch.



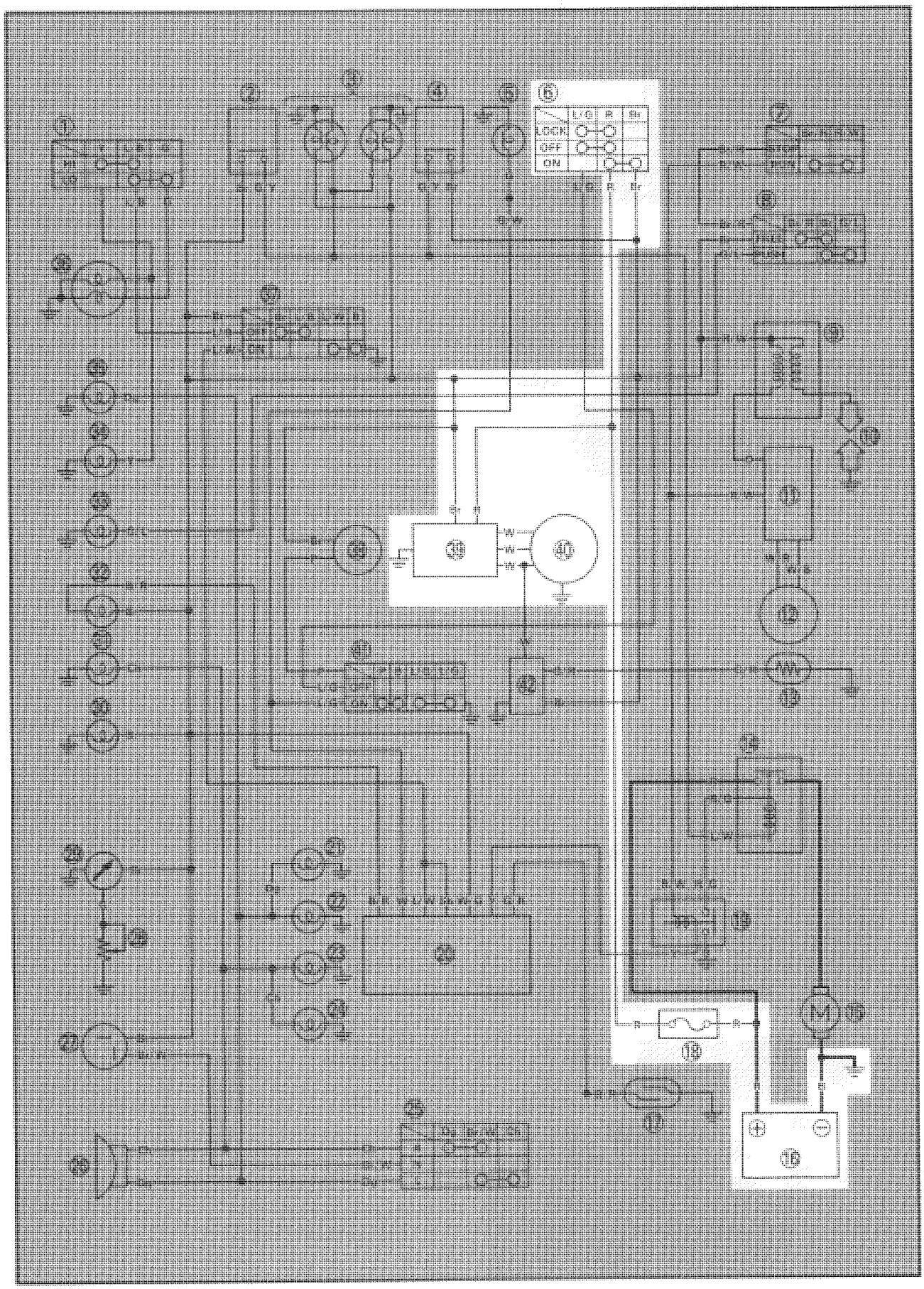


Main switch position	Pocket tester connecting point	Good
ON	③ – ④	○
	④ – ⑤	×
OFF (LOCK)	④ – ⑤	○
	③ – ④	×

○: Continuity (0Ω) ①
×: Discontinuity (∞) ②

③ Brown ④ Red ⑤ Blue/Green

CHARGING SYSTEM

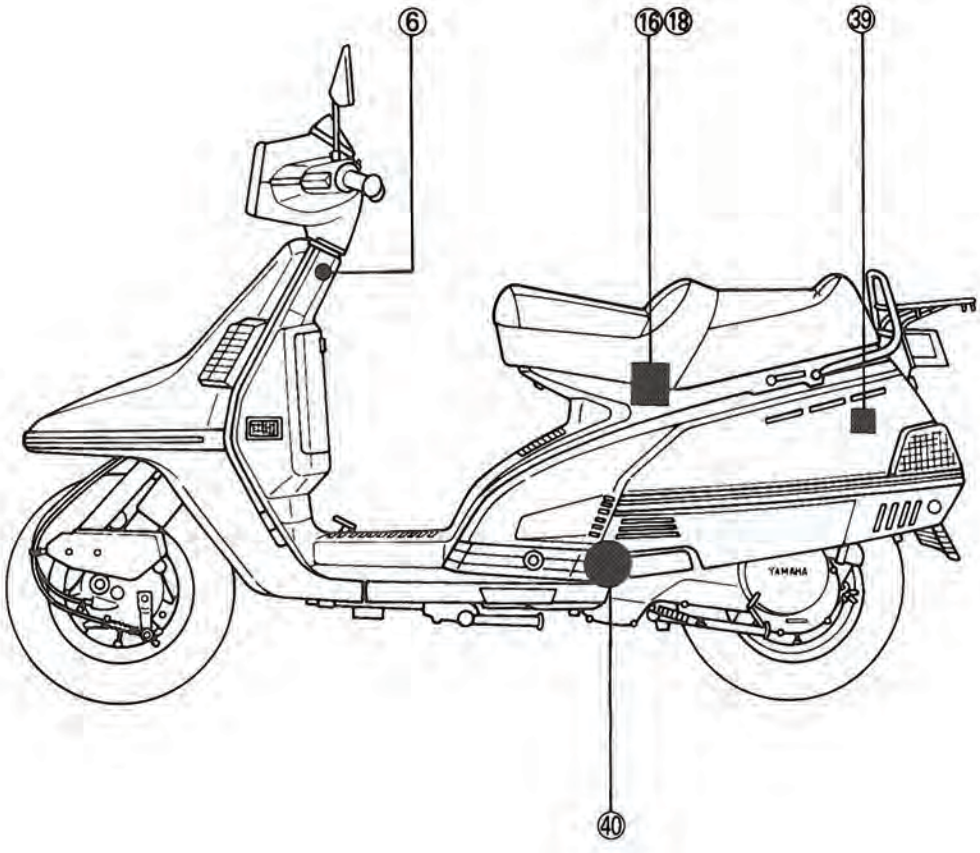


Aforementioned circuit diagram shows charging circuit in wiring diagram.

NOTE:

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

⑥ Main switch
⑯ Battery
⑱ Fuse
㊴ Rectifier/Regulator
㊵ AC magneto generator



TROUBLESHOOTING

THE BATTERY IS NOT CHARGED.

↓

Open the seat and remove the battery cover.

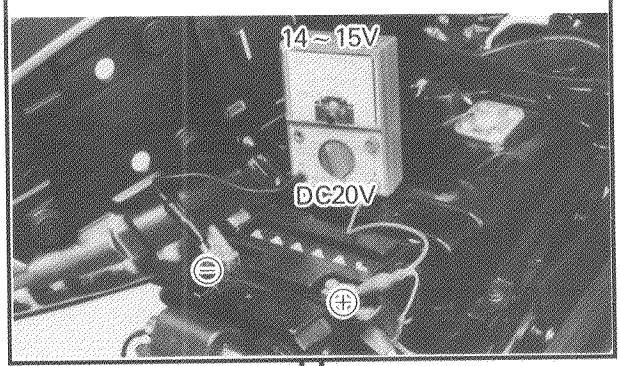
↓

Measure the battery for voltage and specific gravity.
Battery voltage: More than 12V
Specific gravity: 1.280

NO → Recharge the battery.

YES ↓

Connect the Pocket Tester to the battery to measure the generator voltage.



↓

Start the engine and accelerate to about 2,000 r/min or more.

→ Generator Voltage: More than 15V → Replace rectifier with regulator.

↓

Generator Voltage: Less than 14V

↓

Check the stator coil resistance.
Stator coil resistance (White-White):
0.44Ω ± 15% at 20°C (68°F)

↓

Replace the stator coil.

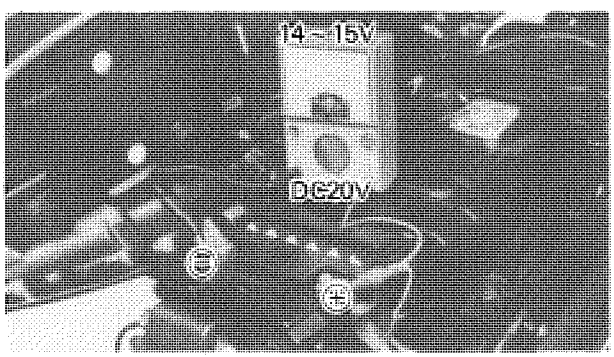
6

BATTERY INSPECTION

Refer to "CHAPTER 2. BATTERY INSPECTION" section.

CHARGING VOLTAGE TEST

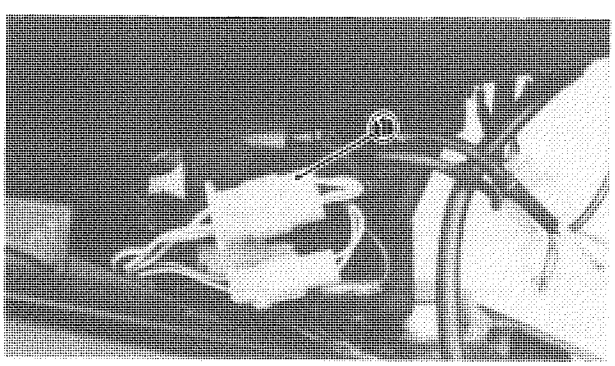
1. Open the seat and remove the battery cover.
2. Connect:
   - Pocket Tester (YU-03112)
     To battery terminals.
3. Start the engine and accelerate to about 2,000 r/min or more.
4. Measure:
   - Generator voltage
     Out of specification→Check battery, stator coil, and rectifier/regulator.



Generator Voltage: 14~15V

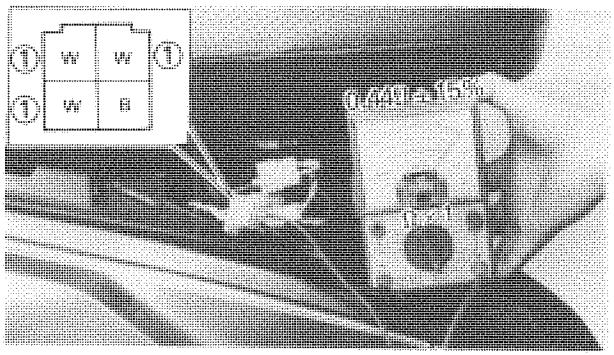
CAUTION:

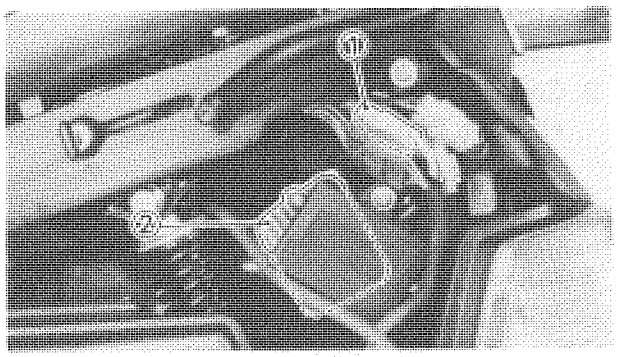
Never disconnect the wires from the battery while the generator is operating, otherwise the voltage across the generator terminals will increase and damage the semiconductors.

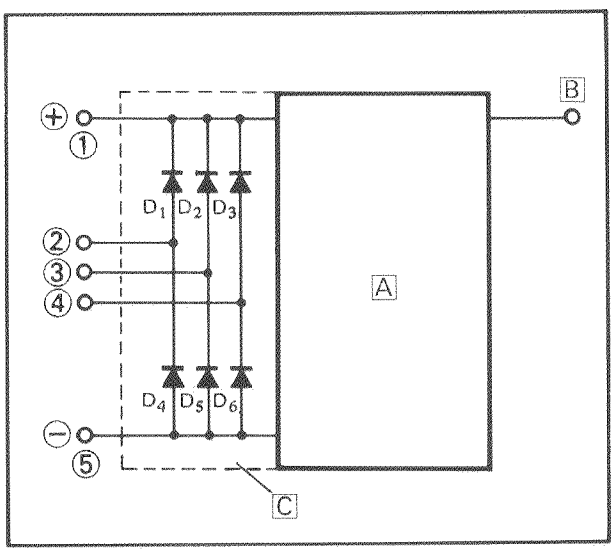


STATOR COIL RESISTANCE TEST

1. Open the seat and remove the front cover.
2. Disconnect:
   - 4-pin connector ① (White, White, White and Black)







3. Connect:
   - Pocket Tester (YU-03112)
4. Measure:
   - Stator coil resistance

   Out of specification→Replace stator coils.

Stator Coil Resistance:
0.44Ω ± 15% at 20°C (68°F)
(White—White)

① White

RECTIFIER TEST

1. Remove:
   - Front cover
   - Side cover (Left)

   Refer to "CHAPTER 2. REMOVING THE COVERS AND PANELS" section.
2. Disconnect:
   - 6-pin connector ① (White, White, White, Red, Brown and Black).

② Rectifier/Regulator

3. Check:
   - Defective element→Replace rectifier.

① Red
② White
③ White
④ White
⑤ Black

Ⓐ IC Regulator
Ⓑ Brown
Ⓒ Rectifier

Checking element	Pocket tester connecting point (+) (Red)	Pocket tester connecting point (−) (Black)	Good	Replace (Element shorted)	Replace (Element opened)
D_1	①	②	○	○	×
	②	①	×	○	×
D_2	①	③	○	○	×
	③	①	×	○	×
D_3	①	④	○	○	×
	④	①	×	○	×
D_4	②	⑤	○	○	×
	⑤	②	×	○	×
D_5	③	⑤	○	○	×
	⑤	③	×	○	×
D_6	④	⑤	○	○	×
	⑤	④	×	○	×

○: Continuity (0Ω) ×: Discontinuity (∞)

NOTE:

The results "○" or "×" should be reversed according to the Pocket Tester polarity.

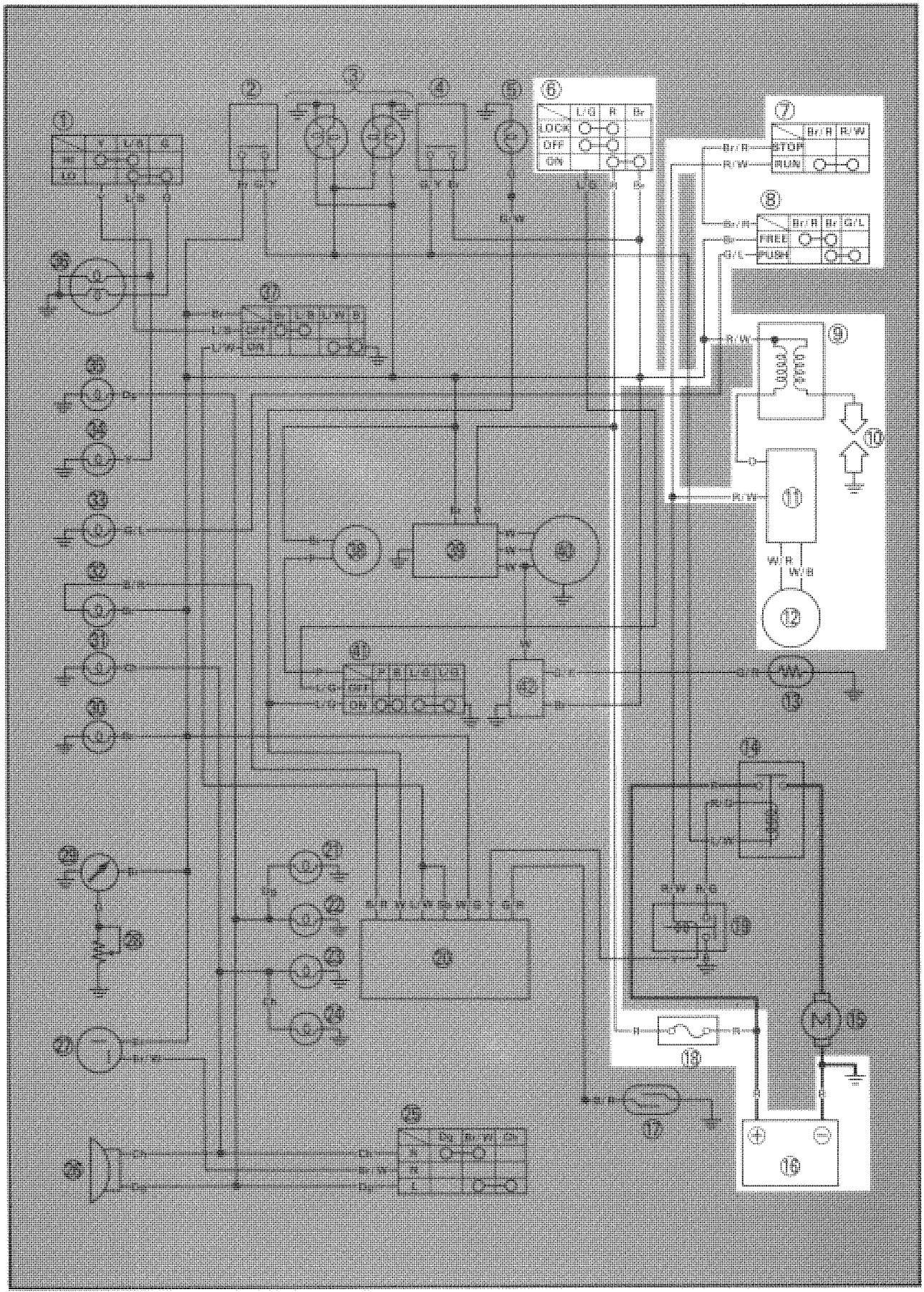
CAUTION:

Do not overcharge rectifier or damage may result.

Avoid:

- **A short circuit.**
- **Inverting + and — battery leads.**
- **Direct connection of rectifier to battery.**

IGNITION SYSTEM

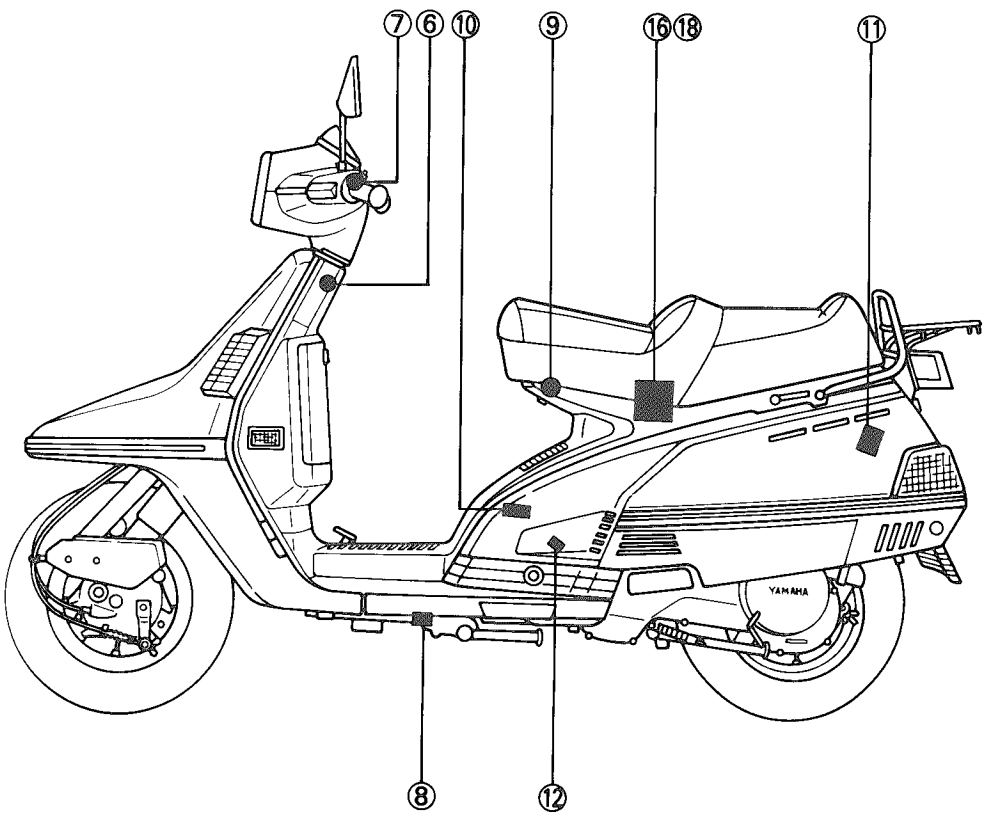


Aforementioned circuit diagram shows ignition circuit in wiring diagram.

NOTE:

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

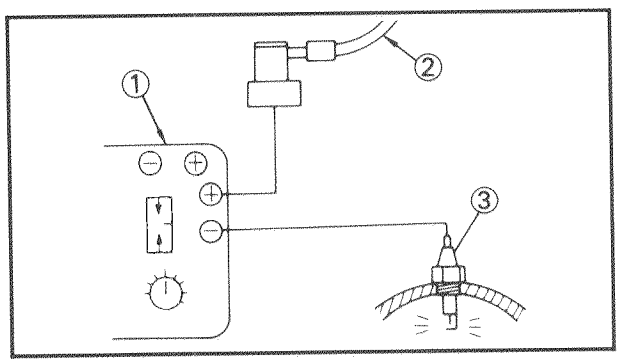
⑥ Main switch
⑦ "ENGINE STOP" switch
⑧ Sidestand switch
⑨ Ignition coil
⑩ Spark plug
⑪ Ignitor unit
⑫ Pickup coil
⑯ Battery
⑱ Main fuse



TROUBLESHOOTING

The entire ignition system can be checked for misfire and weak spark by using the Electro Tester.

1. Warm up the engine so that all of the electrical components are at operating temperature.



2. Connect:
   - Electro Tester (YU-33260) ①
3. Start the engine, and increase the spark gap until misfire occurs. (Test at various r/min between idle and red line.)

② Spark plug lead
③ Spark plug

CAUTION:

Do not run the engine in neutral above 6,000 r/min for more than 1 or 2 seconds.

Minimum Spark Gap:
6 mm (0.24 in)

Faulty ignition system operation (at the minimum spark gap or smaller) → Follow the troubleshooting chart until the source of the problem is located.

Troubleshooting Chart

Check the entire ignition for connections.
→ FAULTY → Correct.

↓

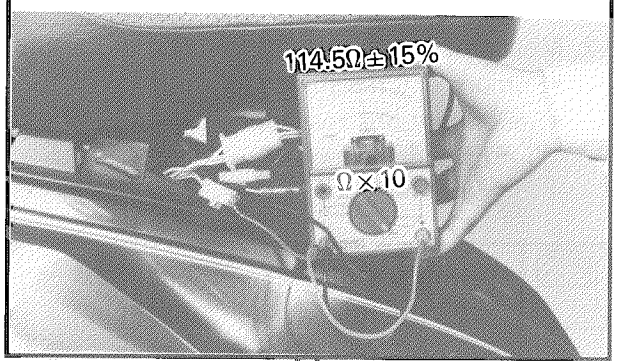
Measure the battery voltage and specific gravity.
Battery voltage: More than 12V
Specific gravity: 1.280
→ NO → Recharge the battery.

