YAMAHA

# YJ50RN

# SERVICE MANUAL

LIT-11616-14-50 5LY-28197-E0

EAS00001

**YJ50RN**
**SERVICE MANUAL**

**First edition, December, 2000**

**Printed in U.S.A.**
**P/N LIT-11616-14-50**

EAS00002

# NOTICE

This manual was produced by the Yamaha Motor Company, Ltd. primarily for use by Yamaha dealers and their qualified mechanics. It is not possible to include all the knowledge of a mechanic in one manual. Therefore, anyone who uses this book to perform maintenance and repairs on Yamaha vehicles should have a basic understanding of mechanics and the techniques to repair these types of vehicles. Repair and maintenance work attempted by anyone without this knowledge is likely to render the vehicle unsafe and unfit for use.

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

**NOTE:**

Designs and specifications are subject to change without notice.

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## IMPORTANT MANUAL INFORMATION

Particularly important information is distinguished in this manual by the following.

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

**⚠ WARNING** Failure to follow WARNING instructions could result in severe injury or death to the scooter operator, a bystander or a person checking or repairing the scooter.

**CAUTION:** A CAUTION indicates special precautions that must be taken to avoid damage to the scooter.

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

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# HOW TO USE THIS MANUAL

This manual is intended as a handy, easy-to-read reference book for the mechanic. Comprehensive explanations of all installation, removal, disassembly, assembly, repair and check procedures are laid out with the individual steps in sequential order.

① The manual is divided into chapters. An abbreviation and symbol in the upper right corner of each page indicate the current chapter. Refer to “SYMBOLS”.

② Each chapter is divided into sections. The current section title is shown at the top of each page, except in Chapter 3 (“PERIODIC CHECKS AND ADJUSTMENTS”), where the sub-section title(s) appears.

③ Sub-section titles appear in smaller print than the section title.

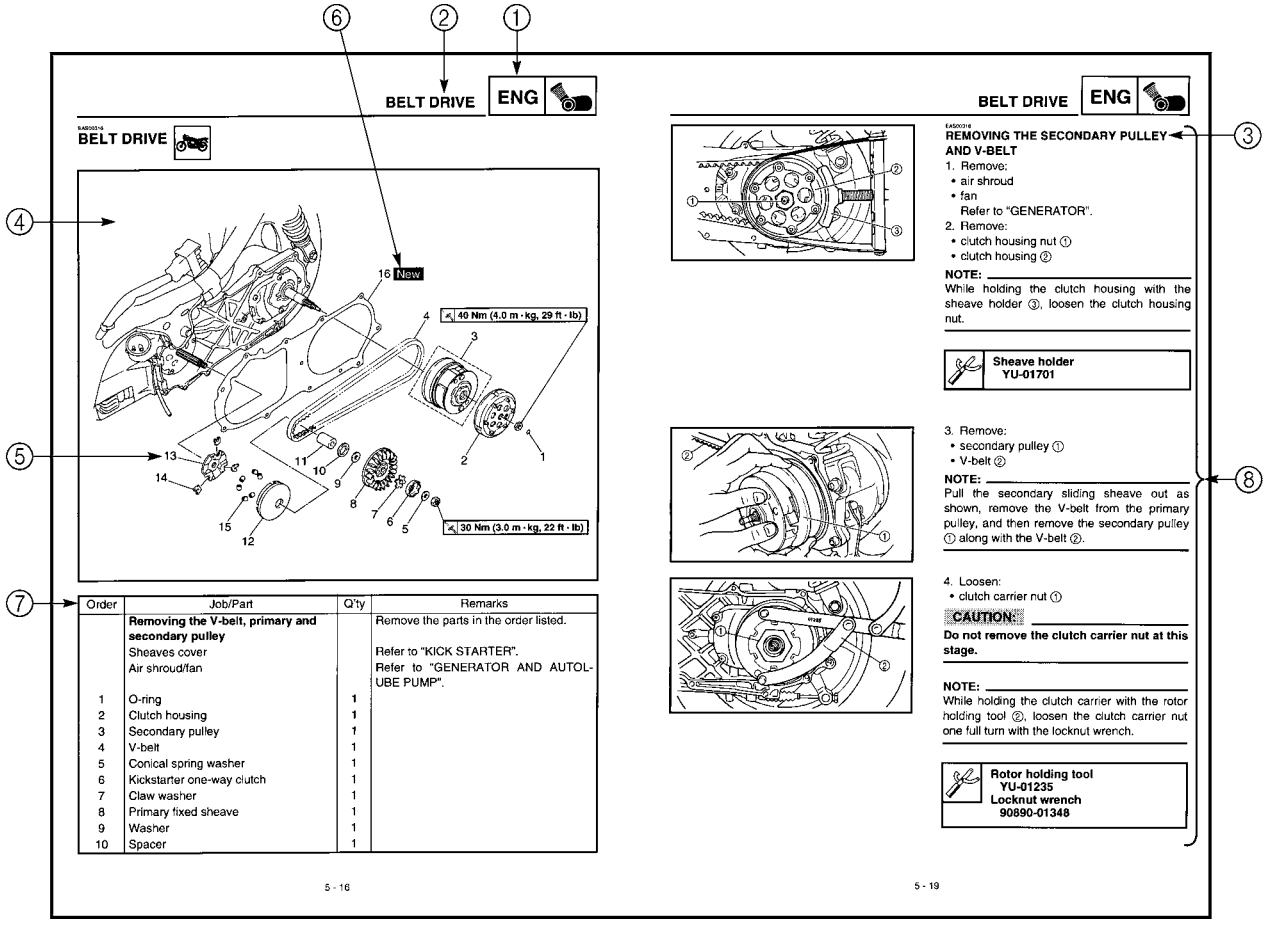
④ To help identify parts and clarify procedure steps, there are exploded diagrams at the start of each removal and disassembly section.

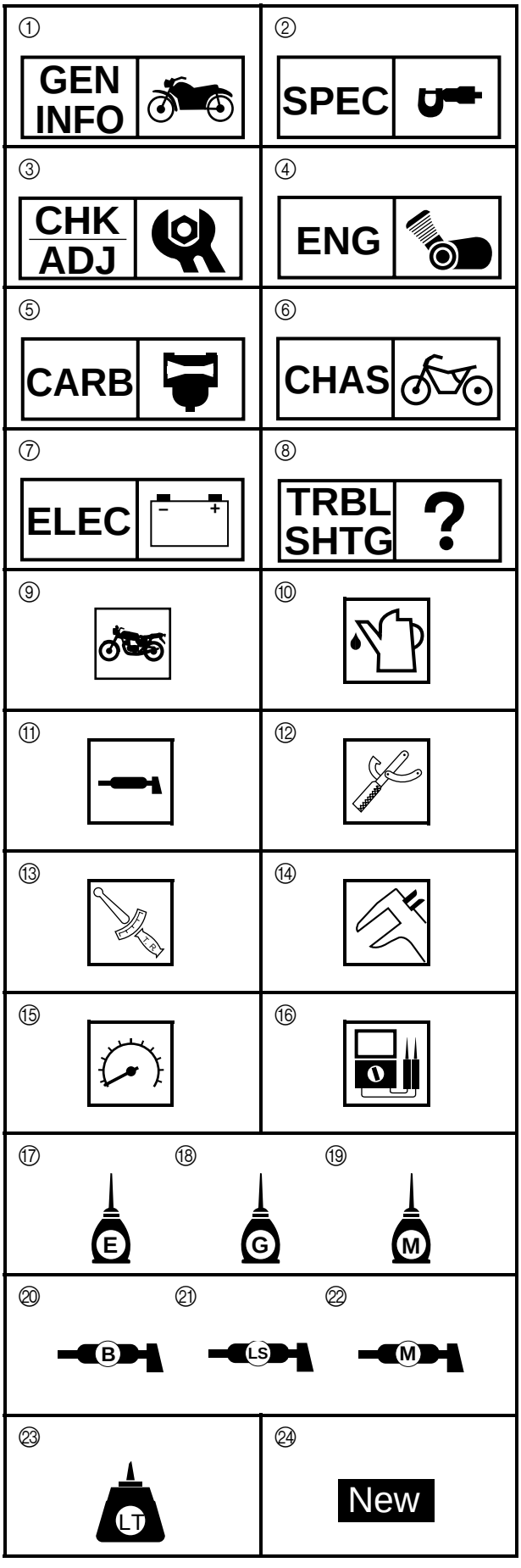
⑤ Numbers are given in the order of the jobs in the exploded diagram. A circled number indicates a disassembly step.

⑥ Symbols indicate parts to be lubricated or replaced. Refer to “SYMBOLS”.

⑦ A job instruction chart accompanies the exploded diagram, providing the order of jobs, names of parts, notes in jobs, etc.

⑧ Jobs requiring more information (such as special tools and technical data) are described sequentially.



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## SYMBOLS

The following symbols are not relevant to every vehicle.

Symbols ① to ⑧ indicate the subject of each chapter.

① General information
② Specifications
③ Periodic checks and adjustments
④ Engine
⑤ Carburetor(s)
⑥ Chassis
⑦ Electrical system
⑧ Troubleshooting

Symbols ⑨ to ⑯ indicate the following.

⑨ Serviceable with engine mounted
⑩ Filling fluid
⑪ Lubricant
⑫ Special tool
⑬ Tightening torque
⑭ Wear limit, clearance
⑮ Engine speed
⑯ Electrical data

Symbols ⑰ to ㉒ in the exploded diagrams indicate the types of lubricants and lubrication points.

⑰ Engine oil
⑱ Gear oil
⑲ Molybdenum disulfide oil
⑳ Wheel bearing grease
㉑ Lithium soap base grease
㉒ Molybdenum disulfide grease

Symbols ㉓ to ㉔ in the exploded diagrams indicate the following.

㉓ Apply locking agent (LOCTITE®)
㉔ Replace the part

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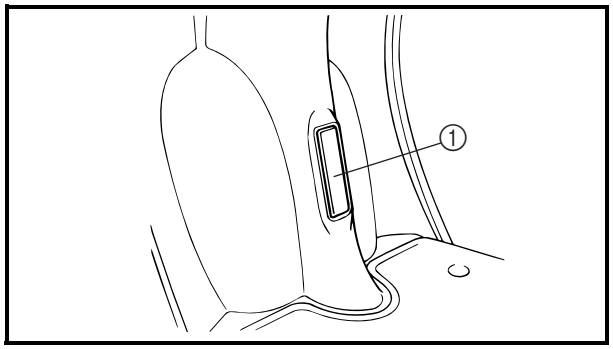


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# GENERAL INFORMATION

## SCOOTER IDENTIFICATION

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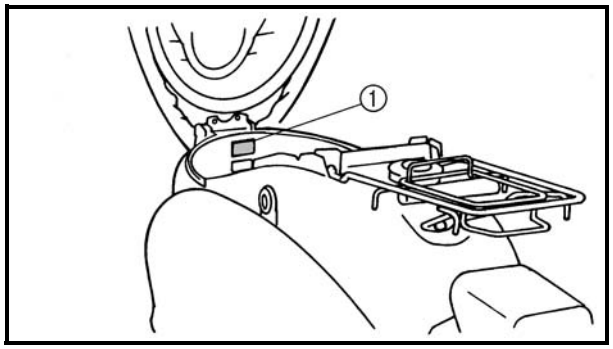
### VEHICLE IDENTIFICATION NUMBER

The vehicle identification number ① is stamped into the frame.



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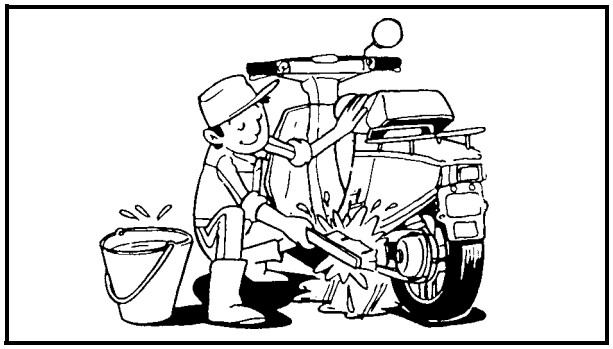
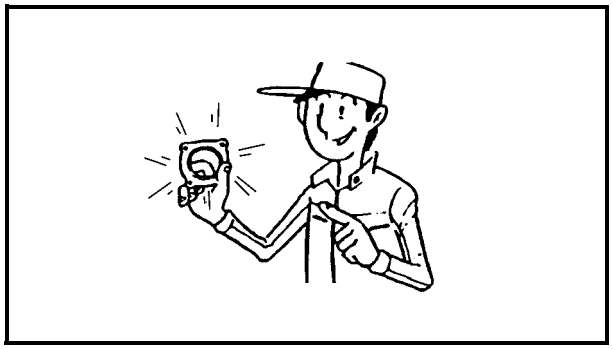
### MODEL CODE

The model code label ① is affixed to the location shown in the figure. Record the information on this label in the space provided. This information will be needed to order spare parts.





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# IMPORTANT INFORMATION

## PREPARATION FOR REMOVAL AND DISASSEMBLY

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

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## REPLACEMENT PARTS

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

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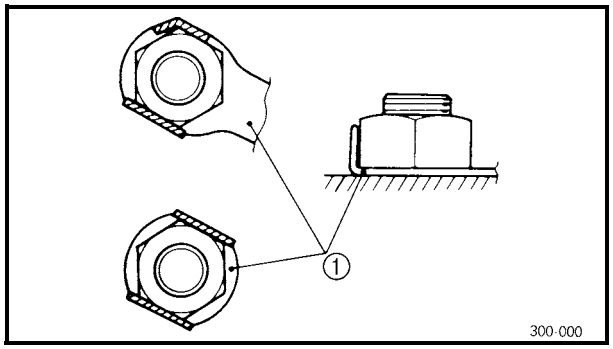
## GASKETS, OIL SEALS AND O-RINGS

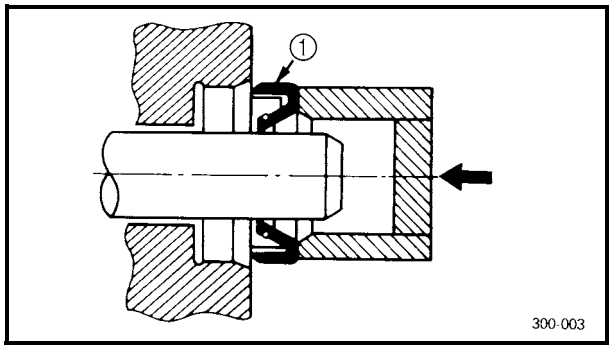
1. When overhauling the engine, replace all gaskets, seals and O-rings. All gasket surfaces, oil seal lips and O-rings must be cleaned.
2. During reassembly, properly oil all mating parts and bearings and lubricate the oil seal lips with grease.



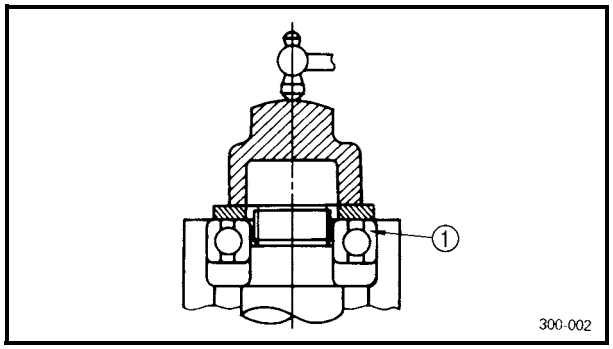

EAS00023

## LOCK WASHERS/PLATES AND COTTER PINS

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

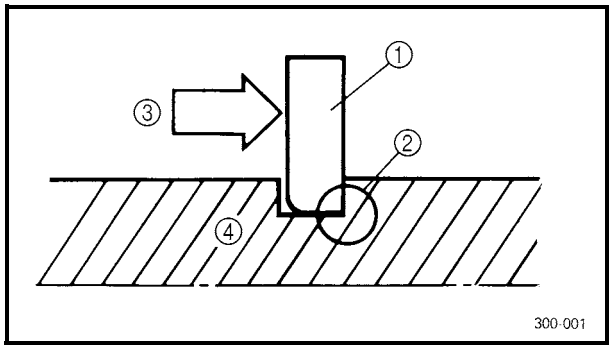



EAS00024
**BEARINGS AND OIL SEALS**
Install bearings and oil seals so that the manufacturer's marks or numbers are visible. When installing oil seals, lubricate the oil seal lips with a light coat of lithium soap base grease. Oil bearings liberally when installing, if appropriate.
① Oil seal

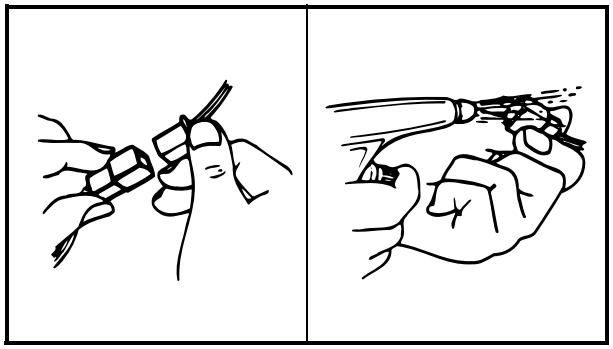



**CAUTION:**
**Do not spin the bearing with compressed air because this will damage the bearing surfaces.**

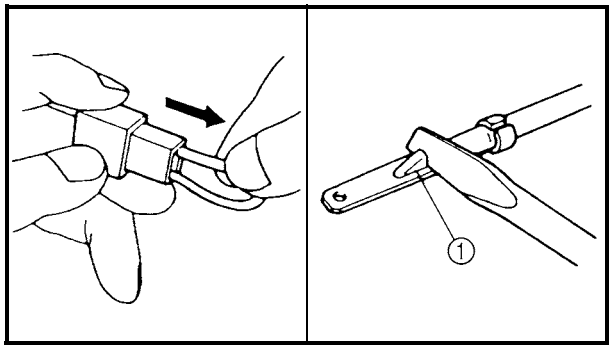
① Bearing




EAS00025
**CIRCLIPS**
Before reassembly, check all circlips carefully and replace damaged or distorted circlips. Always replace piston pin clips after one use. When installing a circlip ①, make sure the sharp-edged corner ② is positioned opposite the thrust ③ that the circlip receives.
④ Shaft

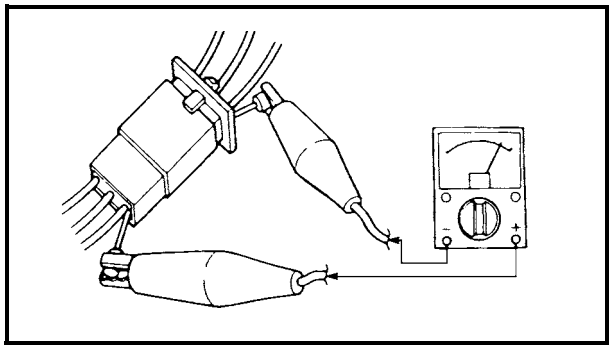


EAS00026
**CHECKING THE CONNECTIONS**
Check the leads, couplers, and connectors for stains, rust, moisture, etc.
1. Disconnect:
   • lead
   • coupler
   • connector
2. Check:
   • lead
   • coupler
   • connector
   Moisture → Dry with an air blower.
   Rust/stains → Connect and disconnect several times.



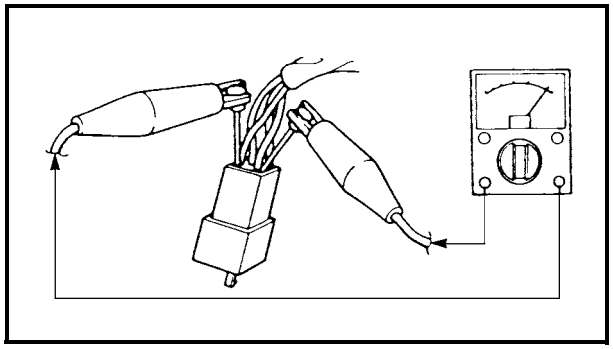

3. Check:
   • all connections
   Loose connection → Connect properly.

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



4. Connect:
   • lead
   • coupler
   • connector

**NOTE:**
Make sure all connections are tight.



5. Check:
   • continuity
   (with the pocket tester)

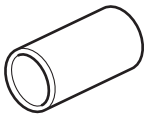
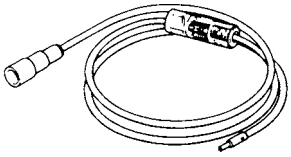
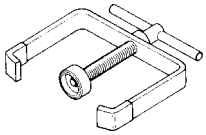
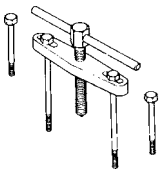
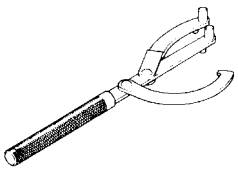
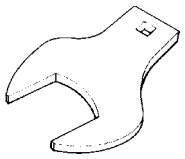
| | |
|---|---|
| | **Pocket tester**<br>**YU-03112** |

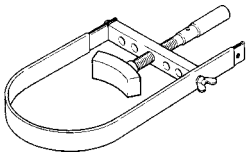
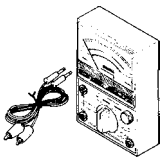
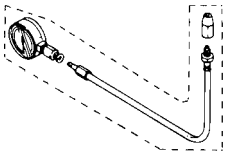
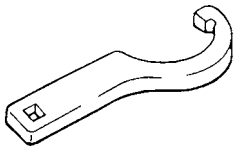
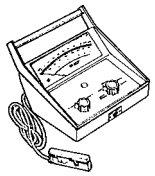
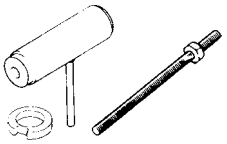
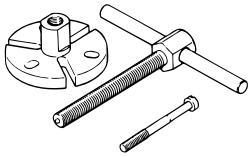
**NOTE:**
- If there is no continuity, clean the terminals.
- When checking the wire harness, perform steps (1) to (3).
- As a quick remedy, use a contact revitalizer available at most part stores.

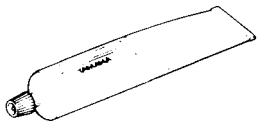
EAS00027
# SPECIAL TOOLS

The following special tools are necessary for complete and accurate tune-up and assembly. Use only the appropriate special tools as this will help prevent damage caused by the use of inappropriate tools or improvised techniques. Special tools, part numbers or both may differ depending on the country.
When placing an order, refer to the list provided below to avoid any mistakes.



| Tool No. | Tool name/Function | Illustration |
|---|---|---|
| YM-01409 | Oil seal guide<br>This tool is used to install oil seals. |  |
| YM-01411 | Crankshaft installer spacer<br>This tool is used to install the crankshaft. |  |
| YM-34487 | Dynamic spark tester<br>This tool is used to check the ignition system components. |  |
| YS-28891 | Clutch spring holder<br>This tool is used to disassembly and assembly the secondary pulley. |  |
| YU-01135 | Crankcase separating tool<br>This tool is used to remove the crankshaft and to separate the crankcase. |  |
| YU-01235 | Rotor holding tool<br>This tool is used to hold the generator rotor when removing or installing the generator rotor bolt. |  |
| YU-01444 | Steering nut wrench (45 mm)<br>This tool is used to loosen and tighten the lower steering stem nut. |  |

| Tool No. | Tool name/Function | Illustration |
|---|---|---|
| YU-01701 | Sheave holder<br><br>This tool is used to hold the clutch housing when removing or installing the clutch housing nut. |  |
| YU-03112 | Pocket tester<br><br>This tool is used to check the electrical system. |  |
| YU-33223 | Compression gauge<br><br>This tool is used to measure engine compression. |  |
| YU-33975 | Steering nut wrench<br><br>This tool is used to loosen or tighten the steering stem ring nut. |  |
| YU-8036-A | Inductive tachometer<br><br>This tool is used to check engine speed. |  |
| Crankshaft installer tool set<br>YU-90050<br>Crankshaft installer pot<br>YU-90058<br>Crankshaft installer bolt<br>YU-90060 | Crankshaft installer tool set<br>Crankshaft installer pot<br>Crankshaft installer bolt<br><br>These tools are used to install the crankshaft. |  |
| YU-90062 | Crankshaft installer adaptor (M10)<br><br>This tool is used to install the crankshaft. |  |
| YU-90105 | Flywheel puller set<br><br>This tool is used to remove the generator rotor. |  |

| Tool No. | Tool name/Function | Illustration |
|---|---|---|
| ACC-1100-15-01 | Quick Gasket®<br><br>This sealant is used to seal to mating surfaces (e.g., crankcase mating surfaces). |  |

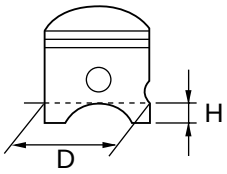
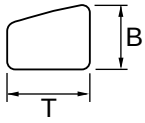
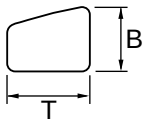
# SPECIFICATIONS

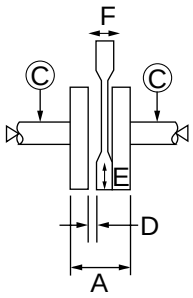
## GENERAL SPECIFICATIONS

| Item | Standard | Limit |
|---|---|---|
| **Model code** | 5LY1 | ---- |
| **Dimensions** | | |
| Overall length | 1,630 mm (64.1 in) | ---- |
| Overall width | 630 mm (24.8 in) | ---- |
| Overall height | 1,030 mm (40.5 in) | ---- |
| Seat height | 715 mm (28.1 in) | ---- |
| Wheelbase | 1,150 mm (45.3 in) | ---- |
| Minimum ground clearance | 85 mm (3.3 in) | ---- |
| Minimum turning radius | 1,600 mm (63 in) | ---- |
| **Weight** | | |
| Wet (with oil and a full fuel tank) | 74 kg (163 lb) | ---- |

# ENGINE SPECIFICATIONS

| Item | Standard | Limit |
|---|---|---|
| **Engine** | | |
| Engine type | Air-cooled, 2-stroke | ---- |
| Induction system | Reed valve | ---- |
| Displacement | 49 $cm^3$ | ---- |
| Cylinder arrangement | Forward inclined single cylinder | ---- |
| Bore × stroke | 40.0 × 39.2 mm (1.57 × 1.54 in) | ---- |
| Compression ratio | 7.3 : 1 | ---- |
| Engine idling speed | 1,800 r/min | ---- |
| **Fuel** | | |
| Recommended fuel | Unleaded fuel | ---- |
| Fuel tank capacity | | |
| Total (including reserve) | 6 L (5.3 Imp qt, 6.3 US qt) | ---- |
| **Engine oil** | | |
| Lubrication system | Separate lubrication (Yamaha autolube) | ---- |
| Oil type or grade | Yamalube 2-cycle oil or | ---- |
| | 2-stroke engine oil | ---- |
| Quantity | | |
| Capacity | 1.4 L (1.23 Imp qt, 1.48 US qt) | ---- |
| Air filter oil grade | Foam air-filter oil or SAE 10W30SE | ---- |
| **Transmission** | | |
| Recommended oil | Yamalube 4 (10W30) or SAE 10W30 type SE motor oil | ---- |
| Periodic oil change | 0.1 L (0.09 Imp qt, 0.11 US qt) | ---- |
| Total amount | 0.11 L (0.1 Imp qt, 0.12 US qt) | ---- |
| **Starting system type** | Electric and kick starter | ---- |
| **Spark plug** | | |
| Model (manufacturer) × quantity | BPR7HS (NGK) | ---- |
| Spark plug gap | 0.6 ~ 0.7 mm (0.02 ~ 0.03 in) | ---- |
| **Cylinder head** | | |
| Max. warpage | ---- | 0.02 mm (0.0008 in) |
| **Cylinder** | | |
| Cylinder arrangement | Forward inclined single cylinder | ---- |
| Bore × stroke | 40.0 × 39.2 mm (1.57 × 1.54 in) | ---- |
| Compression ratio | 7.3 : 1 | ---- |
| Bore | 39.993 ~ 40.012 mm (1.5745 ~ 1.5753 in) | ---- |
| Max. taper | ---- | 0.05 mm (0.002 in) |
| Max. out-of-round | ---- | 0.05 mm (0.002 in) |

| Item | Standard | Limit |
|---|---|---|
| **Piston** | | |
| Piston-to-cylinder clearance | 0.03 ~ 0.05 mm (0.0012 ~ 0.0020 in) | 0.10 mm (0.0039 in) |
| Diameter D | 39.952 ~ 39.969 mm (1.5729 ~ 1.5736 in) | ---- |
|  | | |
| Height H | 5 mm (0.2 in) | ---- |
| Oversize 1st | ---- | ---- |
| Oversize 2nd | ---- | ---- |
| Piston pin bore (in the piston) | | |
| Diameter | 10.004 ~ 10.015 mm (0.3939 ~ 0.3943 in) | 10.045 mm (0.3955 in) |
| Offset | 0 mm (0 in) | ---- |
| Piston pin | | |
| Outside diameter | 9.996 ~ 10.000 mm (0.3935 ~ 0.3937 in) | 9.976 mm (0.3928 in) |
| Piston-pin-to-piston-pin-bore clearance | 0.004 ~ 0.019 mm (0.00016 ~ 0.00075 in) | 0.069 mm (0.0027 in) |
| Piston ring | | |
| Top ring | | |
|  | | |
| Ring type | Keystone | ---- |
| Dimensions (B × T) | 1.2 × 1.8 mm (0.05 × 0.07 in) | ---- |
| End gap (installed) | 0.15 ~ 0.35 mm (0.006 ~ 0.014 in) | 0.70 mm (0.028 in) |
| Ring side clearance | 0.03 ~ 0.05 mm (0.0012 ~ 0.0020 in) | 0.10 mm (0.0039 in) |
| 2nd ring | | |
|  | | |
| Ring type | Keystone | ---- |
| Dimensions (B × T) | 1.2 × 1.8 mm (0.05 × 0.07 in) | ---- |
| End gap (installed) | 0.15 ~ 0.35 mm (0.006 ~ 0.014 in) | 0.70 mm (0.028 in) |
| Ring side clearance | 0.03 ~ 0.05 mm (0.0012 ~ 0.0020 in) | 0.10 mm (0.0039 in) |

| Item | Standard | Limit |
|---|---|---|
| **Crankshaft** | | |
|  | | |
| Width A | 37.90 ~ 37.95 mm (1.492 ~ 1.494 in) | ---- |
| Max. runout C | ---- | 0.03 mm (0.0012 in) |
| Big end side clearance D | 0.35 ~ 0.75 mm (0.0138 ~ 0.0295 in) | 1.0 mm (0.0394 in) |
| Big end radial clearance E | 0.004 ~ 0.017 mm (0.00016 ~ 0.00067 in) | ---- |
| Small end free play F | 0.4 ~ 0.8 mm (0.02 ~ 0.03 in) | ---- |
| **Clutch** | | |
| Clutch type | Dry, centrifugal automatic | ---- |
| Clutch shoe | | |
| Thickness | 4.0 mm (0.157 in) | 1.0 mm (0.039 in) |
| Clutch shoe spring | | |
| Free length | 29.9 mm (1.18 in) | ---- |
| **Kickstarter** | | |
| Kickstarter type | Ratchet | ---- |
| Kickstarter pinion gear clip force | 0.15 ~ 0.25 kg (0.34 ~ 0.56 lb) | ---- |
| **Transmission** | | |
| Transmission type | V-belt automatic | ---- |
| Primary reduction system | Helical | ---- |
| Primary reduction ratio | 48/13 (3.692) | ---- |
| Secondary reduction system | Spur gear | ---- |
| Secondary reduction ratio | 42/13 (3.231) | ---- |
| Operation | Centrifugal automatic type | ---- |
| Single speed automatic | 2.183 ~ 1.050:1 | ---- |
| **Air filter type** | Wet element | ---- |

| Item | Standard | Limit |
|---|---|---|
| **Carburetor** | | |
| Model (manufacturer) × quantity | Y14P/1 (TEIKEI) × 1 | ---- |
| Throttle cable free play (at the flange of the throttle grip) | 1.5 ~ 3.5 mm (0.06 ~ 0.14 in) | ---- |
| ID mark | 5LY1 00 | ---- |
| Main jet | #64 | ---- |
| Main air jet | 2.0 | ---- |
| Jet needle | 3SOC-3/5 | ---- |
| Needle jet | 2.090 | ---- |
| Cutaway | 2.5 | ---- |
| Pilot jet | #46 | ---- |
| Bypass 1 | 0.8 | ---- |
| Valve seat size | 1.8 | ---- |
| Starter jet 1 | #46 | ---- |
| Float height | 15 ~ 17 mm (0.59 ~ 0.67 in) | ---- |
| **Reed valve** | | |
| Thickness | 0.164 ~ 0.176 mm (0.0065 ~ 0.0069 in) | ---- |
| Valve stopper height | 7.0 ~ 7.4 mm (0.28 ~ 0.29 in) | ---- |
| Valve bending limit | 0.2 mm (0.008 in) | ---- |
| **Autolube pump** | | |
| Plunger diameter | 2.62 mm (0.103 in) | ---- |
| Minimum stroke | 0.1 mm (0.0039 in) | ---- |
| Maximum stroke | 0.49 mm (0.0193 in) | ---- |

## CHASSIS SPECIFICATIONS

| Item | Standard | Limit |
|---|---|---|
| **Frame** | | |
| Frame type | Steel tube underbone | ---- |
| Caster angle | 25° | ---- |
| Trail | 71 mm (2.8 in) | ---- |
| **Front wheel** | | |
| Wheel type | Panel wheel | ---- |
| Rim | | |
| Size | 10 × 2.15 | ---- |
| Material | Steel | ---- |
| Wheel travel | 60 mm (2.36 in) | ---- |
| Wheel runout | | |
| Max. radial wheel runout | ---- | 1.0 mm (0.04 in) |
| Max. lateral wheel runout | ---- | 1.0 mm (0.04 in) |
| **Rear wheel** | | |
| Wheel type | Panel wheel | ---- |
| Rim | | |
| Size | 10 × 2.15 | ---- |
| Material | Steel | ---- |
| Wheel travel | 46 mm (1.81 in) | ---- |
| Wheel runout | | |
| Max. radial wheel runout | ---- | 1.0 mm (0.04 in) |
| Max. lateral wheel runout | ---- | 1.0 mm (0.04 in) |
| **Front tire** | | |
| Tire type | Tubeless | ---- |
| Size | 80/90-10 (34J) | ---- |
| Model (manufacturer) | MB38/C-922 (INOUE/CHENG SHIN) | ---- |
| Tire pressure (cold) | | |
| 0 ~ 90 kg (0 ~ 198 lb) | 150 kPa (1.50 kg/cm$^2$, 21.8 psi) | ---- |
| Min. tire tread depth | ---- | 1.0 mm (0.04 in) |
| **Rear tire** | | |
| Tire type | Tubeless | ---- |
| Size | 80/90-10 (34J) | ---- |
| Model (manufacturer) | MB38/C-922 (INOUE/CHENG SHIN) | ---- |
| Tire pressure (cold) | | |
| 0 ~ 90 kg (0 ~ 198 lb) | 175 kPa (1.75 kg/cm$^2$, 25.4 psi) | ---- |
| Min. tire tread depth | ---- | 1.0 mm (0.04 in) |

| Item | Standard | Limit |
|---|---|---|
| **Front brake** | | |
| Brake type | Drum brake | ---- |
| Operation | Right-hand operation | ---- |
| Brake lever free play (at lever end) | 10 ~ 20 mm (0.39 ~ 0.79 in) | ---- |
| Dram brake type | Leading, trailing | ---- |
| Brake drum inside diameter | 110 mm (4.33 in) | 110.5 mm (4.35 in) |
| Lining thickness | 4 mm (0.16 in) | 2 mm (0.08 in) |
| **Rear brake** | | |
| Brake type | Drum brake | ---- |
| Operation | Left-hand operation | ---- |
| Brake lever free play (at lever end) | 10 ~ 20 mm (0.39 ~ 0.79 in) | ---- |
| Drum brake type | Leading, trailing | ---- |
| Brake drum inside diameter | 110 mm (4.33 in) | 110.5 mm (4.35 in) |
| Lining thickness | 4 mm (0.16 in) | 2 mm (0.08 in) |
| **Front suspension** | | |
| Suspension type | Bottom link fork | ---- |
| Front fork type | Coil spring/oil damper | ---- |
| Front fork travel | 40 mm (1.57 in) | ---- |
| Spring | | |
| Free length | 156.5 mm (6.16 in) | 153.4 mm (6.04 in) |
| Spring rate (K1) | 12.8 N/mm (1.28 kgf/mm, 73.09 lb/in) | ---- |
| Spring stroke (K1) | 0 ~ 20 mm (0 ~ 0.79 in) | ---- |
| Spring rate (K2) | 30.4 N/mm (3.04 kgf/mm, 173.58 lb/in) | ---- |
| Spring stroke (K2) | 20 ~ 30 mm (0.79 ~ 1.18 in) | ---- |
| Spring rate (K3) | 67.6 N/mm (6.76 kgf/mm, 386 lb/in) | ---- |
| Spring stroke (K3) | 30 ~ 40 mm (1.18 ~ 1.57 in) | ---- |
| Optional spring available | No | ---- |
| **Steering** | | |
| Steering bearing type | Ball and race bearing | ---- |

| Item | Standard | Limit |
|---|---|---|
| **Rear suspension** | | |
| Suspension type | Unit swing | ---- |
| Rear shock absorber assembly type | Coil spring/oil damper | ---- |
| Rear shock absorber assembly travel | 45 mm (1.77 in) | ---- |
| Spring | | |
| Free length | 173.5 mm (6.83 in) | 170.0 mm (6.69 in) |
| Installed length | 166.5 mm (6.56 in) | ---- |
| Spring rate (K1) | 34.5 N/mm (3.45 kgf/mm, 197 lb/in) | ---- |
| Spring stroke (K1) | 0 ~ 45 mm (0 ~ 1.77 in) | ---- |
| Optional spring available | No | ---- |

# ELECTRICAL SPECIFICATIONS

| Item | Standard | Limit |
|---|---|---|
| **System voltage** | 12 V | ---- |
| **Ignition system** | | |
| Ignition system type | DC.CDI | ---- |
| Ignition timing | 14° BTDC at 5,000 r/min | ---- |
| Advancer type | Fixed | ---- |
| Pickup coil resistance/color | 248 ~ 372 Ω/W/L–W/R | ---- |
| CDI unit model (manufacturer) | 5BM (YAMAHA) | ---- |
| **Ignition coil** | | |
| Model (manufacturer) | 2JN (YAMAHA) | ---- |
| Minimum ignition spark gap | 6 mm (0.24 in) | ---- |
| Primary coil resistance | 0.18 ~ 0.28 Ω | ---- |
| Secondary coil resistance | 6.32 ~ 9.48 kΩ | ---- |
| **Spark plug cap** | | |
| Material | Resin | ---- |
| Resistance | 5 kΩ | ---- |
| **Charging system** | | |
| System type | AC magneto | ---- |
| Model (manufacturer) | F5BM (YAMAHA) | ---- |
| Standard output | 14 V/120 W at 5,000 r/min | ---- |
| Stator coil resistance (W-B) | 0.29 ~ 0.43 Ω | ---- |
| **Voltage regulator** | | |
| Regulator type | Semiconductor, short circuit | ---- |
| Model (manufacturer) | SH671-12 (SHINDENGEN) | ---- |
| No-load regulated voltage (DC) | 14.0 ~ 15.0 V | ---- |
| No-load regulated voltage (AC) | 12.3 ~ 13.3 V | ---- |
| **Rectifier** | | |
| Model (manufacturer) | SH671-12 (SHINDENGEN) | ---- |
| Rectifier capacity (DC) | 8 A | ---- |
| Rectifier capacity (AC) | 12 A | ---- |
| Withstand voltage | 200 V | ---- |
| **Battery** | | |
| Battery type | GT4B-5 | ---- |
| Battery voltage/capacity | 12 V/2.5 AH | ---- |
| Specific gravity | 1.350 | ---- |
| **Headlight type** | Halogen bulb | ---- |
| **Indicator light type × quantity** | Bulb type × 3 | ---- |
| **Bulbs (voltage/wattage × quantity)** | | |
| Headlight | 12 V 35 W/35 W × 1 | ---- |
| Tail/brake light | 12 V 27 W/8 W × 1 | ---- |
| Front turn signal light | 12 V 10 W × 2 | ---- |
| Rear turn signal light | 12 V 10 W × 2 | ---- |
| Meter light | 12 V 1.7 W × 1 | ---- |
| Fuel level indicator light | 14 V 1.4 W × 1 | ---- |
| High beam indicator light | 12 V 1.7 W × 1 | ---- |
| Oil level indicator light | 12 V 1.7 W × 1 | ---- |
| Turn indicator light | 14 V 3 W × 1 | ---- |

| Item | Standard | Limit |
|---|---|---|
| **Electric starting system** | | |
| System type | Constant mesh | ---- |
| Starter motor | | |
| Model (manufacturer) | 5BM (YAMAHA) | ---- |
| Power output | 0.14 kW | ---- |
| Brush | | |
| Overall length | 6.1 mm (0.24 in) | 0.9 mm (0.04 in) |
| Spring force | 2.32 ~ 3.48 N (236.5 ~ 355.0 gf, 8.35 ~ 12.53 oz) | ---- |
| Armature coil resistance | 0.065 ~ 0.079 Ω | ---- |
| Commutator diameter | 15.8 mm (0.62 in) | 14.8 mm (0.58 in) |
| Mica undercut | 1.15 mm (0.05 in) | ---- |
| **Starter relay** | | |
| Model (manufacturer) | G8MS-1A48T-L3-Y28 (OMRON) | ---- |
| Amperage | 20 A | ---- |
| Coil resistance | 54 ~ 66 Ω | ---- |
| **Horn** | | |
| Horn type | Plane | ---- |
| Model (manufacturer) × quantity | GF-12 (NIKKO) × 1 | ---- |
| Max. amperage | 1.5 A | ---- |
| Performance | 95 ~ 115 db (2 m) | ---- |
| Coil resistance | 4.3 ~ 4.8 Ω | ---- |
| **Turn signal relay** | | |
| Relay type | Condenser | ---- |
| Model (manufacturer) | FZ222SD (DENSO) | ---- |
| Self-cancelling device built-in | No | ---- |
| Turn signal blinking frequency | 75 ~ 95 cycles/min. | ---- |
| Wattage | 10 W × 2 + 3.4 W | ---- |
| **Oil level gauge model (manufacturer)** | 53 L (ASTI) | ---- |
| **Fuel level gauge** | | |
| Model (manufacturer) | 4JP (NIPPON SEIKI) | ---- |
| Sender unit resistance (full) | 4 ~ 10 Ω | ---- |
| Sender unit resistance (empty) | 90 ~ 100 Ω | ---- |
| **Fuses (amperage × quantity)** | | |
| Main fuse | 7.5 A × 1 | ---- |

EAS00028
## CONVERSION TABLE

All specification data in this manual are listed in SI and METRIC UNITS.
Use this table to convert METRIC unit data to IMPERIAL unit data.

Ex.

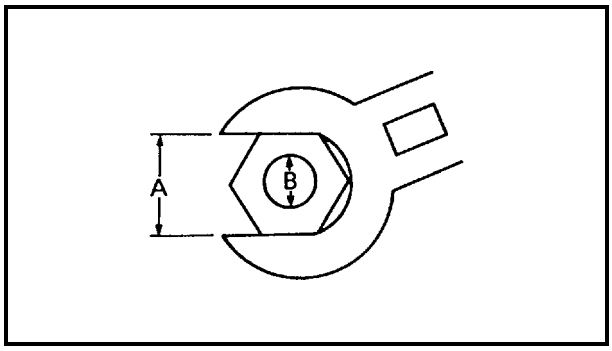
| METRIC | | MULTIPLIER | | IMPERIAL |
|---|---|---|---|---|
| ** mm | × | 0.03937 | = | ** in |
| 2 mm | × | 0.03937 | = | 0.08 in |

CONVERSION TABLE

| METRIC TO IMPERIAL | | | |
|---|---|---|---|
| | Metric unit | Multiplier | Imperial unit |
| Tightening torque | m·kg<br>m·kg<br>cm·kg<br>cm·kg | 7.233<br>86.794<br>0.0723<br>0.8679 | ft·lb<br>in·lb<br>ft·lb<br>in·lb |
| Weight | kg<br>g | 2.205<br>0.03527 | lb<br>oz |
| Speed | km/hr | 0.6214 | mph |
| Distance | km<br>m<br>m<br>cm<br>mm | 0.6214<br>3.281<br>1.094<br>0.3937<br>0.03937 | mi<br>ft<br>yd<br>in<br>in |
| Volume/ Capacity | cc ($cm^3$)<br>cc ($cm^3$)<br>lt (liter)<br>lt (liter) | 0.03527<br>0.06102<br>0.8799<br>0.2199 | oz (IMP liq.)<br>cu-in<br>qt (IMP liq.)<br>gal (IMP liq.) |
| Misc. | kg/mm<br>$kg/cm^2$<br>Centigrade (°C) | 55.997<br>14.2234<br>9/5+32 | lb/in<br>psi ($lb/in^2$)<br>Fahrenheit (°F) |

EAS00030
## GENERAL TIGHTENING TORQUE SPECIFICATIONS

This chart specifies tightening torques for standard fasteners with a standard ISO thread pitch. Tightening torque specifications for special components or assemblies are provided for each chapter of this manual. To avoid warpage, tighten multi-fastener assemblies in a crisscross pattern and progressive stages until the specified tightening torque is reached. Unless otherwise specified, tightening torque specifications require clean, dry threads. Components should be at room temperature.




A: Width across flats
B: Thread diameter

| A (nut) | B (bolt) | General tightening torques | | |
|---|---|---|---|---|
| | | 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 |

# TIGHTENING TORQUES

## ENGINE TIGHTENING TORQUES

| Part to be tightened | Part name | Thread size | Q'ty | Tightening torque | | | Remarks |
|---|---|---|---|---|---|---|---|
| | | | | Nm | m·kgf | ft·lb | |
| Spark plug | | M14 | 1 | 20 | 2.0 | 14 | |
| Cylinder head | Nut | M7 | 4 | 14 | 1.4 | 10 | |
| Cylinder head | Stud bolt | M7 | 4 | 10 | 1.0 | 7 | |
| Air shroud | Screw | M6 | 2 | 7 | 0.7 | 5.1 | |
| Air shroud | Screw | M6 | 1 | 2 | 0.2 | 1.4 | |
| Fan | Screw | M6 | 3 | 7 | 0.7 | 5.1 | |
| Autolube pump | Bolt | M5 | 1 | 6 | 0.6 | 4.3 | |
| Air filter | Screw | M6 | 2 | 9 | 0.9 | 6.5 | |
| Exhaust pipe | Bolt | M6 | 2 | 13 | 1.3 | 9.4 | |
| Muffler | Bolt | M8 | 2 | 28 | 2.8 | 20 | |
| Muffler protector | Screw | M2 | 2 | 9 | 0.9 | 6.5 | |
| Right crankcase | Screw | M6 | 6 | 9 | 0.9 | 6.5 | |
| Bearing retainer (right crankcase) | Screw | M6 | 1 | 7 | 0.7 | 5.1 | |
| Transmission cover | Screw | M6 | 5 | 9 | 0.9 | 6.5 | |
| Sheave cover | Screw | M6 | 10 | 9 | 0.9 | 6.5 | |
| Air filter case | Screw | M6 | 2 | 9 | 0.9 | 6.5 | |
| Starter motor ground lead | Screw | M6 | 1 | 7 | 0.7 | 5.1 | |
| Transmission oil drain bolt | Bolt | M8 | 1 | 18 | 1.8 | 13 | |
| Oil filler plug | | M14 | 1 | 3 | 0.3 | 2.2 | |
| Idle gear plate | Screw | M6 | 2 | 8 | 0.8 | 5.8 | |
| Kickstarter crank | Bolt | M6 | 1 | 11 | 1.1 | 8.0 | |
| Starter motor | Bolt | M6 | 2 | 13 | 1.3 | 9.4 | |
| Clutch housing | Nut | M10 | 1 | 40 | 4.0 | 29 | |
| Bearing retainer (transmission cover) | Screw | M6 | 1 | 7 | 0.7 | 5.1 |  |
| Primary sheave | Nut | M10 | 1 | 30 | 3.0 | 22 | |
| Stator coil assembly | Screw | M6 | 2 | 8 | 0.8 | 5.8 | |
| Generator rotor | Nut | M10 | 1 | 38 | 3.8 | 27 | |
| Clutch carrier | Nut | M28 | 1 | 50 | 5.0 | 36 | |
| Intake manifold | Bolt | M6 | 4 | 11 | 1.1 | 8.0 | |

## CHASSIS TIGHTENING TORQUES

| Part to be tightened | Thread size | Tightening torque | | | Remarks |
|---|---|---|---|---|---|
| | | Nm | m·kgf | ft·lb | |
| Engine mounting: | | | | | |
| Engine mounting bolt/nut | M12 | 84 | 8.4 | 61 | |
| Rear shock absorber and engine | M8 | 15 | 1.5 | 11 | |
| Engine bracket and frame | M10 | 46 | 4.6 | 33 | |
| Tail reinforcement | M6 | 10 | 1.0 | 7.2 | |
| Rear shock absorber and frame | M10 | 30 | 3.0 | 22 | |
| Lower handlebar holder bracket | M10 | 43 | 4.3 | 37 | |
| Upper race | M45 (BCI) | 7 | 0.7 | 5.1 | |
| Upper steering stem ring nut | M25 (BCI) | 33 | 3.3 | 24 | |
| Fork and relay arm assembly | M8 | 19 | 1.9 | 13 | |
| Front shock absorber (upper) | M8 | 19 | 1.9 | 13 | |
| Front shock absorber (lower) | M8 | 19 | 1.9 | 13 | |
| Front turn signal light | M12 | 7 | 0.7 | 5.1 | |
| Fuel tank (upper) | M6 | 7 | 0.7 | 5.1 | |
| Fuel tank (lower) | M6 | 10 | 1.0 | 7.2 | |
| Fuel sender and fuel tank | M5 | 3 | 0.3 | 2.2 | |
| Seat lock assembly | M6 | 7 | 0.7 | 5.1 | |
| Carrier (upper) | M6 | 10 | 1.0 | 7.2 | |
| Carrier (lower) | M8 | 15 | 1.5 | 11 | |
| Storage box | M6 | 8 | 0.8 | 5.8 | |
| License plate bracket and rear turn signal bracket | M6 | 12 | 1.2 | 8.7 | |
| Rear turn signal bracket and tail/brake light | M6 | 7 | 0.7 | 5.1 | |
| Tail cover and rear turn signal bracket | M6 | 12 | 1.2 | 8.7 | |
| Rear turn signal light | M12 | 7 | 0.7 | 5.1 | |
| Front fender and reflector | M5 | 3 | 0.3 | 2.2 | |
| Front wheel axle | M10 | 48 | 4.8 | 35 | |
| Front brake camshaft lever | M5 | 4 | 0.4 | 2.9 | |
| Rear wheel axle nut | M14 | 105 | 10.5 | 75 | |
| Rear brake camshaft lever | M6 | 7 | 0.7 | 5.1 | |
| Rear brake pivot pin | M8 | 16 | 1.6 | 12 | |
| Speedometer cable | M12 | 3 | 0.3 | 2.2 | |
| Upper handlebar holder | M6 | 10 | 1.0 | 7.2 | |

# LUBRICATION POINTS AND LUBRICANT TYPES

## ENGINE

| Lubrication Point | Symbol |
|---|---|
| Oil seal lips | LS |
| O-rings | LS |
| Bearings | E |
| Piston surface | E |
| Piston pin | E |
| Cylinder | E |
| Transmission case (bearing) | LT |
| Right crankcase (bearing retainer) | LT |
| Autolube pump | LS |
| Starter wheel gear | LS |
| Idle gear plate | M |
| Secondary drive gear | G |
| Kickstarter pinion gear | LS |
| Drive axle | M |
| Pump drive gear | LS |
| Main axle | G |
| Main axle (bearing) | G |

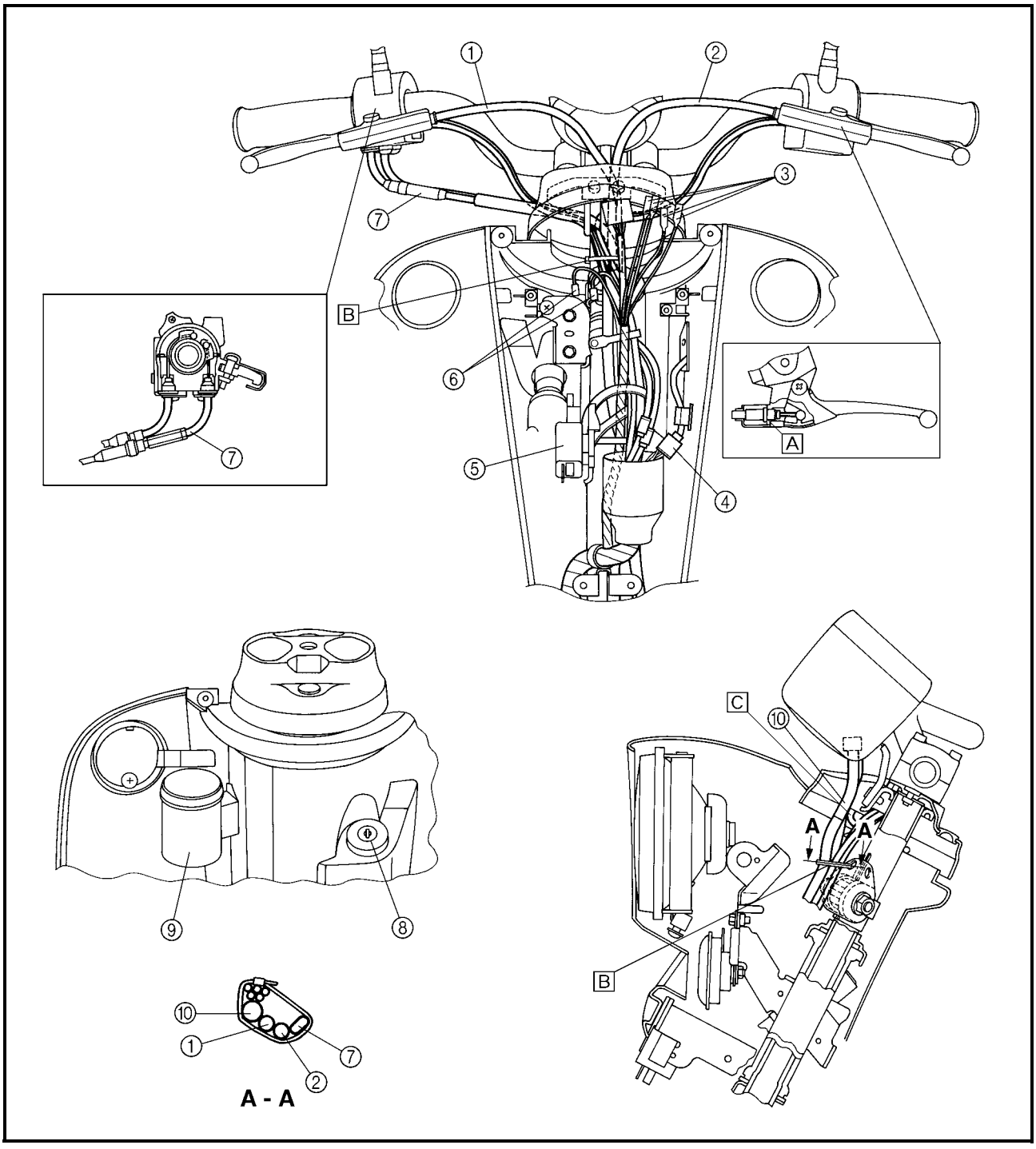
**CHASSIS**

| Lubrication Point | Symbol |
|---|---|
| Oil seal lips | LS |
| O-rings | LS |
| Bearings | LS |
| Speedometer drive gear | LS |
| Front brake camshaft | LS |
| Front brake cable | LS |
| Throttle cable | LS |
| Tube guide (throttle grip) inner surface | LS |
| Upper steering stem ring nut | LS |
| Upper bearing outer race | LS |
| Lower bearing outer race | LS |
| Rear brake camshaft | LS |
| Centerstand | LS |

# CABLE ROUTING

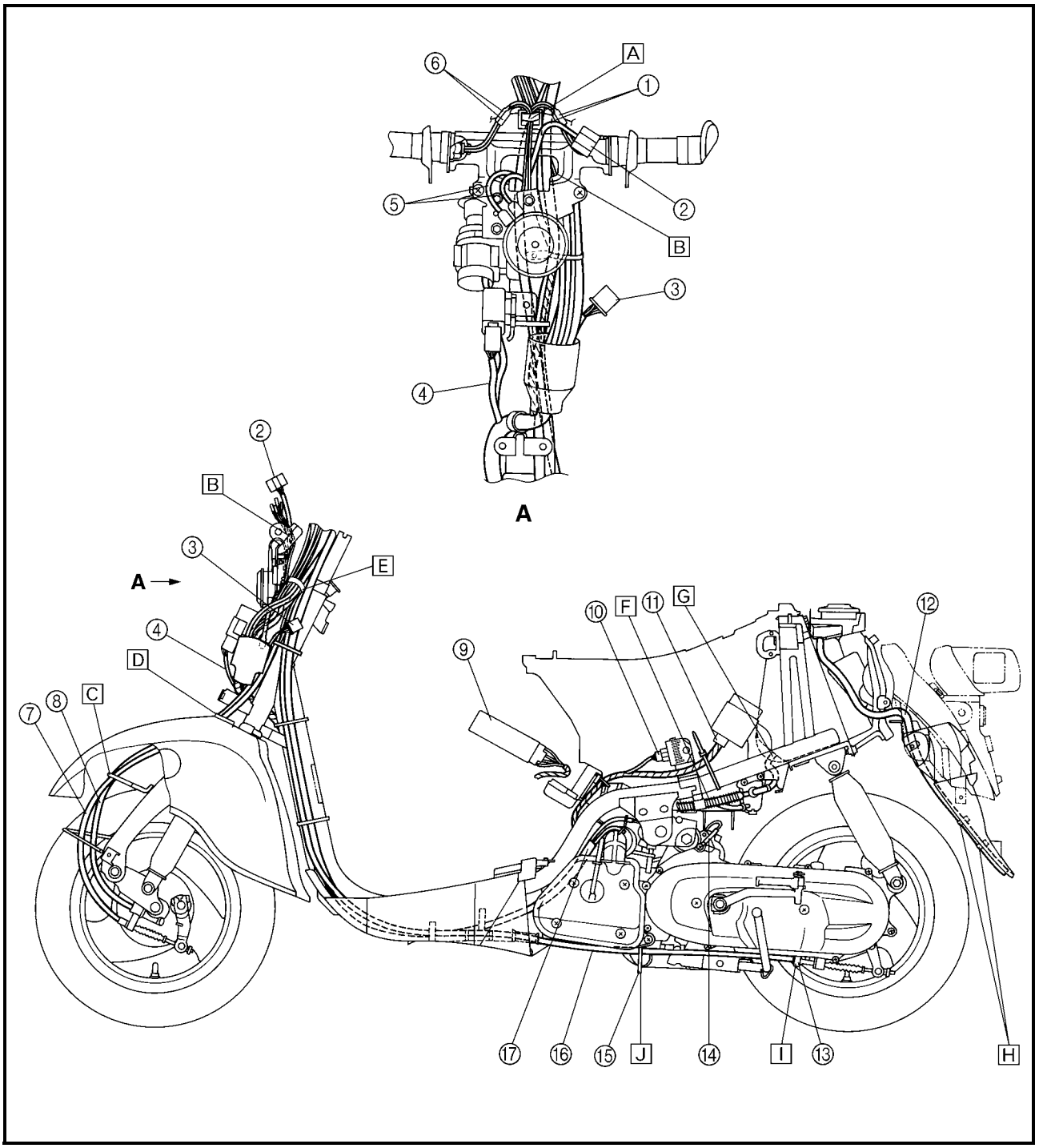
① Front brake cable
② Rear brake cable
③ Front turn signal leads
④ Fuel level gauge coupler
⑤ Flasher relay
⑥ Horn lead
⑦ Throttle cable
⑧ Main switch
⑨ Fuel gauge
⑩ Speedometer cable

A Push the brake cable flange in until it contacts the lever holder.
B Fasten the handlebar switch leads, brake light switch leads, meter light lead, speedometer cable, brake cables and throttle cable with a plastic locking tie.
C Pass the left handlebar switch lead, front brake light switch lead, and throttle cable over the cable guide.



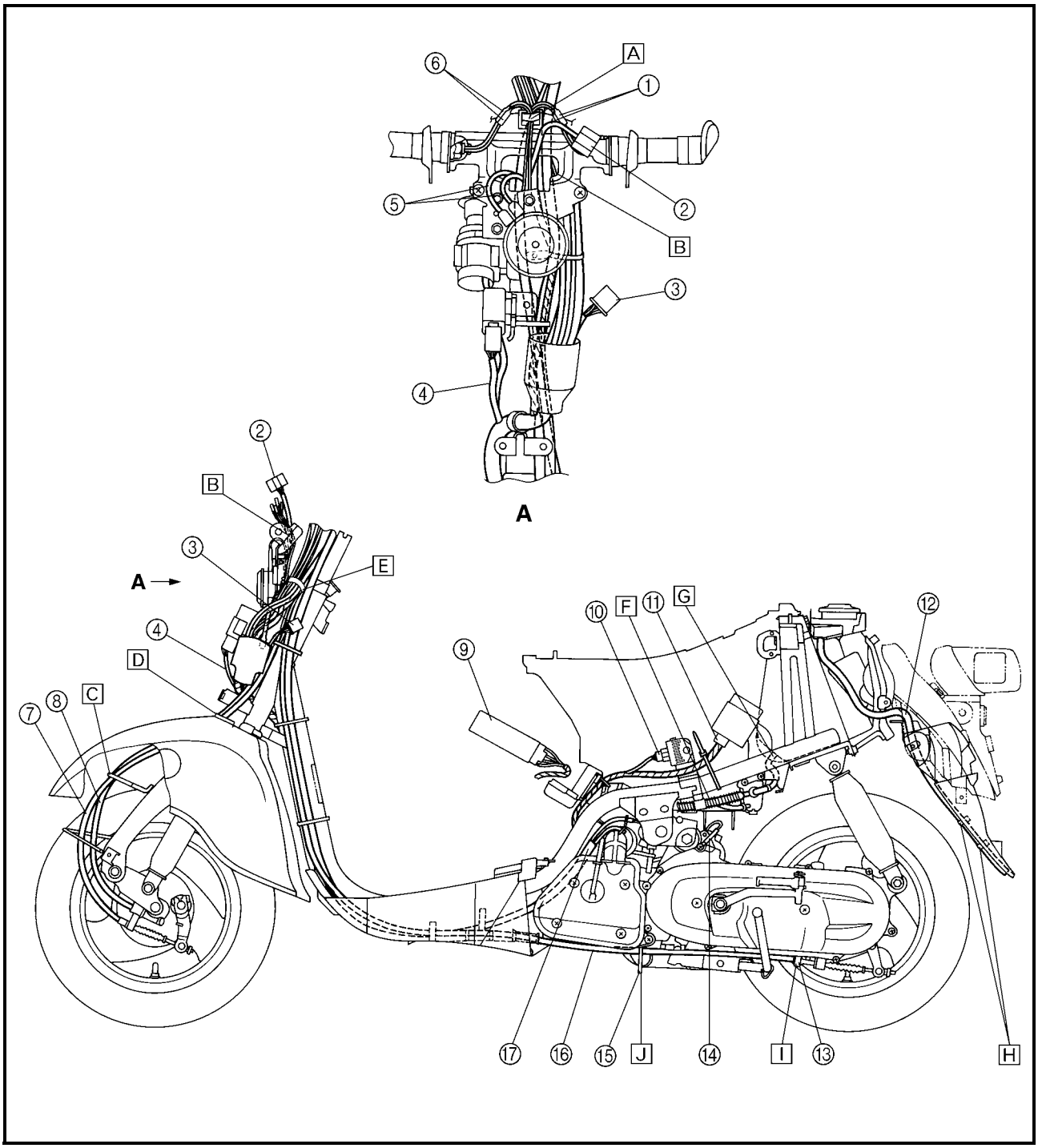
① Front turn signal leads (left)
② Headlight coupler
③ Fuel level gauge coupler
④ Flasher relay lead
⑤ Horn lead
⑥ Front turn signal leads (right)
⑦ Front brake cable
⑧ Speedometer cable
⑨ Battery
⑩ Rectifier/regulator coupler
⑪ CDI unit lead coupler
⑫ Fuel overflow hose
⑬ Crankcase breather hose
⑭ Ground lead
⑮ Carburetor overflow hose
⑯ Rear brake cable
⑰ Throttle cable

A Fasten the turn signal light leads with the clamp.
B Pass the front turn signal light leads, headlight coupler, and horn lead through the hole of the front turn signal light bracket.