↓

Set the main and "ENGINE STOP" switches to "ON", and sidestand to up. Check for voltage (12V) on the "Red/White" lead at the ignitor unit and ignition coil.
→ Check the main fuse and wiring circuit.

↓

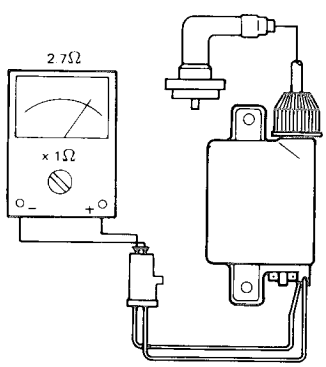
Measure the pickup coil for resistance.
Pickup coil: 114.5Ω ± 15% at 20°C (68°F)
(White/Red—White/Black)
→ NO → Replace the pickup coil assembly.



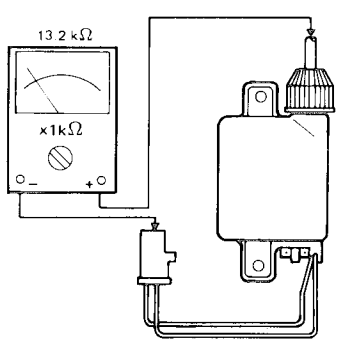
↓

Check the ignition coil for resistance (primary and secondary).

Primary: 2.7Ω ± 10% at 20°C (68°F)

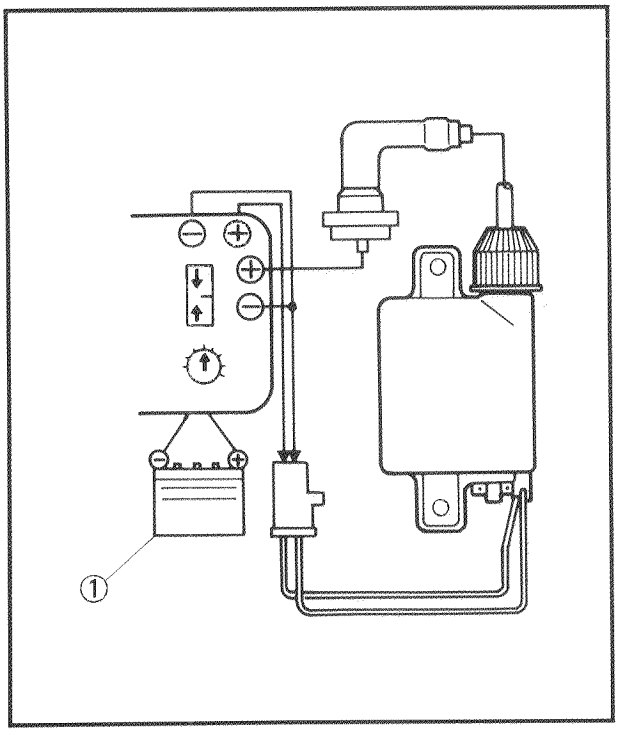


Secondary: 13.2 kΩ ± 20% at 20°C (68°F)



OK → TCI unit is faulty, replace the unit.

NO → Replace the ignition coil(s).



IGNITION SPARK GAP TEST

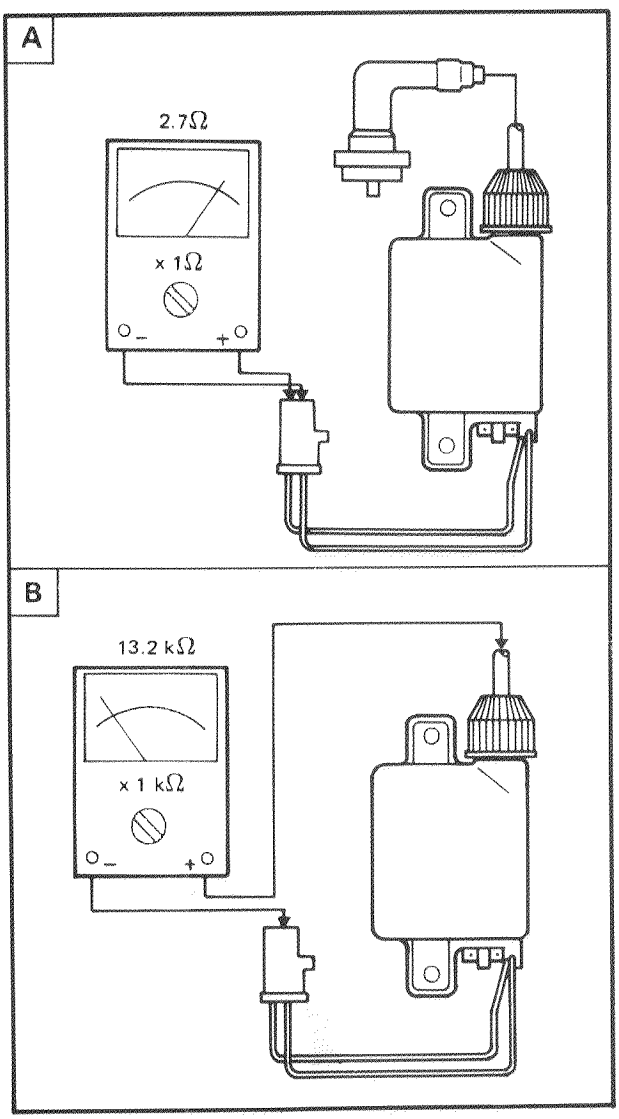
1. Open the seat and remove the front cover.
2. Disconnect:
   - Ignition coil connector
   - Spark plug leads
3. Connect:
   - Electro Tester (YU-33260).

NOTE:

Be sure to use a fully charged 12V battery ①.

4. Turn the spark plug gap adjuster and increase the gap to the maximum limit unless misfire occurs first.

Minimum Spark Gap:
6 mm (0.24 in)



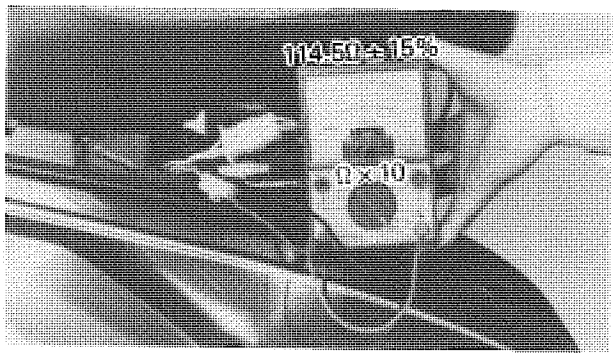
IGNITION COIL RESISTANCE TEST

1. Connect:
   - Pocket Tester (YU-03112)
2. Measure:
   - Primary coil resistance [A]
   - Secondary coil resistance [B]

   Out of specification→Replace.

Primary Coil Resistance:
2.7Ω ± 10% at 20°C (68°F)
Secondary Coil Resistance:
13.2 kΩ ± 20% at 20°C (68°F)

6



PICKUP COIL RESISTANCE TEST

1. Remove:
   - Front cover
   - Side cover (Right)

   Refer to "REMOVING THE COVERS AND PANELS" section.
2. Disconnect:
   - 2-pin connecter (White/Red, White/Black)
3. Measure:
   - Pickup coil resistance

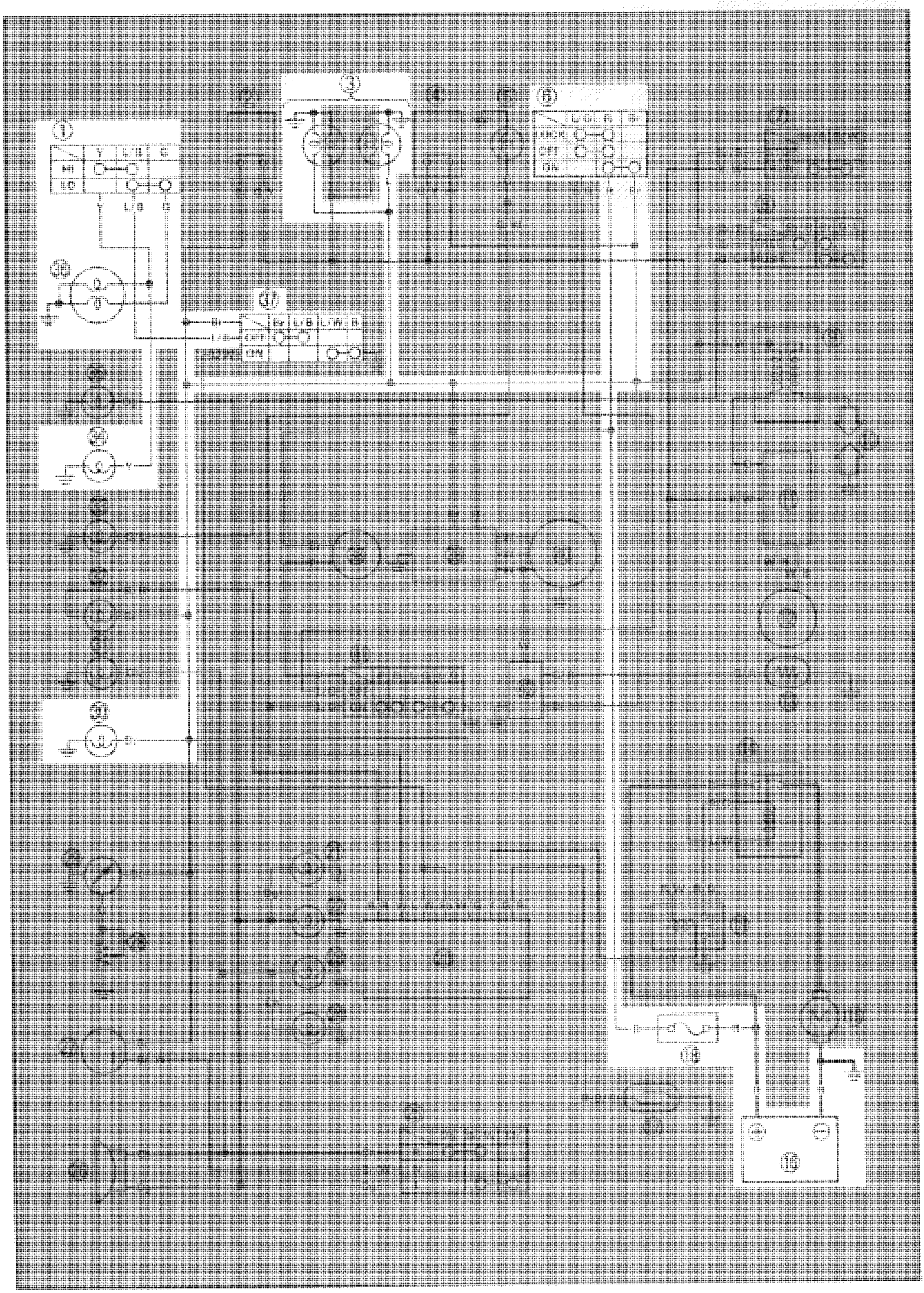
   Use a Pocket Tester. (YU-03112)
   Out of specification→Replace.

Pickup Coil Resistance:
114.5Ω±15% at 20°C (68°F)
(White/Red—White/Black)

SPARK PLUG INSPECTION

Refer to "CHAPTER 2. SPARK PLUG INSPECTION" section.

LIGHTING SYSTEM

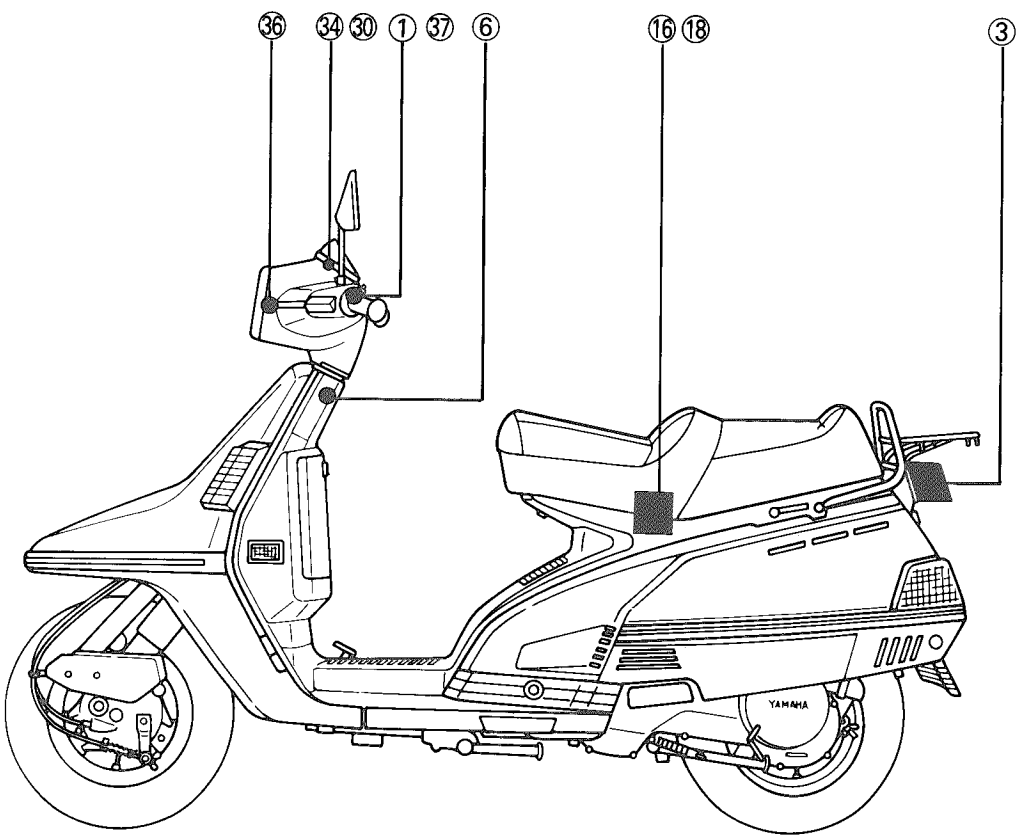


Aforementioned circuit diagram shows lighting circuit in wiring diagram.

NOTE:

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

① "LIGHTS" (Dimmer) switch
③ Tail/Brake light
⑥ Main switch
⑯ Battery
⑱ Main fuse
㉚ Meter illumination
㉞ "HIGH BEAM" indicator light
㊱ Headlight
㊲ "START" switch



LIGHTING TESTS AND CHECKS

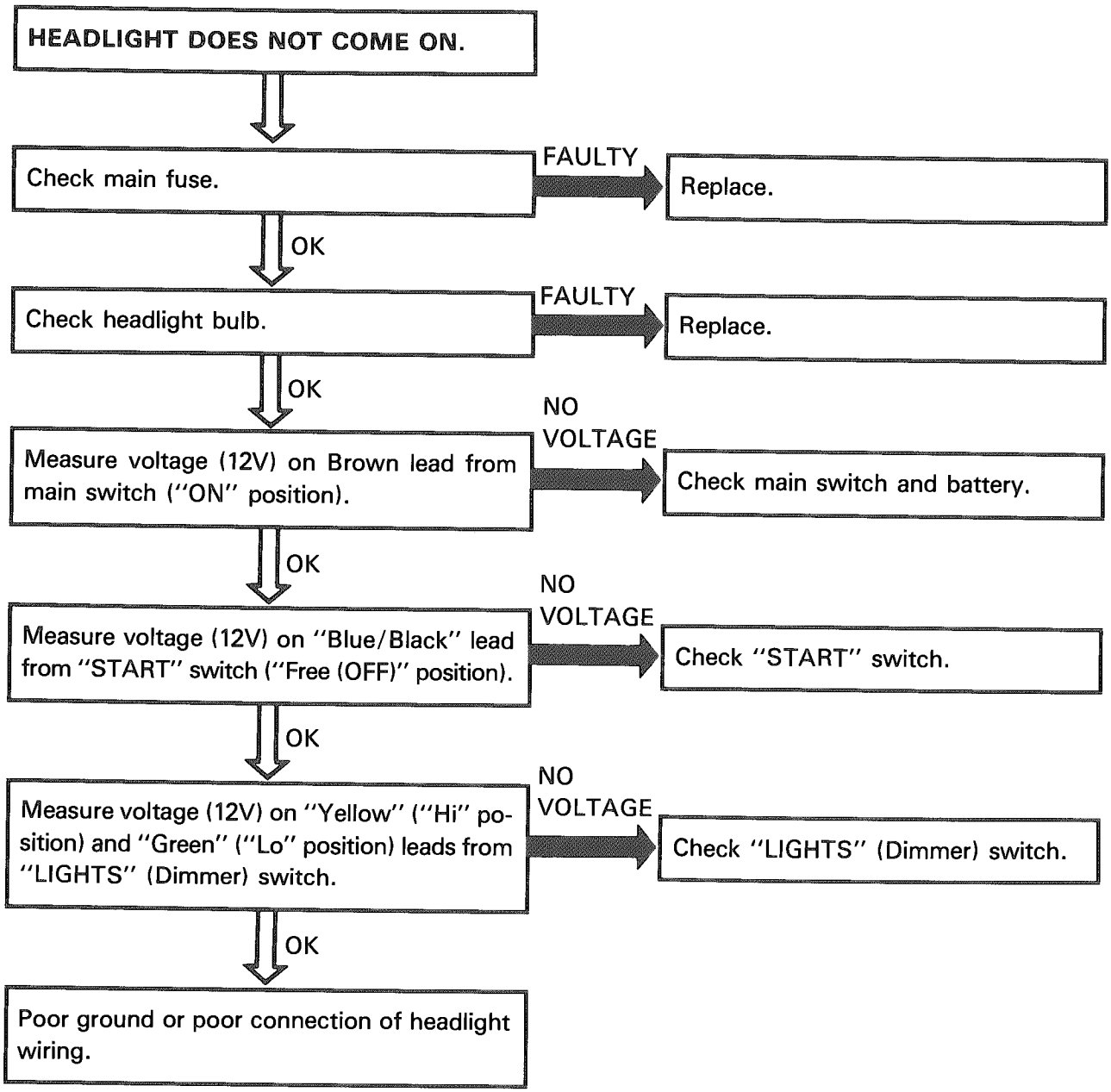
The battery provides power for operation of the headlight, taillight, and meter illumination. If none of the above fail to operate proceed further. Low battery voltage indicates either a faulty battery, low battery fluid level, or a defective charging system.

Also check fuse condition. Replace any "open" fuses. There are individual fuses for various circuits (see complete Circuit Diagram).

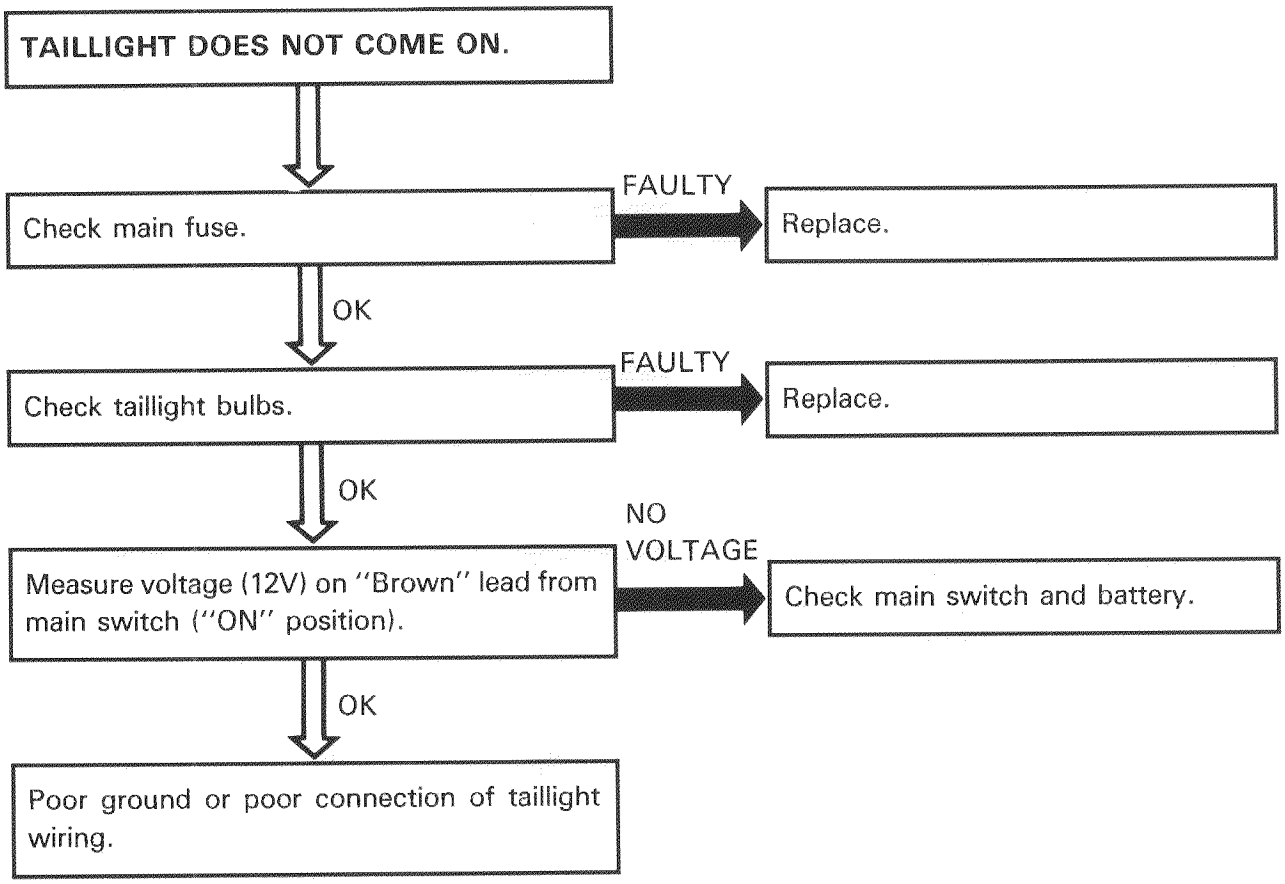
NOTE:

Check each bulb first before performing the following check.

Headlight Troubleshooting

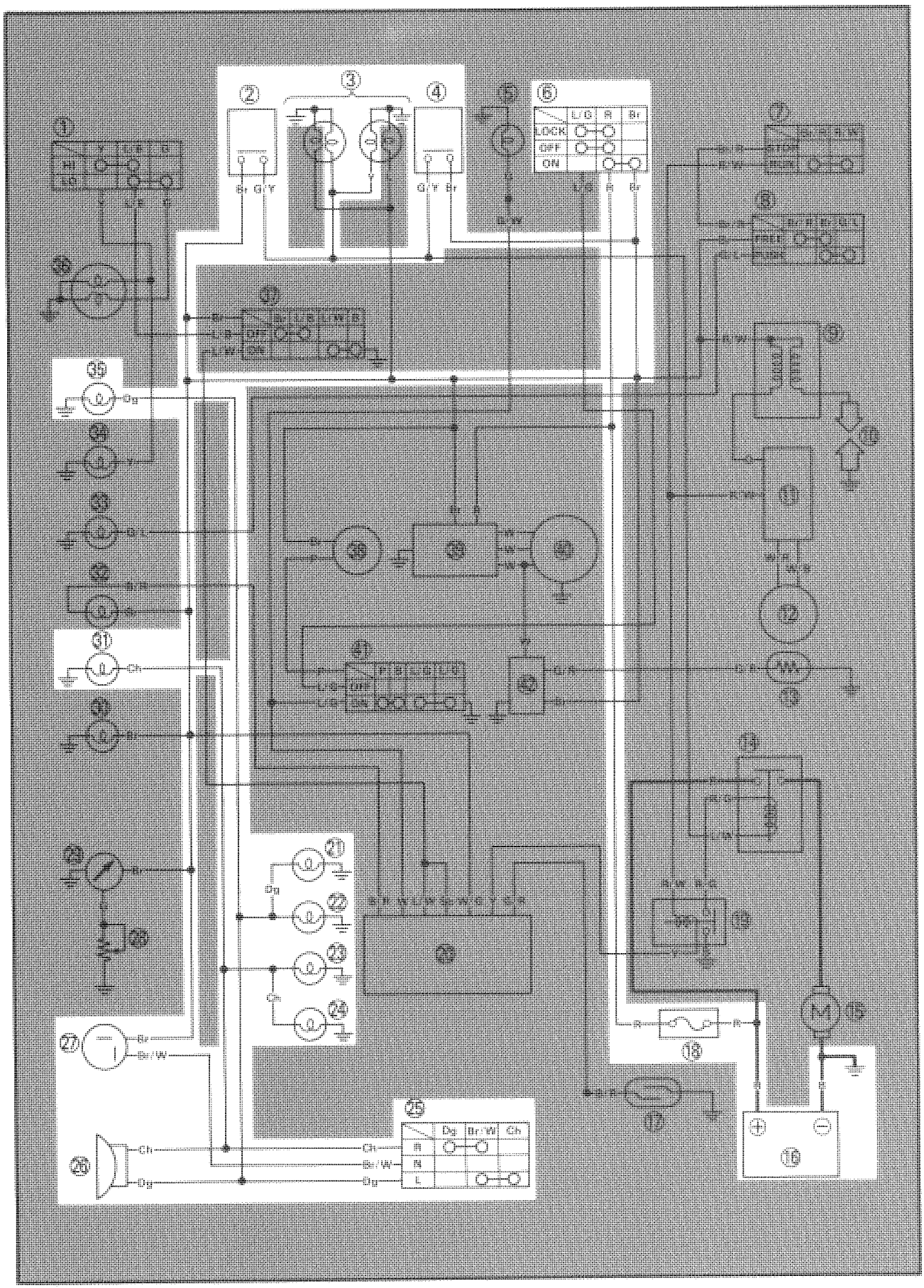


Taillight Troubleshooting



MEMO

SIGNAL SYSTEM

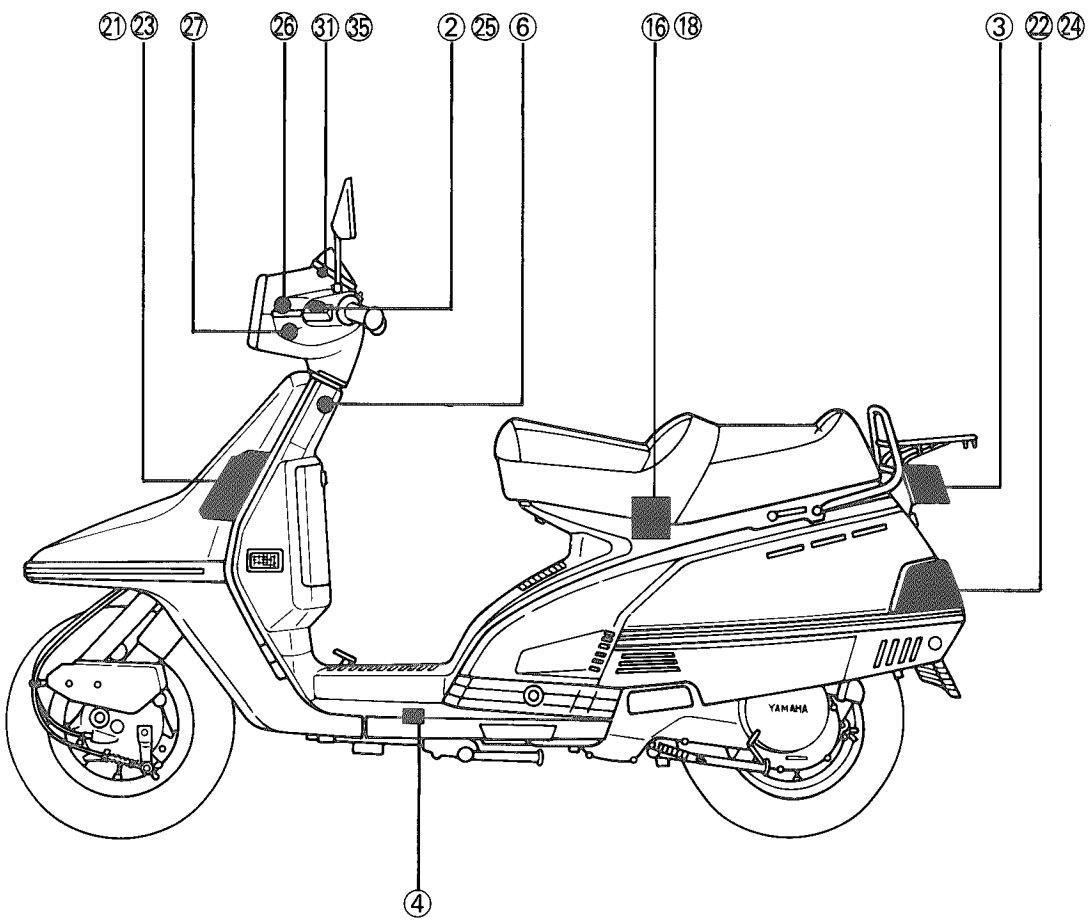


Aforementioned circuit diagram shows signal circuit in wiring diagram.

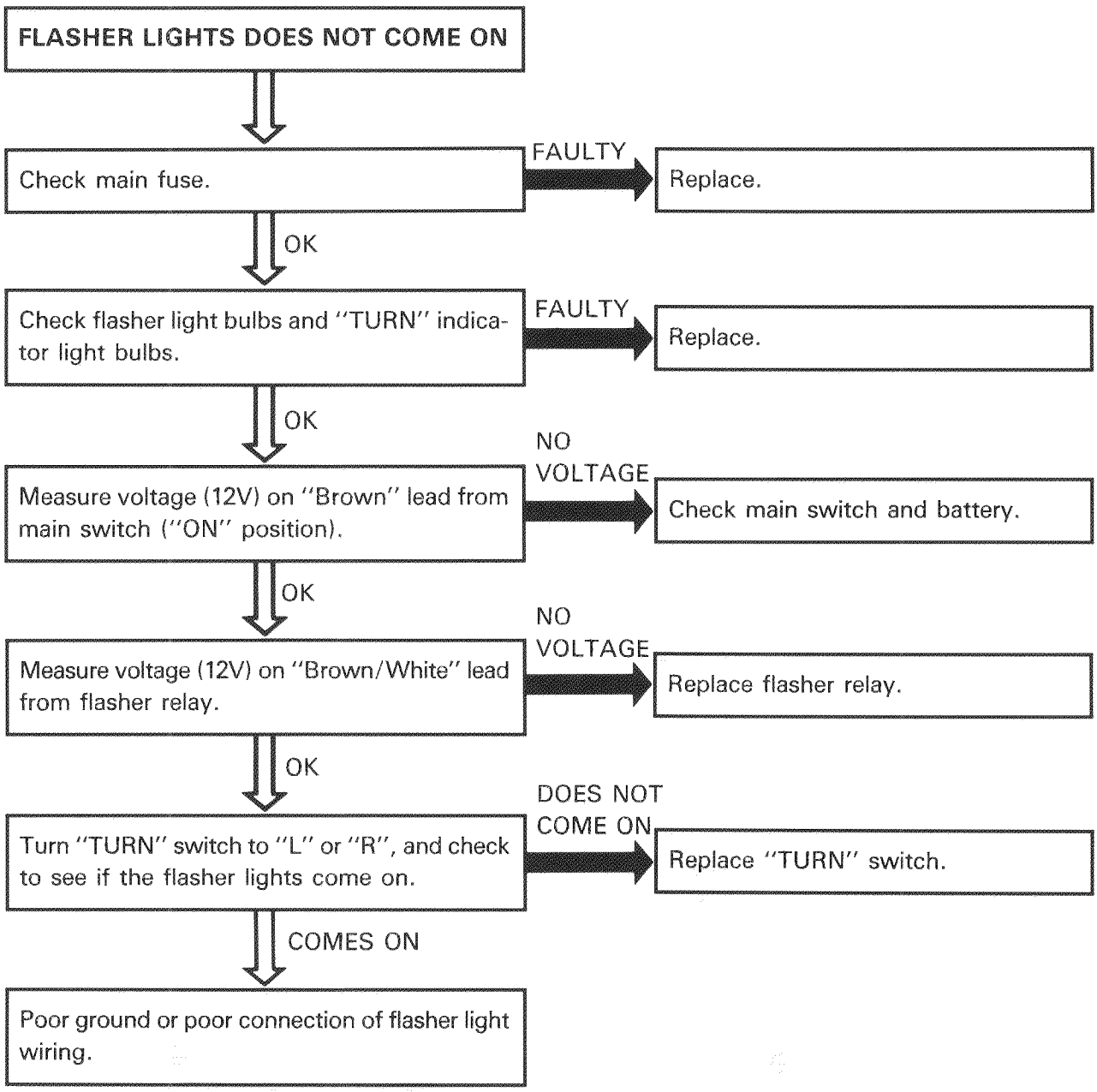
NOTE:

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

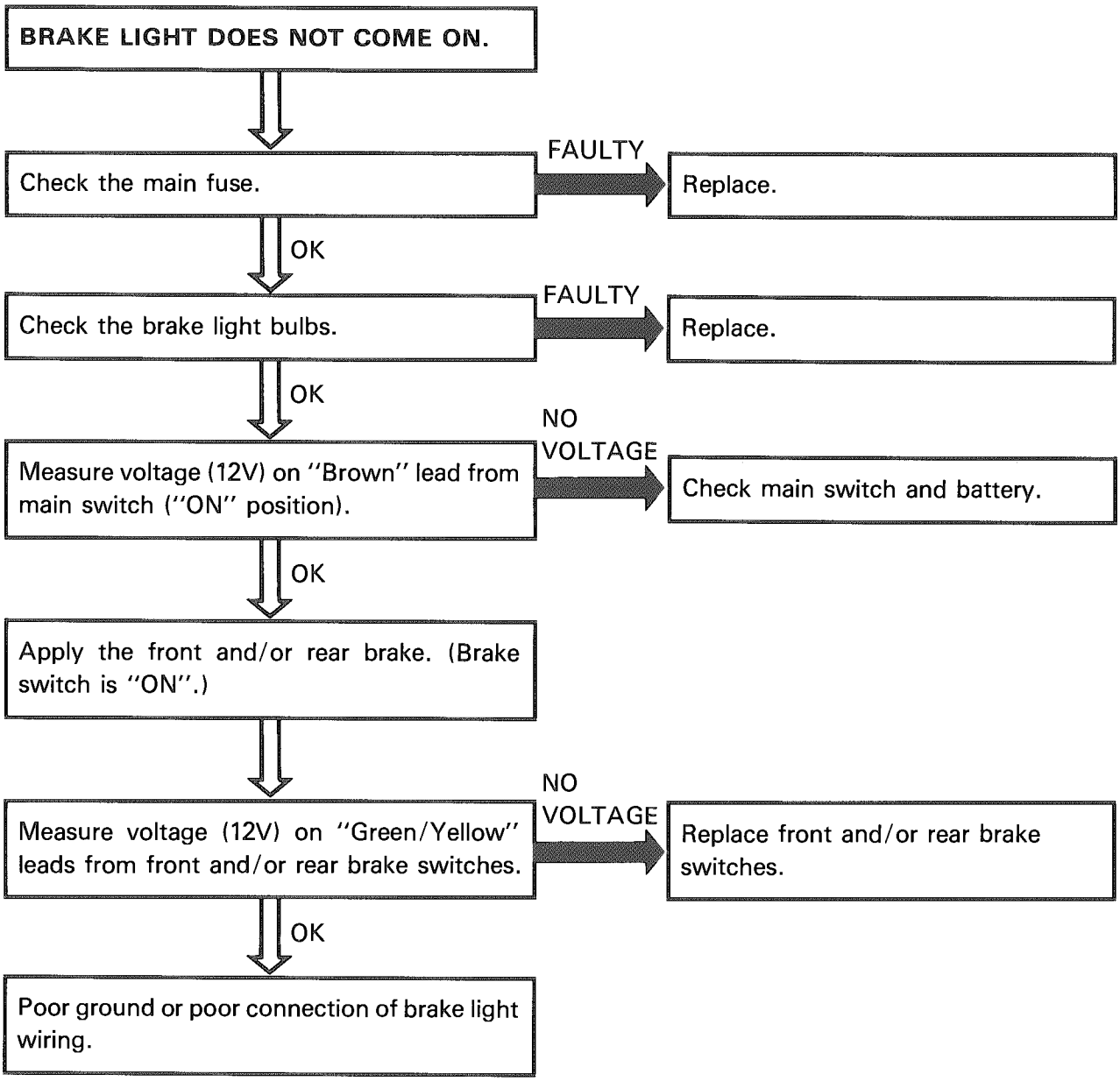
② Front brake switch
③ Tail/Brake light
④ Rear brake switch
⑥ Main switch
⑯ Battery
⑱ Main fuse
㉑ Front flasher light (Right)
㉒ Rear flasher light (Right)
㉓ Front flasher light (Left)
㉔ Rear flasher light (Left)
㉕ "TURN" switch
㉖ Audio pilot
㉗ Flasher relay
㉛ "TURN" indicator light (Left)
㉟ "TURN" indicator light (Right)



TROUBLESHOOTING (1)

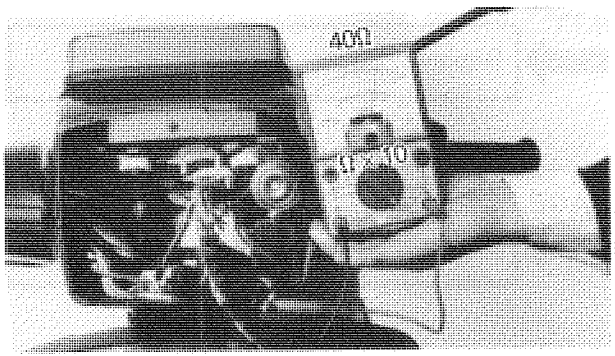


TROUBLESHOOTING (2)



AUDIO PILOT TEST

1. Remove:
   - Headlight unit
     Refer to "CHAPTER 2. HEADLIGHT BULB REPLACEMENT" section.
2. Remove:
   - Audio pilot



3. Measure:
   - Audio pilot resistance
     Use the Pocket Tester (YU-03112)
     Out of specification→Replace.

Audio Pilot Resistance:
40Ω ± 10% at 20°C (68°F)

SWITCHES TEST

"TURN" Switch

Switches may be checked for continuity with a Pocket Tester (YU-03112) on the "Ohm × 1" position.

Switch position	Lead color		
	Dg	Br/W	Ch
R	○——	——○	
N			
L		○——	——○

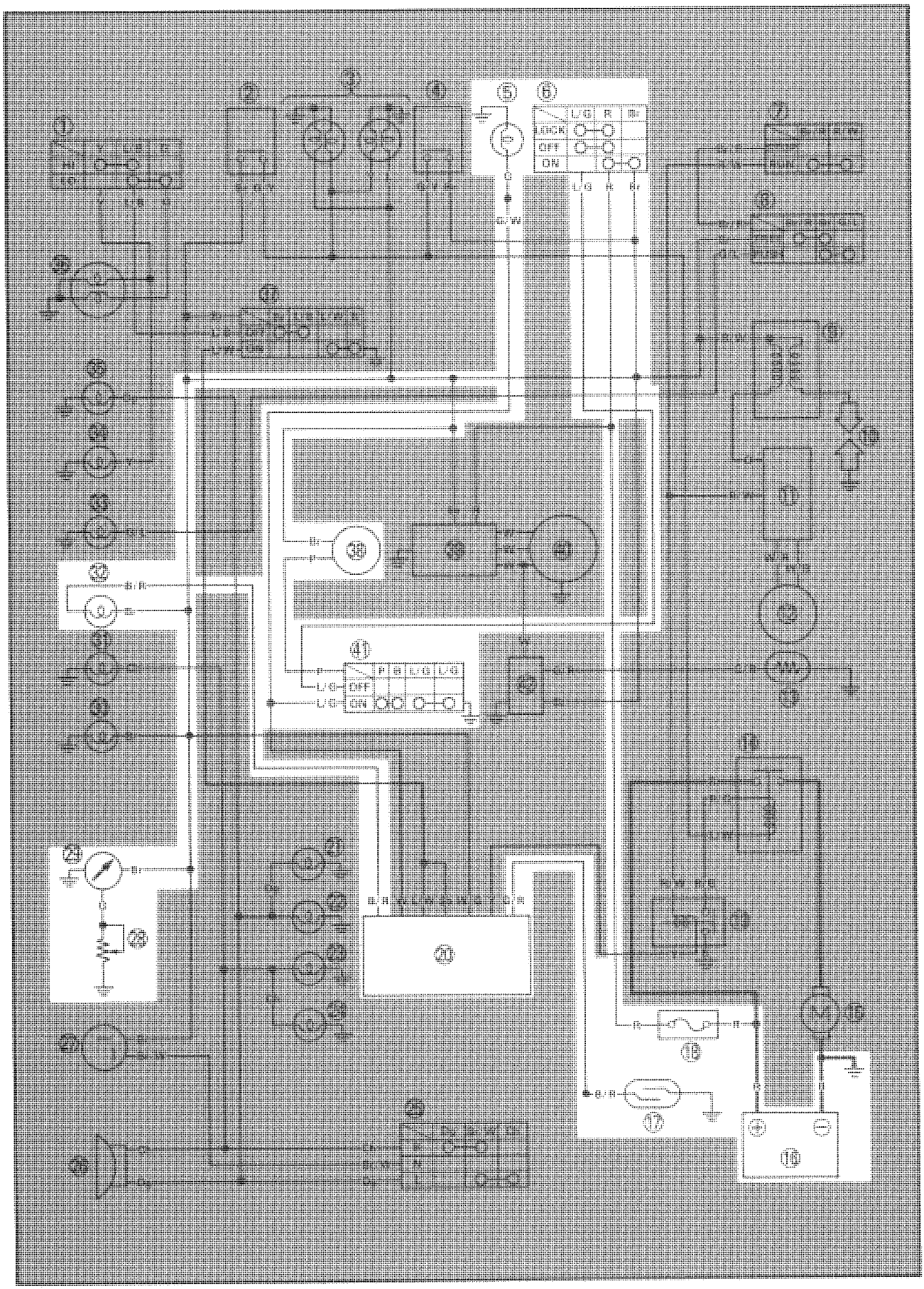
Front and Rear Brake Switch

Refer to "SWITCHES TEST" page 6-16.

6

MEMO

ACCESSORY SYSTEM

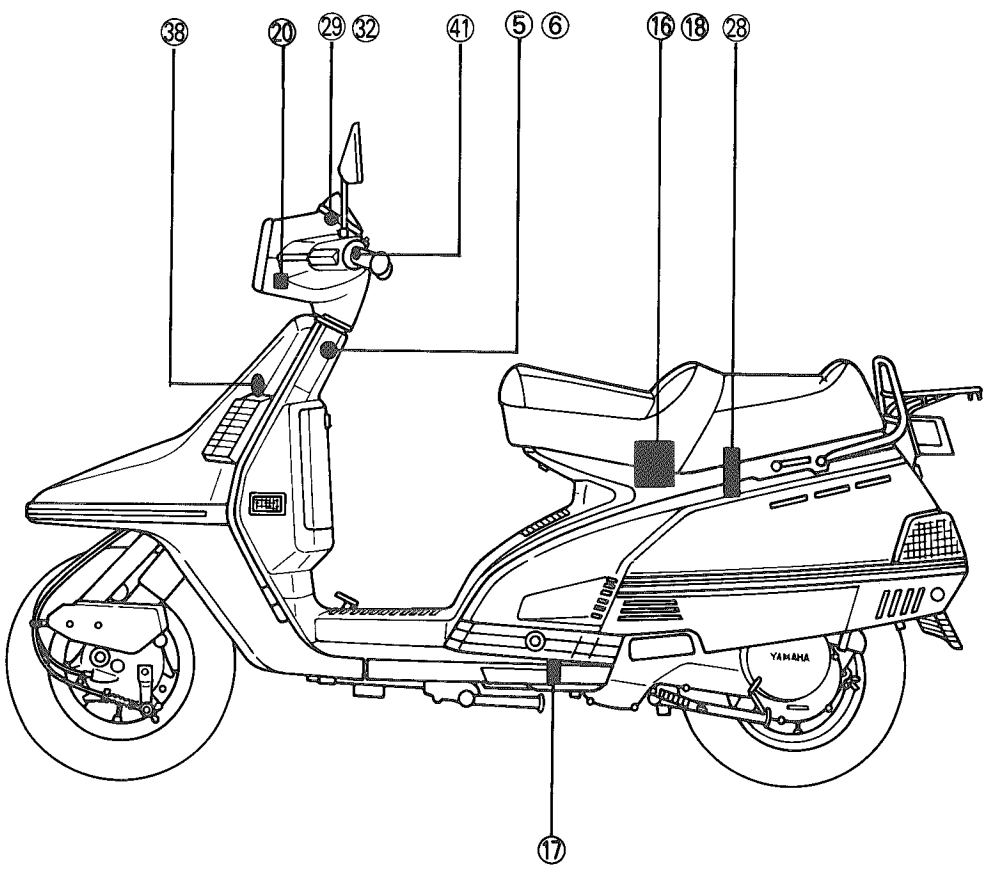


Aforementioned circuit diagram shows accessory circuit in wiring diagram.

NOTE:

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

⑤ Main switch illumination
⑥ Main switch
⑯ Battery
⑰ Oil level switch
⑱ Main fuse
⑳ Diode unit
㉘ Fuel sender
㉙ Fuel meter
㉜ "OIL LEVEL" indicator light
㊳ Horn
㊶ "HORN" switch



MAIN SWITCH ILLUMINATION

Operation

With the main switch turned "off" or set in the "lock" position, pushing the horn button causes the main switch illumination light to come on. The light illuminates the green letters on the main switch panel so that the key hole can be seen even in the dark.

TROUBLESHOOTING (1)

MAIN SWITCH ILLUMINATION DOES NOT COME ON.

↓

Check main fuse. → FAULTY → Replace.

↓ OK

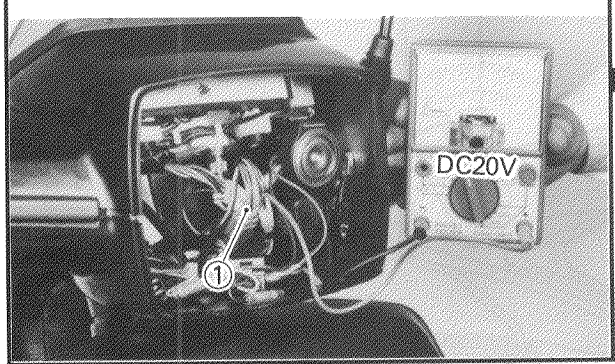
Turn main switch to "OFF" and/or "LOCK".

↓

Measure voltage (12V) on "Blue/Green" lead from main switch. → NO VOLTAGE → Check main switch and battery.

↓ OK

Measure voltage (12V) on "Blue/Green" ① lead from "HORN" switch, while pushing the "HORN" switch. (Switch is "ON") → NO VOLTAGE → Replace "HORN" switch.



↓ OK

Disconnect "Green/White" lead coupler from main switch illumination, and measure voltage (12V). → NO VOLTAGE → Check condition of "Green/White" lead between "HORN" switch and switch illumination.