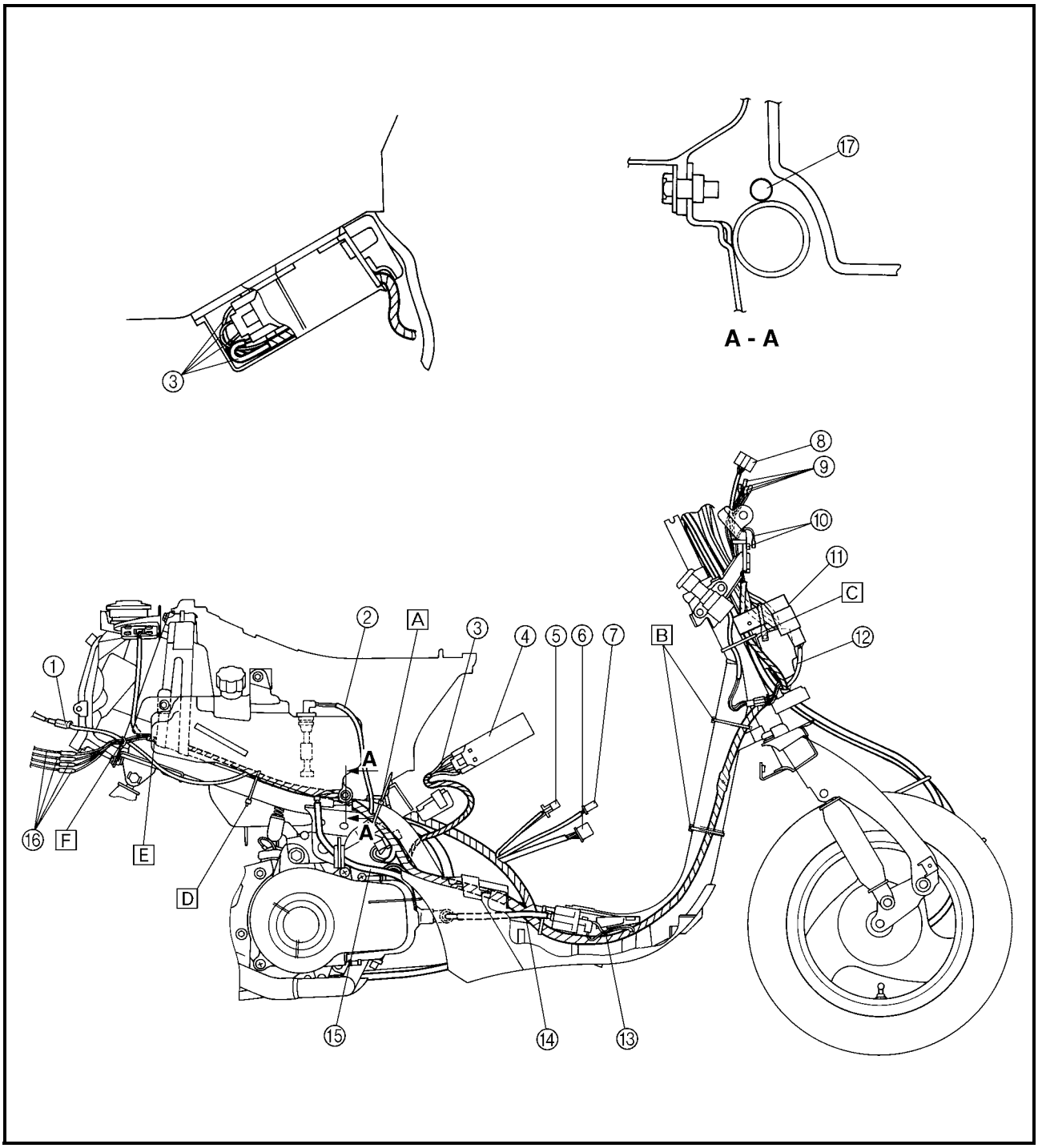


[C] Pass the front brake cable and speedometer cable through the cable guide.
[D] Pass the front brake cable and speedometer cable through the hole of the front fender.
[E] Fasten the speedometer cable, front brake cable, handlebar switch leads and brake light switch leads with a plastic band.
[F] Pass the vacuum hose and fuel hose through the holder. Be sure to pass the vacuum hose through the holder first.
[G] Install the fuel tank so that the paint mark on the fuel hose is facing up.
[H] Pass the fuel overflow hose through the guide.
[I] Pass the crankcase breather hose between the crankcase and rear brake cable.
[J] Pass the carburetor overflow hose on the outside of the rear brake cable.



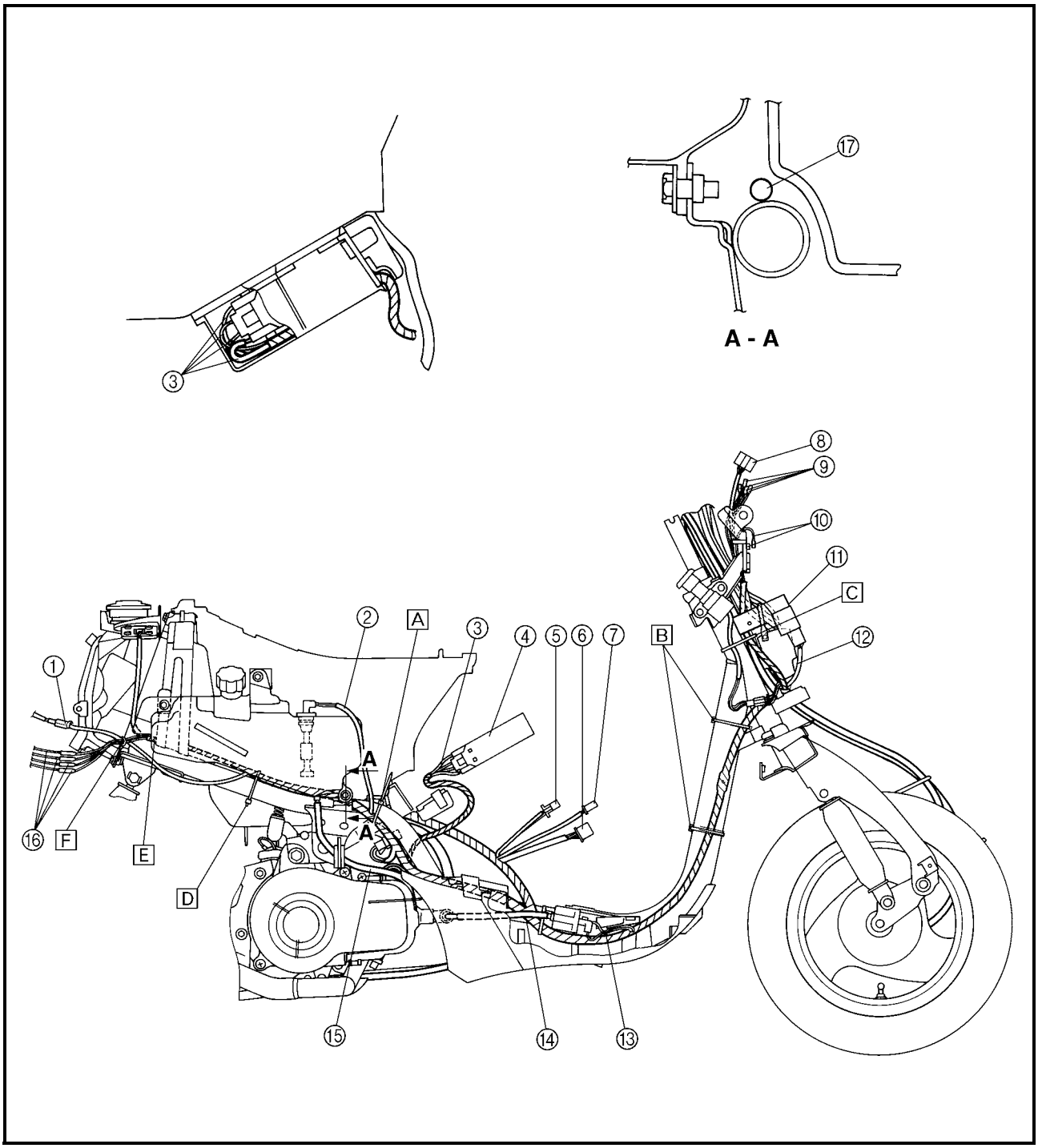


① Tail/brake light coupler
② Oil level switch lead
③ Battery leads
④ Battery
⑤ Starter motor coupler
⑥ AC magneto coupler
⑦ Auto choke coupler
⑧ Headlight coupler
⑨ Front turn signal leads
⑩ Horn lead
⑪ Main switch lead
⑫ Flasher relay lead
⑬ Ignition coil lead
⑭ Spark plug lead
⑮ Oil hose
⑯ Rear turn signal leads
⑰ Wire harness

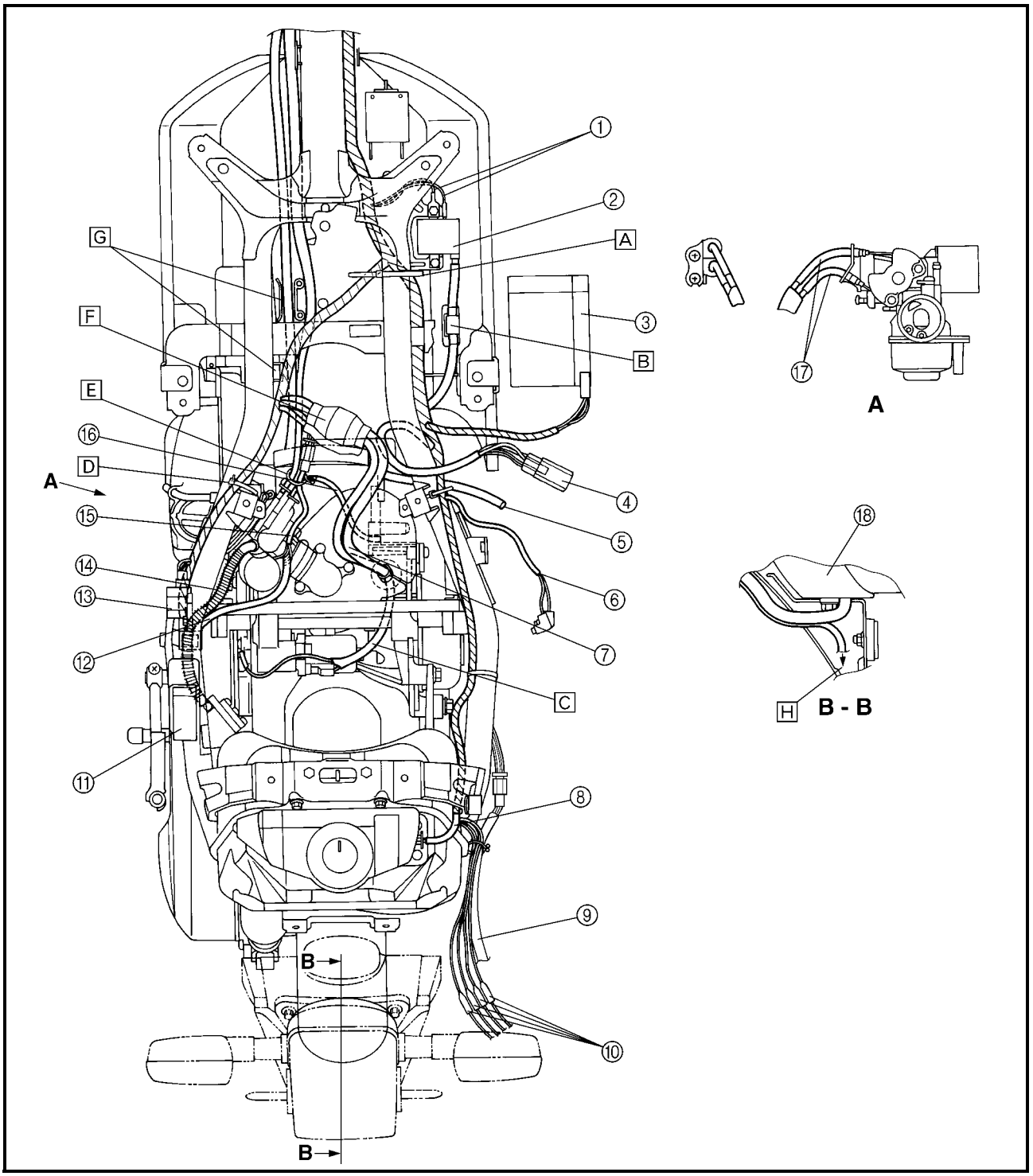


[A] Fasten the wire harness with a plastic locking tie.
[B] Fasten the wire harness, throttle cable and rear brake cable with plastic locking tie.
[C] Fasten the main switch lead with a plastic locking tie.
[D] Fasten the wire harness with a plastic locking tie.
[E] Pass the wire harness on the inside of the seat bracket.
[F] Pass one end of a plastic clip through the hole of the fuel tank flange, and then fasten the tail/brake light lead and rear turn signal light leads with the clip.



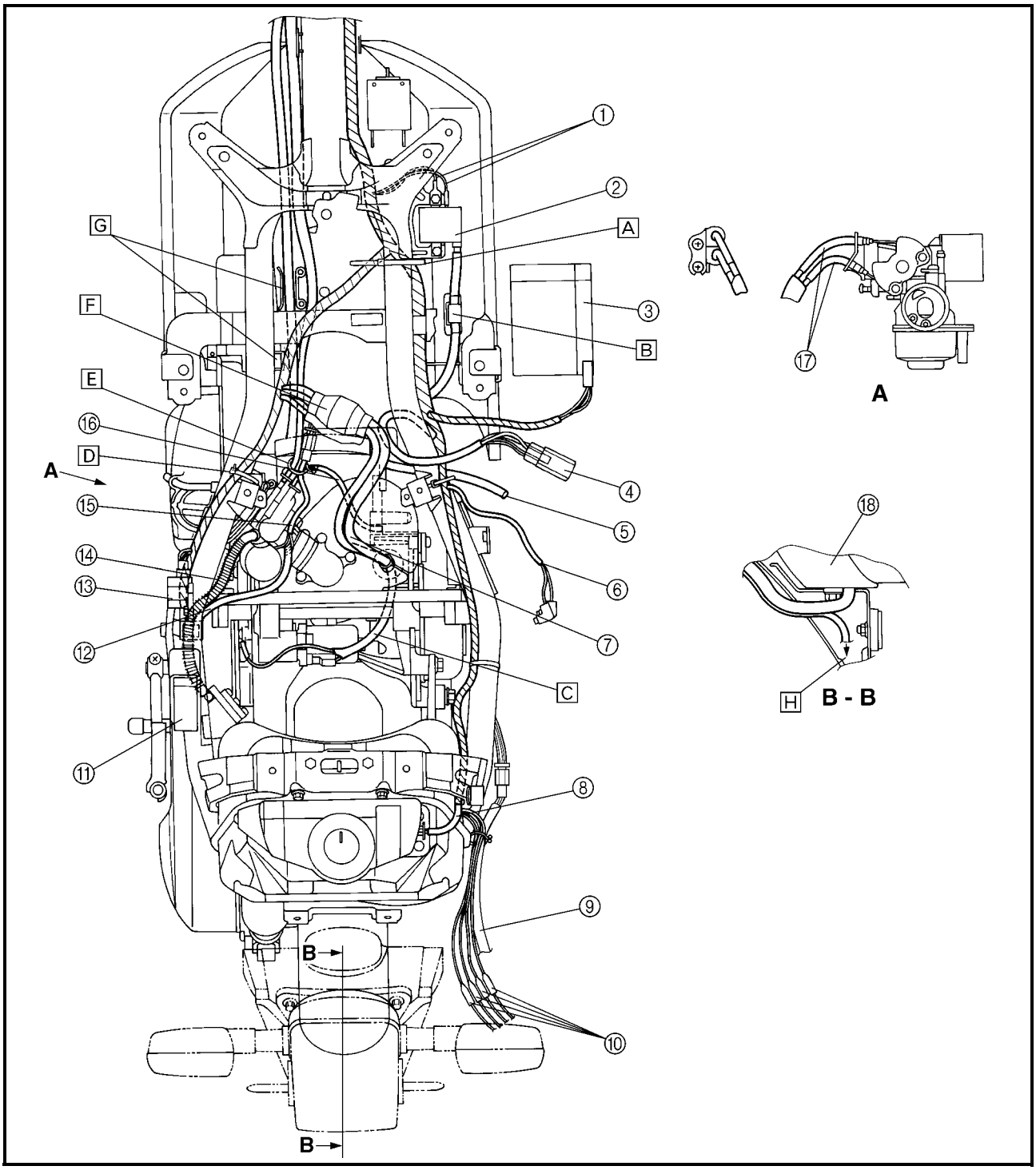


① Ignition coil lead
② Ignition coil
③ Battery
④ Starter relay
⑤ Oil hose
⑥ Oil level switch lead
⑦ AC magneto lead
⑧ Fuel sender lead
⑨ Tail/brake light lead
⑩ Rear turn signal leads
⑪ CDI unit
⑫ Vacuum hose
⑬ Rectifier/regulator
⑭ Fuel hose
⑮ Auto choke lead
⑯ Oil delivery hose
⑰ Throttle cable
⑱ Tail/brake light



[A] Fasten the wire harness at the white tape marker with a plastic locking tie.
[B] Pass the spark plug lead through the bottom cowling guide.
[C] Pass the starter motor lead under the engine bracket and engine mount spacer, and then through the hole of the cover.
[D] Fasten the wire harness with a plastic locking tie in front of the storage box bracket.
[E] Fasten the auto choke lead with a plastic clip.
[F] After connecting the AC magneto coupler and starter motor coupler, cover the couplers with the coupler cover.
[G] Pass the rear brake cable through the bottom cowling guide.
[H] To rear turn signal.





EAS00036

# PERIODIC CHECKS AND ADJUSTMENTS

## INTRODUCTION

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

EAS00037

## PERIODIC MAINTENANCE AND LUBRICATION INTERVALS

| No. | | ITEM | ROUTINE | BREAK-IN 300 mi (500 km) | EVERY | |
|---|---|---|---|---|---|---|
| | | | | | 2,000 mi (3,000 km) or 6 months | 4,000 mi (6,000 km) or 12 months |
| 1 | | **Spark plug** | • Check condition.<br>• Clean or replace if necessary. | √ | √ | √ |
| 2 | | **Air filter element** | • Clean.<br>• Replace if necessary. | | √ | √ |
| 3 | * | **Carburetor** | • Check idle speed.<br>• Adjust if necessary. | √ | | √ |
| 4 | * | **Fuel line** | • Check fuel hose and vacuum hose for cracks or damage.<br>• Replace if necessary. | | √ | √ |
| 5 | * | **Final gear oil** | • Check oil leakage.<br>• Correct if necessary.<br>• Replace every 8,000 mi (12,000 km) or 24 months.<br>(Ride scooter a few minutes before draining.) | **REPLACE.** | √ | √ |
| 6 | * | **Autolube pump** | • Check operation.<br>• Correct if necessary<br>• Bleed. | √ | | √ |
| 7 | | **Brakes** | • Check operation.<br>• Adjust if necessary. | | √ | √ |
| 8 | * | **Wheels** | • Check damage/runout.<br>• Replace if necessary. | | √ | √ |
| 9 | * | **Wheel bearings** | • Check bearing assembly for looseness/damage.<br>• Replace if damaged. | | √ | √ |
| 10 | * | **Steering bearing** | • Check bearing assembly for looseness.<br>• Correct if necessary.<br>• Moderately repack every 8,000 mi (12,000 km) or 24 months.** | √ | √ | √ |
| 11 | * | **Rear shock absorber** | • Check operation/oil leakage.<br>• Replace if necessary. | | √ | √ |
| 12 | * | **V-belt** | • Check damage and wear.<br>• Replace if necessary.<br>• Replace every 6,000 mi (10,000 km). | | | √ |
| 13 | * | **Chassis fasteners** | • Check all chassis fittings and fasteners.<br>• Correct if necessary. | √ | √ | √ |
| 14 | * | **Control and meter cable** | • Apply chain lube thoroughly. | √ | √ | √ |
| 15 | * | **Centerstand** | • Check operation.<br>• Repair if necessary. | √ | √ | √ |

* Since these items require special tools, data and technical skills, have a Yamaha dealer perform the service.

** Lithium soap base grease

EAU00479

**NOTE:**

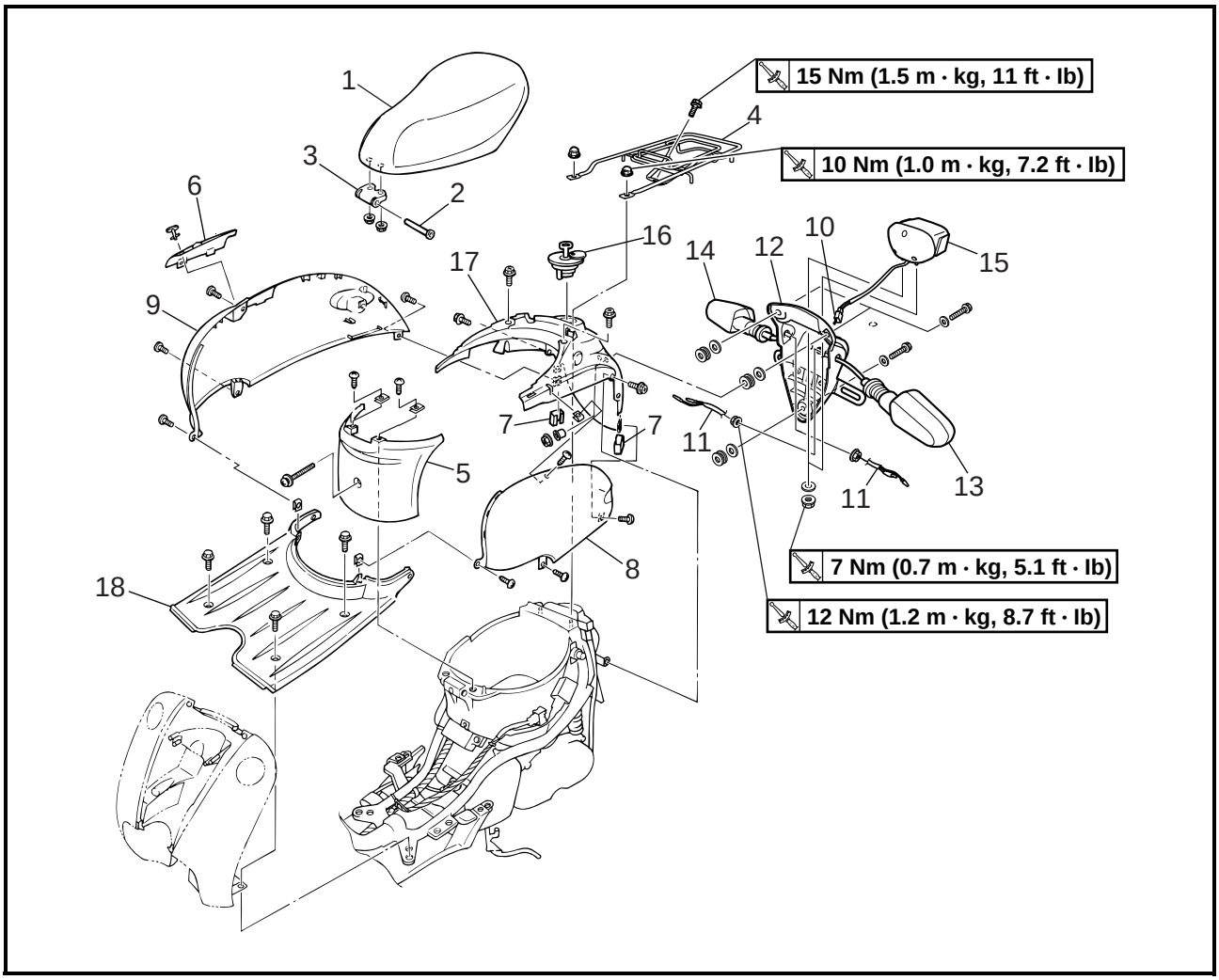
The air filter needs more frequent service if you are riding in unusually wet or dusty areas.

EAU03903

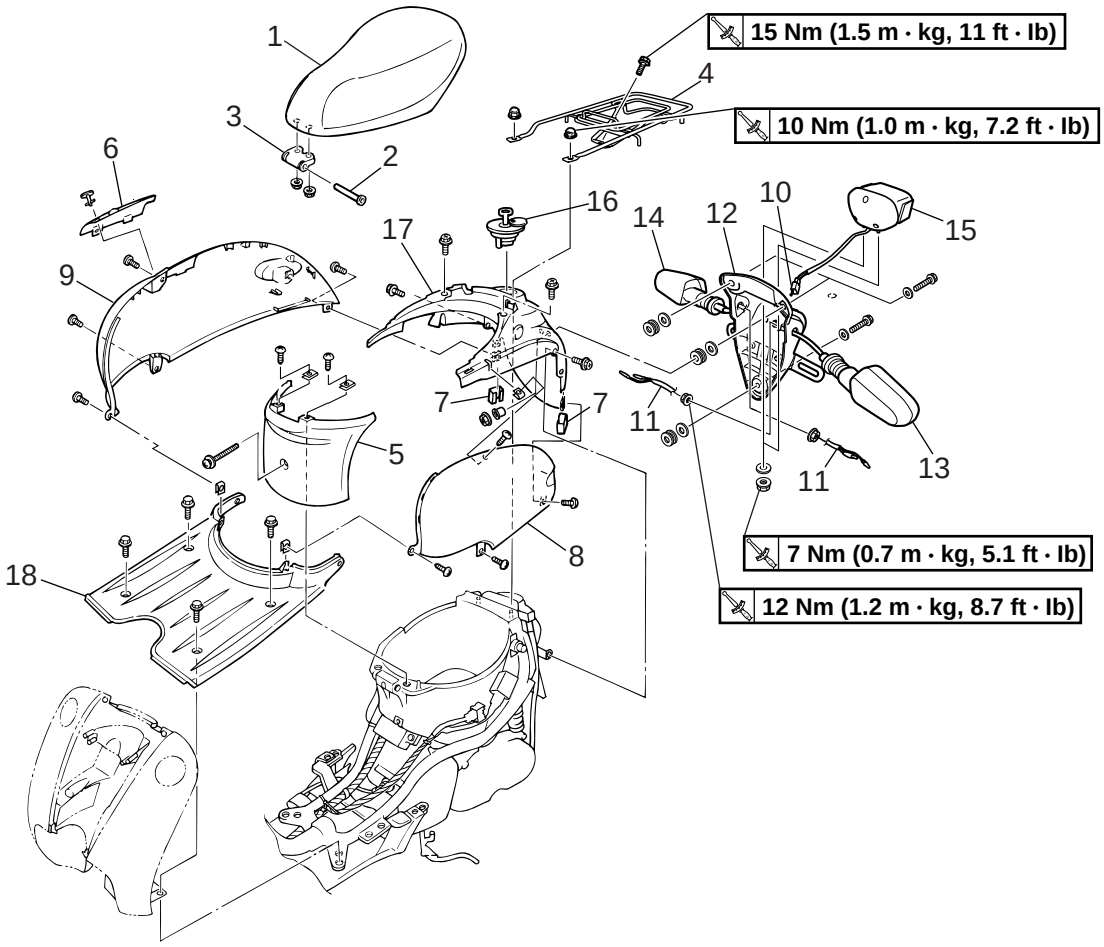
**NOTE:**

From 6,000 mi (9,000 km) or 18 months, repeat the maintenance intervals starting from 2,000 mi (3,000 km) or 6 months.

EAS00038
# SIDE COVERS AND FOOTREST BOARD

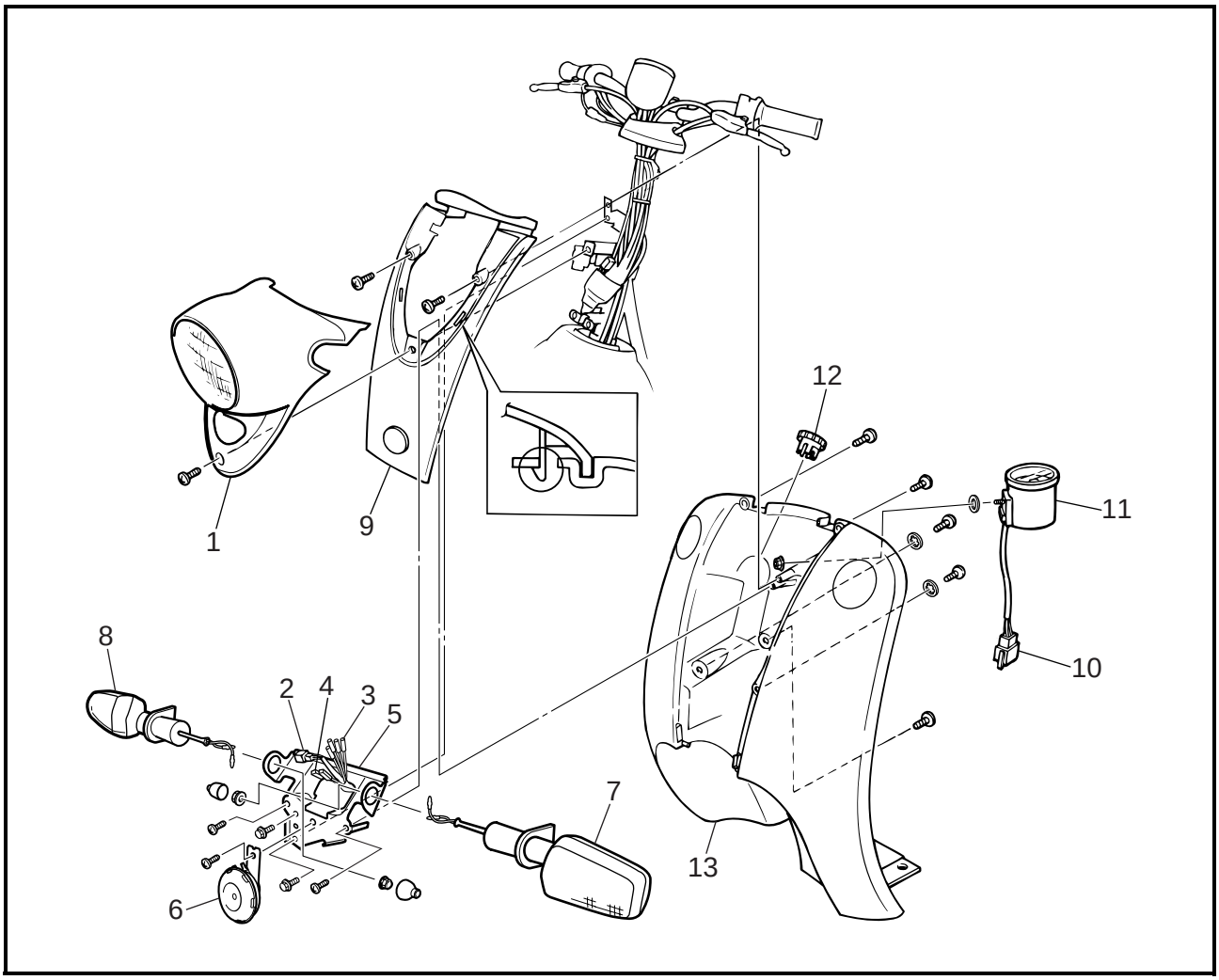



| Order | Job/Part | Q'ty | Remarks |
|---|---|---|---|
| | **Removing the side covers and footrest board** | | Remove the parts in the order listed. |
| 1 | Seat | 1 | |
| 2 | Pin | 1 | |
| 3 | Seat bracket | 1 | |
| 4 | Carrier | 1 | |
| 5 | Center cover | 1 | |
| 6 | Oil tank cover | 1 | |
| 7 | Cowling bold cap | 2 | |
| 8 | Side cover (left) | 1 | |
| 9 | Side cover (right) | 1 | |
| 10 | Tail/brake light coupler | 1 | Disconnect. |
| 11 | Rear turn signal lead | 4 | Disconnect. |

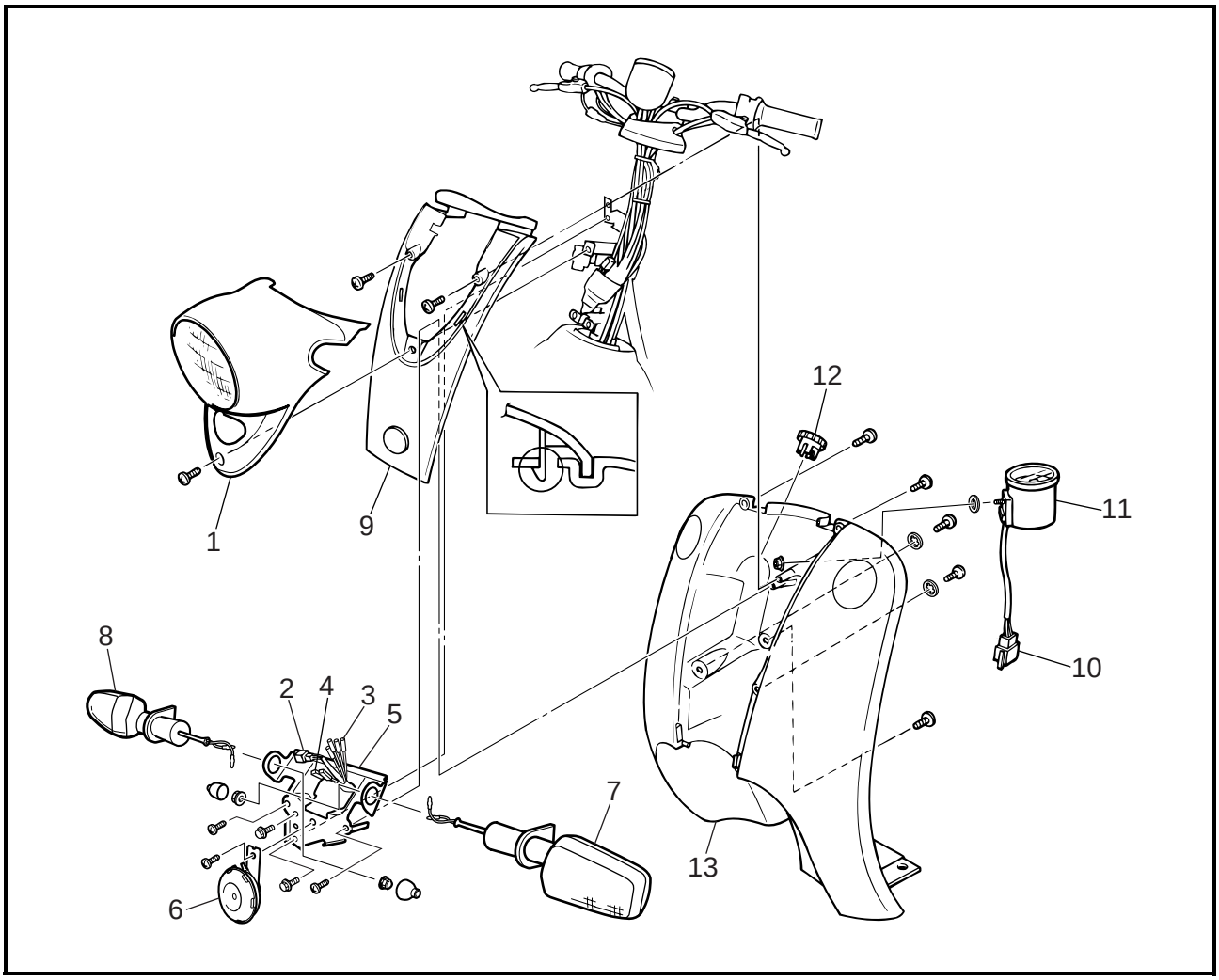



| Order | Job/Part | Q'ty | Remarks |
|---|---|---|---|
| 12 | Rear turn signal bracket | 1 | |
| 13 | Rear turn signal (left) | 1 | |
| 14 | Rear turn signal (right) | 1 | |
| 15 | Tail/brake light | 1 | |
| 16 | Fuel tank cap | 1 | |
| 17 | Tail cover | 1 | |
| 18 | Footrest board | 1 | |
| | | | For installation, reverse the removal procedure. |

EAS00040
# FRONT PANEL AND LEG SHIELD




| Order | Job/Part | Q'ty | Remarks |
|---|---|---|---|
| | **Removing the front panel and leg shield** | | Remove the parts in the order listed. |
| | Footrest board | | Refer to "SIDE COVERS AND FOOT-REST BOARD". |
| 1 | Headlight cover | 1 | |
| 2 | Headlight coupler | 1 | Disconnect. |
| 3 | Front turn signal lead | 4 | Disconnect. |
| 4 | Horn lead | 2 | Disconnect. |
| 5 | Front turn signal bracket | 1 | |
| 6 | Horn | 1 | |
| 7 | Front turn signal (left) | 1 | |
| 8 | Front turn signal (right) | 1 | |
| 9 | Front panel | 1 | |
| 10 | Fuel level gauge coupler | 1 | Disconnect. |

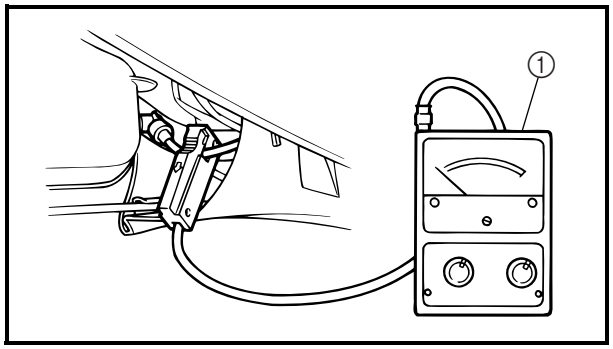



| Order | Job/Part | Q'ty | Remarks |
|---|---|---|---|
| 11 | Fuel level gauge | 1 | |
| 12 | Main switch cover | 1 | |
| 13 | Leg shield | 1 | |
| | | | For installation, reverse the removal procedure. |

EAS00053
## ADJUSTING THE ENGINE IDLING SPEED

**NOTE:**

Prior to adjusting the engine idling speed, the carburetor should be adjusted properly, the air filter element should be clean, and the engine should have adequate compression.

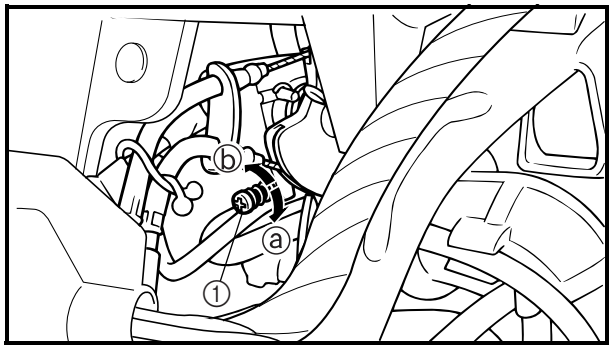



1. Start the engine and let it warm up for several minutes.
2. Remove:
   - center cover
     Refer to “SIDE COVERS AND FOOTREST BOARD”.
3. Attach:
   - inductive tachometer ①
     (onto the spark plug lead of cylinder)

| | |
|---|---|
| | **Inductive tachometer**<br>**YU-8036-A** |

4. Measure:
   - engine idling speed
     Out of specification → Adjust.

| | |
|---|---|
| | **Engine idling speed**<br>**1,800 r/min** |




5. Adjust:
   - engine idling speed

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a. Turn the throttle stop screw ① in direction ⓐ or ⓑ until the specified engine idling speed is obtained.

| | |
|---|---|
| **Direction ⓐ** | **Engine idling speed is increased.** |
| **Direction ⓑ** | **Engine idling speed is decreased.** |

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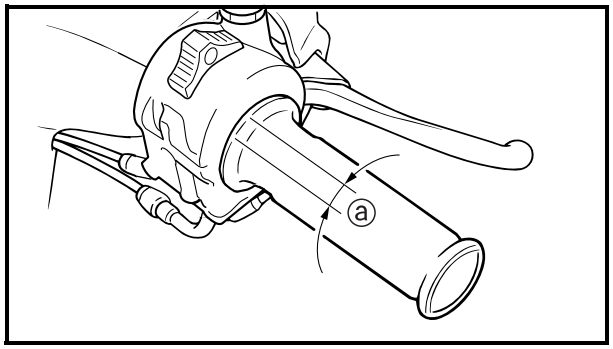



6. Adjust:
   • throttle cable free play ⓐ
   Refer to "ADJUSTING THE THROTTLE CABLE FREE PLAY".

**Throttle cable free play**
**(at the flange of the throttle grip)**
**1.5 ~ 3.5 mm (0.06 ~ 0.14 in)**

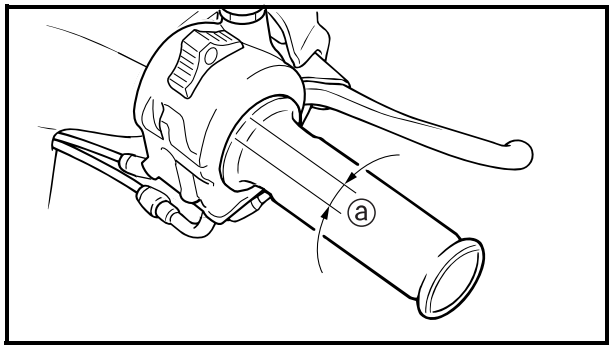
EAS00058

## ADJUSTING THE THROTTLE CABLE FREE PLAY

**NOTE:**

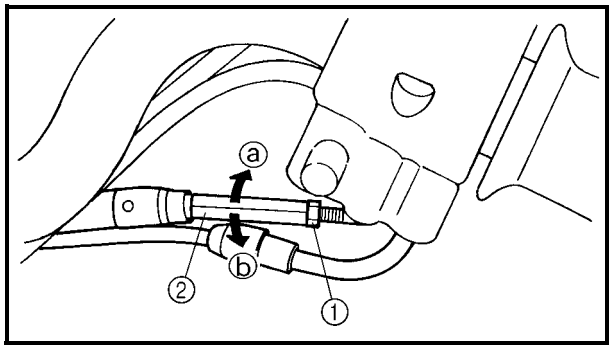
Prior to adjusting the throttle cable free play, the engine idling speed should be adjusted.






1. Check:
   • throttle cable free play ⓐ
   Out of specification → Adjust.

**Throttle cable free play**
**(at the flange of the throttle grip)**
**1.5 ~ 3.5 mm (0.06 ~ 0.14 in)**




2. Adjust:
   • throttle cable free play

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a. Loosen the locknut ①.
b. Turn the adjusting nut ② in direction ⓐ or ⓑ until the specified throttle cable free play is obtained.

| | |
|---|---|
| **Direction ⓐ** | **Throttle cable free play is increased.** |
| **Direction ⓑ** | **Throttle cable free play is decreased.** |

c. Tighten the locknut.

**⚠ WARNING**

**After adjusting the throttle cable free play, start the engine and turn the handlebar to the right and to the left to ensure that this does not cause the engine idling speed to change.**

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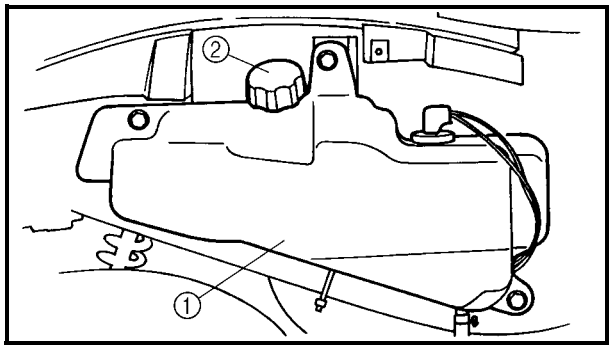
## BLEEDING THE AUTOLUBE PUMP

**NOTE:**

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

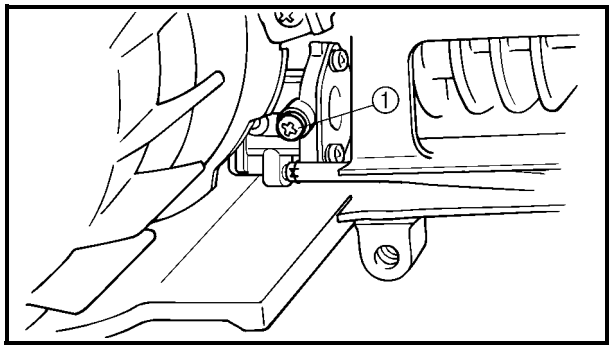
- Setting up a new scooter out of the crate.
- Whenever the oil tank has run dry.
- Whenever any portion of the engine oil system is disconnected.

1. Remove:
   - center cover
   - side cover (right)
   - footrest board
     Refer to “SIDE COVERS AND FOOTREST BOARD”.
   - air shroud
     Refer to “GENERATOR” in chapter 5.
2. Check:
   - oil level
     Refer to “CHECKING THE ENGINE OIL LEVEL”.




3. Fill:
   - oil tank ①
   - oil tank filler cap ②

**Recommended oil**
**Yamalube 2-cycle oil or 2-stroke engine oil**




4. Bleed:
   - pump case and/or oil hose

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a. Remove the bleed screw ①
b. Keep the oil running out until air bubbles disappear.
c. When air bubbles are expelled completely, tighten the bleed screw.

**NOTE:**
- Check the bleed screw gasket, and if damaged, replace with a new one.
- Place a oil pan under the autolube pump to catch oil.

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5. Install:
   - air shroud
     Refer to "GENERATOR AND AUTOLUBE PUMP" in chapter 5.
   - footrest board
   - side cover (right)
   - center cover
     Refer to "SIDE COVERS AND FOOTREST BOARD".



EAS00060
## CHECKING THE SPARK PLUG

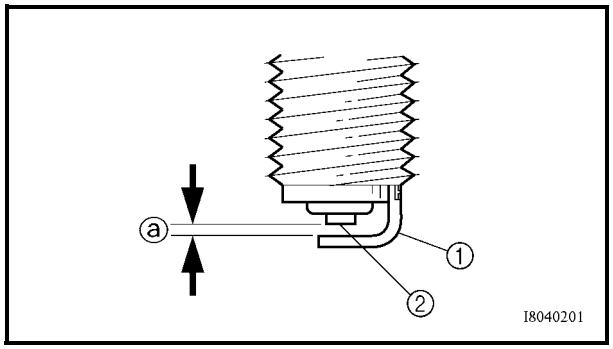
1. Disconnect:
   - spark plug cap
2. Remove:
   - spark plug

**CAUTION:**

**Before removing the spark plug, blow away any dirt accumulated in the spark plug well with compressed air to prevent it from falling into the cylinder.**

3. Check:
   - spark plug type
     Incorrect → Change.

| Spark plug type (manufacturer) |
| --- |
| BPR7HS (NGK) |




4. Check:
   • electrodes ①
   Damage/wear → Replace the spark plug.
   • insulator ②
   Abnormal color → Replace the spark plug.
   Normal color is medium-to-light tan.
5. Clean:
   • spark plug
   (with a spark plug cleaner or wire brush)
6. Measure:
   • spark plug gap ⓐ
   (with a wire gauge)
   Out of specification → Regap.

**Spark plug gap**
**0.6 ~ 0.7 mm (0.02 ~ 0.03 in)**

7. Install:
   • spark plug — **20 Nm (2.0 m · kg, 14 ft · lb)**

**NOTE:**
Before installing the spark plug, clean the spark plug and gasket surface.

8. Connect:
   • spark plug cap

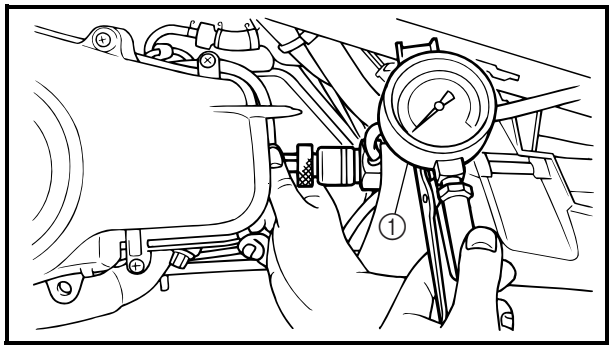
EAS00067
## MEASURING THE COMPRESSION PRESSURE

**NOTE:**
Insufficient compression pressure will result in a loss of performance.

1. Start the engine, warm it up for several minutes, and then turn it off.
2. Remove:
   • center cover
   • footrest board
   Refer to “SIDE COVERS AND FOOTREST BOARD”.
3. Disconnect:
   • spark plug cap
4. Remove:
   • spark plug

**CAUTION:**

**Before removing the spark plug, use compressed air to blow away any dirt accumulated in the spark plug well to prevent it from falling into the cylinder.**




5. Install:
   - compression gauge ①

| | |
|---|---|
| | **Compression gauge**<br>**YU-33223** |



6. Measure:
   - compression pressure
     Out of specification → Refer to steps (c) and (d).

| | |
|---|---|
| | **Compression pressure (at sea level)**<br>**Minimum**<br>**600 kPa (6.0 kg/cm, 85.3 psi)**<br>**Standard**<br>**800 kPa (8.0 kg/cm, 113.8 psi)**<br>**Maximum**<br>**1,000 kPa (10.0 kg/cm, 142.2 psi)** |

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a. Set the main switch to “ON”.
b. With the throttle wide open, crank the engine until the reading on the compression gauge stabilizes.

**⚠ WARNING**

**To prevent sparking, ground the spark plug lead before cranking the engine.**

c. If the compression pressure is above the maximum specification, check the cylinder head and piston crown for carbon deposits.
   Carbon deposits → Eliminate.

d. If the compression pressure is below the minimum specification, squirt a few drops of oil into the cylinder and measure again.
Refer to the following table.

| Compression pressure (with oil applied into the cylinder) | |
|---|---|
| **Reading** | **Diagnosis** |
| **Higher than without oil** | **Piston wear or damage → Repair.** |
| **Same as without oil** | **Piston ring(s), cylinder head gasket or piston possibly defective → Repair.** |

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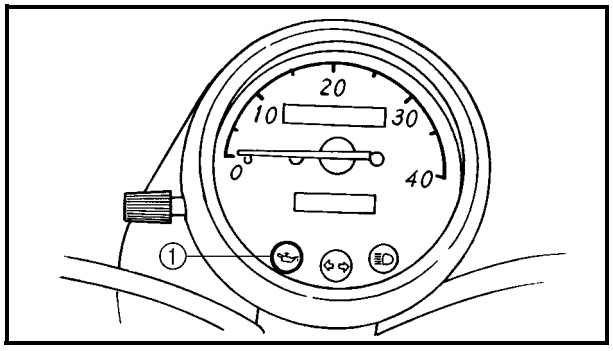
7. Install:
   - spark plug — **20 Nm (2.0 m · kg, 14 ft · lb)**
8. Connect:
   - spark plug cap

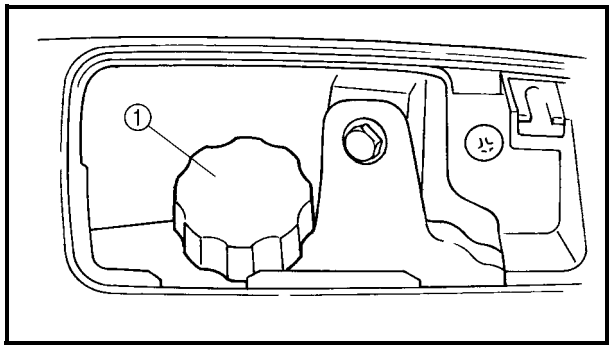
EAS00072
## CHECKING THE ENGINE OIL LEVEL

1. Stand the scooter on a level surface.

**NOTE:**
- Place the scooter on a suitable stand.
- Make sure the scooter is upright.




2. Check:
   - oil level warning light ①
     Refer to “SIGNAL SYSTEM” in chapter 7.




3. Remove:
   - oil tank cover
     Refer to “SIDE COVERS AND FOOTREST-BOARD”.
   - oil tank cap ①

4. Fill:
   - engine oil
     Make sure the engine oil is at the specified level. Fill with oil as necessary.

**Recommended oil**
**Yamalube 2-cycle oil or 2-stroke engine oil**

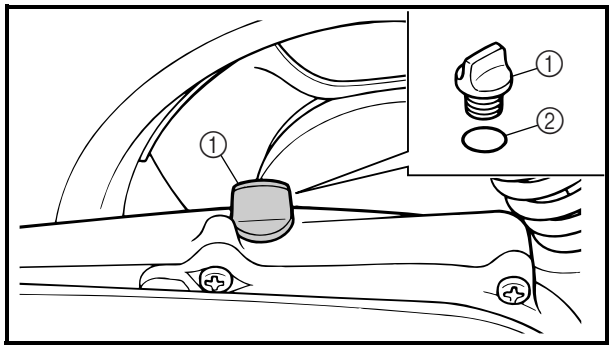


**REPLACING THE TRANSMISSION OIL**

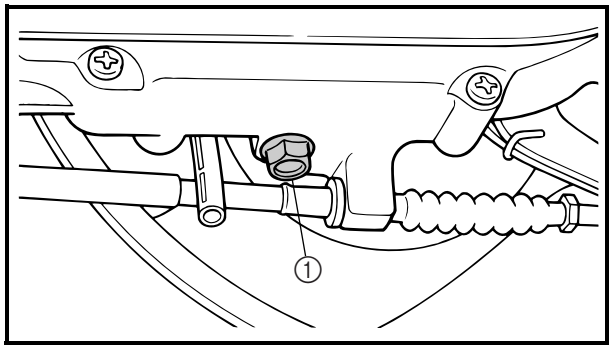
1. Stand the scooter on a level surface.

**NOTE:**
- Place the scooter on a suitable stand.
- Make sure the scooter is upright.

2. Start the engine, warm it up for several minutes, and then turn it off.
3. Place a container under the transmission oil drain bolt.

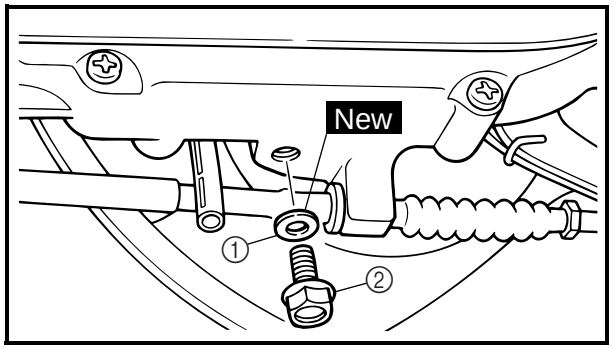



4. Remove:
   - oil filler plug ①
   - O-ring ②




5. Remove:
   - transmission oil drain bolt ①
   - gasket

6. Drain:
   - transmission oil
     (completely from the transmission case)
7. Check:
   - O-ring
     Damage → Replace.



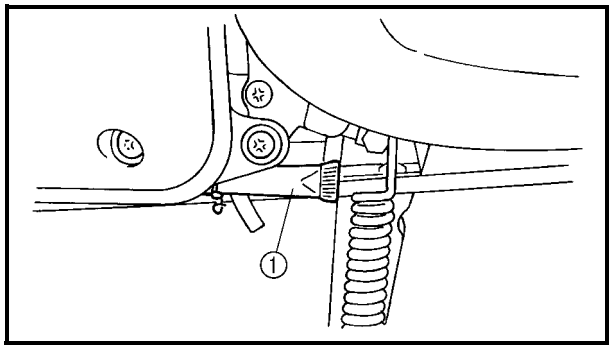

8. Install:
   - gasket ① New
   - transmission oil drain bolt ②

**18 Nm (1.8 m · kg, 13 ft · lb)**

9. Fill:
   - crankcase
     (with the specified amount of the recommended transmission oil)

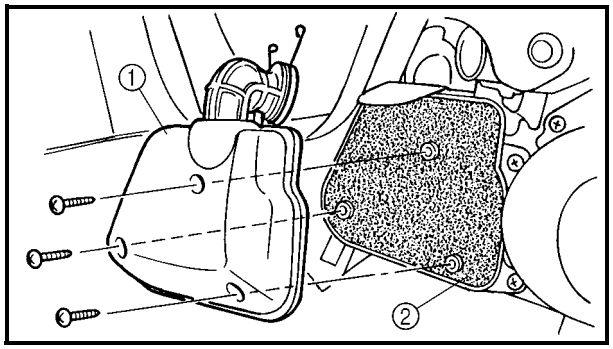
**Recommended oil**
**SAE 10W30SE**
**Total amount**
**0.11 L (0.1 Imp qt, 0.12 US qt)**

10. Install:
    - O-ring
    - oil filler plug




EAS00089
## CLEANING THE AIR FILTER ELEMENT

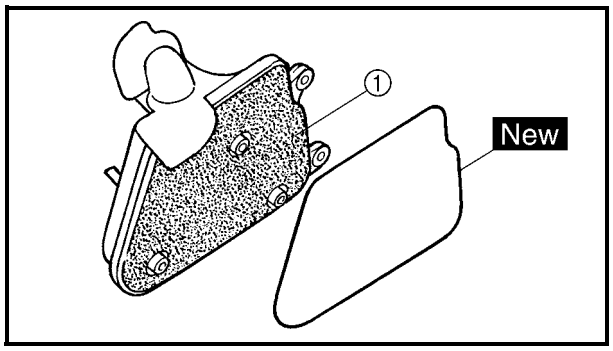
**NOTE:**
On the bottom of the air filter case is a check hose ①. If dust or water or both collects in this hose, clean the air filter element and air filter case.




1. Remove:
   - footrest board
     Refer to "SIDE COVERS AND FOOTREST BOARD".
2. Remove:
   - air filter case cover ①
   - air filter element ②
3. Clean:
   - air filter element
     (with solvent)

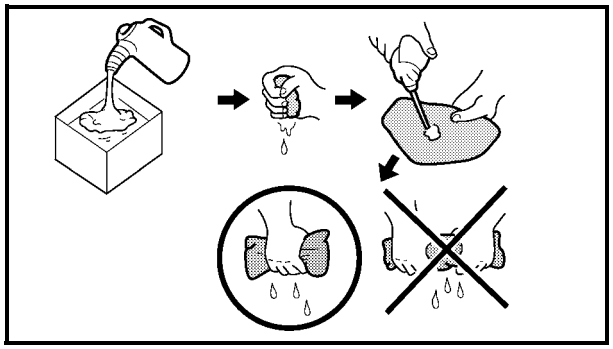
**⚠ WARNING**
**Never use low flash point solvents, such as gasoline, to clean the air filter element. Such solvents may cause a fire or an explosion.**

**NOTE:**
After cleaning, gently squeeze the air filter element to remove the excess solvent.




**CAUTION:**
**Do not twist the air filter element when squeezing it.**

4. Check:
   - air filter element ①
     Damage → Replace.
5. Apply the recommended oil to the entire surface of the air filter element and squeeze out the excess oil. The air filter element should be wet but not dripping.



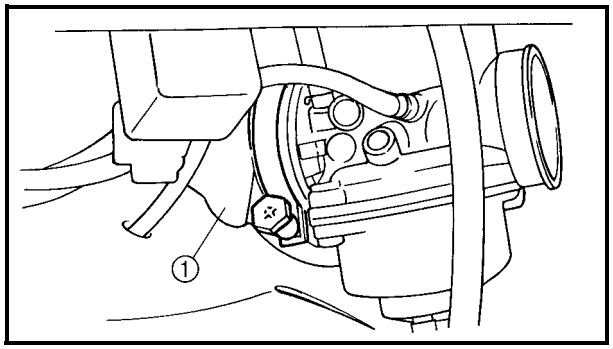
**Recommended oil**
**Foam air filter oil or**
**Yamalube 2-cycle oil or 2-stroke engine oil**

6. Install:
   - air filter element
   - air filter case cover

**CAUTION:**

**Never operate the engine without the air filter element installed. Unfiltered air will cause rapid wear of engine parts and may damage the engine. Operating the engine without the air filter element will also affect the carburetor tuning, leading to poor engine performance and possible overheating.**

7. Install:
   - footrest board
     Refer to “SIDE COVERS AND FOOTREST BOARD”.



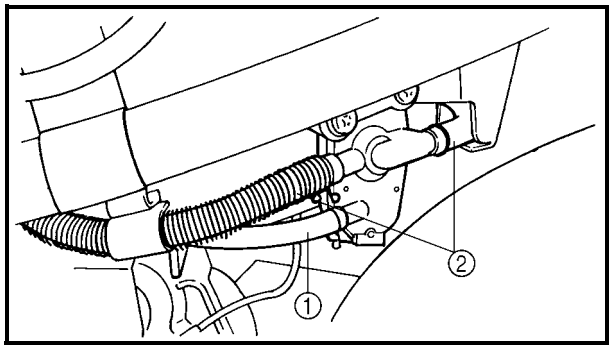

EAS00094
### CHECKING THE CARBURETOR JOINT

1. Remove:
   - center cover
   - footrest board
     Refer to “SIDE COVERS AND FOOTREST BOARD”.
   - air filter case
2. Check:
   - carburetor joint ①
     Cracks/damage → Replace.
     Refer to “CARBURETOR” in chapter 6.
3. Install:
   - air filter case
   - footrest board
   - center cover
     Refer to “SIDE COVERS AND FOOTREST BOARD”.

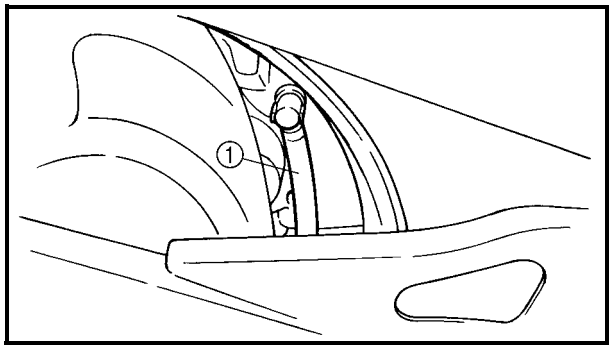
EAS00096
### CHECKING THE FUEL AND VACUUM HOSES

The following procedure applies to all of the fuel and vacuum hoses.

1. Remove:
   - side cover (left)
     Refer to “SIDE COVERS AND FOOTREST BOARD”.




2. Check:
   - vacuum hose ①
   - fuel hoses ②
     Cracks/damage → Replace.
     Loose connection → Connect properly.
3. Install:
   - side cover (left)
     Refer to “SIDE COVERS AND FOOTREST BOARD”.



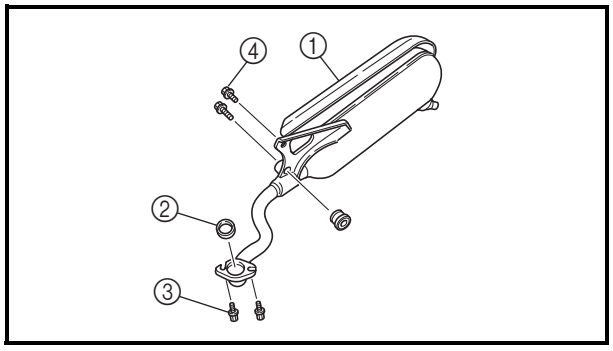

EAS00098
### CHECKING THE CRANKCASE BREATHER HOSE

1. Check:
   - crankcase breather hose ①
     Cracks/damage → Replace.
     Loose connection → Connect properly.

**CAUTION:**

**Make sure the crankcase breather hose is routed correctly.**



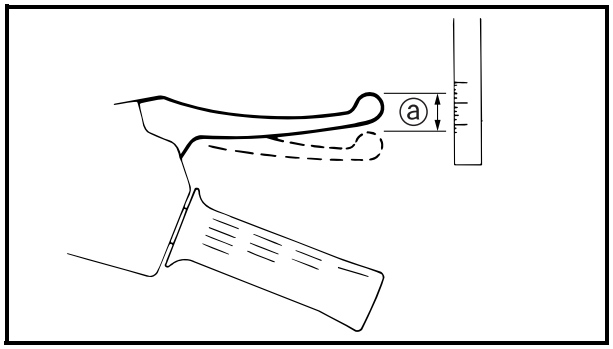


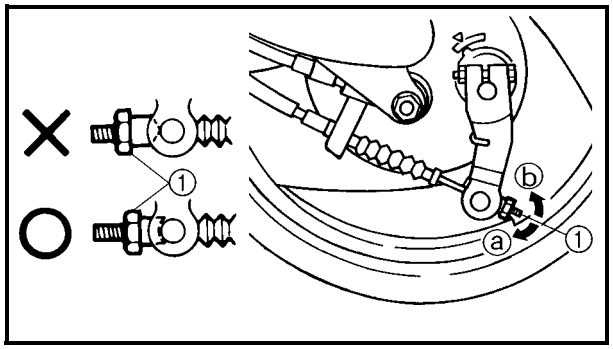

EAS00099
### CHECKING THE EXHAUST SYSTEM

The following procedure applies to all of the exhaust pipes and gaskets.