↓ OK

Replace main switch illumination.

TROUBLESHOOTING (2)

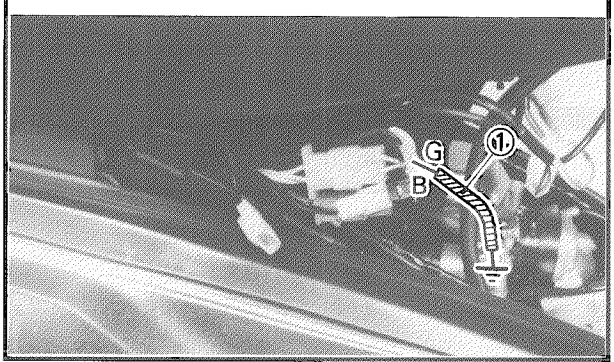
FUEL METER DOES NOT OPERATE.

Check main fuse.
- FAULTY → Replace.
- OK ↓

Measure voltage (12V) on "Brown" lead from main switch ("ON" position).
- NO VOLTAGE → Check main switch and battery.
- OK ↓

Disconnect fuel sender connector, and measure voltage (12V) on "Green" lead from wire harness.
- NO VOLTAGE → Check for an open or poor connection between the main switch and fuel sender.
- OK ↓

Connect "Green" lead from wire harness to "Ground" on frame; use a jumper lead ①.



↓

Fuel meter needle will swing from "F" to "E".
- NO → Replace fuel meter.
- YES ↓

Replace fuel sender.

TROUBLESHOOTING (3)

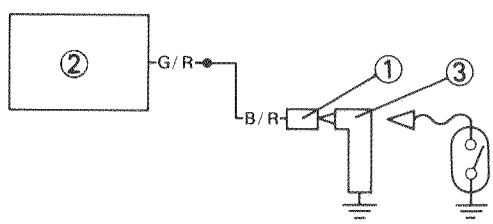
OIL LEVEL INDICATOR LIGHT DOES NOT COME ON.

Check main fuse.
- FAULTY → Replace.
- OK ↓

Check oil level indicator light bulb.
- FAULTY → Replace.
- OK ↓

Measure voltage (12V) on "Brown" lead from main switch ("ON" position).
- NO VOLTAGE → Check main switch and battery.
- OK ↓

Disconnect oil level switch coupler, and connect "Black/Red" lead ① from diode unit ② to "Ground" on frame; use a jumper lead ③.



- LIGHT DOES NOT COME ON → Check diode unit and condition of "Brown" lead between "OIL LEVEL" indicator light and diode unit.
- LIGHT COMES ON ↓

Replace oil level switch.

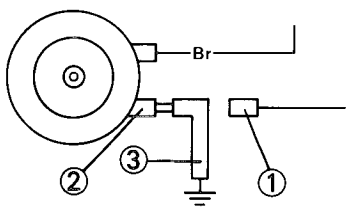
TROUBLESHOOTING (4)

HORN DOES NOT OPERATE.

Check main fuse.
- FAULTY → Replace.

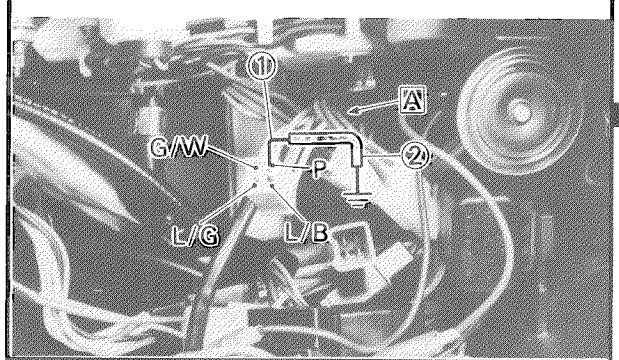
Measure voltage (12V) on "Brown" lead from main switch ("ON" position).
- NO VOLTAGE → Check main switch and battery.
- OK ↓

Disconnect "Pink" lead coupler ① and connect horn terminal ② at "Pink" lead side to "Ground" on frame; use a jumper lead ③



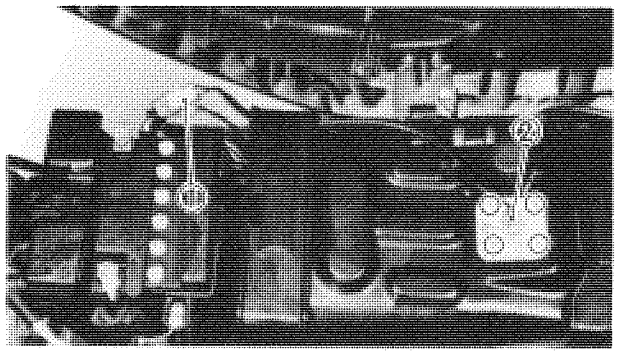
- NOT SOUND → Check condition of "Brown" lead between main switch and horn.
  - OK ↓ Replace horn.
- SOUNDS ↓

Disconnect 4-pin connector at "HORN" switch, and connect "Pink" lead ① from horn [A] to "Ground" on frame; use a jumper lead.



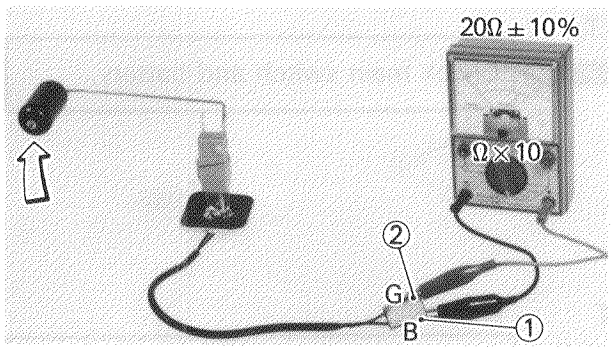
- NOT SOUND → Check condition of "Pink" lead between horn and "HORN" switch.
- SOUNDS ↓

Replace "HORN" switch.



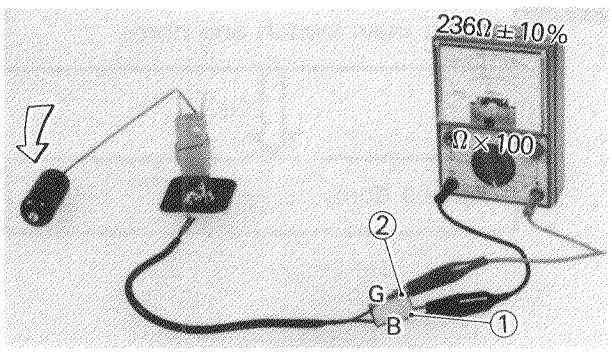
FUEL SENDER TEST

1. Open the seat.
2. Disconnect:
   - Fuel sender connector ①
3. Remove:
   - Fuel sender assembly ②



4. Measure:
   - Fuel sender resistance
   Use the Pocket Tester (YU-03112).
   Out of specification → Replace.

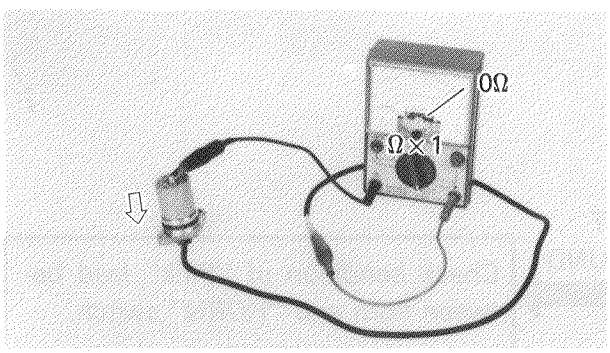
Fuel Sender Resistance:
Full Position [A]:
20Ω ± 10% at 20°C (68°F)
Empty Position [B]:
236Ω ± 10% at 20°C (68°F)



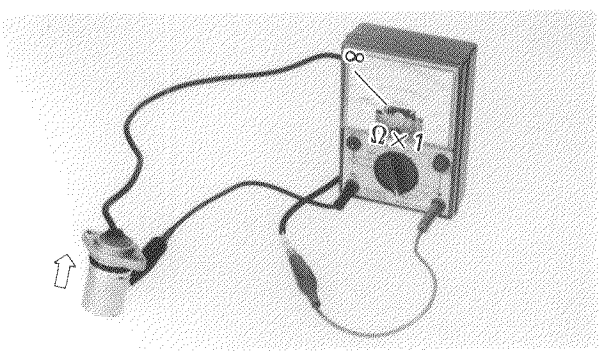
① Black
② Green

OIL LEVEL SWITCH TEST

1. Drain:
   - Engine oil
2. Remove:
   - Oil level switch
3. Measure:
   - Oil level switch resistance
   Use the Pocket Tester (YU-03112).
   Out of specification → Replace.



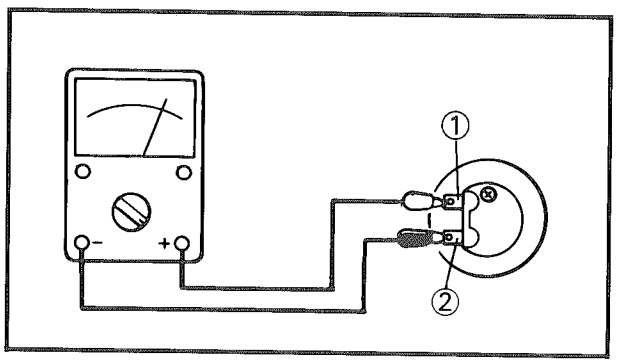
Oil Level Gauge Resistance:
Float is down [A] → 0Ω
Float is up [B] → ∞

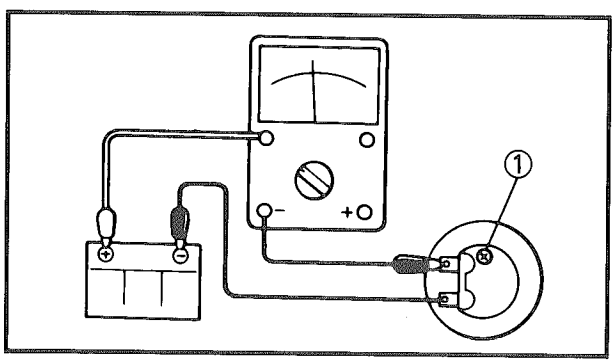


① Black/Red
② Ground

6

4. Install:
   • Oil level switch
5. Connect:
   • Leads
6. Fill:
   • Crankcase
   Refer to "CHAPTER 2 ENGINE OIL REPLACEMENT" section.





HORN TEST

1. Measure:
   • Horn resistance
   Out of specification → Replace.

Tester's lead wire		Standard resistance	Tester's range
Red lead (+)	Black lead (–)		
Brown lead terminal ①	Pink lead terminal ②	1.05Ω ± 10%	R × 1

2. Adjust:
   • Volume
   Turn the adjuster ① in and out so that the volume is maximum at the maximum amperage.

	Horn Maximum Amperage: 2.5A

② Battery (12V)

SWITCHES TEST

Switches may be checked for continuity with a Pocket Tester (YU-03112) on the "Ohm × 1" position.

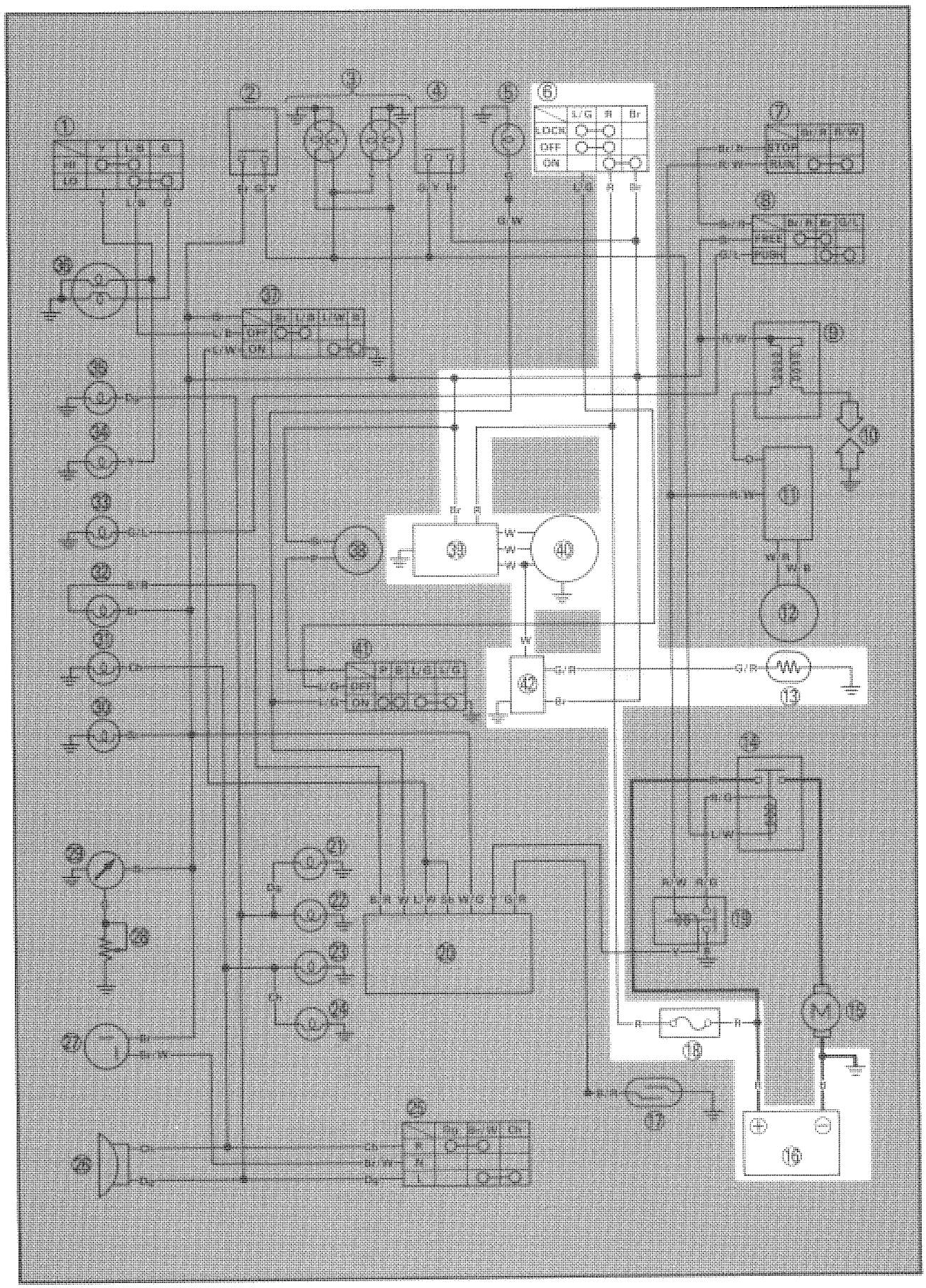
Main Switch

Switch position	Lead color		
	L/G	R	Br
LOCK	○	○	
OFF	○	○	
ON		○	○

"HORN" Switch

Switch position	Lead color			
	P	B	L/G	L/G
OFF				
ON	○	○	○	○

AUTO CHOKE SYSTEM

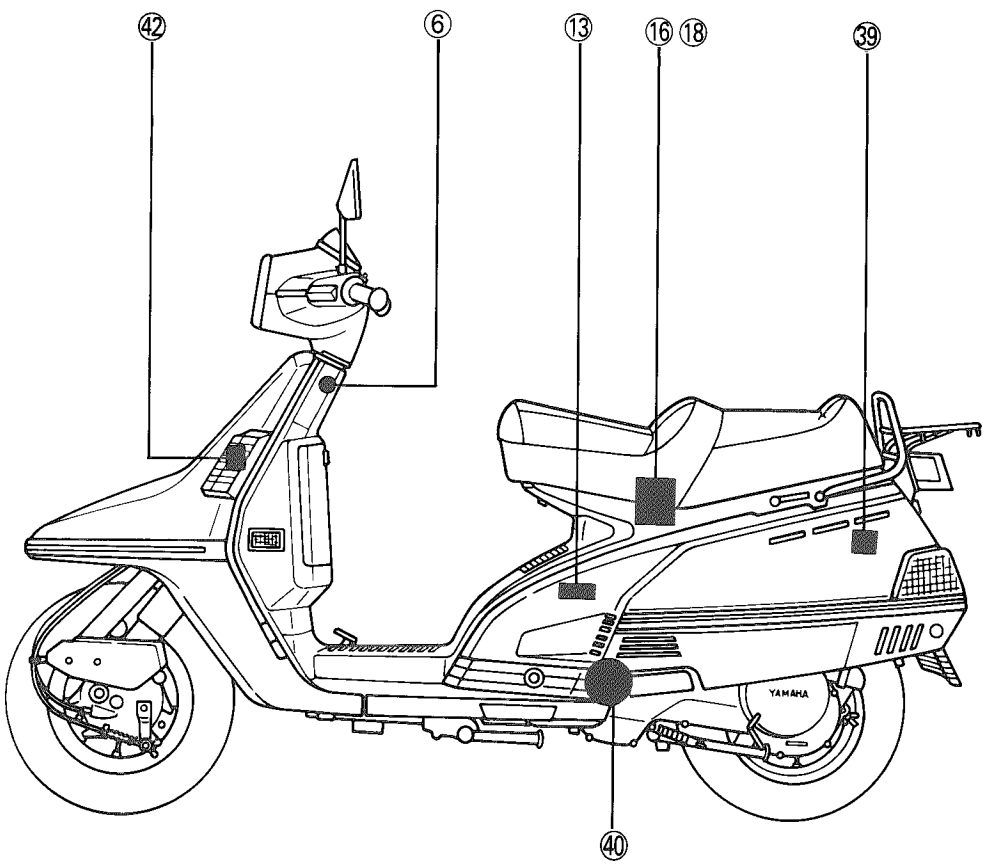


Aforementioned circuit diagram shows auto choke circuit in wiring diagram.

NOTE:

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

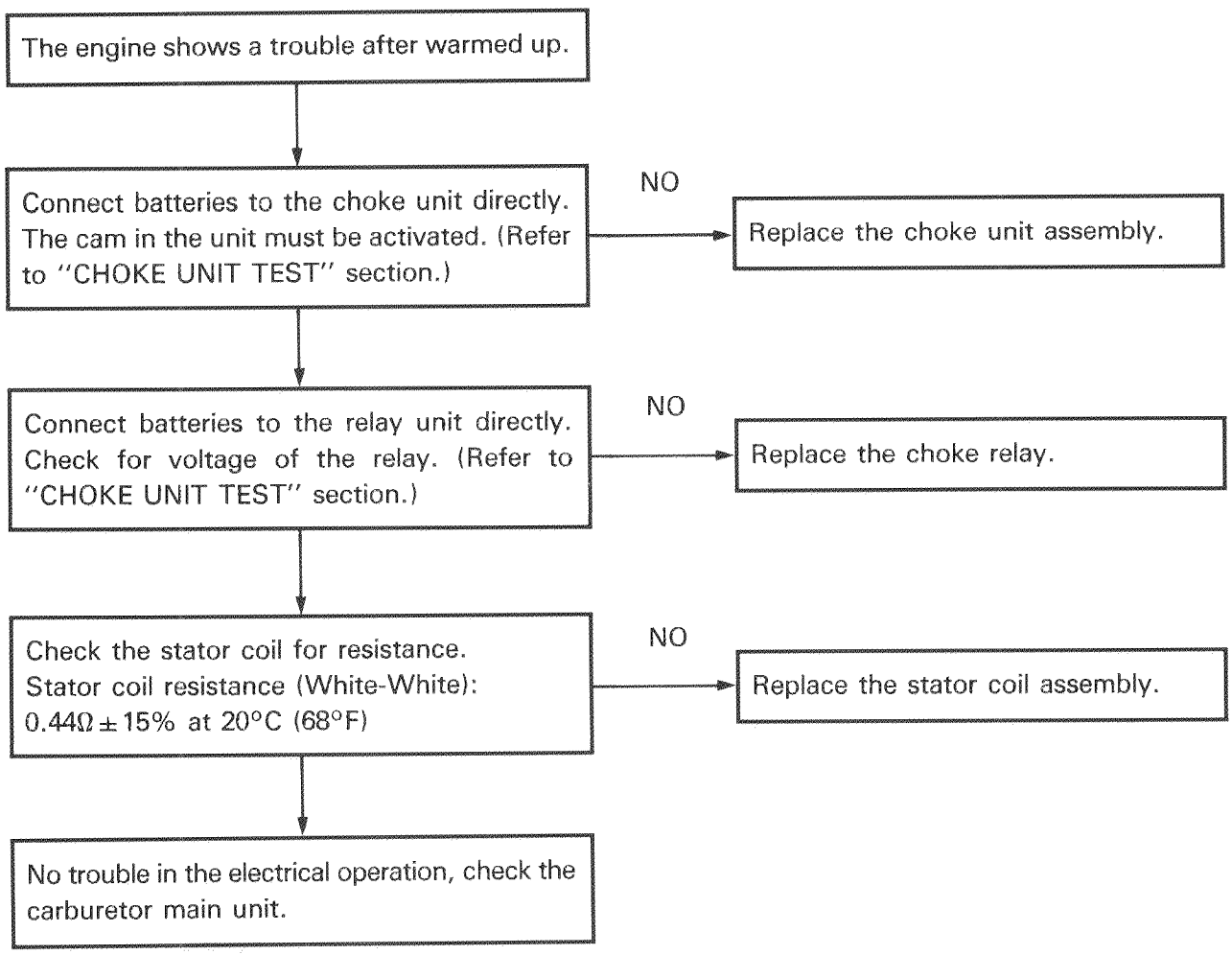
⑥ Main switch
⑬ Choke unit
⑯ Battery
⑱ Main fuse
㊴ Rectifier/Regulator
㊵ AC magneto generator
㊷ Choke relay



AUTO CHOKE SYSTEM

TROUBLESHOOTING

After starting the engine, the AUTO CHOKE system provides a leaner fuel-air mixture according to the increased engine temparature. Thus, if the cold engine is hard to start, the carburetor unit is defective and an overhaul of the unit is necessary. An electrical trouble in the AUTO CHOKE system causes the engine to be a trouble or hard to start when the engine is warmed up. Check the engine as follows:

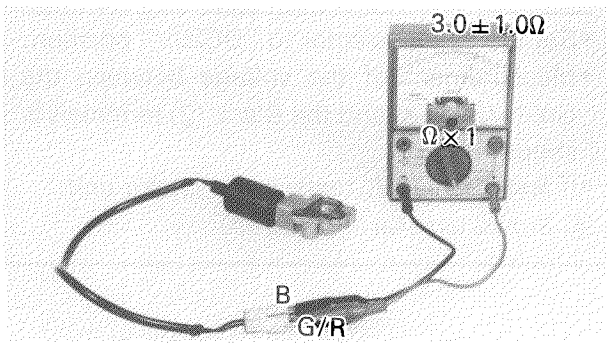




CHOKE UNIT TEST

1. Remove:
   - Carburetor assembly
   - Choke unit

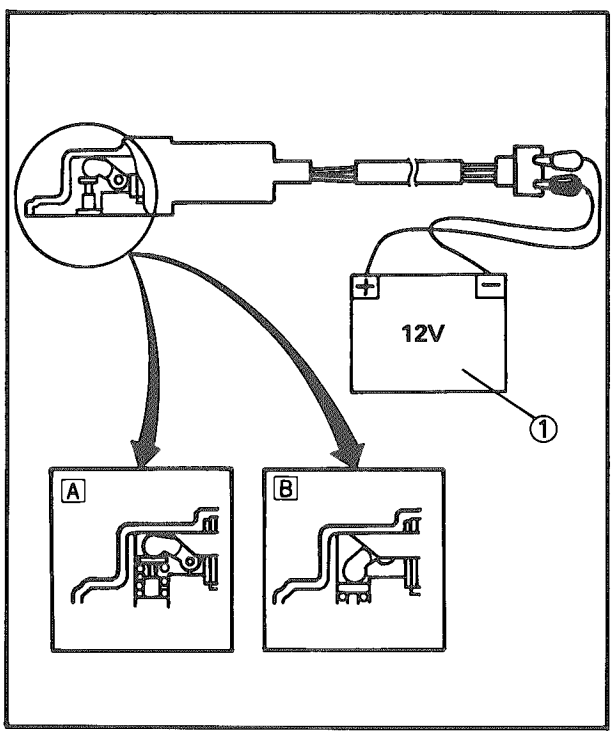
   From carburetor body.
   Refer to "CHAPTER 4. REMOVAL" section.