1. Check:
   - exhaust pipe
   - muffler ①
     Cracks/damage → Replace.
   - gasket ②
     Exhaust gas leaks → Replace.
2. Check:
   - tightening torque

**Exhaust pipe bolt ③**
**13 Nm (1.3 m · kg, 9.4 ft · lb)**
**Muffler and muffler bracket bolt ④**
**28 Nm (2.8 m · kg, 20 ft · lb)**




EAS00109

# CHASSIS

## ADJUSTING THE FRONT BRAKE

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

**Brake lever free play**
**(at the end of the brake lever)**
**10 ~ 20 mm (0.39 ~ 0.79 in)**

2. Adjust:
   - brake lever free play

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a. Turn the adjusting nut ① in direction ⓐ or ⓑ until the specified brake lever free play is obtained.

| | |
|---|---|
| **Direction ⓐ** | **Brake lever free play is increased.** |
| **Direction ⓑ** | **Brake lever free play is decreased.** |

**CAUTION:**

**After adjusting the brake lever free play, make sure there is no brake drag.**

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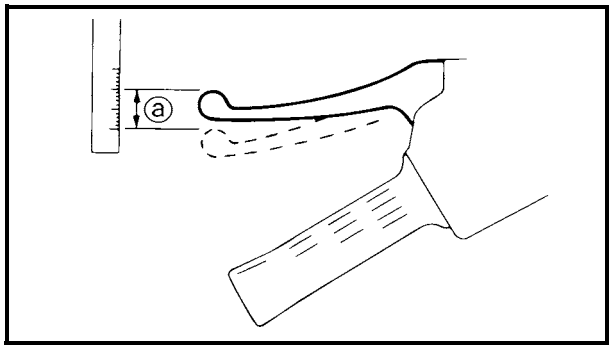
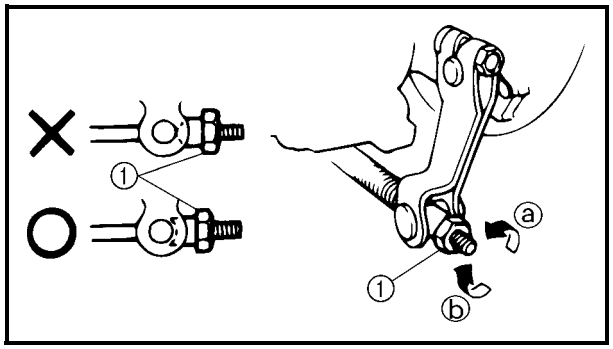



EAS00114

## ADJUSTING THE REAR BRAKE

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

**Brake lever free play**
**10 ~ 20 mm (0.39 ~ 0.79 in)**




2. Adjust:
   • brake lever free play

▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

a. Turn the adjusting nut ① in direction ⓐ or ⓑ until the specified brake lever free play is obtained.

| | |
|---|---|
| **Direction ⓐ** | **Brake lever free play is increased.** |
| **Direction ⓑ** | **Brake lever free play is decreased.** |

**CAUTION:**

**After adjusting the brake lever free play, make sure there is no brake drag.**

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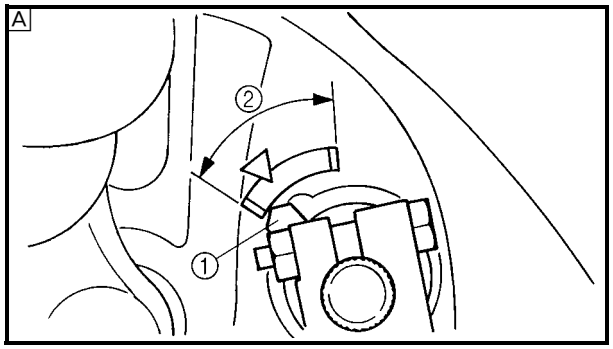
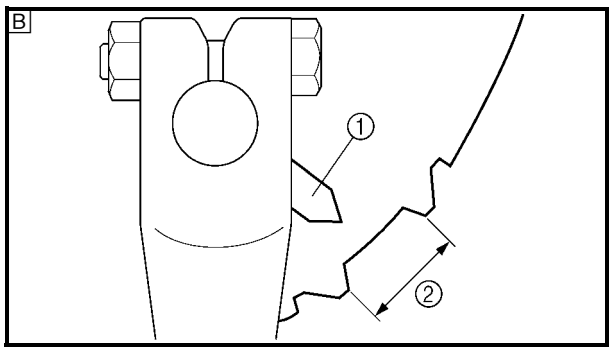



EAS00127
## CHECKING THE BRAKE SHOES

1. Operate the brake.
2. Check:
   • wear indicator ①
   Reaches the wear limit line ② → Replace the brake shoes as a set.
   Refer to “FRONT WHEEL AND BRAKE” and “REAR WHEEL AND BRAKE” in chapter 4.

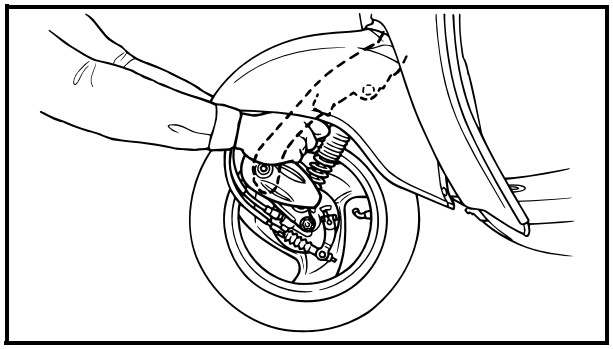
A Front brake
B Rear brake

EAS00148
## CHECKING AND ADJUSTING THE STEERING HEAD

1. Stand the scooter on a level surface.

**⚠ WARNING**

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



**NOTE:**
Place the scooter on a suitable stand so that the front wheel is elevated.

2. Check:
   - steering head
     Grasp the bottom of the front fork legs and gently rock the front fork.
     Binding/looseness → Adjust the steering head.
3. Remove:
   - center cover
   - footrest board
     Refer to "SIDE COVERS AND FOOTREST BOARD".
   - leg shield
     Refer to "FRONT PANEL AND LEG SHIELD".
4. Adjust:
   - steering head

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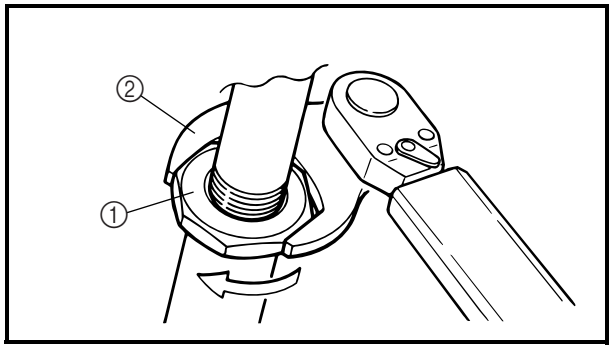
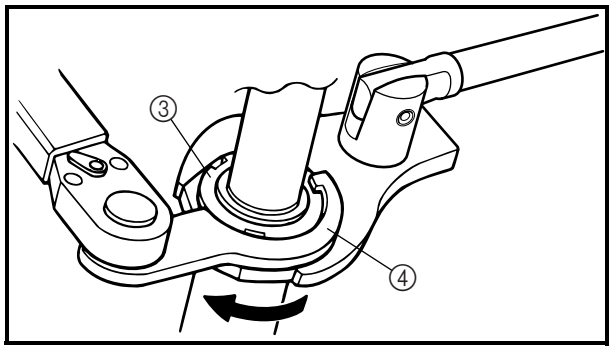



a. Remove the upper steering stem ring nut.
b. Loosen the upper race ① and then tighten it to specification with the steering nut wrench (45 mm) ②.

| | |
|---|---|
|  | **Steering nut wrench (45 mm)**<br>**YU-01444** |

**NOTE:**
Set the torque wrench at a right angle to the steering stem ring nut wrench.




| | |
|---|---|
|  | **Upper race**<br>**7 Nm (0.7 m · kg, 5.1 ft · lb)** |

c. Hold the upper race with a steering nut wrench (45 mm) and tighten the upper steering stem ring nut ③ with a steering nut wrench ④.

| | |
|---|---|
|  | **Steering nut wrench**<br>**YU-33975** |
|  | **Upper steering stem ring nut**<br>**33 Nm (3.3 m · kg, 24 ft · lb)** |

d. Check the steering head for looseness or binding by turning the front fork all the way in both directions.

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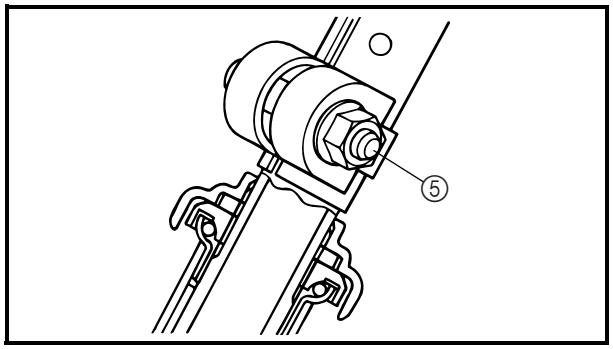



5. Install:
   - Steering shaft bolt ⑤

     **42 Nm (4.2 m · kg, 30 ft · lb)**
6. Install:
   - leg shield
     Refer to “FRONT PANEL AND LEG SHIELD”.
   - footrest board
   - center cover
     Refer to “SIDE COVERS AND FOOTREST BOARD”.

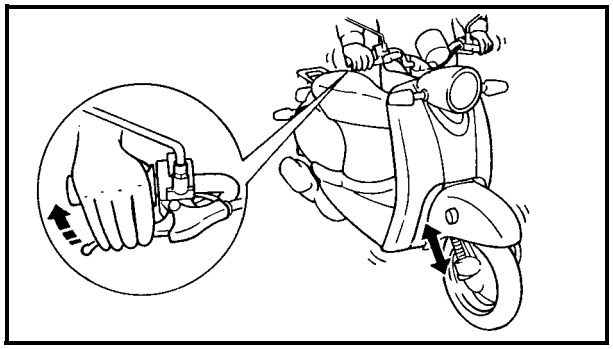
EAS00151
### CHECKING THE FRONT SHOCK ABSORBER

1. Stand the scooter on a level surface.

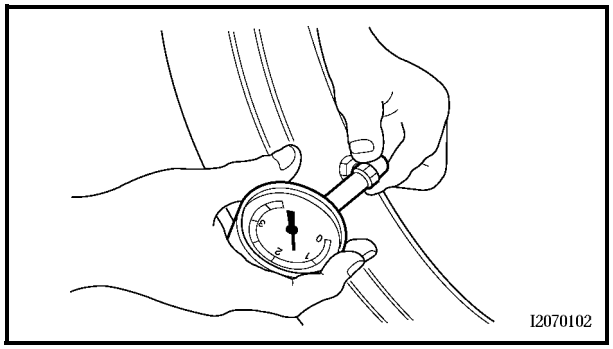
**⚠ WARNING**

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

2. Hold the scooter upright and apply the front brake.



3. Check:
   - front shock absorber operation
     Push down hard on the handlebar several times and check if the front fork rebounds smoothly.
     Rough movement → Repair.
     Refer to “FRONT SHOCK ABSORBER ASSEMBLIES” in chapter 4.




EAS00163
### CHECKING THE TIRES

The following procedure applies to both of the tires.

1. Measure:
   - tire pressure
     Out of specification → Regulate.

**⚠ WARNING**

- **The tire pressure should only be checked and regulated when the tire temperature equals the ambient air temperature.**
- **The tire pressure and the suspension must be adjusted according to the total weight (including cargo, rider and accessories) and the anticipated riding speed.**
- **Operation of an overloaded scooter could cause tire damage, an accident or an injury.**

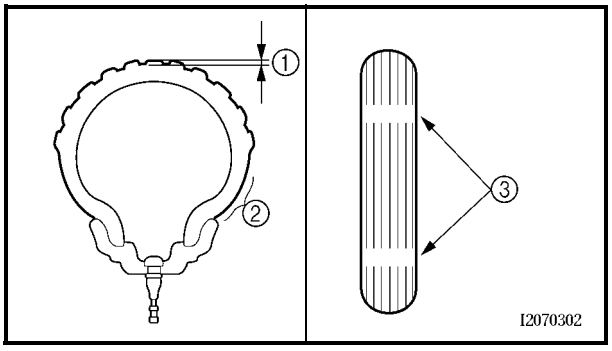
**NEVER OVERLOAD THE SCOOTER.**

| | | |
|---|---|---|
| **Basic weight (with oil and a full fuel tank)** | **74 kg (163 lb)** | |
| **Maximum load*** | **76 kg (168 lb)** | |
| **Cold tire pressure** | **Front** | **Rear** |
| | **150 kPa (1.50 kgf/cm², 21.8 psi)** | **175 kPa (1.75 kgf/cm², 25.4 psi)** |

* total of cargo, rider and accessories

**⚠ WARNING**

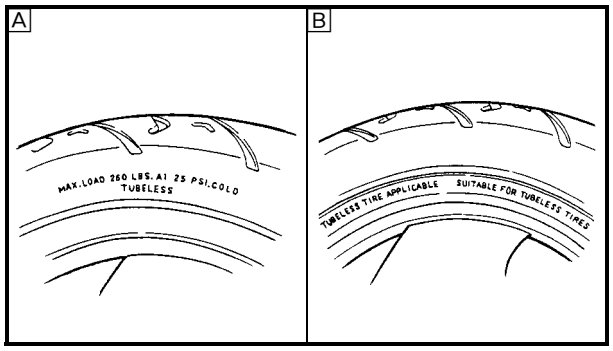
**It is dangerous to ride with a worn-out tire. When the tire tread reaches the wear limit, replace the tire immediately.**




2. Check:
   - tire surfaces
     Damage/wear → Replace the tire.

**Minimum tire tread depth**
**1.0 mm (0.04 in)**

① Tire tread depth
② Side wall
③ Wear indicator




**⚠ WARNING**

- **Do not use a tubeless tire on a wheel designed only for tube tires to avoid tire failure and personal injury from sudden deflation.**
- **When using tube tires, be sure to install the correct tube.**
- **Always replace a new tube tire and a new tube as a set.**
- **To avoid pinching the tube, make sure the wheel rim band and tube are centered in the wheel groove.**
- **Patching a punctured tube is not recommended. If it is absolutely necessary to do so, use great care and replace the tube as soon as possible with a good quality replacement.**

A Tire
B Wheel

| | |
|---|---|
| **Tube wheel** | **Tube tire only** |
| **Tubeless wheel** | **Tube or tubeless tire** |

- **After extensive tests, the tires listed below have been approved by Yamaha Motor Co., Ltd. for this model. The front and rear tires should always be by the same manufacturer and of the same design. No guarantee concerning handling characteristics can be given if a tire combination other than one approved by Yamaha is used on this scooter.**

**Front tire**

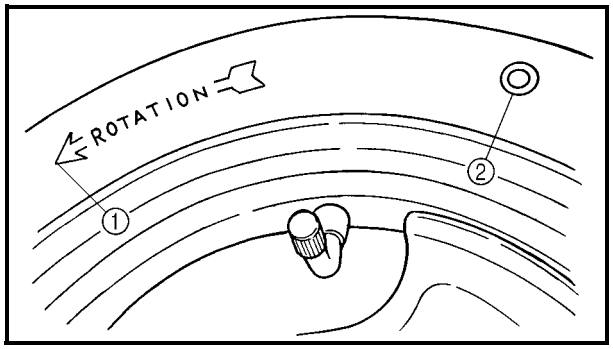
| Manufacturer | Model | Size |
|---|---|---|
| INOUE | MB38 | 80/90-10 (34J) |
| CHENG SHIN | C-922 | 80/90-10 (34J) |

**Rear tire**

| Manufacturer | Model | Size |
|---|---|---|
| INOUE | MB38 | 80/90-10 (34J) |
| CHENG SHIN | C-922 | 80/90-10 (34J) |

**⚠ WARNING**

**New tires have a relatively low grip on the road surface until they have been slightly worn. Therefore, approximately 100 km should be traveled at normal speed before any high-speed riding is done.**




**NOTE:**

For tires with a direction of rotation mark ①:
- Install the tire with the mark pointing in the direction of wheel rotation.
- Align the mark ② with the valve installation point.

EAS00168

## CHECKING THE WHEELS

The following procedure applies to both of the wheels.

1. Check:
   - wheel
     Damage/out-of-round → Replace.

**⚠ WARNING**

**Never attempt to make any repairs to the wheel.**

**NOTE:**

After a tire or wheel has been changed or replaced, always balance the wheel.

EAS00170
## CHECKING AND LUBRICATING THE CABLES

The following procedure applies to all of the cable sheaths and cables.

**⚠ WARNING**

**Damaged cable sheaths may cause the cable to corrode and interfere with its movement. Replace damaged cable sheaths and cables as soon as possible.**

1. Check:
   - cable sheath
     Damage → Replace.
2. Check:
   - cable operation
     Rough movement → Lubricate.

**Recommended lubricant**
**Engine oil or a suitable cable lubricant**

**NOTE:**

Hold the cable end upright and pour a few drops of lubricant into the cable sheath or use a suitable lubricating device.

EAS00171
## LUBRICATING THE LEVERS

Lubricate the pivoting point and metal-to-metal moving parts of the levers.

**Recommended lubricant**
**Lithium soap base grease**

EAS00173
## LUBRICATING THE CENTERSTAND

Lubricate the pivoting point and metal-to-metal moving parts of the centerstand.

**Recommended lubricant**
**Lithium soap base grease**

EAS00179

# ELECTRICAL SYSTEM

## CHECKING AND CHARGING THE BATTERY

**⚠ WARNING**

**Batteries generate explosive hydrogen gas and contain electrolyte which is made of poisonous and highly caustic sulfuric acid. Therefore, always follow these preventive measures:**

- **Wear protective eye gear when handling or working near batteries.**
- **Charge batteries in a well-ventilated area.**
- **Keep batteries away from fire, sparks or open flames (e.g., welding equipment, lighted cigarettes).**
- **DO NOT SMOKE when charging or handling batteries.**
- **KEEP BATTERIES AND ELECTROLYTE OUT OF REACH OF CHILDREN.**
- **Avoid bodily contact with electrolyte as it can cause severe burns or permanent eye injury.**

**FIRST AID IN CASE OF BODILY CONTACT:**
**EXTERNAL**

- **Skin — Wash with water.**
- **Eyes — Flush with water for 15 minutes and get immediate medical attention.**

**INTERNAL**

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

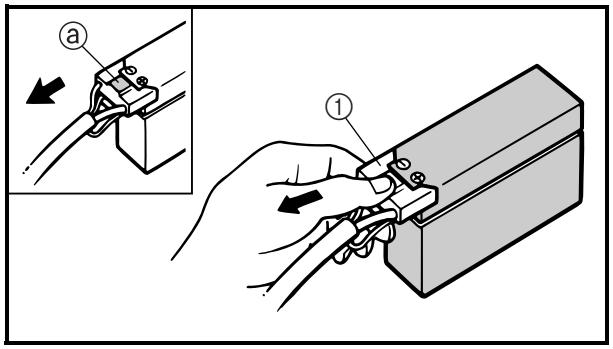
**CAUTION:**

**Charging time, charging amperage and charging voltage for an MF battery are different from those of conventional batteries. The MF battery should be charged as explained in the charging method illustrations. If the battery is overcharged, the electrolyte level will drop considerably. Therefore, take special care when charging the battery.**

**NOTE:**
Since MF batteries are sealed, it is not possible to check the charge state of the battery by measuring the specific gravity of the electrolyte. Therefore, the charge of the battery has to be checked by measuring the voltage at the battery terminals.

1. Remove:
   - center cover
     Refer to "SIDE COVERS AND FOOTREST BOARD".
   - battery box
     Refer to "ENGINE REMOVAL" in chapter 5.

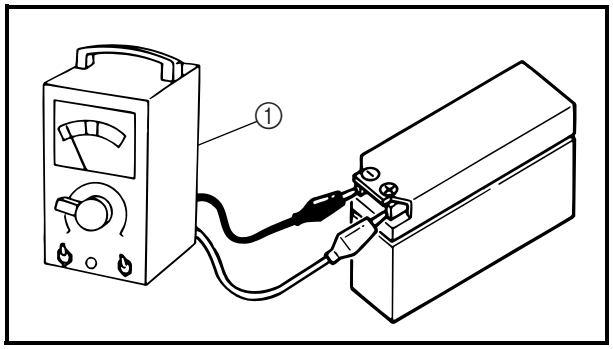





2. Disconnect:
   - battery lead coupler ①
     (from the battery terminals)

**NOTE:**
Push down on the tab ⓐ, and then remove the battery lead coupler.

3. Remove:
   - battery




4. Measure:
   - battery charge

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a. Connect a battery tester ① to the battery terminals.

**Tester positive probe →**
**battery positive terminal**
**Tester negative probe →**
**battery negative terminal**

**NOTE:**
- The charge state of an MF battery can be checked by measuring its open-circuit voltage (i.e., the voltage when the positive terminal is disconnected).
- No charging is necessary when the open-circuit voltage equals or exceeds 12.8 V.

b. Check the charge of the battery, as shown in the charts and the following example.

**Example**

c. Open-circuit voltage = 12.0 V

d. Charging time = 6.5 hours

e. Charge of the battery = 20 ~ 30%

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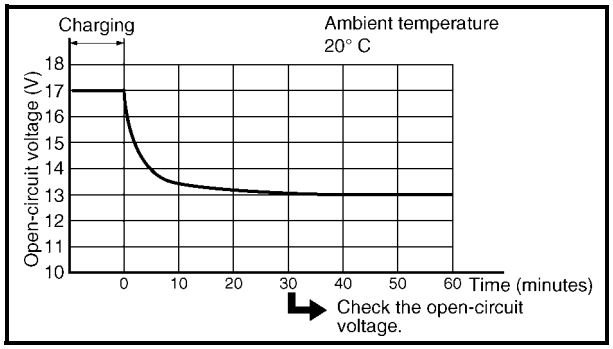
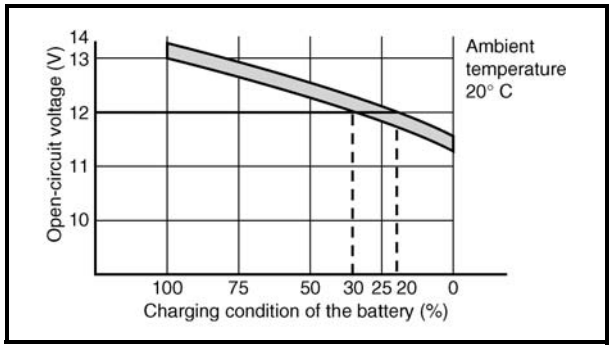



5. Charge:
   - battery
     (refer to the appropriate charging method illustration)

**⚠ WARNING**

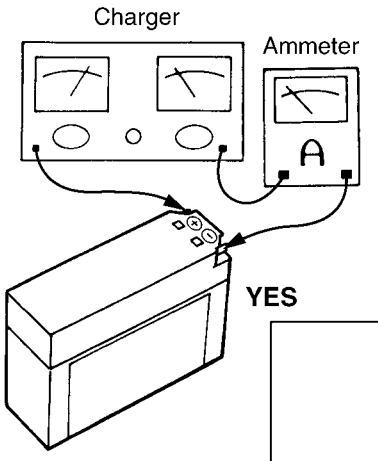
**Do not quick charge a battery.**

**CAUTION:**

- **Never remove the MF battery sealing caps.**
- **Do not use a high-rate battery charger since it forces a high-amperage current into the battery quickly and can cause battery overheating and battery plate damage.**
- **If it is impossible to regulate the charging current on the battery charger, be careful not to overcharge the battery.**
- **When charging a battery, be sure to remove it from the scooter. (If charging has to be done with the battery mounted on the scooter, disconnect the negative battery lead from the battery terminal.)**
- **To reduce the chance of sparks, do not plug in the battery charger until the battery charger leads are connected to the battery.**
- **Before removing the battery charger lead clips from the battery terminals, be sure to turn off the battery charger.**
- **Make sure the battery charger lead clips are in full contact with the battery terminal and that they are not shorted. A corroded battery charger lead clip may generate heat in the contact area and a weak clip spring may cause sparks.**

- **If the battery becomes hot to the touch at any time during the charging process, disconnect the battery charger and let the battery cool before reconnecting it. Hot batteries can explode!**
- **As shown in the following illustration, the open-circuit voltage of an MF battery stabilizes about 30 minutes after charging has been completed. Therefore, wait 30 minutes after charging is completed before measuring the open-circuit voltage.**

## Charging method using a variable voltage charger




Measure the open-circuit voltage prior to charging.

NOTE:
Leave the battery unused for more than 30 minutes before measuring its open-circuit voltage.

Connect a charger and ammeter to the battery and start charging.

NOTE:
Set the charging voltage to 16-17 V.(If the charging voltage is lower, charging will be insufficient, if it is higher, the battery will be over-charged.)

Is the amperage higher than the standard charging amperage written on the battery?

YES

NO

Adjust the charging voltage to 20 ~ 25 V.

Monitor the amperage for 3 ~ 5 minutes. Is the standard charging amperage exceeded?

YES

Adjust the voltage to obtain the standard charging amperage.

NO

If the amperage does not exceed the standard charging amperage after 5 minutes, replace the battery.

Set the timer to the charging time determined by the open -circuit voltage.
Refer to “CHECKING AND CHARGING THE BATTERY”.

If the required charging time exceeds 5 hours, it is advisable to check the charging amperage after 5 hours. If there is any change in the amperage, readjust the voltage to obtain the standard charging amperage.

Leave the battery unused for more than 30 minutes before measuring its open-circuit voltage.
12.8 V ➔ Charging is complete.
12.0~12.7 V ➔ Recharging is required.
Under 12.0 V ➔ Replace the battery.

### Charging method using a constant voltage charger

Measure the open-circuit voltage prior to charging.

**NOTE:**
Leave the battery unused for more than 30 minutes before measuring its open-circuit voltage.

↓

Connect a charger and ammeter to the battery and start charging.

↓

Is the amperage higher than the standard charging amperage written on the battery?

**YES** → Charge the battery until the charging voltage reaches 15 V.

**NOTE:**
Set the charging time to a maximum of 20 hours.

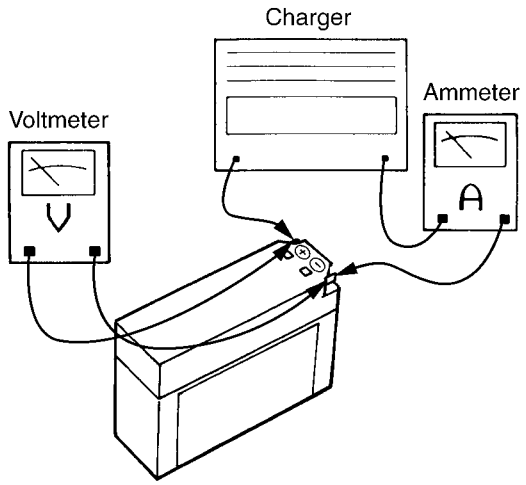
↓

Leave the battery unused for more than 30 minutes before measuring its open-circuit voltage.

12.8 V ➔ Charging is complete.
12.0~12.7 V ➔ Recharging is required.
Under 12.0 V ➔ Replace the battery.

**CAUTION:**
Constant amperage chargers are not suitable for harging MF batteries.

**NO** → This type of battery charger cannot charge an MF battery. A variable voltage- charger is recommended.



6. Install:
   • battery
7. Connect:
   • battery lead coupler
     (to the battery terminals)
8. Check:
   • battery terminals
     Dirt → Clean with a wire brush.
     Loose connection → Connect properly.
9. Lubricate:
   • battery terminal

|  | **Recommended lubricant**<br>**Dielectric grease** |
|---|---|

10. Install:
    • battery box
      Refer to “ENGINE REMOVAL” in chapter 5.
    • center cover
      Refer to “SIDE COVERS AND FOOTREST BOARD”.

EAS00181
## CHECKING THE FUSE

**CAUTION:**

**To avoid a short circuit, always set the main switch to "OFF" when checking or replacing a fuse.**

1. Remove:
   - center cover
     Refer to "SIDE COVERS AND FOOTREST BOARD".
   - battery
     Refer to "ENGINE REMOVAL" in chapter 5.
2. Check:
   - continuity

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a. Connect the pocket tester to the fuse and check the continuity.

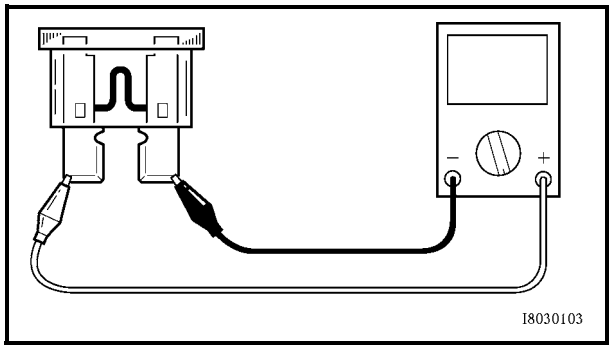
**NOTE:**

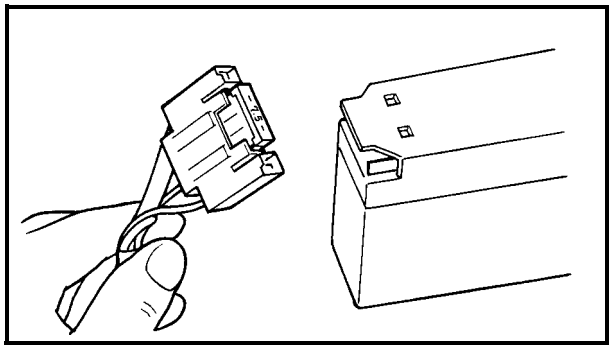
Set the pocket tester selector to "Ω × 1".

| | |
|---|---|
| | **Pocket tester**<br>**YU-03112** |

b. If the pocket tester indicates "∞", replace the fuse.

▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲



3. Replace:
   - blown fuse

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a. Set the main switch to "OFF".
b. Install a new fuse of the correct amperage.
c. Set on the switches to verify if the electrical circuit is operational.
d. If the fuse immediately blows again, check the electrical circuit.

| Items | Amperage rating | Q'ty |
|---|---|---|
| Main fuse | 7.5 A | 1 |

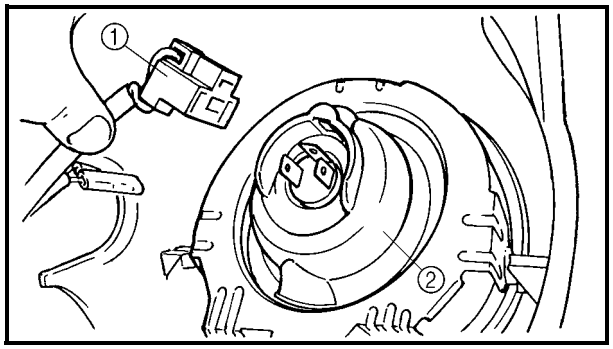
**⚠ WARNING**

**Never use a fuse with an amperage rating other than that specified. Improvising or using a fuse with the wrong amperage rating may cause extensive damage to the electrical system, cause the lighting and ignition systems to malfunction and could possibly cause a fire.**

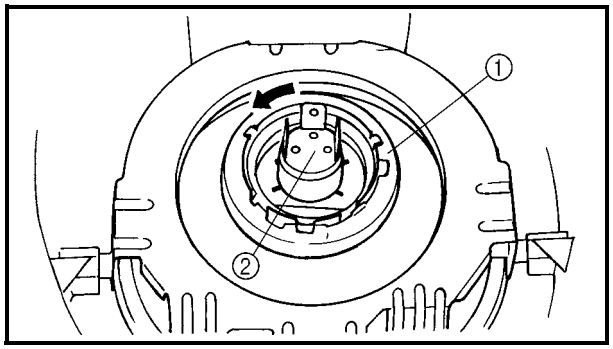
4. Install:
   - battery
     Refer to “ENGINE REMOVAL” in chapter 4.
   - center cover
     Refer to “SIDE COVERS AND FOOTREST BOARD”.

EAS00182
### REPLACING THE HEADLIGHT BULB

1. Remove:
   - Headlight cover
     Refer to “FRONT PANEL AND LEG SHIELD”.




2. Disconnect:
   - headlight coupler ①
3. Remove:
   - headlight bulb holder cover ②




4. Detach:
   - headlight bulb holder ①
5. Remove:
   - headlight bulb ②

**⚠ WARNING**

**Since the headlight bulb gets extremely hot, keep flammable products and your hands away from the bulb until it has cooled down.**

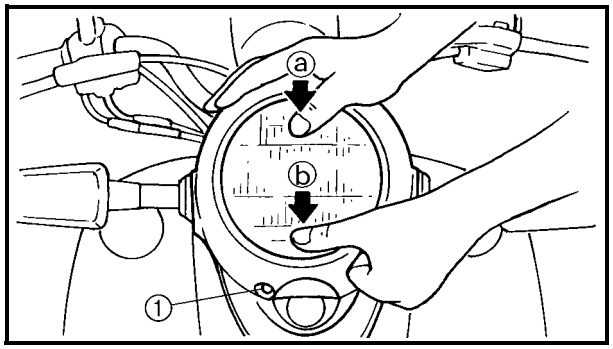
6. Install:
   • headlight bulb New
   Secure the new headlight bulb with the headlight bulb holder.

**CAUTION:**

**Avoid touching the glass part of the headlight bulb to keep it free from oil, otherwise the transparency of the glass, the life of the bulb and the luminous flux will be adversely affected. If the headlight bulb gets soiled, thoroughly clean it with a cloth moistened with alcohol or lacquer thinner.**

7. Attach:
   • headlight bulb holder
8. Install:
   • headlight bulb holder cover
9. Connect:
   • headlight coupler
10. Install:
   • Headlight cover
   Refer to “FRONT PANEL AND LEG SHILD”.






EAS00184
## ADJUSTING THE HEADLIGHT BEAM

1. Adjust:
   • headlight beam (vertically)

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a. Loosen the adjusting screw ① and push the headlight lens unit in direction ⓐ or ⓑ.

| | |
|---|---|
| **Direction ⓐ** | **Headlight beam is raised.** |
| **Direction ⓑ** | **Headlight beam is lowered.** |

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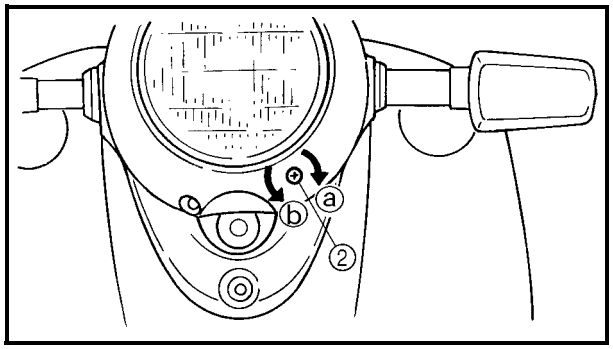


2. Adjust:
   • headlight beam (horizontally)

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a. Turn the adjusting knob ② in direction ⓐ or ⓑ.

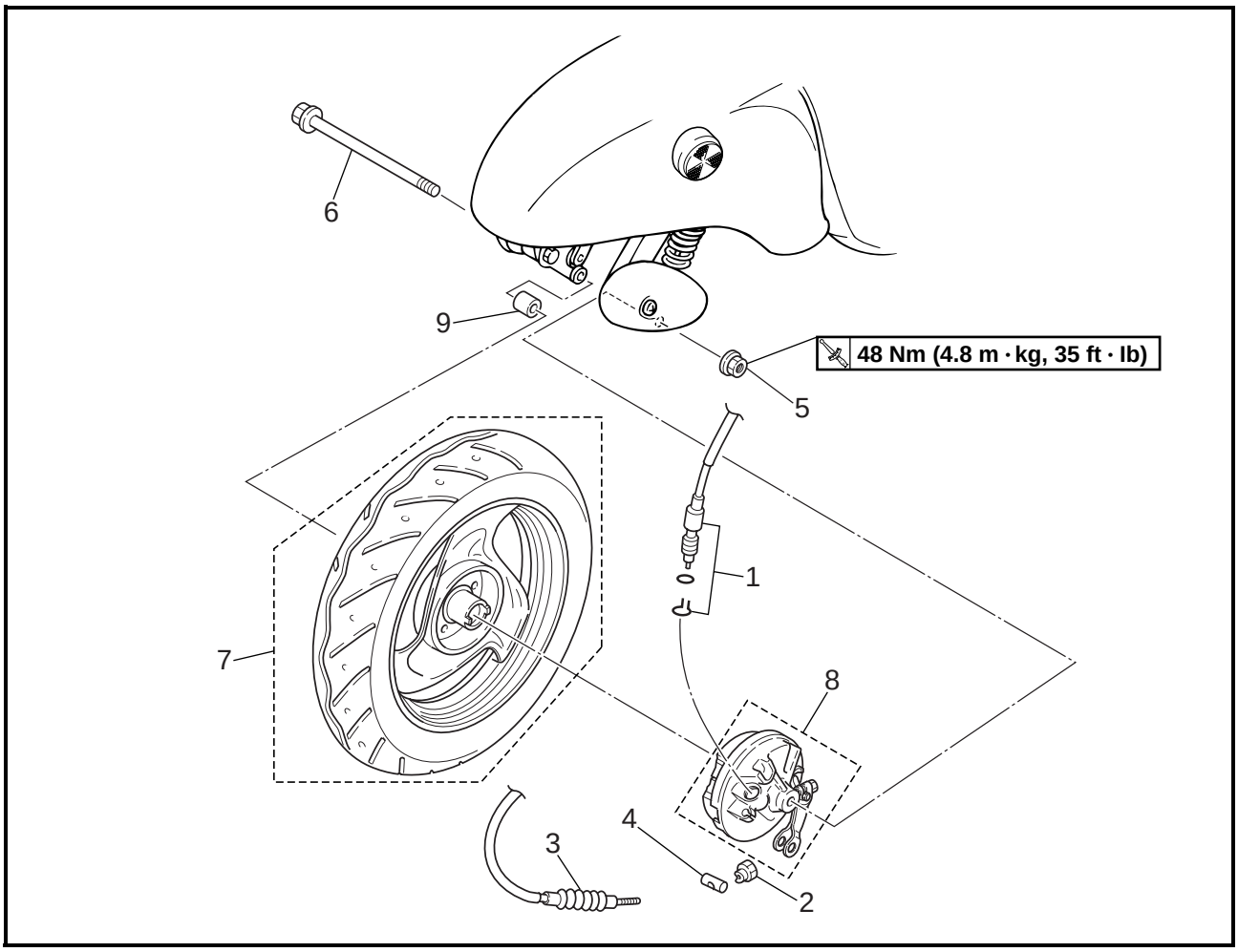
| | |
|---|---|
| **Direction ⓐ** | **Headlight beam moves to the right.** |
| **Direction ⓑ** | **Headlight beam moves to the left.** |

▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲

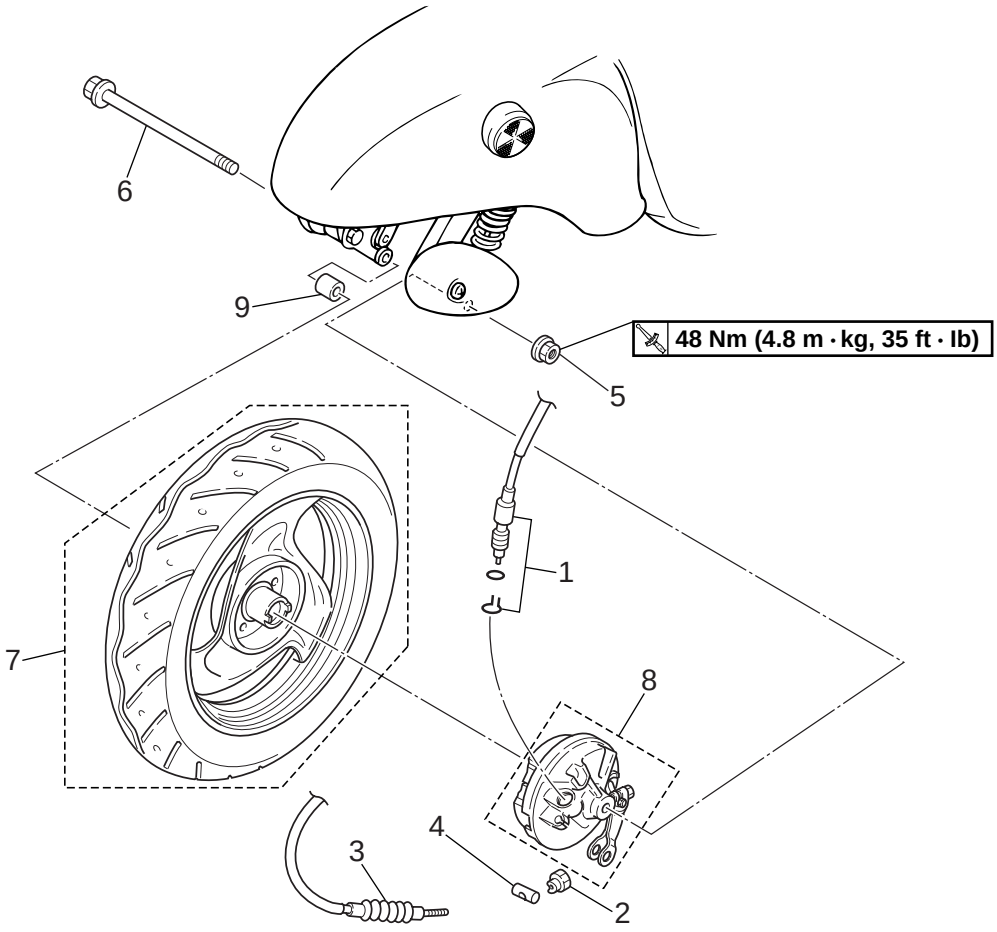
EAS00517

# CHASSIS

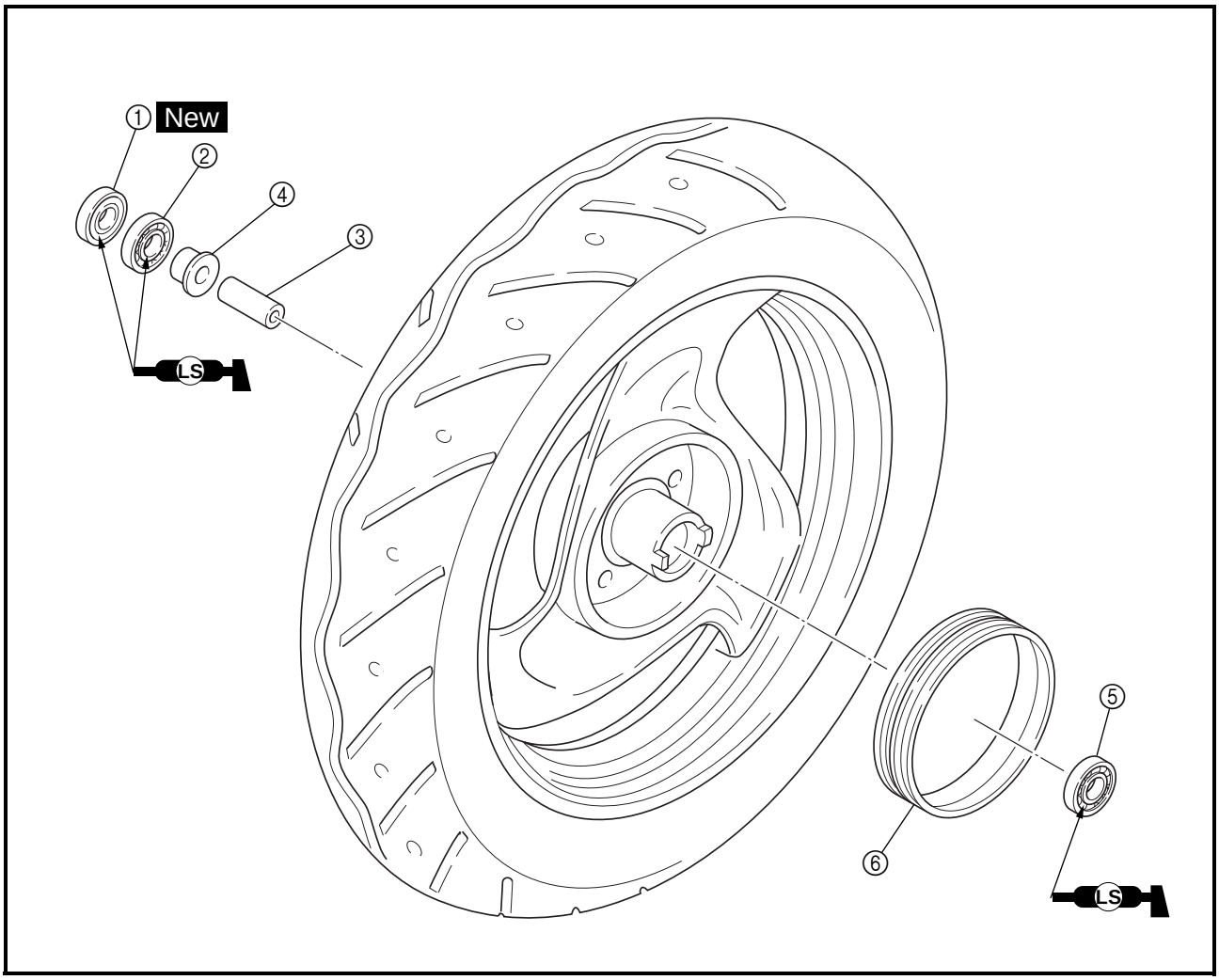
## FRONT WHEEL AND BRAKE



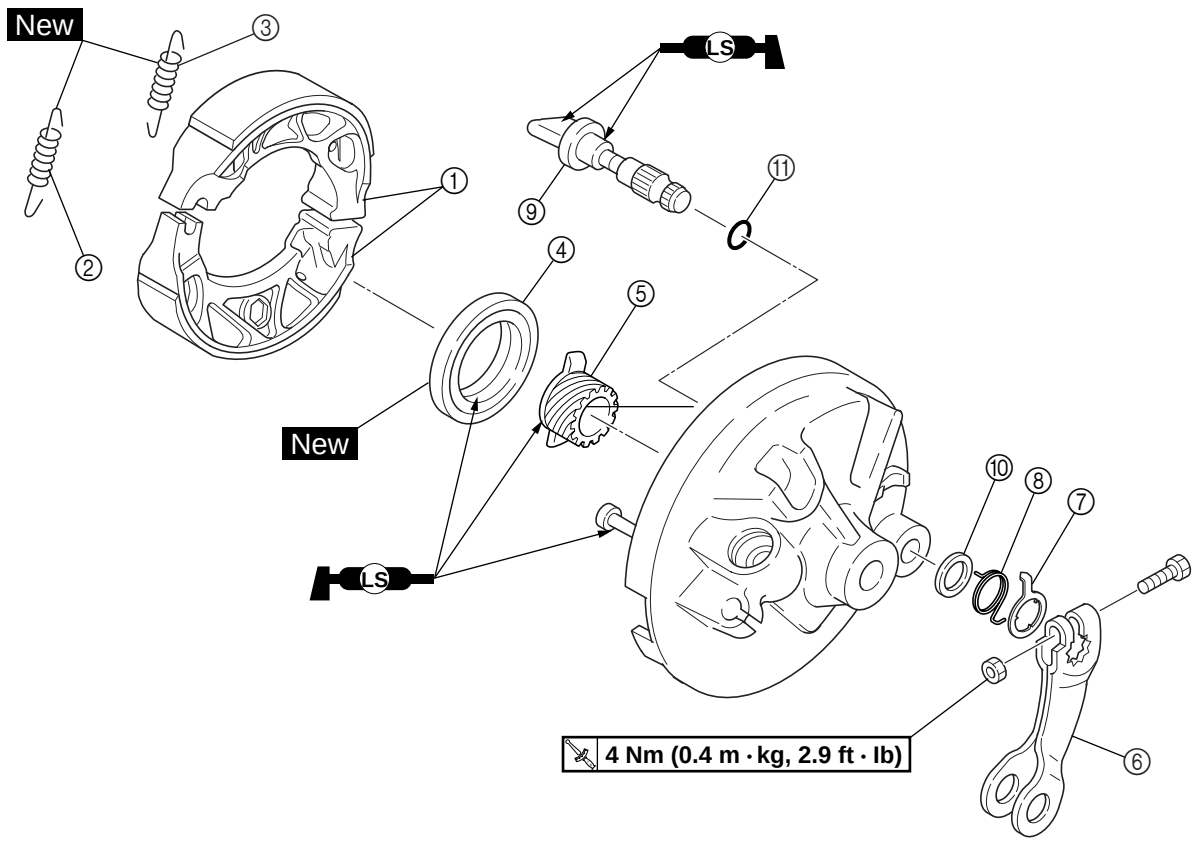

| Order | Job/Part | Q'ty | Remarks |
|---|---|---|---|
| | **Removing the front wheel and brake** | | Remove the parts in the order listed.<br>**NOTE:**<br>Place the scooter on a suitable stand so that the front wheel is elevated. |
| 1 | Speedometer cable assembly | 1 | |
| 2 | Adjusting nut | 1 | Refer to "INSTALLING THE FRONT WHEEL". |
| 3 | Front brake cable | 1 | |
| 4 | Pin | 1 | |
| 5 | Axle nut | 1 | |
| 6 | Wheel axle | 1 | |
| 7 | Front wheel assembly | 1 | |



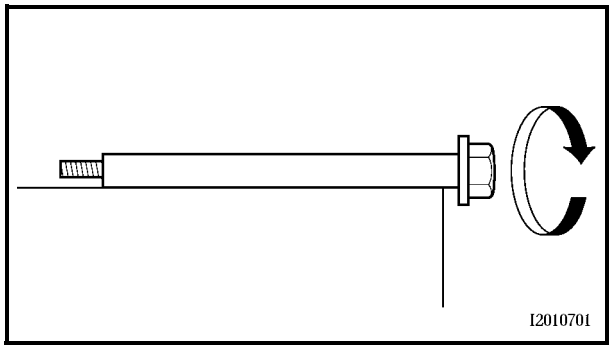

| Order | Job/Part | Q'ty | Remarks |
|---|---|---|---|
| 8 | Front brake shoe plate | 1 | |
| 9 | Spacer | 1 | |
| | | | For installation, reverse the removal procedure. |




| Order | Job/Part | Q'ty | Remarks |
|---|---|---|---|
| | **Disassembling the front wheel** | | Remove the parts in the order listed. |
| ① | Oil seal | 1 | Refer to "CHECKING THE FRONT WHEEL". |
| ② | Wheel bearing (right) | 1 | |
| ③ | Spacer | 1 | |
| ④ | Collar | 1 | |
| ⑤ | Wheel bearing (left) | 1 | |
| ⑥ | Dust seal | 1 | |
| | | | For assembly, reverse the disassembly procedure. |




| Order | Job/Part | Q'ty | Remarks |
|---|---|---|---|
| | **Disassembling the front brake shoe plate** | | Remove the parts in the order listed. |
| ① | Brake shoe | 2 | |
| ② | Brake shoe spring (pin side) | 1 | |
| ③ | Brake shoe spring (brake camshaft side) | 1 | |
| ④ | Bushing | 1 | |
| ⑤ | Speedometer drive gear | 1 | |
| ⑥ | Brake camshaft lever | 1 | |
| ⑦ | Brake shoe wear indicator | 1 | |
| ⑧ | Spring | 1 | |
| ⑨ | Brake camshaft | 1 | |
| ⑩ | Oil seal | 1 | |
| ⑪ | O-ring | 1 | |
| | | | For assembly, reverse the disassembly procedure. |

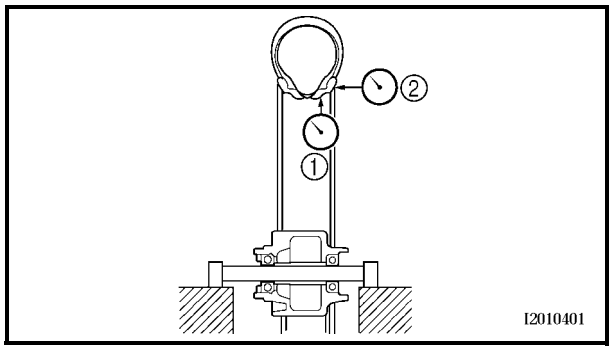



EAS00525
**CHECKING THE FRONT WHEEL**

1. Check:
   - wheel axle
     Roll the wheel axle on a flat surface.
     Bends → Replace.

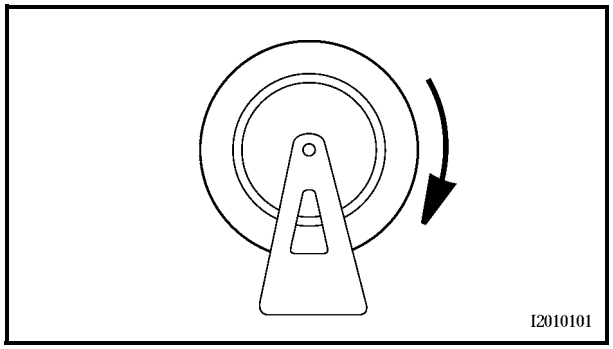
**⚠ WARNING**

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

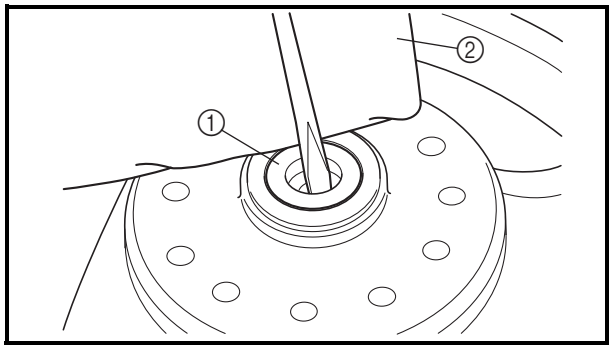


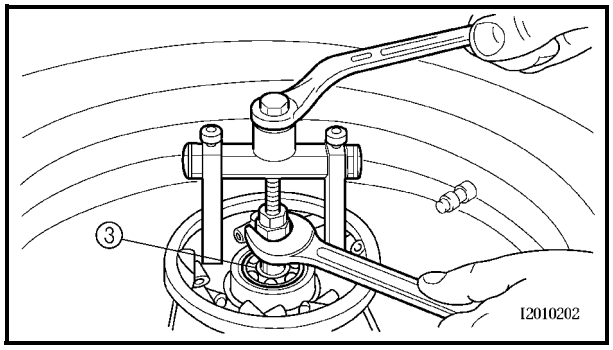

2. Check:
   - tire
   - front wheel
     Damage/wear → Replace.
     Refer to "CHECKING THE TIRES" and "CHECKING THE WHEELS" in chapter 3.
3. Measure:
   - radial wheel runout ①
   - lateral wheel runout ②
     Over the specified limits → Replace.

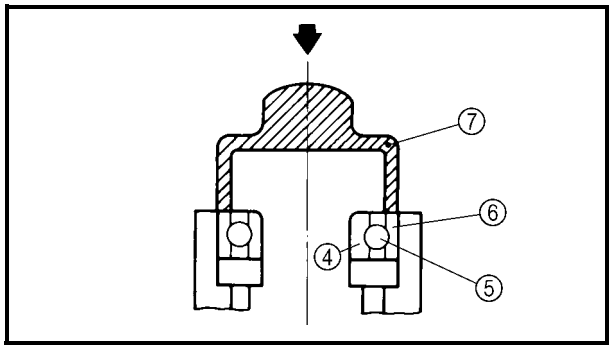
**Radial wheel runout limit**
**1.0 mm (0.04 in)**
**Lateral wheel runout limit**
**1.0 mm (0.04 in)**

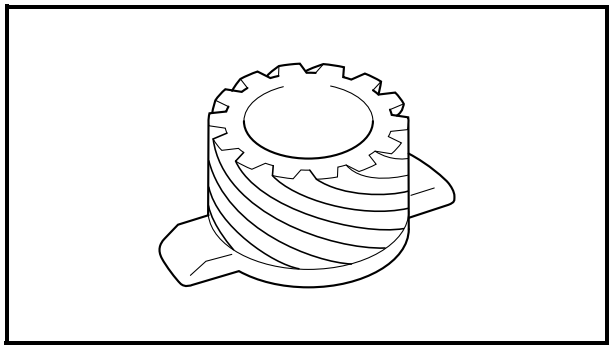



4. Check:
   - wheel bearings
     Front wheel turns roughly or is loose → Replace the wheel bearings.
   - oil seal
     Damage/wear → Replace.



5. Replace:
   - oil seal New
   - wheel bearings New

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a. Clean the outside of the front wheel hub.
b. Remove the oil seal ① with a flat-head screwdriver.

**NOTE:**

To prevent damaging the wheel, place a rag ② between the screwdriver and the wheel surface.

c. Remove the wheel bearings ③ with a general bearing puller.
d. Install the new wheel bearings and oil seal in the reverse order of disassembly.

**CAUTION:**

**Do not contact the wheel bearing inner race ④ or balls ⑤. Contact should be made only with the outer race ⑥.**

**NOTE:**

Use a socket ⑦ that matches the diameter of the wheel bearing outer race and oil seal.

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EAS00535

### CHECKING THE SPEEDOMETER GEAR UNIT

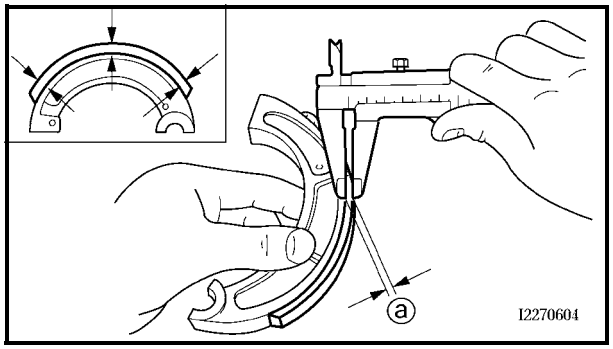
1. Check:
   - speedometer drive gear
     Damage/wear → Replace.

EAS00536
## CHECKING THE BRAKE

The following procedure applies to all of the brake shoes.

1. Check:
   - brake shoe lining
     Glazed areas → Repair.
     Sand the glazed areas with course sandpaper.

**NOTE:**
After sanding the glazed areas, clean the brake shoe with a cloth.

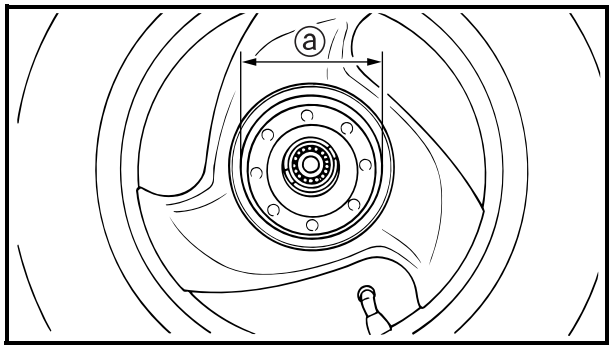



2. Measure:
   - brake shoe lining thickness ⓐ
     Out of specification → Replace.

**Brake shoe lining thickness limit (minimum)**
**2 mm (0.08 in)**

**⚠ WARNING**
**Do not allow oil or grease to contact the brake shoes.**

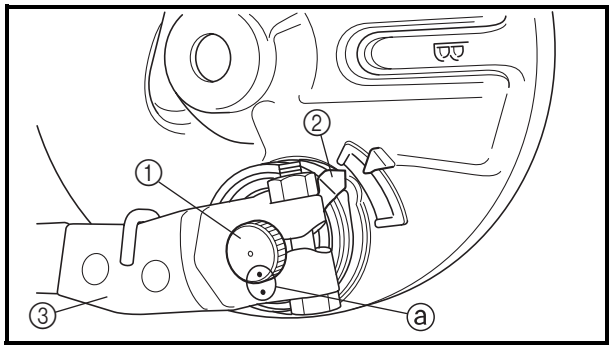
**NOTE:**
Replace the brake shoes as a set, if either is worn to the wear limit.




3. Measure:
   - brake drum inside diameter ⓐ
     Out of specification → Replace the wheel.

**Brake drum inside diameter limit (maximum)**
**110.5 mm (4.35 in)**

4. Check:
   - brake drum inner surface
     Oil deposits → Clean.
     Remove the oil with a rag soaked in lacquer thinner or solvent.
     Scratches → Repair.
     Lightly and evenly polish the scratches with an emery cloth.
5. Check:
   - brake camshaft
     Damage/wear → Replace.




EAS00537
### ASSEMBLING THE BRAKE SHOE PLATE

1. Install:
   - brake camshaft ①
   - spring
   - brake shoe wear indicator ②
   - brake camshaft lever ③

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a. Align the projection on the brake shoe wear indicator with the notch in the brake camshaft.
b. Install the brake camshaft so its punch mark ⓐ is positioned as shown.
c. Check that the brake shoes are properly positioned.

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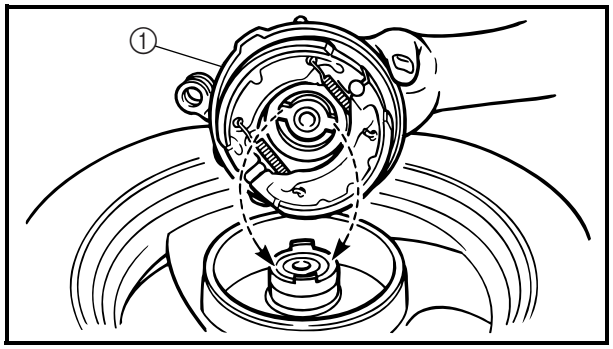
2. Install:
   - speedometer drive gear
   - bushing

EAS00540
### INSTALLING THE FRONT WHEEL

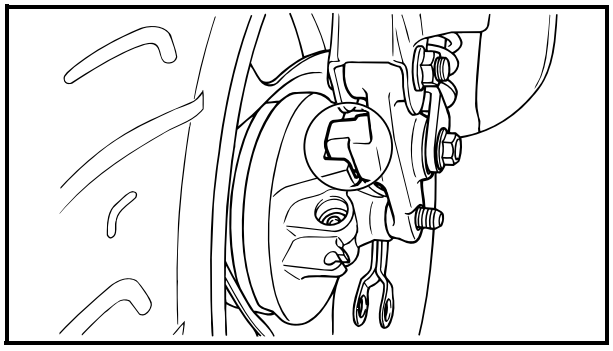
1. Lubricate:
   - wheel axle
   - wheel bearings
   - oil seal lips
   - speedometer drive gear

| | |
|---|---|
| | **Recommended lubricant**<br>**Lithium soap base grease** |




2. Install:
   - brake shoe plate ①

   Align the tabs on the wheel hub with the slit between the speedometer drive gear and the bushing.
3. Install:
   - collar



4. Install:
   - front wheel

**NOTE:**

Make sure the slot in the brake shoe plate fits over the stopper on the outer tube.