2. Measure:
   - Choke unit resistance

   Use the Pocket Tester (YU-03112).
   Out of specification→Replace.

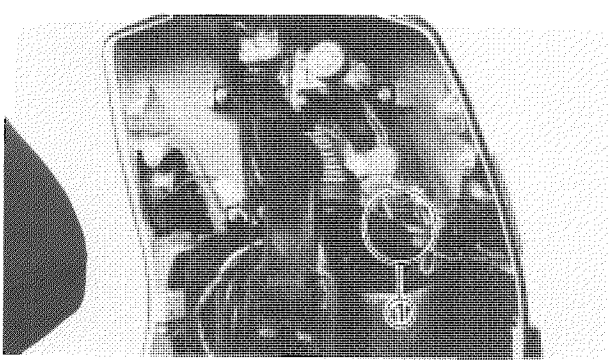
	Choke Unit Resistance: **3.0±1.0Ω at 25°C (77°F)**



3. Connect:
   - 12V Battery ①
4. Check:
   - Cam movement

   Incorrect movement→Replace.

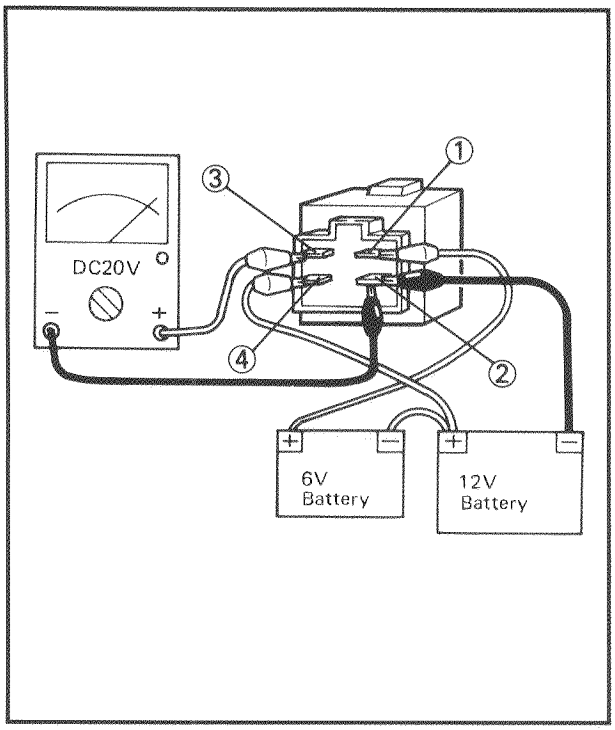
A BATTERY IS NOT CONNECTED (WAX IS COLD)
B BATTERY IS CONNECTED (WAX IS WARM)



CHOKE RELAY TEST

1. Remove:
   - Scooter panel

   Refer to "REMOVING THE COVERS AND PANELS" section.
2. Remove:
   - Choke relay unit ①



3. Inspect:
   • Choke relay unit

Choke unit inspection steps:
• Connect batteries by which the applied voltage is 18V between the white ① and the Black ② terminals.

NOTE:

The relay unit needs at least 13.5V to be activated.

• Set the tester selector to "DC20V" position.
• Measurement of the voltage between the Green/Red ③ and the Black ② terminals is should be 12V.
• If less than 12V, replace the choke unit.
④ Brown terminal

STATOR COIL RESISTANCE TEST

1. Measure:
   • Stator coil resistance
   Out of specification → Replace.

Stator Coil Resistance (White-White):
0.44Ω ± 15% at 20°C (68°F)

Refer to "STATOR COIL RESISTANCE TEST" page 6-22.

CHAPTER 7
APPENDICES

SPECIFICATIONS 7-1
GENERAL SPECIFICATIONS 7-1
MAINTENANCE SPECIFICATIONS 7-4

GENERAL TORQUE SPECIFICATIONS 7-17

DEFINITION OF UNITS 7-17

LUBRICATION DIAGRAMS 7-18

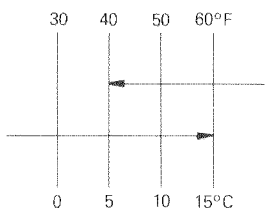
CABLE ROUTING 7-19

XC200T WIRING DIAGRAM

APPENDICES

SPECIFICATIONS

GENERAL SPECIFICATIONS

Model	XC200T
Model Code Number:	1YA
Engine serial Number	1YA-000101
Vehicle Identification Number	JYA1YA00*HA000101
Dimensions: Overall Length Overall Width Overall Height Seat Height Wheelbase Minimum Ground Clearance	 1,920 mm (75.6 in) 715 mm (28.1 in) 1,135 mm (44.7 in) 775 mm (30.5 in) 1,290 mm (50.8 in) 133 mm (5.2 in)
Basic Weight: With Oil and Full Fuel Tank	 128 kg (282 lb)
Minimum Turning Radius:	1,900 mm (75 in)
Engine: Engine Type Cylinder Arrangement Displacement Bore × Stroke Compression Ratio Compression Pressure Starting System	 Air cooled 4-stroke, gasoline, OHV Single, Forward Inclined 200 cm^3 68.0 × 55.0 mm (2.677 × 2.165 in) 9.5 : 1 1,177 kPa (12.0 kg/cm^2, 171 psi) Electric starter
Lubrication System:	Wet Sump (Pressure Lubricated)
Oil Type or Grade: Engine Oil/Transmission oil  	 SAE 20W40 type SE motor oil (If temperature does not go below 5°C (40°F)) SAE 10W30 type SE motor oil (If temperature does not go above 15°C (60°F))
Oil Capacity: Engine Oil: Periodic Oil Change: With Oil Filter Replacement Total Amount Transmission oil Total Amount	 1.0 L (0.88 Imp qt, 1.1 US qt) 1.1 L (0.97 Imp qt, 1.16 US qt) 1.3 L (1.14 Imp qt, 1.37 US qt) 0.2 L (0.18 Imp qt, 0.21 US qt)
Air Filter	Wet Type Element

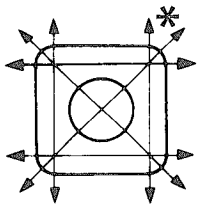
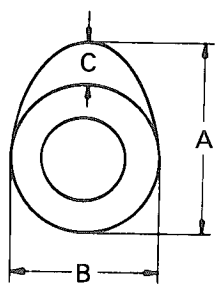
Model	XC200T	
Fuel:		
Type	Regular Gasoline	
Tank Capacity	6.5 L (1.43 Imp qt, 1.72 US gal)	
Carburetor:		
Type/Manufacturer	Y26V/TEIKEI	
Spark Plug:		
Type/Manufacturer	DPR7EA-9/NGK X22EPR-U9/NIPPONDENSO	
Gap	0.8~0.9 mm (0.032~0.035 in)	
Clutch Type:	Dry, Centrifugal Automatic	
Transmission:		
Primary Reduction System	Spur Gear	
Primary Reduction Ratio	49/16 (3.062)	
Secondary Reduction System	Spur Gear	
Secondary Reduction Ratio	35/15 (2.333)	
Transmission Type	V-Belt	
Operation	Automatic	
Chassis:		
Frame Type	Steel Tube Underbone	
Caster Angle	27.5°	
Trail	80 mm (3.15 in)	
Tire		
Type	Tubeless	
Size (F)	4.00-10 4PR	
Size (R)	4.00-10 4PR	
Wear Limit	1.0 mm (0.039 in)	
Tire Pressure (Cold Tire):		
Basic Weight:		
With Oil and Full Fuel Tank	128 kg (282 lb)	
Maximum Load*	156 kg (343 lb)	
Cold Tire Pressure:	FRONT	REAR
Up to 90 kg (198 lb) load*	147 kPa (1.5 kg/cm^2, 21 psi)	196 kPa (2.0 kg/cm^2, 28 psi)
90 kg (198 lb)* ~ Maximum Load*	147 kPa (1.5 kg/cm^2, 21 psi)	245 kPa (2.5 kg/cm^2, 35 psi)
	*Load is the total weight of cargo, rider, passenger, accessories.	

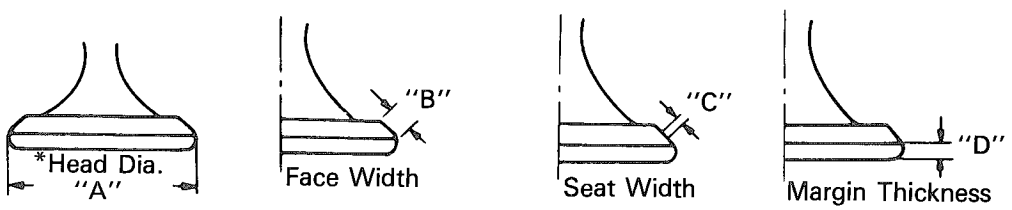
SPECIFICATIONS

Model	XC200T
Brake:	
Front Brake Type	Drum Brake
Operation	Right Hand Operation
Rear Brake Type	Drum Brake
Operation	Right Foot Operation
Suspension:	
Front Suspension	Bottom Link Fork
Rear Suspension	Unit Swing
Shock Absorber:	
Front Shock Absorber	Coil Spring, Oil Damper
Rear Shock Absorber	Coil Spring, Oil Damper
Wheel Travel:	
Front Wheel Travel	76 mm (2.99 in)
Rear Wheel Travel	70 mm (2.76 in)
Electrical:	
Ignition System	T.C.I.
Generator System	A.C. Magneto Generator
Battery Type or Model	YB10L
Battery Capacity	12V 10AH
Headlight Type:	Bulb
Bulb Wattage Quantity:	
Headlight	45W/40W
Tail/Brake Light	8W/27W
Flasher Light	27W×4
License Light	8W×2
Meter Light	3.4W×3
Indicator Light Wattage/Quantity:	
"HIGH BEAM"	3.4W×1
"OIL LEVEL"	3.4W×1
"TURN"	3.4W×2
"SIDESTAND"	3.4W×1

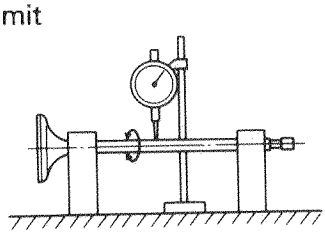
MAINTENANCE SPECIFICATIONS

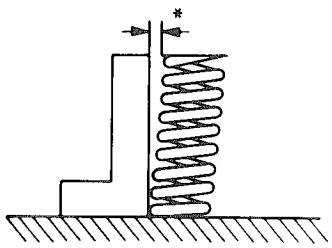
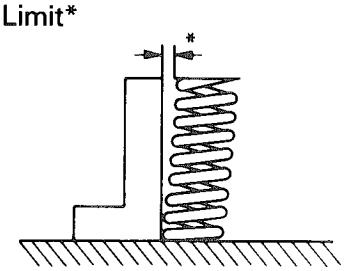
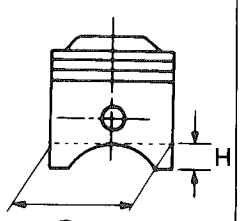
Engine

Model	XC200T
Cylinder Head: Warp Limit 	<0.025 mm (0.001 in)> *Lines indicate straightedge measurement.
Cylinder: Bore Size Taper Limit Out-of-round Limit	 67.98~68.03 mm (2.6764~2.6783 in) <0.05 mm (0.002 in)> <0.01 mm (0.0004 in)>
Camshaft: Drive Method Cam Holder Inside Diameter Camshaft Outside Diameter Shaft-to-holder Clearance Cam Dimensions: Intake "A" <Limit> Intake "B" Intake "C" Exhaust "A" <Limit> Exhaust "B" Exhaust "C" 	 Gear Drive (L) 33.00~33.025 mm (1.299~1.300 in) (R) 7.000~17.018 mm (0.669~0.670 in) (L) 32.959~32.975 mm (1.2976~1.2982 in) (R) 16.967~16.980 mm (0.668~0.669 in) (L) 0.025~0.066 mm (0.001~0.003 in) (R) 0.020~0.051 mm (0.0008~0.0020 in) 32.37~32.49 mm (1.274~1.279 in) <32.33 mm (1.273 in)> 25.99~26.01 mm (1.023~1.024 in) 6.38~6.48 mm (0.2512~0.2551 in) 32.37~32.49 mm (1.274~1.279 in) <32.33 mm (1.273 in)> 25.99~26.01 mm (1.023~1.024 in) 6.38~6.48 mm (0.2512~0.2551 in)
Rocker Arm/Rocker Arm Shaft: Bearing Inside Diateter Shaft Outside Diameter Arm-to-shaft Clearance	 12.000~12.018 mm (0.472~0.473 in) 11.976~11.991 mm (0.472~0.472 in) 0.009~0.042 mm (0.0004~0.0017 in)
Valve, Valve Seat, Valve Guide: Valve Clearance (Cold): IN. EX. Valve Dimensions:	 Auto Adjustment

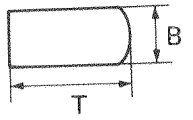


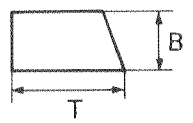
SPECIFICATIONS

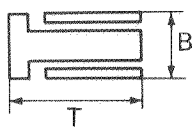
Model		XC200T
"A" Head Dia.	IN.	30.9 ~ 31.1 mm (1.217 ~ 1.224 in)
	EX.	25.9 ~ 26.1 mm (1.020 ~ 1.028 in)
"B" Face Width	IN.	1.7 ~ 2.9 mm (0.067 ~ 0.114 in)
	EX.	1.7 ~ 2.9 mm (0.067 ~ 0.114 in)
"C" Seat Width	IN.	0.9 ~ 1.1 mm (0.035 ~ 0.043 in)
	EX.	0.9 ~ 1.1 mm (0.035 ~ 0.043 in)
<Limit>	IN.	<1.4 mm (0.055 in)>
	EX.	<1.4 mm (0.055 in)>
"D" Margin Thickness	IN.	0.8 ~ 1.2 mm (0.031 ~ 0.047 in)
	EX.	0.8 ~ 1.2 mm (0.031 ~ 0.047 in)
<Limit>	IN.	<0.7 mm (0.028 in)>
	EX.	<0.7 mm (0.028 in)>
Stem Outside Dia.	IN.	5.978 ~ 5.990 mm (0.2354 ~ 0.2358 in)
	EX.	5.963 ~ 5.975 mm (0.2348 ~ 0.2352 in)
<Limit>	IN.	<5.945 mm (0.234 in)>
	EX.	<5.920 mm (0.233 in)>
Guide Inside Dia.	IN.	6.000 ~ 6.012 mm (0.2362 ~ 0.2367 in)
	EX.	6.000 ~ 6.012 mm (0.2362 ~ 0.2367 in)
<Limit>	IN.	<6.05 mm (0.238 in)
	EX.	<6.05 mm (0.238 in)>
Stem-to-Guide Clearance	IN.	0.010 ~ 0.034 mm (0.0004 ~ 0.0013 in)
	EX.	0.025 ~ 0.049 mm (0.0010 ~ 0.0019 in)
<Limit>	IN.	<0.08 mm (0.0031 in)>
	EX.	<0.10 mm (0.0039 in)>
Stem Runout Limit		<0.01 mm (0.0004 in)>
		
Valve Seat Width	IN.	0.9 ~ 1.1 mm (0.035 ~ 0.043 in)
	EX.	0.9 ~ 1.1 mm (0.035 ~ 0.043 in)
Valve Spring:		
Inner Spring:		
Free Length	IN.	35.50 mm (1.398 in)
	EX.	35.50 mm (1.398 in)
Set Length (Valve Closed)	IN.	30.5 mm (1.20 in)
	EX.	30.5 mm (1.20 in)
Compression Force (Valve Closed)	IN.	8.4 ~ 10.2 kg (18.5 ~ 22.5 lb)
	EX.	8.4 ~ 10.2 kg (18.5 ~ 22.5 lb)

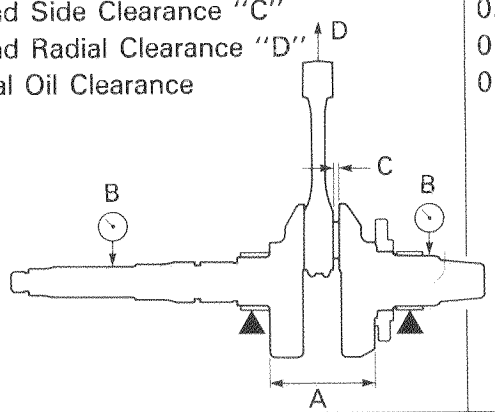
Model		XC200T
Tilt Limit*	IN.	2.5°/1.5 mm (0.059 in)
	EX.	2.5°/1.5 mm (0.059 in)
		
Direction of Winding	IN.	Clockwise
	EX.	Clockwise
Outer Spring:		
Free Length	IN.	37.20 mm (1.465 in)
	EX.	37.20 mm (1.465 in)
Set Length (Valve Closed)	IN.	32.0 mm (1.260 in)
	EX.	32.0 mm (1.260 in)
Compression Force (Valve Closed)	IN.	16.6 ~ 20.4 kg (36.6 ~ 45.0 lb)
	EX.	16.6 ~ 20.4 kg (36.6 ~ 45.0 lb)
Tilt Limit*	IN.	2.5°/1.6 mm (0.063 in)
	EX.	2.5°/1.6 mm (0.063 in)
		
Direction of Winding	IN.	Counterclockwise
	EX.	Counterclockwise
Piston:		
Piston Size "D"		67.95 ~ 68.00 mm (2.675 ~ 2.677 in)
Measuring Point "H"		4.0 mm (0.157 in)
		(From bottom line of piston skirt)
		
Piston Clearance		0.02 ~ 0.04 mm (0.0008 ~ 0.0016 in)
Oversize	1st	68.50 mm
	2nd	69.00 mm

Model	XC200T
Piston Ring:	
Top Ring:	
Type	Barrel
Dimensions (B × T)	1.0 × 2.6 mm (0.0394 × 0.1024 in)
End Gap (Installed)	0.30 ~ 0.45 mm (0.0118 ~ 0.0177 in)
<Limit>	0.70 mm (0.0276 in)
Side Clearance (Installed)	0.03 ~ 0.07 mm (0.0012 ~ 0.0028 in)
<Limit>	0.12 mm (0.0047 in)
2nd Ring:	
Type	Taper
Dimensions (B × T)	1.2 × 2.7 mm (0.0472 × 0.1063 in)
End Gap (Installed)	0.30 ~ 0.45 mm (0.0118 ~ 0.0177 in)
<Limit>	0.80 mm (0.0315 in)
Side Clearance	0.02 ~ 0.06 mm (0.0008 ~ 0.0024 in)
<Limit>	0.12 mm (0.0047 in)
Oil Ring:	
Dimensions (B × T)	2.0 × 2.5 mm (0.0787 × 0.0984 in)
End Gap (Installed)	0.2 ~ 0.7 mm (0.0079 ~ 0.0276 in)
Connecting Rod:	
Oil Clearance	0.021 ~ 0.045 mm (0.0008 ~ 0.0018 in)
Bearing Color Code	1. Blue 2. Black 3. Brown 4. Green
Crankshaft:	
Crank Width "A"	60.95 ~ 61.00 mm (2.400 ~ 2.402 in)
Runout Limit "B"	0.02 mm (0.0008 in)
Big End Side Clearance "C"	0.160 ~ 0.262 mm (0.0063 ~ 0.0103 in)
Big End Radial Clearance "D"	0.021 ~ 0.045 mm (0.0008 ~ 0.0018 in)
Journal Oil Clearance	0.02 ~ 0.05 mm (0.0008 ~ 0.0020 in)
Balancer:	
Balancer Drive Method	Gear





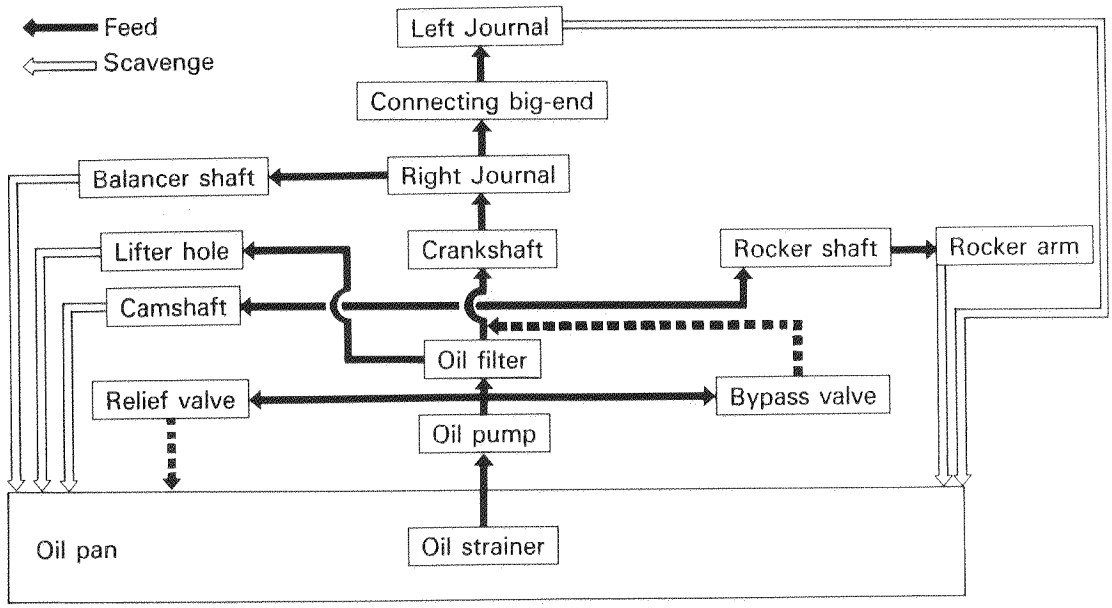




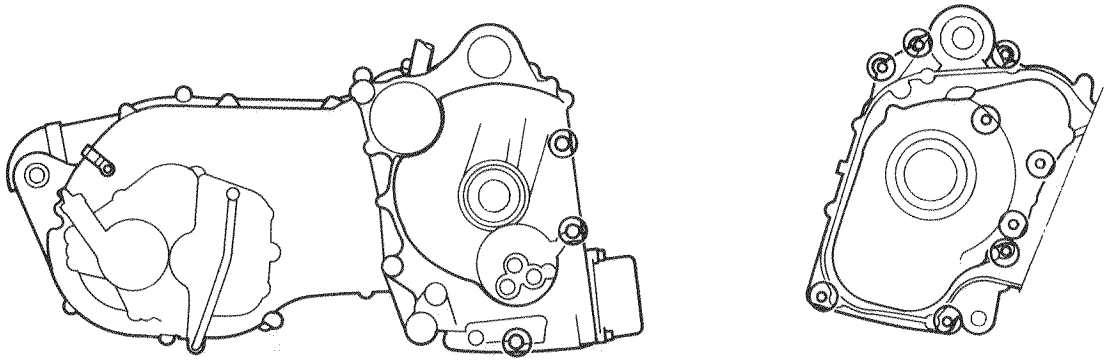
Model	XC200T
Clutch:	
Clutch Shoe Thickness	4.0 mm (0.157 in)
Wear Limit	<2.0 mm (0.079 in)>
Clutch Shoe Spring Free Length	28.5 mm (1.12 in)
Sliding Spring Free Length	96.7 mm (3.81 in)
Clutch-In Revolution	2,200~2,600 r/min
-Stall Revolution	3,450~4,050 r/min
Transmission:	
Main Axle Deflection Limit	<0.08 mm (0.003 in)>
Drive Axle Deflection Limit	<0.08 mm (0.003 in)>
Air Filter Oil Grade (Oiled Filter)	Yamalube 2-cycle oil or equivalent
Carburetor:	
Type/Manufacturer/Quantity	BS28/MIKUNI
I.D. Mark	1YA00
Main Jet (M.J.)	#128
Main Air Jet (M.A.J.)	ϕ1.5
Jet Needle-Clip Position (J.N.)	5C14-3/5
Needle Jet (N.J.)	#95
Pilot Jet (P.J.)	#36
Pilot Air Jet (P.A.J.)	ϕ0.8
Pilot Outlet (P.O.)	ϕ0.8
Bypass 1 (B.P.1)	ϕ0.8
Bypass 2 (B.P.2)	ϕ0.8
Bypass 3 (B.P.3)	ϕ0.8
Pilot Screw (P.S.)	2.0 turns out
Valve Seat (V.S.)	ø2.0
Starter Jet (G.S.)	G.S.1: #48 G.S.2: ϕ0.8
Float Height (F.H.)	26~28 mm (1.024~1.103 in)
Engine Idling Speed	1,250~1,350 r/min
Vacuum Pressure at Idling Speed	Above 170 mm Hg (6.69 in Hg)
Oil Temperature	55~65°C (99~181°F)
Lubrication System:	
Oil Filter Type	Paper
Oil Pump Type:	Trochoid Pump
Tip Clearance	0.12 mm (0.0047 in)
Side Clearance	0.03~0.08 mm (0.0012~0.0031 in)
Bypass Valve Setting Pressure	78.46~117.68 kPa (0.8~1.2 kg/cm^2, 11.38~17.06 psi)
Relief Valve Operating Pressure	343.25~441.32 kPa, (3.5~4.5 kg/cm^2, 49.78~64.0 psi)
Oil Pressure (Hot)	294 kPa (3.0 kg/cm^2, 42.7 psi)/3.500 r/min

Model	XC200T

Lubrication chart:



Crankcase Tightening Sequence:



TIGHTENING TORQUE

Part to be tightened	Thread size	Tightening torque			Remarks
		Nm	m•kg	ft•lb	
Cylinder Head Cover	M10	20	2.0	14	
Spark Plug	M12	17.5	1.75	12.5	
Cylinder Head	M 8	22	2.2	16	
Cylinder Head-Cylinder	M 8	22	2.2	16	
Intake Manifold	M 6	10	1.0	7.2	
Connecting Rod	M 6	18	1.8	13	
Flywheel Magneto	M10	35	3.5	25	
Exhaust Pipe	M 8	30	3.0	22	
Muffler	M 8	25	2.5	18	
Mission Cover	M 5	3	0.3	2.2	
Oil Drain Bolt (Engine)	M14	43	4.3	31	
Oil Drain Bolt (Transmission)	M 8	18	1.8	13	
Crankcase 1	M 6	12	1.2	8.7	
Oil Filter Cover	M 6	10	1.0	7.2	
Oil Filler Case	M 6	10	1.0	7.2	
Transmission Cover	M 6	10	1.0	7.2	
Crankcase Cover 2	M 6	10	1.0	7.2	
Starter Motor Assembly	M 6	7	0.7	5.0	
Cooling Fan	M 6	7	0.7	5.0	
Oil Pump Assembly	M 6	7	0.7	5.0	
Starter Clutch	M 8	30	3.0	22	
Primary Sheave	M16	50	5.0	36	
Clutch	M14	50	5.0	36	
Clutch Housing	M36	90	9.0	65	
Engine Oil Level Sender	M 6	7	0.7	5.0	

Chassis

Model		XC200T
Steering System:		
Steering Bearing Type		Ball Bearing
No./Size of Steel Balls		
	Upper	22 pcs/3/16 in
	Lower	19 pcs/1/4 in
Front Suspension:		
Front Fork Travel		55.0 mm (2.17 in)
Fork Spring Free Length		159.2 mm (6.27 in)
<Limit>		<157.7 mm (6.21 in)>
Spring Rate	K1	11.96 N/mm (1.22 kg/mm, 68.3 lb/in)
	K2	27.46 N/mm (2.8 kg/mm, 157 lb/in)
	K3	36.29 N/mm (3.7 kg/mm, 207 lb/in)
Stroke	K1	0~35 mm (0~1.378 in)
	K2	35~45 mm (1.378~1.772 in)
	K3	45~55 mm (1.772~2.165 in)
Optional Spring		No.
Oil Capacity		24 cm^3 (0.85 Imp oz, 0.81 US oz)
Rear Suspension:		
Shock Absorber Travel		70 mm (2.76 in)
Spring Free Length		225.5 mm (8.88 in)
		224 mm (8.82 in)
<Limit>		<215.5 mm (8.48 in)>
Fitting Length		215.5 mm (8.48 in)
Spring Rate	K1	26.16 N/mm (2.67 kg/mm, 149 lb/in)
	K2	43.11 N/mm (4.40 kg/mm, 246 lb/in)
Stroke	K1	0~35 mm (0~1.378 in)
	K2	35~70 mm (1.378~2.756 in)
Optional Spring		No.
Rear Arm:		
Swing Arm Free Play Limit-Side		0 mm (0 in)
Wheel:		
Front Wheel Type		Cast Wheel
Rear Wheel Type		Cast Wheel
Front Rim Size/Material		MT2.50×10/Aluminum
Rear Rim Size/Material		MT2.50×10/Aluminum
Rim Runout Limit		
Vertical		<1.0 mm (0.04 in)>
Lateral		<1.0 mm (0.04 in)>

Model		XC200T
Drum Brake:		
Type	Front	Leading and Trailing
	Rear	Leading and Trailing
Drum Inside Dia.		
<Limit>	Front	130 mm (5.12 in) <131 mm (5.16 in)>
	Rear	150 mm (5.91 in) <151 mm (5.94 in)>
Lining Thickness	Front/Rear	4 mm (0.16 in)
<Limit>		<2 mm (0.08 in)>
Shoe Spring Free Length		
<Limit>	Front	36.5 mm (1.44 in)
	Rear	68.0 mm (2.68 in)
Brake Lever & Brake Pedal:		
Brake Lever Free Play/Position		10~20 mm (0.4~0.8 in)/at lever end
Brake Pedal Position		57 mm (2.24 in) (Vertical height below footrest top.)
Brake Pedal Free Play		5~15 mm (0.20~0.60 in)

TIGHTENING TORQUE

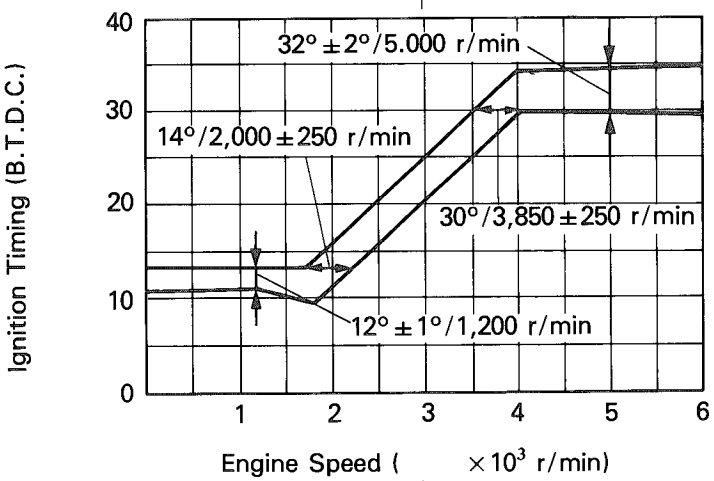
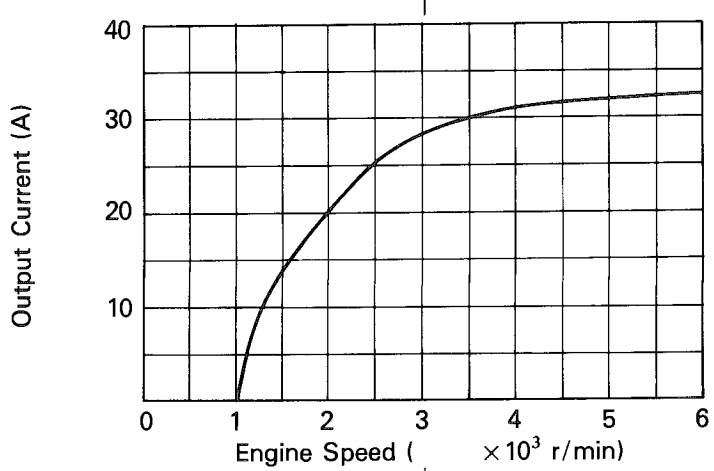
Part to be tightened	Thread size	Tightening torque			Remarks
		Nm	m•kg	ft•lb	
Front Wheel Axle	M12	70	7.0	50	
Front Brake Cam Lever	M 6	10	1.0	7.2	
Front Shock (Upper)	M10	35	3.5	25	
Front Shock (Lower)	M 8	20	2.0	14	
Torque Arm-Fork	M10	40	4.0	29	
Torque Arm-Shoe Plate	M10	45	4.5	32	
Front Arm Pivot	M10	45	4.5	32	
Handle	M10	60	6.0	43	
Steering Shaft	M25	30	3.0	22	
Engine Pivot Shaft	M14	80	8.0	56	
Rear Wheel Axle	M14	100	10.0	72	
Rear Brake Cam Lever	M 6	10	1.0	7.2	
Rear Shock (Upper)	M10	50	5.0	36	
Rear Shock (Lower)	M12	50	5.0	36	
Wheel Hub	M 8	30	3.0	22	
Side Stand	M10	30	3.0	22	
Main Stand	M10	30	3.0	22	
Rear Stay (Front)	M 8	25	2.5	18	
Rear Stay (Upper)	M 8	20	2.0	14	
Rear Stay (Lower)	M 8	20	2.0	14	
Steering Shaft Ring Nut (Lower)	M25	30 3	3.0 0.3	22 2.2	Refer to NOTE
Steering Shaft Ring Nut (Upper)	M25	30	3.0	22	
Fuel tank (Front)		7	0.7	5.1	
(Rear)		15	1.5	11	

NOTE:

- Ring nut (lower):

1) First, tighten the ring nut approximately 50 Nm (5.0 m•kg, 36 ft•lb) by using he torque wrench, then loosen the ring nut completely.
2) Retighten the ring nut 3 Nm (0.3 m•kg, 2.2 ft•lb).

Electrical

Model	XC200T
Voltage	12V
Ignition System: Ignition Timing (B.T.D.C.) Advanced Timing (B.T.D.C.) Advancer Type	 12° at 1,200 r/min 32° at 5,000 r/min Electrical
	
T.C.I.: Pickup Coil resistance (Color) T.C.I. Unit-Model/Manufacturer	 114.5Ω ± 15% at 20°C (68°F) (White/Black — White/Red) TID11-06/HITACHI
Ignition Coil: Model/Manufacturer Primary Winding Resistance Secondary Winding Resistance	 CM11-61/HITACHI 2.7Ω ± 10% at 20°C (68°F) 13.2KΩ ± 20% at 20°C (68°F)
Charging System/Type	A.C. Magneto Generator
A.C. Generator: Model/Manufacturer Normal Output	 FL118-05/HITACHI 14V, 15A at 5,000 r/min
	
Charging Coil Resistance (Color)	0.44Ω ± 15% at 20°C (68°F) (White — White)

SPECIFICATIONS

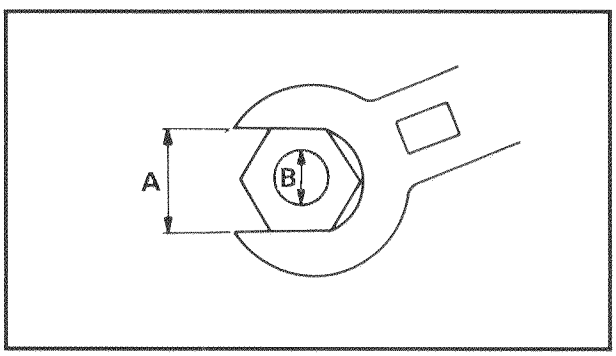
Model	XC200T
Voltage Regulator:	
Type	Short Control
Model/Manufacturer	SH235-12/SHINDENGEN
No Load Regulated Voltage	14.0 ~ 15.0V
Rectifier:	
Model/Manufacturer	SH235-12/SHINDENGEN
Capacity	15.0A
Withstand Voltage	200V
Battery:	
Capacity	12V, 10AH
Specific Gravity	1.280
Electric Starter System:	
Type	Constant Mesh Type
Starter Motor-Model/Manufacturer	SM-7/MITSUBA
Output	0.4 kw
Armature Coil Resistance	0.014Ω ± 10% at 20°C (68°F)
Brush-Overall Length	10.5 mm (0.41 in)
<Limit>	<5.0 mm (0.20 in)>
Spring Pressure	540 ~ 660 g (19.0 ~ 23.3 oz)
Commutator Dia.	23.0 mm (0.91 in)
<Wear Limit>	<22.0 mm (0.87 in)>
Mica Undercut	0.8 × 1.8 mm (0.03 × 0.07 in)
Starer Switch	
Model/Manufacturer	—/HONDALOCK
Amperage Rating	150A
Coil Winding Resistance	3.4Ω ± 10% at 20°C (60°F)
Horn:	
Type/Quantity	Plain Type/1
Model/Manufacturer	YF12/NIKKO
Maximum Amperage	2.5A
Flasher Relay:	
Type	Condenser Type
Model/Manufacturer	FZ261SD/NIPPONDENSO
Self Cencelling Device	No.
Flasher Frequency	75 ~ 95.0 cycle/min
Wattage	27W × 2 + 3.4W
Fuel Gauge:	
Model/Manufacturer	25G/NIPPONSEIKI
Sender Unit Resistance	
Full	20Ω ± 10% at 20°C (68°F)
Empty	236Ω ± 10% at 20°C (68°F)

Model	XC200T
Starting Circuit Cut-off Relay:	
Model/Manufacturer	25G/TATEISHI (OMRON)
Coil Winding Resistance	75Ω ± 10% at 20°C (68°F)
Diode	No.
Circuit Breaker:	
Type	Fuse
Amperage for Individual Circuit/Quantity	
Main	20A × 1
Reserve	20A × 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



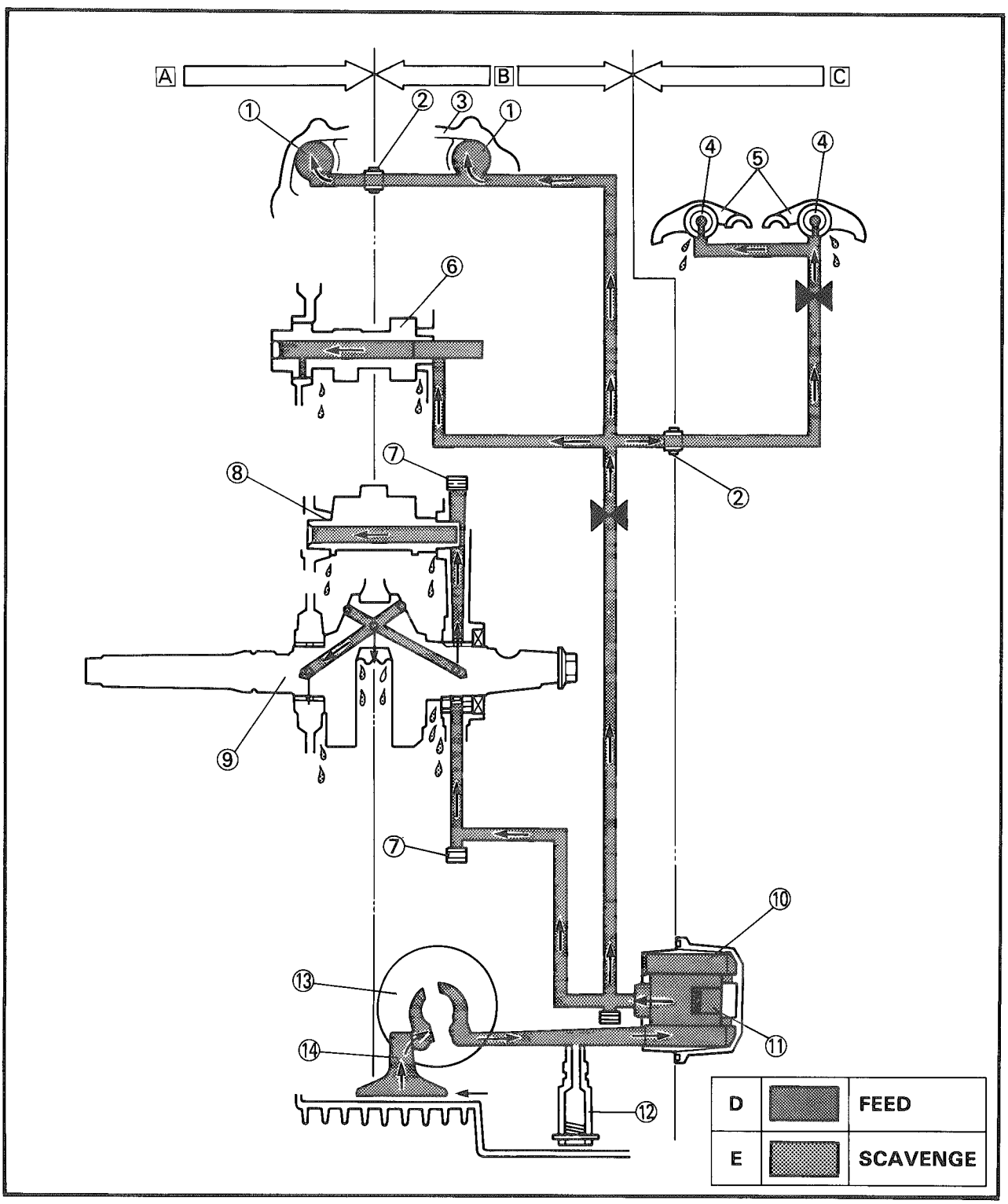
A: Distance across flats
B: Outside thread diameter

DEFINITION OF UNITS

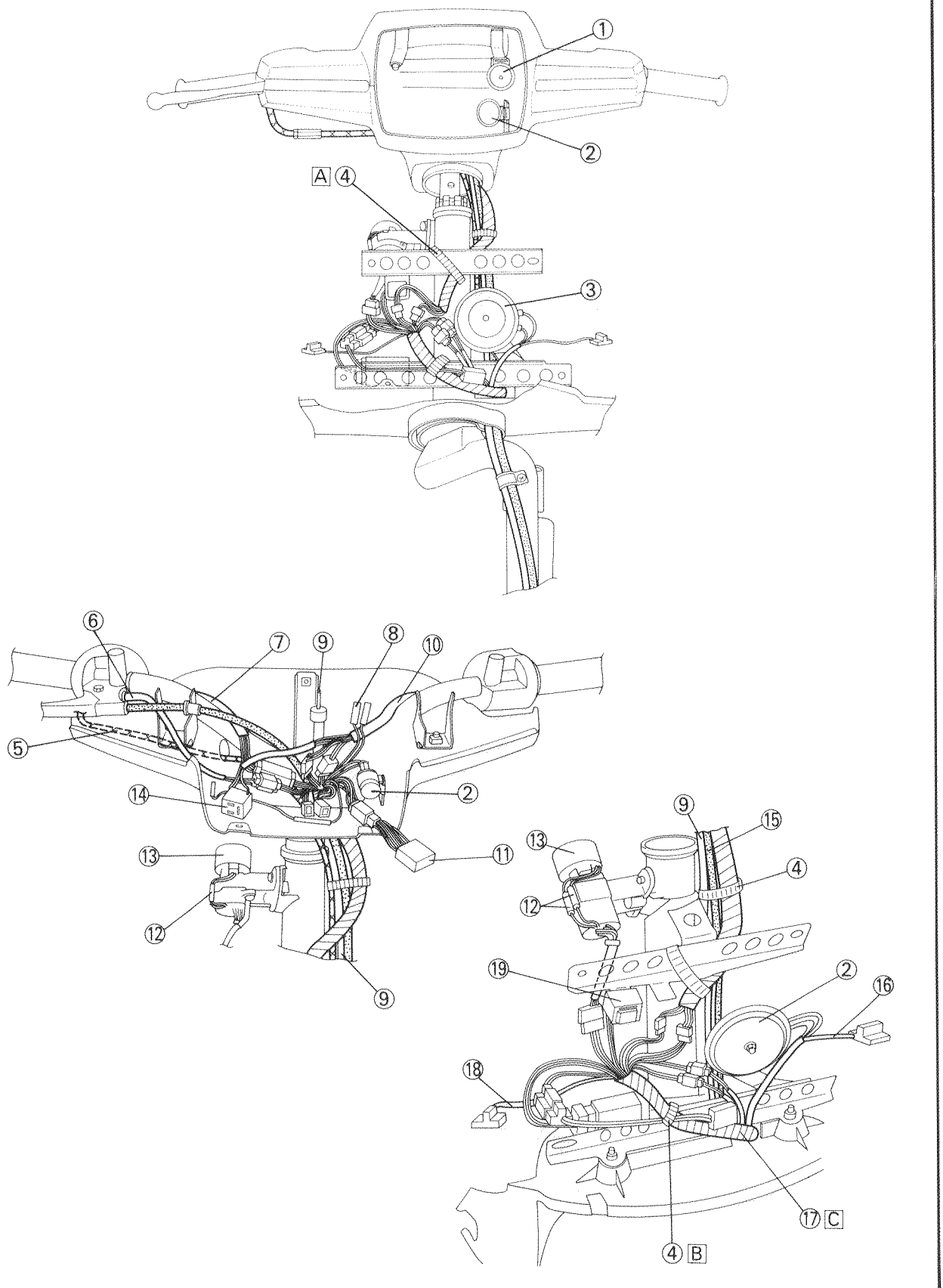
Unit	Read	Definition	Measure
mm	millimeter	10^{-3} meter	Length
cm	centimeter	10^{-2} meter	Length
kg	kilogram	10^{3} gram	Weight
N	Newton	1 kg × m/sec^2	Force
Nm	Newton meter	N × m	Torque
m•kg	Meter kilogram	m × kg	Torque
Pa	Paskal	N/m^2	Pressure
N/mm	Newton per millimeter	N/mm	Spring rate
L	Liter	—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

LUBRICATION DIAGRAM

① Rocker arm shaft Bearing
② Nozzle
③ Cylinder head cover
④ Rocker arm shaft
⑤ Rocker arm
⑥ Camshaft
⑦ Plug
⑧ Balancer shaft
⑨ Crankshaft
⑩ Oil filter
⑪ Bypass valve
⑫ Relief valve
⑬ Oil pump
⑭ Oil strainer
A Crankcase 2
B Crankcase 1
C Cylinder head