5. Tighten:
   • wheel axle nut

**48 Nm (4.8 m · kg, 35 ft · lb)**

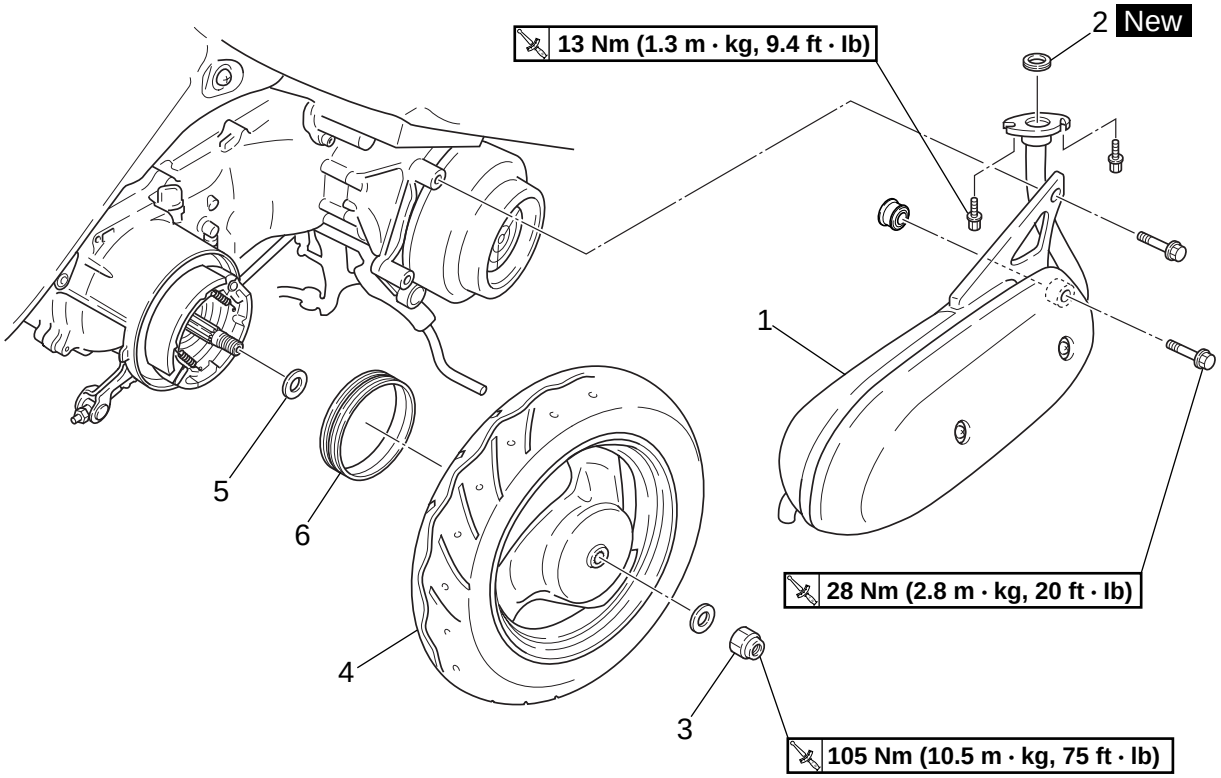
**⚠ WARNING**

**Make sure the brake cable is routed properly.**

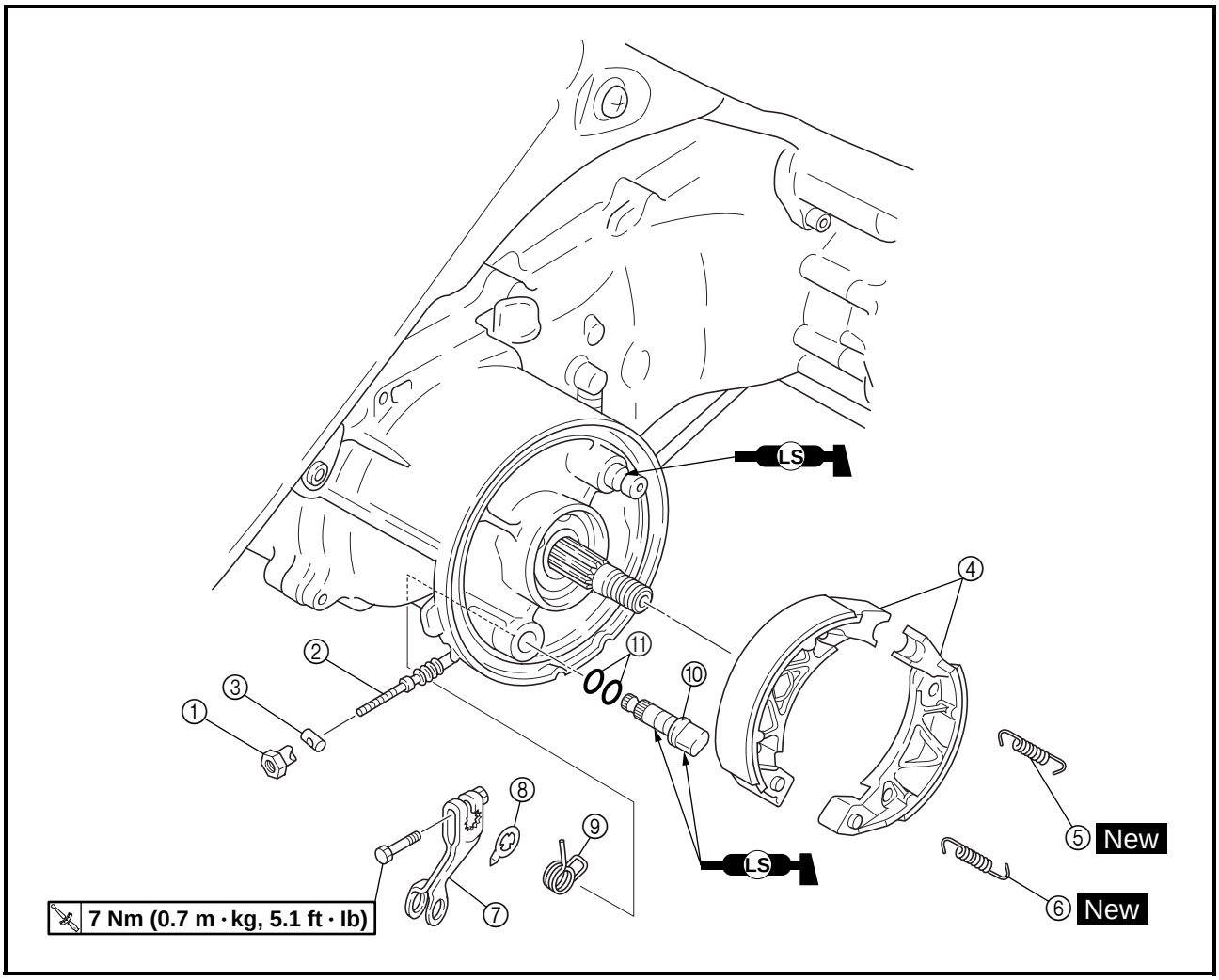
**CAUTION:**

**Before tightening the wheel axle nut, push down hard on the handlebar several times and check if the front fork rebounds smoothly.**

EAS00551
# REAR WHEEL AND BRAKE




| Order | Job/Part | Q'ty | Remarks |
|---|---|---|---|
| | **Removing the rear wheel and brake** | | Remove the parts in the order listed.<br>**NOTE:**<br>Place the scooter on a suitable stand so that the rear wheel is elevated. |
| 1 | Muffler | 1 | |
| 2 | Gasket | 1 | |
| 3 | Axle nut | 1 | |
| 4 | Rear wheel assembly | 1 | |
| 5 | Washer | 1 | |
| 6 | Dust seal | 1 | |
| | | | For installation, reverse the removal procedure. |




| Order | Job/Part | Q'ty | Remarks |
|---|---|---|---|
| | **Removing the rear brake shoe plate** | | Remove the parts in the order listed. |
| ① | Adjusting nut | 1 | |
| ② | Rear brake cable | 1 | |
| ③ | Pin | 1 | |
| ④ | Brake shoe | 2 | |
| ⑤ | Brake shoe spring (pin side) | 1 | |
| ⑥ | Brake shoe spring (brake camshaft side) | 1 | |
| ⑦ | Brake camshaft lever | 1 | |
| ⑧ | Brake shoe wear indicator | 1 | |
| ⑨ | Spring | 1 | |
| ⑩ | Brake camshaft | 1 | |
| ⑪ | O-ring | 2 | |
| | | | For installation, reverse the removal procedure. |

EAS00565
## CHECKING THE REAR WHEEL

1. Check:
   - rear wheel
     Refer to “CHECKING THE FRONT WHEEL”.
2. Check:
   - tire
   - rear wheel
     Damage/wear → Replace.
     Refer to “CHECKING THE TIRES” and “CHECKING THE WHEELS” in chapter 3.
3. Measure:
   - radial wheel runout
   - lateral wheel runout
     Refer to “CHECKING THE FRONT WHEEL”.

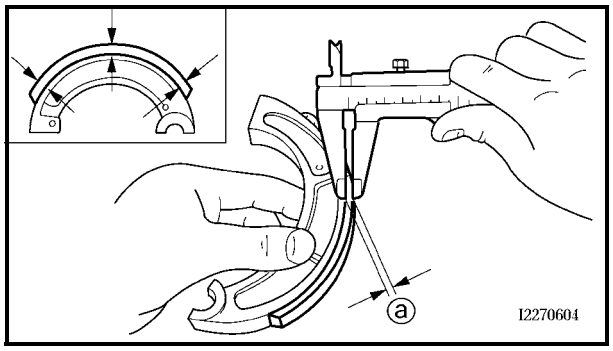
EAS00569
## CHECKING THE BRAKE

The following procedure applies to all of the brake shoes.

1. Check:
   - brake shoe lining
     Glazed areas → Repair.
     Sand the glazed areas with course sandpaper.

**NOTE:**

After sanding the glazed areas, clean the brake shoe with a cloth.




2. Measure:
   - brake shoe lining thickness ⓐ
     Out of specification → Replace.

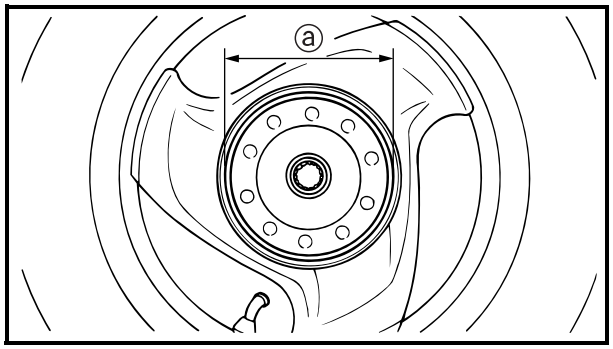
**Brake shoe lining thickness limit (minimum)**
**2 mm (0.08 in)**

**⚠ WARNING**

**Do not allow oil or grease to contact the brake shoes.**

**NOTE:**

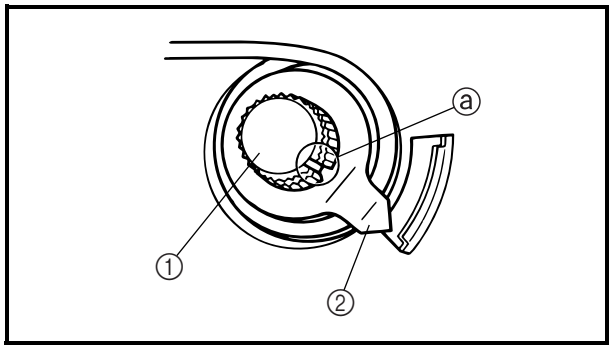
Replace the brake shoes as a set, if either is worn to the wear limit.




3. Measure:
   • brake drum inside diameter ⓐ
   Out of specification → Replace the wheel.

**Brake drum inside diameter limit (maximum)**
**110.5 mm (4.35 in)**

4. Check:
   • brake drum inner surface
   Oil deposits → Clean.
   Remove the oil with a rag soaked in lacquer thinner or solvent.
   Scratches → Repair.
   Lightly and evenly polish the scratches with an emery cloth.
5. Check:
   • brake camshaft
   Damage/wear → Replace.




EAS00570
### INSTALLING THE BRAKE SHOE PLATE

1. Install:
   • brake camshaft ①
   • spring
   • brake shoe wear indicator ②

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a. Align the projection ⓐ on the brake shoe wear indicator with the notch in the brake shoe camshaft.
b. Install the brake camshaft so its punch mark is positioned as shown.
c. Check that the brake shoes are properly positioned.

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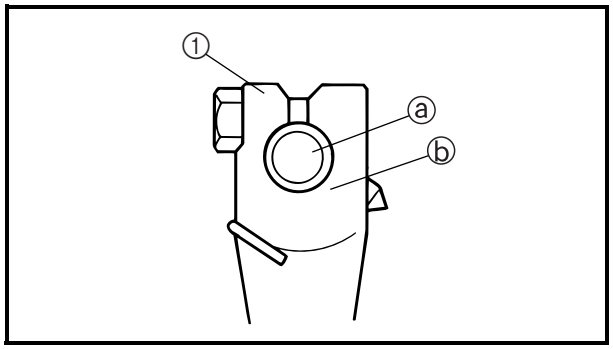



EAS00573
**INSTALLING THE BRAKE SHOES**

1. Install:
   • brake camshaft lever ①

**NOTE:**

• Align the punch mark ⓐ in the brake camshaft with the mark ⓑ on the brake camshaft lever.
• Lubricate the brake camshaft and pin with lithium soap base grease.

**⚠ WARNING**

**After installing the rear brake camshaft, remove any excess grease.**

2. Install:
   • brake shoes

**NOTE:**

Do not to damage the springs during installation.

**INSTALLING THE REAR WHEEL**

1. Tighten:
   • wheel axle nut

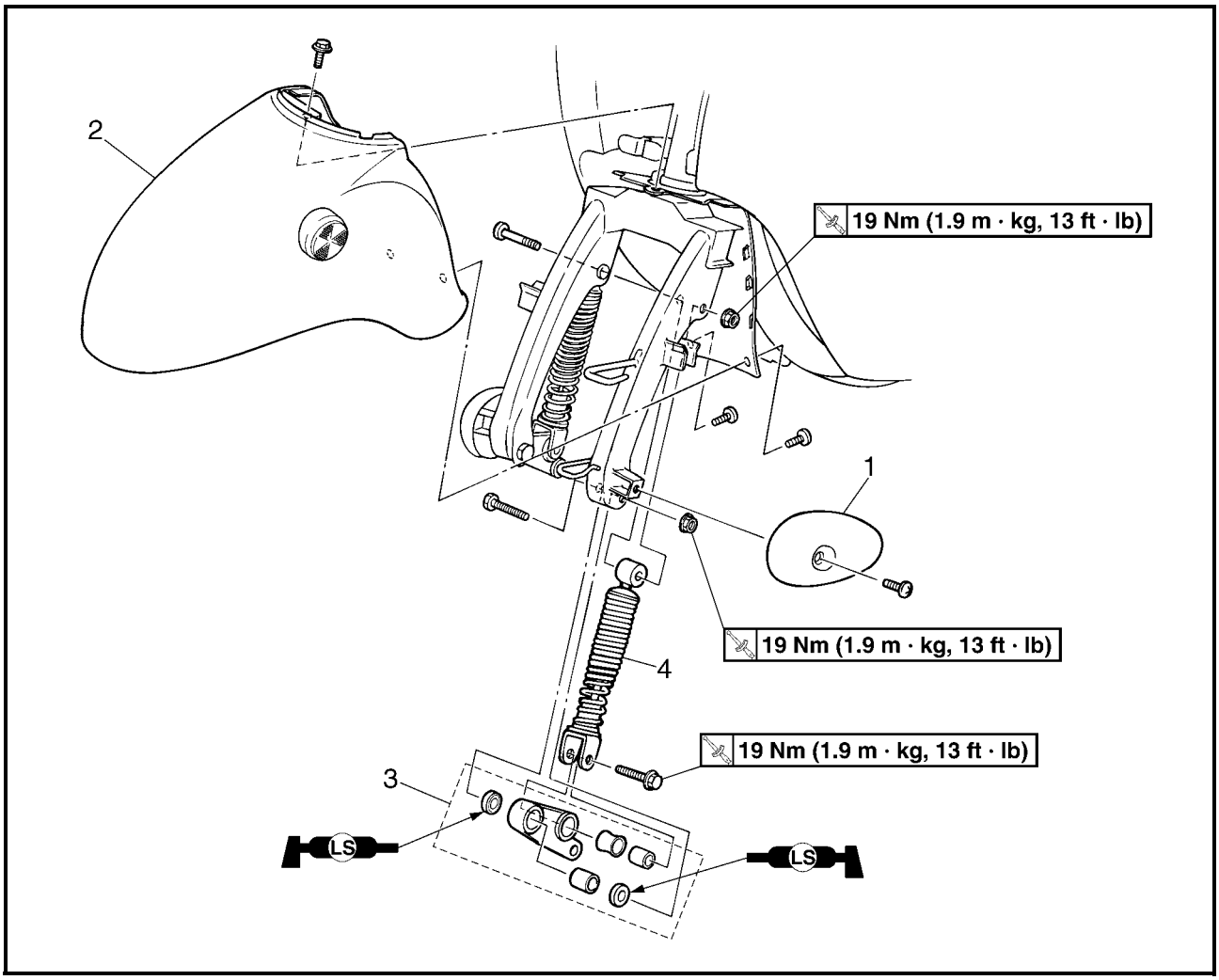
**105 Nm (10.5 m · kg, 75 ft · lb)**

**CAUTION:**

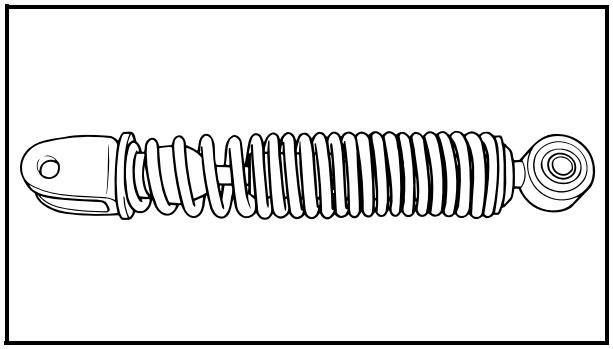
**Do not loosen the wheel axle nut after tightening it to the specified torque.**

2. Install:
   • rear brake cable
   • adjuster
3. Adjust:
   • brake lever free play
   Refer to “ADJUSTING THE REAR BRAKE” in chapter 3.

EAS00647
# FRONT SHOCK ABSORBER ASSEMBLIES



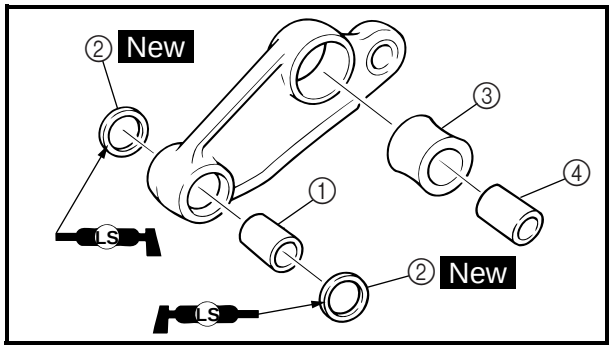

| Order | Job/Part | Q'ty | Remarks |
|---|---|---|---|
| | **Removing the front shock absorber assemblies** | | Remove the parts in the order listed.<br><br>The following procedure applies to both of the front shock absorbers. |
| | Front panel | | Refer to "FRONT PANEL AND LEG SHIELD" in chapter 3. |
| | Front wheel | | Refer to "FRONT WHEEL AND BRAKE". |
| 1 | Relay arm cover | 2 | |
| 2 | Front fender | 1 | |
| 3 | Relay arm assembly | 2 | |
| 4 | Front shock absorber assembly (left/right) | 2 | |
| | | | For installation, reverse the removal procedure. |



### CHECKING THE FRONT SHOCK ABSORBER ASSEMBLIES

The following procedure applies to both front shock absorber assemblies.

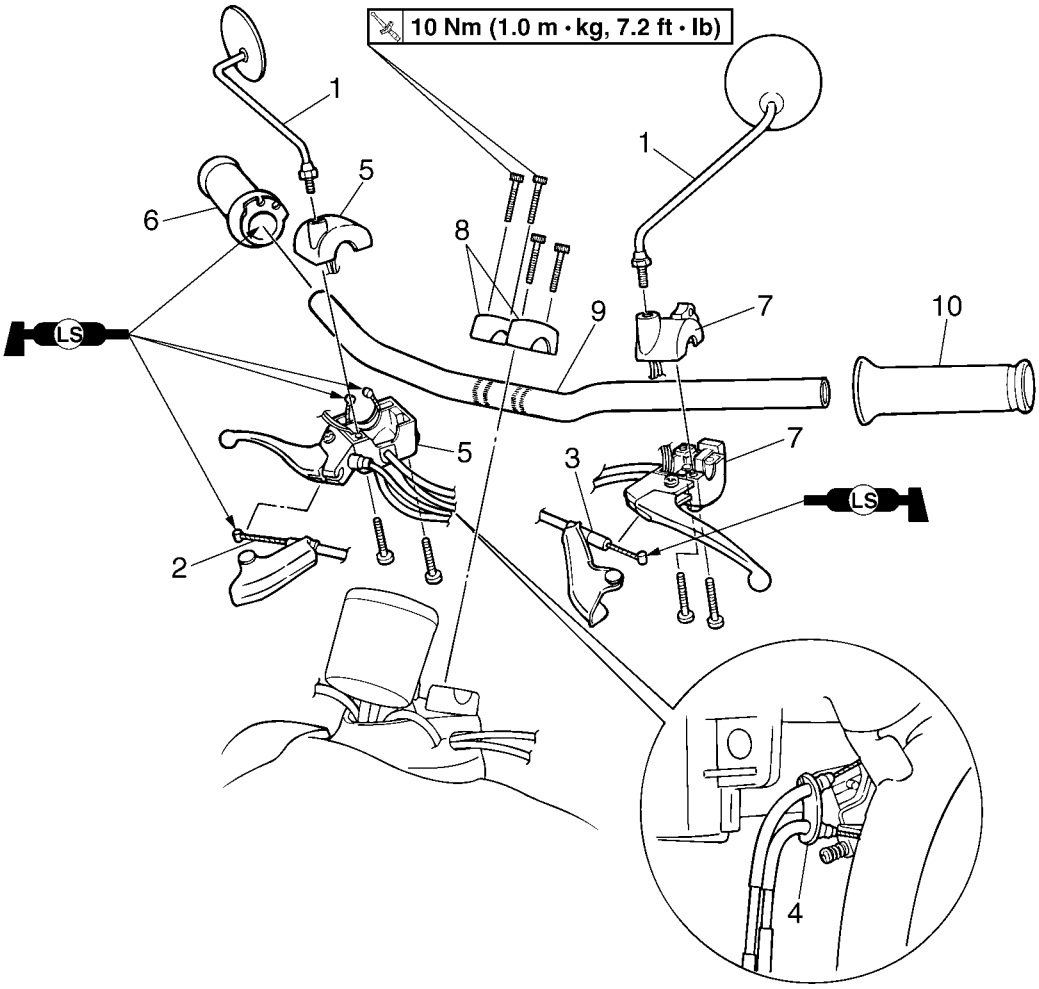
1. Check:
   - front shock absorber rod
     Bends/damage → Replace the front shock absorber assembly.
   - front shock absorber
     Oil leaks → Replace the front shock absorber assembly.
   - spring
     Damage/wear → Replace the front shock absorber assembly.
   - bolt
     Bends/damage/wear → Replace.



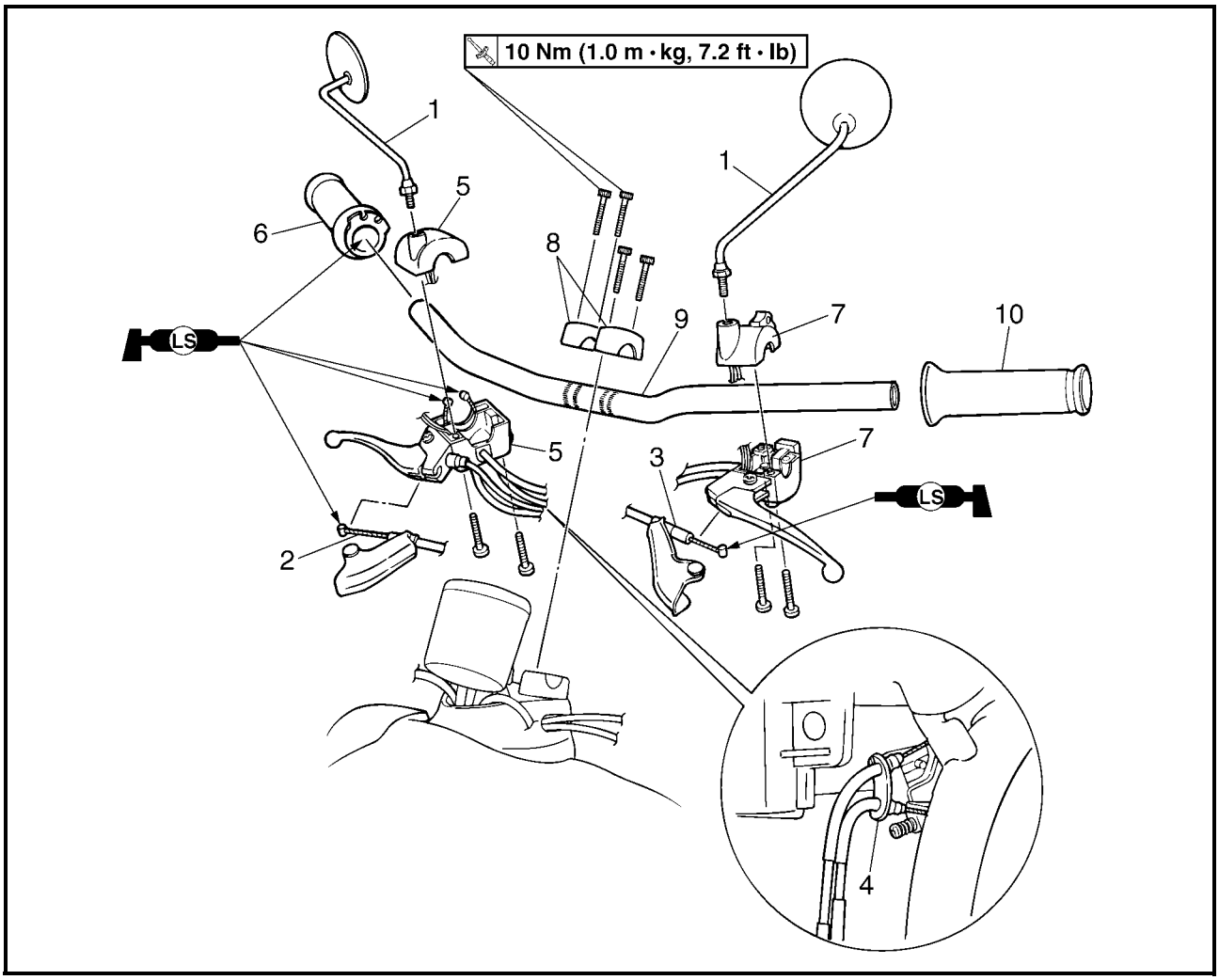

### INSTALLING THE RELAY ARM

1. Install:
   - metal spacer ①
   - oil seal ② New
   - bushing ③
   - spacer ④

EAS00664
# HANDLEBAR




| Order | Job/Part | Q'ty | Remarks |
|---|---|---|---|
| | **Removing the handlebar switches and handlebar grips** | | Remove the parts in the order listed. |
| | Center cover | | Refer to "SIDE COVERS AND FOOT-REST BOARD" in chapter 3. |
| 1 | Rear view mirror (left/right) | 2 | |
| 2 | Front brake cable | 1 | |
| 3 | Rear brake cable | 1 | |
| 4 | Throttle cable holder | 1 | Loosen. |
| 5 | Right handlebar switch | 1 | |
| 6 | Throttle grip | 1 | |



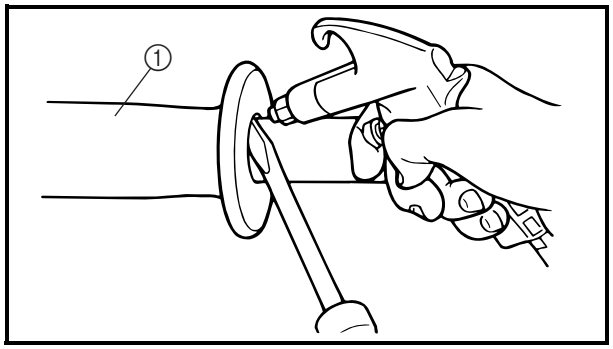

| Order | Job/Part | Q'ty | Remarks |
|---|---|---|---|
| 7 | Left handlebar switch | 1 | Refer to "INSTALLING THE HANDLEBAR". |
| 8 | Upper handlebar holder | 2 | |
| 9 | Handlebar | 1 | |
| 10 | Handlebar grip | 1 | Refer to "REMOVING THE HANDLEBAR". For installation, reverse the removal procedure. |

EAS00666
## REMOVING THE HANDLEBAR

1. Stand the scooter on a level surface.

**⚠ WARNING**

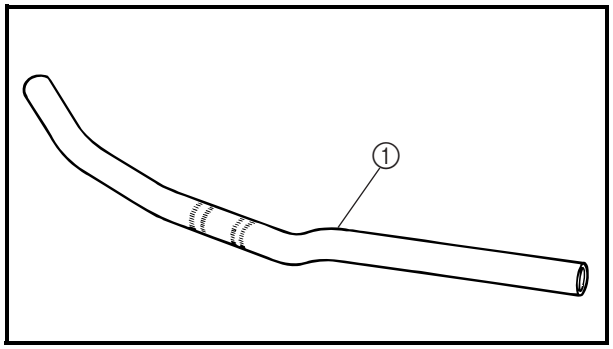
**Securely support the scooter so that there is no danger of it falling over.**




2. Remove:
   - handlebar grip ①

**NOTE:**

Blow compressed air between the handlebar and the handlebar grip, and gradually push the grip off the handlebar.




EAS00668
## CHECKING THE HANDLEBAR

1. Stand the scooter on a level surface.

**⚠ WARNING**

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

2. Check:
   - handlebar ①
     Bends/cracks/damage → Replace.

**⚠ WARNING**

**Do not attempt to straighten a bent handlebar as this may dangerously weaken it.**

3. Install:
   - handlebar grip

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a. Apply a thin coat of rubber adhesive onto the left end of the handlebar.
b. Slide the handlebar grip over the left end of the handlebar.
c. Wipe off any excess rubber adhesive with a clean rag.

**⚠ WARNING**

**Do not touch the handlebar grip until the rubber adhesive has fully dried.**

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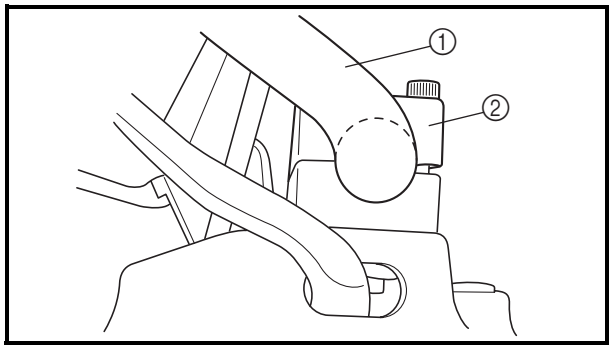
EAS00671
## INSTALLING THE HANDLEBAR

1. Stand the scooter on a level surface.

**⚠ WARNING**

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

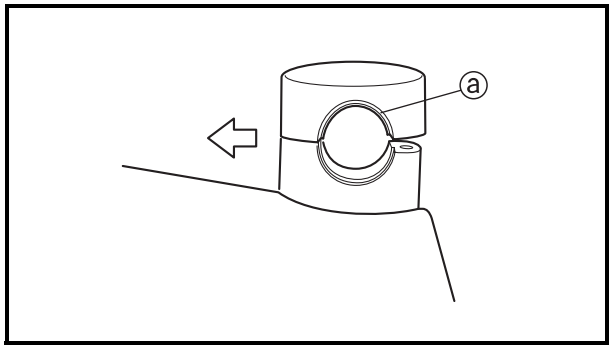



2. Install:
   - handlebar ①
   - upper handlebar holders ②

**10 Nm (1.0 m · kg, 7.2 ft · lb)**

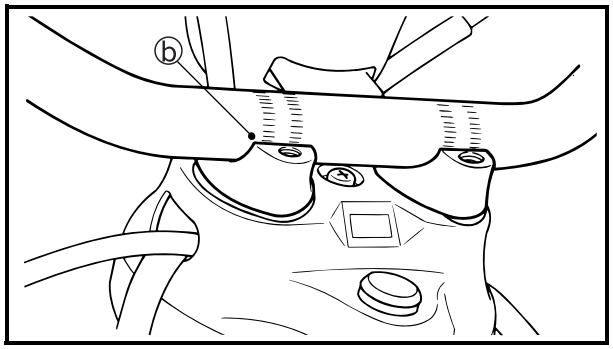
**CAUTION:**

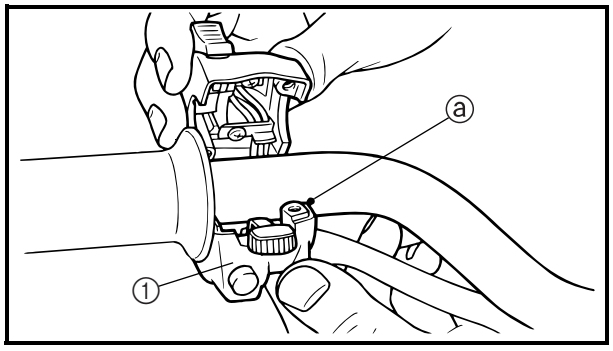
- **First, tighten the bolts on the front side of the handlebar holder, and then on the rear side.**




**NOTE:**

- Install the upper handlebar holders with the grooves ⓐ facing inward.
- Align the match marks ⓑ on the handlebar with the upper surface of the lower handlebar holder.




3. Install:
   - left handlebar switch ①

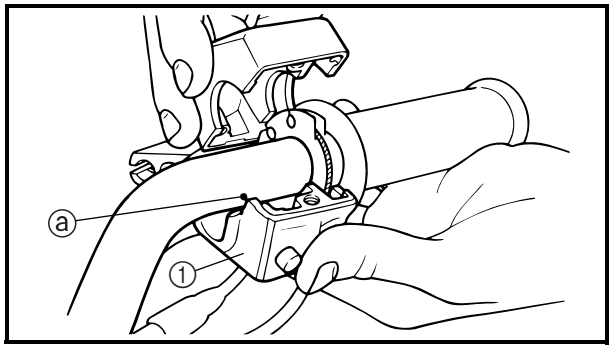
**NOTE:**

Align the mating surfaces of the left handlebar switch with the punch mark ⓐ on the handlebar.

4. Install:
   - throttle grip
   - throttle cable

**NOTE:**
Lubricate the inside of the throttle grip with a thin coat of lithium soap base grease and install it onto the handlebar.

5. Install:
   - right handlebar switch ①




**⚠ WARNING**

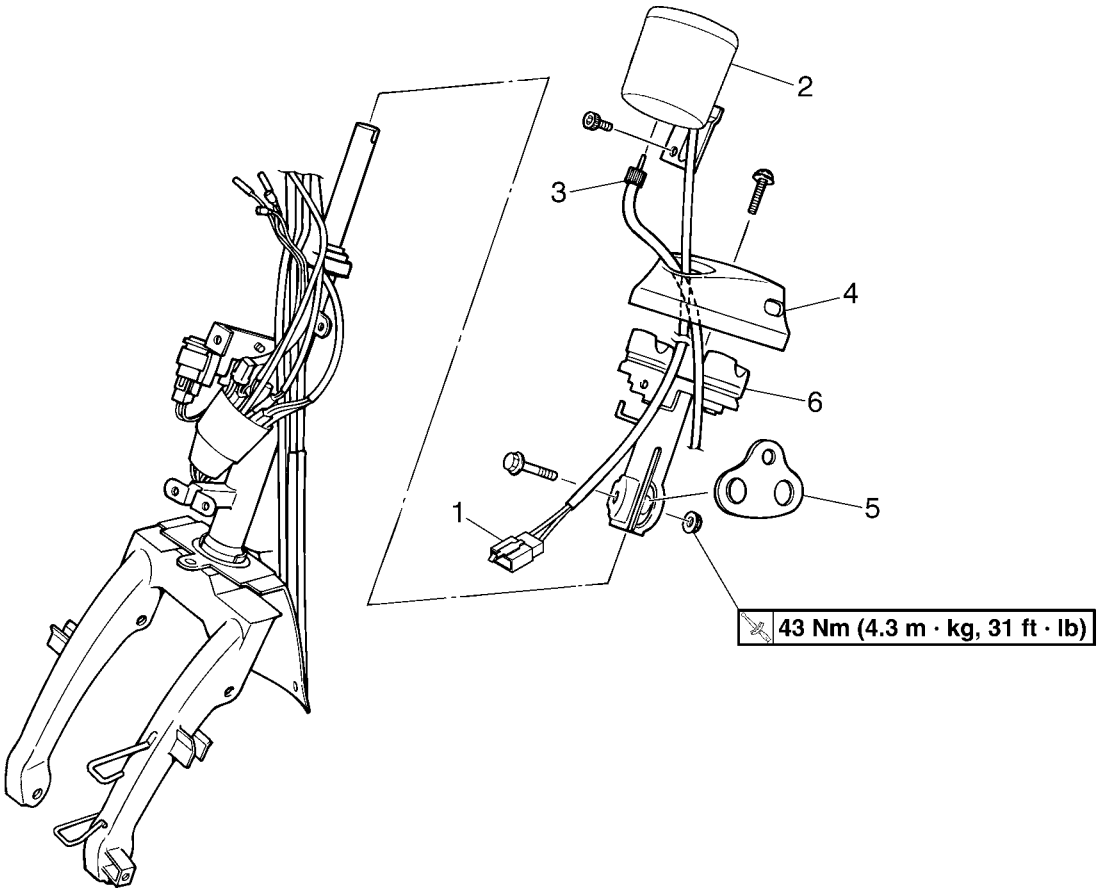
**Make sure the throttle grip operates smoothly.**

**NOTE:**
Align the mating surfaces of the right handlebar switch with the punch mark ⓐ on the handlebar.

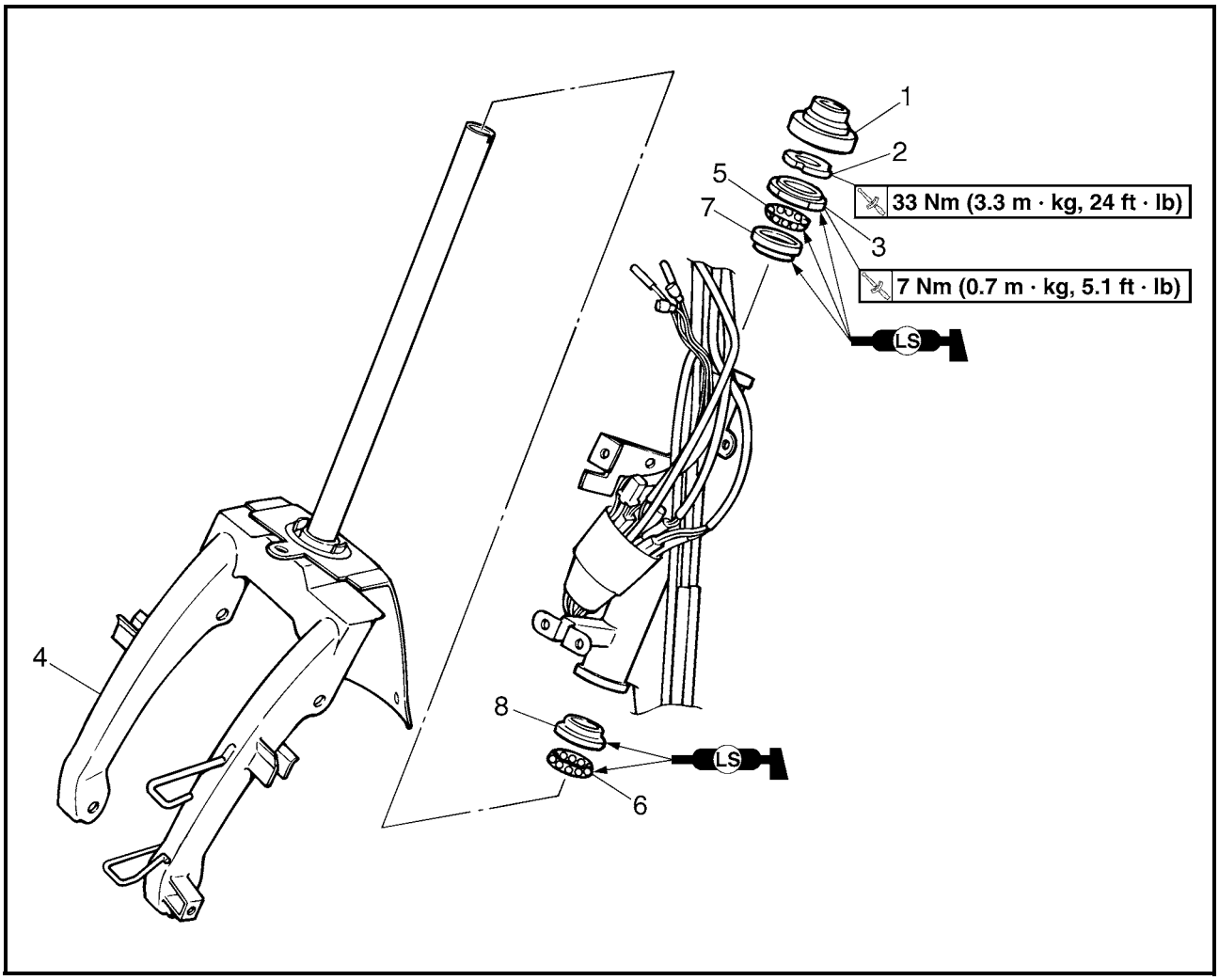
6. Adjust:
   - throttle cable free play
     Refer to "ADJUSTING THE THROTTLE CABLE FREE PLAY" in chapter 3.

**Throttle cable free play**
**(at the flange of the throttle grip)**
**1.5 ~ 3.5 mm (0.06 ~ 0.14 in)**

# STEERING HEAD




| Order | Job/Part | Q'ty | Remarks |
|---|---|---|---|
| | **Removing the lower handlebar holder** | | Remove the parts in the order listed. |
| | Footrest board | | Refer to "SIDE COVERS AND FOOT-REST BOARD" in chapter 3. |
| | Front panel/leg shield | | Refer to "FRONT PANEL AND LEG SHIELD" in chapter 3. |
| | Front shock absorber assemblies | | Refer to "FRONT SHOCK ABSORBER ASSEMBLIES". |
| | Handlebar | | Refer to "HANDLEBAR". |
| 1 | Meter light lead coupler | 1 | Disconnect. |
| 2 | Speedometer assembly | 1 | |
| 3 | Speedometer cable | 1 | |
| 4 | Lower handlebar holder cover | 1 | |
| 5 | Rubber cover | 1 | |
| 6 | Lower handlebar holder bracket | 1 | For installation, reverse the removal procedure. |



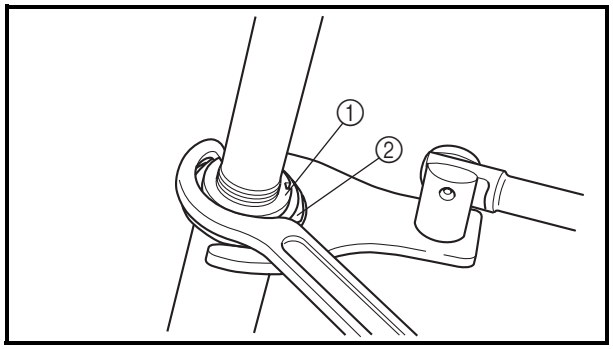

| Order | Job/Part | Q'ty | Remarks |
|---|---|---|---|
| | **Removing the fork** | | Remove the parts in the order listed. |
| 1 | Cover | 1 | |
| 2 | Upper steering stem ring nut | 1 | |
| 3 | Upper race | 1 | |
| 4 | Fork | 1 | |
| 5 | Upper bearing | 1 | |
| 6 | Lower bearing | 1 | |
| 7 | Upper bearing outer race | 1 | |
| 8 | Lower bearing outer race | 1 | |
| | | | For installation, reverse the removal procedure. |

EAS00680
### REMOVING THE FORK

1. Stand the scooter on a level surface.

**⚠ WARNING**

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




2. Remove:
   - upper steering stem ring nut ①
   - upper race ②

**NOTE:**

Hold the upper race with the steering nut wrench (45 mm), and then remove the upper steering stem ring nut with the steering nut wrench.

**Steering nut wrench**
**YU-33975**
**Steering nut wrench (45 mm)**
**YU-01444**

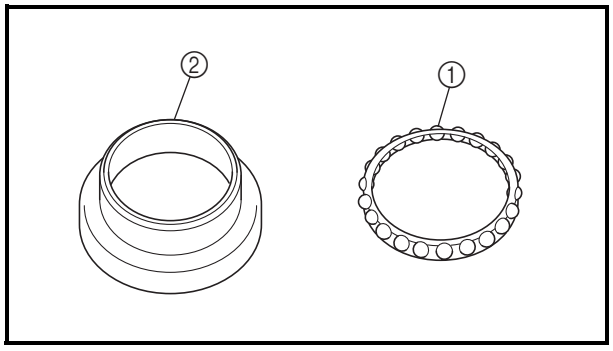
**⚠ WARNING**

**Securely support the lower bracket so that there is no danger of it falling.**

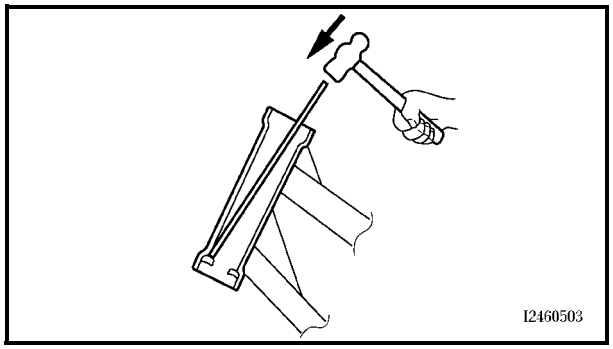
EAS00681
### CHECKING THE STEERING HEAD

1. Wash:
   - bearings
   - bearing races

**Recommended cleaning solvent**
**Kerosene**




2. Check:
   - bearings ①
   - bearing races ②
     Damage/pitting → Replace.




3. Replace:
   - bearings
   - bearing races

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a. Remove the bearing races from the steering head pipe with a long rod ① and hammer.
b. Install new bearing races.

**CAUTION:**

**If the bearing race is not installed properly, the steering head pipe could be damaged.**

**NOTE:**

- Always replace the bearings and bearing races as a set.
- Whenever the steering head is disassembled, replace the rubber seal.

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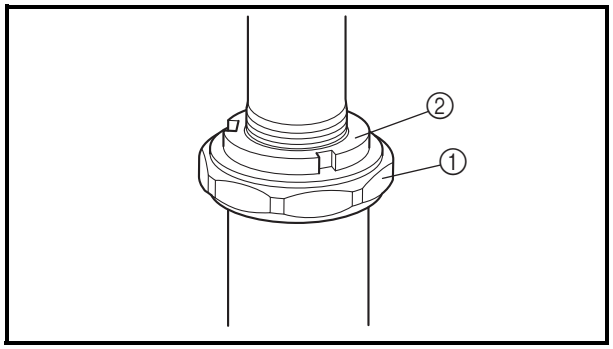
4. Check:
   - upper bracket
   - lower bracket
     (along with the steering stem)
     Bends/cracks/damage → Replace.

4

EAS00684
## INSTALLING THE STEERING HEAD

1. Lubricate:
   - upper bearing
   - lower bearing
   - bearing races

| | |
|---|---|
| | **Recommended lubricant**<br>**Lithium soap base grease** |



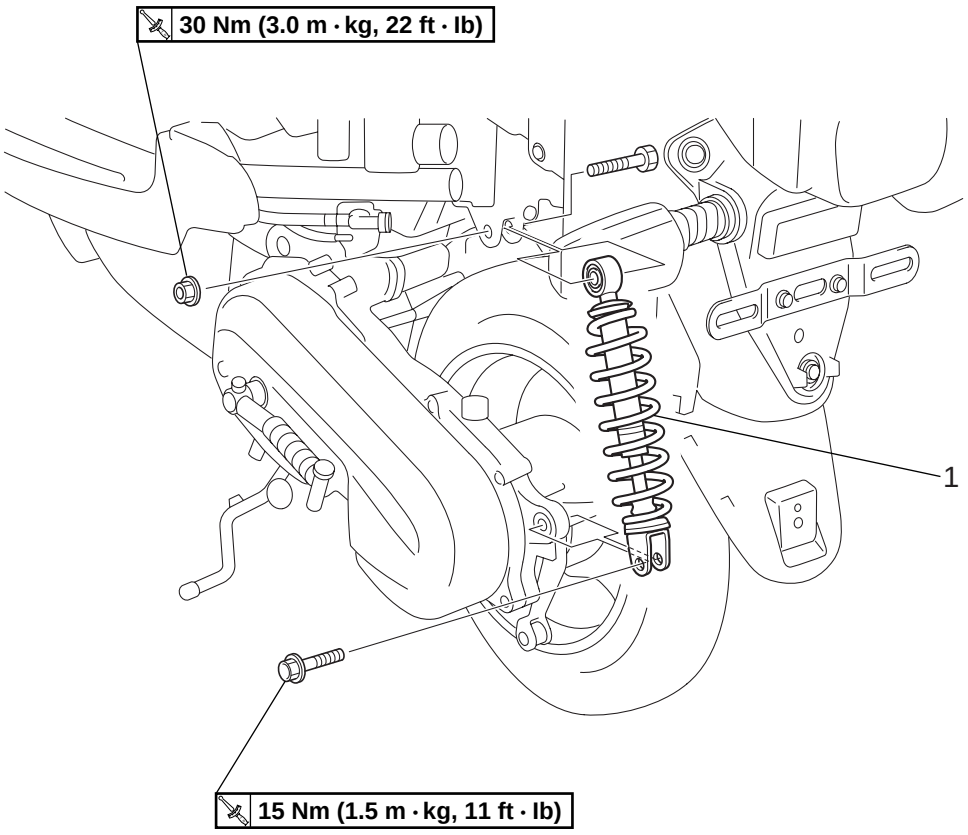

2. Install:
   - upper race ①

     **7 Nm (0.7 m · kg, 5.1 ft · lb)**
   - upper steering stem ring nut ②

     **33 Nm (3.3 m · kg, 24 ft · lb)**

     Refer to “CHECKING AND ADJUSTING THE STEERING HEAD” in chapter 3.

EAS00685
# REAR SHOCK ABSORBER ASSEMBLY




| Order | Job/Part | Q'ty | Remarks |
|---|---|---|---|
| | **Removing the rear shock absorber assembly** | | Remove the parts in the order listed. |
| | Side cover (left) | | Refer to "SIDE COVERS AND FOOT-REST BOARD" in chapter 3. |
| 1 | Rear shock absorber assembly | 1 | For installation, reverse the removal procedure. |

EAS00692
### REMOVING THE REAR SHOCK ABSORBER ASSEMBLY

1. Stand the scooter on a level surface.

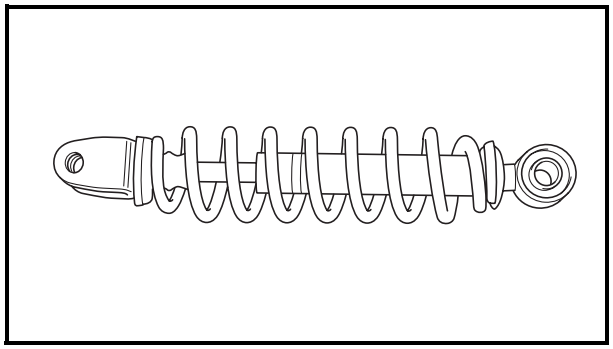
**⚠ WARNING**

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

**NOTE:**

Place the scooter on a suitable stand so that the rear wheel is elevated.

2. Remove:
   - rear shock absorber assembly



EAS00695
### CHECKING THE REAR SHOCK ABSORBER ASSEMBLY

1. Check:
   - rear shock absorber rod
     Bends/damage → Replace the rear shock absorber assembly.
   - rear shock absorber
     Oil leaks → Replace the rear shock absorber assembly.
   - spring
     Damage/wear → Replace the rear shock absorber assembly.
   - bolts
     Bends/damage/wear → Replace.

EAS00697
### INSTALLING THE REAR SHOCK ABSORBER ASSEMBLY

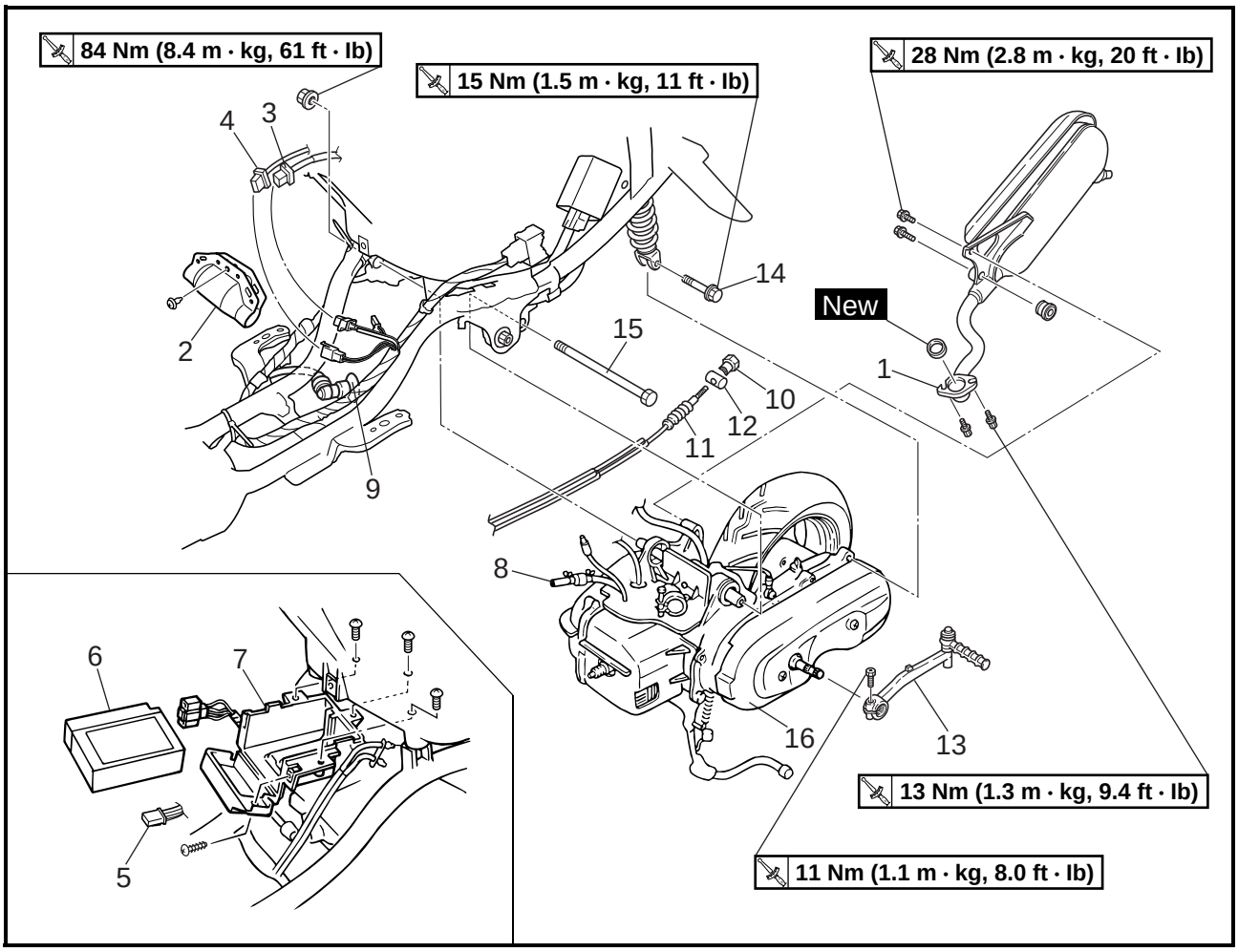
1. Install:
   - rear shock absorber assembly
   - rear shock absorber assembly upper nut
     **30 Nm (3.0 m · kg, 22 ft · lb)**
   - rear shock absorber assembly lower bolt
     **15 Nm (1.5 m · kg, 11 ft · lb)**

**NOTE:**

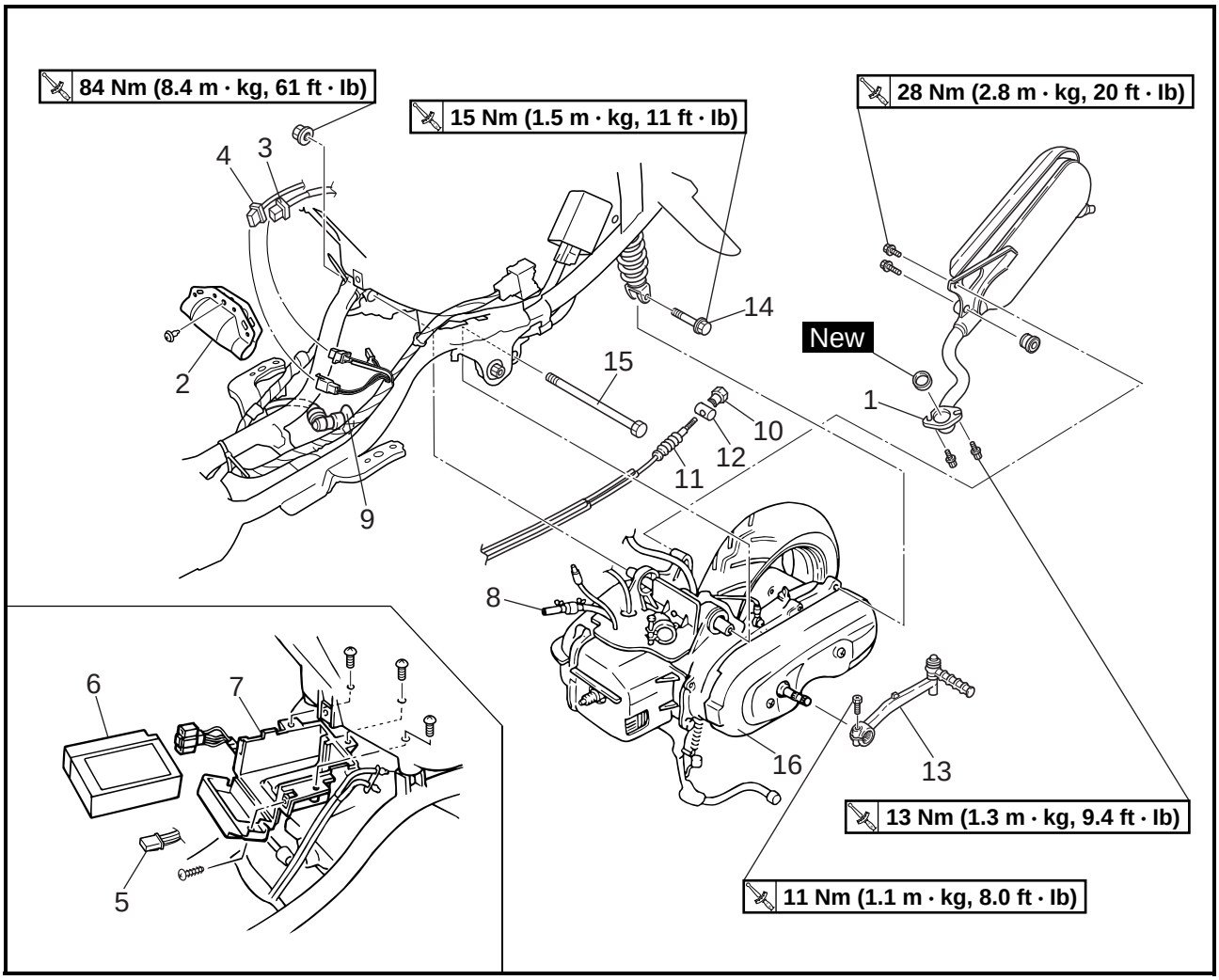
When installing the rear shock absorber assembly, lift up the crankcase.