CABLE ROUTING



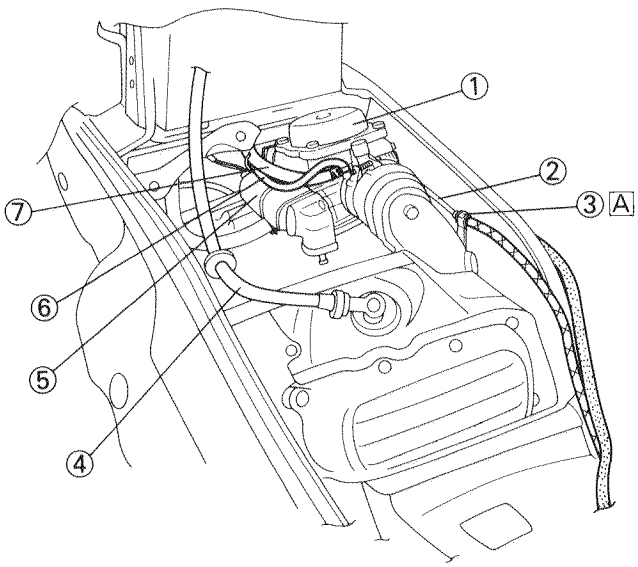
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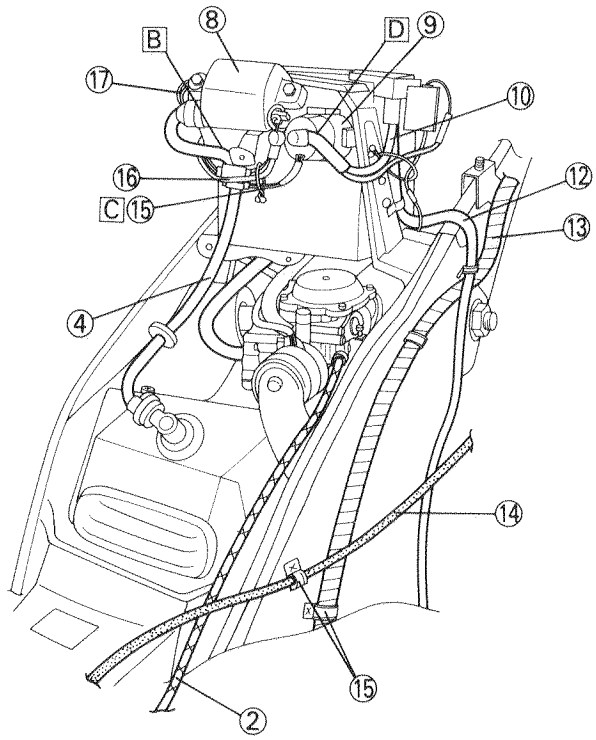
① Audio pilot
② Flasher relay
③ Horn
④ Band
⑤ Throttle cable
⑥ Front brake switch lead
⑦ Handlebar switch (Right) lead
⑧ Audio pilot lead
⑨ Speedometer cable
⑩ Handlebar switch (Left) lead
⑪ Diode unit
⑫ Main switch illumination lead
⑬ Main switch
⑭ Headlight lead
⑮ Front brake cable
⑯ Front flasher light (Left) lead
⑰ Wire harness
⑱ Front flasher light (Right) lead
⑲ Starting circuit cut-off relay

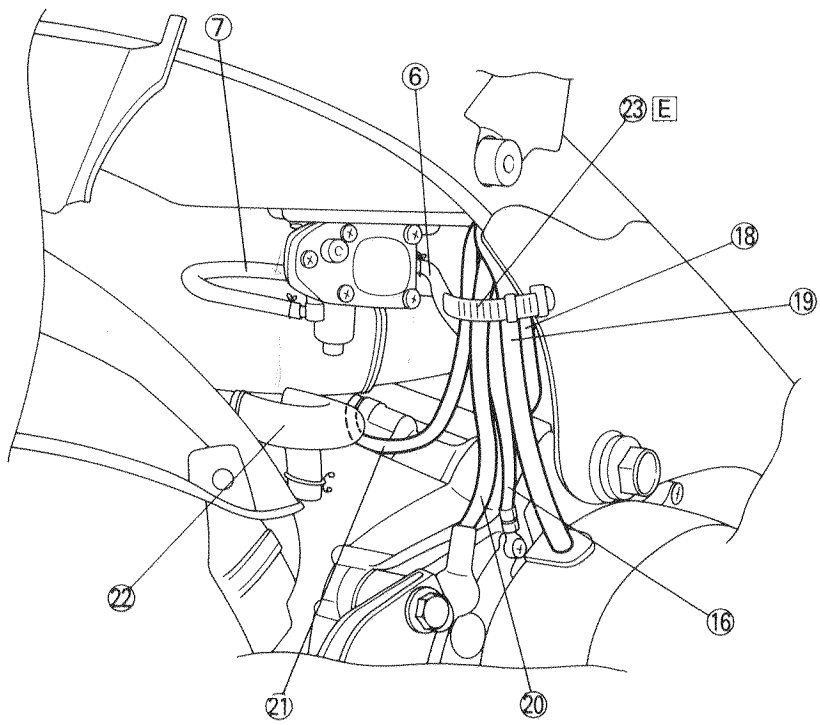
[A] Clamp the wire harness.
Do not over-tighten it.

[B] Clamp the wire harness.
Pull the harness as much as possible so as to take out the slack.

[C] Place the wire harness, front brake switch lead, and sidestand switch lead, through the cut-out section of the inner fender.


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C 15
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15
2


7
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23 E
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19
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16
21
20

① Carburetor
② Throttle cable
③ Cable holder
④ Spark plug lead
⑤ Auto choke unit
⑥ Vacuum hose
⑦ Fuel feed hose
⑧ Ignition coil
⑨ Starter relay
⑩ Fuse
⑪ Battery positive lead
⑫ Battery breather hose
⑬ Wire harness
⑭ Rear brake cable
⑮ Clamp
⑯ Starter motor positive lead
⑰ Earth lead
⑱ Auto choke unit lead
⑲ AC magneto generator lead
⑳ Starter motor negative lead
㉑ Oil level switch lead
㉒ Crankcase breather hose
㉓ Band

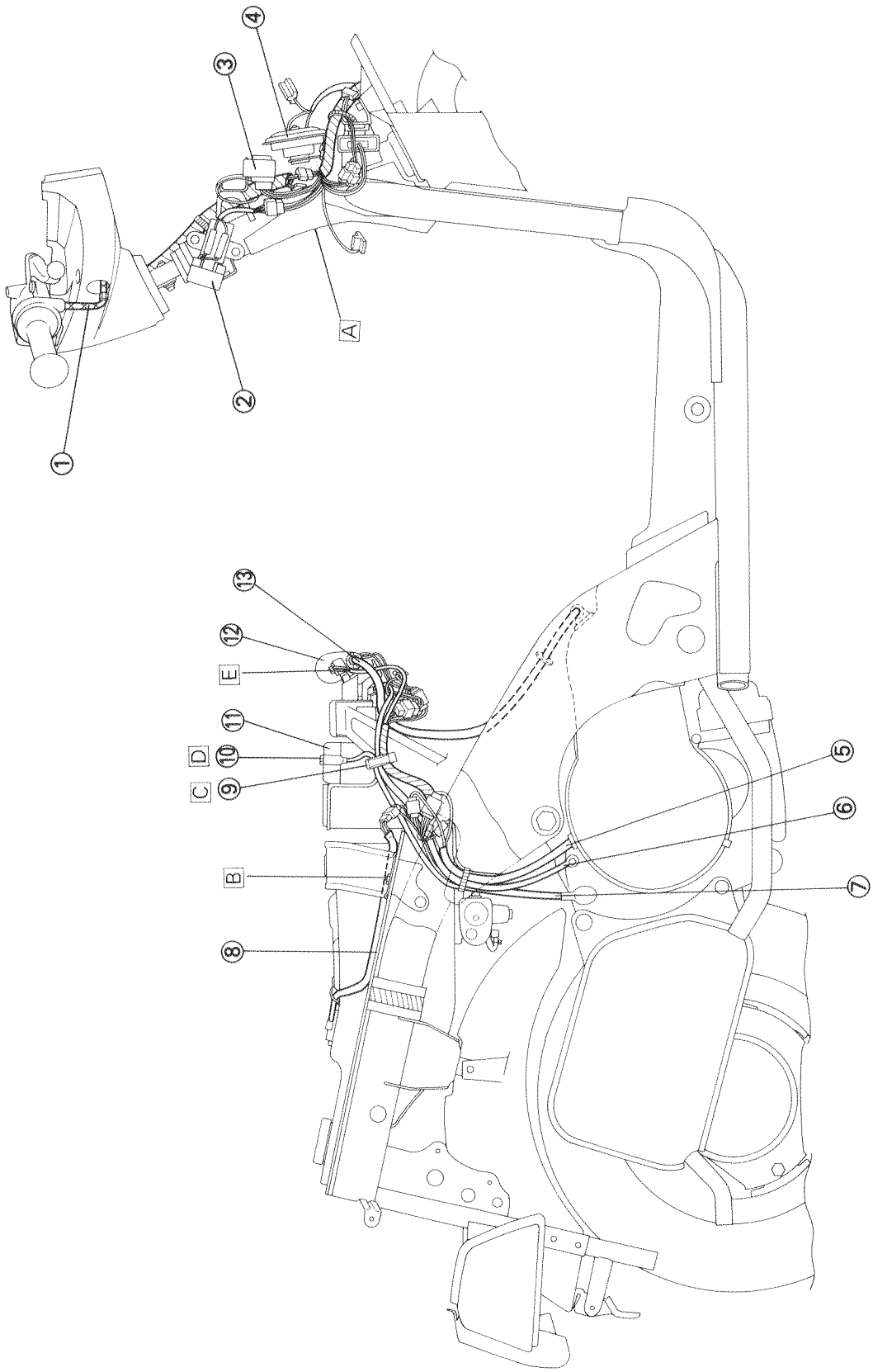
[A] Fix the end of the throttle cable into the cable holder that is attached to the carburetor.

[B] Pass the spark plug lead inside of the three clamped wires: starter relay lead, ignition coil lead, and starter motor positive lead.

[C] Clamp the starter relay lead, ignition coil lead and starter motor positive lead.

[D] Install the starter motor positive lead with the terminal facing out.

[E] Clamp five wires: the starter motor positive lead, auto choke unit lead, AC magneto generator lead, starter motor negative lead, and oil level switch lead.


4
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C
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8

① Throttle cable
② Main switch
③ Starting circuit cut-off relay
④ Horn
⑤ AC magneto generator lead
⑥ Starter motor positive lead
⑦ Starter motor negative lead
⑧ Fuel sender lead
⑨ Clamp
⑩ Battery negative lead
⑪ Battery
⑫ Ignition coil
⑬ Spark plug lead

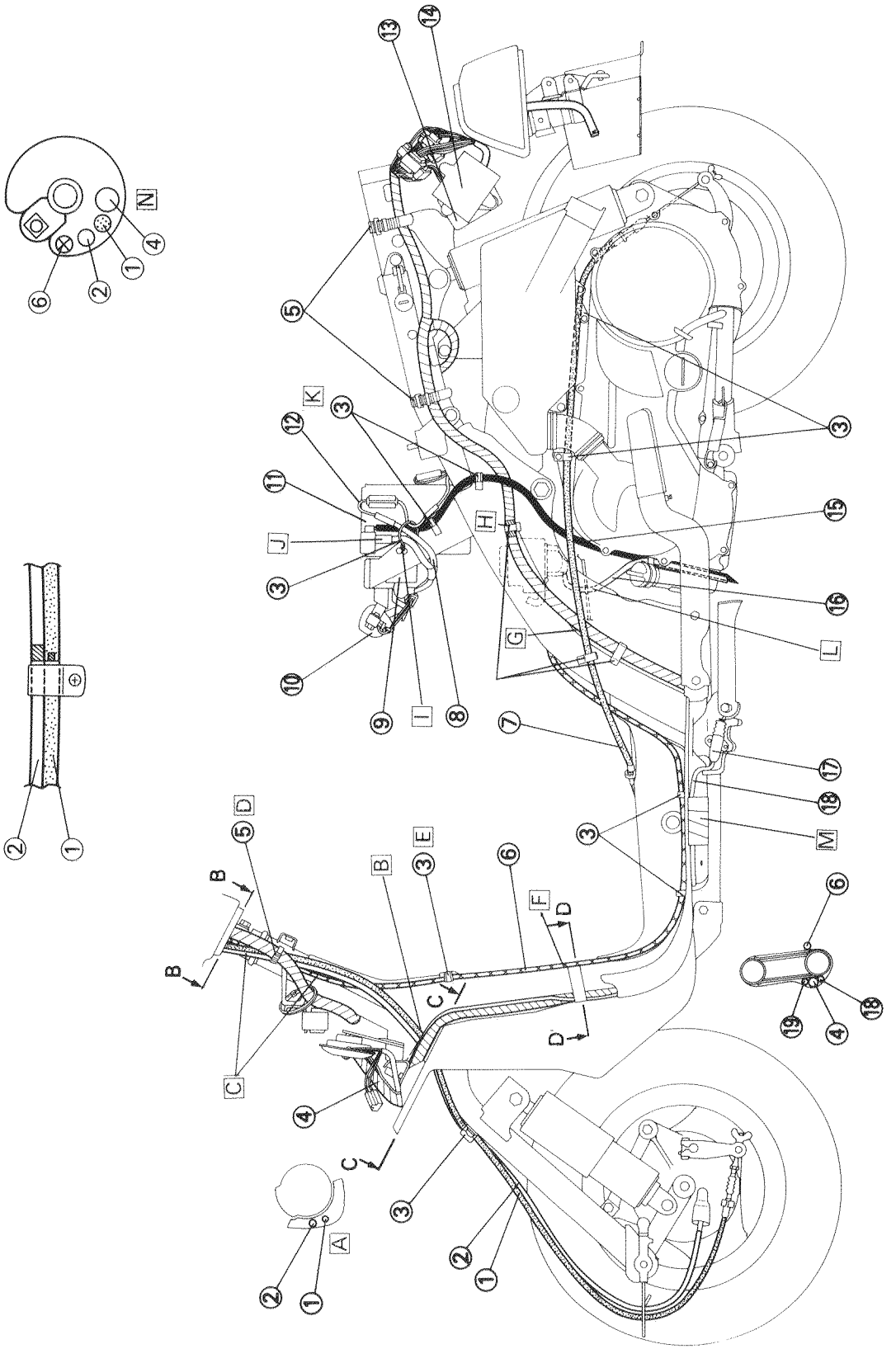
[A] Place the wire harness coupler, excluding the horn lead and left flasher light lead, to the right of the steering head pipe.

[B] Pass the fuel sender lead inside of the seat bracket.
Do not pinch the lead.

[C] Clamp the wire harness, starter relay negative lead and battery negative lead.

[D] Fasten the battery negative lead so as to hang downward.

[E] Fasten the ignition coil negative lead facing to the right.


N
K
H
J
G
L
M
A
B
C
D
E
F

① Front brake cable
② Speedometer cable
③ Clamp
④ Wire harness
⑤ Band
⑥ Throttle cable
⑦ Rear brake cable
⑧ Fuse lead
⑨ Starter relay
⑩ Ignition coil
⑪ Battery
⑫ Fuse
⑬ Rectifier/Regulator
⑭ Ignitor unit
⑮ Battery breather hose
⑯ Carburetor breather hose
⑰ Sidestand switch
⑱ Sidestand switch lead
⑲ Front brake switch lead

[A] Cross section: C-C

[B] Pass the wire harness outside of the inner fender.

[C] Pass the throttle cable inside of the front brake cable and speedometer cable, along the head pipe.

[D] Clamp the wire harness so as to locate the throttle cable, brake cable, and speedometer cable behind the harness.

[E] Clamp the throttle cable.

[F] Double-tape the wire harness, brake switch lead, and sidestand switch.

[G] Pass the wire harness inside of the rear brake cable.

[H] Clamp the wire harness at where the white tape is.

[I] Clamp the battery positive lead and fuse leads.

[J] Install the battery positive lead facing down.

[K] Clamp the battery breather hose without damaging it.

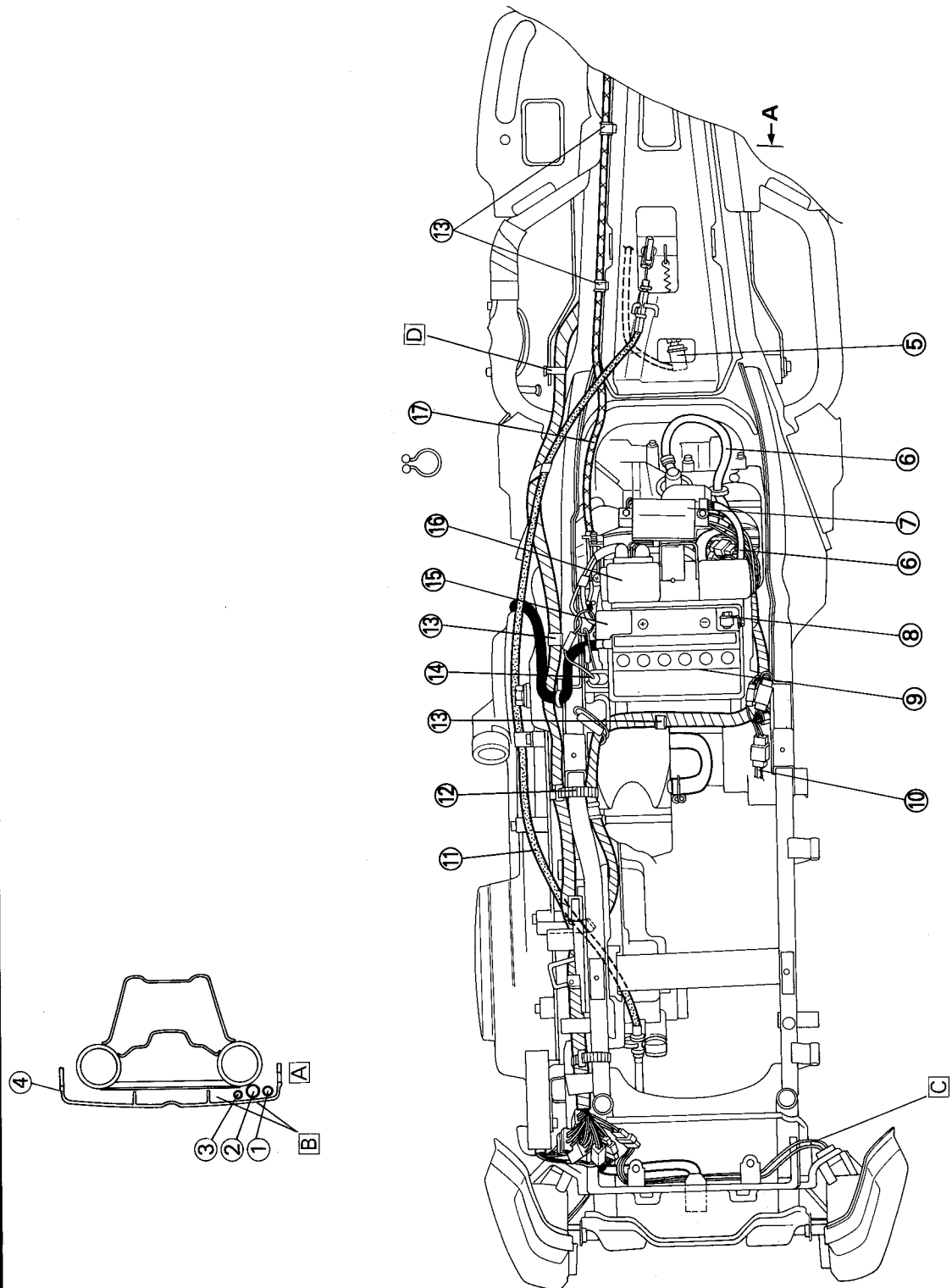
[L] Pass the carburetor breather hose through the heat protector hole.

[M] Tape the sidestand switch lead.

[N] Cross section: B-B

[O] Cross section: D-D

7


A
D
C
B
1
2
3
4
5
6
7
8
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10
11
12
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14
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16
17

① Sidestand switch lead
② Wire harness
③ Brake switch lead
④ Engine protector
⑤ Rear brake switch
⑥ Spark plug
⑦ Ignition coil
⑧ Battery negative terminal
⑨ Battery
⑩ To fuel sender
⑪ Rear brake cable
⑫ Band
⑬ Clamp
⑭ Fuse
⑮ Battery positive terminal
⑯ Starter relay
⑰ Throttle cable