# ENGINE

## ENGINE REMOVAL

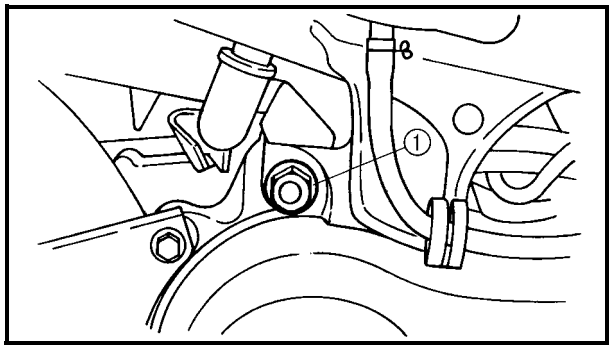


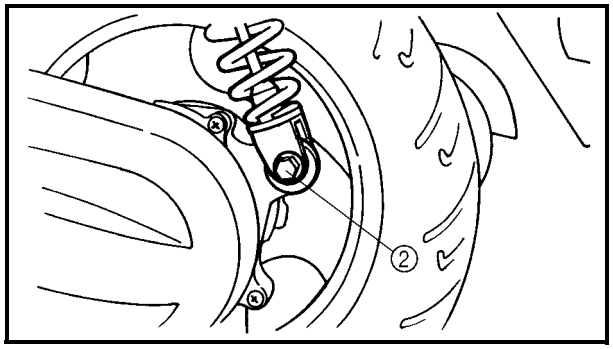

| Order | Job/Part | Q'ty | Remarks |
|---|---|---|---|
| | **Removing the engine** | | Remove the parts in the order listed. |
| | Center cover, side cover (left/right) and footrest board | | Refer to "SIDE COVERS AND FOOTREST BOARD" in chapter 3. |
| | Carburetor | | Refer to "CARBURETOR" in chapter 6. |
| 1 | Muffler | 1 | |
| 2 | Coupler cover | 1 | |
| 3 | Stator coil coupler | 1 | Disconnect. |
| 4 | Starter motor coupler | 1 | Disconnect. |
| 5 | Starter relay coupler | 1 | Disconnect. |
| 6 | Battery | 1 | |
| 7 | Battery box | 1 | |
| 8 | Oil hose | 1 | |
| 9 | Spark plug cap | 1 | |




| Order | Job/Part | Q'ty | Remarks |
|---|---|---|---|
| 10 | Adjusting nut | 1 | |
| 11 | Rear brake cable | 1 | |
| 12 | Pin | 1 | |
| 13 | Kickstarter crank | 1 | |
| 14 | Bolt (rear shock absorber-lower) | 1 | |
| 15 | Engine mounting bolt/nut | 1/1 | |
| 16 | Engine assembly | 1 | |
| | | | For installation, reverse the removal procedure. |

5




EAS00192
## INSTALLING THE ENGINE

1. Install:
   - engine mounting bolt/nut ①

     **84 Nm (8.4 m · kg, 61 ft · lb)**
   - bolt (rear shock absorber-lower) ②

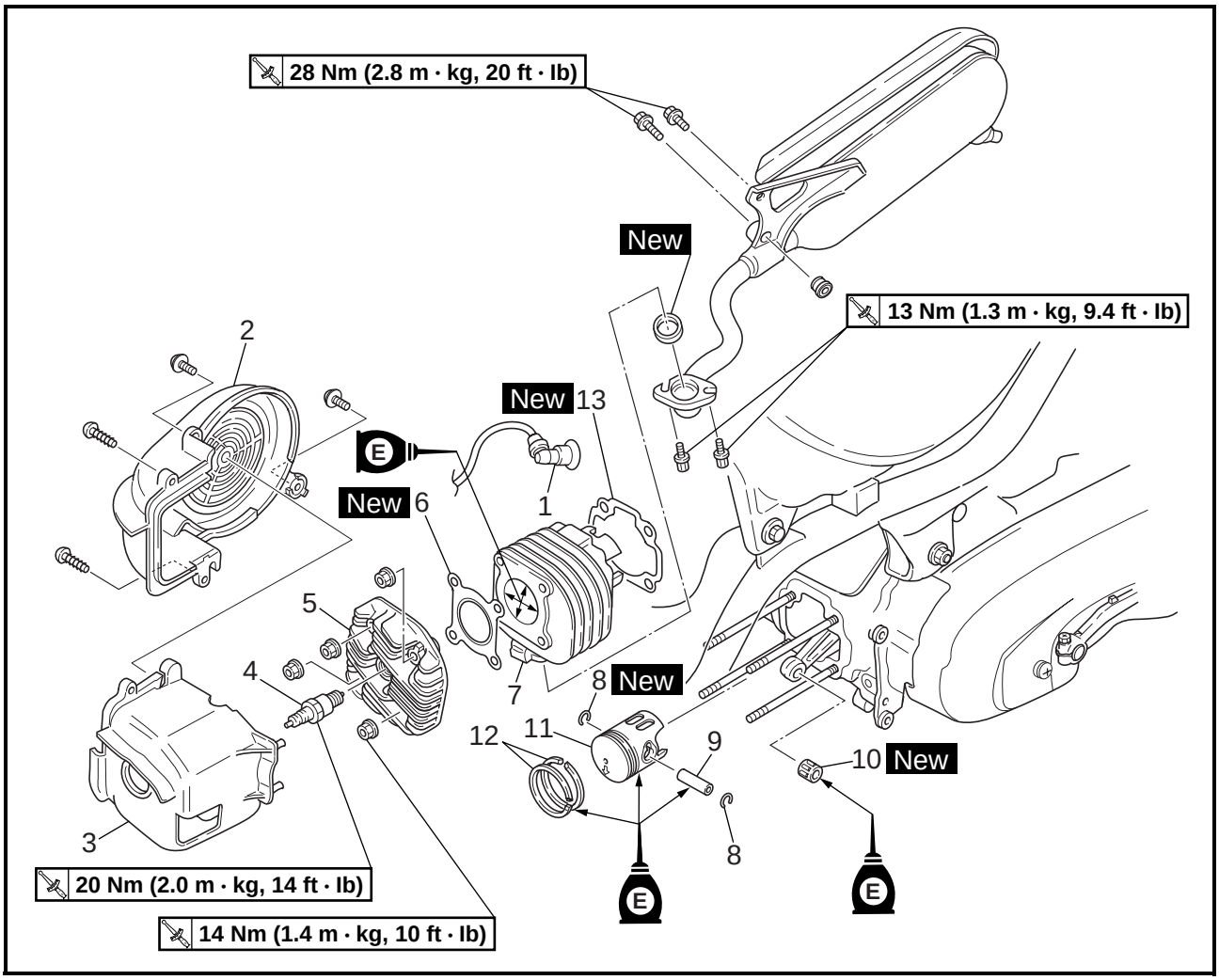
     **15 Nm (1.5 m · kg, 11 ft · lb)**
2. Install:
   - kickstarter crank

     **11 Nm (1.1 m · kg, 8.0 ft · lb)**
   - muffler
   - bolts

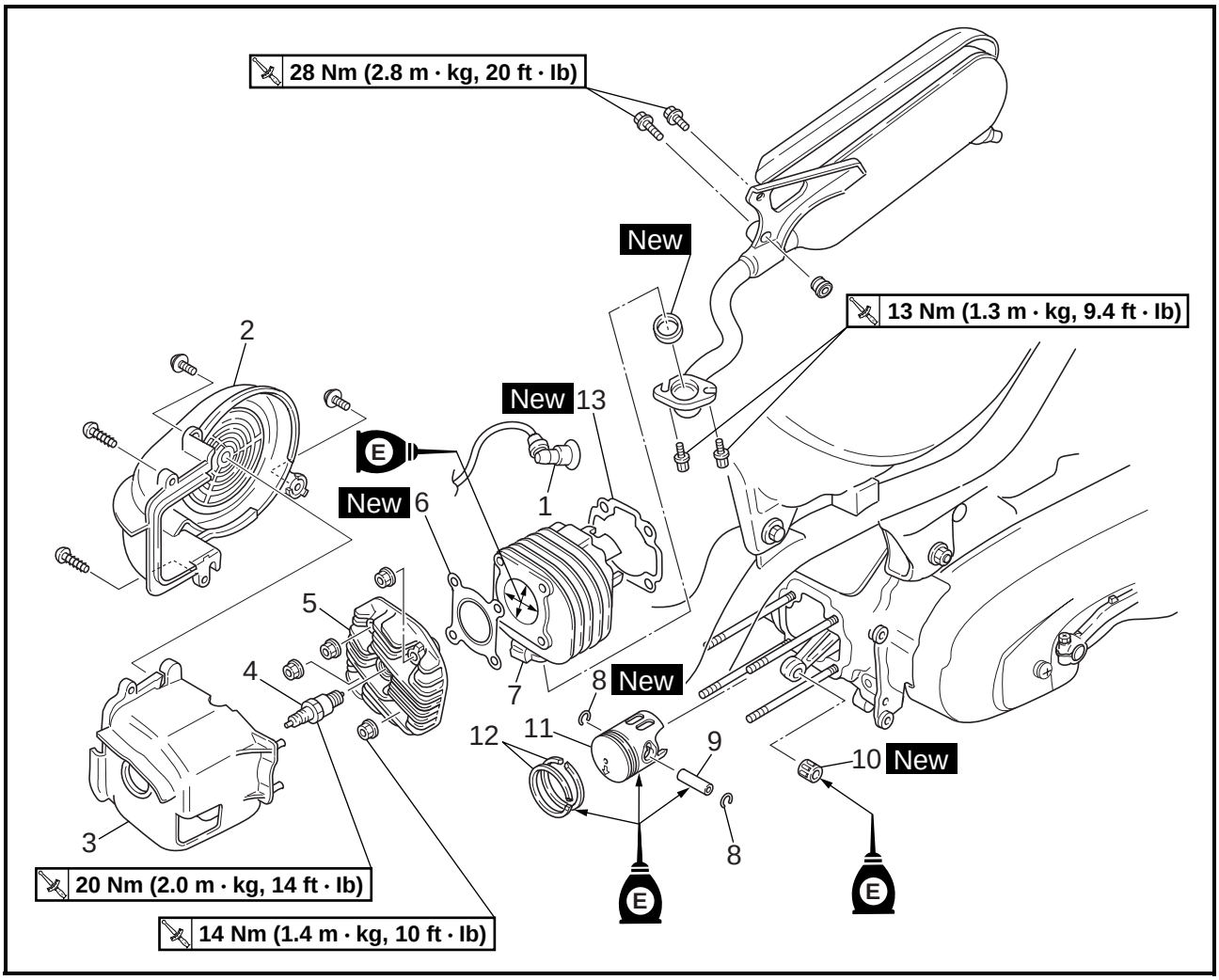
     **28 Nm (2.8 m · kg, 20 ft · lb)**
   - exhaust pipe bolts

     **13 Nm (1.3 m · kg, 9.4 ft · lb)**

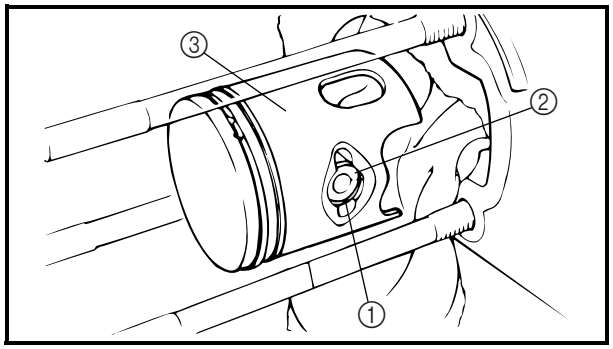
# CYLINDER HEAD, CYLINDER AND PISTON




| Order | Job/Part | Q'ty | Remarks |
|---|---|---|---|
| | **Removing the cylinder head, cylinder and piston** | | Remove the parts in the order listed. |
| | Center cover, side cover (left/right) and footrest board | | Refer to "SIDE COVERS AND FOOTREST BOARD" in chapter 3. |
| | Muffler/gasket | | Refer to "ENGINE REMOVAL". |
| 1 | Spark plug cap | 1 | |
| 2 | Air shroud | 2 | |
| 3 | Cylinder head cover | 1 | |
| 4 | Spark plug | 1 | |
| 5 | Cylinder head | 1 | |
| 6 | Cylinder head gasket | 1 | |
| 7 | Cylinder | 1 | |
| 8 | Piston pin clip | 2 | |
| 9 | Piston pin | 1 | |




| Order | Job/Part | Q'ty | Remarks |
|---|---|---|---|
| 10 | Bearing | 1 | |
| 11 | Piston | 1 | |
| 12 | Piston ring set | 1 | |
| 13 | Cylinder gasket | 1 | |
| | | | For installation, reverse the removal procedure. |




EAS00253
### REMOVING THE CYLINDER AND PISTON

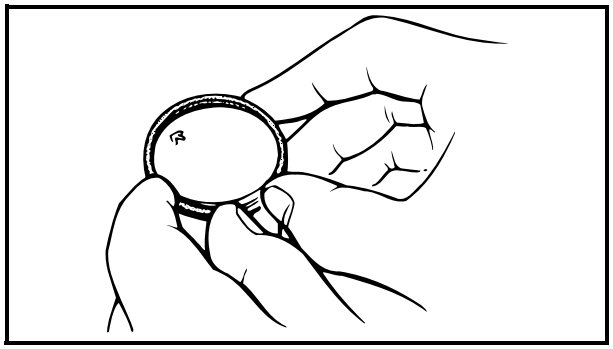
1. Remove:
   - piston pin clip ①
   - piston pin ②
   - piston ③

**CAUTION:**

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

**NOTE:**

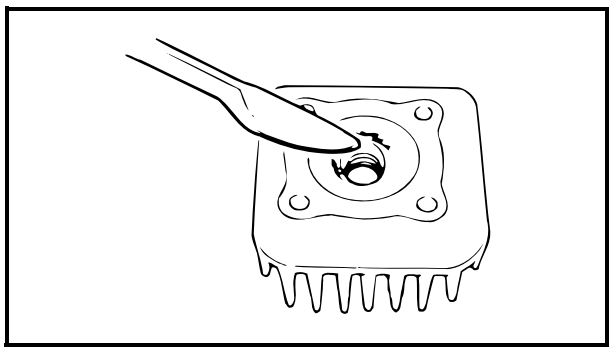
Before removing the piston pin clip, cover the crankcase opening with a clean rag to prevent the piston pin clip from falling into the crankcase.



2. Remove:
   - piston ring

**NOTE:**

When removing a piston ring, open the end gap with your fingers and lift the other side of the ring over the piston crown.



EAS00227
### CHECKING THE CYLINDER HEAD

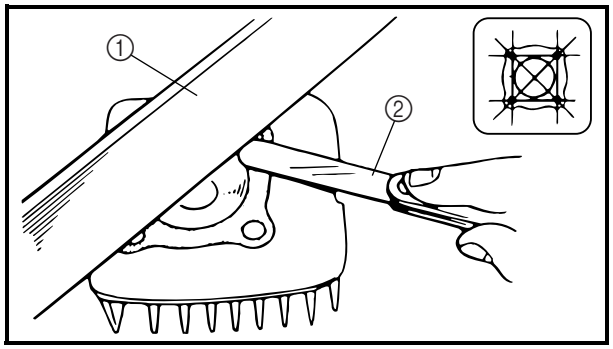
1. Eliminate:
   - combustion chamber carbon deposits (with a rounded scraper)

**NOTE:**

Do not use a sharp instrument to avoid damaging or scratching:
- spark plug bore threads

2. Check:
   - cylinder head
     Damage/scratches → Replace.
3. Measure:
   - cylinder head warpage
     Out of specification → Resurface the cylinder head.

| | |
|---|---|
| | **Maximum cylinder head warpage 0.05 mm (0.002 in)** |

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a. Place a straightedge ① and a thickness gauge ② across the cylinder head.
b. Measure the warpage.
c. If the limit is exceeded, resurface the cylinder head as follows.
d. Place a 400 ~ 600 grit wet sandpaper on the surface plate and resurface the cylinder head using a figure-eight sanding pattern.

**NOTE:**

To ensure an even surface, rotate the cylinder head several times.

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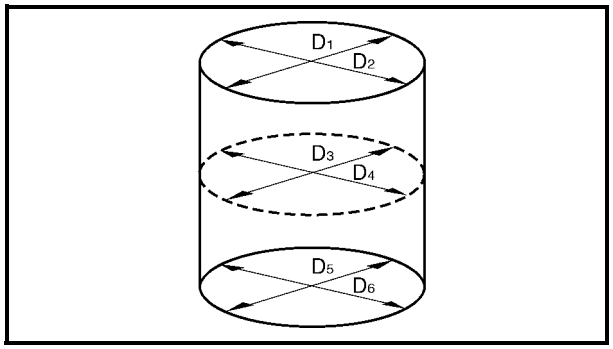
EAS00255

## CHECKING THE CYLINDER AND PISTON

1. Check:
   - piston wall
   - cylinder wall

   Vertical scratches → Rebore or replace the cylinder, and replace the piston and piston rings as a set.
2. Measure:
   - piston-to-cylinder clearance

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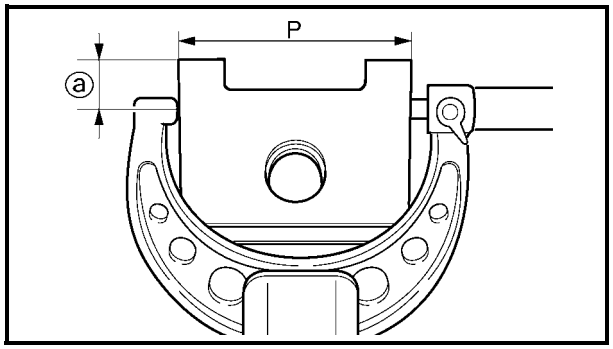
a. Measure cylinder bore “C” with the cylinder bore gauge.

**NOTE:**

Measure cylinder bore “C” by taking side-to-side and front-to-back measurements of the cylinder. Then, find the average of the measurements.

| | |
|---|---|
| **Cylinder bore “C”** | **39.993 ~ 40.012 mm (1.5745 ~ 1.5753 in)** |
| **Max. taper “T”** | **0.05 mm (0.002 in)** |
| **Out-of-round “R”** | **0.05 mm (0.002 in)** |

| |
|---|
| **“C” = maximum of $D_1$ ~ $D_6$** |
| **“T” = maximum of $D_1$ or $D_2$ – maximum of $D_5$ or $D_6$** |
| **“R” = maximum of $D_1$, $D_3$ or $D_5$ – minimum of $D_2$, $D_4$ or $D_6$** |




b. If out of specification, rebore or replace the cylinder, and replace the piston and piston rings as a set.
c. Measure piston skirt diameter "P" with the micrometer.
ⓐ 5 mm (0.20 in) from the bottom edge of the piston

| | Piston size "P" |
|---|---|
| **Standard** | **39.952 ~ 39.969 mm (1.5729 ~ 1.5736 in)** |
| **Oversize 1** | **40.25 mm (1.58 in)** |
| **Oversize 2** | **40.5 mm (1.59 in)** |

d. If out of specification, replace the piston and piston rings as a set.
e. Calculate the piston-to-cylinder clearance with the following formula.

**Piston-to-cylinder clearance =**
**Cylinder bore "C" –**
**Piston skirt diameter "P"**

**Piston-to-cylinder clearance**
**0.036 ~ 0.048 mm**
**(0.0014 ~ 0.0019 in)**
**<Limit>: 0.1 mm (0.0039 in)**

f. If out of specification, rebore or replace the cylinder, and replace the piston and piston rings as a set.

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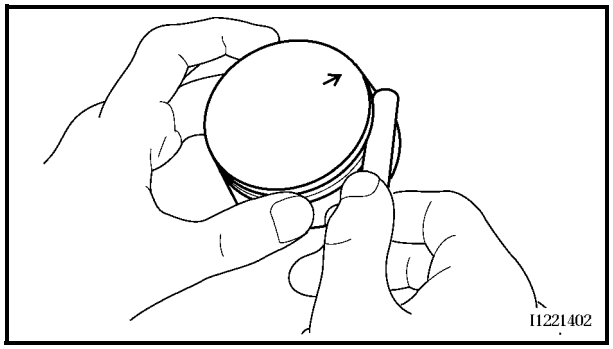
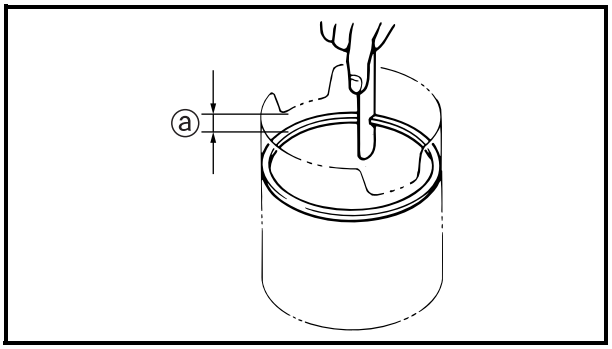



EAS00263
## CHECKING THE PISTON RINGS

1. Measure:
• piston ring side clearance
Out of specification → Replace the piston and piston rings as a set.

**NOTE:**
Before measuring the piston ring side clearance, eliminate any carbon deposits from the piston ring grooves and piston rings.

**Piston ring side clearance**
**Top ring**
**0.03 ~ 0.05 mm**
**(0.0012 ~ 0.0020 in)**
**<Limit>: 0.10 mm (0.0039 in)**
**2nd ring**
**0.03 ~ 0.05 mm**
**(0.0012 ~ 0.0020 in)**
**<Limit>: 0.10 mm (0.0039 in)**




2. Install:
   • piston ring (into the cylinder)

**NOTE:**
Level the piston ring in the cylinder with the piston crown.

ⓐ 10 mm (0.39 in)

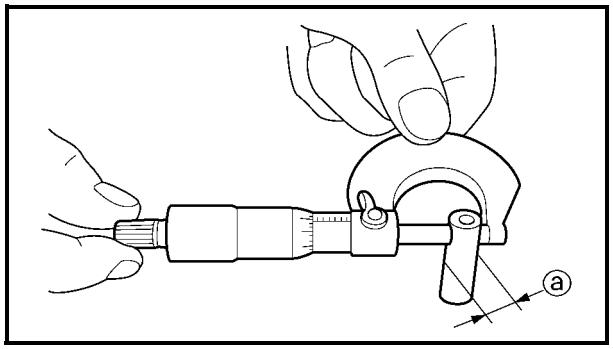
3. Measure:
   • piston ring end gap
   Out of specification → Replace the piston ring.

**NOTE:**
The oil ring expander spacer's end gap cannot be measured. If the oil ring rail's gap is excessive, replace all three piston rings.

**Piston ring end gap**
**Top ring**
**0.15 ~ 0.35 mm (0.006 ~ 0.014 in)**
**<Limit>: 0.70 mm (0.028 in)**
**2nd ring**
**0.15 ~ 0.35 mm (0.006 ~ 0.014 in)**
**<Limit>: 0.70 mm (0.028 in)**

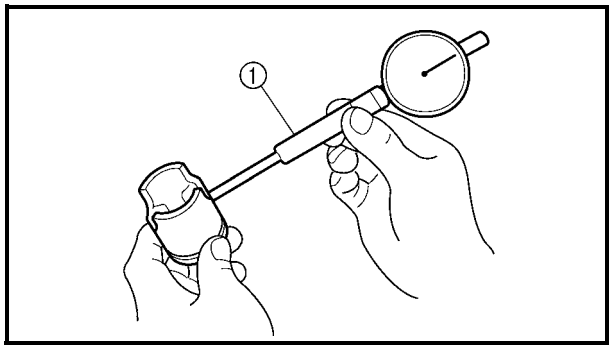
EAS00265
### CHECKING THE PISTON PIN

1. Check:
   • piston pin
   Blue discoloration/grooves → Replace the piston pin and then check the lubrication system.




2. Measure:
   • piston pin outside diameter ⓐ
   Out of specification → Replace the piston pin.

**Piston pin outside diameter**
**9.996 ~ 10.000 mm**
**(0.3935 ~ 0.3937 in)**
**<Limit>: 9.976 mm (0.3928 in)**



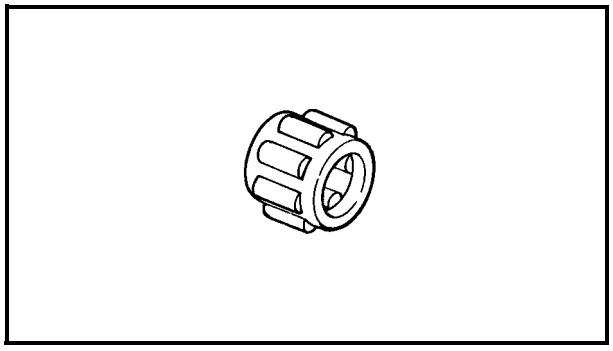

3. Measure:
   • piston pin bore diameter (in the piston) ①
   Out of specification → Replace the piston pin.

**Piston pin bore diameter (in the piston)**
**10.004 ~ 10.015 mm**
**(0.3939 ~ 0.3943 in)**
**<Limit>: 10.045 mm (0.3955 in)**

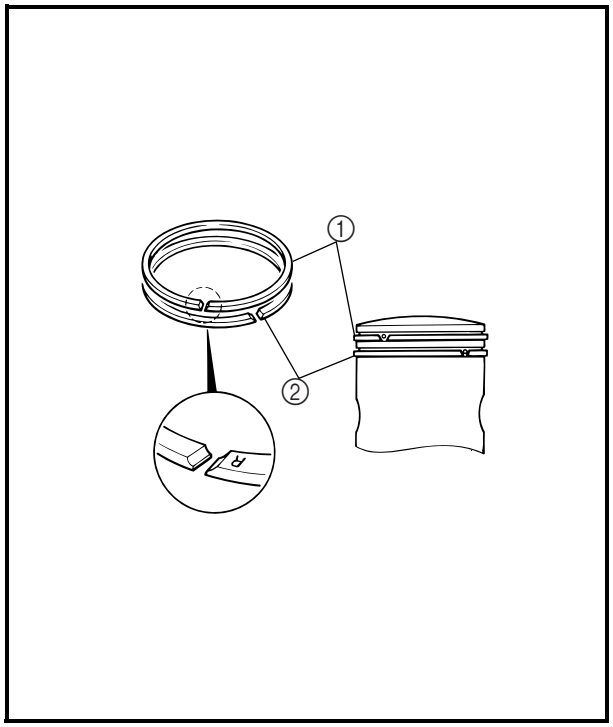
4. Calculate:
   • piston-pin-to-piston-pin-bore clearance
   Out of specification → Replace the piston pin and piston as a set.

**Piston-pin-to-piston-pin-bore clearance =**
**Piston pin bore diameter –**
**Piston pin outside diameter ⓐ**

**Piston-pin-to-piston clearance**
**0.004 ~ 0.019 mm**
**(0.00016 ~ 0.00075 in)**
**<Limit>: 0.069 mm (0.0027 in)**



5. Check:
   • bearing
   Damage/pitting → Replace.

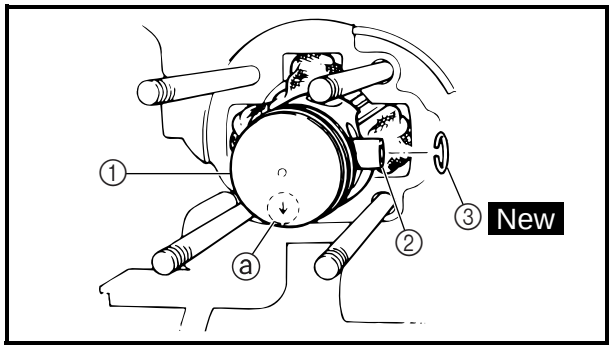



EAS00267
**INSTALLING THE PISTON AND CYLINDER**

1. Install:
   - top ring ①
   - 2nd ring ②

**NOTE:**

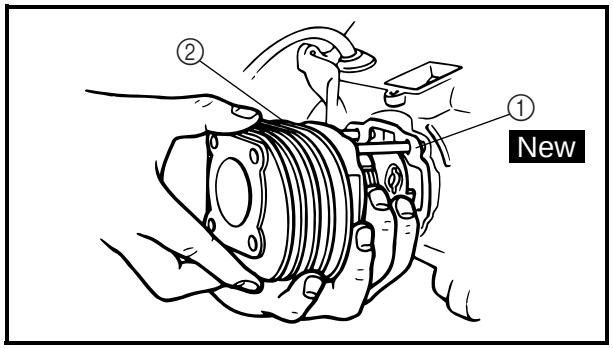
- Be sure to install the piston rings so that the manufacturer's marks or numbers face up.
- Before installing the cylinder, align the piston ring end gaps to the respective knock pins as shown.




2. Install:
   - bearing
   - piston ①
   - piston pin ②
   - piston pin clip ③ New

**NOTE:**

- Lubricate the piston pin with engine oil.
- Make sure the arrow mark ⓐ on the piston points towards the exhaust side of the cylinder.
- Before installing the piston pin clip, cover the crankcase opening with a clean rag to prevent the clip from falling into the crankcase.




3. Install:
   • cylinder gasket ① New
4. Lubricate:
   • piston
   • piston rings
   • cylinder
   (with the recommended lubricant)

**Recommended lubricant**
**Yamalube 2-cycle oil or 2-stroke engine oil**

5. Install:
   • cylinder ②

**NOTE:**
While compressing the piston rings with one hand, install the cylinder with the other hand.

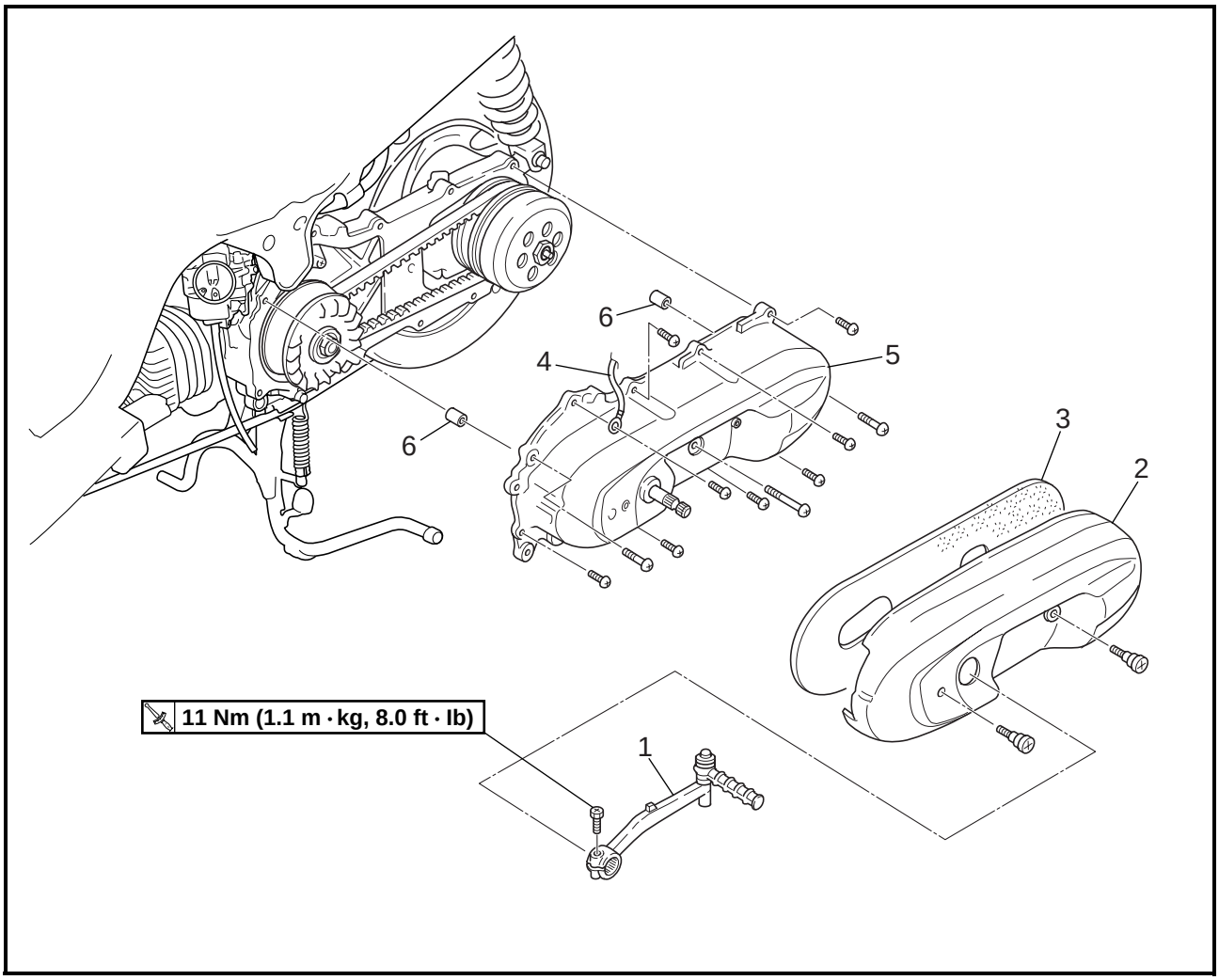
• cylinder head gasket
• cylinder head

**Cylinder nut**
**14 Nm (1.4 m · kg, 10 ft · lb)**

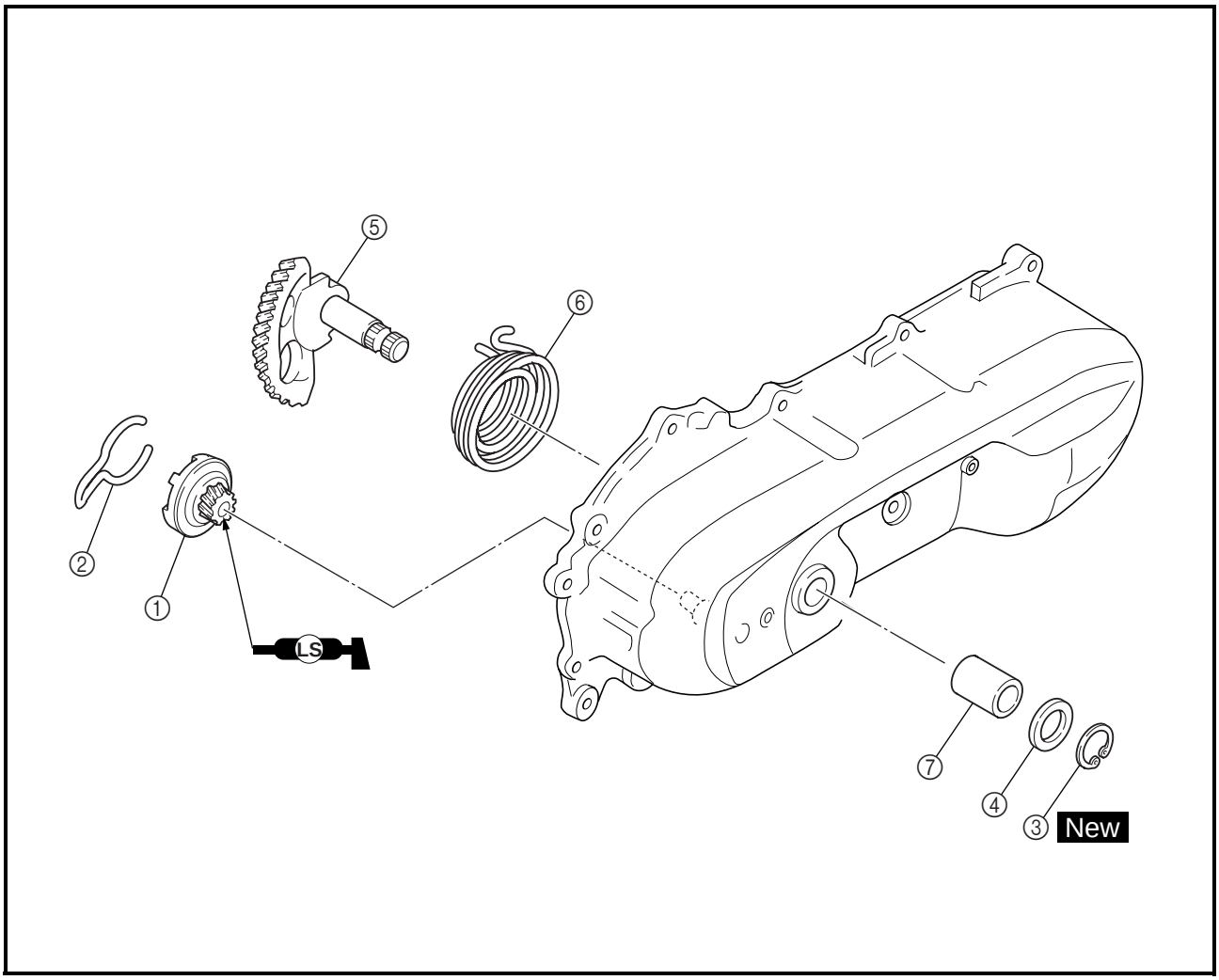
EAS00338

# KICKSTARTER

## SHEAVES COVER



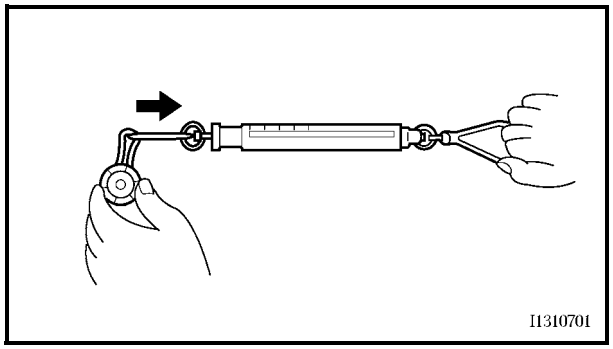

| Order | Job/Part | Q'ty | Remarks |
|---|---|---|---|
| | **Removing the sheave cover** | | Remove the parts in the order listed. |
| | Air filter case assembly | | Refer to "CARBURETOR" in chapter 6. |
| | Transmission oil | | Drain. |
| 1 | Kickstarter crank | 1 | |
| 2 | Cover | 1 | |
| 3 | Damper | 1 | |
| 4 | Ground lead | 1 | |
| 5 | Sheave cover | 1 | |
| 6 | Dowel pin | 2 | |
| | | | For installation, reverse the removal procedure. |




| Order | Job/Part | Q'ty | Remarks |
|---|---|---|---|
| | **Disassembling the kickstarter shaft** | | Remove the parts in the order listed. |
| ① | Kickstarter pinion gear | 1 | |
| ② | Kickstarter pinion gear clip | 1 | |
| ③ | Circlip | 1 | |
| ④ | Washer | 1 | |
| ⑤ | Kickstarter shaft | 1 | |
| ⑥ | Kickstarter spring | 1 | |
| ⑦ | Spacer | 1 | |
| | | | For assembly, reverse the disassembly procedure. |

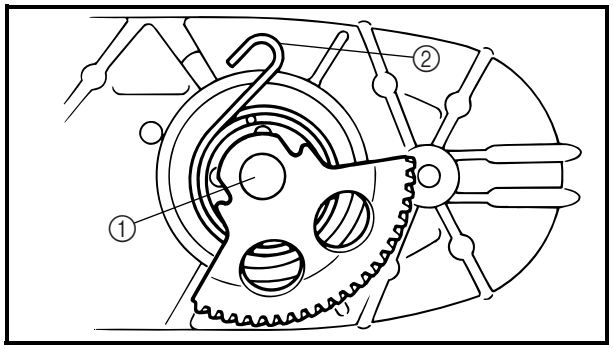
EAS00339
## CHECKING THE KICKSTARTER

1. Check:
   - kickstarter shaft
   - kickstarter pinion gear
     Damage/wear → Replace.
2. Check:
   - kickstarter spring
     Damage/wear → Replace.




3. Measure:
   - kickstarter pinion gear clip force
     (with the spring gauge)
     Out of specification → Replace the kickstarter pinion gear clip.

| | |
|---|---|
| | **Kickstarter pinion gear clip force**<br>**0.15 ~ 0.25 kg (0.34 ~ 0.56 lb)** |

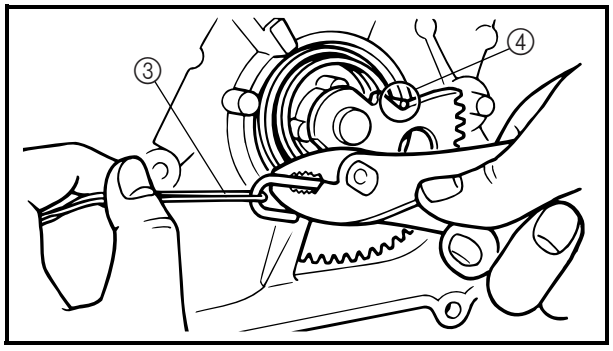


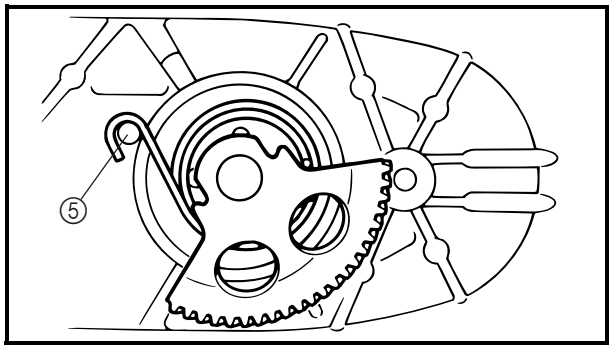

EAS00340
## INSTALLING THE KICKSTARTER

1. Install:
   - kickstarter shaft ①
   - kickstarter spring ②
   - spacer
   - washer
   - circlip

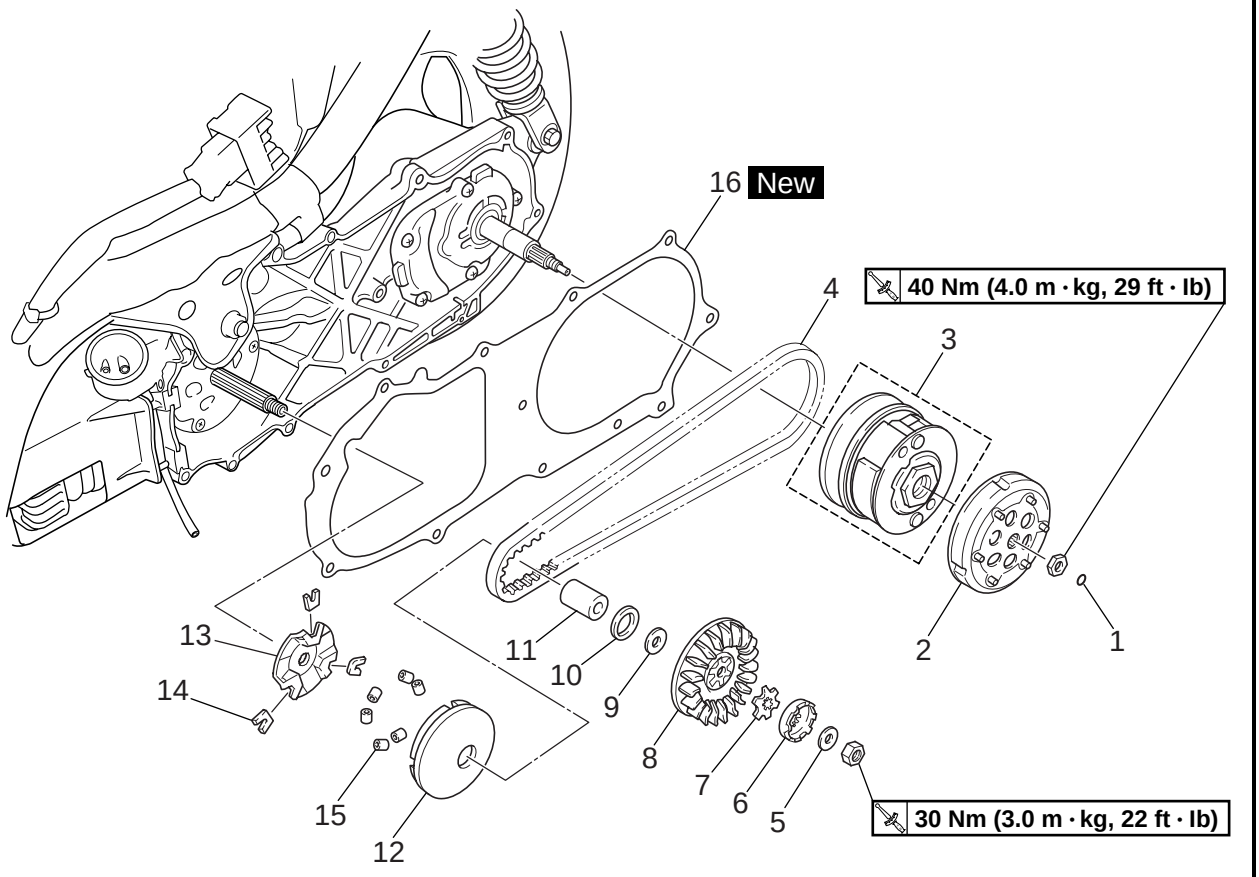
**NOTE:**

- Install the wire ③ onto the kickstarter spring.
- Install the kickstarter spring straight end on the kickstarter shaft notch ④ and hook the spring hooked end on the projection ⑤ as shown.

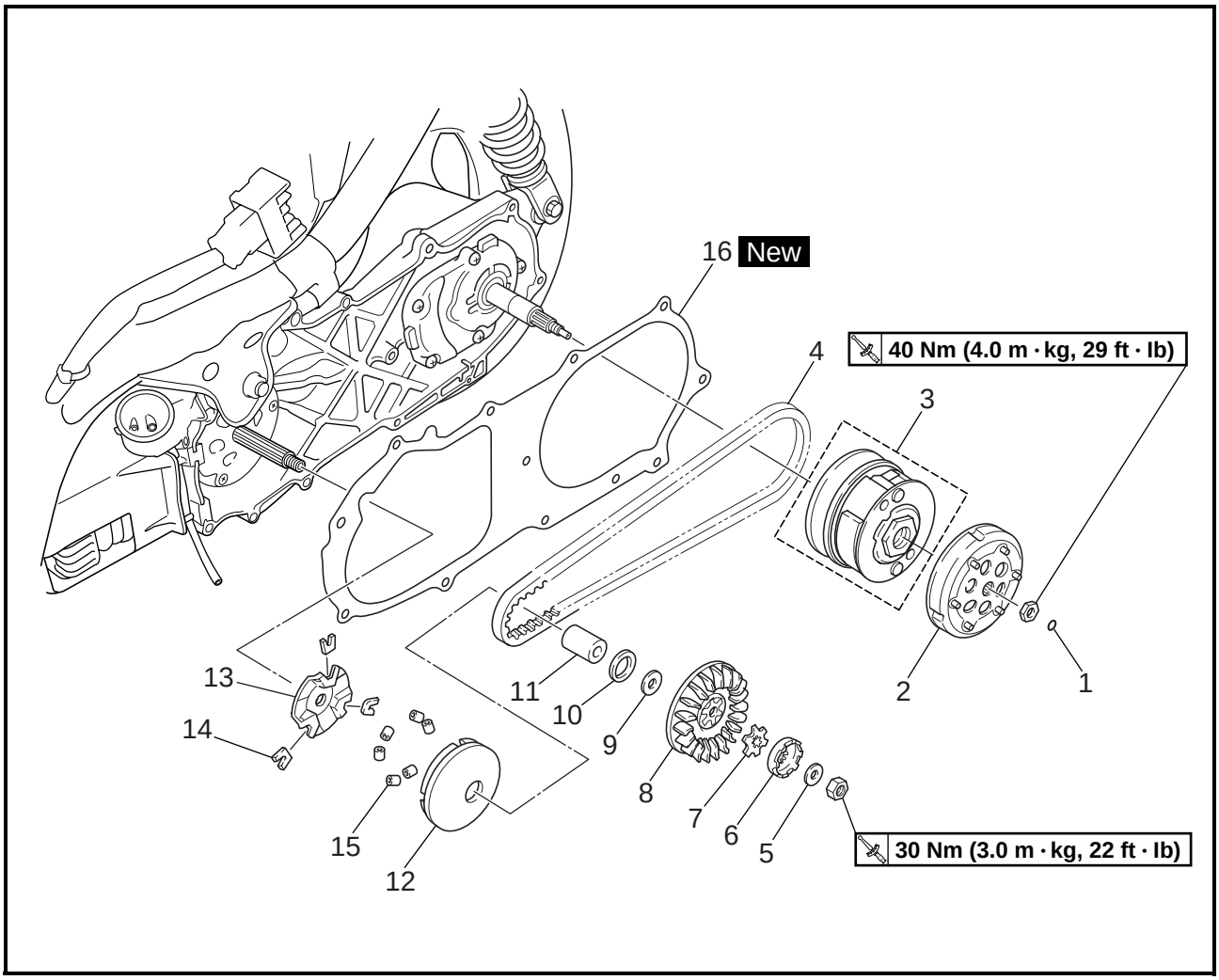


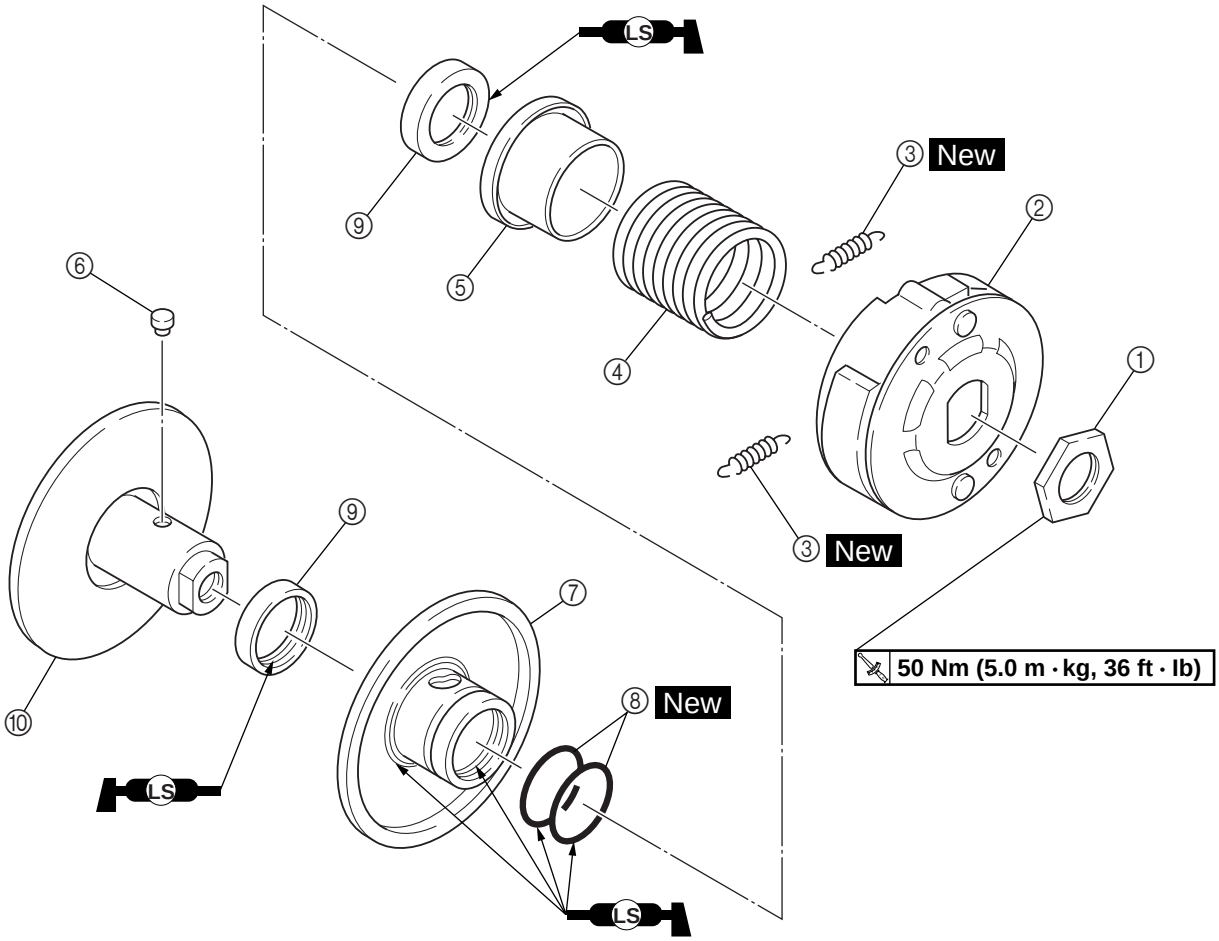
EAS00316
# BELT DRIVE




| Order | Job/Part | Q'ty | Remarks |
|---|---|---|---|
| | **Removing the V-belt, primary and secondary pulley** | | Remove the parts in the order listed. |
| | Sheaves cover | | Refer to "KICK STARTER". |
| | Air shroud/fan | | Refer to "GENERATOR AND AUTOLUBE PUMP". |
| 1 | O-ring | 1 | |
| 2 | Clutch housing | 1 | |
| 3 | Secondary pulley | 1 | |
| 4 | V-belt | 1 | |
| 5 | Conical spring washer | 1 | |
| 6 | Kickstarter one-way clutch | 1 | |
| 7 | Claw washer | 1 | |
| 8 | Primary fixed sheave | 1 | |
| 9 | Washer | 1 | |
| 10 | Spacer | 1 | |




| Order | Job/Part | Q'ty | Remarks |
|---|---|---|---|
| 11 | Collar | 1 | |
| 12 | Primary sliding sheave | 1 | |
| 13 | Slider | 1 | |
| 14 | Cam | 1 | |
| 15 | Primary pulley weight | 6 | |
| 16 | Gasket | 1 | |
| | | | For installation, reverse the removal procedure. |




| Order | Job/Part | Q'ty | Remarks |
|---|---|---|---|
| | **Disassembling the secondary pulley** | | Remove the parts in the order listed. |
| ① | Clutch carrier nut | 1 | |
| ② | Clutch carrier | 1 | |
| ③ | Clutch spring | 2 | |
| ④ | Spring | 1 | |
| ⑤ | Spring seat | 1 | |
| ⑥ | Pin | 2 | |
| ⑦ | Secondary sliding sheave | 1 | |
| ⑧ | O-ring | 2 | |
| ⑨ | Oil seal | 1 | |
| ⑩ | Secondary fixed sheave | 1 | |
| | | | For assembly, reverse the disassembly procedure. |

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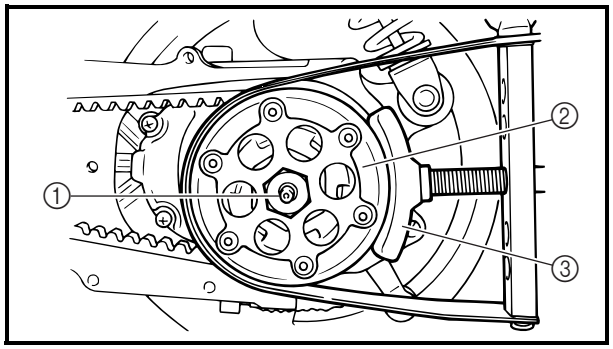


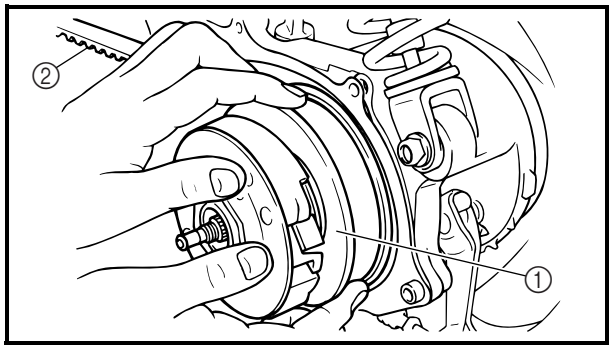

EAS00318
**REMOVING THE SECONDARY PULLEY AND V-BELT**

1. Remove:
   - air shroud
   - fan

   Refer to “GENERATOR AND AUTOLUBE PUMP”.
2. Remove:
   - clutch housing nut ①
   - clutch housing ②

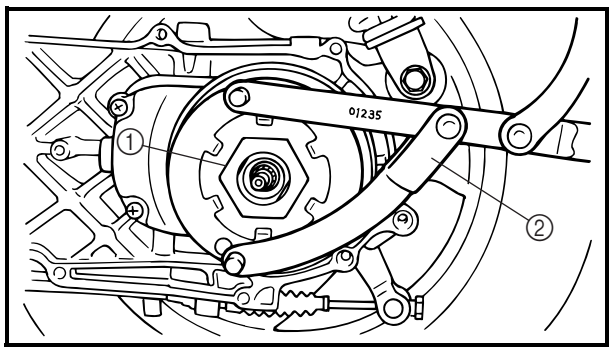
**NOTE:**
While holding the clutch housing with the sheave holder ③, loosen the clutch housing nut.

**Sheave holder**
**YU-01701**




3. Remove:
   - secondary pulley ①
   - V-belt ②

**NOTE:**
Pull the secondary sliding sheave out as shown, remove the V-belt from the primary pulley, and then remove the secondary pulley ① along with the V-belt ②.

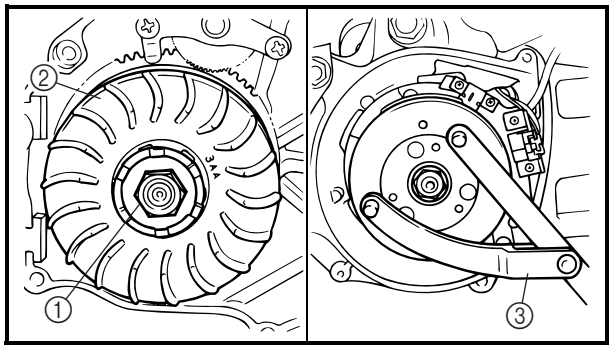



4. Loosen:
   - clutch carrier nut ①

**CAUTION:**
**Do not remove the clutch carrier nut at this stage.**

**NOTE:**
While holding the clutch carrier with the rotor holding tool ②, loosen the clutch carrier nut one full turn with the locknut wrench.

**Rotor holding tool**
**YU-01235**
**Locknut wrench**
**90890-01348**

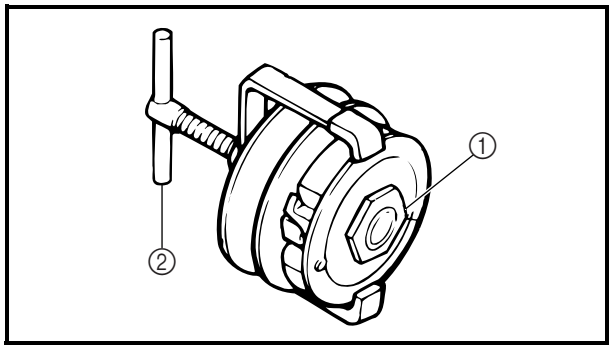



EAS00317
### REMOVING THE PRIMARY SHEAVE

1. Remove:
   - primary sheave nut ①
   - conical spring washer
   - kickstarter one-way clutch
   - claw washer
   - primary fixed sheave ②

**NOTE:**
While holding the generator rotor with the rotor holding tool ③, loosen the primary sheave nut.

| | |
|---|---|
|  | **Rotor holding tool**<br>**YU-01235** |




EAS00319
### DISASSEMBLING THE SECONDARY PULLEY

1. Remove:
   - clutch carrier nut ①

**NOTE:**
Install the clutch spring holder ② onto the secondary pulley as shown. Then, compress the spring, and remove the clutch carrier nut ①.

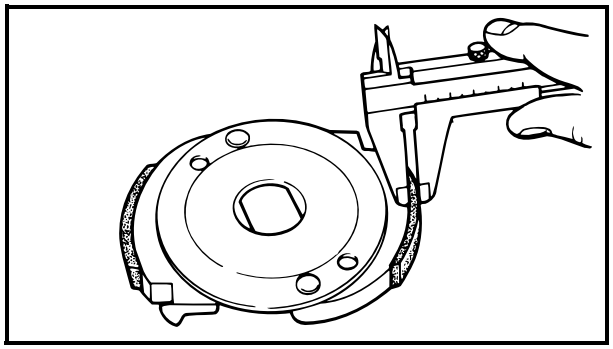
| | |
|---|---|
|  | **Clutch spring holder**<br>**YS-28891** |

EAS00291
### CHECKING THE CLUTCH SHOES

The following procedure applies to all of the clutch shoes.

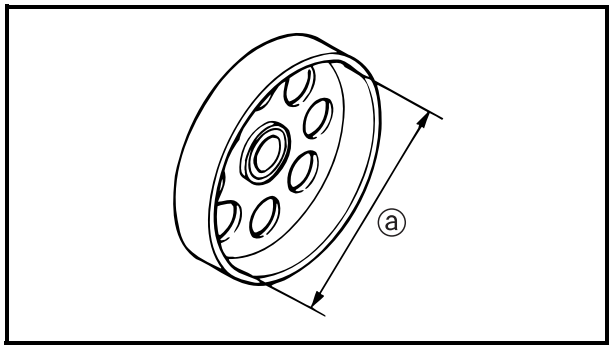
1. Check:
   - clutch shoe
     Damage/wear → Replace the clutch shoes as a set.
     Glazed areas → Sand with course sandpaper.

**NOTE:**
After sanding the glazed areas, clean the clutch with a cloth.



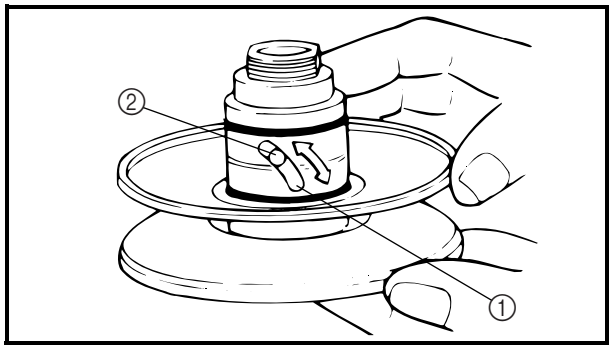
2. Measure:
   • clutch shoe thickness
   Out of specification → Replace the clutch shoes as a set.

**Clutch shoe thickness**
**4.0 mm (0.157 in)**
**<Limit>: 1.0 mm (0.039 in)**



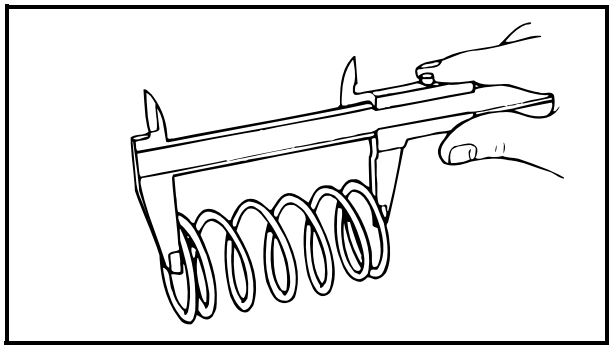

3. Check:
   • clutch housing inside diameter ⓐ
   Out of specification → Replace the clutch housing.

**Clutch housing inside diameter**
**105.0 mm (4.13 in)**
**<Limit>: 105.5 mm (4.15 in)**



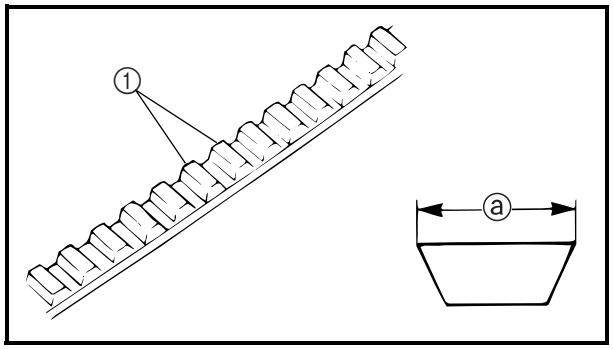

EAS00322
## CHECKING THE SECONDARY PULLEY

1. Check:
   • secondary fixed sheave
   • secondary sliding sheave
   Cracks/damage/wear → Replace the secondary fixed and sliding sheaves as a set.
2. Check:
   • guide pin groove ①
   Damage/wear → Replace the secondary fixed and sliding sheaves as a set.
3. Check:
   • guide pin ②
   Damage/wear → Replace the secondary fixed and sliding sheaves as a set.



4. Check:
   • spring free length
   Out of specification → Replace the spring

**Spring free length**
**95.4 mm (3.76 in)**
**<Limit>: 90.7 mm (3.57 in)**




EAS00320
### CHECKING THE V-BELT

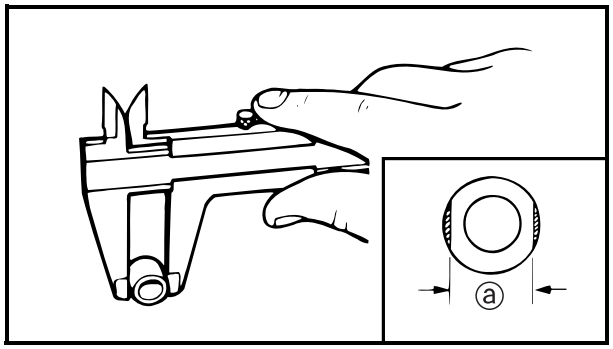
1. Check:
   - V-belt ①
     Cracks/damage/wear → Replace.
     Grease/oil → Check the primary and secondary pulleys.
2. Measure:
   - V-belt width ⓐ
     Out of specification → Replace.

**V-belt width**
**16.6 mm (0.65 in)**
**<Limit>: 15.0 mm (0.59 in)**

EAS00321
### CHECKING THE PRIMARY PULLEY WEIGHTS

The following procedure applies to all of the primary pulley weights.

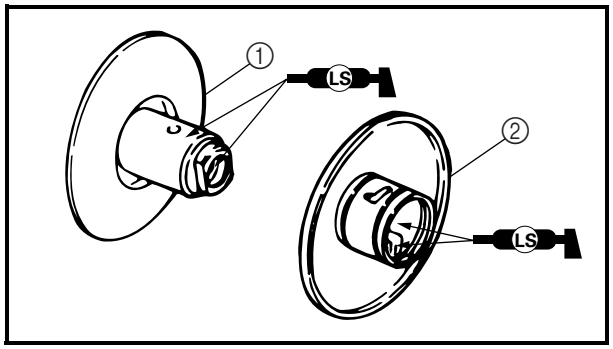
1. Check:
   - primary pulley weight
     Cracks/damage/wear → Replace.




2. Measure:
   - primary pulley weight outside diameter ⓐ
     Out of specification → Replace.

**Primary pulley weight outside diameter**
**15.0 mm (0.59 in)**
**<Limit>: 14.5 mm (0.57 in)**

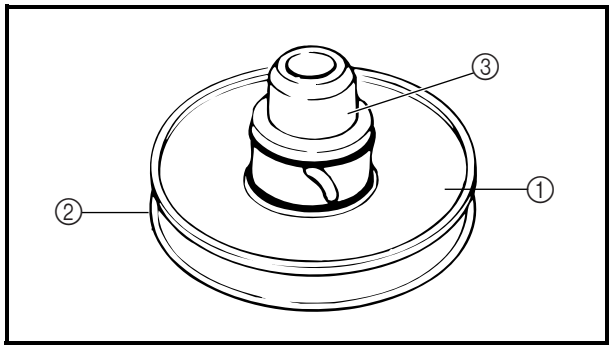
5




EAS00324
**ASSEMBLING THE SECONDARY PULLEY**

1. Lubricate:
   - secondary fixed sheave's inner surface ①
   - secondary sliding sheave's inner surface ②
   - oil seals
     (with the recommended lubricant)

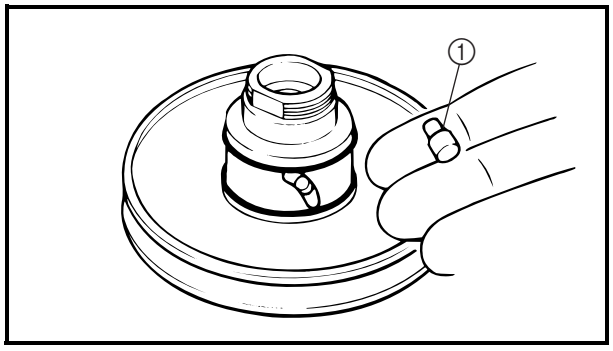
| | |
|---|---|
| | **Recommended lubricant**<br>**Lithium soap base grease** |



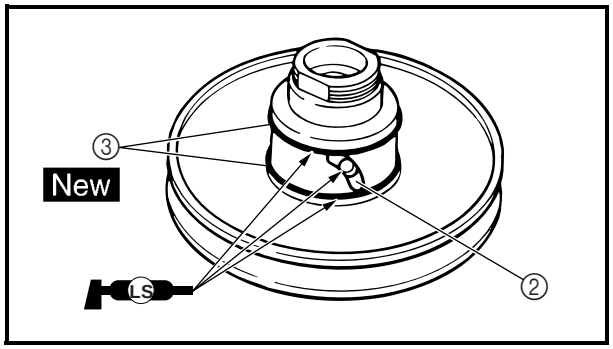

2. Install:
   - secondary sliding sheave ①

**NOTE:**
Install the secondary sliding sheave onto the secondary fixed sheave ② with the oil seal guide ③.

| | |
|---|---|
| | **Oil seal guide**<br>**YM-01409** |

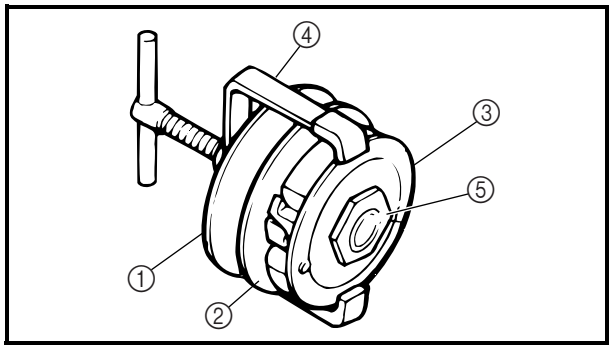



3. Install:
   - guide pin ①




4. Lubricate:
   - guide pin groove ②
   - O-ring ③ New
     (with the recommended lubricant)

| | |
|---|---|
| | **Recommended lubricant**<br>**Lithium soap base grease** |




5. Install:
   - secondary fixed sheave ①
   - secondary sliding sheave ②
   - spring
   - clutch carrier ③

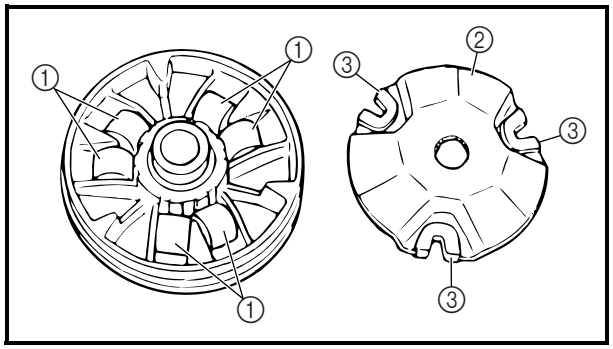
**NOTE:**
Attach the clutch spring holder ④ onto the secondary pulley as shown. Then, compress the spring, and tighten the clutch carrier nut ⑤.

| | |
|---|---|
|  | **Clutch spring holder**<br>**YS-28891** |

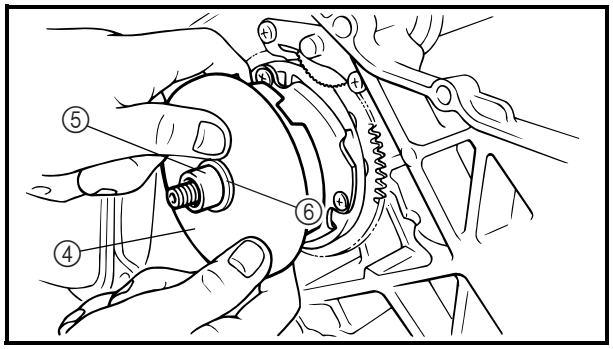
EAS00323
## INSTALLING THE PRIMARY PULLEY

1. Clean:
   - primary fixed sheave
   - primary sliding sheave
   - spacer
   - primary pulley weights

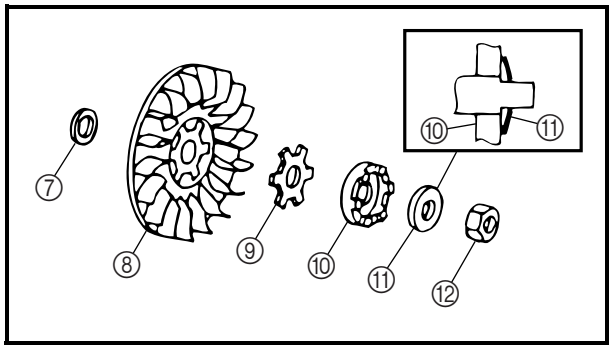





2. Install:
   - primary pulley weights ①
   - slider ②
   - cams ③




3. Install:
   - primary sliding sheave ④
   - collar ⑤
   - spacer ⑥

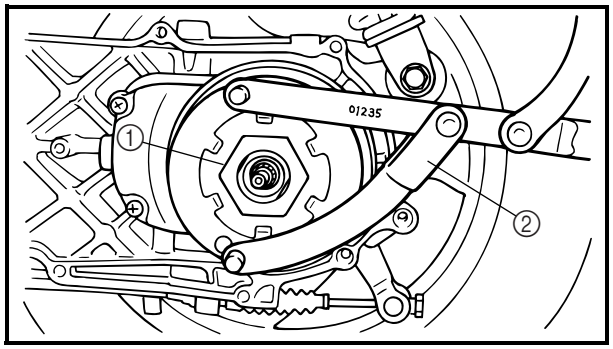



4. Install:
   - washer ⑦
   - primary fixed sheave ⑧
   - claw washer ⑨
   - kickstarter one-way clutch ⑩
   - conical spring washer ⑪
   - primary sheave nut ⑫

**30 Nm (3.0 m · kg, 22 ft · lb)**

**NOTE:**
- Install the conical spring washer ⑪ as shown in the illustration.
- While holding the generator rotor with the rotor holding tool, tighten the primary sheave nut.

**Rotor holding tool**
**YU-01235**



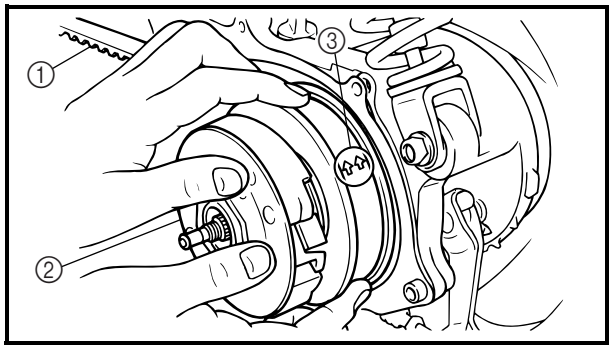

EAS00325
## INSTALLING THE BELT DRIVE

1. Install:
   - clutch carrier nut ①

**50 Nm (5.0 m · kg, 36 ft · lb)**

**NOTE:**
While holding the clutch carrier with the rotor holding tool ②, tighten the clutch carrier nut with the locknut wrench.

**Rotor holding tool**
**YU-01235**



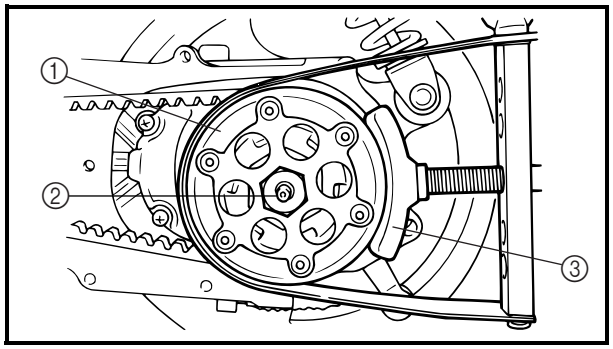

2. Install:
   - V-belt ①
   - secondary pulley ②

**CAUTION:**

**Do not allow grease to contact the V-belt, secondary pulley or clutch assembly.**

**NOTE:**

- The V-belt must be installed, with the arrow ③ forward.
- Install the V-belt on the primary pulley, then install the secondary pulley ② along with the V-belt ①.



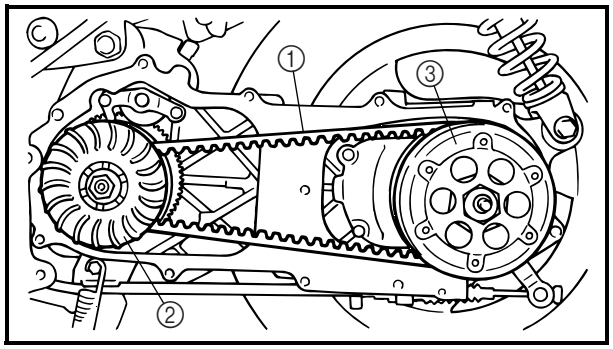

3. Install:
   - clutch housing ①
   - clutch housing nut ②

**40 Nm (4.0 m · kg, 29 ft · lb)**

**NOTE:**

Tighten the clutch housing nut while holding the clutch housing with the sheave holder ③.

**Sheave holder**
**YU-01701**

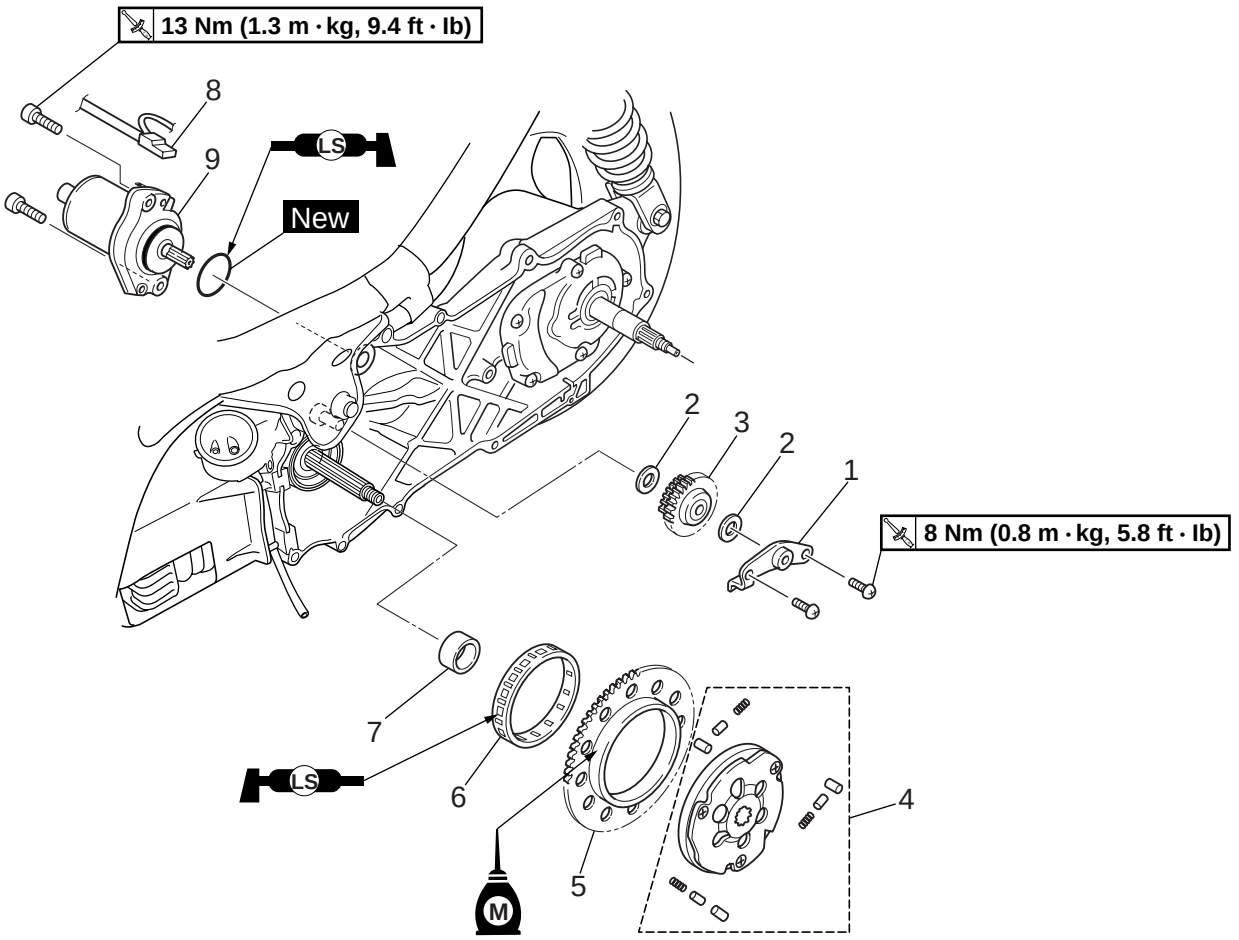



4. Position:
   - V-belt ①

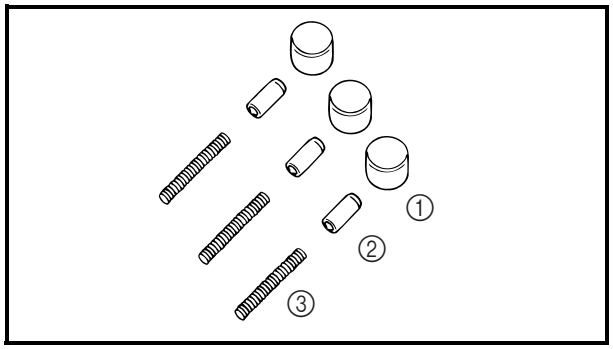
**NOTE:**

Position the V-belt on the primary pulley ② (when the pulley is at its widest position) and on the secondary pulley ③ (when the pulley is at its narrowest position), and make sure the V-belt is tight.

# STARTER CLUTCH AND STARTER MOTOR

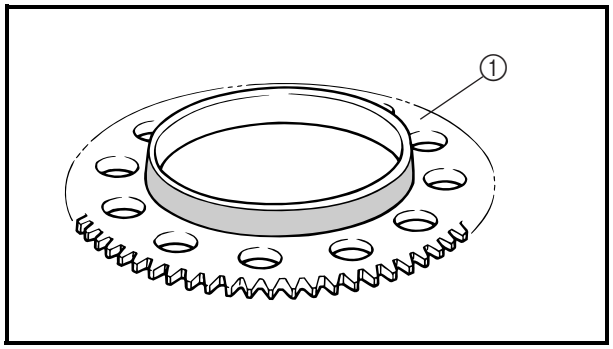



| Order | Job/Part | Q'ty | Remarks |
|---|---|---|---|
| | **Removing the starter clutch and starter motor** | | Remove the parts in the order listed. |
| | Sheaves cover | | Refer to "KICKSTARTER". |
| | Primary sliding sheave | | Refer to "BELT DRIVE" |
| 1 | Idle gear plate | 1 | |
| 2 | Washer | 2 | |
| 3 | Idle gear | 1 | |
| 4 | Starter clutch assembly | 1 | |
| 5 | Starter wheel gear | 1 | |
| 6 | Bearing | 1 | |
| 7 | Spacer | 1 | |
| 8 | Starter motor coupler | 1 | Disconnect. |
| 9 | Starter motor | 1 | |
| | | | For installation, reverse the removal procedure. |

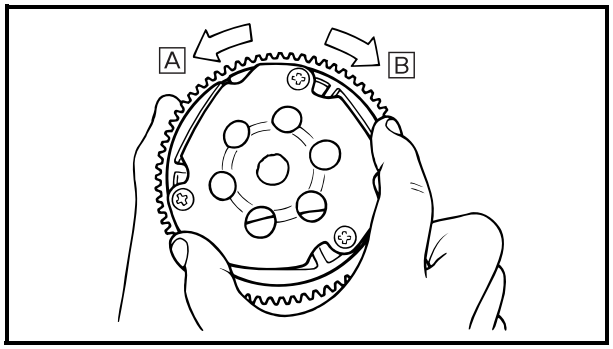



EAS00351
### CHECKING THE STARTER CLUTCH

1. Check:
   - starter clutch rollers ①
   - starter clutch spring caps ②
   - starter clutch springs ③
     Damage/wear → Replace.




2. Check:
   - starter wheel gear ①
     Burrs/chips/roughness/wear → Replace the defective part(s).
3. Check:
   - starter wheel gear contacting surface
     Damage/pitting/wear → Replace the starter wheel gear.

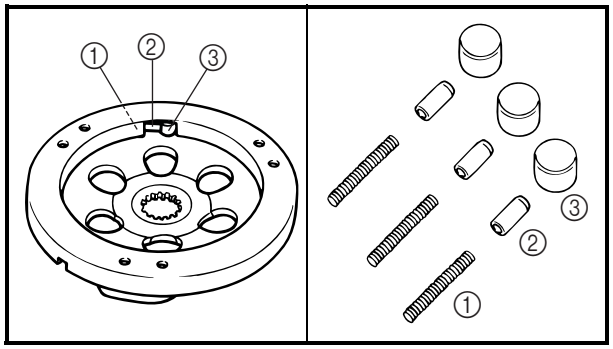



4. Check:
   - starter clutch operation

▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

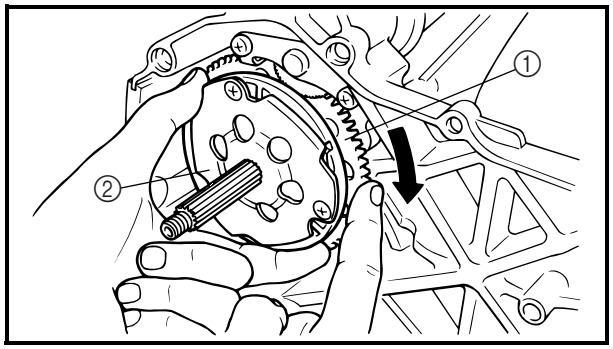
a. Install the starter wheel gear onto the starter clutch and hold the starter clutch.
b. When turning the starter wheel gear clockwise [A], the starter clutch and the starter wheel gear should engage, otherwise the starter clutch is faulty and must be replaced.
c. When turning the starter wheel gear counterclockwise [B], it should turn freely, otherwise the starter clutch is faulty and must be replaced.

▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲




EAS00355
### INSTALLING THE STARTER CLUTCH

1. Install:
   - starter clutch springs ①
   - starter clutch spring caps ②
   - starter clutch rollers ③

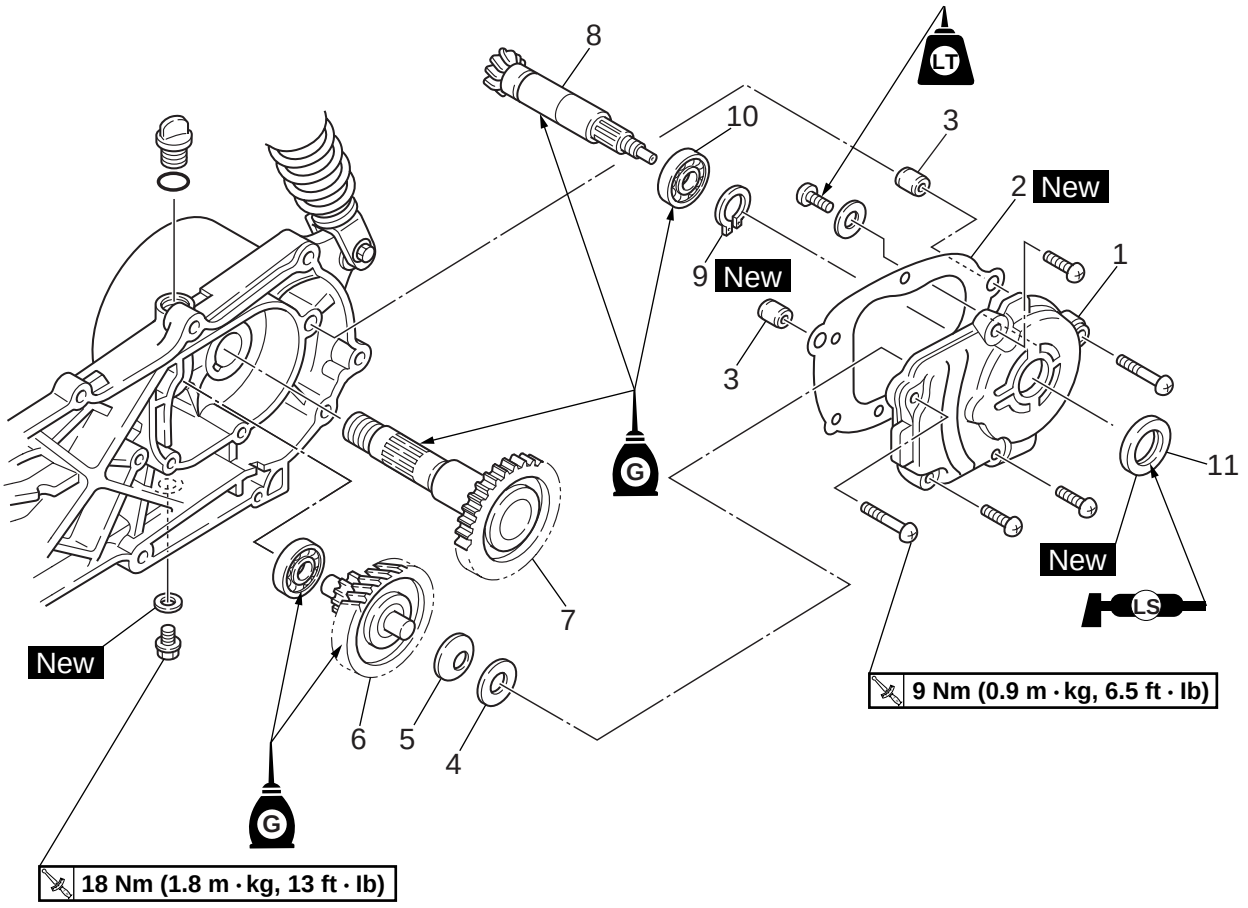



2. Install:
   - starter wheel gear ①
   - starter clutch assembly ②

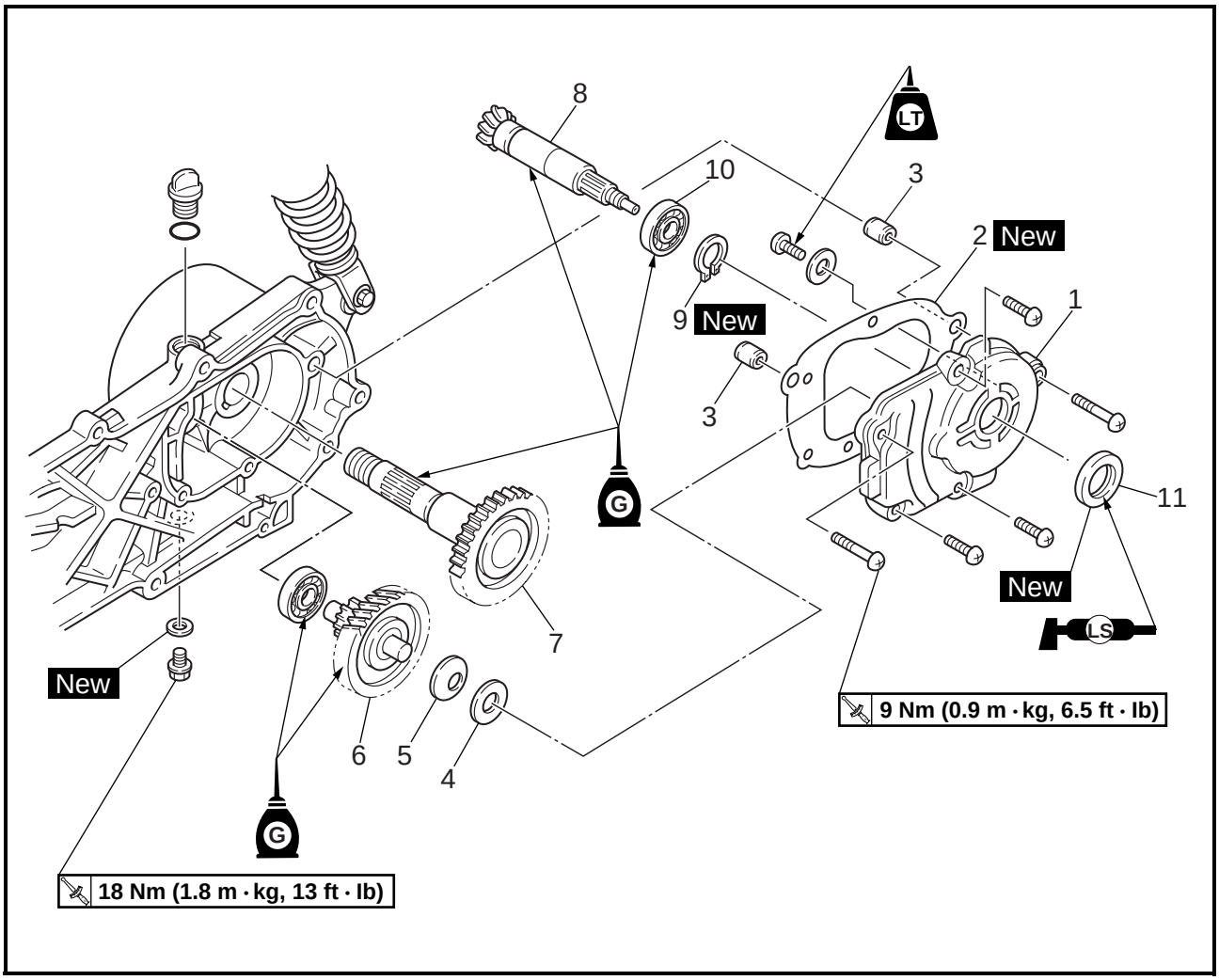
**NOTE:**

Install the starter clutch assembly ① while turning the starter wheel gear ② clockwise.

EAS00419
# TRANSMISSION




| Order | Job/Part | Q'ty | Remarks |
|---|---|---|---|
| | **Removing the transmission** | | Remove the parts in the order listed. |
| | Transmission oil | | Drain. |
| | Rear wheel | | Refer to "REAR WHEEL AND BRAKE" in chapter 4. |
| | Secondary pulley | | Refer to "BELT DRIVE". |
| 1 | Transmission cover | 1 | |
| 2 | Gasket | 1 | |
| 3 | Dowel pin | 2 | |
| 4 | Washer | 1 | |
| 5 | Conical spring washer | 1 | |
| 6 | Main axle | 1 | |
| 7 | Drive axle | 1 | |
| 8 | Secondary drive gear | 1 | |



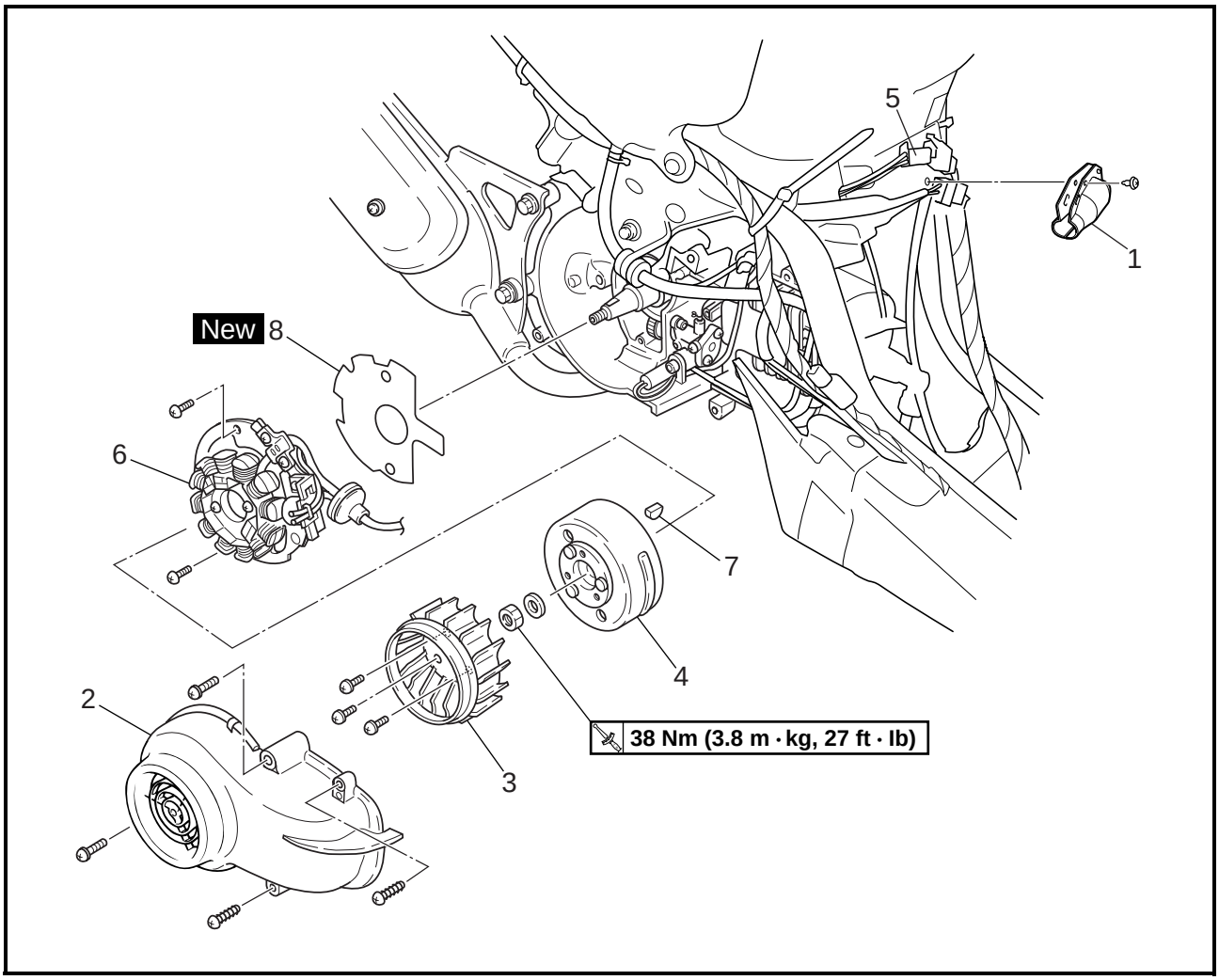

| Order | Job/Part | Q'ty | Remarks |
|---|---|---|---|
| 9 | Circlip | 1 | |
| 10 | Bearing | 1 | |
| 11 | Oil seal | 1 | |
| | | | For installation, reverse the removal procedure. |

EAS00425
## CHECKING THE TRANSMISSION

1. Check:
   - drive axle
   - main axle
   - secondary drive gear
   Damage/wear → Replace.
2. Check:
   - bearing
   Rough movement → Replace.
3. Check:
   - secondary drive gear movement
   Rough movement → Replace the defective part.
4. Check:
   - circlips
   Bends/damage/looseness → Replace.

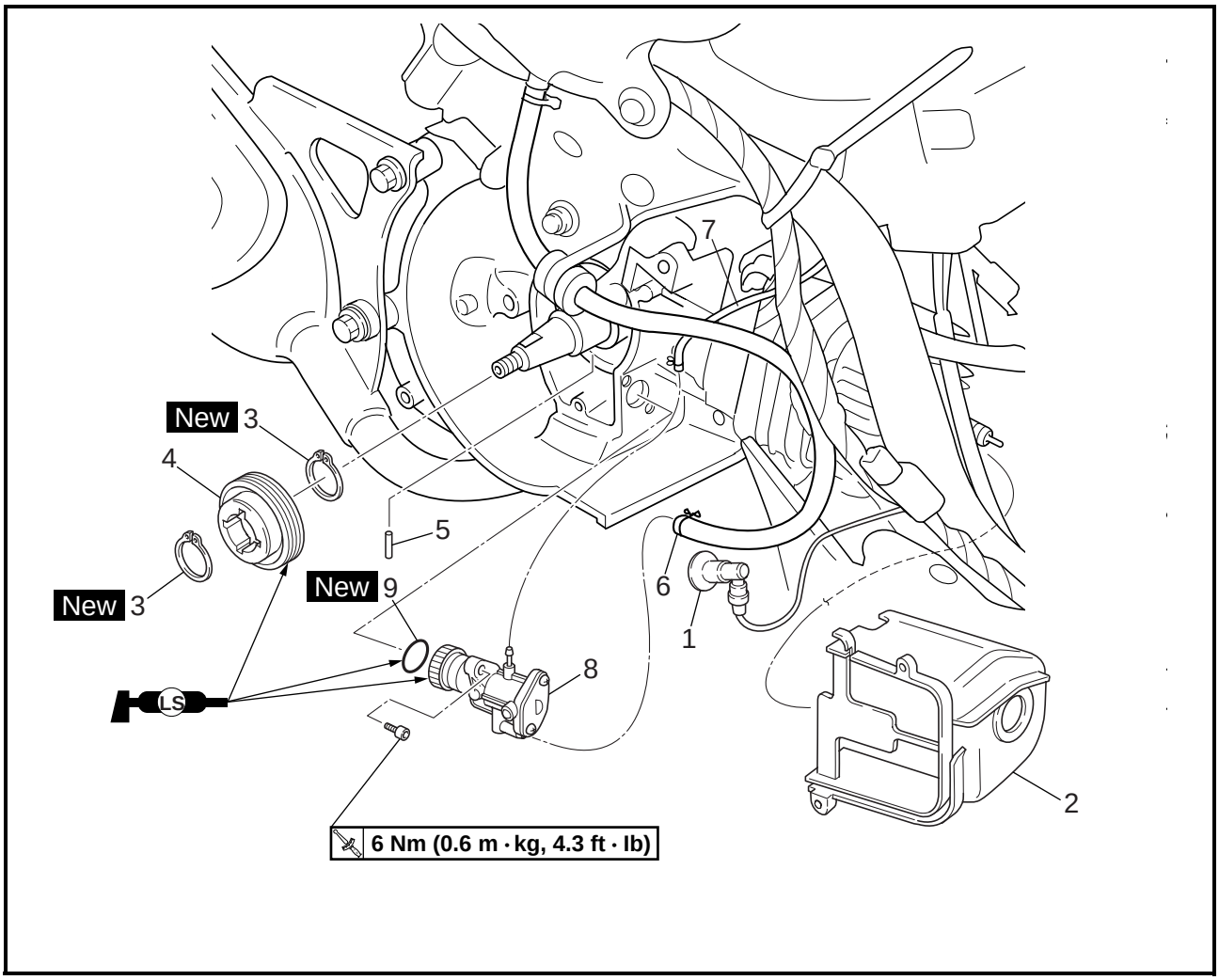
# GENERATOR AND AUTOLUBE PUMP

## STATOR COIL ASSEMBLY

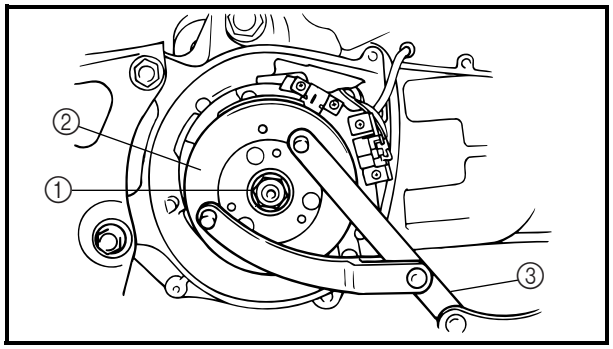



| Order | Job/Part | Q'ty | Remarks |
|---|---|---|---|
| | **Removing the stator coil assembly** | | Remove the parts in the order listed. |
| | Center cover, side cover (right) and footrest board | | Refer to "SIDE COVERS AND FOOTREST BOARD" in chapter 3. |
| 1 | Coupler cover | 1 | |
| 2 | Air shroud | 1 | |
| 3 | Fan | 1 | |
| 4 | Generator rotor | 1 | |
| 5 | Stator coil assembly coupler | 1 | Disconnect. |
| 6 | Stator coil assembly | 1 | |
| 7 | Woodruff key | 1 | |
| 8 | Gasket | 1 | |
| | | | For installation, reverse the removal procedure. |

## AUTOLUBE PUMP




| Order | Job/Part | Q'ty | Remarks |
|---|---|---|---|
| | **Removing the autolube pump** | | Remove the parts in the order listed. |
| | Stator coil assembly | | Refer to "GENERATOR AND AUTOLUBE PUMP". |
| 1 | Spark plug cap | 1 | |
| 2 | Cylinder head cover | 1 | |
| 3 | Circlip | 2 | |
| 4 | Pump drive gear | 1 | |
| 5 | Pin | 1 | |
| 6 | Oil hose | 1 | |
| 7 | Oil delivery hose | 1 | |
| 8 | Autolube pump | 1 | |
| 9 | O-ring | 1 | |
| | | | For installation, reverse the removal procedure. |



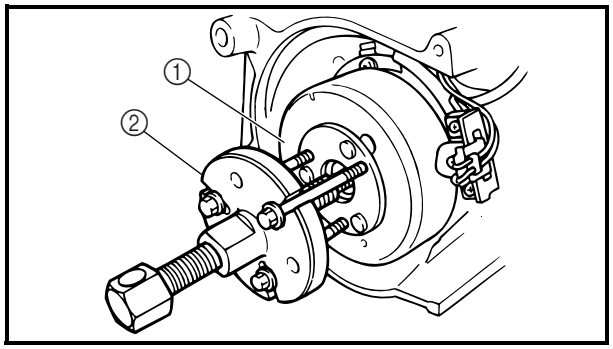

EAS00346
**REMOVING THE GENERATOR**

1. Remove:
   - generator rotor nut ①
   - washer

**NOTE:**

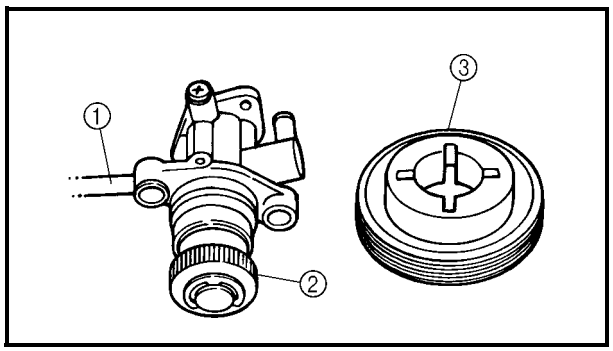
While holding the generator rotor ② with the rotor holding tool ③, loosen the generator rotor nut.

| | |
|---|---|
| | **Rotor holding tool**<br>**YU-01235** |



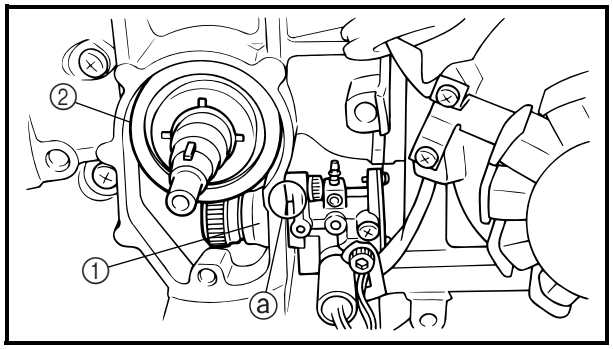

2. Remove:
   - generator rotor ①
     (with the flywheel puller set ②)
   - woodruff key

| | |
|---|---|
| | **Flywheel puller set**<br>**YU-90105** |




**CHECKING THE AUTOLUBE PUMP**

1. Check:
   - oil hose ①
     Obstruction → Blow out with compressed air.
2. Check:
   - autolube pump ②
   - pump drive gear ③
     Damage → Replace.

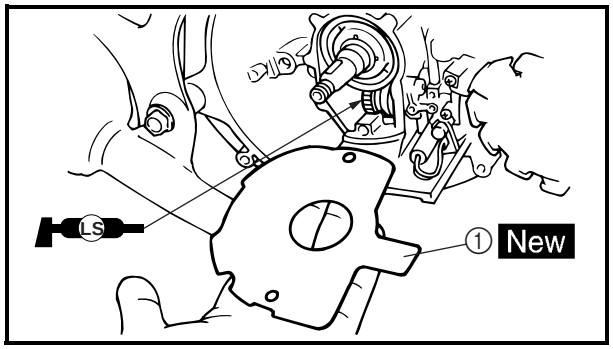


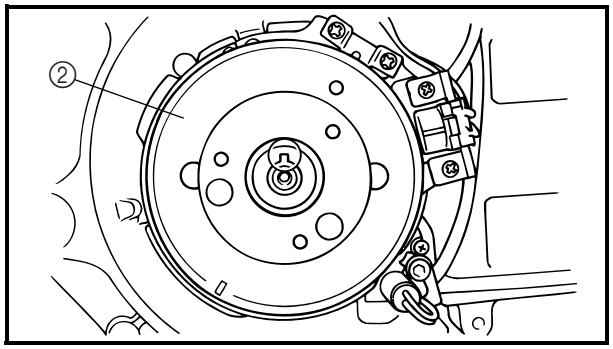

**INSTALLING THE AUTOLUBE PUMP**

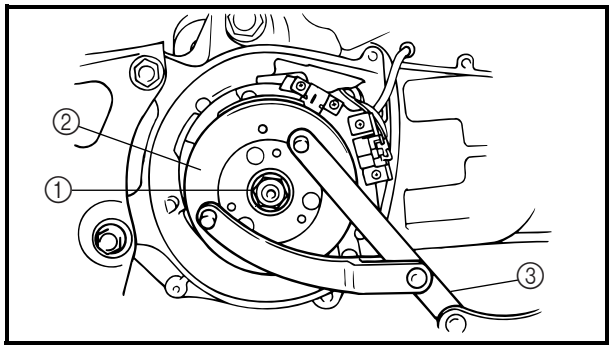
1. Install:
   - autolube pump ①
   - pump drive gear ②

**CAUTION:**

**Push the autolube pump in until it contacts the right crankcase ⓐ, and then tighten the pump bolt to the specified torque.**




EAS00354
**INSTALLING THE GENERATOR**

1. Install:
   - gasket ① New
   - woodruff key
   - generator rotor ②
   - washer
   - generator rotor nut

**NOTE:**
- Clean the tapered portion of the crankshaft and the generator rotor hub.
- When installing the generator rotor, make sure the woodruff key is properly seated in the keyway of the crankshaft.
- Do not allow the rotor holding tool to touch the projection on the generator rotor.

2. Tighten:
   - generator rotor nut ①

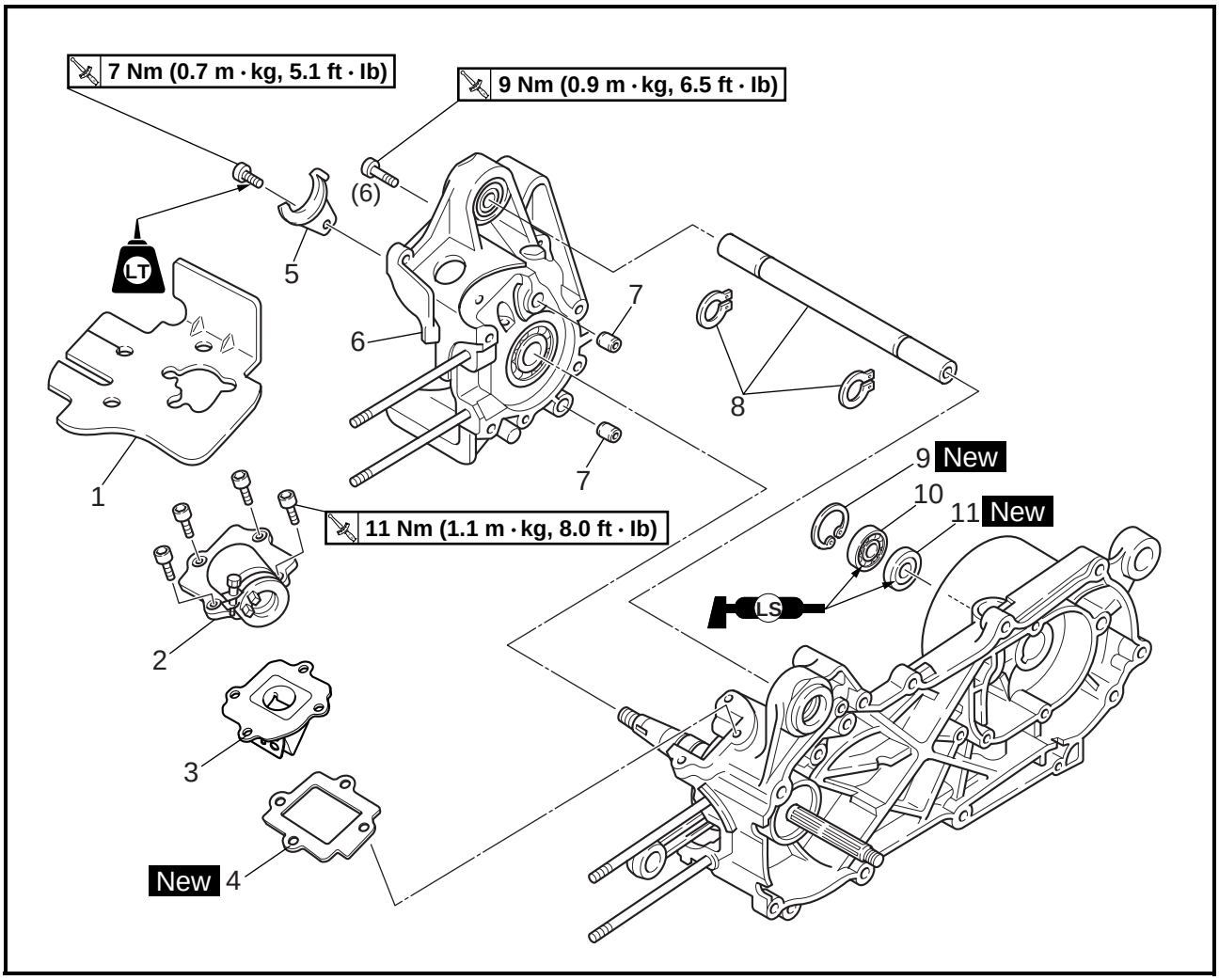
**38 Nm (3.8 m · kg, 27 ft · lb)**

**NOTE:**
- While holding the generator rotor ② with the rotor holding tool ③, tighten the generator rotor nut ①.
- Do not allow the rotor holding tool to touch the projection on the generator rotor.

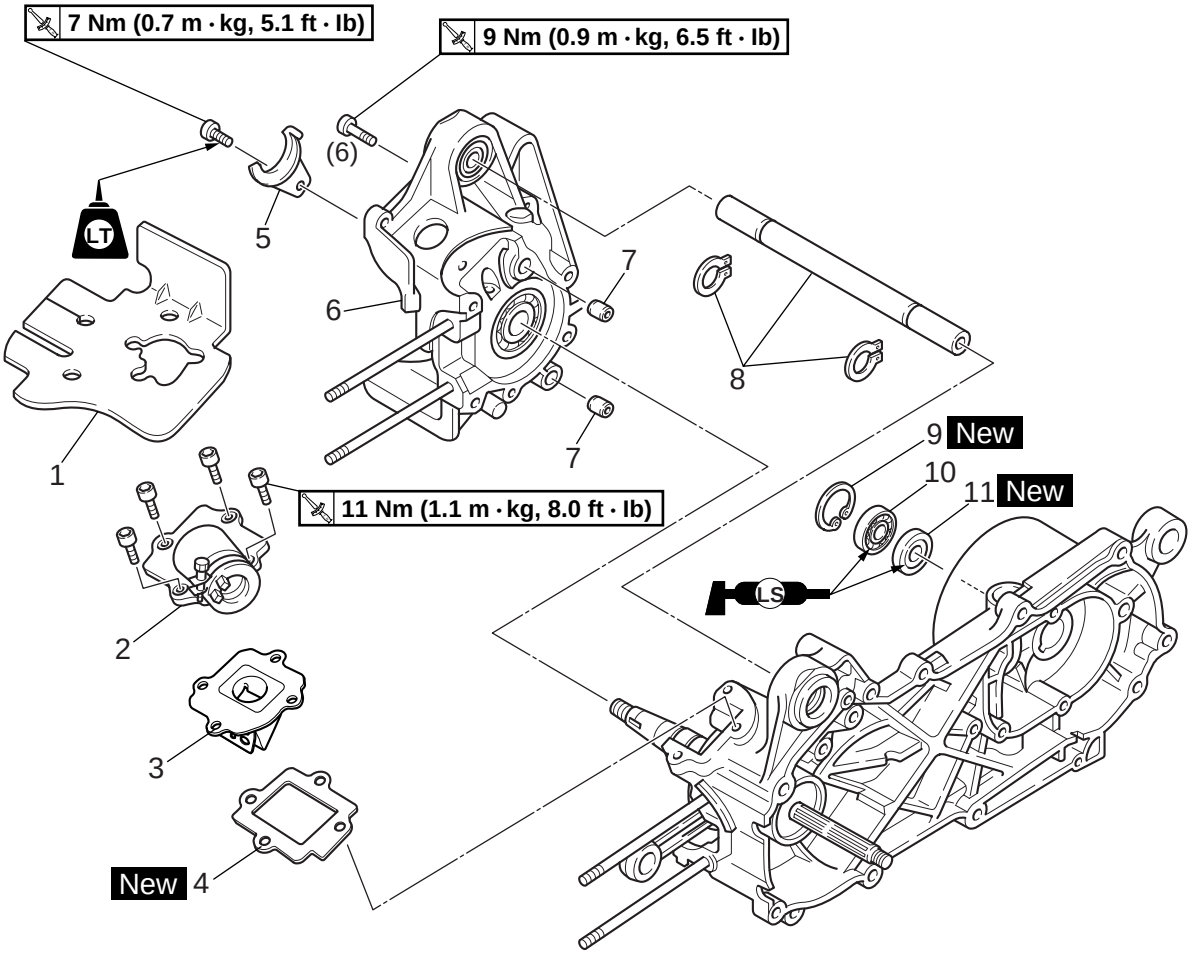
| | |
|---|---|
| | **Rotor holding tool**<br>**YU-01235** |

5

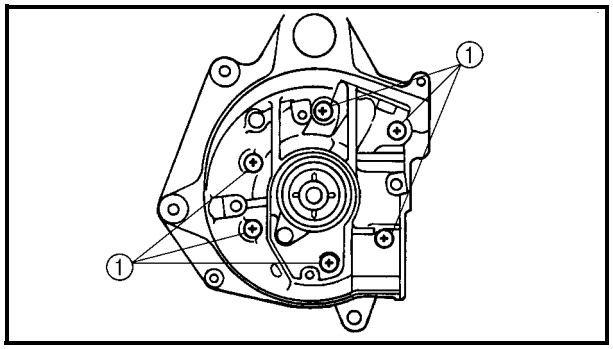
# CRANKCASE




| Order | Job/Part | Q'ty | Remarks |
|---|---|---|---|
| | **Separating the crankcase** | | Remove the parts in the order listed. |
| | Rear wheel assembly | | Refer to "REAR WHEEL AND BRAKE" in chapter 4. |
| | Engine assembly | | Refer to "ENGINE REMOVAL". |
| | Cylinder head, cylinder and piston | | Refer to "CYLINDER HEAD, CYLINDER AND PISTON". |
| | Sheaves cover | | Refer to "KICKSTARTER". |
| | V-belt and secondary pulley | | Refer to "BELT DRIVE". |
| | Starter clutch assembly and starter motor | | Refer to "STARTER CLUCH AND STARTER MOTOR". |
| | Generator rotor | | Refer to "GENERATOR AND AUTOL-UBE PUMP". |
| | Autolube pump | | Refer to "AUTOLUBE PUMP". |
| | Rear wheel | | Refer to "REAR WEEL AND BRAKE" in chapter 4. |
| | Transmission | | Refer to "TRANSMISSION". |



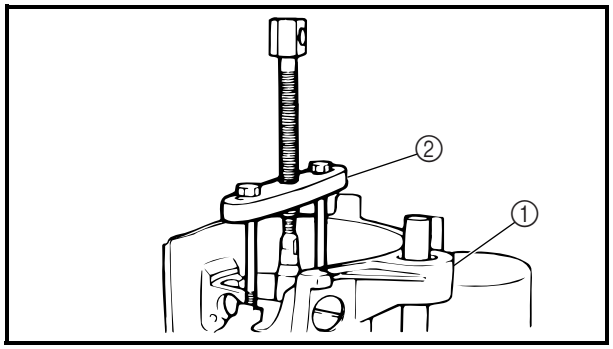

| Order | Job/Part | Q'ty | Remarks |
|---|---|---|---|
| 1 | Cover | 1 | |
| 2 | Intake manifold | 1 | |
| 3 | Reed valve assembly | 1 | |
| 4 | Valve seat gasket | 1 | |
| 5 | Bearing retainer | 1 | |
| 6 | Right crankcase | 1 | Refer to "DISASSEMBLING THE CRANKCASE". |
| 7 | Dowel pin | 2 | |
| 8 | Engine mount spacer | 1 | |
| 9 | Circlip | 1 | |
| 10 | Bearing | 1 | |
| 11 | Oil seal | 1 | |
| | | | For installation, reverse the removal procedure. |




EAS00385
## DISASSEMBLING THE CRANKCASE

1. Remove:
   • crankcase screws ①

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




2. Remove:
   • right crankcase ①

**CAUTION:**
**Tap on one side of the crankcase with a soft-face hammer. Tap only on reinforced portions of the crankcase, not on the crankcase mating surfaces. Work slowly and carefully and make sure the crankcase halves separate evenly.**

**NOTE:**
Remove the crankcase separating tool ②.

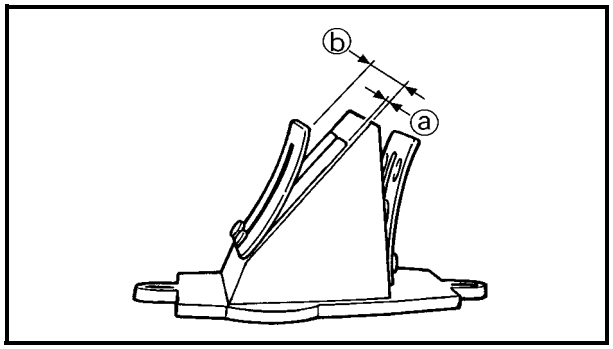
| | |
|---|---|
|  | **Crankcase separating tool**<br>**YU-01135** |

EAS00399
## CHECKING THE CRANKCASE

1. Thoroughly wash the crankcase halves in a mild solvent.
2. Thoroughly clean all the gasket surfaces and crankcase mating surfaces.
3. Check:
   • crankcase
   Cracks/damage → Replace.
   • oil delivery passages
   Obstruction → Blow out with compressed air.

EAS00401
### CHECKING THE BEARINGS AND OIL SEALS

1. Check:
   - bearings
     Clean and lubricate the bearings, then rotate the inner race with your finger.
     Rough movement → Replace.
2. Check:
   - oil seals
     Damage/wear → Replace.



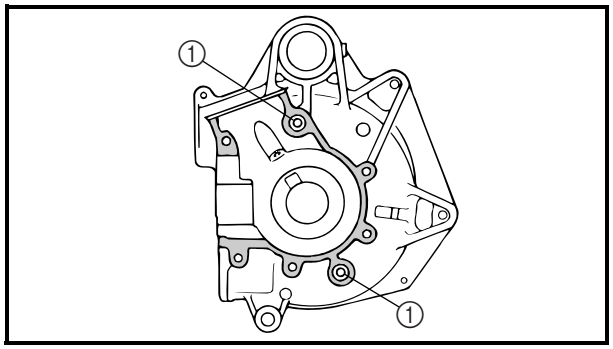

### CHECKING THE REED VALVE

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

**Reed valve bending**
**<Limit>: 0.2 mm (0.008 in)**

2. Measure:
   - valve stopper height ⓑ
     Out of specification → Adjust stopper/ replace valve stopper.

**Valve stopper height**
**7.0 ~ 7.4 mm (0.28 ~ 0.29 in)**



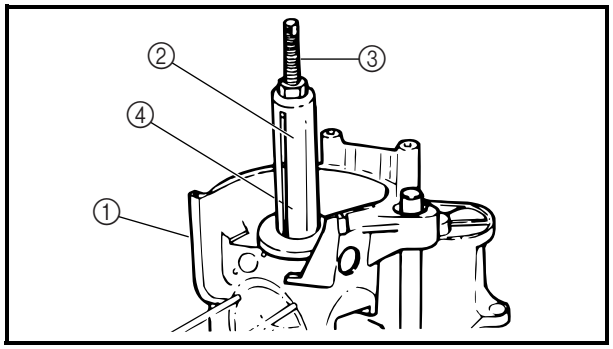

EAS00416
**ASSEMBLING THE CRANKCASE**

1. Apply:
   - sealant
     (onto the crankcase mating surfaces)

| | |
|---|---|
| | **Quick Gasket®**<br>**ACC-1100-15-01** |

**NOTE:**
Do not allow any sealant to come into contact with the oil gallery.

2. Install:
   - dowel pins ①




3. Install:
   - left crankcase ①
     (onto the right crankcase)
     Use the crankshaft installing tool.

| | |
|---|---|
| | **Crankshaft installer pot ②**<br>**YU-90058**<br>**Crankshaft installer bolt ③**<br>**YU-90060**<br>**Crankshaft installer adapter (M10) ④**<br>**YU-90062** |

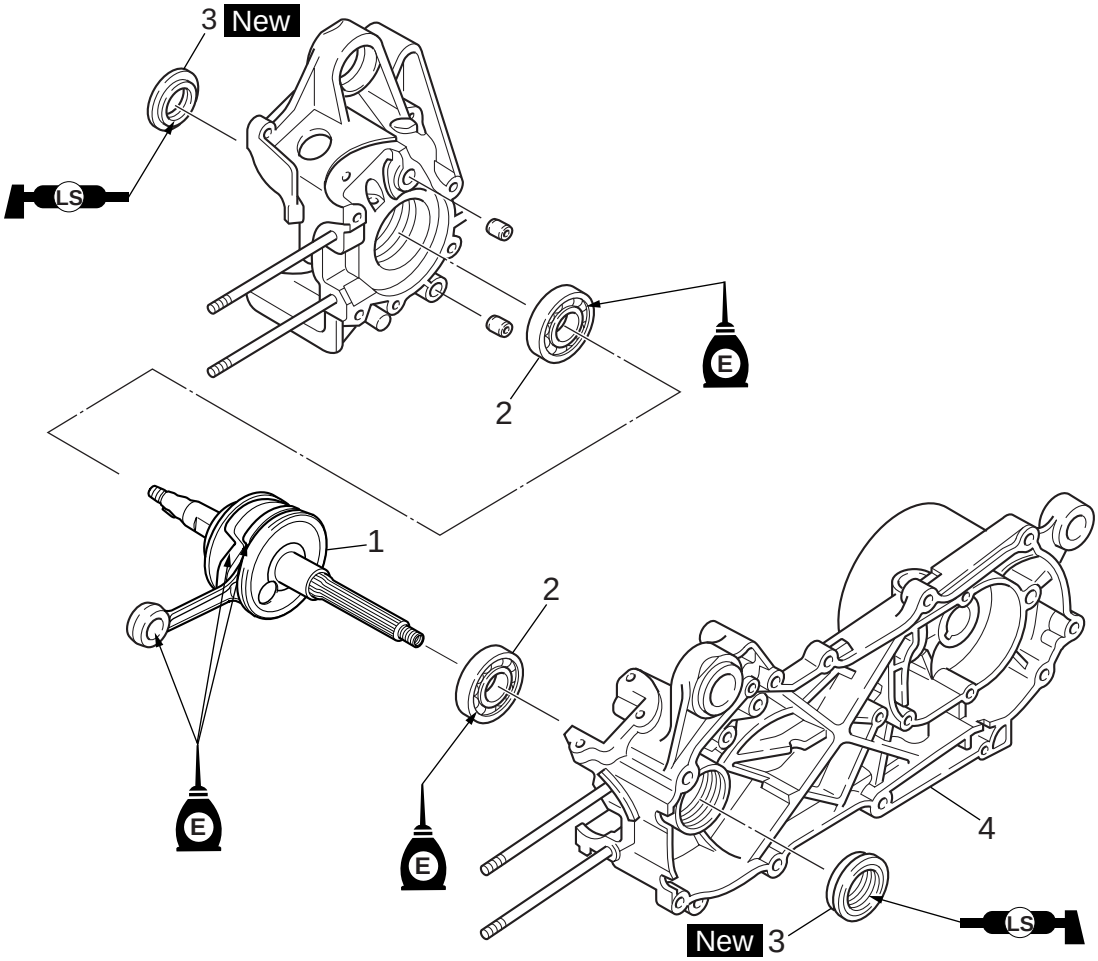
4. Install:
   - crankcase screws

| | |
|---|---|
| | **9 Nm (0.9 m · kg, 6.5 ft · lb)** |

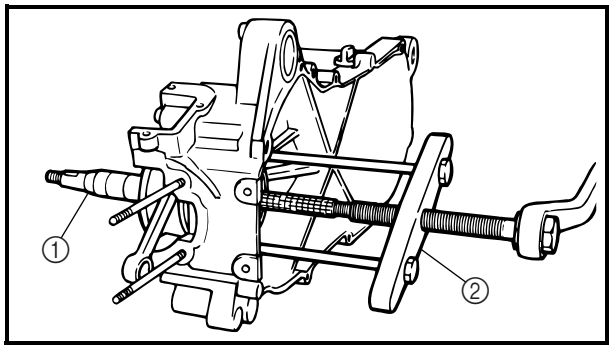
**NOTE:**
Tighten each bolt 1/4 of a turn at a time, in stages and in a crisscross pattern.

5. Apply:
   - engine oil
     (onto the crankshaft pins bearings and oil delivery holes)
6. Check:
   - crankshaft and transmission operation
     Rough movement → Repair.

EAS00381
# CRANKSHAFT




| Order | Job/Part | Q'ty | Remarks |
|---|---|---|---|
| | **Removing the crankshaft** | | Remove the parts in the order listed. |
| | Engine assembly | | Refer to "ENGINE REMOVAL". |
| | Crankcase | | Separate.<br>Refer to "CRANKCASE". |
| 1 | Crankshaft | 1 | |
| 2 | Bearing | 2 | |
| 3 | Oil seal | 1 | |
| 4 | Crankcase 1 | 1 | |
| | | | For installation, reverse the removal procedure. |




EAS00388
## REMOVING THE CRANKSHAFT ASSEMBLY

1. Remove:
   • crankshaft assembly ①

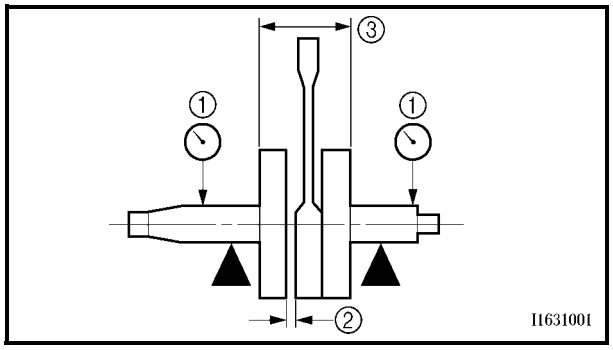
**NOTE:**
- Remove the crankshaft assembly with the crankcase separating tool ②.
- Make sure the crankcase separating tool is centered over the crankshaft assembly.

**Crankcase separating tool**
**YU-01135**

EAS00394
## CHECKING THE CRANKSHAFT

1. Measure:
   • crankshaft runout ①
   Out of specification → Replace the crankshaft, bearing(s) or both.

**NOTE:**
Turn the crankshaft slowly.




**Maximum crankshaft runout**
**0.03 mm (0.0012 in)**

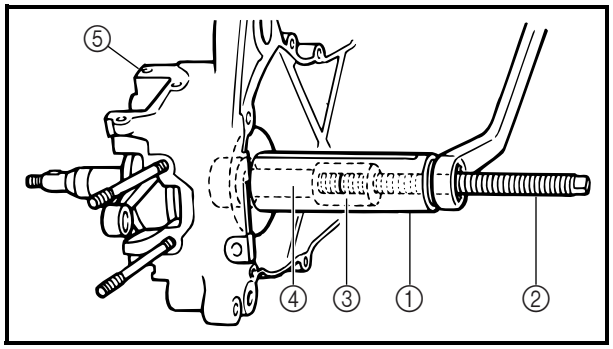
2. Measure:
   • big end side clearance ②
   Out of specification → Replace the big end bearing, crankshaft pin, or connecting rod.