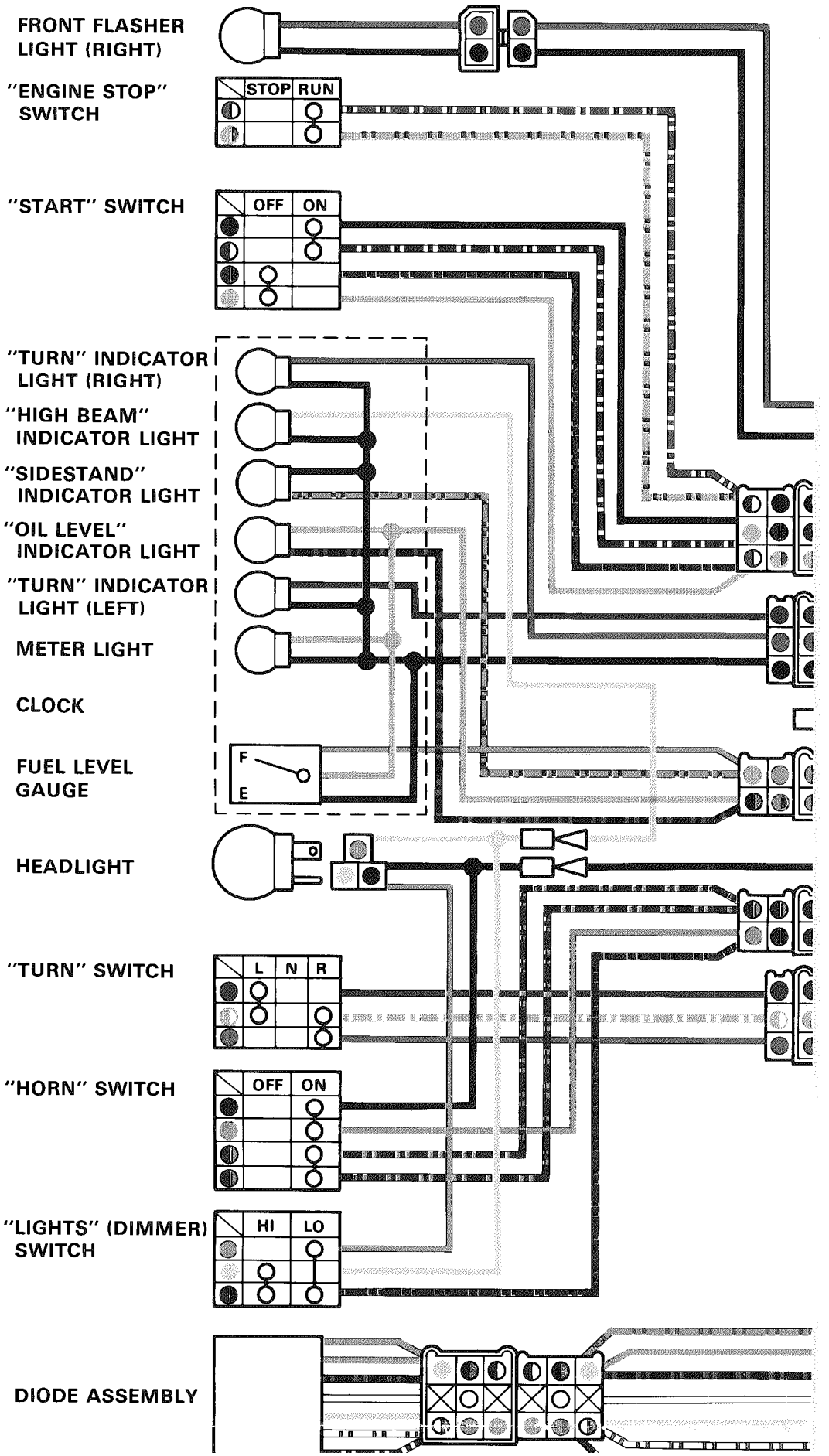
[A] Cross section: A-A

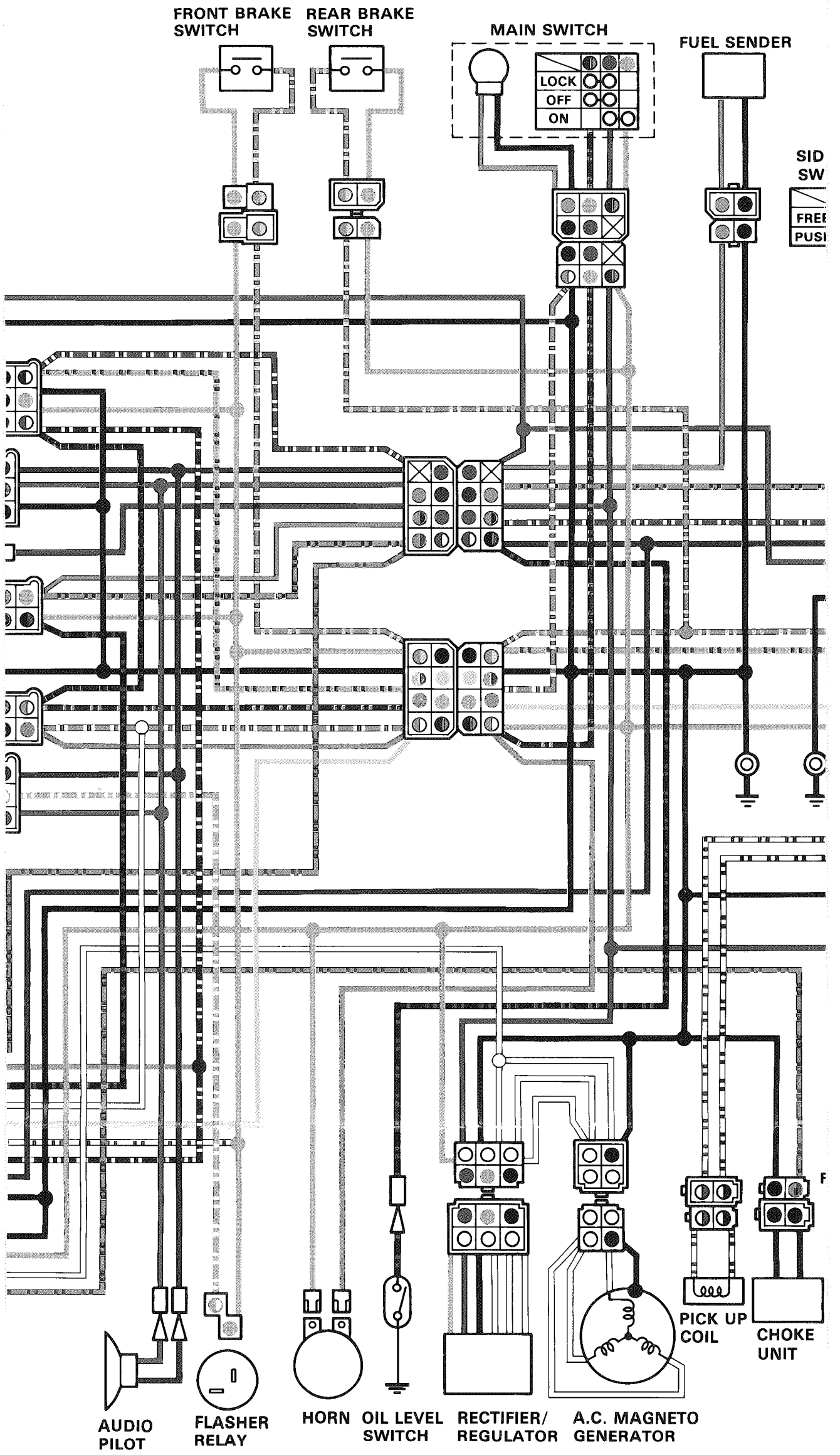
[B] Pass the brake switch lead, wire harness, and sidestand switch lead, inside of the engine protector without them getting pinched by a rib.

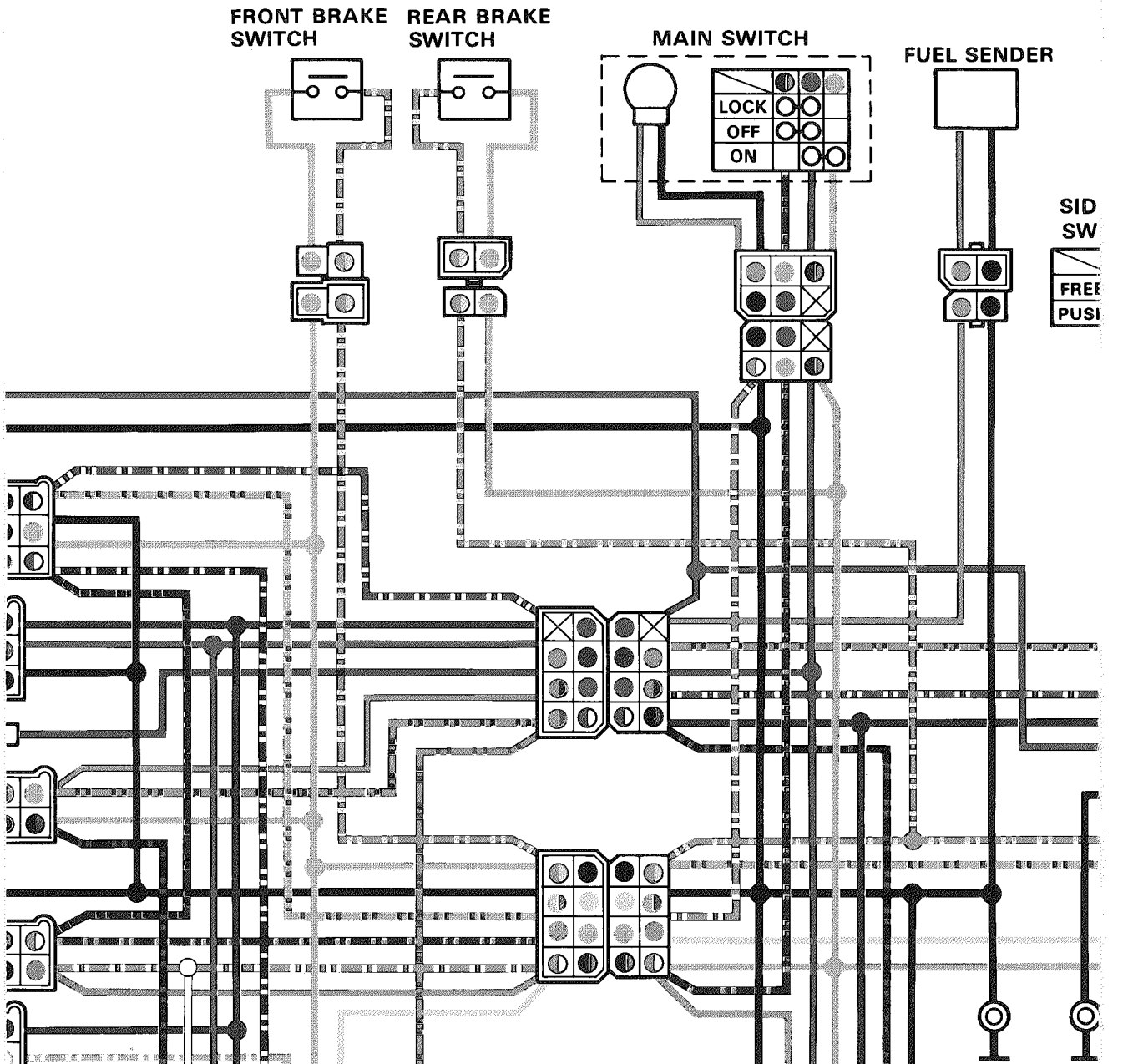
[C] Pass the right flasher light lead under the frame bracket.

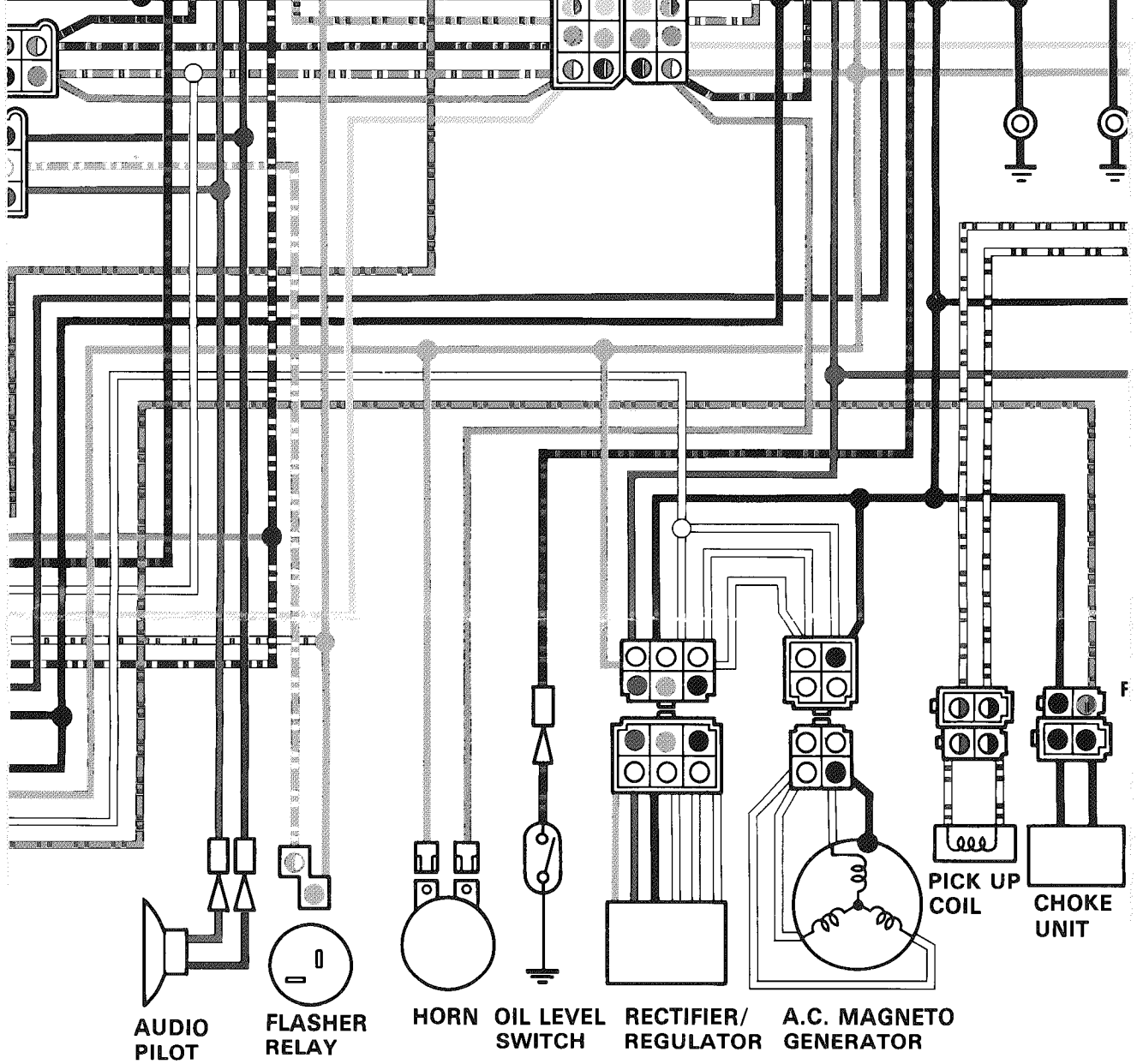
[D] Pass the wire harness under the pin.

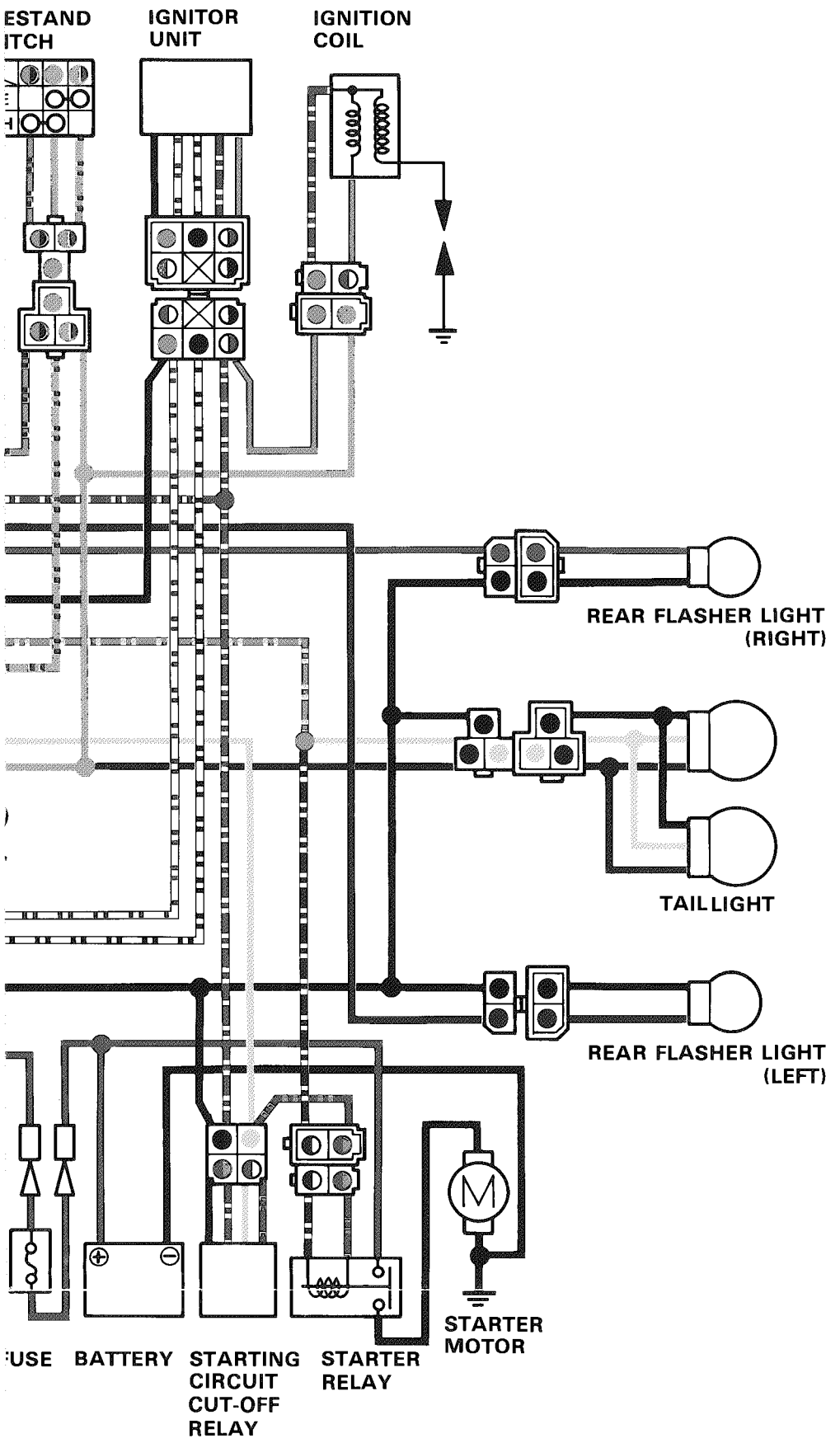
XC200T WIRING DIAGRAM




FRONT BRAKE SWITCH
REAR BRAKE SWITCH
MAIN SWITCH
LOCK
OFF
ON
FUEL SENDER
SID
SW
FREE
PUSH
PICK UP COIL
CHOKE UNIT
AUDIO PILOT
FLASHER RELAY
HORN
OIL LEVEL SWITCH
RECTIFIER/ REGULATOR
A.C. MAGNETO GENERATOR

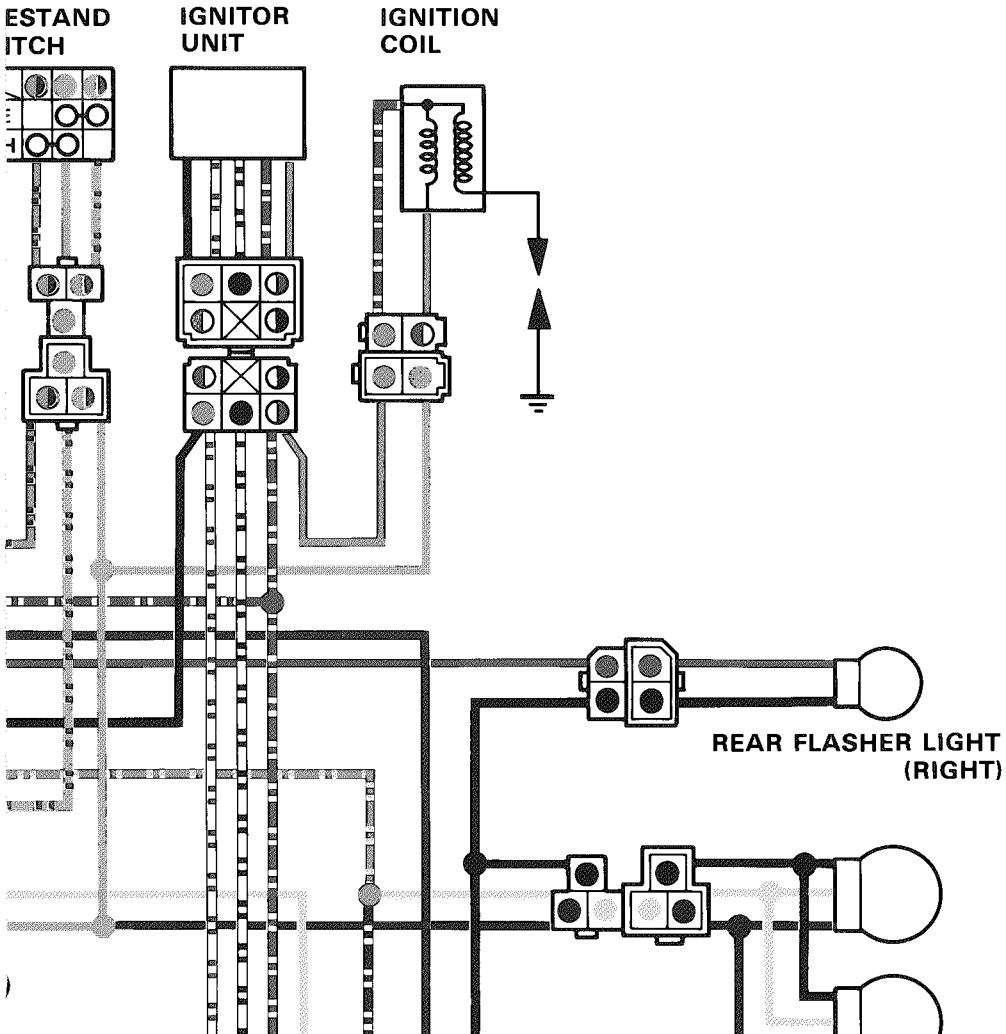

FRONT BRAKE SWITCH
REAR BRAKE SWITCH
MAIN SWITCH
LOCK
OFF
ON
FUEL SENDER
SID
SW
FREE
PUSH

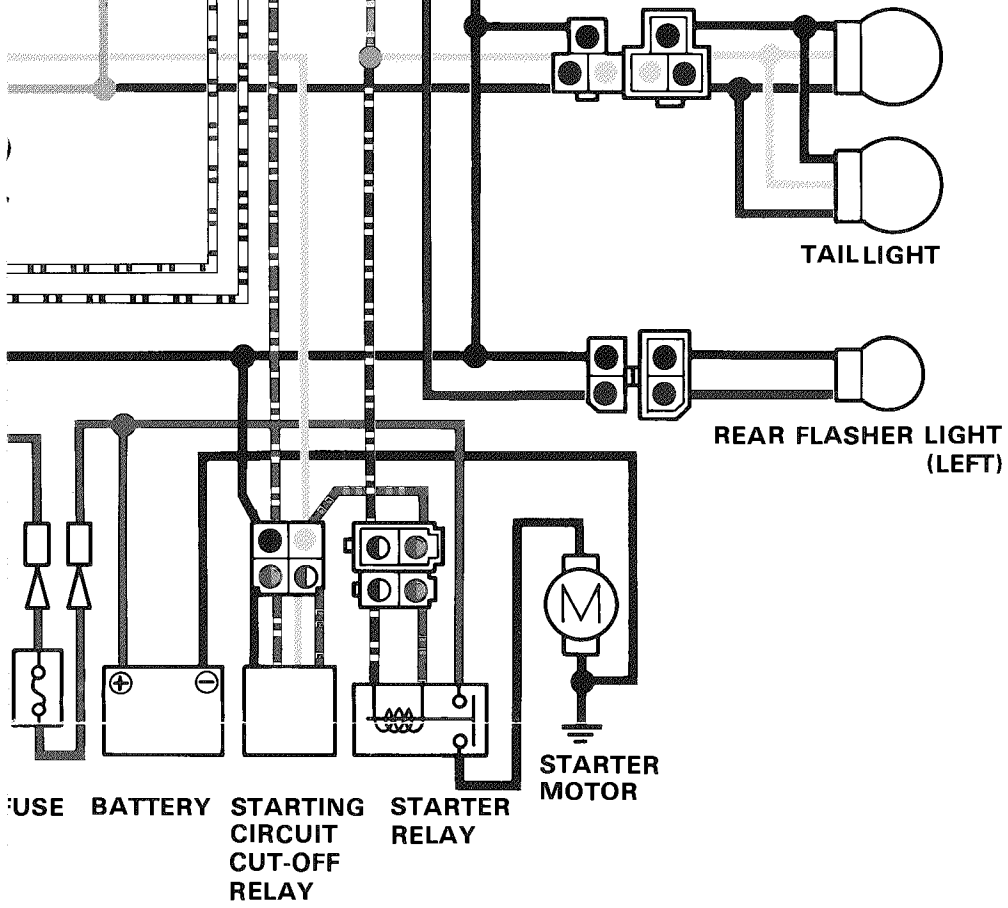

AUDIO PILOT
FLASHER RELAY
HORN
OIL LEVEL SWITCH
RECTIFIER/ REGULATOR
A.C. MAGNETO GENERATOR
PICK UP COIL
CHOKE UNIT



COLOR CODE

●	Black	●	Black/Red	●	Chocolate
●	Brown	●	Brown/Red	●	Brown/White
●	Dark green	●	Green	●	Green/Blue
●	Green/Red	●	Green/White	●	Green/Yellow
●	Blue	●	Sky blue	●	Blue/Black
●	Blue/Green	●	Blue/White	○	White
●	White/Black	●	White/Green	●	White/Red
●	Red	●	Pink	●	Yellow
●	Red/Green	●	Red/White	●	Orange


ESTAND
ITCH
IGNITOR
UNIT
IGNITION
COIL
REAR FLASHER LIGHT
(RIGHT)



COLOR CODE

●	Black	◐	Black/Red	◐	Chocolate
◐	Brown	◐	Brown/Red	◐	Brown/White
◐	Dark green	◐	Green	◐	Green/Blue
◐	Green/Red	◐	Green/White	◐	Green/Yellow
●	Blue	◐	Sky blue	◐	Blue/Black
◐	Blue/Green	◐	Blue/White	○	White
◐	White/Black	◐	White/Green	◐	White/Red
◐	Red	◐	Pink	◐	Yellow
◐	Red/Green	◐	Red/White	◐	Orange

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