**Big end side clearance**
**0.35 ~ 0.75 mm**
**(0.0138 ~ 0.0295 in)**
**<Limit>: 1 mm (0.0394 in)**

3. Measure:
   • crankshaft width ③
   Out of specification → Replace the crankshaft.

**Crankshaft width**
**37.90 ~ 37.95 mm (1.492 ~ 1.494 in)**

4. Check:
   • bearing
   Cracks/damage/wear → Replace.




EAS00408
**INSTALLING THE CRANKSHAFT**

1. Install:
   • crankshaft installing tool

| | |
|---|---|
|  | **Crankshaft installer pot ①**<br>**YU-90058**<br>**Crankshaft installer bolt ②**<br>**YU-90060**<br>**Crankshaft installer adapter (M10) ③**<br>**YU-90062** |

2. Install:
   • crankshaft assembly ④
   (to the left crankcase ⑤)

**CAUTION:**

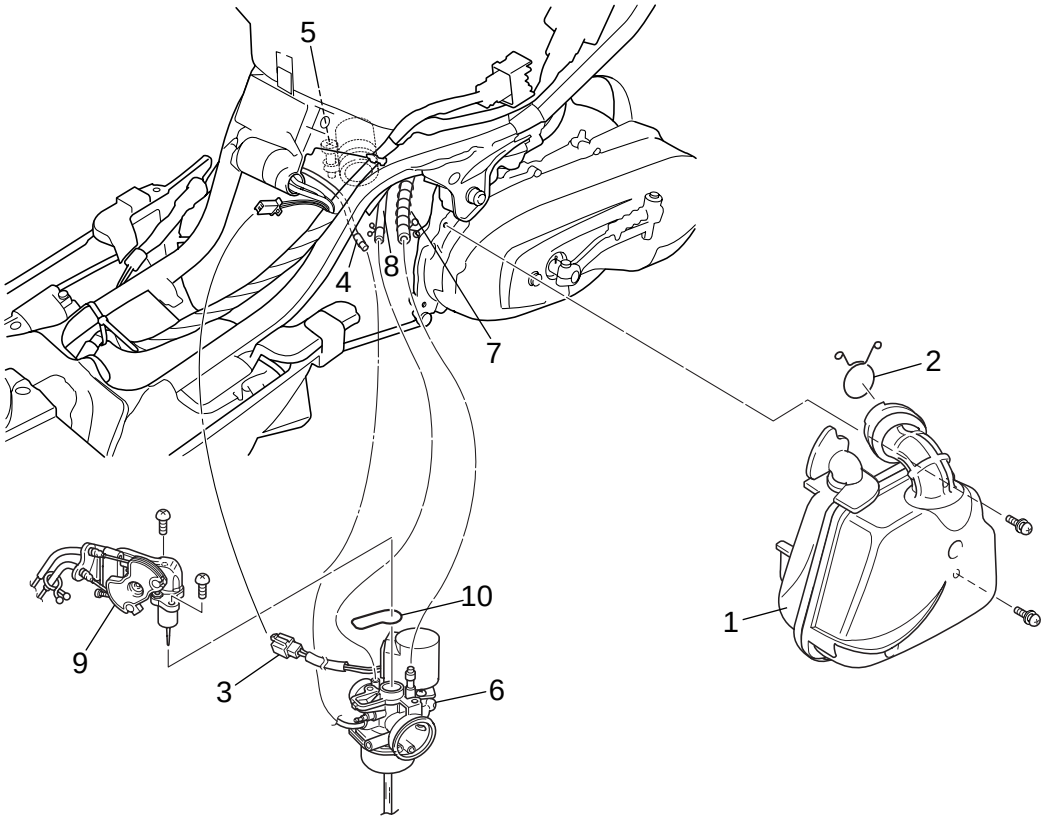
**To avoid scratching the crankshaft and to ease the installation procedure, lubricate the oil seal lips with grease and each bearing with engine oil.**

**NOTE:**

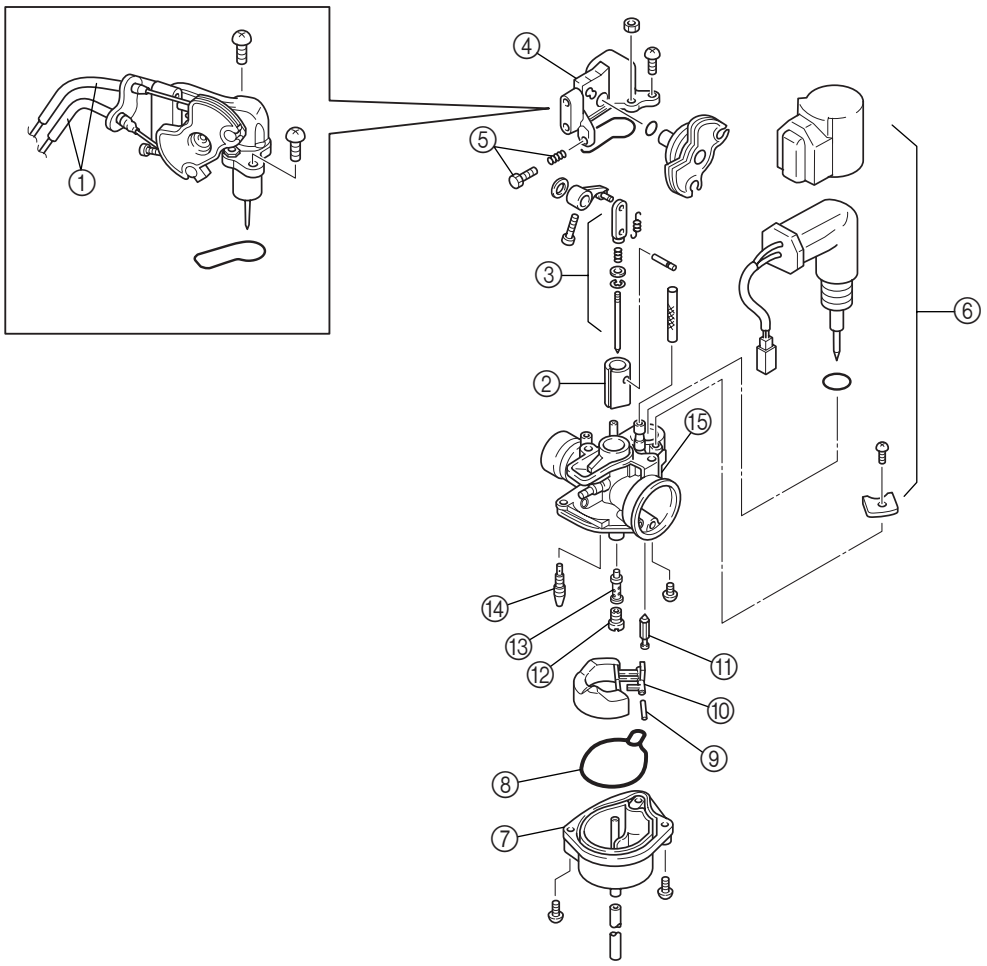
Hold the connecting rod at top dead center (TDC) with one hand while turning the nut of the crankshaft installing tool with the other. Turn the crankshaft installing tool until the crankshaft assembly bottoms against the bearing.

# CARBURETION

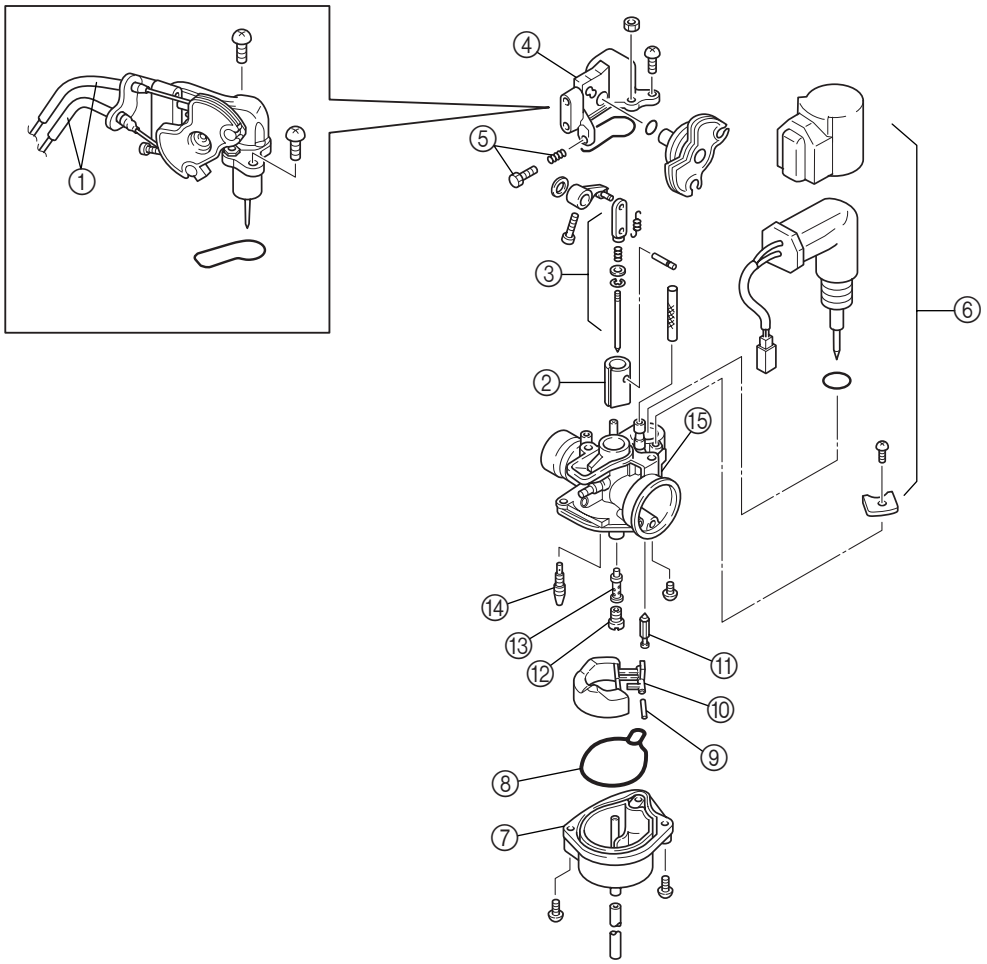
## CARBURETOR




| Order | Job/Part | Q'ty | Remarks |
|---|---|---|---|
| | **Removing the carburetor** | | Remove the parts in the order listed. |
| | Center cover, side cover (left) and foot-rest board | | Refer to "SIDE COVERS AND FOOT-REST BOARD" in chapter 3. |
| 1 | Air filter case assembly | 1 | |
| 2 | Clip | 1 | |
| 3 | Auto choke coupler | 1 | Disconnect. |
| 4 | Oil delivery hose | 1 | |
| 5 | Clamp screw (intake manifold) | 1 | Loosen. |
| 6 | Carburetor assembly | 1 | |
| 7 | Fuel hose | 1 | |
| 8 | Vacuum hose | 1 | |
| 9 | Throttle assembly | 1 | |
| 10 | O-ring | 1 | |
| | | | For installation, reverse the removal procedure. |




| Order | Job/Part | Q'ty | Remarks |
|---|---|---|---|
| | **Disassembling the carburetor** | | Remove the parts in the order listed.<br>**NOTE:**<br>Before disassembling the carburetor, make sure to note the number of times the pilot air screw is turned out from the seated position to its set position. |
| ① | Throttle cables | 2 | |
| ② | Throttle valve | 1 | |
| ③ | Jet needle kit | 1 | |
| ④ | Mixing chamber cap | 1 | |
| ⑤ | Throttle stop screw | 1 | |
| ⑥ | Auto choke assembly | 1 | |
| ⑦ | Float chamber | 1 | |

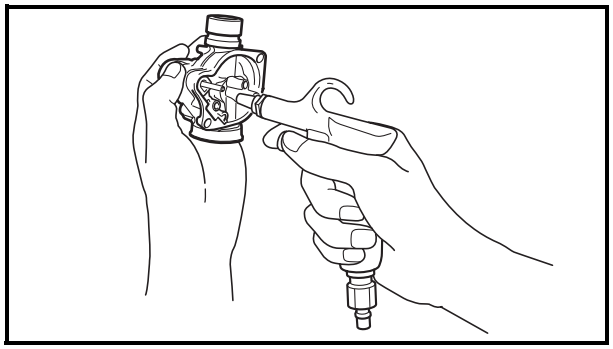



| Order | Job/Part | Q'ty | Remarks |
|---|---|---|---|
| ⑧ | O-ring | 1 | |
| ⑨ | Float pivot pin | 1 | |
| ⑩ | Float | 1 | |
| ⑪ | Needle valve | 1 | |
| ⑫ | Main jet | 1 | |
| ⑬ | Needle jet | 1 | |
| ⑭ | Pilot jet | 1 | |
| ⑮ | Carburetor body | 1 | |
| | | | For assembly, reverse the disassembly procedure. |

EAS00485
## CHECKING THE CARBURETOR

**NOTE:**
Before disassembling the carburetor, make sure to note the number of times the pilot air screw is turned out from the seated position to its set position.

1. Check:
   - carburetor body
   - float chamber
   - jet housing
   Cracks/damage → Replace.

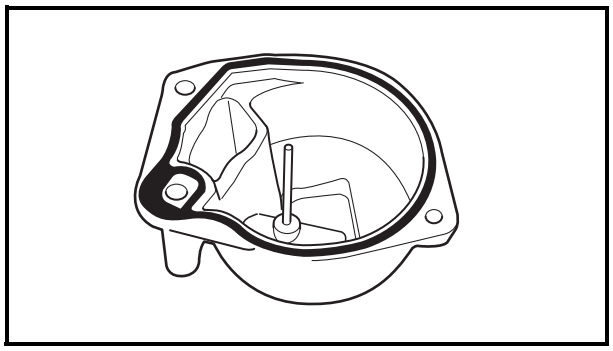


2. Check:
   - fuel passages
   Obstruction → Clean.

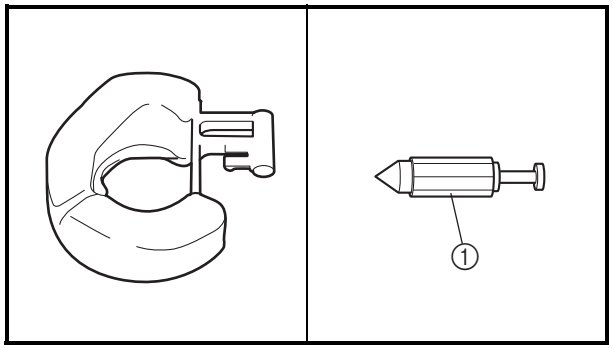
▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

a. Wash the carburetor in a petroleum-based solvent. Do not use any caustic carburetor cleaning solution.
b. Blow out all of the passages and jets with compressed air.

▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲

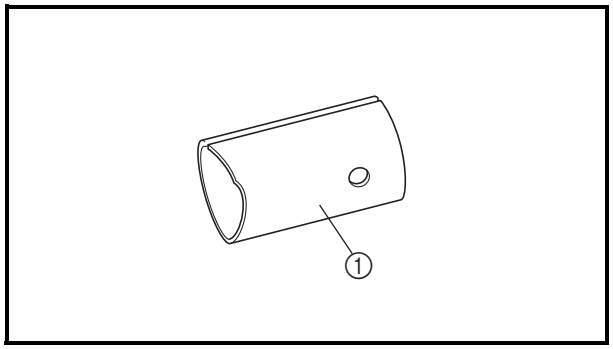


3. Check:
   - float chamber body
   Dirt → Clean.
4. Check:
   - float chamber rubber gasket
   Cracks/damage/wear → Replace.
5. Check:
   - float
   Damage → Replace.

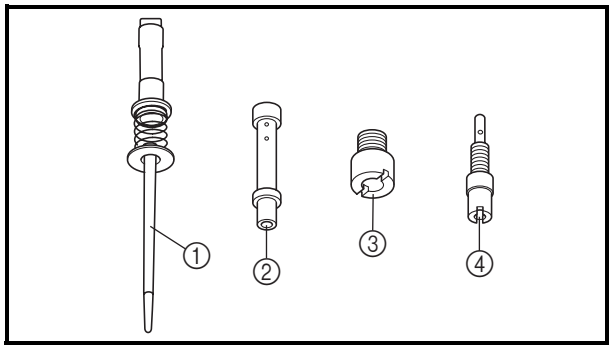



6. Check:
   - needle valve ①
   Damage/obstruction/wear → Replace the needle valve.

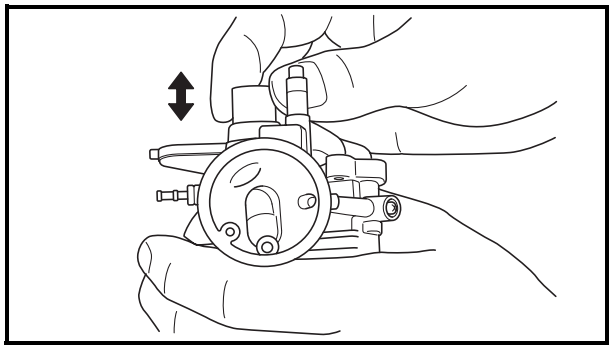
6




7. Check:
   • throttle valve ①
   Damage/scratches/wear→ Replace.



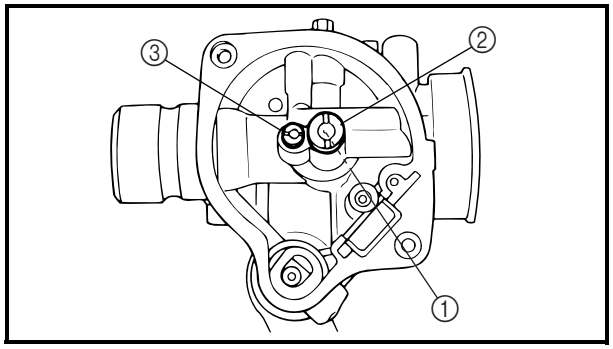

8. Check:
   • jet needle kit ①
   • needle jet ②
   • main jet ③
   • pilot jet ④
   Bends/damage/wear → Replace.
   Obstruction → Clean.
   Blow out the jets with compressed air.



9. Check:
   • throttle valve movement
   Insert the throttle valve into the carburetor body and move it up and down.
   Tightness → Replace the piston valve.
10. Check:
   • vacuum hose
   • fuel hose
   Cracks/damage/wear → Replace.
   Obstruction → Clean.
   Blow out the hoses with compressed air.

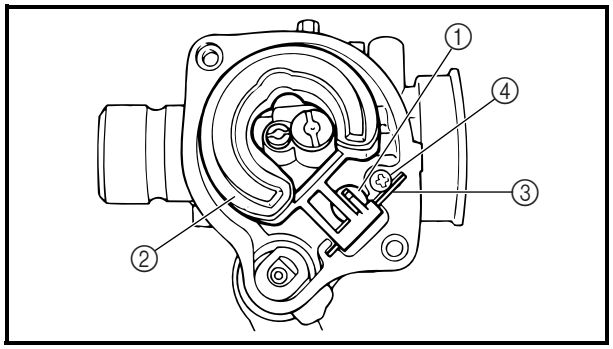
EAS00487
## ASSEMBLING THE CARBURETOR

**NOTE:**
Before assembling the carburetor, make sure to turn out the pilot air screw the same number of times, as noted before disassembly, from the seated position to the set position.

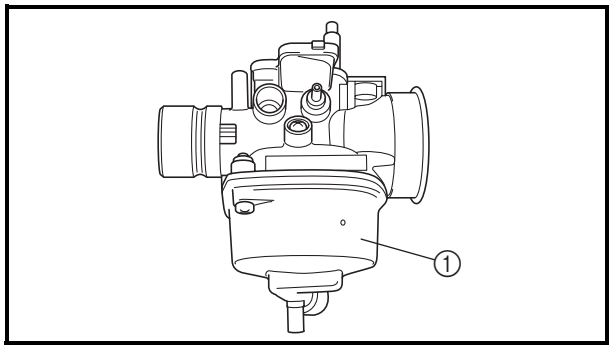



**CAUTION:**
- **Before assembling the carburetor, wash all of the parts in a petroleum-based solvent.**
- **Always use a new gasket.**

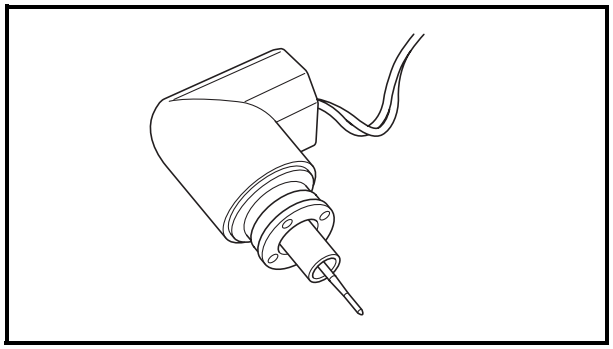
1. Install:
   • needle jet ①
   • main jet ②
   • pilot jet ③




2. Install:
   - needle valve ①
   - float ②
   - float pivot pin ③
   - screw ④




3. Install:
   - float chamber ①



4. Install:
   - starter plunger kit
5. Install:
   - throttle valve
   - jet needle holder
   - jet needle kit

**NOTE:**
Align the groove of the throttle valve with the projection of the carburetor body.

6. Install:
   - throttle cable

EAS00492
**INSTALLING THE CARBURETOR**

1. Adjust:
   - engine idling speed

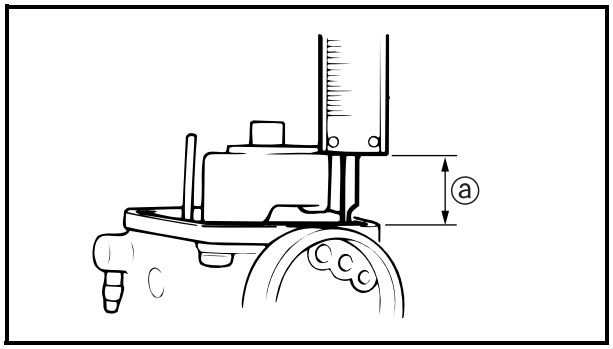
**Engine idling speed**
**1,800 r/min**

Refer to "ADJUSTING THE ENGINE IDLING SPEED" in chapter 3.

2. Adjust:
   - throttle cable free play

**Throttle cable free play (at the flange of the throttle grip)**
**1.5 ~ 3.5 mm (0.06 ~ 0.14 in)**

Refer to "ADJUSTING THE THROTTLE CABLE FREE PLAY" in chapter 3.




EAS00499
## MEASURING AND ADJUSTING THE FLOAT HEIGHT

1. Measure:
   - float height ⓐ
     Out of specification → Replace the needle valve.

| | |
|---|---|
| | **Float height**<br>**15 ~ 17 mm (0.59 ~ 0.67 in)** |

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a. Remove the carburetor.
b. Hold the carburetor in an upside down position.
c. Measure the distance from the mating surface of the float chamber to the top of the float.
d. If the float height is not within specification, check the needle valve.
e. If either is worn, replace them as a set.
f. Install the carburetor.

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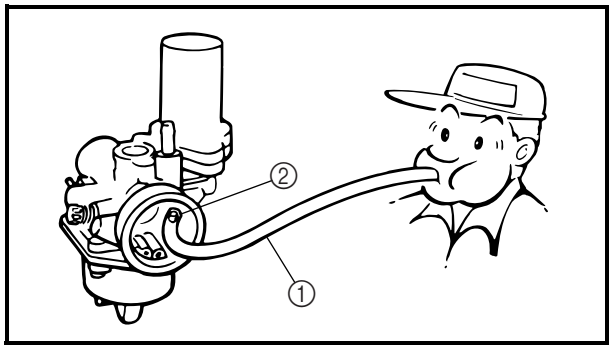
EAS00503
## CHECKING THE AUTOCHOKE ASSEMBLY

**NOTE:**
When checking the autochoke assembly, the ambient temperature must be lower than 45 °C (113 °F).

1. Remove:
   - carburetor
2. Check:
   - autochoke assembly

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a. Connect a 3.3-mm hose ① to the starter air passage ② and blow into the hose.

**NOTE:**
When the starter plunger is open, air should come out of the other side of the starter air passage.

| | |
|---|---|
| **Starter plunger opens.** | **Perform step (3).** |
| **Starter plunger closes.** | **Replace the autochoke assembly.** |

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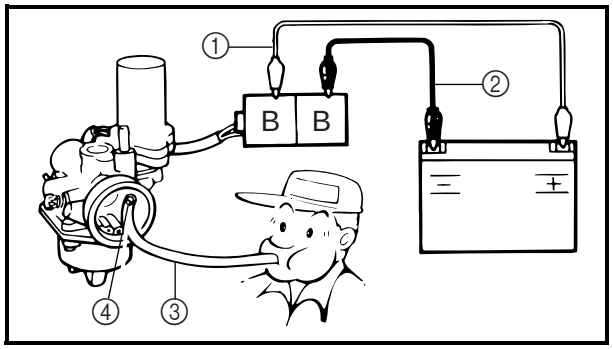


3. Check:
   • autochoke assembly

▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

a. Connect the autochoke assembly leads to a 12.0-V battery for five minutes.

**Positive battery lead ① → black**
**Negative battery lead ② → black**

b. Connect a 3.3-mm hose ③ to the starter air passage ④ and blow into the hose.

| | |
|---|---|
| **Starter plunger opens.** | **Replace the autochoke assembly.** |
| **Starter plunger closes.** | **Autochoke is OK.** |

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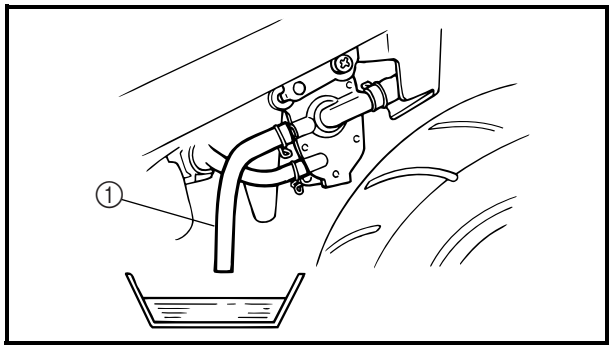
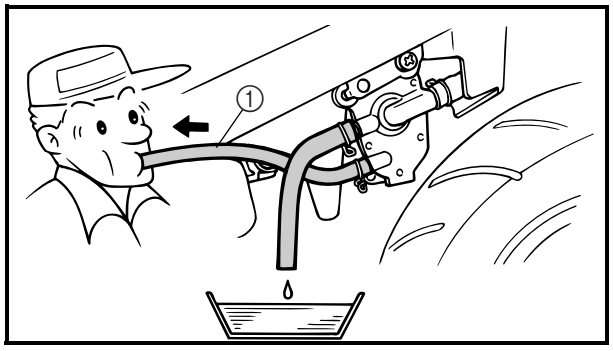



EAS00506
### CHECKING THE FUEL COCK OPERATION

**NOTE:**
After installing the fuel cock, check its operation.

1. Place a container under the end of the fuel hose ①.




2. Check:
   • fuel cock operation

▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

a. Suck on the end of the vacuum hose ①.

| | |
|---|---|
| **Fuel flows.** | **Fuel cock is OK.** |
| **Fuel does not flow.** | **Replace the fuel cock.** |

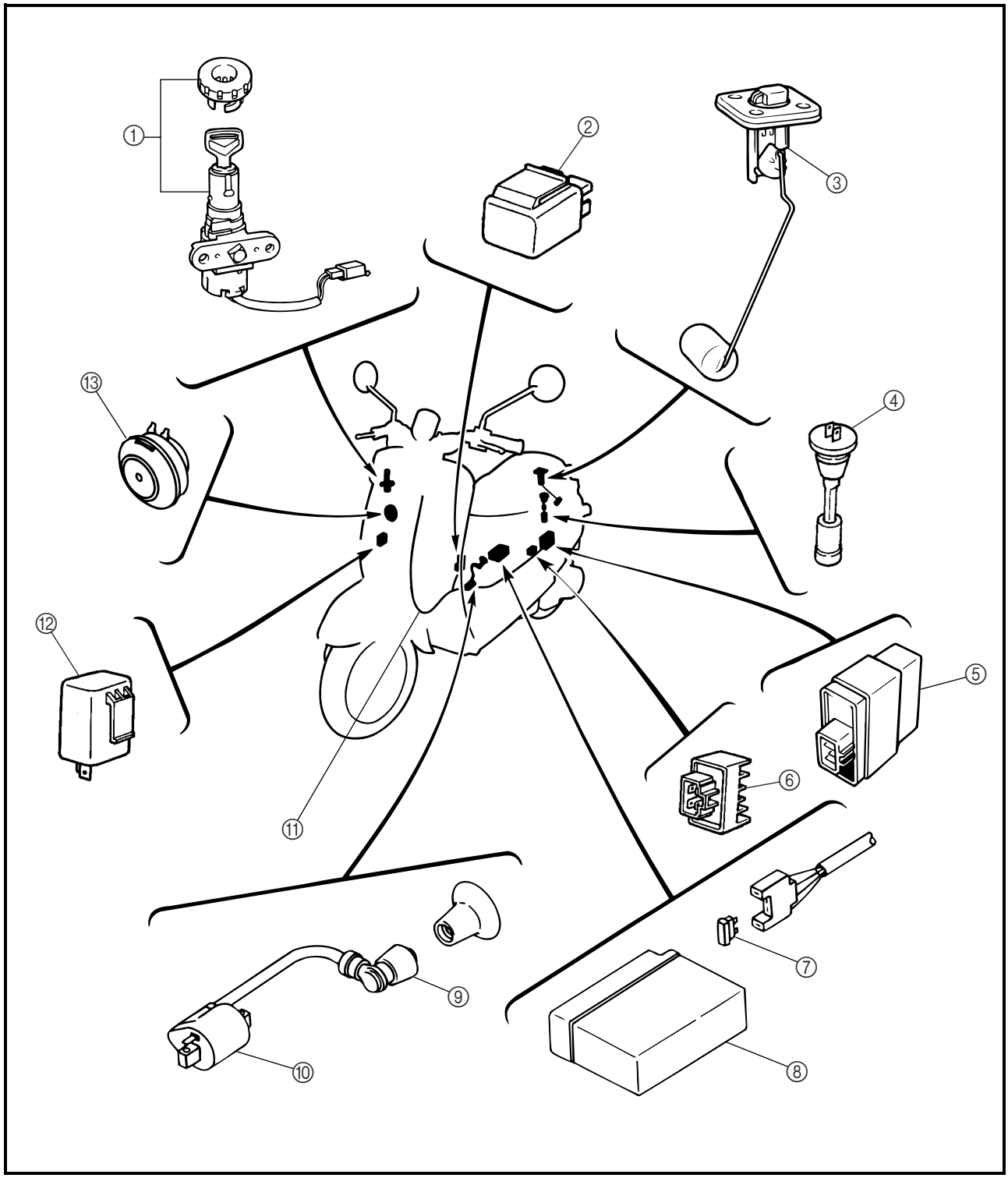
▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲

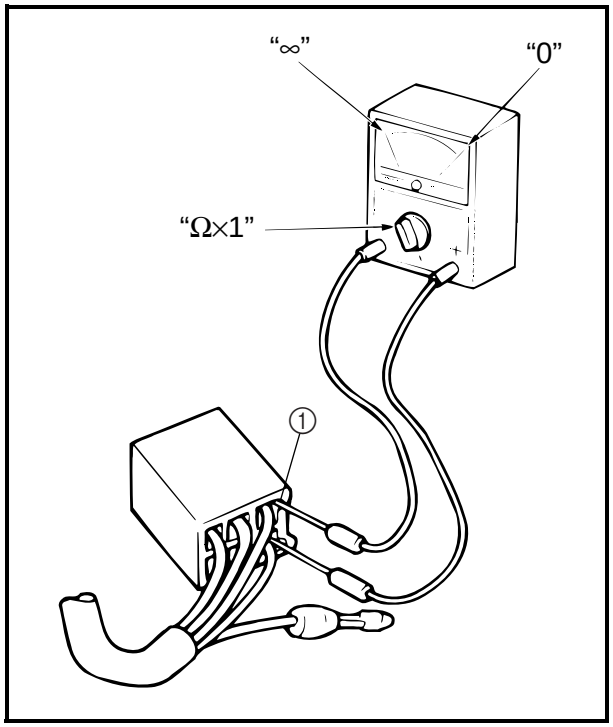
EAS00729

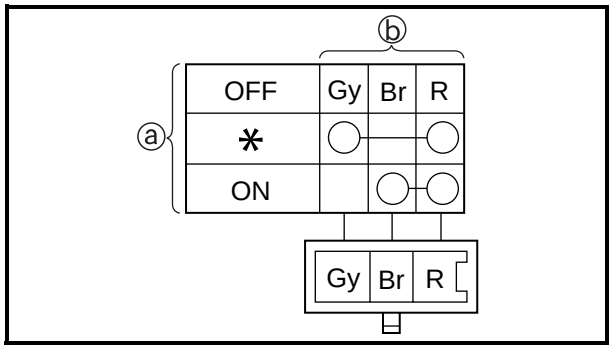
# ELECTRICAL

## ELECTRICAL COMPONENTS

① Main switch
② Starter relay
③ Fuel sender
④ Oil level switch
⑤ CDI unit
⑥ Rectifier/regulator
⑦ Main fuse
⑧ Battery
⑨ Spark plug cap
⑩ Ignition coil
⑪ Wire harness
⑫ Turn signal relay
⑬ Horn






EAS00730
# SWITCHES

## CHECKING SWITCH CONTINUITY

Check each switch for continuity with the pocket tester. If the continuity reading is incorrect, check the wiring connections and if necessary, replace the switch.

**CAUTION:**

**Never insert the tester probes into the coupler terminal slots ①. Always insert the probes from the opposite end of the coupler, taking care not to loosen or damage the leads.**

| | |
|---|---|
| | **Pocket tester**<br>**YU-03112** |

**NOTE:**

- Before checking for continuity, set the pocket tester to "0" and to the "Ω × 1" range.
- When checking for continuity, switch back and forth between the switch positions a few times.

The terminal connections for switches (e.g., main switch, engine stop switch) are shown in an illustration similar to the one on the left.
The switch positions ⓐ are shown in the far left column and the switch lead colors ⓑ are shown in the top row in the switch illustration.

**NOTE:**

"○——○" indicates a continuity of electricity between switch terminals (i.e., a closed circuit at the respective switch position).

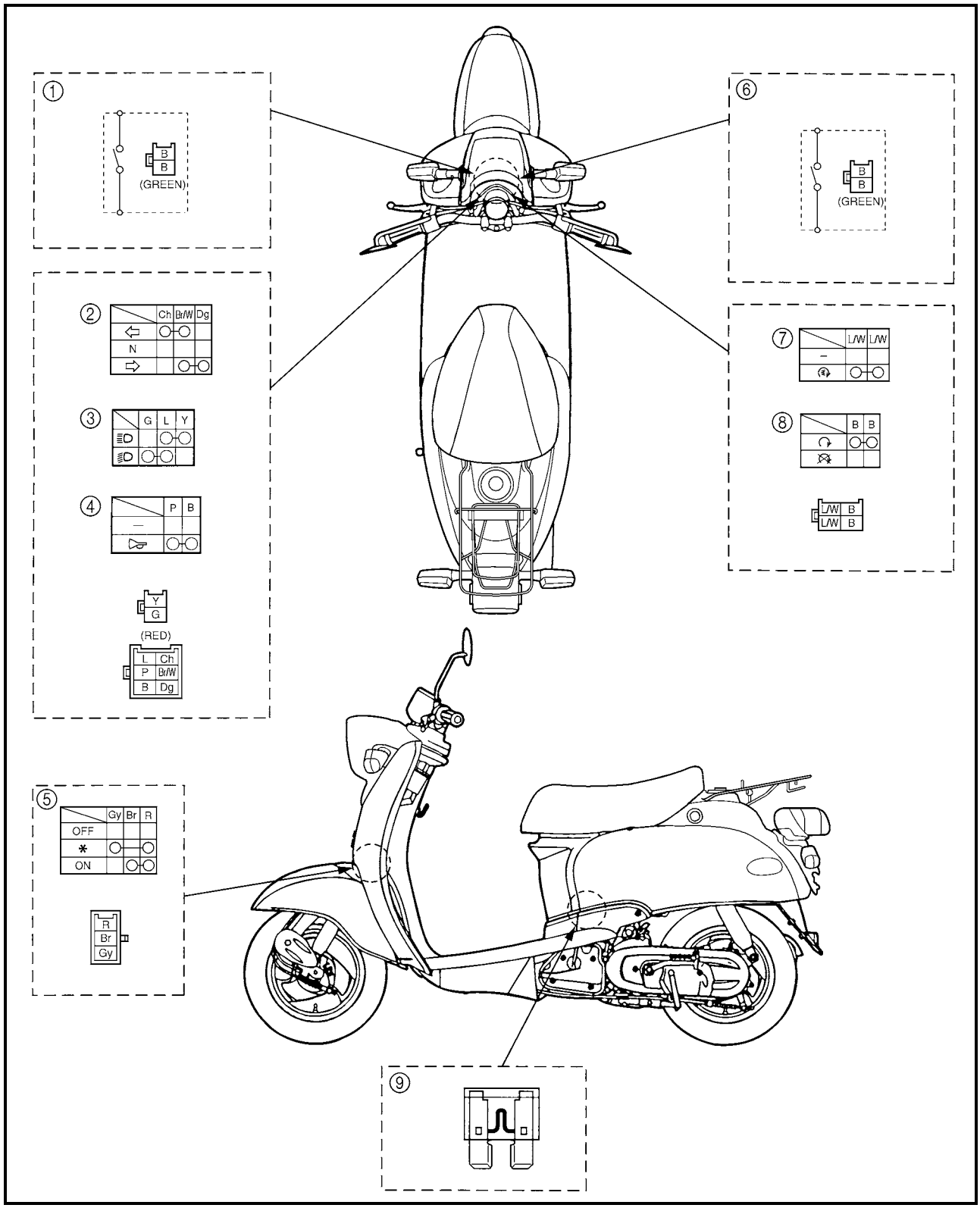
**The example illustration on the left shows that:**

There is continuity between red and brown when the switch is set to "ON".

EAS00731
# CHECKING THE SWITCHES

Check each switch for damage or wear, proper connections, and also for continuity between the terminals. Refer to “CHECKING SWITCH CONTINUITY”.

Damage/wear → Repair or replace.
Improperly connected → Properly connect.
Incorrect continuity reading → Replace the switch.



① Front brake light switch
② Turn signal switch
③ Dimmer switch
④ Horn switch
⑤ Main switch
⑥ Rear brake light switch
⑦ Start switch
⑧ Engine stop switch
⑨ Main fuse

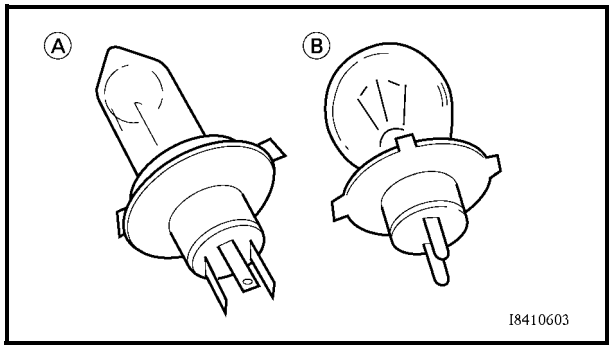
EAS00733
# CHECKING THE BULBS AND BULB SOCKETS

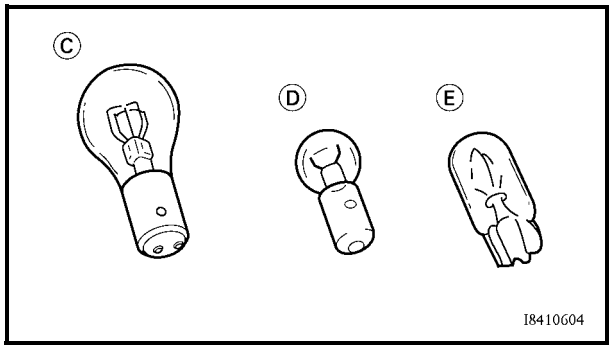
Check each bulb and bulb socket for damage or wear, proper connections, and also for continuity between the terminals.

Damage/wear → Repair or replace the bulb, bulb socket or both.

Improperly connected → Properly connect.

No continuity → Repair or replace the bulb, bulb socket or both.




**TYPES OF BULBS**

The bulbs used on this scooter are shown in the illustration on the left.

- Bulbs Ⓐ and Ⓑ are used for the headlights and usually use a bulb holder that must be detached before removing the bulb. The majority of these types of bulbs can be removed from their respective socket by turning them counterclockwise.
- Bulbs Ⓒ are used for turn signal and tail/brake lights and can be removed from the socket by pushing and turning the bulb counterclockwise.
- Bulbs Ⓓ and Ⓔ are used for meter and indicator lights and can be removed from their respective socket by carefully pulling them out.

### CHECKING THE CONDITION OF THE BULBS

The following procedure applies to all of the bulbs.

1. Remove:
   - bulb

**⚠ WARNING**

**Since the headlight bulb gets extremely hot, keep flammable products and your hands away from the bulb until it has cooled down.**

**CAUTION:**

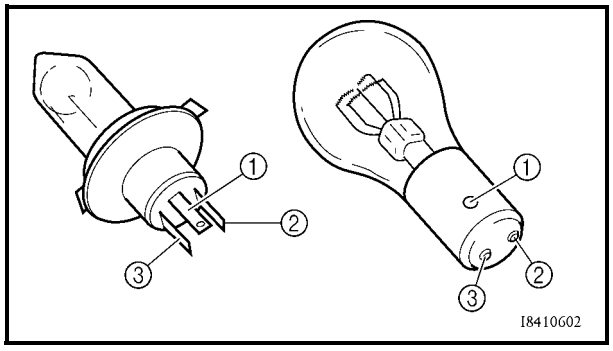
- **Be sure to hold the socket firmly when removing the bulb. Never pull the lead, otherwise it may be pulled out of the terminal in the coupler.**
- **Avoid touching the glass part of the headlight bulb to keep it free from oil, otherwise the transparency of the glass, the life of the bulb, and the luminous flux will be adversely affected. If the headlight bulb gets soiled, thoroughly clean it with a cloth moistened with alcohol or lacquer thinner.**

2. Check:
   - bulb (for continuity)
     (with the pocket tester)
     No continuity → Replace.

**Pocket tester**
**YU-03112**

**NOTE:**

Before checking for continuity, set the pocket tester to "0" and to the "Ω × 1" range.

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a. Connect the positive tester probe to terminal ① and the negative tester probe to terminal ②, and check the continuity.
b. Connect the positive tester probe to terminal ① and the negative tester probe to terminal ③, and check the continuity.
c. If either of the readings indicate no continuity, replace the bulb.

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### CHECKING THE CONDITION OF THE BULB SOCKETS

The following procedure applies to all of the bulb sockets.

1. Check:
   - bulb socket (for continuity)
     (with the pocket tester)
     No continuity → Replace.

**Pocket tester**
**YU-03112**

**NOTE:**

Check each bulb socket for continuity in the same manner as described in the bulb section; however, note the following.

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a. Install a good bulb into the bulb socket.
b. Connect the pocket tester probes to the respective leads of the bulb socket.
c. Check the bulb socket for continuity. If any of the readings indicate no continuity, replace the bulb socket.

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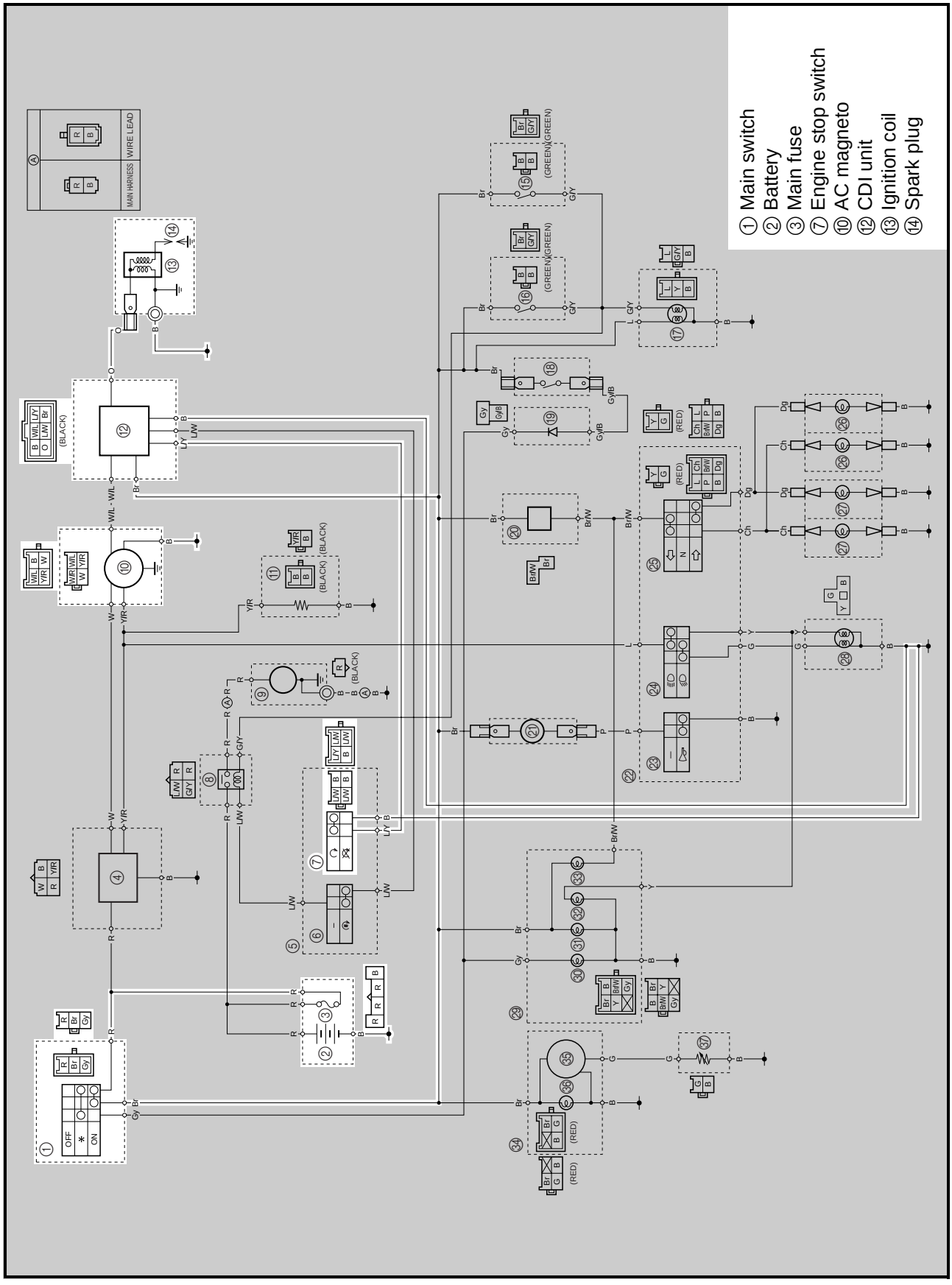
EAS00734
# IGNITION SYSTEM
## CIRCUIT DIAGRAM



EAS00736
## TROUBLESHOOTING

**The ignition system fails to operate (no spark or intermittent spark).**

Check:
1. main fuse
2. battery
3. spark plug
4. ignition spark gap
5. spark plug cap resistance
6. ignition coil resistance
7. pickup coil resistance
8. main switch
9. engine stop switch
10. wiring (of the entire ignition system)

**NOTE:**
- Before troubleshooting, remove the following part(s):

1) center cover
2) side cover (left)
3) side cover (right)
4) leg shield

- Troubleshoot with the following special tool(s).

**Dynamic spark tester**
**YU-34487**
**Pocket tester**
**YU-03112**

EAS00738

1. Main fuse

- Check the main fuse for continuity.
  Refer to "CHECKING THE FUSE" in chapter 3.
- Is the main fuse OK?

YES → Replace the main fuse.

NO

EAS00739

2. Battery

- Check the condition of the battery.
  Refer to "CHECKING AND CHARGING THE BATTERY" in chapter 3.

**Minimum open-circuit voltage**
**12.8 V or more at 20 °C (68 °F)**

- Is the battery OK?

YES

NO
- Clean the battery terminals.
- Recharge or replace the battery.

EAS00740

3. Spark plug

- Check the condition of the spark plug.
- Check the spark plug type.
- Measure the spark plug gap.
  Refer to "CHECKING THE SPARK PLUG" in chapter 3.

**Standard spark plug**
**BPR7HS (NGK)**
**Spark plug gap**
**0.6 ~ 0.7 mm (0.02 ~ 0.03 in)**

- Is the spark plug in good condition, is it of the correct type, and is its gap within specification?

YES

NO
Re-gap or replace the spark plug.

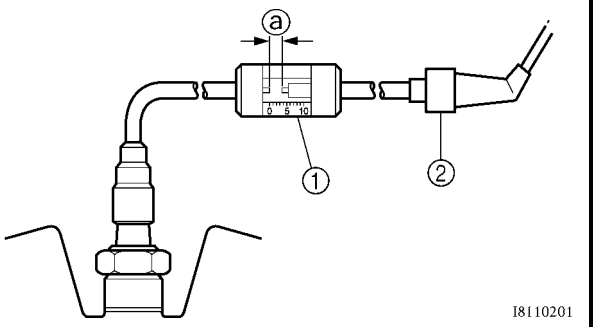
EAS00742

4. Ignition spark gap

- Disconnect the spark plug cap from the spark plug.
- Connect the ignition checker/dynamic spark tester ① as shown.

② Spark plug cap

- Set the main switch to "ON".
- Measure the ignition spark gap ⓐ.
- Crank the engine by pushing the starter switch and gradually increase the spark gap until a misfire occurs.




**Minimum ignition spark gap**
**6 mm (0.24 in)**

- Is there a spark and is the spark gap within specification?

NO

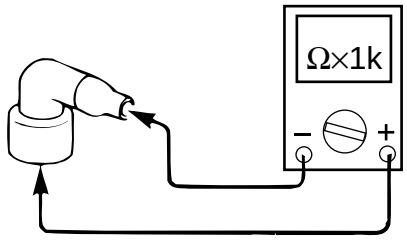
YES

The ignition system is OK.

EAS00744

5. Spark plug cap resistance

- Remove the spark plug cap from the spark plug lead.
- Connect the pocket tester ("Ω × 1k" range) to the spark plug cap as shown.
- Measure the spark plug cap resistance.




**Spark plug cap resistance**
**5 kΩ at 20°C (68°F)**

- Is the spark plug cap OK?

YES

NO

Replace the spark plug cap.

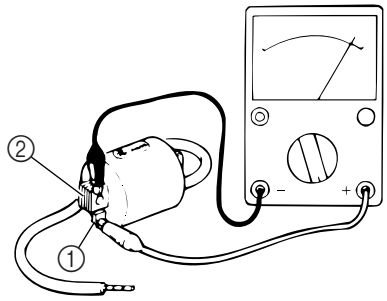
7

EAS00746

6. Ignition coil resistance

- Disconnect the ignition coil connectors from the ignition coil terminals.
- Connect the pocket tester (Ω × 1) to the ignition coil as shown.

**Positive tester probe → orange ①**
**Negative tester probe → ignition coil base ②**

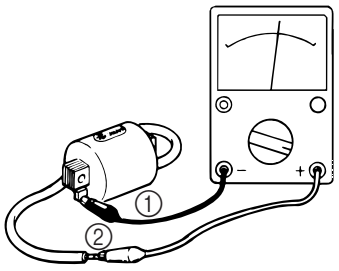



- Measure the primary coil resistance.

**Primary coil resistance**
**0.18 ~ 0.28 Ω at 20 °C (68 °F)**

- Connect the pocket tester (Ω × 1k) to the ignition coil as shown.

**Negative tester probe → orange ①**
**Positive tester probe → spark plug lead ②**




- Measure the secondary coil resistance.

**Secondary coil resistance**
**6.32 ~ 9.48 kΩ at 20 °C (68 °F)**

- Is the ignition coil OK?

YES → NO

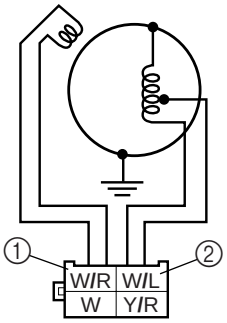
Replace the ignition coil.

EAS00748

7. Pickup coil resistance

- Disconnect the stator coil assembly coupler from the wire harness.
- Connect the pocket tester (Ω × 100) to the pickup coil terminal as shown.

**Positive tester probe → white/red ①**
**Negative tester probe → white/blue ②**




- Measure the pickup coil resistance.

**Pickup coil resistance**
**248 ~ 372 Ω at 20 °C (68 °F)**
**(between white/red and white/blue)**

- Is the pickup coil OK?

YES → NO

Replace the stator coil assembly.

EAS00749

8. Main switch

- Check the main switch for continuity. Refer to “CHECKING THE SWITCHES”.
- Is the main switch OK?

YES → NO

Replace the main switch.

EAS00750

9. Engine stop switch

- Check the engine stop switch for continuity.
  Refer to “CHECKING THE SWITCHES”.
- Is the engine stop switch OK?

YES

NO

Replace the right handlebar switch.

EAS00754

10.Wiring

- Check the entire ignition system’s wiring.
  Refer to “CIRCUIT DIAGRAM”.
- Is the ignition system’s wiring properly connected and without defects?

YES

NO

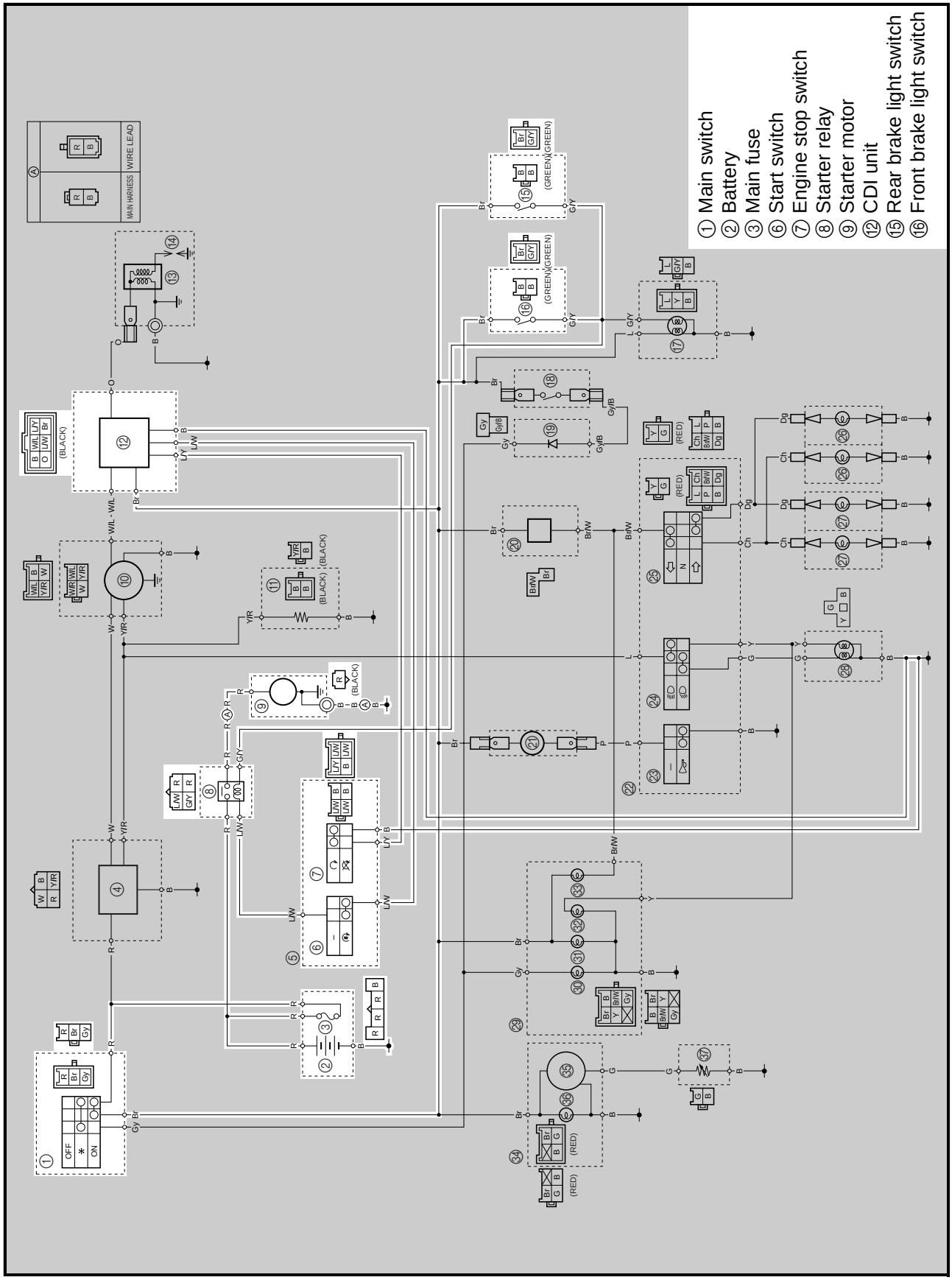
Replace the ignitor unit.

Properly connect or repair the ignition system’s wiring.

EAS00755

# ELECTRIC STARTING SYSTEM

## CIRCUIT DIAGRAM



EAS00757
## TROUBLESHOOTING

**The starter motor fails to turn.**

Check:
1. main fuse
2. battery
3. starter motor
4. starter relay
5. main switch
6. engine stop switch
7. start switch
8. front brake light switch
9. rear brake light switch
10. wiring (of the entire starting system)

**NOTE:**
- Before troubleshooting, remove the following part(s):

1) center cover
2) side cover (left)
3) side cover (right)
4) front panel
5) leg shield

- Troubleshoot with the following special tool(s).

**Pocket tester**
**YU-03112**

EAS00738
1. Main fuse

- Check the main fuse for continuity. Refer to "CHECKING THE FUSE" in chapter 3.
- Is the main fuse OK?

YES

NO → Replace the main fuse.

EAS00739
2. Battery

- Check the condition of the battery. Refer to "CHECKING AND CHARGING THE BATTERY" in chapter 3.

**Minimum open-circuit voltage**
**12.8 V or more at 20 °C (68 °F)**

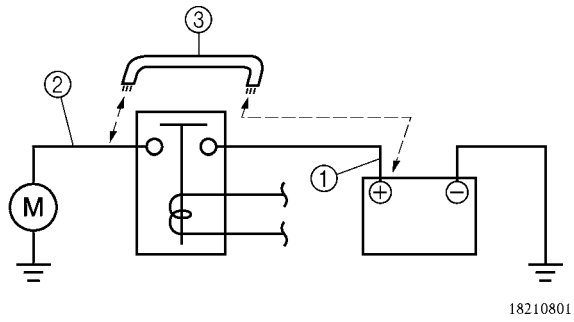
- Is the battery OK?

YES

NO →
- Clean the battery terminals.
- Recharge or replace the battery.

EAS00758
3. Starter motor

- Connect the positive battery terminal ① and starter motor lead ② with a jumper lead ③.




**⚠ WARNING**
- **A wire that is used as a jumper lead must have at least the same capacity or more as that of the battery lead, otherwise the jumper lead may burn.**
- **This check is likely to produce sparks, therefore make sure nothing flammable is in the vicinity.**

- Does the starter motor turn?

YES

NO → Repair or replace the starter motor.

7

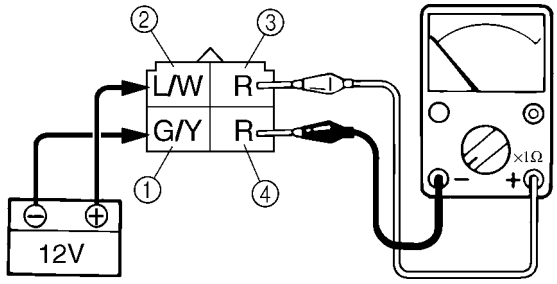
EAS00761

4. Starter relay

- Remove the starter relay from the wire harness.
- Connect the pocket tester ($\Omega \times 1$) and battery (12 V) to the starter relay coupler as shown.

**Negative battery terminal → green/yellow** ①
**Positive battery terminal → blue/white** ②

**Positive tester probe → red** ③
**Negative tester probe → red** ④




- Does the starter relay have continuity between red and black?

YES → Replace the starter relay.
NO

EAS00749

5. Main switch

- Check the main switch for continuity.
  Refer to “CHECKING THE SWITCHES”.
- Is the main switch OK?

YES → Replace the main switch.
NO

EAS00750

6. Engine stop switch

- Check the engine stop switch for continuity.
  Refer to “CHECKING THE SWITCHES”.
- Is the engine stop switch OK?

YES
NO → Replace the right handlebar switch.

EAS00764

7. Start switch

- Check the start switch for continuity.
  Refer to “CHECKING THE SWITCHES”.
- Is the start switch OK?

YES
NO → Replace the right handlebar switch.

8. Front brake light switch

- Check the front brake light switch for continuity.
  Refer to “CHECKING THE SWITCHES”.
- Is the front brake light switch OK?

YES
NO → Replace the front brake light switch.

9. Rear brake light switch

- Check the rear light switch for continuity. Refer to “CHECKING THE SWITCHES”
- Is the rear brake light switch OK?

YES

NO

Replace the rear brake light switch.

EAS00766

10.Wiring

- Check the entire starting system’s wiring. Refer to “CIRCUIT DIAGRAM”.
- Is the starting system’s wiring properly connected and without defects?

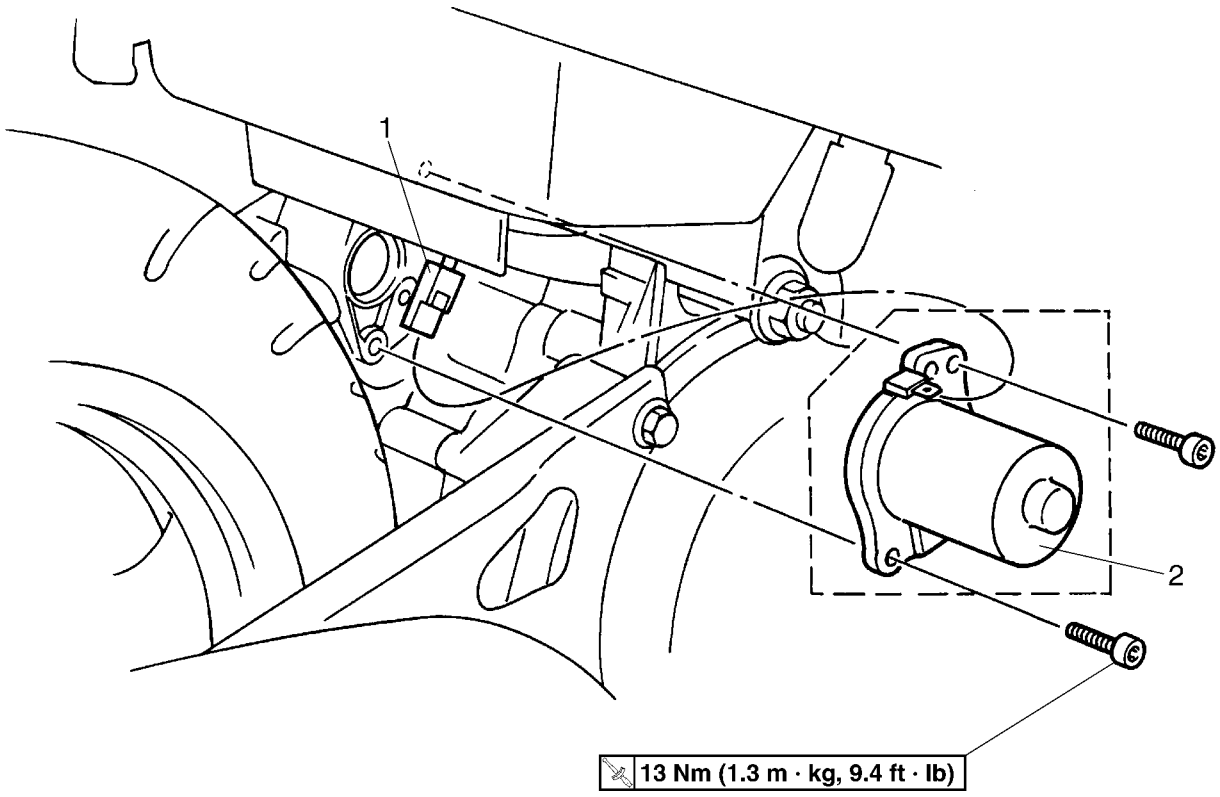
YES

NO

The starting system circuit is OK.

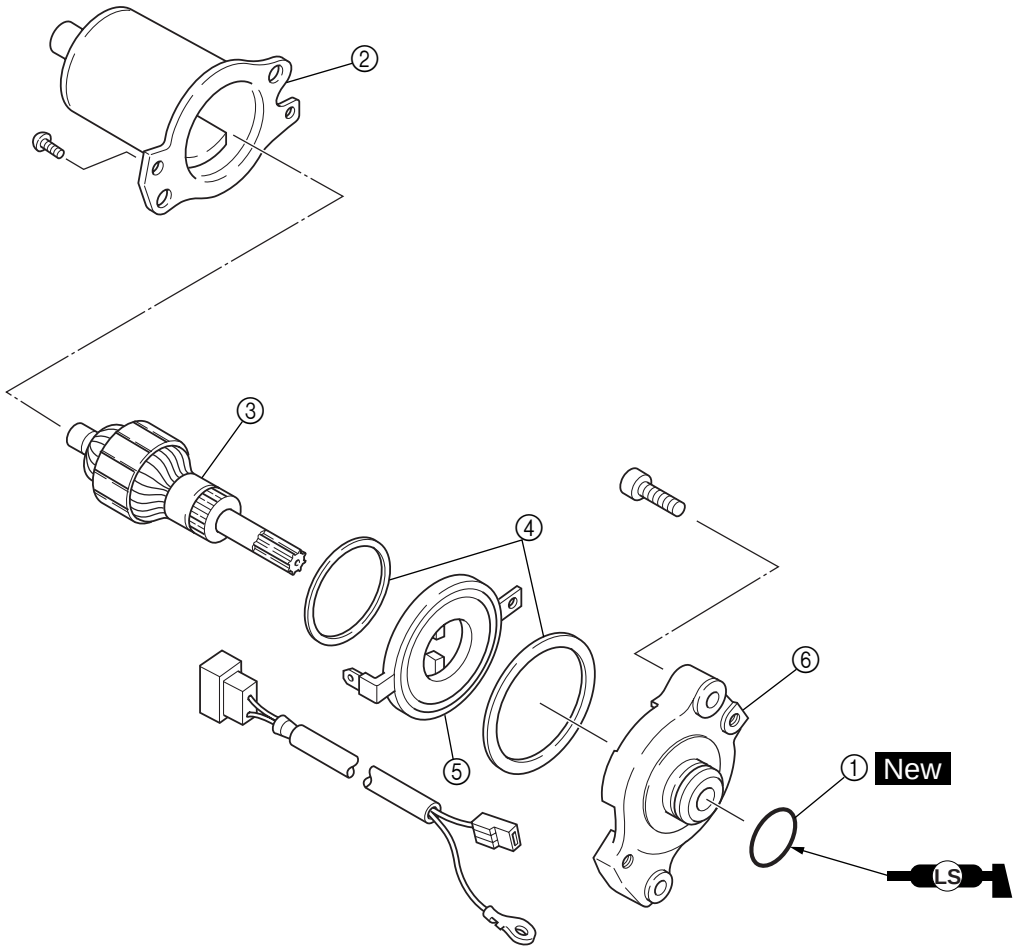
Properly connect or repair the starting system’s wiring.

EAS00767
# STARTER MOTOR

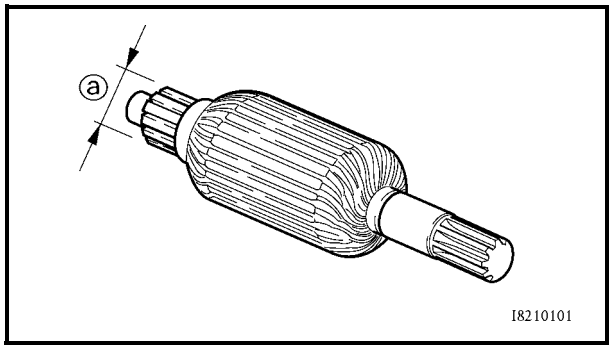



| Order | Job/Part | Q'ty | Remarks |
|---|---|---|---|
| | **Removing the starter motor** | | Remove the parts in the order listed. |
| | Air shroud | | Refer to "CYLINDER HEAD, CYLINDER AND PISTON" in chapter 5. |
| 1 | Starter motor coupler | 1 | |
| 2 | Starter motor assembly | 1 | |
| | | | For installation, reverse the removal procedure. |

EAS00768



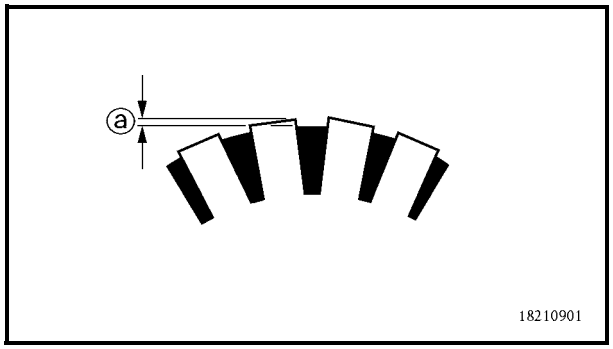

| Order | Job/Part | Q'ty | Remarks |
|---|---|---|---|
| | **Disassembling the starter motor** | | Remove the parts in the order listed. |
| ① | O-ring | 1 | |
| ② | Starter motor yoke | 1 | |
| ③ | Armature assembly | 1 | |
| ④ | Gasket | 2 | |
| ⑤ | Brush holder | 1 | |
| ⑥ | Starter motor cover | 1 | |
| | | | For assembly, reverse the disassembly procedure. |




EAS00769
**CHECKING THE STARTER MOTOR**

1. Check:
   - commutator
     Dirt → Clean with 600-grit sandpaper.
2. Measure:
   - commutator diameter ⓐ
     Out of specification → Replace the starter motor.

**Commutator wear limit**
**14.8 mm (0.58 in)**




3. Measure:
   - mica undercut ⓐ
     Out of specification → Scrape the mica to the proper measurement with a hacksaw blade that has been grounded to fit the commutator.

**Mica undercut**
**1.15 mm (0.05 in)**

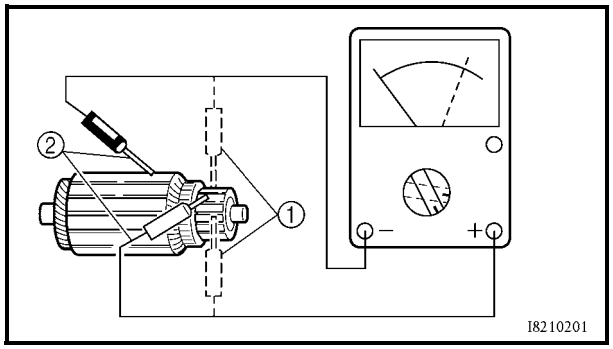
**NOTE:**
The mica must be undercut to ensure proper operation of the commutator.

4. Measure:
   - armature assembly resistances (commutator and insulation)
     Out of specification → Replace the starter motor.

▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

a. Measure the armature assembly resistances with the pocket tester.

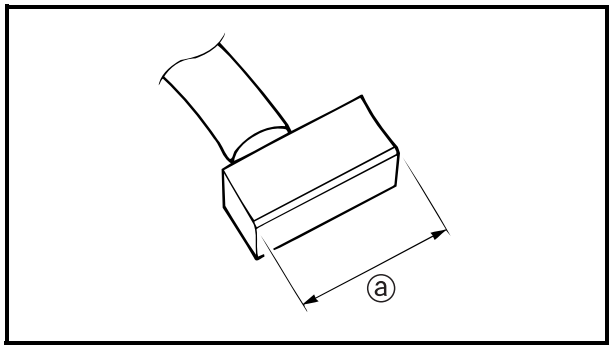
**Pocket tester**
**YU-03112**




**Armature coil**
**Commutator resistance ①**
**0.065 ~ 0.079 Ω at 20 °C (68 °F)**
**Insulation resistance ②**
**Above 1 MΩ at 20 °C (68 °F)**

b. If any resistance is out of specification, replace the starter motor.

▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲



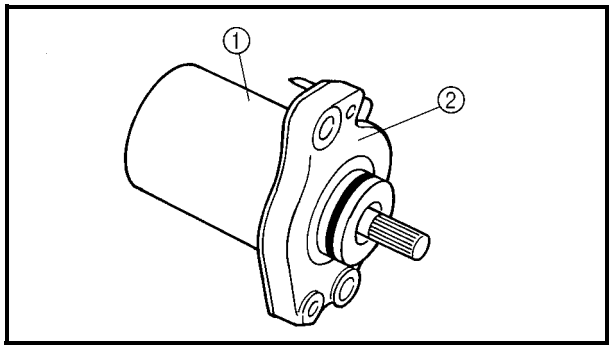

5. Measure:
• brush length ⓐ
Out of specification → Replace the brushes as a set.

**Brush length wear limit**
**0.9 mm (0.04 in)**

6. Measure:
• brush spring force
Out of specification → Replace the brush springs as a set.

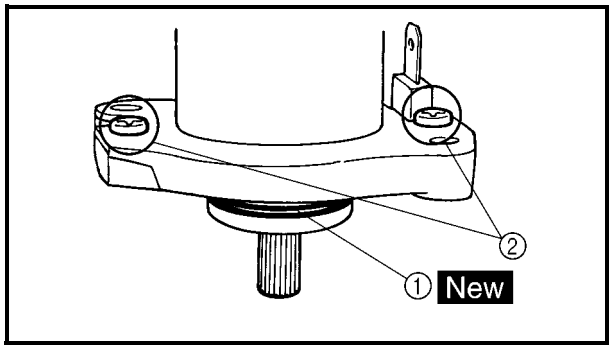
**Brush spring force**
**2.32 ~ 3.48 N**
**(236.5 ~ 355.0 gf, 8.35 ~ 12.53 oz)**

7. Check:
• gear teeth
Damage/wear → Replace the gear.




EAS00772
## ASSEMBLING THE STARTER MOTOR

1. Install:
• starter motor yoke ①
• starter motor cover ②

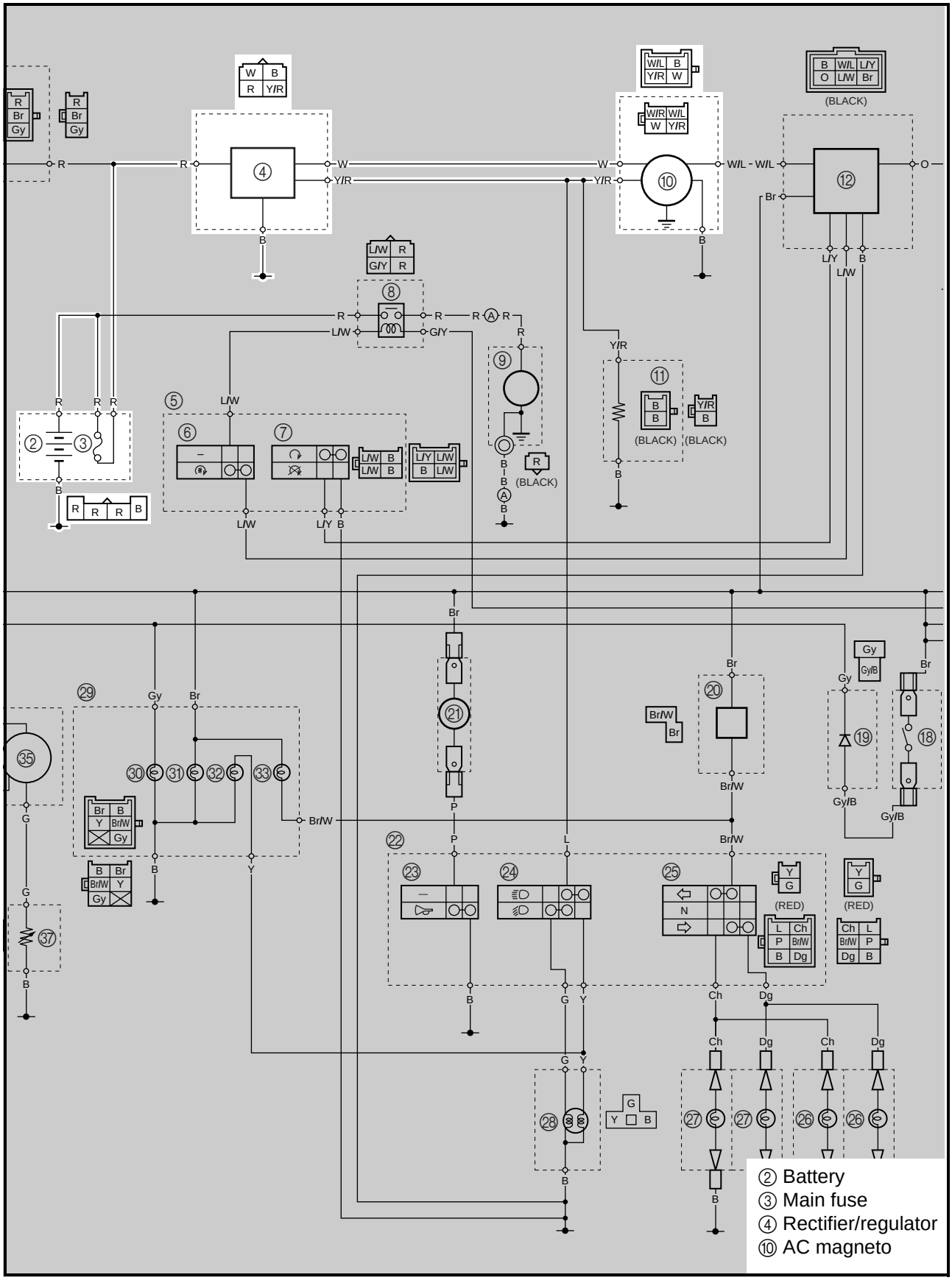



3. Install:
• O-ring ① New
• screws ② **2.5 Nm (0.25 m · kg, 1.7 ft · lb)**

EAS00773

# CHARGING SYSTEM

## CIRCUIT DIAGRAM



EAS00774
## TROUBLESHOOTING

**The battery is not being charged.**

Check:
1. main fuse
2. battery
3. charging voltage
4. wiring (of the entire charging system)

**NOTE:**
- Before troubleshooting, remove the following part(s):

1) center cover
2) side cover (left)
3) side cover (right)

- Troubleshoot with the following special tool(s).

**Inductive tachometer**
**YU-8036-A**
**Pocket tester**
**YU-03112**

EAS00738
1. Main fuse

- Check the main fuse for continuity. Refer to "CHECKING THE FUSE" in chapter 3.
- Is the main fuse OK?

YES ⇩ NO ⇩

Replace the main fuse.

EAS00739
2. Battery

- Check the condition of the battery. Refer to "CHECKING AND CHARGING THE BATTERY" in chapter 3.

**Minimum open-circuit voltage**
**12.8 V or more at 20°C (68°F)**

- Is the battery OK?

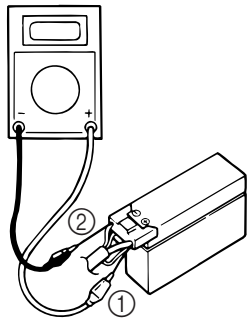
YES ⇩ NO ⇩

- Clean the battery terminals.
- Recharge or replace the battery.

EAS00775
3. Charging voltage

- Connect the inductive tachometer to the spark plug lead.
- Connect the pocket tester (DC 20 V) to the battery as shown.

**Positive tester probe →**
**positive battery terminal ①**
**Negative tester probe →**
**negative battery terminal ②**




- Start the engine and let it run at approximately 5,000 r/min.
- Measure the charging voltage.

**Charging voltage**
**14 V at 5,000 r/min**

7

**NOTE:**
Make sure the battery is fully charged.

- Is the charging voltage within specification?

NO → The charging circuit is OK.

YES →

EAS00779

4. Wiring

- Check the wiring connections of the entire charging system.
  Refer to “CIRCUIT DIAGRAM”.
- Is the charging system’s wiring properly connected and without defects?

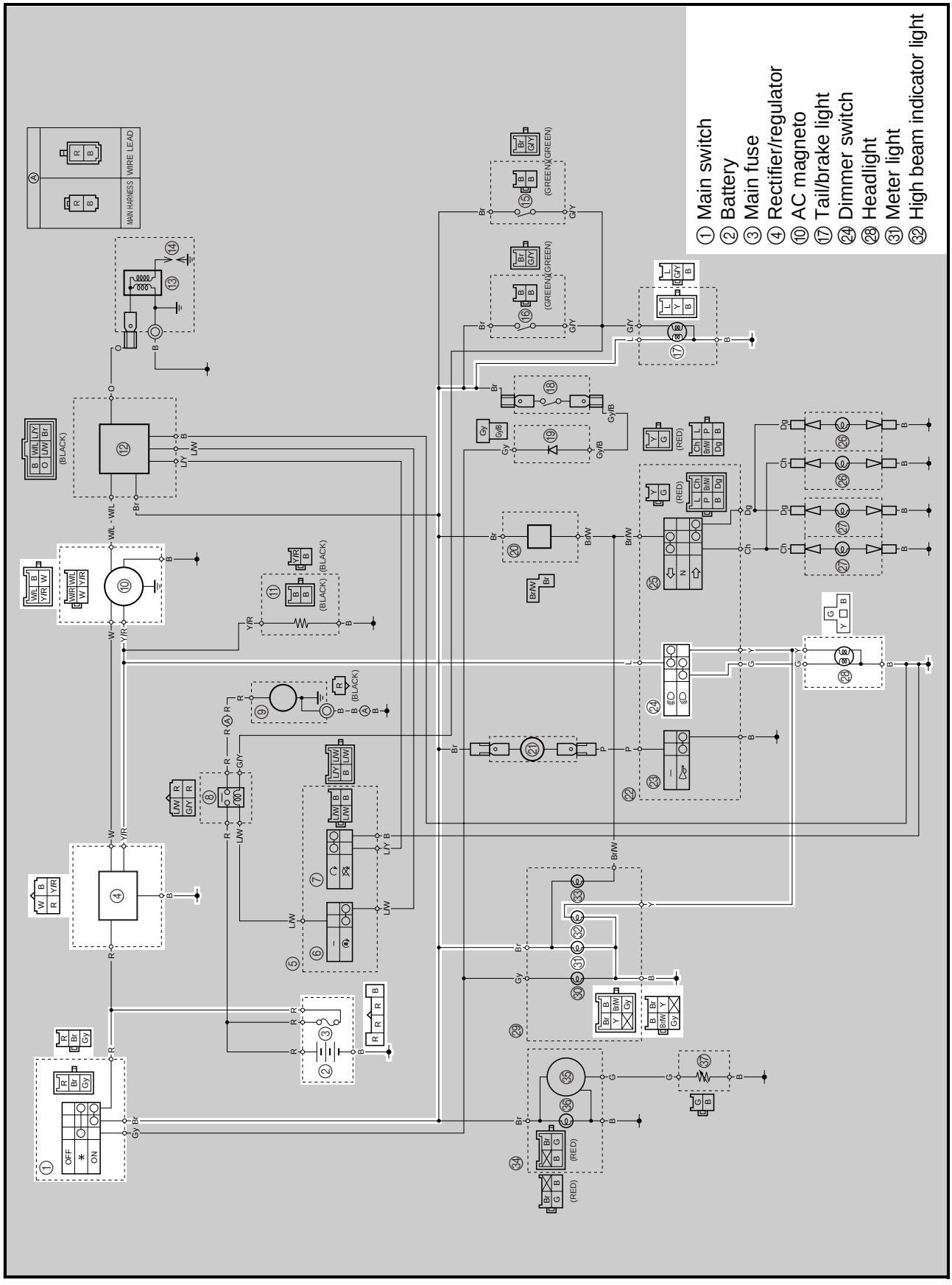
YES → Replace the rectifier/regulator.

NO → Properly connect or repair the charging system’s wiring.

EAS00780

# LIGHTING SYSTEM

## CIRCUIT DIAGRAM



EAS00782
## TROUBLESHOOTING

**Any of the following fail to light: Headlight, high beam indicator light, taillight, auxiliary light, and meter light.**

Check:
1. main fuse
2. battery
3. main switch
4. dimmer switch
5. wiring (of the entire charging system)

**NOTE:**
- Before troubleshooting, remove the following part(s):

1) center cover
2) side cover (left)
3) side cover (right)
4) tail cover
5) headlight cover
6) front panel

- Troubleshoot with the following special tool(s).

**Pocket tester**
**YU-03112**

EAS00738
### 1. Main fuse

- Check the main fuse for continuity. Refer to “CHECKING THE FUSE” in chapter 3.
- Is the main fuse OK?

YES ⇩

NO ⇩

Replace the main fuse.

EAS00739
### 2. Battery

- Check the condition of the battery. Refer to “CHECKING AND CHARGING THE BATTERY” in chapter 3.

**Minimum open-circuit voltage**
**12.8 V or more at 20°C (68°F)**

- Is the battery OK?

YES ⇩

NO ⇩

- Clean the battery terminals.
- Recharge or replace the battery.

EAS00749
### 3. Main switch

- Check the main switch for continuity. Refer to “CHECKING THE SWITCHES”.
- Is the main switch OK?

YES ⇩

NO ⇩

Replace the main switch.

EAS00785
### 4. Dimmer switch

- Check the dimmer switch for continuity. Refer to “CHECKING THE SWITCHES”.
- Is the dimmer switch OK?

YES ⇩

NO ⇩

The dimmer switch is faulty.
Replace the left handlebar switch.

EAS00787

5. Wiring

- Check the entire lighting system's wiring. Refer to "CIRCUIT DIAGRAM".
- Is the lighting system's wiring properly connected and without defects?

YES → Check the condition of each of the lighting system's circuits. Refer to "CHECKING THE LIGHTING SYSTEM".

NO → Properly connect or repair the lighting system's wiring.

EAS00788

**CHECKING THE LIGHTING SYSTEM**

1. The headlight and the high beam indicator light fail to come on.

1. Headlight bulb and socket

- Check the headlight bulb and socket for continuity.
- Are the headlight bulb and socket OK?

YES →

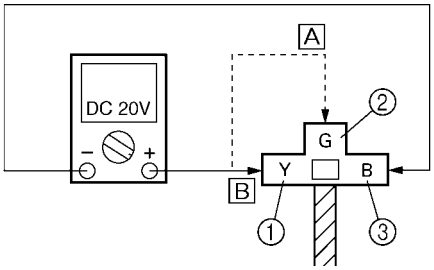
NO → Replace the headlight bulb, socket or both.

2. Voltage

- Connect the pocket tester (DC 20 V) to the headlight and high beam indicator light couplers as shown.

A When the dimmer switch is set to " ≣D ".
B When the dimmer switch is set to " ≣D ".

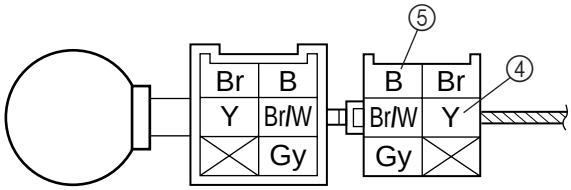
Headlight coupler (wire harness side)




**Positive tester probe → yellow ①**
**Negative tester probe → black ③**

**Headlight**
**Positive tester probe → yellow ① or green ②**
**Negative tester probe → black ③**
**High beam indicator light**
**Positive tester probe → yellow ④**
**Negative tester probe → black ⑤**

Meter light assembly coupler (wire harness side)




- Set the main switch to "ON".
- Start the engine.
- Set the dimmer switch to " ≣D " or " ≣D ".
- Measure the voltage (12 V) of green ② on the headlight coupler (wire harness side).
- Is the voltage within specification?

YES →

NO → This circuit is OK.

7

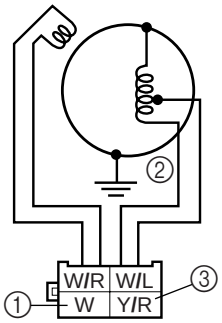
EAS00776

4. Source coil resistance

- Disconnect the stator coil assembly coupler from the wire harness.
- Connect the pocket tester (Ω × 1) to the source coils as shown.

**Positive tester probe → white ①**
**Negative tester probe → ground ②**

**Positive tester probe → yellow/red ③**
**Negative tester probe → ground ②**




- Measure the source coil resistances.

**Stator coil resistance (W-B)**
**0.29 ~ 0.43 Ω at 20°C (68°F)**

- Is the stator coil OK?

YES → The wiring circuit from the main switch to the headlight coupler is faulty and must be repaired.

NO → Replace the rectifier/regulator.

EAS00789

2. The meter light fails to come on.

1. Meter light bulb and socket

- Check the meter light bulb and socket for continuity.
- Are the meter light bulb and socket OK?

YES

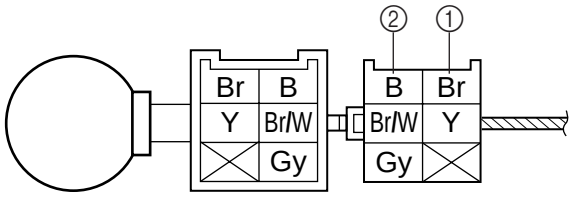
NO → Replace the meter light bulb, socket or both.

2. Voltage

- Connect the pocket tester (20 V) to the meter light coupler (wire harness side) as shown.

**Positive tester probe → brown ①**
**Negative tester probe → black ②**

Meter light assembly coupler




- Set the main switch to "ON".
- Measure the voltage (12 V) of brown ① on the meter light coupler (wire harness side).
- Is the voltage within specification?

YES → This circuit is OK.

NO → The wiring circuit from the main switch to the meter light coupler is faulty and must be repaired.

EAS00790

3. The tail/brake light fails to come on.

1. Tail/brake light bulb and socket

- Check the tail/brake light bulb and socket for continuity.
- Are the tail/brake light bulb and socket OK?

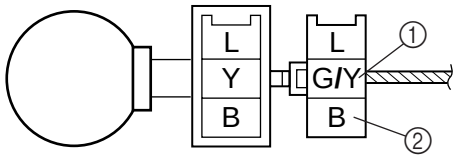
YES

NO → Replace the tail/brake light bulb, socket or both.

2. Voltage

- Connect the pocket tester (DC 20 V) to the tail/brake light coupler (wire harness side) as shown.

**Positive tester probe** → **blue** ①
**Negative tester probe** → **black** ②




- Set the main switch to “ON”.
- Measure the voltage (12 V) of blue ① on the tail/brake light coupler (tail/brake light side).
- Is the voltage within specification?

YES

This circuit is OK.

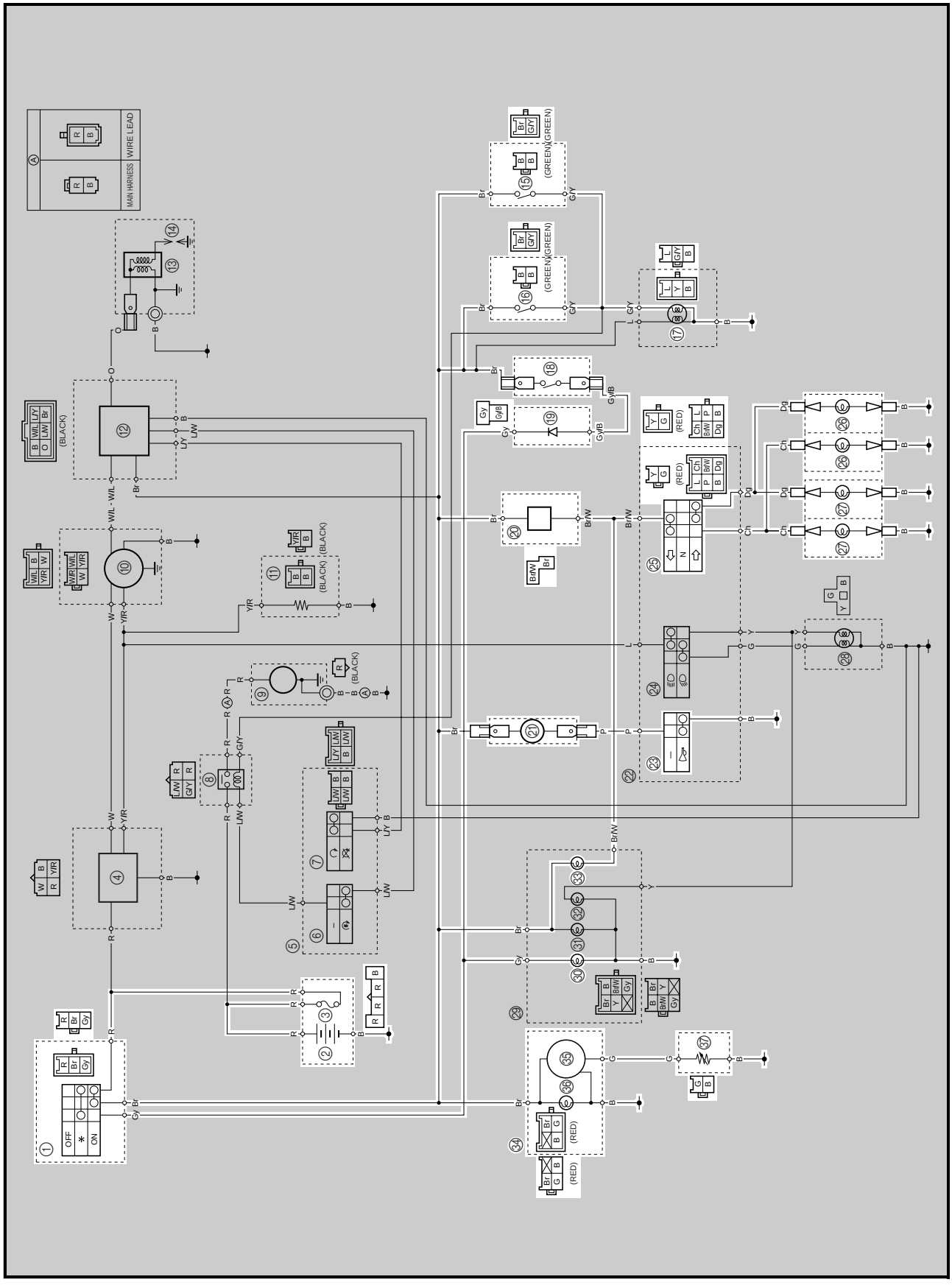
NO

The wiring circuit from the main switch to the tail/brake light coupler is faulty and must be repaired.

EAS00793

# SIGNALING SYSTEM

## CIRCUIT DIAGRAM



① Main switch
② Battery
③ Main fuse
⑮ Rear brake light switch
⑯ Front brake light switch
⑰ Tail/brake light
⑱ Oil level gauge
⑲ Diode
⑳ Turn signal relay
㉑ Horn
㉓ Horn switch
㉕ Turn signal switch
㉖ Rear turn signal light
㉗ Front turn signal light
㉚ Oil level warning light
㉝ Turn signal indicator light
㉞ Fuel gauge assembly
㉟ Fuel level gauge
㊱ Fuel level indicator light
㊲ Fuel sender

EAS00794
## TROUBLESHOOTING

- **Any of the following fail to light: Flasher light, brake light or an indicator light.**
- **The horn fails to sound.**

Check:
1. main fuse
2. battery
3. main switch
4. wiring (of the entire signaling system)

**NOTE:**
- Before troubleshooting, remove the following part(s):

1) center cover
2) side cover (left)
3) side cover (right)
4) tail cover
5) headlight cover
6) front panel

- Troubleshoot with the following special tool(s).

**Pocket tester**
**YU-03112**

EAS00738
### 1. Main fuse

- Check the main fuse for continuity.
- Refer to “CHECKING THE FUSE” in chapter 3.
- Is the main fuse OK?

YES

NO → Replace the main fuse.

EAS00739
### 2. Battery

- Check the condition of the battery. Refer to “CHECKING AND CHARGING THE BATTERY” in chapter 3.

**Minimum open-circuit voltage**
**12.8 V or more at 20 °C (68 °F)**

Is the battery OK?

YES

NO →
- Clean the battery terminals.
- Recharge or replace the battery.

EAS00749
### 3. Main switch

- Check the main switch for continuity. Refer to “CHECKING THE SWITCHES”.
- Is the main switch OK?

YES

NO → Replace the main switch.

EAS00795
### 4. Wiring

- Check the entire signal system’s wiring. Refer to “CIRCUIT DIAGRAM”.
- Is the signaling system’s wiring properly connected and without defects?

YES → Check the condition of each of the signaling system’s circuits. Refer to “CHECKING THE SIGNALING SYSTEM”.

NO → Properly connect or repair the signaling system’s wiring.

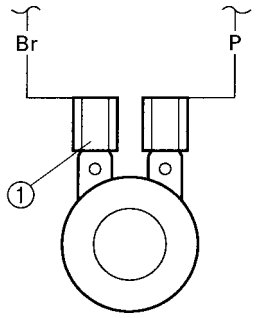
EAS00796
## CHECKING THE SIGNALING SYSTEM

1. The horn fails to sound.

| 1. Horn switch |
|---|
| • Check the horn switch for continuity. Refer to “CHECKING THE SWITCHES”.<br>• Is the horn switch OK? |

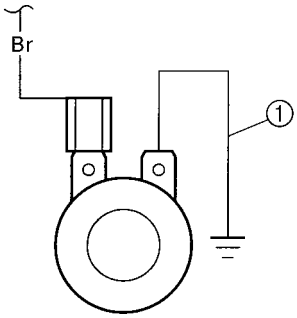
YES

NO → Replace the left handlebar switch.

| 2. Voltage |
|---|
| • Connect the pocket tester (DC 20 V) to the horn connector at the horn terminal as shown. |
| **Positive tester probe → brown ①**<br>**Negative tester probe → ground** |
|  |
| • Set the main switch to “ON”.<br>• Push the horn switch.<br>• Measure the voltage (12 V) of brown at the horn terminal.<br>• Is the voltage within specification? |

YES

NO → The wiring circuit from the main switch to the horn connector is faulty and must be repaired.

| 3. Horn |
|---|
| • Disconnect the pink connector at the horn terminal.<br>• Connect a jumper lead ① to the horn terminal and ground the jumper lead.<br>• Set the main switch to “ON”.<br>• Push the horn switch.<br>• Does the horn sound? |
|  |

NO

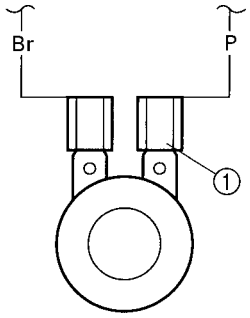
YES → The horn is OK.

7

4. Voltage

- Connect the pocket tester (DC 20 V) to the horn connector at the pink terminal as shown.

**Positive tester probe → pink ①**
**Negative tester probe → ground**




- Set the main switch to "ON".
- Measure the voltage (12 V) of pink ① at the horn terminal.
- Is the voltage within specification?

YES → Repair or replace the horn.

NO → Replace the horn.

EAS00798
2. The tail/brake light fails to come on.

1. Tail/brake light bulb and socket

- Check the tail/brake light bulb and socket for continuity.
- Are the tail/brake light bulb and socket OK?

YES

NO → Replace the tail/brake light bulb, socket or both.

2. Brake light switches

- Check the brake light switches for continuity.
  Refer to "CHECKING THE SWITCHES".
- Is the brake light switch OK?

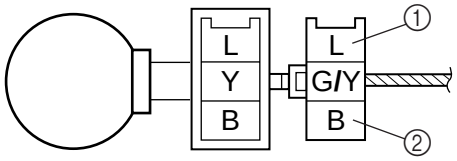
YES

NO → Replace the brake light switch.

3. Voltage

- Connect the pocket tester (DC 20 V) to the tail/brake light coupler (wire harness side) as shown.

**Positive tester probe → green/yellow ①**
**Negative tester probe → black ②**




- Set the main switch to "ON".
- Pull in the brake levers.
- Measure the voltage (12 V) of green/yellow ① on the tail/brake light coupler (wire harness side).
- Is the voltage within specification?

YES → This circuit is OK.

NO → The wiring circuit from the main switch to the tail/brake light coupler is faulty and must be repaired.

EAS00799
3. The turn signal light, turn signal indicator light or both fail to blink.

1. Turn signal indicator light bulb and socket
- Check the turn signal light bulb and socket for continuity.
  Refer to “CHECKING THE SWITCHES”.
- Are the turn signal light bulb and socket OK?

YES

NO → Replace the turn signal light bulb, socket or both.

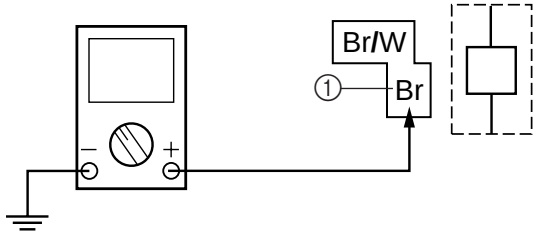
2. Turn signal switch
- Check the turn signal switch for continuity.
  Refer to “CHECKING THE SWITCHES”.
- Is the turn signal switch OK?

YES

NO → Replace the left handlebar switch.

3. Voltage
- Connect the pocket tester (DC 20 V) to the turn signal relay coupler (wire harness side) as shown.

**Positive tester probe → brown ①**
**Negative tester probe → ground**




- Set the main switch to “ON”.
- Measure the voltage (12 V) on brown ① at the turn signal relay coupler (wire harness side).
- Is the voltage within specification?

YES

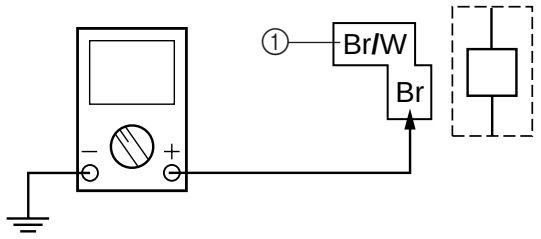
NO → The wiring circuit from the main switch to the turn signal relay coupler is faulty and must be repaired.

7

4. Voltage

- Connect the pocket tester (DC 20 V) to the turn signal relay coupler (wire harness side) as shown.

**Positive tester probe → brown/white ①**
**Negative tester probe → ground**




- Set the main switch to "ON".
- Set the turn signal switch to " ⇦ " or " ⇨ ".
- Measure the voltage (12 V) on brown/white ① at the turn signal relay coupler (wire harness side).
- Is the voltage within specification?

YES

NO

The turn signal relay is faulty and must be replaced.

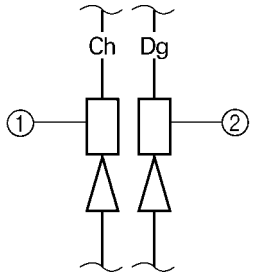
5. Voltage

- Connect the pocket tester (DC 20 V) to the turn signal light connector (wire harness side) as shown.

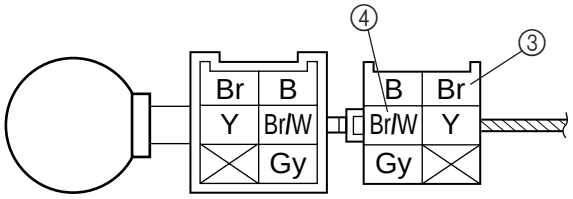
**A Turn signal light**
**Left turn signal light**
**Positive tester probe → chocolate ①**
**Negative tester probe → ground**
**Right turn signal light**
**Positive tester probe → dark green ②**
**Negative tester probe → ground**

**B Turn signal indicator light**
**Positive tester probe → brown ③**
**Negative tester probe → brown/white ④**

A




B




- Set the main switch to "ON".
- Set the turn signal switch to " ⇦ " or " ⇨ ".
- Measure the voltage (12 V) of the chocolate ① or dark green ② at the turn signal light connector (wire harness side).
- Is the voltage within specification?

YES

NO

This circuit is OK.

The wiring circuit from the turn signal switch to the turn signal light connector is faulty and must be repaired.

EAS00802
5. The oil level warning light fails to come on.

1. Oil level warning light bulb and socket

- Check the oil level warning light bulb and socket for continuity.
  Refer to "CHECKING THE SWITCHES".
- Are the oil level warning light bulb and socket OK?

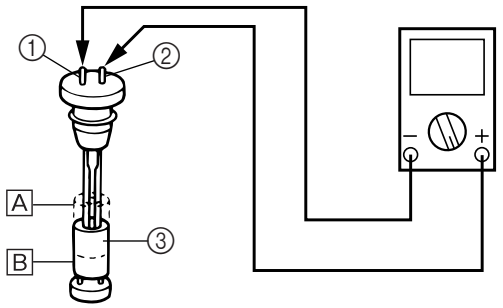
YES

NO → Replace the oil level warning light bulb, socket or both.

2. Oil level switch

- Remove the oil level switch from the oil tank.
- Connect the pocket tester ($\Omega \times 1$) to the oil level switch.

**Positive tester probe** → **terminal** ①
**Negative tester probe** → **terminal** ②




- Check the oil level switch for continuity.
- Hold the oil level switch in an upright position [A] and let the float ③ go all the way down [B].
- Is the oil level switch OK?

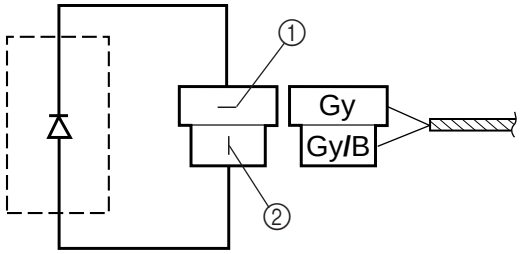
YES

NO → Replace the oil level switch.

3. Diode

- Remove the diode from the wire harness.
- Connect the pocket tester ($\Omega \times 1$) to the diode terminals as shown.
- Check the diode for continuity as follows.

| | |
|---|---|
| **Tester positive probe** → **gray** ① **Tester negative probe** → **gray/black** ② | **Continuity** |
| **Tester positive probe** → **gray/black** ① **Tester negative probe** → **gray** ② | **No Continuity** |




**NOTE:**
When you switch the tester's positive and negative probes, the readings in the above chart will be reversed.

- Are the tester readings correct?

YES

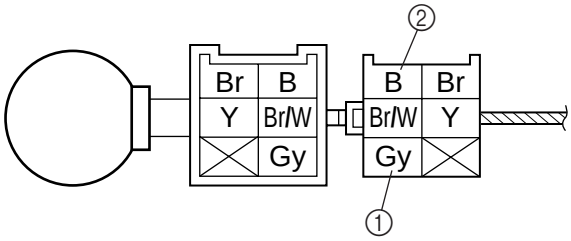
NO → Replace the diode.

7

4. Voltage

- Connect the pocket tester (DC 20 V) to the meter assembly coupler (wire harness side) as shown.

**Positive tester probe → gray ①**
**Negative tester probe → black ②**




- Set the main switch to "ON".
- Measure the voltage (12 V) of gray ① and black ② at the meter assembly coupler.
- Is the voltage within specification?

YES

This circuit is OK.

NO

The wiring circuit from the main switch to the meter light coupler is faulty and must be repaired.

EAS00803

6. The fuel level indicator light fails to come on.

1. Fuel level indicator light bulb and socket

- Check the fuel level indicator light bulb and socket for continuity.
- Are the fuel level indicator light bulb and socket OK?

YES

NO

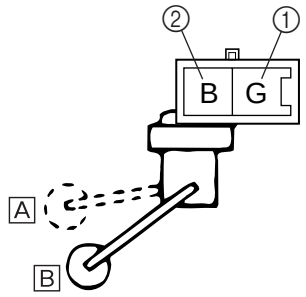
Replace the fuel level indicator light bulb, socket or both.

EAS00804

2. Fuel sender

- Remove the fuel sender from the fuel tank.
- Connect the pocket tester to the fuel sender coupler (fuel sender side) as shown.

**Positive tester probe → green ①**
**Negative tester probe → black ②**




**Fuel sender resistance (up position) A**
**(Ω × 1)**
**4 ~ 10 Ω at 20 °C (68 °F)**
**Fuel sender resistance (down position) B**
**(Ω × 10)**
**90 ~ 100 Ω at 20 °C (68 °F)**

- Is the fuel sender OK?

YES

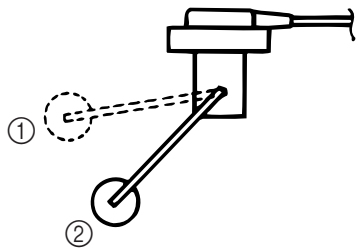
NO

Replace the fuel sender.

3. Fuel level gauge

- Set the main switch to “ON”.
- Move the float up ① or down ②.
- Check that the fuel level gauge needle moves to “F” or “E”.

**NOTE:**
Before reading the fuel level meter, leave the float in one position (either up or down) for at least three minutes.




- Does the fuel level gauge needle move appropriately?

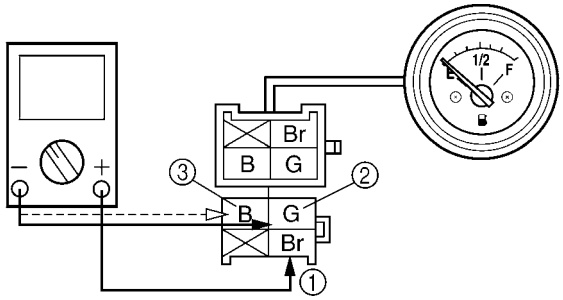
YES

NO → Replace the fuel level gauge.

4. Voltage

- Connect the pocket tester (DC 20 V) to the fuel level gauge coupler (wire harness side) as shown.

**Fuel level gauge**
**Positive tester probe → brown ①**
**Negative tester probe → green ②**
**Fuel level indicator light**
**Positive tester probe → brown ①**
**Negative tester probe → black ③**




- Set the main switch to “ON”.
- Measure the voltage (12 V) of brown ① on the fuel level gauge coupler (wire harness side).
- Is the voltage within specification?

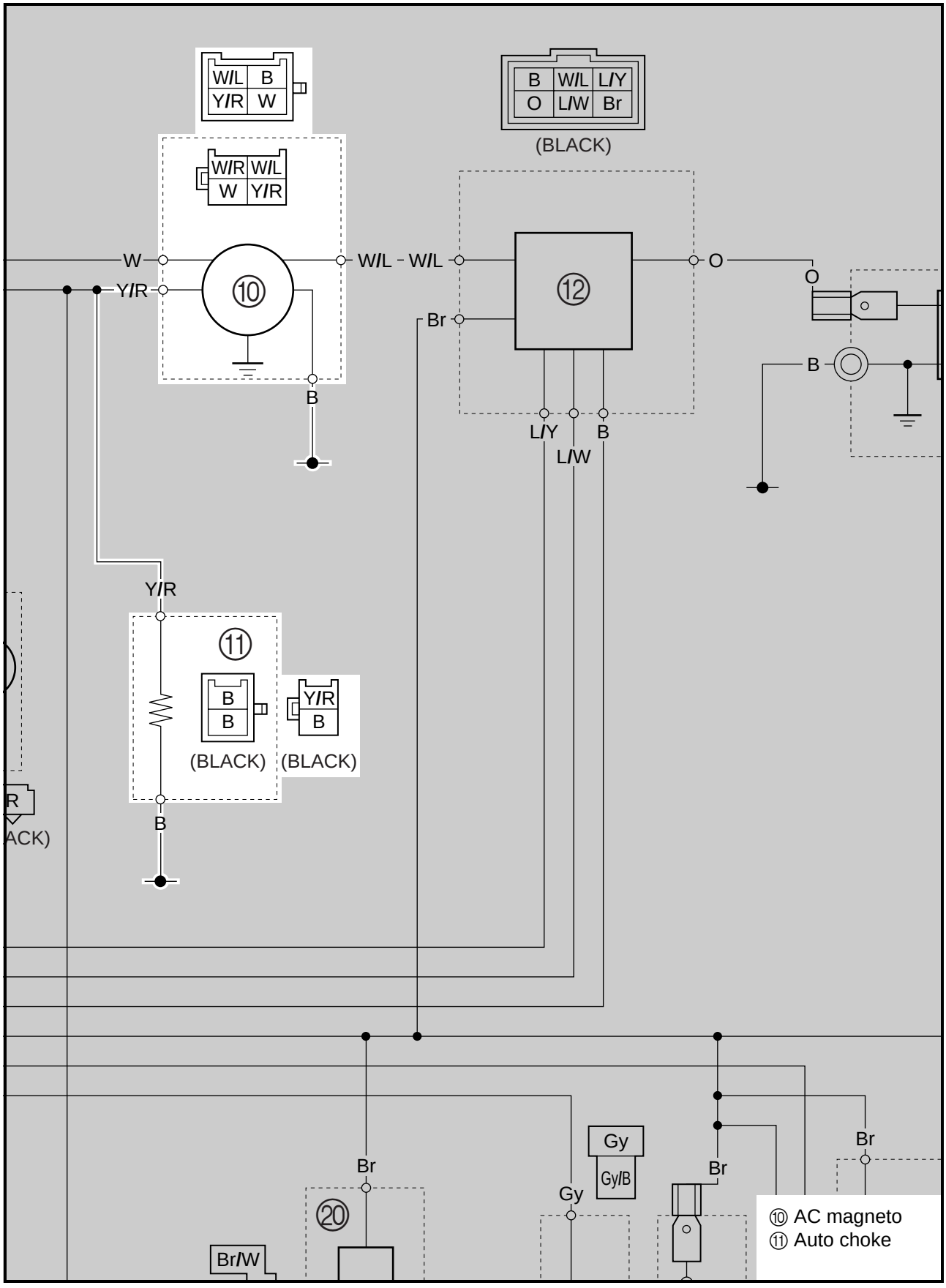
YES → This circuit is OK.

NO → Check the wiring connections of the entire signaling system.

7

# AUTO CHOKE SYSTEM

## CIRCUIT DIAGRAM



## TROUBLESHOOTING

**The auto choke fails to operate**

Check:
1. auto choke resistance
2. lighting coil resistance
3. voltage

**NOTE:**
- Before troubleshooting, remove the following part(s):

1) center cover

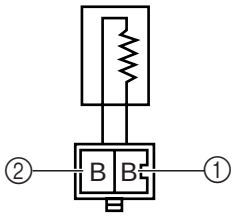
- Troubleshoot with the following special tool(s).

**Pocket tester**
**YU-03112**

1. Auto choke resistance

- Disconnect the auto choke coupler from the wire harness.
- Connect the pocket tester (Ω × 1) to the auto choke coupler as shown.

**Tester positive probe → black** ①
**Tester negative probe → black** ②




**Auto choke resistance**
**8 ~ 12 Ω at 20 °C (68 °F)**

- Is the auto choke unit OK?

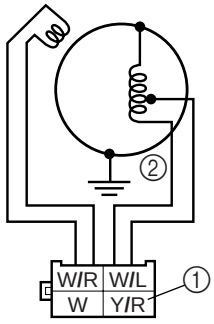
YES

NO → Replace the auto choke.

2. Source coil resistance

- Disconnect the stator coil assembly coupler from wire harness.
- Connect the pocket tester (Ω × 1) to the source coil lead.

**Tester positive probe → yellow/red** ①
**Tester negative probe → ground** ②




**Source coil resistance**
**0.18 ~ 0.28 Ω at 20 °C (68 °F)**

YES

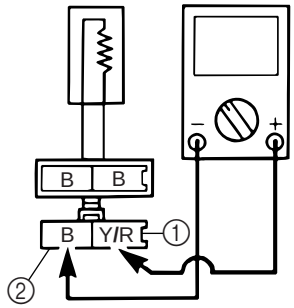
NO → Replace the stator coil assembly.

7

3. Voltage

- Connect the pocket tester (AC 20 V) to the auto choke lead.

**Tester positive probe → yellow/red ①**
**Tester negative probe → black ②**




- Set the main switch to “ON”.
- Start the engine and accelerate to about 3,000 r/min
- Check the voltage.

**Voltage**
**12.8 V or more at 20 °C (68 °F)**

YES

This auto choke is OK.

NO

Check the entire auto choke unit for connection.
Refer to the “CIRCUIT DIAGRAM”.

EAS00845

# TROUBLESHOOTING

**NOTE:**

The following guide for troubleshooting does not cover all the possible causes of trouble. It should be helpful, however, as a guide to basic troubleshooting. Refer to the relative procedure in this manual for checks, adjustments, and replacement of parts.

## STARTING FAILURE/HARD STARTING

**ENGINE**

**Cylinder and cylinder head**
- Loose spark plug
- Loose cylinder head or cylinder
- Damaged cylinder head gasket
- Damaged cylinder gasket
- Worn or damaged cylinder

**Piston and piston ring(s)**
- Improperly installed piston ring
- Damaged, worn or fatigued piston ring
- Seized piston ring
- Seized or damaged piston

**Air filter**
- Improperly installed air filter
- Clogged air filter element

**Crankcase and crankshaft**
- Improperly assembled crankcase
- Seized crankshaft

**FUEL SYSTEM**

**Fuel tank**
- Empty fuel tank
- Clogged fuel tank cap breather hole
- Deteriorated or contaminated fuel
- Clogged or damaged fuel hose

**Carburetor**
- Deteriorated or contaminated fuel
- Clogged pilot jet
- Clogged pilot air passage
- Sucked-in air
- Damaged float
- Worn needle valve
- Improperly installed needle valve seat
- Incorrect fuel level
- Improperly adjusted pilot air screw
- Improperly installed pilot jet
- Clogged starter jet
- Clogged emulsion tube

**Autochoke unit**
- Faulty starter plunger
- Faulty ignitor unit

**ELECTRICAL SYSTEMS**

**Battery**
- Improperly charged battery
- Faulty battery

**Fuse**
- Blown, damaged or incorrect fuse
- Improperly installed fuse

**Spark plug**
- Incorrect spark plug gap
- Incorrect spark plug heat range
- Fouled spark plug
- Worn or damaged electrode
- Worn or damaged insulator
- Faulty spark plug cap

**Ignition coil**
- Broken or shorted primary or secondary coil
- Faulty spark plug lead
- Cracked or broken ignition coil body

**Ignition system**
- Faulty ignitor unit
- Faulty pickup coil
- Broken generator rotor woodruff key

**Switches and wiring**
- Faulty main switch
- Faulty engine stop switch
- Broken or shorted wiring
- Faulty front, rear or both brake switches
- Faulty start switch
- Improperly grounded circuit
- Loose connections

**Starting system**
- Faulty starter motor
- Faulty starter relay
- Faulty starter clutch

EAS00847

## INCORRECT ENGINE IDLING SPEED

**ENGINE**

**Air filter**

- Clogged air filter element

**FUEL SYSTEM**

**Carburetor**

- Faulty starter plunger
- Loose or clogged pilot jet
- Loose or clogged pilot air jet
- Damaged or loose carburetor joint
- Improperly adjusted engine idling speed (throttle stop screw)
- Improper throttle cable free play
- Flooded carburetor

**Autochoke unit**

- Faulty starter plunger
- Faulty ignitor unit

**ELECTRICAL SYSTEMS**

**Battery**

- Discharged battery
- Faulty battery

**Spark plug**

- Incorrect spark plug gap
- Incorrect spark plug heat range
- Fouled spark plug
- Worn or damaged electrode
- Worn or damaged insulator
- Faulty spark plug cap

**Ignition coil**

- Faulty spark plug lead

**Ignition system**

- Faulty ignitor unit
- Faulty pickup coil

EAS00848

## POOR MEDIUM-AND-HIGH-SPEED PERFORMANCE

Refer to “STARTING FAILURE/HEAD STARTING”.

**ENGINE**

**Air filter**

- Clogged air filter element

**FUEL SYSTEM**

**Carburetor**

- Faulty diaphragm
- Incorrect fuel level
- Loose or clogged main jet

EAS00853

## FAULTY CLUTCH

**ENGINE OPERATES BUT SCOOTER WILL NOT MOVE**

**V-belt**

- Bent, damaged or worn V-belt
- Slipping V-belt

**Primary pulley cam and primary pulley slider**

- Damaged or worn primary pulley cam
- Damaged or worn primary pulley slider

**Transmission gear(s)**

- Damaged transmission gear

**CLUTCH SLIPS**

**Clutch shoe spring(s)**

- Damaged, loose or worn clutch shoe spring(s)

**Clutch shoe(s)**

- Damaged or worn clutch shoe(s)

**Primary sliding sheave**

- Seized primary sliding sheave

**POOR STARTING PERFORMANCE**

**V-belt**

- Slipping V-belt
- Oil or grease on the V-belt

**Primary sliding sheave**

- Faulty operation
- Worn pin groove
- Worn pin

**Clutch shoe(s)**

- Bent, damaged or worn clutch shoe(s)

**POOR ACCELERATION PERFORMANCE**

**V-belt**

- Oil or grease on the V-belt

**Primary pulley weight(s)**

- Faulty operation
- Worn primary pulley weight(s)

**Primary fixed sheave**

- Worn primary fixed sheave

**Primary sliding sheave**

- Worn primary sliding sheave

**Secondary fixed sheave**

- Worn secondary fixed sheave

**Secondary sliding sheave**

- Worn secondary sliding sheave

EAS00854
## OVERHEATING

**ENGINE**

**Cylinder head and piston**
- Heavy carbon buildup

**Engine oil and transmission oil**
- Incorrect oil level
- Incorrect oil viscosity
- Inferior oil quality

**FUEL SYSTEM**

**Carburetor**
- Incorrect main jet setting
- Incorrect fuel level
- Damaged or loose carburetor joint

**Air filter**
- Clogged air filter element

**CHASSIS**

**Brake(s)**
- Dragging brake

**ELECTRICAL SYSTEMS**

**Spark plug**
- Incorrect spark plug gap
- Incorrect spark plug heat range

**Ignition system**
- Faulty ignitor unit

EAS00858
## POOR BRAKING PERFORMANCE

- Worn brake shoe lining
- Worn or rusty brake drum
- Incorrect brake lever position
- Incorrect brake lever free play
- Incorrect brake camshaft lever position
- Incorrect brake shoe position
- Damaged or fatigued brake shoe spring
- Oil or grease on the brake shoe
- Oil or grease on the brake drum
- Broken brake torque rod

EAS00862
## UNSTABLE HANDLING

**Handlebar**
- Bent or improperly installed handlebar

**Steering head components**
- Improperly installed lower handlebar holder
- Improperly installed fork (improperly tightened ring nut)
- Bent steering stem
- Damaged ball bearing or bearing race

**Front shock absorber assembly (-ies)**
- Faulty front shock absorber spring(s)
- Leaking oil

**Rear shock absorber assembly**
- Faulty rear shock absorber spring
- Leaking oil

**Tire(s)**
- Uneven tire pressures (front and rear)
- Incorrect tire pressure
- Uneven tire wear

**Wheel(s)**
- Incorrect wheel balance
- Deformed cast wheel
- Damaged wheel bearing
- Bent or loose wheel axle
- Excessive wheel runout

**Frame**
- Bent frame
- Damaged steering head pipe
- Improperly installed bearing race

EAS00866

# FAULTY LIGHTING OR SIGNALING SYSTEM

### HEADLIGHT DOES NOT LIGHT

- Wrong headlight bulb
- Too many electrical accessories
- Hard charging
- Incorrect connection
- Improperly grounded circuit
- Poor contacts (main switch)
- Burnt-out headlight bulb

### HEADLIGHT BULB BURNT OUT

- Wrong headlight bulb
- Faulty battery
- Faulty rectifier/regulator
- Improperly grounded circuit
- Faulty main switch
- Headlight bulb life expired

### TAIL/BRAKE LIGHT DOES NOT LIGHT

- Wrong tail/brake light bulb
- Too many electrical accessories
- Incorrect connection
- Burnt-out tail/brake light bulb

### TAIL/BRAKE LIGHT BULB BURNT OUT

- Wrong tail/brake light bulb
- Faulty battery
- Tail/brake light bulb life expired

### TURN SIGNAL DOES NOT LIGHT

- Faulty turn signal switch
- Faulty turn signal relay
- Burnt-out turn signal bulb
- Incorrect connection
- Damaged or faulty wire harness
- Improperly grounded circuit
- Faulty battery
- Blown, damaged or incorrect fuse

### TURN SIGNAL BLINKS SLOWLY

- Faulty turn signal relay
- Faulty main switch
- Faulty turn signal switch
- Incorrect turn signal bulb

### TURN SIGNAL REMAINS LIT

- Faulty turn signal relay
- Burnt-out turn signal bulb

### TURN SIGNAL BLINKS QUICKLY

- Incorrect turn signal bulb
- Faulty turn signal relay
- Burnt-out turn signal bulb

### HORN DOES NOT SOUND

- Improperly adjusted horn
- Damaged or faulty horn
- Faulty main switch
- Faulty horn switch
- Faulty battery
- Blown, damaged or incorrect fuse
- Faulty wire harness

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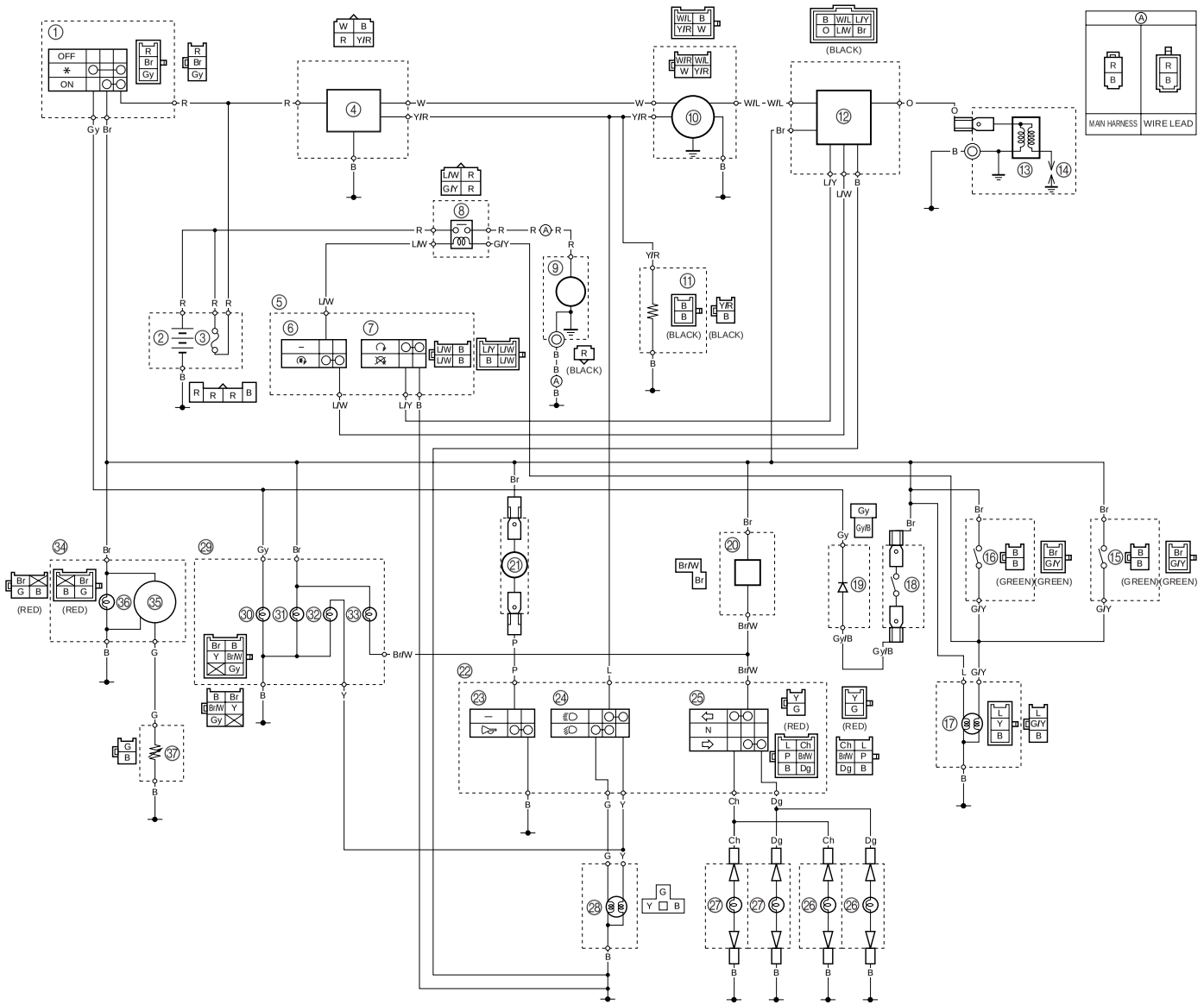
# YJ50RN WIRING DIAGRAM




① Main switch
② Battery
③ Main fuse
④ Rectifier/regulator
⑤ Right handlebar switch
⑥ Start switch
⑦ Engine stop switch
⑧ Starter relay
⑨ Starter motor
⑩ AC magneto
⑪ Auto choke
⑫ CDI unit
⑬ Ignition coil
⑭ Spark plug
⑮ Rear brake light switch
⑯ Front brake light switch
⑰ Tail/brake light
⑱ Oil level gauge
⑲ Diode
⑳ Turn signal relay
㉑ Horn
㉒ Left handlebar switch
㉓ Horn switch
㉔ Dimmer switch
㉕ Turn signal switch
㉖ Rear turn signal light
㉗ Front turn signal light
㉘ Headlight
㉙ Meter assembly
㉚ Oil level warning light
㉛ Meter light
㉜ High beam indicator light
㉝ Turn signal indicator light
㉞ Fuel gauge assembly
㉟ Fuel level gauge
㊱ Fuel level indicator light
㊲ Fuel sender

**COLOR CODE**

| | | | |
|---|---|---|---|
| B .....black | Gy.....gray | W .....white | L/W ..... blue/white |
| Br .....brown | L .....blue | Y .....yellow | L/Y ..... blue/yellow |
| Ch .....chocolate | O .....orange | Br/W.....brown/white | W/L ..... white/blue |
| Dg .....dark green | P.....pink | G/Y .....green/yellow | W/R ..... white/red |
| G.....green | R.....red | Gy/B.....gray/black | Y/R ..... yellow/red |